A NEW GENUS OF PSYLLID (HOMOPTERA: PSYLLOIDEA: APHALARIDAE) FROM FLORIDA

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ABSTRACT

Limataphalara brevicephala gen. et sp. nov. is described from Florida. Its separation from other New World Aphalarinae is discussed and a key to genera is provided. The probable host plant is Nectandra coriacea (Lauraceae).

RESUMEN

Se describe en Florida Limataphalara brevicephala gen. et sp. nov. Se discute su separación de otros Aphalarinae de el nuevo mundo y se describe una clave para estos géneros. Se considera que Nectandra coriacea (Lauraceae) es la planta hospedera de este insecto.

Psyllids belonging to the subfamily Aphalarinae (sensu White & Hodkinson 1985) display high diversification in the north temperate regions of the Holarctic, particularly in the arid regions of Central Asia (see Loginova 1964, Klimaszewski 1973). They are, by contrast, poorly represented in the tropical/subtropical zones. Within the New World, species belonging to the genera Alphalara Förster (1848) and Craspedolepta Enderlein (1919) are particularly abundant throughout the U.S.A. and Canada (Russell 1973, Journet & Vickery 1979). Tropical/subtropical representatives are scarce, the fauna comprising the genera Gyropesylla Brethes (5 species, Argentina to the southern U.S.A.), Neaphalara Brown & Hodkinson (1 species, Panama), Burckhardtia Brown & Hodkinson (1 species, Panama and Mexico) and probably Lanthanaphalara Tuthill (1 species, Peru) (Brethes 1921, Tuthill 1959, Hodkinson & White 1981, Burckhardt 1987, Hodkinson 1988, Brown & Hodkinson 1988). The Aphalarinae are characterised primarily by the presence of long finger-like posterior lobes on the male proctiger and the absence of genital processes.

This paper describes a new monotypic genus, Limataphalara gen. nov., type species brevicephala sp. nov., from Florida and discusses its relationship to other New World Aphalarinae. A key to genera is provided.

Limataphalara gen. nov.
(Figs 1-11)

Type species: Limataphalara brevicephala sp. nov.

Description

Head (Figs 1 & 2) weakly deflexed from the general plane of the body, very short, vertex convex, about 1/3 as long as broad, with 2 large distinct fovea, fore-margin almost straight, hind margin excavate; lateral ocelli large, mounted on distinct tubercles adjacent to the eye; eyes hemispherical; proocellar selerite well-developed, at least anteriorly;
median ocellus small, lying at the apex of thin ribbon-like frons, not fully visible in dorsal view; genae barely swollen, merging with vertex just below front margin of head; antennae (Fig. 3) 10-segmented, short, stout, segment 3 the longest, with a single large rhinarium on each of segments 4 to 9, apical segments with fields of sensoria as in Gyropsylla but with the 2 terminal setae having an acute apex; clypeus (Fig. 4) small and rounded, not extending to fore-margin of head.

Thorax (Fig. 1) with dorsum weakly arched, pronotum short, collar-like, descending to the mid point of the eye; propodeum (Fig. 5) quadrate, divided by a branched suture.

Forewing (Fig. 6) oblong-oval, with a well developed pterostigma and a costal break, venation as in figure, gap in anal vein immediately adjacent to point at which vein Cu_{1b} meets the marginal vein; vein C + Sc, along basal leading edge of wing, strongly thickened, colored bright shining black, the pigment extending into cell c + sc and giving a conspicuous black band along the wing margin; wing membrane slightly thickened.
semitransparent, veins concolorous; hindwing membranous, a little shorter than forewing.

Fore- and mid-legs simple, without characteristic features. Hind leg with coxal meracanthus short, stout and broadly rounded at the apex; area beneath the meracanthus forming a rounded swelling as in Gyropsylla (Fig. 7); metafemora without a genual spine or swelling, with an apical crown of 7-9 thick black spurs; basal metatarsus with 2 similar spurs, shorter than apical metatarsus.

Male proctiger (Fig. 8) with elongate sinuous posterior processes that lack the inner hook-like process that occurs in many aphalarines, although the lower margin appears somewhat swollen in the region where the hook normally occurs; subgenital plate simple, paramere (Fig. 9) of complex form, with a basal interior process; aedeagus (Fig. 10) unusual, with apex only weakly expanded but bearing a long and strongly sclerotized ductus ejaculatorius; point of articulation of apical segment set some way from base.

Female terminalia (Fig. 11) wedge shaped, lacking diagnostic features.

Derivation of name: refers to the shiny black coloration and indicates a polished form of the type genus Aphalaria.

Limataphalara brevicephala sp.n.  
(Figs 1-11)

Characters additional to the generic description are listed below.

Coloration. Dorsal surface of head and thorax bright shining black, underparts usually of similar coloration but occasionally deep red. Antennal segments 1-2 and 9-10 black, remainder creamy white. Forewing membrane yellow, veins concolorous, shining black area present along basal leading edge of wing. Legs black. Abdomen and terminalia pale green to yellow.

Structure. Head (Fig. 2) with antennae mounted on the front margin which bears a row of short setae. Antennae 0.73-0.88 times head width, in one male specimen only 9 segmented. Labium (Fig. 4) elongate, not expanded apically. Forewing (Fig. 6) 1.96-2.11 times as long as broad, 2.19-2.44 times head width, with surface spines occupying all cells, not leaving spine-free bands along the veins; vein R₉ weakly sinuous; cells Cu₁ and m₁+₂ subequal. Metatibia 0.57-0.63 times head width. Male subgenital plate shallow sparsely hairy; paramere (Fig. 9) irregular in shape, with a basal inner process developed into a large inwardly directed tooth, which is just visible in lateral view but very obvious in posterior view, with the inner teeth meeting along the mid-line. Outer part of paramere with a roughly pentagonal base giving rise to a slender, posteriorly curved apical process that bears a linear region of sclerotization along its inner apex; inner surface of paramere with scattered stout setae.

Female proctiger (Fig. 11) of moderate length, 0.63-0.64 times head width, with sinuous dorsal margin; circumanal pore field consisting of a double row of pores, almost half as long as proctiger; subgenital plate roughly triangular, bluntly acute at apex; ovipositor broad basally, tapering into a narrowly acute apex; lateral valves large and somewhat truncate at apex.

Measurements. Head width ♂ 0.56-0.59mm, ♀ 0.59-0.60mm. Antennal length ♂ 0.43-0.50mm, ♀ 0.48-0.51mm. Forewing length ♂ 1.23-1.32mm, ♀ 1.42-1.44mm. Proctiger length ♂ (ignoring lobes) 0.15-0.16mm, ♀ 0.37-0.38mm. Paramere length ♂ 0.21-0.23mm. Apical portion of aedeagus length ♂ 0.14-0.16.

Host plant. Larval material is not available but the collection of adults from Nectandra cortacea (Lauraceae) at two separate localities suggests that this is the host plant.

Derivation of name: refers to the short transverse head.

**Discussion and Diagnosis**

The tropical/subtropical New World Aphalarinae comprise an assemblage of small or monotypic genera that appear taxonomically isolated from each other. This suggests that they may represent relict forms from a much larger fauna.

*Limataphalara* resembles *Gyropsylla* in the form of the swollen metacoxa, in the small rounded meracanthus and in the presence of fields of small sensilla on the antennal flagellum. Furthermore, *Nectandra*, the probable host plant genus of *Limataphalara*, has also been recorded as a host for *Gyropsylla cannela* (Crawford) (Crawford 1925, Hodkinson & White 1981). As all other *Gyropsylla* species for which the host plant is known feed on *Ilex* (Aquifoliaceae) some doubt has previously been expressed as to the veracity of the record from *Nectandra* (Brown & Hodkinson 1988). It may, however, now represent another shared character between related genera.

Amongst other New World aphalarine genera *Lanthanaphalara* and *Neaphalara* share the similar form of coxa and meracanthus to *Limataphalara* and also lack the small inner hook-like process on the posterior projection of the male protiger. *Neaphalara* also possesses a male paramere with an inner basal process, although it differs somewhat in form from that in *Limataphalara*. Otherwise the genera differ markedly in the general form and details of the head, forewing and terminalia.

The remaining tropical/subtropical genus, *Burckhardtia*, appears to feed on *Aralia* (Araliaceae). It differs from *Limataphalara* in most details of the head, legs, forewing and terminalia. The New World aphalarine genera can be separated using the following simplified key.

**Key to Genera of New World Aphalarinae**

1. Forewing with a conspicuous pterostigma ........................................ 2
1'. Forewing without a pterostigma ......................................................... 6
2(1) Forewing with brown color pattern in apical half ............................. 3
2' Forewing without brown color pattern in apical half, at most with a black streak along the leading edge of cell c+sc ........................................ 4
3(2) Forewing with gaps present basally in veins Rs, M and Cu, corresponding to the position of the nodal line. Male protiger with inner hook-like processes on the posterior projection. Clypeus elongate. Paramere in lateral view with basal anterior process ................................. *Neaphalara* Brown & Hodkinson
3' Forewing without gaps in veins along nodal line. Male protiger lacking inner hook-like processes. Clypeus shorter, rounded. Paramere without basal process, with an inner tooth arising at mid-length. ................................................ *Burckhardtia* Brown & Hodkinson
4(2') Vertex elongate, almost as long as broad, each half extended forward into triangular-shaped extensions that reach well forward of the median ocellus ................................................ *Lanthanaphalara* Tuthill
4' Vertex much broader than long. Front of head either straight or with gently rounded anterior lobes on each side of median ocellus ............................... 5
5(4') Forewing membranous, clear. Clypeus usually elongate. Posterior lobe of male protiger long and thin, with 2 small ventral hook like processes, extending well beyond the paramere which is usually clavate. Apex of aedeagus somewhat expanded, hooked anteriorly, without a prominent ductus ejaculatorius ........................................ Gyropsylla Brèthes

5' Forewing semi-thickened, yellow, with a shiny black streak along the leading edge of cell c+sc. Clypeus short and rounded. Lobe of male protiger stout, without ventral processes, barely extending to the paramere. Paramere of more complex form, with an inner basal tooth. Apex of aedeagus linear, with a prominent sclerotized ductus ejaculatorius. ............................. Limataphalara gen. nov.

6(1') Anterior margin of each half of vertex strongly angular. Genae expanded into rounded tubercles below the eye. Clypeus often elongate. ........................................ Aphanara Förster

6' Anterior margin of each half of vertex more gently rounded. Genae not developed into distinct tubercles. Clypeus rounded, not elongate. ........................................ Craspedolepta Enderlein

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FEEDING ON NON-HOST PLANTS BY PARTIALLY MAXILLECTOMIZED TOBACCO HORNWORMS (MANDUCA SEXTA: Lepidoptera: Sphingidae)

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ABSTRACT

Tobacco hornworm larvae reared on diet or jimsonweed and with one or both pairs of maxillary sensillae styloconica removed were given feeding tests with four non-host plants (collard, dandelion, cowpea and mullein). Increased feeding was observed for all larvae lacking medial, lateral, or both pairs of sensillae; these increases were greater for larvae that had been reared on jimsonweed. For larvae with both pairs of sensillae removed, all test plants were highly acceptable. For larvae with only the lateral sensillae removed, the test plants were only slightly more acceptable. Diet-reared larvae with the median sensillae removed found test plants slightly more acceptable than did control larvae. Jimsonweed larvae lacking only the median sensillae found dandelion, normally a rejected plant, almost completely acceptable. Possible physiological reasons for these behavior changes are discussed.

RESUMEN

Se hicieron pruebas alimenticias con cuatro plantas no hospederas a las larvas de Manduca sexta criadas con dieta artificial o con hierba hedionda Datura stramonium y con uno o dos pares de las sensillae styloconicas estirpadas de las maxilas. Las plantas experimentales fueron berza común, Brassica oleracea, amargón, Tanacetum affinitiale, caupl, Vigna sinensis y gordolobo, Verbascum thapsus. Se observó alimentación mas extensiva para las larvas a las cuales les faltaron ambos o uno u otro par (medio o lateral) de sensillae. El aumento de alimentación fue mas grande en las larvas que habían comido hierba hedionda. Todas las plantas fueron aceptadas por las larvas sin ambos pares de sensillae. Las larvas sin las sensillae laterales, aceptaron un poco mas dichas plantas. Las plantas experimentales fueron un poco mas aceptables a las larvas criadas con dieta y sin las sensillae medias, pero las larvas criadas en hierba hedionda y sin las sensillae comieron casi completamente el amargón (el cual normalmente es una planta no aceptable). Se discute la posibilidad de una base quimiosensorial que explique este comportamiento.