

New data on genus *Callomyia* of Finland (Diptera: Platypezidae)

Gunilla Ståhls, Elvira Rättel & Otto Miettinen

Ståhls, G., Rättel, E. & Miettinen, O. 2014: New data on genus *Callomyia* of Finland (Diptera: Platypezidae). — *Sahlbergia* 20(2): 9–12. Helsinki, Finland, ISSN 1237-3273.

The species *Callomyia krivosheinae* Shatalkin (Diptera: Platypezidae: Callomyiinae) is reported as new to Finland and Europe. A host fungus genus, *Phanerochaete* (Polyporales, Phanerochaetaceae), is reported for the first time for *Callomyia* based on observations in Finland. The following host records are observed: *Callomyia amoena* Meigen was found on *Phanerochaete sordida* and *P. velutina*, *C. krivosheinae* on *P. sanguinea* and *P. velutina*, and *C. speciosa* Meigen on *P. sanguinea* and *P. sordida*. DNA identification was used for verifying the field sampled unknown *Callomyia* larvae with correct *Callomyia* taxon.

Lattakärpäslaji *Callomyia krivosheinae* Shatalkin (Diptera: Platypezidae: Callomyiinae) ilmoitetaan Suomelle ja Euroopalle uutena. Sienisuku *Phanerochaete* (Polyporales, Phanerochaetaceae) todetaan suomalaishavaintojen perusteella ensi kertaa *Callomyia*-suvun ravintosieneksi. Seuraavat uudet isäntähavainnot ilmoitetaan: *Callomyia amoena* Meigen havaittiin lajeilla *Phanerochaete sordida* ja *P. velutina*, *C. krivosheinae* lajeilla *P. sanguinea* ja *P. velutina*, *C. speciosa* Meigen lajeilla *P. sanguinea* and *P. sordida*. Lajimääritykset varmistettiin DNA-menetelmin maastosta löydetyille tuntemattomille *Callomyia*-toukille.

Gunilla Ståhls & Elvira Rättel, Finnish Museum of Natural History, Zoology unit, PO Box 17, FI-00014 University of Helsinki, Finland. E-mail: gunilla.stahls@helsinki.fi

Otto Miettinen, Finnish Museum of Natural History, Botany unit, PO Box 7, FI-00014 University of Helsinki, Finland. E-mail: otto.miettinen@helsinki.fi

Introduction

Eight species of *Callomyia* (Diptera: Platypezidae: Callomyiinae) are listed from the Palaearctic region (Peck 1988). Three species have been recorded from Finland: *C. amoena* Meigen, *C. elegans* Meigen and *C. speciosa* Meigen (Chandler 2001). Of these, *C. elegans* remains known from only one specimen. *Callomyia amoena* and *C. speciosa* are common and abundant in forested areas in most parts of Finland. Shatalkin (1980, 1982) described *Callomyia admirabilis* and *C. krivosheinae* from the Russian Far East, and stated that these species are mor-

phologically close to *Callomyia amoena*.

Lundbeck (1927) was the first to report larvae of *Callomyia* collected on a species of *Corticium*. Chandler (2001) mentions Corticiaeae as host fungi for European *Callomyia*. Kessel (1961) described the immature stages of the Nearctic *Callomyia gilloglyrum* Kessel, and indicated that larvae were found under the bark of 'rotten pine logs covered beneath by mats of white mycelium'. Ståhls & Kahanpää (2006) obtained *Callomyia speciosa* from an emergence trap placed over a decaying log of *Alnus incana*, and the log was infested with *Fomitop-*

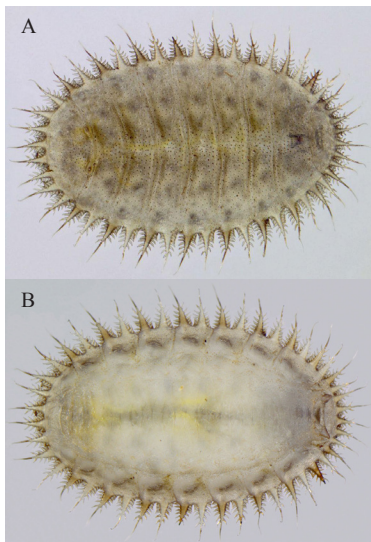


Fig. 1. *Callomyia amoena*, third stage larva, a. dorsal and b. ventral view. Ks: Kuusamo, Oulanka, 2011.

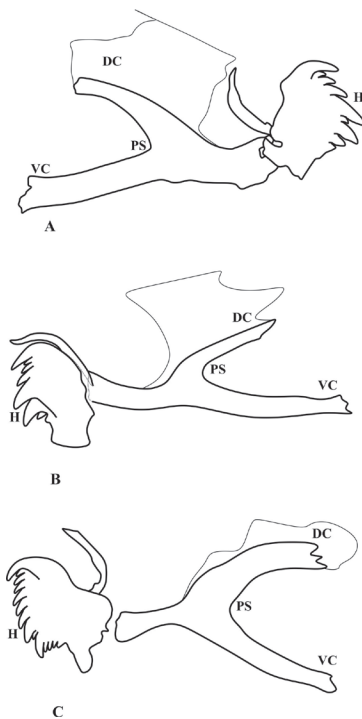


Fig. 2. Cephalopharyngeal skeleton, lateral view, of a. *Callomyia amoena*, b. *C. krivosheinae* and c. *C. speciosa*. DC – dorsal cornua, H – mouth hooks, VC – ventral cornua, PS – pharyngeal sclerite.

sis pinicola (Sw.: Fr.) P.Karst. but wood-encrusting fungi were not observed. Krivosheina (2008) described the fungal substrate of *Callomyia* spp. as ‘mycelial pellicle’ on underside of tree trunks lying on the ground.

Immature stages: morphological and molecular identification

Callomyia larvae are obligatory epibionts, developing on the fungal mycelium film. No precise identifications of host fungi species have hitherto been published for *Callomyia* spp. Krivosheina (2008) described the immature stages of *Callomyia admirabilis*, *C. amoena*, *C. krivosheinae* and *C. speciosa*, and provided an identification key to third stage larvae and puparia. *Callomyia* larvae have broad, strongly flattened bodies with nine segments visible in dorsal view, with specific branched lateral outgrowths (Figs. 1a & b). The lateral outgrowths are adaptations for living externally as epibionts on wood encrusting fungi (Krivosheina and Mamaev, 1967, Krivosheina 2008). *Callomyia* larvae have numerous simple sclerotized tubercles dorsally on segments, differing in length and degree of sclerotization. These cuticular tubercles are largest and densest in median section of segments. Segments have distinct dorsal dark spots near marginal outgrowths and small dark spots on the corresponding ventral area (Figs. 1a, b). Dorsally on the posterior margin of abdominal segments the sclerotized tubercles occur in form of narrow rows, and dorsal surfaces of abdominal segments bear papillae with one micro-seta on apex in transverse rows. Cephalopharyngeal skeleton with paired, curved, strongly sclerotized mouth hooks, situated at same or different levels (Fig. 2).

We found larvae *Callomyia amoena* and *C. krivosheinae* on decaying, fallen tree trunks of *Betula* spp., *Alnus incana* and *Sorbus aucuparia* with fruiting bodies of *Phanerochaete* spp. in N: Helsinki, in suburban areas Pakila and Maunula. Larvae of *Callomyia speciosa* were found on tree trunks of *Pinus sylvestris* and *Picea abies* in St: Rauma and on *Betula* sp. from Sb: Kuopio, Kolmisoppi. The larvae were identified using the key in Krivosheina (2008), and species identification is mainly based on characteristics of the mouth hooks of the cephalopharyngeal organ (Fig. 2) (terminology based on Rotheray et al. 2004).

Fig. 3. *Callomyia krivosheinae* Shatalkin, female. N: Helsinki, Pakila, 2011 (DNA voucher specimens MZH_Y1619).



Fig. 4. *Callomyia amoena* Meigen, female. N: Helsinki, Pakila, 2011 (DNA voucher specimens MZH_Y1620).



Fig. 5. *Callomyia amoena* Meigen, larva on *Phanerochaete velutina*. Ks: Kuusamo, Oulanka, 2011.

Adult flies: morphological and molecular identification

One female of *Callomyia krivosheinae* (Fig. 3) and three females of *C. amoena* (Fig. 4) were obtained in an emergence trap set over decaying tree trunk with several *Phanerochaete* species. *Callomyia* spp. were also hand-netted in the above mentioned localities and used for molecular work. For morphological species identifications the key of Shatalkin (1999) was used. The morphological identifications of the larvae were verified using DNA identification, comparing the mtDNA COI barcode sequences of the larvae with those of obtained adult specimens (males and/or females) from same localities. The COI barcode sequences of the larvae and adults have been deposited in the BOLD database (www.boldsystems.org). All adult and immature specimens are deposited as DNA voucher specimens in MZH.

New host fungi

We found larvae of three *Callomyia* species on three new host fungi species from the genus



Fig. 6. *Callomyia speciosa* on *Phanerochaete sanguinea*, with longer lateral outgrowths than those of *Callomyia amoena* and *C. krivosheinae*. St: Rauma, 2012.

Phanerochaete P. Karst. (1889) (Polyporales, Phanerochaetaceae). The host fungal species are *Phanerochaete sordida* (P. Karst.) J. Erikss. & Ryvarden, *P. velutina* (DC. Fr.) P. Karst. (Fig. 5a, b) and *P. sanguinea* (Fr.) Pouzar (Fig. 6). All three species were found on two species of host fungi. *Phanerochaete* spp. are white-rot, wood decayer species on both deciduous and

Table 1.

Taxon	<i>P. sordida</i>	<i>P. sanguinea</i>	<i>P. velutina</i>
<i>C. amoena</i>	X		X
<i>C. krivosheinae</i>		X	X
<i>C. speciosa</i>	X	X	

coniferous trees, and altogether eight species are known from Finland (Kotiranta et al. 2009). The recorded host fungi for *Callomyia* spp. are the more common and abundant ones of the genus, and occur in the whole country. The host fungi associations we have hitherto found for *Callomyia* spp. are summarized in Table 1.

Acknowledgements

We thank Pekka Malinen for help with digital images.

References

- Kessel, E. L. 1961: The immature stages of *Callomyia*, with the description of a new species of this genus (Diptera: Platypezidae). Occasional papers of the California Academy of Sciences 30: 1–10.
- Kotiranta, H., Saarenoksa, R. & Kytövuori, I. 2009: Aphyllophoroid fungi of Finland. A check-list with ecology, distribution and threat categories. *Norrinia* 19: 1–223.
- Krivosheina, N. P. 2008: On Biology of Xylobiont Platypezid Larvae of the Genus *Callomyia* (Diptera, Platypezidae). *Entomological Review* 88: 973–982.
- Krivosheina, N. P. and Mamaev, B. 1967: Classification key to larvae of arboricolous Dipteran Insects. *Inst. erd. Morf. Eccl. Acad. Nauk. SSSR. Izdatel Nauki*. 366 pp.
- Rotheray, G. E., Chandler, P. J. & Gilbert, F. 2004: Final stage larvae and puparia of Platypezidae (Diptera). *Insect Systematics & Evolution* 35: 79–105.
- Shatalkin, A. I. 1980: New species of Platypezidae (Diptera) from Middle Amur Territory. *Entomologizheskoe Obozrenie* 59: 660–665. [In Russian]
- Shatalkin, A. I. 1999: Family Platypezidae. In: *Key to the Insects of Russian Far East. Vol. IV. Diptera and Siphonaptera*. Vladivostok, Dalnauka. 665 pp. [In Russian]
- Shatalkin, A. I. 1982: New species of flat-footed flies (Diptera, Platypezidae) from Siberia and the Far East. In: *Helminths, ticks and insects*, pp. 68–75. [In Russian]
- Ståhls, G. & Kahanpää, J. 2006: New data on Platypezidae and Opetiidae (Diptera) of Finland. --- *Sahlbergia*, 11: 1-6.