New species of *Cerobasis* and *Psyllipsocus* from México, and a list of Mexican Trogiomorpha (Psocoptera)

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Abstract

Three new species of *Cerobasis* (Trogiidae) and three new species of *Psyllipsocus* (Psyllipsocidae) from México are here described, which rises to seven the number of Mexican *Cerobasis*, and rises to nine the number of Mexican *Psyllipsocus*. Identification keys for the Mexican species of both genera are provided. The Mexican species of Trogiomorpha are thus known to consist of 46 species, of which 25 (54%) are endemic to this country. Lists of *Cerobasis* and *Psyllipsocus* species are presented, as well as a list of the known Mexican Trogiomorpha, including the distribution in this country of each species.

Introduction

Trogiomorpha is one of the three suborders currently recognized in the Psocoptera; it is the smallest in number of species, and the most primitive, to judge by the presence of plesiomorphic characters (Smithers, 1972). The separation of the three suborders of the Psocoptera is based mostly on number of antennal flagellomeres, number of segments in labial palps, degree of fusion of filaments of the hypopharynx, number of tarsomeres, presence or absence of pterostigma, and degree of thickness of this area of the forewing. The Trogiomorpha are recognized as adults by having antennae of more than 20 segments (never secondarily annulated), tarsi of three segments, pterostigma absent or not thickened, labial palps with two segments, and filaments of the hypopharynx separated throughout their length (Dadonnel, 1951; Smithers. 1970. New, 1974).

The purpose of this work is to describe new Mexican species of the trogiomorph genera *Cerobasis* and *Psyllipsocus*, and to present a list of the trogiomorph species that have been, so far, recorded in México, including the general distribution in this country. The new species are deposited in the Insect Collection, Instituto de Biología, UNAM (IHUNAM). The illustrations were made utilizing a drawing tube, and the measurements (lengths given in microns), were taken on parts of the right side of the body, mounted on slides, either in Hoyer's Medium or in Euparal, utilizing a filar micrometer whose measuring unit was 136 microns for wings and 53 microns for other parts. Leg measurements are of the right hind leg. Parts measured and proportions are abbreviated in the text as follows: FW: fore wing; HW: hind wing; F: femur; T1, t2, t3: tarsomeres 1, 2, and 3; P3, P4: third and fourth segments of maxillary palp; f1...fn: antennal flagellomeres 1...n; IO: minimal distance between compound eyes; D: antero-posterior diameter of compound eye; d: transverse diameter of compound eye; PO: d/d Intercellular distance (IO), and eye size (D and d) were measured following Dadonnel's method, but in frontal view of heads mounted on slides (Ball, 1943). In the descriptions presented below, color was recorded on specimens preserved in 80% alcohol. The specimens studied were collected by the author, unless otherwise indicated.

SYSTEMATIC TREATMENT

Family Trogiidae

*Cerobasis alpha* n. sp.
(Figs. 1-9)

DESCRIPTION: FEMALE. Color: Body pale brown dorsally, white ventrally. Compound eyes black;
epicranial ecdysial lines distinct, head pattern as in
Fig. 1, with areas above arms of epicranial ecdysial
lines dark brown, spotted, and area between epicranial
ecdysial lines and epistomal suture white, with dis-

tinct, concave mark in the middle. A dark brown band
on each gena, from compound eye to antennal fossa,
partially surrounding it; each band with an elongated
fenestra next to the compound eye. Postclypeus
irregularly pigmented, dark brown. Proximal halves of
P3 and P4 dark brown. Antennae with scape and pedicel dark brown, and flagellomeres 1-7 proximally
white, with apices dark brown; distal flagellomeres
pale brown. Thoracic pleura chocolate brown. Legs
(Fig. 7), with coxae and trochanters white, femora
white, with apices dark brown and a mesal dark brown
spot on inner side. Tibiae white, each with dark
brown bands near the proximal and distal extremes;
t1 dark brown proximally, dirty white distally; t2 and
t3 pale brown. Paraprocts white, only slightly pig-
mented, epiproct white, with an irregular, longitudi-
nal pigmented band (Fig. 6). Clunium pale brown,
with a pigmented area next epiproct (Fig. 8).

**Morphology:** Apterous. Conapophyses (Fig. 2)
elongate, typical of the genus, with outer edge deeply
pigmented. Sclerite of spermathecal duct not discern-
ible. Parietal glands of spermatheca (Fig. 5), with
central area of large papillae surrounded by a circle
of pores. Paraprocts (Figs. 6 and 9) approximately ellipti-
cal, setose, each with a strong, median spine; with-
out discernible sensory fields. Epiproct (Figs. 6 and 8)
trapezial, setose.

**Measurements:** F: 490; T: 823; t1: 286; t2: 75; t3:
73; P4: 109; f1: 100; f2: 89; f3: 85; f4: 92; f5: 86; f6: 86; f7:
72; f8: 65; f9: 60; f10: 68; IO: 424; D: 183; d: 93; IO/D:
2.31; PO: 0.50

**MALE.** Color: Same as the female.

**Morphology:** Hypandrium typical of the genus,
with sides parallel and apex slightly rounded; distal
half pigmented and proximal half hyaline; hypandrial
brush with 74-99 macrosetae (x= 84.7, n= 4), each
macroseta with apex bifid (Fig. 4). Phallosome (Fig. 3),
with stout parameres, apically rounded, internal sele-
rites anteriorly blunt, and two mushroom- shaped
internal apodemes.

**Measurements:** F: 430; T: 680; t1: 256; t2: 67; t3:
63; P4: 108; f1: 93; f2: 86; f3: 87; f4: 88; f5: 86; f6: 84; f7:
66; f8: 69; f9: 66; f10: 66; IO: 387; D: 168; d: 83; IO/D:
2.3; PO: 0.49

**TYPE LOCALITY.** MEXICO: Baja California Sur.
19 Km NW San José del Cabo, Hwy. 1, 115 m.,
22.VIII.1974, beating vegetation with dead branches
and leaves. Holotype m. allotype f. 14l. and 10m
paratypes (IBUANAM).

**RECORDS.** MEXICO: Baja California Sur. 34 Km.
NW La Paz, 23.VIII.1974, Hwy. 1, beating dead
branches of shrubs, 1m. 100 Km. W San Ignacio, Hwy.
1, 80 m., 24.VIII.1974, beating branches of shrubs
with abundant lichens, 7f, 3m.

**Cerobasis claronensis n. sp.**
(Figs. 10-19)

**DESCRIPTION:** **FEMALE.** Color: Ground color
creamy white, with spots and bands pale brown and
dark brown (Figs. 12, 14). Compound eyes black;
epicranial ecdysial lines ochre, slender, well defined.
In the middle of the front, and close to the epistomal
suture, a V-shaped, pigmented band, also a wide
dark brown band on each gena, from compound eye to
epistomal suture, partially enclosing the antennal
fossa. Vertex with an elongate pigmented band to
dark brown (Figs. 12, 14). Compound eyes black;
epistomal suture, partially enclosing the antennal
fossa. Vertex 'with an elongate pigmented band to
dark brown (Figs. 12, 14). Compound eyes black;
epistomal suture, partially enclosing the antennal
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dark brown (Figs. 12, 14). Compound eyes black;
epistomal suture, partially enclosing the antennal
fossa. Vertex 'with an elongate pigmented band to
dark brown (Figs. 12, 14). Compound eyes black;
epistomal suture, partially enclosing the antennal
fossa. Vertex 'with an elongate pigmented band to
dark brown (Figs. 12, 14). Compound eyes black;

Scales in mm. Figure 2 to scale of Figure 6. Figure 7 to scale of Figure 1. Figure 9 to scale of Figure 8.
4 Insecta Mundi (Fig. 18), with parameres distally rounded, internal sclerites anteriorly pointed, and internal apodemes rounded. Paraprocts and epiproct same as the female.

**Measurements:** F: 330; T: 495; L: 188; T2: 50; t3: 46; P4: 48; f1: 91; f2: 77; f3: 85; f4: 74; f5: 66; f6: 57; f7: 56; f8: 55; f9: 53; f10: 47; IO: 284; D: 128; d: 60; IO/D: 2.21; PO: 0.46

**TYPE LOCALITY.** MEXICO: Revillagigedo Archipelago. Clarion Island, Ca. Naval Garrison (ca. Sulphur Bay), 15.XI.1988, on dead leaves of grasses. Holotype m, allotype f, and five paratypes of each sex (IBUNAM).

**RECORDS.** Clarion Island, 10-16 XII. 1987, beating vegetation near Sulphur Bay, E. Barrera & A. Ocampo, 16f, 5m. 11.XI.1988, ca. Sulphur Bay, on Central Plateau, and slopes from southern edge of island to Central Plateau, beating grasses, leguminous plants, shrubs, *Croton* and *Karwinska*, A.N. Garcia Aldrete, J. L. Colin & A. Cadena, 2f, 14m 14 XI 1988, near Pico Tienda de Campana, beating *Karwinska*, 1f. 15.XI.1988, near Pico Callegos, beating *Karwinska*, 3f, 2m.

**Cerobasis lapidicola** n. sp. (Figs. 20-30)

**DESCRIPTION: FEMALE.** Color: Body dorsally dark brown, ventrally white, with pattern of pigmentation variable in abdomen (Figs. 21, 25). Compound eyes black; epicranial ecdysial lines dark brown, distinct, with very long arms. Head pattern as in Fig. 22; areas above arms of epicranial ecdysial lines pale brown; area below arms of epicranial ecdysial lines dirty white. A dark brown band on each genu from compound eye to epistomal suture, partially enclosing the antennal fossae. P3 and P4 dark brown proximally, dirty white distally. Scape and pedicel dark brown; first four antennal flagellomeres with apices dark brown, proximally pale brown (Figs. 20, 22); distal flagellomeres brown. Thorax with pleura dark brown. Leg with coxae, trochanters and femora white, tibiae pale brown, with a broad, dark brown band, towards each end; t1, t2, and t3 brown. Clunium uniformly pigmented (Fig. 30); paraprocts pale brown, epiproct white, with a longitudinal, trapezal area in the middle.

**Measurements:** F: 604; T: 917; t1: 411; t2: 71; t3: 68; P4: 163; f1: 163; f2: 155; f3: 155; f4: 163; f5: 155; f6: 165; f7: 139; f8: 152; f9: 120; f10: 114; IO: 408; D: 215; d: 122; IO/D: 1.89; PO: 0.57

**MORPHOLOGY:** Gonapophyses (Fig. 23), typical of the genus; opening of spermathecal duct simple, without discernible sclerite. Parietal glands of the spermatheca not discernible. Paraprocts elongate, semi-elliptic, setose. Epiproct trapezial, setose (Fig. 30).

**MALE.** Color: Same as the female, but slightly less pigmented.

**MORPHOLOGY:** Hypondrium (Fig. 26), rounded anteriorly, almost uniformly pigmented, setose, without a well defined brush; brush area with 57-63 slender, distally acuminate setae (n = 2), not different from setae on rest of the surface of hypandrium. Phallosome (Fig. 27), with elongate internal sclerites anteriorly acuminate, and rounded, internal apodemes. Paraprocts, epiproct and pigmentation of clunium as in the female.

**Measurements:** F: 505; T: 752; t1: 359; t2: 67; t3: 57; P4: 144; f1: 144; f2: 143; f3: 135; f4: 133; f5: 144; f6: 139; f7: 131; f8: 130; f9: 108; f10: 91; IO: 307; D: 192; d: 120; IO/D: 1.59; PO: 0.62

**TYPE LOCALITY.** MEXICO: Revillagigedo Archipelago. Socorro Island, Barranca del Mueda, 300m., 3.X.1988, on rock wall with lichens, L. Cervantes, A. Cadena and A.N. Garcia Aldrete. Holotype m, allotype C, 19f and 9m paratypes (IBUNAM).

**RECORDS.** Socorro Island, near Pico Tienda de Campana, 200m., 14.XI.1988, in concavities of calcareous rocks, covered with lichens, towards southeastern end of island, A.N. Garcia Aldrete and A. Cadena, 10f, 4m. 12. XI. 1988, northern edge of island, in concavities of calcareous rock wall, 5f, 1m. Ca. Pirámide (Rocas Monumento), on northwestern end of island, 13.X.1988, on calcareous rock wall with lichens, 7f, 7m. 12.XI.1988, near well on southern edge of island, ca. Sulphur Bay, on dead fronds of coconut palm, 2f. 10.XI.1988, ca. Naval Garrison, on ground, J.L. Colin and A. Cadena, 1f.

**COMMENTS.** The specimens from Clarion Island are less pigmented, the difference between proximal and distal parts of the first antennal flagellomeres is sharper, and the brown bands of the tibiae are more defined than in the specimens from Socorro Island. Also, the abdominal in specimens from Socorro Island is dark brown, and less pigmented and with a cross-shaped mark on tergum in the specimens from Clarion Island.
Table 1. Species of Cerobasis and geographical distribution

<table>
<thead>
<tr>
<th>Species of Cerobasis</th>
<th>Geographical Distribution</th>
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<tbody>
<tr>
<td>C. olivatt Garcia Aldrete</td>
<td>Mexico</td>
</tr>
<tr>
<td>C. alfredi Lienhard</td>
<td>Tunisia</td>
</tr>
<tr>
<td>C. annulata Hagen</td>
<td>Europe, Canary Islands, U.S.A.</td>
</tr>
<tr>
<td>C. australis Enderlein</td>
<td>SW Australia</td>
</tr>
<tr>
<td>C. banth Turner</td>
<td>Morocco, Israel</td>
</tr>
<tr>
<td>C. caboverdensis Lienhard</td>
<td>Cabo Verde</td>
</tr>
<tr>
<td>C. canariensis (Enderlein)</td>
<td>Canary Islands</td>
</tr>
<tr>
<td>C. captiva Garcia Aldrete</td>
<td>Mexico</td>
</tr>
<tr>
<td>C. clarionensis Garcia Aldrete</td>
<td>Mexico</td>
</tr>
<tr>
<td>C. chrysopa Badonnel</td>
<td>Chile</td>
</tr>
<tr>
<td>C. guestalica (Kolbe)</td>
<td>Cosmopolitan</td>
</tr>
<tr>
<td>C. hastoni Lienhard</td>
<td>Cabo Verde, Azores</td>
</tr>
<tr>
<td>C. intermedia Lienhard</td>
<td>Cabo Verde</td>
</tr>
<tr>
<td>C. lamba Thornton &amp; Woo</td>
<td>Galápagos Islands</td>
</tr>
<tr>
<td>C. lapidaria Badonnel</td>
<td>Angola</td>
</tr>
<tr>
<td>C. masuliceps Badonnel</td>
<td>Chile</td>
</tr>
<tr>
<td>C. madera Garcia Aldrete</td>
<td>Madeira Island</td>
</tr>
<tr>
<td>C. madera Lienhard</td>
<td>Madeira Island</td>
</tr>
<tr>
<td>C. multispinosa Obr</td>
<td>Czechoslovakia</td>
</tr>
<tr>
<td>C. recta Thornton &amp; Woo</td>
<td>Galápagos Islands</td>
</tr>
<tr>
<td>C. treptica Thornton &amp; Woo</td>
<td>Galápagos Islands, Mexico</td>
</tr>
</tbody>
</table>

Key to the Mexican Species of Cerobasis.

1. Parietal glands of the spermatheca without central papillae; phallosome without internal apodemes ........................................... guestafalica (Kolbe) ............................

1'. Parietal glands of the spermatheca with central papillae; phallosome with internal apodemes, rounded or mushroom-shaped ........................................

2. Apterous ........................................................................ 3

2'. Micropterous; thoracic nota with a mesal, longitudinal, slender, pigmented band; phallosome with a slender, sclerotized tooth posteriorly, on inner face of each paramere: only known from the northern edge of the Yucatán Peninsula..................

.......................................................... maya Garcia Aldrete ..........................

3. Body dorsally with a longitudinal, well defined, pigmented band, from labrum to epiproct; only known from María Madre Island ................................................................. captiva Garcia Aldrete ..........................

3'. Pattern of pigmentation not as above ............................ 4

4. Hypandrial brush well defined, macrosetae of brush with apex blunt or obtusely concave; clunium not uniformly pigmented; front with pigmented spots ........................................

4'. Hypandrial brush not defined, setae of brush area slender, acuminate; clunium uniformly pigmented; front without pigmented spots; only known from the Revillagigedo Archipelago .......................................................... lapidicola Garcia Aldrete ..........................

5. Head with an elongated, longitudinal, pigmented band on each side of epicanal sulcus; thoracic nota with one pigmented spot on each side of longitudinal midline; abdomen with a median, longitudinal, broad pigmented band, with two slender bands on each side, endemic to Clarion Island .................. clarionensis Garcia Aldrete ..........................

5'. Pattern of pigmentation not as above, not known in Clarion Island ................................................................. 6

6. Central papillae of parietal glands of the spermatheca large; macrosetae of hypandrial brush obtusely concave apically .......................................................... alpha Garcia Aldrete ..........................

6'. Central papillae of parietal glands of the spermatheca small; macrosetae of hypandrial brush blunt, truncate or slightly obtusely concave apically ........................................... treptica Thornton & Woo ..........................

COMMENTS. Seven species of Cerobasis occur presently in México (Table 1), in which are repre-
resented the two groups of species recognized by Lienhard (1984) for the western-palaearctic region: group a, characterized by having parietal glands of the spermatic atrum without central papillae, and phallosome without mushroom-shaped internal apodemes; this group is represented by C. guestfalica (Kolbe), and group b, characterized by having parietal glands of the spermatic atrum with a central rosette of papillae, and phallosome with mushroom-shaped internal apodemes; this group is represented by the other Mexican species (Table 1).

Cerobasis guestfalica is a cosmopolitan species, that reproduces mostly by theitoky, although males are known from England and Poland (Lienhard, 1984). Only females of C. captiva are known, which also suggest theitoky, the species is confined to Maria Madre Island, in the Pacific, where it coexists with C. treptica. The other five Mexican species of Cerobasis are bisexual, and only one of them, C. treptica, presents a wide distribution, whereas the others have quite restricted areas of distribution: C. alpha is only known from a small area in Baja California Sur, C. captiva is endemic to Maria Madre Island, C. clarionensis is endemic to Clarion Island, C. lapidicola is endemic to the two major islands of the Revillagigedo Archipelago (Socorro and Clarion), and C. maya is restricted to a small area on the northern edge of the Yucatan Peninsula. Table 1 shows the known species of Cerobasis and their distribution; not considering C. guestfalica on account of its cosmopolitanism, the genus is almost equally represented in the Neotropical and Palaearctic regions, with ten and nine species respectively, none in common; one species each occur in the Australian and Aethiopian regions, and one of the Palaearctic species (C. annulata Ilagen), has also been recorded in the Nearctic region (Gurney, 1950), a distribution that has been observed for several species of psocids (Baz, 1988; Garcia Aldrete, 1991b; Lienhard, 1986; Mockford, 1980, 1988). It is remarkable that ten of the 22 known species (45.4%) are strictly insular, and it is also remarkable that seven of the 22 species of Cerobasis (31.8%) occur in Mexico, to give more evidence of the rich biological diversity of this country.

Family Psyllipsocidae

Psyllipsocus neoleonensis n. sp. (Figs. 32-36)

DESCRIPTION: FEMALE. Color: Body creamy white, with reddish brown marks, as described below. Compound eyes black, ocelli clear, with reddish centripetal crescents. Epicranial ecdysial line only discernible on vertex; head pattern (Fig. 32), with an elongated, longitudinal spot, enclosing epicranial ecdysial line, three transverse brown bands between ocellar group and epistomal suture, and a dark brown band on each gena, below the antennal fossa. Scape and pedicel each with a longitudinal reddish band; first antennal flagellomere with proximal and distal ends brown, distal flagellomeres brown. Maxillary palps brown. Thorax milky white, with tergal lobes of mesothorax brown; thoracic pleura white, with some brown spots next to coxae; thoracic sternites reddish brown. Legs brown, except distal ends of coxae, trochanters and proximal ends of femora, which are white. Wings (Fig. 34), hyaline, with brown areoles around setal insertions on fore wing, and dark bands along veins of forewing as illustrated. Abdomen dusty white, with tergites and sternites 2-5 reddish brown. Paraprocts each with a brown band as illustrated (Fig. 33). Epiproct with sides more pigmented than central area. A brown, almost circular area next to epiproct, in elytra and adjacent tergite (Fig. 33).

Morphology: Gonapophyses typical of the genus, with broad external valve and elongated, membranous ventral and dorsal valves. Sclerite of spermathecal duct (Fig. 35), broad, elongated.


MALE. Color: Same as the female. Morphology: Hypandrium broad, setose (Fig. 36), posteriorly rounded, with posterior edge strongly pigmented. Phallosome (Fig. 36), simple, with parameres slender, joined posteriorly by a slender bridge. Paraprocts and epiproct as illustrated for the female.


TYPE LOCALITY. MEXICO: Nuevo León. Cerro de la Silla, near Monterrey, western slope, 800m., trail to North Peak, 12.VIII.1989, beating tree branches with dead leaves. Holotype m, allotype f (IBUNAM).

RECORDS. Nuevo León. El Cerro, near Santiago, 470m., 30.VIII.1985, on dead, hanging fronds of Washingtonia filifera. 1m.
Figures 32-36. *Peyllipsocus neoleonensis* n. sp. 32. Frontal view of head, f. 33. Paraprocts, epiproct and clunium, f. 34. Fore and hind wings, f. 35. Sclerite of spermathecal duct, f. 36. Hypandrium and phallosome, m. Scales in mm.
Psyllipsocus hyalinus n. sp.
(Figs. 37-42)

DESCRIPTION: FEMALE. Color: Body creamy white, with brown areas as described below. Compound eyes black, ocelli clear, with ochre centripetal crescents; head pattern (Fig. 37), with dark brown slender bands from ocellar group to genae; two irregular bands from each compound eye to epistomal suture, enclosing antennal fossae; postclypeus dark brown. Maxillary palps dirty white, P3 and P4 with apices dark brown. Scape and pedicel dirty white, with outer margin ochre; F1 and F2 dirty white, with apices dark brown; distal flagellomeres brown. Thorax brown, with tergal lobes ochre. Wings (Fig. 41), hyaline; areola postiea with a dark, slender band enclosing the veins; brown spots on confluence of Cu2 and 1A. Legs with coxae and trochanters white, femora white with a brown spot on inner margin, near distal end; tibiae white with proximal end brown and a brown band towards each end; t1 pale brown, with proximal end dark brown, t2 and t3 brown. Abdomen dirty white, with subcuticular tergal bands ochre. Paraprocts (Fig. 40), each with a broad, transverse, brown area; epiproct white, unpigmented. Clunium white in the middle, brown on each side.

Morphology: Gonapophyses with three pairs of valves: external broad, and dorsal and ventral elongate, membranous; sclerite of spermathecal duct (Fig. 39), tear-shaped, with an accessory transverse sclerite, strongly pigmented. Paraprocts (Fig. 40), setose, sensory fields with 9-10 trichobothria set on basal rosettes; epiproct trapezial, setose.

Measurements: FW: 1898; HW: 1467; F: 468; T: 886; t1: 276; t2: 64; t3: 47; P4: 149; F1: 231; F2: 139; F3: 119; F4: 114; F5: 100; F6: 92; F7: 74; F8: 75; F9: 62; F10: 64; IO: 265; D: 232; d: 127; IO/D: 1.14; PO: 0.54.

MALE. Color: Same as the female.

Morphology: Hypandrium (Fig. 42), approximately pentagonal, projected posteriorly, setose, with a strongly pigmented band running along the margins. Phallosome (Fig. 42), with parameres slender, converging posteriorly to a complex structure formed by a transverse ellipse and two longitudinal, dagger-like, sclerotized bodies. Paraprocts, epiproct and clunium, same as the female.

Measurements: FW: 1835; HW: 1380; F: 424; T: 808; t1: 298; t2: 58; t3: 53; P4: 129; F1: 201; F2: 129; F3: 122; F4: 110; F5: 96; IO: 216; D: 212; d: 112; IO/D: 1.02; PO: 0.52.

Psyllipsocus maculatus n. sp.
(Figs. 43-48)

DESCRIPTION: FEMALE. Color: Body creamy white, with dark brown areas as indicated below. Head pattern (Fig. 43); compound eyes black, ocelli clear, with reddish centripetal crescents. A slender brown band from ocellar group to each gena, and a brown band from each compound eye to lower gena, behind the antennal fossa. Front and upper portion of postclypeus creamy white; lower postclypeus, genae and labrum dark brown. Maxillary palps pale brown, P2 and P3 with apices dark brown. Scape and pedicel dark brown, F1 and F2 creamy white, with apices dark brown, distal flagellomeres brown. Thorax brown, with tergal lobes of meso- and metathorax ochre. Wings (Fig. 44), hyaline, with brown areas as illustrated. Legs dark brown, except trochanters and tarsomeres, which are creamy white. Abdomen with reddish brown subcucular rings. Paraprocts brown (Fig. 46), epiproct white, clunium with a large white area next epiproct, sides of clunium brown (Fig. 46).

Morphology: Subgenital plate setose, straight anteriorly and rounded posteriorly (Fig. 45). Gonapophyses (Fig. 45). Opening of spermathecal duct simple, with no discernible sclerite. Paraprocts semi-elliptical, setose, with seven trichobothria on sensory fields (Fig. 46). Epiproct trapezial, setose (Fig. 46).

Measurements: FW: 1311; HW: 1058; F: 265; T: 511; t1: 215; t2: 49; t3: 44; P4: 98; F1: 93; F2: 70; F3: 50; F4: 58; F5: 57; F6: 43; F7: 43; F8: 41; IO: 194; D: 189; d: 109; IO/D: 1.02; PO: 0.57.

MALE. Color: Same as the female. Wings with reduced pattern of pigmentation, as illustrated in Fig. 47.

Morphology: Hypandrium (Fig. 48), wide, setose, straight anteriorly and rounded, slightly projected posteriorly, with rounded lateral shoulders. Phallosome (Fig. 48), with slender, posteriorly converging parameres, and a posterior, elongate, bilaterally symmetrical piece, projected beyond the hypandrium to form an apically blunt cone. Paraprocts, epiproct and clunium as in the female.

TYPE LOCALITY. MEXICO. Nuevo León. Cerro de la Silla, near Monterrey, western slope, 610m., trail to North Peak, 19 VII 1969, in concretions of calcareous rocks, covered with lichens and mosses. Holotype m, allotype f, 1 f paratype (IBUNAM).
Figures 37-42. *Psyllipsocus hyalinus* n. sp. 37. Frontal view of head, f. 38. Right hind leg, f. 39. Sclerite of spermathecal duct, f. 40. Epiproct, right paraproct and elatium, f. 41. Fore and hind wings, f. 42. Hypandrium and phallosome, m. Scales in mm. Figures 38 and 40 to scale of Figure 41.
Table 2. Species of *Psyllipsocus* and geographical distribution

<table>
<thead>
<tr>
<th>Species</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>P. banksi</em> Cockerell</td>
<td>Burma (in amber)</td>
</tr>
<tr>
<td><em>P. banksiensis</em> Thornton</td>
<td>Malaya</td>
</tr>
<tr>
<td><em>P. bombayensis</em> Menon</td>
<td>India</td>
</tr>
<tr>
<td><em>P. collarti</em> Badonnel</td>
<td>Congo</td>
</tr>
<tr>
<td><em>P. chamela</em> García Aldrete</td>
<td>México</td>
</tr>
<tr>
<td><em>P. decisi</em> Badonnel</td>
<td>Cuba</td>
</tr>
<tr>
<td><em>P. delanarei</em> Badonnel</td>
<td>Argentina</td>
</tr>
<tr>
<td><em>P. doriae</em> Badonnel</td>
<td>Angola</td>
</tr>
<tr>
<td><em>P. dubius</em> Badonnel</td>
<td>Venezuela</td>
</tr>
<tr>
<td><em>P. edentulus</em> Menon</td>
<td>India</td>
</tr>
<tr>
<td><em>P. garciamolinai</em> García Aldrete</td>
<td>México</td>
</tr>
<tr>
<td><em>P. hirsutus</em> Thornton</td>
<td>Malaya</td>
</tr>
<tr>
<td><em>P. hyalinus</em> García Aldrete</td>
<td>México</td>
</tr>
</tbody>
</table>

**Measurements.** FW: 1261, HW: 1020, F: 212, T: 470; t1: 179; t2: 47; t3: 40; P4: 69; f1: 87; f2: 58; f3: 58; F4: 54; f5: 50; f6: 42; f7: 45; f8: 36; IO: 160; D: 170; d: 99; IO/D: 0.94; PO: 0.58

**TYPE LOCALITY.** MEXICO: Nuevo León. Cerro de la Silla, near Monterrey, western slope, trail to North Peak, 800m., 31.VIII.1989, in concavities of calcareous rocks, covered with lichens and mosses. Holotype m, allotype f, 9f and 4m paratypes (IBUNAM).

**Key to the Mexican species of *Psyllipsocus*** (Modified from Gurney, 1943, and García Aldrete, 1989)

1. Head with well defined, transverse, pigmented bands: 2
1'. Head pattern not as above: 3

2. A U-shaped pigmented band enclosing antennal group; clunium pigmented in area next paraprocts and epiproct; fourth segments of maxillary palps short, stout, only known from the coast of Jalisco and in Yucatán: 3
2'. Without a band enclosing antennal group, clunium pigmented only next to epiproct, fourth segments of maxillary palps slender, elongate; only known from Central Nuevo León: 4

3. Macropterous, brachypterous or micropterous, if micropterous, wings not placoid, with small setae, and traces of venation: 4
3'. Micropterous, wings placoid, with long setae and no traces of venation; only known from a small area in the center of the Transverse Volcanic System: 5

4. Setae of forewings not set on dark areolae: 5
Figures 43-48. *Psyllipsocus maculatus* n. sp. 43. Frontal view of head, f. 44. Fore and hind wings, f. 45. Left gonapophyses and subgenital plate, f. 46. Paraprocts, epiproct and clunium, f. 47. Fore wing, m. 48. Hypandrium and underlying phallosome, m. Scales in mm. Figure 48 to scale of Figure 45. Figure 47 to scale of Figure 44.
4. Setae of forewings set on dark brown, basal areolae; only known from the coast of Jalisco. 

................................. garciamolinai Garcia Aldrete

5. Wings spotted; at least with veins of areola postica enclosed by a brown band; a pigmented band from ocellar group to each gena. 

....................................

6. Femora with pigmented spot distally on inner face; tibiae with pigmented bands towards each extreme; wings hyaline, only areola postica and distal confluence of Cu2 and 1A pigmented; only known from Central Nuevo León. 

................................. hyalinus Garcia Aldrete

6'. Femora and tibiae brown; forewings of females with spots on cells R1, R3, M3, R. Cu1b, distal ends of pterostigma and areola postica and distal confluence of Cu2 and 1A; forewings of males with spots on distal ends of pterostigma, areola postica and cells R1, R3, Cu1b, and distal confluence of Cu2 and 1A; only known from central Nuevo León. 

................................. maculatus Garcia Aldrete

7. Apical segments of maxillary palps tapering at apex, broadly rounded on inner margins; macropterous, brachypterous and micropterous; cosmopolitan; recorded in many localities throughout México. 

................................. ocellatus Gurney

7'. Apical segments of maxillary palps broad, apex more or less oblique; macropterous and brachypterous. 

.................................

8. Eyes prominent; apical segment of maxillary palps with apex weakly oblique; hypandrium without conspicuous, heavily sclerotized lateral margins; phallosome with an elongate distal structure; recorded in southern U.S. and in many localities throughout México. 

................................. ocellatus Gurney

8'. Eyes moderately prominent; apical segment of maxillary palps with apex strongly oblique; hypandrium with heavily sclerotized lateral margins; phallosome with a rounded, distal structure; only known from Chichén Itzá, Yucatán. 

................................. yucatan Gurney

COMMENTS. P. neoleonensis is reminiscent of P. chamela in head and forewing pattern, and in phallosome structure; P. hyalinus is close to P. ocellatus in hypandrium and phallosome structure, and P. maculatus differs from all other Psyllipsocus species in forewing and terminalia pattern, and in having a unique hypandrium and phallosome. The three species here described were found sympatrically in a limited area, between 600-800 meters of altitude above sea level, in a ravine at Cerro de la Silla, near Monterrey, México. The habitat of P. neoleonensis is dead leaves and branches of broad leaved trees and dead fronds of palms, and is thus ecologically separated from P. hyalinus and P. maculatus, both found in calcareous rocks cavities and crevices; these two species live together, and they probably have microhabitat differences, the rather small size of the latter, probably facilitate this coexistence, by occupying sites that P. hyalinus, being much more voluminous, can not exploit (see measurements for both species). Certainly the details of their living together deserves a closer scrutiny.

Table 2 shows the known species of Psyllipsocus and their distribution; not considering the fossil P. banksi and the cosmopolitan P. ramburi; the genus is best represented in the Neotropical (13 species) and the Oriental (6 species) regions; four species occur in Africa, two species have been recorded in the Paleartic region, near the Oriental region (China and Japan), and one species each occur in the Pacific and Neartic regions, so the genus is predominantly tropical. Nine of the 14 neotropical species (60%), occur in México, this figure also representing 34% of the total number of species in the genus.

Table 3 presents a list of the species of Trogiomorpha recorded in México, with the purpose of documenting in a single place dispersed information. If not definitive, this list will provide a reference base line for subsequent studies. For economy of space, only the political divisions (states), where the species have been recorded are included. The present list comprises 46 species, and reflects a considerable richness of this suborder in México.

Acknowledgments

I wish to thank Luis Cervantes Peredo, Alex Carrión Carrión and José Luis Colín, for their support and help in the field work conducted in the Revillagigedo Archipelago in 1988. Thanks also to H. Braileovsky, of the Zoology Department, Instituto de Biología, UNAM, and the authorities of the Instituto for support to this and other projects throughout the years. Special thanks are due to Rear Admiral Manuel Rodriguez Cordillo, Commander in 1988 of the Armada de México personnel based in Socorro and Clarion Islands, for the unrestricted logistic support and hospitality provided during the time spent in the Archipelago. I also wish to thank the Secretaría de Marina, México, for supporting the project and for transporting us to and from Socorro and Clarion Islands.
### Table 3. Mexican species of Trogiomorpha and distribution in Mexican states (*: species endemic to México).

<table>
<thead>
<tr>
<th>Species</th>
<th>Distribution</th>
</tr>
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<tr>
<td><em>P. oaxacanus</em> García Aldrete*</td>
<td>Oaxaca</td>
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<tr>
<td>Subfamily Lepolepidinae</td>
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</tr>
<tr>
<td><em>Lepolepis carinensia</em> Turner</td>
<td>Chiapas, Veracruz</td>
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<tr>
<td>Family Trogidae</td>
<td></td>
</tr>
<tr>
<td>Subfamily Troginae</td>
<td></td>
</tr>
<tr>
<td><em>Cerobasis alpha</em> García Aldrete*</td>
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<tr>
<td>Subfamily Periontominae</td>
<td></td>
</tr>
<tr>
<td><em>C. captiva</em> García Aldrete*</td>
<td>Nayarit (María Madre l.)</td>
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<tr>
<td>Family Lepidopsocidae</td>
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<tr>
<td>Subfamily Lepidopsocinae</td>
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</tr>
<tr>
<td><em>C. maya</em> García Aldrete*</td>
<td>Quintana Roo, Yucatán</td>
</tr>
<tr>
<td><em>C. trepica</em> Thornton &amp; Woo</td>
<td>Baja California Sur, Oaxaca, Nuevo León, Michoacán, Puebla, Sinaloa, Tamaulipas</td>
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<tr>
<td><em>E. folco</em> (Badonnel)</td>
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<tr>
<td><em>E. intermedia</em> Mockford</td>
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</tr>
<tr>
<td><em>E. leticiae</em> García Aldrete*</td>
<td></td>
</tr>
<tr>
<td><em>E. macgregori</em> García Aldrete*</td>
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<td><em>K. madagascariensis</em> Kolbe</td>
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<td><em>K. yanezi</em> García Aldrete*</td>
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<td><em>E. vanezi</em> García Aldrete*</td>
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<td><em>E. texanus</em> (Hanks)</td>
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<td><em>E. intermedia</em> Mockford</td>
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Table 3. continued.

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<td>Enderlein</td>
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<td>Pseudolithus chamela</td>
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<td>García Aldrete* Jalisco, Yucatán</td>
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<tr>
<td>P. garciomolinai</td>
<td></td>
</tr>
<tr>
<td>García Aldrete* Jalisco</td>
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<tr>
<td>P. hyalinus</td>
<td></td>
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<tr>
<td>García Aldrete* Nuevo León</td>
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<tr>
<td>P. maculatus</td>
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</tr>
<tr>
<td>García Aldrete* Nuevo León</td>
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</tbody>
</table>

P. monticolas García Aldrete* Distrito Federal, México
P. neoleonensis García Aldrete* Nuevo León
P. acutatus Gurney
P. ramburii Solys-Longchamps
P. yucatan Gurney


