



A review of the genus *Rhipidia* Meigen from China, with descriptions of seven new species (Diptera, Limoniidae)

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Abstract

The genus *Rhipidia* Meigen, 1818 from China is reviewed. Twenty-one species are presented, of which seven species, *Rhipidia* (*Rhipidia*) *bilobata* sp. nov., *R. (R.) flava* sp. nov., *R. (R.) lobifera* sp. nov., *R. (R.) longa* sp. nov., *R. (R.) sejuga* sp. nov., *R. (R.) shennongjiensis* sp. nov., and *R. (R.) spinosa* sp. nov., are described as new to science, and one species, *R. (R.) reductispina* Savchenko, 1983, is recorded from China for the first time. A key to the species of the genus *Rhipidia* from China is given.

Key words: Diptera, Limoniidae, *Rhipidia*, new species, China

Specimens examined. Holotype male (USNM), China: Taiwan, Hassensan (1372–1829 m), 1929. VIII. 30, S. Issiki. One antenna, one wing, one leg and abdomen including hypopygium are mounted on a similarly labeled microscope slide. The remaining five legs are still attached to the body.

Distribution. China (Sichuan, Jiangxi, Taiwan); Russia, Japan.

Remarks. For description and illustration of this species, also see Alexander (1930).

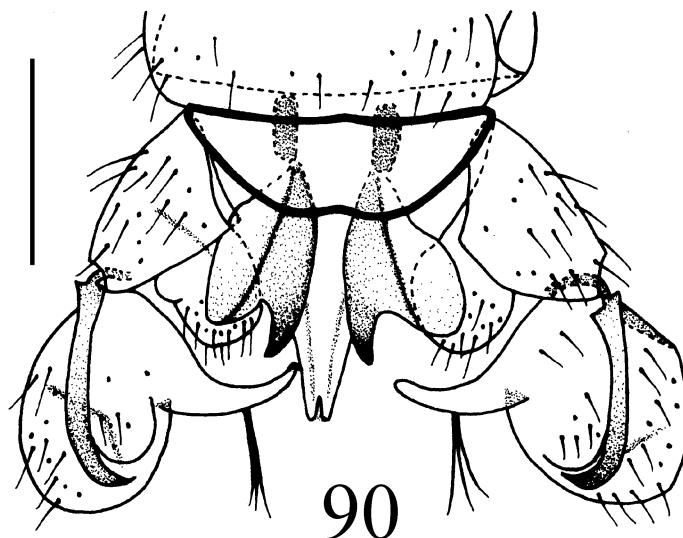


FIGURE 90. *Rhipidia (Rhipidia) triarmata* (Alexander, 1930) (holotype). Hypopygium, dorsal view. Scale bar: 0.2 mm.

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References

- Alexander, C.P. (1913) Report on a collection of Japanese crane-flies (Tipulidae), with a key to the species of *Ptychoptera* [part]. *Canadian Entomologist*, 45, 197–210.
<http://dx.doi.org/10.4039/ent45197-7>
- Alexander, C.P. (1919) The crane-flies of New York. Part I. Distribution and taxonomy of the adult flies. *Memoirs, Cornell University Agricultural Experiment Station*, 25, 767–993.
- Alexander, C.P. (1920) New or little-known crane-flies from Japan (Tipulidae, Diptera). *Transactions of the American Entomological Society*, 46, 1–26.
- Alexander, C.P. (1923) Undescribed species of Japanese crane-flies (Tipulidae, Diptera). Part III. *Annals of the Entomological Society of America*, 16, 57–76.
- Alexander, C.P. (1927) The Oriental Tipulidae in the collection of the Indian museum. Part I. *Records of the Indian Museum*, 29, 167–214.
- Alexander, C.P. (1930) New or little-known Tipulidae from eastern Asia (Diptera). VIII. *Philippine Journal of Science*, 43, 507–536.
- Alexander, C.P. (1932) New or little-known Tipulidae from the Philippines (Diptera). XVI. *Philippine Journal of Science*, 49, 231–276.
- Alexander, C.P. (1933a) New or little-known Tipulidae from eastern Asia (Diptera). XII. *Philippine Journal of Science*, 50, 129–162.
- Alexander, C.P. (1933b) New or little-known Tipulidae from eastern Asia (Diptera). XIII. *Philippine Journal of Science*, 51, 369–408.
- Alexander, C.P. (1934) New or little-known Tipulidae from eastern Asia (Diptera). XIX. *Philippine Journal of Science*, 54,

309–342.

- Alexander, C.P. (1935a) New or little-known Tipulidae from eastern Asia (Diptera). XXVI. *Philippine Journal of Science*, 57, 195–225.
- Alexander, C.P. (1935b) New or little-known Tipulidae from eastern Asia (Diptera). XXIV. *Philippine Journal of Science*, 56, 525–562.
- Alexander, C.P. (1936) New or little-known Tipulidae from eastern Asia (Diptera). XXIX. *Philippine Journal of Science*, 59, 225–257.
- Alexander, C.P. (1940) Records and descriptions of North American crane-flies (Diptera). Part I. Tipuloidea of the Great Smoky Mountains National Park, Tennessee. *American Midland Naturalist*, 24, 602–644.
<http://dx.doi.org/10.2307/2420862>
- Alexander, C.P. (1943) Family Tipulidae. In: Crampton, G.C., Curran, G.C. & Alexander, C.P. (Eds.), *Guide to the insects of Connecticut. Part VI. The Diptera or true flies of Connecticut. First Fascicle*. Bulletin Connecticut State Geological and Natural History Survey, 64, pp. 196–486.
- Alexander, C.P. (1965) New or little-known Tipulidae from Madagascar (Diptera). *Transactions of the American Entomological Society*, 91, 39–83.
- Alexander, C.P. (1966) The crane-fly fauna of the southern Kuriles (Tipulidae, Diptera). *Mushi*, 39, 119–126.
- Alexander, C.P. (1967) The crane flies of California. *Bulletin of the California Insect Survey*, 8, 1–263.
- Alexander, C.P. (1972) Diptera: Tipulidae. *Insects of Micronesia*, 12, 733–863.
- Alexander, C.P. and Byers, G.W. (1981) Tipulidae. In: McAlpine, J.F., Peterson, B.V. Shewell, G.E., Teskey, H.J., Vockeroth, J.R. & Wood, D.M. (Coordinators), *Manual of Nearctic Diptera*. Biosystematic Research Centre, Ottawa, Ontario, pp. 153–190.
- Brunetti, E. (1912) Diptera Nematocera (excluding Chironomidae and Culicidae). *Fauna of British India, including Ceylon and Burma*, 1, 1–581.
- Doane, R.W. (1900) New north American Tipulidae. *Journal of the New York Entomological Society*, 8, 182–198.
- Kuntze, A. (1920) Limoniidae Meig. Tabellen zum Bestimmen der palaearctischen Limoniinae. *Zoologische Jahrbucher, Abteilung fur Systematik, Geographie und Biologie der Tiere*, 43, 371–432.
- McAlpine, J.F. (1981) Morphology and terminology, Adults. In: McAlpine, J.F., Peterson, B.V. Shewell, G.E., Teskey, H.J., Vockeroth, J.R. & Wood, D.M. (Coordinators), *Manual of Nearctic Diptera*. Biosystematic Research Centre, Ottawa, Ontario, pp. 9–63.
- Meigen, J.W. (1818) *Systematische Beschreibung der bekannten europaischen zweiflugeligen Insekten*. Aachen, 1, i–xxxvi, 333 pp.
- Meijere, J.C.H. de (1904) Neue und bekannte Sud-Asiatische Dipteren. *Bijdragen tot de Dierkunde*, 17–18, 83–118.
- Meijere, J.C.H. de (1911) Studien uber Sudostasiatische Dipteren, 5. Ostindische Tipulidae. *Tijdschrift voor Entomologie*, 54, 21–79.
- Oosterbroek, P. (2013) *Catalogue of the Craneflies of the World, (Diptera, Tipuloidea, Pediciidae, Limoniidae, Cylindrotomidae, Tipulidae)*. Available from: <http://ip30.eti.uva.nl/ccw/index.php/> (accessed 7 June 2013)
- Podenas, S., Geiger, W., Haenni, J.-P. & Gonseth, Y. (2006) Limoniidae & Pediciidae de Suisse. *Fauna Helvetica*, 14, 1–375.
- Podenas, S. & Gelhaus, J. (2007) *Identification keys for Limoniinae (Diptera, Limoniidae) of Mongolia and adjacent territories*. Vilnius, Lithuania, 85 pp.
- Ribeiro, G.C. (2006) Homology of the gonostylus parts in crane flies, with emphasis on the families Tipulidae and Limoniidae (Diptera, Tipulomorpha). *Zootaxa*, 1110, 47–57.
- Savchenko, E.N. (1983) *Limoniidae of south Primorye*. Akademiy Nauk Ukrainskoy SSR, I.I. Schmalhausen Institute of Zoology of Academy of Sciences of Ukraine, Naukova Dumka, Kiev, 156 pp.
- Zhang, X., Li, Y. & Yang, D (2012) Species of the genus *Rhipidia* Meigen from Taiwan (Diptera, Limoniidae). *Zootaxa*, 3247, 32–42.