

The European Eel

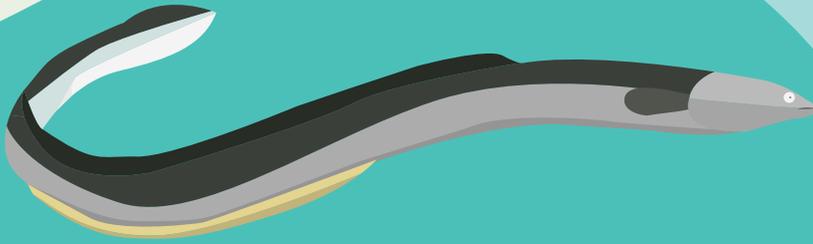
Anguilla anguilla

Native to
**Northern Africa
Europe and
the Sargasso Sea**



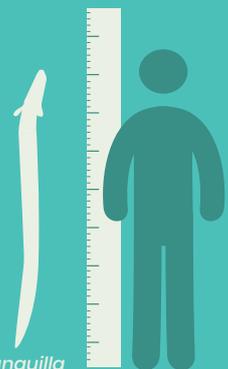
IUCN ASSESSMENT
CONSERVATION
STATUS:

**CRITICALLY
ENDANGERED**



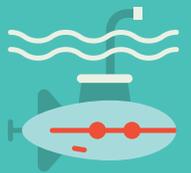
Mature females can contain **1 million eggs** per 1 kg of body weight

Their average length can range from **40–80 cm** but can reach a length of up to **1.5 m** in exceptional cases

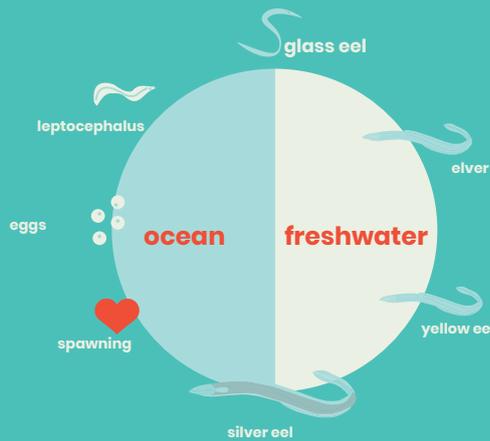


A. anguilla

Eels also migrate vertically on their migration route!



they can dive down 500–1000ft during the day and back up again in the night. That's deeper than a submarine can go!



The European eel crosses **the Atlantic** twice in its life travelling more than:

**10,000
kilometres**

| | | |
|--|--|--|
| Eels that live mainly in Southern warmer waters take approximately | Eels that live mainly in Northern cold waters take approximately | Brantevik Eel one European eel living in a well in Sweden has reportedly lived for 155 years |
| 5 | 15 | 155 |

years to grow

The European eel

The European eel (*Anguilla anguilla*) is listed as critically endangered by the IUCN and faces a wide range of human stressors that threaten its survival. Yet, it is also an extraordinary species with many mysteries left to unfold and therefore worth protecting!

The European eel lives in salt and freshwater. It is a so-called catadromous fish: it is born in the ocean, migrates to freshwater to spend most of its life, and then migrates back to the ocean to breed. The life history of the European eel involves many transformations, and the details are not yet fully understood. Born in the Sargasso Sea in the Western Atlantic, they start their lives as tiny, transparent, leaf-shaped larvae called leptocephali. In this vulnerable form, they start their migration towards the European continent by drifting along the ocean's currents. This migration is thought to take around 1 year.

Upon reaching the continental shelf, the leptocephali transform into so-called glass eels: still transparent, but now eel shaped. Making their way into the freshwater habitats, they take on colour and grow further in size. Due to their yellowish colour on the flanks and belly, eels in this life stage are called yellow eels. This is the longest life stage of the European eel with those in the south growing up quickly and those in the north taking up to 25 years. Females grow significantly bigger and longer because they need to provide more energy for the development of the eggs and carrying them. By the time the female arrives in the Sargasso Sea she is nearly all eggs as she carries up to 1 million eggs per kilo.

After having spent most of their lives in freshwater, the European eels follow a still unknown trigger and start their backward migration to the ocean. The silvering process starts before they begin the migration journey this is also known as maturation. The silvering process is meant for protection against predators and readies their reproductive organs to mate. During this period, their eyes grow to improve their sight in the deeper ocean water. In this life stage, the European eels are called silver eels. They migrate from the European continent all the way back to the Sargasso Sea, meaning the journey they undertake within their lives can exceed 10,000 km. Back in the Sargasso Sea, they are thought to spawn and reproduce in some hundred meters depth and then die – events that no known human has ever observed.

The lifespan of wild European eels is estimated to be around 20 years, but in captivity they have lived well over 80 years – one European eel living in a well has reportedly even lived for 155 years!

The diet of the European eel is broad and includes – depending on its life stage – marine, estuarine and freshwater species, including plankton, molluscs, crustaceans and fish. Interestingly, they can also

move on flooded land and feed on terrestrial fauna such as worms and slugs; if necessary for their survival. Predators of the European eel include large fish, cormorants, herrons, seals, otters and – of course – humans.

Their long and complicated life history makes the European eel vulnerable to a range of natural and human stressors. Once abundant, the European eel is now critically endangered as it was declining steeply for 30 years but since 2011 the populations have stabilized and are slowly improving. Causes for their decline include both fresh- and saltwater fisheries around Europe which target the glass eel, yellow and silver eel life stages. Another major reason for their decline is habitat loss.

An export ban of fished eels has been introduced in the EU in 2010 – however, illegal exports continue, especially of glass eels. Other contributors to the European eel decline are blocked migratory pathways, e.g. dams of hydropower plants. The blades in the turbines of these plants can fatally injure the eels. Moreover, habitat loss and degradation due to wetland reclamation activities and pollution are threatening the eel. Other threats include parasites and changes in the oceanic conditions (e.g. changes in temperature and currents). Similar causes have led to the drastic decline of eel species in other geographical areas as well, e.g. the American eel and Japanese eel.

To protect the European eel, conservation policies have been introduced on EU level. Central to these policies is the so-called Eel Regulation from 2007, demanding Eel Management Plans from all EU Member States with eel habitats. National regulations for these plans include restrictions on commercial and recreational fishing, removal of old and obsolete dams, introduction of fish passes and eel ladders in hydropower plants to enable and facilitate migration, wetland restorations, or restocking activities (i.e. replacement of young eels from areas of high abundance to areas of low abundances).

However, the critically endangered status, the diverse life history and the long generation span of the European eel make monitoring and effective conservation difficult. Therefore, we need to actively intensify and extend conservation measures to ensure that the protection of the European eel does not slip through our hands.

One way you can help with the conservation of the European eel is through contacting organizations like Sustainable Eel Group or the Good Fish Foundation to volunteer to support their efforts!

Bibliography

- Arai, T.** (2014): Do we protect freshwater eels or do we drive them to extinction? In: SpringerPlus 534 (3). Online access: <http://www.springerplus.com/content/3/1/534>.
- Bevacqua, D.**; Melià, P.; Gatto, M.; Leo, G. A. de (2015): A global viability assessment of the European eel. In: Global change biology 21 (9). DOI: 10.1111/gcb.12972.
- Bilotta, G. S.**; Sibley, P.; Hateley, J.; Don, A. (2011): The decline of the European eel *Anguilla anguilla*. Quantifying and managing escapement to support conservation. In: Journal of fish biology 78 (1). DOI: 10.1111/j.1095-8649.2010.02830.x.
- BBC** (2008): The plight of the eel. Online access: http://www.bbc.co.uk/lincolnshire/content/articles/2006/12/19/angling_eels_feature.shtml. Last access on 13/04/2020.
- Cresci, A.**; Durif, C. M.; Paris, C. B.; Shema, S. D.; Skiftesvik, A. B.; Browman, H. I. (2019): Glass eels (*Anguilla Anguilla*) imprint the magnetic direction of tidal currents from their juvenile estuaries. In: Communications Biology 2(1). DOI: 10.1038/s42003-019-0619-8.
- Deedler, C. L.** 1970. Synopsis of biological data on the eel *Anguilla anguilla* (Linnaeus) 1758. FAO Fisheries Synopsis No. 80. FAO, Rome.
- Dekker, W.** (2016). Management of the eel is slipping through our hands! Distribute control and orchestrate national protection. ICES Journal of Marine Science, 73, 2442–2452.
- Dekker, W.** (2003a): Did lack of spawners cause the collapse of the European eel, *Anguilla anguilla*? In: Fisheries Management and Ecology 10 (6). DOI: 10.1111/j.1365-2400.2003.00352.x.
- Dekker, W.** (2003b): On the distribution of the European eel (*Anguilla anguilla*) and its fisheries. In: Can. J. Fish. Aquat. Sci. 60 (7). DOI: 10.1139/f03-066.
- Dekker, W.** (2003c): Status of the European Eel Stock and Fisheries. In: Katsumi Aida, Katsumi Tsukamoto und Katsumi Yamauchi (Hg.): Eel biology. Tokyo, Berlin, Heidelberg, New York, Hong Kong, London, Milan, Paris: Springer.
- Dekker, W.** (2008): Coming to Grips with the Eel Stock Skip-Sliding Away. Online access: https://www.researchgate.net/profile/Willem_Dekker2/publication/40095730_Coming_to_Grips_with_the_Eel_Stock_Skip-Sliding_Away/links/5667032a08ae34c89a021ee9.pdf.
- Euractiv.com** (2017): Mystery of the eel – Europe’s own ivory trade. Online access: <https://www.euractiv.com/section/economy-jobs/news/mystery-of-the-eel-europes-own-ivory-trade/>; last access on 10/04/2020.
- Feunteun, E.** (2002): Management and restoration of European eel population (*Anguilla anguilla*). An impossible bargain. In: Ecological Engineering 18 (5). DOI: 10.1016/S0925-8574(02)00021-6.
- Froese, R.** and D. Pauly. Editors. 2005. FishBase. World Wide Web electronic publication. Online access: www.fishbase.org.
- Hanel, R.**; Briand, C.; Diaz, E.; Döring, R.; Sapounidis, A.; Warmerdam, W. et al. (2019): Research for PECH Committee – Environmental, social and economic sustainability of European eel management. Brussels: European Parliament, Policy Department for Structural and Cohesion Policies.
- International Council for the Exploration of the Sea (ICES)** (2016): ICES Advice on fishing opportunities, catch, and effort. European eel (*Anguilla anguilla*) throughout its natural range, 2016. Online access: <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/ele.2737.nea.pdf>.
- International Council for the Exploration of the Sea (ICES)** (2017): EU request to provide advice on fisheries-related anthropogenic impacts on eels in EU marine waters (ICES Advice 2017). Online access: https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/Special_requests/eu.2017.08.pdf.
- International Council for the Exploration of the Sea (ICES)** (2018): ICES Advice on fishing opportunities, catch, and effort. Online access: <https://doi.org/10.17895/ices.pub.4601>.
- IUCN** (2020): <https://www.iucnredlist.org/species/60344/45833138>. Last access on 13/04/2020
- Nijman, V.** (2015): CITES-listings, EU eel trade bans and the increase of export of tropical eels out of Indonesia. In: Marine Policy 58. DOI: 10.1016/j.marpol.2015.04.006.
- Nilsson, Hanna**; Stage, Jesper (2017): The Economics of European Eel Management. In: Journal of Ocean and Coastal Economics 4 (1). DOI: 10.15351/2373-8456.1025.
- Smithsonian** (2020): <https://www.smithsonianmag.com/smart-news/rip-worlds-oldest-eel-180952306/>; last access on 10/04/2020.
- Solomon, O.**; Ahmed, O. (2016): European Eel. Ecology, Threats and Conservation Status. In: JSRR 10 (7). DOI: 10.9734/JSRR/2016/25850.
- Starkie, A.** (2003): Management issues relating to the European eel, *Anguilla anguilla*. In: Fisheries Management and Ecology 10 (6). DOI: 10.1111/j.1365-2400.2003.00351.x.
- Stein, F. M.** (2016): Illegal Trade Threatens European Eel Recovery. In: Sustainable Eel Group, 2016. Online access: https://www.researchgate.net/publication/303724155_Illegal_trade_threatens_European_eel_recovery.
- Sustainable Eel Group** (2018): Quantifying the illegal trade in European glass eels (*Anguilla anguilla*): Evidences and indicators. Online access: <https://www.sustainableeelgroup.org/wp-content/uploads/2018/02/SEG-Report-2018-I-VI-1.pdf>.
- Svedäng, H.**; Gipperth, L. (2012): Will regionalisation improve fisheries management in the EU? An analysis of the Swedish eel management plan reflects difficulties. In: Marine Policy 36 (3). DOI: 10.1016/j.marpol.2011.11.011.
- Vogel, G.** (2010): Ecology. Europe tries to save its eels. In: Science (New York, N.Y.) 329 (5991), S. 505–507. DOI: 10.1126/science.329.5991.505.
- Westerberg, H.**; Sjöberg, N. (2014): Overwintering dormancy behaviour of the European eel (*Anguilla Anguilla* L.) in a

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