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(Coleoptera: Hydraenidae) for Australia and Papua New Guinea**

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Abstract

The Australian and Papua New Guinean species of the water beetle genus *Gymnochthebius* Orchymont, 1943, are revised, based on the study of 4,904 specimens. The genus is redescribed, and redescrptions are provided for *G. australis* (Blackburn), *G. brisbanensis* (Blackburn), *G. clarki* (Deane), *G. levis* (Deane), *G. lividus* (Deane), *G. notalis* (Deane), and *G. tenebricosus* (Deane). Lectotypes are designated for *Ochthebius australis* Blackburn, 1888, and *Ochthebius tenebricosus* Deane, 1931. *Ochthebius fischeri* Deane, 1931, and *Ochthebius leai* Deane, 1931, are synonymized with *Ochthebius australis* Blackburn, 1888; *Ochthebius flavocinctus* Deane 1933, is synonymized with *Ochthebius lividus* Deane, 1933; and *Ochthebius angustipennis* Deane, 1931, is synonymized with *Ochthebius clarki* Deane, 1931. Twenty-nine new species are described, and a key to the 36 species known from Australia and Papua New Guinea is given. High resolution digital images of all primary types are presented (online version in color), the male genitalia are illustrated, and Australian geographic distributions are mapped. Only one species, *G. clarki*, inhabits both Australia and Papua New Guinea; two species, *G. bacchusi* n. sp. and *G. papua* n. sp. are endemic to Papua New Guinea; 33 species are endemic to Australia. Members of *Gymnochthebius* are found at the gravelly/sandy/silty margins of flowing and standing water. A preliminary grouping of species according to microhabitat substrate is presented. Correspondences between ventral morphology and microhabitat preferences suggest that a few species are evolving toward humicolous habits. New species of *Gymnochthebius* are: *G. angulonotus* (Queensland, Tinaroo Creek Road via Mareeba), *G. bacchusi* (Papua New Guinea, Morobe District, c. 7 miles Lae - Bulolo Road), *G. benesculptus* (South Australia, Warburton River, 1 km N White Bull Yard Kalamurina Stn.), *G. coruscus* (South Australia, Warburton River, 1 km N White Bull Yard Kalamurina Stn.), *G. fontinalis* (South Australia, Elizabeth (Mound) Springs, 7 km NW Coward Springs R.S.), *G. fumosus* (New South Wales, Sydney), *G. hesperius* (Western Australia, Lyndon River Bridge), *G. inlineatus* (Western Australia, Millstream, creek near Deep Reach), *G. lustrosulcus* (Queensland, Cloncurry), *G. minipunctus* (Northern Territory, Palm Valley), *G. nanosetus* (Northern Territory, Roderick Creek, Gregory National Park), *G. nicki* (Victoria, Possum Hollow falls, West branch Tarwin River, 5.6 km SSW Allambee), *G. nigriceps* (South Australia, Mound Spring near Coward Springs), *G. papua* (Papua New Guinea, Morobe District, ca. 10 km S Garaina Saureri), *G. perpunctus* (South Australia, Somme Creek, between Angaston and Sedan), *G. pluvipennis* (South Australia, Warburton