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**Phylogeny and systematics of the Trapeziidae Miers, 1886
(Crustacea: Brachyura), with the description of a new family**

PETER CASTRO, PETER K. L. NG & SHANE T. AHYONG



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Phylogeny and systematics of the Trapeziidae Miers, 1886 (Crustacea: Brachyura), with the description of a new family

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ABSTRACT

A revision of the family Trapeziidae Miers, 1886, has shown that it consists of three clades, one of which is elevated to family status, Tetraliidae *fam. nov.*, for the genera *Tetralia* Dana, 1851, and *Tetraloides* Galil, 1986. The genera *Trapezia* Latreille, 1828, *Calocarcinus* Calman, 1909, *Hexagonalia* Galil, 1986, *Philippicarcinus* Garth & Kim, 1983, *Quadrella* Dana, 1851, and *Sphenomerides* Rathbun, 1897, remain in the Trapeziidae; *Domecia* Eydoux & Souleyet, 1842, *Jonesius* Santharankutty, 1962, *Maldivia* Borradaile, 1902, *Palmyria* Galil & Takeda, 1986, and the fossil genus *Eomaldivia* Müller & Collins, 1991, in Domeciidae Ortmann, 1893. Cladistic analysis shows that Trapeziidae *sensu* Miers, 1886, consists of three clades that show convergence as a result of similar habits as symbionts of reef corals and other cnidarians. A list of all recognised genera and species in the three families and their primary synonyms is provided. Keys are also included for four families of Brachyura symbiotic with reef corals, and for the genera and species of Domeciidae, Tetraliidae, and Trapeziidae. Some rare colour figures are reproduced. Three name changes have resulted within the Tetraliidae: *Cancer glaberrimus* Herbst, 1790, for *Tetralia fulva* Serène, 1984, and *Cancer mutus* Linnaeus, 1758, for *Tetralia armata* Dana, 1852, and *Tetralia vanninii* Galil & Clark, 1988. Nomenclatural problems associated with the repeated use of "forma typica" for various species of *Trapezia* and *Tetralia* are resolved. To stabilise the nomenclature of a number of well-known species, neotypes are designated for 13 species of Trapeziidae for which type material is not extant: *Trapezia cymodoce* (Herbst, 1801), and its three synonyms (*Trapezia dentifrons* Latreille, 1828, *Trapezia dentata* var. *subintegra* Dana, 1852, *Trapezia cymodoce* var. *ornatus* Chen, 1933); *Trapezia bidentata* (Forskål, 1775), and one of its synonyms (*Trapezia ferruginea* Latreille, 1828); *Trapezia digitalis* Latreille, 1828, and one of its synonyms (*Trapezia nigrofusca* Stimpson, 1858); *Trapezia septata* Dana, 1852, and one of its synonyms (*Trapezia reticulata* Stimpson, 1858); *Trapezia areolata* Dana, 1852; *Trapezia bella* Dana, 1852; and *Trapezia speciosa* Dana, 1852. Neotypes are also designated for seven species of Tetraliidae: *Tetralia glaberrima* (Herbst, 1790), and three synonyms (*Trapezia integra* Latreille, 1828, *Trapezia serratifrons* Jacquinet, 1846, *Tetralia laevis-sima* Stimpson, 1858); *Tetralia muta* (Linnaeus, 1758), and one of its synonyms (*Tetralia armata* Dana, 1852); and *Tetraloides nigrifrons* (Dana, 1852).

Key words: Crustacea, Brachyura, revision, new family, Trapeziidae, Domeciidae, Tetraliidae *fam. nov.*, cladistics, coral symbionts, keys