

# Mollusc World

March 2021 • Issue 55

Molluscs of Killarney National Park, Ireland  
*Testudinalia testudinalis* distribution  
Female conchologists of the past



The  
Conchological  
Society  
of Great Britain & Ireland

*Helping to understand, identify, record and conserve molluscs*

## From the Hon. Editor

I hope that this issue of *Mollusc World* will give you something of interest to read at this time when it remains more difficult to be legitimately 'out and about' (this will obviously vary depending on where you live and your personal situation). An article by Evelyn Moorkens and Ian Killeen on non-marine recording in Killarney National Park is a welcome contribution on Irish mollusca (page 3), while Brian Goodwin's researches have produced yet another fascinating insight into conchological history for those interested in this area of our favourite subject (page 8)!

Two papers that were brought to my attention recently have yet more worrying environmental news relating to molluscs. A paper by Albano et al. (2021) records a collapse in native marine species on the Mediterranean coast of Israel, probably due to rising sea temperatures. A study led by researchers at Hull York Medical School and the University of Hull (Danopoulos, E. et al. 2020) looked at more than 50 published studies to investigate the levels of microplastic contamination globally in fish and shellfish, and found that microplastic content was up to 10.5 microplastics per gram (MPs/g) in molluscs versus 2.9 MPs/g in fish. Plastic waste generated worldwide is expected to triple by 2060. Once the plastic finds its way into oceans, lakes and rivers it has the potential to end up as microplastic inside molluscs and other organisms. On a more positive note the paper does provide a useful listing of worldwide commercially important mollusc species.

For convenience and to bring us a little more 'up to date' I have included a QR code (opposite) which you can scan with your phone/device to take you straight to our current web site.

As before, my usual request for 'copy' for *Mollusc World* still stands! perhaps if you are stuck at home this is an ideal opportunity to write something up for your magazine!

*Peter Topley*

### References

Albano, P.G., Steger, J., Bošnjak, M. et al. (2021) Native biodiversity collapse in the eastern Mediterranean. *Proceedings of the Royal Society B*, **288**: 2020.2469. Available online at: <https://doi.org/10.1098/rspb.2020.2469>. Many thanks to Rosemary Hill for bringing this paper to my attention.

Danopoulos E., Jenner L.C., Twiddy M. and Jeanette M. Rotchell J.M. (2020) Microplastic Contamination of Seafood Intended for Human Consumption: A Systematic Review and Meta-Analysis. *Environmental Health Perspectives* **128**(12):1–32.

Currently available at <https://ehp.niehs.nih.gov/doi/pdf/10.1289/EHP7171>

**Mollusc World** is intended as a medium for communication between Conchological Society members (and subscribers) on all aspects of molluscs, in addition to the material found on our web site where a number of early back copies are available for viewing. *Mollusc World* will also be of interest to all those enquiring about this subject or the work of the Society. We welcome all contributions in whatever form they arrive (see page 31 for further details).



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No representation is made about the accuracy of information included in any articles, which solely constitute the authors' personal views on the subjects covered, and are not necessarily those of the Hon. Editor or the Conchological Society.

**Front Cover:** Above: Mollusc trail. 'I do wonder what happened at the end of the trail...did it succumb to a predator? I suspect it has been made by *Limax maximus*, which is numerous in the area [Reading, Berkshire].' (photo and comment: Tom Walker). Below: *Zenobiella subrufescens*, Killarney National Park (photo: Evelyn Moorkens/Ian Killeen, see page 3).



# The land and freshwater molluscs of Killarney National Park, County Kerry, Ireland

Evelyn Moorkens & Ian Killeen



figure 1: Location of Killarney National Park.

## Background and objectives

The Killarney National Park in County Kerry, south-west Ireland (figure 1), covers an area of 10,236 ha with a distinctive combination of mountains, lakes, woods, parkland and waterfalls. A large lake (Lough Leane, figure 2) covers over 25% of the Park's area. Killarney National Park contains many features of national and international importance such as the native oak woods and yew woods together with an abundance of evergreen trees and shrubs, bryophytes and lichens that thrive in the mild Killarney climate. The native red deer here are unique in Ireland with a presence in the country since the last Ice Age. The Park includes a 19<sup>th</sup> century mansion, Muckross House, and the 15<sup>th</sup> century Ross Castle. Killarney National Park was designated as a UNESCO Biosphere Reserve in 1981.

The Park is underlain by two distinct and contrasting rock formations. A major geological boundary runs across the National Park, generally from north-west to south-east, mostly beneath the waters of Lough Leane and Muckross Lake. It separates a mountainous area of Devonian rocks to south and west from a plain underlain by Carboniferous rocks to north and east. In Killarney town it rains on average 223 days per annum. In the mountains this rises to more than 250 days per year, with an annual mean rainfall at Muckross of 1.59 m.

The land and freshwater molluscan fauna of Killarney National Park has received attention from malacologists since the early 20<sup>th</sup> century. The first lists were compiled by notable workers: A.W. Stelfox in 1907, followed by A.E. Boycott, C. Oldham and A.R. Waterston in 1931. Members of the Conchological Society of Great Britain and Ireland visited the National Park in the late 1960s and early 1970s to record for the first distribution atlas (Kerney 1976). Most of the more recent records were gathered in the late 1990s by

Evelyn Moorkens and Roy Anderson. Inevitably the bulk of the records are from the more popular and accessible places such as Muckross House, Torc Waterfall and Woods, and Ross Castle. By 2008, over 75 species had been recorded, including several which are classified as Vulnerable in the Ireland Red List (Byrne *et al.* 2009).

In Autumn 2020 (between Covid lockdowns), we were asked by the National Parks and Wildlife Service (NPWS) to carry out a survey to obtain up-to-date data on the overall non-marine molluscan biodiversity of Killarney National Park. The primary objective for the study was to obtain data on three species listed as Vulnerable in the Red List: *Vertigo antivertigo* (marsh whorl snail), *Zenobiella subrufescens* (brown snail) and *Zonitoides excavatus* (hollowed glass snail). In addition, the study was designed to record the molluscan fauna from a range of freshwater and terrestrial habitats.

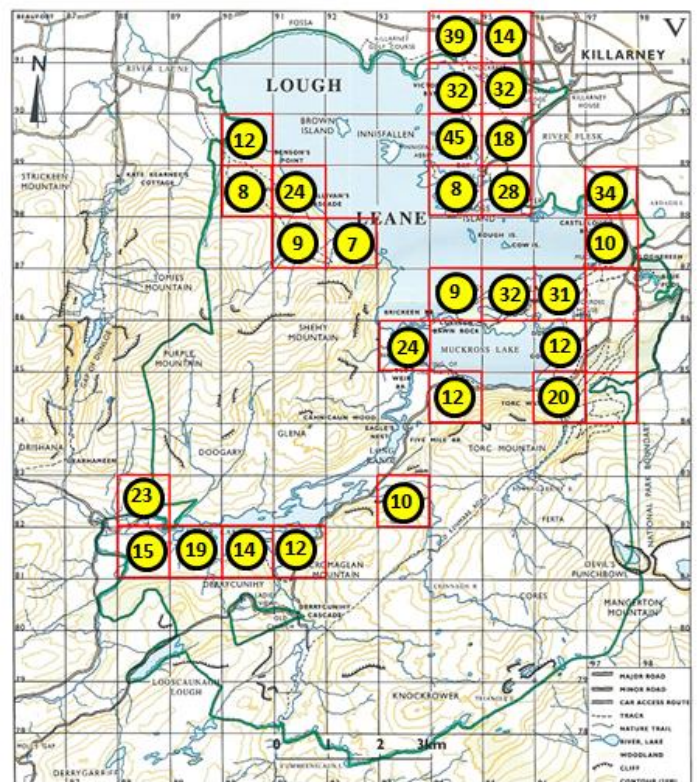


figure 2: Number of species per 1 km square (green line denotes the Killarney National Park boundary).

## Methodology

A strategy was devised to obtain a wide coverage of sites by geographical extent and by habitat. The National Park map was gridded with the 1 km Ordnance Survey squares. The majority of the Park lies in one 10 km square, V98, with smaller proportions in V88 and V99. The aim was to sample the habitats within at least 20 of the approximately 120 1 km squares present over a wide geographical range. In general, this comprised timed searches by two people of usually 30 minutes, and where appropriate by the collection of litter samples. All residues of freshwater samples were retained and sorted microscopically.



## Results

The numbers of land and freshwater molluscs recorded in each of the 28 1 km grid squares surveyed are shown in figure 2. The nomenclature follows Anderson & Rowson (2020) which supersedes Anderson (2005).

The Killarney National Park still supports a large and diverse fauna of land and freshwater molluscs. A total of 77 species of molluscs were recorded comprising 53 terrestrial species (35 snails and 18 slugs) and 24 freshwater species (14 gastropods and ten bivalves) (table 1). The freshwater pearl mussel *Margaritifera margaritifera* is also found in the Park but was not sought during this survey. The number of species per 1 km grid square ranged from seven to 45 (figure 2). The areas with the most diverse molluscan assemblages were in the north-east of the National Park where there was a variety of aquatic, wetland and woodland habitats and a more calcareous geology (figure 3). The lower diversities were in the more acidic habitats in the west and south-west, although these supported a different fauna.

The commonest terrestrial snail was *Discus rotundatus* (found in 20 squares) and the commonest slug was *Lehmannia marginata* (23 squares). Of the freshwater species, *Ampullaceana balthica* and *Potamopyrgus antipodarum* were each found in 14 squares, and the sphaeriid *Euglesa personata* was found in 16 squares. The majority of species were recorded in less than ten 1 km squares.



figure 3: Victoria Bay: well-vegetated lake margins with many species of aquatic molluscs.

All three of the ‘target’ Red List Vulnerable species were found:

***Vertigo antvertigo* (marsh whorl snail):** this species lives in a range of exclusively wetland habitats throughout Ireland. Its threat category arises from the species’ vulnerability to habitat loss through drainage. In the Killarney National Park it was recorded in eight 1 km squares, all along the eastern and southern margins of Lough Leane (figures 4 and 5) where it was found in a variety of open and partially shaded wetland habitats. Large numbers were found in the open wetlands backing the wooded margins of Victoria Bay (1 km squares V9489, V9490, V9491). The previous records for the National Park were from around Flesk marshes and Ross Castle, and surprisingly from Torc Waterfall where the saturated splash zones provided the wet environment.



figure 4: Typical habitat of *Vertigo antvertigo* along the eastern side of Lough Leane.

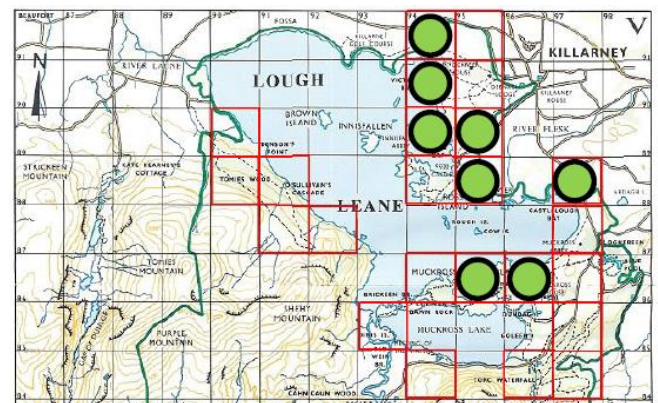


figure 5: Killarney National Park: 1 km square records of *Vertigo antvertigo*.

***Zenobiella subrufescens* (brown snail):** this is a generally uncommon species in Ireland (figure 6). It has a wide and scattered distribution but is rare in the Midlands and East. It was infrequent in the Killarney National Park, found only in six 1 km grid squares during this survey, four in Victoria and Ross Bays, plus Torc Woods and Reenadinn Wood (V9586) on the limestone pavement (figure 7). It was found most commonly in the open wetlands backing the wooded margins of Victoria Bay where it was common on leaves of *Iris*. It was also found on low growing woodland vegetation and on tree trunks. This snail matures relatively late in the year and most of the individuals found in the present survey were only half to two-thirds grown. The majority of records from the National Park are from the Torc Waterfall area, with single records from Ross Castle and Muckross Abbey.



figure 6: *Zenobiella subrufescens*.



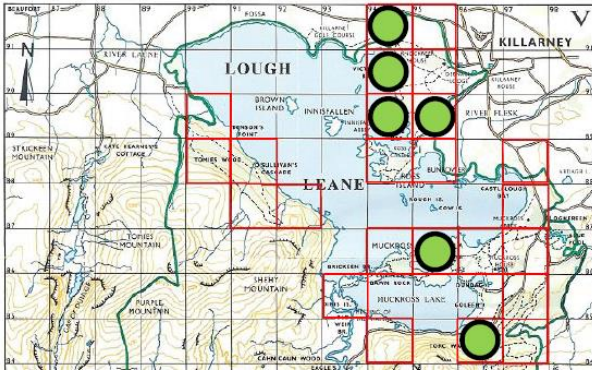


figure 7: Killarney National Park: 1 km square records of *Zenobiella subrufescens*.

***Zonitoides excavatus* (hollowed glass snail):** the distribution of this calcifuge species in Ireland reflects the country's geology. In the Killarney National Park it was found in nine 1 km grid squares (figure 8). It was found only in old, acid (mostly oak) woodlands: Tomies Wood (figure 9), Brickeen and Dinish Islands, and in the old woodlands to the south of Upper Lake. It was particularly common on the lower slopes of Tomies Wood (V9089, V9188) and in Gallivalley Wood (V8981). The snail was usually found under fallen logs and particularly along the edges of semi-embedded logs. The only previous records were from Tomies Wood (V9089) and Torc Waterfall and Woods (V9684), where it was not found during the 2020 survey.

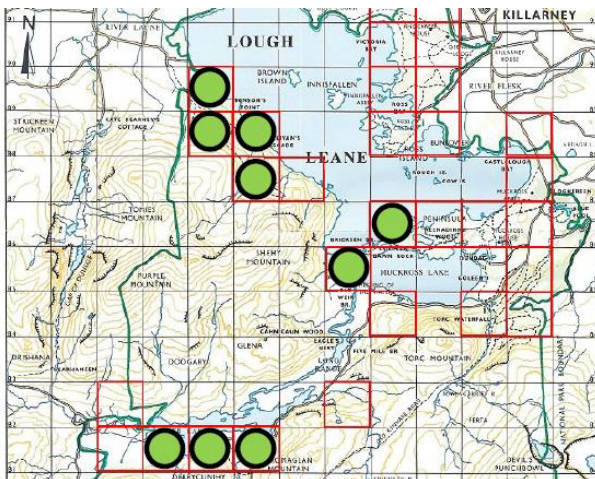


figure 8: Killarney National Park: 1 km square records of *Zonitoides excavatus*.



figure 9: Tomies Wood, habitat for *Zonitoides excavatus* and *Limax cinereoniger*.

Six other species listed as Vulnerable (VU) in the Ireland Red List were found during the present survey:

***Acicula fusca* (point snail)** was found only in three sites: Reenadinn Wood, west of Muckcross House (site 23) and at Lord Brandon's Cottage. The species was surprisingly rare given the amount of suitable habitat (moss and leaf litter in non-acidic woodlands) with only one or two individuals found at each site. There are relatively recent records from Muckcross Ponds and Torc Woods (both Evelyn Moorkens in 1998).

***Arianta arbustorum* (copse snail)** is extremely rare in the southern half of Ireland. The two records for the Killarney National Park at Tomies (V9287) and west of Muckcross (V9586) are the first for County Kerry.

***Leiostryla anglica* (English chrysalis snail)** was found only at Reenadinn Wood (V9586) where it was frequent in mossy leaf litter on the limestone pavement.

***Limax cinereoniger* (ash-black slug)** (figures 9 and 10): despite intensive searching in the old woodlands, only two specimens were found, both in Tomies Wood (V9089, V9188). There are records from Torc Woods and Derrycunihy Wood. This species often occurs at quite low density and usually under large fallen logs, and therefore its presence at other locations in the National Park is likely.



figure 10: *Limax cinereoniger*.

***Aplexa hypnorum* (moss bladder snail)** is a rare species in south-west Ireland. It was found in the Killarney National Park in five 1 km grid squares, four around Victoria Bay and one west of Muckcross House. Typically it was found in swampy, seasonal/semi-permanent pools in open woodland not far from the margins of Lough Leane. These are the first records for South Kerry (vc H1). This is unlikely to be a recent arrival in the Park and it is surprising that it has not been recorded before.

***Euglesa lilljeborgi* (Lilljeborg's pea mussel)** was found in two places in Lough Leane (sites 15 and 21). It is likely to be more common as it prefers a silty/sandy substrate away from the muddy edges which could not be easily sampled during this survey due to high lake levels.

Other species found during the survey included the Kerry slug *Geomalacus maculosus* (figure 11), which is listed in the Red List as of Least Concern although it is protected in Ireland under Annex II and IV of the Habitats Directive. This species was recorded in 12 1 km grid squares from Tomies Wood to Brickeen and Dinish and the Upper Lake (figure 12) sites. It was also found in Tower Wood and Torc Woods. Juveniles were locally abundant and found crawling on boulders covered with white encrusting lichens.





figure 11: *Geomalacus maculosus*.

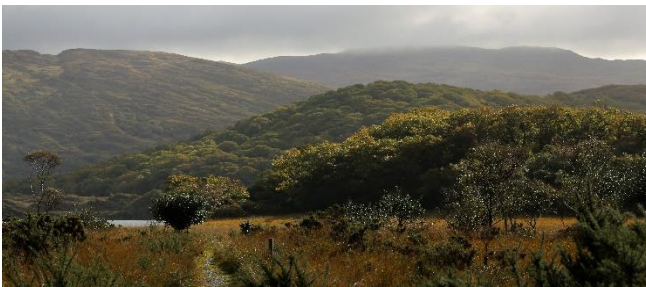


figure 12: Typical habitat of *Geomalacus maculatus* with blanket bog, acid woodland and mountains in the Upper Lake area.

Five other species found were new to County Kerry (vc H1 South Kerry): the girdled snail *Hygromia cinctella*, the banded slug *Arion fasciatus*, the lake limpet *Acroloxus lacustris*, the acute bladder snail *Physella acuta*, and the keeled ram's-horn *Planorbis carinatus*.

A number of species previously recorded in the National Park were not recorded during the present survey. Several of these are freshwater species which may be found if the ponds at Muckross House could be sampled and access could be gained to the well-vegetated margins of Lough Leane. However, it may be of significance that the native bladder snail *Physa fontinalis* was not found, yet the alien *Physella acuta* was very common.

The two acanthinulines, the prickly snail *Acanthinula aculeata* and the plated snail *Spermodea lamellata* (Red List Vulnerable) were not found. Both species were recorded from Torc Woods by Stelfox in 1907 and by Boycott in 1930. The last records were made by G. Visser in 1969 but no locality was given (only 'Muckross square', V98). It is possible that both of these species no longer live in the National Park.

Other notable species not found in 2020 were three whorl snails:

*Vertigo pygmaea* (common whorl snail) was recorded from Ross Castle and Muckross Abbey by Stelfox in 1907. It has not been found since then, but there would appear to be suitable habitat, particularly the wet grasslands away from the margins of Victoria Bay.

*Vertigo substriata* (striated whorl snail) was recorded by Boycott in 1930 at Torc Woods and by Waterston in 1931 from the River Flesk near Ross Castle. Again there is plenty of suitable wetland and woodland habitat for the species.

*Vertigo lilljeborgi* (Lilljeborg's whorl snail) (Red List Vulnerable) is a rare species in Ireland, typically found in wetlands and swamps on lake shores. In 1931 Waterston recorded it from marshes on the right bank of the River Flesk near its mouth ('not uncommon on decaying vegetation') and from a swampy field near Ross Castle (a single specimen) (Kevan & Waterston 1933). It was also found by Fogan in 1969 from Flesk Marshes, but unfortunately there are no details. Plenty of suitable habitat still exists around the eastern and southern side of Lough Leane. However, the species frequently occurs in low numbers and considerable sampling effort would be required to find it once again in the National Park.

A feature of old woodland habitats is that while mollusc diversity can be relatively high, numbers of individuals are often very low. Thus, even sampling large quantities of moss and leaf litter, can result in only low numbers of snails, as was the case with the many 3 litre samples collected during the present survey. It also may account for the apparent rarity or absence of small ground-dwelling species such as *Acicula fusca*, *Aegopinella pura*, *Carychium tridentatum* and *Vitrea contracta*.

## Discussion

The nature of invertebrate habitats makes them difficult to sample quantitatively, thus area of occupancy is a more valuable measure of condition and comparison for invertebrates such as terrestrial mollusc species than density of individuals (Petrovskaya *et al.* 2018). This has led to difficulty in compiling condition assessments for Habitats Directive reporting as well as red lists for invertebrate species, as it is difficult to get good evidence of population trends. Area of occupancy and extent of occurrence are the main sources of trend data for invertebrate red-listing (Cardoso *et al.* 2011). This was also clear while undertaking assessments of *Vertigo* snails (e.g. Killeen 2003, Moorkens & Killeen 2011). Continued area of occupancy of short-lived species that do not move far from their place of birth provides good evidence that populations in these localities are sustainable. However, rare species with narrow habitat tolerances can be lost between surveys with little advance warning if conditions affecting that habitat are changed. This 2020 survey is a good model for approaching an understanding of the distribution of molluscs in the natural and protected environments of Killarney National Park.

This National Park is one of Ireland's most popular tourist destinations yet management is strongly focused on protection of the natural environment. Within the Park there is minimal vehicular access, hiking and cycling is confined to well-managed tracks, there are no camp sites and relatively few amenities or other human pressures. Thus, the management of the National Park is currently ideal for the mollusc species it supports. The woodlands are lightly managed retaining the deep litter, standing dead trees and fallen wood needed to support the range of species encountered. The wetlands are in equally favourable condition with little evidence of artificial drainage. Killarney National Park is an extraordinary example of natural habitat in Ireland, and if it continues to be protected and managed as it is at present, the mollusc fauna should continue to flourish.

Table 1: Species list

TERRESTRIAL SPECIES
<b>Snails</b>
<i>Acicula fusca</i> (Montagu, 1803)
<i>Aegopinella nitidula</i> (Draparnaud, 1805)
<i>Aegopinella pura</i> (Alder, 1830)
<i>Arianta arbustorum arbustorum</i> (Linnaeus, 1758)
<i>Ashfordia granulata</i> (Alder, 1830)
<i>Balea heydeni</i> von Maltzan, 1881 (figure 13)
<i>Carychium minimum</i> O. F. Müller, 1774
<i>Carychium tridentatum</i> (Risso, 1826)
<i>Cepaea nemoralis nemoralis</i> (Linn., 1758)
<i>Clausilia bidentata bidentata</i> (Ström, 1765)
<i>Cochlicopa cf. lubrica</i> (O. F. Müller, 1774)
<i>Columella aspera</i> Waldén, 1966
<i>Cornu aspersum</i> (O. F. Müller, 1774)
<i>Discus rotundatus rotundatus</i> (O.F. Müller, 1774)
<i>Euconulus alderi</i> (J. E. Gray, 1840)
<i>Euconulus fulvus</i> (O. F. Müller, 1774)
<i>Hygromia cinctella</i> (Drap., 1801)
<i>Lauria cylindracea</i> (Da Costa, 1778)
<i>Leiostyla anglica</i> (A. Férussac, 1821)
<i>Nesovitrea hammonis</i> (Ström, 1765)
<i>Oxychilus alliarius</i> (J. S. Müller, 1822)
<i>Oxychilus cellarius</i> (O. F. Müller, 1774)
<i>Oxychilus draparnaudi</i> (H. Beck, 1837)
<i>Oxyloma elegans elegans</i> (Risso, 1826)
<i>Punctum pygmaeum</i> (Drap., 1801)
<i>Pyramidula umbilicata</i> (Montagu, 1803)

<i>Semilimax pyrenaicus</i> (A. Férussac, 1821)
<i>Succinea putris</i> (Linn., 1758)
<i>Trochulus hispidus</i> (Linn., 1758)
<i>Trochulus striolatus</i> (C. Pfeiffer, 1828)
<i>Vertigo antvertigo</i> (Drap., 1801)
<i>Vitrea crystallina</i> (O. F. Müller, 1774)
<i>Zenobiella subrufescens</i> (J. S. Müller, 1822)
<i>Zonitoides excavatus</i> (Alder, 1830)
<i>Zonitoides nitidus</i> (O. F. Müller, 1774)
<b>Slugs</b>
<i>Arion ater</i> (Linn., 1758)
<i>Arion circumscriptus silvaticus</i> Lohmander, 1937
<i>Arion distinctus</i> J. Mabile, 1868
<i>Arion fasciatus</i> (Nilsson, 1823)
<i>Arion flagellus</i> Collinge, 1893
<i>Arion intermedius</i> Normand, 1852
<i>Arion rufus</i> (Linn., 1758)
<i>Arion subfuscus</i> (Drap., 1805)
<i>Deroceras invadens</i> Reise et al., 2011
<i>Deroceras laeve</i> (O. F. Müller, 1774)
<i>Deroceras reticulatum</i> (O. F. Müller, 1774)
<i>Lehmannia marginata</i> (O. F. Müller, 1774)
<i>Limacus maculatus</i> (Kaleniczenko, 1851)
<i>Limax cinereoniger</i> Wolf, 1803
<i>Limax maximus</i> Linn., 1758
<i>Geomalacus maculosus</i> Allman, 1843
<i>Tandonia budapestensis</i> (Hazay, 1880)
<i>Tandonia sowerbyi</i> (A. Férussac, 1823)

FRESHWATER SPECIES
<b>Gastropods</b>
<i>Acroloxus lacustris</i> (Linn., 1758)
<i>Ampullaceana balthica</i> (Linn., 1758)
<i>Ancylus fluviatilis</i> O. F. Müller, 1774
<i>Anisus leucostoma</i> (Millet, 1813)
<i>Aplexa hypnorum</i> (Linn., 1758)
<i>Bithynia tentaculata</i> (Linn., 1758))
<i>Galba truncatula</i> (O. F. Müller, 1774)
<i>Gyraulus albus</i> (O. F. Müller, 1774)
<i>Physella acuta</i> (Drap., 1805)
<i>Planorbis carinatus</i> O. F. Müller, 1774
<i>Potamopyrgus antipodarum</i> (J. E. Gray, 1843)
<i>Stagnicola fuscus</i> (C. Pfeiffer, 1821)
<i>Valvata cristata</i> O. F. Müller, 1774
<i>Valvata piscinalis</i> (O. F. Müller, 1774)
<b>Bivalves</b>
<i>Euglesa casertana</i> (Poli, 1791)
<i>Euglesa hibernica</i> (Westerlund, 1894)
<i>Euglesa lilljeborgi</i> (Clessin, 1886)
<i>Euglesa milium</i> (Held, 1836)
<i>Euglesa nitida</i> (Jenyns, 1832)
<i>Euglesa obtusalis</i> (Lamarck, 1818)
<i>Euglesa personata</i> (Malm, 1855)
<i>Euglesa subtruncata</i> (Malm, 1855)
<i>Pisidium annicum</i> (O. F. Müller, 1774)
<i>Sphaerium corneum</i> (Linn., 1758)



figure 13: *Balea heydeni*.

## Acknowledgements

We gratefully acknowledge the funding of this survey by NPWS. We thank the park rangers for provision of information, especially Mary Sheehan without whose assistance with a four-wheel drive vehicle and knowledge of the Park's habitats we would not have been able to get such comprehensive coverage. The basemap was obtained from the National Park website, © OS Ireland.

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# The razor shell genus *Ensis* Schumacher, 1817: proposed subgenera names to distinguish between the American and east Atlantic species Paul Dansey

According to the World Register of Marine Species (WoRMS 2020) there are 13 extant species of the razor clam genus *Ensis* Schumacher, 1817. They can be divided morphologically and genetically into two groups; those which are found around the coasts of the Americas and those found on the east Atlantic coasts.

The eight species of *Ensis* found around the Pacific and Atlantic coasts of the Americas are:

- Ensis californicus* Dall 1899
- Ensis leei* M. Huber 2015  
(formerly *E. directus* (Conrad, 1943))
- Ensis macha* (Molina, 1782)
- Ensis megistus* Pilsbry & McGinty, 1943 with two subspecies:
  - Ensis megistus coseli* Vierna, 2014  
(formerly *E. minor* Dall 1899)
  - Ensis megistus megistus* Pilsbry & McGinty 1943
- Ensis myrae* Berry, 1954
- Ensis nitidus* (Clessin, 1888)
- Ensis terranovensensis* Vierna & Martínez-Lage, 2012
- Ensis tropicalis* Hertlin & A.M. Strong, 1955.

The five species found on the east Atlantic coasts of Europe and West Africa including the Baltic and Mediterranean seas are:

- Ensis ensis* (Linnaeus, 1758)
- Ensis goreensis* (Clessin, 1888)
- Ensis magnus* Schumacher, 1817
- Ensis minor* (Chenu, 1843)
- Ensis siliqua* (Linnaeus, 1758).

The American razor clam species *Ensis leei* M. Huber, 2015 has also been found on the European east Atlantic coasts since its probable inadvertent introduction to the North Sea in ship ballast water (Cosel *et al.*, 1982).

A number of publications have listed, described and compared the American and east Atlantic species. Clessin (1888) described species of the genus *Ensis* under the generic name *Solen*. Bloomer (1905, 1906) compared the anatomy of American species of *Ensis* with the European *Ensis ensis* and noticed differences in the posterior structure of the siphons. Van Urk (1964) showed morphological differences between the shells of the American *Ensis directus* and the European *Ensis* species, and in a further two articles (Van Urk (1971, 1972) described fossil *Ensis* species in Western Europe and America. The process of plate tectonics has caused the Atlantic Ocean to widen, so littoral species like *Ensis* have become isolated by the separation of North America from Europe, and South America from West Africa. This has resulted in the evolution of new species on the coasts of each continent or subcontinent.

González-Tizón *et al.* (2013), Vierna (2014) and Vierna *et al.* (2009, 2010, 2011, 2012, 2013) have demonstrated genetic differences between American and east Atlantic *Ensis* species. The American species were shown to be closer genetically to each other than to the European species. Cosel (2009) has comprehensively described the eastern Atlantic *Ensis* species.

The 13 extant *Ensis* species vary in shell dimensions, such as length to breadth ratio, and also by how curved they are. In addition, there are differences in the morphology of the muscle scars on the interior of the shells. The American species can be distinguished from the east Atlantic species by the scar of the posterior pallial sinus. If the inside of the shell is examined with the shell held vertically and the posterior at the top, the pallial sinus is seen to be U-shaped in the east Atlantic species and W-shaped in the American species (figure 1).

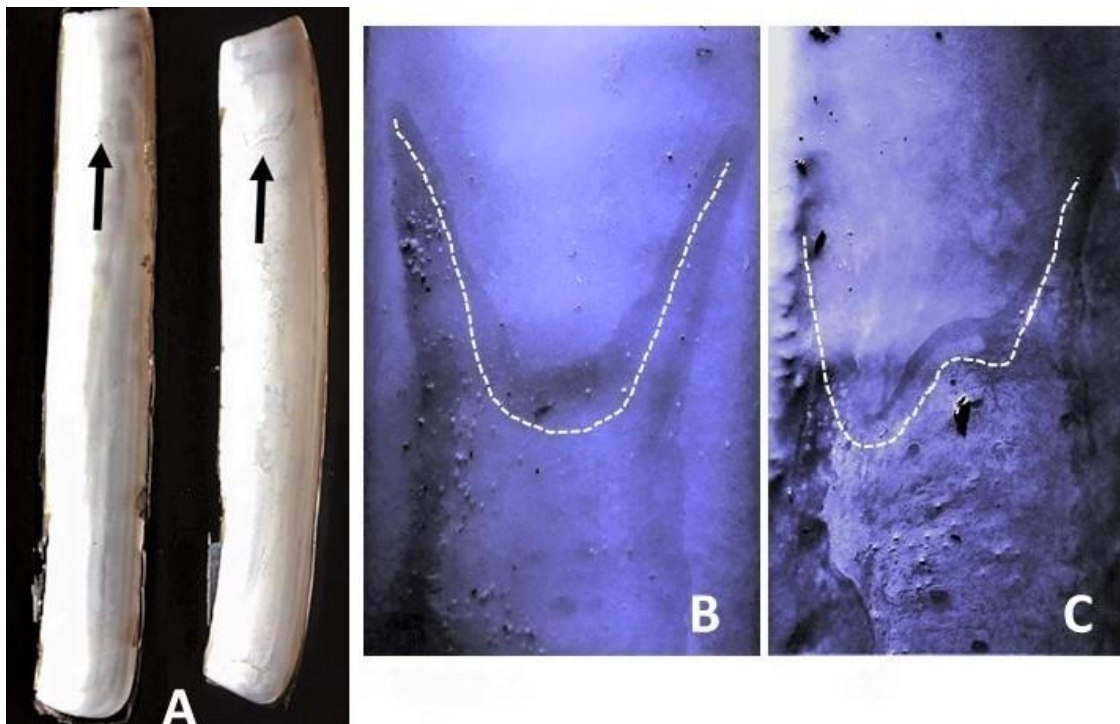


figure 1: Inside of the right valves of *Ensis siliqua* and *Ensis leei*. A: Arrows indicating positions of the posterior pallial sinus scars in *Ensis siliqua* (left) and *Ensis leei* (right) (photo: Paul Dansey); B: U-shaped posterior pallial sinus scar of *Ensis siliqua*. and C: W-shaped posterior pallial sinus scar of *Ensis leei*. (photos: Peter Topley).



I propose the names *Ensis* subgenus *Occidentis* (i.e. western) for the eight species found around the American coasts, and *Ensis* subgenus *Oriente* (i.e. eastern) for the five species found on the east Atlantic coasts.

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## A UK record of *Placida cremoniana* (Trinchese, 1892).

Shannon Moran



*Placida cremoniana* (Trinchese 1892). Sublittoral, 8 metres. Falmouth, Cornwall, England. 13th November 2020.  
© & Leg. Shannon Moran, det. James Lynott, conf. Dr Cynthia D. Trowbridge.

This is probably the first United Kingdom record of this distinctive Mediterranean species. It is apparently rare in the Algarve, Portugal (Calado and Silva 2012). It has not been recorded in Galicia, Spain (Trigo et al. 2018) and no record nearer to the UK is known to this author (please email the author at [Shannonmoran.info@gmail.com](mailto:Shannonmoran.info@gmail.com) if you have evidence to the contrary).

This sea slug is not a nudibranch, it is a sacoglossan. It feeds on green algae as can be seen in this image.

There is no other similar species recorded in European waters, but three very similar ones live in the Pacific, and additional species may occur in the Indian Ocean, tropical Australia, and the Caribbean.

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[With thanks to Ian Smith for suggesting this item. Ed.]

‘Shell collecting is another of those nineteenth-century occupations benefiting the potentially idle hands of the female leisure class. English women were much involved in early efforts to learn more about ocean life by combing the beaches for shells and seaweed’ (Norwood 1993).

To paraphrase (only slightly) Stephen Sondheim’s opening lines from a song in his Broadway musical ‘Company’: ‘I’d like to propose a toast ... here’s to the Ladies Who Conch.’ While the original ‘Ladies Who Lunch’ were rather mockingly judged as wealthy women who wasted their lives in meaningless activities, here no such connotations are implied, although it is true that many of the earliest female shell collectors that we know about were indeed wealthy.

Whole books have been written celebrating the role of women in various branches of science (e.g. Burek & Higgs 1997). As far as I am aware nothing similar has ever been produced for our particular passion. Indeed, in a study of British scientific women (Phillips 1990), conchology was not even listed in the index. Since we recently (2018) celebrated the centenary of (some) women being granted the right to vote, I believe a modest contribution acknowledging our debt to female conchologists would be both timely and of interest.

In order to do justice to what is a vast subject, I have divided this article loosely into four sections, the first two of which are covered in Part 1: pre-Victorian, early Victorian, late Victorian and 20<sup>th</sup> century. Those appearing are an eclectic mix of the rich, those of modest means, the famous, and the almost completely unknown.

## Pre-Victorian

Prior to 1837, female involvement in conchology mainly centred on collecting. **The Duchess of Portland** (1715-1785) accumulated perhaps the most famous shell collection of all time. Her story has been extensively documented (Dance 1986, Brown 2006, Stott 2006, Tobin 2014). Peter Dance also included in his *History of shell collecting*: Madame la Presidente de Bandeville (France); Marchesa Paulucci (Italy); Queen Ulrika (Sweden); Marie Theresa, Empress of Austria; and the Queen of Denmark. It seems unlikely that any of these august ladies actually spent much time outside ‘combing the beaches’ and no doubt disposable income was the most important factor in this phase of conchological history.



However, Margaret Cavendish Bentinck, Duchess of Portland (figure 1) was certainly a ‘serious’ collector and not just interested in shells for their decorative value. As the richest woman in Britain at the time, she was able to employ cleric-naturalist John Lightfoot and Swedish botanist Daniel Solander to curate her extensive scientific collections. Unfortunately, on her death her collections, which included shells, ores, fossils, birds’ eggs and other natural

figure 1: The Duchess of Portland (public domain).

history, were sold at auction over eight days and dispersed so that any scientific value was lost. A great deal of effort has been expended in trying to trace the whereabouts of the dispersed collection; mostly, it seems, without much success. Figure 2 shows two *Polymita picta* shells from Cuba in the Hunterian Museum in Glasgow that are said to have been purchased at the sale of the Portland Collection in 1786.



figure 2: *Polymita picta* shells in the Hunterian Museum, Glasgow, said to have been purchased at the Portland Collection sale in 1786.

One not quite so wealthy collector of the time, also related by Dance (1986), was **Mrs (Elizabeth) Bligh** (1752-1812), whose collection he described as ‘outstanding for its many beautiful and rare shells, most ... from conchologically virgin territories in the South Seas’. The fact that she was the wife of Captain William Bligh of *The Bounty* was probably of some assistance in the accumulation of her treasures! A decade after she died, her extensive collection was sold at the Dubois’ Auction Rooms, Covent Garden, over a period of six days ending on 25<sup>th</sup> May 1822. Figures 3 and 4 show the title page of the sale catalogue and one of the 1024 lots: *Conus aurisiacus*, illustrated by William Swainson. The sale ended with a mahogany cabinet lined with Botany Bay wood, presumably another present for ‘Betsy’ from William’s travels.

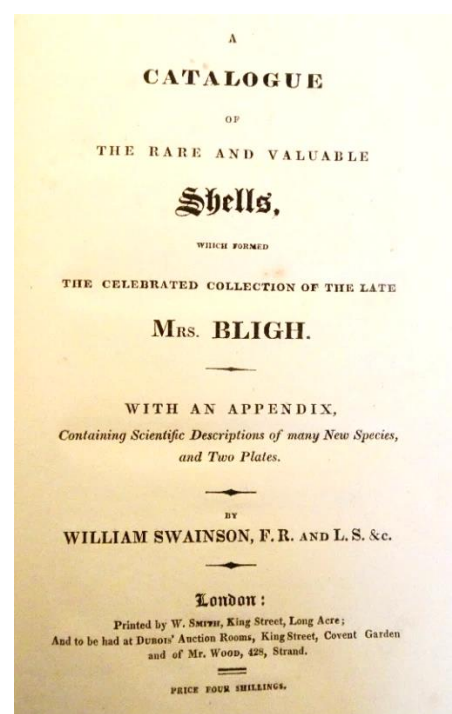


figure 3: Title page of the Bligh sale catalogue.



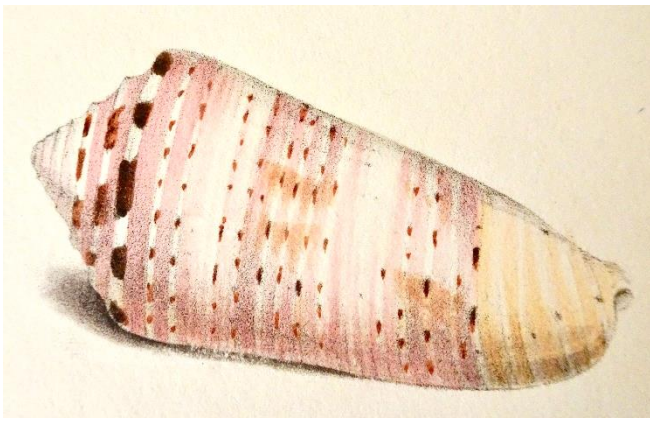
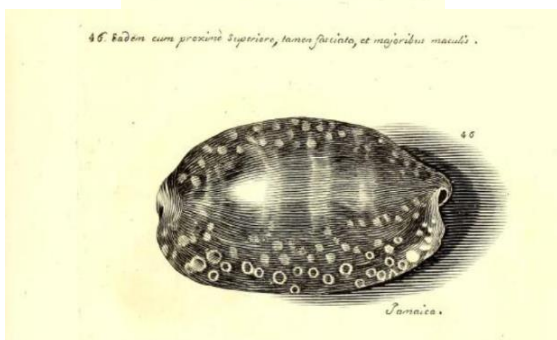
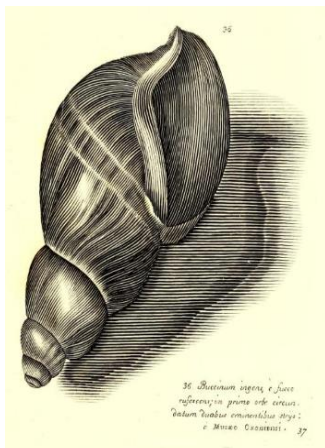


figure 4: *Conus aurisiacus* illustrated by William Swainson: plate from the Bligh sale catalogue.

These were not the only female collectors around the turn of the 18<sup>th</sup> century. The introduction to *The universal conchologist* (Martyn 1784-89) lists the Countess of Bute, Miss Fordyce, Mrs (Thomas) Heron, Mrs (John) Barclay and Mrs (Isaac) Walker as having collections of varying degrees of excellence. However, as Tobin (2014) noted, ‘these names are only the tip of the iceberg’ and ‘much more work ... is necessary to discover and document women’s engagement in natural history activities and their contribution to natural knowledge’.

Aside from collecting, the other main involvement in conchological matters among pre-Victorian women was as artists, almost invariably, it seems, to illustrate works penned by their husbands, brothers or fathers. The best-known example is the case of **Anna and Susanna Lister**, daughters of Martin Lister (1639-1712). Peter Topley (2016) gave a comprehensive account of the Lister sisters in his 2016 Presidential Address and they are also the subjects of a recent book by Roos (2018). Here I pay tribute by showing two of their remarkable pieces of art (figures 5 and 6).



figures 5 and 6: Examples of engravings from Martin Lister’s *Historiae ... conchyliorum* (Lister 1685[–1692–7]). Above: *Archachatina bicarinata* (a sinistral species). Below: *Macrocypraea zebra*.

Not all such artistic endeavours are as well documented. I am struck by the case of **the daughter of William Turton** (1762-1835), physician and naturalist, among whose works is *A conchological dictionary of the British Islands*, published in 1819. The title page (figure 7) acknowledges Miss Turton’s assistance but she is not named, and the exact nature of her assistance is not recorded.

A  
**CONCHOLOGICAL**  
**D I C T I O N A R Y**  
 OF  
**The British Islands.**  
 BY  
**WILLIAM TURTON, M.D.**  
 ASSISTED BY  
**HIS DAUGHTER.**

figure 7: Title page from Turton’s *Dictionary*.

Since a ‘Miss Sutton’ is thanked for three drawings, it is tempting to speculate that the remainder of the artwork, which is not attributed, is by the (partially) anonymous Miss Turton, and I reproduce two examples here by way of long overdue recognition (figures 8 and 9).



figure 8: ‘*Ostrea opercularis* – Variety’ (*Aequipecten opercularis*) (from Turton 1819).



figure 9: ‘*Buccinum reticulatum*’ (*Tritia reticulata*) (from Turton 1819).

Just as Thomas Martyn mentioned a host of female collectors, Turton also referred to **Mrs C.W. Loscombe**, a collector from Exmouth, whose shells featured in his *Dictionary*. The initials refer to her husband, Clifton Wintringham Loscombe (1784-1853), who was more of a bibliophile and numismatist than a conchologist. Born in Bristol, he inherited a fortune while still a young man and seems to have invested in sugar plantations in the West Indies. It was presumably here that he met Maria Frances Rawlins (1787-1857, born in St Kitts). Their marriage in 1808 at Woodbury, Devon (figure 10) was actually their second attempt, following ‘doubt being entertained of the validity of marriage at [Exmouth] Chapel’ in 1807!

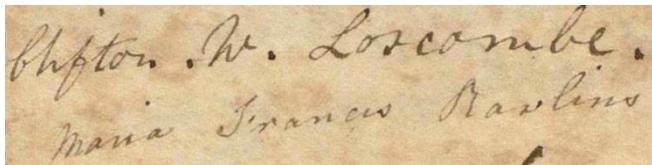


figure 10: Signatures from the 1808 marriage register of Maria Frances Rawlins to Clifton Wintringham Loscombe.

Mr Loscombe seems to have been rather more interested in fossils rather than in ‘recent’ Mollusca, but it was he, rather than Maria, that Sowerby the Elder commemorated in naming the marine bivalve *Limaria loscombi* G. B. Sowerby I, 1823. At the end of Turton’s *Conchological dictionary*, he thanks ‘Mrs. C. W. Loscombe, of Exmouth, for the liberal use of her very rich cabinet of British shells’. She also appears in John Gwyn Jeffreys’ *British conchology* (1862-1869). I have been unable to trace what became of her collection.

Just before we reach the reign of Victoria, I will briefly mention **Sarah Hoare** (1777-1856) (figure 11), daughter of a wealthy Quaker merchant, who, in 1831, published a collection of conchological (and botanical) verse. Based on septets, the work deals with specimens ‘in each order of the class Testacea’ and combines an expression of the marvels of God’s creation along with more scientific information, albeit with an anthropomorphic or moralising tone. I will leave the reader to determine the poetic merits of the work. An introductory septet and two septets regarding *Patella* are reproduced in figures 12 and 13.



figure 11: Sarah Hoare (1777-1856) (public domain).

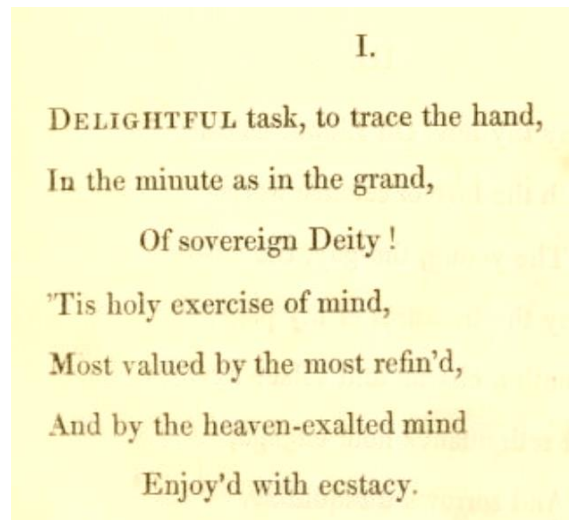


figure 12: Introductory septet from Hoare’s *Poems on conchology and botany* (1831).

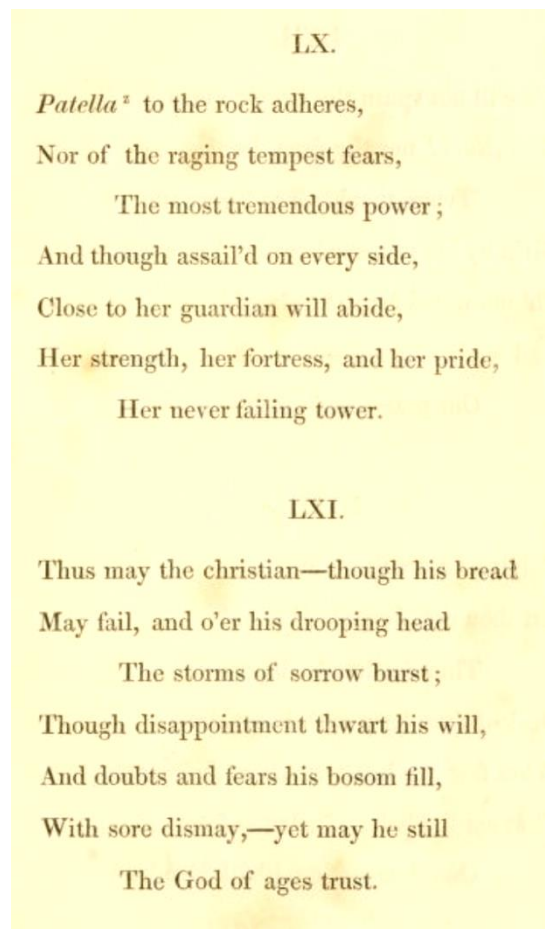


figure 13: Two septets on *Patella* from Hoare’s *Poems on conchology and botany* (1831).

### Early Victorian (1837-1876)

Another wealthy female collector detailed by Peter Dance (1986) was **Mrs Marianne de Burgh**. She is the subject of recent detective work by Selina Wilkins (2019) which incorporates unpublished notes of Peter’s. Among the noteworthy shells in de Burgh’s collection was the type of *Thatcheria mirabilis* Angas, 1877 (figure 14). This was one of Peter Dance’s ‘rare shells’ (Dance 1969) and was originally considered to be a ‘scalariform monstrosity’; it is now much more readily available to collectors.





figure 14: *Thatcheria mirabilis*.

Wilkins' article is admirably comprehensive and about the only detail I can add is the year of birth. There is a marriage settlement (dowry) for a £7000 annuity in the National Archives dated 3<sup>rd</sup> September 1827 (three days before the marriage) which refers to Marianne as 'aged 18'. This means she would probably have been born in 1809. This is consistent with a register of her death in 1880 when she was recorded as 70 years old (although the same document has a birth year of 1810). One small correction to Wilkins' article is warranted: de Burgh's collection was purchased in 1919 by Vernon William MacAndrew<sup>1</sup> (not 'Vernon Andrew').

Female artistic endeavours continued in the Victorian era. Perhaps the most notable was an American, **Lucy Say** (1801-1886). Lucy Way Sistare Say, to give her full (married) name, was born in New London, Connecticut, to Joseph and Nancy Way Sistare – one of 10 children. Say received instruction in drawing and painting from Charles Alexandre Lesueur at an experimental school for girls, the Pestalozzian School in Philadelphia, and was also a temporary pupil of John James Audubon (1785-1851). She married Thomas Say on 4<sup>th</sup> January 1827 and they moved to a utopian socialist community in New Harmony, Indiana – clearly an early 'hippie couple'! Thomas Say was truly a pioneer of American natural history and is justly remembered for his ground-breaking work *American conchology*, as well as three volumes on insects. Unfortunately, he died in 1834 and when *American conchology*'s engraver also died the same year, Lucy took up the challenge and added engraving to her undoubted artistic prowess. Lucy Say was elected as the first female member of the Academy of Natural Sciences of Philadelphia in 1841. She illustrated 66 of the 68 plates in *American conchology* and two of her works are reproduced in figures 15 and 16.

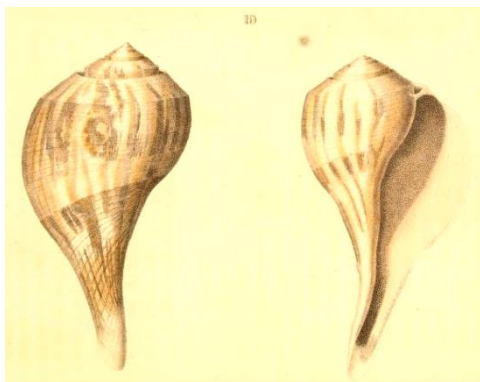


figure 15: '*Fulgur pyruloides*' (*Fulguropsis pyruloides* (Say, 1822)). Plate 19 from Thomas Say's *American conchology* (1830-[38?]).



figure 16: '*Anodonta suborbiculata*' (*Utterbackia suborbiculata* (Say, 1831)). Plate 11 from Thomas Say's *American conchology* (1830-[38?]).

Lest you think that the case of 'Miss Turton' (above) was an exception in being unrecognised, that trend has continued with (male) authors even in relatively recent times. Joseph Kastner (1977) wrote a biographical work featuring 15 or so pioneering naturalists from the New World (all men of course), including Thomas Say. Lucy went unmentioned, save for the following brief reference:

'He [Say] published his *American Conchology*, and eloped with the pretty young lady who made the illustrations for it'!

In Britain, as the 19<sup>th</sup> century progressed, natural history increasingly became an amateur activity, aided by the development of the railway network and, no doubt, by the Bank Holiday Act of 1871 that created a number of fixed holidays and was introduced by Sir John Lubbock, friend and neighbour of Charles Darwin in Downe, Kent. Conchology was accessible to everyone, did not require much in the way of specialist equipment, and had the added attraction of durable shells that were easily collected and visually appealing, and hence deemed appropriate to feminine sensibilities. Illustrative of the period is George Spratt's caricature of 'The Conchologist', with what has been described as 'a quasi-vulval cowry shell, disturbingly enlarged', making up the lower half of her body (figure 17). This image is perhaps more understandable when one realises that Spratt was a male midwife.



figure 17: 'The Conchologist', a caricature by George Spratt. (Science Museum Group Collection, © The Board of Trustees of the Science Museum, London.)

William Huggins (1820-1884) painted a rather more conventional image of a 'Victorian Conchologist Wearing Lace Mop Cap, Ruff And Jewelry', sadly unidentified (figure 18). Huggins was best known for his animal portraits. At the time of writing, this work in oils is on the market for £4500 at Artware Fineart (for details please see <http://www.artwarefineart.com/gallery/portrait-victorian-conchologist-wearing-lace-mop-cap-ruff-and-jewelry>). Huggins was born in Liverpool. In 1856 he moved to Chester, and then in 1876 to Betws-y-Coed before moving back to Chester. Unfortunately, none of these locations is a good match for any of the Victorian conchologists mentioned in this article but it is tempting to imagine it could have been one of them!



figure 18: painting by William Huggins: 'Portrait of a Victorian Conchologist Wearing Lace Mop Cap, Ruff And Jewelry'. (Image by permission from Greg Page-Turner at Artware Fineart.)

Regrettably, as Lynn Barber (1980: Chapter 9, The naturalist in the boudoir) pointed out, 'Victorian women rarely translated their genuine passion for natural history into any purposeful form of research'. This applied especially to the written word where 'ladies were next in line to clergymen as relentless producers of natural history books'. In truth, much of the work by female authors during this period was derivative, with moralistic or religious intent, and aimed at other women and/or children: as Barber pointedly noted, 'it wasn't always easy to tell which'. It was really only during the 20<sup>th</sup> century that women conchologists and malacologists began publishing their own work.

Little seems to have been written about the early female authors of conchological works and little seems to be known about their lives. J. Cosmo Melvill (1890), writing on 'British pioneers in recent conchological science', managed passing references to the Duchess of Portland, **Maria Emma Gray** (as artist for her husband's work) (figure 19) and **Lady Katherine Wigram**, who apparently 'collected vigorously in Oregon'. A short paragraph was also devoted to **Agnes Catlow**.



figure 19: Portrait of Maria Emma Gray (from Gray 1859).

**Agnes Catlow** (1806-1889) was the daughter of Samuel Catlow, a well-known Presbyterian minister who had 13 children, eight of whom he baptised himself. Some of these (perhaps ten) were with his first wife Charlotte who died in 1804. Shortly after, on 17<sup>th</sup> December 1805, Samuel Catlow was married to Elizabeth (née Toplis) at St Mary's Church, Norton Cuckney, in Nottinghamshire. Agnes was born on the 27<sup>th</sup> September in the following year, and was soon followed by William Toplis in 1808 and Maria Elizabeth in 1809. Samuel Catlow had entered the ministry at The Old Meeting House, Mansfield in 1783 and continued in post until 1798. In 1788, however, he opened a Literary and Commercial Seminary (a boarding school for boys aged 10 to 13) and he remained in charge until 1819 when he moved the family to a pastorate in Hampstead, London. This was short-lived as he died in January 1920, leaving his second wife with a young family. I could find no other information about the children's upbringing or childhood but clearly they had a good education. Both sisters appeared in the 1851, 1861 and 1871 censuses, by which time they were living in Surrey and well into their respective careers as authors (and illustrators). Wikipedia suggests that Agnes' 'greatest success as an author' was her *Popular conchology*. This was certainly one of the better non-specialist books of the time (Catlow, 1843) (figure 20), but she also, in conjunction with Lovell Reeve, produced a catalogue of all known living Mollusca, then standing at about 8000 species, which was a work of some originality and scholarship (Catlow & Reeve 1845) (figure 21). Thus, she seems to have been at least partly an exception to the 'derivative author norm' of the period.

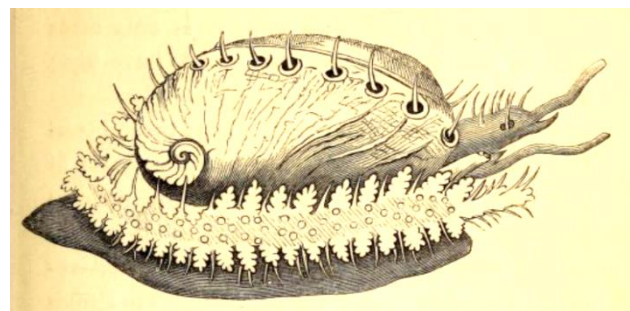


figure 20: From Catlow's *Popular conchology* (1843).



14. *R. cruentata*, Sowerby, Conch. Illus. f. 5, 5\*. *Ticcio*  
 15. *R. crumena*, Lamarck; Reeve, Conch. Icon. pl. 4. f. 17. *Cey*:  
*Ranella elegans*, Kiener; *Murex rana*, pars, Linnaeus;  
*Ranella crumenaoides*, Blainville; *Ranella rana*, Anton.  
 16. *R. cuspidata*, Reeve, Conch. Icon. pl. 8. f. 48.  
 17. *R. elegans*, Beck; Reeve, Conch. Icon. pl. 5. f. 22. *Nicobar*.  
 18. *R. foliata*, Broderip, Zool. Journ. v. 2. pl. 11. f. 1. *Mauritius*  
*Ranella crumena*, Kiener (not of Lamarck).  
 19. *R. gigantea*, Lamarck; Reeve, Conch. Icon. pl. 1. f. 3. *Med*  
*Ranella reticularis*, Deshayes; *Ranella ranina*, Blainville;  
*Gyrina maculata*, Schumacher; *Apollo gyrina*, De Montford.

figure 21: Part of the genus *Ranella* from *The conchologist's nomenclator* (Catlow & Reeve 1845: 252), a catalogue of all known species, with synonyms.

Agnes' three census records show her as, respectively, living off 'interest of money', as a 'fundholder' (i.e. someone with invested money) and as living off 'dividends', so between her earnings and any inheritance she managed to survive financially. However, when she died aged 82 at Addestone on 10<sup>th</sup> May 1889, she left a personal estate worth just £117 1s. 5d [the equivalent of about £15,000 today (Ed.)].

While Agnes Catlow was raised in a strongly religious household, it did not seem to have unduly influenced her writing. The same cannot be said for one of the most popular writers around at this time: **Mary Roberts**. Born 18<sup>th</sup> March 1788 at Homerton in Hackney, London, the family moved in 1790 to Gloucestershire where she was raised as a Quaker. After her father died she seems to have abandoned Quakerism for a Creationist philosophy and returned to London where she continued her writing. Several biographical sources state that she lived and subsequently died in Brompton Square, but both the 1851 and 1861 censuses have her living at 6 Bolton Square with her sister-in-law Maria Roberts. Rather like Agnes Catlow, the census recorded her 'occupation' as 'landed proprietor' in 1851, followed by 'fundholder' in 1861.

Roberts' extreme Creationist views are frequently on show in her book, *The conchologist's companion* (1834) where, for example, referring to *Mytilus*, she opines:

'Let the unbeliever in the superintending providence of his Creator, examine the structure of this insignificant creature, and he will be constrained to acknowledge – unless blinded by prejudice, the moral cataract of the human mind, that the hand of the Deity is conspicuous even here.'

I found the recurring phrases such as 'feeble creatures' and 'wonders of creation', together with the saccharine verse and generally tortuous prose, wearying and while there are some interesting snippets, easily the best elements of her work (unless I too am 'blinded by prejudice') are the illustrations (figures 22 and 23).

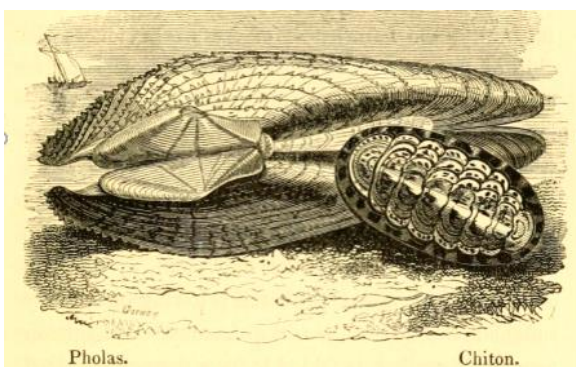


figure 22: From Mary Roberts' *The conchologist's companion* (1834).



figure 23: From Mary Roberts' *The conchologist's companion* (1834).

After writing several other 'popular' natural history works, Roberts returned to her conchological theme with the catchily titled, *A popular history of the Mollusca; comprising a familiar account of their classification, instincts, and habits and of the growth and distinguishing characters of their shells* (Roberts 1851). This work is self-confessedly derivative, 'compiled chiefly from the works of Mr Reeve'. Even with this expert help, the conchological prose is ordinary in contrast to the religious elements, many of which are extraordinary. Apparently:

'Cicero refers to the ocean and its inhabitants as affording irrefragable proofs, in connection with the general order of creation, of the existence of a presiding Deity'.

According to Roberts, this makes him an 'enlightened heathen'. But then a few lines later:

'This heathen philosopher [Cicero], and his equally *unenlightened* countryman [my italics], the eminent natural historian Pliny, delighted to acknowledge in their works the shadowy forms of Pagan superstition, which they supposed to control, not only the passing events of life, but also the varied wonders of creation. They brought to bear upon their subject, which engrossed their profoundest contemplations, all the feeble light which they possessed.'

Even allowing for the self-certainty of a religious fundamentalist, this seems an extraordinarily harsh judgment on two Romans of such historical significance, heathens or not. As with her earlier volume, easily the best parts of this work, in my opinion, are the illustrations (figures 24 and 25). Unfortunately, while the engraver signed the plates, the artist is not credited. Further details of Mary Roberts can be found in Stephen Jay Gould's book *The dinosaur in a haystack* (Gould 1996: 191-196).

On 'the other side of the pond', **Helen Fitch Parker** (1827-1874) produced similar moralistic tomes, notably *Rambles after land shells* and *Frank's search for sea-shells* (Parker 1863, 1866) – see Topley (2008) for some biographical notes.

Roberts' conchological legacy may be modest but that of **Jane Saul** (1807-1895), broadly her contemporary, was much more significant. Very much of the Victorian era, Saul was another relatively wealthy female collector and perhaps as a result of the breadth and eminence of her conchological network, together with the excellence of her collection, her story has already achieved the attention of Kay (1968), Bishop & Way (1976) and Wilkins (2016).

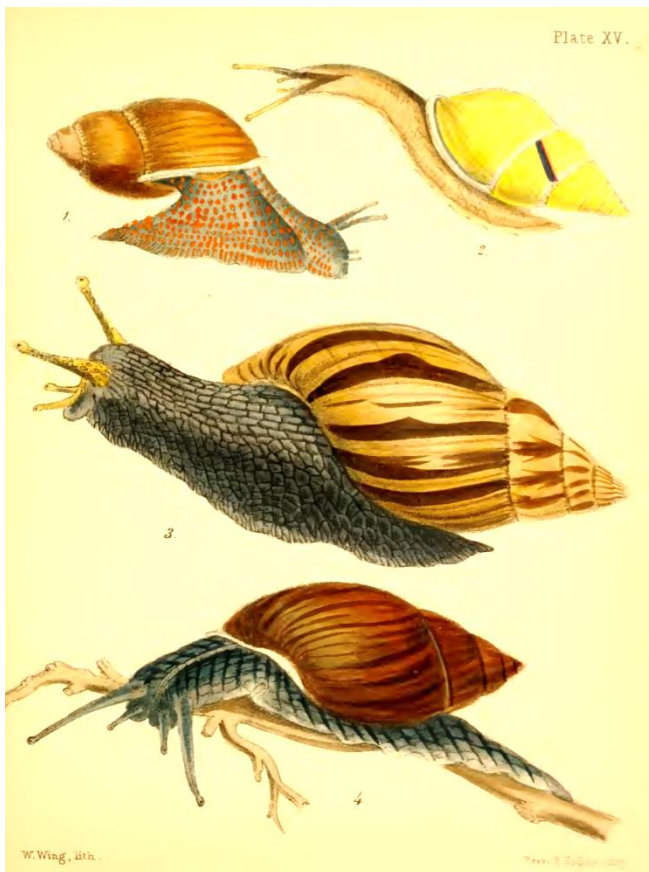


figure 24: From Mary Roberts' *A popular history of the Mollusca* (1851).

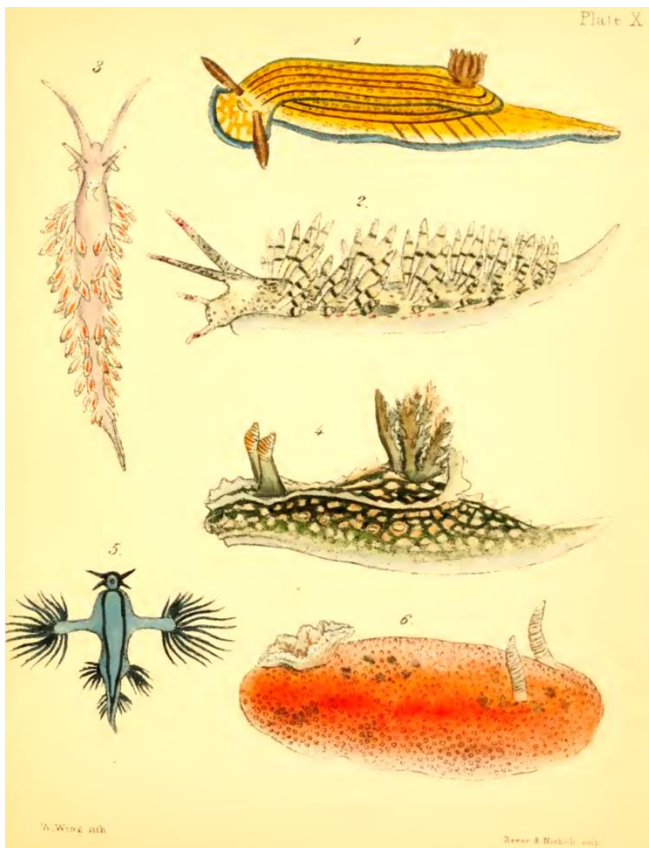


figure 25: From Mary Roberts' *A popular history of the Mollusca* (1851).

Kay's work dealt with her collection, which she bequeathed to Cambridge University when she died and which was particularly rich in rare cowries, cones and *Murex*. Bishop & Way homed in on the type specimens in her collection, while Wilkins<sup>2</sup> delved more into biography and included a

superb array of photographs of the shells, especially the cowries. Saul had several species named in her honour, including by Reeve, Gaskoin and Sowerby, so she was clearly well connected.

Jane seems to have lived all her life in or around the Poplar area of London. Little is known about her early years but the family was recorded at Emmett Street in the 1841 and 1851 censuses and later at Bow Lodge, 33 Bow Street. Jane's father David was a licensed victualler and must have made a very good living. After he died in 1860, Jane and her younger brother George Thomas were described in later censuses as living off 'income from house property, dividends, etc.' and 'income from shares, funds [and rents]'. The household was wealthy enough to employ both cook and housemaid and, towards the end of her life, Jane had a gardener. With disposable income and plenty of time, she was able to indulge her passion and build up not just a significant network of contacts, but also a world-class collection that was bequeathed to Cambridge University on her death. Reeve borrowed heavily from the Saul Collection for his *Conchologica iconica* (1843-78), and two species commemorating Jane are shown in figures 26 and 27.

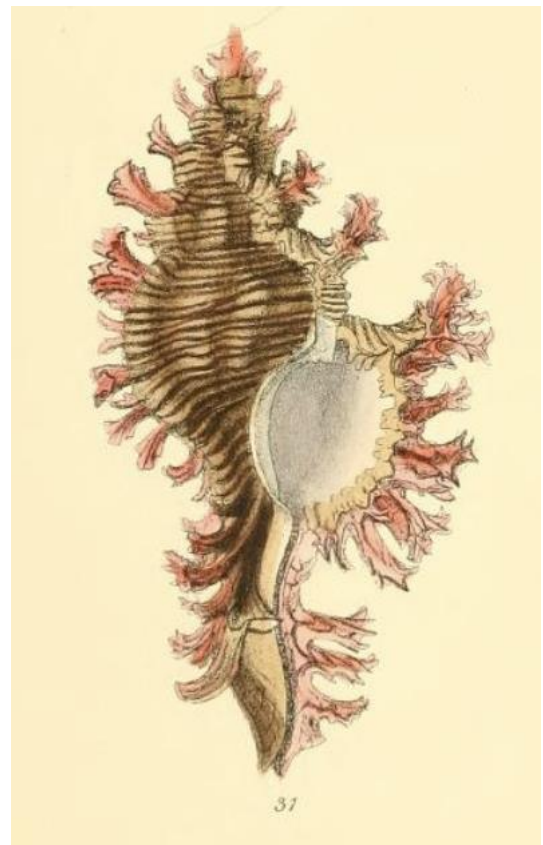


figure 26: '*Murex saulii*' (*Chicoreus saulii* (G.B. Sowerby II, 1841)) from Reeve (1843-78, volume 3, plate 8, no. 31).



figure 27: '*Cypraea saulae*' (*Palmadusta saulae* (Gaskoin, 1843)) from Reeve (1843-78, volume 3, plate 14, no. 62).

(To be continued...)



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## Notes

<sup>1</sup> The circumstances surrounding the acquisition of the collection by the Natural History Museum are worth briefly recording. Vernon MacAndrew (born 15<sup>th</sup> July 1880) was a merchant and keen sailor. At the beginning of the Second World War, the family's 213-ton motor yacht *Campeador V* was requisitioned and Vernon was enlisted as an RNVR Lieutenant to take charge of the yacht and her 19 crew. On 22<sup>nd</sup> June 1940, *Campeador V* was sunk by an enemy mine east of the Isle of Wight and was lost with all hands. Some of Vernon's collection, and that of his grandfather Robert MacAndrew, are also in the Melville-Tomlin collection at the National Museum of Wales, Cardiff (<https://museum.wales/curatorial/biosyb/mollusca/collections/sources/m-z/>).

<sup>2</sup> There are some omissions and typos in Wilkins' (2016) account that are corrected in the text of this article.

## Slug with a forked tail

from *Imogen Cavadino*

In November 2020 Imogen emailed myself and Ben Rowson (our Non-Marine Recorder) the image opposite, with the following note:

'I received this *Deroceras invadens* slug with an unusual deformity and thought it may interest you. It appears to have developed two tail tips, giving a forked tail appearance. It's quite happy crawling around, but does tend to keep both tail tips in the air when doing so.

Ben replied to her as follows: -

'The slug equivalent of a four-leafed clover? Never seen this myself, but I once found a *D. invadens* with a sort of waist-like constriction on the abdomen. The most abnormalities I ever saw were on Isleworth Ait in the Thames in 2006. A few of the arionids and limacids had bent or malformed tentacles...pollution perhaps?'

I would be interested to receive any accounts of similar observations (plus any theories as to the possible cause!) from members. [Ed.]



# The southern distribution limits of *Testudinalia testudinalis*

Ian F. Smith<sup>1</sup>

(Appendix for full species account at <https://flic.kr/s/aHskbm8fpS> )

The Flickr version of this article will be amended if new evidence requires it.

[iwanfsmith@gmail.com](mailto:iwanfsmith@gmail.com)

The following is based on available specimens and images, and on information from workers with many years of experience of *T. testudinalis*. Over fifty museum curators, academics, professionals, amateur shore workers and divers have provided information, and appeals have been made for images or specimens to online groups of shore workers and divers with a total membership of over a thousand. Information from regions with the most complete historic and current evidence suggest that the species extended its range southwards in the relatively cold 19<sup>th</sup> century and has receded towards its previous range in the climatic warming of the late 20<sup>th</sup> and early 21<sup>st</sup> centuries (figure 11). The range expansion is demonstrated with the date of the earliest recorded appearance of *T. testudinalis* at different latitudes. Early recorders were a limited number of specialists, and their accuracy can be checked from museum specimens and their published descriptions and images.

Recording its disappearance from localities has many problems as absence of evidence is not evidence of absence. The onus of proof, by display of specimen or image, rests on those who maintain it is still present at a locality. To assess the probability of decline, reliance has been placed on those with the necessary identification skills who have frequently investigated an area over a period of years. If numbers were noted to decline, followed by no finds while consciously watching for it for several years, it is reasonable to think that the species is lost or at undetectably low numbers.

Occasionally, such assumptions are reversed by subsequent finds, such as happened in the Isle of Man. Readers are asked to contact the author with any visual evidence that affects the findings below, so that the Flickr version of this account can be adjusted accordingly.

A particular problem with documenting the recent decline northwards of *T. testudinalis* has been the very frequent mistaken recording of *Tectura virginea* as it. This has several probable causes:

- 1) Specimens of *T. virginea* can be mistaken for it if the exterior markings are concealed by epizooic growths (figure 1) or are worn away (figure 5).
- 2) The markings on early juvenile *Tectura virginea*, such as tiny specimens from shell-grit samples, are often brownish and mistaken for those of *Testudinalia testudinalis* (figures 1 & 2).
- 3) The vernacular name of *T. testudinalis*, 'Common tortoiseshell limpet', has lead many recorders to think it is the tortoiseshell limpet that is found commonly in England and southern Ireland where it is absent or extremely rare. It is *Tectura virginea*, the 'White tortoiseshell limpet', that is common there and frequently misidentified. To reduce this confusion, the vernacular name of *T. testudinalis* was changed to the 'Northern tortoiseshell limpet' in October 2020 on the UK Species Inventory controlled by the Natural History Museum, London. This problem does not apply in America where *T. virginea* does not occur and the vernacular used for *T. testudinalis* is simply 'Tortoiseshell limpet'.



figure 1. Left: *Tectura virginea* covered by algae; identified by white faecal pellets with hemispherical ends, and pale feeding pits in encrusting alga. (photo: D. Kipling). Right: Juvenile and adult *T. virginea*. Adult apically and juvenile have brownish marks resembling *T. testudinalis*. Juvenile identified by inwardly oriented repugnatory glands and non-green mantle (photos: A. Wake).

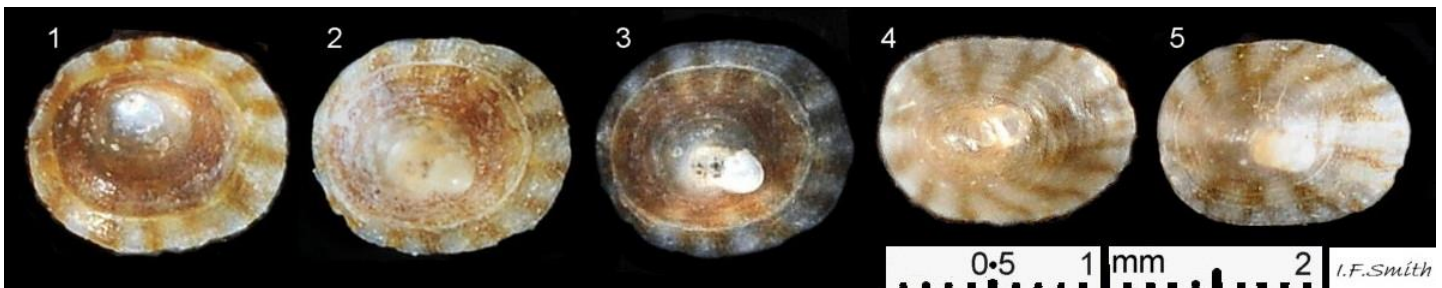


figure 2: Juvenile *T. virginea* from shell-grit. Interiors, 1&4, lack pigment; translucency reveals exterior markings which are usually brownish at this stage. 3 in water so more translucent, others dry. White semi-spiral protoconch attached to apex. 1–3 Dublin, 2020. 4–5 North Devon, 2019. Leg. A. Wright.



4) Distribution maps, such as NBN Atlas, show historic and recent records with the same symbol, so users may think their finds in areas where it is lost are plausible because of the historic records shown.

5) Recent misidentifications added to the *T. testudinalis* map on NBN Atlas, by amateurs, professionals and academics alike, further add to the apparent plausibility of records in areas where it has gone. Sophia Ratcliffe of NBN is making efforts to have them recognised and removed, but the cooperation of some data providers is difficult to obtain.

6) The multiplication of fauna recording organizations, online interest groups and ways of submitting records online has drawn in many enthusiastic but non-specialist contributors. Many are averse to disturbing specimens for close examination and rely on un-posed photographs for identification.

**Regional Detail.**

North-east England has the most detailed data. It is assumed that similar climate changes to those described occurred in other areas.

**British North Sea**

Forbes (Forbes & Hanley, 1849) knew of *T. testudinalis* at many places in Scotland but not in England. He predicted the range expansion southwards which reached the Farne Islands by 1856, Roker by 1857 (Tate, 1863 in Foster-Smith, 2000); Hesleden by 1861 (Dove Marine Laboratory manuscript, 1862, in Foster-Smith, 2000); Hartlepool by 1863 (Hancock, 1863, in Foster-Smith, 2000); Sandsend by 1901 (Lebour, 1902); and Flamborough before 1910 (Hargreaves, 1910) (figures 3 & 4). This advance south of over 220 km took place in the cold period c. 1855 – c.1920 when the ten-year running mean temperature in central England was always below the mean temperature of 1961 – 1990 (figure 4). From c.1920 to the late 1980s the ten-year running mean temperature rose to fluctuate around the level of the 1961-1990 mean. In this period, records of *T. testudinalis* continued to be made so it seems to have maintained its expanded range, though no specimens or images have been seen in this inquiry, so some may be misidentified *Tectura virginea*. From the late 1980s to 2019 the ten-year running mean temperature has risen to unprecedented heights well above the 1961-1990 mean and there has been a marked reduction of reliable records of *T. testudinalis*. Sue Hull, Programme Director Marine Biology, University of Hull, observed occasional rare

specimens in Yorkshire from 2002 to 2007 with a final single specimen at Ravenscar in 2010. Paula Lightfoot, who did extensive shore work and diving in Yorkshire and the North East of England from 2010 to 2020, saw none despite consciously looking for it. The experience of a large number of other shore workers and divers conforms to that of SH and PL. NBN Atlas had several recent records of it in the North East, but all photos shown were of misidentified *Tectura virginea*, and all 2010 to 2020 records were retracted by those who recorded them, though some may remain on NBN Atlas until the Data Providers allow NBN to remove them. The distribution limit may have fallen back to its pre 1856 position in south-east Scotland. The furthest south in the British North Sea, recent (2020), live-taken image seen by IFS is from Edinburgh, 56.00° N (figure 5). It may yet survive further south in Scotland and the extreme north of England as there is a live-taken specimen in National Museums Scotland from Eyemouth 55.88° N (1981). Re-examination of 1980s sites is desirable to see how far south beyond Edinburgh it still occurs live.

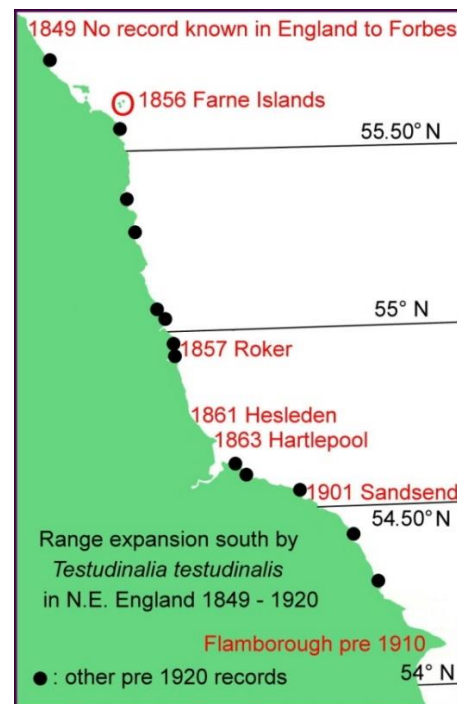
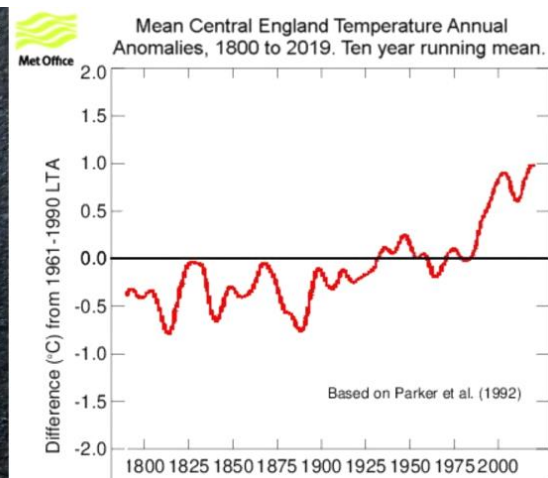


figure 3: N.E. England 19<sup>th</sup> century expansion.



figure 4: Left: *T. testudinalis*. Runswick Bay, Yorkshire. 1909. (photo: J. Middleton, Scarborough Museums)



Right: Mean temperatures in central England 1800 – 2019. (Crown Copyright, Open Government Licence V2)



figure 5: *T. testudinalis*, 10 mm & 12 mm long, from Edinburgh 56.00° N (2020). Exterior worn. (photos: D. Notton)

Other records for 2010 to present in NE England should not be relied on unless evidence can be shown, and users of NBN Atlas should be aware that the *T. testudinalis* map shows historic records in North East England at sites where it no longer occurs.

#### West coast of Ireland

No historic data available. Furthest south recent record at Mulroy Bay, N. Donegal 55.15° N, 07.68°W. (J. Nunn pers. comm. July 2020).

#### East coast of Ireland

The spread south is mentioned in Forbes and Hanley (1849) thus: '*On the Irish shores it has found its way as far south as Dublin Bay, in which well-searched district it has been noticed only of late years; it is there 'abundant, near Williamstown, on stones above low water-mark' (Hassall)*'

The furthest south historic (pre 1893) record is at Bray, Wicklow, 53.20° N. The specimen is in the National Museum of Ireland and has been examined and catalogued (Nunn & Holmes, 1995).

There are several recent records of *T. testudinalis* from Carlingford Lough, about 95 km north of Bray, such as at Greencastle, 54.04° N (2013, det. J. Nunn) and many further north (figure 6). No recent, reliable records further south have come to light in this enquiry.

#### Isle of Man

The spread south of *T. testudinalis* to the Isle of Man, probably from Northern Ireland or southern Scotland, is mentioned in Forbes and Hanley (1849) thus: '*appeared since 1836, and multiplied considerably on the north coast*'.

Subsequent records in Moore (1937) include Ramsey 54.32°N, (1878); Ballaugh 54.31°N, (1901); Fleshwick Bay 54.11°N, common, (1932); Port Erin 54.09°N, few, (1932). A decline and apparent '*loss of species from south of Isle of Man*' was observed when none was found in the years 2000 – 2005 where it had previously been found intertidally in the 1970s and early 1980s (Hawkins in Mieszkowska, 2005), but it was present in 2017, at least sublittorally. Furthest south, recent, sublittoral records at southern tip of island, 54.05° N (2014) and Niarbyl, 54.16° N (2017) (figure 6).

#### North East Irish Sea.

The furthest south, historic record (pre 1910) is from Fleetwood, Lancashire 53.92°N (figure 7). No information has been found on when, and if, it spread south from Scotland in mid 19<sup>th</sup> Century.

The furthest south post 2000 records with images are on the south coast of Scotland from Ardwell, Mull of Galloway, 54.77° N, 4.94° W (2019) eastwards to Islands of Fleet, 54.81° N, 4.21° W (2017) (figure 7). It was present in low numbers in 1991 at Parton Bay, Cumbria 54.55° N. (S.J. Hawkins on NBN Atlas).



figure 6: Top left: *T. testudinalis* at St John's Point, Killough, Northern Ireland 54.23° N. (photo: N. Nolan)  
Bottom left, and right: *T. testudinalis* from the south of the Isle of Man. 54.05° N (2014). (photos: P. Lightfoot. 54.16° N (2017) and D. Kipling)





figure 7: Left: Fleetwood, Lancashire, 53.92°N, (pre 1910) (Photo: B. Rowson, National Museum Wales). Centre: Ardwell, Galloway, 54.77° N, 4.94° W, (2019) (photo: J. Logan). Right: Islands of Fleet, Galloway, 54.81° N, 4.21° W (2017) (photo: J. Logan).

### Wales

No image or specimen evidence has been found for *T. testudinalis* living in Wales recently or historically. The National Museum Wales has specimens of the species, but none is from Wales. A few publications such as Graham (1988) mention Anglesey without further detail. A specimen is rumoured to exist in the Zoology Museum, Bangor University, but the Collections Officer, Helen Gwerfyl, has been unable to find a specimen or documentation to support this. Appeals for images of *T. testudinalis* to sub aqua divers and shore workers in online groups with membership around 1000 have produced several images from Scotland, but none from Wales. There are several records in Wales on NBN Atlas, but none can be substantiated with specimen or image. All images viewed from all sources offered as *T. testudinalis* from Wales were of misidentified *Tectura virginea*.

Forbes and Hanley (1849) mention the possible source of reports of it from Wales thus:

*'The locality 'Bangor', assigned to it by Mr. Sowerby, refers not to Bangor in North Wales, but to a place of the same name in the north of Ireland.'*

Until specimens or images can be found to substantiate the presence of *T. testudinalis* in Wales, recently or historically, it should not be accepted as a confirmed resident. Any new records should be supported with specimens or clear images, preferably including the interior of a fresh shell.

### South-west England

No historic records of *T. testudinalis* were made in this region in the period of its greatest extent 1855-1920, apart from a misidentification of *Tectura virginea* in Cornwall mentioned in Jeffreys (1865). It is most surprising that there are thirty records on NBN Atlas for the northern, cold water species,

*T. testudinalis*, in this most southern, warm water area in the period of climate warming 1981 – 2013 when it was retreating northwards elsewhere. The data holders for most of the records are JNCC or Natural England. Records here were challenged as probable misidentifications of *Tectura virginea* in Wilkinson (2010) who reported, '*JNCC are currently looking into the sources of these more carefully*', but no action has been taken in the ten years since. Unless evidence in the form of specimens or images can be produced, records of *T. testudinalis* in this area should be disregarded.

### Continental coast of Europe

*T. testudinalis* occurs in Norway and south-west Sweden extending, both recently and historically, into the Kattegat and Öresund to the vicinity of Lund at 55.8° N where the limit of distribution is probably controlled by low salinity further into the Baltic (figure 8). *T. testudinalis* also lives on the Danish side of the Kattegat and Lillebaelt (figures 9 & 11) to the outer fringe of the Kieler Bucht and Fehmarnbelt between Germany and the Danish island of Lolland where low salinity probably limits extension further east; this was also the historic limit stated in Meyer & Möbius (1872).

On the North Sea coast of continental Europe, no live-taken specimen or image further south than Norway and Sweden has been traced, but a dead, strandline specimen (date and location when live uncertain) was found at Lister Haken, Sylt, Germany at 55.04° N in 1969 (figure 9).

Offshore there is an unlocalized mention of '*central North Sea*' (Götting, 2008) and an imprecise reference to '*North Sea-Helgoland + deep channel + stony ground*' (Zettler et al., 2018) but K. Janke, a biologist who worked many years on Helgoland, never found it there (pers. comm. V. Wiese, 2020).



figure 8. *T. testudinalis* from the Öresund, south-west Sweden. Left: 56.3° N (undated) (photo: Swedish Museum of Natural History). Right: 55.9°N (1963) (photo: Lund Museum); has specimens from Öresund 1923–1963; most southerly 55.8°N (1963).



figure 9: *T. testudinalis* Left: sublittoral, Strib, Lillebaelt, Denmark 55.54° N (2016). (photo: P. Rasmussen). Right: strandline, Sylt, Germany, North Sea coast 55.04°N (1969). (photo: V. Wiese. Haus der Natur, Cismar).

### East coast of North America

The furthest south historic (1914) record of *T. testudinalis* was at Hempstead Bay, Long Island, New York, 40.6° N (figure 10). The furthest south recent (2009) record on iNaturalist is East Matunuck, Rhode Island, 41.38° N, about 200 km north-east of Hempstead Bay (figures 10 & 11). American records have extended more than 10° of latitude further south than in Europe probably because of the cold Labrador current extending south down the coast to the vicinity of Cape Cod. In the St Lawrence River, the furthest upstream images on iNaturalist are, live, at Rivière-du-Loup, Quebec (2018), 47.84° N, 69.54° W and a vacant shell at L'Isle-aux-Coudres (2020), 47.40° N, 70.34° W, unlikely to have been carried upstream against the flow. The limiting factor is low salinity, so there has probably been little historic variation there with climate change.

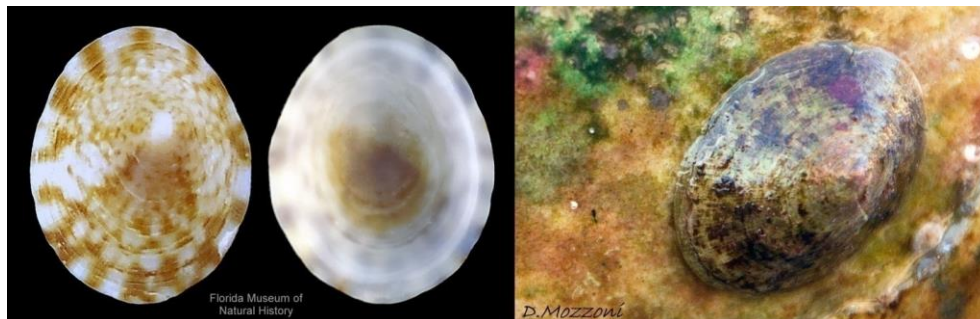


figure 10: *T. testudinalis*. Left: Hempstead Bay, Long Island, New York, 40.6° N (1914) (photo: Florida Museum of Natural History). Right: East Matunuck, Rhode Island, 41.38° N (2009). (photo: D. Mozzoni)

### Northern limits of distribution

Several museums hold specimens of *T. testudinalis* from the northern most coasts of the land masses encircling the Arctic Ocean, including those which are icebound for part of the year. Although the southern limit of distribution is receding northwards, there seems to be little unoccupied coast for it to advance onto northwards with global warming. It might already extend undetected below the sea ice to the North Pole. Some most northerly museum-records on GBIF are: North Alaska 71.3° N (1900); Devon Island, Canada 76.6° N (1962); northern Greenland 76.2° N (1894); north-west Iceland 65.88° N (2019) (figure 12); Svalbard 77.7° N (undated); Nenets Region, northern Russia 69.8° N (1875).



figure 12: Specimen of *T. testudinalis* from north-west Iceland 65.88° N (2019). (photo: S. Case)

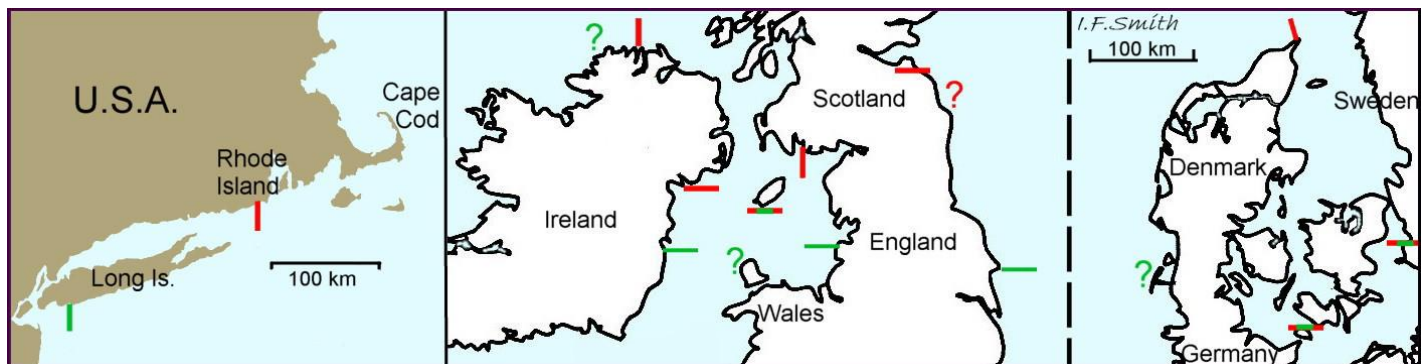


figure 11: Historic (green) and recent (red) southern limits of *T. testudinalis* distribution, based on evidence of specimens and images available to this inquiry. The online Flickr version of this account will be amended if subsequent specimen or image evidence provided to the author by readers requires it.



## Acknowledgements

I should like to thank the following for information, images or specimens that helped establish the probable limits of *T. testudinialis* historically and recently. It is not intended to imply that all agree entirely with my interpretation of the available evidence. Lin Baldock, Charlotte Bolton, Sarah Bowen, Paul Brazier, Blaise Bullimore, Shaun Case, Jon Chamberlain, Jane Delany, Jonas Ekstrom, Mike Elliott, Helen Gwerfyl, Steve Hawkins, Rosemary Hill, Anna Holmes, Rohan Holt, Sue Hull, Angus Jackson, Stuart Jenkins, Nia Jones, Paul Kay, David Kipling, Kerry Lewis, Paula Lightfoot, Kate Lock, Jim Logan, Aisling May, Kryisia Mazik, Jim Middleton, Nova Mieszkowska, David Mozzoni, Will Musk, Naoise Nolan, David Notton, Claude Nozeres, Julia Nunn, Graham Oliver, Gustav Paulay, Anna Persson, Bernard Picton, Sankurie Pye, Poul Rasmussen, Sophia Ratcliffe, Allan Rowat, Ben Rowson, Julia Sigwart, John Slapcinsky, Sabine Stohr, Simon Taylor, Anders Telenius, Dawn Thomas, Ann Wake, Dawn Watson, Richie West, Vollrath Wiese, Andrew Wright and Richard Yorke.

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## To the Editor: *Limacus maculatus* eating an earthworm

from Ian Dawson

Little Paxton, Cambs. 24.09.2020

Dear Peter,

...[I] thought you might be interested to see this photo of *Limacus maculatus* eating a worm spaghetti-style in our garden at Little Paxton yesterday morning. The worm was not moving, so I don't know if the slug caught it alive or simply scavenged a recently dead or moribund individual. I know that *Testacella* prey on earthworms but have not seen such behaviour before from *Limacus*. We have a large population of *L. maculatus* in our compost heap... The patio was wet after overnight rain. A little later in the morning... when I next looked out, the slug was about to disappear down a crack in the paving slabs and there was no sign of the worm, so either the *Limacus* had devoured it completely, any remnant had been cleaned up by a bird, or perhaps (most unlikely) the half-eaten worm had wriggled out of sight.



### Comment from Ben Rowson, Hon. Non-marine recorder:

I don't think I have seen *Limacus* eating worms myself. But they love cat biscuits (all flavours) and Taylor<sup>1</sup> says that *L. flavus* will eat meat, sugar and even soap! I suspect all the British slugs will eat dead or dying worms they find on pavements. The big *Arion* and *Deroceras* slugs often do it, and someone even once sent me a video of *D. reticulatum* attacking an apparently healthy earthworm. *Ambigolimax (valentianus)* I think) is the only slug I've seen stealing from a spider's web, or attacking solitary bee cocoons. Still not as gruesome as *Arion* sp. attacking baby songbirds in the nest though.

<sup>1</sup> 'It [*Limacus flavus*] is an active and voracious species, feeding greedily upon bread, cooked meat, vegetables, and many kinds of table delicacies. It is also partial to cream, butter, flour, and even soap, and will grow sleek and fat upon the mildew found on damp walls.'

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## Marriage and malacology, an adventurous combination

*Adriana C. Gittenberger-de Groot*

*The author of this article was married to Edi Gittenberger for over 50 years and died in September 2020. Prof. Gittenberger-de Groot was a scientist who dedicated her career to research on cardiovascular development. She accompanied Edi on his fieldwork in south-eastern Europe. She presents the views of a non-conchologist on collecting trips, showing that marriage and malacology (or conchology) is an adventurous combination! This article was first published in Basteria, 72 (2008): 67–72. [Ed.]*

Knowing how much my husband Edi [Edmund] Gittenberger has learnt to love making titles for his publications I was tempted to provide a title as ‘The life of a wife of a malacologist’ which is at least more exciting than the first work under his name (in the German language, long used by him): Beiträge zur...[Contributions to...].

Right from the beginning of our relationship, and marriage soon after in 1969, I was confronted with Edi’s hobby and passion: malacology. When he was fortunate to obtain a position as curator in the Rijksmuseum van Natuurlijke Historie, as Naturalis [the National Museum of Natural History in Leiden, The Netherlands] was called at the time, the optimum combination was found. As so few positions were available in this field he counted himself extremely lucky. This event had a great influence on our future as I also decided to adjust my medical career and stay in the field of medical research, not taking up a clinical specialisation. Leiden and the Museum of Natural History were going to be our base for what has turned out to be a wise and perfect decision. Now after more than 40 years and retirement Edi still loves his profession; during the last year he has been active in trying to secure a continuation, at his own pace, in the field of malacology. For me this is also a dream come true, because with two grown-up sons (one has followed his father’s interest, but this time in the field of marine biology), Edi and I can resume some of our adventurous snail hunting expeditions. It is fascinating as we will most probably return to several fantastic locations because techniques have changed from collecting shells with dried animals inside to actual DNA collecting, as Edi refers to it at present.

I would like to share with you a short overview and some highlights and anecdotes of our journeys over the last 40 years. My first memory of collecting snails was on our honeymoon at Lake Garda, Italy, where he spent one hour collecting some snails from a little stone wall and carefully, somewhat shy, introduced me to these beautiful sculpted shells. That was all. Later on he informed me that he didn’t know whether I would appreciate this sort of collecting. Most probably I was a bit too enthusiastic because after that for almost 20 years all our holidays were in fact snail hunting excursions. I loved that combination as there was always a plan, something new or exciting to be discovered and usually somewhere in remote areas. So we soon fell into a rhythm in which two or sometimes three times a year, mostly in spring or autumn, we would go to the Balkans. Curiously enough (I have never quite understood why), we never went collecting in Spain as Edi’s PhD thesis was on Chondrininae, mostly from the Spanish Pyrenees. We did visit colleagues there several times, and I remember gaining five kilos being pregnant with our first son Edi Junior, because the Spanish like to spoil you with at least four meals a day including late evening dinners and additional sweets.

As regards collecting destinations, Edi in the museum was an outsider as most of his colleagues had specialised in South-east Asia and Indonesia. But Edi kept himself strictly to south-east Europe, most probably initially stimulated by his senior Austrian colleague Walter Klemm (figure 1). Our



figure 1: Early sixties: Edi as a young malacologist in discussion with Walter Klemm in his living room in Vienna.

excursions slowly moved from the southern part of Austria and the Karawanken to Monte Negro and eventually Greece. It turned out that the most exciting new species were to be found either at high altitudes or deep in caves. The high-altitude snails were always found just 100 metres from the top and although I enjoyed mountain-walking very much my absolute vertigo caused several anxious moments. So I was quietly relieved when, also because of the birth of our first son, we moved to Monte Negro where Edi changed his interest to cave snails. Edi Junior had his first birthday in Kotor and his second in Budva. For me these were long days of waiting while Edi, with a few words of Serbo-Croatian, tried to interest the local people to take him to unknown cave entrances. The only guidance he had were instructions from a colleague, who had searched for cave spiders and the route descriptions were real puzzles at times. He found many new species and brought back adventurous stories about being lost in a cave once because he trusted a local boy too much on knowing the way. As I do not suffer from claustrophobia, I sometimes joined in the cave searches and we even took Edi Junior along in a backpack. He enjoyed the adventure very much. Soon the whole family learned to pick snails from the rocks and an endless stream of plastic bags with toilet paper containing (live) snails were taken back home. Sometimes the contents of our luggage had a funny smell, but nothing too bad. Slivovitz [plum brandy] proved to be a good preservative for slugs (which, by the way, are not my favourites).

After some years we had to move south to explore new caves. To Edi’s great regret we could not, and still cannot,



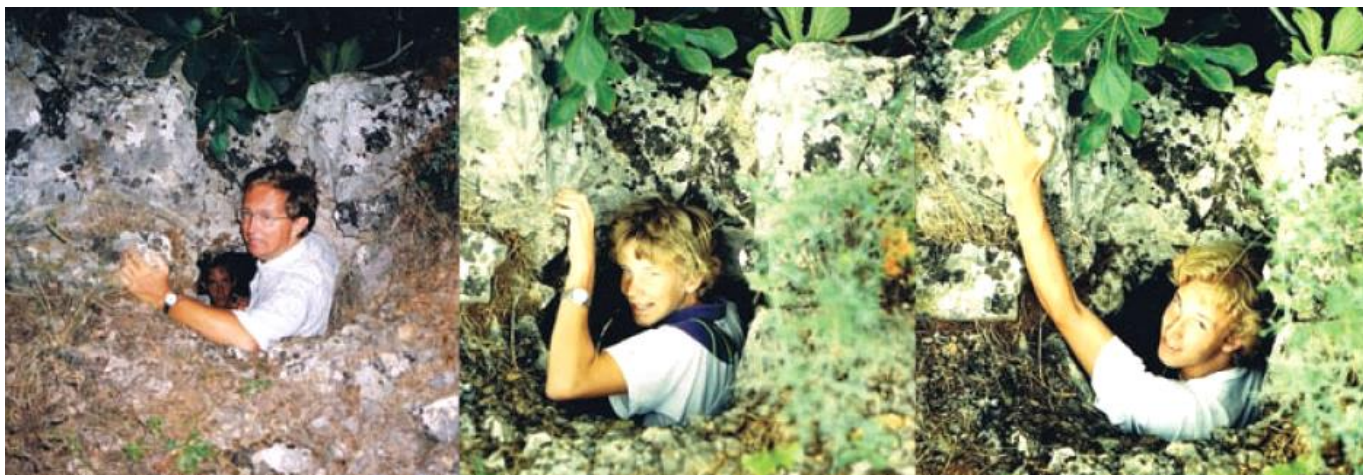


figure 2: Surfacing of the ‘three boys’ from a small cave entrance in a hill north of Leonideon, Greece, where not only snails but also extremely large translucent white cave crickets (genus *Troglophilus*) were seen on the walls.

expand into Albania. So after some deliberations he initiated his most ambitious project: the exploration of the Ionian Islands of Greece. Having two children at that time it turned out to be the ideal choice in combination with a family. Our first trip was to Corfu where we stayed in Benitses, rented a car and drove to all parts of the island. We were lucky to meet a Dutch tourist guide, Vicky Tsatsa, who helped Edi in finding locations of caves. The local Greek people in general proved to be far less supportive in helping us to trace caves. What still surprises me is that we always had to search for snails that had been described at the beginning of the last century, and had never been found again. A real highlight was the rediscovery of a cave on Mount Pantocrator (Katsuri), only accessible by squeezing through a narrow passage, with inside several shells of a beautiful small white snail, *Sciocochlea collasi* Sturany, 1904. Although Edi returned several times, to his regret he never found a live specimen.

From Corfu we went south to Cephalonia and Ithaka. During one trip to Cephalonia, where we stayed in Passion End (which was meant to be Pension and ...) above a very hot pizza restaurant, we travelled through a narrow gorge to Poros. Here I found my only, but very significant, species. Getting out of the car just to have a look at the straight cliff surface, I saw a beautiful highly-ribbed slender snail and cried out, poking my head through the car window, ‘This is a new species!’ Edi named this species after me: *Albinaria adrianae* Gittenberger, 1979. I do not know whether it is a compliment or not, but the species proved to be highly promiscuous and produced many bastards! For years it was investigated by PhD students and it featured in many papers, on the front of a thesis, and eventually on ties Edi wears after I took up silk painting.

Eventually we came to Kithyra (where the four of us stayed cramped in a car for one night after getting lost), and Antikithyra, where we had to live on fishes caught by our sons in order to survive as the ferry passed us by. Every trip always brought unexpected new discoveries and I became confident that we never, however small the place, would go to a location only once. Coming home not only with plastic bags but also with kilos of bottom sediment samples, Edi always discovered something exciting, new or unexpected, implying that we should return ‘as soon as possible’. Edi Junior and Arjan loved those trips and proved to be valuable amateur malacologists, and sampling went at a much higher speed and with greater diversity. Sometimes we were confronted with interesting local customs, like the time

when I sat crocheting at a well. A perfectly innocent occupation which attracted the locals, and we were invited to see the holy snakes that had just appeared at that time and were kept in a glass jar in the church. Later on Edi published the story (if you are interested in the details, see Gittenberger & Hoogmoed (1985)).

It became time to move to the Peloponnese, and coincidentally a cardiology colleague from Greece brought us into contact with the American-Greek family of Tsoukatos in Leonideon. The Greek family house was our destination for more than 12 years and also turned out to be a great holiday place as the high school period of our sons’ education was not conducive to extensive excursions in spring and autumn. Caves were also found there (figure 2), although our searching was not much appreciated as they were the local source of drinking water. However, some cave snails can even be found along ugly-looking newly-excavated roads. With his last new discovery of such a ‘surfacing’ cave snail, Edi returned within a week to Greece after coming home!

Our last destination for many years was Crete, which combined collecting trips and beautiful, sometimes strenuous, walks. I remember how disappointed I once was when the snail marked the previous season with a bright pink spot of nail polish, could not be found the next year.

Slowly Edi spread his interest through a university appointment as Professor of Systematic Zoology to an ever-increasing group of students, some of whom wrote their PhD theses on, for example, *Albinaria*. Evolutionary biology questions replaced mere descriptions of new species. At this time there was also a marked change in the atmosphere of our social conversations. These discussions of course, also held when Edi accompanied me on medical meetings, set the scene at dinners as they were exciting and somewhat different. The search for a specific snail in France on the premises of a mental hospital, where Edi was crawling about on all fours, is still remembered by my colleagues to this day. Also, the way to distinguish species was at times no longer by their shell sculpture or interesting radulae, but had moved to the anatomy of the genital organs. I must say that reference to a long and tortuous penis and other genital terms sometimes caused giggling or shocked responses from the audience. This has now all turned for the better as molecular techniques are the way to investigate the difference between species. It is highly remarkable to me, however, how close the results from the classical

investigation techniques resemble the phylogenetic maps generated by the molecular biology data.

This brings me to the current situation [in 2008] where Edi and I will return once again to our initial adventurous excursions (figure 3). We would like to plan several trips a year to new and old locations on the hunt for snail DNA and we hope to regain a less management-directed life style after

retirement. Our interest has now expanded from mountains and caves to marine life and even South-east Asia. After Edi learnt to swim, snorkel and scuba dive in recent years, I am not sure that he will not follow his son Arjan and start an investigation of *Epitonium* s.l. or other new species to be discovered. The future is bright.



figure 3: Excursion to Zagoria, with a view of the Vikos gorge in northern Greece in 2008 featuring myself and Edi, who holds the well-known plastic bag with, of course, a species that is rare and special for that region, as always!

## Addendum, 2020 *Edi Gittenberger*

After our retirement, two developments dominated the malacological part of our lives. We both became enthusiastic scuba divers and visited many coral reefs worldwide. Since there are always 'resting' periods in between the diving, I could collect terrestrial snails on many islands that had been neglected until then. The paper on the terrestrial gastropods of the Maldives in the *Journal of Conchology* (Gittenberger *et al.* 2019) results from the diving holidays.

When I received a formal invitation to start an inventory of the molluscan fauna of Bhutan in 2012, I immediately accepted on condition that Adriana could join. That was arranged and at this moment, looking back we have been together in Bhutan to look for molluscs six times. It was fascinating but difficult to start working in an area that has

never been investigated for molluscs, with a mixture of Palaearctic elements at high altitudes and tropical species in the southern lowlands.

The future is no longer bright. Adriana, the love of my life, died on September 16<sup>th</sup>, 2020.

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## Introduction to slug identification –short videos

from *Imogen Cavadino*

Recently Imogen Cavadino has worked with RHS videographer Callum Muir to produce three short videos (max c.3mins) on how to identify slugs. The videos are hosted on the RHS YouTube channel:

- How to get started with slug identification: <https://youtu.be/nq0Qvbl4FaM>
- How do I know if my slug is an adult?: <https://youtu.be/972MXN9G4AI>
- Identifying slugs to family level: <https://youtu.be/erO1pSe03cQ>



While, as Imogen says, these videos are not perfect, they hope they will be helpful in getting people started with slug identification. These videos were created for part of Imogen's PhD research, the 'Slugs Count' project: [www.rhs.org.uk/slugscount](http://www.rhs.org.uk/slugscount).



# Saving Mid Wales freshwater pearl mussels from extinction *Hannah Shaw*

In 2009 a chance conversation with an ex-water bailiff led to the discovery of a previously unknown population of freshwater pearl mussels *Margaritifera margaritifera* in a Welsh tributary of the River Wye. A subsequent systematic search of this river found 500 freshwater pearl mussels, the second largest population in Wales! Sadly, this is no longer the case, and this population of pearl mussels is now on the brink of extinction, having declined to approximately 100 elderly mussels. These are the surviving remnant of a much larger population that was once widespread in the River Wye catchment (figure 1).



figure 1: Dead freshwater pearl mussel with habitat in the background. (photo: Andrew G. Shaw)

Suffice to say, this iconic species is now critically endangered in Wales and without immediate conservation action extinction is inevitable in the very near future. In 2006 a survey of the 24 known pearl mussel rivers in Wales found that only nine of these rivers still had pearl mussels (Willing, 2006). By 2018, Welsh pearl mussel populations were restricted to a few hundred mussels in Snowdonia and the rapidly declining population in the River Wye catchment. Not that long ago they would have numbered tens of thousands – not just in the River Wye but in most other rivers across Wales too!

These extraordinary creatures can live to be over 100 years old. However, as with the other populations in Wales, the Wye mussels have not bred successfully for several decades because the water quality in the rivers is no longer good enough to support the very sensitive juvenile mussels. Young freshwater pearl mussels spend the first few years of their lives buried in gravels on the riverbed. They require stable, clean, well-oxygenated gravels but currently there is too much sediment and pollution washing into the rivers which clog the gravels and cause algae to grow and suffocate any young mussels.

Whilst on a training course at the Freshwater Biological Association (FBA), I visited their purpose-built Freshwater Pearl Mussel Ark at Mitchell Wyke Ferry Bay on Lake Windermere in Cumbria. The sight of thousands of well-grown juvenile English pearl mussels provided a ray of hope and inspired me to try to turn their fortune around and prevent their extinction from the River Wye (figure 2).

I started fund-raising by applying to grant-giving organisations and I secured enough funding to establish an *ex-situ* population of the Wye pearl mussels in the FBA's Ark ([https://www.fba.org.uk/FBA/Public/Discover-and-Learn/Projects/The\\_Ark.aspx](https://www.fba.org.uk/FBA/Public/Discover-and-Learn/Projects/The_Ark.aspx)).

In October 2018, once I had obtained the necessary funding and licences, fifty River Wye pearl mussels were carefully transported to the FBA's ark. These are the only Welsh pearl

mussels at the ark and they have successfully reproduced with 2,000 juvenile mussels now being reared by the FBA. These young mussels must be grown-on in captivity until they are at least 30 mm long (taking 6–10 years) and robust enough to survive in the current river conditions.

It is widely accepted that releasing older and larger mussels results in higher survival post-release. Therefore, as a conservation strategy, captive breeding needs to be a long-term commitment and coupled with significant catchment restoration. Therefore, whilst the FBA are busy rearing juvenile mussels, the Freshwater Habitats Trust is planning to undertake a collaborative, large-scale river restoration project in the Welsh Wye catchment. This will restore the freshwater ecosystem so that wild-born juveniles can once again survive in the river and repopulate the whole of the River Wye catchment.

Without continued funding this important species recovery project will not be able to continue. I am currently exploring future funding options but, in the meantime, I have set up a crowdfunding page. **If you would like to support this very important species recovery project and learn more about the project please visit the crowdfunding page at:** <https://www.justgiving.com/crowdfunding/welshpearlmu-selrescue> or scan the QR code.



figure 2: Different juvenile propagation systems at the Freshwater Pearl Mussel Ark. left: Incubator system where the smallest juveniles are maintained in temperature-controlled boxes and fed a commercial shellfish diet. right: Tray system for older/larger juveniles.

(photo credit: FBA)

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## Proposed Conchological Society field meeting: September 2021 (Date to be decided)

The FBA have kindly agreed to host a Conchological Society meeting and provide a tour of their Freshwater Pearl Mussel Ark project. If confirmed, this meeting might additionally also allow some mollusc recording in Lake Windermere and surrounding areas. This meeting, being organised by Hannah Shaw, is at an early stage of planning and if dates and other details are agreed they will go onto the main meetings programme (firstly on the website).

(see also back cover)



figure 1: Graham Long at the Conchology Day at Bournemouth Natural Science Society, 17<sup>th</sup> November 2012.

Graham Long, a minister of the United Reformed Church, was a naturalist, conchologist, writer and modern example of a clergyman-naturalist. I first met Graham on Jersey, Channel Islands, in 1973 where I had gone to help mount a display in the museum. Here the curator John Renouf, a geologist, mentioned a local minister who was keen on natural history and who would like to join us in the field collecting specimens. Our first meeting was on a cold wet November day at Ouaisne Marsh, an occasion we both reminisced on during a recent telephone conversation before Graham died. His interest was then in butterflies and moths but it was soon eclipsed by molluscs.

Graham Long was the only son of Jonathan Long, a semi-professional violinist, and Lucy Clare, a hairdresser at Harrods, and they lived at Enfield, London. During the war Graham was evacuated to Bradford in Yorkshire where his early interest in natural history was kindled by two museum curators who invited him behind-the-scenes in 1944/5 to see the collections (Long 2013). The family moved to Southampton in 1946 where his father was manager of the Bingley Building Society's first southern branch and Graham was educated at Peter Symonds College, Winchester, something he described as a non-event. He joined the Chandlers Ford Congregational Church youth club and first encountered the New Forest through camping trips, a place he returned to for his retirement. On leaving school he had no plans and took on a number of temporary jobs before undergoing training as a chartered surveyor in the New Forest. Then in 1958 he decided on a career in the ministry and, much to his father's disapproval, left surveying to study theology at New College, London, and was ordained for ministry in the Congregational Church in 1962. That year he married Sheila Brock whom he knew through the youth club and took up appointments at the churches at Ash and Sandwich in Kent.

In 1970 Graham went to the Channel Islands to serve the Congregational Church [from 1972, the United Reformed Church (URC)] on Jersey and Guernsey, flying between the islands often in foggy weather in the little yellow Trislander planes. It was on Jersey, where he had his home base at the

manse, that his interest in molluscs took off. In 1983 he was transferred to Camberley, Surrey, where his surveying training was used as he had to oversee the building of a new church to share with the Methodists. This was very demanding and he dropped out of the Conchological Society for a short while. The new church of High Cross opened in 1990. His final posting was to Rugby, Brinklow and Newton churches in the Midlands. Throughout his career he had to look after more than one church congregation which, together with founding counselling and support groups, chairing many national and local committees and writing publications to aid other ministers in the ministry, was a heavy workload. Natural history remained his hobby on his day off and kept him grounded. The Camberley Natural History Society now meets in High Cross church but, according to their secretary, he was never a member, being too heavily committed with church work at weekends and evenings.

When he retired in autumn 2002 he and Sheila, previously accommodated in the manse, had to find their own home and they elected to return to their Hampshire roots, settling in Fordingbridge on the edge of the New Forest. Retirement had much to offer: he had been accepted as a columnist by *The Guardian* to provide a monthly piece for 'Country Diary' on the New Forest, as well as attending meetings of this Society. Then disaster struck: in May 2003 a car accident left Graham badly injured and his wife Sheila was killed. Scans to investigate accident damage also revealed cancer in one of his kidneys, which had to be removed, and he underwent other restorative surgery. Then it was back to Fordingbridge to put his life together again and molluscs and natural history played a strong part in his recovery. He was active with the Fordingbridge URC and also set up a local conservation team, the Fordingbridge Volunteer Action Group concentrated around Bishop's Pond (now called the Friends of Bishop's Pond). They provided an obituary for the *Salisbury Journal* in which they commended Graham for his 'enormous enthusiasm for the natural world, his kindness and sense of humour' and 'whose gifts and talents are currently impossible to replace'.

## Conchological Society

Graham joined this Society in 1974 and was an active member following his retirement, serving on Council; he was once invited to be President but declined through uncertainty over his health with cancer in the background. He contributed a number of articles to *Mollusc World* right up to 2020 when he had a note in each of the three issues for that year, the last published after his death. In December 2009 he and I gave a presentation to the Society on the non-marine molluscs of Hampshire, in which he described a resurvey of ponds first recorded by our past President Leonard Stratton while evacuated to the New Forest from Southampton as a teacher. This talk was also given to the British Naturalists' Association at their field week in Lyndhurst in 2011 and later published in *Country-Side* (Long 2012).

In the early years of his membership on Jersey (1974–1983) he undertook much field work recording non-marine molluscs that was incorporated in a paper published by La Société Jersiaise which is available online (Chatfield 1975). He also collaborated with the museum curator John Renouf



in identifying marine shells dredged from the harbour at St Helier and shells from archaeological excavations. The latter led to a small shell being sent to me in Cardiff to determine because Graham and John had come up with different identifications. Neither I nor John 'Snail' Evans was able to put a name to the shell, so it went off to Michael Kerney, the Society's Non-marine Recorder. He was able to identify it as *Helicodiscus singleyanus* (now *Lucilla singleyana*), an introduced, subterranean species (Kerney 1999: 116). The Jersey shells were new to the British Isles (Chatfield 1977) and were not contemporary with their archaeological context. Graham always kept in touch with his Jersey congregation and friends, regularly visiting for the rest of his life and donating the specimens and notes he had on the island to the Jersey Museum.

By the time that he moved to Camberley in west Surrey I had moved to east Hampshire to run the Gilbert White Museum in Selborne and as both of our jobs involved working at weekends, on a free weekday we would meet up around the Selborne area for conchological fieldwork until Graham's workload at Camberley built up and I was then freelance with tight schedules on contracts from 1989.

When I organised a shell day jointly between the Society and the Bournemouth Natural Science Society in 2012, Graham joined me on the organising team and in the shell road show to the public on the day (figure 1; Chatfield 2013). He was inspired by their shell collection and joined that society too, having plans to work on the collections, but poor health intervened. We did put on a field meeting in Bournemouth, but the two leaders were the only two to turn up! However, we had a good day recording both non-marines in the chine and marines on the shore (Chatfield 2015). Graham also led a Conchological Society field meeting to Edmondsham House, Dorset, in September 2013.

## New Forest

Graham's first involvement with the Forest, once recovered from the accident, was the monthly contributions he made from 2003 to 2018 on the New Forest for *The Guardian*, with occasional entries from Jersey and Ireland when on holiday. These are available online but one entry was published in book form (Wainwright 2006). In many of his early New Forest walks for 'Country Diary' he was joined by Beryl Fletcher from church whom he married in 2006.

Graham became an active member of the New Forest Association (and editor of their newsletter) and the New Forest Study Group. He was also involved with John Gulliver, the head keeper, who had set up a memorial ride to the Victorian/Edwardian lepidopterist F. W. Frohawk to commemorate his association with the Forest, and he took part in several of the Frohawk memorial walks in July on Frohawk's birthday, back to his original interest in butterflies and moths. Graham continued to take an interest in the ride after John Gulliver had retired.

Other survey work in the Forest was with Natural England on the mud snail (*Omphiscola glabra*), a Biodiversity Action Plan (BAP) species. Just outside the Forest on Martin Down Nature Reserve he followed up a report of a Roman snail (*Helix pomatia*) population and, as a Roman snail licence holder, organised a group of volunteers monitoring the population and submitting annual reports to Natural England. Latterly, with ill-health increasing, the project was taken over by Robin Robbins. He also investigated another finding of Roman snails near Andover.

Graham was a wonderful friend, enthusiastic fellow naturalist and conchologist with a great sense of humour and purpose in life. We missed a good President. He will be missed by many circles of people including his three children and four grandchildren. His second wife Beryl predeceased him in 2019. Natural history and his religious faith were key to his recovery after the accident. I remember him at the time saying 'there is a whole new life out there'. Among his publications for the URC was a booklet on bereavement (Long 2005) to help others in a similar situation. I am grateful to Graham's two sons Andrew and Tim Long for information on family history. Obituaries have also been published in *The Guardian* (Long, T. 2021) and *Country-Side*, the journal of the British Naturalists' Association, of which Graham was a member (Chatfield, 2020).



figure 2: Graham Long (right) with Bas Payne, Ron Boyce and Harriet Wood examining *Helicodonta obvoluta* at a field meeting at West Wood, Winchester, 13<sup>th</sup> June 2009 (Chatfield 2010).

(photo: John Glasgow)

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# 50 years ago: from *The Conchologists' Newsletter* (no. 35, December 1970)

The *Conchologists' Newsletter* was this publication's predecessor and ran from January 1961 to December 2002.

## Thoughts on being a naturalist

Nora F. McMillan

First, get a dog! this ensures that you go out every day, often several times a day and it is astonishing what the most barren-seeming neighbourhood can show when patrolled assiduously several times a day. A medium-sized dog is best, not a 3ft. 6 ins. tall Irish wolfhound (I have had one!) nor a 3 lb. Yorkshire terrier (I have had one of these too!). The former leaps 5-barred gates like a stag and the latter terrifies field-mice.

Now, equipped with dog, O.S. map...notebook and pencils (two, in case you lose one) and a few assorted tins and tubes, go out. progress will be slow, frequently infinitesimal, when dog or naturalist stops to peer and poke, but much of onterest will be seen. Along suburban avenues birds can be seen, and often garden escapes or unusual aliens for the botanist. In my district of Cheshire the only specimen of Gallant Soldier (*Galinsoga ciliata*) I have yet found was growing on a pile of gravel dumped in a suburban driveway.

Arrived at fields or waste ground, progress is even slower. Rotten cartons, old planks and such debris of our 'civilisation' yield snails and slugs and help to swell the total for one's 'square'. A pond or ditch, no matter how unpromising, must be investigated – snails, frogspawn, newts, etc...Should one be fortunate enough to live close to the sea, as I did in Ireland for many years, there is no need to say what to do. Along HWM all sorts of interesting flotsam and jetsam (I once found a carboniferous limestone coral not otherwise known to occur in Ireland) is to be found, and lower down a wealth of marine life is spread before one. Time forgotten, icy winds forgotten, numbed hands and feet forgotten, one follows out an equinoctial spring tide to its lowest ebb, as it reveals undreamt-of treasures. In fact, as the hungry husband of this naturalist once declaimed passionately: 'When you go out nothing but darkness or hunger drives you home' – and so it should be!

## Slugs in the poetry of John Clare

A.E. Ellis

Although the snail has often crept into verse – I know of nearly fifty poems in English on the snail, not counting numerous variants of nursery rhymes and translations of Japanese Haiku, besides many short passages and references in other works – few bards seem to have been inspired by its shell-less relations...

...One who did not scorn the humble slug was the 'peasant poet' John Clare (1793–1864), whose sensitive and exact descriptions of nature are unexcelled. Although nearly one third of his life was spent in Northampton lunatic asylum, it must not be assumed that slugs appeal solely to the insane. It must be borne in mind that until the 18<sup>th</sup> century the word 'snail' was used indiscriminately for shell-bearing and naked terrestrial gastropods. The earliest use of 'slug' in the sense of shell-less snail cited in the Oxford English Dictionary is Petiver (1704). 'Large black dew snails' in a dictionary of 1725 evidently refers to *Arion ater*. Gilbert White (1777) mentions 'small shell-less snails, called slugs.' The page references in the following citations are to *The poems of John Clare*, edited by J.W. Tibble, 2 vols (J.M. Dent & Sons, 1935).

*Arion ater*: 'The black snail': *Evening*, stanza 1 (2:417); *Solitude*, line 39 (1:191); *Expectation, a Ballad*, stanza 4 (2:95); *Evening* 92:485). 'The jetty snail': *Summer images*, stanza 16 (2:9). 'The snail jet-black': *Summer Moods* (sonnet, 2:129). 'Jet-black and shining, from the dripping hedge/ Slow peeps the fearful snail': *Summer Images*, first draft, stanza 8 (1:380).

Clare has several references to snails in the modern sense: 'the packman snail' (2:417) and 'the snail from his peeping out' (1:75) are presumably *Helix* [now *Cornu*] *aspersum*. 'Painted shell' (1:183, 196; 2:420) and 'pooties' probably refer to the banded shells of *Cepaea*.



## Conchological Society indoor meetings (see back cover for field meeting diary)

At the time of going to press, due to the ongoing public health situation, it won't be possible to hold face-to-face indoor meetings. However, we are very pleased to invite you to join the following interesting online meetings using the 'Zoom' platform. It might be possible to hold some later meetings 'face to face' depending on the situation. Please see web site for updates.

**JOINING THE ONLINE MEETINGS:** please e mail Catherine Jagger at CIRCA subscriptions (shellmember@gmail.com) preferably at least one week prior to the meeting, indicating your intention to attend. She will then send you full joining instructions and a meeting agenda. The meeting will open for joining from 13.45; please ensure that you join the meeting before the 14.00 start time as late admissions may not always be possible.

**Saturday 17<sup>th</sup> April 2021: ANNUAL GENERAL MEETING AND ADDRESS (ONLINE)**

**Guest speaker: Robert Cameron** (University of Sheffield), 'At a snail's pace: how a New Naturalist got written'. 13.45 sign in for 14.00, ends 16.00.

**Saturday 24<sup>th</sup> July 2021: (ONLINE) Guest speaker: Imogen Cavadino** (Royal Horticultural Society), 'For the love of slugs: using citizen science to explore species diversity in UK gardens'.

**Saturday 16<sup>th</sup> October 2021: (ONLINE or at NHM, London) Guest speaker: Gavan Cooke**, 'Cephalopods of the UK'.

**ONLINE 'EXHIBITS':** members are invited to address the meeting for a maximum of four minutes to show an exhibit or speak briefly on a mollusc-related theme. Anyone wishing to do this please e mail the Hon. Secretary, Rosemary Hill (secretary@conchsoc.org) in advance of the meeting. Note that for each meeting the number of speakers will be limited to the first five applicants.



## About the Conchological Society

The Conchological Society of Great Britain and Ireland is one of the oldest societies devoted to the study of molluscs. It was founded in 1876 and has around 300 members and subscribers worldwide. Members receive two publications: Journal of Conchology which specialises in Molluscan Biogeography, Taxonomy and Conservation and this magazine. New members are always welcome to attend field meetings and indoor meetings before joining.



**Some key contacts** (see web site [<http://www.conchsoc.org/pages/contacts.php>] and 2016 membership list for additional contact details)

HON. PRESIDENT: Martin Willing

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HON. EDITOR OF MOLLUSC WORLD: Peter Topley

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SG17 5EL Email: magazine@conchsoc.org

### FOR BACK NUMBERS OF CONCH. SOC.

#### PUBLICATIONS

please apply to: Tom Walker, 38 Redlands Road, Reading,

RG1 5HD. Email: tom@tmwalker.co.uk

#### How to become a member

Subscriptions are payable in January each year, and run for the period 1st January to 31st December. Members joining later in the year will receive all publications issued during the relevant calendar year. • Ordinary membership £33 • Family/Joint membership £35

• Under 18 (receiving Mollusc World only) £5 • Student membership £15 • Institutional subscriptions £47

In view of the high cost of postage for distribution from the UK, members living in the Republic of Ireland and Europe will be asked to pay an additional postage charge of £8, and members living in the Rest of the World an additional postage charge of £17.

See website for further details. Payments in sterling only, to Catherine Jagger, CIRCA Subscriptions, 14 St Barnabas Court, Cambridge CB1 2BZ, (shellmember@gmail.com). For UK residents we suggest payment by standing order, and if a UK tax payer, please sign a short statement indicating that you wish the subscription to be treated as Gift Aid. Another simple and secure way of paying for both UK and overseas members is by credit card online via PayPal from <http://www.conchsoc.org/join>. Overseas members may also pay using Western Union, but a named person has to be nominated, so please use the Hon Treasurer's name, Nick Light.

#### How to submit articles to Mollusc World

Copy (via e mail, typed or handwritten) should be sent to the Hon. Magazine Editor (contact details above). If sending copy using e-mail please include a subject line 'Mollusc World submission'. When emailing several large file attachments, such as photos, please divide your submission up into separate emails referencing the original article to ensure receipt. Electronic submission is preferred in Microsoft Word. Images and Artwork may be digitised, but we recommend that a digital image size 200Kb- 1Mb (JPEG preferred) be sent with your submission. All originals will be treated with care and returned by post if requested. Authors should note that issues of the magazine may be posted retrospectively on the Conchological Society's web site. **Copy intended for the July 2021 issue should be with the Hon. Editor prior to 6th June 2021;** inclusion in a particular issue is at the Hon. Editor's discretion and depends upon the space available but contributions are always welcome at any time.

## Membership update

The following Conchological Society members have not previously been included in either this column of Mollusc World or in the latest edition of the Members' Guide (2016). Please note that to be included here members must sign a data protection consent form. If you have not been included and now wish to be please contact Catherine Jagger at CIRCA subscriptions (details above).

Codes after a member's contact details denote their interests:

**F** fossils; **G** General malacology including genetics and physiology;

**Mb** British marine; **Mf** Foreign marine; **Nb** British non-marine;

**Nf** Foreign non-marine; **P** photography.

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Mrs J.S. Ridout Sharpe: janetrsharp83@gmail.com



# Conchological Society of Great Britain and Ireland

## Diary of Meetings

Please check website ([www.conchsoc.org](http://www.conchsoc.org)) for further details/updates, including other meetings arranged at shorter notice.

### Conchological Society field meetings

Due to various issues, chiefly relating to Covid-19 uncertainties, this first notification of Conchological Society field meetings includes several provisional and or alternative dates. It is hoped that matters will be resolved (including the removal of a clash of meeting dates) before the AGM in April. Members are advised to keep a regular watch on the Society website for updates. It is essential for those wishing to attend ANY of the meetings, to contact the leader in advance (ideally at least a few days before) to book a place and obtain further details and updates.

**Saturday 8<sup>th</sup> May 2021 (provisional date): NON-MARINE: Langford Lakes, Wiltshire.**

**Leader:** Mike Allen ([aea.escargots@gmail.com](mailto:aea.escargots@gmail.com), 07828 103454). Wiltshire Wildlife Trust reserve; under-recorded meadow, marsh and lake habitats. Possible presence of *Vertigo moulinsiana*. Meet at 10:00 in reserve car park, at SP3 4PA; NGR: SU 037370.

**Saturday 22<sup>nd</sup> OR 29<sup>th</sup> May 2020: NON-MARINE: Mendip area, Somerset.**

**Leader:** Keith Alexander ([keith.alexander@waitrose.com](mailto:keith.alexander@waitrose.com), 07394 251990). Focus on *Ena montana* in ancient woodlands on limestone. The meeting might include a visit to the Woodland Trust site at Dolebury Warren. Meet at 10:30; site details not yet available so please contact leader nearer the time for meeting point.

**Saturday 5<sup>th</sup> June 2021 (provisional date): NON-MARINE: Combe Bissett, Salisbury, Wiltshire Wildlife Trust Reserve**

**Leader:** Mike Allen ([aea.escargots@gmail.com](mailto:aea.escargots@gmail.com), 07828 103454). Chalk downland valley (SSSI) with managed plant species-rich chalk downland with rare flora and fauna, and possible access to the wild refuge ([www.wiltshirewildlife.org/coombe-bissett-down-salisbury](http://www.wiltshirewildlife.org/coombe-bissett-down-salisbury)).

**Saturday 5<sup>th</sup> June 2021 OR 10<sup>th</sup> July: NON-MARINE: near Watlington, Oxfordshire.**

**Leader:** Tom Walker ([tom@tmwalker.co.uk](mailto:tom@tmwalker.co.uk), 07488 231574). This is part of the survey coordinated by Keith Alexander to establish the present status of *Ena montana*. Meet at 10.30 at Greenfield Farm, south of Christmas Common (SE of Watlington) - ample parking (SGR: SU 711918; Sat. nav.: OX9 5HG). We will explore Greenfield Copse and Howe Wood, and perhaps other woods in the vicinity.

**Saturday 12<sup>th</sup> June OR 19<sup>th</sup> June 2021: NON-MARINE: Carmel National Nature Reserve, Carmarthenshire.**

**Leaders:** Ben Rowson ([Ben.Rowson@museumwales.ac.uk](mailto:Ben.Rowson@museumwales.ac.uk), 07853 849114) and Dai Herbert ([phasianella@gmail.com](mailto:phasianella@gmail.com), 07470393642). Reserve in karst limestone area with dramatic disused quarries, ancient woodland and 'the only seasonal lake' in Britain. Meet at 10:00 in layby/car park (brown Nature Reserve sign) at SN590157, S. of Carmel on the A476 (Crosshands to Llandeilo).

**Sunday 3<sup>rd</sup> July OR 10<sup>th</sup> July 2021: NON-MARINE: Wenlock Edge, Shropshire.**

**Leader:** Mags Cousins ([mags.cousins@naturalengland.org.uk](mailto:mags.cousins@naturalengland.org.uk), 07791 505641). Continuing the exploration of National Trust Silurian limestone grassland and disused quarries. Meet at 10.30 at Much Wenlock car park, SO 6287 99644.

**Saturday 21<sup>st</sup> & Sunday 22<sup>nd</sup> August 2021: MARINE: (1) Medmerry managed coastal retreat reserve area, nr. Selsey, and (2) Pagham Harbour LNR (both on Manhood Peninsula, West Sussex) **Leader:** Martin Willing (01730 814790 [martinjwilling@gmail.com](mailto:martinjwilling@gmail.com)). Opportunity to (1) monitor colonisation by marine molluscs of this large coastal retreat area. (This a challenging site with some areas of deep mud & fast flowing water) and (2) visit to Pagham Harbour LNR, a site with a wide variety of intertidal and stable shingle beach habitats (use of a small boat might allow the use of sub-littoral sampling). The site supports some rare and local species such as *Truncatella subcylindrica* & *Leucophytia bidentata* but is considered under recorded for lower shore Mollusca. The two sites will be visited on adjoining days and it will be possible to attend for a single or both days. The order of site visits is yet to be decided with the RSPB site manager.**

**Date in September (at the early stages of planning and to be confirmed; see page 27) NON-MARINE: Lake Windermere, Cumbria.**

**Leader:** Hannah Shaw ([hpecology@hotmail.co.uk](mailto:hpecology@hotmail.co.uk)). Visit to FBA Freshwater Pearl Mussel Ark project and recording in the area of Lake Windermere.

**Saturday 11<sup>th</sup> September 2021: NON-MARINE: Devil's Punch Bowl, Hindhead, Surrey. **Leader:** June Chatfield (01420 82214, [collections@haslemuseum.co.uk](mailto:collections@haslemuseum.co.uk)) Classic Surrey heath habitats. Meet at 11:00 at National Trust car park/visitor centre, NGR SU 891357.**

**Saturday 18<sup>th</sup> September – Saturday 25<sup>th</sup> September 2021 (provisional dates – Field Studies Council confirmation pending):**

**MARINE and NON-MARINE: N. Pembrokeshire Coast. **Leader:** Simon Taylor ([marine@conchsoc.org](mailto:marine@conchsoc.org), 01621 810141).** Area with a good variety of rocky and sandy shores, relatively under-recorded. Based at Dale Fort Field Study Centre, where laboratory facilities are available. Those interested please contact Simon, who will coordinate the accommodation booking with Dale Fort.

**Saturday 2<sup>nd</sup> OR Saturday 9<sup>th</sup> October 2021: NON-MARINE: RHS Gardens, Wisley, Surrey.**

**Leaders:** Imogen Cavadino and Hayley Jones ([imogencavadino@rhs.org.uk](mailto:imogencavadino@rhs.org.uk), 01483 226568). Native and introduced species in the gardens, glasshouses and woodland; help create a reference collection for the site. Meet at 10:30 at the Laboratory Building. Participants must contact leader in advance, for free access to the gardens, and because places are limited, and members of other Societies may also be invited.

**October (date under discussion with Wyre Forest Study Group) 2021: NON-MARINE: Wyre Forest, Worcs.**

**Leaders:** Rosemary Hill ([secretary@conchsoc.org](mailto:secretary@conchsoc.org)) and Rosemary Winnall. Joint meeting with Wyre Forest Study Group. It is planned to survey new areas and if possible, investigate how close to the woodland edge *Malacolimax tenellus* can be found. Meet at 10:00 at Forestry Commission's Wyre Forest Visitor Centre car park (DY14 9XQ; NGR SO 750740) to walk or share cars to access the woodland.

**September or October 2021: Field Meeting NON-MARINE: South Downs, West Sussex.**

**Leader:** Martin Willing (01730 814790, [martinjwilling@gmail.com](mailto:martinjwilling@gmail.com)). A further day visit is planned as part of the Society's *Ena montana* project. It is hoped to visit several historic and recent sites including at National Trust woodlands near Slindon and nearer to the West Sussex / Hampshire border at South Harting and Ditcham. Dates cannot be fixed at this stage but will be posted on the Society website by mid-Spring.

### See page 30 for details of indoor/zoom meetings

**Meeting Programme compiled by Martin Willing on behalf of the Meetings Team. Contacts for meetings related matters to should be addressed to either Martin Willing ([martinjwilling@gmail.com](mailto:martinjwilling@gmail.com)) OR Rosemary Hill, General Secretary ([secretary@conchsoc.org](mailto:secretary@conchsoc.org)). See page 31 for further contact information.**