The Aphodiinae and Rhyparinae (Coleoptera: Scarabaeidae) in southern states of Mexico (Chiapas, Oaxaca, Puebla and Veracruz)

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Received: 15 May 2003
Accepted for publication: 30 June 2003


Abstract. Sixty three species of the Aphodiinae and Rhyparinae are recorded from southern states of Mexico, including 3 species described as new: Aphodius chiapasensis sp. n., A. xalapensis sp. n. and Ataenius pseudousingeri sp. n. One new synonym is proposed: Ataenius crenulatus SCHMIDT, 1910 (≡ A. ricardsi HINTON, 1938, syn. nov.). Haroldiataenius limbatus (BATES) is given in new combination, Ataenius communis HINTON is recorded from Mexico for the first time. The new state records are provided for 36 species and new country records for 12 species. References to taxonomic and faunistic treatments of all species are given, available biological informations are summarized following the species distribution. Habitus of several species, illustrated by means of scanning electron microscope and drawings of pertinent morphological details are included.

Key words: Scarabaeidae, Aphodiinae, Rhyparinae, taxonomy, new species, distribution, Mexico.

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I. INTRODUCTION

Many groups of Meso- and South American species of the Aphodiinae are confused taxonomically and their distribution and biogeographical limits are only sketchily known. The continuing discovery of undescribed species in the Neotropical region is an indication of how little is known about the biodiversity of most tropical areas.

The present work was accomplished on the basis of several projects (see Acknowledgements) with a view to measure the biodiversity of various ecosystems in Mexico and to analyse the local effects of the landscape transformation. The materials for study were recently collected and/or loaned from several museum collections. The 63 species listed in this paper represent only about two-thirds of the total Aphodiinae and Rhyparinae fauna of the southern states of Mexico, where many areas remain unexplored. Certain species previously recorded from this area were not collected because their habitats were not extensively sampled. In this connection, we do not wish to discuss here any
important biogeographical or systematic problems arising from the material examined. Of the total number of 63 species here recognised, three species are described as new, one species is found in Mexico for the first time, the new state records are provided for 36 species and new country records for 12 species. The south Mexican distribution pattern comprises most elements of the Meso- and South American origin (about 40 species), a number of presumably endemic forms (about 10 species), in a lesser degree the Nearctic species (about 6 species) and a bulk of the widely distributed, anthropogenic species of uncertain origin. As a general rule, tropical species exhibit a great variability in their seasonality and year-to-year abundance changes. It is our opinion and conclusion, as a result of recent studies, that intensified collecting over extensive tropical areas and periods of times is necessary to disclose the details of species complex.

Acknowledgements. We are greatly indebted to the institutions and individuals who have assisted by the field work, by the loan of material and by granting facilities for study: G. HALFTER and M. E. FAVILA (Xalapa, Veracruz), M. Benigno GÓMEZ (Tapachula, Chiapas), H. HOWDEN and F. GÉNIER, (Ottawa), P. SKELLEY and R. TURNBOW (Gainesville), B. RATCLIFFE, M. JAMESON and A. SMITH (Nebraska), N. ADAMS and G. HOUSE (Washington DC), P. K. LAGO (Mississippi), R. DANIELSSON (Lund), M. DELLACASA (Calci, Pisa).

The field works were supported by the Instituto de Ecología, Xalapa, Veracruz, México (Research Program CONABIO nº K038), Spanish Ministry of Foreign Office, AECI (Programa Iberoamericano de Cooperación Científica 2000-2003), Colegio de la Frontera Sur, ECOSUR, Chiapas, México (Research Program CONABIO FB824/Y037/01) and University of Alicante, Spain (Research Program of International Cooperation and Special Program of the Visitor Senior Professor). Financial support for Z. STEBNICKA was provided in part by the Ministry of Science in Poland, Grant KBN no 3P04C 089 22.

II. MATERIAL AND METHODS

The results summarized herein represent a join effort of the authors. E. GALANTE and J. R. VERDÚ were largely responsible for the field work in Mexico and collecting the specimens with associated biological information. Z. STEBNICKA was responsible for accumulation of additional material housed in various collections, for descriptions, literature and comments.

The Aphodiinae material was collected in the last five years at various localities of Chiapas, Oaxaca, Puebla and Veracruz (Fig. 1). The specimens were captured using UV-light traps and pitfall traps baited with fish and excrements. An average of 40 traps with fish and 40 traps with dung were placed in each site for 72 hours and beetles were removed at the end of this period. Additional specimens and larval stages of several species were taken directly from excrements, decaying matter, under vegetation, in soil and in the nests of Atta ants.

In connection with ongoing revision of the New World Aphodiinae by Z. STEBNICKA, most of the larger collections were examined and the type material available in various depositories was studied. The specimens from these collections found in the discussed area are here partially included, with verified distribution of particular species and available data on their bionomics. The taxonomy, phylogeny and keys for identification of most species listed herein are taken into consideration in the series of papers dealing with the New World fauna.

Specimens examined for this study are housed in the collections of the following institutions and individuals (abbreviations are as used in the text):

CEUA – Collection of Entomology, University of Alicante, Spain; CMN – Canadian Museum of Nature, Aylmer, Canada; FSCA – Florida State Collection of Arthropods, Gainesville; HAHC – Henry & Anne HOWDEN Collection, Ottawa, Canada; ISEA – Institute of Systematics and Evolution of Animals PAS, Krakow; RTC – Robert TURNBOW Collection, Gainesville, Florida; UMS – University of Mississippi Biology Department, Mississippi; UNSM – University of Nebraska State
III. AREA OF STUDY

(Fig. 1)

A) Veracruz State

Veracruz state is a megadiverse area, but with one of the highest amount of habitat destruction (HALFTER & ARELLANO 2002). The material was collected in three sites: La Mancha, Los Tuxtlas Biosphere Reserve and the area of Xalapa-Las Vigas.

1.- La Mancha (Fig. 1(1)) located in the coastal plain of central Veracruz north of the Santa Marta and San Andrés volcanoes, belongs to Actopan municipality and covers 5264 ha. This area is relatively humid (<1000 mm/year), but its climate is tropical dry due to the orographic influence of the mountains. Mean of annual temperatures ranges between 18°-22°C. The landscape is completely transformed and only small patches of dry forest are conserved along the central coastal plain of Veracruz. Scrub and secondary communities have replaced most of the original forest overlooking the Gulf of México. (NOVELO 1978).

2.- Los Tuxtlas Biosphere Reserve (Fig. 1(2))

The Tuxtlas Biosphere Reserve was created in 1998, and includes one of the largest portions of moist forests in Mexico. This reserve, located in the costal area of southern Veracruz covers 155,122 ha, and is composed of seven volcanoes and a variety of lakes, lagoons and marshlands. The Tuxtlas mountain range spreads from 200 m to 1700 m of elevation of the San Martin volcano. The annual temperatures range between 18°-26°C. This is the second wettest area in Mexico, with very heavy summer rains and an average of annual precipitation ranging from 1200 mm to 4500 mm. This region is an important centre of endemism and of a high biodiversity, but nearly 90 per-

Fig. 1. Map of Mexico. (1-5) Area of collecting. State of Veracruz: (1) – La Mancha, (2) – Los Tuxtlas Biosphere Reserve, (3) – Xalapa-Las Vigas area. States of Puebla and Oaxaca: (4) – Tehuacán-Cuicatlán Biosphere Reserve. State of Chiapas: (5) – Sierra Madre area.
cent of the original forests have been eliminated over the last 30 years and transformed into numerous, impoverished patches of forest. (GONZÁLEZ SORIANO et al. 1997). The most important reference localities are: Catemaco, San Andrés, Santiago, Santeconapan and Pajapan.

3.- Xalapa-Las Vigas area (Fig. 1(3) descends from the slopes of the Cofre de Perote at 1700 m above sea level to 1100 m in the direction of the coastal plain (INEGI 1988). This region constitutes one of the most diverse ecosystems known as Mountain Rain Forest (ZOLA 1987). Las Vigas (2481 m above sea level) is located 21 km NW from Xalapa. Evergreen oak and pinewoods in the high zone and liquidambar woods (sweet gum) in the low zone form its ecosystem (CHAZARO 1982, HALFTER et al. 1995).

**B) Tehuacán-Cuicatlán Biosphere Reserve**

The Tehuacán-Cuicatlán Biosphere Reserve (Fig. 1(4) – states of Puebla and Oaxaca) was created in 1988 and covers 490,187 ha between Puebla and Orizaba cities. This area has drastic variations in both topography and annual rainfall, being delimited in the east and in the west by mountain ranges. The annual temperatures range from 18°-22°C in the Tehuacán Valley to 24.5°C in Cuicatlán. The mean of annual precipitation in the valley ranges from 250 mm to 500 mm, falling from May through October, with the majority between June and September (ENGE & WHITEFORD 1989). These regional geographic characteristics have created several unique microclimates with a rich diversity of fauna and flora. (ARRIAGA et al. 2000) The valley of Tehuacán-Cuicatlán is considered to be a centre for speciation (ARIAS et al. 2001). The original vegetation cover in a low elevation consists of deciduous forest, xerophitic scrublands with cactuses, and pine-oak forest in the Southern Sierra Madre.

**C) Sierra Madre (Chiapas) (Fig. 1(5)**

Chiapas, the southernmost state of Mexico, constitutes the border with Guatemala. The climate and landscape are diverse, ranging from semi-desert to rainforest, and elevation from sea level to 4000 m with subalpine vegetation. The area of collecting was situated in the southeastern corner of Chiapas, at the top of the Mesoamerican Biological Corridor of Sierra Madre.

The Sierra Madre is a narrow, steep range of volcanic mountains extending throughout Chiapas to Guatemala, with elevations between 1500 m in the north and 4080 m near the Guatemala border (Tacaná Volcano). The annual temperatures range from 12°C to 18°C and mean of annual rainfall is 2000 mm.

The tropical decidous forest is common at lower elevation and the montane rain forest is found at the Tacaná Volcano area, but most of this rainforest has been destroyed for cultivations of coffee and corn. The area of collecting included the patches of pine-oak forest, montane rain forest and evergreen cloud forest (BREEDLOVE 1981).

**IV. TAXONOMY AND DISTRIBUTION**

**Aphodiinae**

**Eupariini**

Species listed below are included to the ongoing revisions of the New World taxa. Redescriptions of some species and data on their distribution were published by STEBNICKA (2000, 2001a, 2002a,b, 2003 a,b)

**Martineziella vandykei** (HINTON)

(Fig. 2 a, b)

_Euparia vandykei_ HINTON, 1936a: 273. Type locality: Mexico, Tejupilco, Temascaltepec.

_Martinea (nom. praeoc.) vandykei_ CHALUMEAU 1983a: 152, fig. 7.

_Martineziella (nom. nov.)_ CHALUMEAU, 1986: 386.
Distribution. Known only from Mexico.

Specimens examined (4) – Chiapas (new state record): Laguna Belgica, 16 km NW Ocozocautla 970 m, 7.VI.1990, H. & A. HOWDEN (CEUA, CMN).

Previously recorded from Sinaloa (Mazatlan) and Cuernavaca by CHALUMEAU (1983).

Bionomics. The species is rarely collected, found in the detritus remnants at nests of fire ants.

_Euparixia formica_ HINTON

_Euparixia formica_ HINTON, 1934a: 27-28; WOODROFF & CARTWRIGHT 1967: 14-16, fig. 8. Type locality: Mexico, Tejupilco.

Distribution. Known only from Mexico.
Specimens examined (2) – **Chiapas** (new state record): Cinco Cerros 860 m, 9.VI.1990 H. & A. HOWDEN (HAHC, ISEA).

**Bionomics:** This myrmecophilous species was reported by HINTON (1934a) as being found at the type locality with *Atta sexdens*, but this ant was not ascertained in Mexico and this record probably refers to *Atta mexicana* SMITH.

*Aphotaenius howdeni* CARTWRIGHT  
(Fig. 3)


**Distribution.** Known only from Mexico.  
Specimen (1) – **Chiapas** (new state record): 3 km S of Chicoasen, Rd to Morador, 18.VI.1999, H. & A. HOWDEN (ISEA).

**Bionomics:** unknown.

**Ataeniopsis jaltipani** STEBNICKA

*Ataeniopsis jaltipani* STEBNICKA, 2003a: 109, figs 12,18. Type locality: Mexico, Veracruz, Jaltipan.

**Distribution.** Known only from Mexico.  

**Remarks.** The species is closely related to *Ataeniopsis duncani* (CARTWRIGHT). The latter species is distributed throughout northern Mexican states together with other Sonoran species of this genus, *Ataeniopsis parkeri* (CARTWRIGHT) and *A. rugopygus* (CARTWRIGHT).

**Bionomics.** Unknown.

**Haroldiataenius limbatus** (BATES) comb. nov.


**Distribution.** Mexico. New country record: Honduras.  
Specimens examined (20) – (new state records): **Puebla:** Zapotitlan Salinas, 8.VII.1999, E. GALANTE; Techuacan, Alatapexi 1125 m, M. MORÓN. **Oaxaca:** San Sebastian Frontera, Cerro Colorado, 10.VII.1999, E. GALANTE (CEUA, ISEA); 62 km SW Valle National, 12.VIII.1986, H. & A. HOWDEN (HAHC). **Chiapas:** El Aguacero, 16 km W Ocozocoautla 680 m, 5.VI.1990, H. & A. HOWDEN (HAHC).

**Bionomics.** This species is usually collected in summer, sifted from leaf litter of oak-pine forest, found in cattle dung and in *Atta* dump.

**Haroldiataenius hintoni** (SAYLOR)  
(Fig. 4)

*Atheniopsis hintoni* SAYLOR, 1933: 159.

**Haroldiataenius (Sayloria) hintoni:** CHALUMEAU 1981a: 140; DELLACASA 1988: 275 (catalogue). Type locality: Mexico, Tejupilco.

**Distribution.** Known only from Mexico.  
Specimens examined (8) – **Chiapas** (new state record): Cinco Cerros, 860 m, 31.V.1990, H. & A. HOWDEN (CEUA, ISEA); Puente Macuilapa near Los Amates, 22.V.1964, R. WOODRUFF (CMN).

Previously recorded from Sonora (Alamos) and Tamaulipas (Magiscatzin) by CHALUMEAU (1981a).
**Bionomics.** The specimens were found in detritus remnants near the nest of *Atta*, also collected to light traps.

*Auperia capitosa* (HAROLD)

*Ataenius capitosus* HAROLD, 1867a: 83, et Auctt. Type locality: “Columbia”.

*Auperia capitosa*: STEBNICKA, 2002a: 767-768, figs 5,29,34,39,41.

Distribution. Central and South America.


**Bionomics.** This species was collected throughout the year to light traps at altitude 400-1200 m, found in basal debris of *Bactris* palm and in *Atta* dump.

*Auperia denominata* CHEVROLAT

(Fig. 5 a, b)

*Auperia denominata* CHEVROLAT, 1864: 413.- STEBNICKA 2002a: 749-752, figs 2,6,15,20. Type locality: Cuba, Havana.

Synonyms: *Ataenius euglyptus* BATES, 1887: 97. Type locality: Mexico, Las Vegas

*Ataenius benjaminbanderai* ISLAS, 1955: 497. Type locality: Mexico, Cd Valles

*Ataenius sciurus* CARTWRIGHT, 1974: 65. Type locality: Florida, Gainesville

Distribution: USA (Florida), Central America, Colombia, Ecuador, Brazil, Venezuela, French Guyana, Cuba.


**Oaxaca**: Oaxaca city, 3.VIII.1965, G. H. NELSON (CEUA).

Previously recorded from Chiapas, Oaxaca and Veracruz by STEBNICKA (2002a).

**Bionomics.** Species collected throughout the year, attracted to light, found in *Sciurus* nests.

*Auperia squamosa* (PETROVITZ)

(Fig. 6)

*Phalangochaeta squamosa* PETROVITZ, 1976: 280-282.- Type locality: Ecuador “Archidona Oriente”.

*Auperia squamosa*: STEBNICKA 2002a: 772-773, figs 32,40,42.

Distribution: Central America, Colombia, Ecuador, Paraguay, Venezuela, Trinidad.


Previously recorded from Chiapas, Oaxaca and Veracruz by STEBNICKA (2002a).

**Bionomics.** The species occurs over a wide range and in diverse habitats; long series of specimens were collected between May and September in the wet montane forest litter, shrubs litter, coffee forest litter, buttress litter, decayed *Ficus* fruits, in paramo moss and in broken termite nests.

*Passaliolla cossonoides* (BATES)

(Fig. 7)

*Saprosites cossonoides* BATES, 1887: 93, t.6, fig. 22, et Auctt.. Type locality: Mexico, Cordoba.
Passaliolla cossonoides: STEBNICKA, 2000: 238-239, fig. 3.

Distribution: Mexico, Guatemala, Honduras, Costa Rica, Panama.


Previously recorded from Veracruz by STEBNICKA (2000).

Bionomics. This is the most common species of the genus Passaliolla, collected under bark of dead trees and to FIT’s intercept traps in tropical forest.

Parataenius simulator (HAROLD)

Ataenius simulator HAROLD, 1868: 85, et Auctt. Type locality: Argentina, Mendoza.


Distribution. Southern United States to Argentina, West Indies, Australia, New Zealand, Africa, Europe (Portugal).

**Bionomics.** Collected throughout the year to light traps. Larval stages were redescribed by VERDÚ & GALANTE (1999).

**Ataenius scutellaris** HAROLD

*Ataenius scutellaris* HAROLD, 1867a: 82.- 1876: 96 et Auctt. Type locality: Venezuela, Caracas.

**Distribution.** Central and South America, West Indies, Pacific Islands (Vanuatu).


Previously recorded from Chiapas, Puebla and Veracruz by DELOYA (1994).

**Bionomics.** The species is widely distributed but occurs sporadically, collected in January-March and October-December in forest, in pasture areas with *Brachiaria decumbens*, in human excrements, in bovine and *Guzera* droppings, attracted to light.

**Ataenius steinheili** HAROLD

(Fig. 8)


**Distribution.** South Mexico (Yucatan, Quintana Roo, Escarcega), Colombia, West Indies.


**Bionomics.** This species is very rare, the scarce specimens examined were collected to light trap. Data on its wide distribution given by CHAPIN (1940) and followed by DELOYA (1994) are misleading, and most probably concern a similar species from South America.

**Ataenius crenulatus** SCHMIDT


**Ataenius ricardsi** HINTON, 1938a: 123, figs 1-4. Type locality: Mexico, Chiapas. **New synonymy.**

**Distribution.** Central and South America to Argentina.


Previously recorded from Veracruz by DELOYA (1994) under the name *rickardasi* (sic!).

**Bionomics.** This species was collected throughout the year in open grassy forest, under tree bark and to light traps.

**Remarks.** A comparison of the type specimens of *Ataenius crenulatus* and *A. ricardsi* showed them to be the same species which belongs to the *Ataenius scutellaris*-group (revision in preparation).
**Ataenius sculptor** HAROLD


Distribution. USA, Mexico, Colombia. New country records: Guatemala, Honduras, El Salvador.


Previously recorded from Chiapas and Veracruz by DELOYA (1994).

**Bionomics.** Species collected from May to October to light traps, occasionally found in excrements. Phenology and reproductive features of *Ataenius sculptor* were discussed by MARTINEZ et al. (2002).

**Ataenius complicatus** HAROLD

(Fig. 9)


Distribution. Central and South America to Argentina.


Previously recorded from Veracruz and Oaxaca by DELOYA (1994).

**Bionomics.** Collected throughout the year to light traps, rarely found in cattle excrements.

**Ataenius carinator** HAROLD


Distribution. Mexico, Panama, Venezuela. New country records: Colombia, Ecuador, Peru, Bolivia, Surinam, West Indies.


**Bionomics.** This extremely variable species is usually collected throughout the year on woodland areas, in litter of premontane moist forest and on riversides, taken to pitfall traps.

**Ataenius jalapensis** BATES, stat. nov.


Distribution. Mexico. New country records: Guatemala, Honduras, Belize, Panama.

**Bionomics.** This very common species is usually collected in April – August to light traps in a great number of specimens, occasionally found in dry dung.

*Ataenius scalptifrons* Bates


**Bionomics.** Collected in March – August to black light and UV light traps.
Ataenius gracilis (MELSHEIMER)

*Oxyomus gracilis* MELSHEIMER, 1844:137.


**Distribution.** USA, Central and South America, West Indies, Micronesia.


Previously recorded from Chiapas and Veracruz by DELOYA (1994).

**Bionomics.** This very variable species is characterized by a wide range of climatic and edaphic conditions, collected throughout the year to light traps.

Ataenius aequalis HAROLD


**Distribution verified.** USA, Central and South America and West Indies.


Previously recorded from Veracruz by DELOYA (1994).

**Bionomics.** Collected through all months to light traps, found in litter at forest edges, in droppings, fungi and under bark, sifted from beach scrubs.

Ataenius hirsutus HORN

**Ataenius hirsutus** HORN, 1871: 288.- SCHMIDT 1922: 428; CARTWRIGHT 1974:36-37; DELLACASA 1988: 139 (catalogue). Type locality: Camp Grant, Arizona. [USA].

**Distribution verified.** USA (Arizona, Kansas, New Mexico, Texas) Mexico.


**Bionomics.** Collected in May – September, attracted to light in open meadows, found in the nest of *Neotoma*. Most common in northern Mexico.

Ataenius setiger BATES

**Ataenius setiger** BATES, 1887: 98.- DELLACASA 1988: 226 (catalogue). Type locality: Chilpacingo, Guerrero [Mexico].

**Distribution verified.** USA (Arizona, Texas), Mexico.

Specimens examined (14) - (new state records) **Oaxaca**: Cuicatlan, 3.VII.1999, E. GALANTE (CEUA). **Puebla**: Tehuacan, Altapexi 1125 m, M. MORÓN (ISEA); Tehuixtla, 15.VIII.1971, B. RATCLIFFE (CEUA). **Veracruz**: Lake Catemaco, 24-25.V.1969, H. & A. HOWDEN (HAHC)

**Bionomics.** The species is very similar to *Ataenius hirsutus* and differs from that species only slightly by its significantly shorter and scarcer setae on the elytra. Collected to light traps in open meadows.

Distribution. Mexico. New country records: Guatemala, Honduras, Panama.


Bionomics. This species hitherto known only from its original description appears to be very common in southern Mexico, collected in summer (May-August) to black light traps, found in sheep droppings.

Ataenius pseudousingeri sp.n. (Figs 10, 19)

Material. Holotype male, Mexico, Chiapas, Cinco Cerros 860 m, 31.V.1990, H. & A. HOWDEN, in CMN.


Guatemala: 1 – Zacapa, 6 km W Teculutan, La Palmilla, 5.V.1991, H. & A. HOWDEN. Paratypes are in CEUA, CMN, HAHC, ISEA, RTC, UMS, UNSM, USNM.

Description. Length 3.2 – 3.8 mm. Body oblong oval, moderately shiny, glabrous; colour castaneous or red, elytra usually lighter than fore body. Head moderate in size, clypeal margin finely denticulate or angulate on each side of wide but shallow median emargination, sides straight to right- angled, prominent gena; clypeal surface from anterior margin to frons with transverse rugae, vertex with band of fine punctures. Pronotum convex, base margin and grooved, marginal line erect by moderate punctures, side margin fringed with fine scarce setae; surface punctures of two types, those of median anterior disc fine, uniformly distributed, separated by about two diameters, coarse punctures concentrated on sides and here usually separated by less than one diameter, being sometimes united or confluent, in some specimens coarse punctures are more or
less numerous along pronotal base, scattered or lacking. Scutellum triangular, impunctate. Elytra slightly arcuate, striae deeply impressed with coarse, transverse punctures crenating inner margins of intervals; intervals convex, minutely to finely punctate or impunctate, lateral intervals not different. Ventral surface shiny; disc of metasternum convex, midline impressed, surface with 2-3 moderate punctures; abdominal sternites punctured only on sides, sternites 3-4 with coarse fluting on sides, sternite 5 fluted from side to side; pygidium scabrous in apical half. All femora fusiform, shiny, minutely punctured; meso- and metatibiae widened apically with thin spurs, very small accessory spine and fringe of short setae; tarsi moderate in length; basal tarsomere of metatarsus longer than upper tibial spur and shorter than following tarsomeres combined. In male, penultimate abdominal sternite shorter than in female; genitalia as in Fig. 19.

**Affinity.** *Ataenius pseudousingeri* is a sister species of *A. usingeri* HINTON; both species are very common in south Mexico and occur sympatrically, often in the same time and place. The new species differs from *A. usingeri* by having the body relatively smaller and lighter in colour, the clypeal margin dentate or angulate and the elytral striae deeper with coarser punctures. The male genitalia of both species also differ in shape (Figs 18, 19).

**Ataenius liogaster** BATES

(Fig. 11 a, b)


*Ataenius edwardsi* Chapin, 1940: 26-27 et Auctt. Type locality: Jamaica, Spa. Town (as synonym of *liogaster*: Stebnicka & Lago, in press).

*Ataenius hoguei* Cartwright & Spangler, 1981: 785-789, figs 1-5. Type locality: Mexico, Socorro Island (as synonym of *liogaster*: Stebnicka & Lago, in press).

Distribution verified. Central America and northern part of South America, West Indies, Micronesia, Indonesia, Australia.

Specimens examined (4) – **Veracruz**: Fortin de las Flores, 5.XII.1975, O. S. Flint (ISEA, USNM); Los Tuxtlas, X.1997, F. Vaz-de-Mello (ISEA).

Previously recorded from Chiapas, Puebla and Veracruz by Bates (1887).

**Bionomics.** The species collected in all months through a wide area of distribution, commonly taken to light traps, occasionally found in cattle dung.

Remarks. The males differ from the females by having the pronotal punctures finer and less close, the protibial spur hooked inwardly (Fig. 11 b) and the metasternal disc finely setigerous. The species belongs to the *Ataenius strigatus*-group (revision in press).

**Ataenius castaniellus** BATES

*Ataenius liogaster* var. *castaniellus* Bates, 1887: 95. Type locality: Guatemala, Zapote.

**Ataenius castaniellus**: HINTON 1937: 194; Dellacasa 1988: 106 (as synonym of *cognatus*!).


**Bionomics.** The species was hitherto little known and rarely collected. It is attracted to light and found in dry cattle excrements.
Remarks. The females of *Ataenius castaniellus* are similar externally to the females of *A. liogaster* Bates, however, the male genitalia of both species markedly differ in shape. The species belongs to *Ataenius platensis*-group (revision in preparation).

*Ataenius languidus* SCHMIDT


Distribution verified: USA (Alabama, Florida, Texas, Bahama Isl.), Central America, Venezuela, West Indies.


Previously recorded from Veracruz and Oaxaca by DELOYA (1964).

**Bionomics.** This very variable species was collected in May-July to light traps, occasionally found in cattle dung.

*Ataenius platensis* (BLANCHARD)

*Oxyomus platensis* BLANCHARD, 1843: 185.


Distribution verified: Southeastern United States to Argentina, West Indies.


Previously recorded from Oaxaca and Puebla by DELOYA (1994).

**Bionomics.** Collected through all months in various habitats from sea level to about 1000 m, attracted to light, found in forest litter and in cattle dung. Larval stages were described by VERDÚ & GALANTE (1999).

Remarks. The species is extremely variable, some populations have been described as separate species, however, it is not possible to distinguish them because of contiguous variation. It is not excluded that there are hybrids on the whole area of distribution of these forms. The DNA analysis may partially resolve the problem of populations or separate species.

*Ataenius strigicauda* BATES

*Ataenius strigicauda* BATES, 1887: 96, pl.VI, fig.24.- Horn 1887: 83; CHAPIN 1940: 31-32; CARTWRIGHT & CHALUMEAU 1978: 13, fig. 8; STEBNIKA 1998: 200-201. Type locality: Mexico Cordoba.

Distribution verified. South Mexico, Central and South America, West Indies, Madeira.


**Bionomics.** The species is very common in South America, collected in all months mainly to light traps, occasionally found in excrements. Larval stages were described by VERDÚ & GALANTE (1999).
*Ataenius picinus* HAROLD

*Ataenius picinus* HAROLD, 1867b: 281, et Auctt.; STEBNICKA & HOWDEN 1997: 746-748, figs 4, 5, 22, 39; STEBNICKA 2001b: 28-29, figs 11, 40, 52. Type locality “Chile”.


*Ataenius salutator* FALL, 1930: 99. Type locality: Florida

**Distribution.** Southern US, Central and South America, West Indies, Fiji, Vanuatu, New Caledonia, Australia, New Zealand.

Specimens examined (2) – **Veracruz** (new state record): La Mancha, 24.VII.1999, (adults with larvae), E. GALANTE (CEUA);

Bionomics. Ecologically very diverse species, collected throughout the year to light, found in pitfall traps, in cow and sheep dung, leaf litter samples and in compost heaps. It has some potential as a minor pest; larvae were noted damaging seedlings, adults damaging strawberries, potatoes, and beans. Larval stages were described by VERDÚ & GALANTE (1999).

*Ataenius glabriventris* SCHMIDT


**Distribution** (new records): Central America to Venezuela.


Previously recorded from Veracruz by DELOYA (1994).

Bionomics. Collected in May – August to light traps in open forest.

Remark. The species belongs to the *Ataenius strigatus* group (STEBNICKA & LAGO, in press)

*Ataenius apicalis* HINTON


**Distribution.** USA, Mexico.


Bionomics. In USA collected in racoon dung, in cow dung on borders of swamp forest, attracted to light. Specimens examined were found in *Typha* marsh, in fungi and in rainforest litter. Phenology of *Ataenius apicalis* and reproductive features were discussed by MARTINEZ et al. (2002).

Remark. The species belongs to the *Ataenius strigatus* group (STEBNICKA & LAGO, in press).

*Ataenius texanus* HAROLD


**Distribution.** USA (widely distributed), Mexico. New country record: Central America to Panama, West Indies.

Previously recorded from Chiapas and Veracruz by DELOYA (1994).

**Bionomies.** The species occurs in open grassy forest, collected to light traps, found in forest litter.

*Ataenius imbricatus* (MELSHEIMER)

*Aphodius imbricatus* MELSHEIMER, 1844: 136.


**Distribution verified:** USA, Central and South America, West Indies.


Previously recorded from Chiapas, Oaxaca and Veracruz by DELOYA (1994).

**Bionomies.** This is one of the most common and widely distributed species of *Ataenius*, collected throughout the year to light traps and in cattle dung.

*Ataenius nugator* HAROLD

**Ataenius nugator** HAROLD, 1880:41, et Auctt.; STEBNICKA 2001a: 263-264, figs 5-6. Type locality: “Medellin, Columbia”.

**Distribution.** Mexico, Central America, Colombia, Brazil, Bolivia, Venezuela.


Previously recorded from Chiapas, Oaxaca and Veracruz by STEBNICKA (2001a).

**Bionomies.** Collected in January-August to light traps in a wet tropical montane and lowland forest, sifted from shrubs litter, coffee forest litter and cacao pod litter.

*Ataenius cribrithorax* BATES

**Ataenius cribrithorax** BATES, 1887: 95-96 et Auctt.; STEBNICKA 2001a: 264, figs 7-8. Type locality: Mexico, Cordoba.

**Distribution.** Central America to Panama, West Indies.


Previously recorded from Veracruz by STEBNICKA (2001a).

**Bionomies.** Collected in January – August to light traps, often found in human excrements.

*Ataenius chapini* HINTON

**Ataenius chapini** HINTON, 1938b: 3, fig.6, et Auctt.; STEBNICKA 2001: 265-266, figs 11-12. Type locality: Mexico, Tejupilco, Temascaltepec.

**Synonym:** *Ataenius frankorum* DELOYA, 2000.
Distribution. Mexico, Guatemala, Honduras, Costa Rica, Panama.

Specimens examined (95) – Chiapas: Cinco Cerros 860 m, 9 VI. 1990; El Chorreadero, 8 km E Chiapa de Corzo 590 m, 25 V. 1990; Laguna Belgica, 16 km NW Ocozocoautla 970 m, 7 VI. 1990, H. & A. HOWDEN (HAHC); 10 km W Tuxtla Gutierrez, 23 VI. 1989, P. K. LAGO & E. ZUCCARO (UMS). Veracruz: La Mancha, 21 VII. 1999, (adults with larvae), E. GALANTE (CEUA).

Previously recorded from Chiapas and Veracruz by STEBNICKA (2001a).

Bionomics. Collected in March – August in human excrements and in litter of thorn shrubs.

*Ataenius communis* HINTON

*Ataenius communis* HINTON, 1936b: 421-425, figs 8-10.- STEBNICKA 2001a: 266-267, figs 14, 15. Type locality: Panama, Canal Zone, Ciricito.

Distribution. Central America, Colombia, Venezuela, Trinidad. New record for Mexico.


Bionomics. The species has a wide range, usually collected from May to December in human excrements and to light traps.

*Ataenius opatrinus* HAROLD

*Ataenius opatrinus* HAROLD, 1867a: 82, et Auctt.; STEBNICKA, 2001a: 273-274, figs 3, 37-38, 52. Type locality: Brazil, Bahia.


Distribution. Florida, Central and South America.


Bionomics. Collected in January – March and June – December to light traps in forest, found in human excrements. Larval stages were described by VERDÚ & GALANTE (1999).

*Ataenius perforatus* HAROLD


Distribution verified: Central and South America.


Previously recorded from Veracruz (Cordoba) by BATES (1887).

Bionomics. Collected in almost all months in horse dung and to light traps in subtropical forest.

*Ataenius holopubescens* HINTON

*Ataenius holopubescens* HINTON, 1938a: 124-126, figs 5.8; STEBNICKA 2003a: 232, figs 5, 23-24, 27. Type locality: Mexico, Tejupilco.


Specimens examined (21) – Chiapas: Cinco Cerros 860 m, 9 VI. 1990, H. & A. HOWDEN (HAHC, ISEA); Mpio Cintalapa, 5 mi N Tenochtitlan, 3 VIII. 1991, KOVARIK & PHILIPS (FSCA); El Aguacero. 16 km W Ocozocoautla 680 m, 5 VI. 1990, H. & A. HOWDEN (CEUA, CMN).

Previously recorded from Puebla, Chiapas and Veracruz by DELOYA (1994).

Bionomics. This myrmecophilous species was collected in May – August, sifted from detritus remnants in the vicinity or in the nests of *Atta mexicana*. 
Psammodiini

Neopsammodius veraecrucis (BATES)  

(Fig. 12)


Distribution: Mexico.


Bionomics. Specimens were collected in sheep droppings.
**Neopsammodius werneri** (CARTWRIGHT)

(Fig. 13)


Distribution. USA (Texas), Mexico, Honduras.


Previously recorded from Veracruz by RAKOVIČ (1986).

**Bionomics.** Specimens were collected in cattle dung.

**Neopsammodius culminatus** (BATES)

(Fig. 14)


Distribution. Mexico.


**Bionomics.** Specimens were collected in sheep droppings.

**Trichiorhyssus cristatellus** (BATES)

*Rhyssus cristatellus* BATES, 1887: 102.


Distribution: Mexico, Guatemala, El Salvador.

Specimens examined (2) – Chiapas: Cinco Cerros 860 m, 9, 30.VI.1990, H. & A. HOWDEN (HAHC, ISEA).

Previously recorded from Chiapas and Veracruz by GORDON & CARTWRIGHT (1980).

**Bionomics.** Unknown.

**Aphodiini**

In this tribe, the specimens collected mostly by the staffs of CIBIO are listed. Redescriptions of some species and data on their distribution are adequately covered by DELLACASA M. et al. (1998, 2002).

**Oxyomus setosopunctatus** SCHMIDT

*Oxyomus setosopunctatus* SCHMIDT, 1911: 15.- DELLACASA M. & STEBNICKA 2001: 32-34, figs 2-4, 7. Type locality: “Mexico”.

Distribution. Mexico.


Previously recorded from Veracruz by DELLACASA M. & STEBNICKA (2001).

**Bionomics.** Unknown.
Cephalocyclus villosipes (HAROLD)

Aphodius villosipes HAROLD, 1862: 384. Type locality: Mexico.


Distribution. Mexico.


Previously recorded from Oaxaca by Bates (1887).

Bionomics. Collected in a great number of specimens to pitfall traps baited with fresh cattle dung.

Cephalocyclus hogei (BATES)

Aphodius hogei BATES, 1887: 80. Type locality: Mexico, Las Vigas.


Distribution: Mexico, Guatemala.

Specimens examined (4) – Veracruz: Cruz Blanca (Xalapa) 2300 m, 17.VII.2000, J. R. VERDÚ (CEUA, ISEA).

Previously recorded from Veracruz by DELLACASA M. et al. (2002).

Bionomics. Specimens examined were collected in sheep dung on grassland. Populations of C. hogei and reproductive features were discussed by CRUZ et al. (2002).


Remark. This species is here included through the courtesy of Marco DELLACASA who collected the specimens.

Aphodius (Gonaphodiellus) bimaculosus SCHMIDT

(Fig. 20 a, b)

Aphodius bimaculosus SCHMIDT, 1909: 19. Type locality: “Mexico”.

Aphodius (Gonaphodiellus) bimaculosus: SCHMIDT 1913: 134; 1922: 120-121; DELLACASA 1988: 98 (catalogue).

Aphodius (Gonaphodiellus) maculosus: SCHMIDT 1916: 114 (lapsus calami).

Distribution: Mexico, Guatemala.

Specimens examined (33) – (new state records) Chiapas: Tapachula, El Porvenir, 11.IV.2002, J. R. VERDÚ (CEUA). Oaxaca: 17 km N Villa Diaz Ordaz, 2750 m, 7.IX.1990, R. BARANOWSKII; 16 km S Lom a Morillo nr Garela, 15.IX.1994, R. BARANOWSKII; 18 km N Oaxaca City, 2400 m, 17.XI.1989, R. BARANOWSKII; 45 km NE Putla de Guerrero, 2400 m, 2.IX.1990, R. BARANOWSKII (ISEA, UZIL).
**Biomics.** The specimens were sifted from leaf litter in pine-oak forest and taken from cow dung in cloud forest.

**Remarks.** *Aphodius hoffmanni* ISLAS (1945:451-452, fig. 2) described from Chiapas (Aldea Coronado) is most probably conspecific with *A. bimaculosus*.

*Aphodius (Gonaphodiellus) xalapensis* sp. n.  
(Figs 15, 21 a, b, 23)

Material. Holotype male, Mexico, **Veracruz**, Las Vigas (Xalapa), 18.VII.2000, light trap in *Quercus* forest, 2000 m, J. R. VERDÚ, in CEUA. Paratypes (2) same data as holotype, in CEUA, ISEA.

**Description.** Length 5.4-5.6 mm, greatest width 2.3-2.4 mm. Body elongate, convex, glabrous, shiny; colour dark brown, clypeal margin, pronotal sides and elytral base light brown, legs yellowish brown. Head converging anteriorly, clypeal median emargination shallow, edge obtusely rounded on each side of emargination and nearly straight toward small, right-angled gena; surface uniformly finely punctured, frontal suture indicated by line. Pronotum transverse, base sinuate lacking marginal line, posterolateral angles weakly truncate and finely margined; pronotal punctures everywhere fine, similar to those of head, generally separated by about two diameters. Scutellum triangular, shiny, impunctate. Elytra with minute humeral denticles; striae very fine, shallow, their punctures weakly crenate inner margins of intervals; all intervals flat from base to apex, surface punctures scattered, finer than those of pronotum. Ventral surface shiny; mesosternum with median gibbosity and pale hair on each side of gibbosity; metasternum convex, midline feebly impressed, surface punctures same size and spacing as those of elytral intervals; abdominal sternites with sutures convex and few scattered punctures, penultimate sternite and pygidium with 6-8 long pale hairs. Protibial outer teeth moderate in size, apical spur slender, acute in both sexes; meso- and metatibiae with weak transverse ridges, apex fringed with unequal setae, apical spurs slender; tarsi long; basal tarsomere of metatarsus one-fourth longer than upper tibial spur and subequal to following tarsomeres together. Epipharynx as in Fig. 23. In male, pronotum less convex than in female; genitalia as in Fig. 21 a, b.

**Affinity.** *Aphodius xalapensis* is closely related to *A. bimaculosus* SCHMIDT; it differs from that species primarily by having the head distinctly trapezoid with finer punctures, the elytra shiny lacking preapical spots and the posterolateral angle of pronotum simply truncate, not emarginate. The male genitalia of both species also differ in shape (Figs. 20 a, b, 21 a, b).

*Aphodius (Gonaphodiellus) opisthius* BATES

*Aphodius opisthius* Bates, 1887: 92, et Auctt. Type locality: Veracruz, Cerro de Plumas.


Distribution: Mexico, Guatemala, Costa Rica, Honduras.

Specimens examined (8) – **Oaxaca**: 12 km N Oaxaca City, 1900 m, 5.X.1990, R. BARANOWSKI (ISEA); **Veracruz**: El Fresno (Xalapa) 1800 m, 18.VII.2000, J. R. VERDÚ (CEUA).

Previously recorded from Oaxaca and Veracruz by DELLACASA M. et al. (2002).

**Biomics.** Specimens examined were collected to pitfall trap near stream in tropical montane forest.

*Aphodius (Blackburneus) guatemalensis* BATES

*Aphodius guatemalensis* Bates, 1887: 88, et Auctt. Type locality: Guatemala, Quezaltenango.

*Aphodius (Emadiellus) guatemalensis*: DELLACASA 1988: 137 (catalogue).

Distribution: Mexico, Guatemala, Costa Rica, Panama.


Previously recorded from Oaxaca by DELLACASA M. et al. (2002).

*Bionomics*. Specimens examined were collected in cow and sheep dung. Populations and reproductive features of *Aphodius guatemalensis* were discussed by CRUZ et al. (2002).

*Aphodius* (*Blackburneus*) *charmionus* BATES

*Aphodius charmionus* BATES, 1887: 89, et Auctt. Type locality: Mexico, Veracruz, Jalapa.

Distribution. Central America.
Previously recorded from Veracruz by DELLACASA M. et al. (2002).

Bionomics. The specimens were collected to pitfall traps.

Aphodius (Blackburneus) saylori HINTON

Aphodius saylori HINTON, 1934b: 192. Type locality: Mexico, Temascaltepec, Real de Arriba 6000 ft.

Distribution: Mexico.

Bionomics. Specimens examined were collected in cow and sheep dung.

Aphodius (Agrilinus) sallei HAROLD

Aphodius sallei HAROLD, 1863: 336, et Auctt.. Type locality: Mexico, Cordoba.
Aphodius (Bodilus) sallei: DELLACASA 1988: 194 (catalogue); DELLACASA M. et al. 1998: 159-160, figs 41-44.


Distribution. USA, Central America, West Indies.

Recorded from southern states of Mexico by DELLACASA M. et al. (2002).

Bionomics. Specimens examined were collected to pitfall traps baited with cattle dung.

Aphodius (Agrilinus) chiapasensis sp. n.

Material. Holotype male, Mexico, Chiapas, Mozotal, 10.IV.2002, J.R. VERDÚ, in CEUA. Paratype female, same data as holotype, in CEUA.

Description. Length 3.8-4.0 mm, greatest width 1.8-2.0. Body oval, robust, microreticulate and moderately shiny; piceous with yellow markings. Head trapezoid, piceous mediately with wide yellow spot on each side; median clypeal emargination shallow, edge obtusely rounded on each side of emargination, straight toward small rounded gena; frontal suture indicated by arcuate, slightly convex line, surface punctures fine but deep, separated by about one diameter. Pronotum convex, sides widely yellow with dark spot medially, piceous disc with two close yellow spots at base; pronotal lateral edge finely margined, base slightly sinuate lacking marginal line; surface everywhere punctured, punctures along anterior margin same size as those of vertical band of head, remained surface with moderate in size, evenly distributed punctures separated by their diameter. Scutellum widely triangular, yellow with darker margins and few punctures. Elytra arcuate, convex, minutely setigerous in apical third, with following dark markings: suture dark, intervals 2, 4 each with two median spots, intervals 6-7 with wide long spot joining apical spot of interval 4, interval 8 with two spots in anterior half; elytral humeral denticles minute, striae rather fine with round

vague punctures, intervals flat from base to apex, distinctly finely punctured along striae. Ventral surface alutaceous; disc of metasternum convex with few moderate punctures; abdominal sternites punctured with row of short pale setae. Legs moderate in length; meso- and metatibiae with well developed transverse ridges and apical fringe of short, equal setae; tarsi relatively long, basal tarsomere of metatarsus one-third longer than upper tibial spur and shorter than three next tarsomeres combined. Epipharynx as in Fig. 24. In male, pronotum wider and less convex than in female; genitalia as in Fig. 22 a, b.

**Affinity.** *Aphodius chiapasensis* is most similar to *A. ornatus* SCHMIDT, *A. multimaculatus* HINTON and *A. azteca* HAROLD. It differs from these species by having the base of pronotum with no trace of marginal line and the pronotal punctures uniform in size and spacing. A variation in colour pattern undoubtedly occurs in all the species mentioned. Although the type specimen of *A. Multimaculatus* HINTON was not studied by the authors, it seems likely that it is conspecific with *A. ornatus* SCHMIDT.

*Aphodius (Diapterna) dugesi* BATES

*Aphodius dugesi* BATES, 1887: 83. Type locality: Mexico, Guanajuato.

*Aphodius (Diapterna) dugesi*: DELLACASA G. 1986: 234-235, figs 25, 208-211.

*Diapterna dugesi*: DELLACASA M. et al., 2002: 158.

Distribution: Mexico.


Previously recorded from Oaxaca by DELLACASA M. et al. (2002).

**Bionomics.** Specimens examined were collected at *Atta* nests.

*Aphodius (Nialus) nigrita* (FABRICIUS)

*Aphodius nigrita* FABRICIUS, 1801: 73, et Auctt. Type locality: Mauritius.

*Aphodius (Nialus) nigrita*: SCHMIDT 1913: 128.


Distribution. USA, Central and South America, West Indies, Africa, Madagascar.


Previously recorded from south Mexico by DELLACASA M. et al. (2002).

**Bionomics.** Specimens examined were collected in sheep dung.

*Aphodius (Nialus) lividus* (OLIVIER)

*Scarabaeus lividus* OLIVIER, 1789: 86. Type locality: France, Vincennes.


Distribution. All zoogeographical regions.


Recorded from southern states of Mexico by DELLACASA M. et al. (2002).

**Bionomics.** Specimens examined were collected in cow dung.
Rhyparinae

Termitodius chaki REYES & MARTINEZ

(Fig. 17)


Distribution: Mexico.

Specimens examined (3) – Oaxaca (new state record): 26 km E Teotitlan del Camino, 2250 m, 26.IX.1990, R. BARANOWSKI (ISEA, UZIL).

Bionomics. The species is very little known, found in the nest of termites Coptotermes testaceus (L.). The specimens examined were sifted from leaf litter in mixed oak forest.

Cartwrightia islasi CARTWRIGHT


Distribution: Mexico, El Salvador, Guatemala.


Recorded from Veracruz by CARTWRIGHT (1967).

Bionomics: This myrmecophilous species was taken from a large detritus cavity of Atta cephalotes (L.).

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