MALACOLIMAX TENELLUS (MÜLLER 1774) (PULMONATA: LIMACIDAE) IN THE NORTH MIDLANDS OF ENGLAND

Boycott (1936) referred to *Limax cinereoniger* Wolf as 'our noblest slug and a wonderful judge of scenery' but did not extend this to the similarly restricted *Malacolimax tenellus* (Müller). In Britain this species is confined to sites which have had a long and continuous history of tree cover, and especially those with a long history of large old trees, i.e. old growth conditions. Boycott believed this slug to be the best molluscan indicator of a relatively undisturbed primeval woodland site (Boycott, 1934). It nonetheless appears to be tolerant of traditional management to some extent; most sites tend to be either remnant tree cover on steep slopes or else ancient wood pasture systems. It chiefly feeds on the fruiting bodies of fungi (Ellis, 1936).

This old growth slug has a disjunct distribution in Britain, and is mainly known from the north and west plus the far south-east (Kerney, 1999). Kerney shows just three modern records from the Midlands – Derbyshire (SK27 & 35) and Nottinghamshire (SK67) – and a single old one from Staffordshire (SK04). He comments that its distribution is undoubtedly receding in Britain, and that it is at risk in many places from replanting and clear-felling. The Conchological Society of Great Britain and Ireland has initiated a special survey project for this species (www.conchsoc.org/projects/mal-ten.php). Being isolated, the populations in the Midlands may be amongst the most vulnerable and therefore worthy of fuller documentation.

The species is a European endemic (Kerney & Cameron 1979) and appears to be rare or very rare in many other European states, e.g. Belgium (Instituut voor Natuur- en Bosonderzoek, 2009), Denmark (Wild about Denmark, 2009), Netherlands (Gittenberger *et al*., 1984), and it may be that Britain holds internationally important populations.

Fieldwork during 2009 discovered *M. tenellus* in two counties in the English Midlands and has stimulated this review of the known sites across the north Midlands.

Staffordshire Dimmings Dale, near Cheadle, is a deep valley cut through Keuper Marls exposing several outcrops of the harder Bunter Sandstone (Anonymous, 1994). The stream is a tributary of the River Churnet. Threap Wood is an ancient woodland site, although the core of the wood was felled some decades past, leaving a few remnant old oak *Quercus robur* and *Q. petraea* as well as beech *Fagus sylvatica* trees around its boundaries and along the hard rock outcrops within the main slopes. Much of the area is now under conifer plantations but one section of the wood was left to regenerate – possibly with some replanting of oak – and now comprises a mosaic of oak and birch *Betula* sp.

M. tenellus was originally discovered in Dimmings Dale in 1909 and seen there again in 1910 (Masefield, 1910, 1911). These remained the only records for the county until the present author re-discovered it there 86 years later, on 14.x.1997. One slug was then noted on the fruiting body of the bracket fungus *Inonotus radiatus* on a dead alder *Alnus glutinosa* stem within a small remnant area of alder carr along the valley bottom at about SK057433. The other slug typical of old growth conditions, *Limax cinereoniger*, was noted close by beneath loose bark on a dead oak in Threap Wood (SK055428). A series of visits in 2009 produced further sightings of *M. tenellus*:

- One individual on *Ganoderma australe* fruiting from the base of an old birch tree close to the head of a spring-fed side valley (SK055427), 2.vii.2009; two slugs here 6.viii.2009.
- Two individuals active over a fallen bough beneath an old beech lower down this side valley (SK054428), 6.viii.2009.
- Two more beneath loose bark on another fallen beech bough with abundant fruiting of *Neobulgaria pura*, derived from an ancient beech by the boundary wall (SK056429).

Part of the dale has been designated as a Site of Special Scientific Interest since 1968 in recognition of its outstanding bryophyte and insect assemblages, recognising in particular a long history of insect recording, especially of Diptera. While the 1997 record came from within the protected site, all of the 2009 records came from an area of woodland outside of the designated

site. All of the woodlands here are however owned and managed by Forest Enterprise and the undesignated area appears to be under no particular threat.

Nottinghamshire *M. tenellus* was discovered in Clumber Park on the northern edge of the historic Sherwood Forest, by the author in 1984 as part of a biological survey of the National Trust (NT) estate. Single individuals were found beneath loose bark on a beech log at Thorney Hill (SK625735), 6.viii.1984 and on a felled beech trunk at Ash Tree Hill Clump (SK623756), 7.viii.1984. Clumber Park was designated as an SSSI in 1981, particularly for its saproxylic beetle fauna characteristic of a long continuity of the mature timber habitat and an abundance of standing and fallen dead wood. It seemed remarkable that *M. tenellus* had not been found elsewhere in the Sherwood Forest area, as this is such a draw for field naturalists. Its continued presence at Clumber Park has been confirmed by other recorders subsequently – C Hobart in 2000, Chris Du Feu in 2008, and Marion Bryce in 2009 (A Norris, pers. comm.).

A second locality was found by Chris Du Feu in Forest Pines Country Park, Clipstone (SK6163), 31.x.2008. This is a large area of conifer plantations close to Rufford Park and to the south of the main surviving area of Sherwood Forest's former wood pasture (see below). It is unclear whether this area contains any remnant wood pasture habitat – its presence in such a modified area is surprising.

A third population was found by the author in a small area on the western margins of the Birklands area of Sherwood Forest, 12.viii.2009, just south of Hanger Hill (SK599678), associated with ancient oak trees engulfed within secondary woodland. Initially two individuals were noticed about 1 m above ground level on the bark trunk of a live ancient oak tree – no fungi were apparent. Subsequently more were found on the top of a mature oak which had collapsed and fallen to the ground. One was actively exploring over the extensive growth of *Stereum hirsutum* while two others were found under loose bark elsewhere on the same branch. These individuals were in the one area of the Forest visited that week which appeared to have a particularly humid and sheltered microclimate. Other areas were clearly much drier and more exposed to the wind. *Limax cinereoniger* was also found here in much drier weather conditions in September 2009, in the same area as *M. tenellus*, but the latter species could not then be found despite this being normally the best time of year for finding it. *L. cinereoniger* was also found widely across the Forest but has not previously been reported. The site is owned by Forest Enterprise and lies within the West Birklands and Ollerton Corner SSSI.

M. tenellus was also found by Rosemary Hill in the adjoining Sherwood Forest Country Park (SK6267 & 6268), 24.x.2009 – this area of former wood pasture forms part of the Birklands and Bilhaugh SSSI.

Derbyshire As with the other two Midland counties above, *M. tenellus* was long overlooked in Derbyshire. It was first discovered in two distant areas as recently as 1983. The first is Shining Cliff Woods (SK337522), a steep wooded valley-side above the River Derwent, where Peter Tattersfield discovered it, 23.viii.1983. The species was again noted here by Adrian Norris, 31.viii.1986, and the present author found one beneath loose bark on a fallen oak branch in mature oak woodland, 31.vii.2001, during the course of a biological survey for the NT. The Woods are a Site of Special Scientific Interest, designated partly for their invertebrate interest, and lie within the medieval forest of Duffield Frith (Wiltshire *et al.*, 2005).

The other site is Abney Clough, a wooded side valley of the River Derwent but some 25 km to the north, within the Peak District National Park, where Peter Tattersfield and Ray Clinging discovered it independently in two separate areas. PT was the first to find it, in mixed ash and elm woodland with some planted beech (SK207798), 14.ix.1983. It was subsequently found by RC immediately lower down the clough in broad-leaved woodland under-planted with conifers (SK2179), x.1983. Several specimens of an unusual brown form were found at this latter site, and were dissected by Adrian Norris to confirm their identity. Abney Clough is included in the Abney & Bretton Cloughs SSSI, designated partly for its invertebrate interest and for its 'old oak forest' lichens. The conservation importance of the species is acknowledged locally by its inclusion in the county Red Data Book (Elkington & Wilmot, 1997).

Conclusions

The localities for *Malacolimax tenellus* across the north Midlands all appear to be in safe hands at present – all lie at least partly within SSSIs, one in a National Park, and two owned by the National Trust. The two not fully protected by SSSI designation at present are on land owned and managed by Forest Enterprise. Present management appears appropriate to good conservation in all except two. The Abney Clough site has not been visited by the author and so not assessed for condition. Part of this area had previously been under-planted with conifers when visited by the discoverer, Ray Clinging, in 1983. Forest Pines Country Park has also not been assessed by the author for condition and would appear anomalous in terms of habitat quality for *M. tenellus*.

The Derbyshire and Staffordshire sites are ancient woodlands on steep valley sides, while the Nottinghamshire sites are both former wood pastures within the medieval Forest of Sherwood.

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