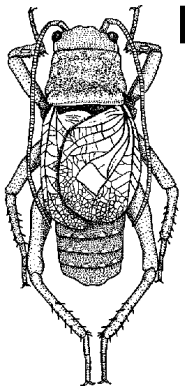

Far Eastern Entomologist

Дальневосточный энтомолог

Jourlal published by
Far East Branch of the
Russian Entomological Society
and Laboratory of Entomology
Institute of Biology and Pedology,
Vladivostok

Number 36: 1–8 ISSN 1026–051X December 1996

TAXONOMIC STUDY OF THE FAR EASTERN HEPIALIDAE (LEPIDOPTERA). RECORD 1. ON SYSTEMATIC POSITION OF THE *PHYMATOPUS* TAXA DESCRIBED FROM THE EAST PALAEARCTIC

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Two taxa – *hecticus* O.Bang-Haas, 1927 and *japonicus* Inoue, 1982 till now regarded as subspecies of *Phymatopus hectus* (Linnaeus, 1758) are separated from the latter as distinct species. A new subspecies *Phymatopus hecticus albomaculatus* ssp. n. is described from Russia (Primorskii krai or Primorye territory). The diagnostic features of all discussed taxa in forewing pattern and in male genitalia are presented in the key.

KEY WORDS: Hepialidae, *Phymatopus hecticus albomaculatus* ssp.n., taxonomy, East Palaearctic.

Ю.А.Чистяков. Таксономическое изучение дальневосточных Hepialidae (Lepidoptera). Сообщение 1. О систематическом положении таксонов *Phymatopus*, описанных из Восточной Палеарктики // Дальневосточный энтомолог. 1996. N 36. P. 1-8.

Два таксона – *hecticus* O.Bang-Haas, 1927 и *japonicus* Inoue, 1982, описанные как подвиды *Phymatopus hectus* (Linnaeus, 1758), выделяются в качестве самостоятельных видов. Из Приморского края описан новый

подвид *Phymatopus hecticus albomaculatus* ssp. n. Приводится определительная таблица обсуждаемых таксонов, построенная на признаках рисунка их крыльев и строения гениталий самцов.

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INTRODUCTION

The genus *Phymatopus* Wallengren, 1869 so far is considered to be monotypic, comprising the eurasian species *Ph. hectus* (Linnaeus, 1758), divisible into a number of subspecies (de Freina & Witt, 1990). Two of them have been known to occur in the Eastern Palaearctic: *Ph. hectus hecticus* O. Bang-Haas in the East Siberia (East Sayan Mountains, Tunkinskie Goltzy or Tunkinskie Alps Range) and *Ph. hectus japonicus* Inoue from Japan. After examination of comparative material from the Europe and from the various regions of the Asian part of Russia (including from Baikalsk, Irkutskaya Oblast - close to the type locality of *hecticus* and from Sakhalin and Kurile Islands - close to the type locality of *japonicus*) it became clear that in this case we have a deal with quite different species. Thus, *Ph. hectus* L. should be divided into 3 species at least. The populations from the Ussuri region undoubtedly belong to *Ph. hecticus*, but differs by forewing pattern and by male genitalia structure. A key to all three species and brief diagnoses with description of a new subspeies and data about their distribution within Russian Far East are given herein.

All material mentioned in the text, including the type specimens, are deposted in the Institute of Biology and Pedology, Vladivostok, Russia. Termilogy of the male genitalia structure used in this paper is based on that, proposed by K.Ueda (1978).

KEY TO THE SPECIES AND SUBSPECIES

1. Forewing pattern of male consists of two silvery white oblique transvers stripes composed of separated spots between dark veins, which are clearly fringed with narrow black lines from inner and outer sides. In male genitalia dorsal process of valvella nearly to stright, hardly curved outwards in distal part; mesosome rounded at tip 2
– Forewing pattern of male consists of two golden-yellowish or whitish stripes usually composed of confluent spots without metallic luster; if they are separated from each other (in outer strip) and tinged with metallic, the black lines along their inner and outer sides always lacking. In male genitalia dorsal process of valvella strongly curved in distal part, hook-like; mesosome with clear cavity at tip 3
2. The outer strip usually interrupted below M_1, consists of 3 silvery spots at apex, then small one inwards and behind of Cu_1, and then largest one at inner margin. In male genitalia eighth abdominal sternum with deep and

narrow at bottom clipping for 2/3 of its width; ventral process of valvella triangula, tapering slightly to truncate tip; dorsal margin of valva concave. (Central and North Europe, Ural Mts.) . . . . . ***Ph. hectus* L.**

– The outer strip usually complete, consists of 4-5 silvery spots at apex, then 2-3 small spots somewhat inwards (or their tracks at least) and then largest one at inner margin. In male genitalia eighth abdominal sternum with uneven and widerounded at bottom clipping for 1/2 of its width; ventral process of valvella belt-like, tapering in distal quarter to pointed tip; dorsal margin of valva convex . . . . . ***Ph. japonicus* Inoue**

3. Both stripes golden-yellowish or yellowish, without metallic luster. In male genitalia eighth abdominal sternum with narrow and deep srater-form hollow at anterior margin; mesosome clear bifurcated at tip; distal projection of valva slightly curved ventrad . . . . . ***Ph. hecticus hecticus* O. Bang-Haas**

– Both stripes silver white, tinged with metallic. In male genitalia eighth abdominal sternum with broad and short srater-form hollow at anterior margin; mesosome with small cavity at tip; distal projection of valva heavily bented ventrad, hook-like . . . . . ***Ph. hecticus albomaculatus* ssp.n.**

***Phymatopus hecticus hecticus* (O. Bang-Haas, 1927) stat. n.**
(Figs 4, 8)

Hepialus hecta hecticus O.Bang-Haas, 1927: 84 (type locality: East Sayan Mountains, Tunkinskie Golzy Range, Buryatia, Russia).

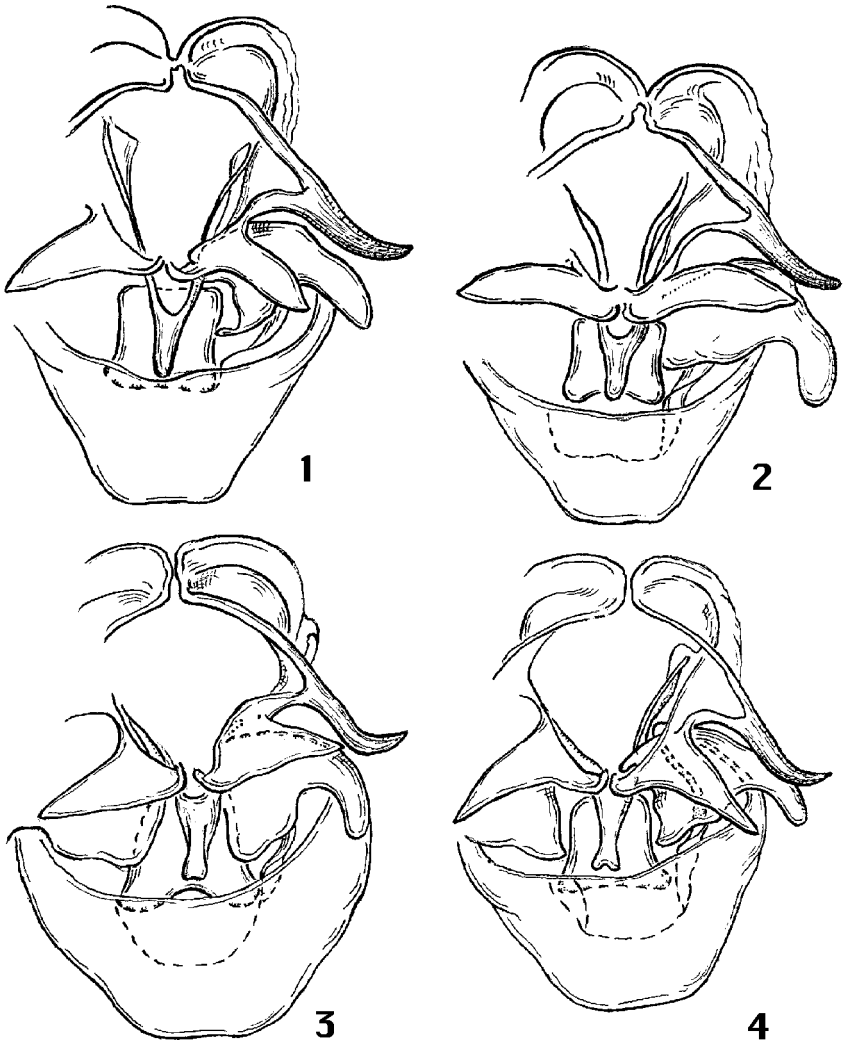
DIAGNOSIS. In appearence differs from *Ph. hectus* L. and *Ph. japonicus* Inoue by golden or yellow stripes, which never fringed with complete black narrow lines, but sometimes escorting outwardly by separate black streaks only.

MALE GENITALIA (Fig. 4) quite differs from both mentioned species by more curved dorsal process of valvella, triangula ventral process of valvella and bifurcated tip of mesosome. Valva broad at basal half, with wide-rounded cut at distal part of ventral margin; distal projection of valva slightly curved ventrads, directed obliquely outward. Eighth abdominal sternum (Fig. 8) with wide in upper part and triangula at bottom clipping at posterior margin and with deep narrow strater-form hollow at anterior margin.

MATERIAL. Kemerovskaya Oblast: ♂, 20 km S Kemerovo, flood-lands, 29.VI 1984 (S.Sinev); Irkutskaya Oblast: 5 ♂, 20 km E Baikal'sk, Khara-Murin river [spur of Khamar-Daban Range], 9-25.VII 1984 (S.Sinev).

DISTRIBUTION. Russia: South of West and East Siberia.

REMARKS. According to original description the specimens from the type series, including 6 males collected in early July, have golden stripes. The inner strip consists of 3 confluent spots, the outer one – of separated spots, of them 3 are at apex, then a small one, obliquely inwards and somewhat lower and then the largest one angled to inner margin.



Figs 1-4. Male genitalia of *Phymatopus* (left dorsal process of valvella not shown): 1,2) *Ph. japonicus*: 1)Sakhalin, 2)Iturup Is.; 3) *Ph. hecticus albomaculatus* ssp.n.; 4) *Ph. hecticus hecticus*.

Some specimens have been in my possession, taken in the spurs of Khamar-Daban Range (about 200 km south-eastward of the type locality of *hecticus*) in appearence generally are corresponding to those of type series, but distinguished from them by yellowish or pale yellow stripes instead of the

golden ones. Forewing pattern of the examined specimens varies also from typical for the type series (with interrupted outer strip) to that with complete outer strip, consisting of 3 spots at apex conjoined or separated by dark veins, 3 spots between veins $M_1 - Cu_1$ isolated from each other and the largest one at inner margin. At last, some specimens have 2-3 small yellow spots at outer margin just over the inner angle or above Cu_1.

A specimen from Kemerovskaya Oblast has the same forewing pattern with yellowish stripes, but somewhat larger (lenth of forewing 13 mm, while that in all specimens from Irkutskaya Oblast is about 11 mm).

Phymatopus hecticus albomaculatus **Tshistjakov, subsp.n.**
(Figs 3, 7)

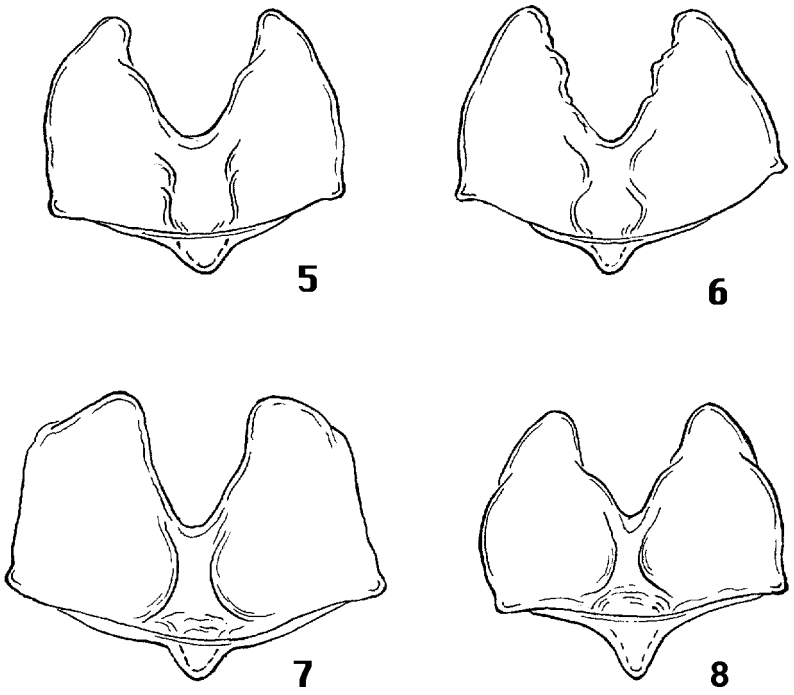
DIAGNOSIS. In appearance, namely by white stripes, composed by separated spots, the new subspecies more similar to *Ph. hectus* L. and *Ph. japonicus* Inoue, then to its nominotypical form. However, it clearly differs from both of them by curved inner strip and by another disposition of the spots in outer strip, never fringed by black lines. Male genitalia quite differs from those of *Ph. hectus* so *Ph. japonicus* in many details and similar to nominotypic subspecies, distinquishing from the latter mainly by shape of eighth abdominal sternum and tip of mesosome.

DESCRIPTION. Male. Lenth of forewing 14 mm. Both stripes composed by white spots with somewhat silver luster. Inner strip curved, consists of 3 spots of which upper 2 separated from each other by dark vein and last one obliquely inwards near base of wing, more or less isolated from the rest. Outer strip consists of 3 separated spots at apex, 2 small spots inwardly, opposit to low angle of *R–Cu* cell, one spot behind Cu_2 and then arched spot with of the same color stroke inwardly at inner margin. Hindwing fuscous, dusted with scattered brounish scales, fringe pale yellow.

MALE GENITALIA (fig. 1, 3). Dorsal and ventral prosesses of valvella of the same shape, as in *Ph. hecticus hecticus*. Valva with deep cut at distal half of ventral margin, distal projection of valva heavily bented ventrard; mesosome with small cavity at tip. Eighth abdominal sternum (fig.2, 3) with elliptical clipping at posterior margin and with short strater–form hollow at anterior margin

FEMALE unknown.

MATERIAL. Holotype: Russian Far East, Primorskii krai, ♂, with hand-writing label (in Russian): "Middle Bikin river, Okhotian zone [mountain taiga forest], Mt. Lobelasa [at present – Gol'tzovaya], 19.VII [19]48", supplied by red label with typed text: "Holotype" and one more label: "*Phymatopus hecticus albomaculatus* ssp.n. det. Yu. Tshistjakov". Paratype: ♂, with hand-writing label (in Russian): "Middle Bikin river, subalpine zone Mt. Lobelasa, 20.VII [19]48", supplied by red label with typed text: "Paratype" and one more label: "*Phymatopus hecticus albomaculatus* ssp.n. det. Yu. Tshistjakov".



Figs 5-8. Eighth abdominal sternum of *Phymatopus*: 5, 6) *Ph. japonicus*: 5) Sakhalin, 6) Iturup Is.; 7) *Ph. hecticus albomaculatus* ssp.n.; 8) *Ph. hecticus hecticus*.

NOTE. Both examined specimens are in very bad condition: the most part of right forerwing in holotype is without scales and its pattern hardly visible, the left forewing in paratype is missing and pattern of the right forewing hardly visible also because of lacking many scales.

Inspite of the collector's name not indicated on the labels, both type specimens mentioned above according to circumstantial evidence, such as the field note–books and memoiries by A.I.Kurenzov (1972), were taken by himself and his assistant D.G.Kononov during their climbing on Koenini Mountains [at present – Arsen'evskie Granity Range], when they took part in zoological expedition to upper Bikin river in 1948.

DISTRIBUTION. North of Primorskii krai and, quite probably the mountain regions of Amurskaya Oblast and Khabarovskii krai.

REMARKS. According to Kurentsov's notes the Okotian zone [mountain taiga with *Picea ajanensis* and *Abies nephrolepis*] and subalpine zone with brushwoods of *Pinus pumila* (where holotype and paratype specimens were collected) occupy in that area the slopes and upper parts of the summits at elevation of 800-900 m and 1200-1500 m above sea level correspondingly.

There are no any other specimen of *Phymatopus* Wlgr. known to be found in Primorye territory southward the type locality of newly described subspecies. Taking into consideration this circumstance somebody can assume, that new subspecies represents a local form, inhabiting only the high altitude zone of the mountain areas in the continental part of the Russian Far East.

***Phymatopus japonicus* Inoue, 1982 stat. n.**
(Figs 1, 2, 5, 6)

Phymatopus hecta japonicus Inoue, 1982, 1: 47; 2: 154, Pl. 3, fig. 1, 2 (Type locality: Tokachi, Nukabira [in the south of the Daisetsu Mountains, about 700 m, Hokkaido, Japan).

DIAGNOSIS. In appearance close to *Ph. hectus* L., clearly differing by shape of valvella and valva in male genitalia.

MALE GENITALIA (Figs 1, 2) similar to that of *Ph. hectus* L., distinquishing by ventral process of valvella almost subequal in width throughout the length and gradually tapering to pointed tip in apical quater (while that of *Ph. hectus* L. clearly triangula, with blunt tip) as well as by dorsal margin of valva convex, but not concave as in *Ph. hectus* L. Eighth abdominal sternum (Figs 5, 6) with uneven clipping at posterior margin and with short strater–form hollow at anterior margin.

MATERIAL. Sakhalin Is.: 7 ♂, 4 ♀, "Central Exp. Sta. Kaibato, 21-23.VII 1930 (collector unknown). Kuril Is.: 6 ♂, 1 ♀, Urup Is., vic. Podgorni, 5,6.VIII 1963 (N.Asarova); 6♂, 1♀, Urup Is., "UR-96-ASL-020", 20.VIII 1996 (V.Teslenko, B.K.Brain); 2 ♂, Iturup Is., vic. Lesozavodsk, 19.VII 1963 (G.Krivoluzkaya); 2 ♂, 1 ♀, Kunashir Is., vic. Alekhino, 1,3.VII 1962 (Safronova, Z.Konovalova) (♀ with additional label: "*Hepialus fusconebulosa* de Geer det. Kurenzov").

DISTRIBUTION. Russian Far East: Sakhalin Island and Southern Kurils (Kunashur, Iturup,Urup). Japan (Hokkaido, Central Honshu).

REMARKS. The series from Kurils and Sakhalin Island somewhat differs from each other as in appearance (in general the specimens from Kurils larger, wingspan of males 30-31 mm and background of their forewings bright, reddish-brown while the specimens from Sakhalin Is. smaller, wingspan of males no more of 25-26 mm and their forewing background pale brown or greyishbrown, with dense admixture of fuscous scales), so by male genitalia structure (representatives of Kurilian population have shorter mesosome and valva with distal projection rounded at tip and heavily bented ventrad while valva of the males from Sakhalin with distal projection conically tapering to tip and curved oblique outwards).

ACKNOWLEGEMENTS

I am very grateful to Dr. S.Yu.Sinev (Zoological Institute Russian Academy of Sciences, Sankt–Petersburg, Russia), who loaned me valuable material

for this study and Dr. A.Shinohara (National Science Museum of Natural History, Tokyo, Japan) for translation an original description of Ph. hecta japonicus from Japanese. Special thanks to Mr. S.Sugi (Tokyo, Japan) for providing me the copies of necessary papers by K.Ueda.

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