# COLEOPTERA FROM VURLONG REEN, NEAR CALDICOT, SOUTH WALES

by David Smith

## Introduction

This report describes the results of a Coleopteran analysis of samples from two trenches at Vurlong Reen, Caldicot Levels, Gwent. These excavations were conducted in 1992 in advance of the Second Severn Crossing by the Birmingham University Field Archaeology Unit. The field investigation has been summarised by Ferris and Dingwall (1992). It revealed a series of waterlogged peats which can now be shown by radiocarbon dating to be Neolithic and Bronze Age. Pollen analysis from these peats is summarised by Walker and James (p. 65) and details of the radiocarbon dates for the sequence are given in their Table 1. A note on plant macrofossils is provided by Caseldine (p. 71). Figure 24 shows the stratigraphic sequence in Trench 1 which was sampled for beetles as a continuous column in 20cm units. It also shows the locations of the adjacent pollen/macrofossil monoliths. Additional samples were taken from nearby Trench 2. Coleopteran analyses were carried out on seven samples from Trench 1 and three samples from Trench 2.

## Processing and identification

Each sample was left to soak in a 10% solution of sodium hydroxide. Matter that had floated free was washed through a 300µ sieve until the sample was fully processed. At this point the resulting slurry was paraffin floated using the method outlined in Coope and Osborne (1968) and subsequently improved upon in Kenward *et al.* (1980). Coleopterous remains were sorted from the flot under a binocular microscope, stored in alcohol and identified using a range of entomological keys and by direct comparison to specimens in the Gorham collection housed in the Department of Earth Sciences, University of Birmingham. The detailed species lists will be included in the forthcoming final report.

## Interpretation

### *Trench 1*

The Coleoptera from the six samples from the eastern trench (1) at Vurlong Reen tell a consistent story as to the long term environmental conditions within this deposit.

The water beetles present from both the Neolithic and Bronze Age peats suggest that these deposits were all laid in aquatic environments. The presence of species such as the Dytiscids *Agabus bipustulatus* (L.) and *Ilybus ater* (Deg.) and the Hydrophilid *Laccobius bipustatus* (F.) all suggest the presence of slow moving, sometimes muddy, fresh eutrophic water throughout the history of the deposit (Balfour Brown 1950; Hansen 1987). The presence of eutrophic waters throughout the deposits as a whole is also supported by the ecology of *Ochthebius minimus* (F.), *Hydraena riparia* (Kug.), *H. palustris* Erich. and in particular *H. testacea* Curt. (Hansen 1987). There is, however, a suggestion of possibly more acidic waters present in the upper Bronze Age deposits from this trench. *Hydraena britteni* Joy is thought to be a stenotope in acid pools in woodland and moorland (Hansen 1987; Koch 1989), *Hydrochus ignicollis* Mots. is also thought to favour more acidic waters (Hansen 1987).

The nature of the surrounding vegetation in both periods is also suggested. Many of the dominant

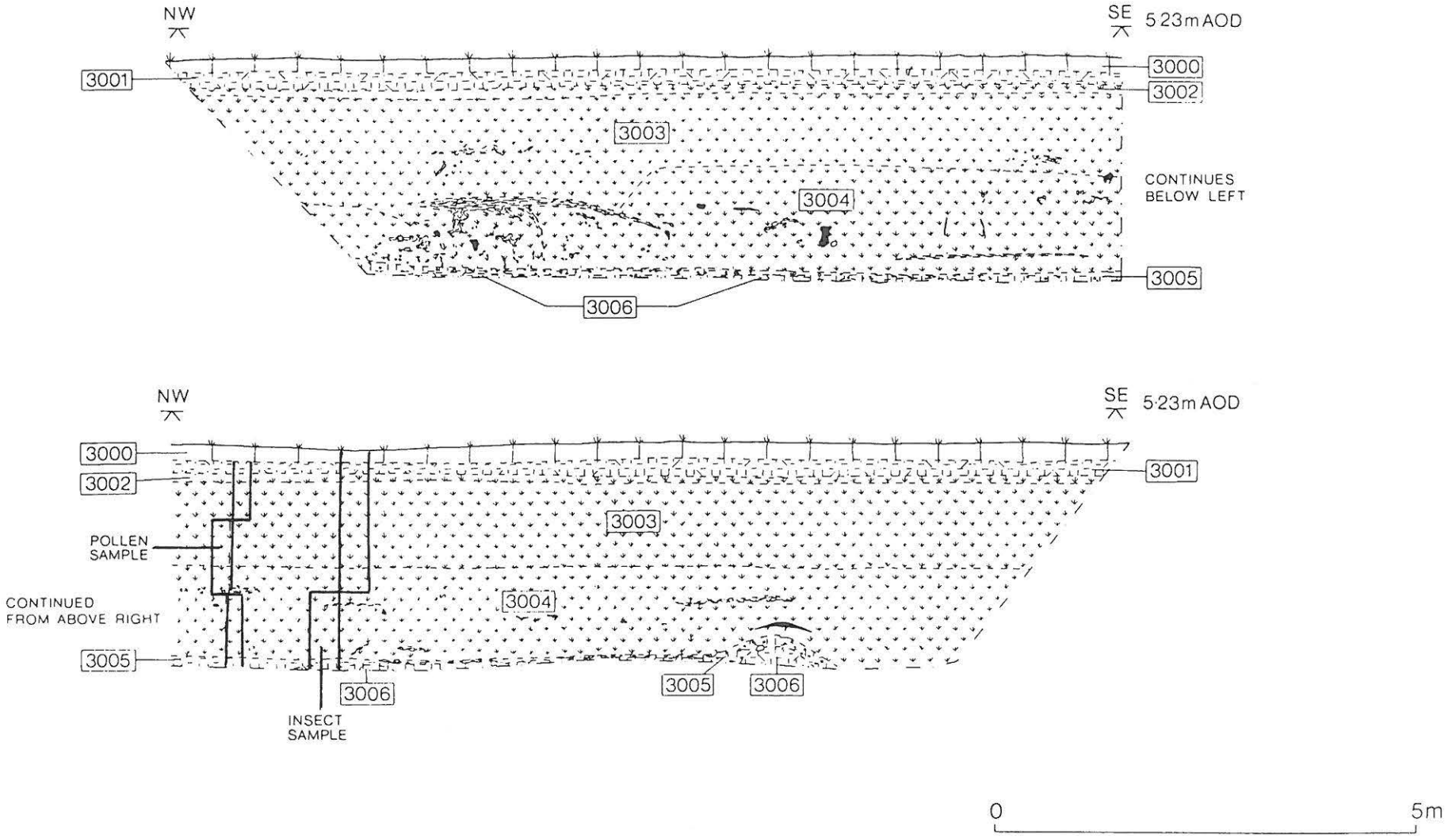


Figure 24. Vurlong Reen: Section of Trench 1 showing the location of the columns of beetle samples and the adjacent monoliths for pollen and macrofossil analysis.

species in the lower samples, from context 3004, are inhabitants of wet, decaying, detritus filled environments found around the base of waterside vegetation. Included in this ecological grouping are *Hydrochus ignicollis* Mots., the Scirtidae *Cyphon* spp., the Hydrophilidae *Cercyon tristis* (Il.), the various species of Pselaphidae and the Corylophid, *Sericoderus lateralis* (Gyll.). Other species suggest the type of reed present in the middle of this section. The Chysomelid *Plateumaris braccata* (Scop.) feeds on *Phragmites australis* L. and the Carabidae *Odacantha melanuara* (L.) feeds only on *Typha* reeds (Harde 1984; Girling 1976). The lower samples also contained evidence of other plant species. The small Curculionid weevil *Tanysphyrus lemnae* (Payk.) feeds exclusively on duck weed floating on the water surface (Harde 1984). The presence of fen woodland in the area at the time of the deposition of the lower samples is suggested by the presence of a few individuals of *Dorytomus taeniatus* (F.), and other *Dorytomus* spp., which feed on broad leaf *Salix* species (Koch 1992).

Although there is evidence for stands of waterside vegetation in the area, the upper Bronze Age samples (contexts 3002, 3003) are probably not derived from the detritis within the mat at the base of reed beds. There is a move away from the dominance of the species seen above towards those which favour areas of mud and plant matter around the margins of small still pools and lakes. Included in this ecological grouping are many Carabidae and the *Dryops* spp.

There are only a few individuals present that might suggest human activity within the area. In sample 4 (Context 3003) there are the remains of three *Aphodius* spp. dung beetles. These species live and feed on the dung of large herbivores, mainly cattle, although they are sometimes encountered in rotting vegetation and flood refuse (Jessop 1988). There is therefore a possibility of grazing in the area.

In summary, the majority of the species present in the lower samples, tentatively assigned to the Neolithic period, suggest the development of a eutrophic freshwater reed bed possibly near a wooded fen. In the upper Bronze Age deposits there seems to be a move away from the dominance of the reed bed to a less vegetated area with pools of stagnant, muddy and possibly more acidic water.

*Trench 2*

The Coleoptera species present in the three samples examined from the western trench (2), Vurlong Reen, strongly resemble those from the lower samples from the eastern trench (1). Similarly, the deposit appears to have resulted from the build-up of the detritus mat at the base of a freshwater eutrophic reed bed. There is again the suggestion that fen woodland was present in the area. In particular *Salix* spp. (the host plant of *Dorytomus taeniatus* (F.)) and *Fraxinus* spp. (the host plant of the Scolytidae *Hylesinus oleiperda* (F.)). In addition, the single individual of *Anobium punctatus* (Geer.) the 'common furniture' beetle is thought to feed on standing dead timber in woodland when away from human habitation (P. Osborne pers. comm.) As with the eastern trench there are a few individuals of the dung feeding Scarabaeidae which may indicate the presence of pasture in the area.

Overall, this suggests that the peat deposits in this trench developed in similar conditions, at a similar period, to the Neolithic and Bronze Age peats in the eastern trench.

## Species of biogeographical importance

The majority of the species present in the deposits from both trenches at Vurlong Reen are common in the late Holocene and are currently found in

reed beds throughout mainland Britain. However, one species does appear to have a temporal biogeographical importance. In sample 4 (Context 3003) from the eastern trench (1), dated to 3320±60 BP, half of a well preserved thorax has been identified as a *Chalenius sulcicollis* (Payk). This species is a relatively well known inhabitant of soft mud and plant stems among reed beds on the continent (Lindroth 1986). However, it is not native to the British Isles at present and is, therefore, believed to be extinct in this country (Kloet and Hinks 1977; Girling 1984). This species has been found in geological samples in the past, mainly from the Bronze Age peats from the Somerset trackways, and it has been suggested that its presence can be taken as a sign of warmer summer temperatures and more pronounced continental conditions (Girling 1984). One noticeable absentee from these faunas is *Anthicus gracilis* Panz. which, although not common, persistently occurs in Bronze Age peats from the Somerset Levels and other sites (Girling 1976, 1977, 1980, 1984; Dinnin M. pers. comm.).

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