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**A revision of the Australian handfishes  
(Lophiiformes: Brachionichthyidae), with descriptions of  
three new genera and nine new species**

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## Abstract

The family Brachionichthyidae is represented by at least 14 small, Australian endemic, lophiiform fishes distributed from central eastern Australia to the Great Australian Bight. All but three of these species occur in the seas off Tasmania. The group is comprised of two recognised genera, *Brachionichthys* Bleeker and *Sympterichthys* Gill, and three new genera, *Brachiopsilus* **gen. nov.**, *Pezichthys* **gen. nov.** and *Thymichthys* **gen. nov.** Nine of the 14 species are undescribed. The type genus, *Brachionichthys*, consists of *B. hirsutus* (Lacepède) and *B. australis* Last, Gledhill & Holmes. These species, which are covered with long, unicuspid spinules and a strong colour pattern of dark spots and streaks, typically have 7 pectoral-fin rays. The genus *Sympterichthys* includes one of Australia's earliest described fishes, *S. unipennis* (Cuvier), and a new taxon *S. moultoni* **sp. nov.** Members of the genus lack warts and dermal appendages on the skin but are covered in small embedded scales with adpressed, unicuspid and bicuspid spinules originating from the posterior margin of their bases. *Brachiopsilus* contains three new species: *B. dianthus* **sp. nov.**, *B. dossenus* **sp. nov.** and *B. ziebelli* **sp. nov.** These handfishes, which are amongst the largest members of the family (reaching 117 mm SL), are smooth skinned (without spinules, dermal appendages or fleshy warts), are vividly coloured in life (without extensive blackish markings), and have 9–10 pectoral-fin rays. A fourth genus, *Pezichthys*, is not fully resolved and may be polyphyletic. It provisionally consists of five undescribed species: *P. amplispinus* **sp. nov.**, *P. compressus* **sp. nov.**, *P. eltanini* **sp. nov.**, *P. macropinnis* **sp. nov.** and *P. nigrocilium* **sp. nov.** These species are variably covered in erect, bicuspid spinules, and all have 7 pectoral-fin rays. *Thymichthys* contains two old species-level taxa, *T. politus* (Richardson) and *T. verrucosus* (McCulloch & Waite), both previously placed in *Sympterichthys*. Members of the genus *Thymichthys* have an ornate skin variably covered with wart-like protuberances, dermal appendages and a sparse coverage of scales with their spinules not or barely penetrating the skin surface. Regional morphs exist for *Thymichthys verrucosus* which may represent an unresolved species complex. New study material and a molecular study of these populations across their ranges are needed to determine their relationships. Other characters useful in defining the brachionichthyid genera, and distinguishing species, include illicial morphology, coloration, characteristics of the skin, including the form and degree of coverage and exposure of spiny scales, and selected morphometrics and meristics. Historical and current ecological data confirms that these fishes have specialised habitat requirements, patchy distributions and poor dispersal capabilities, making them amongst the most vulnerable of marine fishes. The fossil record suggests that the group was once much more widespread and their restricted extant distribution in Australia may be linked to regional extinction due to their life history strategy.

**Key words:** Lophiiformes, Antennarioidei, Brachionichthyidae, handfishes, *Brachionichthys*, *Brachiopsilus*, *Pezichthys*, *Sympterichthys*, *Thymichthys*, new genera, new species, Australia