

A L1 stage nymph of *Issus cf. coleoptratus* (Fabricius, 1781) (Hemiptera, Issidae) from a suburban garden at Evesham, Worcestershire

Paul F.Whitehead
 Moor Leys, Little Comberton, Pershore, Worcestershire, England
 WR10 3EH Email: paulpfw@outlook.com

Synopsis

A first nymphal instar (L1) of *Issus cf. coleoptratus* (Fabricius, 1781) is illustrated, perhaps for the first time. It cannot presently be separated taxonomically by sight from any of 14 other L1 stage *Issus* nymphs presently known from Worcestershire. The invertebrate community surrounding *I. coleoptratus* on ivy is cited. In the described context nymphs of *I. coleoptratus* occur at low density.

Introduction

In collating British records of *Issus muscaeformis* (Schrank, 1781) Whitehead & Key (2010) had access only to adults and three later stage nymphs all of which were characteristically variegated. No L1 stage *Issus* nymphs were traced either in the field or in literature.

During 2017 14 L1 stage nymphs of *Issus* Fabricius, 1803 were obtained from traps set in old-established tree bole cavities in Small-leaved Lime trees *Tilia cordata* Miller at Shrawley Wood, Worcestershire (Whitehead, in preparation) and in that year, as a significant accession to biogeography, *I. muscaeformis* was confirmed breeding on Small-leaved Lime there.

As a consequence of this new information it became necessary to locate L1 stage nymphs of a British *Issus* from a site where without doubt only one of the two species exists. Given that L1 stage *Issus* nymphs are in the order of one millimetre long this was no easy task but on 23 July 2019 such a nymph was encountered (01, 02) under a dense veil of ivy *Hedera helix* L. in a suburban garden in Evesham, Worcestershire, (VC 37, 52°06'N 1°56'W, SP04, 54 m altitude) where only *I. coleoptratus* is well-known and extant. *Issus muscaeformis* is not presently regarded as synanthropic and generally appears to shun human interventions. **The Evesham nymph figured here is therefore taken to be *I. coleoptratus*.**

Discussion

On 23 July 2019 attempts were made to find L1 stage nymphs of *I. coleoptratus* by removing thick blankets of ivy from a timber fence in what is commonly called 'a front garden' in Evesham town, Worcestershire. The houses are substantial properties built about 1925 following the 'garden city suburb' objective popular at the time. Associated with this are greatly enhanced thermal hotspots, topographical shelter, and a now somewhat reduced abundance of amenity trees and proliferation of ornamental shrubs, many of them evergreen. The previously undocumented synanthropic relationship of *I. coleoptratus* with a wide range of cultivated plants was discussed by Whitehead & Key (2010).

The ivy was cut back in its entirety and a single L1 stage nymph of *I. coleoptratus* (01–03) (note slight post-mortem elongation due to fluid immersion) was encountered and retained. The specimen was 1.2 mm (± 0.2mm) in length and waxy caudal filaments were visible in life. The illustrations convey the overall appearance of the nymph; the disposition and number of the sensory pits on the fore and hind wing pads should be attended to. There is a single internal pit on the hind wing pad. In contrast some L1 nymphs from Shrawley Wood have two such internal sensory pits (03, right); further research may reveal these to be *I. muscaeformis*.

Given the generally uniform colouration of later stage nymphal and adult *I. coleoptratus* it was an unexpected surprise to observe that the Evesham nymph was highly variegated. It is a point of interest that this early stage variegation is soon lost; L2 stage nymphs of *I. coleoptratus* are normally paler and less variegated and L3 stage nymphs of both species are unlikely to be confused? The legs of the Evesham L1 stage nymph are however paler than those of most of the Shrawley Wood L1 stage nymphs some of which show incipient annulation; at this site *I. coleoptratus* and *I. muscaeformis* are sympatric and the fact that none of the 14 L1 stage nymphs from that site can be differentiated may lend support to the uniform appearance of both species at this nymphal stage.

This text is a discussion document which should be regarded only as an entry point to the topic.



01. L1 stage nymph of *Issus cf. coleoptratus*, suburban Evesham, Worcestershire, 23 July 2019.



02. L1 stage nymph of *Issus cf. coleoptratus*, suburban Evesham, Worcestershire, 23 July 2019.



03. L1 stage nymphs of *Issus*. Left: *I. cf. coleoptratus*, Evesham, Worcestershire, 23 July 2019. Right: *I. cf. muscaeformis*, Shrawley Wood, Worcestershire, 19 July 2017.

Synecology of ivy-inhabiting *Issus coleoptratus* nymphs at Evesham

At Evesham ivy-inhabiting *I. coleoptratus* form part of a complex invertebrate community that includes mites *Bryobia* sp. (Acari, Tetranychidae), scale insects, tingid bugs *Derephysia foliacea* (Fallén, 1807) which have a perennial presence, together with encyrtid and eupelmid wasps, some of them rare. The predatory anthocorid bug *Cardiastethus fasciventris* (Garbiglietti, 1869) and the corylophid beetle *Orthoperus atomus* (Gyllenhal, 1808) have been found directly associated with *Bryobia* mite populations.

The predatory coccinellid beetle fauna is well-developed. Amongst these *Rhyzobius chrysomeloides* (Herbst, 1792) is a constant breeder sometimes in numbers (Whitehead, 2007) while *Nephus quadrimaculatus* (Herbst, 1783) and *Scymnus interruptus* (Goeze, 1777) are usually less numerous. *Issus coleoptratus* extends to other gardens in the area and late stage nymphs have been observed on the sclerophyllous shrub *Elaeagnus pungens* Thunb. cv. 'Maculata'. In ivy blankets it seems clear that *I. coleoptratus* nymphs occur in small numbers perhaps as a strategy to minimise predation; at Shrawley Wood (Whitehead, in press) it appears that, as a further distinct strategy, L1 stage *Issus* nymphs may assemble in or be reluctant to leave tree bole cavities.

Conclusion

A L1 stage nymph of *I. coleoptratus* from Evesham, Worcestershire, which on present knowledge can only be that species, is highly variegated but the appendicular skeleton is largely pale. When compared microscopically (x100) with 14 other L1 stage *Issus* nymphs from Shrawley Wood, Worcestershire, no characters could be found that unambiguously allow any of them to be distinguished taxonomically. The subject would evidently lend itself to DNA analysis.

References

- Whitehead, P.F. 2007. Invertebrates on Mexican Orange *Choisya ternata* Humboldt in English gardens with observations on *Rhyzobius chrysomeloides* (Herbst, 1792) (Col., Coccinellidae) and other coccinellids. *Entomologist's Monthly Magazine* **143**:7-10.
- Whitehead, P.F., in preparation. *Issus muscaeformis* (Schrank, 1781) (Hemiptera, Issidae) new to Worcestershire with observations on the early nymphal stages.
- Whitehead, P.F. & Key, R.S. 2010. Observations on British *Issus* (Hemiptera, Issidae) with reference to development, periodicity, and ecology. *Worcestershire Record* **29**:22-27.