



Background Document for White skate  
*Rostroraja alba*



## **OSPAR Convention**

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. It has been ratified by Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland and the United Kingdom and approved by the European Community and Spain.

## **Convention OSPAR**

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. La Convention a été ratifiée par l'Allemagne, la Belgique, le Danemark, la Finlande, la France, l'Irlande, l'Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d'Irlande du Nord, la Suède et la Suisse et approuvée par la Communauté européenne et l'Espagne.

## **Acknowledgement**

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### **Photo acknowledgement**

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# Background Document for White skate *Rostroraja alba*

## Executive Summary

This background document on the White skate *Rostroraja alba* has been developed by OSPAR following the inclusion of this species on the OSPAR List of threatened and/or declining species and habitats (OSPAR Agreement 2008-6). The document provides a compilation of the reviews and assessments that have been prepared concerning this species since the agreement to include it in the OSPAR List in 2008. The original evaluation used to justify the inclusion of *R.alba* in the OSPAR List is followed by an assessment of the most recent information on its status (distribution, population, condition) and key threats prepared during 2009-2010. Chapter 7 provides proposals for the actions and measures that could be taken to improve the conservation status of the species. In agreeing to the publication of this document, Contracting Parties have indicated the need to further review these proposals. Publication of this background document does not, therefore, imply any formal endorsement of these proposals by the OSPAR Commission. On the basis of the further review of these proposals, OSPAR will continue its work to ensure the protection of *R.alba*, where necessary in cooperation with other competent organisations. This background document may be updated to reflect further developments or further information on the status of the species which becomes available.

## Récapitulatif

Le présent document de fond sur la Raie à bec pointu a été élaboré par OSPAR à la suite de l'inclusion de cette espèce dans la liste OSPAR des espèces et habitats menacés et/ou en déclin (Accord OSPAR 2008-6). Ce document comporte une compilation des revues et des évaluations concernant cette espèce qui ont été préparées depuis qu'il a été convenu de l'inclure dans la Liste OSPAR en 2008. L'évaluation d'origine permettant de justifier l'inclusion de la Raie à bec pointu dans la Liste OSPAR est suivie d'une évaluation des informations les plus récentes sur son statut (distribution, population, condition) et des menaces clés, préparée en 2009-2010. Le chapitre 7 fournit des propositions d'actions et de mesures qui pourraient être prises afin d'améliorer l'état de conservation de l'espèce. En se mettant d'accord sur la publication de ce document, les Parties contractantes ont indiqué la nécessité de réviser de nouveau ces propositions. La publication de ce document ne signifie pas, par conséquent que la Commission OSPAR entérine ces propositions de manière formelle. A partir de la nouvelle révision de ces propositions, OSPAR poursuivra ses travaux afin de s'assurer de la protection de la raie à bec pointu, le cas échéant avec la coopération d'autres organisations compétentes. Ce document de fond pourra être actualisé pour tenir compte de nouvelles avancées ou de nouvelles informations qui deviendront disponibles sur l'état de l'espèce.

## 1. Background information

### Name of species

White skate (*Rostroraja alba*) Lacepède 1803

## 2. Original evaluation against the Texel-Faial selection criteria

### List of OSPAR Regions and Dinter biogeographic zones where the species occurs

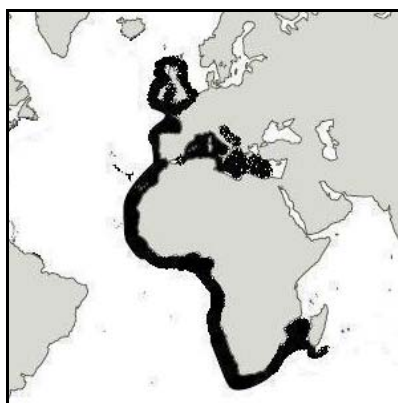
OSPAR Regions: The OSPAR List recognises that *R. alba* occurs in Regions II, III and IV. This background document presents evidence that this species has been reported in the Azores Pinho (2005, 2006)

Dinter biogeographic zones: Boreal, Warm Lusitanian subprovince, Cool Lusitanian subprovince, Azores subprovince (Macaronesian province)

Figure 1: Global distribution of *Rostroraja alba*

Source: adapted from van der Elst 1998

Records from the Azores (Pinho, 2005, 2006) are not shown



### List of OSPAR Regions where the species is under threat and/or in decline

All Regions where it occurs. The status of this species in Region V remains unknown, but it is likely to be suffering depletion by expanding deepwater fisheries.

### Original evaluation against the Texel-Faial criteria for which the species was included on the OSPAR List

*R. alba* was nominated for inclusion in the OSPAR List in 2006 by Germany

**Table 1:** Summary assessment of White skate (*Rostroraja alba*) against the Texel-Faial criteria

Criterion	Comments	Evaluation
Global importance	The historic distribution of this species includes OSPAR Regions II, III and IV, also recently recorded from V, southwards from the British Isles, but its global range includes the Mediterranean and much of the African coast.	Does not qualify
Regional importance	<i>Rostroraja alba</i> may have been of regional importance in the past, when it was reportedly abundant in a few localities (Irish Sea, English Channel, off Brittany). These have now been removed by target fisheries.	Does not qualify
Rarity	<i>R. alba</i> was formerly common from the British Isles and southwards. It is now absent from research vessel surveys and very rarely recorded in commercial catches.	Qualifies

Sensitivity	This is a large, long-lived coastal, shelf and upper slope species with a low reproductive rate. Its age and very large size at maturity means that all size classes are vulnerable to capture in demersal fisheries. Mortality of the large juveniles is high for many years before they reach maturity. Recovery of populations will be extremely slow even if fishing pressures are lifted.	Qualifies
Keystone species	No	Unknown
Decline	<i>R. alba</i> was formerly sufficiently abundant in some coastal areas to support localised longline target fisheries in parts of its range. It has declined severely during the past 50 to 100 years around the British Isles, in the Irish Sea, and the Bay of Biscay. It is now absent from research vessel surveys, very rarely recorded in commercial catches, and very infrequent, if not locally extinct in most of its former shelf range. Marked declines have also occurred outside the OSPAR Area, where data are available.	Qualifies

### 3. Current status of the species

*R. alba* is included on the IUCN Red List of Threatened Species as “Endangered” globally and “Critically Endangered” in the North-East Atlantic (Dulvy *et al.* 2006). Its Mediterranean population is listed in Appendices of the Barcelona and Bern Conventions. ICES considers the species to be ‘severely depleted’ and its absence in contemporary surveys is a cause for concern in the Celtic Seas. It is a prohibited species under EU Fisheries Regulations.

#### Distribution in OSPAR Maritime Area

*R. alba* is (or was) distributed in the Eastern Atlantic from the British Isles (OSPAR Regions II and III) southward into Region IV, also along the coast of Africa and in most of the Mediterranean (to Tunisia and Turkey) (Figure 1, Dulvy *et al.* 2006; Froese & Pauly 2006; Fricke *et al.* 2007), but not in Madeira (Wirtz *et al.* 2008). Pinho (2005, 2006) also reports the species from Region V (ICES Area X). It occurs on the seabed from coastal waters and across the shelf to the upper slope, from 40-400m and exceptionally down to 500m (Capape 1976; Stehmann and Burkel 1984; Serena 2005). It is found on sandy and detrital bottoms, often close to rocks, but Du Buit (1974) reports it to be more prevalent in rocky habitats (Dulvy *et al.* 2006). Its current status is largely unknown in most of its range.

The contraction of the range of *R. alba* and its extirpation in the most heavily fished parts of its distribution are likely to continue, unless the latest conservation and management measures adopted for EU fleets are implemented effectively and fishing mortality declines significantly.

#### Population (current/trends/future prospects)

Overall population size is likely very small and almost certainly still decreasing. Coastal and shelf stocks may have been extirpated, certainly in the north of their former OSPAR range. Deepwater fisheries are likely now harvesting the upper slope sector of the stock that was until recently unexploited. Given that this species is likely to be taken in trawl, longline and gillnet fisheries that target more abundant high-value teleosts (e.g., megrim, anglerfish and hake), it is unlikely that by-catch mortality will cease, although retention of by-catch is prohibited under Council Regulation (EC) N<sup>o</sup> 43/2009 (Annex III Part B) in ICES Areas VI, VII, VIII, IX and X (OSPAR Regions III, IV and part of V). It is too early to tell whether new management measures (regulation of deepwater fisheries and species protection) could reverse the long term trend towards depletion of stocks and extirpation from former areas of this species’ range.

- Region II** Extirpated from all or most of this Region.
- Region III** Formerly taken in local target fisheries in the western Channel and Irish Sea (Isle of Man). Now extirpated from the Irish Sea. A target fishery in Brittany (Baie de Douarnenez) closed in the 1960s. Considered severely depleted in the Celtic Seas eco-region by ICES WGEF (2008), with few or no recent survey records.
- Region IV** Still present. Landings from the Bay of Biscay now extremely rare. Reported in commercial landings by Portugal. Status and trends unknown, but presumed to be depleted.
- Region V** Recently reported from the Azores (and possibly Mid-Atlantic Ridge) (Pinho 2005, 2006). Status unknown, but likely to be suffering depletion by expanding deepwater fisheries.

**Condition (current/trends/future prospects)**

The condition of the remaining populations of this species is likely extremely poor in shelf seas, but possibly better in deep waters of Region V. Productivity is naturally very low in this very large skate, so recovery will be extremely slow even if all remaining individuals in shelf waters are strictly protected through fisheries and biodiversity conservation measures. It will likely take more than ten years to see a significant improvement in status. This species is assessed as “Critically Endangered” by IUCN in the OSPAR Area because of past and continuing population declines (Dulvy *et al.* 2007).

**Limitations in knowledge**

Data on *Rostroraja alba* are very limited in the OSPAR Maritime Area, though the species was known to be more common in the past. There is little information on remaining populations, stock dynamics, reproductive rate and ecology of this species in the North-East Atlantic. ICES WGEF (2008) notes that further studies are required to determine whether viable populations of *R. alba* remain in the Celtic Seas (Region III).

The misidentification of this species, particularly through confusion with other ‘long-nosed’ species of skate, is likely to hamper data collection and management efforts. EU Member States have been required since 2008 to provide species-specific landings data for most common species of skates and rays landed in the North Sea (ICES Regions IIa and IV – OSPAR Region II and part of Region I). Council Regulation (EC) No. 43/2009 extended this reporting requirement to ICES Areas IIIa, VIa–b and VII (the majority of OSPAR Region III). This will ultimately improve understanding of skate fisheries in the OSPAR Area (ICES WGEF 2008) (but only for species landed – see 5 below).

**4. Evaluation of threats and impacts**

By-catch mortality in inshore fisheries is the key threat to *R. alba*, which is vulnerable to fisheries long before it is old enough to reproduce. *R. alba* was reportedly traditionally targeted by line fisheries in the western Channel and Irish Sea. They are now mainly caught as by-catch in trawls, also static (gill or tangle) nets and by hook and line (including, very rarely, by sport anglers off the Irish coast). It is unknown whether there is any targeting for aquarium display. The distribution of the threat posed by fisheries mortality is linked to the intensity of coastal, shelf and deepwater net and trawl fisheries in OSPAR Regions where the species still persists. Recolonisation of areas from which the *R. alba* has been extirpated may be hampered by by-catch in fisheries, although prohibition of retention and the encouragement of measures to mitigate by-catch under Council Regulation (EC) N<sup>o</sup>. 43/2009 Annex III Part B should reduce mortality (see Section 5). Decreasing fishing effort as a result of management and economic constraints may also reduce this threat, to some extent, in future years.

**Table 2:** Summary of key threats and impacts to White Skate (*Rostroraja alba*)

Type of impact	Cause of threat	Comment
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Excessive mortality	Removal of all life stages through fisheries (primarily commercial by-catch, possibly target sports fishing)	Fisheries mortality affects all life stages, from egg cases on nursery grounds to newly hatched, juveniles and adult fish. It has greatly exceeded the natural rate of population increase for this species, but may be mitigated under the current EC management regime.
Habitat damage	Mobile fishing gears, pollution	Minor impact compared with excessive mortality rates in fisheries.
Prey availability	Depletion of prey species	Potential, but minor impact compared with fisheries mortality.

## 5. Existing management measures

The total allowable catch (TAC) set for all species of skates and rays combined in the North Sea (ICES Areas IIa and IV, OSPAR Region II) since 1999 has greatly exceeded recent catches and seems unlikely to have restricted landings. In 2008 and 2009 this was reduced to 1643 t, i. e. 25 % less than the TAC in 2007, and became restrictive. However, *R. alba* probably no longer occurs in this Region.

In 2009, skate fisheries also came under precautionary TAC management in the majority of OSPAR Region III (ICES Areas IIIa, VIa–b and VII) (Council Regulation (EC) N<sup>o</sup>. 43/2009). All quotas for vessels over 15 m length are for by-catch-only, defined as not exceeding 25 % of the live weight of catch retained on board) and exclude *R. alba* (see below). EC requirements for reporting species-specific skate and ray landings data do not include *R. alba*.

Minimum landing sizes have been set for skates and rays in a few Sea Fisheries Committee Districts in English and Welsh waters. These do not provide effective protection for large species, which are still immature at much larger sizes, and *R. alba* no longer occurs in these coastal waters.

In December 2008, the Council of Ministers prohibited retention of *R. alba* by fishing vessels in ICES Areas VI, VII, VIII, IX and X (OSPAR Regions III, IV and part of V). Council Regulation (EC) N<sup>o</sup> 43/2009 (Annex III Part B) of 16 January 2009 states: “Catches of this species may not be retained on board and shall be promptly released unharmed to the extent practicable [...]. Fishers shall be encouraged to develop and use techniques and equipment which [...] serve to facilitate the rapid and safe release of the species”. It is too early to judge how effective this measure will be. It will certainly need to be widely publicised to the fishing industry and recreational anglers if it is to be implemented effectively. These stakeholders should also be encouraged to report released by-catch.

## 6. Conclusion on overall status

White skate (*R. alba*) is “Critically Endangered” in the OSPAR Area due to steep declines in abundance and extirpation from parts of its former range. These declines were originally caused by historic target longline fisheries, subsequently through fisheries by-catch in shelf seas, and may now be driven by deepwater fisheries. The adoption of some management measures in 2008, including the mandatory release of by-catch in EU fisheries, is too recent to have had any impact upon overall status.

## 7. Action to be taken by OSPAR

The conservation objectives for *R. alba* should be to protect the remaining populations, particularly along the continental shelf and in coastal waters, in order to allow stocks to rebuild and recolonise this species’ former range. This requires the location and protection of remaining populations and their



habitat and the minimisation of target and by-catch mortality throughout the OSPAR Area. The protection of large adult females should be an essential component of any actions taken.

#### **Action/measures that OSPAR could take, subject to OSPAR agreement**

As set out in Article 4 of Annex V of the Convention, OSPAR has agreed that no programme or measure concerning a question relating to the management of fisheries shall be adopted under this Annex. However where the Commission considers that action is desirable in relation to such a question, it shall draw that question to the attention of the authority or international body competent for that question. Where action within the competence of the Commission is desirable to complement or support action by those authorities or bodies, the Commission shall endeavour to cooperate with them.

It is proposed that OSPAR should recommend that relevant Contracting Parties (those within the historic range of *R. alba* and those whose flag vessels pursue fisheries within this range) take into account the “Critically Endangered” status of this species when reviewing, updating, developing and/or adopting the following:

1. national, European and regional fisheries conservation and management measures, including provisions within the Community Plan of Action on Sharks and prohibitions on fishing, retention, landing and sale;
2. marine protected areas;
3. national, European and international protected species legislation (including the Bern Convention on the Conservation of European Wildlife and Natural Habitats and Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora); and
4. marine species, habitat and fisheries research.

It is proposed that OSPAR should draw to the attention of Contracting Parties the conservation measures for this species adopted by the Council of Ministers in 2008, and recommend that CPs disseminate this information to their commercial and recreational fishers, encourage fishers to report details (including date and location) of released by-catch, and use the information submitted in their reports to OSPAR.

It is proposed that OSPAR urges Contracting Parties and the European Commission to consider carefully how zero quotas, mandatory release and protected species legislation may be adopted that does not prevent sports anglers from engaging in the voluntary tag and release programmes that have potential to provide important data on this species.

To complement the above, the OSPAR Commission should:

1. communicate to the European Commission the “Critically Endangered” status of *R. alba* and its Annex V status, and encourage urgent consideration of the species as a candidate for listing on European and international biodiversity conventions and for special attention under the Community Plan of Action for Sharks;
2. communicate to ICES and other relevant scientific funding bodies the need for more research on the life history, distribution and habitat requirements of *R. alba*, with a view to obtaining management advice and identifying critical areas (e.g. spawning grounds) for protection.

**Table 3:** Summary of key priority actions and measures which could be taken for *R.alba*. Where relevant, the OSPAR Commission should draw the need for action in relation to questions of fisheries management to the attention of the competent authorities. Where action within the competence of the Commission is desirable to complement or support action by those authorities or bodies, the Commission shall endeavour to cooperate with them.

Key threats	<p>Fisheries mortality:</p> <p>By-catch in commercial fisheries</p> <p>Target fishing (if occurring – primarily sport angling and possibly obtaining specimens for aquaria)</p> <p>Habitat deterioration (secondary threat)</p>	
Other responsible authorities	<p>EC and Council of Fisheries Ministers (Common Fisheries Policy, TACs)</p> <p>OSPAR Contracting Parties</p> <p>ICES (e.g. provision of advice on trends, assessment criteria and triggers) and other RFOs</p> <p>Council of Europe?</p>	
Already protected? Measures adequate?	<p>EU: Zero TAC and mandatory release (2009)</p>	<p>Too recent to be able to assess impact. Must be extended into future years. Should not prohibit the participation of anglers in genuine tag and release research programmes;</p> <p>Supplement with national and EC species conservation measures</p>
Recommended Actions and Measures	OSPAR Commission	<p>Communicate to the Commission the status of <i>R. alba</i> and its need for conservation under biodiversity instruments and the Community Plan of Action for Sharks;</p> <p>Communicate to ICES and other scientific bodies the need for research and advice on distribution and habitat requirements.</p>
	Contracting Parties	<p>Consider how national and regional fisheries conservation and management measures, marine protected areas, and species/ biodiversity protection legislation may be used to improve the status of <i>R. alba</i> and take action to apply these, as appropriate;</p> <p>Disseminate to commercial and sports fishers information on the threatened status of <i>R. alba</i> and the legal and voluntary measures that protect it and require captures to be released alive;</p> <p>License tag and release programmes;</p> <p>Assist industry to develop techniques and equipment to facilitate safe release of <i>R. alba</i> from commercial fishing gear.</p>
	Research needs	<p>Life history information;</p> <p>Location of surviving populations (including surveys of areas formerly supporting target fisheries) and critical mating and spawning habitats</p>

**Brief summary of the proposed monitoring system (see annex 2)**

Relevant Contracting Parties should be encouraged to report to OSPAR on:

- Historic records (location, dates and abundance)
- Current location, dates and number of by-catch (returned to the sea) and sea angling records (including tag and release)
- Any individuals in captivity (with a view to facilitating life history and genetic studies)

## Annex 1: Overview of data and information provided by Contracting Parties

Contracting Party	Feature occurs in CP's Maritime Area	Contribution made to the assessment (e.g. data or information provided)	National reports References or web links
Belgium	N	N	
Denmark	N	N – Review of Draft (No comments)	
France	Y	Y 7.1.ii. Habitat protection through the designation of marine protected areas and strict implementation of no take zones for skate mating and spawning grounds is the only effective protection for this species.	Iglésias, S.P., Toulhoat, L. & Sellos, D.Y. 2009 in press. Taxonomic confusion and market mislabelling of threatened skates: Important consequences for their conservation status. <i>Aquatic Conservation: Marine and Freshwater Ecosystems</i> . (in press).
Germany	N	Y	Fricke, R., M. Bilecenoglu & H. M. Sari (2007) Annotated checklist of fish and lamprey species (Gnathostomata and Petromyzontomorphi) of Turkey, including a Red List of threatened and declining species. <i>Stuttgarter Beiträge zur Naturkunde</i> , (A) 706: 1-169, figs 1-3, tabs 1-8.  Wirtz, P., R. Fricke & M. J. Biscoito (2008) The coastal fishes of Madeira Island – new records and an annotated checklist. <i>Zootaxa</i> , 1715: 1-26, figs 1-8.
Iceland	N	N	
Ireland	Y	N	
Netherlands	N	N	
Norway	N	N	
Portugal	(Azores: Y)	N	
Spain	Y	Y – Review of Draft	
Sweden	N	Y – Review of Draft	
United Kingdom	Y	Y – Review of Draft	

## Summaries of country-specific information provided

**Spain:** *Rostroaja alba* (White skate) in the Cantabrian Sea:

The historical series of bottom trawl surveys carried out from 1983 in the continental shelf of Galicia and Cantabrian Sea do not show the presence of this species in the area. Likewise no information on catches is recorded.

**France:** Extract from Iglésias *et al.* in press 2009: “Between 1964 and 2006 it is estimated that landings of *R. alba* were reduced by  $99.4 \pm 0.5\%$  in the port of Concarneau (9 tonnes in 1964 to  $0.058 \pm 0.046$  tonnes in 2006). It is estimated that only  $117 \pm 89$  kg and  $13 \pm 10$  individuals of *R. alba* have been landed in 2005 by France in all fish markets. The use of the landing name “White skate” for *R. alba* is now discontinued in French fish markets and it is now only known by the oldest fishermen and fish market workers. In 1964, 58.944 tonnes of *R. alba* were landed in the port of Douarnenez, when this species was targeted by a longline fishery (Du Buit, pers. comm.). When this stock collapsed over the next few years, so too did the fishery.”

## Annex 2: Detailed description of the proposed monitoring and assessment strategy

### Rationale for the proposed monitoring

Very little information exists on this species, its life history, distribution and habitat. These recommendations aim to provide the data needed to develop appropriate conservation and management measures for surviving populations of *R. alba* and their habitat.

### Use of existing monitoring programmes

Several regular fishery independent surveys are undertaken by research vessels and chartered vessels in the OSPAR area. These report all records of *R. alba*.

Commercial catch and landings data (where landings are not prohibited) should, under EU Regulation and FAO guidelines, record *R. alba* at species level. However, compliance is poor in parts of the OSPAR Area and could be improved by Contracting Parties, particularly through the provision of better identification guides. Voluntary tag and release programmes and records of catches by anglers have produced some important data on distribution, migration and abundance trends for other species at low/no cost to researchers and managers. Genuine, well-conducted tagging programmes should be permitted to take this species under license within zero TACs and other species conservation measures. The ICES Working Group on Elasmobranch Fishes uses these and all other available sources to report regularly on the status of this species in the OSPAR Area.

### Synergies with monitoring of other species or habitats

Monitoring of other coastal species of sharks, skates and rays on the OSPAR list require very similar strategies.

### Assessment criteria

It is not considered necessary at the present time to develop assessment criteria or triggers for additional monitoring of this species.

### Techniques/approaches

As already underway, with the addition of more accurate identification guides for use by industry and at landing sites. Electronic tagging and tracking techniques could be used to monitor habitat use and movements in known populations.

### Selection of monitoring locations

Monitoring should be focused on known relict populations in inshore waters and areas where target fisheries used to take place. The use of visual tags should be attempted where feasible to estimate population size and immigration from recapture data. Electronic tracking may be possible if relict populations are located in inshore waters.

### Timing and Frequency of monitoring

As already underway.

### Data collection and reporting

As already undertaken or required.

### Quality assurance

n/a

## Annex 3: References

- Anon. 1999. UK Biodiversity Group Tranche 2 Action Plans. Brander, K. 1981. Disappearance of Common skate *Raja batis* from Irish Sea. *Nature* 290: 48-49.
- Bruce, J. R., J. S. Colman, and N. S. Jones. 1963. *Marine fauna of the Isle of Man*. Memoir 36. Liverpool University Press, Liverpool, United Kingdom.
- Capapé, C. (1976) Contribution a la biology des rajidae des cote Tunisiennes *Raja alba* Lacepede 1803: Repartition géographique et bathymétrique, sexualité, reproduction, fécondité. *Ann. Ir. St.*, 56, 285-306.
- Day, F. 1880-1884. *The Fishes of Great Britain & Ireland*. Williams & Norgate, London.
- Dulvy, N.K. & Reynolds, J.D. 2002. Predicting vulnerability to extinction in Skates. *Conservation Biology*, 16, 440-450.
- Dulvy, N.K., Metcalfe, J.D., Glanville, J., Pawson, M.G. & Reynolds, J.D. 2000. Fishery stability, local extinctions, and shifts in community structure in skates. *Conservation Biology*, 14 (1): 283-293.
- Dulvy, N.K., Pasolini, P., Notarbartolo di Sciara, G. Serena, F., Tinti, F., Ungaro, N., Mancusi, C. & Ellis, J.E. 2006. *Rostroraja alba*. In: IUCN 2006. 2006 IUCN Red List of Threatened Species. <http://www.iucnredlist.org> .
- Fricke, R., Bilecenoglu, M., Sari, H.M. & Kaya, M. 2007. Annotated checklist of fish and lamprey species of Turkey, including a Red List of threatened and declining species. *Stuttgarter Beiträge zur Naturkunde (A)* 706: 1-169.
- Froese, R. and D. Pauly. Editors. 2006. *FishBase*. World Wide Web electronic publication. [www.fishbase.org](http://www.fishbase.org) , version (05/2006).
- Holden, M.J. 1977. Elasmobranchs. In: J.A. Gulland *Fish population dynamics*. pp: 187-214. J. Wiley and Sons.
- ICES ACFM. 2005. Report of the ICES Advisory Committee on Fishery Management, Advisory Committee on the Marine Environment, and Advisory Committee on Ecosystems, 1.4.1, Deepwater sharks in the northeast Atlantic (ICES Sub-areas V-XIV, mainly Portuguese dogfish and leafscale gulper shark). ICES Advice. Vols 1-11. 1,403 pp.
- ICES. 1995. Report of the Study Group on Elasmobranch Fishes. ICES CM 1995/G:3 ICES.
- ICES. 2002. Report of the Working Group on Ecosystem Effects of Fisheries. Advisory Committee on Ecosystems. ICES CM 2002/ACE:03.
- ICES SGEF. 2002. Report of the Study Group of the Elasmobranch Fishes (SGEF). ICES CM 2002/G:08.
- ICES SGEF. 2004. Report of the Study Group on Elasmobranch Fishes (SGEF). ICES Living Resources Committee ICES CM 2004/G:11. International Council for the Exploration of the Sea, Denmark.
- ICES WGEF, 2005. Report of the Working Group on Elasmobranch Fishes, ICES Headquarters 6-10 May 2002, ICES CM 2002/G:08.
- ICES WGEF. 2006. Report of the Working Group of the Elasmobranch Fishes (WGEF). 14–21 June 2006, ICES, Copenhagen. ICES CM 2006/ACFM:31 Ref. LRC.

ICES WGEF. 2007. Report of the Working Group of the Elasmobranch Fishes (WGEF). 22–28 June 2007, Galway, Ireland. ICES CM 2007 /ACFM:27.

ICES WGEF. 2008. Report of the Working Group of the Elasmobranch Fishes (WGEF). 3–6 March 2008, Copenhagen, Denmark. ICES CM 2008/ACOM:16

ICES WGFE. 2006. Report of the Working Group on Fish Ecology (WGFE), 13–17 March 2006, ICES, Copenhagen. ICES CM 2006/LRC:06, 154 pp.

Iglésias, S.P., Toulhoat, L. & Sellos, D.Y. 2009 in press. Taxonomic confusion and market mislabelling of threatened skates: Important consequences for their conservation status. *Aquatic Conservation: Marine and Freshwater Ecosystems*. (in press).

Pinho, M.R. 2006. Elasmobranch Statistics from the Azores (ICES Area X). Working Document (ICES WGEF 2006).

Quéro, J.C. & Cendrero, O. 1996. Incidence de la pêche sur la biodiversité ichthyologique marine: Le bassin d'Arcachon et le plateau continental sud Gascogne. *Cybium*, 20:323–356.

Rogers, S.I. & Ellis, J.R. 2000. Changes in the demersal fish assemblages of British coastal waters during the 20th century. *ICES Journal of Marine Science*, 57: 866–881.

STECF, 2006. Report of the STECF working group on deep-sea gillnet fisheries. Commission Staff Working Paper. 52 pp.

STECF. 2003. Commission Working Paper. Report of the *ad hoc* Working Group on Elasmobranch Fisheries. SEC(2003)1427.

Stehmann, M., and D. L. Bürkel. 1984. Rajidae. Pages 163–196 in P. J. P. Whitehead, M.-L. Bauchot, J.-C. Hureau, J. Nielsen, and E. Tortonese, editors. *Fishes of the northeastern Atlantic and Mediterranean*. United Nations Educational, Scientific and Cultural Organization, Paris.

Stehmann, M. 1990. Rajidae. Pages 29–50 in J. C. Quero, J. C. Hureau, C. Karrer, A. Post, and L. Saldanha, editors. *Checklist of the fishes of the eastern tropical Atlantic*. European Ichthyological Union and United Nations Educational, Scientific and Cultural Organization, Paris.

Walker, P.A. and Hislop, J.R.G. 1998. Sensitive skates or resilient rays? Spatial and temporal shifts in ray species composition in the central and north-western North Sea between 1930 and the present day. International Council for Exploration of the Seas. *Journal of Marine Science* 55: 392-402.

Wheeler, A. (1978) Key to the fishes of Northern Europe. Frederick Warne & Co, London.

Wirtz, P., R. Fricke & M. J. Biscoito (2008) The coastal fishes of Madeira Island – new records and an annotated checklist. *Zootaxa*, 1715: 1-26.





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