

## Observations on the naturalised invertebrate fauna of Stratford Butterfly Farm, Stratford-on-Avon, Warwickshire.

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### Introduction

It is well known that the artificially controlled environments of buildings support a wide range of invertebrates as extensions of their natural ranges, many of which are regarded as aliens or tramp species. Such species extend into climate-controlled greenhouses, palm houses and even hospitals and the bibliography covering the exotic invertebrate fauna of the Eden Project biomes in Cornwall is now extensive. Exotic species may arrive rapidly (Hancock & Robinson, 2021; Wetterer, 2009) but few can persist following closure of such places. The Eden rainforest biome was planted in 2000, opened to the public in 2001 and by October 2002 a large population of the ant *Technomyrmex albipes* (Smith, 1861), believed to be native to Indonesia, had been noted there (P. F. Whitehead, *pers. obs.*). The Victorian edifice that was Liverpool Royal Infirmary was boarded up after its closure in 1978, but 12 months later the population of American Cockroach *Periplaneta americana* (Linnaeus, 1758) had burgeoned (P. F. Whitehead, *pers. obs.*). This account considers some of the exotic naturalised invertebrates presently adapted to the climate-controlled environment of the Stratford-on-Avon Butterfly Farm, Warwickshire.

### Discussion

The butterfly farm opened in 1985 and I first visited it during 1988 by which time the pan-tropical millipede *Oxidus gracilis* (C. L. Koch, 1847), native to the Asian far east (Blower, 1985) was already established. The Nearctic 'hothouse alien' snail *Zonitoides arboreus* (Say, 1816), normally an inhabitant of humid upland woodlands, was also evident at that time. Although visits since then have been relatively few, recent evidence suggests further 'consolidation' of this alien fauna, in particular the development of populations of scale insects and mites that form part of the food chain for other species.

Spiders such as *Pholcus phalangioides* (Füssli, 1775), an almost cosmopolitan tramp species, construct webs in open exposure and together with *Uloborus plumipes* Lucas, 1846, reported on by Farmer (2022), occur widely. It is perhaps unusual to find a spider that benefits directly from butterfly rearing programmes; that the rather rare photophobic *Meta bourneti* Simon, 1924 (01) has adapted to this regime is of particular interest.



01. The spider *Meta bourneti* Simon, 1924 consuming a captured nymphalid butterfly *Heliconius* sp. with *Uloborus plumipes* above. Stratford-on-Avon butterfly farm, 29 August 2022. Paul Whitehead.

There appear to be no regional records of this species which here exemplifies a climatically-controlled 'staging post' population with the ability to move or be moved elsewhere when the opportunity presents itself.

The salticid *Pseudeuophrys lanigera* (Simon, 1871) is a recognised synanthrope which is actively spreading north following the movement of isotherms and which frequently turns up in dry hotspots such as insulated house walls; I found examples using abandoned glasshouses at Wick, Pershore, Worcestershire on 18 April 2015. At Stratford-on-Avon Butterfly Farm the spiders appear to have adapted to the internal environment of the main flight areas.

The small distinctive ant *Plagiolepis alluaudi* Emery, 1894 (02) has maintained a significant population at the site for some years (Malumphy, 2016) and is especially adapted to honeydew secreted by scale insects, especially on *Thaumatococcus* spp. and other araceous plants. This is another species known from the Eden biomes and one which has been the subject of recent discussion (Malumphy, 2016; Hancock & Robinson, 2021).



02. Worker caste of the Little Yellow Ant *Plagiolepis alluaudi* showing fungal spores ingested with honeydew. Are the spores being cultured and passively distributed? Stratford-on-Avon Butterfly Farm, 29 August 2022. Paul Whitehead.

The Greenhouse Camel-cricket *Tachycines asynamorus* Adelung, 1902 (03) is apparently a scarce declining species of controlled environments in Britain which during the day tends to retreat to secure niches. A single example of this elusive insect was observed on 29 August 2022. Although sometimes carnivorous *T. asynamorus* is also a detritivore so it may well be that this species has a cleansing function at Stratford-on-Avon where it probably occurs in small numbers only.



03. A sub-adult Greenhouse Camel-cricket *Tachycines asynamorus* in its diurnal retreat. Stratford-on-Avon butterfly farm, 29 August 2022. Paul Whitehead.

Some aspects of this invertebrate fauna demonstrate similarity to cave faunas particularly with regard to reduced light intensity created at Stratford either by elimination or shrouding. Most species of *Tachycines* are true troglodytes. Although of interest for the way in which a range of species have become adapted to this humanly-controlled microclimate the entire biota hangs in the balance for that reason.

### References

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### Images

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