The body of the gilthead sea bream is oval, rather deep and compressed. The head is regularly curved and the eyes and mouth are relatively small, with the mouth being very slightly oblique. The gill rakes on the first arch are short, 11-13 in total, with 7 or 8 on the lower part and 5 to 6 on the upper part. The dorsal fin has 11 spines and 13 to 14 soft rays, and the anal fin has 3 spines and 11 or 12 soft rays. Counted along the lateral line, the number of scales is 73-85. The basic body coloration is silvery grey, with a large black blotch at the beginning of the lateral line extending on upper margin of operculum where it is edged below by a reddish area. There is also a golden frontal band between eyes edged by two dark areas. Further, dark longitudinal lines are often present on sides of body, a dark band on dorsal fin, and the fork and tips of caudal fin are edged with black.

The gilthead sea bream is a subtropical Sparidae distributed from 62°N - 15°N, 17°W - 43°E. This species is common in the Mediterranean Sea, present along the Eastern Atlantic coasts from Great Britain to Senegal, and rare in the Black Sea. Due to its euryhaline and eurythermal (lower lethal limit is 2°C) habits, the species is found in both marine and brackish water environments such as coastal lagoons and estuarine areas, in particular during the initial stages of its lifecycle.

Larvae are born in the open sea during October-December and juveniles typically migrate in early spring towards protected coastal waters, where they can find abundant trophic resources and milder temperatures (nursery areas). In the open sea gilthead sea bream are usually found on rocky and seagrass (Posidonia oceanica) meadows, but it is also frequently caught on sandy grounds. Young fish remain in relatively shallow areas (up to 30 m), whereas adults can reach deeper waters, generally not more than 50 m.

The species is a protandrous hermaphrodite: it is a functional male in the first two years and at over 30 cm becomes female. Males enter puberty at 2 years of age (20-30 cm) and in females at 2-3 years (33-40 cm). Females are batch-spawners that can lay 20,000-80,000 eggs every day for a period up to 4 months. In captivity, sex reversal is conditioned by social and hormonal factors.
Aquaculture production (1,3)

The gilthead sea bream has traditionally been cultured in Mediterranean coastal lagoons and brackish/salt water ponds, especially in the northern Adriatic valli in Italy and the Egyptian hosha. These extensive farming systems acted as like natural fish traps, taking advantage of the natural trophic migration of juveniles from the sea. By the late 1970s, the reduced availability of wild fry and the increasing demand from intensive farms enhanced the development of induced spawning techniques, establishing by the end of the 1980s a production scheme based on a reliable and programmed quantity of fry. Extensive farming still remains a traditional activity in some regions, but with a very low impact on the market.

Since artificial breeding was successfully achieved in Italy in 1981-82 and large-scale production of juveniles was definitively achieved in 1988-1989 in Spain, Italy and Greece, the production is mostly from intensive farming with average densities of 20-100 kg m⁻³ and a FCR values ca. 1.5-2.1.

Intensive farming relies on the production of larvae; usually every hatchery has its own broodstock unit, where breeders of various age groups, from 1 year-old males to 5-year old females, are kept under long-term stocking conditions. At the beginning of the spawning season, selected batches of breeders are transferred to the spawning tanks. The broodstock may be conditioned by environmental manipulation in order to extend or modify reproduction time. Fish are stocked in tanks equipped with a water heating/cooling system and computerized control of temperature and light intensity. Sexual maturation is obtained by exposing the broodstock to photoperiod and water temperature conditions that occur during the natural spawning period. Female spawning can be also obtained by GnRHα injection (5-20 mg/kg).

Fertilized eggs are 0.94-0.99 mm in diameter with a single oil droplet and hatch after 48 h at 17-18°C. At hatching, gilthead sea bream larvae measure 3.8 mm and generally deplete their yolk sacs at 2-4 days after hatching when they start preying on rotifers. After 10-11 days, rotifers are integrated with Artemia nauplii until the larvae accomplish metamorphosis (32-35 days post-hatching). Prior to being fed to the larvae, both rotifers and Artemia are routinely enriched with commercial enrichments to improve their nutritional value. In Mediterranean hatcheries, microalgae are used both for rotifer production and to improve the water quality in the larval tanks, the so-called ‘green water’ that is used during the initial rearing phases. Weaning may start at different larval ages depending on the hatchery practices, but dry feeds (50-60% protein) are generally introduced in a co-feeding schema at the end of the first month of larval life.
Once the weaning is completed, the grow-out period starts (ca. 3-5 g), gilthead sea bream intensive growing-out phase may be carried out in land-based installations with rectangular concrete tanks which vary in size (200-3,000 m³) according to fish size and the demands of production or in sea cages. When gilthead sea bream are reared in tanks, high water temperatures (24-26°C) and densities are used (20-45 kg/m³, average standard 30 kg/m³) and massive oxygen injections are needed to ensure fish survival. Ongrowing in sea cages is simple and economical and systems are normally used in the Mediterranean basin. Although densities 30 kg/m³ are lower than in tanks, there advantages that make cages farming profitable. As there is not possible to control temperature in cage rearing, this results in a longer rearing period to market size, or the necessity to stock juveniles. On average, larger fish (10 g) first commercial size (350-400 g) in about year, while smaller ones (5 g) reach the size in about 16 months.

Production statistics (4)
Most production occurs in the Mediterranean basin, with Greece (44%) by far the largest producer in 2008. Turkey (20%), Spain (18%) and Italy are also the major Mediterranean producers. Considerable production occurs in Croatia, Cyprus, Egypt, France, Morocco, Portugal and Tunisia. There is gilthead sea bream production in the Red the Persian Gulf, and the Arabian Sea (Israel, Kuwait and Oman; 3%).

The rapid development of production of gilthead sea bream in sea cages has led to steadily increase production, which in turn has led to declining prices. 

These data have been summarized by Enric Gisbert, IRTA, October 2010

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