Pleuronectes platessa, European Plaice

Assessment by: Freyhof, J.

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Taxonomy

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Phylum</th>
<th>Class</th>
<th>Order</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animalia</td>
<td>Chordata</td>
<td>Actinopterygii</td>
<td>Pleuronectiformes</td>
<td>Pleuronectidae</td>
</tr>
</tbody>
</table>

**Taxon Name:** *Pleuronectes platessa* Linnaeus, 1758

**Synonym(s):**
- *Platessa latus* Cuvier, 1829
- *Platessa platessa* (Linnaeus, 1758)
- *Platessa vulgaris* Cloquet, 1826
- *Pleuronectes borealis* Faber, 1828

**Regional Assessments:**
- Mediterranean
- Europe

**Common Name(s):**
- English: European Plaice, Flatfish, Fluke, Hen Fish, Plaice-fluke
- French: Carrelet, Plie, Plie Commune, Plie D’Europe
- Spanish: Solla, Solla Europea

**Taxonomic Source(s):**

**Taxonomic Notes:**
Despite the occurrence of separate sub-populations of plaice within the continental shelf populations, no significant differentiation was found using microsatellites (Hoarau et al. 2002, Was et al. 2010, Watts et al. 2010). Only mitochondrial DNA, which has a higher resolution, revealed that the North Sea-Irish Sea samples were weakly distinguishable from Norway, the Baltic and the Bay of Biscay samples (Hoarau et al. 2004). Clear genetic differentiation was found between the populations of Iceland, the Faroes, and the continental shelf of western Europe, that are separated by deep ocean channels (Hoarau et al. 2002, Was et al. 2010).

**Assessment Information**

**Red List Category & Criteria:** Least Concern ver 3.1

**Year Published:** 2014

**Date Assessed:** October 22, 2013

**Justification:**
A widespread species which is vulnerable to over-fishing in the sea. However the species has recovered from historical over-fishing in the 1970-1980s, and spawning biomass is increasing. The species is widely distributed and proved to be resilient to over-exploitation, and is considered Least Concern.
Previously Published Red List Assessments
2008 – Least Concern (LC)

Geographic Range

Range Description:
Distribution is from the western Mediterranean (including a small part of the northwestern Moroccan coast) and along all European coasts to the White and Barents Seas; absent from northern Baltic, Black and Caspian Seas. Regularly reported from freshwaters in the Kanin Peninsula (Barents Sea). Occasionally reported from freshwater outside Barents Sea basin, but individuals might be misidentified *P. flesus*.

Country Occurrence:
**Native:** Belgium; Denmark; Faroe Islands; France (France (mainland)); Germany; Gibraltar; Guernsey; Iceland; Ireland; Isle of Man; Italy (Italy (mainland), Sardegna, Sicilia); Jersey; Latvia; Lithuania; Monaco; Morocco; Netherlands; Norway; Poland; Portugal (Portugal (mainland)); Russian Federation; Spain (Spain (mainland)); Sweden; United Kingdom (Great Britain, Northern Ireland)

FAO Marine Fishing Areas:
**Native:** Atlantic - eastern central, Atlantic - northeast, Mediterranean and Black Sea -
Distribution Map

Pleuronectes platessa

Range

- Extant (resident)

Compiled by:
IUCN (International Union for Conservation of Nature)

http://dx.doi.org/10.2305/IUCN.UK.2014-1.RLTS.T135690A50018800.en
Population

Populations
An abundant species. Population biomass is highest in the North Sea (Wimpenny 1953).

Population trends
The species is exploited throughout its range. Exploitation at unsustainable levels in the 1970s and 1980s reduced the spawning stock biomass to critical levels. Since then the fishing pressure has been reduced and the spawning stock biomass increased during the last 5-10 years in all stocks (ICES 2013). In the North Sea, the spawning stock biomass increased in 2012 to the highest level observed since 1957 (ICES 2013).

Current Population Trend: Increasing

Habitat and Ecology (see Appendix for additional information)

Habitat
This is a medium sized flatfish that is distributed in waters from less than 1 m down to c.100 m, although occasionally specimens may be found down to 500 m. Small fish are concentrated in shallow waters, while large fish occur in deeper waters. Found in sea water and in estuaries, rarely entering freshwaters.

Biology
Spawns at sea, in January-June, in deep water, at temperatures of around 6°C. Eggs and larvae are pelagic and drift with current. At about 10 mm SL, left eye moves to right side, pigmentation develops, and juveniles switch to a benthic habit.

The maximum size is 90-100 cm (Muus and Nielsen 1999). The maximum age observed in the biological samples taken routinely in the North Sea since the 1950s are 30 years in females and 25 years in males (A.D. Rijnsdorp pers. comm. 2013). Age at maturation is 2-3 years in males and 4-5 years in females, with plaice from northern areas maturing at an older age and larger size than plaice from the south (Rijnsdorp 1989). Length and age at maturation has gradually reduced since the beginning of the 20th century, most likely due to a fisheries-induced evolutionary change (Grift et al. 2003, van Walraven et al. 2010).

The species has a complex life cycle with life stages inhabiting specific and spatially segregated habitats (Wimpenny 1953). Spawning occurs in offshore waters (Harding et al. 1978, Nielsen et al. 2004, Fox et al. 2000, Taylor et al. 2007). Eggs and larvae are pelagic until metamorphosis. At metamorphosis the larvae move to the sea bed and migrate to their nursery grounds in estuaries and along sandy coasts (Rijnsdorp et al. 1985). Juveniles spend their first years of life in the coastal nurseries and gradually move to deeper waters. In the White Sea, juveniles enter freshwater to forage in mid-June in the Kanin Peninsula. Once mature, the animals migrate between spawning grounds and feeding areas (Hunter et al. 2004, Bolle et al. 2005). Juvenile plaice show a clear preference for fine sandy sediments, which allows them to bury in the sediment and hide from predators (Gibson 2005, Gibson and Robb 2000). The preference for sandy sediments remains during the entire lifespan, although older age groups may be found on coarser sand.

Plaice is a benthivore feeding on a variety of benthic invertebrates such as bivalves, polychaetes,
crustaceans (e.g. amphipods, mysids and small shrimps). Large plaice feed on molluscs and sandeels (de Clerck and Buseyne 1989, Rijnsdorp and Vingerhoed 2001).

Due to the specific habitat requirements of the early demersal stages of plaice in combination with the relative small size of these habitats, nursery habitat may limit the population size that can occur in a specific sea area (Rijnsdorp et al. 1992, Gibson 1994, van der Veer et al. 2000).

**Systems:** Freshwater, Marine

**Use and Trade (see Appendix for additional information)**

The species is harvested for human consumption, and for sport fishing.

**Threats (see Appendix for additional information)**

The species is currently recovering from over-exploitation, and spawning stock biomass shows an increasing trend over the last 5-10 years (ICES 2013). The species is mainly exploited in mixed fisheries using bottom trawls, and locally in a directed fisheries using gill nets. Substantial numbers of undersized plaice are caught in small meshed fisheries directed at brown shrimps, sole and Nephrops (ICES 2013).

Oil and gas exploitation occur in the distribution area of the species. Since the species critically depend on the size and quality of their nursery grounds, any anthropogenic activities that adversely impact nursery areas will have a negative impact on the species.

**Conservation Actions (see Appendix for additional information)**

The species is currently recovering from over-exploitation that occurred in the 1970 and 1980s; spawning stock biomass has shown an increasing trend over the last 5-10 years (ICES 2013). The species occurs in numerous marine protected areas throughout its range.

**Credits**

**Assessor(s):** Freyhof, J.

**Reviewer(s):** Rijnsdorp, A.D., Turnock, S., Comeros-Raynal, M. & Allen, D.J.

**Contributor(s):** Rijnsdorp, A.D.
Bibliography


Sakamoto, K. 1984. <i>Interrelationships of the family Pleuronectidae (Pisces: Pleuronectiformes)</i>.


Wimpenny, R.S. 1953. <i>The plaice</i>. Arnold, London.

**Citation**


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**External Resources**

For Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats
(http://www.iucnredlist.org/technical-documents/classification-schemes)

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Season</th>
<th>Suitability</th>
<th>Major Importance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)</td>
<td>Resident</td>
<td>Suitable</td>
<td>No</td>
</tr>
<tr>
<td>9. Marine Neritic - Subtidal Sandy</td>
<td>Resident</td>
<td>Suitable</td>
<td>Yes</td>
</tr>
<tr>
<td>9. Marine Neritic - Subtidal Sandy-Mud</td>
<td>Resident</td>
<td>Suitable</td>
<td>Yes</td>
</tr>
<tr>
<td>9. Marine Neritic - Subtidal Muddy</td>
<td>Resident</td>
<td>Suitable</td>
<td>Yes</td>
</tr>
<tr>
<td>9. Marine Neritic - Estuaries</td>
<td>Resident</td>
<td>Suitable</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Use and Trade
(http://www.iucnredlist.org/technical-documents/classification-schemes)

<table>
<thead>
<tr>
<th>End Use</th>
<th>Local</th>
<th>National</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food - human</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sport hunting/specimen collecting</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Threats
(http://www.iucnredlist.org/technical-documents/classification-schemes)

<table>
<thead>
<tr>
<th>Threat</th>
<th>Timing</th>
<th>Scope</th>
<th>Severity</th>
<th>Impact Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Energy production &amp; mining - Oil &amp; gas drilling</td>
<td>Ongoing</td>
<td>Unknown</td>
<td>Causing/could cause fluctuations</td>
<td>Unknown</td>
</tr>
<tr>
<td>Stresses: 1. Ecosystem stresses -&gt; 1.2. Ecosystem degradation 2. Species Stresses -&gt; 2.3. Indirect species effects -&gt; 2.3.7. Reduced reproductive success</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Biological resource use - Fishing &amp; harvesting aquatic resources</td>
<td>Past, unlikely to return</td>
<td>Whole (&gt;90%)</td>
<td>Slow, significant declines</td>
<td>Past impact</td>
</tr>
<tr>
<td>Stresses: 2. Species Stresses -&gt; 2.1. Species mortality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Biological resource use - Unintentional effects: (large scale)</td>
<td>Ongoing</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Stresses: 2. Species Stresses -&gt; 2.1. Species mortality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conservation Actions in Place
(http://www.iucnredlist.org/technical-documents/classification-schemes)
### Conservation Actions in Place

In-Place Land/Water Protection and Management

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Occur in at least one PA</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Additional Data Fields

#### Distribution

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower depth limit (m)</td>
<td>0</td>
</tr>
<tr>
<td>Upper depth limit (m)</td>
<td>500</td>
</tr>
</tbody>
</table>

#### Population

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population severely fragmented</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Habitats and Ecology

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing decline in area, extent and/or quality of habitat</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement patterns</td>
<td>Not a Migrant</td>
</tr>
</tbody>
</table>
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