

A review of the genus *Oosternum* Sharp of the West Indies (Coleoptera: Hydrophilidae: Sphaeridiinae)

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Abstract

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The representatives of the genus *Oosternum* Sharp, 1882 occurring in the West Indies are revised. Ten species are recorded, of which seven are here described as new: *Oosternum andersoni* sp. n. (Cuba), *O. bacharengae* sp. n. (Dominican Republic), *O. cercyonoides* sp. n. (Jamaica), *O. insulare* sp. n. (Jamaica), *O. luciae* sp. n. (Saint Lucia), *O. megnai* sp. n. (Cuba) and *O. pecki* sp. n. (Dominican Republic). Diagnoses and detailed distributional data are also provided for *O. sharpi* Hansen, 1999 (widespread throughout both Greater and Lesser Antilles), *O. latum* Fikáček, Hebauer & Hansen, 2009 (endemic to St. Vincent) and an undescribed species from the Bahamas. A key to the West Indian *Oosternum* is provided and important diagnostic characters are illustrated. The West Indian fauna of *Oosternum* contains representatives of five different species groups and likely originated by multiple independent colonizations from the American continent. Within the study region, the highest diversity is known from the Greater Antilles, where two endemic species each in Cuba, Jamaica, and Hispaniola. The populations of *O. sharpi* were found to consist exclusively of females on all islands with the exception Puerto Rico.

Introduction

The West Indies (i.e. the Caribbean islands off the continental shelf; Bond 1993) is a region generally known for its high species diversity and endemism. At the same time, large part of its natural habitats were destroyed and it is therefore considered as one of the world's biodiversity hotspots (Mittermeier et al. 2005). Although a large number of biodiversity studies have been conducted in the area, surprisingly little is known about the diversity of insects and other invertebrates. Cryptic leaf-litter inhabiting taxa are among those for which available information is especially limited, although a very high diversity

is expected based on available data from the continental Central America (e.g., Anderson and Ashe 2000) and preliminary data available from several projects currently running in the Caribbean islands (e.g., Cala-Riquelme 2013; Cala-Riquelme and Agnarsson in press; Deler-Hernández et al. 2013; R. Anderson, pers. comm.).

In the present contribution we examine the West Indian fauna of the hydrophilid beetle genus *Oosternum* Sharp, 1882. The genus contains minute beetles generally inhabiting leaf-litter of various types of tropical forests. Although it also occurs in the Oriental Region, the genus is especially diverse in the Neotropical Region, from where 15 species are presently described (Fikáček 2009;

Fikáček and Hebauer 2009; Fikáček et al. 2009; Makhan 2009; Short and Fikáček 2011) and additional ca. 45 species are awaiting description (M. Fikáček unpubl. data). Based on the distribution data of the species groups which were already revised in detail (see aforementioned references), the genus includes both widely distributed species as well as those with very limited ranges, and seems therefore an ideal model group to study the biogeography and endemism of the leaf-litter invertebrates of the West Indian islands. This motivated us to perform its detailed taxonomic revision.

Available data from the West Indies were very scarce prior to this study. A single widespread species, *O. sharpi* Hansen, 1999, was recorded from Cuba and Puerto Rico (Peck 2005; Spangler 1981, in both cases as *O. costatum* Sharp, 1882) and the supposed single island endemic *O. latum* Fikáček, Hebauer & Hansen, 2009 was described recently from the Saint Vincent Island of the Lesser Antilles (Fikáček et al. 2009). For this study we have accumulated the material from 15 islands of both the Greater and Lesser Antilles, resulting from our own recent field work in Cuba and Jamaica and from several large projects by the Canadian and US entomologists. The results of the taxonomic revision of this material are summarized below.

Materials and methods

A total of 280 specimens from 13 countries (15 islands) of the West Indies were examined in this study. Most specimens were collected by sifting leaf litter in various kinds of forests with subsequent extraction using Berlese funnels and Winkler traps. Part of this material was collected during our recent expeditions to various parts of Cuba and Jamaica. The remaining material was examined from the Canadian and US collections, most importantly the personal collection of Professor Stewart Peck (SBPC) and the West Indian Beetle Fauna Project Collection (WICP).

Habitus photographs were taken using Canon EOS 550D digital camera with attached Canon MP-E65mm f/2.8 1–5× macro lens, and subsequently adapted in Adobe Photoshop CS5. Drawings of male genitalia are based on

photographs taken using Canon EOS 1100D digital camera attached to Olympus BX41 compound microscope and subsequently combined in Helicon Focus software. Scanning electron micrographs of the holotypes of the new species were taken using Hitachi S-3700N environmental electron microscope at the Department of Paleontology, National Museum in Prague. General morphological terminology follows Hansen (1999) and Fikáček et al. (2009).

Examined specimens are deposited in the following collections:

- BMNH The Natural History Museum, London, U.K. (M. Barclay);
- BSC-E Departamento de Zoología, Centro Oriental de Ecosistemas y Biodiversidad, Santiago de Cuba, Cuba (F. Cala-Riquelme);
- CMN Canadian Museum of Nature, Ottawa, Canada (R. Anderson);
- CNC Canadian National Collection, Ottawa, Canada (A. Smetana);
- NMPC National Museum, Prague, Czech Republic (M. Fikáček);
- SBPC Stewart Peck Personal Collection, Ottawa, Canada;
- SEMC Division of Entomology, Biodiversity Institute, University of Kansas, Lawrence, USA (A. Short);
- WIBF West Indian Beetle Fauna Project Collection, Montana State University, Bozeman, Montana (M. Ivie).

Checklist of the West Indian species of *Oosternum*

<i>Oosternum andersoni</i> sp. n.	Cuba
<i>Oosternum bacharengae</i> sp. n.	Hispaniola: Dominican Rep.
<i>Oosternum cercyonoides</i> sp. n.	Jamaica
<i>Oosternum insulare</i> sp. n.	Jamaica
<i>Oosternum latum</i> Fikáček, Hebauer & Hansen, 2009	Saint Vincent
<i>Oosternum luciae</i> sp. n.	Saint Lucia
<i>Oosternum megnai</i> sp. n.	Cuba
<i>Oosternum pecki</i> sp. n.	Hispaniola: Dominican Rep.
<i>Oosternum sharpi</i> Hansen, 1999	widespread in the West Indies
<i>Oosternum</i> sp.	Bahamas: Andros Is.

Key to species of West Indian *Oosternum*

- 1 Median portion of prosternum elevated and demarcated from lateral portions (Figs 35–38). Antennal grooves of prothorax with acute lateral projection (see Fikáček 2009, Fig. 13) 2
 - Median portion of prosternum not elevated and demarcated from lateral portions (Figs 29–33). Antennal grooves of prothorax rounded to subangular, without acute lateral projection 5
- 2 Pronotal punctation consisting of punctures of two very different sizes (Figs 22, 27). Each paramere bearing a single seta apically (Figs 55, 60) 3
 - Pronotal punctation uniform, all punctures of the same size (Figs 23, 24). Each paramere bearing two short setae apically (Figs 56, 57) 4
- 3 Pronotum without microsculpture on interstices (Fig. 22). Metaventricle crenulate behind mesocoxal cavities (Fig. 42). Lateral membrane in apical portion of the median lobe very narrow and without setae (Fig. 55) *O. insulare*

- Pronotum with fine mesh-like microsculpture on interstices (Fig. 27). Metaventricle not crenulate behind mesocoxal cavities (Fig. 47). Lateral membrane in apical portion of the median lobe wide and with a series of fine setae (Fig. 60)..... *O. sharpi*
- 4 Body widest at elytral base (Fig. 9). Pronotum very convex, not forming a continuous curve with elytra in lateral view (Fig. 10). Lateral membrane only present in apical fifth of the median lobe and lacking setae (Fig. 56) *O. latum*
- Body widest ca at midlength (Fig. 11). Pronotum moderately convex, forming a continuous curve with elytra in lateral view (Fig. 12). Lateral membrane reaching midlength of the median lobe and bearing a series of fine setae (Fig. 57) ...
..... *O. luciae*
- 5 Punctures of pronotum increasing in size towards posterior margin, smaller and transverse anteriorly and large and rounded posteriorly (Fig. 26). Preepisternal plate of mesoventrite subrhomboid, largely overlapping over anterior portion of the metaventricle (Fig. 46). Aedeagus as in Fig. 59..... *O. pecki*
- Pronotal punctation uniform, size of punctures not increasing posteriad. Preepisternal plate of mesoventrite drop-like or suboval, only slightly overlapping over the anterior margin of the metaventricle (Figs 39–41, 45)..... 6
- 6 Elytral interval 2 narrower and lower than interval 3 subapically. Preepisternal elevation of the mesothorax narrower, 2.0–2.8× as long as wide. Smaller species, body length smaller than 1.5 mm..... 7
- Elytral interval 2 of the same width and height as interval 3 subapically. Preepisternal elevation of the mesothorax wide, 1.7× as long as wide. Large species, body length 1.9–2.0 mm *O. cercyonoides*
- 7 Anterolateral ridges of metaventricle meeting mesally and projecting posteriad (Fig. 40). Apical portion of the median lobe bottle-shaped, widely rounded at apex (Fig. 54). General coloration dark brown (Figs 3, 4)..... *O. bacharengae*
- Anterolateral ridges of metaventricle not meeting mesally (Figs 39, 45). Apical portion of the median lobe gradually narrowing, acute at apex (Figs 53, 58)..... 8
- 8 Lateral margin of the pronotum sinuate. Preepisternal elevation of mesoventrite wider, 2.0× as long as wide (Fig. 39). Median lobe very wide, not reaching the level of parameral apices (Fig. 53) *O. andersoni*
- Lateral margin of the pronotum arcuate. Preepisternal elevation of mesoventrite narrower, 2.3× as long as wide (Fig. 45). Median lobe narrow, slightly overlapping the parameral apices (Fig. 58)..... *O. megnai*

Taxonomy

Oosternum andersoni sp. n.

<http://zoobank.org/FEEF4A2B-C113-4209-8551-25BE9943D63D>

http://species-id.net/wiki/Oosternum_andersoni

Figs 1–2, 19, 29, 39, 53, 61

Type-locality. Cuba, Santiago de Cuba Province: Santiago Municipality, 20.011°N, 75.673°W, 550 m, Km 7 of the road to Gran Piedra.

Type-specimens (144 spec.). Holotype male, dry mounted, with genitalia mounted in Euparal on a microslide pinned below the specimen. Original label: “CUBA: Santiago de Cuba: Km 7 of the road to Gran Piedra, 26.i.2012, R. Anderson leg., 20.011°N, 75.673°W, elevation 550 m [printed] / Holotype, *Oosternum andersoni* sp. n., Deler-Hernández & Fikáček det. 2013 [red, printed]” (NMPC). Paratypes: **CUBA:** Pinar del Río province, Sierra del Rosario, Rangel, ca. 15 Km S. Cinco Pesos, 30.v.1990, M. A. Ivie leg., berlese from deep log and leaf litter (2 spec., WIFP). Cienfuegos province: Cumanayagua municipality, 2 Km E of Mayarí, ca. 842 m a.s.l., 21.96651°N, 80.11497°W, 18.v.2013, R. Anderson leg (2013-017) (29 spec., NMPC); Cumanayagua municipality, uphill road to Pico San Juan, ca. 1086 m a.s.l., 21.9881°N, 80.1464°W, 19.v.2013, R. Anderson leg (2013-022) (37 spec., NMPC); Cumanayagua municipality, Aguacate, Gruta Mengoa, near of Río Cabagan, ca. 620 m a.s.l., 21°55'52.43"N, 80°5'4.60"W, 20.v.2013, R. Anderson & A. Deler-Hernández leg (CF6) (53 spec., NMPC, CMN, BMNH, SEMC, SBPC). Holguín

province: Mayarí municipality, Pinarito, PN La Mensura-Piloto, ca. 410 m a.s.l., 20.41598°N, 75.82008°W, 12.v.2013, R. Anderson leg (13 spec., NMPC). Santiago de Cuba province: Km 7 of the road to Gran Piedra, ca. 550 m a.s.l., 20.011°N, 75.673°W, 26.i.2012, R. Anderson leg. (2012-007) (5 spec., BSC-E, NMPC); 23.v.2013, R. Anderson leg. (2013-031) (4 spec., NMPC).

Differential diagnosis. Body widest ca at midlength. Lateral margin of pronotum weakly sinuate. Pronotal punctation uniform in size, moderately dense, consisting of small, rasp-like punctures. Pronotal interstices without microsculpture. Mesal part of prosternum not divided from lateral portions. Lateral margin of antennal grooves rounded. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, 2× longer than wide. Interstices of median part of metaventricle without microsculpture. Anterolateral ridges of metaventricle not meeting together mesally. Parameres 1.2× longer than phallobase, bearing two short setae apically. Median lobe shorter than parameres, widely oval in shape, acute at apex. Membranous lateral projections of median lobe absent.

Description. Habitus. Body elongate oval, gradually narrowing posteriad; total length/total width ratio = 1.7. Length: 1.25–1.29 mm, length of holotype: 1.37 mm; width: 0.73–0.77 mm, width of holotype: 0.75 mm.

Coloration. Coloration of dorsal side brown to dark brown, elytra darker than pronotum, head dark brown. Ventral side brown. Femora and tibiae brown, tarsi,



Figures 1–12. Habitus of *Oosternum* from West Indies. 1–2. *Oosternum andersoni* sp. n., length = 1.25 mm (1. dorsal view, 2. lateral view). 3–4. *Oosternum bacharenge* sp. n., length = 1.40 mm (3. dorsal view, 4. lateral view). 5–6. *Oosternum cercyonoides* sp. n., length = 1.95 mm (5. dorsal view, 6. lateral view). 7–8. *Oosternum insulare* sp. n., length = 1.40 mm (7. dorsal view, 8. lateral view). 9–10. *Oosternum latum* Fikáček, Hebauer & Hansen, 2009, length = 1.50 mm (9. dorsal view, 10. lateral view). 11–12. *Oosternum luciae* sp. n., length = 1.41 mm (11. dorsal view, 12. lateral view).

antennomeres 1–6 and mouthparts yellowish, antennal club pale reddish brown.

Head. Clypeus with sparse punctation consisting of fine rounded punctures, each puncture bearing fine decumbent seta; setae pale; interstices without microsculpture; anterior margin of clypeus slightly concave. Frons with dense punctation consisting of coarse rounded punctures, punctures of same shape medially and laterally; interstices with fine mesh-like microsculpture. Eyes moderately large. Mentum $1.8\times$ wider than long, anterior margin slightly emarginate; anteromedian part not distinctly impressed; with sparse punctation, punctation consisting of minute, nearly indistinct punctures bearing minute setae; interstices with very fine microsculpture, opaque. Submentum without poriferous disc-like fields. Maxillary palpus with palpomeres 2 and 4 ca. $1.5\times$ longer than palpomere 3. Antenna with 9 antennomeres; scapus shorter than antennomeres 2–6 combined.

Prothorax. Pronotum evenly convex forming continuous curve with elytra in lateral view. Lateral margin weakly sinuate; with narrow marginal bead. Pronotal punctation uniform in size, moderately dense; slightly sparser than that on frons, consisting of small, rasp-like punctures, slightly sparser laterally than medially; all punctures bearing long setae; interstices without microsculpture. Transverse row of punctures on posterior margin of pronotum absent. Median portion of prosternum not elevated and demarcated from lateral portions, median carina of prosternum narrow, projecting more anteriorly mesally than anterior margin of median portion, with anterior portion elevated into small tooth in lateral view. Postero-mesal projection with deep notch. Antennal grooves moderately large. Lateral margin of antennal grooves rounded.

Mesothorax. Scutellar shield bearing a few small punctures; interstices without microsculpture. Elytral series 1–5 arising basally, series 6–9 joint subbasally. Serial punctures small, transverse, sparsely arranged, with minute setae (indistinct under binocular microscope). Interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex, intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, $2\times$ longer than wide, widely attached to metaventricle; posterior part of preepisternal elevation slightly overlapping over anterior margin of metaventricle; median part flat; bearing sparsely arranged shallow setiferous punctures; interstices without microsculpture.

Metathorax. Metaventricle distinctly longer than preepisternal elevation of mesothorax, median portion markedly differing from lateral portion in punctation and microsculpture; punctation of median portion consisting of small rounded punctures, interstices without microsculpture, shiny. Anterolateral ridges bent posteriad along lateral margin of metaventricle, concave laterally, not meeting together and bent posteriad mesally. Anterior margin of metaventricle not crenulate.



Figures 13–18. Habitus of *Oosternum* from West Indies. **13–14.** *Oosternum megnai* sp. n., length = 1.49 mm (13. dorsal view, 14. lateral view). **15–16.** *Oosternum pecki* sp. n., length = 1.50 mm (15. dorsal view, 16. lateral view). **17–18.** *Oosternum sharpi* Hansen, 1999, length = 1.37 mm (17. dorsal view, 18. lateral view).

Abdomen. Ventrite 1 with additional longitudinal ridges laterally. Ventrites 2–5 without longitudinal ridges; posterior margin of all ventrites lacking denticles.

Male genitalia. Aedeagus 0.5 mm long, parameres 1.2× longer than phallobase. Parameres continuously narrowing apicad, bearing two short setae apically. Phallobase wide, 1.4× longer than wide. Median lobe slightly shorter than parameres, widely oval in shape, slightly narrowing at apex. Membranous lateral projections of median lobe absent. Gonopore absent.

Etymology. The new species is dedicated to our friend Robert S. Anderson (Canadian Museum of Nature, Ottawa), a very enthusiastic entomologist and collector of the type specimens.

Distribution. *Oosternum andersoni* sp. n. is a Cuban endemic species currently known from the western, central and eastern parts of the island (Fig. 61).

Habitat. Most specimens were sifted from wet leaf litter in evergreen montane forests.

Oosternum bacharengae sp. n.

<http://zoobank.org/AFDE881F-D1DB-419C-874D-C373DC6E36B7>

http://species-id.net/wiki/Oosternum_bacharengae

Figs 3–4, 20, 30, 40, 54, 61

Type-locality. Dominican Republic, Hatomayor province: Parque Nacional Los Haitises, 19°1'4.26"N, 69°37'17.24"W, 250 m, W of Sabana de la Mar.

Type-specimens (1 spec.). Holotype dry mounted, with genitalia mounted in Euparal on a microslide pinned below the specimen. Original label: "DOM REP: Hatomayor province, Par. Nac. Los Haitises W. of Sabana de la Mar, 01.iv.1992, M. A. Ivie, D. S. Sikes & W. Lanier, 19°1'4.26"N, 69°37'17.24"W, elevation 250 m, [printed] / Holotype, *Oosternum bacharengae* sp. n., Deler-Hernández & Fikáček det. 2013 [red, printed]" (WIFP).

Diagnosis. Body widest ca. at midlength. Lateral margin of pronotum angulate. Pronotal punctation uniform in size, moderately dense consisting of small rasp-like punctures. Pronotal interstices without microsculpture. Mesal part of prosternum not divided from lateral portions. Lateral margin of antennal grooves rounded. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 as convex as adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate narrow, suboval, 2.8× longer than wide. Interstices of median part of metaventricle without microsculpture, shiny. Anterolateral ridges of metaventricle meeting together and bent posteriad mesally. Parameres 0.8× as long as phallobase, bearing two short setae apically. Median lobe ca. as long as parameres, nearly parallel-sided, bottle-shaped apically. Membranous lateral projections of median lobe absent.

Description. Habitus. Body elongate oval, gradually narrowing posteriad; total length/total width ratio = 1.6. Length: 1.4 mm; width: 0.84 mm.

Coloration. Coloration of dorsal side of head, pronotum and elytra dark brown. Ventral side brown.

Head. Clypeus with sparse punctation consisting of fine punctures, each puncture bearing fine decumbent seta; setae pale; interstices without microsculpture; anterior margin of clypeus slightly concave. Frons with moderately dense punctation, consisting of coarse, crescent-like punctures, punctures of same shape medially and laterally; interstices without microsculpture. Eyes moderately large. Mentum 1.8× wider than long, anterior margin slightly emarginate; anteromedian part not distinctly impressed; with sparse punctation consisting of small and isolated, nearly indistinct punctures bearing minute setae; interstices with very fine microsculpture, opaque. Submentum without poriferous disc-like fields. Maxillary palpus with palpomeres 2 and 4 ca. 1.5× longer than palpomere 3. Antenna with 9 antennomeres; scapus shorter than antennomeres 2–6 combined.

Prothorax. Pronotum evenly convex forming continuous curve with elytra in lateral view. Lateral margin of pronotum angulate, with narrow marginal bead. Pronotal punctation uniform in size, moderately dense, slightly denser than that on frons, consisting of small, rasp-like punctures similar on whole surface of pronotum; all punctures bearing long setae; interstices without microsculpture. Median portion of prosternum not elevated and demarcated from lateral portions, median carina of prosternum narrow, projecting more anteriorly mesally than anterior margin of median portion, with anterior portion elevated into small tooth in lateral view. Postero-mesal projection with deep notch. Antennal grooves moderately large. Lateral margin of antennal grooves rounded.

Mesothorax. Scutellar shield bearing a few tiny punctures; interstices without microsculpture. Elytral punctures coarse, shallowly impressed, rounded to slightly transverse. Serial punctures small; transverse; sparsely arranged, with minute setae (indistinct under binocular microscope). Interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex, intervals 5, 7 and 9 as convex as adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate narrow, suboval, 2.8× longer than wide, widely attached to metaventricle; posterior part of preepisternal elevation slightly overlapping over anterior margin of metaventricle; median part flat; bearing sparsely arranged shallow setiferous punctures; interstices without microsculpture.

Metathorax. Metaventricle distinctly longer than preepisternal elevation of mesothorax, median portion markedly differing from lateral portion in punctation and microsculpture; punctation of median portion sparse, consisting of minute punctures, interstices without microsculpture, shiny. Anterolateral ridges bent posteriad along lateral margin of metaventricle, concave laterally, meeting together and projecting posteriad mesally. Anterior margin of metaventricle not crenulate.

Abdomen. Ventrite 1 with additional longitudinal ridges laterally. Ventrites 2–5 without longitudinal ridges; posterior margin of all ventrites lacking denticles.

Male genitalia. Aedeagus 0.48 mm long, parameres 0.8× longer than phallobase. Parameres continuously narrowing apicad, bearing two short setae apically. Phallobase wide, 2× longer than wide. Median lobe ca. as long as parameres, nearly parallel-sided, with wide apical projection. Membranous lateral projections of median lobe absent. Gonopore absent.

Etymology. The new species is dedicated to the Dominican radio station El Bacharengo, a source of the Caribbean music for the first author during his studies in the Czech Republic.

Distribution. *Oosternum bacharengo* sp. n. is a Hispaniolan endemic species currently only known from the type locality in the northeastern part of the Dominican Republic (Hato Mayor province) (Fig. 61).

Habitat. Based on the label data, the type specimens was collected in litter between tree buttresses in the rain forest.

Oosternum cercyonoides sp. n.

<http://zoobank.org/4B4F624C-6044-4B16-A829-E7F699B70567>

http://species-id.net/wiki/Oosternum_cercyonoides

Figs 5–6, 21, 31, 41, 50, 61

Type-locality. Jamaica, St. Thomas P. Portland Gap: 18°1'44.76"N, 76°30'22.40"W, 1676 m.

Type-specimens (5 spec.). Holotype female. Original label: "JAMAICA: St. Thomas P. Portland Gap, 17.xii.1972/01.i.1973, S & J. Peck, elevation 5500', cloud for., dung & carrion tr. [printed] / Holotype, *Oosternum cercyonoides* sp. n., Deler-Hernández & Fikáček det. 2013 [red, printed]" (CNC). Paratypes: **JAMAICA:** St. Thomas P. Portland Gap: same data as holotype (4 spec., CNC, BSC-E, NMPC).

Diagnosis. Body widest ca at midlength. Lateral margin of pronotum angulate. Pronotal punctation uniform in size, moderately dense consisting of small rasp-like punctures. Pronotal interstices without microsculpture. Mesal part of prosternum not divided from lateral portions. Lateral margin of antennal grooves subangulate. Elytral interval 2 of the same width as interval 3, as high as intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 as convex as adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, 1.7× longer than wide. Interstices without microsculpture, shiny. Anterolateral ridges of metaventricle not meeting together of median part of metaventricle mesally.

Description. Habitus. Body elongate oval, gradually narrowing posteriad; total length/total width ratio = 2.5. Length: 1.9–1.95 mm, length of holotype: 1.9 mm; width: 0.75–0.78 mm, width of holotype: 0.78 mm.

Coloration. Coloration of dorsal side brown to dark brown, elytra darker than pronotum, head dark brown. Ventral side brown. Femora and tibiae brown, tarsi and mouthparts yellow.

Head. Clypeus with sparse punctation consisting of small rounded punctures, each puncture bearing fine decumbent

seta; setae pale; interstices without microsculpture; anterior margin of clypeus truncate. Frons with dense punctation consisting of coarse, impressed rounded punctures, punctures of same shape medially and laterally; interstices without microsculpture. Eyes moderately large. Mentum 1.8× wider than long, anterior margin slightly emarginate; anteromedian part not distinctly impressed; with sparse punctation, consisting of small, nearly indistinct punctures bearing minute setae; interstices with very fine microsculpture, opaque. Submentum without poriferous disc-like fields. Maxillary palpus with palpomeres 2 and 4 ca. 1.2× longer than palpomere 3.

Prothorax. Pronotum evenly convex forming continuous curve with elytra in lateral view. Lateral margin of pronotum angulate, with narrow marginal bead. Pronotal punctation uniform in size, moderately dense, as dense as that on frons, consisting of small rasp-like punctures similar on whole surface of pronotum; all punctures bearing long setae; interstices without microsculpture. Median portion of prosternum not elevated and demarcated from lateral portions, median carina of prosternum narrow, not projecting more anteriorly than anterior margin of median portion, with anterior portion elevated into small tooth in lateral view. Postero-mesal projection with deep notch. Antennal grooves moderately large. Lateral margin of antennal grooves subangulate.

Mesothorax. Scutellar shield bearing a few small rasp-like punctures; interstices without microsculpture. Elytral series 1–5 and 8 arising basally, series 6–7 and 9 joint subbasally. Serial punctures small; transverse; sparsely arranged; with minute setae (indistinct under binocular microscope). Interval 2 of the same width as interval 3, as high as intervals 1 and 3, reaching elytral apex, intervals 5, 7 and 9 as convex as adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, 1.7× longer than wide, widely attached to metaventricle; posterior part of preepisternal elevation slightly overlapping over anterior margin of metaventricle; median part flat; bearing sparsely arranged shallow setiferous punctures; interstices without microsculpture.

Metathorax. Metaventricle distinctly shorter than preepisternal elevation of mesothorax, median portion markedly differing from lateral portion in punctation and microsculpture; punctation of median portion consisting of sparsely arranged but large rasp-like setiferous punctures, interstices without microsculpture, shiny. Anterolateral ridges bent posteriad along lateral margin of metaventricle, concave laterally, not meeting together mesally. Anterior margin of metaventricle not crenulate.

Abdomen. Ventrite 1 with additional longitudinal ridges laterally. Ventrites 2–5 without longitudinal ridges; posterior margin of all ventrites lacking denticles.

Etymology. The species name is derived from the name of the megasternine genus *Cercyon* Leach, 1817, reflecting the *Cercyon*-like appearance of this new species.

Distribution. *Oosternum cercyonoides* sp. n. is a Jamaican endemic currently only known from the type lo-

cality in the Blue Mountains, i.e. the highest mountain massif in the eastern part of the island (Fig. 61).

Habitat. Based on the label data, the specimens were collected using baited pitfall traps in the montane cloud forest.

Oosternum insulare sp. n.

<http://zoobank.org/725652DA-DD49-4A9C-867F-077D6788AB5F>

http://species-id.net/wiki/Oosternum_insulare

Figs 7–8, 22, 35, 42, 55, 61

Type-locality. Jamaica: Cockpit Country, 18°20'51.7"N, 77°38'29.7"W, 250 m, trail to upper Windsor Cave.

Type-specimens (10 spec.). Holotype male, dry mounted, with genitalia mounted in Euparal on a microslide pinned below the specimen. Original label: "JAMAICA, Cockpit Country, trail to upper Windsor Cave, 11.xi.2013, ca. 250 m a.s.l., 18°20'51,7"N, 77°38'29,7"W, F. Cala-Riquelme leg. [printed] / Holotype, *Oosternum insulare* sp. n., Deler-Hernández & Fikáček det. 2013 [red, printed]' (NMPC). Paratypes: **JAMAICA:** Cockpit Country: same data as holotype (5 spec., NMPC, CMN, SEMC, BMNH). Trelawny, 5 mi. N. Alberttown, 30.xii.1972, S&J. Peck leg. Ber. 250 (3 spec., CNC). Portland: 1 mi W Ecclesdown, 18°5'33.08"N, 76°30'3.64"W, 10.viii.1974, S & J. Peck leg., 1500' (1 spec., CNC).

Diagnosis. Body widest ca at midlength. Lateral margin of pronotum angulate. Pronotal punctation uniform in size, dense, consisting of large rounded punctures. Pronotal interstices without microsculpture. Mesal part of prosternum divided from lateral portions by oblique sharp ridges. Lateral margin of antennal grooves with acute projection. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, 1.8× longer than wide. Median elevate portion of metaventrite nearly reaching lateral margins, interstices of median part of metaventrite with very fine microsculpture, opaque. Anterolateral ridges of metaventrite not meeting together mesally. Parameres 0.7× longer than phallobase, bearing a single seta apically. Median lobe ca. 1.5× longer than parameres, slight narrowing from base towards apex, with minute apical projection. Membranous lateral projections of median lobe absent.

Description. Habitus. Body elongate oval, gradually narrowing posteriad; total length /total width = 1.6. Length: 1.3–1.4 mm, length of holotype: 1.4 mm; width: 0.78–0.84 mm, width of holotype: 0.84 mm.

Coloration. Coloration of dorsal side reddish brown. Ventral side dark to reddish brown. Femora and tibiae dark brown, tarsi, mouthparts and antennomeres 1–6 yellowish.

Head. Clypeus with sparse punctation consisting of fine puncture, each puncture bearing fine decumbent seta; setae pale; interstices without microsculpture;

anterior margin of clypeus slightly concave. Frons with dense punctation consisting of coarse rounded punctures, punctures of same shape medially and laterally; interstices without microsculpture. Eyes moderately large. Mentum 1.9× wider than long, anterior margin slightly emarginate; anteromedian part deeply impressed in contrast to lateral portions; with sparse punctation, punctation consisting of small, nearly indistinct punctures bearing minute setae; interstices with very fine microsculpture, opaque. Submentum without poriferous disc-like fields. Maxillary palpus with palpomeres 2 and 4 ca. 1.2× longer than palpomere 3. Antenna with 9 antennomeres; scapus shorter than antennomeres 2–6 combined.

Prothorax. Pronotum evenly convex, slightly more convex than elytra in lateral view; lateral margin angulate, with narrow marginal bead. Pronotal punctation consisting of two types of punctures, large rounded without seta and smaller transverse with long seta; interstices without microsculpture. Transverse row of punctures on posterior margin of pronotum hardly defined. Median portion of prosternum elevated and demarcated from lateral portion. Median carina of prosternum narrow, projecting more anteriorly mesally than anterior margin of median portion, straight in lateral view. Median portion of prosternum 1.2× wider than long, postero-mesal projection with shallow notch. Pair of deep pits next to ridge delimiting median portion of prosternum present. Antennal grooves moderately large. Lateral margin of antennal grooves with acute projection.

Mesothorax. Scutellar shield bearing a few small, round punctures; interstices without microsculpture. Elytral series 1–6 arising basally, series 7–9 subbasally. Serial punctures small; transverse; sparsely arranged, with minute setae (indistinct under binocular microscope). Interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex, intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, 1.8× longer than wide, widely attached to metaventrite; posterior part of preepisternal elevation slightly overlapping over anterior margin of metaventrite; median part flat, bearing densely arranged, large, shallow setiferous punctures; interstices with very fine microsculpture, opaque.

Metathorax. Metaventrite ca. as long as preepisternal elevation of mesothorax, median portion markedly differing from lateral portion in punctation and microsculpture reaching nearly to lateral margin; punctation of median portion sparse consisting of small, rounded punctures, interstices without microsculpture, shiny. Anterolateral ridges bent posteriad along lateral margin of metaventrite, angulate laterally, not meeting together mesally. Anterior margin of metaventrite crenulate.

Abdomen. Ventrite 1 with additional longitudinal ridges laterally. Ventrites 2–5 without longitudinal ridges; posterior margin of all ventrites lacking denticles.

Male genitalia. Aedeagus 0.57 mm long, parameres 0.7× longer than phallobase. Parameres continuously narrowing apically, bearing a single seta apically. Phallobase

narrow, 3× longer than wide. Median lobe ca. 1.5× longer than parameres, slight narrowing from base towards apex, with minute apical projection. Membranous lateral projections of median lobe absent. Gonopore absent.

Etymology. The species name is the manuscript name used in an unpublished revision of the genus *Oosternum* by M. Hansen – it was the only West Indian endemic in the manuscript, hence the highlighting of the fact that it is the island endemic.

Distribution. *Oosternum insulare* sp. n. is the Jamaican endemic currently known from three localities throughout the island, all situated in the altitudes around 500 m a.s.l. (Fig. 61).

Habitat. Specimens of *O. insulare* were collected from leaf litter of the well-preserved semi-deciduous forest in the karst area.

Oosternum latum Fikáček, Hebauer & Hansen, 2009

http://species-id.net/wiki/Oosternum_latum

Figs 9–10, 23, 36, 43, 56, 61

Oosternum latum Fikáček, Hebauer & Hansen, 2009: 34.

New material examined (21 spec.). **SAINT VINCENT AND GRENADINAS:** Hermitage Forest, E. of Spring Village, ca. 360 m a.s.l., 13°14'53.04"N, 61°12'47.49"W, 16–27.viii.2006, S & J. Peck leg., forest FIT (06-105) (10 spec., SBPC, NMPC), 15–27.viii.2006, S & J. Peck leg., clearing FIT trap, (06-101B) (1 spec., SBPC), 16–27.viii.2006, S & J. Peck leg., forest edge Malaise, (06-104) (10 spec., SBPC, NMPC).

Diagnosis. Body widest on base of elytra. Lateral margin of pronotum angulate. Pronotal punctation uniform in size, sparse, consisting of small, rasp-like, weakly impressed punctures. Pronotal interstices with microsculpture. Mesal part of prosternum divided from lateral portions by oblique sharp ridges. Lateral margin of antennal grooves with acute projection. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices opaque, with very fine microsculpture. Preepisternal plate wide, suboval, 2× longer than wide. Interstices of median part of metaventrite without microsculpture, with subpentagonal slightly elevate median portion. Anterolateral ridges of metaventrite not meeting together mesally. Parameres 1.2× longer than phallobase, bearing two short setae apically. Median lobe longer than parameres, projecting slightly farther than parameres, nearly parallel-sided basally, narrowing apicad in apical 0.2. Membranous lateral projections of median lobe present.

Description. For complete description see Fikáček et al. (2009).

Distribution. *Oosternum latum* is the endemic of the Saint Vincent Island (Fig. 61). The specimens examined for this study represent the first precisely localized material available for the species, as only the island name

is mentioned in the locality label of the type specimens (Fikáček et al. 2009).

Habitat. Specimens of *O. latum* examined here were collected in a lower montane rain forest with mixed forest plant compositions. A portion of the specimens were collected using flight intercept traps, and others using a Malaise trap.

Oosternum luciae sp. n.

<http://zoobank.org/DEF8AEF2-93DB-449D-BFB6-7D0157A566BB>

http://species-id.net/wiki/Oosternum_luciae

Figs 11–12, 24, 37, 44, 57, 61

Type-locality. Saint Lucia, Barre de L'Isle: 13.9368°N, 60.9593°W, 340 m.

Type-specimens (1 spec.). Holotype male, dry mounted, with genitalia mounted in Euparal on a microslide pinned below the specimen. Original label: “ST LUCIA: Barre de L'Isle, 25/28.v.2009, E. A. Ivie, 13.9368°N, 60.9593°W, elevation 340 m, [printed] / Holotype, *Oosternum luciae* sp. n., Deler-Hernández & Fikáček det. 2013 [red, printed]” (WIFP).

Diagnosis. Body widest ca at midlength. Lateral margin of pronotum weakly sinuate. Pronotal punctation uniform in size, moderately dense consisting of small, transverse punctures. Pronotal interstices with microsculpture. Mesal part of prosternum divided from lateral portions by oblique sharp ridges. Lateral margin of antennal grooves with acute projection. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate narrow, drop-like, 2.6× longer than wide. Interstices of median portion of metaventrite with strong mesh-like microsculpture on the whole surface. Anterolateral ridges of metaventrite not meeting together mesally. Parameres 1.2× longer than phallobase, bearing two short setae apically. Median lobe slightly longer than parameres, nearly parallel-sided basally, narrowing apicad in apical 0.4. Membranous lateral projections of median lobe present, with series of long setae on each side.

Description. Habitus. Body widely oval, strongly narrowing posteriad; total length / total width ratio = 1.3. Length: 1.41 mm; width: 0.87 mm.

Coloration. Coloration of dorsal side of head, pronotum and elytra dark brown. Ventral side brown.

Head. Clypeus with sparse punctation consisting of fine, each puncture bearing fine decumbent seta; setae pale; interstices with fine microsculpture; anterior margin of clypeus slightly concave. Frons with moderately dense punctation consisting of small, shallowly impressed rounded to slightly transverse punctures, punctures of same shape medially and laterally; interstices with fine mesh-like microsculpture. Eyes moderately large. Mentum 1.9× wider than long, anterior margin slightly emarginate; anteromedian part deeply impressed in contrast to lateral portions; with sparse punctation, punctation consisting of small, nearly indistinct punctures

bearing minute setae; interstices with fine microsculpture consisting of transverse ridges. Submentum without poriferous disc-like fields. Maxillary palpus with palpomeres 2 and 4 ca. 1.2× longer than palpomere 3. Antenna with 9 antennomeres; scapus shorter than antennomeres 2–6 combined. Evenly convex.

Prothorax. Pronotum forming continuous curve with elytra in lateral view; lateral margin weakly sinuate, with narrow marginal bead. Pronotal punctation uniform in size, moderately dense, as dense as that on frons consisting of small, transverse punctures similar on whole surface of pronotum; punctures with minute setae intermixed among those bearing long setae; interstices with microsculpture. Transverse row of punctures on posterior margin of pronotum absent. Median portion of prosternum elevated and demarcated from lateral portions; median carina of prosternum narrow, projecting more anteriorly mesally than anterior margin of median portion, with anterior portion elevated into small tooth in lateral view. Median portion of prosternum 1.8× wider than long, postero-mesal projection with shallow notch. Pair of deep pits next to ridge delimiting median portion of prosternum present. Antennal grooves moderately large. Lateral margin of antennal grooves with acute projection.

Mesothorax. Scutellar shield bearing few minute rounded punctures; interstices without microsculpture. Elytral punctures coarse, shallowly impressed rounded to slightly transverse. Serial punctures small; transverse; sparsely arranged, with minute setae (indistinct under binocular microscope). Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate narrow, drop-like, 2.6× longer than wide, widely attached to metaventricle; posterior part of preepisternal elevation slightly overlapping over anterior margin of metaventricle, median part flat, bearing densely arranged, large, shallow setiferous punctures; interstices with very fine microsculpture, opaque.

Metathorax. Metaventricle ca. as long as preepisternal elevation of mesothorax, median portion markedly differing from lateral portion in punctation and microsculpture; punctation of median portion moderately dense, consisting of large, sharply impressed round setiferous punctures, interstices with strong mesh-like microsculpture on the whole surface. Anterolateral ridges bent posteriorly along lateral margin of metaventricle, concave, laterally not meeting together mesally. Anterior margin of metaventricle not crenulate.

Abdomen. Ventricle 1 with additional longitudinal ridges laterally. Ventrites 2–5 without longitudinal ridges; posterior margin of all ventrites lacking denticles.

Male genitalia. Aedeagus 0.44 mm long, parameres 1.2× longer than phallobase. Parameres continuously narrowing apically, bearing two short setae apically. Phallobase narrow, 1.9× longer than wide. Median lobe slightly longer than parameres, nearly parallel-sided basally, nar-

rowing apically in apical 0.4. Membranous lateral projections of median lobe present. Gonopore present.

Etymology. The species name is derived from the woman's name Lucia, referring to the presence of this species in the Saint Lucia island.

Distribution. *Oosternum luciae* sp. n. is an endemic of Saint Lucia island and currently known only from the type locality (Fig. 61).

Habitat. Based on the label data, the type specimen was collected using an UV light trap.

Oosternum megnai sp. n.

<http://zoobank.org/E11CD275-C61D-42D2-BBDD-D8258ED20B73>

http://species-id.net/wiki/Oosternum_megnai

Figs 13–14, 25, 32, 45, 51, 58, 61

Type-locality. Cuba, Granma Province: PN Turquino, 20°0.9'N, 76°53.3'W, slope below Pico Naranjo ca. 0.4 km N of La Platica (by air), 950 m.

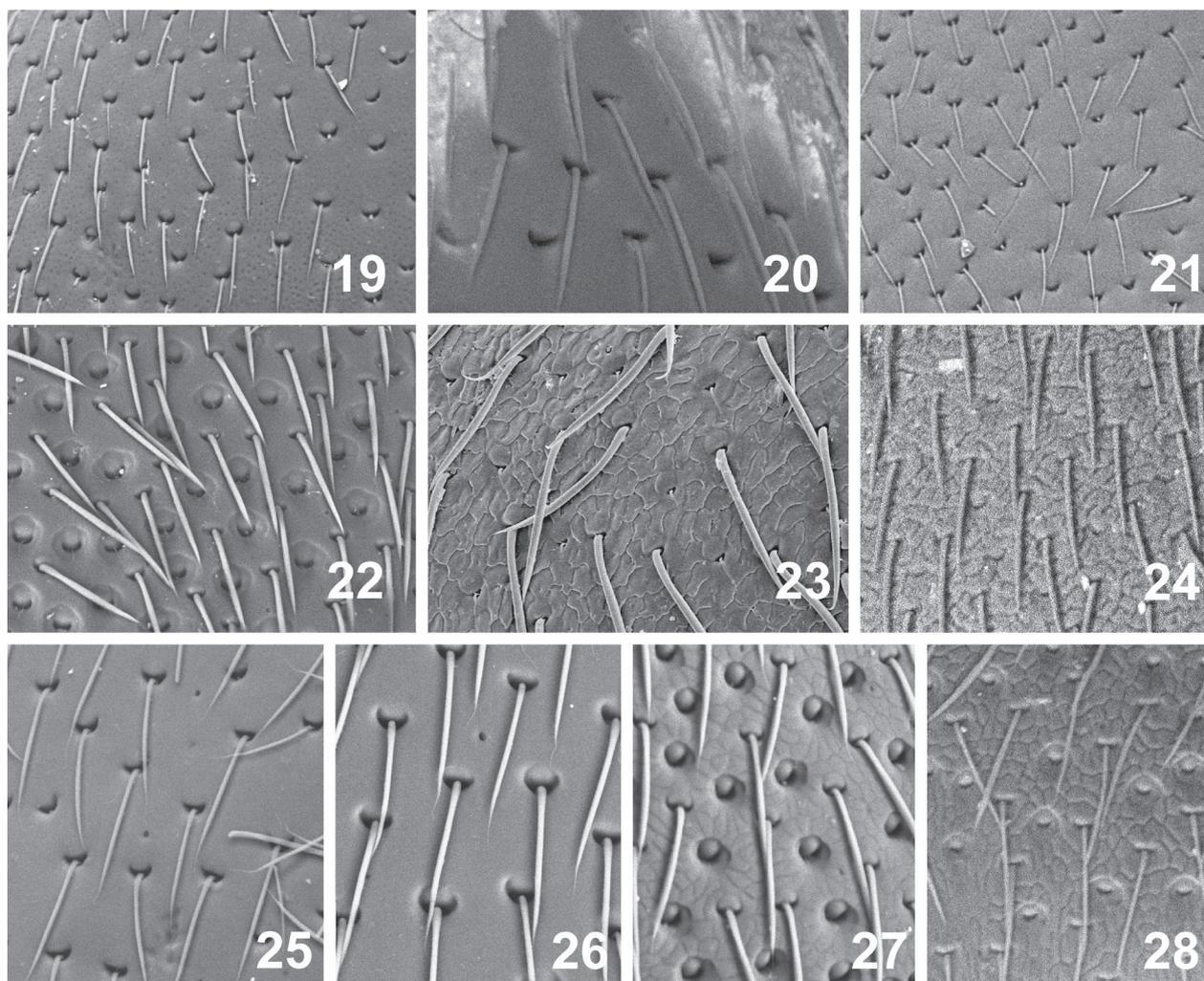
Type-specimens (13 spec.). Holotype male, dry mounted, with genitalia mounted in Euparal on a microslide attach to the specimens. Original label: "CUBA: Granma: PN Turquino, slope below Pico Naranjo ca. 04 km N of La Platica (by air), 24.vi.2012, Deler-Hernández & Fikáček leg. 20°0.9'N, 76°53.3'W, elevation 950 m, MF23 [printed] / Holotype, *Oosternum megnai* sp. n., Deler-Hernández & Fikáček det. 2013 [red, printed]" (NMPC). Paratypes **CUBA:** Granma province: same data as holotype (12 spec., NMPC, CMN, SEMC, BSC-E, BMNH).

Diagnosis. Body widest ca at midlength. Lateral margin of pronotum angulate. Punctation uniform in size, moderately dense, consisting of small, rasp-like punctures. Pronotal interstices without microsculpture. Mesal part of prosternum not divided from lateral portions. Lateral margin of antennal grooves rounded. Elytral interval 2 narrower than interval 3, as high as intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 as convex as adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate narrow, drop-like, 2.3× longer than wide. Interstices of median part of metaventricle without microsculpture. Anterolateral ridges of metaventricle not meeting together mesally. Parameres 0.8× longer than phallobase, bearing two long setae apically. Median lobe longer than parameres, oval in shape, with small apical projection. Membranous lateral projections of median lobe absent.

Description. Habitus. Body elongate oval, gradually narrowing posteriorly; total length/total width ratio = 1.9. Length: 1.47–1.49 mm, length of holotype: 1.32 mm; width: 0.75–0.82 mm, width of holotype: 0.8 mm.

Coloration. Coloration of dorsal side brown to dark brown, head, pronotum and elytra dark brown. Ventral side light brown. Femora, tibiae, tarsi and antennomeres and light brown, antennal club dark brown.

Head. Clypeus with moderately dense punctation consisting of fine punctures, each puncture bearing



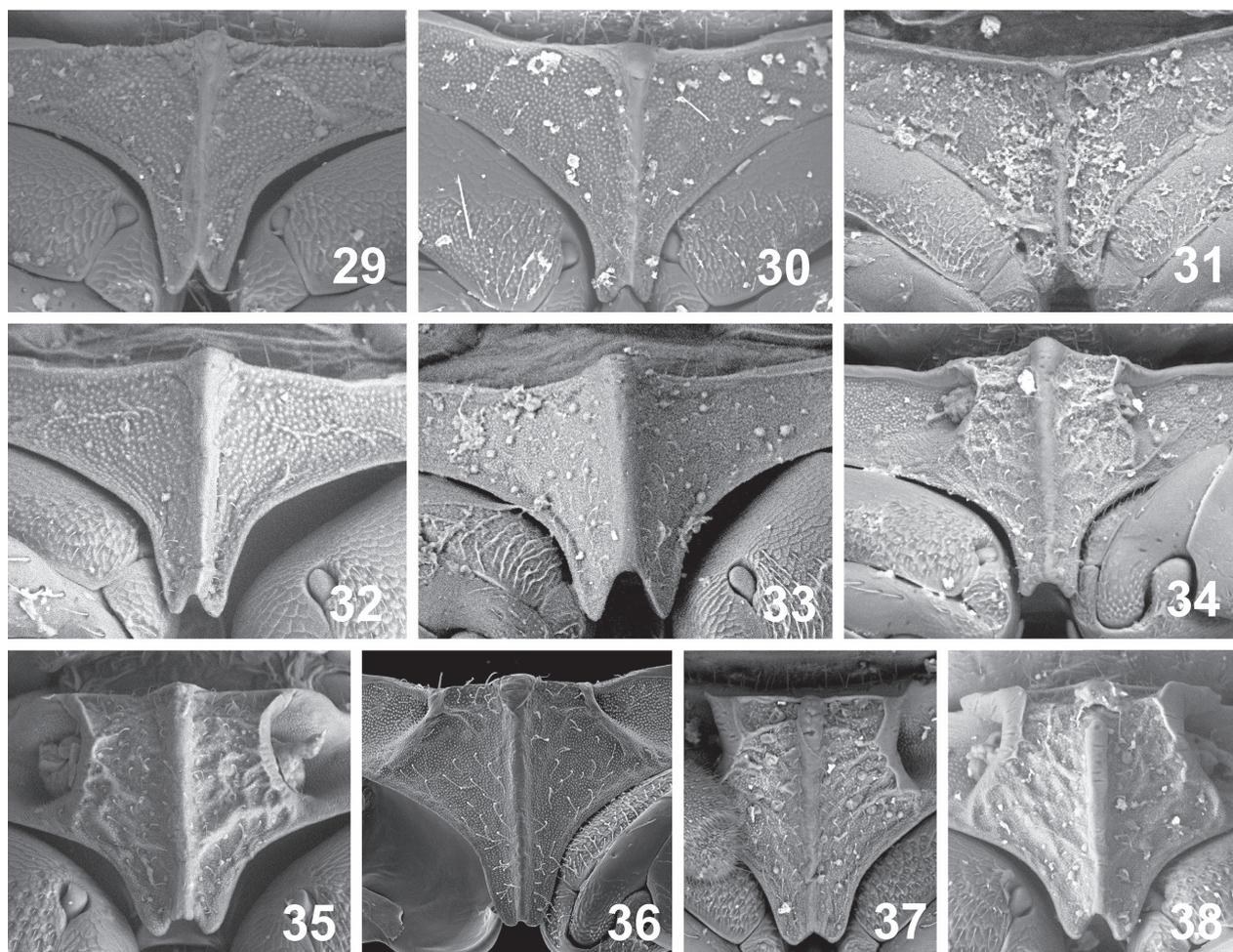
Figures 19–28. Pronotal punctation and microsculpture. 19. *Oosternum andersoni* 20. *O. bacharenge* 21. *O. cercyonoides* 22. *O. insulare* 23. *O. latum* 24. *O. luciae* 25. *O. megnai* 26. *O. pecki* 27. *O. sharpi* 28. *Oosternum* sp. (Bahamas).

fine decumbent seta; setae pale; interstices without microsculpture; anterior margin of clypeus truncate. Frons with dense punctation consisting of small, punctures of same shape medially and laterally; interstices without microsculpture. Eyes moderately large. Mentum 1.8× wider than long, anterior margin deeply emarginate; anteromedian part not distinctly impressed; with sparse punctation, punctation consisting of minute, nearly indistinct punctures bearing minute setae; interstices with fine microsculpture consisting of transverse ridges. Submentum without poriferous disc-like fields. Maxillary palpus with palpomeres 2 and 4 ca. 1.2× longer than palpomere 3. Antenna with 9 antennomeres; scapus shorter than antennomeres 2–6 combined.

Prothorax. Pronotum evenly convex forming continuous curve with elytra in lateral view. Lateral margin of pronotum angulate; with narrow marginal bead. Pronotal punctation uniform in size, moderately dense, as dense as that on frons; consisting of small rasp-like punctures, slightly sparser laterally than medially; all punctures bearing long setae; interstices without

microsculpture. Median portion of prosternum not elevated and demarcated from lateral portions, median carina of prosternum narrow, projecting more anteriorly mesally than anterior margin of median portion, with anterior portion elevated into small tooth in lateral view. Postero-mesal projection with shallow notch. Antennal grooves moderately large. Lateral margin of antennal grooves rounded.

Mesothorax. Scutellar shield bearing a few small, rasp-like punctures; interstices without microsculpture. Elytral series 1–5 and 8 arising basally, series 6–7 and 9 joint subbasally. Serial punctures small; transverse; sparsely arranged, with minute setae (indistinct under binocular microscope). Elytral interval 2 narrower than interval 3, as high as intervals 1 and 3, reaching elytral apex, intervals 5, 7 and 9 as convex as adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate narrow, drop-like, 2.3× longer than wide, widely attached to metaventrte; posterior part of preepisternal elevation slightly overlapping over anterior margin of metaventrte; median part flat; bearing densely



Figures 29–38. Median portion of prosternum. 29. *Oosternum andersoni* 30. *O. bacharengae* 31. *O. cercyonoides* 32. *O. megnai* 33. *O. pecki* 34. *Oosternum* sp. (Bahamas) 35. *O. insulare* 36. *O. latum* 37. *O. luciae* 38. *O. sharpi*.

arranged, large, shallow setiferous punctures; interstices without microsculpture.

Metathorax. Metaventricle distinctly longer than preepisternal elevation of mesothorax, median portion markedly differing from lateral portion in punctation and microsculpture; punctation of median portion sparse consisting of small rounded punctures, interstices without microsculpture, shiny. Anterolateral ridges bent posteriorly along lateral margin of metaventricle, concave laterally, not meeting together mesally. Anterior margin of metaventricle not crenulate.

Abdomen. Ventrite 1 with additional longitudinal ridges laterally. Ventrites 2–5 without longitudinal ridges; posterior margin of all ventrites lacking denticles.

Male genitalia. Aedeagus 0.52 mm long, parameres 0.8× longer than phallobase. Parameres continuously narrowing apicad, bearing two long setae apically. Phallobase narrow, 2.1× longer than wide. Median lobe longer than parameres, oval in shape, with small apical projection. Membranous lateral projections of median lobe absent. Gonopore absent.

Etymology. The new species is dedicated to our excellent colleague and friend Yoandri S. Megna (Universidad de Oriente, Santiago de Cuba, Cuba).

Distribution. *Oosternum megnai* sp. n. is the Cuban endemic species currently known only from the type locality in the southeastern part of the island (Granma province) (Fig. 61). The locality is situated in the Sierra Maestra mountain range which is considered one of the main centers of diversity in Cuba (CENAP 2004).

Habitat. Specimens of *O. megnai* were collected in dry leaf litter in the secondary forest.

Oosternum pecki sp. n.

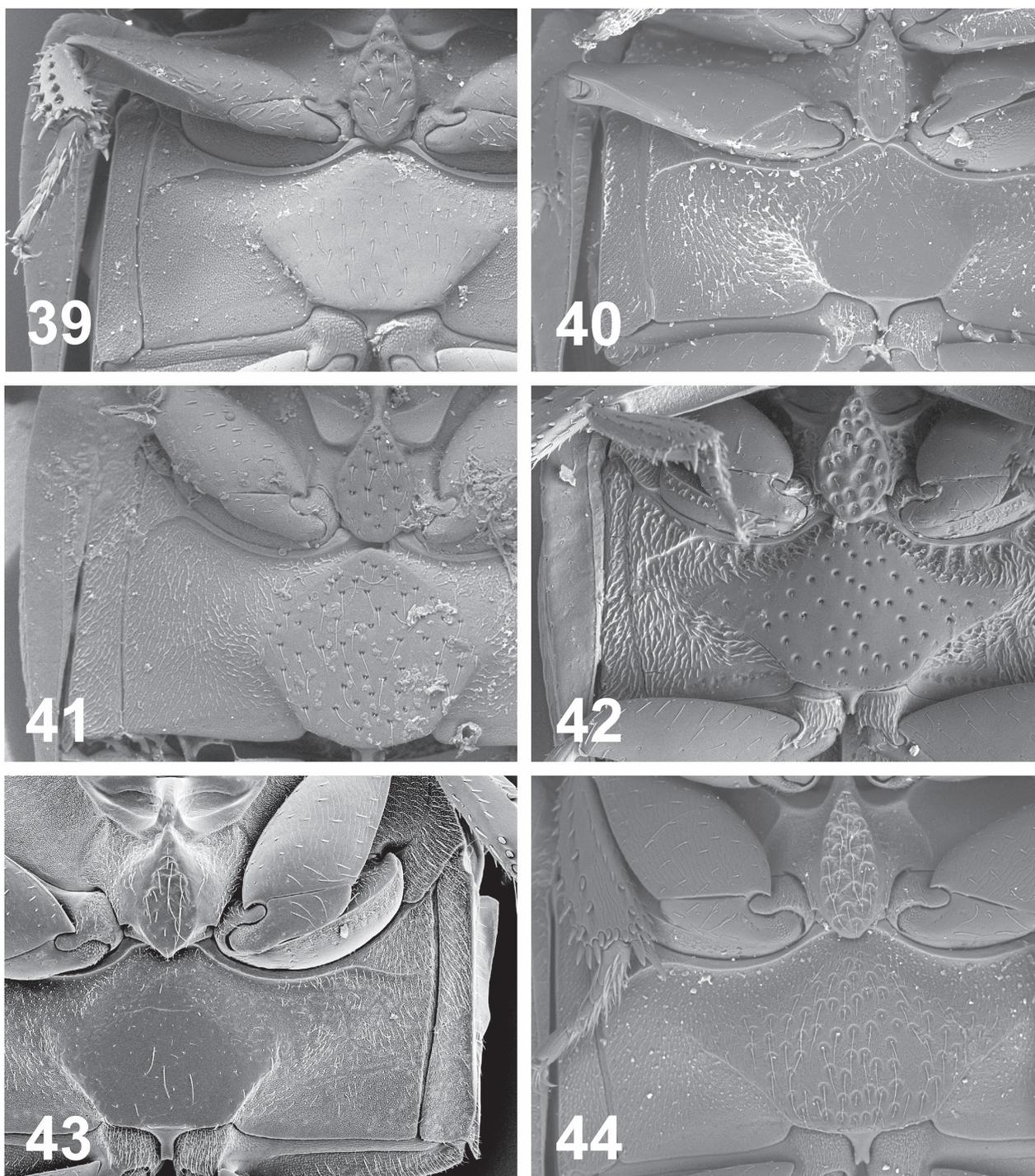
<http://zoobank.org/425E2398-6C4F-4966-A966-E7B1DD0C8207>

http://species-id.net/wiki/Oosternum_pecki

Figs 15–16, 26, 33, 46, 49, 52, 59, 61

Type-locality. Dominican Republic, Barahona: 17°59'06.85"N, 71°12'57.29"W, 7 Km NW Paraiso, 200 m.

Type-specimens (19 spec.). Holotype male, dry mounted, with genitalia mounted in Euparal on a microslide pinned below the specimen. Original label: "DOM REP: Barahona: 7 Km NW Paraiso, 27.xi/04.xii.1991, Masner & Peck, elevation 200 m, rainforest remnant, intercept tp. [printed] / Holotype, *Oosternum pecki* sp. n., Deler-Hernández & Fikáček det. 2013 [red, printed]" (CNC). Paratypes: DO-

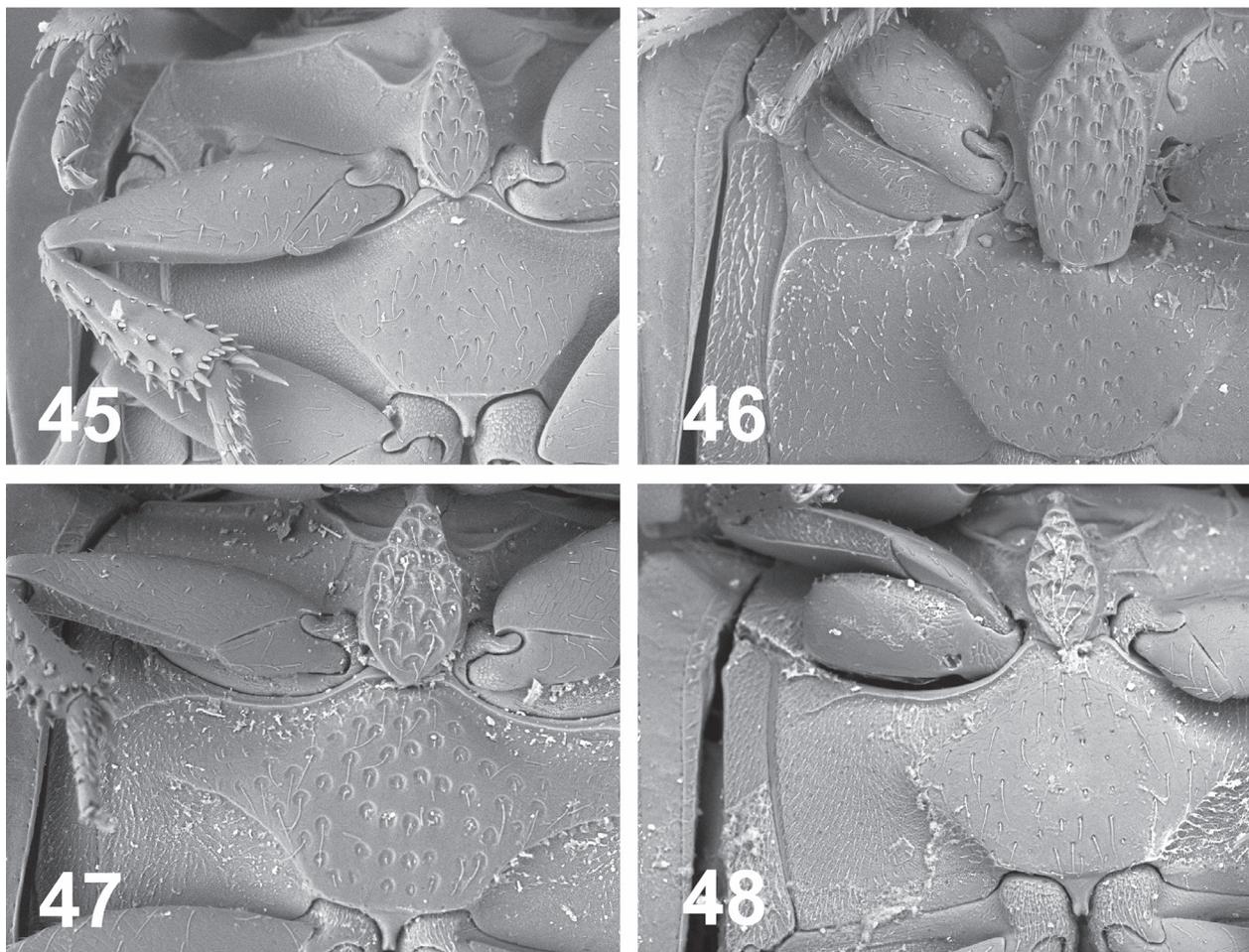


Figures 39–44. Meso- and metaventrite plate. 39. *Oosternum andersoni* 40. *O. bacharengae* 41. *O. cercyonoides* 42. *O. insulare* 43. *O. latum* 44. *O. luciae*.

MINICAN REPUBLIC: Barahona: same data as holotype (18 spec., CNC, NMPC, BSC-E, CMN, SEMC).

Diagnosis. Body widest ca at midlength. Lateral margin of pronotum angulate. Pronotal punctation double-sized, dense consisting of moderately large round and rasp-like punctures. Pronotal interstices without microsculpture. Mesal part of prosternum not divided from lateral portions. Lateral margin of antennal grooves rounded. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3,

reaching elytral apex. Elytral intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, sub-rhomboid, $2.1\times$ longer than wide, largely overlapping over metaventrite. Interstices of median part of metaventrite without microsculpture. Anterolateral ridges of metaventrite not meeting together mesally. Parameres $1.1\times$ longer than phallobase, bearing two long setae apically. Median lobe ca. as long as parameres, nearly parallel-sided basally,



Figures 45–48. Meso- and metaventrite plate. 45. *O. megnai* 46. *O. pecki* 47. *O. sharpi* 48. *Oosternum* sp.

narrowing apicad in apical 0.2, apex rounded. Membranous lateral projections of median lobe absent.

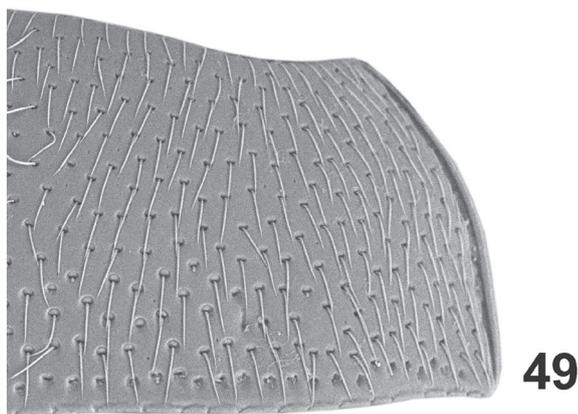
Description. Habitus. Body elongate oval, gradually narrowing posteriad; total length/total width ratio = 1.6. Length: 1.45–1.5 mm, length of holotype: 1.41 mm; width: 0.89–0.97 mm, width of holotype: 0.89 mm.

Coloration. Coloration of dorsal side reddish brown. Ventral side brown to reddish brown. Femora, tibiae and antennal club pale reddish brown, tarsi and antennomeres 1–6 yellowish.

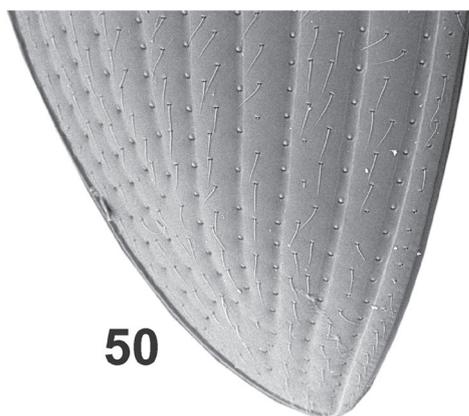
Head. Clypeus with sparse punctation consisting of fine punctures, each puncture bearing fine decumbent seta; setae pale; interstices without microsculpture; anterior margin of clypeus truncate. Frons with dense punctation consisting of small punctures of same shape medially and laterally; interstices without microsculpture. Eyes moderately large. Mentum 1.9× wider than long, anterior margin slightly emarginate; anteromedian part not distinctly impressed; with sparse punctation, punctation consisting of minute, nearly indistinct punctures bearing minute setae; interstices with fine microsculpture consisting of transverse ridges. Submentum without poriferous disc-like fields. Maxillary palpus with palpomeres 2 and 4 ca. 1.2× longer than palpomere 3. Antenna with 9 antennomeres; scapus shorter than antennomeres 2–6 combined.

Prothorax. Pronotum evenly convex, forming continuous curve with elytra in lateral view. Lateral margin of pronotum angulate, with narrow marginal bead. Pronotal punctation double-sized, dense, slightly denser than on frons, consisting of transverse punctures anteriorly and large round punctures posteriorly; all punctures bearing long setae; interstices without microsculpture. Median portion of prosternum not elevated and demarcated from lateral portions, median carina of prosternum narrow projecting more anteriorly than anterior margin of median portion, with anterior portion elevated into small tooth in lateral view. Postero-mesal projection with deep notch. Antenal grooves moderately large. Lateral margin of antennal grooves rounded.

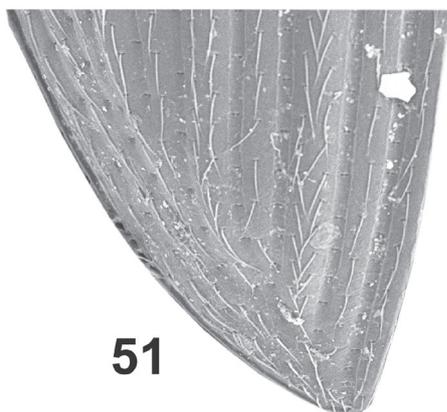
Mesothorax. Scutellar shield bearing a few small rasp-like punctures; interstices without microsculpture. Elytral series 1–5 and 8 arising basally, series 6–7 and 9 joint subbasally. Serial punctures small; transverse; sparsely arranged, with minute setae (indistinct under binocular microscope). Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex, intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, subrhomboid, 2.1× longer than



49



50



51



52

Figures 49–52. Additional diagnostic characters of West Indian *Oosternum*. (49) Pronotal punctation of *O. pecki*. (50–52) Apical portion of elytra 50. *O. cercyonoides* 51. *O. megnai* 49, 52. *O. pecki*.

wide, widely attached to metaventricle; posterior part of preepisternal elevation much overlapping over anterior margin of metaventricle; median part flat; bearing densely arranged, large, shallow setiferous punctures; interstices without microsculpture.

Metathorax. Metaventricle distinctly shorter than preepisternal elevation of mesothorax, median portion markedly differing from lateral portion in punctation and microsculpture; punctation of median portion sparse, consisting of small rounded punctures, interstices without microsculpture, shiny. Anterolateral ridges bent posteriad along lateral margin of metaventricle, concave laterally, not meeting together mesally. Anterior margin of metaventricle not crenulate. Lateral margin with additional slightly concave ridge.

Abdomen. Ventrite 1 without additional longitudinal ridges laterally. Ventrites 2–5 without longitudinal ridges; posterior margin of all ventrites lacking denticles.

Male genitalia. Aedeagus 0.57 mm long, parameres 1.1× longer than phallobase. Parameres continuously narrowing apicad, bearing two long setae apically. Phallobase wide, 1.6× longer than wide. Median lobe ca. as long as parameres, nearly parallel-sided basally, narrowing apicad in apical 0.2, apex rounded. Membranous lateral projections of median lobe absent. Gonopore present.

Etymology. The new species is dedicated to Professor Stuart Peck (Carleton University, Canada) whose collecting trips accumulated a huge material of the West Indian Hydrophilidae, including many *Oosternum* specimens used for this study.

Distribution. *Oosternum pecki* sp. n. is a Hispaniolan endemic species currently known only from the type locality situated in the southern part of the Dominican Republic (Barahona province) (Fig. 61).

Habitat. Based on the label data, the type specimens were collected in a remnant of the rain forest using a flight intercept trap.

Oosternum sharpi Hansen, 1999

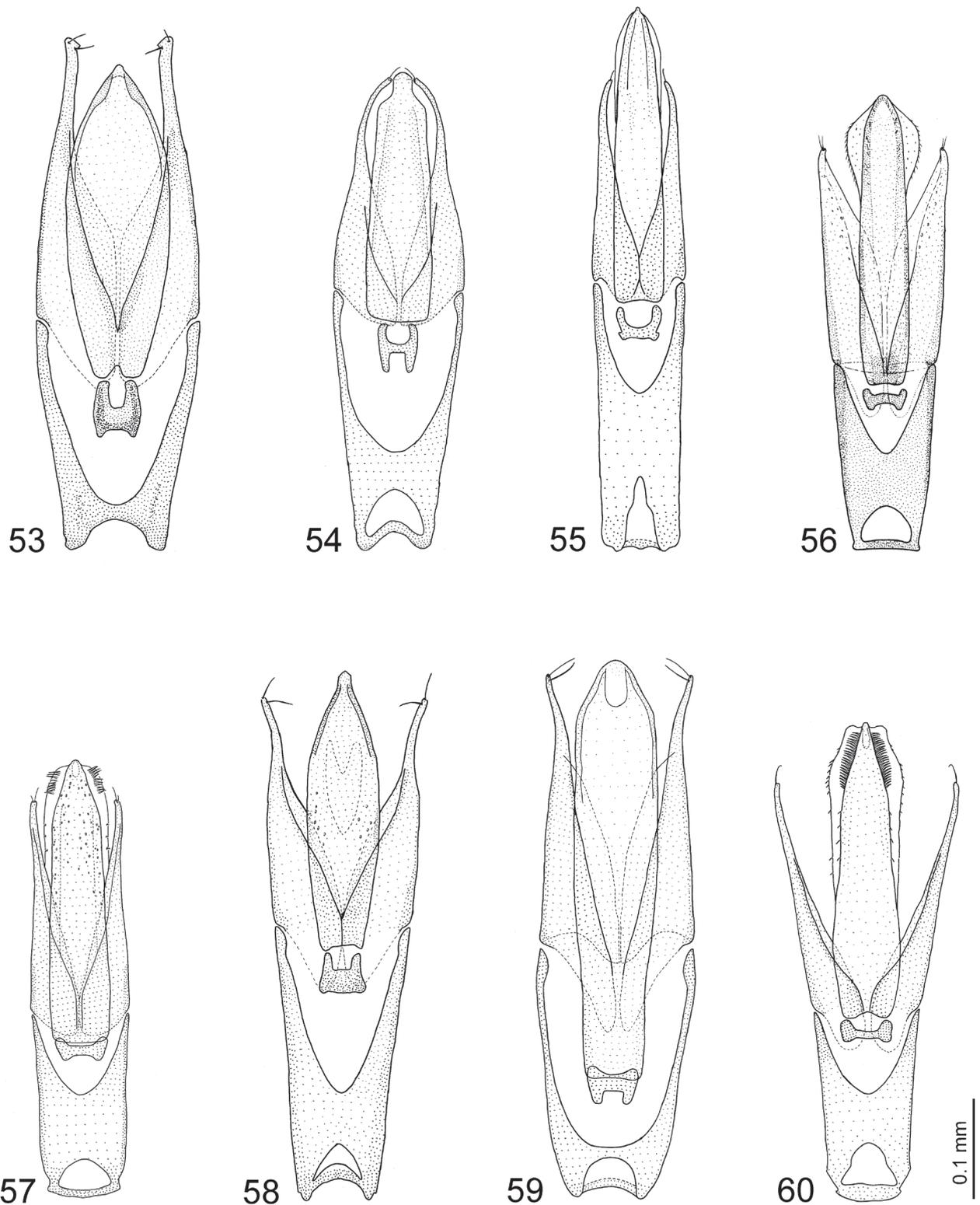
http://species-id.net/wiki/Oosternum_sharpi

Figs 17–18, 27, 38, 47, 60, 61

Oosternum costatum Sharp, 1882: 113 (secondary homonym of *Megasternum costatum* LeConte, 1855).

Oosternum sharpi Hansen, 1999: 242 (replacement name).

Material examined (65 spec.). **CUBA:** Cienfuegos province: Cumanayagua municipality, Jardín Botánico de Cienfuegos, Soledad, ca. 73 m, 22°7'18.44"N, 80°19'35.26"W, 21.v.2013, A. Deler-Hernández leg., horse excrements (3 spec., NMPC); 01.v.1950, Acc. No 49672 (4 spec., WIFP); Mina Carlota, ca. 470 m, 22.0667°N, 80.1667°W, 06.v.1950, Acc. No 49681 (1 spec., WIFP). Camagüey province: Sierra de Cubitas municipality, Hoyo de Bonet, Res. Ecol. “Limonos-Tuabaquey”, ca. 90 m a.s.l., 21°36'32.51"N, 77°47'5.30"W, 14.iv.2012, F. Cala-Riquelme & N. Duperré leg., (CU-20) (1 spec., NMPC). Granma



Figures 53–60. Aedeagus. 53. *Oosternum andersoni* 54. *O. bacharengae* 55. *O. insulare* 56. *O. latum* 57. *O. luciae* 58. *O. megnai* 59. *O. pecki* 60. *O. sharpi*.

province: PN Turquino track to Pico Turquino, ca. 900 m a.s.l., 20°0.5'N, 76°53.6'W, 29.iii.2012, F. Cala-Riquelme & N. Duperré leg., (CU03) (15 spec., NMPC). Santiago de Cuba province: San Luis municipality, El Vivero 1.6 Km E of Dos Caminos, ca. 150 m a.s.l., 20°10.8'N, 76°46.4'W,

20–21.vi.2012, A. Deler-Hernández & M. Fikáček leg., (MF18) (3 spec., NMPC); Km 7 road to Gran Piedra, ca. 550 m a.s.l., 20.011°N, 75.673°W, 26.i.2012, R. Anderson leg., (2012–007) (1 spec., NMPC). Guantánamo province: El Yunque, 0.5–1.0 Km W of campismo popular, ca.

40–50 m a.s.l., 20°20.1'N 74°33.6'W, 10.vi.2012, A. Deler-Hernández & M. Fikáček leg., (MF01) (1 spec., NMPC). **HAITI:** Port-au-Prince: 18°31'1.33"N, 72°20'7.42"W, 22.v.1950, Acc # 49650, H. B. Mills colr. (4 spec., WIFP). **DOMINICAN REPUBLIC:** Barahona: 7 Km NW Paraiso, ca. 200 m a.s.l., 17°59'06.85"N, 71°12'57.29"W, 27.xi/04.xii.1991, Masner & Peck leg., (91–341) (2 spec., SBPC); 1–04.xii.2012, Masner & Peck leg (91–358) (1 spec., SBPC). **JAMAICA:** Try Good Hope: ca. 145 m a.s.l., 18°25'N, 77°41'W, 17.viii.1966, H. F. Howden leg., (1 spec., SBPC); Trelawny Par. Nr. Windsor Caves, 18°20'59.21"N, 77°38'56.11"W, 24.iii.1991, T. K. Phillip and L. Gerofsky leg., berlese stream-side leaves (1 spec., WIFP). **PUERTO RICO:** 3.5 Km S Cabo Rojo, Cueva Tuna, ca. 25 m, 18°02'N, 67°09'W, 14.vi.1974, S. Peck leg., (1 spec., SBPC); Aguas Buenas, near Aguas Buenas Cave, ca. 250 m a.s.l., 18°15'N, 66°07'W, 07–17.v.1973, S. Peck leg., (1 male, SBPC); 2 km S Mamayas (Palmer), ca. 70 m, 18°21'13.63"N, 65°46'36.05"W, 25.IX.1987, M. Ivie, ex. old lawn debris (3 spec., WIFP); Isla Verde, vii/viii.1957, I. Fox lgt, light trap (1 spec., WIFP); El Verde, ca 250 m, 18°19'27.35"N, 65°49'26.90"W, M. A. Ivie lgt, at light (1 spec., WIFP). **BARBADOS:** Colescave: 1 Km SSE Welchman Hall, ca. 200 m a.s.l., 13°11'N, 59°34'W, 22–26.ii.1979, S. Peck leg., (3 spec., SBPC); Welchman Hall Gully, ca. 270 m a.s.l., 13°11.74'N, 59°34.60'W, 26.v.2006, S & P. Peck leg (06–60) (1 spec., SBPC). **TRINIDAD & TOBAGO:** Curupe: ca. 13 m a.s.l., 10°38'21.96"N, 61°24'35.91"W 05.xii.1977, W.R.M. Mason leg (1 spec., SBPC). **SAINT LUCIA:** Vieux Fort, ca. 3 m a.s.l., 13°43'18.68"N, 60°56'58.86"W, 12.vii.2007, S & P. Peck leg (07–60) (1 spec., SBPC). **SABA:** Neth Antil, ca. 384 m a.s.l., 17°37'43.45"N, 63°13'47.93"W, 20.V.2008, D. S. Sikes & M. A. Ivie leg, berlese litter/lawn clipping, (1 spec., WIFP). **DOMINICA:** Springfield Estate, ca. 330–360 m a.s.l., 15°20.796'N, 61°22.142'W, 30.v/16.vi.2004, S & P. Peck leg (04–86) (1 spec., SBPC). **SAINT VINCENT AND GRENADINAS:** Esmerald Valley Hotel, E. of Layou, ca. 20 m a.s.l., 13°12'N, 61°14.8'W, 27–29.viii.2006, S & J. Peck leg., forest edge UV, (06–123) (6 spec., SBPC); Buccament. Esmerald Valley Hotel, ca. 20 m a.s.l., 13°12'36.18"N, 61°13'47.74"W, 10–20.vi.2007, S & P. Peck leg (07–12) (1 spec., SBPC), Bequia island, Hamilton, ca. 25 m a.s.l., 13°00'30"N, 61°14'W, 01.viii.2008, S. Peck & M. de Silva leg (08–75) (1 spec., SBPC). **GUADELOUPE:** BT Malendure, Petite Trace, Fond Ravine, ca. 3 m a.s.l., 16°10.44'N, 61°46.7'W, 21.v.2012, S. Peck leg., forest edge UV, (12–31) (2 spec., SBPC). **VIRGIN ISLAND:** St. John, Dennis Bay, ca. 5 m, 18°21'7.08"N, 64°46'29.86"W, 16.vi.1980, (1 spec., WIFP); Maho Bay, ca 30 m, 18°21'41.92"N, 64°44'32.81"W, 12.iii.1984, W. B. colr, under trees near road, (1 spec., WIFP); St. Thomas, ca. 50 m, 18°21'20.93"N, 64°55'31.20"W, 05.viii.1984, (1 spec., WIFP).

Diagnosis. Body widest ca at midlength. Lateral margin of pronotum angulate. Pronotal punctation double-sized, dense consisting of moderately large, round punctures intermixed with smaller transverse punctures. Pronotal

interstices with microsculpture. Mesal part of prosternum divided from lateral portions by oblique sharp ridges. Lateral margin of antennal grooves with acute projection. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, 2× longer than wide. Interstices of median part of metaventrite with very fine microsculpture, opaque. Anterolateral ridges not meeting together mesally. Parameres 1.2× longer than phallobase, bearing a single seta apically. Median lobe longer than parameres, narrowing towards apex. Membranous lateral projections of median lobe large, bearing long setae on each side.

Distribution. *Oosternum sharpi* is a common species distributed throughout the West Indies. We are recording it from all islands of the Greater Antilles (Cuba, Jamaica, Hispaniola and Puerto Rico) as well as from 9 islands of the Lesser Antilles. The species is otherwise widely distributed in southern USA, Central America and northern part of the South America, and was also introduced to the Azores (Orchymont 1940, Svensson 1973), Hawaiian islands (Hansen 1995), Ghana (Smetana 1978) and Sri Lanka (Hansen 1995). All specimens but one examined by us from the West Indian islands were females. The only male known from the West Indies is from Puerto Rico.

Habitat. Specimens of *O. sharpi* are often collected from dry leaf litter of secondary forests or other secondary types of vegetation (including bamboo stands in agricultural areas), and are also found in cow and horse dung in the lowlands or occasionally attracted to UV light.

Oosternum sp.

Figs 34, 48

Material examined (1 spec.): **BAHAMAS:** Andros Island, Forfar Field Station, 10 m, 24°53'50.81"N, 77°55'54.29"W, 10/15.vii.1983, J. Peacock leg., at light (1 spec., WIFP).

Diagnosis. Body widest ca at midlength. Lateral margin of pronotum angulate. Pronotal punctation double-sized, dense consisting of moderately large, round punctures intermixed with smaller transverse punctures. Pronotal interstices with microsculpture. Lateral margin of antennal grooves with acute projection. Elytral interval 2 narrower than interval 3, lower than intervals 1 and 3, reaching elytral apex. Elytral intervals 5, 7 and 9 distinctly higher than adjacent intervals. Elytral interstices shiny, without microsculpture. Preepisternal plate wide, drop-like, 2× longer than wide. Interstices of median part of metaventrite with very fine microsculpture, opaque. Anterolateral ridges of metaventrite not meeting together mesally, indistinct laterally.

Comment. The single examined specimen is very similar to *O. sharpi* but differs from it by the relatively smaller preepisternal plate of the mesothorax, central portion of the metaventrite with much finer punctation and the

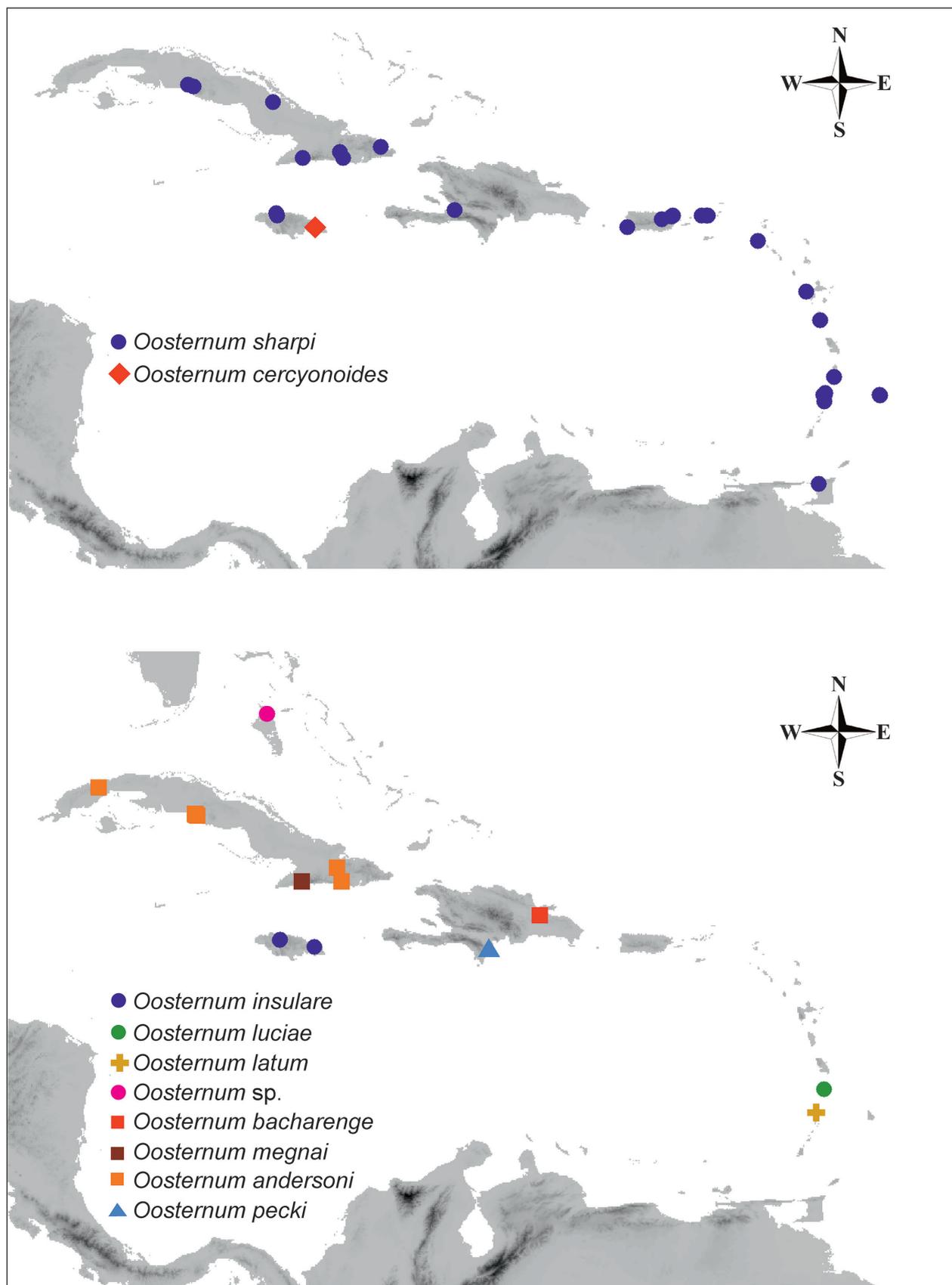


Figure 61. Distribution of the representatives of the *Oosternum* from West Indies. Shape of the symbols indicate the species group which the respective species belongs to (see the Discussion for details).

laterally incomplete anterolateral ridge (Fig. 48). However, since only a single female is available, we refrain from describing it as a new species, pending the discovery of additional specimens and ideally males.

Discussion

Composition of the West Indian fauna of *Oosternum*.

Ten species groups of *Oosternum* were defined by Fikáček et al. (2009), using a set of arbitrarily selected characters (prosternal morphology, the form of the pronotum, elytral morphology and the morphology of the metaventricle). These groups were aimed to divide the genus into smaller parts facilitating the species-level revision. Their phylogenetic significance has never been tested, yet they are the only available proxy of the internal structure of *Oosternum* at the moment. Moreover, additional characters exclusively correlating with some of the groups or their combinations were subsequently found (Fikáček 2009), which possibly indicates that at least some of these groups are candidates for monophyletic clades.

Representatives of five different species groups were found in the West Indies. Four species, the widely distributed *O. sharpi*, the endemic *O. insulare* and *O. luciae*, and the undescribed species from the Bahamas, are members of the *O. sharpi* species group (indicated by circles in Fig. 61). One species, *O. latum*, is a member of the *O. aequinoctiale* group (Fikáček et al. 2009; cross-shaped symbol in Fig. 61), which seems to be morphologically very close to the *O. sharpi* group based on the medially differentiated prosternum, pronotal punctation consisting of two intermixed types of punctures (one with long seta, one with extremely reduced seta) and antennal grooves with acute lateral projection. Further five species represent the groups without differentiated median portion of prosternum. They key out as members of *Oosternum* group C (in case of *O. cercyonoides*) and of the *O. pubescens* group (in case of *O. andersoni*, *O. bacharengae*, *O. megnai* and *O. pecki*) using the key to groups by Fikáček et al. (2009), as they differ in the morphology of the elytral intervals. However, the close relationship of the West Indian species with *O. pubescens* (LeConte, 1855) seems rather improbable, as the latter species is unique among *Oosternum* by possessing a partially differentiated median portion of prosternum (see Fig. 250 in Smetana 1978, under the name *Cercyon pubescens*). In contrast, all West Indian species bear a simply carinate prosternum. Moreover, *O. pecki* seems rather isolated from the remaining West Indian species based on its unique morphology of the meso- and metaventricle (preepisternal plate largely overlapping over metaventricle, metaventricle with an additional lateral ridge along the lateral margin) as well as by the character of the pronotal punctation (shape of the punctures changes from anterior margin to the posterior one). We therefore tentatively consider the West Indian species with simple prosternum as members of three species groups: *O. cercyonoides* and *O. pecki* each represent

a separate species group (marked by a rhomboid and a triangle in Fig. 61, respectively), whereas *O. andersoni*, *O. bacharengae* and *O. megnai* are extremely similar to each other and form the group depicted by squares in Fig. 61.

Biogeography of the West Indian *Oosternum*. Nine of the ten *Oosternum* species occurring in the West Indies are thus far endemic to the region. All of them are single-island endemics. The highest diversity is found in the Greater Antilles, where six endemic species were found, two on each island (Cuba, Jamaica, Hispaniola) except for Puerto Rico, from where no endemic species is known. In the Lesser Antilles, only two endemic species are known from the southern part of the island arc; one from each Saint Lucia and Saint Vincent islands.

Based on the assignment to the tentative species groups discussed above, the fauna of the Greater Antilles clearly shows a composite character, hosting representatives of five different species groups. Each Jamaican endemic species belongs to a different species group, and the same is the case of Hispaniola. This seems to indicate that the fauna of these islands resulted from multiple independent colonizations. A different situation is found in Cuba, where both endemic species, *O. andersoni* and *O. megnai*, are morphologically very similar and very likely closely related. They are moreover very similar to *O. bacharengae* from Hispaniola. It is hence probable that the three species are closely related. The geological block that today forms the northern part of Hispaniola was originally connected to that of eastern Cuba until the Early to Middle Miocene when it separated (Graham 2003). Hence, *Oosternum bacharengae* may have originated by vicariance after the separation of northern Hispaniola from Cuba. In Cuba, the two endemic species were never collected syntopically: *Oosternum andersoni* is a highland species widespread throughout the island, whereas *O. megnai* is endemic to the western part of the Sierra Maestra Mts. The type locality lies at the slope of Pico Turquino, i.e. the highest Cuban mountain. We failed to find the species in the central and eastern parts of Sierra Maestra despite our recent intensive collecting effort in these areas, which confirms that *O. megnai* is very likely a very local endemic. To understand the reasons for the within island split of *O. andersoni* and *O. megnai*, it would be necessary to date the age of the split. However, a local split along the elevation gradient seems currently as the most probable explanation.

Although data from other islands of the Greater Antilles are more limited than those from Cuba, the separation along the altitudinal gradient is likely also present in Jamaica, where *O. cercyonoides* is known from the highest mountain range only (Blue Mountains in eastern Jamaica, the type locality at 1600 m a.s.l.), whereas *O. insulare* is known from localities at around 500 m a.s.l. across the island. In this case, the species are however not related to each other, but the different environmental requirements may have facilitated their coexistence in the island after two independent colonizations. The composite character of the Hispaniolan fauna may on the other hand reflect

the composite geological origin of the island. The current island consists of two originally separate blocks. The northern one was connected to eastern Cuba until the Early/Middle Miocene (as discussed above), whereas the southern one originally formed a separate island and was connected with the northern one in the Middle Miocene (Graham 2003). One Hispaniolan endemic species is known from the former northern island (*O. bacharenge*), the other from the former southern island (*O. pecki*) and they are moreover not closely related to each other. The probable origin of *O. bacharenge* was already discussed. *Oosternum pecki* may have originally been the sole endemic in the small island of Southern Hispaniola, resulting from the dispersal from the continent or another West Indian island.

The endemics of the Lesser Antilles are most probably not closely related, and are both known from the volcanic island in the south of the island arc (*O. luciae* from St. Lucia, *O. latum* from St. Vincent), i.e. those which are rather close to the South American continent. The taxonomy and distribution is known in detail at least for the *O. aequinoctiale* group to which *O. latum* belongs. All species of this group but *O. latum* are restricted to South and Central America, and none of them, including the otherwise very widespread *O. aequinoctiale* (Motschulsky, 1855), does not occur in the West Indies (Fikáček et al. 2009). It seems hence probable that *O. latum* colonized the volcanic island of St. Vincent from South America. Same may be true for *O. luciae* which also has its relative species only in South America (Fikáček, unpubl. data) and is not related to any other West Indian species.

Unbalanced sex ratio of West Indian populations of *O. sharpi*? *Oosternum sharpi* is the only species of the genus that is widespread in the West Indies and also the only one that is not endemic – it is also widespread in the continental Central and South America and in the southern USA (this material was not studied in detail in this study). Surprisingly, the vast majority of the West Indian specimens of this species examined by us (64 of 65 specimens) are females. No males were found in most islands, with the only exception of Puerto Rico, from which the only West Indian male of the species is known. Even through this may be accidental due to a small number of specimens collected in most collecting events, it still stands in contrast to most other West Indian *Oosternum* species treated here in which males were found despite the limited number of collected specimens. It is also in a strong contrast to the continental populations of *O. sharpi*, in which males are frequent (M. Fikáček, unpubl. data). Additional collecting is needed to test whether the absence of males in most islands is just a collecting bias, or whether some island population of *O. sharpi* may be parthenogenetic. The latter possibility would however correspond with the wide distribution of the species in the West Indies as well as with the fact that *O. sharpi* is the only species of the genus which was introduced outside of the Neotropical Region (as a single female is able to establish a new population in parthenogenetic species).

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