

# ***Prohercostomus*, a New Subgenus of the Genus *Hercostomus* Loew (Diptera, Dolichopodidae) from Baltic Amber**

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**Abstract**—A new subgenus of *Hercostomus* Loew, *Prohercostomus* subgen. nov. (Diptera, Dolichopodidae), is described for *Dolichopus noxialis* Meunier (type species; redescribed) and six other species, all from Baltic amber. Subgenera of *Hercostomus* are keyed.

## **INTRODUCTION**

Paleogene fauna of dolichopodid flies from Baltic amber is quite rich but nevertheless rather poorly studied (Keilbach, 1982; Spahr, 1985). The last monographic treatment of this fauna appeared in the beginning of the century (Meunier, 1907, 1908a, 1908b). The systematics of the family has changed considerably since. Very short species descriptions given by Meunier often do not allow determination of even the generic position of these taxa correctly. Some species were probably wrongly assigned by him at the generic level. Negrobov (1978) suggested that some species were wrongly assigned by Meunier to the genus *Dolichopus* Latreille, 1796. Thus, a revision of this type material is needed. Unfortunately the present whereabouts of the type collection, which was housed in the former Geologisch-Paläontologisches Institut, Universität Königsberg, is unknown.

## **RESULTS AND DISCUSSION**

A piece of Baltic amber that I had bought in Vilnius contains a male dolichopodid, doubtless belonging to the extant genus *Hercostomus* Loew, 1857. This find confirms Bickel's (1994) opinion that recent genera of Dolichopodidae already appeared in the Paleogene. Comparison of this specimen with the descriptions made by Meunier allows its assignment to *Dolichopus noxialis*; his accurate drawings of the antenna and fore and hind tarsus virtually exclude erroneous identifications. Related species described by Meunier under the genera *Gymnopternus* Loew, 1857 and *Dolichopus* should also be transferred to *Hercostomus*.

Recent fauna of the genus *Hercostomus* comprise about 320 mostly Holarctic species (Foote *et al.*, 1965; Negrobov, 1991). Known tropical species of this group will probably be excluded from the genus after future revision (Robinson, 1970; Dyte, 1975). The taxonomy within the genus turned out to be rather complex, and

in recent papers it is usually divided into the subgenera *Hercostomus* s. s., *Gymnopternus* Loew, 1857, *Platyopsis* Parent, 1929, and *Poecilobothrus* Mik, 1878 (Pollet, 1990; Negrobov, 1991). Besides that, Stackelberg (1949) created one more subgenus, *Microhercostomus*, for *Hercostomus dilatitarsis* Stackelberg, 1949 from Kondara Gorge (Gissar Range, Tajikistan). The only type specimen differs from all the other *Hercostomus* species by the absence of the posterior crossvein (*m-cu*) in the wings. I collected in 1979 a representative series in the canyon of the Varzob River, the type locality of this species (5 males and 5 females; Gissar Range, Takob Gorge, 1800 m; in the collection of Voronezh University). All the specimens are identical to the holotype except for retention of the *m-cu* crossvein. Its absence is obviously an exception (mutation), very rare in the subfamily Dolichopodinae. Therefore the subgenus *Microhercostomus* Stackelberg is considered a synonym of the nominative subgenus, *Hercostomus* s. s.

A careful examination of *H. noxialis* has shown that it could not be included in either extant subgenus of *Hercostomus*. The species combines the characters diagnostic for some of the extant subgenera with several obvious plesiomorphies, permitting description of a new subgenus of *Hercostomus*. The most characteristic of its plesiomorphies are the unusual leg chaetotaxy, elongate  $R_1$  vein, simple massive surstyli and gonopods of males, etc. Judging from the habitus, this new subgenus could be an ancestral group to the others (except for *Poecilobothrus*).

The diagnosis of a new subgenus, a key to subgenera of *Hercostomus*, and a detailed redescription of *H. noxialis* are given below.

## **SYSTEMATIC PALEONTOLOGY**

**Subgenus *Prohercostomus* Grichanov subgen. nov.**

Type species. *Dolichopus noxialis* Meunier, 1907; Baltic amber.



**D i a g n o s i s.** Head with single pair of stout ocellar bristles. Postocular setae black, numerous. Face narrow. Pubescence of arista undeveloped. Thorax with single stout propleural bristle. Humeral tubercle with one stout and several short bristles. Six dorsocentral bristles. Acrostichal bristles in two series reaching fifth pair of dorsocentral bristles. Posterior part of mesoscutum without dark hairs. Scutellum with two stout bristles and two hairs on sides. Legs simple. Fore and middle coxae with small hairs and several bristles in distal half, hind coxae with single stout bristle. Middle and hind femora with single, stout but short, anterior subapical bristle. Tibial bristles poorly developed, scarcely as long as diameter of tibia; ventral bristles undeveloped; dorsal bristles on fore and hind tibiae forming single series along their whole length. Wing elliptical, about twice as long as wide;  $R_1$  reaching wing midlength;  $R_{4+5}$  and  $M_{1+2}$  in distal wing half parallel; anal lobe broad; alula undeveloped. Abdomen (including 8th segment) in dark bristles. Hypopygium not large, without stalk; cerci simple; surstyli and gonopods large, massive, relatively simple.

**C o m p o s i t i o n.** Subgenus *Prohercostomus* comprises the following species (all from Baltic amber):

*bickeli* Evenhuis, 1994, p. 361 (*Dolichopus*), comb. nov.;  
= *vulgaris* Meunier, 1907, p. 221 (*Dolichopus*), comb. nov.;  
*interceptus* Meunier, 1907, p. 221 (*Gymnopternus*),  
comb. nov.;

*intremulus* Meunier, 1907, p. 221 (*Gymnopternus*),  
comb. nov.;

*meunierianus* Evenhuis, 1994, p. 361 (*Dolichopus*),  
comb. nov.;

= *notabilis* Meunier, 1907, p. 221 (*Dolichopus*), comb. nov.;

*monotonus* Meunier, 1907, p. 221 (*Dolichopus*), comb. nov.;

*negotiosus* Meunier, 1907, p. 221 (*Dolichopus*), comb. nov.;

*noxialis* Meunier, 1907, p. 221 (*Dolichopus*), comb. nov.;

### Key to subgenera of *Hercostomus*

1. Arista with pubescence long (about 1.6 times as long as basal width of arista); distinct purple spot in notopleural pit; male cerci elongate triangular with ventral margin strongly incised ..... *Poecilobothrus*

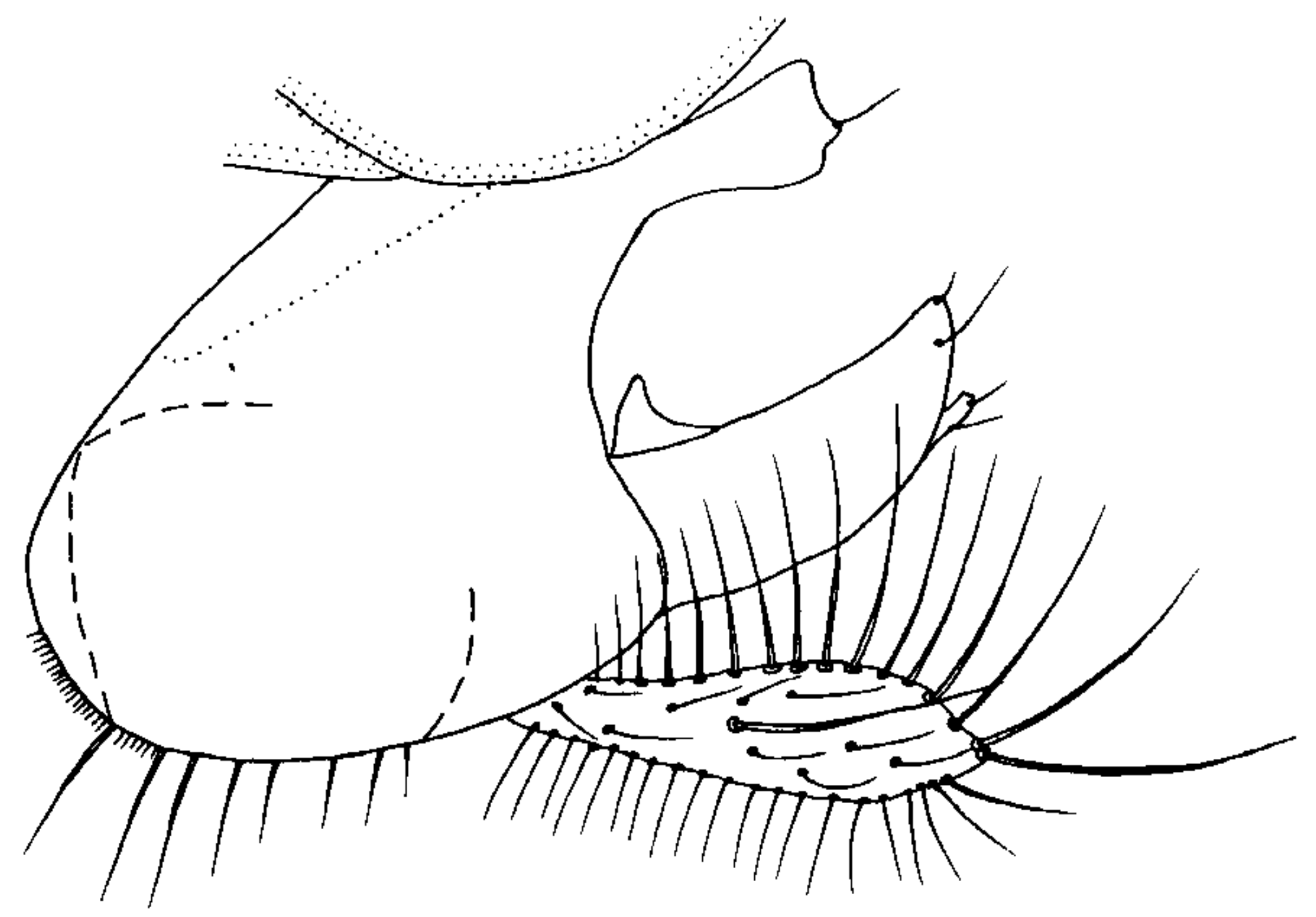
—Arista bare or rarely pilose; notopleural pit normally without purple spot; cerci variously shaped ..... 2

2. Face broad, parallel-sided; epistome concave, clypeus convex; palps relatively large and wide; first metatarsomere with single ventral bristle ..... *Platyopsis*

—Face at least in male relatively narrow; clypeus not or at most weakly convex; palps normally small, rarely large and elongate; first metatarsomere without stout ventral bristle ..... 3

3. Tibial bristles poorly developed, scarcely as long as diameter of tibia; ventral bristles undeveloped; dorsal bristles on fore and hind tibiae forming single series along their whole length;  $R_1$  reaching wing midlength; male surstyli and gonopods massive, simple ..... *Prohercostomus* subgen. nov.

—Tibial bristles (including ventral ones) usually well-developed; dorsal bristles at least in basal half of fore and hind tibiae divided into anterodorsal and posterodorsal;



*Hercostomus (Prohercostomus) noxialis*, hypopygium in right lateral view.

$R_1$  usually not reaching first third of wing length; male surstyli and gonopods complex shaped, often slender ..... 4

4. Metapleuron with group of hairs before posterior spiracle; mesoscutum posteriorly and scutellum dorsally hairy;  $R_{4+5}$  and  $M_{1+2}$  parallel ..... *Gymnopternus*

—Metapleuron and posterior mesoscutum usually bare; scutellum usually with two stout bristles and two marginal hairs;  $R_{4+5}$  and  $M_{1+2}$  usually converging .....  
..... *Hercostomus* s.s. (*Microhercostomus*, syn. nov.)

### *Hercostomus (Prohercostomus) noxialis* (Meunier, 1907)

*Dolichopus noxialis* Meunier, 1907, p. 221, 1908a, p. 46, 1908b, p. 88, 1912, p. 179; Keilbach, 1982, p. 375; Spahr, 1985, p. 34; Evenhuis, 1994, p. 362.

**T y p e s.** In the collection of the former Geologisch-Paläontologisches Institut, Universität Königsberg (location unknown).

**D e s c r i p t i o n** (figure). General coloration of the head, thorax and abdomen is dark, with a metallic shine that in certain light has a greenish sheen. The pollinosity and minute pale hairs are virtually indistinguishable. The face is narrow (ratio of its width below antennae to height 8 : 27); the clypeus is not convex, twice narrower than epistome. Antenna is entirely dark, with the 2nd segment rounded and 3rd segment elongate triangular (twice as long as high), apically acuminate; the arista lacks distinguishable pubescence, consists of two segments, and originates in distal third of 3rd segment. Ratio of the lengths of 1st to 3rd antennal segments to the height of 3rd segment and lengths of 1st and 2nd segments of arista is 5 : 4 : 13 : 7 : 7 : 30.

The legs are mostly pale, except for dark middle and hind coxae, hind tibiae in distal half, fore and middle tarsi (except for the base of first segment), and hind tarsi. All legs are simple, with short black bristles scarcely exceeding in length the diameter of the respective podomeres. The fore and middle coxae are covered with small hairs, with several bristles in distal half. The hind coxae bear a single stout outer bristle. The middle and hind trochanters bear a single stout dorsal bristle. The fore femora bear one to three posteroventral subap-



ical hairs. Fore tibiae bear a series of 10 short but stout dorsal bristles along their whole length, with an elongate anteroventral bare area in the distal half; other bristles are lacking. The 1st segment of the fore tarsi bears a ventral series of very short, scarcely visible spinules. The middle femora bear a single, short but stout, anterior subapical bristle and several posteroventral subapical hairs. The middle tibiae bear two anterodorsal, two to three posterodorsal, and five to six apical bristles. The hind femora bear one short but stout, anterior subapical bristle, several posteroventral subapical hairs, and a series of short but distinct, dorsal hairs in the basal half. Hind tibiae bear a series of 12 short dorsal bristles along their whole length, and several very short apical bristles. Ratio of the lengths of coxa, femur, tibia, and 1st to 5th tarsomeres is for the fore legs 35 : 52 : 45 : 27 : 13 : 10 : 6 : 6, for the middle legs 27 : 55 : 57 : 28 : 15 : 12 : 9 : 8, and for the hind legs 20 : 65 : 63 : 70 : 15 : 25 : 15 : 10 : 9.

The wings are elliptical and lack spots. The costal vein lacks thickenings.  $R_1$  reaches wing midlength.  $R_{2+3}$  is nearly straight. The ratio of the section of costal vein between  $R_{2+3}$  and  $R_{4+5}$  to its section between  $R_{4+5}$  and  $M_{1+2}$  is 23 : 14.  $R_{4+5}$  and  $M_{1+2}$  are parallel in the distal wing half and both are slightly curved towards the posterior wing margin.  $M_{1+2}$  joins costal vein a little beyond wing tip. The ratio of the proximal and distal sections of  $M_{1+2}$  is 65 : 71. The crossvein *m-cu* is slightly convex and forms right angles to both longitudinal veins.  $CuA_1$  reaches the wing margin. The ratio of the proximal and distal sections of  $CuA_1$  to *m-cu* is 65 : 34 : 16. The anal vein ends not reaching the wing margin; the anal angle is a right angle. The calypters are poorly distinguishable, pale (?) with dark (?) setae. The halter is pale.

The abdomen bears dark bristles, dorsally and laterally short and ventrally (on the 2nd to 4th sterna) long bristles. The eighth segment bears stout dark bristles. The hypopygium with appendages is dark, shorter than the length of 4th–6th abdominal segments combined. The epandrium bears very short and dense erect hairs dorsobasally. The cerci are flat, elongate oval, with narrow apex, densely beset with long dark bristles. The surstyli are elongate triangular, massive, a little shorter than the cerci, with a small ventrobasal lobe; their apices are weakly curved ventrad and bear at least two small bristles. The gonopods are long, massive, curved dorsad, slightly widened at the apex, with an apical hair as long as the surstyli. The hypandrium and the bases of the gonopods are concealed by the last abdominal segments.

**Measurements** (mm): body length 2.6, length of wing 2.5, length of hypopygium 0.6.

**Comparison.** *H. (P.) noxialis* is clearly distinct from other species of the subgenus described by Meunier in the shape of the 3rd antennal segment (1st flagellomere) and ratio of tarsomeres. In the ratio of length and height of the 3rd antennal segment this species is most similar to *H. (P.) meunierianus*, being distinct from the latter in the arista originating in the distal third of the 3rd segment, and in the 1st segment of the fore tarsi being twice longer than the 2nd.

**Remarks.** The difference between yellow, orange, brown, and purple colors, which are quite widely used in the diagnostics of the recent species of *Hercostomus*, is masked by coloration of the amber.

**Material.** Completely preserved male in the piece of Baltic amber labelled: Baltic Amber: Vilnius, 13.04.1996, I.Y. Grichanov (in author's collection); Upper Eocene–Lower Oligocene.

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