

OCCURRENCE IN BRITAIN OF *ASELLUS COMMUNIS* SAY, 1818,
A NORTH AMERICAN FRESHWATER ISOPOD

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On the basis of four hundred and fifty collections from one hundred and seven different vice-counties, it was recently stated that only three species of *Asellus*, a genus of freshwater Isopoda, occur in Britain (Williams, 1962a): *A. aquaticus* (L.), *A. meridianus* Rac. and *A. cavaticus* Schiödte. As shown first by Moon (1953), these include the numerous 'varieties' and 'species' described by Collinge (1945a, b, 1946a, b, c). Only *A. aquaticus* and *A. meridianus* are found in surface waters.

In 1963, Dr. D. W. Sutcliffe of the Freshwater Biological Association, Windermere, forwarded for examination several specimens of *Asellus* from a lake in Northumberland. These were found to be neither *A. aquaticus*, *A. meridianus*, nor any other species hitherto described from Europe. In view of the position of the locality from which they were collected, that is, the unlikelihood of the occurrence of a new European species well north of the southernmost limit of Pleistocene glaciation in Britain, and in view of the occurrence in the same lake of *Crangonyx pseudogracilis* Bousfield, a North American amphipod introduced to Britain (Hynes, 1951, 1955), comparisons were then attempted with North American species of *Asellus*. These attempts were unfruitful since, with the exceptions of "*A. communis* Say" (sensu Racovitza, 1920), *A. dentadactylus* Mackin & Hubricht, and *A. montanus* Mackin & Hubricht (and later *A. kenki* Bowman), American epigeic species of *Asellus* were so incompletely described that meaningful comparisons were impossible.

The situation was partly resolved by the loan to me by Dr. J. G. Mackin, Texas A. & M. University, of two slide preparations. The slides showed the first and second antennae, the first, second and third pleopoda, the first and seventh peraeopoda, and the telson and uropoda of a male specimen collected from Valley Creek, near Philadelphia, Pennsylvania. Comparison of male specimens from Northumberland with this loaned material, particular attention being paid to the conformation of the armature at the tip of the endopod of the second pleopod, indicated probable conspecificity.

Such conspecificity, however, did not resolve the species identity. Although Mackin's material was labelled "*A. communis* topotypes", Say (1818) in fact

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did not formally designate a type locality for his species, merely noting (p. 427-428): "a very common species in our fresh waters, particularly in rivulets under stones. It is frequently introduced with the Schuylkill water into Philadelphia". Moreover, Say's description of *A. communis* is quite inadequate as a basis for unequivocal identification of this species. Racovitza's (1920) redescription of "*A. communis*" it must be noted, although comprehensive, was based upon three specimens collected from the Potomac River, Washington, D.C., and arbitrarily assumed by Racovitza to be *A. communis*. His description did not apply to the material from Valley Creek, Pennsylvania, or from Northumberland.

A monographic revision of epigeic species of North American *Asellus* by the present author (Williams, 1970) now makes possible a more complete resolution of the situation. In this revision, a detailed discussion of the identity of Racovitza's and Say's taxa is given. Racovitza's taxon is regarded as a new species, and in the absence of original type material and a clearly delimited type locality, a neotype and restricted type locality for *A. communis* were designated. Full justification and the details relating to this course of action are provided in the revision.

Careful morphological comparison of males in the material from Northumberland with the neotype and two topotypes (male) of *A. communis* clearly indicated conspecificity. Some critical morphological characters, and especially those relating to the male genital pleopoda and the first male peraeopod, are illustrated and compared in fig. 1. Drawings were prepared with a camera lucida. Female material of *Asellus* is much less useful diagnostically, but it is pertinent to record that the female specimen from Northumberland did not differ significantly from North American females regarded as *A. communis* because of their association with males in unispecific collections.

***Asellus communis* Say, 1818**

Material examined. — 13 ♂♂, 1 non-ovigerous ♀, coll. D. W. Sutcliffe, November 1963. Of these 10 ♂♂ are deposited in the British Museum (Natural History), Reg. No. 1968: 310.

Description of locality. — As the present record of *A. communis* is the first relating to the occurrence of a species on both sides of the Atlantic, and is the first record of a species that is almost certainly a relatively recent introduction to Britain, a short description of the locality from which the material was collected is of interest. The description is based entirely on notes provided by Dr. D. W. Sutcliffe.

The specimens were collected from Bolam Lake, about 26 km northwest of Newcastle-upon-Tyne, Northumberland, Map Reference 77/080818. The lake is artificial and was constructed in 1818. Its water is fairly hard as the lake overlies Carboniferous limestone. The lake may be regarded as eutrophic, and has a rich fauna of insects, molluscs, flatworms and leeches, the following species being

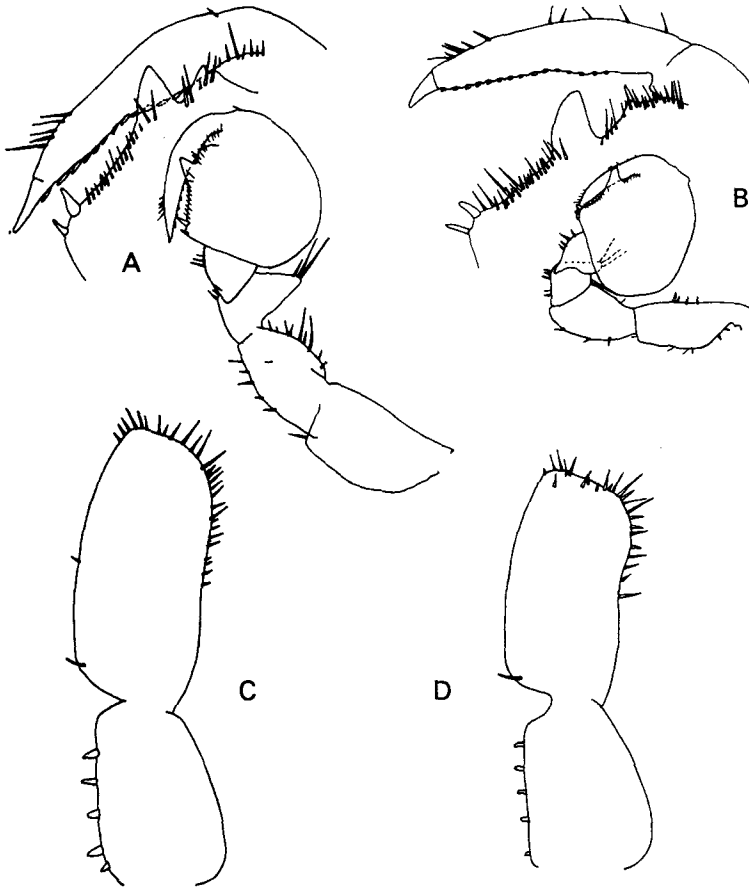


Fig. 1. *Asellus communis* Say, 1818. A, C, respectively, first pereopod (palm in detail) and first pereopod of male specimen from Lake Bolam, Northumberland; B, D, respectively, first pereopod (palm in detail) and first pereopod of the neotype. Appendages from right side. B and D after Williams (1970).

common: *Glossiphonia complanata* (L.), *Theromyzon tessulatum* (Müll.), *Planorbis corneus* (L.), *Physa fontinalis* (L.), *Sphaerium* sp., *Limnaea pereger* (Müll.), *Gammarus pulex* (L.), and *Gasterosteus aculeatus* L. Trout are present, and *Crangonyx pseudogracilis* is common. Several small bays and all of one end have extensive reed-beds, largely *Carex* sp., but stretches of the shore are stony with littoral leaf-litter.

Additional remarks. — It is noteworthy that, according to Dr. Sutcliffe (personal communication, 4.xi.1963), *A. aquaticus* or *A. meridianus* occur in all 'suitable' localities in the neighbourhood of Lake Bolam, but apparently not in Lake Bolam itself. This suggests that perhaps *A. communis* has replaced one or other of these species. If so, then it may be that the British Isles will be subjected to a second successful invasion of a species of *Asellus*; it has already been suggested

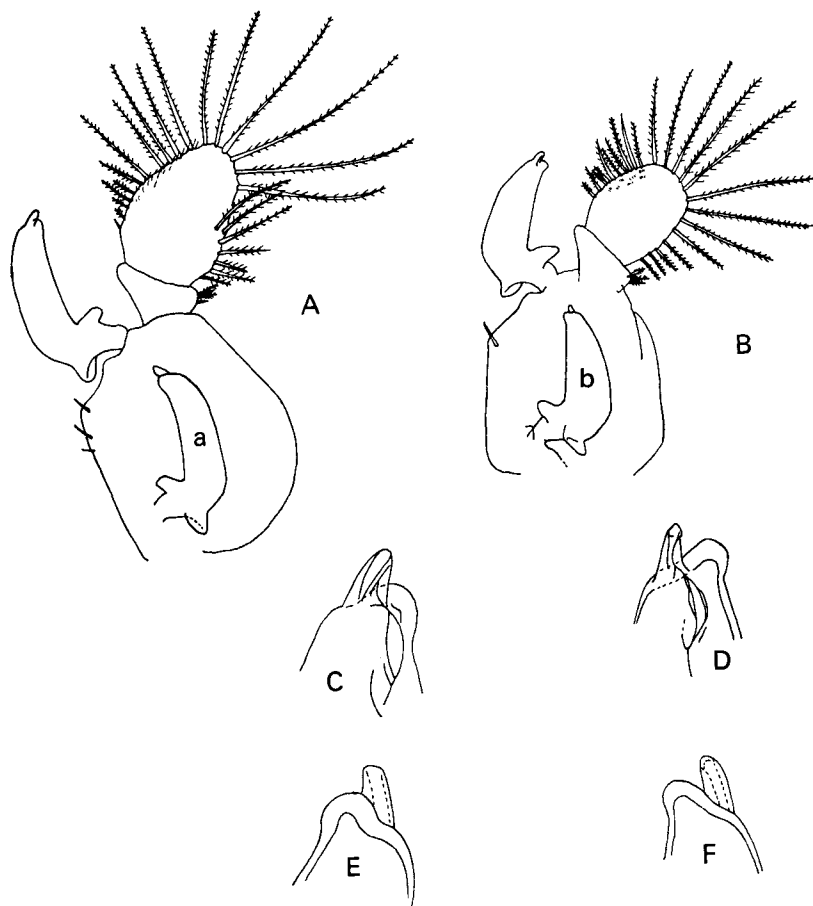


Fig. 2. *Asellus communis* Say, 1818. A, a, C and E refer to the whole or part of the second pleopod of a male specimen from Lake Bolam, Northumberland; B, b, D and F refer to the whole or part of the second pleopod of the neotype. A, B, whole appendage in ventral view; a, b, dorsal surface of endopodite; C, D, ventral surface of tip of endopodite; E, F, dorsal surface of tip of endopodite. Appendages from right side. B, b, D and F after Williams (1970).

(Williams, 1962b, 1963) that *A. meridianus* was present in Britain before *A. aquaticus* and is presently being replaced by it. Certainly it would be of interest to determine the manner in which populations of *A. aquaticus*, *A. meridianus* and *A. communis* interact.

Population densities of *A. communis* in Lake Bolam appear to undergo considerable fluctuation. When first collected the species was said to be very numerous all around the lake shore with several specimens occurring in each sweep of the collecting net. Later, November 1964, it was reported as much less numerous, then in subsequent years as apparently absent, but in late 1967 it was again collected without difficulty (D. W. Sutcliffe, personal communication, 8.i.1968).

No information on the probable time of introduction is available, and estate records relating to the history of the lake unfortunately could not be found. The occurrence of North American maple trees around the lake suggest an American influence of some age, although, on the other hand, *Crangonyx pseudogracilis* has not so far been recorded elsewhere in Northumberland; the nearest west it occurs is Lake Bassenthwaite and the nearest south, southern Yorkshire (D. W. Sutcliffe, personal communication, 10.v.1965). On the basis of its spreading rate in Britain, the dispersal powers of this species appear to be considerable (Macan, 1963).

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RÉSUMÉ

Un Isopode d'eau douce largement répandu en Amérique du Nord, *Asellus communis* Say, 1818, est signalé pour la première fois de la Grande-Bretagne.

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