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REVIEW OF THE DIGGER WASPS OF THE GENUS *BRACHYSTEGUS* A. COSTA (HYMENOPTERA, CRABRONIDAE, BEMBICINAE) OF RUSSIA AND NEIGHBOURING COUNTRIES

P. G. Nemkov

Institute of Biology and Soil Science, Vladivostok-22, 690022, Russia

The original key to four Palaearctic *Brachystegus* species and the review of two species of Russia and neighbouring countries are given. *B. scalaris* Illiger is newly recorded for Georgia, Kyrgyzstan, Uzbekistan, Tajikistan and Iran and *B. incertus* Radoszkowski – for Azerbaijan and Uzbekistan.

KEY WORDS. Hymenoptera, Crabronidae.

П. Г. Немков. Обзор роющих ос рода *Brachystegus* A. Costa (Hymenoptera, Crabronidae, Bembicinae) фауны России и сопредельных стран // Дальневосточный энтомолог. 2003. N 131. С. 1-5.

Даются оригинальная определительная таблица для 4 палеарктических видов рода *Brachystegus* и обзор 2 видов из России и сопредельных стран. *B. scalaris* Illiger впервые указан для Грузии, Киргизии, Узбекистана, Таджикистана и Ирана, а *B. incertus* Radoszkowski – для Азербайджана и Узбекистана.

Биолого-почвенный институт, Дальневосточное отделение Российской Академии Наук, Владивосток-22, 690022, Россия.

INTRODUCTION

This paper is treated of *Brachystegus* of the fauna of Russia and neighbouring countries. Seventy eight specimens from the collections of Zoological Institute,

Russian Academy of Sciences (St. Petersburg) [ZIN]; Zoological Museum, Moscow State University [ZMMU]; Institute of Zoology, Ministry of Education and Science of Kazakhstan (Almaty) and Institute of Biology and Soil Science, Russian Academy of Sciences (Vladivostok) have been studied. Only synonymy which concerns fauna of Russia and neighboring countries is given for the reviewed species. New records are asterisked. Distribution of *B. scalaris* and *B. incertus* in Eastern Europe and Asia is drawn on the map (Fig. 1).

Genus *Brachystegus* A. Costa, 1859

Brachystegus A. Costa, 1859: 24 [type species – *Brachystegus dufourii* (Lepeletier, 1845) [= *Brachystegus scalaris* (Illiger, 1807)], by monotypy]; Handlirsch, 1895: 1011; Dalla Torre, 1897: 576; Pate, 1937: 14, 1938: 125, 158; Maidl & Klima, 1939: 139; Bohart & Menke, 1976: 51, 472.

DIAGNOSIS. Current generic diagnosis is given in Bohart & Menke (1976).

SPECIES INCLUDED. Eighteen species was included in the genus *Brachystegus* previously (Bohart & Menke, 1976). Later *B. basalis* (Smith, 1856) was removed from *Nysson* to *Brachystegus* by Krombein (1985); *B. dubitatus* (Turner, 1914) was resurrected from junior synonym of *B. decoratus* (Turner, 1914) to valid species by K. V. Krombein (1985); *N. fraterculus* Gussakovskij, 1933 was removed from *Brachystegus* to *Nysson* by S. F. Gayubo (Bitsch et al., 1997). Currently *Brachystegus* includes 19 species, four of them are distributed in Palaearctic: *B. braueri* (Handlirsch, 1887); *B. incertus* (Radoszkowski, 1877); *B. pieli* (Yasumatsu, 1943); *B. scalaris* (Illiger, 1807). The original key to the *Brachystegus* Palaearctic species is given below.

Key to the Palaearctic species

1. Anterior margin of the clypeus medio-apically with a pair of strong, projecting, acute teeth. Gaster red without light spots. Wings somewhat deeply clouded with violaceous-brown. Head, thorax except the dorsum, basal half of first gastral tergum and all gastral sterna with very dense dirty-yellowish pubescence. Larger size: ♀ 12.0 mm (♂ unknown). – China (Anhui) ***B. pieli***
 - Anterior margin of the clypeus medio-apically without a pair of strong teeth. Gaster black with light spots. Wings slightly clouded with brown. Body with dense silvery pubescence or nearly bare. Smaller size: 7.0-10.0 mm 2
2. Apical part of clypeus is separated from its basal part by sharp ridge and forms with it a right angle. Basal part of clypeus, frons, mesopleuron and second gastral sternum covered by very dense silver pubescence, which conceal body sculpture. ♀ ♂ 8.0-10.0 mm. – West and Central Asia ***B. incertus***
 - Apical part of clypeus is separated from its basal part by blunt and indistinct ridge and forms with it an obtuse angle. Body uniformly covered by not so long, sparse, dirty-gray hairs, which not conceal body sculpture 3

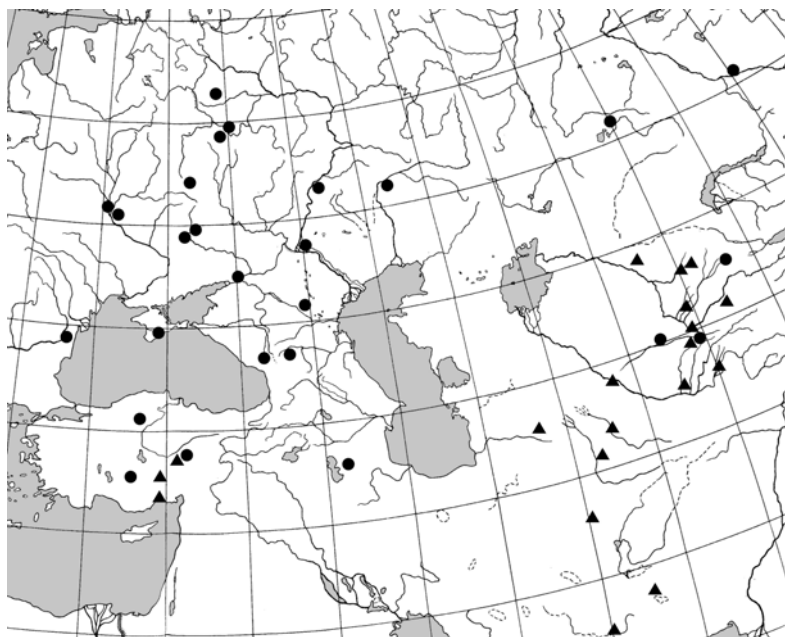


Fig. 1. Distribution of *Brachystegus scalaris* (dark circles) and *B. incertus* (dark triangles) in Eastern Europe and Asia.

3. Pronotal collar without transverse carina, rounded in lateral view. Flagellum black, apical flagellomeres sometimes brownish. Body with whitish coloration. ♀ ♂ 7.0-9.0 mm. – Europe (except North), West and Central Asia . . . *B. scalaris*
 – Pronotal collar with transverse carina anteriorly, angular in lateral view. Flagellum ferruginous. Body with yellow coloration. ♀ ♂ 8.0-10.0 mm. – Morocco, Algeria, Tunisia *B. braueri*

LIST OF THE SPECIES

***Brachystegus scalaris* (Illiger, 1807)**

Nysson interruptus Latreille, 1803: 580, ♀ (nom. preocc., non Fabricius, 1798; holotype – ♀, France).

Nysson scalaris Illiger, 1807: 157, ♀, nom. nov. pro *N. interruptus* Latreille.

Nysson scalaris: Handlirsch, 1887: 319, ♀ ♂; 1895: 808.

Nysson (Brachystegus) scalaris: Maidl & Klima, 1939: 140.

Brachystegus scalaris: Bohart & Menke, 1976: 473.

MATERIAL. 30 ♀ and 23 ♂ from Russia (Ryazan, Vladimir, Saratov, Kursk, Volgograd, Rostov-na-Donu and Stavropol regions, Karachayevo-Cherkesiya), Ukraine (Kiev and Kharkov regions), Georgia [1 ♂, T'bilisi, 6.V 1901 (Satunin)],

Kazakhstan (Aksay, Semipalatinsk and Astana regions), Kyrgyzstan [1 ♀, south slope of Kyrgyz Range, Kenkol river, 28.V 1909 (Minkword and Knorring)], Uzbekistan [2 ♀, Kattakurgan region, Yargak, 19.VI 1929 (Zimin); 1 ♀, the same region, Kumak, 25.V 1929 (Zimin); 1 ♀, the same region, Changir, 25.V 1930 (Zimin)], Tajikistan [2 ♀, 1 ♂, Kondara canyon near Dushanbe, 30.V 1936, 13, 27.VI 1939 (Gussakovskij)], Iran [1 ♂, Tabrīz, 6.VI 1914 (Andrievskii)], Switzerland (Martigny), Spain (Fuentespina).

DISTRIBUTION. Portugal, Spain, France, Italy, Switzerland, Germany, Austria, Poland, Czechia, Slovakia, Hungary, Roumania, Ukraine, Russia (European part, except north), *Georgia, Kazakhstan, *Kyrgyzstan, *Uzbekistan, *Tajikistan, *Iran, Turkey, ? North Arabia (Handlirsch, 1887: 323).

***Brachystegus incertus* (Radoszkowski, 1877)**

Nysson incertus Radoszkowski, 1877: 45, ♀ [holotype – ♀, “Zaravsh. dol., 18”, Tajikistan, valley of Zeravshan river, 18.V 1869 (Fedchenko); deposited in ZMMU, examined]; synonymised with *scalaris* by Handlirsch, 1895.

Nysson incertus: Handlirsch, 1887: 400.

Nysson decemnotatus F. Morawitz, 1890: 609, ♂ [nom. preocc., non A. Costa, 1869; holotype – ♂, Turkmenistan, Tejen, 5.V 1888 (Semenov); deposited in ZIN, examined]; synonymised with *incertus* by Gussakovskij, 1933; synonymised with *scalaris* by Bohart & Menke, 1976.

Nysson scalaris: Handlirsch, 1895: 808 (part.).

Nysson decemnotatus: Handlirsch, 1895: 809.

Nysson incertus: Gussakovskij, 1933: 288, 1935: 438.

Nysson (Brachystegus) decemnotatus: Maidl & Klima, 1939: 140.

Nysson (Brachystegus) incertus: Maidl & Klima, 1939: 140.

Brachystegus incertus: Bohart & Menke, 1976: 473.

Brachystegus scalaris: Bohart & Menke, 1976: 473 (part.).

MATERIAL. 22 ♀ and 23 ♂ from Azerbaijan [1 ♀, 2 ♂, Naxçivan region, 10 NE Gulfa, 17.VI 1985 (Tobias); 1 ♂, 35 km N Naxçivan, 20.VI 1985 (Tobias)], South Kazakhstan (Qarataū Zhotasy mountains, Taraz and Shardara regions), Uzbekistan [1 ♀, 2 ♂, Farghona, 9, 25.VI 1927 (Sabbatovskii)], Turkmenistan (Firyuza canyon near Ashgabat, Chärjew region, Imam-Baba on Murgap Deryasy river, Badhyz reserve), Tajikistan (Dushanbe, Kabadian, Külob), Iran: (Āvāz, Bampūr, Tabrīz), Pakistan (40 km NW Kamarod).

DISTRIBUTION. *Azerbaijan, South Kazakhstan, *Uzbekistan, Turkmenistan, Tajikistan, Turkey, Iran, Pakistan.

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SHORT COMMUNICATION

E. A. Beljaev. *ACOSMERYX NAGA* MOORE (LEPIDOPTERA, SPHINGIDAE) – NEW SPECIES OF HAWKMOTHS FOR THE FAUNA OF RUSSIA. – Far Eastern Entomologist. 2003. N 131: 6-8.

Е. А. Беляев. *Acosmeryx naga* Moore (Lepidoptera, Sphingidae) – новый вид бражников для фауны России // Дальневосточный энтомолог. 2003. N 131. С. 6-8.

Hawkmoth *Acosmeryx naga* (Moore, [1858]) [1] is reported from Russia, Primorskii krai, for the first time. Ecological conditions near the collecting localities and way of immigration of the species are discussed. The author thank Mr. G. Grigoryev (St. Petersburg) and Dr. M. Omelko (Gornatayezhnaya Station, Ussuriisk) for providing of the available material. This research was supported by grants of the Far Eastern Branch of Russian Academy of Sciences (N 03-1-0-06-028 and N 03-3-A-06-018).

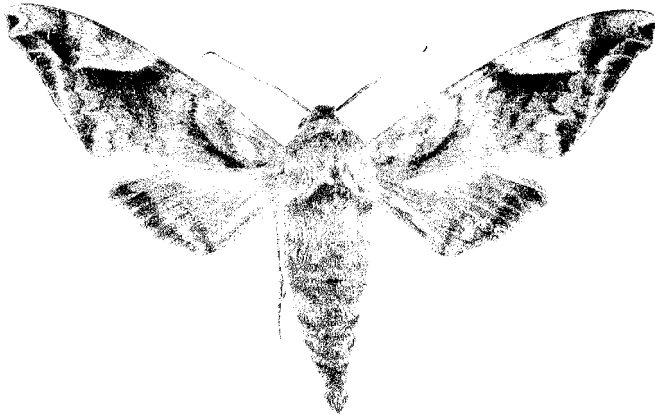


Fig. 1. *Acosmeryx naga*, male, from Krounovka river.

***Acosmeryx naga* (Moore, [1858])**

Fig. 1.

Philampelus naga Moore, [1858], in Horsfield & Moore, Cat. lepid. Insects Mus. Hon. East-India Company 1: 271.

MATERIAL. Russia, Primorskii krai: 5♂, 1♀, Ussuriisk district, 42 km SW of Ussuriisk, upper Krounovka river, 3.VI 2002, E. Beljaev leg.; 4♂, 1♀, Khasanskii district, 6 km NW of Zanadvorovka, Gusevskii Rudnik. 4, 9, 10, 18.VI 2003, G. Grigoryev leg.; 2♀, Ussuriisk district, 20km SE Ussuriisk, Gornotayozhnoe, 9.VI 2003, M. Omelko leg.

DISTRIBUTION. Russia (Southwest of Primorskii krai) (new record); Japan, Korea (Central and South), China (north to Hebei and Shanxi), Tajikistan, Afghanistan, northern Pakistan, northern and north-eastern India, Nepal, Bhutan, Thailand, northern Vietnam, Malaysia (Malaya Peninsula) [2].

BIOLOGY. In northern China there is one generation per year, with adults flying between April and June [3]. In South Korea fly period of the species from early May until mid August [4].

In south of Primorskii krai it fly from second half of May to mid of June, judge from condition of collected moths, which were moderately fresh or distorted more or less strongly.

HOST PLANTS. Recorded in Korea on *Stathmopoda*, *Ampelopsis*, *Vitis* (*Vitaceae*) [4]. In China (Shanxi) also recorded from *Actinidia chinensis* [5].

COMMENTS. The discovering of a new large hawkmoth in the Ussuri region – is unusual event because of long history and intensity of collecting of moths here [6]. So, this fact needs to be discussed in detail.

Environmental conditions in the collecting localities of the species were as follow. The collecting place on Krounka river is located in central part of basalt Borisovskoe (Shufanskoe) Plateau, which is eastern horn of East-Manchurian Mountainous Country, on altitude of 200 m in wide canyon with the bottom looks as wide dry valley covered with light forest with numerous grass and shrub clearing. This valley is characterised by abundance of xero- and termophilous trees: *Ulmus pumila*, *Malus mandshurica*, *Armeniaca mandshurica*, *Pyrus ussuriensis*, *Crataegus pinnatifida*, mixed with typical south Ussurian broad-leaved trees: *Quercus mongolica*, *Phellodendron amurense*, different species of *Salix*, *Populus koreana*, *Acer ginnala* and others. The liana *Vitis amirensis* is common here. From north the valley is bordered with very steep southern slope of ridge named as “Khrebet Smerti” (Ridge of Death). This slope looks as long band of almost vertical rocks covered discontinuously with oak (*Quercus mongolica*) forests with considerable participation of *Armeniaca mandshurica*, *Ulmus macrocarpa*, *Juniperus rigida*, *Tilia mandshurica*, *Acer mono*. This southern band of rocks serves as concentrator and reflector of the Sun heat and provides very high daytime temperatures near bottom of the rocks. Near this slope a screen for collecting of moths, lighted by mercury lamp (160 W) powered from portative generator, was located. Six specimens of the species were collected here during the first half of dark, cloudy and warm night with air temperature about 15-18°, just before and in the beginning of strong rain. Judge from the rate of flying on light of the hawkmoths, the collecting screen was located in or near place of their hatching.

The collecting site on Gusevskii Rudnik is placed 30 km southward of the previous locality, on the southeast edge of the same Plateau and on the same altitude. However the nature of this location differs strongly. Settlement Gusevskii Rudnik is located on the Plateau on open place in humid oak-broadleaved forest with participation of *Abies holophylla*, *Carpinus cordata*, *Kalopanax septemlobus*, *Betula schmidtii*, *Acer pseudosieboldianum*, *Weigela praecox*. The place has strong influence of sea, as result strong fogs are common here and daytime temperatures are markedly lower than on Krounka river. Five specimens were captured here during two weeks of regular collecting on light of mercury lamp (250 W). The specimens came flying to screen in cloudy and warm nights only. The infrequent fly of the hawkmoth indicates a remoteness of its hatching from the collecting place. Possibly, the moths could fly from long chains of southern rocks, similar to that on Krounka river, bordered basins of Amba and Gryasnaya rivers in the neighbourhood of Gusevskii Rudnik, in 5 km west and northwest of the settlement.

Gornotayozhnoe village is placed more than 60 km east of the previous localities, in south-west outskirts of the Sikhote-Alin Mountainous Country. Environment in the locality are characterized by predominance of secondary oak-broadleaved forests common for southern Sikhote-Alin territory and by subcontinental climate with high summer temperatures. Two females only were collected on light here.

A question on existence of the species in Primorskii krai is opened. High number of specimens, including female, which were collected for the short time in Krounovka river, and early time of its flying testify to hatching of the moths from hibernated pupas near the collecting place. However in 2003 in the in the same locality and almost in the same time (from

30.V. to 1.VI.) the hawkmoth was not found. Possibly it might have been result of cool nights with temperatures (6-8°C), which could oppress flying activity of the southern moth.

Collecting of markedly battered, solitary moths in Gusevskii Rudnik in 2003 could be treated as testimony to regular migration of the species in Primorskii krai, as it is presumed for some hawkmoths, as follow: *Macroglossum pyrrhostictum* Butler, 1875; *M. saga* Butler, 1878; *Agrius convolvuli* (Linnaeus, 1758) and others (personal unpublished data). However common way of migration of southern moths and butterflies lies along the sea coast through traditional localities of insect collecting such as Andreevka, Vityaz, Ryazanovka, Bezverkhovo (Sidemi), Kedrovaya Pad Reserve. Nevertheless this large and noticeable hawkmoth never had been reported from them.

Capturing of the hawkmoth in Gornotayozhnoe, where insects are collected regularly almost one hundred years, undoubtedly need to be treated as migration of the species. Taking in the account of absence of its registration in the enumerated southwest coastal localities, only migration from the west, from or through Borisovskoe Plateau, can be supposed.

On the whole, analysis of the enumerated facts allows suppose recent immigration of the species in the western part of Primorskii krai, and current spread of the species on eastward, in forest territories with height summer temperatures. I incline to treat *Acosmeryx naga* inhabits territory of Borisovskoe Plateau, at least two last years. Possibly, it inhabits most thermal sites along steep southern slopes of canyons. Temperatures near bottom of the slopes could be enough for the growth of this thermophilous hawkmoth species. The immigration of *Acosmeryx naga* in the territory of Primorskii krai goes with tendency to the global warming.

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Address: Institute of Biology and Soil Science, Far East Branch of Russian Academy of Sciences, 690022, Vladivostok-22, Russia.

E-mail: entomol@ibss.dvo.ru

FAX: (4232) 310 193