

A review of the subtribe Gorytina (Hymenoptera, Crabronidae, Bembicini) with a key to the genera

Обзор подтрибы Gorytina (Hymenoptera, Crabronidae, Bembicini) с определительной таблицей родов

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Key words: digger wasps, Crabronidae, Bembicini, Gorytina, genera, key.

Ключевые слова: роющие осы, Crabronidae, Bembicini, Gorytina, роды, определительная таблица.

Abstract. A review of the subtribe Gorytina is given. The new key to the genera and annotated list of the genera are provided.

Резюме. Дается обзор трибы Gorytina. Приводятся оригинальная определительная таблица родов и аннотированный список родов.

Introduction

Gorytina are variously ranked. Bohart and Menke [1976] subdivided the subfamily Bembicinae (their Nyssoninae) into six tribes: Heliocausini, Alyssontini, Nyssonini, Gorytini, Stizini, and Bembecini. Hanson and Menke [2006], based on Prentice's unpublished doctoral thesis [Prentice, 1998], recognized only three tribes within Bembicinae: Alyssontini, Bembicini, and Nyssonini, and reduced Gorytini to one of six subtribes of Bembicini.

The subtribe Gorytina was designated, along with five other subtribes (Argogorytina, Clitemnestrina, Exeirina, Handlirschiina, Olgiina), by Nemkov and Lelej [1996] within the tribe Gorytini, according to Bohart and Menke [1976]. It included one fossil and 24 recent genera: *Afrogorytes* Menke, 1967, *Ammatomus* A. Costa, 1859, *Arigorytes* Rohwer, 1912, *Austrogorytes* Bohart, 1967, †*Biamogorytes* Nemkov, 1990, *Eogorytes* Bohart in Bohart and Menke, 1976, *Hapalomellinus* Ashmead, 1899, *Harpactus* Shuckard, 1837, *Hoplisoides* Gribodo, 1884, *Gorytes* Latreille, 1805, *Kohlia* Handlirsch, 1895, *Lestiphorus* Lapeletier de Saint Fargeau, 1832, *Liogorytes* Bohart, 1967, *Megistommum* W. Schulz, 1906, *Neoplisus* Bohart, 1967, *Oryttus* Spinola, 1836, *Psammaecius* Lapeletier de Saint Fargeau, 1832, *Psammaletes* Pate, 1936, *Pseudoplisus* Ashmead, 1899, *Pterygorytes* Bohart, 1967, *Sagenista* Bohart, 1967, *Sphecius* Dahlbom, 1843, *Tanyoprymnus* Cameron, 1905, *Trichogorytes* Rohwer, 1912, *Xerogorytes* Bohart in Bohart and Menke, 1976. In his paper on the tribe Gorytini of the

Neotropical Region, Bohart [2000] also recognized Gorytini as a tribe and described eight new genera pertaining to the subtribe Gorytina: *Allogorytes* Bohart, 2000, *Aroliagorytes* Bohart, 2000, *Epigorytes* Bohart, 2000, *Leiogorytes* Bohart, 2000, *Leurogorytes* Bohart, 2000, *Stethogorytes* Bohart, 2000, *Trachogorytes* Bohart, 2000, and *Tretogorytes* Bohart, 2000. The same work synonymized *Neoplisus* with the genus *Stenogorytes* Schrottky, 1911, which was erroneously synonymized with *Megistommum* earlier [Bohart, Menke, 1976].

Based on Prentice's unpublished data [Prentice, 1998], Pulawski [2003a] transferred the genera *Ammatomus*, *Kohlia*, *Sphecius*, and *Tanyoprymnus* from Gorytina to the subtribe Handlirschiina and synonymized the subtribe Argogorytina with Gorytina, thus adding the latter four genera *Argogorytes* Ashmead, 1899, *Malaygorytes* Nemkov, 1999, *Neogorytes* Bohart in Bohart and Menke, 1976, and *Paraphilanthus* Vardy, 1995. He also synonymized *Trachogorytes* with *Mellinus* Fabricius, 1790 from the monotypic subfamily Mellininae [Pulawski, 2007]. The genus *Saygorytes* Nemkov, 2007 includes detaching *phaleratus* species group from the genus *Pseudoplisus* [Nemkov, 2007].

As a result of the latest reclassification of the subtribe Gorytina [Nemkov, Pulawski, 2009], *Pseudoplisus* and *Leiogorytes* were synonymized with *Gorytes*, while the genera *Argogorytes* (including *Malaygorytes*), *Neogorytes* and *Paraphilanthus* were transferred to the resurrected subtribe Argogorytina, and *Trichogorytes* was transferred to the new monotypic subtribe Trichogorytina.

Thus the subtribe Gorytina currently includes one fossil and 26 recent genera, which are highly difficult to identify based on the incomplete keys [Bohart, Menke 1976; Bohart, 2000].

Descriptive terminology follows Bohart and Menke [1976]. The data about the species of Gorytina genera are taken from online catalog [Pulawski, 2003b].

Subtribe **Gorytina**

Lepeletier de Saint Fargeau, 1845

Gorytina Lepeletier de Saint Fargeau, 1845: 54. Based on *Gorytes* Latreille (stem: *Goryt-*). Originally spelled Gorytites, latinized to Gorytinae by Dalla Torre, 1897: 535.

= Arpactinae R. Turner, 1915: 67. Based on *Arpactus* Panzer, 1805 (stem: *Arpact-*).

= Hoplisini Rohwer, 1916: 654, 656. Based on *Hoplisus* Lepeletier de Saint Fargeau, 1832 (stem: *Hoplis-*).

Genera included: *Afrogorytes*, *Allogorytes*, *Arigorytes*, *Aroliagorytes*, *Austrogorytes*, †*Biamogorytes*, *Eogorytes*, *Epigorytes*, *Gorytes*, *Hapalomellinus*, *Harpactostigma*, *Harpactus*, *Hoplisoides*, *Lestiphorus*, *Leurogorytes*, *Liogorytes*, *Megistommmum*, *Oryttus*, *Psammaecius*, *Psammaletes*, *Pterygorytes*, *Sagenista*, *Saygorytes*, *Stenogorytes*, *Stethogorytes*, *Tretogorytes*, *Xerogorytes*.

Diagnosis. Palpal formula 6+4. Labrum not or barely exposed or, if prominent, its exposed part at most one-third as long as broad. Inner eye margins of female almost parallel to conspicuously converging toward clypeus, nearly straight from upper clypeal margin to midocellus level. Ocelli not deformed, well developed. Scutum with oblique carina. Scutellum not overlapping metanotum. Forewing submarginal cell II not petiolate. Male sternum II without keel-like elevation, sternum VIII apically with one or two prongs, volsella differentiated into cuspis and digitus. Female pygidial plate well-defined.

Geographic range. Widely distributed: in the Palaearctic Region — 7, in the Ethiopian — 6, in the Oriental — 5, in the Australian — 1, in the Nearctic — 10, and in the Neotropical — 16 genera.

Biology. Nest in the ground with one or several cells. The prey are leafhopper nymphs and adults from the families Acrocephalidae, Aphrophoridae, Cercopidae, Cicadellidae, Fulgoridae, Issidae, Jassidae, Membracidae, and Psyllidae [Bohart, Menke 1976; Kazenas, 2001]. In general a species of Gorytina selects its prey from a single family and often a single genus or species. Female provides each nest cell with a few (rarely more, up to several tens) leafhoppers and lay egg on one of them.

Key to the genera

1. Hindwing jugal lobe smaller than outline of tegula *Austrogorytes*
- Hindwing jugal lobe larger than outline of tegula 2
2. Female basitarsus with two long setae before apex. Four apical male flagellomeres not modified 3
- Female basitarsus with three long setae before apex. One or more of four apical male flagellomeres modified ... 8
3. Anterior scutellar sulcus foveolate 4
- Anterior scutellar sulcus simple 5
4. Second recurrent vein of forewing ends at submarginal cell II *Gorytes*
- Second recurrent vein of forewing ends between submarginal cells II and III †*Biamogorytes*
5. Hindwing media diverging well beyond *cu-a* *Hapalomellinus*
- Hindwing media diverging at or before *cu-a* 6
6. Axillae large, space between them not more than their wide *Saygorytes*
- Axillae small, space between them much more than their wide 7
7. Acetabular carina short, not longer than three midocellus diameters *Stethogorytes*

- Acetabular carina long, much longer than three midocellus diameters *Megistommmum*
- 8. Hindwing media diverging well beyond *cu-a* *Harpactus*
- Hindwing media diverging at or before *cu-a* 9
- 9. Admedian scutal lines joining to form median carina ... *Afrogorytes*
- Admedian scutal lines broadly separated 10
- 10. Anterior scutellar sulcus simple 11
- Anterior scutellar sulcus foveolate 12
- 11. Forewing stigma very small, shorter than midocellus diameter *Pterygorytes*
- Forewing stigma moderate, longer than midocellus diameter *Psammaletes*
- 12. Gastral tergum I nodose apically *Lestiphorus*
- Gastral tergum I not nodose apically 13
- 13. Subomaulus well defined, continued and some projecting ventrad *Psammaecius*
- Subomaulus absent or obscure 14
- 14. Episternal sulcus absent *Allogorytes*
- Episternal sulcus present 15
- 15. Episternal sulcus curving backward 16
- Episternal sulcus continued downward almost vertically 17
- 16. Metapleural posterior suture simple *Stenogorytes*
- Metapleural posterior suture entirely foveolate *Xerogorytes*
- 17. Acetabular carina long, much longer than three midocellus diameters 18
- Acetabular carina absent or short, not longer than three midocellus diameters 21
- 18. Spiracular groove on propodeum absent 19
- Spiracular groove on propodeum present 20
- 19. Female arolia nearly equal in size. Male gaster with six visible terga *Hoplisoides*
- Female arolia enlarged on foreleg. Male gaster with seven visible terga *Sagenista*
- 20. Propodeal enclosure rugose *Eogorytes*
- Propodeal enclosure mostly smooth *Epigorytes*
- 21. Acetabular carina absent 22
- Acetabular carina present 24
- 22. Propodeal enclosure rugose *Oryttus*
- Propodeal enclosure mostly smooth 23
- 23. Metapleural posterior suture simple *Aroliagorytes*
- Metapleural posterior suture entirely foveolate *Liogorytes*
- 24. Propodeal enclosure rugose 25
- Propodeal enclosure mostly smooth 26
- 25. Metapleural posterior suture simple below and foveolate above *Arigorytes*
- Metapleural posterior suture entirely foveolate *Harpactostigma*
- 26. Metapleural posterior suture simple below and foveolate above *Leurogorytes*
- Metapleural posterior suture entirely foveolate *Tretogorytes*

List of the genera*Afrogorytes* Menke, 1967

Afrogorytes Menke, 1967: 34. Type species: *Gorytes monstruosus* Handlirsch, 1894, by original designation.

Two species of this genus occur in Yemen, Somalia, Tanzania, Zambia, and Namibia.

Allogorytes Bohart, 2000

Allogorytes Bohart, 2000: 220. Type species: *Gorytes bifasciatus* Brèthes, 1909, by original designation and monotypy. One species of this genus occurs in Paraguay.

Arigorytes Rohwer, 1912

Arigorytes Rohwer, 1912: 469. Type species: *Gorytes coquilletti* W. Fox, 1895, by original designation and monotypy. Five species of this genus occur in the USA.

Aroliagorytes Bohart, 2000

Aroliagorytes Bohart, 2000: 182. Type species: *Gorytes imitator* Handlirsch, 1901, by original designation and monotypy. One species of this genus occurs in Brazil.

Austrogorytes Bohart, 1967

Austrogorytes Bohart, 1967: 155. Type species: *Gorytes bellicosus* F. Smith, 1862, by original designation. Thirty-One species of this genus occur in Australia.

†*Biamogorytes* Nemkov, 1990

Biamogorytes Nemkov, 1990: 124. Type species: *Biamogorytes handlirschi* Nemkov, 1990, by original designation and monotypy.

One fossil species of this genus occurs in the Upper Oligocene of the Russian Far East (Russia, Primorskiy Kray, Svetlovodnaya River).

Eogorytes Bohart in Bohart and Menke, 1976

Eogorytes Bohart in Bohart and Menke, 1976: 52, 505. Type species: *Gorytes fulvohirtus* Tsuneki, 1963, by original designation. Three species of this genus occur in Korea, Japan, and Taiwan.

Epigorytes Bohart, 2000

Epigorytes Bohart, 2000: 183. Type species: *Gorytes procerulides* Strand, 1910, by original designation.

Four species of this genus occur in Costa Rica, Colombia, Brazil, and Paraguay.

Gorytes Latreille, 1805

Gorytes Latreille, 1805: 180. Type species: *Mellinus quinquecinctus* Fabricius, 1793, by monotypy.

Arpactus Panzer, 1805: 17. Type species: *Mellinus quadrifasciatus* Fabricius, 1804, by monotypy. Synonymized with *Hoplisus* by Dahlbom, 1843: 159.

Arpactus Panzer, 1806: 164, junior homonym of *Arpactus* Panzer, 1805. Type species: *Mellinus quadrifasciatus* Fabricius, 1804, designated by Pate, 1937: 11.

Euzonia Stephens, 1829b: 363, objective junior synonym of *Gorytes* Latreille, 1805. Type species: *Mellinus quinquecinctus* Fabricius, 1793, designated by Pate, 1937: 27.

Hoplisus Lepeletier de Saint Fargeau, 1932: 61. Type species: «*Hoplisus 5-Cinctus* St. Farg.» [= *Hoplisus quinquecinctus* sensu Lepeletier de Saint Fargeau, 1832 = *Mellinus quinquecinctus* Fabricius, 1793], designated by Westwood, 1839: 80. Synonymized with *Gorytes* by Pate, 1935: 248.

Euspongus Lepeletier de Saint Fargeau, 1832:66. Type species: *Euspongus laticinctus* Lepeletier de Saint Fargeau, 1832, designated by Westwood, 1839: 80. Synonymized with *Hoplisus* by Dahlbom, 1843: 161.

Pseudoplisus Ashmead, 1899: 323. Type species: *Gorytes floridanus* W. Fox, 1891 [= *Pseudoplisus smithii floridanus* (W. Fox, 1891)], by original designation. Synonymized with *Gorytes* by Nemkov and Pulawski, 2009: 7.

Laevigorytes Zavادل in Zavادل and Šnoflak, 1948: 66. Type species: *Gorytes kohlii* Handlirsch, 1888, by monotypy. Synonymized with *Gorytes* by de Beaumont, 1953: 197, synonymy

confirmed by Nemkov 1999: 2. Synonymized with *Pseudoplisus* by Bohart and Menke, 1976: 52.

Leiogorytes Bohart, 2000: 178. Type species: *Leiogorytes guerero* Bohart, 2000, by original designation and monotypy. Synonymized with *Gorytes* by Nemkov and Pulawski, 2009: 7.

One fossil and 76 recent species of this genus occur in the Palaearctic, Ethiopian, Oriental, and Nearctic Regions.

Hapalomellinus Ashmead, 1899

Hapalomellinus Ashmead, 1899: 300. Type species: *Gorytes eximius* Provancher, 1888, primary homonym of *Gorytes eximius* F. Smith, 1862 [= *Gorytes albitomentosus* Bradley, 1920], by original designation and monotypy.

Three species of this genus occur in Canada and the USA.

Harpactostigma Ashmead, 1899

Harpactostigma Ashmead, 1899: 299. Type species: *Hoplisus velutinus* Spinola, 1851, by original designation.

One species of this genus occurs in Chile and Argentina.

Harpactus Shuckard, 1837

Arpactus Jurine, 1807: 192, junior homonym of *Arpactus* Panzer, 1805, and of *Arpactus* Panzer, 1806. Type species: *Arpactus formosus* Jurine, 1807, designated by Shuckard, 1837: 220.

Harpactus Shuckard, 1837: 221. Emendation of *Arpactus* Jurine, 1807. As noted by Pulawski [1985], Shuckard emended *Arpactus* on linguistic grounds, thus creating an available new name, with its own date and author (Articles 19 and 33.2). Since *Harpactus* is an emendation, it has the same type-species as *Arpactus* Jurine (Article 67.8).

Harpactes Dahlbom, 1843: 147, junior homonym of *Harpactes* Swainson, 1837 (Aves), and of *Harpactes* Templeton, 1834 (Arachnida). Emendation of *Harpactus* Shuckard.

Dienoplus W. Fox, 1894: 548. Type species: *Dienoplus pictifrons* W. Fox, 1894, by monotypy. Synonymized with *Harpactus* by Ashmead, 1899: 328.

Seventy-two species of this genus occur in the Palaearctic, Ethiopian, and Nearctic Regions.

Hoplisoides Gribodo, 1884

Hoplisoides Gribodo, 1884: 276. Type species: *Hoplisoides intricans* Gribodo, 1884, by monotypy.

Icuma Cameron, 1905: 21. Type species: *Icuma sericea* Cameron, 1905, by monotypy [= *Gorytes vespoidea* F. Smith, 1873]. Synonymized with *Hoplisoides* by Bohart in Bohart and Menke, 1976: 53.

Seventy-nine species of this genus occur in the Palaearctic, Ethiopian, Oriental, Nearctic, and Neotropical Regions.

Lestiphorus Lepeletier de Saint Fargeau, 1832

Lestiphorus Lepeletier de Saint Fargeau, 1832: 70. Type species: *Crabro bicinctus* Rossi, 1794, by monotypy.

Lestophorus Agassiz, 1847: 208. Emendation of *Lestiphorus* Lepeletier de Saint Fargeau, 1832.

Hypomellinus Ashmead, 1899: 299. Type species: *Gorytes rufocinctus* W. Fox, 1892 [= *Gorytes piceus* Handlirsch, 1888], by original designation. Synonymized with *Lestiphorus* by Pate, 1936: 50.

Mellinogastra Ashmead, 1899: 300. Type species: *Gorytes mellinoides* W. Fox, 1895, by original designation. Synonymized with *Lestiphorus* by Krombein, 1939: 143.

Eighteen species of this genus occur in the Palaearctic, Ethiopian, Oriental, and Nearctic Regions.

Leurogorytes Bohart, 2000

Leurogorytes Bohart, 2000: 186. Type species: *Leurogorytes stangei* Bohart, 2000, by original designation and monotypy.

One species of this genus occurs in Argentina.

Liogorytes Bohart, 1967

Liogorytes Bohart, 1967: 160. Type species: *Liogorytes catarinae* Bohart, 1967 [= *Gorytes polybia* Handlirsch, 1895], by original designation.

Eleven species of this genus occur in Brazil and Argentina.

Megistommum W. Schulz, 1906

Megalomma Shuckard, 1840: 181. Nomen nudum.

Megalomma F. Smith, 1873: 405, junior homonym of *Megalomma* Westwood, 1841. Type species: *Megalomma elegans* F. Smith, 1873 [= *Gorytes procerus* Handlirsch, 1888], designated by Pate, 1837: 37.

Megistommum W. Schulz, 1906: 200. Substitute name for *Megalomma* F. Smith, 1873.

Five species of this genus occur in Mexico, Costa Rica, and Brazil.

Oryttus Spinola, 1836

Oryttus Spinola, 1836: 23. Type species: «*Arpactus concinnus* Rossi, 1790» [= *Sphex concinnus* Rossi, 1790, by monotypy.

Agraptus Wesmael, 1852: 108, objective junior synonym of *Oryttus* Spinola, 1836. Type species: *Gorytes concinnus* of Vander Linden, 1829 [= *Sphex concinnus* Rossi, 1790, by monotypy.

Arcesilas Pate, 1938: 60. Type species: *Gorytes mirandus* W. Fox, 1892, by original designation. Synonymized with *Oryttus* by Bohart, 1968: 435.

Fifteen species of this genus occur in the Palaearctic, Ethiopian, Nearctic, and Neotropical Regions.

Psammaecius Lepeletier de Saint Fargeau, 1832

Psammaecius Lepeletier de Saint Fargeau, 1832: 72. Type species: *Gorytes punctulatus* Vander Linden, 1829, by monotypy.

Five species of this genus occur in the Palaearctic Region.

Psammaletes Pate, 1936

Psammaletes Pate, 1936: 49. Type species: *Gorytes bigeloviae* Cockerell et Fox, 1897, by original designation.

Nine species of this genus occur in the USA, Mexico, Costa Rica, Brazil, and Trinidad.

Pterygorytes Bohart, 1967

Pterygorytes Bohart, 1967: 157. Type species: *Gorytes valens* W. Fox, 1897, by original designation.

Three species of this genus occur in Brazil.

Sagenista Bohart, 1967

Sagenista Bohart, 1967: 157. Type species: *Hoplisis scutellaris* Spinola, 1841, by original designation.

Ten species of this genus occur in the Neotropical Region.

Saygorytes Nemkov, 2007

Saygorytes Nemkov, 2007: 2. Type species: *Gorytes phaleratus* Say, 1837, by original designation.

Seven species of this genus occur in the USA, Mexico, and El Salvador.

Stenogorytes Schrottky, 1911

Stenogorytes Schrottky, 1911: 28. Type species: *Megalomma melanogaster* Schrottky, 1911, by original designation. Synonymized wrongly with *Megistommum* Schulz by Bohart and Menke, 1976: 52.

Neoplisis Bohart, 1967: 159. Type species: *Gorytes notabilis* Handlirsch, 1888, by original designation. Synonymized with *Stenogorytes* by Bohart, 2000: 197.

Fourteen species of this genus occur in the Neotropical Region.

Stethogorytes Bohart, 2000

Stethogorytes Bohart, 2000: 219. Type species: *Stethogorytes volcano* Bohart, 2000, by original designation and monotypy.

One species of this genus occurs in Costa Rica.

Tretogorytes Bohart, 2000

Tretogorytes Bohart, 2000: 181. Type species: *Tretogorytes sinuosus* Bohart, 2000, by original designation and monotypy.

One species of this genus occurs in Brazil.

Xerogorytes Bohart in Bohart and Menke, 1976

Xerogorytes Bohart in Bohart and Menke, 1976: 53, 517. Type species: *Arigorytes anaetis* Pate, 1947, by original designation and monotypy.

One species of this genus occurs in the USA.

Acknowledgements

I am grateful to Prof. A.S. Lelej (Institute of Biology and Soil Science, Vladivostok, Russia) for the critically reviewing the manuscript. The work was supported in part by the Russian Foundation for Basic Research (grant number 08-04-00184) and the Presidium of the Far Eastern Branch of the Russian Academy of Sciences (grants numbers 09-III-A-06-174 and 09-I-II23-09).

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