The Coleoptera of the Seychelles islands

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The Indian Ocean Biodiversity Assessment 2000-2005 reviewed the biogeography of the Seychelles islands through systematic collecting of all taxonomic groups. Biodiversity collecting for this assessment started in 2000 under a Memorandum of Understanding with the Seychelles government with taxonomic support from 87 expert taxonomists in 20 countries. These taxonomists reported the identification of a large number of previously undescribed species and the material initiated taxonomic revisions of most of the groups concerned. These revisions are being published in widely dispersed academic journals, most of which are not available in Seychelles. The only comprehensive taxonomic treatments available cover dicotyledon plants and vertebrates. The information generated by the project has been collated into a monographic series on the Seychelles fauna. The aim of these monographs is to disseminate taxonomic information in a form that can be easily utilised by future workers in the region and by conservationists and researchers in Seychelles. This high quality biodiversity information is essential for future sustainable biodiversity management.

Further details of the Indian Ocean Biodiversity Assessment can be found on the Nature Protection Trust of Seychelles web-site: http://islandbiodiversity.com.

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Family ENDOMYCHIDAE

Floyd W. Shockley

Introduction

Endomychidae (the handsome fungus beetles) is a moderately speciose family of mycophagous beetles which feed primarily on the hyphae and spores of basidiomycete and ascomycete fungi but also contains members that commonly feed on zygomycete molds. Endomychids are primarily a tropical group found throughout the temperate, subtropical and tropical regions of the world with highest diversity in the Neotropics, Equatorial Africa, and Southeast Asia.

To date, very few phylogenetic studies have been completed to clarify the higher-level relationships within the family and the relationships of the family to other members of the Cerylonid Series of Cucujoidea (Robertson *et al.* 2008; Ślipiński & Pakaluk 1991; Tomaszewska 2000a, 2000b, 2005). At present, Endomychidae contains 12 subfamilies and approximately 1782 species in 130 genera (Shockley *et al.* in press).

Like many other mycophagous cucujoid families, the family Endomychidae is poorly represented in the Seychelles Islands. Kolbe (1910) recorded 2 species in his treatment of the Seychellen beetle fauna, and Arrow (1922) added 4 more species. No new species have been described from the Seychelles since Arrow's treatment. However, since many similar species are often difficult to diagnose or are found only in cryptic or specialized habitats, it seems likely that there may be additional, unidentified species still housed in museums around the world. The following is a key to the six known species of Endomychidae found in the Seychelles Islands.

Key to the Endomychidae of the Seychelles Islands

1.	Antennae 5-segmented and stout	*Trochoideus desjardinsi*
	Antennae 9- or 10-segmented	2
2.	Antennae 9-segmented; elytra with 2 yellow maculae	*Anagaricophilus pulchellus*
	Antennae 10-segmented; elytra uniformly dark	3
3.	Tarsi 4-segmented; 2-segmented antennal club	*Eidoreus minutus*
	Tarsi 3-segmented; 3-segmented antennal club	4
4.	Tarsi linear; tarsal claws simple	*Geoendomychus oculatus*
	Tarsomere I w/ single long narrow lobe; claws appendiculate	5
5.	Antennomeres III-VII uniform in size and small	*Cyrtomychus minor*
	Antennomere VII expanded apically compared to III-VI	*Cyrtomychus coccinelloides*

Species Accounts

The following are individual species accounts of the species of Endomychidae known to occur in Seychelles. These treatments are not intended to be full redescriptions of these species, but instead are provided to diagnose them. Included with each description is a brief summary of their distributions (world and within Seychelles) and any available biological/ecological information.

Anamorphinae

Anagaricophilus pulchellus Arrow, 1922 (Fig. 1a)

Anagaricophilus pulchellus Arrow 1922: 82

Description: Length: 1.5mm. Form elongate-oval. Dorsal vestiture fine and short. Antennae 9-segmented with a loose, 3-segmented club. Pronotum with long, lateral sulci bounded externally by a distinct carina. Prosternum narrow but extending between the procoxae and

rounded at tip. Mesosternum also narrow between mesocoxae. Each elytron with two yellow maculae, the anterior macula extends posterior from the middle of the basal margin and then bends towards the medial margin near the midpoint of the elytra to create a dark area near the mediobasal margin. The posterior macula is large, round and located just anterior of the elytral apex. Tarsi are 4-segmented with simple tarsal claws apically.
Distribution: Endemic to Seychelles. Collected on Silhouette (Mare aux Cochons) and Mahe (Cascade; Mount Sebert). Collected in 1908-9.
Biology/Ecology: Rarely collected. Their habitat appears to be limited to high elevation forests between 300-750m. There is no biological information known about this species. However, Pakaluk (1986) found the gut of an unidentified *Anagaricophilus* larva from Madagascar to be filled with spores of Fungi Imperfecti and also pointed out that species of similar genera are often found in forest debris (a common condition associated with mycophagy on microfungi). It seems likely that this species has similar habits.

Cyrtomychus coccinelloides Kolbe, 1910 (Fig. 1b)

Cyrtomychus coccinelloides Kolbe 1910: 35. Arrow 1922: 78

Description: Length: 1.8mm. Form elongate-oval. Dorsal vestiture moderately long. Antennae 10-segmented with a loose 3-segmented club; antennomeres III-VI similar in size and small, VII expanded apically (making it appear to be part of the club). Pronotum narrowly margined with short lateral sulci; laterally rounded and somewhat constricted basally. Prosternum narrow, parallel and acutely rounded at tip. Mesosternum strongly narrowed between the middle coxae. Elytra of male with apices produced and thickened, uniformly dark brown in color. Tarsi are 3-segmented with tarsomere I produced beneath to form a long, narrow slender lobe; tarsomere II much reduced; tarsomere III long and slender; tarsal claws bearing a sharp basal tooth ventrally.
Distribution: Endemic to Seychelles. Collected on Silhouette (Mont Pot-a-eau; Mare aux Cochons), Mahe (Morne Blanc; Morne Pilot; between Trois Freres and Morne Seychellois; Mare aux Cochons; Cascade Estate), and Praslin (Cotes d'Or Estate). Collected in 1894 and 1908-9.
Biology/Ecology: Found exclusively in old growth high forests at elevations of 300-750m. Specimens have been collected from August to March. This species, along with the following, are rarely collected but locally abundant once a population has been found. Arrow (1922) reported specimens collected in Coco-de-Mer (*Lodoicea*) palm forests, which are endemic only to the islands of Praslin and Curieuse of Seychelles. However, specimens have been recovered from other islands suggesting that this is not an obligatory association.

Cyrtomychus minor Arrow, 1922 (Fig. 1c)

Cyrtomychus minor Arrow 1922: 78

Description: Length: 1.5 mm. Form elongate oval. Dorsal vestiture is prominent but shorter than in the preceding species. Antennae 10-segmented with a loose 3-segmented club; antennomeres III-VII all small and similar in size. Pronotum more evenly rounded and broader at the base, its lateral sulci short but conspicuous. Prosternum narrow, parallel and acutely rounded at tip. Mesosternum strongly narrowed between the middle coxae. Tarsi identical to the preceding species.
Distribution: Endemic to Seychelles. Collected on Silhouette (Mare aux Cochons), Mahe (Morne Blanc; Morne Pilot; Cascade Estate; Mare aux Cochons; Mount Sebert), and Praslin (Cotes d'Or Estate). Collected in 1908-9.
Biology/Ecology: Sympatric with the previous species and like the preceding species is locally abundant and endemic to old growth high forests at elevations of 300-750m. According to Arrow (1922), this species can be found in forests containing Capucin fruit trees (*Northia seychellana*), *Pheonicophorium borsigianum* palms, or Coco-de-Mer palms (*Lodoicea*).

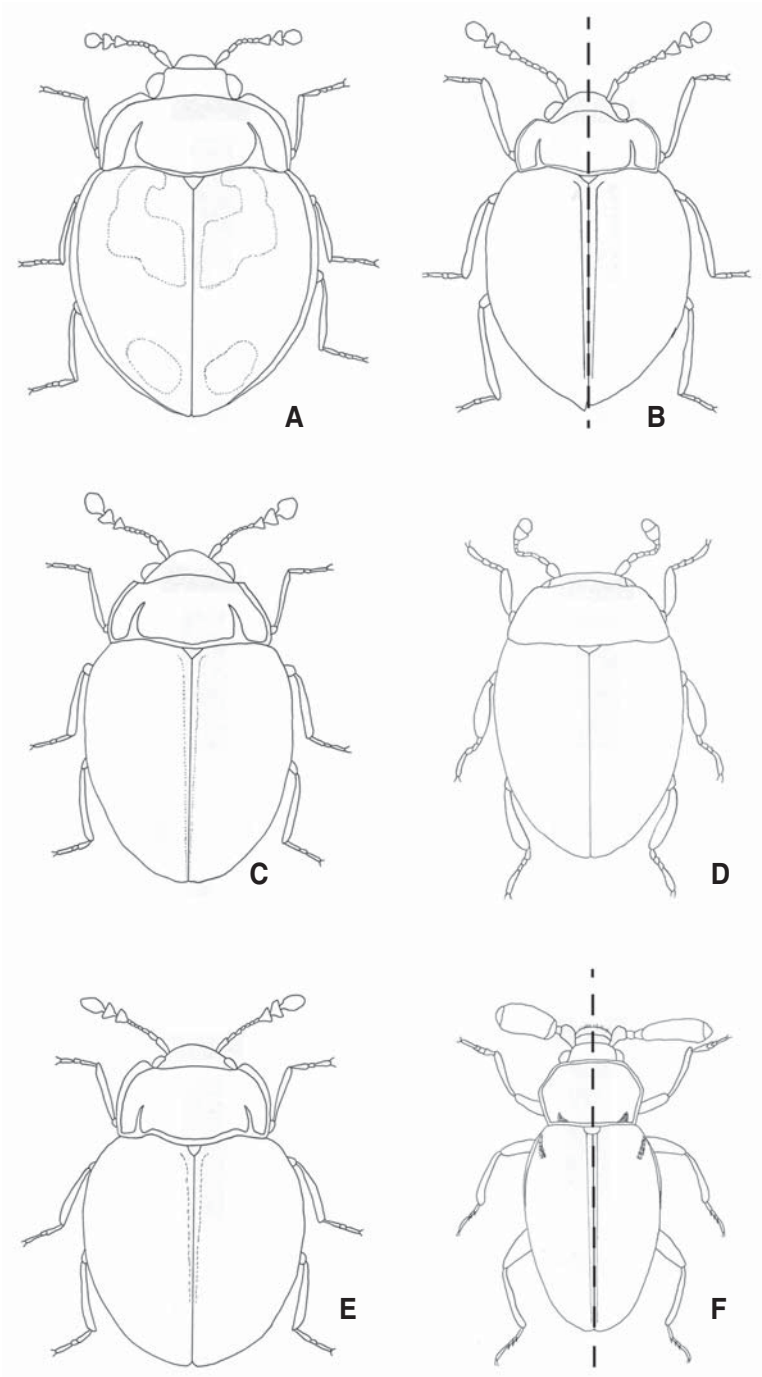

Fig. 1. Line illustrations of the Seychellen Endomychidae species (vestiture and punctation not shown). A. *Anagaricophilus pulchellus*. B. *Cyrtomychus coccinelloides* (left side = male; right side = female). C. *Cyrtomychus minor*. D. *Eidoreus minutus*. E. *Geoendomychus oculatus*. F. *Trochoideus desjardinsi* (left side = male; right side = female). A-C and E redrawn from Arrow (1992); D redrawn from Sasaji (1986); E redrawn from Arrow (1925).

Geoendomychus oculatus Arrow, 1922 (Fig. 1e)

Geoendomychus oculatus Arrow 1922: 80

Description: Length: 1.0mm. Form elongate-oval. Dorsal vestiture erect and grayish in color. Antennae are 10-segmented with a 3-segmented club. Pronotum is transverse, narrowly margined, and with anterior-medially curved, deeply impressed lateral sulci reaching the middle of the pronotal disc; basal margin lobed medially. Prosternum is narrow between the procoxae but widened behind the procoxae, flat, and margined along each side, apex truncate. Tarsi are 3-segmented and linear with simple tarsal claws.

Distribution: Endemic to Seychelles and has only been collected on the island of Mahe (Cascade Estate) in 1909.

Biology/Ecology: Very rarely collected. Known only from forests at approximately 300m elevation. No biological information is known about this species.

Eupsilobiinae

Eidoreus minutus Sharp, 1885 (Fig. 1d)

Pseudalexia sechellarum Kolbe 1910: 34

Description: Length: 1.0mm. Oval and moderately convex. Dorsal surface smooth, extremely finely and sparsely pubescent. Antennae 10-segmented with a large 2-segmented compact club. Pronotum lacking lateral sulci or basal foveae entirely. Prosternum broadly separating procoxae and expanding laterally beyond procoxae. Mesosternum is highly modified and internalized, only visible as two small lateral plates. Anterior metasternal process large and rounded and meeting the posterior margin of the prosternum. Tarsi are 4-segmented with simple claws.

Distribution: Widely distributed across Atlantic and Pacific islands. Known from Cuba, Ecuador (Galapagos Islands), Fiji, French Polynesia (Tubuai Islands), Guadeloupe, Mascarene Islands, Seychelles, the Solomon Islands (Guadalcanal), Sri Lanka, the United States (Hawaiian Islands), and the Virgin Islands (Pakaluk & Ślipiński 1990). Within Seychelles, *E. minutus* was collected in 1908-9 on Mahe (Cascade Estate), Long Island and Praslin (Cotes d'Or Estate), and on Mahé (Le Niol) and Cousine in 1991 and 1998 respectively.

Biology/Ecology: Most likely a myrmecophilous inquiline. Kolbe (1910) recorded specimens of this species from an ant nest found under a stone. Arrow (1922) further reported collecting it from the nest of the ant *Pheidole punctulata* found in a decayed log.

Pleganophorinae

Trochoideus desjardinsi Guérin-Méneville, 1838 (Fig. 1f)

Trochoideus desjardinsi Guérin-Méneville 1838: 22. Arrow 1922: 82
Trochoideus amphora Cantor 1844: 282
Pseudopaussus monstrosus Schulze 1916: 292
Trochoideus termitophilus Roepke 1919: 34
Trochoideus rouyeri Pic 1922: 8
Trochoideus particularis Pic 1922: 8

Description: Length: 3.0-4.0mm. Form elongate and parallel-sided. Dorsal vestiture consisting of short dense setae. Antennae 5-segmented (appearing as 4-segmented) and highly modified, the last segment greatly swollen in males and somewhat sausage-shaped in females (giving them a similar habitus to Paussine carabids) with the last 2 antennomeres appearing fused to form a massive club. Pronotum with lateral sulci represented only by very shallow depressions on the basal margin. Prosternum very narrow and not separating the procoxae. Tarsi are 4-segmented

and linear, tarsomeres I and IV relatively long, tarsomeres II-III are similar in size and much shorter than I or IV.

Distribution: Widely distributed across many of the Indian and Pacific oceanic islands. Introduced into southern Florida (Skelley & Burgess 1995). Collected in the Andaman Islands, Borneo, Fiji, India, Java, Madagascar, Malay Peninsula, the Mascarene Islands, Myanmar, New Guinea, the Philippines, Samoa, Seychelles, Sri Lanka, Thailand, and the United States (Florida). Within Seychelles, collected in Mahe (Morne Blanc; Cascade Estate), Long Island, Silhouette (La Passe), Bird, Amirantes (Poivre and D'Arros islands), Farquhar and Providence in 1905, 1908-9 and 1999-2003.

Biology/Ecology: Often found in association with rotting coconut husks of the Coconut Palm. However, it is also a facultative nest symbiont of social insects. Arrow (1925) reported specimens of this species were collected from the nests of two different termite species, *Termes gilvus* and *Eutermes ceylonicus*. Hölldobler & Wilson (1990) and Lawrence & Reichardt (1969) both list it generally as a myrmecophile, and Wasmann (1894) reported collection of it from the nest of an ant, *Plagiolepis longipes*. Specimens have been collected in ethanol/turpentine traps and at mercury vapor lights, black lights, and fluorescent light traps (Skelley & Burgess 1995). Hinton (1945) and Aitken (1975) both reported this species as a pest of stored grain products where it probably feeds on the hyphae and spores of a variety of molds.

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Family MORDELLIDAE

Wenhua Lu

A total of 13 tumbling flower beetles (Coleoptera: Mordellidae) are recorded from Seychelles. Among them three are probable new species in three different genera. These 13 species belong to two tribes and eight genera (Mordellini: *Glipa*, *Hoshihananomia*, *Mordellaria*, and *Stenomorda*. Mordellistenini: *Falsomordellistena*, *Glipostenoda*, *Mordellina*, and *Mordellistena*). *Glipa perigrinator* (Champion, 1917) is resurrected and transferred from *Mordella*; *Falsomordellistena partilis* (Champion, 1917), *Glipostenoda coleae* (Champion, 1917), *Glipostenoda degressa* (Champion, 1917), *Glipostenoda mahena* (Kolbe, 1910), *Mordellina dirempta* (Champion, 1917), and *Mordellina septemcarinata* (Champion, 1917) are transferred from *Mordellistena*; all this results in a total of seven new name combinations. Unusual sexual dimorphism of *S. disparilis* in elytral color pattern is noted for the first time. The diversity of genera and the small number of species within each genus may indicate occasional colonizations and unlikely relics of former land connection. However, close resemblance and sympatric geography of species within each of *Glipostenoda*, *Mordellina*, and *Mordellistena* suggest recent speciation. Historical records suggest that Bignoniaceae is a novel larval host plant of Mordellidae.

The tumbling flower beetles (Coleoptera: Mordellidae) are known for frequenting flowers and attempting to escape capture by springing and falling, or tumbling. Most species are only