Biodiversity Duty:
Mollusca Survey of National Slate Museum, Llanberis

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National Museum Wales
8 & 9 June 2009

Introduction

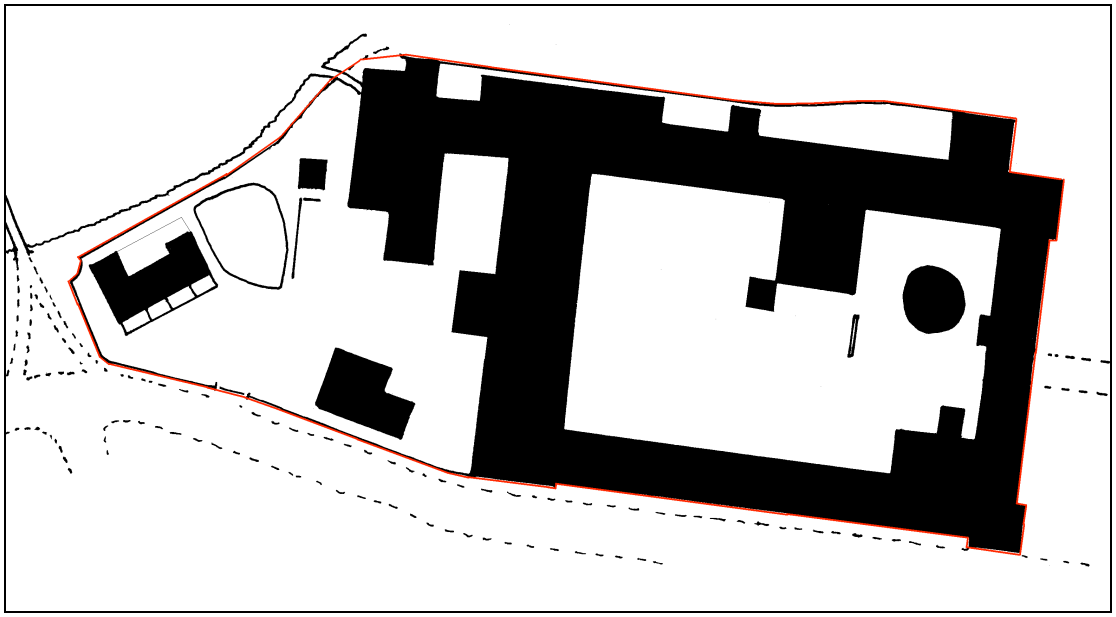
From 1 October 2006, all public authorities in England and Wales have a duty to have regard to the conservation of biodiversity in exercising their functions (Section 40 of the Natural Environment and Rural Communities Act 2006). As part of the Museum's response to this legislation, biodiversity audits are being carried out at a series of its sites. In this report, a list of Mollusca species is presented from a survey of the grounds of the National Slate Museum, Llanberis in June 2009.

The National Slate Museum, Llanberis is composed of two parts, the museum building and the Vivian Incline. The Museum buildings are set in Padarn Country Park and consist of a rectangular building with a central courtyard and an enclosed area to the east with a café, children's play area, quarry man's cottages and the water wheel tower. The Vivian Incline is set close by in Coed Dinorwig Site of Special Scientific Interest (SSSI), a semi-natural oak woodland. The incline is leased from Gwynedd County Council and under the Museum's management.

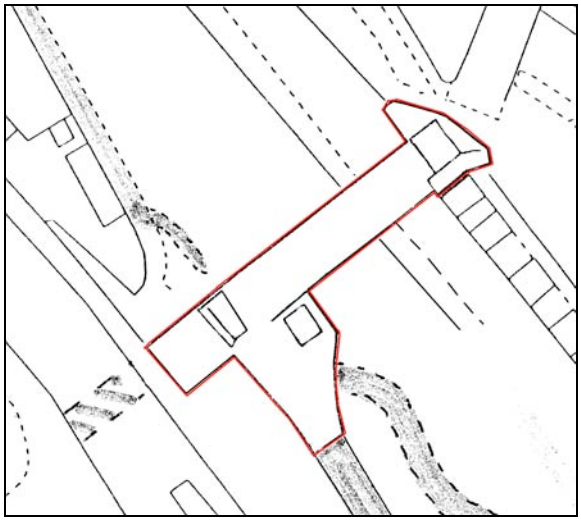
Methods

The survey was carried out on the 8 and 9 June 2009. The area surveyed is shown in Figure 1.

Figure 1 (a & b). Areas surveyed. The site boundary is shown in solid red. Not to scale.



a) Museum buildings



b) Vivian Incline.

We carried out the survey by walking around the grounds. As a Phase 1 habitat survey had been carried out on the site earlier in the year we were able to concentrate our searches on each of the habitats identified in this survey. The list below is a condensed version of the habitat types as identified in the phase 1 habitat survey, for the comprehensive list please see the report by Tim Rich.

Scattered Scrub
There are two small patches of cut bramble scrub at the base of the incline.

Broad-leaved parkland/scattered trees
Two oak trees and one sapling occur immediately to the west of the water wheel tower.

Dry Dwarf Shrub Heath
At the base of the incline is a small triangular area of heathland dominated by heather and bramble.

Ephemeral/short perennial vegetation
Scattered around the museum quadrangles are small areas of ephemeral vegetation.

Introduced Shrub
A small area of butterfly bush scrub occurs at the base of the incline.

Buildings and Walls
The Museum buildings are well maintained and are known to have a bat roost. Other than the walls of the buildings, there are a few walls along the museum buildings site boundary and at the incline.

Bare ground
Most of the ground within the museum buildings site is covered with small slate chippings.

Manual searches were carried out in a range of these habitats. These searches involved searching on our hands and knees through the foliage and leaf litter layer (figures 2 and 3), and searching walls and the outsides of old buildings (figures 4, 5 and 6).

We also used a suction sampler to help draw out any small species living in the dense grass or deep cracks of walls (figure 7). Finally, we collected samples of leaf litter and surface soil from different areas which we then dried out in an oven at a low temperature, sieved (5mm and 0.5mm sieve sizes) and searched through under a bright light to find smaller litter dwelling species.

We were able to identify a large proportion of the taxa in the field, but some specimens difficult to identify were collected for later determination. Nomenclature follows Roy Anderson, 2005 - An annotated list of the non-marine mollusca of Britain and Ireland. *Journal of Conchology*, **38** (6): 607-637. Notes on the distribution on the taxa in the UK are taken from Michael Kerney, 1999 - *Atlas of the Land and Freshwater Molluscs of Britain and Ireland*. 264 pp. Harley Books.

Figure 2. Searching through leaf litter

Figure 3. Searching in woodland

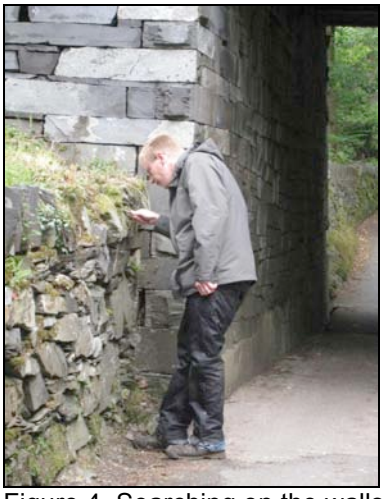


Figure 4. Searching on the walls

Figure 5. Searching the walls of an old building at bottom of incline

Figure 6. Searching the garden walls

Figure 7. Using the suction sampler at the top of the incline

Results

The species recorded are listed below.

TABLE 1. MOLLUSCA RECORDED AT LLANBERIS

Species	Common name (if applicable)	UK distribution of taxa
Acicula fusca	Point snail	Native – prefers the moss and leaf litter of undisturbed deciduous woodland. Patchy distribution throughout Britain where it is retreating as a result of intensive farming and destruction of deciduous woodland.
Aegopinella nitidula	Smooth glass snail	Native – common and widespread.
Aegopinella pura	Clear/Delicate glass snail	Native – common and widespread. Characteristic of leaf litter in deciduous woodlands.
Arion (Arion) flagellus	Durham slug	Possibly native – widespread in the West of Britain, less so elsewhere though under recorded.
Arion (Arion) rufus	Large black slug	Probably native – common and widespread.
Arion (Carinarion) circumscriptus	Dotted slug	Probably native – common and widespread.
Arion (Kobeltia) distinctus	Common garden slug	Probably native – under recorded yet likely to occur throughout most of the British Isles.
Arion (Kobeltia) owenii	Warty arion (slug)	Probably native – first distinguished in 1970's, remains seriously under recorded. Distribution - restricted to parts of Devon and North-west England/Scotland, parts of N. Ireland.
Boettgerilla pallens	Worm slug	Introduced – first noted in England and Wales in 1972. Continuing to spread rapidly.
Carychium tridentatum	Slender herald snail	Native – common and widespread.
Cepaea (Cepaea) nemoralis nemoralis	Grove/Brown-lipped snail	Native – common and widespread.
Clausilidae sp. juv.	Door snail	Unable to identify as specimen is a juvenile.
Cochlicopa cf. *lubrica*	Slippery moss snail	Native – common and widespread.
Cornu aspersum	Common/Garden snail	Introduced – early in Romano-British period. Broadly distributed although less so in northern parts of Britain.
Deroceras (Deroceras) panormitanum	Caruana's/Sicilian slug	Probably introduced – first record for SE Wales in 1931. Spread has been rapid, now common in many areas of the UK.
Deroceras (Deroceras) reticulatum	Field/Milky slug	Probably native – common and widespread.
Galba truncatula	Dwarf pond snail	Native – common and widespread. Although an aquatic species, it lives mostly outside of the water but in moist habitats.
Discus (Gonyodiscus) rotundatus rotundatus	Rounded/Radiated snail	Native – common and widespread.
Lauria cylindracea	Common chrysalis snail	Native – common and widespread.

Lehmannia marginata	Tree slug	Probably native – common and widespread, some decline in central and eastern England.
Oxychilus cellarius	Cellar snail	Native – common and widespread.
Oxychilus navarricus helveticus	Glossy/Swiss glass snail	Probably introduced – common in southern and central Britain although distribution is patchy in parts.
Tandonia budapestensis	Budapest slug	Probably introduced – first recognized in Britain in 1921, but possibly before. Common and widespread, range spreading slowly north.
Vitrea contracta	Milky crystal snail	Native – common and widespread.

Discussion

A total of 24 species of molluscs were recorded. This is a low number, which can be attributed to the fact that the habitat is quite acidic. Snails need a calcium-rich chalky soil to form their shells, and this may account for their low numbers, and also the increased numbers of slug species found (8 out of the 24 species).

The majority of molluscs species found are common and none of them are listed as threatened or protected. Despite this, there are three species worth noting.

The presence of *Acicula fusca (*Point snail*)* is an indication of good habitat as it is commonly found in old, undisturbed deciduous woodland and is intolerant of human disturbance. Although this species is under recorded due to its small size, we do know that it's range is becoming restricted in the U. K. by intensive farming practices and the destruction of deciduous woodland. We found the species in the leaf litter taken from the area at the top of the incline that is surrounded by lots of old woodland. Its presence here indicates that the woodland area is relatively undisturbed and as a result, probably species rich. The woodland area does not come under the Museum's remit as it is not our land.

Figure 8. Point Snail – *Acicula fusca* (2.2 – 2.5mm)

There are two slug species of note, firstly *Arion (Kobeltia) owenii* or the warty slug. This species prefers moist, sheltered places under ground litter an in the soil, and occurs in both wild and disturbed habitats. It remains under recorded across the U. K., so its distribution appears to be restricted to the South west of England and parts of Scotland and Northern Ireland. This looks to be the first record of it in North Wales.

Figure 9. Warty Slug – *Arion (Kobeltia) owenii* (25 – 35mm)

The second slug species of note was *Boetgerilla pallens*, also known as the 'worm slug' due to its worm-like, extensible body which has evolved as an adaptation to living below ground in cracks, root holes and worm burrows (see figure 10). It is an introduced species first recorded in 1972, since then its spread appears to have been rapid although apparently uneven and unpredictable (see Kerney, 1999).

Figure 10. Worm slug - *Boetgerilla pallens* (35 – 55mm)