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Catalogue of malgasy genera of Pselaphinae Latreille, 1802 and first data on the diversity of Pselaphid beetles population in the Amber Mountain National Park, Northern Madagascar (Coleoptera Staphylinidae)

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ABSTRACT The catalogue of the genera of Pselaphinae Latreille, 1802 from Madagascar is here presented. For each genus is given the bibliographic reference relative to the original description, its synonyms and the number of total known species. A review of current knowledge about Pselaphinae from the National Park of Amber Mountain (Northern Madagascar) shows that for this area are at present known 16 genera (14 endemic to Madagascar and one of Amber Mountain) and 23 species, all malgasy endemic, 19 of which are known only for the Amber Mountain area. During faunistic researchs carried out in this district, from 18 to 31 March 2011, were collected seven genera (*Faronitopsis*, *Trissemus*, *Leichotrella*, *Ctenistes*, *Acylotyrus*, *Eichiella* and *Rhynchoclaviger*) reported for the first time for Amber Mountain area. The research confirms the high biodiversity of malgasy Pselaphid fauna and some of its characteristics as the coexistence in the same area of more congeners species, sometimes very similar to each other, contrary to what occurs in temperate regions. Besides the classic environment of the soil, in Madagascar there are many species that live on herbaceous vegetation or on the branches of trees, in particular those belonging to the tribe of Brachyglutini and Ctenistini.

KEY WORDS Catalogue of genera; Pselaphinae; Madagascar; Amber Mountain; Biodiversity.

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INTRODUCTION

The Malgasy Pselaphinae fauna is relatively well-studied due to the works of Raffray (1890; 1897; 1898; 1900; 1903; 1904); Wassmann (1891; 1893a; 1897); Fairmaire (1898a; 1898b); Jeannel (1954a; 1954b; 1956a; 1959b; 1960a; 1960b; 1961b), Leleup (1969; 1972; 1976a; 1976b; 1977), Célis (1969; 1970), Dajoz (1982); Coulon (1986; 1989), Hlaváč (2005) and Hlaváč & Baňař (2012).

At present for Madagascar are known 128 genera of subfamily Pselaphinae Latreille, 1802 (where 105, representing about 82%, are Malagasy endemics) for a total of 417 species, with 415 of them (equal to 99.5%) endemic to Madagascar.

Below is presented an exhaustive picture of the current knowledge about pselafidofauna from Madagascar, according to the classificatory scheme proposed by Newton & Chandler (1989) as modified by Bouchard et al. (2011). For each taxonomic group (supertribes and tribes) are indicated the number of genera and species, specifying the number of taxa endemic to Madagascar. For each genus is given the bibliographic reference relative to the

original description, its synonym and the number of total known species; with **E** are highlighted the genera endemic to Madagascar.

Genera of PSELAPHINAE *from Madagascar*

Supertribus FARONITAE Reitter, 1882
3 genera and 15 species all endemic to Madagascar.

Faronites Jeannel, 1954a: 153 (11 spp.) **E**
Faronitopsis Jeannel, 1960a: 54 (1 sp.) **E**
Parafaronus Jeannel, 1960a: 54 (3 spp.) **E**

Supertribus EUPLECTITAE Streubel, 1839
36 genera, 29 endemic to Madagascar; 147 species all endemic to Madagascar

Tribus Bithynoplectini Schaufuss, 1890
12 genera, 10 endemic to Madagascar; 26 species all endemic to Madagascar.

Anozethopsis Jeannel, 1956a: 6 (2 spp.) **E**
Apozethopsus Jeannel, 1954a: 159 (3 spp.) **E**
Basilewskyozethus Leleup, 1977: 76 (1 sp.) **E**
Decazethodes Coulon, 1989: 232 (1 sp.) **E**
Microzethinus Jeannel, 1954a: 165 (1 sp.) **E**
Microzethopsis Jeannel, 1960a: 64 (1 sp.) **E**
Nesiozethus Jeannel, 1954a: 164 (3 spp.) **E**
Petalozethopsis Jeannel, 1960b: 6 (1 sp.) **E**
Protozethopsus Jeannel, 1954a: 162
(13 spp., 10 spp. endemic to Madagascar)
  Protozethus Jeannel 1954b: 62 (misspelling)
  Metazethopsis Jeannel, 1960a: 68
Trizethopsis Dajoz, 1982: 482 (1 sp.) **E**
Zethinomorphus Jeannel, 1960a: 66 (1 sp.) **E**
Zethopsiola Jeannel, 1954b: 86
(67 spp., 1 sp. endemic to Madagascar)

Tribus Euplectini Streubel, 1839
14 genera, 12 endemic to Madagascar; 70 species all endemic to Madagascar.

Afroplectus Jeannel, 1952a: 130
(231 spp., 2 spp. endemic to Madagascar)
  Afroplectidius Jeannel 1952b: 200 (subgenus)
  Afroplectodes Jeannel, 1952b: 202 (subgenus)
  Afroplectaualax Jeannel, 1959b: 202 (subgenus)
Aminosimus Raffray, 1898a: 267 (12 spp.) **E**
  Plectasymus Jeannel 1960a: 80 (subgenus)
Anotimus Dajoz, 1982: 484 (1 sp.) **E**
Asymoplectidius Jeannel, 1956a: 11 (1 sp.) **E**
Asymoplectus Raffray, 1897: 55
(54 spp., 9 spp. endemic to Madagascar)
  Asymoplectodes Jeannel 1960a: 75 (subgenus)
Humbertella Newton & Chandler, 1989: 19
NEW NAME for *Humbertiella* Jeannel, 1960b: 7 (preocc., not Saussure, 1869) (1 sp.) **E**
Neoplectidius Jeannel, 1960a: 84 (1 sp.) **E**
Neothesiastes Jeannel, 1960a: 73 (2 spp.) **E**
Nesiotoplectus Jeannel, 1954a: 175 (15 spp.) **E** (including Comore islands)
Omotimiotes Jeannel, 1954a: 170 (1 sp.) **E**
Pachyeuplectus Jeannel, 1954a: 179 (1 sp.) **E**
Paraphiliopsis Jeannel, 1959a: 120; 1960a: 70 (5 spp.) **E**
Plectiastes Jeannel, 1960b: 9 (1 sp.) **E**
Plectodytes Jeannel, 1956a: 8 (2 spp.) **E**
Pseudozibus Jeannel, 1956b: 365
(5 spp., 1 sp. endemic to Madagascar)
  Aphiliopsis Besuchet, 1956: 369
Trimiophanes Jeannel, 1954a: 168 (16 spp.) **E**

Tribus Trichonychini Reitter, 1882
8 genera, 7 endemic to Madagascar; 51 species all endemic to Madagascar.

Ambalavoa Dajoz, 1982: 487 (1 sp.) **E**
Ankavena Jeannel, 1954a: 192 (2 spp.) **E**
Apotectus Newton & Chandler, 1989: 28
NEW NAME for *Autoplectus* Raffray, 1883: 248 (preocc., not Balsamo-Crivelli, 1843) (7 spp., 6 endemic to Madagascar); known only from Madagascar and Angola
Badensia Jeannel, 1954a: 193 (13 spp.) **E**
Imeriniella Jeannel, 1960b: 13 (3 spp.) **E**
  Imerinella Jeannel, 1960a: 110 (objective synonym of *Imeriniella* Jeannel, 1960)
Ranavala Raffray, 1898b: 224 (21 spp.) **E**
  Masoala Jeannel, 1954a: 190 (subgenus)
  Fanovana Jeannel, 1960a: 100 (subgenus)
Ranavalidius Jeannel, 1959b: 204 (3 spp.) **E**
Ranavalodes Jeannel, 1960a: 99 (2 spp.) **E**

Supertribus BATRISITAE Reitter, 1882
9 genera, 8 endemic to Madagascar; 36 species, 35 endemic to Madagascar.

Tribus Batrisini Reitter, 1882

Batrischema Newton & Chandler 1989: 34
NEW NAME for *Batrisoschema* Jeannel, 1960a: 123 (preocc., not Reitter, 1883) (1 sp.) **E**

Batrisochorus Jeannel 1949a: 146
(16 spp., 1 sp. not endemic to Madagascar)
Batristellus Jeannel 1949b: 154 (subgenus)
Batrisodella Jeannel, 1954a: 243 (2 spp.) **E**
Batrisodites Jeannel, 1954a: 244 (19 spp.) **E**
Batrisolius Jeannel, 1956a: 25
Batrisomina Raffray, 1903: 316 (11 spp.) **E**
Batrixenus Newton & Chandler, 1989: 35
NEW NAME for *Batrisoxenus* Dajoz, 1982: 495 (preocc., not Leleup, 1971) (1 sp.) **E**
Franzorella Leleup, 1977: 82 (1 sp.) **E**
Jochmansiella Leleup, 1976b: 307 (1 sp.) **E**
Macrodelphus Leleup, 1977: 84 (1 sp.) **E**

Supertribus Goniaceritae Reitter, 1882
13 genera, 10 endemic to Madagascar; 88 species, 87 endemic to Madagascar.

Tribus Brachyglutini Raffray, 1904
10 genera, 7 endemic to Madagascar, 81 species, 80 endemic to Madagascar.

Baxyridius Jeannel, 1954a: 210 (2 spp.) **E**
Bryaxella Raffray, 1903: 319 (1 sp.) **E**
Leiochrotella Jeannel, 1954a: 231 (3 spp.) **E**
Leiochrotidius Jeannel, 1960a: 161 (1 sp.) **E**
Madabaxyris Dajoz, 1982: 501 (1 sp.) **E**
Rabyxis Raffray, 1890: 124 (43 spp.) **E**
(1 sp. also in Comore islands)
Pseudobaxyris Jeannel 1960a: 129 (subgenus)
Reichenbachella Jeannel, 1949b: 80
(19 spp., 1 sp. not endemic to Madagascar)
Reichenbachia Leach, 1826: 451
(340 spp., 20 spp. endemic to Madagascar)
Dierobia Thomson, 1859: 54
Dicrobia Reitter, 1882: 474 (misspelling of *Dierobia*)
Reichenbachius Casey, 1906: 359
Trissemus Jeannel, 1949a: 95
(130 spp., 8 spp. endemic to Madagascar)
Corynecerus Jeannel, 1949a: 111 (subgenus)
Trissemodes Jeannel, 1949b: 84 (subgenus)
Trissemidius Jeannel, 1952a: 182 (subgenus)
Apotrissemus Jeannel, 1954: 211 (subgenus)
Trissemites Jeannel, 1959a: 529 (subgenus)
Trissemellus Jeannel, 1959a: 529 (subgenus)
Trissemosus Jeannel, 1959a: 529 (subgenus)
Xenobryaxis Jeannel, 1954a: 234 (1 sp.) **E**

Tribus Iniocyphini Park, 1951
3 genera and 7 species all endemic to Madagascar.

Capnites Raffray, 1898: 245 (1 sp.) **E**
Sogaella Jeannel, 1960a: 125 (5 spp.) **E**
Leiochrotina Jeannel, 1959b: 208 (preocc., not Westwood, 1883)
Trichopnites Dajoz, 1982: 500 (1 sp.) **E**

Supertribus Pselaphitae Latreille, 1802
28 genera, 19 endemic to Madagascar, 70 species all endemic to Madagascar.

Tribus Ctenistini Blanchard, 1845
7 genera, 4 endemic to Madagascar; 13 species all endemic to Madagascar.

Chenniopsis Raffray, 1904: 338 (1 sp.) **E**
Ctenisophanes Jeannel, 1954a: 259 (4 spp.) **E**
Ctenistes Reichenbach, 1816: 75
(30 spp., 1 sp. endemic to Madagascar)
Dionyx Le Peletier & Serville, 1825: 221
Tecnesis Peyerimhoff, 1925: 59 (subgenus)
Leptoctenistes Jeannel, 1956c: 167 (subgenus)
Tectenis Jeannel, 1959a: 617 (misspelling of *Tecnesis*)
Tecnesites Jeannel, 1961a: 451 (subgenus)
Desimia Reitter, 1882: 457
(23 spp., 3 spp. endemic to Madagascar)
Tetracis Sharp, 1874: 79
Desmia Leng, 1920: 132 (misspelling)
Desimiella Jeannel, 1949a: 200 (subgenus)
Xenodesimia Jeannel, 1959a: 632 (subgenus)
Enoptostomus Schaum, 1864: 528
(23 spp., 2 spp. endemic to Madagascar)
Hynneophorus Leleup, 1972: 171 (1 sp.) **E**
Laphidioderomimus Leleup, 1972: 167 (1 sp.) **E**

Tribus Odontalgini Jeannel, 1949
3 genera, 2 endemic to Madagascar; 5 species all endemic to Madagascar.

Algodontodes Jeannel, 1960a: 175 (1 sp.) **E**
Madontalgus Dajoz, 1982: 506 (1 sp.) **E**
Odontalgus Raffray, 1877: 286
(49 spp., 3 spp. endemic to Madagascar)
Herminiella Blattný, 1925: 211

Tribus Pachygastrodini Leleup, 1969
2 genera and 3 species all endemic to Madagascar.

Pachygastrodes Leleup 1969: 284 (1 sp.) **E**

Pachygastrodirius Leleup 1976a: 268 (2 spp.) **E**

Tribus Tyrini Reitter, 1882
8 genera, 6 endemic to Madagascar, 34 species all endemic to Madagascar

Acylobythus Jeannel, 1960a: 178 (2 spp.) **E**
Acylopselaphus Raffray, 1883: 237 (11 spp.) **E**
Acylotyrus Jeannel, 1954a: 278 (13 spp.) **E**
Leptotyrus Jeannel, 1954a: 283
Centrophthalmosis Raffray, 1904: 376
(27 spp., 1 sp. endemic to Madagascar)
Centrophthalmus Schmidt Goebel, 1838: 7
(90 spp., 2 spp. endemic to Madagascar)
Camaldus Fairmaire 1863: 637
Franziotus Leleup, 1972: 175 (3 spp.) **E**
Nesiotyrodes Jeannel, 1954a: 285 (1 sp.) **E**
Vadoniotus Jeannel, 1954a: 287 (1 sp.) **E**

Tribus Arhytodini Raffray, 1890
5 genera and 12 species all endemic to Madagascar

Eichiella Leleup, 1976b: 311 (2 spp.) **E**
Holozodoides Dajoz, 1982: 503 (1 sp.) **E**
Holozodus Fairmaire, 1898b: 346
NEW NAME for *Hologlyptus* Fairmaire, 1898a: 338 (preocc., not Le Conte, 1866; Pomel, 1883) (4 spp.) **E**
Pasiglyptus Berg, 1899: 79
Tetraglyptinus Jeannel, 1960a: 167 (1 sp.) **E**
Tetraglyptus Jeannel, 1956a: 46 (4 spp.) **E** (including Comore islands)

Tribus Pselaphini Latreille, 1802
3 genera, none endemic to Madagascar; 3 species all endemic to Madagascar

Pselaphaulax Reitter, 1909: 218
(61 spp., 1 sp. endemic to Madagascar)
Neopselaphaulax Jeannel 1959a: 593
Pselaphidius Jeannel, 1951: 9
(15 spp., 1 sp. endemic to Madagascar)
Pselaphoxys Raffray, 1890: 139
(5 spp., 1 sp. endemic to Madagascar)

Supertribus Clavigeritae Leach, 1815
39 genera, 36 endemic to Madagascar; 62 species all endemic to Madagascar

Tribus Clavigerini Leach, 1815
39 genera, 36 endemic to Madagascar; 62 species all endemic to Madagascar

Andasibe Hlaváč & Baňař, 2012: 60 (1 sp.) **E**
Ankarahitra Jeannel, 1954a: 308 (1 sp.) **E**
Antalaha Jeannel, 1954a: 318 (5 spp.) **E**
Antahala Dajoz, 1982: 521 (misspelling)
Apoderiger Wassmann, 1897: 263 (2 spp.) **E**
Articeronomus Raffray, 1898a: 268 (1 sp.) **E**
Articeropsis Wasmann, 1893a: 257
(4 spp., 2 spp. endemic to Madagascar) (also in Sri Lanka)
Dimerometopus Célis, 1970: 245 (1 sp.) **E**
Fustigerodes Reitter, 1884: 168
(3 spp., 2 spp. endemic to Madagascar) (also in Bolivia?)
Commatoceropsis Raffray, 1890a: 167 (revised status)
Commatocerinus Wassmann, 1897: 260
Fustigeromimus Dajoz, 1982: 515 (1 sp.) **E**
Hadrophorus Fairmaire, 1898b: 342 (1 sp.) **E**
Xenofranzia Célis, 1969: 422
Madara Dajoz, 1982: 520 (1 sp.) **E**
Marofusiger Dajoz, 1982: 517 (1 sp.) **E**
Merinia Newton & Chandler, 1989: 67
NEW NAME for *Imerina* Raffray, 1897: 281 (preocc., not Ragonot, 1891) (2 spp.) **E**
Micrapoderiger Jeannel, 1960a: 202 (1 sp.) **E**
Microclaviger Wasmann, 1893: 108 (5 spp.) **E**
Nearticerodes Jeannel, 1954a: 299 (1 sp.) **E**
Neoceratopsis Jeannel, 1956a: 50 (1 sp.) **E**
Neocerus Wasmann, 1893a: 105 (1 sp.) **E**
Neocorynotus Jeannel, 1960a: 198 (1 sp.) **E**
Neofustigerinus Jeannel, 1960a: 194 (2 spp.) **E**
Novofustiger Wassmann, 1893b: 106 (1 sp.) **E**
Paussiger Wasmann, 1893a: 257 (1 sp.) **E**
Platycerodes Jeannel, 1960a: 193 (1 sp.) **E**
Pseudoradama Dajoz, 1982: 519 (1 sp.) **E**
Radama Raffray, 1883: 230 (4 spp.) **E**
Radamellus Raffray, 1905: 456 (3 spp.) **E**
Radamides Wasmann, 1897: 261
(4 spp., 3 spp. endemic to Madagascar) **E** (also in South Africa)
Rhynchoclaviger Wasmann, 1891: 4 (1 sp.) **E**
Rynchoclaviger Raffray, 1911: 175 (misspelling)
Semiclaviger Wasmann, 1893b: 102 (1 sp.) **E**
Soalala Dajoz, 1982: 512 (1 sp.) **E**
Stenofustigerinus Célis, 1970: 241 (1 sp.) **E**

Sufifer Newton & Chandler, 1989: 66
NEW NAME for *Fusifer* Raffray, 1900: 524 (preocc., not Dendy, 1896) (2 spp.) **E**
Theocerus Raffray, 1897: 280 (2 spp.) **E**
Thysdariella Hlaváč, 2005: 304 (1 sp.) **E**
Thysdariopsis Jeannel, 1960a: 211 (1 sp.) **E**
Thysdarius Fairmaire, 1904: 117
NEW NAME for *Thysdrus* Fairmaire, 1898b: 344 (preocc., not Stal, 1874) (2 spp.) **E**
Triceratomerus Jeannel, 1960a: 195 (1 sp.) **E**
Trichomatosus Célis, 1970: 268 (1 sp.) **E**
Trymalius Fairmaire, 1898b: 345 (1 sp.) **E**

MATERIALS AND METHODS

Study area

The research was conducted within the National Park of Amber Mountain at the north side of Madagascar, in the province of Antsiranana, about 40 km southwest of the capital Diégo Suarez. The National Park was created in 1958 and it is the first protected area in Madagascar, covering about 185 square kilometers. Actually, the Amber Mountain includes a complex of protected areas which extend over 23,010 hectares, whose 18,200 hectares of the National Park and 4,810 hectares of the Special Reserve Amber Forest (Fig. 1). A track of about 30 km, opened by the French Foreign Legion and today only partially practicable with off-road car, allows to cross the National Park along the east-west direction. From this track many paths branch off, allowing to visit by walking the entire area (Fig. 2).

The soil is volcanic and the area of the National Park culminates in the Amber Peak (1,475 m above sea level) and, like an oasis, is located within a region of dry savanna. The rain forest of the park is lush; with their heavy rainfall (annual rates of 3,585 mm of rain) it represents the water reservoir of the entire region and the rainiest area of Madagascar. The old craters host numerous lakes such as the "Lac de la Coupe Verte", the "Petit Lac" (Fig. 3), the "Grand Lac" and the "Lac Mahery" near Sakharami (Fig. 4). The crest line is a natural barrier that divides the relief of the Amber Mountain in two very different areas. The western side of the mountain is covered with a dense rainforest (Fig. 5), while its eastern side is characterized by a drier forest (Fig. 6). Due to the volcanic nature of this basaltic massive, the Park is very rich in streams and waterfalls which gush in many localities, offering some surprising views such as the Great Waterfall, the Little Waterfall and the Sacred Waterfall (Fig. 7).

The list of collecting stations within the National Park of Amber Mountain (Madagascar) is shown below (Table 1). Are indicated the geographical coordinates (latitude and longitude), the sampling technique used, the altitude, the date of collection and the name of the sampler.

Sampling methods

Faunistic researchs were carried out on the western side of the National Park of Amber Mountain and focused on beetles especially with regard to family Staphylinidae and the subfamily Pselaphinae. The research, funded by the University of Catania and the Ministry of Scientific Research of Germany, was supported in the field by researchers of the University of Antananarivo (Fig. 8) and authorized by The National Association for the Management of Protected Areas in Madagascar (A.N.G.A.P.). As shelter was used the small forestal barrack located in the Park. The entomological samplings were carried out from 18 to 31 March 2011 in various environments (soil, litter, on herbaceous, shrub and arboreal vegetation, in subcorticicolous and sublapidicolous environment), by sight or using the entomological net and sifting.

Images of the insects were obtained via a stereoscopic microscope Leica MZ 205A (equipped with the software auto-montage pro, Syncroscopy).

RESULTS

Current knowledge about Pselaphinae from the National Park of Amber Mountain (Northern Madagascar)

On the basis of literature cited above, for the study area are currently known 16 genera (14 endemic to Madagascar and one of Amber Mountain) and 23 species, all malagasy endemic, 19 of which are known only to the Amber Mountain area. Hereinafter they are reported and briefly commented, and with the letter **E** are indicated those strictly endemic of the district of Amber Mountain.

1

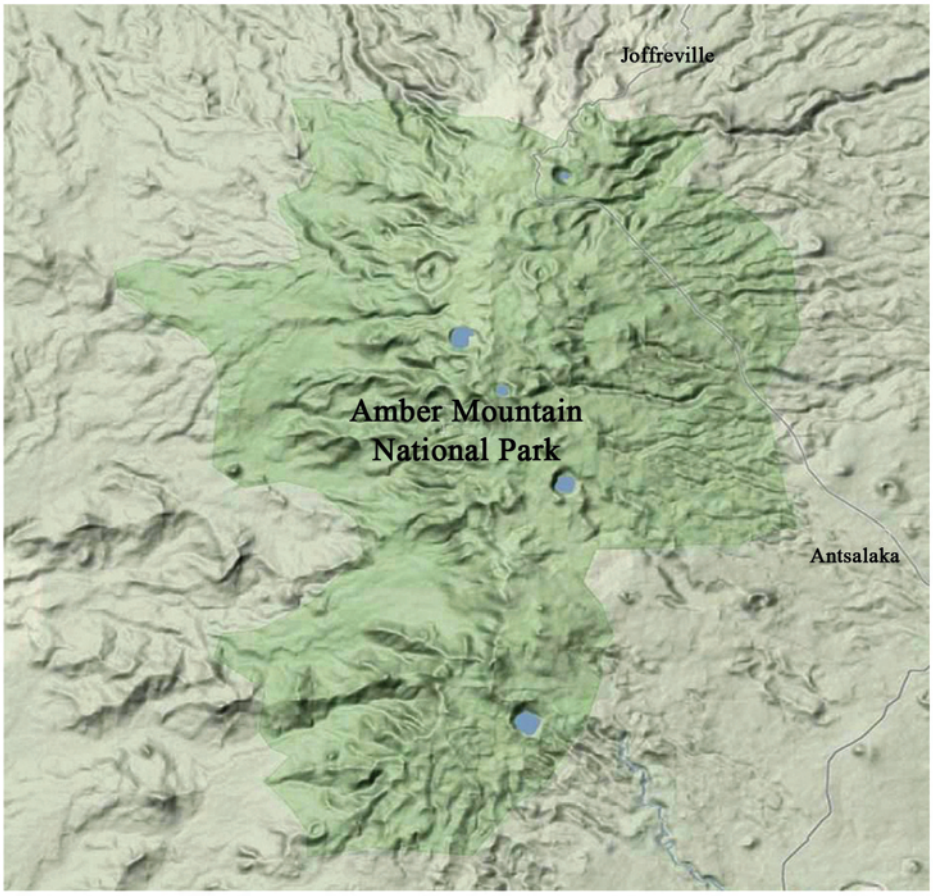

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Figure 1. Madagascar: localization of the National Park of Amber Mountain.
Figure 2. Map of the National Park of Amber Mountain (from Google Earth, mod.).

Northern Madagascar, Antsiranana province, Diana region, National Park Ambre Mountain

Mad 1. Path between forestal home and Sacred Waterfall. 12°31'39.27''S 49°10'17.51''E, sifting of litter, 1,062 m 19/III/2011, G. Sabella.

Mad 2. Petit Lac. 12°32'10.04''S 49°10'33.59''E, sifting of litter along banks, 1,070 m 20/III/2011, G. Sabella.

Mad 3. Petit Lac. 12°32'12.73''S 49°10'27.26''E, Sifting of litter and rotten wood, 1,150 m 20/III/2011, G. Sabella.

Mad 4. Temporary lake along Thousand Trees track. 12°31'23.30''S 49°10'19.16''E, sifting of litter and rotten wood, 1,040 m 21/III/2011, G. Sabella.

Mad 5. Temporary lake along Thousand Trees track. 12°31'23''S 49°10'19''E, entomological net on herbaceous vegetation, 1,040 m 21/III/2011, G. Sabella.

Mad 6. 1 km after the Park entrance. 12°30'55''S 49°10'49''E, entomological net on herbaceous vegetation, 990 m 22/III/2011, R. Ranaivosolo.

Mad 7. Big tree near forestal house. 12°31'38.13''S 49°10'17.83''E, sifting of litter, 1,060 m 22/III/2011, G. Sabella.

Mad 8. Wetland along Thousand Trees track. 12°31'16''S 49°10'24''E, entomological net on herbaceous vegetation, 1,040 m 23/III/2011, G. Sabella.

Mad 9. Along Thousand Trees track before wetland. 12°31'22''S 49°10'23''E, entomological net on herbaceous vegetation, 1,050 m 23/III/2011, G. Sabella.

Mad 10. Along Thousand Trees track before wetland. 12°31'16''S 49°10'23''E, sifting of litter and rotten wood, 1,040 m 23/III/2011, G. Sabella.

Mad 11. Along artificial canal near the wooden bridge. 12°31'27''S 49°10'21''E, entomological net on herbaceous vegetation, 1,050 m 23/III/2011, G. Sabella.

Mad 12. Sacred Waterfall. 12°31'41''S 49°10'17''E, entomological net on herbaceous vegetation, 1,070 m 23/III/2011, G. Sabella.

Mad 13. Wetland along Thousand Trees track. 12°31'16''S 49°10'24''E, sifting of litter, 1,040 m 24/III/2011, G. Sabella.

Mad 14. Sommet track 600 m after the cross Sacred Waterfall. 12°31'42''S 49°10'15''E, entomological net on herbaceous vegetation, 1,070 m 25/III/2011, G. Sabella.

Mad 15. Sommet track, 1,700 m after the cross Sacred Waterfall. 12°31'59''S 49°10'09''E, sifting of litter and rotten wood, 1,150 m 25/III/2011, G. Sabella.

Mad 16. Sommet track, about 5 km after the cross Sacred Waterfall. 12°34'13''S 49°10'57''E, entomological net on herbaceous vegetation, 1,250 m 25/III/2011, G. Sabella.

Mad 17. Big Cascade track, about 1 km after the cross Sacred Waterfall. 12°31'00''S 49°10'30''E, rotten wood, 1,050 m 26/III/2011, G. Sabella.

Mad 18. Big Cascade track, about 1,3 km after the cross Sacred Waterfall. 12°30'57''S 49°10'30''E, under bark, 1,030 m 26/III/2011, G. Sabella.

Mad 19. Big Cascade track, about 2,5 km after the cross Sacred Waterfall. 12°30'00''S 49°10'23''E, sifting of litter and rotten wood, 850 m 26/III/2011, G. Sabella.

Mad 20. Big Cascade track, about 2,8 km after the cross Sacred Waterfall. 12°30'04''S 49°10'23''E, entomological net on herbaceous vegetation and trees, 860 m 27/III/2011, R. Ranaivosolo.

Mad 21. Big Cascade track, about 2,8 km after the cross Sacred Waterfall. 12°30'04''S 49°10'23''E, sifting of litter, 860 m 27/III/2011, R. Ranaivosolo.

Mad 22. Big Cascade track, about 1,3 km after the cross Sacred Waterfall. 12°30'57''S 49°10'30''E, sifting of bark, 1,030 m 27/III/2011, G. Sabella.

Mad 23. Forestal house. 12°31'37''S 49°10'19''E, entomological net on herbaceous vegetation, night-time, 1,055 m 27/III/2011, G. Sabella & R. Ranaivosolo.

Mad 24. Thousand Trees track, small waterfall. 12°31'23''S 49°10'16''E, sifting of litter, 1,055 m 28/III/2011, G. Sabella.

Mad 25. Sommet track, 500 m after the cross Sacred Waterfall. 12°31'43''S 49°10'06''E, entomological net on trees, 1,120 m 28/III/2011, G. Sabella & R. Ranaivosolo.

Mad 26. Sommet track, 250 m after the cross Sacred Waterfall. 12°31'42''S 49°10'23''E, sifting of litter and rotten wood, 1,080 m 28/III/2011, G. Sabella.

Mad 27a. Lac Mahery, Sakharami, around lac. 12°26'25''S 49°14'49''E, entomological net on trees (morning time), 370 m 29/III/2011, G. Sabella & R. Ranaivosolo.

Mad 27b. Lac Mahery, Sakharami, forest around lac. 12°26'13''S 49°14'47''E, sifting of litter and rotten wood, 390 m 29/III/2011, G. Sabella.

Mad 27c. Lac Mahery, Sakharami, around lac. 12°26'25''S 49°14'49''E, entomological net on trees (in the afternoon), 370 m 29/III/2011, G. Sabella & R. Ranaivosolo.

Mad 27d. Lac Mahery, Sakharami, forest around lac. 12°26'31''S 49°14'49''E, sifting of litter and rotten wood, 375 m 29/III/2011, G. Sabella.

Mad 28. Thousand Trees track, small waterfall. 12°31'23''S 49°10'16''E, sifting of litter, 1,055 m 30/III/2011, R. Ranaivosolo.

Mad 29. Thousand Trees track, between wetland and Big Cascade track. 12°31'04''S 49°10'21''E, entomological net on trees, 1,020 m 30/III/2011, G. Sabella & R. Ranaivosolo.

Mad 30. Thousand Trees track, between wetland and Big Cascade track. 12°30'53''S 49°10'18''E, sifting of litter of epiphyte on wood, 980 m 30/III/2011, G. Sabella.

Mad 31. Thousand Trees track, between wetland and Big Cascade track. 12°30'45''S 49°10'12''E, sifting of bark, 1,000 m 30/III/2011, G. Sabella.

Mad 32. Sommet track 600 m after the cross Sacred Waterfall. 12°31'42''S 49°10'15''E, entomological net on trees, 1,070 m 31/III/2011, G. Sabella.

Mad 33. Sommet track, 1.700 m after the cross Sacred Waterfall. 12°31'59''S 49°10'09''E, entomological net on trees, 1,150 m 31/III/2011, G. Sabella.

Table 1. The list of collecting stations within the National Park of Amber Mountain (Madagascar)

FARONITAE Reitter, 1882

E *Faronites curtipennis* Leleup, 1977

Faronites curtipennis Leleup 1977: 72

REMARKS. Endemic of Amber Mountain, known for a single female collected by H. Franz in 22.V.1969 near the forestal station.

E *Faronites jeanneli* Leleup, 1977

Faronites jeanneli Leleup 1977: 72, fig. 1 (aedeagus)

REMARKS. Endemic of Amber Mountain, known for two male and two female collected by H. Franz in 22.V.1969 at Samdramiana river, 800 meters above sea level.

E *Faronites robinsoni* Jeannel, 1959

Faronites robinsoni Jeannel 1959b: 191, fig. 2 (aedeagus); Jeannel 1961b: 2

REMARKS. Endemic of Amber Mountain, known for a single female collected by A. Robinson in XII.1958 at Les Roussettes by the soil washing, 1,100 meters above sea level.

EUPLECTITAE Streubel, 1839
Bithynoplectini Schaufuss, 1890

Apozethopsus vadoni Jeannel, 1954

Apozethopsus vadoni Jeannel 1954a: 159, figs. 6 (habitus), 7 (palpus), 8 (aedeagus); Jeannel 1954b: 85, figs 39 (habitus), 40 (palpus), 41 (aedeagus); Jeannel 1960a: 61, figs. 22 (habitus), 23 (aedeagus); Coulon 1989: 133, figs. 99 (palpus), 100 (antenna), 101 (aedeagus)

Apozethopsus pauliani Jeannel 1954a: 159, fig. 9 (aedeagus); Jeannel 1954b: 85, fig. 42 (aedeagus); Jeannel 1960a: 62

REMARKS. Species known only for the Northeastern Madagascar (Andranofotsy) and Amber Mountain, where 1 male have been collected by R. Paulian in XII.1948.

E *Protozethopsus franzi* Leleup, 1977

Protozethopsus franzi Leleup 1977: 75, fig. 2 (aedeagus)

REMARKS. Endemic of Amber Mountain, known for 2 male collected by H. Franz in 20.V.1969.

Euplectini Streubel, 1839

E *Aminosimus ambreanus* Jeannel, 1959

Aminosimus ambreanus Jeannel 1959b: 196; Jeannel 1961b: 5

REMARKS. Endemic of Amber Mountain, known for one female collected by sight by P. Remy in the summer of 1957 on clayey ground.

E *Asymoplectus ambreanus* (Jeannel, 1954)

Biblioplectinus ambreanus Jeannel 1954a: 173, fig. 24 (aedeagus)

Asymoplectus (*Asymoplectodes*) *ambreanus* Jeannel 1960a: 79, fig. 46 (aedeagus)

REMARKS. Endemic of Amber Mountain, known for 5 specimens collected by R. Paulian in XII.1948.

Asymoplectus remyi Jeannel, 1959

Asymoplectus remyi Jeannel 1959b: 192, fig. 5 (aedeagus)

Asymoplectus (s. str.) *remyi* Jeannel 1961b: 3

REMARKS. Species known from the Périnet Forest (Analamazoatra, Central Madagascar) and Amber Mountain, where 6 specimens have been collected near the Petit Lac in the soil by P. Remy in the summer of 1957.

E *Asymoplectus decoratus* Jeannel, 1959

Asymoplectus decoratus Jeannel 1959b: 194, fig. 7 (aedeagus)

Asymoplectus (*Asymoplectodes*) *decoratus* Jeannel 1961b: 3

REMARKS. Endemic of Amber Mountain, known for one male collected by P. Remy in the summer of 1957 near the Petit Lac in the soil.

E *Nesiotoplectus megacephalus* (Raffray, 1897)

Euplectus megacephalus Raffray 1897: 265

Nesiotoplectus megacephalus Jeannel 1954a: 176, figs 26 (habitus), 27 (aedeagus); Jeannel 1960a: 94, figs 66 (habitus), 67 (aedeagus); Jeannel 1961b: 9-10

REMARKS. The species is known only for the environs of Diégo Suarez, where 3 specimens have been collected by C. Allaud in 1893.

E *Trimiophanes microphthalmus* Jeannel, 1959

Trimiophanes microphthalmus Jeannel 1959b: 197, fig. 16 (aedeagus); Jeannel 1961b: 6 (*microcephalus*, misspelling), 8

REMARKS. Endemic of Amber Mountain, known for 4 specimens collected by A. Robinson in XII.1958 at Les Roussettes by soil washing, 1,100 meters above sea level.

Figures 3-6. Madagascar, Antsiranana province, National Park of Amber Mountain. Fig. 3. The Petit Lac. Fig. 4. The Lac Mahery near Sakharami. Fig. 5. Rainforest on the western side of the Amber Mountain. Figure 6. Forest on the eastern side of Amber Mountain. Fig. 7. National Park of Amber Mountain: the Sacred Waterfall (Photos R. Gerecke). Fig. 8. Researchers of the University of Tuebingen (Germany) and Antananarivo (Madagascar) on the trail that leads to the entrance of the National Park of Amber Mountain (Photo G. Sabella).

Trichonychini Reitter, 1882

E *Badensia pauliani* Jeannel, 1954

Badensia pauliani Jeannel 1954a: 193, figs 43 (habitus), 44 (aedeagus), 45 (metatibiae and metatarsi); Jeannel 1960a: 111-112, figs 100 (habitus), 101 (aedeagus)

REMARKS. Endemic of Amber Mountain, known for one specimen male collected by R. Paulian in XII.1948.

E *Ranavala ambreana* Jeannel, 1959

Ranavala ambreana Jeannel 1959b: 207, fig. 23 (aedeagus)

Ranavala (s. str.) *ambreana* Jeannel 1961b: 12

REMARKS. Endemic of Amber Mountain, known for 5 specimens collected at Les Roussettes in the soil by P. Remy in VII.1957.

Ranavala crassiuscula Jeannel, 1959

Ranavala crassiuscula Jeannel 1959b: 206, fig. 24 (aedeagus); Jeannel 1960b: 13

Ranavala (s. str.) *crassiuscula* Jeannel 1961b: 12

REMARKS. Species known for Marojejy Massif (Sambava, Ambinanitelo) and the Amber Mountain where it has been collected only one winged female in the soil at Les Roussettes by P. Remy in VII.1957, 950 meters above sea level.

BATRISITAE Reitter, 1882
Batrisini Reitter, 1882

E *Batrisomina wewalkai* Leleup, 1977

Batrisomina wewalkai Leleup 1977: 93

REMARKS. Endemic of Amber Mountain, known for one female collected by H. Franz near the Petit Lac in 21.V.1969, 1,400 m above sea level.

E *Franzorella trifossulata* Leleup, 1977

Franzorella trifossulata Leleup 1977: 83, figs 8 (habitus), 9 (aedeagus), 10 (antenna), 11 (median leg), 12 (metatrochanter)

REMARKS. Genus and species endemic of the Amber Mountain, where have been collected two males and one female by H. Franz in 20.V.1969 near the forestal station.

GONIACERITAE Reitter, 1882
Brachyglutini Raffray, 1904

E *Rabyxis pauliani* Jeannel, 1954

Rabyxis pauliani Jeannel 1954a: 198, fig. 47 (aedeagus)

Rabyxis (s. str.) *pauliani* Jeannel 1961b: 131, 134, fig. 132 (aedeagus)

REMARKS. Endemic of Amber Mountain, known for 5 specimens collected by R. Paulian in XII.1948.

E *Rabyxis viduana* (Raffray, 1897)

Reichenbachia viduana Raffray 1897: 266

Rabyxis viduana Jeannel 1954a: 200, fig. 51 (aedeagus)

Rabyxis (s. str.) *viduana* Jeannel 1961b: 131, 138, fig. 139 (aedeagus)

REMARKS. Species known for a single male collected by C. Allaud in VI.1893 at Diégo Suarez.

E *Reichenbachia auriculata* Raffray, 1897

Reichenbachia auriculata Raffray 1897: 266; Jeannel 1960a: 151, 152

Reichenbachia (s. str.) *auriculata* Jeannel 1954a: 220, 225

REMARKS. Species known for some specimens collected by C. Allaud in VI.1893 at Diégo Suarez.

Reichenbachia usitata Raffray, 1897

Reichenbachia usitata Raffray 1897: 267; Jeannel 1960a: 151, 153

Reichenbachia (s. str.) *usitata* Jeannel 1954a: 220, 228, fig. 76 (aedeagus); Jeannel 1956a: 43

REMARKS. Species widely distributed and separated into several subspecies, whose taxonomic validity is to be verified. It is signaled for the Northern Madagascar (Diégo Suarez, 7 specimens C. Allaud 1893; Monte Tsaratanana, forest at 1,500 meters above sea level, one male and one female R. Paulian XI.1949), Eastern Madagascar (Ambodivoangy, Ankovana, Andranofotsy, by beating the branches of trees) and Southern Madagascar (Behara).

PSELAPHITAE Latreille, 1802
Tyrini Reitter, 1882

E *Acylopselaphus calcaratus* Raffray, 1897

Acylopselaphus calcaratus Raffray 1897: 268; Raffray 1904: 330; Jeannel 1954a: 271, 275, figs 129 (antenna), 130 (palpus), 131 (aedeagus); Jeannel 1960a: 180, 182, figs 220 (antenna), 221 (palpus), 222 (aedeagus)

REMARKS. Species known for 1 male and 3 fe-

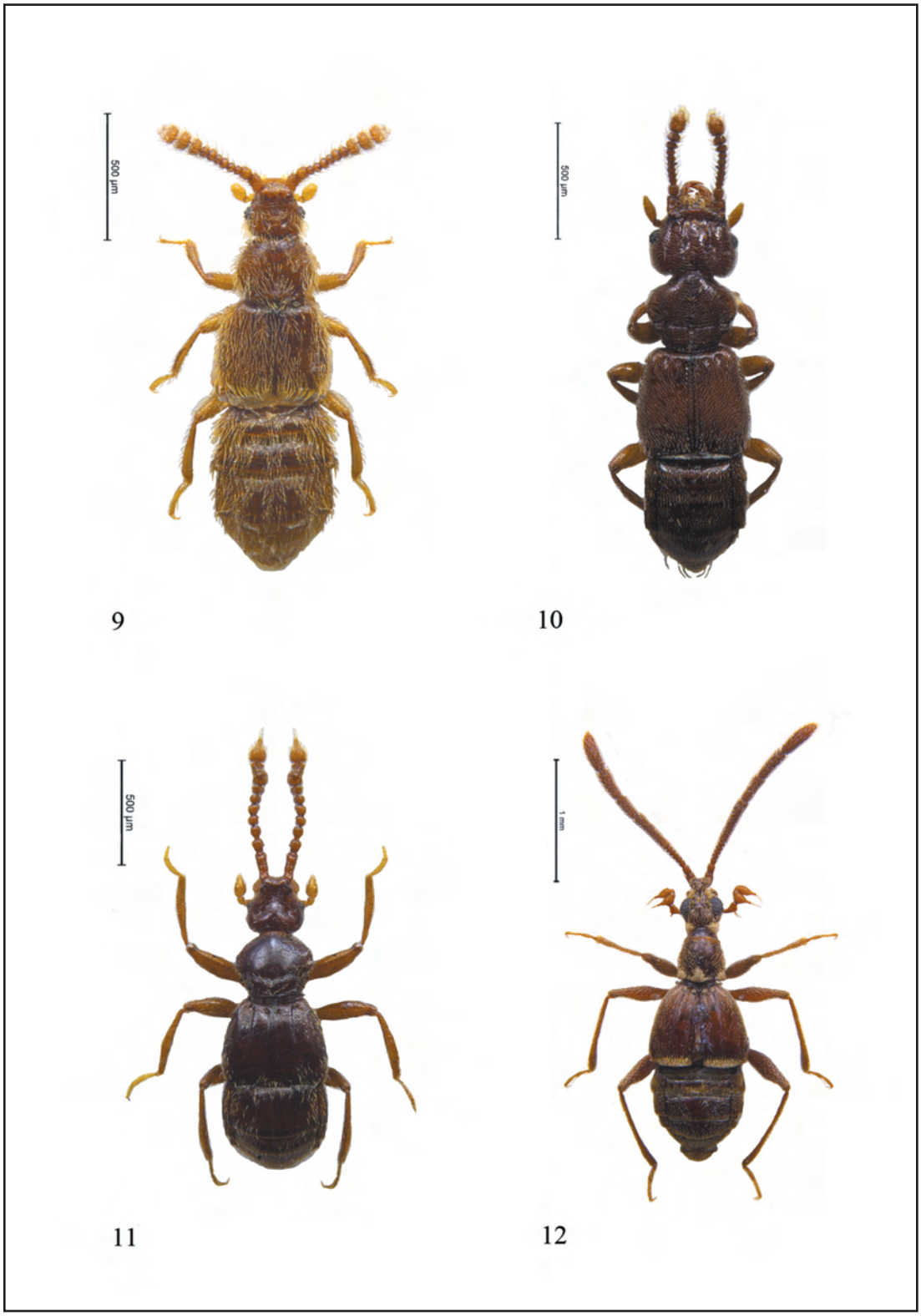

Figure 9. *Faronites* sp. from Amber Mountain. Figure 10. *Nesiotoplectus megacephalus* Jeannel, 1954 from Lac Mahery, Sakharami. Figure 11. *Ranavala ambreana* Jeannel, 1959 from Petit Lac. Figure 12. *Ctnenistes vadoni* Jeannel, 1954 from temporary lake along Thousand Trees track.

males collected by C. Allaud in 1893 at Diégo Suarez.

Clavigeritae Leach, 1815
Clavigerini Leach, 1815

E *Articeronomus nitidus* Raffray, 1897

Articeronomus nitidus Raffray 1897: 269; Jeannel 1954a: 310; Jeannel 1960a: 202

Remarks. Species collected by C. Allaud at Diégo Suarez.

E *Microclaviger alluaudi* Raffray, 1897

Microclaviger alluaudi Raffray 1897: 270; Jeannel 1954a: 336, 337, fig. 200 (aedeagus); Jeannel 1960a: 212, 213

Remarks. Two specimens of these species were collected at Diégo Suarez by C. Allaud in V.1893 in a rotting tree trunk with *Camponotus boisvini*.

Preliminary data on Pselaphinae collected in Amber Mountain from 18 to 31 March 2011

During the period of stay in Amber Mountain 159 specimens of Pselaphinae have been collected, whose study is currently being defined. At present only the shunting at genera level has been completed, while as regards the determination at the specific level, with some exceptions, it will be necessary the comparison with the typical material. Hereinafter still are reported these preliminary data, indicating for each identified genus the number of specimens and the number of collected species.

Faronitae

Faronites Jeannel, 1954. 1 specimen and 1 species (Fig. 9)

Faronitopsis Jeannel, 1960. 1 specimen and 1 species. Genus reported for the first time for the Amber Mountain area.

Euplectitae
Bithynoplectini

Apozethopsus Jeannel, 1954. 2 specimens and 1 species.

Euplectini

Asymoplectus Raffray, 1897. 1 specimen and 1 species.

Trimiophanes Jeannel, 1954. 3 specimens and 3 species.

Nesiotoplectus megacephalus Jeannel, 1954 (Fig. 10)

Examined material. Lac Mahery, Sakharami, 12°26’25’’S 49°14’49’’E, 370 m, 12°26’31’’S 49°14’49’’E, 375 m 29/III/2011, G. Sabella, 1 male.

Ecological notes. Entomological net on trees.

Trichonychini

Ranavala ambreana Jeannel, 1959 (Fig. 11)

Examined Material. Petit Lac, 12°32’10.04’’S 49°10’33.59’’E, 1,070 m, 20/III/2011, G. Sabella, 1 female; Petit Lac, 12°32’12.73’’S 49°10’27.26’’E, 1,150 m, 20/III/2011, G. Sabella, 1 male and 1 female; temporary lake along Thousand Trees track, 12°31’23.30’’S 49°10’19.16’’E, 1,040 m, 21/III/2011, G. Sabella, 1 male and 2 female; along Thousand Trees track before wetland, 12°31’16’’S 49°10’23’’E, 1,040 m, 23/III/2011, G. Sabella, 1 female.

Ecological notes. Sifting of litter along banks, sifting of litter and rotten wood.

Ranavala crassiuscula Jeannel, 1959

Examined material. Big Cascade track, about 2,5 km after the cross Sacred Waterfall, 12°30’00’’S 49°10’23’’E, 850 m, 26/III/2011, G. Sabella, 1 male and 1 female.

Ecological notes. Sifting of litter and rotten wood.

Ranavala Raffray, 1898. 3 specimens and 2 species.
Badensia Jeannel, 1954. 2 specimens and 1 species.

Batrisitae
Batrisini

Batrisomina Raffray, 1903. 1 specimen and 1 species.

GONIACERITAE
Brachyglutini

Reichenbachia Leach, 1826. 109 specimens and 6 species.

Rabyxis Raffray, 1890. 8 specimens and 3 species.

Trissemus Jeannel, 1949. 2 specimens and 1 species. Genus reported for the first time for the Amber Mountain area.

Leichotrella Jeannel, 1954. 1 specimen and 1 species. Genus reported for the first time for the Amber Mountain area.

PSELAPHITAE
Ctenistini

Ctnenistes vadoni Jeannel, 1954 (Fig. 12)

Ctnenistes vadoni Jeannel 1954a: 257, figs 103-104 (antennae), 105 (adeagus); Jeannel 1956a: 49; Jeannel 1960a: 172.

EXAMINED MATERIAL. Temporary lake along Thousand Trees track, 12°31'23''S 49°10'19''E 1,040 m, 21/III/2011 G. Sabella, 2 males; wetland along Thousand Trees track, 12°31'16''S 49°10'24''E, 1,040 m, 23/III/2011 G. Sabella, 2 males and 3 females; forestal house, 12°31'37''S 49°10'19''E, 1,055 m, 27/III/2011, G. Sabella & R. Ranaivosolo, 1 female.

ECOLOGICAL NOTES. Entomological net on herbaceous vegetation. The genus is reported for the first time for the Amber Mountain area. The species is endemic to Madagascar where it is mentioned for numerous localities in the eastern regions: Antakotako (Maroantsetra); beach of Maroantsetra; Beanana (high valley Lokoho); Périnet Forest; Fanovana (Moramanga).

Tyrini

Acylotyrus Jeannel, 1954. 2 specimens and 2 species. Genus reported for the first time for the Amber Mountain area.

Arhytodini

Eichiella Leleup, 1976. 1 specimen and 1 species. Genus reported for the first time for the Amber Mountain area.

CLAVIGERITAE
Clavigerini

Rhynchoclaviger Wassmann, 1891. 1 specimen and 1 species. Genus reported for the first time for the Amber Mountain area.

CONCLUSIONS

In conclusion, seven genera (*Faronitopsis*, *Trissemus*, *Leichotrella*, *Ctnenistes*, *Acylotyrus*, *Eichiella* and *Rhynchoclaviger*) are reported for the first time for Amber Mountain area. The research confirms the high biodiversity of malgasy Pselaphid fauna and some of its characteristics.

The number of genera and species endemic to Pselaphinae of Madagascar, although already very high, it is certainly expected to grow further, partly because some areas of the Big Island are still unexplored, and because even in areas that are relatively well known, such as the Amber Mountain, focused research and in different periods of the year allow to greatly increase the number of genera and species. In tropical regions and especially in equatorial regions often coexist in the same area more congeners species, sometimes very similar to each other, contrary to what occurs in temperate regions. In this regard, a significant example is represented by the large number of species of *Faronites*, *Ranavala*, *Reichenbachia* or *Trimiophanes* collected in Amber Mountain.

Research confirms that for Pselaphid species of Madagascar, with some exceptions, not ever occur collections with a large number of specimens. In fact, even in the literature, the species are known for one or few specimens. This seems to be another feature of Pselaphinae fauna from Madagascar. A further consideration relates to the environment where is possible to collect these beetles. Besides the classic environment of the soil, in Madagascar, as also known in the literature, there are many species that live on herbaceous vegetation or on the branches of trees, in particular those belonging to the tribe of Brachyglutini and Ctenistini.

Finally, it is surprising that a relatively small area such as the Amber Mountain guests a so rich Pselaphid's population in relation both to the number of genera and species and also to their rates of endemicity, and richer, for example, than that of Sicily.

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