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ONTHOPHAGUS YUCATANUS, A NEW SPECIES OF THE CLYPEATUS GROUP FROM MEXICO AND GUATEMALA (COLEOPTERA: SCARABAEIDAE)

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ABSTRACT
A new Mexican and Guatemalan species, Onthophagus yucatanus, belonging to the Clypeatus group is described and illustrated. The distinctive characters of this species, its geographical distribution, and habits are described.

Key Words: Scarabaeidae, Onthophagus, New species, Mexico, Guatemala

RESUMEN
Se describe e ilustra una nueva especie mexicana y guatemalteca, Onthophagus yucatanus, perteneciente al grupo Clypeatus. Se comentan sobre sus caracteres distintivos, así como su distribución geográfica y hábitos.

Translation provided by author.

The Clypeatus group of the worldwide genus Onthophagus Latreille, represents a heterogeneous and taxonomically difficult group of American species. According to Zunino & Halffter (1997) the Clypeatus group is formed by three species complexes, named Clypeatus, Mirabilis, and Nasicornis. However, delimitation of these complexes, and of all the groups of this genus, is vague and requires clarification based on phylogenetics approaches. At present we prefer, as did Howden & Gill (1993) and Kohlmann & Solís (2001), to exclude the species of the Dicranius and Mirabilis groups (sensu Howden & Gill 1993). In addition, we also exclude the species of the Nasicornis complex (sensu Zunino & Halffter 1997) from the Clypeatus group, primarily on the basis of the lack of tubercles and horns on the vertex, at least in the males.

Thus, the Clypeatus group would include only the following species: O. clypeatus Blanchard from Colombia, Ecuador, Peru, Bolivia, and French Guyana; O. rhinophyllus Harold from Venezuela and Colombia; O. rhinolophus Harold from Mexico and Guatemala; O. belorhinus Bates from Mexico and Guatemala; O. xanthomerus Bates from Colombia, Ecuador, and Peru; O. praecellens Bates from Costa Rica, Panama, and Colombia; O. dicianoides Balthasar from Ecuador; O. lojanus Balthasar from Ecuador; O. maya Zunino from Mexico and Belize; O. praecellens Howden & Gill from Costa Rica and Panama; O. andersoni Howden & Gill from Costa Rica; O. luismargaritorum Delgado from Mexico; O. veracruzensis Delgado from Mexico; O. coriaceomargrosus Kohlmann & Solís from Costa Rica; O. gra-
Instituto de Ecología, A. C. (Veracruz, Mexico). Paratypes (116 ♂, 132 ♀) same data as holotype, except: 19-VIII-2001 (1 ♂, 6 ♀); 20-VIII-2001 (14 ♂, 6 ♀); 17-18-IX-2001, 18:00-09:00 hrs (1 ♂); 18-19-IX-2001, 18:00-09:00 hrs (4 ♂, 10 ♀); 19-IX-2001, 09:00-18:00 hrs (14 ♂, 7 ♀); 19-20-IX-2001, 18:00-09:00 hrs (3 ♂, 7 ♀); 17-X-2001, 09:00-17:30 hrs (25 ♂, 28 ♀); 17-18-X-2001, 17:30-08:00 hrs (10 ♂, 9 ♀); 16-XI-2001, 08:30-17:30 hrs (6 ♂, 5 ♀); 16-17-XI-2001, 17:30-09:00 hrs (4 ♂); 17-XI-2001, 09:30-17:30 hrs (2 ♂, 6 ♀); 17-18-XI-2001, 17:30-07:00 hrs (2 ♂); 15-16-XII-2001, 17:00-08:30 hrs (1 ♂, 2 ♀); 16-XII-2001, 08:30-17:20 hrs (2 ♂, 5 ♀); 13-I-2002, 09:00-17:30 hrs (1 ♂, 3 ♀); 11-12-II-2002, 17:15-08:30 hrs (1 ♂, 1 ♀); 12-II-2002, 08:30-17:30 hrs (3 ♂, 4 ♀); 12-II-2002, 17:30-09:00 hrs (2 ♂, 2 ♀); 13-II-2002, 09:00-19:15 hrs (1 ♂); 13-14-II-2002, 17:35-08:00 hrs (1 ♂); 11-12-III-2002, 17:30-09:30 hrs (1 ♂); 12-III-2002, 09:30-18:00 hrs (3 ♂, 2 ♀); 13-III-2002, 09:00-18:00 hrs (1 ♂, 1 ♀); 13-14-III-2002, 18:00-09:00 hrs, (3 ♂, 1 ♀); 19-IV-2002 (1 ♂); 12-V-2002, 10:00-18:30 hrs (3 ♂, 2 ♀); 14-15-V-2002, 18:30-10:00 hrs (1 ♂, 1 ♀); 10-12-VI-2002 (2 ♀); 10-12-VII-2002, 18:30-08:30 hrs (3 ♂, 5 ♀); 13-V-2002, excremento de perro (1 ♀); 20-VIII-2001-17-IX-2001 NTP80 (1 ♂); 17-IX-2001-17-X-2001, NTP80 (1 ♂); 17-X-2001-16-XI-2001, NTP80 (1 ♂); 16-XI-2001-16-XII-2001, NTP80 (1 ♂); 13-II-2002-11-III-2002, NTP80 (1 ♂); 15-V-2002-12-IV-2002, NTP80 (4 ♂); 12-VI-2002-12-VII-2002, NTP80 (1 ♂); 12-VII-2002-17-VIII-2002, NTP80 (1 ♂). “GUATEMALA: Petén, Aldea Carmelita, Campamento Chuntuquí, 24-25-II-1996, bosque alto, 17°32′N 90°07′W, E. Cano col.” (2 ♂, 1 ♀); same data as anterior, except: Campamento El Naranjo, 25-II-1996, heces de jaguar, E. Cano col. (1 ♂); San Miguel la Palotada, 16-III-1999, M. Jolón col. (1 ♂, 1 ♀); San Miguel la Palotada, 7-VIII-1999, M. Jolón col. (1 ♀). Twenty paratypes deposited in each one of the following collections: Florida State Collection of Arthropods (Gainesville, United States), Canadian Museum of Nature (Ottawa, Canada) and Instituto de Biología de la Universidad Nacional Autónoma de México (Mexico City); 151 paratypes deposited in the Instituto de Ecología, A. C. (Veracruz, Mexico); seven paratypes deposited in the Universidad del Valle de Guatemala (Guatemala City); and ten paratypes deposited in each one of the following collections: Cauahtémoc Deloya Collection (Veracruz, Mexico), Lizandro N. Peraza Collection (Yucatán, México) and Leonardo Delgado Collection (Mexico City).

Description

Holotype male (Fig. 1, 2). Length: 5.4 mm, maximum width (at basal third of elytra): 3.3 mm. Small, ovate, dorsally glabrous; dorsal color metallic dark green with very slight cupreous reflections on head, anterolateral regions of pronotum dull, venter with same color as dorsum but with cupreous reflections more pronounced, femora and tibiae completely reddish green, tarsi reddish. Clypeus triangular, with apical third obliquely reflexed, apex acuminate, sides slightly and evenly sinuated to the genae; clypeus moderately concave, fronto clypeal region feebly convex, frons flattened, genae slightly convergent forward; vertex with two slender, divergent horns, bases of horns well separated and arising at level of posterior portion of eyes, horns slightly below the top of pronotum. Head with punctures small, shallow and sparse, shallower and finer towards apex and vertex.

Pronotum with anterior right angles and somewhat projected, lateral borders strongly curved in front of middle, posterior angles almost evenly rounded to base. Disc and posterolateral portions of pronotum swollen; anterior third declivous with two longitudinal, obtuse tubercles in front of disc, tubercles slightly divergent and separated by a shallow concavity widened forward; tubercles and lateral portions of pronotum delimiting two very feeble concavities. Pronotum with moderately large, ringed punctures, denser and larger at anterior angles; lateral concavities and anterior angles with finely reticulate punctuation; anterior concavity almost smooth; pronotal base finely margined with a row of small punctures. Elytra with evident humeral and apical calli; elytral striae marked by double line crenulated by medium-size punctures; intervals with fine, shallow punctures and rugosities, denser to lateral intervals.

Metasternum convex with dense, ringed punctures. Abdominal sternites shagreened, with a row of small punctures adjacent to anterior margin, each puncture bearing a yellowish seta; sixth abdominal sternite narrowed medially. Pygidium strongly convex to apical third, surface with large and deep punctures moderately dense, each puncture bearing a small, yellowish seta. Protibiae with inner border evenly curved, outer border quadrate and teeth situated at distal middle, apex with inner projection bearing a brush of setae; apical spur elongate and curved outside. Apex of meso and metatibiae with a row of small spinules intermixed with long setae. Genitalia with parameres strongly projected ventrally, dorsally flattened and with apices parallel.

Allotype female (Fig. 1, 4). Length: 5.3 mm, maximum width (at basal third of elytra): 3.3 mm. Differs from holotype in the following respects: anterolateral regions of pronotum scarcely dull; clypeus semitrizeozoidal, slightly emarginated at middle, anterior margin very scarcely reflexed and with sides almost straight to the genae; frontoclypeal region carinated from side to side; frons with two rounded, transversal tubercles situated slightly behind of anterior border of eyes; vertex without horns; clypeus with strongly...
rugose punctation, genae with coarse punctures; pronotum with anterior angles not projected, almost evenly convex, only with a small, central concavity adjacent to anterior margin; pronotum with finely reticulate punctuation restricted to anterior angles; sixth abdominal sternite not narrowed medially; protibiae slightly broader and without inner projection and brush of setae; apical spur longer.

Variation in the series of paratypes (113 ♂♂, 128 ♀♀).—Length: 3.5-5.6 mm, maximum width (at basal third of elytra): 2.3-3.6 mm. The dorsal color varies from dark green to blue; size of punctures on elytra varies moderately in both sexes; in
the smaller males the clypeus is scarcely reflexed and the cephalic horns are reduced to small, transverse tubercles, the pronotum is nearly evenly convex, with only a small concavity flanked by two small rounded tubercles; in the smaller females the pronotum is evenly convex, lacking anterior concavity.

Type Locality
Mexico, Yucatán, Tzucacab, Tigre Grande (19°42′36″N 89°02′28″W).

Etymology
The specific epithet derives from Yucatán, the name of the Mexican state where this species was collected.

Taxonomic Remarks
*Onthophagus yucatanus* shares several characters with *O. luismargaritorum*. Both species are distinguished from the remaining species in the *Clypeatus* group by the following combination of characters: major males with clypeus obliquely reflexed and acuminated (not rectangular, rounded or with a projection “T” shaped), the horns on the vertex arising between the eyes (not arising behind the eyes) and the protibiae short and wide (not elongate and slender), and the females with the tubercles on the vertex situated at level of the anterior border of eyes (not at level of the posterior border of eyes), and the pronotum without tubercles.

The two species are separated by the following characters: males and females of any size of *O. yucatanus* by the dorsal color metallic dark green or blue with very slight cupreous reflections on head and larger and denser ringed punctures of the pronotum, not with dorsal color strongly metallic cupreous green and small and sparse ringed punctures of pronotum as in *O. luismargaritorum*; major males of *O. yucatanus* with the central tubercles of pronotum obtuse and with the central concavity widened to anterior margin (Fig. 1, 2), not with tubercles rounded and the central concavity with same wide from tubercles to anterior margin (Fig. 1, 3) and major females of *O. yucatanus* with a small concavity adjacent to anterior margin of pronotum, not with pronotum evenly convex as in females of *O. luismargaritorum*.

Distribution
*Onthophagus yucatanus* is known from the type locality, situated in the central region of the Península de Yucatán, Mexico, and from the region of Petén, Guatemala. Both areas present tropical moist subdeciduous forest with low altitude. Extensive sampling in other localities in the northern peninsula with dry deciduous forests produced no specimens of this species.

Habits
At the type locality, specimens of *O. yucatanus* were caught with traps baited with human excrement and with traps baited with rotting squid. Two hundred and thirty one specimens were obtained in the coprotraps and only 11 in the necrotraps. This feeding preference contrasts with that of most species of the *Clypeatus* group, which are captured primarily at rotting fruit and carrion. Only *O. luismargaritorum* shares the same preferences, with 83% of the specimens known of this species collected at human and cow dung, and only 17% with necrotraps (Delgado 1995).

Although many specimens were collected during the day (124) in comparison to those caught during the night (75), more data are needed to define the daily activity of this species.

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