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Caddisfly (Trichoptera) remains from Westward Ho.!

The Mesolithic site at Westward Ho. is on the coast, only being exposed at the lowest tides at the present time. This paper forms part of a multidisciplinary study of material from this site.

Trichoptera remains were quite common consisting entirely of larval remains. These comprised pronotal, parietal and frontoclypeal sclerites and cases, one containing numerous fragments of the larval exuviae.

Few species were present although several specimens of each species found were present. All except one Leptocerid and possibly another case were Limnephilids belonging to Limnephilinae.

The collected material consisted of three sedimentary successions here called W.H., W.H.Bl(1) and W.H.Bl(2) and two bulk samples W.H.Bl(A) and W.H.Bl(B). Of the successions W.H. was sampled every 2cm. the others were sampled every five cms. Caddis larval remains were found in all of these units although in W.H. they were only in samples 8-0 cm apart from one parietal half in sample 26-24cm. The distribution of subfossils in the site is given in figure 1.

Overall the most common genus in the site was Limnephilus all specimens were compared with modern specimens or photographs of modern specimens for species identifications. Species of Limnephilus are characteristic of slow flowing or still water, the species from this site can be split into three main groups. The majority of the Limnephilus found are of a small type with a small brown frontoclypeus, brown parietals and pale brown pronota and mesonota. The frontoclypeus has a pale hind angle and length is not much greater than breadth, the constriction is about half way between anterior and posterior ends. These specimens compare well with L. affinis

Curtis, L. auricula Curtis and L. incisus Curtis. In the table some specimens are marked L. cf auricula and one L. cf incisus these are the species that they resemble most closely, but all species are similar, in his key of the larvae of the British Limmnephilidae Hiley (1976) does not consider himself capable of reliably separating L. affinis and L. incisus hence these should not be taken as certain identifications. Limnephilus incisus Curtis is referred to as Colpotaulius incisus Curtis by some authors. All of these species live in small often grassy still water bodies, L. auricula Curtis lives in temporary water bodies. Limnephilus group 'a' has a brown pronotum similar to that of the L. affinis group, these individuals may belong to this group, insufficient evidence is present. The subfossil called Limnephilus cf rhombicus is of an individual represented by a frontoclypeus with a broad dark stripe on a pale background spreading towards the anterior margin where the length is more or less equal to the width at the anterior margin. Modern species similar to the subfossil are L. marmoratus Curtis, L. politus McL and L. rhombicus L. These species all live in a wide variety of lenitic waters. One pronotum of a Limnephilus similar to L. subcentralis Brauer was obtained from sample W.H.Bl(2) 10 - 5 cm. Other species showing comparable features are L. borealis Zett. and pale forms of L. lunatus Curtis. These species are found in most types of still and slowly flowing water as a group.

Numerous pieces of a Limnephilid more or less identical with Glyphotaelius pellucidus Retz were recovered from all units of this site. Those identified as Glyphotaelius cf pellucidus are subfossil frontoclypeal apotomes, the pronotum of Glyphotaelius is very similar to certain forms of Limnephilus, represented in part here by the Limnephilus rhombicus group. These are referred to in the tables

as ?Limnephilus group 'b'. The frontoclypeus has a length breadth ratio where the length of the frontoclypeus is substantially greater in relation to the breadth than any British Limnephilus, the most similar being L. flavicornis Fabr and L. stigma Curtis, Limnephilus of this type has a greater length to breadth ratio than any other British Limnephilid. Glyphotaelius pellucidus Retz is usually found in association with the dead leaves of trees, eg. in forest pools. It builds its case from fragments of tree leaf. It is not found in brackish waters.

Two specimens of the frontoclypeus of a species belonging to the Limnephilinae but not to Limnephilus were recovered. The area of the anterior part in front of the central constriction is too great, it is however very similar to allied genera in the Limnephilinae, eg. Anabolia, Arctopora, Asynarchus and Lenarchus. Of these genera only Anabolia is present in Britain at the present day. The subfossils did not compare well with Lenarchus or Arctopora. With the exception of one locality in Bulgaria Asynarchus is confined to Fennoscandia in Europe, the Bulgarian montane locality and the more southerly fennoscandian localities are of A. lapponicus Zett, the subfossils do not belong to this species. Larvae of the other three European species have , to my knowledge, yet to be described. Anabolia has by some authors been described as two separate genera, Anabolia and Phacopteryx. The members of Anabolia from this description all have a highly distinctive pattern of black and white markings on all of the large sclerites. The subfossil from this site by contrast has a dark uniform brown frontoclypeus with a pale fleck either side of the hind angle. This pattern is characteristic of the Phacopteryx subgenus. The only member of this subgenus in Europe is Anabolia brevipennis Curtis. These specimens closely resemble this species. Anabolia

brevipennis Curtis inhabits 'small, stagnant often swampy water bodies' (Lepneva 1971) and 'ponds or lakes with the bed covered with dead leaves' (Lestage 1921), for example in peat bogs. It is not tolerant of brackish water.

The only non Limnephilid on the site was a Leptocerid. This was represented by a case containing some larval and pupal fragments and possibly by another empty case. The fragments, mandible and other small head capsule remains were found in the bottom of what had been a pupal case. Leptocerids habitually throw out the larval skin before pupation, so the the discovery of even these meagre fragments was the greatest good luck. From these fragments and the case itself it is possible to identify this species as Athripsodes aterrimus Steph. While it is possible that the case in W.H.B1(1) 5-0cm could be this species as well, the other case in W.H.B1(2) 30-25cm is certainly not, further identification is not possible. Wallace(1981) states that A. aterrimus Steph is found in 'ponds, lakes and slow-flowing waters, also faster flowing water of lake exits and below weirs; usually among plants and on muddy sand; widespread and abundant'. I have frequently encountered this species as a subfossil in the past, the only one on this site of which I can say this. It is also slightly tolerant of brackish conditions.

The sediments on this site were all water lain in still or near still conditions. Slight change can be seen within the succesion, Athripsodes aterrimus Steph the only named species in the lower part of the succession is characteristic of rather more open water than the species found in the upper part of the succesion. The limnephilids from the lower part show that the deposits are water borne, probably still water, but no more. The species in the upper reaches, Anabolia brevipennis Curtis, Glyphotaelius pellucidus Retz and Limnephilus cf

auricula/incisus suggest an environment consisting of grassy pools with dead leaves in the bottom, probably in a swampy forest area. Anabolia brevipennis Curtis and Glyphotaelius pellucidus Retz are not known to be halophile so the water was freshwater, despite the sites now being well below the tide line. The overall picture then is of a lake or pool slowly turning in to a freshwater peatbog.

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