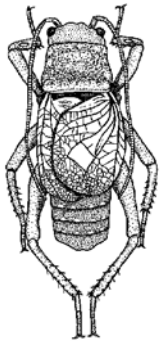

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REVIEW OF THE MYMARIDAE (HYMENOPTERA, CHALCIDOIDEA) OF PRIMORSKII KRAI: GENERA *ARESCON* WALKER AND *DICOPOMORPHA* OGLOBLIN

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Three species of *Arescon* and two species of *Dicopomorpha* are included in this review. *A. zenit* **sp. n.** (Primorskii krai, Russia) and *D. koreana* **sp. n.** (South Korea) are described. *A. dimidiatus* (Curtis) is newly recorded from Russia. A new synonymy is proposed: *A. dimidiatus* (Curtis, 1832) = *A. flaviventris* (Ryland, 1922), **syn. n.** Keys to the three Palaearctic species of *Arescon* and two Palaearctic species of *Dicopomorpha* are given.

KEY WORDS: Hymenoptera, Mymaridae, *Arescon*, *Dicopomorpha*, taxonomy.

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Дается обзор 3 видов *Arescon* и 2 видов *Dicopomorpha*. Описываются два новых для науки вида: *A. zenit* **sp. n.** (Приморский край) and *D. koreana* **sp. n.** (Южная Корея). Впервые для России приводится *A. dimidiatus* (Curtis). Предложена новая синонимия *A. dimidiatus* (Curtis, 1832) = *A. flaviventris* (Ryland, 1922), **syn. n.** Дается определительная таблица 3 палеарктических видов *Arescon* и 2 палеарктических видов *Dicopomorpha.*

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INTRODUCTION

Collecting and preservation methods of the material from Primorskii krai were described by Triapitsyn & Berezovskiy (2001). Terms for morphological features are those of Gibson (1997). All measurements are given in micrometers (μm), as length or, where necessary, as length/width. Abbreviations used are: F = funicle segment of the female antenna or flagellomere of the male antenna; MT = Malaise trap; YPT = yellow pan trap. New distribution records are asterisked (*).

Acronyms for depositories of specimens are as follows: NHMW, Naturhistorisches Museum Wien, Vienna, Austria; UCRC, University of California, Riverside, California, USA; ZIN, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

The investigative responsibilities have been divided between the authors in such a way that SVT is solely responsible for the entire text of this article, including its taxonomic part, while VVB sorted mymarids from bulk samples, point-, card-, and slide-mounted the specimens, and made line drawings.

Genus *Arescon* Walker, 1846

Arescon Walker, 1846: 49 [type-species: *Mymar dimidiatus* Curtis, 1832 (near Belfast, Northern Ireland), by monotypy]; Debauche, 1948: 73; Kryger, 1950: 41; Annecke & Doutt, 1961: 12; Trjapitzin, 1978: 527; Schauff, 1984: 38; Viggiani, 1988: 557; Viggiani, 1989: 143; Noyes & Valentine, 1989: 28; Yoshimoto, 1990: 29; Triapitsyn & Huber, 2000: 613.

Leimacis Foerster, 1847: 208 [type species: *Leimacis rufula* Foerster, 1847 (Aachen, Germany), by monotypy]. Synonymized under *Arescon* by Kryger, 1934: 505.

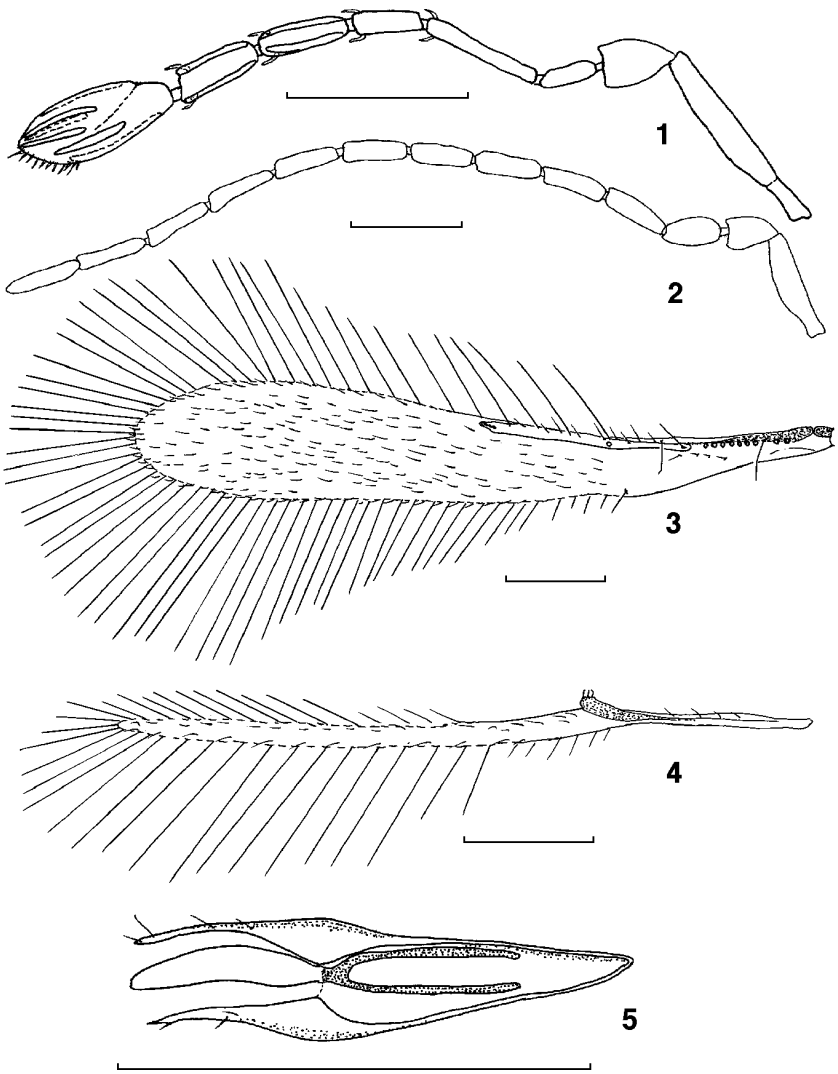
Limacis Foerster, 1856: 116, 117, 120 (an unjustified emendation).

Xenomymar Crawford, 1913: 349 [type-species: *Xenomymar urichi* Crawford, 1913 (Verdant Vale, Trinidad Island, Trinidad and Tobago), by original designation]; Ogloblin, 1938: 97; Ogloblin, 1957: 37. Synonymized under *Arescon* by Annecke & Doutt, 1961: 12.

Neurotes Enock, 1914: CXXXIV [type-species: *Neurotes iridescens* Enock, 1914 (Hollington Wood, Hastings, England), by monotypy]; Enock, 1915: 178; Kryger, 1950: 74. Synonymized under *Arescon* by Kloet & Hincks, 1945: 305.

DIAGNOSIS. See the diagnoses by Debauche (1948), Schauff (1984), Noyes & Valentine (1989), and Yoshimoto (1990). The clava of the female antenna in *Arescon* species is entire, not 2-jointed as mistakenly illustrated for the type-species of the genus by Kryger (1950), although the clava of *A. dimidiatus* indeed is incompletely subdivided dorso-laterally (from the inner side only) (Fig. 1).

COMMENTS. The nomenclatural history of *Arescon* was well discussed by Annecke & Doutt (1961) and Graham (1982). Both sexes of *Arescon* are easily recognizable in the Palaearctic region by the combination of a long marginal vein on the forewing (the venation reaches almost half length of the forewing, like in *A. dimidiatus*, but usually it is much longer), and 5-segmented tarsi. Females of *Arescon* are also distinctive by a characteristic 5-segmented funicle of the antenna, while the males of *Arescon* have an 11-segmented flagellum of the antenna.



Figs 1-5. *Arescon dimidiatus* from Moscow region, Russia (female from Mamontovka and male from Fryazevo): 1) antenna, female, 2) antenna, male, 3) forewing, male, 4) hind wing, male, 5) male genitalia, dorsal view. Scale bars = 0.1 mm.

Despite of the existing descriptions of 19 valid extant species, excluding *A. zenit* sp. n., no taxonomic keys have been available for their recognition besides Argentina (five species - Ogloblin, 1957) and Finland (two species - Hellén, 1974).

Biology of *Arescon* is unknown except for an Oriental species *A. enocki* (Subba Rao et Kaur, 1959), which was reared in India from eggs of *Amrasca devastans* (Distant, 1918) (Homoptera: Cicadellidae) (Subba Rao, 1966; Subba Rao et al., 1968; Kapadia & Mittal, 1995) [*A. devastans* has been treated recently as a synonym of *A. b. biguttula* (Ishida, 1913), also known as *A. biguttula* (Shiraki, 1912)].

The type species of *Arescon*, *A. dimidiatus*, is perhaps the most uncharacteristic species. Its forewing is quite different from the forewing of other species of *Arescon* that we have examined, which have a much longer marginal vein (reaching about 2/3 to 3/4 of wing's length), similar to the one found in *A. zenit* sp. n., to the point that *Arescon* might have to be split to at least two groups in the future, possibly to species-groups or even subgenera; in the latter case *A. dimidiatus* would be the only known species in the nominative subgenus and *Xenomymar* would be upgraded to the subgeneric rank.

The place of *Arescon* within a higher hierarchy of Mymaridae and its relationships with other genera were discussed by Schauff (1984), who considered it to be related to the *Alaptus* Westwood, 1839 group of genera. Viggiani (1988), however, disagreed with that opinion and based on male genitalia placed *Arescon* in the tribe *Aresconini* Viggiani, 1989 of the subfamily Mymarinae (Viggiani, 1989).

Key to the Palaearctic species

1. Forewing with venation reaching just about half length of the wing; forewing disc more or less uniformly setose (Fig. 3) . . . . . 1. ***A. dimidiatus***
− Forewing with venation reaching about 2/3 to 3/4 length of the wing (as in Fig. 7); forewing disc with a well-defined bare area 2
2. Forewing relatively broader, with longest marginal cilia about equal to maximal width of the wing; bare area in the center of the disc . . . . . 2. ***A. iridescens***
− Forewing relatively narrower, with longest marginal cilia almost 2 x greater than maximal width of the wing; bare area in the apical part of the disc (Fig. 7) . . . . . 3. ***A. zenit* sp. n.**

1. *Arescon dimidiatus* (Curtis, 1832)

Figs 1-5

Mymar dimidiatus Curtis, 1832: folio 411 (lectotype - ♀, designated by Graham, 1982: 217, near Belfast, Northern Ireland [Nat. Hist. Division of the National Mus. of Ireland, Dublin], not examined).

Litus dimidiatus: Haliday, 1833: 345; Foerster, 1847: 208.

Arescon dimidiatus: Walker, 1846: 51; Kryger, 1950: 42; Hellén, 1974: 5; Graham, 1982: 216 (*dimidiatum*); Noyes, 1998: CD-ROM (*dimidiata*).

Leimacis rufula Foerster, 1847: 208 (syntypes - ♀ and ♂, Aachen, Germany [NHMW], not examined). Synonymized under *A. dimidiatus* by Kryger, 1950: 42.

Neurotes flaviventris Ryland, 1922: 204 (syntypes - 1♀ and 2♂, top of Bryn Euryn Hill, Rhos, near Colwyn Bay, Wales (UK) [depository unknown], not examined), **syn. n.**

Arescon rufula: Debauche, 1948: 75; Mathot, 1969: 1 (*rufulum*); Trjapitzin, 1978: 527 (*rufulum*); Thuróczy, 1983: 339 (*rufulum*).

Arescon flaviventris: Kloet & Hincks, 1945: 305.

MATERIAL. **Russia**: Moscow region: Fryazevo: 25.VI-2.VII 2000, M.Tretiakov, 1♀; 25.VII 2000, M.Tretiakov, 2♂; 15-25.VIII 2000, M. Tretiakov, 1♂; 23.VIII 2000, M.Tretiakov, 2♀; 25-31.VIII 2000, M. Tretiakov, 2♀; Mamontovka: 10-20.VII 2000, E. Shouvakhina, 1♀, 1♂; 10-20.VIII 2000, E. Shouvakhina, 1♂; 20-31.VIII 2000, E. Shouvakhina, 3♂, 2♂ [UCRC, ZIN]. **Austria**: Lower Austria, Vienna, VII 1950, W. Soyka, 1♂. Tirol, Krössbach: IX 1957, W. Soyka, 1♀; 30.VII 1960, W. Soyka, 1♀ [NHMW].

DIAGNOSIS. Both sexes of *A. dimidiatus* were redescribed by Debauche (1948). Females and males of this species are very easy to distinguish by the characteristic forewing (Fig. 3), with the venation almost reaching half of wing's length. In addition, the main distinguishing features of the female *A. dimidiatus* are as follows. Length of body 600-700 (occurrence of smaller or larger specimens is possible). Coloration of body brown to dark brown except posterior scutellum (sometimes) and base of gaster light brown, antenna smoky brown (scape and pedicel slightly lighter or pale), legs yellowish brown. Head large, wider than mesosoma; vertex with transverse sculpture; torulus at mid level of eye, close to transverse trabecula. Mandible 4-dentate, with three of the teeth acute and one obtuse. Antenna (Fig. 1) with scape slender and smooth; pedicel finely longitudinally striate, a little longer than F1; all funicle segments much longer than wide, F2 the longest of funicle segments, F3 about as long as F1 or slightly longer, F1-F3 without longitudinal sensilla, F4 and F5 subequal in length, wider than preceding funicle segments, each with 2 longitudinal sensilla; clava entire, not 2-jointed as mistakenly indicated and illustrated by Kryger (1950), but incompletely subdivided dorso-laterally (from the inner side only) (Fig. 1), 2.7-2.8 x as long as wide, a little shorter than F4 and F5 together, with 6 longitudinal sensilla and 10-12 modified setae (sensilla) subapically on the ventral side. Mesosoma a little shorter than metasoma; pronotum very narrow; mesoscutum finely longitudinally cellulate-striate, its midlobe with a pair of short setae and each side lobe with a weak seta; scutellum almost smooth, much shorter than mesoscutum, anterior scutellum a little shorter than posterior scutellum, scutellar placoid sensilla in the center of anterior scutellum and well apart from each other, posterior scutellum mediolongitudinally divided; axilla with a weak seta; metanotum with a distinct triangular dorsellum; propodeum smooth, almost as long as scutellum. Forewing as in the male (Fig. 3) but a little narrower, about 6.5 x as long as wide, with venation reaching almost 1/2 length of wing; hypochaeta on submarginal vein long, reaching past posterior margin; the real hypochaeta (the one next to the base of marginal vein) inconspicuous, not reaching posterior margin; first and second distal macrochaetae (following Annecke & Doutt, 1961) slightly less than 2 x as long as proximal macrochaeta; marginal vein with 3 or 4 additional very long setae distad of second distal macrochaeta (their number may differ even in the same specimen); proximal placoid sensillum close to first distal macrochaeta; blade slightly infuscated, almost hyaline; disc more or less uniformly setose distad of middle of marginal vein; longest marginal cilia 1.7-1.9 x greatest width of wing. Hind wing as in the male (Fig. 4), about 23 x as long as wide; blade almost hyaline, mostly bare except for rows

of microtrichia along margins; longest marginal cilia about 6 x greatest width of wing. Metasoma with petiole small, trapezoidal in dorsal view, about as long as wide; ovipositor occupying about 0.7 x length of gaster, a little exserted beyond its apex, ovipositor/metatibia ratio 1.0-1.1:1. The male *A. dimidiatus* is similar to the female except for the normal sexually dimorphic characters and the following. Scape and pedicel pale, flagellum brown; gaster more uniformly colored than in the female. Antenna (Fig. 2) with flagellomeres more or less subequal in length and width (F1 the shortest and widest). Forewing (Fig. 3) 5.9-6.0 as long as wide, otherwise very similar to that of the female (note that the hypochaeta is incorrectly labeled on the submarginal vein in the illustration of the forewing of *A. fulvum* Annecke et Doutt, 1961 (Annecke & Doutt, 1961: Fig. 5) - in Mymaridae, the real hypochaeta, according to Huber (1997), is a distinct (usually, but not in *Arescon*), backwards projecting seta on ventral surface just in front of marginal vein); hind wing (Fig. 4) very similar to the female's; genitalia (Fig. 5) typical for the genus as illustrated by Viggiani (1989), occupying about 1/3 length of gaster.

DISTRIBUTION. *Russia (Moscow region); *Austria, Belgium, Czech Republic, Denmark, Finland, Germany, Hungary, United Kingdom (England, Northern Ireland, Wales).

HOSTS. Unknown.

COMMENTS. We retain here the original, masculine, gender for the type species of this genus, *A. dimidiatus*. However, different authors (see above) spelled this specific name in other genders. Graham (1982) placed *A. flaviventris* in a tentative synonymy under *A. dimidiatus*; after a careful comparison of the original description of *Neurotes flaviventris* by Ryland (1922), with the female and male specimens of *A. dimidiatus* at our disposal, we formalize this apparent synonymy. Unfortunately, Ryland's type material of *Neurotes flaviventris* may no longer exist. The chance that the British fauna has more than two species of *Arescon* besides *A. dimidiatus* and *A. iridescens* (Enock, 1914) is slim, and Ryland's description of *Neurotes flaviventris* fits the morphological characters found in *A. dimidiatus*, such as the narrow forewing without a bare area on the broadest part of the disc.

2. *Arescon iridescens* (Enock, 1914)

Neurotes iridescens Enock, 1914: CXXXIV, pl. A, figs 1 and 2 (syntypes - 1♀ and 1♂, Hollington Wood, Hastings, England (UK) [Nat. Hist. Mus., London, England], not examined); Enock, 1915: 178, pl. 9; Kryger, 1950: 75.

Arescon iridescens: Kloet & Hincks, 1945: 305; Hellén, 1974: 5; Schauff, 1984: 38 (*irridescens* !).

DIAGNOSIS. Both sexes of *A. iridescens* were photographed by Enock (1914) to accompany the original description, which is in fact very short (the second Enock's description of this species, dated 1915, is identical to the first one); it was amended later by Kryger (1950). They are very easy to distinguish by the dark brown coloration of the body as well as by the characteristic forewing with a beautiful

iridescence of the blade (Enock, 1915). The forewing of *A. iridescens* has a distinct, oval bare area in the center of the disc (Enock, 1914); the venation reaches roughly about 2/3 of wing's length (Kryger, 1950). In addition to the forewing characters, F2 of the female antenna of *A. iridescens* is the longest funicle segment (Kryger, 1950).

DISTRIBUTION. Italy (Viggiani & Jesu, 1988), Denmark, Finland, United Kingdom.

HOSTS. Unknown.

COMMENTS. Through the courtesy of Dr. C. Thuróczy (Systematic Parasitoid Lab., Plant Protection and Soil Conservation Sta., Köszeg, Hungary), a series of dry-mounted specimens of *A. iridescens* from Finland, determined by W. Hellén (Hellén, 1974) has been examined; these were loaned from Zool. Mus., Finnish Mus. of Nat. Hist., Helsinki, Finland. These specimens agree in every regard with the descriptions and the photographs of *A. iridescens* by Enock (1914, 1915) and also with the redescription and illustrations by Kryger (1950).

3. *Arescon zenit* S. Triapitsyn et Berezovskiy, sp. n.
Figs 6-8

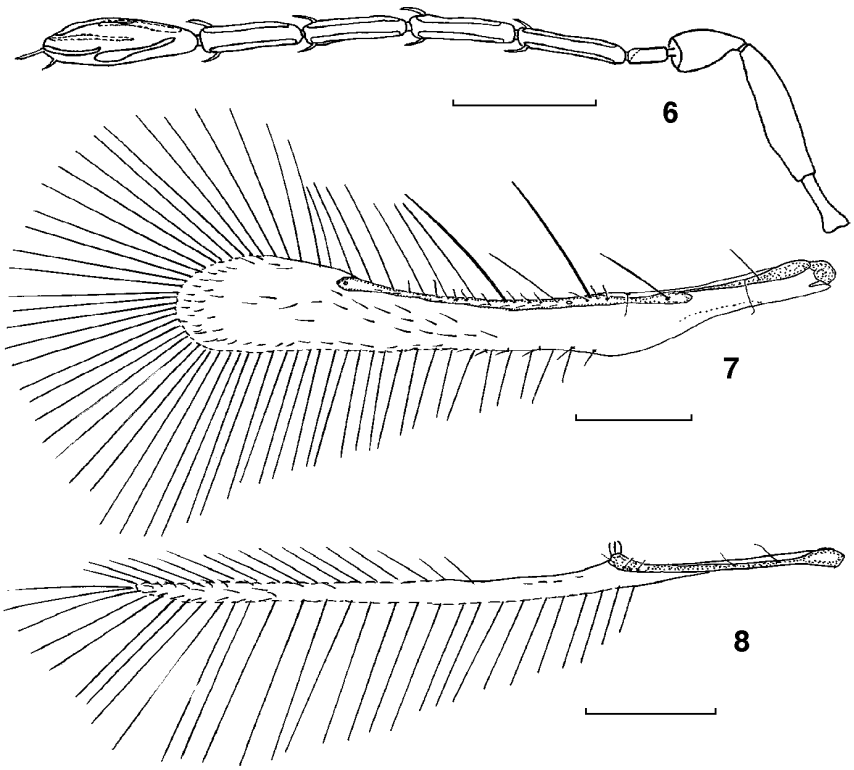
MATERIAL. Holotype – ♀ (on slide) [ZIN]: Russia, Primorskii krai, Ussuriysk district, Gornotayozhnoye, 10-20.VII 2000, M. V. Michailovskaya, MT. Paratype – Russia: same locality and collector as the holotype, 1-4.VIII 1999, 1 ♀ on slide, MT [UCRC].

DESCRIPTION. FEMALE (holotype and paratype). Color. General coloration of body and appendages brown or smoky brown; pedicel, clava, midlobe of mesoscutum, scutellum, legs, and first gastral tergum slightly lighter (paler).

Head. Almost as wide as high in anterior view, wider than mesosoma. Vertex weakly sculptured, ocelli on a rectangular stemmaticum as characteristic of the genus; face almost smooth; torulus at mid level of eye. Mandible 4-dentate, with all teeth acute.

Antenna (Fig. 6). Scape, pedicel, and funicle sparsely setose, clava more densely setose. Scape very finely longitudinally striate, almost smooth, about 4 x as long as wide (excluding radicle, which is long and thin and not fused with the rest of scape); pedicel longitudinally striate, 1.8 x as long as wide, much longer than F1; all funicle segments cylindrical, F1 the shortest, without longitudinal sensilla; F2-F5 subequal in length (F2 the longest), each with 2 longitudinal sensilla and a pair of sickle-shaped sensilla (modified setae) apically; clava entire, 3.5 x as long as wide, with 5 longitudinal sensilla and 2 modified setae (sensilla) subapically on the ventral side.

Mesosoma. Pronotum lightly sculptured, each side lobe with several strong setae. Mesoscutum with faint cellulate sculpture, a little wider than long, its midlobe much longer than wide, with a pair of adnotaular setae, each side lobe with a strong seta in posterolateral angle. Axilla faintly reticulate, without setae. Scutellum about as long as wide, shorter than mesoscutum, anterior scutellum almost smooth, posterior scutellum with weak cellulate sculpture; scutellar placoid sensilla in the center of



Figs 6-8. *Arescon zenit* sp. n., female (holotype): 6) antenna, 7) forewing, 8) hind wing. Scale bars = 0.1 mm.

anterior scutellum. Dorsellum rhomboidal, each lateral panel of metanotum with 1 weak seta. Propodeum smooth, a little shorter than scutellum; mesophragma almost reaching posterior margin of propodeum.

Wings. Forewing (Fig. 7) about 6.7 x as long as wide, with venation reaching almost exactly 3/4 length of wing; hypochaeta on submarginal vein long, reaching past posterior margin; the real hypochaeta (the one next to the base of marginal vein) inconspicuous, not reaching posterior margin; first and second distal macrochaetae (following Annecke & Doutt, 1961) slightly more than 2 x as long as proximal macrochaeta; marginal vein with 6 additional large setae, 1 between the distal macrochaetae and 5 posterior to second distal macrochaeta, proximal placoid sensillum close to first distal macrochaeta; blade strongly infuscated; disc mostly bare except for a group of irregularly arranged setae in the center of the disc and a few scattered setae at apex; longest marginal cilia about 2.3 x greatest width of wing. Hind wing (Fig. 8) 25-26 x as long as wide; blade notably infuscated, mostly bare except for 1 complete row of microtrichia along posterior margin and a few setae at apex; longest marginal cilia 6.3 x greatest width of wing.

Metasoma. Petiole very short, much wider and higher than long. Gaster longer than mesosoma; ovipositor occupying 0.8-0.9 x length of gaster, markedly exserted beyond its apex (by 1/5-1/6 of the total length of ovipositor).

Measurements (holotype): Body (length, taken before slide-mounting): 566; head (length/width, length taken before slide-mounting): 103/200; mesosoma: 273; metasoma: 364; ovipositor: 344. Antenna: scape: 145; pedicel: 52; F1: 32; F2: 80; F3: 76; F4: 76; F5: 73; clava: 111. Forewing: 570/85; venation: 424; longest marginal cilia: 197. Hind wing: 539/21; longest marginal cilia: 133. Legs (given as femur, tibia, tarsus): fore: 130, 139, 161; middle: 130, 197, 139; hind: 136, 224, 155.

MALE. Unknown.

DIAGNOSIS. Among the Palaearctic species of *Arescon,* the new species is most close to *A. iridescens*, from which it differs by the characters indicated in the key. From the females of the two described Indian species, *A. enocki* and *A. mudigerensis* Subba Rao, 1989, *A. zenit* sp. n. differs by the much darker body coloration: it is brownish yellow in *A. enocki* (Subba Rao & Kaur, 1959) and light brown in *A. mudigerensis* (Subba Rao, 1989). *A. zenit* sp. n. is obviously more closely related to *A. mudigerensis*, which also has an infumate forewing (Subba Rao, 1989), than to *A. enocki*, whose forewing is almost hyaline (Subba Rao & Kaur, 1959; Subba Rao, 1989). Additionally, F2 of the female antenna is a little shorter than F3 in the new species whereas it a little longer than F3 in *A. mudigerensis*, and the forewing disc of *A. mudigerensis* is more densely setose (Subba Rao, 1989).

DISTRIBUTION. Known only from the type locality in Russia (Primorskii krai).

HOSTS. Unknown.

ETYMOLOGY. This species is named after Zenit St. Petersburg, the favorite soccer club of SVT.

COMMENTS. The apical part of one antenna of the holotype (F5 and clava) is missing. For comparison, we have examined a series of specimens of *A. enocki* at UCRC (4♀ and 8♂ on slides and 7♀ and 9♂ on points): "INDIA: Karnataka, Bangalore District, Budigere, 6-7 May 1984, S. K. Rajeshwami, ex. *Empoasca signata* (Haupt) on castor bean. Det. S. Krishnaswamy". These specimens fit well both the original description and diagnosis of *A. enocki* by Subba Rao & Kaur (1959) and the short description of the male and the illustrations of the female of this species by Subba Rao (1966), except for the clava which is distinctly solid and bearing at least 7 longitudinal sensilla (it appears 3-segmented in Fig. D, Pl. I, in Subba Rao, 1966). The male of *A. enocki* is slightly darker colored than the female. The indicated host leafhopper, *E. signata* (Haupt, 1927), is a synonym of *E. libyca* (De Bergevin et Zanon, 1922), and also represents a new host record of *A. enocki*, which was known before only from *Amrasca b. biguttula*.

Genus *Dicopomorpha* Ogloblin, 1955

Dicopomorpha Ogloblin, 1955: 387 [type-species: *Dicopomorpha macrocephala* Ogloblin, 1955 (?Loreto or ?San Ignacio, Misiones, Argentina), by original designation]; Annecke & Doutt, 1961: 11; Noyes & Valentine, 1989: 32; Yoshimoto, 1990: 26; Triapitsyn & Huber, 2000: 613.

Chromodicopus Ogloblin, 1955: 390 [type-species: *Chromodicopus pulchricornis* Ogloblin, 1955 (San Ignacio, Misiones, Argentina), by original designation]; Annecke & Doutt, 1961: 11. Synonymized under *Dicopomorpha* by Yoshimoto, 1990: 27.

Dicopulus Ogloblin, 1955: 394 [type-species: *Dicopulus stramineus* Ogloblin, 1955 (Loreto, Misiones, Argentina), by original designation]; Annecke & Doutt, 1961: 11. Synonymized under *Dicopomorpha* by Yoshimoto, 1990: 27.

DIAGNOSIS. See Ogloblin (1955) and Yoshimoto (1990). It must be noted here that generic limits of *Dicopomorpha* are not well set at present and, like in many other genera of Mymaridae, they must be thoroughly redefined based on a worldwide study of the variety of species comprising this large and diverse genus. It must be noted here that F2 in the species with a 7-segmented funicle of the female antenna can vary in length from being subequal to the neighboring funicle segments, like in *D. echmepterygis* Mockford, 1997, to a much shorter (like in *D. indica* (Subba Rao, 1989) or *D. straminea* (Ogloblin, 1955), often ring-like (like in *D. macrocephala* Ogloblin, 1955).

COMMENTS. Both Palaearctic species of this genus have a 6-segmented funicle of the female antenna (due to an apparent loss of F2) whereas all other described and the majority of the undescribed species of *Dicopomorpha* have a 7-segmented funicle (with F2 often very short). However, females of some undescribed Australasian and Oriental species of this genus often have a 6-segmented funicle like the two species from the southeastern Palaearctic region treated here. Dry-mounted specimens of such *Dicopomorpha* species can be easily confused with the species of *Alaptus*.

A host is known for only *D. echmepterygis*, which was reared in Illinois, USA from eggs of *Echmepteryx hageni* (Packard, 1870) (Psocoptera: Lepidopsocidae) (Mockford, 1997).

Key to the Palaearctic species (females)

1. F2 the longest funicle segment . . . . . 1. ***D. liaoningensis***
– F2 shorter than following funicle segments (Fig. 9) . . . . . 2. ***D. koreana* sp. n.**

1. *Dicopomorpha liaoningensis* (Lou, Cao et Lou, 1999)

Alaptus liaoningensis Lou, Cao & Lou, 1999: 429 (holotype – ♀, Shenyang, Liaoning Province, China) [Shenyang Agricultural University, Liaoning, China], not examined).

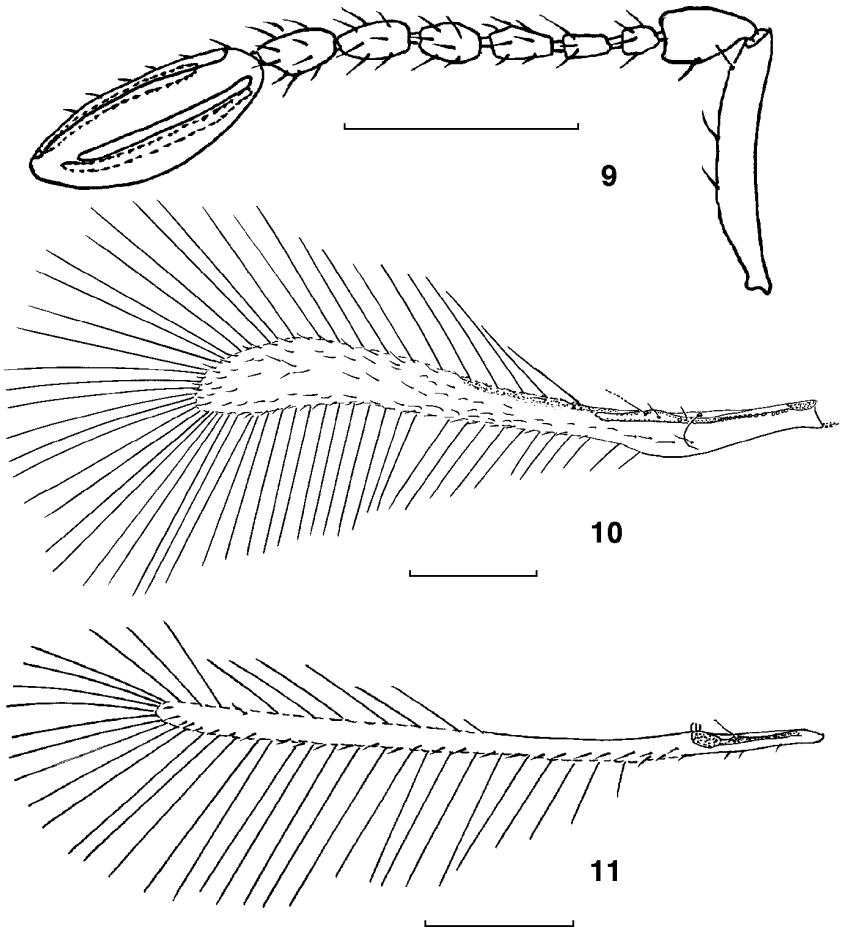
Dicopomorpha liaoningensis: Triapitsyn & Huber, 2000: 613.

DIAGNOSIS. Female. Antenna with a 6-segmented funicle, F2 the longest funicle segment; forewing basally with posterior margin notably incised; ovipositor/metatibia ratio 1.43:1 (Lou et al., 1999).

This species is known only from the female sex (the 4 specimens comprising the type series).

DISTRIBUTION. China (Liaoning).

HOSTS. Unknown.



Figs 9-11. *Dicopomorpha koreana* sp. n., female (holotype): 9) antenna, 10) forewing, 11) hind wing. Scale bars = 0.1 mm.

COMMENTS. The scape and the pedicel in the illustration of the female antenna of *D. liaoningensis*, which accompanies the original description almost certainly are drawn incorrectly, probably because of an awkward position of the antenna on the slide.

2. *Dicopomorpha koreana* S. Triapitsyn et Berezovskiy, sp. n.
Figs 9-11

MATERIAL. Holotype – ♀ (on slide) [UCRC]: South Korea: Gangwon-do, Pyengchang, Donam, Byungnae, 24.IX 1998, J.-Y. Choi, 1♀ on slide, YPT.

DESCRIPTION. FEMALE (holotype). Color. Body and appendages brownish except head, scutellum, metanotum, metacoxa and metafemur pale; eye dirty pink.

Head. Triangular in anterior view, a little wider than high. Vertex and face with faint cellulate sculpture; face hexagonal, torulus at lower eye level. Mandibles cross over, each with 2 equal teeth.

Antenna (Fig. 9). Scape slightly curved and with faint longitudinal sculpture, 5.7 x as long as wide; pedicel finely longitudinally striate, 1.8 x as long as wide, much longer than F1 and much wider than funicle segments; all funicle segments longer than wide, each with several setae exceeding segment's width, without longitudinal sensilla; F1 and F2 shorter than following segments, F3-F6 subequal in length, F6 the broadest funicle segment, clava 2.7 x as long as wide, with 4 longitudinal sensilla occupying almost its whole length.

Mesosoma. Pronotum mediolongitudinally divided, without setae. Mesoscutum with strong longitudinally cellulate sculpture, midlobe with a pair of weak setae, each side lobe with a strong seta. Axilla large, with 2 weak setae. Scutellum cellulate-reticulate, about as long as mesoscutum. Metanotum band-like. Propodeum much shorter than scutellum. Mesophragma strongly projecting into metasoma posteriorly, reaching base of first gastral tergum.

Wings. Forewing (Fig. 10) 8.8 x as long as wide, with posterior margin slightly, but notably curved; hypochaeta long and curved, almost reaching posterior margin, macrochaeta (distal) very strong (it is partially broken off on both wings); blade infuscated basally, medially, and along margins; chaetotaxy on disc irregular, leaving a small bare area just beyond venation and a larger bare area in the broadest (apical) part; longest marginal cilia 3.1 x greatest width of wing. Hind wing (Fig. 11) about 21 x as long as wide; blade infuscated throughout in a patchy pattern, with a row of microtrichia along posterior margin; longest marginal cilia 6.3 x greatest width of wing.

Metasoma. Gaster a little longer than mesosoma; ovipositor very short, occupying about 1/3 length of gaster, not exserted beyond apex of gaster; ovipositor/metatibia ratio 0.62:1. Cerci with very long, curved setae.

Measurements (holotype): Body (length, taken before slide-mounting): 399; head (length/width, length taken before slide-mounting): 90/164; mesosoma: 182; metasoma: 221; ovipositor: 100. Antenna: scape: 121; pedicel: 48; F1: 22; F2: 25; F3: 33; F4: 33; F5: 35; F6: 37; clava: 121. Forewing: 536/61; longest marginal cilia: 191. Hind wing: 497/24; longest marginal cilia: 151. Legs (given as femur, tibia, tarsus): fore: 118, 112, 130; middle: 130, 164, 127; hind: 151, 161, 133.

MALE. Unknown.

DIAGNOSIS. The new species differs from *D. liaoningensis* in having F2 shorter than following funicle segments (in *D. liaoningensis*, F2 is the longest funicle segment). The basal incision of the posterior margin of the forewing of *D. koreana* sp. n. is much less prominent than in *D. liaoningensis*. The ovipositor is much shorter in *D. koreana* sp. n. than in *D. liaoningensis* (the respective ovipositor/metatibia ratios are 0.62:1 and 1.43:1).

DISTRIBUTION. Republic of Korea (Gangwon-do).

HOSTS. Unknown.

ETYMOLOGY. The specific name originates from the Korean Peninsula where the species was collected.

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REFERENCES

Annecke, D. P. & Doutt, R. L. 1961. The genera of the Mymaridae Hymenoptera: Chalcidoidea. – Entomological Memoirs (Department of Agricultural Technical Services, Republic of South Africa) 5: 1-71.

Crawford, J. C. 1913. Descriptions of new Hymenoptera, No. 8. – Proceedings of the United States National Museum 46 (No. 2029): 343-352.

Curtis, J. 1832. British Entomology 9: Plates 386-433 (with text). London.

Debauche, H. R. 1948. Etude sur les Mymarommidae et les Mymaridae de la Belgique (Hymenoptera Chalcidoidea). – Mémoires du Musée Royal d'Histoire Naturelle de Belgique 108: 1-248.

Enock, F. (1913)1914. On a new genus of Mymaridae. – The Transactions of the Entomological Society of London: cxxxiv, pl. A.

Enock, F. 1915. A new mymarid from Hastings. – The Hastings and East Sussex Naturalist 2: 178-181, pl. 9 (p. 101).

Foerster, A. 1847. Ueber die Familie der Mymariden. – Linnaea Entomologica 2: 195-233.

Foerster, A. 1856. Hymenopterologische Studien. II Heft. Chalcidiae und Proctotrupii. Aachen: Ernst ter Meer. 156 p.

Gibson, G. A. P. 1997. Chapter 2. Morphology and terminology. – In: Gibson, G. A. P., Huber, J. T., & Woolley, J. B. (Eds.). Annotated keys to the genera of Nearctic Chalcidoidea (Hymenoptera). Ottawa: NRC Research Press: 16-44.

Graham, M. W. R. de V. 1982. The Haliday collection of Mymaridae (Insecta, Hymenoptera, Chalcidoidea) with taxonomic notes on some material in other collections. – Proceedings of the Royal Irish Academy B82(12): 189-243.

Haliday, A. H. 1833. An essay on the classification of the parasitic Hymenoptera of Britain, which correspond with the Ichneumones minuti of Linnaeus. – Entomological Magazine 1: 259-276, 333-350.

Hellén, W. 1974. Die Mymariden Finnlands (Hymenoptera: Chalcidoidea). – Fauna Fennica 25: 1-31.

Huber, J. T. 1997. Chapter 14. Mymaridae. – In: Gibson, G. A. P., Huber, J. T., & Woolley, J. B. (Eds.). Annotated keys to the genera of Nearctic Chalcidoidea (Hymenoptera). Ottawa: NRC Research Press: 499-530.

Kapadia, M. N. & Mittal, V. P. 1995. Record of two egg parasitoids of the okra jassid *Amrasca biguttula biguttula* (Ishida). – Gujarat Agricultural University Research Journal 20(2): 180-181.

Kloet, G. S. & Hincks, W. D. 1945. A check list of British insects. With a preface by N. D. Riley. – Stockport, England: T. Buncle & Co., Ltd. 483 p.
Kryger, J. P. 1934. Synonymic remarks on some generic names of Mymaridae (Hym.). – Entomologiske Meddelelser 18: 503-508.
Kryger, J. P. 1950. The European Mymaridae comprising the genera known up to c. 1930. – Entomologiske Meddelelser 26: 1-97.
Lou, J.-X., Cao, T.-W. & Lou, M. 1999. Two new species of *Alaptus* in northeastern China (Hymenoptera: Chalcidoidea: Mymaridae). – Acta Zootaxonomica Sinica 24(4): 429-432.
Mathot, G. 1969. Contribution à la connaissance des Mymaridae d'Europe et description d'espèces nouvelles (Hymenoptera: Chalcidoidea). – Bulletin de l'Institut Royal des Sciences Naturelles de Belgique 45(7): 1-23.
Mockford, E. L. 1997. A new species of *Dicopomorpha* (Hymenoptera: Mymaridae) with diminutive, apterous males. – Annals of the Entomological Society of America 90(2): 115-120.
Noyes, J. S. 1998. Catalogue of the Chalcidoidea of the World. – ETI/The Natural History Museum. CD-ROM.
Noyes, J. S. & Valentine, E. W. 1989. Mymaridae (Insecta: Hymenoptera) - introduction, and review of genera. – Fauna of New Zealand 17: 1-95.
Ogloblin, A. A. 1938. Descripción de una nueva especie del género *Xenomymar*, Crawford (Mymaridae, Hym.). – Revista Argentina de Entomología 1(3): 97-100.
Ogloblin, A. 1955. Los nuevos representantes de la fam. Mymaridae (Hym.) de la República Argentina. – Bollettino del Laboratorio di Zoologia Generale e Agraria «Filippo Silvestri», Portici 33: 377-397.
Ogloblin, A. A. 1957. Especies nuevas del género *Xenomymar* Crawford (Mymaridae, Hymenoptera). – Neotropica 3(11): 37-44.
Ryland, A. W. 1922. A new mymarid from North Wales. – Entomologist 55: 204-205.
Schauff, M. E. 1984. The Holarctic genera of Mymaridae (Hymenoptera: Chalcidoidea). – Memoirs of the Entomological Society of Washington 12: 1-67.
Subba Rao, B. R. 1966. Records of known and new species of mymarid parasites of *Empoasca devastans* Distant from India. – The Indian Journal of Entomology 28: 187-196.
Subba Rao, B. R. 1989. On a collection of Indian Mymaridae (Chalcidoidea: Hymenoptera). – Hexapoda 1: 139-186.
Subba Rao, B. R., Baldev Parshad, Atma Ram, Singh, R. P. & Srivastava, M. L. 1968. Distribution of *Empoasca devastans* and its egg parasites in the Indian Union. – Entomologia Experimentalis et Applicata 11(2): 250-254.
Subba Rao, B. R. & Kaur, R. B. 1959. Studies on Indian Mymaridae - part I. – Proceedings of the Indian Academy of Sciences (B)49: 227-238.
Thuróczy, C. 1983. Négy, a faunánkra új fémfürkészfaj (Hymenoptera: Chalcidoidea, Mymaridae). [Four mymarid species new to the fauna of Hungary (Hymenoptera: Chalcidoidea]. – Folia Entomologica Hungarica 44(2): 338-340. (In Hungarian.)
Triapitsyn, S. V. & Berezovskiy, V. V. 2001. Review of the Mymaridae (Hymenoptera, Chalcidoidea) of Primorskii krai: genus *Mymar* Curtis. - Far Eastern Entomologist 100: 1-20.
Triapitsyn, S. V. & Huber, J. T. 2000. 51. [Fam. Mymaridae - mymarids]. – In: [Keys to the insects of Russian Far East. Vol. IV., Pt. 4. Vladivostok, Dal'nauka: 603-614. (In Russian.)
Trjapitzin, V. A. 1978. 18. [Fam. Mymaridae - mymarids]. – In: [Keys to the insects of the European part of the USSR]. Vol. III. Pt 2. Leningrad, Nauka: 516-538. (In Russian).

Viggiani, G. 1988. Biosystematics of mymarid egg-parasitoids of Auchenorrhyncha. − Proceedings of the 6th Auchenorrhyncha Meeting, Turin, Italy, 7-11 Sept. 1987: 555-565.
Viggiani, G. (1988)1989. A preliminary classification of the Mymaridae (Hymenoptera: Chalcidoidea) based on the external male genitalic characters. – Bollettino del Laboratorio di Entomologia Agraria «Filippo Silvestri» di Portici 45: 141-148.
Viggiani, G. & Jesu, R. 1988. Considerazioni sui Mimaridi italiani ed i loro ospiti. − Atti [XV] Congresso Nazionale Italiano di Entomologia [L'Aquila] 15: 1019-1029.
Walker, F. 1846. VIII.-Descriptions of the Mymaridae. − The Annals and Magazine of Natural History 18: 49-54, and Errata and Addenda: viii.
Yoshimoto, C. M. 1990. A review of the genera of New World Mymaridae (Hymenoptera: Chalcidoidea). Flora & Fauna Handbook No. 7. Gainesville, Florida, Sandhill Crane Press, Inc. 166 p.