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A new species of planthopper in the genus *Colpoptera* (Hemiptera: Fulgoroidea: Nogodinidae) from the Northeastern coast of Jamaica

BRIAN W. BAHDER[1], WAYNE MYRIE[2], ERICKA E. HELMICK[3], ALEX R. VAN DAM[4] & CHARLES R. BARTLETT[5]

[1]*University of Florida, Department of Entomology and Nematology - Fort Lauderdale Research and Education Center; 3205 College Ave., Davie, FL 33314-7719, USA*
bbahder@ufl.edu; https://orcid.org/0000-0002-1118-4832
[2]*Coconut Industry Board, 18 Waterloo Road, Kingston 10, Jamaica W. I.*
cocomax@cwjamaica.com; https://orcid.org/0000-0001-8969-1204
[3]*University of Florida, Department of Entomology and Nematology - Fort Lauderdale Research and Education Center; 3205 College Ave., Davie, FL 33314-7719, USA*
ehelmick@ufl.edu; https://orcid.org/0000-0002-5153-0891
[4]*University of Puerto Rico at Mayagüez, Department of Biology, Carr. 108, Barrio Miradero Km 1.3, Mayagüez, Puerto Rico 00680*
alex.vandam@upr.edu; https://orcid.org/0000-0002-1966-0338
[5]*University of Delaware, Department of Entomology and Wildlife Ecology, 250 Townsend Hall, Newark, DE 19716-2160, USA*
bartlett@udel.edu; https://orcid.org/0000-0001-9428-7337

Abstract

A new species of *Colpoptera* Burmeister, 1835, *C. japortla* **sp. nov.** (Colpopterinae: Colpopterini), is described from Jamaica. The new species was found during a survey of planthoppers associated with coconut palms to document taxa that are potential phytoplasma vectors. Molecular data for the five-prime region of the cytochrome *c* oxidase subunit I (COI) gene and 18S rRNA gene is provided and compared to available members of Colpopterini. Syntypes of *Colpoptera rugosa* Van Duzee borrowed for comparison with the new species were found to be a mixed series including representatives of *Jamaha elevans* (Walker). A lectotype designation, with an amended diagnosis, is made for *Colpoptera rugosa*, to preserve the stability of nomenclature and this species is transferred to *Jamaha* as *J. rugosa*, **comb. nov.**

Key words: taxonomy, phylogenetics, biodiversity, survey, Colpopterinae

Resumen

Se describe para Jamaica una nueva especie perteneciente al género *Colpoptera* Burmeister, 1835, *C. japortla* **sp. nov.** (Colpopterinae: Colpopterini). La nueva especie se descubrió durante un muestreo de chicharritas en cocoteros, en el que se documentan todos aquellos posibles taxones vectores de fitoplasmas. Se proporcionan datos moleculares para la región cinco-prima del gen de la subunidad I (COI) del citocromo *c* oxidasa y para el gen 18S ARNr y se comparan con los miembros disponibles de Colpopterini. Se descubrió que los sintipos de *Colpoptera rugosa* de Van Duzee utilizados para comparar con la nueva especie, eran en realidad una serie mixta que incluía representantes de *Jamaha elevans* (Walker). Se realiza una designación de lectotipo, con un diagnóstico modificado, para *Colpoptera rugosa* con el fin de preservar la estabilidad de la nomenclatura y esta especie se transfiere a *Jamaha* como *J. rugosa*, **comb. nov**.

Palabras clave: taxonomía, filogenética, biodiversidad, muestreo, Colpopterinae

Introduction

Recent vector survey work in Jamaica has focused on documenting Cixiidae due to the ability of *Haplaxius crudus* (Van Duzee, 1907) to transmit the phytoplasma (‘*Candidatus* Phytoplasma palmae’) that causes lethal yellowing (LY) in coconut palms (*Cocos nucifera* L.) (Howard & Thomas 1980) and the discovery of *Oecleus mackaspringi*

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Bahder & Bartlett, 2019, as a putative vector of LY (Myrie *et al*. 2019). Planthopper taxa associated with palms aside from Cixiidae are also being documented because of the possibility that they may play a role in pathogen transmission. In survey work during February of 2022, a specimen of Colpopterini was collected by sweeping vegetation underneath coconut palms (*Cocos nucifera* L.) and determined to represent a new species of *Colpoptera* Burmeister, 1835. The genus *Colpoptera* (Nogodinidae: Colpopterinae: Colpopterini) is comprised of about 23 species distributed mainly in the Caribbean, Mesoamerica, and northern South America, with one species recorded from Florida (Bartlett *et al.* 2014, Bartlett & Wilson 2023, Bourgoin 2023).

The known nogodinid fauna of Jamaica consists of all three described species of *Jamaha* Gnezdilov & O'Brien, 2008—*J. chrysops* (Fennah, 1955), *J. elevans* (Walker, 1858), and *J. playa* Bahder & Bartlett, 2023 (in Bahder *et al.* 2023), plus *Colpoptera rugosa* Van Duzee, 1907 (described from Jamaica) and *C. sinuata* Burmeister, 1835 (described from Mexico, reported from Jamaica by Melichar 1923) (Metcalf 1958, Gnezdilov & O'Brien 2008, Bahder *et al.* 2023, Bourgoin 2023). Herein, the new taxon is described, molecular data for the five-prime region of the cytochrome *c* oxidase subunit I (COI) gene and 18S rRNA gene is provided and compared to available members of Colpopterini, with other available taxa of Nogodinidae serving as outgroups, and a key to the species of *Jamaha* is provided. In addition, we review the genus-level status of *Colpoptera rugosa* and also designate and illustrate a lectotype for this species.

Materials and methods

Locality and Specimen collection. The specimen was collected by sweeping vegetation underneath coconut palms (Fig. 1), aspirated and then transferred directly to 95% ethanol. The specimen was collected near Spring Garden, Portland Parish, Jamaica (18.222517, -76.632347) and exported to the U.S.A. under permit number P526-170201-001. The specimen was measured, photographed, and dissected using a Leica M205 C stereoscope and Leica DFC25 camera. Images of the specimen and all features photographed were generated using the LAS Core Software v4.12. The holotype is deposited at the University of Florida—Fort Lauderdale Research and Education Center (FLREC) in Davie, FL, U.S.A.

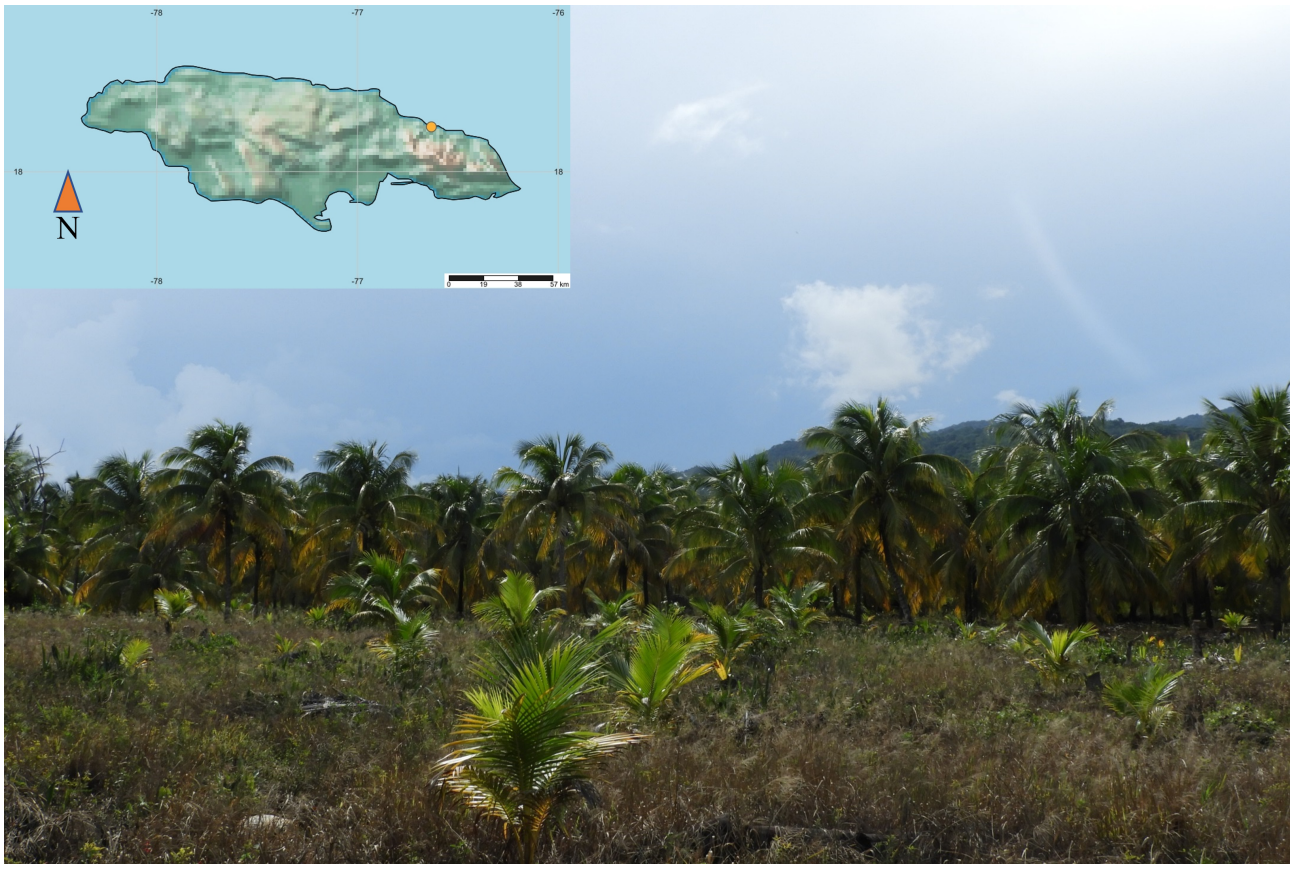

FIGURE 1. Habitat and type locality of *Colpoptera japortla* **sp. n.**

Syntypes of *Colpoptera rugosa* were borrowed from the California Academy of Sciences collection (San Francisco, CA). Examined syntypes were provided with 2D barcode labels and data captured using "Arthropod Easy Data Capture" (Schuh *et al*. 2010, Schuh 2012, Arthropod Easy Capture 2013) associated with the Tri-Trophic Thematic Collections Network project (http://tcn.amnh.org/), with these data eventually aggregated at iDigBio (https://www.idigbio.org/). Label data is quoted verbatim for all primary types examined (lectotypes and allotypes), using "/" to indicate a line break and "//" to indicate a new label and supplemental information given in brackets.

Morphological terminology and identification. Morphological terminology generally follows Gnezdilov (2013) except for the use of the traditional terms frons and vertex for metope and coryphe, and male terminalia nomenclature updated after Bourgoin (1988) and Bourgoin & Huang (1990) and forewing venation following Bourgoin *et al*. (2015). New taxa and nomenclatural acts are to be attributed to Bahder and Bartlett.

Dissections and DNA Extraction. The terminalia that were dissected also served as the source of tissue for DNA extraction. The terminal end of the abdomens was removed and placed directly into a solution of tissue lysis buffer (buffer ATL) and proteinase K (180 µl ATL and 20 µl proteinase K) from the DNeasy® Blood and Tissue Kit (Qiagen). The abdomen was left to lyse for 24 hours at 56 °C. Following lysis, the eluate was transferred to a new 1.5 ml microcentrifuge tube and DNA extraction proceeded as per the manufacturer's instructions. The terminalia were then immersed in 200 µl of buffer ATL and 200 µl of buffer AL from the same kit and placed at 95 °C for 24 hours to remove fat, wax, and residual tissue. The cleared genitalia were then used for morphological characterization and photography.

PCR Parameters, Sequence Data, and Analysis. To obtain COI and 18S sequence data, previously published primers were used in all PCR reactions (Table 1). PCR reactions contained 5x GoTaq Flexi Buffer, 25 mM $MgCl_2$, 10 mM dNTP's, 10 mM of each primer, 10% PVP-40, and 2.5U GoTaq Flexi DNA Polymerase, 2 µl DNA template, and sterile dH_20 to a final volume of 25 µL. Thermal cycling conditions for all loci involved were as follows: 2 min initial denaturation at 95 °C, followed by 35 cycles of 30-sec denaturations at 95 °C, 30-sec annealing, and extension at 72 °C. Specific annealing temperatures and extension times for respective loci are presented in Table 1. Products were visualized on a 1.5% agarose gel stained with GelRed (Biotium). PCR products of the appropriate size were purified using the ExoSAP-IT™ Express PCR Product Cleanup Reagent per the manufacturer's protocol (ThermoFisher Scientific, Waltham, Massachusetts, USA). The purified PCR product was quantified using a NanoDrop Lite Spectrophotometer (ThermoFisher Scientific, Waltham, Massachusetts, USA) and sequenced using the SeqStudio Genetic Analyzer (Applied Biosystems). Contiguous files were assembled using DNA Baser (Version 4.36) (Heracle BioSoft SRL, Pitesti, Romania), and aligned using ClustalW as part of the package MEGA7 (Kumar *et al.* 2016). Maximum Likelihood trees were generated using the Bootstrap method as the test of phylogeny based on the Tamura-Nei model for each the COI and 18S separately as well as the concatenated data for both loci.

TABLE 1. Primers used to amplify corresponding gene regions that were used to assess the placement of novel taxon and PCR parameters for each locus.

Locus	Primer	Direction	Sequence (5' → 3')	Annealing	Extension	Reference
COI	COI_D1_F	Forward	GGAACWATAAGAAGWATAATYATYCG	40 ˚C	1 min. 30 sec.	Humphries *et al.* 2021
	C1-J-2195RC	Reverse	ACTTCTGGATGACCAAAAAATCAA			
18S	18SF	Forward	ACTGTCGATGGTAGGTTCTG	50 ˚C	2 min.	Bahder *et al.* 2019
	18SR	Reverse	GTCCGAAGACCTCACTAAA			

Taxon sampling. For molecular comparisons, an unidentified species of *Colpoptera* from Florida, U.S.A. is included in the analysis (see Bartlett *et al.* 2014, Bartlett & Wilson 2023) as the ingroup taxon. Outgroup taxa included are *Jamaha playa* and an unidentified species of *Biolleyana* Distant, 1909 (Nogodinidae: Nogodininae) was used to root the tree. Accession numbers for all taxa, including the new species are included in Table 2.

TABLE 2. Molecular taxon sampling and GenBank accession numbers.

Taxon	COI	18S
Colpoptera japortla **sp. nov.**	OR466122	OR470697
Colpoptera sp.	OR466123	OR470699
Jamaha playa	OQ120945	OQ116784
Biolleyana sp.	OR466124	OR470698

TABLE 3. Biometric data for *Colpoptera japortla* **sp. nov.** (in mm).

Character	Male (*n*=2)	Female (*n*=2)
Body length, with wings	3.8	3.9
Body length, no wings	2.2	2.5
Forewing length	3.5	3.5–3.6
Vertex length	0.2	0.2
Vertex width, basal margin	0.4	0.4
Vertex width, distal margin	0.4	0.4
Pronotum length, midline	0.2	0.2
Mesonotum length, midline	0.6	0.6
Mesonotum width	0.9	0.9
Frons width, dorsal margin	0.4	0.4
Frons width, clypeal suture	0.3	0.3
Frons width, widest	0.5	0.5
Frons width, narrowest	0.3	0.3
Frons length, midline	0.5	0.5
Clypeus length	0.3	0.3

Systematics

Family Nogodinidae Melichar, 1898

Subfamily Colpopterinae Gnezdilov, 2003

Tribe Colpopterini Gnezdilov, 2003

Genus *Colpoptera* Burmeister, 1835

Type species. *Colpoptera sinuata* Burmeister, 1835 (type by subsequent designation of Distant 1910: 314)

Diagnosis (Abridged from Gnezdilov & O'Brien 2008). Body elongate, head about as broad as prothorax, eyes prominent. Frons elongate, with distinct median carina. Vertex transverse, anterior margin truncate, posterior margin concave. Pronotum narrow, anterior margin strongly convex, posterior margin concave. Mesonotum at midline longer than vertex and pronotum combined, bearing arcuate anterior transverse carinae and median carina. Forewings elongate and narrowed to rounded apex, with narrow hypocostal plate and many transverse veins apically, hindwings large and functional. Hind tibia with single lateral tooth distally. Male pygofer with nearly straight hind margin (elongate process absent). Aedeagus relatively simple, bilaterally symmetrical, with elongated, usually bifurcated, subapical lateral processes ("phallobase lobe" of Gnezdilov & O'Brien 2008); and with pair of shorter, simple ventral processes. Gonostyli bearing broad capitulum, narrowing apically with broad lateral tooth. Anal tube elongated. Female sternite VII with rounded median process (Gnezdilov & O'Brien 2008: fig. 59). Gonoplacs nearly triangular, fused medially; gonocoxa VIII with straight hind margin (Gnezdilov & O'Brien 2008: figs. 60–62). Female anal tube long and narrow, distinctly longer than gonoplacs (Gnezdilov & O'Brien 2008: fig. 57).

***Colpoptera japortla* Bahder & Bartlett, sp. nov.**
(Figures 2–7)

Type locality. Spring Garden, Portland Parish, Jamaica (18.222517, -76.632347) (Fig. 1).

Etymology. The specific epithet '*japortla*' is an amalgamation of Jamaica and Portland Parish, and is intended to be used as a noun in apposition.

Diagnosis. Body pale, elongate. Vertex rectangular, approximately 2.5× as wide as long at midlength. Gonostyli broadly rounded ventrally, capitulum relatively short and broad, bearing helical ridge. Aedeagus with elongated subapical processes, bifurcate at base with dorsal branch much longer than ventral, and short curved ventral paired processes. Male anal tube elongated, downturned, ventral margin sinuate with distinctive concavity near midlength.

Description. Color. Body pale, generally testaceous with diffuse irregular darker shading, slight fuscous wash on pronotum and mesonotum, forewing transparent, fuscous in basal 2/3, paler distad of clavus.

FIGURE 2. Adult habitus *Colpoptera japortla* **sp. n.**; (A) male lateral view and (B) male dorsal view.

Head. In dorsal view, vertex broader than wide (width approximately 2.5× length at midline), nearly rectangular, anterior margin truncate, approximately level with anterior margin of eyes, posterior margin concave, median carina present, transverse carina at fastigium (Fig. 3A). In lateral view, head profile generally rounded (slightly angled at fastigium at transverse carina), vertex declined, weakly projected in front of eyes. Frons in lateral view curved in

dorsal third, face declinate (Fig. 3B). In frontal view, frons peltate, widest just above frontoclypeal suture; dorsal margin (at transverse carina) truncate, lateral margins curved, expanding from dorsal margin, reaching widest point just below antennae then constricting strongly, frontoclypeal suture convexly arched (Fig. 3C). In lateral view, gena bearing incomplete longitudinal carina from a point approximately near the junction of the lateral carinae of the frons with the frontoclypeal suture to (but not reaching) the posterior margin of the lateral ocellus. Eye obliquely oval, weakly emarginated near antenna; lateral ocellus conspicuous near anteroventral margin of eye. Antennae short, scape ring-like, pedicel slightly longer than wide and cylindrical bearing many sensory plaques, flagellum bristle-like with bulbous base.

Thorax. Pronotum in dorsal view narrow, widest at midpoint with anterior margin convex, posterior margin concave, tricarinate, carina at midline contiguous from anterior to posterior margin, lateral carinae extending from anterior margin of pronotum, arched laterad, becoming obsolete before posterior margin (Fig. 3A). Mesonotum along midline about 2.4× longer than head and pronotum combined, and about 1.25× wider than long, tricarinate at anterior margin, two additional carinae arising at mid carina near anterior margin, extending diagonally to just beyond lateral carinae, slightly sinuate (Fig. 3A). In lateral view, greatly raised, angled where diagonal carinae arise at mid carina (Fig. 3B).

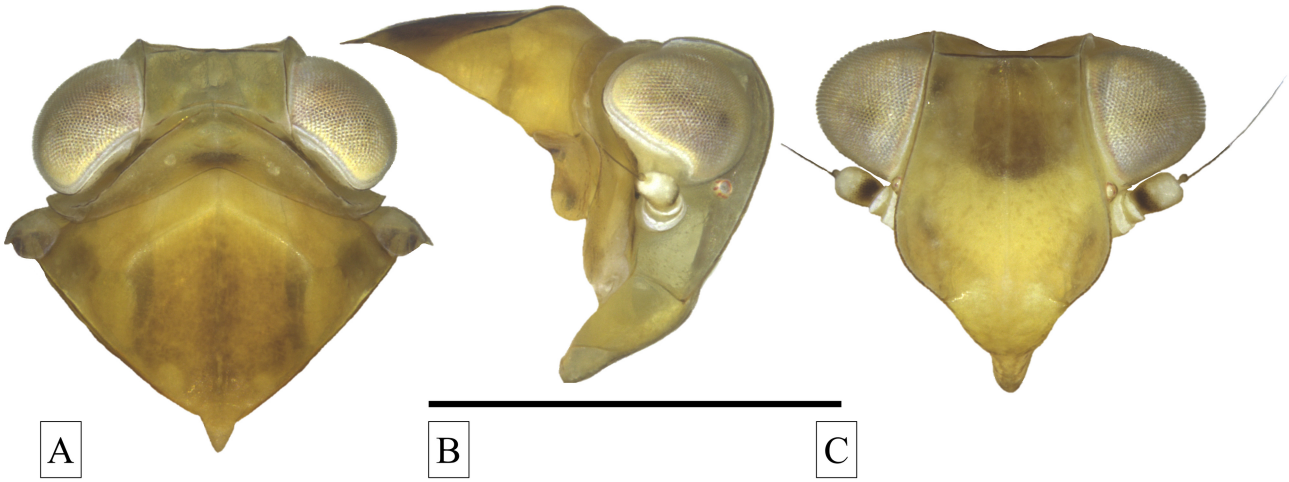

FIGURE 3. Adult *Colpoptera japortla* **sp. n.**; (A) head, pronotum, mesonotum dorsal view, (B) head and pronotum lateral view, and (C) head frontal view; scale = 1 mm.

Forewing elongate, broadest basally, narrowed distally to rounding apex (weakly pointed near apex of MP); costal margin convexly arched, trailing margin constricted at claval apex, veins reticulate, especially distally; MP and CuA forked proximad of claval apex (Fig. 4).

Male terminalia. Pygofer in lateral view quadrate, anterior and posterior margins subparallel, anterior margin convexly sinuate, posterior margin nearly linear, medioventral process lacking (Fig. 5). Gonostyli in lateral view broad and generally rounded with stout capitulum on anterio-dorsal surface, capitulum semi-helical with sclerotized curved ridge, apex blunt with caudal surface rounded, anterior margin appearing hooked (Fig. 5). Aedeagus nearly symmetrical with two pairs of processes (Fig. 6); first pair (A1 & A2) larger , bifurcated at base, resulting in two projections per process (A1a and A1b on right lateral side and A2a and A2b on left lateral side) arising on ventral margin, curving dorsad and cephalad initially, arching with apex pointing ventrad, nearly reaching base (Fig. 7A, B). Second pair (A3 & A4) arising on ventral side at midline, robust, short, strongly sinuate, less sclerotized than A1 and A2, curving from ventral side laterally, approximately half length of A1b and A2b (Fig. 7C, D). Anal segment elongated and downcurved, irregularly sinuate in lateral view, dorsal margin angled ventrad approximately at ¼ length from base, ventral margin with strong invagination approximately at 2/3 from base, apex distad of invagination falcate.

Plant associations. Unknown, collected by sweeping herbaceous weeds.

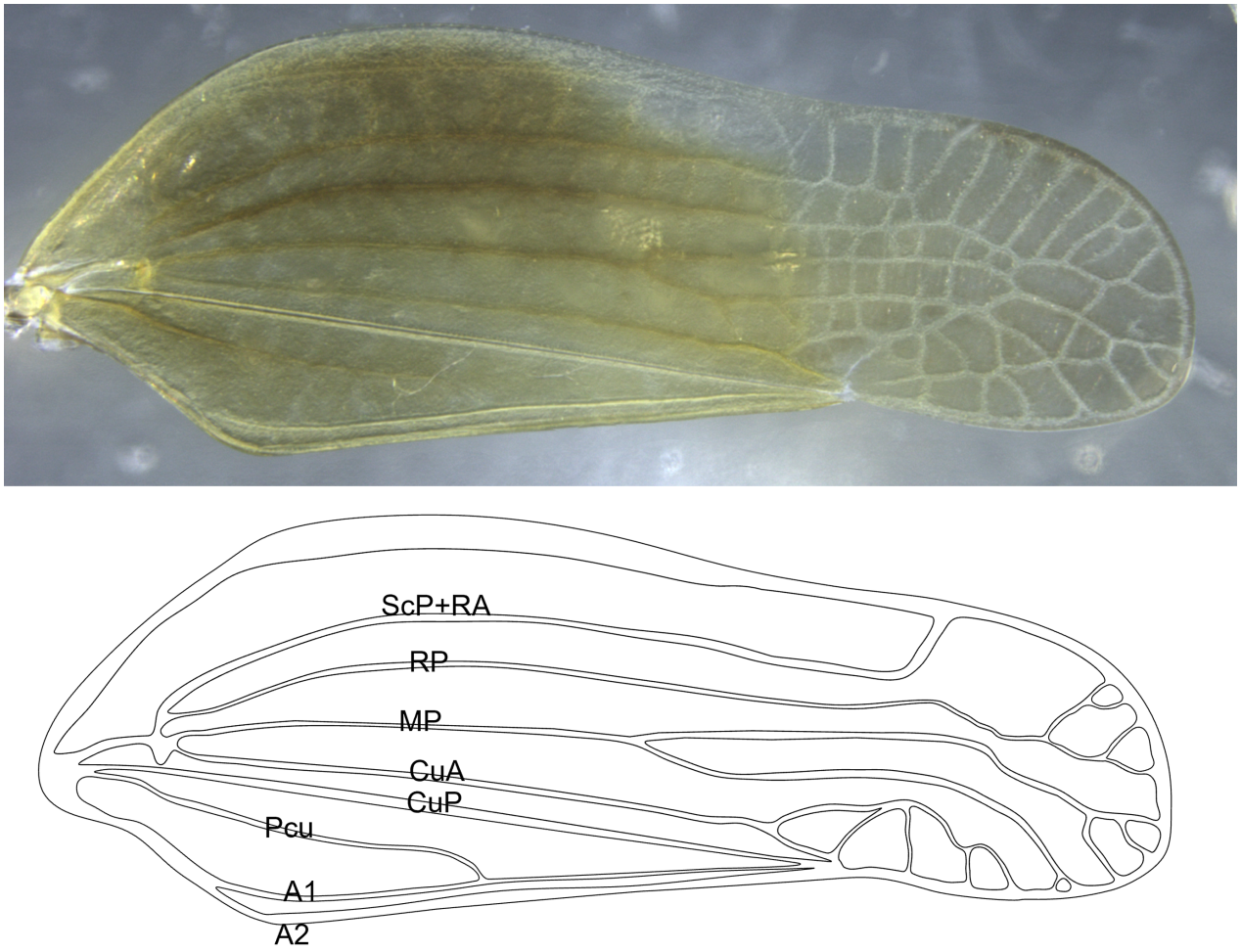

FIGURE 4. Forewing venation of *Colpoptera japortla* **sp. n.;** wing vein nomenclature following Bourgoin *et al.* (2015).

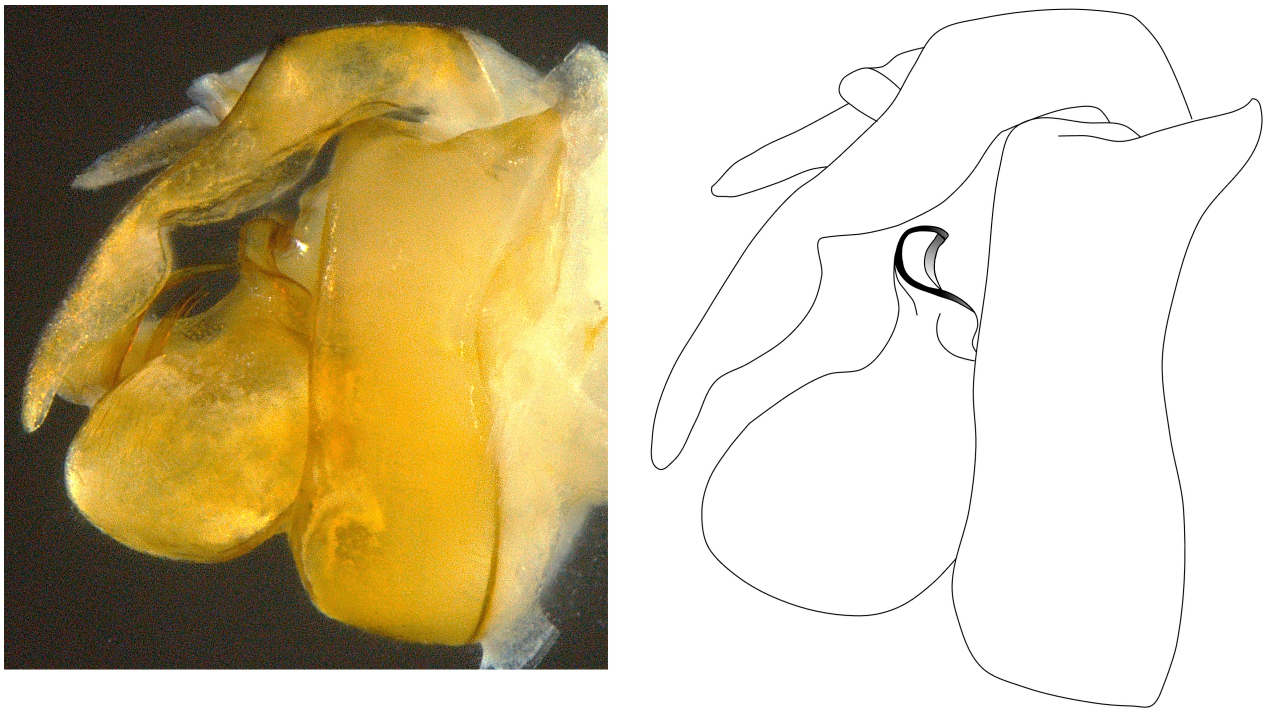

FIGURE 5. Adult male *Colpoptera japortla* **sp. n.**: terminalia in left lateral view.

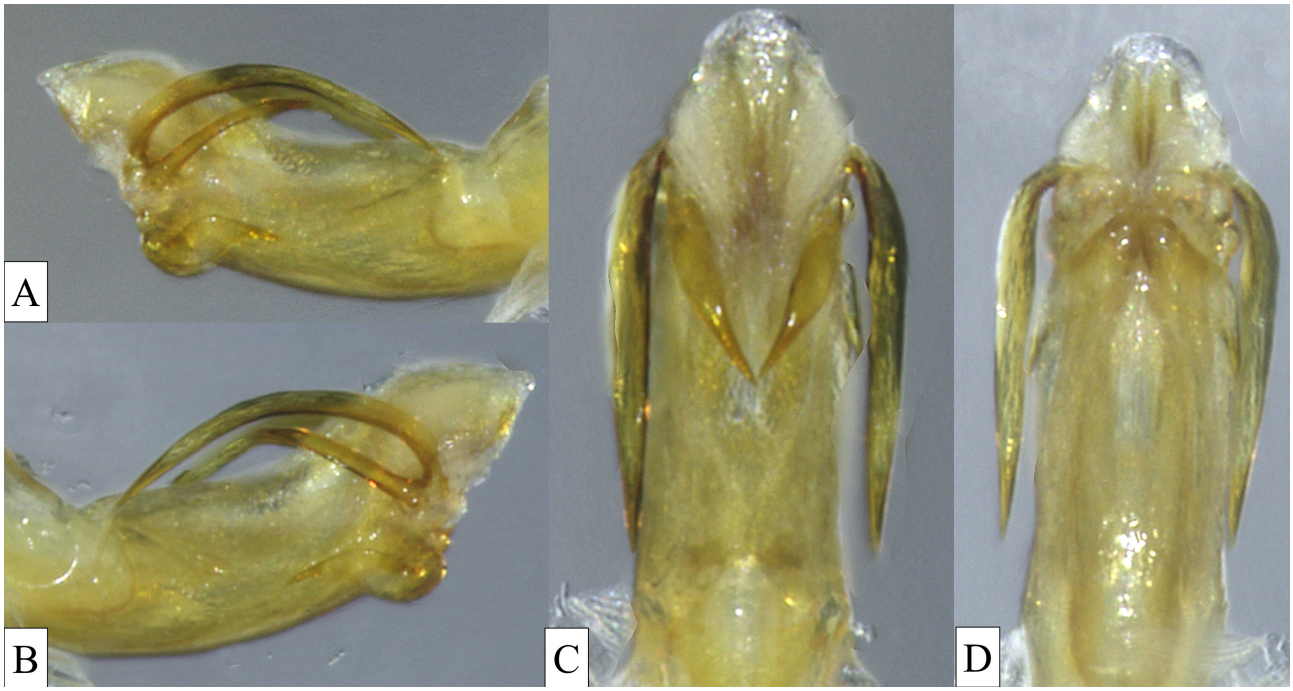

FIGURE 6. Aedeagus of *Colpoptera japortla* **sp. n.**: (A) right lateral view, (B) left lateral view, (C) dorsal view and (D) ventral view.

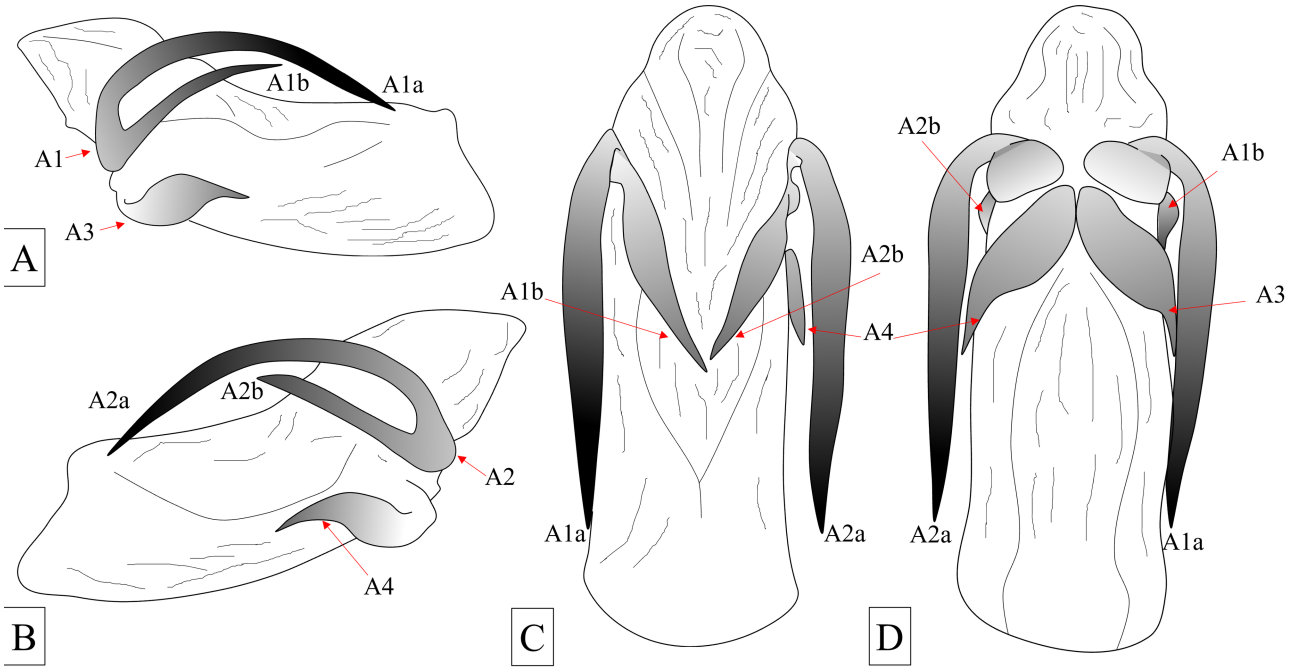

FIGURE 7. Line art aedeagus of *Colpoptera japortla* **sp. n.**: (A) left lateral view, (B) right lateral view, (C) dorsal view and (D) ventral view.

Distribution. Jamaica (Portland Parish).

Type material. Holotype, male: "Jamaica, Portland Parish / nr. Spring Garden / 15. II.2022 / sweeping weeds / Coll.: B.W.Bahder // Holotype / *Colpoptera japortla* ♂" (FLREC);

Paratypes (1 male, 2 females): same data as holotype (FSCA).

Sequence Data. For the COI gene, a 531 bp product (GenBank Accession No. OR466122) and for the 18S gene, a 1,367 bp product (GenBank Accession No. OR470697) were generated. Based on the phylogenetic analyses

performed, there was strong bootstrap support for *Colpoptera japortla* **sp. nov.** resolving adjacent to an unidentified species of *Colpoptera* from Florida, U.S.A. based on COI (90) and 18S (100) (Fig. 8). Furthermore, the tree from the concatenated COI and 18S data demonstrated further support (98) for the placement of *Colpoptera japortla* **sp. nov.** adjacent to the unidentified species from Florida.

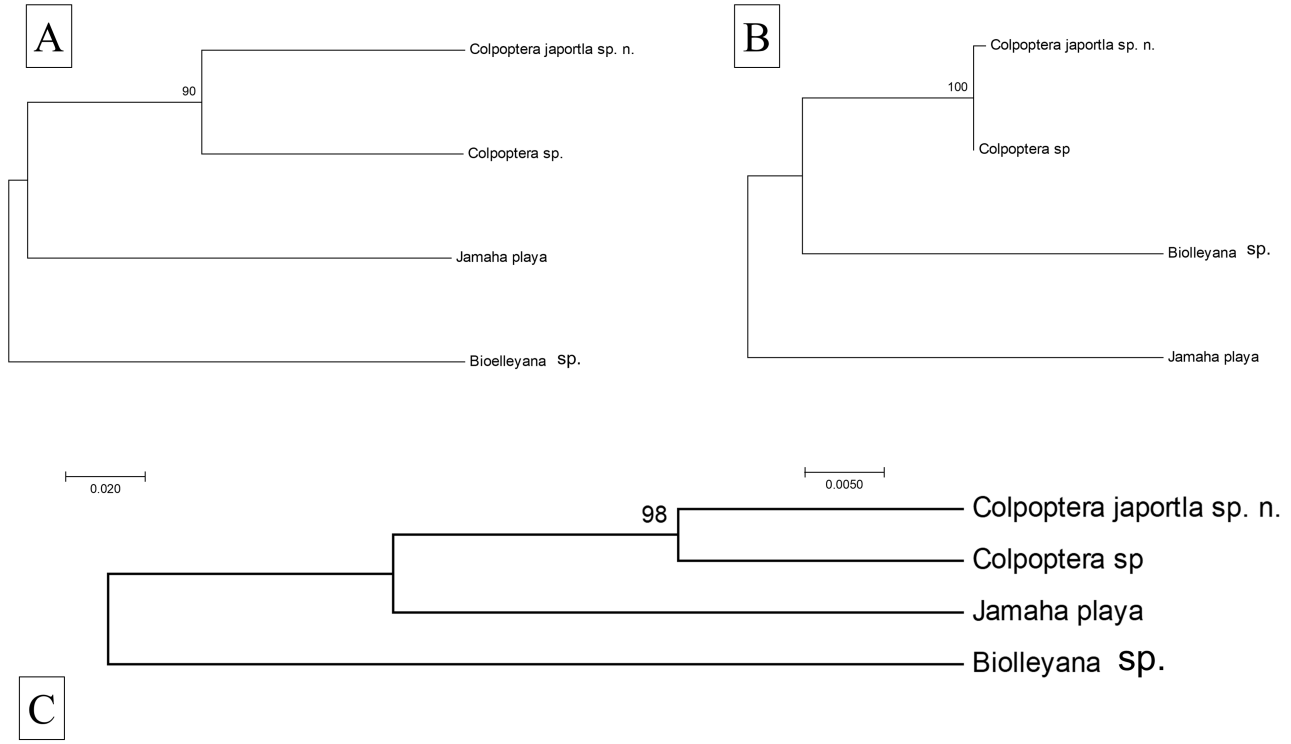

FIGURE 8. Maximum Likelihood trees exhibiting relationship of *Colpoptera japortla* **sp. n**. to available nogodinid taxa; (A) COI, (B) 18S, bootstrap support in % (1,000 replicates) indicated above branches, scale bar = percent nucleotide difference.

Remarks. The general habitus of *Colpoptera japortla* **sp. nov.** appears similar to many described species of *Colpoptera*. The most similar species appears to be *C. rotunda* Caldwell from Yucatan, Mexico (Caldwell 1945) based on salient features and the general form of the terminalia. However, *Colpoptera japortla* **sp. nov.** differs from *C. rotunda* by possessing paired ventral processes on the aedeagus that are absent in *C. rotunda*, also, each gonostylus of *C. rotunda* bears an elongated, falcate capitulum, whereas *C. japortla* **sp. nov.** bears a short, stout capitulum with a helical ridge. The other species recorded from Jamaica, *C. sinuata*, differs in overall coloration (specifically forewing color and pattern) as well as the structure of aedeagus. While *C. sinuata* does possess ventral processes, they are much narrower compared to *C. japortla* **sp. nov.** and shape of dorsal processes in *C. sinuata* are more similar to each other in size and not curved whereas these processes in *C. japortla* **sp. nov.** have the distal pair singficantly longer than the basal pair, with all processesses distinctly curved.

Very little data exist for Nogonidid taxa that would allow for generating a tree from combined COI and 18S data. As new taxa are discovered and previously described taxa become available for analysis, this shortcoming can be addressed. Regardless, the morphological features (lack of lateral process seen in *Jamaha* and less produced head/relatively short wings compared to *Neocolpoptera*) observed in the new species support placement in the genus *Colpoptera*.

Genus *Jamaha* Gnezdilov & O'Brien, 2008

Diagnosis. Metope elongate, enlarged before clypeus, with median carina running through the postclypeus only. Fore wings widely rounded apically. Radius, median, and cubitus anterior bifurcate (R 2 M 2 CuA2). Hind tibia with single tooth distally. Hind margin of pygofer (males) with long process medially. Aedeagus without ventral hooks.

***Jamaha rugosa* (Van Duzee, 1907), comb. nov.**
(Figure 9)

= *Colpoptera rugosa* Van Duzee, 1907: 36 (original description).

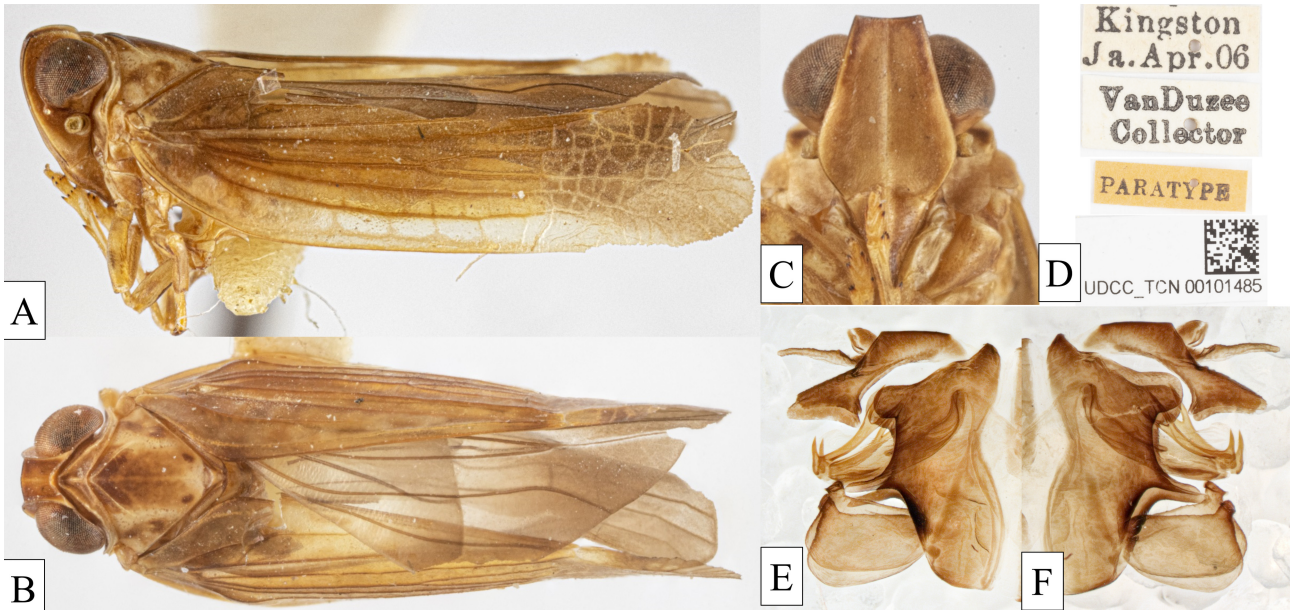

FIGURE 9. Male *Jamaha elevans* from Van Duzee syntype series of *Colpoptera rugosa* at CASC; (A) habitus lateral view, (B) habitus dorsal view, (C) frontal view, (D) labels, (E) male terminalia, right lateral view, (F) male terminalia, left lateral view.

Amended diagnosis. Male terminalia. Pygofer in lateral view broadest subdorsally, narrowed ventrad, anterior margin concave, posterior margin bearing large rounded lobe at caudodorsal angle (apex bluntly acute) and an elongated blunt process near midlength, ventral margin nearly linear, medioventral process lacking. Gonostyli in lateral view broad, spatulate (dorsal margin straight—excepting capitulum—ventral margin weakly convex except broadly rounded along ventrocaudal margin, apex rather truncate; capitulum short, apex diagonally truncate crowned with a flanged margin. Aedeagus nearly symmetrical, weakly upcurved, with a pair of subapical ventral processes and a pair of subapical lateral processes; ventral processes closely approximated, much shorter than lateral processes, acuminately pointed (about ¼ length of aedeagus); lateral processes nearly 3/4 length of aedeagus, symmetrical, apical half forked into three elongated processes. Anal segment in lateral view elongate, downcurved at epiproct, distally greatly expanded with apex truncate cave; in dorsal view anal tube elongate, parallel-sided, bifid past paraproct; paraproct thin and elongated.

Remarks. As we had noted in an earlier manuscript (Bahder *et al.* 2023), Distant (1910) considered *C. rugosa* and *J. elevans* synonyms, although this synonymy was not subsequently followed (e.g., Metcalf 1958). *Colpoptera rugosa* was described from a series of specimens collected from several locations in southwestern Jamaica by Van Duzee in 1906 (Van Duzee, 1907). Van Duzee did not designate types for his described species. However, he was working on a manuscript designating types for his species when he died in 1940 (O'Brien 1971) and many of his described species at CASC have specimens bearing lectotype labels. However, these designations had not been published, which is necessary for validity. For *Colpoptera rugosa*, Van Duzee had labeled a male from Kingston (California Academy of Sciences Type number 2301) as lectotype, and a female, also from Kingston, as allotype (California Academy of Sciences Type number 2301). We examined *Colpoptera rugosa* syntypes from Kingston and Montego Bay.

We examined the entire series of *Colpoptera rugosa* syntypes from the CASC collection. The series consists of 33 specimens on 23 pins (some pins included 2 or 3 specimens), including the specimens tagged as lectotype and allotype by Van Duzee (with the remainder bearing paratype labels). Some of these specimens were damaged, lacking abdomens or other parts (including evidence of dermestid damage), but many were sound. We cleared the abdomens of 11 male specimens and found that 9 of these—including Van Duzee's lectotype—were found to be *Jamaha elevans* (Fig. 8). Two of the specimens—both from Montego Bay (Fig. 9)—were *Jamaha*, but not *J.*

elevans, or any other *Jamaha* we are aware of. Because the validity of the species *Colpoptera rugosa* depends on the type designation, we are designating one of these specimens we are designating as the lectotype of *Colpoptera rugosa* (see material examined). Because the lectotype specimen designated here has the elongate process on the lateral margin of the male pygofer, the diagnostic feature of the genus *Jamaha*, we refer this species to that genus as *Jamaha rugosa* (Van Duzee, 1907), **new combination**.

The specimens from the *Colpoptera rugosa* syntype series that we found to be *Jamaha elevans* are listed under the material examined for that species. Unfortunately, we were unable to find a convincing diagnostic feature to separate these species without recourse to male terminalia. Because of this, we are listing only the males with cleared genitalia as being definitively *J. rugosa*, new combination, or *J. elevans*. The remainder we are listing separately under Other material examined—*Colpoptera rugosa* syntypes of uncertain affinity".

Jamaha rugosa and *J. elevans* can be distinguished from eachother by the processes of the aedeagus where *J. elevans* possess a pair of dorsally angled, short processes at the apex of the aedeagus on the dorsal margin with a pair of elongate, bifid processes angled cephalad, whereas *J. rugosa* lacks the apical processes, and instead of bifid processes, possesses a pair of elongate trifid processes. Both *J. elevans* and *J. rugosa* can also be separated from *J. playa* by the armature of the aedeagus. *Jamaha playa* has asymmetrical armature, an apical pair of processes similar to *J. elevans* exist but are directly curved cephalad, on the right lateral side, exists a large bifid process and on left lateral side exists a large trifid process.

Type material. Lectotype (here designated, from CASC *Colpoptera rugosa* syntype series, marked as paratype by Van Duzee): "Montego Bay / Ja.[maica] Apr. 06 // Van Duzee / Collector // Paratype [yellow paper] // EPVan Duzee / collector // Lectotype / Colpoptera / rugosa V.D. // Colpoptera / rugosa /V.D. [handwritten] // UDCC_TCN 00102115 [2D barcode label].

Paralectotype (CASC, male). "Montego Bay / Jamaica / April 1906 / E. P. Van Duzee // Paratype //EPVanDuzee / Collection // Paralectotype / Colpoptera / rugosa V.D. // UDCC_TCN 00102585 [2D barcode label].

Other Material examined—*Colpoptera rugosa* syntypes of uncertain affinity.

Allotype (unpublished Van Duzee designation). "Kingston / Ja. Apr.06// Van Duzee / Collector // Allotype [red paper] // EPVanDuzee / Collector // California Academy / of Sciences / Type. no. 2302 //Colpoptera / rugosa / Van D [handwritten] // AMNH_IZC 00300650"

Kingston, Apr 1906, E. P. Van Duzee, AMNH_IZC 00300441 (2 males, 1 female on same pin), same AMNH_IZC 0030040 (1 male, 2 females, same pin). Montego Bay, Apr 1906, E. P. Van Duzee, AMNH_IZC 00300666 (2 damaged specimens, no abdomens); same AMNH_IZC 00300439 (3 specimens on pin, all no abdomen); Mandeville, Apr 1906, E. P. Van Duzee AMNH_IZC 00300667 (1 male, 1 female on pin); same AMNH_IZC 00300447 damaged, no abdomen); same, AMNH_IZC 00300449 (2 specimens, 1 no abdomen, 1 damaged male); same, AMNH_IZC 00300448 (1 damaged specimen); same, AMNH_IZC 00300446 (damaged male). Port Antonio, Apr 1906, E. P. Van Duzee, AMNH_IZC 00300438 (no abdomen); same AMNH_IZC 00300437 (no abdomen).

Jamaha elevans (Walker, 1858)

(Figure 8)

= *Poeciloptera elevans* Walker, 1858: 335 (original description).
= *Ormenis elevans* (Walker), comb. by Melichar, 1902: 71.
= *Colpoptera elevans* (Walker), comb. by Distant, 1910: 315.
= *Jamaha elevans* (Walker), comb. by Gnezdilov & O'Brien 2008: 25.

Amended diagnosis. Male terminalia. Pygofer in lateral view broadest subdorsally, narrowed ventrad, anterior margin concave, posterior margin bearing large rounded lobe at caudodorsal angle and an elongated acuminate process near midlength, ventral margin nearly linear, medioventral process lacking. Gonostyli in lateral view broad, weakly spatulate (dorsal margin straight—excepting capitulum—ventral margin weakly convex except broadly rounded along ventrocaudal margin, apex rather truncate; capitulum relatively short, apex diagonally truncate crowned with a flanged margin. Aedeagus nearly symmetrical, weakly upcurved, with a pair of subapical ventral processes and a pair of subapical lateral processes; ventral processes closely approximated, much shorter than subapical lateral processes, acuminately pointed (about ¼ length of aedeagus); lateral processes nearly 2/3 length of aedeagus, symmetrical, with a short upward projected process proximad, and apical third forked into a pair of

elongate forks (Fennah 1955: fig. 2r illustrates the left side as not forked). Anal segment in lateral view elongate, downcurved at epiproct, distally greatly enlarged with apex concave; in dorsal view antal tube elongate, parallel-sided, bifid past paraproct; paraproct thin and elongated.

Remarks. *Jamaha elevans* was previously reported, and illustrated, from Jamaica by Fennah (1955). The species was subsequently made the type species of the then-new genus *Jamaha* by Gnezdilov and O'Brien (2008). In Fennah's (1955) illustrations (fig. 20s), the lateral processes of the aedeagus are not symmetrical, but the right side is forked and the left is not, but the Kingston specimens that we examined otherwise appear the same as those illustrated by Fennah (1955).

Material examined.

JAMAICA (All CASC, from *Colpoptera rugosa* type series, marked as paratypes by Van Duzee): "Kingston / Ja. Apr.06// EPVanDuzee / Collector // Lectotype / rugosa [red paper, unpublished lectotype designation by Van Duzee] // E.P.VanDuzee / Collection // California Academy / of Sciences / Type . no. . 2301 // Jamaha / elevans (Walker) / Det: CRBartlett '23" (unpublished Van Duzee lectotype designation). Mandeville, Apr 1906, E. P. Van Duzee (male, barcode AMNH_IZC 00300444 [dissected]). Kingston, Apr 1906, E. P. Van Duzee (6 males, barcodes AMNH_IZC 00300442, 00300443, 00300445, 00300551,00300552, 00300555, UDCC_TCN 00101485 [all dissected]).

Key to the Species of *Jamaha* Gnezdilov & O'Brien, 2008

1. Male pygofer in lateral view bearing a large spatulate process dorsad of the elongate process on the lateral margin of the pygofer opening (Fig. 5); anal tube greatly expanded at apex. **2**
–. Male pygofer in lateral view bearing only an elongate process on the lateral margin of the pygofer opening; anal tube in lateral view bearing a large ventral tooth, but not particularly expanded apically . . . . . ***J. chrysops***
2. Large dorsal spatulate process of the lateral margin of the pale pygofer constricted near the base (Fig. 5); anal tube apically truncate; dorsolateral phallobase lobes 4-branched on the left side, 3 branched on the right (Fig. 6). . . . . ***J. playa* sp. nov.**
–. Large dorsal spatulate process of the lateral margin of the pale pygofer not constricted near the base. **3**
3. Aedeagus with apical processes angled dorsad (Fig. 10A) . . . . . ***J. elevans***
–. Aedeagus lacking apical processes (Fig. 10B). . . . . ***J. rugosa* comb. nov.**

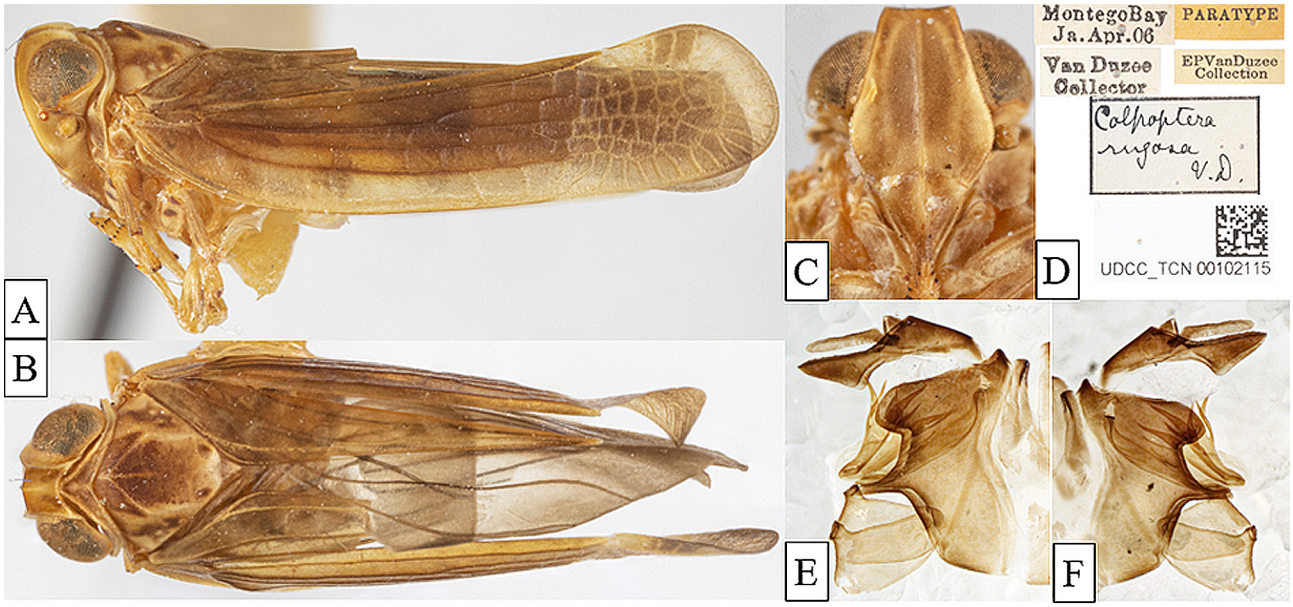

FIGURE 10. Male lectotype of *Jamaha rugosa* (CASC); (A) habitus lateral view, (B) habitus dorsal view, (C) frontal view, (D) labels, (E) male terminalia, right lateral view, (F) male terminalia, left lateral view.

FIGURE 11. Aedeagus of *Jamaha elevans* (A) and *Jamaha rugosa* (B).

Discussion

With the addition of *Jamaha rugosa*, **new combination**, the genus *Jamaha* consists of four species. All four species of *Jamaha* were described from Jamaica, with only *J. elevans* reported from outside of that island (from Haiti, Melichar 1902, Metcalf 1938). While we can not confirm the record of *J. elevans* from Haiti, we have examined an undescribed *Jamaha* from the Dominican Republic, which confirms the presence of the genus outside of Jamaica.

The discovery of another new species of planthopper further highlights the untapped diversity of this group (Fulgoroidea) in the Neotropics. We concur with Gnezdilov (2013: 350) that it "is beyond doubt that further investigation" will increase the number of known taxa in the Colpopterini. The discovery of *Colpoptera japortla* **sp. nov.** represents the second Nogodinid planthopper from Jamaica described from this survey effort, with *Jamaha playa* previously described (Bahder *et al*. 2023). While the Nogodinidae likely do not contribute to the epidemiology of lethal yellowing disease in coconut, the discovery of taxa in this family is valuable because it allows for the generation of molecular data for a group that is poorly represented in the literature. The genus *Colpoptera* is widespread in the Caribbean and Central America and is frequently encountered, however, little molecular data is available. Future efforts need to not only generate data for new taxa but simultaneously seek to generate data for previously described taxa.

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