UDC 595.797 Entomological Review, 73 (5), 1994

Sphecid Wasps of the Genus *Belomicroides* (Hymenoptera, Sphecidae) of Asia* [1]

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Abstract. A review of known Asiatic species of oxybeline digger wasps of the genus *Belomicroides* Kohl including 5 species is given. *B. desertorum* sp. n. from Turkmenistan and *B. mela* sp. n. from Uzbekistan are described. The male of *B. olgae* Kazenas is described for the first time. A key to species of the genus from Asia and figures of anatomical details are offered.

Key words: Hymenoptera; Sphecidae; *Belomicroides*; systematics (new species).

At present, in the genus *Belomicroides* Kohl 10 species distributee exclusively in the Old World (4 species from Rhodes Island, Tunisia, and Algeria in Mediterranea; 3 species in South Africa; and 1 species each in Sri Lanka, Tajikistan, and Kazakhstan) (Bohart and Menke, 1976; Kazenas, 1979; Krombein, 1982) are known. The genus *Belomicroides* probably is the most generalized in the tribe Oxybelini of the subfamily Crabroninae (Bohart and Menke, 1976). It differs from other genera of the tribe in the absence of the propodeal spine and distinct scales of the postscutellum, and also in the strongly developed medial carina of abdominal sternite VI in the ♀. Asiatic species of the genus differ particularly in the absence of emargination on the ventral margin of the mandibles. Their ♀s are characterized (in known cases) also by considerably paler, as compared with ♂s, color of the body, presence of triangular processes in the lower part of the genae, and variously shaped unpaired processes of the medial lobe of the clypeus.

All materials known today were collected in arid, often desert regions; however, there have been no data on the biology of species of *Belomicroides* until now.

This paper presents a review of species of *Belomicroides* recorded in Asia, including descriptions of 2 new species, *B. desertus* sp. n. from Repetek (Turkmenia) and *B. melas* sp. n. from the vicinity of Bukhara (Uzbekistan). Examined materials are preserved in the collection of the Zoological Museum of Moscow State University (ZMM) and the Zoological Museum of the Russian Academy of Sciences, St. Petersburg (ZIS).

In descriptions of new species proportions of body parts are designated as follows: *IOD*, ratio of distance between inner orbits at the level of the medial ocellus to the distance between them at the level of the antennal pits; *OOD:OD:POD*, ratio of distance between inner orbit on vertex and lateral ocellus to diameter of lateral ocellus and distance between lateral ocelli. Measurements were made at magnification ×56.

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*Originally published in Zoologicheskiy Zhurnal, Vol. 73, No. 1, 1994, pp. 89-96.

[1]This work was funded by a "Universities of Russia" grant.

ISSN0013-8738/94/0005-0092

KEY TO ASIATIC SPECIES OF *BELOMICROIDES*

1. ♀ (in *B. zimini* and *B. melas* not known): medial lobe of clypeus with unpaired process, lower parts of genae with small triangular processes, abdominal sternite VI with medial carina. ..... 2.

— ♂ (in *B. rostratus* and *B. desertus* not known): medial lobe of clypeus and lower parts of genae without distinct processes, apical abdominal sternites without medial carinae. ..... 4.

2. Process of medial lobe of clypeus apically truncate (Fig. 2, *4*). ..... *B. olgae* Kazenas

— Process of medial lobe of clypeus triangularly rostrate (Figs. 3, *2*; 4, *2*). ..... 3.

3. Medial lobe of clypeus with small apical emargination (Fig. 3, *1*), mandibles relatively robust; body predominantly (head and mesopleura partly, mesonotum and propodeum entirely) black with yellow pattern. ..... *B. rostratus* Krombein

— Medial lobe of clypeus apically truncate (Fig.4, *1*), mandibles relatively slender; body predominantly whitish yellow (head, except transverse stripe on vertex between eyes; mesonotum, except 3 longitudinal stripes; mesopleura, except apices; and propodeum, except apical and pair of basilateral spots pale), with weak brown pattern. ..... *B. desertus* sp. n.

4. Head and thorax, except basal 2/3 of mandibles, humeral tubercles posteriorly, and transparent tegulae, completely black; foretibia mesally; midtibia, except outer side; and hindtibia, except base and apex; and also entire femora, except apices, black; tibia with strongly developed, long spines. ..... *B. melas* sp. n.

— Head and thorax with somewhat lesser developed pale pattern; foretibia entirely, midtibia, except inner stripes, and hindtibia externally whitish yellow; forefemora ventrally with small yellow spots. Spines of tibia weaker. ..... 5.

5. Head (clypeus at base of medial lobe and on sides, lower face on sides, and long inner orbits, entire head posteriorly to vertex) and thorax (pronotum anteriorly; on ridge and humeral tubercles; mesonotum along lateral margins; mesopleura posterior to humeral tubercles; scutellum entirely; and postscutellum on sides) with rather bright yellow or yellowish ferrugineous spots. ..... *B. olgae* Kazenas

— Head and thorax predominantly black, except ferrugineous clypeus and posterior part of head ventrally and tiny spots on pronotal ridge. ..... *B. zimini* (Gussakovskij)

Belomicroides zimini (Gussakovskij)
(Fig. 1, *1*-2)

zimini Gussakovskij, 1952: 258 (*Melomicrus*). Lectotype ♂, designavi (ZIS).

Material. Lectotype, ♂: "Tajikistan, Dzhilikul', Vakhsh R., 13.VI.1934 (Gussakovskiy). Turkmenia, 1 ♂: Ak.Yayla., Atrek R., 22.VII.1932 (A. Ushinskiy)" (ZIS). Kazakhstan, 1 ♂: "vicinity of Kapchagay, 12.VII.1979 (Kazenas)" (ZMM).

Remarks. In the original description, besides the lectotype designated here, a specimen from

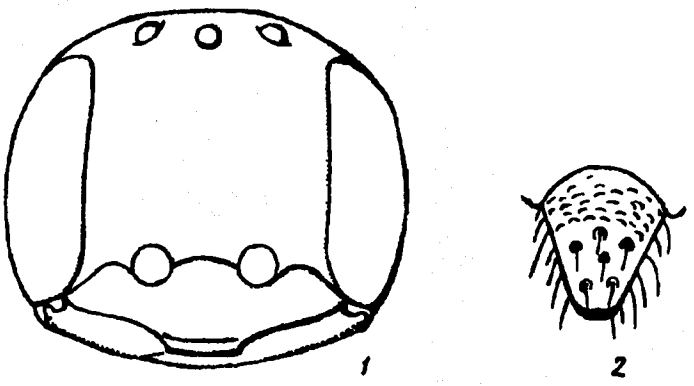

Fig. 1. *Belomicroides zimini* (Gussakovskij), ♂: *1*) head in anterior view, 2) abdominal tergite VII in dorsal view.

Ukraine is mentioned. In the collection of Gussakovskiy (ZIS) I found only a pin with labels "Aleshki, 12.VII.1926 (L. Zimin)" and "*Belomicrus zimini*, n. sp., ♂. Gussakovskij det.," and also a piece of porous vegetable material with a minute pin sticking in it. Unfortunately the specimen itself had been lost and it was impossible to compare it with the lectotype.

Belomicroides olgae Kazenas
(Fig. 2, *1-4*)

olgae Kazenas, 1979: 172. Holotype ♀, examinavi (ZIS).

Material. Holotype ♀: Kazakhstan, "70 km NW of Furmanovka, Dzhambul Prov., 24.VI.1975 (Kazenas)." Paratype, 1 ♀: "SE Kazakhstan, 17 km NWW [sic, = WNW?] Bakanas, Ili R., 18.VI.1970 (Kazenas)" (ZIS). Kazakhstan, 1 ♂, Aksuen, 27.VI.1979 (Pesenko) (ZMM).

Description. ♂ (described for first time). Head in anterior view (Fig. 2, *1*) round and slightly transverse; *IOD* = 50:54; medial lobe of clypeus convex, with transparent apical stripe, almost squarely truncate, with blunt lateral teeth; frons convex, with short medial depression at level of apices of compressed scapes; areas between lateral ocelli on vertex and inner orbit oval-convex; *OOD*:*OD*:*POD* = 6:9:21; mandibles without ventral emargination or process; all flagellar segments except apical segment transverse; pronotum anterior with transverse pit divided by short medial ridge into two parts (each part wider than diameter of lateral ocellus); pronotal ridge with barely developed medial depression and distinct, transparent posterior stripe; postscutellum with weak lateral stripe, slightly depressed laterally; mid- and hindtibia with rows of long, but slender spines; abdominal tergite VII with distinctly convex pygidial area restricted on sides, and distinctly outlined also posteriorly (Fig. 2, *2*).

Sculpturation of body in form of somewhat even, dense punctation on shiny background, becoming absent at apex of medial lobe of clypeus, in lower part of genae, on forefemora, and apex of dorsal area of propodeum. Intervals between punctations in middle of frons, on pronotum, in anterior angles of mesonotum and upper parts of mesopleura half as great or equalling diameters of punctation, and ventrally and on sides of frons, on vertex, in middle and posterior parts of mesonotum, on scutellum and in lower part of mesopleura 1.5-3 times diameters of punctations. Basal part of dorsal area of propodeum finely reticulate-shagreened, and posterior and lateral surfaces of propodeum densely reticulate-shagreened. Abdominal segments with dense and fine punctation on background of transverse

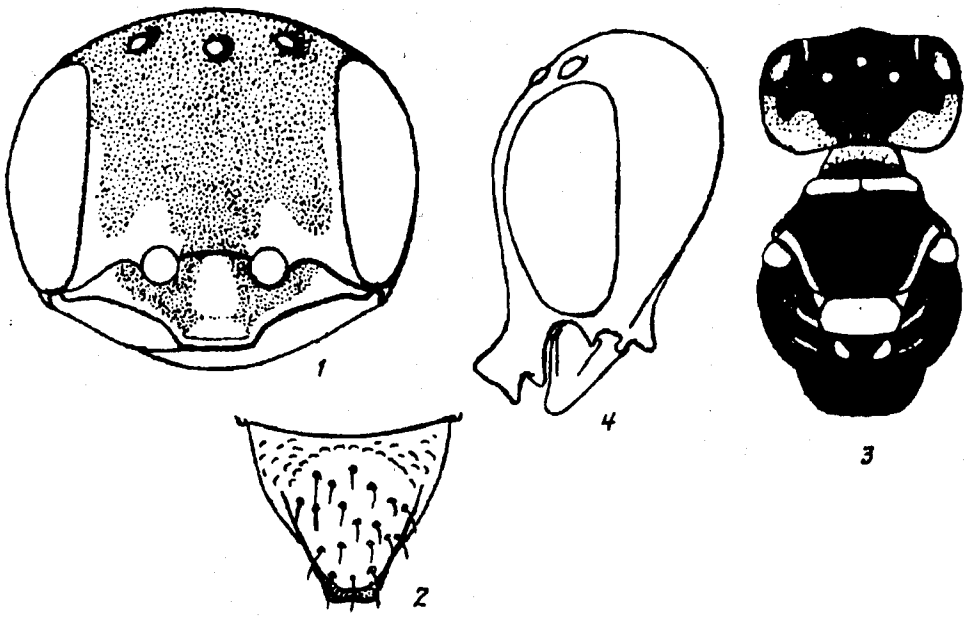

Fig. 2. *Beomicroides olgae* Kazenas: *1*) head in anterior view; *2*) abdominal tergite VII in dorsal view; 3) head and thorax in dorsal view; 4) head in lateral view; *1-3*) ♂, *4*) ♀.

microstriation, except smooth and very sparse (3-4 times diameter of large punctations) punctate pygidial area.

Pubescence of body mainly of slender, short, sparse, decumbent silvery setae, except even slenderer, but longer setae of apical stripe of clypeus, lower surface of fore- and midtrochanters and femora, and also 3 apical abdominal segments and sternal preapical cilia.

Color of body predominantly black (Fig. 2, *3*). Basal 2/3 of mandibles, clypeus on sides and basal spot of its medial lobe, face on sides of antennal pits and slender setae along inner orbits almost to projection of medial ocellus, all tibia externally, bases of tegulae, wing scales and veins whitish yellow. Antennae ventrally, lower part of genae posteriorly, pronotal ridge and humeral tubercles posteriorly, lateral margins of pronotum, scutellum entirely, postscutellum on sides, axillary sclerites partly, mesopleura posterior to humeral tubercles, forefemora wide ventrally, and midfemora near apex ventrally, foretibia predominantly and all tarsi, except apical segments, yellow.

Flagellum dorsally, genae at base and occiput entirely, pronotum anteriorly and in lower angles, propleura posteriorly, midtibia mesally, and apical segments of tarsi ferrugineous. Medial lobe of clypeus predominantly and contiguous parts of lateral lobes, scape dorsally and pedicel almost entirely, propleura anteriorly, forecoxae and trochanters partly and pygidial area entirely brown.

Length of body 4.0 mm.

Differential diagnosis. The ♂ of *B. olgae* differs from ♀ of this species in absence of process on medial lobe of clypeus, less developed pale pattern of clypeus and entire face and also completely black abdomen. Among known ♂s of Asiatic species, the ♂ of *B. olgae* is most similar in color of legs

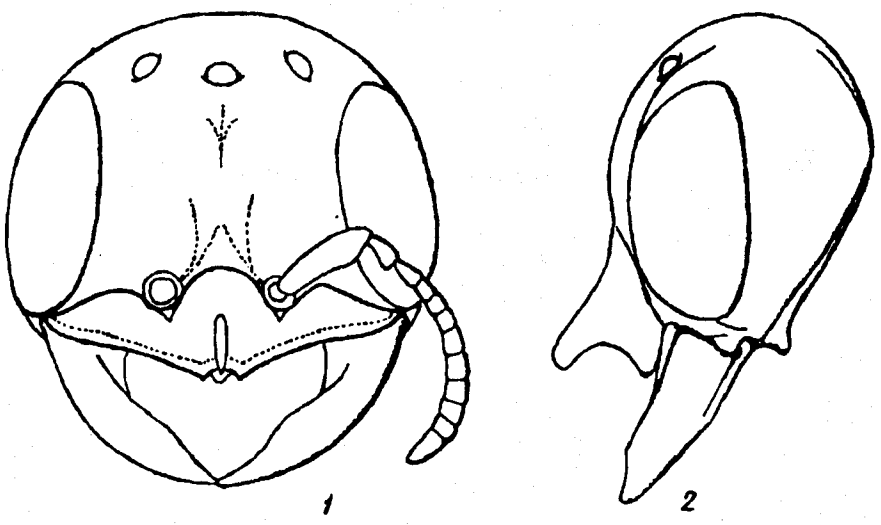

Fig. 3. *Belomicroides rostratus* Krombein, ♀ (after Krombein, 1982): *1*) head in anterior view, 2) head in lateral view.

and partly of head and also sculpturation of body to *B. zimini*, but differs in developed pale pattern of thorax and somewhat sparser punctation of vertex. It differs from the almost black ♂ of *B. melas* sp. n. in not only considerably paler color of body, including head and legs, but also in sparser punctation of head and thorax and slenderer spines of midtarsi and hindtarsi.

Belomcroides rostratus Krombein
(Fig. 3, *1*-2)

rostratus Krombein, 1982: 31 (holotype ♀, No. 100322, USNM).

Distribution. Sri Lanka (S Province). Krombein (1982) noted that this species occurs in one of most arid regions of the SE part of the island.

Remarks. *B. rostratus* is known only from 1 ♀. It is most similar to *B. desertus* sp. n. in the shape of the process of the medial lobe of the clypeus, but differs in small emargination of its apical stripe, more robust mandibles, slightly longer middle flagellar segments, but most of all in predominantly black body color, mesonotum and propodeum entirely, and head, mesopleura, and metapleura partly.

Belomicroides desertus Antropov, sp. n.
(Fig. *4*, 1-5)

Material. Holotype ♀: "Turkmenia, Repetek, *Alhagi camelorum*, 22.VII.1937 (G. Kostylev)" (ZMM).

Description. ♀. Head anteriorly (Fig. 4, *1*) round, almost as wide as high; *IOD* = 48:54; medial lobe of clypeus at apex with transparent stripe, truncate, delimited on sides with small teeth, with pointed rostrate, medial process (Fig. 4, 2), slightly curved downward; frons convex and without medial furrow; *OOD*:*OD*:*POD* = 6:9:20; genae ventrally with distinct triangular processes, mandibles without ventral emargination or process, and with pointed apex; flagellar segments (except apical

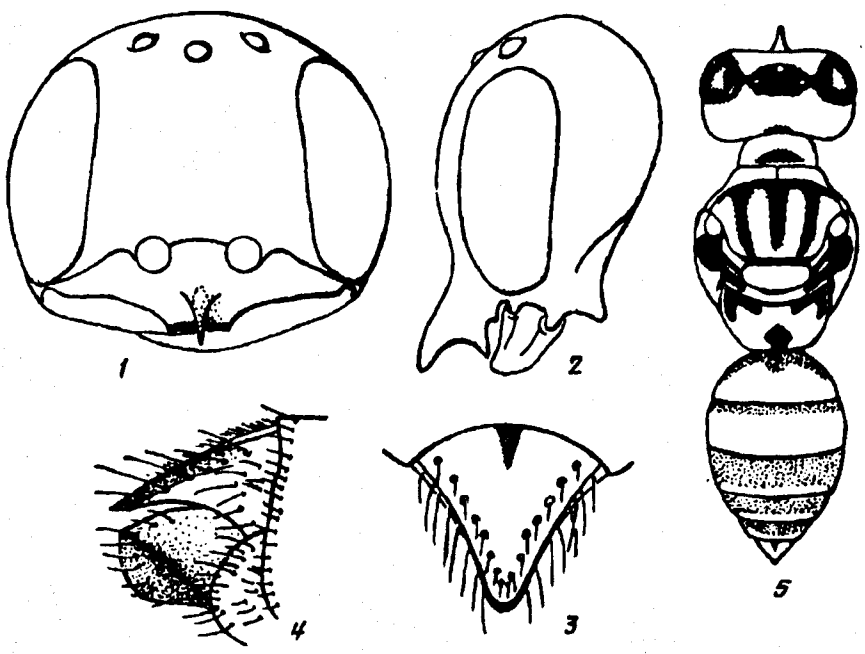

Fig. 4. *Belomicroides desertus* sp. n.: *1*) head in anterior view, 2) head in lateral view, *3*) abdominal tergite VI, *4*) sternite IV in lateral view, *5*) pattern of body in dorsal view.

segment) transverse; pronotum in anterior part with medial ridge and pair of oval pits on sides of anterior end; pygidial area (Fig. 4, *3*) acute (slightly less than 60); abdominal sternite VI with acute, oval, medial ridge (Fig. 4, *4*).

Sculpturation of body predominantly in form of slender punctation, even and dense on head and thorax and lacking on process of medial lobe of clypeus, genae ventrally, apex of dorsal area of propodeum, and abdominal segments (especially sternites). Intervals between punctations on frons, vertex, genae, pronotal ridge, mesonotum, scutellum, and upper parts of mesopleura equal to or half 0.5-1 diameter of punctations, and on lower parts of mesopleura, on sides of propodeum and on abdominal tergite I 1.5-2 times diameter of punctation. Abdominal tergites II-V and I-VI with micropunctation at base. Pygidial area smooth, with large punctations along sides.

Pubescence of frons, vertex, genae, and thorax present, sides of propodeum and abdominal segments (except apical segments) consisting of sparse, short (not longer than diameter of medial ocellus), semidecumbent, silvery setae. Face ventrally, on sides and clypeus, except process of medial lobe, with denser semidecumbent setae almost masking sculpturation of cuticle.

Color of body (Fig. 4, *5*) predominantly whitish yellow. Apical 1/3 of mandibles; transverse spot in front of pronotal ridge; upper parts of mesopleura; basilateral spots near dorsal area and medial spot of posterior part of propodeum; small spots on coxae, trochanters, and basal half of hindfemora; basilateral spots of tergite I and sternites I-III; narrow basal transverse stripe of tergite II; broad basal stripes of tergites III-V and sternites IV-V; and also abdominal sternite VI entirely brown. 3 longitudinal stripes of mesonotum and lateral stripes of scutellum and postscutellum black.

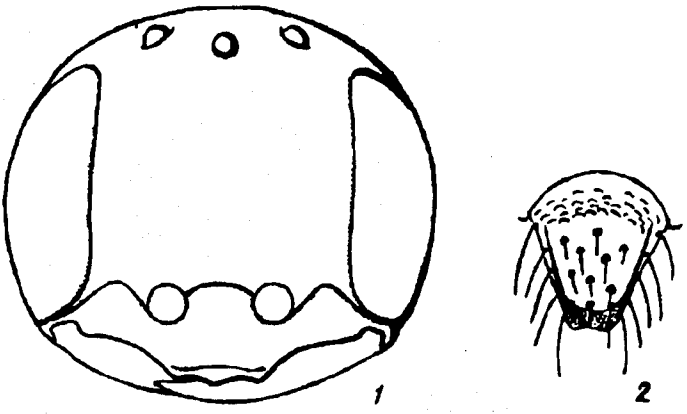

Fig. 5. *Belomicroides melas* sp. n., ♂; *1*) head in anterior view, 2) abdominal tergite VII in dorsal view.

Length of body 3.6 mm.

♂ not known.

Differential diagnosis. In shape of clypeal process, the new species is most similar to *B. rostratus*, from which it differs in slenderer mandibles, anteriorly truncate medial lobe of clypeus and, especially, in considerably paler body color. The ♀ of *B. desertus* differs from the ♀ of *B. olgae* in pale color of head and thorax, and also in shape of clypeal process and broader pygidial area.

Belomicroides melas Antropov, sp. n.
(Fig. 5, *1*-*2*)

Material. Holotype ♂: Uzbekistan, 35 mm SE of Bukhara, 1.VI.1991 (V. Gorbatovskiy) (ZMM).

Description. ♂. Head anteriorly (Fig. 5, *1*) round, slightly transverse; *IOD* = 41:47; medial lobe of clypeus roundly convex, with transparent apical stripe bearing weak medial process and restricted on sides by small but distinct teeth; frons convex, with small, medial depression, but without medial groove; vertex on sides of lateral ocelli and between ocelli broadly concave; *OOD:OD:POD* = 5:8:18; mandibles slender, without ventral depression or process; all flagellar segments, except apical segment, transverse; pronotum with pair of small pits (half diameter of lateral ocellus) divided by short medial ridge; pronotal ridge with barely developed medial depression and distinct marginal stripe posteriorly; postscutellum posteriorly on sides with distinct marginal stripe and medial depression; hindtibia along posterior margin with 2 basal rows of relatively robust, flattened spines, length of which not less than width of hindtibia at base; abdominal tergite VII with flat, outlined pygidial area (Fig. 5, 2).

Sculpturation of body mainly in form of dense punctation with shiny intervals between punctations, lacking on apex of medial lobe of clypeus, in lower parts of genae, and on apex of medial lobe of clyepus, in lower parts of genae, and on apex of dorsal area of propodeum. Intervals between punctations on frons and vertex equal to or half diameter of punctation, on mesonotum; at base of scutellum, and in upper parts of mesopleura 1.5-3 times diameters of punctation. Lower part of base of scutellum, propodeum, and abdominal segments (except tergite VII) with microscopic punctation on background of microstriation. Abdominal tergite VII with several large punctations.

Pubescence of body consisting of relatively sparse, very short, decumbent silvery setae not masking sculpturation of cuticle.

Color of body predominantly black. Basal 2/3 of mandible, small spots on apices of forefemora ventrally, scales at base of forewings, and veins of wings whitish. Antennal flagellum ventrally; humeral tubercles posteriorly; tarsi and foretibia predominantly; midtibia externally; and hindtibia at base yellowish ferrugineous. Apex of clypeus, scape, pedicel, and flagellum dorsally; humeral tubercles at base; tegulae; and apex of abdomen brown.

Length of body 3.0 mm.

♀ not known.

Differential diagnosis. *B. melas* differs from all known ♂s of Asiatic species primarily in entirely black body (except wings, fore- and midtibia, and tarsi), and also in denser punctation of frons, vertex, and mesonotum.

LITERATURE CITED

BOHART, R. M., and A. S. MENKE. 1976. Sphecid Wasps of the World. A Generic Revision. Univ. of Calif. Press, Berkeley—Los Angeles—London: 1-695.

GUSSAKOVSKIY, V. V. 1952. New and little known species of Psammocharidae and Sphecidae (Hymenoptera) of western Tajikistan. [In Russ.]. Tr. Zool. Inst. Akad. Nauk SSSR 10: 199-288.

KAZENAS, V. L. [no date given]. New species of the genus *Belomicroides* Kohl (Hymenoptera, Sphecidae) from southeastern Kazakhstan. [In Russ.]. In: Novyye Vidy Nasekomykh Tr. Vsesoyuzn. Entomol. Obshch. 61: 172-174.

KROMBEIN, K. V. 1982. Biosystematic studies of Ceylonese wasps, X: Taxonomic and biological notes on some Oxybelinae (Hymenoptera: Sephecoidea, Crabronidae). Internatl. J. Entomol. (India) 1(1): 31-39.