

## SPECIES INFORMATION SHEET

## *Anguilla anguilla*

English name: <b>European eel</b>	Scientific name: <b><i>Anguilla anguilla</i></b>	
Taxonomical group: Class: Actinopterygii Order: Anguilliformes Family: Anguillidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 5–50 years or more, within the Baltic area about 15 on average	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), Migration barriers (J03.02.01), Alien species (I01)	Future threats (Habitats Directive article 17 codes): Fishing (F02), Migration barriers (J03.02.01), Alien species (I01)	
IUCN Criteria: <b>A3bde+4bde</b>	<b>HELCOM Red List Category:</b>	<b>CR</b> <b>Critically Endangered</b>
Global / European IUCN Red List Category: CR/CR	Habitats Directive: –	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark: <i>national management plan in place</i> / <b>CR</b> , Estonia: <i>national management plan</i> / <b>DD</b> , Finland: <i>glass eel stocking, national management plan</i> / <b>EN</b> , Germany: <i>national management plan</i> / <b>2</b> (Endangered, Baltic Sea), Latvia: <i>national management plan</i> / –, Lithuania: <i>national management plan</i> / –, Poland: <i>national management plan</i> / –, Russia: <i>none (not considered rare in Russian part of the Baltic)</i> / –, Sweden: <i>national management plan</i> / <b>CR</b>		

### Distribution and status in the Baltic Sea region

This species is distributed throughout the Baltic Sea in the HELCOM area in coastal and adjacent freshwater rivers, streams, and lakes. The whole European stock is considered to be a single panmictic population (Palm et al., 2009) but there are geographical differences in population dynamics (i.e. growth rates, sex ratios, rates of survival and productivity of the habitat) and consequently in fisheries (Dekker 2003, 2004; ICES 2006).



European eel. Photo by Anders Asp.

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A prolonged decline in recruitment of glass eel coming into European waters is observed since 1980 and only 1–5 % of the former numbers arrive in Europe today (Dekker 2004, Wickström 2006, ICES/EIFAC 2011). In the Baltic, recruitment of yellow eel has been continuously in decline since the 1950s and comparing the last 5 years with levels 1960–1979, a 90 % decline is observed (ICES/EIFAC 2011).

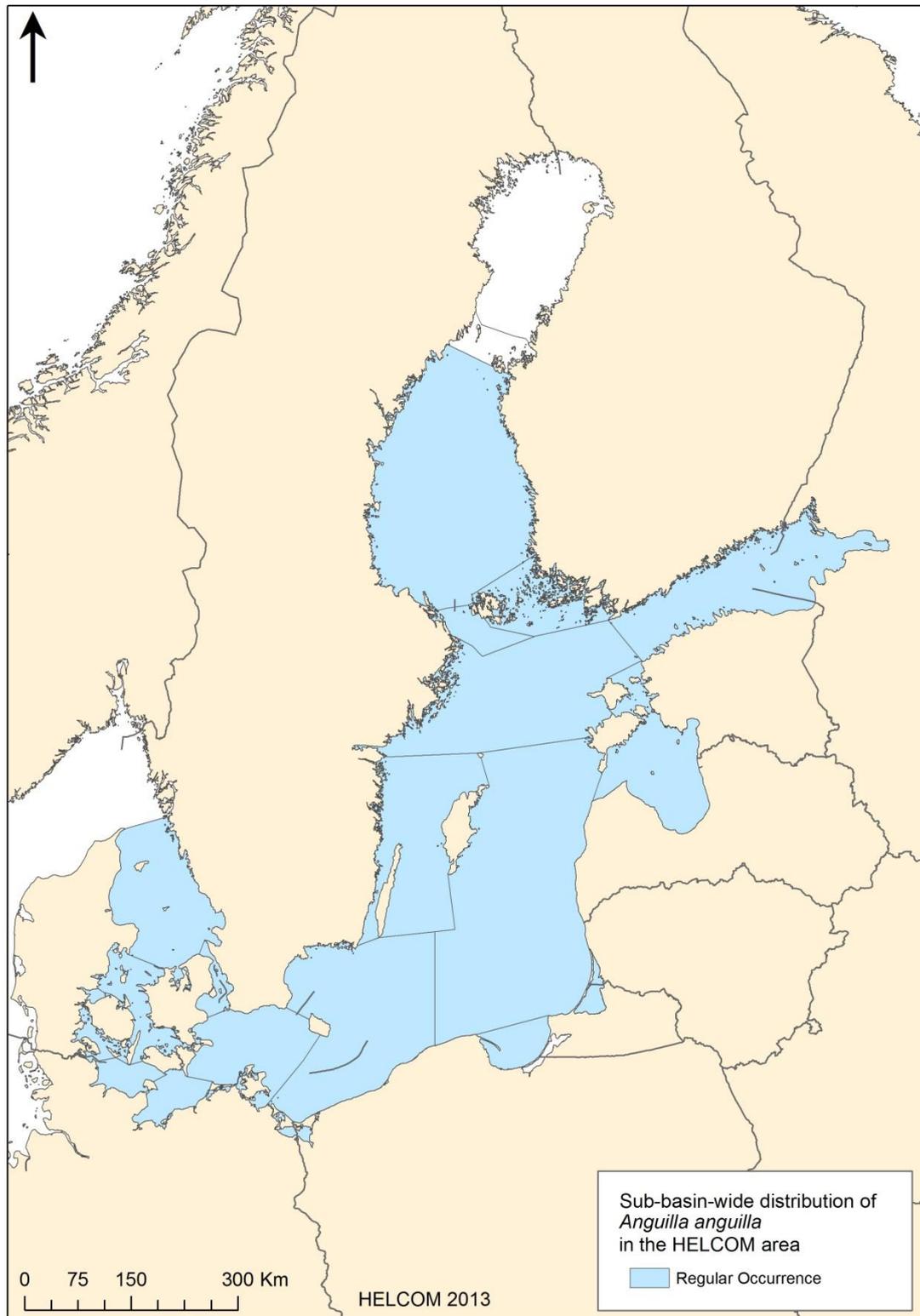
All life stages of European eel, including newly arriving glass eels, growing yellow eel and maturing migrating silver eel, are commercially exploited. Stocking has also been a common practice. Glass eels fished in areas around the Bay of Biscay are regularly restocked at other places – including the Baltic Sea.

In the HELCOM area the eel fishery has consisted of fishing for yellow eel and silver eel (ICES/EIFAC 2011). Landings have decreased in many parts of the Baltic (e.g. Russia, Finland, Latvia and Lithuania) and are much smaller in Sweden and Denmark (WGEEL 2011, Svedäng 1996) today compared to the last century. For example, landings in the Curonian Lagoon show a 50 % decline during the last 10 years and a 90 % decline compared to pre-WW2 landings (Data from the Institute of Ecology, Nature Research Center, Vilnius). Furthermore, data from voluntary fishery journals in Sweden show a 50 % reduction in CPUE of silver eel in the Baltic Sea between the 1960s and 2000s (Andersson et al. 2012). The conclusions in the latest ICES advice are that the stock remains at a historical minimum, continues to decline and is outside safe biological limits (ICES 2012).

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*Anguilla anguilla***Distribution map**

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly (no reproductive behaviour) (HELCOM 2012).



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### Habitat and ecology

The European eel has an unusual life history. It spawns in the Sargasso Sea (tropical Western Atlantic), where the individuals die after spawning. The larvae follow the Gulf Stream across the Ocean; following arrival on the Continent, they transform into transparent glass eels. The migration time towards Europe is not known, but estimates vary from less than one year to three years. Following arrival in continental waters of Europe and North Africa, the glass eel starts pigmenting and changes into the juvenile yellow eel stage. Some eels stay in coastal areas while others migrate into streams and rivers. At the end of the yellow eel stage, the eels start their maturation and they migrate towards the sea, out of the Baltic, ultimately towards their spawning area in the Ocean. This stage is indicated as silver eel.

### Description of major threats

All life stages of European eel, including newly arriving glass eels, growing yellow eel and maturing migrating silver eel, are commercially exploited. Another severe problem is mortality generated by hydropower generation stations. European eels are also affected by pollution. Chemical contamination might affect spawning success although an effect on the stock level has not been demonstrated (ICES 2012). In recent decades, eels have been affected by the *Anguillicoloides crassus* parasite; this may result in general health problems.

### Assessment justification

Landings have decreased in many parts of the Baltic (e.g. Russia, Finland, Latvia and Lithuania) and are much smaller in Sweden and Denmark today compared to the 1960s (ICES/EIFAC 2011; Svedäng 1996). For example landings in the Curonian Lagoon show a 50 % decline during the last 10 years and 90 % decline compared to pre-WW2 landings (Data from the Institute of Ecology, Nature Research Center, Vilnius). Data from voluntary fishery journals in Sweden show a 50 % reduction in CPUE between the 1960s and 2000s (Andersson et al. 2012).

In Sweden, glass eels generally become yellow eels before recruiting to the continental stock; the youngest stage observed on the coast is the young yellow eel. For them, a 90 % decline has been observed during the past 60 years (3 generations). Similar declines in young yellow eels have been observed elsewhere in Europe and are assumed to occur elsewhere in the Baltic too.

Due to the drastic decrease in recruitment (90 %) an expected decrease in the population size in the future (IUCN criteria A3) or including both past and future times (criteria A4) is both above the threshold for Critically Endangered, CR (80 %) based on index of abundance (b), exploitation (d) and potential threats by the *Anguillicoloides crassus* (e). This is not downgraded by immigration from outside the HELCOM area since the situation for eel is equally critical all over the distribution area (ICES 2012, ICES/EIFAC 2011).

### Current regulations

In 2007, the EU adopted the Eel Regulation (Council Regulation No 1100/2007). The objective of this is the protection and sustainable use of the stock of European Eel. This is achieved by obliging Member States to develop national management plans for their territory; with the objective of “permit[ting] with high probability the escapement to the sea of at least 40 % of the silver eel biomass relative to the best estimate of escapement that would have existed if no anthropogenic influences had impacted the stock”.

EU Members States have identified the natural habitats for the European eel and prepared eel management plans. Where management plans do not cover coastal waters, EU imposes a 50 % reduction in the eel fishery relative to the average catch in 2004–2006. Furthermore each Member State

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should establish authorization lists of vessels, fishermen and sales and marketing bodies.

In 2007, the European eel was listed in appendix II (B) in CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), which came into effect on March 13th 2009. International trade (for the EU: across external EU borders) is only allowed if a so-called Non-Detriment Finding has been issued. In the EU, CITES is implemented in Council Regulation (EC) 338/97 on the protection of wild fauna and flora by regulating trade therein and in Commission Regulation (EC) 865/2006. The EU regulation is stricter than CITES, mainly because the Habitats directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora). Since 2010, no Non-Detriment-Finding has been issued anymore, and hence the international trade has been closed. The ban is reviewed annually.

In accordance with the EU Eel Regulation, national management plans have been compiled and implemented in 2009. In 2012, Member States have assessed the status of their part of the stock, and post-evaluated the effect of their management measures. An international assessment (ICES) and post-evaluation (EU) will be completed in 2013. The CITES ban on international trade across outer borders of the EU is re-evaluated in 2013, and the potential for integration with the Eel Regulation considered.

### Recommendations for actions to conserve the species

No substantial recovery in recruitment due to the implemented management actions in the EU in 2009 has been observed yet, with international trade stop into and out of the EU and with legislated national management plans. This is mainly because the lagged decline in recruitment translates to a future decline in adult eels, at least for the next two decades (ICES 2012). However, there is still an urgent need to reduce the anthropogenic impacts until there is clear evidence that the stock is increasing (ICES 2012). In addition concern has been raised that the existing national management plans will not be sufficient to protect the species (Svedäng and Gipperth 2012), suggesting the need for further actions.

In order to reduce all anthropogenic mortality to as close to zero as possible as recommended by ICES (2012) we suggest the following. Fishing of European eel within the HELCOM area should be stopped until there is clear evidence that the stock is increasing. In rivers and streams, actions should be taken to give safe passage for migrating eels and prevent mortality of eels in turbines. In line with the Water Framework Directive and fulfilling of Good Environmental Status, the heavy metal content and chemical pollution of freshwater habitats should be reduced. Member states of HELCOM should also participate in European eel conservation program of international institutions. In addition restocking of glass eels should not be undertaken until the effects of this on the population have been evaluated. Finally, the European eel should be considered to be added to Annex V of the EU Habitats Directive.

### Common names

D- Europäischer Aal, Flusaal or Aal; DK- Ål; EE- Angerjas; FI- Ankerias; LA- Zutis; LI- Europinis ungurys; PL- Węgorz; RU- Evropeiskij rečnoj ugor'; SE- Ål

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### References

- Andersson, J. Florin, A-B. Petersson, E. 2012. Escapement of eel (*Anguilla anguilla*) in coastal areas in Sweden over a 50 year period. ICES J. MAR. Sci. 69 (6): 991–999.
- Dekker W. 2003. On the distribution of European eel (*Anguilla anguilla*) and its fisheries. Canadian Journal of Fisheries and Aquatic Sciences, 60(7): 787–799.
- Dekker W. 2004. Slipping through our hands. Population dynamics of the European eel. Amsterdam (Universiteit van Amsterdam), Akademisch Proefschrift, 188 pp. Available in: <http://www.diadfish.org/doc/these%202004/Dekker-Thesis-eel.pdf>
- Estonian eBiodiversity. Red List 2008 results and species information available at <http://elurikkus.ut.ee/prmt.php?lang=eng>
- HELCOM 2007. HELCOM Red list of threatened and declining species of lampreys and fish of the Baltic Sea. Baltic Sea Environmental Proceedings No. 109. Helsinki Commission, Helsinki. 40 pp.
- HELCOM 2012. Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.
- ICES/EIFAC. 2011. Report of the 2011 Session of the Joint EIFAC/ICES Working Group on Eels. ICES CM 2011/ACOM:18.
- ICES 2012. ICES Advice 2012. Book 9.
- Palm, S. Dannewitz, J. Prestegaard, T. Wickstrom, H. 2009. Panmixia in European eel revisited: no genetic difference between maturing adults from southern and northern Europe Heredity 103 (1): 82–89.
- Svedäng, H. 1996. The development of the eel *Anguilla Anguilla* (L). stock in the Baltic Sea: an analysis of catch and recruitment statistics. Bulletin of the Sea Fisheries Institute 3: 29–41.
- Svedäng, H., Gipperth, L. 2012. Will regionalisation improve fisheries management in the EU? An analysis of the Swedish eel management plan reflects difficulties. Marine Policy, 36: 801–808.
- Svensson, M., Degerman, E, Florin, A.-B., Hagberg, J., Kullander, S. O., Nathanson, J. E. & Stenberg, C. 2010. Fiskar – Fish. Pisces. In Gärdenfors, U. (ed.) Rödlistade arter i Sverige 2010 – The 2010 Red List of Swedish Species. ArtDatabanken, SLU, Uppsala. P. 323–332. Red List categories available also at <http://www.artfakta.se/GetSpecies.aspx?SearchType=Advanced>
- Thiel, R., Winkler, H., Böttcher, U., Dänhardt, A., Fricke, R., George, M. Kloppmann, M., Schaarschmidt, T., Ubl, C. & Vorberg, R. 2013. Rote Liste und Gesamtartenliste der etablierten Neunaugen und Fische (Petromyzontida, Elasmobranchii & Actinopterygii) der marinen Gewässer Deutschlands. 5. Fassung, Stand August 2013. Naturschutz und Biologische Vielfalt 70 (2) 2013 11 – 76 Bundesamt für Naturschutz.
- Urho, L., Pennanen, J. T. & Koljonen, M.-L. 2010. Kalat Fish, Pisces. In Rassi, P., Hyvärinen, E., Juslén, A. & Mannerkoski, I. (eds.). Suomen lajien uhanalaisuus – Punainen kirja 2010. Ministry of the Environment & Finnish Environment Institute, Helsinki. P. 336–343.
- Wickström, H. 2006. Ålen. In Kustfiske och fiskevård : en bok om ekologisk fiskevård på kusten. Lindgren B. & Carlstarnd H. (Eds). Sportfiskarna. Göteborg.
- Wind, P. & Pihl, S. (eds.). 2004–2010. The Danish Red List. - The National Environmental Research Institute, Aarhus University [2004]-. <http://redlist.dmu.dk> (updated April 2010). Species information available at <http://bios.au.dk/videnudveksling/til-myndigheder-og-saerligt-interesserede/redlistframe/soegart/>