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Distribution and variation of the species of Brachychaeteuma  
occurring in Britain and Ireland

by

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Early this century the family Brachychaeteumatidae, with the single genus Brachychaeteuma, was a wholly British (and initially northern English) group. All of the three species now standing as British had been described by 1918. Now there are no more than twenty vice-county records of all three species of which ten have been made during the last ten years; there are also very few records of the genus on the continent and each of the authors reporting its occurrence have commented on the paucity of material.

Like all chordeumatidans, Brachychaeteuma exhibits much intraspecific variation in the form of the gonopods, principally in the anterior processes of the modified limbs of the eighth pair of limbs, the gonopods proper. Most of this variability has been described in material from continental Europe. The discovery of a variant during the spring meeting at Lancaster in 1983 provides the occasion for a review of the present situation.

The British and Irish species and their known distribution

The first two of the three species listed below have a mainly northern range; they are externally indistinguishable; each has three ill-defined ocelli on either side and in one variant they are lacking. The third species is strictly southern in its range; it has six more obvious ocelli.

Brachychaeteuma bagnalli

This was the first species of the genus to be described.

1. Durham (vc 66), Gibside, Bagnall (1911), described by Verhoeff (1911)  
Three further Durham localities in 1918 (Bagnall, 1919)
2. Yorkshire, North Riding (vc 62) Easingwold, garden 1956 and again 1961  
by Blower.
3. Dublin (H21), Ballygall, Declan Doogue 1978 in a cornfield on the site  
of an old deserted garden at St. Clare's Hospital.

4. Lancashire, mid (vc 60), Gait Barrows, near Silverdale, by Adrian Rundle, 1983
5. Westmorland, (vc 69), Meathop Wood, 1983. Tony Barber had two males; one of them was a normal bagnalli the other was the variant discussed below.

These five vice-county records represent all we know of the distribution of B. bagnalli. For 27 years the species was not known outside Britain and even now we know of only two records, from caves in Belgium and north west Germany (Schubart, 1938).

#### Brachychaeteuma bradeae

This was the second species to be found in Britain.

1. Lancashire, south (vc 59), Darwen, Whitehall Park and in other gardens in the town (Brade-Birks, 1917).
2. Lancashire, north (vc 69), Barrow in Furness, Brade-Birks (1918 A)
3. Norfolk, west (vc 28), Heacham, Chiver's nurseries, Brade-Birks (1920)  
Norfolk, west (vc 28), Barroway, Drove, collected by Adrian Baker, 1970
4. Somerset, south (vc 5), survey record
5. Sussex, east (vc 14), survey record
6. Lancashire, mid (vc 60), in the grounds of St. Martin's College, Adrian Rundle, 1983

George Fussey also had the species from Meathop (vc 69) at the Lancaster meeting in 1983.

B. bradeae was originally described as Iacksoneuma bradeae by Brolemann and Brade-Birks in honour of A. Randall Jackson. It differed in several respects from the genus Verhoeff had described to house bagnalli, principally in the presence of three ocelli and paranotal lobes; Verhoeff's description of bagnalli as being blind and without paranotal lobes was found to be at fault by Brade-Birks (1918 A). Brade-Birks re-examined the types and found them to have ocelli and lobes; bradeae was thus transferred to the genus Brachychaeteuma with characters amended.

Outside Britain variants of B. bradeae have been described from Sweden and Germany. The Swedish examples were described from Lund, Visby and Kalmar, in graveyards and gardens, by Lohmander (1925) as varieties B. bradeae: var. truncata (Fig 2) and elongata (Fig 4). The German animals include examples from Pasing in Bavaria, found and described by Verhoeff (1925) as B. bluncki (Fig 3) and from Berlin in the Botanic Garden and a cemetery

as B. verhoeffi by Schubart (1930). Lohmander, (pers. com. to Schubart, 1934) later found there was no significant difference between his varieties truncata and elongata and the Berlin examples of B. bluncki and B. verhoeffi respectively. Lohmander said that all these forms could be found in the same place and were probably just forms of one highly variable species. Yet another form, B. bradeae hussoni (Fig 6) was described by Schubart and Husson (1936) from caves in north east France. Schubart gave the form sub-specific status in the absence of knowledge of whether it was geographically isolated from the other forms.

### Brachychaeteuma melanops

This was the third of the species to be discovered, by Bagnall;

1. Dorset, (vc 9 ), Swanage, 1918; described by Brade-Birks (1918 B)
2. Devon, south (vc 4), Torquay and Babbacombe, Bagnall (1919)
3. Cornwall, east, (vc 2) Polbathic, Turk (1943)  
Tintagel, Rocky Valley, Blower, in 1963
4. Kent, west (vc 16 ), garden, J.L.Harding, 1967
5. Surrey (vc 17 ), in three separate km squares, Kime (1978)
6. Sussex, west (vc 13 ), one square, Kime (1978)
7. Monmouth (vc 35 ), OtterHole Cave, near Chepstow (Chapman, 1979)

Outside Britain the species has only be found in France: near Pau by Brolemann (1935) as B. melanops horticola and from six departments, mostly in caves (Demange, 1981). Turk (1943) said that his male example resembled Brolemann's sub-species.

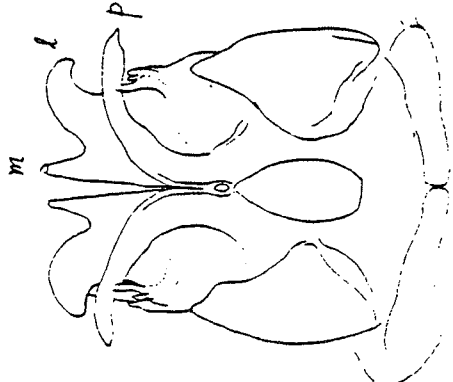
### The new variant, BMG 1983 (Fig 5)

In addition to adding two more vice-county records to the existing three for B. bagnalli and one more for B. bradeae, the Lancaster meeting turned up a new form. One of the two specimens collected by Tony Barber at Meathop was a typical B. bagnalli (Fig 8), the other was the BMG variant, but it is not immediately evident to which species it should be attached. I have arranged the known forms in Figs 1 to 8 to help decide the issue; I am not suggesting that the arrangement is in any way definitive.

In the upper row of figures are the forms with very little mesial division between the anterior processes of the gonopods. Forms along the row differ in the extent and manner of separation between the median and lateral processes of each side.

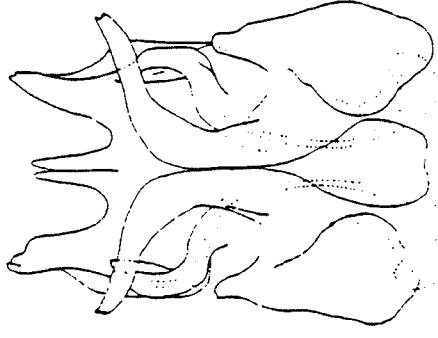
- 1**

*B. bradeae*  
(U.K.)

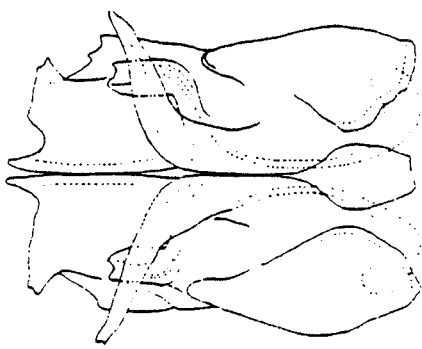


**4**

*var. elongata*  
(=verhoeffii)

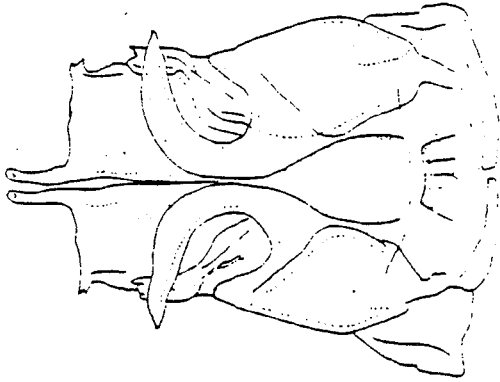

- 2**

*var. truncata*

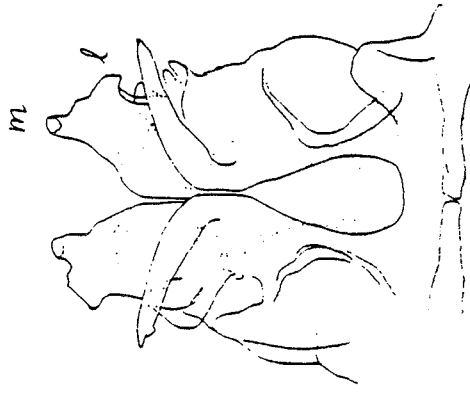


**3**

*var. bluncki*



- 5**

*var. B.M.G. 1983*




**6**

*bradeae hussoni*

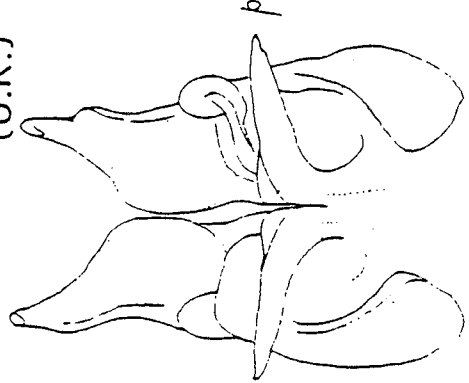

- 7**

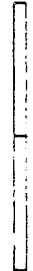
*B. bagnalli*  
(N.W. Germany)



**8**

*B. bagnalli*  
(U.K.)





In the lower row, all the forms show a more marked separation between the left hand process or processes, and those of the right hand. Along the row, from left to right, the figures show a gradual reduction of the lateral processes and their eventual elimination (in bagnalli U.K.). It is of course possible to read the sequence from right to left and see the gradual appearance and development of lateral lobes as branches of the median lobes of bagnalli, from the lateral tooth in bagnalli from north west Germany, through B. bradeae hussoni to BMG variant. The beginning of (or end of ) a lateral lobe can just be imagined in bagnalli U.K. Other examples of bagnalli from Britain and Ireland do not show this lateral shoulder. The more obvious triangular tooth-like processes of north west German examples (Fig 7) are, according to Schubart (1938) completely missing in English and Belgian examples.

The typical bradeae form as in Fig 1 is also the form of the example from Darwen figured in Blower (1958) and of the male from Drove in Norfolk. The typical bagnalli form is very similar to figure 8 (without the shoulders) and is also the form of Brade-Birk's original male and those from Yorkshire, North Riding and from Dublin.

B. herrioti Demange, 1962 is similar to B. bradeae hussoni and comes from caves in Meurthe-et-Moselle. Five other species of Brachychaeteuma are figured by Demange (1981) from French caves.

### Conclusion

A logical argument is developed which suggests affinity of the new variant with B. bagnalli. The same argument suggests that hussoni should be attached to B. bagnalli rather than to B. bradeae. However, intuition leads one to the view that the new form is a variety of B. bradeae. Examination of further examples may add to the idea of a very variable bradeae-bagnalli species, or may suggest the new variant is merely an aberration of the normal bradeae pattern. For the moment, nothing is to be gained by associating the variant with either bradeae or bagnalli.

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### Figures 1 - 8

Posterior views of the gonopods (limbs 8) of typical, varietal and subspecific forms of Brachychaeteuma bagnalli and B. bradeae.

1. Collected G. Fussey, Meathop, vc 69, April 1983
- 2, 3 & 4. Figures 368, 369 & 370 respectively, from Brolemann (1935) redrawn to the same scale.
- 5 & 8. The two males collected A.D.Barber, Meathop Wood, vc 69, April 1983.
6. Figure 2 of Schubart & Husson (1937) redrawn to same scale.
7. Figure 1 of Schubart (1938) redrawn to same scale.

m, l, anterior median and lateral lobes; p, posterior lobes

The scale is 0.2mm long.

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