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Notes on the specific status of *Chalicodoma saussurei*
(RADOSZKOWSKI, 1874)
(Hymenoptera: Apoidea: Megachilidae)

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ABSTRACT. *Megachile saussurei* RADOSZKOWSKI, 1874 is an distinct species, not a synonym of *M. leachella* CURTIS, 1828. It belongs to the genus *Chalicodoma* (sensu MICHENER 1962, 1965). Redescription of *Ch. saussurei* and comparative notes with *Megachile leachella* are given.

Key words: entomology, taxonomy, redescription, Hymenoptera, Apoidea, Megachilidae, *Chalicodoma saussurei*, *Megachile leachella*.

The original description of *Megachile saussurei* was supplied by RADOSZKOWSKI (1874b) on the basis of a female specimen from Saratov (South Russia). In 1875 F. MORAWITZ, based on the collection materials of FEDTSCHENKO and RADOSZKOWSKI from Uzbekistan, described a male of *M. saussurei* and a new species *M. multispinosa* for a male. V. V. POPOV (1946, 1967) examined the males of both species described by MORAWITZ and found that actually the male of *M. saussurei* was a male of *M. multispinosa*, but the male of so-called *M. saussurei* was in fact a male of *M. leachella* CURTIS, 1828.

Very likely, this confusion of male description caused the synonymisation of *M. saussurei* RAD. with *M. leachella* CURTIS (SCHWARZ et al. 1996).

The purpose of this paper is to clarify the question. In this connexion we examined all the available material and studied the main sources of information about both species.

MATERIAL EXAMINED

Lectotype: (female) provided with 2 red and 3 white labels: one red label with inscription "Typus", the other with inscription "Lectotypus"; one white label with inscription "*saussurei*", another with inscription "*Megachile saussurei* det et coll. RADOSZKOWSKI", the third label with inscription "Lectotypus *Megachile saussurei* RAD., B. TKALCU det.". The lectotype was designated by TKALCU in 1978. It is deposited in the Krakow collection of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences (ISEA, PAS).

Comparative material of *Ch. saussurei*: 1F – Uzbekistan, Samarkand, 5. 07. 1954, leg. RASULOV, det. PONOMAREVA; 1F 1M – Kazakhstan, Charkin, 27. 06. 1951, *Lotus corniculatus* (1F), *Alhagi camelorum* (1M), leg. RUDOLF; 1M – Turkmenistan, Kara-Kala, 30. 05. 1952, *Zygophyllum*, leg. KIRJAKOVA, det. POPOV (coll. of Zoological Institute of RAS, St. Petersburg, Russia).

Comparative material of *M. leachella*: 2F – Cherkassy d., Kanev Reserve, 5. 06. 1950, *Lotus corniculatus*, *Stachys recta*; 1F – Nikolaev d., Voznesenskii sovchoz, 16. 06. 1954, *Medicago sativa*; 1F – Kirovograd d., Bandurovka, 24. 07. 1953. *Lotus corniculatus*; 10F – Kherson, near Zurupinsk, Oleschkinski peski, 24. 06. 1968, *Genista tinctoria*; 9M – Kherson d., Chernomorskii Reserve, 8. 06. – 10. 06. 1960, *Amorpha fruticosa*; 1M – the same place, 16. 06. 1968, leg. and det. OSYTSHNJUK; 1M – Crimea, Karadag, 19. 08. 1928, leg. KARAWAJEV, det. OSYTSHNJUK. 1F – France o Tournon, St. Donats – Herbasse, 18. 07. 1984, leg. GUSENLEITNER, det. Zanden; 1M – Cardak, Asia Minor, 7. 06. 1964, leg. GUSENLEITNER, det. REBMANN (Biologiezentrum, Landesmuseum, Linz, Austria), 1F – Poland, 22. 07. 1972, leg. BANASZAK, det. PETERS.

We also examined all specimens of the collection at the Institute of Zoology, National Academy of Sciences, Kiev, Ukraine, of the private collection of J. BANASZAK, Bydgoszcz, Poland, and specimens loaned from the Collection of the Institute of Systematics and Evolution of Animals, Krakow, Poland.

TAXONOMIC HISTORY

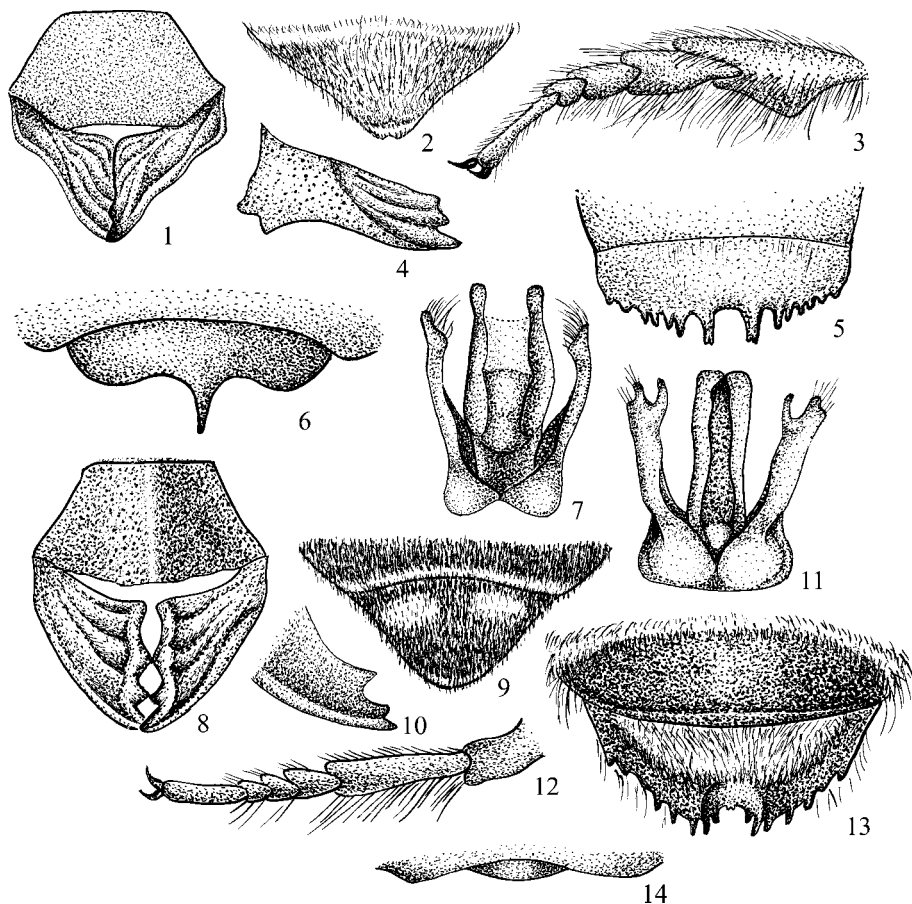
Chalicodoma saussurei (sensu MICHENER 1962, 1965) is a representative of the subgenus *Pseudomegachile*. This subgenus was established by FRIESE in 1899 and was placed by him in the genus *Megachile* LATREILLE, 1802. MICHENER (1962, 1965) divided this a large and heterogeneous group into three separate genera – *Megachile*, *Chalicodoma* and *Creightonella*. Already RADOSZKOWSKI (1874a, b) recognized two large groups (*Megachile* and *Chalicodoma*) within *Megachile*. According to Michener's classification the subgenus *Pseudomegachile* was included in the genus *Chalicodoma*.

This concept of generic classification within *Megachile* was accepted by most apidologists (PASTEELS 1965, TKALCU 1967, 1969, MITCHEL 1980, ZANDEN 1989, RASMONT et al., 1995, BANASZAK, ROMASENKO, 1998). At the same time the generic classification of FRIESE with some changes was supported by REBMANN (1968, 1970), WARNCKE (1970) and other German apidologists.

In the last system of *Apoidea* MICHENER (2000) no longer recognizes the three genera. He places them as subgenera in the genus *Megachile*, but recognizes three groups "each equivalent to one the three genera".

M. leachella is a representative of the subgenus *Eutricharaea* within the genus *Megachile*. For many years this species was misidentified by European authors as *M. argentata* (F.). In 1872 THOMSON established the subgenus *Eutricharaea* and designated the putative *M. argentata* as its type species.

This fact was revealed by HURD (1967). On the basis of type studies of FABRICIAN *Apis argentata* he concluded that it was not *Megachile argentata* as



1–7. *Chalicodoma* (*Pseudomegachile*) *saussurei* (RAD.): female (1–2): 1 – clypeus and mandibles, 2 – metasomal tergum 6; male (3–7): 3 – protarsus, 4 – mandible, 5 – tergum 6, 6 – tergum 7, 7 – genitalia; 8–14. *Megachile* (*Eutricharaea*) *leachella* CURTIS: female (8–9): 8 – clypeus and mandibles, 9 – metasomal tergum 6; male (10–14): 10 – mandible (apex), 11 – genitalia, 12 – protarsus, 13 – tergum 6, 14 – tergum 7

interpreted by European authors, but a North African species of *Megachile*, belonging to the subgenus *Eutricharaea*. He designated the lectotype for *Apis argentata* FABRICIUS in 1964. For the European so-called *M. argentata* he proposed a valid name – *M. leachella* CURTIS. At the same time REBMANN (1967), studying this species in detail, confirmed HURD's decision.

RESULTS AND DISCUSSION

Undoubtedly, the above mentioned information clearly shows that *Chalicodoma saussurei* and *Megachile leachella* are representatives of two different subgenera and genera. Each of them is a separate species and differs in features indicated in the following table:

<i>Ch. saussurei</i> (RAD.)	<i>M. leachella</i> CURTIS
	female
1. Supraclypeal area scarcely punctate in middle.	1. Supraclypeal area with small impunctate area in middle.
2. Clypeus flattened, completely rugulose punctate, its apical margin nearly abrupt, smooth (Fig. 1).	2. Clypeus convex in middle, very closely punctate with impunctate longitudinal midline, its apical margin slightly produced in middle, finely serrate (Fig. 8).
3. Mandible with broad 2-dentate apex (Fig. 1).	3. Mandible with broad 4-dentate apex (Fig. 8).
4. Mesoscutum coarsely rugulose punctate.	4. Mesoscutum finely rugulose punctate.
5. Propodeal triangle (metapostnotum) shining, very delicately shagreened, except coarsely narrow strip at base.	5. Propodeal triangle mat delicately shagreened, except coarsely shagreened triangle at base.
6. Metasomal terga closely regularly punctate.	6. Metasomal terga not so closely irregularly punctate.
7. Tergum 1 with lateral macula of white short felt-like hairs and narrow apical fringe.	7. Tergum 1 with lateral macula of white erect hairs and narrow apical fringe.
8. Terga 2-5 with broad white apical bands (width = 1/4 tergal length).	8. Terga 2-5 with narrower apical bands (width = 1/5 tergal length).
9. Tergum 6 black, with sparse white close-fitting hairs (Fig. 2).	9. Tergum 6 black, with two oval maculae of white felt-like pubescence (Fig. 9).
10. Ventral scopa white.	10. Ventral scopa white, with black apex.
11. Sternum 5 with interrupted apical fringe of short white hairs.	11. Sterna 2-5 with uninterrupted apical fringe of longer white hairs.

male

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|---|---|
| 1. Mandible 2-dentate at apex (Fig. 4). | 1. Mandible 3-dentate at apex (Fig. 10). |
| 2. Protarsus yellowish-brown, its basitarsus slightly dilated along lower margin, with fringe of long dense white hairs (Fig. 3). | 2. Protarsus black or brownish-black, its basitarsus narrow, not dilated, with short white hairs (Fig. 12). |
| 3. Tergum 6 broad, spine-like denticulate at apex, with white sparse pubescence (Fig. 5). | 3. Tergum 6 narrowed, more or less coarsely denticulate at apex, with dense felt-like pubescence (Fig. 13). |
| 4. Tergum 7 large, rectangular at apex, with spine-like mid-process of apical margin (Fig. 13). | 4. Tergum 7 small, rounded at apex (Fig. 14). |
| 5. Genitalia: gonostylus dilated apically with two processes, penis valve with rounded apex (Fig. 7). | 5. Genitalia: gonostylus not dilated apically, with slanting apex, penis valve with dilated apex (Fig. 11). |

The taxonomic value of morphological characters of *Ch. saussurei* and *M. leachella* confirms the significant differences between two species. Both female and male specimens of *Ch. saussurei* clearly differ from those of *M. leachella* in the form and structure of the clypeus, mandibles, metasomal terga 6 and male terga 7, protarsi, male genitalia, as well as the sculpture and pubescence of mesosoma and metasoma. Based on results of a comparative morphological study of the two species, the representatives of different subgenera *Pseudomegachile* FRIESE, 1899, and *Eutricharaea* THOMSON, 1872, we have arrived at a conclusion that *Ch. saussurei* is distinct species, and its name is valid.

REDESCRIPTION OF *CHALICODOMA (PSEUDOMEGACHILE) SAUSSUREI* (RAD.)

Ch. saussurei, both female and male specimens, were described very briefly and incompletely by RADOSZKOWSKI (1874) and MORAWITZ (1875), therefore we give their redescription below.

Female. Body length: 12-13 mm. Black, except the reddish-brown ventral part of mesepisterna, sterna 1-2, base of sternum 3, ventro-lateral part of metasomal terga 1-2 and legs. Head rounded, somewhat shorter than wide. Lateral parts of clypeus, supraclypeal area and paraocular area with dense white pubescence. Antennae: scape black, pedicel and flagellum brownish; pedicel as wide as long, flagellomeres longer than wide, except second ones, which are shorter than wide. Supraclypeal area weakly convex, irregularly punctate. Clypeus (Fig. 1) flattened, closely punctate, its apical margin nearly abrupt, smooth, slightly thickened. Mandibles (Fig. 1) short, with broad bidentate apex. Mesoscutum and mesoscutellum closely punctate, with white sparse pubescence. Propodeum granulate posteriorly and laterally, white pubescent; propodeal triangle delicately shagreened, except

coarsely shagreened basal part. Metasoma strongly convex dorsally. Metasomal terga densely punctate; tergum 1 with white close-fitting pubescence laterally, with sparse narrow apical fringe; terga 2-5 with white wide unbroken bands (equal to 1/4 tergal length); tergum 6 with short black pubescence and sparse white pubescent at base (Fig. 2), with short dense reddish-yellow pubescence apically; ventral scopa white; sterna 6 with short white hairs. Hind tibial spurs yellowish, acute at apex. Metabasitarsus slightly dilated, its base and apex of equal width, about 4 times as long as wide.

Male. Similar to female, differs in some characters as follows. Body length: 11-12 mm. Antennae: scape, flagellum brownish; flagellomere 1 as wide as long, the rest longer than wide. Clypeus slightly convex, closely regularly punctate, its apical margin abrupt, smooth. Supraclypeal area closely punctate. Mandible with bidentate apical margin (its apex somewhat narrow than base), lower basal tooth (Fig. 4) short, blunt, triangular. Metasomal terga 2-5 with apical bands narrower than those of female. Tergum 1 with brownish impunctate deep concavity of vertical part, its apical fringe of white long hairs. Tergum 6 with white close-fitting pubescence, its apical margin coarsely dentate with shallow mid-emargination (Fig. 5); tergum 7 broad, its apical margin nearly rectangular with spine-like mid-process (Fig. 6). Metasomal sterna brownish; sternum 1 concave medially, with long white pubescence; sterna 2-3 with unbroken white fringes, sternum 4 slightly emarginate in middle of apical margin, its fringe interrupted in middle. Protarsus yellowish-brown, its basitarsus slightly dilated along lower margin, with fringe of long dense white hairs (Fig. 3). Procoxae with short blunt spines. Legs reddish-brown; metatrochanter and femora with white long hairs on inner surface. Genitalia (Fig. 7): gonostylus dilated apically, with two processes, penis valve with rounded apex.

Ecology: Oligolectics: Fabaceae (*Megicago sativa*, *Melilotus albus*, *M. officinalis*, *Alhagi kirghisorum*, *Halimodendron argenteum*, *Psoralea drupacea*), recorded also from Lamiaceae (*Ziziphora clinopodioides*), Asteraceae (*Acroptilon picris*, *Centaurea solstitialis*), and Cucurbitaceae (*Cucumis melo*, *Citrullus vulgaris*). Flight season: May-August (POPOV 1967)

Distribution: Saratov, Astrachan (South Russia), Uzbekistan, Turkmenistan, Tadzhikistan, Kazakhstan, Turkey, Spain (MORAWITZ 1875, FRIESE 1899, POPOV 1967, TKALCU 1978).

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