

Mollusc World

Issue 28

March 2012



Field meetings
to join this season

Akera bullata in action

Letters of A.E. Ellis

Anatomy without dissection



THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

From the Hon. Editor

Honorary Membership for Pryce Buckle

Congratulations are due to Pryce Buckle, who has been awarded an Honorary Membership by the Conchological Society.



Pryce put a huge amount of dedication into the role of Hon. Treasurer during his tenure; moreover he successfully taught himself all about website software in order to produce and maintain the Society's website at a time when the software to do so was much less user-friendly than it is now. Other work of his has included indexing of Conchological Society publications and extraction of historical material, including obituaries of well known conchologists, for the

web site. His useful knowledge of the Society's rules and procedures has also been much valued. Pryce is known as a respected naturalist both within the Society and with other organisations such as the Hertfordshire Natural History Society where he was Mollusc Recorder for 25 years. The picture above shows Pryce at the all day Council meeting in 2006.

As this magazine was about to go to press, news came in that Jan Light, who has held the role of Hon. Marine Recorder for the Conchological Society for 20 years (and is appropriately featured in 'On the spot' on page 9) has decided to step down from this role for medical reasons. I am sure we would all agree with Bas Payne who writes that "we owe her an enormous debt for the way in which she has contributed her enthusiasm and skill over these years". Please continue to send marine recording enquiries to marine@conchsoc.org : they will be re-routed to others to deal with.

Our new Web Site is now up and running and you can find the address in the footer at the bottom of each page.

Please continue to send in interesting articles or snippets for publication in Mollusc World. Also, be inspired this season and join one or more of our field meetings listed at the back of this issue.

Peter Topley

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Front cover: *Vitrina pellucida*, Clifton, Bedfordshire, January 2012 (photo: Peter Topley)

Mollusc World

This magazine is intended as a medium for communication between Conchological Society members (and subscribers) on all aspects of molluscs. We include articles, field meeting reports, research news, results from the mapping schemes and identification aids. We welcome all contributions in whatever form they arrive (see back cover for further details).

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For many years, my snailing activities were almost completely confined to terrestrial species, with only occasional observations of a few common freshwater species. By the '90s, however, I realised that this was just not good enough, and decided it was time to start recording freshwater species properly. An added impetus came when the non-marine *Atlas* was published (Kerney, 1999), which showed a lot of empty circles for freshwater species in south-east Scotland, where I live. Had there been mass extinctions? Only, apparently, of conchologists. Michael Kerney wrote these words in the introduction to the *Atlas* (page 23): 'In south-east Scotland . . . most of the detailed freshwater recording was done by D.K. Kevan of Edinburgh in the years 1930–60; the apparent decline of many common freshwater species in this area . . . is therefore illusory.' I had to get out there and do something about it.

Where to start? Many ponds have disappeared over the years, and others are too small to be indicated on the standard 1:50,000 Ordnance Survey maps. There are, however, a number of larger lakes and reservoirs, not all of them easy to reach. Most promising of all, though, was the Union Canal, running from near the centre of Edinburgh to Falkirk. A visit established that it was a fairly simple matter to get snails by searching the marginal vegetation along the canal, which of course was easily accessible from the towpath. Armed with my net, I set off along the canal.

My activities along the canal, and in freshwater generally, might well have remained spasmodic but for a surprising finding in late summer 2002. Somewhere east of Linlithgow in West Lothian I found some snails that seemed to me a bit different from what I had seen before (remember that I had to learn freshwater species as I went!), and fortunately kept a few. Examining them again later, they appeared to be specimens of *Bithynia leachii*, a rare snail known only from two sites in Scotland (Kerney, 1999), neither of which was near the new site; this identification was confirmed by Geraldine Holyoak, then Non-marine Recorder. Was *B. leachii* more widespread in Scotland, where it is evidently at the edge of its range, than had been supposed?

At this point it is probably helpful to say something about the Scottish canals. Scotland is not good country for canal building on the whole, being mainly mountainous, boggy and thinly populated. The Central Belt, between Edinburgh and Glasgow, is however more favourable terrain and was heavily industrialised at an early date, so there was good economic justification for building a canal between the Clyde and the Forth, which allowed not only better transport within the country, but also improved communications between Glasgow and Europe, as the canal was big enough to take the small sea-going ships of the era. The Forth & Clyde Canal was opened in stages between 1777 and 1790, and ran from Bowling on the Clyde estuary, several miles

west of Glasgow, via Falkirk, to Grangemouth on the Firth of Forth, a total length of 35 miles. It included over 30 locks to enable boats to climb from sea level at each end across the higher ground between. The canal skirted the north side of Glasgow, and the Glasgow Branch was constructed to bring the benefits of the canal nearer to the centre of the city. Not only were facilities for trade greatly improved, but shipping between the east and west coasts of Scotland no longer had to risk the dangerous seas round the north of Scotland (Hutton, 2002; www.scottishcanals.co.uk).

The other main canal that survives in the Lowlands is the Union Canal, which connected Edinburgh with the Forth & Clyde Canal at Falkirk. This was not opened until 1822, too late to realise its full potential as the railways came not long after, offering much quicker services. The Union Canal was a 'contour canal', all on the same level without any locks until it reached Falkirk, where it was connected to the Forth and Clyde canal by a flight of 11 locks (Hutton, 2002). There are, however, some fine aqueducts over several deep river valleys.

As with many canals throughout Britain, as other means of transport developed, use of the canals diminished. Various stretches became choked, others were closed or culverted, and the will to maintain them failed. However, in the late '90s the decision was made to clean out the canals, reconstruct missing sections and restore navigation throughout under the title 'Millennium Link'. In many places this merely involved dredging, but there were also locks to be repaired, as well as general maintenance. The biggest tasks, however, were the reconstruction of closed and culverted sections, and particularly construction of completely new sections of canal and building the Falkirk Wheel (figure 1), a unique device to connect the two canals instead of the long-defunct (and very time-consuming) flight of locks. The Falkirk Wheel is now a big tourist attraction in its own right.



figure 1: The Falkirk Wheel



figure 2: The topmost section of the Monkland Canal, almost completely choked with vegetation.

Remains of a third canal, the Monkland Canal, exist to the east of Glasgow. At its fullest extent, the Monkland Canal ran down from Calderbank to join the Glasgow Branch of the Forth & Clyde Canal (Hutton, 2002), but today only short segments remain, the rest being filled in or culverted. Over a mile of the topmost section remains, but it is heavily overgrown and not navigable (figure 2). At the lower end of this section, the water disappears into a culvert and re-emerges over 2 miles away at Coatbridge, where it continues west for a mile or more before disappearing for ever under a railway line. This section looks much more like a normal canal. Nearby, in the centre of Coatbridge, is a grassy depression that tends to flood in wet weather and this too is probably a remnant of the canal.



figure 3: The Glasgow branch of the Forth and Clyde Canal, lined with Reed Sweet-grass, *Glyceria maxima*.

In what was left of 2002, and throughout 2003 I walked or cycled the whole length of the three Lowland canals recording the freshwater molluscs, and *B. leachii* in particular, at frequent intervals. Much of this was done by sweeping a net through the marginal vegetation, which consists predominantly of lush growth of the Reed Sweet-grass, *Glyceria maxima* (figure 3). *G. maxima* lines the canals throughout, except where heavy shade from overhanging trees prevents its growth, and in newly

reconstructed sections of canal where a few clumps have been planted but have not yet spread far (figure 4). In a few places, snails could be seen on vertical walls, such as near locks, or crawling on the shallow stony bottom, but such sites produced only a small number of records. The results were described in a paper published in the *Journal of Conchology* (Sumner, 2006). This showed that many species were more widely distributed than indicated in the *Atlas*, and that *B. leachii* in particular was distributed throughout most of the length of the Forth & Clyde, and Union Canals (Table 1). Altogether 17 species were recorded, and of these seven (*Valvata cristata*, *B. leachii*, *Lymnaea stagnalis*, *Planorbis carinatus*, *Planorbis cornuus*, *Acroloxus lacustris*, *Oxyloma elegans*) were very much more widespread than had previously been recorded. On the other hand, certain species shown in the *Atlas* (*Radix auricularia*, *Dreissena polymorpha*) did not turn up during this study.

Inadequate recording is probably in part responsible for the differences between my study in 2002–3 and the *Atlas* maps, but it also seems likely that loss of industry along the canals, resulting in better water quality, and the reconstruction works connected with the Millennium Link could have been favourable to the spread of freshwater molluscs. In any case, I decided to see if any species were still spreading through the canals, first by sampling each year stretches of canal that had lacked *B. leachii* when I first looked at them, and then after 5 years, in 2008, walking the whole length of the canals once again.



figure 4: A reconstructed section of the Union Canal at Wester Hailes, Edinburgh, showing the sparse marginal vegetation typical of these new parts of the canals with concrete banks

Canal towpaths are probably one of the most public areas in which one can look for snails, and I was often engaged in conversation by various passers-by. Apart from small boys, who wanted to know “What yer catching, mister?”, and who lost interest as soon as they discovered it wasn’t fish, many of these people were genuinely interested in what I was doing. My response was usually along the lines that species were spreading since the restoration of the canals, and the numbers of molluscs indicated that the water quality was good. On one occasion, at Clydebank, a couple who kept a

pet shop told me that terrapins could be seen a bit further along the canal. Indeed there were, a couple of red-eared terrapins (*Trachemys scripta elegans*) sunning themselves by the canal. They are, apparently, often released into the wild by pet owners who have been unable to cope with them, but fortunately it is too cold in Britain for them to breed successfully. It was in the same place that I was approached by a man who wanted to know “What the **** are you doing?”, a friendly greeting in the West of Scotland. After some discussion he went away under the impression that I was a professor searching for substances of potential pharmaceutical value in water snails. Sometimes, in the more built-up areas near the canals, I would go into a corner shop to get a snack to keep me going during the long days walking along the canal. My net often excited comment, and the people looking after the shop (who usually seem to have come from overseas) would often ask what I was doing. Once the man asked if they were poisonous, and I realised he thought I was looking for snakes, not snails! Another question was whether I ate the snails. In a shop in Coatbridge I was told that in Morocco they boiled the snails before eating them, but I didn't stay to get the recipe. During all the years I was doing this study I managed to avoid falling in the canals, but I was once suspected of wanting to do something similar. At its eastern end, the Forth & Clyde Canal used to reach the Forth through what is now Grangemouth Docks, but this route was cut off many years ago by the construction of a motorway. Instead, a new bit of canal was built to connect with the River Carron on the same side of the motorway. One day, having sampled the canal all the way from Falkirk, I went past the marina at the end of the canal and looked over the edge. The tide was out, and on either side of the Carron was an expanse of unpleasant-looking mud. It wasn't long before the man in charge of the marina came out, fearing that I was about to throw myself into the mud, though it is difficult to imagine anything less inviting! Once he had established that I wasn't a potential suicide, we had quite a chat. It seemed that algal growth was becoming a problem in the canals, because they were no longer allowed to use 'the granules' (the nature of which I didn't discover). One wonders what the effect of an algicide (many of which contain copper) on molluscs might be and how molluscs might respond to excessive growth of algae.

Over the five years since I first sampled the canal, it became clear that species such as *B. leachii* continued to expand their range and fill in most of the gaps that were present in 2003. As the vegetation developed in the newly reconstructed parts of the canals, these too became colonised. As late as 2008, fresh species turned up that I hadn't previously recorded: *Hippeutis complanatus* at two sites in the Union Canal; *Valvata piscinalis* in the Forth & Clyde Canal on the west side of Glasgow; and *B. leachii* in the Monkland Canal where I hadn't found it in 2003. How do these molluscs spread? Sticking to the feet of



figure 5: A clump of floating vegetation drifting along the Union Canal. Such clumps can transport several species of freshwater molluscs.

birds or even large insects is commonly stated to be a mechanism (Rees, 1965), but in an elongated body of water like a canal drifting vegetation and other material must provide a good means of transport. Clumps of vegetation are often seen drifting along the canals (Fig. 5), and I found no fewer than nine species attached to such clumps, of which *A. lacustris* seemed to be the commonest. *L. stagnalis* and *Radix balthica* turned up on pieces of floating wood, and a specimen of *P. corneus* was seen floating along by itself, not attached to anything. Passing boats must also be an effective means of transport, and recently a specimen of *D. polymorpha*, not recorded in the canals for some time, was found on a boat in the Forth & Clyde Canal (Adrian Norris, personal communication). Not all molluscs in the canals seem to be spreading, however. Various common freshwater species have local distributions and occur only in small numbers in the canals. *R. balthica*, probably our commonest freshwater snail, was only found rather rarely. *Gyraulus albus*, another common species, was only found in the Forth & Clyde Canal, mainly in the Falkirk area. And *Potamopyrgus antipodarum*, which has spread so widely throughout the British Isles, is scarce throughout the canals, apart from a good population that seems to have become established in the Union Canal at Falkirk. In general the canals provide a fairly uniform habitat, shown by the presence throughout most of their length of several molluscan species and the uniformity of the vegetation, so it is difficult to see why some species remain localised. Continued monitoring of this rich and fascinating system may help to provide some answers – perhaps another survey in the future would be appropriate.

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Late in March 2010, as I was walking past a small seawater pond near Oban in west Scotland, I caught sight of an extraordinary animal swimming with great energy and panache. Others appeared alongside it and together, just below the water surface, they performed an unforgettable display of synchronised swimming. They were rather like bats flying slowly underwater, except that each had a near circular membrane as its 'wings'. I had never seen anything like it. I soon identified the animal as *Akera bullata*, an opisthobranch gastropod. This article describes some of the findings that arose out of that discovery.



figure 1: A medium-sized *Akera bullata*, crawling.

One of the most intriguing aspects of this marine mollusc is the variety of bodily shapes and postures that it can adopt. These are so diverse that it can be hard to believe they all involve the same animal. For most of the year *Akera* is a dark, drab sea-snail. When small, it crawls on and eats seaweed; when large, it prefers silty sediment. Its most notable features are the rectangular head, the two parapodia (lateral extensions of the foot) that fold over its back, and the thin, delicate shell partly visible at its rear end (figure 1). It often moves and feeds under silty debris and can sometimes be hard to see.

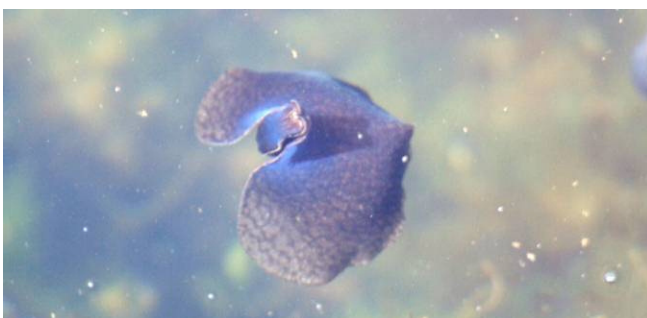


figure 2: Blue iridescence in a swimming *Akera*.

For a short period in the spring, just before mating and spawning, *Akera* is almost magically transformed. Shoals of swimmers perform an elegant underwater ballet. Their

beauty is enhanced by a glancing blue iridescence, probably caused by interference of light in parts of the integument (figure 2). During the powerful downstroke of the wings (parapodia), the body surface becomes so tightly stretched by the strong swimming muscles that the yellow colour of the thin shell, and through that the brighter yellow of the digestive gland, are briefly visible (figure 3).



figure 3: Two *Akera* swimming. Left animal, heart-shape at start of downstroke. Right animal, side view, start of upstroke.

The few scientists who have seen *Akera* swimming have abandoned their sober scientific style and, quite independently, waxed lyrical about its bizarre beauty:

'The movements have an extraordinary lightness and grace' (Morton and Holme, 1955).

'...no-one can possibly see it and forget it' (Yonge and Thompson, 1976).

'The animal... hovers in the most graceful postures in the clear water... The movements are so charming that we wish we could make it swim whenever we wanted. However, although there are almost always *Akera* in our aquarium, we rarely see them swimming' (Meyer and Möbius, 1865).

'Nothing is more interesting and graceful than *Akera* when it is swimming ...' (Guiart, 1901).

Guiart describes his journey on foot to see this spectacle at a remote site on the Atlantic coast of France. He not only risked his life in quicksands but, while wading up to his thighs, was briefly attacked by a 1.5 m long octopus 'with arms as thick as your wrist'. But he urged his readers:

'What you are going to see will more than make up for these petty irritations, so just ignore them. ... Where sun warms the deep water, you will see small, elegant animals rising from the sand and flying up to the surface. They sink and rise again, appearing from left and right, exultantly beating wings that undulate like

the costume of a miniature Loie Fuller. You will be entranced by this new Serpentine Dance.’ [Loie Fuller (1862–1928) was a famous dancer who devised many original dances. One of her creations, the Serpentine Dance, involved huge, rapidly undulating, expanding and contracting circular veils on each arm. This dance does indeed bear some resemblances to *Akera*’s swimming style, as can be seen in a performance by Fuller filmed in 1896 and now on You Tube.]



figure 4: Wings are rigid during the rapid, powerful downstroke.



figure 5: Two *Akera* swimming. Left: near end of upstroke. Right: end of downstroke, tightly-wrapped parapodia and pointed rear end.



figure 6: Mid-upstroke, dorsal view: edges are upturned because animal is sinking.

Akera swims by powerful synchronised beats of its two parapodia (Morton and Holme, 1955). These wing-like flaps are broadly united with the foot and, at the start of the downstroke, the three together form the swimming membrane, a near-complete medusa-like disc. The downstroke is rapid and powerful, driving the animal

upwards and keeping it waterborne (figure 4). At the end of the downstroke, the wings are wrapped tightly around the body, making a streamlined shape with a sharply pointed rear end (figure 5). Immediately, the animal begins to sink under the weight of its shell and internal organs. It continues to sink during the much slower upstroke when, paradoxically, the relaxed edges of the wings are turned *upwards* because the animal is sinking faster than the wings are moving upwards (figure 6). [The diagrams given by Thompson (1976, figures 14a and 14b on page 29), repeated in Thompson and Brown (1976, figures 11a and 11b on page 30) and elsewhere, wrongly show this upward turning of the edges to be a feature of the *downstroke*, as common sense would suggest it to be. In fact, during the downstroke the muscles are so tightly contracted and the wings so rigid that the edges remain firm (figure 4).]

Another author made a more fundamental, if understandable, error. Watching *Akera* swimming, it is easy to gain the false impression that the flapping cloak-like wings are attached to its back and that their outer edges meet along its ventral surface – perhaps because it looks rather like a cloaked human being. In fact the reverse is true – the wings (parapodia) are attached to the ventral foot and they meet over the animal’s back. This illusion was probably the cause of the impossible drawing in Clayton (1974, page 147) showing a swimming *Akera* with its ventral surface and shell mouth visible through the closing wings.

In 2010 the number of individuals swimming in the pond at any one time exceeded 100 on two days (5 and 8 April) and was in the range 20–100 on five other days in April. This number declined sharply after mid-April and almost none were seen swimming during the rest of the year, indicating a brief but intense swimming period. There was a swimming season again in April 2011 but, for unknown reasons, the numbers swimming were much lower, rarely exceeding single figures at any one time.

Why do *Akera* swim? It has been suggested that it is a form of sexual display, since it has usually been recorded shortly before spawning (Thompson, 1976). This cannot be the whole story, however. *Akera* of all sizes swim, except the really big ones (the largest swimmer I have seen weighed 6.5 g). In April 2010 I saw small numbers, up to 20 on each occasion, of minute, recently metamorphosed *Akera* swimming together in the pond shallows. Still translucent and largely unpigmented, they swam with the same postures and movements as adults (figure 7). Of a sample of 13, one weighed only 18 mg and all were less than 80 mg. I have the impression that *Akera* swim to escape undesirable conditions, such as overcrowding, heat or food shortage.

Akera adopts various other postures. Hedgehog-like, it rolls into a ball when handled or provoked (figure 8). It cannot withdraw completely into its shell and, in this position, the

parapodia are wrapped tightly around the shell and the withdrawn head. During mating, *Akera* contorts and stretches its body (figure 9). It is a hermaphrodite and copulation is a communal activity performed in chains; each animal acts as male to the one in front and female to the one behind. Usually the chains are coiled in on themselves and hidden under debris, so it is difficult to see what is happening. I have encountered groups of up to six assembled in this way, presumably mating.



figure 7: Two very small *Akera* (< 50 mg each) swimming. Left: end of downstroke, tightly wrapped and pointed. Right: heart-shape of early downstroke.



figure 8: Two *Akera* rolled up in defensive posture after being handled.



figure 9: Mating assembly of three *Akera*.

The Oban *Akera* pond measures *ca.* 25 × 5 × 1.5 m deep and held at least 2,800 individuals in spring 2010. This estimate was based on the number of empty shells and dead and dying animals at the pond edge during summer. *Akera* lives for about a year and dies soon after spawning, many or most crawling ashore to die. Earlier, I had intended to measure the number in the pond by a mark-and-recapture method. To find a suitable marking technique, I test-marked the shells of a few live specimens with a small dot of correcting fluid (Tippex). Sadly they all died within a few hours. Unlike prosobranchs and land snails, *Akera* have thin uncalcified shells – hence the name ‘bubbleshells’ for this group of opisthobranchs. Solvent must have rapidly entered their bodies through the shell.

How is it that *Akera* can reach such a high density in a small pond like this, but seem rarely to be met with in such numbers in the open sea or in firths and estuaries? Probably because the pond has no outlet. It is a settling pond and soakaway, dug about ten years ago to take the outflow from a marine aquarium. *Akera* larvae have a very brief pelagic stage and, presumably, a few larvae entered the pond in the water supply years ago and gave rise to this population. Moreover, there are no fishes or other predators such as large crabs in the pond. In such conditions, invertebrates rule! A similarly isolated population was recorded by Morton and Holmes (1955) in a seawater tank in Plymouth naval dockyard and was used in their classic photographic study. Another well-known population, in more natural conditions but not fully isolated from the open sea, occurs at the Fleet in Dorset (Thompson and Seaward, 1989).

It is near-impossible to measure the body length of an animal that extends and contracts as it moves, and contracts strongly as soon as you approach it! With time and patience it can be done for one animal, but measuring individual lengths of large samples is wholly impractical. I therefore used live mass as a standard measure of size, weighing each after blotting it gently dry with absorbent tissue paper. The largest from the pond, where the substrate and main diet of larger *Akera* is a silt-sand mixture, weighed 11.0 g. However, two raised from the egg in captivity on a silt substrate attained 19.2 and 14.6 gm. Like others, they spawned repeatedly and lost much weight in the month before death. Their large size may have been attributable to the silt, or lower population density, or other conditions of captivity. The shell of the largest was 33 mm long, somewhat smaller than the 41 mm maximum recorded by Thompson and Seaward (1989) for specimens from Lough Ine in Ireland.

Finally, something remarkable. One day, the largest captive-bred *Akera* escaped from the tank. It ended up on a filter, a perforated metal sheet at the drain where waste water leaves the aquarium. The holes in the metal sheet were 6 mm in diameter. The large *Akera* was about 10 mm wide at the

head and 20 mm at the parapodia. Yet it had squeezed its foreparts, including the parapodia, through one of the holes and had been stopped only by its 23 mm wide shell. It couldn't move in either direction and was firmly stuck. Because of the large width and bulk of body that had gone through, it was impossible to draw it backwards without killing it. Sadly, my prize specimen died, and a slightly smaller one met the same fate some days later. The extraordinary volume contraction that must have accompanied this feat presumably involves a large redistribution of body fluids, together with deformation of the soft integument. The same thing must happen when large terrestrial slugs escape from sprung mousetraps (the breakback variety), or enter houses by squeezing under closed, tightlyfitting modern doors – phenomena I suspect others will also have experienced?

Acknowledgements

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'On the spot' questionnaire: Jan Light

What do you do for a living? I live in Dorset and am retired, but I undertake work on molluscs in archaeology, when contractual opportunities arise.

What areas of conchology particularly interest you?

Native marine molluscs within the northeast Atlantic context; marine molluscan distributional studies; marine molluscs in archaeology; conchological books; shell artefacts, shellcraft, shell cards and postcards.

How did your interest in molluscs begin? When I was between the ages of 6 and 10 my father was posted to Hong Kong. European children attended school in the mornings only, in the afternoons we were often bussed to a local beach where I inevitably found shells and I started to collect them. My mother kept all our shells in chocolate boxes and they found their way back to England when we returned.

When and how did you become a member of the Conchological Society? In 1981 when my own children were 10, 9 and 5 we had a rather bleak winter when they were intermittently down with viruses. We kept our children indoors when they were ill in those days and during one protracted bout of cabin fever I pulled out the boxes of shells. The children and I sorted the shells, arranged them in 'kinds' and when the children were well enough we went to the library to get a book out to name them. The address of the secretary of the Conchological Society (Terry Crowley) was in the back of one of those books and I applied to join. Some months later I heard from Beryl Rands that I had been elected to the Society.

In what ways have you been involved in the Society and its activities? I have always enjoyed the field programme but have been a regular attendee at indoor meetings too. When I returned from Hong Kong, as the eldest of four

children I was allowed, as a special treat, to stay with my great aunt Jessie who lived in Earls Court. I travelled from High Barnet on the underground on my own from what seems to me now to be quite a young age! Aunt Jess introduced me to the Natural History Museum and I used to spend every Saturday that I could in the Museum with a board, paper and a few coloured pencils, wandering round the exhibits. I enjoyed the privilege and independence, as the eldest child, and the Museum has always had a special resonance for me.

In due course I was elected to Council as a member then took over from Dennis Seaward as Marine Recorder. I love recording, the thrill of the chase and making new discoveries. I have been privileged to serve a term as President.

Do you have a memorable 'conchological moment'? On one of my earliest field trips I went for a week to Skye. It was on this trip that I got to know fellow marines, Julia Nunn and Celia Pain well. I still have to smile when I recall Julia racing me to the shore!! The shores and collecting were like nothing I had experienced before. One morning I was walking the water line at Broadford and I came across a pristine white articulated *Chlamys nivea* lying on the sands, smiling at me. I went on to find other shells of this species including orange and purple specimens. This cemented my love for the Pectinidae which is the queen of molluscan genera for me.

If you were marooned on a desert island and could take only one book with you what would it be and why? This is so difficult. It is tempting to choose one of my books with beautiful hand-coloured plates but how long would it last? Then perhaps I might consider a book dealing with the native malacofauna which could be useful, but you aren't telling me where my island is! So I think I am going to need

something that would take a long time to read and will choose Fretter and Graham's tome *British Prosobranch Molluscs: their functional anatomy and ecology*. By the time I get to the end of it I will need to go back to the beginning to refresh my memory!

If your house was burning down what shell (or shell related item) would you rescue first? This is a difficult decision but I think I would grab my box of *Janthina* specimens which contains all the species and includes specimens collected by others including the late Douglas Wilson. If I could not find it then I have a glazed lidded box which contains assorted shelly items; specimens and artefacts and I think I would be glad to save that.



Jan on the shore at Camus Crois, Skye, September 2009, with a Sea Urchin (*Echinus esculentus*) placed temporarily into fresh water to release any small parasitic gastropods that might be present (the animal was afterwards returned to the shore unharmed). (Photo: Peter Topley)

Is there a shell or mollusc that eludes you and why? There are a number of species I would love to find alive but the first that springs to mind is the small white parasitic bivalve, *Devonia perrieri*. It would mean tracking down its *Leptosynapta* host, a holothurian.

Where is your favourite location for mollusc/shell hunting and why? I have several favoured beaches and they are all in Britain and Ireland. The one I have visited least but would love to return to is Shell Beach on Herm. It was on that coast that I found *Galeomma turtoni* attached to the underside of a rock although I had absolutely no idea what it was when I found it. The two valves were gaping and enmeshed in the soft parts which were attached to the rock limpet-like. It hardly looked molluscan!

Do you draw any particular inspiration from historical figures in natural history and why?

It is fortunate that my inspiration is still with us. She lives in Cornwall and her name will be well known to all Conch Soc members. Stella Turk was the sitting President when I joined in 1981. I took a strandline collection of micro-shells from Porthcurno to my first indoor meeting as a display and she helped me identify all my mysteries. She has been a constant source of advice, information and welcome to her cottage, which is a treasure and something of a Mecca.

Can you recall an interesting mollusc-related incident?

We eat quite a bit of seafood in France and usually offer guests at least one Fruits de Mer meal during their stay. I had been to the poissonerie and bought all the components which included whelks of which both Nick and I are rather fond. I had carefully arranged all the various invertebrate items on platters and had seated guests and was inviting people to help themselves when I noticed an unexpected movement from the direction of the whelk platter. One of the snails was attempting to right itself and move off the plate. When I had asked for the whelks (bulots) I had neglected to tell the fishmonger that I wanted to buy the cooked ones!

What words of advice would you give to a budding conchologist? Watch more experienced conchologists as they go about their fieldwork. Don't be afraid to ask for help. It is important that you get the correct name for your shells, particularly if you are going to send your records to the Conchological Society recording schemes. By all means tackle the business of identifying your shells with the help of the literature and, more and more, the resources on the internet which are becoming more plentiful all the time. But if you are puzzled or unsure then ask someone more experienced than you. If they are unsure they will pass you on. At some point you should get your answer. If an expert is puzzled you may be on to something!! Or your shell may just be too worn to identify with confidence. Asking advice includes how to manage a collection and how to collect, where, when – all the tips that ensure you should come back from a visit to the shore (or whatever habitat you have searched) with some interesting material.

Is there anything else you would like to add? Shell collecting, in all its manifestations, is a lifelong adventure.

British Shell Collectors' Club

28th April 2012, 9am to 5pm:

Shell Convention

Theydon Bois Village Hall,
Essex, CM16 7ER

Admission is free. Bring a friend. It is an opportunity to meet other members and seek advice from experienced collectors. Many shell and shell related items are for sale, in the afternoon a shell auction takes place.

8th September 2012

Chatsworth Shell Fayre, Cavendish Hall, Chatsworth House,
Derbyshire, DE45 1PJ

For further information and other events see:

www.britishshellclub.org.uk/



What do we think about graffiti, and why publish an article about graffiti in *Mollusc World*? Many argue that graffiti has been a part of human culture since the drawing of the first pictures in caves. Although we mostly use the term graffiti when talking about one or more items, 'graffito', although rarely used, is the singular of 'graffiti'. The word derives from the Greek 'Graphein' which means 'to write'. This in itself gives a clue as to what most authors on the subject agree on, namely that graffiti is the act of drawing or writing on walls or other surfaces in order to communicate messages to the public. There is an enormous literature on whether graffiti is art or crime. As a layman, I suspect that the way most people might decide whether graffiti is art or crime centres mainly on location. If a graffito is somewhere 'acceptable', perhaps the side of a building where it may be obvious it has been commissioned, it is art; if, on the other hand someone has created a piece on a wall in an underground railway station or on the side of a shop, it is 'defacing' and thus seen as a crime. In addition, graffiti that are pleasing to the eye are much more likely to appeal to the viewer than items that consist of letters or words only, wherever they are located.

Over the years I have built up a collection of photos of graffiti I have seen around Gibraltar, more particularly graffiti that have a natural history flavour. I started my collection when I discovered a small graffito on a wall in my garden of a snail that my young son, Alex, had painted clandestinely (figure 1).



figure 1 (left): Graffito of a snail, by my son.
figure 2 (right): First graffito (Market Square) of The 'Gibraltar Monkey Queen'.

I have many pictures, including those of the 'Gibraltar Monkey Queen' that mysteriously appeared around Gibraltar starting in May of 2011 (figure 2) resembling Banksy's famous 'Monkey Queen'. We might expect molluscs not to be high up on the graffiti artist's list of subjects, but there is a location in Gibraltar where we see two mollusc classes represented by graffiti. Some of my favourite graffiti are on a wall outside the north entrance of the Prince's Gallery tunnel at the Northern Defences (colloquially called 'The Jungle'). While it may be difficult to put oneself into the mind of the artist(s) responsible, the mix of species used and incorporation of skulls into the designs, along with the bright colours, provide an unusual (and possibly psychedelic) effect (figure 3). Looking closely we can see both a snail and octopus in the design, both incorporating the skull theme (figures 4 and 5).

I wonder how many readers have seen other molluscan graffiti and if they have photos of these?



figure 3: 'Graffiti Wall' at the Northern Defences ('The Jungle'). Note the use of a human skull theme.



figure 4: Detail from 'Graffiti Wall': a snail.



figure 5: Detail from 'Graffiti Wall': an Octopus.

Survey of land snail diversity in some threatened limestone hills in Mfamosing, Cross River State, Nigeria

Chris Oke*

Limestone hills are biodiversity hotspots known to harbour many endemic species. The limestone hills in Mfamosing, Cross River State, southeastern Nigeria are one of the few limestone hill areas in Nigeria and in West Africa. The hills are seriously threatened by commercial exploitation for cement and other industrial raw materials (e.g. poultry feeds, toothpaste, etc.) by both local and multinational cement companies. The biota of these hills is not known, and many species stand at risk of disappearing if the hills are destroyed.

Studies on the land mollusc species in the limestone hills in Mfamosing were carried out by myself with the assistance of seven students from the Department of Animal and Environmental Biology, and two students from the Department of Soil Science, University of Benin, Benin City, Nigeria. We also had the assistance of three local guards in our team (figure 1).



figure 1: Participants in the field work. From left to right: Ngozi Azubike, Gerald Okonkwo, Itohan Amadasun, Ekene Sidney Ogboli, Emediong Ita, Lydia Eguavo, Theophilus Ogbeifun, Ogheneovo Dibo and Samuel Ebeye.



figure 2: Lydia, Itohan and Gerald crossing a fast flowing stream to one of the limestone hills.

We sampled six limestone hills in total and collected about 66 species and over 1500 specimens in 14 families of land molluscs. Most of the species were rare with restricted range sizes and of great conservation interest giving the fact that the limestone hills are currently being exploited for limestone by



figure 3: Degraded limestone hill.

local quarry companies. One of the hills visited in 2009 has been mined almost to ground level. It is also very interesting to know that some of the species recorded in these hills are new species (to be described in the *Journal of Conchology*).

Some of the problems encountered include the long travelling time (28 hours by road), difficult terrain that entails crossing deep, narrow streams (figure 2) and insect bites and stings (especially sand flies and bees). We also encountered two snakes (cobras) while crossing the swamp to one of the limestone hills. It was a very interesting field experience for all of us and we are grateful to the Conchological Society of Great Britain and Ireland for their financial assistance that enabled us to cover the travel expenses. Figure 3 shows the degraded limestone hills. Figure 4 shows some of the snails collected from the limestone hills.



figure 4: Some of the snail species collected during the survey.

*Department of Animal and Environmental Biology, University of Benin, Benin City, Edo State, Nigeria

Much anatomy can be observed on molluscs lacking external shells (figure 1), and internal organs can sometimes be seen in those with semi-transparent bodies (figure 2).

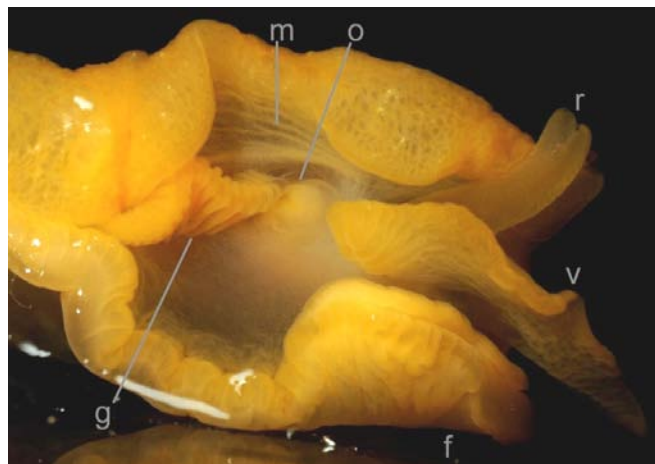


figure 1: Side view of *Berthella plumula*. m: underside of mantle. o: genital opening. r: rhinophore. v: oral veil. g: gill. f: foot.



figure 2: Transparent foot of *Janolus hyalinus* on underside of water. Length 15mm. 1: oral tentacle. 2-2: pale grey channel linking cerata. 3: buccal mass. 4: stomach. 5: ovotestis.

But the shell of a sea snail usually conceals most of the soft body parts, and only parts of the foot, head and siphon, are seen when the animal is active (figure 3).



figure 3: Active *Nucella lapillus* exposing parts of tentacles, foot, operculum and tip of siphon.

Improved views of the sole of the foot and underside of the snout can be obtained when small snails crawl on the undersurface of the water (figure 4).



figure 4: *Hydrobia ulvae* crawling on underside of water, exposing sole of foot, edges of black opercular lobes, opening and underside of snout, and tentacles.

Others can be observed by placing them in a submerged plastic petri dish with holes drilled near the edge. When they have a grip, invert the petri dish, letting any air escape from the holes (figure 5). Larger specimens can be viewed on a submerged sheet of glass held up on supports.

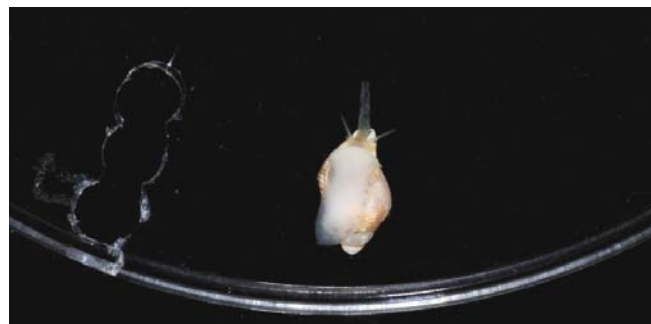


figure 5: Juvenile *Buccinum undatum* crawling on underside of inverted petri dish. Holes for escape of trapped air.

Much more of a snail's body can be observed if the live animal is induced to extend fully. The simplest way to do this is to place the shell in water with its aperture facing up or sideways. A brief glimpse of behind the head, where the penis is located on mature males of many species, may be had as the snail stretches out to grip the substrate and turn the shell mouth down (figure 6). The form of the penis is important in differentiating several similar species, but the duration of exposure may be too short for the necessary detail to be studied.

For longer examination, or photography, the turning of the snail needs to be prolonged. This can be sometimes done by holding the spire with forceps, but success varies between species and individuals. For example, *Hydrobia ulvae* may extend quickly, *Littorina littorea* is often slow to emerge and retreats at the slightest movement of the forceps, and *Nucella lapillus* may stay withdrawn for days if it has fed recently. Other methods of restraint are needed for reluctant extenders.



figure 6: Unrestrained male *H. ulvae* turning itself from lying with shell aperture facing up. Snout, head and yellowish white hooked penis exposed for a few seconds during the turn.

Small species, like *H. ulvae*, can be held for longer by pushing the spire into a prepared hole in the edge of a small piece of plasticine about 5 mm thick. This leaves both hands free for operation of equipment, and allows one to do something else while waiting for the animal to extend. The extra effort exercised by the animal against the restraint produces an exposure of a much greater part of the body than during a normal turn (figure 7). If it gets a grip on the substrate while you are away, it is strong enough to shift a piece of plasticine many times its own size, so weigh the plasticine down with a stone or piece of lead. Often, after a few minutes, the snail manages to pull itself from the plasticine, so check frequently for movement. For photography, avoid brightly coloured plasticine as it may reflect unwanted colour onto the specimen.



figure 7: Male *H. ulvae* stretching as it pulls free from plasticine. Visible features include head, cephalic tentacles, dorsal surface of foot, large sickle-shape penis and small pallial tentacle. Shell was restrained with aperture facing to right.

Larger species, especially those with short spires, can not be held by plasticine. Instead, they can be gripped in plastic bulldog clips, ideally with a plastic spring, or in the spring clips found on some plastic clothes hangers (cut free with a hacksaw). To prevent the snail from moving the clip, place a piece of lead on the clip (figure 8). If the spring mechanism is metal, wash it in tap water and dry it well after use. For photography, paint clips with non-reflective blackboard paint.



figure 8: *N. lapillus* restrained by clip and lead weight.

With patience, well-directed lighting and luck, good views, or macro-photographs, will be had of the head, tentacles (figure 9) and the interior of the mantle cavity containing the ctenidium (pinnate gill), anus, oviduct opening (figure 10) or penis (figure 11), and other features such as the ovipositor on female *L. littorea* (figure 12). Sometimes, the skin is thin and translucent so some internal organs can also be discerned, such as the spirally coiled radular sac of *L. littorea* (figure 12).



figure 9: Male *Littorina littorea* restrained by clip. Head, snout, tentacles and part of foot with distinctive 'tiger stripes'. White organ below and behind eye is reduced penis of non-breeding period. Grey, out of focus, ctenidium visible in mantle cavity.

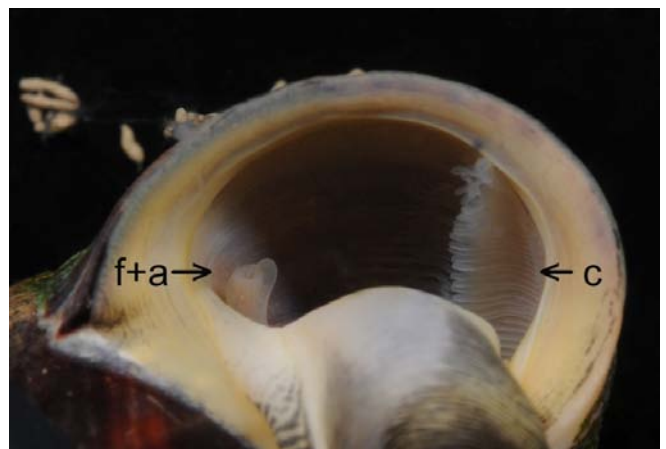


figure 10: Mantle cavity of female *L. littorea* restrained by clip. f & a: female oviduct opening and anus (longer and thinner). c: ctenidium, adjacent ridged surface of mantle cavity indicates location of mucus gland. Faecal pellets top left. Yellow mantle reaches rim of aperture when animal extended.

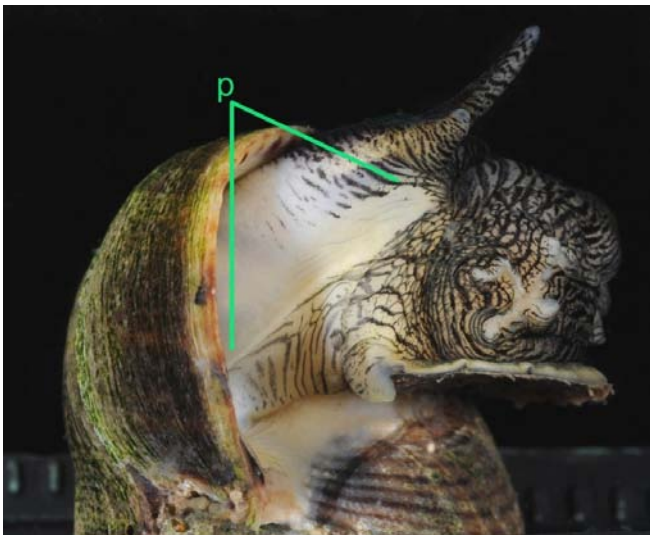


figure 11: Male *L. littorea* restrained by clip. p: white penis, reduced out of breeding season; distinguish from similar female ovipositor (see fig. 12) by thicker freer lower edge of penis. (Also males have anus without accompanying oviduct, see figure 10.)

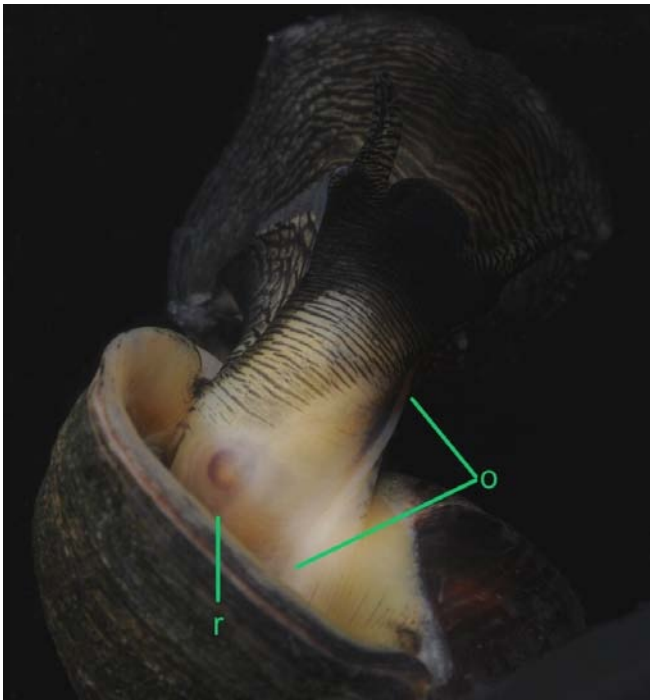


figure 12: Female *L. littorea* restrained by clip. r: spiral radular sac (twice as long as shell when uncoiled). o: thicker, freer, upper edge of female ovipositor (compare with reduced penis in figure 11).

The above techniques will assist examination under a dissecting microscope or hand magnifier, but vibration or shadow movement may cause timid species to withdraw. Best results are often obtained by photographing the extended animal with a digital SLR camera and well-directed flash, and subsequently viewing the magnified images on the screen of a computer.

Live examination cannot replace skilled detailed dissection of internal anatomy, but for the amateur who lacks the skill, equipment or inclination to dissect, it can provide much interest and information. For studying external anatomy, live examination sometimes has the advantage, as the positions of organs on a dissected animal depend on the way the mantle cavity is opened, and they may be collapsed, even when the animal was narcotised and relaxed before killing.

On live animals the organs are in more predictable positions and more likely to be expanded (figure 13).

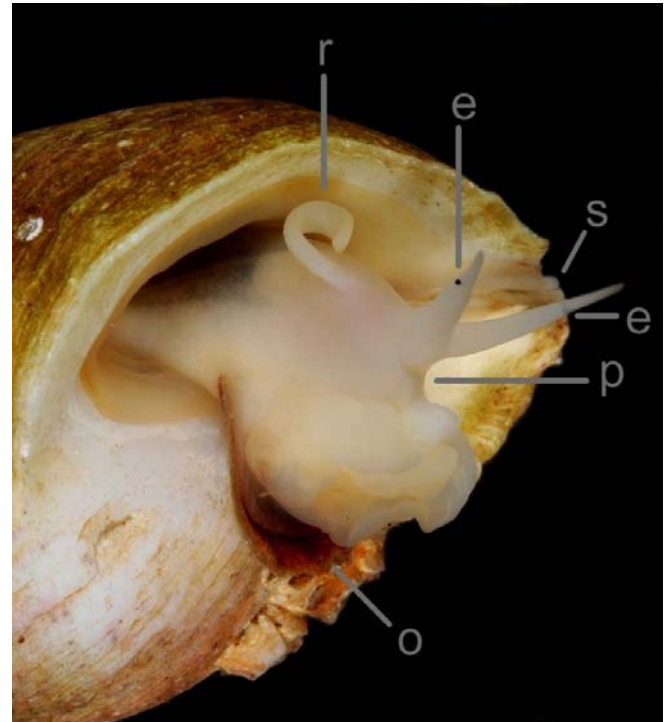


figure 13: Fully extended male *N. lapillus*. r: recurved penis. e: eye at top of thick basal two thirds of tentacle, obscured in image on left tentacle. s: siphon, slit ventrally, barely protrudes from siphonal channel. p: proboscis pouch below front of small rounded head. o: operculum.

Graham, (1988), writing of *N. lapillus*, states:

‘The head is a flat transverse ridge...Each tentacle has an eye about one third of its length up from the base.’

This description may be based on collapsed dead material, as all live specimens examined by the author of this article had the eye about two thirds of the way up the fully expanded tentacle, and the head, as in figure 13, did not resemble a flat transverse ridge.

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Slugs of the British Isles: a new guide to species and a screening of the fauna

Ben Rowson, Roy Anderson, Bill Symondson & James Turner

As members will be aware, no up-to-date guide to all the slug species of Britain and Ireland is currently available. I have often heard naturalists give this among their reasons for not paying slugs as much attention as other groups. This seems a shame when slugs are a big part of life in this part of the world, being some of our most conspicuous and important invertebrates. Among the problems in identification are the perennial difficulties caused by substantial and overlapping variation in appearance, the growing number of introduced species, rapidly changing distributions and the taxonomic changes or debates involving many. There are also the possibilities that Britain and Ireland host overlooked species, native or introduced, or that our populations are not the same species as those known by the same names elsewhere. The quick identification of live animals, which is in many cases possible for slugs, continues to be a goal of amateurs and professional scientists alike.

In an attempt to tackle this, we have begun researching and producing a new slug guide with welcome support from the Leverhulme Trust and Amgueddfa Cymru – National Museum Wales. The guide will appear in the Field Studies Council's respected AIDGAP imprint, with the aim of making accurate slug identification easier and more appealing to a wider audience. It will also include accessible and up-to-date sections on the ecology of slugs as environmental indicators, as ecosystem engineers and as pests with notes on their control. For those who wish to go deeper there will be clear guidance on dissection and the portrayal of taxonomically informative internal features, plus inclusion of other taxonomic issues where necessary.

Slug identification is often not a wholly straightforward task. Here we use an example to illustrate a few of the issues. Figure 1 shows six animals we collected from various localities in Britain and Ireland. Each was photographed alive under standard lighting and background conditions, itself not as easy as it might seem! They show *Limax cinereoniger*, a large and appealing species that appears regularly in *Mollusc World* and is often regarded an old or ancient woodland indicator.

Or are they? The pale individual at the top, from Glamorganshire, happens to resemble that figured by Alexander (2011). Yet none of them is of the 'typical' ash-black form with tripartite sole shown in the classic guides by Kerney and Cameron (1979) and Cameron, Jackson and Eversham (1983). Nor do they exactly conform to any of the British varieties listed by Quick (1960). The dark-spotted tentacles given as a key feature by Quick and referred to by Alexander (2011) are not obvious in all of them. So how can we know they are *L. cinereoniger* and not, for example, *L. maximus* or even one of several continental taxa? Well, the coarse tubercles, long keel and slender body are visible in the photos, and on dissection the genitalia of the three adults is like that generally given for *L. cinereoniger* (e.g. in Kerney and Cameron, 1979). That leaves two half-grown slugs (yearlings?) and one 25mm juvenile. Two are from ancient woodland, one being from the recent Conch Soc

Field Meeting in the Wyre Forest, Worcestershire. The third is from open peatland in County Galway, hardly the classic environment, though old references to such habitats exist. Such juveniles can be grown on to adulthood in an established slug zoo, but with a high risk of mortality and sudden loss of the specimen (and unlike snails leaving no shell to fall back on).

All the slugs in our guide will be DNA sequenced or barcoded. This offers an alternative that not only allows juveniles and even eggs to be identified but lets the DNA of each individual be compared directly with that of others cited in studies worldwide and to act as a reference in future. It also lets geographic and other genetic variation be compared, and can help show how universal certain identification characters really are. At the time of writing we are still waiting for sequence results from these six individuals but this will provide further evidence for their identity as *L. cinereoniger* (or otherwise). As we aim to cover all species across the whole of the British Isles this will amount to a genetic screening of our slug fauna for variation and undetected species. Of course, few naturalists have access to sequencing facilities or even want to try dissection. But future identifications based on verified photographs should result in greater accuracy, which has knock-on effects for recording and other studies. A welcome side effect of showing as much variation as possible, from juvenile to adult, is to highlight the subtle beauty of most of our slugs. This is something that cannot do their reputation any harm.

Even among those for whom slugs are not a first love, Conch Soc members have a huge pool of knowledge and experience and are likely to be among the first testers and users of our guide. So we are keen to hear from members of any particular problems we should address, or of features that have or have not been found useful. These could come from relative beginners as well as those more experienced. In addition we would welcome any live specimens of unusual appearance or from unexpected localities (at the address on BR's Museum web page; please advise by email or phone before sending). If this makes you look closely at slugs for the first time, then congratulations – your conversion to limacophile will have already begun!

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figure 1 (opposite): Specimens of *Limax* cf. *cinereoniger* from various localities in Britain & Ireland, photographed by James Turner. All scalebars = 10mm. Tentacles along the bottom not shown to scale.



Papillifera papillaris has been much in the news in recent years following the discovery in 2004 of a thriving population at Cliveden House in Buckinghamshire (Ridout Sharpe, 2005, 2007). The publicity generated by the ensuing discussions led to the disclosure of a second British population of this Mediterranean shell on Brownsea Island in Portland Harbour, Dorset (Ridout Sharpe, 2011).

The Cliveden snails almost certainly arrived in England when the balustrade at the House was imported from the Villa Borghese in Rome, Italy, in 1896, and it is perhaps surprising that 104 years passed before its presence was recognised. The date when the Brownsea shells came to that island is shrouded in mystery; Italianate sculpture seems to have been imported to Brownsea in the mid eighteenth century (Sir Humphrey Sturt), the later nineteenth century (Hon. George Cavendish-Bentinck) and the early twentieth century (Charles and Florence van Raalte) (Ridout Sharpe, 2011). What is known is that the shell was first identified, observed as a new shell and so identified by Mike Kerney in 1993, although inexplicably the discovery of this ‘new’ British shell was not published at the time.

A vernacular name for this snail of ‘Pulteney’s door snail’ has been suggested by Ridout Sharpe (2011) to avoid any rivalry between the wardens of Cliveden House and Brownsea Island who might each claim precedence. Richard Pulteney supposedly included this shell, called by him *Turbo bidens*, in his *Catalogues of the Birds, Shells, and Some of the More Rare Plants of Dorsetshire*, published in 1799, and discussed by Dance (2008). I propose that this would not be an appropriate name, as I believe there is considerable doubt that Pulteney actually observed this snail in Dorset.

T. BIDENS. Lin. 1240. L. G. 3609. Helix bidens. Mull. Verm. II. p. 116. List. Conch. t. 41. A. Gualt. t. 4. D. E. Pen. t. 81. 117. BIDENTATED SNAIL. Shell, brown, very fragile, thin, and nearly pellucid, cylindrical; old shells three-quarters of an inch long, and one-sixth of an inch wide, closely and minutely striated, the whole length. Volutions, ten or eleven, nearly flat, and turning the contrary way, from right to left. The sutures of the volutions elegantly crenated. The mouth ovate, much contracted, and furnished with two folds, or denticles, on the interior, or pillar lip. Common in woods, upon trees, and on moss: also, in the chinks of old walls.

figure 1: Pulteney’s description of *Turbo bidens* in 1799 in *Catalogues of the Birds, Shells, and Some of the More Rare Plants of Dorsetshire*.

Pultney’s description of this snail is shown in figure 1 but the 1799 edition of the book does not contain any illustrations. When compared with a photograph of a modern specimen of *P. papillaris* (figure 2), it is clear that his description fits reasonably well, although there is only a single ‘fold’ or ‘denticle’ in the aperture. There is also the question of what he meant by ‘crenations’. What causes concern is his mention that it is ‘Common in woods, upon trees, and on moss: also, in the chinks of old walls.’

While the latter habitat is acceptable, it is extremely unlikely that the shell, in Dorset, was ever common, and certainly not in woods or on trees or moss, habitats it is not known to occupy. The question therefore arises: what shell was Pulteney describing? Was it *P. papillaris* or a different shell?



figure 2: *Papillifera papillaris*

The references supplied by Pulteney to support his description are worth examining. He lists six earlier descriptions (I–VI below).

I.

Lin. 1240.

Linnaeus, C. 1767. *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*; 12th edition, vol. 1, part 2. Holmiae. p. 1240, shell no. 649.

bidens. 649. T. testa turrata pellucida: anfractibus contrariis, sutura subcrenata, apertura postice bidentata. Bonan. recr. 3. t. 41. Aucta. Gualt. test. t. 4. f. C. Habitat in Europa australi; terrestris.

Translation: ‘*Turbo* with a translucent turreted shell; contrary [sinistral] whorls, a subcrenate suture, two-toothed aperture posteriorly. Lives in southern Europe; terrestrial.’

Linnaeus quotes Gualtieri’s figure 4C (figure 3), which does not have any papillae along the sutures, although it is perhaps relevant that Pulteney gives his reference to the 12th edition of *Systema Naturae*, published in 1767, rather than the 10th edition of 1758; in the earlier edition Linnaeus omitted the Buonanni reference (figure 4), which does seem to show some dots along the sutures and could be *P. papillaris*. The identity of the Linnaean shell is unclear.

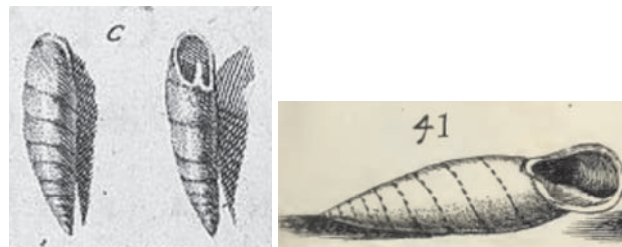


figure 3 (above left): Gualtieri, N. 1732. *Index testarum*, table 4, figure C.

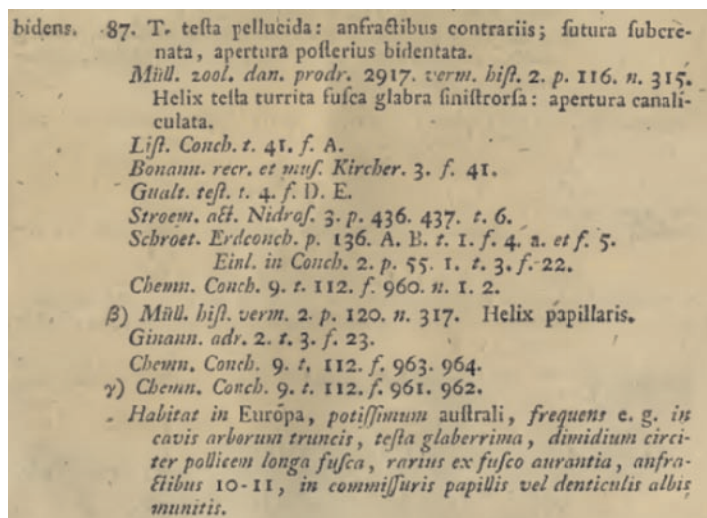
figure 4 (above right): Buonanni, P. 1684. *Recreatio mentis*, figure 41.

Kadolsky (2009) considers it to be the species currently known as *Cochlodina incisa* (Küster, 1876). Kadolsky accepts that there are fine crenations visible in Gualtieri 4C which adequately account for the Linnaean description. He argues that crenations are not the same as papillae, and that the crenations described by Linnaeus in *Helix bidens* are not the papillae of *Papillifera*.

II.

L.G. 3609.

Gmelin, J.F. 1791. *Caroli a Linné Systema Naturae*; vol.1, part 6. p. 3609, shell no. 87.



Gmelin's description is an almost exact copy of Linnaeus, omitting only the work 'turrata'. All his references under the nominate species (presumably variety α), with the exception of Buonanni and Gualtieri, are of shells without papillae and are consistent with *Cochlodina laminata*. Of importance is that both the Müller references he quotes are to *H. bidens* which is **not** *P. papillaris* but *C. laminata* (see below for more details).

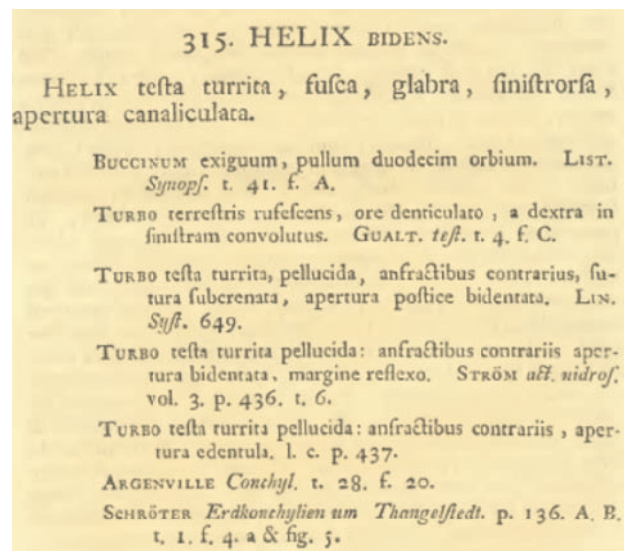
All the references to variety β are entirely consistent with *P. papillaris*. Variety γ is indeterminate, but is probably a *Balea*. The fact that Pulteney does not specify 'variety β' makes it likely that he was referring to the 'normal' variety, which is *C. laminata*. However, Gmelin's nominate species **does** refer to Buonanni (figure 4).

III.

Mull. Verm. II. p. 116

Müller, O.F. 1774. *Vermium terrestrium et fluviatilium seu animalium infusoriorum, helminthicorum, et testaceorum, non marinorum, succincta historia*; vol. 2. Hafnia. p.116, shell no. 315.

All the references and the description (not reproduced here), are all entirely consistent with the shell now known as *C. laminata*; *Helix papillaris* is described separately several pages later under shell number 317. If Pulteney had intended *H. papillaris* as his Dorsetshire shell then it is extraordinary that he did not make the correct reference to Müller.



IV.

List. Conch. t. 41. A

Lister, M. 1685. *Historiae sive synopsis mediocrae conchyliorum, quorum omnium pictorae, ad vivum delineata, exhibitur*; vol. 1. London. fig. 41 A.



There is no text accompanying this illustration, and its identification is unclear, but there is no suggestion of any papilli, and it is almost certainly *C. laminata*.

V.

Gualt. t. 4. D.E.

Gualtieri, N. 1742. *Index testarum conchyliorum quae adservantur in museo Nicolai Gualtieri*. Florence. plate 4, figs. D, E.



D. E. Idem papillis albis in spirarum commissuris distinctus. (an Columbae Cap. 7.)

Translation: 'the same [as the previous shell, C, now identified as *C. laminata*] with distinct white papillae in spiral sutures.'

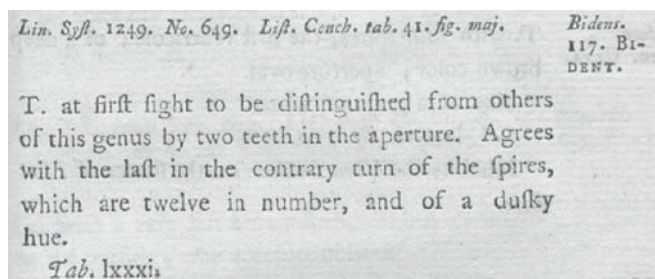
These illustrations D and E clearly represent *P. papillaris*. This reference does appear in Müller's original

description of *P. papillaris* and it is curious that Pulteney specifically refers to these figures of Gualtieri, whereas Linnaeus referred to figure C. The Columna (Cap. 7) reference by Gualtieri is likely to be of *P. papillaris*; although Columna's illustration is indeterminate, his text does refer to 'punctorum distinctionem'.

VI.

Pen. t. 81. 117.

Pennant, T. 1777. *British Zoology*; vol. 4; *Crustacea, Mollusca, Testacea*. London. p. 131; plate 81, fig. 117.



Pennant neither describes nor illustrates any crenations or papillae, and this shell is certainly not *P. papillaris*; it is considered by Kennard and Woodward (1926) to be *C. laminata*.

One final work must be mentioned, and was discussed by Dance (2008). In 1807 Maton and Rackett included a shell which from their references, brief description and illustration is clearly *P. papillaris*, and claim that it was in the possession of Pulteney. They state 'Noticed as English by Dr. Pulteney.' and later 'He [Pulteney] notes it as a Dorsetshire shell : but there is reason to believe he was deceived, and the species is not of British growth, since, notwithstanding a most diligent search, we have been unable to procure it.'

If, as Pulteney states, the shell was 'Common in woods', Maton and Rackett would surely have found specimens. It is of interest that in a revised edition of Pulteney's *Catalogues...* published in 1813, 11 years after Pulteney's death, and with additional notes by Rackett, there is no mention of *T. bidens* or of any other shell which could be considered to be *P. papillaris*. Presumably Rackett had accepted that Pulteney did not find this shell in Dorset. Very oddly, Maton and Rackett's reference to Pulteney's illustration (t. 21. f. 16.?) is to a shell Pulteney calls '*Turbo labiatus*' and is unidentifiable – certainly not anything like *P. papillaris*. Yet all the references, with the exception of Pulteney and Olivier, do refer to *P. papillaris*. It gets more and more confusing!

46.
bidens. T. testa pellucida; anfractibus contrariis; sutura sub-
 4. 5. f. 3. crenata; apertura posteriorius bidentata. *Linu. Syst.*
Nat. p. 1240. n. 649. *Linu. Gmel. p.* 3609.
Bonann. Recr. 3. t. 41.
Gualt. Test. t. 4. f. D. E.
Ginann. Op. Post. t. 3. f. 23.
Muller Verm. 2. p. 120. n. 317. H. papillaris.
Chem. Conch. 9. t. 112. f. 963, 964. ?
Schröt. Eñul. in Conch. 1. t. 3. f. 22.
Pulteney in Hutch. Dorset. p. 46. t. 21. f. 16. ?
Olivier's Travels in the Ottoman Empire, t. 17. f. 3. ?
Habitat in muscosis, vel cavis arborum truncis.
Testa dimidium circiter pollicem longa, glaberrima, fusca. *Anfractibus*
 10—11 in commissuris, papillis vel denticulis albis munitis. (*Gmel.*)
 Noticed as English by Dr. Pulteney.
 We have more than once had occasion to remark

the necessity of adverting to Linnaeus's descriptions, as well as his references. The words "*sutura subcrenata*," point out a distinction in this species not to be found in any other. Yet this character has been overlooked, and several of the following species have been supposed to be *T. bidens* by every British author except Dr. Pulteney, who describes his shell as having "the sutures prettily crenated." We have given a figure from a specimen in the doctor's museum, now in the possession of this Society. He notes it as a Dorsetshire shell; but there is reason to believe he was deceived, and that this species is not of British growth, since, notwithstanding a most diligent search, we have been unable to procure it.



Conclusions

Pulteney gives six references in his description of *T. bidens*. Careful review of these references suggests that only one of them (Gualtieri) definitely refers to the shell now known as *P. papillaris*, the remainder referring to either *C. laminata* or *C. incisa*. He may well have had a specimen of *P. papillaris* in his collection, as attested by Maton and Rackett, but it seems probable that this was not acquired in Britain.

It seems far more likely that Pulteney was describing *C. laminata* as his Dorsetshire shell, a shell which is 'Common in woods, upon trees and on moss: also, in the chinks of old walls.' The argument against calling the shells at Cliveden House or on Brownsea Island the 'Pulteney door shell' is strong, and if a vernacular name is required, another should be sought.

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Molluscs on the money – 50p celebrating fifty years of WWF

Peter Topley

Last year, to mark the 50th anniversary of WWF, the Royal Mint released a special UK 50p coin, but the first time I noticed this coin in my change was during the Christmas break. I was immediately struck by the interesting design, which features fifty carefully selected icons, each symbolising an aspect of WWF's wide ranging environmental and conservation work including also representations of man's impact on the world, such as human footprint, a wind turbine, a house and a car. The coin was created by graphic designer Matthew Dent who commented: 'My idea was to design a selection of stylised icons to represent the various facets of WWF – shapes that would not only complement the famous panda logo, but would also be recognisable when fitted onto the coin's face.... The challenge was simplifying the shapes whilst keeping them distinctive, and of course, squeezing them all in.' I was interested to see that one of the icons featured a gastropod (and possibly a second one, right in figure?) to symbolise WWF involvement in invertebrate projects. Does

anyone know whether this is the first time a mollusc has been featured on a British coin?



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- http://www.wwf.org.uk/wwf_articles.cfm?unewsid=4689
- <http://www.royalmint.com/store/BritishBase/UKWWFBU.aspx>

Why I hate slugs

Graham Saunders

We live in a house which is more than 300 years old and consists of Dorset cobb. The walls are very thick and made of straw and cow dung plus flint etc and surfaced inside and out with multiple layers of paint. Inside the actual walls are living grey slugs, which could have been there for centuries. From time to time one attempts to explore the electrical system. Part of the slug vaporizes and the trip switches throw. We switch on again and reset electric clocks and computers etc. A few days later the remains liquefy and the circuits are again disabled. We call in an electrician, at great expense, and the fault is isolated and slug proofed. Opening up all the switch boxes and shoving in slug pellets does not appear to be a long-term option as the colony is probably spread throughout the walls as high as the damp rises and there is possibly enough organic matter in those walls to keep them going for another century!

Rabbit and snail paella

June Chatfield

Graham Long's note on the Sandhill Snail *Theba pisana* sold in a fish market in Italy (*Mollusc World* 26: 19, July 2011) has prompted another record of the same snail eaten in Spain. When visiting my cousin Joan, who now lives in Murcia in southeast Spain, we usually drop into a traditional taverna in the mountains off the tourist routes that is full of local character. On one occasion, making the best use of resources of the area, rabbit and snail paella was on the menu. Rabbits are numerous in the citrus groves of Murcia and so is *T. pisana*, even inland. At the side of the taverna I was intrigued to see piles of shells showing that the snail ingredient of the dish was *T. pisana*. I am afraid that I did not try it, and Joan is a vegetarian anyway.

Oysters as cat food

Kevin Brown

Oysters are today considered a luxury food, but this has not always been the case. In the late eighteenth and early nineteenth centuries they were more often associated with poverty. Improvements in transportation, particularly following the introduction of the railways, meant that huge quantities could be quickly transported to the burgeoning markets of the cities.



“*Ostreum Vulgare*” (*Ostrea edulis*) from E.M. da Costa *British Conchology* 1778. (photo: Peter Topley)

In 1836 Dickens wrote, in *The Pickwick Papers*:–
‘It is a very remarkable circumstance, sir,’ said Sam, ‘that poverty and oysters always seem to go together.’
‘I don’t understand you, Sam,’ said Mr Pickwick.
‘What I mean, sir,’ said Sam, ‘is, that the poorer a place is, the greater the call there seems to be for oysters. Look here, sir; here’s an oyster stall to every half dozen houses – the

streets lined with ‘em. Blessed if I don’t think that ven a man’s very poor, he rushes out of his lodgings, and eats oysters in reg’lar desperation.’

Part of the attraction for the poor was, no doubt, that oysters did not need cooking, for with people migrating to the cities following the industrial revolution many were living in crowded conditions, large families sharing single rooms often without cooking facilities. For them oysters would have been an ideal ‘ready meal’. The extent of the trade may be gathered from Henry Mayhew’s *London Labour and the London Poor* which in the 1850s refers to nearly five hundred million oysters passing through Billingsgate in a single year.

Oysters to feed the masses are one thing, it is more surprising though to read of oysters used as cat food. Recently I came across the following passage written by James Boswell about the great lexicographer Dr. Samuel Johnson:–

“I never shall forget the indulgence with which he (Dr. Johnson) treated Hodge, his cat; for whom he himself used to go out and buy oysters, lest the servants having that trouble should take a dislike to the poor creature”. (Quoted in “A treasury of Cat Tales and Trifles” – National Trust, 2002).

Hodge may have been an exception, given oysters just as today’s pampered pets may be given the best cuts of fresh meat rather than fed from tins, but whether an exception or a rare observation of more general practice, it is strange today to think of a cat being fed oysters.

Slug caught in a mouse trap

Dear Mr Topley,

I wonder if this photo is of interest for the magazine? I bait my mousetraps with 1/2 peanut and was mystified as to how the bait vanished without the trap firing, until this evening I found the enterprising culprit.... Not so much up and under as under and up! The garage where the trap was set is on the very edge of the University of Keele, in Staffordshire.

With best wishes,

Andrew Fear

[The slug appears to be *Lehmanna valentiana*. Ed.]



Extracts from some letters of Arthur Erskine Ellis

A small archive of correspondence and other papers of A. E. Ellis (1902–1983), conchologist, author and respected teacher, were generously donated to the Conchological Society by Stella Turk in 2009 (see J. Ridout Sharp, 2010) and are now in the Society's archive in Leeds. Some of the earlier letters (c.1922–1950) are in the nature of copies assembled by Ellis himself, which he thought might be of future interest and what follows are some extracts of these, which to my knowledge have not been previously published. I have left the letters unaltered but have included occasional notes of explanation (square brackets) where necessary. For biographical details of some of the conchologists mentioned see www.conchsoc.org/eminent/conchologists.php.

Peter Topley

Oxford, 4th June 1922. This afternoon I cycled to Stonesfield, near Woodstock [Oxfordshire], where the Roman Snail (*Helix pomatia*) occurs; it was the first time I had seen it in its native haunts. They would indeed be tough customers if they lived in gardens. There are a number of disused slate quarries round Stonesfield and large numbers of *H. pomatia* and other kinds of snail occur on the heaps of refuse, now overgrown with bushes. (A.E.E note, 1978: The quarries seem to have been built on.)

Epsom, 24th June 1932. On Sunday I drove down to Lewes [Sussex], through the beautiful Worth Forest and the unbeautiful Hayward's Heath, and picked up Tomlin [J.R. le B. Tomlin (1864–1954)], who came by train from St Leonards. We then went to Newhaven and along the coast to Shoreham beach, to look for the starry clover [*Trifolium stellatum*], which Tomlin wanted to see. We succeeded after much search in finding one miserable specimen, so the plant is verging on extinction (a few years before it was plentiful). We then went on to Arundel and North Stoke, where we grubbed in ditches, collecting among other molluscs the rare *Planorbis vorticulus*. Besides Mollusca, Tomlin also collects beetles....

Epsom 31st May 1938. Last Tuesday I went to the 150th anniversary meeting of the Linnean Society [of London], which was held at the Royal Institution. I ran into Ramsbottom [John Ramsbottom (1885–1974) mycologist], the President, just before the meeting, as he was trying to get into a cupboard containing fire-hoses, &c, and I was able to direct him to the door he really wanted, as I had just emerged from it myself. It just shows that even great men get a little flurried on state occasions! The meeting was well attended with many foreign delegates present. Ramsbottom's address, though interesting, was delivered in a low monotone, and the general atmosphere became increasingly soporific. Three o'clock in the afternoon is a

time when human metabolism is at its lowest ebb. I just managed not to drop off to sleep, but my friend Winckworth [Ronald Winckworth, 1884–1950] gave up the unequal struggle and folding his arms, in the manner of Longfellow's Windmill, on his breast, took his rest, and all was peace within. Not for long, however, for just as Ramsbottom happened to mention elephants in the course of his discourse, stertorous trumpeting echoed through the lecture theatre, and the rest of his masterly address was punctuated by derisive snorts from the happily snoring but blissfully unconscious Winckworth. When congratulated on his performance afterwards, the musician stoutly denied that he had slept at all, and professed to have heard every word of the lecture. Testimony of witnesses proved overwhelmingly against him however, and he was reluctantly convinced when I appealed to a French visitor, who replied, "Mai oui, he snore verra mouch!".

Epsom 31st May 1938. We went to the Royal Show in Windsor Great Park on Friday. Some of the more interesting exhibits were a reconstruction of a farm house and buildings of a century ago....and a tent showing recent research into soils, their composition and microfauna (bacteria, moulds etc). This particular tent was the least crowded of all, as scientific research does not appeal to the average farmer, but I found it very interesting. I was in there contemplating some particularly fruity cheeses when the King and Queen walked in. They came up to within a couple of yards of me and I thought that the Queen was going to ask me if I was responsible for the cheeses, but one look at them (or at me) was enough and she sheered off...Crowds of people had been queuing for hours to see them, while I was trying to hide behind somebody's back to avoid them!

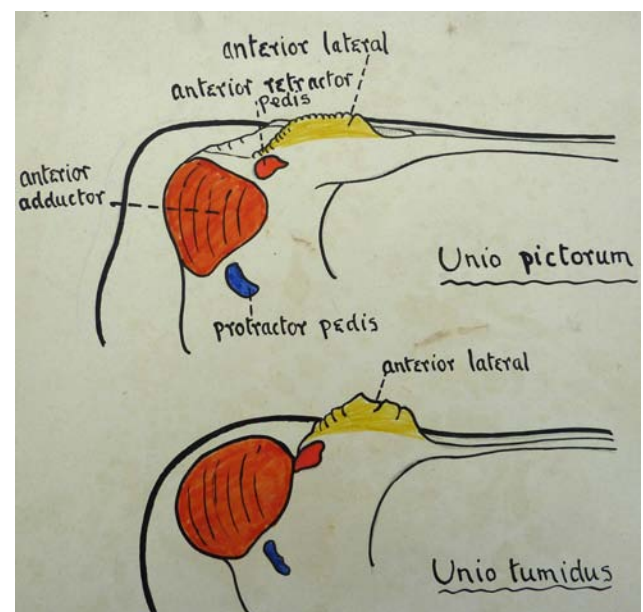


figure 1: Drawing by A.E. Ellis of the anterior muscle scars and lateral teeth of two *Unio* species.

Epsom 31st May 1938. Yesterday I went to...Cut Mill ponds near Godalming [Surrey] and collected the largest specimens of swan mussels (*Anodonta cygnea*) I have ever found, also the painter's mussel (*Unio pictorum*) (figure 1). On Tuesday I took a pupil, Parks [later the surgeon Sir Alan Parks 1920–1982], to the canal near Bisley and to a lake near Farnborough, and had quite a good sport with the molluscs. Parks is very keen on freshwater life and is one of several who are making collections for the Smith Pearse natural history prize. It is going to be difficult to judge this year...

Epsom 30th May 1940. I have just been out for a cycle ride and did some *Pisidium* hunting in the river Mole. What with this and that one doesn't get much time nowadays for field work, but I intend to get out once a week to keep sane. The nightingales in a wood I passed seemed never to have heard of the war, lucky birds.

Epsom 25th October 1940. I have spent a strenuous afternoon, with Harris (lab. steward) moving the more valuable specimens from the museum [at Epsom College where Ellis was Head of the Biology Department from 1931 to 1963] and storing them in a place of greater security, namely in a cupboard in the basement under the staircase. As the stairs are concrete, this should give some protection. At any rate it is better than having the things on the top floor with nothing but a glass roof above them...as the bombs fall close by nearly every night I felt it would be wise to take some precautions. Our models and many of the specimens are valuable if not irreplaceable. "Oswald" the skeleton stands guard just inside the cupboard, so any nosey Parker who opens the door will get a shock.

Epsom 12th December 1940. Last Sunday was a perfect day. Winckworth came over from South Norwood and we drove to the woods between Dorking and Guildford, and walked thence to Ewhurst in the Weald. When we returned, I had just seen Winckworth off at Epsom Downs station at 5.30 when the sirens went, so I hurried down to the College as I was in charge at the [fire] control centre. I hadn't expected them so early. It turned out to be a prelude to one of our liveliest evenings. For nine hours a non-stop procession of bombers went over, and London had a bad time. The sky to the north was lit up by fires, and Carshalton gasometer was hit, with spectacular results...

Epsom 22nd June 1941. Between midnight and 1 am on Sunday night I went out on the lawns in front of the College to collect worms, for Medical Sixth to dissect. One catches them on the surface, using a torch with the regulation double sheet of paper behind the glass. By 1 am I had secured about 80, and as there was distant gunfire and a plane was approaching I decided to knock off. The following morning the Bursar got hold of me and said "Hi you, I've got a bone to pick with you about those ----- worms!" What had happened was that the Home Guard [(H.G.)] on watch on the tower had been rung up by the ARP [Air Raid

Precaution] wardens at two of the posts on the edge of the College grounds, who reported an intermittent light in front of the College. By the time one of the H.G. went to investigate I had just knocked off. The Bursar told the H.G. that it was only the biology master collecting worms. This didn't make any sense to the H.G., but the Bursar explained that there is a peculiar kind of worm which can only be collected just after midnight, and this had to satisfy him. While this was going on, the police rang up from a box at the far end of the College fields to report a mysterious light which they had been unable to trace. The Bursar repeated the same story, and a gruff voice from the other end of the wire replied, "Worms! Worms! I'll give him worms!" I told the Medical Sixth they ought to be highly appreciative of the worms acquired at such peril.

Epsom 19th October 1941. On Friday I went to a meeting of the Malacological Society [of London] at the Natural History Museum, which was followed by a short meeting of the Conchological Society to arrange for the election of the next year's officers. I am retiring from the presidency, as my two years of office are now up, so we had to nominate a successor.

Epsom College, 1st November 1942. I had a good afternoon's snailing at Box Hill [near Dorking, Surrey] on Wednesday, where *Azeca goodalli* and the white variety occur in quantity, besides many other woodland snails. This wet weather is good for bringing out Mollusca, so long as it stops conveniently to allow the conchologist to get at them. Winckworth tells me that "British Snails" [Ellis' book published 1926, reprinted 1969] is now out of print, as a friend whom he recommended to buy a copy was unable to procure one. I think the O.U.P. [Oxford University Press] ought to have given me the opportunity of buying up the last few copies. I don't actually possess a copy in the binding in which it was published, but only the advance copy in an inferior binding, and an interleaved copy. I am going to inquire if there are any unbound copies; it may be out of binding and not out of print. I think the edition was only 500, so possibly they have sold the lot.

Epsom College, 28th February 1943. Yesterday...I went up to London for the jubilee (50th anniversary) meeting of the Malacological Society. There was a good attendance and various people gave reminiscences of the early history of the Society and spoke of the progress of malacology in the last 50 years. The only original member present was Kennard [Alfred S. Kennard, 1870–1948], who must have been about 25 when the Society was founded. Afterwards I went to dinner with Winckworth at his home in South Norwood and we spent the evening looking at shells and books, of which he has a fine collection...His study is the tidiest room I ever have seen. Everything is orderly and put away in drawers or shelves, nothing out of place, and he has a methodical system of cataloguing so that he can find any specimen, paper or book in a few minutes or turn up any reference. His shells are mostly Indian, collected by his brother [Harold C.

Winkworth, 1878–1947] and himself. The marine shells [were] sold to Liverpool Museum, and have been destroyed by bombing, an irreparable loss. The non-marine shells were given to me and together with my own collection are in the College museum...or to be accurate are in my room at present, so I can solace myself in odd moments by looking at them, though I don't get much time for pottering with snails these days. (*A.E.E. later note*: The combined collection was presented to the British Museum (Nat.Hist.) in 1963.)

Epsom College, 21st March 1943. ...I went with Dr Idris Jones [? possibly Walter Idris Jones (1900–1977), scientist and sportsman] to lunch in the restaurant of St Mary's Hospital medical school [Imperial College, London], of which he is biology lecturer. He told me of a method of preparing microscopic slides of *Mucor* [moulds] which I believe is a new technique. It was invented by Prof. Fleming [Alexander Fleming (1881–1955), biologist and pharmacologist] at St. Mary's, who sat opposite us at lunch. I saw in the Times next day that he was elected F.R.S. that afternoon. Fleming discovered quite accidentally that the blue mould, *Penicillium*, secretes a substance which is poisonous to Bacteria...He was able to make an extract from the mould...and now the bacteriologists at Oxford have taken it up and are trying to prepare a drug from *Penicillium* which they hope will be of clinical use in curing diseases caused by bacteria. If it works the new preparation promises to be more effective than any known bactericide...

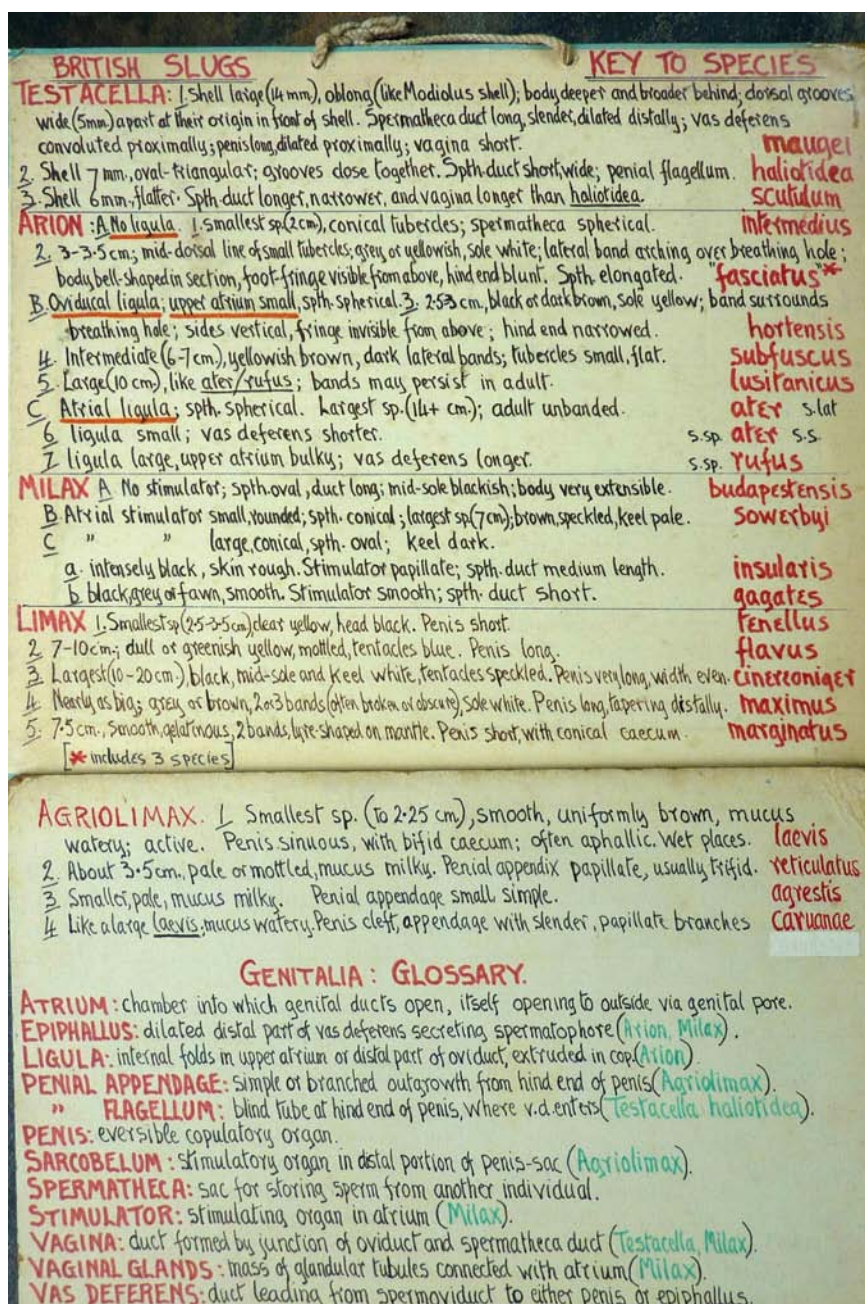
Epsom, 3rd November 1945. On Tuesday I went to a council meeting of the Conchological Society at the Natural History Museum. Several of the old stagers turned up, including Tomlin, now over 80, but looking little older than when I first knew him over 20 years ago. Mrs Moorhouse took the trouble to come all the way from Yorkshire to attend, and succeeded in dropping a brick. Gardiner's name was put forward for the office of Marine Recorder, and she said, "But I heard that Mr. Gardiner is dead." When she realised that Mr. Gardiner was not only still alive but sitting opposite her, the poor lady was scarlet with confusion. We had to appoint a new secretary, as Jackson [John Wilfrid Jackson, 1880–1978] is retiring, and decided upon Mrs. Nora MacMillan [1908–2003], the first time we have had a lady secretary. I think she will be very efficient.

figure 2 (right): Key to British slugs written on boards by A.E. Ellis for teaching purposes.

Epsom College, 20th March 1948. The Winckworths got home last Friday...I went to supper there on Wednesday. They are both looking well and sunburnt after the voyage, and are glad to be home again. Winckworth enjoyed collecting in the Seychelles, but Mrs W. was rather bored with nothing to do, and of course his brother's death cast a gloom over most of their holiday. They brought back some conch shells...large shells with a hole bored in them, which the natives use to announce the return of fishing boats. The sound carries a long way across the bay. Mrs W, has mastered the art of blowing them, and gave vent to dolorous blasts at intervals throughout the evening, but neither W. nor I could produce a sound.

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- Crowley T.E.C. (1983) Obituary: Arthur Erskine Ellis, 1902–1983. *Journal of Conchology* **31** (193–199)
 Ridout Sharp, J. (2010) Down memory lane..., *Mollusc World* **23**, (24–25)



History from a shell artefact:

John Llewellyn-Jones

the story of the ‘Charles W. Morgan’ on a tiger cowry

For the last few years we have stayed with Judith Nelson over the weekend of the Conch. Soc. Workshop in November. During the evening we look at some of the shell and shell artifacts that Judith had collected over the past year. Shell ladies from the 50s, shell porcelain, jewellery made up of shells, cameo lamps, cowry cameos, shell pictures, shell miniatures and many other fascinating objects. This year one of the pieces was a cowry cameo with a sailing ship and two interesting captions – ‘Charles W. Morgan’ and ‘Mystic Seaport’ carved onto it (figure 1). I asked Judith if I could research the cameo. In the end I swapped it with her so that I could research it at home. So started a fascinating trail, leading me to the Mystic Seaport in Connecticut and a real whaling vessel, the Charles W. Morgan.



figure 1: Cameo cowry showing the Charles W. Morgan.

Mystic Seaport turned out to be the ‘Museum of America and the sea’ in Mystic, Connecticut. It is a theme park, a living history museum, consisting of a village, ships and 17 acres of exhibits depicting coastal life in New England in the nineteenth century. The Charles W. Morgan turned out to be the last surviving wooden whaling ship from the great days of sail. Built in 1841 in New Bedford, Massachusetts, one of the four main east coast seaports and whaling centres. She was a purpose-built wooden whaling ship, fast, rugged and versatile and named after her owner. She was launched on 21 July 1841 and sailed from New Bedford for 45 years between 1841 and 1886.

The Charles W. Morgan was considered a lucky ship because in her 37 voyages (figure 3) and a career that spanned 80 years she survived ocean storms, arctic ice and a cannibal attack. Accidents did occur when seamen were working aloft in the rigging and processing the whales in rough seas. During the whale chases whaleboats were sometimes tipped over or smashed by the whales and men were injured or killed as a result. May I remind readers about the wonderful whale chase in *Moby Dick* written in 1851 by Herman Melville. One other mishap that occurred was when Captain Thomas C. Lander’s 16-year-old son fell overboard and drowned, followed by his wife, Lydia, giving

birth to their son on board. In another incident the Charles W. Morgan rescued a group of Russian prisoners who had escaped from a forced labour camp.



figure 2: A whale hunt scrimshawed onto a whale’s tooth.

The Charles W. Morgan’s maiden voyage, with 35 crew on board, began on 6th September 1841 with a journey around Cape Horn and across the Pacific Ocean. She returned after 3 years and 4 months with 1600 barrels of sperm oil, 800 barrels of whale oil and 10,000 lbs of baleen. In fact her maximum capacity was 3000 barrels which equals 90,000 gallons of oil. During her 37 voyages the Charles W. Morgan brought home 54,483 barrels of sperm and whale oil and 152,934 pounds of baleen. The Charles W. Morgan primarily hunted three species of whale; the Sperm, Right and Bowhead. These species were easy to catch, yielded the most desirable products and reliably remained afloat when they were killed. Her longest voyage was 4 years and 11 months, her shortest was only eight and a half months. She visited 59 different ports from the south Pacific to the West Indies, from the tip of Chile to the Russian port of Vladivostok and in the course of her travels, crewmen from nearly every continent worked her decks, many becoming US citizens.

Before petroleum oil was discovered in 1859 whale oil was the primary source of lubrication for steam driven machinery, illumination for lamps, street lights and lighthouses. Baleen was used for buggy whips, collar stays, hairbrushes, women’s corsets, umbrella ribs etc. Spermaceti was used for making candles and ambergris used as a fixative in the perfume industry.

As the whaling industry waned the Charles W. Morgan relocated to San Francisco from 1887 until 1906, off loading her whale oil and shipping it back east by rail. In 1906 she returned to New Bedford until 1921 when she retired from whaling. She was taken to Whaling Enshrined Inc. where she was used in two films, ‘Java Head’ and ‘Down to the Sea in Ships’ (both 1921) and was then exhibited at Col. Edward H.R. Green’s South Dartmouth, Massachusetts, estate. In November 1941 she was moved to Mystic Seaport where the cowry cameo was sold as a souvenir of her to visitors. In 2010 a multi-million dollar restoration programme began to restore her to seaworthiness; the only surviving wooden whaleship from the nineteenth century is still in existence.

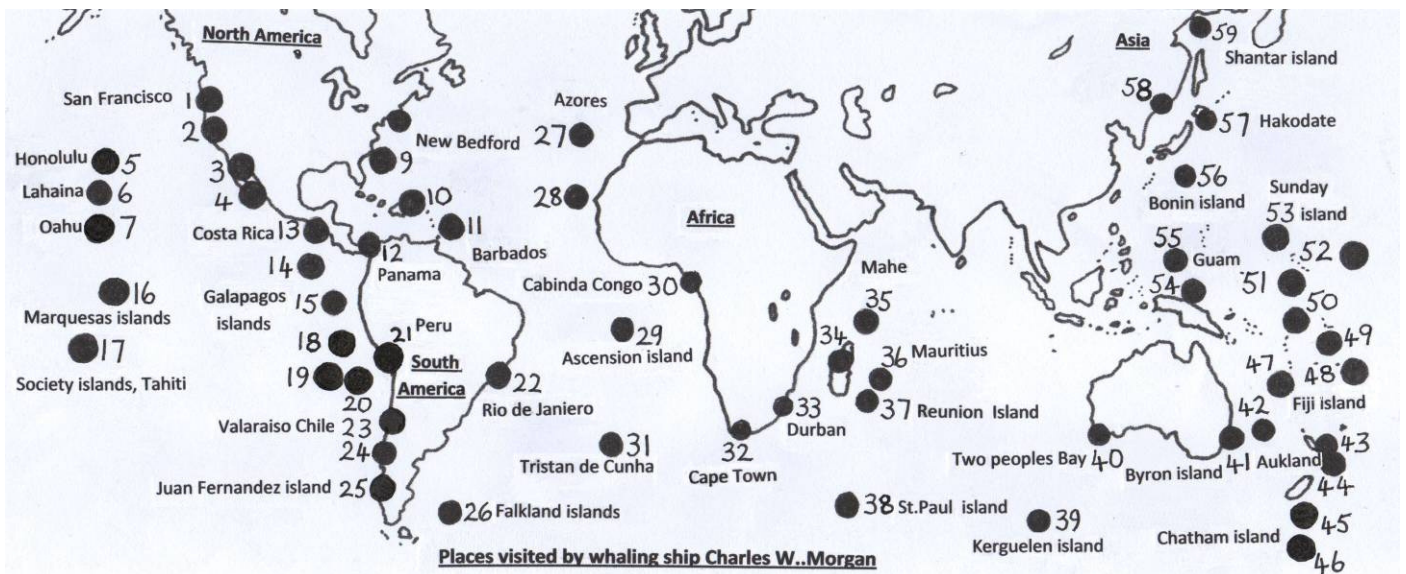


figure 3: Map showing the ports Charles W. Morgan visited.

Mytilus edulis from deep water

David McKay

Everyone who does any amount of mollusc collecting from time to time finds specimens of species in unexpected places be it valves of *Crassostrea gigas* in the Middle of the Irish Sea to *Crepidula fornicata* on Aberdeen beach. Examples of live specimens in unusual places are rather less common but one occasionally finds *Tellina tenuis* in *Laminaria* holdfasts or *Calliostoma zizyphinum* under stones just below high water mark. In November 2011 I was shell collecting on *Nephrops* trawler on the Fladen Ground (58°06-22'N 00°05'W-00°36'E) and got a number of live *Mytilus edulis*. Because the fishing boat was towing each haul for 5 hrs covering between 12 and 15 nautical miles each tow, it is impossible to tell exactly where the *Mytilus* were caught. The water depth in the area was 140 to 150 metres deep and the bottom consisted of mud.

The first specimen I collected was recently dead with valves still articulated. Over the period of the trip I caught *Mytilus* in five of the 27 hauls we made. On a couple of occasions I only caught single specimens but on others the *Mytilus* were in clumps with *Modiolus modiolus*. Although *Modiolus* can be found at considerable depths in my experience it is very seldom found on bottoms of soft mud, and I never seen *Mytilus* and *Modiolus* in mixed clumps before.

The *Mytilus* ranged in length from 23 to 106 mm and cannot possibly be the result of a single settlement. When I got the first dead specimen I thought it had been discarded from a ship that had had mussels on the menu, but the presence of live specimens in clumps with *Modiolus* rules this explanation out. Although not in the immediate vicinity of where we were fishing there is a number of oil and gas production platforms to the north and west of where we were fishing. It is my belief that the mussels I found originally settled and grew on the underwater parts of these platforms and became dislodged either by the wave action or the activities of maintenance teams. Having dropped to the seabed they have been spread over a wide are by the actions

of the fishing fleet. Vessels may fish to within half a mile of a platform and, as indicated above, tow for considerable distances away from the platform. Material such as clumps of mussels would simply be dumped over the side in normal fishing operations and were only noticed because I was there collecting shells.

While cleaning the animals that were alive I noted that most of the shells were clean and sharp and similar to those one would see produced from suspended cultivation except for the 106mm specimen, which was very thick shelled and similar to the old gnarled specimens often found in Shetland voes or west of Scotland Sea lochs. The meats within the shells were in very poor condition. Whether this is because the *Mytilus* were not thriving in the unusual conditions they found themselves in or because they were recovering from spawning is impossible to tell. It is, however, interesting to note that *Mytilus* spat must find their way a considerable distance (100 miles) off shore where they would normally have no prospect of finding a suitable settlement site.



Mytilus edulis from 144m deep, Fladen Ground. The largest is 106 mm and the smallest 23 mm in length.

The Celtic Sea Slug

June Chatfield

I first saw living specimens of the Celtic Sea Slug, *Onchidella celtica*, in Petri dishes in a research laboratory at the University of Reading in 1965. The animals had been sent from the Marine Laboratory at Plymouth. The first time that I met them in their natural habitat was some 45 years later at Newquay in Cornwall in May 2010.

Onchidella celtica, as its English name implies, has the main part of its British distribution in Devon, Cornwall and the Channel Islands. On the Continent it follows the Atlantic coast south from Brittany in France. It is a curious gastropod mollusc without a shell and, being on the shore, has been called a sea slug but in classification it is a pulmonate related to land snails and is not an opisthobranch (the group to which true sea slugs belong). The animal is dark grey, about 1 cm long with a pimply back (figures 1 and 2). When it moves along a single pair of short tentacles can be seen with a single black eye-spot in the swelling at the tip. Like land snails they breath air and are active on the top of the shore when the tides recedes, going on feeding expeditions browsing on the algae following the tide down the shore and then coming back up to their high tide resting place, often in rock crevices.

In Newquay they were found in considerable numbers (over 50) on a steep, wet, shaded cliff face in the upper zone of wet rock above a flat sandy surf shore between Tolcarne Beach and Great Western Beach (figure 3) and they also occurred on a wet cliff face in the entrance of a cave in the latter locality (SW/81-61-). Their precise requirements appear to be a rocky cliff face, possibly some crevices, shade, moisture and suitable algal food to browse on. They inhabit the upper shore.



figure 2: A cluster of Celtic Sea Slugs.



figure 1: *Onchidella celtica* crawling showing the warty back and tentacles.

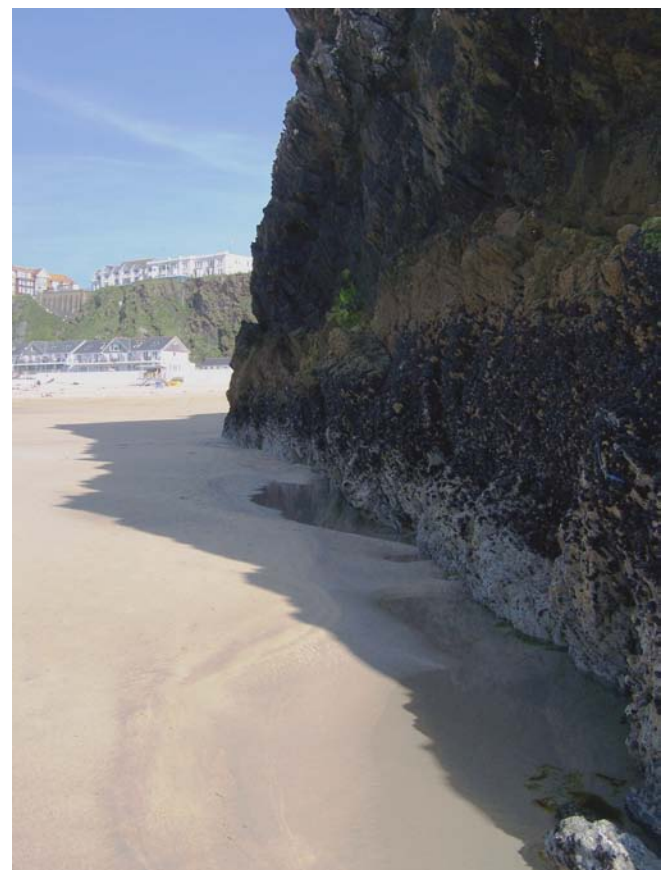
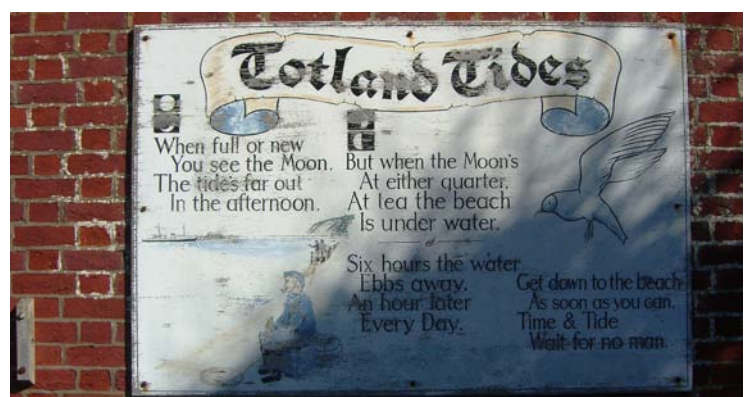


figure 3: The habitat of *O.celtica* at Newquay, Cornwall.

Some advice for marine conchologists...

Sign spotted in Totland Bay, Isle of Wight.

(photo: John Glasgow)



Membership update

The members listed on this page have joined the Conchological Society since the publication of the last Members' Guide (in February 2011), or for various reasons were not included in the guide. The codes in italics after the member's address indicate the member's interests:

A – Applied Conchology (shell artefacts, shell money cooking, decorations etc)

B – Conchological books

C – Conservation

D – Diving

E – Ecology and Pollution

F – Fossils

G – General Malachology including genetics and physiology

Mb – British Marine

Mf – Foreign Marine

Nb – British Non-marine

Nf – Foreign Non-marine

P – Photography

W – Conchological poetry and prose

Z – Captive breeding of molluscs

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B, Nb

We could not include a further 8 members in this contact list as prior to this issue going to print they have not given their formal consent under the data protection regulations to their names being included. If you are one of the 8, or have never been included in the Members' Guide, and would like to be included in the next issue of Mollusc World, please contact the Membership Secretary (contact details on web site).

Conchological Society – diary of meetings

Programme Secretary: Ron Boyce, 447c Wokingham Road, Earley, Reading, Berkshire RG6 7EL

IMPORTANT: Please remember to inform the leader if you are attending a field meeting. If you are held up in traffic or your public transport is delayed, it may be possible to ring the Programme Secretary on 0794 109 4395 on the day of the meeting for information on the location of the field site being surveyed.

Indoor meetings at the Natural History Museum will take place in the Angela Marmont Centre for UK Biodiversity, Darwin Building, for which you turn left at the tail of the Diplodocus, go past the dinosaur exhibition then down the stairs and turn left. Please note the earlier start times, and also the long indoor meetings in October and January with an early start time of 11:00 h. Please bring plenty of exhibits and demonstration material.

The Programme Secretary will be happy to receive any offers to lead field meetings or suggestions for speakers for indoor meetings.

Key to meetings

NHM = Natural History Museum, London, indoor meeting

FIELD = Field Meeting at outdoor location

WKSHP = Workshop on Molluscan topic

YCS = Yorkshire Conch. Soc. Event

NHM – Saturday 24 March

14:00 h in the Angela Marmont Centre for UK Biodiversity, Darwin Building, preceded by Council meeting.

Annual General Meeting

Presidential Address by Sebastian Payne

Changing distributions, climate change, & Conch. Soc. records

Conchological Society – diary of meetings (continued)

FIELD – Thursday-Tuesday 5-10 April

Porcupine marine meeting in Guernsey
Conch Soc are cordially invited to this meeting.
For details see <http://pnmhs.co.uk/news-2>

YCS – Saturday 14 April

Howell Wood Country Park
Meet at 10:30 h in car park north west corner of wood, grid ref. SE 433090, approach from north.
Contact: David Lindley
(0113 2697047) (home), david.lindley3@btinternet.com

FIELD – Saturday 21 April

Downton Gorge, Herefordshire
Leader: Simon Cooter
(01743 792294 (work)

Downton Gorge is formed by the river Teme cutting through a ridge of limestones, siltstones and sandstones of Silurian age. The southern part of the reserve contains a deep ravine with steep cliffs, while the river in the northern part is joined by a series of small side valleys. There are small flat areas of alluvium adjacent to the river where the gorge is broadest. A number of types of woodland are present containing sessile oak, ash, wych elm and both large-leaved and small-leaved lime. The molluscs here have been little studied.

Meet at Forge Bridge, grid ref. SO 454750, at 10:30 h. On the A49 between Ludlow and Craven Arms turn westwards at Bromfield onto the A4113 (signposted 'Leintwardine'). Continue out of Bromfield along the A4113, then take the first left (signposted 'Downton' and about a mile out of Bromfield). At the first small cross-roads, immediately before the 'Downton' village sign, turn left down the single-track road (marked private road) and keep following the track until you reach the river. Forge Bridge can be easily recognised as it has battlements along its walls. Bring stout footwear, walking poles and a packed lunch.

FIELD – Saturday 5 May

Titchfield Haven, Hampshire. Marine and non-marine meeting.
Leader: June Chatfield
(01420 82214) (home)

Titchfield Haven near Fareham has an interesting mix of molluscan habitats both marine, freshwater and land. It has a muddy sand/bound shingle beach that is usually rich in dead shells, including the Quahog (*Mercenaria mercenaria*) that came into Southampton Water in the 1950s and these continue to thrive [see *Mollusc World* for November 2011, pp 25-27]. The very low almost Spring tide will allow us to explore the shore for live records and also seaweed (including reds) for washing. Low tide is not until late afternoon and here there is the 'double Solent' tide caused by the Isle of Wight which retards the going out. Therefore we will use the time before lunch to explore the Titchfield Canal (freshwater) and surrounding wetland before following the tide out in the afternoon. There is a Visitor Centre on site with bookshop, refreshments and general facilities, entry is free but it does not have a car park. Parking is along the sea wall and it is less congested towards the west end of the beach. From the A27 follow the brown heritage signs to the Titchfield Haven Visitor Centre via the B3334 and then at Stubbington, right through Hillhead and the coast road to the Haven. Meet at 11:00 h at grid ref. SU 534024. We will lunch somewhere on the sea wall and anyone arriving just for the marine part of the day will find us easily on the shore. Wear suitable warm and waterproof

clothing, footwear with a good grip and bring pond nets, trays etc. for freshwater work in the morning. High tide (4.7 m) is at 11:15 BST and low tide (0.6 m) at 16:50 BST.

Public transport: the nearest railway station is Fareham. The bus (33, First), from Fareham bus station to Hillhead, Solent road, leaves at 20 min past each hour and the circular route returns from Hillhead at 50 min past the hour, last one 17:50 h. There is a Premier Inn with close access to the train station at Fareham. Further information is obtainable from the leader.

YCS – Saturday 12 May

Bransdale, north of Helmsley
Meet at 10:30 h in car park at Carlton Grange Plantation, grid ref. SE 614886.
Contact: David Lindley
(0113 2697047) (home), david.lindley3@btinternet.com

FIELD – Saturday 19 May

Rivelin valley near Sheffield. Joint meeting with Sorby Natural History Society
Leader: Robert Cameron
(0114 268 6675) (home), radc@blueyonder.co.uk

Meet at 10:30 h at the Rails Lane car park at SK 291872. Rails Lane here joins the A6101 to the north, and the A57 to the south on the western edge of the city (O.S. Explorer 278). Bring lunch! The valley is steep in places, with a stream; bring robust footwear. Finish c. 17:00 h, but we will never be far from the car park.

The Rivelin Valley is one of a number of steep-sided valleys cutting through the Coal Measures on their way to the Don Valley in central Sheffield. It is mostly wooded, with many old industrial workings that used the water power of the stream. In its lower section, there are also allotments and some open recreation areas. The woods are mixed, with some patches of Dog's Mercury and Wood Rush. Fragments may be ancient.

The valley was last searched for snails 10 years ago, almost to the day. 34 species (22 snails, 12 slugs) were found within 500 m of the meeting place car park. Although the soils are acid (*Zonitoides excavatus* is there), the damp and lack of agricultural activity has allowed a rich fauna to develop. There are more species recorded from other woods in Sheffield, and we hope to add to this list. In particular, anyone finding a Clausiliid will have a triumph: they should be returning now that pollution has declined. The records will contribute to the Sheffield BioBlitz, for which this is the last day of recording.

FIELD – Saturday 16 June

Taff Gorge beech woodlands, Cardiff. Joint meeting with Wildlife Trust of South and West Wales.
Leader: Ben Rowson
(08753 849114) (mobile), ben.rowson@museumwales.ac.uk

In the Taff Gorge at the northern edge of Cardiff are Beech woodlands at the western limit of this species' native range. They grow on Carboniferous limestone and sandstone in a former coal-mining area. Coed-y-Bedw Nature Reserve (Wildlife Trust of South & West Wales) includes ancient broadleaved woodland while the adjacent Lesser Garth Wood is a SSSI and part of the Cardiff Beech Woodlands Special Area of Conservation (SAC). Calcareous springs and streams run through the woods. The area has a rich terrestrial mollusc fauna, and old woodland species including *Leiostylax anglica*, *Malacolimax tenellus* and *Phenacolimax major* have been found in the woods or nearby. *Azeca goodalli*, reported from the area in 1897, is apparently the only record for VC41, so is

worth targeting. A mollusc species list for the area would be welcomed by the Wildlife Trust and others. Many hands should make light work of this!

Meet at 10.30 am. Very limited parking is available on the southern edge of Coed-y-Bedw, in a lay-by on the road between Taff's Well and Pentyrch (ST 1094 8251), and there are no toilets. We will therefore meet at the Ty Nant Inn/Pugh's Garden Centre (ST 1279 8196) where more parking is available. This will require a 1-2 km drive, or if cars are too full, walk to Coed-y-Bedw along a busy road – please take care. Please contact Ben if interested in attending.

FIELD – Saturday 30 June

Winchester College nature reserve and Itchen valley, Hampshire. Freshwater and land meeting
Leader: June Chatfield
(01420 82214) (home)

We propose to work Winchester College's Falldon nature reserve and other freshwater and wetland sites along the River Itchen in Winchester. *Vertigo moulinsiana* occurs on the Itchen so any records will be useful. It is hoped that members of Winchester College Natural History Society will be able to join us – J. R. le B. Tomlin made his conchological debut with a paper read to the Natural History Society when he was at the college.

Meet at St Catherine's Park and Ride car park, grid ref. SU 487282, at 10:30 h. The current parking fee is £3.00 all day (coin machine). There are toilet facilities on-site. If travelling from North by car on A34 or M3, exit at junction 9 and follow extreme left-hand lane for Winchester/Southampton A33 for one mile to next roundabout. Follow Winchester A33 to next junction, take left for Winchester B3330, follow round for 0.5 mile under motorway, extreme left hand lane through two sets of traffic lights signed to St Cross, into Garnier Road, 50 yards turn right into St Catherine's Park and Ride. From South on M3, take left slip road A31 at top of Twyford Down cutting, downhill left hand lane to traffic lights. Turn left for St Cross Garnier Road, in 50 yards turn right into St Catherine's Park and Ride.

Winchester is well served by trains out of London Waterloo and also by cross-country services from the north via Oxford and Reading. From Winchester railway station, walk 100 yards down slope to your left and catch the Green Park and Ride bus to St Catherine's Park and Ride, £2.70 return.

From the Park and Ride we will follow a footpath to the Itchen Navigation in Garnier Road, then up the footpath to Falldon; more details later via the website.

YCS – Saturday 8 September

Nunnington for River Rye. Freshwater meeting
Meet at 10:30 h in parking area north of river in Nunnington, grid ref. SE 669795
Contact: David Lindley
(0113 2697047) (home), david.lindley3@btinternet.com

FIELD – Sunday to Wednesday 16-19 September

Pembrokeshire. Marine meeting.
Leader: John Llewellyn-Jones
(01634 261147) (home)

The leader and others have booked a cottage at Tavernspite, SN 1812. Accommodation should be sought nearby.

YCS – Sunday 30 September

Reighton Sands. Marine meeting.
Joint Meeting with YNU Marine and Coastal section

Meet at 09:30 h in the car park at Reighton Gap, grid ref. TA 139762.

Low water 1.0 m at Bridlington is at 11:30 h.

Contact: David Lindley
(0113 2697047) (home), david.lindley3@btinternet.com

NHM – Saturday 6 October

11:00 h in the Angela Marmont Centre for UK Biodiversity, Darwin Building.
Please note the revised start time and changed venue. No Council meeting.

Please bring plenty of exhibits and demonstration material. There will be a lunch break at about 13:00 h. Lecture to start at 14:00 h.

Members are encouraged to bring specimens of any Mollusca for identification. Binocular microscopes will be available if needed.

Guest speaker at 14:00 h

Robert Cameron (University of Sheffield)
The Cepaea Megalab project

YCS – Saturday 6 October

Yorkshire Wolds
Meet at 10:30 h near pond in Fridaythorpe village, grid ref. SE 875591
Contact: David Lindley
(0113 2697047) (home), david.lindley3@btinternet.com

FIELD – Saturday 13 October

Wyre Forest. Fungi and Slugs. Joint meeting with Wyre Forest Study Group
Leader: Rosemary Winnall and John Bingham
(01299 266489) (home) (07732 203393) (mobile)

Meet at 10:30 h at Hawkbatch car park near Bewdley, grid ref. SO 761776, for further studies on the distribution of slugs within the Forest and their relationship with fungi.

NHM – Saturday 20 October

11:00 h in the Angela Marmont Centre at the Natural History Museum
Full day meeting of Council only.

FIELD – Saturday 3 November.

Nottinghamshire. Slug search
Leader: Chris du Feu
(01427 848400) (home)
chris@chrisdufe.force9.co.uk

INDOOR – Saturday 17 November

Regional meeting at Bournemouth Natural Sciences Society
Contact: June Chatfield
(01420 82214) (home)

WKSHP – Saturday 24 November

The annual workshop held in Woking offers Members the opportunity to receive tuition on identifying difficult groups. Bookings to Judith Nelson (01483 761210) (home)

NHM – Saturday 8 December

14:00 h in the Angela Marmont Centre at the Natural History Museum, preceded by Council meeting.
Guest speaker at 14:00 h
Miranda Lowe (NHM London)
Blaschka: Glass creatures of the ocean



All of a size and both with shells: invertebrate mollusc meets vertebrate reptiles.

Photo: June Chatfield

An adult Roman Snail (*Helix pomatia*) from chalk grassland near Guildford (brought by a museum visitor) meets my two hatchling Spur-thighed Tortoises (*Testudo graeca*), Macro and Micro, on the lawn of the Gilbert White Museum, Selborne in 1987. They are now no longer the size of a snail. The Reverend Gilbert White also mentions both tortoises and snails in Letter 50 to Daines Barrington dated 21 April 1780 of his book *The Natural History of Selborne* when they both emerged from hibernation at the same time. However, the snail that he would have seen would have been the Common Garden Snail (*Cornu aspersum*) since the Roman Snail does not extend west of the North Downs into Hampshire. Both snails and tortoises hatch from eggs. *June Chatfield*

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 worldwide. Members receive two publications *Journal of Conchology* which specialises in Molluscan Biogeography, Taxonomy and Conservation and *Mollusc World*, our magazine for members. New members are always welcome to attend field meetings and indoor meetings before joining.

How to become a member

Subscriptions are payable in January each year, and run for the period 1st January to 31st December.

Ordinary membership is £33.00, Family/Joint membership £35.00, Student membership £15.00, and Institutional subscriptions £47.00. In view of the high cost of overseas postage, members living in Europe are 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 the membership secretary (contact details are on our web site). 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. It is no longer necessary to sign a formal declaration. 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 (handwritten, typed or electronic) should be sent to the Hon. Editor at the address below. If sending electronic 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, but if other programmes (e.g. Works) are used, please indicate the programme used with the accompanying e-mail. Images and Artwork may be digitised, but we recommend that a digital image size 200Kb- 1Mb (JPEG preferred) be sent with your submission. For line art we recommend that you send hard copy, all originals will be treated with care and returned by "snail-mail". Authors should note that issues of the magazine may be posted retrospectively on the Conchological Society's web site.

Please send articles to:

Peter Topley, c/o The Hon. General Secretary, Miss R.E. Hill, 447b Wokingham Road, Earley, Reading RG6 7EL (or alternatively Peter's address may be found in the member's guide); email: mollusworld@ntlworld.com.

Advertisements in Mollusc World

We are pleased to invite advertisements, provided they are in line with the Conchological Society's charitable objectives and responsibilities. Typical examples might include books and other publications, equipment, services and collections of (or individual) shells. The latter will be vetted on a case by case basis and only accepted if there are no ethical problems. Advertisements of shells for sale from commercial shell dealers will generally not be accepted. A nominal charge will usually be made for advertisements and will be required from commercial advertisers. Charges per issue are currently £20 per 100 cm² space for a boxed advertisement or £1.00 per line for a text only advertisement. Any requests for advertisements should be sent to the Editor by the normal route; information on preferred methods of payment will be given at the time.