

Hidden life in the interstices

On biology and taxonomy of Dipsocoridae occurring in Central Europe

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Dipsocoridae (Heteroptera:Dipsocoromorpha) is a small family of terrestrial and semiaquatic true bugs. In Central Europe, five species have been recorded so far. Because of their cryptic lifestyle, Dipsocoridae are only rarely collected and their biology is largely unknown. European genera *Pachycoleus* and *Cryptostemma* usually occur in microhabitats with small spaces between the substrate particles (interstitial spaces). In this study, we provide first record of *C. remanei* for Central Europe and observations on biology of *Cryptostemma* and *Pachycoleus*.



Cryptostemma remanei 6th paratergite



Cryptostemma allenium 6th paratergite

Cryptostemma remanei is recorded for the first time in Central Europe

Based on examination of specimens from National Museum in Prague and other collections, *C. remanei*, previously reported only from Southern Europe, seems to be more common than *C. allenium*, which it was formerly confused with. The two species can be separated based on the shape of male abdomen appendages, especially of the sixth paratergite.

HELP WANTED!

If there are any specimens of *Cryptostemma* in your collection, please be sure to verify their identity. We would be thankful for any data from Central Europe!



Cryptostemma spp.



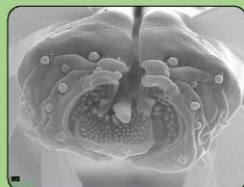
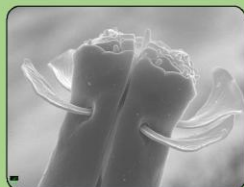
Cryptostemma inhabits gravel riverbanks and seems to be more of a scavenger

Litter bugs from genus *Cryptostemma* live in interstitial spaces between pebbles on sunny gravelly riverbanks. The bugs occur most frequently on the edges of stream, where the stones are wet, but not submerged.

Based on laboratory observations, *Cryptostemma* feeds frequently on dead insects, rejecting live prey. When moving around, it constantly touches the surface with its rostrum, possibly looking for corpses of aquatic insects washed ashore.



Both genera possess microtrichia on hemelytrae, which retain an air bubble when underwater, enabling bugs to survive for several weeks through plastron breathing.



Cryptostemma possess unique labial leaf-like sensilla

The labium tip of *Cryptostemma* is unique among Dipsocoromorpha. It is equipped with conspicuous leaf-like sensilla of unknown function. Presumably, multiple chemosensory organs located on the rostrum tip are used during scavenging, when *Cryptostemma* touches the surface with its labium, to detect chemicals released from dead insects.

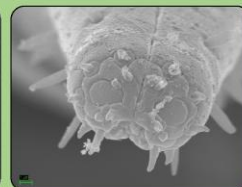
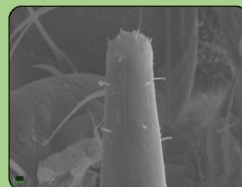
Pachycoleus spp.



Pachycoleus inhabits bogs and other damp habitats and actively hunts small insects

Pachycoleus usually occurs in various wetland habitats, such as bogs, spring mires, fens or even damp meadows. It dwells in interstitial spaces between leaves of *Sphagnum* moss, which are, similar to pebble interstices on riverbanks, often flooded.

In laboratory, *Pachycoleus* readily hunts live small arthropods (mites, springtails). The attack is initiated by contact of fore tarsi with the prey. When possible, *Pachycoleus* also feeds on dead insects.



Labium of *Pachycoleus* resembles that of other Dipsocoromorpha

Unlike *Cryptostemma*, rostrum of *Pachycoleus* lacks the leaf-like sensilla. The labium tip is equipped with several chemosensory sensilla placodes and resembles in shape that of other predatory Dipsocoromorpha, such as Ceratocombidae. We speculate that different feeding strategies of *Pachycoleus* and *Cryptostemma* are responsible for the differences in labium shape.

In further course of this ongoing project, we would like to thoroughly revise distribution of *Cryptostemma* species in Central Europe, verify their validity using barcoding and closely examine feeding behaviour of *Cryptostemma* and *Pachycoleus* species. Furthermore, attention will be paid to mating behaviour, internal parasites and overwintering of the bugs.

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Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Heteropteron - Mitteilungsblatt der Arbeitsgruppe
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