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FIRST RECORDS OF *HEMINOTHRUS* (*CAPILLONOTHRUS*) *THORI* (BERLESE, 1904) AND *PERLOHMANNIA* (*PERLOHMANNIA*) *DISSIMILIS* (HEWITT, 1908) (ARACHNIDA: ACARI: ORIBATIDA) IN IRELAND

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Abstract

In this paper we present the first records for Ireland of *Heminothrus* (*Capillonothrus*) *thori* (Berlese, 1904) and *Perlohmannia* (*Perlohmannia*) *dissimilis* (Hewitt, 1908), both mites belonging to the suborder Oribatida. Both species were recovered from riparian habitats along the River Liffey in Co. Kildare and, in addition to providing number of individuals and precise location of the records, some comments on the biogeography and biology of these species are presented.

Key words: *Heminothrus* (*Capillonothrus*) *thori*, *Perlohmannia* (*Perlohmannia*) *dissimilis*, Acari, Oribatida, riparian, first records, Ireland

Introduction

Riparian habitats are unique ecosystems that are located along the banks of rivers and other water networks, between the water mark and the portion of land above the high water mark where vegetation, soil, invertebrates, and wildlife are influenced by occasional inundation (Naiman *et al.,* 1993). Natural riparian zones are some of the most diverse, dynamic and complex biophysical terrestrial habitats (Naiman *et al.,* 1993) and their vegetation support a huge abundance of invertebrates (Gregory *et al.,* 1991). Arthropods, both aquatic and terrestrial, are dependent on these habitats for feeding, resting, refuge and reproduction. These organisms

in turn provide a critical resource base for many wildlife species such as birds, fish and other invertebrates (Doyle, 1990; Gray, 1993). There is very little knowledge of the invertebrate fauna inhabiting these habitats in Ireland and this is especially true of the mites.

Oribatids belong to the mite suborder Oribatida or Cryptostigmata and are mainly soil living decomposers present in almost all habitats, their distribution ranges from arid coniferous forests to floodplain forests, canopies and even salt marshes, with a few species adapted to life in aquatic environments. Oribatid mites consist of approximately 10,000 described species worldwide (Subías, 2004, updated 2012).

Material and methods

Several sites were sampled from the riparian zone of the River Liffey in Co. Kildare. Sampling plots (4m x 4m) were located along the river and each contained a square grid of nine pitfall traps placed to sample invertebrate soil fauna, i.e. each 2m from each other and 2m from the water's edge. The samples were collected over a two week period between 14 and 29 April 2011.

The mites, once recovered from the pitfall traps, were slide mounted using Hoyer's medium and identified using Balogh and Balogh (1992), Balogh and Mahunka (1983) and Weigmann (2006). Voucher specimens are deposited in the School of Biology and Environmental Science, University College Dublin, Ireland.

Results and discussion

Heminothrus (*Capillonothrus*) *thori* (Berlese, 1904) (= *Nothrus crinitus* Warburton and Pearce, 1905) and *Perlohmannia* (*Perlohmannia*) *dissimilis* (Hewitt, 1908) were found in the traps and are the first records for Ireland. Neither was reported in the checklist of Luxton (1998) for Irish Cryptostigmata and Mesostigmata mites, nor in later works carried out in Ireland.

One individual of *H.* (*C.*) *thori* was found at Old Manor Abbey (Latitude 53º 09' 773' 'N and Longitude 06º 46' 350' ' W) in one of the pit fall traps closest to the river. The species is mainly

found in wet and moist forests according to Weigmann (2006). More precisely, it can be defined as hygrophilous, silvicolous and tyrphobiotic. *H.* (*C.*) *thori* has a Holarctic and Oriental distribution (Palaearctic: frequent; Nearctic: more frequent in the Northern and Eastern Nearctic and Orient: South East China and India).

Finding oribatids in wet habitats such as the riparian is not surprising as several species have even been recorded in springs (i.e. see Willmann (1932), Franz (1954) or Schatz and Gerecke (1996)). Recently, *H.* (*C.*) *thori* was collected (and reported as *Platynothrus thori*) from several springs in the Trentino Region (Northern Italy) by Gerecke *et al.* (2009). This species is an example of the many terrestrial species of oribatid that can be found in aquatic habitats, either as chance stragglers from the surrounding habitats, or from periodic or unpredictable flooding, where they can survive for long periods. Most of the mites found associated with springs seem to belong to the moss fauna of the moist surrounding area or to be washed in from trees. Only a few oribatid species are truly aquatic, reproducing and having all stages of their life-cycle in the aquatic habitat.

H. (*C.*) *thori* has been recorded in Britain (Luxton, 1996). Another congeneric species, *Heminothrus* (*Platynothrus*) *peltifer* (Koch, 1839) was the most abundant of the oribatid mites recovered from the riparian sites studied. This latter species is known to prefer to inhabit moist habitats such as forests and wetlands, but is very widely distributed and was, for example, one of the most abundant mites collected in a previous study made in Irish peatlands and bogs (Wisdom *et al.,* 2011).

Three individuals of *Perlohmannia* (*P.*) *dissimilis* were found in a site located at Kilcullen (Latitude 53º 08' 037' ' N and Longitude 06º 44' 633' ' W). This species occurs mainly on forest floors, on the soil surface and in moss. It is considered meso-hydrophilic (Weigmann, 2006). *P.* (*P.*) *dissimilis* has a Palaearctic and Oceanian distribution (Central and South Europe, Western Central Asia and east of Asian Russia and Hawaii.) and has already been recorded in Britain (Luxton, 1996).

P. (*P.*) *dissimilis* was firstly described by Hewitt (1908) as *Lohmannia insignis* Berl. var.

dissimilis, but later in 1916 Berlese created the new genus *Perlohmannia* for the two *Lohmannia* species with *insignis* as the type species while the variety *dissimilis* was promoted to the full rank of species. Of the nine species currently placed in the genus *Perlohmannia* (*Perlohmannia*) Berlese, 1916, only the type species, *P.* (*P.*) *insignis* (Berlese, 1904) had previously been recorded in Ireland. It was described by Berlese, based on Irish specimens sent to him by J. N. Halbert (see more details in Grandjean (1958)), and was later reported by Carpenter (1905) in samples from a garden in Co. Dublin.

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