

AQUACULTURE IN SPAIN

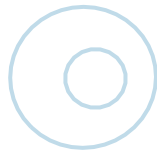
2025



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# 1



## **Executive Summary**

# 1. Executive Summary

## 1.1. Aquaculture in Spain

- » The aquaculture harvest in Spain in 2024 was 268,564 tonnes and a value at first sale of 856.5 million euros. The most abundant species was the mussel (*Mytilus spp.*), with 184,593 tonnes and an estimated value of €138.1 million. Followed by sea bass with 27,376 tonnes and a value of €138.1 million; rainbow trout with 16,693 tonnes and a value of €54.6 million; sea bream with 10,765 tonnes with a value of €72.0 million and bluefin tuna with 10,312 tonnes with a value of €184.4 million. According to data from MAPA and APROMAR.
- » In 2023, there were 4,908 aquaculture establishments in production. Of which 4,663 of molluscs and 245 of fish (147 in inland waters, 59 of seawater on land and 39 in nurseries in the sea).
- » Employment in aquaculture in Spain in 2023 was 5,854, 0.4% less than in 2022. It was distributed among 8,209 people, (2,044 people less than the previous year). The majority of employees, 3,895 people, were non-salaried (self-employed), mainly in the mussel subsector. In 2023, the total number of employed women was 2,119 (25.8%) compared to 6,090 men (74.2%).
- » In 2024, 162,400 t of fish feed were used in Spain, 0.3% more than in 2023 (161,836 t). The amount of aquaculture feed used in Spain barely accounts for 1% of the total livestock feed consumed in this country.
- » The marine fish harvest in Spain in 2024 was 65,036 t, -1.3% less than in 2023 (65,848 t). The value of this production in first sale is estimated at €603 million, -0.004% less than in 2024 (€605.5 million). The Valencian Community topped the list with a total of 20,655 tonnes. Production is expected to increase by around 5.8% in 2025 and will occur mainly in the Valencian Community, Catalonia and Galicia.
- » The aquaculture sea bream harvest in Spain in 2024 was 10,764 t, (-17.9%) and a value at first sale of €53.4 million. By 2025, growth of approximately the same percentage is estimated. The Valencian Community led production with 7,541 t, -17.9% less than in 2022 (9,360 t), accounting for 70.1% of the total; followed by the Canary Islands 1,350 t (12.5%); Catalonia 1,104 t (10.3%) and Andalusia with 770 tonnes (7.2% of the total). The production of juvenile sea bream in Spain in 2024 was 20.7 million units and it is estimated that production in 2025 will be higher and reach 23.4 million units. It was led by the Balearic Islands (79.4% of the total) and followed by the Region of Murcia (16.4%) and Andalusia (4.2%).
- » The sea bass harvest in Spain in 2024 was 27,376 tonnes, 11.4% more than in 2023 (24,580 tonnes) and a value of €123.7 million. The Valencian Community has led the production with 8,592 tonnes (31.4% of the total), followed by the Region of Murcia (6,692 tonnes, 24.4%), the Canary Islands (6,594 tonnes, 24.1%), Andalusia with 4,797 tonnes (17.5%) and Catalonia with 701 tonnes (2.6%). By 2025, growth of 1.5% is expected with a sea bass harvest in Spain of 27,789 tonnes. The production of juvenile sea bass in Spain in 2024 was 54.5 million units. The production of juvenile sea bass in Spain was carried out in the Balearic Islands (70.3%) and Andalusia (29.7%). By 2025 it is estimated that it will decrease to 40 million units.
- » Bluefin tuna aquaculture production in Spain in 2024 was 10,312 tonnes and slightly higher production is estimated for 2025. The total estimated value of this production in Spain was €129 million.
- » Rainbow trout production in Spain in 2024 is estimated to be 16,693 tonnes, 13.1% more than in the previous year, with a value of €54.6 million. By 2025, a slight growth is expected with about 16,920 t. The production of



Rainbow trout are changing in recent years to larger trout.

- » In Spain, 5 tonnes of caviar were produced in 2024 and 121 tonnes of sturgeon meat. The two main species produced are Siberian sturgeon and Adriatic sturgeon.
- » The turbot harvest in 2024 in Spain according to APROMAR data was 10,058 t, +4.8% more than the previous year (9,600 t), and a value of €121.9 million. It is expected to remain similar in 2025. Galicia was the only turbot-producing autonomous community in Spain. The production of turbot juveniles in Spain in 2024 was 15.3 million units.
- » Meagre production in 2024 was 5,051 t, -31.6 % less than in 2023 and with an estimated first sale value of 35.6 million euros. The production of Spanish sea bass comes from the Valencian Community, the Region of Murcia and, to a lesser extent, Andalusia. A similar drop in production is expected by 2025. In Spain, some 4.5 million sea bass juveniles were obtained in 2024 in the Region of Murcia.
- » In 2024, 1,031 tonnes of sole were produced from aquaculture in Spain, -4.3% less than in 2023 (1,077 tonnes) with a value of €19.6 million. This production was located in Galicia (77.2%) and Andalusia (22.8%). The 2025 harvest is estimated to increase to 1,095 t. In Spain, some 16.5 million sole juveniles were obtained in Galicia (100%) in 2024 and it is expected to grow to 31.9 million by 2025.
- » In 2024, according to APROMAR data, the cultivation of *Seriola dumerili* in Spain decreased to 51 t, i.e. -16.1% compared to 2023 (44 t). By 2025, production is expected to increase to 88 tonnes. A total value of €0.7 million is estimated. As for juveniles, 0.64 million units were produced in Andalusia, and it is estimated that production in 2025 will double and reach 1.2 million units. This denotes the great interest that this species is generating.
- » Spanish European eel production in 2024, mainly located in the Valencian Community, was 355 t. Its purpose is both the repopulation of rivers and for consumption. An estimated value of €3.9 million.

## 1.2. Aquaculture in the European Union and in the world

- » According to the Food and Agriculture Organization of the United Nations (FAO), global aquatic production (fisheries and aquaculture) in 2023 was 227.1 million tonnes, 2.2% more than in 2022, representing a record volume. This is the second time globally that aquatic animal aquaculture has outproduced extractive fisheries (52% vs. 48%). Total aquaculture production, including algae, has already exceeded that of extractive fishing since 2013.
- » In 2023, global aquaculture production reached 136.2 million tonnes, valued at €292,786 million, 58% of total global fisheries and aquaculture production.
- » In 2023, the total aquatic production of the European Union (aquaculture plus fishing) totaled 4,614 thousand tonnes, 3.4% less than in 2022 (4,788 thousand tonnes). The decline in production continues for the sixth consecutive year with an average of -4.7% in those 5 years. As for the value of production in 2023, it was €4,149 million, 3.3% more than in 2022 (€4,018 million).
- » Mussels continue to be the most produced species in the EU (27) for another year in 2023 with 360,504 tonnes, -12.3 % less than in 2022 (410,909 t). Rainbow trout is the second most farmed species with 170,246 t, 0.2% more than in 2022 (169,930 t). The third place is occupied by sea bream with 105,924 tonnes, -0.9% less than the previous year (106,837 tonnes). The Japanese oyster is in fourth place with 90,346 tonnes, a -10.4% less than in 2022 (100,793 t). Sea bass is in fifth place with 86,547 tonnes, -4.8% less than in the previous year (90,883 tonnes), according to FAO data.
- » The list of producing countries within the European Union is led by Spain with a production in 2023 of 243,110 t, with a decrease of -11.9% compared to 2022 (276,071 t), according to FAO. France is the second largest producer and in 2022 harvested 186,569 tonnes, -6.9% less than in 2022 (200,490 tonnes). It is followed by Greece with 141,933 t, -3.2% less than in 2022 and Italy with 126,292 t, -4.8% less. Spain accounted for 23.0% of the EU's entire production volume, followed by France with 17.6%, Greece with 13.4% and Italy with 11.9%, as the main producers.
- » Aquaculture in the EU (27) in 2023 took place mostly in marine waters (75.4%) and 24.1% in freshwater.

- » In 2023, according to FAO data, 558,615 tonnes of aquaculture fish were farmed in the European Union, with a first-sale value of €2,897.9 million. This represents a reduction of -2.0% in volume compared to 2022 (570,270 t) and a slight increase of +0.4% in value (€2,885.5 million in 2022).
- » Total aquaculture production of sea bream (*Sparus aurata*) in Europe and the rest of the Mediterranean in 2024 is estimated at 332,775 t, -6.7% less than in 2023 (332,966 t) according to statistics from APROMAR, FEAP and FAO. A slight decrease is forecast in 2025, with production of around 321,000 t. The total value in the first sale of Mediterranean aquaculture sea bream harvested in 2024 is estimated at €1,614. The total production of juvenile sea bream in 2024 in Europe (including Turkey) is estimated to be 742.1 billion units, 8.0% more than in 2023 (662.3 million units).
- » Total aquaculture production of sea bass (*Dicentrarchus labrax*) in Europe and the rest of the Mediterranean arc in 2024 was 307,782 t, 0.6% more than in 2023 (306,006 t), according to consolidated statistics from FAO, FEAP and APROMAR. By 2025 it is estimated that it will remain stable or slightly higher (-3.0%). The total value of aquaculture sea bass in 2024 was approximately €1,692.8 million. (I suggest joining this paragraph with the next one.) The production of juvenile sea bass in 2024 in Europe (including Turkey) decreased to 602.1 million units, -14.7% less than in 2023.
- » Total turbot production (*Scophthalmus maximus*) of aquaculture in the world in 2024 was 74,459 t, 1.2 % more than the previous year (73,459 t). In Europe, the main producing country is Spain, which harvested 10,412 tonnes (13.5% of the total), 4.8% more than in 2023 (9,600 tonnes).
- » In 2023 the global harvest of Senegalese sole (*Solea senegalensis*) from aquaculture was 2,479 t, 6.7 % more than the previous year (2,324 t). By 2025 it is expected to increase by 2.7% to around 2,550 t. These are data collected by FEAP and APROMAR.
- » Global aquaculture bluefin tuna production (Atlantic) was 31,506 tonnes in 2024, a decrease of 14.7% compared to the previous year (36,956 tonnes). The main producing countries were Malta (12,156 t), Spain (10,312 t; 32.7 percent of the total), Turkey (4,000 t), Croatia (3,500 t) and Tunisia (1,400 t). Production is expected to increase by 16.2% in 2025, reaching 36,600 tonnes.
- » The production of sea bass (*Argyrosomus regius*) from aquaculture in the Mediterranean area in 2024 is estimated at 50,766 t, 2.7% more than in 2022 (49,410 t).
- » Global aquaculture production of rainbow trout (*Oncorhynchus mykiss*) in 2023 was 1,150,496 t, an increase of 14.6% over the previous year with 1,004,161 t.
- » Global caviar production was around 660 tonnes in 2024, of which 198 tonnes were produced in the European Union (27) (30%) according to FEAP.

2



## Introduction

## 2. Introduction

The unstable global situation continues to generate a high degree of political and economic uncertainty, marked by geopolitical conflicts such as the war in Ukraine since 2022 and the humanitarian crisis in Gaza that began in October 2023. These events have caused a strong imbalance in the global economy, especially affecting strategic sectors such as energy and food, and complicating efforts to combat global challenges such as climate change and biodiversity loss.

In this context, the European Union has reinforced its commitment to sustainable and resilient development through an ambitious set of strategic policies that directly affect fisheries and aquaculture. These include:

- The Common Fisheries Policy (CFP), which sets out the general framework for the management of living aquatic resources and aquaculture, and includes instruments such as Advisory Councils and Production and Marketing Plans.
- The strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2021-2050, which defines objectives for resilience, ecological transition, social acceptance and improvement of the regulatory framework.
- The EMFAF (European Maritime, Fisheries and Aquaculture Fund), an essential financial tool to support the sustainability, modernisation and innovation of the sector during the period 2021–2027.
- The European Ocean Pact (2025), which is a roadmap to restore and protect marine ecosystems and consolidate a sustainable blue economy.

The European Green Deal, including:

- From farm to fork, which promotes a diet based on sustainable foods such as farmed fish.
- Biodiversity Strategy, which affects spatial planning and environmental requirements.
- Plan for the Blue Economy and Circular Economy, which promote efficiency in water, energy, feed and

Containers.

- Climate Pact, which conditions the adaptation and decarbonisation of the sector.
- The EU's Trade Policy, which conditions access to the European market for imported products and raises the debate on regulatory reciprocity.
- The Horizon Europe programme, which finances R+D+i projects in genetics, digitalisation, animal welfare and climate mitigation.

In this environment, the European Federation of Aquaculture Producers (FEAP) has reaffirmed its vision of sustainable, equitable and impactful aquaculture. At its 2025 General Assembly, it identified three main structural challenges holding back the growth of the sector:

- A complex and often contradictory regulatory framework, which slows down investment, innovation and expansion.
- A structural lack of social acceptance, both in the territories where it is produced and in consumer markets.
- The growing impact of climate change, with visible consequences on fish health, the stability of production systems and the urgent need for adaptation.

In response to this communication challenge, the European Commission launched in 2025 the "EU Aquaculture: We Work For You With Passion" campaign, co-funded by the European Commission, with the aim of increasing the visibility of professionals in the sector, building trust in European aquaculture and improving its social perception, especially among urban and young consumers.

On a national scale, this line is reinforced with APROMAR's communication strategy, deployed through its institutional initiative "Aquaculture of Spain". This strategy focuses on humanizing the sector by showing the people who make it possible, making visible its connection with the territories and highlighting the values of sustainability, quality, animal welfare and national origin. Through campaigns



audiovisuals, real testimonies, actions on social networks and collaborations with the media, seeks to reconnect the consumer with aquatic foods produced in Spain and combat obsolete prejudices, promoting sectoral pride and conscious consumption.

These communication strategies are supported by the European Commission's Contingency Plan to Guarantee Food Supply in Times of Crisis. This report identifies as the main risks to European food security the high costs of inputs, extreme weather, dependence on imported inputs, and limited internal capacities in some chains

such as aquaculture, where the EU remains net importer.

At the national level, the CIRCUTECH project has carried out a comprehensive analysis of the Spanish aquaculture sector, highlighting strengths such as leadership in R+D, high environmental certification, species diversity and low carbon footprint. It also identifies barriers such as overregulation, high energy costs, unfavourable social perception and lack of available space. It proposes strategies aimed at simplifying regulations, diversifying markets, integrating digitalisation, and promoting communication and training as levers for structural transformation.

At the same time, the consumption of aquatic products in the EU and Spain shows a downward trend. In 2023, per capita consumption in Spanish households was 19.7 kg, 19.7% less than in 2019 (MAPA). The EU Eurobarometer (2023) indicates that only a third of Europeans consume fish or aquaculture products at least once a week, while 15% never do. High price perception, confusion about labeling, and disconnection with the origin of the product are key barriers. This situation requires:

- Educational and informative campaigns aimed at consumers, young people and families.
- Clear labelling and enhanced traceability.
- Greater differentiation of the European aquaculture product from imports.
- Innovation in formats, convenience and distribution channels.

In this complex but promising political, environmental and social scenario, European aquaculture is positioned as one of the key solutions for the future of the system

alimentary. Spanish aquaculture maintains a prominent position in Europe, with solid production, innovation and exports. However, the fall in domestic consumption, the trade deficit and social disconnection are the main obstacles. Converting the available policies and strategies into concrete, measurable and territorially adapted actions will be the key to consolidating a more resilient, competitive and socially recognised sector. Strengthening communication, traceability, and sustainability strategies, as well as promoting domestic consumption and regulatory adaptability, will be key to consolidating its future and responding to present challenges.

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In each new edition of the annual report of APROMAR it is worth remembering that aquaculture is the production of animals and algae in the water using techniques aimed at making more efficient use of natural resources. It is an activity equivalent to what livestock and agriculture are on land. It encompasses varied practices and a very wide range of species and production systems. One of the distinguishing features of fishing is that, throughout all or at least part of its life cycle, the organisms produced are owned by some person. Aquaculture has a history of 4,000 years, but it has been 50 years ago when it has become a relevant socio-economic activity, employing more than 14 million people in the world.

APROMAR is aware of the difficulties that the sector has been accumulating for several years and thanks to its Production and Marketing Plans (PPyC) and with the help of the General Secretariat of Fisheries of the Ministry of Agriculture, Fisheries and Food, it is making important use of this fund obtaining innovative results for companies in terms of fish health and welfare. sustainability of feed, veterinary treatments, market observatory, communication and promotion of aquaculture products.

## Scope of the report

The preparation of this annual report on the evolution of the aquaculture sector is important to know the state of the activity and promote its sustainable development. The target audience is companies and professionals in the sector, but also public administrations, legislators, politicians, researchers, the media, liberal professionals, trade unions, students and society in general.

Although this report focuses on aquaculture as a supplier of food for people, there are other important purposes for the products of this activity, such as the production of pharmaceutical products, the release of specimens for sport fishing, the repopulation of the natural environment, aquariums or scientific research.

This publication is an exercise in sectoral transparency that respects the right to free competition. In his

**Editorial Writing** The publication of confidential information relating to the strategies of the producing companies from which anti-competitive practices could be derived has been avoided. Its objective is only to provide basic aggregate information that may be of interest to anyone interested in aquaculture, both producers and researchers, non-governmental organizations, suppliers, public administrations, trade unions, trainers and students.

The data contained in this report has been collected and processed by APROMAR. In addition to the information collected by the association itself among its members, information from the European Commission, the Spanish Ministry of Agriculture, Fisheries and Food (MAPA), the European Federation of Aquaculture Producers (FEAP) and the Food and Agriculture Organization of the United Nations (FAO) has been used. The National Advisory Board on Aquaculture (JACUMAR-JACUCON) has also been a relevant source of data.

### INFORMATIVE NOTES

- This study refers only to quantities produced and placed on the market of species by aquaculture companies. All references to the term "production" refer to quantities produced and marketed. The volumes of product in the process of production (increase in biomass), but not yet harvested, are not considered.
- The weight of the species produced refers to live weight. All references to production volumes refer to weight prior to gutting or processing, if any.
- The value of world aquaculture productions offered by FAO is given in US dollars. In this report, US dollars have been converted into euros at the exchange rate of 1.0 dollars = 0.80 euros.
- In the price time series, no adjustment has been made based on changes in the price of money (CPI). All prices indicated are in nominal values.
- The annual publication of FAO and FEAP production statistics sometimes includes the revision of data from past years. This circumstance may mean changes on the figures published for the same years in previous editions of this same report.
- "First sale" means the sale made by the primary producer (aquaculturist) to the first commercial link in the value chain.

### NOTES ON STATISTICS

- The data used for the preparation of this 2025 report refer to last year, and even to 2 previous years, depending on the source consulted. Thus, the most recently published FAO and MAPA data refer to 2024. While the data resulting from the surveys carried out by APROMAR and FEAP make
- reference to 2024. When possible, a forecast for 2025 is offered.
- The statistical compilation of aquaculture productions in Europe for this report presents data from the European Union (27) separately in order to disaggregate them from those for Norway and Turkey.

*The purpose of this report is to disseminate the information contained therein. To this end, APROMAR authorises the use by third parties of the text, graphics and tables shown therein on the sole condition that APROMAR is cited as the source.*

# 3



## **Aquaculture in the world**

## 3. Aquaculture in the world

### 3.1. Global availability of aquatic products

Aquatic products from aquaculture and extractive fisheries are critical to feeding a growing global population in a healthy way. These foods represent one of the most important sources of animal protein in the world. According to the FAO's SOFIA 2024 report, aquatic products provided 15% of animal protein and 6% of total protein consumed worldwide in 2021, being essential for more than 3,200 million people, who obtain at least 20% of their protein intake from them, with an estimated average consumption of 20.7 kg per capita. This dependence is particularly significant in lower-income countries, where aquatic protein exceeds 50% of total protein consumed, while in high-income countries dependence is considerably lower.

In addition to their protein intake, aquatic foods contain all the essential amino acids, as well as long-chain omega-3 fatty acids (EPA and DHA), vitamins A, D and group B, and minerals such as calcium, iodine, iron, zinc and selenium. This combination makes them a food of high nutritional quality, essential for correcting unbalanced diets and improving overall health.

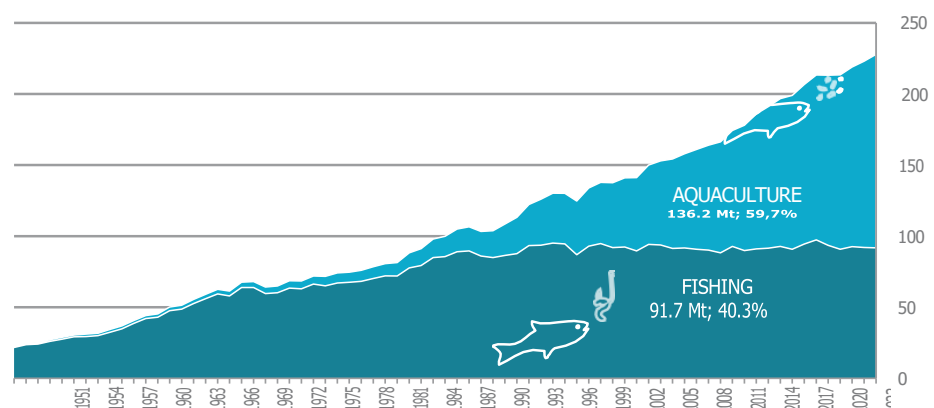
According to the FAO, total aquatic production (aquaculture and fisheries) in 2023 reached 236.1 million tonnes, which is

a new record and an increase of 5.8% compared to 2022. Of this volume, 196.4 million tonnes corresponded to aquatic animals and 39.7 million to algae. In terms of distribution, 61.2% of animal production came from

**World aquatic production (aquaculture + fishing) in 2023 was 136.2 million tons. Aquaculture, with a growth of 5.8% compared to 2022, surpassed (52%) for the second time extractive fishing in aquatic animal production. Since 2013, total aquaculture (including algae) already exceeded fishing in volume.**

marine areas, of which 68% were fisheries and 32% aquaculture, and 38.8% inland waters, dominated by aquaculture (83% compared to 17% extractive fishing). For the second year in a row, aquaculture surpassed extractive fishing in volume in aquatic animal production, contributing 52% of the total, compared to 48% for fishing. Since 2013, the production

Figure 3-1.  
Evolution of world  
aquatic production  
(aquaculture plus  
fishing) in the period  
1951-2023 (FAO).





total aquaculture, including algae, had already surpassed extractive fishing in global volume.

Since 2017, total global aquatic production has remained above 200 million tonnes. That year there was a growth of 4.0% compared to 2016. During 2019 and 2020, overall growth slowed down, with rates below 1%, mainly

due to the decrease in extractive fishing catches as a result of the COVID-19 pandemic. In 2019, catches fell by 4.1% (93.5 Mt) compared to 2018 (97.5 Mt), and in 2020 they did so by an additional 2.7% (91.0 Mt). By contrast, aquaculture demonstrated its resilience with progressive increases: 3.3% in 2019 (119.8 Mt), 2.5% in 2020 (122.8 Mt), 2.8% in 2021 (126.2 Mt), 3.7% in 2022 (130.9 Mt) and 4.0% in 2023 (136.2 Mt), consolidating its strategic role as a stable source of food.

Over the past 30 years, joint production has grown at an average rate of 2.5% per year, exceeding the rate of world population growth that has been 1.0% according to World Bank data in 2020.

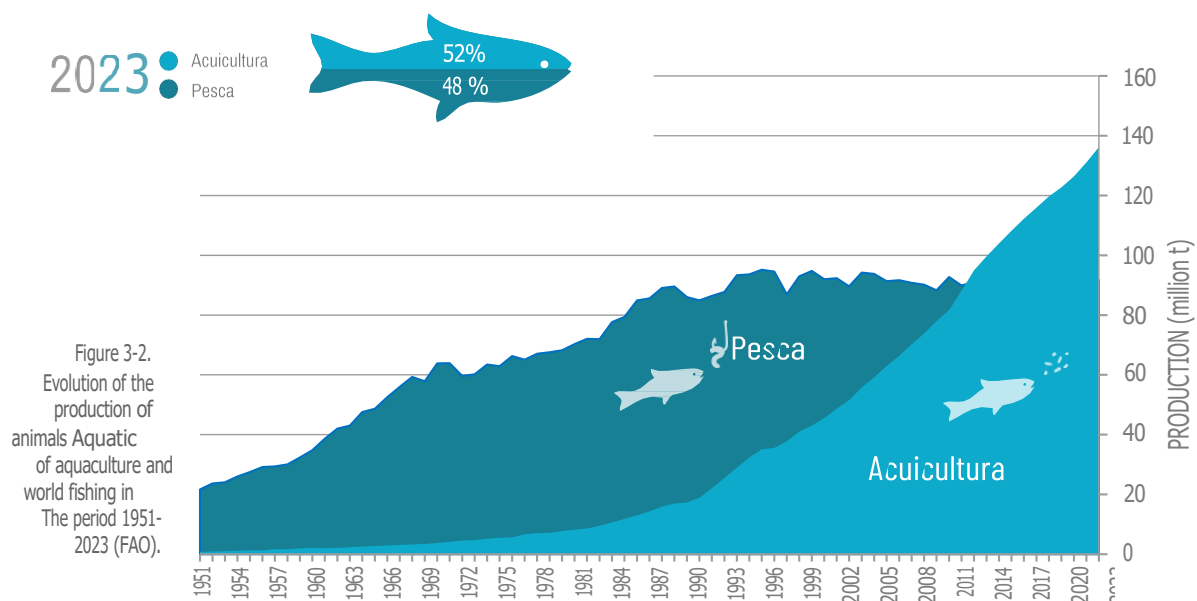
The analysis of the graphs allows us to conclude that aquaculture is the main driver of growth in the global availability of aquatic products. This progress responds to the fact that many fisheries have reached their Maximum Sustainable Yield (MSY), remaining stable for three decades in a range between 86 and 94 million tonnes, over which FAO forecasts a slight recovery in the coming years.

According to FAO estimates, total aquatic animal production will increase by 10 percent by 2032, reaching 205 million tonnes, of which 111 million tonnes will come from aquaculture and 94 million from capture fisheries. This increase responds to the planned expansion of aquaculture, together with the progressive stabilization of the global fishing effort.

**In addition to sustainable aquaculture growth, fisheries management and improved value chains remain key to ensuring healthy and sustainable food socially, economically and environmentally.**

The share of aquatic products destined directly for human consumption has increased from 67% in 1960 to 90% in 2023, reflecting improved processing, storage and distribution systems. At the same time, the use of by-products for the production of fishmeal and fish oils has increased: in 2023 they accounted for 35% and 55% of its total production, respectively.

International trade in aquatic products



it has also maintained its growing trend. In 2023, the total value reached €164 billion, with an average annual growth rate of 7.2% since 1976. China, Norway, Vietnam, Ecuador and Chile lead exports, while the European Union continues to be the largest import market, followed by the United States, China and Japan.

The consumption of aquatic products continues to increase in absolute terms. In 2023, 169 million tonnes were reached, with an average growth rate of 3.0% since 1961, compared to 1.6% for the population. By 2030, the global average consumption of aquatic animal products is estimated to reach 21.4 kg per capita, an increase of 15 percent from current levels.

### 3.2. State of the world's aquaculture

Aquaculture is an activity aimed at raising and producing aquatic organisms in their environment. It is also defined as the cultivation under controlled conditions of species that develop in the aquatic environment (fish, molluscs, crustaceans and algae) and that are useful for humanity.

Each region of the world has aquaculture adapted to its environmental characteristics and the species that are raised there. It is therefore a highly diverse and flexible activity, capable of being integrated into different environments and ways of life. This makes it a key socio-economic activity for the development of local communities, especially in areas where other economic activities are not viable, and in developing countries with high nutritional needs. In particular, the presence of long-chain omega-3 polyunsaturated fats (EPA and DHA) in aquatic products is an essential element for people's health and quality of life.

In addition to the direct jobs generated on the farms, there are those linked to a wide range of auxiliary activities that support the aquaculture sector, such as processing, packaging, marketing and distribution, manufacture of equipment and nets, farming technologies, ice production, construction and maintenance of facilities, technical consultancy, scientific research and administrative services related to its monitoring and regulation.

On the other hand, aquaculture is positioned as the livestock activity with the lowest climate impact. FAO believes that its development contributes to the efficient use of resources

Sustainable fisheries and aquaculture remain key complementary activities for global food security. FAO believes that both sectors, managed responsibly, can ensure sufficient, nutritious and equitable supplies for present and future generations.

To ensure its sustainability, FAO is promoting the "Blue Transformation" initiative, a strategy aimed at achieving resilient, healthy and equitable aquatic systems. This transformation must also include the strengthening of small-scale fisheries, which account for 40% of catches and 90% of employment in the extractive sector, with a high participation of women (40% in the value chain), as well as the promotion of sustainable aquaculture, which already exceeds half of the world's aquatic animal production.

to food security and economic growth, all with a limited and controllable environmental impact.

To assess the growth of world aquaculture, data from 1950 are taken into account, when global production barely exceeded 638 thousand tons. In contrast, the 136.2 million tonnes reached in 2023 reflect an exceptional increase over the last seven decades.

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**Aquaculture is the livestock activity with the lowest carbon footprint, and its expansion is key to achieving more efficient and sustainable food production.**

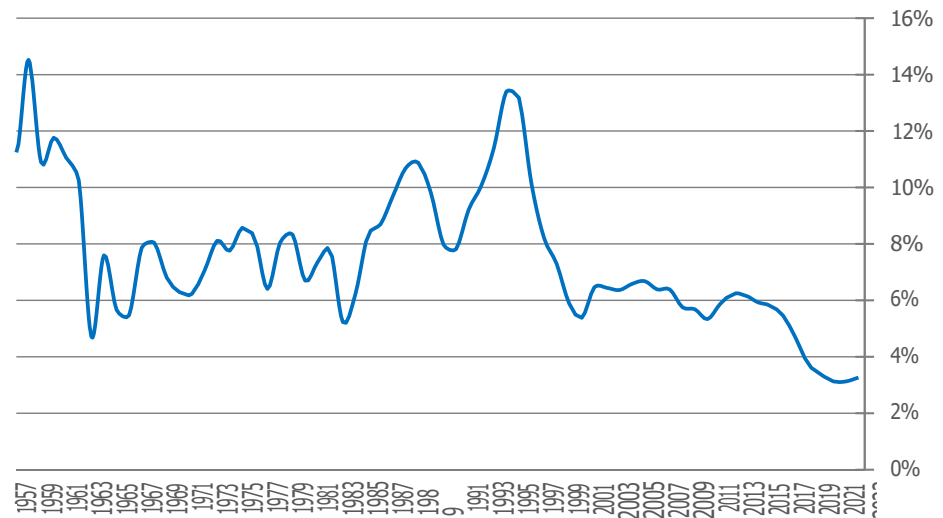
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Analysis of year-on-year growth using 5-year moving averages shows that the overall growth rate remains above 3%. During the 1990s, average growth was 9.3%, falling to 6.0% in the period from 2000 to 2010, and to 4.5% in the last decade. In the most recent years, 2021, 2022 and 2023, year-on-year growth has stabilised at around 3.2%, indicating a phase of maturation and consolidation of the sector.

In 2023, global aquaculture production reached 136.2 million tonnes, valued at €292,786 million, accounting for 58% of the world's total aquatic production

In economic terms, the estimated value of the first sale of aquaculture production in 2023 is around 292,786

Figure 3-3.  
Growth trends  
year-on-year production  
world aquaculture in the  
period 1957-2023, calculated  
on arithmetic means by  
5-year rolling tranches for  
Attenuate cycle oscillations  
short (from FAO).



million euros, representing an increase of 4.3% compared to 2022 (280,849 million euros). This growth confirms the recovery of the economic rhythm prior to the pandemic. In comparison, the increase recorded in 2021

compared to 2020 it was 8.8%, while the growth in 2020 compared to 2019 was only 3.7%, affected by the logistical and market limitations imposed by the COVID-19 pandemic.

## 3.3. Aquaculture productions in the world

Aquaculture production is different on each continent. It is a sector that has developed differently in each place, depending on the environment, culture, economic level, governance and other intrinsic factors of each locality, country or continent.

Asia has been cultivating aquaculture species for more than 2,000 years and continues to be the world's largest producer. In 2023 it topped the list of continents with 91.7% of global production, reaching 124.8 Mt, 3.7% more than in 2022. The second world producer was America (3.7%, 5.1 Mt), followed by Europe (2.5%, 3.5 Mt), Africa (1.9%, 2.6 Mt) and Oceania (0.2%, 0.2 Mt).

Production increased in Asia (3.7%) and the Americas (10.7%), while Europe, Africa and Oceania recorded slight declines of -1.5%, -1.3% and 5.5%, respectively. Africa remains a region with high development potential because of their need for healthy food and their dependence on proteins of aquatic origin, which in many countries exceeds 50% of the animal protein consumed.

Asia also led in 2023 in extractive fishing production, with 48.5 Mt, representing 52.9% of the global total. It was followed by America with 16.7 Mt (18.2%), Europe with 14.4 Mt (15.7%), Africa with 10.6 Mt (11.5%) and Oceania with 1.6 Mt (1.7%). The highest year-on-year growth in extractive fisheries was experienced by Asia with 2.6%, followed by Europe with 1.6% and Africa (1.1%). On the other hand, the Americas and Oceania experienced a decrease of -9.8% and -2.5%, respectively, compared to 2022.

**China continues to stand out as the world's leading aquaculture producing country, with 78.3 million tonnes harvested in 2023, accounting for 57.5% of global production.**

In the country rankings, the top five are still Asian: China, Indonesia, India, Vietnam and Bangladesh,

which together produced 113.2 Mt, which represents 83.1 % of the global total in 2023. The rest of the top 10 was completed by the Philippines, Republic of Korea, Norway, Egypt and Chile. These ten countries accounted for 122.6 Mt, or 90.0% of global production.

China increased its production by 3.8% compared to the previous year. India and Vietnam stand out as the countries with the highest increases, both above 5%, and India with a rise of 10.6%. On the other hand, Norway and Chile suffered slight declines (-0.7% and -1.4%, respectively), while the Republic of Korea lost 0.4%.

Spain fell from 24th to 26th place in the global ranking, with a production of 243,110 tonnes, with a decrease of -0.11% compared to 2022.

If the European Union (EU-27) were considered as a single producer, its aquaculture volume in 2023 would have been 1.06 million tonnes, ranking 13th in the world, between Ecuador and Thailand.

**India and Vietnam are the countries that experienced the sharpest growth in 2023, with 10.6% and 5.2%, respectively.**

In terms of value, the top four countries were China, India, Vietnam and Indonesia, with a combined share of 77.1% of the total value generated. China led with €180,327 million, India reached €22,234 million after a growth of 61.3% and

Table 3-1.

Main aquaculture producing countries by annual tonnes in 2023 and year-on-year rate of change (FAO).

Country	Quantity (t)	% Var. annual
1 China	78,276,941	3.8%
2 Indonesia	15,361,425	4.0%
3 India	11,321,123	10.6%
4 Vietnam	5,378,860	5.2%
5 Bangladesh	2,852,572	4.4%
6 Philippines	2,384,023	1.5%
7 Republic of Korea	2,304,411	-0.4%
8 Norway	1,649,984	-0.7%
9 Egypt	1,552,430	0.0%
10 Chile	1,502,919	-1.4%
11 Ecuador	1,234,088	3,09%
12 Myanmar	1,197,000	6,58%
13 Media – EU	1,058,742	-4.49%
14 Thailand	1,001,222	0,02%
15 Japan	879,361	-6.80%
(16) Brazil	793,096	7,32%
TOTAL 15 PRALES. PRODUCERS	127,689,455	4,07%
OTHER COUNTRIES	8,476,311	1,03%
WORLDWIDE TOTAL	136,165,767	3,7%
26 Spain	243,110	0.11%

Table 3-2.

Main aquaculture producing countries by value of annual production (Million Euros) in 2023 (FAO) and year-on-year rate of change.

Country	Value (M€)	% Var. annual
1 China	180.327	23.0%
2 India	22.234	61.3%
3 Vietnam	12.260	2.6%
4 Indonesia	10.783	-4.2%
5 Chile	9.136	-1.4%
6 Norway	8.652	-2.4%
7 Bangladesh	4.867	-6.2%
8 Japan	4.020	19.8%
9 Ecuador	3.603	9.9%
10 Republic of Korea	2.306	-7.5%
11 Turkey	2.268	11,6%
12 Thailand	2.241	-4.8%
13 Egypt	1.806	-37.4%
14 Philippines	1.784	-2.1%
15 Iran (Islamic Republic of)	1.709	22,3%
TOTAL 15 PRALES. PRODUCER	267.919	18,1%
OTHER COUNTRIES	24.867	6,2%
WORLDWIDE TOTAL	292.786	17.0%
31 Spain	689	10,4%

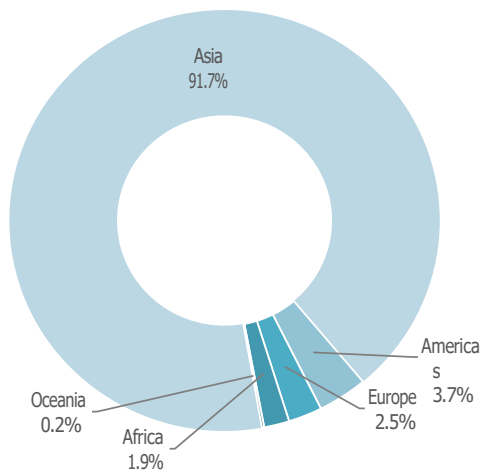
Vietnam maintained its position with €12,260 million. Indonesia (€10,783 million), Chile (€9,136 million), Norway (€8,652 million) and Bangladesh (€4,867 million) ranked from 4th to seventh, with decreases compared to 2022 of -4.2%, -1.4%, -2.4% and -6.2%, respectively. Japan and Ecuador recovered positions with increases of 19.8% and 9.9%, while Egypt experienced a strong

**If the European Union (of the 27) were considered as a unit, its aquaculture harvest in 2023 would be with 1.06 million tons in 13th place, between Ecuador and Thailand.**



## Aquaculture in the World

Figure 3-4.  
Distribution of aquaculture  
production across the five  
continents (from FAO).



a decrease of 37.4%. These ten countries accounted for 88.2 % of global value in 2023.

Spain maintained 31st place in terms of value, with production valued at €697 million, which means that

it represents a growth of 1.2% compared to 2022. Here we would not talk about the EU if it were 1 unit in value?

In terms of species, the most cultivated by volume in 2023 were the Japanese Laminaria (*Saccharina japonica*) with 13.3

Species	Scientific name	Tons	% Var. annual
1 Japanese Laminaria	( <i>Saccharina japonica</i> )	13.253.569	22.0%
2 Eucheuma Seaweed	( <i>Eucheuma and Kappaphycus</i> )	8.254.317	5.8%
3 Japanese oyster	( <i>Crassostrea gigas</i> )	7.766.906	12,9%
4 Whiteleg Shrimp	( <i>Litopenaeus vannamei</i> )	7.356.982	7,8%
5 Funny Seaweed	( <i>Gracilaria sp.</i> )	7.021.566	-7.2%
6 Chinese carp	( <i>Ctenopharyngodon idella</i> )	6.218.513	1,1%
7 Nile Tilapia	( <i>Oreochromis niloticus</i> )	5.195.916	3,9%
8 Silver Carp	( <i>Hypophthalmichthys molitrix</i> )	5.147.718	1,5%
9 Catla	( <i>Labeo catla</i> )	4.478.973	8,1%
10 Chinese Knife	( <i>Sinonovacula constricta</i> )	4.449.106	7,3%
TOTAL 10 PRALES. SPECIES		69.143.566	13,1%
OTHER SPECIES		67.552.848	-3,2%
TOTAL WORLD AQUACULTURE		136.696.415	4,4%
26 Rainbow trout	( <i>Oncorhynchus mykiss</i> )	1,105,245	10,1%
33 Japanese clam	( <i>Ruditapes philippinarum</i> )	882,974	-80.1%
56 Golden	( <i>Sparus aurata</i> )	341,289	-0,9%
66 Sea Bass	( <i>Dicentrarchus labrax</i> )	286,968	-2,3%
81 European mussels	( <i>Mytilus galloprovincialis and edulis</i> )	220,004	-13,5%
98 Turbot	( <i>Scophthalmus maximus</i> )	73,423	1,1%

Table 3-3.  
Main species  
produced by  
aquaculture in the  
world (in tonnes) in  
2022 (FAO) and year-  
on-year rate of

Mt, the seaweed *Eucheuma* (genera *Eucheuma* and *Kappaphycus*) with 8.3 Mt, the Japanese oyster (*Crassostrea gigas*) with 7.8 Mt and the prawn or white shrimp (*Litopenaeus vannamei*) with 7.4 Mt. Followed by *Gracilarias* with 7.0 Mt and the Chinese carp (*Ctenopharyngodon idella*) with 6.2 Mt.

The top ten species produced accounted for 50.6%

% of total volume, with a combined growth of 13.1

%. The species farmed in Spain that appear in this global ranking are: rainbow trout (26th), sea bream (56th), sea bass (66th), European mussels (81st) and turbot (98th).

In terms of production value by species, white shrimp (*Litopenaeus vannamei*) is the species that tops the ranking with €35,398 million, 13.3% more than in 2022. This is followed by the marsh crab (*Procambarus clarkii*) with a total of €25,915 million, 27.8% more than in 2022. Atlantic salmon obtained a profit of €16,820 million and a decrease of -4.1% compared to 2022. Below them are Chinese carp and Chinese channel crab with €13,310 million (18.3% more than in 2022) and €10,611 million (28.1 million euros).

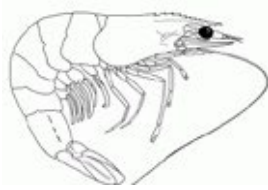
% more than in 2022), respectively.

Species annual	Name scientist	Value (M€)	% Var.
1 Whiteleg Shrimp	( <i>Litopenaeus vannamei</i> )	35.398	13,3%
2 Marsh crab	( <i>Procambarus clarkii</i> )	25.915	27,8%
3 Atlantic salmon	( <i>Salmo salar</i> )	16.820	-4.1%
4 Chinese carp	( <i>Ctenopharyngodon idella</i> )	13.310	18,3%
5 Chinese channel crab	( <i>Eriocheir sinensis</i> )	10.611	28,1%
6 Silver Tent	( <i>Hypophthalmichthys molitrix</i> )	10.222	19,6%
7 Nile Tilapia	( <i>Oreochromis niloticus</i> )	8.804	5,0%
8 NEP Freshwater Fish	(miscellaneous)	7.829	87,8%
9 Common tent	( <i>Cyprinus carpio</i> )	7.829	16,2%
10 Freshwater Snook	( <i>Siniperca chuatsi</i> )	7.627	39,8%
TOTAL 10 PRALES. SPECIES		144.365	18,45%
OTHER SPECIES		292.671	17,02%
TOTAL WORLD AQUACULTURE		437.036	17,02%
18 Rainbow trout	( <i>Oncorhynchus mykiss</i> )	4.690	15,7%
42 Sea Bass	( <i>Dicentrarchus labrax</i> )	1.499	-0.2%
43 Golden	( <i>Sparus aurata</i> )	1.469	-8.8%
78 Turbot	( <i>Scophthalmus maximus</i> )	475	17,1%
89 European mussels	( <i>Mytilus galloprovincialis and edulis</i> )	337	1,7%

Table 3-4.  
Main species by value  
(million euros)  
produced through  
aquaculture in the world  
in 2023 (FAO) and year-  
on-year change.

The ten most valuable species generated together €144,365 million, 18.45% of the total value of world aquaculture (€437,036 million). As for species produced in Spain,

Rainbow trout (€4,690 million, +15.7%), sea bass (€1,499 million, -0.2%), sea bream (€1,469 million, -8.8%), turbot (€475 million, +17.1%) and European mussels (€337 million, +1.7%).



*Litopenaeus vannamei*

## WHITE WOLF (*Litopenaeus vannamei*)

Class: Crustacea Order: Decapode • Family: Penaeidae

**Significant characters and morphology:** The white prawn, also called equatorial prawn, is a species characterized by whitish legs and a greenish-gray color when raw (red when cooked). It can reach a maximum size of 230 mm.

**Culture:** Its production is carried out on the coast, in ponds located in intertidal zones and with different levels of intensification.

**Product presentation:** It is presented on the fresh market, frozen, whole or headed.



*Saccharina japonica*

## JAPANESE LAMINARIA (*Saccharina japonica*)

Class: Phaeophyceae Order: Laminariales • Family: Laminariaceae

**Significant characters and morphology:** Brown algae formed by a brownish-golden lamina and stipe. The edges of the central nerve expand in a pinatifid fashion along with the lamina.

**Cultivation:** It is one of the world's most productive species due to its high growth speed, facilitating its large-scale cultivation. It can occur on both exposed and calm coasts.

**Marketing and consumption:** Cultivated for human consumption, practically everything is used from it, even the stem. For each meter of rope, about 10.6 kg can be obtained.



*Hypophthalmichthys molitrix*

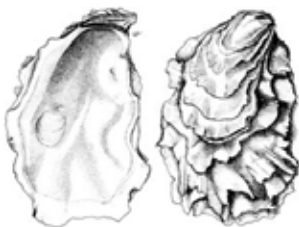
## SILVER CARP (*Hypophthalmichthys molitrix*)

Class: Osteictios Order: Cypriniformes • Family: Cyprinidae

**Significant characters and morphology:** Robust fish with a slight elevation in its dorsal part. The body is laterally compressed fusiform and the ventral part forms an acute keel, which runs from the chest to the belly.

**Culture:** It is widely used in polyculture for the best use of the systems, when they do not contain fish that use the trophic level of phytoplankton. It is used in waters affected by eutrophication from anthropic action. Its reproduction is obtained induced in the laboratory, not spontaneously spawning in naturalized or closed environments.

**Products and consumption:** Species suitable for consumption, but with a large number of spines that make it difficult to market.



*Crassostrea gigas*

## JAPANESE OYSTER (*Crassostrea gigas*)

Class: Bivalvia Order: Ostrea • Family: Ostreidae

**Significant characters and morphology:** Bivalve mollusc, filtering, dirty white or greyish in colour. The valves are slightly elongated on the anteroposterior axis with one of the ends (where the hinge is) ending in a point. The right or upper leaflet is relatively flat and the left or lower valve is concave and adheres to the substrate. The average size is 9 to 10 cm and reaches a maximum size of 20 cm.

**Cultivation:** The breeding method used depends on the environment, as well as tradition. In "over-elevation" farming, oysters are placed in plastic nets attached to trestles above the ground. In "bottom" culture, they are placed directly on the shore or in shallow water. "Rope" culture is done with oysters on ropes. And in "deep water" farming, oysters are placed in parks located at depths of up to ten meters.

**Marketing:** It is marketed fresh, frozen (meat and half shell) and canned.

## 3.4. Aquaculture productions by groups and environments

In global aquaculture, the most produced species group in 2023 continued to be fish, with 63.8 million tonnes, accounting for 46.9% of the total. It was followed by algae with 37.7 million tonnes (27.6%), molluscs with 19.5 million tonnes (14.3%) and crustaceans with 13.7 million tonnes (10.1%). Other groups such as amphibians, reptiles and invertebrates reached lower figures, together representing less than 2% of total production. In addition, 74.6% of the farmed species were fed, reflecting the predominance of intensive and semi-intensive systems over extensive ones.

If the economic value of production is analyzed by groups of species, it is observed that the classification varies with respect to volume. Fish remain in first position with 153,760 million euros, which represents 52.2% of the total. Next, are the crustaceans, which generated 80,463 million euros (29.5%). In third place, molluscs reached 29,872 million euros (10.2%), followed by algae with 14,777 million euros (5.0%). Finally, amphibians and reptiles together contributed just under 3% of the total value of global aquaculture.

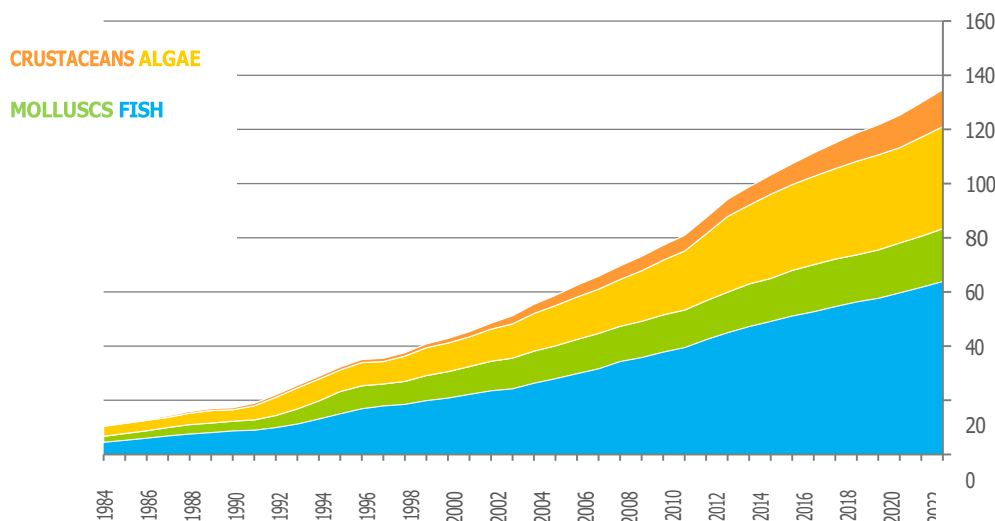


Figure 3-5. Evolution of Production aquaculture World Cup (Mt), for groups, for the period 1951-2023 (FAO).

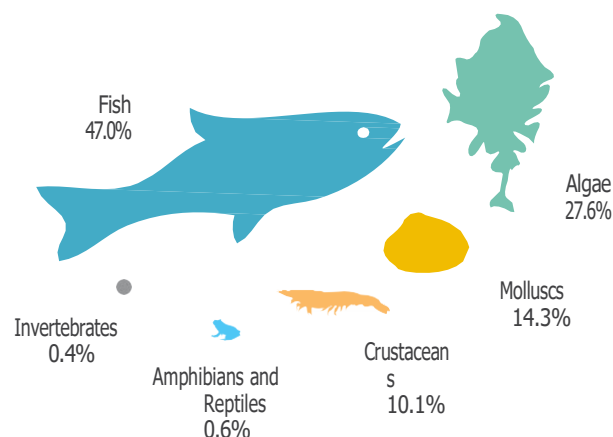


Figure 3-6. Percentage distribution of production of world aquaculture (t) in 2023 by groups (FAO).



Unlike terrestrial farming systems, where most production is concentrated in a few domesticated species, global aquaculture stands out for its high diversity. According to FAO data, in 2023, around 730 different aquatic species were being bred in the world, including fish, molluscs, crustaceans, algae and other organisms. Of these, 15 species accounted for 61% of the total production volume, a diversity derived from the biological richness of the aquatic environment, the adaptability of these organisms to controlled systems and the continuous technological and cultural innovation of farming systems.

If aquaculture production is divided by production environment, it can be seen that 54.6% takes place in marine waters,

**In 2023, some 730 different aquatic species were being bred in the world, including fish, molluscs, crustaceans, algae and others, according to FAO. Of these, 17 represent 60% of the total production.**

while 45.4% take place in fresh water. This distribution shows a slight inversion with respect to the historical trend, since the growth of marine and marine-coastal species – especially in Asia and South America – has increased their relative weight in recent years.

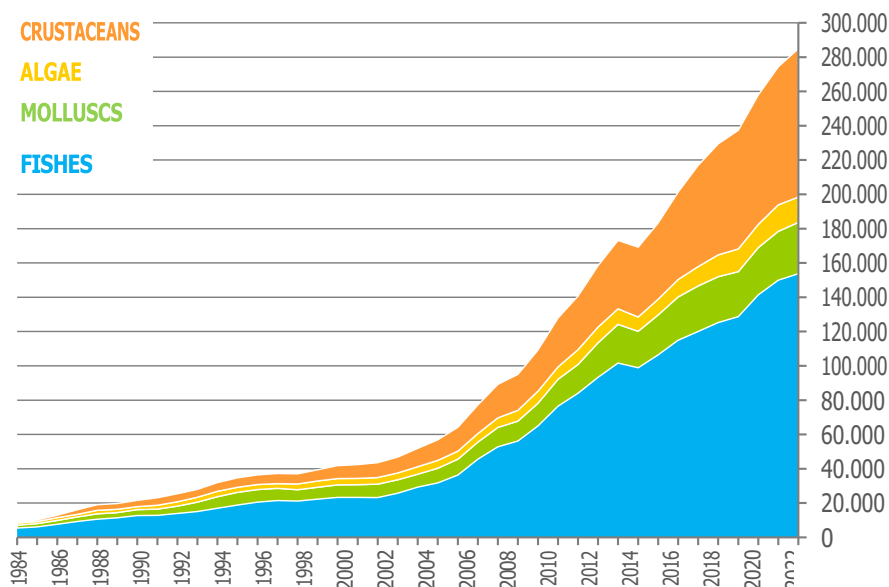


Figure 3-7.  
Evolution of the value of production of aquaculture world, by groups, for the period 1984-2023, in millions of euros (FAO).

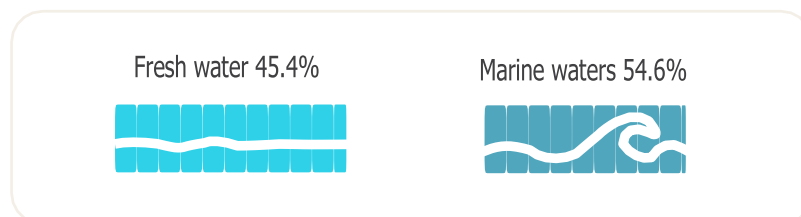


Figure 3-8.  
Distribution percentage of Production (t) of World aquaculture in 2023 by production environments (FAO).

### 3.5. Potential of aquaculture and sustainable development

Over the past few decades, aquaculture has established itself as one of the fastest growing productive activities on a global scale. According to the latest FAO report (SOFIA 2024 The State of World Fisheries and Aquaculture 2024), in 2022 aquaculture production reached an all-time high of 130.9 million tonnes, positioning itself for the first time as the largest aquaculture production in the world.

main source of aquatic food for the human consumption, ahead of extractive fishing.

The success of modern aquaculture is based on the proper management of the biology of farmed species, the introduction of technological innovations, the development of specific foods and business organization.

This growth has been driven by significant technological advances, better biological management of the cultivated species and a growing professionalization of the sector. In this context, the success of modern aquaculture lies in its ability to combine environmental sustainability, economic efficiency and social commitment, offering a strategic response to the global challenges of food security, climate change and pressure on terrestrial ecosystems.

Since the adoption of the Blue Transformation programme in 2021, FAO has set out a clear vision to sustainably intensify and expand aquaculture, focusing on three key pillars: effective governance, technological innovation and equity in access to resources and benefits. This approach is aligned with FAO's Strategic Framework 2022–2031 and responds directly to the Sustainable Development Goals (SDGs), especially SDGs 2 (zero hunger), 12 (responsible consumption and production), 13 (climate action) and 14 (life below water).

Specifically, the Blue Transformation seeks to increase global sustainable aquaculture production by at least 35% by 2030, generate decent and inclusive employment in the sector, and ensure resilience to environmental and economic crises. FAO stresses that this expansion must be carried out under solid regulatory frameworks and with rigorous monitoring of ecological, social and economic impacts.

At the European level, the sustainable development of aquaculture is framed in the European Green Deal and the Farm to Fork strategy, whose lines

are specified in the Strategic Guidelines for a more sustainable and competitive EU aquaculture (2021–2030). This communication from the European Commission promotes a competitive, resilient sector that reduces dependence on imports through the local production of healthy and safe food.

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**The success of modern aquaculture is based on in the proper management of the biology of cultivated species, in the introduction of technological innovations, in the development of specific foods and in the business organization.**

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These guidelines prioritize administrative simplification, innovation, environmental sustainability and rural and coastal development. They also promote transparent labelling and European consumer awareness of the origin of seafood. In this context, the Spanish aquaculture model stands out for its strategic potential in Europe, leading in production volume and maintaining quality and sustainability standards aligned with EU regulations.

Aquaculture is at the heart of the United Nations 2030 Agenda. As a multifaceted activity, it can contribute directly and indirectly to the achievement of the 17 SDGs. According to Troell et al. (2023), its main positive impacts focus on the eradication of hunger (SDG 2), improved health and nutrition (SDG 3), poverty reduction (SDG 1), gender equality (SDG 5) and the protection of aquatic and terrestrial ecosystems (SDGs 14 and 15).

In addition, its potential to integrate circular production models (such as aquaponics or the use of algal biomass for energy) reinforces its role in the transition to more sustainable food systems (SDGs 6, 9, 11, 12 and 13).

Spain, as the largest aquaculture producer in the EU in 2023 (with 266,066 tonnes and a value of €750.5 million), is in a privileged position to lead this transition. However, as highlighted in APROMAR's 2025 Sustainability Report, the country is still highly dependent on imports for

to satisfy their domestic consumption, which shows a wide margin for national sustainable growth.

Spanish aquaculture has demonstrated a low water and carbon footprint, a strong commitment to quality certification, animal welfare and the

traceability, and a capacity to contribute to the socio-economic development of rural and coastal areas. With a network of more than 5,200 facilities, a leading scientific community in Europe and recognised traceability, the sector is firmly moving towards comprehensive sustainability.

# 4



## **Aquaculture in the European Union**

## 4. Aquaculture in the European Union

### 4.1. Situation of aquaculture in the European Union

This section presents the current state of aquaculture production in the European Union. Unfortunately, as in previous reports, the situation continues to show signs of stagnation, or even a gradual decrease. Despite the efforts of the European Union over the past two decades, the targets set for the sector are not being achieved.

The European Commission has repeatedly sought to revive aquaculture's productive potential, through strategic documents, guidance frameworks and the endorsement of the Aquaculture Advisory Council (AAC). Thus, on 12 May 2021, new strategic guidelines for more sustainable and competitive aquaculture in the EU were published. However, its non-binding nature on member states, coupled with weak implementation and a lack of effective follow-up mechanisms, has prevented tangible results. The strategy does not define specific production objectives, which has led States to prioritise environmental agendas over productive growth, generating structural difficulties for the development of the sector.

In 2023, the total aquatic production (fishing plus aquaculture) of the European Union reached 4,614 thousand tonnes, which represents a decrease of -3.1% compared to 2022 (4,778 thousand tonnes). This is the sixth consecutive year of production decline, accumulating an average drop of -4.5% in that period. The economic value of this production was 4,149.2 million euros, which represents an increase of 3.3% compared to the previous year (4,017.7 million euros), mainly attributable to the increase in the price of some products.

Aquaculture accounted for 22.9% of the total volume of aquatic production in the EU in 2023, while extractive fisheries amounted to 77.1%. Fishing contributed 3,556

thousand tons, a slight decrease of -2.8% compared to 2022 (3,657 thousand tons).

As for aquaculture, a total of 1,058.7 thousand tons were harvested in 2023, which represents a decrease in the -5.5% compared to the 1,121.3 thousand tons of 2022. This reduction

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**In 2023, 4,614 thousand tons of fishery and aquaculture products were harvested in the European Union with a value of €4,149 million. As for aquaculture, a total of 1,058.7 thousand tons were harvested in 2023, which represents a decrease of -5.5% compared to the 1,121.3 thousand tons of 2022.**

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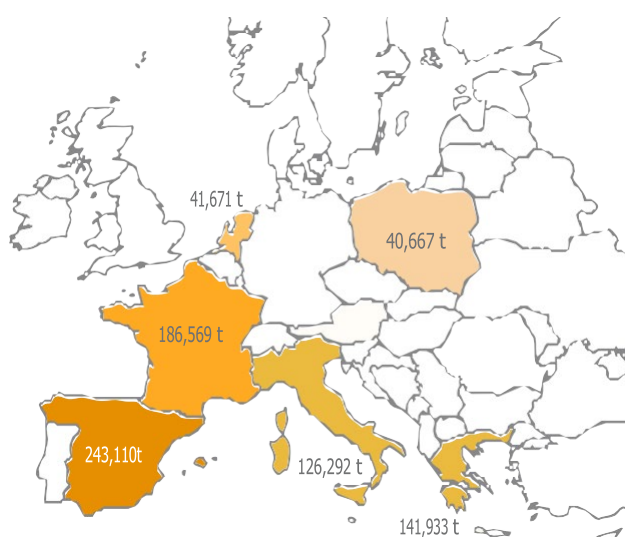
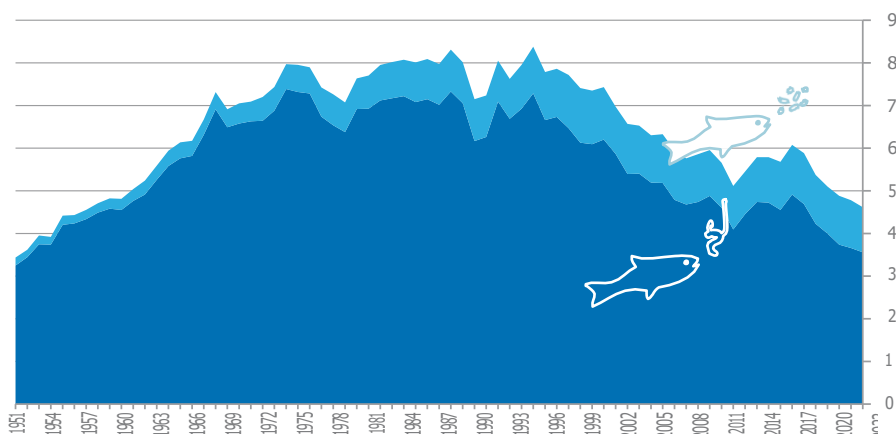
This is worrying and reinforces the downward trend of recent years.

The importance of aquaculture within the EU varies significantly between Member States. In some countries, such as Spain, its economic and social weight has already exceeded that of extractive fishing, especially in certain autonomous communities. In addition to its economic dimension, aquaculture plays a prominent role in maintaining coastal and river communities and their cultural traditions.

In 2023, Spain led aquaculture production with 243,110 tonnes, although there was a decline in -11.9% vs. 2022 (276,071 t). It was followed by France with 186,569 tonnes, Greece (141,933 t), Italy (126,292 t) and the Netherlands (41,671 t). Spain accounted for 23% of the EU's total aquaculture volume, followed by France (17.6%), Greece (13.4%) and Italy (11.9%). Together, these

## Aquaculture in the European Union

Figure 4-1.  
Evolution of the  
Total production of  
Aquaculture and fisheries  
of the 27 States  
members of the Union  
between 1951 and  
2023, in millions of  
Tons (FAO).



	VALUE (Millions €)	VOLUME (Tons)
Spain	697,2 M€	243.110
France	782,6 M€	186.569
Greece	598,4 M€	141.933
Italy	502,2 M€	126.292
Netherlands (Kingdom of the)	103,2 M€	41.671
Poland	160,8 M€	40.667
Ireland	141,5 M€	35.118
Germany	112,3 M€	34.961
Denmark	115,2 M€	33.135
Croatia	176,3 M€	26.824
Portugal	200,4 M€	22.448
Malta	172,2 M€	20.833
Czechia	46,3 M€	18.613
Hungary	53,1 M€	17.785
Finland	74,0 M€	15.169
Sweden	41,1 M€	11.425
Romania	32,4 M€	11.264
Bulgaria	35,3 M€	9.928
Cyprus	33,8 M€	5.700
Austria	32,7 M€	5.170
Lithuania	15,6 M€	4.258
Slovakia	8,4 M€	2.768
Slovenia	5,0 M€	1.139
Estonia	4,9 M€	918
Latvia	2,6 M€	784
Belgium	1,6 M€	261

Figure 4-2. Distribution of aquaculture production in the Member States of the European Union (27) by quantity (tonnes) and value (million euros) in 2023 (FAO).

Five countries accounted for more than 70% of the total volume produced.

In terms of economic value, France led the production value with €782.6 million, followed by Spain (€697.2 million), Greece (€598.4 million) and Italy (€502.2 million). These four countries account for more than 60% of the total value of EU aquaculture. These figures reflect an unequal distribution of economic value in European aquaculture, where Mediterranean countries continue to concentrate a substantial part of the activity.

As for the groups of farmed species, in 2023 the

proportion was fish (53.1%) and molluscs (46.9%) by volume. In economic value, fish generated €2,897.9 million and molluscs €1,228.9 million, the latter being the most affected by the reduction in volume.

In 2023, 558,615 tonnes of fish, worth €2,897.9 million, and 497,493 tonnes of molluscs, worth €1,229.0 million, were farmed in the European Union. Compared to 2022, this represents a decrease of -2.0% in fish volume



## Aquaculture in the European Union

Figure 4-3  
Evolution of  
aquaculture  
production (Mt) in  
the European  
Union by group for  
the period  
1951-2023 (FAO).

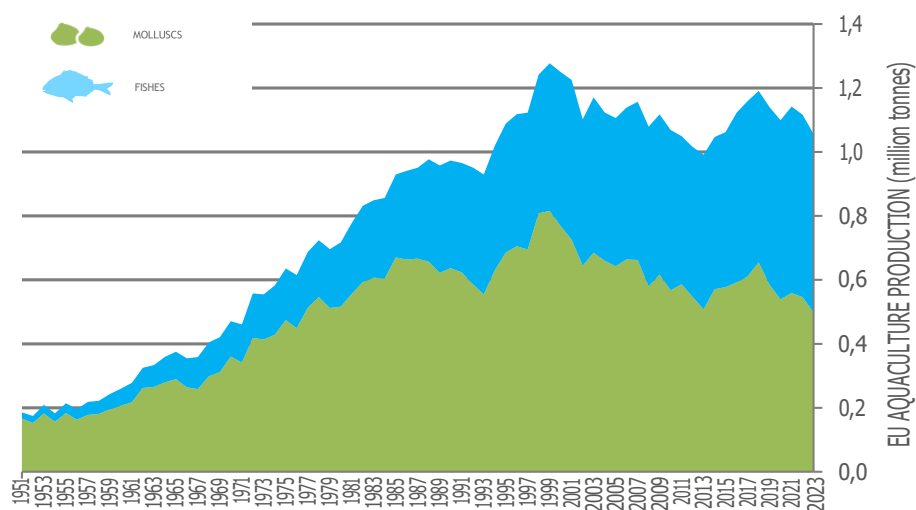
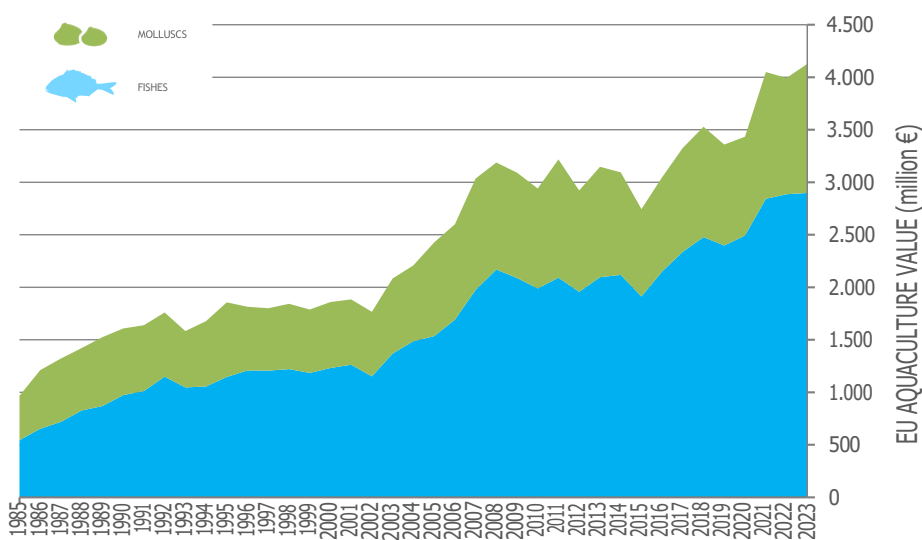


Figure 4-4.  
Evolution of the  
value of the  
production of  
aquaculture in the  
European Union in  
millions of euros, by  
groups for the period  
1985-2023  
(FAO).



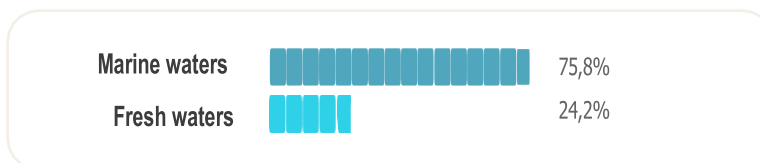
(up from 570,200 tonnes) and a 0.5% increase in value (from €2,885 million). In the case of molluscs, the volume fell by -8.9% (from 546,200 t), but the economic value increased by 10.9% (from €1,108 million), which could indicate a change in the average price or an improvement in the added value of certain products.

The farming environment is still dominated by aquaculture

**In 2023, 558,615 tonnes of fish worth €2,897.9 million and 497,493 tonnes of molluscs worth €1,229.0 million were farmed in the EU.**

## Aquaculture in the European Union

Figure 4-5.  
Percentage distribution of  
aquaculture production  
(tonnes) in the Union  
European in 2023 by environment  
(FAO).



marine (75.8%), compared to 24.2% of freshwater production, remaining stable compared to previous years. Analysing the species, mussels (*Mytilus spp*) continue to be the most produced with 360,504 tonnes, although they have experienced a sharp reduction of -12.3% compared to 2022 (410,909 t). The

Rainbow trout was the second most farmed species with 170,246 t, followed by sea bream (105,924 t), European oyster (90,346 t), sea bass (86,547 t) and common carp (63,430 t).

Atlantic bluefin tuna, which occupies seventh position with 32,638 tonnes, experienced a slight increase of 1.3%.

Table 4-1.  
Main species  
produced by  
aquaculture in the  
European Union, by tonne,  
in  
2023 (FAO).

Species	Scientific name	Tons	% Var. annual
1 Mussels	( <i>Mytilus spp</i> )	360.504	-12,3%
2 Rainbow trout	( <i>Onchorynchus mykiss</i> )	170.246	0,2%
3 Sea bream	( <i>Sparus aurata</i> )	105.924	-0,9%
4 Japanese oyster	( <i>Crassostrea gigas</i> )	90.346	-10,4 %
5 Sea Bass	( <i>Dicentrarchus labrax</i> )	86.547	-4,8%
6 Common tent	( <i>Cyprinus carpio</i> )	63.430	-0,7%
7 Atlantic Bluefin Tuna	( <i>Thunnus thynnus</i> )	32.638	1,3%
8 Japanese clam	( <i>Ruditapes philippinarum</i> )	22.904	-6,1%
9 European oyster	( <i>Ostrea edulis</i> )	15.630	572.5 %
10 Turbot	( <i>Scophthalmus maximus</i> )	12.683	0,4%
11 Meagre	( <i>Argyrosomus regius</i> )	12.522	9,0%
12 Atlantic Salmon	( <i>Salmo salar</i> )	10.511	-19,6%
OTAL 10 PRALES. SPECIES		960.852	-5,3%
OTHER SPECIES		97.890	-8,1%
TOTAL EU AQUACULTURE		1.058.742	-5,6%

In contrast, species such as Atlantic salmon (-19.6%) and Japanese clams (-6.1%) recorded notable declines.

Atlantic bluefin tuna, which occupies seventh position with 32,638 tonnes, experienced a slight increase of 1.3%. In contrast, species such as Japanese oysters (-84.5%), Atlantic salmon (-19.6%) and Japanese clams (-6.1%) recorded notable declines.

Of the total 1,058,742 tonnes of aquaculture harvested in 2023, the top 10 species accounted for 960,852 tonnes, or 90.8% of the total. The rest of the species totalled 97,890 tonnes, which represented a decrease of -8.1% compared to the previous year.

In terms of economic value, the top 10 species generated €3,559.7 million, representing 85.8% of the total value of EU aquaculture. The added value of the rest of the species was €589.6 million, a significant increase of 11.6%, a sign of a more diverse market and possibly greater added value in alternative species.

Among the species with the highest economic value are rainbow trout with €693.13 million, followed by sea bass (€544.49 million), sea bream (€500.75 million), Japanese oysters (€444.64 million), mussels (€414.66 million) and bluefin tuna (€356.17 million). Common carp, with €208.07 million, and fine clams, with €107.64 million, showed a notable increase of 28.4% and 49.4

Table 4-2  
Main species produced  
by aquaculture in the  
European Union, by  
value, in 2023  
(FAO).

Species	Scientific name	Value (M€)	% Var. annual
1 Rainbow trout	( <i>Onchorynchus mykiss</i> )	693,13	19,9%
2 Sea bass	( <i>Dicentrarchus labrax</i> )	544,49	-3,4%
3 Sea bream	( <i>Sparus aurata</i> )	500,75	-5,5%
4 Japanese oyster	( <i>Crassostrea gigas</i> )	444,64	10,1 %
5 Mussels	( <i>Mytilus spp</i> )	414,66	-0,3%
6 Atlantic Bluefin Tuna	( <i>Thunnus thynnus</i> )	356,17	-25,8%
7 Common carp	( <i>Cyprinus carpio</i> )	208,07	28,4%
8 Japanese clam	( <i>Ruditapes philippinarum</i> )	185,80	-2,2%
9 Fine clam	( <i>Ruditapes decussatus</i> )	107,64	49,4%
10 Turbot	( <i>Scophthalmus maximus</i> )	104,29	10,9%
11 Atlantic Salmon	( <i>Salmo salar</i> )	88,87	-1,4%
12 European oyster	( <i>Ostrea edulis</i> )	67,22	348,5 %
13 Marine Fish	(miscellaneous)	64,54	118,9%
14 Meagre	( <i>Argyrosomus regius</i> )	50,24	-16,4%
15 Snapper	( <i>Pagrus pagrus</i> )	32,52	-12,6%
TOTAL 10 PRALES. SPECIES		3.559,65	2,0 %
OTHER SPECIES		589,57	11,6 %
TOTAL EU AQUACULTURE		4.149,22	3,3%

% respectively. On the other hand, sea bass and snapper showed significant drops in value.

According to the EUMOFA 2024 report, domestic consumption of aquatic products in the EU fell in volume by about 17%, influenced by the increase in prices resulting from inflation and the prolonged effects of the conflict in Ukraine. Despite this, value spending increased by 11%, reflecting a change in consumption habits more conditioned by macroeconomic factors than by structural supply.

In summary, the European aquaculture sector continues to face significant structural and policy barriers. Although some countries such as Spain, France and Greece maintain a productive leadership, the lack of generalized growth, the absence of binding targets and the regulatory context limit their expansion. However, the economic value of aquaculture has shown some recovery in 2023, which could indicate an incipient revival of the market if accompanied by effective support and stimulus measures by Member States and EU institutions.

species



*Salmo salar*

## SALMON

### ATLANTIC SALMON (*Salmo salar*)

Class: Osteictios Order: Salmoniformes • Family: Salmonidae

**Significant characters and morphology:** Fish bluish-grey on the dorsal side with some spots, lighter on the flanks and with a silvery belly. Elongated body covered with small scales. Large mouth provided with strong teeth. Second adipose dorsal fin. Narrow caudal peduncle.

**Farming:** Atlantic salmon farming has an initial freshwater stage that takes place in land-based facilities. When they are between 1 year and 18 months, and reach a weight of 50-90 g, they are transferred to nurseries in the sea. There they are aged for 12 to 18 months, until they reach a harvest weight of 4 to 5 kg.

**Product presentation:** The main final product is fresh fillet, although it is also marketed whole (or gutted) fresh. Frozen fillets and other products with higher added value, such as whole smoked salmon or thinly sliced salmon, are also marketed.

## 4.2. Situation of fish aquaculture in the European Union

In 2023, according to FAO data, 558,615 tonnes of aquaculture fish were harvested in the European Union, representing a decrease of -2.0% compared to 2022 (570,270 t). This production generated an economic value of €2,897.9 million, which implies a slight growth of +0.4% compared to 2022 (€2,885.5 million).

In other words, in 2023 the downward trend in volume continued, while value added showed a slight recovery, possibly reflecting the effect of higher prices on higher-priced species, such as trout or carp, compared to the fall in higher-volume species such as sea bass or bluefin tuna.

The top 10 farmed species accounted for 90.4% of the total volume, with 504,901 tonnes, a decrease of -2.1% compared to 2022. The rest of the species accounted for 53,714 tonnes, with a somewhat more moderate decrease of -1.3%, which indicates a slight stabilisation in productive diversification.

The most farmed species in 2023 was once again rainbow trout with 170,246 tonnes, remaining stable (+0.2%) compared to the previous year. It was followed by sea bream (105,924 tonnes, -0.9%), sea bass (86,547 tonnes, -4.8%) and common carp (63,430 tonnes, -0.7%). Other notable species were Atlantic bluefin tuna

**In the European Union, 558,615 tonnes of farmed fish were farmed in 2023, with a value of 2,897.9 million euros**

(32,638 t, +1.3%), Atlantic salmon (10,511 t, -19.6%) and turbot (12,683 t, +0.4%). Sea bass showed significant growth (+9.0%) with 12,522 tonnes. On the other hand, species such as catfish (*Clarias gariepinus*) and unspecified freshwater fish recorded notable drops in production.

Species	Name scientist	Tons	% Var. annual
Rainbow trout	( <i>Onchorynchus mykiss</i> )	170.246	0.2%
Golden	( <i>Sparus aurata</i> )	105.924	-0.9%
Sea bass	( <i>Dicentrarchus labrax</i> )	86.547	-4.8%
Common tent	( <i>Cyprinus carpio</i> )	63.430	-0.7%
Atlantic bluefin tuna	( <i>Thunnus thynnus</i> )	32.638	1.3%
Turbot	( <i>Scophthalmus maximus</i> )	12.683	0,4%
Meagre	( <i>Argyrosomus regius</i> )	12.522	9,0%
Atlantic salmon	( <i>Salmo salar</i> )	10.511	-19,6%
Other marine fish	(miscellaneous)	7.530	86,9%
Other freshwater fish	(miscellaneous)	6.898	-22.7%
TOTAL 10 PRALES. SPECIES		508.929	-1,0%
OTHER SPECIES		49.686	-11,9%
TOTAL EU FISH AQUACULTURE		558.615	-2.0%

Table 4-3.  
Main fish species produced by aquaculture in the European Union, by tonnes, in 2023 (FAO).

In terms of economic value, these 10 species generated €2,643.1 million, i.e. 91.2% of total fish production in the EU. The average value of a kilo of fish from

aquaculture in first sale was €5.19/kg, 2.6% more than the €5.06/kg of 2022.

From an economic point of view, the rainbow trout was

## Aquaculture in the European Union

Species annual	Name scientist	Value (M€)	% Var.
Rainbow trout	( <i>Onchorynchus mykiss</i> )	693,1	19,9%
Sea bass	( <i>Dicentrarchus labrax</i> )	544,5	-3,4%
Golden	( <i>Sparus aurata</i> )	500,8	-5,5%
Atlantic bluefin tuna	( <i>Thunnus thynnus</i> )	356,2	-25,8%
Common tent	( <i>Cyprinus carpio</i> )	208,1	28,4%
Turbot	( <i>Scophthalmus maximus</i> )	104,3	10,9%
Atlantic salmon	( <i>Salmo salar</i> )	88,9	-1,4%
Marine Fish	(miscellaneous)	64,5	118,9%
Meagre	( <i>Argyrosomus regius</i> )	50,2	-16,4%
Porgy	( <i>Pagrus pagrus</i> )	32,5	-12,6%
European eel	( <i>Anguilla anguilla</i> )	27,3	-35,5%
TOTAL 10 PRALES. SPECIES		2.643,1	0,7 %
OTHER SPECIES		254,8	-2,5 %
TOTAL EU FISH AQUACULTURE		2.897,9	0,4%

Table 4-4. Main fish species produced through aquaculture in the European Union, by value, in 2022 (FAO).

also the species with the highest value in 2023, with €693.1 million, which represents a growth of +19.9% compared to the previous year. It was followed by sea bass (€544.5 million, -3.4%), sea bream (€500.8 million, -5.5%) and bluefin tuna (€356.2 million, -25.8%). It is worth highlighting unregistered marine fish, with an increase of 118.9%, common carp, with a notable increase to €208.1 million, +28.4%, and turbot, with €104.3 million and +10.9%. Other species, such as the European eel (-35.5%), the croaker (-16.4%) and the snapper (-12.6%), also saw their economic value decrease, although they continue to remain within the top 11. The set of species outside the top 10 reached a value of

€254.8 million, with a slight annual variation of -2.5%.

When analysing the distribution by country, Greece once again led the production of aquaculture fish in the EU in 2023 with 123,803 tonnes and a value of €587.4 million. It was followed by Spain with 84,508 tonnes and €569.4 million, which consolidates its position as the second largest producing country. In third place, Italy with 50,537 tonnes (€243.8 million), followed by Poland (40,667 tonnes, €160.8 million) and France (39,657 tonnes, €201.0 million). Countries such as Croatia, Denmark, the Czech Republic and Hungary also stand out, which, although with lower volumes, have a consolidated production structure, mostly oriented towards continental aquaculture.

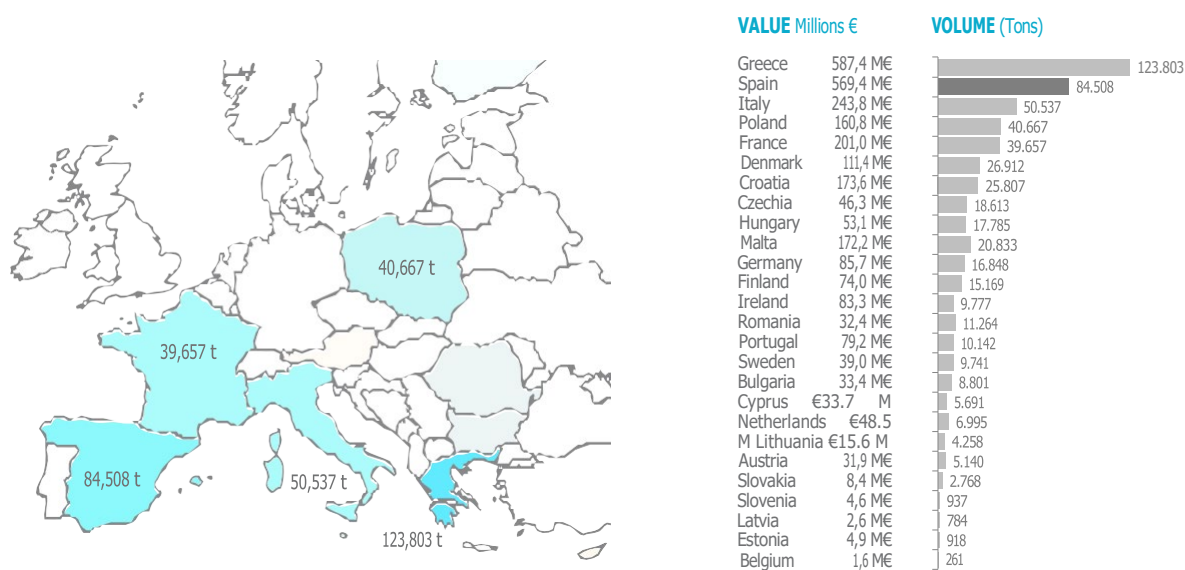


Figure 4-6. Distribution of aquaculture fish production in the Member States of the European Union by volume (tonnes) and value (million euros) in 2023 (FAO).

## Aquaculture in the European Union

The evolution of fish aquaculture in the European Union in recent years continues to reflect very limited growth when compared to the international context. From 2000 to 2023, fish production in the EU has increased to

an average rate of less than 1.0% per year, well below the 5.1% average global growth. This difference highlights the structural and regulatory difficulties faced by the European sector compared to other regions of the world.

Figure 4-7.  
Relative evolution of increases in total aquaculture production in the European Union, of Europe (including Turkey) and the world between 2000 and 2023. The cumulative percentage increases are shown, taking the year 2000 as a reference base (100) (based on FAO data).

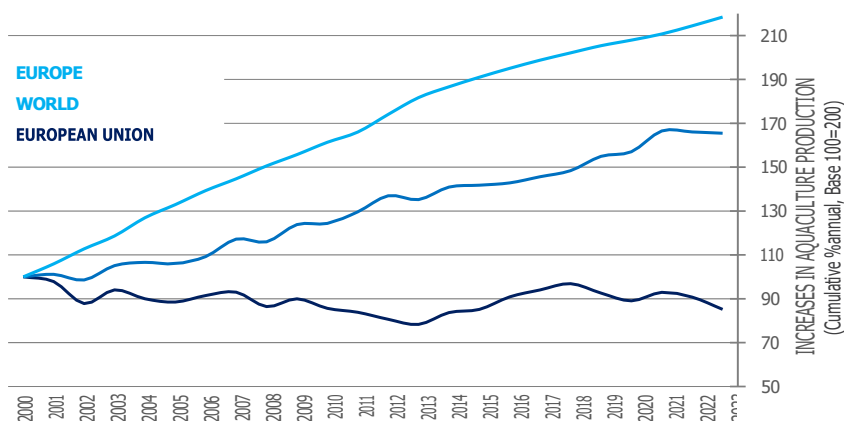


Figure 4-8.  
Relative evolution of increases in aquaculture fish production in the European Union, Europe (including Turkey) and world levels between 2000 and 2023. The cumulative percentage increases are shown, taking the year 2000 as a reference base (100) (based on FAO data).

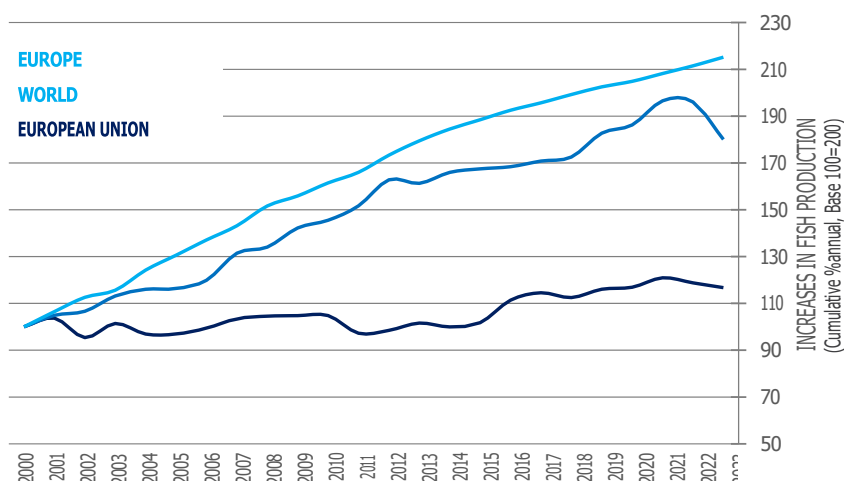
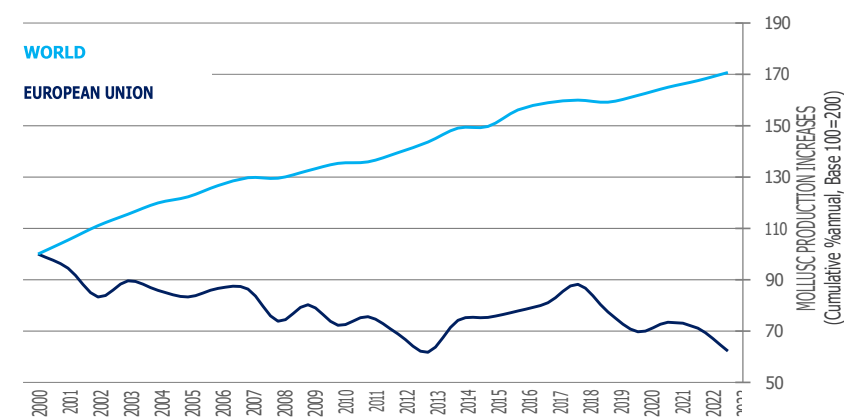


Figure 4-9.  
Relative evolution of the increases in aquaculture mollusc production in the European Union and world between 2000 and 2023. The cumulative percentage increases are shown, taking the year 2000 as a reference base (100) (based on FAO data).





In conclusion, although there are concrete success stories and improvements in certain species or countries, fish aquaculture in the European Union is still weighed down by very moderate growth. Regulatory constraints, access to space and water, and administrative complexity continue

being determining factors in this evolution. However, the technological robustness of the sector, its growing diversification and its strong link with the rural and coastal environment, consolidate aquaculture as an activity with the capacity to adapt and with the potential to contribute to the sustainable development of the region.

## 4.3. Situation of mollusc aquaculture in the European Union

In 2023, 19,511,256 tons of aquaculture molluscs were harvested in the world. The European Union contributed 497,493 tonnes to this production, representing 2.6% of the world total, with a value of 1,229.0 million euros in first sale.

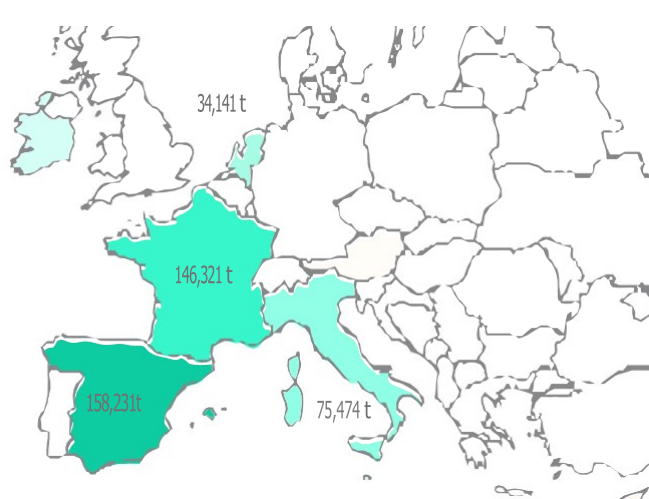
The main producing country continues to be Spain, based on mussel farming, followed by France (mainly oysters) and Italy (focused on clams). These three countries accounted for 76.4% of the total European aquaculture mollusc harvest in 2023, i.e. 380,026 tonnes.

Spain produced 186,784 tonnes, making it the leading producer in volume, with an associated economic value of €154.3 million. The second place in volume was occupied by France with 146,321 tonnes, but in terms of

The value was clearly the first country in the ranking, with €712.8 million, driven mainly by the production of

**In 2023, 19.5 Mt of aquaculture molluscs were harvested in the world. The European Union contributed 497.5 thousand tons to this production with a value of €1,229 million in first sale**

oysters. Italy ranked third in volume with 75,474 tonnes, while in value it was also in second position, with €320.8 million in first sale.



	VALUE € million	VOLUME (Tons)
Spain	125.233	158.231
France	570.215	46.321
Italy	256.631	75.474
Netherlands	52.024	34.141
Ireland	57.622	24.809
Germany	26.122	18.079
Greece	10.300	18.010
Portugal	120.479	12.219
Denmark	3.822	6.211
Sweden	2.159	1.684
Bulgaria	1.430	1.096
Croatia	2.624	1.017
Slovenia	329	202
Romania	0	0

Figure 4-10. Production of aquaculture molluscs in EU Member States by volume (tonnes) and value (million euros) in 2023 (based on FAO data).

European aquaculture mollusc production has remained on a downward trend in recent years. Despite this, it has shown a slight recovery in value. From an all-time high of 815,239 tonnes in 1999, production has fallen to 497,493 t in 2023, representing a decline of -39.0 % cumulative. The year-on-year change in volume was -8.9% year-on-year, while the total economic value was €1,229.0 million, an increase of 10.9%, suggesting a higher average selling price for several key species.

Mussel aquaculture (*Mytilus spp*) in the European Union put 360,504 tonnes on the market in 2023, which represented 72.5% of the total mollusc harvest, with

a value of €414.7 million (33.7% of the total value). It was followed in volume by the Japanese oyster (*Crassostrea gigas*) with 90,346 t (18.2%) and a value of €444.6 million (36.2%), making it the most valuable species of the year. In third place, in volume, was the Japanese clam with 22,904 t (4.6%) and a value of €185.8 million (15.1%).

Next, the European oyster (*Ostrea edulis*) was placed with 16,471 tonnes (-10.4% compared to 2022) and a value of €69.9 million (5.7 % of the total). In fifth place is the fine clam (*Ruditapes decussatus*) with 5,924 t (35.8% compared to 2022), whose value amounted to €107.6 million (8.8% of the total).

The cockle (*Cerastoderma edule*) showed a harvest of 907 t (-21.9% year-on-year) with a value of €3.4 million.

Table 4-5.  
Main species of molluscs produced by aquaculture in the European Union, for tons, in 2023 (FAO).

Species	Scientific name	Tons	% Var. annual
Mussels	( <i>Mytilus spp</i> )	360.504	-12,0%
Japanese oyster	( <i>Crassostrea gigas</i> )	90.346	638,3%
Japanese clam	( <i>Ruditapes philippinarum</i> )	22.904	2,5%
European oyster	( <i>Ostrea edulis</i> )	16.471	-10,4%
Fine clam	( <i>Ruditapes decussatus</i> )	5.924	35,8%
Cockle	( <i>Cerastoderma edule</i> )	907	-21,9%
TOTAL 6 PRALES. SPECIES		497.056	-8.0%
OTHER SPECIES		437	7,0%
TOTAL AQUACULTURE EU MOLLUSCS		497.493	-0.08%

Table 4-6.  
Top mollusc species produced by aquaculture in the European Union, by value, in 2022 (FAO).

Species	Name scientist	Value M€	% Var. annual
Japanese oyster	( <i>Crassostrea gigas</i> )	444,6	9,9%
Mussels	( <i>Mytilus spp</i> )	414,7	-1,1%
Japanese clam	( <i>Ruditapes philippinarum</i> )	185,8	-16,9%
Fine clam	( <i>Ruditapes decussatus</i> )	107,6	50,6%
European oyster	( <i>Ostrea edulis</i> )	69,9	382,6%
Cockle	( <i>Cerastoderma edule</i> )	3,4	-5.9%
TOTAL 6 PRALES. SPECIES		781.410,0	6,6%
OTHER SPECIES		6.371,7	-23.7%
TOTAL AQUACULTURE EU MOLLUSCS		1.228.989,1	7.6 %

The average first-sale value per kilogram in 2023 was €4.92/kg for Japanese oysters, €1.15/kg for mussels, Japanese clams at €8.11/kg, fine clams at €6.54/kg, European oysters at €4.24/kg and cockles at €3.79/kg. These prices reflect a diversification of the market, with low-volume but high-average price species, compared to intensive production species with tighter margins.

In short, mollusc aquaculture in the European Union maintains its strategic importance, especially in countries with strong cultural, social and economic roots linked to the consumption of these species. However, the sustained decline in volume over the last few decades, combined with an increasingly demanding market, highlights the need to strengthen the policy and technical support framework to ensure its long-term sustainability and competitiveness.

### 4.4. Potential of European aquaculture

Aquaculture in the European Union continues to show signs of stagnation, despite its high potential. In 2002 the EU launched its first "Strategy for the Sustainable Development of European Aquaculture", with ambitious targets for employment, production and sustainability. However, it did not meet the objectives set, due in large part to pressure from third countries, failures in governance and the impact of economic crises. Subsequently, in 2009 a push communication was published and in 2013 the "Strategic Guidelines for the Sustainable Development of EU Aquaculture" were drawn up, a prelude to the most recent guidelines of May 2021, which in turn are aligned with the European Green Deal and the "Farm to Fork" Strategy. These successive roadmaps have been accompanied by support for research, innovation and European funding to consolidate a modern and competitive sector.

The potential is still remarkable. Europe has approximately 55,000 km of coastline, with very favourable environmental, physical and oceanographic conditions for the development of aquaculture activities. Its business fabric has high levels of technical and scientific knowledge, which has made it possible to generate safe, high-quality and environmentally friendly seafood, supported by stable jobs in rural and coastal areas. The EU also excels in research and innovation, thanks to its programmes such as Horizon Europe, and in educational infrastructure. The return of these regulatory requirements – related to health, animal welfare, traceability and environmental protection – brings added social value that strengthens consumer confidence and public acceptance.

Member States have adjusted their National Strategic Plans in line with Community guidelines, and

they have resources from the European Maritime Fund for Fisheries and Aquaculture (EMFAF), supported by mechanisms such as the EU Aquaculture Assistance Mechanism. In response to the demands of the sector, the Commission has published in 2024 and early 2025 several documents promoting recommendations and good practices on access to space and water, energy transition and adaptation to climate change. In addition, guides on animal welfare, use of GIS data for planning and management, as well as regenerative fisheries and multifunctional aquaculture have been planned, which reinforces the regulatory framework from a comprehensive approach.

The Commission's Scientific Advisory Mechanism (MAR) insists that aquaculture outlines a strategic path for a sustainable and inclusive diet, by generating food throughout the year, accessible and with a smaller environmental footprint. Since June 2023, with its report "Towards sustainable food consumption", it has been recommended to integrate aquaculture into global food policies, encouraging proximity between producers and consumers and restricting imports from areas with high environmental impacts – which reinforces the role of EU aquaculture as a model against external dependence.

However, barriers remain. The production of fish and molluscs has barely grown in fifteen years, despite the efforts of FAO and the EU. Currently, more than 70% of the fish consumed by the EU is imported. The regulatory environment, although broad and rigorous, sometimes presents additional layers at the national or regional level that do not provide added value, make projects more expensive and increase procedures, extending authorizations up to eight years: a negative factor for competitiveness against imported products.

The pressure for space on coasts and rivers, due to tourism, urbanization or recreational activities, sometimes relegates aquaculture. A public image with false myths about its impacts still persists, which limits its acceptance.

In contrast, the Parliament and the European Commission have strengthened the regulatory framework, but its implementation

local needs improvements. It is vital to ensure that national and regional frameworks are effective, speedy and equitable, without exceeding the required level and without creating unjustified barriers. Only then will European aquaculture be able to reach its full potential, contributing to food security, rural employment and sustainability.

### 4.5. Videos and reports of interest



Without nearby communities there is no fish for everyone

#### Meet the Committee of Experts

Aquaculture companies contribute to generating employment, avoiding depopulation, underpinning the local economy, maintaining traditions, sponsoring activities, and generally improving life and coexistence in the local communities where they are present.

<https://youtu.be/RRvRyawSe7U?si=hKtGRJskm67-Q1R9>



EU aquaculture: we work for you with passion

#### EU aquaculture communication campaign

Find out how aquaculture producers in the European Union work through the communication campaign "we work for you with passion". In English

[https://youtu.be/ScXRLzRs\\_vk?si=7QU3bPO04tWXftZF](https://youtu.be/ScXRLzRs_vk?si=7QU3bPO04tWXftZF)



EU aquaculture: more than a job, a passion – Eduardo Soler

#### EU aquaculture communication campaign

Eduardo Soler, Head of Sustainability at AVRAMAR in Spain, shares his passion for aquaculture as part of the European communication campaign.

[https://youtu.be/T8VVqM2DYc8?si=KFbLwbAd\\_qKCXWKz](https://youtu.be/T8VVqM2DYc8?si=KFbLwbAd_qKCXWKz)



Sturgeon and CITES producers

#### Video by the Swedish association RecirkFisk

Interesting video highlighting the problems faced by sturgeon fish farmers. In English.

<https://youtu.be/bHtcG5cMLM?si=ND9lWINQnAVbFsX4>



## FEAP Smartchats

### Webinar Series on topics of interest to aquaculture

In the Smartchats of the European Federation of Aquaculture Producers, experts are invited to discuss a topical topic of interest for EU aquaculture. In English.

<https://www.youtube.com/@FEAPchannel/playlists>

## REPORTS



## Aquaculture Sea Bream, Sea Bass and Rainbow Trout Welfare Guides from Spain

### Fish welfare

Continuation of the series on aquaculture fish welfare. Good practice guides in Spanish and English.

<https://apomar.es/guia-bienestar/>

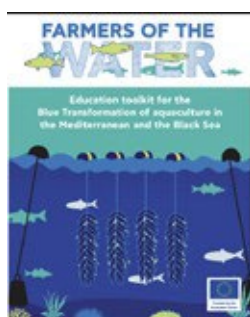


## Apomar Report

### Sustainability Report 2025

The Sustainability Report is a technical and rigorous document in which you can transparently consult the sustainability indices of our sector through three prisms: social, environmental and economic.

<https://apomar.es/memorias/>



## Water farmers

### FAO

Educational toolkit for the Blue Transformation of aquaculture in the Mediterranean and Black Sea. In English.

<https://openknowledge.fao.org/bitstreams/6949bae8-eb7b-495b-9cff-2d43045ff289/download>



## The European Ocean Pact

### European Commission

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

<https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:52025DC0281>

# 5



## **Aquaculture production in Spain and Europe**

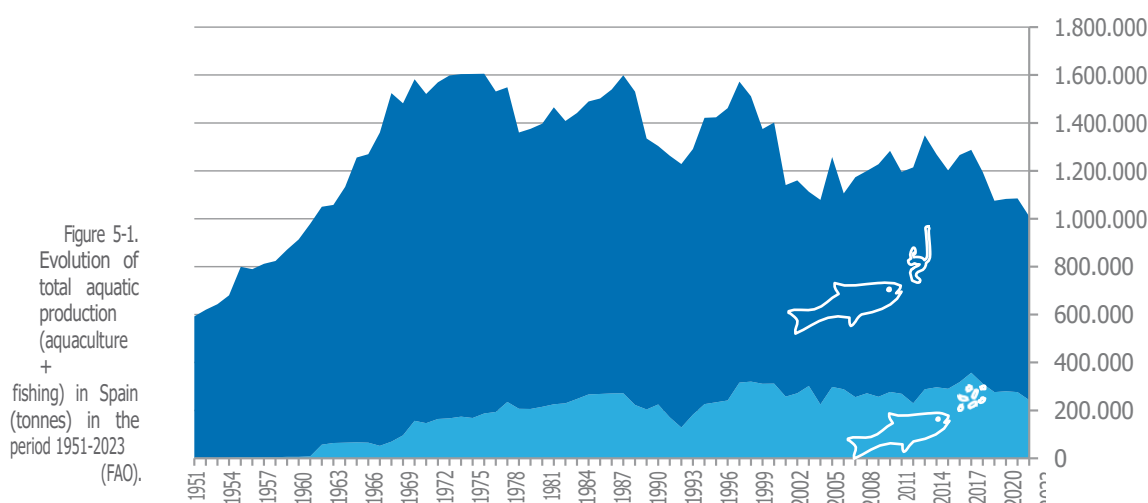


## 5. Aquaculture production in Spain and Europe

### 5.1. Production of seafood in Spain

Total aquatic products from fisheries and aquaculture in Spain in 2023 fell to 1.01 million tonnes, a reduction of 6.9% compared to 2022 (1.08 Mt). Fishing accounted for 75.9% of the total with 0.77 Mt, 5.2% less than in 2022 (0.81 Mt), while aquaculture contributed 24.1%,

with 243,110 t, registering a decline of 11.9% compared to 2022 (276,071 t). According to FAO data, the average year-on-year variation over the last decade has been -2.3% in fishing and 1.2% in aquaculture, reflecting the relative stability of the latter in the face of the progressive fall in catches.



Data collected from FAO's FishStatj programme and data obtained by APROMAR from its member companies and verified with those published by the Ministry of Agriculture, Fisheries and Food (MAPA) differ, which is not uncommon. Aquaculture in Spain according to APROMAR data and comparisons with the rest of the Spanish reports indicates that aquaculture production in 2023 was 266,060t,

12.2% less than in 2022 and 266,656 in 2024, a 0.22% more than in 2023.

The most abundant species was the mussel (*Mytilus spp.*), with 184,593 t in 2024 (182,790 t in 2023) with an estimated value of €138.1 million. Followed by sea bass with 27,276 tonnes in 2024 (24,580 tonnes in 2023) and a value of €238.5 million; with 10,821 tonnes in 2024 (13,106 tonnes in 2023) with a value of €72.0 million;

## Aquaculture Production in Spain and Europe

rainbow trout with 14,689 t in 2024 (14,757 t in 2022) with a value of €54.6 million; turbot with 10,058 t in 2024 (9,600 t in 2023) with a value of €93.3 million and bluefin tuna with 10,388 t in 2024 (9,744 t in 2023) and a value of €184.4 million.

On the fishing side, the main species caught by the Spanish fleet were skipjack tuna (*Katsuwonus pelamis*) of which 134,507 t were caught in 2023 (138,219 t in 2022), Argentine hake (*Merluccius hubbsi*) with 94,766

t in 2023 (101,588 t in 2022) and yellowfin tuna (*Thunnus albacares*) with 58,773 t in 2023 (62,735 t in 2022) according to FAO.

**Aquaculture in Spain in 2024 was 266,656 tonnes, 0.2% more than in 2023 and with a value at first sale estimated at 856.5 million euros.**

Figure 5-2.  
Evolution of the  
aquaculture  
harvest in Spain, in  
tonnes and by  
species, in the  
period 1953-2024  
(MAPA and  
APROMAR data).

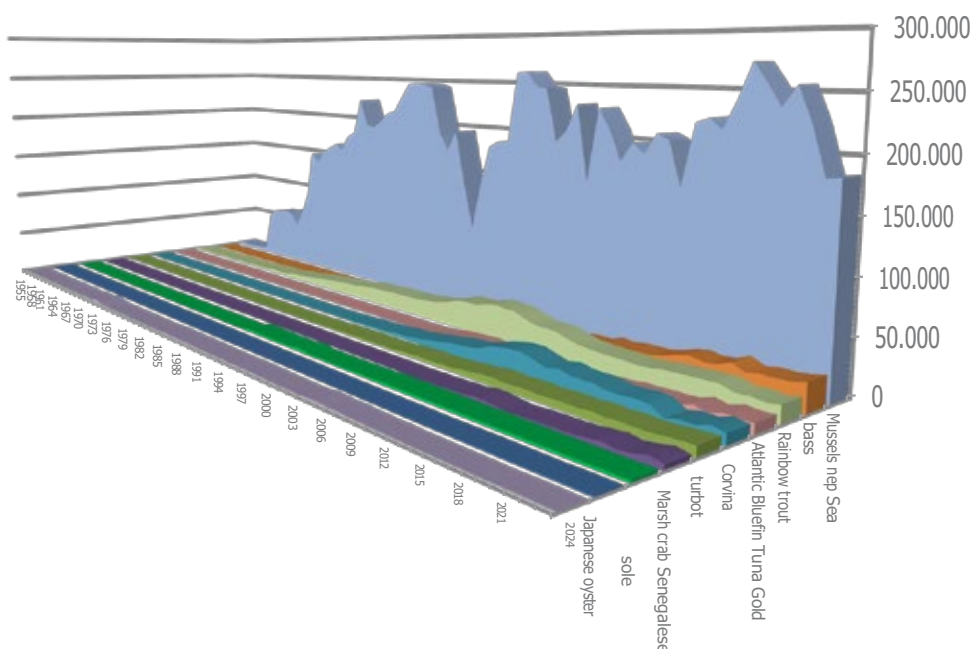
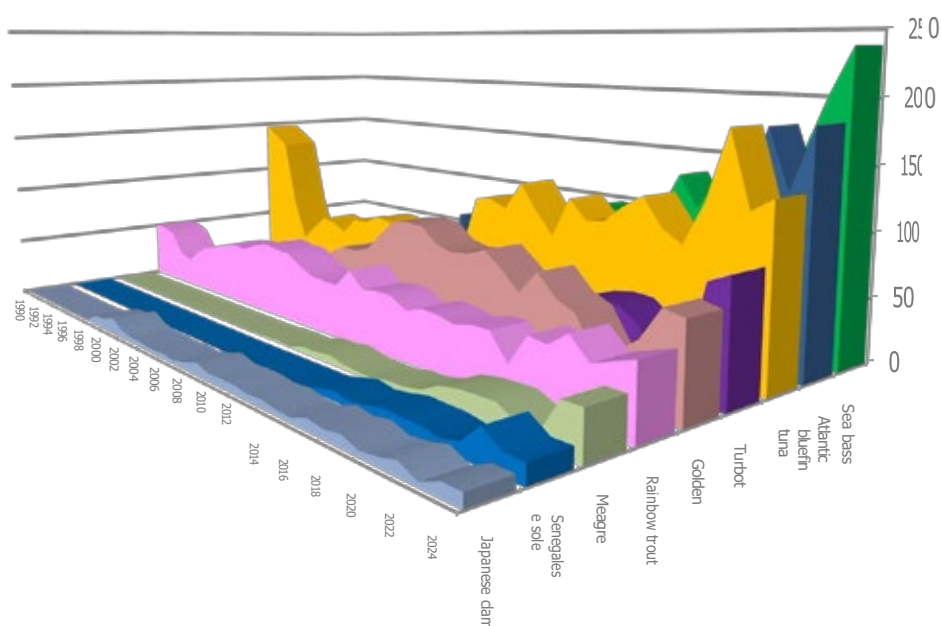
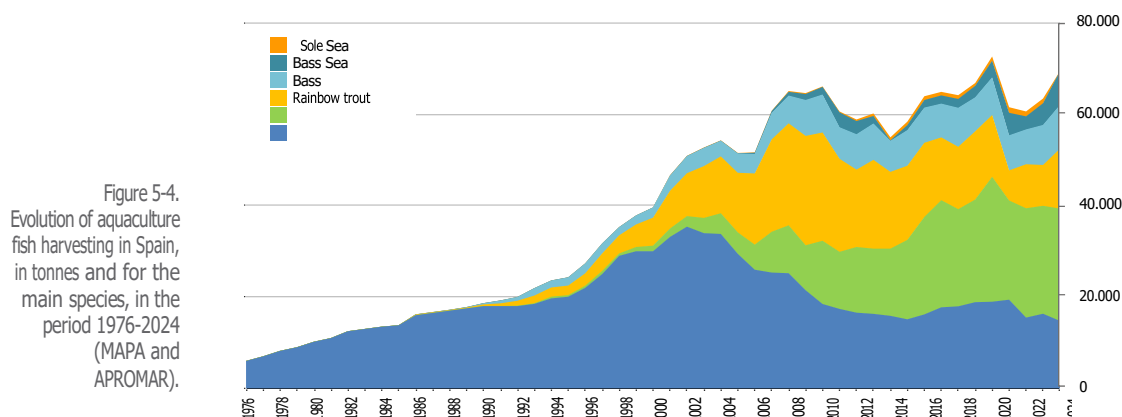


Figure 5-3.  
Value evolution  
of the harvest of  
aquaculture in Spain,  
in millions of euros  
and by species, in  
the period 1987-  
2024 (MAPA and  
APROMAR)



# Aquaculture Production in Spain and Europe


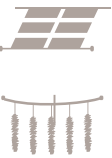





## 5.2. Types of aquaculture establishments in Spain

Spain has a varied availability of water resources on which aquaculture is feasible, both in the marine and continental (freshwater) areas. Thus, in addition to the almost 8,000 km of coastline, there are nine large rivers, numerous minor river courses, lakes and a reservoir water capacity greater than those of the 55,000 hm<sup>3</sup>. This water wealth, together with a diverse orography and a wide range of climates, provides

environmental and physical-chemical characteristics suitable for the development of aquaculture.

Aquaculture establishments are designed and built to meet the biological needs of the farmed species and to adapt to the conditions of the physical environment. In this way, the following categorization of aquaculture establishments in Spain can be made:

- 
**At sea in nurseries.**  
 These establishments consist of rigid plastic rings that support and float net bags inside which fish such as sea bream, sea bass or sea bass are stabled and raised.
- 
**At sea in rafts and long-lines.**  
 These are floating structures for the cultivation of bivalve molluscs, mainly mussels. The rafts consist of a platform from which they hang Cultivation ropes, and long-lines are non-rigid structures that consist of a mother line, arranged between buoys linearly on the surface of the sea, which in turn hang the cultivation ropes. Rafts operate better in sheltered waters, as in the case of Galician estuaries, while long-lines offer better results in open waters, as is the case of mussel farming in Andalusia. This type of establishment corresponds to vertical farming systems.
- 
**On dry land (salt water).**  
 These are establishments built on site on dry land on the coast and that obtain their water by pumping from catchments in the sea or wells. It is the type of farm where the production of turbot, for example, or sole is carried out.
- 
**On the beach, intertidal zone and estuaries (salt water).**  
 These are aquaculture establishments in which farming is carried out with minimal physical intervention on the environment. This is the case of clam and oyster production. It is carried out in beach areas or intertidal areas in which animals are deposited directly on the substrate or in meshes on tables. It is also the type of farms located in ponds dug into the earth in old salt areas or marshes, an example of which is the estuaries for the production of fish such as sea bream, sea bass or sea bass. This type of establishment is framed within horizontal crops.
- 
**On dry land (fresh water).**  
 They consist of establishments built on site on the banks of rivers, or their sources, which take advantage of the gravity circulation of water. It is the type of facility in which the production of rainbow trout or sturgeon is carried out.

### TYPES OF AQUACULTURE ESTABLISHMENTS IN SPAIN

## 5.3. Number of aquaculture establishments in Spain

In 2023, a total of 4,908 aquaculture establishments were in operation and in production in Spain, 149 fewer than in 2022, when 5,057 establishments were registered, according to data from the Ministry of Agriculture, Fisheries and Food (MAPA). Of these, 4,663 corresponded to marine aquaculture of molluscs, mostly mussels farmed in rafts or in "long-line" systems, 139 less than in the previous year. This category remains by far the most numerous, accounting for more than 94% of all active installations.

Inland aquaculture (in fresh waters) had 147 active farms, 2 less than the previous year, mainly dedicated to the breeding of species such as rainbow trout and sturgeon. The number of establishments located on the coastal mainland for marine aquaculture was 59 (4 less than in 2022). As for nurseries at sea,

A total of 39 operated, one less than in 2022, for the cultivation of marine fish such as sea bass or sea bream.

**In 2023, there were 4,908 aquaculture establishments in production, of which 4,663 were molluscs and 245 fish (147 in inland waters, 59 on land and 39 in nurseries).**

It is relevant to note that continental aquaculture continues to be a key tool for the socio-economic development of rural areas in Spain. In these areas, where the supply of employment is limited, aquaculture activity represents a focus for generating stable employment, productive diversification and population fixation.

Figure 5-5.  
Evolution of the total  
number of aquaculture  
establishments in Spain  
with  
production between 2002  
and 2023 (source  
MAPA/APROMAR)

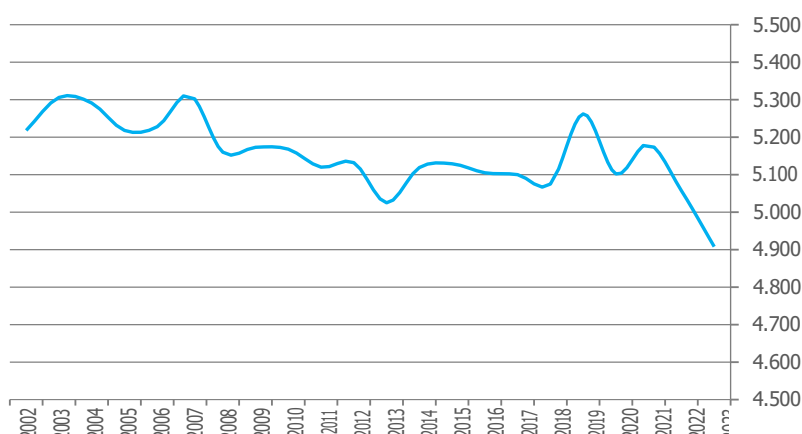
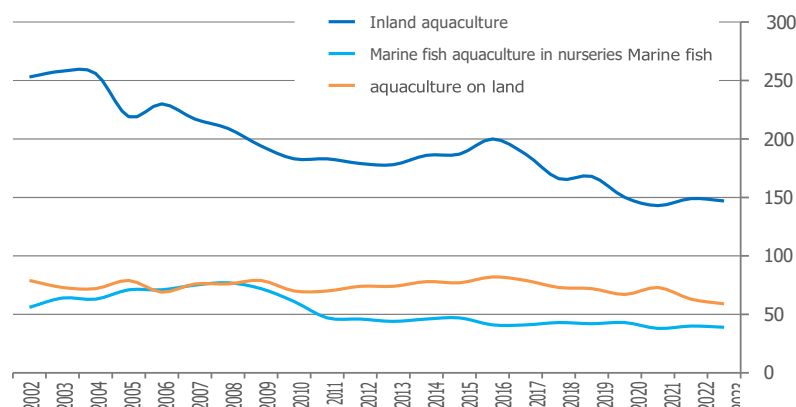


Figure 5-6.  
Evolution of the number  
of establishments  
aquaculture in Spain with  
production, dedicated to  
inland aquaculture,  
marine fish in nurseries  
and fish marina on land  
between 2002 and 2023  
(source  
MAPA/APROMAR).



## 5.4. Employment in aquaculture in Spain

Statistics prepared annually by the Ministry of Agriculture, Fisheries and Food (MAPA) indicate that the number of annual work units (AWUs) in aquaculture in Spain in 2023 was 5,854, which represents a slight decrease of 0.4% compared to the previous year, when 5,878 AWUs were registered. As for the total number of people employed in the sector, 8,209 were counted in 2023, which represents a decrease of 19.9% compared to 2022, when there were 10,253 people. This difference between the evolution of the number of AHUs and the total number of people reflects a concentration of employment and a possible increase in dedication per worker.

In 2023, most employment was held by non-salaried persons, who accounted for 34.4% of the

total in terms of AHU. It was followed by specialised operating personnel with 35.6%, non-specialised operators with 16.9%, higher or intermediate qualified technicians with 9.4%, administrative staff with 3.0%, and other categories with 0.8%. This distribution confirms the stability of the labour structure in the sector, with a predominance of operational personnel over technical or administrative profiles.

Since 2007 there has been an agreement in Spain between unions and employers to regulate minimum labour relations in marine aquaculture. On 23 April 2024, the VII State Collective Agreement for Aquaculture was registered and published. This agreement is the first to cover both marine and continental aquaculture and has been promoted and coordinated by APROMAR together with the trade union organisations representing the sector.

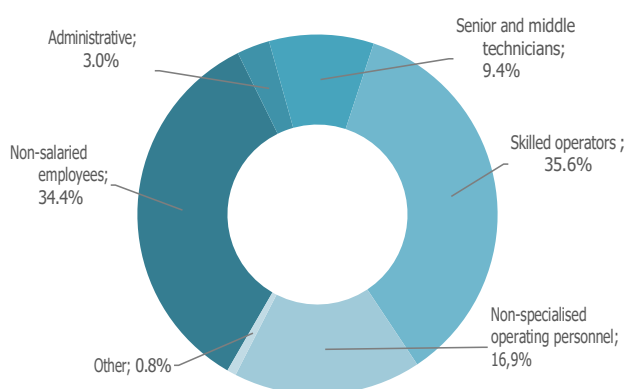


Figure 5-7. Distribution of employment in aquaculture in Spain, by professional category, in 2023 calculated on Annual Work Units (ABPM).

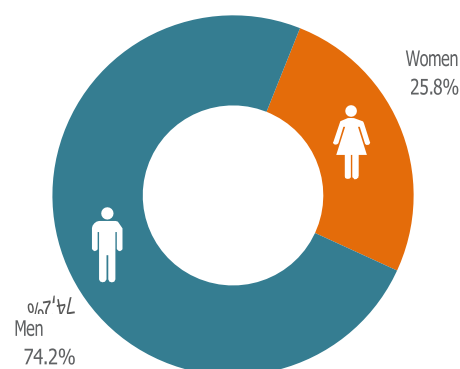


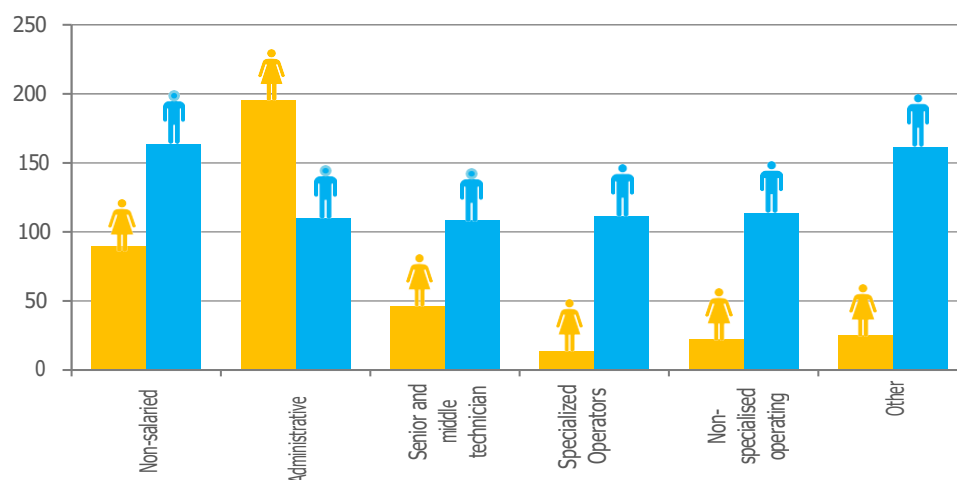
Figure 5-8. Distribution of employment by sex calculated on the number of people in aquaculture in Spain in 2023 (MAPA).

Employment in aquaculture continues to be mostly occupied by men, although with a female representation that is still significant. In 2023, the total number of employed women was 2,119, representing 25.8% of the total, compared to 6,090 men, who account for 74.2%. In relation to professional categories, the largest number of women continues to be concentrated in non-professional positions.

salaried workers (1,373 women), followed by non-specialised operating personnel (185), senior and middle technicians (182), specialised operating staff (246), administrative staff (182), administrative staff (182), (124) and other functions (10). In the case of men, the highest figures correspond to non-salaried workers (2,522), specialized operators (2,071), technicians (427), non-specialized operators (937), administrative (69) and other categories (65).

## Aquaculture Production in Spain and Europe

Figure 5-9.  
Employment by  
sex calculated on  
the number of  
persons in  
aquaculture  
in Spain in 2023  
(MAP).

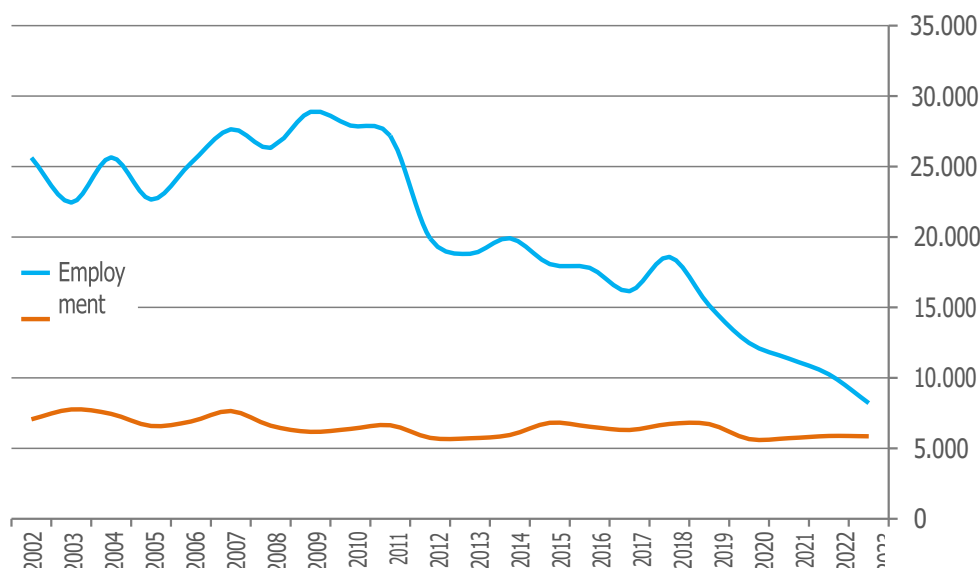


The evolution of employment in aquaculture in Spain over the last ten years shows a cumulative decrease in both the number of people and the number of AHUs. The total number of people employed has fallen by 55.8% since 2013, while the number of AHUs has fallen by 2.2%. This sustained reduction over time shows a

transformation of employment towards greater operational efficiency, although it also reflects the general stagnation of the sector's structural growth.

The estimate of indirect employment associated with the 8,209 people working in aquaculture in 2023 is at 20,554 jobs.

Figure 5-10.  
Evolution of  
employment in  
aquaculture in  
Spain during the  
period 2002-2023,  
showing the figures  
of people and  
Work Units  
Annual (ABPM).



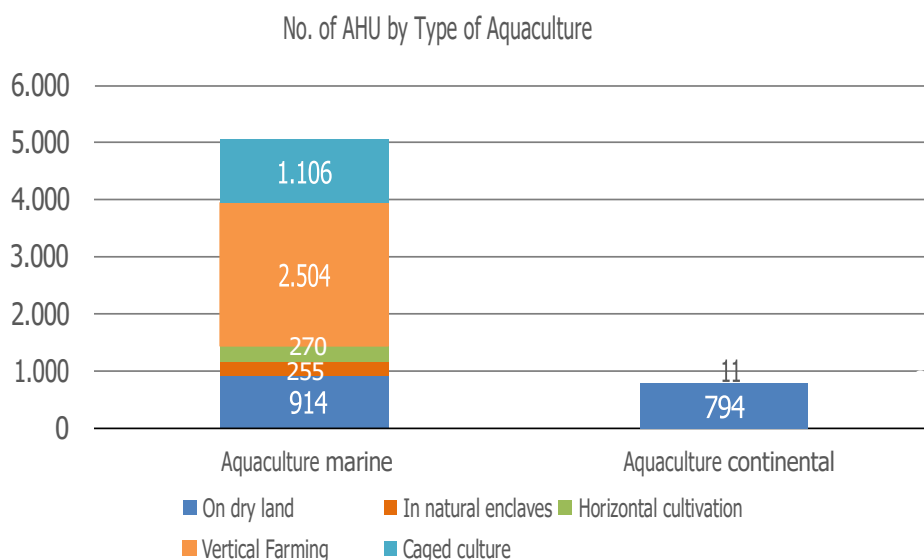
If employment data is analysed by type of aquaculture, most employment in 2023 was concentrated in marine aquaculture, with 2,504 AHU in vertical farming, 270 in horizontal farming, 1,106 in nurseries at sea, 914 on land and 255 in natural enclaves. In

inland aquaculture, 794 AHUs were registered on land and 11 in natural enclaves, according to MAPA data. This distribution shows the predominance of marine facilities in the whole of aquaculture use, with a clear specialization in the cultivation of molluscs.



## Aquaculture Production in Spain and Europe

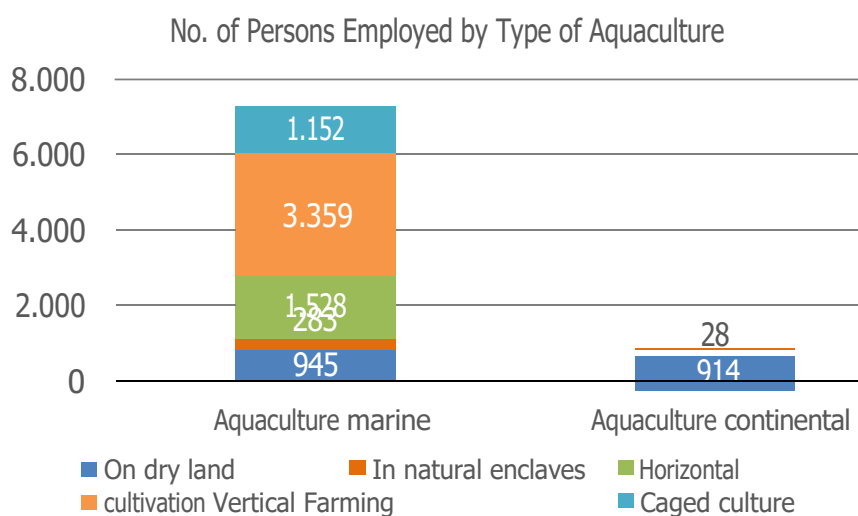
Figure 5-11.  
Number of AHUs  
in 2023 by type  
of  
aquaculture.  
Own elaboration of  
the MAPA data  
source.



In the classification by number of people and types of aquaculture, marine aquaculture also accounts for the majority of employment, with 3,359 people in vertical farming, 1,528 in horizontal farming, 1,152 in sea cages, 945 on land and 283 in natural enclaves. For its part, inland aquaculture employed 914

people on the mainland and 28 in natural enclaves, according to MAPA data. Compared to the previous year, the continuation of the decrease in employment in marine aquaculture (vertical + horizontal farming) stands out, going from a total of 7,061 people in 2022 to 4,888 in 2023, mainly linked to the reduction of production units in the mussel sector.

Figure 5-12.  
Number of People in  
2023 by type of  
aquaculture. Own  
elaboration of the MAPA  
data source.



## 5.5. Consumption in Spain

Feeding aquaculture animals, particularly fish, is a key element of their viability. The optimization of the use of raw materials, knowledge about nutrients, their digestibility and the correct handling of feed are essential for the responsible development of this activity. In 2024, 162,400 t of feed were used in Spain, a figure slightly higher than that recorded the previous year (161,836 t in 2023) and which represents a stabilization of consumption after the decrease observed in 2022 (162,169 t).

86.8%, 140,900 t, was administered to marine fish: mainly sea bass, croaker, turbot, sea bream, eel and sole. The remaining 13.2%, 21,500 tonnes, was allocated to continental species such as trout and sturgeon. The amount of aquaculture feed used in Spain barely adds up to 1% of the total livestock feed consumed in this country.

The feed used in Spanish aquaculture farms is almost entirely extruded and has been produced for the most part in the country itself, complemented by imports from other EU Member States, mainly France and Portugal. The location of feed mills in Spain facilitates the carrying out of important research and research activity.

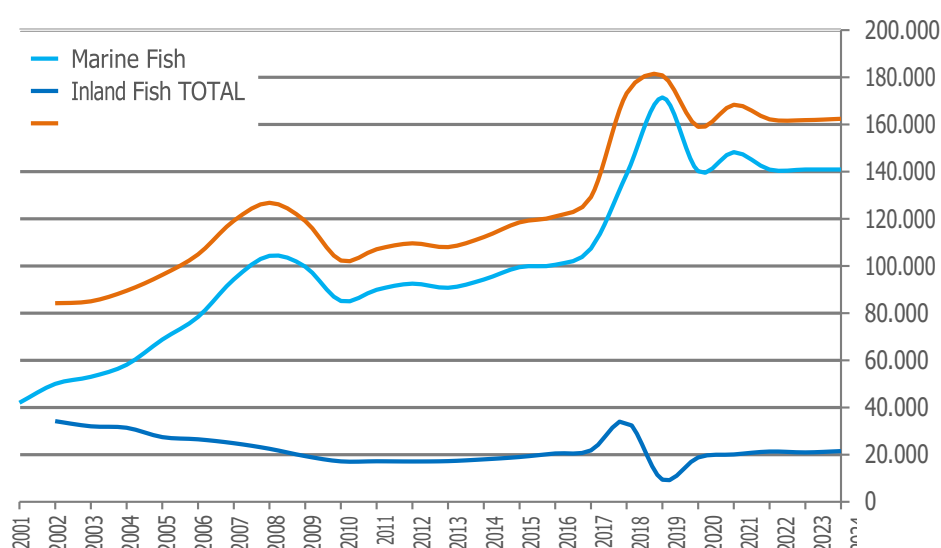
innovation in the field of fish nutrition and feeding. This innovation is promoted by the feed manufacturing companies themselves and by aquaculture companies, but public research centres, technology centres and universities also play a crucial role.

**In 2024, 162,400 tonnes of fish feed were used in Spain, 0.3% more than in 2023 (161,836 t).**

**The amount of aquaculture feed used in Spain still represents only 1% of the total feed for livestock in this country.**

In mollusc farming there is no consumption of feed because they are filter feeders. Their diet is based on taking advantage of the natural productivity of the waters, whose nutrients favor the presence of plankton that is filtered and consumed by the molluscs. Galicia, which is the main mollusc-producing region in Spain and Europe, stands out for the high natural productivity of its five estuaries.

Figure 5-13.  
Evolution of feed consumption (tonnes) for aquaculture in Spain broken down between marine and inland fish during the period 2001-2024 (sources Skretting and Biomar).



## 5.6. Marine aquaculture in Spain and Europe

The species produced by aquaculture in Spanish marine waters, and covered in greater detail in this report, are sea bream, sea bass, turbot, sea bass, sea bass, sole,

bluefin tuna, mussels, clams and oysters. Other species of interest such as eel, yellowtail, shrimp, microalgae and macroalgae are also analyzed, but with a lesser degree of detail.

### Marine fish farming

Marine fish farming in Spain in 2024 was 65,036 t, a decrease of -1.3% compared to the previous year (65,908 t in 2023). The value of this production is estimated at €603 million, practically stable compared to 2023 (€605.2 million).

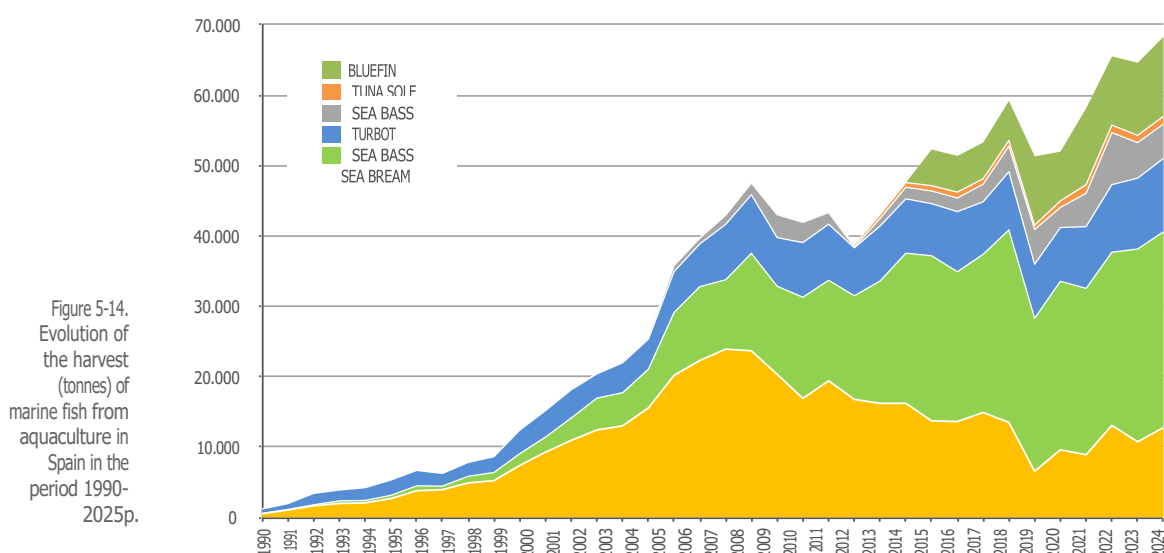
The species that performed best in 2024 were sea bass, which reached 27,376 tonnes (+11.4% compared to 2023), bluefin tuna, with 10,312 tonnes (+5.8%), and turbot, up to 10,058 tonnes (+4.8

%). On the other hand, those that experienced the greatest decreases compared to the previous year were: sea bass (5,051 tonnes; -31.6%), sea bream (10,765 tonnes; -17.9%), and Senegalese sole (1,031 tonnes; -4.3%)

%). Eel maintained a volume of 355 t, slightly above 2023.

**Marine fish farming in Spain in 2024 was 65,036 t, -1.3% less than in 2023 (65,908 t). The value of this production is estimated at €603 million (€605.2 million in 2023).**

Looking ahead to 2025, forecasts point to a generalized recovery with a combined production of 68,845 t (+5.8%). The boost will come especially from shrimp (+72.2%) and sea bream (+18.8%), while the rest of the species will remain at similar levels or with moderate growth, and will occur mainly in the Valencian Community, Catalonia and Galicia.



## Aquaculture Production in Spain and Europe

When analysing the production of fish (sea bream, sea bass, turbot, sea bass, sole, eel and yellowtail) by community, it can be seen that the Valencian Community topped the list with a total of 20,655 tonnes. Its production fell by a total of

-2.7% compared to 2023 (21,227 t). This decrease has occurred mainly in the production of sea bream and sea bass.

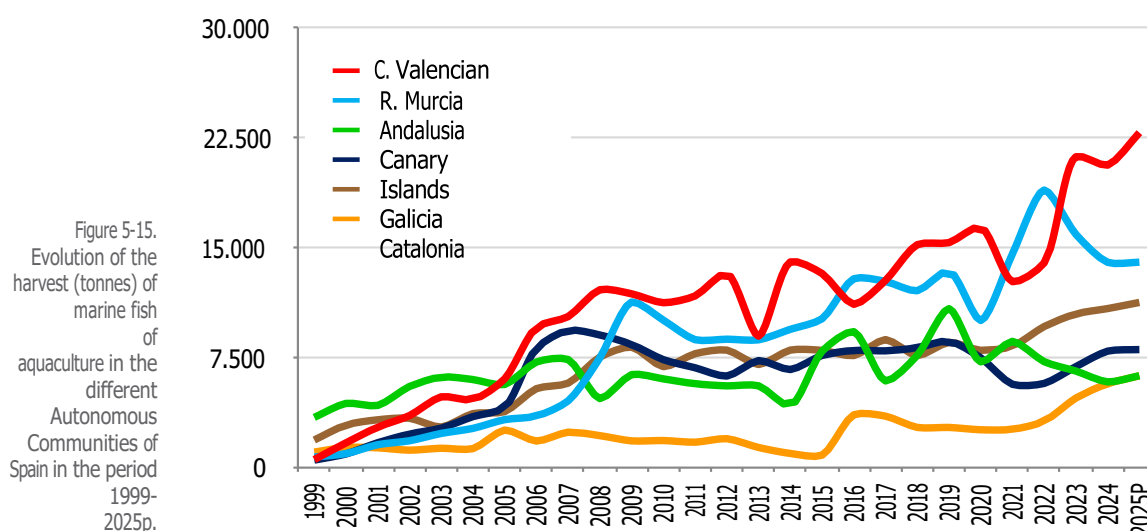
The next community in production was the Region of Murcia, with 14,001 t, -12.0% less than in 2023 (15,923 t). This decrease was mainly in the production of sea bass and bluefin tuna.

In third place was Galicia, with a total of 10,490 tonnes,

3.5% more than in 2023 (10,853 t). This increase occurred mainly in the production of turbot and sole.

The Canary Islands rose to the fourth community in terms of aquaculture marine fish production with a total of 7,944 t in 2024, experiencing an increase of 15.4% (6,886 t in 2023). He mainly increased the cultivation of sea bass.

Andalusia fell to fifth position with 5,841 tonnes, -11.2% less than in 2023 (6,582 tonnes) due to the cultivation of sea bream, sea bass and bluefin tuna. And Catalonia with 5,723 t ranked sixth and increased its production by 20.7% (4,740 t in 2023) due to sea bass production.



### Production of DORADA

Total aquaculture production of sea bream (*Sparus aurata*) in Europe and the rest of the Mediterranean in 2024 is estimated at 322,775 t, -6.7% less than in 2023 (332,966 t) according to statistics from APROMAR, FEAP and FAO. A slight decrease is estimated in 2025, with production around 321,000 t.

The total value of Mediterranean aquaculture sea bream harvested in 2024 at first sale is estimated at €1,614 million, with an estimated value of €5 per kilogram at the first sale.

There is aquaculture sea bream production in more than 20 countries, with the main producers being Turkey with 140,000 tonnes (representing 43.4% of total production), Greece with 58,000 tonnes (18.0%), Egypt with 43,645 tonnes (13.5%),

Tunisia with 16,000 tonnes (5.0%), Spain with 12,791 tonnes (3.3%) and Croatia with 10,185 tonnes (3.2%). Its cultivation is also carried out in Italy, Cyprus and there are smaller productions in: Malta, Israel, France, Portugal, Albania, Algeria, United Arab Emirates and Bosnia, among others.



*Sparus aurata*

## SEA BREAM (*Sparus aurata*)

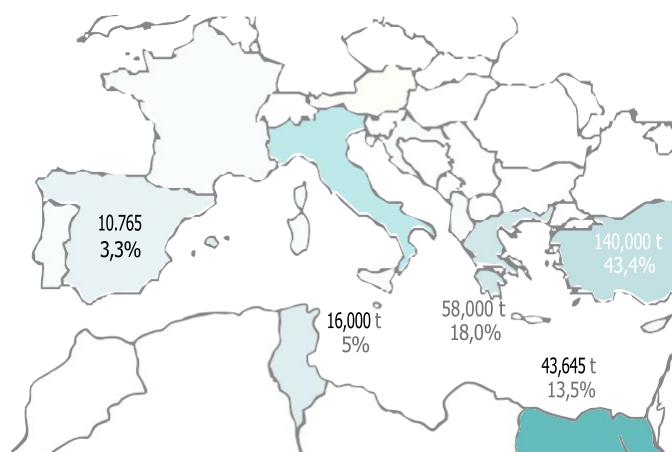
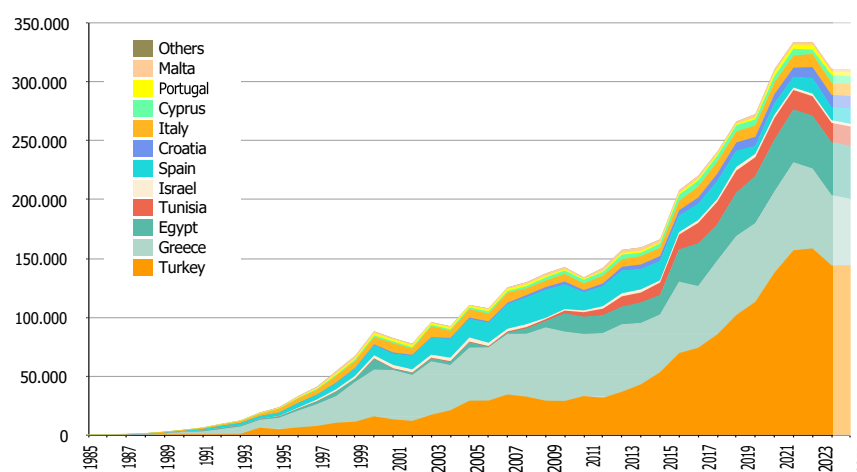
Class: Osteictos Order: Perciformes • Family: Sparidae

## SEA

**Significant characters:** High oval body flattened laterally. Large head with arched profile. Silver-gray coloration with a dark spot at the beginning of the lateral line and a small scarlet band on the upper edge of the operculum. It shows a characteristic golden band between the eyes. Forked caudal fin. It reaches a size of up to 57 cm in length. It is a proterandral hermaphrodite animal, first maturing as a male and from the second or third year it becomes female. It can live more than 10 years.

**Cultivation:** Its ageing is carried out in almost all Mediterranean countries. Hatcheries produce eggs from breeding individuals under highly controlled conditions. Each female lays 2 million eggs of 1 mm in diameter per kilo of weight. During their first month of life in culture, the larvae feed on living organisms: rotifers and brine shrimp. Then, they start feeding feed made from natural raw materials. The breeding facilities are varied: floating nurseries at sea, concrete tanks or ponds on land. Each sea bream takes between 18 and 24 months to reach 400 g from the time it hatches from the egg. The commercial size ranges from 250 g to more than 2 kg.

Figure 5-16.  
Evolution of  
aquaculture sea  
bream production  
(tonnes) in the  
Mediterranean area and  
the rest of the world in  
the period 1985-2025p  
(Based on FAO, FEAP and  
APROMAR).



VALUE (Millions €) VOLUME (Tons)

Türkiye	700,0 M€	140.000
Greece	290,0 M€	58.000
Egypt	218,2 M€	43.645
Tunisia	80,0 M€	16.000
Spain	53,8 M€	10.765
Italy	49,5 M€	9.900
Croatia	50,9 M€	10.185
Cyprus	31,5 M€	6.301
Portugal	15,0 M€	3.000
Malta	11,0 M€	2.200
Israel	10,8 M€	2.150
France	10,0 M€	2.000

Figure 5-17. Distribution of aquaculture sea bream production in the Mediterranean area in 2023 in volume (tonnes) and value (million euros), based on FAO, FEAP and APROMAR data.

## Aquaculture Production in Spain and Europe

The total production of juvenile sea bream in 2024 in Europe (including Turkey) is estimated to be 742.1 billion units, up 8.0% from 2023 (687.3 million units). The main producing country was Turkey (290 million) followed by Greece (210 million), then Italy (135 million), France

(56 million) and Spain (21 million youth). In any case, the difficulty of contrasting these figures must be pointed out again, especially in Greece and Turkey. The production of juvenile sea bream is estimated to increase by 1.0% in 2025, to 749 million units.

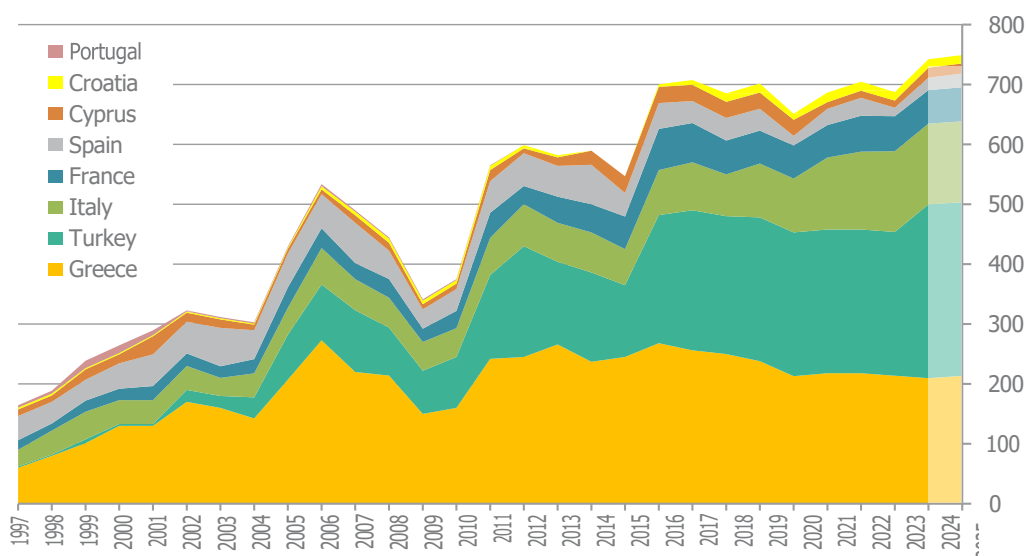
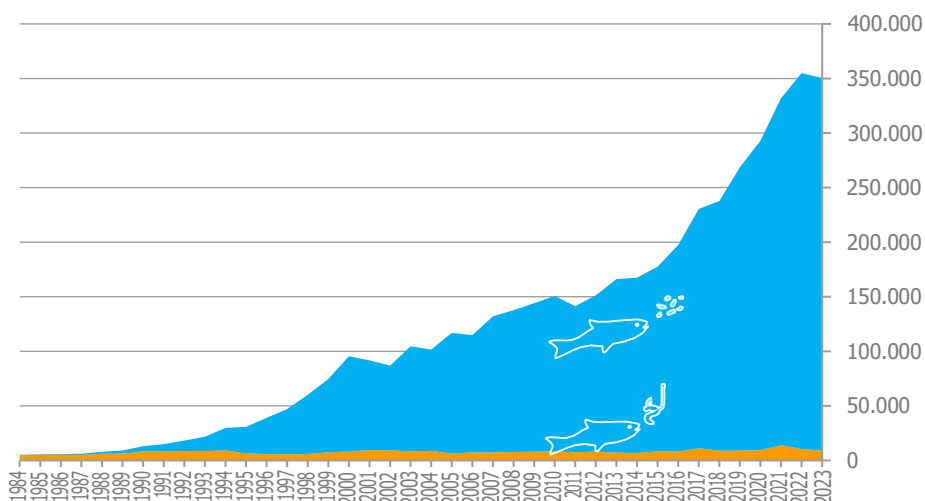


Figure 5-18. Evolution of the total production of juvenile sea bream (million units) in the Mediterranean area in the period 1997-2024p (on FEAP and APROMAR).

The landing of sea bream from extractive fishing in the Mediterranean and Atlantic Ocean countries at fishing ports in the Mediterranean Sea and Atlantic Ocean countries totalled 9,074 tonnes in 2023, -13.8% less than in 2022 (10,526 tonnes). This amount

remained relatively constant with an average of 9,000 tonnes per year in the last 10 years, while farmed sea bream accounted for 97.4% of the total supply of this species.

FFigura 5-19.  
Evolution of total  
world production  
(tonnes) of sea bream  
(*Sparus aurata*),  
through aquaculture  
and fisheries, in the  
period 1984-  
2023 (FAO)



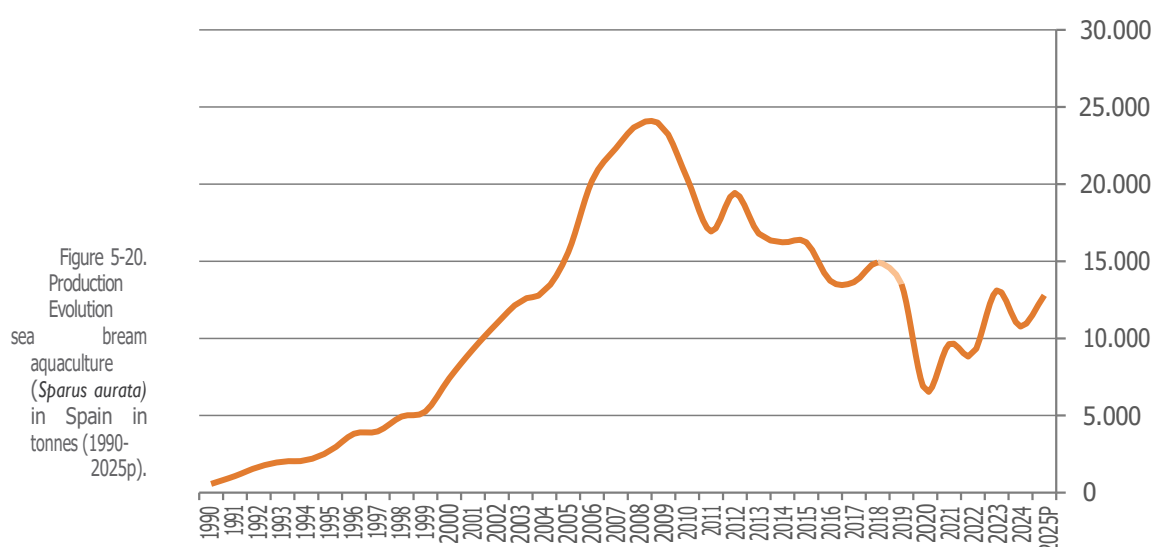


## Aquaculture Production in Spain and Europe

The aquaculture sea bream harvest in Spain in 2024 was 10,764 t, -17.9% less than the previous year with 13,106 t. By 2025, 12,791 t (2025P) are estimated, which would mean a +18.8% compared to 2024. The highest annual Spanish harvest of aquaculture sea bream took place in 2008, with 23,930 t. In 2024, the Valencian Community led the production of aquaculture sea bream with 7,541 tonnes, -17.9% less than in 2023 (9,360

t) accounting for 70.1% of the total; followed by the Canary Islands, 1,350 t, which represented a decrease of 7.6 compared to 2023

(1,460 t) and a total of 12.5% of the total. The third position went to Catalonia with 1,104 t, it grew by 29.9% (850 t in 2023) with 10.3% of the total; followed by Andalusia, which decreased production by -16.8% with 770 t (926 t in 2023), accounting for 7.2% of the total; and the Region of Murcia without production in 2024.



As for the value of the first sale of sea bream production in Spain in 2023, an average price per

kilogram of €5.39 and therefore, total production was €53.4 million, 13.5% less than in 2023 (€61.7 million).

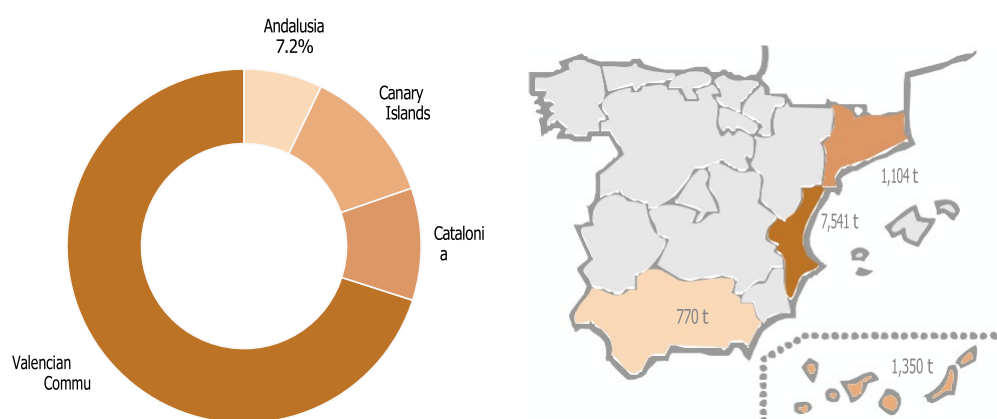


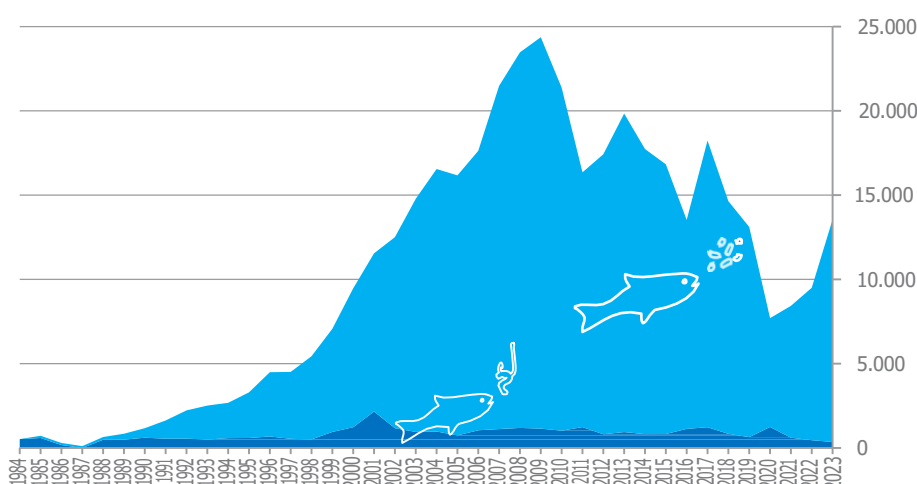
Figure 5-21. Percentage distribution of sea bream productions (tonnes) in Spain by Autonomous Communities in 2024.

## Aquaculture Production in Spain and Europe

Fishing contributed 351.8 tonnes to production in 2023, which was -24.0% less than in 2022 (463 t) and representing 2.6% of the total. The volume of catches has varied between 800 and 1,200 tonnes in the last 10 years, while farmed sea bream accounted for 97.4 % of total in 2023.

**Aquaculture sea bream accounted for 97.4 % of the total supply in the world compared to 2.6% of extractive fishing. In Spain, aquaculture sea bream accounted for 97.4% of the supply, according to FAO data.**

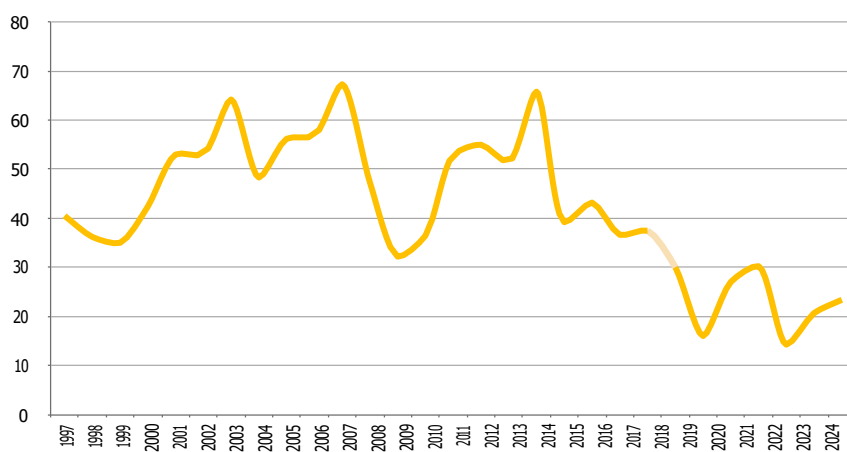
Figure 5-22.  
Evolution of sea bream  
(*Sparus aurata*)  
sources in Spain in  
tonnes: aquaculture  
and fisheries, in the  
period 1984-2023  
(FAO-MAP).



The production of juvenile sea bream in Spain in 2024 was 20.7 million units (14.3 M.ud in 2023) and it is estimated that production in 2025 will be higher and reach 23.4 million units. It is important to bear in mind that these data collected by APROMAR differ from those reported by JACUMAR because they include all juveniles produced on Spanish farms and not only those destined for sale to third parties. The production of youth gilthead bream in 2023 was led by the Balearic Islands

(79.4% of the total) and followed by the Region of Murcia (16.4%) and Andalusia (4.2%). The average purchase price of juvenile sea bream in Spain, at an equivalent weight of 2 g per unit, is estimated at 0.45 euros/unit in 2024. The Spanish production of commercial sea bream requires the import of additional juveniles to those of national production, and these are not included in the aforementioned statistics. The origin of these fish is, in order of importance, France, Italy and Greece.

Figure 5-23.  
Production Evolution  
of gilthead bream youth  
in Spain in millions of  
units (1997-2025p).



## Production of BASS

Total aquaculture production of sea bass (*Dicentrarchus labrax*) in Europe and the rest of the Mediterranean arc in 2024 was 307,782 t, 0.6% more than in 2023 (306,006 t), according to consolidated statistics from FAO, FEAP and APROMAR. By 2025 it is estimated that it will remain stable or slightly lower (-3.0%).

The total value of aquaculture sea bass in 2024 was approximately €1,692.8 million.

The main bass producing countries were Turkey with 160,000 tonnes (accounting for 52.0% of the total), Greece with 47,000 tonnes (18.4%), Egypt with 34,100 tonnes (11.1%) and Spain with 27,789 tonnes (8.9%). Sea bass is also produced in Croatia, Iran, Italy, Albania, Tunisia, Cyprus, Portugal, France, the United Arab Emirates, Algeria, Morocco, Israel, Saudi Arabia, Bosnia and Herzegovina, Montenegro, Malta, Slovenia and the Dominican Republic.



### SEA BASS (*Dicentrarchus labrax*)

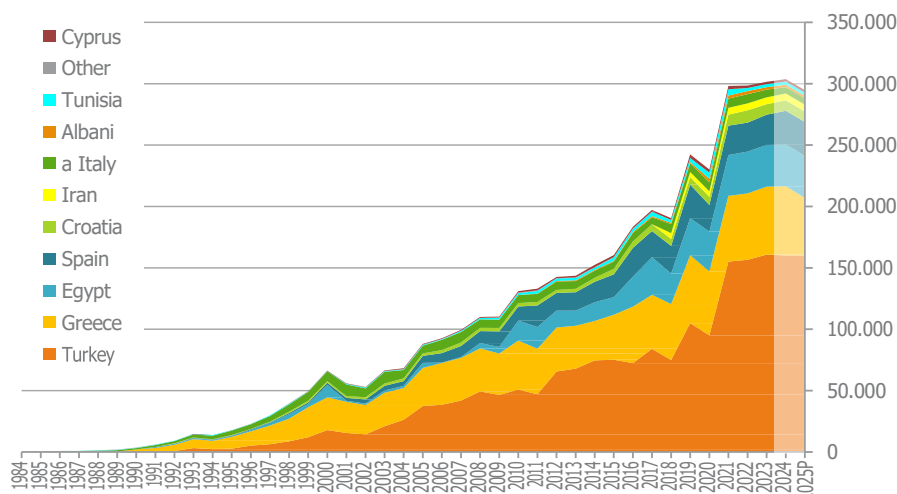
Class: Osteichthyes Order: Perciformes • Family: Moronidae

### SEA

**Significant characteristics:** Spindle-shaped and vigorous body with large scales. Pointed head with small nasal openings, small eyes and large mouth. The lower jaw is somewhat prominent. Lead gray coloration, darker on the dorsal part and silver sides. On the operculum it has a black spot. Slightly forked caudal fin. It reaches a size of up to 70 cm in length. It tolerates wide variations in temperature and salinity of the water. The first sexual maturation usually occurs at 2-4 years of age. Its longevity is estimated at about 30 years.

**Culture:** Sea bass is a fish whose breeding is carried out in almost all Mediterranean countries. Hatcheries produce eggs from breeding individuals under highly controlled conditions. Each female lays 250,000 eggs of 1 mm in diameter per kilo of weight. During their first month of life in culture, the larvae feed on living organisms: rotifers and brine shrimp. They then start feeding feed made from natural raw materials. The breeding facilities are varied: floating nurseries at sea, concrete tanks or ponds on land. Each sea bass takes between 20 and 24 months to reach 400g from the time it hatches from the egg. The commercial size ranges from 250 g to more than 2.5 kg from the time it hatches from the egg. The commercial size ranges from 250 g to more than 1.5 kg.

Figure 5-24.  
Evolution of total  
aquaculture sea bass  
production (tonnes) in the  
Mediterranean area and  
the rest of the world in the  
period 1984-  
2025p (Based on FAO data, FEAP  
and APROMAR).



## Aquaculture Production in Spain and Europe

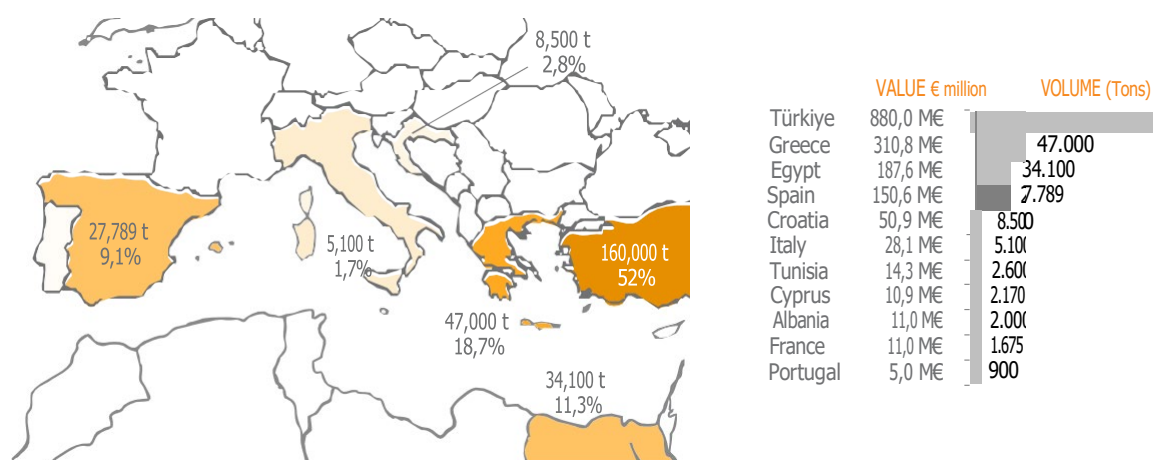
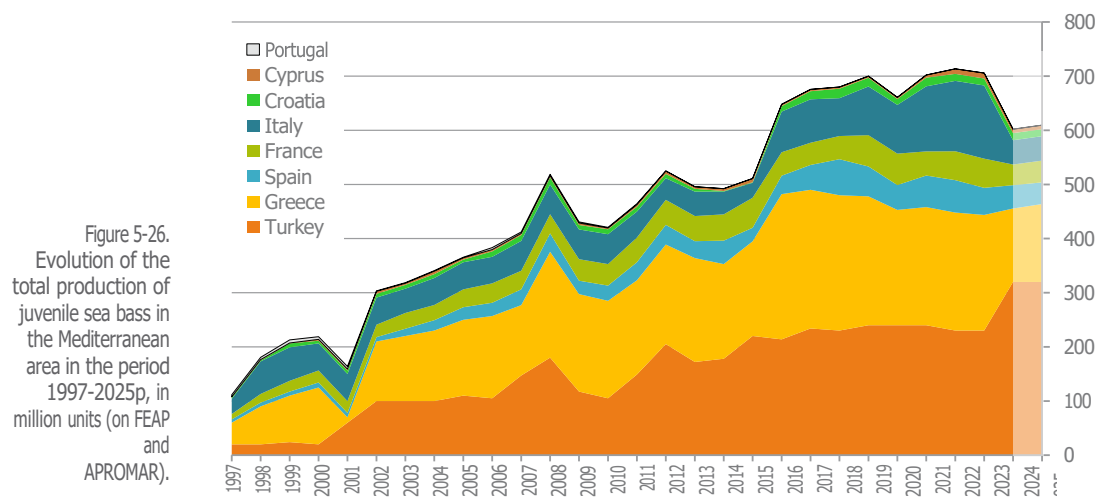


Figure 5-25. Distribution of sea bass aquaculture production in the Mediterranean area in 2024 in volume (tonnes) and value (million euros), based on FAO, FEAP and APROMAR data.

The production of juvenile sea bass in 2024 in Europe (including Turkey) was 602.1 million units, a -14.7 % less than in 2023 (705.6 M). The main producing country was Turkey with 320 million units, followed by Greece

with 135.5 million and Italy 45 million, Spain in fourth place with 43 million and France produced about 38.2 million units. A slightly higher production is expected for 2024, around 609.4 million juvenile sea bass (+1.2%).

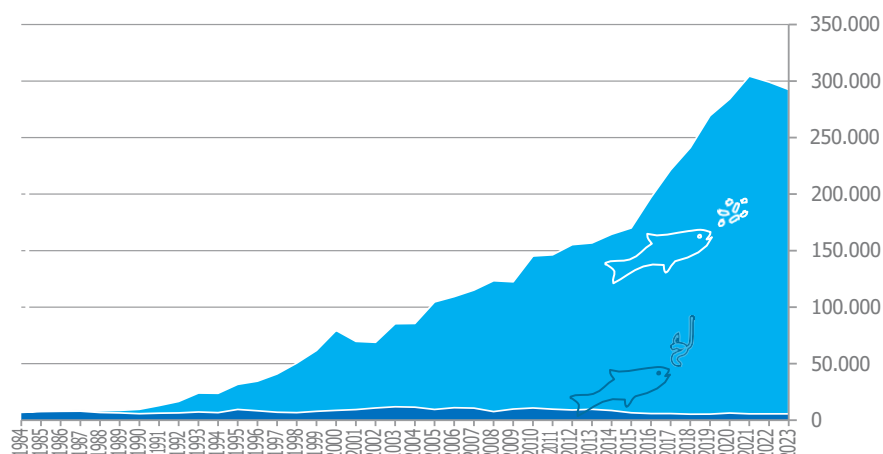


In 2023, 5,556 tonnes of sea bass were obtained from extractive fisheries worldwide. When compared to the amount of sea bass obtained through aquaculture

In that same year, 286,968 tonnes, it can be seen that aquaculture provides 98.1% of the total sea bass found in the markets worldwide.

## Aquaculture Production in Spain and Europe

Figure 5-27.  
Evolution of total  
world production  
(tonnes) of sea bass  
(*Dicentrarchus labrax*),  
through aquaculture  
and fisheries, in the  
period 1984-2023  
(FAO).



The aquaculture sea bass harvest in Spain in 2023 was 27,376 t, 11.4% more than in 2022 (24,580 t). The Valencian Community has led production in 2024 with 8,592 t (31.4% of the total), followed by the Region of Murcia (6,692 t, 24.4% of the total), the Canary Islands (6,594 t, 24.1 %), Andalusia with 4,797 tonnes (17.5% of the total) and Catalonia with

701 tonnes (2.6 % of the total). Growth of 1.5% is forecast for 2025 with a sea bass harvest in Spain of 27,789t. For 2024, an average first-sale price of sea bass of €4.91/kg is estimated, 11.6% more than in 2023 (€8.25/ kg) and a total value of Spanish production of €123.7 million (-3.7% less than 2023).

Figure 5-28.  
Production  
Evolution  
aquaculture of  
sea bass  
(*Dicentrarchus  
labrax*) in Spain in  
tonnes (1990-  
2025p).

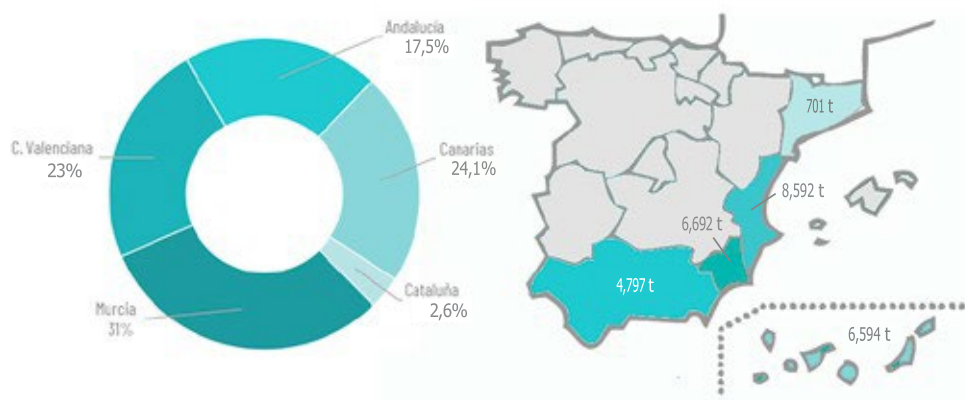
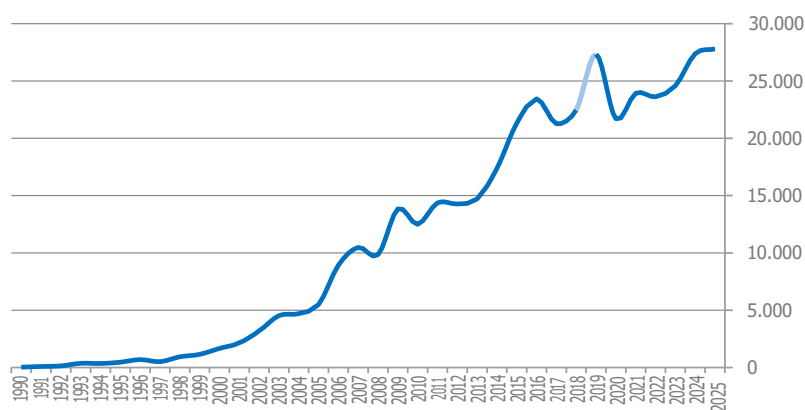


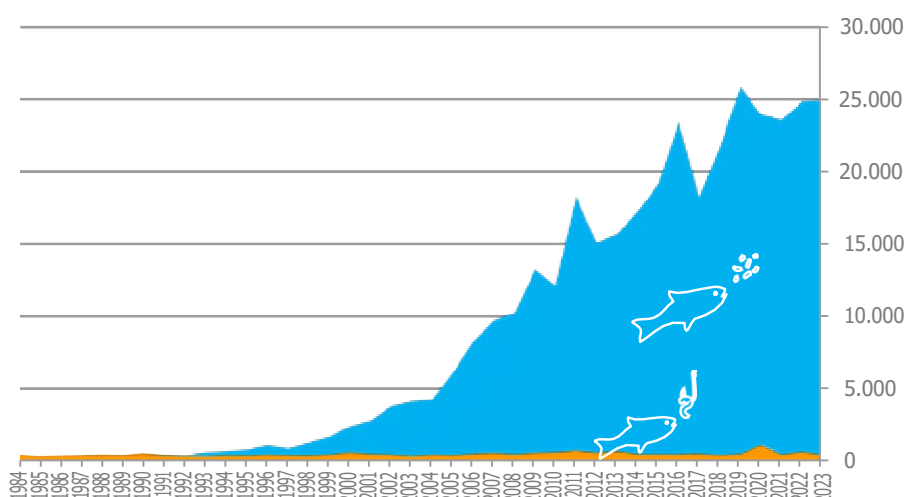
Figure 5-29. Percentage distribution of sea bass productions (tonnes) in Spain by Autonomous Communities in 2024.

## Aquaculture Production in Spain and Europe

In 2023, 502 tonnes of sea bass were caught and arrived at Spanish ports. This was a decrease of -30.3% compared to 2022 (720 t). How to

As you can see, when comparing fisheries and aquaculture by species, aquaculture provides 98.0% of the Spanish sea bass that reaches the markets.

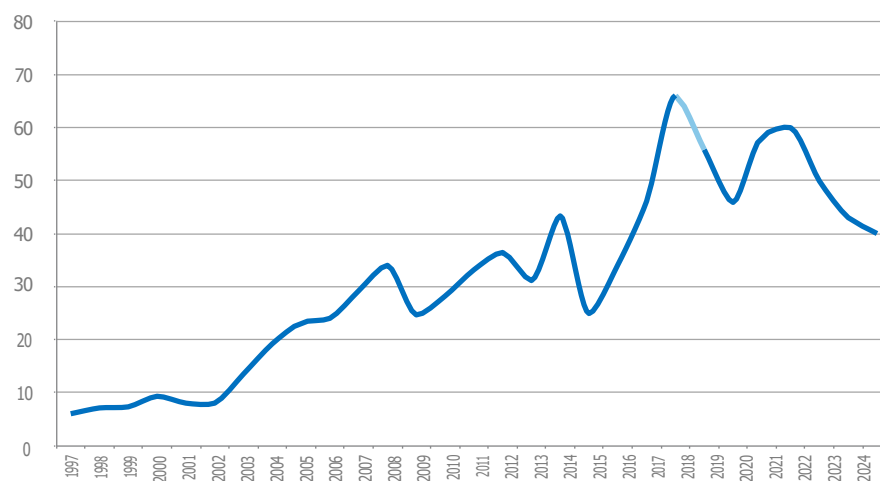
Figure 5-30.  
Evolution of  
the sources  
of  
obtaining sea bass  
(*Dicentrarchus labrax*)  
in Spain: aquaculture  
and fishing in tonnes,  
in the period 1984-  
2023 (FAO-MAP).



The production of juvenile sea bass in Spain in 2024 was 54.5 million units. This was carried out in the Balearic Islands (70.3%) and Andalusia (29.7%). By 2025, it is estimated that the production of juvenile sea bass in Spain will decrease to 40.0 million units. It is important to note that these data collected by APROMAR differ from those reported by JACUMAR because they include all juveniles produced on Spanish farms

and not only those intended for sale to third parties. The average purchase price of juvenile sea bass in Spain, at an equivalent weight of 2 g per unit, is estimated at 0.32 euros/unit. The Spanish production of commercial-size sea bass requires the import of juveniles in addition to those of national production, and these are not included in the aforementioned statistics. The origin of these fish is, in order of importance, France, Italy and Greece.

Figure 5-31.  
Evolution of the  
Youth production  
of sea bass in Spain in  
million units  
(1997-2025p).





## Joint figures for the cultivation of SEA BREAM and SEA BASS

Given the very similar environmental and biological requirements of sea bream and sea bass, their forms of production are very similar. For this reason, they are often grown on the same farms and both are replaceable with each other. Even at the market level, the situation of sea bream affects that of sea bass, and vice versa. Therefore, it is interesting to show the joint analysis of the production of both species.

Total aquaculture production of sea bream plus sea bass in Europe and the rest of the world in 2024 is estimated at 624,578 t, -3.2% less than in 2023 (645,373 t), according to consolidated statistics from FEAP, APROMAR and FAO. By 2025, a similar or slightly lower production is expected at around 614,277 t.

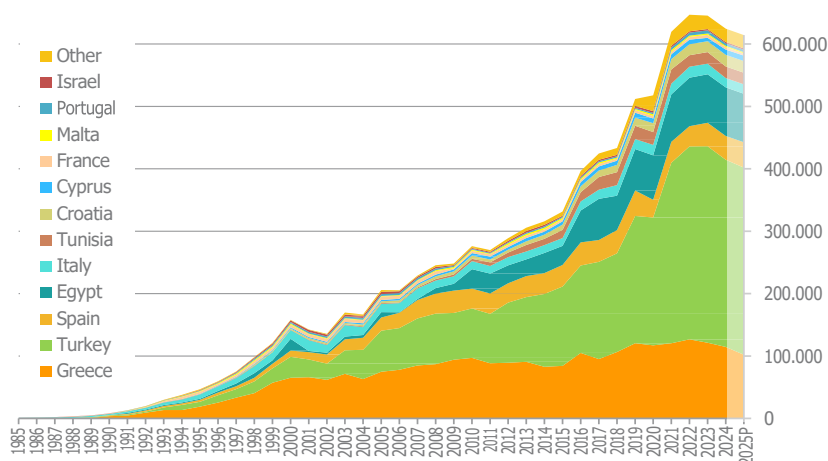


Figure 5-32. Evolution of the joint production of sea bream and sea bass aquaculture (tonnes) in the Mediterranean area and the rest of the world in the period 1985-2025p (Based on FAO, FEAP and APROMAR data).

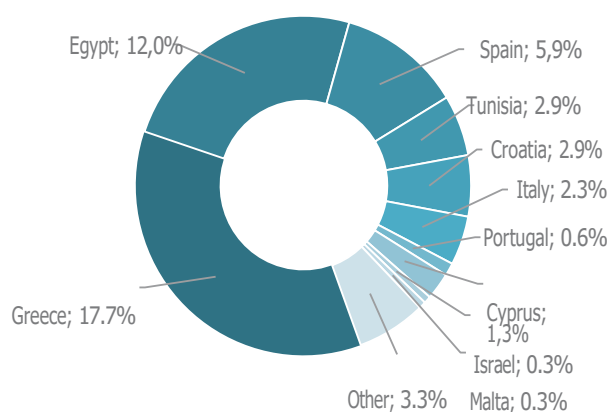


Figure 5-33. Distribution of aquaculture production of sea bream plus sea bass in the Mediterranean area in 2024 in volume (tonnes) and value (million euros), on FAO, FEAP and APROMAR data.

The joint production of juveniles of sea bream plus sea bass in the Mediterranean area in 2023 (not including Egypt or Tunisia) was 1,344,152 units, which represents a decrease of -3.5% on the previous year's figure

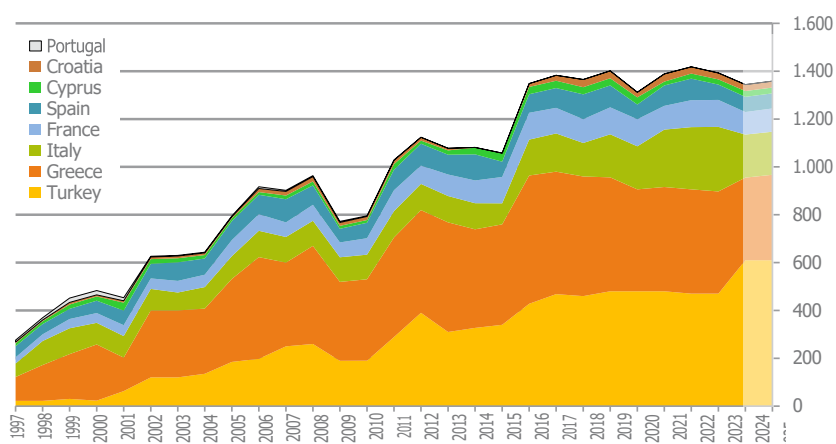
(1,392,852 units). The main producing countries by

## Aquaculture Production in Spain and Europe

In order of importance are Turkey (610 million), Greece (345.2 million), Italy (180 million), France (94.26 million) and Spain (63.5 million). In 2024, production is expected to be slightly lower with about 1,358,588 juveniles.

## Aquaculture Production in Spain and Europe

Figure 5-34.  
Evolution of the joint  
production of juvenile sea  
bream and sea bass in  
the Mediterranean area in  
the period 1997-2025p,  
in millions  
units (on FEAP and  
APROMAR).



Total aquaculture production of sea bream plus sea bass in Spain in 2024 was 38,141 t, 1.2% more than the previous year (37,596 t). The largest production took place in the

Valencian Community (16,133 t, 42.3% of the total), Canary Islands (7,944 t, 21% of the total), Region of Murcia (6,692 t, 17.5%), Andalusia (5,567 t, 15.0%) and Catalonia (1,805 t, 5%).

Figure 5-35.  
Evolution of aquaculture  
production of sea bream  
plus sea bass in Spain  
in tonnes (1990-2025p).

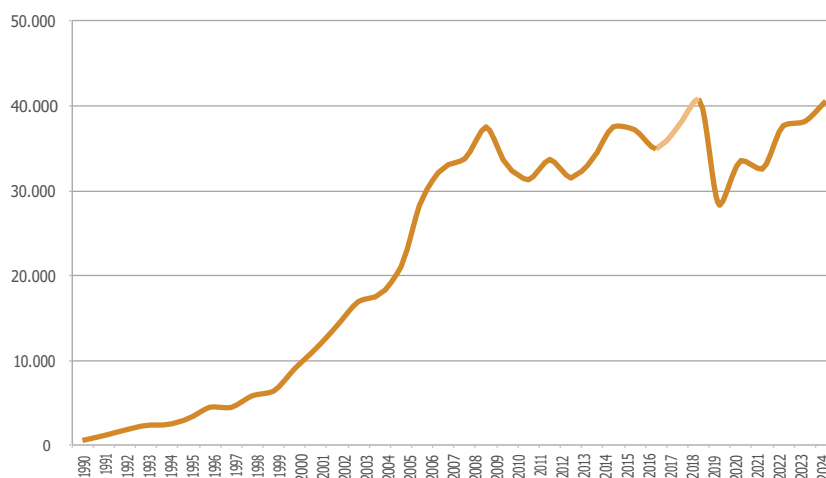
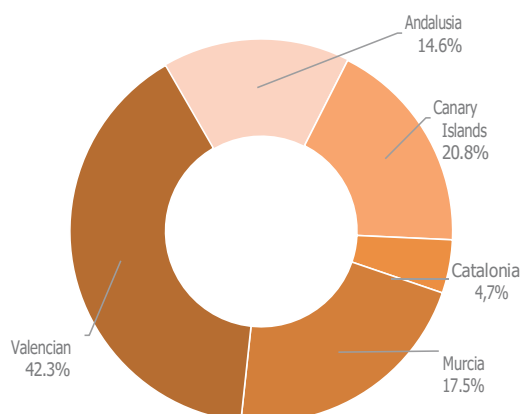


Figure 5-36.  
Percentage distribution of the  
productions (tonnes) of sea  
bream plus sea bass in Spain by  
Autonomous Communities in 2024.



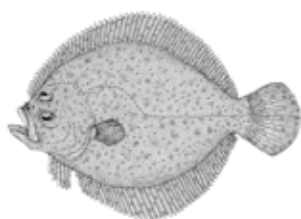
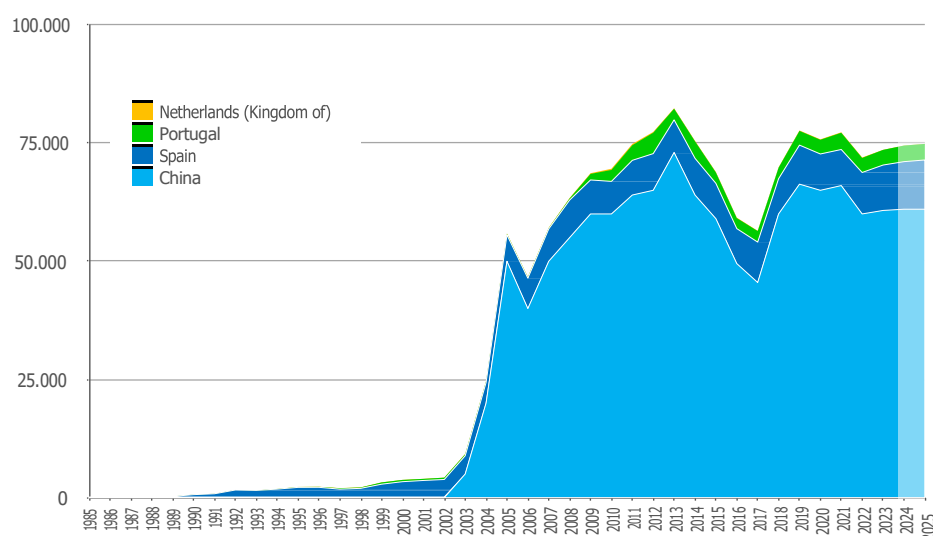
## RODABALLO Production

The total production of turbot (*Scophthalmus maximus*) from aquaculture in the world in 2024 was 74,459 t, 1.2% more than the previous year (73,549 t).

In China there is a very significant production of aquaculture turbot, which obtained about 61,000 tons in

2024, although both the figures and the exact species are imprecise. In Europe, the main producing country is Spain, which harvested 10,412 tonnes (13.5% of the total), 4.8% more than in 2023 (9,600 tonnes). Portugal, with 3,400 tonnes, is the third largest producer (4.6% of the total), followed by Chile with 100 tonnes (0.001% of the total). By 2025 it is expected to remain similar at about 74,813 t.

Figure 5-37.  
Evolution of the turbot  
aquaculture harvest  
(production) in the  
world (tonnes) for the  
period 1985-2025p  
(Based on FAO, FEAP and  
APROMAR data).



*Scophthalmus maximus*

## TURBOT

### RODABALLO (*Scophthalmus maximus*)

Class: Osteichthyan Order: Pleuronectiformes • Family: Scophthalmidae

**Significant characteristics:** The body of adult specimens does not present bilateral symmetry, being rounded and flattened. Bulging eyes, located on the left side. Large mouth with prominent jaw. A brownish-brown upper colour more or less dark, which varies according to the environment, with numerous spots that also cover the fins. The lower flank is depigmented. It can reach up to 100 cm in length. It reaches sexual maturity during the 4th or 5th year of life.

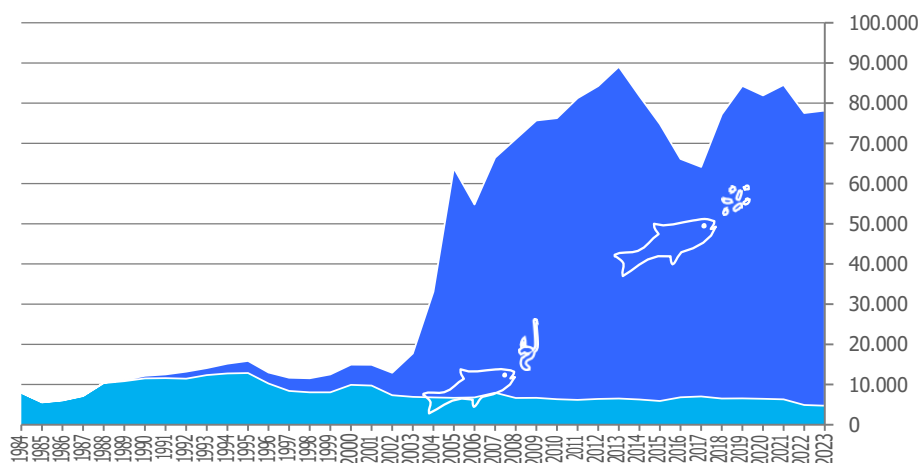
**Culture:** In aquaculture, reproduction is carried out in hatcheries under very controlled conditions. The clutches are about 500,000 to 1,000,000 eggs per kilo of female weight. After an incubation period of 5 to 7 days, the larvae hatch. During their first month of life in culture they feed on living organisms: rotifers and brine shrimp. Then they start a diet based on feed made with natural ingredients. Breeding facilities are usually circular concrete tanks in facilities on the coast.

## Aquaculture Production in Spain and Europe

In the case of turbot, if we compare fish catches and aquaculture production, the latest data

are from FAO for 2023 and indicate that 93.9% is aquaculture (73,423 t) and the rest comes from extractive fishing (9,474 t).

Figure 5-38.  
Evolution of world  
production (tonnes) of  
turbot (*Scophthalmus  
maximus*), through  
aquaculture and  
fisheries, in the period  
1985-  
2023 (FAO).



The turbot harvest in 2024 in Spain, according to APROMAR data, was 10,058 t, 4.8% more than the previous year (9,600 t). It is expected to remain similar in 2025. Galicia is the only turbot-producing autonomous community in Spain at present.

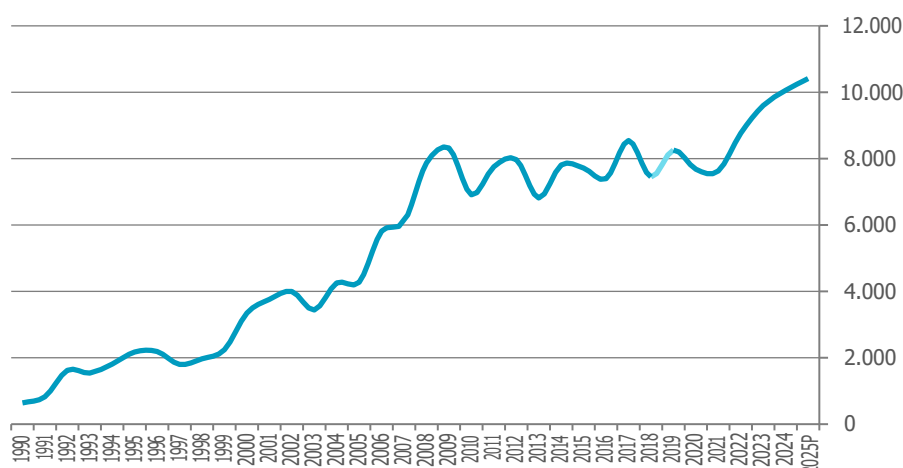
As for the average value in first sale in Spain, a price of 12.12 euros/kg (8.92 euros/kg) is estimated for 2024 with a total of 121.9 million euros, 0.5% more than the previous year (115.7 million euros).

As in the case of sea bream and sea bass, the amount of wild turbot that is caught by

The Spanish fleet is increasingly scarce and testimonial for the markets (77 tonnes in 2023). The production of aquaculture turbot accounts for more than 99% of the production of this species in Spain. However, imports of turbot from Europe into Spain from Europe, mainly from the Netherlands, are relevant.

The production of turbot juveniles in Spain in 2024 was 15.3 million units. It was in Galicia where all the juveniles of this species were produced. The average purchase price of juvenile turbot in Spain is estimated at 0.71 euros/unit.

Figure 5-39.  
Evolution of the  
aquaculture harvest  
(production) of turbot  
(*Scophthalmus maximus*)  
in Spain in tonnes  
(1990-2025p).



## Aquaculture Production in Spain and Europe

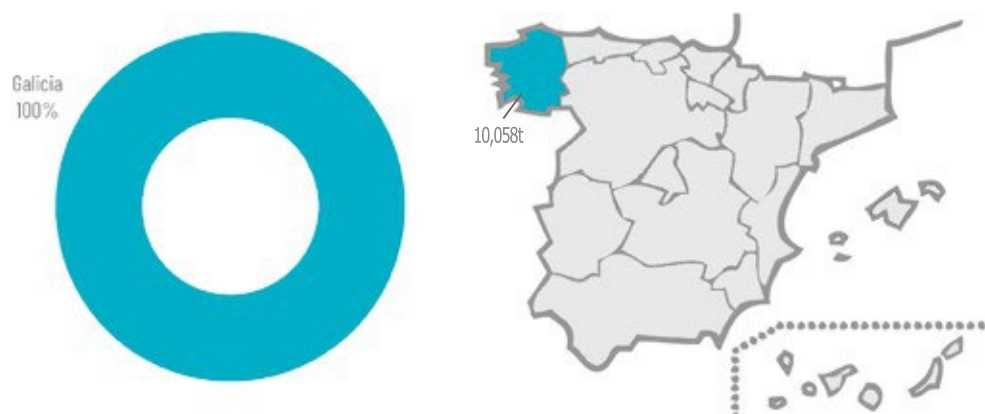


Figure 5-40. Distribution map of turbot production in Spain.

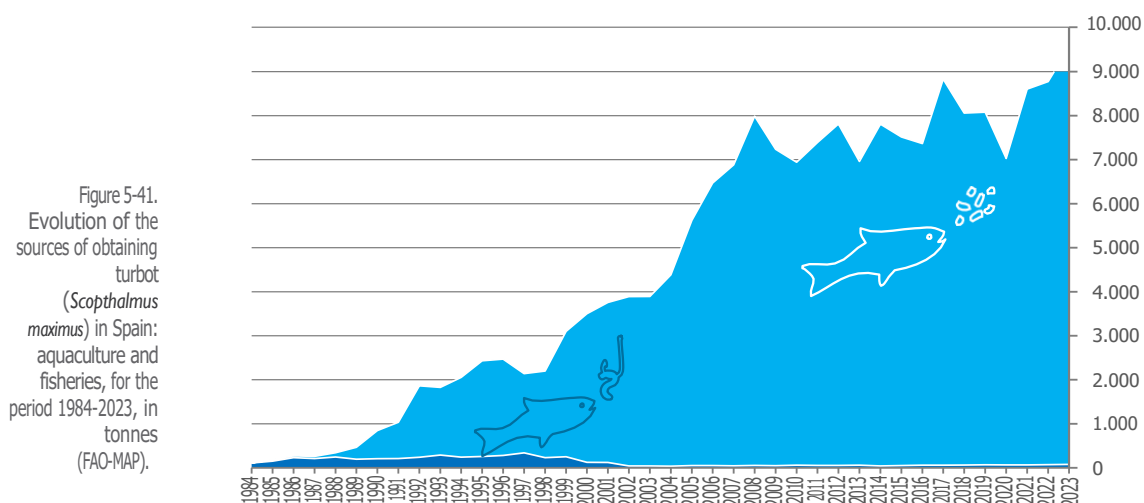


Figure 5-41. Evolution of the sources of obtaining turbot (*Scophthalmus maximus*) in Spain: aquaculture and fisheries, for the period 1984-2023, in tonnes (FAO-MAP).

### MEAGER Farming

The production of aquaculture Meagre (*Argyrosomus regius*) in the Mediterranean area in 2024 is estimated at 50,766 tonnes, 2.7% more than in 2023 (49,410 tonnes). The main producing countries are Egypt (34,000 t, 67.0 percent of the total), Turkey (6,200 t, 12.2 %), Spain (4,886 t, 9.9%), Greece (4,500 t, 8.9%) and Tunisia (500 t, 1.1 %). A decrease of -0.3% (50,600 t) is forecast for 2025.

Meagre is a highly prized fish in those regions where it has been traditionally consumed. Recent increases in its production through aquaculture have begun to make it recognized in many new countries.

In 2023, global catches of this species were 7,611 t, 89.9% more than in 2023 (4,008 t). Aquaculture farming, therefore, represents 86.7% of the world's sea bass production.

The production of meagre through aquaculture in Spain in 2024 was 5,051 t, -31.6% less than in 2023 (7,383 t). This figure refers to fish finished and placed on the market, and not to live biomass increases. This nuance is important in a fish, such as sea bass, which is farmed up to several kilograms of individual weight.



## MEAGRE

(*Argyrosomus regius*)

Class: Osteichthys Order: Perciformes • Family: Scienidae



*Argyrosomus regius*

**Significant characters:** Relatively large head and elongated, silvery-gray body with a mixture of dark tones. The head is colored yellow with a rounded muzzle. Mouth in terminal position without barbels, with conical and robust teeth. Small eyes. It reaches lengths between 50 cm and up to 2m, and a weight of up to 40 kg.

**Culture:** The cultivation of sea bass is carried out in various Mediterranean countries. Breeding centers produce eggs from breeding individuals under highly controlled conditions. A 1 m long female produces more than 1 million eggs per year, which have a diameter of less than 1 mm. During their first month of life in culture, the larvae feed on living organisms: rotifers and brine shrimp. They are then fed with feed made from natural raw materials. The breeding techniques are similar to those used for sea bass and sea bream, both in floating nurseries in the sea and in earthen ponds. Sea bass grow substantially faster than sea bream or sea bass, and can reach 1 kg in 12 months. The commercial size is between 1 and 4 kg.

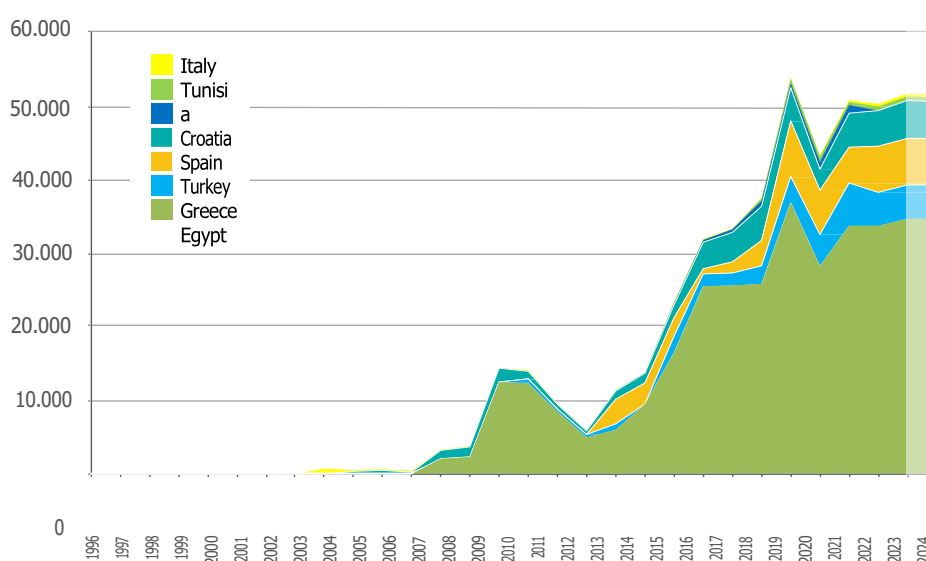
The bulk of the Spanish meagre harvest comes from the Valencian Community with 81.7% and Murcia 18.3%, in addition, a small amount was produced in Andalusia. It is a species whose production is growing in interest for producers and consumers, and whose production in 2025 is expected to be lower (-33.8%).

As for the value of meagre at the first sale, an average value per kg of 7.05 euros is estimated for 2023, which represents a total of 35.6 M euros in Spain, -27.8% less than in 2023 with 49.3 M euros.

The catch of meagre by fishing fleets in the world in 2023, according to FAO, was 3,582 tonnes, -10.7% less than the previous year (4,011 tonnes). Of these, Spain caught 249 tonnes, a figure lower than the previous year (343 tonnes). Therefore, 96.8% of sea bass in Spain is provided by aquaculture.

In Spain, some 4.5 million juveniles of this species were obtained in the Region of Murcia alone in 2023. A price of 0.36 euros/unit is estimated.

Figure 5-42.  
Evolution of the  
harvest (production)  
of sea bass  
aquaculture (in  
tonnes) in the  
Mediterranean for  
the period  
1996-2025p  
(Based on FAO,  
FEAP and  
APROMAR).



## Aquaculture Production in Spain and Europe

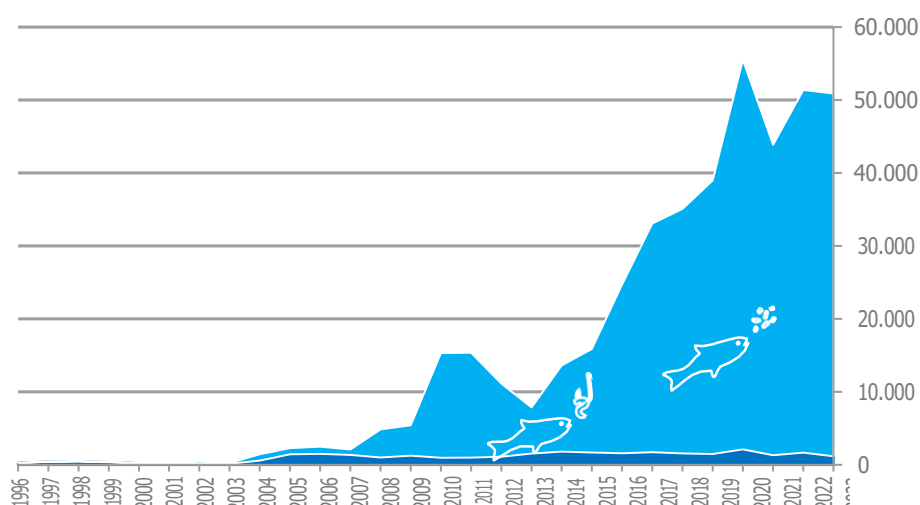


Figure 5-43.  
Production  
Evolution  
Mediterranean sea  
bass (*Argyrosomus  
regius*), in tonnes,  
through aquaculture  
and fishing, in the  
period 1996-2023  
(FAO).

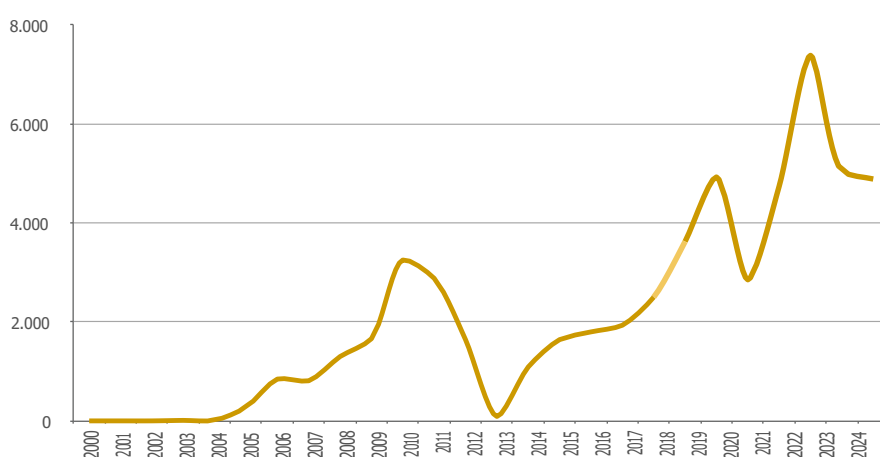


Figure 5-44.  
Evolution of the croaker  
(*Argyrosomus regius*)  
harvest in Spain in  
tonnes (2000-2025p).

### SOLE Production

In 2024, the global harvest of Senegalese sole (*Solea senegalensis*) from aquaculture was 2,479 t, 6.7% more than the previous year (2,324 t). By 2025 it is expected to grow by 2.7% to about 2,550 t, according to data compiled by FEAP and APROMAR. These figures differ from those published by FAO up to 2023 which indicate that the total for 2023 was 2,189 tonnes, 27.3 percent more than the previous year (1,719 tonnes). FAO reports that Senegalese sole fisheries landed 71 tonnes globally in 2023, of which 5 tonnes were in Spain, which means that 90.4% comes from aquaculture globally.



*Solea senegalensis*

In 2024, 1,031 tonnes of aquaculture sole were produced in Spain, -4.3% less than in 2023 (1,077 tonnes). This production was located in Galicia (77.2%) and Andalusia (22.8%). The 2025 harvest is forecast to increase to 1,095 t.

## Aquaculture Production in Spain and Europe

In terms of value, it is a highly valued species in the markets and a value at first sale of 19.04 euros/kg is estimated with a total value in 2024 of 19.6 million euros, - 6.1% less than the previous year (21.8 million).

In Spain in 2024, about 16.5 million juveniles of this species were obtained, in Galicia (100%), and it is expected to grow to 31.9 million units in 2025. A unit cost of the juniors of 2.85 euros is estimated.

Figure 5-45.  
Evolution of the  
harvest (aquaculture  
production) of  
Senegalese sole  
(*Solea senegalensis*)  
in the world for the  
period 2005-2025p  
(based on FAO,  
FEAP and  
APROMAR).

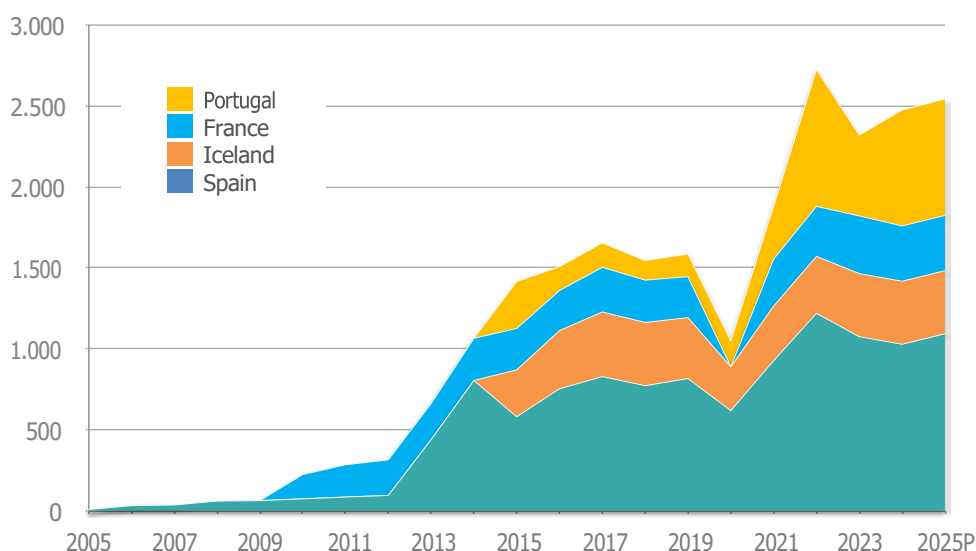
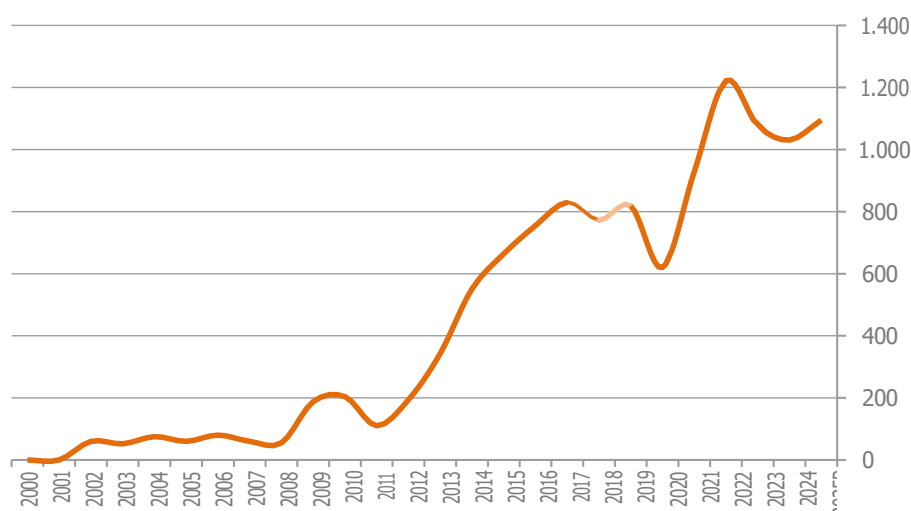


Figure 5-46.  
Evolution of the  
harvest  
(aquaculture  
production) of sole  
(*Solea senegalensis*)  
in Spain in tonnes  
(2000-2025p).

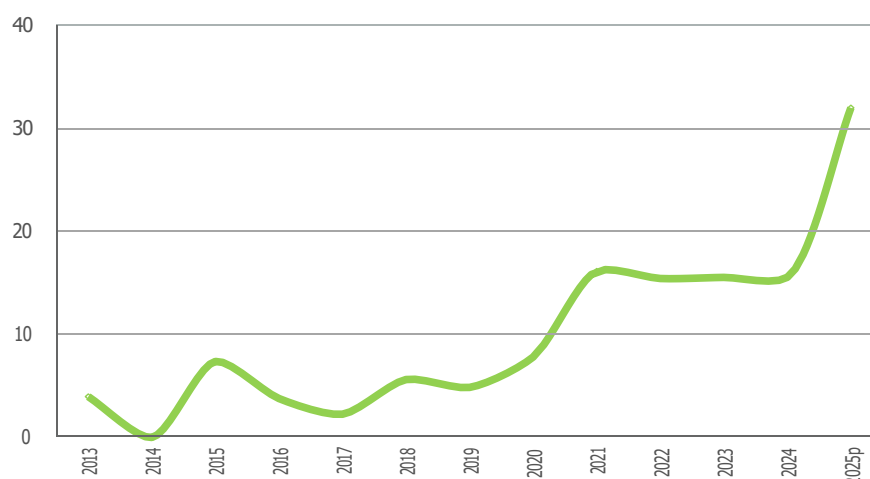


In Spain in 2024, some 16.5 million juveniles of this species were obtained, in Galicia (100%), and it is expected that

grow to 31.9 million units by 2025. A unit cost of the juniors of 2.85 euros is estimated.

## Aquaculture Production in Spain and Europe

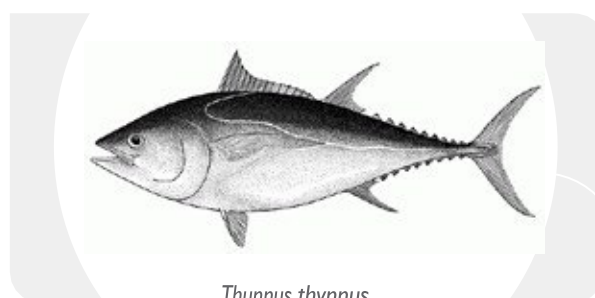
Figure 5-47.  
Production  
Evolution of  
juvenile sole  
(*Solea senegalensis*) in Spain  
in millions of  
units (2013-2025p).



### BLUEFIN TUNA Farming

All bluefin tuna (*Thunnus thynnus*) available on consumer markets originates from wild stocks. A part of them are put on the market immediately after they are caught and are considered fishing products. But another part of the bluefin tuna, which is growing and now the majority, is caught alive by purse seine gear or traps and kept for months on aquaculture farms. In these farms, consisting of nurseries in the sea, bluefin tuna are fed to recover their optimal body condition after the reproductive migration they will have made from the Atlantic Ocean to the interior of the Mediterranean Sea, and to regulate the market. But in parallel to this partial aquaculture activity, there is a notable scientific effort focused on closing the production cycle and raising bluefin tuna from egg to commercial size in captivity. Spain is a world leader in research into the integral culture of bluefin tuna, especially through the Spanish Institute of Oceanography, and very satisfactory results have been achieved both in its reproduction, which is already a fact, and in breeding to commercial size.

In previous reports, the global production of bluefin tuna from aquaculture was indicated taking into account the data



*Thunnus thynnus*

FAO and APROMAR estimates of 3 species of aquaculture bluefin tuna (Pacific, Atlantic and South). Taking into account these 3 species, the world's largest producers are Japan, Malta, Spain, Australia and Mexico. In this report, to facilitate interpretation and comparison with the Spanish production of bluefin tuna, only Atlantic bluefin tuna have been taken into account. Total global production was 31,506 tonnes in 2024, a decrease of 14.7% compared to the previous year (36,956 tonnes). The main producing countries were Malta (12,156 t), Spain (10,312 t; 32.7 percent of the total), Turkey (4,000 t), Croatia (3,500 t) and Tunisia (1,400 t). Production is expected to increase by 16.2% in 2025, reaching 36,600 tonnes.

It should be noted that bluefin tuna production is limited by the catch quotas established internationally by ICCAT.

## Aquaculture Production in Spain and Europe

Figure 5-48.  
Evolution of  
aquaculture  
production  
(fattening)  
of bluefin tuna in the  
world for the period  
1984-2025p, in  
tonnes (based on  
FAO data).

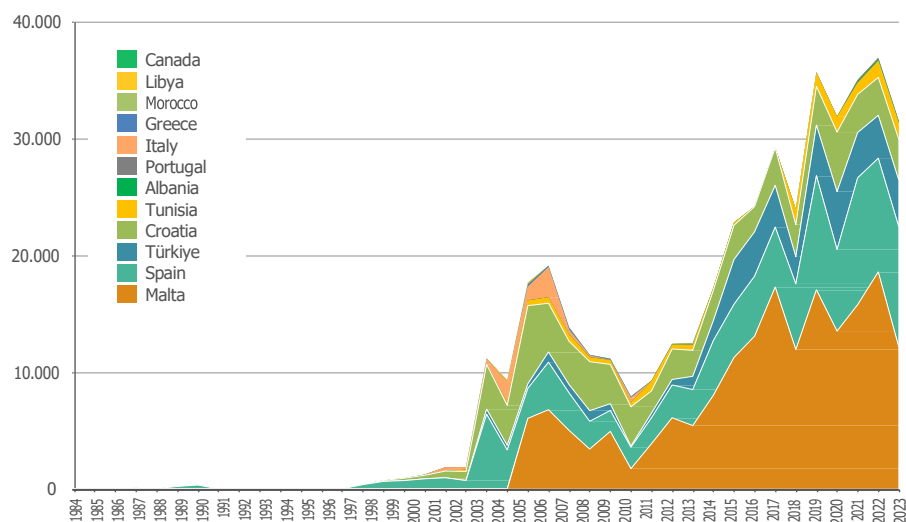
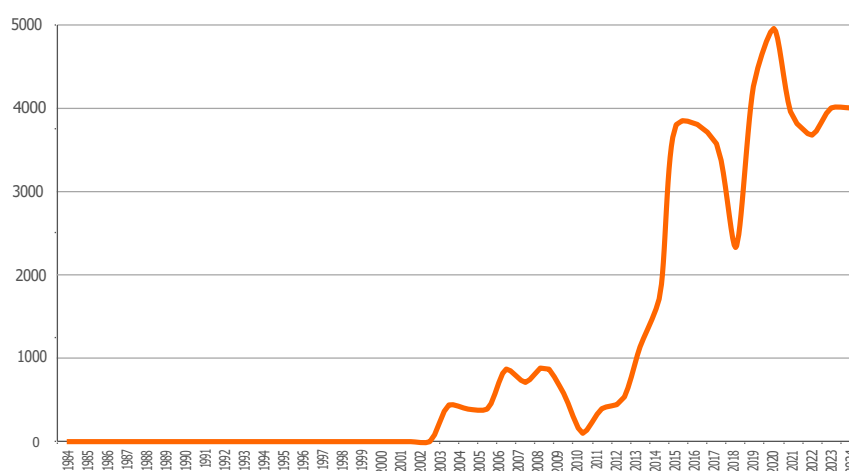


Figure 5-49.  
Evolution of the harvest  
(aquaculture  
production/ fattening)  
of bluefin tuna in Spain  
for the period 1984-  
2025p in tonnes (on  
data  
FAO-MAP).



Bluefin tuna aquaculture production in Spain in 2024 was 10,312 t (9,744 t in 2023) and slightly higher production is estimated for 2025.

With an estimated sale value of 12.5 euros/kg, the total value in Spain at first sale was 129 million euros in 2024 , -8.1 less than in 2023 (140.9 million euros).

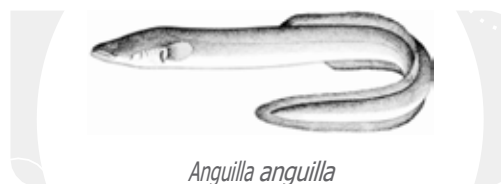
Discussions are currently taking place at the level of the European Commission and the Member States of the European Union to increase the authorised production capacities of aquaculture farms in parallel with the increase in fishing quotas. These increased fishing quotas are made possible by the strong recovery of wild bluefin tuna stocks.

## Farming of other marine fish species

### Eel Farming

Eel farming (*Anguilla anguilla*) is a traditional activity in Spain, with varying levels of intensification. Its production depends on the capture of wild elvers since there is not enough scientific knowledge for their reproduction in captivity. For this reason, its future is highly conditioned by the European Recovery Plan for this species.

At the European level, 2,608 t of European eel were produced through its cultivation in 2023, 47.0% less than in 2022 (4,911 t). The producing countries are Germany (1,163 t), Greece (605 t), Spain (355 t) and Italy (272 t).



*Anguilla anguilla*

Spanish production at the commercial level in 2024, located only in the Valencian Community, was 355 tonnes (340 tonnes in 2023). Its purpose is both the repopulation of rivers and for consumption. In terms of value at first sale, a price of 11.1 euro/kg is estimated for 2024, which represents a total value of 3.9 million euros, 4.4% more than in 2023 (3.8 million euros).

### Cultivation of YELLOWTAIL

Aquaculture in Spain of yellowtail of the species *Seriola dumerili*, also known as amberjack, is currently being incorporated into aquaculture production on a commercial scale. It is the culmination of many years of scientific research and technological development. With its cultivation, new business opportunities and job creation are opened, making it one of the species with the greatest potential for Spanish aquaculture.

In 2024, according to APROMAR data, the cultivation of *Seriola dumerili* in Spain increased to 51 t, i.e. +16.1% compared to 2023 (44 t). Production is expected to increase to 88 tonnes by 2025. As for the sale price, it is estimated in 2024 at 14.0 euros/kg and a total value of 0.7 million euros.

In addition, juveniles of this species are produced in Spain in Andalusia. In 2024 it was 0.64 million units and 2025 production is expected to double and reach 1.2 million

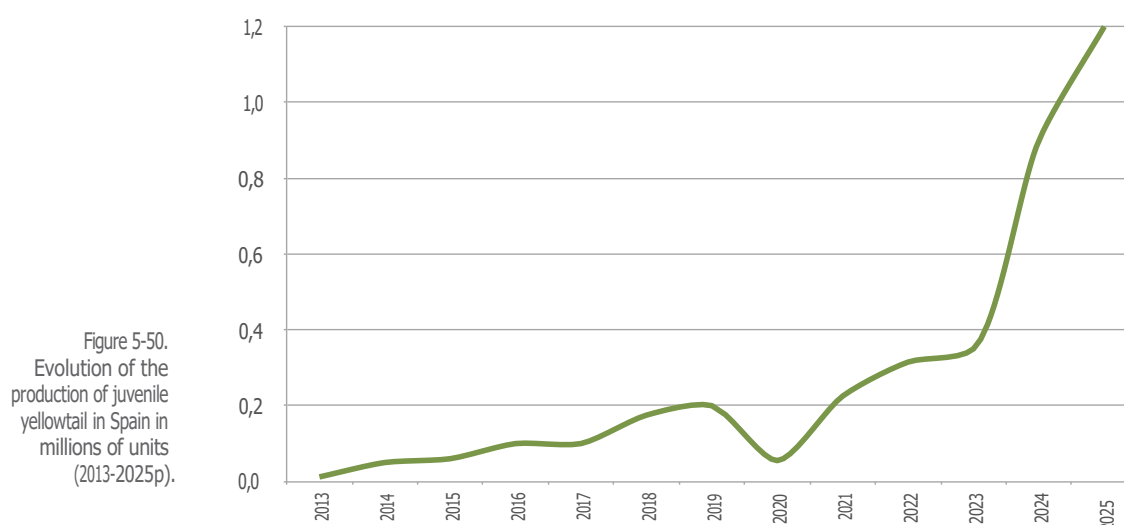


*Seriola dumerili*

units, as estimated for 2024. This denotes the great interest that this species is generating. The average purchase price of juvenile yellowtail in Spain, at an equivalent weight of 2 g per unit, is calculated at 3.5 euros/unit in 2024.



## Aquaculture Production in Spain and Europe



### Shellfish culture

Spanish aquaculture stands out as a reference at European and world level for the quantity and quality of its mollusc breeding. In 2023, the harvest of molluscs in the European Union was 1,526.2 million tonnes, 64.4

% more than in the previous year (546,201 t) with a value in first sale of 1,229.0 million euros according to FAO data. The main producers were: Spain, France and Italy.

### MUSSEL Farming

According to data collected from the MAPA, the harvest in 2024 was 184,593.2 t, 1.0% more than in the previous year (182,790 t) with a value in first sale of 138.1 million euros (8.2 %, €127.6 million).

There are several Spanish autonomous communities in which mussels are grown, but they are mainly settled in the Galician estuaries through their traditional cultivation in rafts. Galician production represents 97% of the total national mussel, but there are also productions in Catalonia, the Valencian Community, Andalusia and the Balearic Islands.

The mussel seed (cheek) is usually collected from the natural environment, or collected by using collecting ropes, for later stringing in rafts or long-



lines. In 2024, the price of Galician mussels in first sale is estimated to have been 0.72 euros/kg.

62% of the mussels harvested in Spain are marketed by producers to the fresh market, while the remaining 38% goes to the processing industry, i.e. to cooks and canneries.

## Aquaculture Production in Spain and Europe

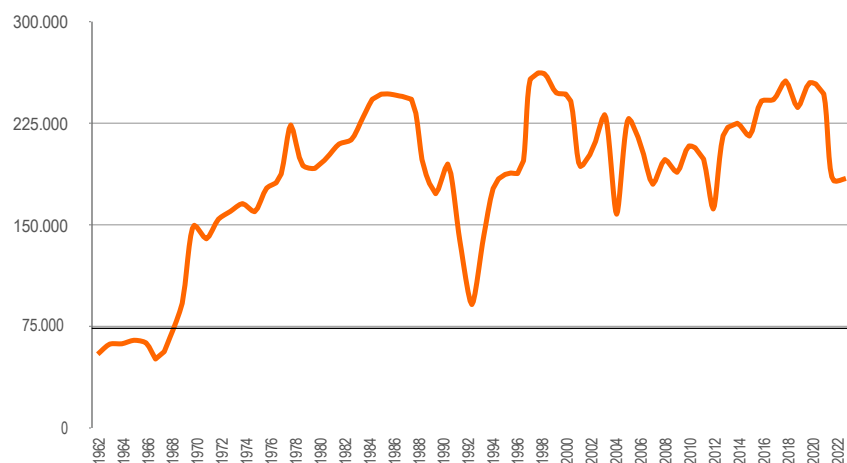


Figure 5-51.  
Evolution of mussel  
aquaculture production in Spain  
between 1961 and 2024 in tonnes  
(according to MAPA-APROMAR).

### Oyster farming

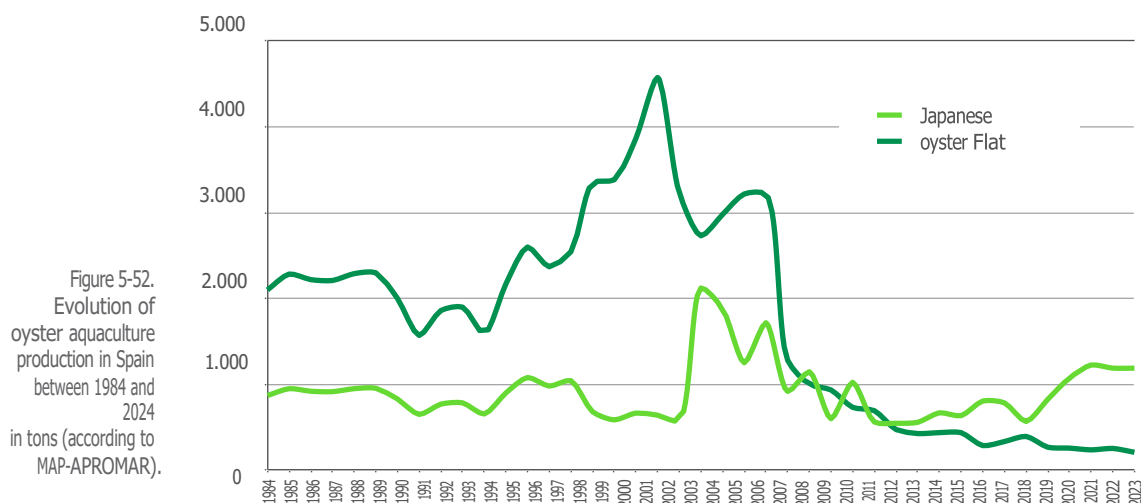
Oysters are an important group of molluscs in economic terms in Spain. There are two cultivated species: the flat oyster (*Ostrea edulis*) and the Japanese oyster (*Crassostrea gigas*). The combined production in 2024 of both species was 1,398 t, -3.1% less than in 2023 (1,443 t), and their economic value at first sale was 1.3 million euros, according to MAPA data.

Of the Japanese oyster species, 1,189 tonnes were produced in Spain in 2024, mainly in Galicia, Catalonia, Andalusia, Asturias, Cantabria and the Valencian Community. Its total value in the first sale was 5.9 million euros.

Galicia is the only autonomous community that produces flat oysters. In total, 209 tonnes of this species were produced in Spain in 2023, with a value of 1.3 million euros.

Oyster farming can be carried out through several techniques, but the common ones in Spain are intertidal cultivation in farming parks, or vertical cultivation from rafts using baskets. Oyster seed is obtained from farms, both domestic and imported.





## CLAM CULTIVATION

Three species of clams are farmed in Spain: fine, slug and Japanese, with a combined production in 2024 of 793 t (946 t in 2023) and an economic value in first sale of 10.3 million euros, according to data from the MAPA.

The Japanese clam (*Ruditapes philippinarum*) is the main species of clam grown in Spain. It has a shell whose color varies between brown, gray and black, with very marked striations that form grids. It is known as Italian clam, due to the importance of its production in that country. In 2024 its production in Spain was 750 t, -16.4% more than in 2023 (897 t) when it reached an economic value in its first sale of 9.6 million euros.

The fine clam (*Ruditapes decussatus*) is also known as the Carril clam. Its color, between white and light brown, varies depending on the sand where it is raised. The inner face is bright white with yellowish tones, sometimes bluish in the area near the umbo that is located in the front of the shell. In 2024, 12 tonnes of this species were produced in Spain, with a total value of 0.9 M euros, a drastic drop compared to the 144 t in 2022, although not as drastic compared to 2023 (23 t).

The slug clam (*Venerupis pullastra*) is gray or cream in color with brown spots. Its shell is oval and on its outer surface it has concentric lines that intersect with thinner radial lines. In 2024, 31 tonnes were produced in Spain, with an economic value at first sale of 0.3 million euros. Like the fine clam, it suffered a very notable drop in production compared to 124 t in 2022.



## Aquaculture Production in Spain and Europe

In Galicia, according to the Consellería do Mar, the drop in the slug clam harvest has been around 84% in the last 25 years. The Japanese clam has a greater capacity for adaptation and reproduces more quickly, therefore, in the Galician estuaries it displaces species such as the slug clam and the fine clam. It was in 2006 when

a sharp decrease in the slug clam and a reversal of production were observed. In recent years, therefore, the Japanese clam has taken over from the slug clam as the main species produced due to the fact that the production is higher, although it is later sold at a lower price.

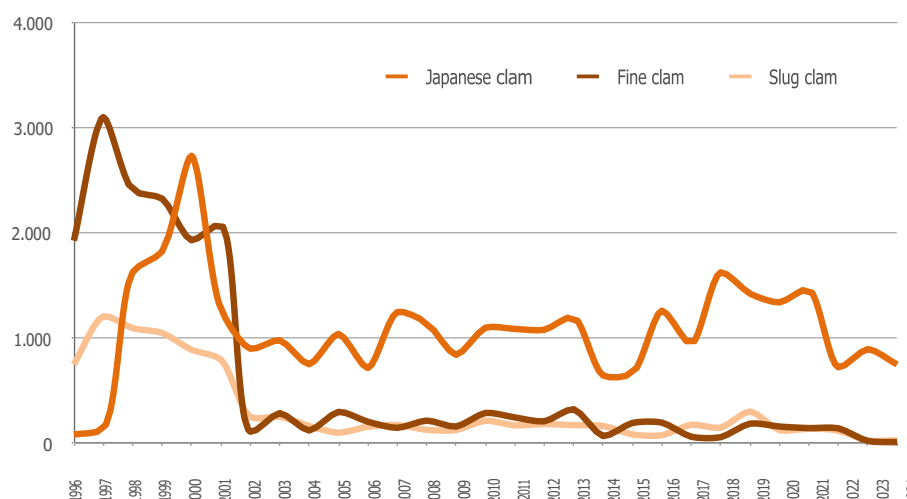


Figure 5-53. Evolution of clam aquaculture production in Spain between 1996 and 2024 in tons (according to MAPA-APROMAR).

The seed for clam production comes from hatcheries and to a lesser extent from its collection in natural banks. In Spain, clam farming is carried out in cultivation parks or in natural banks with good water flow and at different depths depending on the species.

Its cultivation is based on the care of the sandy bottoms, the elimination of algae, the control of predators, the oxygenation of the substrate, the rarification of the population when it is excessive and the planting of juvenile specimens.

## Production of other species

### MICROALGAE cultivation

In various regions of Spain there are companies dedicated to the commercial production of microalgae. Its facilities are sophisticated and develop important efforts in research, development and innovation. The destination of the microalgae produced is human nutrition, animal feed (including aquaculture), biofuels and cosmetics, among others. By 2025, the



Commercial production has specialized in Spirulina (*Arthrospira platensis*). The estimated harvest and value figures for first sale by autonomous community are:

## Aquaculture Production in Spain and Europe

Region of Murcia (1.3 t; €53,700), Valencian Community (0.44 t; €47,155), Catalonia (0.39 t; €89,552 ) and Cantabria (0.28 t; €36,225).

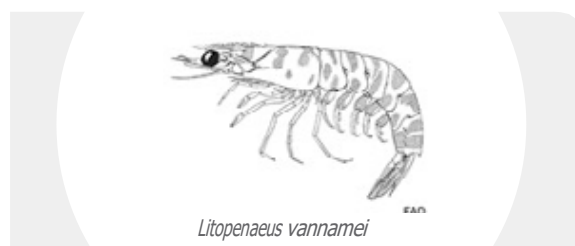
Microalgae were incorporated into the Regulatory Code in 2015.

European organic production and recognition as a natural source of Omega-3 oils, opening up new marketing possibilities.

### Production of SHRIMP

There is currently only one shrimp farm in operation in Spain, located in Medina del Campo (Valladolid), which has been demonstrating great dynamism and capacity for innovation. The species produced is white shrimp (*Penaeus vannamei*) and they stand out for the quality and freshness of their productions. In 2024, 8.1 t of this species were produced in Spain (8 t in 2023).

In addition, other species of commercial interest are also farmed in Andalusia, in particular the Mediterranean prawn (*Melicerus kerathurus*) and the



tiger prawn (*Penaeus monodon*), whose combined harvest in 2025 was 26.44 tonnes, with an estimated value at first sale of 0.6 million euros.

### MACROALGAE Production

The use of macroalgae for uses such as obtaining different phycocolloids (alginates, agar and carrageenans) or as agricultural fertiliser is traditional on the northern coast of Spain. Most of the macroalgae are obtained from the natural environment without any human intervention other than the uprooting by hand or the collection of landslides, but there are several initiatives underway for their cultivation. These macroalgae aquaculture initiatives produce higher value-added species by being used for direct human food or as a source of bioactive compounds. The species currently cultivated are "sugar kombu" (*Saccharina latissima*), "sea lettuce" (*Ulva spp.*), 2 species of *Codium* (*C. tomentosum* and *C. vermilare*,



known as "Ramallo") and red algae known under the name of "ogonori" (*Gracilaria spp.*, *Gracilariopsis spp.*). In 2023, around 22.5 tonnes were produced (228 tonnes in 2023). They were grown in Galicia (58%) and Andalusia (42%) according to MAPA data.

## 5.7. Inland aquaculture in Spain and Europe

Inland aquaculture is that which is carried out with fresh water. In Spain, the main species produced by inland aquaculture are bow trout

iris, several species of sturgeon and tench. There are also smaller productions of common carp and Nile tilapia.

### RAINBOW TROUT Production

According to FAO data, global aquaculture production of rainbow trout (*Oncorhynchus mykiss*) in 2023 was 923,872 tonnes, an increase of 1.3% compared to the previous year (912,280 t).

The main producing countries were Turkey with 221,046 tonnes (23.9% of the world total), Iran with 215,000 tonnes (23.3 per cent).

), the Russian Federation with 130,332 tonnes (14.1%), Norway with 90,022 tonnes (9.7%), Chile with 44,288 tonnes (4.8%) and Peru with 39,859 tonnes (4.5%). Other relevant countries by production volume are Italy, Colombia, France, Denmark and Kyrgyzstan. This species, native to North America, is now cultivated in more than 80 countries on all continents.

Most rainbow trout are farmed in freshwater, although a relevant percentage completes their final fattening in saltwater, especially in countries such as Norway and Chile. Commercial extractive fishing of this species is very marginal, accounting for only 922 t tonnes worldwide in 2023, mainly in Finland, Peru, the Czech Republic and Slovakia.

In Spain, rainbow trout production in 2024 was 16,693 tonnes, 13.1% more than in 2023 (14,757 t). By 2025, a slight increase is expected to 16,920 tonnes (1.4%), although both figures remain far from the all-time high of 35,384 tonnes reached in 2001.



*Oncorhynchus mykiss*

#### TROUT (*Oncorhynchus mykiss*)

Class: Actinopterygii Order: Salmoniformes • Family: Salmonidae

**Significant characteristics:** Elongated, fusiform body and adipose fin present. Blue to olive green coloration on a pink iridescent band along the lateral line and silver below it. Back, sides, head and fins covered with small black dots. The coloration varies from intense dark to shiny-silvery.

**Cultivation:** Its breeding is carried out halfway around the world. Females are capable of producing up to 2,000 eggs per kg of body weight. The eggs are relatively large in size (3-7 mm in diameter). After hatching, the fry are nourished for a short period of time by the reserve food provided by the yolk vesicle. Then they start a diet based on feed made with natural ingredients. Aquaculture farms are varied, with ponds on land, concrete or fibre facilities and even cages in fresh or salt water. Rainbow trout usually take 10 months from hatching to reach portion size (250-300 g), although commercial sizes reach several kilograms in weight.

## Aquaculture Production in Spain and Europe

Figure 5-54  
Evolution of  
bow trout  
aquaculture  
production  
in the world  
in the period  
1964-2024 in  
tons (about  
FAO data ).

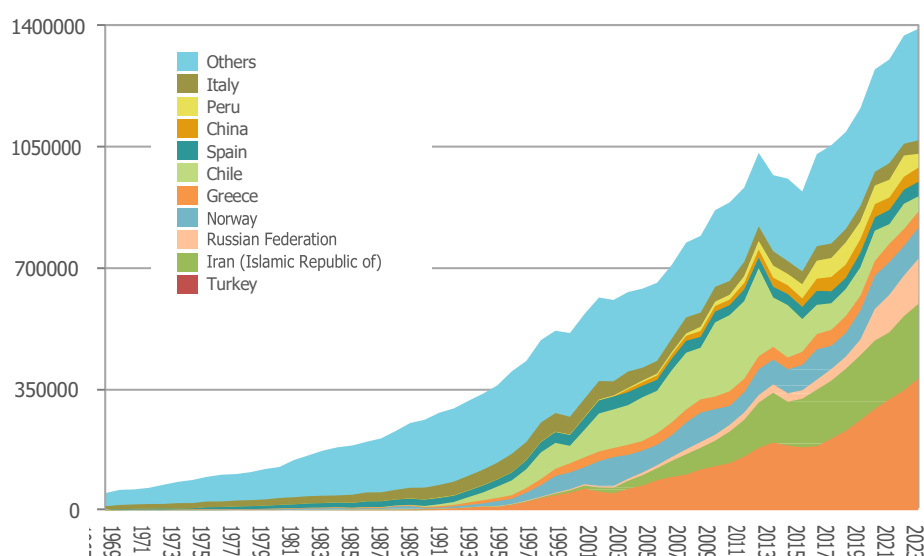
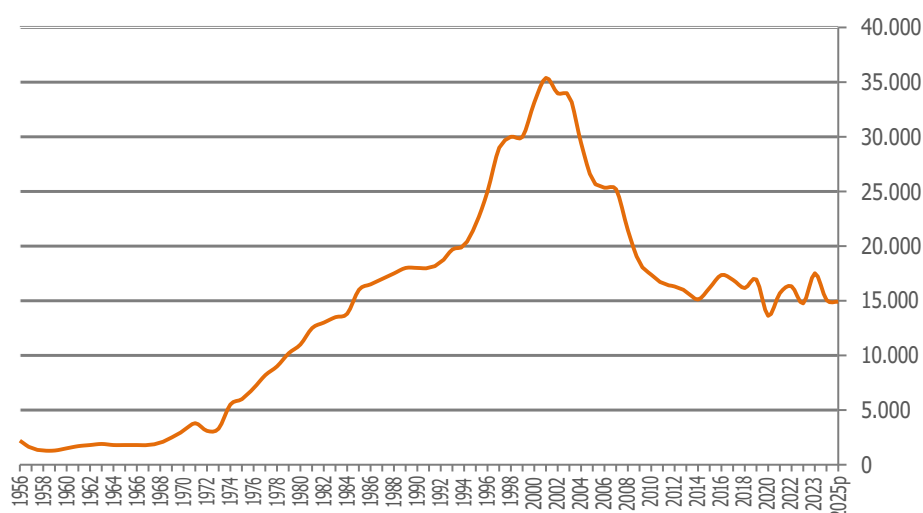


Figure 5-55.  
Evolution of  
rainbow trout  
aquaculture  
production in Spain  
in tonnes (1956–  
2025p). Data  
APROMAR.



The main producing autonomous communities in 2024 were Castilla y León with 3,471 t, Galicia with 2,584 t, Catalonia with 2,292 t, La Rioja with 1681 t, Aragon with 1,598 t, Andalusia with 1,496 t, Navarra with 1,388 tonnes, Asturias with 1,038 tonnes, Castilla-La Mancha with 1,000 t, and Cantabria with 145 t.

In terms of economic value, it is estimated that in 2024 the average price of the first sale was €5.20/kg, which meant a total turnover in the first sale

of approximately €54.6 million, 10.0% more than in 2023 (€49.6 million).

The trend in the sector in recent years shows a progressive orientation towards the cultivation of larger specimens. This transformation responds both to the stagnation of the price of feed trout and to the development of value-added channels, such as processing (smoking) or the HORECA channel, in which fish weighing more than 1 kg are prioritized.



## Aquaculture Production in Spain and Europe

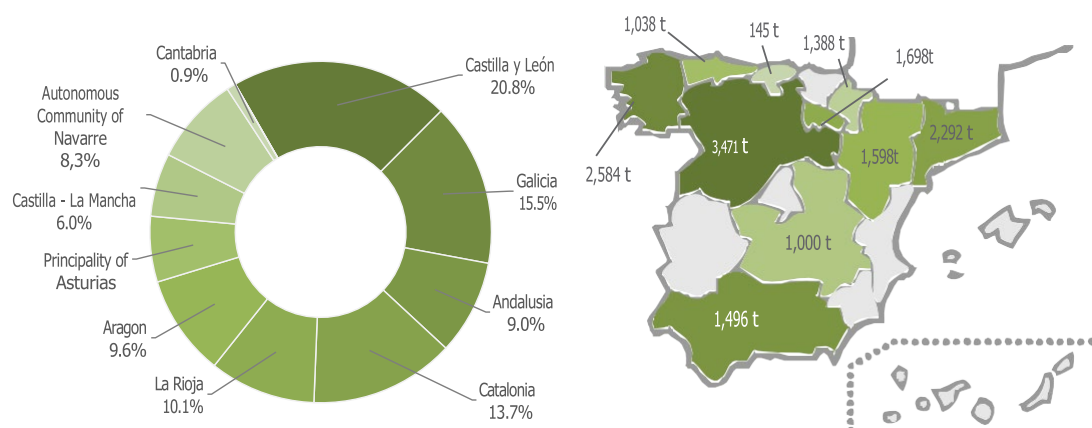


Figure 5-56. Distribution of the rainbow trout harvest among the autonomous communities in 2024 (APROMAR data).

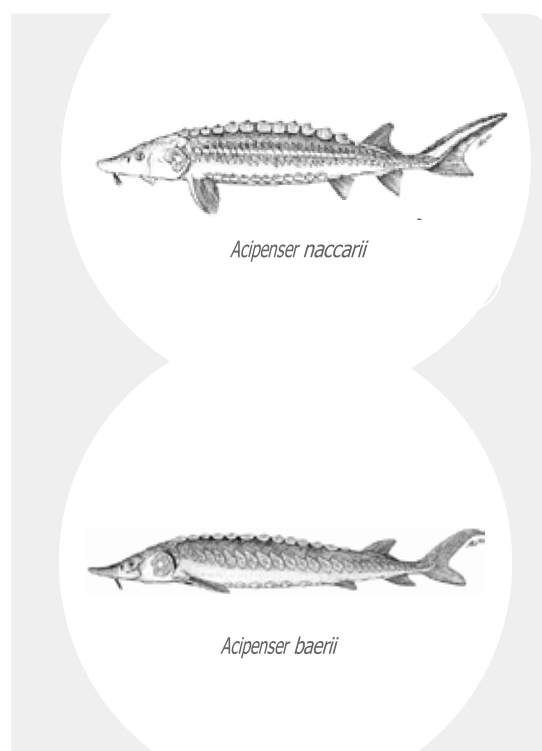
### STURGEON Production

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) agreed in 2006 to ban exports of caviar from fishing, in the face of severe declines in wild sturgeon populations. Since then, there has been a growing interest in sturgeon aquaculture to obtain farmed caviar, which is allowed to be marketed internationally.

Currently, the only caviar that is legally marketable internationally is that produced by cultivation. The farmed sturgeon species belong to the Acipenseridae family, including: the Siberian sturgeon (*Acipenser baerii*), the Russian or Danube sturgeon (*Acipenser gueldenstaedtii*), the beluga sturgeon (*Huso huso*), the star sturgeon or Sevruga (*Acipenser stellatus*), the white sturgeon (*Acipenser transmontanus*), the Adriatic sturgeon (*Acipenser naccarii*) and the sterlet sturgeon (*Acipenser ruthenus*).

Global caviar production is estimated at 660 tonnes in 2024, representing a growth of 10% over the previous year. Of this figure, some 198 tonnes have been produced in the European Union (30% of the world total), according to FEAP data.

Italy leads European caviar production with 65 tonnes (30.9% of the total), followed by Poland with 50 tonnes (23.8%), France with 45 tonnes (21.4%) and Germany with 25 tonnes (11.9%). Also



Belgium (11 t), the Netherlands (5.5 t), Greece (4 t) and Spain are listed with an estimated production of 5 tonnes in 2024, accounting for 2.4% of the European total.

## Aquaculture Production in Spain and Europe

Figure 5-57.  
Evolution of world  
production of caviar  
(from both fisheries  
and aquaculture)  
in tonnes between  
1976 and 1976  
2024. FAO and FEAP data.

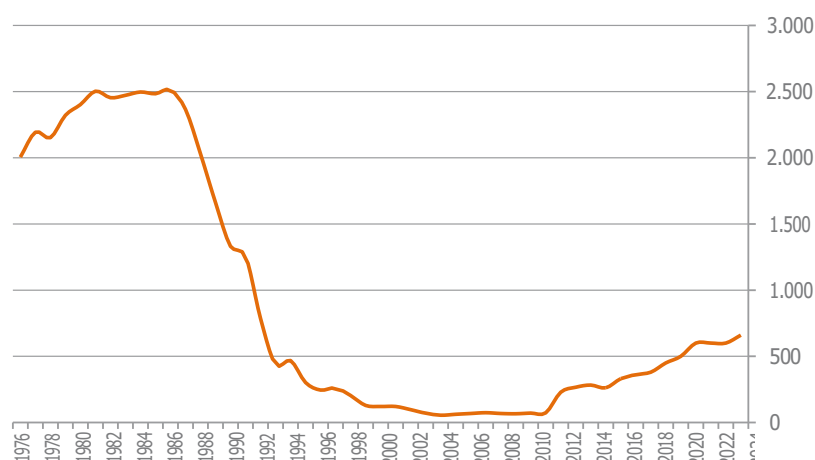
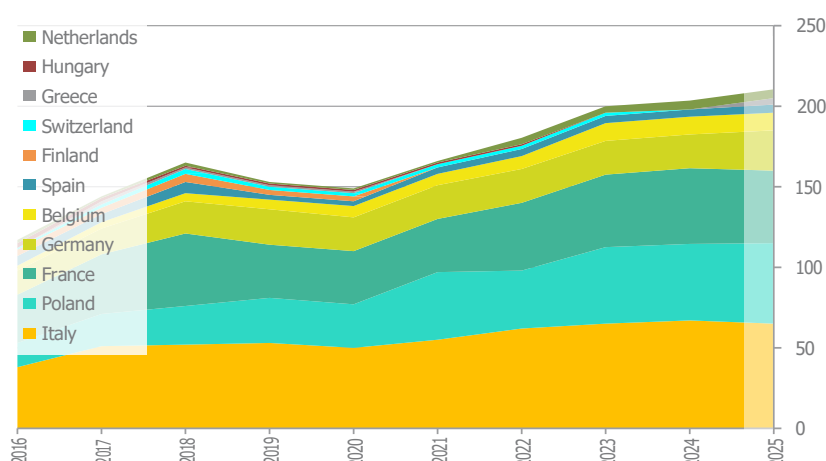


Figure 5-58.  
Evolution of caviar  
production in the EU-27  
in tonnes (2016–2025).  
FEAP data.



While caviar is the main by-product of sturgeon aquaculture, the meat of this fish is also highly valued and traded in markets.

In 2023, global sturgeon meat production through aquaculture was 178,589 tonnes, representing an increase of 15.6% compared to the previous year (154,546 t). Extractive fishing, meanwhile, continues to be active in countries such as Russia, Iran, Canada and the United States, although with very small numbers. In 2023, just 212 tonnes were caught by fishing, which means that more than 99.9% of the world's sturgeon production currently comes from aquaculture.

In Spain, during 2024, caviar production reached 5 tonnes, while that of sturgeon meat was 121 tonnes. Species farmed in the country include Siberian sturgeon (*Acipenser baerii*), Adriatic sturgeon (*Acipenser naccarii*), Russian or Danube sturgeon (*Acipenser gueldenstaedtii*), star sturgeon (*Acipenser stellatus*) and beluga sturgeon (*Huso huso*).

These productions are especially concentrated in communities such as Andalusia, Catalonia and Aragon, where farms specialising in both obtaining caviar and marketing meat have been established.

# Aquaculture Production in Spain and Europe

Figure 5-59.  
Distribution of the caviar  
harvest among EU-27  
countries in 2025. FEAP  
data.

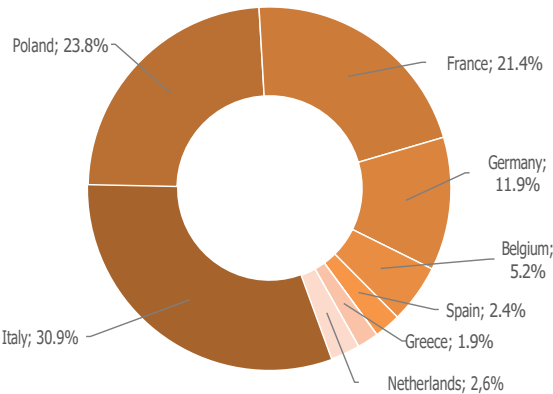


Figure 5-60.  
Evolution of world  
sturgeon  
production  
(fisheries and  
aquaculture) between  
1951 and 2023. FAO  
data.

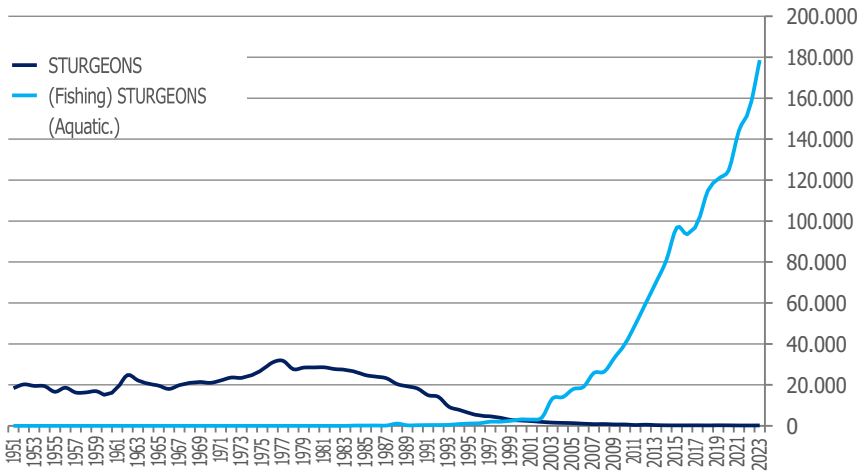
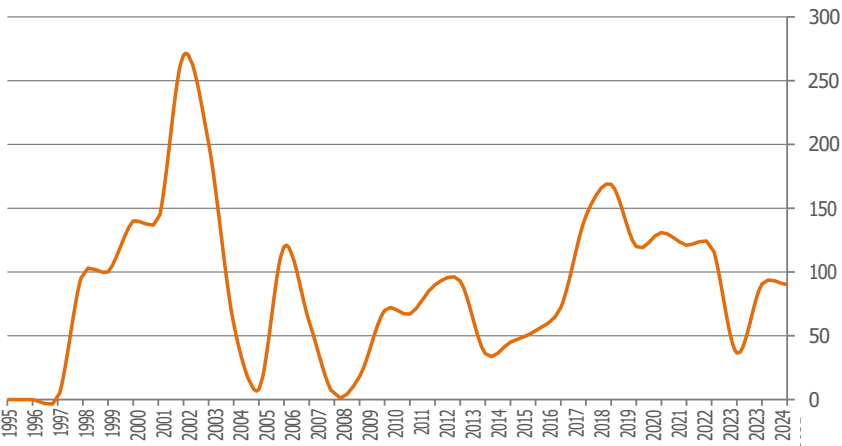


Figure 5-61.  
Evolution of  
sturgeon aquaculture  
production in Spain  
between 1995 and  
2025p (various  
species). Data MAPA-  
APROMAR-FAO.

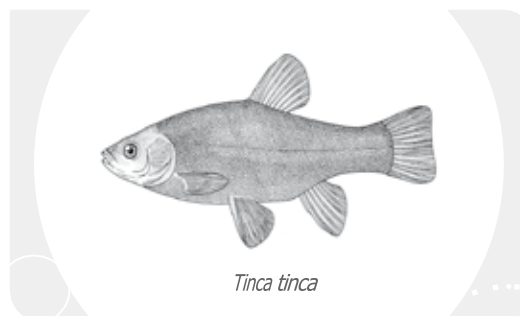


## TENCA Cultivation

The tench (*Tinca tinca*) is an exclusively European species whose cultivation has a long tradition linked to the extensive management of ponds and continental aquatic systems. In 2024, total production in the European Union was estimated at 539 tonnes, representing a slight drop from the 666 tonnes recorded in 2023. The main producing country remains France, with 298 tonnes (55.3% of the European total), followed by Poland (150 tonnes, 27.8%), the Czech Republic (150 tonnes, 27.8%), Germany (119 t, 22.1 %), Lithuania (54 tt, 10.0 %) and Italy (24 t, 4.5 %). Tench is produced in at least 20 European countries.

In Spain, tench production in 2024 was 7.0 tonnes, according to the latest data from the MAPA. With this, there is an abrupt decrease compared to 2023 (16.5 t; -63.3%), this figure is still a long way from the peak reached at the end of the 80s, when it exceeded 450 t per year. Its production is mainly carried out in extensive ponds, mainly located in the autonomous community of Extremadura.

Tench is valued in certain Spanish regions as a traditional species, linked to local cuisines and strategies



sustainability. For this reason, APROMAR-REMA promoted a specific project in 2022 to study the causes of the decline of its cultivation and propose measures for its recovery, in collaboration with the Association of Tenant Growers of Extremadura (Ibertenca). As a result, it was possible to involve the competent administrations and establish a roadmap aimed at promoting this species as a model of sustainable rural development.

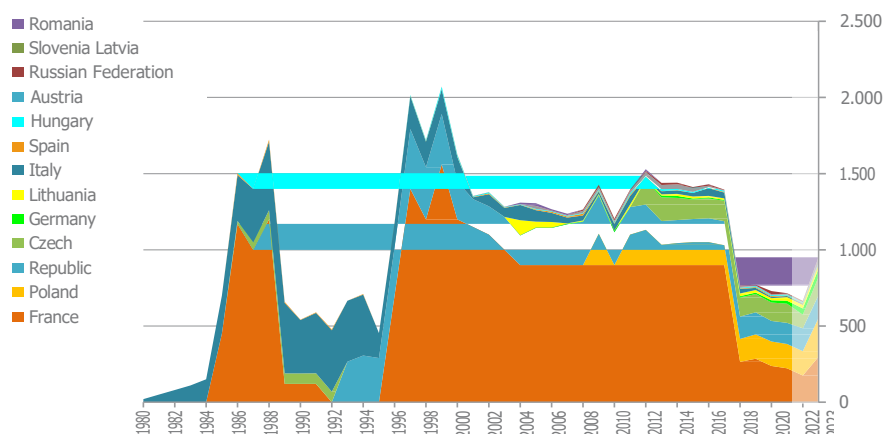


Figure 5-62. Evolution of aquaculture production of tench in Europe in tonnes (1980–2023). Source: FAO.

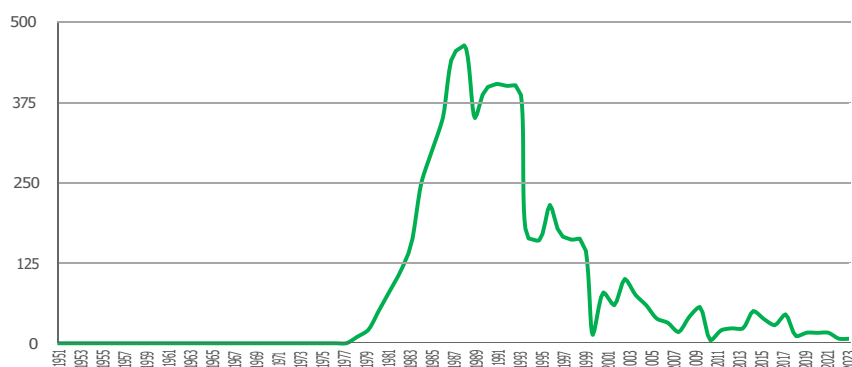












Figure 5-63. Evolution of aquaculture production of tench (*Tinca tinca*) in Spain in tonnes (1951–2025p). Source: MAPA–FAO.

# Aquaculture Production in Spain and Europe

Table 5-1. Data on productions of farmed aquaculture species in Spain (tonnes).

	<b>SEA BREAM</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Andalusia	1.605	980	1.560	1.606	920	960	815	926	770	770
	Balearic	0	0	0	0	0	0	0	0	0	0
	Canary Islands	2.492	2.063	2.380	2.380	1.893	725	790	1.460	1.350	1.350
	Catalonia	656	654	0	0	0	0	380	850	1.104	1.300
	Murcia	3.368	4.356	3.184	2.906	1.107	2.461	1.327	510	0	140
	Valencian	5.619	5.590	7.806	6.629	2.668	5.486	5.620	9.360	7.541	9.231
	<b>TOTAL</b>	<b>13.740</b>	<b>13.643</b>	<b>14.930</b>	<b>13.521</b>	<b>6.588</b>	<b>9.632</b>	<b>8.932</b>	<b>13.106</b>	<b>10.764</b>	<b>12.791</b>
	<b>SEA BASS</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Andalusia	6.081	3.261	4.479	7.120	3.950	7.365	6.020	5.024	4.797	4.797
	Canary Islands	5.507	5.900	5.793	6.253	5.596	4.951	4.948	5.426	6.594	6.701
	Catalonia	236	146	30	30	70	99	170	850	701	452
	Murcia	8.164	6.990	7.525	9.181	3.585	7.285	7.244	7.580	6.692	6.600
	Valencian	3.457	4.972	4.633	4.751	8.508	4.228	5.240	5.700	8.592	9.239
	<b>TOTAL</b>	<b>23.445</b>	<b>21.269</b>	<b>22.460</b>	<b>27.335</b>	<b>21.709</b>	<b>23.928</b>	<b>23.622</b>	<b>24.580</b>	<b>27.376</b>	<b>27.789</b>
	<b>DOR + LUB</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
		37.185	34.912	37.390	40.856	28.297	33.560	32.554	37.686	38.141	40.580
	<b>TURBOT</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Asturias	0	0	0,00	0	0	0	0	0	0	0
	Cantabria	50	105	100,00	0	0	0	0	0	0	0
	Galicia	7.346	8.441	7.350,00	8.258	7.681	7.629	8.766	9.600	10.058	10.412
	Basque Country	0	0	0,00	0	0	0	0	0	0	0
	<b>TOTAL</b>	<b>7.396</b>	<b>8.546</b>	<b>7.450</b>	<b>8.258</b>	<b>7.681</b>	<b>7.629</b>	<b>8.766</b>	<b>9.600</b>	<b>10.058</b>	<b>10.412</b>
	<b>MEAGRE</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Andalusia	46	46	50	23	23	4	25	1	0	0
	Canary Islands	0	0	0	0	0	0	0	0	0	0
	Catalonia	0	0	0	0	0	0	0	0	0	0
	Murcia	0	0	0	0	85	348	2.100	1.573	923	923
	Valencian	1.752	1.886	2.450	3.600	4.817	2.500	2.617	5.809	4.128	3.963
	<b>TOTAL</b>	<b>1.798</b>	<b>1.932</b>	<b>2.500</b>	<b>3.623</b>	<b>4.925</b>	<b>2.852</b>	<b>4.742</b>	<b>7.383</b>	<b>5.051</b>	<b>4.886</b>
	<b>ANGUILLA</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Valencian	315	330	330	360	350	340	340	340	355	360
	<b>TOTAL</b>	<b>315</b>	<b>330</b>	<b>330</b>	<b>360</b>	<b>360</b>	<b>340</b>	<b>340</b>	<b>340</b>	<b>355</b>	<b>360</b>
	<b>SOLE</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Andalusia	460	537	487	531	302	285	361	187	235	235
	Galicia	295	293	287	287	318	644	861	890	795	860
	<b>TOTAL</b>	<b>755</b>	<b>830</b>	<b>774</b>	<b>818</b>	<b>620</b>	<b>929</b>	<b>1.222</b>	<b>1.077</b>	<b>1.031</b>	<b>1.095</b>
	<b>PRAWN</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	C and Leon	8	5	5	5	5	8	8	8	8	8
	Andalusia	0	0	0	0	0	0	0	0	26	26
	<b>TOTAL</b>	<b>8</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>35</b>	<b>35</b>
	<b>SERIOLA</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Murcia				0	0	0	5	0	0	5
	C. Valencian				18	90	139	158	18	39	83
	Andalusia					0	0	0	0	13	13
	<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>90</b>	<b>139</b>	<b>163</b>	<b>18</b>	<b>51</b>	<b>88</b>
	<b>BLUEFIN TUNA</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Andalusia	1.083	1.083	1.083	1.566	2.014	0	0	444	0	450
	Catalonia	2.700	2.700	2.700	2.700	2.500	2.500	2.600	3.040	3.918	4.506
	Murcia	1.360	1.360	1.360	1.360	5.262	4.500	8.277	6.260	6.394	6.355
	<b>TOTAL</b>	<b>5.143</b>	<b>5.143</b>	<b>5.143</b>	<b>5.626</b>	<b>9.776</b>	<b>7.000</b>	<b>10.877</b>	<b>9.744</b>	<b>10.312</b>	<b>11.311</b>
<b>TOTAL</b>		<b>52.778</b>	<b>51.840</b>	<b>53.705</b>	<b>59.546</b>	<b>51.664</b>	<b>52.318</b>	<b>58.664</b>	<b>65.848</b>	<b>64.999</b>	<b>68.832</b>
	<b>RAINBOW TROUT</b>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P
	Castilla y León	5.413	5.049	4.975	5.888	3.617	3.834	4.007	3.884	3.471	3.432
	Galicia	3.101	2.403	2.689	1.840	1.363	1.750	1.941	1.395	2.584	3.243
	Andalusia	2.159	1.941	1.380	1.448	1.587	1.561	1.500	1.320	1.496	1.599
	Catalonia	1.872	1.813	1.630	1.921	1.652	1.650	1.880	2.265	2.292	2.332
	La Rioja	1.304	1.715	1.728	1.912	1.728	1.950	2.500	1.778	1.681	1.687
	Aragon	1.076	1.168	1.191	1.098	637	1.609	1.679	1.566	1.598	1.420
	Principality of Asturias	733	987	704	922	1.160	1.100	1.100	905	1.038	1.038
	Castile - La Mancha	861	872	773	797	991	845	388	700	1.000	636
	Autonomous Community of Navarre	555	678	791	856	685	1.180	1.180	800	1.388	1.388
	Cantabria	180	182	184	168	129	150	153	144	145	145
	Basque Country	95	95	115	89	66	55	0	0	0	0
	<b>TOTAL</b>	<b>17.354</b>	<b>16.902</b>	<b>16.160</b>	<b>16.939</b>	<b>13.620</b>	<b>15.684</b>	<b>16.328</b>	<b>14.757</b>	<b>16.693</b>	<b>16.920</b>

# 6



## **Marketing and consumption of aquaculture products in Europe and Spain**

## 6. Marketing and consumption of aquaculture products in Europe and Spain

### 6.1. Consumption of aquatic products in the European Union

The European Union is the first and most important world market. The European Union continues to be the first and most important world market for aquatic products, i.e. the main destination for both food from aquaculture and from fishing.

According to the 2024 AIPCE-CEP report, in 2023 the European Union recorded a total supply of 10.98 million tonnes of aquatic products. After discounting exports and non-food uses (646,000 tonnes), the total estimated consumption was 10.34 million tonnes, which represents a slight decrease from 10.53 million tonnes in 2022.

- If all EU aquaculture and fisheries production were destined for the domestic market, it would only cover 41.5% of the total supply, although this figure also includes products not intended for human consumption.
- Adjusting these data only for food use, domestic production and the EU's domestic supply would represent 31.3% of the total available, under the assumption that all production remained within the single market. While imports account for 68.7%, evidencing the strong external dependence on the European market.

Per capita consumption in 2023 stood at 23.0 kg per person per year (in live weight), a figure lower than in 2022 (23.6 kg), confirming the downward trend observed in recent years. This prolonged drop in consumption worries the sector, as it occurs in a context of growing awareness of health and sustainability. To reverse it, it is recommended to reinforce the nutritional education of the population,

facilitating economic access to these products – for example, through tax adjustments – and promoting institutional campaigns to promote consumption.

The AIPCE-CEP report notes that the diversity of species available to the European consumer has increased significantly in recent years, partly thanks to advances in packaging, conservation and logistics, which have improved access to a wider range of aquatic products.

According to the EUMOFA report (2024), the apparent per capita consumption of aquatic products in the European Union in 2022 was 23.5 kg (live weight), a figure practically aligned with the AIPCE-CEP estimates for the same year. This slight adjustment compared to the 2021 figure (23.7 kg) reflects methodological differences between sources, but confirms a phase of stabilization in consumption after several years of moderate declines.

Portugal once again leads the European rankings, with a per capita consumption of 54.5 kg in 2022, despite a 4% drop compared to 2021. It is followed by Spain with 41.9 kg (-2%), France with 32.6 kg (+1%), and Luxembourg with 30.4 kg (-5%). The EU average is 23.5 kg per person. Below this are countries such as Germany (12.5 kg), Austria (11.8 kg) or Hungary (6.7 kg). In relative terms, most countries experienced declines, although some such as Estonia (+13%), Croatia (+7%) and Romania (+5%) showed increases.

Total consumption in the EU is still dominated by capture fish, which accounts for approximately 69% of the total,



## Marketing and consumption of aquaculture products in Europe and Spain

compared to 31% from aquaculture. However, this proportion varies considerably depending on the type of species.

Tuna and salmon continue to be the products with the highest per capita consumption, with 2.96 kg and 2.51 kg respectively.

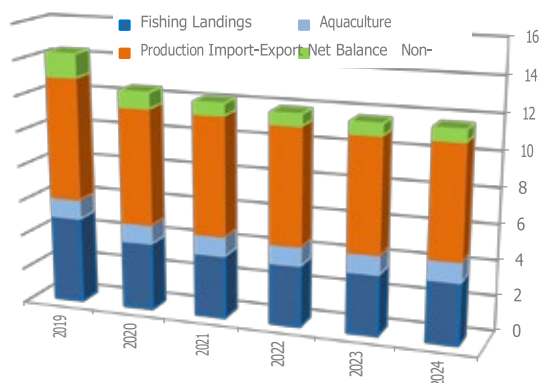


Figure 6-1.  
Evolution of the origin of aquatic products consumed in the European Union (27) between 2020 and 2024, in tonnes of equivalent live weight. EU aquaculture and fisheries productions are considered in addition to the net balance of imports and exports and non-food uses (PIPA-CEP 2024).

The consumption of tuna, almost entirely from fishing (2.94 kg), remains the highest, while salmon, with a majority aquaculture share (2.37 kg), consolidates its position as one

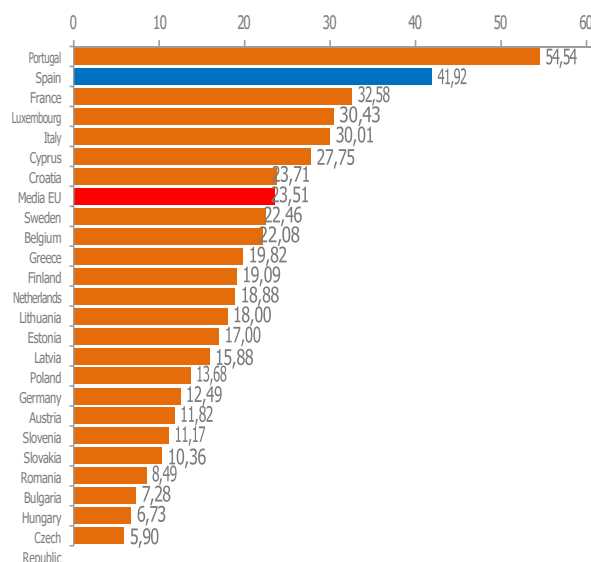
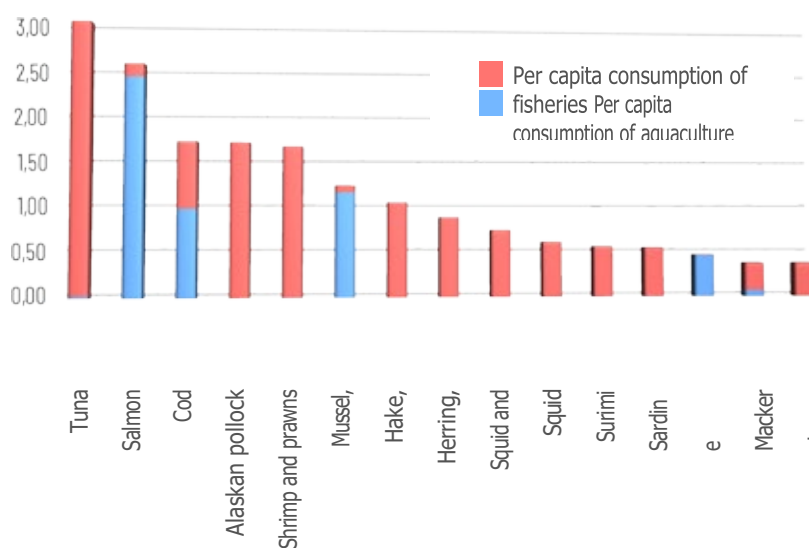


Figure 6-2.  
Per capita consumption of aquatic products in the member states of the European Union calculated on live weight (European Commission. EUMOFA 2024).

Figure 6-3.  
Per capita consumption of the main species (segregating aquaculture and fisheries) in the European Union (European Commission. EUMOFA 2024).



one of the favorites among consumers. Shrimp and prawns stand out for their growth, reaching a per capita consumption of 1.68 kg, divided between aquaculture (0.96 kg) and fishing (0.72 kg). Squid and squid have also registered a relevant consumption, with 0.73 kg per capita, entirely from fishing.

In terms of origin, most products such as cod (1.63 kg), Alaskan pollock (1.67 kg) and hake (1.03 kg) come almost exclusively from wild fishing. On the other hand, salmon (94% of

aquaculture) and mussels (93% aquaculture, 1.13 kg per capita) are examples of species whose consumption is mainly based on aquaculture production.

Improved logistics and packaging, along with the expansion of large retail chains, has increased access to and variety of aquatic products in domestic markets. This transformation has helped to broaden the choice of the European consumer, although it has not been enough to stop the fall in consumption, especially in countries with less fishing tradition.

## 6.2. Food consumption in Spain

Having quality and up-to-date information on markets and consumption is essential for production companies to make informed decisions. The Ministry of Agriculture, Fisheries and Food (MAPA) regularly publishes detailed reports on the situation of food consumption in Spain, the most recent reference being the one for the 2024 financial year, published in 2025.

In 2024, the Spanish population grew to 49,077,984 inhabitants (0.9% more than in 2023). The number of households also increased by 0.6% compared to 2023, reaching 19,425,559 households.

Total consumption of food and beverages, both inside and outside the home, stood at 30,668.65 million kilolitres, 0.2% less than in 2023. However, total expenditure amounted to 119,667.59 million euros, 2.4% more than the previous year, due to the effect of the increase in prices, whose average value stood at €3.91/kg-l. In per capita terms, consumption was 680.34 kg-l/person and average annual expenditure was 2,797.48 euros/person, representing an increase of 1.0%.

87.5% of the volume of consumption was made inside the home, compared to 12.5% outside it. However, in terms of expenditure, extra-domestic consumption accounted for 30% of the total, showing that the prices paid outside the home are significantly higher (€9.33/kg-l compared to €3.12/kg-l at home).

Domestic consumption registered a slight drop of 0.2% in volume compared to 2023, standing at 26,823.4 million kg-l, although with an increase of 2.6% in value to 83,795.24 million euros, driven by

a 2.8% increase in the average price. Per capita consumption was 572.02 kg-l (-1.5%), but average expenditure increased to €1,786.97/person (+€22.35 compared to the previous year).

By type of product, fresh food gained share, representing 37.9% of total volume and 40.1% of expenditure. The rest of the food accounted for 62.1% of the volume and 59.9% of the value.

Among the most relevant changes in 2024:

- Consumption of fresh meat (+2.9%), processed meat (+1.1%) and frozen meat (+1.2%) increased (%), highlighting a moderate growth in the average price.
- The fishing sector saw its consumption in households fall by 3.7%, especially in fresh fish (-5.5%) and seafood (-4.8%), although canned fish grew by 2.1%.
- Purchases of olive oil fell by 11.4%, affected by high prices, while sunflower oil rose by 7.9%.
- Purchases of legumes increased (+2.8 %), pasta (+4.3%), sauces (+4.0%) and pizza bases (+6.0%).

As for out-of-home consumption, it fell slightly by 0.2% in volume, but grew by 1.9% in value, reaching 35,872.35 million euros, as a result of the increase in the average price. Per capita consumption outside the home was 108.32 kg-l/person, which represents a drop of 1.8 kg-l compared to 2023. Per capita expenditure was €1,010.51, still below the pre-pandemic level.

By distribution channels, supermarkets and self-service stores accounted for 52.7% of the total volume, followed by supermarkets and supermarkets.

discount stores (14.5%) and hypermarkets (12.7%). The traditional store lost weight with a fall of 5.4%.

### 6.3. The consumption of aquatic products in Spain

This category of aquatic foods includes fresh fish, frozen fish, molluscs, crustaceans and canned fish and molluscs.

In 2024, Spanish households bought 3.7% fewer fish products by volume. The reduction affected all market segments. Fish purchases declined, with a fall of 5.5% in the fresh segment and 5.4% in frozen. Consumption of shellfish, molluscs and crustaceans fell by 7.3%, despite a slight increase of 1.2% in the cooked segment, which did not compensate for losses in frozen and fresh products. Canned fish and molluscs were the only segment with a positive evolution, with a growth of 2.1% in volume. In terms of value, there was an increase of 0.2%, as prices increased by an average of 4.0% (11.12 euros/kg).

Per capita consumption of aquatic products at the end of 2024 was 17.99 kg/person, 4.9% less than in 2023. This figure does not coincide with others, probably because it is estimated on purchases and not on apparent consumption. Even so, spending fell per person by 1.1%. Comparing this data with 2019 (before the pandemic) it can be seen that the purchase of aquatic products decreased by 16.8%, although turnover increased, due to an increase in the average price of 23.4%, according to the MAPA.

According to data from the Fishing Month by Month (MAPA) report for November 2024, at the end of the mobile year

Spanish households had consumed 3.7% less fish, both fresh (-5.5%) and frozen (-5.4%). In terms of species, the purchase of sardines/anchovies (+4.6%), hake/whiting (+2.1%), salmon (+1.6%) and sea bass (+0.9%).

At the end of 2024, the structure of the fishery products market remained stable. Fresh fish is the most relevant segment, accounting for 40.7% of the volume and 38.0% of the volume

% of the economic value, with a decrease in consumption above the sector average and a 0.9% drop in turnover. Despite this, it showed a decrease above the sector average and a 0.9% drop in turnover. Canned fish and molluscs were in second place, with 23.0% of the volume and 26.7% of the value, increasing their purchases by 2.1% and their turnover by 4.4%. Fresh shellfish and crustaceans are the third segment, with 12.9% of the volume and 12.0% of the value, showing the largest drop (-7.3

% by volume). Frozen fish accounts for 11.1% of volume and 10.4% of value, with a decrease in purchases of 5.4% and a reduction of 1.6% in value. Canned fish and molluscs were in second place, with 23.0% of the volume and 26.7% of the value, experiencing growth in both purchases (+2.1%) and value (+4.4%). Fresh shellfish and crustaceans accounted for 12.9% of volume and 12.0% of value, registering the largest drop in consumption (-7.3%). Frozen fish accounts for 11.1% of volume and 10.4% of value, with a decrease of 5.4% % in volume and 1.6% in value.

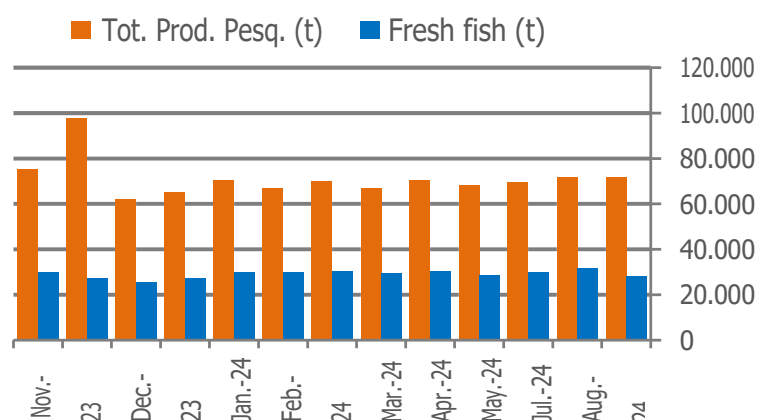


Figure 6-4.  
Evolution of the consumption of fishery products (aquaculture plus fishing) in Spanish households from December 2023 to November 2024. Total aquatic products are shown (= fishery products) and, within them, fresh products (source: MAPA)

## Marketing and consumption of aquaculture products in Europe and Spain

Table 6-1. Main statistical magnitudes in the marketing of fish in Spain for consumption in households between November 2023 and 2024. Data from the General Directorate of the Food Industry of the MAPA.

HOUSEHOLD CONSUMPTION IN THE MONTH							
Products	Amount Consumed		Evolution	Value (million €)		RRP evolution in the month	
	per month (thousands						
	2023	2024	%24/23	2023	2024	%24/23	2024
TOT. PROD. FISHING***	75,31	71,82	-4,6	809,32	816,19	0,8	11,36
TOT. FRESH FISH	29,93	28,17	-5,9	299,00	309,19	3,4	10,98
FRESH TROUT	0,49	0,90	83,7	4,66	8,38	79,8	9,32
SOLE	3,83	3,20	-16,4	32,67	31,57	-3,4	13,47
SALMON	5,90	6,04	2,4	80,49	85,87	6,7	14,23
SEA BASS	2,24	2,45	9,4	25,23	28,12	11,5	11,50
SEA BREAM	2,92	2,02	-30,8	25,40	21,59	-15,0	10,69
TURBOT	0,20	0,30	50,0	2,78	5,09	83,1	16,85
TOTAL FEEDING	2.152,84	2.192,46	1,8	6.933,01	7.232,22	4,3	3,30
CONSUMPTION IN HOUSEHOLDS TAM* MONTH							
Products	Amount consumed in the period (thousands of t)		Evolution	Value (million €)		Evolution	Kg per capita
	TAM month 2024	TAM month 2023		%24/23	TAM month 2023		
	2023	2024	%24/23	2023	2024	%24/23	2024
TOT. PROD. FISHING***	874,76	851,32	-2,7	9.297,45	9.441,10	1,5	11,09
TOT. FRESH FISH	364,40	348,21	-4,4	3.598,25	3.601,05	0,1	10,34
FRESH TROUT	8,22	7,79	-5,2	74,51	76,33	2,4	9,80
SOLE	6,64	6,28	-5,4	93,70	89,01	-5,0	14,16
SALMON	56,78	61,86	8,9	813,95	912,32	12,1	14,75
SEA BASS	22,92	28,80	25,7	246,39	308,52	25,2	10,71
SEA BREAM	33,58	25,81	-23,1	299,56	258,13	-13,8	10,00
TURBOT	3,97	3,15	-20,7	52,83	45,98	-13,0	14,61
TOTAL FEEDING	26.829,28	26.873,57	0,2	81.082,32	83.691,36	3,2	3,11

Notes:

\* TAM = Current Month + 11 Previous Months.

\*\* MARKET SHARE in VALUE represents % of expenditure on each product purchased with Total expenditure on food (= 100%) Source: Subdir. General. of Structure of the Food Chain. General Address. of Industry and Markets To the food. MAPA.

Figure 6-5.  
Importance of the  
different types of  
aquatic products in  
household  
consumption in  
Spain in 2024  
(MAPA).

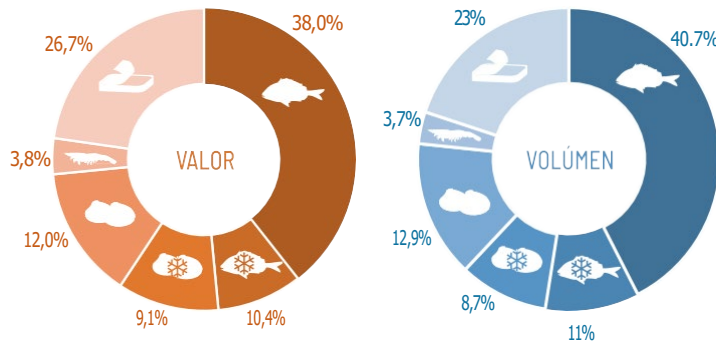


Figure 6-6.  
Percentage distribution of  
the purchase of  
aquatic products in  
2024 by type of  
establishment and  
percentage change on  
the previous year (ABPM data).

	%Variation	
	Same period previous year	
	Value	Volume
Total Fishing	0.2 %	-3,7 %
Fresh Fish	-0,9 %	-5,5 %
Frozen Fish	-1,6 %	-5,4 %
Seafood/Mollusc cong	-4,8 %	-5,0 %
Seafood/Fres Mollusc	-1,5 %	-7,3 %
Cooked	6.7 %	5.8 %
Seafood/Mollusc	4.4 %	7.1 %

6.4. The consumption of fresh aquatic products in Spain

In 2024, per capita consumption of fishery products in Spain was 17.99 kg per person, which represents a decrease of 4.9% compared to 2023, according to MAPA data. This figure, estimated on household purchases, is below the European average, where per capita consumption reached 23.0 kg in 2023, confirming a sustained trend of decline in national consumption. Within the set of aquatic products, fresh fish was the most consumed in Spanish households, with 7.48 kg per capita, although it also experienced a decrease of 5.5%. It was followed by canned fish and molluscs, with 4.12 kg per capita, and fresh shellfish, molluscs and crustaceans, whose consumption fell by 7.3%, standing at 2.34 kg per capita. The monthly evolution of purchases shows a stabilisation of consumption after the summer months, although with lower volumes than those recorded in 2023 in most segments.

As for distribution channels, supermarkets accounted for 51.9% of the total volume, although with a drop of 3.3%. Brick-and-mortar stores remained the second most important channel at 20.7%, but suffered the largest contraction, with a decline of 5.8%. Hypermarkets accounted for 13.0% of volume (-3.7%), followed by discount stores with 10.0% (-2.5%).

Regarding the average price, the general increase was 4.0%, reaching €11.12/kg. E-commerce recorded the highest value, with €12.51/kg, although with a slight decline (-0.1%). Traditional stores were positioned as the second most expensive channel, with 11.90 €/kg, while discount stores offered the lowest prices (€10.48/kg). Supermarkets, despite being the main channel, maintained prices below the average, with €10.92/kg

## Marketing and consumption of aquaculture products in Europe and Spain



NOTES: 1. This file has been prepared by APROMAR for distribution restricted to its members.

2. Source: Subdir. General of Structure of the Food Chain. General Director of Industry and Food. MAP

Figure 6-7. Evolution of fish consumption from aquaculture and fisheries in Spanish households between December 2023 and 2024. The quantity (t) and the retail price are indicated (source: MAPA).

## Marketing and consumption of aquaculture products in Europe and Spain

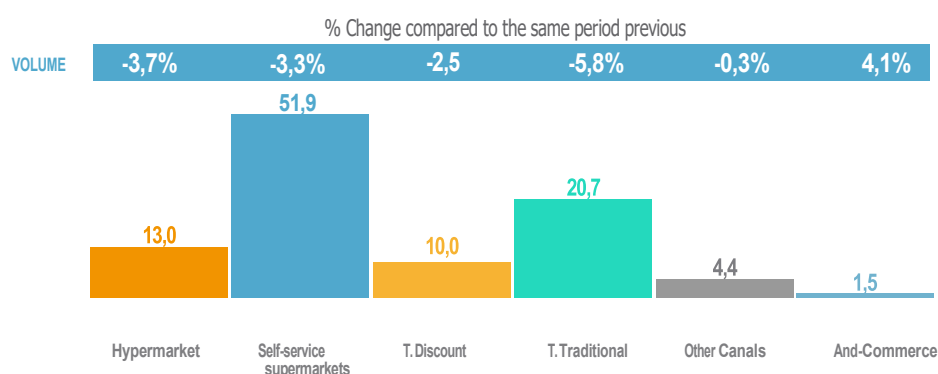


Figure 6-8.  
Percentage distribution of the purchase of fresh aquatic products in 2023 vs. 2024 by types of establishments and percentage change over the previous year (MAPA data).

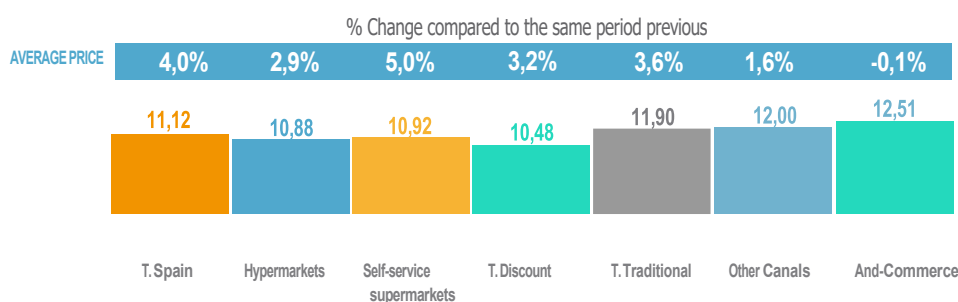


Figure 6-9.  
Percentage distribution of the average price of fresh aquatic products by sales channels in 2023 vs. 2024 and percentage variation over the previous year (MAPA data).

### 6.5. Trading of sea bream

At the Mediterranean level, the main market for sea bream continues to be Italy, where some 49,800 tonnes were consumed in 2023. The next markets were Turkey (50,200 t), Spain (24,600 t), Greece (22,100 t), Portugal (17,200 t) and France (15,400 t).

According to EUMOFA data, the apparent consumption of sea bream in Spain in 2024 was 30,670 t (production + imports – exports), 5.2% less than in 2023. The national production of this species reached 13,220 tons and 630 tons of fish, while 25,330 tons were imported and 8,510 tons were exported. With this, only 16.5% of the sea bream

consumed in Spain (households and other establishments) in 2024 were of national origin (assuming that all exports were of national product).

According to the MAPA's Food Consumption Report, focused solely on household consumption, 4.1% less fresh sea bream was purchased in 2024 than the previous year. The average purchase price increased by 10.2% to 9.94 euros/kg. It is estimated that, on average, each Spaniard consumed about 0.65 kg of sea bream, which represents a decrease of 5.8 kg

% compared to 2023. Sea bream accounted for 0.34% of the total value of household food purchases.

Figure 6-10.  
Percentage distribution of the country of origin of sea bream marketed in Spain in 2024 according to EUMOFA.

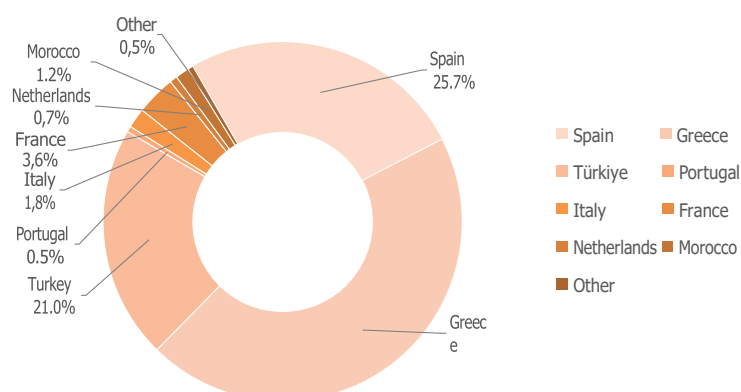




Figure 6-11. Diagram of productions, trade flows and apparent markets for sea bream in Europe in 2023. Based on data from FEAP, FAO and APROMAR



## Marketing and consumption of aquaculture products in Europe and Spain

As for the first sale price (including imports), according to APROMAR estimates and based on data from MercaMadrid and MercaBarna, it was €6.02/kg, 17.4 % more than in 2023 (€5.12/kg).

The value of sea bream up to 600 g varied significantly throughout the year. In the first quarter, the average price was 5.82 euros/kg, in the second quarter it rose to 6.10 euros/kg, in the third it fell slightly to 5.97 euros/kg

and in the fourth quarter the highest values were reached with 6.18 euros/kg. The highest prices of the year were recorded in December and June, with prices close to 6.3 euros/kg.

According to figures from the MAPA, the value of the sea bream produced in Spain in 2024 was 5.85 euros/kg, with a total production value of 76.5 million euros. This amount relates only to domestic production, without taking into account imports of this species.

Figure 6-12.  
Evolution of average prices (euros/kg) for the marketing of sea bream (400/600 g.) in MercaMadrid and MercaBarna (Mercas starting prices) between 2021 and 2024 (data of the Ministry of Economy and Competitiveness). All price values are nominal and have not been adjusted to the variations in the CPI.

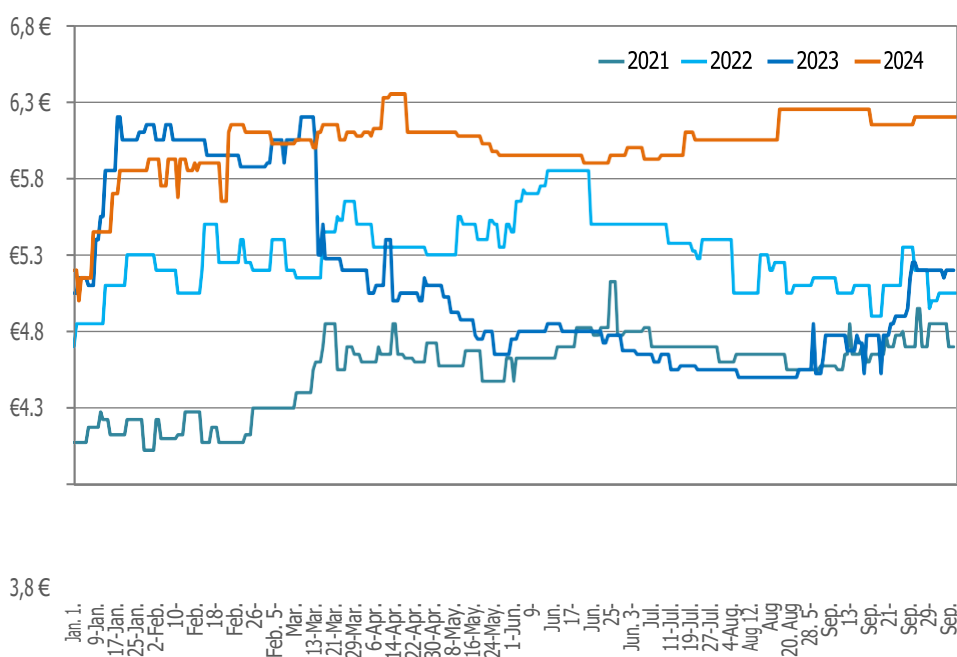
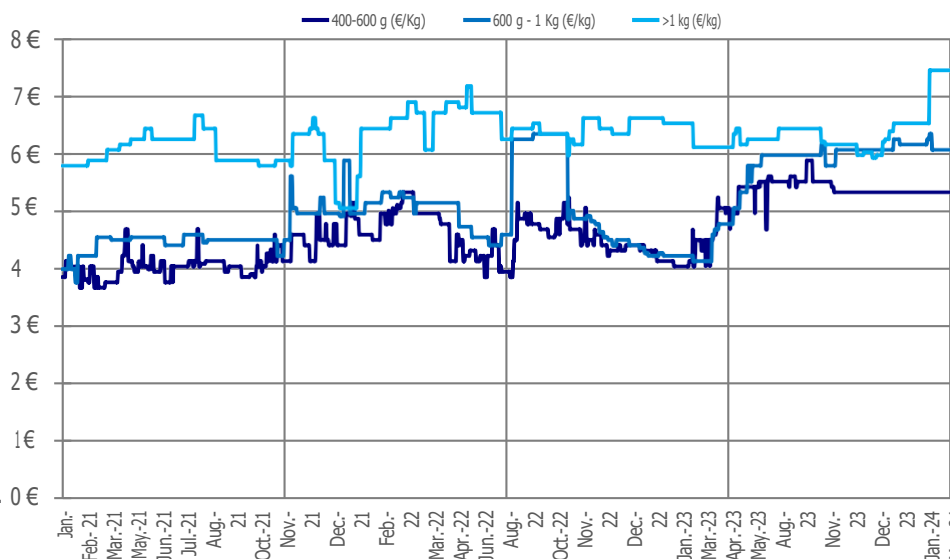
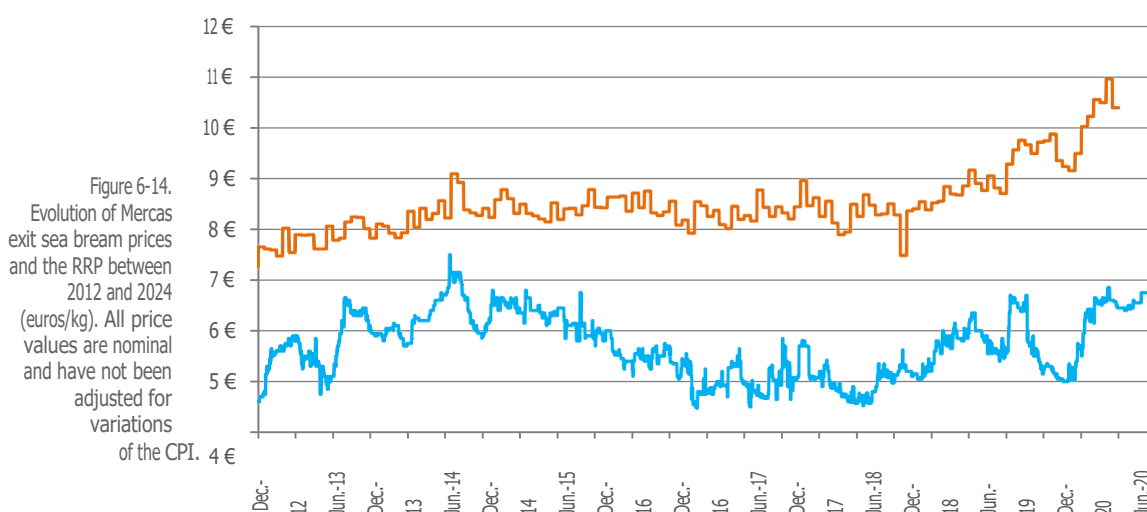


Figure 6-13.  
Evolution of average prices (euros/kg) of First sale of golden in its three Main Commercial sizes between 2021 and 2024 (Mº of Economy and Competitiveness).





The differences between the prices of the MAPA and those registered in the Mercas are due to the fact that they reflect different moments in the commercial chain and products with different characteristics. The MAPA calculates a weighted average price that covers all national production at first sale, either from the farm or the fish market, including operations that are very diverse in size, quality and destination (for example, wholesale sales or sales to the HORECA channel). For their part, the Mercas – such as MercaMadrid or MercaBarna – collect prices of the products that are marketed through their platforms, which tend to have a larger size or quality, although they represent a lower

total volume. Therefore, both prices are valid, but not directly comparable, since they measure different products within the same species, at different stages and channels of marketing.

The marketing of aquaculture sea bream is mainly carried out through supermarkets and department stores. Traditional fishmongers (specialized trade) constitute the third sales channel. There is also marketing through the non-domestic HORECA channel (Hotels, Restaurants and Catering), although most of the consumption is made in homes (around 80%).

## 6.6. Marketing of sea bass

In 2024, the main European markets for sea bass were Italy (52,430 t), Spain (32,810 t), Turkey (34,960 t), Greece (26,900 t), France (12,340 t) and Portugal (7,780 t), according to APROMAR estimates and consolidated data from EUMOFA and FEAP.

APROMAR estimates the apparent consumption of sea bass in Spain (production + imports – exports) at 32,810 tonnes in 2024, which represents 3.6% more than in 2023. Of this total, 25,025 tonnes came from national aquaculture, and 1,210 tonnes from extractive fishing. In terms of foreign trade, 17,900 tonnes were imported and 11,325 tonnes were exported, so that 44.6% of the sea bass consumed in Spain was of national origin (assuming that all exports were of Spanish production).

According to the MAPA Food Consumption Panel – focused exclusively on households – the consumption of fresh sea bass decreased by 2.1% in volume compared to 2023. At the same time, expenditure fell by 1.3%, reaching an average annual price of €10.89/kg. Per capita consumption was 0.47 kg per person during the year. These figures are not directly comparable with those of APROMAR, since the latter considers total consumption, including channels such as Horeca or institutional.

The average price for the first sale of aquaculture sea bass in 2024 – including imports and calculated from the starting prices of Mercas (MercaMadrid and MercaBarna) – was €5.01/kg, 4.2% less than in 2023 (€5.23/kg), according to APROMAR estimates.

## Marketing and consumption of aquaculture products in Europe and Spain

In the first quarter the average price was 5.92 euros/kg, in the second 5.73 euros/kg, in the third 5.11 euros/kg and in the fourth 4.28 euros/kg. The maximum value was reached in March with 6.10 euros/kg and the minimum in November with 4.18 euros/kg.

However, according to figures from the MAPA, the value in the first sale of sea bass produced in Spain was 8.52 euros/kg with

a total production value of 219.3 million euros. This amount refers to domestic production, without taking into account imports of this species.

Figure 6-16 shows the evolution of the price by size and highlights the increase in the price of sea bass over 1 kg in the last quarter.

Figure 6-15.  
Evolution of the average prices (euros/kg) of sea bass marketing (400/600 g.) in MercaMadrid and MercaBarna (Mercas starting prices) between 2021 and 2024 (data from the Ministry of Economy and Competitiveness). All price values are nominal and have not been adjusted with the CPI variations.

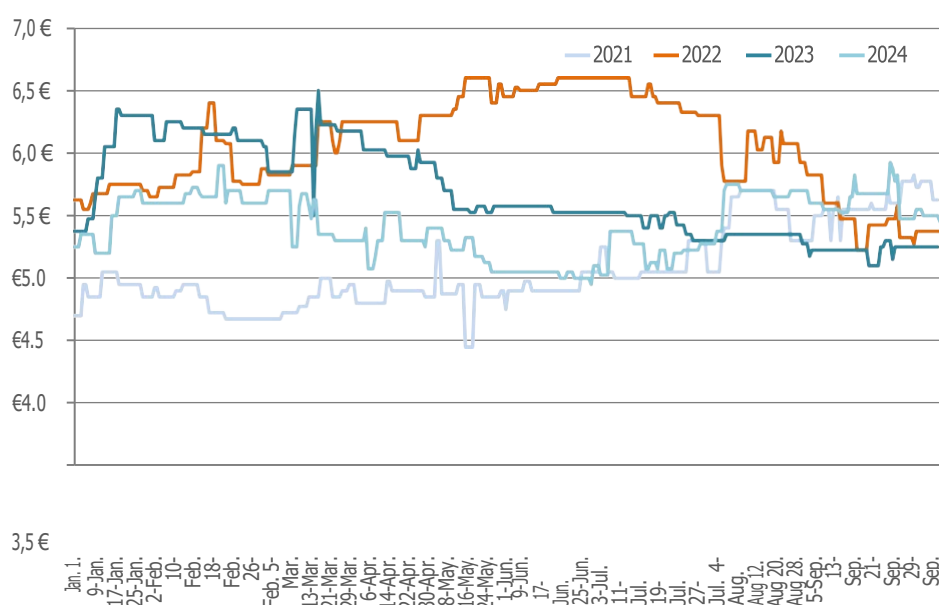


Figure 6-16.  
Evolution of the average prices (euros/kg) of first sale of sea bass in its three main commercial sizes between 2020 and 2024 (M<sup>o</sup> of Economy and Competitiveness).

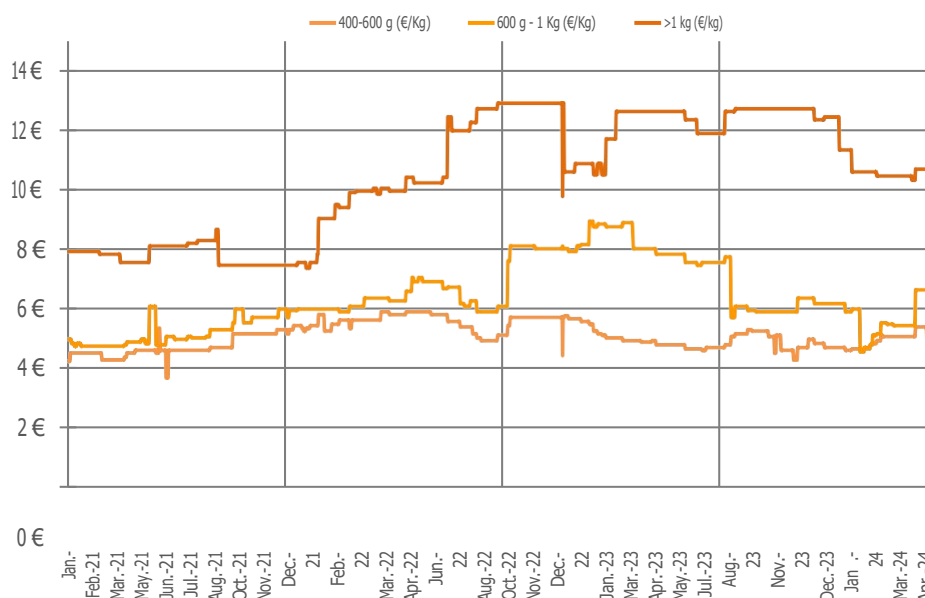
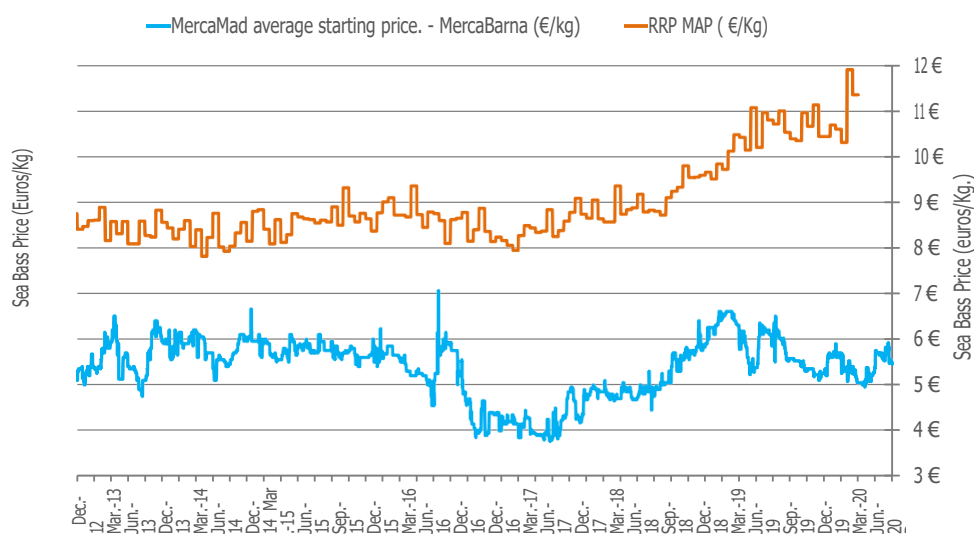


Figure 6-17.  
Evolution of the  
prices of sea  
bass from Mercas  
and the RRP  
between 2012 and  
2024 (Euros/  
kg). All price  
values are  
nominal.



The marketing of aquaculture sea bass continues to be channelled mainly through supermarkets and department stores, with traditional fishmongers being the third most important channel.

The HORECA channel (hotels, restaurants and catering) maintains a growing trend, although 78% of consumption is still made in homes.

Figure 6-18. Country of origin percentage distribution of sea bass marketed in Spain in 2024.

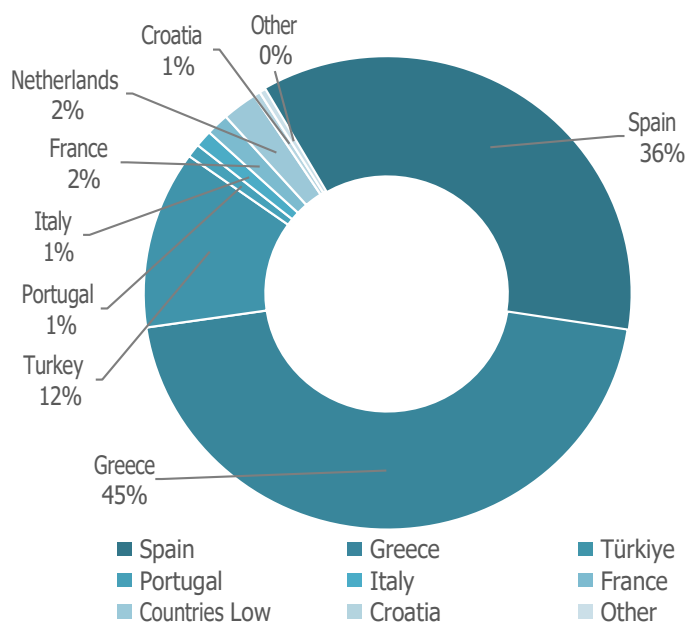


Figure 6-19. Diagram of productions, trade flows and apparent markets for sea bass in Europe in 2024. Based on data from FEAP, FAO and APROMAR.





## 6.7. Marketing of turbot

In 2024, turbot consumption in Spanish households decreased by 1.2% in volume, according to the MAPA Consumption Panel. Expenditure was also reduced by 0.6%, reaching an average price of 13.28 euros/kg. Per capita consumption was 0.075 kg per person, representing a decrease of 6.3 % compared to 2023.

According to figures from the MAPA, the average first sale price of turbot produced in Spain was 8.78 euros/kg, with a

total production value of €84.3 million. This data refers only to domestic production, without considering imports.

For its part, data from the Mercas (MercaMadrid and MercaBarna) place the average annual price of the first sale of turbot at €13.4/kg. In the first quarter it was on average 12.9 euros/kg, in the second and third it was 13.0 euros/kg and in the fourth it increased to 14.7 euros/kg.

Figure 6-20.  
Evolution of the average prices (euros/kg) of turbot (1,000/2,500 g.) in MercaMadrid and MercaBarna (prices of Mercas) between 2021 and 2024 (data from the Ministry of Economy and Competitiveness).

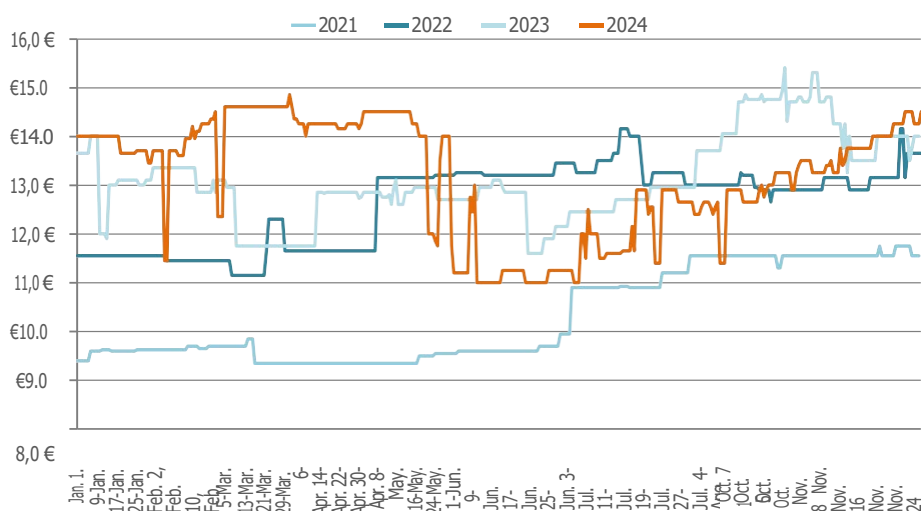
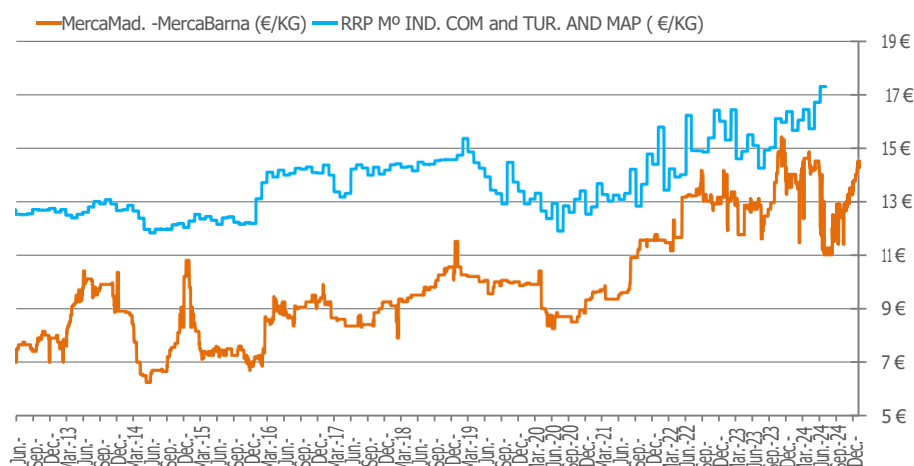


Figure 6-21.  
Evolution of prices in the marketing of turbot (1,000/2,500 g.) in MercaMadrid and the RRP between 2012 and 2024. All price values are nominal.





## Marketing and consumption of aquaculture products in Europe and Spain

Spanish aquaculture turbot is marketed through various channels, although its distribution is mainly concentrated in the Horeca channel, and to a lesser extent via traditional fishmongers. The supermarket and department store channel has also gained weight in recent years

years. The export trend remains stable, with special destinations for markets such as France and Portugal. Spain continues to be the main European producer of aquaculture turbot, concentrating approximately 70% of total production.

# 7



## **Challenges of aquaculture in Spain**

# 7. Challenges of aquaculture in Spain

Aquaculture is an activity with a notable implementation in Spain, being already traditional and socially relevant in many localities. Aquaculture facilities are located in rural, river or coastal areas, where other types of investment rarely reach and where aquaculture is often the only business activity that generates stable and quality employment. In addition, it is an inclusive job, both in productive, technical and managerial jobs.

This primary sector, of which this country has long been the main producer in the European Union, is made up of micro and small enterprises, although in the case of fish farming there are also medium and large enterprises. Most of them specialise in the production of specific species and are at the forefront of European aquaculture, attracting investors of multiple nationalities. As far as the marketing of their fish, molluscs, crustaceans and algae is concerned, they do so mainly in Spain but also in demanding international markets.

However, aquaculture in Spain has not managed to develop sufficiently to cover the very significant Spanish foreign trade deficit in terms of seafood, i.e. food from aquaculture and fisheries. A deficit that also continues to grow until it stood at 2,957 million euros in 2023, which means that in Spain self-sufficiency in terms of seafood is only 35.07%. For example, two out of every three sea bream and one out of every two sea bass consumed in Spain are imported.

Strategic autonomy in the field of food sovereignty is currently a priority of the European Union and nationally. Given that the limitations of the traditional fishing grounds of the Spanish fishing fleet are permanent, national aquaculture can and must alleviate this deficit as an activity that generates economy and employment throughout the length and breadth of Spain.

As a whole, Spanish fish farming companies are business-competitive entities, but this position is being seriously compromised by various perfectly identified issues. The most relevant matters are related to the legal administrative framework that they must comply with and which are detailed in this chapter. This situation limits the growth capacity of companies while reducing their competitiveness by entailing superfluous and dispensable administrative burdens.

### SIMPLIFICATION AND COHERENCE OF THE REGULATORY FRAMEWORK.

Aquaculture is a food-producing activity of the primary sector that takes place, in whole or in part, in areas of public domain. This logically forces their companies to comply with very numerous regulations in a multitude of areas: occupancy concessions, environmental impact, fish health, emissions, food safety, waste, fees, royalties, occupational risks, etc. Most of it is legislation originating in the European Union, so for the proper functioning of the Spanish internal market a uniform and coherent application is necessary. In this sense, it is essential to strengthen the coordination of the different administrations at the Spanish and regional state level and the dialogue with the sector so that an adequate implementation and interpretation of this legislation is carried out. Although the competent administrations in aquaculture production are the corresponding departments of the autonomous communities, the state administration plays a role in its coordination while being central in issues such as hydrological planning (in rivers), coastal and marine management, and the marketing of aquatic products. APROMAR is firmly committed to a public-private collaboration that facilitates the development of this activity in a propitious, stable and positive business environment for the progress of the country as a whole.

APROMAR has identified that the main shortcomings of the regulatory framework that applies to aquaculture in Spain originate at the level of the European Union. The European Green Deal, established in 2019 by the European Commission, consists of a package of policy initiatives that aim to put the Union on the path to the ecological transition, with the ultimate goal of achieving climate neutrality by 2050 and transforming the European Union into a fair and prosperous society with a modern and competitive economy. However, from its first moments, the environmental objectives of the Green Deal have taken precedence over those of business competitiveness. This lack of coherence and balance within the Green Deal is at the epicentre of Europe's geostrategic problems and, as far as this report is concerned, it marks the future of aquaculture. From this point on, the Member States give almost absolute political priority to the restoration of nature and this leads to a lack of commitment to develop aquaculture even if it proves to be environmentally sustainable. This is evidenced by the fact that the European Commission's strategic guidelines for a more sustainable and competitive EU aquaculture are non-binding and have a very limited impact on the governance of the Member States. In addition, effective and timely monitoring measures for aquaculture development have not been established at European level, and the policy objective of promoting sustainable aquaculture is not quantifiable.

Recent political changes at the global level are forcing the European institutions to change their policies and strengthen the Union's economic competitiveness as well as its strategic autonomy, in principle within the Green Deal. The European Commission's new Commissioner for Fisheries and Oceans, Costas Kadić, has launched two initiatives that could be relevant to the aquaculture sector. On 5 June, it presented the European Ocean Pact, a strategic initiative that lays the foundations for a renewed approach to maritime sectors, including aquaculture. APROMAR has welcomed this initiative and the recognition of the role of aquaculture in the governance of ocean resources, but criticises the failure to specifically mention inland aquaculture. On the other hand, the drafting of the Vision 2040 document for Fisheries and Aquaculture is underway, which will represent a valuable opportunity to consolidate the strategic importance of aquaculture within the European food system and the blue economy. This Vision 2040, which will be published in a few months, will have

taking into account sector-specific aspects such as generational renewal, sectoral support, the state of the oceans and aquatic biodiversity, transparency throughout the supply chain, the environmental footprint of fishery and aquaculture products, decarbonisation efforts and the contribution to coastal and rural communities. Other aspects, such as consumer information and interest on food products, food safety, trade policy and due diligence on the environment and social rights will also be relevant.

At the Spanish level, the remarkable effort of the General Secretariat of Fisheries (MAPA) to promote the regulatory alignment that applies to aquaculture in Spain through the work for Spain's Contribution to the EU Strategic Aquaculture Guidelines 2021-2030 (EsACUI) should be recognized and highlighted. This initiative is the result of a process of analysis and reflection that began in December 2019 with the in-depth evaluation of the Strategic Plan for Spanish aquaculture 2014-2020. Based on the results and lessons learned, and from an integrative and cooperative work approach, EsACUI is a key strategic instrument to address the challenges of Spanish aquaculture together with the set of administrations involved, both state and regional, identifying problems in detail, analysing different ways of dealing with them and optimising the challenges of the Spanish aquaculture efforts to be made. APROMAR is fully involved in its development and convinced that its results will soon become evident.

In relation to the specific regulatory challenges of aquaculture in Spain, APROMAR highlights the need to address the following issues:

- A holistic review of the administrative framework that applies to aquaculture under the European concept of "Better regulation" by eliminating unnecessary burdens and promoting measures to increase its effectiveness, efficiency, predictability and transparency; in addition to shortening and transparency in the deadlines of administrative procedures.
- The surveillance of the Market Unity in Spain for the benefit of workers, consumers and companies in terms of professional qualifications, fish labelling and traceability requirements. Including the standardization of the regional regulatory framework with regard to the data required for the Register of Livestock Farms (REGA), the requirements in the

environmental monitoring plans and port taxes, among other aspects.

- To remove aquaculture from the scope of Directive 2006/123/EC on Services in the Internal Market (known as Bolkestein) as it affects concessions for the occupation of the public domain. Failure to do so leads the sector to the obligation of public tenders for the granting of concessions, especially in the situation of application of extraordinary extensions, which are complex to implement in production systems with long production cycles that would be cut short. APROMAR is convinced that there are sufficient legal arguments to argue that the Services Directive is not so broad as to include aquaculture.
- Rationalization of the fees applied to aquaculture (e.g. state and regional port fees) and fees (e.g. discharge into rivers).
- Sharing among the different administrations of the statistical data provided by companies in the surveys to which they are obliged by the different state or regional departments. This will avoid redundant surveys and lighten the cost for companies.
- Define maritime spatial planning with future approaches and alleviation of past inertia, definitively establishing the areas of priority use for aquaculture and for aquaculture to fit into areas of high potential. Also, the biological (ecological) load capacities in each of these areas must be determined considering all the activities that take place in them.
- Define potential areas for aquaculture in watersheds to expedite permitting, facilitating the identification of suitable and unsuitable areas, as a tool for economic development in rural areas.
- To promote greater knowledge of the aquaculture sector among public administration staff and legislators, covering the fields of animal health, environmental protection, animal welfare, and others.
- Creation in Spain of a single web portal, at the national and regional level, which informs citizens in a transparent way about legislative initiatives and public consultations, similar to the "Welcome to Have your say" of the European Commission.

### OPTIMISATION OF AQUACULTURE IN HYDROLOGICAL PLANNING.

Freshwater is a key resource for inland water aquaculture activity and aquaculture companies that depend on it are committed to using it responsibly. It should be noted that this sector is not a consumer of this water since it only needs it as a means of production and after use it returns it in its entirety and in similar quality conditions. The recognition of this non-consumptive use of freshwater by aquaculture facilities in rivers is especially critical in times of drought. Taking into account the increasingly frequent situation of prolonged droughts, it is essential that aquaculture receives a treatment that recognizes this type of circumstance, so that its preferential access to the water that it always returns is guaranteed. In this regard, it proposes the following three measures:

- Application of reductions in fees and fees to aquaculture in a manner similar to those offered to agriculture and livestock.
- Carry out a legislative adaptation so that the ecological flows are adjusted to each river section. APROMAR considers that the current ecological flows are oversized in many channels and there is room for a reduction without putting the ecosystems at risk in these stretches of river.
- Always offer aquaculture companies time periods to adapt to changes in authorized flows and possible new obligations that require significant investments. Fish stocks in the facilities cannot be modified in a controlled manner from one day to the next and business investments must fit into their annual budgetary capacities.

### COMPATIBILITY OF AQUACULTURE WITH OTHER USES OF SPACE.

Spain's coasts and rivers are areas where numerous economic and social activities converge, including aquaculture. In this sense, work must be done for the positive integration of activities and take advantage of the positive synergies that arise between them. Aquaculture can fit seamlessly with other economic activities with which it shares space. Sometimes occasional conflicts may arise with other uses and users of the space, but these can be resolved satisfactorily for all

parts. Aquaculture is a strategic economic sector within the framework of the EU Blue Economy and synergies should be sought and developed with all sectors that also carry out their activity around the sea and rivers. In this sense, public institutions play a central role in planning activities and arbitrating solutions. APROMAR proposes the following:

- Promote the search for synergies between aquaculture and fishing, tourism and eco-environmental activities.
- Avoid the spurious interposition of conflicts between sectors as an excuse to cover underlying problems with personal or political motivations.
- Promote from political groups the resolution of possible conflicts in local communities, aligning local policy with the national and European objectives of the Blue Economy.

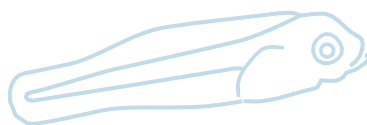
### RELATIONSHIP WITH SOCIETY.

Society is subjected to an incessant torrent of information, sometimes factual and sometimes misleading, which leads them to doubt basic issues such as the way the food they consume is produced, the conservation of the environment, nutritional issues, animal welfare or the healthiness of food. Providing people with the most correct possible interpretation of this information is an obligation of many: public administrations, the media, economic sectors, scientists and social organizations. To this end, significant investments in promotional and communication campaigns are necessary to

aspire to achieve sufficient didactic minimums. In this way, the following is necessary:

- Public administrations such as the Ministry of Agriculture, Fisheries and Food, the Ministry of Health, the Ministry of Consumer Affairs, and especially the Spanish Agency for Food Safety and Nutrition (AESAN), must publicly clarify doubts and respond to false communications in the media.
- To improve statistics on the consumption of seafood in Spain. APROMAR considers that the most appropriate calculation of per capita consumption is the one made on the apparent consumption of whole fish. Apparent consumption results from computing national production, adding imports and subtracting exports, divided by the number of people including tourists. And whole fish is calculated by applying correction coefficients when the imports or exports are of eviscerated or filleted products.
- Recover the consumption of aquatic products in Spain. This would benefit the overall health of Spanish society and support the continuity of the fisheries and aquaculture sectors. These campaigns must be tackled in two ways: by increasing campaigns to promote fish consumption (including for children), and by reducing VAT on aquatic products.
- Implementation of general communication and information actions with institutional support to society on the characteristics of aquaculture. These communication activities should be coordinated with those carried out by the sector itself.

# 8



## **Analysis of the evolution of global aquaculture, in the EU and in Spain (2004–2024)**



## 8. Analysis of the evolution of global aquaculture, in the EU and in Spain (2004–2024)

By Garazi Rodríguez Valle, APROMAR-OPP n°30

### The evolution of the aquaculture sector through the APROMAR production report

Since its first edition in May 2004, entitled "Situation of marine fish farming in Spain. Production Report 2003", the APROMAR statistical report now entitled "Aquaculture in Spain" has established itself as the main statistical reference on the production and evolution of the national aquaculture sector.

The Board of Directors of APROMAR decided that this report would be published on an annual basis, with the aim of being a source of information with which to know the state of the sector in order to be mainly useful for its associated companies. Today, this report has a greater scope and therefore, it reflects and analyzes the production of farmed species in Spain. This report actively contributes to improving public knowledge of the sector, being in turn an exercise in dissemination and transparency that supports the continuous improvement of aquaculture activity in our country.

Fish farming provides extraordinarily nutritious fish to a population that is progressively increasing as its concern to maintain its diet in a healthier way increases every day.

It is the primary sector activity with the greatest future projection and the greatest capacity for growth, not only because 70% of the surface is water, but also because it is production: with a lower carbon footprint, less freshwater consumption, fish have an excellent way of converting food more efficiently than terrestrial animals and also, they have higher reproductive rates. In addition to all this,

it is an activity that generates employment in rural areas and coastal areas where other sectors are difficult to access, and can even be developed in protected areas (such as in the Natura 2000 Network). Last but not least, in addition to obtaining high-quality food from aquaculture, it also produces food for the production of pharmaceuticals, cosmetics, biofuels, etc.

Throughout these two decades, although it has been operating since 1986, APROMAR has played a key role as the voice of the sector, promoting sustainable development, innovation and professionalisation of Spanish aquaculture. Their work has been essential to make visible the importance of this activity in terms of food security, blue economy and territorial cohesion, defending the interests of the sector before the administrations, promoting improvement projects and promoting greater social acceptance of aquaculture products. And to analyze and commemorate this temporal evolution, this article is included as a special edition this year.

Below, a journey through these 20 years is made, as is usually done in this report, from the global perspective to the particular situation in Spain.

### Evolution of the Geopolitical Context 2004-2024

To understand the situation of the aquaculture sector during these two decades, it is necessary to contextualize the geopolitical situation.

In 2004, the world economy was in a growth phase, driven by international trade and globalization, after the crisis of the 2000s. Although the international scenario was still suffering from

instability generated after the attacks of September 11 in 2001 and the invasion of Iraq in 2003.

At the food level, there were concerns about food safety and traceability after the "mad cow" crisis, the outbreaks of avian flu and the attacks. And in this context, China consolidated its position as a great power after its entry into the WTO in 2001, with a sharp increase in exports of fish, meat and vegetables.

This context logically affected the fisheries and aquaculture sectors. Mainly because of this, it turned the focus of attention to food safety and traceability, which had an impact on agri-food regulation in general.

On the other hand, in 2004 the European Union was enlarged from 15 to 25 member States, integrating countries from central and eastern Europe. This meant an expansion of the internal market, with greater diversity in aquaculture and fisheries and highlighted the need for harmonisation of regulations (CFP, CAP, etc.) between States. During that year, the Doha Round negotiations continued in the WTO, focusing on agricultural liberalization and market access for developing countries. On the other hand, there was pressure to reduce subsidies and to protect sensitive markets in Europe, such as dairy, sugar and some fish products.

FAO promoted the Code of Conduct for Responsible Fisheries and the first ecosystem management initiatives. And aquaculture was recognized as the only way to compensate for the stagnation of fishing, since it had declared that about 75% of fish stocks were fully exploited or overexploited. And in 2007, common policies were redefined with effects on fisheries and aquaculture. And the new European framework opened up new opportunities. Among them, aquaculture was beginning to be seen as a means of supplying food to counteract the reduction in fish catches. Also, the reform of the CFP required aquaculture to demonstrate its sustainability, traceability and added value, in order to be able to access aid and be fully integrated into common policies. At this time, specialized professional organizations and the first specific national strategies for aquaculture were beginning to appear. And therefore, it was a turning point to see aquaculture as something more than an auxiliary activity to fishing.

Also in 2004, reports by the WorldFish Center and FAO openly spoke of a "second blue revolution" to refer to the intensive use of science, genetics, closed systems and technology for sustainable aquaculture (which had begun in the 1970s in India with the creation of the "Blue Revolution" concept). In 2022, FAO's "Blue Transformation" programme was published, setting a global framework for sustainable intensification of the sector until 2030.

In 2010, the Aquaculture Stewardship Council (ASC) was founded to certify sustainable practices. In turn, the FAO recommends moving towards offshore aquaculture.

The financial crisis of 2008, COVID-19 in 2020, logistical crises, conflicts such as the Russian invasion of Ukraine in 2022 and the massive destruction of Gaza at the hands of Israel, which continue today, generated disruptions in supply chains, making inputs more expensive and increasing concerns about food security and sovereignty. And prioritizing self-sufficiency and resilience in governments' agendas.

In 2024, in contrast to 2004, the geopolitical context was also marked by a phenomenon that affects the entire planet, Climate Change. This situation puts in check the availability of water, the health of ecosystems and, of course, fisheries and aquaculture productivity.

In 2024, digitalisation and automation are a reality, although the increase is going at a dizzying pace. And consumption is marked by new models: the rise of vegetarianism, functional foods, plant-based products and the use of alternative proteins.

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**In just two decades, aquaculture has gone from being an activity considered complementary to extractive fishing to consolidating itself as a fundamental pillar of the global food system.**

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A summary comparison of both years can be seen in the following table:

# Analysis of the evolution of global aquaculture, in the EU and in Spain (2004–2024)

Table 8.1. Comparison of the global geopolitical context between 2004-2024.

Dimension	2004	2024
Geopolitics	Post-9/11 unipolar world, Iraq war, EU expansion	Multipolar world, wars in Ukraine and Gaza, China-US tension, energy instability
Economy worldwide	Globalization on the rise, growth sharp	Partial deglobalization, inflation, post-COVID logistical disruptions
Change climatic	Present on the agenda, but without urgency global	Cross-cutting priority, with extreme events, water scarcity and loss of biodiversity
Food safety	Focused on poverty and supply in the Global South	Geopolitical, Climate and Logistics Risk: A New Focus on Food Sovereignty
Technology	Start of digitalization, low connectivity in rural areas	Agriculture 4.0, AI, blockchain, sensors, automation, big data in food
Consumer	More traditional, price-oriented	More informed, it demands sustainability, traceability, animal welfare

In 2004, its main function was to relieve pressure on traditional fisheries, with a volume-focused approach and almost exclusively present in Asia, through extensive or semi-intensive systems. In contrast, by 2024 aquaculture is already producing more than 50% of fish intended for human consumption, having expanded territorially towards Latin America and Africa, with a progressive diversification in farmed species that includes not only traditional fish such as carp or tilapia, but also molluscs, algae, sea cucumber and high-value species such as yellowtail or sole.

The environmental concerns that were beginning to emerge in 2004 (the use of fishmeal and fish oil or local impacts on ecosystems) have given way to a more complex agenda in 2024, where climate change, animal welfare, traceability and social acceptance are already determining factors. Likewise, if in 2004 sustainability was an aspirational goal, today it has become a precondition for operating and competing in the market, especially in regions such as the EU. On a technical level, cultivation models have evolved

significantly: from conventional systems to the development of technologies such as recirculating systems (RAS), integrated multi-trophic aquaculture (IMTA), offshore platforms and automation with digital tools.

**Overall, global aquaculture in 2024 was presented as a more efficient, technified, environmentally conscious and strategic activity integrated into the food safety systems of the twenty-first century.**

It could be said that in 2004 the priority at the global level was to produce more and reduce costs, and that in 2024, the important thing is to produce better, in a sustainable and resilient way.

A comparison of the global aquaculture situation in this period can be seen in the following table:

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Table 8.2. Comparative global situation of aquaculture between 2004-2024.

Dimension	2004	2024
Role in the food system	Considered "supplementary" to fishing	It produces more than 50% of the world's fish for Human consumption
Geographical weight	Domination of Asia with semi-Intensive	Asia Maintains Leadership, but with Expansion in Africa and Latin America
Species diversification	Low diversity (carp, tilapia, salmon, shrimp)	Increasing diversification: new species, algae, sea cucumber, etc.
Core concerns	Environmental impact, use of fishmeal/fish oil	Climate change, animal welfare, social acceptance, traceability
Degree of sustainability	Sustainability as a desired goal	Sustainability as a market condition
Cultivation and innovation models	Extensive or traditional systems predominate	RAS Advancement, IMTA, Offshore, Automation, Digital

And aquaculture is now seen as a strategic pillar to feed the growing population with a low environmental footprint.

## Evolution of Global Production

Between 2004 and 2024, aquaculture has undergone a profound transformation on a global, European and national scale . In these two decades, the sector has gone from being an incipient complement to extractive fishing at a global level to becoming the main supplier of aquatic products for human consumption. This period has been marked by steady growth in production, progressive diversification of farmed species, significant technological advances, increased environmental regulation, and increasing attention to the social and economic impact of the activity.

In 2004, according to FAO data, world aquaculture produced about 56 million tonnes, accounting for about 37% of production

total aquatic. It was already the fastest growing food activity in the world (average +6–8% per year) with Asia, especially China, predominating. Although it was seen as a solution to overfishing, there were growing concerns about the use of fishmeal and fish oils, environmental impact and animal welfare . In 2013, that figure exceeded 94 million tonnes, accounting for 51% of production, and in 2023 with 136 million tonnes it already accounted for almost 60% of total production.

According to FAO data, the almost 56 million tonnes cultivated in 2004 were achieved thanks to the cultivation of some 365 different species (including all groups). Of these, the main ones were the Japanese Laminaria , Silver Carp, Oysters (various), Chinese Carp, Common Carp and Japanese Clam. In 2023, the cultivated species are approximately 473. And the main species have been Laminaria del Japón (formerly *Laminaria japonica*, today *Saccharina japonica*), Euchema Algae (several), Vannamei Prawn (*Litopenaeus vannamei*), Gracilaria Algae and Oysters (several). In short, in both

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In recent decades, the diversity of culture has increased by 108 and although the production of *Laminaria* from Japan as the main aquaculture species has been maintained, the next positions occupied by oysters and carps have been replaced by red algae and the vannamei shrimp.

This massive consumption of algae responds to a mixture of economic, industrial and technological factors, as well as cultural. If analyzed in detail, *Laminaria* is the brown algae known as kombu. It has been a mainstay of the Japanese diet and culture. It has a very high nutritional value, it is a food considered functional and in addition to its culinary uses, it is one of the main sources of alginate that is used in the food (ice cream, sauces), pharmaceutical (pills, capsules) and cosmetics industries, among others. It requires low investment and generates high returns. Algae of the genus *Euchema* and *Gracilaria* are a source of carrageenan and agar, respectively, which today are components of an impressive variety of products (dairy, cosmetics, toothpaste, paints, paper, gelatins, pharmaceutical industries, microbiological laboratories, etc.) and are also species of high productivity and low cost of cultivation.

The vannamei shrimp is the most cultivated and consumed crustacean in the world thanks to its high production yield, it has a wide consumer acceptance (taste, texture, size, versatile in cuisine, etc.) and has an excellent organization in the export chain.

Analysing the most produced species, it can be deduced that growth has been especially concentrated in Asia (China, India, Indonesia and Vietnam), where expansion has been accompanied by heavy investments in intensive production systems, infrastructure and processing.

The economic value has also multiplied, being about 53,000 million euros in 2004 and reaching more than 276,000 million euros in 2023, of which 225,600 million were generated by these 4 largest Asian producers.

Throughout this period, the sustained growth of global aquaculture has been driven by a combination of international agencies, regional programmes, national governments and technical networks.

The most relevant have been the FAO, NACA (Network of Aquaculture Centres in Asia-Pacific), the World Bank, WorldFish and SEAFDEC (Southeast Asian Fisheries Development Center). Although growth has really occurred due to the national implementation of active policies with public investment, incentives for family aquaculture, genetic improvement, health and openness to international trade.

In terms of employment, in 2004 extractive fisheries employed more than 80 per cent of all jobs in the fisheries and aquaculture sector, mainly in Asia. From 2010 onwards, aquaculture began to gain importance thanks to the expansion of semi-intensive systems in Asia, RAS in Europe and integrated systems in Africa and Latin America. And in 2022, the aquaculture sector already accounted for approximately a third of direct employment. For every direct job in aquaculture, between 2 and 4 indirect jobs are generated in the value chain (feed, logistics, processing, etc.).

By 2024, it is estimated that more than 120 million people in the world depend totally or partially on aquaculture and fisheries for their livelihoods.

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**For each direct employment in aquaculture, between 2 and 4 indirect jobs are generated in the value chain (feed, logistics, processing, etc.).**

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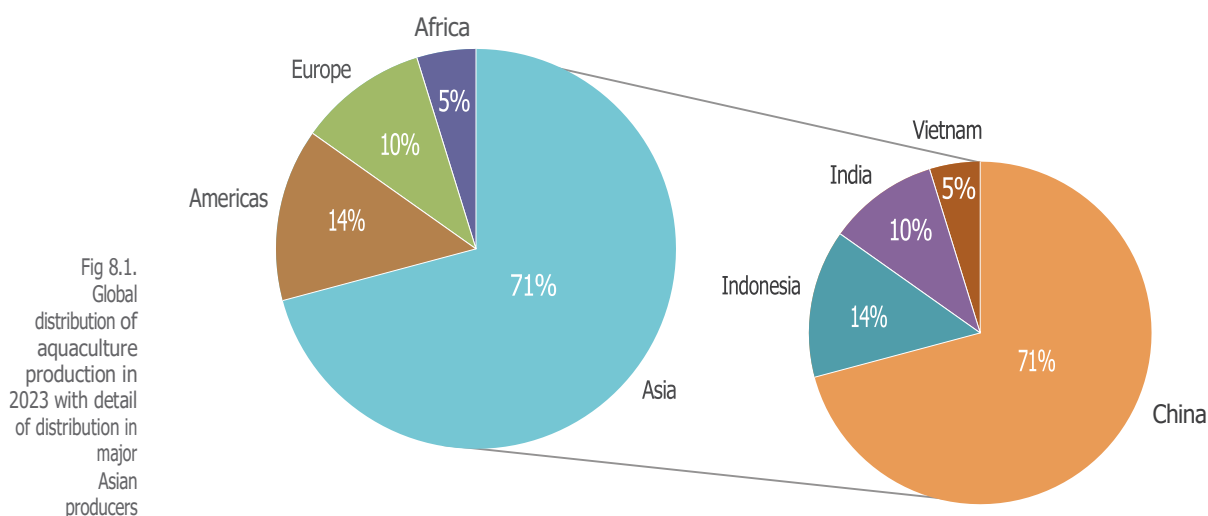
### Developments in the European Union

During the period 2004–2024, the European Union has actively promoted the development of sustainable, innovative and high value-added aquaculture, although the growth in volume has been modest and stagnant compared to other regions such as Asia. The institutions and networks that have led the drive have been the European Commission (DG MARE), the Aquaculture and Market Advisory Committees (AAC and MAC), the European Federation of Aquaculture Producers (FEAP) and EATIP.

Aquaculture production in the EU has remained stable in volume since 2004, hovering around 1.1–1.3 million tonnes per year, with a trend towards stagnation since 2020. In turn, it has achieved a revaluation in



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economic terms with high-value products such as sea bass, sea bream, rainbow trout, turbot, oysters and mussels, and certified production. It has gone from €3.4 million in 2004 (EU28) to €5.5 million (EU27). This confirms a strategy focused on: quality before quantity, certified premium production, diversification towards species and add value with innovation.

Although the EU represents less than 3% of the world's volume, it has an important role as a major importer, regulator and benchmark in sustainability. In 2004, the approximately 1.3 million tonnes produced were divided into 94 farmed species. Of these, the main ones were the Mussel (several), the Common Carp, Sea Bream, Sea Bass, Clam Japanese bluefin tuna, Atlantic bluefin tuna and European eel. In 2023

### Trout

Rainbow, Atlantic Salmon, Sea Bream, European Oyster, Sea Bass and Common Carp. Therefore, there are two species: trout and salmon, which went from not being in the top production positions in 2004 to being leaders in 2023.

The overall success of mussels, rainbow trout and Atlantic salmon in aquaculture today is due to a combination of productive, nutritional and commercial factors. These species offer high efficiency in cultivation, a nutritional profile highly valued by the modern consumer and great versatility in

marketing formats. The mussel stands out for being a local, economical food with a positive environmental impact, as it feeds exclusively on phytoplankton. Rainbow trout, with a long tradition in Europe, have adapted to sustainable production systems, including recirculation and inland aquaculture, remaining an accessible source of quality protein. For its part, Atlantic salmon has managed to position itself as a premium product on a global scale, thanks to a highly technical industry that guarantees a constant, safe and high-quality supply. These species represent successful models of modern aquaculture that respond to both market demand and sustainability challenges.

on the other hand, the main ones were Mussel (several),

**The global success of mussels, trout  
Rainbow and Atlantic salmon in  
aquaculture today respond to a  
combination of productive, nutritional  
and commercial factors.**

The next most produced species: sea bream, European oyster, sea bass and common carp continue to be fundamental pillars of aquaculture in different countries.

regions of the world for their cultural, nutritional and productive value. Sea bream and sea bass, Mediterranean species par excellence, have consolidated their presence in European markets thanks to their gastronomic quality, their constant availability throughout the year and their adaptation to intensive systems of cultivation in floating nurseries. Both have gained recognition as fresh, healthy and local products, and are protagonists in the promotion of collective brands and sustainability certifications.

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**The EU's aquaculture production strategy is focused on quality before quantity (certified premium production), species diversification and adding value with innovation.**

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The European oyster, although more demanding in cultivation than other species, represents a product of high added value linked to the gastronomic and environmental heritage of coastal regions such as France, Galicia or Ireland; its consumption is associated with quality, traceability and tradition. For its part, the common carp, although less visible in Western markets, continues to be one of the most produced species worldwide, especially in Asia and Eastern Europe, due to its hardiness, low production cost and strategic role in the food security of millions of people. These four species reflect both the diversity of regional approaches and aquaculture's ability to respond to different types of demand, from gourmet products to accessible and sustainable protein.

It is noteworthy that, in parallel to traditional species, European aquaculture has progressively incorporated high-value species such as Meagre, turbot and sole, which represent a commitment to diversification, quality and innovation. The Meagre, with rapid growth, good commercial acceptance and good productive performance, has experienced a notable increase in recent years, especially in the western Mediterranean, positioning itself as an emerging species with a strong projection. Turbot, introduced decades ago, but consolidated especially in Galicia, has reached a stable production thanks to a high gastronomic demand in markets

European and a technical mastery in its cultivation, being a benchmark of quality and differentiation. On the other hand, sole (mainly *Solea senegalensis*) has been a biotechnological challenge in terms of breeding and fattening, but it is currently advancing thanks to recirculating systems (RAS) and its high commercial value, aimed at both national consumption and export. These species, although still smaller in volume, reflect the potential of European aquaculture to generate products of excellence, adapted to demanding market niches, and contribute to the technological development of the sector.

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**Although the EU accounts for less than 3% of the world's volume, it has an important role as a major importer, regulator and benchmark in sustainability.**

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In the EU, direct employment in aquaculture has fallen slightly in volume, but has increased in qualifications. It is estimated that by 2024 there will be around 70,000 direct jobs, with a greater presence in Spain, France, Greece and Italy. In addition, it must be taken into account that it has become a key driver of rural, coastal and sustainable employment. Technological transformation, environmental pressure and new consumption models have reconfigured the type of jobs in the sector, demanding more technical, digital and environmental skills. Therefore, there is a high level of professionalization and technification, although with challenges to ensure generational renewal and gender equality.

In general, important progress has been made at the EU level, such as the expansion of the number of recognised Aquaculture Producer Organisations, the development of Multiannual National Strategic Plans, greater traceability and health controls of aquatic products, the increase in certifications and the promotion of the diversification of species and systems (RAS, IMTA, Offshore). In contrast, excessive bureaucracy, competition for space, low social acceptance, territorial inequality and limited access to financing for innovation projects remain structural obstacles. Unfortunately, these are issues that are not expected to be solved in the short term.



### Evolution in Spain

The Spanish geopolitical context was marked in 2004 by the 11-M terrorist attack in Madrid perpetrated by Islamist jihadists. It was a turning point in Spanish politics and especially in its international relations. The government shifted from the left (PSOE) to the right (PP) with a shift in relations that brought the country closer to France and Germany while generating tensions with the US. (especially because of the withdrawal of troops from Iraq). In addition, Spain voted in favour of the integration of the new 10 countries into the EU and was even one of the main promoters of a Constitution for Europe.

On the other hand, Spain, in the midst of economic growth, demanded labour that led to an increase in immigration from Latin America, the Maghreb and Eastern Europe. This sparked debates on integration, labor rights, and regularization policies. It could be said that 2004 was a year of rupture and geopolitical reconfiguration of Spain.

In 2004, fisheries were facing great pressures from overfishing, reduced fishing effort and quotas, generating tensions in the sector and forcing it to comply with the new requirements of the CFP. There were plans to retire the fleet to scrap ships and there was a process of renewing these by improving issues of traceability, on-board conservation and management systems. On the other hand, aquaculture continued to be a minority activity compared to fishing and the cultivation of mussels, sea bream, sea bass, turbot and rainbow trout was focused. It had problems with authorizations and social acceptance, especially in coastal areas. It had institutional support from the EU Fisheries Fund (FIFG) with aid for investment and modernisation of facilities. In fact, Spain was the largest recipient of EU fisheries funds. In addition, standards for sustainability, labelling of origin, food safety and catch control were introduced and adopted. Spain was already one of the largest consumers and marketers of fishery products in the EU. And as imports increased, domestic sectors were under pressure in terms of prices and competitiveness.

At that time, the problems of generational renewal were already evident and the need to improve vocational training in aquaculture was discussed.

In 2024, the picture is very different. Spain is immersed in much more complex challenges at the international level.

with direct impacts on the primary sector. The war in Ukraine, inflation and the energy crisis have increased interest in food autonomy and the sustainability of national production. In addition, climate change has become a cross-cutting priority, directly affecting marine ecosystems and the planning of fisheries and aquaculture policies. In this context, Spanish fishing has managed to move towards greater sustainability, with improvements in resource management, use of more efficient technologies and greater compliance with regulations, although problems such as generational renewal, increased costs and the reduction of fishing grounds persist. Aquaculture has acquired a strategic weight, perceived as a sustainable and safe alternative to extractive fishing. In 2024, the sector has a better public reputation, institutional support and a strong boost from the European Green Deal and the FEMPA fund, although it continues to face administrative difficulties in opening new farms. Animal welfare, digitalisation, circular economy and species diversification criteria have also been incorporated, demonstrating a more mature sector adapted to current demands.

In the last 20 years, aquaculture in Spain has produced an average of 280,000 tonnes per year with a positive average year-on-year variation of 0.35%. Representing on average 24% of total aquatic products, 76% of which come from extractive fishing.

The most representative species have been mussels, sea bass, sea bream, rainbow trout, turbot, bluefin tuna, Meagre, slug clam, fine clam, eel, flat oyster, sole, Japanese oyster and Japanese clam. Mussel production is by far the largest and on average in the last 20 years it has oscillated at 220,000 tonnes, although production has not been stable, it has had some intermediate years with strong variations. Secondly, during this time the production of sea bream and sea bass has varied and has been exchanged. Sea bream boomed further in the early years to reach a production peak of almost 24,000 tonnes, but has been declining as sea bass production has increased. This is because it is usually the same companies that cultivate both species and the production of sea bass has been more profitable in recent years.

It is also worth noting the importance of rainbow trout production in the late 90s and early 2000s and it is observed that it suffers a notable progressive drop from 33,700 t in 2004 to approximately 15,000 t in 2024. In addition, there has been a change in the production model and it has gone beyond

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to produce practically everything as ration trout to larger specimens destined for the processing industry (e.g. smoked trout) or the HORECA channel.

On the other hand, the cultivation of turbot, bluefin tuna and Meagre have grown in recent years, while the rest of the species have had a more stable production.

If a territorial comparison is made, it was Andalusia and Galicia that led fish production at the beginning of the period, and in 2024 it is the Region of Murcia and the Valencian Community. These Autonomous Communities have been affected by several adverse events in recent years: in 2019 the storm Gloria and

an epidemic of pasteurella in sea bass, and 2020 the Covid-19 pandemic but even so, they have made great efforts to recover production.

Analysing the evolution of aquaculture establishments, according to MAPA data, they range between 5,000-5,300 (mostly for molluscs) in this period. In general, there is a decrease in the number of establishments, although it has varied in different periods. Inland aquaculture is the one that has suffered the greatest decrease in the number of establishments, as can be deduced from the negative evolution of rainbow trout production. In addition, since 2010 there has been a decline in marine aquaculture from nurseries and stability in marine production on land.

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the support of generative artificial intelligence tools (ChatGPT,  
OpenAI's GPT-4 model), supervised and adapted by APROMAR's  
technical team.

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Report by the Spanish Aquaculture Business Association (APROMAR).

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November 2025  
v1

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Editorial director: Garazi Rodríguez Valle  
Design and layout: Virginia Marín Magán



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