Review of species of the genus *Macropsidius* Ribaut, 1952 (Homoptera: Cicadellidae: Macropsinae) of Russia and adjacent territories

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**ABSTRACT.** Annotated check list of species of *Macropsidius* of Russia, Transcaucasia, Kazakhstan, Central Asia, and Mongolia with main diagnostic characters and data on biology and distribution is provided. Illustrated key to species is given. The synonymy of *M. arenosus* Mitjaev, 1971, *syn. n.* and *M. ersinicus* Vilbaste, 1980, *syn. n.* under *Macropsidius involutus* Dlabola, 1963 is established.

The genus *Macropsidius* Ribaut, 1952 (Homoptera: Auchenorrhyncha: Cicadellidae: Macropsinae) was described as monotypic for *M. dispar* (Fieber, 1868) [Ribaut, 1952]. However, even eleven years later Dlabola [1963] included in this genus 11 species, 6 of which were described as new. In the subsequent years the review of *Macropsidius* of Caucasus and Transcaucasia [Logvinenko, 1981], and a series of works by Mitjaev [1967, 1971, 1973, 1990] with descriptions of 11 species from Kazakhstan were published along with separate original descriptions by other authors [Emelyanov, 1964, 1972; Vilbaste, 1965, 1980; Lukyanova, 1992]. As a result, at the end of XX century the genus included about 40 Palaearctic species, considerable part of which being known only from single of several localities situated close to each other. These facts were in contradiction with ecological data, since almost all *Macropsidius* species feed on wormwood (*Artemisia* spp., Asteraceae) and inhabit arid plains and midlands of Asiatic part of Palaearctic, so there is nothing to prevent their wide distribution.

In the course of our investigations it has been found that a number of *Macropsidius* species have much wider ranges than it was expected and several ones were described under different names from different regions [Tishechkin, 2006, 2007, 2011]. In total, eight synonyms were established in the articles abovementioned; on the other hand, investigation of a great material collected in Kazakhstan and Central Asia revealed only two new species. Consequently, there is good reason to believe, that the most part of species in this genus are already described. Moreover, several forms from Mediterranean and West China apparently are synonyms. Therefore, the number of species in this genus will hardly increase in future.

The present article includes an annotated check list of species of *Macropsidius* of Russia, Transcaucasia, Kazakhstan, Central Asia, and Mongolia with main diagnostic characters, data on host plants and distribution, and illustrated key to species.

Type specimens of species described by J. Dlabola are deposited in Muséum National d’Histoire Naturelle, Paris and National Museum, Prague. The rest of the material investigated is deposited in the collections of Zoological Institute of the Russian Academy of Sciences (St.-Petersburg) and Zoological Museum of M.V. Lomonosov Moscow State University.

The genus *Macropsidius* is closely related to *Macropsis* Lewis, 1836 and distinctly differs from the latter only by shorter (sometimes considerably reduced) py-
The genus under consideration is most uniform in its external appearance almost all representatives of the genus feed on Rosaceae (Prunus species) differ from Palaearctic ones in larger size, more slender body, and another coloration. In addition, they feed on Rosaceae (Prunus), i.e. have quite a different ecological preferences [Hamilton, 1983]. For these reasons here we treat Macropsidius as a separate genus including only Palaearctic species.

Representatives of Macropsidius are most diverse in the steppes and deserts of Central Asia. Considerable number of species occurs also in Transcaucasia and Mediterranean. Only two species are distributed far outside the Palaearctic arid zone. These are M. sahibergi (Flor, 1861) widespread in Central Europe and M. niger (Matsumura, 1915) occurring from the steppes of South Siberia and Mongolia eastwards as far as the Russian Maritime Territory (Pacific Coast).

The genus under consideration is most uniform in host preferences. Almost all known species feed on wormwood (Artemisia spp.). The only exception is M. maculatus Mitjæv, 1971 dwelling both on Artemisia karatavica Krash. et Abol. ex. Poljak. and on Lepidolaena spp. (also Asteraceae). Only few species are monofagous; most ones can feed on several wormwood species belonging to different sections or even subgenera.

Male vibrational calling signals in Macropsidius are single or repeated phrases with complex temporal pattern [Tishechkin, 2003, 2006, 2007, 2011]. Immediately before copulation a male produces copulatory signals differing from the calling ones [Tishechkin, 2003].

Pygofer processes in Macropsidius quite often vary both in length and in the shape having acute or, by contrast, widely rounded tips (Figs 10–14). Occasionally, left and right processes differ in shape even in the same individual. The shape of styles does not provide diagnostic characters because the expansion in their distal part varies greatly within a species (Figs 15–19). Moreover, in certain species individuals with expanded or with narrow styles are more abundant and this makes situation even more difficult.

For this reason species diagnostics in Macropsidius is based almost exclusively on penis shape. However, in many species penis possess longitudinal lateral and/or ventral laminate carinae so much variable in shape and size, that occasionally new species were described based on males with extreme variants of their structure. Therefore, sometimes dissection of several males is necessary for reliable species identification.

Annotated check list of Macropsidius species of Russia and adjacent territories

1. Macropsidius duuschulus
   Dlabola, 15th October 1965
   Figs 1–3, 15–17, 34–39
   Macropsidius albinervis Violbeste, December 1965 [Tishechkin, 2007]
   Macropsidius rigidus Mitjavev, 1971 [Tishechkin, 2007]
   Coloration typical (Figs 1–3). Penis rather narrow, without longitudinal carinae, with two apical processes somewhat variable in shape and size (Figs 34–39). In the shape of penis distinctly differs from all other representatives of the genus with the exception of closely related M. arenicola Em.

Illustrated redescription with data on acoustic signals is given in Tishechkin [2007]. Identification of M. duuschulus is based on original description, identification of M. albinervis — on investigation of the specimens from Altai Mts. from whence this form was described. Identification of M. rigidus is based on investigation of specimens from Kazakhstan identified by Prof. I.D. Mitjavev.

DISTRIBUTION. South-Eastern Kazakhstan (Dzhungarskiy Alatau, Tarbagatay, and Saur Mtn. Ranges), Altai Mts., steppes of South Siberia (Tyva, South-Eastern Transbaikalia), Mongolia, apparently also adjacent regions of Northern China.

HOST. Artemisia lacinata Willd.
2. *Macropsidius arenicola* Emeljanov, 1972
Figs 20–23, 40–43

Coloration typical (Figs 20–23). Similar to *M. duesschulus*, but differs from it in larger apical part of penis (Figs 40–41) and wider penis shaft in lateral view (Figs 42–43), smaller size (body length in male 3.1–3.5 mm, in female — 3.4–4.1 mm; in *M. duesschulus* 3.5–4.1 and 3.8–4.5 mm, respectively), and lighter coloration. Two large series of specimens from Mongolia were investigated in addition to single ones. All diagnostic characters remain constant within a series of specimens collected at the same locality and date. For this reason we treat this form as a separate species, though very similar to *M. duesschulus*.

Investigation of many specimens from Mongolia showed that the number of subapical teeth on 2nd valvulae of ovipositor in *M. arenicola* and *M. duesschulus*, contrary to data in Tishechkin [2007], considerably overlaps.

Illustrated redescription is given in Tishechkin [2007], identification of species is based on investigation of specimens from Mongolia identified by Prof. I.D. Mityaev.

**DISTRIBUTION.** Extreme South-East of Kazakhstan, Saur Mtn. Range [Mityaev, 2002], Mongolia [Emelyanov, 1972].

**HOST.** In Mongolia was collected from *Artemisia gr. arenaria* [Emelyanov, 1972].

Figs 44–46

Coloration typical. Penis without longitudinal carinae, with two sometimes almost reduced apical denticles (Figs 44–46). Distinctly differs from other species by penis shape.

This species was described in brief terms in the key to species of leafhoppers of European Russia [Emelyanov, 1964]. Detailed redescription with data on acoustic signals is provided in Tishechkin [2006]. Identification of species is based on original description and investigation of specimens from many localities in Russia and Kazakhstan.

**DISTRIBUTION.** Southern Ukraine, Central and Southern European Russia (northwards at least as far as the Oka River Valley), Kazakhstan with the exception of southern deserts and mountain regions. Record from Kyrgyzstan [Isyk-Kul’ Depression; Abdurakhimov, 1972] needs verification and possibly refers to *M. majusculus* Mitjaev, 1971.

**HOST.** *Artemisia abrotanum L.* (= *A. prosera* Willd. = *A. proseraeformis* Krasch.).

Figs 47–48

Coloration typical. Differs from all other species by peculiar shape of penis having basal expansion densely covered with minute denticles (Figs 47–48).

Identification of species is based on original description [Logvinenko, 1981].

**DISTRIBUTION.** Transcaucasia (Nakhichevan’).

**HOST.** *Artemisia* sp. [Logvinenko, 1981].

Figs 49–50

Coloration typical. Differs from all other representatives of the genus with the exception of *M. sahlbergi* (Flor, 1861) by penis bearing very wide ventral carina (Figs 49–50).

Identification of species is based on investigation of paratypes and specimens from Eastern Kazakhstan identified by Prof. I.D. Mitiaev.

**DISTRIBUTION.** Was described from the steppes at the foothills of Kalbinskiy Mtn. Range, Kazakh part of Altai Mts. [Mitjaev, 1971, 1973]. Later was found in the materials from Eastern Mongolia (Eastern and Sukhe-Bator Aimag). Apparently inhabits steppes of Central Asia from Eastern Kazakhstan to Eastern Mongolia.

**HOST.** Was collected from *Artemisia sericea* Web. ex Stechm., *A. frigida* Willd. (subgenus *Artemisia*, section *Absinthium*), and *A. compacta* Fisch. ex DC. (subgenus *Seriphidium*).

6. *Macropsidius sahlbergi* (Flor, 1861)
Figs 51–57

*Pedieopsis sahlbergi* Flor, 1861

Coloration typical. As in *M. kalbensis*, penis with very wide ventral carina (Figs 51–57). Differs from *M. kalbensis* by shorter apical part and more narrow shaft of penis in ventral view (Fig. 51).

Illustrated redescription of *M. sahlbergi* with data on acoustic signals is given in Tishechkin [2006], identification of species is based on Dlabola [1963] and investigation of specimens from many localities in European Russia.

**DISTRIBUTION.** Eastern Europe northwards as far as the Baltic Region, Ukraine, Central and Southern European Russia, Southern part of West Siberia, plains of Kazakhstan. Also was found in two localities in Kyrgyzstan, both in West Tien Shan Mts.: mountain steppes 20 km North of Tash-Kumyr and Karasuu River Gorge 10 km upstream from Karakul’ Town (Figs 55–57).

**HOST.** *Artemisia campestris* L. and *A. arenaria* DC. (both from the subgenus *Dracunculus*).

Figs 58–63

Coloration typical. Penis with narrow, sometimes entirely reduced lateral carinae in the middle of the shaft (Figs 58, 62). Occasionally, carinae are visible only as viewed from the apex in a somewhat lateral view (Fig. 61). Carinae are bent dorsally so that in lateral view sometimes produce an illusion of a single carina on dorsal side of a shaft (Figs 59–60). Apex with one or two denticles on each side of the gonopore.

Identification of species is based on original description and investigation of specimens from Southern Kazakhstan identified by Prof. I.D. Mitiaev.

**DISTRIBUTION.** Southern Kazakhstan (Zailiyskiy Alatau Mtn. Range), Kyrgyzstan (Kungey and Terskey Alatau Mtn. Ranges, Kekemen River Valley).

**HOST.** Was collected from wormwoods from *Abrotanum* section: *A. laciniata* [Mitjaev, 2002] and *A. santolinifolia* Turcz. ex Bess. (our data).

Figs 18–19, 27–28, 64–67

Coloration typical. In most dark males almost all face and fore part of pronotum black, membrane of forewings infumose, almost black (Figs 27–28). Penis narrow, without longitudinal carinae, with groups of denticles on both sides of the apex (Figs 64–67).

**DISTRIBUTION.** Was found only in Western Kopet-Dag Mtn. Range (Turkmenistan).

**HOST.** *Artemisia* sp.

Figs 29–33, 68–77

*Agalia nigra* Matsumura, 1915

*Hephathus niger* Matsumura, 1915

*M. baikalica* Kusnezov, 1929

*Hephathus pygmaeus* Vilbaste, 1966

*Macropsidius bajanagti* Dlabola, 1967


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Macropsidius niger bajanagti Dlabola, 1967 [Tishechkin, 2011]

Distributes from other representatives of the genus by uniform black or unburnt coloration (Figs 29–33). Only in most light-colored specimens black pattern typical for Macropsidius is distinguishable on face, pro- and mesonotum (Fig. 32). Penis with very narrow, occasionally hardly visible lateral carinae usually dentified in apical half (Figs 68–77). Specimens from the steppes of South Siberia and Mongolia have lighter coloration and broader carinae, than the specimens from the Russian Far East (Figs 68–72 and 73–77, respectively). This is a good reason to treat them from the steppes of Central Asia as a separate subspecies, M. niger bajanagti.

Identification of species is based on description in Anufriev [1978]. Illustrated redescription with data on acoustic signals and hosts is given in Tishechkin [2006].

DISTRIBUTION. Steppes of South Siberia and Northern Mongolia, Southern part of the Russian Far East, Korea, apparently also adjacent territories of Northern China.

HOST. In South Siberia (Tyva) was collected from Artemisia glauca Pall. ex Willd. (subgenus Dracunculus), in the Russian Far East (Khabarovsk Region and Maritime Territory) lives on species from the section Artemisia.

10. Macropsidius chazarianus Logvinenko, 1981

Figs 78–83

Coloration typical, in males forewings very rarely are darkened. Penis in basal part with wide lateral carinae and with groups of denticles on both sides of the gonopore (Figs 78–83). Identification of species is based on original description and on investigation of specimens from Astrakhan' Area and from Mangyshlak Peninsula (Northern Kazakhstan). Illustrated redescription is given in Tishechkin [2006].

DISTRIBUTION. Sands of the Northern part of Caspian Depression from North Caucasus (environ of Kakhchakala, Dagestan) to Mangyshlak.

HOST. Wormwoods from the subgenus Dracunculus: A. arenaria, A. scoparia Waldst. et Kit.

11. Macropsidius compactus Mitjaev, 1990

Figs 13–14, 84–86

Coloration typical. Penis narrow with small lateral carinae in the basal half and with groups of denticles on both sides of the gonopore (Figs 84–86). Identification of species is based on investigation of paratypes and specimens from South-Eastern Kazakhstan identified by Prof. I.D. Mitjaev. Illustrated redescription with data on acoustic signals is given in Tishechkin [2006].

DISTRIBUTION. Was described from Northern and North-Western slopes of Tarbagatay Mtn. Range (South-Eastern Kazakhstan), later was found in Naursum Nature Reserve (Northern Kazakhstan) and in Transvolga part of Saratov Area. Apparently, the range includes the most part of the territory of Kazakhstan and Transvolga regions of Southern European Russia.

HOST. Wormwood species from all three subgenera (Artemisia, Dracunculus, and Seriphipidum).

12. Macropsidius maculatus Mitjaev, 1971

Figs 87–92

Coloration typical. Penis with wide lateral carinae divergent in basal two thirds of a shaft and convergent in apical part (Figs 87–92). Apex rather short, with a denticle on each side of the gonopore.

Identification of species is based on investigation of paratypes and specimens from Southern Kazakhstan identified by Prof. I.D. Mitjaev.

DISTRIBUTION. Common species in Syrdar’inskii Karatai Mtn. Range (Southern Kazakhstan). Also, was found in Talas Alatau Mtn. Range (Dauba; Mitjaev, 2002) and in the Western part of Chatkal Mtn. Range (Chatkal’skti’ Nature Reserve, Uzbekistan; our data).


Figs 93–98

Coloration typical. Very similar to M. maculatus and differs from it only by stronger dentified and longer apical part of penis (Figs 93–98). Identification of species is based on original description and investigation of specimens from Southern Kazakhstan identified by Prof. I.D. Mitjaev.

DISTRIBUTION. Southern and South-Eastern Kazakhstan (sand deserts South of the Balkhash Lake; the Zaisan Lake Depression), Uzbekistan, Northern Tajikistan.

HOST. Was collected from Artemisia songarica Schrenk and A. tomentella Trautv., both from the subgenus Dracunculus [Mitjaev, 2002].

14. Macropsidius involutus Dlabola, 1963

Figs 10–12, 99–128

Macropsidius serratus Logvinенко, 1965 [Tishechkin, 2006]

Macropsidius variabilis Mitjaev, 1971 [Tishechkin, 2006]

Macropsidius arenosus Mitjaev, 1971, syn. n.

Macropsidius erisicus Vilbaste, 1980, syn. n.

Coloration typical. Penis with wide lateral carinae more or less dentified in distal part (Figs 99–128). The shape and length of the apical part of penis varies greatly. Also, it must be taken into account, that in M. involutus as well as in many other representatives of the genus back view of penis depends greatly on its position: even slight deviation up or down results in the considerable change of apex length in the drawings (Figs 120–121). Tips of pygofer processes acute or rounded, occasionally both variants can be found in the same specimen (Figs 10–12).

Identifications of M. involutus and M. erisicus are based on original descriptions, identification of M. serratus — on original description and investigation of specimens collected on Kerchenskiy Peninsula (Crimea) ca. 20 km from the type locality. Identifications of M. variabilis and M. arenosus are based on investigation of specimens from Kazakhstan identified by Prof. I.D. Mitjaev. Illustrated redescription of M. involutus with data on acoustic signals is given in Tishechkin [2006].

According to the original description, M. arenosus from the deserts of the Southern Kazakhstan (Southern shore of Balkhash Lake between Karatal and Lepsy Rivers, and Akal’ Lake Depression) differs from M. involutus by shorter and uniformly tapered apical part of penis without spatulate ex-
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pansion. However, investigation of many specimens of *M. involutus* from Kerchenskiy Peninsula (Figs 100–104) revealed several males with almost reduced spatulate expansion and hardly distinguishable denticle only on one side of the apex of penis (Figs 103–104). On the other hand, in males from the Southern Kazakhstan (Karatal River flood-plain North of Ush-Tobe) identified as *M. arenosus* by Prof. I.D. Mityaev (Figs 105–108) the shape of apical part of penis varies greatly, moreover, among them there are specimens indistinguishable from *M. involutus* from Crimea (Fig. 105). In the populations from other regions variability of this character is no less great. All these facts give good reason to establish the synonymy of *M. arenosus* under *M. involutus*.

*M. ersinicus* described based on single male from Southern Tyva, South Siberia (environs of Erzin Village near the boundary of Mongolia) differs from the typical *M. involutus*...
by narrow, parallel-sided and stronger dentified lateral carinae of penis (Figs 126–128). Among many Macropsidius specimens from Mongolia collected by Prof. A.F. Emelyanov I have found only one male with similar penis shape (South-Gobiian Aimag, Nadvgar-Ula Mtn. 55 km NW from Yamag-Ula Mtn., 9.VIII.1974, Figs 123–125). Very occasionally similar specimens are also found in Southern Turkmenistan (Western Kopet-Dag Mtn. Range, Figs 117–118), but there is no clear-cut distinction between them and the specimens from Kazakhstan (Figs 110–112 and 113–118). Since such males are most rare in occurrence and are always found as single specimens, apparently they are not separate biological species, but merely an anomalous form of *M. involutus*.
DISTRIBUTION. Southern regions of Ukraine and European Russia (mainly saline lands on the Black Sea Coast and in Lower Volga Region), almost the whole territory of Kazakhstan; very rare and local in Central Asia.

HOST. Wormwood species from the subgenus Seriphidium.


Figs 129–131

Pale green or yellowish green, black pattern on face, pro- and mesonotum usually partially or entirely absent, only occasionally well developed. Forewings always transparent, with light veins. Penis in basal part with wide lateral carinae abruptly tapered in the middle of a shaft (Figs 129–131). Apical part of penis very long and narrow.

Identification of species is based on investigation of paratypes and specimens from Southern Kazakhstan identified by Prof. I.D. Mitjaev.

DISTRIBUTION. Was collected in the Great and Minor Barsuki Deserts North of Aral Sea, in the sand deserts of Middle Ili River Valley (Kazakhstan) and in Bukhara Area (Uzbekistan). Apparently, the range includes sand deserts of Kazakhstan and Central Asia.

HOST. Type series was collected from *Artemisia* sp. [Mitjaev, 1990]. Later was recorded from *A. santolinifolia* [Mitjaev, 2002].


Figs 132–137

Coloration typical. Penis with rather narrow lateral carinae and single ventral one widest in basal two thirds of a shaft (Figs 132–133, 135–137). Apical part with groups of denticles on both sides.

Illustrated redescriptions based on investigation of holotype is given in Tishechkin [2011].

DISTRIBUTION. I have investigated the male from Arax River Valley (holotype, Figs 132–135) and a series of specimens from Dagestan (environments of Gubden Town, Figs 136–137). Apparently, the range includes arid regions of Eastern Caucasus and Transcaucasia.

HOST. Unknown.

17. *Macropsidius valiturus* Dlabola, 1963

Figs 4–6, 138–145

*Macropsidius demavendinus* Dlabola, 1974 [Tishechkin, 2011]


Coloration typical (Figs 4–6). Penis with two lateral and one ventral carinae (Figs 138–144). As a rule all carinae are widest in basal half of a shaft. Apical part with groups of denticles on both sides. Closely related to *M. araxes* and *M. kajkanus*. Differs from the former species by less developed carinae of penis and the shape of spots on face (Figs 134 and 145), and from the latter one by almost parallel-sided distal half of penis shaft in lateral view (Figs 140–142 and 147).

Identification of *M. valiturus* is based on investigation of type series, identification of *M. demavendinus* — on investigation of the drawings and photographs of paratype genitalia and of the specimens from several localities in Iran. Identification of *M. tricostatus* is based on original description. Illustrated redescriptions are given in Tishechkin [2011].

DISTRIBUTION. Georgia, Azerbaidzhan (Mugansk Steppe and Nakhichevan’), Iran.

HOST. In Nakhichevan’ was found on dry slopes with *Artemisia* sp. and *Achillea* sp. [Logvinenko, 1981].


Figs 146–148

Coloration typical. Penis with two lateral and one ventral carinae (Figs 146–148). All carinae comparatively narrow, gradually tapered apically. Very similar to *M. valiturus* and differs from it by somewhat wider penis uniformly tapered apically in lateral view. In addition, *M. valiturus* occurs in Transcaucasia and Iran, whereas *M. kajkanus* was found only in South-Eastern Kazakhstan.

Identification of species is based on investigation of paratypes. Drawings of genitalia in addition to original description are given in Tishechkin [2011].

DISTRIBUTION. Kaykan Mtn. Range (South-Eastern Kazakhstan, North-Eastern part of Dzhungarskiy Alatau Mtn. Range).

HOST. *Artemisia juncea* Kar. et Kir. from the subgenus Seriphidium [Mitjaev, 2002].


Figs 149–151

Coloration typical. Penis with two lateral and one ventral carinae (Figs 149–151). The formers are strongly expanded in basal half of the shaft and almost reduced in distal half so that penis looks pyriform in back view.

Identification of species is based on investigation of paratypes and specimens from Southern Kazakhstan identified by Prof. I.D. Mitjaev.


HOST. Was collected from *Artemisia juncea* and *A. terrae-albae* Krusch., both from the subgenus Seriphidium [Mitjaev, 2002].


Figs 7–9, 24–26, 152–158


Coloration typical, occasionally more contrasting than in other species (Figs 7–9, 24–26). Penis with two lateral and two ventral carinae (Figs 152–158). The formers are strongly expanded in basal half of the shaft so that penis looks pyriform in back view.

Identification of *M. vallaris* and *M. montanus* are based on original descriptions and on investigation of specimens from many localities in Central Asia. Illustrated redescriptions are given in Tishechkin [2007].

DISTRIBUTION. Turkmenistan (Kugitang Mtn. Range), East of Uzbekistan, Tajikistan (Zeravshan River Valley, Vakhsh and Transalay Mtn. Ranges), South-Western border of Ferghana Valley (environments of Sokh Village 70 km South of Kokand).

HOST. *Artemisia sp.*


Figs 159–165

Coloration typical. As in *M. vallaris*, penis with two lateral and two ventral carinae, but the formers are much more narrow and the latters are set wider apart and directed laterally so that penis looks narrow, almost parallel-sided in back view (Figs 159–165).

DISTRIBUTION. Was described from the foothills on the Southern and South-Eastern boundaries of Kyzylikam Desert and in their central part (Tamyndtau Mts.). Later was found in materials from Akmolinsk Area (Kazakhstan) and Mongolia.

HOST. *Artemisia* from the subgenus Seriphidium.
22. *Macropsidius dispar* (Fieber, 1868)  
Figs 166–169

*Pediopsis dispar* Flor, 1868  
*Macropsidius hispanus* Dlabola, 1963 [Dlabola, 1975]  

Coloration typical, but central part of pronotum sometimes is strongly darkened, especially in males. Penis in back view wide in basal part, gradually tapered apically, without longitudinal carinae (Figs 166–169).

Identification of species is based on description in Ribaut [1952] and investigation of specimens from Spain.  
*M. parvus* Ribaut, 1959 described based on the single male from Southern France (Alpes-Maritimes) is very similar.
to *M. dispar* and differs from it only by narrower penis [Ribaut, 1959]. According to Giustina [1989], genitalia preparation is absent in Ribaut collection, the species was not found later on, so its existence "seems hypothetical". Judging from the illustrations in original description (Figs 170–171), this taxon was described based on the specimen of *M. dispar* with extremely narrow penis. However, investigation of the variability of the latter species is desirable for formal establishing the synonymy.

**DISTRIBUTION.** Spain, Southern France. Records from Russia and adjacent territories [e.g. in Logvinenko, 1981] apparently are in error.

**HOST.** *Artemisia campestris* [Ribaut, 1952].

Since this species was not found in Russia, it is not included in the key to species given below.

**KEY TO SPECIES OF MACROPSIDIUS OF RUSSIA AND ADJACENT TERRITORIES.**

1. Background coloration black or infumose (Figs 29–33). ................................................................. 2

   — Background coloration light, very rarely in certain specimens central part of pronotum or forewings more or less darkened (Figs 20–28). .......................................... 2

2. Penis with two apical processes (Figs 34–36, 40–41). 3

   — Penis without apical processes, usually with one or several denticles on each side of the gonopore. ........ 4

3. Penis with rather short and slender apical part (Figs 34–36) and narrow shaft in lateral view (Figs 37–39). Body length in male 3.5–4.1 mm, in female — 3.8–4.5 mm. ......................................................... 5

   — Penis with larger apical part (Figs 40–41) and wider shaft in lateral view (Figs 42–43). Body length in male 3.1–3.5 mm, in female — 3.4–4.1 mm. ........................ 6

4. Penis with basal expansion densely covered with minute denticles. (Figs 47–48). .......................... 7

   — Penis without basal expansion covered with denticles. 5

5. Penis with longitudinal carinae (Figs 44–46, 62–67); sometimes in *M. majusculus* with very narrow carinae in the middle part of the shaft (Figs 58–61). .......................... 6

   — Penis with one or several longitudinal carinae at least in basal part of the shaft. .............................. 8

6. Penis with widely rounded apex in back view (Fig. 44).

   — Penis with somewhat extended and flattened apical part (Figs 58, 62, 64–66). ................................ 7

   — Apical part of penis with a group of denticles on each side (Figs 64–66). Western Kopet-Dag Mtn. Range (Turkemenistan). ................................. 8

   — Apical part of penis with one or rarely two denticles on each side (Figs 58, 61–63). Southern Kazakhstan, Kyrgyzstan. ................................. 9

7. Pennis with very wide ventral carina throughout all its length (Figs 50, 52–57). .............................. 9

   — Penis without ventral carina or with one or two rather narrow ventral carinae. ............................ 10

8. Penis shaft extended basally in back view, with elongated apex (Figs 49–50). ................................. 11

   — Penis shaft narrow, parallel-sided in back view, with shorter apex (Figs 51–57). ........................... 11

9. Penis with both ventral carinae (Figs 78–131). .......................... 11

   — Penis with one or two ventral carinae (Figs 132–133, 135–144, 146–165). ................................. 16

10. Lateral carinae developed only in the basal part of the shaft, short and narrow, only slightly, if at all, wider than the shaft (Figs 84–86). ............................. 11

   — Lateral carinae much wider than the shaft at least in the widest point, sometimes developed throughout all its length (Figs 78–83, 87–131). 12

   — Lateral carinae expanded in basal half of the shaft and almost reduced in distal half so that penis looks pyriform in back view (Figs 78–79, 129). 13

   — Lateral carinae developed throughout almost all the shaft, tapered towards its apex (Figs 87–128). 14

   — Lateral carinae more or less gradually tapered towards apex, apical part comparatively wide (Figs 78–83). 15

   — Lateral carinae abruptly tapered at the middle of a shaft, apical part of penis very long and narrow (Figs 129–131). 16

11. Lateral carinae arcuate or uneven, slightly divergent or parallel in basal part, typically with numerous small denticles in distal part (Figs 99–116, 119–122), very rarely with larger irregular acute denticles (Figs 117–118, 124–125, 127–128). Penis comparatively narrow in back view. ................................. 17

   — Lateral carinae almost straight and strongly divergent in basal part. Penis broader in back view (Figs 87–98). 15

   — Apical part of penis short, as a rule with a single denticle on each side (Figs 87–90). ......................... 18

   — Apical part of penis elongated, as a rule with several denticles on each side (Figs 93–95). ................................. 19

   — Penis with one ventral carina (Figs 132–133, 135–144, 146–151). ................................. 19

   — Penis with two ventral carinae (Figs 152–165). .......................... 20

   — Lateral carinae narrow, only slightly, if at all, expanded in the middle part (Figs 132–133, 135–144, 146–148). .......................... 21

   — Lateral carinae strongly expanded in basal part so that penis looks pyriform in back view (Figs 149–151). .......................... 20

   — Black spots in the central part of face strongly curved outwards, almost touch each other by the lower ends (Fig. 134). Apical part of penis comparatively short (Figs 132–133, 136–137). ................................. 20

   — Black spots in the central part of face almost straight, parallel-sided, do not touch each other by the lower ends (Fig. 145). Apical part of penis usually elongated (Figs 138–144, 146–148). ................................. 21

   — Penis shaft in side view as a rule somewhat unevenly tapered apically, almost parallel-sided in the distal half, its subapical part rather narrow (Figs 140–142). Transcaucasia, Iran. ................................. 21

   — Penis shaft in side view uniformly tapered apically, its ventral edge forms fair-curve, subapical part wider (Fig. 147). Eastern Kazakhstan (Dzhungarskii Alatau Mtn. Ridge). ................................. 22

   — Lateral carinae wide, strongly curved, widest in the basal half (Figs 152–153). ................................. 22

   — Lateral carinae narrow, more or less parallel-sided, widest in the middle (Figs 159–160). ................................. 21

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Macropsidius of Russia and adjacent territories

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