

Notes on the identification of the British species of *Bolyphantes* (Linyphiidae)

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Introduction

The two British representatives of the genus *Bolyphantes* – *B. luteolus* (Bl.) and *B. alticeps* (Sund.) – can present considerable difficulties in identification to anyone meeting either for the first time. Indeed, on investigation, it seems that quite experienced arachnologists sometimes confuse them. Whilst *B. alticeps* may be commoner in the north and *B. luteolus* in the south, the two are sometimes taken together, so that it is unwise to assume that all the specimens collected in any one area will be of the same species. Identification is usually fairly straightforward if one has a series of reference specimens at hand, but with a single specimen, and the existing literature, confusion is easily possible; the more so when somewhat intermediate types are met with. The reasons for this confusion, which occurs with both sexes, will first be discussed.

Females:

The size, colour, pattern and eyes of the two species are of no value in separating them. The comparatively longer forelegs (especially femora and tibiae) of *B. alticeps* seemed, at first, to offer a useful means of separation, but it was not possible to find a method of expressing this in a way which held for the whole range of specimens examined. The spines on tibiae I and II are also not a reliable guide.

We are, therefore, obliged to rely on the epigynes in separating the females of the two species; and this is where the main confusion arises. Firstly, the figures of the epigynes in Locket & Millidge (1953) are not drawn from strictly comparable angles. This gives the impression that they are more dissimilar than, in fact, is the case. Furthermore, the drawings of both Locket & Millidge and Wiehle (1956) suggest that the scape of *B. luteolus* is bifurcated posteriorly, whereas that of *B. alticeps* is not. In fact, the scape of *B. alticeps* is frequently slightly bifid, and, in many cases, markings on the scape suggest bifurcation even when, on closer

examination, the actual end of the scape is found to be straight (eg. fig. 6). In addition, some scapes of *B. luteolus* show very little sign of bifurcation. The actual width of the scape is also subject to considerable variation in both species.

Males:

The two distinguishing features of value are the forms of the carapace and palpi in the two species. Locket & Millidge figure the carapace of *B. alticeps* only, merely stating that *B. luteolus* is less elevated. Wiehle gives drawings of both carapaces. Unfortunately, some *B. luteolus* are more elevated, and some *B. alticeps* less elevated, than others and a "high" *B. luteolus* could be related to the drawings of *B. alticeps*. One should be able to overcome this problem by looking at the palpi, but, again, the drawings in Locket & Millidge are not from strictly comparable angles. Also, the difference in the stout patellar spines in the two species does not come out very well in these figures. Wiehle's drawings of the palpi are somewhat confusing, but the differences in the spines are well shown.

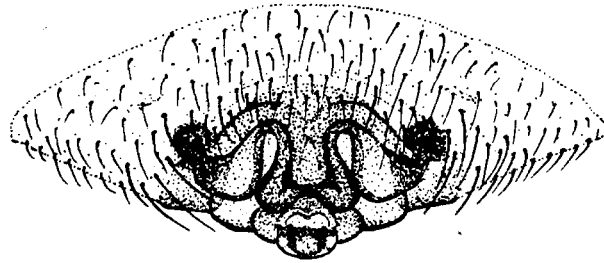
The study of a large number of both species, collected from widely different areas of Britain, and some from Sweden, suggests that the following features are a reliable guide to correct identification.

Criteria used for identification:

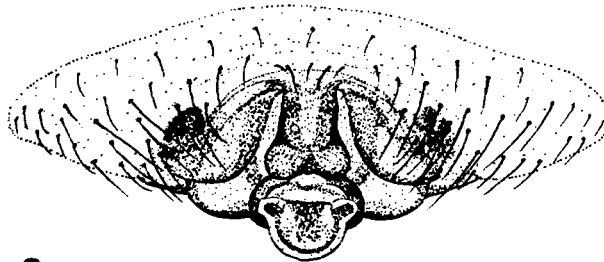
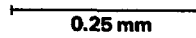
Females:

The epigynes of *B. alticeps* are almost always larger than those of *B. luteolus*. The actual width of the subgenital sclerite in *B. alticeps* varies from 0.30 to 0.38 mm (average 0.32 mm), whereas in *B. luteolus* this measures from 0.20 to 0.33 mm (average 0.26 mm). This fact is of very limited value in itself unless one can take accurate absolute measurements. The width of the stretcher is also fairly consistently larger in *B. alticeps* than in *B. luteolus*, and the scape, although variable, is usually wider than the stretcher in *B. luteolus* and the same width, or narrower, in *B. alticeps*. It is possible to use these facts in a simple formula which appears to give good and reliable separation. Three measurements need to be taken (figs. 3 and 4):

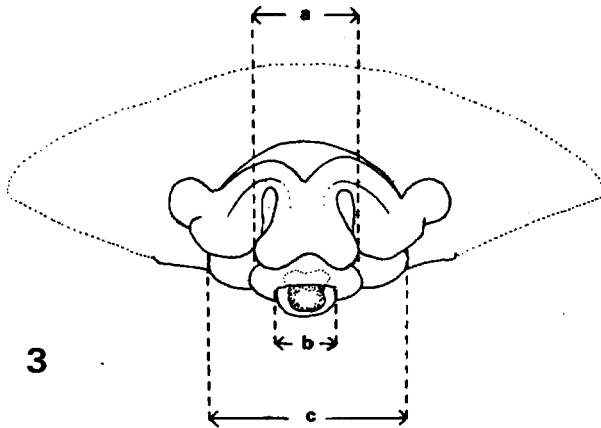
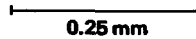
- (a) Maximum width of scape.



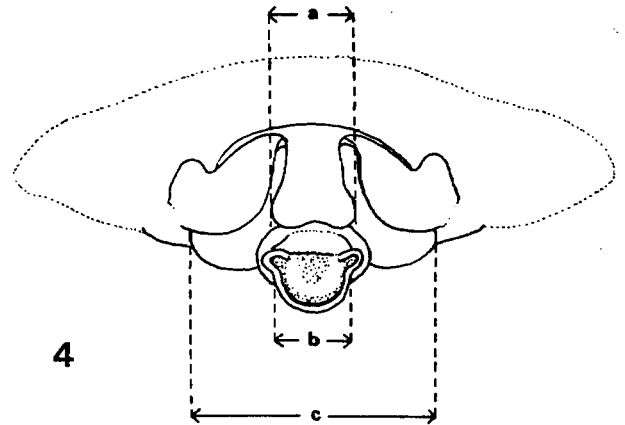
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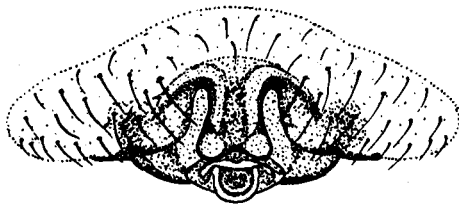


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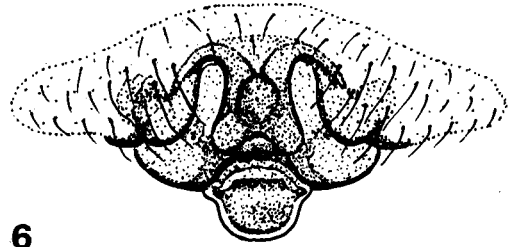
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Figs 1-4: *Bolyphantes* epigynes. 1 *B. luteolus*; 2 *B. alticeps*; 3 Diagram showing measurements taken on *B. luteolus*; 4 Ditto. *B. alticeps*.



5

0.25 mm



6

0.25 mm



7



8

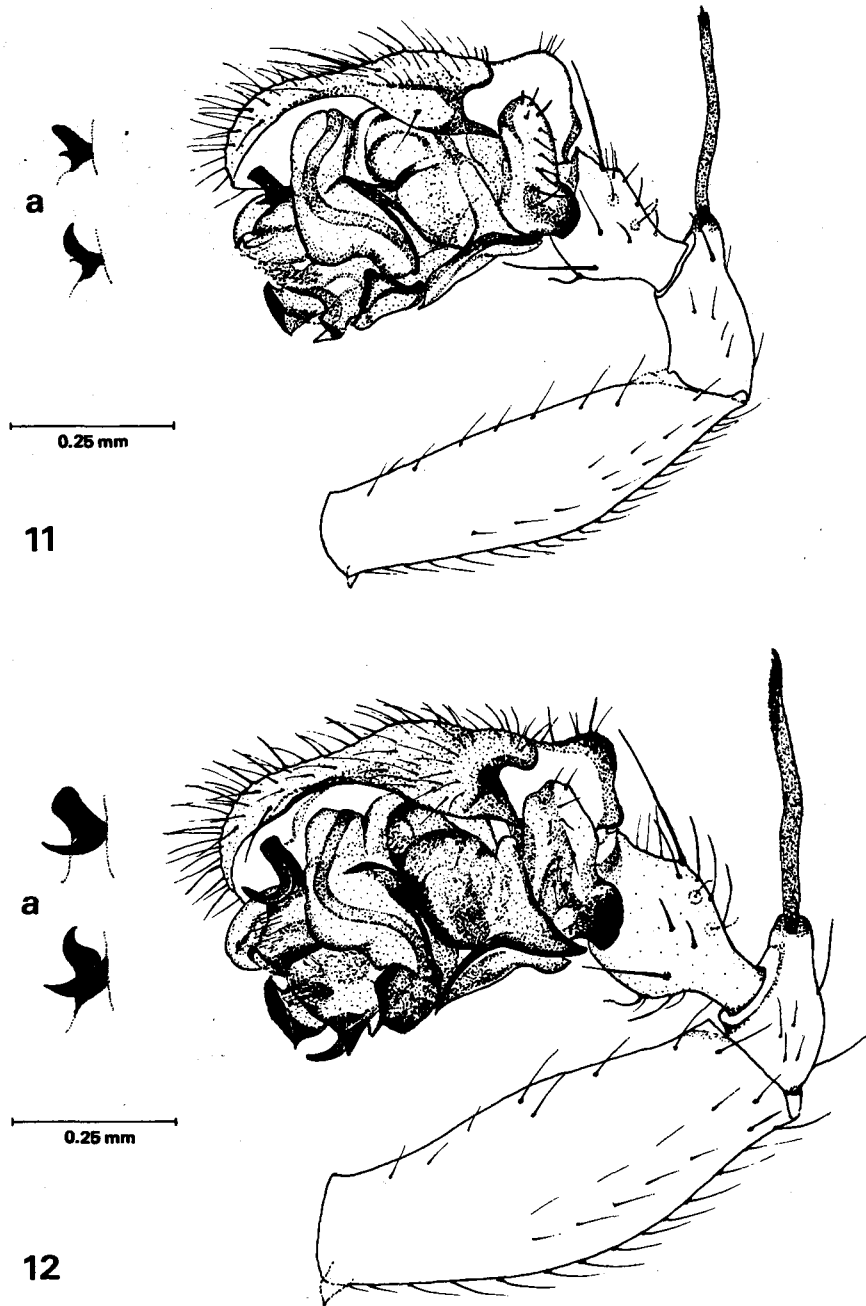


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10

Figs 5-10: *Bolyphantes* epigynes and carapaces. 5 *B. luteolus* epigyne; 6 *B. alticeps* epigyne; 7 and 9 *B. luteolus* ♂ carapace from side; 8 and 10 *B. alticeps* ♂ carapace from side.



Figs 11-12: *Bolyphantes* male palps. 11 *B. luteolus* left palp from outside; 12 *B. alticeps* left palp from outside. *a*, variations in toothlike process.

- (b) Width of stretcher.
- (c) Width of subgenital sclerite.

The ratio $[(b+c)/a]$ then gives figures of 2.2 to 3.5 for *B. luteolus* and 3.6 to 5.0 for *B. alticeps*. The epigynes in figs 1 and 2 give values of 2.5 for *luteolus* and 3.8 for the *alticeps*. Figs 5 and 6 give 3.3 for *luteolus* and 3.63 for *alticeps*. In this second pair of (rather intermediate) epigynes, the scapes appear almost identical in shape.

In practice, greater separation is obtained for the majority of specimens, the average figure being 2.9 for *luteolus* and 3.9 for *alticeps*.

When taking measurements, the epigyne must be viewed from the correct angle, particularly with respect to being able to see the full lateral extent of the subgenital sclerite. Obviously, higher magnifications give greater accuracy when measuring. A magnification of 100X is desirable, but at 40X the method is still reliable, though requiring a little more care.

Males:

In both species, the degree of elevation of the carapace is somewhat variable, being generally greater in the larger specimens than the smaller ones. In figs. 7 and 8 the carapace of the *B. luteolus* is almost as high as that of the *B. alticeps* whereas figs. 9 and 10 show carapaces which differ very considerably in elevation. However, the carapaces of *B. alticeps* are produced into a small "snout" between the anterior eyes, whereas those of *B. luteolus* are not. This is constant, and a more useful feature than the actual degree of elevation.

The palpi of *B. alticeps* are slightly larger than those of *B. luteolus*, but the palpal organs of the two species are very similar (figs. 11 and 12). The shape of the small "tooth" varies (figs. 11(a) and 12(a)), and cannot be relied upon as an aid to identification. The most valuable single feature for distinguishing between the palpi of the two species is the form of the stout patellar spine. Although the actual size is variable, the shape of the spine is constant and differs in the two species. In *B. luteolus* the tip of the spine has an appearance reminiscent of the jagged end of a broken broom handle, whereas in *B. alticeps* the terminal quarter to one third is tapered, and provided with serrations on the tapered edge.

It was interesting to find a specimen of *B. alticeps* (Coll. D.W.M.) which had one patellar spine very much shorter and thinner than the other; the tapering and serrations, however, remained constant in both.

Acknowledgements

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References

- LOCKET, G. H., and MILLIDGE, A. F., 1953: *British Spiders*, Vol II Ray Soc. London.
- WIEHLE, H., 1956: Spinnentiere oder Arachnoidea (Araneae), 28. Familie Linyphiidae - Baldachinspinnen. *Tierwelt Deutschland*, 44.