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World synopsis of described species of the genus *Platypygus* Loew (Diptera: Mythicomyyiidae: Platypyginae)

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Abstract

The taxonomy of the genus *Platypygus* Loew is summarized, previously described species are reviewed based on examination of types, and a key to known species of the genus worldwide is presented. All previously described species are diagnosed and illustrated. The male genitalia of *P. ridibundus* (Costa) and female genitalia of *P. americanus* Melander are described for the first time. Some characters supporting the monophyly of the genus *Platypygus* are discussed and the Nearctic *Cyrtisiopsis americanus* (Melander) is restored to its original combination as *Platypygus americanus*. The type status of *Platypygus bellus* Loew, *P. lativentris* Loew, *P. pumilio* Loew, and *P. turkmenorum* Paramonov is clarified and a lectotype is selected for *Platypygus kurdorum* Paramonov and *P. tauricus* Paramonov. New country records are given for the following species: *P. bellus* (Greece); *P. chrysanthemii* (Israel, Jordan); *P. kurdorum* (Israel, Jordan, Syria); *P. limatus* (Nepal, Thailand); *P. pumilio* (Greece, Turkmenistan); *P. ridibundus* (Cyprus, Israel, Portugal), *P. titanomedeae* (Jordan, Turkey).

Key words: Diptera, *Platypygus*, taxonomy, Palaearctic, Oriental, Afrotropical, Platypyginae, Mythicomyyiidae, systematics, key, *Cyrtisiopsis*, new records

species of the genus *Cyrtisiopsis* (e. g., *C. melleus*), the vaginal furca is also a U-shaped structure, but the apex is sclerotized as much as the lateral arms.

In the male genitalia, two long hyaline sclerites, medially inserted in the gonocoxites, support the apex of the aedeagus and epandrium. This structure is a shared character not found in other genera of Platypyginae. The gonostyli are usually fused to the gonocoxites and are clavate apically (e. g. Fig. 17a). *Platypygus melinoproctus* is exceptional in having separate and structurally different gonostyli (Fig. 12d).

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References

- Arnett, R.H. (1993) *American insects: a handbook of insects of America north of Mexico*. Sandhill Crane Press, Gainesville, Florida, 850 pp.
- Austen, E.E. (1937) *The Bombyliidae of Palestine*. British Museum (Natural History), London, ix + 188 pp.
- Becker, A. (1889) Die Spinnen und fortgesetzte Mittheilungen über bei Sarepta vorkommende Insekten. *Bulletin de la Société Impériale des Naturalistes de Moscou*, (n. s.) 2, 373–379.
- Becker, T. (1913) Genera Bombyliidarum. *Ezhedgodnik Zoologicheskago Muzeya Imperatorskoi Akademii Nauk, St. Petersburg*, 17, 421–502.
- Becker, T., Bezzi, M., Bischof, J., Kertész, K. & Stein, P. (1903) *Katalog der paläarktischen Dipteren*. Band II. Orthorrhapha Brachycera. [No publisher given], Budapest, 396 pp.
- Becker, T. & Stein, P. (1913) Persische Dipteren von den Expeditionen des Herrn N. Zarudnyj 1898 und 1901. *Ezhedgodnik Zoologicheskago Muzeya Imperatorskoi Akademii Nauk, St. Petersburg*, 17, 503–654.
- Bezzi, M. (1898) Contribuzione all fauna ditterologica Italiana. II. — Ditteri delle Marche degli Abruzzi. *Bollettino della Società Entomologica Italiana*, 30, 19–50.
- Bezzi, M. (1905) Ditteri Eritrei raccolti dal Dott. Andreini e dal Prof. Tellini. *Bollettino della Società Entomologica Italiana*, 37, 195–304.
- Bezzi, M. (1924) *The Bombyliidae of the Ethiopian region based on material in the British Museum (Natural History)*. British Museum (Natural History), London, 390 pp.
- Bezzi, M. (1925) Quelques notes sur les bombyliides (Dipt.) d'Égypte, avec description d'espèces nouvelles. *Bulletin de la Société Royal Entomologique d'Égypte*, 8, 159–242.
- Bezzi, M. (1926) Notes additionnelles sur les Bombyliidae (Dipt.) d'Égypte. *Bulletin de la Société Royal Entomologique d'Égypte*, 9, 244–273.
- Bigot, J.-M.-F. (1858) Essai d'une classification générale et synoptique de l'ordre des insectes diptères. (VI^e mémoire). Tribu des Bombyliidi, (mihi). *Annales de la Société Entomologique de France*, 6 (3), 569–595.
- Bigot, J.-M.-F. (1893) [Deux notes en réponse aux critiques faites par MM. F.-L. Arribalzaga et J. Mik.] *Bulletin Bimensuel de la Société Entomologique de France*, 1893 (6), clvii–clviii.
- Bowden, J. (1965) Diptera from Nepal. Bombyliidae. *Bulletin of the British Museum (Natural History), Entomology*, 17 (6), 203–208.

- Bowden, J. (1975) Family Bombyliidae. In: Delfinado, M.D. & Hardy, D.E. (Eds.), *A catalog of the Diptera of the Oriental Region. Vol. II. Suborder Brachycera through Division Aschiza, Suborder Cyclorrhapha*. University Press of Hawaii, Honolulu, pp. 165–184.
- Bowden, J. (1980) Family Bombyliidae. In: Crosskey, R. W. (ed.), *A catalogue of the Diptera of the Afrotropical Region*. British Museum (Natural History), London, 1, pp. 381–430.
- Brues, C.T. & Melander, A.L. (1932) Classification of insects. A key to the known families of insects and other terrestrial arthropods. *Bulletin of the Museum of Comparative Zoology*, 73, 1–672.
- Brues, C.T., Melander, A.L. & Carpenter, F.M. (1954) Classification of insects. Keys to the living and extinct families of insects, and to the living families of other terrestrial arthropods. *Bulletin of the Museum of Comparative Zoology*, 108, 1–917.
- Brunetti, E. (1909) Revised and annotated catalogue of Oriental Bombyliidae with descriptions of new species. *Records of the Indian Museum*, 2, 437–492.
- Carles-Tolrà, M. & Báez, M. (2002) Mythicomyiidae. In: Carles-Tolrà, M. (Ed.), *Catálogo de los Diptera de España, Portugal y Andorra (Insecta)*. *Monografías de la Sociedad Entomológica Aragonesa*, 8, pp. 108.
- Charykuliev, D. (1972) [On the bombyliid fauna (Diptera, Bombyliidae) of Turkmenia]. In: Tokgaev, T. & Myartseva, S.N. (Eds.), [*The insects of southern Turkmenia*]. Ashkabad, Turkmenistan, pp. 146–155. [in Russian]
- Cockerell, T.D.A. (1914) The fossil and recent Bombyliidae compared. *Bulletin of the American Museum of Natural History*, 33, 229–236.
- Cole, F.R. & Schlinger, E.I. (1969) *The flies of western North America*. University of California Press, Berkeley, 693 pp.
- Contini, C., Lyneborg, L., Majer, J.M., Rivocecci, L. & Zaitzev, V.F. (1995) Diptera Nemestrinoidea, Asiloidea, Bombylioidea. *Checklist delle specie della fauna Italiana*, 68, 1–19.
- Costa, A. (1863) Nuovi studii sulla entomologia della Calabria Ulteriore *Atti delle Accademia delle Scienze Fisiche e Matematiche di Napoli*, 1 (2), 1–80.
- Efflatoun, H.C. (1945) A monograph of Egyptian Diptera. Part VI. Family Bombyliidae. Section 1: Subfamily Bombyliidae Homeophthalmae. *Bulletin de la Société Fouad I^{er} Entomologique*, 29, 1–483.
- El Hawagry, M.S.A. (2011) Catalogue of Superfamily Asiloidea (Diptera: Brachycera) of Egypt. *Efflatounia* (Special Issue), 11, 1–189.
- Engel, O. (1933) Bombyliidae. In: Lindner, E. (Ed.), *Die Fliegen der paläarktischen Region*. Vol. 4, pt. 3. E. Schweizerbart, Stuttgart, pp. 97–144.
- Evenhuis, N.L. (1983) *An indexed bibliography of Bombyliidae (Insecta: Diptera)*. J. Cramer, Braunschweig, 493 pp.
- Evenhuis, N.L. (1991) World catalog of genus-group names of bee flies (Diptera: Bombyliidae). *Bishop Museum Bulletin in Entomology*, 5, i–vii, 1–105.
- Evenhuis, N.L. (1993) Catalogue of the types of Southern African Mythicomyiidae (Insecta: Diptera). *Genus*, 4 (2), 91–102.
- Evenhuis, N.L. (2002) Catalog of the Mythicomyiidae of the world (Insecta: Diptera). *Bishop Museum Bulletin in Entomology*, 10, 1–85.
- François, F.J.J. (1966) Matériaux nouveaux pour une faune des Bombyliidae (Diptera) de Grèce. *Bulletin et Annales de la Société Royale d'Entomologie de Belgique*, 102 (10), 155–189.
- Gharali, B., Kamali, K., Evenhuis, N.L. & Talebi, A.A. (2011) A review of the genus *Platypygus* Loew (Mythicomyiidae: Platypyginae) in Iran, with notes on *Cyrtisiopsis maculiventris* (Loew) n. comb. *Zootaxa*, 2441, 41–52.
- Giebel, G.C. (1856) *Fauna der Vorwelt mit steter Berücksichtigung der lebenden Thiere*. Zweiter Band: Gliederthiere. Erste Abtheilung. Insecten und Spinnen. F. A. Brockhaus, Leipzig, 511 pp.
- Greathead, D.J. & Evenhuis, N.L. (2001) Annotated keys to African genera of Bombylioidea (Diptera: Bombyliidae and Mythicomyiidae). *African Invertebrates*, 47, 105–224.
- Greathead, D.J. & Evenhuis, N.L. (2004) Fauna Europaea: Mythicomyiidae. In: Pape, T. & Beuk, P. (Eds.), *Fauna Europaea: Diptera*. Fauna Europaea version 2.4. Available from: <http://www.faunaeur.org> (accessed 29 November 2012)
- Grimaldi, D.A. (1999) The co-radiations of pollinating insects and angiosperms in the Cretaceous. *Annals of the Missouri Botanical Garden*, 86, 373–406.
<http://dx.doi.org/10.2307/2666181>
- Hall, J.C. (1976) Bombyliidae of Chile. *University of California Publications in Entomology*, 76 [1975], 1–287.
- Hall, J.C. (1981) Family Bombyliidae. In: McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey, H. J., Vockeroth, J. R. & Wood, D. M., *Manual of Nearctic Diptera*. Volume 1. Research Branch, Agriculture Canada Monographs No. 27., pp. 589–602.
- Hall, J.C. & Evenhuis, N.L. (1986) Family Bombyliidae. In: Griffiths, G.C.D. (Ed.), *Flies of the Nearctic Region. Vol. V. Part 13, Number 5*. E. Schweizerbart, Stuttgart, pp. 321–592.
- Hasbenli, A. & Aktas, M. (1995) Two new *Platypygus* Loew, 1844 (Diptera, Bombyliidae) species from Turkey. *Türkiye Entomoloji Dergisi*, 19 (2), 147–150.
- Hennig, W. (1969) Kritische Betrachtungen über die phylogenetische Bedeutung von Bernstein-fossilien: Die Gattung *Proplatypygus* (Diptera, Bombyliidae) und *Palaeopsylla* (Siphonaptera). *Memoria de la Società Entomologica di Italiana*, 48, 57–67.
- Hennig, W. (1972) Eine neue Art der Rhagionidengattung *Litolepis* aus Chile, mit Bemerkungen über Fühlerbildung und Verwandtschaftsbeziehungen einiger Brachycerenfamilien (Diptera: Brachycera). *Stuttgarter Beiträge zur Naturkunde*, 242, 1–18.

- Hesse, A.J. (1938) A revision of the Bombyliidae (Diptera) of southern Africa. [I]. *Annals of the South African Museum*, 34, 1–1053.
- Hesse, A.J. (1956) A revision of the Bombyliidae (Diptera) of southern Africa. II [part]. *Annals of the South African Museum*, 35, 1–464. [Part II concludes in *Annals of the South African Museum*, 35, 465–972.]
- Hesse, A.J. (1967) Additions to the Cyrtosiniinae (Bombyliidae) of South Africa. *Annals of the South African Museum*, 50, 89–130.
- Hull, F.M. (1973) Bee flies of the world. the genera of the family Bombyliidae. *Bulletin of the United States National Museum*, 286, 1–687.
- International Commission on Zoological Nomenclature (I.C.Z.N.) (1999) *International Code of Zoological Nomenclature*. Fourth edition. International Trust for Zoological Nomenclature, London, xxix + 306 pp.
- Kertész, K. (1909) *Catalogus dipterorum hucusque descriptorum*. Volumen V. Bombyliidae, Therevidae, Omphralidae. [No publisher given], Budapest, 199 pp.
- Koçak, A.O. & Kemal, M. (2009) List of the dipteran genera and species recorded in Turkey based upon the Info-system of the Cesa. *Cesa News*, 51, 3–106.
- Liepa, Z. (1969) List of the scientific works and described species of the late Dr. S.J. Paramonov, with locations of types. *Journal of the Entomological Society of New South Wales*, 5, 3–22.
- Loew, H. (1844) Beschreibung einiger neuen Gattungen der europäischen Dipterenfauna [part]. *Stettiner Entomologische Zeitung*, 5, 114–130. [Article concludes in *Stettiner Entomologische Zeitung*, 5, 154–173.]
- Loew, H. (1846) Fragmente Kenntniss der europäischen Arteneiniger Diptereingattungen, *Stettiner Entomologische Zeitung*, 1, 319–530.
- Loew, H. (1853) *Neue Beiträge zur Kenntniss der Dipteren*. Zweiter Beitrag. Mittler & Sohn, Berlin, 24 pp.
- Loew, H. (1856) Neue Beiträge zur Kenntnis der Dipteren. Zweiter Beitrag. In: Loew, H. (Ed.), *Programm der Königlichen Realschule zu Meseritz womit zu der am 2. und 3. October 1854 stattfindenden öffentlichen Prüfung alle Gönner und freunde der Anstalt, insbesondere die Eltern und Angehörigen sämtlicher Schüler*. F.W. Lorenz, Meseritz [= Międzyrzecz], pp. 1–24
- Loew, H. (1860). *Die Dipteren-Fauna Südafrika's. Erste Abtheilung*. G. Bosselman, Berlin, xi + 330 pp.
- Loew, H. (1862) *Monographs of the Diptera of North America*. Part I. Smithsonian Institution, Washington, D. C., xxiv + 221 pp.
- Loew, H. (1869) *Beschreibungen europäischer Dipteren. Systematische Beschreibung der bekannten europäischen zweiflügeligen Insecten. Von Johann Wilhelm Meigen. Achter Theil oder zweiter Supplementband. Beschreibungen europäischer Dipteren. Erster Band*. H.W. Schmidt, Halle, xvi + 310 + [1] pp.
- Loew, H. (1873) *Beschreibungen europäischer Dipteren. Systematische Beschreibung der bekannten europäischen zweiflügeligen Insecten. Von Johann Wilhelm Meigen. Zehnter Theil oder vierter Supplementband. Beschreibungen europäischer Dipteren. Dritter Band*. H.W. Schmidt, Halle, viii + 320 pp.
- Loew, H. (1874) Diptera a nova Hugo Theod. Christopho collecta. *Zeitschrift für die Gesammte Naturwissenschaft*, 43, 413–420.
- Melander, A.L. (1950) Taxonomic notes on some smaller Bombyliidae (Diptera). *Pan-Pacific Entomologist*, 26, 139–156.
- Mühlenberg, M. (1971a) Die Abwandlung des Eilegeapparates der Bombyliidae (Diptera). Eine funktionsmorphologische Studie. *Zeitschrift für Morphologie der Tiere*, 70 (1), 1–72.
<http://dx.doi.org/10.1007/bf00297219>
- Mühlenberg, M. (1971b) Phylogenetisch-systematische Studien an Bombyliiden (Diptera). *Zeitschrift für Morphologie der Tiere*, 70 (1), 73–102.
- Nagatomi, A., Saigusa, T., Nagatomi, H. & Lyneborg, L. (1991) The systematic position of Apsilocephalidae, Rhagionidae, Protempididae, Hilarimorphidae, Vermileonidae and some genera of Bombyliidae (Insecta, Diptera). *Zoological Science*, 8, 595–607.
- Osten Sacken, R. (1858) Catalogue of the described Diptera of North America. Prepared for the Smithsonian Institution. *Smithsonian Miscellaneous Collections*, 2, ix + 221 pp.
- Pagano, V. (1901) *Studii su la Calabria di Leopoldo Pagano da diamante. Vol. II*. M. d'Auria, Napoli, 467 pp.
- Painter, R.H. & Painter, E.M. (1965) Family Bombyliidae. In: Stone, A., Sabrosky, C.W., Wirth, W.W., Foote, R.H. & Coulson, J.R. (Eds.), A catalog of the Diptera of America north of Mexico. *United States Department of Agriculture, Agricultural Handbook*, 276, pp. 406–446
- Papp, L. (2003) Further additions and corrections to the Hungarian checklist (Diptera). *Folia Entomologica Hungarica*, 64, 303–309.
- Papp, L. (2004) Twenty species of Diptera new to Hungary. *Folia Entomologica Hungarica*, 65, 135–144.
- Paramonov, S.J. (1926) Zur Kenntniss der Gattung *Platypygus* Lw. (Diptera, Bombyliidae). *Konowia*, 5, 85–92.
- Paramonov, S.J. (1929) Beiträge zur Monographie einiger Bombyliiden-Gattungen. (Diptera). *Trudy Fizychno-Matematichnogo Viddil Ukrains'ka Akademiya Nauk*, 11 (1), 65–225.
- Paramonov, S.J. (1934) Unentberliche kritische Bemerkungen zur Arbeit von Dr. Engel's über die Bombyliiden in Lindner's "Die Fliegen der paläarktischen Region". *Konowia*, 13, 10–21.
- Paramonov, S.J. (1939) Kritische Übersicht der gegenwertigen und fossilen Bombyliiden-Gattungen (Diptera) der ganzen Welt. *Trudy Institut Zoologita Biologii, Kiev*, 23, 23–50.

- Pont, A.C. (1997) The Kowarz Collection of Diptera in the University Museum of Natural History, Oxford, U.K. *Studia Dipterologica*, 4, 353–358.
- Poole, R.W. (1996) Diptera, pp. 15–604. In: Poole, R.W. & Gentili, P. (Eds.), *Nomina Insecta Nearctica. A checklist of the insects of North America*. Volume 3: Diptera, Lepidoptera, Siphonaptera. Entomological Information Services, Rockville, Maryland, 1143 pp.
- Popescu-Mirceni, R. & Pârvu, C. (2009) Distributional data on some East-Mediterranean Brachycera (Diptera). [Results of the “Euphrates” Expedition - 2008, in Turkey and Syria]. *Travaux de Muséum National d’Histoire Naturelle “Grigore Antipa”*, 52, 429–436.
- Rohdendorf, B.B. (1964) [Historical development of dipterous insects.] *Trudy Palaeontologicheskoi Instytuta, Akademiia Nauk SSSR*, 100, 1–311. [in Russian]
- Rohlfien, H. & Ewald, B. (1979) Katalog der in den Sammlungen der Abteilung Taxonomie der Insekten des Institutes für Pflanzenschutzforschung, Bereich Eberswalde (ehmals Deutsches Entomologisches Institut), aufbewahrten Typen — XVIII. *Beiträge zur Entomologie*, 29, 201–247.
- Sabrosky, C.W. (1999) Family group names in Diptera. An annotated catalog. *Myia*, 10, 1–360.
- Schiner, J.C. (1868) Diptera. In: *Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. Von Willerstorff-Urbair*. Zoologischer Theil. Zweiter Band. 1. Abtheilung. B.K. Gerold’s Sohn, Wien [= Vienna]. vi + 388 pp.
- Schmiedeknecht, O. (1896) Meine Reise nach der Provinz Oran in Algerien. *Természetrázi Füzetek*, 19, 140–164.
- Séguy, E. (1930) Risultati zoologici della Missione inviata dalla R. Società Geografica Italiana per l’esplorazione dell’oasi di Giadarub. Insectes diptères. *Annali del Museo Civico di Storia Naturale Giacomo Doria*, 55, 75–93.
- Séguy, E. (1949) Un *Cyrtosia* nouveau et synopsis des espèces méditerranéenes (Dipt., Bombyliidae). *Revue Française d’Entomologie*, 16, 83–85.
- Séguy, E. (1963) Microbombyliides de la Chine Paléarctique (Insectes, Diptères). *Bulletin du Muséum National d’Histoire Naturelle*, (2) 35 (3), 253–256.
- Shorthouse, D.P. (2010) SimpleMappr, a web-enabled tool to produce publication-quality point maps. Available from: <http://www.simplemappr.net> (accessed 10 March 2013)
- Stein, J.P. (1881) Die Löw’sche Dipteren-Sammlung. *Stettiner Entomologische Zeitung*, 42, 489–491.
- Steyskal, G.C. & El Bialy, S. (1967) A list of Egyptian Diptera with a bibliography and key to families. *United Arab Republic, Ministry of Agriculture, Technical Bulletin*, 3, 1–87.
- Theodor, O. (1983) *The genitalia of Bombyliidae (Diptera)*. Israel Academy of Sciences and Humanities, Jerusalem, 275 pp.
- Tschirnhaus, M. von, Irwin, M., Hauser, M., Evenhuis, N. & Pape, T. (2000) Provisional checklist of the Agromyzidae, Therevidae, Mythicomyiidae, Sarcophagidae and Stratiomyidae (Diptera) of the Brandberg Massif, Namibia. *Cimbebasia Memoir*, 9, 383–384.
- Verrall, G.H. (1909) *Systematic list of the Palaearctic Diptera Brachycera. Stratiomyidae, Leptidae, Tabanidae, Nemestrinidae, Cyrtidae, Bombyliidae, Therevidae, Scenopinidae, Mydidae, Asilidae*. Gurney & Jackson, London, 34 pp.
- Zaitzev, V.F. (1966) [Parasitic flies of the family Bombyliidae (Diptera) in the fauna of Transcaucasia]. Nauka, Moscow & Leningrad, 375 pp. [in Russian]
- Zaitzev, V.F. (1989) Family Bombyliidae, pp. 43–169. In: Soós, Á. & Papp, L. (Eds.), *Catalogue of Palaearctic Diptera*. Volume 6. Therevidae—Empididae. Akadémiai Kiadó, Budapest & Elsevier, Amsterdam, 435 pp.
- Zaitzev, V.F. (1992) Evolutionary pathways of morphofunctional adaptations (with reference to the Superfamily Bombylioidea, Order Diptera). *Trudy Zoologicheskogo Instituta*, 185, 1–189, 51 pls. [In Russian.]
- Zaitzev, V.F. & Kandybina, M.N. (1983) Fam. Bombyliidae. In: Zaitzev, V.F., Kandybina, M.N., Nartshuk, E.P. & Richter, V.A., [Catalog of the type specimens in the collection of the Zoological institute, Academy of Sciences of the USSR. *Insecta (Diptera)*. Number 1. Families Acroceridae, Nemestrinidae, Bombyliidae]. Nauka, Leningrad, pp. 12–44. [in Russian]