

## A Description of the Early Juvenile Colour Patterns of Eleven *Lethrinus* Species (Pisces: Lethrinidae) from the Great Barrier Reef, Australia

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**ABSTRACT.** The early post-settlement diurnal colour patterns of 11 of the 17 *Lethrinus* species presently known from the Great Barrier Reef are described: *Lethrinus atkinsoni* Seale; *Lethrinus erythracanthus* Valenciennes; *Lethrinus genivittatus* Valenciennes; *Lethrinus harak* Forsskål; *Lethrinus lentjan* Lacépède; *Lethrinus nebulosus* (Forsskål); *Lethrinus obsoletus* (Forsskål); *Lethrinus olivaceus* Valenciennes; *Lethrinus ornatus* Valenciennes; *Lethrinus variegatus* Valenciennes and *Lethrinus xanthochilus* Klunzinger. Where possible, descriptions cover the ontogenetic development of colour patterns from settlement through to attainment of the adult colouration. In addition, notes are provided on the pigmentation patterns of the late pre-settlement stage of *L. atkinsoni*, *L. genivittatus* and *L. variegatus*. Descriptions are based on field and aquarium observations and freshly collected specimens, with details of colour patterns retained by preserved material also included. The study is aimed as a guide to the identification of *Lethrinus* early juveniles, based primarily on colour patterns, with notes given on ecology and field identification. Morphological information is provided to facilitate the identification of early juveniles. Two new characters, cheek scales and maxillary serrations, are used to distinguish among recently-settled *Lethrinus* species. Juvenile lethrinids possess a complex range of colour patterns during their early juvenile period. Three general patterns are displayed by most species, based on stripes and irregular bands. These patterns and their rapid interchanges are described, and interpreted in relation to behavioural observations. Possible functions of the shared colour patterns are discussed in relation to the ecology of *Lethrinus* juveniles.

WILSON, G.G., 1998. A description of the early juvenile colour patterns of eleven *Lethrinus* species (Pisces: Lethrinidae) from the Great Barrier Reef, Australia. Records of the Australian Museum 50(1): 55–83.

The emperors (family Lethrinidae, *Lethrinus* species) are conspicuous percoid fishes found predominantly within coral reef habitats of the subtropical and tropical Indo-Pacific (Johnson, 1980; Springer, 1982; Carpenter & Allen, 1989). They often form an important component of reef-

based fisheries throughout their range (Craig, 1981; Dalzell, 1988; Carpenter & Allen, 1989; Dalzell *et al.*, 1992; Jennings & Polunin, 1995), and are of considerable management interest. Fishes on coral reefs represent an increasingly exploited fisheries resource (Russ, 1991;