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Faune de Madagascar

93

Dariusz Iwan

Insecta Coleoptera Tenebrionidae

Pedinini Platynotina

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In memoriam

Nous avons le triste devoir d'annoncer le décès de notre excellente collègue, Madame le professeur Olga Ramilijaona Ravoahangimalala, entomologiste médicale, professeur de biologie animale à la faculté des sciences d'Antananarivo.

Nous nous étions rencontrés à Masoala en 2001, dans le cadre de l'expédition du Radeau des Cimes, tissant des liens de collaboration et de sympathie. Notre travail commun n'avait pas cessé, et notre regrettée collègue était une correspondante efficace de la Faune de Madagascar.

Nous prions sa famille, ses collègues et la faculté des sciences de Tananarive d'accepter l'expression de nos condoléances et de notre émotion.

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Remerciements / Acknowledgements

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Résumés / Summaries

Résumé

Ce volume est consacré à l'étude taxonomique illustrée des Coleoptera Platynotina de Madagascar. Les Platynotina malgaches se divisent en trois groupes principaux : (I) les genres *Zidalus* Mulsant et Rey (trois espèces) et *Anchophthalmops* Koch (une espèce), qui occupent à la fois Madagascar et l'Afrique ; (II) le genre endémique *Lechius* Iwan (trois espèces) ; (III) le groupe de genres malgaches « Mélanocratoïde » (huit genres, 30 espèces). Les Platynotina malgaches comptent 37 espèces réparties dans 11 genres. La présence à Madagascar d'*Anchophthalmops menouxi* (Mulsant et Rey, 1853) doit être confirmée. On donne les clés d'identification bilingues français-anglais des genres et des espèces.

Summary

The taxonomical study of the Coleoptera Platynotina of Madagascar is presented and illustrated. The Madagascan Platynotina include three main groups: (I) the genera *Zidalus* Mulsant et Rey (three species) and *Anchophthalmops* Koch (one species) occurring in both Madagascar and the African continent; (II) the endemic genus *Lechius* Iwan (three species), and (III) the Madagascan "melanocratoid" generic group (eight genera, 30 species). The Madagascan Platynotina comprise 37 species in 11 genera. The occurrence in Madagascar of one species, *Anchophthalmops menouxi* (Mulsant et Rey, 1853) needs confirmation. Bilingual French-English identification keys to genera and species are presented.

Famintinana

Ity laharana ity dia natokana hoan'ny fanavahana ara-tsokajy arahin-tsary ireo Coleoptera Platynotina eto Madagasikara. Ny Platynotina Malagasy dia mitsinjara ho vondrona telo lehibe: (I) taranaka Zidalus Mulsant sy Rey (karazana 3) ary ny Anchophthalmops Koch (karazana 1), izay hita eto Madagsikara sy any Afrika; (II) ny taranaka Lechius Iwan (karazana 3) tsy fahita afa-tsy eto Madagasikara; (III) ny vondron-karazana malagasy "Melanocratoïde" (taranaka 8, karazana 30). Ny Platynotina dia tafiditra ao anatin'ny karazana 37 ao amin'ny taranaka 11. Mila alalinina ny fisian'ny Anchophthalmops menouxi (Mulsant et Rey, 1853) eto Madagasikara. Koa indro atolotra ireo teny fototra famantarana ny karazana sy ny taranaka amin'ny teny frantsay sy anglisy.

Streszczenie

Zaprezentowano wyniki badań taksonomicznych malgaskich chrząszczy podplemienia Platynotina. Obecnie, powyższy takson składa się z 3 głównych grup: (I) rodzaje *Zidalus* Mulsant et Rey (3 gatunki) i *Anchophthalmops* Koch (1 gatunek) występujące na Madagaskarze i kontynencie afrykańskim; (II) endemiczny rodzaj *Lechius* Iwan (3 gatunki) i

(III) malgaska grupa rodzajów “melanocratoid” (8 rodzajów, 30 gatunków). Ogółem Platynotina Madagaskaru skupiają 37 gatunków skupionych w 11 rodzajach. Dane o występowaniu na Madagaskarze gatunku *Anchophthalmops menouxi* (Mulsant et Rey, 1853) wymagają potwierdzenia. Zaprezentowano dwujęzyczny, angielsko-francuski, klucz do oznaczania rodzajów i gatunków.

Mots-clés

Coleoptera, Tenebrionoidea, Tenebrionidae, Pedinini, systématique, répartition, Madagascar.

Keywords

Coleoptera, Tenebrionoidea, Tenebrionidae, Pedinini, systematics, distribution, Madagascar.

Teny fototra

Coleoptera, Tenebrionoidea, Tenebrionidae, Pedinini, fanavahana ara-tsokajy, fitsinjarana ara-jeografia, Madagasikara.

Słowa kluczowe

Coleoptera, Tenebrionoidea, Tenebrionidae, Pedinini, systematyka, rozmieszczenie, Madagaskar.

Introduction

The tribe Platynotini was formally established by KOCH in 1953. Platynotini includes the genera earlier classified by MULSANT and REY (1853: 37) in the groups "Platynotaires", "Opatrinaires" and "Trigonopaires", or, according to Lacordaire's (1859: 233, 255) system, to the groups "Platinotides" and "Gonopides". In two subsequent papers, KOCH (1955, 1956) presented a division of Platynotini into subtribes (Anomalipina, Gonopina, Platynotina) and generic groups, as well as a revision of African genera. A paper on Madagascan Platynotini was to appear separately, as announced by KOCH (1956: 62) in a footnote: "The present paper does not deal with the Madagascan genera *Melanocratus*, *Styphacus* and *Madobalus*, a revision of which is in the press with the 'Mémoires Institut de recherche scientifique de Madagascar'"; the paper, however, has never appeared. Further revisions of African genera were presented by ENDRÖDY-YOUNGA (1988, 2000) and IWAN (1997b, 1998a-d, 1999a-c, 2000b, c, 2001a, b), of Oriental ones – by KASZAB (1975) and IWAN (1997a), and those from New World – by IWAN (1995a). In 2002, IWAN proposed a hypothesis on the phylogeny of Platynotini, based on cladistic analysis including all the known genera of the tribe. Three lineages were distinguished (cladograms 1-2): the phylogenetically closely related clades "trigonopoids" (South Africa) and "melanocratoids" (Madagascar), and the polyphyletic "platynotoids" (tropical Africa, Madagascar, Oriental Region and New World).

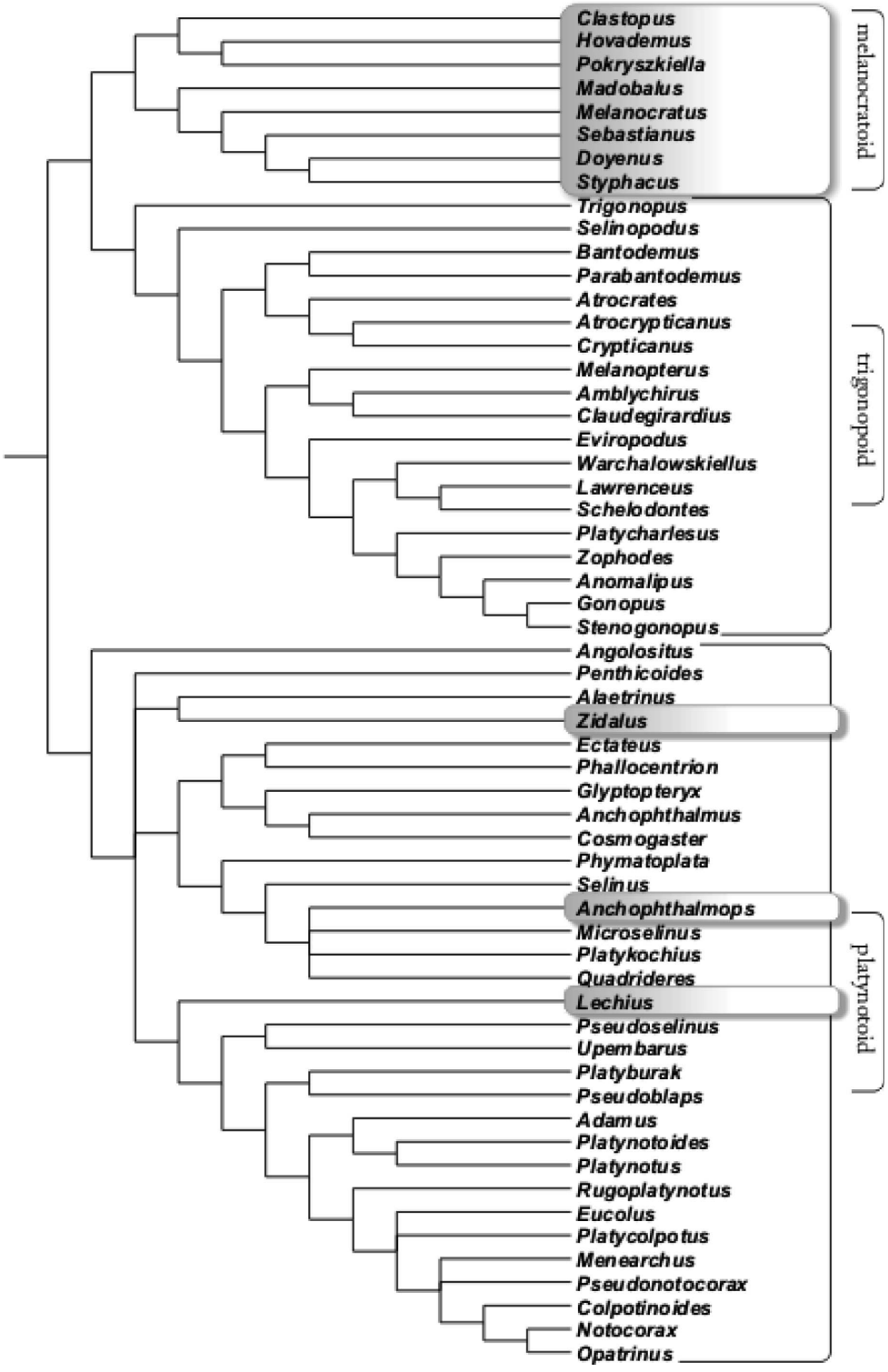
According to IWAN's division of subfamily Opatrinae (2004b), Platynotini (*sensu* KOCH, 1956) was demoted to the subtribe Platynotina of the tribe Pedinini.

The catalogue of Platynotina (IWAN, 2002b) includes 58 genera and 460 species and subspecies distributed in tropical Africa and Madagascar, Oriental Region and New World (map 1).

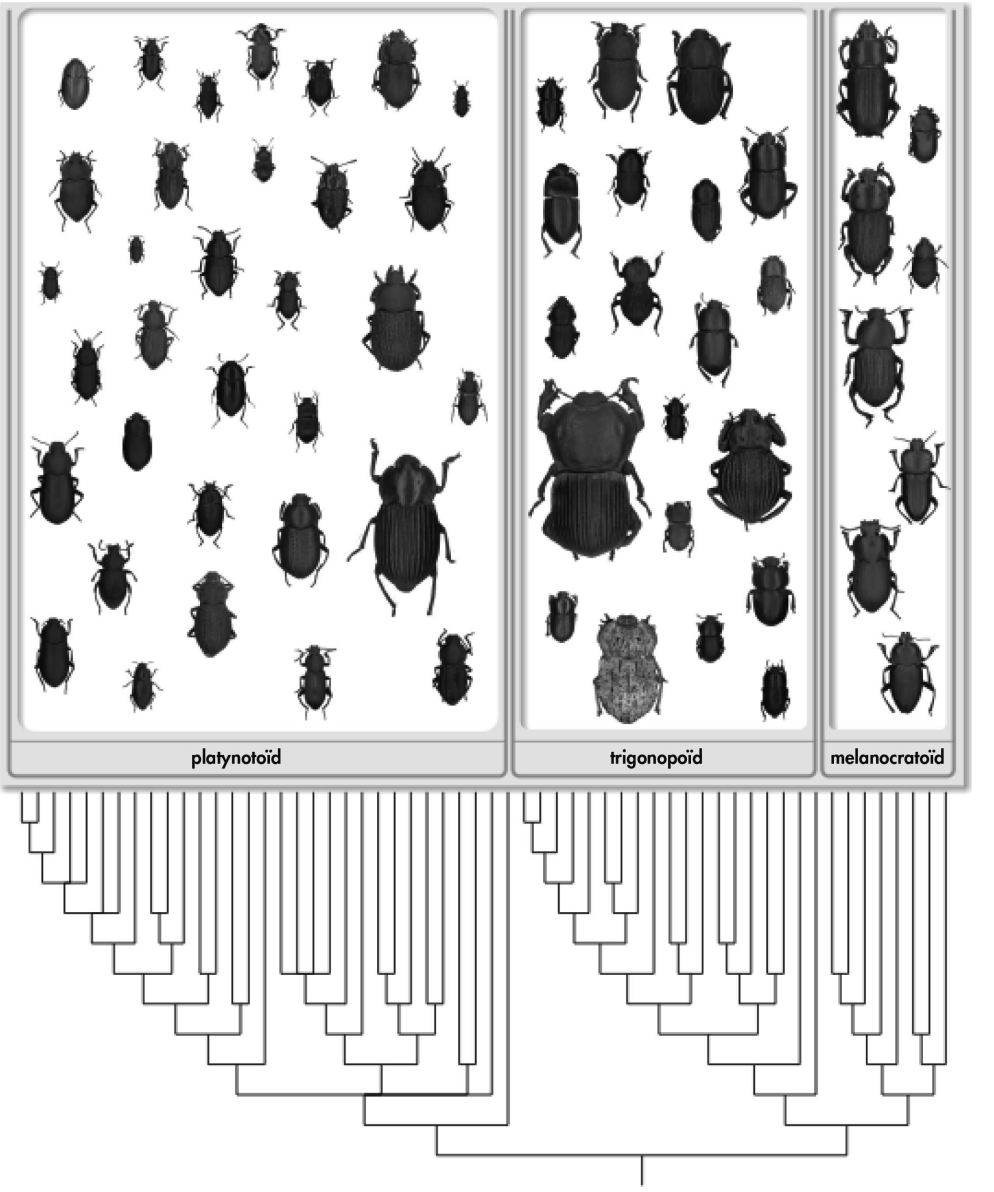
HISTORY OF STUDIES ON MADAGASCAN PLATYNOTINA

Klug (1833). Description of *Opatrum attenuatum* Klug, 1833, the first species from Madagascar representing the Platynotini.

Mulsant and Rey (1853). This monumental publication deals with the higher-level systematics of the group "Parvilabres", which is treated as a family, subdivided into tribes and branches, with numerous descriptions of new taxa, re-descriptions and keys to tribes, branches, genera and species. The family "Parvilabres" *sensu* MULSANT and REY corresponds



Cladogram 1. Phylogeny of the subtribe Platynotina (after IWAN, 2002a). Taxa occurring in Madagascar in shaded boxes.



Cladogram 2. Three main development lineages of the subtribe Platynotina.

roughly to the subfamily Opatrinae *sensu* KOCH (1956) and MEDVEDEV (1968). Two new species of the genus *Opatrinus* Dejean were described from Madagascar (*madagascariensis* and *insularis*), as well as *Selinus menouxi*.

Gemminger and Harold (1870). Two species, *Hopatrinus insularis* Mulsant et Rey, 1853 and *H. madagascariensis* Mulsant et Rey, 1853 are recorded from Madagascar; the spelling of *Opatrinus* is changed to *Hopatrinus* and the author – from Dejean to Latreille; *Selinus menouxi* Mulsant et Rey, 1853 with no reference to locality instead of distribution bears a note "incert. sedis".

Fairmaire (1893). Data on the occurrence of *Opatrinus madagascariensis* Mulsant et Rey (Mayotte, Madagascar) and *O. insularis* Mulsant et Rey (Grande Comore, Mayotte, Madagascar).

Fairmaire (1895). The first of a series of 5 papers in which the author describes genera and species (mostly in French or Latin) included at present in Madagascan Platynotini; there are no figures or identification keys, the descriptions are concise (e.g. compared to those in the papers of Mulsant and Rey), hence the necessity to verify the names (given to species by Fairmaire), based on type materials. The paper contains the description of the monotypic genus *Melanocratus* with *M. validipes* (Madagascan endemic).

Champion (1895). A species list which is a supplement to the 1870 catalogue by Gemminger and Harold; the author lists FAIRMAIRE's (1895) *Melanocratus validipes*.

Fairmaire (1898). The paper contains a description of the second (also monotypic) Madagascan genus, *Clastopus* with *C. eurynotoides*.

Fairmaire (1899). A description of the second species in the genus *Melanocratus* – *M. major*.

Fairmaire (1901). Another alpha-taxonomic paper with descriptions of Madagascan endemics: the monotypic genus *Madobalus* (with *M. rotundicollis*) and the genus *Styphacus* (with *S. Decorsii* oraz *S. humerosus*).

Fairmaire (1902). Fairmaire's last paper with descriptions of Platynotini from Madagascar: 4 new species of the genus *Melanocratus* Fairmaire (*M. amplicollis, M. convexicollis, M. neuter* and *M. ovoideus*) and 2 of *Selinus* Mulsant et Rey (*S. abacoides* and *S. punctipennis*); all the species are endemic to Madagascar.

Gebien (1910). The first edition of the World's catalogue of Tenebrionidae. For Platynotini, the author listed from Madagascar 14 species representing 6 genera; in the catalogue they are placed in the subfamilies Pedininae and Opatrinae.

Chatanay (1913). The paper deals with Tenebrionidae of the Comoro Islands; two species are listed (at the time classified in the tribe Pedinini): *Opatrinus* (*Zodinus*) *insularis* Mulsant et Rey and *Opatrinus* (*Zodinus*) *madagascariensis* Mulsant et Rey.

Gebien (1922). The author lists synonyms of *Opatrinus insularis* Mulsant et Rey, 1853 (= *Opatrinus ater* Müller, 1887) and *Opatrinus attenuatus* (Klug, 1833) (= *Opatrinus madagscariensis* Mulsant et Rey, 1853).

Gebien (1938). The largest and until now the most popular global catalogue of Tenebrionidae (second, improved edition), including 15 species (six genera). Changes compared to Gebien's 1910 catalogue pertain mainly to the classification – all the taxa are included in the tribe Pedinini. In their original description, Mulsant and Rey gave "Africa" with a question mark, but other specimens from the type series bear labels with Madagascar as the place of origin.

Gridelli (1947). A revision of African species of the genus *Opatrinus* Dejean (at present *Zidalus* Mulsant et Rey) containing descriptions, re-descriptions and an identification key to species and subspecies. In this paper, Gridelli provides pairs of subspecies (*O. setuliger setuliger* Mueller and *O. setuliger camerunensis* Gridelli; *O. attenuatus attenuatus* and *O. attenuatus bottegoi; O. latipes latipes* Sahlberg and *O. latipes tanaensis* Gridelli; *O. insularis insularis* Mulsant et Rey and *O. insularis somalicus* Gridelli; *O. niloticus niloticus* Mulsant et Rey and *O. niloticus zolotarevskyi* Español), where one member of the pair would

represent populations from the western part of Africa, the other – from its eastern part and Madagascar, or one member would be found on the continent, and the other on Madagascar.

Koch (1956). A revision of African Platynotini, including 3 species which are present also in Madagascar: *Opatrinus* (*Zidalus*) *insularis* Mulsant et Rey, *Opatrinus* (*Zodinus*) *attenuatus* Klug and *Selinus menouxi* Mulsant et Rey; Koch announces a separate revision of Malagasy endemics of the tribe.

Ardoin (1974). Based on materials collected in the massif Andringitra by the members of the CNRS expedition (October 1970-January 1971, within the project no 225, coordinated by R. Paulian), the author describes an endemic Madagascan genus *Hovademus* with two species: *H. andringitrensis* and *H. pauliani*; the description of the second species (placed in a footnote) is based on materials collected by R. Paulian in 1954 in Andohahelo (= Andohahela), later confirmed by a large series of specimens from the same locality in 1972 (ARDOIN, 1976).

Iwan (1995b). A revision of the genus *Zidalus* Mulsant et Rey, earlier interpreted as a subgenus within *Opatrinus* Dejean; the taxon includes, among others, 3 species found in both Africa and Madagascar: *Z. insularis* (Mulsant et Rey, 1853), *Z. servus* (Mulsant et Rey 1853) (proposed new synonym *Opatrinus setuliger* Mueller, 1887) and *Z. attenuatus* (Klug, 1833).

Iwan (1995c). The paper contains a description of the new endemic genus *Lechius* Iwan, including 2 species: *Selinus abacoides* Fairmaire, 1902 and the newly described *Lechius steineri* Iwan, 1995.

Iwan (1996). The author distinguishes a group of "melanocratoid Platynotina" comprising 8 genera endemic to Madagascar. The paper contains descriptions of new taxa (4 genera: *Hovademulus, Doyenus*, *Pokryszkiella* and *Sebastianus* and 14 species: *Doyenus dentatus*, *D. uncus*, *Hovademulus ordinarius*, *H. tenuiculus*, *Melanocratus fairmairei*, *M. ferreri*, *Pokryszkiella cornuta*, *Sebastianus magnus*, *S. projectus*, *S. simplex*, *Styphacus bartolozzi*, *S. kochi*, *S. nimius*, *S. phreneticus*), re-descriptions (based on type material) of earlier described species, illustrations and an identification key to genera and species. Based on cladistic analysis, generic hypotheses are verified and a hypothesis on the phylogeny of the group is proposed. Based on dissection of females (1st instar larvae were found in bursa copulatrix of 6 species) ovoviviparity is established in Madagascan Platynotini.

Ferrer (1998). The paper contains descriptions of new species and faunistic data on Tenebrionidae of Madagascar; it includes 8 species of Platynotini.

Iwan (1998e). A description of a new species, *Hovademulus madagascariensis*, with a key to species of the genus *Hovademulus* Iwan, 1996.

Iwan (1999d). Descriptions of two new species, *Sebastianus endrodyi* and *S. madagascariensis*, with an identification key to all taxa included in *Sebastianus* Iwan, 1996 and analysis of character distribution within the geographical range of the genus.

Iwan (2000a). The paper deals with viviparity in beetles; ovoviviparity in Tenebrionidae is discussed, based on the 1st instar larvae described for the first time and originating from the bursa copulatrix of females of Madagascan Platynotini.

Iwan (2001c). A revision of the genera *Clastopus* Fairmaire and *Lechius* Iwan, with detailed figures and keys to species. Synonymising *Clastopus eurynotoides* Fairmaire, 1898 [type species of the monotypic genus *Clastopus* Fairmaire] (= *Selinus punctipennis* Fairmaire, 1902) [type species of the genus *Hovademulus* Iwan] results in synonymisation of the generic names *Clastopus* Fairmaire, 1898 (= *Hovademulus* Iwan, 1995).

Ferrer (2002). A description of a new species – *Styphacus iwani*.

Iwan (2002a). A revision of 58 genera constituting the tribe Platynotini. Based on cladistic analysis, the earlier hypothesis (IWAN, 1996) on the monophyly of the group of Malagasy endemic "melanocratoids" (sister group to S. African "trigonopoids") is confirmed, while the remaining taxa from Madagascar are found to belong to a polyphyletic group "platynotoids" with African mainland affinities.

Iwan (2002b). A catalogue of the World's Platynotini – including 11 genera with 33 species from Madagascar (14 nominal generic and 46 specific names).

Iwan (2004a). A revision of the genus *Styphacus* Fairmaire containing descriptions of 3 new species (*S. drugmandi*, *S. girardi* and *S. pauliani* Iwan), detailed diagnostic figures, distribution maps and an identification key to all known species.

Iwan (2005). A description of a new species – *Clastopus aberlenci* and its first-stage larva.

MATERIALS AND METHODS

Material examined

Since the publication of my first paper on Platynotina of Madagascar I have examined over 1,000 specimens of beetles, from 22 museum and private collections (see Abbreviations). A great part of the earlier examined material had to be re-examined in order to unify the descriptions, make new drawings, correct and improve identification keys, verify distribution data and make them more precise.

Internal structure of genitalia *and larvae*

The abdomen was treated with 10% KOH without heating during ca. 24 hours. Following dissection of *genitalia* or other internal structures they were rinsed with distilled water and stored in glycerin, in plastic vials of 6 mm diameter and 12 mm length (purchased from BioQuip), pinned under the specimen and labels.

In the case of female *genitalia*, some structures (bursa copulatrix and spermatheca) were stained with chlorazol black and figures were made immersed which allows membraneous parts (especially bursa copulatrix) to preserve their natural shape.

First instar larvae were obtained from the bursa copulatrix after removal and maceration in 10% KOH, and stained and stored as for female *genitalia*.

Camera lucida drawings were made under an Olympus SZX12microscope.

Adult morphology and morphometrics

The terminology adopted for morphology and anatomy of imagines and morphometric abbreviations used in the present Faune de Madagascar follows the standards presented in the revision of the genera of Platynotina (IWAN, 2002a).