NEW SPECIES AND RECORDS OF Chrysobothris Eschscholtz (Coleoptera: Buprestidae) FROM MONTSERRAT, SABA, AND ANGUILLA, WITH A KEY TO THE Chrysobothris thoracica SPECIES-GROUP IN THE WEST INDIES

CRYSTAL A. MAIER
Division of Entomology
Department of Ecology and Evolutionary Biology
University of Kansas
1501 Crestline Drive, Suite 140
Lawrence, KS 66045, U.S.A.

AND

MICHAEΛ A. IVIE
Montana Entomology Collection
1601 S. 19th Ave., Room 50 Marsh Laboratory
Montana State University
Bozeman, MT 59717-3020, U.S.A.
mivie@montana.edu

ABSTRACT
The West Indian Chrysobothris thoracica species-group is defined to include Chrysobothris thoracica (F., 1798), Chrysobothris hispaniolae Fisher, 1925, Chrysobothris guadeloupensis Descarpentries, 1981, Chrysobothris sabae Maier and Ivie, new species (Saba), and Chrysobothris marskeae Maier and Ivie, new species (Montserrat). New records of C. thoracica from Anguilla and several of the Virgin Islands are reported. These rarely collected species are defined, keyed, and illustrated.

Key Words: Lesser Antilles, Greater Antilles, metallic wood-boring beetles, taxonomy

The West Indies are one of the most diverse of the Global Biodiversity Hotspots (Smith et al. 2006). The Buprestidae of the West Indies remain poorly known, having been last treated comprehensively by Fisher (1925). The vast majority of the 143 species recorded from the biogeographic West Indies (Bellamy 2008, 2011) is known from only a few islands (Cuba, Hispaniola, Puerto Rico) or island groups (Bahamas, Virgin Islands, Guadeloupe). Most species are reported from only a single island, and few species are reported from more than a singleton or short series. Given the global rank of the West Indian diversity, the literally thousands of islands in the region, the apparent island endemism, and the paucity of buprestid specimens, the true buprestid fauna is expected to be considerably larger and more widely distributed than recorded.

The northern Leeward Islands, those islands southeast of the Virgin Islands and north of the Guadeloupe Archipelago, are particularly underrepresented. These small islands are the northern portion of two island arcs: the limestone Caribees (Sombrero to Barbuda) to the east and the Volcans (Saba to Montserrat) to the west. No buprestids were reported from these islands until Ivie et al. (2008) recorded seven species from Montserrat, albeit none of which had specific names.

One of these species was recorded as “Chrysobothris sp. thoracica group,” which led to an examination of a small series of enigmatic specimens from the Northeastern Caribbean. These specimens belong to a group of small Chrysobothris Eschscholtz species seemingly limited to the area from Hispaniola to Guadeloupe and characterized by a red pronotum and transversely marked elytra (Figs. 1–4). This C. thoracica species-group includes three described species. Chrysobothris thoracica (F., 1798) was described from St. Thomas, Virgin Islands, and has subsequently been recorded from a variety of islands of the Puerto Rican Bank (Puerto Rico, St. Thomas, St. John, Sandy Cay, Guana, Anegada) and nearby St. Croix (Fisher 1925; Ivie and Miller 1984; Ivie 2001; Valentine and Ivie 2005). Descarpentries (1981) provided the only record for this species outside the Puerto Rico/Virgin Islands when he described Chrysobothris thoracica guadeloupensis Descarpentries from Porte d’Enfer, Grande Terre, Guadeloupe.
The only other described member of the group is *Chrysobothris hispaniolae* Fisher, 1925 from Hispaniola. Thus, until Woodley and Touroult (2012) elevated Descarpentries’ subspecies to species status, the *C. thoracica* species-group included a species on Hispaniola and another on the Puerto Rican Bank and St. Croix, with an outlying subspecies in Guadeloupe, and an unidentified
group-member from Montserrat. However, in between lay many islands of the northern Leeward Islands, with no records of this group. From this starting point, we assembled additional specimens with the same general habitus during inventory work for Montserrat, Anguilla, Saba, and the Virgin Islands.

These specimens show considerable variation in color pattern within the basic plan. Seemingly consistent, albeit minor color differences were noted that, by themselves, are not very convincing of species-level distinctions. The form of the aedeagus of the nomen-lotype St. Thomas population of *C. thoracica* varied little from those of Puerto Rico, the other northern Virgin Islands, and St. Croix. However, the aedeagus illustrated by Descarpentries (1981) was quite distinct from that species (Woodley and Touroult 2012). The Montserrat specimens were dissected, compared to both the typical form and the Guadeloupe form, and found to likewise differ from both. Single specimens from Anguilla and Saba were then examined, and the Saba specimen was found to be a male of yet another distinct form. Variation in the genitalia from each area, combined with their corresponding color morphs, indicated that, in fact, four species were represented amongst the material available. Unfortunately, the Anguilla specimen is a female, and insufficient material is at hand to decide the status of that population, leaving it assigned to *C. thoracica* until further material becomes available.

Specimens of this group are rarely collected. Approximately 25 specimens of *C. thoracica* have been collected in the Virgin Islands in the 210+ years since the types were reported, this in spite of some of the most intensive collecting per square kilometer of anywhere in the Neotropics, with over 40,000 mounted beetles examined from these islands (M. A. Ivie, unpublished). Only a handful of specimens from Puerto Rico are known, again in spite of a large collecting effort. Woodley and Touroult (2012) reported only nine known, again in spite of a large collecting effort. Touroult (2005) likewise eluded capture until 1977, in spite of some of the most intensive collecting per collector in that island group. However, in 2005 and 2012, they reported on a half dozen or so specimens to add to the singleton reported by Descarpentries (1981), some of which were reared after the host was identified.

The unique Saba specimen is one of 3,000 beetle specimens collected on that island (M. A. Ivie and D. Sikes, unpublished). Surveys of St. Kitts, Nevis, Barbuda, St. Martin, Antigua, and St. Eustatius have yet to reach this level of inventory effort, and it seems likely that members of this group will eventually be found on them, as well as additional islands of the Guadeloupe group.

**Material and Methods**

Specimens were photographed with a JVC® 3CCD KY-F750 digital camera mounted to a Leica® MS5 dissecting microscope, with a Schott® Fostec DCR 111 fiber optic illuminator and a bottomless foam coffee cup as a light diffuser. The camera was attached to an IBM IntelliStation M Pro® and the images were processed using Syncroscopy Auto-montage Pro® ver. 5.03.0020 Beta and enhanced in Adobe Photoshop® CS5.

The aedeagus was extracted from relaxed specimens through the caudal opening in the abdomen, examined, photographed, and subsequently glued to a card below the specimen. Label information is presented as in Ivie (1985), with line breaks indicated by a semicolon (;) and labels separated by a slash (/). Specimens from the following collections were examined or cited in this study:

- **MNHN** – Muséum national d’Histoire naturelle, Paris, France.
- **UAM** – University of Alaska Museum, Fairbanks, AK.
- **WIBF** – West Indian Beetle Fauna Project Collection, Montana State University, Bozeman, MT.
- **NMNH** – U.S. National Museum of Natural History, Washington, DC.
- **ZMUC** – Zoological Museum, University of Copenhagen, Denmark.

**Results**

Five species are included in the *C. thoracica* species-group: *C. thoracica*, *C. guadeloupensis*, *C. hispaniolae*, *Chrysobothris marskeae* Maier and Ivie, new species, and *Chrysobothris sabae* Maier and Ivie, new species. These species are grouped together based on size (<8 mm), a mostly metallic red pronotum, the elytra with four greenish blue spots, and their occurrence in the West Indies (Fig. 8). Although the host is known for only one of the species (Woodley and Touroult 2012), all are associated with dry to moist tropical forests.
Key to the Species of the Chrysobothris thoracica Species-Group from the West Indies

1. Base of pronotum with bluish green patch immediately anteriad scutellum, extending anteriad of elytral lobes (Fig. 4; Woodley and Touroult 2012, fig. 2) ........................................... 2

1’. Base of pronotum with bluish green patch absent immediately anteriad scutellum, or patch only bordering posterior margin (Figs. 1–3) ............................................................................. 3

2. Aedeagus robust, less than 2.2 times as long as wide (Fig. 6). Montserrat ................... C. marskeae Maier and Ivie, new species

2’. Aedeagus narrow, at least 3.4 times as long as wide (Descarpentries 1981, fig. 4; Woodley and Touroult 2012, figs. 5, 6). Guadeloupe .......... C. guadeloupensis Descarpentries

3. Lateral margins of pronotum strongly arcuate, pronotum widest at midpoint; posterior margin of pronotum red or greenish, never blue; suture blue at most just behind scutellum, not distinctly and brightly blue to level of first discal macula. Hispaniola ...... C. hispaniolae Fisher

3’. Lateral margins of pronotum weakly arcuate, pronotum widest in anterior third; posterior margin of pronotum blue; suture bright metallic blue behind scutellum to level of first discal macula. Puerto Rico, Virgin Islands, Leeward Islands ......................................................... 4

4. Posthumeral blue macula, viewed from the side, confluent or nearly confluent with basal elytral blue macula; elytron changing from bronze to somewhat aeneous in apical portion, often blue-green at apex (Fig. 3). Puerto Rico, the Virgin Islands, Anguilla ......... C. thoracica (F)

Chrysobothris guadeloupensis
Descarpentries, 1981

Chrysobothris thoracica guadeloupensis
Chrysobothris guadeloupensis; Woodley and Touroult 2012: 3.

Diagnosis. This species most closely resembles C. marskeae, with a pronotal blue patch immediately anterior to scutellum (Woodley and Touroult 2012: fig. 2). It can be distinguished from C. marskeae by its narrow aedeagus, which is at least 3.4 times as long as wide (Woodley and Touroult 2012: figs. 5, 6). Chrysobothris guadeloupensis is also the only species in the C. thoracica species-group known from the Guadeloupe archipelago. For a full description, see Woodley and Touroult (2012).

Length. 4.5–6.2 mm (from Woodley and Touroult 2012).

Distribution. This species is reported from the islands of Grande Terre, Basse Terre, and La Désirade in Guadeloupe (Woodley and Touroult 2012).

Type Locality. Porte d’Enfer, Portland, Grande Terre, Guadeloupe (MNHN).

Material Examined. None. Key and diagnosis are based on Descarpentries (1981) and Woodley and Touroult (2012).

Biology. Chrysobothris guadeloupensis has been reared from Tamarindus indica L. and

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Figs. 5–7. Chrysobothris species, male genitalia. 5) C. sabae; 6) C. marskeae; 7) C. thoracica.
Acacia tortuosa (L.) Willd. (Fabaceae) as well as Laguncularia racemosa (L.) C. F. Gaertn. (Combretaceae) (white mangrove) (Touroult 2005; Woodley and Touroult 2012). It is widespread in Guadeloupe, mostly in the dry forest zone.

Remarks. Originally described as a subspecies of C. thoracica, C. guadeloupensis was recently elevated to species rank by Woodley and Touroult (2012).

**Chrysobothris hispaniolae** Fisher, 1925
(Fig. 2)


**Diagnosis.** This species can be distinguished from all other species in the *C. thoracica* species-group by the distinctive pronotum, which is widest in the middle (widest point of the pronotum is in the anterior third in all other species). This is the only species in the group known from Hispaniola (Haiti and Dominican Republic).

**Length.** 3.9–5.3 mm.

**Distribution.** Hispaniola (Haiti, Dominican Republic: Provinces Pedernales, Barahona, La Altagracia).

**Type Material Examined.** HOLOTYPE: ♂– Pt. au Prince; Haiti; R.J. Crew/ Type No.; 26811; U.S.N.M./ HOLOTYPE; CHRYSOBOTHRIS; hispaniolae; FISHER (NMNH).


**Biology.** Unknown.

**Chrysobothris marskeae** Maier and Ivie, new species
(Figs. 4, 6)

**Diagnosis.** This species can be distinguished from all others in the *C. thoracica* species-group by the pronotal blue spot anterior to the scutellum (a character shared with *C. guadeloupensis*) and the robust aedeagus, which is 2.2 times as long as wide. This is the only species in the group that occurs on the island of Montserrat.

**Description.** Male (Fig. 4); length 4.0–6.3 mm, width 2.0–2.8 mm at widest point; brilliant metallic scarlet and olive green dorsally; ventrally metallic blue-black to metallic green; evenly covered with heavy, confluent punctuation. Head green dorsally, golden green ventrally and surrounding occiput, with dense, recumbent setae ventrally. Head with micropuncturing and larger punctures, costulate ventrally. Frons green to blue-green metallic, with dense, recumbent white setae above epistoma. Setae on frons set into deep pits, cuticle of frons areolate. Eyes large, covering approximately 1/3 of total head surface area, converging narrowly at vertex and widely at antennal insertions. Antennal cavities twice as wide as long, widely separated. Head with weak inverted “Y” shaped median carina on vertex. Antennae weakly serrate, green with sparse setae. First 3 antennomeres not significantly dilated.
apically. Pronotum metallic scarlet dorsally, anterior margin margin and anterior angles green, with brilliant metallic cyan macula at middle of posterior margin; almost 2 times as wide as long, laterally arcuate, widest in anterior third; anterior margin very weakly bisinuate, emarginate; posterior margin strongly bisinuate, approaching angular. Pronotal disk evenly covered with deep punctation and micropunctation. Scutellum blue-black. Leg metallic blue-black, rugulose, with scattered punctation. Profemur with broad serrate tooth, bordered with 7 small teeth. Protibia with small tooth on interior face. Mesostibia with row of spines on interior face. Prosternal process evenly, deeply punctate and evenly rugulose, expanded behind procoxae. Elytra 2 times longer than wide, parallel in basal third, then gradually expanding to reach widest point at apical third; brassy black, with slight purple sheen, turning faintly blue-green at apex; entire base of elytron bordered with a thick band of metallic cyan, cyan extending posteriorly to first third of elytral suture turning dull blue-green along elytral suture to apex. Elytron with 2 dull, diffuse blue-green transverse maculae, 1 each at one-third and two-thirds of distance to apex; evenly punctate; distinctly serrate in apical third, with sparse white recumbent setae near serration. Elytral suture bordered with carina. Elytral apex broadly rounded and weakly serrate. Ventrally blue-black, with sparse white, recumbent setae; ventrites evenly punctate. Abdomen metallic violet dor-sally. Last ventrite with 3 wide, weak teeth posteriorly. Aedeagus (Fig. 6) robust, 2.2 times as wide as long, laterally arcuate, widest in anterior third; metallic scarlet and bronze dorsally; ventrally metallic violet, rugulose, with dense, recumbent white setae. Setae costulate ventrally. Frons green to blue-green with micropunctures and larger punctures, metallic, with dense, recumbent white setae near antennal insertions. antennae strongly bisinuate, emarginate; posterior margin very weakly bisinuate, even angular. Pronotal disk evenly covered with deep punctation and micropunctation. Scutellum blue-black. Leg metallic violet, rugulose, 632 ft.; 16°45.91’N, 62°12.95’W; 30 MAY – 12 JUNE 2002; Malaise trap, M.A. Ivie/ WIBF 059324 (WIBF). 2 – MONTSERRAT: N. Cedar Ghaut; Furlong, 170 ft; 16°46.546’N, 62°10.333’W; 04-09 AUG 2005; M.A. Ivie colr/WIBF 059325 (BMNH). 1 – MONTSERRAT: Cassava; Ghaut, Beattie House; 16°45.91’N, 62°12.95’W; 17 – 30 MAY 2002, 632 ft; A. Krakower, Malaise/ WIBF 059327 (WIBF). 1 – MONTSERRAT: Hope Ridge; 16°45.17’N, 62°12.74’W; 01 AUG 2003, 1051 ft; J. Boatswain & J. Martin; Canopy fogging at dawn/ WIBF 059328 (WIBF). 1 – MONTSERRAT: Woodlands; Duryea’s Parr. 420; 16°45.799’N, 62°13.210’W; 16 – 29 JUNE 2000, in pool; M.A. Ivie & K.A. Guerrero/ WIBF 059329 (WIBF).

**Biology.** Nothing is known about the biology of this species.

*Chrysobothris sabae* Maier and Ivie, *new species* (Figs. 1, 5)

**Diagnosis.** This species most closely resembles *Chrosoba thoracica* due to its entirely red pronotum; however, it can be distinguished from the humeral and first discal blue maculae completely separated (viewed from the side) and the evenly bronze elytra (Fig. 1). Further, the male genitalia differ from all other species of the group (Fig. 5), the median lobe being more narrowly angulate apically than in *Chrosoba thoracica*. *Chrysobothris sabae* is the only species in the group known from Saba, Netherlands Antilles.

**Description.** Male (Fig. 1); length 6.2 mm, width 2.9 mm across at widest point; brilliant metallic scarlet and bronze dorsally; ventrally metallic blue-black to metallic green; evenly covered with heavy, confluent punctation. Head green, with micropunctures and larger punctures, costulate ventrally. Frons green to blue-green metallic, with dense, recumbent white setae. Setae on frons set into deep pits, cuticle of frons areolate. Eyes large, covering approximately 1/3 of total head surface area, converging narrowly at vertex and widely at antennal insertions. Antennal cavities separated by at least 5 times diameter of antennal cavity. Head with weak inverted “Y” shaped median carina on vertex. Antennae weakly serrate, golden green with sparse white setae. First 3 antennomeres not significantly dilated apically. Pronotum metallic scarlet dorsally, anterior margin and anterior angles green, without brilliant metallic cyan macula at middle of posterior margin; almost 2 times as wide as long, laterally arcuate, widest in anterior third; anterior margin very weakly bisinuate, emarginate; posterior margin strongly bisinuate, even angular. Pronotal disk evenly covered with deep punctation and micropunctation. Scutellum blue-black. Leg metallic violet, rugulose,
with scattered punctuation. Profemur with broad serrate tooth, bordered with 7 small teeth. Protibia with small tooth on interior face. Mesotibia with row of spines on interior face. Prosternal process evenly, deeply punctate and evenly rugulose, expanded behind procoxae. Elytra 2 times longer than wide, parallel in basal third, then gradually expanding to reach widest point at apical third; bronzy violet, with slight purple sheen, color even to apex; entire base of elytron bordered with thick band of metallic cyan, cyan extending posteriorly to apex; distinctly serrate in apical third. Elytral suture and two-thirds of distance to apex; evenly punctate; bordered with weak tooth posteriorly. Elytra 2 times longer than that seen in C. sabae. 

**Chrysobothris thoracica** (Fabricius, 1798) can be distinguished by the humeral and first discal blue maculae confluent and the elytra with bluish green cast at apex (Fig. 3). Furthermore, the male genitalia (Fig. 7) differ from all other species of the group, with a broader apex of the median lobe than that seen in C. sabae.

**Type Locality.** Saba, in the former Netherland Antilles, now a Public Entity within the Kingdom of the Netherlands.

**Distribution.** Puerto Rico, St. Thomas, Great St. James, St. John, Sandy Cay, Jost Van Dyke, Guana, Necker Island, Anguilla. Records that are tentatively included: St. Croix, Anguilla.

**Type Locality.** St. Thomas, 3 syntypes in ZMUC (Zimms 1964).


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