HELCOM MINISTERIAL MEETING COPENHAGEN 3 OCTOBER 2013

HELCOM Red List Species Information Sheets (SIS)
Fish

This document was a background document for the
2013 HELCOM Ministerial Meeting

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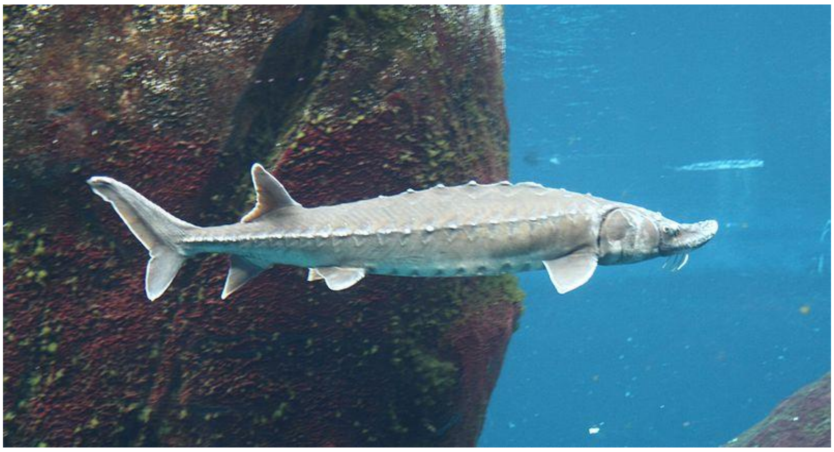
Baltic Marine Environment Protection Commission

English name: **American Atlantic sturgeon**	Scientific name: ***Acipenser oxyrinchus***	
Taxonomical group: Class: Actinopterygii Order: Acipenseriformes Family: Acipenseridae	Species authority: *Mitchill, 1815*	
Subspecies, Variations, Synonyms:	Generation length:	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02), Eutrophication (H01.05), Migration barriers (J03.02.01)	Future threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02), Eutrophication (H01.05), Migration barriers (J03.02.01)	
IUCN Criteria: –	**HELCOM Red List Category:**	**RE** **Regionally Extinct**
Global / European IUCN Red List Category: NT/NE	Habitats Directive: Annex V	
Previous HELCOM Red List Category (2007): RE		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia *protected by national law* / **RE**, Finland –/**RE,** Germany *reintroduction programme* / **0** (extinct, Baltic Sea), Latvia –/**RE**, Lithuania –/**RE**, Poland *Not under species protection but year round prohibiting of catches and a reintroduction programme* / **RE**, Russia *illegal to fish or land specimens (obviously extinct in the region)* / **RE**, Sweden –/**RE**		

Distribution and status in the Baltic Sea region

The sturgeon occurring in the Baltic after 1800 has most probably been *A. oxyrhincus* and not as previously believed *A. sturio* (Gessner & Ritterhoff 2004). The sturgeon populations have declined to extinction throughout its distribution range in the HELCOM area. Along the Atlantic coast of eastern North America, more or less stable populations of the species belonging to several genetically distinct entities still occur. Former Baltic Sea populations have been genetically most similar to the northernmost Canadian population of the species which still lives in St. Lawrence and St. John rivers (Ludewig et al. 2002).



American Atlantic sturgeon. Photo: Simon Pierre Barette

Habitat and ecology

The American Atlantic sturgeon lives demersally above sand and mud bottoms, in the ocean from inshore coastal waters down to around 50 meters depth. The species usually lives solitarily. As an anadromous migrating species, it enters rivers for reproduction, and spawns at depths of 2 to 10 m on stony bottoms. Females produce 800 000 to 2 400 000 sticky eggs which adhere to stones and the larvae hatch in a week. After hatching, juveniles may remain in fresh or brackish water for 3–5 years, then migrate slowly into the sea where they spend at least 8 years (often up to 30 years) before they mature and start their spawning migration again (they spawn every 3–4 years). American Atlantic sturgeons feed on crustaceans, molluscs, polychaete worms, and small fish and reported maximum total length is 403 cm (male) or 430 cm (female). In the Gulf of Finland, there is a record of a sturgeon caught in 1934 (near settlement Repino) that was 280 cm in length, 177 kg in weight, and 22 years old. The last record in the Neva River was in June 1994. (Gessner & Ritterhoff 2004, Froese & Pauly 2011)

Description of major threats

American Atlantic sturgeon is highly sensitive to human activities. It was a target species of (historical) fisheries, and it was caught as by-catch in demersal and river fisheries. Furthermore, eutrophication degrades its spawning habitat (as the species would need clean gravel beds), and dam and weir construction in rivers barriers spawning routes and causes too strong water velocity along the spawning routes. The species used to be common, but is now extinct.

Assessment justification

Species is red-listed as Regionally Extinct (RE). It is deemed likely that it has ceased to reproduce within the HELCOM area. The last large female was caught in Estonia in May 1996. The ongoing re-introduction programmes in Germany and Poland have not yet resulted in any successful reproduction.

Recommendations for actions to conserve the species

This species is extirpated in the Baltic region and the possibilities for spontaneous reintroduction are very low. Therefore hatchery rearing and stocking are needed. However, before this action is taken, it is necessary to improve understanding of the causes of extinction, as well as on suitable conditions for reintroduction. Conservation schemes should include scientifically advised restocking programmes into suitable rivers over an extended period of time (using as stocking material specimens out of the northernmost population of the North American stocks, from around St.-Lawrence and St.-John rivers, Canada), as well as fisheries restrictions, freshwater and marine protected areas, measures to reduce eutrophication of the spawning rivers, and construction of special fish passes or sturgeon elevators around weirs.

In May 2007 the first release of young sturgeon was made in the Odra River. The fish were all tagged and some had transmitters attached. The restocking trials were continued in 2008, and some 35,000 fish have now been released into the Odra and its tributaries. This forms part of research into sturgeon migratory behaviour and habitat utilization in the Odra region to assess the river system’s suitability for reestablishment of a sturgeon population. A monitoring programme identifies and quantifies risk factors for survival of the young fish. The research outcomes will provide the basis for management of a possible large-scale reintroduction to follow.

Common names

DE: Baltischer Stör; DK: Vestatlantisk stør; ES: Atlandi tuur; FI: Sinisampi; LV: Store, Atlantijas store, LT: Sturys (Aštriašnipis eršketas); PL: Jesiotr ostronosy; RU: Amerikanskij osjotr; SE: Atlantisk stör

References

Froese, R., Pauly, D. (eds) (2011). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org.

Gessner, J., Ritterhoff, J. (eds.) (2004). Species differentiation and population identification in the sturgeons *Acipenser sturio* L. and *Acipenser oxyrhinchus*. BfN-Skripten 101.

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Ludewig, A., Debus, L., Lieckfield, D., Wirgin, I., Benecke, N., Jenneckens, I., Williot, P., Waldman, J.R., Pitra, C. (2002). When the american sea sturgeon swam east. Nature 419: 447–448.

Red Book of the Russian Federation: Animals. Moscow, ACT Astrel, 2001. 860 p. [In Russian]

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): 11–76.

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.

English name: ***Common skate***	Scientific name: ***Dipturus batis***	
Taxonomical group: Class: Elasmobranchii Order: Rajiformes Family: Rajidae	Species authority: Linnaeus, 1758	
Subspecies,Variations,Synonyms: *Raja batis*	Generation length: 25 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02	Future threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**RE Regionally Extinct**
Global / European IUCN Red List Category: CR/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark *Zero-TAC since 2010* /–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Prohibited to fish for and land this species all year round* / **RE**		

Distribution and status in the Baltic Sea region

The common skate was formerly a common and widespread species occurring in the Kattegat and more rarely south to the northern parts of the Sound. The North Sea population has decreased dramatically, starting in the 1920s and accelerating during the second part of the 1900s and mature individuals of the species no longer occur regularly within the HELCOM area. The species is considered Regionally Extinct.

Common skate, *Dipturus batis* (von Wright 1895)

Habitat and ecology

The common skate is a demersal skate species living on soft bottoms below 10 m depth, adults usually below 30 m depth. They are slow-growing and long-lived and do not become sexually mature until after 10 years age. Mating occurs in spring, and the egg-capsules are laid in summer. The species is oviparous and deposits its egg-case in algae and seagrass beds. About 40 eggs per individual are laid annually. The young may tend to follow large objects, such as their mother. The species feeds on moderately sized benthic organisms including crustaceans, bony fish and polychaete worms. The maximum total length is 285 cm, and the maximum total weight 97.1 kg. (Fricke 1987, Froese & Pauly 2005)

Description of major threats

The species has become threatened and in the HELCOM area Regionally Extinct due to fishing (both as target species and as by-catch). Its populations have been significantly declining throughout its distribution range both in the HELCOM area and in other European waters (Anonymous 2004b, ICES 2006).

Assessment justification

The common skate was formerly a common and widespread species occurring in the Kattegat and more rarely south to the northern parts of the Sound. The North Sea population has decreased dramatically, starting in the 1920s and accelerating during the second part of the 1900s. The decrease of the North Sea populations is estimated to 98 (95–100)% over the last three generations (75 years), and since mature individuals are no longer occurring regularly within the HELCOM area the species is considered Regionally Extinct (RE).

Recommendations for actions to conserve the species

To enable a possible recolonisation from adjacent areas the common skate needs restrictions to benthic fisheries (e.g. trawling), and a restrictive fisheries management. As usually only the wings of rays are landed it is hard to separate this species from other non-threatened ray species. It is therefore recommended that rays should only be allowed to be landed as uncut. Marine protected areas without fisheries pressure and sand/gravel extraction would serve for the recovery of the populations. As major threats for the species occur outside the HELCOM area in the neighbouring OSPAR area, OSPAR could be requested to consider providing additional protection for this species.

Common names

DE: Glattrochen; DK: Skade; ES: –; FI: Silorausku; GB: Common skate; LA: Parastā raja; LI: Švelnioji raja; PL: Raja gładka; RU: Gladkij skat; SE: Slätrocka

References

Anonymous (2004b). Case study 3, the common skate, *Dipturus batis*. IUCN Internet Publication. Available at: http://www.iucn.org/places/medoffice/medredlist/pdf/dipturus_batis.pdf

Fricke, R. (1987). Deutsche Meeresfische. Bestimmungsbuch. Hamburg (DJN). 219 pp.

Fries, B. Smitt, F. S. Von Wright, W. (1895). Skandinaviens fiskar. Norstedt, Stockholm.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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 (2006). Report of the Working Group on Elasmobranch Fishes (WGEF), 14–21 June 2006. ICES CM 2006/ACFM:31. 291 pp.

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

English name: **European eel**	Scientific name: ***Anguilla anguilla***	
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: **A3bde+4bde**	**HELCOM Red List Category:**	**CR** **Critically Endangered**
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: *national management plan in place* **/ CR**, Estonia: *national management plan* / **DD**, Finland: *glass eel stocking*, *national management plan* **/ EN**, Germany: *national management plan* / **2** (Endangered, Baltic Sea), Latvia: *national management plan* / –, Lithuania: *national management plan* / –, Poland: *national management plan* / –, Russia: *none (not considered rare in Russian part of the Baltic)* / –, Sweden: *national management plan* / **CR**		

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.

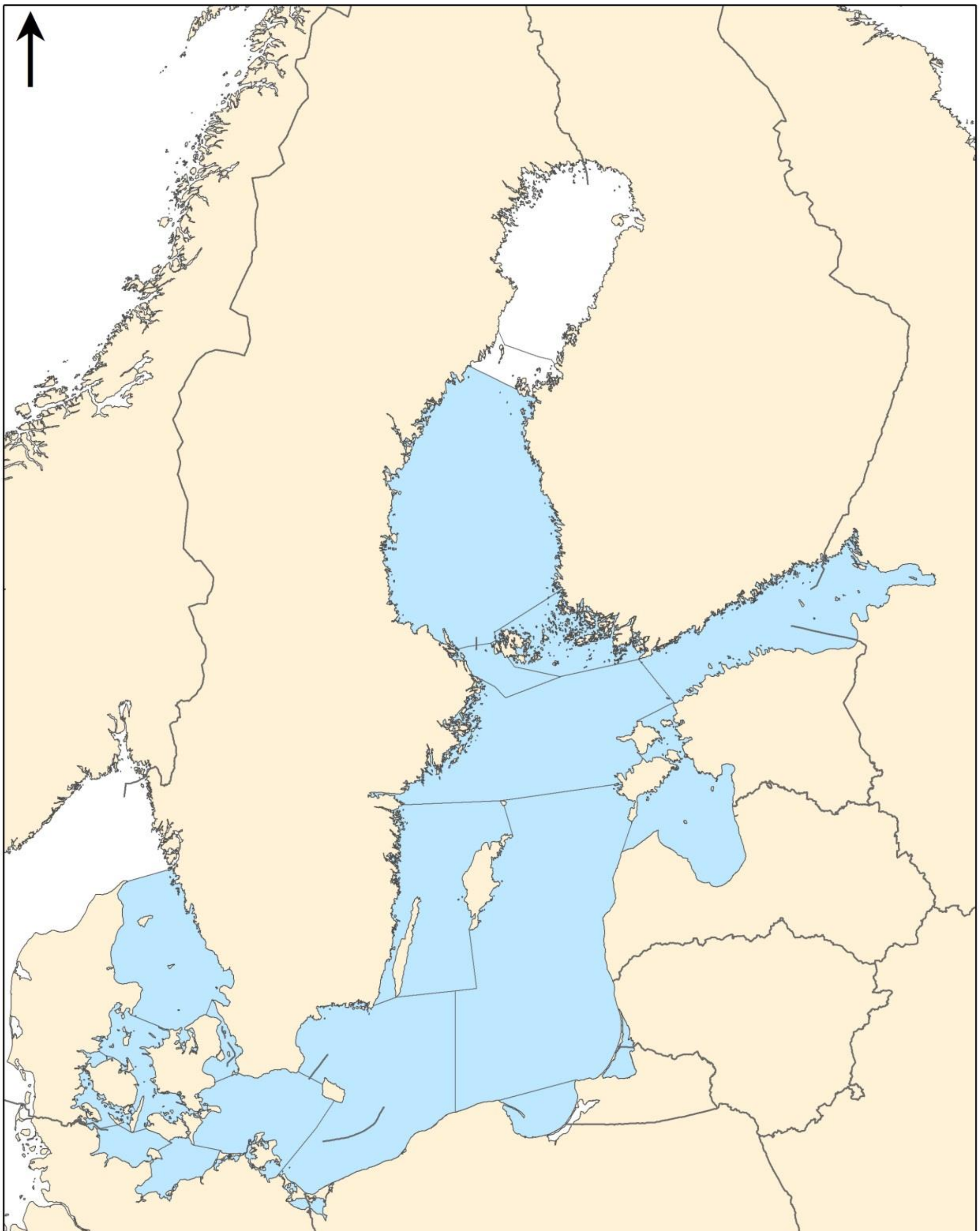
A prolonged decline in recruitment of glass eel coming into European waters is observed since 1980 and only 1–5 % of the former numbers arrive in Europe today (Dekker 2004, Wickström 2006, ICES/EIFAC 2011). In the Baltic, recruitment of yellow eel has been continuously in decline since the 1950s and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

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).



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 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 gives 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, Flussaal or Aal; DK- Ål; EE- Angerjas; FI- Ankerias; LA- Zutis; LI- Europinis ungurys; PL- Węgorz; RU- Evropeiskij rechnoj ugor'; SE- Ål

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/

English name: **Porbeagle**	Scientific name: ***Lamna nasus***	
Taxonomical group: Class: Elasmobranchii Order: Lamniformes Family: Lamnidae	Species authority: Bonnaterre, 1788	
Subspecies, Variations, Synonyms: –	Generation length: 18.8 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02)	Future threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02)	
IUCN Criteria: **A2bd**	**HELCOM Red List Category:**	**CR** **Critically Endangered**
Global / European IUCN Red List Category: CR)/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark *Zero-TAC in Denmark and EU since 2010* / –, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Prohibited to fish for and land this species all year round* / **CR**		

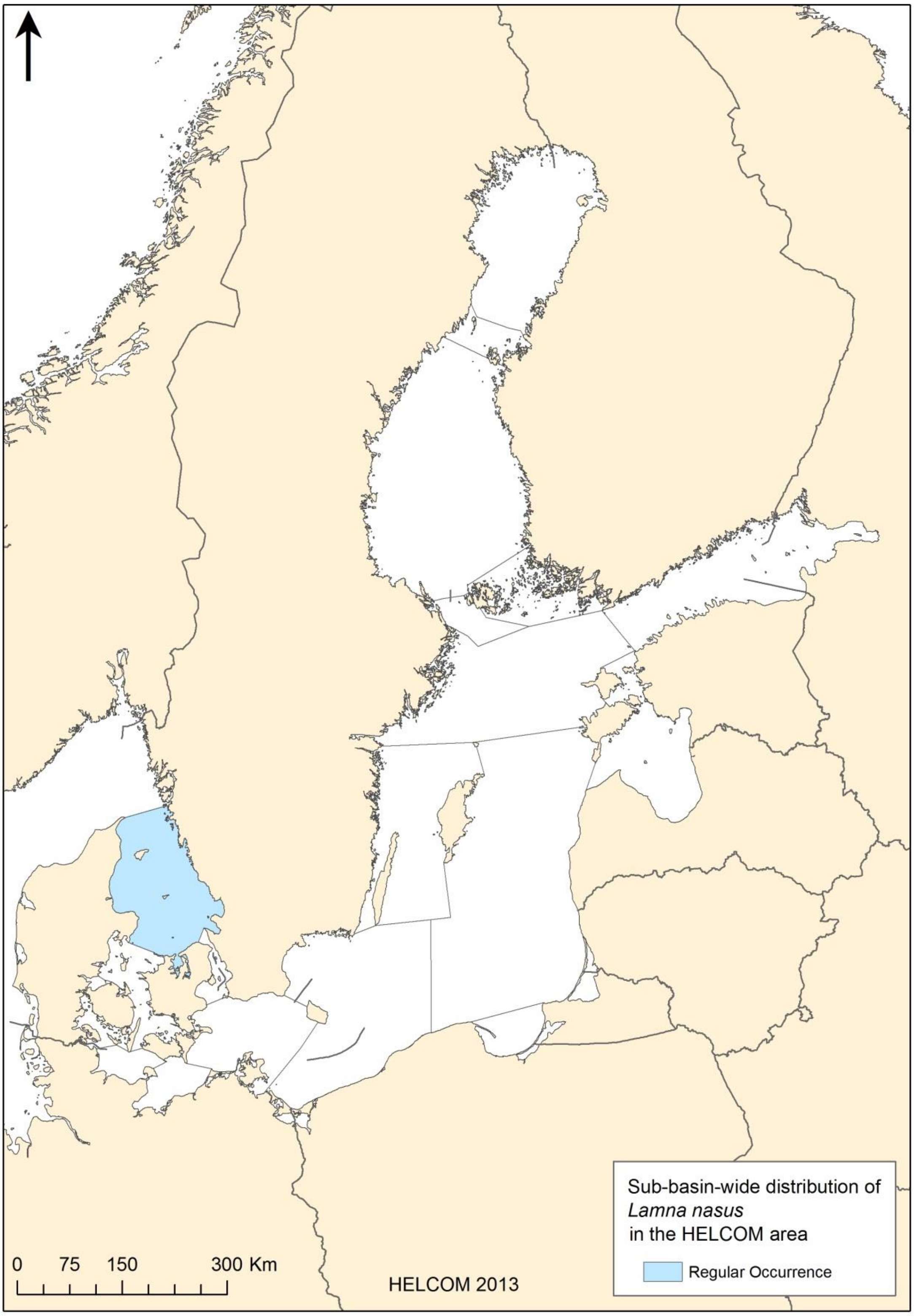
Distribution and status in the Baltic Sea region

Porbeagle is a migrant species that occurred regularly in the Kattegat and the Sound during the 19th century and until the mid-1900s. Small groups followed migrating *Clupea harengus* and *Scomber scombrus* as they entered the HELCOM-area. Porbeagle still occurs regularly in the North Sea and Skagerrak, but is nowadays a very rare visitor in Kattegat, and even more so further south into the Sound and is associated with annual migration routes. The number of mature individuals regularly occurring in the area is very small. Porbeagle has been the subject of targeted fisheries since the 1930s. Landings have decreased dramatically since the late 1940s and the Northeast Atlantic population size is estimated to have decreased by approximately 90% (80–95%) during the last three generations (57 years) (ICES 2012). Porbeagle is listed in CITES Appendix II meaning that trade is strictly regulated to protect the species.

Porbeagle. Illustration by Citron.

Distribution map

The map shows the sub-basin in the HELCOM area where the species is known to occur (HELCOM 2012). Porbeagle has occurred regularly in the Kattegat and the Sound until the mid-1900s but currently it is a very rare visitor in the Kattegat region.



Habitat and ecology

The porbeagle is a shark species that is specialized on following large schools of fish (especially herrings), which serve as its prey. It lives pelagically in the sea but follows its prey into inshore waters and even river mouths, where its distribution is mainly determined by salinity conditions (down to 10 psu). Porbeagles probably mate in summer; they are ovoviviparous, giving birth to 1–5 juveniles. The resilience of this species is very low, with individuals maturing at over 14 years (Fricke, 1987; Froese & Pauly 2012). The species reaches 350 cm total length, a weight of 230 kg, and an individual age of 45–46 years in an unfished population (today only 24–25 years) (Natanson *et al*. 2002).

Description of major threats

The porbeagle is a rare species and highly sensitive to human activities. The populations have significantly declined throughout the distribution range in HELCOM area. The porbeagle is threatened by fisheries, and it is caught as by-catch in pelagic and trawl fisheries on schooling fish species like herrings and mackerel.

Assessment justification

Both the extent of occurrences (EOO), estimated to 25 000 km², and the area of occupancy (AOO), exceeds the limit for red listing. The number of reproductive individuals is estimated to 100 (0–200) which is below the level of being considered Endangered (EN) according to the D criterion. Further reductions of the population are expected. The rate of decline has amounted to 90 (80–95) % for the last 60 years. This rate of decline exceeds the threshold for Critically Endangered (CR) in the A criterion (i.e. A2bd). The threat category is not downgraded by immigration from outside the HELCOM area since the situation for porbeagle is critical in the whole Northeast Atlantic.

Recommendations for actions to conserve the species

Fishing methods might be optimized to reduce porbeagle by-catch. As porbeagle is threatened also outside the HELCOM area in the adjacent OSPAR area, OSPAR officials could be contacted to consider conservation measures for the species.

Common names

DE: Heringshai; DK: Sildehaj; FI: Sillihai; GB: Porbeagle; LA: Siļķu haizivs ; LI: Atlantinis silkiaryklis ; PL: Żarłacz śledziowy ; RU: Atlanticheskaja se'ldyovaja akula; SE: Håbrand/Sillhaj

References

Fricke, R. (1987). Deutsche Meeresfische. Bestimmungsbuch. Hamburg (DJN). 219 pp.
Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).
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 (2012). ICES Advice 2012, Book 9.
Natanson, L.J., Mello, J.J., Campana, S.E. (2002). Validated age and growth of the probeagle shark, *Lamna nasus*, I the western North Atlantic Ocean. Collective Volume of Scientific Papers ICCAT 54: 1261–1279.
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.

SPECIES INFORMATION SHEET *Squalus acanthias*

English name: **Spurdog / Spiny dogfish**	Scientific name: ***Squalus acanthias***	
Taxonomical group: Class: Elasmobranchii Order: Squaliformes Family: Squalidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length:	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), Other threats (J03)	Future threats (Habitats Directive article 17 codes): Fishing (F02), Other threats (J03)	
IUCN Criteria: **A2bd**	**HELCOM Red List Category:**	CR Critically Endangered
Global / European IUCN Red List Category: VU/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark *Zero-TAC in Skagerrak/Kattegat and the North Sea from 2010 (EU-areas IIIa, IIa & IV)* / –, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Prohibited to fish for and land this species all year round* **/ CR**.		

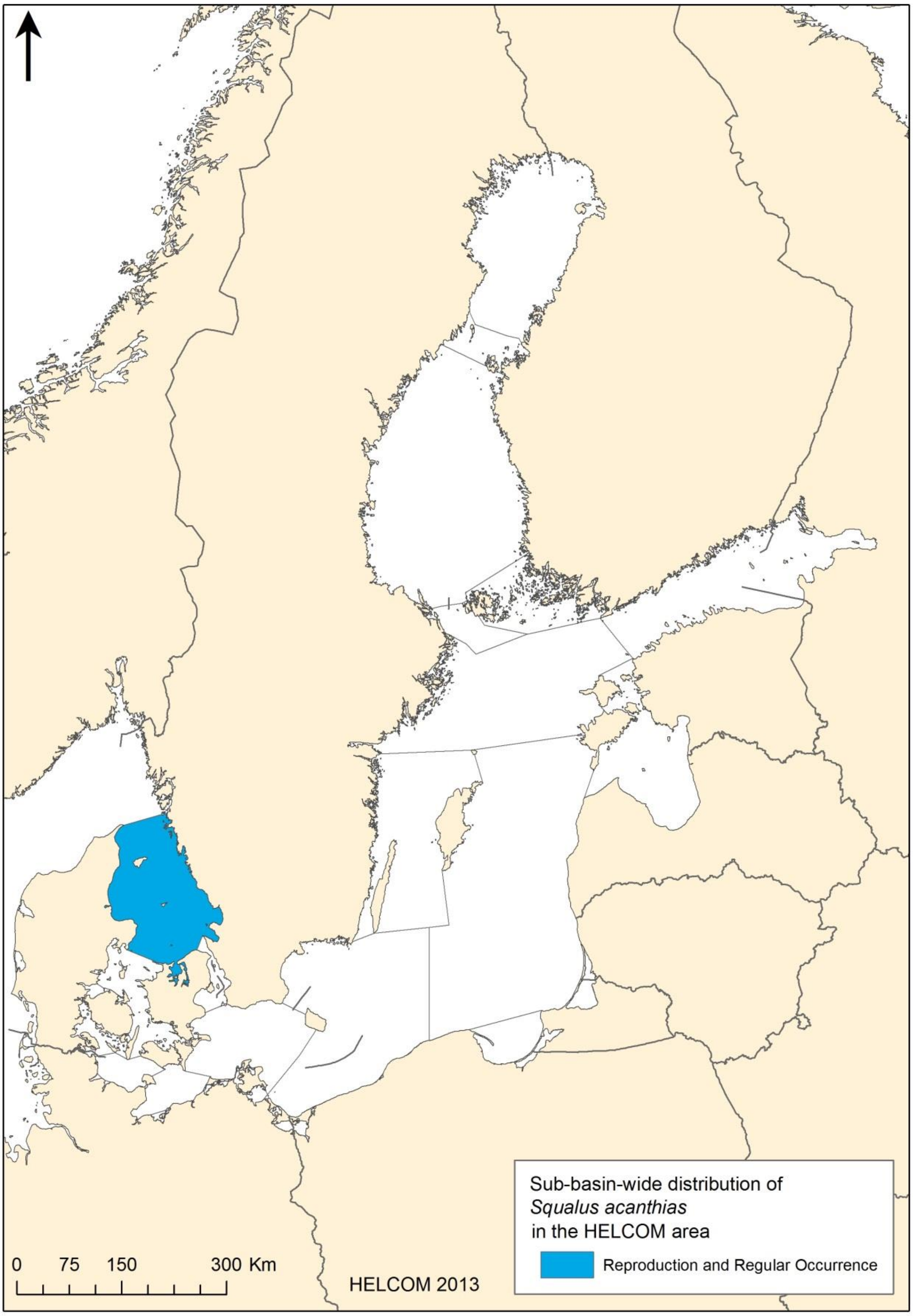
Distribution and status in the Baltic Sea region

The spurdog or spiny dogfish is the most abundant shark species in the Northeast Atlantic as well as within the HELCOM area. All Northeast Atlantic spiny dogfish are considered to belong to a single population. The species occurs regularly in Kattegat, the Sound and the Danish Belts, but only sporadically in the Baltic proper. The species forms large aggregations, and especially large females have been subjected to a targeted fishery. According to available data (ICES 2011) the Northeast Atlantic population may have decreased by as much as 98% compared to original biomass, and the decrease is well over 90% over the last three generations (79 years). ICES (2011) advices on the basis of the precautionary approach that there should be no targeted fishery and that catches in mixed fisheries should be reduced to the lowest possible level. EU has a zero-TAC since 2010.

Spurdog. Photo by Björn Fagerholm, Swedish University of Agricultural Sciences

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

Spurdogs are ovoviviparous, reach maturity late and are very long-lived. Females are pregnant for 18–22 months and the very low annual recruitment makes the species extraordinarily sensitive to fishing. The species is highly migratory, travelling in large, dense "packs", segregated by size and sex. Spurdogs prey opportunistically on a variety of small fish and invertebrates (Fordham *et al*. 2006). Aside from humans, adult dogfish have few enemies. Although dogfish are regularly blamed for preying heavily on economically valuable groundfish, stomach content analyses reveal that most groundfish are uncommon in dogfish diets and the amount of groundfish removed by dogfish is a small fraction of fishery removal and stock sizes (Link *et al*. 2002).

Description of major threats

The principal threat to this species worldwide is over-exploitation, by target and bycatch fisheries. This is a valuable commercial species in many parts of the world, caught in bottom trawls, gillnets, line gear, and by rod and reel. Locally high biomass initially supports large catches, but most large-scale spurdog fisheries have depleted populations and collapsed. An aggregating habit makes it possible for fishers to continue to target highest value mature females even after stocks have been depleted to a few percent of baseline. The species is also taken as bycatch in mixed species fisheries, meaning that fishing pressure can continue even after stocks have been so seriously depleted that they can no longer support viable fisheries.

The spiny dogfish is potentially impacted also by habitat loss and degradation which relate to coastal development, pollution, dredging and bottom trawling that affect the coastal or benthic habitats on which spiny dogfish or their prey rely (ASMFC 2002).

Assessment justification

Both the extent of occurrence and area of occupancy exceed the limit for red listing, as does the number of mature individuals. The population is, however, currently declining and the rate of decline is estimated to more than 90% over the past 80 years (ICES 2011). The rate of decline exceeds the threshold for Critically Endangered (CR) in the A criterion (A2bd). The threat category is not downgraded by immigration from adjacent areas since the spurdog is declining and considered threatened also outside the HELCOM area.

Recommendations for actions to conserve the species

The spurdog populations would benefit from a restrictive fisheries management, ICES recommends 0–catch, and from a network of marine protected areas where fisheries is completely banned; such areas would serve for recovery of the populations. As a main threat for the species occurs outside HELCOM area in the neighbouring OSPAR area, and some populations in western HELCOM area depend on North Sea stocks, similar measures are recommended for the European Atlantic to restore population.

Common names

D - Dornhai; DK - Pighaj; GB – Spurdog/Spiny dogfish ; ES -; FI – Piikkihai; LV - zelkņhaizivs, katrāns; LT - Paprastasis dygiaryklis; PL - Koleń; RUS - Kolyuchaya akula, Katran; S – Pigghaj

References

ASMFC (2002). Fishery Management Plan for Spiny Dogfish. Draft for Public Comment. Atlantic States Marine Fisheries Commission.

Fordham, S., Fowler, S.L., Coelho, R., Goldman, K.J., Francis, M. (2006). *Squalus acanthias*. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

ICES (2011). Report of the ICES Advisory Committee. 2011. ICES Advice. Book 9, 148 pp.

Link, J.S., Garrison, L.P., Almeida, F.P. (2002). Ecological Interactions between Elasmobranchs and Groundfish Species on the Northeastern U.S. Continental Shelf. I. Evaluating Predation. North American Journal of Fisheries Management, American Fisheries Society 22: 550–562.

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.

English name: **Grayling**	Scientific name: ***Thymallus thymallus***	
Taxonomical group: Class: Actinopterygii Order: Salmoniformes Family: Salmonidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 6.7 years	
Past and current threats (Habitats Directive article 17 codes): Climate change (M01.01, M01.04), Construction (D03.03, J02.02.01), Contaminant pollution (H01), Eutrophication (H01.05), Fishing (F02)	Future threats (Habitats Directive article 17 codes): Climate change (M01.01, M01.04), Construction (D03.03, J02.02.01), Contaminant pollution (H01), Eutrophication (H01.05), Fishing (F02)	
IUCN Criteria: **A2bcd**	**HELCOM Red List Category:**	**CR** **Critically Endangered**
Global / European IUCN Red List Category: LC/LC	Habitats Directive: Annex V	
Previous HELCOM Red List Category (2007): –		
Protection and Red List status in HELCOM countries: Denmark: *totally protected since 04.05.2001* / **VU** Estonia: *protected by the law (second category)* / **VU** Finland: *fishing is not allowed during 1.4.– 31.5., except with rod or lure. Size limit for all fishing is 30 cm, or locally even higher* / **CR** (Baltic Sea grayling) Germany: –/**2** (Endangered, freshwaters) Latvia: *commercial fishing and angling rules (closed season, minimal landing size), regulation nr. 45 and 396* / – Lithuania: fishing is not allowed from 1 March till 15 May. Size limit for fishing is 29 cm total length / – Poland: –/**DD** Russia: *fisheries regulations* / – Sweden: *minimum landing size 30 cm in Åland Sea* / **LC**		

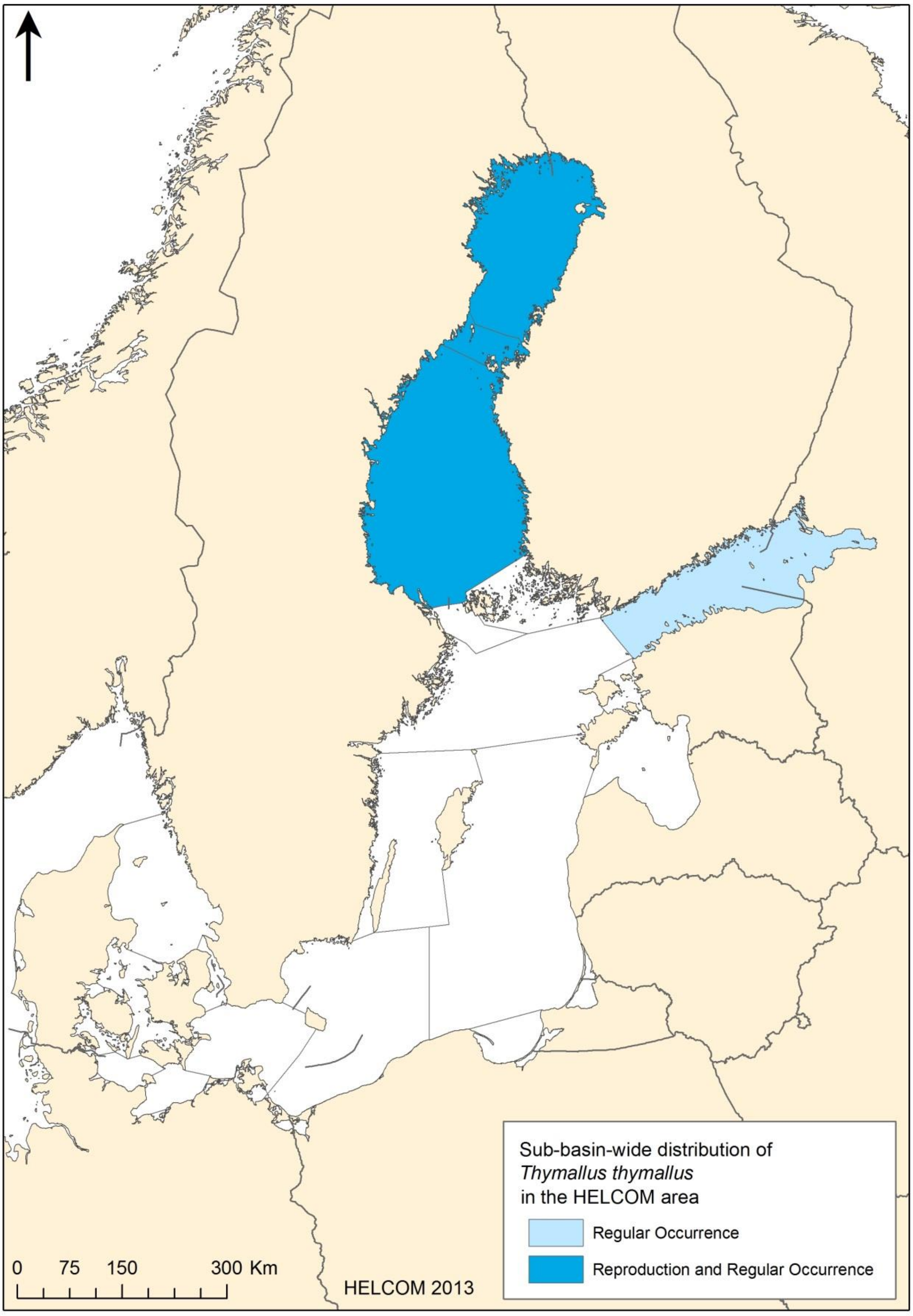
Distribution and status in the Baltic Sea region

Grayling inhabits coastal areas sporadically only in the Gulf of Bothnia, both in Sweden and Finland. Baltic Sea populations are considered CR in Finland (Urho et al. 2010). Enquiries for coastal fishermen in Sweden (Jensen & Alanära 2006) and in Finland show that the abundance of grayling has decreased during the last twenty years in Sweden and even longer in Finland. The exact amount of decrease is difficult to estimate, due to the low number of individuals left; however, a range of 50 to 90 % decrease has been estimated. The situation for coastal spawning grayling is much worse than that of anadromous grayling. Sea-spawning grayling is rather unique in the world. Anadromous grayling probably still occurs in a couple of rivers in Finland and some more in Sweden, however, the occurrence of non-anadromous grayling in rivers complicates the abundance estimations. Anyway, grayling is declining in several Swedish rivers in the northern Bothnian Sea and Bothnian Bay (Nordwall & Carstein 2001, unpublished).

Grayling. Photo by Martin Karlsson, Swedish University of Agricultural sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012a).



Habitat and ecology

Generally the grayling inhabits rivers with hard sand or stone bottom and well oxygenated, cold and fast-flowing water. However it also occurs in clear lakes and freshened part of the northern Baltic Sea. Usually it lives in hollows behind boulders and shaded water under overhanging vegetation in rivers. It is gregarious, forms schools and feeds mainly on insect nymphs, small worms and crustaceans. Grayling spawns in shallow stretches, usually 20–40 cm deep, or riffles, with moderate current of about 0.5 m/s and clean gravel bottom (Froese & Pauly 2012). In the sea, grayling reproduces in open, stony outer archipelago.

Description of major threats

This species is threatened by climate change, especially increasing temperatures in its southern distribution area. Regionally the species suffers from dam constructions river regulation, pollution, and eutrophication.

Assessment justification

The situation for coastal spawning grayling is much worse than for anadromous grayling. In an Interreg project (Alanärä et al 2006) it was shown that sea-spawning grayling reproduces in two areas in Sweden and none in Finland. The extent of occurrence for grayling in the coastal areas in Finland has been reduced by 50 % since 1950s. Electrofishing in Swedish rivers shows no trend during the last 20 years (Degerman, Sers & Magnusson 2009), however electrofishing is not so good for catching this species. An unpublished report by Nordvall & Carstein 2001 states that there is a decline in several Swedish rivers in the northern Bothnian Sea and Bothnian Bay. A suspected decline of more than 80 % the last three generations leads to a status of CR in the HELCOM saline areas. Immigration from outside the HELCOM area is not considered significant for either the anadromous or sea-spawning type hence the threat category is not downgraded.

Recommendations for actions to conserve the species

The reasons for the decrease are mostly unknown but due to low number of individuals, fishery is not recommended. Introductions and preservation of stock specific genes in cultivation should be considered before it is too late. Restoration of spawning habitats and improvement of water quality in spawning rivers is recommended. It is also necessary to increase knowledge on life-history and ecology to suggest meaningful action plans. Reduction of eutrophication in rivers and reduction of sediment load from rivers would probably benefit the species.

Common names

D: Äsche; DK: Stalling; ES: Harjus; FI: Harjus; GB: Grayling; LA: Alata; LI: Kiršlys; PL: Lipień; RU: Evropeiskiy kharius; SE: Harr

References

Alanärä, A., Hudd, R., Nilsson, J., Lax H-G., Carlsson, U. (2006). Slutrapport Projekt Kvarkenharr. Sveriges lantbruksuniversitet, Vattenbruksinstitutionen. Rapport 55. Umeå.

Degerman, E., Sers, B., Magnusson, K. (2009). Artförekomst perioden 1988–2007 i Svenskt ElfiskeRegiSter – förändras arternas förekomst över tid? Information från Svenskt ElfiskeRegiSter Vol. 1. Fiskeriverket, Sötvattenslaboratoriet, Örebro. 28 pp. [in Swedish]

Freyhof, J. (2009). Rote Liste der im Süßwasser reproduzierenden Neunaugen und Fishce (Cyclostoma & Pisces). Naturschutz und Biologische Vielfalt 70(1): 291–316. In Bundesamt für Naturschutz (2009). Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands. Band 1: Wirbeltiere. Bundesamt für Naturschutz.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

Jensen, H. & Alanärä, A. (2006). Provfiske efter lekmogen harr vid kusten i Kvarkenregionen. Sveriges lantbruksuniversitet, Vattenbruksinstitutionen. Rapport 46. Umeå.

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.

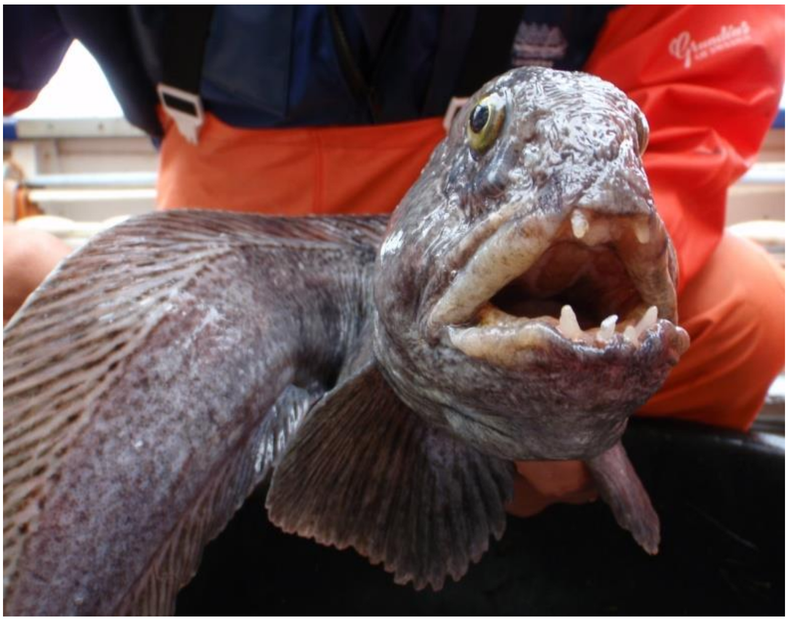
Wind, P. & Pihl, S. (eds.) (2004–2010). The Danish Red List. - The National Environmental Research Institute, Aarhus University [2004]-. http://redlist.dmu.dk (updated April 2010). Species information available at http://bios.au.dk/videnudveksling/til-myndigheder-og-saerligt-interesserede/redlistframe/soegart/

SPECIES INFORMATION SHEET *Anarhichas lupus*

English name: **Atlantic wolf-fish**	Scientific name: ***Anarhichas lupus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Anarhichadidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 14 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (both commercial and recreational) (F02), By-catch (F02)	Future threats (Habitats Directive article 17 codes): Fishing (both commercial and recreational) (F02), By-catch (F02)	
IUCN Criteria: **A2d**	**HELCOM Red List Category:**	**EN Endangered**
Global / European IUCN Red List Category NE / NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**EN**		

Distribution and status in the Baltic Sea region

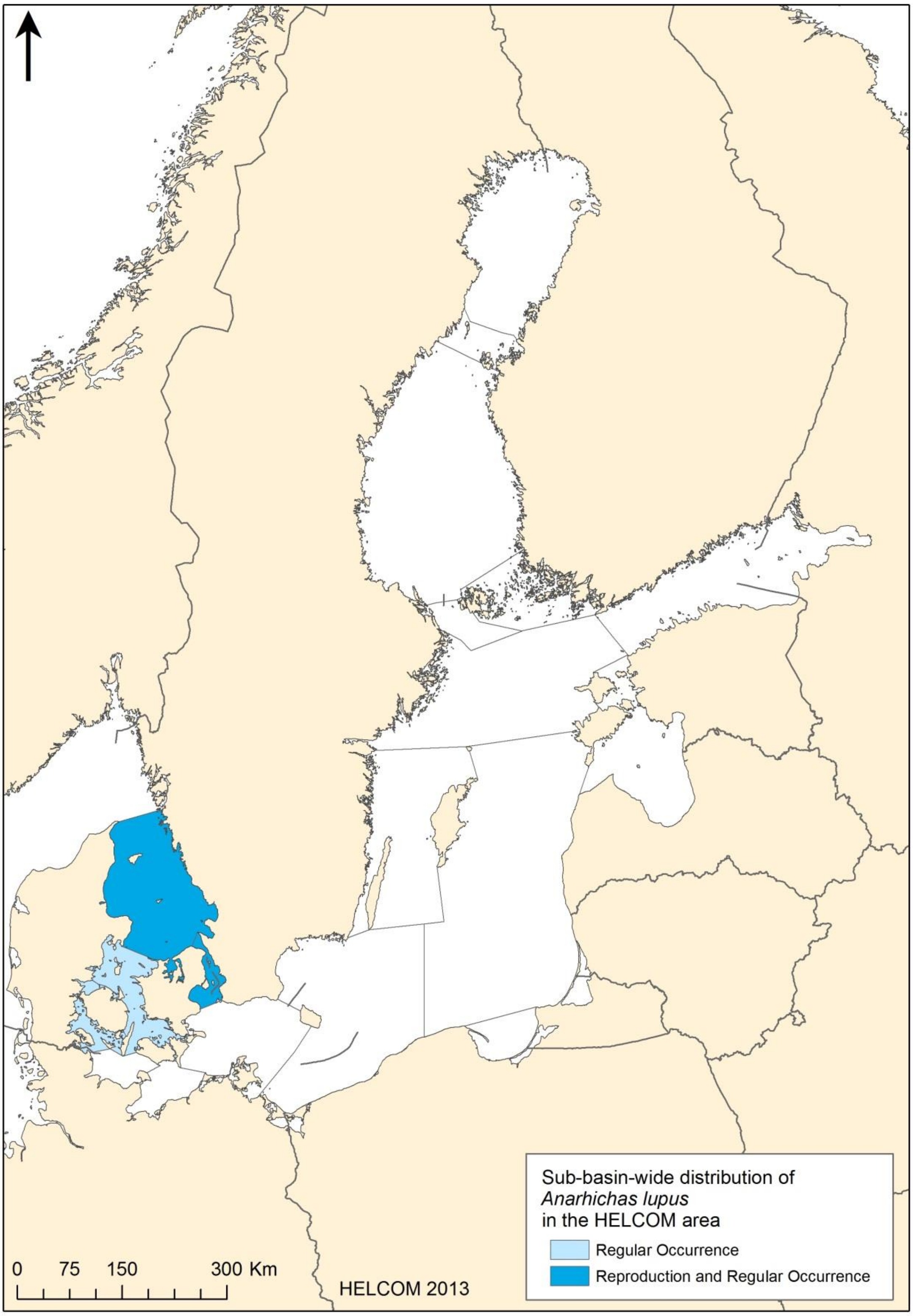
The Atlantic wolf-fish is found in the deeper parts of the Kattegat, and it occurs regularly in the Sound and the Belt Sea. The species has been occasionally reported as far into the Baltic Sea as the Eastern Gotland Basin. Swedish commercial landings in the Kattegat have decreased continuously from more than 30 tonnes in 1999 to less than 2 tonnes in 2011.



Atlantic wolf-fish. Photo by David Andersson, Swedish University of Agricultural Sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

Atlantic wolf-fish is a demersal species which inhabits rocky bottoms. Sometimes it can also be found foraging on sandy or muddy bottoms. It occurs normally in shallow coastal waters between 20 to 60 m in summer and it migrates to deeper waters offshore in winter. The wolf-fish has very strong jaws and it feeds on hard-shelled molluscs, crabs, lobsters, sea urchins and other echinoderms, as well as fish. It is a solitary species and forms pairs for mating. The male guards the eggs for 2–3 months until hatching. The wolf-fish becomes sexually mature at ages of 6–12 years, measuring 50–60 cm. Maximum known life span is 22 years (Froese & Pauly 2012, Kullander et al. 2012).

Description of major threats

Atlantic wolf-fish is threatened by fishery induced mortality, including effects of bycatch and accidental catches.

Assessment justification

The number of mature individuals exceeds the limit for red listing. The extent of occurrences (EOO) and the area of occupancy (AOO) also exceed the limits for red listing. The population is still declining or is expected to do so in the future. Based on the drastic decline in Swedish landings in the Kattegat (Fiskeriverket 2011) the rate of decline has amounted to 70 (50–90) % in the last 40 years. Depending on which of the estimated values is used the assessment varies from Endangered (EN) to Critically Endangered (CR). However, based on the most plausible values the species meets the criteria for Endangered (EN) in the A criterion (A2d). Immigration from outside the HELCOM area is too low to have a rescue effect since the situation for the wolf-fish is severe also in the adjacent area of Skagerrak.

Recommendations for actions to conserve the species

A prerequisite for recovery of this species is an effectively reduced fishery in the Kattegat. If the reduction of fishing is not sufficient to turn the population trend to recovery, spawning areas should also be identified and marine protected areas could be implemented on offshore grounds in order to improve survival.

Common names

DK: Stribet havkat; ES: -; FI: Merikissa; DE: Seewolf; LV: Viklzivs; LT: Paprastoji vilkžuvė; PL: Zębacz, RU: Polosataja zubatka; SE: Havskatt

References

Fiskeriverket (2011). Ask, L., Westerberg, H. (eds.). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdf

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517pp. [in Swedish]

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

English name: **Whitefish**	Scientific name: ***Coregonus maraena***	
Taxonomical group: Class: Actinopterygii Order: Salmoniformes Family: Salmonidae	Species authority: Bloch, 1779	
Subspecies, Variations, Synonyms: *Coregonus lavaretus*	Generation length: 9 years	
Past and current threats (Habitats Directive article 17 codes): Migration barriers (J03.02.01), Fishing (both commercial and recreational) (F02), By-catch (F02)	Future threats (Habitats Directive article 17 codes): Migration barriers (J03.02.01), Fishing (both commercial and recreational) (F02), By-catch (F02)	
IUCN Criteria: **A2bd**	**HELCOM Red List Category:**	**EN Endangered**
Global / European IUCN Red List Category VU/VU	Habitats Directive: Annex V	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark: –/**LC** Estonia: *fisheries regulations* / **DD** Finland: *stocking of specimens* / **EN** (River spawning) & **VU** (Sea spawning) Germany: *stocking of specimens* / * (Not threatened, Baltic Sea) Latvia: *special status by Council of Ministers regulations* / **VU** (River spawning) Lithuania: *minimum landing size (36 cm)* / (*C. lavaretus holas*, 4 (I) Indeterminate) Poland: *stocking of specimens,, minimum landing size (40 cm), protection period (1X-31XII), mesh size restrictions* / **DD** Russia: –/ **EN** Sweden: *protected from fishing during spawning time 1XI- 15XII in the county of Gotland and 15X-30XI in the county of Gävleborg. A no-take area in the southern Bothnian Sea was implemented in 2011* / **EN**		

Distribution and status in the Baltic Sea region

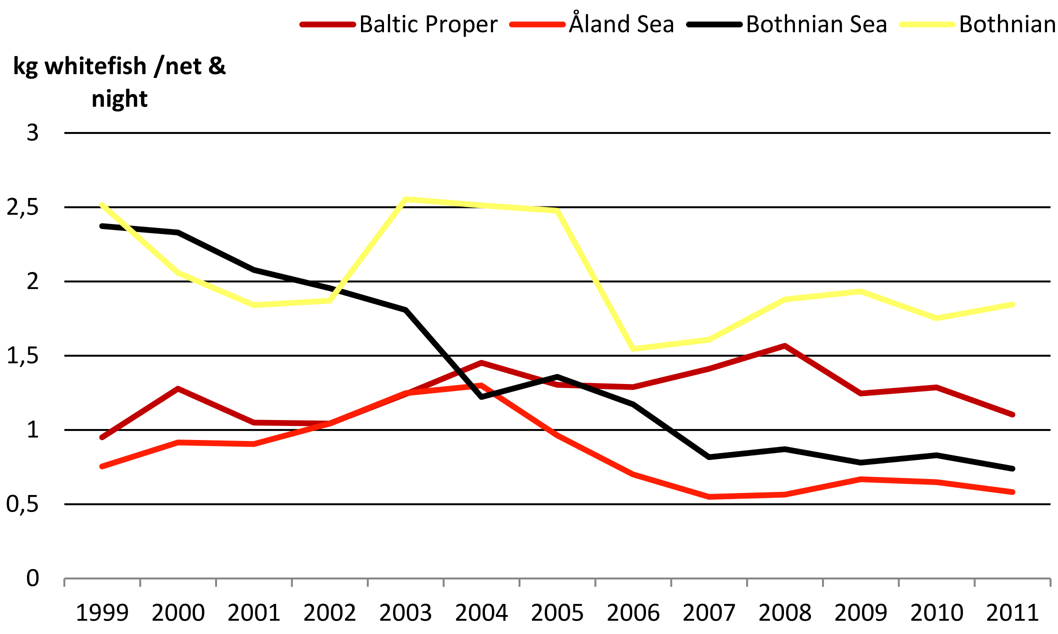
The whitefish is a group of populations, forms or species with unclear taxonomy, here defined as anadromously migrating whitefish stocks around the Baltic Sea and the sea-spawning ones, which are more local. This complex would include species and/or populations previously recorded under the names *Coregonus balticus*, *C. maraena*, *C. oxyrinchus* (Baltic stocks, if *C. oxyrinchus* was not restricted to River Rhine, as Freyhof & Schöter 2005 suggest), *C. lavaretus* and *C. pallasii*. The species and/or populations in this complex are distributed throughout coastal waters of the HELCOM area, and in adjacent rivers and streams.

Whitefish is an important fish for recreational as well as commercial fishery in the Baltic Sea.

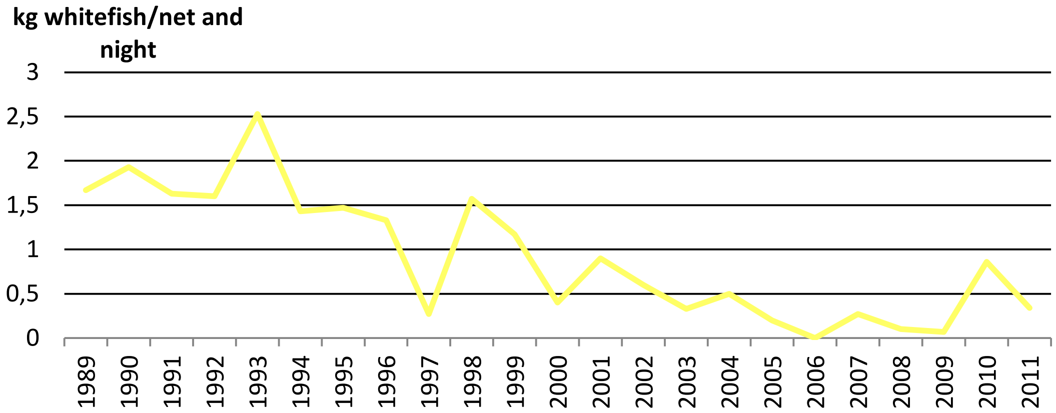
Despite huge introductions the catch per unit effort of sea-spawning whitefish has decreased 43–65% in Finnish commercial fishery in the Gulf of Bothnia from 1980s to today. Swedish data from commercial fishery also show a decline over the last decade by 50% in the Bothnian Sea and 30% in the Bothnian Bay but no trend in the Baltic Proper (Fiskeriverket 2011, Florin 2011).

Whitefish. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Monitory fishing from the Quark shows an 89% decrease between 1994 and 2009 while monitory fishing in the Stockholm area shows no decrease (Florin 2011). In the Curonian Lagoon landings have decreased with 99% in the last decade. In Estonia several sea-spawning populations are almost extinct although some have slightly recovered in recent years. Decreasing population of anadromous whitefish of the Neva River in Russia is included in the Red Book of Saint-Petersburg (under the name *Coregonus lavaretus*, “nevskiy sig”).



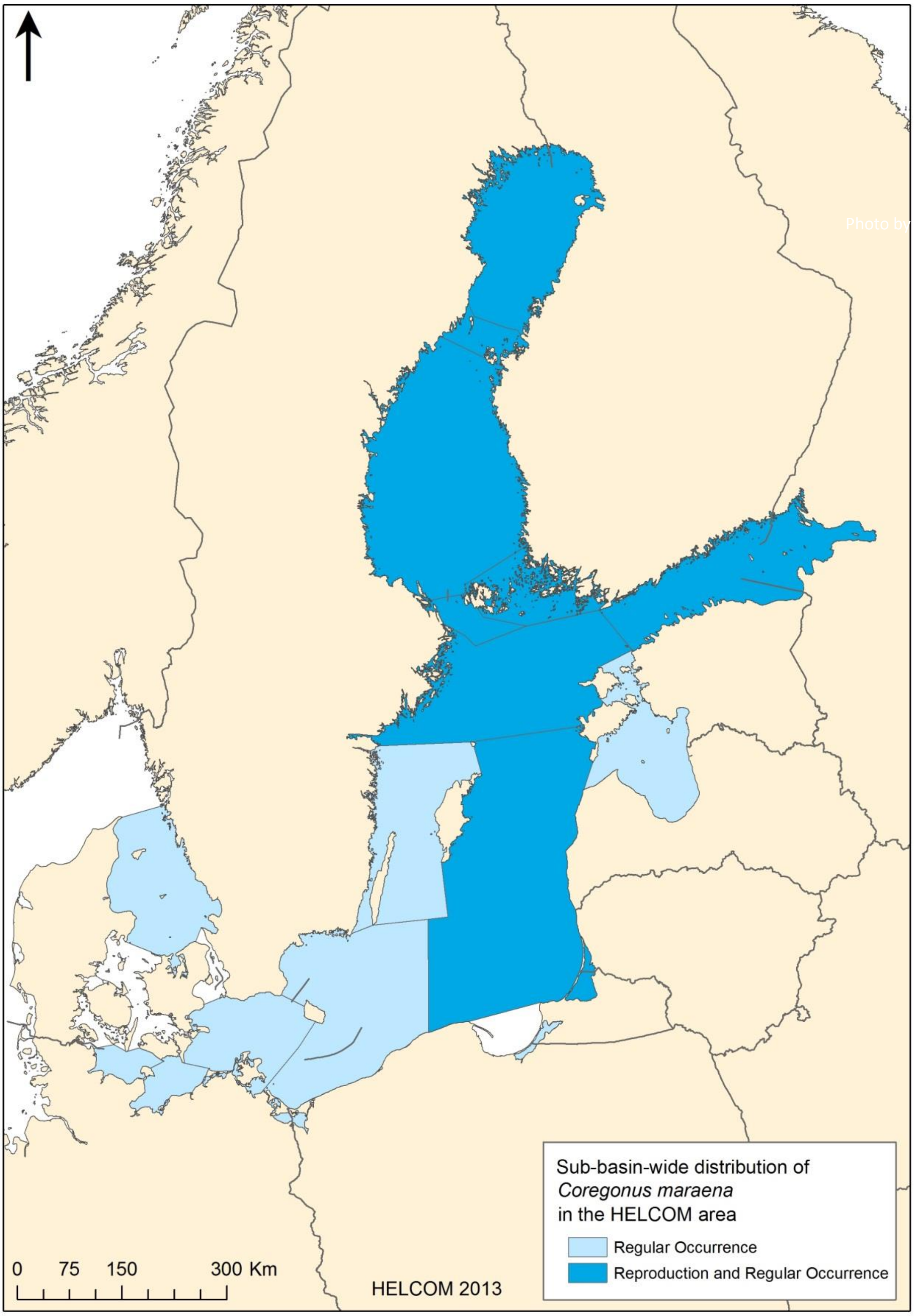
Cpue of whitefish from Swedish commercial fishery data showing significant decrease in the Bothnian Sea and the Åland Sea but no significant trend in other areas.



Cpue of whitefish in monitory fishing in Holmön in the northern Quark.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

This species prefers cool waters and lives mostly in coastal waters, some populations close to estuaries. In the northern Baltic Sea the river spawning whitefish carries out long migrations (several hundred km), and is not restricted to river mouths or coastal areas but crosses also the Gulf of Finland and the Gulf of Bothnia. It matures at an age of 2–4 years and migrates into freshwater for spawning, which happens in October–November for *C. maraena*. Coastal spawning (i.e. sea-spawners) also occurs in subpopulations, and these subpopulations do not tend to migrate into rivers.

Description of major threats

The whitefish is threatened by a variety of factors, including construction of dams and weirs in rivers that hampers the spawning migration, eutrophication of the reproduction habitats, climate change, fisheries as a target species or as by-catch, and introduction of *Coregonus* species and populations from other areas as *Coregonus* specimens readily hybridize. Whitefish is globally listed as VU (A2cd) due to dam constructions over the last 15 years.

Assessment justification

Despite huge introductions in Finnish waters (annually 40–90 million newly hatched and 4–8 million one-summer old) the catch per unit effort of sea-spawning whitefish has decreased 43–65% in Finnish commercial fishery in the Gulf of Bothnia in 1984–2010. Swedish data from commercial fishery also show a decline over the last decade by 50% in the Bothnian Sea and by 30% in the Bothnian Bay but no trend in the Baltic Proper.

Monitory fishing from the Quark show an 89% decrease between 1994 and 2009 while monitory fishing from two series in the Stockholm area shows no decrease. In the Curonian Lagoon commercial landings decreased from 3 tonnes in the early 2000 to only 30 kg in 2011. In Estonia several sea-spawning populations are almost extinct although some have slightly recovered in recent years.

The overall decrease of whitefish in the HELCOM area based on the data above is assumed to be between 40 to 80% over the last three generations warranting an EN category according to the A2b criteria. This is not downgraded by potential immigration from outside the HELCOM area since the species is considered globally threatened in addition to probable natal homing behaviour restricting migration.

Recommendations for actions to conserve the species

Whitefish would benefit from a reduction of eutrophication in the spawning rivers and coastal habitats, from the construction of fish passes around barriers like weirs, and from sustainable fisheries management, controlling illegal fishery and considering the needs of both migratory and sea spawning *Coregonus*. Whitefish would probably benefit from reduction of fishery in some regions where the number of individuals is low. The possibility for restoration of reproduction areas should be examined and introductions may be used as a last resort to support the stock in some areas where natural reproduction is not possible anymore.

Common names

D:Schnäpel; DK: Hetling; ES: Merisiig; FI: Siika; ; LA: Sīga; LI: Sykas; PL: Sieja; RU: Sig; SE: Sik

References

Andrušaitis G. (ed.) (2003). Red Data Book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fiskeriverket (2011). Ask, L., Westerberg, H. (eds.). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. . Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdf

Florin, A.B. (2011) Förslag till ändring av Fiskeriverkets föreskrifter (FIFS 2004:36) om fisket i Skagerrak, Kattegatt och Östersjön; Ett fiskefritt område i södra Bottenhavet för att stärka bestånden av havslekande sik. Fiskeriverket, Dnr 13-2144-11. Bilaga 1. Biologiskt underlag till förslaget. [in Swedish] Availble at: http://www.slu.se/PageFiles/96799/BiologisktunderlagtillsikFFOremiss20110521.pdf

Freyhof, J., Schöter, C. (2005). The houting *Coregonus oxyrinchus* (L.) (Salmoniformes: Coregonidae), a globally extinct species from the North Sea basin. Journal of Fish Biology 67: 713–729.

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Red Book of the Russian Federation (animals). 2001. “Act Astrel”. 863 pp. (In Russian) [Красная Книга Российской Федерации (животные). 2001. «Аст Астрель». 863 с.], on-line version (2007) http://www.sevin.ru/redbooksevin/index.html

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): 11–76.

Urho, L. (2011). Kalasto-, kalakantamuutokset ja vieraskalalajit ilmaston muuttuessa. RKTL:n työraportteja 6/2011. 110 p.

Urho, L. (2012). Kalasto, kalakannat ja kalastus sekä niiden sopeutuminen ilmaston muuttuessa. Teoksessa: Miten väistämättömään ilmastonmuutokseen voidaan varautua? - yhteenveto suomalaisesta sopeutumistutkimuksesta eri toimialoilla, (toim. Ruuhela, R.). MMM:n julkaisuja 6/2011: 46–51. Maa- ja metsätalousministeriö 2012.

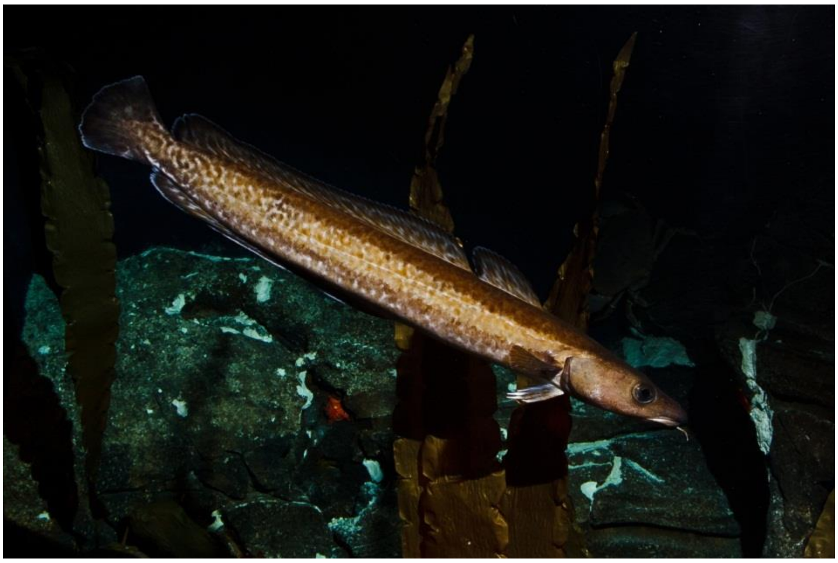
Urho, L., Pennanen, J. T. & Koljonen, M.-L. (2010). Kalat Fish, Pisces. In Rassi, P., Hyvärinen, E., Juslén, A. & Mannerkoski, I. (eds.). Suomen lajien uhanalaisuus – Punainen kirja 2010. Ministry of the Environment & Finnish Environment Institute, Helsinki. P. 336–343.

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/

English name: **Ling**	Scientific name: ***Molva molva***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Lotidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 12.7 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02.02.01; F02.03)	Future threats (Habitats Directive article 17 codes): Fishing (F02.02; F02.03)	
IUCN Criteria: **A2d**	**HELCOM Red List Category:**	**EN** **Endangered**
Global / European IUCN Red List Category NE / NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark *TAC regulation by EU in Kattegat* / –, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *TAC regulation by EU in Kattegat* / **EN**		

Distribution and status in the Baltic Sea region

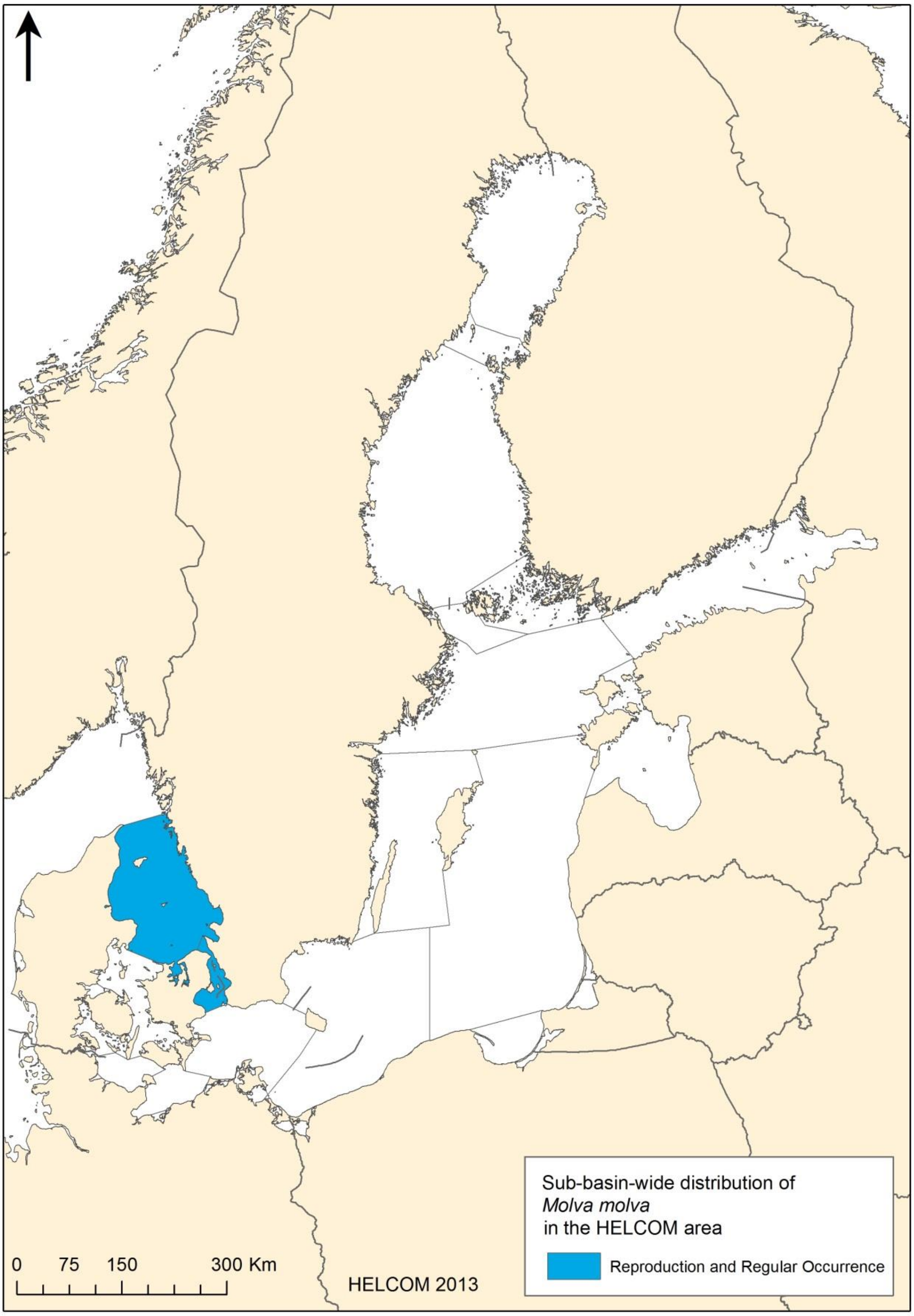
Ling is found mostly in the Kattegat and the northern part of the Sound. The stock in the Kattegat and the Sound are believed to belong to the North Sea population. Ling are sporadically observed in the south-western Baltic. The spawning stock in the Kattegat and the northern Sound, marginal to the North Sea population, is presently at a very low level. A drastic decrease was observed in commercial Swedish landings over the assessment period (data from 1975–2011), from above 30 tonnes in the beginning of the 1970s in the Kattegat to less than 1 tonne in 2008 (Fiskeriverket 2011). Since 2008 the landings have been below 1 tonne.



Ling. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

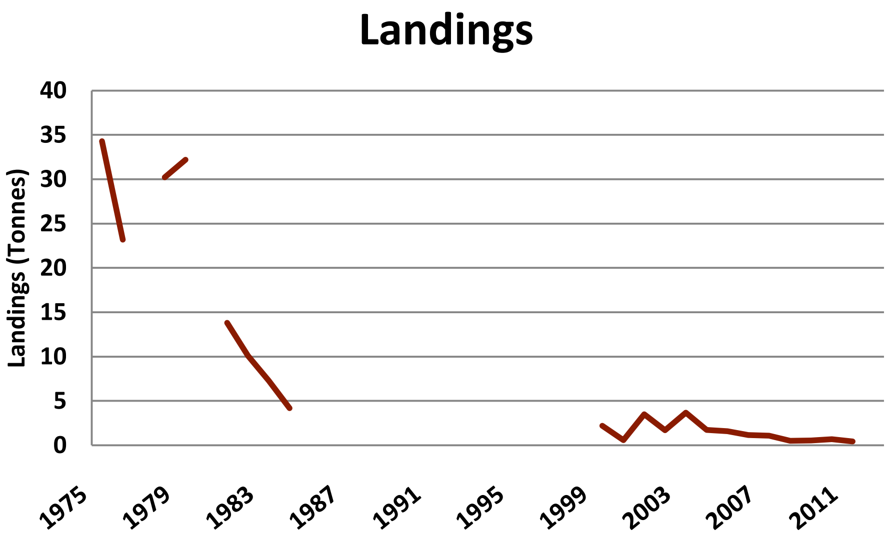
Ling lives mostly on hard bottoms, from shallow waters down to 1000 meters depth but is most commonly present between 100 and 400 meters (Muus & Nielsen 1999). Ling can be observed in sparse shoals. Ling can reach a maximum length of 2 meters and a weight of 45 kg. It is a voracious predatory fish foraging mostly on other fish, crabs and cephalopods. Ling becomes sexually mature at ages 5–8. Spawning occurs from 20 to 300 m. The biggest females may lay up to 60 million eggs. The juveniles are pelagic during the first 2 years of life.

Description of major threats

The major threat is commercial fishing, i.e. demersal trawling and seining.

Assessment justification

Commercial Swedish landings showed a drastic decrease over the assessment period (data from 1975–2011), from above 30 tonnes in the beginning of the 1970s in the Kattegat to less than 1 tonne since 2008. This results in an estimated 50–99% decrease in three generations time, resulting in EN A2d status. This is not downgraded due to immigration from outside the HELCOM area since the situation is severe also in adjacent areas (Skagerrak).



Swedish landings of ling from the Kattegat according to Sweden statistics. Missing data are due to the fact that in some years landings of ling in the Skagerrak and Kattegat have been combined, preventing the use of the data.

Recommendations for actions to conserve the species

The knowledge of biology of the species should be increased and tools for investigation species on hard bottoms should be developed. Reduced fishing effort would be beneficial for this species as well.

Common names

D – Leng ; DK - Lange; GB – Ling; FIN –Molva; LT - Paprastoji molva; LV: Jūras līdaka; PL - Molwa; RUS - Mol'va; S – Långa

References

Fiskeriverket (2011). Ask, L., Westerberg, H. (eds.). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdp

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.

Muus, B.J., Nielsen, J.G. (1999). Sea fish. Scandinavian Fishing Year Book, Hedehusene, Denmark. 338 pp.

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.

English name: **Cod**	Scientific name: ***Gadus morhua***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Gadidae	Species authority: (Linnaeus, 1758)	
Subspecies, Variations, Synonyms: –	Generation length: 13,5 (10-19)	
Past and current threats (Habitats Directive article 17 codes): Fishery (FO2), Eutrophication (H02.01), Unknown (U)	Future threats (Habitats Directive article 17 codes): Eutrophication (H02.01), Unknown (U), Climate change (M01)	
IUCN Criteria: **A2b,c + A4b,c**	**HELCOM Red List Category:**	**VU** **Vulnerable**
Global / European IUCN Red List Category: VU/-	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/-, Estonia –/NE, Finland –/NA, Germany –/* Not Threatened, Latvia - / -, Lithuania –/–, Poland -/-, Russia –/–, Sweden Protected from fishing during spawning 1st of January to 31st of March in coastal areas in Kattegat. An MPA, with a central no-take zone, was established in southern Kattegat in 2010 with the goal to restore Kattegat cod / EN		

Distribution and status in the Baltic Sea region

Cod occurs in the whole HELCOM area (the Baltic Sea, including the Kattegat) but reproduction is limited to the more saline parts. The cod is managed in three management units: the Eastern stock in ICES subdivisions 25-32, the Western stock (ICES SD 22-24) and the Kattegat stock (ICES SD 21).

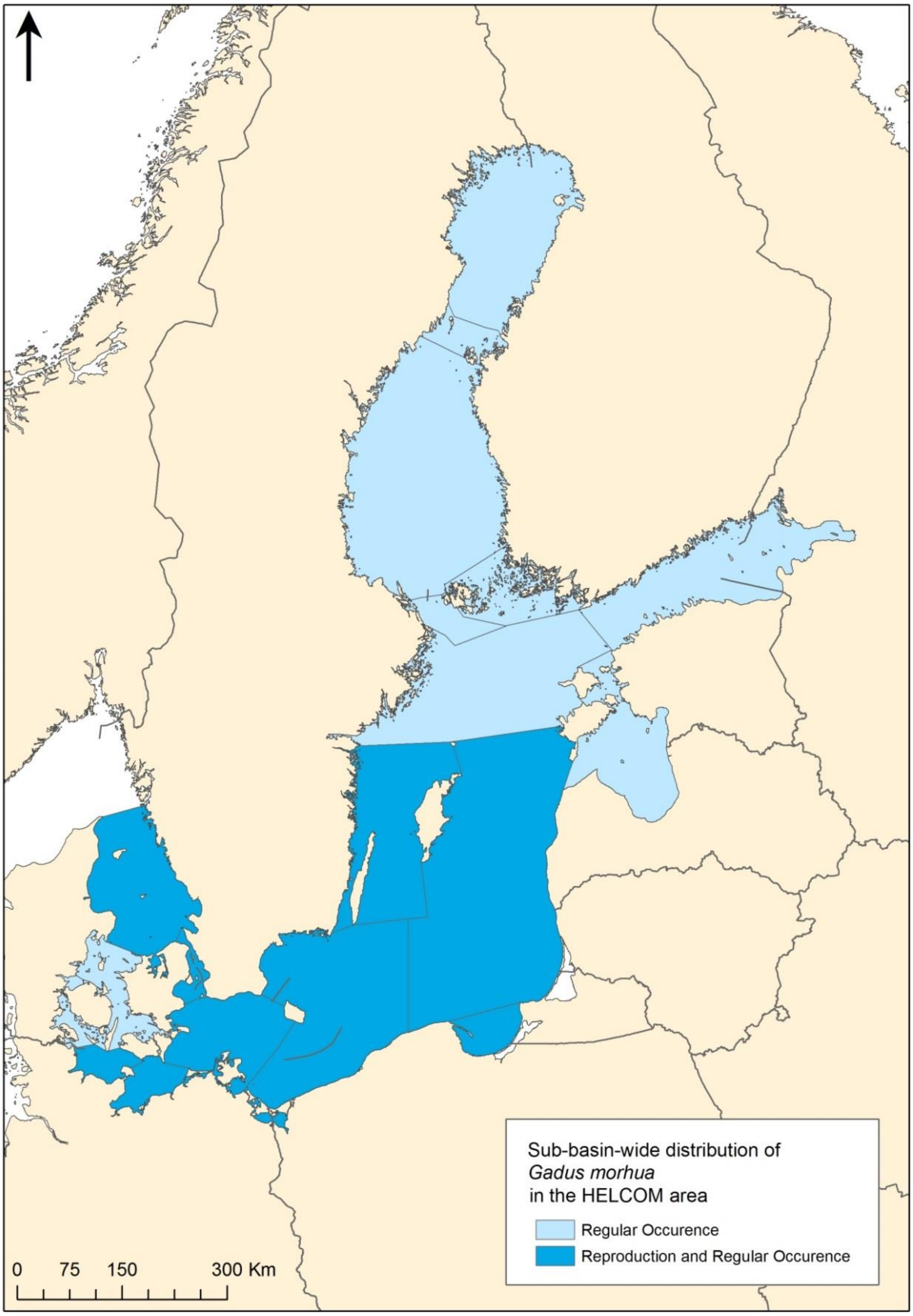
The Eastern Baltic cod makes up the majority of cod in the HELCOM area and the stock has drastically declined since the 1980s. This has been in part due to overfishing but it has also been negatively affected by degradation of spawning areas due to oxygen depletion in the deeper water in the eastern part of the Baltic Sea (ICES 2012b). Recently also a problem with extremely bad physical condition among the cod has been discovered that might jeopardize the recovery of the population (Eero et al 2012a). Fishing is now being managed in the EU management plan adopted in September 2007 (ICES 2012b). Since 2005, there has been an increase in the Eastern cod stock.

The Western Baltic cod stock has been decreasing over the last three generations but the decrease has levelled off since the cod management plan was put into action in September 2007.

The situation for the cod in the Kattegat is critical with a drastic decline in spawning stock biomass (SSB) and also a reduction in number of spawning areas. The main threat is overfishing that has continued over a long time. An EU Management plan was adopted for the Kattegat cod stock in December 2008 (ICES 2012a).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012a).



Habitat and Ecology

Cod is a demersal, marine coastal fish species occurring in the whole HELCOM area. Reproduction in this marine species is however limited to areas with salinities of >11 PSU. Within the HELCOM area it takes place in coastal areas of the western Baltic Sea and the Kattegat and in the deeper areas in Eastern Gotland Basin, Gdansk basin and Bornholm basin. Due to the special hydrographic conditions of the Baltic Sea, recruitment is impaired in most years. It is dependent on inflows of oxygenated ocean water, i.e. the recruitment success is strongly dependent on salinity and oxygen conditions in the spawning area.

Cod undertake migrations between spawning and feeding areas and have strong homing behaviour resulting in fine-scaled population structure. In the Kattegat, for example, there are resident coastal spawning cod mixing with juveniles originating from the North Sea and the Sound. The latter will however return to their native areas to spawn and will not contribute to the Kattegat stock.

Cod is a predatory fish foraging mainly on small pelagic fishes such as sprat and herring but also juvenile cod.

It spawns during spring in the western Baltic Sea, during summer in the eastern Baltic Sea, and during late winter or early spring in the Kattegat. Eggs and larvae are pelagic.

Maturity is reached at 2-6 years of age and at a size of 31-74 cm. Maximum size recorded is 2m total length and 96 kg and maximum age has been estimated to 40 years.

Photo by Martin Karlsson, Swedish University of Agricultural sciences.

Description of Major threats

Cod has been a commercial and highly appreciated fish species for centuries and fishery has been the major identified threat (ICES 2012a, b). An EU management plan was adopted in September 2007 for the Eastern and Western Baltic cod stocks and in December 2008 for the Kattegat cod. The aim of these management plans is to decrease fisheries pressure and signs of recovery can already be seen in the Eastern Baltic cod.

Another major threat, loss of spawning areas due to oxygen depletion that has been caused by climatologically induced physical changes and eutrophication, has not ceased (Casini 2011, ICES 2012, HELCOM 2013a, b, Hinrichson et al 2011, Figure 1). Instead, it is predicted to increase in the future (HELCOM 2013a, Meier et al 2012). Today oxygen depletion has led to two out of three spawning areas (the Gotland and the Gdansk basins) having ceased to significantly contribute to the reproduction of the Eastern Baltic cod due to oxygen deficiency (ICES 2012b).

The reasons for the poor physical condition of the Eastern Baltic cod stock are unknown and so far unidentified threat factor(s) contribute to the poor physical condition and may do so also in the future (Eero et al 2012a).

Since the reproduction of cod is dependent on high salinity and cod is a cold-water species the predicted changes of the Baltic Sea towards a warmer and less saline status are also a threat towards cod (Gårdmark et al 2013, HELCOM 2013).

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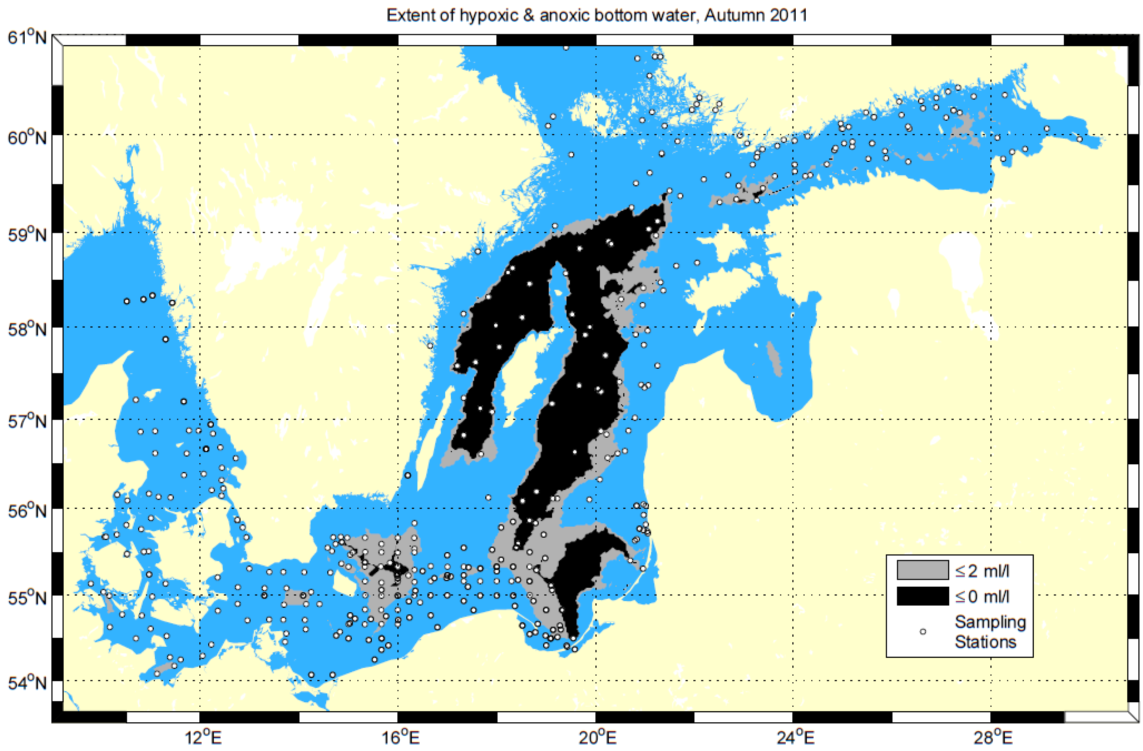


Figure 1. Extent of hypoxic and anoxic bottom water, autumn 2011. From Hansson et al (2012)

Assessment justification

Assessment period

For cod the assumption of higher relative fecundity of older individuals, warranting z=1/3 in the calculation of generation time, is certainly fulfilled. Laboratory experiments on cod have demonstrated that first-time spawners have a lower reproductive success, breeding for a shorter time and producing fewer and smaller eggs with lower fertilization and hatchings rates (Solemdal *et al.*, 1995; Trippel, 1998; Tomkiewicz *et al.*, 2003b). It has also been shown that older/larger cod in the Baltic Sea produce eggs with better quality (Vallin & Nissling 2000) and that big female cod produce larger eggs which have a higher buoyancy, which in turn result in a better survival rate (Cardinale and Arrhenius 2000, Figure 2). Furthermore, in multiple spawning fishes like cod, older individuals are likely to produce more batches, within the spawning season, over a longer period than younger ones (Parrish *et al.*, 1986; Lambert, 1990). In addition, the fertilization rate is higher when bigger males are involved in the spawning act

(Hutchings *et al*., 1999).

Figure 2. In 1987, during the cod boom years, it was possible to hit a school of fish where most of the fish were 15 years old. Photo: Eero Aro.

There are several estimations of age at maturity for cod from different sources. For Atlantic cod age at maturity seem to vary between 2-10 years (Curry- Lindahl 1985, Jonsson & Semb-Johansson 1992) or 3-15 years (Froese & Pauly 2012). According to Muus et al (1999) the migrating cod in the North-East Atlantic mature at 8-12 years while coastal cod at western Norway reach maturity at 4-6 years. Data from older literature probably presenting a more pristine situation gave values of 8-10 years (cited in Pethon 1998). In the Baltic Sea, the range of age at maturity in the 2000s seem to be the same as in the 1960s, i.e. 2-4 years although there has been a shift towards maturing at smaller size and younger ages between the late 1980s and today (Cardinale & Modin 1999, Vainikka et al 2003). From Ojaveer et al (2003) the majority of contemporary cod mature at an age of 3 years although some already at 2 and in the Gulf of Finland maturity is not reached until 4 or 5 years old. Combining these sources gave an estimated average age of maturity for cod in the HELCOM area of 4 years.

In the same way there are different estimates of maximum lifespan of Atlantic cod ranging from 25 years given in Fishbase (Froese & Pauly 2012) to 40 years in several other sources (Curry- Lindahl 1985, Jonsson & Semb-Johansson 1992, Pethon 1998). In the Baltic Sea cod has been shown to be at least 22 years old[1]. Given the same weight for the two different published figures resulted in an estimated maximum life span for cod in the HELCOM area of 32.5. This resulted in a reproductive period of 32.5-4=28.5 years and a generation time of 4 + (28.5/3)=13.5 years, - and hence an assessment period of 3*13.5 = 40.5 years. Initially, the assessment period was therefore decided to be 1971-2011. In this recent update, figures from 2012 have been added due to a request by HELCOM Contracting Parties but the start of the reference period was left the same, i.e. the assessment period used here was 1971-

[1] Investigations of the Institute of Food Safety, Animal Health and Environment "BIOR" Fishery Department, Latvia between 1949 and 2012.

2012. Using the lower estimates of average age of maturity (3 years) and maximum life span (25 years) would result in a generation time of 10.33 and an assessment period of 31 years while using the higher estimates for age at maturity (9 years) and longevity (40 years) would result in a generation time of 19.33 and an assessment period of 58 years.

This uncertainty increases the possibility for the assessment period to start anywhere between 1954 and 1981 but with a higher probability for 1971 according to the rationale presented above. In appliance with the IUCN Guidelines 2011 section 3.2.5 this uncertainty has been included in the documentation of the assessment.

Assessment units

It was decided that assessments will be done for all fish and lamprey species at species level. As a result of the request by HELCOM HABITAT 14/2012, assessments have been made both for the species as a whole and divided in the three assessment units defined by ICES, i.e. Kattegat cod (ICES Subdivision 21), Western Baltic cod (ICES Subdivisions 22-24) and Eastern Baltic cod (ICES Subdivisions 25-32).

In a note from ICES to HELCOM dated 12 September 2013, ICES explains the differences to assessment units between the IUCN and ICES approaches are the following: "*ICES investigates the dynamics of stocks of fish. A stock is a tool for assessment and management. Defining a stock involves both ecological and social aspects (see Reiss et al., 2009). A fish stock does not "exist" unless it is exploited e.g. we have sandeel stocks in the North Sea but not in the Irish Sea, however there are certainly sandeel populations in both seas. So there exists a fundamentally different approach between assessed populations and assessed stocks. IUCN assesses species and also permits regional and national assessments of threats to species (IUCN, 2012). When using fish stock assessment information the differing units of observation, and units for implementation of action, must be reconciled.*"

Data used

As an index for reduction in population size (criterion A1b-A4b) the data for spawning stock biomass (SSB) were taken from the most recent publication of ICES Advice (ICES 2012a,b) as well as the draft report from 2013 (ICES in press).

Another index of reduction in population size is the decline of extent or quality of habitat (A1-4c). For this we have used information on available spawning areas from different publications, and the references are given in the text. The latter is also used in combination with SSB for evaluation of criteria B, C and D.

For both the SSB and reduction of habitat we used five year averages at the beginning of the assessment period (i.e. 1971-1975, 1954-1958 or 1981-1985) in combination with an average of the last five years of available data.

Criterion used

According to the IUCN guidelines all taxa should be tested against all criteria where there is information available. In this assessment, Criterion A – D was used. Due to limited resources, the HELCOM RED LIST team was not able to carry out the Criterion E assessment.

Criterion E is a quantitative analysis of the probability of extinction over the next three generations or 10 years whichever is the longer time. There are some long term predictions available for the future development of the Baltic cod (Meier et al 2012, MacKenzie et al 2011, Gårdmark et al 2013). They show that depending on climate, salinity, seals, eutrophication and fishery, the scenarios are very different - from a positive development to a continued decline. From a multimodel simulation of future development of the Baltic Sea Meier et al (2012) draw the conclusion: “Although cod biomass is mainly controlled by fishing mortality, climate change together with eutrophication may result in a biomass decline during the latter part of this century, even when combined with lower fishing pressure”.

Based on the ICES note to HELCOM dated 12 September 2013, ICES informs that current ICES advice on the three cod stock in the Baltic includes short-time projections of population development through to 2015. “*For cod in Western Baltic Sea (ICES Subdivisions 22–24), if the management plan is adhered to, the SSB will increase by 17% by 2015 and remain above B_{lim} and the precautionary buffer. It is estimated that only a sizable increase in TAC2 (>25%) will reduce the projected SSB in 2015. For cod in Eastern Baltic Sea (ICES Subdivisions 25–32), if the management plan is adhered to, the SSB will increase by 15% by 2015 and remain well above B_{lim} and the precautionary buffer. Again, it is estimated that only a sizable increase in TAC (>50%) will reduce the projected SSB in 2015.. For cod in Division IIIa East (Kattegat), ICES advises that no directed fishery takes place and bycatch and discards should be minimised. The stock has been below B_{lim} since 2000. The lack of any estimates of fishing mortality prevents ICES from making any projections about future stock dynamics of cod in the Kattegat.*”

Choice of criteria A2 instead of A1

Although one of the major threats, fishery, is managed according to EU management plan adopted in September 2007 for the Western and Eastern Baltic cod and in December 2008 for the Kattegat cod, the other major threat identified for cod, i.e. loss of spawning areas due to oxygen depletion, has not ceased (Casini 2011, ICES 2012, HELCOM, 2013b, Hinrichson et al 2011). In fact, oxygen depletion is predicted to continue and get worse in the future (HELCOM 2013a and Meier et al 2012). Hence, Criterion A2 is appropriate for cod. In addition, the factors causing the poor physical condition of the cod in Eastern Baltic stock are still unknown and may well be considered a future threat to the population as well (Eero et al 2012a). SSB is also not the sole predictor for future stock size. For instance, recruitment of Eastern Baltic cod has been shown to be significantly related also to the winter North Atlantic Oscillation index, and the reproductive volume in the Gotland Basin in May (Margonski et al 2011). Hence, the recovery of the Eastern Baltic cod cannot be attributed solely to good fisheries management since also favourable biological conditions are needed (Cardinale & Svedäng 2011 and Eero et al 2012b). In summary, it may be concluded that recovery cannot be guaranteed even when fishery has ceased. The Canadian Atlantic cod has not yet recovered since it collapsed in the early 1990s despite a complete cod fishing ban in offshore waters since 1992 (Hutchings & Rangely, 2011).

The IUCN guidelines for managed stocks state that commercially harvested species should not be downgraded into a lower category due to the existence of management schemes. Successful management in itself will in time guarantee a better status for the species. "*Such listing should not be problematic in the medium to long term because, if the fishery is managed effectively, although it currently exhibits symptoms consistent with endangerment, the population will eventually stabilize at a target level and the decline will end, such that the taxon no longer qualifies for listing. If the declines would continue there would be reasons for concern and the listing would still apply.*" IUCN Guidelines 2011 section 5.5.

Differences between IUCN and ICES assessment approaches for commercial species

The HELCOM RED LIST team, IUCN and ICES worked together during the red listing process to clarify some differing views from conservation and fisheries-linked communities towards assessment of commercial fish species. Upon a request by HELCOM HOD 42/2013, ICES provided a note to HELCOM (dated 12 September 2013) to further explain differences in the approaches. This note states that:

“*ICES and IUCN use different language. Further consideration about the differences between the approaches employed by IUCN and ICES explain that a divergence of approaches has been highlighted by*

Rice and Legace (2007) when they showed that across 89 exploited fish species, the IUCN decline criterion suggested a serious risk-of-extinction in 87% of cases; whereas most of the stocks were within a zone that according to criteria in relevant international commitments allowed exploitation to continue. Rice and Legace (2007) suggested that the disparities were rooted in different approaches to tolerance to risk between fisheries advice and IUCN listing criteria.

Wherever possible ICES sets a minimum biomass limit for a stock (called Blim). When a stock falls below this level, the ICES advice for immediate management action becomes extremely vocal. Blim is defined in a pragmatic manner but generally either reflects the biomass at which scientists think recruitment will begin to be impaired (reduced as a result of the low biomass of adults) or the lowest observed biomass in the time series (this is used when data or knowledge is lacking). Usually a precautionary buffer is added to this Blim threshold to account for uncertainty or noise in the stock assessments. As shown by Rice and Legace (2007) the numbers of individual fish that make up a Blim sized stock are larger by at least a factor of 100 than the trigger for conservation action using the IUCN Absolute Numbers criterion. So in terms of number, the Blim approach of ICES is more precautionary than the IUCN criteria. Especially as Blim is derived for stocks and not for species or amalgamated regional populations of species.

Regarding the approach to precaution and the underlying knowledge base, ICES advice is provided using all available knowledge and scientific understanding at the time. The analysis method to assess the dynamics of the stock does not have precautionarity built in. The precautionary approach is built into the framework for advice accounting for the risks and uncertainties. ICES advice requires the use of the most scientifically robust assessment method."

Overall assessment of cod in the HELCOM area

Decline in spawning stock biomass

For the assessment period between 1971 and 2012, the cod stock in the HELCOM area, covering the whole Baltic Sea and the Kattegat, has decreased by 46% (based on a comparison between the mean value of 1971-1975 and 2008-2012, Figure 3), which merits a VU assessment (more than 30% decrease) under the A2b criterion (decrease in population size indicated by an index).

Using a longer generation time, data is only available for the Eastern Baltic cod stock giving an estimated loss of 41%,.Using a shorter generation time estimate or applying the A4 criteria, using the years after the cod boom (1986-1990) as reference point, and assuming a status quo for the future stock size, results in a decrease of 48%. Both estimates are well above the threshold for VU status. Applying A3 will not lead to any threat categorisation as the decline in the stock gives the impression of having levelled off.

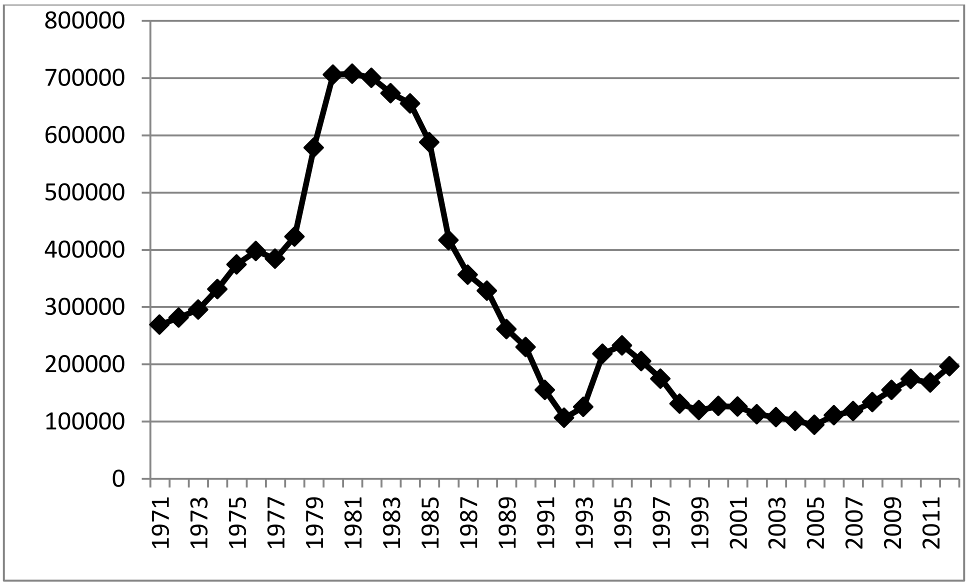


Figure 3. Cod in the Helcom area, total SSB (tonnes) in 1971-2012 for all three stocks assessed.

Decline in habitat quality

Two out of three spawning areas (the Gotland and the Gdansk basins) have ceased to significantly contribute to the reproduction of the Eastern Baltic cod due to oxygen deficiency (ICES 2012b, Figure 4). In addition, important areas which previously served as spawning grounds have been lost in the Kattegat. This implies a considerable reduction in resilience of the whole cod stock in the Helcom area and fulfils the criteria A2c, decrease in habitat quality.

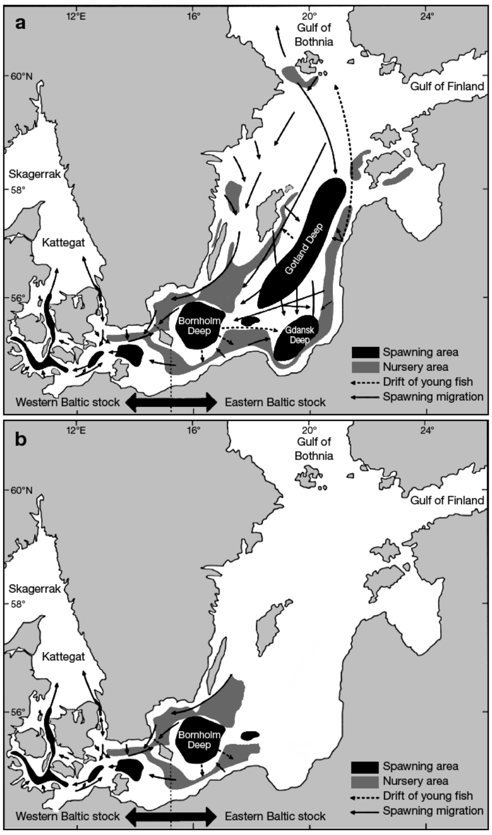


Figure 4. Changes in the historical main spawning areas of cod *Gadus morhua* in the western Baltic, eastern Baltic and Danish Belt Sea (redrawn from Bagge et al. 1994). (a) Cod spawning in the Gotland Deep and Gdansk Deep as it was depicted in the 1980s; (b) cod reproduction still occurs in the Bornholm Deep, but it is nowadays negligible in the Gotland and Gdansk Deeps (from Cadinale & Svedäng 2011).

Using the decrease of spawning areas in the whole HELCOM area based on the HELCOM sub-division into sub-basins (Figure 5), assuming a total loss of spawning area in the Gdansk Basin and the Eastern Gotland Basin, results in a reduction in spawning area of 49% This is probably an overestimation since cod do not use all areas for reproduction.

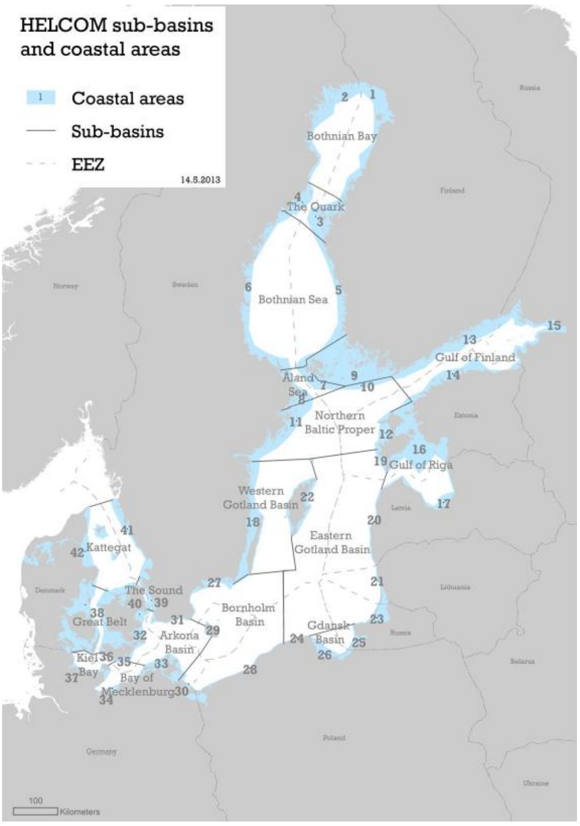


Figure 5. Map of the Baltic Sea presenting the HELCOM sub-division into 17 off-shore sub-basins (white) and 42 coastal areas (blue) as presented in the [HELCOM Monitoring and Assessment Strategy (2013)](). EEZs of the countries are shown with a grey dashed line.

Table 1. HELCOM off-shore sub-basins with potential cod reproduction

HELCOM sub-basins	Area
Eastern Gotland Basin Offshore waters	70749
Gulf of Gdansk Basin Offshore waters	3650
Bornholm Basin Offshore waters	38836
Arkona Basin Offshore waters	13458
Bay of Mecklenburg Offshore waters	3477
Kiel Bight Bay Offshore waters	2716
Great Belt Offshore waters	1944
The Sound Offshore waters	254
Kattegat Offshore waters	15672
Total area:	150756
Total area minus Eastern Gotland Basin and Gdansk Basin:	76357
Decrease in total area:	49%
Area for Eastern Baltic cod (Eastern Gotland Basin + Gdansk Basin+ Bornholm Basin)	113235
Area for Eastern Baltic cod minus Eastern Gotland and Gdansk Basins	38836
Decrease in area for Eastern Baltic cod:	68%

A more conservative estimate of loss of spawning area for the Eastern Baltic cod which is based on loss in reproductive volume (Figure 6) gives a value of 38% for the reduction. As there are additional losses of spawning areas in the Kattegat, the total loss in is between the threshold levels for Vulnerable (30% decrease) and Endangered (50% decrease) resulting in the status VU A2c. Application of A3, projection into the future, will lead to LC status while A4, just as A2, ranges between EN and VU.

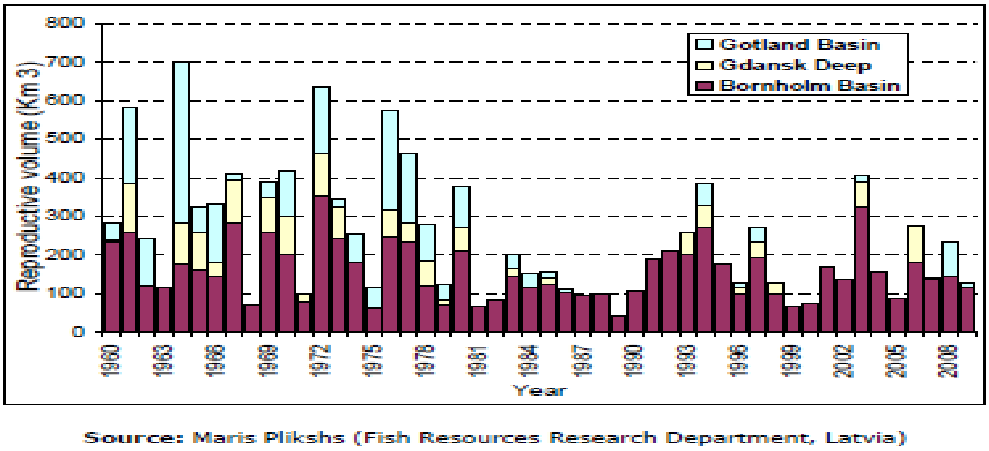


Figure 6: Reproductive volume of the Baltic cod in the main spawning areas. From Casini, 2011.

Criteria B, C and-D

In criterion B, both the extent of occurrence (EOO) and area of occupancy (AOO) of cod are above the threshold for being Near Threatened (<40 000km^2 and < 4000km^2). For criterion C, the number of mature individuals is above 20 000 and the AOO above 40 km^2. Hence cod does not fulfil the criterion C or D.

Regional assessment adjustment

In a regional assessment, the threat category should be downgraded if conspecific populations outside the region are judged to affect the regional extinction risk. For example, immigration from outside the region will tend to decrease extinction risk within the region (IUCN 2011). For cod this is not the case since there is clear evidence for cod in the HELCOM area being separated from North East Atlantic and Skagerrak cod (Nielsen et al 2002, Svedäng et al 2007, 2010b, Neuenfeldt et al 2013). This is also reflected in the separate management units for cod used by ICES (2012a,b).

Conclusion

It is possible that the current positive trend in the Eastern Baltic cod stock will continue as also projected by ICES up to 2015, despite the severe loss of spawning habitat, and in the next evaluation of the RED LIST cod will not fulfill the criteria for being threatened. However, at the moment, following the IUCN guidelines and looking back over the last three generations, cod in the HELCOM area fulfills the VU criteria both for the loss of spawning area and loss of SSB. A summary of the assessment, including separate assessment for the different management units is given in table 2.

Table 2. Summary of the assessment of cod in the HELCOM area.

Assessment unit	Category	Criteria
Cod in total Helcom area	VU	A2b,c + A4b,c,
Cod in Kattegat	CR	A2b,c
Cod in Western Baltic	NT	A2b+A4b
Cod in Eastern Baltic	VU	A2b,c +A4b,c

Separate assessment by stocks

Kattegat cod

Spawning stock biomass

Spawning stock biomass (SSB) of cod in the Kattegat has been at its historically lowest level and below biomass reference points since 2000, with the lowest values of SSB estimated for 2010 (ICES 2012a). Since 1971, SSB has decreased more than 90% and since 1981 the decrease is 84% (Figure 7). No historic estimates of SSB are available for comparison of decrease using the longer estimated generation time, however using the catch per unit effort in the Danish fishery in Kattegat 1953-1992 (Nielsen & Richardson 1996) indicate that the stock in the late 1950s where of the same size as in late 1980s – if this is true the estimated decrease in SSB over the longer time frame is 74%. The Kattegat stock is already considered depleted (ICES 2012a) and a projection into the future using A3 would probably not lead to a future decrease of the same amount as has already happened in the past. For the same reason any combination of past and future time using A4 would result in a worst case scenario of more than 90% decrease and a best case of no decrease, or even an increase and hence using criteria A3 or A4 does not give any additional information compared to using A2.

The estimated decrease in the past for Kattegat stock leads to a range in threat category between Endangered and Critically Endangered depending on generation time used. Using the most probable estimate for generation time it fulfils the criteria A2b for the level of Critically Endangered. This is also in line with the precautionary principle. Criterion A1 is not applicable since there is no recovery in the Kattegat stock despite a management plan (ICES 2012a).

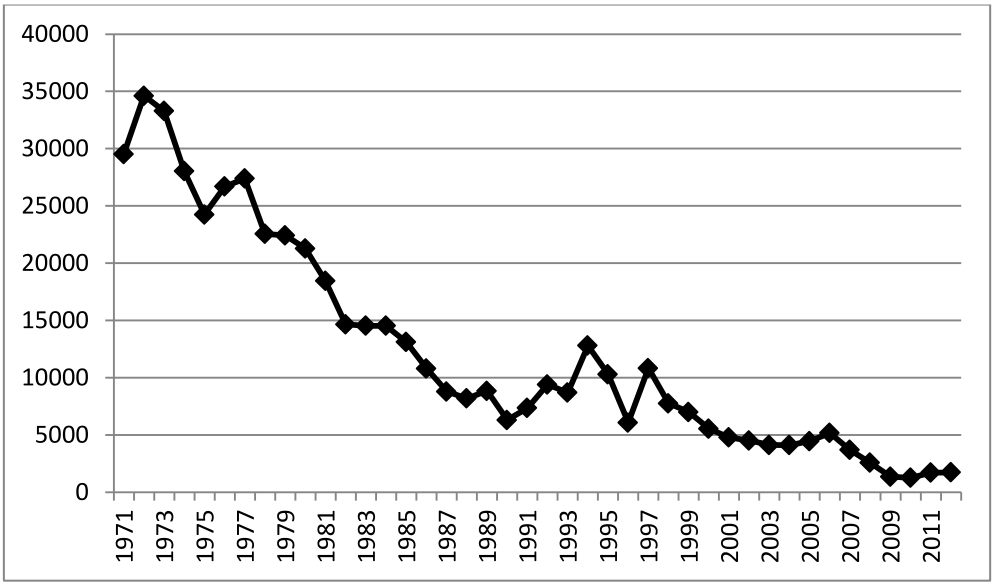


Figure 7. Kattegat Stock, SSB (tones) 1971-2012.

Spawning areas

Cod spawning aggregations have been observed in the central and southern part of the Kattegat (Hagström et al. 1990, Bagge et al. 1994, Svedäng & Bardon 2003, Vitale et al. 2008, Svedäng et al. 2010a, b). There are clear indications that several subpopulation units and spawning areas have been lost over the last 40 years, as spawning for instance has ceased in the Skälderviken and Laholmsbukten (Svedäng et al. 2010a). This means that the loss of numbers of spawning areas in Kattegat probably is between 70 and 85% (only 1 or 2 spawning areas left out of at least 6 previously known) meaning that the population probably has decreased with the same amount due to decline in area of occupancy. Even though there is no perceived threats to the spawning areas the strong natal homing behaviour (Svedäng et al 2010 a, b) might prevent it from being re-colonised even if the stock would increase. This fulfils the criteria A2c for the level of Critically Endangered. Since the loss has already happened and there are no indications of future loss of spawning areas using A3 projecting into the future will not result in any different assessment, for the same reason using any combination of past and future time using A4 will result in estimations ranging from CR to LC. Criterion A1 is not applicable since there is no recovery in the Kattegat stock despite a management plan (ICES 2012a)

Criteria B, C and D

In criterion B both extent of occurrence (Kattegat, table 2) and area of occupancy (spawning areas, Vitale et al 2008) of cod is below the threshold for being Vulnerable (<20 000 km^2 and < 2000 km^2 respectively) and fulfilling the sub-criteria of being severely fragmented (2-6 locations) and declining, and hence fulfils the criteria B1a, c and B2a, c for the level of Vulnerable.

The Kattegat cod does not fulfil the criteria C , small and continuously declining population, since the number of mature individuals is above 20 000 the threshold for being Near Threatened (in HELCOM RED LIST 2/ 2010). The Kattegat cod neither fulfils the criterion D, very small and restricted population, since the number of mature individuals is estimated above 2000 individuals, and area of occupancy is above 40km^2 which is the thresholds for Near Threatened in the regional guidelines (HELCOM RED LIST 2/ 2010).

Regional consideration

Cod is generally known to display natal homing and evidence of a fine scaled population structure exist (Nielsen et al 2002, Svedäng et al 2003, 2007, 2010a, b and Neuenfeldt et al 2013). Cod from outside Kattegat are highly unlikely to contribute to the spawning population since the migration from Skagerrak and North sea cod have been shown to be only feeding migration (Svedäng et al 2007, 2010a, b) Furthermore the adjacent Western Baltic Sea stock have been decreasing the last three generations hence there is little probability of a spill-over effect from areas outside the Kattegat and the suggested threat level is not downgraded

Western Baltic cod

Spawning stock biomass

According to ICES (2012b) the SSB in the Western Baltic cod stock has been fluctuating just above the precautionary level since 2000 with an increase in recent years. Looking at the assessment period 1971-2012, SSB decreased with 20 % over the last 40 years (Appendix 1, Figure 8). Unfortunately, no older data are available, making a comparison with the longer assessment period impossible. Usage of the shorter generation time results in a decrease of 27 % which is almost equivalent to the estimated decrease of 29% using criteria A4. The latter assuming a future with no decrease in biomass since although the decrease has stopped there is no indication of a full recovery (ICES 2012b). This also prevents the use of A1 since there is no evidence of recovery despite the management plan, which also calls into question if the reasons of the decline are fully understood and solved. The decrease in SSB leads to estimates of decline within the range of NT for A2b and A4b.

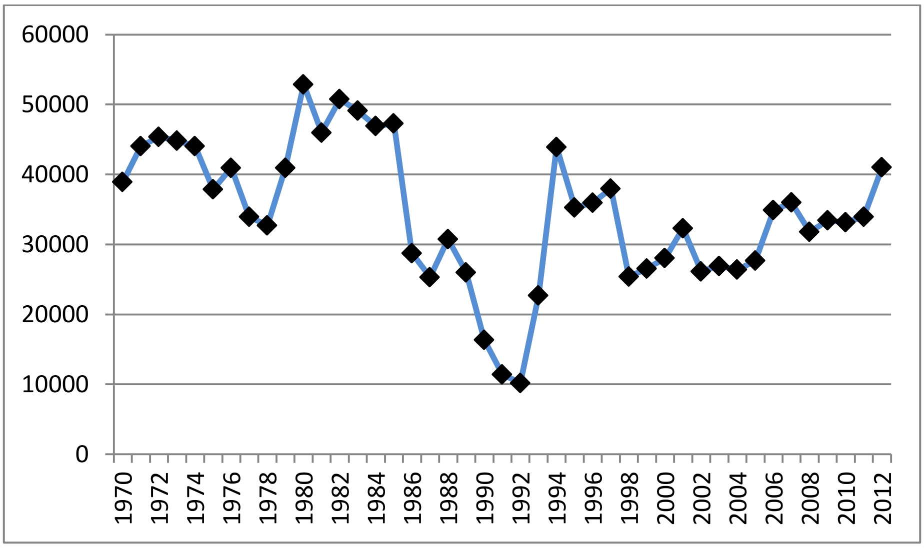


Figure 8. Western Baltic Stock, SSB (tones) 1971-2012.

Spawning areas

Spawning takes place in the Sound, in the Belt Sea and at various locations in the Arkona basin (Figure 4. Bagge et al. 1994). There is no information that any spawning areas have been lost during the extended assessment period, i.e. over the last 60 years, and there is no indication of future losses of spawning areas. Hence, the Western Baltic cod, based on A2c, A3c and A4c, is considered Least Concern. For reasons given above, the criterion A1 was not deemed appropriate.

Criterion B, C and D

In criterion B, both the extent of occurrence and area of occupancy of Western Baltic cod (Figure 4) are above the threshold for being threatened (>20 000 km^2 and > 2000 km^2, respectively) according to IUCN (2011), but below the threshold for being considered Near Threatened (<40 000km^2 and < 4000km^2, according to IUCN guidelines). However, the stock does not fulfil the required sub-criteria of being severely fragmented and declining, and hence the criterion B gives Least Concern.

The Western Baltic cod does not fulfil the criteria C or D since the number of mature individuals is above 20 000, and area of occupancy is above 40km^2, which are the thresholds for Near Threatened.

Regional consideration

Cod is generally known to display natal homing and evidence of a fine scaled population structure exist (Vallin & Nissling 2000, Nielsen et al 2002, Svedäng et al 2007, 2010a, b and Neuenfeldt et al 2013). Furthermore, both adjacent cod stocks i.e. the eastern Baltic Sea and the Kattegat have been decreasing the last three generations and hence there is little probability of a rescue effect from outside and the suggested threat level is not down-graded.

Eastern Baltic cod

Spawning stock biomass

For the assessment period between 1971 and 2012, the stock has decreased by 45 % (Figure 9). Use of the longer generation time of 58 years, and comparison of the values in the 1954-1958 with the current situation (average of years 2008-2012), results in a decrease of 41 %. The use of the shorter generation time of 31 years, using 1981-1985 as a reference period, results in a loss of 78%. However, the cod stock was exceptionally large in the early 80s and the cod-boom years 1979-1985 could be questioned as reference point since the decrease following these could be seen as part of a natural fluctuation. Choosing the years after the cod boom as a starting point, results in a decrease of 46%. As a conclusion, this means that the range of estimates for a decrease for criterion A2b all lie within the category Vulnerable.

There are indications of a major recovery over the last years with ICES projecting an increase of SSB by 15% by 2015, so a projection into the future using A3 based on SSB would result in LC status.

Using A4 and choosing the years after the cod boom 1986-1990 as a starting point and predicting that the current stock size remains the same (the positive trend has levelled off, Figure 9) results in an expected decrease of 46%, fulfilling the category Vulnerable.

A1 is not used since although the impacts of fishery on the population are being managed the other main threat, reduction of habitat extent and quality, has not ceased (HELCOM 2013a) but is rather projected to increase (HELCOM 2013a, Meier et al 2012). In addition, in connection with the recovery of the Eastern Baltic Sea cod there has been a considerable decrease in mean weight in the stock, i.e. reduced growth and decreased condition (ICES 2012b, Eero et al 2012a).

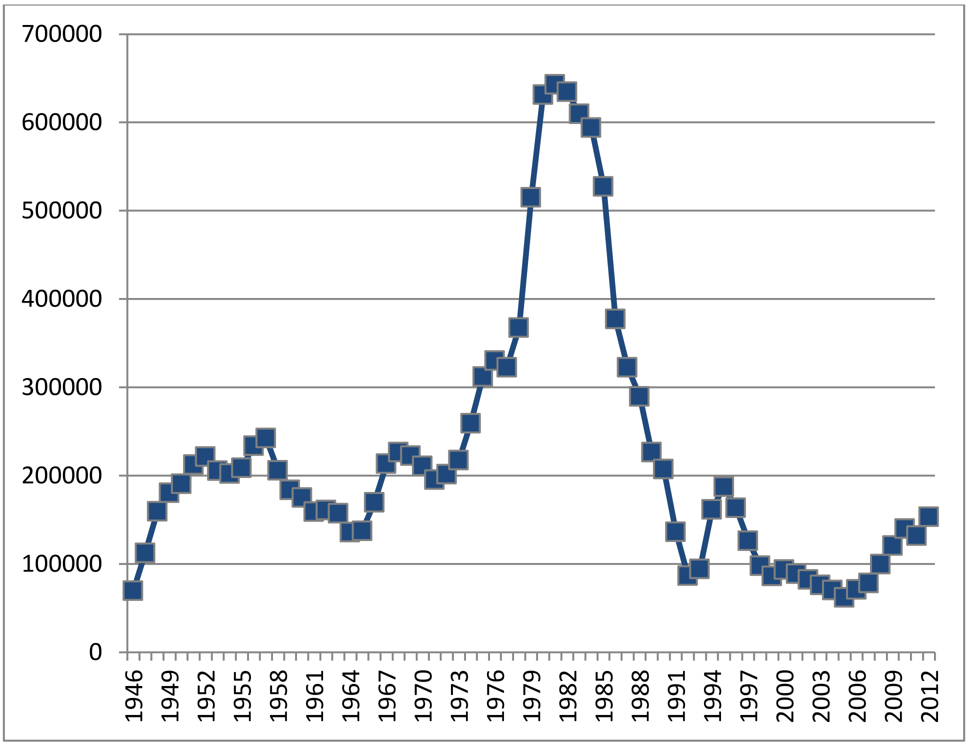


Figure 9. Eastern Baltic Stock, SSB (tones) 1967-2012.

Spawning areas

Eastern Baltic cod spawns according to Bagge et al. (1994) in the Bornholm basin, Gdansk deep and Gotland deep. Eero et al. (2007) evaluated the contribution from the three spawning areas over the last century and observed that the Gdansk and Gotland deeps ceased functioning as main contributors in the 1980s (i.e. before and up to the cod boom years in the mid-1980s, Figures 1 and 4).

Strong environmental changes, including increased hypoxia, occurred in the Baltic deeper waters in the 1980s, negatively impacting the cod spawning areas (Casini, 2011, Figure 3). Reproductive volume (rv) for Eastern Baltic cod decreased by 38% over the last 40 years (based on comparison of mean value of reproductive volume 1971-1975 i.e. 285 km^3 - and 2005-2009 i.e. 175 km^3, Figure 6). Using the longer estimate for generation time results in a decrease of 53% (based on comparison with oldest available data 1960-1964 i.e. 380 km^3). Using the shorter generation time would result in no loss of reproductive value comparing the bottom years 1981-1984 (rv=150 km3) with most recent values. Using the criteria A4 for combining any time of past and future time and assuming that future situation is not improving results in a decrease of 51 % (using the years 1976-1980 as reference period). The uncertainty of the future is too great to allow a projection of three generations using A3.

It could be argued that the use of rv will lead to an overestimation of the population decrease since rv is not related to the number of recruits when the volume is smaller than 300 km^3. An alternative estimation of reduction in population size due to spawning habitat loss is to use the so called Area of Occupancy (AOO). Using the area of the offshore waters, according to “HELCOM sub-division” (Figure 5), and assuming a total loss of the Gotland basin and Gulf of Gdansk as spawning areas the reduction in AOO is 66%. Since this loss took place in the 1980s, the estimated decrease is the same regardless generation time used. Since there are no signs of improvement of the oxygen situation in the cod spawning areas (HELCOM 2013a, Hansson et al 2013) and there is also no foreseen continued loss of AOO (but see HELCOM 2013a), projecting into the future using A3 or A4 will not change the assessment. This calculation of loss in AOO is probably also an overestimation of loss, since cod does not utilise the whole basins for spawning and hence the more conservative value of more than 30% loss but less than 50% loss is used. This fulfils the criteria A2c, A4c for VU status.

A1 is not used since this threat, loss of spawning habitat due to oxygen deficiency caused by eutrophication, has not ceased (HELCOM 2013a) and it is unclear if recovery is possible since although the population size have increased the former spawning grounds in the Gotland deep and the Gulf of Gdansk have not been re-colonized (Casini 2011, Eero et al 2012a).

Criteria B, C and D

In criterion B both extent of occurrence and area of occupancy of Eastern Baltic cod are above the threshold for being Near Threatened (>40 000km^2 and <>4000km^2). The Eastern Baltic cod does not fulfil the criteria C or D, since the number of mature individuals is above 20 000 and area of occupancy is above 40km^2 .

Regional consideration

Cod is generally known to display natal homing and evidence of a fine scaled population structure exist (Vallin & Nissling 2000, Nielsen et al 2002, Svedäng et al 2007, 2010a, b and Neuenfeldt et al 2013). Furthermore the adjacent cod stock, i.e. the Western Baltic cod stock, has been decreasing the last three generations, hence there is little probability of a rescue effect from outside the eastern Baltic and the suggested threat level is not downgraded. Moreover, the genetic separation between Eastern and Western Baltic cod and the adaptations shown by the Eastern stock to low salinity conditions in the Baltic proper emphasize the rather unique character of the Eastern Baltic cod and the low likelihood that the stock is replenished from the western components.

Recommendations for actions to conserve the species

The EU management plan for cod should be followed. The species also needs eutrophication of the Baltic Sea proper to be reduced and through that, ultimately, an improvement oxygen conditions of the deep waters, as the species needs well-oxygenated deep water spawning habitats. The reasons of a reduced individual growth rate should be investigated. For cod in the Kattegat, fishing mortality must be kept at a very low level in order to give the stock a chance to recover.

Common names

D Kabeljau; GB – Cod; EST - Tursk; DK - Torsk; FIN - Turska; LV - Menca; LT - Menkė; PL -; RUS - Atlanticheskaya (baltiyskaya) treska; S - Torsk

References

Sobel, J. 1996. *Gadus morhua*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>. Downloaded on **19 June 2013**.

Bagge, O., Thurow, F., Steffensen, E. & Bay, J., 1994. The Baltic cod. Dana 10: 1-27

Cardinale, M., Arrhenius, F., 2000. The influence of stock structure and environmental conditions on the recruitment process of Baltic cod estimated using generalized additive model. Can. J. Fish. Aquat. Sci. 57, 2402–2409.

Cardinale, M. & Modin, J. 1999. Changes in size- at-maturity of Baltic cod (Gadus morhua) during a period of large variations in stock size and environmental conditions. Fisheries research 41: 285-295.

Cardinale, M. & Svedäng, H. 2011. The beauty of simplicity of science: Baltic cod stock improves rapidly in a 'cod hostile' ecosystem state. Marine Ecology progress Series 425:297-301.

Casini, M. 2011. Ecosystem shifts in the Baltic Sea. In "*Regime shifts in marine ecosystems*". Policy

Department B: structural and cohesion policies, European Parliament, IP/B/PECH/IC/2011-102.
Curry-Lindahl, K. 1985. Våra fiskar. Havs och sötvattensfiskar i Norden och övriga Europa. P.A. Norstedt & Söners förlag, Stockholm.
Jonsson, B. & Semb-Johansson, A. (red) 1992. Norges Dyr. Fiskene 2. Saltvannfisker. J.W. Cappelens Forlag.
Eero, M., Köster, F.W., Plikshs, M. & Thurow, F. 2007. Eastern Baltic cod (*Gadus morhua callarias*) stock dynamics: extending the analytical assessment back to the mid-1940s. ICES Journal of Marine Science 64, 1257-1271
Eero M, Köster FW, MacKenzie BR (2008) Reconstructing historical stock development of Atlantic cod (Gadus morhua) in the eastern Baltic Sea before the beginning of intensive exploitation. Can J Fish Aquat Sci 65:2728–2741
Eero, M., Vinther, M. Haslob, H., Huwer, B., Casini, M., Storr-Paulsen, M. Köster, F.W. 2012 a Spatial management of marine resources can enhance the recovery of predators and avoid local depletiuon of forage fish. Conservation letters doi: 10.1111/j.1755-263X.2012.00266.x
Eero, M. Köster, F.W. and Vinther, M. 2012 b. Why is the Eastern Baltic cod recovering? Marine Policy 36:235-240.
Froese, R. & Pauly, D. Editors. 2012. FishBase. World Wide Web electronic publication. www.fishbase.org, version (10/2012).
Gårdmark Anna, Martin Lindegren, Stefan Neuenfeldt, Thorsten Blenckner, Outi Heikinheimo, Bärbel Müller-Karulis, Susa Niiranen, Maciej T. Tomczak, Eero Aro, Anders Wikström, and Christian Möllmann 2013. Biological ensemble modeling to evaluate potential futures of living marine resources. Ecological Applications 23:742–754. http://dx.doi.org/10.1890/12-0267.1
Hagström, O., Larsson, P.O. & Ulmestrand, M. 1990. Swedish cod data from the international young fish surveys 1981-1990. International Council for the Exploration of the Sea, ICES CM 1990/G: 65
Hansson, M. Andersson, L.,Axe, P. and Szaron, J. 2013 Areal Extent and Volume of Anoxia and Hypoxia in the Baltic Sea, 1960-2012. REPORT OCEANOGRAPHY No. 46, 2013.
HELCOM RED LIST 2 2010. Minutes of the second meeting of the steering group of the project for completeing the Helcom Red List of species and habitat/biotopes (HELCOM RED LIST). Helsinki, Finland, 9 June 2010. Agenda item 4.
HELCOM RED LIST FISHES 2011. MINUTES OF THE SECOND MEETING OF RED LIST FISH AND LAMPREY SPECIES EXPERTS (HELCOM RED LIST FISHES), Agenda item 4.1
HELCOM, 2013a Approaches and methods for eutrophication target setting in the Baltic Sea region. Balt. Sea Environ. Proc. No. 133
HELCOM 2013b. Concise thematic assessment of eutrophication status in the Baltic Sea 2007-2011. Will be accessible via www.helcom.fi draft document available at http://meeting.helcom.fi/c/document_library/get_file?p_l_id=18975&folderId=2351178&name=DLFE-54624.pdf
HELCOM 2013c. Climate change in the Baltic Sea Area: HELCOM thematic assessment in 2013. Balt. Sea Environ. Proc. No. 137.
Hinrichsson, H.-H., Huwer, B., Makarchouk, A., Petereit, C., Schaber, M. & Voss, R. 2011. Climate-driven long-term trends in Baltic Sea oxygen concentrations and the potential consequences for eastern Baltic cod (Gadus morhua) ICES Journal of Marine Science (2011), 68(10), 2019–2028. doi:10.1093/icesjms/fsr145
Hutchings, J.A., Bishop, T.D. and McGregor-Shaw C.R., 1999. Spawning behaviour of Atlantic cod, Gadus morhua: evidence of mate competition and mate choice in a broadcast spawner. Canadian Journal of Fisheries and Aquatic Science, 56: 97-104
ICES 2011b. Report of the Baltic Fisheries Assessment Working Group (WGBFAS), 12-19 April 2011, ICES Headquarters, Copenhagen. ICES CM 2011/ACOM:10.
ICES 2012a. ICES Advice 2012. Book 6.
ICES 2012b. ICES Advice 2012. Book 8.
ICES in press. Draft Report of the Baltic Fisheries Assessment Working Group (WGBFAS), 10-17 April 2013, ICES Headquarters, Copenhagen.

IUCN 2001. IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, U.K. ii + 30pp.

IUCN 2003. Guidelines for Application of IUCN Criteria at Regional Levels. Version 3.0. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK. ii+26 pp.

IUCN Standards and Petitions Subcommittee. 2011. Guidelines for Using the IUCN Red List Categories and Criteria. Version 9.0. Prepared by the Standards and Petitions Subcommittee. Downloadable from http://www.iucnredlist.org/documents/RedListGuidelines.pdf.

Hutchings, J. A. & Rangely, R. 2011. Correlates of recovery for Canaduian Atlantic cod (Gadus morhua). Canadian Journal of Zoology 89 (5):386-4090.

Jennings, S., M.J. Kaiser and J.D. Reynolds. 2001. Marine Fisheries Ecology. Blackwell publishing, Oxford.

Lambert, T.C., 1990. The effect of population structure on recruitment in herring. Journal du Conseil International pour l'Exploration de la Mer , 47: 249-255

Limburg, K. E., Walther, Y., Hong, B., Olson, C. & Stora°, J. 2008 Prehistoric versus modern Baltic Sea cod fisheries: selectivity across the millennia. Proc. R. Soc. B 275, 2659–2665. (doi:10.1098/rspb.2008.0711)

MacKenzie, B.R., Eero, M. & Ojaveer, H. 2011. Could seals prevent cod recovery in the Baltic seaPLoS ONE 6(5):e18998.doi:10.1371/journal.pone.0018998

Meier et al 2012. Comparing reconstructed past variation and future projections of the Baltic Sea ecosystem – first results from multi-model ensemble simulations. Environ. Res. Lett. 7 doi:10.1088/1748-9326/7/3/034005

Muus, B.J., Nielsen, J.G., and Svedberg, U. 1999. Havsfisk och fiske i Nordvästeuropa. Prisma, Stockholm. Neuen feldt, S. Righton, D., Neat, F., Wright, P.J., Svedäng, H., Michaelsen, K., Subbey, S., Steingrund, P., Thorsteinsson, V., Pampouilie, C., Andersen, K.H., Pedersen, M.W. and Metcalfe, J. 2013. Analysing migrations of Atlantic cod Gadus morhua in the north-east Atlantic Ocean: then, now and the future. Journal of Fish Biology 82: 741-763.

Nielsen, E., Richardson, K. 1996. Can changes in the fisheries yield in the Kattegat (1950-1992) be linked to changes in primary production? ICES Journal of Marine Science 53: 988-994

Nielsen, E. E. Hansen, M. M. Ruzzante, D. E. Meldrup D. and P. Grønkjær. 2002. A hybrid-zone in Atlantic cod (Gadus morhua) in the Baltic and the Danish Belt Sea revealed by individual admixture analysis. . Molecular Ecology, 12, 1497–1508

Ojaveer, E. Pihu, E. Saat, T. 2003. Fishes of estonuia.. Estonia Academy Publishers, tallin.

Parrish, R.H., Mallicoate, D.L. and Klingbeil, R.A., 1986. Age dependent fecundity, number of spawnings per year, sex ration, and maturation stage in Northern anchovy, Engraulis mordax. US Fisheries Bulletin, 84: 503-517

Pethon, P. 1998. Aschehougs store fiskebok. Norges fisker i farger. H. Aschehoug & Co. 4 uppl.

Reiss, H., Hoarau, G., Dickey-Collas, M. and Wolff, W.G. 2009. Genetic population structure of marine fish: mismatch between biological and fisheries management units. Fish and Fisheries, 10: 361–395.

Rice, J. C., and Legace, E. 2007. When control rules collide: a comparison of fisheries management reference points and IUCN criteria for assessing risk of extinction. ICES Journal of Marine Science, 64: 718–722.

Solemdal, P., Kjesbu, O.S. and Fonn, M., 1995. Egg mortality in recruit- and repeatspawning cod – an experimental study. ICES CM1995/G:35

Svedäng, H. & Bardon, G. 2003. Spatial and temporal aspects of the decline in cod (Gadus morhua L.) abundance in the Kattegat and eastern Skagerrak. ICES Journal of Marine Science 60: 32-37

Svedäng, H. Righton D. and P. Jonsson.2007. Migratory behaviour of Atlantic cod Gadus morhua: natal homing is the prime stock-separating mechanism Mar. Ecol. Prog. Ser.345:1-12

Svedäng, H., Stål, J., Sterner, T. & Cardinale, M. 2010a. Consequences of Subpopulation Structure on Fisheries Management: Cod (Gadus morhua) in the Kattegat and Öresund (North Sea). Reviews in Fisheries Science 18: 139-150.

Svedäng, H., André, C., Jonsson, P., Elfman, M. & Limburg, K. 2010b. Migratory behaviour and otolith chemistry suggest fine-scale sub-population structure within a genetically homogenous Atlantic cod population. Environmental Biology of Fishes 89: 383-397.

Tomkiewicz, J., Tybjerg, L. and Jespersen, Å., 2003 a. Micro- and macroscopiccharacteristic to stage gonadal maturation of female Baltic cod. Journal of FishBiology, 62: 253-275

Trippel, E.A., 1998. Egg size and viability and seasonal offspring production of youngAtlantic cod. Transactions of the American Fisheries Society, 127: 339-359

Vainikka, A., Gårdmark, A., Bland, B., and Hjelm, J. 2009. Two- and three-dimensional maturation reaction norms for the eastern Baltic cod, Gadus morhua. – ICES Journal of Marine Science, 66: 248–257.

Vallin, L. & Nissling, A. 2000. Maternal effects on egg size and egg buoyancy of Baltic cod, Gadus morhua—implications for stock structure effects on recruitment. Fish. Res. 49, 21–37.

Vitale, F. Börjesson, P., Svedäng, H. & Casini, M. 2008. The spatial distribution of cod (Gadus morhua L.) spawning grounds in the Kattegat, eastern North Sea. Fisheries Research 90: 36-44

ANNEX

ICES Review of HELCOM draft (version 17 December 2012) Red List assessment of cod

The following ICES advice was produced in the course of preparing the assessment of the cod and most of the remarks made by ICES have been take into account in this final SIS for the cod.

8.3.3.1 **Special request, Advice February 2013**

ECOREGION **Baltic Sea**
SUBJECT **Review of HELCOM draft Red List assessment of cod (*Gadus morhua*)**

Advice summary

The advice below relates to each of the questions within the HELCOM request.

Has the HELCOM Red List assessment been carried out appropriately following the criteria of IUCN?

ICES advises that Criterion E should be used to assess reduction in population size, rather than screening assessments using Criterion A for the three cod stocks in the Baltic. In the current HELCOM assessment, ICES advises that Subcriterion A1 should have been used rather than Subcriterion A2 except for the Kattegat stock, and that habitat loss should have been assessed using Criterion B rather than Criterion A, because spawning-stock biomass (SSB) trends were available.

ICES advises that due to the separate past (and future) trajectories of the three stocks, it is not appropriate to assign one IUCN category collectively for all cod in the Baltic.

Has the assessment utilized correctly all appropriate data on the development of the cod stock(s) and its habitats?

ICES advises that further data should have been used in the assessment. With regards to habitats, the best information was generally used, but interpreted in an inconsistent manner, and should have been assessed using Criterion B.

Has the generation time of cod been estimated properly?

ICES advises that the calculation of generation time of cod was consistent with IUCN guidelines, but some of the parameters used were inappropriately specified..

Does any significant immigration exists between the Baltic Sea stock(s) and the North Sea population?

There is insufficient information to advise on the degree of mixing between the cod stocks in the Baltic and in the North Sea. From an assessment and management perspective, separation is assumed between the stocks.

Request

*"ICES is requested to evaluate whether the draft Red List assessment of Baltic Sea cod (*Gadus morhua*) by the Fish Experts Team of the HELCOM Red List project has been carried out appropriately following the assessment criteria of IUCN. More specifically, ICES is asked to check if the assessment utilizes correctly all appropriate data on the development of the cod stock(s) and its habitats. ICES is also*

requested to review whether the generation time of cod has been estimated properly, taking into account that it should represent pre-disturbance generation length and an age where 50% of the individual reproductive output has been reached. Additionally, ICES is requested to evaluate whether any significant immigration exists between the Baltic Sea stock(s) and the North Sea population."

ICES advice

Has the HELCOM Red List assessment been carried out appropriately following the criteria of IUCN?

ICES advises that the Criterion E (see IUCN (2012) for descriptions of the criteria) approach should be used, rather than assessment using Criterion A, for each of the three cod stocks in the Baltic (Kattegat, western Baltic, and eastern Baltic). In its application of Subcriterion A2 the HELCOM Red List assessment (the HELCOM assessment) generally follows the IUCN approach as provided in the 2012 guidelines (IUCN, 2012). However, the IUCN screening approaches that comprise Criteria A to D are suitable in relatively data-limited circumstances, but should be replaced if sufficient information is available to take quantitative approaches. ICES advises that quantitative stock assessments, with projections, are the most appropriate tools to determine extinction risk due to reductions in population size. Current fishery assessments, including information on the dynamics of recruitment and their demographic structure, are available for these cod stocks. It is thus possible to apply Criterion E. A further advantage to the fishery assessment process is that the extent to which the current status and trend of each stock is attributable to fishing pressure can be inferred, enabling a better specification of any conservation actions that may be needed.

In the current HELCOM assessment, Subcriterion A2 was used rather than Subcriterion A1. For at least two of the stocks (western Baltic and eastern Baltic) of cod in the HELCOM area, stock sizes are increasing. The causes of earlier decreases are understood and these changes are reversible, i.e. Subcriterion A1 should be used. In the Kattegat, Subcriterion A2 may be more appropriate. Habitat loss should have been assessed using Criterion B rather than Criterion A; as Criterion A uses a proxy for population size when assessing habitat loss and such proxies are not needed because population estimates (SSB trends) are available.

The projections provided in the ICES fishery assessments were not used in the analysis, neither was additional information offered by the stock assessments and the spatial survey data. The ICES projections to provide catch advice were short term, but the methodology could be extended to address the Criterion E probability of extinction.

The three cod stocks in the HELCOM area have separate and distinct past (and likely future) trajectories. It is therefore not appropriate to assign one IUCN category collectively for all cod in the Baltic as this carries the risk of losing important signals from the individual stocks.

Has the assessment utilized correctly all appropriate data on the development of the cod stock(s) and its habitats?

ICES advises that the assessment has not fully used all appropriate data. The HELCOM assessment uses one metric provided by the stock assessments, the SSB time-series (time-series of the biomass of mature fish). However, the HELCOM assessment does not incorporate the additional information provided by the stock assessments, such as population assessments, nor does it consider recruitment dynamics.

The HELCOM assessment considered that habitat loss was a factor in the Kattegat cod stock. ICES advises that this conclusion is not appropriate as the reproductive capacity of this cod stock is reduced (ICES, 2012) and the reduction in habitat use is more likely due to a reduced stock size than to habitat loss (Svedäng *et al.*, 2010).

That the 'cod boom years' were removed from the SSB time-series is understandable as the productivity of cod in the Baltic Sea in these years was higher than in the present times. However, much of the argument concerning the change in area of occurrence (spawning habitat) includes the estimates of the area of occurrence from this period of 'cod boom'. This is inconsistent.

Has the generation time of cod been estimated properly?

The IUCN guidelines (IUCN, 2011) provide several ways of calculating generation time. It is not clear in the HELCOM assessment text how the generation time of cod was estimated or whether it followed the IUCN guidelines. Questioned by ICES a member of the HELCOM Assessment group (M. Svensson, pers. comm.) explained how generation time was estimated and confirmed that the process had followed the IUCN guidelines. The IUCN guidance is generic, though, and perhaps not tuned to data-rich circumstances. In this case the life characteristics of Norwegian or global stocks has been used, which may not be appropriate (see Brander, 1995, 2007). ICES recommends that the calculation of generation time should, where possible, be based on the life characteristics of the stock under assessment. ICES does not use "pre-disturbance" generation times in its stock assessments as a harvested stock cannot be regarded as undisturbed (and would be unlikely to return rapidly to a "pre-disturbance state"). ICES calculates current generation times at 2–5 years.

Does any significant immigration exist between the Baltic Sea stock(s) and the North Sea population?

There is no conclusive study on the degree of mixing between cod in the Baltic Sea and the North Sea and this may well vary over time. ICES currently assesses and advises on the basis of three stocks in the HELCOM area, and they are managed as separate entities.

Additional advice

The three cod stocks show differing dynamics. Under these circumstances, the use of metrics of biomass to merge stock information when attempting a regional assessment of population status is unwise, as the signal from the most-at-risk stock is masked by the stronger signal from the healthier stocks. This has occurred in the assessment – see Figures 1, 6, and 7 in the HELCOM assessment. The assessment of the overall status of cod in the Baltic (Table 3 in the HELCOM assessment) is therefore not appropriate.

Background

Previous approach by ICES to the IUCN red listing of commercially exploited fish species.

In 2009, ACOM was asked by Norway to provide advice on the IUCN listing of marine fish species (ICES, 2009). ICES stated:

"*There are three general methods for evaluating extinction risk: (1) screening methods, such as the IUCN redlisting criteria; (2) simple population viability analysis based on time trends; and (3) age structured population viability analysis. The rate of false positives (prediction of extinction which does not occur) and false negatives (the occurrence of unpredicted extinction) is likely to be the highest for screening methods, lower for simple population viability analysis based on time trends, and lowest for age structure population viability analysis. None of the methods are considered reliable for accurately estimating the probability of extinction, but they may be useful to evaluate the relative probability of extinction between species or between management options."*

Later in the advice ICES stated:

"Screening methods may be useful to prompt a more comprehensive analysis, but should not be used as the basis for a listing decision when more detailed data are available, as is typically the case for exploited marine species. Screening methods also only provide an evaluation of stock status at a point in time. They do not include a projection into the future which is more useful for estimating the probability of extinction. As well, criteria based on the rate or magnitude of population decline may overlook the fact that even well managed exploited fish populations can experience large declines. Furthermore, in some cases even a small additional decline may induce a population to pass a tipping point and lead to an

increased chance of extinction.

Population Viability Analysis (PVA) is a method that projects a population forward in time using uncertainty to make statements about the probability of population abundance falling below some predetermined level in a given number of years. PVA is useful to indicate the relative risk of extinction (e.g., between stocks) rather than to estimate the absolute probability. The PVA is a forecast of what would be likely to happen to a stock if current conditions remain unchanged throughout the projection period. This assumption of stationarity implies that the conditions that generated the observed values will continue into the future.

Another approach is the Age Structured Population Viability Analysis. In the standard application of this approach the simple PVA is augmented to account for life stage/age structure allowing density dependence and other forms of non-stationarity to occur in the projections. This approach allows comparison of the relative probability of extinction for alternative management options.

Standard fishery models can also be used to examine the risk of extinction. Stock and recruitment estimates can be compared to the replacement line under the current mortality rate. When total mortality is too high, the replacement line will be to the left of recruitment values associated with low stock size, causing the stock to decline. If depensation is present in the stock-recruitment relationship (or if the stock-recruitment relationship changes over time causing a smaller slope at the origin), too high a mortality rate will cause the stock to eventually go extinct. There is no time period involved in this approach, but continued recruitment below the replacement line [at low stock size] *implies a high probability of extinction."*

ICES views a stock assessment with a projection as an appropriate analysis of the likely extinction risk of a commercially exploited marine organism due to reduction in population size. This is a more effective tool than the IUCN red listing Criterion A.

IUCN criteria and the HELCOM proposal

Most of the HELCOM assessment considers the three cod stocks (and the amalgamated HELCOM cod grouping) in relation to IUCN Criterion A – reduction of population size. The proposal suggests that the other IUCN criteria (B–E) are not appropriate and/or able to be applied to these cod populations. The HELCOM assessment document discusses the appropriateness of Subcriterion A1 or A2, and concludes that Subcriterion A2 is appropriate despite the existing management plans for Baltic cod. The assessment considers the decline criterion in relation to SSB (mature adults; IUCN, 2012) and spawning areas.

"Subcriterion A1 if causes of reduction are clearly reversible, understood and ceased.
Subcriterion A2 if the reduction or its causes may not have ceased, may not be understood or may not be reversible."
IUCN (2012)

ICES does not agree with the HELCOM assessment that "*there has been not enough data to apply criterion E*". The IUCN guidelines suggest the use of a PVA (population viability analysis; IUCN, 2011). The ICES stock assessment and management approaches incorporate the "precautionary approach", thus to some extent accounting for a large amount of the uncertainty associated with the stock assessments (see section 9.5 in IUCN, 2011), and also include clear documentation and evaluation of methods (ICES, 2013).

"Quantitative analysis (Criterion E).
A quantitative analysis is defined here as any form of analysis which estimates the extinction probability of a taxon based on known life history, habitat requirements, threats and any specified management options. … Quantitative analyses should make full use of all relevant available data. In a situation in which there is limited information, such data as are available can be used to provide an estimate of extinction risk (for instance, estimating the impact of stochastic events on habitat). In presenting the

results of quantitative analyses, the assumptions (which must be appropriate and defensible), the data used and the uncertainty in the data or quantitative model must be documented."
IUCN (2012)

ICES considers that the availability of quality assured stock assessments, which in turn provides a basis to perform projections into the future, allows for the quantitative calculation of extinction risk, taking the uncertainty of the data into account, which is the requirement under Criterion E. Once such a calculation becomes possible, the nature of a red list assessment changes. Criteria A–D applications typically involve screening methods, with the intent of "waving a flag" to indicate that a more intensive analysis is required. For that reason, the quantification of these criteria deliberately and defensibly errs on the risk-averse side. For example, a population decline estimate of 50% or 70% (depending on the circumstances) can see the subject of the assesment classified as endangered under Criterion A, when in terms of typical fisheries target levels, a population reduced by this extent below its pristine level would be seen to be close to an optimal level for harvesting and securing MSY. In contrast, an analysis meeting the Criterion E requirements subsumes the various considerations taken into account in a screening approach. The Criterion E approach should be integrative, risk-neutral, and a more soundly based process, leading to more reliable estimates of a population status as well as providing the basis to apply the quantitative criteria regarding extinction risk.

Sources

Brander, K. M. 1995. The effect of temperature on growth of Atlantic cod (*Gadus morhua* L.). ICES Journal of Marine Science, 52: 1–10.

Brander, K. M. 2007. The role of growth changes in the decline and recovery of North Atlantic cod stocks since 1970. ICES Journal of Marine Science, 64: 211–217.

ICES. 2009. Report of the ICES Advisory Committee 2009. ICES Advice 2009. Book 1, pp. 147–156.

ICES. 2012. Cod in Division IIIa East (Kattegat). In Report of the ICES Advisory Committee 2012. ICES Advice, 2012. Book 6, Section 6.4.1.

ICES. 2013. Report of Benchmark Workshop on Baltic Multispecies Assessments (WKBALT). (In prep.)

IUCN. 2011. Guidelines for Using the IUCN Red List Categories and Criteria. Version 9.0. Prepared by the Standards and Petitions Subcommittee.

IUCN. 2012. IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32 pp. (http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf)

Svedäng, H., Stål, J., Sterner, T., and Cardinale, M. 2010. Subpopulation structure in cod (*Gadus morhua*) puts strain on the management toolbox. Reviews in Fisheries Science, 18: 139–150.

Sources provided by HELCOM

Assessment of Cod by HELCOM Red List Fish and Lampreys Expert Group 2012-11-08 (assessment justification version 17 December 2012).

Summary of the IUCN criteria and guidelines and additional HELCOM guidelines for conservation status assessments in the HELCOM Red List project.

English name: **Tope shark**	Scientific name: ***Galeorhinus galeus***	
Taxonomical group: Class: Elasmobranchii Order: Carcharhiniformes Family: Triakidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 21.3 years	
Past and current threats (Habitats Directive article 17 codes): By-catch (F02), Fishing (F02)	Future threats (Habitats Directive article 17 codes): By-catch (F02), Fishing (F02)	
IUCN Criteria: **A2bd, D1**	**HELCOM Red List Category:**	**VU** **Vulnerable**
Global / European IUCN Red List Category: VU/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**VU**		

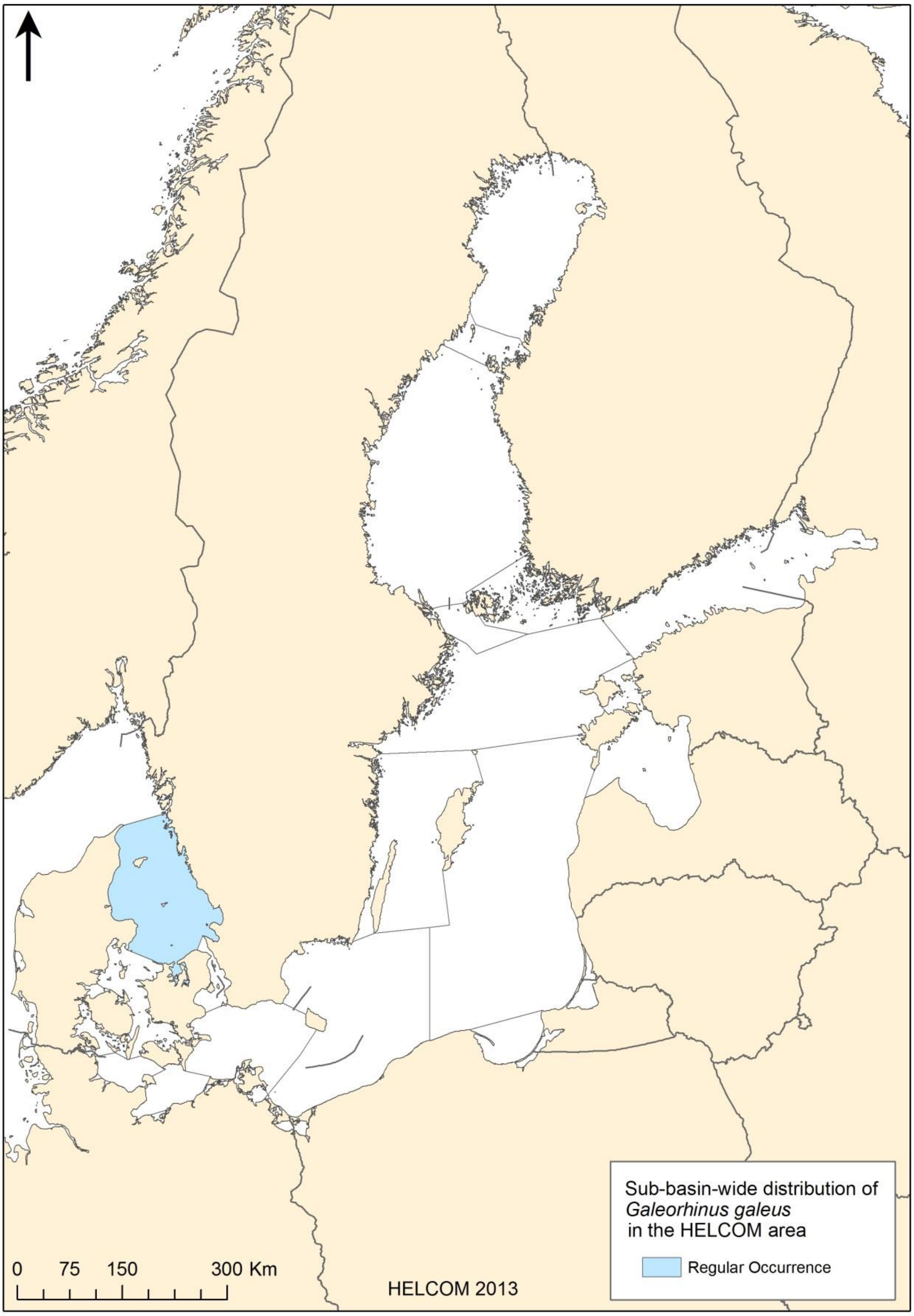
Distribution and status in the Baltic Sea region

Tope shark is a migrant species that occurred regularly in the Kattegat in the 19th century. The species occurs regularly in the North Sea and Skagerrak but are nowadays a rare visitor in Kattegat, and only occasionally recorded from the Sound. Tope sharks probably still occur regularly in low numbers in packs of spiny dogfish in the HELCOM area. Tope shark is not the subject of targeted fisheries in the northeast Atlantic but is often caught in mixed demersal and pelagic fisheries. The population is considered to have decreased by 30 (10–50)% over the last three generations (63.9 years). The number of mature individuals regularly occurring in the HELCOM area is very small.

Tope shark. Photo by Anders Salesjö Photography, Undervattenbilder.se.

Distribution map

The map shows the sub-basin in the HELCOM area where the species is currently known to occur as a rare visitor (HELCOM 2012). Tope shark occurred regularly in the Kattegat area in the 19th century.



Habitat and ecology

The species is most abundant in cold to warm temperate continental seas, from the surfline and very shallow water to well offshore (Walker 2006). The species is primarily found near the bottom but ranges through the water column even into the pelagic zone. The tope shark feeds mainly on teleost fish, most often on bottom-associated species although pelagic fish are also taken. Cephalopods, mostly squid and octopus, are also important in their diet. The diet of small juveniles includes a high proportion of crustaceans and other prey such as annelids and gastropods.

Description of major threats

Tope shark is of limited importance in commercial fisheries. Catches are sparse and the species is mainly caught as by-catch in pelagic and trawl fisheries on schooling fish species like herrings and mackerel.

Assessment justification

The area of occupancy is above the level for being considered threatened (> 4 000 km^2) but the extent of occurrence is estimated to 25 000 km^2 which is below the threshold for Near Threatened in the B criterion. The population is currently declining or is expected to do so in the future. The rate of decline has amounted to 30 (10–50)% over the last 60 years. The rate of decline exceeds the threshold for Vulnerable (VU) in the A criterion. The number of mature individuals is estimated to be c. 525 (50–1000) which is lower than the threshold for Vulnerable (VU) according to the D-criterion hence this species is categorised as VU (A2bd, D1). Immigration into the HELCOM area is not deemed to be significant to downgrade the threat category since the species is declining also in adjacent areas.

Recommendations for actions to conserve the species

Bycatch in mixed demersal and pelagic fisheries should be reduced. Additionally, advice on a suitable TAC is needed from ICES.

Common names

DE: Hundshai; DK: Gråhaj; ES: ; FI: Harmaakoirahai ; GB: Tope shark; LA: Zāģastes haizivs; LI: Paprastasis sriubinis ryklys; PL: Żarłacz szary; RU: Supovaja akula; SE: Gråhaj

References

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.

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

Walker, T.I., Cavanagh, R.D., Stevens, J.D., Carlisle, A.B., Chiaramonte, G.E., Domingo, A., Ebert, D.A., Mancusi, C.M., Massa, A., McCord, M., Morey, G., Paul, L.J., Serena, F., Vooren, C.M. (2006). *Galeorhinus galeus*. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org

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<tr><td>English name:
Whiting</td><td colspan="2">Scientific name:
Merlangius merlangus</td></tr>
<tr><td>Taxonomical group:
Class: Actinopterygii
Order: Gadiformes
Family: Gadidae</td><td colspan="2">Species authority:
(Linnaeus, 1758)</td></tr>
<tr><td>Subspecies, Variations, Synonyms:
–</td><td colspan="2">Generation length:
6.7 years</td></tr>
<tr><td>Past and current threats (Habitats Directive article 17 codes): Fishing (F02.01.02;F02.01.03;F02.02.01;F02.02.02)</td><td colspan="2">Future threats (Habitats Directive article 17 codes):
Fishing (F02.02;F02.03)</td></tr>
<tr><td>IUCN Criteria:
A2bd</td><td>**HELCOM Red List Category:**</td><td>**VU**
Vulnerable</td></tr>
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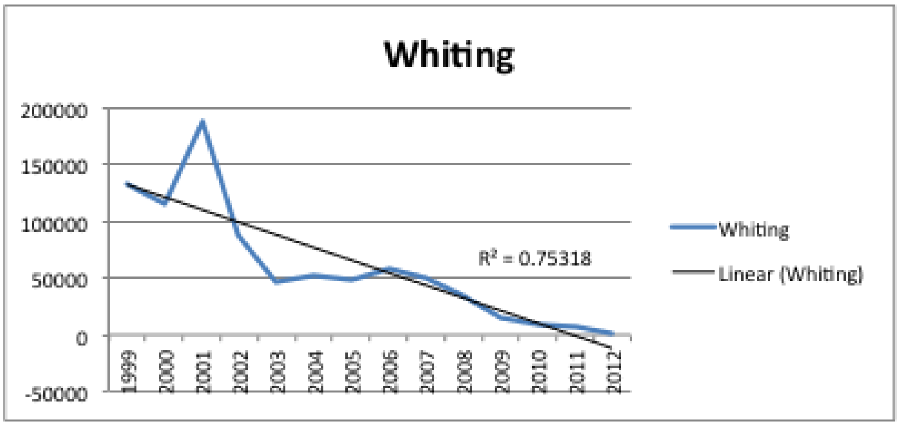
NE/NE</td><td colspan="2">Habitats Directive:
–</td></tr>
<tr><td colspan="3">Previous HELCOM Red List Category (2007): RA</td></tr>
<tr><td colspan="3">Protection and Red List status in HELCOM countries:
Denmark –/–, Estonia –/–, Finland –/–, Germany –/* (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Minimum landing size of 23 cm in Kattegat. TAC regulation by EU* / **VU**</td></tr>
</table>

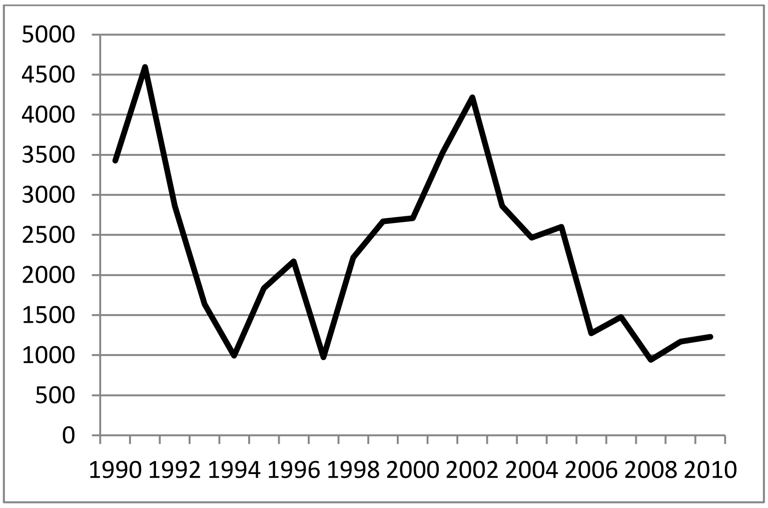
Distribution and status in the Baltic Sea region

Whiting occurs in the western Baltic, the Belt Sea, the Sound and the Kattegat. Whiting spawns in the Kattegat, which is the core area for whiting within the HELCOM area. Landing statistics indicate a sharp decline in abundance in the Skagerrak and the Kattegat (ICES 2011). Swedish landing statistics for the last 12 years in the Kattegat indicate a continuous decline that is even sharper (99% decline). However, it remains unclear to what extent the drastic reduction in landings was due to a decline in the whiting stock biomass or to changed fishing patterns. On the other hand, the fishery independent survey, International Bottom Trawl Survey (IBTS), shows a decline in whiting abundance in the Kattegat by 30% over the last three generations. Furthermore IBTS data on whiting in the Kattegat for sizes above 300 mm in total length indicate that the occurrence of adult whiting has become very scarce.

Whiting. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.



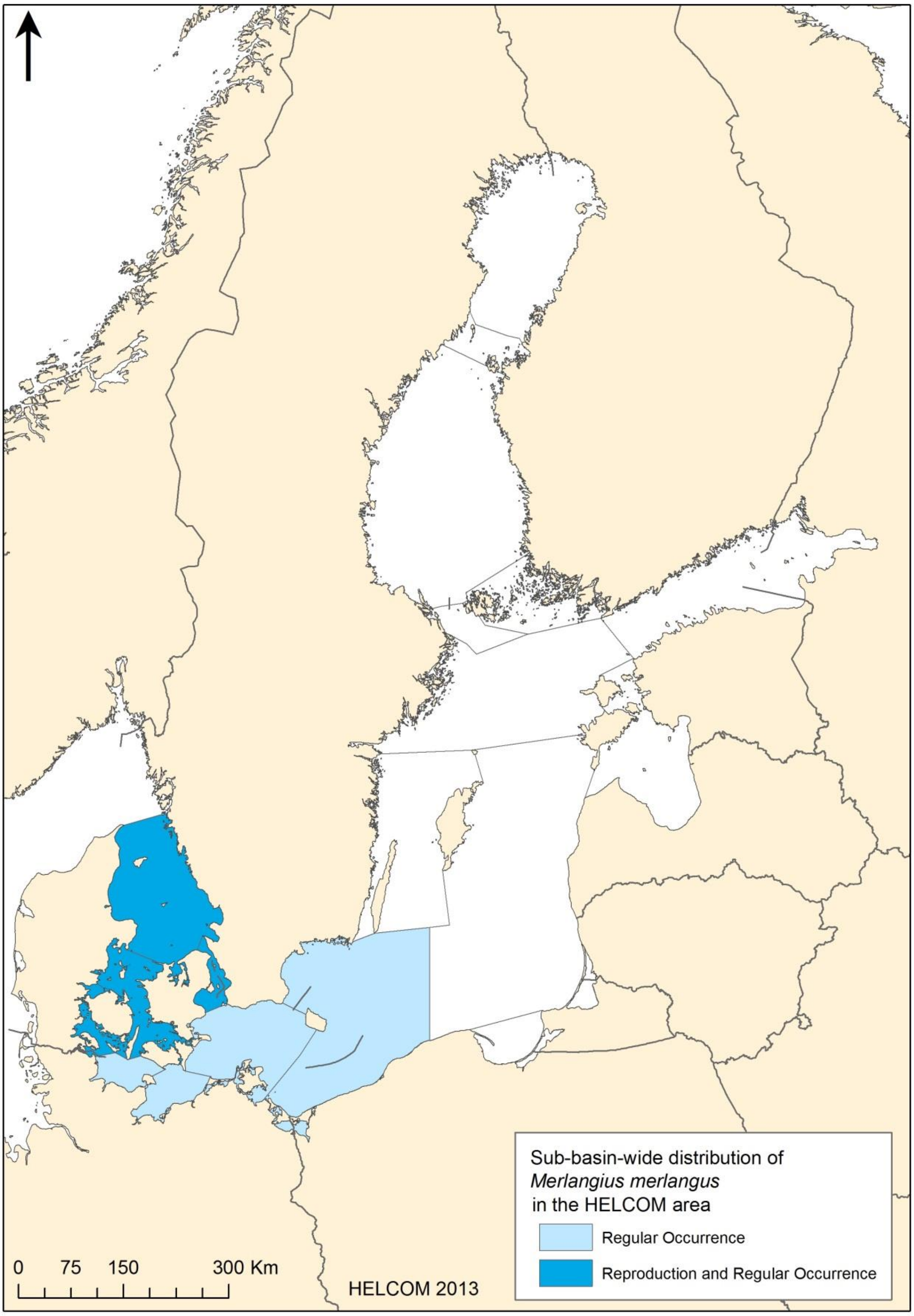
Swedish landings of whiting (kg) between 1999–2011 in the Kattegat (Sweden Statistics).



IBTS data from Kattegat in the first quarter of the year: Cpue of whiting (numbers per trawling hour).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

Whiting is a benthopelagic gadoid often appearing in shoals. Whiting occurs between 10 and 200 m depths, but is commonly found from 30 to 100 meters. It matures sexually at ages of 2–3 years. Egg and larvae are planktonic. Spawning occurs between January and July. It reaches a maximum length of 70 cm. Whitings forage on herring, sprat, sandeel, and crustaceans (Froese & Pauly 2012).

Description of major threats

Commercial passive fishing (i.e. netting, longlining) and active fishing (i.e. demersal and pelagic trawling) are the major threats. Furthermore, climate changes with synergistic effects of eutrophication that may lead to oxygen depletion is a potential threat.

Assessment justification

Whiting spawns in the Kattegat, which is the core area for whiting within the HELCOM area and hence only data from this area are used in the assessment. Available landing data provide insufficient information on the whiting stock status (ICES 2011), however taken as a face value the landing statistics indicate a sharp decline in abundance in ICES division IIIa, corresponding to the Skagerrak and Kattegat. Swedish landing statistics for the last 12 years in the Kattegat indicate a continuous decline that is even sharper (99% decline, Fiskeriverket 2011). However, it remains unclear to what extent the drastic reduction in landings was due to a decline in the whiting stock biomass or to changed fishing patterns.

The fishery independent survey, International Bottom Trawl Survey (IBTS), indicates a decline in whiting abundance in the Kattegat by 30% over the last three generations. IBTS data on whiting in the Kattegat for sizes above 300 mm in total length indicate that the occurrence of adult whiting has become very scarce, although for the last time period equal to three generations (c. 20 years as generation time has been set to 6.7 years for whiting) no trend is discernible. Conclusively, the situation for whiting in the HELCOM area is worrying, with a possible decrease between 30 and 99%.

Given the concern that the decrease in landings could to some extent reflect a changed fishing pattern and not be proportional to the decrease of the stock itself, less weight is put on the decrease in landings and more on the decrease in IBTS surveys. This results in an estimate of possible decrease of 30–50% which fulfils the A2bd criteria for the category VU. This should not be degraded to NT due to immigration from the North Sea since also the landings in whole IIIa have decreased drastically since 1980s.

Recommendations for actions to conserve the species

More biological knowledge is needed, especially concerning stock structure and migration.

Common names

D –Wittling; DK – Hvilling; GB – Whiting; FIN – Valkoturska; LV - Merlangs; LT - Paprastasis merlangas; RUS - Merlang; S – Vitling

References

Fiskeriverket (2011). Ask, L., Westerberg, H. (eds.). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdp

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

ICES (2011). ICES ADVICE 2011, Book 6.

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.

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): 11–76.

English name: **Sea lamprey**	Scientific name: ***Petromyzon marinus***
Taxonomical group: Class: Cephalaspidomorphi Order: Petromyzontiformes Family: Petromyzontidae	Species authority: Linnaeus, 1758
Subspecies, Variations, Synonyms: –	Generation length: 7.5 years
Past and current threats (Habitats Directive article 17 codes): Migration barriers (J03.02.01), Eutrophication (H01.05), Fishing (F02)	Future threats (Habitats Directive article 17 codes): Migration barriers (J03.02.01), Eutrophication (H01.05), Fishing (F02)
IUCN Criteria: **C2a(i)**	**HELCOM Red List Category:** **VU Vulnerable**
Global / European IUCN Red List Category: LC/LC	Habitats Directive: Annex II, V
Previous HELCOM Red List Category (2007): EN	
Protection and Red List status in HELCOM countries: Denmark –/**VU,** Estonia –/–, Finland –/–, Germany –/***** (Not threatened, Baltic Sea)**,** Latvia –/–, Lithuania –/**1** (E=Endangered)**,** Poland *Illegal to catch, kill or disturb* / **EN**, Russia *Included in the Red Books of St Petersburg, Leningrad District and Russian Federation as endangered species, which means it is illegal to fish for and land this species* / **EN**, Sweden *Illegal to fish for and land this species all year round. Regional programs for restoration of river habitats* / **NT**	

Distribution and status in the Baltic Sea region

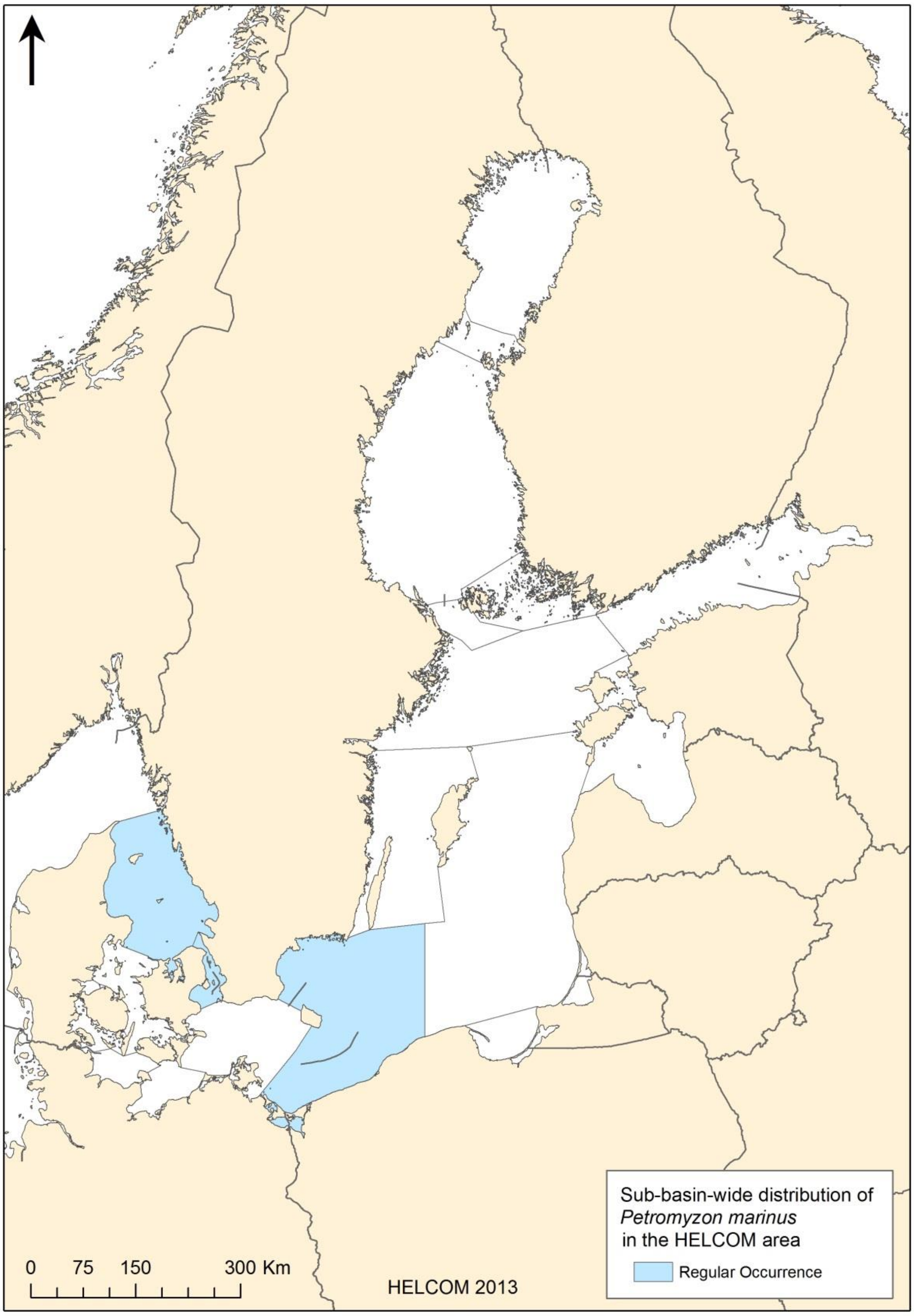
The sea lamprey (*Petromyzon marinus*) is distributed throughout the HELCOM area, but is very rare in most basins. It may have been more common in the past but in the Baltic Proper and the Gulfs it has been very rare at least since the early 1800s. In Finland, for example, fishermen have caught this species less than 20 times during the last 200 years. It is equally rare in the Russian part of the Gulf of Finland and only occasional catches are reported in Estonia, Latvia and Lithuania. It is reported more often in Germany and Poland and there may be a spawning population in the Oder River but this has not been confirmed. In Sweden the sea lamprey occurs along the west coast, but even in the Sound and in the southern Baltic Sea it is a very rare, occasional visitor. Spawning of sea lamprey has been verified in

Sea lamprey. Photos: Natalia Chernova, Zoological Institute, St Petersburg (top), Anders Salesjö Photography, Undervattenbilder.se (bottom).

eight Swedish and five Danish rivers in Kattegat and in one Swedish river in the Sound. There are indications of decline of sea lamprey in Kattegat.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly (HELCOM 2012).



Habitat and ecology

The sea lamprey is an anadromous long distance migrating species. Adults enter freshwater habitats in late winter or spring and migrate upstream to their spawning sites. The spawning habitat consists of gravel bottoms with isolated larger pebbles or rocks and adjacent clean sandy areas, where sea lamprey spawns from June to July. After spawning, the adults normally die. The larvae stay near the spawning site for 2–5 years and bury in the sand, where they feed on micro-organisms and detritus. After metamorphosis, they migrate downstream to the sea, where they live parasitic on fish and mammal species, sucking blood and feeding on skin and musculature (Fricke 1987). An anticoagulant substance prevents the blood of the prey from clotting (Holcik 1986). In the ocean, sea lampreys are found from inshore to deep waters, either on rock bottom where they can attach with their sucking disk, or parasitic on their prey (Froese & Pauly 2012). The species occurs in the whole Baltic Sea catchment area, though it is very rare in the northern parts, and spawning has not yet been observed there. The species reaches a maximum total length of 120 cm, a maximum weight of 2.5 kg, and an individual age of up to 9 years.

Description of major threats

There are several threat factors for the sea lamprey: construction of weirs and dams in river, eutrophication of the spawning habitats in rivers (since larvae survive only on well oxygenated sand bottoms), outside the HELCOM area also fisheries (sea lamprey as target species, e.g. in Portugal, France), and fisheries on sea lamprey's prey species (large fish). The species is considered as rare and highly sensitive to human activities.

Assessment justification

Sea lamprey is a very rare species in the HELCOM area. In the northern Baltic Sea, it is caught irregularly but almost annually in Estonia but in Finland, Russia and Latvia the species is not an annual catch. For example, it has been reported only eight times since 1927 in the Russian part of Gulf of Finland. In Poland, there may be a spawning population in the Oder River but this has not been verified yet (Psuty *et al*. 2010). Sea lamprey is caught regularly in the Arkona Basin but there is no reproduction in German rivers and no trend in reporting frequency of the species in the southern Baltic Sea (Thiel *et al*. 2009).

In Denmark, the sea lamprey reproduces in five rivers in Helcom area and there are indications of decline since 1990 (Olesen *et al*. 2009). Swedish inventories in Kattegat also show reproduction in eight rivers and estimated a total of 800 reproducing individuals in 2008 (Söderman & Ljunggren 2009). In the Sound area, spawning has been documented in the River Råån, latest in 2003. Sparse monitory data from cooling water intake in Ringhals (Kattegat) show strong decreasing trend.

A small population with a suspected continuing decline and less than 1000 individuals in the largest subpopulation results in VU status (C2a(i)). Immigration from outside the HELCOM area is unlikely to have any significant effect on the threat status since Sea lamprey is very rare also in the adjacent area.

Recommendations for actions to conserve the species

Measures for protection of sea lamprey should mainly include the improvement of the situation along the migration routes, mainly in fresh water habitats and at the (potential) spawning sites. Eutrophication of potential spawning sites should be avoided. The spawning success has to be continuously surveyed. Reintroduction might be considered after restoration of migration routes and spawning habitats. Fisheries on sea lampreys should be forbidden. The records of this species should be collected in a shared database.

Common names

DE: Meerneunauge; DK: Havlampret; ES: merisutt; FI: Merinahkiainen; GB: Sea lamprey ; LA: Jūras nēģis; LI: Jūrinė nėgė; PL: Minóg morski; RU: Morskaja minoga; SE: Havsnejonöga

References

Alekseev, G.A., Kuderskiy, L.A. (2001). Sea lamprey *Petromyzon marinus* (Petromyzontidae) in the eastern part of the Gulf of Finland. Voprosi Ikhthyologii 41: 135–137. [in Russian] (Алексеев Г.А., Кудерский Л.А. 2001. Морская минога *Petromyzon marinus* (Petromyzontidae) в восточной части Финского залива. Вопр. ихтиологии. Т. 41. Вып. 1. С. 135–137)

Fricke, R. (1987). Deutsche Meeresfische. Bestimmungsbuch. Hamburg (DJN). 219 pp.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Holcik, J. (ed.) (1986). The freshwater fishes of Europe, Vol. 1, Part I. Petromyzontiformes. Aula-Verlag, Wiesbaden / Germany. 313 pp.

Lietuvos Raudonoji Knyga, the Red List of Lithuania. List available at http://www.raudonojiknyga.lt/

Olesen, T.M., Carl, H., Aarrstrup, K. (2009). Havlampret (*Petromyzon marinus* Linnaeus 1758) i danske vandlöp 1869–2209. Flora og Fauna 115: 45–60.

Psuty, I., Krajniak, T., Szymanek, L., Grochowski, A. (2010). Expert study report on the occurrence of two lamprey species: river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*) in the river estuaries of the Baltic Sea and in the coastal sea zone. Gdynia

Red Book of Nature of Saint-Petersburg. "Professional", Saint-Petersburg. 2004. 416 p. (In Russian) [Красная книга природы Санкт-Петербурга. СПб. 2004. 416 с.]

Red book of Nature of the Leningrad region. Vol. 3. Animals. “Mir I Semya” ", Saint-Petersburg. 2002. 480 p. (In Russian) [Красная книга природы Ленинградской области. Том 3. Животные. "Мир и Семья", Санкт-Петербург, 2002, 480 с.]

Red Book of the Russian Federation (animals). 2001. “Act Astrel”. 863 pp. (In Russian) [Красная Книга Российской Федерации (животные). 2001. «Аст Астрель». 863 с.], on-line version (2007) http://www.sevin.ru/redbooksevin/index.html

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

Söderman, M., Ljunggren, N. (2009). Inventering av havs- och flodnejonöga I Halland 2008. Meddelande 2009:19. Länsstyrelsen i Hallands län. Länsstyrelsens tryckeri, Halmstad. 168 pp. [in Swedish].

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): 11–76.

Thiel, R., Winkler, H.M., Riel, P., Neumann, R., Gröhsler, T., Böttcher, U., Spratte, S., Hartmann, U. (2009). Endangered anadromous lampreys in the southern Baltic Sea: spatial distribution, long-term trend, population status. Endangered Species Research 8: 233–247.

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/

SPECIES INFORMATION SHEET *Raja clavata*

English name: **Thornback ray**	Scientific name: ***Raja clavata***	
Taxonomical group: Class: Elasmobranchii Order: Rajiformes Family: Rajidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 12.2 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02.02.02), By-catch (F02)	Future threats (Habitats Directive article 17 codes): Fishing (F02.02.02), By-catch (F02)	
IUCN Criteria: **A2bd**	**HELCOM Red List Category:**	**VU Vulnerable**
Global / European IUCN Red List Category: NT/(NT)NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Prohibited to fish for and land this species all year round.* / **EN**		

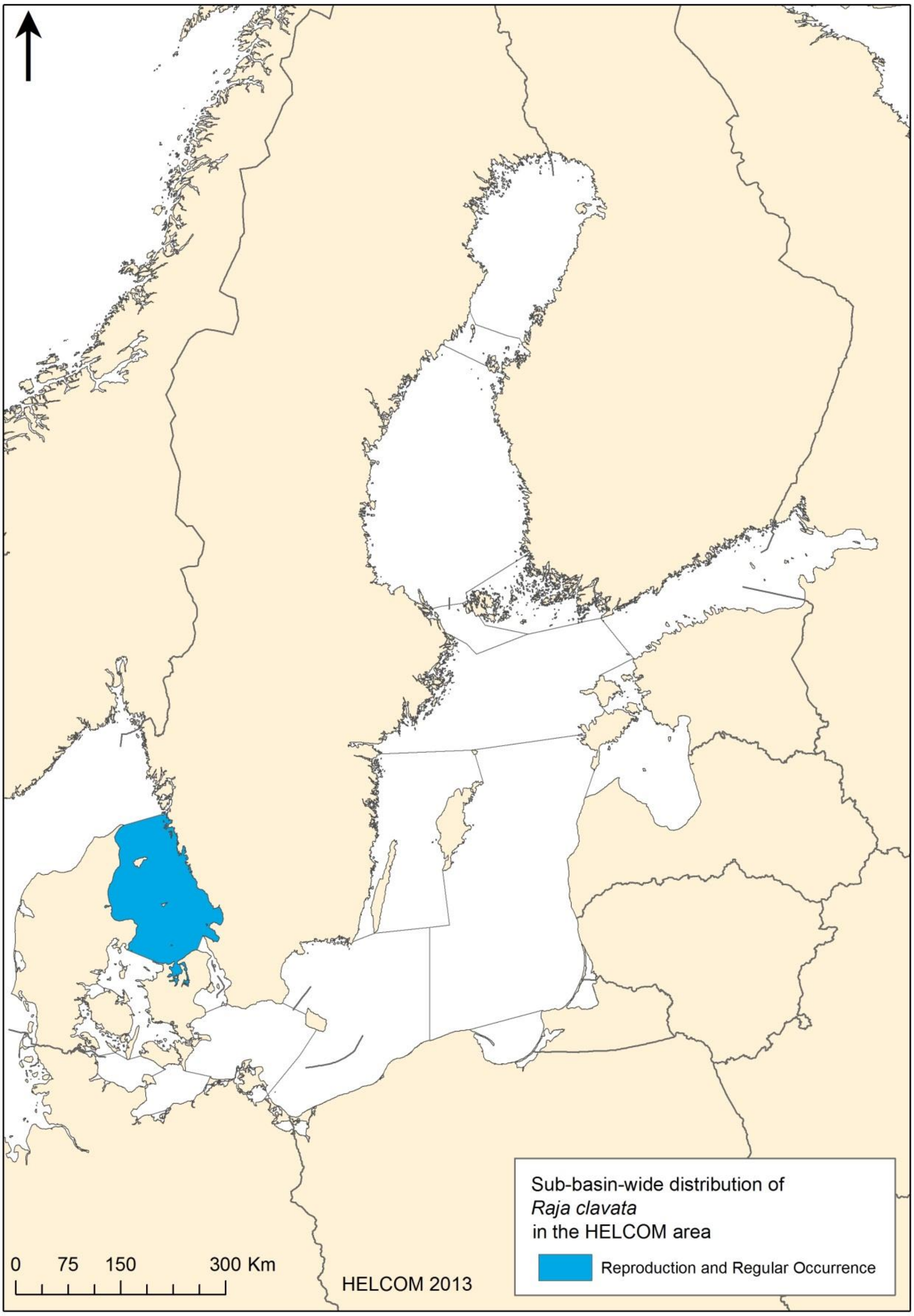
Distribution and status in the Baltic Sea region

Thornback ray occurs in the north-east Atlantic and its reproduction areas include the Kattegat. It can occasionally be found as far as the Bornholm Basin in the Baltic Sea. It is relatively large and even if not subject of targeted fisheries it is an important species in mixed demersal fisheries in the North Sea. The species has undergone a contraction in range, especially affecting the eastern part of its former range. Population size is estimated to have decreased by 40 (30–50)% during the last three generations (36.6 years). Available census data indicate a more stable situation in the North Sea since the mid-1990s (ICES 2012).

Thorn-back ray. Photo by Timo Moritz Deutches Meeresmuseum.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The thornback ray is a demersal coastal species which inhabits a variety of substrates, including mud, sand, shingle, gravel and rocky areas down to 300 m depth, although it is most abundant in 10 to 60 m depths in coastal areas (Wheeler 1969). It is a nocturnal species that tolerates low salinities and feeds on all kinds of bottom animals but prefers crustaceans (Stehmann & Bürkel 1984). Thornback ray shows a clear annual migration cycle and moves from deeper offshore waters in autumn and winter to shallower areas (<10 m) in spring (Hunter et al. 1997). Juveniles are non-migratory, inhabiting inshore nursery grounds (Steven 1932). It detects weak electric fields generated by other organisms (prey detection and predator avoidance) but may also generate its own weak electric fields (Fritzsch & Moller 1995).

Description of major threats

The thornback ray is an important component of demersal fisheries in most European waters and is taken by trawl and gillnet, particularly as by-catch. Thornback rays are also regularly caught by recreational anglers, although mortality from this source of fishing pressure is of little impact for the population as a whole, particularly in areas where catch and release is practiced.

Assessment justification

The number of mature individuals is estimated to at least 10 000. Both the extent of occurrence and area of occupancy exceed the limit for red listing. The population is currently declining and the rate of decline has amounted to 30–50% in the last 40 years. Depending on which of the estimated values is used the assessment varies from Vulnerable (VU) to Endangered (EN). However, based on the average value (40%) the rate of decline exceeds the threshold for Vulnerable (VU) in the A criterion (A2abd). This is not downgraded by immigration from adjacent areas since the thornback ray is declining and considered threatened also outside the HELCOM area.

Recommendations for actions to conserve the species

This species needs restrictions of demersal fisheries (trawling etc.), and a restrictive fisheries management. Sand and gravel extraction should be restricted, too. Marine protected areas without fisheries pressure and sand/gravel extraction would serve for the recovery of the populations. As major pressures for the species occur outside the HELCOM area in the neighbouring OSPAR area, OSPAR could be requested to consider providing additional protection for this species. As usually only the wings of rays are landed, it is hard to separate this species from other non-threatened ray species. It is therefore recommended that rays should only be allowed to be landed as uncut.

Common names

D: Nagelrochen; DK: Sømrokke; FI: Okarausku GB: Thornback ray; LI: Dyglioji raja PL: Raja ciernista; LV: Dzelkņraja; RUS: Koljuchij skat; SE: Knaggrocka

References

Ellis, J. (2005). *Raja clavata*. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org. (viewed 24 January 2013)

Fritzsch, B., Moller, P. (1995). A history of electroreception. p. 39–55. In: Moller, P. (ed.) Electric fishes:history and behavior. Fish and Fisheries Series 17. Chapman & Hall, London. 584 pp.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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 (2012). ICES Advice 2012, Book 6.

Stehmann, M.& Bürkel, D.L. (1984). Rajidae. p. 163–196. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 1. Unesco, Paris.

Steven, G.A. (1932). Rays and skates of Devon and Cornwall. II. A Study of the fishery; with notes on the occurrence, migrations and habits of the species. Journal of the Marine Biological Association of the United Kingdom 18: 1–33.

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

Walker, P., Howlett, G., Millner, R. (1997). Distribution, movement and stock structure of three ray species in the North Sea and eastern English Channel. ICES Journal of Marine Science 54: 797–808.

Wheeler, A. (1978). Key to fishes of northern Europe. Warne, London, 380 pp.

English name: **Salmon**	Scientific name: ***Salmo salar***	
Taxonomical group: Class: Actinopterygii Order: Salmoniformes Family: Salmonidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 7.8	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), Migration barriers (J03.02.01)	Future threats (Habitats Directive article 17 codes): Fishing (F02), Migration barriers (J03.02.01)	
IUCN Criteria: **A4b**	**HELCOM Red List Category:**	**VU Vulnerable**
Global / European IUCN Red List Category: LC in 1996 but needs updating/NE	Habitats Directive:	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: All: *TAC regulation by EU in the Baltic Sea* Denmark: –/ **VU** Estonia: *Protected by the law (III category). ERDB: Regular stockings. Fishery regulations* / **CR** Finland: *Minimum legal landing size is 60 cm, except 50 cm in the Bothnian Bay. Temporal fishing regulations during the spawning migration in the sea at the Finnish coast. Fishing is not allowed during spawning season in rivers. Stock enhancement projects in empty rivers. Regular stocking*. / **VU** Germany: *Protected by national and European law* / **3** (Vulnerable, Baltic Sea) Latvia: *Under the Law on the Conservation of Species and Biotopes; included in CM regulation Nr. 396 and 45. Protection by commercial fishing rules and angling rules (closed season, minimal landing size)*. / – Lithuania: *Included in the Red Book. Restoration program in some rivers. Protected from fishing during spawning time in rivers 16 October - 31 December. Restricted fishery in migration routes.* / **5 (Rs, Restored)** Poland: *Stocked annually in some Pomeranian rivers (in contact to the Baltic waters). Minimum landing size 60 cm. Minimum mesh size 80 mm (bar length). Closed season different in coastal and open waters. Protected area (closed for fishery) in the river mouths*. / **CR** Russia: *Protected in Leningrad District. Fishery is also limited in all areas*. / – Sweden: *Protected from fishing during spawning time in some areas. Minimum legal landing size 45 cm in Kattegat and 60 cm in the Baltic Sea.* / **LC**		

Distribution and status in the Baltic Sea region

This anadromous species reproduce in rivers across the whole Baltic Sea and Kattegat, and undertake long feeding migrations into saline water. Unfortunately, many Baltic rivers have lost their original wild salmon populations. The main reason for the loss has been the damming of rivers for hydropower and dredging of rapids and riffles (salmon reproduction areas) for log driving purposes. Some dams were subsequently fitted with fish ways and again support salmon populations, although the original strain may have been lost and replaced with a restocked strain.

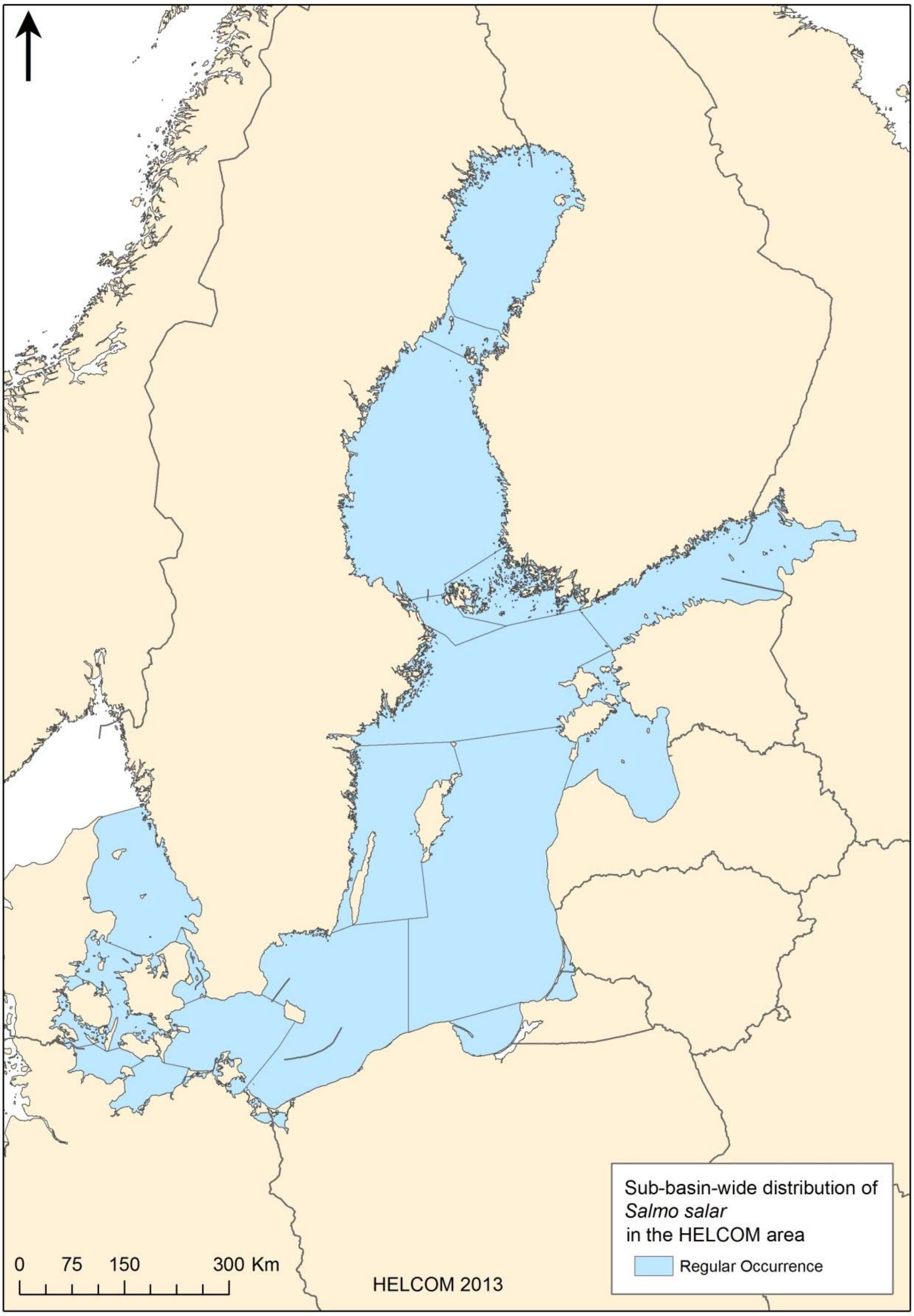
The situation for wild salmon has improved since 1995 with a sixfold natural increase of smolt production in the Baltic Sea (HELCOM 2011). This improvement is not seen in Kattegat, where the stocks are just above the conservation limit – and with a successive decline in recruitment since the 1990s. Despite the positive development in the Baltic sea the probability to reach 50 % of the potential smolt production capacity is still unlikely in half of the rivers examined (ICES 2011b).

Another worrying factor is that postsmolt survival has been more than halved since the 1990s (HELCOM 2011). Combining estimated natural smolt production and postsmolt survival show that the number of adult salmon produced has not changed between 1995 and 2009, however if postsmolt survival continues to decrease this will have an adverse effect on the stock.

Salmon. Male during spawning time (top) and a fish caught outside spawning season (bottom). Photos by Hans Schibli, County Board of Halland.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly (HELCOM 2012). Reproduction only takes place in rivers.



Habitat and ecology

The salmon reproduce in rivers across the whole Baltic Sea, but the most productive rivers are found in the Gulf of Bothnia. Juvenile salmon stay in freshwater streams for one to four years and then spend one to several years at sea on a feeding migration before they return to spawn in the natal river. The Baltic salmon is characterized by a distinct population structure which mirrors the postglacial colonization history. Salmon from different rivers (populations) are mixed in the southern Baltic during the feeding migration, but then follow different migration routes back to the home rivers. The Baltic salmon feed mainly on herring and sprat during the sea migration (HELCOM 2011).

Description of major threats

Commercial and recreational fishing and blocking of migration routes are the main current threats towards salmon in the HELCOM area.

Assessment justification

The situation for wild salmon has improved since 1995 with a sixfold natural increase of smolt production (from 500 000 to 2500 000 individuals) in the Gulf of Bothnia, Gulf of Finland and Baltic Proper and the increase is especially strong in the Bothnian Bay which now stands for 90 % of the total smolt production in the Baltic Sea (HELCOM 2011).

Despite this positive development the number of wild salmon in the Baltic Sea has not increased in some rivers since 2001 (ICES 2011a). Another worrying factor is that postsmolt survival has decreased in the Baltic Sea during this period (from 40% to 10% between 1990s and 2000s (HELCOM 2011, ICES 2011b)). Combining estimated natural smolt production and postsmolt survival shows that the number of adult salmon produced has not changed between 1995 and 2009, however if postsmolt survival continues to decrease this will have an adverse effect on the stock. According to WGBAST report (ICES 2011b) the decrease in survival has levelled off for wild salmon.

In Kattegat the stocks are just above the conservation limit – and with a successive decline in recruitment since the 1990s.

Probability to reach 50% of the potential smolt production capacity by 2011 is very likely in five and likely in three while uncertain in six and unlikely in 13 out of the 27 rivers examined in the Baltic Sea (ICES 2011b). This means that the smolt production capacity in rivers with wild stocks of salmon is below 50% of its current potential. However, this is probably mostly due to the intense exploitation which to a large extent was made before the start of the assessment period 1986–2010, and it is very hard to say how much of the decrease has happened during the assessment period. The estimated decrease during the last 20 years is 0–30%, however, salmon is care dependent in such a way that if habitat restoration would stop it would come to decline even more in the future. This leads to the expert judgment that salmon probably experience a population decrease of more than 30% within the HELCOM area including both past and future time, fulfilling the A4b criteria of being Vulnerable. Immigration from outside the HELCOM area is unlikely to have any rescue effect due to the species strong natal homing behaviour.

Recommendations for actions to conserve the species

This species would benefit from a range of measures including conservation and protection of unobstructed salmon rivers, fisheries management, and reduction of eutrophication in the spawning rivers, ecological flows downstream of dams and power plants, when necessary, ban of gravel extraction in such rivers, construction of fish passes across barriers along the spawning migration route. Illegal fishery also needs to be stopped.

Common names

D: Atlantischer Lachs; DK: Laks; ES: lõhi s; FI: Lohi; GB: Salmon; LA: Lasis; LI: Lašiša; PL: Łosoś a; RUS: losos', syomga; SE: Lax

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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 (2011). Salmon and Sea Trout Populations and Rivers in the Baltic Sea – HELCOM assessment of salmon (*Salmo salar*) and sea trout (*Salmo trutta*) populations and habitats in rivers fl owing to the Baltic Sea. Baltic Sea Environmental Proceedings No. 126A. Helsinki Commission, Helsinki. 79 pp.

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

ICES (2011a). Report of the ICES Advisory Committee. ICES Advice. Book 8, 135 pp.

ICES (2011b). Report of the Baltic Salmon and Trout Assessment Working Group (WGBAST), 22–30 March 2011, Riga, Latvia. ICES 2011/ACOM:08. 297 pp.

Lietuvos Raudonoji Knyga, the Red List of Lithuania. List available at http://www.raudonojiknyga.lt/

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.

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): 11–76.

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/

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<tr><th>English name:
Trout</th><th colspan="2">Scientific name:
Salmo trutta</th></tr>
<tr><td>Taxonomical group:
Class: Actinopterygii
Order: Salmoniformes
Family: Salmonidae</td><td colspan="2">Species authority:
Linnaeus, 1758</td></tr>
<tr><td>Subspecies, Variations, Synonyms:</td><td colspan="2">Generation length:
8 years</td></tr>
<tr><td>Past and current threats (Habitats Directive article 17 codes):
Fishing (F02), Migration barriers (J03.02.01)</td><td colspan="2">Future threats (Habitats Directive article 17 codes):
Fishing (F02), Migration barriers (J03.02.01)</td></tr>
<tr><td>IUCN Criteria:
A4b</td><td>**HELCOM Red List Category:**</td><td>**VU**
Vulnerable</td></tr>
<tr><td>Global / European IUCN Red List Category:
LC/LC but noted that anadromous part of populations (sea trout) and many lacustrine stocks have in many cases markedly declined</td><td colspan="2">Habitats Directive:
–</td></tr>
<tr><td colspan="3">Previous HELCOM Red List Category (2007): VU</td></tr>
<tr><td colspan="3">Protection and Red List status in HELCOM countries:
Denmark: –/**LC**
Estonia: *Regular stockings. Fishery regulations.* / **NT**
Finland: *Fishing is not allowed during spawning time in freshwater. Minimum legal landing size is 50 cm in the sea. Fishing restrictions areas outside some river mouths. Construction of fish passes in rivers. Restorations. Regular stockings.* / **CR** (sea migrating)
Germany: *A restocking program has been established since the 1990´s. Each year approx. 500.000 juveniles are released in suitable rivers.* / ***** (Not threatened, Baltic Sea)
Latvia: *Under the Law on the Conservation of Species and Biotopes; included in CM regulation Nr. 396 and 45. Protection by commercial fishing and angling rules (closed season, minimal landing size).* / –
Lithuania: *Restoration program in some rivers. Protected from fishing during spawning time in rivers 1 October - 31 December. Restricted fishery in migration routes.* / –
Poland: *Stocked annually in some Pomeranian rivers (in contact to the Baltic waters). Minimum landing size 50 cm. Closed season different in coastal and open waters. Minimum mesh size 70 mm (bar length) for fishery in the coastal area of Gdansk Bay, 80 mm for the rest of Polish Maritime Areas. Protected area (closed for fishery) in the river mouths.* / –
Russia: *Anadromous form is included in the Red Books of St Petersburg, Leningrad District and Russian Federation, which means it is illegal to fish for and land this species.* / **EN**
Sweden: *Protected from fishing during spawning time in some areas. Minimum legal landing size 45 cm in Kattegat, and 50cm in the rest of the Baltic Sea, except for 40 cm in Åland Sea*. / **LC**</td></tr>
</table>

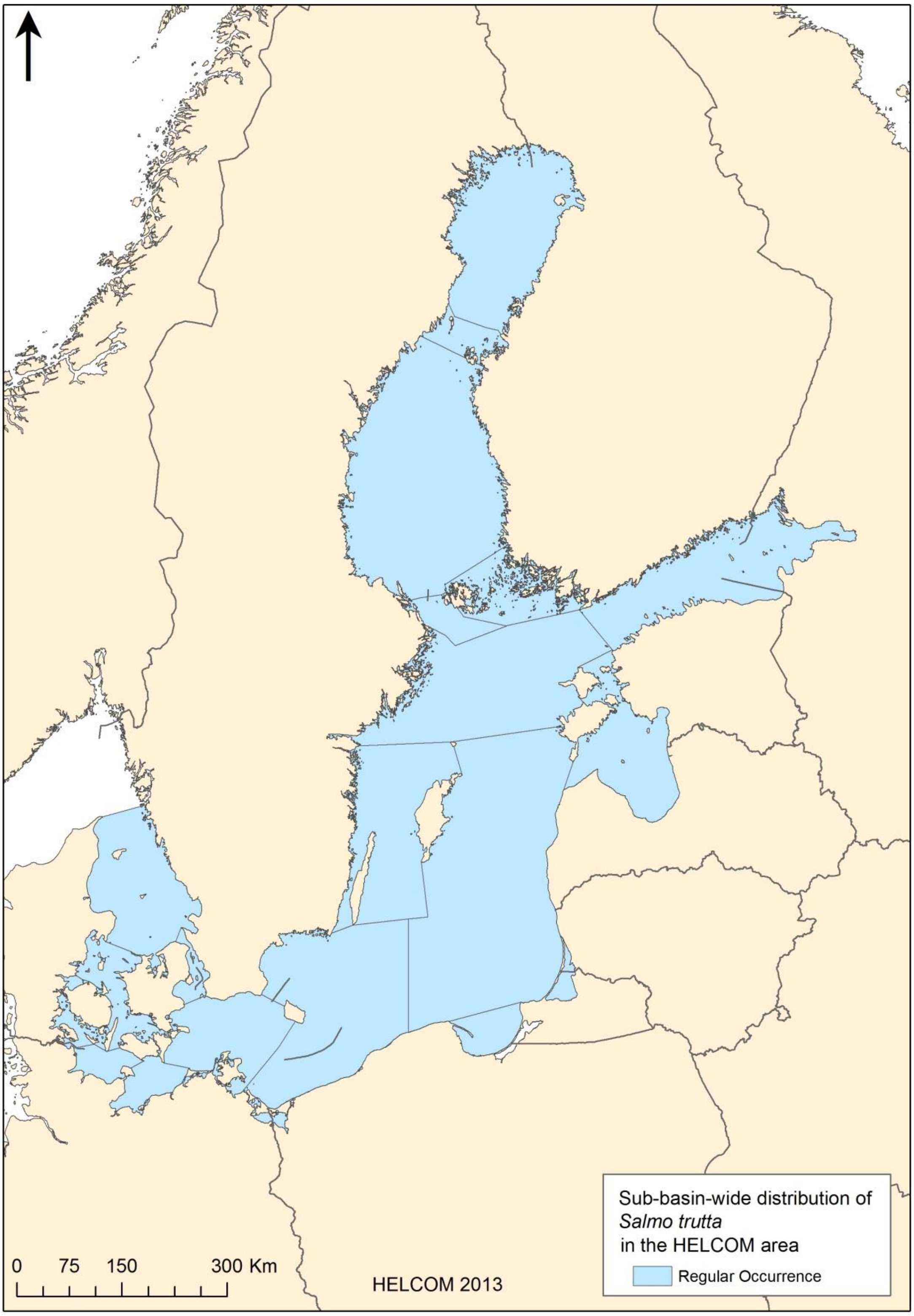
Distribution and status in the Baltic Sea region

Sea trout is an anadromous form of brown trout (*Salmo trutta* L.) and the species is naturally distributed in northern and western Europe from the White Sea to northern Spain, including the entire Baltic Sea area. It is a highly appreciated in commercial and recreational fishery and stocking is a common practice in large part of the distribution area. In total there are about 1000 trout rivers in the Baltic Sea area (ICES 2011a,b). Although still numerous, the sea trout populations have been affected by migration obstacles, habitat degradation and fishing. In three out of nine ICES subdivisions in the Baltic Sea the parr production is estimated to be below 50% compared to potential production capacity and only in three areas it is 100% (ICES 2011a,b). The populations in both the Bothnian Sea and Gulf of Finland are in poor state (ICES 2011b, HELCOM 2011). Globally this species is considered not threatened but it is noted that the anadromous part of populations (sea trout) and many lacustrine stocks have in many cases markedly declined because of pollution (and possibly from impacts from salmon farming) (Freyhof, J. 2011).

Trout. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly (HELCOM 2012). Reproduction takes place in rivers.



Habitat and ecology

Sea trout usually lives in the same water system with resident brown trout, and they can be genetically isolated from each other or breed together and genetically belong to the same population (Freyhof 2011). Populations are often partially migratory, i.e. one part of the population leaves the river for feeding in the sea (predominantly females migrate), while another part stays in the river as residents. Sea trout spawn in rivers and smaller streams, often in the upper reaches or in smaller tributaries, where the nursery areas of trout are also found. They live their first (1–5) year(s) as parr in the stream, leaving the stream as smolts for a feeding migration in the sea that lasts for ½–5 years. After the sea migration they return to their natal stream for spawning. Spawning may be repeated several times. Adults feed on small fish and large crustaceans.

Description of major threats

Commercial and recreational fishing and blocking of migration routes are the major threats for anadromous trout.

Assessment justification

In three out of nine ICES assessment area the parr production is estimated to be below 50% and only in 3 areas it is 100% (ICES 2011b). Assuming that all ICES SD represents equal parts of the stock would result in an overall reduction of 25%. However there are no trend data and the reduced parr production are probably to a large part caused by constructions in rivers which were made before the start of the assessment period. There are indications of a continuing decline in the Gulf of Bothnia were landings have declined and older individuals are missing (ICES 2011b). Otherwise there are no data to follow trends in stocks of sea trout. Although there is no question that the Gulf of Bothnia and Gulf of Finland are in an adverse state the decrease in total HELCOM area in the past 3 generations is most probably below 30%. However, there are indications of a decline in the recent past. Furthermore, trout is care dependent in such a way that if habitat restoration would cease it would decline even more in the future. This leads to the expert judgment that trout probably experiences a population decrease of more than 30% within the HELCOM area including both past and future time, fulfilling the A4b criteria of being Vulnerable. Immigration from outside the HELCOM area is unlikely to have any rescue effect due to the species strong natal homing behaviour.

Recommendations for actions to conserve the species

According to the meeting of sea trout specialists and managers around the Baltic in Helsinki, Finland, 2011 (Pedersen et al. 2012) the species would benefit by a range of measures including conservation and protection of unobstructed trout and salmon rivers, fisheries management, reduction of eutrophication in the spawning rivers, ecological flows downstream past dams and power plants, reduced sediment load through adequate riparian zones, when necessary, ban of gravel extraction in such rivers, construction of fish passes across barriers along the spawning migration route. Illegal fishery also needs to be stopped.

Common names

D: Meerforelle; DK: Ørred; ES: meriforell; FI: Taimen; GB: Trout; LA: Taimiņš; LI: Šlakis; PL: Troć; RUS: Kumzha, forel'; SE: Öring

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Freyhof, J. (2011). *Salmo trutta*. In: IUCN 2011. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org. (viewed 30 April 2012)

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 (2011). Salmon and Sea Trout Populations and Rivers in the Baltic Sea – HELCOM assessment of salmon (*Salmo salar*) and sea trout (*Salmo trutta*) populations and habitats in rivers fl owing to the Baltic Sea. Baltic Sea Environmental Proceedings No. 126A. Helsinki Commission, Helsinki. 79 pp.

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

ICES (2011a). Report of the Baltic Salmon and Trout Assessment Working Group (WGBAST), 22–30 March 2011, Riga, Latvia. ICES 2011/ACOM:08. 297 pp.

ICES (2011b). Report of the ICES Advisory Committee. ICES Advice. Book 8, 135 pp.

Pedersen, S., Heinimaa, P., Pakarinen, T. (eds.) (2012). Workshop on Baltic sea trout. DTU Aqua report 248, 95 pp.

Red Book of Nature of Saint-Petersburg. "Professional", Saint-Petersburg. 2004. 416 p. (In Russian) [Красная книга природы Санкт-Петербурга. СПб. 2004. 416 с.]

Red book of Nature of the Leningrad region. Vol. 3. Animals. “Mir I Semya” ", Saint-Petersburg. 2002. 480 p. (In Russian) [Красная книга природы Ленинградской области. Том 3. Животные. "Мир и Семья", Санкт-Петербург, 2002, 480 с.]

Red Book of the Russian Federation (animals). 2001. “Act Astrel”. 863 pp. (In Russian) [Красная Книга Российской Федерации (животные). 2001. «Аст Астрель». 863 с.], on-line version (2007) http://www.sevin.ru/redbooksevin/index.html

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): 11–76.

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.

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/

English name: **Asp**	Scientific name: ***Aspius aspius***
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cyprinidae	Species authority: Linnaeus, 1758
Subspecies, Variations, Synonyms: *Leuciscus aspius*	Generation length: 11 years
Past and current threats (Habitats Directive article 17 codes): Construction (J02.05.02; J02.01), Fishing (F02.01.01, F02.01.02),	Future threats (Habitats Directive article 17 codes): Construction (J02.05.02, J02.01), Fishing (F02.01.01, F02.01.02)
IUCN Criteria: **A3d**	**HELCOM Red List Category:** **NT Near Threatened**
Global / European IUCN Red List Category LC/LC	Habitats Directive: Annex II and V
Previous HELCOM Red List Category (2007): VU	
Protection and Red List status in HELCOM countries: Denmark –/**LC** Estonia: *protected by the law (second category)* / **DD** Finland: stockings, *introduction and transfer of individuals* / **NT** Germany –/***** (Not threatened, Baltic Sea) Latvia: *protected species (regulation nr. 45 and 396), catch regulated by angling rules* / – Lithuania: *minimum landing size (52 cm)* / – Poland: Not protected by the law, *protection measure in freshwater bodies only* / – Russia: – / **EN** Sweden: *fishing is prohibited during spawning time in some large rivers, construction of fish passes* / **NT**	

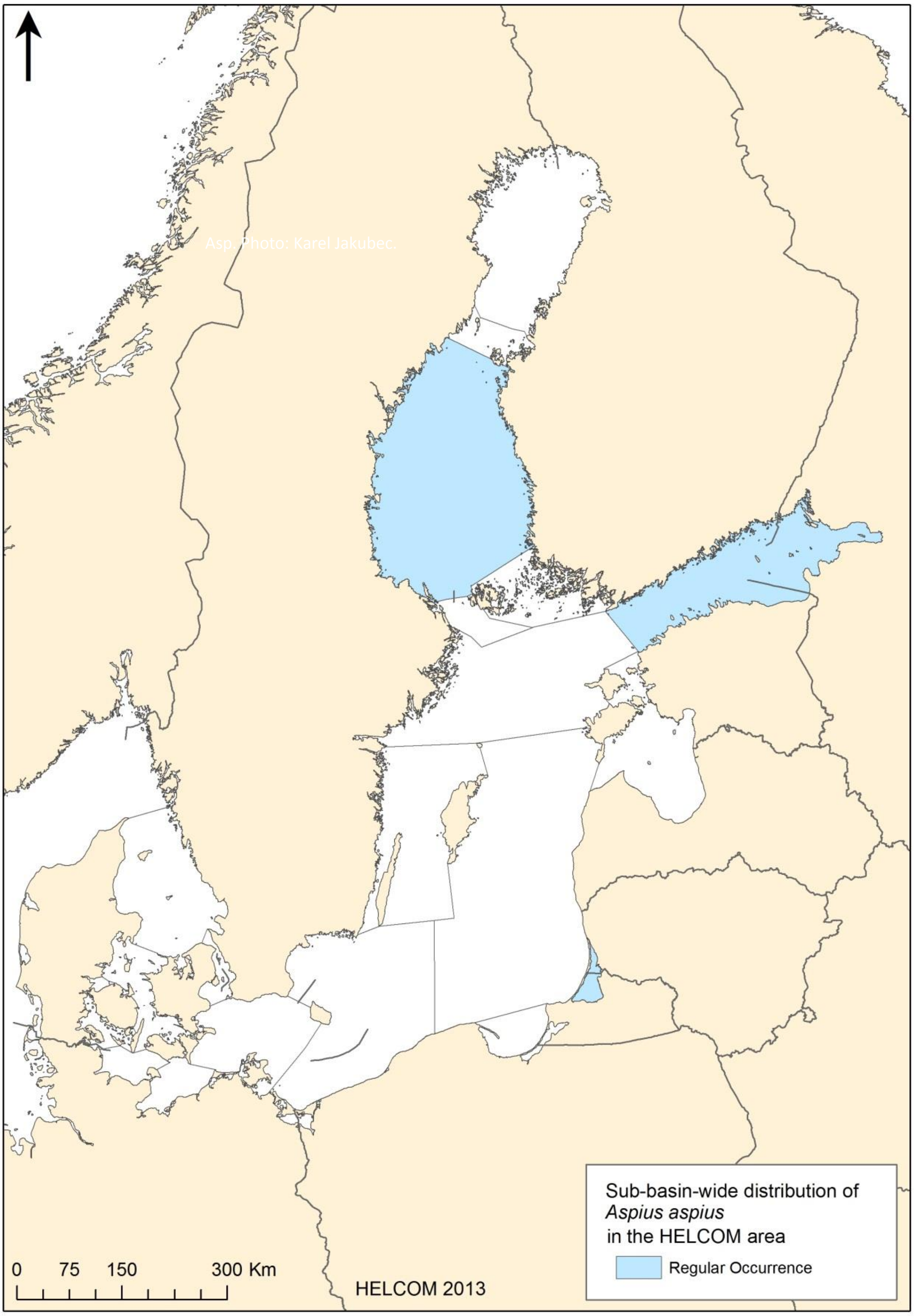
Distribution and status in the Baltic Sea region

This freshwater species is occasionally encountered in several coastal areas in the Baltic Sea. It is however regularly occurring only in some rivers and near them in the eastern part of the Gulf of Finland, the eastern part of the Bothnian Sea and the Curonian and Vistula lagoons. Asp is more abundant in the southern part of the Baltic Sea area. Population is increasing but not profuse in Finland, Sweden, Latvia and Germany. Commercial landings in Lithuanian part of the Curonian Lagoon decreased during the last decade while the catches in the Russian part increased. The species is rare in the Russian part of the Gulf of Finland but reported abundant from the Neva River.

Asp. Photo by Karel Jakubec.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly (HELCOM 2012a).



Habitat and ecology

The asp lives in open water of large and medium-sized lowland rivers and large lakes. Asp inhabits also lower reaches of rivers and estuaries. It prefers to stay near bridge pillars, near tributaries, under weirs, in deep currents and overgrown parts of river and in quiet bays of river bends. Asp is one of the cyprinids which is piscivore and it may also prey on small aquatic birds. Juveniles are gregarious predators while adults hunt in small groups or are solitary (Froese & Pauly 2011). Juveniles and adults feed mainly on fish, especially on *Alburnus alburnus* or *Osmerus eperlanus*. They migrate upstream in tributaries for spawning in April–June and spawn in fast-flowing water on gravel or submerged vegetation. Lake populations migrate to tributaries; anadromous populations forage mainly in estuaries and freshened parts of the sea, migrating to rivers only for spawning. Asps begin spawning migration in second half of October and overwinter in the lower reaches of river. The species hybridizes with *Leuciscus idus*.

Description of major threats

The species is threatened due to alteration of river morphology for example by constructions in the water destroying spawning areas or drying out projects resulting in loss of nursery areas. Commercial fishing is also a threat.

Assessment justification

This species is generally not caught in the regular environmental monitory fishing series in the HELCOM area using multimesh gillnets or fykenets (HELCOM 2012b). The Institute of Freshwater Research in Sweden reports decreasing population in the great lakes, including Lake Mälaren in the 1960s but stabilising in the 1980s and even increase in catches in the 2000s. Increasing population is also reported in Germany. There is a declining trend in commercial catches in Lithuania (c. 10 tonnes in 2003 and c. 2 tonnes in 2012). However, juveniles are regularly found in beach seine surveys and it seems there is not any decline of at least in regard to juveniles. According to the Lithuanian River monitoring data, populations in the inland waters are considered stable. In Sweden and Finland the species is considered NT and it is also included in the Red Books of Leningrad and St. Petersburg districts.

This species is care dependent. Stocking and restoration of migration routes have led to populations that in the HELCOM area are stable or increasing. No threats for decline in future are detected but if the conservation effort would stop the species is at risk of reaching the status of VU (>30% decline in population size) and hence it classifies as Near Threatened (NT).

Recommendations for actions to conserve the species

Fishing during spawning and migration should be restricted and fishpasses should be constructed to repair blocked migration routes. In areas, where the species has disappeared conditions should be improved by habitat restoration and afterwards reintroductions might be considered. Further information on the population size should be collected.

Common names

DE: Rapfen; DK: Asp; ES: Tõugjas ; FI: Toutain; GB: Asp; LA: Salate; LI: Salatis; PL: Boleń; RU: Zherekh; SE: Asp

References

Aleksejevs, E., Birzaks, J. (2011). Long-term Changes in the Ichthyofauna of Latvia's Inland Waters. Scientific Journal of Riga Technical University 7: 9–18.

Berglund, J. (2004). Leklokaler för asp i Göta älvs, Hjälmarens och Vänerns avrinningsområde. Fiskeriverket informerar 2004:10. Intellecta Docusys, Västra Frölunda. 129 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.64f5b3211343cffddb2800019057/1327998208127/finfo2004_10.pdf

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Freyhof, J. (2008). *Aspius aspius*. IUCN Red List of Threatened Species. Version 2012.2. Availeble at: www.iucnredlist.org

Froese, R., Pauly, D. (eds.) (2011). FishBase.World Wide Web electronic publication. Available at: www.fishbase.org

Gaigalas, K. (2001). Fishes in the Curonian Bay basin, their resources and fishery. Klaipėda, Eglė. 372 pp.

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 (2012a). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

HELCOM (2012b). Indicator based assessment of coastal fish community status in the Baltic Sea 2005–2009. Baltic Sea Environment Proceedings No. 131. Helsinki Commission, Helsinki. 88 pp.

Ojaveer, E., Pihu, E., Saat, T. (eds.) (2003). Fishes of Estonia. Estonian Academy Publishers, Tallinn. 416 pp.

Plikšs, M., Aleksejevs, E. (1998). Fishes of Latvia. Gandrs, Riga. 304 pp.

Psuty, I., Wilkoñska, H. (2009). The stability of fish assemblages under unstable conditions: A ten-year series from the Polish part of the Vistula Lagoon. Archives of Polish Fisheries 17: 65–76.

Red Book of the Russian Federation (animals). 2001. "Act Astrel". 863 pp. (In Russian) [Красная Книга Российской Федерации (животные). 2001. «Аст Астрель». 863 с.], on-line version (2007) http://www.sevin.ru/redbooksevin/index.html

Shibaev, S. V., Khlopnikov, M. M., Skolov, A. V. (eds.) (2008). Fischery cadastre of transboundary reservoirs of Russia (the Kaliningrad region) and Lithuania. Mishutkina Co, Kaliningrad. 200 pp.

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): 11–76.

Urho, L., Lehtonen, H. (2008). Fish species in Finland. Finnish Game and Fisheries Research Institute, Helsinki. 34 pp.

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.

Virbickas, J. (2000). Fishes of Lithuania. Trys žvaigždutės, Vilnius. 192 pp.

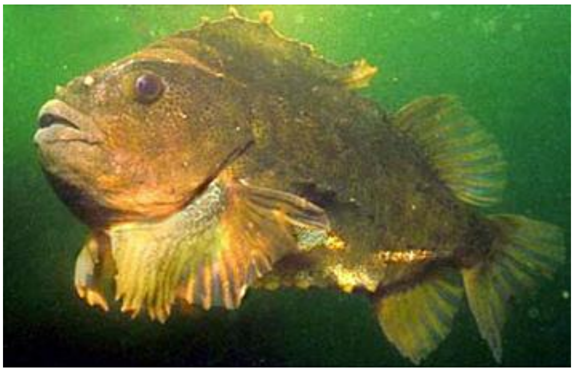
Wind, P. & Pihl, S. (eds.). (2004–2010). The Danish Red List. - The National Environmental Research Institute, Aarhus University [2004]-. http://redlist.dmu.dk (updated April 2010). Species information available at http://bios.au.dk/videnudveksling/til-myndigheder-og-saerligt-interesserede/redlistframe/soegart/

SPECIES INFORMATION SHEET *Cyclopterus lumpus*

English name: **Lumpsucker**	Scientific name: ***Cyclopterus lumpus***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Cyclopteridae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 7 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02)	Future threats (Habitats Directive article 17 codes): Fishing (F02), By-catch (F02)	
IUCN Criteria: **A2b**	**HELCOM Red List Category:**	**NT** **Near Threatened**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**LC,** Germany –/***** (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**NT**		

Distribution and status in the Baltic Sea region

The lumpsucker is distributed and reproducing all over the Baltic Sea. It is targeted in fishery and its roe is highly appreciated. In the Baltic proper the ICES Baltic International Bottom Trawl Survey (BITS) shows no decline from 1988 to 2010 but in the Arkona Sea the survey indicates a 60–70% decline the last 20 years. In Kattegat the International Bottom Traw Survey (IBTS) shows a 90% decline from the end of the 1980s to today. This could to some extent be due to some very good years in the late 1980s. Looking at a longer timeframe 1979 to 2010 reveal that catch per unit effort in IBTS in Kattegat the last 5 years is 75% lower than before the high abundance in 1988–1991 (Fig. 1).



Lumpsucker. Photo by Timo Moritz Deutches Meeresmuseum (left), Jón Már Halldórsson (right).

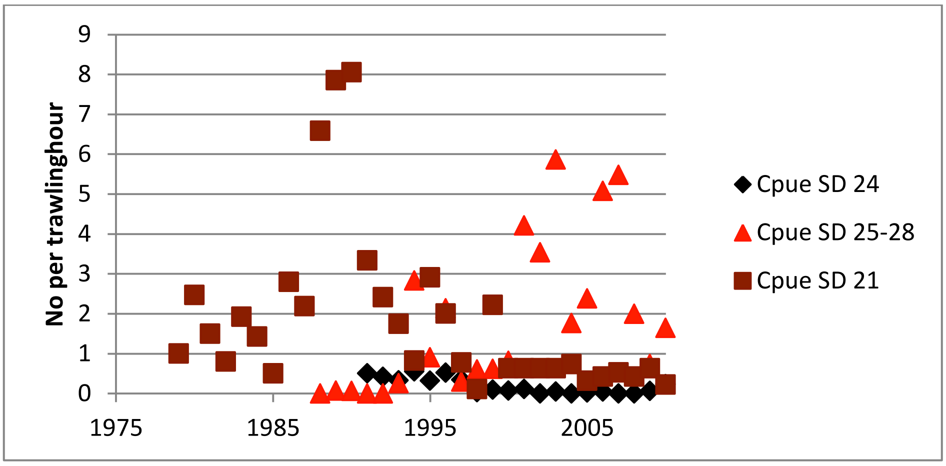
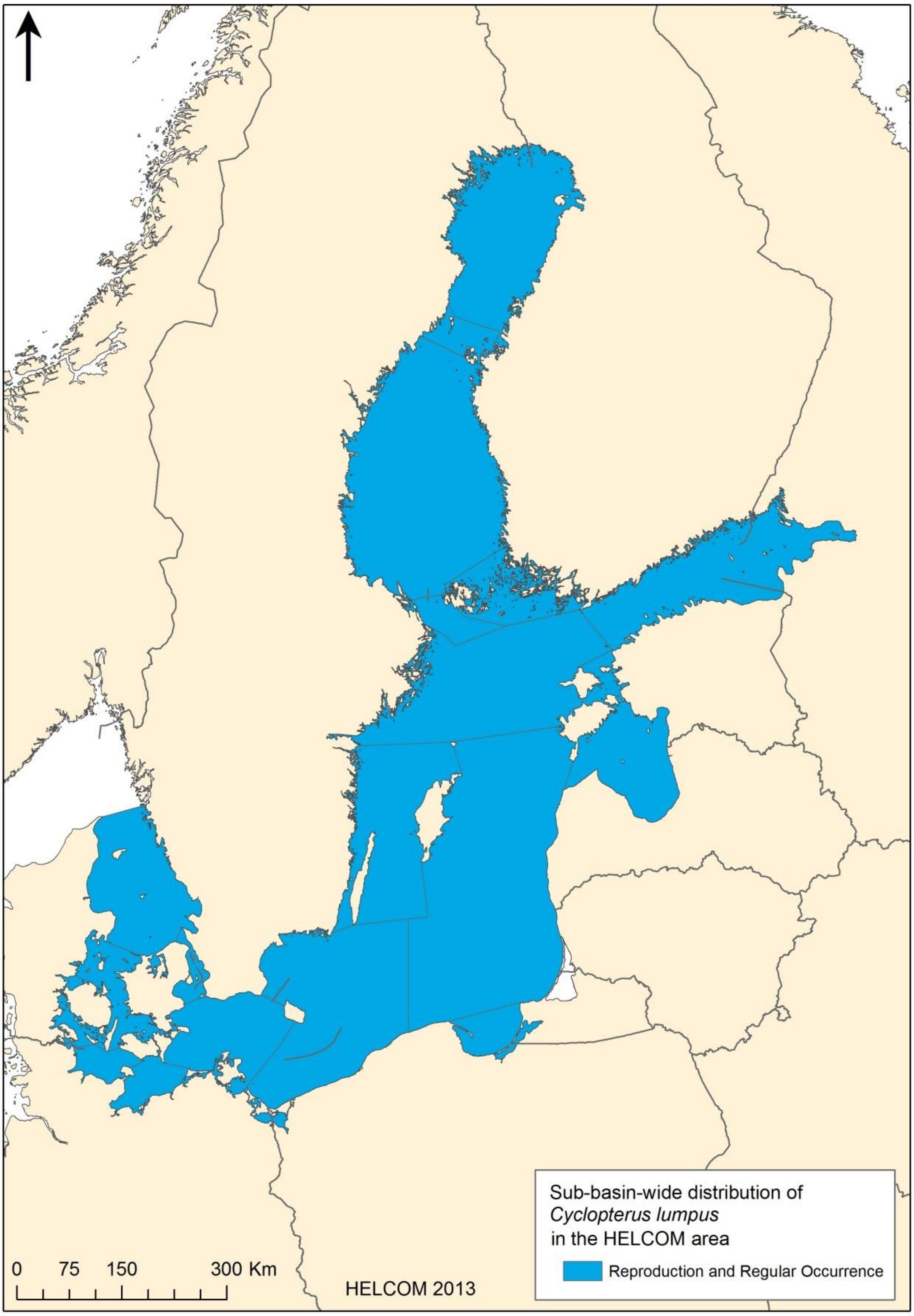


Fig. 1 Catch per unit effort (cpue) of lumpsucker in the International Bottom Trawl Survey in Kattegat (ICES SD 21) and in the Baltic International Trawl Survey in the Arkona basin (SD 24) and in the Baltic proper (ICES SD 25–28).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and reproduce (HELCOM 2012).



Habitat and ecology

Lumpsucker is basically solitary rather than a schooling fish with an epibenthic-pelagic behaviour. It inhabits rocky bottoms but may occur among floating seaweeds. The lumpsucker migrates considerable distances in an annual cycle between deeper waters in winter and shallower waters in summer and have a homing instinct (Coad & Reist 2004, Davenport 1985). During the spawning season the male becomes reddish in colour on the underside, whereas the female is blue-green. Lumpsucker feeds on ctenophores, medusas, small crustaceans, polychaetes and small fishes (Froese & Pauly 2012).

Description of major threats

The major threat is fishing, both commercial, recreational and as by-catch.

Assessment justification

The ICES Baltic International Bottom Trawl Survey (BITS) data show no decline in the eastern part of the Baltic Sea (SD25–28) from 1988 to 2010. Catches are generally low in the Arkona basin but BITS data still show a 60 to 70% decline from 1991 to 2010. Data from BITS in Öresund and the Belt Seas are too scarce to draw any conclusions on trend. In Kattegat the German acoustic surveys showed a 50% decline from 1996 to 2010, and in the same area Swedish data from the International Bottom Trawl Survey (IBTS) showed a 90% decrease from 1988 to 2010. This could however be due to some very good years in the late 1980s. Looking at a longer timeframe 1979 to 2010, IBTS reveal that catch per unit effort the last 5 years are 75% lower than before the high abundance in 1988–1991 (Fig. 1).

Lumpsucker is distributed and reproducing all over the Baltic Sea. Hence, even though a drastic decline in Kattegat and western Baltic Sea (as stated above) has been observed, the overall decrease in abundance is less than 30% but more than 15% resulting in an NT category (A2b). This is not downgraded due to possible immigration from outside the HELCOM area since the status of this species is unknown in adjacent areas.

Recommendations for actions to conserve the species

Fishery should be regulated and better information on population size is needed.

Common names

D - Seehase; GB – Lumpsucker; EST - Merivarblane; DK - Stenbider; FIN – Rasvakala; LV - Zaķzivs, jūras zaķis; LT - Ciegorius; PL - Tasza; RUS - Pinagor; S – Sjurygg

References

Coad, B.W., Reist, J.D. (2004). Annotated list of the arctic marine fishes of Canada. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2674. 112 pp.

Davenport, J. (1985). Synopsis of biological data on the lumpsucker *Cyclopterus lumpus* (Linnaeus 1758). FAO Fisheries Synopsis No. 147. 31 pp.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

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

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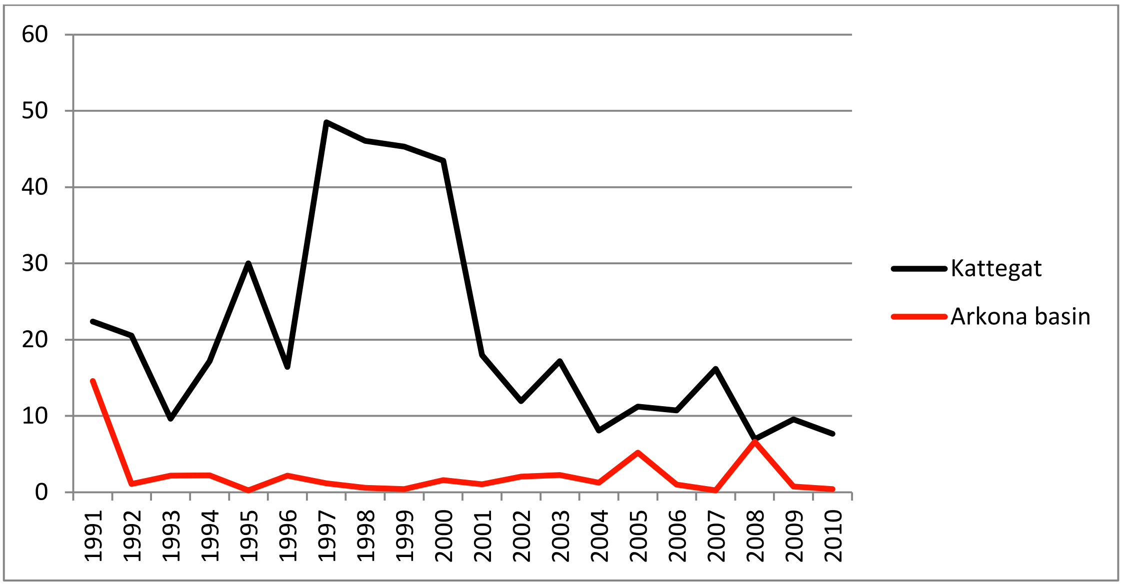
English name: **Four-bearded rockling**	Scientific name: ***Enchelyopus cimbrius***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Lotidae	Species authority: Linnaeus, 1766	
Subspecies, Variations, Synonyms: *Rhinonemus cimbrius (Gill 1863)*	Generation length: 5 years	
Past and current threats (Habitats Directive article 17 codes): Unknown	Future threats (Habitats Directive article 17 codes): By-catch (F02)	
IUCN Criteria: **A2b**	**HELCOM Red List Category:**	**NT** **Near Threatened**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): RA		
Protection and Red List status in HELCOM countries: Denmark –/**DD**, Estonia –/–, Finland –/–, Germany –/*****(Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**DD**		

Distribution and status in the Baltic Sea region

The four-bearded rockling is to a large extent mainly distributed in marine waters but can also be found in the brackish waters of the Baltic Sea. Bottom trawling surveys in Kattegat show a 74 % decrease during the assessment period from 1995 to 2010. German trawl surveys from Arkona basin (ICES SD 24) and the Belt Seas (ICES SD 22) show no trend while Swedish trawl survey data show a tendency for decline since 2001 in the same area. It is possible that the decrease in Kattegat is due to a resume to more natural values after high CPUE in trawling catches during 1997 to 2000. However data from 1991 to 2010 still display a significant decrease of 54 %.

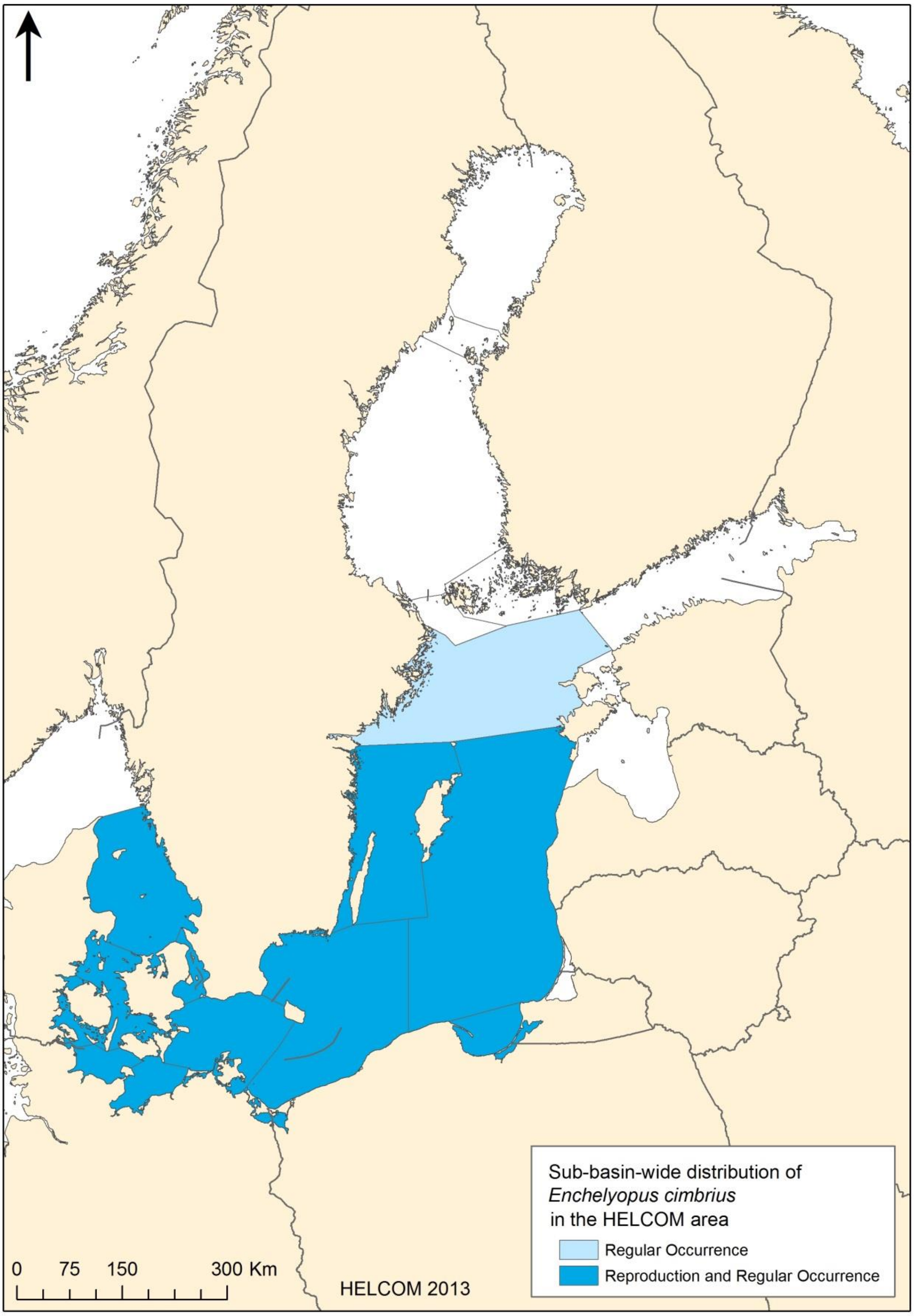
Four-bearded rockling. Photo by David Andersson, Swedish University of Agricultural Sciences.



Number of four-bearded rocklings caught per hour in Swedish Bottom trawl surveys (IBTS and BITS). Assessment period is 1995–2010.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012a).



Habitat and ecology

A bottom-living sedentary rockling which is generally captured on muddy or sandy bottoms in 20–250 m depth; it has been caught as deep as 550 m (Muus & Nielsen 1999). In the northern parts of its range it is usually found in shallower areas, whereas in the south it lives in deep waters. It feeds mainly on crustaceans, and to a lesser extent on worms and molluscs. It breeds in deep water in late spring and summer; the eggs and larvae are pelagic (Froese & Pauly 2012).

Description of major threats

No major threats have been identified but it is caught unintentionally in the cod trawl fishery, which could present a threat.

Assessment justification

Data from 1991 to 2010 gives a significant decrease in cpue of 54% in the Kattegat while data from the Arkona Sea and the Belt Sea show no trend. Assuming that the data represents equal parts of the total population the overall decrease is (54+0/2) = 27% resulting in NT category. Due to the species sedentary behaviour possible immigration from the Skagerrak is not deemed to be of such a magnitude that the category should be lowered.

Recommendations for actions to conserve the species

The population trend of the species should be monitored and the extent of bycatch in trawl fishery should be investigated and possibly reduced.

Common names

D: Vierbärtelige Seequappe; DK: Firtrådet havkvabbe; ES: neljapoiseluts; FI: Neliviiksimade; GB: Four-bearded rockling; LA: Četrtaustekļu jūras vēdzele; LI: Keturūsė vėgėlė; PL: Motela; RU: Chetyrekhusij nalim; SE: Fyrtömmad skärlånga

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Muus, B.J., Nielsen, J.G. (1999). Sea fish. Scandinavian Fishing Year Book, Hedehusene, Denmark. 338 pp.

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): 11–76.

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/

English name: **River lamprey**	Scientific name: ***Lampetra fluviatilis***	
Taxonomical group: Class: Cephalaspidomorphi Order: Petromyzontiformes Family: Petromyzontidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 7 years	
Past and current threats (Habitats Directive article 17 codes): Migration barriers (J03.02.01), Eutrophication (H01.05), Fishing (F02),	Future threats (Habitats Directive article 17 codes): Eutrophication (H01.05), Migration barriers (J03.02.01), Fishing (F02),	
IUCN Criteria: **A2bd**	**HELCOM Red List Category:**	**NT** **Near Threatened**
Global / European IUCN Red List Category LC/LC	Habitats Directive: Annex II, V	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark: –/**DD** Estonia: *Fishery regulations* / **LC** Finland: *In some closed rivers stocks are kept alive by transfer individuals over dams and in some others with stocking* / **NT** Germany: *Protected by national and European law (Annex II, V Habitat Directive)* / **1** (Critically endangered, Baltic Sea) Latvia: *Fishery regulated by number of gears and closed season. Under the Law on the Conservation of Species and Biotopes Nr. 396 and 45 / –* Lithuania –/– Poland: *prohibited to kill, catch or disturb this species under strict protection* / **VU** Russia: Excluded from the Red Book of Russian Federation since 1997 Sweden: *regional restoration programs in rivers* / **LC**		

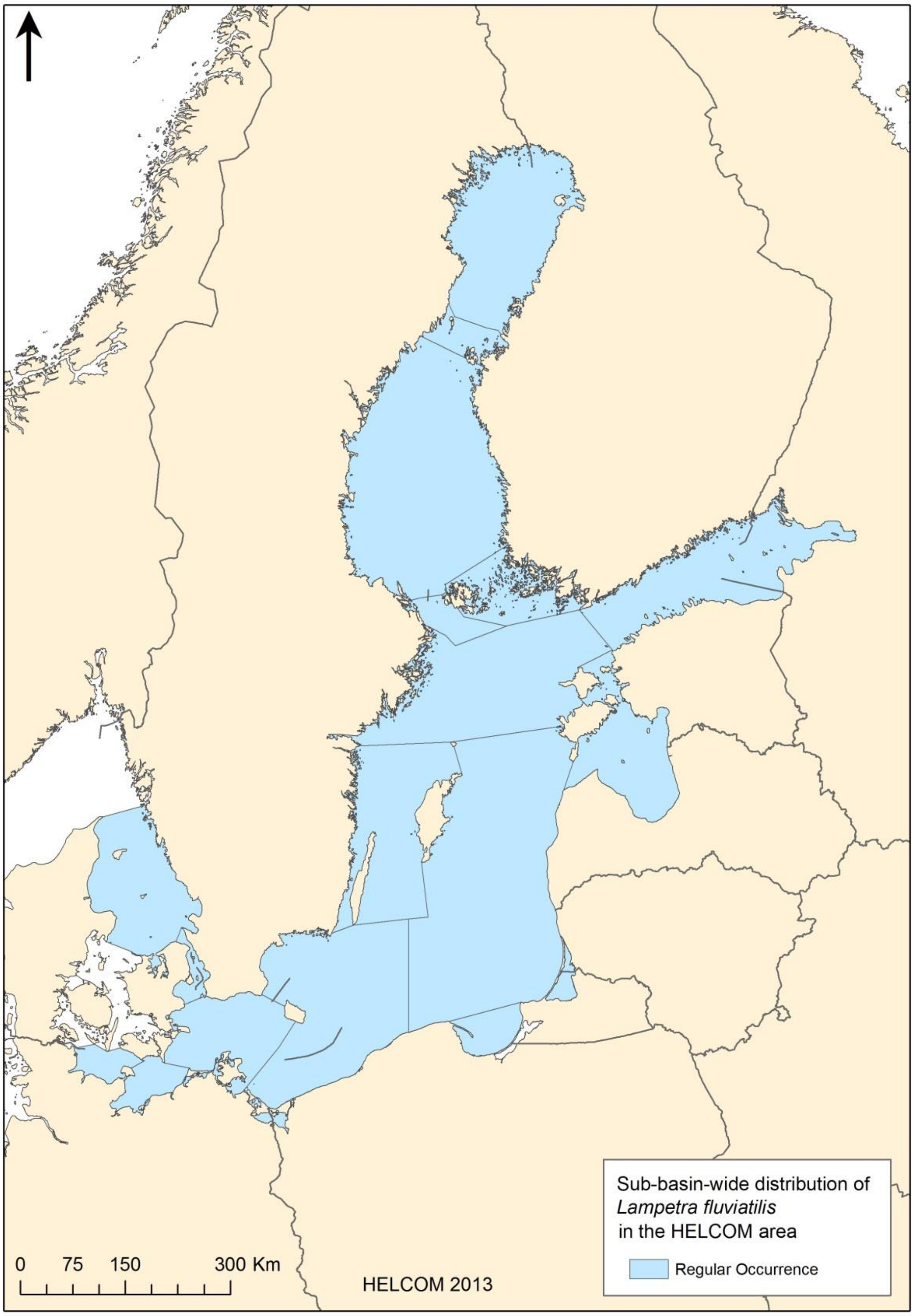
Distribution and status in the Baltic Sea region

River lamprey. Photo by Gerd-Peter Zauke, Carl von Ossietzky University Oldenburg.

The anadromous river lamprey is distributed throughout the HELCOM area including adjacent rivers and streams. A land-locked form is present in the greater lakes in Sweden and Finland. River lampreys are traditionally used as human food in the northern and eastern part of the Baltic Sea and there is a commercial fishery in Finland, Estonia, Latvia, Lithuania, Russia and Sweden. In Poland, spawning probably takes place in some Pomeranian rivers and lakes as well as in Odra and Vistula basins in connection with estuaries and coastal areas but there is lack of knowledge of this species. In Germany this species is considered critically endangered while there is a lack of knowledge of the status in Denmark. After a severe reduction of the species in the mid-1900s, due to establishment of hydropower plants, most Baltic areas show a stable development of the species in the last decades. Data from commercial landings in southern Baltic Sea show that despite a large decrease seen during the 1900s there is no decrease during the last 20 years. Furthermore Swedish electrofishing data from rivers show stable occurrence over the last 25 years. In contrast, the catches in Finland have been reduced close to half from the late 1980s to 2000s, and in a monitory series in Åland Sea the catch per unit effort have decreased by 80% during the same timeframe.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly (HELCOM 2012). Reproduction only takes place in rivers.



Habitat and ecology

The river lamprey is an anadromous long-distance migrating species. Adults enter freshwater habitats in autumn, winter and even spring, migrate far upstream, and spawn from early spring to early summer in gravel areas with adjacent clean sand bottoms. Short after spawning the adult river lampreys die. Larvae bury in sand or clean silt near the spawning site for 3–5 years. After metamorphosis the juveniles migrate downstream to the sea in spring where they spend another 1–2 years, benthic in shallow and deeper water, mostly on hard bottom or parasitic on larger fishes (mainly cod or herring) (Fricke 1987, Froese & Pauly 2012). All lampreys have bucal glands that excrete a substance that prevents blood from clotting (Holcik 1986). This species reaches a maximum total length of 50 cm, a maximum weight of 150 g, and an individual age of up to 10 years.

Description of major threats

In the past, the most important reason for population declines was establishment of hydropower plants in rivers. Currently, eutrophication in the spawning habitats (larvae can live only in well oxygenated sand bottoms) and still also construction of weirs and dams in rivers and in some areas fisheries (target species) are major threats. The species is sensitive to human activities, including acid waters and daily water level regulations.

Assessment justification

After a severe reduction in the mid-1900s due to establishment of hydropower plants the Baltic populations have stabilised. Data from commercial landings in southern Baltic Sea (in Thiel et al. 2009) show that despite a large decrease seen during the whole investigated time series (1887–1999) there is no decrease over the last 3 generations (1990–2010). In addition landings from 17 rivers in Latvia show stable commercial catches over the last 20 years. Lampreys are not caught in coastal monitory fishing series or acoustic- and bottom trawl surveys but Swedish electrofishing data from rivers show stable occurrence over the last 25 years (Degerman *et al*. 2008). In contrast to these data from the cooling water intake in Forsmark in the Åland Sea show an 80% decrease during the assessment period and catches in Finland have decreased from 1.8 millions in the late 1980s to 800 000 in the 2000s. Assuming that Finland has approximately half of the lamprey populations in the HELCOM area the drastic reduction of landings in Finland together with the sensitivity of their lifestyle (require various habitats and functioning waterways) suggest a possible decrease between 10–50% with most probable value according to expert judgement 25% in the HELCOM. The estimated 25% reduction results in a NT status for river lamprey in the A criterion (A2bd) for the HELCOM area. Immigration from outside the HELCOM area is unlikely to have any rescue effect due to the species natal homing behaviour.

Although the estimated area of occupancy, which for this anadromus species equals the area of rivers with known reproduction, are below the threshold for NT (2 000 km^2), and there is a continued decline, the lack of severe fragmentation or extreme fluctuations in habitat or abundance leads to the B-criteria not being fulfilled.

Recommendations for actions to conserve the species

Measures for protection of river lamprey should mainly improve the situation along the migration route and at the spawning sites. The construction of new weirs and other migration obstacles in rivers and streams should be avoided; fish passes should be constructed where weirs and other obstacles exist. In Finland some closed river stocks are kept alive by manually transfer individuals over dams. Eutrophication of potential spawning sites should be reduced. Fishery should also be controlled.

Common names

DE: Flussneunauge; DK: Flodlampret; ES: Jõesilm; FI: Nahkiainen; GB:River lamprey; LV: Upes nēģis ; LI: Upinė nėgė; PL: Minóg rzeczny; RU: Rechnaja minoga; SE: Flodnejonöga

References

Degerman, E., Sers, B., Magnusson, K. (2009). Artförekomst perioden 1988–2007 i Svenskt ElfiskeRegiSter - förändras arternas förekomst över tid? Information från Svenskt ElfiskeRegiSter vol. 1. Fiskeriverket, Sötvattenslaboratoriet, Örebro. 28 pp. [in Swedish]

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fricke, R. (1987). Deutsche Meeresfische. Bestimmungsbuch. Hamburg (DJN). 219 pp.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Holcik, J. (ed.) (1986). The freshwater fishes of Europe, Vol. 1, Part I. Petromyzontiformes. Aula-Verlag, Wiesbaden / Germany. 313 pp.

Psuty, I., Krajniak, T., Szymanek, L., Grochowski, A. (2010). Expert study report on the occurrence of two lamprey species: river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*) in the river estuaries of the Baltic Sea and in the coastal sea zone. Gdynia.

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): 11–76.

Thiel, R., Winkler, H.M., Riel, P., Neumann, R., Gröhsler, T., Böttcher, U., Spratte, S., Hartmann, U. (2009). Endangered anadromous lampreys in the southern Baltic Sea: spatial distribution, long-term trend, population status. Endangered Species Research 8:233–247.

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.

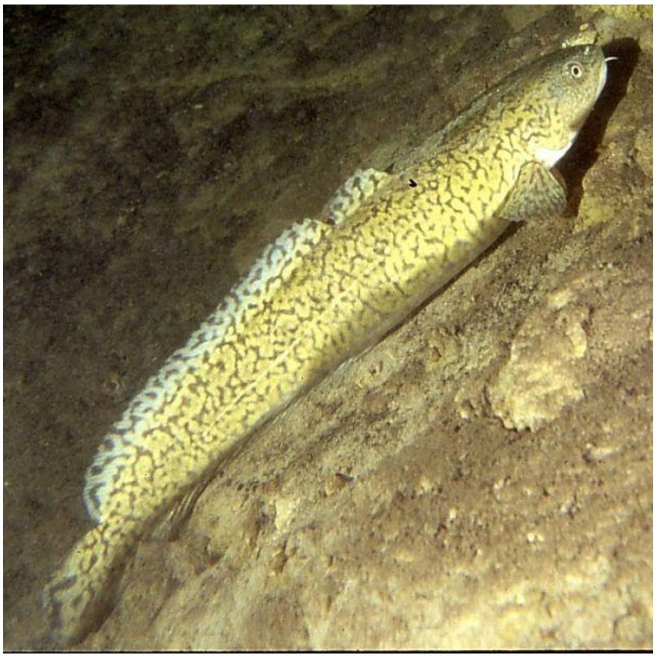
Wind, P. & Pihl, S. (eds.). (2004–2010). The Danish Red List. - The National Environmental Research Institute, Aarhus University [2004]-. http://redlist.dmu.dk (updated April 2010). Species information available at http://bios.au.dk/videnudveksling/til-myndigheder-og-saerligt-interesserede/redlistframe/soegart/

SPECIES INFORMATION SHEET *Lota lota*

English name: **Burbot**	Scientific name: ***Lota lota***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Lotidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 8.3 years	
Past and current threats (Habitats Directive article 17 codes): Eutrophication (H01.05), Climate change (M01.01, M01.04)	Future threats (Habitats Directive article 17 codes): Eutrophication (H01.05), Climate change (M01.01, M01.04)	
IUCN Criteria: **A2b**	**HELCOM Red List Category:**	**NT** **Near Threatened**
Global / European IUCN Red List Category LC/LC	Habitats Directive: –	
Previous HELCOM Red List Category (2007): LC		
Protection and Red List status in HELCOM countries: Denmark –/**LC**, Estonia *Fisheries regulations*/**LC**, Finland –/**LC**, Germany –/***** (Not threatened, Baltic Sea), Latvia *national angling rules* / –, Lithuania *minimum landing size (49 cm)* / –, Poland –/–, Russia –/–, Sweden –/**NT**		

Distribution and status in the Baltic Sea region

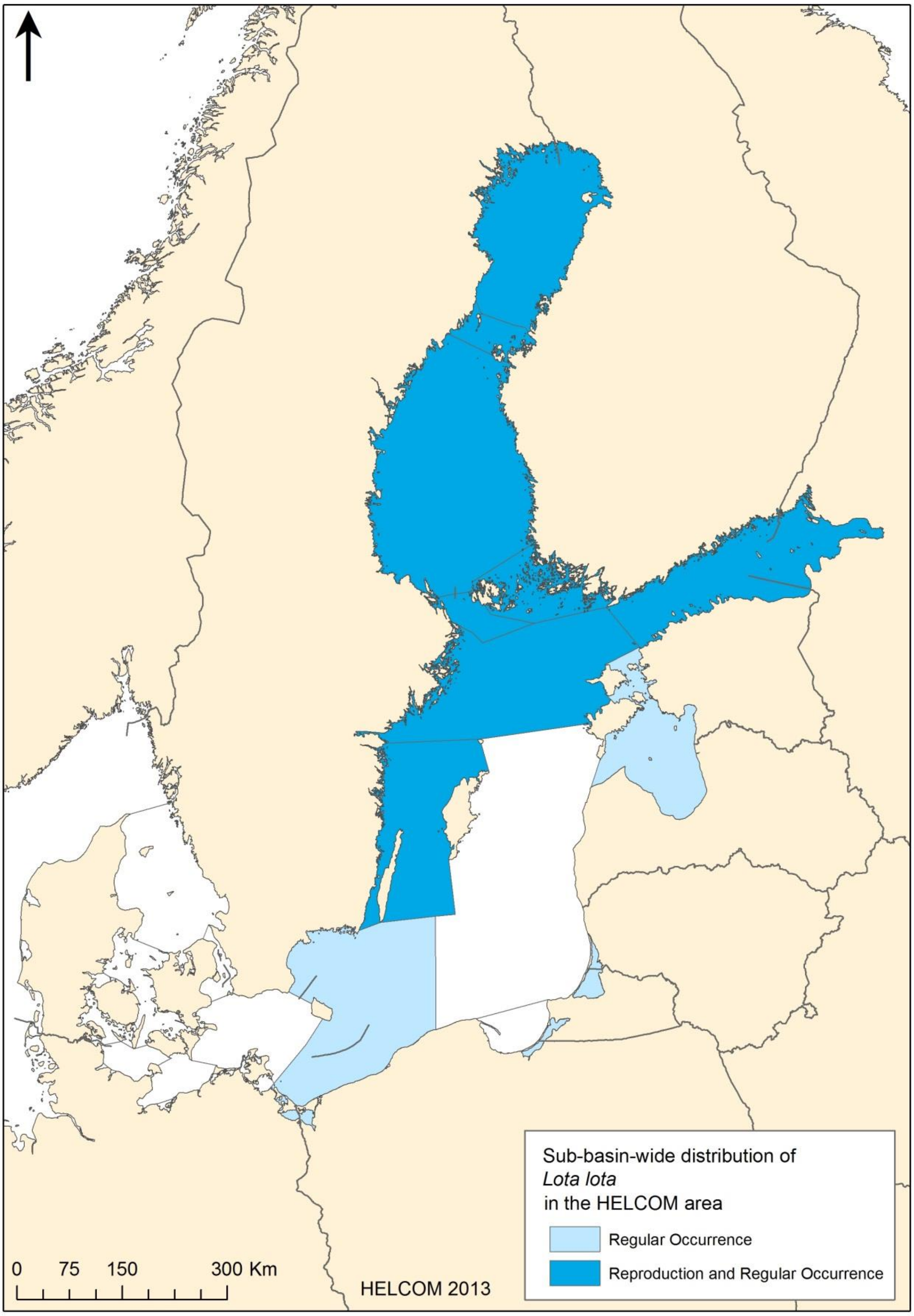
The main distribution of burbot is in the northern Baltic Sea; the Gulf of Bothnia and the Gulf of Finland. Swedish coastal landings have decreased from 4 tonnes in 1999 to 1 ton in recent years. The landings in Finland have also decreased (with up to 80% in the best fishing area in the Archipelago Sea) but this is to some extent due to lowered effort. According to Stapanian et al. (2010) there also seem to be a circumpolar decline in burbot. The species is declining in Estonia, Finland and Sweden while in Latvia, Lithuania and Russia it is secured, in Poland vulnerable, and in Germany imperilled. No information exists from Denmark.



Burbot. Photo by Achim R. Schloeffel.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The burbot is distributed in well oxygenated flowing waters and large lakes, estuaries and in brackish waters in the Baltic Sea. It is generally a nocturnal species. It spawns in November–March, at temperatures below 4°C. The burbot is known to undertake spawning migrations into estuaries and up to rivers. It spawns at night, in groups of up to 20 interlaced individuals forming a ball. In contrast to most freshwater fish burbot is very active during winter, even below ice cover. Juveniles and adults feed on large invertebrates and small fish.

Description of major threats

Eutrophication and global warming are potential treats, also sedimentation of habitats. However, little is known on which potential threats affect this species.

Assessment justification

The number of mature individuals exceeds the limit for red listing. The extent of occurrence (EOO) and the area of occupancy (AOO) also exceed the limits for red listing but the population is currently declining or is expected to do so in the future.

Swedish coastal landings have decreased from 4 tonnes in 1999 to 1 ton in recent years. During the same time catch per unit effort in gillnets in Swedish commercial fishery in the Bothnian Bay show a significant decline with at least 70%. The landings in Finland have also decreased (with up to 80% in the best fishing area in the Archipelago Sea) but this is to some extent due to lowered effort. According to Stapanian et al. 2010 the species is declining in Estonia, Finland and Sweden while in Latvia, Lithuania and Russia it is secured, in Poland vulnerable, and in Germany imperilled. There is no information from Denmark. Overall the estimated possible decline of burbot in the HELCOM area, based on the above information, is between 0–35%. Depending on which of the estimated values is used the assessment varies from Least Concern (LC) to Vulnerable (VU). Based on the most probable values, the species falls in the category Near Threatened (NT) according to the A2b criteria. This is not downgraded by immigration from outside the HELCOM area since also the freshwater populations have declined.

Recommendations for actions to conserve the species

The reasons for the observed decrease are not well known. It is necessary to increase knowledge on life-history and ecology to suggest meaningful action plans.

Common names

DE: Quappe; DK: Knude; ES: Luts; FI: Made; GB: Burbot; LA: Vēdzele; LI: Vėgėlė; PL: Miętus; RU: Nalim SE: Lake

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Freyhof, J., Kottelat, M. (2008). *Lota lota*. IUCN Red List of Threatened Species. Version 2012.2. Availeble at: www.iucnredlist.org

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Stapanian, M.A., Paragamian, V.L., Madenjian, C.P., Jackson, J.R., Lappalainen, J., Evenson, M.J., Neufeld, M.D. (2010). World-wide status of burbot and conservation measures. Fish and Fisheries 11: 34–56.

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

Swedish Board of Fisheries (2011). Ask, L., Westerberg, H. (eds.). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdf

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): 11–76.

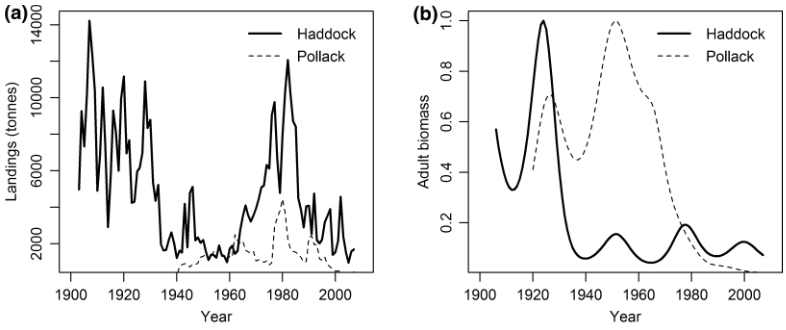
Wind, P. & Pihl, S. (eds.). (2004–2010). The Danish Red List. - The National Environmental Research Institute, Aarhus University [2004]-. http://redlist.dmu.dk (updated April 2010). Species information available at http://bios.au.dk/videnudveksling/til-myndigheder-og-saerligt-interesserede/redlistframe/soegart/

English name: **Haddock**	Scientific name: ***Melanogrammus aeglefinus***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Gadidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 9.3 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02.02.01;F02.02.02;F02.03)	Future threats (Habitats Directive article 17 codes): Fishing (F02.02), Eutrophication (H01.05)	
IUCN Criteria: **B1a+2a**	**HELCOM Red List Category:**	**NT Near Threatened**
Global / European IUCN Red List Category VU (A1d+2d) in 1996/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: TAC regulation by EU. Denmark –/–, Estonia –/–, Finland –/–, Germany –/***** (Not threatened, Baltic Sea)**,** Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Protected from fishing during spawning (1st of January to 31st of March) in the Kattegat coastal area. Minimum landing size of 27 cm in Kattegat.* /**EN**		

Distribution and status in the Baltic Sea region

Haddock occurs in the Kattegat, the Belt Sea and the Sound but currently spawning is only known from the sound. In recent years, the haddock stock has increased in the North Sea and Skagerrak (ICES 2011). However, if the stock development is analysed over a longer period of time a, a variable pattern in commercial landings can be depicted: a drastic decline in the 1930s, an increase after the WWII, decline once more in the 1950s, and an increase from 1960 to 1980 followed by collapse in landings during the last two decades (Cardinale *et al.* 2012). It should also be observed that the increase in the stock in the 1960s–1980s was entirely located to the western part of the Skagerrak whereas landings of haddock in the Kattegat were scarce. It has been estimated that less than 1% of the haddock stock in the Kattegat compared to the stock size in the beginning of the 20th century (Cardinale *et al*. 2012).

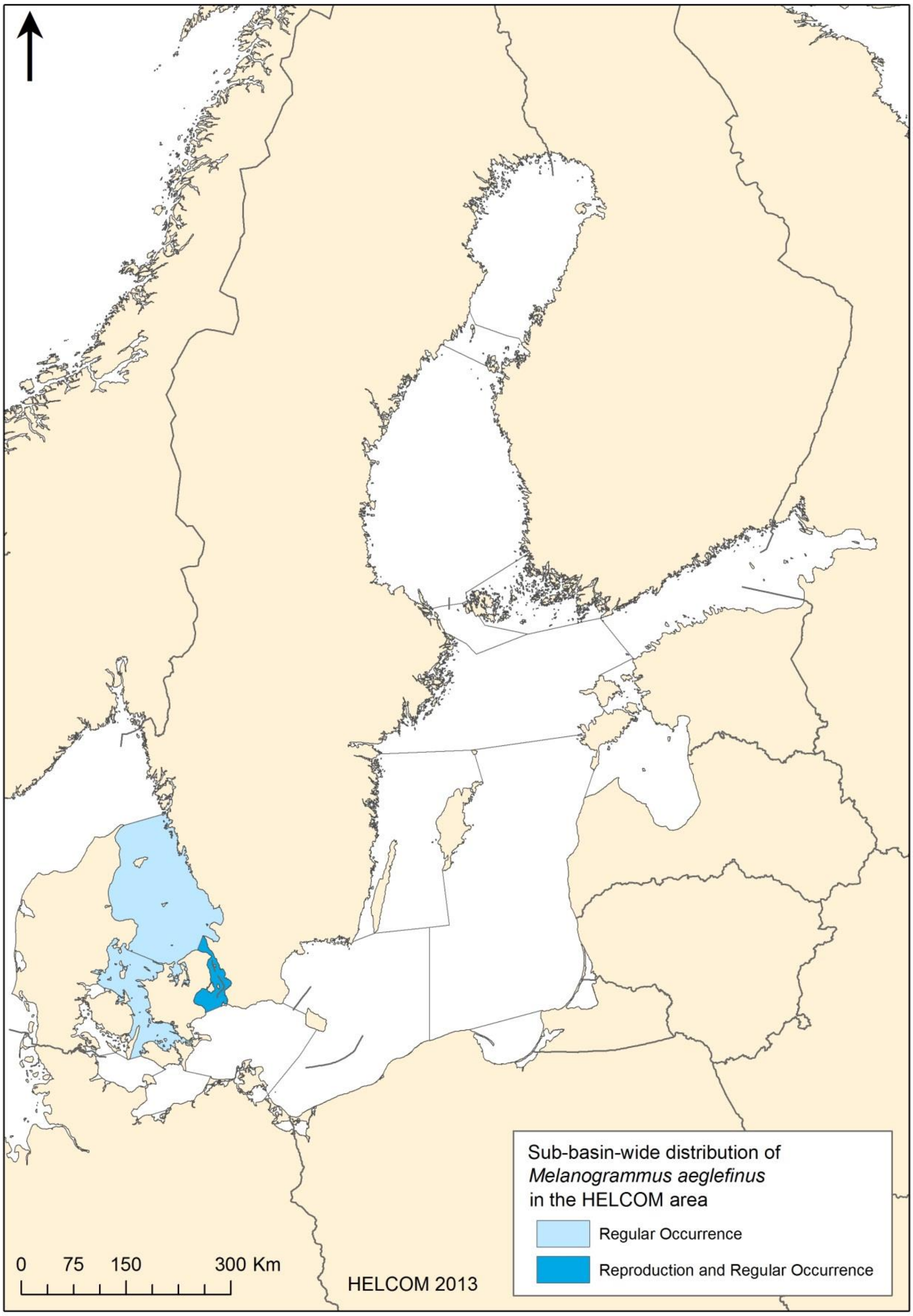
Haddock. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.



Historical trends of (a) total official ICES landings, (b) adult biomass [in relative scale] for haddock (and pollack) in the Skagerrak and Kattegat. From Cardinale *et al.* 2012.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

Haddock is a demersal species inhabiting the Northwest and Northeast Atlantic and foraging on benthos, mostly mussels, brittle stars and polychaetes. It lives on soft bottoms at depth ranges of 10–450 m, usually at 10–200 m depths. Haddock are seldom longer than 1 m and the maximum weight is just below 20 kg. The species sexually matures at ages 2–5 years. Eggs and larvae are pelagic. Most juvenile haddock in the Kattegat probably originate from the North Sea and return migrations to spawning localities in the North Sea can be assumed to occur in similarity to cod (Svedäng *et al.* 2007).

Description of major threats

The major threat is commercial fishing, i.e. benthic, demersal and pelagic trawling and demersal seining. Eutrophication is a potential threat as it might lead to oxygen depletion and deterioration of nursery areas.

Assessment justification

After a severe reduction during the last century the haddock is currently increasing in Kattegat. The estimated population size is above the threshold for being threatened.

Spawning is today restricted only to the Sound so a very restricted area of occupancy (10–500km^2) and extent of occurrence (<5 000km^2) together with a low number of spawning locations satisfy the B criterion for Near Threatened. Although immigration is possible from outside the HELCOM area this is not deemed to currently be of significance to change the threat status since the Kattegat population is currently totally depleted.

Recommendations for actions to conserve the species

A prerequisite for recovery is an effectively reduced fishery in the Kattegat. Spawning areas should be identified and given a sufficient protection. Recovery of the haddock stock in the Kattegat will not occur unless fishing effort is reduced.

Common names

D – Schellfisch ; DK – Kuller; GB – Haddock; FIN –Kolja; LV - Pikša; LT - Juodadėmė menkė; PL - Plamiak; RUS - Piksha; S – Kolja

References

Cardinale, M., Svedäng, H, Bartolino, V., Maiorano, L., Casini, M., Linderholm, H. (2012). Spatial and temporal depletion of haddock and pollack during the last century in the Kattegat-Skagerrak. Journal of Applied Ichthyology 28: 200–208.

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.

Svedäng, H., Righton, D., Jonsson, P. (2007). Migratory behaviour of Atlantic cod Gadus morhua: natal homing is the prime stock-separating mechanism. Marine Ecology Progress Series 345: 1–12.

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

Swedish Board of Fisheries (2011). Ask, L., Westerberg, H. (eds.). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdf

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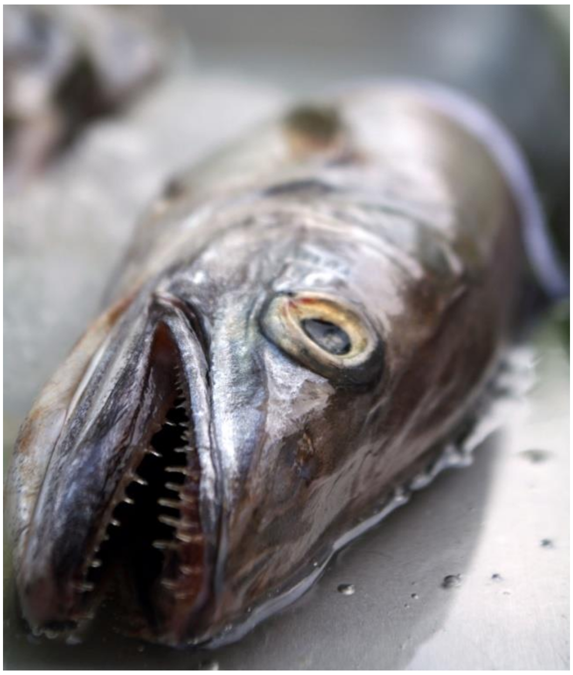
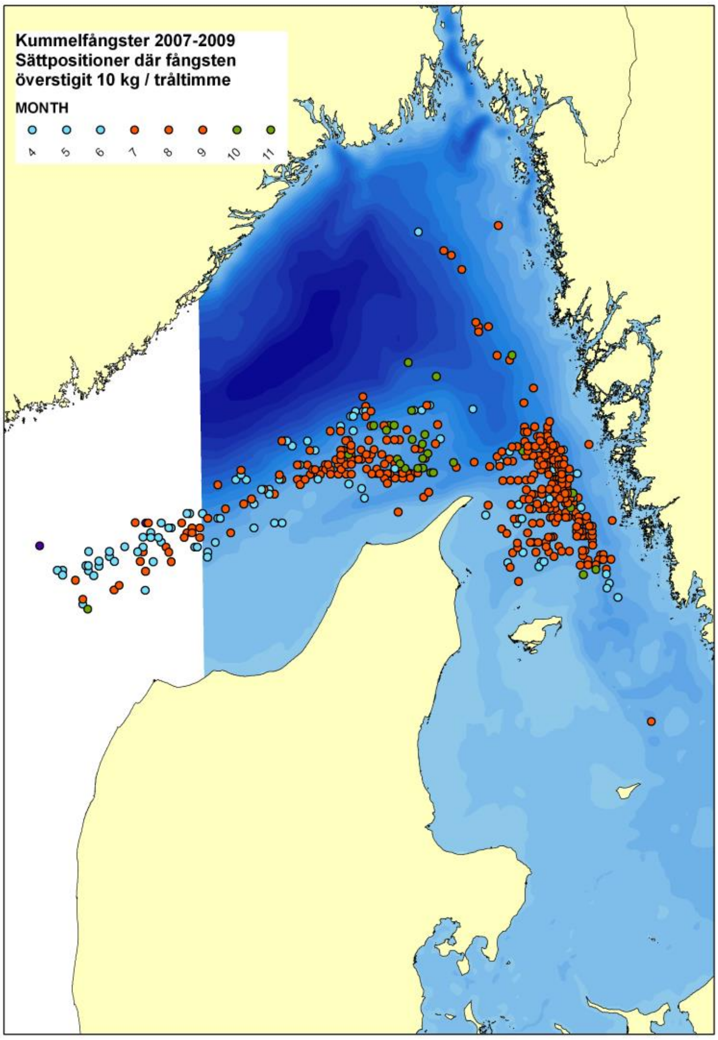
English name: **European hake**	Scientific name: ***Merluccius merluccius***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Gadidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 11.3 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02.02), Random Threat Factors (U)	Future threats (Habitats Directive article 17 codes): Fishing (F02.02), Random Threat Factors (U)	
IUCN Criteria: **B1a+2a**	**HELCOM Red List Category:**	**NT** **Near Threatened**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): RA		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Minimum landing size of 30 cm in Kattegat* / **NA**		

Distribution and status in the Baltic Sea region

Hake is a widely spread species in the North East Atlantic. The spawning biomass in the northern part of the North East Atlantic (from Kattegat down to Bay of Biscay) has been increasing since 1998 and is estimated to be on record high in 2011 (ICES 2011). However, the Kattegat stock status is unknown since reproduction was recently rediscovered in this area. Hake spawning sites have newly been revisited in northern part of the Kattegat, and have been found active (Svensson 2010). Recruits and feeding fish are estimated to be found in deeper parts of the Kattegat. The stock in the Kattegat is on verge of the distribution area and this species do not occur elsewhere in the Baltic area.



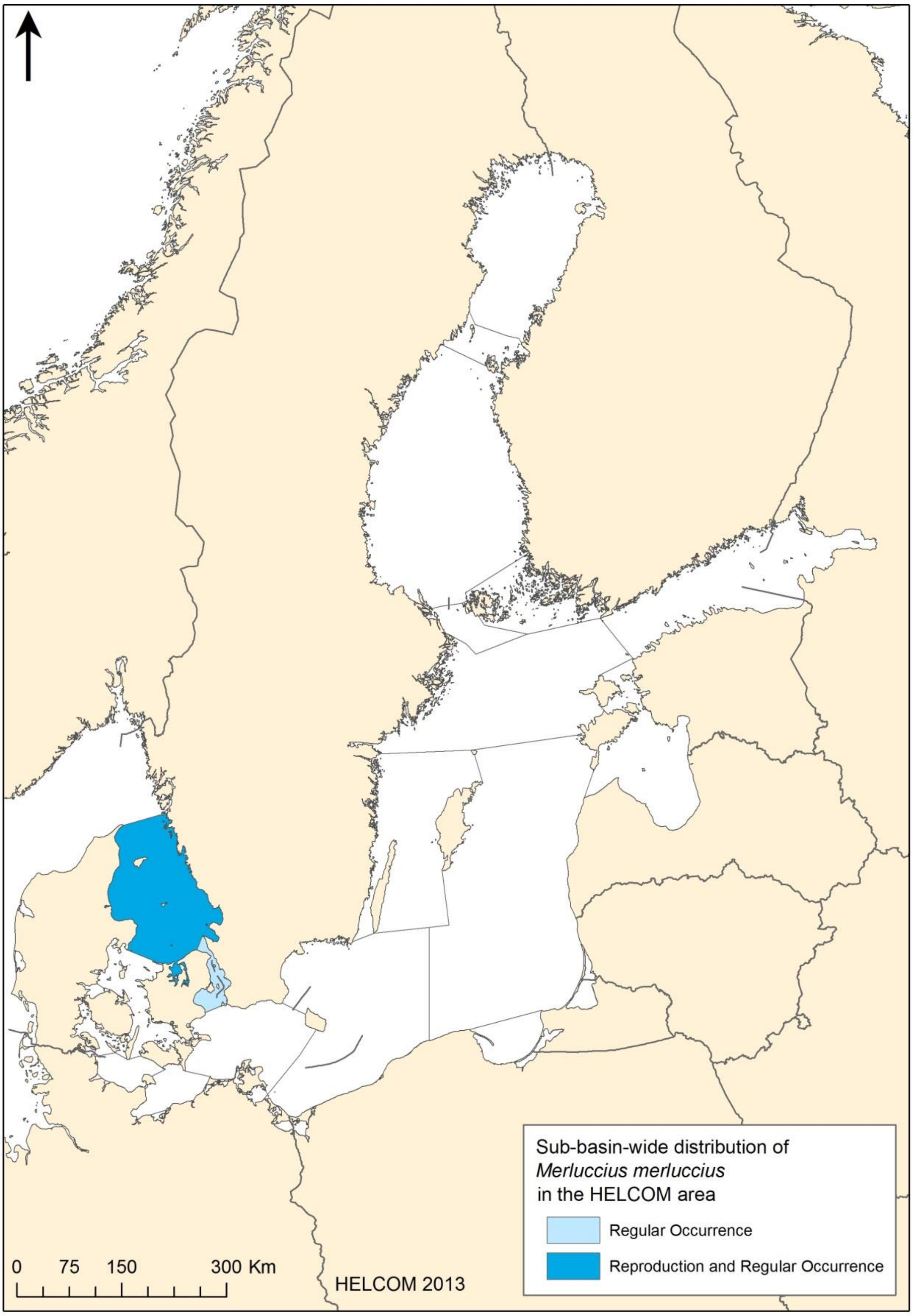
Hake. Photo by Francesca Vitale, Swedish University of Agricultural Sciences.



Hake catches between 2007 and 2009. The figure is showing the setting position of commercial trawl hauls where the catches of hake were above 10 kg. From Svenson (2010).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The species lives on soft bottoms usually between 200 and 1000 m depth. It rarely reaches a size above 100 cm. In summer time it occurs at shallower depths. Hake spawn at 20 m depth in the Kattegat. It is a batch spawner and eggs and larvae are pelagic. Age at first maturity is 4 for males and 10 for females.

Adults live close to the bottom during day-time, but move off-bottom at night for foraging. It occurs sometimes in shoals. Adults are mostly foraging on herring, sprats, cephalopods and younger hake. The young feed on crustaceans.

Description of major threats

Professional active fishing, i.e. benthic or demersal trawling are the major identified threats. The small area of occupancy and only one spawning site furthermore makes this species sensitive to stochastic population dynamics and other random threat factors. There is a risk of mismanagement as at present TACs are set for both the Kattegat and Skagerrak stocks together. In addition there is no monitoring of the sub-stock in the Kattegat. Furthermore there is a risk of increased fishery on the spawning grounds.

Assessment justification

The spawning biomass in the Northern Stock (including a wide area from Kattegat and Skagerrak, the North Sea, the water around the British Isles and down to the Bay of Biscay) has been increasing since 1998 and is estimated to be record high in 2011 (ICES 2011). The stock status in Kattegat is however unknown since reproduction was recently rediscovered in Kattegat. A small extent of occurrence (<100km^2) and area of occupancy (<10km^2) together with only one spawning site fulfils the criteria for NT B1a+2a. Although immigration is possible from outside the HELCOM area this is not deemed to currently be of significance to change the threat status.

Recommendations for actions to conserve the species

The Kattegat stock is in need of a management plan, as its existence is entirely neglected. The stock is at the margin of its distribution area and is as such vulnerable. More biological knowledge is also needed.

Common names

D – Seehecht; DK Kulmule–; GB – European Hake; FIN – Kummeliturska; LV - Eiropas heks, Eiropas merlūza; LT- Europinė paprastoji jūrų lydeka-; PL Morszczuk-; RUS - Evropeiskaja merluza; S – Kummel

References

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 (2011). ICES ADVICE 2011, Book 6.

Svenson, A. (2010). Sammanfattning från försöksfisket efter kummel i juli 2010. Promemoria Institute of Marine Research 2010. [in Swedish]

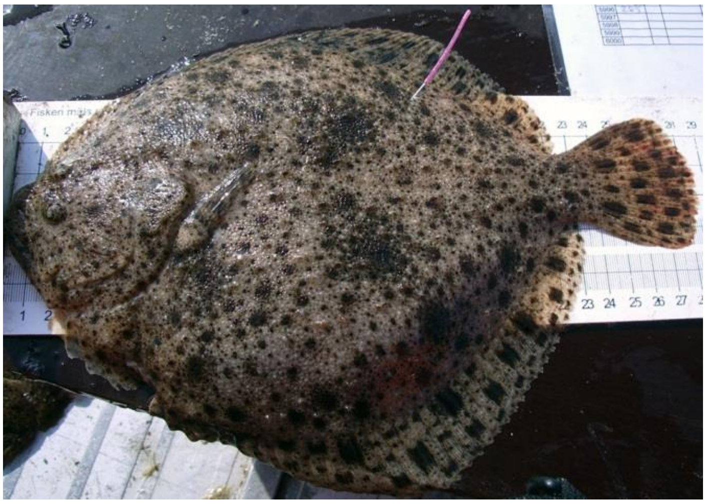
Swedish Board of Fisheries (2011). Ask, L., Westerberg, H. (eds.) (2011). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish] Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdf

SPECIES INFORMATION SHEET *Scophthalmus maximus*

English name: **Turbot**	Scientific name: ***Scophthalmus maximus***	
Taxonomical group: Class: Actinopterygii Order: Pleuronectiformes Family: Scopthalmidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Psetta maxima*	Generation length: 8.5 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02), Eutrophication (H01.05)	Future threats (Habitats Directive article 17 codes): Fishing (F02), Eutrophication (H01.05)	
IUCN Criteria: **A2bd**	**HELCOM Red List Category:**	**NT** **Near Threatened**
Global / European IUCN Red List Category NE/NE	Habitats Directive: Annex II, V	
Previous HELCOM Red List Category (2007): DD		
Protection and Red List status in HELCOM countries: Denmark: –/– Estonia: –/**LC** Finland: –/**DD** Germany: –/***** (Not threatened, Baltic Sea) Latvia: *Protected by commercial fishing rules (closed season, minimal landing size) and gear regulation*. / – Lithuania: *Protected from fishing during spawning time 1st of June to 31st of July.* / – Poland: *Protected from fishing during spawning time 1st of June to 31st of July, minimum landing size 30cm.* / – Russia: –/– Sweden: *Protected from fishing during spawning time 1st of June to 31st of July in ICES SD 25, 26 and 28 south of 56,50N. A no-take area at Gotska Sandön implemented in 2005.Minimum landing size of 30 cm.* / **LC**		

Distribution and status in the Baltic Sea region

Turbot (*Scophthalmus maximus*) is a coastal species commonly occurring in the northeast Atlantic, throughout the Mediterranean and along the European coasts to the Arctic Circle. In the Baltic Sea it is frequent up to the Åland Sea.

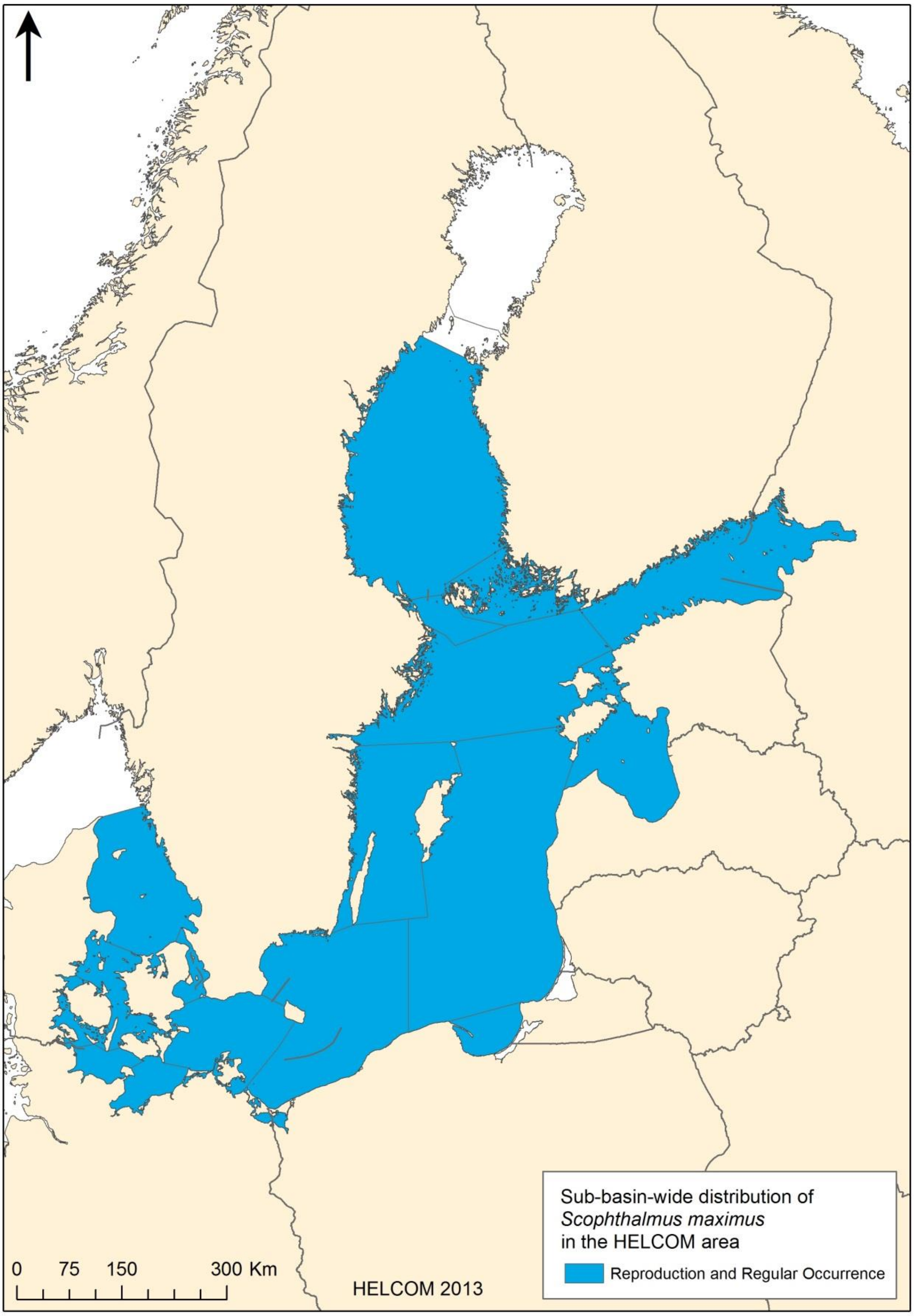


Turbot. Photo by Susanne Tärnlund, Swedish University of Agricultural Sciences.

Turbot is locally of great economic importance, especially to the coastal fishery. The main part of turbot fishery takes place in the southern and western part of the Baltic Sea within the Danish and German fisheries. The fishery directed towards turbot escalated in the early 1990s in eastern Gotland basin and Gdansk bay due to Polish, Russian and Swedish gillnet fishery (ICES 2011) and total landings in the Baltic Sea exceeded 1000 tonnes. Since 1995 however, the total landings of turbot in the Baltic Sea decreased and amounted to 300 tonnes in 2010 (ICES 2011). Also catch per unit effort from commercial gillnet fishery in the Baltic Sea show decreasing trends; in Latvia and Lithuania there is more than 60% decrease, in Russia the decrease is 20% while in Sweden the downward trend turned in 2003 and the catch per unit effort is higher today than in the mid-1990s. In Estonia annual coastal gill-net monitoring indicates that there is strong fluctuation of size in year classes, and, therefore, abundance fluctuates considerably. ICES Baltic International Trawl Survey do not show any decrease but this survey is not good for monitoring turbot (ICES 2012). In the Kattegat ICES International Bottom Trawl Survey shows a decrease of large fishes (>30cm) of 65% during the assessment period 1985–2011. However, compared to the level in the beginning of the series the decrease is only 20%. Looking over the whole 19th century, however, the Kattegat turbot is depleted, and only 5 % of the historical stock is left (Cardinale et al 2009).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

In spring both juvenile and adult turbots move to the coast and in winter they migrate towards deeper water, although seldom deeper than 70 m (30 m in central Baltic) (Florin 2005). Spawning takes place in summer in shallow waters (10–40 m, 10–15 m in the central Baltic) and after metamorphosis the post larvae settle at the bottom in even shallower waters closer to shore (down to one meter depth) (Florin 2005). In addition to this general migration pattern the depth distribution changes continuously with size and age in such a way that older and larger turbot are found in increasingly deeper waters (Florin 2005).

Males are smaller than females and their growth curve in the Baltic Sea level out close to 30 cm although individuals up to half a meter can be found. Females mature at about the age of four years while males are ready to mate a year earlier (Florin 2005). In the Baltic maturity is reached already at a size of 20 cm for females and 15 cm for males while on the Swedish west coast mature females and males are probably about 30 and 25 cm, respectively.

Turbot, like most flatfishes, is a marine species but has the capacity to survive and reproduce at varying salinity. Eggs from the Belt Sea have an optimal development at 15 psu while eggs from the North Sea have an optimum between 20 psu and 35 psu and do not survive in the lower salinities of the Baltic (Florin 2005). Eggs from east of Gotland develop without increased mortality down to 7 psu (Nissling et al. 2006) and some eggs even hatch at 5.5 psu. Interestingly, although flatfish eggs are normally pelagic, turbot eggs are not buoyant at salinities below 20 psu and the eggs from Baltic Sea turbot are thus demersal (Nissling et al. 2006).

The genetic data show no structure for the turbot within the Baltic Sea according to Nielsen et al. (2004) and Florin & Höglund (2007), although the former study discovered a difference between the Baltic Sea and Kattegat with a hybrid zone in the Belt Sea. Tagging studies from different parts of the Baltic Sea all show that turbot have high spawning area fidelity and that 95% of the fishes move less than 30 km from tagging site although few individual specimens show displacements of hundreds of kms (Aneer & Westin 1990, Florin & Franzen 2010).

Turbot is a visual daylight predator foraging on highly mobile prey. They often leave the bottom to hunt in the open water column. Turbots have large mouths, compared to other flatfishes, thus allowing them to forage on macrofauna (>1mm) from the beginning of their benthic life. Juvenile turbots less than or equal to 30 mm consume mainly amphipods, while >30 mm turbots also eats mysid shrimps and fish (Florin 2005). For adult turbots herring, sandeels and gobies are important food items (ICES 2011).

Description of major threats

High fishing pressure, especially on large females is a major threat to turbots in the HELCOM area. Destruction of nursery areas as well as hypoxia in deeper overwintering areas due to increased eutrophication is also detrimental for the turbot.

Assessment justification

Data from Russian fishery in the Gdansk bay show high estimates of abundance 1995–2000. After that the same data show suddenly a 4-fold decrease, an increasing trend 2001–2009 and at the end of the time series a 20% decrease compared to the beginning of the time series (Data from D. Ustups Latvia, chair of WKFLABA 2010). Data from commercial gillnet fishery in Latvia in the eastern Gotland basin show decrease in catch per unit effort (cpue) from 1996 to 2011 with 60–70% (Data shown during ICES 2012, Didzis Ustups, Latvian Institute of Food Safety, Animal Health and Environment "BIOR"). Data from Polish fishery in Gdansk Bay show a decrease in gillnet cpue of 68% between 1995–2004 (Draganik et al.

2005). Unfortunately no data are available for later years to see if this decrease has changed as it had for Russian data in the same area. Cpue statistics in gillnet in Sweden show that the stocks in Hanö Bay and the eastern Gotland basin have not decreased when considering the whole time series. In Estonia annual coastal gill-net monitoring indicates that there is strong fluctuation of size in year classes, and, therefore, abundance fluctuates considerably. Baltic International Trawl Survey does not show any decrease but this survey is not good for monitoring turbot (ICES 2012). International Bottom Trawl Survey shows a decrease of large fishes (>30cm) in the Kattegat of 65% during the assessment period 1985–2011. However, compared to the level in the beginning of the series the decrease is only 20%. Looking over the whole 19th century however the Kattegat turbot is depleted and only 5% of historical stock left (Cardinale et al 2009).

Giving equal weight to all data sources and all areas gives an average decrease of just around 30% with a worst estimate of 50% and a best estimate of 10%. This would result in VU but if more weight is given to data from Bornholm and Gdansk basin where the turbot is more numerous than in peripheral parts of the distribution area, the most probable decrease will be less than 30%. Immigration from outside the area is unlikely to help the situation of this species since turbot outside the area lacks the adaptation to the low salinity within the Baltic Sea and is most likely not able to reproduce here. Therefore the species is categorized as NT according to the A2b and A2d criteria.

Recommendations for actions to conserve the species

There is a need for a management plan to regulate the fishery in the HELCOM area. Possible actions could be area or time specific protection of spawning and nursery areas or a limit in maximal mesh size to protect the biggest females. In addition important spawning and nursery areas should be protected from exploitation.

Common names

D: Steinbutt; DK: Pighvarre; EST: kammeljas; FI: Piikkikampela GB: Topknot; PL: Skarp; LV: Akmeņplekste, āte; LT: Otas; RUS: Tjurbo; SE: Piggvar

References

Aneer, G., Westin, L. (1990). Migration of turbot (Psetta maxima L.) in the northern Baltic proper. Fisheries Research (Amsterdam) 9: 307–315.

Cardinale, M., Linder, M., Bartolino, V., Maiorano, L., Casini, M. (2009). Conservation value of historical data: reconstructing stock dynamics of turbot during the last century in Kattegat-Skagerrak. Marine Ecology Progress Series 386: 197–206.

Draganik, B., Maksimov, Y., Ivanov, S., Psuty-Lipska, I. (2005). et al 2005. The status of the turbot *Psetta maxima* (L.) stock supporting the Baltic fishery. Bulletin of the Sea Fisheries Institute. Gdynia 164: 23–53.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Florin, A.-B. (2005). Flatfishes in the Baltic Sea – a review of biology and fisheries with a focus on Swedish conditions. Fiskeriverket informerar 2005:14. Fiskeriverket , Kustlaboratoriet, Öregrund. 55 pp. [in Swedish] Available at: http://www.havochvatten.se/om-oss/publikationer/fiskeriverkets-publikationer/finfo-fiskeriverket-informerar.html.

Florin, A.-B., Höglund, J. (2007). Absence of population structure of turbot (Psetta maxima) in the Baltic Sea. Molecular Ecology 16: 115–126.

Florin, A.-B., Franzén, F. (2010). Spawning site fidelity in Baltic Sea turbot (Psetta maxima). Fisheries Research 102: 207–213.

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 (2010). Report of the ICES/HELCOM Workshop on Flatfish in the Baltic Sea (WKFLABA), 8–11 November 2010. ICES CM 2010/ACOM:68. 85 pp.

ICES (2011). Report of the ICES Advisory Committee. ICES Advice. Book 8. 135 pp.

ICES (2012). Report of the Second ICES/HELCOM Workshop on Flatfish in the Baltic Sea, 19–23 March 2012. ICES CM 2012/ACOM:33. 135 pp.

Nielsen, E. E., Nielsen, P. H., Meldrup, D., Hansen, M. M. (2004). Genetic population structure of turbot (*Scophthalmus maximus L*.) supports the presence of multiple hybrid zones for marine fishes in the transition zone between the Baltic Sea and the North Sea. Molecular Ecology 13: 585–595.

Nissling, A., Johansson, U., Jacobsson, M. (2006). Effects of salinity and temperature conditions on the reproductive success of turbot (*Scophthalmus maximus*) in the Baltic Sea. Fisheries Research 80: 230–238.

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): 11–76.

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.

English name: **Eelpout / Viviparous blenny**	Scientific name: ***Zoarces viviparus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Zoarcidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 6.7 years	
Past and current threats (Habitats Directive article 17 codes): Climate change (M01.01), Contaminant pollution (H03), Competition and predation (I02), By-catch (F02)	Future threats (Habitats Directive article 17 codes): Climate change (M01.01), Contaminant pollution (H03), Competition and predation (I02), By-catch (F02), Alien species (I01).	
IUCN Criteria: **A2b**	**HELCOM Red List Category:**	**NT** **Near Threatened**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): LC		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**LC**, Finland –/**LC**, Germany –/**V** (Near threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**NT**		

Distribution and status in the Baltic Sea region

Eelpout is widely distributed and reproducing in coastal areas in the whole HELCOM area. As eelpout is not one of the most important commercial fish species, the data on its population development does not cover the whole Baltic Sea. However, in two of the four Swedish surveys available significant declines of more than 50% have been observed during the last 20 years. Despite the species being commonly used for environmental monitoring, index of abundance data is not collected in other regions. Eelpout is commercially fished in Latvia and in the Russian part of the Gulf of Finland fishermen often catch it from ice when hook-fishing smelt in spring time. There are no signals about stock decline in these areas. Eelpout is common also in Estonia and Finland. In Germany it has been considered near being threatened.

Eelpout. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

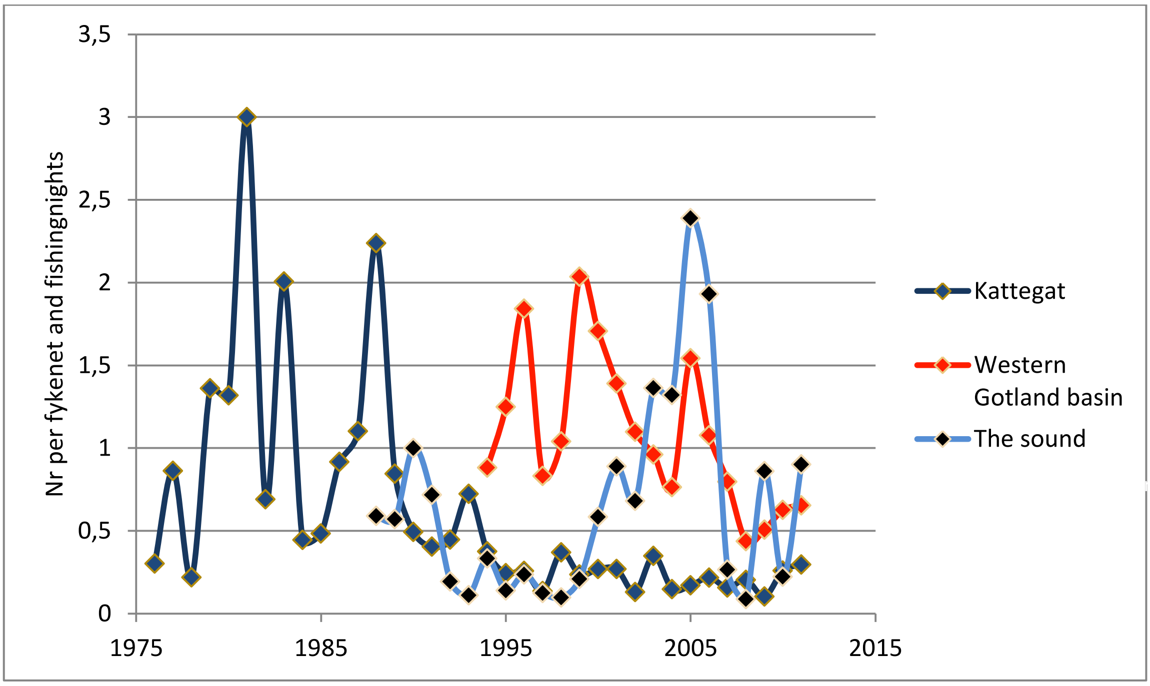


Fig. 1. Catch per unit effort of eelpout in different Swedish fykenet monitoring programs. The assessment period is 1991–2011.

Table 1. Mean catch per unit effort in Swedish monitoring programs during the assessment period 1991-2011. Comparison of mean level at the beginning and start of the assessment period (3 year average) and correlation coefficient and P-values form a Linear regression of Ln transformed cpue values over the assessment period.

Mean cpue (3 year average)	Kattegat	Western Gotland	The Sound	Åland Sea
Start of assessment period	0.52	1.32	0.34	10.8
End of assessment period	0.22	0.59	0.66	4.67
Relative change	-0.58	-0.55	+0.94	-0.57
R2	0.32	0.37	0.16	0.06
P	0.008	0.007	0.07	0.26

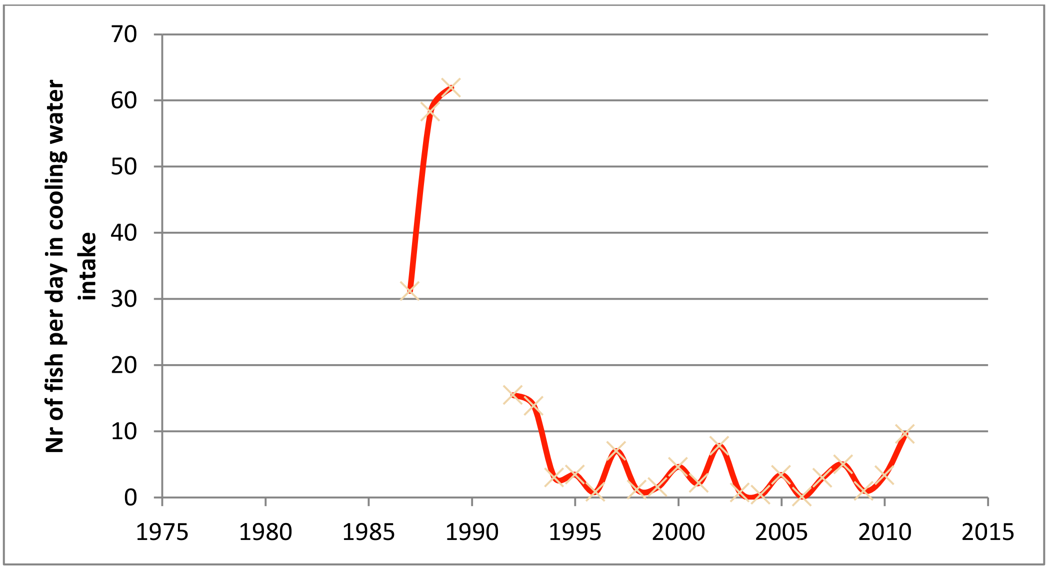
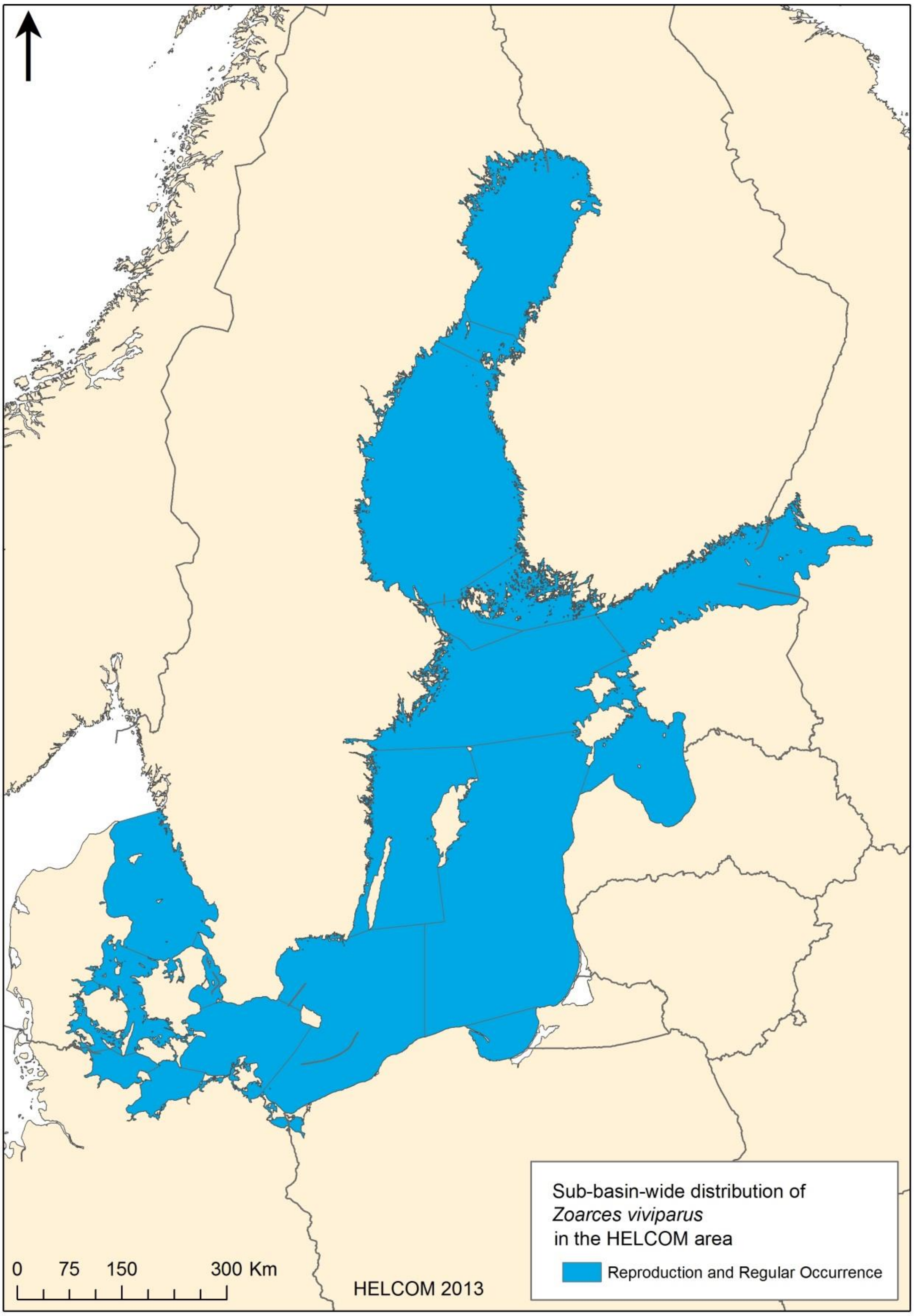


Fig.2. Trends in number of eelpouts in the cooling water intake at Forsmark nuclear powerplant in Åland Sea. No data from 1990 and 1991. The assessment period is 1991–2011.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The eelpout is a widespread species in the coastal waters of the North Sea and Baltic Sea commonly occurring in shallow shores and estuaries down to 40 m depth. It is considered a cold water species and survival is lower during warm summers. Increasing temperature also results in reduced growth and fecundity. Mating takes place in August–September with internal fertilization of the eggs. Female give birth to 30–400 developed young (35–55 mm) in December–February. Due to its viviparous behavior, reproductive impairments can easily be linked to the mother fish and due to its stationary behavior it can also be linked to the environment. Therefore this species has been commonly used in environmental monitoring and toxicology studies. A recent genetic study has revealed considerable gene flow and an absence of genetic divergence on distances up to 90 km in the Baltic Sea, suggesting that migration might be more common than previously believed.

Eelpout feeds mainly on gastropods, chironomids and crustaceans, and occasionally on fish eggs and larvae. Adults range from 20 to 40 cm in size and have a life span of approximately 5–14 years. Females reach maturity at an age of 1–2 years and males already at one year. There is a differentiation in life-history traits in the Baltic Sea with more slow-growing, later maturing individuals in northern, less saline areas.

Description of major threats

The reasons for the decrease are unknown but since eelpout is a cold water species, increased water temperatures due to changed climate may affect eelpout reproduction and hasten the rate of decline. Reproductive impairment due to pollution may have serious consequences not only for individuals but also for populations. Other perceivable threats may be predation by cormorants and cod and by-catch in fishery. The invasive round goby (*Neogobius melanostomus*) could also possibly have a negative effect on the eelpout as they overlap in habitat.

Assessment justification

The data on population development of eelpout does not cover the whole Baltic Sea. However, in the Swedish monitoring (Kattegat, Sound, Western Gotland Basin, Åland Sea), two out of four areas show significant declines of more than 50%. If it is assumed that this represents the trends in the whole Baltic Sea, the eelpout could have decreased with an average of almost 30% during the last three generations. It might be argued that the decrease of eelpout is only reflecting a return to normal values due to a change to warmer climate after a cold period in the 1980s. However, one of the monitoring series, the Kattegat, goes back to 1976 and although there is a clear increase in cpue in late 1980s, the values in the late 2000s are still only 50% of the values in the beginning of the data series. This implies that the observed decline cannot be explained purely by climate-driven natural fluctuation and hence the criteria of more than 30 % decline in population size (A2b) is almost fulfilled resulting in the categorisation of eelpout as Near Threatened (NT) in the HELCOM area. The threat category is not downgraded due to immigration from outside the HELCOM area for two reasons; eelpout is considered a sedentary species and there has been a negative population development also in the Skagerrak.

Recommendations for actions to conserve the species

The reasons for the decrease are unknown but the development of the stock should be followed and surveys where data are missing should be undertaken. Investigations of the extent of bycatches in the fishery and the impact of cormorant predation are recommended as well as more comprehensive studies of the effects of climate change on eelpout populations.

Common names

D: Aalmutter; DK: Ålekvabbe; ES: emakala; FI: Kivinilkka; GB: Checker eelpout; LI: Gyvavedė vėgėlė; LV: Lucītis; PL: Węgorzyca; RU: Evropeiskaja bel'djuga; SE: Tånglake

References

Bergek, S., Franzén, F., Quack, M., Hochkirch, A., Kinitz, T., Prestegaard, T., Appelberg, M. (2012). Panmixia in Zoarces viviparus: implications for environmental monitoring studies. Journal of Fish Biology 80: 2302–2316.

Bergek, S., Ma, Q., Vetemaa, M., Franzén, F., Appelberg, M. (2012). From individuals to populations: Impacts of environmental pollution on natural eelpout populations. Ecotoxicology and Environmental Safety 79: 1–12.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Hedman, J. E., Rudel, H., Gercken, J., Bergek, S., Strand, J., Quack, M., Appelberg, M., Forlin, L.,Tuvikene, A., Bignert, A. (2011). Eelpout (Zoarces viviparus) in marine environmental monitoring. Marine Pollution Bulletin 62: 2015–2029

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 (2008). Manual for Marine Monitoring in the COMBINE Programme HELCOM Commission.

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

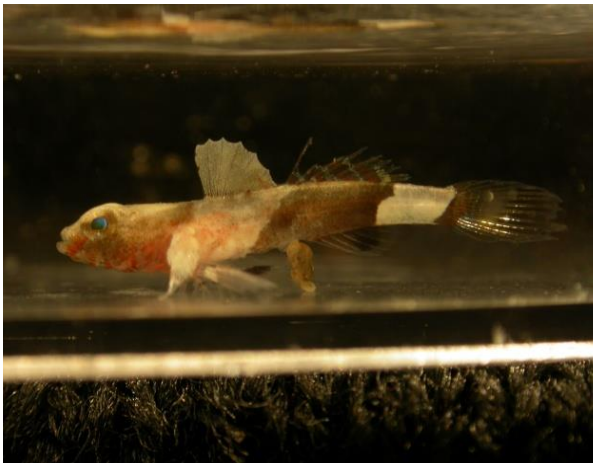
Svensson, M., Degerman, E, Florin, A.-B., Hagberg, J., Kullander, S. O., Nathanson, J. E. & Stenberg, C. (2010). Fiskar – Fish. Pisces. In Gärdenfors, U. (ed.) Rödlistade arter i Sverige 2010 – The 2010 Red List of Swedish Species. ArtDatabanken, SLU, Uppsala. P. 323–332. Red List categories available 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): 11–76.

English name: **Guillet´s goby**	Scientific name: ***Lebetus guilleti***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Gobiidae	Species authority: Le Danois, 1913	
Subspecies, Variations, Synonyms: –	Generation length:	
Past and current threats (Habitats Directive article 17 codes): Not known	Future threats (Habitats Directive article 17 codes): Not known	
IUCN Criteria: –	**HELCOM Red List Category:**	**DD** **Data Deficient**
Global / European IUCN Red List Category: NE/NE	Habitats Directive:	
Previous HELCOM Red List Category (2007): Not Evaluated		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/–		

Distribution and status in the Baltic Sea region

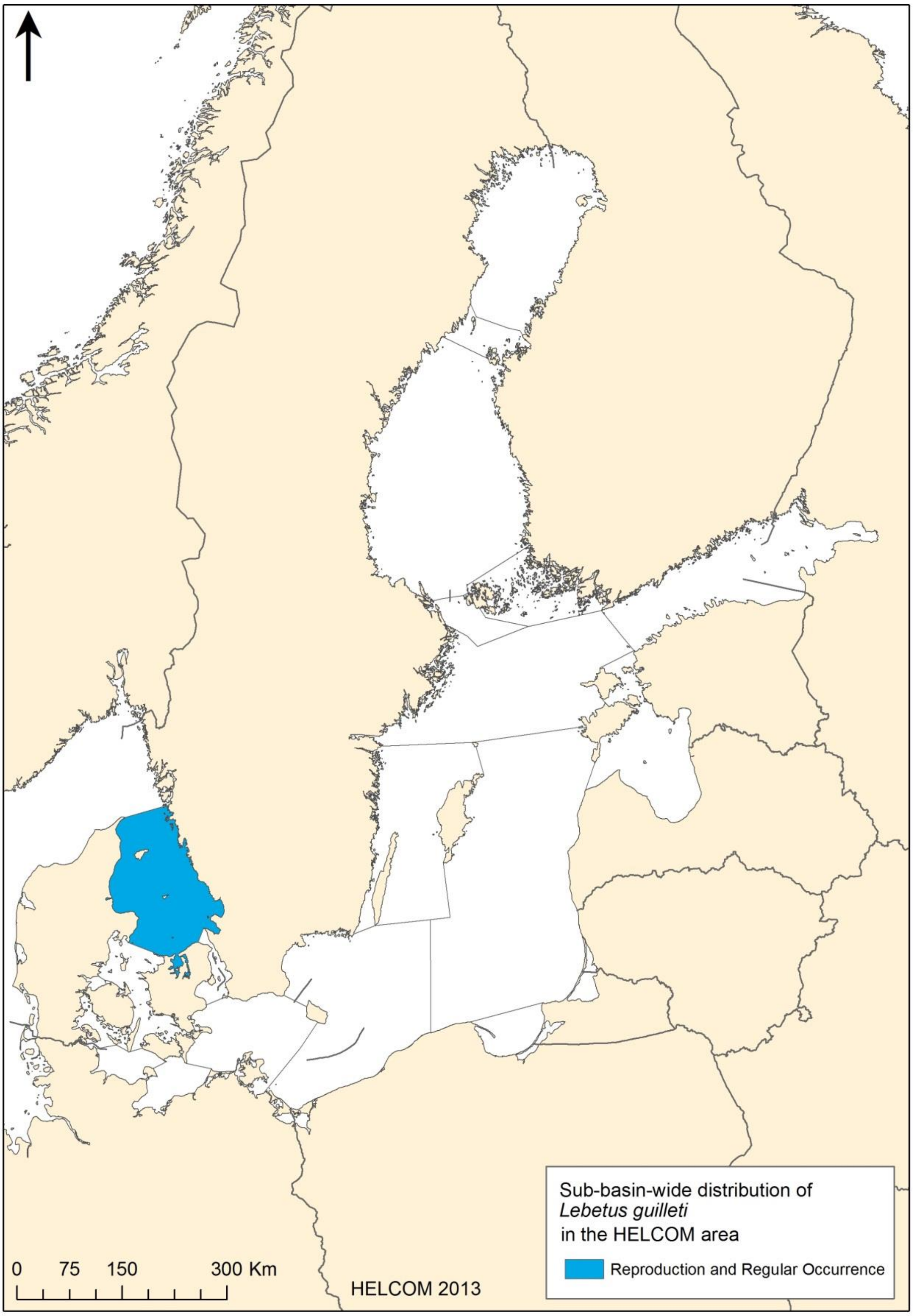
In the HELCOM area the Guillet´s goby is known to occur occasionally at least in the Kattegat but the species may occur further south as well (Froese & Pauly 2012). Its small body size (<3 cm) makes it elusive and difficult to notice.



Guillet's goby. Photo by Michael Norén, Swedish Museum of Natural History.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology
A marine, demersal species found near shore down to 30 meters deep. The Guillet´s goby lives close to sand, shell or gravel bottoms, where its colouration works as camouflage (Miller 1986).

Description of major threats
Not known.

Assessment justification
Virtually nothing is known about the biology or occurrence of the species within the HELCOM area. The number of mature individuals could be anything between less than 50 and more than 2 000 meaning that possible status of this species ranges from Critically Endangered to Least Concern, and hence it is considered Data Deficient (DD). Not assessed globally.

Recommendations for actions to conserve the species
There is a need to improve the knowledge on the distribution, abundance, essential habitat requirements and population structure of the species before any recommendations can be given.

Common names
D: Guillet-Grundel; DK: Europæisk dværgkutling; GB: Guilllet´s goby; LA: Guilleta jūrasgrundulis, Guilleta gobija; SE: Dvärgstubb

References
Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

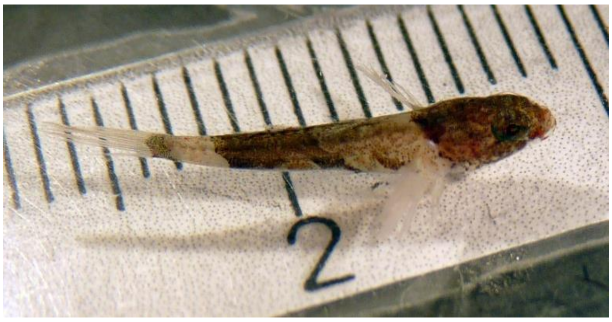
Miller, P.J. (1986). Gobiidae. p. 1019–1085. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 3. UNESCO, Paris.

SPECIES INFORMATION SHEET *Lebetus scorpioides*

<table>
<tr><th>English name:
Diminutive goby</th><th colspan="2">Scientific name:
Lebetus scorpioides</th></tr>
<tr><td>Taxonomical group:
Class: Actinopterygii
Order: Perciformes
Family: Gobiidae</td><td colspan="2">Species authority:
Collett, 1874</td></tr>
<tr><td>Subspecies, Variations, Synonyms: –</td><td colspan="2">Generation length: 1.3 years</td></tr>
<tr><td>Past and current threats (Habitats Directive article 17 codes): Not known</td><td colspan="2">Future threats (Habitats Directive article 17 codes): Not known</td></tr>
<tr><td>IUCN Criteria:
–</td><td>HELCOM Red List Category:</td><td>DD
Data Deficient</td></tr>
<tr><td>Global / European IUCN Red List Category:
NE/NE</td><td colspan="2">Habitats Directive:
–</td></tr>
<tr><td colspan="3">Previous HELCOM Red List Category (2007): RA</td></tr>
<tr><td colspan="3">Protection and Red List status in HELCOM countries:
Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/DD</td></tr>
</table>

Distribution and status in the Baltic Sea region

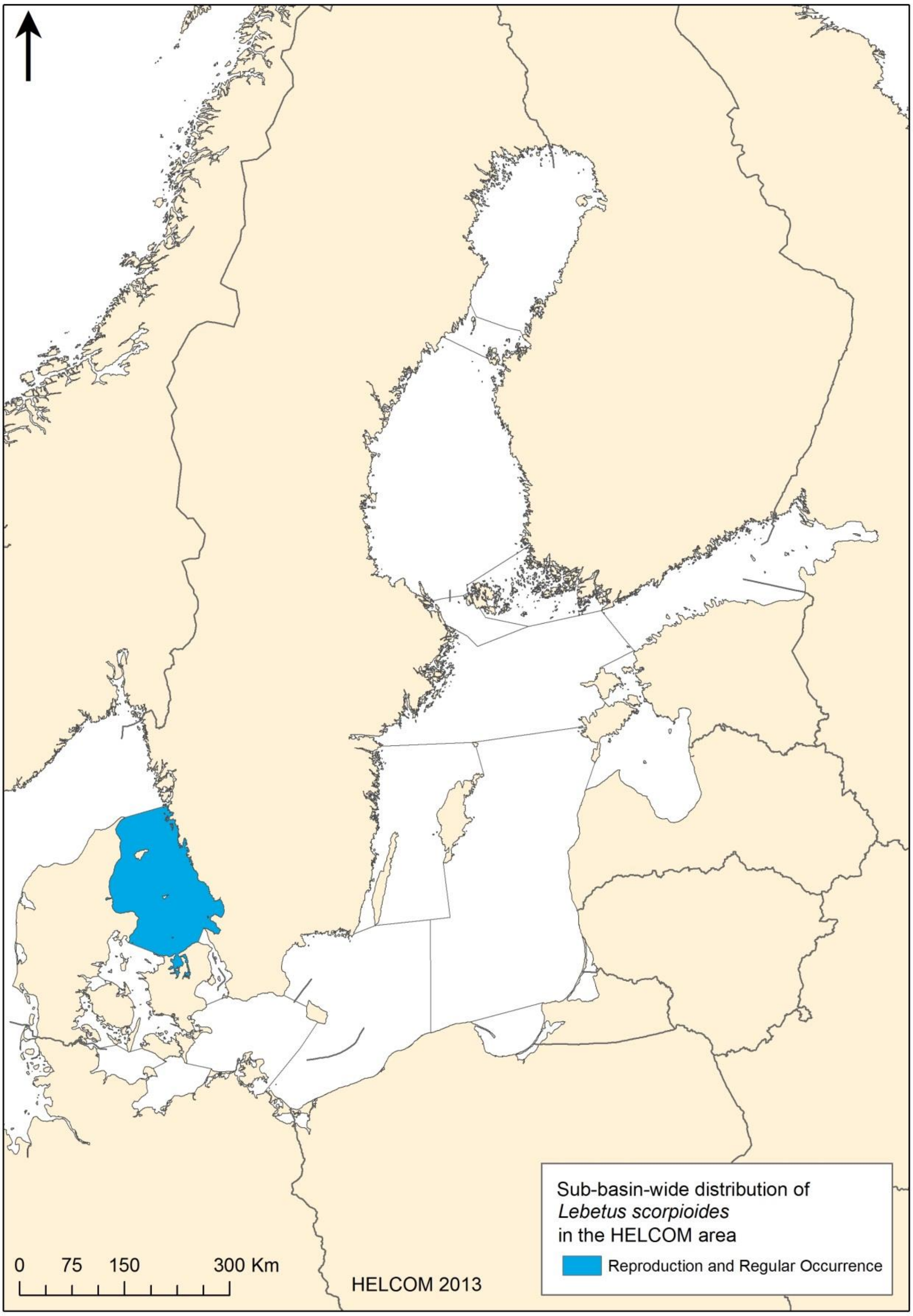
The diminutive goby is a small and easily overlooked fish occurring in coastal waters along the north-eastern coasts of Europe (Froese & Pauly 2012). It is rarely recorded in the Skagerrak and Kattegat and virtually nothing is known about its occurrence within the HELCOM area.



Diminutive goby. The distance between scale marks is 1 mm. Photos: Erling Svensen of male (left), UW Photo and David Andersson of female (right), Swedish University of Agricultural Sciences..

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology
A marine and bottom living species found at depths from 20 to 375 meters on shell and gravel bottoms. It feeds on small crustaceans (decapods and amphipods), polychaetes and bivalves (Miller 1986).

Description of major threats
Not known.

Assessment justification
Virtually nothing is known about the biology or the occurrence of this species within the HELCOM area. The number of mature individuals could be anything between less than 50 and more than 2 000 meaning that possible status of this species ranges from Critically Endangered to Least Concern. Therefore the species is considered Data Deficient (DD).

Recommendations for actions to conserve the species
There is a need to improve the knowledge on distribution, abundance, population structure and habitat requirements of this species before any recommendations can be given.

Common names
D: Skorpionsgrundel; DK: Ulkekutling; GB: Diminutive goby; PL: Babka płowa; SE: Simpstubb

References
Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Miller, P.J. (1986). Gobiidae. p. 1019–1085. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 3. UNESCO, Paris.

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

English name: **Fries's goby**	Scientific name: ***Lesueurigobius friesii***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Gobiidae	Species authority: Malm, 1874	
Subspecies, Variations, Synonyms: *Gobius friesii*	Generation length: 5,3 years	
Past and current threats (Habitats Directive article 17 codes): Not known	Future threats (Habitats Directive article 17 codes): Not known	
IUCN Criteria: –	**HELCOM Red List Category:**	**DD** **Data Deficient**
Global / European IUCN Red List Category: NE/NE	Habitats Directive:	
Previous HELCOM Red List Category (2007): DD		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

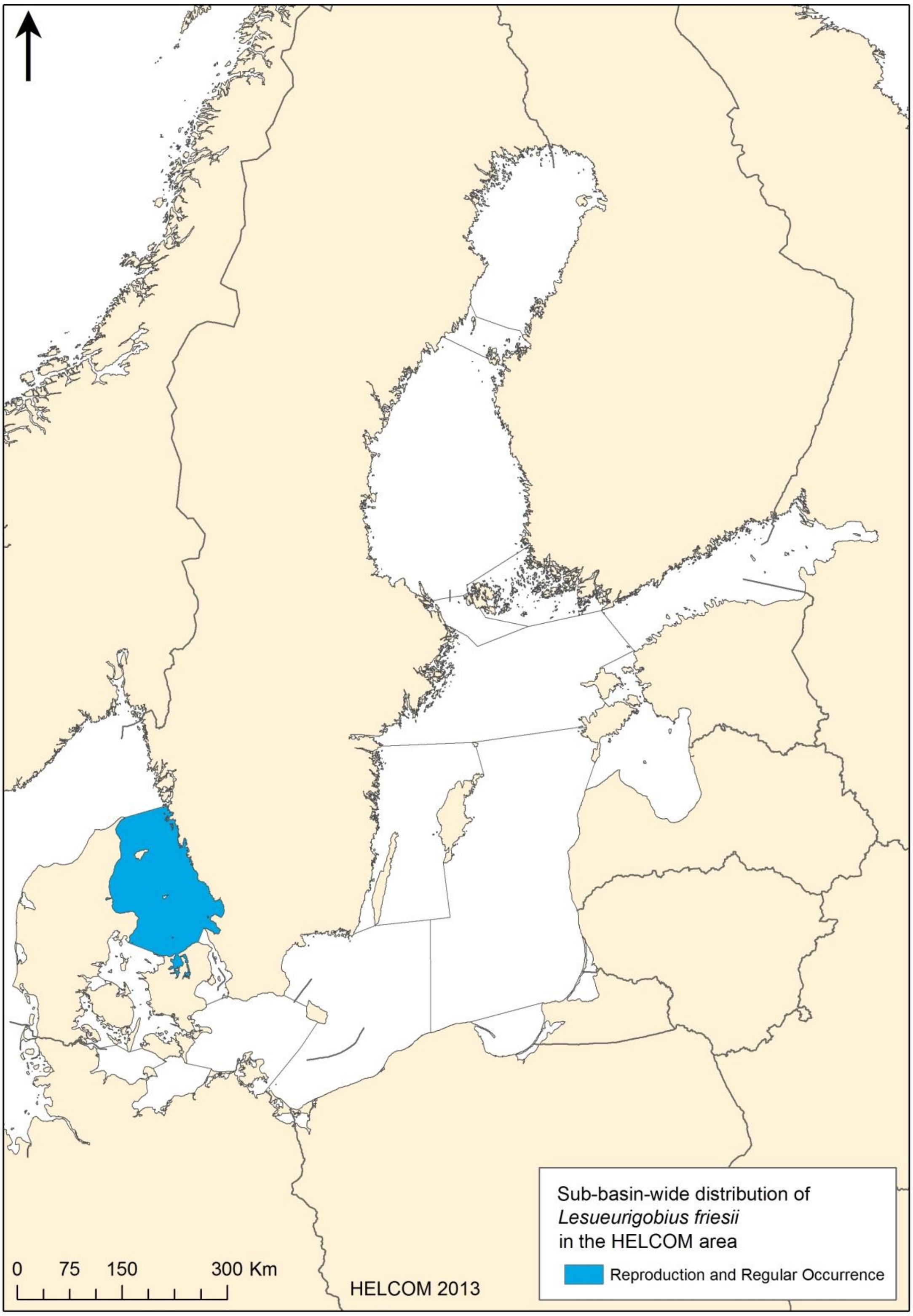
Distribution and status in the Baltic Sea region

The distribution of Fries´s goby is centered to the Eastern Atlantic: from Spain to the Skagerrak and Kattegat and also in the Mediterranean Sea (Froese & Pauly 2012). Little is known about its occurrence and population structure in the HELCOM area.

Fries' goby. Photo by Michael Norén, Swedish Museum of Natural History.

Distribution map

The map shows the sub-basin in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

Fries's goby is a small bottom-living fish in areas with soft sandy or muddy bottoms in depths from 10 to 350 m. By moving away clay or sand it creates holes which characteristically have two openings. It is possible that they also use cavities or burrows excavated by lobster, *Nephrops norvegicus*, and the two species are considered to live in a symbiotic relationship in the same cavities (Miller 1986).

Description of major threats

Not known.

Assessment justification

Virtually nothing is known about the biology or occurrence of this species within the HELCOM area. The number of mature individuals could be anything between less than 50 and more than 2 000 meaning that possible status of this species is anything from Critically Endangered to Least Concern and hence it is considered Data Deficient (DD).

Recommendations for actions to conserve the species

There is a need to improve knowledge on distribution, abundance, habitat requirements and population structure of the species before any recommendations can be given.

Common names

D: Fries-Grundel; DK: Spidshalet kutling; FI: Suippopyrstötokko; GB: Fries's goby; LV: Frīza jūrasgrundulis; SE: Spetsstjärtad smörbult

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Miller, P.J. (1986). Gobiidae. p. 1019–1085. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 3. UNESCO, Paris.

English name: **Checker eelpout**	Scientific name: ***Lycodes gracilis***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Zoarcidae	Species authority: Sars, 1867	
Subspecies, Variations, Synonyms: Often mistaken for *L. vahlii*	Generation length: 5 years	
Past and current threats (Habitats Directive article 17 codes): Not known	Future threats (Habitats Directive article 17 codes): Not known	
IUCN Criteria: –	**HELCOM Red List Category:**	**DD Data Deficient**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): –		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

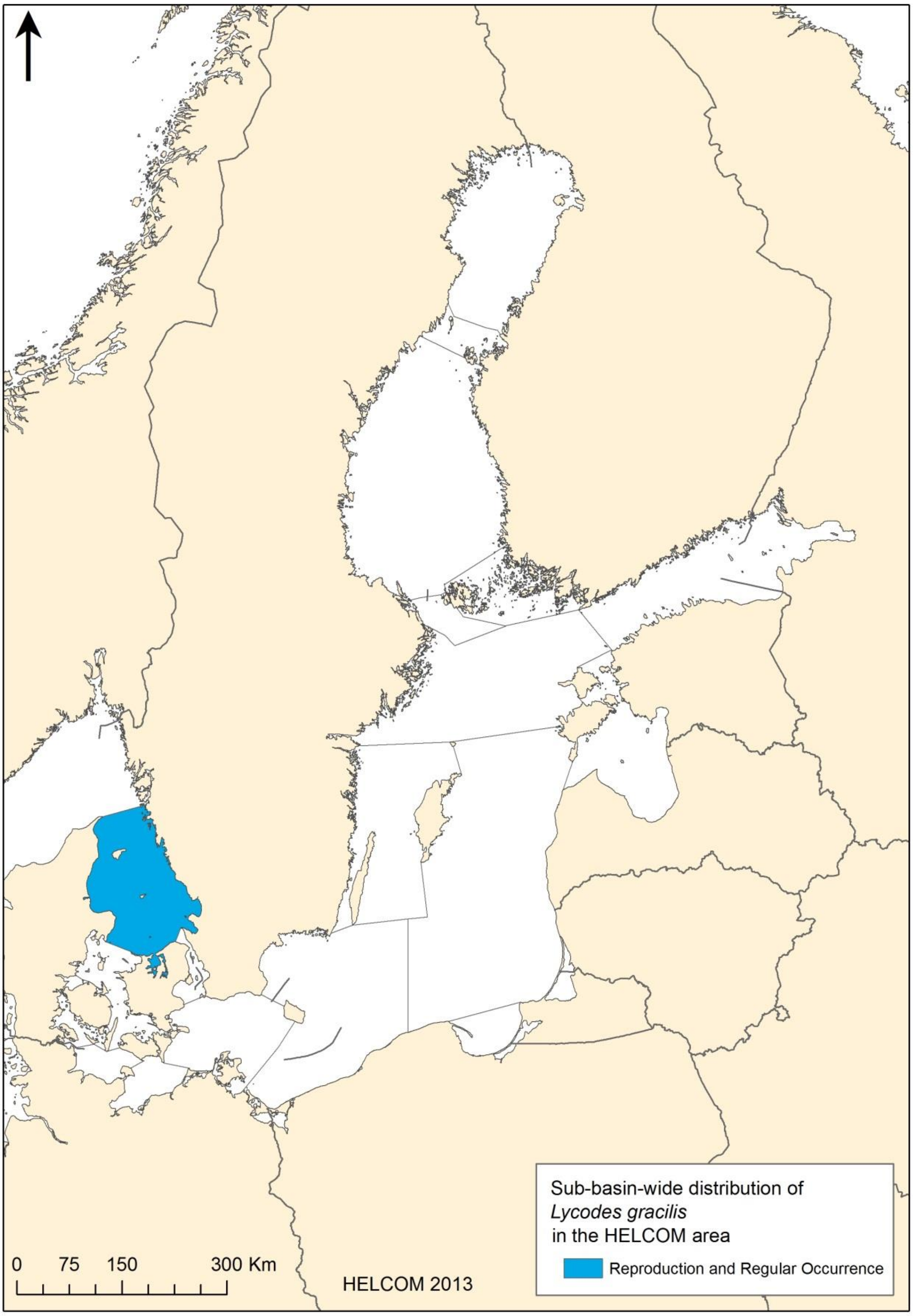
Distribution and status in the Baltic Sea region

The checker eelpout is a strictly marine species with its primary distribution in the Skagerrak and in deeper parts of the Kattegat in the HELCOM area (Froese & Pauly 2012). Virtually nothing is known about its biology or status within the HELCOM area.

Checker eelpout. Photo: Anders Salesjö Photography, Undervattenbilder.se.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology
The checker eelpout lives on soft bottoms at depths between 90 to 365 m at temperatures of 2–6 °C (Anderson & Fedorov 2004).

Description of major threats
No major threats identified within HELCOM area.

Assessment justification
Assuming the same generation time as for *Zoarces viviparus* (i.e. 5 years), gives an assessment window from 1995–2010. Bottom trawling surveys in the Skagerrak and Kattegat show a clear downward trend in CPUE since the beginning of 1990s and from 1995 to 2010 the checker eelpout has decreased more than 80%. Looking at a shorter timeframe 2002–2010 gives the same result. However seen on a longer timescale this might be a natural return to lower values. The uncertainty in the decline (0–80%) results in a DD status.

Recommendations for actions to conserve the species
There is a need to improve the knowledge on distribution and abundance of this species together with essential habitat requirements and population structure of the species before any recommendations can be given.

Common names
DK: Almindelig ålebrosme; FI: Kalpapyrstö; GB: Checker eelpout; LV: Valsa lucītis; RU: Tonkij likod; SE: Ålbrosme

References

Anderson, M.E., Fedorov, V.V. (2004). Family Zoarcidae Swainson 1839. Eelpouts. California Academy of Sciences. Annotated Checklists of Fishes (34):58.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

English name: **Norwegian topknot**	Scientific name: ***Phrynorhombus norvegicus***	
Taxonomical group: Class: Actinopterygii Order: Pleuronectiformes Family: Scopthalmidae	Species authority: Günther, 1862	
Subspecies, Variations, Synonyms: –	Generation length: –	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**DD** **Data Deficient**
Global / European IUCN Red List Category: NE/NE	Habitats Directive:	
Previous HELCOM Red List Category (2007): RA		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

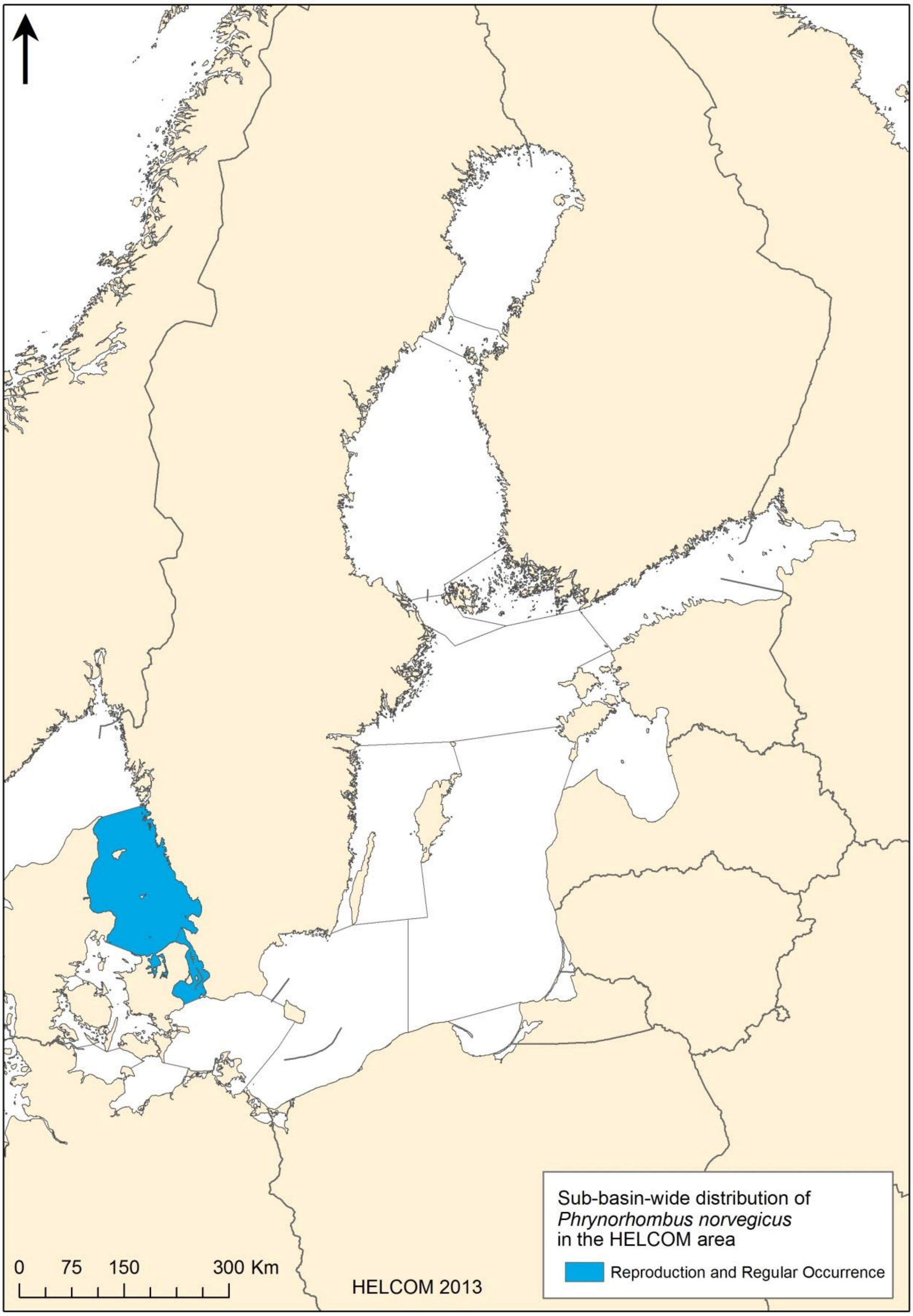
Distribution and status in the Baltic Sea region

The Norwegian topknot is common in the Skagerrak and northern Kattegat, and occurs regularly in the southern Kattegat and the Sound and also sporadically in the Belt Seas. Very little information is available on the status of this species. Swedish bottom trawling surveys in Ustö in the Kattegat have caught this species regularly from 1994 to 2007. However, it has not been caught during the last four years after this.

Norwegian topknot. Photo by Björn Fagerholm, Swedish University of Agricultural Sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology
This is the smallest flatfish occurring in the HELCOM area with a maximum total length of 12 cm. It is a marine bottom dweller that inhabits rocky bottoms from 10 to 200 meters depth, usually 25 to 40 m (Muus & Jensen 1999, Froese & Pauly 2012). Normally camouflaging with the surrounding habitat the species keeps its body tight to vertical rocky walls or sloping hard bottoms. It feeds on fishfry and small invertebrates and spawns from April to August.

Description of major threats
No major threats have been identified.

Assessment justification
Very little information is available on this species but it is possible that the species has declined more than 80 % the last three generations. The possible decline between 0 to 80 % results in DD status for this species.

Recommendations for actions to conserve the species
There is a need to improve the knowledge on distribution and abundance of this species together with essential habitat requirements and population structure of the species before any recommendations can be given.

Common names
D: Zwergbutt; DK: Småhvarre; FI: Pikkukampela GB: Norwegian topknot; PL: Turbotek norweski LV: Norvēģu akmeņplekste, mazā akmeņplekste; LT: Norveginis mažasis otas; RUS: Norvezhskaja karlikovaja kambala SE: Småvar

References
Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii (in Swedish). Artdatabanken, SLU, Uppsala. 517 pp.

Muus, B.J., Nielsen, J.G. (1999). Sea fish. Scandinavian Fishing Year Book, Hedehusene, Denmark. 338 pp.

English name: **Norway goby**	Scientific name: ***Pomatoschistus norvegicus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Gobiidae	Species authority: Colett, 1902	
Subspecies, Variations, Synonyms: *Gobius minutus norvegicus*	Generation length: 1–2 years	
Past and current threats (Habitats Directive article 17 codes): Not known	Future threats (Habitats Directive article 17 codes): Not known	
IUCN Criteria: –	**HELCOM Red List Category:**	**DD** **Data Deficient**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: ´ –	
Previous HELCOM Red List Category (2007): –		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/LC		

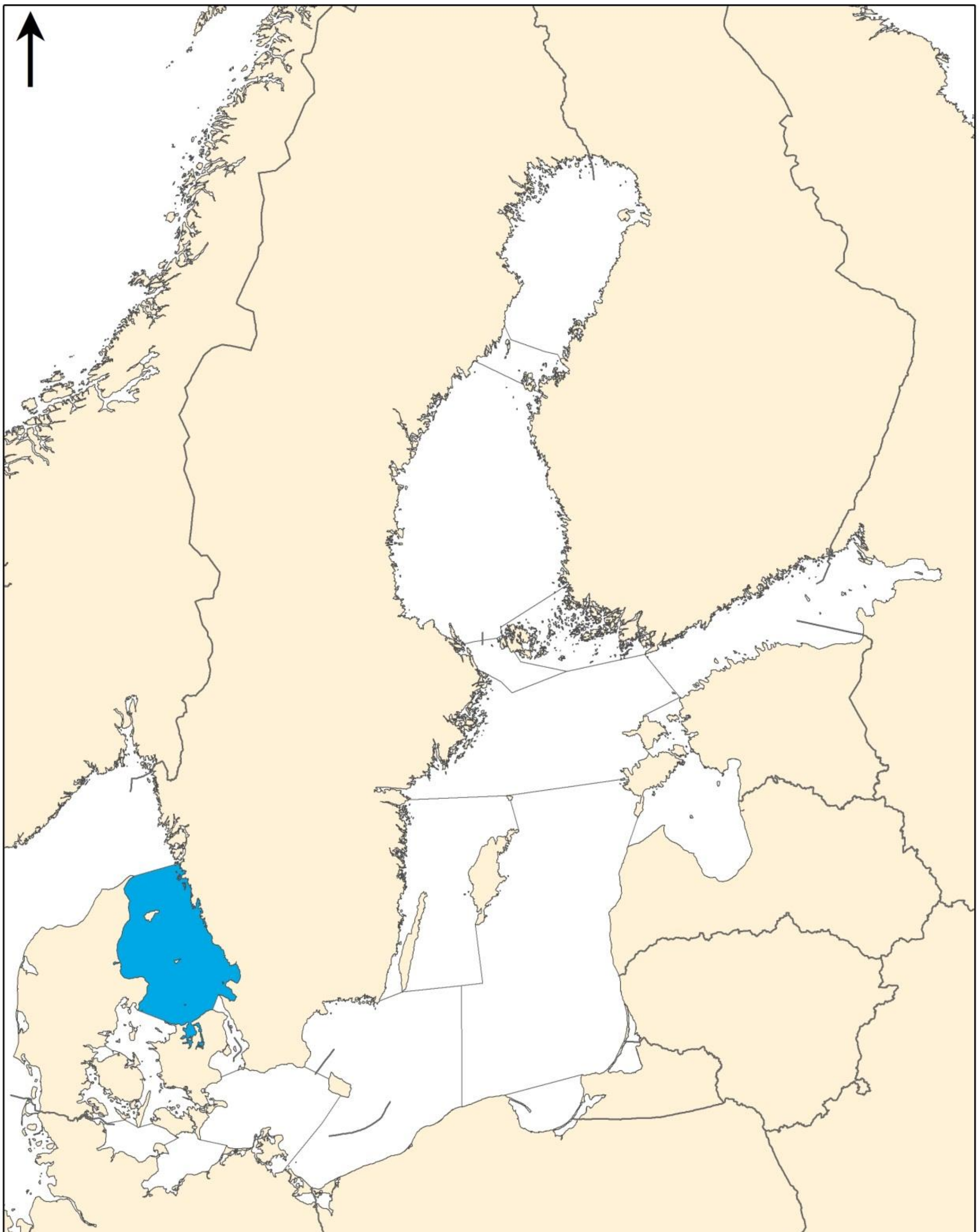
Distribution and status in the Baltic Sea region

The Norway goby occurs in coastal waters along the north-eastern coasts of Europe (Froese & Pauly 2012). It is very similar to the sand goby (*Pomatoschistus minutus*) but lives offshore on depths from 30 to 300 meters. The species has been overlooked and the first Swedish record originates from 1994. The Norwegian goby is presently considered common in the Skagerrak and rare in the northern Kattegat but virtually nothing is known about its occurrence within the HELCOM area.

Norway goby. Photo by Erling Svensen, UW Photo.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The Norway goby lives in deeper water (down to 325 meters) on mud and shell bottoms and feeds on amphipods and small crustaceans. Spawning occurs between March and July. Maturity is reached after the first winter and 75% of the individuals survive their first spawning season but all die after their second spawning season (Miller 1986).

Description of major threats

Not known.

Assessment justification

Virtually nothing is known about the biology or occurrence of the species within the HELCOM area. The number of mature individuals could be anything between less than 50 and more than 2 000 meaning that possible status of this species is anything from Critical endangered to Least Concern and hence it is considered Data Deficient (DD).

Recommendations for actions to conserve the species

There is a need to improve the knowledge on distribution, abundance, essential habitat requirements and population structure of the species until any recommendations can be given.

Common names

D: Norwegengrundel; DK: Norsk kutling; FI: Norjantokko; GB: Norway goby; LV: Norvēģu jūrasgrundulis; SE: Dystubb

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

HELCOM (2012). Checklist of Baltic Sea Macro-species. Baltic Sea Environment Proceedings No. 130. Helsinki Commission, Helsinki. 203 pp.

Miller, P.J. (1986). Gobiidae. p. 1019–1085. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 3. UNESCO, Paris.

English name: **Painted goby**	Scientific name: ***Pomatoschistus pictus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Gobiidae	Species authority: Malm, 1865	
Subspecies, Variations, Synonyms: *Gobius pictus*	Generation length: 1.5 years	
Past and current threats (Habitats Directive article 17 codes): Not known	Future threats (Habitats Directive article 17 codes): Not known	
IUCN Criteria: –	**HELCOM Red List Category:**	**DD** **Data Deficient**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

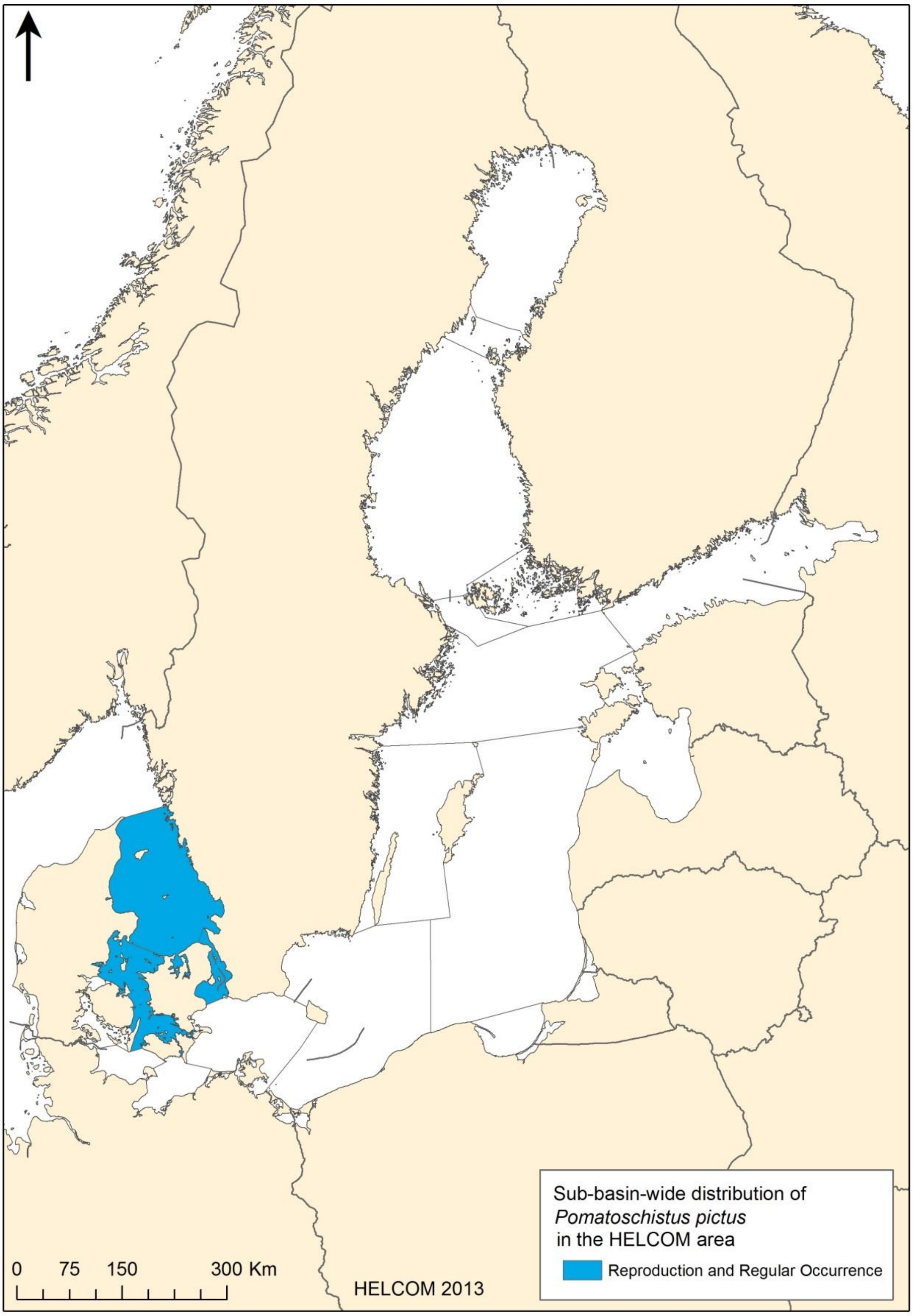
Distribution and status in the Baltic Sea region

The painted goby occurs in coastal waters along the north-eastern coasts of Europe (Froese & Pauly 2012) and is presently considered common in the Skagerrak and rare in the Kattegat and the Sound but virtually nothing is known about its occurrence within the HELCOM area.

Painted goby. Photo by Anders Salesjö Photography, Undervattenbilder.se.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The painted goby is a marine species that often occurs together with *Pomatoschistus microps* and *P. minutus*. The species occurs from shallow coastal areas down to around 50 meters depth, mainly on gravel and sand bottoms. It feeds on copepods and amphipods. The male guards (paternal care) the eggs before hatching after about two weeks. Maturity is reached in a year and all individuals die after their second spawning season after two years (Miller 1986).

Description of major threats

Not known.

Assessment justification

Virtually nothing is known about the biology or occurrence of this species within the HELCOM area. The number of mature individuals could be anything between less than 50 and more than 2 000 meaning that possible status of this species is anything from Critical endangered to Least Concern and hence it is considered Data Deficient (DD).

Recommendations for actions to conserve the species

There is a need to improve knowledge on distribution, abundance, essential habitat requirements and population structure of the species before any recommendations can be given.

Common names

D: Fleckengrundel; DK: Spættet kutling; FI: Kivikkotokko; GB: Painted goby; LI: Puošnusis grundalas; LV: Plankumainais jūrasgrundulis; PL: Babka pisana; SE: Bergstubb

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

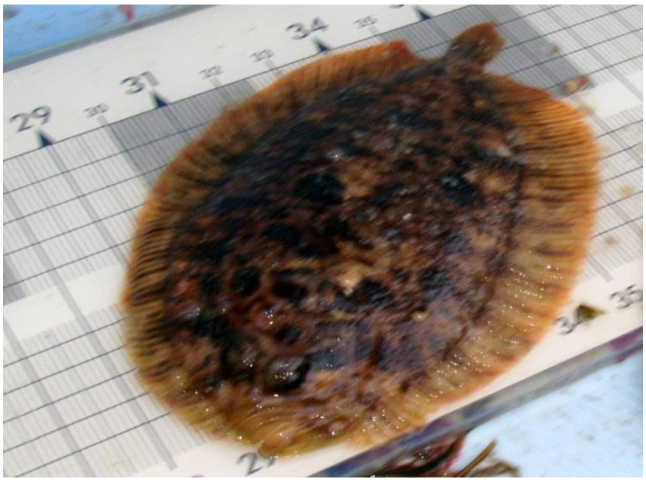
Miller, P.J. (1986). Gobiidae. p. 1019–1085. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 3. UNESCO, Paris.

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.

English name: **Topknot**	Scientific name: ***Zeugopterus punctatus***	
Taxonomical group: Class: Actinopterygii Order: Pleuronectiformes Family: Scopthalmidae	Species authority: Bloch, 1787	
Subspecies, Variations, Synonyms: –	Generation length:	
Past and current threats (Habitats Directive article 17 codes): Not known	Future threats (Habitats Directive article 17 codes): Not known	
IUCN Criteria: **–**	**HELCOM Red List Category:**	**DD** **Data Deficient**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): RA		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

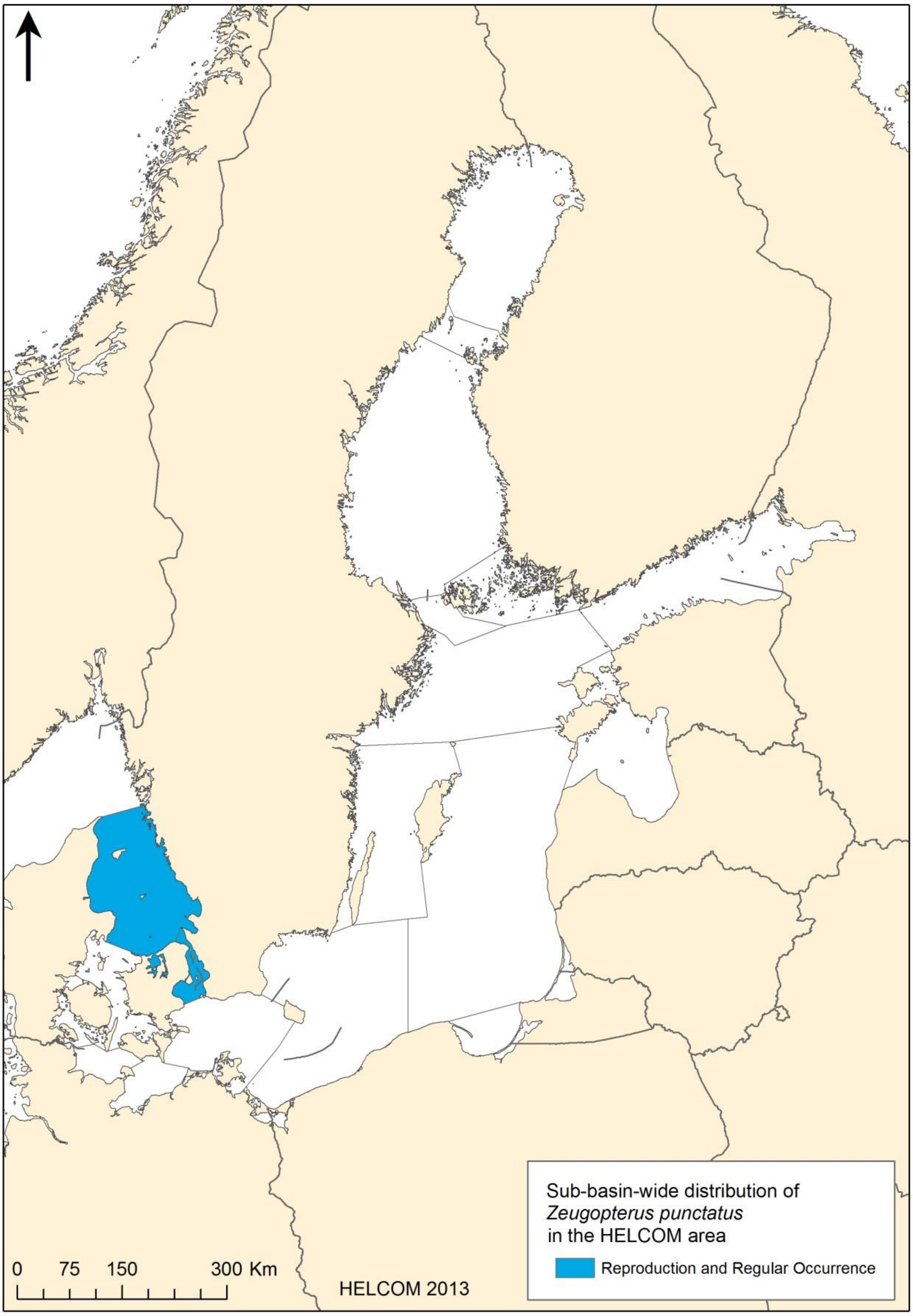
The topknot is common in the Skagerrak and northern Kattegat, and occurs regularly in the southern Kattegat and the Sound and also sporadically in the Belt Seas (Froese & Pauly 2012, Kullander 2012). No information is available on the status of this species.



Topknot. Photo by Björn Fagerholm, Swedish University of Agricultural Sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The topknot is a marine bottom dweller that inhabits rocky bottoms from 10 to 40 meters depth (usually 10 to 15 m). Normally camouflaging with the surrounding habitat the species keeps its body tight to vertical rocky walls or sloping hard bottoms. The topknot feeds on small fish and invertebrates. Spawning takes place in spring and early summer. It can reach a total length of 25 cm.

Description of major threats

Not known.

Assessment justification

No information available but it is possible that the species had declined more than 80 % over the last three generations. The possible decline between 0 and 80% results in Data Deficient (DD) status for this species.

Recommendations for actions to conserve the species

There is a need to improve knowledge on distribution, abundance, essential habitat requirements and population structure of the species before any recommendations can be given.

Common names

D: Haarbutt; DK: Hårhvarre; FI: Kalliokampela GB: Topknot; PL: Ptera; LV: Plankumainā akmeņplekste; LT: Dėmėtasis otas; RUS: Pjatnistyj topknot; SE: Bergvar

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii (in Swedish). Artdatabanken, SLU, Uppsala. 517 pp.

English name: **Bleak**	Scientific name: ***Alburnus alburnus***	
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cyprinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 4.7 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**LC**, Estonia –/**LC**, Finland –/**LC**, Germany –/**G** (Endangered by unknown extent, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

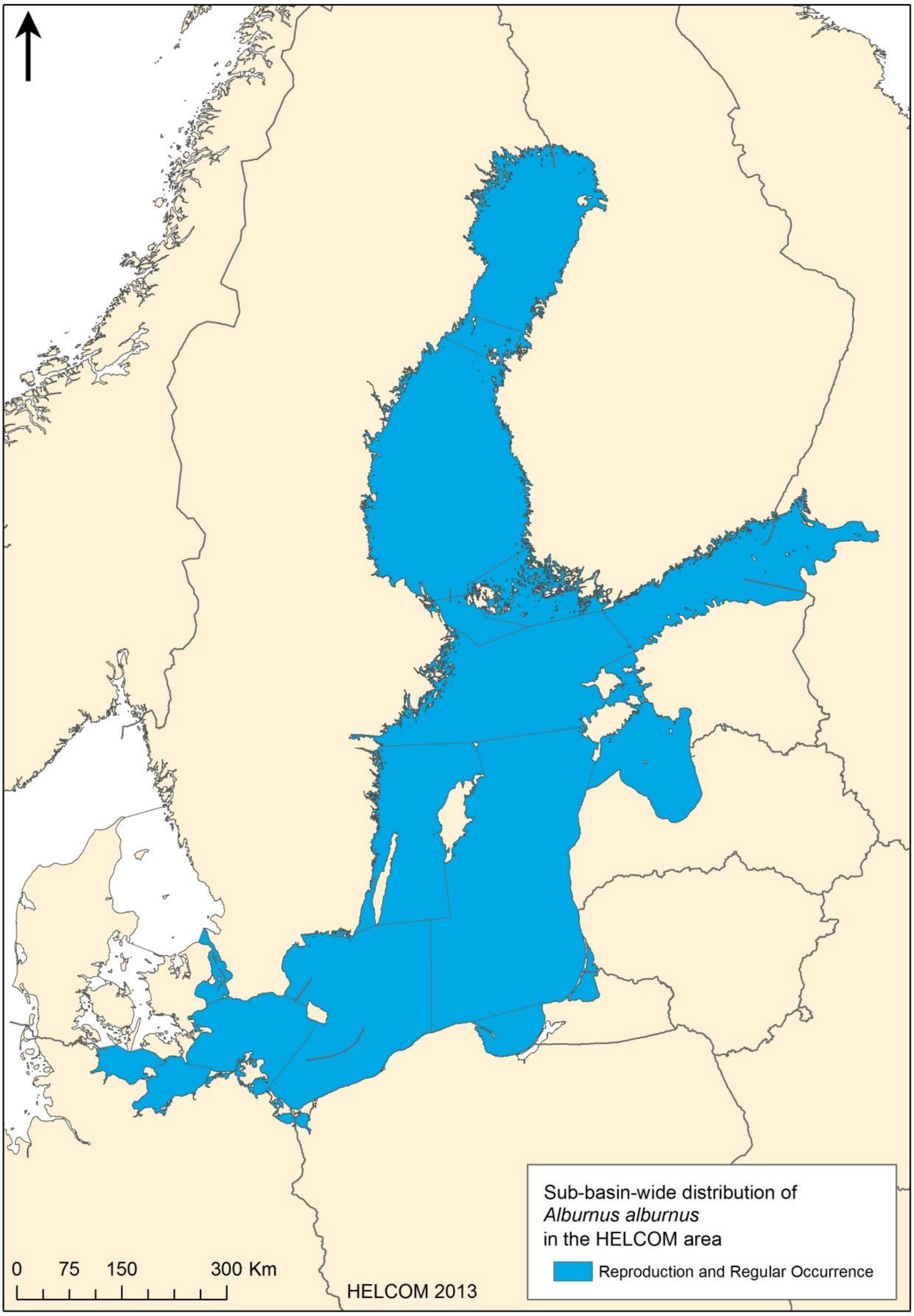
Distribution and status in the Baltic Sea region

The bleak occurs in all coastal habitats of the Baltic proper. It is originally a freshwater species that cannot tolerate high salinity.

Bleak. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The bleak lives in shoals close to the surface in most freshwater environments, preferring slow flowing rivers. Sexual maturation is reached in 2 years in males, and in 3 years in females. Spawning usually takes place from April to July, sometimes even as late as August. The bleak spawns close to the shore, usually on gravel or rocky substrate, sometimes also among vegetation. It feeds on zooplankton, small invertebrates and fish larvae. Common standard length is from 12 to 15 cm, maximum up to 25 cm; maximum body weight 80 g. (Kottelat & Freyhof 2007, Lelek 1987)

Description of major threats

No major threats known.

Assessment justification

This species does not fulfil any of the criteria for being threatened according to the IUCN system. The population size, the distribution area and the area of occupancy are all well above the threshold values. There are no signs of decline and no perceived threats. Hence it is categorized as Least Concern.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

D - Ukelei, Laube; GB - Bleak; EST - Viidikas; DK - Løje; FIN - Salakka; LV - Vīķe; LT - Paprastoji aukšlė; PL - Ukleja; RUS - Ukleika; S - Löja

References

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.

Kottelat, M., Freyhof, J. (2007). Handbook of European freshwater fishes. Publications Kottelat, Cornol / Switzerland. 646 pp.

Lelek, A. (1987). The freshwater fishes of Europe. Vol. 9. Threatened fishes of Europe. Aula-Verlag, Wiesbaden / Germany. 343 pp.

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): 11–76.

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/

English name: **Twaite shad**	Scientific name: ***Alosa fallax***	
Taxonomical group: Class: Actinopterygii Order: Clupeiformes Family: Clupeidae	Species authority: La Cepède, 1803	
Subspecies, Variations, Synonyms: –	Generation length: 9.3 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: Listed as Alosa spp in Anex II and V	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/**NA,** Estonia –/–, Finland –/–, Germany *Protected by national and European law.* **/ 3** (Vulnerable, Baltic Sea), Latvia *Protected by the law, included in CM regulation Nr. 396* / **RA,** Lithuania –/**DD,** Poland *Prohibited to kill, catch or disturb this species under strict protection all year round* / **EN,** Russia *Prohibited to fish for and land this species all year round* / **EN,** Sweden *Prohibited to fish for and land this species all year round* / **NA**		

Distribution and status in the Baltic Sea region

This anadromous species is mainly distributed in the southeastern part of the Baltic Sea. Available monitory fishing series from the Baltic International Trawl Survey in the Arkona basin shows no trend. The species occurs sparsely in netseries from the Curonian lagoon and Jurkalne and shows no trend. Twaite shad has irregular occurrence in Estonia. It is considered threatened but with a positive trend over the last decade in Germany. Polish data from commercial fishery in Odra and Vistula lagoons show an increase in landings since the 1970s. In Lithuania the twaite shad has increased in abundance in recent years (Repecka 2003) and the same is true for German and adjacent waters (Thiel et al. 2007). There is no clear evidence which factors cause disappearence and recovery of twaite shad. However, decreased pollution by nutrients, heavy metals and other pollutants in the lagoons of the southern Baltic and less strong winter periods in those areas during the last 15 years may have affected the population increase of twaite shad (Thiel et al. 2007). The species is globally categorized as LC as the current status of the species is good and its population is increasing in the North Sea and Baltic Sea (Freyhof & Kottelat 2008).

Illustration by von Wright (1895)

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly (HELCOM 2012).

Habitat and ecology

The twaite shad *Alosa fallax* is a species that spends much of its life pelagically in the open water of coastal seas, and anadromously migrates into large rivers for spawning. Adult fish enter estuaries annually, and then from April to June they migrate upstream. First year adults just train the migration, but second year or older specimens spawn above sand and mud bottoms. Spawning occurs repeatedly during several nights, from May to June; the adults usually survive spawning and return in autumn to the sea. When hatching, larvae measure 4.25–6 mm, but juveniles have grown to 7–8 cm when they start their downstream migration into the sea in autumn. Twaite shad does not grow any further in winter; growth periods are in summer in their river habitat. They feed on aquatic insects, crustaceans, fish larvae and young fish. Maximum total length is 60 cm but more commonly 40 cm, maximum body weight 1.5 kg, and maximum individual age 25 years. (Quignard & Douchement 2004, Freyhof & Kottelat 2008, Froese & Pauly 2012)

Description of major threats

Although the species is not considered threatened at the moment, several factors have affected negatively its population: blocking of migration routes with dam constructions for hydropower, pollution and destroying spawning habitats. The spawning habitats of twaite shad can be negatively affected by eutrophication and technical constructions like dredging of rivers for shipping lanes. Twaite shades are caught as bycatch in pelagic fisheries especially during their spawning migrations and in the estuaries.

Assessment justification

The number of reproductive individuals, as well as the extent of occurrence, are well above the thresholds for being threatened according to the IUCN criteria. The area of occupancy is restricted (<500km^2) but since there is no continuing decrease or extreme fluctuations in population size or habitat and the population is not extremely fragmented it does not fulfill the criteria for being threatened. In fact this species shows a positive trend in population size over the last three generations and is hence considered LC.

Recommendations for actions to conserve the species

Connectivity of spawning and feeding habitats should be improved; pollution and eutrophication should be reduced. By-catch in fisheries should be reduced by using more selective gear.

Common names

D - Finte; GB – Twaite shad; EST -Vinträim ; DK - Stavsild; FIN – Täpläsilli; LV - Palede, lapreņģe,skalla; LT-Perpelė; PL- Parposz; RUS - Finta; S – Staksill

References

Andrušaitis G. (ed.) (2003). Red data book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Freyhof, J., Kottelat, M. (2008). *Alosa fallax*. In: IUCN 2011. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 30 April 2012)

Fries, B. Smitt, F. S. Von Wright, W. (1895). Skandinaviens fiskar. Norstedt, Stockholm.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org.

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Red Book of the Russian Federation (animals). 2001. "Act Astrel". 863 pp. (In Russian) [Красная Книга Российской Федерации (животные). 2001. «Аст Астрель». 863 с.], on-line version (2007) http://www.sevin.ru/redbooksevin/index.html

Repečka, R. (2003). Changes in biological indices and abundance of salmon, sea trout, smelt, vimba and twaite shad in the coastal zone of the Baltic Sea and the Curonian Lagoon at the beginning of spawning migration. Acta Zoologica Lituanica 13: 195–216

Quignard, J. P., Douchement, C. (1991). *Alosa alosa* (Linnaeus, 1758). Pp. 89–126. In: Hoestlandt, H. : The freshwater fishes of Europe. Vol. 2. Clupeidae, Anguillidae. Aula-Verlag, Wiesbaden / Germany. 447 pp.

Thiel, R., Riel, P., Neumann, R., Winkler, H. M. (2007). Twaite shad (*Alosa fallax* (Lacépède, 1803)) in German and adjacent Baltic waters: historical importance, intermediate decline and recent recovery of the population. Fishery and Aquaculture in Lithuania 7: 28–58.

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): 11–76.

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/

<table>
<tr><td>English name:
Starry ray /Thorny skate</td><td colspan="2">Scientific name:
Amblyraja radiata</td></tr>
<tr><td>Taxonomical group:
Class: Elasmobranchii
Order: Rajiformes
Family: Rajidae</td><td colspan="2">Species authority:
Donovan,1808</td></tr>
<tr><td>Subspecies, Variations, Synonyms:
Raja radiata</td><td colspan="2">Generation length:
11</td></tr>
<tr><td>Past and current threats (Habitats Directive article 17 codes):
–</td><td colspan="2">Future threats (Habitats Directive article 17 codes):
–</td></tr>
<tr><td>IUCN Criteria:
–</td><td>**HELCOM Red List Category:**</td><td>**LC**
Least Concern</td></tr>
<tr><td>Global / European IUCN Red List Category
VU/NE</td><td colspan="2">Habitats Directive:
–</td></tr>
<tr><td colspan="3">Previous HELCOM Red List Category (2007): EN</td></tr>
<tr><td colspan="3">Protection and Red List status in HELCOM countries:
Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**</td></tr>
</table>

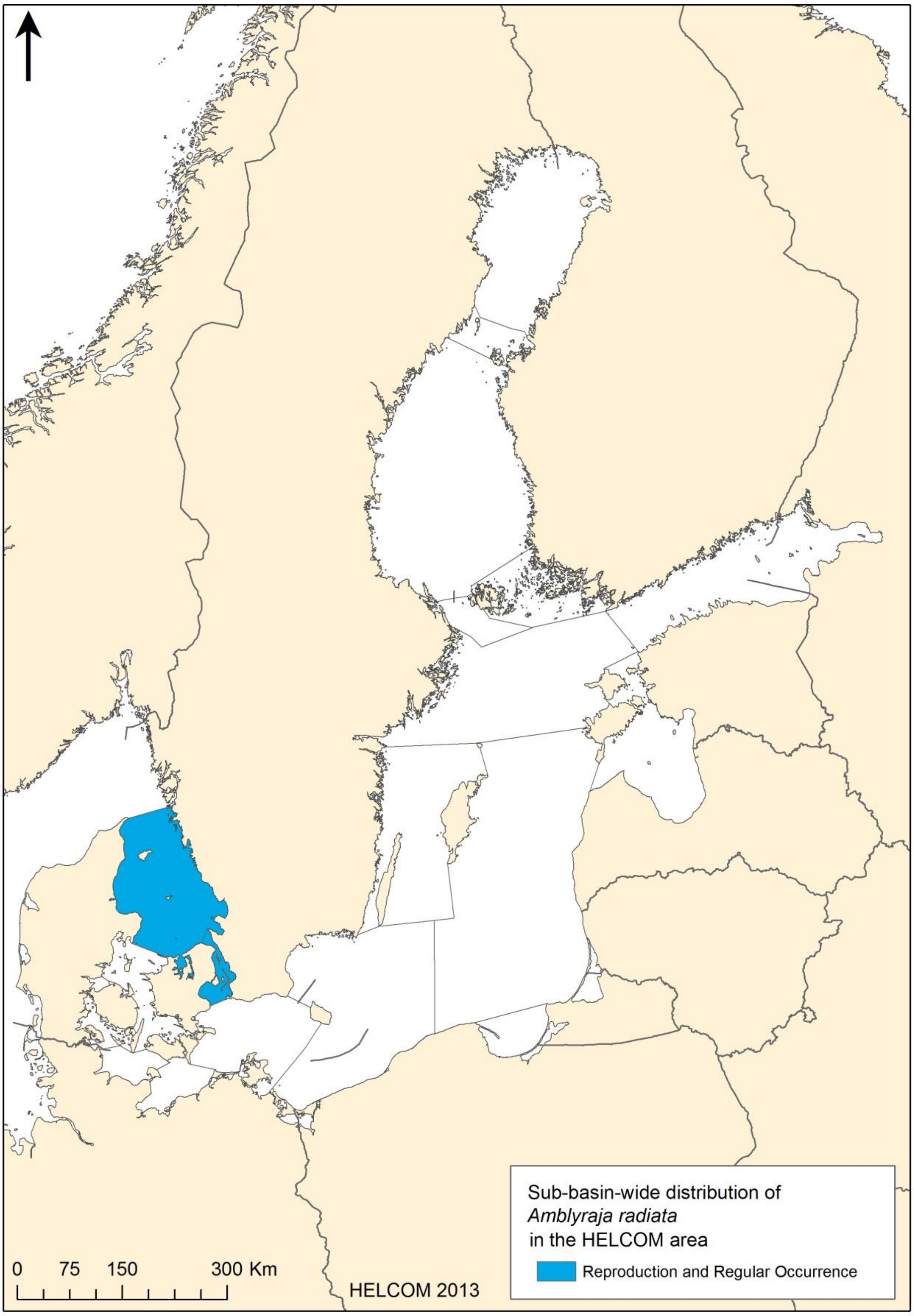
Distribution and status in the Baltic Sea region

The starry ray is the most common ray in the North Sea and in the HELCOM area. It reproduces in the Kattegat and the Sound and has been found in the south-western parts of the Baltic. This small-bodied ray is of little commercial importance but it is often caught as bycatch in demersal fisheries. Bottom trawl survey data from the Kattegat shows strong fluctuation without any clear long-term trend. The population in the Sound shows signs of a small increase since the early 1990s. In the North Sea the species abundance increased in the 1990s but has decreased in the last decade (ICES 2012).

Starry ray. Photo by David Andersson, Swedish University of Agricultural Sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The starry ray is a demersally living skate species occurring on soft bottoms (occasionally also hard bottoms). It is found at various depths, from 10 to 850 m, but most often between 30 and 200 m. The starry ray reproduces throughout the year; the species is oviparous and deposits its egg-case in algae and seagrass beds. Starry rays feeds on crustaceans, fish and polychaete worms. It can reach a maximum total length of over 1 meter but is seldom over 60 cm in the North Sea and HELCOM area. The maximum reported age is 28 years. (Froese & Pauly 2012)

Description of major threats

In the previous HELCOM assessment (HELCOM 2007) the species was considered threatened and several factors were mentioned as threats: habitat loss due to effects of sand and gravel extraction, trawling, eutrophication of sand bottoms (since the species inhabits clean oxygenated sand bottoms where it can bury and breathe), and fisheries (as by-catch in demersal fisheries).

Assessment justification

The bottom trawl survey data from IBTS survey in the Kattegat shows strong fluctuation but no clear long-term trend. The population in the Sound shows signs of a small increase since the early 1990s. The starry Ray is according to assessment of the International Council for the Exploration of the Seas (ICES) showing increased abundance in the North Sea in the 1990s but decreased abundance over the last decade. It is globally red-listed as Vulnerable (VU A2b), but as Least Concern (LC) in the North-east Atlantic. This is a widespread, common ray with no evidence of decline within the HELCOM area during the assessment period, hence it is currently considered Least Concern (LC) within the HELCOM area.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D - Sternrochen; GB –Starry ray; DK - Tærbe; FIN – Kynsirausku; LV - Ērkšķu raja; LT - Žvaigždėtoji raja; PL - Raja promienista; RU -Zvjozdchatij skat ; S – Klorocka

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (12/2012).

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.

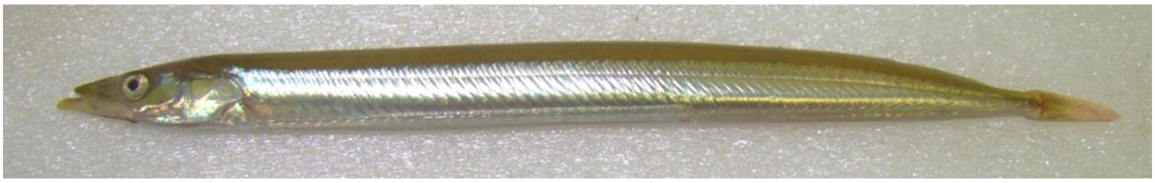
ICES (2012). ICES Advice2012, Book 6.

SPECIES INFORMATION SHEET *Ammodytes marinus*

English name: **Lesser sandeel/Raitts sandeel**	Scientific name: ***Ammodytes marinus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Ammodytidae	Species authority: Raitt, 1934	
Subspecies, Variations, Synonyms: –	Generation length: 3.8	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): DD		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The lesser sandeel is a marine species reproducing in both Kattegat and the Sound but it is unknown how far into the Baltic Sea this marine species can be found. It is commercially exploited in a fishery targeting all species of sandeels. This fishery is assessed by ICES but unfortunately not enough data have been available for the Kattegat to perform an assessment (ICES 2012). The sandeel is not caught in regular fish monitoring surveys due to its small, snake-like bodyshape and survey data are only available from one area in the Kattegat. These data show large inter-annual variation but no overall trend during the sampling period 1981–2010.



Ammodytes marinus. Photo by Natalia Chernova, Zoological Institute, St. Petersburg.

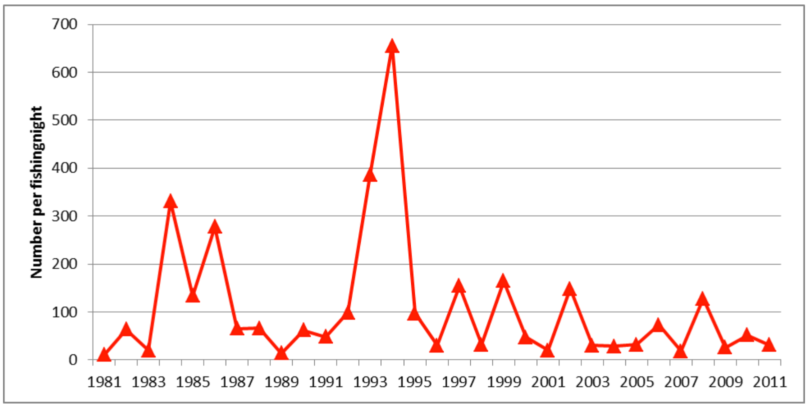
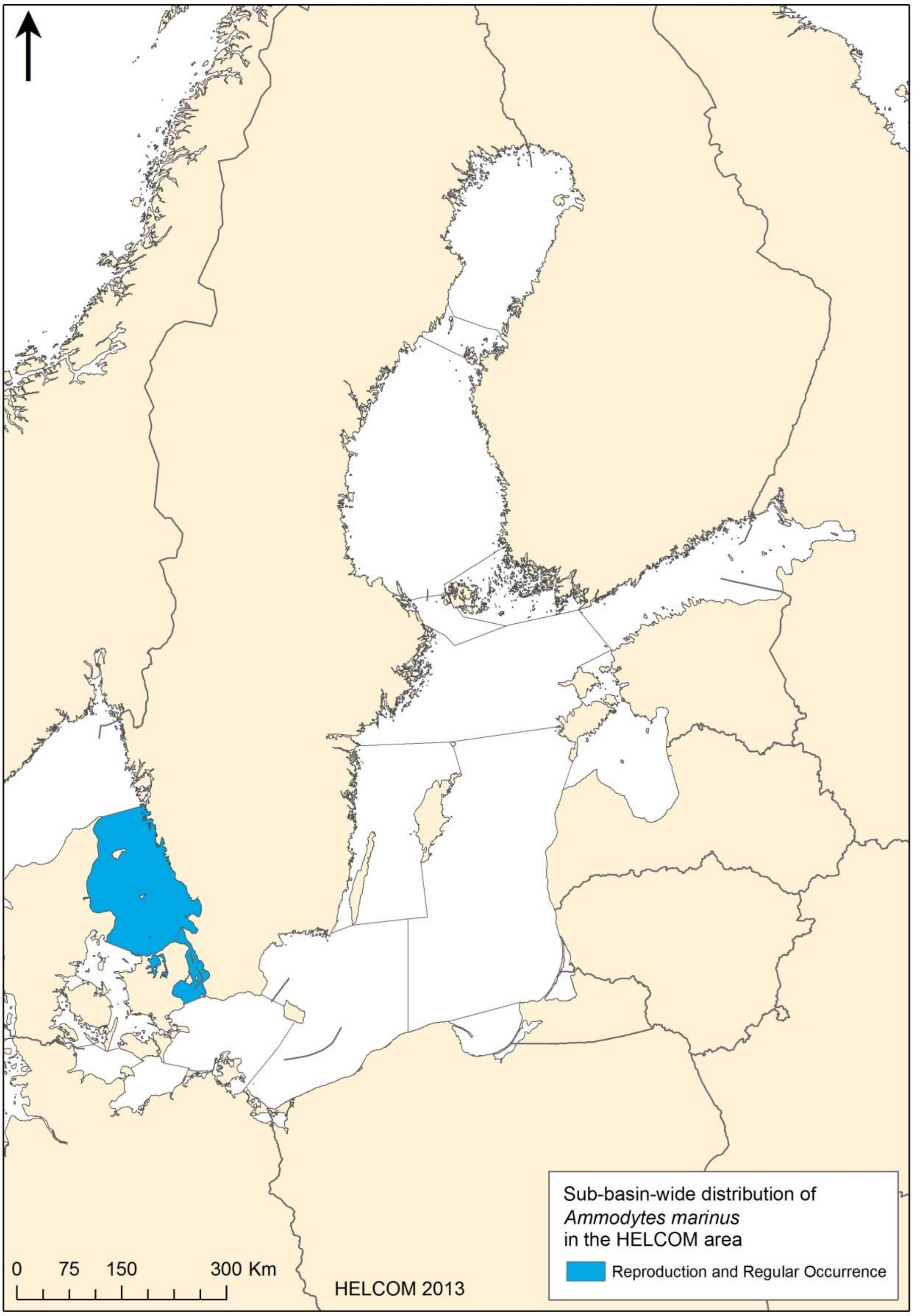


Fig 1. *Ammodytes* spp. caught in the Swedish monitoring fishing at Ringhals nuclear powerplant in the Kattegat.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

Sandeel is a short-lived species, which reaches maturity at 1 or 2 years age and lives a maximum of ten years. It reaches a total length of 25 cm. It lives in a depth of 10–150 m on sandy bottoms. During winter and when light conditions are bad the lesser sandeel digs into the sand. When currents are strong the sandeel leaves the sand and forms large shoals. Spawning from November to February and eggs are deposited on sand or fine gravel bottoms. Sandeels are largely stationary after settlement. Sandeel feeds on plankton and is itself prey for many predators like cod and haddock but also fish eating birds. (Froese & Pauly 2012)

Description of major threats

No current major threats identified.

Assessment justification

Sandeel (mostly *A. marinus* but also *A. tobianus* and *H. lanceolatus*) is caught in the commercial sandeel fishery and ICES assesses these species jointly in some areas. The state of the stock in the Kattegat is unknown since the available information (only landings) is inadequate to evaluate stock status or trends (ICES 2012). However, the stock adjacent to HELCOM area (central eastern North Sea including Skagerrak) where there is data on spawning stock biomass, have an overall positive trend the last 10 years (Data from ICES 2012). Due to its shape it is not caught in regular monitoring, but sampling in the cooling water intake at Ringhals nuclear powerplant in the Kattegat show that the catch per unit effort of *Ammodytes* spp. has no trend over the assessment period (11 years) and also no trend during the whole investigated period 1981–2010. In conclusion, despite sparse data there is no indication of decline or identified threats for this species in the HELCOM area. The species is hence considered LC.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

DE: Sandaal; DK: Havtobis; ES: merisutt; FI: Merituulenkala; GB: Raitt´s sandeel/Lesser sandeel ; LA: Lielā tūbīte; LI: Europinis tobis; PL: Dobijak niebieski; RU: Mnogopozvonkovaja peschanka; SE: Havstobis

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

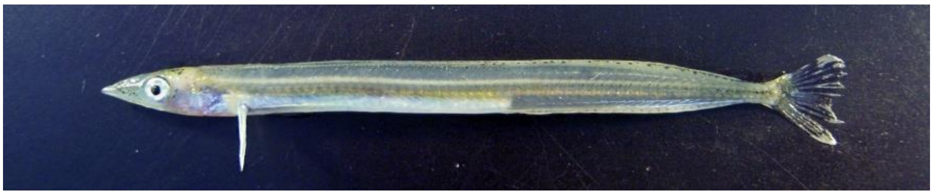
ICES 2012. ICES Advice 2012. Book 6.

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): 11–76.

English name: **Sandeel**	Scientific name: ***Ammodytes tobianus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Ammodytidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 3.3	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**LC**, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

This originally marine species is commonly occurring and reproducing in all parts of the HELCOM area, except for the least saline lagoons. It is commercially exploited in a fishery targeting all sandeel species in the Kattegat. This fishery is assessed by ICES but unfortunately not enough data are available for Kattegat to perform an assessment (ICES 2012). The sandeel is not caught in regular fish monitoring surveys, due to its small, snake-like bodyshape and survey data are only available from one area in the Kattegat and one in Åland Sea. These data show large inter-annual variation but no overall trend during the sampling period 1981–2010.



Sandeel. Photo by Björn Fagerholm, Swedish University of Agricultural Sciences.

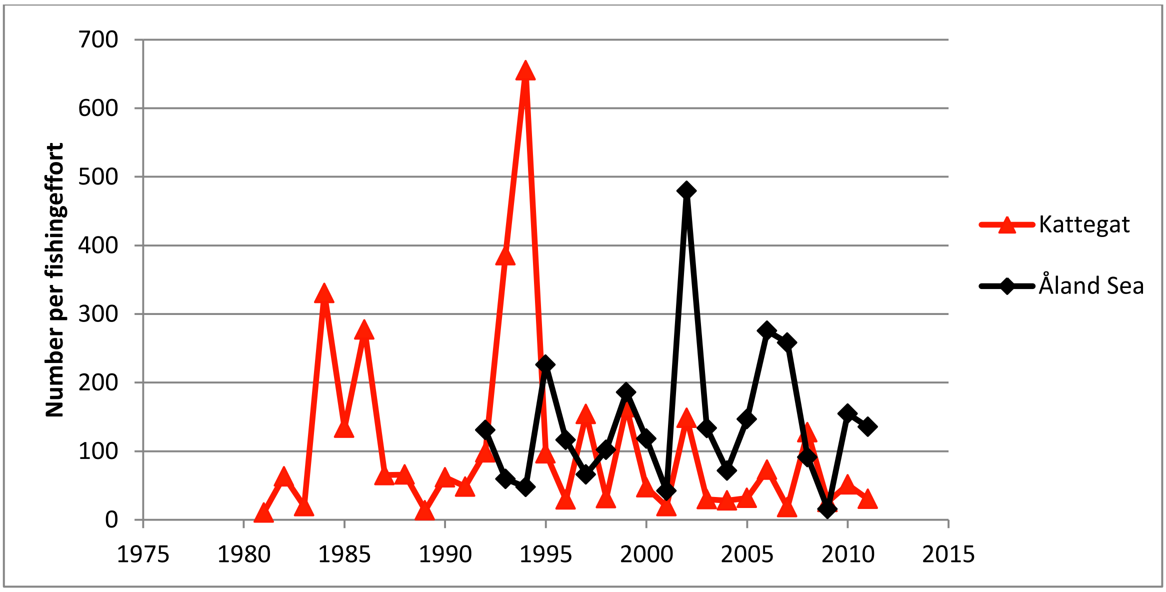
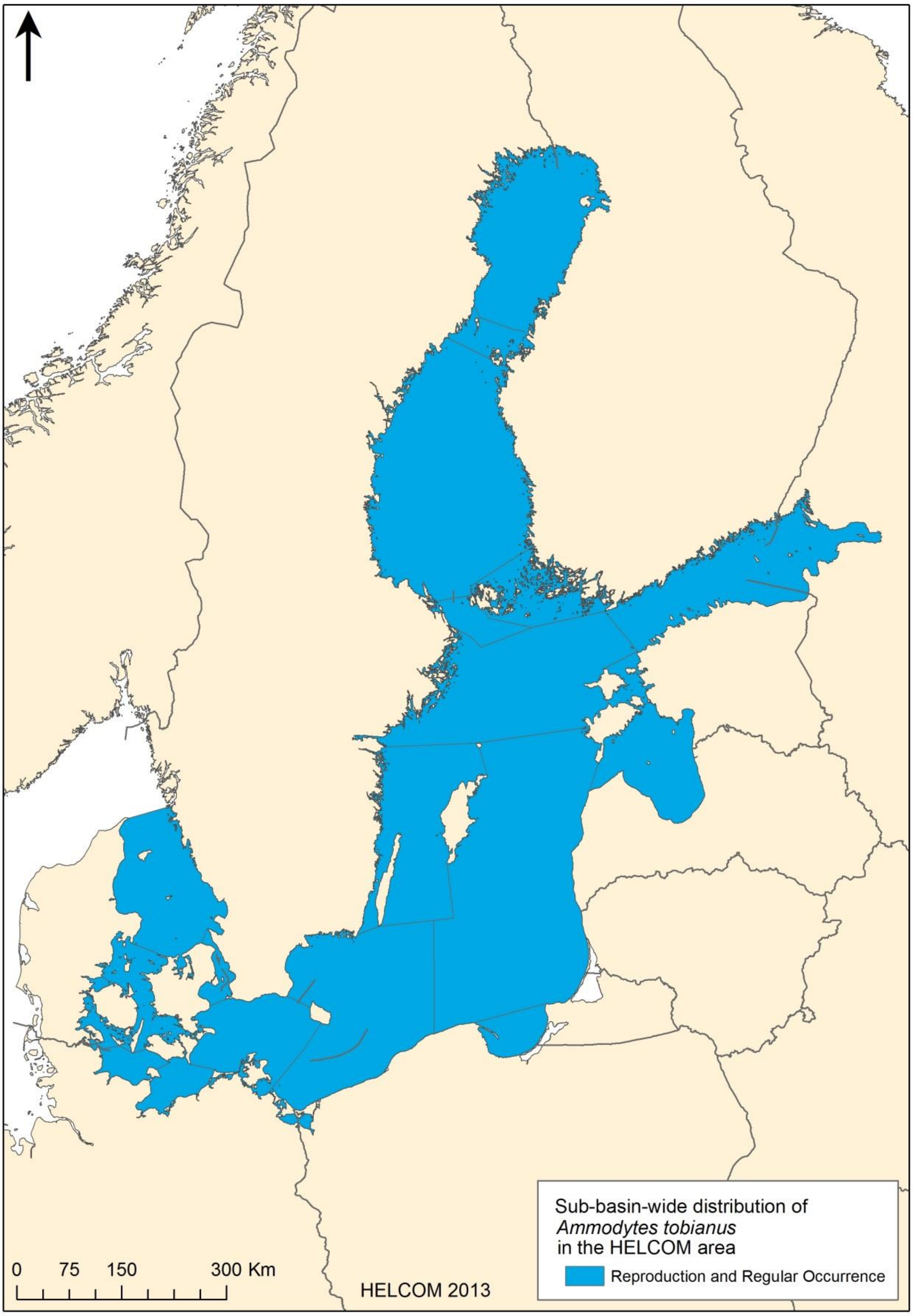


Fig 1. *Ammodytes* spp. caught in the Swedish fish monitoring at Ringhals nuclear powerplant in Kattegat and Forsmark nuclear powerplant in the Åland Sea.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

Sandeel is a short-lived species, reaching maturity at 1 or 2 years age and living a maximum of ten years. It reaches a total length of 20 cm. It lives in coastal areas on sandy bottoms. During winter and when light conditions are poor the sandeel digs into the sand. When currents are strong the sandeel leaves the sand and forms large shoals. It spawns from November to February and eggs are deposited on sand or fine gravel bottoms. Sandeels are largely stationary after settlement. Sandeel feeds on plankton and is itself prey for many predators like cod and haddock but also fisheating birds. (Froese & Pauly 2012)

Description of major threats

No current major threats identified.

Assessment justification

Sandeel (mostly *A. marinus* but also *A. tobianus* and *H. lanceolatus*) is caught in the commercial sandeel fishery and ICES assesses these species jointly in some areas. The state of the stock in Kattegat is unknown since the available information (only landings) is inadequate to evaluate stock status or trends (ICES 2012). However, the stock adjacent to HELCOM area (central eastern North Sea including Skagerrak) where there are data on spawning stock biomass, have an overall positive trend for the last 10 years (Data from ICES 2012). Due to its shape it is not caught in regular monitoring but sampling in the cooling water intake at Ringhals nuclear powerplant in Kattegat show that the catch per unit effort of *Ammodytes* spp. have no trend over the last 10 years and also no trend during the whole investigated period 1981–2010. The same is true for the cooling water intake in Forsmark, Åland Sea, where there is no trend in *Ammodytes tobianus* over the assessment period (10 years) nor over the whole investigation period 1992–2011. In conclusion, despite sparse data there is no indication of decline or identified threats for this species in the HELCOM area. Therefore the species is considered LC.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

DE: Kleiner Sandaal; DK: Kysttobis; ES: väike tobias; FI: Pikkutuulenkala; GB: Sandeel; LA: Tūbīte; LI: Mažasis tobis; PL: Tobiasz; RU: Malopozvonkovaya peschanka; SE: Kusttobis

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

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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): 11–76.

English name: **Herring**	Scientific name: ***Clupea harengus***	
Taxonomical group: Class: Actinopterygii Order: Clupeiformes Family: Clupeidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Clupea harengus membras* – Baltic Sea herring	Generation length: 6.7 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): LC for the species but EN for the autumn spawning form		
Protection and Red List status in HELCOM countries: All: TAC regulation by EU, Denmark –/–, Estonia –/**LC**, Finland –/**LC**, Germany –/***** (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland *Minimum landing size 16 cm in some coastal areas* /–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The Baltic herring *Clupea harengus membras* is a subspecies of the Atlantic herring *Clupea harengus.* Baltic herring as a subspecies includes populations of autumn-spawning herrings mainly in the western and southern Baltic Sea and spring-spawning herring mainly in the eastern and northern parts of the sea basin. There is wide overlap in the distribution of the different forms.

The autumn-spawning Baltic herring was considered threatened in HELCOM (2007) possibly due to fisheries. The decline of the autumn-spawning Baltic herring occurred during the 1940s and 1950s at a time when fishing induced mortality was low compared to the situation today. Hence, the main reason for the decline may be in oceanographic influences and not in fisheries (Anokin 1971, Sjöblom 1978, Ojaveer 2006).

ICES estimates of spawning stock biomass show more than 50% decrease over the last 20 years in the Western Baltic spring spawning stock. The decrease in biomass is mainly a decline in individual biomass, not in numbers. During the same time there is a 25% decrease in Baltic proper but an increase in Bothnian Sea and in Riga Bay and a stable population in Bothnian Bay. Summing total spawning stock biomass for the whole Baltic shows no significant trend over the last 20 years.

Catch of herring. Photo by Olavi Kaljuste, Swedish University of Agricultural Sciences.

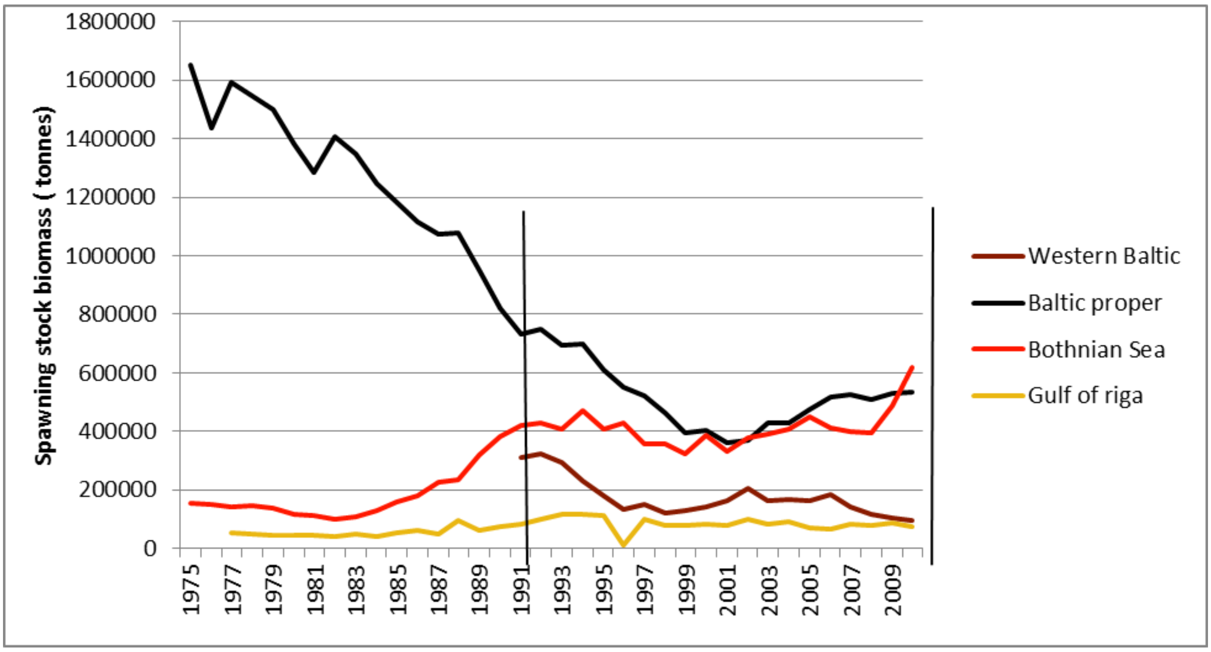
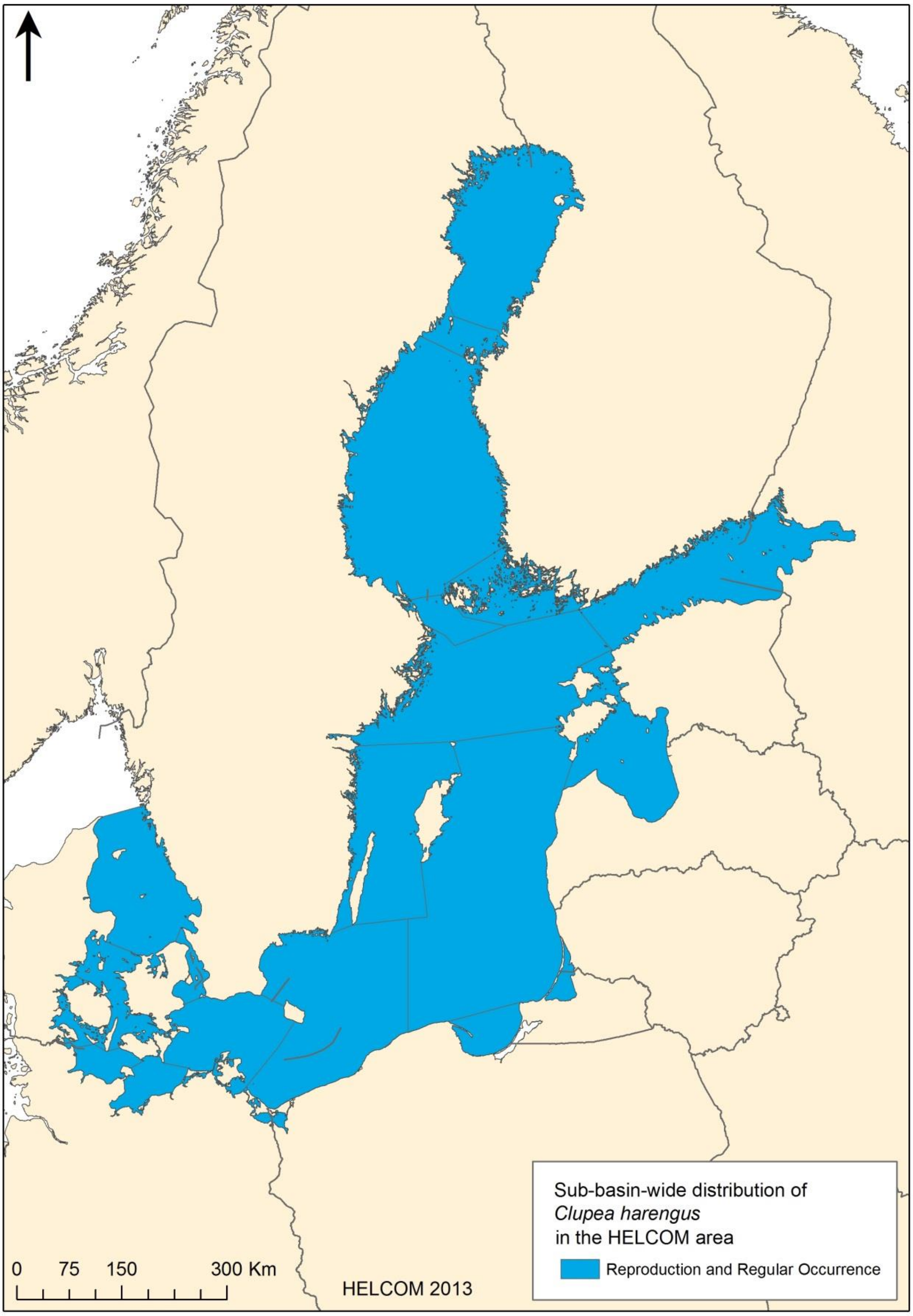


Fig. 1. Trends in spawning stock biomass, numbers from ICES (2011). The vertical lines indicate the assessment period 1990–2010.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The Baltic Sea herring is a pelagic species, spending the day close to the bottom but the night near the surface. Light is an important factor controlling its vertical distribution. It schools in coastal waters, with complex feeding and spawning migrations. Spawning occurs from spring to late autumn (see systematics below). The eggs are deposited on the substrate. The species is a facultative zooplanktivorous-filter feeder, i.e. it can switch to filter-feeding if the food density and particle size is appropriate. Herring mainly feeds on planktonic copepods. Other characteristics are schooling, silvery sides, excellent hearing, and very fast escape response that act as anti-predator devices (Froese & Pauly 2005). It is an important prey species for many predators including cod and seals (c.f. Gårdmark et al. 2012).

The taxonomy of the whole *Clupea harengus* species complex is under discussion. While some scientists have defined the spring and autumn-spawning populations as sibling species of the Baltic herring (e.g. Ojaveer 2006), others have shown these to be environmentally flexible fenotypes depending on nutritional status of individuals (Anokina 1971, Aneer 1985, Rajasilta 1992). However, the spring and autumn-spawning Baltic herrings differ in morphological and meristic characters (eg. Heincke 1998). On the other hand, the observed differences are mainly a result of environmental conditions during the early ontogeny (Parmanne 1990, Hognestad 1995, Hulme 1995). Hence, differences in morphology cannot be used to infer genetic separation. However, Jörgensen *et al*. (2005) showed that one spring-spawning population in Western Baltic Sea (Rugen population) appears to differ genetically from other spring-spawning populations in the Baltic. One reason for the difficulty to detect genetic divergence of Baltic herring (besides a possible high gene flow) is that genetic variation of the Baltic herring appears to be low (Johannesson & André 2006).

Description of major threats

No major threats perceived at the moment but eutrophication can be a threat in some areas (Urho et al. 2003).

Assessment justification

Autumn spawning herring is listed as EN in HELCOM (2007), however assessing all herring as one species results in LC status. ICES estimates of spawning stock biomass (ICES 2011) show more than 50 % decrease last 20 years in the Western Baltic spring spawning stock. The decrease in biomass is mainly a decline in individual biomass, not in numbers. In the rest of Baltic Sea there is a 25% decrease in Baltic proper (ICES SD25-29+32) but an increase in Bothnian Sea (SD30) and in Riga Bay (SD 29:2). Furthermore, according to catch per unit effort in trapnet fishery there is a stable population in Bothnian Bay. Summing up the total spawning stock biomass for the whole Baltic shows no significant trend for the last 20 years.

This is a widely distributed species with high population size and according to estimation of total spawning stock biomass in the HELCOM area no significant decline the last three generations can be detected.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area. Fishery statistics however should continue to be monitored to prevent overfishing.

Common names

D - Atlantischer Hering; GB – Herring; EST - Räim; DK - Sild; FIN – Silakka; LV - Reņģe; LT - Strimelė; PL - Śledź; RUS - Atlanticheskaja sel'd'; S – Sill/Strömming

References

Anokhina, L. (1971). Maturation of Baltic and White Sea herring with special reference to variations in fecundity and egg diameter. Rapports et procès-verbaux des réunions / Conseil permanent international pour l'exploration de la mer 160: 12–17.

Aneer, G. (1985). Some speculations about the Baltic herring (*Clupea harengus membras*) in connection with the eutrophication of the Baltic Sea. Canadian Journal of Fisheries and Aquatic Sciences 42: 83–90.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

Gårdmark, A., Östman, Ö., Nielsen, A., Lundström, K., Karlsson, O., Pönni, J.,Aho, T. (2012). Does predation by grey seals (Halichoerus grypus) affect Bothnian Sea herring stock estimates? ICES Journal of Marine Science 69: 1448–1456.

Heincke, F. (1898). Naturgeschichte des Herings. Abhandlungen des Deutschen Seefischerei-Vereins 2, p. 1–128. HELCOM 2007.

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.

Hognestad, P.T. (1995). The Lake Rossfjord herring (*Clupea harengus* L.) and its environment. ICES Journal of Marine Science 51: 281–292.

Hulme, T.J. (1995). The use of vertebral counts to discriminate between North Sea herring stocks. ICES Journal of Marine Science 52: 775–779.

ICES (2011). Report of the Baltic Fisheries Assessment Working Group (WGBFAS), 12–19 April 2011. ICES CM 2011/ACOM:10. 824 pp.

Johannesson, K., André, C. (2006). Life on the margin: genetic isolation and diversity loss in a peripheral marine ecosystem, the Baltic Sea. Molecular Ecology 15: 2013–2029.

Jørgensen, H. B. H., Hansen, M. M., Bekkevold, D., Ruzzante, D. E., Loeschke, V. (2005). Marine landscapes and population genetic structure of herring (*Clupea harengus* L.) in the Baltic Sea. Molecular Ecology 14: 3214–3234.

Ojaveer, E., Pihu, E., Saat, T. (eds.) (2003). Fishes of Estonia. Estonian Academy Publishers, Tallinn. 416 pp.

Parmanne, R. (1990). Growth, morphological variation and migrations of herring (*Clupea harengus* L.) in the northern Baltic Sea. Finnish Fish. Research 10: 1–48.

Rajasilta, M. (1992). Timing of spawning in the Baltic herring (*Clupea harengus membras*) in the Archipelago Sea, SW Finland: regulatory mechanisms and consequencies for offspring production. PhD-thesis, University of Turku. Annales Universitatis Turkuensis, Ser AII: 81.

Sjöblom, V. (1978). The effect of climatic variation on fishing and fish populations. Fennia 150: 33–37.

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): 11–76.

Urho, L., Kjellman, J., Pelkonen, T. (2003). Eutrophication and herring reproduction success in the northern Baltic Sea. ICES Marine Science Symposia 219: 430–432.

SPECIES INFORMATION SHEET *Cobitis taenia*

English name: **Spined loach**	Scientific name: ***Cobitis taenia***	
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cobitidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 4.2 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria:	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: Annex II	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**LC**, Estonia *Protected by the law (III category)* / **DD**, Finland –/**VU**, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/–, Lithuania –/–, Poland *Prohibited to kill, catch or disturb this species under strict protection* / –, Russia –/–, Sweden –/**LC**		

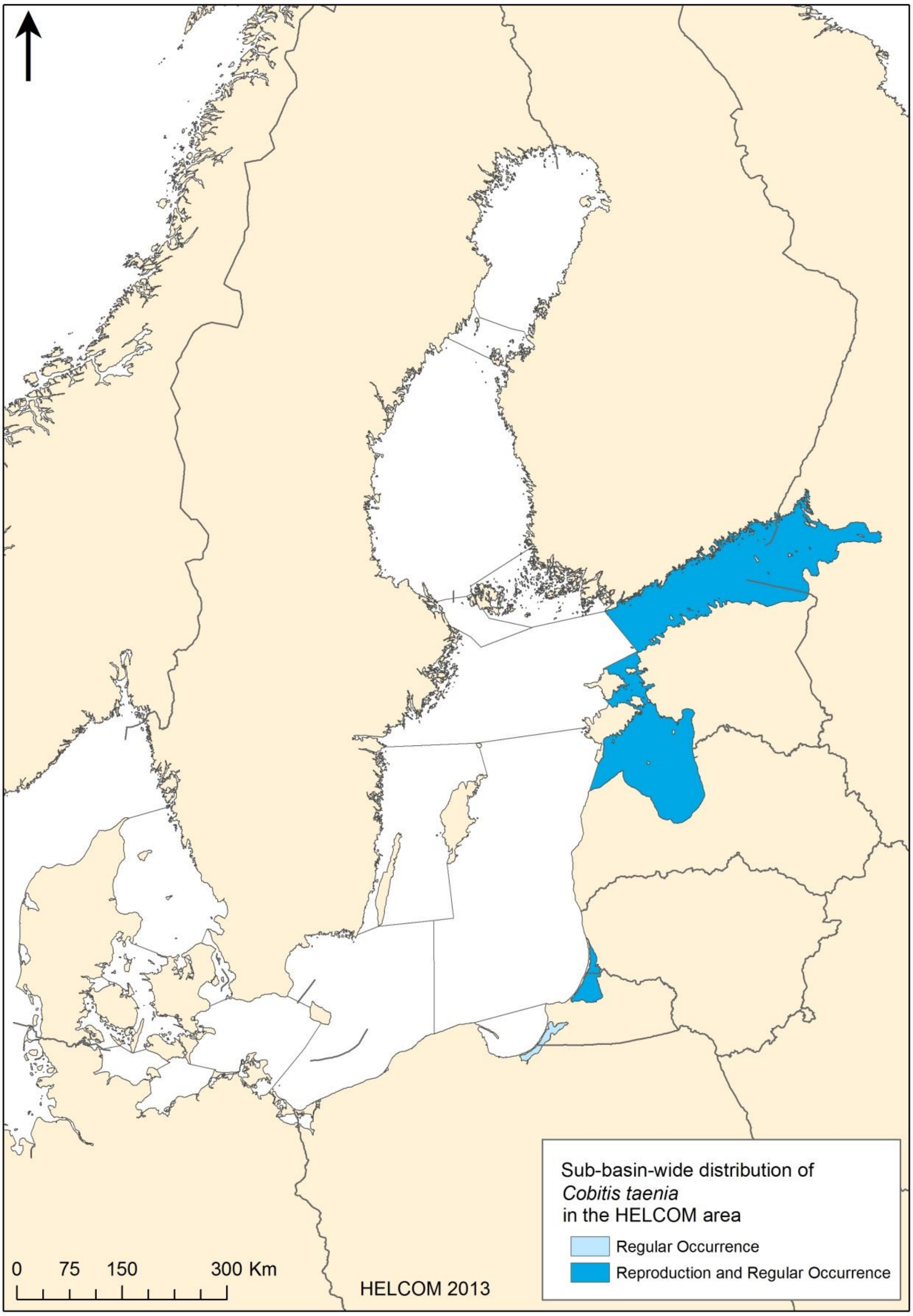
Distribution and status in the Baltic Sea region

Spined loach was believed to be a more widespread species in the past but according to Bohlen & Rab (2001) it represents a species complex, with the nominal species *C. taenia* mainly restricted to the Baltic Sea drainages. This freshwater species occurs in drainages all over the Baltic Sea except for the Gulf of Bothnia. In the Baltic Sea it is restricted to coastal waters below 5 psu. The spined loach is abundant in the Estonian archipelago area, in the eastern part of the Gulf of Finland and also in the Curonian lagoon. It also occurs in the Vistula lagoon. The population is increasing in freshwaters of Germany while considered stable in Estonia, Latvia, and Lithuania. The status in Finland changed from EN to VU in the Red List 2010. In Sweden this species has in surveys turned out to be common in soft, muddy substrates in many kinds of lakes from hypereutrophic to dystrophic (Delling et al. 2000).

Spined loach. Photo by Timo Moritz, Deutches Meeresmuseum.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce in coastal areas (HELCOM 2012).



Habitat and ecology

The spined loach *Cobitis taenia* lives benthic in slow-flowing and still waters, lagoon and lake habitats and estuaries, on soft substrate. In the Baltic Sea this freshwater fish is found in salinities up to 5 psu. The species is active at night, staying hidden under rocks or burying in the substrate during the day. Spined loach spawns in spring or summer and the eggs are deposited scattered into plant material, attached to rocks or macrophytes in shallow, flowing water. Females live up to five years and males up to three and can reach a maximum length of 13.5 cm. Females spawn for the first time at the age of 2–3 years, males already at the age of 1–2 years.

Description of major threats

No major threats perceived at the moment.

Assessment justification

As the species can live in several different habitats and there are no perceived threats and no suspicion of decline, this species is considered LC. The area of occupancy within the Baltic Sea is restricted but this species does not fulfill the sub-criteria of being either severely fragmented, showing extreme fluctuations in population size or habitat availability, or having continuing decline in population size or habitat. The population size is also estimated to be well above the threshold of a small population (<20 000), as evidenced by a beach seine survey in the Curonian lagoon that caught at least few individuals per 1 000m^2.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area but information on habitat requirements and population size especially in the basin of the Gulf of Finland should be collected.

Common names

D - Steinbeißer; GB – Spined loach; EST - Hink; DK - Pigsmerling; FIN – Rantanuoliainen; LV - Akmeņgrauzis; LT - Kirtiklis; PL - Koza pospolita; RUS - Obiknovennaja schipovka; S - Nissöga

References

Aleksejevs, E., Birzaks, J. (2011). Long-term Changes in the Ichthyofauna of Latvia's Inland Waters. Scientific Journal of Riga Technical University 7: 9–18.

Bohlen J., Rab, P. (2001). Species and hybrid richness in spined loaches of the genus Cobitis L. (Teleostei: Cobitidae), with a checklist of European forms and suggestions for their conservation. Journal of Fish Biology 59: 75–89.

Delling, B., Kullander, S.O.,Tengelin, B. (2000). Sällsynta fiskar I östergötland. Fiskefunktionen, Rapport 2000:2. Länsstyrelsen i Östergötland. 48 pp. [in Swedish]

Freyhof, J. (2011). *Cobitis taenia*. In: IUCN 2011. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org.

Gaigalas, K. (2001). Fishes in the Curonian Bay basin, their resources and fishery. Klaipėda, Eglė. 372 pp.

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.

Kottelat, M., Freyhof, J. (2007). Handbook of European freshwater fishes. Publications Kottelat, Cornol, Switzerland. 646 pp.

Ojaveer, E., Pihu, E., Saat, T. (eds.) (2003). Fishes of Estonia. Estonian Academy Publishers, Tallinn. 416 pp.

Online report on Article 17 of the Habitats Directive: conservation status of habitats & species of Community interest (2001–2006). Available at http://bd.eionet.europa.eu/article17.

Plikšs, M., Aleksejevs, E. (1998). Fishes of Latvia. Gandrs, Riga. 304 pp.

Shibaev, S. V., Khlopnikov, M. M. and Skolov, A. V. (eds.) (2008). Fischery cadastre of transboundary reservoirs of Russia (the Kaliningrad region) and Lithuania. Mishutkina Co, Kaliningrad. 200 pp.

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): 11–76.

Urho, L., Lehtonen, H. (2008). Fish species in Finland. Finnish Game and Fisheries Research Institute, Helsinki. 34 pp.

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.

Vetemaa, M., Ložys, L., Minde, A. (2009). LIFE Nature project “Marine Protected Areas in the Eastern Baltic Sea”. Action A5 – Fish community inventory. Final report. Available at: http://www.balticseaportal.net/media/upload/File/Deliverables/Action%20reports/A5_final_report.pdf.

Vilbaste, K. (ed.) (2004). Hink, Cobitis taenia. In: Internationally important species in Estonia: Natura 2000. Eesti Vabariigi Keskkonnaministeerium, Tallinn.

Virbickas, J. (2000). Fishes of Lithuania. Trys žvaigždutės, Vilnius. 192 pp.

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/

English name: **Vendace**	Scientific name: ***Coregonus albula***	
Taxonomical group: Class: Actinopterygii Order: Salmoniformes Family: Salmonidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 5.5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: *Coregonus* spp in Annex V	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**VU** in freshwater, Estonia –/**DD**, Finland –/**LC**, Germany –/***** (Not threatened, freshwaters), Latvia –/**RA** in freshwater, Lithuania –/–, Poland –/**DD**, Russia –/–, Sweden *Local, stakeholder managed fishery for a restricted number of license holders* / **LC**		

Distribution and status in the Baltic Sea region

Vendace is a commonly occurring fish species, mainly anadromous in the Gulf of Finland and marine in the northernmost freshened part of the Gulf of Bothnia. It is frequently stocked in lakes and reservoirs in northern and central Germany and Poland, as well as Estonia. Baltic Sea populations are commercially fished in Sweden, Finland and Russia and the roe is very valuable. Swedish assessment data show that spawning stock biomass in the Swedish part of the Bothnian Bay has increased over the last 15 years. The status in the Gulf of Finland is unknown.

Catch of vendace and single specimen. Photos by Olavi Kaljuste and Yvette Heimbrand, Swedish University of Agricultural Sciences.

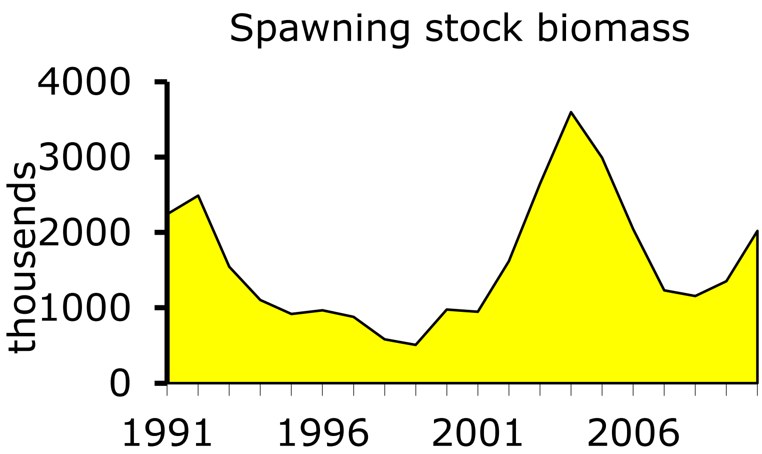
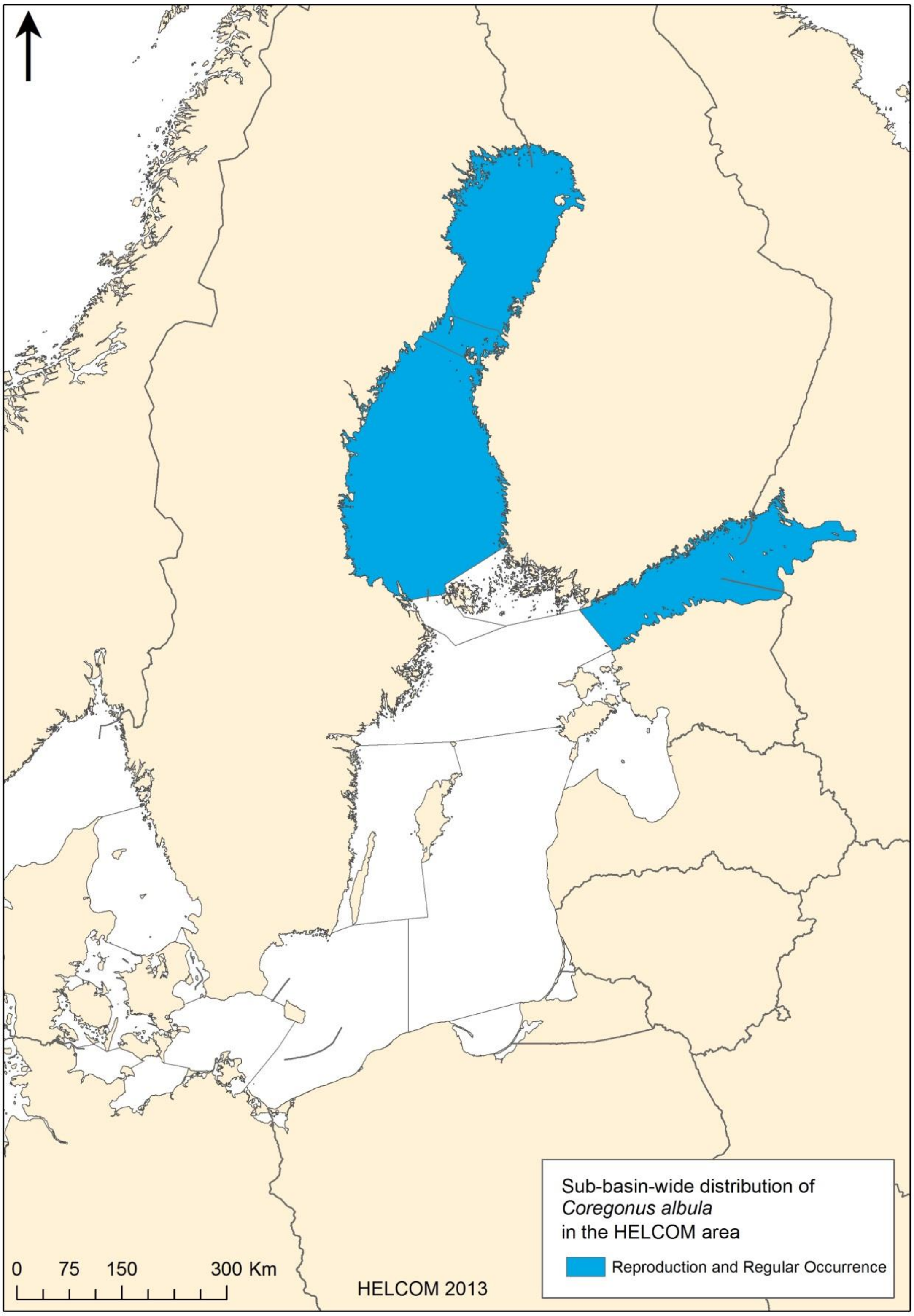


Fig.1. Estimated number of mature fish in the Swedish part of the Bothnian Bay (Fiskeriverket 2011).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The vendace is a pelagic, schooling fish which in late autumn either migrates upstream in rivers to spawn or in less saline areas spawns in a coastal habitat. It feeds on zooplankton and insect larvae. Vendace can be sexually mature already at the age of 1 year and it can live up to 10 years. It can reach a total length of above 30 cm but is usually 15–20 cm. (Freyhof 2011, Fiskeriverket 2011)

Description of major threats

No major threats at the moment but uncontrolled fishing could become a threat.

Assessment justification

The size of the population and the extent of occurrence, as well as the area of occupancy (AOO Bothnian bay <20m approximately 8 000 km^2) are well above the thresholds for being red listed according to the IUCN criteria. Available data show that spawning stock biomass in the Bothnian Bay has increased during the assessment period. The status in the Gulf of Finland is unknown but a possible reduction in population size in the entire HELCOM area is believed to be less than 15% over three generations. Therefore this species is considered LC in the HELCOM area.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area. Fishery statistics however should continue to be monitored to prevent overfishing.

Common names

D - Kleine Maräne; GB – Vendace; EST - rääbis; DK - Heltling; FIN – Muikku; LV - Repsis; LT - Seliava; PL - Sielawa; RUS - Evropeiskaja rjapushka; S – Siklöja

References

Andrušaitis G. (ed.) (2003). Red Data Book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fiskeriverket (2011). Ask, L., Westerberg, H. (eds.). Fiskbestånd och miljö i hav och sötvatten – Resurs och miljööversikt 2011. Danagårds Grafiska, Ödeshög. 247 pp. [in Swedish]. Available at: https://www.havochvatten.se/download/18.472732f513318aaf1af800075/1319016178229/ROM+2011.pdp

Freyhof, J. (2009). Rote Liste der im Süßwasser reproduzierenden Neunaugen und Fishce (Cyclostoma & Pisces). Naturschutz und Biologische Vielfalt 70(1): 291–316. In Bundesamt für Naturschutz (2009). Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands. Band 1: Wirbeltiere. Bundesamt für Naturschutz.

Freyhof, J. (2011). *Coregonus albula*. In: IUCN 2012. IUCN Red List of Threatened Species. www.iucnredlist.org (viewed 25 October 2012).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.
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/

SPECIES INFORMATION SHEET *Cottus gobio*

English name: **Bullhead**	Scientific name: ***Cottus gobio***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Cottidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 3.8 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: Annex II (except the Finnish populations)	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**RE,** Estonia Protected by the law (III category) / **LC,** Finland –/**LC,** Germany Protected by national and European law / ***** (Not threatened, freshwaters), Latvia –/–, Lithuania –/–, Poland Prohibited to kill, catch or disturb this species under strictly protection / **DD**, Russia Included in the Red Book of Russia as decreasing species (illegal to fish for and land this species) / **EN**, Sweden –/**LC**		

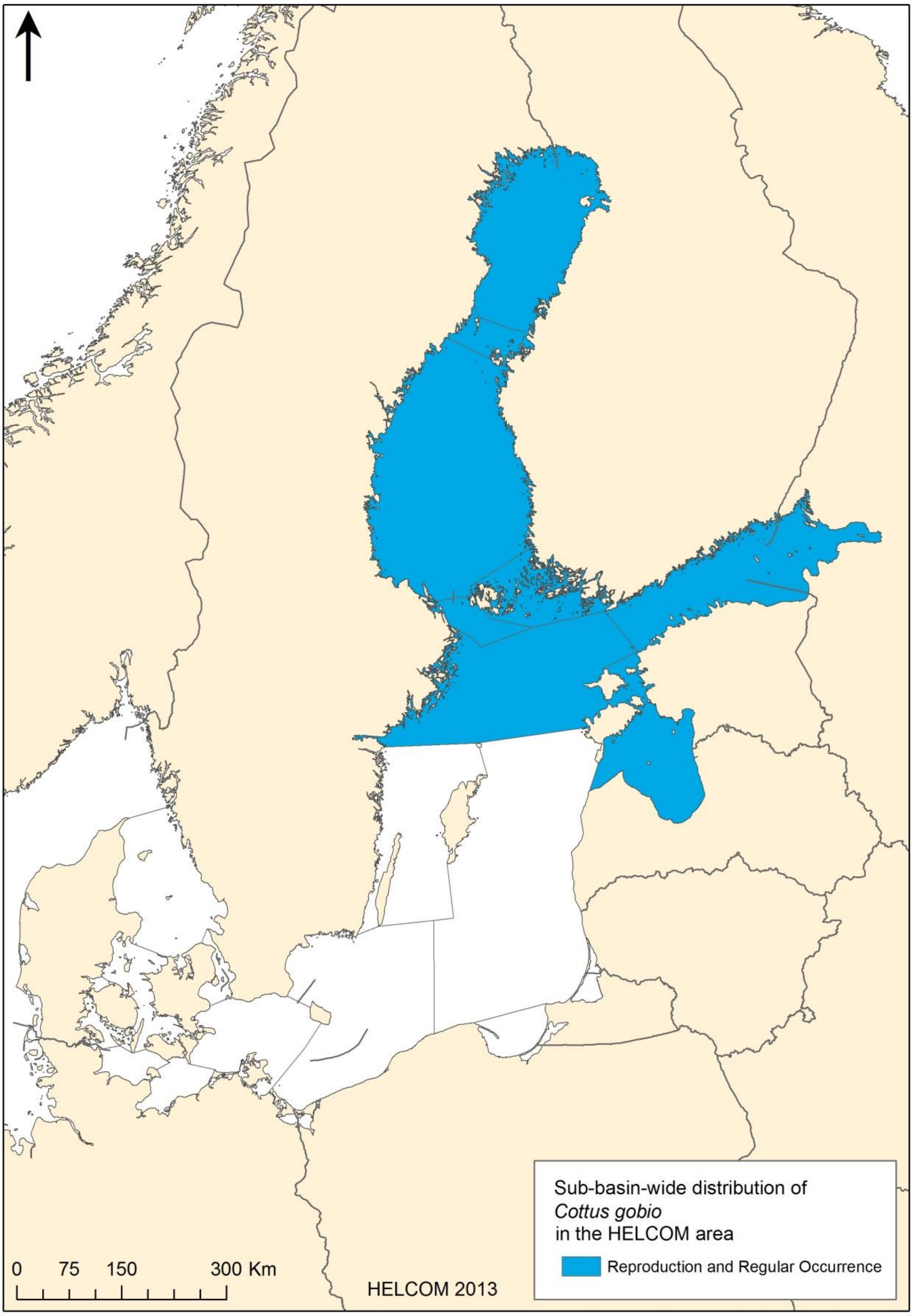
Distribution and status in the Baltic Sea region

In the Baltic Sea, the main distribution of this freshwater species is in the north, in the Gulf of Bothnia and the Gulf of Finland. It occurs also in some Estonian sea areas, in the Gulf of Riga, and in the Vistula lagoon. The bullhead has decreased in very eutrophicated areas in Finland, but no quantitative data are available from the Baltic Sea since the species is not caught in coastal monitory fishing or by regular fishery.

Bullhead. Photo by Essi Keskinen, Metsähallitus NHS.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

This species inhabits clean and well-oxygenated gravel and rock bottoms in streams, rivers and lakes, in estuaries and in shallow brackish waters of the Baltic Sea. It feeds on small benthic invertebrates, like insects and crustaceans. The species is most active at night and in daytime it can be found resting underneath stones. The eggs are also attached in clumps underneath stones and guarded there by the parent. No long migrations are known. The maximum total length is 18 cm but the species is usually smaller, and the maximum individual age is 5 years. (Froese & Pauly 2005, Freyhof & Kottelat 2005)

Description of major threats

The bullhead is mainly threatened by eutrophication, as the species needs clean and oxygenated water, especially for spawning, embryonic development, and larval habitats. It cannot live in eutrophicated areas where the stones of rocky bottoms are covered by filamentous algae.

Assessment justification

The bullhead has decreased in very euthrophicated areas in Finland, but there are no quantitative data available from the Baltic Sea since the species is not caught in coastal monitory fishing or by regular fishery. Electrofishing in Swedish rivers however shows increasing trend over the last 20 years and no significant trend over the last 15 and 10 years (Degerman et al. 2009). The decrease in the whole HELCOM area based on the available information is estimated to be less than the 15% population decline that is the threshold for Near Threatened according to the A criterion. The distribution area and population size are also well above the limits for being classified as threatened and hence this species is classified as Least Concern in the HELCOM area.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area but methods should be developed to collect information on the species occurrence and abundance. Furtermore populations of this species would benefit from reduced eutrophication.

Common names

D - Groppe; GB – Bullhead; EST - võldas; DK - Hvidfinnet ferskvandsulk; FIN – kivisimppu; LV - Platgalve; LT - Paprastasis kūjagalvis; PL - Głowacz białopłetwy; RUS - Evropeiskij rechnoj bychok; S – Stensimpa

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Degerman, E., Sers, B., Magnusson, K. (2009). Species occurrences from 1988–2007 in the swedish electrofishing register. (Artförekomst perioden 1988–2007 i Svenskt ElfiskeRegiSter – förändras arternas förekomst över tid?) Information från Svenskt ElfiskeRegiSter. Nr 1, 2009. [in Swedish] Available at: http://www.slu.se/Documents/externwebben/akvatiska-resurser/Databaser/Info%20SERS%20nr%201%202009.pdf.

Freyhof, J. (2009). Rote Liste der im Süßwasser reproduzierenden Neunaugen und Fishce (Cyclostoma & Pisces). Naturschutz und Biologische Vielfalt 70(1): 291–316. In Bundesamt für Naturschutz (2009). Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands. Band 1: Wirbeltiere. Bundesamt für Naturschutz.

Freyhof, J., Kottelat, M., Nolte, A. (2005). Taxonomic diversity of European Cottus with description of eight new species. Ichthyological Exploration of Freshwaters 16: 107–172.

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Red Book of the Russian Federation (animals). 2001. “Act Astrel”. 863 pp. (In Russian) [Красная Книга Российской Федерации (животные). 2001. «Аст Астрель». 863 с.], on-line version (2007) http://www.sevin.ru/redbooksevin/index.html.

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/

SPECIES INFORMATION SHEET *Entelurus aequoreus*

English name: **Snake pipefish**	Scientific name: ***Entelurus aequoreus***	
Taxonomical group: Class: Actinopterygii Order: Syngnathiformes Family: Syngnathidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Syngnathus aequoreus*	Generation length: 2.5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

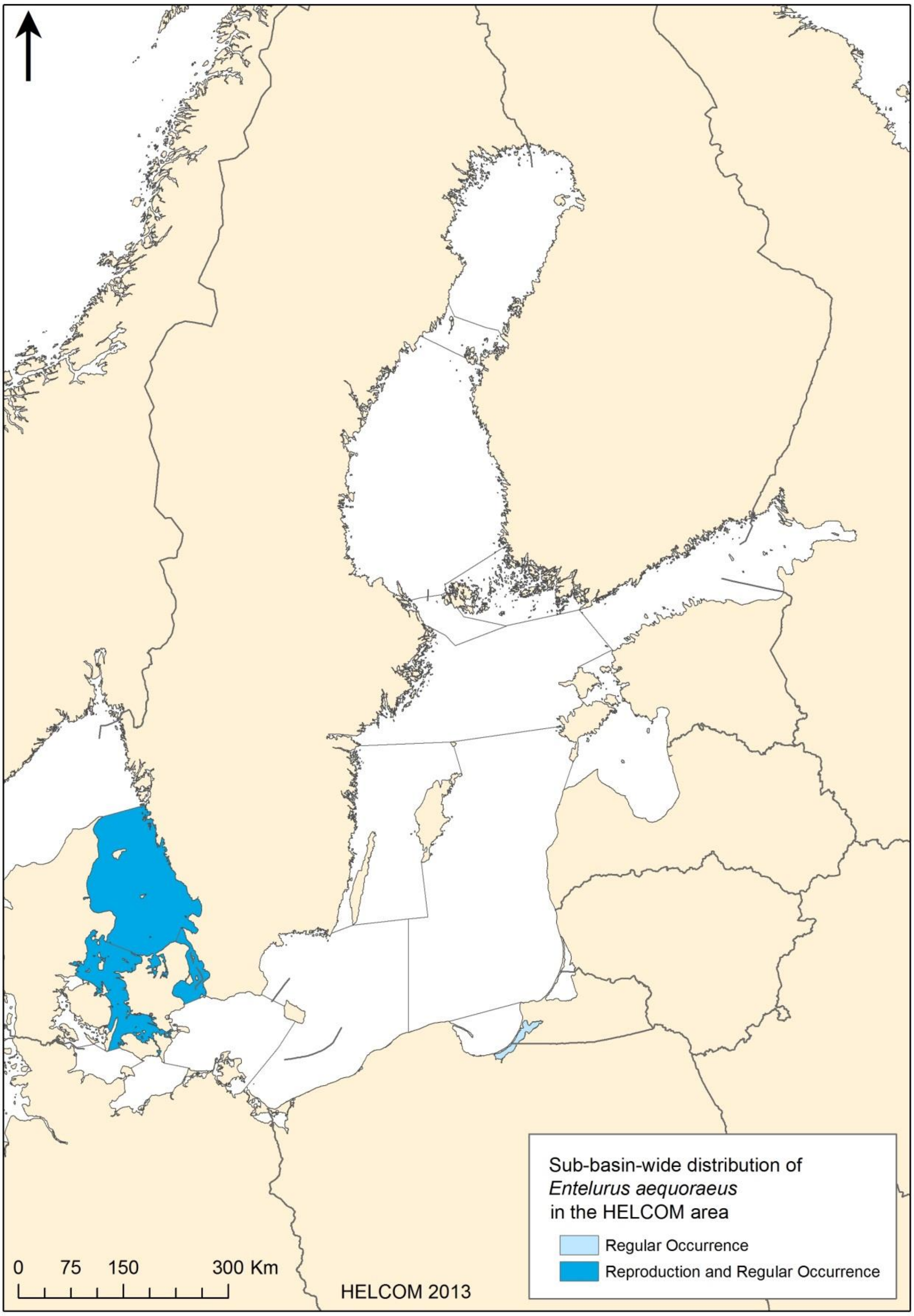
Distribution and status in the Baltic Sea region

The snake pipefish is common in the Northeast Atlantic from Iceland and Norway south to the Azores and Portugal (Kullander et al. 2012). The snake pipefish is very common in the Skagerrak coast; it occurs sparsely in the Kattegat and is rare in the Sound and the southern Baltic. Like most species of the Syngnathidae family, the snake pipefish distribution and abundance is not monitored well with standardized test fishing nets because of its snakelike bodyform. However, there are indications of an increasing abundance of the species in the Northeast Atlantic since 2003 (Harris et al. 2007, van Damme & Couperus 2008).

Snake pipefish. Photo © Citron.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The snake pipefish is a marine species that lives along the coast from 5–10 meters depth sometimes down to 100 m. It prefers vegetated bottoms, like *Zostera marina*, *Chorda filum* or *Fucus* beds, but it can also be found further offshore in the vicinity of drifting algae. Their diet consists of fish larvae and small crustaceans. The spawning takes place in pairs in dense vegetation during June to July. The male broods the embryos attached to its abdomen. (Dawson 1986, Froese & Pauly 2012, Kullander et al. 2012)

Description of major threats

The species is not considered threatened at the moment but the loss of suitable habitats by fragmentation of *Zostera* beds and removal of algae has probably affected the species negatively within the HELCOM area.

Assessment justification

There is no trend during the last years in coastal monitoring data in the HELCOM area but in adjacent waters the species has increased considerably.

The main habitat of the snake pipefish, *Zostera* meadows and possibly also other macrophyte rich habitats have declined and deteriorated considerably within the HELCOM area and it could be assumed that the population of the species has also declined together with the habitat changes. However, these changes have in most areas happened e.g. more than 30 or even 100 years ago and currently the situation has stabilized, if not improved. As the snake pipefish is a short-lived species for which the time-period of population decline evaluation is only 10 years, the most drastic habitat changes, as well as the possible decline in population, have no effect on the assessment under criterion A. The extent of occurrence (EOO) is below the threshold for Near Threatened (<40 000 km^2) according to the B1 criterion however none of the required additional criterias of severe fragmentation, continuing decline or extreme fluctuations in population size or habitat is fulfilled. The estimated area of occupancy is above the threshold for being threatened according to the IUCN. The species is categorized as Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but more information should be collected on the status of this species.

Common names

D: Große Schlangennadel; DK: Snippe; FI: Merineula; GB: Snake pipefish; LI: Didžioji adatžuvė; LV: Lielā čūskzivs; PL: Wężyna; RU: Zmeyevidnaja igla-ryba; SE: Större havsnål

References

Dawson, C.E., (1986). Syngnathidae. p. 628–639. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 2. Unesco, Paris.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Harris, M. P., Beare, D., Toresen, R., Nøttestad, L., Kloppmann, M., Dörner, H., Peach, K., Rushton, D. R. A., Foster-Smith, J., Wanless, S. (2007). A major increase in snake pipefish (*Entelurus aequoreus*) in northern European seas since 2003: potential implications for seabird breeding success. Marine Biology 151: 973–983.

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii (in Swedish). Artdatabanken, SLU, Uppsala. 517 pp.

van Damme, C. J. G., Couperus, A. S. (2008). Mass occurrence of snake pipefish in the Northeast Atlantic: Result of a change in climate? Journal of Sea Research 60: 117–125.

SPECIES INFORMATION SHEET *Labrus bergylta*

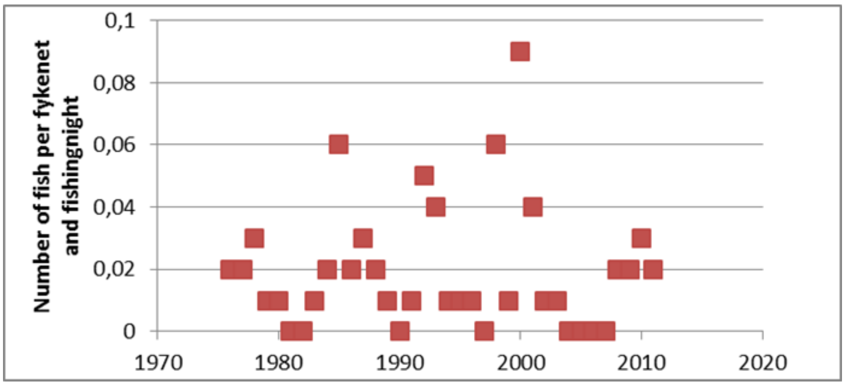
English name: **Ballan wrasse**	Scientific name: ***Labrus bergylta***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Labridae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 13.7 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/* (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The ballan wrasse is a relatively common species in the Kattegat and the Sound and it has also been encountered in the southwestern Baltic Sea. The ballan wrasse is caught regularly at low numbers at coastal monitoring fyke-net fishing in the Kattegat with no signs of decline. Surveys have also shown that ballan wrasse is commonly occurring on offshore banks. It has hitherto not been used commercially.

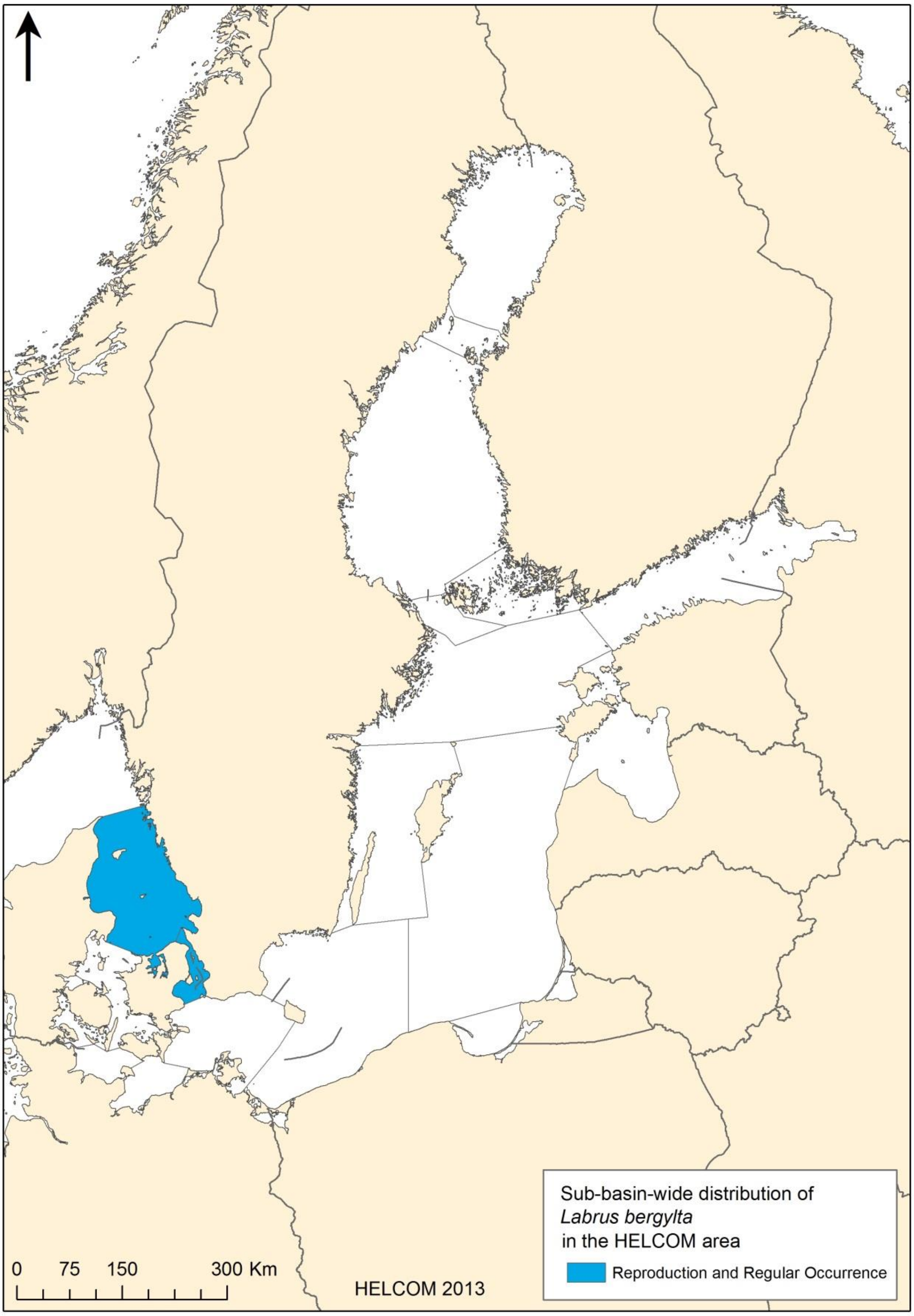
Ballan wrasse. Photo by Martin Karlsson, Swedish University of Agricultural sciences.

Fig. 1. Ballan wrasse caught in Swedish coastal fish monitoring in the Kattegat.



Distribution map

The map shows the subbasins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

This species is found mainly in inshore waters down to 30 meters depth around rocks, offshore reefs and amongst seaweeds. Young individuals are often found in intertidal areas. It feeds on crustaceans and molluscs (Quignard & Pras 1986).

All individuals are born females, and they change sex when they are between four and 14 years old (Froese & Pauly 2012, Kullander et al 2012), but not every female changes sex. One or more females spawn in a nest built of algae by the male in a rocky crevice. The male guards the nest for one to two weeks until the eggs hatch. The larvae are pelagic (Muus & Nielsen 1999, Froese & Pauly 2012, Kullander et al 2012).

Description of major threats

There are no major threats known for this species.

Assessment justification

Ballan wrasse is only known to reproduce in the Kattegat and in the Sound meaning an extent of occurrence of less than 40 000 km^2 but more than 20 000 km^2. Similarly, the area of occupancy is probably less than 4 000 km^2 but more than 2 000 km^2. The limited distribution area however does not qualify for red listing since the species is not considered severely fragmented, nor have extreme fluctuations in abundance or available habitat and the only available time series shows no signs of decline over the last 30 years. There is also a possibility for immigration into the HELCOM area from Skagerrak that could act as a source population. With its complicated lifecycle and long lifespan the species could be regarded sensitive to environmental deterioration or disturbance but no immediate threats has been identified, and the species is classified as Least Concern.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

D: Gefleckter Lippfisch; DK: Bergylte; FI: Viherhuulikala; GB: Ballan wrasse; LI: Vaivorykštinė lūpažuvė; LV: varavīksnes lūpzivs; PL: Wargacz kniazik; RU: Labrus; SE: Berggylta

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517pp. [in Swedish]

Muus, B.J., Nielsen, J.G. (1999). Sea fish. Scandinavian Fishing Year Book. Hedehusene, Denmark. 340 pp.

Naturvårdsverket (2010). Undersökning av utsjöbankar – Inventering, modellering och naturvärdesbedömning. Swedish Environmental Protection Agency, Report 6385. 48 pp. [in Swedish]

Quignard, J.-P., Pras, A. (1986). Labridae. p. 919–942. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the north-eastern Atlantic and the Mediterranean, Vol. 2. UNESCO, Paris.

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): 11–76.

English name: **Cuckoo wrasse**	Scientific name: ***Labrus mixtus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Labridae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 11.7 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

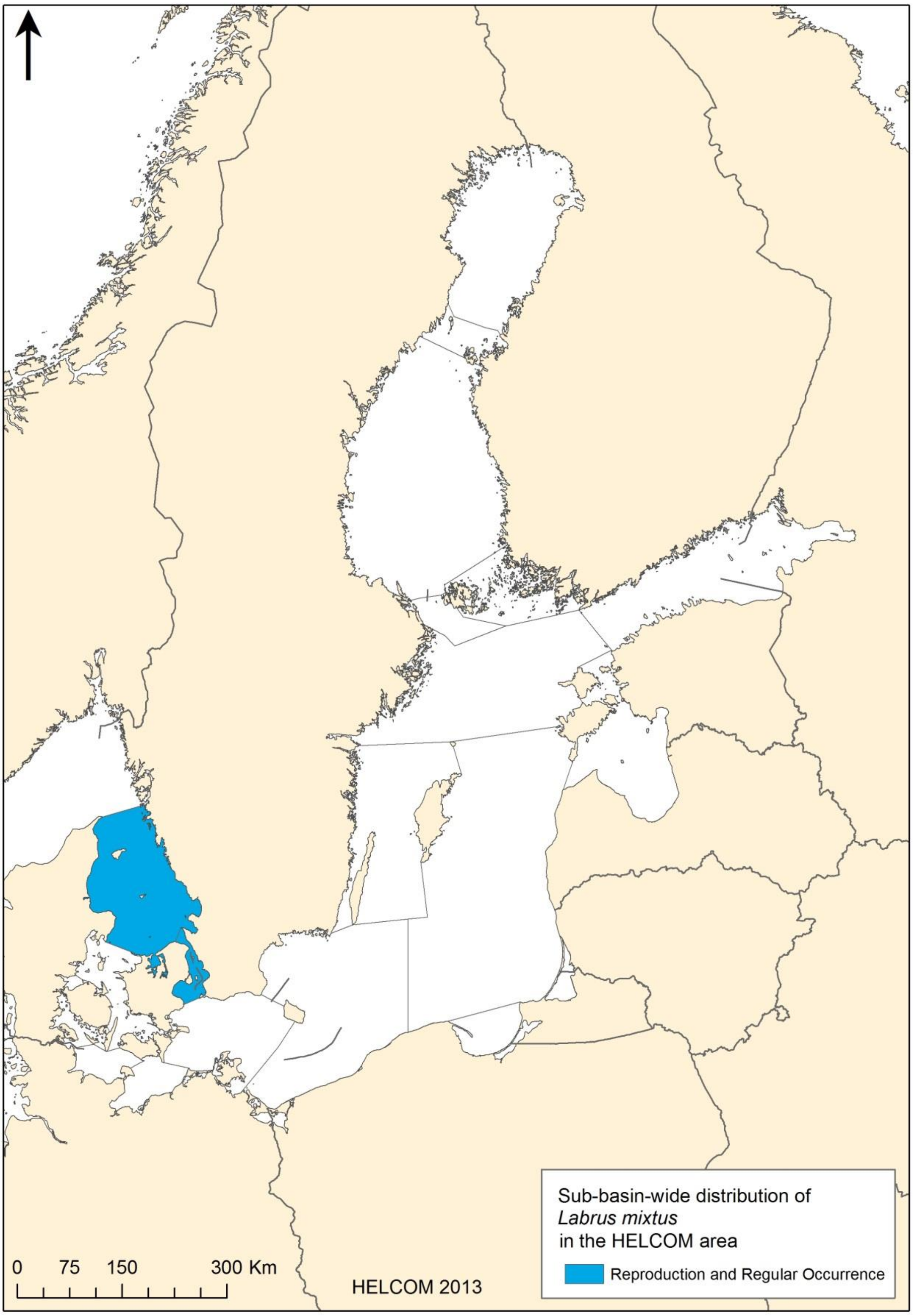
Distribution and status in the Baltic Sea region

The cuckoo wrasse is a relatively common species in the Kattegat and more rare in the Sound. The cuckoo wrasse is caught sporadically at low numbers at monitory fishing in the Kattegat. Surveys have also shown that cuckoo wrasse is commonly occurring on offshore banks. It has hitherto not been used commercially.

Cuckoo wrasse's sexual colour dimorphism (male on the left, female on the right). Photos by Björn Fagerholm, Swedish University of Agricultural Sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The cuckoo wrasse is a purely marine species living in close proximity to vertical rocky habitats or among algae down to 80 meters depth. In winter it generally swims deeper and the Atlantic Ocean populations are known to occur down to 200 meters depth. Its diet consists mainly of molluscs, crustaceans and fish. When they are 7–13 years old, some female cuckoo wrasse change color and sex and become fully functional males (terminal phase). These males are known as secondary males and spawn in pairs with females. The male excavates a nest and attracts the female with an elaborate swimming display. It has also been found that a very few cuckoo wrasse are born male but have the female coloring. These males are known as primary males and their role in reproduction has not been fully ascertained. (Quignard & Pras 1986, Muus & Nielsen 1999, Froese & Pauly 2012, Kullander et al. 2012)

Description of major threats

There are no major threats known for this species.

Assessment justification

The cuckoo wrasse is only known to reproduce in the Kattegat and in the Sound, meaning an extent of occurrence (EOO) of less than 40 000 km^2 but more than 20 000 km^2. Similarly, the area of occupancy (AOO) is probably less than 4 000 km^2 but more than 2 000 km^2. The limited distribution area however does not qualify for red listing since the species is not considered severely fragmented, nor have extreme fluctuations in abundance or available habitat. The cuckoo wrasse is only caught sporadically but there are no signs of continued decline in either habitat or abundance. Due to its complicated lifecycle and long lifespan, the species might be considered sensitive to any anthropogenic pressures, e.g. environmental deterioration, but no immediate threats have been identified. Therefore this species is classified as Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D: Kuckucks Lippfisch; DK: Blåstak (male)/rødnæb (female); FI: Sinihuulikala; GB: Cuckoo wrasse; LI: Dvidėmė lūpažuvė; LV: Plankumainā lūpzivs; PL: Wargacz tęczak; RU: Labrus; SE: Blågylta; Blåstråle (male)/rödnäbba (female)

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517pp. [in Swedish]

Muus, B.J., Nielsen, J.G. (1999). Sea fish. Scandinavian Fishing Year Book. Hedehusene, Denmark. 340 pp.

Naturvårdsverket (2010). Undersökning av utsjöbankar – Inventering, modellering och naturvärdesbedömning. Swedish Environmental Protection Agency, Report 6385. 48pp. [in Swedish]

Quignard, J.-P., Pras, A. (1986). Labridae. p. 919–942 In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 2. UNESCO, Paris.

SPECIES INFORMATION SHEET *Liparis liparis*

English name: **Sea-snail, striped sea-snail**	Scientific name: ***Liparis liparis***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Liparidae	Species authority: Linnaeus, 1766	
Subspecies, Variations, Synonyms: *Lipars liparis barbatus,* subsp. in the Baltic Sea	Generation length: < 3 years.	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**DD**, Germany –/***** (Not threatened, Baltic Sea), Latvia –/*Included in Red Data book, category 3 - rare species,* **RA**, Lithuania –/–, Poland *Prohibited to kill, catch or disturb this species under strict protection* / **VU**, Russia –/–, Sweden –/**LC**		

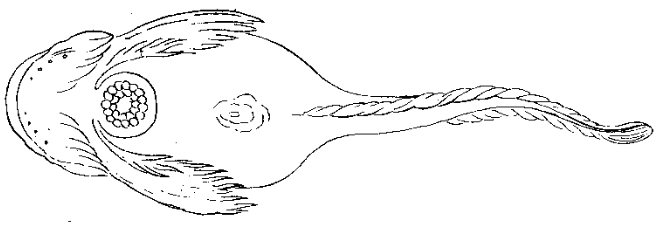
Distribution and status in the Baltic Sea region

The sea-snail is distributed in the whole of the HELCOM area but in contrast to most marine fishes in the area it is rare in the Kattegat and the southern parts of the Baltic Sea. It becomes more common north of the Kattegat and in the northern Baltic Proper and the Bothnian Sea.

Sea snail. The color of sea-snails is extremely variable. Photo by Timo Moritz, Deutches Meeresmuseum.

Its non-migratory behaviour and small size makes it very rarely caught in regular monitoring programs. Monitoring by Isaac-Kidd trawl in Ringhals nuclear power plant in the Kattegat 1981–2011 gets a few individuals every other year with no indication of decline. This species is globally considered not threatened (Stein 2010) since it has a wide distribution, a broad depth range, and a lack of threats impacting it across its full range.

Liparis liparis. Baltic Sea, Sweden coast (Sodermanland province, Morkø Island). (Ekström, 1832: 169, Tab.5, was described under the name *Liparis barbatus*).



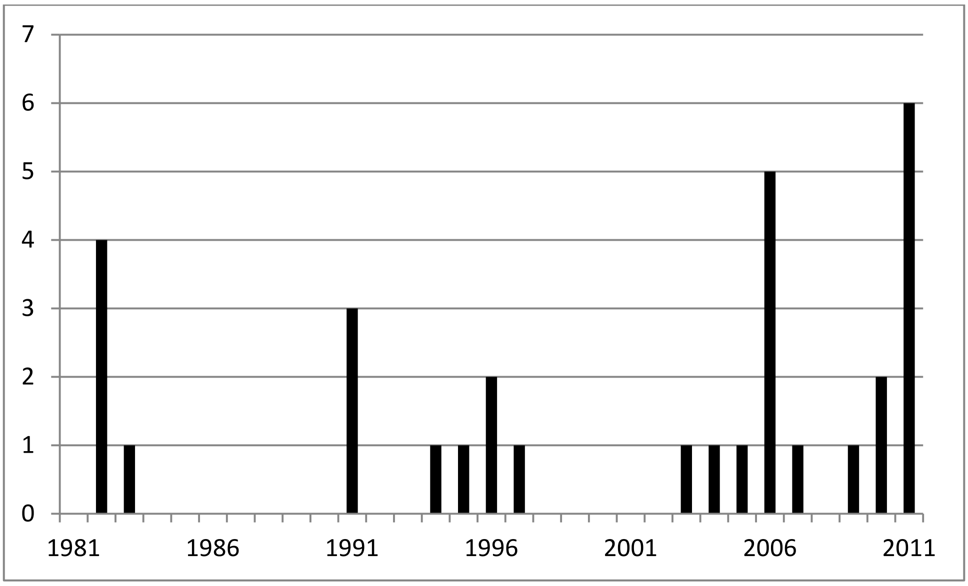
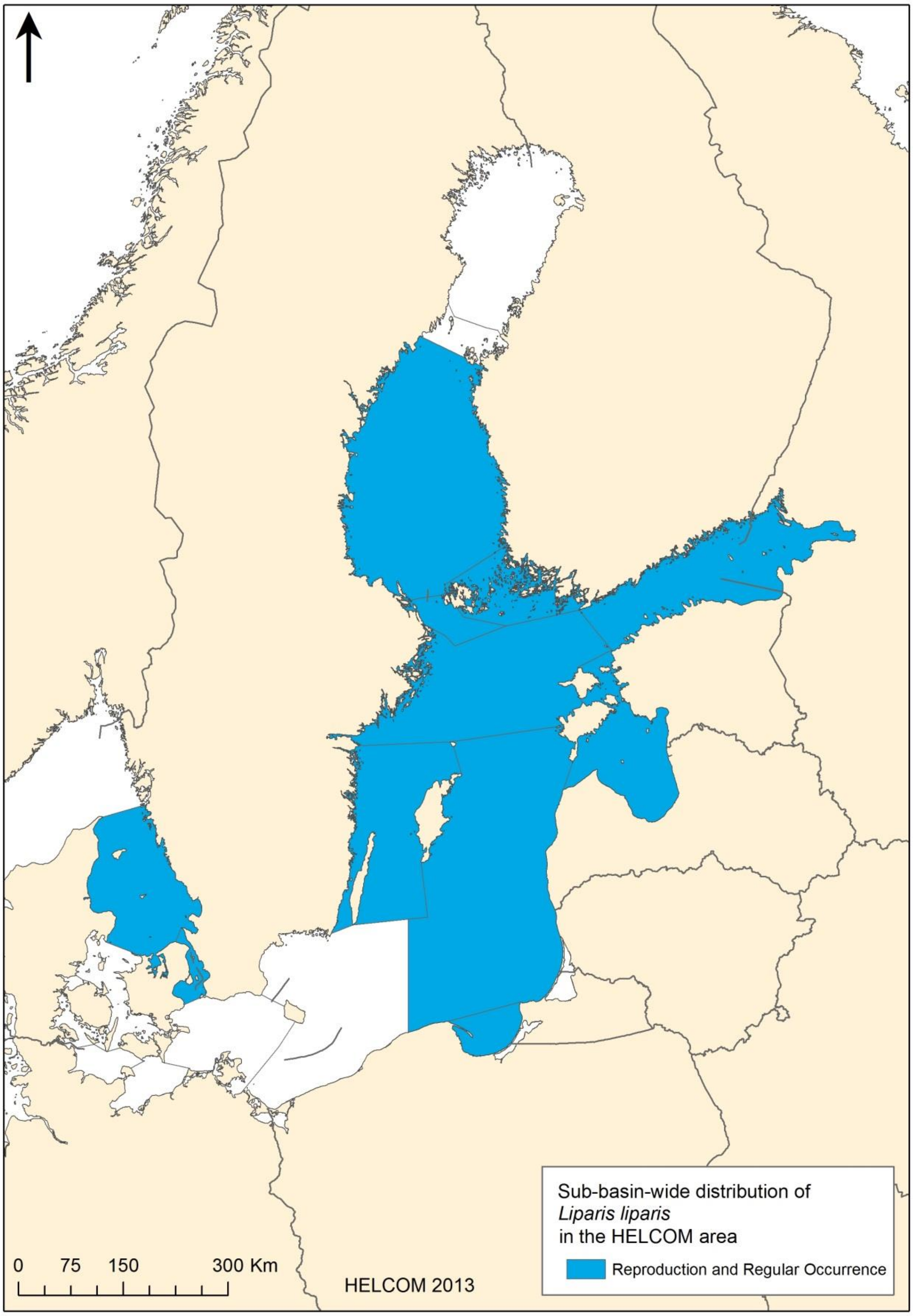


Fig. Number of sea-snails (both *L. liparis* & *L. montagui*) caught yearly at the Swedish fish monitoring using small- meshed Isaac-Kidd trawl in the cooling water intake at Ringhals powerplant in the Kattegat.

Distribution map

The map shows the subbasins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The sea-snail is a benthic species occurring from the subtidal zone to almost 300 m depth (Stein & Able 1986, Froese & Pauly 2005, Kullander 2012). Thanks to its suction disc it can keep itself attached also in areas with strong currents. The sea snail is a small, 10–15 cm long, fish with a maximum lifespan of 2–3 years (Stein 2010). It feeds primarily on crustaceans, occasionally also on fish and polychaetes. It spawns in the winter from December to February. The sea-snail in the Baltic Sea differs somewhat from the sea-snail in Kattegat and is sometimes considered a separate subspecies (Kullander 2012).

Description of major threats

The sea-snail could become threatened by eutrophication, as the species needs clean water and sediments, especially for spawning, egg deposition, and larval habitats.

Assessment justification

The number of mature individuals exceeds the limit for red listing. The extent of occurrence (EOO) and area of occupancy (AOO) also exceed the limits for red listing. The data is sparse and totally lacking from large part of the Baltic Sea but the data that exists gives no reason to suspect population decrease during the assessment period, which is 10 years. The estimated values for which the assessment is based on are all within range of the category of Least Concern (LC). Immigration from the Skagerrak or the North Sea is possible to the Kattegat population but the sea-snail population of the Baltic Sea is unlikely to get immigration from outside the HELCOM region.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but more data on abundance and population trends of the species is needed. The status of the subspecies should also be investigated.

Common names

D - Scheibenbauch; ES – Pullukala; GB – Longspined bullhead; DK - Finnebræmmet ringbug; FIN – Imukala; LV - Plūkšņzivs; LT - Europinis gleivys; PL - Dennik; RU - Evropeiskij liparis; S – Ringbuk

References

Andrušaitis G. (ed.) (2003). Red Data Book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii (in Swedish). Artdatabanken, SLU, Uppsala. 517 pp.

Stein, D.L. and K.W. Able, 1986. Liparididae. p. 1275–1283. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 3. UNESCO, Paris.

Stein, D.L. 2010. *Liparis liparis*. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org

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): 11–76.

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.

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Montagus sea-snail</td><td colspan="2">Scientific name:
Liparis montagui</td></tr>
<tr><td>Taxonomical group:
Class: Actinopterygii
Order: Scorpaeniformes
Family: Liparidae</td><td colspan="2">Species authority:
Donovan, 1804</td></tr>
<tr><td>Subspecies, Variations, Synonyms:
–</td><td colspan="2">Generation length:
Not known</td></tr>
<tr><td>Past and current threats (Habitats Directive article 17 codes):
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–</td><td>**HELCOM Red List Category:**</td><td>**LC**
Least Concern</td></tr>
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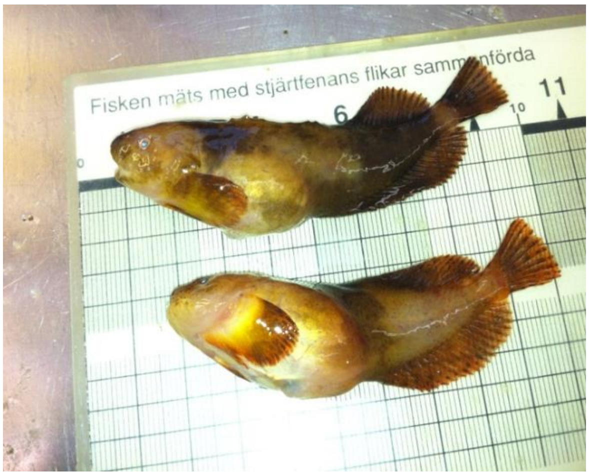
NE/NE</td><td colspan="2">Habitats Directive:
–</td></tr>
<tr><td colspan="3">Previous HELCOM Red List Category (2007): EN</td></tr>
<tr><td colspan="3">Protection and Red List status in HELCOM countries:
Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**</td></tr>
</table>

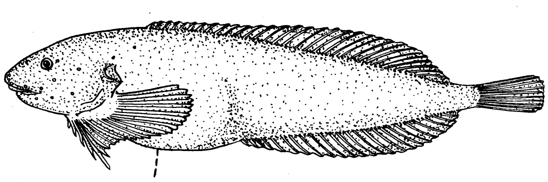
Distribution and status in the Baltic Sea region

The Montagus sea-snail is a strictly marine species distributed in the Kattegat basin and in the Sound in the HELCOM area.

Its non-migratory behaviour and size makes it very rarely caught in regular monitoring programs. The data from Swedish monitoring by Isaac-Kidd trawl in Ringhals nuclear power plant in the Kattegat 1981–2011 shows low numbers with only a few individuals every other year but no indication of decline.



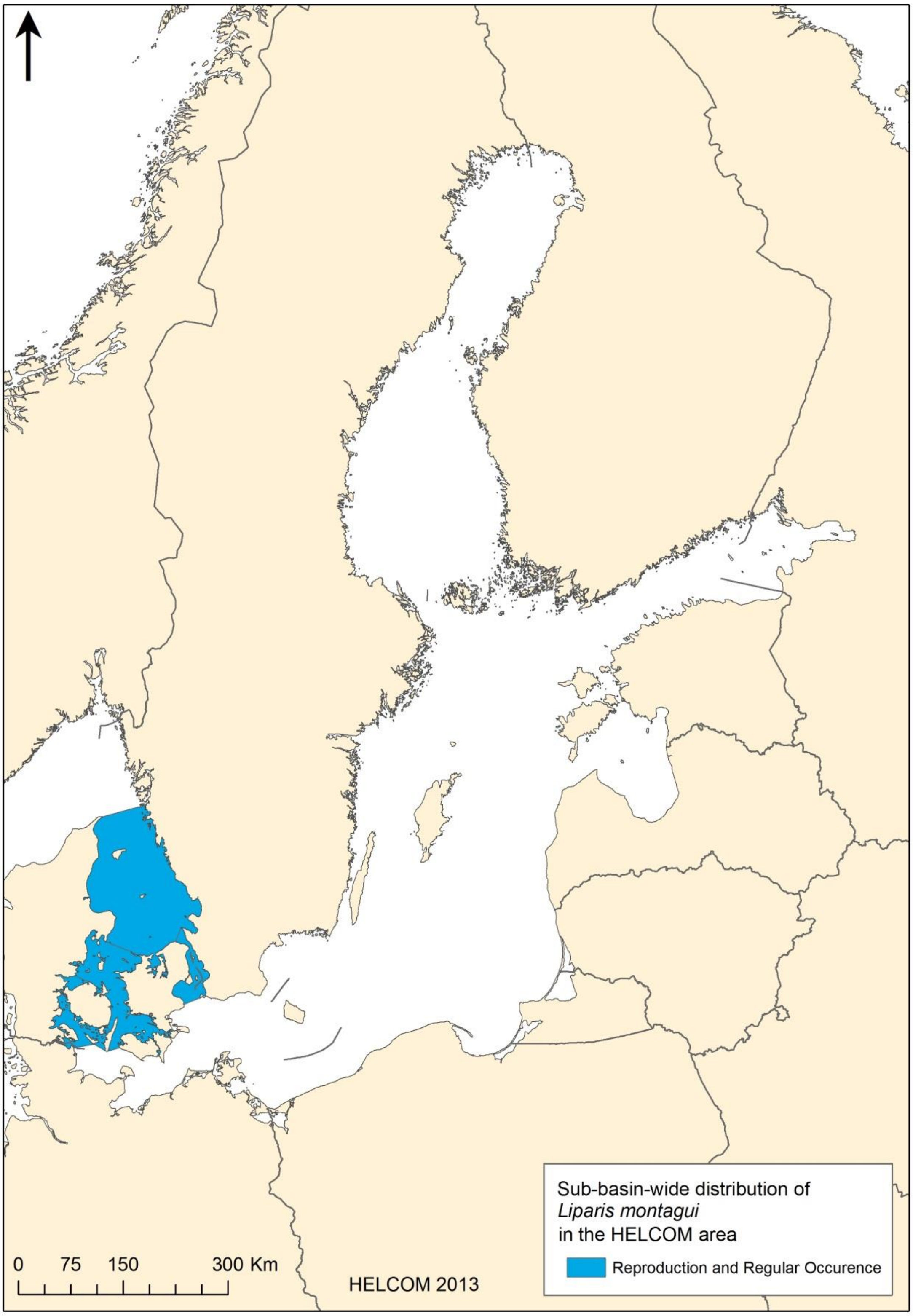
Montagus seasnail. Photo by Björn Fagerholm, Swedish University of Agricultural Sciences.



Liparis montagui. Length 114 mm. (From: Chernova 1991).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The Montagus sea-snail occurs from intertidal areas down to 30 m, often under stones or clinging to algae. It feeds primarily on crustaceans such as gammarids and amphipods in intertidal areas and shrimps and small crabs in sub tidal areas. (Stein & Able 1986, Chernova 1991, Froese & Pauly 2005, Kullander et al. 2012)

Description of major threats

The Montagus sea-snail is not considered threatened at the moment. However, eutrophication may affect its population negatively, as the species needs clean water and sediments, especially for spawning, egg deposition, and larval habitats.

Assessment justification

The number of mature individuals exceeds the limit for red listing. The extent of occurrence (EOO) is estimated to 20 000 km². The area of occupancy (AOO) exceeds the limit for red listing. Despite that data is scarce there are no signs of significant population change during the assessment period. The estimated values for which the assessment is based on are all within range of the category of Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but more data on abundance and population trends of the species is needed.

Common names

D - Kleiner Scheibenbauch; ES – ; GB – Longspined bullhead; DK - Særfinnet ringbug; FIN – Pikkuimukala; LV - Montegjū plūkšņzivs; LT - Montegiu gleivys; PL - Tłuściel; RU - Liparis Montegju; S – Tångringbuk/ Montagus ringbuk

References

Chernova, N.V. (1991). Liparid fishes of the Eurasian Arctic. Apatyti, Kola Brunch of AN SSSR. 111 p. [In Russian]

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517 pp. [in Swedish]

Stein, D.L., Able, K.W. (1986). Liparididae. p. 1275–1283. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean, Vol. 3. UNESCO, Paris.

English name: **Snake blenny**	Scientific name: ***Lumpenus lampretaeformis***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Stichaeidae	Species authority: Walbaum, 1792	
Subspecies, Variations, Synonyms: –	Generation length: 3.7	
Past and current threats (Habitats Directive article 17 codes): Eutrophication (K02.03)	Future threats (Habitats Directive article 17 codes): Eutrophication (K02.03)	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**DD**, Germany –/**1** (Critically endangered, Baltic Sea), Latvia –/**RA**, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

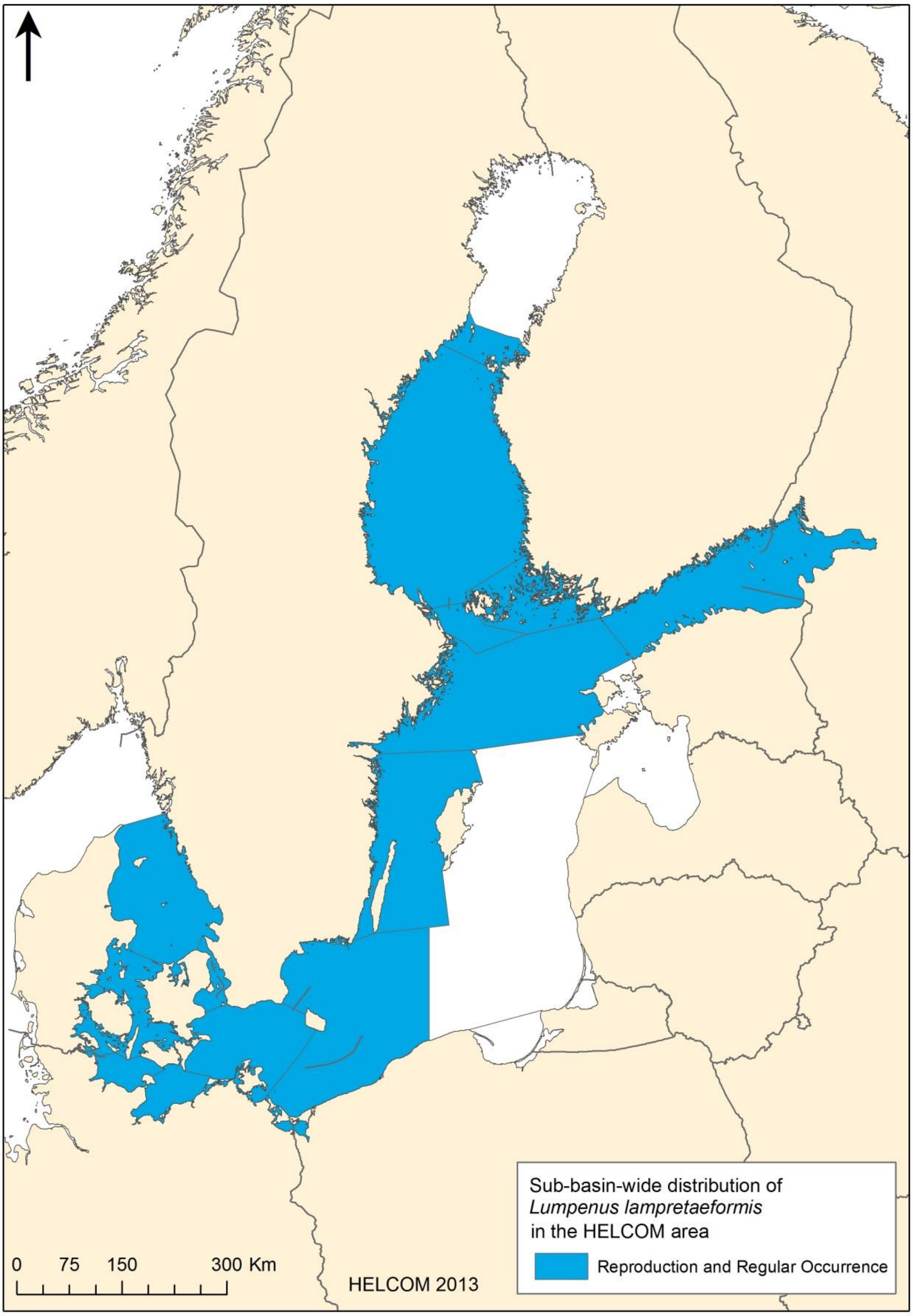
Distribution and status in the Baltic Sea region

The snake blenny occurs on soft, muddy or sandy, bottoms from the Kattegat to the Gulf of Bothnia. It is mainly distributed on depths between 30 and 120 m. Reliable data on distribution, population size and population trend are lacking. The species is most likely negatively affected by the increase of areas with anoxic conditions in the Baltic Proper, and as a consequence decreasing area of distribution and habitat quality.

Catch of snake blenny at the International Bottom Trawl Survey 2012.
Photo by David Andersson, Swedish University of Agricultural Sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The snake blenny is benthic on clean mud bottoms at 30–200 m depth. It buries and lives in Y-shaped tubes in the mud. The species feeds on small crustaceans, molluscs, brittle stars and worms. Adults mature at about 20 cm total length. Spawning season is from December to January; about 1000 eggs are laid on the sea floor. Larvae are pelagic. The maximum total length of adults is 50 cm (Fricke 1987, Froese & Pauly 2005).

Description of major threats

The species was considered threatened in the previous HELCOM assessment (HELCOM 2007) and eutrophication and habitat loss were mentioned as main threats to the species. The species requires relatively clean and well oxygenated deepwater habitats.

Assessment justification

The species is most likely negatively affected by the increase of areas with anoxic conditions in the Baltic Proper, and as a consequence the area of occupancy (AOO) and the habitat quality have decreased. During the period 1999–2011 the percentage of uninhabitable bottoms in the Baltic Proper increased from 5 to 15%, based on the increase in hypoxia (Hansson et al 2011). The Baltic Proper corresponds to about 70% of the species total AOO and consequently this 10% loss of habitat in the Baltic Proper corresponds to a loss of AOO in the HELCOM area in the order of 3–10% during the assessment period. If this loss of habitat is directly related to a decrease in population size it is below the threshold for being Near Threatened due to population decrease and since both distribution area and population size are well above threshold levels this species is currently considered LC on a HELCOM level.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but more data should be collected on the status of this species.

Common names

D - Spitzschwanz-Schlangenstachelrücken; GB –Snake blenny; DK - Spidshalet langebarn; ES: suttlimusk; FIN – Elaska ; LV - Lentzivs, Islandes lentzivs; LT - Nėginis liumpenas; PL - Taśmiak; RU Minogovidnij ljumpen ; S – Spetsstjärtat långebarn

References

Andrušaitis G. (ed.) (2003). Red Data Book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fricke, R. (1987). Deutsche Meeresfische. Bestimmungsbuch. Hamburg (DJN), 219 pp.

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

Hansson, M. Andersson, L. & Axe, P. 2011. Areal Extent and Volume of Anoxia and Hypoxia in the Baltic Sea, 1960–2011. REPORT OCEANOGRAPHY No. 42, 2011.

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.

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): 11–76.

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.

SPECIES INFORMATION SHEET ***Myoxocephalus scorpius***

English name: **Shorthorn sculpin**	Scientific name: ***Myoxocephalus scorpius***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Cottidae	Species authority: Linnaeus, 1858	
Subspecies, Variations, Synonyms: –	Generation length: 5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**DD**, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

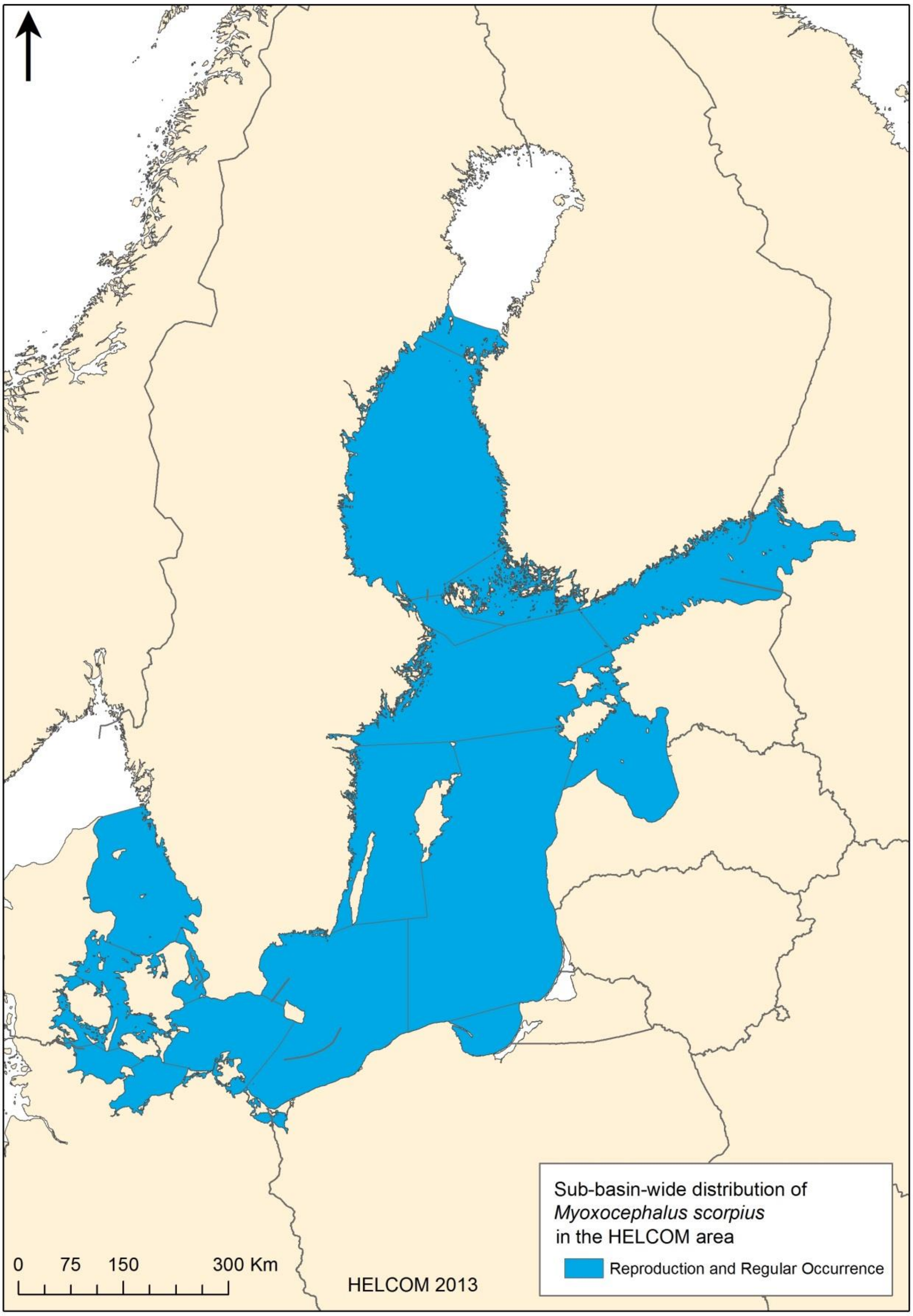
The shorthorn sculpin inhabits coastal and shallow offshore habitats in marine and brackish waters. The species is very common in the Kattegat and its abundances decrease towards the northeastern Baltic Sea with the decreasing salinity.

A Swedish monitoring series from Kvädöfjärden in the Western Gotland basin shows a positive trend between 1996 and 2011. The species also shows increasing occurrences the last decade in Swedish fish monitoring in Northern Baltic Proper. In Kattegat however there is a negative development during the same time period.

Shorthorn sculpin. Photo by Björn Fagerholm, Swedish University of Agricultural Sciences.

Distribution map

The map shows the subbasins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



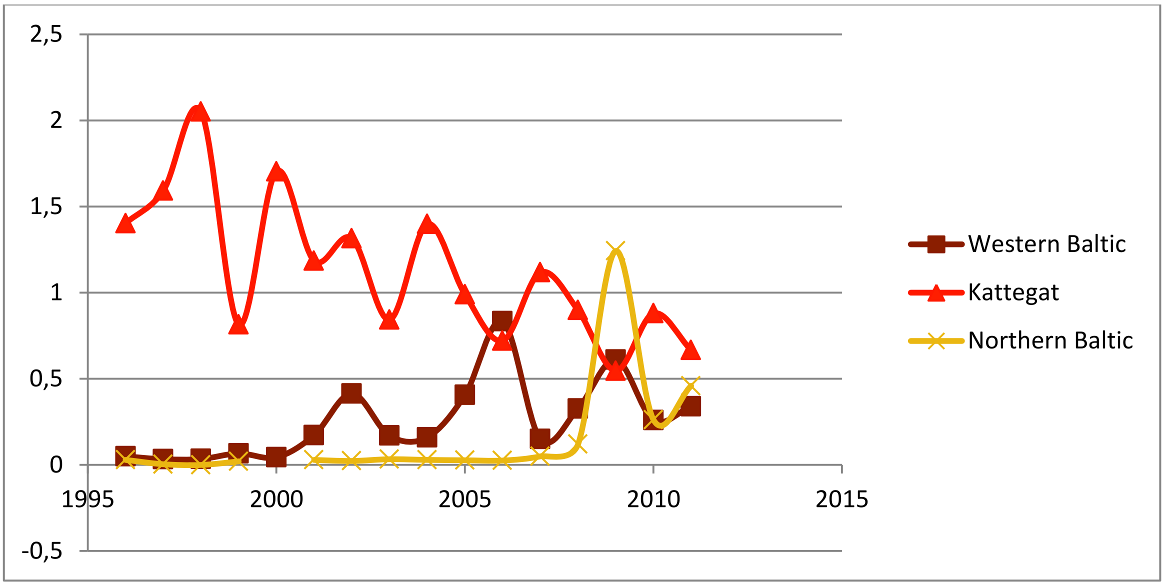


Fig.1 Catch per unit effort in Swedish monitoring net fishing in western Baltic Proper, Northern Baltic proper and in Kattegat.

Habitat and ecology

The shorthorn sculpin is a benthic species found on rocky bottoms with sand or mud, or among seaweeds. It feeds on fish, large crustaceans, occasionally polychaetes and amphipods. During the spawning season (from December to March), the male's underside becomes deep red with white spots. (Fedorov 1986, Froese & Pauly 2005)

Description of major threats

No major threats identified within the HELCOM area.

Assessment justification

The number of mature individuals exceeds the limit for red listing. The extent of occurrence (EOO) and area of occupancy (AOO) exceed the limits for red listing. There are signs of significant population change in the Kattegat, however given the species positive trend in available data from the Baltic Sea the total decrease in the HELCOM area is probably less than 15%. Hence the species falls in the category Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D - Seeskorpion;ES – nolgus; GB – Shorthorn sculpin; DK - Almindelig ulk; FIN – Isosimppu; LV - Ziemeļu buļlzivs; LT - Builis; PL - Kur diabeł; RUS - Evropeiskij kerchak; S – Rötsimpa

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fedorov, V.V. (1986). Cottidae. p. 1243–1260. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean, Vol. 3. UNESCO, Paris.

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

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.

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): 11–76.

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.

SPECIES INFORMATION SHEET *Nerophis lumbriciformis*

English name: **Worm pipefish**	Scientific name: ***Nerophis lumbriciformis***	
Taxonomical group: Class: Actinopterygii Order: Syngnathiformes Family: Syngnathidae	Species authority: Jenyns, 1835	
Subspecies, Variations, Synonyms: *Syngnathus lumbriciformis*	Generation length: 2.5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

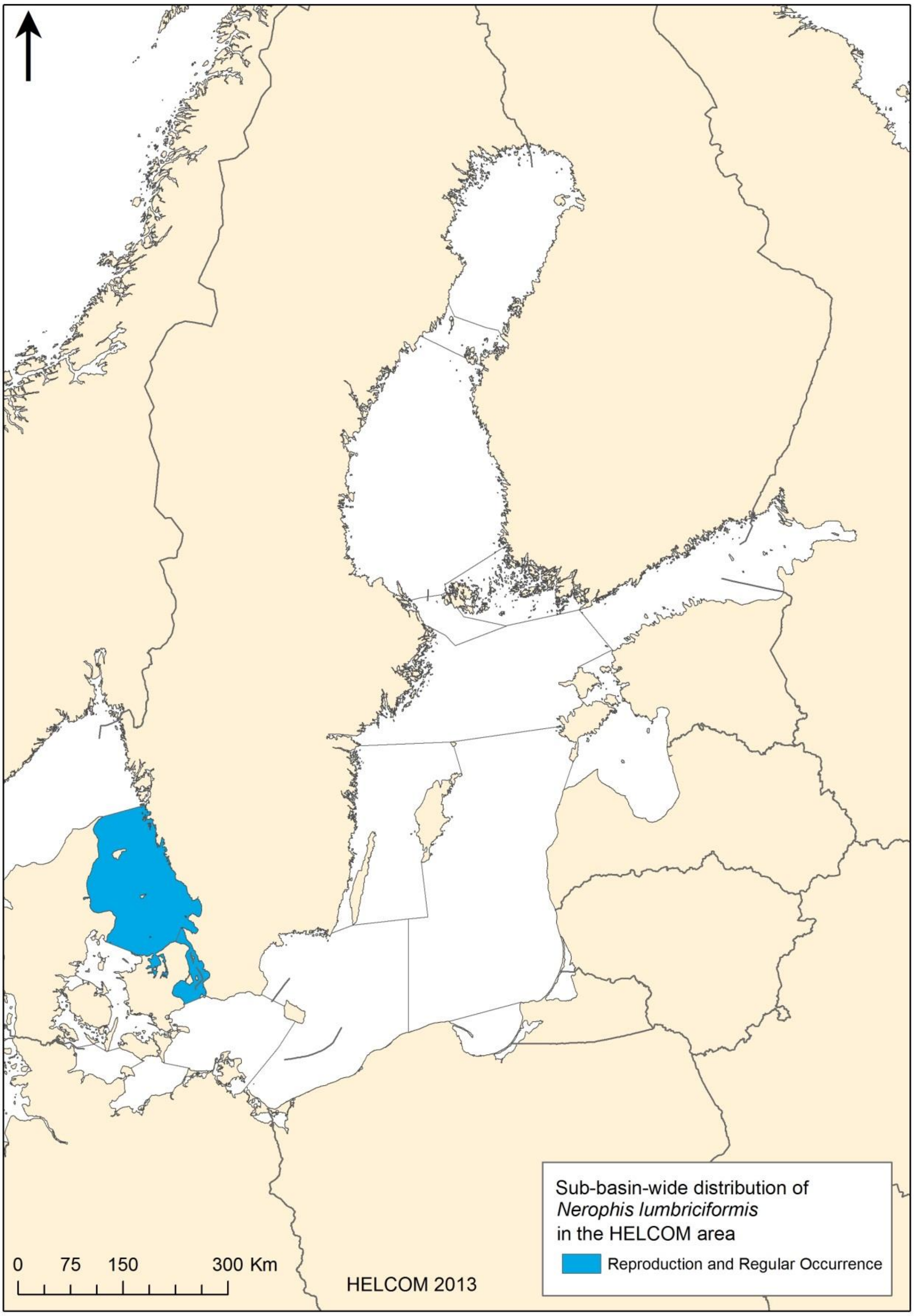
Distribution and status in the Baltic Sea region

The worm pipefish is sparsely represented in Swedish coastal waters, where it is limited to the Skagerrak and Kattegat basins (Kullander et al. 2012). It is found in the *Fucus* belt. Like most species of the *Syngnathidae* family, the worm pipefish distribution and abundance is not monitored well with standardized test fishing nets because of its snakelike body.

Worm pipefish. Photo by Norbert Häubner, Klubban field station, Uppsala University.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The worm pipefish is a marine species that lives in the intertidal zone down to about 30 m among rocks or holdfasts and lower branches of red and brown algae. It spawns in the summer months. It feeds on small crustaceans and fish fry. The larvae are attached to the ventral surface of the males. Parental care is exclusively paternal and the male broods embryos attached to their abdomen. (Dawson 1986, Froese & Pauly 2012, Kullander et al. 2012)

Description of major threats

No major threats identified.

Assessment justification

The extent of occurrence (EOO) is below the threshold for Near Threatened (< 40 000 km^2) according to the B1 criterion, however none of the required additional criterias of severe fragmentation, continuing decline or extreme fluctuations in population size or habitat is fulfilled. The estimated area of occupancy is above the threshold for being threatened according to the IUCN. There are no data on trends in habitat or population size but since no major threats are identified this species is considered Least Concern (LC) in the HELCOM area.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but more information should be collected on the status of this species.

Common names

D: Krummschnäuzige Schlangennadel; DK: Krumsnudet næbsnog; FI: Käyränokkaneula; GB: Worm pipefish; LI: Sliekžuvė; LV: Tārpzivs; RU: Cherveobraznij nerofis; SE: Krumnosig havsnål

References

Dawson, C.E. (1986). Syngnathidae. p. 628–639. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 2. Unesco, Paris.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517 pp. [in Swedish]

English name: **Straight nosed pipefish**	Scientific name: ***Nerophis ophidion***	
Taxonomical group: Class: Actinopterygii Order: Syngnathiformes Family: Syngnathidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Syngnathus ophidion*	Generation length: 2.2 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**LC**, Estonia –/**DD**, Finland –/**LC**, Germany –/***** (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/Included in the Polish Red Book, Russia –/–, Sweden –/**LC**		

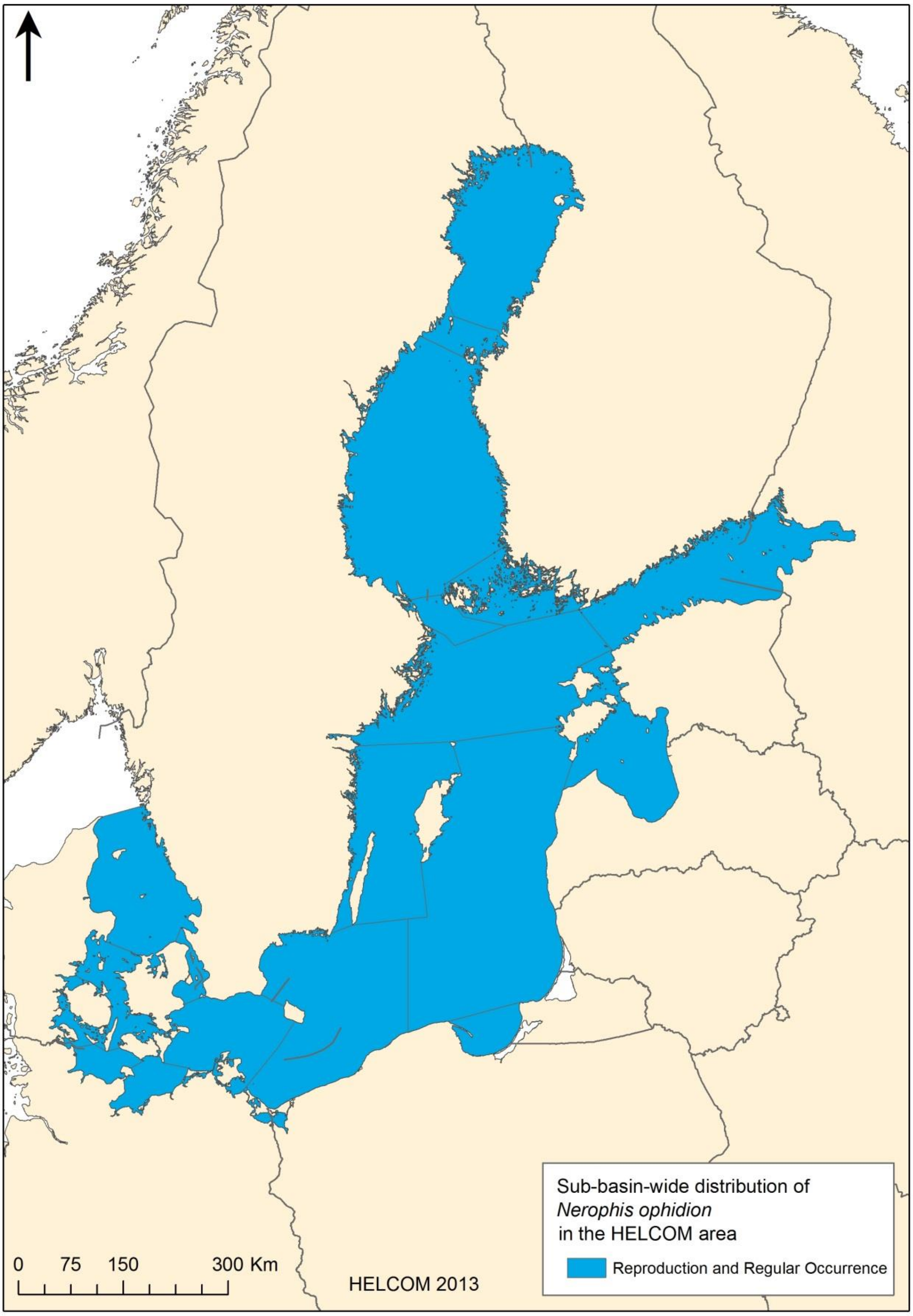
Distribution and status in the Baltic Sea region

The straight nosed pipefish is commonly found along the west coast of Sweden and in the southern Baltic Sea, to a lesser extent in the Gulf of Bothnia. Elsewhere the distribution extends from central Norway south along the coast (including the British Isles) to Morocco and continues into the Mediterranean Sea and Black Sea. It is not distributed, however, along the North Sea coast between Denmark and the English Channel. Like most species of the *Syngnathidae* family, the distribution and abundance is not monitored well with standardized test fishing nets because of its snakelike body.

Straight nosed pipefish. Photo Vivica von Vietinghoff, Deutches Meeresmuseum.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The straight nosed pipefish is a marine species that inhabit algal zone or eel-grass beds (*Zostera marina*) along the coastal zone from 2 to 15 meters depth. Adults spawn in May to August. It feeds on small crustaceans and fish fry. The male broods the embryos attached to their abdomen where paternity is ensured despite brooding of embryos outside of the male's body. Each male broods eggs from a single female, for each brood, but females may deposit eggs on several males. (Dawson 1986, Froese & Pauly 2012, Kullander et al. 2012)

Pregnant male straight nosed pipefish. Photo: Anders Berglund, Uppsala University.

Description of major threats

The species is not considered threatened at the moment but the loss of suitable habitats by fragmentation of *Zostera* beds has probably affected the species negatively in the Baltic Sea.

Assessment justification

Small catches in Swedish nuclear power plant cooling water intake in the Kattegat show no trend over the last 10 years and larger catches in the Åland Sea do not show any population trend over the last 10 years either but a positive trend can be seen in 1992–2011. Both extent of occurrence and area of occupancy exceed the levels for being threatened according to the B criteria. The main habitat of the straight-nosed pipefish, *Zostera* meadows and possibly also other macrophyte rich habitats have declined and deteriorated considerably within the HELCOM area and it could be assumed that the population of the species has also declined together with the habitat changes. However, these changes have in most areas happened e.g. more than 30 or even 100 years ago and currently the situation has stabilized, if not improved. As the straight-nosed pipefish is a short-lived species for which the time-period of population decline evaluation is only 10 years, the most drastic habitat changes, as well as the possible decline in population, have no effect on the assessment under criterion A. The species is widespread and still common in the Baltic Sea, and does not meet any of the other criteria either, and is therefore categorized as Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D: Kleine Schlangennadel; DK: Stor næbsnog; ES: madunõel; FI: Siloneula; GB: Straight nosed pipefish; LI: Paprastoji jūrų yla; LV: Čūskzivs; PL: Wężynka; RU: Pryamonosaja morskaja igla; SE: Mindre havsnål

References

Dawson, C.E., (1986). Syngnathidae. p. 628–639. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 2. Unesco, Paris.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

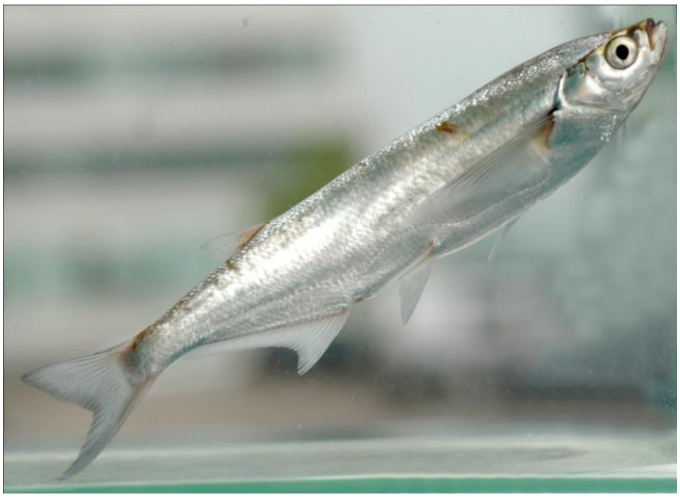
Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii (in Swedish). Artdatabanken, SLU, Uppsala. 517 pp.

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): 11–76.

SPECIES INFORMATION SHEET *Pelecus cultratus*

English name: **Razor-fish/Sichel**	Scientific name: ***Pelecus cultratus***	
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cyprinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: In recent years this taxa has been placed in the Leuciscinae or the Cultrinae. Kottelat and Freyhoff (2007) tentatively place it in Leuciscinae.	Generation length: 5.5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: Annex II	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**CR**, Estonia –/–, Finland –/**DD**, Germany –/**R** (Extremely rare, Baltic Sea), Latvia *No protection measures apart from minimum landing size of 32 cm* / **RA**, Lithuania –/–, Poland *Under strictly protection, catching, killing or disturbing the species is prohibited, in exceptionof Vistula Lagoon where population is strong and stable* / **NT**, Russia –/–, Sweden *Prohibited to fish for and land this species all year round* / **NA**		

Distribution and status in the Baltic Sea region

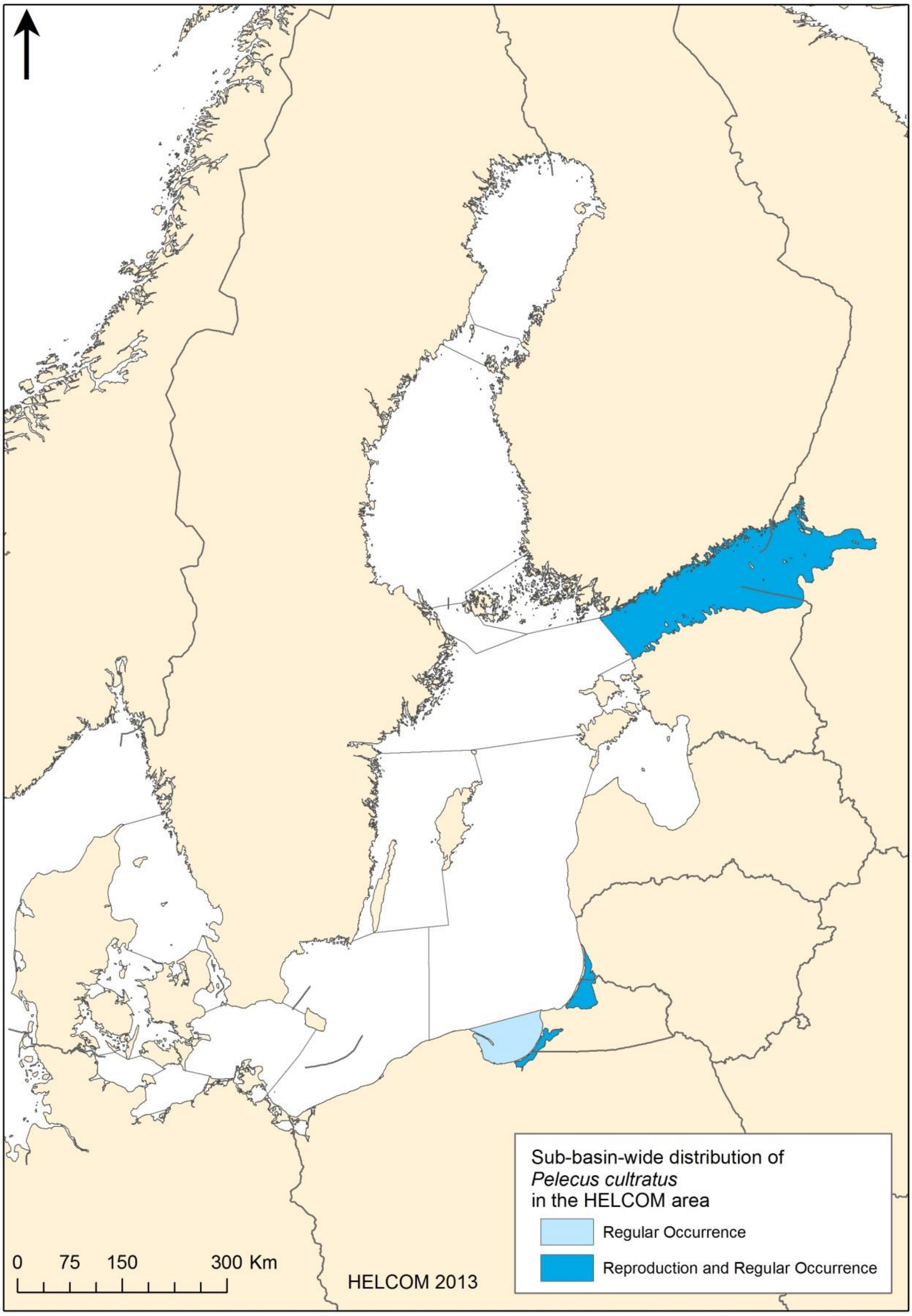


Razor-fish. Photo by Lauri Urho, Finnish Game and Fisheries Research Institute.

The razor-fish is mainly distributed in freshwaters from Vistula to Neva drainages, including lakes Ladoga and Onega. It is also abundant in the eastern part of the Gulf of Finland. Occasionally it is found at the coast west of Vistula and on the coasts of Latvia, Estonia, southern Sweden and Finland. It is common bycatch in the fykenet fishery in the Polish part of the Vistula lagoon. Data from commercial landings in Vistula lagoon show a decrease in mid 1900s but an increase during last decades. More recent investigation (2004–2010) of fishing and fishing effort shows that the species seems to be stable. Razor-fish is considered extremely rare in Germany with a stable but low population size. Razor-fish has recently become more abundant in Finland and Latvia. The species is abundant in the Curonian Lagoon where commercial landings at the Russian side of the Lagoon were approx. 325 tonnes plus 4 tonnes on the Lithuanian side in 2011. There are no signs of species decline in this area and the total catches in the Curonian Lagoon have increased during the last 20 years.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The razor fish is a euryhaline pelagic fish which inhabits open water surfaces of large rivers and large lakes and lagoons. Anadromous individuals forage and spawn in pelagic freshened parts of sea or lower parts of rivers, in main channel or floodplains. A non-migratory form exists in the Curonian and Vistula lagoons. The species lives up to nine years, although Gaigalas (2001) reported a 13 years old female. First spawning takes place at 3–5 years.

Description of major threats

Fishing could become a major threat to this species.

Assessment justification

Available data show that population size is stable or increasing and there is no decline in area of occupancy. Furthermore total population size is above the limits of the IUCN criteria for a small (< 20 000 individuals) population. Although both extent of occurrence and area of occupancy are below the limit for NT in a restricted population (< 5 000 and < 500 km^2 respectively) the razor-fish does not fulfil the additional sub criteria of either being severely fragmented, experiencing a continuous decline in population size or habitat, or extreme fluctuations in population size or habitat. Hence this species is classified as LC in the HELCOM area according to the IUCN system.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area but information on the size of the populations should be collected.

Common names

D - Ziege; GB – Razorfish/Sichel; EST - Nugakala; DK - Sabelkarpe; FIN - Miekkasärki; LV - Kaze; LT - Ožka; PL - Ciosa; RUS - Chekhon; S - Skärkniv

References

Aleksejevs, E., Birzaks, J. (2011). Long-term Changes in the Ichthyofauna of Latvia's Inland Waters. Scientific Journal of Riga Technical University 7: 9–18.

Andrušaitis G. (ed.) (2003). Red Data Book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Freyhof, J., Kottelat, M. (2008). *Pelecus cultratus.* In: IUCN 2011. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org.

Gaigalas, K. (2001). Fishes in the Curonian Bay basin, their resources and fishery. Klaipėda, Eglė. 372 pp.

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Kottelat, M., Freyhof, J. (2007). Handbook of European freshwater fishes. Publications Kottelat, Cornol, Switzerland. 646 pp.

Ojaveer, E., Pihu, E., Saat, T. (eds.) (2003). Fishes of Estonia. Estonian Academy Publishers, Tallinn. 416 pp.

Psuty, I., Wilkoňska, H. (2009). The stability of fish assemblages under unstable conditions: A ten-year series from the Polish part of the Vistula Lagoon. Archives of Polish Fisheries 17: 65–76.

Plikšs, M., Aleksejevs, E. (1998). Fishes of Latvia. Gandrs, Riga. 304 pp.

Rassi, P., Hyvärinen, E., Juslén, A., Mannerkoski, I. (eds.) (2010). The 2010 Red List of Finnish Species. Ministry of the Environment and Finnish Environment Institute, Helsinki. 685 pp.

Ruzhin, S.V. (1982). Some aspects of reproduction of *Pelecus cultratus* (L.) in the eastern part of the Gulf of Finland. Sbornik nauch. trudov GosNIORKh 191: 55–60. [Ружин, С. В. Некоторые черты биологии размножения чехони Pelecus cultratus (L.) Восточной части Финского залива. Сборник науч. трудов ГосНИОРХ 191: 55–60].

Ruzhin, S.V. (1982). Growth and fecundity of Pelecus cultratus (L.) in the eastern part of the Gulf of Finland. Sbornik nauch. trudov GosNIORKh 178: 112–120. [Ружин, С. В. Характеристика роста и плодовитости чехони Pelecus cultratus (L.) Восточной части Финского залива. Сборник науч. трудов ГосНИОРХ 178: 112–120].

Shibaev, S. V., Khlopnikov, M. M., Skolov, A. V. (eds.) (2008). Fischery cadastre of transboundary reservoirs of Russia (the Kaliningrad region) and Lithuania. Kaliningrad, Mishutkina Co. 200 pp.

Stolarski, J. (1995). Sichel (Pelecus cultratus L.) from the Vistula Lagoon. Bulletin of the SFI Gdynia 2: 11–21

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): 11–76.

Urho, L., Lehtonen, H. (2008). Fish species in Finland. Finnish Game and Fisheries Research Institute, Helsinki. 34 pp.

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.

Vetemaa, M., Ložys, L., Minde, A. (2009). LIFE Nature project "Marine Protected Areas in the Eastern Baltic Sea". Action A5 – Fish community inventory. Final report. Available at: http://www.balticseaportal.net/media/upload/File/Deliverables/Action%20reports/A5_final_report.pdf.

Virbickas, J. (2000). Fishes of Lithuania. Trys žvaigždutės, Vilnius. 192 pp.

English name: **Minnow**	Scientific name: ***Phoxinus phoxinus***	
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cyprinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Several species may be within the P. phoxinus (Freyhoff & Kottelat 2008).*	Generation length: 4.3 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**LC**, Estonia –/**LC**, Finland –/**LC**, Germany –/***** (Not threatened, freshwaters), Latvia –/–, Lithuania –/–, Poland *Prohibited to kill, catch or disturb this species under strict protection* / –, Russia –/–, Sweden –/**LC**		

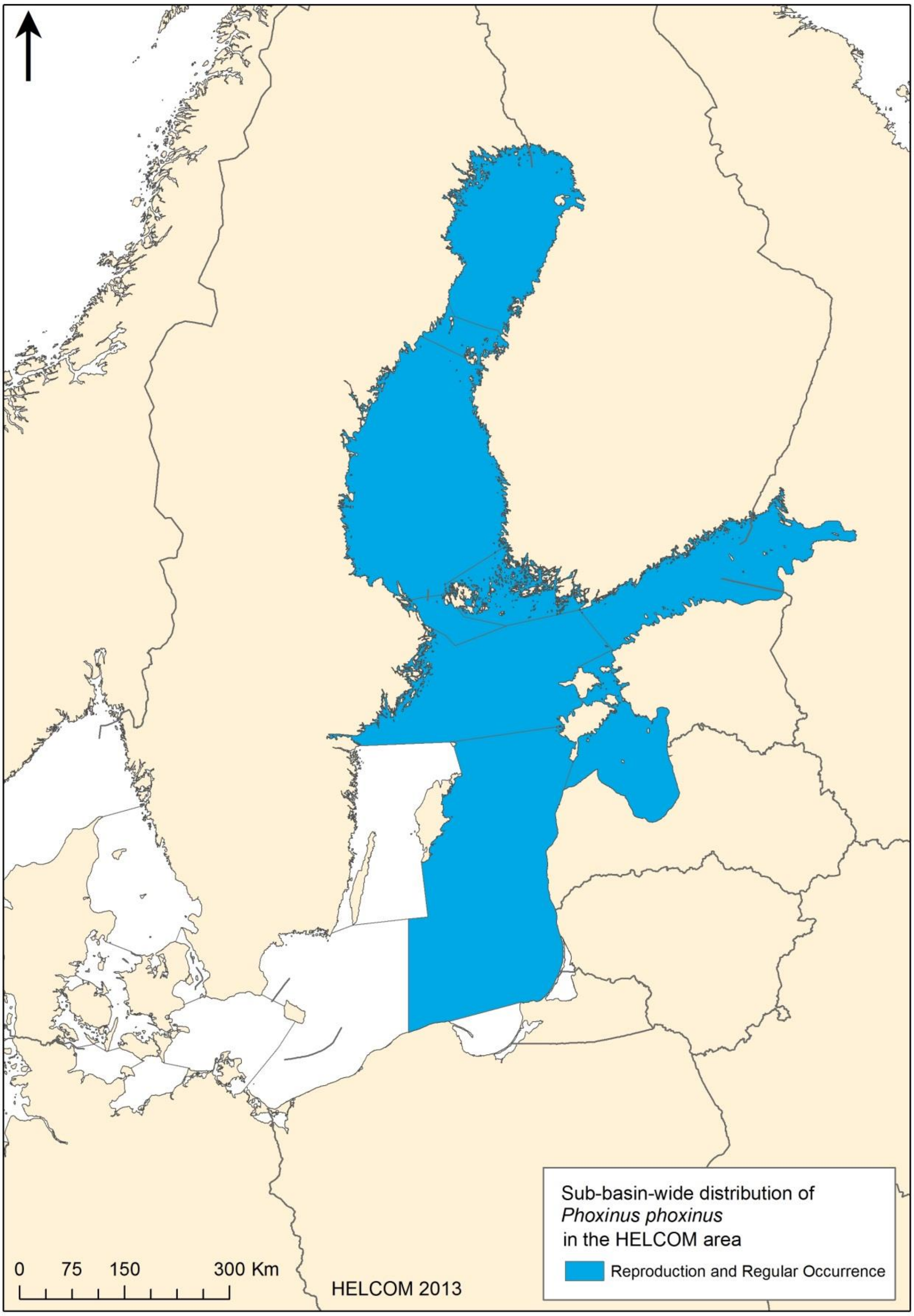
Distribution and status in the Baltic Sea region

This river associated freshwater fish also spawns in coastal areas in the northern and eastern part of the Baltic Sea. Although it is common in shallow coastal areas it is not caught in any regular environmental monitoring in the Baltic Sea. Data from Swedish rivers however show no change in occurrence during the last 25 years (Degerman et al. 2009). There is an observed decrease in eutrophicated Finnish coastal areas, though no numerical data is available for the decrease.

Minnow. Photo by Martin Karlsson, Swedish University of Agricultural Sciences.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

This gregarious small species inhabits a wide range of cold and well oxygenated habitats in rivers, lakes and less saline coastal areas. It is often associated with salmonid fishes and thrives in running waters. The minnow spawns for the first time at two years and lives up to 11 years but more usually up to 4–5 years. The species spawns in shoals and females deposit the sticky eggs deep into clean gravel. It feeds on invertebrates, algae and detritus. It can reach a maximum length of 14 cm but is seldom more than 7 cm long. (Freyhof & Kottelat 2008)

Description of major threats

No major threats perceived at the moment in the HELCOM area although increased eutrophication could become a future threat. Pollution and excessive stocking of species of *Salmo* spp. are identified as threats in the global IUCN list.

Assessment justification

Number of reproductive individuals, extent of occurrence and area of occupancy are all well above thresholds for red-listing according to IUCN system. Although there are some indications for decline in eutrophicated areas the decline is estimated to be less than 15% in the overall HELCOM population and hence this species is categorized as Least Concern.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area but information on habitats and population size in coastal areas should be collected.

Common names

D - Elritze; GB – Minnow; EST - lepamaim; DK - Elritse; FIN – Mutu; LV - Mailīte; LT - Rainė; PL - Strzebla błotna; RUS - Obiknovenniy gol'yan; S – Elritsa

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Freyhof, J. (2009). Rote Liste der im Süßwasser reproduzierenden Neunaugen und Fishce (Cyclostoma & Pisces). Naturschutz und Biologische Vielfalt 70(1): 291–316. In Bundesamt für Naturschutz (2009). Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands. Band 1: Wirbeltiere. Bundesamt für Naturschutz.

Freyhof, J., Kottelat, M. (2008). *Phoxinus phoxinus.* In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 24 October 2012)

Degerman, E., Sers, B., Magnusson, K. (2009). Artförekomst perioden 1988–2007 i Svenskt ElfiskeRegiSter– förändras arternas förekomst över tid? Information från Svenskt Elfiskeregister Vol. 1. Fiskeriverkets Sötvattenslaboratorium, Örebro. 28pp. [in Swedish]

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.

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/

SPECIES INFORMATION SHEET *Scyliorhinus canicula*

English name: **Lesser spotted dogfish /Small-spotted catshark**	Scientific name: ***Scyliorhinus canicula***	
Taxonomical group: Class: Elasmobranchii Order: Carcharhiniformes Family: Scyliorhinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 11	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC Least Concern**
Global / European IUCN Red List Category LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Prohibited to fish for and land this species all year round* **/ LC**		

Distribution and status in the Baltic Sea region

The lesser spotted dogfish is a small and widespread catshark, living in coastal areas from West Africa to Norway. The species is considered one of the most abundant shark species in the Northeast Atlantic. The lesser spotted dogfish reproduces in the Kattegat and the northern parts of the Sound. The population trend in the North Sea is increasing (ICES 2012) and there are no signs of any significant population changes in the HELCOM area over the last thirty years.

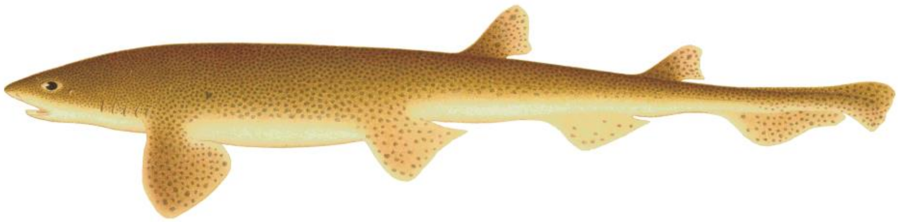
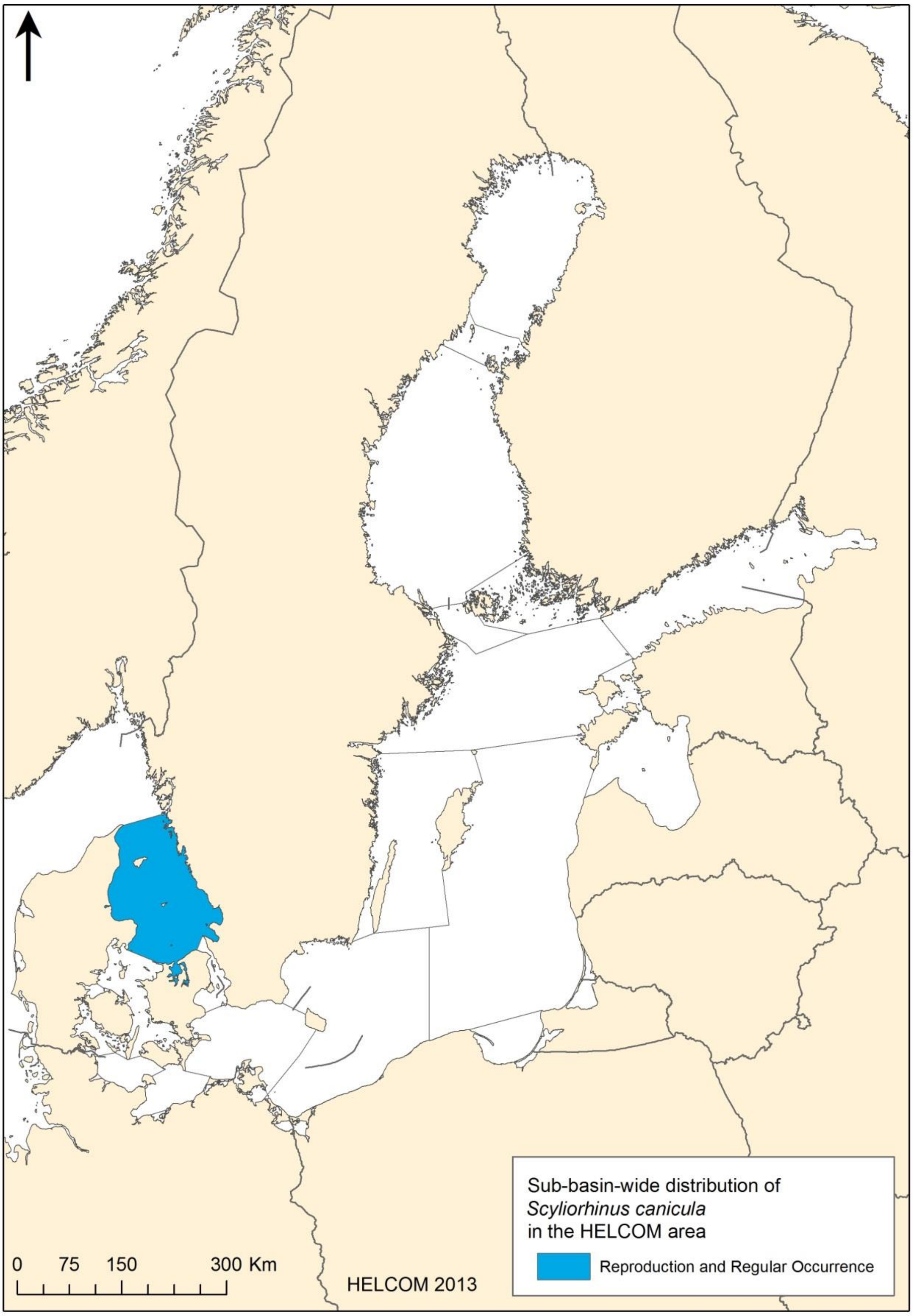


Illustration by von Wright (1895)

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The lesser spotted dogfish is a demersally living shark species found at depths of 3–110 m, rarely to 400 m. It is oviparous with a single egg laid per oviduct at a time, spawning in November to July and attaches its egg-cases to algae and sea-grasses. Juveniles hatch after 8–9 months of development. Adults grow slowly and mature after 3–5 years. The species lives on sandy, coralline, algal, gravel or muddy bottoms; it is rarely found in mid-water. The lesser spotted dogfish feeds on molluscs and crustaceans, small cephalopods, polychaete worms, and small bony fish. The maximum total length is 100 cm but usually not above 60 cm, and the maximum reported age 12 years (Froese & Pauly 2012).

Description of major threats

The lesser spotted dogfish was considered threatened in the previous HELCOM assessment (HELCOM 2007). In that assessment the species was assumed to be threatened by fisheries (caught as by-catch in demersal fisheries and also as a target species) and probably also by habitat loss due to eutrophication, sand and gravel extraction etc.

Assessment justification

The lesser spotted dogfish is considered one of the most abundant shark species in the Northeast Atlantic. There are no signs of any significant population changes in the HELCOM area over the last three generations (31.5 years). In the adjacent North Sea area the abundance is increasing according to survey data (ICES 2012) and immigration is probable into the HELCOM area. Although data from the HELCOM area are scarce and the population is most likely rather small, both population size and distribution area are well above threshold level for being red-listed. Furthermore, since there is no evidence of decrease within the HELCOM area the species is considered Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D - Kleingefleckter Katzenhai; GB –Starry ray; DK - Småplettet rødhaj; FIN – Pistepunahai; LV - Mazā kaķhaizivs; LT - Mažadėmis katryklis; PL - Rekinek psi; RU -; S – Småfläckig rödhaj

References

Fries, B. Smitt, F. S. Von Wright, W. (1895). Skandinaviens fiskar. Norstedt, Stockholm.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (12/2012).

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 (2012). ICES Advice 2012. Book 6.

SPECIES INFORMATION SHEET *Spinachia spinachia*

English name: **Fifteen-spined stickleback**	Scientific name: ***Spinachia spinachia***	
Taxonomical group: Class: Actinopterygii Order: Gasterosteiformes Family: Gasterosteidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 1.3	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**DD**, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/**RA**, Lithuania –/–, Poland *Prohibited to kill, catch or disturb this species under strict protection* /–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

This marine species is widely distributed and reproducing as far into the Baltic Sea as the Bothnian Sea. It is considered very rare in Poland but common in other areas. It is not caught in regular coastal fish monitoring due to its slender body shape and small size. The only known trend data are from catches in Swedish nuclear power plant cooling water intake in Kattegat where the population show no overall trend in the last 10 years.

Fifteen-spined stickleback. Photo by Timo Moritz Deutches Meeresmuseum.

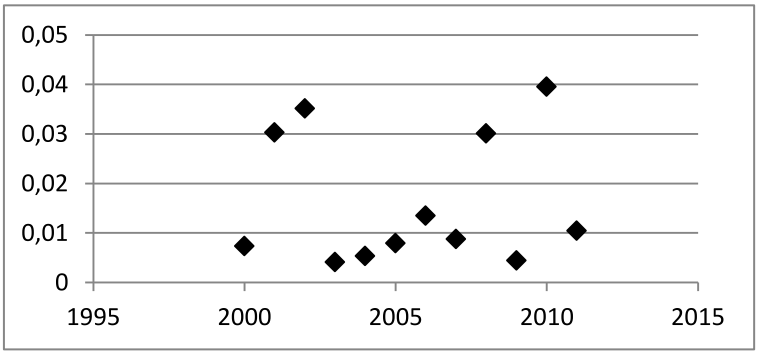
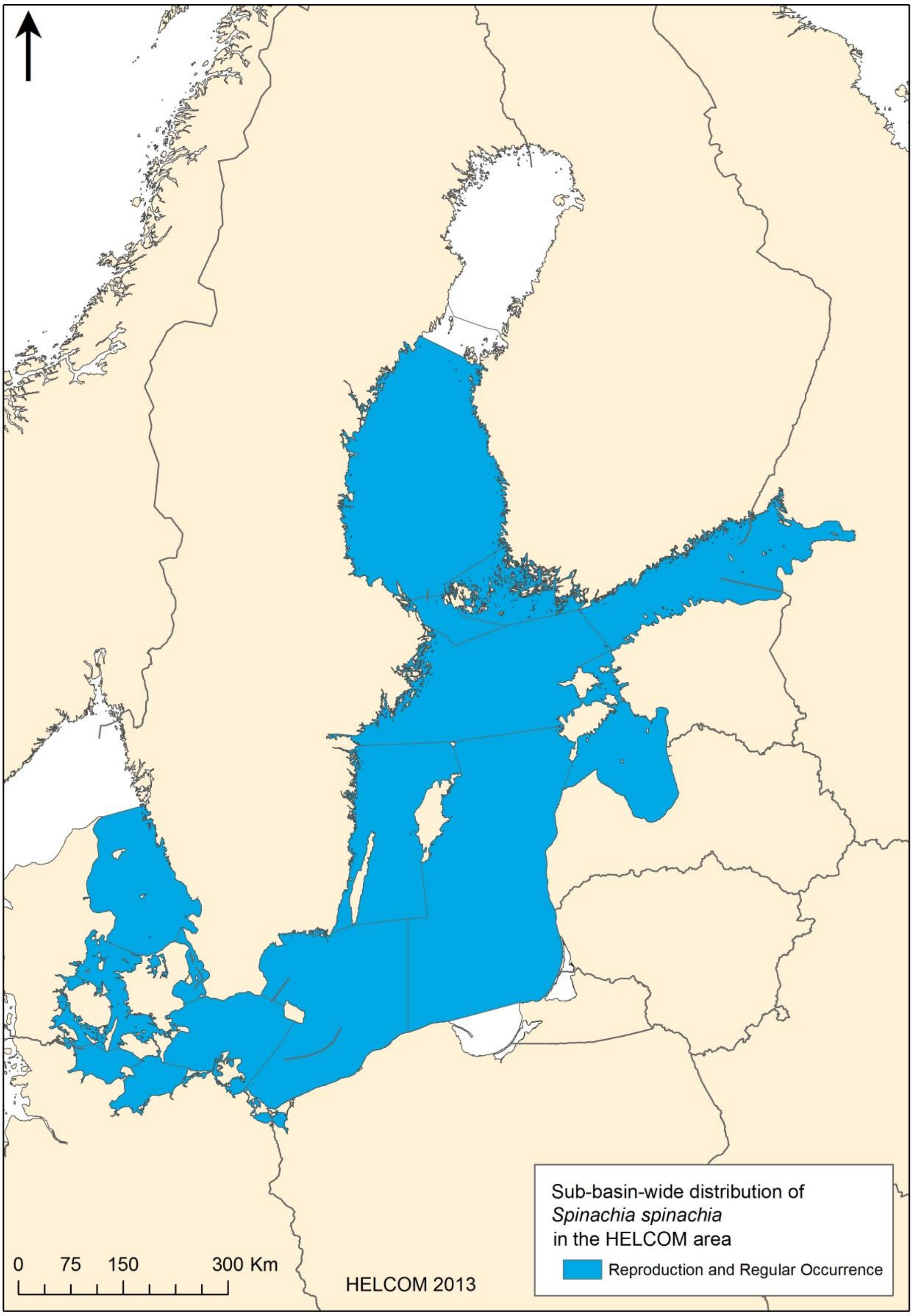


Fig1. Number of fifteen-spined sticklebacks caught per hour using a small-mesh sized Isaac Kidd trawl in a monitory fishing in the cooling water intake in a Swedish nuclear power plant in the Kattegat. Mean number of individuals caught yearly was 22.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The fifteen-spined stickleback is a small and shortlived species which reaches maturity at one year of age and a size of 10–15 cm total length. Adults live solitary or in pairs in weedy, shallow coastal areas. During spawning in early summer the male build a nest where the female deposits hundreds of eggs. The male care for and defend the nest until the eggs hatch a few weeks later. Adults often die after the spawning season. The fifteen-spined stickleback feed on small invertebrates like amphipods, mysids and copepods. (Froese and Pauly 2012 and Kullander et al 2012)

Description of major threats

No major threats have been identified.

Assessment justification

This species is widespread and occurring in most coastal parts of the HELCOM area. The only available time series, Isaac-Kidd trawling in a Swedish nuclear power plant cooling water intake in the Kattegat shows no population trend during the assessment period. The main habitat of the species, *Zostera* meadows and *Fucus* spp. stands have declined or deteriorated within the HELCOM area and it could be assumed that the population of the species has also declined together with the habitat changes. However, these changes have in most areas happened several decades ago and currently the situation has stabilized, if not improved. As the fifteen-spined stickleback is a short-lived species for which the time-period of population decline evaluation is only 10 years, the largest habitat changes, as well as the possible decline in population, have no effect on the assessment under criterion A. Therefore this species fulfils no criteria for being threatened according to the IUCN criteria and is hence considered Least Concern in the HELCOM area.

Recommendations for actions to conserve the species

No protection actions are currently needed in HELCOM area but more information should be collected on the status of this species.

Common names

DE: Seestichling; DK: Tangsnarre; ES: Raudkiisk; FI: Vaskikala; GB: Fifteen-spined stickleback ; LA: Jūras stagars; LI: Penkiolikaspyglė dyglė; PL: Pocierniec; RU: Dlinnorilaja koljushka; SE: Tång spigg

References

Andrušaitis G. (ed.) (2003). Red Data Book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517pp. [in Swedish]

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): 11–76.

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.

English name: **Corkwing wrasse**	Scientific name: ***Symphodus melops***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Labridae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Labrus melops, Crenilabrus melops*	Generation length: 5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The corkwing wrasse is commonly found in the Kattegat and down to the Sound. It is rare in the southwestern Baltic Sea. Outside the HELCOM area the species is distributed along the Atlantic coast from central Norway south to Morocco and the Azores and along the northern Mediterranean coast.

Corkwing wrasse. Photos by Vivica von Vietinghoff, Deutsches Meeresmuseum (left) and Martin Karlsson, Swedish University of Agricultural Sciences (right).

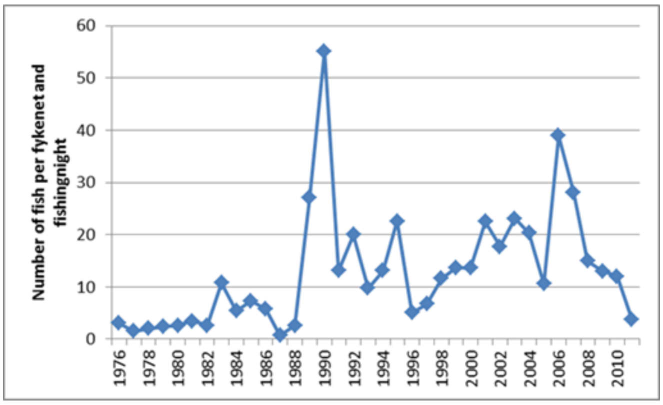
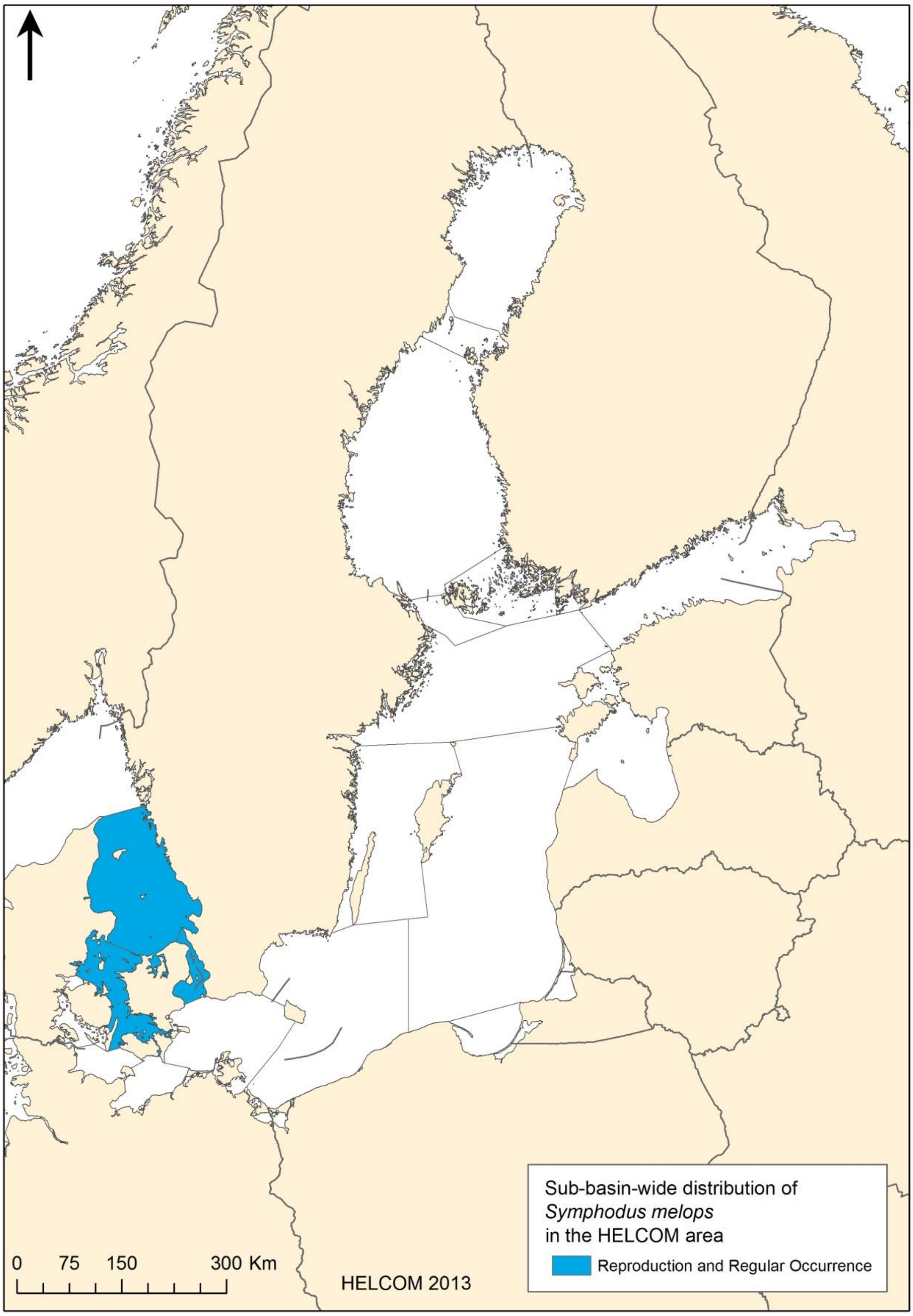


Fig 1. Catch per unit effort of corkwing wrasse in Swedish coastal fyke net monitoring in the Kattegat.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The corkwing wrasse is a marine territorial coastal fish inhabiting rocky habitats and eelgrass beds from shallow water down to 30 meters depth. This species lives in small groups of individuals of different sizes and seems to stay within a small local area throughout their lifecycle (Froese & Pauly 2012, Kullander et al 2012). Their diet consists of various small animals, including mussels, snails, crustaceans, bryozoans and various worms (Quignard and Pras 1986). Sex change from female to male has been observed but this species is essentially dioecious. The corkwing wrasse is commercially used because of its ability to remove parasites from other fish and is used in salmon aquaculture to remove the salmon louse (*Lepeophtheirus salmonis*) (Potts 1973).

Description of major threats

No major threats are identified for corkwing wrasse and coastal monitory fishing shows a positive trend.

Assessment justification

Corkwing wrasse reproduces in the Kattegat, the Great Belt and the Sound meaning that both the extent of occurrence (EOO) and the area of occupancy (AOO) are just above the limits for redlisting according to the IUCN criteria. Fykenet monitory fishing in the Kattegat shows no trend over the last three generations (15 years) and a positive trend over the entire investigated period 1976–2011. Hence this species is considered LC, Least Concern.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

D: Goldmaid; DK: Savgylte; FI: Rantahuulikala; GB: Corkwing wrasse; LI: Tamsiadryžė žaliažuvė; LV: Melnacu lūpzivs; PL: Wargacz melops; SE: Skärsnultra

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517pp. [in Swedish]

Potts, G.W. (1973). Cleaning symbiosis among British fish with special reference to Crenilabrus melops (Labridae). Journal of the Marine Biological Association of the United Kingdom 53: 1–10.

Quignard, J.-P., Pras, A. (1986). Labridae. p. 919–942 In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 2. UNESCO, Paris.

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): 11–76.

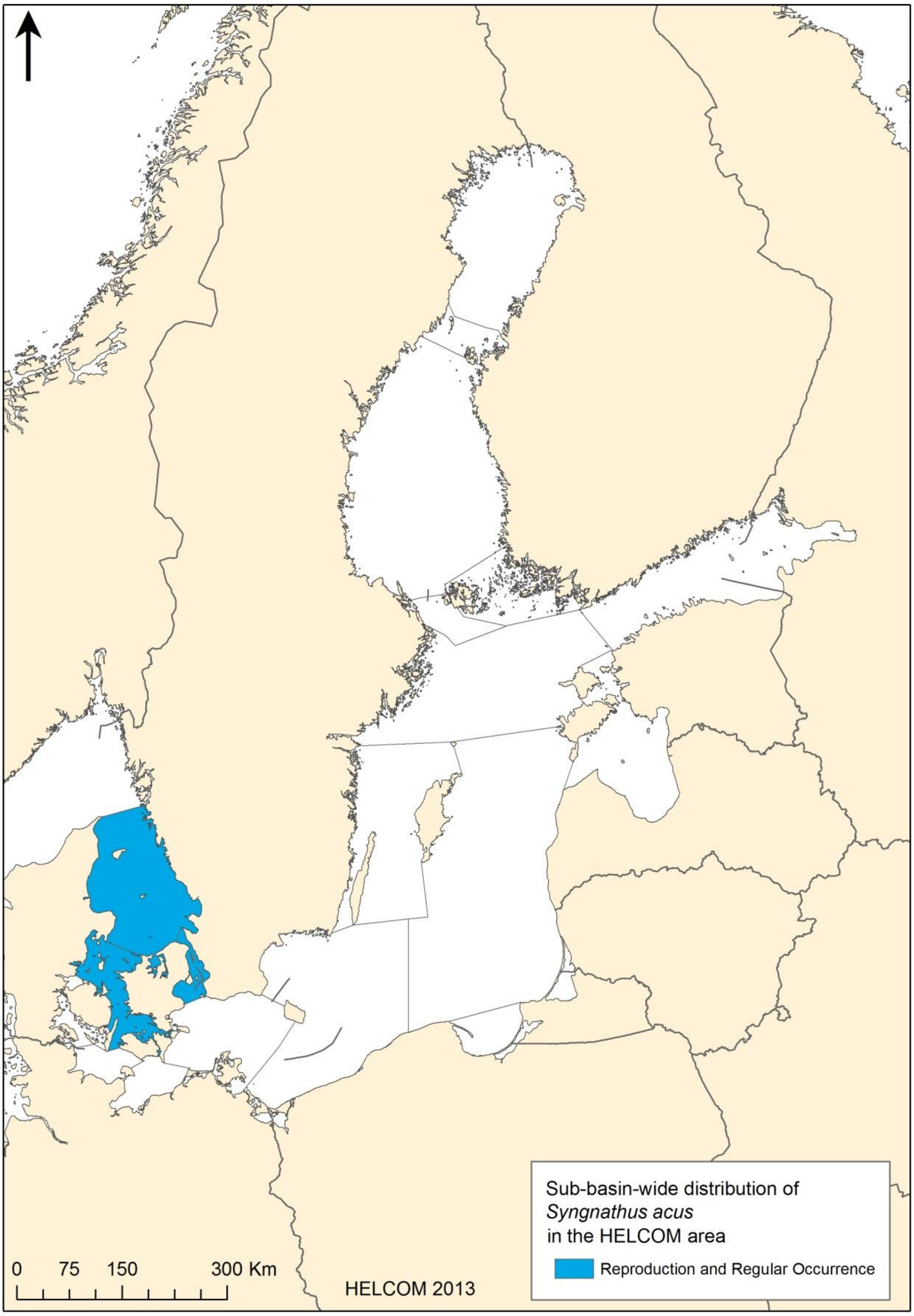
English name: **Greater pipefish**	Scientific name: ***Syngnathus acus***	
Taxonomical group: Class: Actinopterygii Order: Syngnathiformes Family: Syngnathidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 1.8 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–**,** Estonia –/–**,** Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The distribution of the species in the HELCOM area is restricted to the Kattegat and the Sound. Outside the HELCOM area, the greater pipefish occurs from the Black Sea through the Mediterranean Sea and the north-eastern Atlantic to Norway (Kullander et al. 2012). Like most species of the *Syngnathidae* family, the distribution and abundance of *S. acus* is not monitored well with standardized test fishing nets because of its thin/snakelike body form and behaviour.

Distribution map

The map shows the subbasins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The greater pipefish is a mainly marine species that lives along the coast or further offshore down to about 100 meters depth. It prefers vegetated rocky or sandy bottoms, often with algae and eelgrass (*Zostera marina*). It can also be found in brackish water (i.e. estuaries). The diet consists of fish larvae and small invertebrates. Spawning takes place in pairs in dense vegetation in May to August and the eggs are deposited in the male´s brood pouch. Larvae hatch at a length of 2.5 cm and initially live planktonically (Dawson 1986, Froese & Pauly 2012, Kullander et al. 2012).

Description of major threats

At present the species is not considered threatened. However, its population has probably been negatively affected by loss of suitable habitats, e.g. fragmentation of *Zostera* beds .

Assessment justification

There are small catches of the species in Swedish nuclear power plant cooling water intake in the Kattegat showing no trend from 1988 to 2011 but a distinct peak in abundance in late 1990s and an almost statistically significant decrease during the last decade. This is, however, probably a return to more normal values. The extent of occurrence (EOO) is below the threshold for Near Threatened (< 40 000 km^2) according to the B1 criterion however none of the required additional criteria of severe fragmentation, continuing decline or extreme fluctuations in population size or habitat is fulfilled. The estimated area of occupancy is above the threshold for being threatened according to the IUCN criteria. An important habitat of the species, *Zostera* meadows and possibly also other macrophyte rich habitats have declined or deteriorated within the HELCOM area and it could be assumed that the population of the species has also declined together with the habitat changes. However, these changes have in most areas happened several decades ago and currently the situation has stabilized, if not improved. As the greater pipefish is a short-lived species for which the time-period of population decline evaluation is only 10 years, the most drastic habitat changes, as well as the possible population decline, have no effect on the assessment under criterion A. The species is categorized as Least Concern (LC). Not assessed globally.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but more information should be collected on the status of this species.

Common names

D: Große seenadel; DK: Stor tangnål; FI: Isoneula; GB: Greater pipefish; LI: Didžioji jūrų adata; LV: Lielā adatzivs; PL: Iglicznia wielka; RU: Bol'shaja igla-ryba; SE: Större kantnål

References

Dawson, C.E. (1986). Syngnathidae. p. 628–639. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Vol. 2. UNESCO, Paris.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517 pp. [in Swedish]

SPECIES INFORMATION SHEET *Syngnathus typhle*

English name: **Broad-nosed pipefish/Deepsnouted pipefish**	Scientific name: ***Syngnathus typhle***	
Taxonomical group: Class: Actinopterygii Order: Syngnathiformes Family: Syngnathidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 1.8 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**LC,** Germany –/***** (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland *Prohibited to kill, catch or disturb this species under strict protection* / **CR**, Russia –/–, Sweden –/**LC**		

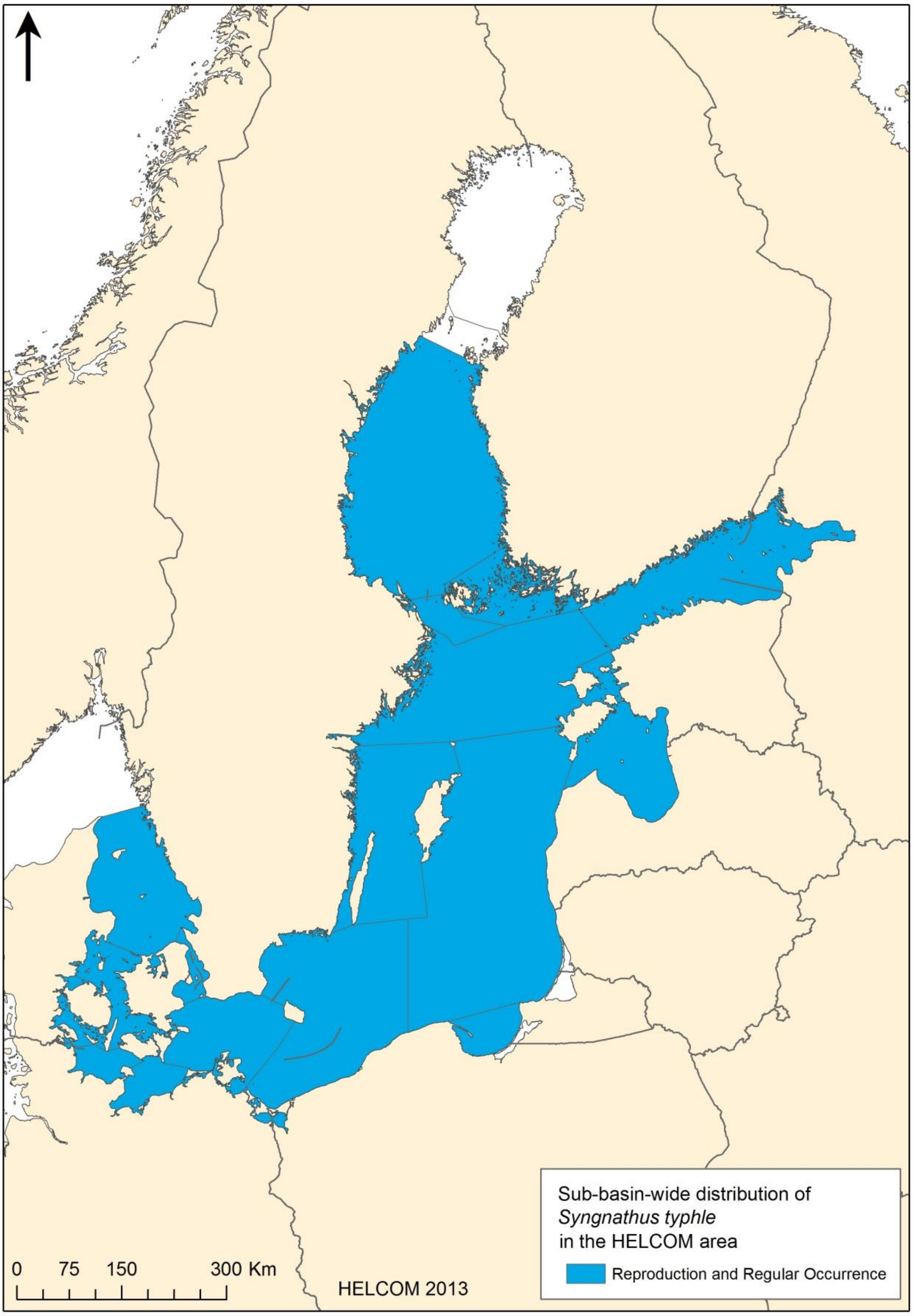
Distribution and status in the Baltic Sea region

The broad-nosed or deepsnouted pipefish is together with the greater pipefish (*Syngnathus acus)* the most widespread species of all syngnathids in the HELCOM area. It occurs mainly in *Zostera* meadows in shallow waters or in soft and sandy bottoms down to 20 m depth (Kullander et al. 2012). In the Puck Bay (Poland) the species occurs in the *Pilayella* blooms where many specimens are observed in loosely floating algae. In the monitoring of cooling water intake at the power plant Ringhals in the Kattegat the abundance of the broad-nosed pipefish is showing weak positive trend over the last decade. A smaller amount is caught at the power plant Forsmark cooling water intake in the Åland Sea and the trend is negative with a 90 % decrease over the last 10 years.

Broad-nosed pipefish. Photos by Anders Berglund, Uppsala University (left) and Vivica von Vietinghoff, Deutsches Meeresmuseum (right).

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The broad-nosed pipefish is mainly a marine species that lives in coastal waters down to around 20 meters depth. It inhabits vegetated sandy or mud bottoms, preferably with eelgrass (*Zostera*). It is also common in the Baltic Sea in brackish water and can also be found in estuaries. The diet of the species consists of fish larvae, small fish and small invertebrates. The spawning takes place in pairs in dense vegetation during April to August and the eggs are deposited in the male's brood pouch. The male spawns with several females and can brood up to a couple of hundred embryos, which he also supplies with nutrition. (Dawson 1986, Froese & Pauly 2012, Kullander et al. 2012)

Description of major threats

The species is not considered threatened at the moment but its population has been negatively affected by the loss of suitable habitats, e.g. fragmentation of *Zostera* beds and removal of algae.

Assessment justification

Assuming that the data from Forsmark are representative for the Åland Sea and the data from Ringhals for the Kattegat Basin and that the population size is proportional to area a drastic decline of 90 % in the Åland Sea and no change in the Kattegat could at most lead to <20% population decline. The main habitats of the broad-nosed pipefish, *Zostera* meadows and possibly also other macrophyte rich habitats, have declined or deteriorated considerably within the HELCOM area and it could be assumed that the population of the species has also declined together with the habitat changes. However, these changes have in most areas happened several decades ago and currently the situation has stabilized, if not improved. As the broad-nosed pipefish is a short-lived species for which the time-period of population decline evaluation is only 10 years, the largest habitat changes, as well as the possible decline in population, have no effect on the assessment under criterion A. The species is widespread and still common in the Baltic Sea, and does not meet any of the other criteria either, and is therefore categorized as Least Concern (LC). Not assessed globally.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but more information should be collected on the status of this species.

Common names

D: Grasnadel; DK: Almindelig tangnål; ES: Merinõel FI: Särmäneula; GB: Broad-nosed pipefish, Deep-snouted pipefish; LI: Paprastoji jūrų adata; LV: Adatzivs; PL: Iglicznia; RU: Dlinnorylaja igla-ryba; SE: Tångsnälla

References

Dawson, C.E., (1986). Syngnathidae. p. 628–639. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. Volume 2. Unesco, Paris.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517pp. [in Swedish]

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): 11–76.

English name: **Longspined bullhead**	Scientific name: ***Taurulus bubalis***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Cottidae	Species authority: Euphrasen, 1786	
Subspecies, Variations, Synonyms: –	Generation length: 2.5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**DD**, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/**RA**, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The longspined bullhead inhabits coastal and shallow offshore habitats in marine and brackish waters. It is very common in the Kattegat and its distribution and abundance decrease towards northeast in the Baltic Sea together with decreasing salinity. The species is only caught in good numbers in Swedish fish monitoring with fyke nets in Vendelsö, in the Kattegat, and catches indicate a decrease from the 1990s but also a recent increase, resulting in no trend over the last 10 years.


Longspined bullhead. Photos by Martin Karlsson, Swedish University of Agricultural Sciences (left), Timo Moritz, Deutches Meeresmuseum (right).

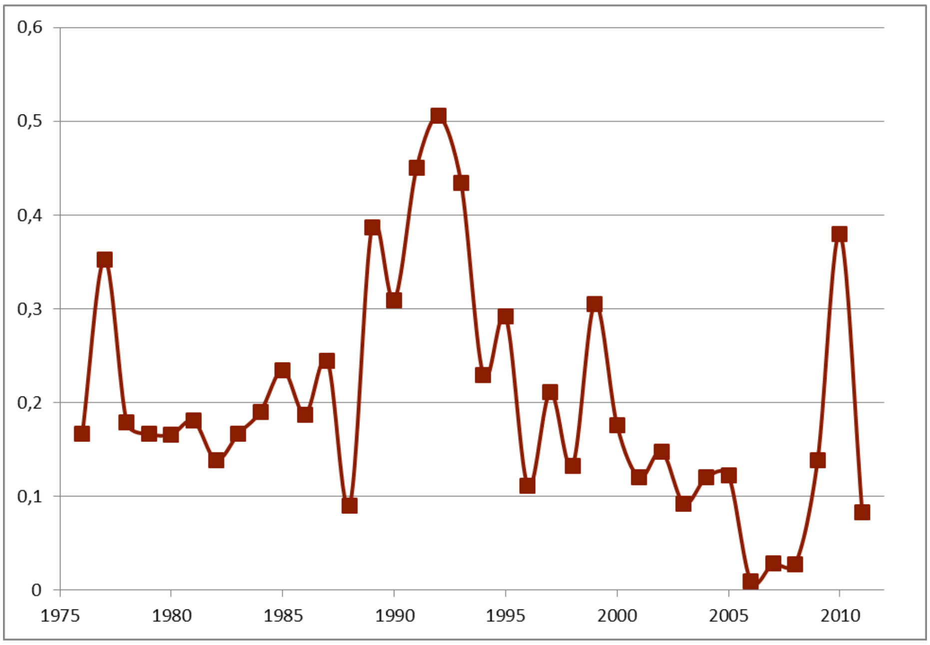
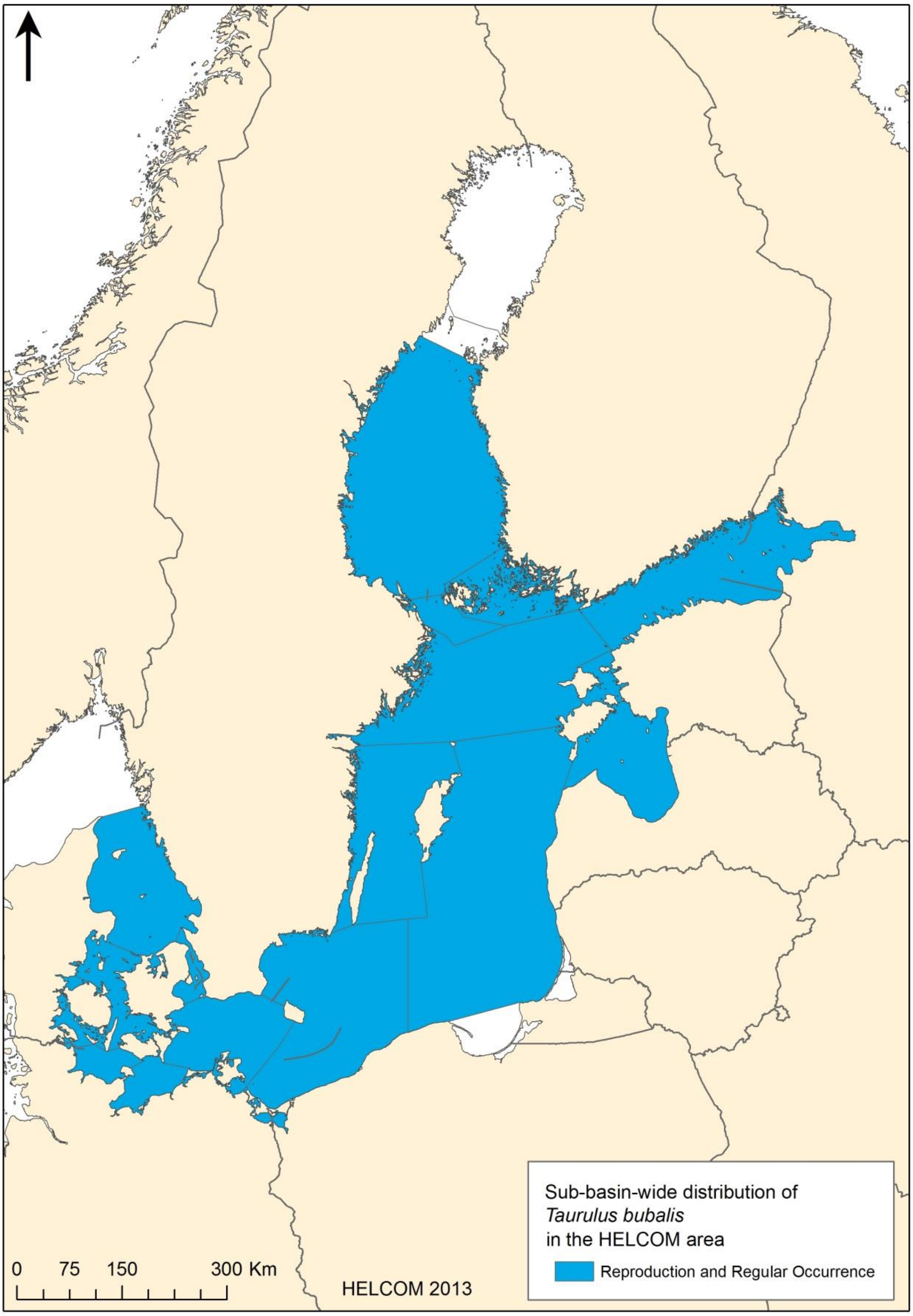


Fig.1 Catch per unit effort of longspined bullhead in fykenet monitoring in Kattegat.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The longspined bullhead is a resident benthic species with homing behavior (Gibson 1999). It inhabits tide pools and inshore waters on rocky bottoms or among algae at 0–30 m depth (Froese & Pauly 2005). It feeds on mysids, amphipods (gammarids), decapods, polychaetes, molluscs, ophiuroids and fish (Fedorov 1986). The longspined bullhead can breathe air when out of water (Martin & Bridges 1999).

Description of major threats

No major threats identified within the HELCOM area.

Assessment justification

The number of mature individuals, as well as the extent of occurence (EOO) and the area of occupancy (AOO) exceed the limits for red listing. There are no signs of significant population change. The estimated values for which the assessment is based on are all within the range of the category of Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

D – Seebull;ES – Meripühvel; GB – Longspined bullhead; DK - Langtornet ulk; FIN – Piikkisimppu; LV - Jūras dzeloņgalve; LT - Buivolas; PL - Kur głowacz; RUS Evropeiskij bychok-buivol; S – Oxsimpa

References

Andrušaitis G. (ed.) (2003). Red Data Book of Latvia. Vol.5. Fishes, Amphibians, Reptiles. Riga, 144 pp.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fedorov, V.V. (1986). Cottidae. p. 1243–1260. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean, Vol. 3. UNESCO, Paris.

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

Gibson, R.N. (1999). Movement and homing in intertidal fishes. p. 97–125. In: Horn, M.H., Martin, K.L.M., Chotkowski, M.A. (eds.) Intertidal fishes. Life in two worlds. Academic Press. London. 399 pp.

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.

Martin, K.L.M., Bridges, C.R., (1999). Respiration in water and air. p. 54–78. In: Horn, M.H., Martin, K.L.M., Chotkowski, M.A. (eds.) Intertidal fishes. Life in two worlds. Academic Press. London. 399 p.

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.

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): 11–76.

English name: **Greater weever**	Scientific name: ***Trachinus draco***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Trachinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length:	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/* (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The greater weever is a marine species commonly occurring and reproducing in Kattegat, the Belt Seas and the Sound. It is occasionally found also in southern Baltic Sea but it is not reproducing there. Both monitoring data and commercial landings from the last decades show a positive trend in the HELCOM area.

Greater weaver. Photo: Timo Moritz, Deutches Meeresmuseum.

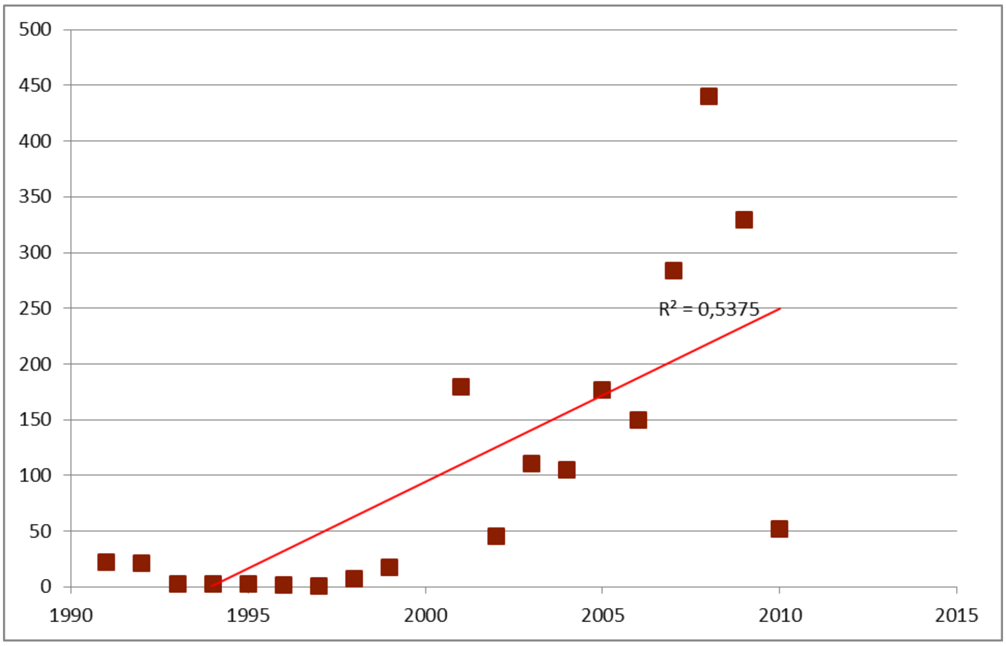


Fig.1 Catch per unit effort (number per trawling hour) of greater weever in international bottom trawl surveys in Kattegat (IBTS) during third quarter of the year (Linear fit and correlation coefficient from linear regression shown).

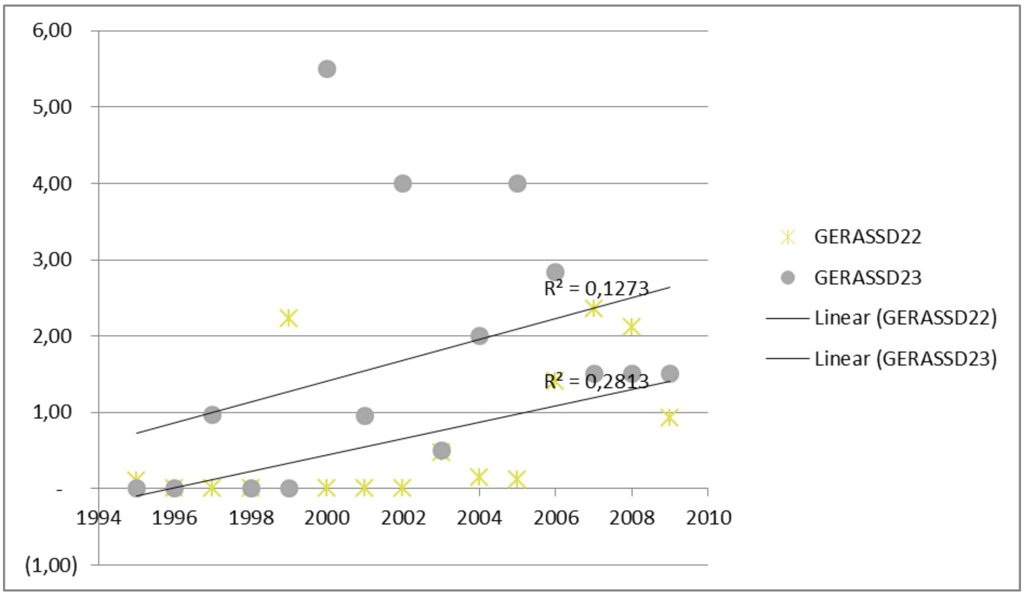
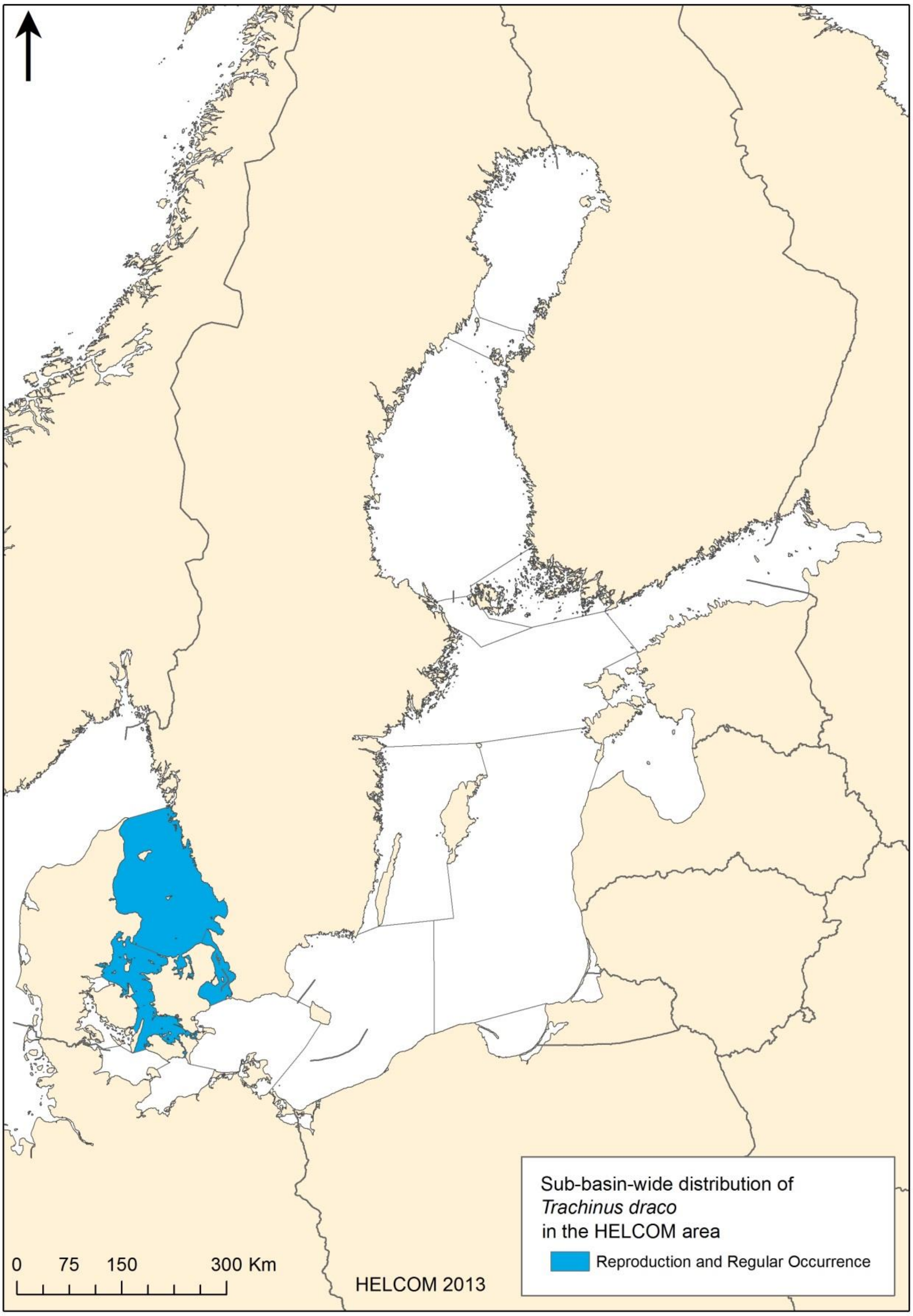


Fig.2 Catch per unit effort (number per trawling hour) in German Acoustic Survey in the Belt Sea (SD 22) and Öresund (SD 23). Linear fit and correlation coefficients from linear regression are shown.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The greater weever spawns during summer in shallow coastal waters with soft bottoms with sand or gravel. During winter it migrates to deeper areas down to 150 m. It often lays buried with just the eyes and tip of first dorsal fin exposed. The first dorsal fin rays, as well as the spine on the preoperculum contain venomous spines protecting the species from predators. During night the greater weever leaves the burrow to feed on small invertebrates and fishes. Adults normally reach a total length of 25 cm. (Froese & Pauly 2012, Kullander et al. 2012)

Description of major threats

No major threats currently identified.

Assessment justification

Greater weever is caught in the international bottom trawl survey (IBTS) in Kattegat both in the first and third quarter of the year. Swedish IBTS in Kattegat show no long term trend in sampling in the first quarter but data from the third quarter sampling between 1991–2010 shows a strong increase after 2000. The same pattern is seen in a coastal bottom trawl monitoring in Kattegat. The German Acoustic survey only dates back to 1995 but shows the same pattern of increase in Kattegat as well as in Öresund and the Belt Seas in the 2000s. Swedish commercial landings from Kattegat 1999–2011 show a drastic increase from less than 10 tonnes yearly before 2006 to almost 800 tonnes in 2011. In all, this data show that the greater weever is currently increasing in the HELCOM area and since neither population size nor geographic distribution is very restricted this species currently does not fulfil any criteria for being threatened in the HELCOM area according to the IUCN system and it is hence listed as Least Concern.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

DE: Großes Petermännchen; DK: Almindelig fjæsing; ES:-; FI: Louhikala; GB: Greater weever ; LA: Lielā drakonzivs; LI: -; PL: Ostrosz; RU: -; SE: Fjärsing

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).
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.
Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517 pp. [in Swedish]
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): 11–76.

English name: **Fourhorn sculpin**	Scientific name: ***Triglopsis quadricornis***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Cottidae	Species authority: Euphrasen, 1786	
Subspecies, Variations, Synonyms: *Myoxocephalus quadricornis* (Linnaeus, 1758)	Generation length: 7.2 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**LC** **Least Concern**
Global / European IUCN Red List Category LC/LC	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**DD**, Finland –/**LC**, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The fourhorn sculpin is distributed in the Baltic coast of Sweden, Finland, Russia and southwestwardly to eastern Poland. Landlocked populations are also known in Sweden, central Finland and Karelia. The fourhorn sculpin is often caught in the Russian part of the Gulf of Finland.

Fourhorn sculpin is caught in high numbers in Swedish monitory net surveys in three areas, representing the Western Gotland basin, Northern Baltic Proper and Åland Sea. No negative trend is seen over the assessment period 1990–2010 in any of the areas. There is possible indication of decrease in the southern parts of the Baltic Sea due to deterioration of habitat quality.

Fourhorn sculpin. Photo: by Natalia Chernova, Zoological Institute, St. Petersburg.

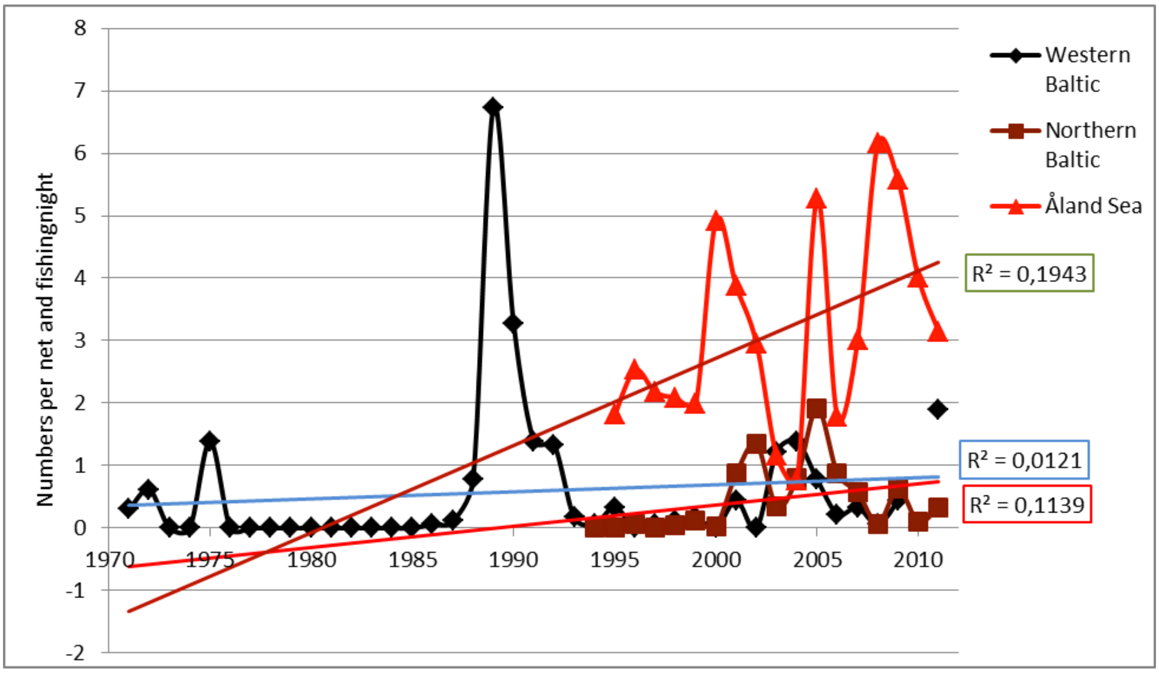
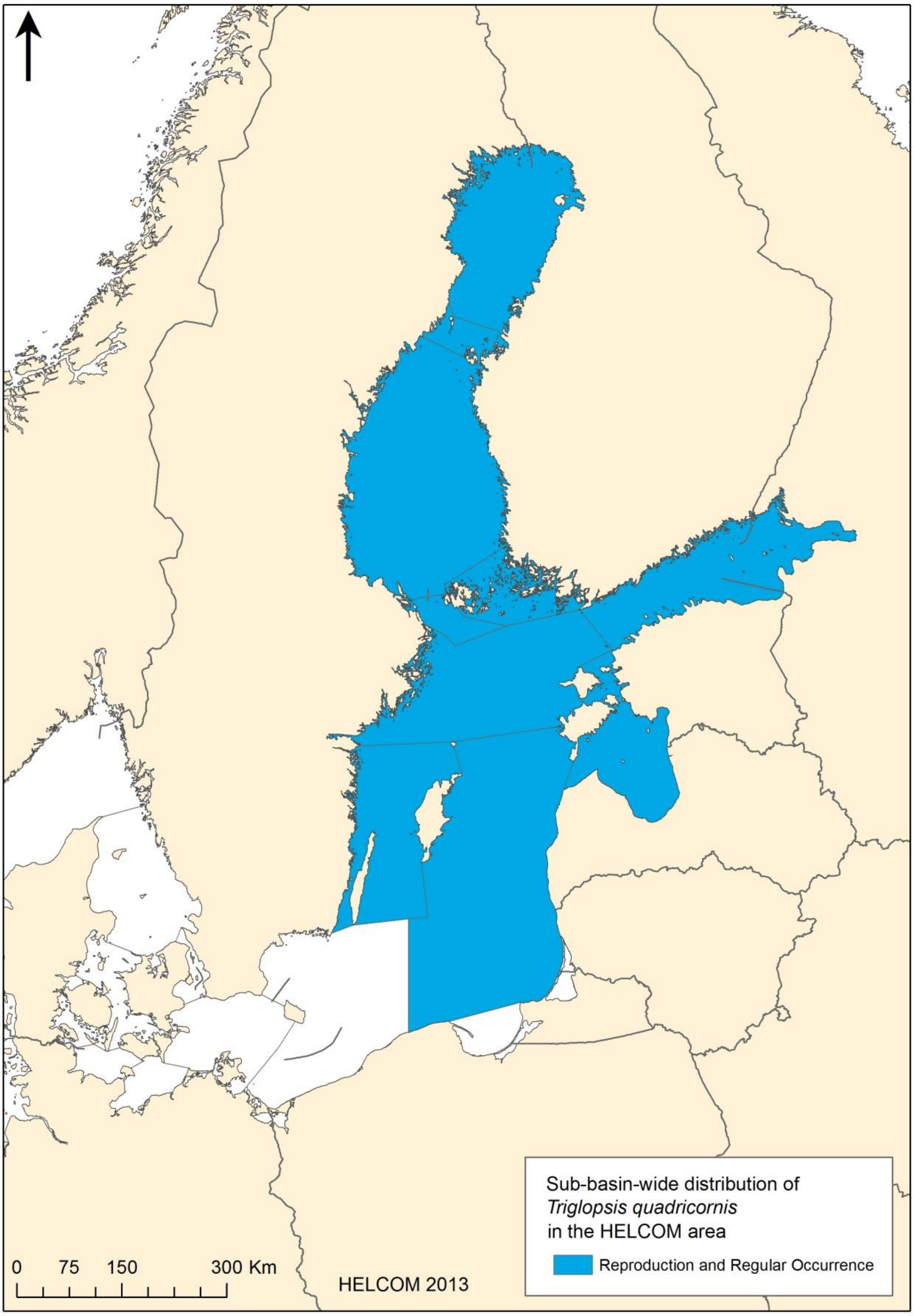


Fig. 1. Catch per unit effort (numbers per net and night) in three different Swedish gillnet fish monitoring series from the western Gotland basin, Northern Baltic Proper and Åland Sea. The lines represent linear regression and R^2 the correlation coefficient of these.

Distribution map

The map shows the sub-basins in the HELCOM area where the species is known to occur regularly and to reproduce (HELCOM 2012).



Habitat and ecology

The fourhorn sculpin occurs in cold brackish and moderately saline coastal waters or as landlocked subpopulations in lakes. The species is benthic and movements are limited to short onshore-offshore seasonal migrations and mass movements of fry into shallow water in autumn. It is diurnal from November to April but is largely nocturnal the rest of the year. It feeds on small crustaceans, fish and molluscs. Spawning takes place in shallow waters where the male digs a groove in the gravel where pairing and egg laying occur. In spring they move to deeper water as the water temperatures rise, and stay there during summer. (Fedorov 1986, Westin 1971, Kottelat & Freyhof 2007)

Description of major threats

No major threats are identified at present. In the future, eutrophication and global warming are most likely the most predominating threats. Continuing eutrophication will harm the species, as it needs clean water and sediments especially for spawning, egg deposition, and larval habitats (Martin & Bridges 1999). Climate change or more specifically rising water temperatures will also have a negative effect on the species as it needs cold bottom water to thrive.

Assessment justification

The number of mature individuals exceeds the limit for red listing. The extent of occurrences (EOO) and the area of occurrence (AOO) exceed the limits for red listing. Available data from monitory fishing show no signs of decline during the assessment period. However, there is a suspicion of population reduction that relates to decreased quality of the habitat in the southern part of the distribution area. Overall the population size decrease in the HELCOM area is believed to be less than 15%. This means that the species does not qualify for being red-listed according to the IUCN system and is hence classified as Least Concern (LC).

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D - Vierhörniger Seeskorpion; ES – Merihärg; GB – Fourhorn sculpin; DK - Hornulk; FIN – Härkäsimppu; LV - Četrragu buļzivs; LT - Ragys; PL - Kur rogacz; RU - Chetyrekhrogij bychok; S – Hornsimpa

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fedorov, V.V. (1986). Cottidae. p. 1243–1260. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (eds.) Fishes of the North-eastern Atlantic and the Mediterranean, Vol. 3. UNESCO, Paris.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

Gibson, R.N. (1999). Movement and homing in intertidal fishes. p. 97–125. In: Horn, M.H., Martin, K.L.M., Chotkowski, M.A. (eds.) Intertidal fishes. Life in two worlds. Academic Press. London. 399 pp.

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.
Kottelat, M., Freyhof, J. (2007). Handbook of European freshwater fishes. Publications Kottelat, Cornol, Switzerland. 646 pp.
Martin, K.L.M., Bridges, C.R. (1999). Respiration in water and air. p. 54–78. In: Horn, M.H., Martin, K.L.M., Chotkowski, M.A. (eds.) Intertidal fishes. Life in two worlds. Academic Press. London. 399 pp.
Westin, L. (1971). Locomotory activity patterns of fourhorn sculpin, *Myoxocephalus quadricornis* (L.). (Pisces). Report / Institute *of* Fresh-water Research*,* Drottningholm *51:184–196.*

SPECIES INFORMATION SHEET *Alopias vulpinus*

English name: **Thresher shark**	Scientific name: ***Alopias vulpinus***	
Taxonomical group: Class: Elasmobranchii Order: Lamniformes Family: Alopiidae	Species authority: Bonnaterre, 1788	
Subspecies, Variations, Synonyms: –	Generation length: 8–14 years	
Past and current threats (Habitats Directive article 17 codes): Fishery, Bycatch (F02)	Future threats (Habitats Directive article 17 codes): Fishery, Bycatch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: VU (NT in the North East Atlantic)/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**NA**		

Distribution and status in the Baltic Sea region

This oceanic and coastal shark is virtually circumglobal in tropical to cold-temperate seas. In the North East Atlantic it ranges from Norway, south (including the Mediterranean and Black Seas) down the coast of western Africa. It is however only a rare visitor in the HELCOM area. All members of genus *Alopias*, the thresher sharks, are listed as Vulnerable globally because of their declining populations. These downward trends are the result of a combination of slow life history characteristics, and high levels of largely unmanaged and unreported mortality in target and bycatch fisheries. In the North East Atlantic data is limited but a population decline suspected and the species is listed as Near Threatened in this area.

Habitat and ecology

While found both in coastal and oceanic waters, it is most abundant in offshore waters. It ranges between surface waters and more than 300 m depth. Thresher shark is viviparous, with a gestation period of nine months. Young individuals generally remain close to shore after parturition and during their first few years.

Maximum recorded size varies with sex and geographic location and ranges from 4 to almost 6 m. Size at maturity is between 260–465 cm total length and estimated age at maturity ranges from 3–9 years. The species reaches an age of at least 24 years maybe up to 50 years.

Diet varies but is often dominated by small, pelagic fish like, anchovies, herring and mackaerel.

Description of major threats

The thresher shark is taken as primarily as bycatch of longline fisheries for tuna and swordfish in the Northeast Atlantic, and also in driftnets and gillnets. Within the HELCOM area, however, no major threats are identified.

Assessment justification

No regular occurrence of mature individuals within the HELCOM area, hence categorized Not Applicable (NA) for the assessment.

Recommendations for actions to conserve the species

This species is a rare visitor to the HELCOM area but since it is threatened in adjacent areas fishing of the species should be prohibited.

Common names

D -Fuchshai; ES –; GB –Thresher shark; DK -Rævehaj; FIN –Kettuhai ; LV -Parastā lapshaizivs ; LT -Paprastoji jūrų lapė; PL -Kosogon; RU -; S – Rävhaj

References

Goldman, K.J., Baum, J., Cailliet, G.M., Cortés, E., Kohin, S., Macías, D., Megalofonou, P., Perez, M., Soldo, A., Trejo, T. (2009). *Alopias vulpinus*. In: IUCN 2012. IUCN Red List of Threatened Species Available at: www.iucnredlist.org (viewed 27 January 2013)

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.

English name: **Allis shad**	Scientific name: ***Alosa alosa***	
Taxonomical group: Class: Actinopterygii Order: Clupeiformes Family: Clupeidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 9.3 years	
Past and current threats (Habitats Directive article 17 codes): Migration barriers (J03.02.01), Contaminant pollution (H.01), Bycatch (F02), Eutrophication (H01.05)	Future threats (Habitats Directive article 17 codes): Migration barriers (J03.02.01), Contaminant pollution (H.01), Bycatch (F02) Eutrophication (H01.05)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: LC/LC	Habitats Directive: Listed as *Alosa* spp. in Annex II and V	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark –/**NA**, Estonia –/–, Finland –/–, Germany *Protected by national and European law* **/ R** (Extremely rare, Baltic Sea)**,** Latvia –/–, Lithuania –/–, Poland *Prohibited to kill, capture or disturb this species under strict protection* / –, Russia –/–, Sweden: *Prohibited to fish for and land this species all year round,* **NA**.		

Distribution and status in the Baltic Sea region

The historical distribution range of this species includes an area from the Kattegat to the western and eastern Gotland Sea including adjacent rivers and streams. It has been rare since the 1800´s in most parts of Baltic Sea, occurring occasionally as a vagrant (Fries et al. 1895, Thiel et al. 2007). In contemporary times it has only been recorded occasionally in the HELCOM area (HELCOM 2012).

Alllis shad. Photo by Björn Fagerholm, Swedish University of Agricultural Sciences.

Habitat and ecology

The Allis shad is a species that spends most of its life in the open water of coastal oceans, and anadromously migrates into large rivers for spawning. When maturing, adults stop feeding, enter estuaries, and then from April to June they migrate as far upstream as possible, with the males first arriving to find spawning sites, and the females following 1–2 weeks later. They spawn repeatedly during several nights, from May to June, above clean gravel beds, and mostly die immediately after. A single female can spawn 50 000 to 600 000 eggs that float towards the bottom, mostly remaining close to the spawning site, but some drifting downstream for up to 30 km. After hatching, larvae and juveniles live in slow-flowing stretches along deeper parts of the river; after 3–4 months, they have reached a total length of 8–12 cm, and start their downstream migration towards the sea, where they remain and grow for 3–11 years until maturation (Fricke 2004).

Description of major threats

Main threat for the species has been and still is the blocking of migration routes with dam constructions for hydropower, pollution, bycatch and destroyed spawning habitats. Spawning habitats can be negatively affected by eutrophication and technical constructions like deepening rivers for shipping lanes. Allis shad is threatened by bycatch in pelagic fisheries especially during their spawning migrations and in the estuaries.

Assessment justification

This species is very rare in the HELCOM area and has probably been rare at least since the beginning of the period with data 1855 (Thiel et al. 2007). The species is not known to reproduce in the HELCOM area, and the Baltic Sea population does not exceed 2% of the European population. For these reasons the species is categorized Not Applicable in the HELCOM assessment.

Recommendations for actions to conserve the species

No protection actions are currently needed in HELCOM area.

Common names

D – Maifisch, Alse; GB – Allis shad; EST -Aloosa ; DK - Majsild; FIN – Pilkkusilli; LV - Aloza; LT - Alsé; PL - Aloza ; RUS - Alosa; S – Majfisk

References

Fricke, R. (2004). Der Maifisch (*Alosa alosa*). Offenbach am Main (Verband Deutscher Sportfischer). 39 pp.

Fries, B. Smitt, F. S. Von Wright, W. (1895). Skandinaviens fiskar. Norstedt, Stockholm.

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.

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): 11–76.

Thiel, R., Winkler, H.M., Neumann, R. (2007). Schlussbericht über das F+E-Vorhaben Erfassung von FFH-Anhang II-Fischarten in der deutschen AWZ von Nord- und Ostsee (ANFIOS) FKZ: 803 85 220 (unpublished scientific report to BfN). Available at: http://www.bfn.de/habitatmare/de/downloads/berichte/Erfassung_FFH_Fischarten_Nordsee-Ostsee_2007.pdf.

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/

English name: **Blue bream, Zope**	Scientific name: ***Ballerus ballerus***	
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cyprinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Abramis ballerus*	Generation length: 6.2 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: LC/LC	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/**LC**, Germany –/* (Not threatened, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The blue bream is a freshwater fish which sometimes migrate into estuaries in the Baltic Sea. The blue bream occurs in abundance especially in the large estuaries of the Bornholm basin. It may occur also in other major estuaries along the southern coast of the Baltic, as well as southern Finland and Sweden and the Russian part of the Gulf of Finland.

Blue bream. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Habitat and ecology

The blue bream prefers larger, slow flowing rivers and adjacent seasonally flooded pools. It matures sexually at about 15 cm standard length and at age of 3–4 years. The short reproductive period takes place in spring. Each female lays 5 000–20 000 eggs on submerged vegetation in areas with gravel. The species undertakes migrations and can therefore also be found in estuaries. It feeds mainly on zooplankton (Kottelat & Freyhof 2007, Lelek 1987). The common standard length of the blue bream is 20–30 cm, maximum standard length 50 cm, and maximum body weight 750 g.

Description of major threats

No major threats known.

Assessment justification

The species was excluded from the assessment as it is neither likely to be reproducing within the assessment area, nor is a significant part of the European population regularly occurring in the assessment area.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but information on the size of the populations should be collected.

Common names

D - Zope; GB - Blue bream; EST - Abakala; DK - Brasenflire; FIN - Sulkava; LV - Spāre; LT - Sparis; PL - Rozpiór; RUS - Sinetz; S - Faren

References

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.

Kottelat, M. & J. Freyhof (2007). Handbook of European freshwater fishes. Publications Kottelat, Cornol / Switzerland. 646 pp.

Lelek, A. (1987). The freshwater fishes of Europe. Vol. 9. Threatened fishes of Europe. Aula-Verlag, Wiesbaden / Germany. 343 pp.

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): 11–76.

English name: **Barbel**	Scientific name: ***Barbus barbus***	
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cyprinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: Not known	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: LC/LC	Habitats Directive: Annex V	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany *Protected by national and European law (Annex V Habitat Directive)* / **R** (Extremely rare, Baltic Sea), Latvia –/–, Lithuania –/–, Poland *Protection measures only in the freshwater* / –, Russia –/–, Sweden –/–		

Distribution and status in the Baltic Sea region

The barbel is a freshwater species which occurs rarely in brackish water. It is occurring in some Pomeranian rivers and lakes in contact with the Baltic Sea, but rarely((found in estuaries and coastal area.

Barbel. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Habitat and ecology

The barbel occurs in medium to large rivers, and occasionally in lakes. Adults often shoal and overwinter in large aggregations in slow-flowing river habitats**.** It reaches maturity at an age of 3–6 years, males one year earlier and live up to 15 years. Adults migrate to spawning areas during summer where males exhibit courtship behaviour and single females spawn with several males repeatedly during the season. Eggs are deposited in excavations in the gravel and hatched larvae drift to shallow shoreline habitat. Juveniles leave the shores for faster flowing water as they grow. The barbel feeds on benthic invertebrates, small fish and sometimes algae (Freyhof 2011).

Description of major threats

The barbel declined sharply during the 20th century due to building of water reservoirs and pollution but has since then stabilised and is considered LC on a global level. It is locally threatened by pollution and river regulation in some drainage areas of the southern Baltic Sea.

Assessment justification

There is no evidence for reproduction within the Baltic Sea and there is only irregular occurrence in estuaries. Therefore this species does not fulfil the criteria for being assessed according to the IUCN guidelines and is hence considered Not applicable (NA) for assessment

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM marine area.

Common names

D -Barbe; ES –Pardkala; GB -Barbel ; DK -Flodbarbe; FIN -Jokibarbi; LV -Barbe ; LT -Ūsorius; PL -Brzana; RU -Barbus; S -Flodbarb

References

Freyhof, J. (2011). *Barbus barbus*. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 3 March 2013)

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.

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): 11–76.

English name: **Basking shark**	Scientific name: ***Cetorhinus maximus***	
Taxonomical group: Class: Elasmobranchii Order: Lamniformes Family: Cetorhinidae	Species authority: Gunnerus, 1765	
Subspecies, Variations, Synonyms: –	Generation length: Not known	
Past and current threats (Habitats Directive article 17 codes): Fishery (F02)	Future threats (Habitats Directive article 17 codes): Bycatch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: VU (EN in North East Atlantic)/NE (in European assessment)	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark *illegal to catch since 2006. (EF) 51/2006 /* –, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *prohibited to fish for and land this species all year round* / **CR**		

Distribution and status in the Baltic Sea region

The basking shark (*Cetorhinus maximus*) is the second largest fish species in the world. It is migratory and widely distributed in the Atlantic and Pacific Oceans, but only regularly seen in a few favoured coastal locations and probably never abundant. In the HELCOM area it is only a very rare visitor from the North Sea. The basking shark has been exploited for several centuries to supply liver oil for lighting and industrial use, skin for leather and flesh for food or fishmeal. It has been declining worldwide and is assessed as Endangered in the North east Atlantic. Basking shark is on the CITES list annex 2 meaning that trade is strictly regulated to protect the species.

Habitat and ecology

The basking shark is a very large, filter-feeding cold-water pelagic species that is often associated with surface aggregations of zooplankton where they feed on small fish, fish eggs and zooplankton by swimming open-mouthed with gill rakers erect and extended across the gaps between the gill arches to form a sieve. Ovoviviparous species. Males become sexually mature at a length of 5–7 m, age unknown, but possibly 12–16 years. Females are mature at 8.1–9.8 m and perhaps 16–20 years. Maximum lifespan of 50 years has been reported.

Description of major threats

The basking shark has been exploited for several centuries and although targeted fishing is limited today bycatch is still a threat to the species.

Assessment justification

There has never been a regular occurrence of mature individuals in the HELCOM area, and hence the species is considered Not Applicable (NA) for the assessment.

Recommendations for actions to conserve the species

This species is a rare visitor to the HELCOM area but since it is threatened in adjacent areas fishing for this species should be prohibited.

Common names

D -Riesenhai; ES –; GB – Basking shark; DK -Brugde; FIN – Jättiläishai; LV - Milzu haizivs; LT -Milžinryklis; PL -Długoszpar; RU -Gigantskaja akula; S – Brugd

References

Compagno, L., Dando, M., Fowler, S. (2005). A field guide to the Sharks of the world. Collins, London. 368 pp.

Curry-Lindahl, K. (1985). Våra fiskar. Havs- och sötvattensfiskar i Norden och övriga Europa. P. A. Norstedt & Söners Förlag, Stockholm. 528 pp.

Fowler, S.L. (2005). *Cetorhinus maximus*. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 26 January 2013)

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.

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

English name: **Rabbit-fish**	Scientific name: ***Chimaera monstrosa***	
Taxonomical group: Class: Holocephali Order: Chimaeriformes Family: Chimaeridae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: Not known	
Past and current threats (Habitats Directive article 17 codes): By-catch (F02)	Future threats (Habitats Directive article 17 codes): By-catch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: NT/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**EN**		

Distribution and status in the Baltic Sea region

This species is widespread throughout the Northeast Atlantic and it is recorded from the deeper areas of Skagerrak and Kattegat. In the HELCOM area the rabbit-fish is however only a rare visitor. *The rabbit-fish* is taken in deepwater trawl fisheries in the Northeast Atlantic and is either landed as byproduct or is a component of discarded bycatch. Survival rates of discards are likely low given the depths of capture and the soft body structure of this condrichtyan fish. The suspected high rate of mortality in discards, its unproductive life history characteristics, and the increasing trend of deepsea water fishing in North East Atlantic has led to it being globally assessed as Near Threatened. In Sweden the species was listed as Endangered due to a very restricted extent of occurrence coupled with a population decrease.

SPECIES INFORMATION SHEET *Chimaera monstrosa*

Rabbit-fish. Photo by David Andersson, Swedish University of Agricultural Sciences.

Habitat and ecology

The rabbit-fish prefer upper continental slope habitats at depths of 300 to 500 m with a reported maximum depth of 1 663 m. It reaches maturity at 11–13 years and has a maximum lifespan up to 30 years. It feeds mainly on bottom-dwelling invertebrates.

Description of major threats

There is a continuing trend of increasing deepwater fishing activities in the North Atlantic, while regulation is often lagging. Deepwater chondrichthyans, like the rabbit-fish, are potentially at risk from these activities since its slow population turnover rate makes its sensitive to exploitation, and it has low survival in bycatch.

Assessment justification

No regular occurrence of mature individuals in the HELCOM area, hence categorized as Not Applicable (NA) for assessment.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but findings of this species should be recorded.

Common names

D -Seekatze; ES –; GB – ; DK -; FIN –Sillikuningas ; LV -Eiropas himēra ; LT -Europinė chimera; PL -Chimera; RU -Evropeiskaja chimera; S – Havmus

References

Dagit, D.D., Hareide, N., Clò, S. (2007). *Chimaera monstrosa*. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 27 January 2013)

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.

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

SPECIES INFORMATION SHEET *Coryphaenoides rupestris*

English name: **Roundnose grenadier/Blunt-nose rattail**	Scientific name: ***Coryphaenoides rupestris***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Macrouridae	Species authority: Gunnerus, 1765	
Subspecies, Variations, Synonyms: –	Generation length: Not known	
Past and current threats (Habitats Directive article 17 codes): Fishing, By-catch (F02)	Future threats (Habitats Directive article 17 codes): Fishing, By-catch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**EN**		

Distribution and status in the Baltic Sea region

The roundnose grenadier is a marine deepwater species that only occasionally occurs in the Kattegat and the Sound. It is commercially exploited in the North Sea and the scientific advice by the International Council for Exploration of the Seas (ICES) is that fishery should not be allowed to expand until it is proven sustainable.

Habitat and ecology

The roundnose grenadier forms large schools on 400–900 m depth. It feeds on a variety of fish and invertebrates, but primarily on pelagic crustaceans such as shrimps, amphipods and cumaceans. It reaches maturity at a total length of 50 cm and can reach a maximum length over one meter. It is reported to have a maximum age over 50 years.

Description of major threats

The major threats are fishery both as a targeted species and as by-catch.

Assessment justification

This is a deep-water species with the closest reproduction areas in the Skagerrak and it is also not spending a significant part of its lifetime within the HELCOM area. Therefore it is categorized as Not Applicable (NA) for the assessment.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D -Rundnasen-grenadier; ES –; GB –Roundnose grenadier ; DK -Skolæst; FIN –Lestikala; LV -Apaļdeguna garaste ; LT -; PL -Buławik czarny; RU -Tuporiliy macrurus; S –Skoläst

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2012).

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 (2012). ICES ADVICE 2012, Book 9.

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

SPECIES INFORMATION SHEET *Cottus poecilopus*

English name: **Alpine bullhead**	Scientific name: ***Cottus poecilopus***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Cottidae	Species authority: Heckel, 1837	
Subspecies, Variations, Synonyms: –	Generation length: 3.5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): Eutrophication (K02.03)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: LC	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/**LC**, Estonia –/–, Finland –/**LC**, Germany –/**0** (Extinct, freshwaters), Latvia –/–, Lithuania –/–, Poland –/**N**T, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The Alpine bullhead is distributed in northern Sweden and Finland between 64 and 68°N and in central lake areas and a few streams in southern part of Sweden and Finland. It is also distributed in northern Poland, Lake Ladoga and southern Lake Onega basins, a few lakes in northern Germany (extirpated), Lake Hañcza in Poland and Skjernaa drainage in Denmark. It is a freshwater species and rarely recorded in the Bothnian Sea and Bothnian Bay.

Cottus poecilopus, Alpine bullhead (photo: Wikimedia commons)

Habitat and ecology

This species inhabits northern and mountain and foothill streams, and oligotrophic lakes. It thrives in fast-flowing waters of coastal streams, rivers, inland lakes, usually on stony bottoms (Fedorov 1986).

The Alpine bullhead feeds on algae (diatoms, desmids, blue-green algae), polychaetes, crustaceans, aquatic insect larvae and nymphs (Ephemeroptera, Trichoptera, Plecoptera, Chironomidae), fish eggs and larvae.

Description of major threats

Like *C. gobio* this species is most likely also threatened by eutrophication, as the species needs clean water and sediments, especially for spawning, egg deposition, and larval habitats.

Assessment justification

The alpine bullhead is a freshwater species, which neither reproduces within the Baltic Sea or Kattegat nor has a significant part of the population spending significant time in this area. Therefore the species does not fulfil the criteria for being assessed according to the IUCN system and is considered Not Applicable (NA) for assessment.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but information on records of the species should be collected.

Common names

D -Sibirische Groppe; GB – Alpine bullhead; DK - Finnestribet ferskvandsulk; FIN – Kirjoeväsimppu; LV - Raibā platgalve; LT -Rabapelekis kūjagalvis; PL -Głowacz pręgopłetwy; RUS -Pestronogij bychok; S – Bergsimpa

References

Fedorov, V.V. (1986). Cottidae. p. 1243–1260. In P.J.P. Whitehead, M.-L. Bauchot, J.-C. Hureau, J. Nielsen and E. Tortonese (eds.) Fishes of the North-eastern Atlantic and the Mediterranean. UNESCO, Paris. Vol. 3.

Freyhof, J. (2009). Rote Liste der im Süßwasser reproduzierenden Neunaugen und Fishce (Cyclostoma & Pisces). Naturschutz und Biologische Vielfalt 70(1): 291–316. In Bundesamt für Naturschutz (2009). Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands. Band 1: Wirbeltiere. Bundesamt für Naturschutz.

Freyhof, J., M. Kottelat and A. Nolte. 2005. Taxonomic diversity of European Cottus with description of eight new species. Ichthyological Exploration of Freshwaters, 16: 107–172.

Froese R. & Pauly D. (eds) (2005). FishBase. Available in: www.fishbase.org, version (11/2005).

Głowaciński, Z. (ed.) (2001). Polish Red Data Book of Animals, Vertebrates" Z. , Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

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.

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/

English name: **Black mouthed dogfish**	Scientific name: ***Galeus melastomus***	
Taxonomical group: Class: Elasmobranchii Order: Carcharhiniformes Family: Scyliorhinidae	Species authority: Rafinesque, 1810	
Subspecies, Variations, Synonyms: –	Generation length: Not known	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA Not Applicable**
Global / European IUCN Red List Category: LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**NA**		

Distribution and status in the Baltic Sea region

This small, common to abundant catshark is widely distributed in the Northeast Atlantic and Mediterranean Seas. Various research survey and landings data show no evidence of any significant decline, and overall populations appear stable. In the HELCOM area however the black mouthed dog fish is only a rare visitor.

Habitat and ecology

The black mouthed dog fish occurs on continental shelves and upper slopes, mainly at depths of 200–500 m. The species is ovoviviparous and size at maturity in females is documented as 38–51 cm and males as 34–45 cm. It feeds mainly on crustaceans, teleost fishes and cephalopods.

Description of major threats

No major threats identified within the HELCOM area but the species is taken as bycatch by demersal trawls and longlines throughout large areas of its geographic range.

Assessment justification

No regular occurrence of mature individuals, hence considered Not Applicable (NA) for the assessment.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D -Fleckhai; ES –; GB –; DK -Ringhaj; FIN –Rengaskissahai ; LV - Melnmutes kaķhaizivs; LT -Juodažiotis pjūklauodegis katryklis; PL -Piłogon; RU -Chernorotaja akula; S – Hågäl

References

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.

Serena, F., Mancusi, C., Ungaro, N., Hareide, N.R., Guallart, J., Coelho, R., Crozier, P. (2009). *Galeus melastomus.* In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 26 January 2013)

SPECIES INFORMATION SHEET *Gobio gobio*

English name: **Gudgeon**	Scientific name: ***Gobio gobio***	
Taxonomical group: Class: Actinopterygii Order: Cypriniformes Family: Cyprinidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 3.5 years	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: LC/LC	Habitats Directive:	
Previous HELCOM Red List Category (2007): NT		
Protection and Red List status in HELCOM countries: Denmark –/**LC**, Estonia –/**DD**, Finland –/**LC**, Germany –/**D** (Data deficient, Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

The gudgeon is a freshwater species which occurs rarely in brackish water. It is reported from some shallow sea areas in Estonia, in the Russian part of the Gulf of Finland and in the Curonian Lagoon but it is believed that reproduction is restricted to freshwater. There might be some misreporting of other species as gudgeon, such as the invasive alien species whitefinned gudgeon (*Romanogobio alpinnatus*). This makes the distribution within the HELCOM area somewhat uncertain.

Gudgeon. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Habitat and ecology

The gudgeon prefers river and lake habitat with sand or gravel substrate. It is a bottom dwelling, gregarious fish feeding on benthic invertebrates. It reaches maturity at 1–3 years at a size of 10 cm and is reported to live for a maximum of 8 years reaching a maximum size of 20 cm. Spawning takes place during early summer in shallow areas. This is a morphological very versatile species and concern has been raised that *G. gobio* might be a complex of several species.

Description of major threats

No major threats known.

Assessment justification

There is no indication of reproduction within the Baltic Sea or Kattegat. Furthermore, the species does not have a significant part of the population spending a significant part of their lifetime within the HELCOM saline area and hence this species is considered Not Applicable for the assessment.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area but species identity should be verified in different areas and the existence of reproducing gudgeon with the saline area should be investigated. Finally, information on habitats and population size in the basin of the Gulf of Finland should be collected.

Common names

D -Gründling; ES –rünt; GB -Gudgeon ; DK -Grundling; FIN –Törö; LV -Grundulis ; LT -Gružlys; PL -Kiełb krótkowąsy; RU -Obyknovennij peskar'; S –Sandkrypare

References

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Freyhof, J. (2011). *Gobio gobio*. IUCN Red List of Threatened Species. Version 2012.2. www.iucnredlist.org. (vieved 20 February 2013)

Froese, R., Pauly, D. (eds.) (2011). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (02/2013).

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.

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): 11–76.

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/

SPECIES INFORMATION SHEET *Hippoglossus hippoglossus*

English name: **Halibut**	Scientific name: ***Hippoglossus hippoglossus***	
Taxonomical group: Class: Actinopterygii Order: Pleuronectiformes Family: Pleuronectidae	Species authority: Linneaus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 8.5 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (F02)	Future threats (Habitats Directive article 17 codes): Fishing (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: EN/NE	Habitats Directive:	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden: Protected from fishing during spawning time, 20 December to 31 of March / **EN**		

Distribution and status in the Baltic Sea region

This marine flatfish is currently a rare visitor in the Kattegat and occasionally observed in the Belt Sea and the Sound. It was probably a more frequent visitor with feeding migration to Kattegat before the populations in the Skagerrak and North Sea were reduced. There are however no evidence of regular reproduction within the HELCOM area during the timeframe for the redlisting process (1800– current date).

Halibut. Photo: Leif Krause.

Halibut. Photo by Timo Moritz Deutches Meeresmuseum.

Habitat and ecology

The Atlantic halibut is a marine deepwater species spawning during December–April in 200–300m in coastal areas but down to 2000m at sea. It is remarkable for a flatfish that this species swims quite often freely in the water column. Halibut feed mainly on other fish (cod, haddock, sand-eels, herring, capelin), but also takes cephalopods, large crustaceans and other bottom-living animals. Halibut is largest of all flatfishes in the HELCOM area with males about 150 cm and females of 200 cm. Males sexually mature at a length of 55–110 cm and females at length of 110–135 cm, which correspond to ages between 4–18 years. Maximum lifespan is estimated to be 50 years.

Description of major threats

Due to slow growth rate and late onset of sexual maturity, halibut populations can be seriously affected by overfishing.

Assessment justification

As the species is not reproducing in the HELCOM area and less than 2% of the European population can be found within the HELCOM area, the species categorized Not Applicable (NA).

Recommendations for actions to conserve the species

This species is currently a rare visitor to the HELCOM area but since it is threatened in adjacent areas (globally listed as Endangered) fishing for this species should be regulated and a management plan established to promote re-colonisation of feeding migrating halibut in the Kattegat.

Common names

D: Heilbutt; DK: Helleflynder; EST:-; FI: Ruijanpallas; GB: Halibut; PL: Halibut biały; LV: Atlantijas paltuss; LT: Atlantinis paltusas; RUS: Atlanticheskij belokoryj paltus; SE: Hälleflundra

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

Kullander, S.O., Nyman, L., Jilg, K., Delling, B. (2012). Nationalnyckeln till Sveriges flora och fauna. Strålfeniga fiskar. Actinopterygii. Artdatabanken, SLU, Uppsala. 517 pp. [in Swedish]

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

SPECIES INFORMATION SHEET *Pollachius pollachius*

English name: **Pollack**	Scientific name: ***Pollachius pollachius***	
Taxonomical group: Class: Actinopterygii Order: Gadiformes Family: Gadidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 4.3	
Past and current threats (Habitats Directive article 17 codes): Fishing, Bycatch (F02)	Future threats (Habitats Directive article 17 codes): Fishing, Bycatch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/– (Baltic Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden *Protected from fishing during spawning 1st of January to 31st of March in coastal areas in Kattegat* / **CR**		

Distribution and status in the Baltic Sea region

During the 20th century pollack was regularly occurring in the eastern parts of Kattegat and the northern parts of the Sound (Cardinale & Svedäng 2012). Larger individuals were mainly observed in late autumn. Numbers have been significantly lower during the last decades but regular observations are still made in the Kattegat and the Sound while it is sporadically reported as far into the Baltic Sea as Gulf of Riga (HELCOM 2012). Outside the HELCOM area, it inhabits the Northeast Atlantic from the Bay of Biscay to Norway and Iceland (Froese & Pauly 2012). Reproduction has not been confirmed within the HELCOM area.

Pollack. Photos by Vivica von Vietinghoff, Deutsches Meeresmuseum (top), Björn Fagerholm, Swedish University of Agricultural Sciences (bottom).

Habitat and ecology

The pollack is found either in mid-water or close to shore over hard bottoms. Juveniles may form schools with saithe (*P. virens*) but are also found solitary defending feeding territory. Larger individuals move to the open sea and are often found around rocky areas at 40–100 m depth in small shoals or individually. It mainly feeds on fish, and occasionally on cephalopods and crustaceans (shrimps and crabs). The species spawns in dense shoals from March to May, at a water temperature of 8–10°C, at deeper waters. The eggs and larvae are pelagic. Maximum total length of adults is 130 cm, maximum body weight 18.1 kg, maximum individual age 8 years, and age at maturity 2–3 years (Fricke 1987, Froese & Pauly 2012).

Description of major threats

Caught as bycatch in cod and saithe fisheries. It has also previously been targeted in the Kattegat.

Assessment justification

No confirmed reproduction within the HELCOM area and less than 2% of the European population occurring in the area makes the pollack Not Applicable (NA) for assessment in the HELCOM area.

Recommendations for actions to conserve the species

No confirmed reproduction within HELCOM area but since it is threatened in adjacent areas fishing should be restricted. A TAC should be implemented also in the North Sea, Skagerrak and Kattegat.

Common names

D –Pollack; DK – Lubbe; GB – Pollach; FIN – Lyyraturska; LV - Pollaks; LT – Sidabrinis polakas; PL- Rdzawiec; RUS - Serebristaja saida ; S – Lyrtorsk/Bleka

References

Fricke, R. (1987). Deutsche Meeresfische. Bestimmungsbuch. Hamburg (DJN). 219 pp.

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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.

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

English name: **Mackerel**	Scientific name: ***Scomber scombrus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Scombridae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 8.2	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: LC/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/**NA,** Finland –/–, Germany –/***** (Not threatened, Baltic Sea)**,** Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**LC**		

Distribution and status in the Baltic Sea region

Mackerel is a long-migrating marine species that is occasionally caught in all parts of the Baltic Sea, including the Gulfs. It is however only regularly occurring in the southern Baltic Sea and Kattegat while spawning takes place outside the HELCOM area. The Northeast Atlantic mackerel comprises three spawning components, the southern, western and North Sea (including Skagerrak). Mackerel from the southern and western areas migrate north to feed in autumn and then mix with the North Sea component. Mackerel is targeted by both recreational and commercial fishery and assessment of mackerel in the Northeast Atlantic by ICES shows that fishing mortality is above the target level but the spawning stock biomass nevertheless increased between 2002 and 2010 and is well above Biological precautionary level (ICES 2011, Collette et al. 2011).

Mackerel. Photo: Maria Boström, Swedish University of Agricultural Sciences

Habitat and ecology

The mackerel is a pelagic species which forms large schools near the surface in shelf areas (Collette et al. 2011). It feeds on plankton and small fish. It reaches maturity at an age between 2–7 years and can live up to 18 years. It is seldom over 50 cm long (Froese & Pauly 2012).

Description of major threats

No major threats identified with in the HELCOM area.

Assessment justification

Mackerel is a widely distributed and migratory species. The Northeast Atlantic Mackerel is a combination of southern, western, and North Sea spawning components. There is no reproduction within the HELCOM area (HELCOM 2012) and it is only a small part of the total North East Atlantic stock, presumably less than 2% of the European population that migrates to feed within the HELCOM area. This species is therefore considered Not Applicable for assessment according to the IUCN system in the HELCOM area.

Recommendations for actions to conserve the species

No protection actions currently needed in HELCOM area.

Common names

DE: Makrele; DK: Makrel; ES: makrell; skumbria; FI: Makrilli; GB: Mackerel ; LA: Makrele; LI: Atlantinė skumbrė; PL: Makrela; RU: Atlanticheskaja skumbrija; SE: Makrill

References

Collette, B., Boustany, A., Carpenter, K.E., Di Natale, A., Fox, W., Graves, J., Juan Jorda, M., Kada, O., Nelson, R., Oxenford, H. (2011). *Scomber scombrus.* In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 15 November 2012)

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (10/2012).

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 (2011). Report of the ICES Advisory Committee. ICES Advice. Book 9. 148 pp.

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): 11–76.

English name: **Red fish /Golden red fish**	Scientific name: ***Sebastes norvegicus***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Sebastidae	Species authority: Ascanius, 1772	
Subspecies, Variations, Synonyms: *Sebastes marinus*	Generation length: 26 years	
Past and current threats (Habitats Directive article 17 codes): Fishery, Bycatch (F02)	Future threats (Habitats Directive article 17 codes): Fishery, Bycatch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**NA**		

Distribution and status in the Baltic Sea region

The red fish is a very rare visitor in the Kattegat from reproduction areas in northern Norway but it is common in the North East Atlantic where it is commercially fished. Due to its late maturation and slow growth it is sensitive to overexploitation.

Sebastes norvegicus. Photo by Natalia Chernova, Zoological Institute, St. Petersburg.

Habitat and ecology

The red fish is a gregarious species occurring off the coast in depths of 100–1000 m. Juveniles are found in fjords, bays and inshore waters. It feeds on euphausiids, fish and ctenophores in spring. Copulation takes place in late summer or early autumn and the spermatozoa are kept in the ovary of the female after copulation until such time that the eggs ripen paving the way for fertilization. In winter females give birth to 50 000–350 000 pelagic larvae of 8 mm length. The red fish reaches maturity around 40 cm length and have a maximum reported length of 1 meter and maximum lifespan of 60 years.

Description of major threats

The species is threatened by fisheries as target species, and also by other demersal fisheries (mainly as by-catch in shrimp trawls).

Assessment justification

The red fish is occasionally found within the HELCOM area as a visitor from reproduction areas in northern Norway but since there is no reproduction within the HELCOM area and not a significant part of the population spends a significant part of their lifetime within the HELCOM area this species is considered Not Applicable (NA) for assessment.

Recommendations for actions to conserve the species

Since the threats for this species occur outside the HELCOM area there are no protection actions currently needed in the HELCOM area.

Common names

D -Rotbarsch; ES –; GB –Red fish ; DK -Stor rødfisk; FIN –Punasimppu, Puna-ahven; LV -Zeltainais sarkanasaris ; LT -Didysis jūrinis ešerys; PL -Karmazyn atlantycki; RU -Zolotistij morskoj okun'; S –Större kungsfisk

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (12/2012).

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.

SPECIES INFORMATION SHEET *Sebastes viviparus*

English name: **Norway haddock**	Scientific name: ***Sebastes viviparus***	
Taxonomical group: Class: Actinopterygii Order: Scorpaeniformes Family: Sebastidae	Species authority: Krøyer, 1845	
Subspecies, Variations, Synonyms: –	Generation length: 21 years	
Past and current threats (Habitats Directive article 17 codes): Fishery, By-catch (F02)	Future threats (Habitats Directive article 17 codes): Fishery, By-catch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**NT**		

Distribution and status in the Baltic Sea region

The Norway haddock is an occasional visitor in the Kattegat from reproduction areas in the Skagerrak.

Habitat and ecology

This marine species inhabits rocky bottoms, close to the shore, between 10 and 150 m, but it has also been recorded down to 760 m depth. It lives in shoals and is viviparous, i.e. gives birth to alive young. It feeds on various small crustaceans and young fish. The Norway haddock reaches maturity at a size of 10–15 cm and is reported to have a maximum total length of 35 cm and reach a maximum age of 40 years.

Description of major threats

The species is threatened by fisheries as target species, and also by other demersal fisheries (mainly as by-catch in shrimp trawls).

Assessment justification

The Norway haddock is occasionally found within the HELCOM area as a visitor from reproduction areas in the Skagerrak but since there is no reproduction within the HELCOM area and not a significant part of the population spends a significant part of their lifetime within the HELCOM area, this species is categorized as Not Applicable (NA) in the assessment.

Recommendations for actions to conserve the species

Since the threats for this species occur outside the HELCOM area there are no protection actions currently needed in the HELCOM area.

Common names

D -Kleiner Rotbarsch; ES –; GB –Norway haddock ; DK -Lille rødfisk; FIN –Pikkupunasimppu; LV -Mazais sarkanasaris ; LT -Mažasis jūrinis ešerys; PL -Karmazynek; RU -Malyi morskoj okun'; S –Mindre Kungsfisk

References

Froese, R., Pauly, D. (eds.) (2012). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (12/2012).

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.

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

SPECIES INFORMATION SHEET *Somniosus microcephalus*

English name: **Greenland shark**	Scientific name: ***Somniosus microcephalus***	
Taxonomical group: Class: Elasmobranchii Order: Squaliformes Family: Somniosidae	Species authority: Bloch & Schneider, 1801	
Subspecies, Variations, Synonyms: –	Generation length: Not known	
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): Bycatch (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: NT/NE	Habitats Directive:	
Previous HELCOM Red List Category (2007): VU		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**VU**		

Distribution and status in the Baltic Sea region

Greenland shark is restricted to the northern Atlantic and Arctic Seas. In wintertime it moves further south and is a rare but regular visitor to the Kattegat. Historically targeted in its main distribution area for its liver oil and this fishery may have resulted in decrease of the species. This shark is globally listed as Near Threatened on the basis of possible population declines and limiting life history characteristics such as being a large, slowgrowing, late maturing, live bearing shark.

Habitat and ecology

Greenland shark inhabits inshore zones to continental shelves and slopes usually in depths of 0 to 1,200 m. This is a slowgrowing shark with most adults between 2–4m total length. Maximum size is uncertain but reaches at least 6 m. Age at maturity and longevity is unknown but probably high. It gives birth to live young. It feeds on a variety of prey including invertebrates, fish, seabirds, seals as well as offal.

Description of major threats

There are no major threats identified within the HELCOM area. In its main distribution area it was historically targeted fishery and is presently taken as bycatch in trawl, gillnet and trap fisheries, as well as in Arctic artisanal fisheries.

Assessment justification

There are no indications that mature individuals would regularly spend time within the HELCOM area. Hence the species is considered Not Applicable (NA) for the assessment.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D -Eishai; ES –; GB –; DK -Grønlandshaj; FIN –Holkeri ; LV -Grenlandes haizivs, polārā haizivs ; LT -Arktinis ryklys; PL -Rekin polarny; RU -Grenlandskaja poljarnaja akula; S – Håkäring

References

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.

Kyne, P.M., Sherrill-Mix, S.A., Burgess, G.H. (2006). *Somniosus microcephalus*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>. Downloaded on **26 January 2013**.

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

Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J. & Tortonese, E. (eds.) (1989). *Fishes of the Northeastern Atlantic and the Mediterranean.* Volume 1. Unesco.

SPECIES INFORMATION SHEET *Squatina squatina*

English name: **Angel shark/Monk fish**	Scientific name: ***Squatina squatina***	
Taxonomical group: Class: Elasmobranchii Order: Squaliformes Family: Squalidae	Species authority: Linneaus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: Not known	
Past and current threats (Habitats Directive article 17 codes): Bycatch (F02), Construction (J02)	Future threats (Habitats Directive article 17 codes): Bycatch (F02), Construction (J02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: CR/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): EN		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/**NA**		

Distribution and status in the Baltic Sea region

The angel shark was once a widespread species in the coastal zone of North east Atlantic, from Scandinavia to North-western Africa including the Mediterranean and Black Seas. It was also a rare visitor in the HELCOM area. Today the species has severely declined in most of its range. Landings in the Northeast Atlantic, compiled by ICES, have declined from 15 to 20 t in the 1980s, to 1 to 2 t from the 1990s and onwards. It is globally assessed as Critically Endangered and it is considered extinct in the North Sea.

Habitat and ecology

Angelshark is an ovoviviparous bottom-dwelling shark, occurring on or near the bottom from close inshore (5 m) to at least 150 m depth. It prefers mud or sandy bottom, where it lies buried with little more than its eyes protruding. In the northern parts of its range the angelshark is seasonally migratory and it may penetrate estuaries and brackish water. Angelshark feeds mainly on bony fishes, especially flatfishes but also other demersal fishes and skates, crustaceans and molluscs. Females reach maturity at 128 to 169 cm, and males at 80 to 132 cm. Age at maturity and longevity are unknown.

Description of major threats

Angel sharks are highly susceptible to bycatch in trawls. It is also bycaught in trammel nets and bottom longlines. Human disturbance by habitat degradation and tourism are also possible threats to its preferred sandy nearshore habitat.

Assessment justification

The mature individuals of the species have never regularly occurred in the HELCOM area, and hence the species is categorized as Not Applicable (NA) in the assessment.

Recommendations for actions to conserve the species

This species is a rare visitor to the HELCOM area but since it is threatened globally fishing for this species should be prohibited.

Common names

D -Meerengel; ES –; GB Angelshark/Monkfish; DK -Havengel; FIN – Merienkeli; LV - Parastā eņģeļhaizivs ; LT - Europinis plokščiakūnis ryklys; PL - Anioł morski; RU -; S – Havsängel

References

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.

ICES Advice 2012, Book 9.

Morey, G., Serena, F., Mancusi, C., Fowler, S.L., Dipper, F.,Ellis, J. (2006). Squatina squatina. In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 26 January 2013)

SPECIES INFORMATION SHEET *Thunnus thynnus*

English name: **Blue-fin tuna**	Scientific name: ***Thunnus thynnus***	
Taxonomical group: Class: Actinopterygii Order: Perciformes Family: Scombridae	Species authority: Linnaeus, 1758	
Subspecies,Variations,Synonyms: *Scomber thynnus*	Generation length: 7	
Past and current threats (Habitats Directive article 17 codes): Fishery (F02)	Future threats (Habitats Directive article 17 codes): Fishery (F02)	
IUCN Criteria: –	**HELCOM Red List Category:**	**NA** **Not Applicable**
Global / European IUCN Red List Category: EN/NE	Habitats Directive: –	
Previous HELCOM Red List Category (2007): CR		
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden: *Prohibited to fish for and land this species all year round* / NA		

Distribution and status in the Baltic Sea region

The blue fin tuna is an Atlantic species and only a very rare visitor to the HELCOM area. This species has become rare relative to historical levels because of massive overfishing. Based on the most recent stock assessment (International Commission for the Conservation of Atlantic Tunas, ICCAT 2010), summed spawning stock biomass for both the Eastern and Western Atlantic stocks has declined at least 51% since 1970.

Habitat and ecology

This is a pelagic, oceanodromous, schooling species that seasonally can be found close to shore. It preys on small schooling fishes or on squids and red crabs. This species has a maximum size over 300 cm fork length (FL), but a more common length is up to 200 cm. Age of first maturity is about 3–5 years (115–121 cm FL), with a longevity of 35 years or more.

Description of major threats

The species is threatened by overexploitation outside the HELCOM area.

Assessment justification

The species is not reproducing within the HELCOM area. It is assumed that the proportion of the population occurring in the Kattegat, the Belts and the Sound is and has been less than 2% of the European population both currently and in the past. Hence it is considered Not Applicable (NA) for the assessment.

Recommendations for actions to conserve the species

The species has a management plan that should be followed but no additional protection actions are currently needed in the HELCOM area.

Common names

D -Blauflossenthunfisch; ES –; GB – ; DK -Atlantisk tun; FIN –Tonnikala; LV -Zilā tunzivs ; LT -Paprastasis tunas; PL -Tuńczyk błękitnopłetwy; RU -Sinij tunetz; S –Tonfisk

References

Collette, B., Amorim, A.F., Boustany, A., Carpenter, K.E., de Oliveira Leite Jr., N., Di Natale, A., Die, D., Fox, W., Fredou, F.L., Graves, J., Viera Hazin, F.H., Hinton, M., Juan Jorda, M., Kada, O., Minte Vera, C., Miyabe, N., Nelson, R., Oxenford, H., Pollard, D., Restrepo, V., Schratwieser, J., Teixeira Lessa, R.P., Pires Ferreira Travassos, P.E., Uozumi, Y. (2011). *Thunnus thynnus.* In: IUCN 2012. IUCN Red List of Threatened Species. Available at: www.iucnredlist.org (viewed 27 January 2013)

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.

ICCAT (2010). Report of the 2010 Atlantic Bluefin Tuna Stock Assessment Session. Madrid, Spain, 6–12 September 2010. Available at: http://www.iccat.int/Documents/Meetings/Docs/2010_BFT_ASSESS_REP_ENG.pdf

SPECIES INFORMATION SHEET *Zeus faber*

English name: **John dory**	Scientific name: ***Zeus faber***
Taxonomical group: Class: Actinopterygii Order: Zeiformes Family: Zeidae	Species authority: Linnaeus, 1758
Subspecies, Variations, Synonyms: –	Generation length: Not known
Past and current threats (Habitats Directive article 17 codes): –	Future threats (Habitats Directive article 17 codes): –
IUCN Criteria: –	**HELCOM Red List Category:** **NA Not Applicable**
Global / European IUCN Red List Category: NE/NE	Habitats Directive: –
Previous HELCOM Red List Category (2007): EN	
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/–, Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/NA	

Distribution and status in the Baltic Sea region

The John-Dory is a rare visitor to the HELCOM area but has a worldwide distribution including the coastal areas of Northeast-Atlantic, the Mediterranean, the Indian Ocean and the western Pacific.

John dory. Photo by Vivica von Vietinghoff, Deutsches Meeresmuseum.

Habitat and ecology

The John-Dory is a marine species living solitary and mainly close to the bottom from shallow waters down to 400m depth. It feeds mainly on schooling fish but also cephalopods and crustaceans. It reaches maturity at an age of 4 years and length of 29–35cm. Maximum reported length is 90 cm, maximum reported age 12 years.

Description of major threats

No major threats identified.

Assessment justification

No reproduction and no regular occurrence in the HELCOM area, and hence considered as Not Applicable (NA) in the assessment.

Recommendations for actions to conserve the species

No protection actions currently needed in the HELCOM area.

Common names

D -Heringskönig; ES –; GB – ; DK -Sanktpetersfisk; FIN –Pietarinkala; LV -parastā dorija ; LT -Paprastoji saulažuvė; PL -Piotrosz japoński; RU -; S –Sanktpersfisk

References

Froese, R., Pauly, D. (eds.) (2005). FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (11/2005).

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.