



GENERAL FISHERIES COMMISSION FOR  
THE MEDITERRANEAN  
COMMISSION GÉNÉRALE DES PÊCHES  
POUR LA MÉDITERRANÉE



**Committee on Aquaculture (CAQ)**

**Eighth Session**

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**Trend and issues of aquaculture in the Mediterranean and Black Sea**

**INTRODUCTION**

1. This document provides an overview of the aquaculture production for the GFCM member countries<sup>1</sup> in the Mediterranean and Black Sea, and it is structured likewise the previous trend and issues reports presented at the sixth and seventh sessions on the CAQ. The first section of the document provides a statistical analysis of aquaculture production in the GFCM member countries by group of species, environment and structure of culture. Information is based on data collected via the Information System for the Promotion of Aquaculture in the Mediterranean (SIPAM) database in collaboration with the countries national coordinators and following the Recommendation GFCM/35/2011/6 on reporting of aquaculture data and information. A review of all data collected before the Recommendation entered into force had been performed in order to complete and harmonize the SIPAM database through a comparison with data from FAO statistics.

2. The second part of the document outlines priority issues to be addressed towards a more sustainable development of aquaculture in the Mediterranean and Black Sea. These issues were highlighted by the CAQ during its previous session as well as by its subsidiary bodies and are reported in the related documents (see list of documents GFCM/CAQ/VIII/2013/Inf.1).

**MEDITERRANEAN AQUACULTURE TRENDS PRODUCTION OVERVIEW**

3. Aquaculture production data refer to the FAO statistical areas (Fig. 1). In particular marine environment is referred to the statistical area FAO 37 (Mediterranean and Black Sea marine water), FAO 27 (Northeast Atlantic marine water, for France and Spain) and FAO 34 (Atlantic eastern central marine water, for the production of Morocco).

<sup>1</sup> Albania, Algeria, Bulgaria, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Romania, Slovenia, Spain, Syria, Tunisia and Turkey.

As for freshwater and brackish environments the FAO statistical areas concerned are: FAO 01 (African inland water, for the production of Egypt, Libya, Tunisia and Morocco), FAO 04 (Asia inland water, referred to the inland production of Cyprus, Israel, Lebanon, Syria and Turkey), and FAO 05 (Europe inland water, for Spain, France, Italy, Malta, Slovenia, Serbia, Croatia, Montenegro, Albania and Greece).

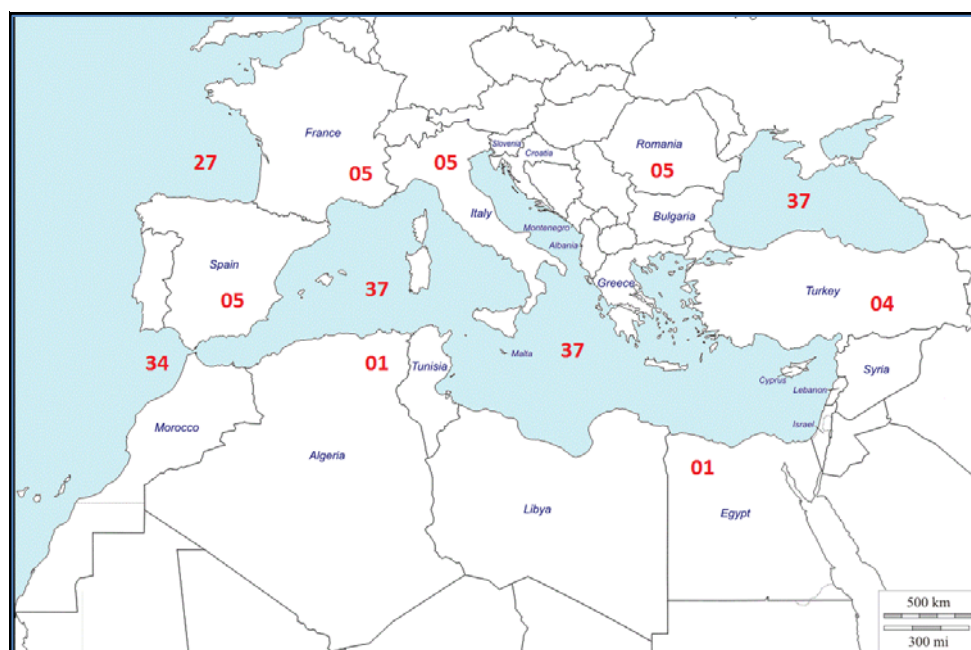


Figure 1: FAO Statistical areas (map ©Daniel Dalet)

### **General production trend**

4. Aquaculture in the GFCM area plays an important role in terms of contribution to economic development, employment for coastal communities and as an important source of food. In the Mediterranean region, while the production from capture fisheries stabilized in the early 1990s and many stocks are considered now fully or overexploited, marine and brackish water aquaculture grew steadily during the last decades, contributing substantially in meeting rising demand for fishery products. About 67 different species comprising fish, molluscs and crustaceans are currently farmed in marine and brackish environments in the Mediterranean and Black Sea, and the production of fish and molluscs dominate.

5. According to SIPAM-FAO statistics for 2010<sup>2</sup>, total marine and brackish water aquaculture production in the GFCM area (excluding aquatic plants, freshwater aquaculture and marine and brackish aquaculture from Atlantic areas), increased from about 540 000 tonnes in 1990 to around 1 400 000 tonnes in 2010. On the other hand, if 2010 production for the same year from freshwater and the Atlantic area is included, in 2010, the total aquaculture volume in the GFCM members countries accounted for about 1 961 700 tonnes (Fig. 2) with an estimated value of about USD 5.5 billion.

6. Positive growth involved mainly the marine and brackish water components which recorded an average annual growth rate of 8.9 percent rising from about 543 700 tonnes in 1990 to 1 555 800 tonnes in 2010 with a total value of about USD 4 billion (Fig. 2). The major contribution came from few finfish species and included the gilthead seabream (*Sparus aurata*), whose production has risen rapidly up from 3 833 tonnes in 1990 to 143 295 tonnes in 2010 (worth approximately USD

<sup>2</sup> SIPAM-FAO statistics as of 03/03/2013. Data are subject to regular updating by the countries through the SIPAM national focal points.

785 million); the European seabass (*Dicentrarchus labrax*) which has also recorded a positive growth from 2 944 tonnes in 1990 to 131 509 tonnes produced in 2010 (valued roughly USD 786 million); and the mullet (notably the flathead grey mullet *Mugil cephalus*) whose production peaked in 2006 at over 250 000 tonnes and then declined to about 120 000 tonnes by 2010 (value USD 323 million). This drastic reduction seems to be linked to more restrictive regulations in place for the collection of wild juveniles in Egypt, which is by far the main producer of mullets with 97.2 percent of the total production. The main producers of gilthead seabream were Greece (42.8 percent), Turkey (20.4 percent) and Spain (13.3 percent), whereas the top three producers of European seabass included Turkey (39.5 percent), Greece (27.5 percent) and Egypt (12.4 percent).

7. It worth mentioning here the meagre (*Argyrosomus regius*), which is an emerging species in Mediterranean and Black Sea aquaculture and whose production started in 1997 in France and Italy. Meagre shows a potential market in aquaculture production thanks to its favourable farming conditions (such as high growth rate and low mortality) and attractive intrinsic values (shape, good processing yield, good nutritional values, low fat content, excellent taste and firm texture). Meagre is currently produced in Egypt (by far the main producer with 81 percent of total production), Spain, France, Malta, Italy, Cyprus and Croatia.

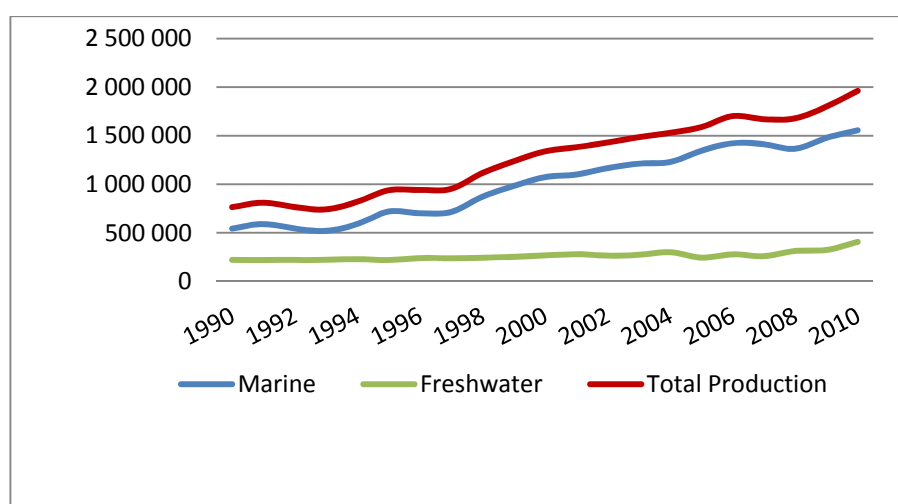


Figure 2: Mediterranean and Black Sea aquaculture production trend (1990-2010, in tonnes)

8. The production of mollusc bivalves is also quite relevant for the GFCM member countries. Mussels dominate by far the production, which accounted for about 414 500 tonnes in 2010 (worth about USD 396 million) and included the Mediterranean mussel (*Mytilus galloprovincialis*) and the blue mussel (*Mytilus edulis*). Carpet shells include the two species Japanese carpet shell (*Ruditapes philippinarum*) and the grooved carpet shell (*Ruditapes decussatus*). The combined production doubled from just over 20 000 tonnes in 1990 to about 40 000 in 2010 with a total value of USD 154.5 million. The third group of molluscs, oysters, comprise the Pacific cupped oyster (*Crassostrea gigas*) and the European flat oyster (*Ostrea edulis*). The production of oysters has progressively decreased in the last two decades and in 2010 was approximately 88 800 tonnes with a total value close to USD 0.5 billion. Almost the entire production of molluscs comes from Spain (41 percent), France (30 percent), Italy (24 percent) and Greece (4 percent).

9. Although a high value commodity, crustacean aquaculture is still very limited for the GFCM member countries and in 2010 about 840 tonnes (for a total value of just over USD 7 million) were produced mainly by Spain (in the Atlantic area) and by Egypt (in the brackish water zones along the coast). The dominant species was the kuruma prawn (*Penaeus japonicus*) which accounted for 91 percent of total crustaceans' production.

10. Freshwater production has levelled off for many years at around 250 000 tonnes, but in 2010 it grew rapidly to 400 000 tonnes (i.e. +26 percent from 2009 data) most likely for the increased production by Egypt (Fig. 2). Salmonidae is one of the most important families of freshwater fish produced in the Mediterranean and Black Sea area. Farmed species include the sea trout (*Salmo trutta*), the Atlantic salmon (*Salmo salar*), the rainbow trout (*Oncorhynchus mykiss*), the Arctic char (*Salvelinus alpinus*) and the brook trout (*Salvelinus fontinalis*). The farming of Salmonids shows a regular positive trend in the last two decades with a production which almost doubled rising from approximately 100 000 tonnes in 1990 to about 183 000 tonnes in 2010 for a total value of about USD 950 million. Turkey led the production with over 85 200 tonnes farmed in 2010, followed by France with roughly 35 450 tonnes and Italy with about 35 200 tonnes.

11. The second group of freshwater finfish reared in the GFCM member countries belongs to the Cyprinidae family that comprises the common carp (*Cyprinus carpio*), the silver carp (*Hypophthalmichthys molitrix*), the bighead carp (*Hypophthalmichthys nobilis*), the grass carp (*Ctenopharyngodon idella*) and the goldfish (*Carassius carassius*). The production of Cyprinids, although not following a regular trend, has more than doubled between 1990 and 2010, going from just over 100 000 tonnes to about 220 000 tonnes for a total value of over USD 450 million. The top three producers of Cyprinids were Egypt (191 721 tonnes), Israel (6 950 tonnes) and France (4 200 tonnes).

## SELECTED PENDING AND EMERGING ISSUES

12. Despite its undoubted success, the aquaculture industry in the GFCM area has faced cycles of alternate positive and negative phases, going from high margins-low volumes to low margins-high volumes, and it is currently looking at the development of new species for production in order to offer a wider range of products to customers; however, to date most of these species are still in the experimental or pilot stage (Barazi-Yeroulanos, 2010). This expansion, however, has been raising several country-specific concerns encompassing economic, environmental and social aspects, which could put at stake the sustainability of the sector.

13. In this regard and bearing in mind specific differences reflecting cultural, social, economic and legislative aspects which are peculiar to each Mediterranean and Black Sea region, a series of issues have been identified and discussed by the CAQ at the sixth session (Tirana, Albania, 17–19 December 2008) and seventh session (Rome, 8–10 March 2011). These challenges were urged to be properly addressed in order to respond effectively to the sustainability of the industry. The following aspects are a cursory summary of the main concerns:

- Need for a better definition and regional harmonization of aquaculture legal frameworks and procedural aspects of convoluted institutional settings;
- Environmental and social concerns which call for a swift inclusion of aquaculture within integrated coastal zones management and maritime policies;
- Space limiting factors, administrative and local conflicts could be reduced through the adoption of allocated zones for aquaculture (AZA);
- Absence of a sector marketing strategy to better pursue price stability, exploitation of emerging niche markets, increase domestic consumption, improve the public image of the sector, and increase industry competitiveness;
- Lack of timely collection of statistics on marine aquaculture to monitor, assess and forecast aquaculture production and production capacity;
- Lack of data on marketing of aquaculture products and consequently on competition with imported farmed products,
- Relevance of the involvement of farmers' associations and producers' organizations in regional sector development and identification of a regional strategy;

- Improvement of regional aquaculture biosecurity with regard to fish diseases and aquatic animal health management, responsible use of drugs and vaccines, and use of risk assessment as management tool with regard to disease prevention;
- Introduction of certification systems and introduction and harmonization of traceability systems;
- Improvement of institutional and scientific cooperation, including knowledge and data sharing in order to harmonize common procedures;
- Need for R&D applied to production technology, new species and diversified production models to increase market opportunities;
- Technical upgrading of staff and strengthening national capacity in the region on the main challenges and priorities for sustainable aquaculture development;
- Fostering the conservation of traditional aquaculture, with specific reference to extensive aquaculture and lagoon management, including traditional knowledge of coastal communities;
- Awareness raising on threats brought about by a changing climate, vulnerability of the aquaculture sector and potential adaptation and mitigation measures to cope with climate change related issues;
- Strengthening of aquaculture governance in the region.

#### **SUGGESTED ACTIONS BY THE CAQ**

14. The Committee is invited to review the information in this report and may wish to comment on the main priority issues identified. The Committee may also wish to advise on additional aspects that could contribute to respond effectively to the sustainability of the aquaculture industry.