

Pagrus pagrus or *Pagellus erythrinus* larvae?

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A preliminary ontogenetic series of common pandora (*Pagellus erythrinus*) larvae is presented showing that larvae of this species possess an occipital crest from 4 to 16 mm total length. Such a trait has been described as a diagnostic character of the larvae of another sparid fish, namely *Pagrus pagrus*, and has been erroneously considered as being absent in all other Sparidae species. This caused confusion and erratic identifications of the two species of larvae in Mediterranean ichthyoplankton investigations.

Common pandora, *Pagellus erythrinus* (Linnaeus, 1758), is a demersal sparid fish, widely distributed in the Mediterranean, the Black Sea and the Atlantic Ocean along the European and African coasts, from Brittany (also recorded from Scandinavia) to the Cape Verde and the Canary Islands (Fisher et al., 1987). It is a high-valued species, which is often one of the main target species of the small-scale, as well as the trawl fisheries (Somarakis & Machias, 2002 and references therein). However, data on its biology, especially during its early life stages are sparse. The ontogeny of *Pagellus erythrinus* is poorly known with the respective publications limited to few specimens at the larval and juvenile stages collected from the natural environment (Lo Bianco, 1937).

In this study, we provide evidence that existing descriptions of the early life stages of the common pandora are erratic, leading to confusion of *Pagellus erythrinus* larvae with those of another sparid fish, namely *Pagrus pagrus* and, consequently, to incorrect species identification in the Mediterranean ichthyoplankton collections. Existing knowledge of the early life stages of the two sparid species were summarized by Ranzi (in Lo Bianco, 1937) who also provided a key for the identification of eggs and larvae of the Sparidae family. This publication (which is nevertheless the only one available) points out that the main diagnostic characters distinguishing *Pagellus erythrinus* from *Pagrus pagrus* larvae are the presence of a strong occipital spine in *Pagrus pagrus* (from 4 mm to 15 mm total length), which is absent in all other Sparidae and the presence of a black dorsal stripe of melanophores in *Pagellus erythrinus* located posterior to the dorsal fin.

Several studies, examining gonad maturity stages of wild specimens, suggest that *Pagellus erythrinus* has a spawning period extending from late spring to late summer. In both the eastern, and the western Mediterranean Sea as well as in the Atlantic, the spawning period of *Pagellus erythrinus* extended from May to August without any important variation among these areas. On the other hand, published studies on the reproductive period of *Pagrus pagrus* in both the North American coasts and the eastern Mediterranean Sea, as well as under culture conditions, indicate that *Pagrus pagrus* spawns in spring (March to early May). The latter does not agree with Ranzi's (in Lo Bianco, 1937) and other authors' descriptions of *Pagrus pagrus* larvae collected in the plankton from May to August.

During the summer of 2001, an investigation into the ontogeny of *Pagellus erythrinus* under intensive culture conditions was initiated. *Pagellus erythrinus* eggs were obtained from captive

bloodstocks and kept under natural photoperiod and temperature conditions. Incubation and culture were carried out at a temperature of 21°C and salinity of 39 psu. The pseudo-green water technique was used for larval rearing. Morphological characters were studied *in vivo* under a binocular microscope using individually anaesthetized specimens. These were

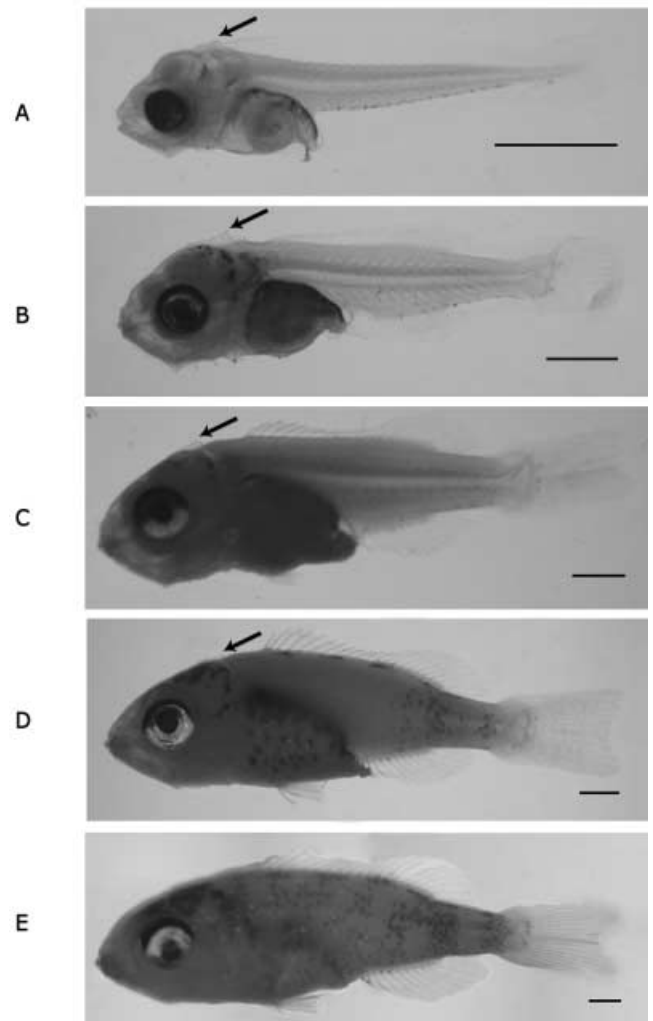


Figure 1. Photographs of *Pagellus erythrinus* larvae: (A) 4.0; (B) 7.0; (C) 10.0; (D) 13.0, and (E) 16.0 mm total length.

subsequently photographed and length measurements were taken on the photos. The examination of developmental series of these larvae (Figure 1) showed the existence of a well-developed occipital spine, appearing at 4.0 mm total length, on the dorsal-posterior region of the head (Figure 1A). That spine was actually of supraoccipital origin (George Koumoundouros, University of Patras, personal communication). In the subsequent stages of development (Figure 1B–D), the spine was prominent up to a length of 16.0 mm total length (Figure 1E). Furthermore, the black dorsal stripe of melanophores posterior to the dorsal fin, which was described by Ranzi as a diagnostic feature of *Pagellus erythrinus* larvae, was not observed.

These observations strongly suggest that existing descriptions of *Pagellus erythrinus* and *Pagrus pagrus* larvae are problematic which might have caused confusion in the Mediterranean ichthyoplankton studies. Indeed, both in the western and eastern Mediterranean, published ichthyoplankton papers (Sabatés, 1990) report the occurrence of *Pagrus pagrus* (but not *Pagellus erythrinus*) larvae during summer (May–September), which is not in agreement with the reported reproductive period of this species (March–May, see references above).

In conclusion, the occipital crest, which has been described as a diagnostic character of *Pagrus pagrus* larvae, is also a prominent trait for *Pagellus erythrinus* larvae. Since all *Pagrus pagrus* larvae described so far were collected in summertime (see Lo Bianco, 1937), it is not very clear whether larvae of this species do actually possess an occipital crest. However, there is the Mediterranean ichthyoplankton study (Karagitsou et al., 1997), which reports the occurrence of *Pagrus pagrus* larvae (presumably larvae with an occipital crest) from March to September. Based on our findings and published data on species reproductive

periods, it seems likely that larvae of both species possess an occipital crest with those collected from February to April belonging to *Pagrus pagrus* and those collected from June to August, belonging to *Pagellus erythrinus*. In May, it is highly probable that larvae of both species occur in the plankton. A comparative study of the ontogeny of the two species is therefore necessary.

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