

The juvenile stage of the species
Centrolophus niger (Gmelin) found in the
plankton of the middle Adriatic

Nalaz juvenilnog stadija vrste Centrolophus niger
(Gmelin) u planktonu srednjeg Jadrana

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Juvenile pelagic stages of the species *Centrolophus niger* (Gmelin) have either rarely been found in the Mediterranean or are completely unknown.

Lo Bianco S. (1909, p. 704) records the occurrence of pelagic stages of this species in the Bay of Naples in October and November. The length of the specimens caught on that occasion ranged between 10 and 20 mm. Specimens measuring up to 4 cm and more were found from November through March, though rather rarely. No description of the caught specimens is given by Lo Bianco. He remarks that their reproduction takes place in the autumn and that the species is distinguished by a rapid growth. A 20 mm long specimen observed in the aquarium reached the length of 17 cm from December through May.

Sanzo L. (1932) found eggs of this species in the Bay of Naples in November and December and succeeded in obtaining, from those eggs, all the stages up to the juvenile one. The largest specimen, caught in December, measured 21,20 mm (17 mm ex cauda).

Graeffe (1888, p. 21) reports that young specimens of this species occur, not quite rarely, in the northern Adriatic (Bay of Trieste) in May and June under the *Rhizostoma* umbrella. No such observations, however, have later been made by other authors. According to Graeffe, the occurrence of the adult stage is a rare one in the northern Adriatic.

The specimen of the juvenile stage of the *Centrolophus niger* (Gmelin), found by us west of the Island of Vis, in the area of the »Stončica« obser-

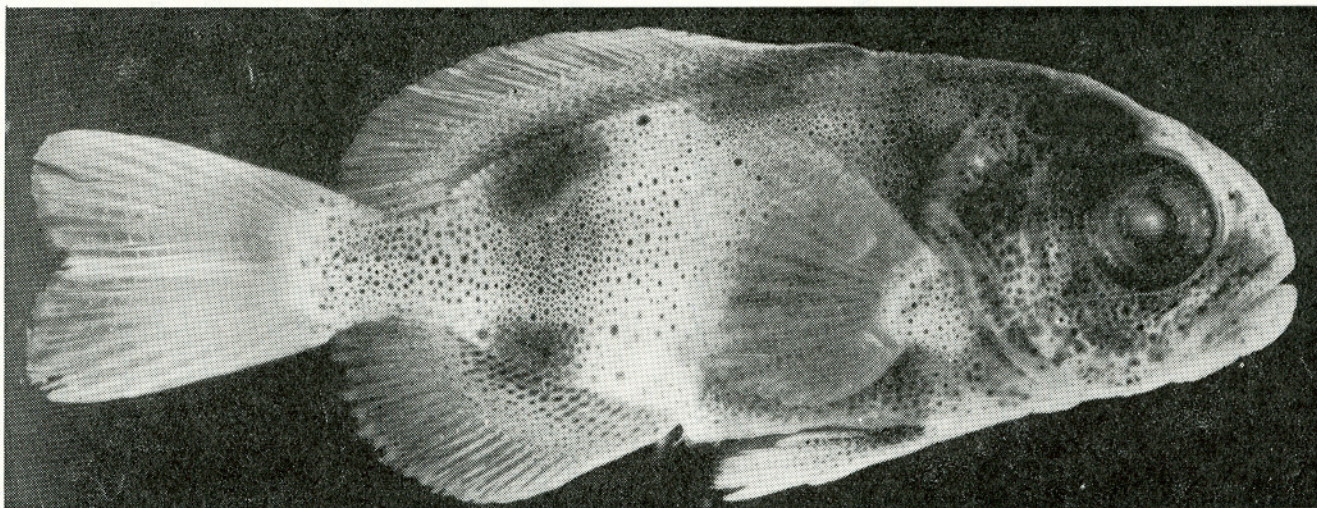


Fig. 1. *Centrolophus niger* (Gmelin) juvenile stage (length 27,99 mm), caught at the »Stončica« Station, off Vis Island, on November 8th, 1971 (original)

vation station (43°00' N, 16°20'E) was the first juvenile stage of this species found in the Middle Adriatic (Fig. 1). Measuring 27.99 mm in length, it was caught on November 8th, 1971 by a vertical haul of the Heligoland type of plankton net (Künne, 1933), hauled from a depth of 75 m to the surface of the sea.

It is interesting to mention that no specimen of the juvenile development stage of the species *Centrolophus niger* (Gmelin) was found among the abundant ichthyologic plankton obtained by obliquely horizontal hauls from a depth of about 50 m to the surface of the sea (the net being 6 m long and having a diameter of 2 m) in the course of a M. V. HVAR cruises lasting for 13 months (1948—1949) and covering the whole of the open part of the Adriatic (307 catches at 164 stations located in the area extending from Rovinj in Istria to Himare in Albania, and lying between the eastern and western shores of the Adriatic).

Only one specimen of the juvenile stage of this species, i.e. the one we are referring to in the following lines was present among the ichthyologic plankton (859 catches) in the catches obtained by the vertical hauls of the Heligoland type of plankton net, which hauls took place monthly through a long series of years at two stations located in the Middle Adriatic area («Pelegrin», 43°12'N, 16°19'E, off Hvar Island, and »Stončiča«, 43°00'N, 16°20'E, off Vis Island) (Fig. 2).

Our specimen preserved in neutralized formalin (2%), has the following measurements:

Total length	27,993 mm
Standard length (ex cauda)	21,973 mm
Preorbital length	2,186 mm
Eye diameter, horizontal	2,881 mm
Postorbital length	3,225 mm
Head length	8,557 mm
Length of pectoral fin	5,590 mm
Anal fin base	5,160 mm
Dorsal fin base	8,600 mm
Caudal fin (from the end of caudal peduncle to the end of caudal fin)	6,020 mm
Depth of body (at the beginning of the dorsal fin base)	8,180 mm

Owing to the greater depth of its body, the juvenile specimen is rather squat, with the following properties:

The standard length is 2,68 times as large as the depth of body (at the beginning of the dorsal fin base), and 2,56 time as large as the head length.

Numerical values of rays in the various fins of our specimen are the following:

The caudal fin rays are somewhat shorter in the middle, comprising altogether 15 bifurcating and 2 simple ones; additional few rays are on the sides.

The dorsal fin comprises 7 shorter and 33 longer rays, totalling 40 rays.

The anal fin extending from the vicinity of anus to end of the caudal peduncle — where it and the dorsal fin end at the same level — comprises 3 shorter rays followed by 20 longer ones, totalling 23 rays.

The pectoral fins are rounded, covering a larger part of the body's depth. Each of the fins has 18 rays.

The ventral fins extend as far as the anus. The number of rays could not be exactly counted.

The pigmentation of the preserved specimen is the following: four transverse wide black belts are conspicuous. The first belt is in the fore part of the body, just behind the gill cover; the second begins before the anus, extending headwards; the third is located between the caudal peduncle and anus, while the fourth, of a lesser intensity, comprises the caudal peduncle (Fig. 1).

The geographical distribution of the adult stage of the species *Centrolophus niger* (Gmelin) includes the eastern Atlantic (Norway, the Spanish and Portuguese coastal waters, the Bay of Biscay, the islands of Madeira and the Azores). Its presence has also been established in the coastal waters of Scotland, and — rather rarely — in the eastern North American coastal waters (New Foundland). The species has also been recorded in the waters of Australia, New Zealand, South Africa and the eastern part of the Pacific Ocean.

The species rarely occurs in the Mediterranean; when it does, it is in the western part of that sea (Goode and Bean, 1895, pp. 213—214; Dieuzeide, 1954—1955, pp. 222—223; Bini, 1968, pp. 75—77 Clofnam, 1973, pp. 559—560).

A small number of adult specimens were found (Carus, 1889—1893) in the Adriatic, near Venice (Ninni, Canestrini, Giglioli), near Trieste (Perugia, Graeffe), in the waters of Dalmatia (Faber) and near Split (Kolombatović).

Kolombatović (1893, p. 21) describes some morphological properties of another adult specimen of the species *Centrolophus niger* (Gmelin) in his possession in view of the fact that, in Giglioli's opinion, the species was questionable. The species, recorded by Kolombatović by its vernacular name »blakousna pastirica«, has been termed »pastir šiljoglavac« (»pastir vitkan«) by Šoljan, 1963, p. 347).

The adult stage of the species *Centrolophus niger* (Gmelin) has been added to the list of fishes compiled by Langhoffer A. (1904, p. 195) for the Zoological Museum of Zagreb. One of the specimens had been caught near Rijeka on June 21st, 1891, and was presented by Katuriċ M. and another had been caught in the waters off the Island of Vis on January 2nd, 1899, and was presented to the Museum by Kolombatović Gj.

Centrolophus niger (Gmelin) is a pelagic, solitary fish like *Naucrates ductor* (L.) While preferring considerable depths, the species appears also near the sea surface. Its occurrence in the Adriatic is rather a rare one. According to Binni (1968, p. 76), the species is caught by means of floating long-lines and purse seines, but mostly by means of trawl nets, hauled at a depth between 60 and 350 metres. However, in the course of the 1948—1949 cruise, made by M. S. HVAR (which lasted for 13 months) when 304 hauls by trawl took place at 163 stations in depths ranging from 50 m to less than 250 m, and a few times also in depths between 318 m and 475 m, no adult specimen of the species *Centrolophus niger* (Gmelin) occurred in the catches. The absence of the species was also recorded in numerous later trawl catches, particularly in the open area of the Mid-Adriatic. This fact confirms the rarity of the species in the Adriatic.

An adult female specimen of this species was found by M. Morović on the fish market at Split. The specimen belonged to a trawl catch resulting from a haul in the depth of 180 metres which took place in the Blitve-

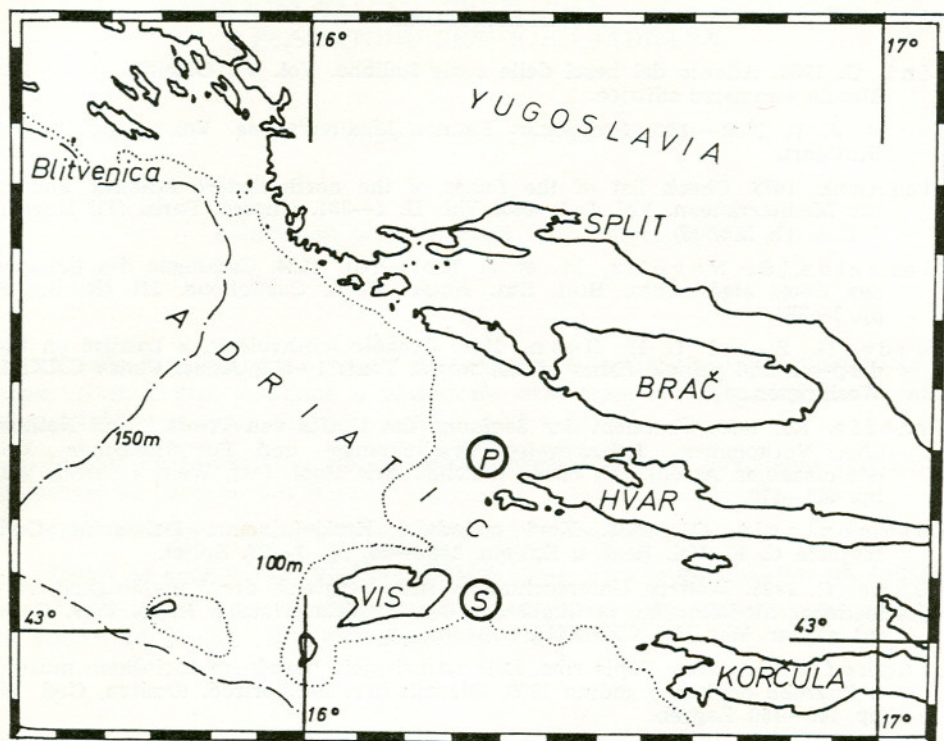


Fig. 2. Chart showing the location of the observation stations »Stončica« (S) and »Pelegrin« (P).

nica area (open Mid-Adriatic) on March 24th 1958. The specimen's total length amounted to 51 cm, and its weight was 1100 gr. The specimen was in the second stage of sexual maturity, and decomposed parts of fishes were contained in its stomach.

Probst, K. (1963, p. 172) referring to this species, says as follows: »Vom Aquarium Dubrovnik (Dalmatien) wurde ein Exemplar auf mysteriöse Weise in einem Holzkäfig treibend, gefunden. Dieses hielt sich gut und frass Fischfleisch aus der Hand. Später wurde es lebend nach Wien ins »Haus des Meeres« gebracht«. No other data concerning this specimen have been given.

As resulting from all the quotations contained in this paper and from our data obtained through a number of catches taken both by means of plankton nets and trawls, the species *Centrolophus niger* (Gmelin) rarely occurs in the Adriatic. This is why the find of the juvenile stage of this species in the Mid - Adriatic area adds to the knowledge of distribution of juvenile stage of the species *Centrolophus niger* (Gmelin) in the Adriatic Sea.

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NALAZ JUVENILNOG STADIJA VRSTE *Centrolophus niger* (Gmelin)
U PLANKTONU SREDNJEG JADRANA

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U radu se izvještava o prvom nalazu juvenilnog stadija vrste *Centrolophus niger* (Gmelin), nađenog u planktonu otvorenog srednjeg Jadrana 8. studenog 1971. kod otoka Visa.

Primjerak je ulovljen planktonskom mrežom koja je povlačena vertikalno iz dubine od 75 m do površine.

Daju se mjerne karakteristike kao i opis primjeraka.

Iznosi se geografsko rasprostranjenje vrste s osobitim ozbirom na Jadran.

Priopćuje se nalaz adultne ženke ove vrste na splitskoj ribarnici, ulovljene vučom 24. ožujka 1958. kod Blitvenice.