

A description of the postlarva of *Cygnodraco mawsoni* Waite, 1916 (Pisces, Bathydraconidae), from the Southern Ocean

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Eight postlarvae of *Cygnodraco mawsoni* Waite, 1916, were collected off the Australian Antarctic Mawson Station in the South Indian Ocean, during the South African SIBEX II expedition. These postlarvae are distinctive by having a long and slender body, projecting lower jaw and bicoloured caudal fin. Their morphology and pigmentation are unlike any known bathydraconid early life history stages.

Gedurende die Suid-Afrikaanse SIBEX II-ekspedisie is agt post-larwes van *Cygnodraco mawsoni* Waite, 1916, naby die Australiese Antarktiese Mawson-stasie in die Suid-Indiese Oseaan versamel. Hierdie post-larwe is uitkenbaar deur 'n lang slanke liggaam, 'n onderkaak wat uitsteek en 'n tweekleurige stertvin. Die morfologie en kleurpatroon is heel anders as die ander reeds bekende vroeë ontwikkelingsstadia van die Bathydraconidae.

The early life history stages of the families Bathydraconidae and Harpagiferidae are the least known among the five notothenioid families found in the Southern Ocean. Of the sixteen recognized bathydraconid species, the postlarvae of only three species, namely *Parachaenichthys georgianus*, *Psilodraco breviceps* and *Gymnodraco acuticeps*, are currently known (Efremenko 1983).

Eight specimens of a previously unknown postlarval stage were found in the catch of krill trawls made off the Australian Antarctic Mawson Station, in the South Indian Ocean, during the South African SIBEX II expedition. The unusually long and slender specimens were identified as postlarvae of the rare bathydraconid species *Cygnodraco mawsoni* Waite, 1916. *C. mawsoni* was originally described from a 411,0 mm SL adult specimen caught off Drygalski Island (65°43'S / 92°10'E) by the Australian Antarctic Expedition 1911–1914. Two more specimens were caught years later by the Belgian Antarctic Expedition in the Atlantic sector of the Southern Ocean (Gosse 1968).

Methods

Measurements of the preserved specimens were taken to the nearest 0,05 mm. Greatest body depth (= head depth) was measured at the level of pelvic fin insertion. In addition to the standard measurements recommended by Hureau (1982), the following measurements were recorded: fleshy interorbital width; length of upper jaw, from tip of jaw to rear end of maxilla; length of lower jaw, from tip of jaw to rear end of angular bone; pectoral fin length, from upper pectoral base to tip of longest fin ray; pelvic fin length, from pelvic insertion to tip of longest fin ray; least depth of caudal peduncle; caudal peduncle length, between last anal fin ray and a vertical at caudal fin base; prepelvic distance, from tip of snout to pelvic insertion; prepectoral distance, from tip of snout to upper pectoral base.

In order to facilitate counts, some specimens were immersed overnight in a dilute solution of alizarin red for light staining of fin elements. Vertebral counts were obtained from radiographs made on photographic paper. The specimens used in this study are deposited in the JLB Smith Institute of Ichthyology, Grahamstown, South Africa (RUSI).

Cygnodraco mawsoni Waite, 1916 (postlarva)

Figure 1

Material examined: RUSI 26195, six specimens 90,4–102,5 mm SL, South Indian Ocean, off Mawson Station, 66°22,69'S / 61°58,6'E, 15/40 Polish krill trawl, 0–55 m, R.V. 'Africana', SIBEX II, Station 03–03, 7 March 1985; RUSI 26196, one specimen, 90,7 mm SL, South Indian Ocean, off Mawson Station, 66°20,38'S / 62°03,96'E, 15/40 Polish krill trawl, 0–500 m, R.V. 'Africana', SIBEX II, Station 03–04, 7 March 1985; RUSI 26197, one specimen, 105,0 mm SL, South Indian Ocean, off Mawson Station, 66°28,41'S / 62°42,8'E, 15/40 Polish krill trawl, 0–33 m, R.V. 'Africana', Station I-001, 8 March 1985.

Description of postlarva: Data in parenthesis refer to the range of counts given by Waite (1916) for the holotype of *C. mawsoni* and the two specimens reported by Gosse (1968). SL = standard length.

Dorsal fin rays 60–64 (61–64); anal fin rays 36–39 (36–37); pectoral fin rays 22–24 (23–26); vertebrae 76–79 (78–79). Body long and slender, more or less uniformly deep between head and tail, the greatest depth 17,0–21,1 in SL; head large, 4,0–4,5 in SL; snout long and flat, 1,8–2,0 in head length; eye moderate, recessed in bony orbit (Figure 2), its diameter 7,4–8,6 in head length (HL); interorbital space narrow, its fleshy

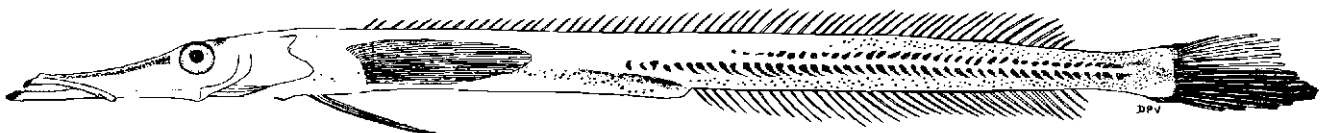


Figure 1 *Cygnodraco mawsoni*, postlarva, RUSI 26195, 90,4 mm SL.

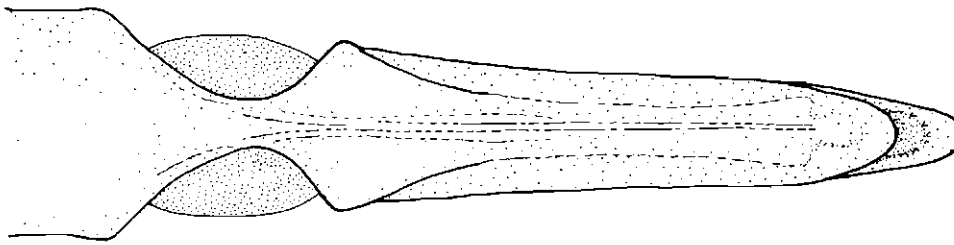


Figure 2 Dorsal view of the head of the postlarva of *C. mawsoni* (RUSI 26195).

width 19,6–25,4 in HL. Mouth large, lower jaw projecting in front of upper jaw, its length 1,6–1,7 in HL; upper jaw much shorter, 3,1–3,5 in HL, its tip resting behind symphyseal teeth of lower jaw; a fleshy chin nub present at the tip of lower jaw; both jaws with two rows of small, conical teeth, outer row larger.

Pelvic fins inserted in front of pectoral base, prepelvic distance 3,8–4,3 and pelvic fin length 8,6–9,9 in SL; pectoral fin large, its base covering most of body depth, prepectoral distance 3,4–3,8 and pectoral fin length 6,7–7,5 in SL; dorsal fin origin slightly behind pectoral fin base, predorsal distance 3,2–3,7 in SL; anal fin origin immediately behind anus, more or less under middle of dorsal fin, preanal distance 1,7–1,8 in SL; last anal ray closer than last dorsal fin ray to caudal fin base; caudal peduncle short and relatively slender, its length 13,9–16,8 in SL and the depth 2,2–3,1 in its length; lower lobe of caudal fin noticeably longer than upper lobe. The gut is long and straight, about a third of SL, and without a swollen section. The terminal vertebral element is upturned.

Colour: In life, body pink with orange tint, head pale and eye silvery white with a black pupil; a line of small, epidermal melanophores stretches from anterior margin of eye to tip of upper jaw; chin nub dark; a few melanophores present on roof of mouth, immediately in front and behind vomer; scattered pigment cells present on ventral surface of head between mandibles; a triangular cluster of occipital melanophores; small melanophores on dorsal surface of at least posterior half of the gut; the larger, laterally dispersed pigment cells may be peritoneal melanophores. Epidermal pigmentation on the body begins with ventrolateral pigment cells grouped in diagonal lines of 2–4 along the hypomeres, from anal origin to caudal fin base; a similar arrangement of dorsolateral melanophores runs from level of front third of anal fin to caudal base; additional, smaller and denser melanophores present on the posterior half of caudal peduncle, which is rather dark compared to body section in front of it. Internal pigmentation of the myomeres begins above posterior quarter of gut, with a hypaxial series of diagonal, short and faint dark bars and runs backwards with its colour intensifying posteriorly. A similar, epaxial series starts above 4th or 5th anal fin ray, its bars smaller, more like large oval spots. Caudal fin bicoloured, its upper half pale and its lower half black. Other fins pale.

Remarks: At about 100 mm standard length, the post-

larva of *C. mawsoni* bears little resemblance to the adult (Waite 1916, pl. 3, fig. 1). Body proportions are markedly different, especially the depth of the body and the length of the head, both of which are much larger in the adult. The lower jaw in the adult projects only slightly and its symphyseal teeth are not exposed. The caudal fin of the adult is truncate, has no exceptionally long rays and is unicoloured. Furthermore, the lateral lines and the operular spine present in the adult have not developed at this stage in the postlarva.

The three known bathydraconid postlarvae (Efremenko 1983) are quite different from the postlarva of *C. mawsoni* described above. Although not closely related, the postlarva of *Parachaenichthys georgianus* carries a superficial morphological resemblance to the former. However, *C. mawsoni* is distinctive with its much longer body, the projecting lower jaw, the posterior myomere pigmentation and the bicoloured caudal fin (Figure 1). In addition, the high number of dorsal fin rays and vertebrae will distinguish *C. mawsoni* from any other bathydraconid postlarvae.

The postlarvae of *C. mawsoni* were caught in the upper 60 m of the epipelagic zone. The trawling was carried out between 17h30 and 21h45, over the Antarctic continental slope. The bottom depth range was 1730–2450 m. The surface temperature ranged from –1,3 to –1,5°C.

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References

- EFREMENKO, V.N. 1983. Atlas of fish larvae of the Southern Ocean. *Cybium* 7(2): 3–74.
- GOSSE, J-P. 1968. Expéditions Antarctiques Belges. Poisson recoltés par l'expédition d'été 1967. *Bull. Inst. r. Sci. nat. Belg.* 44(39): 1–11.
- HUREAU, J-C. (Editor). 1982. Methods for studying early life history stages of Antarctic fishes. *Cybium* 6(1): 3–11.
- WAITE, E.R. 1916. Fishes. Australian Antarctic Expedition. Scientific Reports, Series C. — Zoology and Botany 3(1): 1–92.