

## Leiodinae (Coleoptera, Leiodidae) of Ankarafantsika National Park, Madagascar

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ŠVEC Z. & BAŇAŘ P. 2021: Leiodinae (Coleoptera, Leiodidae) of Ankarafantsika National Park, Madagascar. *Acta Musei Moraviae, Scientiae biologicae* **106(2)**: 343–350. – Review of Leiodinae in Ankarafantsika National Park (Madagascar, Boeny region) is presented. *Dermatohomoeus multipunctatus* sp. nov. from Madagascar is described. Findings of *Dermatohomoeus bulirschi* Švec, 2004, *D. ferrugineus* Švec, 2004, *D. madagascarensis* Švec, 2004 and *Cyrtusiola truncata* Švec, 1996 are recorded from the Ankarafantsika National Park for the first time. It has also been the first finding of these species since the date of their original description.

**Keywords.** New species, Leiodidae, Leiodinae, Pseudoliadini, *Dermatohomoeus*, *Cyrtusiola*, distribution, Madagascar, Ankarafantsika National Park

### Introduction

This contribution represents the first part of the results of a project focusing on the Leiodinae fauna of Madagascar. This project is part of extensive, still running research of the Insecta of Madagascar managed by the junior author with the kind approval of the relevant authorities. The aim of this article is to enumerate the Leiodinae species and describe one species new to science from the Ankarafantsika National Park. The Leiodinae fauna of Madagascar is not sufficiently known at present. Only four genera have been reported to date (PECK 2003; ŠVEC 1996, 2004) from the fourth largest island in the world, i.e., *Cyrtusiola* Hlisnikovský, 1974, *Dermatohomoeus* Hlisnikovský, 1963, *Dieta* Sharp, 1876 and *Pseudocyrtusiola* Švec, 2004.

The Ankarafantsika National Park is located in the north-western part of Madagascar in the Boeny region. The research was conducted in dry tropical woodland. The material was collected by sifting forest litter or rotten wood, subsequently it was separated using the Winkler extractor and preserved in 40% ethyl alcohol.

Beside four Leiodinae species already known from Madagascar, one *Dermatohomoeus* new to science was discovered in nine different samples taken in the Ankarafantsika National Park.

Including the new species described herein, the genus *Dermatohomoeus* comprises 46 species altogether. The species of the genus are distributed predominantly in the Oriental region, south-eastern part of the Palaearctic, as well as in the Australian region, Madagascar and one species is known also from the Afrotropical region. Altogether seven species had been discovered in Madagascar previously (Švec 2004). The species described in this article is number eight.

The biology of the *Dermatohomoeus* species is not known. The specimens are usually obtained by sifting in leaved forests.

Additionally, two *Cyrtusiola* species were found among the material from the Ankarafantsika National Park. As both *Cyrtusiola* species were discovered only in one and two specimens respectively, descriptions of the new species were postponed until expected new findings are reported. The project researching the Madagascan insects is still running and the intermediate results indicate discovery of more Madagascan Leiodinae species new to science which will be described in the forthcoming parts of this project.

### Material and Methods

This paper is based on the leiodid material collected during two field trips in 2011 and 2015 in Madagascar, Ankarafantsika National Park. The material was compared with the type and other leiodid material deposited in the NMPC.

Collecting data of the type series cited in quotation marks are taken from the locality labels accompanying the examined specimens. The individual lines from the original locality labels are separated by a slash “/”; the individual labels are separated by double slash “//”. A slash is also used in the abbreviations of the locality sites and data.

The holotype and paratypes bear a red label indicating the status of the specimen, name of the species, the name of the senior author who described the species and the relevant year, and they are attached to the same pin as the given specimen.

The examined specimens were preserved in 40% alcohol and subsequently dissected or directly mounted on paper cards. The dissected male genitalia were taken over clove oil, 40% ethyl alcohol and water to polyvinylpyrrolidin (Lompe 1986) on a transparent slide added to the same pin as the dissected specimen or directly on the card near to the relevant specimen. All the dissected specimens also bear a label with the following text: “genitalia in water/ soluble medium/ polyvinylpyrrolidin”.

The description of the new species is based on the holotype. Variability is mentioned in the paragraph “Variation” and includes features exhibited by the paratypes. The important characters of sexual dimorphism are also included in the mentioned paragraph. Those characters that seem to be usual in the genus – e.g micro-sculpture of ventral part of body, setosity on antennae, legs or body surface are not mentioned in the description.

The measurements of the total body length mentioned in the original description were obtained by the measuring of the smallest and largest specimens examined. Specific measurements of the individual body parts were taken from the holotype only. The measurements of morphologic body parts were measured to the first decimal place of millimetre, the measurements of the male and female genitalia were measured to the second decimal place of millimetre.

### Abbreviations

Abbreviations of the localities where the leiodids were collected during two field trips (2011 and 2015) in Ankarafantsika National Park, Madagascar:

Leiodinae of Ankarafantsika NP, Madagascar (Coleoptera)

- AKF/02/2011 AKF/02/2011 MADAGASCAR NW, Ankarafantsika N.P.; 22.iv.2011, S16°18'55.9" E46°48'44.1"; 134 m, sifting forest litter + rotten wood, Winkler app. extr.; R. Raveloson lgt;
- AKF/03/2011 AKF/03/2011 MADAGASCAR NW, Ankarafantsika N.P.; 22.iv.2011, S16°18'57.1" E46°48'43.4"; 140 m, sifting for. litter + rott. wood; Winkler app. extr.; L.S. Rahanitriniaina lgt.
- AKF/04/2011 AKF/04/2011 MADAGASCAR NW, Ankarafantsika N.P.; 22.iv.2011, S16°18'46.6" E46°48'58.8"; 89 m, sifting forest litter, Winkler app. extr., L.S. Rahanitriniaina & R. Raveloson lgt.;
- AKF/05/2011 AKF/05/2011 MADAGASCAR NW, Ankarafantsika N.P.; S16°18'05.1" E46°49'08.3"; 23.iv.2011, 89 m, sifting forest litter, Winkler app. extr. L.S. Rahanitriniaina & R. Raveloson lgt.
- AKF/06/2011 AKF/06/2011 MADAGASCAR NW, Ankarafantsika N.P.; 23.iv.2011, S16°18'05.9" E46°49'06.4"; 71 m, sifting forest litter, Winkler app. extr. L.S. Rahanitriniaina & R. Raveloson lgt.
- AKF/07/2011 AKF/07/2011 MADAGASCAR NW, Ankarafantsika N.P.; 23.iv.2011, S16°18'07.8" E46°48'59.5"; 79 m, sifting forest litter, Winkler app. extr. L.S. Rahanitriniaina & R. Raveloson lgt.
- AKF/13/2011 AKF/13/2011 MADAGASCAR NW, Ankarafantsika N.P.; 25.iv.2011, S16°18'47.0" E46°48'57.1"; 79 m, sifting forest litter, Winkler app. extr., L.S. Rahanitriniaina & R. Raveloson lgt.
- AKF/16/2011 AKF/16/2011 MADAGASCAR NW, Ankarafantsika N.P.; 25.iv.2011, S16°17'32.4" E46°48'35.7"; 61 m, sifting forest litter, Winkler app. extr., L.S. Rahanitriniaina & R. Raveloson lgt."
- AKF/17/2011 AKF/17/2011 MADAGASCAR NW, Ankarafantsika N.P.; 25.iv.2011, S16°17'32.9" E46°48'38.1"; 75 m, sifting forest litter, Winkler app. extr. L.S. Rahanitriniaina & R. Raveloson lgt.
- AKF/2015/18 AKF/Jan.2015/18 NW MADAGASCAR, Ankarafantsika N.P.; 24.1.2015, circuit „Source de vie“, sifting forest, litter by big tree, Winkler app. extraction S16°18'12.0" E46°48'47.4"; 81 m a.s.l., P. Baňaf & E.M. Rabotoson lgt.
- AKF/2015/19 AKF/Jan.2015/19 NW MADAGASCAR, ANKARAFANTSIKA N.P.; 24.1.2015 circuit „Source de vie“ marking „500 m“, sifting forest litter, Winkler app. extraction, 85 m a.s.l., P. Baňaf & E.M. Rabotoson lgt.
- AKF/2015/20 AKF/Jan.2015/20 NW MADAGASCAR, Ankarafantsika N.P.; 24.1.2015, close to main entrance, sifting forest litter, Winkler apparatus extraction, 75 m a.s.l., very wet material P. Baňaf & E.M. Rabotoson lgt.
- AKF/2015/21 AKF/Jan.2015/21 NW MADAGASCAR, Ankarafantsika N.P.; 25.1.2015, circuit „Source de vie“ marking „1500 m“, sifting forest litter by big tree, Winkler apparatus extraction, 90 m a.s.l., P. Baňaf & E.M. Rabotoson lgt.
- AKF/2015/22 AKF/Jan.2015/22 NW MADAGASCAR, Ankarafantsika N.P.; 25.1.2015, circuit „Source de vie“ marking „1100 m“, sifting forest litter, Winkler apparatus extraction, 85 m a.s.l., P. Baňaf & E.M. Rabotoson lgt.
- AKF/2015/24 AKF/Jan.2015/24 NW MADAGASCAR, Ankarafantsika N.P.; 25.1.2015, end of circuit „Extension Baobab“, crossin with „Source de vie“ sifting forest litter, Winkler app. extr., 95m a.s.l., P. Baňaf & E.M. Rabotoson lgt.

Abbreviation of the depository of the material used in this study.

MMBC	.....	Moravian Museum, Brno
NMPC	.....	National Museum, Prague
ZSPC	.....	Zdeněk Švec collection, Prague

## Taxonomy

*Dermatohomoeus multipunctatus* sp. nov.

(Figs 1, 2)

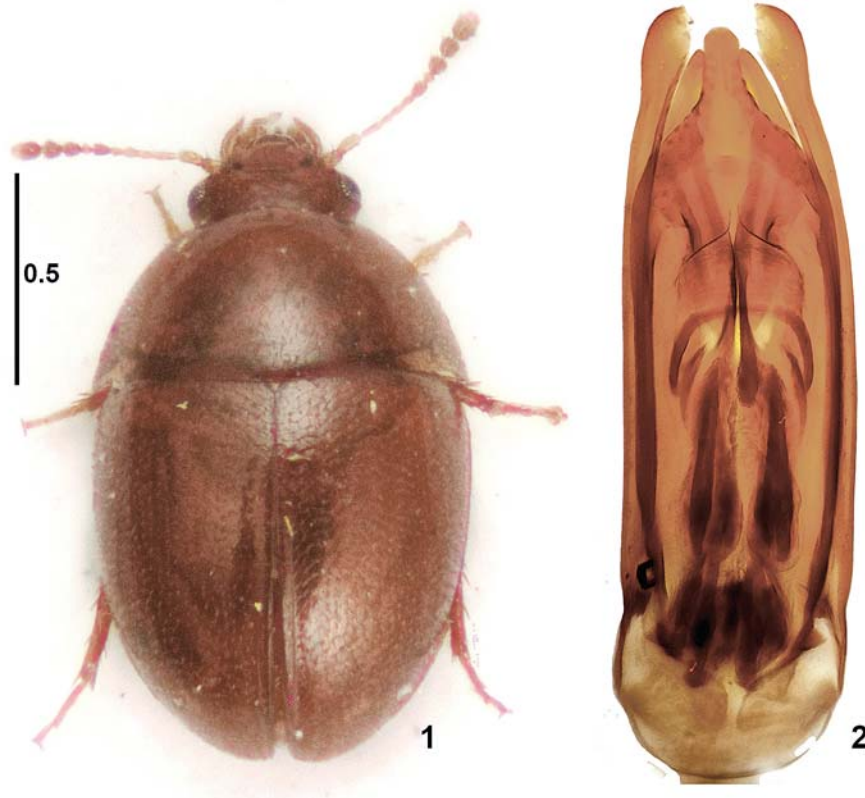
**Type locality.** Madagascar, Boeny region, Ankarafantsika N.P., end of circuit „Extension Baobab“, crossing with „Source de vie“, 95m a.s.l.

**Type material.** Holotype, (♂): “AKF/Jan.2015/24 NW/ MADAGASCAR/ ANKARAFANTSIKA N.P./ 25.1.2015 end of circuit/ „Extension Baobab“// crossin with „Source de vie“/ sifting forest litter, Winkler app./ extr., ~95m a.s.l./ P. Bañar & E.M. Rabotoson lgt.”, (MMBC). Paratypes, (2 ♂♂, 1 ♀), the same data; (1 ♂, 1 ♀), “AKF/Jan.2015/19 NW/ MADAGASCAR/ ANKARAFANTSIKA N.P./ 24.1.2015// circuit „Source de vie“ marking / „500m“, sifting forest litter./ Winkler app. extraction, 85m/ a.s.l., P. Bañar & E.M./ Rabotoson lgt.”; (6 ♂♂, 1 ♀), “AKF/Jan.2015/22 NW/ MADAGASCAR/ ANKARAFANTSIKA N.P./ 25.1.2015//circuit „Source de vie“ marking / „1100m“, sifting forest litter./ Winkler apparatus/ extraction, ~85m a.s.l., P. Bañar & E.M./ Rabotoson lgt.”; (2 ♂♂), “AKF/Jan.2015/20 NW MADAGASCAR/ ANKARAFANTSIKA N.P./ 24.1.2015 close to main/ entrance, sifting forest litter// Winkler apparatus extraction/ 75m a.s.l., very wet material/ P. Bañar & E.M. Rabotoson lgt.”; (33 ♂♂, 35 ♀♀), “AKF/Jan.2015/21 NW/ MADAGASCAR/ ANKARAFANTSIKA N.P./ 25.1.2015 circuit „Source de/ vie“ marking „1500m“// sifting forest litter by big tree, Winkler / apparatus extraction, 90m a.s.l./ P. Bañar & E.M. Rabotoson lgt.”; (1 ♂), “AKF/Jan.2015/18 NW/ MADAGASCAR/ ANKARAFANTSIKA N.P.; 24.1./ 2015, circuit „Source de/ vie“, sifting forest litter by big tree// Winkler app. extraction/ S16°18'12.0"E46°48'47.4"/ 81m a.s.l. P. Bañar & E.M./ Rabotoson lgt.”; (1 ♂), “AKF/16/2011 MADAGASCAR/ NW ANKARAFANTSIKA N.P./ 25.iv.2011/ S16°17'32.4"E46°48'35.7// 61m sifting forest litter, Winkler/ app. extr. L.S./Rahanitriniaina & R.Raveloson lgt.”; (1 ♂), “AKF/02/2011 MADAGASCAR/ NW ANKARAFANTSIKA N.P.; / S16°18'55.9"E46°48'44.1"// 22.iv.2011134m, sifting forest/ litter + rotten wood, Winkler app./ extr.; R. Raveloson lgt.”; (5 ♂♂, 1 ♀), “AKF/04/2011 MADAGASCAR/ NW, ANKARAFANTSIKA N.P./ sifting forest litter, Winkler app. extr./ 22.iv.2011 S16°18'46.6"E46°48'58.8”; 89m L.S.Rahanitriniaina/ & R.Raveloson lgt.” (MMBC, ZSPC).

**Description.** Body length 1.4–1.6 mm, in holotype 1.5 mm. Length of body parts in holotype: head 0.2 mm, pronotum 0.4 mm, elytra 0.9 mm, antenna 0.5 mm, aedeagus 0.53 mm. Spermatheca 0.08 mm. Maximum width of head 0.4 mm at eyes, pronotum 0.8 mm at base, elytra 1.0 mm at basal fourth. Shape of body as in Fig. 1. Dorsum, including legs, lightly chestnut coloured, anterior tarsi yellowish-brown, antennomeres 1–6 yellow, antennomeres 9–11 yellowish-brown. Underside reddish-brown with darker mesoventral carina and coxal margins. Head with oblique fine and dense strigosites on temples, elytra with transverse sparser strigosites. Entire dorsum punctate.

Head. Eyes small and subglobose; ratio of eye width/space between eyes = 1/14.7. Dorsal surface of head with very distinct but irregular punctation, punctures separated by 1–3 times their own diameter. Two large punctures on each side behind clypeal line. Length of antennomeres 2–11 (antennomere 2 is standard = 1.0) = 1.0-1.0-0.5-0.5-0.5-0.5-0.8-0.5-0.8-1.1. Width of antennomeres 2–11 (antennomere 2 is standard = 1.0) = 1.0-0.5-0.5-0.5-0.5-1.3-1.0-1.5-1.5-1.8. Eyes globose, strongly standing out of the head outline. The gula is indistinctly very feebly micro-sculptured; genae and postgenae distinctly transversally strigose.

Pronotum. Broadest at base. Base straight; very feebly emarginate before the acute posterior angles. Posterior angles acute, pointed in lateral view. Sides evenly curved from base to anterior angles in both dorsal and lateral view. Pronotal punctation rather dense, distinct. Punctures distinctly denser and larger on basal half of pronotum, separated by about 3 times their own diameter. Punctures a little smaller and sparser on anterior half



**Figs 1–2.** *Dermatohomoeus multipunctatus* sp. nov., holotype: 1 – dorsum; 2 – aedeagus dorsally.

of pronotum, separated by about 4–5 times their own diameter. Hypomeron micro-sculptured, predominantly with longitudinal long cells.

Elytra. Broadest approximately at basal quarter; roundly curved to apex. Elytral surface punctate. Larger punctures arranged in double rows. Row punctures separated predominantly by roughly their diameter transversally; by 2 times their own diameter longitudinally. Punctures equipped with recumbent, posteriorly oriented setae. Spaces between double rows possess a little finer hardly smaller punctures of almost the same size as row punctures. Interval punctures sparser, separated by about 2–4 times their diameter, arranged in single longitudinal, less regular row. Majority of elytral punctures are connected by fine transverse zigzag strigosities separated by about 0.02 mm. Sutural stria extending approximately to basal third of elytra.

Legs. Anterior tarsomere 1 distinctly dilated and elongate with distinct dense setae laterally and ventrally, approximately as long as tarsomere 5 (without claws). Setae shorter and sparser on tarsomeres 2–4.

Mesoventrite. Transversally micro-sculptured with protracted cells. Longitudinal carina of shape typical for the genus. Mesoventrite possesses the deep emargination between anterior top of carina and transversal procoxal rest located at anterior margin of mesoventrite.

Metaventrite. Finely sparsely punctate with fine short recumbent hair; lateral parts micro-reticulate, hairless. Central plate of metaventrite flat with several small punctures with lightly coloured adjacent hairs. Lateral parts micro-sculptured, lack punctures and hairs.

Membranous wings developed.

Genitalia. Aedeagus flat with relatively wide, long, on the top rounded terminal process. Operculum divided into two symmetric very large half-moon shaped longitudinal parts visible partly on antero-lateral sides of median lobe. The endophallus is more-segmented; the most significant sclerites are two longitudinal club-shaped sclerites crossed by large transversally oriented lunate-shaped sclerites (as in Fig. 2). Parameres widened apically, bearing two very short and fine setae. Spermatheca not figured because based on previous experience its diagnostic importance seems to be useless due to the uniformity of spermatheca in the *Dermatohomoeus* species occurring in Madagascar.

**Variation.** The colour of dorsum varies from reddish to chestnut. Anterior tarsi slender in female.

**Distribution.** Madagascar, Boeny region.

**Differential diagnosis.** The new species is most similar to *D. madagascarensis* Švec, 2004 and also *D. bulirschi* Švec, 2004, especially in their size, colour of dorsum and pronotal and elytral surface structures. Pronotum in *D. multipunctatus* sp. nov. as well as

**Tab. 1.** The overview of species of *Dermatohomoeus* (*D.*) and *Cyrtusiola* (*C.*) discovered in the samples. Symbols (number of species in the sample): '+' = <10, '++' = >10, '-' = absence.

SAMPLE	<i>D. bulirschi</i>	<i>D. ferrugineus</i>	<i>D. mada-gascarensis</i>	<i>D. multi-punctatus</i>	<i>C. truncata</i>	<i>Cyrtusiola</i> spp. (undescribed)
AKF/02/2011	-	-	+	+	-	-
AKF/03/2011	-	-	+	-	-	-
AKF/04/2011	-	-	++	+	-	-
AKF/05/2011	-	-	-	-	-	+
AKF/06/2011	-	-	+	-	-	-
AKF/07/2011	-	-	++	-	-	-
AKF/13/2011	-	-	++	-	-	-
AKF/16/2011	-	-	+	+	-	+
AKF/17/2011	-	-	+	-	-	-
AKF/2015/18	-	-	-	+	-	-
AKF/2015/19	-	-	++	+	-	-
AKF/2015/20	-	-	++	+	-	-
AKF/2015/21	-	-	+	++	-	-
AKF/2015/22	-	-	++	+	+	-
AKF/2015/24	+	++	++	+	-	-



in *D. madagascarensis* and *D. bulirschi* without any transverse strigosity. Elytra in all the mentioned species bear double rows of punctures with smaller and less expressed punctures. The new species differs from the compared species by its distinctly punctate pronotum especially on basal half, while the pronotum is almost smooth in *D. madagascarensis* and very sparsely punctate in *D. bulirschi*. The new species differs from all Madagascan known species also by the shape of the internal sac, which has other two distinguished longitudinal club-shaped sclerites crossed by large transversally oriented lunate-shaped sclerites while the more distinctive sclerites in *D. bulirshi* are paired, U-shaped and the same in *D. madagascarensis* is widely U-shaped with stuck cluster-shaped structure.

**Etymology.** The name of the new species refers to the distinctly punctate pronotum (derived from Latin “*multi*” = many and Latin “*punctorum*” = punctures).

#### Distribution

A total of 44 samples were taken during the years 2011 and 2015 from the Ankarafantsika National Park. Representatives of the subfamily Leiodinae were discovered in the samples. The discovered species were as follows: *Dermatohomoeus bulirschi* Švec, 2004, *D. ferrugineus* Švec, 2004, *D. madagascarensis* Švec, 2004, *D. multipunctatus* sp. nov. and *Cyrtusiola truncata* Švec, 1996. Beside them, two new species of *Cyrtusiola* have been found.

#### Conclusions

A total of 20 species of the subfamily Leiodinae were known from Madagascar until recently. Seven species of the subfamily Leiodinae including *Dermatohomoeus multipunctatus* sp. nov. and the two species of the genus *Cyrtusiola* not described here have been discovered in the Ankarafantsika National Park during the research.

As no Leiodinae have been known from Ankarafantsika National Park before, all the findings presented above represent new records for this national park. While only few specimens of *Dermatohomoeus bulirschi*, *D. ferrugineus* and *Cyrtusiola truncata* were found in one of the samples, *D. madagascarensis* Švec, 2004 seem to be a very common species as many specimens were detected in all but one sample. *D. multipunctatus* sp. nov.; were found in majority of the samples. Two new species of *Cyrtusiola* were found each in one sample only and therefore are not described in this paper.

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