DISCOVERY OF *TRACHYSPHAERA LOBATA* (RIBAUT, 1954) IN WALES

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On 21st March 2007 I looked for the woodlouse *Oritoniscus flavus* (Budde-Lund, 1906) at its only site in the UK, discovered by Ian Morgan at Bynea, Llanelli, Wales in 1994. Within a few minutes of sieving moss and plant litter many *Oritoniscus* were located and my appreciation was mentally extended to Ian and others who had encouraged me to look there. Also, almost immediately I became aware of another speciality - a relatively large white microglomerid with heavy transverse ridges that stood out against the silty soil darkened with coal dust - *Trachysphaera lobata* (Ribaut, 1954) at its first site in Wales, and second in the UK. The first site in the UK was discovered in 1984 on the Isle of Wight by Dick Jones and Andy Keay (Jones & Keay, 1986) who give an excellent description and drawing of the species. According to Jean-Paul Mauriès (communication to Paul Lee in June 2005) the precise identity of the species present in the UK is not completely certain since the telopods (in the male) of the UK specimens do not seem to match the published description of *T. lobata*; it and closely related species in western Europe may be in need of revision. However, the telopods from the three British sites appear similar, referring to Dick Jones' drawing of those from the Isle of Wight. The source of the population is open to question but it is likely to have been an introduction from western Europe; both the Isle of Wight and Llanelli have or had coastal ports nearby. The question will be considered in a later paper.

The site at Bynea (SS54829851, vc44, Alt.6m asl.) is a patch of scrub with a small clearing containing brambles and ruderal herbs, bounded on all sides by reens or ditches; a footpath runs along one edge (Fig. 1). The site is immediately north of a transport corridor with the A484 road and the main coast railway line; there is an extensive network of drains and historic reens as the area, including the *Trachysphaera* site, is reclaimed marsh (originally salt marsh) and the water table seems to be carefully controlled within narrow limits about a metre below the surface. This seems to be an important factor in the suitability of the site for *Trachysphaera* (for *Oritoniscus* also) as the soil, of silt darkened with coal dust and enriched with humus, is relatively shallow (10 - 15cm) on top of clay or hard compacted mine spoil from the immediately adjacent and abandoned coal mine, the only obvious remnant being the tall brick chimney. A branch railway line served the mine, marked by the remaining embankment across the marshes and grazing fields.

Although studies on the ecology of *Trachysphaera* at the Llanelli site are ongoing, a few notes on their densities may be of interest: they ranged from zero or very low at the fringes of the one hectare site to what was an extreme, a very localised concentration in which 140 were counted from 1.1L of soil from under a rotten, partly buried log in humus-rich soil next to a reen - a density of 127 per litre (127,000 per m^3). A typical sample or an average of many samples though would surely contain considerably less: for example one from near the centre of the study area on 26th February 2008 contained 180 specimens in 4L (45 per litre, 45,000 per m^3). It should be noted that the densities quoted per m^3 are largely meaningless since the soil depth is only of the order of 10 - 15cm, but they are given for comparison with Lee *et al*. (2005). As sampling technique and experience improved, an increasing proportion of the immature stadia (probably all except for stadium I) were found.

For comparison, at East Cliff, Bembridge, Isle of Wight in 1984, Jones & Keay (1986) found densities of 28 *Trachysphaera* per 0.005m^3 (5.6 per litre, 5600 per m^3), seemingly commonest at a depth of 15cm. Lee *et al.* (2005) found densities in 2005 of 2.18 per litre (2180 per m^3) and remarked that the species seems to have declined in numbers at East Cliff (figures from their table of results have been averaged). In all cases samples were not random being taken from sites selected for the likelihood of obtaining positive results.
The conservation of the Bynea site and its special fauna is hopefully assured by the local Carmarthenshire County Council although there is extreme pressure for infilling and development on the surrounding marshes and fields, being on the edge of Llanelli and on the flat coastal belt of south Wales. The site is owned by the local council, at one end of an area designated for the protection of the Water Vole - a BAP species. However, the site is likely to become further surrounded by industrial development, housing and amenity areas - subject to pollution incidents from the road and into the watercourses, and from fly tipping. Careful

maintenance of the water table must be assured and any conservation activities carefully monitored to prevent soil compaction, burning of cleared vegetation, over-zealous scrub clearance and inappropriate use of herbicides and insecticides. In addition any damaging footpath operations and demolition or reconstruction work on the historic mine chimney needs to be closely controlled. Otherwise the site and its important fauna are critically vulnerable.

FIGURE 1: The *Trachysphaera lobata* locality at Bynea

It came as a considerable surprise to the author to find the species again on 5th April 2009 under a hedge at the edge of the churchyard of the sparse and remote village of Llanwrtyd in mid Wales (SN86354780, vc42, Alt. 220m asl) apparently far removed from mining or industrial connections as a source of introduction. The question naturally arises - is *Trachysphaera lobata* actually a native species that has been seriously overlooked? This is actually difficult to countenance as it is a relatively large and obvious animal to anyone studying small soil organisms, using a variety of methods; soil invertebrate studies have been carried out extensively by university students at all levels and by agricultural research organisations up and down the country for many years.

However the timber export industry might be a possibility; viz. the railway 2.5km away at Llanwrtyd Wells runs directly to Llanelli on the coast (or lorries, or a combination of the two may have been involved) and trucks returning to pick up more timber for pit props or for export, from the extensive forests surrounding Llanwrtyd, may have carried the species in adhering mud. Also noteworthy is the fact that the *Trachysphaera* site at Llanelli is 100m from the present day main coastal railway line, 600m from the branch line to Llanwrtyd Wells and, more pertinently, is actually on the terminus site of the historic branch line to the long-closed coal mine.

The single male and four female mature specimens were found among moss at the surface and in the friable, structured and well-drained soil up to 5cm down. Shaded by the hedge, the soil in the very small area examined was moist (even after several weeks of dry weather) and central Wales is well endowed with

rainfall through most of the year. The soil habitat accords with that at Llanelli - a structured crumble, rich in humus, with many cavities, that is shaded, and neither dries out nor becomes waterlogged.

ACKNOWLEDGEMENTS

My thanks go to Ian Morgan and others for encouraging me to look at the Llanelli site, to Jean-Paul Mauriès for his opinion on the identification problems, to Paul Lee and Andy Keay for sharing this information and to Dick Jones for a drawing of the telopods of an Isle of Wight male; additionally to Paul Lee for information on the Bembridge site.

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