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4 **Title**
5 New Cockroaches (Dictyoptera: Blattodea) from French Guiana and a Revised Checklist for
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7

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20 **Running title:** French Guiana Blattodea
21
22
23
24
25

26 **Abstract**

27 Although French Guiana is one of the greatest hotspots of cockroach biodiversity on Earth,
28 there are still undocumented species. From both newly collected and museum specimens, we
29 provide species descriptions for *Buboblatta vlasaki* sp. nov., *Lamproblatta antoni* sp. nov.,
30 and *Euhypnorna bifuscina* sp. nov. and report new geographic records for species in the
31 genera *Epilampra* Burmeister, *Euphyllodromia* Shelford, *Ischnoptera* Burmeister, and
32 *Euhypnorna* Hebard. Finally, we update the checklist of species known from the region to
33 163 total species records from French Guiana, making it the second greatest hotspot of
34 known cockroach biodiversity on Earth.

35 **Keywords**

36 Guyane, France, Blattoidea, Corydiidae, Blaberoidea, Lamproblattidae
37

38 **Introduction**

39 French Guiana is a hotspot of cockroach biodiversity. It has a higher number of
40 known species per unit area than any region in the neotropics, other than the state of Rio de
41 Janeiro in Brazil (Evangelista *et al* 2015, Evangelista *et al* 2016). Yet, this may be an artifact
42 of higher sampling effort in the region since this pattern of species richness is not congruent
43 with that of other taxa (Joppa *et al* 2011, Orme *et al* 2005).

44 There have indeed been numerous focused taxonomic efforts to catalogue and
45 describe the cockroach taxa of French Guiana. Hebard (1921b, 1926) did the first
46 comprehensive studies on this fauna and was followed by Bonfils (1975) and Grandcolas
47 (1992a, 1992b, 1993a, 1993b, 1994a, 1994b). Other taxonomic papers have contributed to the
48 knowledge of this fauna although they did not specifically focus on French Guiana (reviewed
49 in Evangelista *et al* 2015). Despite these efforts, there are still taxa to be described.

50 Grandcolas (1994b) lists 124 species from French Guiana that he believed were new to
51 science, including 23 new genera, but these are still mostly undescribed.

52 In this paper, we describe three new species and present eight new records of species
53 from French Guiana. Additionally, the checklists of Evangelista *et al* (2015, 2016) omit
54 species noted in two publications (Grandcolas 1994a, Grandcolas 1994b), so we add them
55 here. We also amend previous errors in the report of one synonym from Guyana (British
56 Guiana).

57

58 **Material and Methods**

59 Dissections of specimens were done as in Evangelista *et al* (2016). Specimen
60 photographs were taken using a Leica MZ12 microscope camera and manually compiled in
61 GIMP free image editing software.

62 Morphological terminology for genitalia follows Klass (1997) unless otherwise noted.
63 Terminology for wing and tegminal morphology follows Rehn (1951) with modifications by
64 Kukalova-Peck & Lawrence (2004) with original terminology (Rehn 1951) in parentheses.
65 Extensive measurements were taken for each specimen in the manner of Evangelista *et al*
66 (2016). Morphological features that are missing from the specimens, due to natural or
67 artificial (damage) absence, are recorded as “NA.” If a structure is partially damaged, its total
68 length may be estimated and noted with “est.”

69 For the material examined, we provide transcriptions of specimen label information.
70 To maintain precision, we provide these without translation to English.

71 Deposition of the specimens is indicated by their voucher number. The types with a
72 specimen number alphanumeric code beginning with “MNHNEP”, “NHFLFG”, or “GF-FL”
73 are deposited in the MNHN, Paris. Those only with a number prefaced by “RUDEFG” (and
74 not an additional “MNHNEP” number) are deposited in Charles University, Prague.

75

76 **Results**

77 **Genus *Buboblatta* Hebard, 1920**

78 Superfamily: Corydioidea; Family: Corydiidae; Subfamily: Latindiinae

79 *History.* The genus was originally erected to contain one Panamanian species, *Latindia*
80 *armata* Caudell, 1914, whose male and female were both macropterous (female in plate VI 6-
81 8). Hebard (1920) believed the genus was closest to *Melestora* Hebard, 1920, which was
82 assigned to the Latindiinae by Princis (1971). Bruijning (1959) added a second species
83 (figures 5, 6 in Bruijning 1959), which was collected in Suriname and for which the female is
84 unknown. Grandcolas (1994a) noted a taxon he referred to as “N. gen. 6 aff. *Buboblatta*
85 n.sp.1” from French Guiana. In the MNHN, Paris, collection there are unidentified specimens
86 of this genus from Peru, and from French Guiana.

87

88 *Buboblatta vlasaki* Evangelista, Kotyková Varadinová and Jůna, **sp. nov.**

89 Figs 1, 2, and 3; Table 1

90 *Material examined:* 2 females, 1 male. Holotype: RUDEFG38, female. Paratype: MNHN-
91 EP4279, female. Allotype: NHDE0018/MNHN-EP-EP4280, male. Collection Locality:
92 Reserve Naturelle Nationale des Nouragues (4°5’34”N, 52°40’39”W) (RUDEFG38); Arataye
93 Affl. Approuagues aval du Saut Parare 18.VII.1988, chasse de nuit branche, Museum Paris
94 Guyane Francaise (MNHN-EP-4279); Arataye Affl. Approuagues 8 km NE pied Saut Parare
95 19.IV.1988, chasse de nuit sur tige plante LAXY appuyée sur tronc, Museum Paris Guyane
96 Francaise (NHDE0018, MNHNEP4280). Collectors: František Jůna (RUDEFG38); L.
97 Desutter & P. Grandcolas rec. (NHDE0018).

98 *Diagnosis:* The male and female of this species are dimorphic in body shape and genitalia but
99 the body coloration and morphology of the head, legs, and abdomen are very similar between

100 the sexes. The morphological similarities, and the shared locality of the paratype female and
101 allotype male, support the association of these morphs under one species.

102 These individuals were identified as *Buboblatta* Hebard, 1920 by the presence of a
103 valvate subgenital plate, fuscous coloration, small body size, and distinct Corydiid type
104 venation of the male hind wings. Within *Buboblatta*, this species was differentiable from *B.*
105 *geijskesi* Bruijning, 1959 by the male paraprocts' shape. *Buboblatta vlasaki* is differentiable
106 from *B. armata* (Caudell, 1914) by wing state of the female (macropterous in *B. armata*,
107 brachypterous in *B. vlasaki*) and the symmetry of the male subgenital plate (produced to the
108 right in *B. armata* and symmetrical in *B. vlasaki*).

109 *Description of female holotype*: Head covered in moderately long setae. Interocular space (~
110 1.0 mm) significantly wider than interantennal space (~ 0.8 mm). Ocelli whitish, noticeable,
111 but very reduced in size. Frons black above antennal sockets and dark brown-amber below,
112 with slightly lighter coloration under antennal sockets. Clypeus and labrum, lighter than frons
113 and amber. Palps dark in color, similar to upper frons.

114 All legs dark brown overall with distal sections of segments light amber. Foreleg
115 anterior ventral margin of femur with a row of small spines (46 right, 41 left), one large
116 preapical spine and one larger apical spine; posterior ventral margin with small spines or
117 setae (9 right, 8 left) approximately uniformly spaced; tibia and tarsomeres densely covered
118 with setae with a few large spines at margin but only one spine preceding margin. Middle and
119 hind leg tibia and femur also densely covered with setae; tibia with large spines throughout;
120 apical spine present on anterior ventral margin of femora; tibia with a transverse stripe of
121 light amber at its halfway point. Pulvilli absent from front and middle legs (hind legs not
122 examined). Arolia very small. Pretarsal claws slender, symmetrical and unspecialized.
123 Genicular spines present on hind leg femora (middle leg not observed due to damage) and
124 absent on front leg femora.

125 Ventral abdomen entirely covered with setae, more densely posteriorly. Overall
126 coloration dark brown, but slightly lighter anteriorly and with very light amber spots laterally.
127 Subgenital plate valvate. Dorsal abdomen mostly without long setae, except laterally and
128 posteriorly. Coloration black or dark brown overall with orange amber spots (Figs. 1 and 2).
129 Supra-anal plate is symmetrical, very wide (~ 2 mm), and very short (~ 0.2 mm). Cerci long,
130 slender, and with two amber bands.

131 Pronotum subtrapezoidal with widest point in the posterior quarter. Surface punctate.
132 Also, with the anterior lateral portions slightly lower than rest of the shield. Coloration as in
133 remainder of body, but with a small light spot on either side of the medial line and a light
134 region on both lateral sections of the posterior margin. Mesonotum greatly narrowed and
135 postero-lateral corners square, with the remainder of their typical width covered by tegmina.
136 Tegmina brachypterous; length only just surpassing the posterior margin of the mesonotum;
137 width less than a third of the width of the metanotum. Tegmina also with very prominent dark
138 setae. Only traces of a subcosta and two other tegminal veins (possibly the radius and
139 media/cubitus) visible. Wings absent entirely. Coloration as of rest of body but mottled with
140 light spots.

141 *Description of female paratype*: Same as holotype except: slightly lighter (more brownish)
142 coloration overall, ~ 40 (right) or ~ 37 (left) piliform spines on anterior ventral margin of
143 foreleg femur and 7 (right) or 9 (left) small spines or setae on posterior ventral margin;
144 foreleg tibia with two spines preceding margin; pulvilli and arolia absent from all legs;
145 genicular spine present on middle and hindleg femur.

146 *Description of male allotype*: Head as in female except interocular space and inter antennal
147 space roughly equal.

148 Forelegs as in female except with 43 setae on foreleg ventro-anterior margin (left);
149 arolia present on all legs but very small; foreleg tibia with two spines preceding margin.

150 Abdomen as in female except terminal segments. Subgenital plate roughly
 151 symmetrical, with simple finger-like styli of medium to small size. Supra-anal plate with
 152 anterior margin (concave) and posterior margin (convex) each approximately triangular;
 153 anterior margin triangle comes to a narrow round point while posterior margin triangle comes
 154 to a wider truncate point. Supra-anal plate with long setae at margin. Paraprocts asymmetrical
 155 and specialized as in Fig 3d; a few robust setae on medial margin pointing inwards.

156 Genital phallomeres as in Fig 3f and g; hooked phallomere (L3) short; L1 with a
 157 bulbous end bearing some short setae or rugosity.

158 Tegmina large; brown as on rest of body, but with light brown speckles; covered
 159 densely with short setae dorsally, and scarcer on ventral side. Venation as in Fig 3a; subcosta
 160 branched; radius extensive and reaching to apical margin; medial (M) vein either stalked on
 161 radius (after 3rd branching point of radius) or entirely merged with cubitus (CuA); cubitus or
 162 Cu+M (CuA+M) vein branched and with veins roughly paralleling anterior and posterior
 163 margin; plical furrow (CuP) arched; anal area with few discernable veins. Wings (Fig 3b)
 164 with thin banded coloration on anterior margin with a white area at the apical end of the
 165 subcostal vein (Sc); no intercalated triangle. Venation as in Fig 3b; unbranched subcosta
 166 stalked on radius with small accessory vein preceding it on stalk; radius extensive and
 167 reaching anterior margin; media (M) and cubitus (CuA) appear to have a common origin on
 168 radial stalk; media with only one bifurcation; cubitus (CuA) many branched; plical veins not
 169 continuous but all three touching apical margin; 11 anal veins, the anterior two sharing a
 170 common branch, the posterior three or four not connected to the remainder; intercalaries
 171 present throughout.

172 *Etymology*: Blanka Vlasáková led the expedition to French Guiana during which the female
 173 specimen was collected. Moreover, “vlas” in the Czech language means “hair”, a reference to
 174 the abundant setae on this species.

175 *Known geographic distribution*: French Guiana (new record).

176

177 **Genus *Lamproblatta* Hebard, 1919**

178 Family: Lamproblattidae; Subfamily: Lamproblattinae

179

180 *Lamproblatta antoni* Evangelista, Kotyková Varadínová and Jůna, **sp. nov.**

181 Figs 4 and 5; Table 1

182 *Material examined*: 1 male. Holotype: RUDEFG20. Collection Locality: Reserve Naturelle
 183 Nationale des Nouragues (4°5'34"N, 52°40'39"W). Collectors: František Jůna.

184 *Diagnosis*: This individual was identified as *Lamproblatta* preliminarily by the apterous state
 185 of the adult and dark black coloration, and then confirmed by examination of the male genital
 186 configuration and comparison with illustrations of Evangelista *et al* (2016) and Klass (1997).

187 We were not able to associate this with any known species of *Lamproblatta*. It is
 188 closest to *L. mimetes* Rehn, 1930, *L. albipalpus* Hebard, 1919 and *L. ancistroides* Rehn,
 189 1930. It is separable from all three species by genital features. Among others, the differences
 190 are as follows: *L. mimetes* Rehn, 1930 has a wide circular protrusion between the styli that is
 191 absent in *L. antoni*; *L. albipalpus* Hebard 1919 has a spine (sra) on sclerite R1 that is absent
 192 in *L. antoni*; both *L. albipalpus* Hebard 1919 and *L. ancistroides* Rehn, 1930 differ from *L.*
 193 *antoni* in the shape of sclerite R2 and the shape of the protrusions on L2B (l2d).

194 *Description of male*: Head with interocular space (~ 2.1 mm) slightly wider than
 195 interantennal space (~ 1.8 mm). Ocelli whitish. Frons uniformly black with a maroon
 196 undertone. Clypeus and labrum lighter than frons and amber. Palps buffy with a light amber
 197 distal segment.

198 Legs with more visible maroon color but still very dark, with the basal coxae, and
 199 tibia being the darkest parts. Forelimb anterior ventral margin of femur with a row (15 left, 13

right) of large spines, approximately equal in size, followed by two larger preapical spines, and an even larger apical spine. Posterior ventral margin of fore-femur with three large spines, all in the distal half, and an apical spine. Lacking a genicular spine on foreleg femur but with genicular spine in middle leg femur (hind leg not examined). Pulvilli present on the basal four tarsomeres; bordered on both sides with a row of short, distally pointed spines; basal pulvillus reaching more than halfway down length of tarsomere. Basal tarsomere on front and middle legs not slender and slightly inflated. Arolia present and small (not reaching halfway up tarsal claws). Pretarsal claws symmetrical and unspecialized.

Overall coloration of ventral abdomen dark maroon. Subgenital plate mostly symmetrical; area between styli only slightly bowed posteriorly (not drastically bowed as in *L. mimetes* (Rehn 1930; Pl.II Fig.1); styli roughly equal in size; overall shape as in *L. albipalpus* (Rehn, 1930; Pl.II Fig. 2). Dorsal abdomen mostly without setae on anterior five segments, and some short stubble on posterior five segments. Coloration as frons, uniformly black with undertones of maroon. Supra-anal plate symmetrical, trapezoidal with tip moderately narrow (4 mm width at base, 1 mm at tip); whitish tip (typical of genus).

Pronotum subtrapezoidal with widest point in the posterior quarter. Surface smooth and without sulci or punctae. Coloration of thorax same as frons and dorsal abdomen. Wings and tegmina entirely lacking. Head visible from a dorsal view of pronotum.

Etymology: The specific epithet derives from the first name of the primary author's father.

Known geographic distribution: French Guiana (new record).

221 **Genus *Epilampra* Burmeister, 1838**

222 Superfamily: Blaberoidea; Family: Blaberidae; Subfamily: Epilamprinae

224 *Epilampra amapae* Rocha e Silva Albuquerque & Gurney, 1962

225 Figs 6 and 7; Table 2

226 *Material examined*: 5 males, 4 females. Male: RUDEFG11, RUDEFG09,
 227 NHDEFG01/MNHN-EP-EP4101, NHDEFG03/MNHN-EP-EP4103, NHFLFG447/MNHN-
 228 EP-EP4105. Female: RUDEFG10, NHDEFG02/MNHN-EP-EP4102, NHFLFG066/MNHN-
 229 EP-EP4104. Collection locality: Reserve Naturelle Nationale des Nouragues (4°5'34"N,
 230 52°40'39"W) (RUDEFG specimens); Arataye Affl. Approuagues 8 km NE pied Saut Parare
 231 (NHDEFG01-03 specimens); Sinnamary Piste de st Elie PK15. Collection date: 22.VII.1988
 232 (NHDEFG01/MNHN-EP-EP4101), 13.VI.1988 (NHDEFG02/MNHN-EP-EP4102), 2015
 233 (NHFLFG447/MNHN-EP-EP4105); 4.VIII.1988 (NHFLFG066/MNHN-EP-EP4104).
 234 Collectors: František Jůna (RUDEFG specimens); L. Desutter and P. Grandcolas (NHDEFG
 235 specimens).

236 *Diagnosis*: These specimens match the description by Rocha e Silva Albuquerque & Gurney
 237 (1962). Specifically, the coloration of the pronotum, forelimbs, and body proportions of the
 238 females. Head coloration is somewhat similar to that of *Epilampra azteca* Saussure, 1868 but
 239 it is differentiable from this species by the shape of L2d (teardrop or globular in *E. amapae*,
 240 while blocky or globular in *E. azteca*), tegmina coloration (amber orange in *E. amapae* and
 241 light brown with large speckles in *E. azteca*) and coloration of the pronotum (solidly filled
 242 color with slightly lighter area medially in *E. amapae* and "Aztec-like" pattern in *E. azteca*).

243 *Remarks*: Rocha e Silva Albuquerque & Gurney (1962) did not describe the genitalia of *E.*
 244 *amapae* so we include illustrations of them here (Fig 7e). We place *E. amapae* in subgroup C
 245 of the Burmeisteri group of *Epilampra* based on the following characteristics (morphological
 246 terms here follow Roth 1970): absence of a dense setal brush on L1; separation of L2d and
 247 prepuce; slightly scale-like appearance of the prepuce; shape of l2d; and shape and setae of
 248 L1. The genitalia most closely resemble those of *E. azteca*, which we consider its sister
 249 species. Based on the variation in genitalia shown in Roth (1970) and the variation we

250 observe in our specimens, the shape of sclerite L2d may be too variable to use as a
 251 differentiating feature of these two species. We keep them as separate species first to preserve
 252 the taxonomy and because there are obvious and distinct color differences between the two.
 253 Future evidence, possibly in genetics, could reveal these to be color morphs of the same
 254 species.

255 *Known geographic distribution:* Brazil (Amapa), French Guiana.

256

257 *Epilampra azteca* Saussure, 1869

258 Table 2

259 *Material examined:* 1 male, 2 females. Male: RUDEFG26. Female: RUDEFG05,
 260 RUDEFG06. Collection locality: Reserve Naturelle Nationale des Nouragues (4°5'34"N,
 261 52°40'39"W). Collectors: František Jůna.

262 *Diagnosis:* These specimens match the description by Rocha e Silva Albuquerque & Gurney
 263 (1962). Specifically, coloration of pronotum and frons, and allometry, though the examined
 264 females are slightly smaller than the described specimens.

265 *Remarks:* This species is already known from French Guiana (Evangelista *et al* 2015).
 266 *Epilampra colorata* (Rocha e Silva Albuquerque & Gurney 1962) was synonymized with *E.*
 267 *azteca* Saussure, 1869 by Roth with agreement by Gurney (Roth 1970). Evangelista *et al*
 268 (2016) reported a new record of *E. azteca* in Guyana, but under the name *E. colorata*. We
 269 amend that here (Online Resource 1).

270 *Known geographic distribution:* Mexico, Panama, Colombia, Ecuador, Venezuela, Trinidad
 271 and Tobago, French Guiana, Suriname, Brazil, Guyana (new record).

272

273 *Epilampra opaca* Walker, 1868

274 Fig 8

275 *Material examined:* *Epilampra opaca opaca*: FLFG164, 165, 485, 489, 490, “Planète
 276 Revisitée Guyane, 2015, Monts Tumuc-Humac, Massif du Mitaraka”, “54.44768 O 2.235494
 277 N (C100) 350m” – “54.4419 O 2.233664 N (C1000) 415m”, “23 II – 10 III 2015”, “nuit”.
 278 Collector: “Frédéric Legendre & Sylvain Hugel rec.” (GF-FL164/MNHN-EP-EP4106 and
 279 GF-FL165/MNHN-EP-EP4107); “Planète Revisitée Guyane, 2015, Monts Tumuc-Humac,
 280 Massif du Mitaraka”, “54.455612 O 2.235396 N (sommets) 415m” – “54.462592 O
 281 2.232997 N (savane) 510m”, “23 II – 10 III 2015”, “nuit”, “Frédéric Legendre & Sylvain
 282 Hugel rec.” (GF-FL485/MNHN-EP-EP4108, GF-FL489/MNHN-EP-EP4109, GF-
 283 FL490/MNHN-EP-EP4110) – APA 973-1; 3 labels: “Arataye Affl. Approuagues aval du Saut
 284 Parare. 5.VII.1988 ‘1’”, “chasse de nuit ‘petite boucle’ ‘plant’”, “MUSEUM PARIS.
 285 GUYANE FRANCAISE. L. Desutter & P. Grandcolas rec.”; NHDEFG04/MNHN-EP-
 286 EP4111, “Saul. 16.VIII. 1988 ‘4’”, “foret inondable remblais d’orpillage, ‘plante’ chasse de
 287 nuit”, “MUSEUM PARIS. GUYANE FRANCAISE. L. Desutter & P. Grandcolas rec.”;
 288 NHDEFG05/MNHN-EP-EP4112 “Sinnamary Piste de st Elie PK15. 4.VIII.1988 ‘2’”,
 289 “chasse de nuit ‘petite parallele’ ‘plant’”, “MUSEUM PARIS. GUYANE FRANCAISE. L.
 290 Desutter & P. Grandcolas rec.”; NHDEFG06/MNHN-EP-EP4113, “Saul. 16.VIII.1988 ‘4’”,
 291 “foret inondable remblais d’orpillage, ‘plante’ chasse de nuit”, “MUSEUM PARIS.
 292 GUYANE FRANCAISE. L. Desutter & P. Grandcolas rec.” *Epilampra opaca conca*:
 293 “GUYANE FRANCAISE, GOURDONVILLE. COLL. LE MOULT”. “MUSEUM PARIS.
 294 COLLECTION, LUCIEN CHOPARD 1927”; “CEIBA Biological Station, Madewini,
 295 Guyana (6°29'N, 58°13'W). Date: 18.VIII.2012.” “Collectors. Dominic A. Evangelista and
 296 William R. Kuhn.”

297 *Diagnosis:* This species was identified by comparison of the genitalia (specifically, the shape
 298 of L2d) of multiple specimens to figures in Roth (1970).

299 *Remarks:* There appears to be a color polymorphism in this species, although future work
 300 could find these forms to be distinct species. One color form, which we refer to as *Epilampra*
 301 *opaca conca* (type A), has a neutral gray as a base color, a pearly white abdomen, and an
 302 interocular marking of the shape of the base of a tooth. The other color form, *Epilampra*
 303 *opaca opaca* (type B), has an earthy brown tinge, the abdomen is deep brown, and the
 304 interocular coloration is also brown but with light vertical stripes. The holotype of *Epilampra*
 305 *opaca* (NHMUK012501958) has the color form of *E. opaca opaca*. The genitalia of this
 306 species is variable (Roth 1970), but the two color forms appear to both fall within this
 307 variation and we are unaware of any morphological characters separating them other than
 308 color. If this species uses color pattern in its recognition of potential mates, it is possible they
 309 could be distinct biological species. The coloration of most *Epilampra* species is distinct in
 310 the pronotum and frons (pers. obs. Evangelista), but the evolutionary factors underlying this
 311 variation are entirely unknown.

312 *Known geographic distribution:* Venezuela, Guyana, Suriname, French Guiana, Brazil.

313

314 *Epilampra sagitta* Hebard, 1929

315 Table 2

316 Material examined: 1 male. RUDEFG08. Collection locality: Reserve Naturelle Nationale des
 317 Nouragues (4°5'34"N, 52°40'39"W). Collectors: František Jůna.

318 *Diagnosis:* These specimens match the figures of Roth (1970). Specifically, the shape of L2d
 319 and the prepuce very closely match these structures that Roth (1970) reported from a
 320 specimen from Amapa, Brazil.

321 *Known geographic distribution:* Brazil (Amazonas, Amapa, Mato Grosso), French Guiana
 322 (new record).

323

324 *Epilampra egregia* Hebard, 1926

325 Figs 9 and 10

326 Material examined: 1 male. RUDEFG0712. Collection locality: Reserve Naturelle Nationale
 327 des Nouragues (4°5'34"N, 52°40'39"W). Collectors: František Jůna.

328 *Diagnosis:* We identified this species by the unique shape and sculpturing of the adult
 329 pronotum, and comparison of the shape of genital sclerites with Bonfils (1975).

330 *Remarks:* This species was not treated in Roth (1970) but its genitalia were illustrated in
 331 Bonfils (1975) who placed this species in the *abdomennigrum* group of *Epilampra*. We have
 332 included illustrations of it here to aid others in identification and systematics.

333 *Known geographic distribution:* French Guiana, Surinam.

334

335 **Genus *Euphyllodromia* Shelford, 1908**

336 Family: "Ectobiidae"; Subfamily: Pseudophyllodromiinae

337

338 *Euphyllodromia spiculata* Lopes & da Silva, 2012

339 Material examined: 1 male. RUDEFG32. Collection locality: Reserve Naturelle Nationale des
 340 Nouragues (4°5'34"N, 52°40'39"W). Collectors: František Jůna.

341 *Diagnosis:* This specimen was initially identified by the distinctive coloration of the head and
 342 pronotum. Since coloration in this genus is variable (Sonia M. Lopes, pers. comm.), the
 343 identification was confirmed through comparison of the subgenital plate and internal
 344 genitalia. Specifically, the small medial projection on the subgenital plate, the shape of the
 345 left phallomere and the presence of an accessory brush-like sclerite confirmed the
 346 identification of this species.

347 *Known geographic distribution:* Brazil (Amazonas), French Guiana (new record).

348

349 **Genus *Ischnoptera* Burmeister, 1838**

350 Family: “Ectobiidae”; Subfamily: Blattellinae

351

352 *Ischnoptera miuda* Lopes, 2009

353 Figs 11 and 12

354 Material examined: 1 male. RUDEFG36. Collection locality: Reserve Naturelle Nationale des
355 Nouragues (4°5’34”N, 52°40’39”W). Collectors: František Jůna.356 *Diagnosis*: We identified this specimen as *Ischnoptera* based on the comb-like structures on
357 the dorsal tergal gland, the shape of the subgenital plate, the spination on the front femora and
358 the sulci of the pronotum. We were further certain of our identification of this species by
359 comparison with the genital morphology of *I. miuda*. Although there are some minor
360 differences in coloration of the frons, coloration of the tergal gland, and width of the
361 interocular space.362 *Description of male RUDEFG36 (in addition to description in Lopes 2009)*: Head solidly
363 dark colored as the remainder of the body. Ocellar spots light, whitish. Interocellar space
364 distinctly less than interantennal space and interocular space drastically less than interocellar
365 space. Face rugose, mostly from ocelli to clypeus.366 Leg coloration as in remainder of body, but with tarsi lighter and more amber colored.
367 Basal segments slightly rugose or punctate. Anterior ventral margin of front leg femur with
368 two large basal spines followed by ten (right) or nine (left) spinules, one large preapical spine
369 and a large apical spine. Frontleg genicular spine absent. Middle leg with two large spines on
370 anterior ventral margin and one large genicular spine.371 Abdomen mostly solidly colored ventrally and dorsally. Subgenital plate slightly
372 asymmetrical; divided medially with peg-like styli positioned apically on the two narrow
373 lobes; some large setae scattered throughout with small setae concentrated apically. Dorsal
374 tergal gland (T7) with combs; medial lump pronounced; solidly colored. Medium sized setae
375 scattered throughout dorsal abdomen and most obvious on posterior margins. Supra-anal
376 plate nearly trapezoidal; only slightly sclerotized at margin; symmetrical.377 Pronotum semicircular anteriorly and truncate posteriorly, with a nearly straight
378 posterior margin. Surface with slight elevational changes and low rugosity originating from
379 many small punctae. Small setae present on anterior margin.380 Tegmina long and slender, reaching far past the end of the body with small delicate
381 setae on ventral side. Coloration lighter than remainder of body, medium brown overall;
382 subcostal area light with Sc vein blackened. Veins modified into robust cells basally, giving
383 tegmina appearance of rugosity.

384 Overall body is dark brown or black with a chestnut base color.

385 *Known geographic distribution*: Brazil (Rio de Janeiro), French Guiana (new record).

386

387 *Ischnoptera hercules* Rehn, 1928388 Material examined: 4 males. GF-FL14/MNHN-EP-EP4119, GF-FL161/MNHN-EP-EP4120,
389 GF-FL243/MNHN-EP-EP4121, GF-FL482/MNHN-EP-EP4122. Collection locality: “Planète
390 Revisitée Guyane, 2015, Monts Tumuc-Humac, Massif du Mitaraka”, (54.450529 O
391 2.234979 N (D1) 300 m) – (54.454609 O 2.240465 N (A500) 360 m (“23 II – 10 III 2015”,
392 “nuit” (GF-FL14); “Planète Revisitée Guyane, 2015, Monts Tumuc-Humac, Massif du
393 Mitaraka”, (54.44768 O 2.235494 N (C100) 350 m) – (54.4419 O 2.233664 N (C1000) 415
394 m), “23 II – 10 III 2015”, “nuit” (GF-FL161 and GF-FL243); “Planète Revisitée Guyane,
395 2015, Monts Tumuc-Humac, Massif du Mitaraka”, (54.455612 O 2.235396 N (sommet A)
396 415 m) – (54.462592 O 2.232997 N (savane) 510 m), “23 II – 10 III 2015”, “nuit” (GF-
397 FL482); APA 973-1. Collection date: “23 II – 10 III 2015”. Collectors: Frédéric Legendre &
398 Sylvain Hugel.

399 *Diagnosis:* We identified this species by the large body size, stark black coloration, shape of
 400 the subgenital plate, and pattern of sclerotization on the supra-anal plate (weakly sclerotized
 401 area central and symmetrical).

402 *Known geographic distribution:* Guyana, Suriname, Brazil (Para), French Guiana (new
 403 record).

404

405 **Genus *Euhypnorna* Hebard, 1921**

406 Family: “Ectobiidae”; Subfamily: Blattellinae

407 *Remarks:* Hebard (1921a) first described this genus designating *Euhypnorna grata* Hebard,
 408 1921 as the type species from Panama, and placed the genus in a group related to *Hypnorna*
 409 Stål, 1860, *Hypnornoides* Rehn, 1917, and *Calhypnorna* Saussure & Zehntner, 1893. The
 410 closest relationship given by Hebard (1921a) was with *Hypnorna* Stål, 1860, with which he
 411 differentiated *Euhypnorna* by the following characteristics: male interocular space narrow in
 412 *Euhypnorna*, wide in *Hypnorna*; posterior margin of pronotum convex in *Euhypnorna*,
 413 truncate in *Hypnorna*; apical end of tegmina broadly rounded in *Euhypnorna*, tapered and
 414 narrow in *Hypnorna*; head without carina in *Euhypnorna*, with carina in *Hypnorna*;
 415 hindwings with subcostal branches not clubbed in *Euhypnorna*, clubbed in *Hypnorna*;
 416 branches of the cubitus in tegmina closer to parallel with posterior margin (original wording
 417 “longitudinal”) in *Euhypnorna*, more oblique in *Hypnorna*. From Hebard’s original
 418 description and the description of the new species we can add further characteristics of the
 419 genus: tergal gland present and formed from a deep concave hole filled with long, dense,
 420 agglutinated setae; subgenital plate concave between styli; styli mostly simple and
 421 unmodified; left paraproct with a fang-like tooth. The genus can be easily differentiated from
 422 *Hypnorna*, *Calhypnorna*, and *Hypnornoides* by the following: tergal gland (7th tergite)
 423 present in *Euhypnorna*, absent in *Hypnorna* and *Calhypnorna*; styli simple and stout in
 424 *Euhypnorna*, elongated and simple in *Hypnorna* and modified and elongated (like
 425 *Chorisoneura*) in *Calhypnorna*; female supra-anal plate simple in *Euhypnorna*, divided in
 426 *Calhypnorna* and *Hypnornoides*; female brachypterous in *Euhypnorna*, macropterous in
 427 *Hypnorna*, *Calhypnorna*, and *Hypnornoides*; hindwing radial rami not clubbed in
 428 *Euhypnorna* and clubbed in *Hypnorna*; hindwing CuA divided once and then merged again
 429 into a single vein, *Calhypnorna* and *Hypnorna* without any division; head without sulcus or
 430 carina in *Euhypnorna*, with sulcus and carina in *Calhypnorna* and *Hypnorna*. Given the shape
 431 of the subgenital plate (one male examined at MNHN, Paris; label: “*Calhypnorna*
 432 *saperdoides* Walk.”; “JATAHY, GOYAZ.BRESI”) and the molecular results discussed in
 433 Evangelista *et al* (2015), *Calhypnorna* should be considered closely related to *Chorisoneura*.

434 Given the morphology of *Euhypnorna bifuscina* sp. nov., we place *Euhypnorna* in
 435 Blattellinae (genitalia with hooked phallomere on left), and near to *Dasyblatta* as it shares
 436 traits with *Dasyblatta warei* Mendoza and Evangelista, 2016 (body somewhat setaceous,
 437 similar body coloration, female brachypterous and male macropterous).

438

439 *Euhypnorna bifuscina* Evangelista, Varadinova and Juna, **sp. nov.**

440 Figs 13, 14, and 15; Table 3

441 Material examined: 2 males, 1 female. HOLOTYPE: MNHN-EP-EP4278. Male. Reserve
 442 Naturelle Nationale des Nouragues (4°5’34”N, 52°40’39”W). Collectors: František Juna.
 443 ALLOTYPE: MNHN-EP-EP4118. Female with ootheca. 3 labels. “chasse de nuit”,
 444 “Sinnamary. Paracou. Foret sur sable blanc. 31.VIII.1988. ‘3’,” “MUSEUM PARIS.
 445 GUYANE FRANCAISE. L. Desutter & P. Grandcolas rec.” PARATYPE: Male. 3 labels.
 446 “Foret de crete chasse de nuit. Ch. Grumage tronc”. “Sinnamary Paracou. Foret sur sable
 447 blanc. 27.VIII.1988. ‘4’.” “MUSEUM PARIS. GUYANE FRANCAISE. L. Desutter & P.

448 Grandcolas rec.” PARATYPES: MNHN-EP-EP4114, MNHN-EP-EP4115, MNHN-EP-
449 EP4116, MNHN-EP-EP4117.

450 *Diagnosis:* We placed this specimen in *Euhypnorna* because of the similarity to *E. grata* in
451 coloration, configuration of the tergal gland, subgenital plate, and hind wing venation.

452 Yet, *E. bifuscina* differs from *E. grata* in subgenital plate shape, coloration, and body
453 proportions. *Euhypnorna bifuscina* has styli close together and medial, while *E. grata* has
454 them further apart, with the left stylus near the cercal base; *E. bifuscina* with color covering
455 the base of R and M+C, and *E. grata* is lacking such coloration; *E. bifuscina* with white
456 lateral margin on pronotum greatly expanded posteriorly and occupying ~ 2/3 of the posterior
457 margin, whereas in *E. grata* the white lateral margin is only slightly expanded posteriorly,
458 and occupying little to none of the hind margin; *E. bifuscina* with smaller cerci (1:8, cerci
459 length to body length), *E. grata* with larger cerci (1:5.5, cerci length to body length).

460 *Description of male:* Head lacking visible ocelli; uniformly black; labrum slightly lighter than
461 frons; frons with large setae sparsely separated. Antennal scape dark brown; pedicel light
462 brown; flagellum black on proximal 23 segments, then white for next six segments before
463 returning to black for the remaining. Terminal maxillary palp without terminal cup or
464 desclerotized area.

465 Foreleg ventro-anterior margin with a row of small stout spines (16), one large
466 preapical spine and one large apical spine; genicular spine absent. Middle and hind femora
467 ventro-anterior margin with three large spines; no apical spines; genicular spine present.
468 Foreleg with five tarsal segments, each of which bears a small pulvillus apically (largest on
469 the fourth segment). Arolia large; tarsal claws unspecialized and symmetrical. Leg coloration:
470 coxa dark brown basally and white apically, front leg with white area smaller and rectangular
471 shaped; all tibia dark brown, middle and hind leg femur mostly light with dark brown
472 dorsally, front leg femur nearly entirely brown.

473 Pronotum covered in long setae overall but not dense; subquadrate with anterior
474 margin more rounded than posterior; black central area with buffy lateral margin; buffy
475 margin thin anteriorly and wide posteriorly, taking up 2/3 of the posterior margin.

476 Wings with large apical area, folded toward the anterior portion of the wing when at
477 rest; slightly stronger sclerotization in costal margin at the subdivisions of the subcosta and
478 radius as well as apically at the first branches of the anal veins; arculus strong and connecting
479 the subcosta and CuA veins; subcostal vein meeting wing base, connected to radius by cross
480 veins and meeting anterior edge of wing in the apical half, where it has a few short,
481 unbranched rami; radius with primary and secondary branching, as well as small vein twigs,
482 mostly in apical half; media originating from the radius, unbranched and connected to both
483 the radius and CuA with cross veins; CuA divided into two branches at basal 1/3, which then
484 meet again to form a single vein in the apical 1/4; apical field supported by CuA anteriorly,
485 branched axillary (anal vein) posteriorly, and with plical vein 3 in the middle; plical vein 1
486 (possibly CuP) 2/3 the length of the wing; plical vein 2 reduced to the fold of the wing for
487 most of its length; plical vein 3 only present apically, and nearly meeting the most apical
488 point of the wing; anal region with 13 major veins connected to each other via the basal arch,
489 with three small veins disconnected from the arch at the inner portion of the folded section;
490 anterior branches of the anal vein system (i.e., branched axillary) with some cross branches in
491 apical third, and a very apical subdivision in second branch of anal vein system, also with
492 some small cross veins. Tegmina darkened basally with a light medial region and darker
493 apical region, the latter of which is only pronounced on the left tegmina; uniformly covered
494 in setae with medium density; subcosta short and unbranched; media and CuA with
495 approximately eight total branches combined; anal area very elongated; ventral tegmina
496 (right) bearing small patches of short, rigid setae on the apical end of the radial rami.

497 Dorsal abdomen bearing pronounced tergal gland on 7th tergite, composed of a deep
498 basin densely filled with thick, rigid setae (Fig 15c).

499 Subgenital plate only slightly asymmetrical; styli short, simple, slightly pointed
500 medially and bearing a few small sclerotized spines along the medial side and apically;
501 margin between styli narrow and concave; medium sized setae at the posterior margin, lateral
502 to the styli; lateral posterior corners bearing two stout spines projecting dorso-anteriorly (Figs
503 14b and 15e).

504 Hook-like phallomere on the left side (L3) bearing a subapical incision; medial
505 phallomere slender, curved, divided at anterior 1/3 and with a small lightly sclerotized glob at
506 the anterior end; right phallomere (R2) “Y” shaped, with the undivided portion having a
507 pronounced bend at the end, part of the divided portion with a sclerotized knob bearing a
508 tooth, and two accessory sclerites within the divided portion (Fig 15i).

509 Supra-anal plate specialized and symmetrical; bilobed with wide rectangular division
510 between lobes; lobes knob shaped, each bearing three robust spines apically (two spines in
511 paratype). Paraprocts asymmetrical and somewhat specialized; left paraproct with sclerotized
512 area small, bearing a small patch of setae and a single spine; right paraproct with long
513 sclerotized area, an anteriorly directed hooked spine on the lateral edge, elongated medial
514 area coming to a pointed spine medially, and a small sclerotized ventral portion enclosing a
515 larger central unsclerotized portion.

516 *Morphological notes:* Upon examination, it appears that the complementary spines on the
517 subgenital plate and opposite tergite (8th) could possibly interlock, as they form non-parallel
518 angles with each other (i.e., in their natural orientation they could cross each other, as
519 opposed to laying adjacent to each other). Given that this was discovered after dissection,
520 their exact operational placement in life is not known.

521 *Description of female:* Same as male, except for the following characters: tegmina and wings
522 brachypterous and reaching middle of the hind thoracic segment; dorsal abdomen with large
523 setae on the posterior margin the segments; supra-anal plate truncated, simple; subgenital
524 plate wide, simple; ventro-anterior margin of forelegs as in male, except with 14 spines (left),
525 13 spines (right); arolia medium sized; hind tarsus (right) three or four segmented; if the
526 latter, third segment reduced, possibly bearing a pulvillus; other segments lacking pulvili.

527 *Description of male (paratype):* Same as holotype except for the following characters: middle
528 and hind leg tarsi lacking pronounced pulvilli except on third segment; four total segments;
529 knobs on supra-anal plate with only two spines each.

530 *Etymology:* The specific epithet “bifuscina” refers to the dual spined projections on the supra-
531 anal plate. “Fuscina,” another word for trident, is also reminiscent of “fuscous” which might
532 be used to describe the color of this insect, the tegmina in particular.

533 *Known geographic distribution:* French Guiana (new record).

534

535 **Conclusions**

536 With the species reported here, and inclusion of described species reported in two
537 publications (Grandcolas 1994a, Grandcolas 1994b) previously unrecognized in Evangelista
538 *et al* (2015) and Evangelista *et al* (2016), French Guiana is known to have 163 species of
539 cockroaches (Online resource 1). The specimens for these potential new records await
540 description, when the cockroach fauna of French Guiana and the Guiana Shield can be further
541 updated.

542

543 **Author Contributions**

544 ZKV set the scope of the study. FJ, PG, and FL collected specimens and curated them along
545 with DAE and ZKV. DAE, ZKV, PG, and FL provided preliminary identification of
546 specimens. DAE and ZKV took photos and collected data. DAE made illustrations and final

547 taxonomic determinations and wrote descriptions. DAE and ZKV wrote the manuscript and
 548 PG and FL provided improvements.

549

550 **Compliance with Ethical Standards**

551 **Conflict of Interest**

552 The authors declare that they have no conflict of interest.

553

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560

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 565 material studied here was collected during the “Our Planet Reviewed” Guyane-2015
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 571 realized in collaboration with the Parc amazonien de Guyane and the Société entomologique
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 573 expeditions and who collected the specimens here.

574

575 **A. Electronic Supplementary Material**

576 ESM 1 Checklist of the cockroaches of the Guiana Shield. Updated with new information.
 577 “o” indicates presence in a region; “?” indicates unverified record; “+” indicates a record,
 578 new from this paper.

579

580 **References**

581 Beccaloni G (2018) Cockroach Species File Online. Version 5.0/5.0. World Wide Web
 582 electronic publication, World Wide Web electronic publication

583

584 Bonfils J (1975) Blattoptera [Orthopteroidea] récoltés en Guyane Française par la mission du
 585 muséum national d’histoire naturelle. Ann Soc entomol Fr 11: 29-62.

586 Bruijning CFA (1959). The Blattidae of Surinam. In Studies on the Fauna of Suriname and
 587 Other Guyanas (ed. by D.C. Geijakes & P.W. Hummelinck), Vol. 4, pp. 1-103. Springer
 588 Netherlands.

589 Evangelista DA (2016) Biodiversity and Systematics of the Blattodea of the Guiana
 590 Shield. PhD, Rutgers, The State University of New Jersey, New Jersey, USA.

591 Evangelista DA, Chan K, Kaplan KL, Wilson MM, Ware JL (2015) The Blattodea s.s.
 592 (Insecta, Dictyoptera) of the Guiana Shield. ZooKeys 475: 37-87.

- 593 Evangelista DA, Sylvain E, Mendoza CM, Guzman K (2016) New and enigmatic
594 cockroaches (Dictyoptera: Blattodea) of Guyana. *J Nat Hist* 50: 2249-2276.
- 595 Grandcolas P (1992a) Evolution du mode de vie, répartition et nouveaux taxons dans le genre
596 *Xestoblatta* Hebard, 1916 (Dictyoptera, Blattellidae, Blattellinae). *Rev fr entomol* 14: 155-
597 168.
- 598 Grandcolas P (1992b) *Paradicta* n. gen. et *Neorhichnoda* n. gen., deux nouveaux genres de
599 Blaberinae (Dict., Blattaria, Blaberidae). *Bull Soc Ent Fr* 97: 7-15.
- 600 Grandcolas P (1993a) L'Ecologie de la Répartition de *Thanatophyllum akinetum* en Guyane
601 Française (Insecta, Blattaria). *Biogeographica* 69: 73-86.
- 602 Grandcolas P (1993b) Le genre *Paramuzoa* Roth, 1973: sa répartition et un cas de xylophagie
603 chez les Nyctiborinae (Dictyoptera, Blattaria). *Bull Soc Ent Fr* 98: 131-138.
- 604 Grandcolas P (1994a) La richesse spécifique des communautés de blattes du sous-bois en
605 forêt tropicale de Guyane Française. *Rev Ecol* 49: 139-150.
- 606 Grandcolas P (1994b) Les Blattes de la Forêt Tropicale de Guyane Française: Structure de
607 Peuplement (Insecta, Dictyoptera, Blattaria). *Bull Soc Zool Fr* 119: 59-67.
- 608 Hebard M (1920) The Blattidae of Panama. *American Entomological Society Memoirs* 4: 1-
609 148
- 610 Hebard M (1921a) A note on Panamanian Blattidae with the description of a new genus and
611 two new species. *Entomol News* 32: 161-169.
- 612 Hebard M (1921b) South American Blattidae from the Museum National d'Histoire
613 Naturelle, Paris, France. *Proc Acad Nat Sci Philadelphia* 73: 193-304.
- 614 Hebard M (1926) The Blattidae of French Guiana. *Proc Acad Nat Sci Philadelphia* 78: 135-
615 244.
- 616 Joppa LN, Roberts DL, Myers N, Pimm SL (2011) Biodiversity hotspots house most
617 undiscovered plant species. *Proc Natl Acad Sci USA* 108: 13171-6.
- 618 Klass K-D (1997) The external male genitalia and the phylogeny of Blattaria and Mantodea.
619 *Bonn Zool* 42: 1-340.
- 620 Kukalova-Peck J, Lawrence JF (2004) Relationships among coleopteran suborders and major
621 endoneopteran lineages: evidence from hind wing characters. *Eur J Entomol* 101: 195-144.
- 622 Lopes SM (2009) Espécies novas de Ischnoptera (Blattellidae, Blattellinae) do Estado do
623 Mato Grosso, Brasil e considerações sobre *I. similis*. *Iheringia, Sér Zool* 99: 172-176.
- 624 Orme CD, Davies RG, Burgess M, Eigenbrod F, Pickup N, Olson VA, Webster AJ, Ding TS,
625 Rasmussen PC, Ridgely RS, Stattersfield AJ, Bennett PM, Blackburn TM, Gaston KJ, Owens
626 IP (2005) Global hotspots of species richness are not congruent with endemism or threat.
627 *Nature* 436: 1016-1019.
- 628 Princis K (1971) Blattariae: Subordo Epilamproidea: Fam. Ectobiidae W. Junk, 's-
629 Gravenhage.
- 630 Rehn JAG (1930) New or little known Neotropical Blattidae (Orthoptera). Number two.
631 *Trans Am Entomol Soc* 56: 19-71.

632 Rehn JWH (1951) Classification of the Blattaria as indicated by their wings (Orthoptera).
633 Mem Am Entomol Soc 14: 1-134.

634 Rocha e Silva Albuquerque I, Gurney AB (1962) Insecta Amapaensia. - Orthoptera:
635 Blattoidea. Studia Entomologia 5: 235-255.

636 Roth LM (1970) The male genitalia of Blattaria. V. Epilampra spp. (Blaberidae:
637 Epilamprinae). Psyche 77: 436-486.

638

639 **Tables**

640 **Table 1** Allometry of *Buboblatta vlasaki* sp. nov. and *Lamproblatta antoni* sp. nov. "NA"
641 indicates a missing morphological feature.

Morphological feature		<i>Buboblatta vlasaki</i> sp. nov.		<i>Lamproblatta antoni</i> sp. nov.		
		Adult ♀	Adult ♂	Adult ♂	Adult ♀	
Head	Greatest width	2.0	1.7	3.5	3.5	
	Medial length	2.3	2.0	4.3	4.0	
Pronotum	Greatest width	4.3	3.3	7.0	7.0	
	Medial length	3.0	2.5	5.5	6.0	
Leg	Front	Femur	2.5	2.2	4.0	NA
		Tibia	1.7	1.7	3.0	NA
	Middle	Femur	3.0	NA	5.5	5.0
		Tibia	2.8	NA	4.8	4.5
	Hind	Femur	4.0	3.4	6.4	6.0
		Tibia	4.3	NA	7.0	7.1
Cerci length		2.0	2.5	NA	3.9	
Tegminal length		1.2	11.5	NA	NA	
Total body length		9.1	8.9	15.6	19.5	

642

643

643

644 **Table 2** Allometry of some *Epilampra* individuals reported from French Guiana. “NA”
 645 indicates a missing morphological feature. “est.” indicates an estimated length, usually
 646 because the specimen was damaged.

Morphological feature		<i>Epilampra amapae</i>				<i>E. azteca</i>			<i>E. sagitta</i>	
		Adult ♀		Adult ♂		Adult ♀	Adult ♀	Adult ♂	Adult ♂	
		RUDEFG10	65792	RUDEFG09	RUDEFG11	RUDEFG06	RUDEFG05	RUDEFG26	RUDEFG08	
Head	Greatest width	3.0	–	3.1	2.8	2.9	3.2	2.5	3.2	
	Medial length	3.0	–	3.0	3.0	2.5	3.0	2.1	3.4	
Pronotum	Greatest width	5.5	5.7	4.8	5.0	5.0	5.5	4.1	6.0	
	Medial length	4.1	4.0	4.0	4.0	4.0	4.0	3.3	4.0	
Leg	Front	Femur	3.0	–	3.0	2.7	2.8	2.5	2.1	2.8
		Tibia	2.8	–	2.8	2.2	1.5	1.3	1.9	1.7
	Middle	Femur	3.5	–	3.0	3.2	3.2	3.5	3.1	4.0
		Tibia	3.5	–	3.4	3.1	3.0	3.2	2.5	3.6
	Hind	Femur	4.5	–	4.0	NA	4.0	NA	3.5	5.0
		Tibia	6.0	–	4.5	NA	5.0	NA	5.0	7.0
Cerci length		2.0	–	2.0	2.0	1.8	1.5	1.7	3.1	
Tegminal length		18.0	17.0	16.2	16.5	17.0	16.8	15.0	21.3	
Total body length		19.5	22.0	17.0	16.5 (est.)	20.0	17.1	15.5	22.0	

647

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649

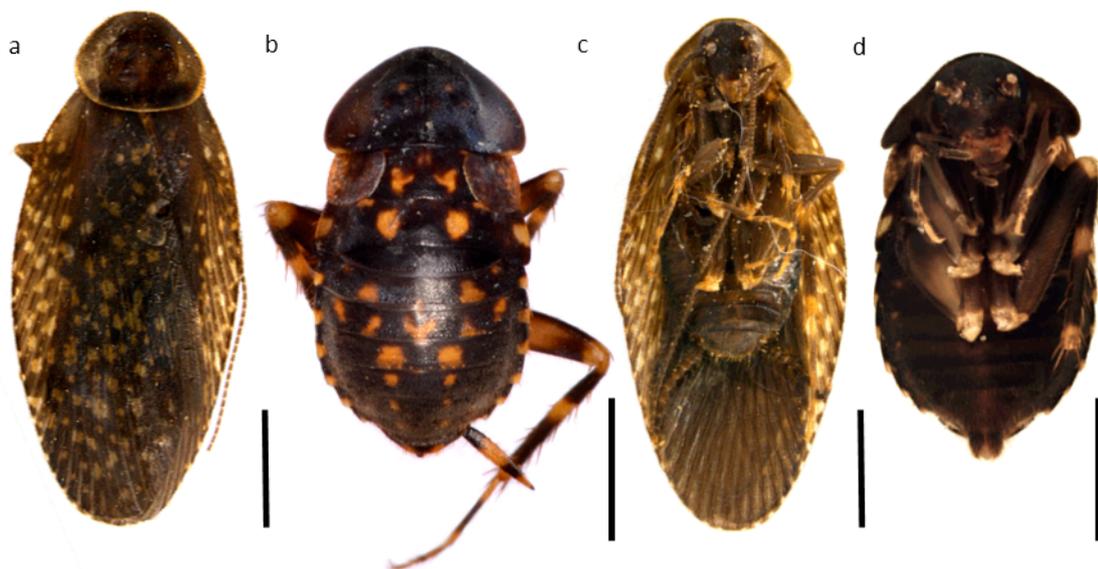
650 **Table 3.** Allometry of two Blattellinae species reported from French Guiana, including
 651 *Euhypnorna bifuscina* sp. nov. “NA” indicates a missing morphological feature. “est.”
 652 indicates an estimated length, usually because the specimen was damaged.

Morphological feature		<i>Euhypnorna bifuscina</i> sp. nov.			<i>Ischnoptera miuda</i>	
		Adult ♂	Adult ♂	Adult ♀	Adult ♂	
Head	Greatest width	1.6	1.5	1.5	1.5	
	Medial length	2.0	1.6	1.5	2.0	
Pronotum	Greatest width	2.4	2.25	2.0	2.8	
	Medial length	2.0	2.0	2.0	2.0	
Leg	Front	Femur	2.1	2.0	1.75	1.3
		Tibia	1.6	1.6	1.2	1.0
	Middle	Femur	2.7	3.0	2.5	2.0
		Tibia	2.5	2.5	2.0	1.6
	Hind	Femur	2.8	3.0	3.0	NA
		Tibia	3.8	3.8	3.0	NA
Cerci length		NA	1.5	0.8	1.5	
Tegminal length		9.5	9.5	1.6	9.5	
Total body length		10.5	10 (est.)	7.0	9.5 (est.)	

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653 **Figures**

654 **Fig 1** *Buboblatta vlasaki* sp. nov. **a, b** Dorsal habitus. **c, d** Ventral, whole body. **a, c** Adult
655 male. **b, d** Adult Female. All scale bars 3 mm.



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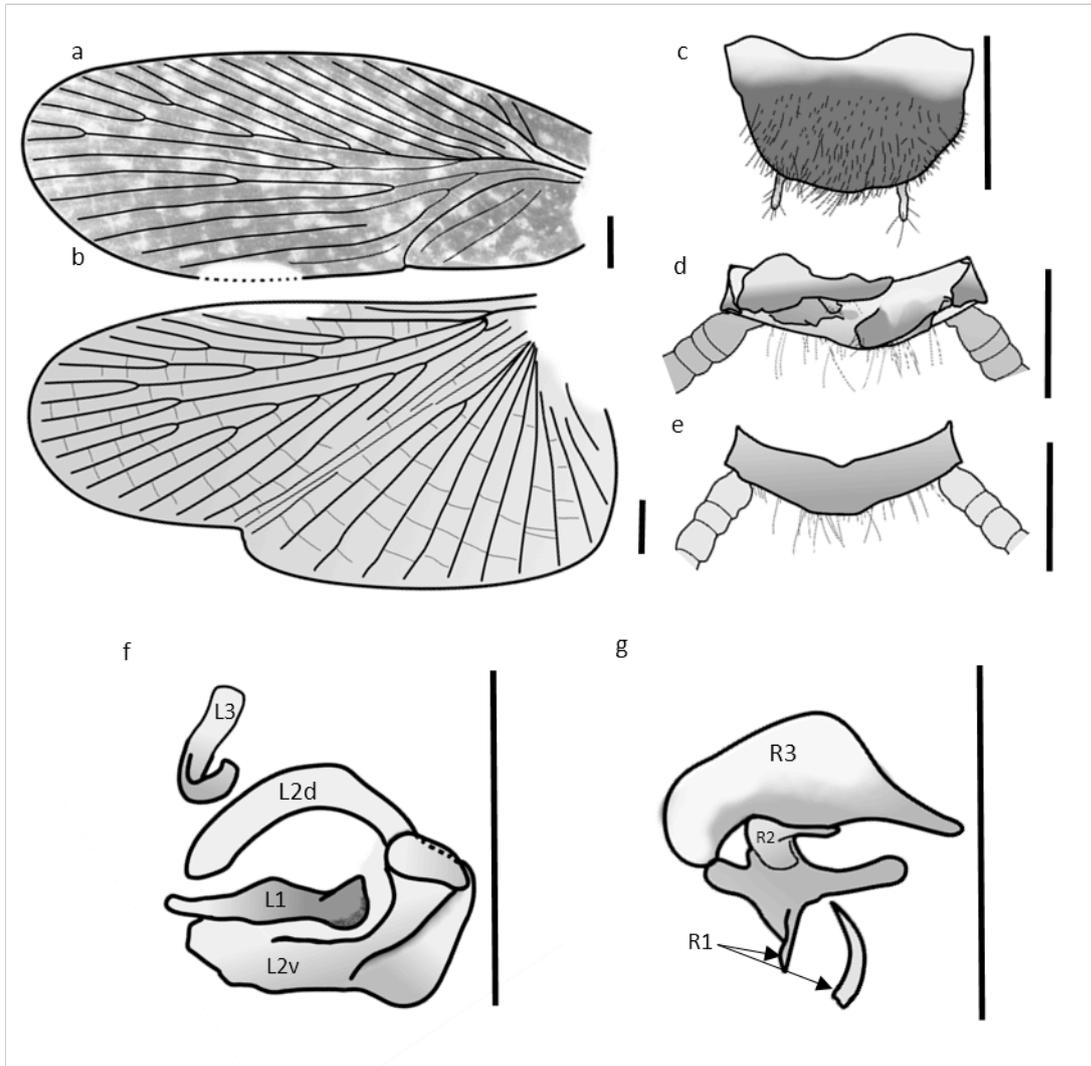
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658 **Fig 2** *Buboblatta vlasaki* sp. nov. **a, b, c** Adult male. **d, e** Adult female. **a** Ventral view of
659 head. **b** Ventral view of posterior male segments and styli. **c** Dorsal view of male pronotum.
660 **d** Dorsal view of female pronotum. **e** Setae and pitting on tegmina and pronotum of female.
661 All scale bars 1 mm.



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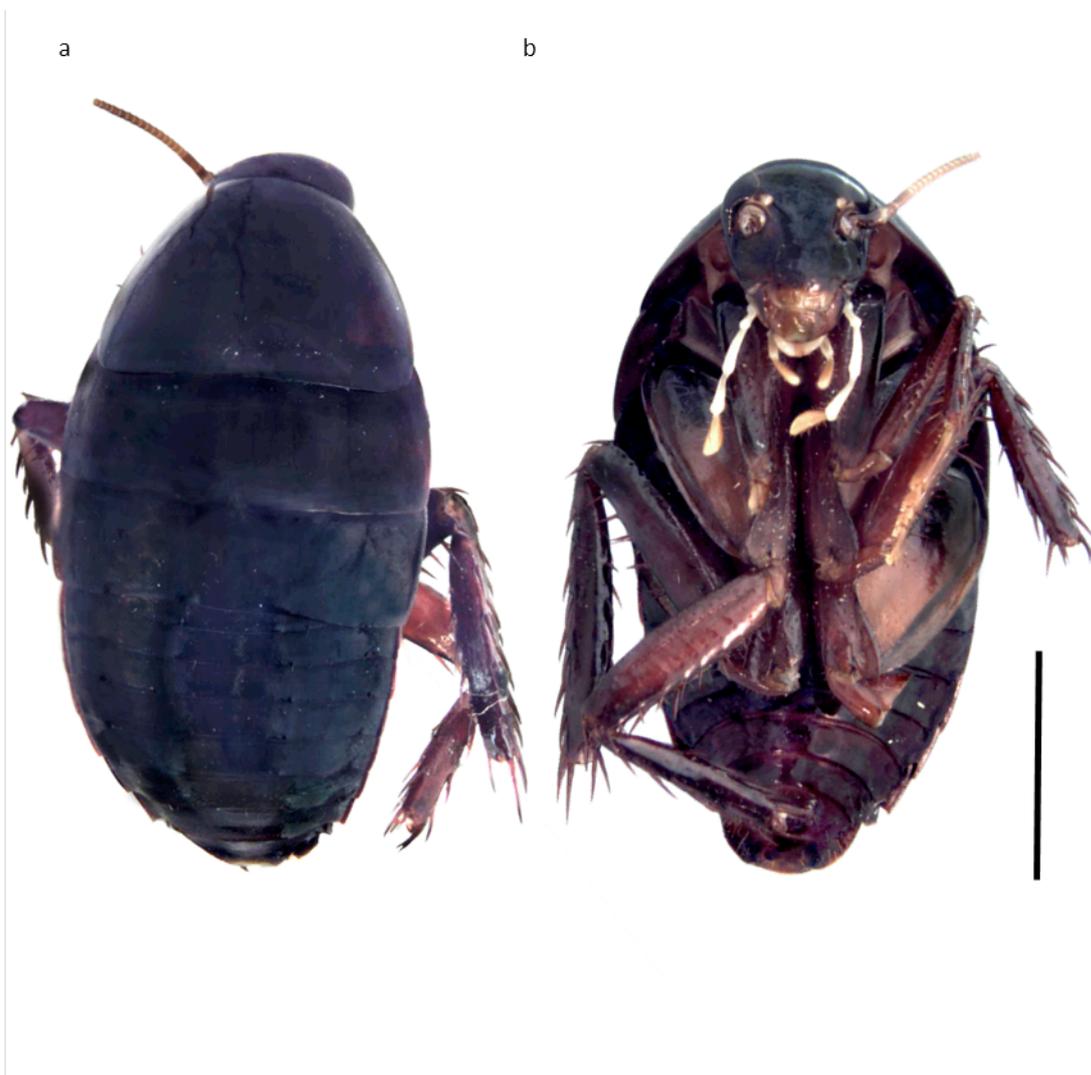
663 **Fig 3** *Buboblatta vlasaki* sp. nov. illustrations of male type. **a** Tegmina. **b** Hind wing. **c**
 664 Ventral view of subgenital plate and styli. **d** Ventral view of supra-anal plate, and paraprocts.
 665 **e** Dorsal view of supra-anal plate. **f** Left genital complex with phallomeres labeled. **g** Right
 666 genital complex with phallomeres labeled. Scale bars 1mm.



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Fig 4 *Lamproblatta antoni* sp. nov. full body, adult male. **a** Dorsal habitus. **b** Ventral, full body. Scale bar 5 mm.



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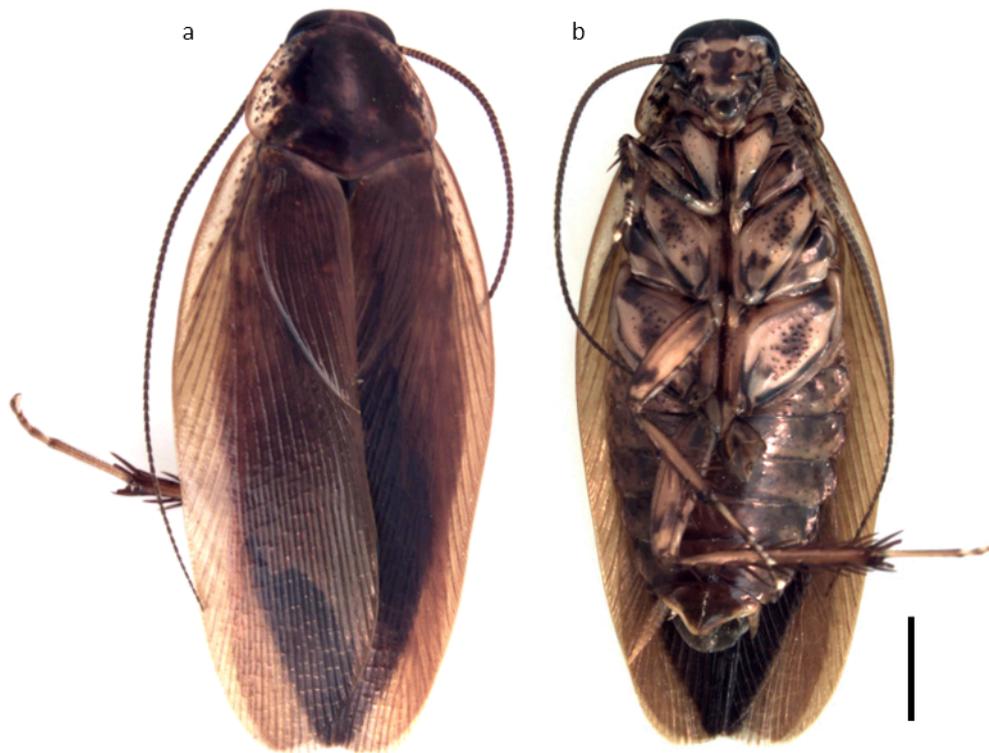
Fig 5 *Lamproblatta antoni* sp. nov. details of adult male. **a** Ventral head. **b** Ventral view of posterior end, subgenital plate, and styli. **c** Dorsal view of posterior end and supra-anal plate. **d** Left genital complex with phallomeres labeled. Dorsal view with anterior end oriented upwards. **e, f** Right genital complex with phallomeres labeled. **e** Dorsal view with anterior end oriented upwards. **f** Left lateral view, anterior end oriented left on page. All scale bars 1 mm.



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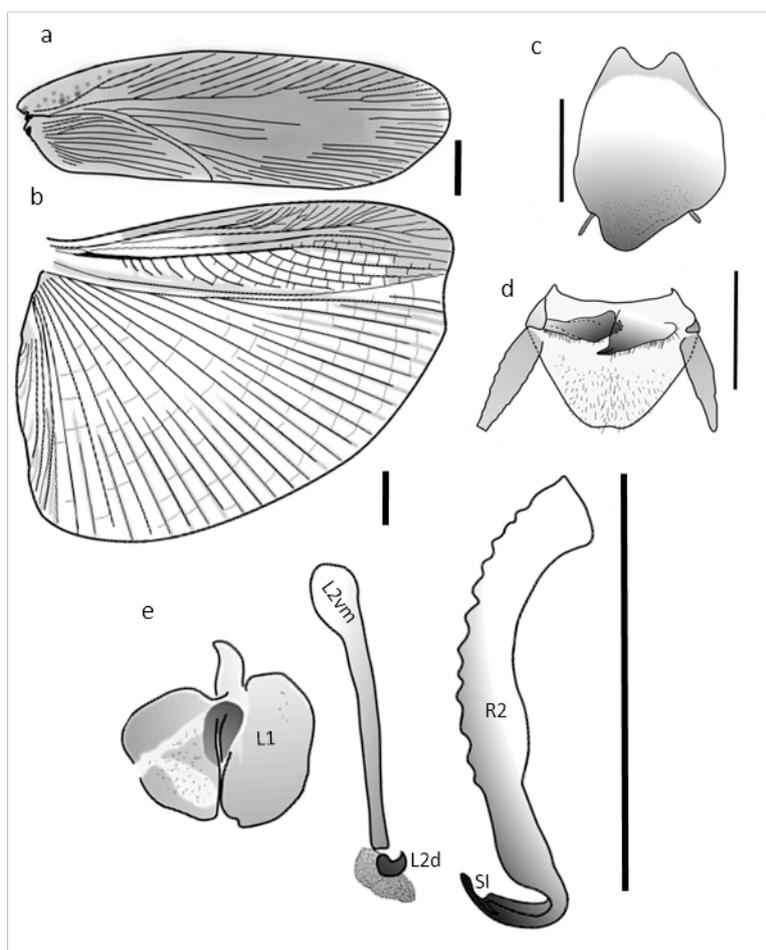
682 **Fig 6** *Epilampra amapae* Rocha e Silva Albuquerque & Gurney, 1962, adult male. **a** Dorsal
683 habitus. **b** Ventral whole body. Scale bar 3 mm.



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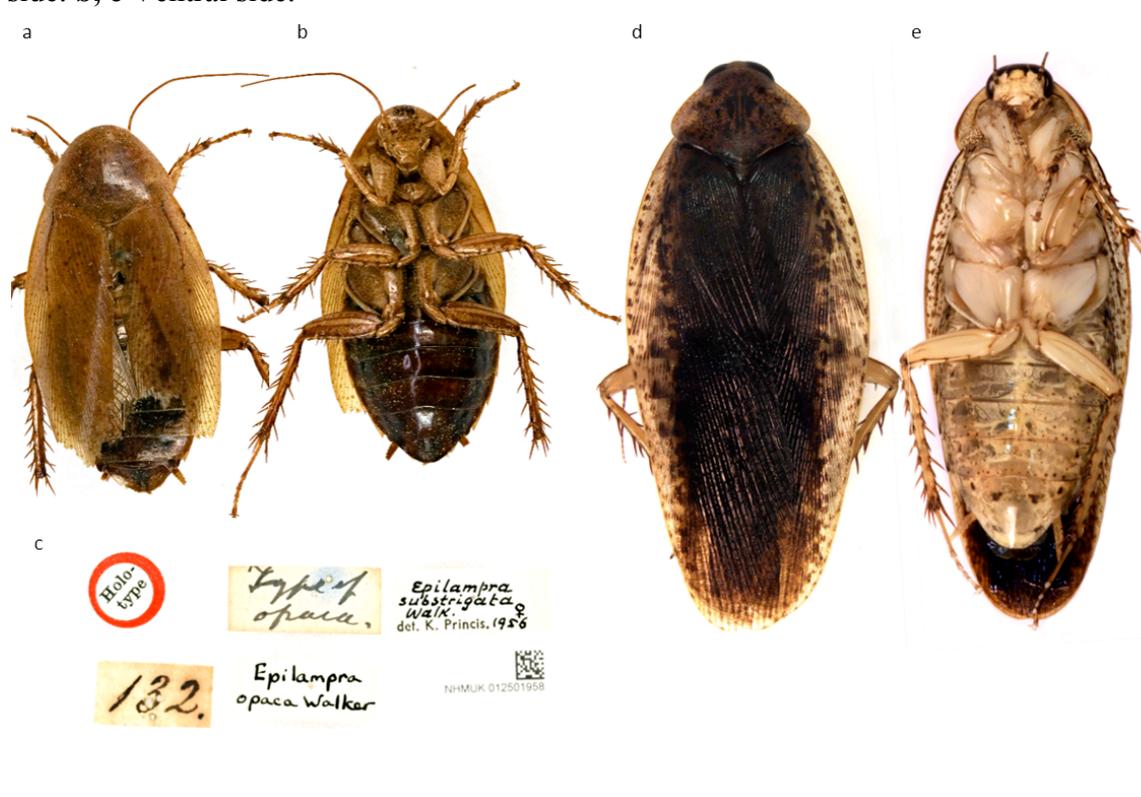
686 **Fig 7** *Epilampra amapae* Rocha e Silva Albuquerque & Gurney, 1962, adult male
 687 illustrations. **a** Tegmina. **b** Hind wing. **c** Subgenital plate and styli, ventral view. **d** Supra-anal
 688 plate and paraprocts, ventral view. **e** Genitalia with phallomeres labeled as seen from ventral
 689 view with posterior end oriented downward on page. All scale bars 2 mm.



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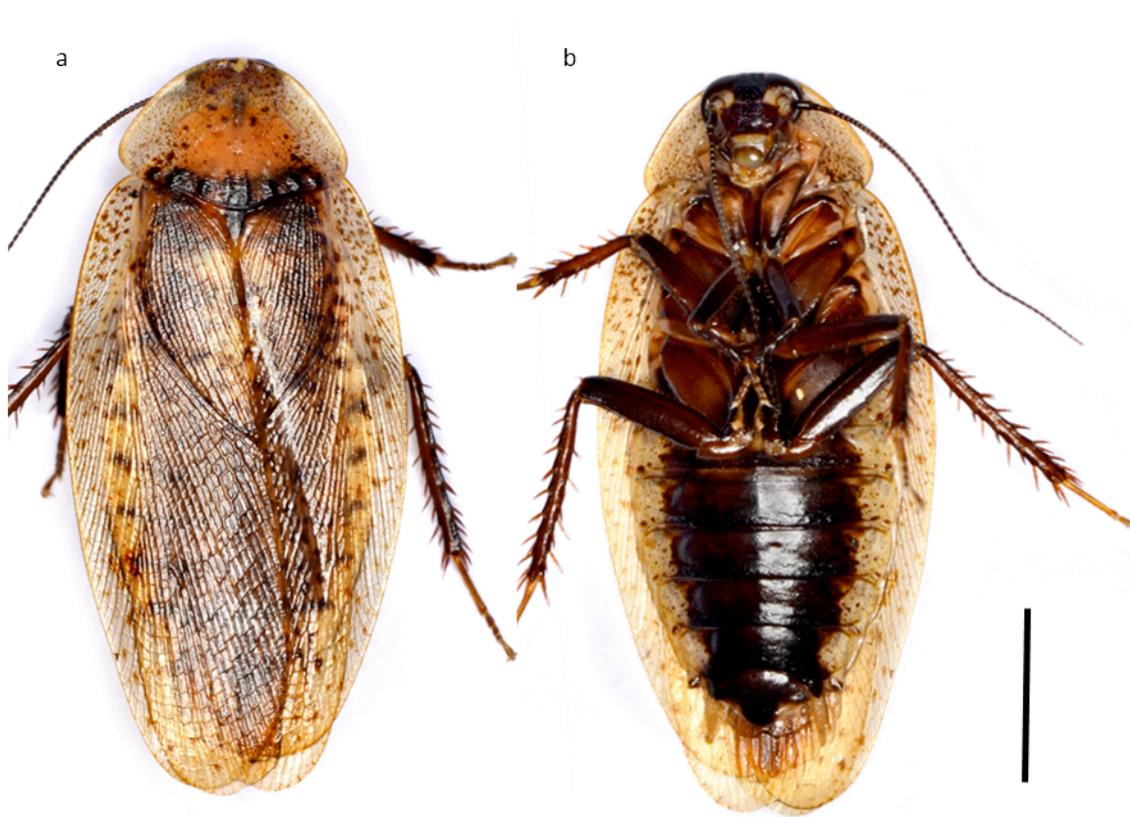
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692 **Fig 8** *Epilampra opaca* Walker, 1868, representatives of two color morphs. **a, b** *Epilampra*
 693 *opaca* holotype, NHMUK012501958. Representative of *Epilampra opaca opaca* color form.
 694 DECBA1845. **c** Labels for holotype. **d, e** *Epilampra opaca conca* color form. **a, d** Dorsal
 695 side. **b, e** Ventral side.



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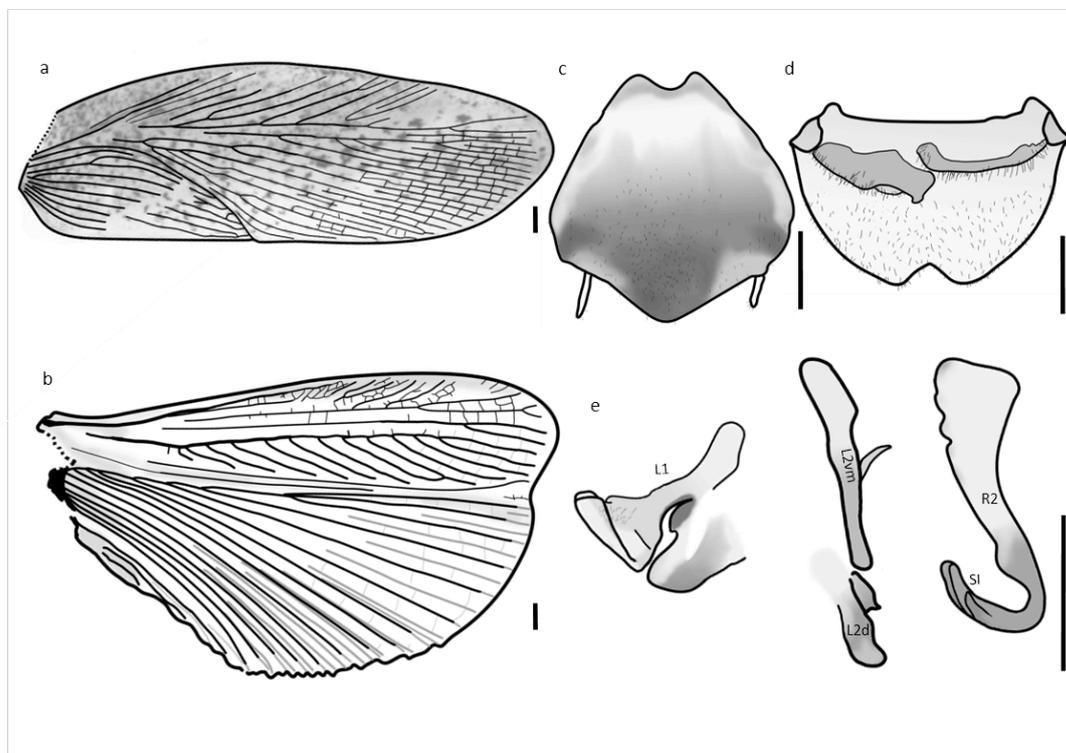
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698 **Fig 9** *Epilampra egregia* Hebard, 1926, adult male. **a** Dorsal habitus. **b** Ventral, whole body.

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Fig 10 *Epilampra egregia* Hebard, 1926, illustrations of adult male. **a** Tegmina. **b** Hind wing. **c** Subgenital plate, ventral view. **d** Supra-anal plate and paraprocts, ventral view. **e** Genitalia with phallomeres labeled as seen from ventral view with posterior end oriented downward on page. All scale bars 1 mm.



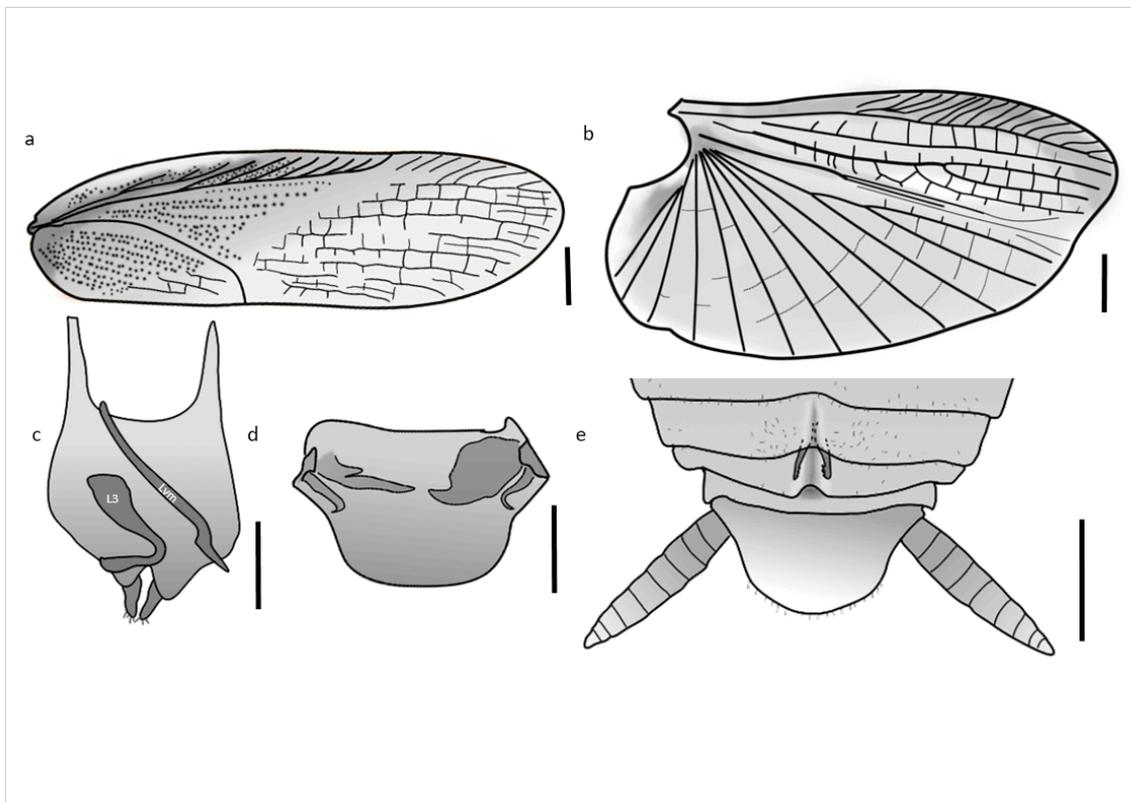
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706 **Fig 11** *Ischnoptera miuda* Lopes, 2009 adult male. **a** Dorsal habitus. **b** Ventral head, showing
707 details of facial coloration, rugosity, and eye shape. **c** Subgenital plate and styli, ventral view.
708 **d** Dorsal pronotum. All scale bars 1 mm.
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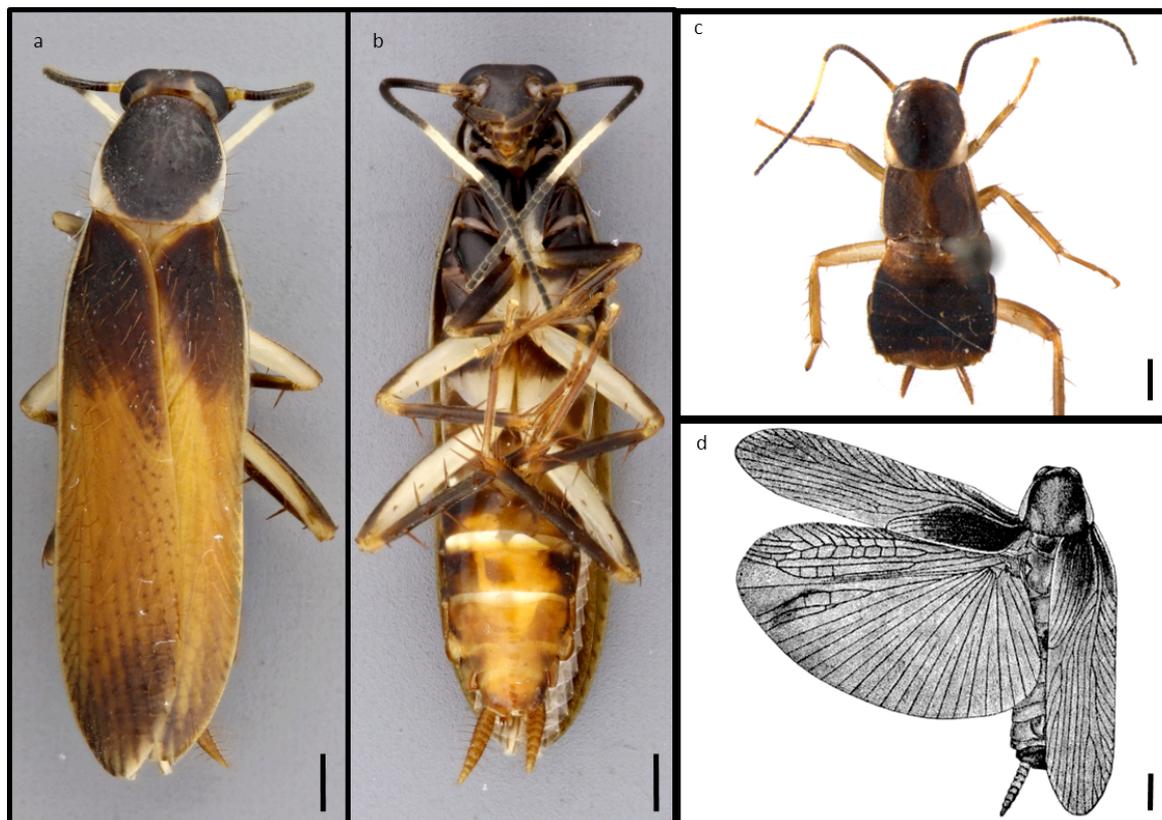
711 **Fig 12.** *Ischnoptera miuda* Lopes, 2009 adult male illustrations. **a** Tegmina. **b** Hind wing. **c**
712 Subgenital plate and genitalia as seen from dorsal view. **d** Supra-anal plate and paraprocts
713 from ventral view. **e** Supra-anal plate, tergal gland, and dorsal terminalia. All scale bars 1
714 mm.



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717 **Fig 13** *Euhypnorna* spp. **a-c** *Euhypnorna bifuscina* sp. nov. **d** Illustration of *Euhypnorna*
 718 *grata* Hebard, 1921 from original publication. **a, d** Dorsal habitus of males. **b** Whole body,
 719 ventral. **c** Dorsal habitus of female.



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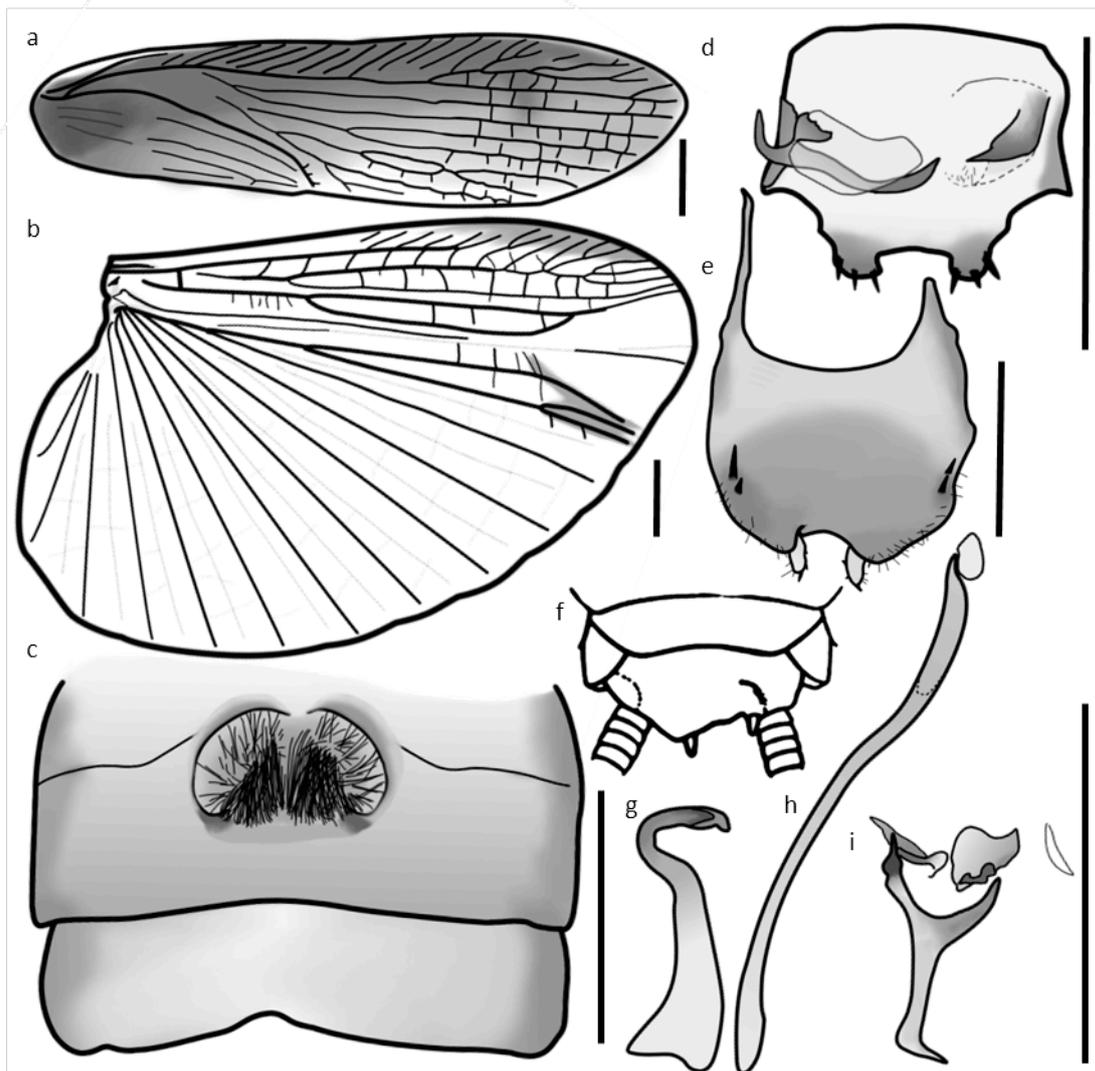
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Fig 14 *Euhypnorna bifuscina* sp. nov. photographic details. **a** Ventral head, antennae, and foreleg femur. **b** View of subgenital plate and complementary tergum, showing possibly interlocking spines. **c** Lateral view of tergal spine seen in **b**. **d** Ventral edge of tegmina with stout setae on radial rami. **e** Lateral view of ootheca (scale bar 1 mm).



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728 **Fig 15** *Euhypnorna* spp. illustrations. **a–e, g–i**, *Euhypnorna bifuscina* sp. nov. adult male
 729 type, illustrations. **a** Tegmina. **b** Hind wing. **c** Dorsal abdomen and external portion of tergal
 730 gland. **d** Subgenital plate and paraprocts, ventral view. **e** Subgenital plate, dorsal view. **g** Left
 731 phallomere, L3. **h** Ventral-medial phallomere, Lvm. **i** Right phallomere, R2. All scale bars 1
 732 mm. **f** Illustration of *Euhypnorna grata* Hebard, 1921 subgenital plate and styli in the ventral
 733 view reproduced from original publication.



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