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Jumping plant lice of the family Carsidaridae (Hemiptera : Psylloidea) from Cameroon: taxonomic, faunistic, phenology and host plants

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Abstract

Cameroonian psyllids members of the Carsidaridae family are revised. Six species are recognized within this family including three known species, two newly described species; one species remain undescribed because the material is not sufficient. The newly described species are *Carsidara camerunensis* sp.n., psyllid of *Sterculia tragacantha* and *Mesohomotoma njinei* sp.n., psyllid of *Desplatsia dewevrei*. Adults and fifth instars' larvae of the five Carsidaridae species are diagnosed and illustrated. The host plants of the five described species belong in Malvaceae family. The psyllid outbreak period of each species depends on the availability of young leaves on host plants. Then, the population dynamic of each species depends mainly on the phenology of the host plant which depends of climatic factors.

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Introduction

Psyllids are small plant sap-sucking insects of Hemiptera commonly called jumping plant lice. As other hemipterans, jumping plant lice have piercing-sucking mouth-parts. When feeding, the mandibular and maxillary stylets are inserted into the host tissue, saliva is injected and then the liquid food is absorbed. Before feeding, the insects probe more or less extensively. The probing also involves injection of saliva, which is particularly relevant in species which transmit bacterial or viral pathogens (Burckhardt and De Queiroz, 2012). Currently, 3850 species have been described world-wide (Li, 2011), which is probably less than half of the existing number of species. Recent revised classification of psyllid indicated that eight families could be defined: Aphalaridae, Calophyidae, Carsidaridae, Homotomidae, Liviidae, Phacopteronidae, Psyllidae and Triozidae (Burckhardt and Ouvrard, 2012). Psyllids are distributed among all biogeographic regions but they are most numerous in warmer regions (Burckhardt, 1994). Their distribution in the tropical regions of Africa is poorly known, therefore they could exist numerous undescribed psyllid species from this part of world.

The first biodiversity data of psyllids from Cameroon was published by (Tamesse *et al.*, 2007); these authors listed 35 species of Triozidae. Since, Dzokou *et al.* (2009a), in the West Region of Cameroon, listed 37 species of Psyllidae family; Yana *et al.* (2009), in the Centre Region of Cameroon, listed 11 species of Phacopteronidae family; Yana *et al.* (2010) listed, in the Centre Region of Cameroon, 45 species of Psyllidae family and Mveyo *et al.* (2011) listed, in the South Region of Cameroon, 35 species of Psyllidae. Several species recorded by those authors are new records. Until now no record of the biodiversity of psyllid of Carsidaridae family from Cameroon is not yet described. Carsidarids psyllid group, according to Heslop-Harrison (1958), are considered as a tribe of the subfamily Ciriacreminae. In this subfamily, the author places 6 genera *Carsidara*, *Mesohomotoma*, *Mastigimas*, *Protyora*, *Epicara* and *Diceraopsylla*.

Vondráček (1957) considers Carsidaridae as a group close to Triozidae. For his part, Becker-Migdisova (1973) recognizes seven subfamilies among Carsidaridae: Calophyinae, Pauropsyllinae, Leptynopterinae, Phacopterinae, Tenaphalarinae, Carsidarinae and Homotominae. The family gathers by Becker-Migdisova (1973), a large number of genera among Psylloidea. White and Hodkinson (1985) conducted a comprehensive definition of Carsidaridae; two subfamilies are retained by the authors in this family: Mastigmatinae- Becker Migdisova (1973) and Carsidarinae Crawford with the following genera *Mastigimas* Enderlein, *Tenaphalara* Kuwayama, *Protyora* Kieffer, *Mesohomotoma* Kuwayama, *Paracarsidara* Heslop-Harrison and *Carsidara* Walker. Hollis (1987) reconsider the classification of *Mastigimas* and transfers it to the Calophyidae family. Burckhardt and Ouvrard (2012), in the newly psyllid classification confirmed Carsidaridae as a family within the Hemiptera Psylloidea.

The psyllids of Carsidaridae family are associated with host plants of the families Sterculiaceae, Bombacaceae and Malvaceae, ie the plants of Malvales group (Hollis (1987)). The carsidarids host plants are of some economic importance. *Theobroma cacao* L. (Sterculiaceae) originated from tropical America has been introduced in Cameroon. This plant is cultivated in various regions: South, Centre, East, West and Littoral (Mbondji, 1984). Cocoa is a major export crop in several West African countries. The update of the study of the population dynamic of the cocoa psyllid is indispensable for an integrated pest management.

Previously in Cameroon, very few scientific notes included psyllids members of carsidarids group: *Mesohomotoma tessmanni* (Aulmann) (Messi, 1986), *M. hollisi* Messi (Messi and Nguefang, 1993) and *Tenaphalara camerunus* (Aulmann) (Hollis, 1987). No other records of Carsidaridae psyllids were published from this country. This paper described the biodiversity of psyllids of Carsidaridae family from

Cameroon, provided keys for their identification and the taxonomic description of two new species within his family. Regular field surveys give us useful also information of the population dynamic of species of economic importance such as cocoa psyllid.

Materials and methods

Study sites

Psyllids were sampled in four sites for regular monthly prospection: Kala (3°47' N, 11°24'E), Minkoameyos (3°51'N, 11°31'E), Nkomilong (3°47' N, 11°24'E) and Soa (3°57'N, 11°36'E). The four localities are in the Center region of Cameroon, central Africa.

Population dynamic study of psyllid

Field surveys, for population dynamic study, took place for a period of 24 months (January 2006-December 2007). Psyllids for its various developmental stages were counted on a selected branch of five host plant in each locality. Adult psyllids were captured with a sweep net of 0.5 mm mesh size and an aspirator. Larvae were sampled directly from buds and leaves of the host plant

Taxonomic study, terminology and abbreviations

Drawings were made under a microscope with slide-mounted specimens of insects. Morphological terminology follows Hollis (1973, 1987); and Ossiannilsson(1992). The following abbreviations are used: LZUY= Laboratory of Zoology, University of Yaounde I; RMCA= Royal Museum of Central Africa; NHMB= Naturhistorisches Museum Basel,

Switzerland; NHY= National Herbarium of Yaounde, Cameroon. The following abbreviations are used in the descriptions and measurement tables. Adult: BL, body length; BW, body width; HW, head width; AL, antenna length; F₁, length of first antennal flagellomere; WL, forewing length; WW, forewing width; wL, hindwing length; wW, hindwing width; MTL, metatibial length; MFL, metafemur length; MP, male proctiger length; PL, paramere length; DL, length of distal segment of aedeagus; FP, female proctiger length; SL, female subgenital plate length. Fifth instar larva: BL, body length; BW, body width; AL, antenna length; FL, forewing-pad length; ML, metatibial length.

Museum specimen deposit

The specimens are preserved dry and slide-mounted or in 70% ethanol and are deposited in LZUY, RMCA and NHMB. The host plants were identified at NHY. Drawings and measurements were made from slide-mounted material.

Results and discussion

Carsidaridae Crawford

Carsidaridae synonymies and diagnosis characters are given by (Hollis, 1987). (Burckhardt and Ouvrard, 2012) recently confirmed the family status of Carsidaridae and listed the nine genera within this family along with the type species of each genus. The taxonomic of Carsidaridae species from Cameroon follows the classification of (Hollis, 1987) and (Burckhardt and Ouvrard, 2012).

Table 1. Measurements (in mm) of last instar larvae of Carsidaridae species (N= number of measured specimens).

Species	N	BL	BW	AL	FL	MTL	BL/BW	BL/AL	AL/FL
<i>Carsidara camerounensis</i> sp.n.	6	3.8	1.6	1.8	1.3	1.1	2.4	2.1	1.4
<i>Mesohomotoma tessmanni</i>	15	2.4	0.5	1.2	0.7	0.4	4.8	2	1.7
<i>Mesohomotoma hibisci</i>	30	2.6	0.9	1.7	0.8	0.7	2.8	1.5	2.1
<i>Mesohomotoma njinei</i> sp.n.	12	3.1	0.8	1.9	0.8	0.7	3.8	1.6	2.4
<i>Tenaphalara camerunus</i>	6	2.9	0.9	1.1	0.7	0.5	3.2	2.6	1.6

Psyllid species belonging in Carsidaridae family are characterized by: antennal sockets enlarged and swollen ventromedially and vertex often deeply divided by median giving the head a cleft appearance

in dorsal view. Antennal flagellum with single subapical rhinarium presents on flagellomere 3 in addition to those on flagellomeres 2, 4, 6 and 7. False r_{s-m} cross-vein present in forewing or r_s and M_{1+2} in

broad contact, costal break absent. Hind tibia with a well-developed basal spine; hind basitarsus with a single apical spur. Male subgenital plate with a pair of secondary lobes anterior to parameres, these lobes appear to be sclerotised projections arising from the membrane lining the inner surface of the subgenital plate (Hollis, 1987). Final instar larva elongate, clearly divided into head, thorax and abdomen; antennae elongate, 10 segmented; legs elongate,

tarsal arolium sessile and fan-shaped or globular; wing buds small, without humeral lobes; thoracic sclerites poorly differentiated; caudal region of abdomen differentiated and bearing convoluted pore bands, anus terminal or termino dorsal; body setae mainly simple but scattered, small, lanceolate setae present on caudal sclerites marginally and submarginally (Hollis, 1987).

Table 2. Measurements (in mm) of male adult of Carsidaridae species (N= number of measured specimens).

Species	N	BL	BW	HW	AL	F1	WL	WW	wL	ww	MTL	MFL	MP	PL	DL
<i>Carsidara camerounensis</i> sp.n	20	6.7	1.8	1.1	4.1	0.6	7.5	2.9	4.7	1.8	1.4	1.2	0.5	0.4	0.4
<i>Mesohomotoma tessmanni</i>	5	2.5	0.8	0.6	1.7	0.3	3.6	1.2	2.5	0.8	0.7	0.6	0.4	0.4	0.2
<i>Mesohomotoma hibisci</i>	35	3.8	0.8	0.7	2.6	0.4	4.2	1.4	2.5	0.8	0.8	0.7	0.3	0.4	0.4
<i>Mesohomotoma njinei</i> sp.n.	9	4.5	0.8	0.7	2.5	0.4	4.7	1.6	2.9	0.9	1.0	0.8	0.3	0.4	0.3
<i>Tenaphalara camerunus</i>	3	3.3	0.6	0.6	1.4	0.3	2.9	0.9	1.9	0.6	0.6	0.5	0.3	0.3	0.3

Key to Carsidaridae genera from Cameroon

1. Forewing narrowing to a subacute apex, *Rs* and *M₁₊₂* not in contact but connected by a false *rs-m* cross-vein (Fig. 32, 33), *cu₁* much wider than high and

with a value of at least 1.7; antennal flagellum elongate, 1st flagellar segment long and narrow, not less than nine times longer than its greatest width.

Table 3. Measurements (in mm) of female adult of Carsidaridae species (N= number of measured specimens).

Species	N	BL	BW	HW	AL	F1	WL	WW	wL	ww	MTL	MFL	FP	SL
<i>Carsidara camerounensis</i> sp.n.	20	6.8	1.9	1.2	4.0	0.6	8.1	3.2	5.2	1.7	1.4	1.2	1.2	0.5
<i>Mesohomotoma tessmanni</i>	8	3.0	0.9	0.6	1.7	0.4	4.0	1.4	2.6	0.8	0.7	0.6	0.7	0.5
<i>Mesohomotoma hibisci</i>	35	4.3	0.9	0.8	2.7	0.4	4.9	1.6	3.0	0.9	0.9	0.8	1.0	0.9
<i>Mesohomotoma njinei</i> sp.n.	4	4.4	0.9	0.8	2.6	0.4	5.2	2.0	3.2	1.2	1.1	0.9	1.1	0.7
<i>Tenaphalara camerunus</i>	4	3.6	0.7	0.6	1.5	0.3	3.4	0.9	2.3	0.6	0.5	0.4	0.6	0.4

2. Pterostigma absent and *M+Cu* about half as long as *Cu* stem; male proctiger bipartite, with a large, anvil-shaped median posterior lobe in addition to lateral

lobes (fig. 52, 53, 54)...*Mesohomotoma*. Pterostigma present (Fig. 31), male proctiger unipartite, without median posterior lobe and lateral lobes (Fig. 51).

Table 4. Ratios of male adult of Carsidaridae species.

Species	BL/BW	AL/HW	AL/F1	BL/HW	WL/HW	WL/WW	WL/wL	wL/ww	MTL/HW	MP/HW	PL/HW
<i>C. camerounensis</i>	3.7	3.7	6.8	6.1	6.8	2.6	1.6	2.6	1.3	0.5	0.4
<i>M. tessmanni</i>	3.1	2.8	5.6	4.2	6.0	3.0	1.4	3.1	1.2	0.6	0.6
<i>M. hibisci</i>	4.7	3.7	6.5	5.4	6.0	3.0	1.7	3.1	1.1	0.4	0.6
<i>M. njinei</i>	5.6	3.6	6.2	6.4	6.7	2.9	1.6	3.2	1.4	0.4	0.6
<i>T. camerunus</i>	5.5	2.3	4.6	5.5	4.8	3.2	1.5	3.2	1.0	0.5	0.5

3. *M+Cu* very short, about one third as long as *R* stem and less than half as long as *Cu* stem (Fig. 31); female terminalia, in profile, rounded dorsally, ventrolateral margins of proctiger with dense fringes of setae, lateral palps ridged (Fig. 65)...*Carsidara* -*M+Cu* longer, about as long as or longer than *R* stem and *Cu*

stem (Fig. 40); female terminalia, in profile conical, proctiger sometimes with a median lobe posterior to anal pore, lateral palps not ridged (Fig.69).

4. False *r₁-rs* crossvein absent (Fig. 40).

5. Radular area absent in cu1a, claval suture reaching hind margin of forewing distant from apex of Cu_{1b} (Fig.40) *Tenaphalara*.

Carsidara Walker 1869

Carsidara synonymies and diagnosis characters are given by (Hollis, 1987).

Carsidara camerunensis Tamesse sp.n.
Fifth instar larva.

Colouration

body orange brown dorsally and pale yellow to ochreous ventrally; compound eyes reddish; claws dark brown.

Table 5. Ratios of female adult of Carsidaridae species.

Species	BL/BW	AL/HW	AL/F1	BL/HW	WL/HW	WL/WW	WL/wL	wL/ww	MTL/HW	FP/HW	FP/SL
<i>Carsidara camerounensis</i> sp.n	3.6	3.3	6.6	5.6	6.7	2.5	1.5	3.0	1.2	1.0	2.4
<i>Mesohomotoma tessmanni</i>	3.3	2.8	4.2	5.0	6.6	2.8	1.5	3.2	1.2	1.2	1.4
<i>Mesohomotoma hibisci</i>	4.7	3.4	6.7	5.4	6.1	3.1	1.6	3.3	1.1	1.2	1.1
<i>Mesohomotoma njinei</i> sp.n.	4.8	3.2	6.5	5.5	6.5	2.6	1.6	2.6	1.4	1.4	1.6
<i>Tenaphalara camerunus</i>	5.1	2.5	5.0	6.0	5.6	3.7	1.5	3.8	0.8	1.0	1.5

Structure

Final instar larva (Fig. 1) elongate, not clearly divided into head, thorax and abdomen. Antenna elongate, 10 segmented; flagellum distinctly subdivided with two subapical rhinaria present on flagellomeres 2, 3, 4, and a single subapical rhinarium on flagellomeres 6, 7, 8 (Fig. 2). Antennae, legs, head, thorax and abdomen are covered by minute lanceolate setae.

Dorsally, abdomen with three stronger short setae in its margin. Wing pads, with many marginal lanceolate setae. Legs elongate, tarsal arolium sessile and globular (Fig. 3). Caudal region of abdomen differentiated and bearing a convoluted pore band and many oval patches of pores (Fig. 4). Anus in ventral and terminal position. Measurements and ratios in table 1.



Fig. 1-8. Carsidaridae fifth instar larvae. 1,2,3,4, *Carsidara camerunensis* ; 5,6,7,8, *Tenaphalara camerunus*. Scale lines : 0.3 mm (1) ; 0.06 mm (2) ; 0.15 mm (3) ; 0.08 mm (4, 6) ; 0.10 mm (5) ; 0.04 mm (7, 8).

Adult

Colouration

Overall body color brown with dark brown markings dorsally. Antennal flagellomeres 1-5 dark-brown

apically, eyes dark-brown. Forewings yellowish with a large brown dot in cu_{2b} cell. Hindwings transparent; spurs and claws dark-brown. Vertex with a dark-brown transverse band.

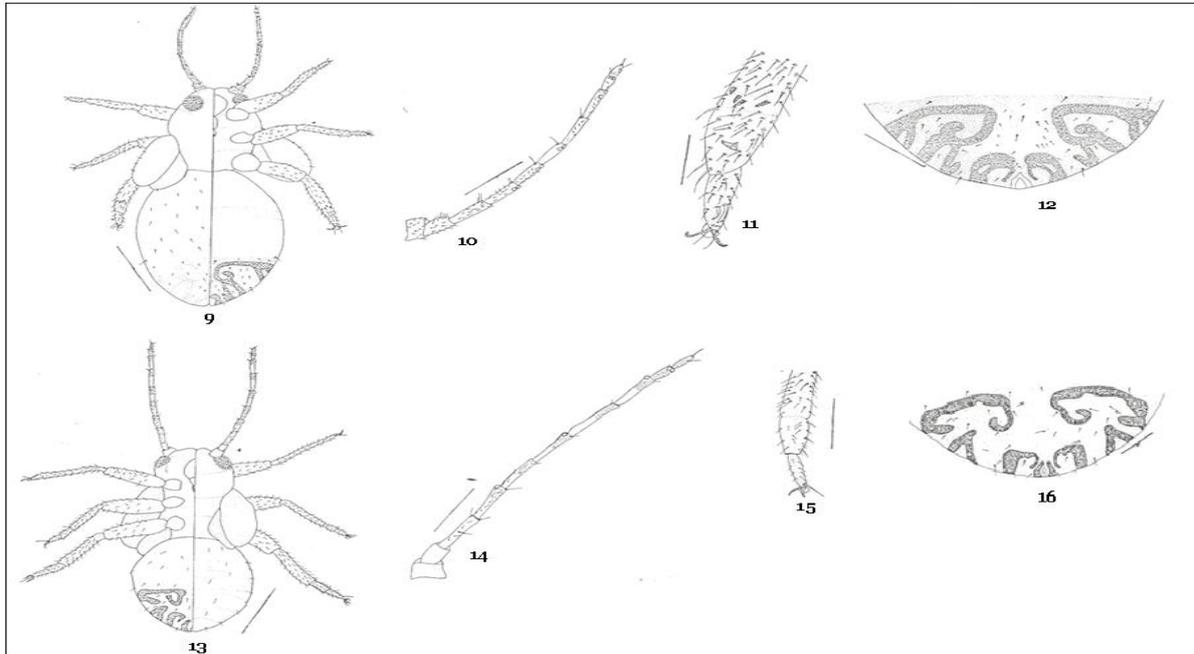


Fig. 9-16. Carsidaridae fifth instar larvae. 9, 10, 11, 12, *Mesohomotoma tessmanni*; 13, 14, 15, 16, *Mesohomotoma hibisci*. Scale lines: 0.3 mm (9, 13); 0.06 mm (11); 0.15 mm (12); 0.12 mm (10, 14); 0.01 mm (15); 0.03 mm (16).

Structure

Head (Fig. 21) with concave vertex; discal foveae clearly marked as broad longitudinal oblique grooves, frontal margin sharply defined and deeply incised by median suture, lateral and hind margins prominent but obtuse. Lateral ocelli placed posteriorly on vertex. Anteriorly, vertex bears lanceolate setae. Antennal sockets enlarged. Antennal flagellum 3.3-3.7 times longer than head width (Fig. 26). First flagellomere elongate than the other flagellomeres and with 5 rhinaria (3 subapically, one in middle and another in basal third). The second flagellomere with 8 rhinaria (one in basal part, 4 in apical third and 3 in apical part). The third flagellomere with 3 rhinaria in subapical part. The fourth flagellomere with single rhinarium apically. The fifth flagellomere lack rhinarium. The sixth flagellomere with 2 subapical rhinaria. The seventh and eighth flagellomeres lack rhinarium. Forewing (Fig. 31) ovate with subacute

apex, 2.5-2.6 times longer than wide and 1.5 times longer than hindwing. Costal break absent, pterostigma elongate with triangular form and more long than R_1 stem. r_1 - r_5 cross-vein absent; $M+Cu$ stem very short about 0.39 times as long as R stem and about 0.47 times as long as Cu stem; cu_1 cell more wide than higher, without radular spinules; m_1 and m_2 cells have radular spinules. Hindwing (Fig. 36) with grouped costal setae: 2 before costal break, 6 + 5 after costal break and hamulus (2+6+5+1). Hind legs (Fig. 41, 42) long and slender; metacoxa with short acute and pointed meracanthus; metatibia with basal spine, apical spurs of hind tibia arranged 1+2+2; metabasitarsus with one black spur. Male genitalia, as in (Fig. 51), shows a sclerotized process near of paramere; proctiger unipartite, about 1.55 times longer than wide and bearing lanceolate long setae in the apical region; paramere (Fig. 56), long, outer face lightly curved with lanceolate long setae, inner face

highly concaved with lanceolate long setae, posteroapical lobe in addition to posteroapical hook; apical segment of aedeagus highly modified (Fig. 60), end tube of ductus ejaculatorius heavily sclerotised. Female genitalia as in (Fig. 65); proctigere without posterodorsal lobe, apex strongly sclerotised upcurved, posterolateral margins with fringes of long

setae, circumanal compressed anteriorly with two rows of pores, subgenital plate short apex lightly rounded, external margin with lanceolate long setae, inner margin with lanceolate short setae, lateral valvulae swallowed up in ventral valvula. Measurements and ratios in tables 2, 3, 4 and 5.

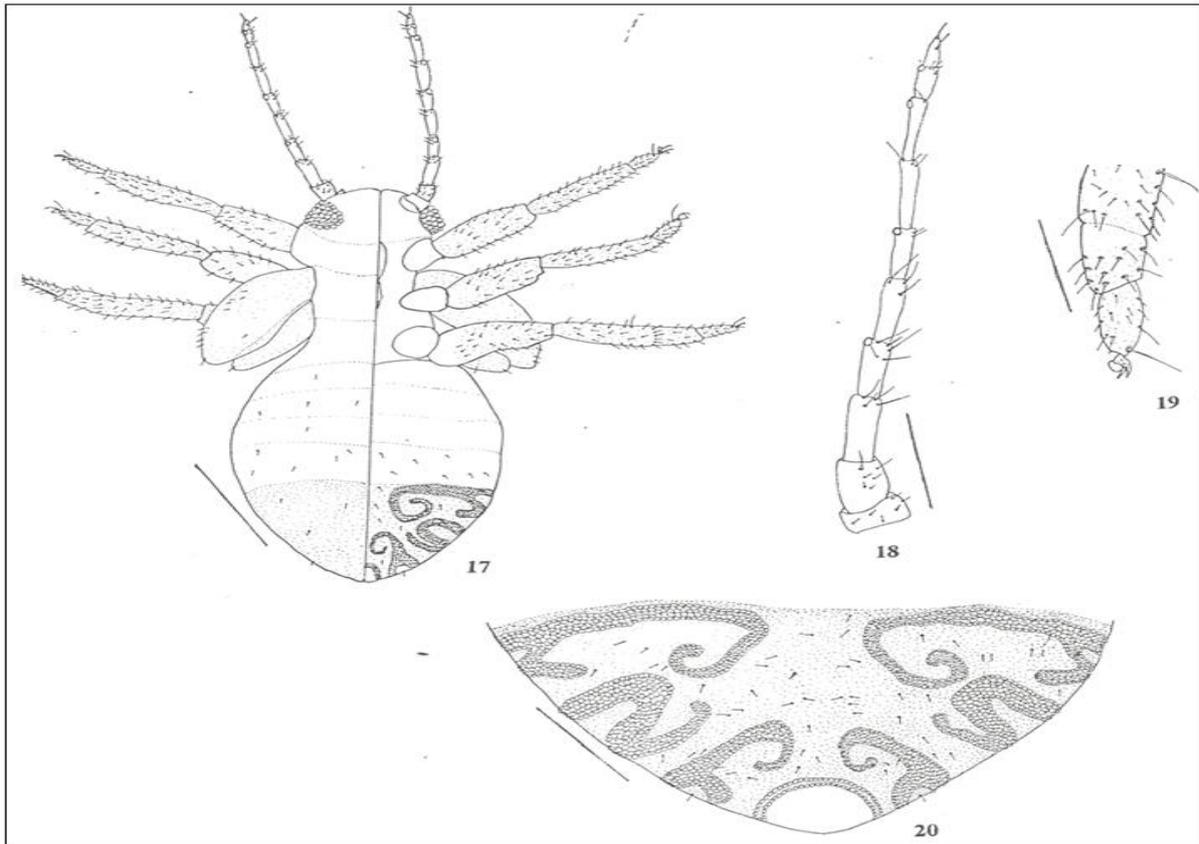


Fig. 17-20. *Mesohomotoma njinei* n.sp. fifth instar larva. Scale lines: 0.4 mm (17) ; 0.08 mm (18) ; 0.12 mm (19) ; 0.2 mm (20).

Host plant and bioecology

Host plant: *Sterculia tragacantha* (Malvaceae).

Bioecology

Carsidara camerunensis does not induce galls on the host plant. The sapping and sucking activities of the larvae distorts the leaves and buds which become necrotic in parts. The larvae produce white waxy filaments which cover the upper surface of the leaf reducing the process of photosynthesis. *Carsidara camerunensis* sp.n. was collected during the months of January and February in the Centre Region of

Cameroon. During this period, host plant has new leaves and much buds. Then the host plant phenology could explain the period of proliferation of *C. camerunensis*.

Material examined

Holotype

♂: Kala, 03°50'121"N, 11°21'004"E, 1122 m: 10 i 2009 (JL Tamesse) (RMCA).

Paratype

Kala, 03°50'121"N, 11°21'004"E, 1122 m: 10 i 2009;

20 ♂, 21 ♀, 8 larvae; Minkoameyos, 03°52'290"N, 11°25'420"E, 740 m: 18 ii 2007, 2 larvae; Nkomilong, 03°49'954"E, 1161 m: 29 i 2007, 2 ♂, 3 ♀, 4 larvae; 19 ii 2007, 3 ♂, 2 ♀, 2 larvae.

Comment

(Hollis, 1987) described, in the Afro-tropical one species: *Carsidara africana* Hollis. *Carsidara camerunensis* sp.n. described in this work from Cameroon is different from *C. africana* by the following characters: the posterior margin of the vertex of *C. africana* is concave and that of *C. camerunensis* sp.n. is inverted V-shaped. The antennal flagellomeres 1-6 of *C. africana* are dark brown apically and flagellomeres 7-8 entirely dark brown but on *C. camerunensis* sp.n., the flagellomeres 1-5 are dark brown apically and flagellomeres 7-8 are yellowish; antennal flagellum of *C. africana* 2.7- 3.0 times longer than head width, and the one of *C. camerunensis* sp.n. is 3.3-3.7 times longer than head width; first flagellomere of *C. africana*, with 6-12 rhinaria in apical third, second flagellomere with 10-20 rhinaria in apical half, third flagellomere with 5-7 rhinaria in apical quarter, fourth flagellomere with 2 subapical rhinaria and up to 5 more in apical third, fifth flagellomere with 0 or 1 subapical rhinarium and up to 3 more in apical third, seventh flagellomere with a single subapical rhinarium but first flagellomere of *C. camerunensis* sp.n., with 5 rhinaria (3 subapically, one in middle and another in basal third), second flagellomere with 8 rhinaria (one in basal part, 4 in apical third and 3 in apical part), third flagellomere with 3 rhinaria in subapical part, fourth flagellomere with single rhinarium apically, fifth flagellomere lack rhinarium, sixth flagellomere with 2 subapical rhinaria, seventh and eighth flagellomeres lack rhinarium. The pterostigma is small, about 3 times longer than wide in *C. Africana* and greater, about 4.7 times longer than wide, in *C. camerunensis* sp.n. On *C. africana* forewing, *M+Cu* stem about 0.33 times as long as *R* stem and about 0.5 times as long as *Cu* stem but on *C. camerunensis* sp.n. forewing, *M+Cu* stem about 0.35 times as long as *R* stem and about 0.6 times as long

Cu stem. *Cu*₁ cubital cell is about 3 times longer than wide in *C. camerunensis* sp.n. and about 2 times as long as wide in *C. africana*. The posterior lateral expansion of the male proctiger is convex in *C. camerunensis* sp.n. and relatively more slender than in *C. africana* male proctiger; the male proctiger about 1.4 times longer than wide on *C. africana* and about 1.5 times longer than wide on *C. camerunensis* sp.n. The apex of the subgenital plate process is slightly cracked in *C. camerunensis* sp.n. and sharp and pointed in *C. africana*. The proximal portion of the paramere has a square section in *C. camerunensis* sp.n. and rounded in *C. africana*. The process of ventral apex of aedeagus in *C. Africana* is longer than the one of *C. camerunensis* sp.n.

Etymology

The species is named after the country, Cameroun where this work was conducted. This species is the first psyllid species described within the genus *Casidara* from Cameroon.

Tenaphalara camerunus (Aulmann): redescription
Fifth instar larva.

Colouration

Body whitish; eyes reddish; antennal flagellomeres 2, 4 and 6 apically dark-brown, flagellomeres 7 and 8 entirely dark-brown; claws and spurs of hind leg dark brown.

Structure

Final instar larva (Fig. 5), elongate and oblate dorsoventrally; antenna 10 segmented; flagellum distinctly subdivided with one apical rhinarium present on flagellomeres 2, 4, 6 and 7 (Fig. 6); antennae, legs, head and abdomen are covered by minute lanceolate setae; wing pads elongate and well-developed without setae; metatibia apically with 5 spurs, metabasitarsus and metatarsus with one 1 spur each, tarsal arolium sessile and globular (Fig. 7); caudal region of abdomen differentiated and bearing a convoluted pore bands (Fig. 8); anus in ventral position. Measurements and ratios in table 1.

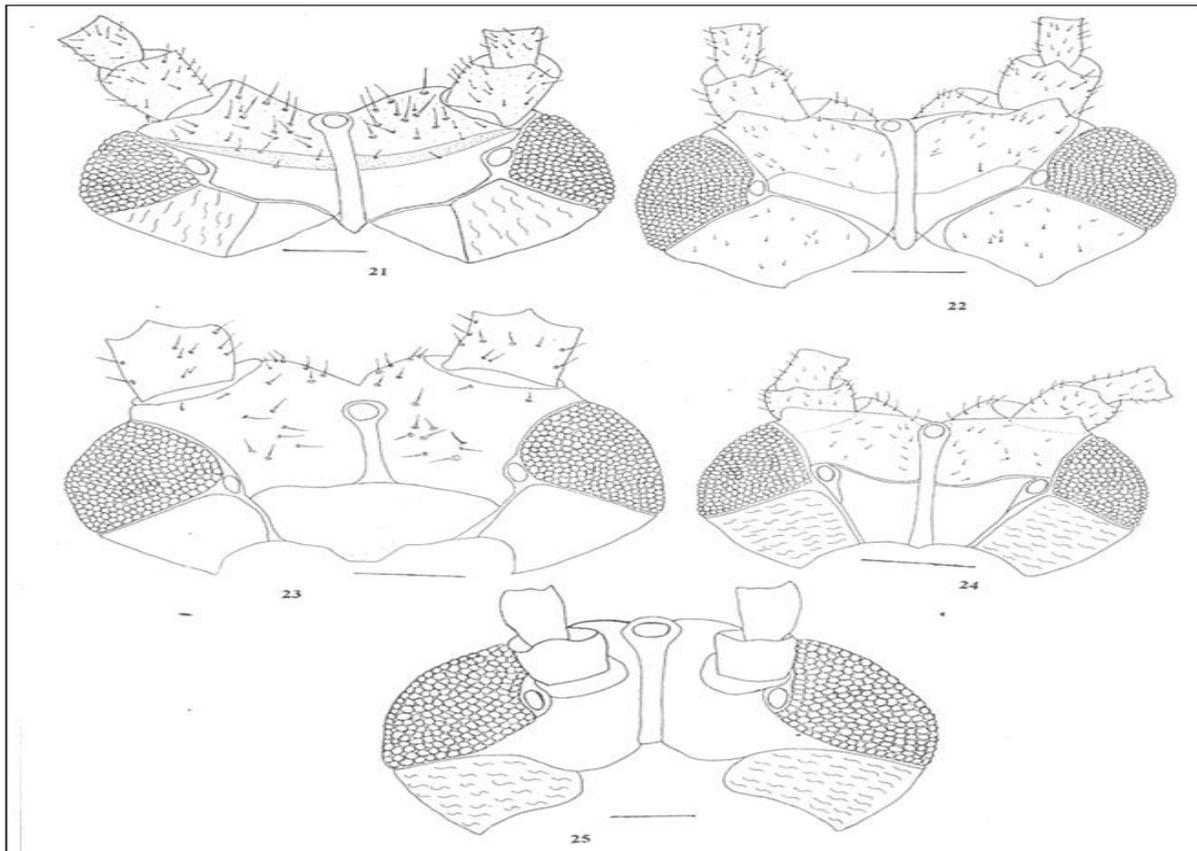


Fig. 21-25. Carsidaridae heads. 21, *C. camerunensis* ; 22, *M. hibisci*; 23 *M. njinei*; 24, *M. tessmanni*; 25 *T. camerunus*. Scale lines: 0.07 mm (21) ; 0.06 mm (22, 23, 24) ; 0.04 mm (25).

Adult

Colouration

Body whitish; eyes reddish; flagellomeres 3, 4, 5 and 6 apically dark-brown, flagellomeres 7 and 8 entirely dark-brown, forewings yellowish; hindwings transparent; spurs and claws dark-brown.

Structure

Integument of head and thorax almost glabrous. Head (Fig. 25) with disc of vertex convex, foveae present as very shallow circular depressions, hind and lateral margins of vertex rounded, frontal margin not sharply defined but deeply incised by median suture, lateral ocellae posteriorly on vertex, anterolateral tubercles absent; antennal sockets slightly enlarged, flagellum about 2.5 times longer than head width (Fig. 30), 1st flagellomere at least 5.0 times longer than the flagellum, flagellomeres 2, 3, 4, 6 with each one apical rhinarium; genal tubercles minute, latero-ventral tubercles absent; ultimate rostral segment

about 5 times longer than wide. Forewing (Fig. 35) elongate with subacute apex, about 3.7 times longer than wide, costal break absent, pterostigma present and long, r_1 - rs cross-vein and rs - m cross-vein are absent, $M+Cu$ slightly longer than R stem and slightly longer than Cu stem, cu_1 cell value greater than 2.0 and without radular spinules, claval suture apex distant from apex of Cu_{ub} ; hindwing (Fig. 40) with grouped costal setae: 1 before costal break, 2+1+3 after costal break and the hamulus (1+2+1+3+1); hind legs (Fig. 49, 50) metacoxa long with short acute and rounded meracanthus, metatibia with strong basal spine, apical spurs of hind tibia arranged 2+1+2; metabasitarsus with one black spur. Male genitalia as in (Fig. 55) with one incurved sclerotized process, male proctiger unipartite with or without lateral lobes, paramere (Fig. 59) with internal margin incurved, apex extended by a sclerotized process finely sharpened, distal portion of aedeagus (Fig. 64) short, with broad apex, endtube of ductus

ejaculatorius simple. Female genitalia as in (Fig. 69); proctiger with a well-developed dorsal lobe, anus terminal, circumanal expanded and cover over the ½ of proctiger length with two rows of pores, subgenital plate apex short. Measurements and ratios in tables 2, 3, 4 and 5.

Host plant and bioecology

Host plant

Ceiba pentandra (Malvaceae).

Bioecology

Tenaphalara camerunus does not induce damage visible on the host. The larvae produce white wax filaments which covers buds of the host plant. *T. camerunus* is not frequent on his host plant during the year. But the highest number of individuals was noted on February in the Centre Region of Cameroon. During that period the host plant renews its leaves and buds. Then the host plant phenology could explain the period of proliferation of *T. camerunus*.

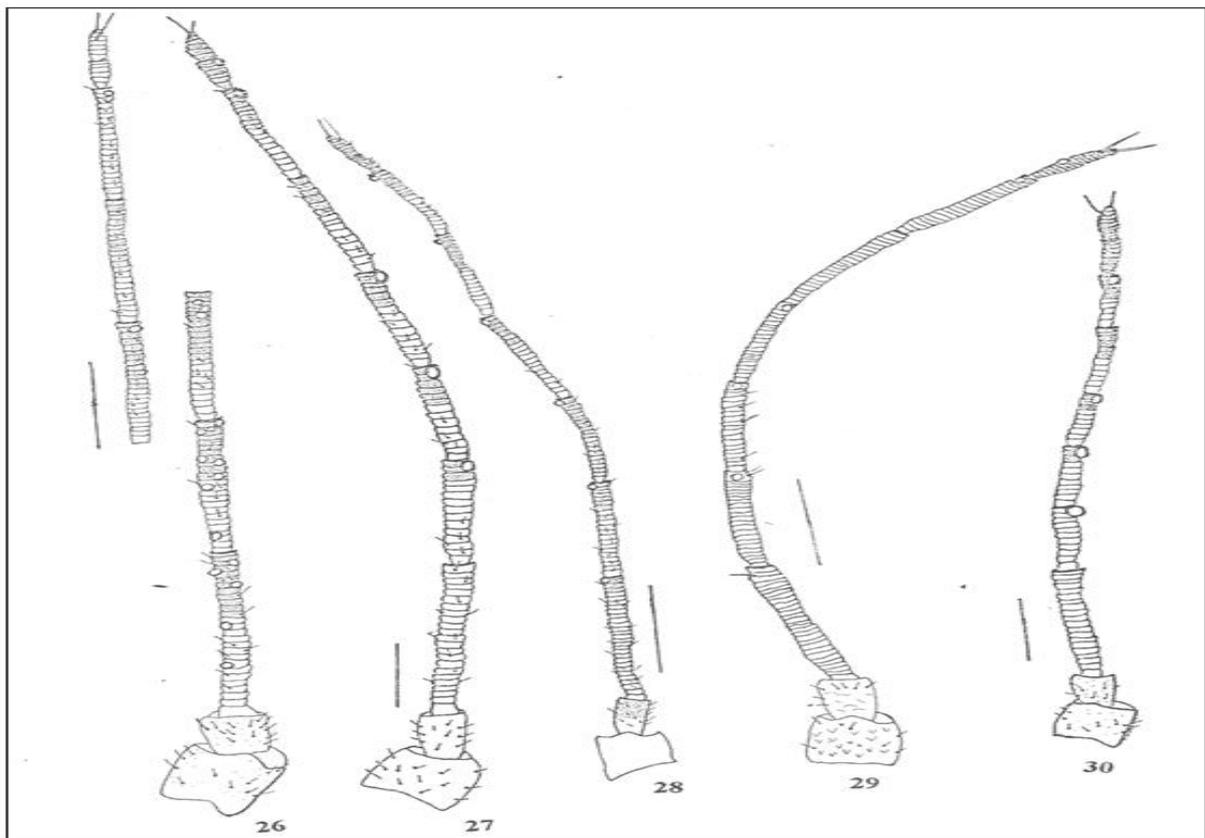


Fig. 26-30. Carsidaridae antennae. 26, *C. camerunensis* ; 27, *M. tessmanni*; 28, *M. hibisci*; 29, *M. njinei*; 30, *T. camerunus*. Scale lines: 0.12 mm (26, 29, 30) ; 0.11 mm (27) ; 0.17 mm (28).

Material examined

Kala, 03°50'121"N, 11°21'004"E, 1122 m: 28 vii 2006, 1 ♀. Minkoameyos, 03°52'290"N, 11°25'420"E, 740 m : 18 ii 2007, 10 ♂, 5 ♀, 13 larvae.

Comments

T. camerunus described in this study was formerly known as *Carsidara camerunus* Aulmann. The new combination was established by (Hollis, 1987). This

species have the same characters as the formerly described species by (Hollis, 1987); but some few characters are different: forewings lack *r*₁-*r*_s cross-vein to *rs-m*, the male proctiger has no weakly developed lateral lobes and the female subgenital plate is not apically trilobed as reported by (Hollis, 1987). In Cameroon *T. camerunus* was collected on *Ceiba pentandra* and according to (Hollis, 1987), *T.*

camerunus feed on *Ceiba pentandra*, *Bombax buonopozense* and *B. sessile* (Malvaceae).

Mesohomotoma tessmanni (Aulmann): redescription Fifth instar larva.

Genus *Mesohomotoma* Kuwayama

Colouration

Mesohomotoma synonymies and diagnosis characters are given by (Hollis, 1987).

Body color orange brown, eyes reddish, claws and spurs dark brown, caudal region more dark brown than the other part of abdomen.

Included species of Mesohomotoma genus

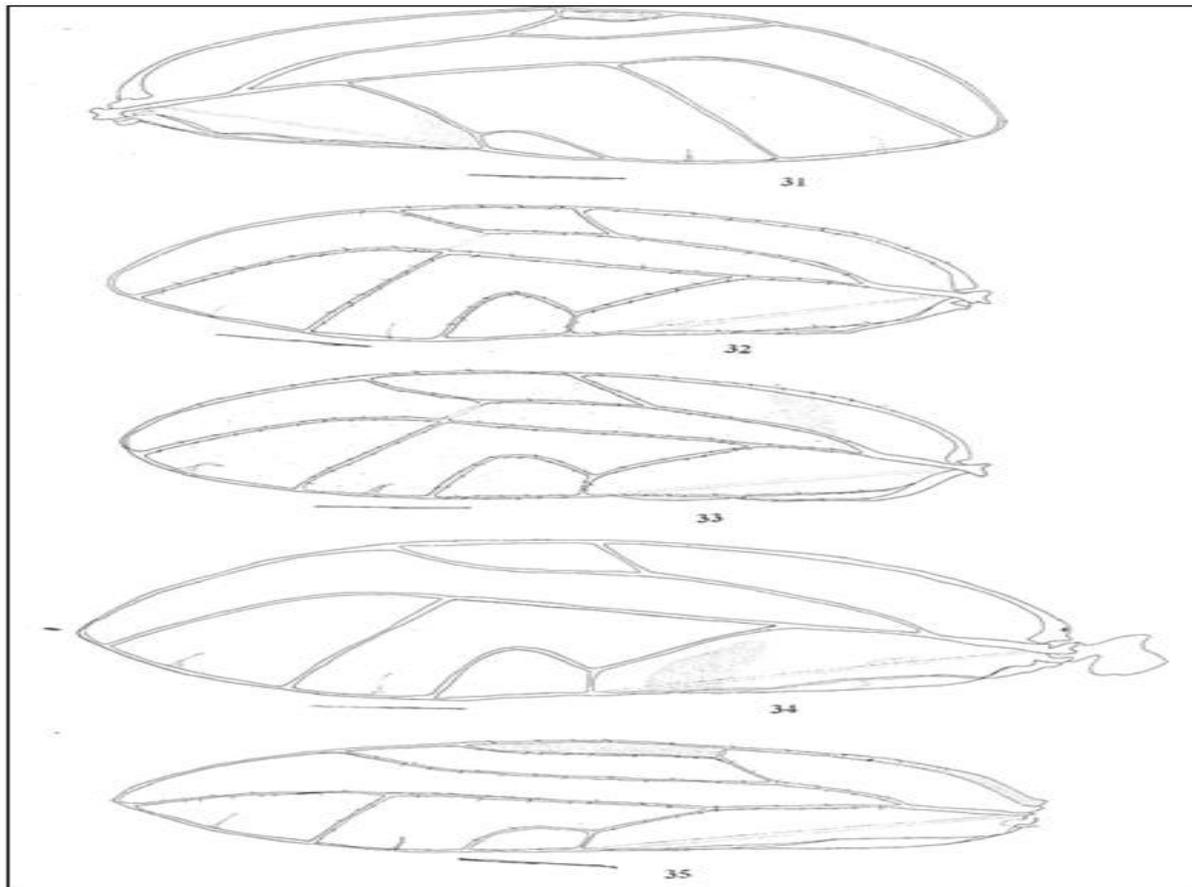


Fig. 31-35. Carsidaridae forewings. 31, *C. camerunensis* ; 32, *M. tessmanni*; 33, *M. hibisci*; 34, *M. njinei*; 35, *T. camerunus*. Scale lines: 0.3 mm (31, 32, 33, 34) ; 0.12 mm (35).

Structure

Final instar larva (Fig. 9) elongated and obliterated dorsoventrally, not clearly divided into head and thorax. Antenna (Fig. 10) elongate, 10 segmented; flagellum distinctly subdivided with two apical rhinaria present on flagellomeres 2, 3, 4, 6; a single apical rhinarium on flagellomere 7 and one rhinarium in apical third of 8th flagellomere. Antenna, legs, head, thorax and abdomen covered with lanceolate setae. Wingpads elongate and well-developed with

some marginal lanceolate setae. Hindtibia apex with four spurs arranged 1+2+1; metabasitarsus with one spur darker and apex of the tarsus bear apically two long strong setae; tarsal arolium sessile and globular (Fig. 11). The caudal region of abdomen differentiated and bearing a convoluted pore band (Fig. 12); anus in ventral position. Measurements and ratios in table 1.

Adult

Colouration

Overall body color light brown with dark brown markings dorsally. The antennal flagellomeres 2-6 dark-brown apically, flagellomeres 7-8 entirely dark-

brown. Compound eyes reddish. Forewings orange with a dark-brown dot in cu_{2b} cell. Hindwings transparent; spurs and claws dark-brown.



Fig. 36-40. Carsidaridae hindwings. 36, *C. camerunensis* ; 37, *M. tessmanni*; 38, *M. njinei*; 39, *M. hibisci*; 40, *T. camerunus*. Scale lines: 0.3 mm (36); 0.2 mm (37, 38) ; 0.12 mm (39); 0.08 mm (40).

Structure

Integument of head and thorax almost glabrous. Head (Fig. 24) with disc of vertex deeply divided by median suture, foveae present as deep oblique grooves, lateral and hind margins of vertex obliquely raised, anterior margin poorly defined but deeply incised by median suture, anterolateral tubercles well-defined, lateral ocellae posteriorly placed. Anteriorly, vertex bears lanceolated setae. Antennal sockets enlarged, flagellum 2.8 times longer than head width; first antennal flagellomere elongate than the other flagellomeres; the flagellomeres 2, 3, 4, 6, 7 with each one apical rhinarium (Fig. 27). Genae with a small tubercle on either side of mid ventral suture immediately anterior to clypeus, lateral tubercles absent; occiput with a small tubercle on each side below eye; ultimate rostral segment at least longer than wide. Forewing (Fig. 32), narrow, elongate, 2.8-

3.0 times longer than wide and 1.5 times longer than hindwing; with subacute apex; costal break, pterostigma and r_1-r_s absent, $M+Cu$ stem short, about two-fifths as long as R stem and half as long as Cu stem, cu_1 cell value almost 2.0 and without radular spinules, Cu_{1a} strongly arched towards M stem, apex of claval suture distant from apex of Cu_{1b} . Hindwing (Fig. 37) with grouped costal setae: 1 before costal break, 3+5 after costal break and hamulus (1+3+5+1). Hind leg (fig. 43, 44) metacoxa with short acute and pointed meracanthus; metatibia with strong basal spine, apical spurs of hind tibia arranged 1+1+3; metabasitarsus with one darker spur. Male genitalia as in (Fig. 52) present two sclerotized process near of paramere; male proctiger bipartite, a strong anvil-shaped median posterior lobe present in addition to well-developed lateral lobes; paramere (Fig. 57) long inner face lightly curved with lanceolate setae, apex

sclerotised with two strong setae; aedeagus (Fig. 61) narrow apically, apex of ductus ejaculatorius prominent, strongly produced from aedeagal apex and expanded apically. Female genitalia as in (Fig. 66), possess a large circumanal with two rows of

pores; female proctiger in profile, strongly stepped posteriorly, apical part narrow elongate and bearing short and thickened setae, apex weakly barbed; subgenital plate long apex lightly pointed. Measurements and ratios in tables 2, 3, 4 and 5.

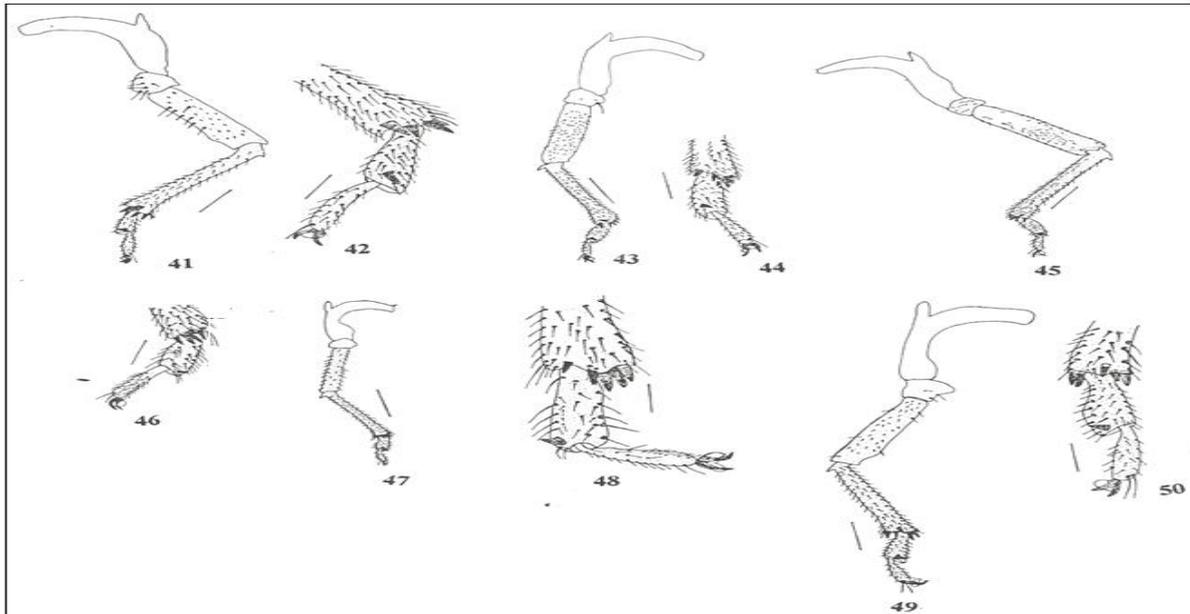


Fig. 41-50. Carsidaridae hind legs. 41, 42, *C. camerunensis* ; 43, 44, *M. tessmanni*; 45, 46, *M. hibisci*; 47, 48, *M. njinei*; 49, 50, *T. camerunus*. Scale lines: 0.2 mm (41, 47); 0.02 mm (46); 0.03 mm (44, 48, 50); 0.04 mm (45); 0.05 mm (43); 0.06 mm (49); 0.07 mm (42).

Host plants and bioecology

Host plants: *Theobroma cacao*, *Theobroma bicolor*, *Cola* spp., *Sterculia rhinopetala*, *Octolobus spectabilis* (Malvaceae).

Bioecology

Mesohomotoma tessmanni does not induce galls on the hosts. The eggs laying process and the sap sucking abilities of larvae distort the leaves and buds which become necrotic in parts. The larvae produce white waxes which cover the upper leaf surface reducing the process of photosynthesis. *M. tessmanni* feed on several host plants but *T. cacao* is the preferential host plant, the other plants could be considered as intermediaries host plants. On the preferential host plant (*T. cacao*) the highest number of individuals was noted from December 2006 to February and April 2007 in the Centre Region of Cameroon (Fig. 70). On the intermediaries host

plants, the highest number of individuals was noted on April and July for *T. bicolor* (Fig. 71); from February to May and September, November on *Cola* spp. (Fig. 72). Then the presence of young leaves on the host plant could justify the main periods of proliferation of *M. tessmanni*.

Material examined

Kala, 03°50'121"N, 11°21'004"E, 1122 m: 23 ii 2006, 4 ♂, 8 ♀, 12 larvae ; 22 iii 2006, 2 ♂, 3 ♀, 8 larvae ; 27 iv 2006, 2 ♂, 1 ♀ ; 26 v 2006, 1 ♂, 4 larvae ; 28 vi 2006, 10 larvae ; 28 ix 2006, 8 larvae ; 27 xii 2006, 7 ♂, 11 ♀, 5 larvae ; 25 i 2007, 14 ♂, 11 ♀, 5 larvae ; 16 ii 2007, 12 ♂, 18 ♀ ; 23 iii 2007, 6 ♂, 3 ♀, 3 larvae ; 27 iv 2007, 22 ♂, 13 ♀ ; 25 v 2007, 7 ♂, 2 ♀ ; 27 vi 2007, 9 ♂, 3 ♀ ; 20 vii 2007, 2 ♂, 1 ♀ ; 24 x 2007, 1 ♂ ; 27 xii 2007, 6 ♂, 4 ♀, 3 larvae (on *T. cacao*). 27 xi 2006, 1 ♀ ; 16 ii 2007, 2 ♂, 3 ♀, 6 larvae ; 23 iii 2007, 1 ♀, 2 larvae ; 27 iv 2007, 7 ♂, 4 ♀, 33 larvae ; 25 v 2007, 2

♂; 27 vi 2007, 15 larvae; 23 viii 2007, 1 ♂; 27 xii 2007, 1 ♂, 1 larva (on *T. bicolor*). 27 iv 2006, 1 ♀, 5 larvae; 28 ix 2006, 2 ♂, 10 larvae, 19 x 2006, 1 ♀; 27 xi 2006, 2 ♂, 6 ♀, 12 larvae; 27 xii 2006, 1 ♂; 16 ii 2007, 2 ♂, 8 larvae; 27 iv 2007, 22 ♂, 8 larvae; 25 v

2007, 12 larvae (on *Cola* spp.). 22 ix 2007, 1 ♂, 1 ♀, 1 larva. Minkoameyos, 03°52'290"N, 11°25'420"E, 740 m; 18 ii 2007, 4 ♂, 5 ♀, 1 larva; 31 iii 2007, 3 larvae; 29 iv 2007, 1 ♂. Soa, 03°58'112"N, 11°35'435"E, 674 m; 24 iii 2007, 1 ♀ (on *Sterculia rhinopetala*).

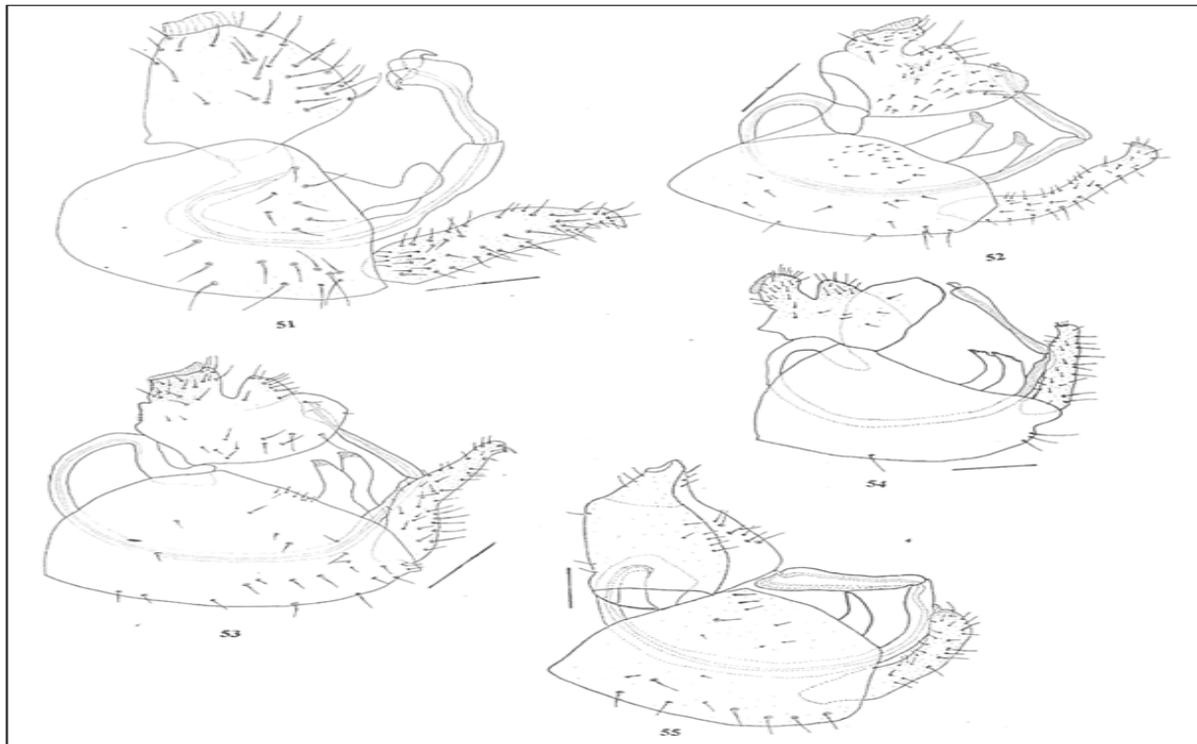


Fig. 51-55. Carsidaridae male genitalia. 51, *C. camerunensis*; 52, *M. tessmanni*; 53, *M. hibisci*; 54, *M. njinei*; 55, *T. camerunus*. Scale lines: 0.06 mm (51, 52, 53); 0.08 mm (54); 0.03 mm (55).

Mesohomotoma hibisci (Froggatt): redescription
Fifth instar larva

Colouration

Body whitish to yellowish; eyes reddish; antennal flagellomeres 2, 3, 4, 5 and 6 apically dark-brown, antennal flagellomeres 7 and 8 entirely dark-brown; claws dark brown, caudal region dark brown.

Structure

Final instar larva (Fig. 13) elongated and oblated dorsoventrally, not clearly divided into head and thorax. Antenna elongate, 10 segmented; flagellum distinctly subdivided with one apical rhinarium on flagellomeres 2, 4, 6 and 7 (Fig. 14); wing pads elongate and well-developed, without setae; metatibia and metabasitarsus without spur (Fig. 15). The caudal region of abdomen differentiated and bearing a

convoluted pore band (Fig. 16); anus in ventral position. Measurements and ratios in table 1.

Adult

Colouration

Body whitish with light brown markings dorsally; antennal flagellomeres 1-6 dark-brown apically, flagellomeres 7-8 entirely dark-brown. Compound eyes reddish; forewings with a dark-brown band in c+sc cell; hindwings transparent; spurs and claws dark-brown.

Structure

Head (Fig. 22) with disc of vertex deeply divided by median suture, foveae present as deep oblique grooves, lateral and hind margins of vertex obliquely raised; anteriorly, vertex bear lanceolate setae.

Antennal (Fig. 28), sockets enlarged, flagellum 3.4-3.7 times longer than head width; first antennal flagellomere elongate than the other flagellomeres; flagellomeres 1, 2, 3, 4, 6, 7 with one apical rhinarium on each flagellomere. Forewing (Fig. 33), 3.1 times longer than wide and 1.7 times longer than hindwing; hindwing (Fig. 39) with grouped costal setae: 1 before costal break, 3+3 after costal break (1+3+3). Hind leg (Fig. 45, 46) metacoxa long with short acute and pointed meracanthus; metatibia with strong basal spine, apical spurs of hind tibia arranged 1+2+1+1; metabasitarsus with one black spur. Male genitalia as in (Fig. 53) with two sclerotized process near the

paramere, inner lobe of proctiger less developed, paramere (Fig. 58) long, external face curved with lanceolate setae, apex sclerotised with one long strong setae and one short strong setae. Aedeagus (Fig. 62) rectilinear, apex of ductus ejaculatorius prominent, strongly produced from aedeagal apex and expanded apically. Female genitalia as in (Fig. 67); circumanal larger anteriorly and shorter posteriorly with two rows of pores, proctiger bearing several long setae, subgenital plate long, shorter than proctiger, apex not pointed; valves well developed. Measurements and ratios in tables 2, 3, 4 and 5.

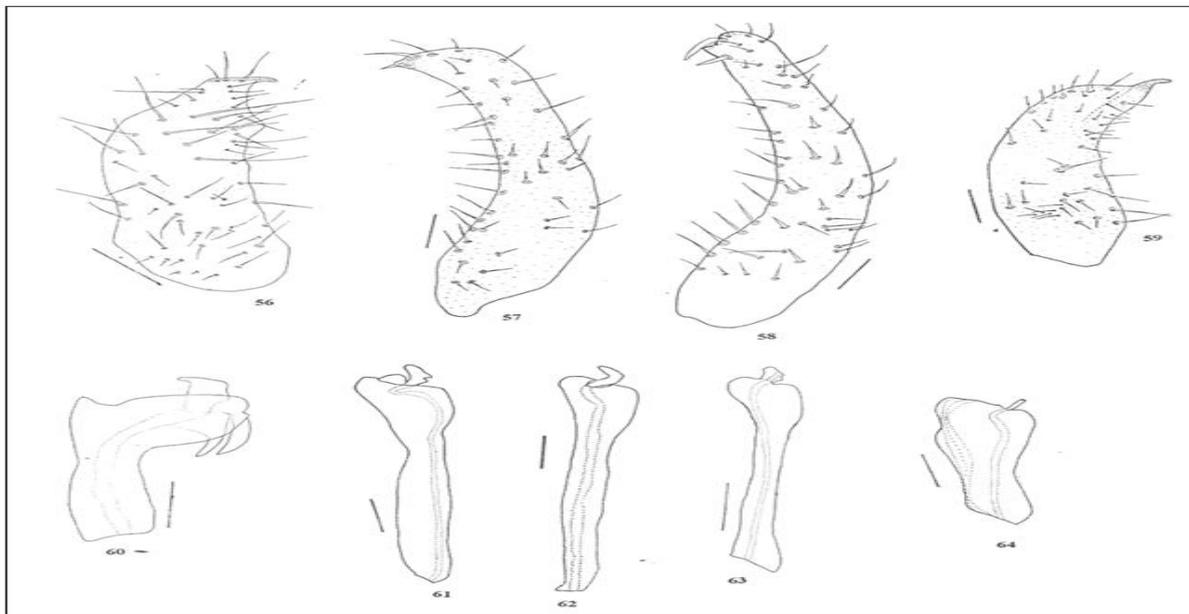


Fig. 56-64. Carsidaridae paramere lateral view and apical segment of aedeagus. 56, 60, *C. camerunensis*; 57, 61, *M. tessmanni*; 58, 62, *M. hibisci*; 63, *M. njinei*; 59, 64 *T. camerunus*. Scale lines: 0.03 mm (56, 60, 63); 0.02 mm (57, 58, 59, 61, 62); 0.04 mm (64).

Host plant and bioecology

Host plants: *Hibiscus tiliaceus* (Malvaceae).

Bioecology

Mesohomotoma hibisci does not induce galls on the host. The sap and sucking activities of larvae distorts leaves and buds which become necrotic in parts. During the proliferation period of this pest, the host plant is stunted aspect. *Mesohomotoma hibisci* feed only one host plant in Cameroon *H. tiliaceus*. The highest number of individuals was noted from June to

July, December and April in the Centre Region of Cameroon (Fig. 73). On these different periods the host plants renew its leaves and buds. Then, the phenology of each host plant explains the period of proliferation of *M. hibisci*.

Material examined

Yaoundé, 03°52'191"N, 11°30'856"E, 723 m : 23 iv 2007, 18 ♂, 17 ♀, 6 larvae ; 31 v 2007, 4 ♂, 2 ♀, 1 larva ; 26 vi 2007, 13 ♂, 14 ♀, 4 larvae ; 17 vii 2007, 9 ♂, 13 ♀, 6 larvae ; 25 viii 2007, 1 ♂, 2 ♀, 3 larvae ; 23

ix 2007, 5 ♂, 4 ♀; 25 x 2007, 8 ♂, 4 ♀; 28 xii 2007, 7 ♂, 6 ♀, 37 larvae.

Comment

Mesohomotoma hibisci described in Cameroon for the first time has the same characters as the formerly

described species by (Hollis, 1987). In Cameroon, this species feed on *H. tiliaceus* and according to (Hollis, 1987), *M. hibisci* feed on *H. tiliaceus* *H. rosasinensis* and *H. boryanus*.

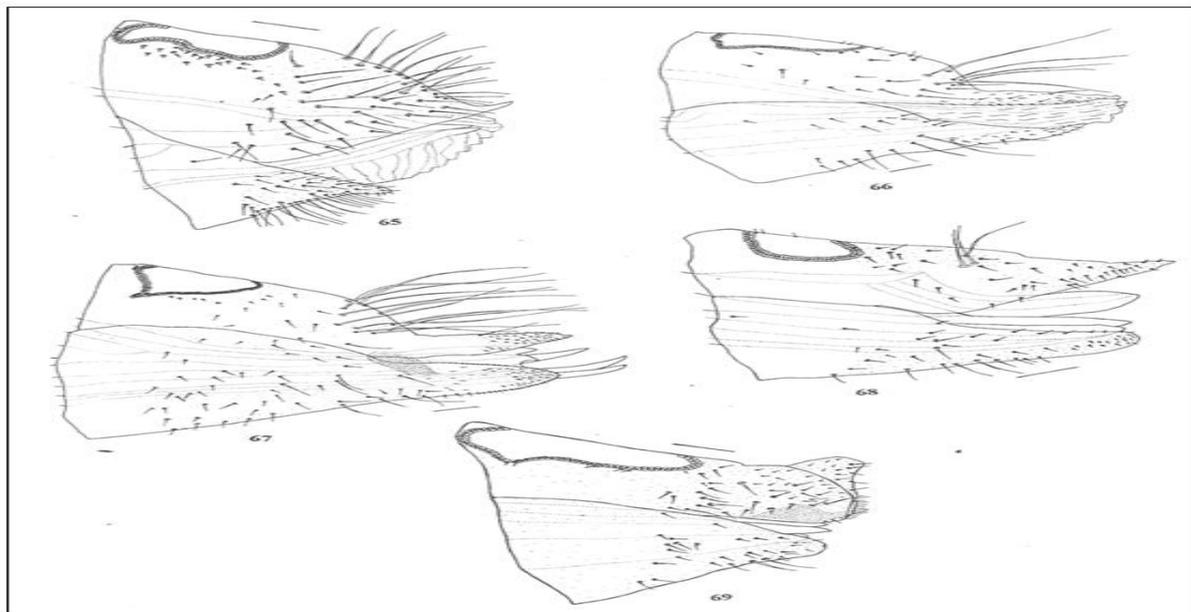


Fig. 65-69. Carsidaridae female genitalia. 65, *C. camerunensis*; 66, *M. tessmanni*; 67, *M. hibisci*; 68, *M. njinei*; 69, *T. camerunus*. Scale lines: 0.06 mm (65); 0.05 mm (66); 0.02 mm (67); 0.07 mm (68); 0.03 mm (69).

Mesohomotoma njinei Tamesse sp.n.

Fifth instar larva

Colouration

Body pale yellow with orange brown bands dorsally; eyes reddish; antennal flagellomeres 2, 3, 4, 5 and 6 apically dark-brown, flagellomeres 7 and 8 entirely dark-brown; claws dark brown. The caudal region is more dark brown than the other part of abdomen.

Structure

Final instar larva (Fig. 17) elongated and obliterated dorsoventrally, not clearly divided into head and thorax. Antenna elongate, 10 segmented; flagellum distinctly subdivided with one apical rhinarium on flagellomeres 2, 4, 6 and 7 (Fig. 18); wing pads elongate and well-developed with setae; metatibia and metabasitarsus not clearly separated (Fig. 19). The caudal region of abdomen differentiated and

bearing a convoluted pore band (Fig. 20); anus terminal, in ventral position. Measurements and ratios in table 1.

Adult

Colouration

Body dark brown, dorsal view darker; eyes reddish; forewings with a large and two small patches dark-brown in *cu*₂ cell; hindwings transparent; spurs and claws dark-brown.

Structure

Head (Fig. 23) with disc of vertex deeply divided by median suture, foveae present as deep oblique grooves, lateral and hind margins of vertex obliquely raised; anteriorly, vertex bear lanceolate setae. Antennal (Fig. 29), sockets enlarged, flagellum 3.2-3.6 times longer than head width; first antennal flagellomere elongate than the other flagellomeres;

flagellomeres 2, 4, 6, 7 with each one apical rhinarium. Forewing (Fig. 34), 2.6-2.9 times longer than wide and 1.6 times longer than hindwing; hindwing (Fig. 38) with grouped costal setae: 2 before costal break, 5+3 after costal break and the hamulus (2+5+3+1). Hind leg (fig. 47, 48) metacoxa long with short acute and pointed meracanthus; metatibia with strong basal spine, apical spurs of hind tibia arranged 1+4; metabasitarsus with one black spur. Male genitalia as in (Fig. 54) present two incurved sclerotized process near of paramere, paramere

slightly rectilinear but apex internal margin incurved; aedeagus (Fig. 63) rectilinear, apex of ductus ejaculatorius prominent, strongly produced from aedeagal apex and expanded apically. Female genitalia as in (Fig. 68); proctiger with a large circumanal short with two rows of pores, proctiger not stepped posteriorly, bearing only three long setae, subgenital plate less narrow than proctiger on the end part, apex not pointed. Measurements and ratios in tables 2, 3, 4 and 5.

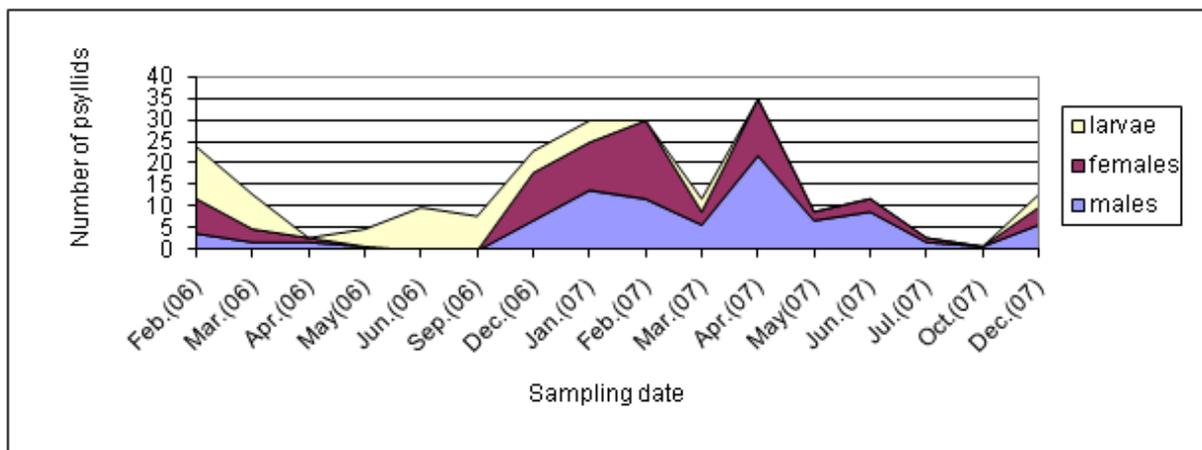


Fig. 70. Number of larvae, males and females of *Mesohomotoma tessmanni* collected at Kala on *Theobroma cacao*.

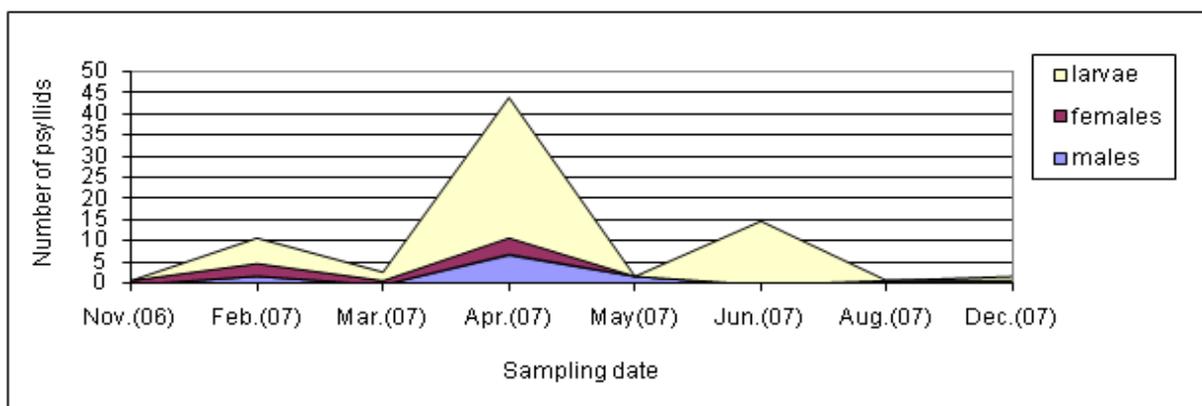


Fig. 71. Number of larvae, males and females of *Mesohomotoma tessmanni* collected at Kala on *Theobroma bicolor*.

Host plant and bioecology

Host plants: *Desplatsia dewevrei* (Malvaceae).

Bioecology

Mesohomotoma njinei sp.n. does not induce galls on

the host. The sap sucking activities of the larvae distorts the leaves and buds which become necrotic in parts. The larvae produce white waxy filaments which covers the upper leaf surface reducing the process of photosynthesis. *Mesohomotoma njinei* sp.n.feed only

one host plant in Cameroon *D. dewevrei*. *Mesohomotoma njinei* sp.n. is not frequent on their host plant during the year, it has been recorded six times during the twenty-four months of survey. The highest number of individuals was noted from January to February, in the Centre Region of Cameroon (Fig. 74). During that period the host plant renews its leaves and buds. Then the phenology of host plant could justify the higher number of *Mesohomotoma njinei* sp.n. during this period.

Material examined

Holotype ♂: Kala, 03°50'121"N, 11°21'004"E, 1122 m, *Desplatsia dewevrei* (Malvaceae): 16 ii 2007 (JL Tamesse) (RMCA).

Paratype: Kala, 03°50'121"N, 11°21'004"E, 1122 m, *Desplatsia dewevrei* (Malvaceae): 16 ii 2007, 3♂, 8 larvae; 20 vii 2007, 1♀. Nkomilong, 03°49'954"E, 1161 m: 29 i 2007, 5♂, 1♀, 3 larvae; 19 ii 2007, 3♂, 1♀, 4 larvae; 29 vi 2007, 1♀, 2 larvae; 29 xii 2007, 2♂.

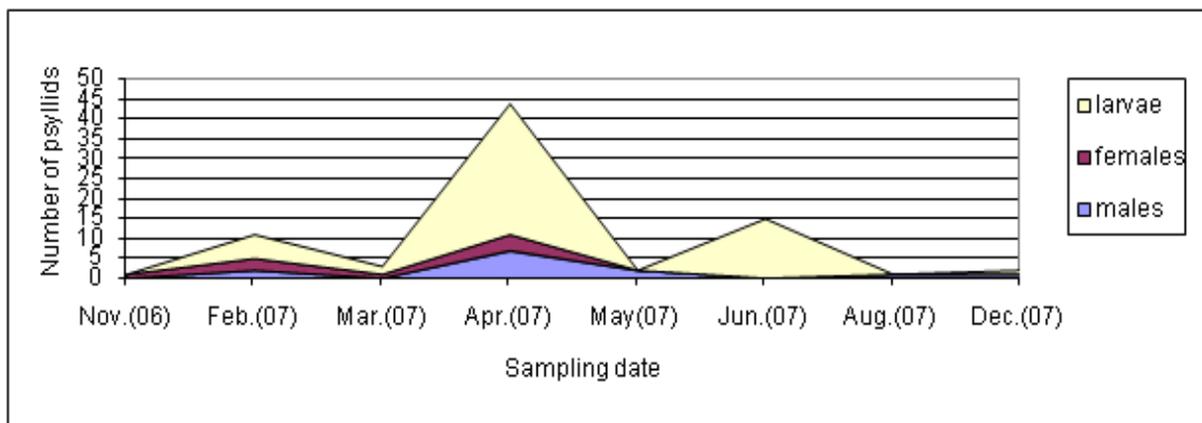


Fig. 72. Number of larvae, males and females of *Mesohomotoma tessmanni* collected at Kala on *Cola* spp.

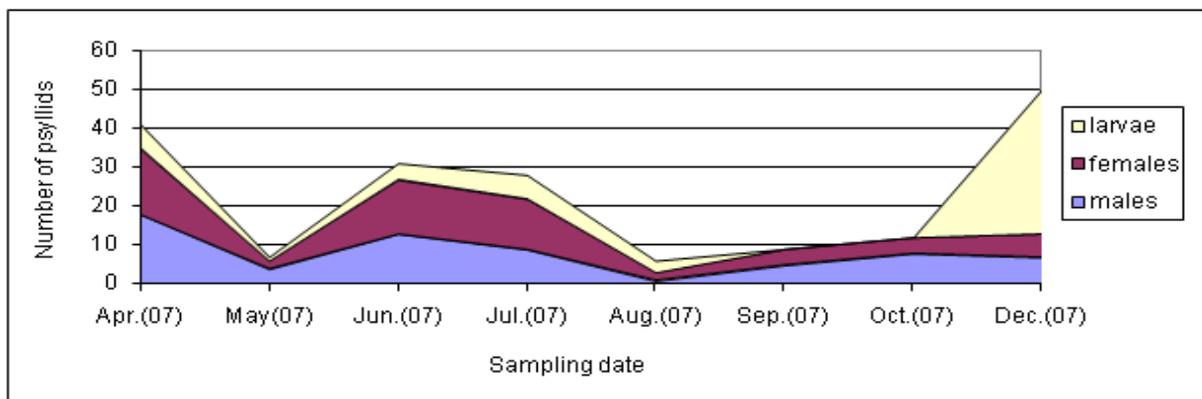


Fig. 73. Number of larvae, males and females of *Mesohomotoma hibisci* collected at Yaounde on *Hibiscus tiliaceus*.

Comment

Mesohomotoma njinei sp.n. is similar to *M. tessmanni*; caudal region of the fifth instar larva, structure of head and antenna, proctiger and aedeagus seem to be same. But the two species differ markedly by anus form of 5th larval stage which is concaved on *Mesohomotoma njinei* sp.n., triangular

on *M. tessmanni* and oval on *M. hibisci*; flagellomeres 2, 4, 6, and 7 of 5th larval stage bearing apically only one rhinarium but on *M. tessmanni* flagellomeres 2, 3, 4, and 6 bearing two rhinaria; the hindtibia of 5th larval stage of *M. tessmanni* has four spurs and metabasitarsus with one spur darker but *Mesohomotoma njinei* sp.n. lacks these spurs. The

adult antennal flagellomeres 2-6 are dark-brown apically on *M. tessmanni* and flagellomeres 1-6 are dark-brown apically on *M. hibisci* but on *Mesohomotoma njinei* sp.n. only flagellomere 6 is apically dark-brown and flagellomeres 7-8 are entirely dark-brown. On *Mesohomotoma njinei* sp.n. the flagellum is 3.2-3.6 times longer than head width but on *M. tessmanni* and *M. hibisci* the flagellum is respectively 2.8 and 3.4-3.7 times longer than head width. Forewings of adult with a large and two small patches dark-brown in cu_2 cell on *Mesohomotoma njinei* sp.n. but on *M. hibisci* a large patch dark-brown is located in $c+sc$ cell; on *Mesohomotoma njinei* sp.n. forewing 2.6-2.9 times longer than wide and 1.6 times longer than hindwing, on *M. tessmanni* forewing 2.8-3.0 times longer than wide and 1.5 times longer than hindwing, and on *M. hibisci* forewing 3.1 times longer than wide and 1.7 times longer than

hindwing. The hindwing disposition of costal setae is (2+5+3+1) on *Mesohomotoma njinei* sp.n., (1+3+5+1) on *M. tessmanni*, and (1+3+3) on *M. hibisci*. Apical spurs of hind tibia arranged 1+4 on *Mesohomotoma njinei* sp.n., 1+1+3 on *M. tessmanni*, and 1+2+1+1 on *M. hibisci*. Paramere slightly rectilinear but apex internal margin incurved on *Mesohomotoma njinei* sp.n., but on *M. tessmanni* paramere is long inner face lightly curved, and on *M. hibisci* paramere is long, external face curved. Female proctiger with a large circumanal less long on *Mesohomotoma njinei* sp.n. but circumanal is less large and long on *M. tessmanni*; female proctiger not stepped posteriorly, bearing only three long setae on *Mesohomotoma njinei* sp.n. but on *M. tessmanni* and *M. hibisci* female proctiger is stepped posteriorly and bearing more than three long setae.

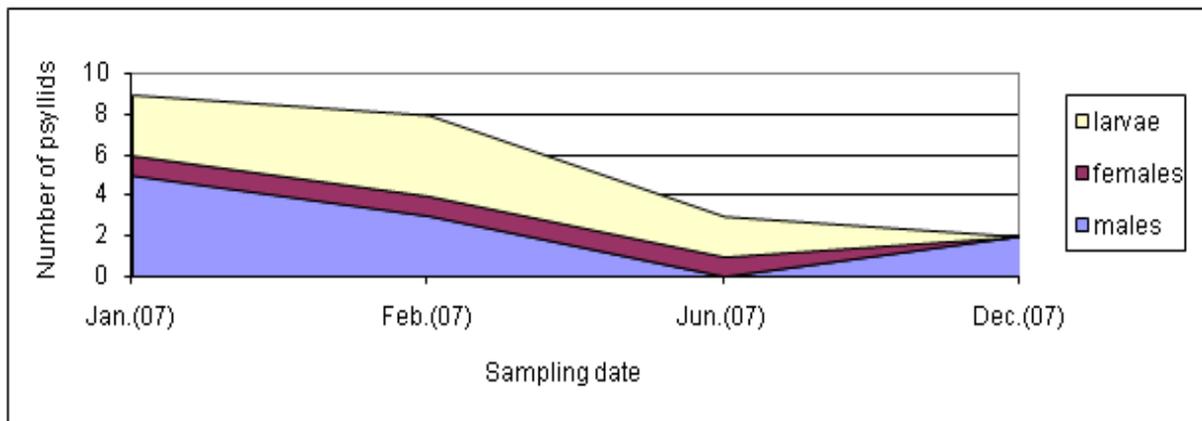


Fig. 74. Number of larvae, males and females of *Mesohomotoma njinei* sp.n. collected at Nkomilong on *Desplatsia dewevrei*.

Etymology

The new species is dedicated to Professor Emeritus Njine Thomas, former Dean of the Faculty of Science, University of Yaoundé I, Cameroon for its support and encouragement to carry out this work.

Conclusion

This review brings out the number of described species in Carsidaridae family to five. Three species were described before by (Hollis, 1987): *M. tessmanni*, *M. hibisci*, and *T. camerunus* but *M. hibisci* is described for the first time in Cameroon,

because the sample of *M. hibisci* described by (Hollis, 1987) was not recorded in Cameroon. Two species are described for the first time and are new: *Carsidara camerunensis* sp.n. and *Mesohomotoma njinei* sp.n.. In Cameroon carsidarids feed on the host plants belonging to Malvaceae family. They do not induce galls on their host plants, the sap sucking of larvae distorts the leaves and buds which become necrotic in parts. The larvae produce white waxes which cover the upper leaf surface reducing the process of photosynthesis. The highest number of individuals of each species was noted when the host plant presents

young leaves. The dynamic population of each species depends of the phenology of the host plant which depends of climatic factors..

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