

## Recent records of British pseudoscorpions

Susan J. Salmon

Zoology Department, University of Leicester

Pseudoscorpions are being mapped on the 10 km grid system for the European Invertebrate Survey, but as yet little is known of their distribution patterns. Records of British pseudoscorpions since Kew (1911, 1916) and Evans and Browning (1954) are scattered in the literature. It was thought useful therefore, to note the occurrence of various species found during a survey in the late autumn of 1969, concentrated in Berkshire, Buckinghamshire, Oxfordshire and Huntingdon; vice-counties 22, 23, 24 and 31 respectively. These observations were made whilst searching for a suitable site on which to make a detailed study of pseudoscorpion populations and their ecological energy relationships.

As Gabbutt (1967) has shown that pseudoscorpions are very abundant in beechleaf litter, six areas were visited; all were *Fagus* woodland except Monks Wood, which consists of mixed oak-ash woodland with hazel. Samples of 2 x 1/10m<sup>2</sup> or 5 x 1/25m<sup>2</sup> were collected, and where possible these were subdivided into leaf litter and the upper 3 cm of soil, for extraction in a modified *Tullgren* apparatus. For the purpose of the present paper, actual numbers of each species are given, and the numbers collected from leaf litter and soil combined.

**Monks Wood National Nature Reserve**, Huntingdonshire (Grid reference TL200800). Four sites were visited on 22 October 1969, each of increasing age since coppicing.

Site I: Leicester University Experimental Plot.

No pseudoscorpions were found.

Site II: Coppiced in 1959-60.

*Chthonius ischnocheles* (Herman) 1804.

7 ♀♀, 1 undetermined adult, 7 tritonymphs, 7 deutonymphs.

*Allochernes dubius* (O.P.-Cambridge) 1892.

2 ♀♀, 1 ♂, 3 tritonymphs, 1 deutonymph, 9 protonymphs.

Site III: Coppiced in 1954-55.

*C. ischnocheles*, 1 ♂, 2 deutonymphs.

*A. dubius*, 1 ♀, 1 tritonymph, 1 deutonymph.

Site IV: Coppiced in 1930-40

*C. ischnocheles*, 1 ♀.

*A. dubius*, 1 ♀, 1 protonymph.

Jones (1970), sampling leaf litter at Monks Wood in 1967 for *C. ischnocheles*, found that the main peaks in numbers of deutonymphs and tritonymphs appeared during the autumn. The above results correspond well with his findings. Jones (pers. comm.) has found *A. dubius* rarely, whilst in the above survey *A. dubius* was found as commonly as *C. ischnocheles* in the samples. However, all specimens of *A. dubius* were found in the soil, which Jones did not study.

**High Standing Hill, Windsor Great Park, Berkshire** (Grid reference SU936741). 6 November 1969.

*C. ischnocheles* 4 ♀♀, 3 ♂♂, 11 tritonymphs, 25 deutonymphs, 3 protonymphs.

*A. dubius*, 7 ♀♀, 1 ♂, 2 tritonymphs, 2 deutonymphs, 12 protonymphs.

*Neobisium muscorum* (Leach) 1817. 2 ♀♀, 1 ♂, 1 tritonymph, 5 deutonymphs, 2 protonymphs.

**Aston Rowant National Nature Reserve**, Buckinghamshire. Two sites were visited on 6 November 1969.

Site I: Little London Wood (Grid reference SU733969)

*C. ischnocheles*, 2 ♀♀, 1 ♂, 3 tritonymphs, 10 deutonymphs, 3 protonymphs.

*A. dubius*, 1 ♀.

*N. muscorum*, 1 ♀.

Site II: Grant's Wood (Grid reference SU735967)

*C. ischnocheles*, 3 ♀♀, 4 tritonymphs, 11 deutonymphs, 14 protonymphs.

*N. muscorum*, 1 ♀, 1 tritonymph, 2 deutonymphs, 1 protonymph.

**Lambridge Wood, Henley-on-Thames, Oxfordshire** (Grid reference SU746839). 6 November 1969. The pseudoscorpions of this wood have been studied by Gabbutt (1967).

*C. ischnocheles*, 1 tritonymph.

*Roncus lubricus* L. Koch 1873. 15 ♀♀, 5 ♂♂, 2

tritonymphs, 3 deutonymphs, 5 protonymphs.

#### Hampden Estates, Buckinghamshire.

Four sites were visited on 9 December 1969.

##### Site I: Lodge Wood (Grid reference SP866016)

*C. ischnocheles*, 1 deutonymph.

*N. muscorum*, 2 protonymphs.

##### Site II: Keepershill Wood (Grid reference SP842012)

*C. ischnocheles*, 1 tritonymph, 1 deutonymph.

*N. muscorum*, 2 protonymphs.

##### Site III: Weyburn's Wood (Grid reference SP844043)

*C. ischnocheles*, 1 tritonymph, 1 deutonymph.

*N. muscorum*, 1 ♀, 2 tritonymphs, 1 deutonymph, 4 protonymphs.

##### Site IV: Pond Wood (Grid reference SP835046)

*N. muscorum*, 2 ♀♀, 1 tritonymph, 1 deutonymph.

*Chthonius orthodactylus* (Leach) 1817. 15 tritonymphs, 4 deutonymphs.

#### The Beech Bowl, Wytham Wood, Oxfordshire (Grid reference SP460090). 9 December 1969.

*C. ischnocheles*, 8 ♀♀, 1 ♂, 7 tritonymphs, 20 deutonymphs, 5 protonymphs.

*N. muscorum*, 4 protonymphs.

#### Discussion

From the thirteen sites sampled in this survey, *C. ischnocheles* was the most common species, occurring at eleven sites. In terms of numbers also, *C. ischnocheles* was the most abundant species. Data on the life history of *C. ischnocheles* have been given by Gabbutt (1967), whose work on this species has shown that half the overwintering population consists of deutonymphs, a consequence of a protonymphal peak in June - September. In the above survey, the deutonymphal stage of *C. ischnocheles* was the most abundant during the three months of sampling.

*N. muscorum* was recorded from eight sites, and again the results obtained in the survey correspond with those of Gabbutt (1970). *N. muscorum* exhibits a similar life history to *C. ischnocheles*, differing in that the protonymphs reach peak numbers in September - October. Hence one would expect a higher proportion of protonymphs in the autumn population, whereas equal numbers of protonymphs

and deutonymphs of *N. muscorum* were found.

In *A. dubius*, the third most common species found during the survey, the protonymphal stage was the most abundant, although Gabbutt (1970) reports that all three nymphal stages overwinter.

The ratio of females to males in all five species found was greater than 1. In *N. muscorum* this sex ratio was 8:1, *C. ischnocheles* 5:1, and *A. dubius*, 4:1. In *A. dubius*, Gabbutt (1970) found that there were always more females than males, with a ratio of 3:1 in the winter population. However, to date there is no evidence in the other four species that the sex ratio is not normally 1:1. It must be concluded therefore that the sex ratios obtained in this survey may be a seasonal anomaly, or due to differential extraction in the Tullgren funnels.

Research on the populations and life histories of *N. muscorum* and *C. orthodactylus* at Pond Wood, on the Hampden Estates, is continuing until March 1972, and these data will be related to studies of laboratory metabolism, especially feeding and respiration. It is hoped that these studies will enable an assessment to be made, in terms of energy flow, of the importance of pseudoscorpions as part of the predatory fauna in beech woodlands.

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#### References

- EVANS, G. O. and BROWNING, E. 1954: Pseudoscorpiones. Synopses of the British Fauna No. 10. London: Linnean Society of London
- GABBUTT, P. D. 1967: Quantative sampling of the pseudoscorpion *Chthonius ischnocheles* from beech litter. *J. Zool., Lond.* 151: 469-478
- GABBUTT, P. D. 1970: Sampling problems and the validity of life history analyses of pseudoscorpions. *J. Nat. Hist.*, 4: 1-15

- JONES, P. E. 1970: The occurrence of *Chthonius ischnocheles* (Hermann) (Chelonethi: Chthoniidae) in two types of hazel coppice leaf litter. *Bull. Brit. Arach. Soc.*, 1 (5): 77-79
- KEW, H. W. 1911: A synopsis of the False-Scorpions of Britain and Ireland. *Proc. R. Irish Acad.*, (B) 29: 38-64
- KEW, H. W. 1916: A synopsis of the False-Scorpions of Britain and Ireland. Supplement. *Proc. R. Irish Acad.*, (B) 33: 71-85

### A note on the occurrence of *Clubiona juvenis* Simon in the fens of the Norfolk Broads

C.I. Carter

Alice Holt Lodge, Farnham, Surrey

On 22 September 1970, while an intensive collection of spiders was being made in the Bure Marshes, Norfolk, a number of clubionids were taken from beneath dry, cut sedge (*Cladium*) laying at the waters edge. The adult clubionids were all *C. phragmitis* Koch except for a single female which was identified as *C. juvenis* Simon. The determination of this individual was kindly confirmed by Mr. G.H. Locket who pointed out that the numbers of tibial III spines and inner cheliceral teeth sometimes varied from those quoted in Locket and Millidge (1951). Wiehle (1965) has pointed out that the tibial apophyses of the male palps of this species may also show some similarity with *C. trivialis* Koch. In his key, the large size of the anterior median eyes (also mentioned by Locket and Millidge (1951)) is used as a distinguishing character for both sexes. Two further specimens, both males, were identified by John Gray from a collection made by sweeping reeds two days earlier at Reedham Marsh in the River Ant valley. During mid-September 1971, these and other Norfolk fenland sites were visited by members of the British Arachnological Society conducting a survey for the Nature Conservancy. A further two males were taken at Reedham Marsh, one from *Spagnum* at the bottom of a reed bed and another by sweeping. In addition, four females were found in the ground vegetation of a *Phragmites/Cladium* fen by Meadow Dyke not far from Horsey Mere. Previous records in the British

Isles are: Co. Wicklow, sand dunes (Locket and Millidge 1951); Co. Wexford, sand dunes (E. Duffey pers. com.); and Keyworth, Poole, Dorset, under *Phragmites* in a brackish marsh (P. Merritt pers. com.).

The occurrences of *C. juvenis* in wet habitats in Norfolk and Dorset, and sand dunes in Ireland, are comparable with those on the continent (Bochmann 1941, cited by Duffey 1968), in that this species is diplostenocious (being found in these two contrasting habitats). It does seem, however, that most of the European records examined by Nemenz (1967) are of wet habitats although the spider lives above in the drier vegetation; in the dry habitats the spiders were found in dense parts of tussocks where the air moisture was probably high.

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#### References

- DUFFEY, E. 1968: An ecological analysis of the spider fauna of sand dunes. *J. anim. Ecol.* 37: 641-674
- LOCKET G.H. & MILLIDGE, A.F. 1951: *British Spiders*. Vol I. Ray Society, London
- NEMENZ, H. 1967: *Clubiona juvenis* Simon 1878. Sitzung der mathematisch-naturwissenschaftlichen Klasse vom 7 April 1967 *Sher. ost. Akad. Wiss., Anz. math.-naturw. Klasse* Nr. 6: 132-139
- WIEHLE, H. 1965: Die *Clubiona* - Arten Deutschlands, ihre natürliche Gruppierung und die Einheitlichkeit im Ban ihrer Vulva *Senckenberg biol.* 46: 471-505