ISSN 2755-3531

Vol. 45, no. 3 **Journal *of* Conchology** 16 May 2025

Published by the Conchological Society of Great Britain and Ireland, established 1874

First records of *Semilimax pyrenaicus* (Stylommatophora: Vitrinidae) in Britain

Liam Olds[1], Ben Rowson[2], Carys Romney[1], Christian Owen[3], Rhian Rowson[4] & Graham Watkeys[2]

1 *Buglife – The Invertebrate Conservation Trust, G.06 Allia Future Business Centre, London Road, Peterborough UK PE2 8AN (liam.olds@buglife.org.uk)*
2 *Dept. Natural Sciences, Amgueddfa Cymru – Museum Wales, Cathays Park, Cardiff, UK CF10 3NP*
3 *75 Lewis Street, Aberbargoed, Mid Glamorgan, UK CF81 9DZ*
4 *Bristol Museum & Art Gallery, Queens Road, Bristol, UK BS8 1RL*
Corresponding author: *B. Rowson (ben.rowson@museumwales.ac.uk)*

Abstract. *Semilimax pyrenaicus* has been known in Ireland for over 100 years, but not previously found in Britain, despite widespread recording of two other vitrinid species. Through fieldwork and the online recording system iRecord, large *S. pyrenaicus* populations were found in two river valleys, one in the South Wales Valleys (the Cynon Valley) the other in Snowdonia / Eryri National Park (Ceunant Cynfal). Though climatically similar, the two have very different histories, the Cynon Valley being a broad valley heavily deforested and modified by industry and settlement, and Ceunant Cynfal being a narrow gorge with remnants of ancient Atlantic Oak Woodland. In Britain, *S. pyrenaicus* appears to be a recent arrival (earliest record 2019) and seems likely to spread, perhaps aided by passive dispersal along rivers.

ZooBank identifier. urn:lsid:zoobank.org:pub:D150A3DA-5951-4327-8817-7C4540EE5D3A

DOI. https://doi.org/10.61733/jconch/4548

Introduction

The Pyrenean Glass Snail, *Semilimax pyrenaicus* (A. Férussac, 1821), is unusual in being one of three non-marine mollusc species known from Ireland, but not Britain (the others being the slugs *Geomalacus maculosus* Allman, 1843 and *Arion occultus* Anderson, 2004). In Ireland, *S. pyrenaicus* has been found in wet woodlands and ungrazed grasslands dominated by sedges (Kerney 1999). In continental Europe, *S. pyrenaicus* is found throughout the Pyrenees of Spain, France, and Andorra, and in scattered sites across central France (MNHN & OFB 2003–2025; Welter-Schultes 2012). In Spain, it is a species of humid habitats including pine and beech woodlands (Cadevall & Orozco 2016). Very recently, it was detected in Belgium for the first time, in a lowland wet woodland which happens to lie between two garden centres (Bronne et al. 2025). Bronne et al. (2025) also suggest there has been some confusion between *S. pyrenaicus* and other *Semilimax* species in continental Europe.

Semilimax pyrenaicus was first recorded from Ireland in 1904 by P.H. Grierson, who exhibited specimens of "*Vitrina pellucida* var. *depressiuscula*" from Collon, Co. Louth, at a meeting of the Conchological Society (Collier 1904: 125). After examining the genitalia of Irish specimens, E.H. Bowell (1908) identified them as *Vitrina pyrenaica* (A. Férussac, 1821), a species described from the Pyrenees. Meanwhile J.W. Taylor (1907) had identified the Irish populations as *Vitrina elongata* (Draparnaud, 1805), a synonym of *Semilimax semilimax* (J.B. Férussac, 1802), a species originally described from the Alps. *Semilimax pyrenaicus* and *S. semilimax* are very similar species, and confusion between them continues to the present day (Bronne et al. 2025). Perhaps stimulated by the disagreement with Bowell, Taylor printed a new name, *Vitrina hibernica* Taylor, 1908, for the Irish populations on the covers issued with Part 15 of his Monograph (Taylor 1906–1914). He later gave *V. hibernica* a fuller treatment in an Appendix to the completed volume (Taylor 1906–1914). However, Bowell's view was adopted by Kennard & Woodward (1926) and has been followed by later Irish and British authors. The Irish species is therefore implicitly assumed to be the same as that found in the

Pyrenees. Since the time of Taylor (1906–1914) it has been recorded at many more sites across the Republic of Ireland, and Northern Ireland since 1973 (Fogan 1969; Anderson 1974, 1991; 2025; Kerney 1999).

Meanwhile, the absence of *S. pyrenaicus* from Britain is widely apparent. The species has been included in many guides to British and Irish molluscs (e.g. Kerney & Cameron 1979; Kerney 1999; Rowson et al. 2014). In these it appears alongside the superficially similar *Vitrina pellucida* (O.F. Müller, 1774) and *Phenacolimax major* (A. Férussac, 1807), the only other vitrinid species in the area. *Vitrina pellucida* is an exceptionally tolerant species that has been recorded in almost all habitats throughout Britain and Ireland, whereas *P. major* appears to be restricted to woodlands in southern Britain. Knowledge of their British distribution is based largely on records verified by the Non-Marine Mollusc Recording Scheme run by the Conchological Society of Great Britain & Ireland (https://conchsoc.org/). Since 2013, the scheme has made increasing use of the UK's online system iRecord (https://irecord.org.uk/), which played an important role in this study.

Materials & Methods

The study was sparked by a finding in the field on 18 January 2025 and the subsequent confirmation of specimens by dissection with reference to Kerney & Cameron (1979), Giusti et al. (2011) and Rowson et al. (2014). The extensive terrestrial mollusc collections at the National Museum of Wales, Cardiff were checked to confirm that no older shells of *S. pyrenaicus* from Britain were present. We checked all records and photographs of Vitrinidae on iRecord, which to date has 256 accepted records of *V. pellucida* and 10 of *P. major*, plus 7 of *S. pyrenaicus* (all of which are from Northern Ireland). We considered two British records on iRecord to show animals that potentially belonged to *S. pyrenaicus*, one from near the find in South Wales and another from North Wales. We visited these sites and others nearby to search for specimens to confirm identification. Voucher specimens have been deposited at the Museum and all records have been submitted to the Conchological Society scheme.

Cynon Valley, South Wales Valleys

On 18 January 2025 one of us (LO) encountered several unusual semi-slugs during a field meeting of the Glamorgan Bryophyte Group at Cwmaman, Rhondda Cynon Taf. Cwmaman is a small blind-ending stream valley branching off the larger Cynon Valley, one of the major landforms that characterise the South Wales Valleys region. While examining reclaimed colliery spoil associated with the former Fforchwen Pit and Cwmaman Colliery, several adults were found beneath stones along an unsurfaced path within young secondary woodland (Fig. 1A). This area, reclaimed in the 1990s, was formerly open grassland but now supports a mix of coniferous and broadleaved trees. Further searching (with CR) revealed additional specimens under large and small stones among exposed colliery spoil substrate. On 26 January 2025, LO, CO & CR found over 50 live individuals under stones in the surrounding area (Fig. 1B) to an elevation of 385 m above sea level. At least 20 empty shells were found under a single large rock, perhaps suggesting rapid mortality due to desiccation. Other invertebrates found alongside *S. pyrenaicus* at Cwmaman included the slug *Arion* cf. *iratii* Garrido, Castillejo & Iglesias, 1995 (identified by external morphology) and the harvestman *Sabacon viscayanum ramblaianum* (Martens, 1983), both believed to be of Pyrenean origin. The Iberian ground beetle *Leistus oopterus* Chaudoir, 1861 was also encountered.

On iRecord, only one record from South Wales was considered a possible *S. pyrenaicus* (record ID 8860515). This was of a single individual from Pwll Waun Cynon, a Wildlife Trust nature reserve, photographed by GW on 15 January 2019 and at that time identified as *P. major*. No specimen was taken. This site lies in the Cynon Valley, approximately 5 km downstream of Cwmaman. The 2019 specimen was found in scrub under a bitumen tile used to attract reptiles. A visit on 26 January 2025 located a single live individual beneath dead wood among flood debris and stalks of the invasive Japanese Knotweed (*Reynoutria japonica* Houtt.) near the River Cynon (Fig. 1C).

To establish whether the species had spread further downstream, two sites further down the River Cynon were searched by LO, BR, CO, CR & GW on 3 March 2025. Two live *S. pyrenaicus* adults were found under stones and logs on the river embankment opposite Penrhiwceiber, in mixed woodland and scrub, again invaded by *R. japonica,* lying over blocks of rubble from iron furnaces (slag). Measured along the river valleys, the site at Penrhiwceiber lies approximately 9 km from the sites in Cwmaman. A search of the river banks at Abercynon, where the River Cynon flows into the River Taff, did not produce any *S. pyrenaicus*.

Ceunant Cynfal, Snowdonia / Eryri National Park

A review of all the vitrinid records on iRecord showed only one other record that could be *S. pyrenaicus* (record ID 35361611). This was of an individual from Ceunant Cynfal, photographed by Kay Dinsdale on 7 April 2024, and identified at that time as *V. pellucida* by Harriet Adams. It was

Figure 1. Habitats of living *Semilimax pyrenaicus* in Britain. **A, B**, secondary woodland and scrub on colliery spoil, Cwmaman, 18 & 26 January 2025. **C**, riverside area with *Reynoutria japonica,* Pwll Waun Cynon, 26 January 2025. **D**, Atlantic Oak Woodland in river gorge at Ceunant Cynfal, 21 March 2025.

found under a rotting log on the ground and no specimen was available. The shape of the mantle and shell in the photographs made it difficult to conclude that it was not *V. pellucida*, the only vitrinid known in North Wales and widely recorded throughout the Snowdonia / Eryri National Park. Ceunant Cynfal is a steep-sided river gorge on hard, acidic bedrock. It is one of several sites in the region to include ancient native Atlantic Oak Woodland (sometimes termed "rainforest"), a rare and remarkable habitat well known to naturalists for its high bryophyte and lichen diversity (Natural Resources Wales 2025). The upper part of the gorge is a National Nature Reserve, while the lower is known as Coed Ty-Isaf (north bank) and Nurse Gellidywyll (south bank). The lower slopes have a history of conifer plantation and, on the 1900s Ordnance Survey map, were flanked by areas known as Nurse Dôl-rhiw and Nurse Tal-y-bont, implying that they were tree nurseries. Footpaths and footbridges run through the gorge, which is popular with walkers visiting the Rhaedyr Cynfal waterfall. The land above the forest boundaries is a "fridd" habitat of sheep pasture, bracken, and scattered trees.

To investigate the 2024 record, Ceunant Cynfal was visited by BR & RR on 20–21 March 2025 (Fig. 1D). Shells and live adults of *S. pyrenaicus* were found under dead wood and bark of Sessile Oak (*Quercus petraea* (Matt.) Liebl.) amidst bilberry (*Vaccinium* L.) and hard fern (*Blechnum* L.) in the woodland. They were found at five sites over more than 1 km along the gorge, as far as the waterfall. The maximum elevation was 95 m above sea level. No *S. pyrenaicus* were found in the adjoining fridd even where abundant wood and stones were present. Mollusc species in the woodland included the Tree Slug *Lehmannia marginata* (Müller, 1774)

Figure 2. Living adult *Semilimax pyrenaicus* from near Cwmaman, 18 January 2025.

Figure 3. Shell removed from living adult *Semilimax pyrenaicus* from near Cwmaman, 18 January 2025.

and *Zonitoides excavatus* (Alder, 1830), a known calcifuge (Kerney, 1999). No *Vitrina pellucida* were found, either in the woodland or the fridd. Relatively few non-native molluscs were present. *Arion flagellus* Collinge, 1893 was occasional in the woodland and fridd, and *Deroceras invadens* Reise, Hutchinson, Schunack & Schlitt, 2011 was common but only in the fridd.

Identification

Various features of the living animal (Fig. 2), shell (Fig. 3), and genitalia (Fig. 4) allow the exclusion of *V. pellucida* and *P. major*. Two specimens from Cwmaman and one from Ceunant Cynfal were dissected. The genitalia are well developed and apparently mature (Fig. 4). The penis is very small and sac-like, lacking a penial retractor. It is dwarfed by a very large, soft, and glandular atrial stimulator lying along the right side of the body cavity (this organ, called a stimulator in Giusti et al. 2011, is called a penial appendage in Kerney & Cameron 1979) The junction of the bursa copulatrix duct and vagina is much higher up than junction of the penis and vagina. According to Kerney & Cameron (1979) and Giusti et al. (2011), the small penis, lack of a retractor, and very large atrial stimulator (also called a penial appendage) rules out other superficially similar European vitrinids such as *Eucobresia diaphana* (Draparnaud, 1805) (this was also checked in preserved specimen of *E. diaphana*). Likewise, the very large size of the stimulator suggests that the Welsh slugs *are S. pyrenaicus* rather than *S. semilimax* (Kerney & Cameron 1979).

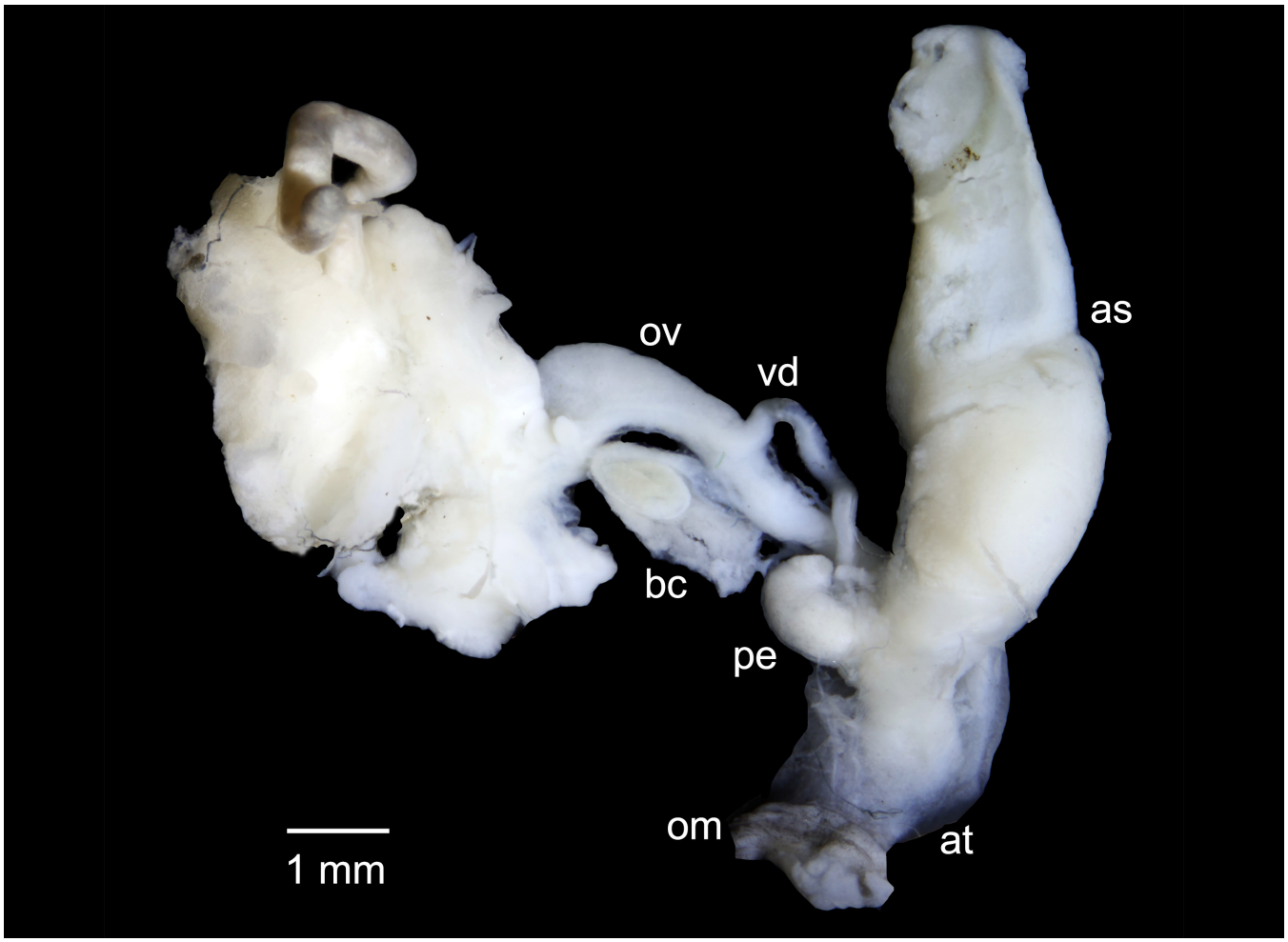

Figure 4. Genitalia of adult *Semilimax pyrenaicus* from near Cwmaman, 18 January 2025. Abbreviations: as, atrial stimulator; at, atrium; bc, bursa copulatrix; om, ommatophore retractor; ov, oviduct; pe, penis; vd, vas deferens.

The mantle of living *S. pyrenaicus* from the Welsh sites varies in colour from pale grey speckled with darker grey, to dark grey heavily speckled with black (Fig. 2). The body visible through the shell is a much paler and warmer colour. The size of the mantle lobes and their disposition over the shell, which normally covers the shell apex, rule out *P. major* and *V. pellucida*. In certain living orientations the mantle lobe does not quite reach the shell apex, but the more voluminous mantle and relatively smaller and flatter shell mean that *S. pyrenaicus* can be distinguished from photographs. With hindsight, and having checked specimens from the localities, this includes the photographs on iRecord from 2019 and 2024.

The shell (Fig. 3) is typically vitrinid, but very flattened and with a broad mouth membrane, matching illustrations of *S. pyrenaicus* shells in various publications (e.g. Taylor 1914; Kerney & Cameron 1979; Welter-Schultes 2012; Cadevall & Orozco 2016). The shell is smaller, flatter, and more oblong than *V. pellucida* or *P. major*, making distinction from empty shells possible in Britain.

Based on previous records from Ireland, adults of *S. pyrenaicus* appear to be present in most months of the year.

Discussion

As noted by Kerney (1999), *Semilimax pyrenaicus* has been found at scattered sites across Ireland, except in the western part of the Republic of Ireland (Fig. 5). Taylor (1906–1914) and Fogan (1969) considered it indigenous to Ireland, while Anderson (1991, 1992, 2025) and Kerney (1999) concluded that it was probably introduced from continental Europe. Kerney (1999) noted that the early records in Co. Louth and Co. Wicklow came from estates with 18th and 19th century exotic plantings. Anderson (1974, 1991, 1992) gave evidence that it was colonising new sites in Northern Ireland, in forested glens, disturbed Alder (*Alnus*

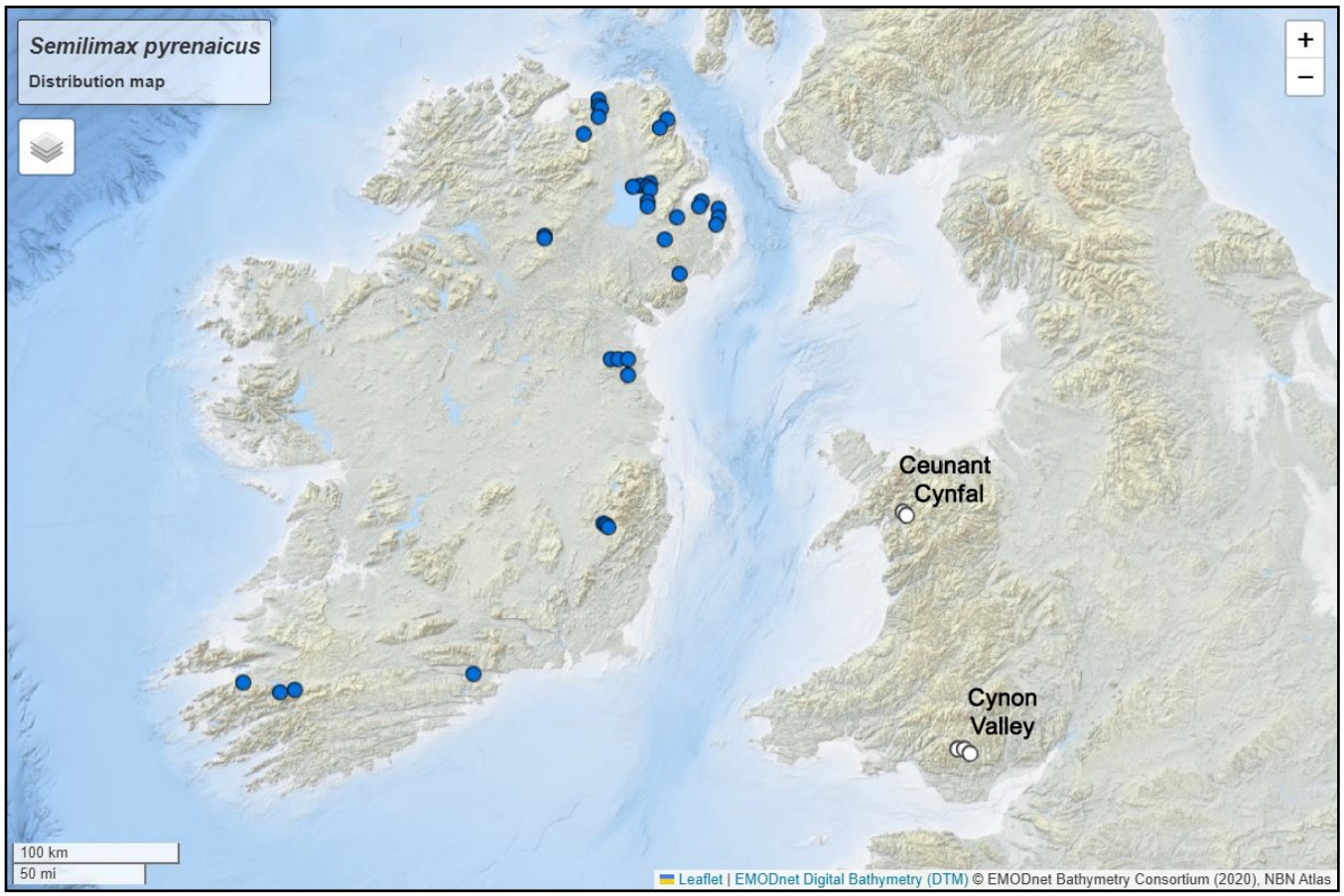

Figure 5. Records of *Semilimax pyrenaicus* in Ireland (blue dots) and Britain (white dots). Based on the distribution map from Mollusc-Ireland (Anderson 2025; © National Museums Northern Ireland, 2006–2024) with white dots added by this study.

glutinosa (L.) Gaertn.) woodlands and a Norway Spruce (*Picea abies* (L.) H. Karst.) plantation. The alternative, that *S. pyrenaicus* was a rare, native relict was difficult to reconcile with its absence in Britain, and the lack of subfossils in either Britain or Ireland. Bronne et al. (2025) suspected *S. pyrenaicus* is spreading with garden plants in Belgium.

Here we report the near-simultaneous finding of *S. pyrenaicus* in two distantly separated river valleys in Wales, the first records of the species in Britain. This presents a similar dilemma of interpretation to the species' distribution in Ireland. In both areas, the species is numerous and present at sites spanning at least 8 km (Cynon Valley) or 1 km (Ceunant Cynfal) (site details in Table 1). The 2019 record from Pwll Waun Cynon shows that it has been present for at least 6 years. However, it has not previously been recorded in either the South Wales Valleys or Snowdonia, despite *V. pellucida* being widely recorded in both regions, with records backed up by specimens or photographs in many cases, including those on iRecord. The lack of subfossil records is also unchanged. *Semilimax pyrenaicus* therefore seems to have arrived in Britain relatively recently, albeit long enough ago to have built up large local populations.

Both valleys are climatically rather similar, although the steep gorge at Ceunant Cynfal is more humid and sheltered than the more exposed sides of the far broader Cynon Valley. Both support wet woodland with a woodland mollusc fauna. However, their histories are very different. The sites in the Cynon Valley are highly modified habitats in an industrial area with colliery spoil generation, settlement and commercial conifer plantation. Synanthropic introduced molluscs and other invertebrates are much in evidence, and *S. pyrenaicus* was found even in young secondary woodland and scrub. In Ceunant Cynfal, the only major source of disturbance appears to be historical tree plantation, including conifers. The dense woodland landscape is relatively natural and *S. pyrenaicus* was not found living outside it.

It appears likely that *S. pyrenaicus* will be detected in other areas in Britain, or spread to them, in future. Anderson (1991) suggested that in Ireland the anthropogenic spread of *Arion owenii* provided a parallel to that of *S. pyrenaicus*.

Table 1. Coordinates for the first sites for *Semilimax pyrenaicus* in Britain. OSGR, UK Ordnance Survey Grid Reference.

Locality	Latitude	Longitude	OSGR	Date	Source
Pwll Waun Cynon	51.6895	–3.3993	ST03379990	15/i/2019	iRecord
Near Cwmaman	51.6847	–3.4557	SS9945899443	18/i/2025	This study
Near Cwmaman	51.6846	–3.4559	SS9944999428	18/i/2025	This study
Near Cwmaman	51.6857	–3.4608	SS9910899560	18/i/2025	This study
Pwll Waun Cynon	51.6899	–3.3999	ST0333199947	26/i/2025	This study
Near Cwmaman	51.6841	–3.4575	SS9933699379	26/i/2025	This study
Near Cwmaman	51.6840	–3.4585	SS9926799369	26/i/2025	This study
Near Cwmaman	51.6833	–3.4603	SS9914299297	26/i/2025	This study
Near Cwmaman	51.6830	–3.4605	SS9912699256	26/i/2025	This study
Near Cwmaman	51.6824	–3.4578	SS9931399184	26/i/2025	This study
Near Cwmaman	51.6819	–3.4577	SS9931999133	26/i/2025	This study
Near Cwmaman	51.6810	–3.4578	SS9930599038	26/i/2025	This study
Near Cwmaman	51.6805	–3.4578	SS9930798977	26/i/2025	This study
Near Cwmaman	51.6796	–3.4579	SS9929798877	26/i/2025	This study
Near Cwmaman	51.6794	–3.4579	SS9929798856	26/i/2025	This study
Near Cwmaman	51.6791	–3.4578	SS9930298821	26/i/2025	This study
Near Cwmaman	51.6785	–3.4577	SS9930698756	26/i/2025	This study
Near Cwmaman	51.6782	–3.4578	SS9930498726	26/i/2025	This study
Near Cwmaman	51.6833	–3.4612	SS9907799292	26/i/2025	This study
Near Cwmaman	51.6847	–3.4635	SS9892099452	26/i/2025	This study
Opposite Penrhiwceiber	51.6705	–3.3594	ST06099773	03/iii/2025	This study
Opposite Penrhiwceiber	51.6697	–3.3583	ST06169764	03/iii/2025	This study
Ceunant Cynfal	52.9557	–3.9469	SH69314159	07/04/2024	iRecord
Coed Ty–Isaf, Ceunant Cynfal	52.9557	–3.9469	SH69314159	20/03/2025	This study
Coed Ty–Isaf, Ceunant Cynfal	52.9555	–3.9403	SH69754155	21/03/2025	This study
Coed Ty–Isaf, Ceunant Cynfal	52.9544	–3.9398	SH69784143	21/03/2025	This study
Near Rhaedr Cynfal waterfall	52.9520	–3.9324	SH70274115	21/03/2025	This study
Near Rhaedr Cynfal waterfall	52.9526	–3.9299	SH70444121	21/03/2025	This study

A species first described from Ireland, *A. owenii* has now become extremely widespread in both Ireland and Britain and is often found in disturbed, wet woodlands and even in urban areas. In South Wales, *A. owenii* is often found very close to river edges, in the typical vegetation of the area. The subterranean slug *Selenochlamys ysbryda* Rowson & Symondson, 2008 also appears to favour woodland at river margins in this area (Rowson et al. 2014). This habitat is often heavily invaded by the non-native plants *R. japonica* and *Impatiens glandulifera* Royle, which spread rapidly downstream aided by frequent winter floods. This method of passive dispersal may also aid the spread of *A. owenii, S. ysbryda* and other molluscs that live under fallen wood, can survive brief immersion, and inhabit the increasingly homogenous strips of habitat remaining along river corridors.

The origin of the newly discovered populations of *S. pyrenaicus* is unknown. The species may have been introduced from Ireland, or from continental Europe. In South Wales, a remarkable number of flightless invertebrates from the Pyrenees, or with affinities to species there, have been discovered in recent years. They include the millipedes *Ceratosphys amoena confusa* Ribaut, 1955), *Cranogona dalensi* Mauriès, 1965, *Cylindroiulus pyrenaicus* (Brölemann, 1897), and *Cylindroiulus sagittarius* (Brölemann, 1897), and the woodlouse *Oritoniscus flavus* (Budde-Lund, 1906) (Telfer et al. 2015; Gregory et al 2018, 2019). Two Pyrenean species found with *S. pyrenaicus* at Cwmaman were *A.* cf. *iratii* and *S. viscayanum ramblaianum*, while the probably Pyrenean slug *Arion* cf. *fagophilus* (De Winter, 1986) also occurs in South Wales (Rowson et al. 2014). Iron ore was imported from the Basque Country (including the western Pyrenees) to South Wales from the 1860s, reaching a large scale by the early twentieth century (Flinn, 1955). This has been suggested as a potential route of introduction for some of these

invertebrates (Telfer et al. 2015; Gregory et al. 2018; Gregory & Owen 2019). However, not all molluscs in the South Wales Valleys have Pyrenean origins, and other species in the area, such as *S. ysbryda* and the woodland semi-slug *Daudebardia rufa* (Draparnaud, 1805), were presumably introduced from other parts of Europe (Rowson et al. 2014; Owen et al. 2016). Since being detected in South Wales, *D. rufa* has been found in a river valley in North Wales, and in woodlands in both Northern Ireland and the Republic of Ireland (see Rowson 2021, 2023). Recording demonstrates that despite their small size and delicate nature, these molluscs are still able to arrive and spread in Britain and Ireland.

Acknowledgements

We wish to thank Kay Dinsdale, Harriet Adams, and all who have submitted vitrinid records to the Conchological Society or to iRecord. We are also grateful to Roy Anderson and Louis Bronne for comments on the manuscript.

Note added after review

During the publication process, two additional sites for *Semilimax pyrenaicus* were found in South Wales: one in woodland in the Cynon Valley near Mountain Ash (51.6909, −3.3809 / SO046000), and the other under conifers near Nantyfyllon, in the Llwnfi Valley near Maesteg (51.6248, −3.6689 / SS845930). The Llwynfi Valley is around 15 km west of the Cynon Valley, providing further evidence that *S. pyrenaicus* has spread prior to its detection in South Wales.

References

Anderson R. 1974. *Vitrina (Semilimax) pyrenaica* (Férussac) in Co. Antrim. *Irish Naturalists' Journal* **18** (2): 51–52.

Anderson R. 1991. Evidence of recent spread in *Semilimax pyrenaicus* (Férussac) and *Arion owenii* Davies (Mollusca, Gastropoda). *Irish Naturalists' Journal* **23** (12): 510.

Anderson R. 1992. A second Co. Down station for *Semilimax pyrenaicus* (Férussac) (Mollusca, Gastropoda). *Irish Naturalists' Journal* **24** (4): 172.

Anderson R. 2025. *Semilimax pyrenaicus* (A. Férussac, 1821). In: MolluscIreland. https://www2.habitas.org.uk/molluscireland/species.php?item=15. Accessed 11 February 2025.

Bowell EH. 1908. On the anatomy of *Vitrina pyrenaica*. *The Irish Naturalist* **17**: 94–98, pl. 4.

Bronne L, Vochten T, Delcourt J. 2025. First record of a *Semilimax pyrenaicus* population in the Benelux: insights into potential anthropogenic dispersal (Gastropoda: Vitrinidae). *Journal of Conchology* **45** (3): 468–480. doi: 10.61733/jconch/4541

Cadevall J, Orozco A. 2016. *Caracoles y Babosas de la Península Ibérica y Balaeares*. Omega, Barcelona, Spain, 817 pp.

Collier E. 1904. Proceedings of the Conchological Society of Great Britain & Ireland. *Journal of Conchology* **11** (4): 123–125.

Flinn, MW. 1955. British steel and Spanish ore: 1871–1914. *The Economic History Review (New Series)* **8** (1): 84–90.

Fogan, M. 1969. *Vitrina (Semilimax) pyrenaica* (Férussac) in Kerry North. *Irish Naturalists' Journal* **16** (6): 175.

Giusti F, Fiorentino V, Benocci A, Manganelli G. 2011. A survey of vitrinid land snails (Gastropoda: Pulmonata: Limacoidea). *Malacologia* **53** (2): 279-336. doi: 10.4002/040.053.0206

Gregory SJ, Owen C, Jones G, Williams E. 2018. *Ommatoiulus moreleti* (Lucas) and *Cylindroiulus pyrenaicus* (Brölemann, 1897) new to the UK (Diplopoda, Julida: Julidae) and a new host for *Rickia laboulbenioides* (Laboulbeniales). *Bulletin of the British Myriapod & Isopod Group* **30**: 48–60.

Gregory SJ, Owen C. 2019. *Cylindroiulus sagittarius* (Brölemann, 1897) new for the UK (Diplopoda, Julida: Julidae) and a new host for *Rickia laboulbenioides* (Laboulbeniales). *Bulletin of the British Myriapod & Isopod Group* **31**: 3–8.

Kennard AS, Woodward BB. 1926. Synonymy of the British Non-marine Mollusca (Recent and post-Tertiary). British Museum (Natural History), London, UK, 447 pp. doi: 10.5962/bhl.title.8325

Kerney MP & Cameron RAD. 1979. A *Field Guide to the Land Snails of Britain and North-West Europe*. Collins, London, UK, 288 pp.

Kerney M. 1999. *Atlas of the Land and Freshwater Molluscs of Britain and Ireland*. Harley Books, Colchester, UK, 264 pp.

MNHN, OFB. 2003–2025. Fiche de *Semilimax pyrenaicus* (A. Férussac, 1821). Inventaire national du patrimoine naturel (INPN). https://inpn.mnhn.fr/espece/cd_nom/163166. Accessed 11 February 2025.

Natural Resources Wales. 2025. *Ceunant Cynfal Site Information.* https://nrwcmsv13-a3hwekacajb3frbw.a02.azurefd.net/696315/ceunant-cynfal-site-information.pdf?rmode=pad&v=1d95cbd025f88d0 (Accessed 25 March 2025).

Owen C, Rowson B, Wilkinson K. 2016. First record of the predatory semi-slug *Daudebardia rufa* (Draparnaud, 1805) from the UK (Eupulmonata: Daudebardiidae). *Journal of Conchology* **42** (3): 119–121.

Rowson B. 2021. Non-marine Recorder's Report 2020. *Mollusc World* **54**: 6–10.

Rowson B. 2023. Non-marine Recorder's Report 2022. *Mollusc World* **62**: 16–21.

Rowson B, Turner JA, Anderson R & Symondson WOC. 2014. *Slugs of Britain and Ireland: Identification, Understanding and Control.* Field Studies Council, Shropshire, UK, 140 pp.

Taylor JW. 1907. *Vitrina elongata* in Ireland: an addition to the fauna of the British Isles. *The Irish Naturalist* **16**: 225–231, pl. 26.

Taylor JW. 1906–1914. *Monograph of the Land & Freshwater Mollusca of the British Isles. Volume 3: Zonitidae, Endodontidae, Helicidae.* Taylor Bros., Leeds, UK, 498 pp.

Telfer MG, Gregory SJ, Kime RD, Owen C, Spelda J. 2015. *Ceratosphys amoena* Ribaut, 1920 and *Hylebainosoma nontronensis* Mauriès & Kime, 1999 new to Britain (Diplopoda: Chordeumatida). *Bulletin of the British Myriapod & Isopod Group* **28**: 15–30.

Welter-Schultes FW. 2012. *European Non-marine Molluscs, a Guide for Species Identification.* Planet Poster Editions, Göttingen, Germany, 674 pp.

Manuscript received: 28 March 2025
Revised manuscript accepted: 24 April 2025
Editor: Robert Forsyth