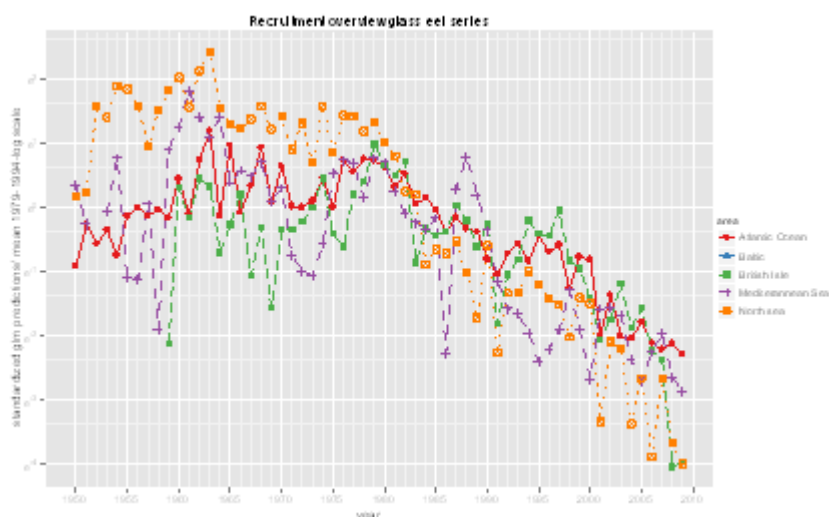


## 9.4.9 European eel

### State of the stock

Abundance of the European eel stock (all stages glass eel, yellow eel and silver eel) is at a historical minimum and continues to decline. Recruitment is also at a historical low level and continues to decline. All glass eel recruitment series show clear and marked reductions since the early 1980s. For the different areas (Baltic, continental North Sea, continental Atlantic, British Isles, and Mediterranean), current recruitment is between 1 and 9% of that observed in the 1970s.

Recruitment in 2008 and 2009 has been especially low.

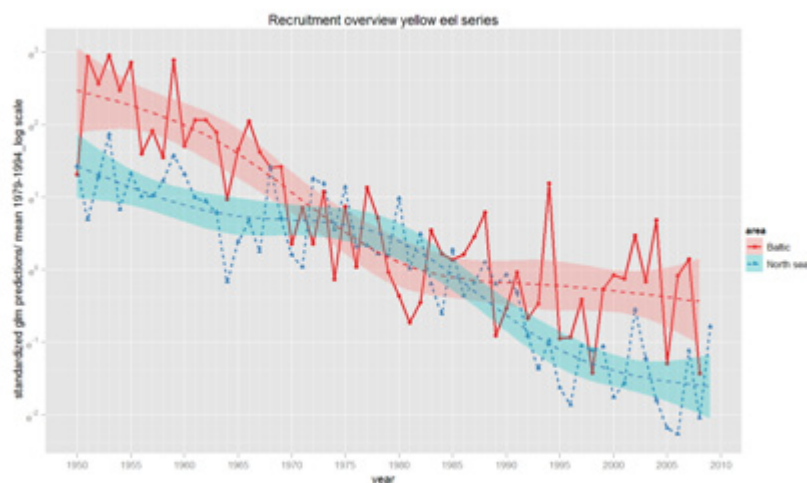


**Figure 9.4.9.1** Recruitment index for glass eel per area in logarithmic scale. Each series is scaled to the mean of 1979–1994.

Recruitment of continental North Sea yellow eel has been declining continuously since the 1950s. Recruitment of yellow eels in the Baltic is now less than 10% of that observed in the 1950s and 1970s.

Despite the marked stock decline, fishing effort and mortality continues to be high both on juvenile (glass eel) and older eels (yellow and silver eel) (FAO/ICES 2009).

Landings reported to FAO have declined to about 25% of the annual catches during the mid-1960s, although the reported landings values are known to be unreliable (see ICES, 2008, Figure 9.4.9.5). Decreased landings in combination with continuous high fishing mortality are a strong indication of reduced stock size.



**Figure 9.4.9.2** Recruitment index for yellow eel per area in logarithmic scale. Each series is scaled to the mean of 1979–1994.

## Management objectives

EU adopted a management framework for the eel stock in 2007 via EU regulation (EU 1100/2007). The objective of the management framework is the protection and sustainable use of the stock. With the objective to rebuild the eel stock Norway decided in June 2009 to cut the eel quota by 80% in 2009 and to carry out an experimental fishing at a very low level in 2010.

## Reference points

Precautionary reference points have not been agreed for eel. However, exploitation that leaves 30% of the virgin spawning stock biomass is generally considered to be a reasonable target for escapement. Due to the uncertainties in eel management and biology ICES proposed a limit reference point of 50% for the escapement of silver eels from the continent in comparison to pristine conditions (ICES, 2003). This is higher than the escapement level of at least 40% 'pristine' set by the EU Regulation.

## Single-stock exploitation boundaries

### *Exploitation boundaries in relation to precautionary limits*

The abundance of the European eel stock continues to decline at an alarming rate. A concerted effort by all European countries over the distribution area of eel is urgently needed to halt this decline. There are indications that recruitment may be impaired by the current low level of spawning stock size. All types of anthropogenic stresses (e.g., recreational and commercial fishing, barriers to passage, habitat alteration, pollution,) should be minimized to promote stock recovery until there is clear evidence that the stock is increasing. Due to the long life time of eel recovery will be a long-term process.

Given the continued declining abundance of glass eels, ICES reiterates its concern about glass eel stocking programs. The programs involve capture and translocation of eels from one river to another. While stocking programs may benefit specific rivers, these programs risk reducing the contribution that these glass eels could make to sustain the overall European eel stock, because of capture and translocation mortality and reduced survival in the river where eels are stocked. Fishing and use of glass eel for any purpose should be reconsidered, with intervention only taking place where there is an objective of increasing or protecting the glass eel's contribution to spawner production.

ICES reiterates its previous advice that **“all anthropogenic impacts on production and escapement of eels should be reduced to as close to zero as possible until stock recovery is achieved”**.

## Management considerations

In the 1970s, recruitment of glass eels was still at average levels. This indicates that SSB was not limiting the production of recruits during this period.

The eel stock is scattered over a multitude of inland and coastal waters with divergent characteristics. Anthropogenic pressures, such as fishing, barriers to migration (including intakes and turbines), pollution, habitat loss, etc. vary between river basins. Therefore, management plans prepared under the auspices of the EU Regulation should address anthropogenic stresses that are locally important. Interim recovery levels, more stringent than those defined in the EU Regulation, should also be considered in the development of management plans. Candidates for interim recovery levels are discussed in FAO/ICES (2008).

The EU Regulation makes a portion of glass eel catches available for stocking, which may involve translocation of eels between river basins. It is unlikely that the 40% recovery objective of the EU Regulation can be met primarily through stocking, since the total catch of glass eels is well below that required. Moreover, the contribution the glass eels used for stocking make to the future spawning stock will be reduced if: (a) there is some capture and translocation mortality, (b) there are more anthropogenic stresses in the river system in which they are stocked than in the source river and (c) the stocked eels are not able to migrate to spawning grounds and contribute to the spawning portion of the stock. As noted above, ICES is concerned about the use of glass eels for stocking, and it does not endorse this aspect of the EU Regulation. However, recognizing that it is allowed under the Regulation, stocking should be limited to unpolluted waters with low pathogen burdens, and exhibiting minimal other anthropogenic impacts, including fishing. Procedures to prevent the introduction and spreading of parasites and diseases should be applied, in accord with European fish disease prevention policies. As stated in the ICES Advice 2008: “...large-scale stocking should not be allowed unless a scientific evaluation demonstrates that the potential escapement of silver eels will be enhanced.”

It is important that monitoring of stock size and recruitment be continued and further enhanced so that future stock development can be measured and the efficacy of eel management plans can subsequently be quantified and evaluated.

Arrangements must be made to make monitoring data accessible and compiled in a form for international analysis. Following the implementation of eel management plans in July 2009 (although some have been delayed), national reports from Member States on their implementation practices are expected in 2012. Following this, the first post-evaluation of the regulation is expected.

The escapement level of at least 40% 'pristine' set by the EU regulation is below ICES proposal for a limit reference point of 50% for the escapement of silver eels.

#### *Ecosystem considerations*

Habitat alteration, including barrier to eel passage and deterioration in water quality (contaminants, diseases and parasites) contribute to the anthropogenic stresses on eels and also affect their reproductive success.

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

#### *Regulations and their effects*

In 2007, eel was included in CITES Appendix II that deals with species not necessarily threatened with extinction, but in which trade must be controlled to avoid utilization incompatible with the survival of the species (see <http://www.cites.org/eng/disc/how.shtml>). The listing was implemented in March 2009.

#### *The environment*

Recent research has indicated that pollution, diseases, and parasites seriously impair the quality and reduce the fat content of individual silver eels, although the impact on the overall stock is unknown. On a pan-European scale, large differences in eel quality occur between areas. The quality of spawners also varies with biological characteristics such as fat content. None of these quality parameters are currently included in the assessment of stock status, or in setting management targets. However, these quality parameters have impacts on the condition and behaviour of individual eels and may impact their reproductive success. As well, from some regions, eels are contaminated to such an extent that they exceed either National or EU human consumption limits and consequently represent a threat to consumers.

### **Scientific basis**

#### *Data and methods*

The advice is based on recruitment indices both from surveys and commercial data. Reported landings data are unreliable and incomplete, but show a decline. Most EU Member States now have quantitative estimates of pristine silver eel production.

#### *Uncertainties*

The varying degrees of uncertainty in the estimates of pristine silver eel production make evaluation of progress toward the 40% recovery level (called for in the EU Regulation) difficult. The lack of spatial and process information on the effect of decreasing spawner quality makes it challenging to quantify the impact on effective spawner biomass.

The implementation of the EU Regulation has the potential of improving data in the future. However, several long time-series may be jeopardised in the near future due to changes in the local eel fisheries under the Eel Management Plans (EMPs). Given the poor state of the stock and the high anthropogenic impacts, it is critically important that the existing time-series of recruitment be continued and supplemented. For all existing fisheries, effort and yield need to be monitored. Improved spatial coverage is needed to adequately characterize the quality of eels over the species area of distribution.

Current data collection programmes (EMPs, DCR, WFD, etc) need to be extended, co-ordinated, and integrated to support enhanced eel assessment and management.

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

The status of the stock is critical. The stock continues to decline. The advice remains that urgent actions are needed to avoid further depletion of the eel stock and to promote recovery.

### **Source of information**

- EC 2007. Council regulation (EC) N° 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel.
- ICES 2003. Report of the ICES Advisory Committee on Fishery Management 2002. ICES Cooperative Research Report No. 255: 938–947.
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