



Review of the genus *Bubaces* (Hemiptera: Heteroptera: Rhyparochromidae: Lethaeini) with descriptions of three new species, new distributional records, and key to species

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Abstract

The genus *Bubaces* Distant, 1893 is reviewed and three new species are described: *B. gloriosus* **sp. nov.**, from Costa Rica (Puntarenas Province) and Mexico (Campeche, Chiapas, Guerrero, Oaxaca, and Veracruz), *B. occidentalis* **sp. nov.**, from Mexico (Colima, Guerrero, Jalisco, and Michoacan) and *B. rostralis* **sp. nov.**, from Mexico (Quintana Roo). Additional state faunistic records of the previously described species *B. castaneus*, *B. convergens*, *B. enatus* and *B. uhleri* are provided. Photographs of the dorsal habitus, the male genital capsule, and the parameres are included, as well as close up photos of the metathoracic scent glands of both sexes. A key to species of the genus is provided.

Key words: Heteroptera, Lygaeoidea, Lethaeini, *Bubaces*, revision

Introduction

Rhyparochromidae is the most diverse group of Lygaeoidea, with more than 2150 species (Dellapé & Henry 2019). The family contains two subfamilies, Plinthisinae and Rhyparochrominae, the latter with 14 tribes including the tribe Lethaeini (Henry 1997, and Dellapé et al. 2015). The Lethaeini includes 41 genera and 188 species worldwide (Dellapé & Henry 2019) and shows its greatest diversity in the tropical and subtropical regions. It is one of the most diverse tribes in the Neotropics, with 13 genera and 36 known species (Li et al. 2011, Dellapé et al. 2015). The genus *Bubaces* Distant, 1893, belongs to the tribe Lethaeini and is characterized by having the body strongly shiny dorsally and almost so ventrally; the head with two iridescent patches, one on either side of the midline and close to the neck; the pronotum trapeziform, narrowing anteriorly, with a pair of trichobothria on the anterolateral region; the eyes small, without two long, forward curving setae; the juga well-developed; and the fore femora slightly incrassate, each with only one short, stout, subdistal spine. Dorsal and ventral surfaces are glabrous or clothed with long upstanding hairs. The metathoracic scent gland peritremes are sexually dimorphic, broad, and raised above the pleural surfaces. Each ostiolar peritreme has the apex broadly recurved, or with very wide curvature resembling a “question mark” in males (Fig. 13); on the other hand, it is elongate, somewhat broadly “S”-shaped, slightly recurved anteriorly, and ending in a blunt tip in females (Fig. 14) (Brailovsky 1981; O’Donnell 1991, 2006).

The dorsal and ventral coloration, the general morphological characters (especially genital structures), and the shape of metathoracic peritremes in each sex are essentially the same for all known species which can complicate identifications. In this study, the combination of the pubescence, the body size, the ocelli absent or present, the length of the rostrum, the coria with or without circular pale yellowish subapical spots, and the length of the hemelytra, allow with certainty to confirm the specific identifications. The series of photographs from the dorsal and lateral view complement this study.

The genus is distributed in Argentina, Brazil, Costa Rica, Greater and Lesser Antilles, Mexico, Panama and Venezuela, and currently comprises five species: *B. castaneus* Distant, 1893; *B. convergens* Brailovsky, 1981; *B. enatus* Brailovsky, 1981; *B. heissi* O’Donnell, 2006; and *B. uhleri* (Distant, 1901). Three new species, *B. gloriosus* from Mexico and Costa Rica, and *B. occidentalis* and *B. rostralis* from Mexico are described. New distributional records for *B. castaneus*, *B. convergens*, *B. enatus* and *B. uhleri* are included. In addition, a key to species is given.

Material and methods

The following abbreviations are used for the institutions cited here: Natural History Museum, London, England (BMNH); Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica (INBIO); Colección Entomológica del Instituto de Ecología, A. C., Xalapa, Veracruz, México (INECOL); Instituto de Biología, Universidad Nacional Autónoma de México (UNAM); National Museum of Natural History, Smithsonian Institution, Washington, D. C., USA (USNM). The measurements were obtained using an ocular micrometer. All measurements are in mm. External and internal genital structures were studied with a stereoscopic microscope (model Zeiss Stereo Discovery 8). Images were taken with a Nikon D200 camera. To remove soft tissues, genitalia were macerated in hot 10% solution of KOH for 3 to 5 minutes, rinsed in distilled water, and dissected under a stereoscopic microscope Leica MZ8.

Taxonomy

Bubaces Distant

Bubaces Distant, 1893: 409.

Type species: *Bubaces castaneus* Distant 1893. Monobasic.

Redescription. Body elongate, surface strongly shining, glabrous or pronotal disk, clavus and corium clothed with long upstanding hairs. **Head.** Dorsally impunctate and ventrally impunctate or with few scattered punctures; wider than long, non-declivent; vertex flat or slightly convex; juga carinate; preocular area elongate; eyes large, protuberant; ocelli absent or close to eyes; antennal segments I-IV clothed with short decumbent pubescence; antennal segment I exceeding tylus by more than half its length; dorsum with two iridescent spots, one on either side of midline; each spot consists of a series of parallel ridges; ventrally slightly swollen; rostrum elongate, reaching posterior border of metacoxae or extending to abdominal sternite IV or anterior border of abdominal sternite VI; rostral segment I short, extending just beyond level of middle eye or exceeding base of head. **Thorax.** Pronotum wider than long, trapeziform, narrowing anteriorly and bilobed into anterior and posterior lobes with shallow transverse constricted impression, not deeply incised; anterior pronotal lobe almost flat, with prominent punctate collar, set off from remainder of pronotum by an incised groove; collar broadening slightly mesally; anterolateral margins emarginate, sinuate; pronotal trichobothrium present anteriorly on lateral pronotal margin; humeral angles rounded; calli flat, impunctate; posterior pronotal lobe with shallow punctures; pronotal trichobothrium removed from the anterolateral corner of pronotum, placed instead on lateral margin about 1/3 to 1/2 along the length of the anterior lobe. Metathoracic scent gland peritremes sexually dimorphic, broad, raised above pleural surfaces. **Male.** Each ostiolar peritreme with apex broadly recurved, or with very wide curvature resembling a “question mark” (Fig. 13). **Female.** Each ostiolar peritreme elongate, shaped like a broad “S”, slightly recurved anteriorly, ending in a blunt tip (Fig. 14); evaporative areas each covering all of mesoepimeron but not extending dorsally along junction with metapleuron. **Legs.** Fore femora not incrassate, not much more swollen than middle and hind femora, each armed ventrally with one short, stout, subdistal spine; femora with or without tubercles; all tibiae sparsely spined. **Scutellum.** Longer than wide; punctate mesally and laterally, with V-shaped impunctate elevated area. **Hemelytra.** In macropterous forms, reaching apex or extending beyond apex of last abdominal segment; in submacropterous (coleopteroid type) form reaching posterior border of abdominal segment VI; each clavus with two regular rows of punctures, with an irregular (single proximally, double distally) row between them; coria irregularly punctate, except row of punctures parallel to claval-corium suture uniformly alineate; hemelytral membranas each with four distinct veins, without cross veins. **Abdomen.** Sparsely clothed beneath with short, decumbent hairs, or with fine, longer hairs. **Male genitalia.** Genital capsule with small tooth along anterior margin of dorsal opening (hard to see). Paramere. Inner and outer surface almost at same level and apically blunt; body wide (Figs. 15–22).

Differential diagnosis. *Bubaces* is related to *Xestocoris* Van Duzee by having the dorsal surface of body strongly shiny, pronotum trapeziform, narrowing anteriorly, head basally with two iridescent spots, one on either side of midline, and fore femora slightly incrassate. In *Xestocoris*, the body dorsally is densely clothed with long hairs, and the eyes have two long, forward-curving setae. In *Bubaces*, the body dorsally is glabrous or clothed with a few long, scattered hairs, and the eyes lack the two long, forward-curving setae.

At present, *Bubaces* includes five described species, all confined to the Neotropics, ranging from Mexico to Argentina, and including the West Indies: *B. castaneus* Distant 1893, *B. convergens* Brailovsky 1981, *B. enatus* Brailovsky 1981, *B. heissi* O'Donnell 2006, and *B. uhleri* (Distant 1901).

Brailovsky (1981) divided the genus into two groups of species. The “*castaneus*” group contains species which are longer than 4.70 mm., the ocelli are present, the rostrum is longer, reaching onto abdominal sternite IV and sometimes to the posterior border of sternite VI, and rostral segment I exceeding beyond the base of the head. Included in this group are the following species: *B. castaneus*, *B. convergens*, and *B. heissi*. In the “*uhleri*” group, the species are shorter than 4.20 mm., the ocelli are absent, the rostrum is shorter, reaching only to the posterior border of the metasternum, and rostral segment I extends just beyond the level of middle of the eye. This group includes *B. enatus*, and *B. uhleri*.

Key to the species of *Bubaces*

- 1 Body shorter than 4.30 mm; ocelli absent; rostrum shorter, reaching posterior border of metasternum; rostral segment I reaching middle third of eye 2
- Body longer than 4.70 mm; ocelli present; rostrum extending beyond posterior border of metacoxae; rostral segment I exceeding base of head 3
- 2 Coria each with circular, pale yellowish, subapical spot; femora tuberculate; hemelytra submacropterous, with membranes reaching posterior third of abdominal segment VI (Figs. 7, 12). *B. uhleri* (Distant, 1901)
- Coria without circular, yellow subapical spots; femora not tuberculate; hemelytra macropterous, with membranes reaching posterior border of last abdominal segment (Fig. 3) *B. enatus* Brailovsky, 1981
- 3 Apex of each male ostiolar peritremes rounded, tightly recurved back upon itself; female ostiolar peritremes strongly bent. *B. heissi* O'Donnell, 2006*
- Apex of each male ostiolar peritremes wide open, resembling a “question mark”; female ostiolar peritremes not strongly bent 4
- 4 Each clavus and corium glabrous (Fig. 8) 5
- Each clavus and corium clothed with long, erect hairs (Fig. 11) 6
- 5 Coria each without circular yellow to creamy yellow subapical spots (Figs. 1, 8) *B. castaneus* Distant, 1893
- Coria each with a prominent circular yellow to creamy yellow subapical spots (Fig. 4, 10) *B. gloriosus* sp. nov.
- 6 Coria without circular yellow to creamy yellow subapical spots (Figs. 5, 11) *B. occidentalis* sp. nov.
- Coria each with a prominent circular yellow to creamy yellow subapical spots 7
- 7 Rostrum long, reaching posterior border of abdominal sternite V or anterior border of VI (Fig. 6) *B. rostralis* sp. nov.
- Rostrum shorter, reaching middle third of abdominal sternite IV (Figs. 2, 9) *B. convergens* Brailovsky, 1981

*Based on the original description.

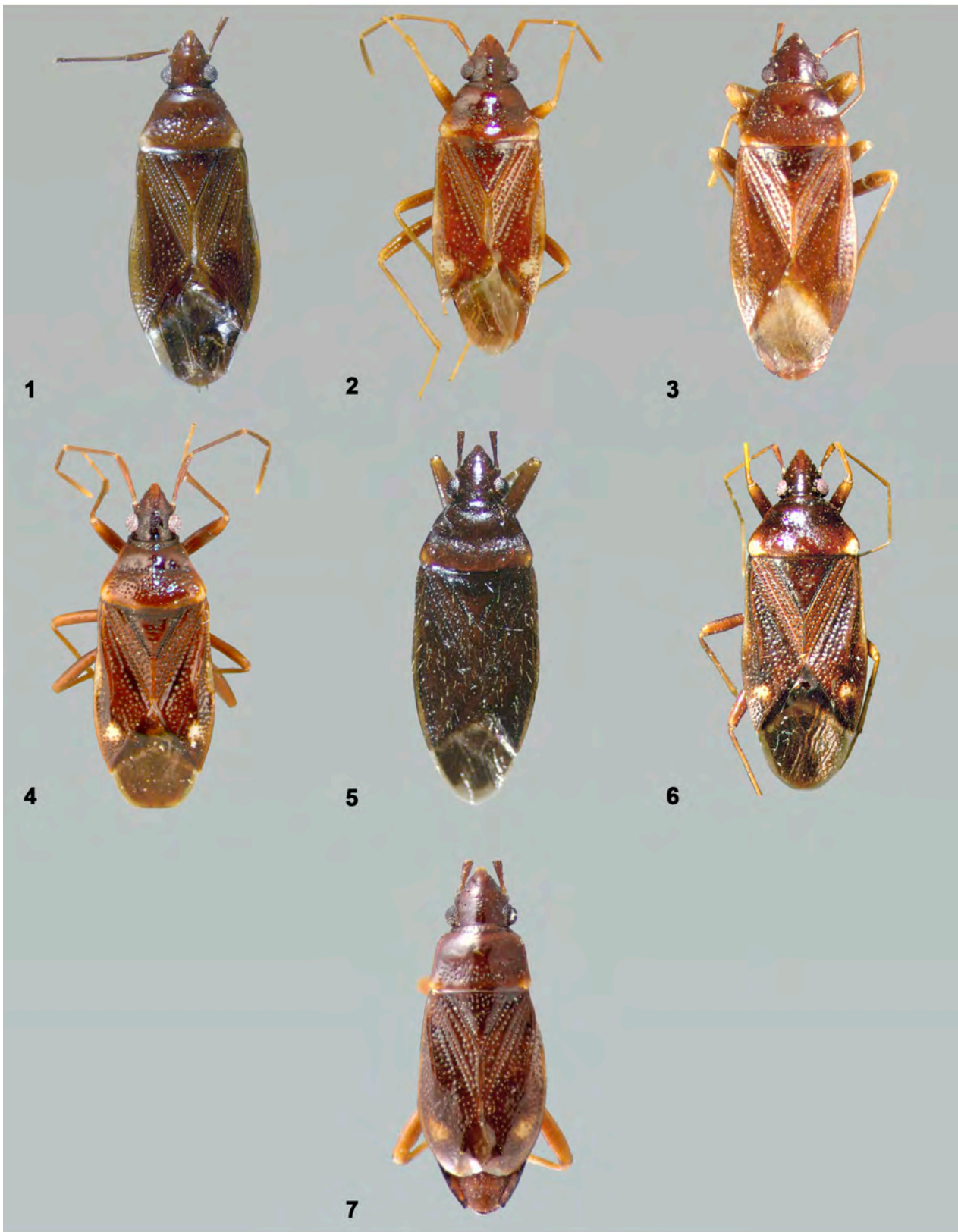
Bubaces castaneus Distant, 1893

(Figs. 1, 8, 15–16)

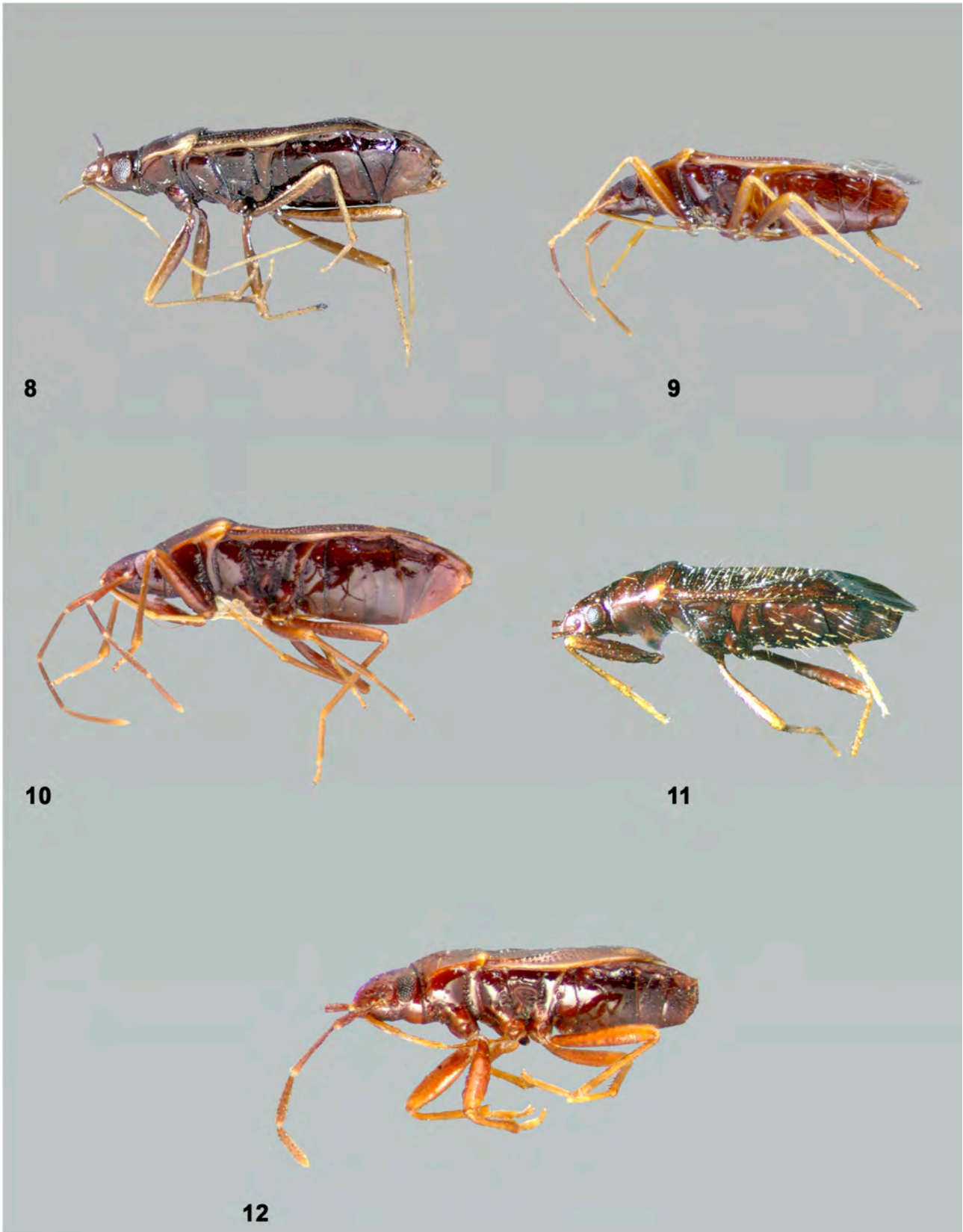
Bubaces castaneus Distant, 1893: 409-410 (original description)

Redescription. Male. Dorsal coloration. Head shining reddish brown; tylus and antennal segments I-IV shining pale chestnut orange; basally with two iridescent spots, one on either side of midline; each spot consists of a series of parallel ridges. Pronotum with anterior lobe dark shining reddish brown, posterior lobe pale shining chestnut, with humeri and anterolateral borders yellow. Scutellum dark shining reddish brown. Clavus and coria pale shining chestnut, with costal margins yellow; hemelytra tricolored, membranes at base and near apical corial borders shining chestnut, followed by a transverse hyaline band which continues along the border, the rest pale yellow gray. Dorsal abdominal segments shining chestnut, with lateral margins of segments III-V shiny yellow. **Ventral coloration.** Head, thorax and abdominal sternite shining chestnut; rostral segments I-IV yellow (apex of IV pale brown); evaporative surfaces dark shining reddish brown; coxae and trochanters shining chestnut; femora shining chestnut with apices yellowish orange; tibiae and tarsi yellow. **Structure.** Body length over 5.4 mm. **Head.** Dorsally impunctate; vertex flat; ocelli separated from adjacent eye by less than its diameter: Ventrally with scattered punctures, with shallow longitudinal sulcus; rostrum reaching posterior border of abdominal sternite IV; rostral segment I surpassing base of head. **Thorax.** Pronotum glabrous, bilobed, with dorsal transverse impression shallow, not deeply incised; posterior pronotal lobe evenly punctate. **Hemelytra.** Macropterous, extending beyond apex of

last abdominal segment; clavi and coria glabrous. **Abdomen.** Sterna sparsely clothed with fine long hairs. Genitalia. Parameres as in figures 15–16.



FIGURES 1–7. Dorsal view of *Bubaces* spp. 1, *B. castaneus* Distant (female). 2, *B. convergens* Brailovsky (male). 3, *B. enatus* Brailovsky (female). 4, *B. gloriosus* **sp. nov.** (female). 5, *B. occidentalis* **sp. nov.** (male). 6, *B. rostralis* **sp. nov.** (male). 7, *B. uhleri* (Distant) (male).



FIGURES 8–12. Lateral view of *Bubaces* spp. 8, *B. castaneus* Distant (female). 9, *B. convergens* Brailovsky (male). 10, *B. gloriosus* **sp. nov.** (female). 11, *B. occidentalis* **sp. nov.** (male). 12, *B. uhleri* (Distant) (male).

Female. Habitus and color similar to male. Metathoracic scent glands with each ostiolar peritreme simple, short, not so well-developed, sinuate, not curving posteriorly.

Measurements. Male. Body length 4.80; head length 0.81; head width across eyes 0.81; interocular distance 0.42; preocular length 0.54; length antennal segments: I 0.72, II 0.90, III 0.73, IV 0.76; pronotum: total length 0.87; maximum width across humeral angles 1.36; scutellum: length 0.67; width 0.79.

Female. Body length 5.54; head length 0.87; head width across eyes 0.84; interocular distance 0.43; preocular length 0.57; length antennal segments: I 0.82, II 1.65, III 0.84, IV 0.81; pronotum: total length 1.00; maximum width across humeral angles 1.63; scutellum: length 0.81; width 0.87.

General distribution*. Described from Mexico and later cited from Central America, West Indies, and South America, south to Brazil and Argentina. **ARGENTINA:** CHACO DE SANTA FE (Las Garzas). **BRAZIL:** BAHIA (Encruzilhada). **MEXICO:** CAMPECHE (Escarcega); YUCATAN (Temax, Peto, Muna, Chichenitza, Chuminopolis). **WEST INDIES:** GRENADA (Grand Anse). TRINIDAD (Arima, St. Gorge Co., Curepe, Simla) (Distant 1893; Brailovsky 1981; O'Donnell 1986; Baranowski and Slater 2005; Dellapé, et al. 2015).

***The following state records given by Brailovsky (1981) and O'Donnell (1986) are erroneous and belong to another species: MEXICO: COLIMA (Paso del Rio, Acaponeta); JALISCO (Chamela); OAXACA (Tehuantepec).**

Material examined. New records. MEXICO: Campeche, Bolonchen de Rejón, 15-21-VI-1982, M. Vertiz, H. Velasco (UNAM) 2 males, 4 females; Calkimi, 28-IV-1982, M. Garcia (UNAM) 1 female; El Remate, 26-IV-1982, A. Ibarra (UNAM) 1 female. **Quintana Roo,** Coba, 3-XI-1981, E. Barrera (UNAM) 1 male, 1 female; San Isidro, Puerto Morelos, 12-13-VIII-1982, M. Garcia (UNAM) 1 male; km 146 road Chetumal-Puerto Juarez, 17-VI-1984, F. Heredia (UNAM) 4 females; Can Cun, 16-VIII-1982, H. Delfin (UNAM) 1 female. **Yucatan,** X-Can, 30-IV-1982, A. Ibarra (UNAM) 1 female.

Discussion. *Bubaces castaneus*, the type species of the genus, is segregated by having the dorsal surface of the pronotum, clavi and coria glabrous, the coria lack the circular yellow to creamy-yellow subapical spots, the head ventrally has a shallow longitudinal sulcus, the rostrum reaches the posterior border of abdominal sternite IV, all tibiae are sparsely spined, and the ostiolar peritremes in male specimens are raised, above the pleural surface, posteriorly with a gentle and open curve, resembling a question mark.

This species is included in the “*castaneus*” group by having the total length of the body longer than 4.70 mm.

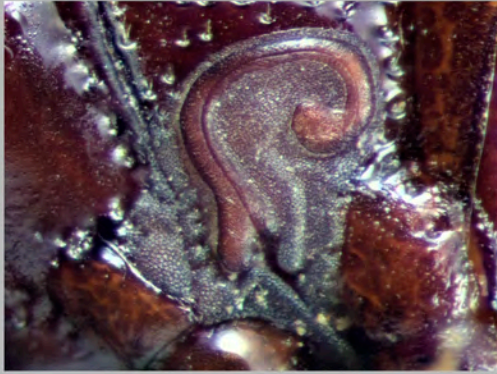
Biology. Collected at light trap (O'Donnell 1986).

***Bubaces convergens* Brailovsky, 1981**

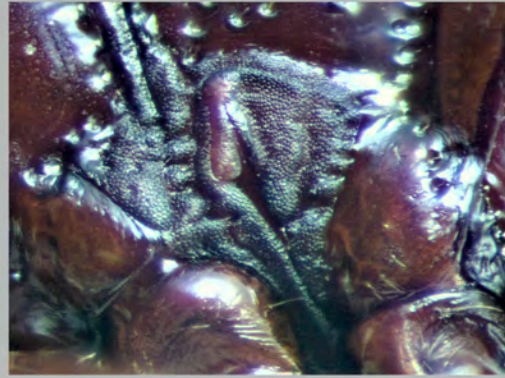
(Figs. 2, 9)

Bubaces convergens Brailovsky, 1981: 206-208 (original description)

Redescription. Male. Dorsal coloration. Head shining reddish brown; tylus and antennal segment I shining dark chestnut; antennal segments II–IV pale chestnut orange; basally with two iridescent spots, one on either side of midline, each spot consisting of a series of parallel ridges. Pronotum with anterior lobe dark shining reddish brown, posterior lobe pale shining chestnut, with humeri and anterolateral borders yellow. Scutellum pale shining chestnut orange. clavi and coria pale shining chestnut, each with costal margin yellowish, and with prominent circular yellow to creamy yellow subapical spot; hemelytra tricolored, membranes at base and near apical corial borders shining chestnut, each followed by a transverse hyaline band, which continues along border, remainder pale yellow gray. Dorsal abdominal segments entirely shining chestnut. **Ventral coloration.** Head, thorax and abdominal sterna shining reddish brown; rostral segments I–IV yellow (apex of IV pale brown); evaporative surfaces dark shining reddish brown to black; coxae and trochanters shining reddish brown; femora shining pale chestnut orange with apices paler; tibiae and tarsi yellow to pale orange. **Structure.** Body length large, over 5.4 mm. **Head.** Dorsally impunctate; vertex flat. Ventrally with scattered punctures, with deep longitudinal sulcus; rostrum reaching middle third of abdominal sternite IV; rostral segment I exceeding base of head. **Thorax.** Pronotum clothed with scattered long hairs; bilobed, transverse impression shallow, not deeply incised; posterior pronotal lobe evenly punctate. **Hemelytra.** Macropterous, extending beyond apex of last abdominal segment; clavi and coria clothed with long erect hairs. **Abdomen.** Sterna sparsely clothed with fine longer hairs.



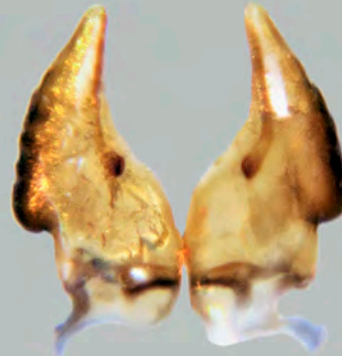
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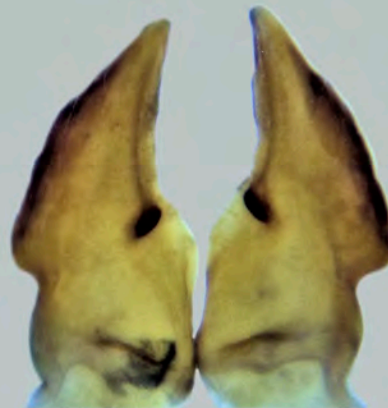


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FIGURES 13–14. Metathoracic scent gland peritreme of *Bubaces occidentalis* sp. nov. 13, male. 14, female. **FIGURES 15–22.** Parameres of *Bubaces* spp. 15–16, *B. castaneus* Distant. 17–18, *B. gloriosus* sp. nov. 19–20, *B. occidentalis* sp. nov. 21–22, *B. rostralis* sp. nov.

Female. Habitus and color similar to male. Metathoracic scent gland. Ostiolar peritremes simple, short, not so well-developed, sinuate, not curving posteriorly.

Measurements. Male. Body length 4.91; head length 0.76; head width across eyes 0.82; interocular distance 0.45; preocular length 0.48; length antennal segments: I 0.67, II 0.90, III 0.76, IV 0.84; pronotum: total length 0.90; maximum width across humeral angles 1.45; scutellum: length 0.78; width 0.82.

Female. Body length 5.85; head length 0.90; head width across eyes 0.94; interocular distance 0.54; preocular length 0.55; length antennal segments: I 0.81, II 1.17, III 1.03, IV 0.90; pronotum: total length 1.17; maximum width across humeral angles 1.82; scutellum: length 1.02; width 1.20.

General distribution*. Described from Mexico and South America. **MEXICO:** GUERRERO (Tecpan de Galeana); OAXACA (La Ventosa, Tehuantepec, Zanatepec); VERACRUZ (San Andres Tuxtla). **PANAMA:** Rio Hato, Arraijan. **VENEZUELA:** MARACAY (El Limon) (Brailovsky 1981).

***The following records given by Brailovsky (1981), and O'Donnell (2006) are erroneous and belong to another species: MEXICO: CHIAPAS (Agua Azul, Comitán, Ocozocoautla, Tuxtla Gutierrez); OAXACA (Tehuantepec); VERACRUZ (Catemaco).**

Material examined. New records. **COSTA RICA:** Provincia Guanacaste, Finca Jenny, 30 km N of Liberia, 300 m, I-1992, E. Araya (UNAM) 1 female; Estación Santa Rosa, 300 m, 23-II-8-III-1995, L. Angulo (INBIO) 1 female. **MEXICO:** Chiapas, Mepastepec, Rancho Puerta de Oro, 11-VIII-1991, C. Mayorga (UNAM) 1 male.

Discussion. *Bubaces convergens*, is included in the “*castaneus*” group by virtue of having the total body length greater than 4.70 mm. This species is recognized by having the dorsal surfaces of the pronotum, clavi and coria clothed with long erect hairs, each corium has a prominent circular yellow to creamy yellow subapical spot, the head ventrally has a deep longitudinal sulcus, and the rostrum reaches the middle third of abdominal sternite IV. In *B. castaneus*, the surfaces of the pronotum, clavi and coria are glabrous, the coria lack circular yellow to creamy yellow subapical spots, and the rostrum reaches the posterior border of abdominal sternite IV.

***Bubaces enatus* Brailovsky, 1981**

(Fig. 3)

Bubaces enatus Brailovsky, 1981: 209-210 (original description)

Redescription. Female. Dorsal coloration. Head, anterior lobe of pronotum, and scutellum shining reddish brown; apex of tylus, posterior lobe of pronotum, clavi and coria shining chestnut orange; head basally with two iridescent spots, one on either side of midline, each spot consisting of a series of parallel ridges; antennal segment I pale reddish brown, II-IV chestnut orange; humeri yellow; anterolateral borders of pronotum shining reddish brown; hemelytral membranes hyaline ambarine to dark yellow. **Ventral coloration.** Head, thorax and abdominal sterna shining reddish brown; rostral segments I-IV yellow (apex of IV brown); coxae and trochanters shining chestnut; femora shining chestnut with apices pale; tibiae and tarsi yellow; ostiolar peritremes dark orange; evaporative areas dark brown. **Structure.** Body length shorter than 3.9 mm, width greatest beyond middle. **Head.** Impunctate; vertex convex; ocelli absent; ventrally with short, shallow longitudinal sulcus; rostrum reaching posterior border of metasternum; rostral segment I extending just beyond level of middle of eye. **Thorax.** Pronotum glabrous, bilobed, transverse impression shallowly incised; posterior pronotal lobe with scattered shallow punctures. **Hemelytra.** Macrop-terous; clavi and coria glabrous; hemelytral membranes reaching apex of last abdominal segment. **Abdomen.** Sterna sparsely clothed with fine longer hairs.

Male. Not examined.

Measurements. Female. Body length 4.00; head length 0.67; head width across eyes 0.72; interocular distance 0.45; preocular length 0.46; length antennal segments: I 0.51, II 0.67, III 0.51, IV 0.55; pronotum: total length 0.75; maximum width across humeral angles 1.20; scutellum: length 0.70; width 0.72.

General distribution*. Only known from Argentina and Brazil. **ARGENTINA:** CHACO (P. N. Chaco); CORDOBA (Los Cocos); MISIONES (Parque Nacional Iguazu); SALTA (Departamento General San Martín, Abra Grande, Orán). **BRAZIL** (Minas Geraes, Piracicaba, Espiritu Santo, Bahia). (Brailovsky 1981; O'Donnell 1986, Dellapé, et al. 2015).

*The following records given by O'Donnell (1986) are erroneous and belong to another species: **BARBADOS** (Parish St. Michael). **TRINIDAD** (St. Augustine). **VENEZUELA** (Sucre, Maracay, Portuguesa, Aragua, Yaracuy).

Material examined. New records: ARGENTINA: 3 females, Tucuman, Buruyacu-Chilcas, 10.xi.1979, col. Golbach (UNAM); 1 female, Entre Rios, xii.1976, col. D. Carpintero (UNAM).

Discussion. *Bubaces enatus*, belongs to “*uhleri*” group. It is similar to *B. uhleri* in having the pronotum, clavi and coria glabrous, the body length shorter than 4.30 mm., rostral segment I is short, reaching only the middle third of the eye, ocelli are absent, and the rostrum reaches the posterior border of the metasternum.

In *B. uhleri*, known from the West Indies, each corium has a circular pale yellowish-orange subapical spot and the femora are tuberculate (Fig. 6). In *B. enatus*, recorded from Argentina and Brazil, each corium lacks a circular yellow subapical spot, and the femora lack tubercles (Fig. 3).

Bubaces heissi O'Donnell, 2006

Bubaces heissi O'Donnell, 2006: 536-537 (original description)

General distribution. Recorded only from Panama. **PANAMA:** CANAL ZONE (Coco Solo Hospital); LA CANARCA; FT. CLAYTON; CHIRIQUI (Rovira); CHEPO (Altos de Maje); LAS CUMBRES; COLON (Sta. Rita Ridge) (O'Donnell 2006).

Discussion. *Bubaces heissi*, is included in the “*castaneus*” group by virtue of having the total length of the body longer than 5.00 mm.

This species is recognized by having the dorsal surfaces of pronotum and clavi clothed with long erect hairs, each corium with a prominent circular yellow to creamy yellow subapical spot, and the male metathoracic scent glands each with the ostiolar peritreme conspicuously broad, strongly raised above pleural surface, tightly recurved posteriorly, resembling a coiled back upon itself. In *B. castaneus*, the surfaces of pronotum, clavi and coria are glabrous, each corium lacks a circular yellow to creamy yellow subapical spot, and the male metathoracic scent glands each have the ostiolar peritreme raised, not strongly recurved posteriorly, but with a gentle, very wide curvature that resembles a “question mark”.

In *Bubaces convergens* the dorsal surfaces of the pronotum and clavi are clothed with long erect hairs, and each corium has a prominent circular yellow to creamy yellow subapical spot, but the ostiolar peritremes are raised, not strongly recurved posteriorly, but each with a gentle, very wide curvature that resembles a “question mark”.

Bubaces occidentalis sp. nov.

(Figs. 5, 11, 13-14, 19-20)

Type locality. Mexico, Jalisco.

Description. Holotype male. Dorsal coloration. Head shining reddish brown; tylus and antennal segments I-IV shining pale chestnut orange; basally with two iridescent spots, one on either side of midline, each spot consisting of a series of parallel ridges. Pronotum with anterior lobe dark shining reddish brown, posterior lobe pale shining chestnut, with humeri and anterolateral borders yellow to dark yellowish orange. Scutellum, clavi and coria dark shining reddish brown; costal margins of coria dark yellowish orange; hemelytra tricolored, membranes at base and near apical corial borders shining chestnut, followed by a transverse hyaline band which continues along each border, remainder pale yellow gray; dorsal abdominal segments shining chestnut, with lateral margins of segments III-V shiny yellow. **Ventral coloration.** Head, thorax, and abdominal sterna shining reddish brown; rostral segments I-IV yellow (apex of IV pale brown); evaporative surfaces dark shining reddish brown to black; coxae and trochanters shining reddish brown; femora shining chestnut with apices yellowish orange; tibiae and tarsi yellow. **Structure.** Body length large, over 5.4 mm. **Head.** Dorsally impunctate; ventrally with scattered punctures, and with deep ventral longitudinal sulcus; rostrum reaching posterior border of abdominal sternite IV; rostral segment I exceeding base of head. **Thorax.** Pronotum clothed with scattered long hairs, bilobed, transverse impression shal-

low, not deeply incised; posterior pronotal lobe evenly punctate. **Hemelytra.** Macropterous, extending beyond apex of last abdominal segment; clavi and coria clothed with long erect hairs. **Abdomen.** Sterna sparsely clothed with fine longer hairs. **Genitalia.** Parameres as in figures 19–20.

Female. Habitus and color similar to male.

Measurements. Male. Body length 5.54; head length 0.91; head width across eyes 0.96; interocular distance 0.52; preocular length 0.60; length antennal segments: I 0.78, II 1.95, III 0.93, IV 0.87; pronotum: total length 1.08; maximum width across humeral angles 1.78; scutellum: length 0.90; width 0.94.

Female. Body length 5.85; head length 0.96; head width across eyes 1.02; interocular distance 0.55; preocular length 0.64; length antennal segments: I 0.84, II 1.20, III 0.93, IV 0.88; pronotum: total length 1.15; maximum width across humeral angles 1.90; scutellum: length 0.95; width 1.08.

Type material. HOLOTYPE male: **MEXICO: Jalisco,** Estación de Biología, Chamela, 16-XI-1978, H. Brailovsky (UNAM). PARATYPES: **MEXICO: Colima,** 5.8 km NO Ixtlahuacan, 390 m, 19°01'15.7"N-103°46'37.8"W, 26-IV-2006, 15-II-2007, S. Zaragoza (UNAM) 1 male, 4 females; 4 km SO de Jiliotupa, arroyo El Salado, 163 m, 19°03'26.1"N-103°43'26.1"W, 28-VI-2006, F. A. Noguera, S. Zaragoza, E. Ramirez, E. Gonzalez, & L. Salas (UNAM) 6 males, 6 females. **Guerrero:** Teacalco, 1110 m, 2-II-1989, E. Barrera, A. Cadena, & L. Cervantes (UNAM) 1 male. **Jalisco,** Estación de Biología, Chamela, at blacklight, 18-III-1975, 30-IV-1976, 24-VII-1976, 15-VI-1977, 16-17-XI-1978, 6-IX-1979, 3-VII-1988, 12-VIII-1988, 21-VII-1989, 29-VI-1990, 7-VII-1990, 27-VIII-1990, 21-VI-1991, 13-VII-1991, 16-X-1991, H. Brailovsky, M. Gurrola, E. Ramirez, C. Mayorga, G. Ortega León, E. Barrera, & A. Cadena (UNAM) 18 males, 25 females. **Michoacan,** Caleta de Campos, 27-VII-1985, R. Barba (UNAM) 1 female.

Etymology. The specific name is in reference to the Western distribution of this species.

Discussion. Differential diagnosis. *Bubaces occidentalis* sp. nov., is included in the “*castaneus*” group by having the total length of the body greater than 4.70 mm. *Bubaces occidentalis* is further segregated by having the dorsal surfaces of the pronotum, clavi and coria clothed with long hairs, the coria lacking circular yellow to creamy yellow subapical spots, and its distribution being restricted to the western parts of Mexico. In *B. castaneus*, the surfaces of the pronotum, clavi and coria are glabrous, the coria also lack circular yellow to creamy yellow subapical spots, but its has a wide distribution, occurring from southern Mexico (States of Campeche, Quintana Roo and Yucatan) throughout Central and South America.

***Bubaces gloriosus* sp. nov.**

(Figs. 4, 10, 17-18)

Type locality. Mexico, Guerrero.

Description. Holotype male. Dorsal coloration. Head shining reddish brown; tylus shining dark chestnut; antennal segments I-IV shining pale yellowish orange; basally with two iridescent spots, one on either side of midline; each spot consisting of a series of parallel ridges. Pronotum with anterior lobe dark shining reddish brown, posterior lobe pale shining chestnut, with humeri yellow, and anterolateral borders dark yellowish orange. Scutellum pale shining reddish brown. Clavi and coria dark shining chestnut; costal corial margins yellowish, and each corium with prominent circular yellow to creamy yellow subapical spot; hemelytra tricolored, membranes at base and near apical corial borders shining chestnut, followed by a transverse hyaline band which continues along each border, remainder pale yellow gray. Dorsal abdominal segments shining chestnut, with lateral margins of segments III-V shiny yellow. **Ventral coloration.** Head, thorax and abdominal sterna shining reddish brown; rostral segments I-IV yellow (apex of IV pale brown); evaporative surfaces dark shining reddish brown to black; coxae and trochanters shining reddish brown; femora shining chestnut with apices yellowish orange; tibiae and tarsi yellow. **Structure.** Body length large, greater than 5.4 mm. Head. Dorsally impunctate; ventrally with scattered punctures, with ventral shallow longitudinal sulcus; rostrum reaching posterior border of abdominal sternite IV (in some specimens reaching middle third of sternite V); rostral segment I exceeding beyond base of head. **Thorax.** Pronotum glabrous, bilobed, transverse impression shallow, not deeply incised; posterior pronotal lobe evenly punctate. **Hemelytra.** Macropterous, extending beyond apex of last abdominal segment; clavi and coria glabrous. **Abdomen.** Sterna sparsely clothed with fine longer hairs. **Genitalia.** Parameres as in figures 17–18.

Female. Habitus and color similar to male.

Measurements. Male. Body length 5.35; head length 0.81; head width across eyes 0.84; interocular distance 0.48; preocular length 0.60; length antennal segments: I 0.75, II 0.97, III 0.85, IV 0.88; pronotum: total length 0.93; maximum width across humeral angles 1.54; scutellum: length 0.90; width 0.87.

Female. Body length 5.60; head length 0.85; head width across eyes 0.90; interocular distance 0.49; preocular length 0.57; length antennal segments: I 0.79, II 1.95, III 0.90, IV 0.90; pronotum: total length 0.99; maximum width across humeral angles 1.65; scutellum: length 0.91; width 0.90.

Type material. HOLOTYPE male: **MEXICO: Guerrero**, Acahuizotla, 15-XI-1983, M. Garcia (UNAM) 1 male. PARATYPES: **MEXICO: Campeche**, Ciudad de Campeche, 9-IX-1971, H. Brailovsky (UNAM) 1 female. **Chiapas**, Agua Azul, 1-V-1978, without collector (UNAM) 1 male, 1 female; Villa Flores, 28-IX-1982, R. Iruegas (UNAM) 1 female; Arriaga, 60 m, at blacklight on deciduous tropical forest, 16°14'02"N-93°53'55"W, 12-VI-2010, L. Cervantes, D. Brzoska (UNAM) 3 females. **Guerrero**, Juxtlahuaca, 16-I-1986, H. Brailovsky (UNAM) 1 female; Acahuizotla, 24-VI-1983, M. Garcia (UNAM) 1 female. **Oaxaca**, Pochutla, Finca Progreso, 2-VI-1987, L. Cervantes (UNAM) 1 male; Puerto Angel, 31-VII-1965, A. B. Lau (USNM) 1 female; Toltepec, 30-V-1987, F. Arias, E. Barrera (UNAM) 1 male, 1 female; Juchitan, Sierra Tolistoque, 1500 m, 14-VI-2013, J. Delgado, E. Mora (INECOL) 1 male, 1 female; Parque Nacional Huatulco, 0.5 km N Estación El Sabal, 29 m, 15°46'19.7"N-96°11'53.9"W, 1-IX-2005, S. Zaragoza (UNAM) 3 males; Tehuantepec, 1-V-1981, E. Barrera (UNAM) 1 female; San Mateo Yextla, 25-V-1990, E. Barrera, A. Cadena (UNAM) 1 female; km 6 desviación San Juan Guichicovic, VI-1989, E. Barrera, A. Cadena (UNAM) 1 female. **Veracruz**, Estación Biológica Los Tuxtlas, 14-17-VI-1989, J. L. Colin, H. Rojas (UNAM) 1 female; Catemaco, 1-IV-1953, without collector (UNAM) 1 female. **COSTA RICA: Provincia Puntarenas**, Quepos, Parque Nacional Manuel Antonio, 80 m, IV-V-1991, R. Zuñiga (INBIO) 2 males.

Etymology. From the Latin, “*gloriosus*”, referring to the attractive appearance of this species.

Discussion. *Bubaces gloriosus* sp. nov., is included in the “*castaneus*” group because its total length is greater than 4.70 mm.

Bubaces gloriosus sp. nov., is segregated by having the dorsal surfaces of the pronotum, clavi and coria glabrous, each corium has a circular yellow to creamy-yellow subapical spot, the head has a shallow ventral longitudinal sulcus, and the rostrum reaches the posterior border of abdominal sternite IV or sometimes to the middle third of V. In *B. convergens*, the most similar species, the dorsal surfaces of pronotum, clavi and coria are clothed with fine erect and longer hairs, and each corium lacks a circular yellow, to creamy yellow subapical spot.

***Bubaces rostralis* sp. nov.**

(Figs. 6, 21-22)

Type locality. Mexico, Quintana Roo.

Description. Holotype female. Dorsal coloration. Head shining reddish brown; tylus and antennal segments I-IV shining dark chestnut orange; basally with two iridescent spots, one on either side of midline; each spot consisting of a series of parallel ridges. Pronotum with anterior lobe dark shining reddish brown, posterior lobe pale shining dark reddish, with humeri yellow and anterolateral borders pale shining reddish brown. Scutellum dark shining reddish brown. Clavi and coria pale shining reddish brown, with costal corial margins yellowish, each corium with a prominent circular yellow to creamy-yellow subapical spot; hemelytra tricolored, membranes at base and near apical corial borders shining chestnut, followed by a transverse hyaline band which continues around borders, remainder pale yellow gray. Dorsal abdominal segments III-V pale brown with lateral margins yellow, segments VI-VII shining dark brown. **Ventral coloration.** Head, thorax and abdominal sterna shining reddish brown; rostral segments I-IV yellow (apex of IV pale brown); evaporative surfaces shining reddish black; coxae and trochanters shining pale reddish brown; femora shining pale reddish brown with apices yellowish orange; tibiae and tarsi yellow. **Structure.** Body length large, over 5.4 mm. **Head.** Dorsally impunctate; ventrally with scattered punctures, with deep ventral longitudinal sulcus; rostrum reaching posterior border of abdominal sternite V; rostral segment I exceeding beyond base of head. **Thorax.** Pronotum clothed with scattered long hairs, bilobed, transverse impression shallow, not deeply incised; posterior pronotal lobe evenly punctate. Metathoracic scent glands with ostiolar peritremes simple, short, not so well-developed, sinuate, not curving posteriorly; evaporative areas covering entire mesoepimeron, but not extending dorsally along junction with metapleuron. **Hemelytra.** Macropterous, extending beyond apex of last abdominal segment; clavi and coria clothed with long erect hairs. **Abdomen.** Sterna sparsely clothed with fine longer hairs.

Male. Habitus and color similar to female. Parameres as in figures 21-22.

Measurements. Male. Body length 5.62; head length 1.02; head width across eyes 0.99; interocular distance 0.52; preocular length 0.69; length antennal segments: I 0.87, II 1.20, III 0.99, IV 1.03; pronotum: total length 1.21; maximum width across humeral angles 1.95; scutellum: length 1.05; width 1.04.

Female. Body length 6.30; head length 1.02; head width across eyes 1.03; interocular distance 0.57; preocular length 0.69; length antennal segments: I 0.90, II 1.32, III 1.12, IV 1.05; pronotum: total length 1.27; maximum width across humeral angles 2.09; scutellum: length 1.12; width 1.11.

Type material. HOLOTYPE female, **MEXICO: Quintana Roo**, km 146, road Chetumal-Cancun, 3-V-1982, A. Ibarra (UNAM). PARATYPES: **MEXICO: Quintana Roo**, km 146, road Chetumal-Cancun, 3-V-1982, A. Ibarra, 16-VIII-1982, V. Melendez (UNAM) 1 male, 5 females; Quintana Roo, km 146, road Chetumal-Puerto Juarez, 17-III-1982, col. M. Garcia (UNAM) 1 female; Quintana Roo, Buenavista, 18-III-1982, M. Garcia (UNAM) 1 female.

Etymology. The new species is named for the long rostrum, reaching abdominal sterna V or VI.

Discussion. This new species is included in the “*castaneus*” group, and has affinities with *B. convergens* by having the pronotum, clavi and coria clothed with long erect hairs, and each corium with a prominent circular yellow to creamy-yellow subapical spot, but the rostrum is shorter in *B. convergens* reaching only to the middle third of abdominal sternite IV, whereas in *B. rostralis* sp. nov., it reaches the posterior border of abdominal sternite V or sometimes to the middle third of sternite VI; also the body dorsally and ventrally is shining dark reddish brown.

***Bubaces uhleri* (Distant)**

(Fig. 7, 12)

Rhaptus uhleri Distant, 1901: 508 (original description).

Redescription. Male. Dorsal coloration. Strongly shining, almost dark chocolate brown to reddish brown; basally with two iridescent spots, one on either side of midline; each spot consisting of a series of parallel ridges; antennal segments I-IV, tylus, humeri, anterolateral borders of pronotum, and costal margins of coria pale shining chestnut orange; each corium with a prominent circular pale shining yellowish-orange subapical spot; hemelytral membranes hyaline; dorsal abdominal segments shining reddish brown. **Ventral coloration.** Head, thorax, abdominal sterna and genital capsule strongly shining reddish brown; evaportive areas darker; rostral segment I pale yellowish orange, II-IV yellow (apex of IV pale brown); coxae, trochanters, femora, and tibiae shining chestnut orange; tarsi pale shiny yellow. **Structure.** Body length shorter than 3.9 mm, width greatest beyond middle. **Head.** Impunctate; wider than long, non-declivent, vertex slightly swollen; ocelli absent; eyes large, protuberant; ventrally with short, shallow longitudinal sulcus; rostrum reaching posterior border of metasternum; rostral segment I extending just beyond level of middle of eye. **Thorax.** Pronotum glabrous, bilobed, transverse impression shallow, not deeply incised; anterior pronotal lobe slightly convex, with punctate collar, set off from remainder of pronotum by a gently incised groove; collar broadening slightly mesally; anterolateral margins emarginate, sinuate; posterior pronotal lobe with scattered shallow punctures. Metathoracic scent glands with ostiolar peritremes broad, raised above pleural surfaces, not strongly recurved posteriorly, but with a gentle, very wide curvature that resembles a “question mark”. **Legs.** Fore, middle and hind femora tuberculate; fore tibiae without spines; middle and hind tibiae sparsely spined. **Hemelytra.** Coleopteroid with clavi and coria fused, glabrous; hemelytral membranes reaching posterior border of abdominal sternite VI. **Abdomen.** Sterna sparsely clothed with fine longer hairs.

Female. Not examined.

Measurements. Male. Body length 2.85; head length 0.64; head width across eyes 0.61; interocular distance 0.37; preocular length 0.36; length antennal segments: I 0.45, II 0.51, III 0.45, IV 0.57; pronotum: total length 0.58; maximum width across humeral angles 0.87; scutellum: length 0.54; width 0.43.

General distribution. Widely distributed in the West Indies. Originally described from the Island of Grenada [(Mount Gay Est (Leeward Side))] and later cited from: **ANTIGUA:** Christian Valley. **BARBADOS:** Crab Hill, St. Thomas Parish. **DOMINICAN REPUBLIC:** Monte Cristi, Santo Domingo. **GRENADA:** Goat Point, Grand Anse, St. Andrew Parish. **JAMAICA:** Parish of Manchester, Parish of St. Andrew. **NEVIS:** Butler Village. **ST. LUCIA:** 2 mi N Castries. **ST. VINCENT:** Kingstown. **TRINIDAD:** Cumate, Arima, Simla Biol. Sta., St. George Co.) (Distant 1901, O’Donnell 1986, 1991, Baranowski and Slater 2005).

Material examined. New records: GUADELOUPE: Pointe de la Grande Vigie, 77 m, 16.50959°N—61.46715°W, 27-I-2010, R. Anderson (UNAM) 1 male.

Discussion. *Bubaces uhleri*, belongs to the “*uhleri*” species group, and can be identified by having the dorsal surfaces of the pronotum, clavi and coria glabrous, each corium with a circular pale yellowish orange subapical spot, the ocelli absent, the rostrum reaching the posterior border of the metasternum, rostral segment I extending just beyond level of middle of eye, the femora of each leg dorsally and laterally tuberculate, the fore tibiae without spines, while the middle middle and hind tibiae are spinose, the hemelytra reduced, coleopteroid, with the clavi and coria fused, and the hemelytral membranes short, reaching the posterior border of abdominal segment VI.

Biology. Occurs often in xeric areas in ground litter. Taken below *Ficus* sp., in St. Vincent. They may also feed on grass seeds. Some specimens attracted to blacklights (Baranowski & Slater 2005).

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