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Estación Biológica Doñana

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PRESS RELEASE

The European eel, on the brink of extinction due to its rarity and the human search for exclusiveness

- **Rampant price rises are bringing the species nearer to its final demise, according to a study from the Doñana Biological Station (EBD-CSIC).**

- **The scientific team highlights the urgent need of a fisheries closure and a commercialization ban for Anguilla species to avoid extinctions**

*Glass eels, a juvenile stage of the European eel (*Anguilla anguilla*), caught during the scientific monitoring of the species in the Oria River, Basque Country, N Spain (Photograph: AZTI)*

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Seville, August 28th 2025. The European eel (*Anguilla anguilla*) has been considered a **Critically Endangered species**, the most extreme threat category, for two decades. However, despite its great and increasing rarity, the species **is still fished and commercially exploited**. A study led by the Estación Biológica de Doñana – CSIC, just published in the journal *Conservation Letters*, shows that eel rarity, combined with human desire to possess and consume exclusive items, generate **an extinction vortex that promotes eel exploitation until its very disappearance**.

The commercial exploitation of wild species often drives decreases in abundances and/or range restrictions. In these situations, maintaining harvest requires investing more time or travelling further, potentially reaching a point in which catch costs are not compensated by the economic returns obtained, which would lead to the cessation and exploitation that may, in turn, favor population recovery. However, it may happen that **a species supervening rarity involves an increase of its market value**. This is because we humans then to overvalue scarce items as a status symbol. The scarcer the object of our desire is, the more consumers are willing to pay for it.

When this logic is applied to species that, despite being in decline, are still commercially exploited, there is an opportunity for **the development of a market extinction vortex**. This is a self-fueling process, driven by the positive relation between rarity and value, that allows and favors the exploitation of a species to its last individual. “It has been proposed that such processes would be involved in the endangerment of a variety of organisms, including **rhinoceros, pangolins or sharks**”, points out **Miguel Clavero**, researcher at the EBD - CSIC and main author of the study. “Our work now demonstrates that the European eel is also tangled in a market extinction vortex”.

From popular food to delicacy

The scientific team focused on the exploitation of glass eels, the larval stage in which the eels travelling from the Sargasso Sea approach the coast and enter in rivers and wetlands. Glass eels are harvested across the European eel range, mainly to source aquaculture (which relies completely on wild-caught individuals) and stocking activities. However, in Spain direct consumption of glass eels (known as *angulas*) is also relevant, following a culinary culture that has its cradle in the Basque Country and the expanded across Spain.

Up to the 1970s, **glass eels were an abundant resource and a popular food item**. But the eel collapse around 1980, involving reductions of around 95% in recruitment (i.e., glass eel arrivals), **transformed the glass eel into a luxury delicacy**. “We thought that this was the kind of scenario that can promote a market extinction vortex, so we started a search for data on harvest and prices that could be used to describe this process”, tells **Clavero**.

The study **used data on glass eel commercial landings reported in Spain since 1950**, grouped in nine time-series. “These data are part of the information compiled across Europe by the working group on eels of the International Council for the Exploration of the Sea (ICES) to evaluate eel conservation status and provide a management advice to the European Commission in a yearly basis”, explains **Estíbaliz Díaz**, researcher at AZTI and co-author of the study. Catch data shows **an initial increase, peaking sharply**

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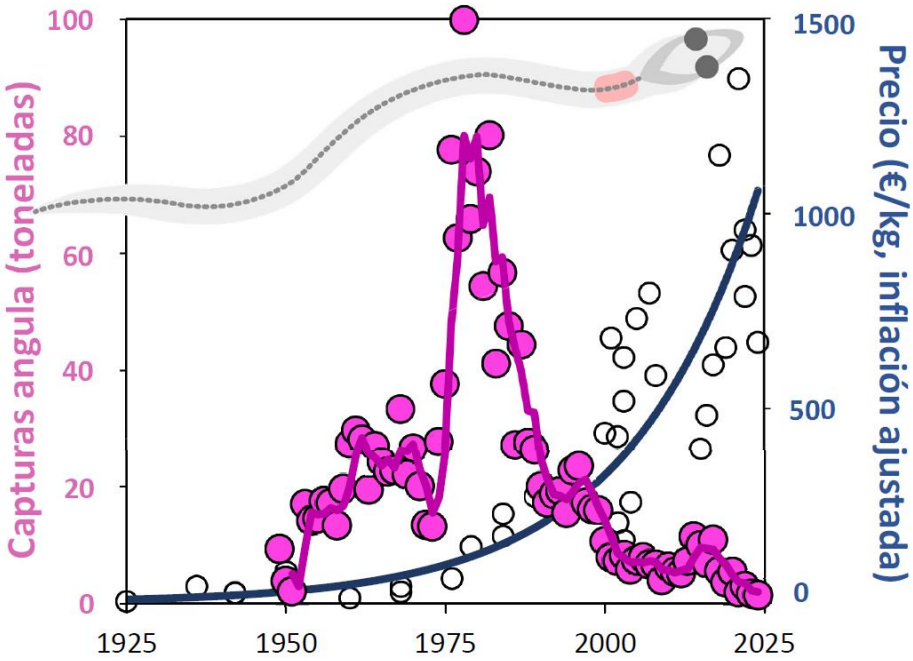
around 1980, followed by a steep decline that has continued to the present, with no sign of slowing or recovery.

Regarding eel market value, the team searched **contemporary and historical newspapers to compile the prices paid for glass eels along the 100 years** comprised between 1925 and 2024. After taking into account for the effect of currency changes (from *pesetas* to euros) and accounting for inflation, the authors found out that the price of glass eels has grown exponentially in the last century, from the 5 euros per kg paid in 1925 to some 1000 euros per kg in the present.



Trends in glass eel catches recorded in Spain and their price throughout the 20th century. Modified from Figure 1 of the article

Less catches and a higher price

Before 1980 glass eel price increased in parallel with its harvest, arguably due to an increasing commercial interest that led to larger fishing efforts. However, this abundance-price relationship **reversed after the eel collapse, when the drastic reduction of glass eel landings was associated with a rapid price increase**.

“This is the expected scenario when a market extinction vortex is operating, since status consumption **drives the willing to pay more for scarce items**, those that are not within the reach of the majority”, tells **Miguel Clavero**. In fact, the article shows that from 1990 the total value of glass eel landings in Spain has remained stable, despite harvest has fallen by 85% in that period. “Fishing and commercializing glass eels remain profitable despite minuscule harvest, due to the continuous rise of prices”, Clavero points out.

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A notable feature of the extinction market described in the article is that **exploitation costs** (i.e., the expenses devoted to glass eel harvest) **change minimally despite the continuous decline in glass eel availability**.

“In the cases of rhinoceros or pangolins, increasing scarcity involves that hunters need to devote more time and take more risks to obtain each individual, and only higher prices compensate this effort. In the case of glass eels, prices are clearly increasing, but **there is no need to increase fishing effort**. Fishing simply involve awaiting their arrival each year”, explains **Clavero.**

“Exploitation costs are in general low, and vary very little among years, without relationship with eel recruitment. With present-day prices virtually **any glass eel catch covers fishermen expenses y gains are easily obtained**”, tells **Estíbaliz Díaz**, who besides her researcher role in AZTI is the Spanish representative in ICES’s working group on eels.

The need of fishing and commercialization bans

The relationship between the ever-growing glass eel price and its shrinking availability **creates perverse incentives for the commercial exploitation of the European eel, ignoring its critical conservation status.** “ICES has repeatedly advised the full cessation of eel fisheries, in all habitats and life stages and for any aim, but this has not resulted in any substantial reduction of fishing-related mortality”, Estíbaliz Díaz explains.

According to Miguel Clavero, a **full fishing ban for the European eel, including glass eels, is necessary but not sufficient**. “A temporal ban on the commercialization of eel products should be implemented, covering all species within the genus *Anguilla*”, tells the Estación Biológica de Doñana – CSIC researcher. The eel has an important associated cultural heritage across Europe and is the center of several deeply-rooted traditions. The same can be said for several other congeneric species in different areas of the world. All *Anguilla* species are targeted by globally-operating marketing networks, involving both legal and illegal movements, which are often closely related.

Clavero thinks that, besides glass eel exploitation, **other components of eel commercialization, including aquaculture, stocking activities and international movements, may be influencing the market extinction vortex described on the basis of Spanish data**. “It is in fact plausible that similar processes are functioning around the exploitation of different European eel life stages and across the whole species range, even involving other *Anguilla* species in a global-scale phenomenon. ***Anguilla* eel conservation relies on the stopping of the luxury market inertias**, by implementing moratoria on fishing and commercialization of these animals”, the researcher concludes

Reference:

Clavero M, Blanco-Garrido F, Díaz E, Hermoso V (2025) The eel market extinction vortex. Conservation Letters DOI: https://doi.org/10.1111/conl.13122

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