



Entomofauna

ZEITSCHRIFT FÜR ENTOMOLOGIE

Band 26, Heft 14: 241-252

ISSN 0250-4413

Ansfelden, 30. August 2005

Review of the digger wasps of the genus *Palarus* LATREILLE in Russia and neighbouring countries (Hymenoptera, Crabronidae, Larrinae)

Pavel G. NEMKOV

Abstract

A review of seven *Palarus* species of Russia and neighbouring countries is given. *Palarus leleji* sp. nov. is described from the North Iran. New synonymies are proposed: *P. affinis* F.MORAWITZ, 1893 syn. nov. = *P. variegatus variegatus* (FABRICIUS, 1781); *P. incertus* RADOSZKOWSKI, 1893 syn. nov. = *P. bisignatus* F.MORAWITZ, 1890; *P. seraxensis* RADOSZKOWSKI, 1893 syn. nov. = *P. funerarius* F.MORAWITZ, 1889. A key to the species is given. Key words: digger wasps, Crabronidae, Larrinae, *Palarus*, Russia.

Zusammenfassung

Eine Übersicht von sieben *Palarus*-Arten aus Russland und benachbarter Länder wird gegeben. *Palarus leleji* sp. nov. wird aus dem Nordiran beschrieben. Neue Synonymien werden angeboten: *P. affinis* F. MORAWITZ, 1893 syn. nov. = *P. variegatus variegatus* (FABRICIUS, 1781); *P. incertus* RADOSZKOWSKI, 1893 syn. nov. = *P. bisignatus* F.MORAWITZ, 1890; *P. seraxensis* RADOSZKOWSKI, 1893 syn. nov. = *P. funerarius* F.MORAWITZ, 1889. Ein Bestimmungsschlüssel für die Arten wird gegeben.

Introduction

The genus *Palarus* includes thirty-four species currently found in the Palaearctic, Afrotropical and Oriental regions (BOHART & MENKE 1976; GAYUBO, ASÍS & TORMOS

1992). Seven of them inhabit Russia and neighbouring countries. There are four species groups within the genus: *variegatus*, *histrion*, *latifrons* and *handlirshi* (BOHART & MENKE 1976). Representatives of the two latter species groups are not found in this area. *Palarus* females burrow their nests in packed sandy soil or heavy clay. The principal prey for this genus are various Hymenoptera (BOHART & MENKE 1976), although some Syrphidae and Bombyliidae flies were recorded as a prey of *P. pictiventris* F. MORAWITZ as well (KAZENAS 1994). In this paper I follow the terminology accepted in taxonomy of Crabronidae (BOHART & MENKE 1976).

196 *Palarus* specimens from the collections of Zoological Institute of Russian Academy of Sciences (St. Petersburg) and the Institute of Biology and Soil Science of Russian Academy of Sciences (Vladivostok) were studied.

Genus *Palarus* LATREILLE, 1802

Palarus LATREILLE, 1802: 336. Type species: *Tiphia flavipes* FABRICIUS, 1793 [= *Palarus rufipes* LATREILLE, 1812, secondary homonym of *Palarus flavipes* (FABRICIUS, 1781), by monotypy].

Diagnosis: Current diagnosis is given in BOHART & MENKE (1976).

Key to the species

- 1 Female pygidial plate longitudinally striated and mat (figs 1, 2), gastral sternum II with prominence (figs 7, 8). Male pygidial plate elongated, more or less longitudinally concave, once emarginated apically (figs 3-6). Larger: body length 9-20 (Species group *variegatus*) 2
 - Female pygidial plate smooth and shining, gastral sternum II without prominence. Male pygidial plate rather short, flat, with one medial and two lateral teeth apically (fig. 9). Smaller: body length 6-12 (Species group *histrion*) 6
- 2 Shortest distance between eyes evidently smaller than first flagellomere length. Female with very short rear concave area of gastral sternum II prominence (fig. 7). Male pygidial plate lanceolate, slightly emarginated apically (fig. 5). Body length: ♀ 13-16, ♂ 11-14 *P. saundersi* MORICE
 - Shortest distance between eyes not smaller than first flagellomere length. Female with rather long rear concave area of gastral sternum II prominence (fig. 8). Male pygidial plate cuneiform, noticeably emarginated apically (figs 3, 4, 6) 3
- 3 Flagellum entirely black. Male pygidial plate fig. 6. Smaller: body length 9-14 ... 4
 - Flagellum mostly reddish-yellow. Male pygidial plate figs 3, 4. Larger: body length 15-20 5
- 4 Body with yellow spots. Frons above antennal sockets yellow. Body length: ♀ 11-14, ♂ 9-12 *P. variegatus variegatus* (FABRICIUS)
 - Body with whitish spots. Frons above antennal sockets black. Body length: ♀ 11-14, ♂ 9-12 *P. variegatus varius* SICKMANN
- 5 Metapleura and propodeum yellow. Female pygidial plate with straight medial part of lateral border (fig. 2). Male gastral sternum I posteriorly with two prominent teeth (fig. 10), pygidial plate with nearly parallel lateral sides (fig. 4). Body length: ♀ 16-20, ♂ 15-19 *P. aurantiacus* RADOSZKOWSKI

- Metapleura and propodeum black. Female pygidial plate with concave medial part of lateral border (fig. 1). Male gastral sternum I posteriorly with slightly emarginated prominent lamella (fig. 11), pygidial plate with divergent lateral sides (fig. 3). Body length: ♀ 17-19, ♂ 18 *P. leleji* sp. nov.
- 6 External edge of mandible with a notch. Gaster black with yellow or whitish spots, without ferruginous coloring. Body length: ♂ 7-9, ♀ 6-8. *P. funerarius* F. MORAWITZ
- External edge of mandible without a notch. Gaster partly ferruginous 7
- 7 Mesopleura and dorsal surface of propodeum with dense recumbent silvery setae. Gaster ferruginous, terga I-IV medially with whitish band, pygidial plate ferruginous. Body length: ♀ 6-9, ♂ 6-8 *P. pictiventris* F. MORAWITZ
- Mesopleura and dorsal surface of propodeum with a few inconspicuous setae. Gaster mainly yellow, apical edge of all terga ferruginous, pygidial plate yellow. Body length: ♀ 9-12, ♂ 8-11 *P. bisignatus* F. MORAWITZ

Species group *variegatus*

***Palarus aurantiacus* RADOSZKOWSKI, 1893**

Palarus aurantiacus RADOSZKOWSKI, 1893: 68, ♀ [holotype (or syntypes) ♀, Turkmenistan, Serax; deposited in Museum für Naturkunde der Humboldt-Universität in Berlin, Germany; not examined]: F. MORAWITZ 1897: 151; DALLA TORRE 1897: 657; BOHART & MENKE 1976: 290; KAZENAS 1978: 139; NAZAROVA 1998: 41; KAZENAS 2001: 32, 165.

Material: Uzbekistan: 1 ♀ 2 ♂♂, Khiva, 12.-29.VI.1927, leg. GUSSAKOVSKIJ. Turkmenistan: 1 ♀, Usun-Ada, leg. F. MORAWITZ; 1 ♂, Kerki, 17.VI.1932, leg. MARECHEK; 2 ♂♂, Krasnovodsk, 14.-18.VI.1928, leg. GUSSAKOVSKIJ; 4 ♂♂, 40 km N Kizyl-Arvat, 19.V.-2.VII.1953, leg. ODINTZOVA; 1 ♀ 1 ♂, 40 km N Kizyl-Arvat, 31.V.1953, leg. SHTAINBERG; 3 ♀♀ 2 ♂♂, 40 km N Kizyl-Arvat, 18.-27.VI.1953, leg. KRYZHANOVSKI; 1 ♀, Repetek, 9.VI.1982, leg. KRIVOKHATSKI. Tajikistan: 1 ♂, Aivadz, 25.VII.1934, leg. GUSSAKOVSKIJ.

Distribution: Uzbekistan, Turkmenistan, Tajikistan.

***Palarus saundersi* MORICE, 1897**

Palarus saundersi MORICE, 1897: 310, ♂ [holotype ♂, Egypt, Koubbeh near Cairo; deposited in Hope Department of Entomology, Oxford, Great Britain; not examined]: BEAUMONT 1949: 649, 1957: 139, 1960: 246; BEAUMONT, BYTINSKI-SALZ & PULAWSKI 1973: 17; BOHART & MENKE 1976: 291; GUICHARD 1988: 134.

Material: Turkmenistan: 2 ♀♀, Uch-Adzhi, 12.V.1932, leg. KUZNETZOV.

Distribution: Turkmenistan, Israel, Saudi Arabia, Morocco, Libya, Egypt.

***Palarus leleji* NEMKOV sp. nov.**

Holotype ♀, Iran, Azarbayjon province, Ungut-Munan, 21.VI.1922, leg. BOCHARNIKOV; deposited in Zoological Institute of Russian Academy of Sciences, St. Petersburg. Paratypes: 2 ♀♀ 1 ♂, Iran, Azarbayjon province, Ungut-Munan, 21.VI.1922, leg. BOCHARNIKOV.

Diagnosis: A new species is most related to *Palarus aurantiacus* RADOSZKOWSKI in

having a similar body structure, punctuation and pattern of coloration, but differs distinctly from the latter in having black metapleuron and propodeum (yellow and reddish-yellow in *P. aurantiacus*). The female of *P. leleji* differs from its *P. aurantiacus* counterpart in having a pygidial plate with concave medial part of lateral border (straight medial part of lateral border in *P. aurantiacus*). The male of *P. leleji* differs from its *P. aurantiacus* counterpart in having gastral sternum I posteriorly with slightly emarginated prominent lamella (two teeth in *P. aurantiacus*) and in having a pygidial plate with divergent lateral sides (almost nearly parallel lateral sides in *P. aurantiacus*).

Description: ♀. Body length 17-19 mm. External edge of mandible with a notch. Frontal tubercle with thin longitudinal suture. Length of flagellomere I approximately twice as long as its width. Shortest distance between eyes at top of head approximately the same length as flagellomere I. Foretibia apically without sickle-shaped flattened seta. First foretarsus article not enlarged. Prominence of gastral sternum II with rather long rear concave area (fig. 8). Pygidial plate with concave medial part of lateral border (fig. 1). Body practically hairless, however, upper one-third of clypeus and frons densely covered with very short recumbent silvery hairs. Lower two-third of clypeus smooth and shining with several medium-sized punctures. Upper one-third of clypeus and frons mat with very dense subcontiguous micropunctures. Temples somewhat dull with sparse small punctures. Scutum and scutellum smooth and shining with large and deep scattered punctures. Mesopleuron smooth and semi-shining with rather dense large punctures. Metapleuron dull, gently striated (horizontally in upper half and nearly vertically in lower one). Metapostnotum coarse striated (nearly longitudinally basally and laterally and transversally medioapically). Dorsal surface of propodeum near metapostnotum semi-dull with dense small punctures. Lateral surface of propodeum smooth and shiny anteriorly and nearly vertically gently striated posteriorly. Posterior surface of propodeum smooth and somewhat shiny medially and gently obliquely striated laterally. Gastral terga I-V except impunctate apical margin with scattered medium-sized punctures (sparse medially and rather dense laterally), smooth and rather shiny. Sternum II smooth and shining shiny with rather sparse medium-sized punctures (except impunctate posterolateral corners). Sterna III-VI smooth and shining shiny with several medium-sized punctures laterally. Pygidial plate dull, gently striated (fig. 1).

Body black with yellow and reddish-yellow coloration. Basal half of mandible, clypeus, lower half of frons, scapus and tegula bright-yellow. Temple (entirely or partly), collar, pronotal lobe, anterolateral corner of scutum and mesopleuron (entirely or partly) yellow with more or less pronounced reddish tint. Scutellum yellowish-brown or dark-brown. Gastral terga I-III with wide reddish-yellow (partly ferruginous) band, tergum IV mostly brown, terga V dark-brown. Sternum I ferruginous, sternum II ferruginous with two big dark posterolateral spots, sterna III-V black with somewhat ferruginous apical margin, sternum VI dark-brown or black. Pygidial plate dark-brown or black. Flagellum reddish-yellow, apical joints somewhat darkened. Legs ferruginous with yellow spot on fore femora and fore and middle tibiae. Wings transparent. Veins and stigma dark-brown.

♂. Body length 18 mm. As in female except: gastral terga IV-V with wide reddish-yellow (partly ferruginous) band; tergum VI apically with small reddish-yellow spot; sternum I posteriorly with slightly emarginated prominent lamella (fig. 11); sternum II entirely ferruginous, with large transversally rounded projection; sternum II ferruginous except two small lateral dark-brown spots; pygidial plate ferruginous except dark-brown

apex, with divergent lateral sides (fig. 3).

Distribution: North Iran.

Natural History: No habitat information is provided on the holotype and paratypes labels.

Etymology. The species is dedicated to the famous Russian hymenopterist Prof. Arcady S. LELEJ.

***Palarus variegatus variegatus* (FABRICIUS, 1781)**

Thiphia variegatus FABRICIUS, 1781: 451, sex not indicated [holotype ♀, Russia, Siberia (no specific locality); deposited in British Museum (Natural History), London; not examined]: BEAUMONT 1949: 637, 1967: 337; TSUNEKI 1971: 34; KAZENAS 1972b: 160; TSUNEKI 1972: 408; BOHART & MENKE 1976: 291; KOLESNIKOV 1977: 319; KAZENAS 1978: 139; ISLAMOV 1986: 528; KAZENAS 2001: 32.

Crabro flavipes FABRICIUS, 1781: 470, sex not indicated [holotype ♀, Italy (no specific locality); deposited in Zoological Museum, Copenhagen, Denmark; not examined]: RADOSZKOWSKI 1877: 24, 1887: 44; F. MORAWITZ 1891: 209; DALLA TORRE 1897: 657; TURNER 1911: 484 (synonymized with *P. variegatus*); GUSSAKOVSKIJ 1934: 10.

Palarus auriginosus EVERS MANN, 1849: 384, sex non indicated [syntypes, sex unknown, Russia: Astrakhan, Orenburg, and Saratov; deposited in Zoological Institute of Russian Academy of Sciences, St. Petersburg; not found]: BECKER 1880: 153; KOHL 1885: 420 (synonymized with *P. flavipes*); RADOSZKOWSKI 1890: 507, 1891: 591.

Palarus affinis F. MORAWITZ, 1893: 414, ♂ [holotype ♂, Tajikistan, Takfan in Yagnob River valley; deposited in Zoological Institute of Russian Academy of Sciences, St. Petersburg; examined] **syn. nov.**: F. MORAWITZ 1894: 344; DALLA TORRE 1897: 657; GUSSAKOVSKIJ 1935: 433; PULAWSKI 1965: 575; BOHART & MENKE, 1976: 291; NAZAROVA 1998: 41; KAZENAS 2001: 32.

Material: Bulgaria: 3 ♀ ♀, Slynchev bryag, 30.VII., 5.VIII.1982, leg. KURZENKO. Ukraine: 1 ♀, Crimea, Evpatoria, 23.VII.1914, leg. PLIGINSKI. Russia: 1 ♂, Rayzanskaya oblast, Gremyachka, 27.VII.1891, leg. SEMENOV; 1 ♀ 1 ♂, Kurskaya oblast, Borisovka, 8.VII.1920, 18.VI.1924, leg. ARENS; 2 ♂ ♂, Gurievskaya oblast, Inder, 9.VII.1961, leg. KAZENAS; 3 ♂ ♂, Stavropol, 21.VII.1985, leg. NEMKOV; 1 ♂, Astrakhanskaya oblast, Nikolskoe, 8.VIII.1989, leg. LEHR; 1 ♂, Chitinskaya oblast, Abagaitui, 19.VII.1984, leg. LELEJ. Georgia: 1 ♂, Voshlovansky preserve, 8.VI.1984, leg. KUZNETZOV. Kazakhstan: 1 ♀, Karashokat, 13.VI.1931, leg. LUPLOVA; 1 ♂, Yanvartzevo, 24.VII.1949, leg. RUDOLF; 3 ♀ ♀ 1 ♂, Yanvartzevo, 8.-20.VI.1949, 11.-26.VI.1950, leg. RUDOLF; 3 ♀ ♀ 2 ♂ ♂, Kharkin, 6.-18.VI.1950, 6.-18.VI.1951, leg. RUDOLF; 1 ♂, Kharkin, 29.VI.1951, leg. POPOV; 1 ♀, 40 km S Zhana-Arka, 6.VIII.1960, leg. KERZHNER; 3 ♀ ♀ 1 ♂, 17 km NW Bakanas, 23.VI.-9.VII.1970, leg. KAZENAS; 1 ♀ 1 ♂, 25 km N Lepsy, 1.VII.1978, leg. NARCHUK; 2 ♂ ♂, 70 km NW Kzyl-Orda, 8.VI.1979, leg. PESENKO. Uzbekistan: 2 ♀ ♀, Kamashi, 23.VI.1930, leg. GUSSAKOVSKIJ; 1 ♀, Yargak, 23.VI.1930, leg. GUSSAKOVSKIJ. Turkmenistan: 2 ♂ ♂, Krasnovodsk, 15.VI.1928, leg. GUSSAKOVSKIJ; 1 ♀, Farab, 8.V.1929, leg. SHESTAKOV; 1 ♀, Ashkhabad, 24.V.1952, leg. SHTEINBERG; 1 ♂, 40 km N Kizyl-Arvat, 29.V.1953, leg. ODINTZOVA; 1 ♂, Bukharden, 4.VII.1978, leg. SUGONYAEV. Tajikistan: 1 ♂ (holotype of *P. affinis* F. MORAWITZ), Yagnob river, Takfan, leg. F. MORAWITZ; 2 ♀ ♀ 1 ♂, Khorog, 28.VII.1978, leg. SEMYANOV. Mongolia: 1 ♂, South Gobi, 70 km S Noyon, 23.-

24.VIII.1969, leg. ZAITZEV; 1♂, Adzh-Bogdo ridge, Ikh-Bogdo-Ula mountain, 18.VII.1970, leg. KERZHNER; 1♀, Ubsu-Nur lake, 50 km Ulangom, 6.VIII.1970, leg. EMELYANOV. China: 1♀, Alashan ridge, Dan-Yuan-In, 12.-15.VI.1908, leg. KOZLOV; 1♂, Alashan ridge, Khotyn-Gol, 20.-21.VI.1908, leg. KOZLOV; 1♀, Alashan ridge, Bainkhuluk, 20.V.1909, leg. KOZLOV.

Distribution: France, Spain, Italy, Croatia, Germany, Austria, Hungary, Czech Republic, Slovakia, Romania, Bulgaria, Greece, Ukraine, Russia (European territory except north, North Caucasus, Chitinskaya oblast), Armenia, Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, Turkey, Afghanistan, Pakistan, Mongolia, China (Inner Mongolia), Tunisia.

Remarks: The study of the holotype of *Palarus affinis* F. MORAWITZ and the material of *P. variegatus* FABRICIUS showed no reliable differences between them. *P. affinis* is a brightly-colored form of *P. variegatus* only.

***Palarus variegatus varius* SICKMANN, 1894**

Palarus variegatus varius SICKMANN, 1894: 215, ♀♂ [syntypes ♀♂, China, Hopei Province, Tientsin; deposited in Münster, Germany; not examined]: DALLA TORRE 1897: 657; TSUNEKI 1964: 61, 1969: 17, 1971: 34; KAZENAS 1980: 89; TSUNEKI 1982: 15; NEMKOV 1992: 245; WU & ZHOU 1996: 93.

Palarus saishiuensis OKAMOTO, 1924: 202, ♀ [holotype ♀, South Korea, Quelpart Island (now Cheju Island); depository unknown; not examined]: TSUNEKI 1971: 34 (synonymized with *P. variegatus varius*).

Material: Russia: 1♀, Amurskaya oblast, Leninskii, 7.VIII.1982, leg. LELEJ; 1♀, Amurskaya oblast, Saskal, 13.VIII.1982, leg. LELEJ; 1♀, Amurskaya oblast, Glukhari, 14.VIII.1982, leg. LELEJ. CHINA: 1♂ (probable syntype of *P. variegatus varius* SICKMANN), Hopei Province, Tiensin, leg. VEBER.

Distribution: Russia (Amurskaya oblast), North China, South Korea.

Species group *histrio*

***Palarus bisignatus* F. MORAWITZ, 1890**

Palarus bisignatus F. MORAWITZ, 1890: 587, ♂ [holotype ♂, Turkmenistan, Ashkhabad; deposited in Zoological Institute of Russian Academy of Sciences, St. Petersburg; examined]: F. MORAWITZ 1897: 150; DALLA TORRE 1897: 657; KAZENAS 1972: 160; BOHART & MENKE 1976: 290; KAZENAS 2001: 32.

Palarus incertus RADOSZKOWSKI, 1893: 70, ♀ [holotype (or syntypes) ♀, Turkmenistan, Serax; deposited in Museum für Naturkunde der Humboldt-Universität in Berlin, Germany] **syn. nov.**: DALLA TORRE 1897: 658; BOHART & MENKE 1976: 291.

Material: Uzbekistan: 1♂, Novyi Urgench, 4.VI.1927, leg. GUSSAKOVSKII; 2♀♀ 1♂, Khiva, 15.VI.1927, leg. GUSSAKOVSKII. Turkmenistan: 1♂ (holotype of *P. bisignatus* F. MORAWITZ), Ashkhabad, leg. KOMAROV; 1♂, Ashkhabad, 4.VI.1928, leg. GUSSAKOVSKII; 3♀♀ 2♂♂, Usun-Ada, leg. F. MORAWITZ; 2♀♀, Kushka, 2.VI.1912, leg. BUBYR; 1♀, Repetek, 22.VI.1925, leg. GUSSAKOVSKII; 1♀, Akhcha-Kuima, 14.VI.1952, leg. SHTEINBERG; 2♂♂, 40 km N Kizyl-Arvat, 19.VI.1953, leg. KRYZHANOVSKI; 1♀, Kizyl-Arvat, 9.VII.1953, leg. KRYZHANOVSKI.

Distribution: South Kazakhstan, Uzbekistan, Turkmenistan.

Remarks: O. RADOSZKOWSKI said in the note to the original description of *Palarus incertus* RADOSZKOWSKI that his species described in female may be the opposite sex of *P. bisignatus* which was known in male only (RADOSZKOWSKI 1893). The study of *P. bisignatus* F. MORAWITZ material (including specimens of both sexes from South Turkmenistan, the type locality of both species) and the comparison of it with *P. incertus* description demonstrated that they belong to the same species.

***Palarus funerarius* F. MORAWITZ, 1889**

Palarus funerarius F. MORAWITZ, 1889: 136, ♀ [holotype ♀, China, Inner Mongolian Autonomous Region, Tsagan Buryuk; deposited in Zoological Institute of Russian Academy of Sciences, St. Petersburg; examined]: DALLA TORRE 1897: 658; GUSSAKOVSKIJ 1935: 433; BOHART & MENKE 1976: 291; KAZENAS 1978: 139; ISLAMOV 1986: 527; WU & ZHOU 1996: 93; NAZAROVA 1998: 41; KAZENAS 2001: 32, 165.

Palarus gracilis KOHL, 1889 (in: KOHL & HANDLIRSCH 1889: 277), ♂ [holotype (or syntypes) ♂, Turkmenistan, Pulikhatum S Serax near Iranian border; deposited in Naturhistorisches Museum, Wien, Austria; not examined]: DALLA TORRE 1897: 658; BEAUMONT 1949: 652 (synonymized with *P. funerarius*).

Palarus quiescens NURSE, 1903: 5, ♀ ♂ [syntypes ♀ ♂, India, Gujarat, Deesa; deposited in British Museum (Natural History), London; not examined]: TURNER 1911: 480 (synonymized with *P. funerarius*).

Palarus nursei TURNER, 1911: 481, ♂ ♀ [syntypes ♂ ♀, Pakistan, Quetta; deposited in British Museum (Natural History), London; not examined]: BOHART & MENKE 1976: 291; GUICHARD 1988: 136; KAZENAS 2000: 51 (synonymized with *P. funerarius*).

Palarus seraxensis RADOSZKOWSKI, 1893: 69, ♀ ♂ [syntypes ♀ ♂, Turkmenistan, Serax; deposited in Krakow, Poland; not examined], **syn. nov.**: DALLA TORRE 1897: 659; BOHART & MENKE 1976: 291; KAZENAS 2001: 33.

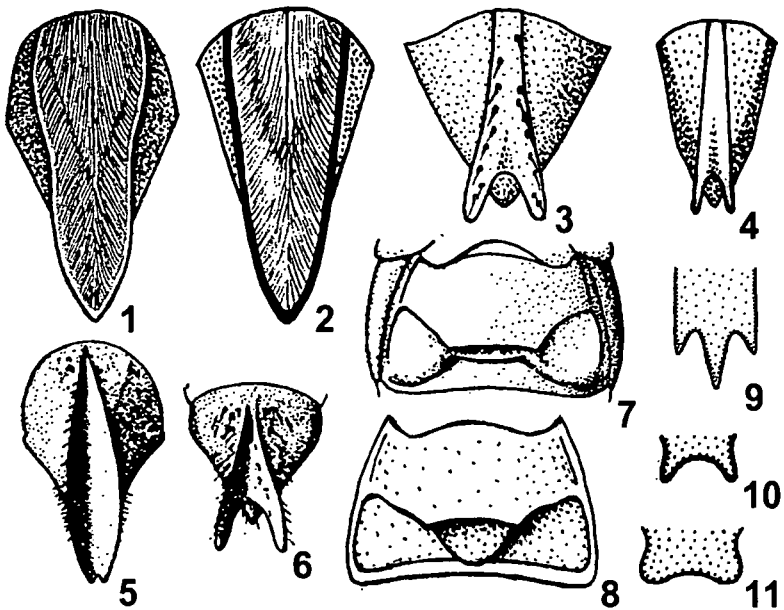
Material: Armenia: 1 ♀, Ordubad, 30.V.1924, leg. VOLKOVICH. Turkey: 1 ♂, Diarbakir, Tigrisufer, 26.VII.1988, leg. SCHMID-EGGER. Kazakhstan: 1 ♀, Chelkar, 1.VI.1908, leg. ANDROSSOV; 3 ♀ ♀ 2 ♂ ♂, Kharkin, 20.VIII.1948, 4.-21.VI.1951, leg. RUDOLF; 3 ♀ ♀ 4 ♂ ♂, Kharkin, 25.-31.VII.1951, leg. POPOV; 1 ♂, 25 km E Balkhash, 23.VI.1978, leg. KOZLOV; 1 ♂, Aksuek, 27.VI.1978, leg. PESENKO; 1 ♀, 25 km N Lepsy, 1.VII.1978, leg. NARCHUK; 1 ♂, 25 km N Lepsy, 1.VII.1978, leg. NARCHUK; 1 ♀, Kolshengel, 3.VII.1979, leg. PESENKO. Uzbekistan: 2 ♀ ♀ 5 ♂ ♂, Khiva, 26.VI.1976, leg. PESENKO. Turkmenistan: 2 ♀ ♀ 6 ♂ ♂ (probable syntypes of *P. seraxensis* RADOSZKOWSKI), Serax, leg. F. MORAWITZ; 1 ♂, Ashkhabad, leg. KOMAROV; 9 ♂ ♂, Dort-Kuyu, 5.VI.1888, leg. SEMENOV; 1 ♂, Tedzhen, 11.VI.1888, leg. SEMENOV; 2 ♂ ♂, Farab, 5.-6.V.1929, leg. SHESTAKOV; 1 ♀ 3 ♂ ♂, Imam-Baba, 1932, leg. SHESTAKOV; 1 ♂, Akhcha-Kuima, 14.VI.1952, leg. SHTEINBERG; 1 ♀ 1 ♂, 40 km N Kizyl-Arvat, 19.VI.1953, leg. KRYZHANOVSKI; 3 ♂ ♂, Tash-Kepri, 1.-12.VI.1954, leg. TOBIAS; 4 ♂ ♂, Repetek, 20.VI.1976, leg. PESENKO; 1 ♀, 60 km E Nebit-Dag, 2.VI.1988, leg. LELEJ. Tajikistan: 1 ♂, Aivadz, 27.VII.1934, leg. GUSSAKOVSKIJ; 1 ♂, Nizhniy Pyandzh, 18.VI.1943, leg. SHTAKELBERG; 3 ♂ ♂, Kurgan-Tyube, 14-25.VIII.1948, leg. POPOV; 1 ♀, Kurgan-Tyube, 20.VIII.1948, leg. RUDOLF. Mongolia: 3 ♂ ♂, Bayan-Hongor aimak, Tsagan-Bogdo-Ula mountain, 10-11.VIII.1981, leg. KOROTYAEV. China: 1 ♀ (holotype of *P. funerarius* F. MORAWITZ), Inner Mongolian Autonomous Region, "Zagan-Burjuk", leg. POTANIN.

Distribution: Armenia, Turkey, Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, Pakistan, North India, Mongolia, China (Inner Mongolia).

Remarks: There are 2♀♀ 6♂♂ of *Palarus* with the labels "Serax // coll. F. MORAWITZ" in the Zoological Institute of Russian Academy of Sciences (St. Petersburg) collection that well agree with *P. seraxensis* RADOSZKOWSKI original description (RADOSZKOWSKI 1893), and a strong possibility exists that they are the syntypes of this species. These specimens have been compared with the holotype of *P. funerarius* F. MORAWITZ and found to be identical. *Palarus beaumonti* BYTINSKI-SALZ recorded from Turkey and Greece (Rhodes) is very similar to *P. funerarius* F. MORAWITZ and may be a synonym or subspecies of the latter (BEAUMONT 1967), although the matter requires additional study.

***Palarus pictiventris* F. MORAWITZ, 1890**

Palarus pictiventris F. MORAWITZ, 1890: 589, ♀ [syntypes ♀♀, Turkmenistan, Ashkhabad; deposited in Zoological Institute of Russian Academy of Sciences, St. Petersburg; examined]: DALLA TORRE 1897: 659; BOHART & MENKE 1976: 291; KAZENAS 1994: 115; KAZENAS 2001: 33.



Figs 1, 3, 8, 11 *Palarus leleji* sp. nov.: 1 female pygidial plate; 3 male pygidial plate; 8 female sternum II; 11 apical projection of male sternum I, front view.

Figs 2, 4, 10 *Palarus aurantiacus*: 2 female pygidial plate; 4 male pygidial plate; 10 apical projection of male sternum I, front view.

Figs 5, 7 *Palarus saundersi*: 5 male pygidial plate; 7 female sternum II.

Fig. 6 *Palarus variegatus*, male pygidial plate.

Fig. 9 *Palarus funerarius*, male pygidial plate.

Material: Uzbekistan: 1♂, Baga-Abzal near Bukhara, 24.V.1932, leg. KUZNETZOVA. Turkmenistan: 2♀♀ (syntypes of *P. pictiventris* F.MORAWITZ), Ashkhabad, leg. KOMAROV); 1♀, Usun-Ada, leg. F. MORAWITZ; 1♀, Imam-Baba, 15.V.1912, leg. KOZHANCHIKOV); 1♂, Farab, 12-28.V.1929, leg. SHESTAKOV; 8♀♀7♂♂, 40 km N Kizyl-Arvat, 15.V.-19.VI.1953, leg. KRYZHANOVSKI; 1♀, Akhcha-Kuima, 30.V.1985, leg. LELEJ).

Distribution: Uzbekistan, Turkmenistan.

Acknowledgements

I am very grateful to Prof. V.I. TOBIAS (Zoological Institute of Russian Academy of Sciences, St. Petersburg) for the loan material as well as Prof. A.S. LELEJ and Mr. V.D. ROMANOVSKI for valuable comments.

Literature

- BEAUMONT, J. 1949: Contribution à l'étude du genre *Palarus* LATR. (Hym. Sphecidae). - Revue Suisse de Zoologie 56: 627-673.
- BEAUMONT, J. 1957: Hyménoptères récoltés par une mission suisse au Maroc (1947). Sphecidae 4. - Bulletin de la Société des Sciences Naturelles et Physiques du Maroc 36: 139-164.
- BEAUMONT, J. 1960: Sphecidae (Hym.) récoltés en Tripolitaine et en Cyrénaïque par M. Kenneth M. GUICHARD. - Bulletin of the British Museum (Natural History), Entomology 9: 219-251.
- BEAUMONT, J. 1967: Hymenoptera from Turkey. Sphecidae, I. With Appendix. *Sphex* LINNÉ, Subgenus *Palmodes* KOHL par P. ROTH. - Bulletin of the British Museum (Natural History), Entomology 19: 253-382.
- BEAUMONT, J. & BYTINSKI-SALZ, H. & PULAWSKI, W. 1973: The Sphecidae (Hym.) of Eretz Israel. III. Subfamilies: Astatinae, Larrinae, Trypoxyloninae, Pemphredoninae, Crabroninae, Oxybelinae. - Israel Journal of Entomology 8: 1-26.
- BECKER, A. 1880: Beiträge zu meinem Verzeichnissen der um Sarepta und am Bogdo vorkommenden Pflanzen und Insekten, und Beschreibung einer *Mylabris*-Larve. - Bulletin de la Société Impériale des Naturalistes de Moscou 55: 145-156.
- BOHART, R.M. & MENKE, A.S. 1976: Sphecid wasps of the world. A generic revision. - Berkeley, Los Angeles, London: University of California Press, 695 pp.
- DALLA TORRE, K.W. 1897: Catalogus Hymenopterorum hucusque descriptorum systematicus et synonymicus, Volumen VIII: Fossores (Sphegidae). - Lipsiae: Guilelmi Engelmann, 749 pp.
- EVERSMANN, E. 1849: Fauna Hymenopterologica Volgo-Uralensis. Fam. III. Sphegidae LATR. - Bulletin de la Société Impériale des Naturalistes de Moscou 22: 359-436.
- FABRICIUS, J.Ch. 1781: Species Insectorum exhibentes eorum differentias specificas, synonyma auctorum, loca natalia, metamorphosin adiectis observationibus, descriptionibus, 1. - Hamburg, Kiel: Carol. Ernest. Bohnii, 517 pp.
- GAYUBO, S.F. & ASIS, J.D. & TORMOS, J. 1992: A new species of *Palarus* LATREILLE from Spain with a comparative study on nesting behavior and larvae in the genus (Hymenoptera: Sphe-cidae). - Annals of the Entomological Society of America 85: 26-33.

- GUICHARD, K.M. 1988: The genus *Palarus* (Hymenoptera: Sphecidae) in Arabia. - Fauna of Saudi Arabia 9: 132-137.
- GUSSAKOVSKIJ, V.V. 1934: Schwedisch-chinesische wissenschaftliche Expedition nach den nordwestlichen Provinzen Chinas, unter Leitung von Dr. Sven HEDIN und Prof. SÜ Pingchang. - Arkiv för Zoologi 27A: 1-15.
- GUSSAKOVSKIJ, V.V. 1935: Sphecodea und Vespoidea von Tadjikistan. - Travaux de la Filiale de l'Académie des Sciences de l'URSS au Tadjikistan 5: 409-467 (in Russian).
- ISLAMOV, Sh.D. 1986: Digger-wasps (Hymenoptera, Sphecidae) in the mountainous regions of Uzbekistan. - Entomologicheskoye Obozreniye 65: 513-534 (in Russian).
- KAZENAS, V.L. 1972: Sphecidae (Hymenoptera) of the South-East Kazakhstan. - Trudy Vsesoyuz-nogo Entomologicheskogo Obshchestva 55: 93-186 (in Russian).
- KAZENAS, V.L. 1978: The digger wasps of Kazakhstan and Middle Asia (Hymenoptera, Sphecidae). The determinant. - Alma Ata: Izdatelstvo Nauka Kazakhskoy SSR, 172 pp. (in Russian).
- KAZENAS, V.L. 1980: Contributions to the digger wasp fauna (Hymenoptera, Sphecidae) of the Soviet Far East. - Taxonomiya nasekomykh Dalnego Vostoka. Vladivostok: Akademiya Nauk SSSR, Dalnevostochnyi Nauchnyi Tsentr 80-94 (in Russian).
- KAZENAS, V.L. 1994: Unusual prey of digger wasps from genus *Palarus* LATR. (Hymenoptera, Sphecidae). - Byulleten Moskovskogo Obshchestva Ispytateley Prirody, Otdel Biologicheskiiy 99: 115 (in Russian).
- KAZENAS, V.L. 2000: New synonyms in Central and South Asian Sphecidae. - Journal of Hymenoptera Research 9: 48-47.
- KAZENAS, V.L. 2001: Fauna and biology of sphecid wasps (Hymenoptera, Sphecidae) of Kazakhstan and Central Asia. - Almaty: Kazgos INTI, 333 pp. (in Russian).
- KOHL, F.F. 1885: Die Gattungen und Arten der Larriden Autorum. - Verhandlungen der kaiserlich-königlichen Zoologisch-Botanischen Gesellschaft in Wien 34:171-268, 327-454.
- KOHL, F.F. & HANDLIRSCH, A. 1889: Transcaspische Hymenopteren. - Verhandlungen der kaiserlich-königlichen Zoologisch-Botanischen Gesellschaft in Wien 39: 267-286.
- KOLESNIKOV, V.A. 1977: Sphecid wasps (Hymenoptera, Sphecidae) of the Bryansk region as entomophagous insects. - Entomologicheskoye Obozreniye 56: 315-325 (in Russian).
- LATREILLE, P.A. 1802: Histoire naturelle générale et particulière des Crustacés et des Insectes. Ouvrage faisant suite à l'Histoire Naturelle générale et particulière, composée par Leclercq de Buffon, et rédigée par C.S. SONNINI, membre de plusieurs Sociétés savantes. - Vol. 3, Paris, Imprimerie F. Dufart, 467 pp.
- MORAWITZ, F. 1889: Insecta, a Cl. G. N. POTANIN in China et in Mongolia novissime lecta. IV. Hymenoptera Aculeata. - Horae Societatis Entomologicae Rossicae 23: 112-168.
- MORAWITZ, F. 1890: Hymenoptera Fossoria transcaspica nova. - Horae Societatis Entomologicae Rossicae 24: 570-645.
- MORAWITZ, F. 1891: Ueber Astrachan'sche Fossorien. - Horae Societatis Entomologicae Rossicae 25: 175-233.
- MORAWITZ, F. 1893: Catalog der von D. GLASUNOV in Turkestan gesammelten Hymenoptera Fossoria. - Horae Societatis Entomologicae Rossicae 27: 391-428.

- MORAWITZ, F. 1894: Beitrag zur Raubwespenfauna Turkmeniens. - *Horae Societatis Entomologicae Rossicae* 28: 327-365.
- MORAWITZ, F. 1897: Ueber einige transcaspihe Raubwespen. - *Horae Societatis Entomologicae Rossicae* 30: 144-160.
- MORICE, F.D. 1897: New or little-known Sphegidae from Egypt. - *The Transactions of the Entomological Society of London* 1897: 301-316.
- NAZAROVA, Sh.D. 1998: Sphecid wasps of the Nature Reserve "Tigrovaya Balka", Tajikistan. - *Izvestiya Akademii Nauk Respubliki Tadjikistan. Otdeleniye Vologiceskikh I Medi-tsiniskikh Nauk* 139: 38-43 (in Russian).
- NEMKOV, P.G. 1992: Sphecidae. - *Insects of Khingan Nature Reserve. Part II. Vladivostok: Dal-nauka* 243-251 (in Russian).
- NURSE, C.G. 1903: New species of Indian Hymenoptera. - *The Journal of the Bombay Natural History Society* 15: 1-18.
- OKAMOTO, H. 1924: The insect fauna of Quelpart Island (Saishiu-to). - *Bulletin of the Agricultural Experimental Station, Government-General of Chosen* 1: 47-233.
- PULAWSKI, W.J. 1965: O synonymice niektórych palearktycznych Sphecidae (Hym.). - *Polskie Pismo Entomologiczne* 35: 563-578.
- RADOSZKOWSKI, O. 1877: Sphegidae (Voyage au Turkestan i A.P. FEDTCHEKNO, fasc. 14, tome 2, partie 5). - *Izvestiya Imperatorskobo Obshchestva Lyubiteley Estestvoznaniya, Antropologii i Étnografii pri Imperatorskom Moskovskom Universitete* 26: 1-87.
- RADOSZKOWSKI, O. 1887: Insecta in itinere Cl. N. Przewalskii in Asia centrali novissime lecta. III. Sphegidae. - *Horae Societatis Entomologicae Rossicae* 21: 41-52.
- RADOSZKOWSKI, O. 1890: Hyménoptères récoltés sur le mont Ararat. - *Horae Societatis Entomologicae Rossicae* 24: 502-510.
- RADOSZKOWSKI, O. 1891: Essai sur une classification des Sphegides in sensu Linneano après la structure des armures copulatrices. - *Bulletin de la Société Impériale des Naturalistes de Moscou (Nouvelle Série)* 5: 571-596.
- RADOSZKOWSKI, O. 1893: Faune hyménoptérologique Transcaspienne (Suite et fin). - *Horae Societatis Entomologicae Rossicae* 27: 38-81.
- SICKMANN, F. 1894: Beiträge zur Kenntniss der Hymenopteren-Fauna des nördlichen China. - *Zoologische Jahrbücher, Abtheilung für Systematik, Geographie und Biologie der Thiere* 8: 195-236.
- TSUNEKI, K. 1964: A guide to the study of the Japanese Hymenoptera (21). (9). Larrinae occurring in Japan and Korea. - *Life Study (Fukui)* 8: 61-63.
- TSUNEKI, K. 1969: Gleanings on the bionomics of the East-Asiatic non-social wasps (Hymenoptera). II. Some species of Tachytini, Larrini and Palarini (Sphecidae). - *Etizenia* 39: 1-22.
- TSUNEKI, K. 1971: Spheciden aus der Inneren Mongolei und dem nördlichen China (Hym.). - *Etizenia* 58: 1-38.
- TSUNEKI, K. 1972: Ergebnisse der zoologischen Forschungen von Dr. Z. KASZAB in der Mongolei. 284. Sphecidae (Hymenoptera). VI. - *Acta Zoologica Academiae Scientiarum Hungaricae* 18: 381-416.
- TSUNEKI, K. 1982: Sphecidae from North Korea (II) with the list of the species of the family known from the Korean Peninsula (Hymenoptera). - *Special Publications of the Japan Hymenopterists Association* 20: 1-22.

- TURNER, R.E. 1911: Notes on fossorial Hymenoptera. IV. Remarks on the genus *Palarus*.
- The Annals and Magazine of Natural History (Series 8) 7: 479-485.
- WU, Y. & ZHOU, Q. 1996: Economic Insect Fauna of China. Fasc. 52. Hymenoptera:
Sphecidae. - Beijing: Science Press, 197 pp. (in Chinese).

Address of the author:

Pavel G. NEMKOV
Institute of Biology and Soil Science
Russian Academy of Sciences
690022 Vladivostok, Russia

Druck, Eigentümer, Herausgeber, Verleger und für den Inhalt verantwortlich:
Maximilian SCHWARZ, Konsulent für Wissenschaft der O.Ö. Landesregierung,
Eibenweg 6, A-4052 Ansfelden, e-mail: maxschwarz@tele2.at

Redaktion: Erich DILLER (ZSM), Münchhausenstrasse 21, D-81247 München, Tel.(089)8107-251
Fritz GUSENLEITNER, Lungitzerstrasse 51, A-4222 St. Georgen / Gusen
Wolfgang SCHACHT, Scherrerstrasse 8, D-82296 Schöngeising, Tel. (089) 8107-302
Erika SCHARNHOP, Himbeerschlag 2, D-80935 München, Tel. (089) 8107-102
Emma SCHWARZ, Eibenweg 6, A-4052 Ansfelden
Thomas WITT, Tengstrasse 33, D-80796 München, e-mail: witt-thomas@t-online.de

Postadresse: Entomofauna (ZSM), Münchhausenstrasse 21, D-81247 München,
e-mail: erich.diller@zsm.mwn.de oder: wolfgang.schacht@zsm.mwn.de



Entomofauna

ZEITSCHRIFT FÜR ENTOMOLOGIE

Band 26, Heft 15: 253-280

ISSN 0250-4413

Ansfelden, 30. August 2005

**Beitrag zur Trauermückenfauna Taiwans
Teil II: Gattungen *Sciara*, *Schwenckfeldina*, *Trichosia*,
Leptosciarella, *Baeosciara* und *Trichosillana* gen. nov.
(Diptera Nematocera: Sciaridae)**

Hans-Georg RUDZINSKI

Abstract

This is the second part in a series of taxonomic studies on the Sciaridae of Taiwan and represents the records of 20 species. 4 species could be identified as wellknown palaeartic species. Two of them are recorded from Taiwan for the first time. The other 16 species are described as new to science. The recorded species belong to the following genera: *Sciara* (3), *Schwenckfeldina* (2), *Trichosia* (4), *Leptosciarella* (7), *Baeosciara* (3) and *Trichosillana* gen. nov. (1). New morphological results in the species descriptions and the phylogenetic relationships between the genera and species are discussed under each genus.

Zusammenfassung

Im vorliegenden 2. Beitrag zur Sciaridenfauna Taiwans werden 20 Arten vorgestellt. 4 Arten können bekannten paläarktischen Arten zugeordnet werden, wobei es sich bei 2 Arten um Erstnachweise für die Fauna Taiwans handelt. Die übrigen Arten werden als neu für die Wissenschaft beschrieben. Die nachgewiesenen Arten gehören zu den Gattungen *Sciara* (3), *Schwenckfeldina* (2), *Trichosia* (4), *Leptosciarella* (7), *Baeosciara* (3) und *Trichosillana* gen. nov. (1). Neue morphologische Erkenntnisse aus den Artbeschreibungen und phylogenetische Beziehungen zwischen Arten und Genera werden bei den vorgestellten Gattungen erörtert.