

The genus *Hypheodana* Metcalf and description of three new species (Hemiptera, Cicadomorpha, Membracidae) ¹

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ABSTRACT. The genus *Hypheodana* Metcalf, 1952, previously considered of uncertain position, is classified in Darninae-Darnini. The following species are treated, together with a re-characterization of the genus: *Hypheodana ursus* (Fairmaire, 1846), *H. cuneata* (Fowler, 1894) **comb. nov.** (formerly in *Aspona*), *H. intermedia* (Fowler, 1894) **comb. nov.** (formerly in *Aspona*), and also *H. proxima* **sp. nov.** (from Costa Rica), *H. costata* **sp. nov.** and *H. acuta* **sp. nov.** (these two from Mato Grosso, Brazil). All the species are illustrated.

KEYWORDS. Auchenorrhyncha, description, Homoptera, new taxa, nomenclatural acts, taxonomy.

RESUMO. O gênero *Hypheodana* Metcalf e descrição de três novas espécies (Hemiptera, Cicadomorpha, Membracidae). O gênero *Hypheodana* Metcalf, 1952, antes considerado em posição incerta, é classificado em Darninae-Darnini. As seguintes espécies são tratadas, juntamente com uma re-caracterização do gênero: *Hypheodana ursus* (Fairmaire, 1846), *H. cuneata* (Fowler, 1894) **comb. nov.** (antes em *Aspona*), *H. intermedia* (Fowler, 1894) **comb. nov.** (antes em *Aspona*) e, também, *H. proxima* **sp. nov.** (da Costa Rica), *H. costata* **sp. nov.** e *H. acuta* **sp. nov.** (estas duas do Mato Grosso, Brasil). Todas as espécies são ilustradas.

PALAVRAS-CHAVE. Atos nomenclaturais, Auchenorrhyncha, descrição, Homoptera, novos táxons, taxonomia.

STÅL (1867) described the genus *Hypheus* designating *Thelia ursus* Fairmaire, 1846 as its type species.

FOWLER (1894) described three species from Central America, *Aspona turgescens*, *A. intermedia*, and *A. cuneata*, but with some doubt about their inclusion in the genus *Aspona* Stål.

FUNKHOUSER (1927) catalogued the genus in Darninae, with two species, *Hypheus ursus* Fairmaire and *H. viridistrigata* [sic] (Walker, 1858).

METCALF (1952) discovered that the name *Hypheus* Stål had been used before to another taxon, therefore, gave to it a new name *Hypheodana*.

METCALF & WADE (1965) maintained *Hypheodana* in Darninae-Darnini with both species, as in FUNKHOUSER (1927).

DEITZ (1975) in classifying the higher categories of Membracidae, set aside three genera, among them *Hypheodana*, saying that "The original descriptions of these genera and knowledge of their type-species are inadequate for placing them in higher categories".

McKAMEY (1998) also kept the genus as *incertae sedis*, inside Darninae.

BARREIRA & SAKAKIBARA (2001) removed *Thelia viridistriga* Walker, 1858 from *Hypheodana* and placed it into *Paracentronodus* Sakakibara, 1971.

In the present paper *Hypheodana* Metcalf, 1952 is confirmed as belonging in Darninae-Darnini, as defined by DEITZ

(1975). Six species are included in the genus.

Hypheodana Metcalf, 1952

Hypheus Stål, 1867: 557 (type species: *Thelia ursus* Fairmaire, 1846, by original desig.) (**praeoc.**).

Hypheodana Metcalf, 1952: 230 (**nom. nov.**); Metcalf & Wade, 1965: 619; Deitz, 1975: 67; McKamey, 1998: 159 (**incertae sedis**).

Head triangular, covered with short and decumbent hairs; vertex punctured, weakly sculptured, superior margin, between eyes, widely arched. Eyes ovate and slightly prominent laterad. Ocelli equidistant to eyes and to each other. Suprantennal lobules not differentiated from the rest of vertex, with margins slightly sinuose, apex reaching just below middle of frontoclypeus. Frontoclypeus, in frontal view, ovoid, little longer than wide, apex hairy; in lateral view, strongly produced downwards, with lateral surface near antenna distinctly concave and glabrous; anteclypeus small forming a straight angle with frontoclypeus; rostrum short, reaching mid-coxae.

Pronotum coarsely punctured, sometimes with longitudinal rugae (elevated lines), covered with sparse and minute hairs; metopidium strongly convex, in lateral view slightly produced ahead; postocular lobules close to thorax, without carina, the distance from eye to humeral angle about the diameter of eye; humeral angles frequently produced laterad, horizontal, flattened, concave below; posterior process tectiform, covering completely

the tegmina, except the base and a narrow portion of costal margin, more or less elevated at base above scutellum, then sloping gradually to apex, sometimes extended beyond the tegmina; in dorsal view, triangular, slightly swollen at middle, marked in front and after the swelling in a more or less V-shaped depression.

Tegmina, usually, with two discoidal and five apical cells. Hind wings with four apical cells.

Pro- and mesothoracic legs with longitudinal rows of cucullate setae on ventral side of femur and tibia; metathoracic legs with femur lacking cucullate setae.

Comments. STÅL (1867) characterized the genus *Hypheus* as: "Thorax in front strongly declivous, dorsum of posterior process swollen at base, tectiform after the swelling, sides slightly convex, lateral margins not curved inwards; head perpendicular, triangular, frons acute and produced downwards; other characters as in *Aspona*."

The head is not always perpendicularly produced downwards, in some species it is obliquely directed ahead, with apex of frontoclypeus more rounded and pilose. The pronotum is usually short, with posterior process almost terminating abruptly near apex of tegmina; in some species, however, the terminal portion extends far beyond the tegmina in a slender, more or less conic, and acute point. The humeral angles also varies from ear-like expansion to just angulate. The pronotum surface, nevertheless the coarse punctuation, varies from opaque (*H. ursus*) to more or less brilliant (*H. intermedia*, *H. cuneata*), or adorned with longitudinal rugae or striae like some Polyglyptini (Smilliinae) individuals. It is visible, from above, a faint V-shape dark patch on dorsum. The tegmina venation is similar to that of *Cyphotes* Burmeister but, in some species, the cross-veins can be missing as in *Aspona* Stål, resulting in only one discoidal cell.

FOWLER (1894) described *Aspona turgescens*, *A. intermedia*, and *A. cuneata*. About the species he stated "According to Stål, the tegmina have only one discoidal area, but in the first species described below two are present, and the character is evidently variable. In our collection there are specimens of three species, one of which belongs to the typical form, and the second is intermediate and passes on to the third, which any one would describe as a new genus without least hesitation, were it not for the second; after considerable doubt I have come to the conclusion that it is best to class them together under *Aspona* until more is known regarding the group, which seems to be a very scarce one." None of the Fowler's species belongs in *Aspona* Stål. The last two are considered here as *Hypheodana*; the first one will be transferred to another genus opportunely.

Key to species

1. Pronotum punctured; humeral angles well developed, auriculate 2
- 1'. Pronotum ornate with longitudinal rugae (carinae); humeral angles short 5
2. Dorsum of pronotum strongly sinuate *H. ursus*
- 2'. Dorsum of pronotum convex, widely arched 3

3. Surface of pronotum brilliant 4
- 3'. Surface of pronotum opaque *H. proxima* sp. nov.
4. Humeral angles black *H. intermedia*
- 4'. Humeral angles concolor *H. cuneata*
5. Pronotum navicular, posterior process extended to apex of tegmina *H. costata* sp. nov.
- 5'. Pronotum styliform, posterior process extended quite beyond apex of tegmina *H. acuta* sp. nov.

Hypheodana ursus (Fairmaire, 1846)

Figs 1-2

Thelia ursus Fairmaire, 1846: 306 (type loc.: Colômbia, Bogotá).

Hypheodana ursus; Metcalf & Wade, 1965: 619; Deitz, 1975: 67; McKamey, 1998: 159.

Comments. FAIRMAIRE (1846) gave the following definition: "Fusco-ferruginous, silky, with some darkened patches; humeral angles large, rounded; pronotum rounded anteriorly, little compressed dorsally, having a strong transversal depression just behind the humeral angles; body below and legs ferruginous-pale".

These diagnostic characters match very well with the specimens here examined (from Brazil) and also with the figure in the Fairmaire's work, Pl.V, figure 10 (from Colombia). The pronotum is castaneous, somewhat greenish on posterior process; the humeral angles are developed in an ear-like expansion, slightly trilobate at apex, and dorso-ventrally compressed on anterior and posterior margins.

Measurements (in millimeters). Female. Total length 7.20; width of head 2.60; length of head 1.40; distance between apices of humeral angles 6.10.

Material examined. BRAZIL, Mato Grosso: "SINOP-MT – Brasil/S12°37'/X/1974 – M. Alvarenga", 1 female (DZUP).

Hypheodana proxima sp. nov.

Figs 3-5

Diagnosis. Pronotum convex, coarsely punctuate, opaque; humeral angles auriculate; apex of posterior process extended to little beyond tips of tegmina.

Measurements (in millimeters). Male. Total length 6.80; width of head 2.64; length of head 1.52; distance between apices of humeral angles 4.40.

Holotype male. Coloration dirty-castaneous; dorsum of pronotum with two longitudinal dark stripes on each side of median carina, not well defined, from base of head to middle, then diverging laterad but not reaching lateral margins; under-surface of body and legs, except tibiae and tarsi, dark-castaneous.

Pronotum convex, in lateral view, with dorsal outline widely arched, very slightly sinuate above humeral angles; in dorsal view, the anterior 2/3 more or less parallel-sided, and then, at final 1/3 converging to an acute apex, just little be-



Figures 1-12. Species of *Hypheodana*: (1-2) *H. ursus*, female; (3-5) *H. proxima* **sp. nov.**, holotype male; (6-7) *H. costata* **sp. nov.**, holotype male; (8-10) *H. acuta* **sp. nov.**: (8-9) holotype female; (10) paratype male; (11) *H. intermedia* **comb. nov.**, holotype female, *Aspona*; (12) *H. cuneata* **comb. nov.**, holotype female, *Aspona*.

yond tips of tegmina; humeral angles well developed in an ear-like process, somewhat trilobate distally. Tegmina with one discoidal cell; cross-vein s absent.

Comments. This species is very close to *H. intermedia* (Fowler) concerning the pronotal shape. It differs in the sur-

face texture and coloration. In *H. intermedia*, the surface is shining, nevertheless the similar punctures in both, and uniformly colored, except the humeral angles that are entirely black. *H. proxima* **sp. nov.** is also similar to *H. ursus* (Fairmaire), having well developed humeral angles and opaque and dirty aspect.

The tegmina, however, present the venation similar to *Aspona* Stål, that is, lack the cross-vein *s*, which reduces the number of discoidal cells to only one. I believe that, in this case, the absence of the cross-vein *s* is occasional.

Holotype male. "COSTA RICA: Lim/Hitoy Cerere/100 m/30.viii.2000/V.O. Becker Col" (DZUP).

***Hypheodana intermedia* (Fowler, 1894) comb. nov.**

Fig. 11

Aspona intermedia Fowler, 1894: 51 (type loc.: Panama, Bugaba); Metcalf & Wade, 1965: 618; Broomfield, 1971: 356; McKamey, 1998: 150.

Comments. This species is very similar to the next one, *H. cuneata* (Fowler), in the shape of pronotum and its brilliant surface; the posterior process, however, is little shorter in length, with the apex not extended to beyond the tegmina. The humeral angles are entirely black. According to the comments made by Fowler, it can be deduced that the tegmina present only one discoidal cell.

Material examined. A photograph of the holotype female, *Aspona intermedia* Fowler, 1894 (BMNH-The Natural History Museum, London).

***Hypheodana cuneata* (Fowler, 1894) comb. nov.**

Fig. 12

Aspona cuneata Fowler, 1894: 51 (type loc.: Panama, v. Chiriqui); Metcalf & Wade, 1965: 618; Broomfield, 1971: 343; McKamey, 1998: 150.

Comments. According to the original description, it is allied to *H. intermedia* "from which it may easily be distinguished by its form, the sides of the pronotum being gradually narrowed from the shoulders to the apex, and by the more regular rows of punctures and less rugose interstices, which are considerably more in number; ...Only one discoidal area is present." The pronotum, compared with *H. intermedia* (Fowler), is longer and tapering, with the apex extended, visibly, to beyond the tegmina.

Material examined. Only photograph of the holotype female, *Aspona cuneata* Fowler, 1894 (BMNH-The Natural History Museum, London).

***Hypheodana costata* sp. nov.**

Figs 6-7

Diagnosis. Pronotum naviculate, ornated with longitudinal rugae; little depressed behind humeral angles; posterior process abruptly pointed downwards at apex, almost as long as tegmina.

Measurements (in millimeters). Male/female. Total length 5.80/7.60; width of head 2.12/2.52; length of head 1.12/1.80; distance between apices of humeral angles 3.00/4.00.

Holotype male. Dirty yellowish-brown; a thin stripe on coronal suture, and other two, faint, longitudinal, at each side of median carina of pronotum, from metopidium to near apex,

black; sides of thorax and underside of abdomen, black.

Head triangular, obliquely projected forwards. Pronotum naviform, short, as long as tegmina; in lateral view, the contour line undulate, feebly depressed behind humeral angles, and abruptly descending near apex, terminating in an acute point; surface provided with several longitudinal rugae (elevated lines), some of which reach the apex; in dorsal view, triangular, humeral angles short and blunt, two very weak V-shaped depression, one at base of posterior process, above scutellum, and other pre-apical, just before descending part, forming an oblique weak carina at each side from dorsal carina.

Tegmina with two discoidal cells.

Female. Very similar to male either in shape or color, just bigger in size.

Holotype male. BRAZIL, *Mato Grosso*: "SINOP – MT – Brasil / S 12°31' W 55°37' / X/1974 – M. Alvarenga" (DZUP). Paratype: 1 female, "P. St Elie / Guyane Fr. / 27-28 IX 89" "L. Arnaud" (L. Arnaud collection, Paris-France).

Comments. This species is somewhat similar to *H. intermedia* Fowler, but smaller; pronotum narrower, presenting evident lateral rugae, and without strong depression on dorsum. The head is clearly projected obliquely forward.

***Hypheodana acuta* sp. nov.**

Figs 8-10

Diagnose. Slender and elongate species; pronotum adorned with longitudinal rugae, posterior process extended well beyond the apex of tegmina in an almost conic projection.

Measurements (in millimeters). Female/male. Total length 9.60/7.20; width of head 2.40/2.12; length of head 1.36/1.20; distance between apices of humeral angles 3.44/2.72.

Holotype female. Dirty-castaneous; slightly darkened from middle of head, metopidium, to dorsum of posterior process; thorax and abdomen beneath fuscous.

Pronotum elongated, more or less styliform, weakly depressed; in lateral view, the dorsal line gradually descending to apex which slightly ascends to tip; posterior process with lateral longitudinal lines well marked, 3-4 the longest, from above humeral angles to very apex; lateral margins widely rounded near abdomen, then, after the end of tegmina each margin joined to one another, practically fused, forming a cone-like extension.

Tegmina with two discoidal cells.

Male. Smaller; very similar in the pronotal shape. Slightly darker; disc of head, metopidium, underside of thorax and abdomen, black.

Holotype female. BRAZIL, *Mato Grosso*: "SINOP-M. Grosso/ Brasil – X/1975/M. Alvarenga" (DZUP). Paratype male, with same label data (DZUP).

Comments. This species is different from others in having the pronotum elongate, gradually pointed, more or less conic, extended far beyond the tegmina. The humeral angles are short and triangular.

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