

# The caddisflies (Insecta; Trichoptera) of Seychelles: taxonomy, zoogeography, biology and conservation.

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## Abstract:

Ten caddisfly species are known from Seychelles, the taxonomy, biogeography and biology of these are discussed and their conservation status indicated. The fauna contains widespread species and some of Gondwana origin.

## Introduction

The Trichoptera (caddisflies) is a medium-sized insect order which means that about 10,000 species have been described so far, and about 20,000 more may be expected. Their closest relatives are the butterflies and moths (Lepidoptera). The earliest caddisflies are known in fossil state from the Permian. The larvae of caddisflies are aquatic; they inhabit a wide range of freshwater biotopes such as streams, rivers, lakes, ponds, temporary pools etc. Two species are marine, and a few others are terrestrial. The general appearance of the adults is that of small to medium-sized moths; they are brownish, greyish or yellowish, and bright colours are rare. The smallest species have a length of about 1 mm, the largest ones may reach 4 cm.

The morphology and behaviour of caddis larvae differ according to family or species. In general, they are caterpillar-like, and many of them construct portable cases made of silk and covered with a variety of sand grains, plant particles, etc. Many larvae construct silken nets to catch their food, which may be fine organic particles, coarse plant material, or living animals. *Hughscottiella* is unique in that it feeds on dead animals.

Caddisflies occur everywhere in the world except Antarctica and some distant oceanic islands. At present, ten species of caddisflies are known from the Seychelles islands:

### Hydroptilidae:

*Oxyethira sechellensis* Malicky, 1993

### Hydropsychidae:

*Hydromanicus sechellensis* Ulmer, 1910

Ecnomidae:

*Ecnomus insularis* Ulmer, 1910

*Ecnomus maheensis* Malicky, 1993

Polycentropodidae:

*Cyrnodes scotti* Ulmer, 1910

Atriplectididae:

*Hughscottiella auricapilla* Ulmer, 1910

Helicopsycheidae:

*Helicopsyche palpalis* Ulmer, 1910

*Helicopsyche kantilali* Marlier & Malicky, 1979

Sericostomatidae (?):

*Seselpsyche matyoti* Malicky, 1993

There has been little research on Seychelles Trichoptera. The species described by Ulmer (1910) were collected in their adult stages by H. Scott during the Percy Sladen Expedition in 1908-09. F. Starmühlner (1976, 1979) collected some larvae in February 1974. G. Marlier (1978) collected larvae and adults in October 1976. From these two collections, *Helicopsyche kantilali* was described. I collected adults and larvae in December 1992, resulting in the discovery of three more species (Malicky 1993). Marlier described the larvae and pupae of *Hydromanicus sechellensis*, *Ecnomus insularis* and both *Helicopsyche* species, as well as the striking larva which may well belong to *Hughscottiella auricapilla* in view of its similarity to the confamilial *Atriplectides dubius* from Tasmania and southern Australia (Neboiss 1978), although no pupa has been found to date. The larvae and pupae of *Cyrnodes scotti*, *Leptodermatopteryx tenuis*, *Ecnomus maheensis*, *Oxyethira sechellensis* and *Seselpsyche matyoti* are unknown. Marlier described a small unidentified larva from Starmühlner's collections (Marlier 1978).

### Zoogeography

*Oxyethira sechellensis* may belong to a small group of species which were known from South Africa and Reunion. The widespread genera *Ecnomus* and *Helicopsyche* show no evident affinities. *Hydromanicus* is a genus of many south-east Asian species, and *H. sechellensis* is the only known species outside south-east Asia. *Hughscottiella auricapilla* belongs to the small family Atriplectididae which otherwise includes only *Atriplectides dubius* from Tasmania and Australia. It is therefore certain that it is a Gondwana relict. The affinities of *Cyrnodes*, *Leptodermatopteryx* and *Seselpsyche matyoti* are still unclear. They may also be relict species.

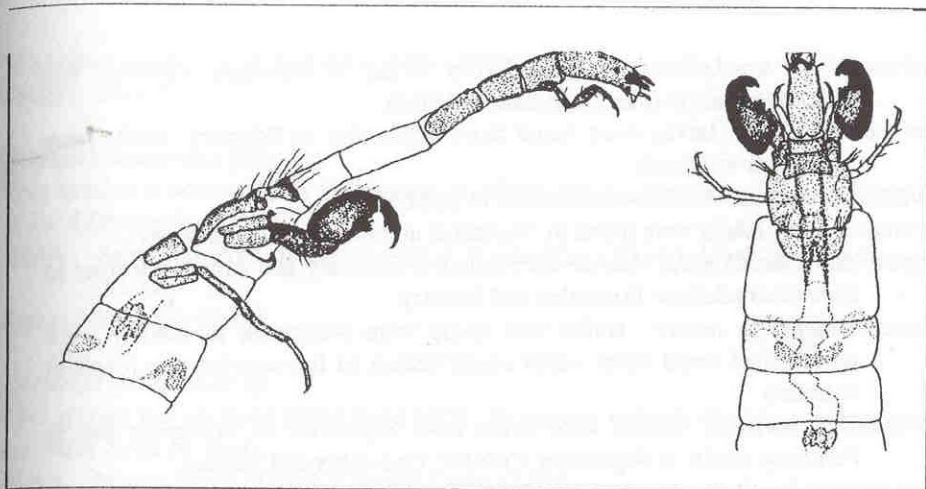


Fig. 1. *Hughscottiella auricapilla* larva showing head extended during feeding (lateral view) and retracted (dorsal view)

### Biology

*Hydromanicus*, *Ecnomus*, *Hughscottiella*, *Seselpsyche* and *Helicopsyche* live in mountain streams. *Cyrnodes* and *Leptodermatopteryx* were caught near "marshy hollows" (Scott 1910); my stay on Mahé in December 1992 was too short to find out what Scott meant by this term, so the biotope of these two species remains unknown. *Oxyethira* has been caught in a mangrove swamp, near water of low salinity.

*Helicopsyche* larvae are known as "scrapers" which eat the biofilm, i.e. the thin cover on stones in streams which consists of algae, fungi, bacteria, protozoans and the like. *Ecnomus* may live in a similar way, but the possibility that it is also carnivorous cannot be excluded. *Hydromanicus* has a net-spinning larva which probably eats any dead or live organic matter captured in the nets, as is usual in most hydropsychids.

The feeding habits of the larva of *Hughscottiella* which were previously unknown were observed and studied by me during my stay in December 1992. It eats dead animals, but in such a way that the body content is hollowed out from inside, which explains the extraordinary shape of this larva (Fig. 1.). This feeding behaviour is unique among Trichoptera larvae.

Nothing is known of the feeding habits of the larvae of *Oxyethira*, *Cyrnodes*, *Leptodermatopteryx* or *Seselpsyche*.

### Phenology

*Oxyethira sechellensis*: one adult was found in December.

*Hydromanicus seychellensis*: larvae were found in February, October and December; adults from September to March.

*Ecnomus insularis*: larvae were found from September to February; adults from November to March.

*Ecnomus maheensis*: adults were found in December.

*Cyrnodes scotti*: adults were found in November and from January to March.

*Hughscottiella auricapilla*: larvae were found in February and from September to December adults in December and January.

*Leptodermatopteryx tenuis*: adults were found from November to January. An unidentified small larva which could belong to this species was found in February.

*Helicopsyche palpalis*: larvae were found from September to November and in February; adults in September, October, December and January.

*Helicopsyche kantilali*: larvae were found from September to November and in February; adults from September to December.

*Seselopsyche matyoti*: one adult was found in December. The unidentified small larva described by Marlier (1978) was found in February.

There is no other information on the life cycles of these species. Most of them may be ayclic, but complicated annual cycles may also be present.

### Distribution and conservation

*Oxyethira sechellensis* (Map 1):

Mahé: mangroves at Anse aux Pins

Status: unknown

*Hydromanicus seychellensis* (Map 1)

Widespread on Mahé and Praslin, probably inhabiting all mountain streams. Records were made from the following places:

Mahé: R. Mamelle (20-40m above sea level), R. du Cap (40-100m), R. Rochon (360m), R. Grand St Louis (100-220m), R. Jasmine (80-100m), R. Plaisance (100m), R. Grande Anse (2-200m), R. Athanas (300-350m), R. Quenet (30-40m), R. Cascade West (10m), R. Jouanis, Cascade Estate (250-500), Mare aux Cochons (410-500m), R. Grand Bois (430m)

Praslin: Cascade in the Vallée de Mai (50-200m), R. Baie St Anne

Status: Secure

*Ecnomus insularis* (Map 1):

Widespread on Mahé and Silhouette. Records were made from:

Mahé: R. Cascade (100m), R. Grand St Louis (90-220m), Cascade Estate (270m), Anse aux Pins mangroves (0m), R. du Cap (100m), Mare aux Cochons (410m)

Silhouette: plateau of Mare aux Cochons (300m)

Status: Secure

*Ecnomus maheensis* (Map 1):

This species is also probably widespread on Mahé, but has only recently been found at the following localities:

Mahé: Anse aux Pins mangroves (0m), R. du Cap (100m), Mare aux Cochons (410m)

Status: Probably secure

*Cyrnodes scotti* (Map 2):

This species has not been found since 1909. Its present status is therefore unknown. localities given by Scott:

Mahé: Morne Blanc (270m), Cascade Estate (270m)

*Hughscottiella auricapilla* (Map 2.):

Widespread in probably all streams of Mahé,

Mahé: R. Grand Bois near Casse Dent (480m), Cascade Estate (270m), Mare aux Cochons (410-500m), R. Grand St. Louis, R. Islette, R. Cascade West, R. du Cap, R. Grande Anse, R. Danzilles

Status: Secure

*Leptodermatopteryx tenuis* (Map 1.)

The only adults recorded were found by Scott in 1908 at the following sites:

Mahé: Trois Frères (500m), Morne Blanc (270m), Mare aux Cochons (500m)

Status: Unknown.

*Helicopsyche palpalis* (Map 2.)

Records from Mahé are as follows:

Mahé: R. Rochon (360m), R. Athanas (300-350m), R. Cascade (10-500m), Cascade Estate (270m), Mare aux Cochons (300-500m), North-east Point, R. Grand St. Louis (250-550m), R. Grande Anse (50m), R. Grand Bois near Casse Dent (480m), R. du Cap (100m)

Status: Secure

*Helicopsyche kantilali* (Map 2.)

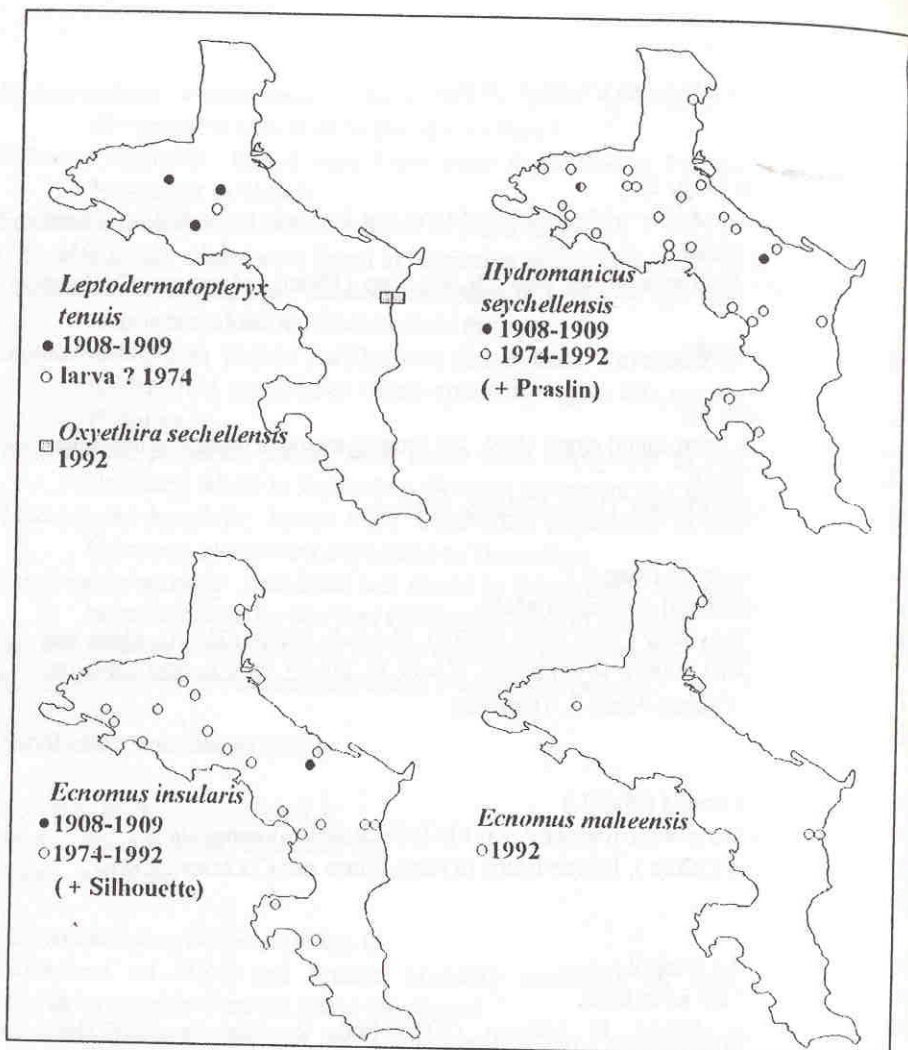
Widespread on Mahé:

Mahé: R. Grand Bois (480m), R. Athanas (300-350m), R. Quenet (30-40m), R. Grand St. Louis (220m), R. Grande Anse, R. du Cap (100m)

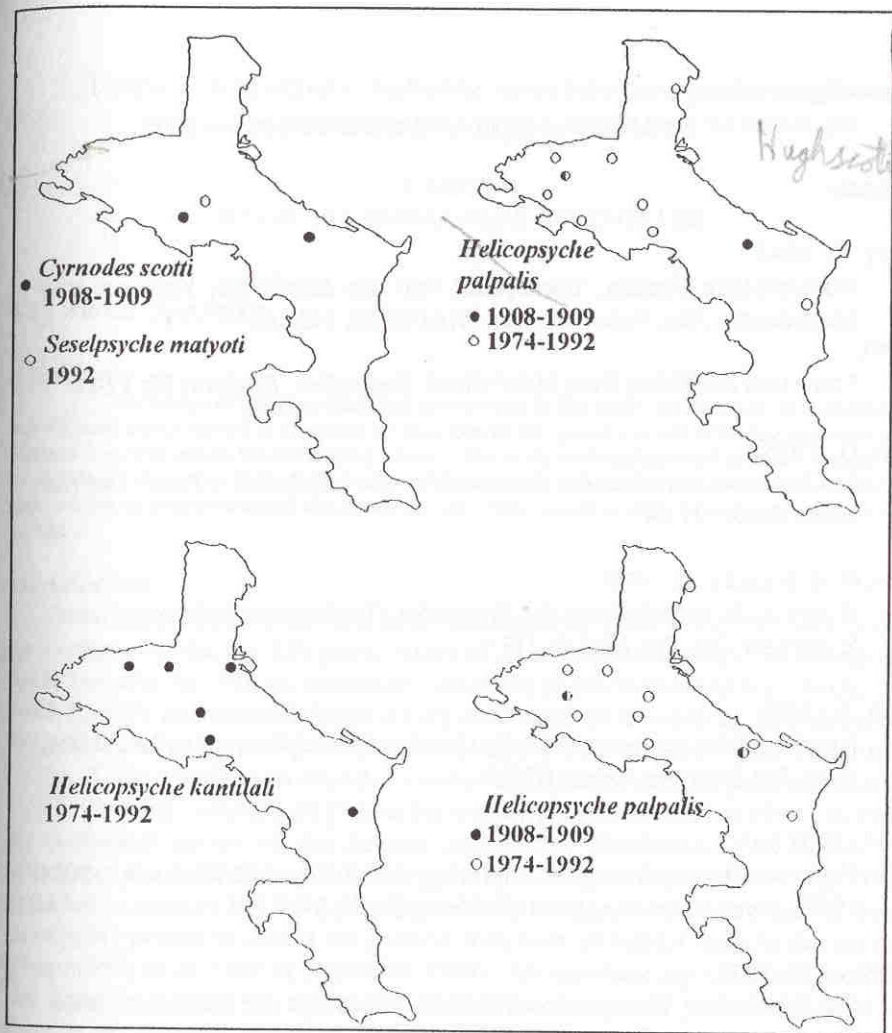
Status: Secure

*Seselpsyche matyoti* (Map 2.)

Only one adult was found at R. Grand Bois near Casse Dent, 430m, on Mahé. Its status is unknown.



Map 1. Distribution of caddisflies on Mahé



Map 2. Distribution of caddisflies on Mahé

## Acknowledgements

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