

Systematics of the clingfish subfamily Diademichthyinae (Gobiesocidae)

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Digest

The Indo-Pacific clingfish subfamily Diademichthyinae Whitley, 1950 (family Gobiesocidae) was redefined in this study by the following five characters: (1) upper-jaw teeth variously shaped but consistently with hook-like tips; (2) lacrimal canal pores 0 or 2 (usually 2); (3) two rows of gill filaments on gill arches 1–3 (3 gills sensu Briggs); (4) middle portion of adhesive disc (or posterior portion of anterior disc when adhesive disc separated two parts = disc region D sensu Hutchins) lacking flattened papillae; (5) complex articulation present between posterior tip of basipterygium and anteromedial edge of ventral postcleithrum. A taxonomic revision of the subfamily recognized 29 valid species in 14 genera, including 10 new species and 3 new genera [viz., *Aspasma ubauo* Fujiwara & Motomura, 2019; *Aspasmichthys ciconiae* Jordan & Fowler, 1902; *Diademichthys lineatus* (Sauvage, 1883); *Discotrema crinophilum* Briggs, 1976; *Discotrema monogrammum* Craig & Randall, 2008; *Erdmannichthys alorensis* (Allen & Erdmann, 2012); *Flabellicauda akiko* (Allen & Erdmann, 2012); *Flabellicauda alleni* Fujiwara, Conway & Motomura, 2021; *Flabellicauda bolini* (Briggs, 1962); *Flabellicauda cometes* Fujiwara, Conway & Motomura, 2021; *Flexor incus* Conway, Stewart & Summers 2018; *Lepadichthys coccinotaenia* Regan, 1921; *Lepadichthys conwayi* Fujiwara & Motomura, 2020; *Lepadichthys ctenion* Briggs & Link, 1963; *Lepadichthys erythraeus* Briggs & Link, 1963; *Lepadichthys frenatus* Waite, 1904; *Lepadichthys misakius* (Tanaka, 1908); *Lepadicyathus minor* (Briggs, 1955); *Liobranchia stria* Briggs 1955; *Pheralloodus indicus* Weber, 1913; *Propheralloodus briggsi* Shioyaki & Dotsu, 1983; *Propheralloodus longipterus* Fujiwara & Motomura, 2018; *Propheralloodus marianaensis*, new species; *Propheralloodus smithi* (Briggs, 1955); *Pseudolepadichthys trishula* (Fujiwara, Hagiwara & Motomura, 2020), new combination; *Rhinorhynchichthys geminus* (Fujiwara & Motomura, 2021), new combination; *Rhinorhynchichthys heemstraorum* (Fujiwara & Motomura, 2021), new combination; *Rhinorhynchichthys lineatus* (Briggs, 1966), new combination; *Rhinorhynchichthys polyastrous* (Fujiwara & Motomura, 2021), new combination].

Lepadichthys Waite, 1904 was initially problematic, including several unusual species which did not conform to the generic diagnosis. In addition, a recent comprehensive molecular study on clingfishes revealed that *Lepadichthys* was a polyphyletic group. Detailed morphological examination, including osteological characters, of *Lepadichthys* in this study

confirmed that the genus should be divided into five genera (including “true” *Lepadichthys*), each being monophyletic and distinguished from each other by conditions of the cephalic sensory canal pores, oral features, shapes of the premaxilla and lower-jaw teeth, size of the adhesive disc, caudal skeleton, and general color pattern. Three of the five genera (*Flabellicauda*, *Pseudolepadichthys* and *Rhinorhynchichthys*) are new to science. A miniature species of *Lepadichthys*, *L. minor*, was transferred to the redefined genus *Lepadicyathus* Prokofiev, 2005, with *Lepadicyathus mendeleevi* Prokofiev, 2005 being regarded as a junior synonym of *L. minor*. “True” *Lepadichthys* was found to include 9 nominal species, 6 of them valid [viz., *L. coccinotaenia*, *L. ctenion* (junior synonym: *L. bilineatus*), *L. conwayi*, *L. erythraeus*, *L. frenatus*, and *L. misakius* (junior synonyms: *L. sandaracatus* and *L. springeri*)].

Examination of *Unguitrema nigrum* Fricke, 2014 (type species of the monotypic genus *Unguitrema*), *Discotrema monogrammum*, and *Discotrema zonatum* Craig & Randall, 2008 revealed that the three nominal species were conspecific, *D. monogrammum* being a senior synonym of the others. Consequently, the poorly known genus *Unguitrema* Fricke, 2014 was synonymized under *Discotrema* Briggs, 1976. Three other monotypic genera were treated similarly, *Liobranchia* Briggs, 1955 being regarded as a senior synonym of *Aspasmodes* Smith, 1957 and *Pheraliodichthys* Shiogaki & Dotsu, 1983. In addition, the type species of the latter two genera (viz., *Aspasmodes briggsi* Smith, 1957 and *Pheraliodichthys meshimaensis* Shiogaki & Dotsu, 1983) were synonymized under *Liobranchia stria*, resulting in recognition of *Liobranchia* as a monotypic genus, containing only *L. stria*.

A diagnosis, description, synonymy, distribution, ecological notes, and list of examined specimens (or appropriate citation if previously published in detail) were given for each genus and species, together with an identification key for all members of the Diademichthyinae. Diagnostic characters of members of the subfamily were also discussed along with their adhesive ecology.