Records of the Australian Museum (2007) Vol. 59: 1–8. ISSN 0067-1975

Larval Development in the Lutjanid Subfamily Lutjaninae (Pisces): the Genus *Macolor*

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ABSTRACT. Larval development of the Indo-west Pacific lutjanine lutjanid *Macolor niger* is described based on pelagic larvae (4.8–10 mm) from western Pacific plankton hauls, settlement-stage larvae (17–19 mm) from Great Barrier Reef light-trap catches and Solomon Island reef-crest net catches, and settled juveniles (26–32 mm) from the western Pacific. The larvae possess all the characteristics of lutjanids (24 myomeres; elongate dorsal spine 2 and pelvic spine; pelvic ray 1 longer than spine; postcleithral spine; extensive, large, smooth head spines; and fin-ray counts of DX,14–15, AIII,10–11, P_1 17–18), and corroborate the inclusion of *Macolor* in the Lutjanidae. The larvae have long, weakly serrate, robust fin spines, with the serrations largely disappearing by settlement at 17–19 mm. Unique meristic values (in particular fin-ray and gill-raker counts) and distinctive colour pattern at settlement confirm the identification. Settled juvenile *M. macularis* (17–20 mm) from the western Pacific are similar to *M. niger*, but are slightly deeper bodied, with much longer elements in the pelvic fin and spiny dorsal fin. Distinctive meristics and pigment patterns separate the two species.

LEIS, JEFFREY M., 2007. Larval development in the lutjanid subfamily Lutjaninae (Pisces): the genus *Macolor*. *Records of the Australian Museum* 59(1): 1–8.

The perciform fish family Lutjanidae, or tropical snappers, consists of about 125 species of medium to large fishes of great ecological and commercial importance arrayed in five subfamilies (Johnson, 1993; Nelson, 1994). The largest lutjanid subfamily, Lutjaninae, (sensu Johnson, 1980) contains six genera: *Hoplopagrus* (east Pacific, monotypic), *Lutjanus* (worldwide, c. 70 species), *Macolor* (Indo-west-Pacific, two species), *Ocyurus* (west Atlantic, monotypic), *Pinjalo* (Indo-west-Pacific, two species) and *Rhomboplites* (west Atlantic, monotypic). Descriptions of larvae of at least some species in most lutjanine genera have been published or are in preparation. Larvae of several *Lutjanus* species have been described (see summaries in Kojima, 1988; Watson & Brogan, 1996; Leis & Rennis, 2004; Lindeman *et al*., 2005), and descriptions of seven more Indo-Pacific *Lutjanus* species are in preparation (JM Leis, unpublished). Larvae of the monotypic genera *Hoplopagrus, Ocyurus* and *Rhomboplites* have been described (summarized in Watson & Brogan, 1996; Lindeman *et al*., 2005), and a description of the larvae of both *Pinjalo* species is in preparation (JM Leis, unpublished). Larvae of *Macolor*, in contrast, have not been described.

The two species of *Macolor* Bleeker—*M. niger* (Forsskål) and *M. macularis* Fowler—are closely associated with coral reefs and are widely distributed in the western Pacific and Indian Oceans (Kishimoto *et al*., 1987). Once confusion over its marked ontogenetic changes was resolved, *M. niger* was long considered the sole *Macolor* species, and although originally placed in the sciaenid genus *Sciaena* by Forsskål, and occasionally considered a serranid (Günther, 1873) it has been placed in the Lutjanidae by consensus since at least the end of the nineteenth century. Several workers placed