

***Meioneta fuscipalpa* (C. L. Koch, 1836), a
linyphiid spider new to Britain (Araneae:
Linyphiidae)**

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Summary

The linyphiid spider *Meioneta fuscipalpa* (C. L. Koch, 1836) is described and illustrated as new to Britain, and its habitat and distribution are discussed. Comparative drawings of *M. gulosa* (L. Koch, 1869) are also provided.

Introduction

During the autumn of 1998 a preliminary study of the invertebrate fauna of the air base at RAF Mildenhall in the Suffolk brecklands was carried out by PL on behalf of the USAF under contract to the Suffolk Wildlife Trust. An area of calcareous grass heath at the eastern end of the airfield (Grid ref. TL 712765) was surveyed on 8 October 1998. The area had been mown a week or so before and the grass litter had been left in place. Handfuls of this litter were shaken over a net and among the spiders that were collected were a number of specimens of *Meioneta*, including two males. One of these was clearly *M. rurestris* (C. L. Koch), but the other specimen proved more difficult to identify and was at first thought to be *M. gulosa* (L. Koch). As the habitat seemed unusual (altitude only 7 m) and the location was a long way from the nearest site known for *M. gulosa*, it was assumed to be an accidental introduction.

The USAF commissioned a full-scale invertebrate survey of the RAF Mildenhall site during 1999, but no further specimens of the species were taken until 17 June 1999, when vacuum sampling produced a second male and a female. When pitfall traps set in the same area (TL 711765) on 9 July 1999 were emptied on 5 August 1999, a third male was found. The palpal lamellae of these two males showed some variation from each other and from the 1998 male, so the specimens were sent to PM who identified them as *M. fuscipalpa* (C. L. Koch).

Both sexes are described and figured here from the British material and from a pair collected in Austria. Comparative drawings of *M. gulosa* are provided from specimens from Scotland. All measurements are in mm.

Description

***Meioneta fuscipalpa* (C. L. Koch, 1836) (Figs. 1–8)**

Micryphantes fuscipalpus C. L. Koch, 1836: 46, pl. 89 fig. 202 (descr. ♀).

Micryphantes fuscipalpis: Chyzer & Kulczyński, 1894: 88, pl. 3 fig. 35 (♂).

Ischnyphantes fuscipalpis: Simon, 1929: 540, fig. 815 (♂).

Meioneta fuscipalpis: Wiehle, 1956: 119, figs. 204–206 (♀♂); Thaler & Noflatscher, 1990: 174, fig. 16 (♂); Heimer & Nentwig, 1991: 210, fig. 567 (♂).

Material examined: GREAT BRITAIN: Suffolk, Mildenhall, RAF Mildenhall, alt. 7 m: 1♂, hand collecting, 8 October 1998; 1♀ 1♂, 17 June 1999, vacuum sampling; 1♂, pitfall trapping, 9 July–5 August 1999; all leg. and coll. P. Lee. AUSTRIA: Südtirol, Castelfeder, alt. 400 m, in pitfalls, 1♀ 1♂, 28 June 1988, leg. M.-T. Noflatscher, coll. K. Thaler.

Comparative material: *M. gulosa*: GREAT BRITAIN: Wester Ross, Sgurr a'Chaorachain, 700 m, under stones, 1♀ 1♂, 10 November 1997, leg. A. Wilson (NMS).

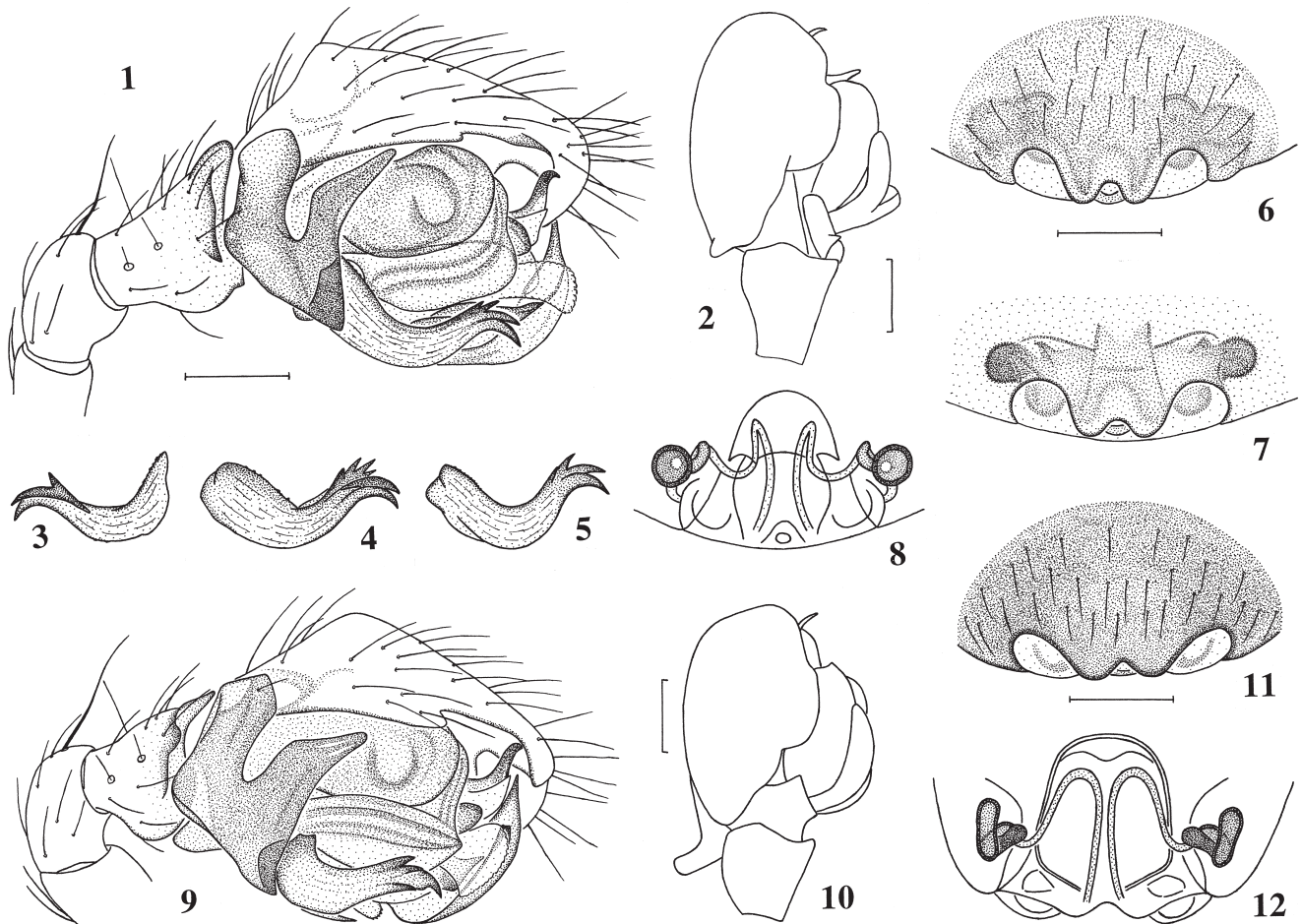
Note: The specific name has usually been spelled *fuscipalpis* in the literature, but the original spelling was *fuscipalpus* (in the masculine *Micryphantes*) and, according to H. D. Cameron (in litt.), although *palpus* is a masculine noun, *fuscipalpus* must be treated as a compound adjective, so the feminine ending must be *-palpa*.

Male: Total length 1.9–2.4. Carapace length 0.85–1.0, width 0.6–0.7. Posterior eyes all *c.* 1 diam. apart, PME about same size as PLE. Carapace yellow-brown to brown, with darker striae. Sternum grey-brown to black-brown. Abdomen dark grey. Legs yellow-brown, suffused with black to a variable extent, especially on legs I–III. Palp yellow-brown suffused with black, especially on tibia and cymbium. All leg tibiae with 2 dorsal spines, length *c.* 1–1.25 diam. of tibia. No lateral tibial spines. Tm I 0.23–0.27. Male palp (Figs. 1–5): lamella variable, but always with two large downward-curved terminal teeth. With a small rounded projection proximally on dorso-mesal side of cymbium (Fig. 2).

Female: Total length 2.0. Carapace length 0.85, width 0.6. Coloration similar to male. Legs I–III suffused with black, palp heavily suffused with black. Posterior eyes *c.* 0.75 diam. apart. Epigyne and vulva (Figs. 6–8): seminal receptacles small and round. Sides of scape diagonal and smoothly rounded.

Diagnosis: *Meioneta fuscipalpa* belongs to the group of species which lack lateral spines on tibiae I–II. Among British species, the shape of the male palpal lamella is closest to that of *M. gulosa*, but in *gulosa* it terminates in a single robust downward-curved tooth whereas in *fuscipalpa* there are two thinner curved teeth terminally (Figs. 1, 3–5, 9). However, the most obvious difference in the palp is that *fuscipalpa* lacks the large posterior projection on the mesal side of the cymbium which is present in *gulosa*, and best seen in dorsal view (Fig. 2 cf. Fig. 10).

The female is less easily distinguished from that of *M. gulosa*, but in *fuscipalpa* the sides of the scape form a less acute angle with the epigastric furrow and the central notch in the scape is more rounded (Figs. 6–7 cf. Fig. 11). These figures are drawn from as near as possible to the same angle. If the epigyne is cleared the seminal receptacles of *fuscipalpa* are seen to be round, but they are sausage-shaped in *gulosa* (Figs. 8, 12). In *M. rurestris* the sides of the scape are much straighter, or the



Figs. 1–12: **1–8** *Meioneta fuscipalpa*. **1** Right male palp (Mildenhall, 17.6.99), ectal; **2** Ditto, dorsal; **3** Left palpal lamella, ectal (Mildenhall, 5.8.99); **4** Right palpal lamella, ectal (Mildenhall, 8.10.98); **5** Right palpal lamella, ectal (Castelfeder, Austria); **6** Epigyne (Mildenhall); **7** Epigyne (Castelfeder); **8** Vulva, ventral (Castelfeder). **9–12** *Meioneta gulosa*. **9** Right male palp, ectal; **10** Ditto, dorsal; **11** Epigyne; **12** Vulva, ventral. Scale lines=0.1 mm.

scape may even be slightly narrower anteriorly than posteriorly.

Habitat and distribution

The only known British locality is a calcareous breckland heath, and the specimens were obtained from one of two areas of relict grass heath on the site. This had already been identified as an important natural site as a result of previous botanical surveys, and the cutting regime had been adapted to allow Sand Catchfly (*Silene conica* L.) to flower and set seed. This has allowed a wide range of flowering plants to survive and has created a more tussocky habitat than on the other areas of the airfield where the turf is mown more closely.

There is little information in the literature regarding the habitat of *M. fuscipalpa* on the European continent. Heimer & Nentwig (1991) state that it is rarely found, in damp places, and occasionally on tree trunks, and that its biology is largely unknown. Wiehle (1956) also indicates that details of habitats have not been described and that its distribution in Germany is poorly known. He describes its wider distribution as Northern Europe (except Great Britain), France, Switzerland, Austria, Hungary, Russia, the Balkans, and Madeira. Bonnet (1957) also records it from Poland, Sweden, Norway,

Czech Republic, Italy and the Azores. However, as *fuscipalpa* has sometimes been confused with *rurestris* in the literature, some of these records may refer to *rurestris* rather than *fuscipalpa*. Mikhailov (1997) records it as widespread across European Russia and the western half of Siberia, and as far south as the Caucasus and Tajikistan.

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Note added in proof

After this paper had gone to press, we received some further information about continental records of *M.*

fuscipalpa from Theo Blick and Herman Vanuytven (in litt.) referring to papers by Blick (1999) and Vanuytven (1992) respectively. In Germany the species is listed as occurring mainly in grassland on sandy disturbed ground, and sometimes on sandy arable land and intensively grazed pasture. In Belgium it was found among grass on a dyke and on open sandy ground near a road and a wood. This is in general agreement with the habitat in Suffolk.

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Sub-social behaviour in the diplurid *Ischnothele caudata* (Araneae, Dipluridae)

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Summary

Investigations of the behaviour of *Ischnothele caudata* (Araneae, Dipluridae) in the laboratory have shown this species to exhibit sub-social behaviour, an as yet unreported phenomenon in orthognath spiders. The females care for their young after hatching by providing food. Experiments showed the care by the mother to be necessary for the spiderlings during a critical phase of at least 5 weeks, with the young gaining weight faster and having higher chances of survival.

Introduction

Spiders have always been regarded as a typically solitary animal group, even though several dozen species from at least 9 different families have evolved living in groups (Shear, 1970; Kullmann, 1972; Buskirk, 1981; Uetz & Hieber, 1997; Aviles, 1997). Authors are largely agreed on the evolutionary process that led to social behaviour in Araneae. Two different processes have been discovered. One led from an aggregation of adult animals under certain environmental conditions to a way of life that resembles more a mutual tolerance than co-operation. This evolutionary path, which is mostly postulated for orb-weaving spiders, occurred while the spiders retained their solitary way of life. No co-operation takes place, but merely a reduction of the

distance between the webs to a minimum (Burgess, 1978; Krafft, 1982a, b; Uetz & Hieber, 1997). The other process, most likely involved in the evolution of social behaviour in the non-orb-weaving species, has its origin in the caring for offspring, which was expanded temporally until spiderlings stay with their mother for life. In the highest evolved species this leads to co-operation in all aspects of life (Burgess, 1978; Krafft, 1982a, b; Lubin, 1995; Aviles, 1997).

All authors agree, furthermore, that two things are necessary as pre-adaptations for social behaviour: a web as a medium of information transfer, and life in the tropics or sub-tropics where potential prey is abundant year-round (Nentwig, 1985).

Social behaviour in spiders has only been known in the labidognaths, the more modern, more highly developed group, but has never been observed in the orthognath spiders (Shear, 1970; Aviles, 1997). Darchen's report (1967) on a social diplurid, *Macrothele darcheni* Benoit, has to be viewed with a certain amount of scepticism, as he was only able to study a single web and did not conduct any behavioural experiments. Galiano (1972) gave a detailed description of the development of *Ischnothele siemensi* F.O.P.-Cambridge (= *I. guianensis* (Walckenaer)) and observed that third instar spiderlings remain for varying periods in the maternal web, where they may capture small prey and then disperse to construct their own webs. Paz (1988) observed no social behaviour in any form in a study on a species of *Linothele* (Araneae, Dipluridae) in which residents treat conspecific intruders into their webs as prey. Coyle (1995) in his revision of the subfamily Ischnothelinae gives no further reference to social interactions in *Ischnothele*, but mentions observations suggesting that older juveniles of the African species *Thelechoris striatipes* (Simon) sometimes remain in the maternal web for extended periods. Although these are

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