

Absence of caudal fin in *Solea solea* (Soleidae) collected in the Northern Adriatic

by

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RÉSUMÉ. - Absence de nageoire caudale chez des *Solea solea* (Soleidae) capturées dans l'Adriatique nord.

Le 24 octobre 2003, 25 spécimens (10,1% du nombre total d'individus capturés, N = 247) de soles communes ont été capturés dans le nord de l'Adriatique. Les nageoires caudales de ces spécimens étaient totalement absentes et, apparemment, ne s'étaient jamais développées.

Key words. - Soleidae - *Solea solea* - MED - Northern Adriatic - Absence of caudal fin.

The findings of deformed fish in the Adriatic are not rare, but they are limited to sporadically caught specimens (Jardas and Morović, 1973; Jardas and Homen, 1977) and not connected to any known cause. The higher frequency of spinal deformities was reported only for red mullet, *Mullus barbatus*, but without detailed analysis (Jardas and Morović, 1975), for big-scale sand smelt, *Atherina boyeri* (Tutman et al., 2000), and grass goby, *Zosterisessor ophiocephalus* (Dulčić, 2004), with discussions on the possible reasons for such deformities. The aim of this paper is to present absence of caudal fin in common sole *Solea solea* (L., 1758), caught in the Northern Adriatic.

On 24th October 2003 a sample of 25 specimens (10.1% of the total number of caught specimens N = 247) of common sole were caught in the Northern Adriatic (1.5 Nm west of Umag, western coast of Istria, Croatian waters) (Fig. 1). The length of individuals ranged from 19.8 cm to 32.5 cm (mean value = 26.7 ± 0.78 cm), while weight from 186 g to 352 g (mean value = 245 ± 59.2 g). Specimens were caught during common sole fishing season, by trammel net (mesh size of inner panel: 80 mm) at a depth of 25 m, with a sea surface temperature of 15.5°C. The caudal fins of those specimens were entirely absent and apparently had not developed (Fig. 2A). Although body coloration, meristic and morphometric characters were consistent with previous descriptions of this species (Jardas, 1996), analysis with X-rays revealed that entire caudal complex was lacking (Fig. 2B). Specimens are preserved and stored in the ichthyological collection of the Institute of Oceanography and Fisheries, Split, Croatia.

So far, such phenomenon for common sole and family Soleidae was not observed, but similar case was reported for a specimen of white seabream, *Diplodus sargus sargus*, from the Adriatic (Šoljan, 1931). The origins for the absence of caudal fin in both cases could not be the same, since Šoljan (1931) explained this absence by the attack of European lobster, *Homarus gammarus*, on white seabream during its juvenile stage. Similar cases concerning fin absence, partial abnormal absence and incomplete formation in general were recorded for the pelvic, ventral and dorsal fin in various fishes (Marr, 1945; Nelson, 1971; Alvarez-Leon, 1980; Valente, 1988). Most of the aetiologies of the wild fish anomalies remained speculative or unknown. A wide range of physical, chemical and biologi-

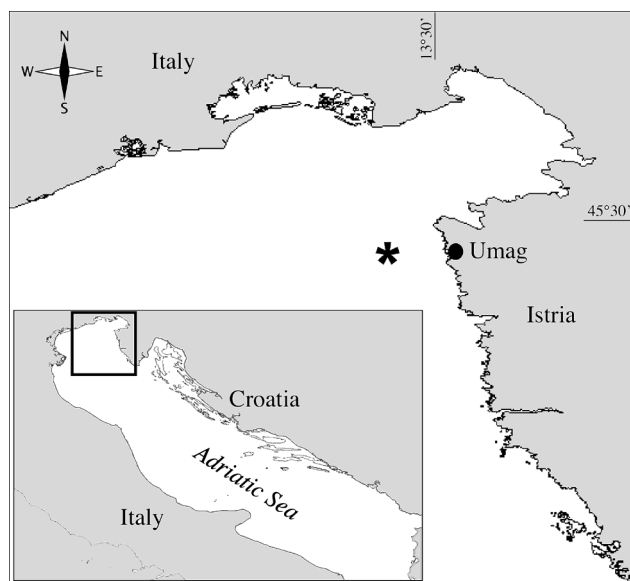


Figure 1. - Locations where the specimens of common sole *Solea solea* were caught (western coast of Istria, Croatian waters). [Localisation de la région où les spécimens de *Solea solea* ont été capturés (côte ouest d'Istrie, Croatie).]

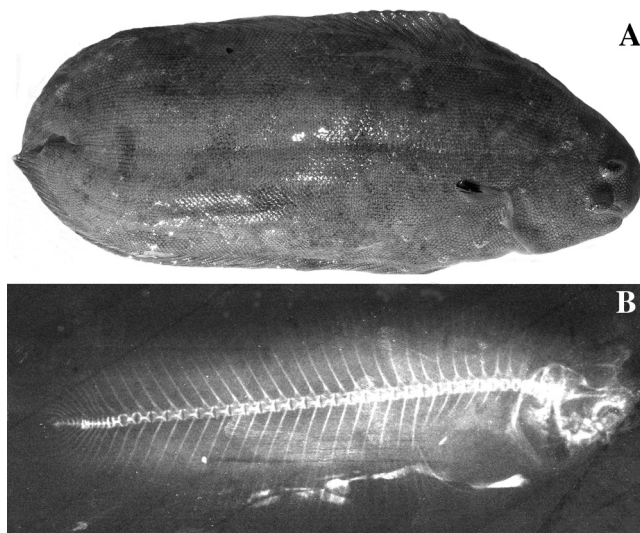


Figure 2. - A: Specimen of *Solea solea* (22.2 cm) lacking caudal fin; B: X-ray radiograph of a specimen. [A : Spécimen de *Solea solea* (22,2 cm) sans nageoire caudale ; B : Radiographie d'un spécimen.]

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cal factors may cause deformities of various fish species in natural and reared conditions (Tutman *et al.*, 2000). Some authors suggest that such anomalies might originate through unfavourable environmental conditions during embryonic development (Welch *et al.*, 1963), so that they might be used as environmental quality indicators (Mahon *et al.*, 1979; Endo and Iwatsuki, 1998; Tutman *et al.*, 2000; Dulčić, 2004). In the present case, without additional data we are not able to support such a hypothesis. If the level of deformities is high and constant and exists in different age classes, it could be a sign of significant ecosystem changes or genetic changes of a population. This could influence the fishery if deformities exist in populations of commercially important species (Tutman *et al.*, 2000). In that case, the status of deformed common sole needs to be evaluated on a continuous basis in the Northern Adriatic.

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