CYCLOPS SINGULARIS EINSLE (1996) IN OXFORD, A NEW BRITISH RECORD

JIM GREEN AND SARAH YARWOOD-BUCHANAN

Prof. J. Green, 17 King Edwards Grove, Teddington, Middlesex TW11 9LY, UK.

S. J. A. Yarwood-Buchanan, School of Biological and Molecular Sciences, Oxford Brookes University, Gipsy Lane, Headington, Oxford, OX3 0BP, UK.

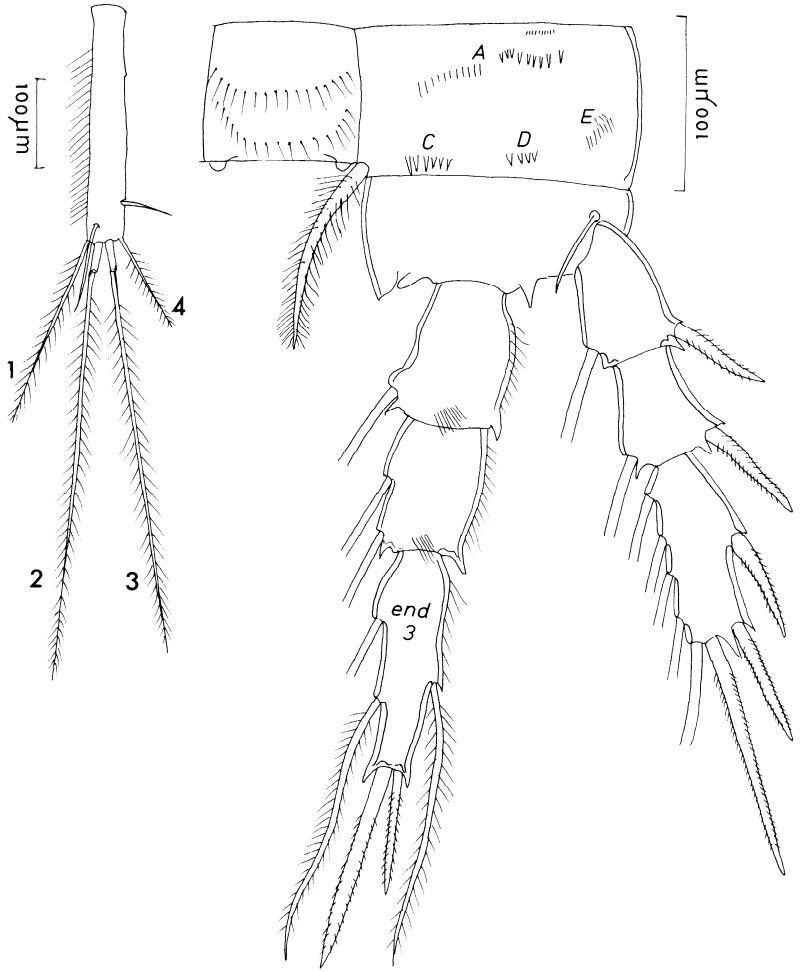
Shortly before he died, Ulrich Einsle (1996a) described two new species of *Cyclops* from ephemeral pools near Lake Constance. He had been aware for many years that the populations in these pools differed somewhat from *Cyclops furcifer,* but regarded them as temporal variants of that species (Einsle 1963). A detailed morphometric analysis combined with studies of chromatin diminution and enzyme electrophoresis led to his paper of 1996.

Our involvement with *Cyclops singularis* began when we were trying out various keys for the identification of some cyclopoid copepods collected from Peasemoor Piece, a seasonal pond on the outskirts of Oxford. With the older keys (Kiefer 1929; Gurney 1933; Dussart 1969; Harding & Smith 1974; Kiefer 1978; and even Einsle 1993) we ended up somewhere around *Cyclops furcifer* or *C. strenuus,* but when we used Einsle (1996b) we arrived at *C. singularis.*

We decided to check this by detailed measurements of ten adult females, all carrying eggs. Einsle (1996a) had shown that there was some seasonal variation in the morphology of *C. singularis* and *C. heberti,* so it was important to make comparisons with his data from the same season. The results are given in Table 1. The least variable and most reliable measurements appear to be of seta 1 as ratios to the length of the ramus, to the length of seta 4, and as a percentage of the total length.

Our measurements of the last article of the endopodite of leg 4 give a ratio of length to width of 2.92 ± 0.1, whereas Einsle gives a ratio of about 2.5. The outer apical spine of this article was 59% of the inner spine, agreeing with Einsle's description 'longer than half the inner spine'. In *C. heberti* the outer spine is only half the length of the inner, while in *C. furcifer* it is only one third. For a more detailed comparison of these species, see Einsle (1996a).

We have not examined chromatin diminution or enzyme electrophoresis, and so cannot claim to have completely identified our specimens with *C. singularis,* but on the basis of morphometrics this appears to be the most reasonable attribution.



Cyclops singularis from Peasemoor: caudal ramus and leg 4. Only the bases of the swimming setae are shown. Lettering of the spine groups on the coxa follows Einsle (1996b). Group B is missing in the Peasemoor females (also in Einsle's specimens). Group D normally has two or 3 spines, but can have 1 or 4. Groups D and E are missing in *C. heberti.* Einsle does not show the minute row of spinules proximal to group A.

Table 1. Morphometric comparison of *Cyclops* from Peasemoor Piece with Einsle's data for *C. heberti* and *C. singularis*. L, length; W, width; T.L., total length.

	C. heberti 17.05.94	*C. singularis* 17.05.94	Peasemoor 11.05.00
Total length mm	1.54 ± 0.055	1.97 ± 0.065	1.75 ± 0.06
Caudal ramus L:W	5.8 ± 0.3	6.1 ± 0.2	6.2 ± 0.3
Seta 1 : L. ramus	0.71 ± 0.03	0.9 ± 0.04	0.86 ± 0.06
Seta 2 : L. ramus	2.29 ± 0.10	1.76 ± 0.07	1.98 ± 0.13
Seta 3 : L. ramus	1.89 ± 0.10	1.53 ± 0.06	1.68 ± 0.06
Seta 1 : Seta 4	1.35 ± 0.04	1.82 ± 0.09	1.75 ± 0.10
Seta 1 as % T.L.	9.1 ± 0.2	12.9 ± 0.3	12.6 ± 1.04
Seta 2 as % T.L.	29.4 ± 0.9	25.4 ± 0.7	28.9 ± 1.81
All samples (Einsle 1996a)			
Seta 1: L. ramus	0.66 – 0.74	0.82 – 1.00	0.86
Seta 1 : Seta 4	1.32 – 1.37	1.74 – 1.96	1.75
Seta 1 as % T.L.	9.1 – 9.9	12.5 – 13.9	12.6

Our motive in publishing this preliminary note is to alert others to the possibility that *C. singularis* may occur in collections from seasonal ponds in the UK. The recent record of this species in Belgium (Alekseev et al. 2002) indicates that this species is not restricted to its type locality. There is also another possibility: that *C. heberti* might also occur, since Einsle (1996a) found the two together in the ephemeral pools near Lake Constance.

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