Mollusc World

Issue 37 March 2015

Recording on the Yorkshire coast

Alfred Russell Wallace and land snails

Calliostoma taxonomy

Molluscs in the Seychelles

The Conchological Society of Great Britain and Ireland

Helping to understand, identify, record, and conserve molluscs

From the Hon. Editor

As promised in the last issue Simon Taylor and David Lindley have now produced two excellent reports of the September 2014 Yorkshire coast field meeting (which involved a number of us in much sample processing in the lab and at home– see left!) that are now published here.

A big thank you is due to those who responded to my plea for more articles – please keep them coming in! On a separate issue there is also a need currently recognised for more marine papers and papers from Britain and Ireland for the Society's Journal, the **Journal of Conchology.** The Hon. Editor, Dr Graham Oliver (for contact details see page 31), would welcome any submissions for his consideration.

I have received an e-mail from our member John Robinson regarding possible binders for Mollusc World (which would also be useful for any other A4-sized magazine, such as the British Shell Collectors' Club's *Pallidula*). He writes: 'They are hardback, A4 size and blue in colour. They use the same system of retention as the old [A5 *Conchologists'*] *Newsletter* binders, that is to say, elastic cords. I also arranged to have a label on the spine, suitably worded. Each binder will hold up to 26 magazines, but I will probably put 21 in each, that is 3 years issues, so as you can see 3 folders will last quite a long time!... The company is called Modern Bookbinders [tel: 01254 59371]'.

Finally I would like to welcome any new members to the Conchological Society, especially if this is the first time you are a reading our magazine. There are always many opportunities to become further involved with the Society's activities and we look forward to seeing you at one or more of our meetings.

Peter Topley

Mollusc World

This magazine is intended as a medium for communication between Conchological Society members (and subscribers) on all aspects of molluscs, in addition to the material found on our web site. Hopefully it will also be of interest to all those enquiring about this subject or the work of the Society.

We include articles, meeting reports, research news, results from the mapping schemes and identification aids. We welcome all contributions in whatever form they arrive (see page 31 for further details).

Contents

ISSN 1740–1070

All photographs and drawings featured in articles are by the author unless otherwise indicated.

Many thanks go to Vicki Harley for copyediting.

Printed by Short Run Press, Exeter, EX2 7LW.

Front cover: The limpets *Patella vulgata* and *P. ulyssiponensis* were both present at some of the sites visited during the Conchological Society's field meeting to Yorkshire in September 2014 (see Simon Taylor's report from page 6). This photo shows an unusually active juvenile, probably *P. ulyssiponensis*, at low tide on the shore of North Landing, Flamborough.

(photo: Peter Topley)

Field meeting to Yorkshire, September 2014 – the terrestrial tale

David Lindley

Although the planned Conchological Society field meeting to Yorkshire in September 2014 was primarily a marine meeting, the morning tides allowed for terrestrial work to be conducted in the afternoons. In addition the marine sites visited were all at localities where some terrestrial recording could be conducted in the immediate vicinity. The area visited from Flamborough Head to Whitby covers a large range of different sites from ancient woodland, soft boulder clay cliffs to chalk grassland without having to travel a great distance from the coast.

A list of species found is shown in table 1. I have grouped the 1-km squares together in order to save space as there are a large number. The list shows species found in each area on each day. Should anyone wish a full 1 km list this can be obtained by contacting me.

figure 1: *Limax cf decampi*, Fylingdales School.
(photo: Terry Crawford)

On Monday 8th September the marine site to be visited was Boggle Hole which happens to be extremely close to Fylingdales School where the recent discovery of *Limax cf decampi* (figure 1) was made. Terry Crawford kindly made contact with the school regarding a visit and they were delighted. Terry Crawford, Adrian Norris and I visited the school and after being introduced to the headmaster were taken to one of the science classes where Terry delivered a short talk to the class about *Limax cf decampi*. This was well received by the children who were enthralled when Terry produced a large specimen of the species which was allowed to crawl about on their hands. After a quick hands wash the children then donned their wellies and accompanied by their teacher they proceeded to take us to an area where they had seen the species crawling about. After a short search a specimen was found which delighted everyone. The list of species for the school is not large for the day as it has recently been looked at in detail.

It was a good use of our time and the school science department are intending to map the species within the grounds and also try and identify what it is feeding upon. Who knows we may have created the spark that produces another John Gwynn Jeffries.

Following this, a visit was made to Falling Foss woods which are a short distance away across the A171. This is an ancient steep-sided mixed woodland popular with walkers. After a brief sojourn in the café, we looked at two of the 1-km squares to the south of the waterfall. Initially we were disappointed with the species found which may have been due to recent dry weather. A damper part of the wood yielded a surprise when on twigs under oak we found both *Zonitoides excavatas* and *Spermodea lamellata* together and in decent numbers. *Zenobiella subrufescens* turned up in a marshy area doing its usual trick of climbing to the top of stems. By the end of day 1, we had recorded 33 terrestrial species.

On the Tuesday the marine meeting was to Filey Brigg, a long spit of boulder clay resting on hard calcareous substrate. The morning there gave me an opportunity to look for *Helicella itala*. There have been a number of old records for the Brigg and it was not until a few years ago that I rediscovered it there. On that occasion, it was found not on the top as was expected but on the side in a small area. I spent a good 2 hours searching for it but could not even find dead shells. The side is dangerous to work and there have been a number of landslips in recent years; it is therefore possible it is now lost from the site.

The afternoon was spent on the chalk Wolds a short distance inland near Fordon. Here we examined North Dale. This is typical Yorkshire Wolds landscape with a steep-sided valley having a good south-facing slope. It is currently being managed by Butterfly Conservation for both Brown Argus and Marbled White. It was hoped that *H. itala* may be found. We found both *Cernuella virgata* and *Candidula intersecta* in numbers but the only specimens of *H. itala* were two sub-fossil examples from a rabbit burrow. It was interesting to note that *Cecilioides acicula* could only be found in the detritus from rabbit burrows and not in mole hills which is how we usually find it in the area. Could this indicate the depth at which it lives in the valley? Single specimens of *Pupilla muscorum* and *Vertigo pygmaea* were also found. At the end of this day the total number of species found had increased to 44.

On the Wednesday the intention was to visit north landing at Flamborough Head and Thornwick Bay next to it. Adrian Norris and myself took this opportunity to look in some of the gullies in the area to try and locate sites for *Leiostyla anglica*. This species can be found at a number of sites on the cliffs in the area where streams or springs have formed gullies leading to the beach. Some of these can only be reached when the tide is out. We were unsuccessful at a previously known site at North Landing but found three specimens in a small flush by the path leading down to Thornwick Bay. A number of sites for *L. anglica* on the boulder clay cliffs to the north and south have been lost due to coastal erosion but with luck the more stable sites on the chalk cliffs will remain.

During the afternoon we were joined by Terry Crawford and after parking in the RSPB car park at Bempton Cliffs we walked to a SSSI a few miles inland which goes by the wonderful name of Hoddy Cows. This is a spring-fed marshy meadow on the chalk which was last visited in 1996. The site is now much overgrown with much of the area now covered by grass instead of moss and sedge. It is also being encroached by scrub and brambles and appears to be ungrazed. I had been warned by the Natural England representative that this was the case but did not expect it to be as bad. Despite its obvious decline in quality we quickly found *Vertigo antivertigo* and *V. substriata;* and after a short while *V. pygmaea* was located. A litter sample later produced the first specimens of *Punctum pygmaeum* found

that week. A short report is to be submitted to Natural England with some recommendations, which may halt the decline of the site. The species list had now increased to 52.

The following day was spent at Hayburn Wyke, a typical example of old wet woodland found in this area, managed by the National Trust. The path meanders through this woodland to reach a boulder shore backed by a waterfall. We spent most of the day in the woodland and an interesting list was made. Several fine specimens of *Limax cinereoniger* were seen during the day (figure 2). *Boetgerilla pallens* was also found which was new to the reserve and not seen on the last visit in 2006. Tony Wardhaugh found *Spermodea lamellata*, *Acanthinula aculeata* and *Acicula fusca* (figure 3). All had been found in the reserve previously but they were particularly hard to find on that day.

Later in the afternoon, a small disused sandstone quarry near Claughton was examined with a small list of species being obtained.

figure 2: *Limax cinereoniger* at Hayburn Wyke.

figure 3: *Acicula fusca*, Hayburn Wyke. (photo: Tony Wardhaugh)

For the final day of terrestrial work I decided that it would be very valuable to visit Ellers Springs SAC in Dalby Forest which is situated a short way inland. It is 20 years since *Vertigo geyeri* was discovered here and the site has been monitored every five years or so by Adrian Norris and myself. We had not been since 2007 and a visit was long overdue; so the necessary permissions were obtained with, I might add, a great deal of enthusiasm from Natural England.

On the Monday morning prior to going to Boggle Hole I had visited the site and set out a series of traps. These consisted of a number of large dampened egg trays which were pegged to the ground throughout the main site (figure 4). This is not an infallible method but has been used with good results in marsh/flush areas previously. Due to the warm weather I would have preferred not to have left them down for that length of time but unfortunately due to the programme this had been unavoidable.

figure 4: (left to right) Tony Wardhaugh, David Lindley and Terry Crawford discussing the finer points of *Vertigo* identification (with trap) at Ellers Springs. (photo: Moira Wardhaugh)

The site appears still to be in a favourable condition though there is not as much open flush as previously seen. Of the ten egg boxes I had laid out three were found to have no molluscs under them at all; though one did have two glow worm larvae resting underneath. Of the remainder, seven species were found which included *V. antivertigo*, *V. pygmaea* and juveniles of *V. geyeri*. We continued to search the site and good numbers of *V. geyeri* were seen, many of which were juveniles. It was interesting to note that *Vallonia pulcella* was also present in numbers throughout the site. I had previously seen it sparingly on the margins of a small pond at the edge of the site. Small litter samples were taken for later processing from both sides of the track which bisects the SAC and *V. geyeri* was found in both samples. A report is to be submitted to Natural England regarding our findings.

In the afternoon we firstly visited Staindale Lake, a large man-made pond within the forest area. The purpose was to ascertain if *Gyraulus laevis* was still present. We were able to confirm it is still in the lake though in small numbers. Following this we visited Worry Dale just to the north of the lake. Terry Crawford had noticed the site whilst Lepidoptera recording in the area and thought it might be interesting. Worry Dale is a narrow steep-sided valley with conifer plantations on either side. Corallian limestone outcrops on the steep cut sides and there are large areas of moss and golden saxifrage where moisture seeps through. The dale was fairly rich and species such as *Zonitoides excavatus*, *Leiostyla anglica* and *V. substriata* were found. It was a good ending to an interesting week.

It was a good week of terrestrial recording with a total of 70 species found. If we add *Limacus maculatus* and *Milax gagates* which I had found in a garden in Filey during the visit then the total becomes a very respectable 72. Records were obtained from 23 1-km squares, many of which had not been previously looked at.

I would like to thank Natural England, the Forestry Commission, National Trust and the landowners for the various permissions granted. I would also like to thank all the participants during the week who, I hope, enjoyed a taste of the Yorkshire coast and some ‘Reet gud Yorkshire ‘ospitality tha knows’. Lastly I would like to thank Paula Lightfoot for her great enthusiasm and commitment which made it such a good week.

	08.09.2014		09.09.2014		10.09.2014		11.09.2014		12.09.2014		
	Fylingdales School	Falling Foss woods	Filey Brigg	Fordon	Flamborough & Thornwick Bay	Bempton Cliff & Hoddy Cows	Hayburn Wyke	Cloughton Quarry	Area of Ellers Spring SAC	Staindale Lake	Worry Dale
Acanthinula aculeata							•				
Acicula fusca							•		•		
Aegopinella nitidula		•	•	•			•		•		•
Aegopinella pura							•				
Arianta arbustorum		•				•	•				
Arion ater agg.		•					•				•
Arion ater seg				•		•	•				
Arion flagellus		•									
Arion circumscriptus				•			•	•		•	
Arion fasciatus					•						
Arion distinctus	•	•		•			•	•	•		
Arion intermedius		•	•				•	•			•
Arion subfuscus	•	•		•			•		•		•
Boettgerilla pallens							•				•
Candidula intersecta			•	•							
Carychium minimum		•			•	•	•		•	•	•
Carychium tridentatum					•		•		•		•
Cecilioides acicula				•							
Cepaea nemoralis		•	•	•	•	•	•		•		
Cepaea hortensis		•				•	•			•	
Cernuella virgata			•	•	•						
Cochlicopa lubrica		•	•	•	•	•	•		•	•	
Cochlicopa lubricella				•	•						
Cochlodina laminata		•					•				
Cornu aspersum		•	•	•	•		•	•			
Deroceras invadens	•							•			
Deroceras laeve		•			•	•	•			•	
Deroceras reticulatum	•	•		•			•	•	•		
Discus rotundatus		•			•		•		•		•
Euconulus fulvus		•					•				•
Euconulus alderi						•			•	•	
Helicella itala				**Sub F.**							
Lauria cylindracea		•	•								
Leiostyla anglica					•				•		•
Lehmannia marginata							•	•	•		
Limax cinereoniger							•				
Limax cf decampi	•										
Limax maximus	•			•			•		•		
Monacha cantiana			•	•	•	•	•	•			
Nesovitrea hammonis			•	•		•	•		•		
Oxychilus alliarius		•		•	•		•		•		
Oxychilus cellarius		•		•			•	•			
Oxyloma elegans					•	•	•		•		
Punctum pygmaeum						•	•		•		•
Pupilla muscorum				•							
Spermodea lamellata		•					•				
Tandonia budapestensis		•									
Trochulus hispidus				•	•	•			•		•
Trochulus striolatus		•		•	•	•	•			•	•
Vallonia costata				•							
Vallonia excentrica			•	•							
Vallonia pulchella									•		
Vertigo antivertigo						•			•		
Vertigo geyeri									•		
Vertigo pygmaea				•	•	•			•		
Vertigo substriata						•			•		
Vitrea contracta				•					•	•	•
Vitrea crystallina		•									•
Vitrina pellucida		•									
Zenobiella subrufescens		•									
Zonitoides excavatus		•									•
Ancylus fluviatilis		•					•				
Galba truncatula		•			•	•	•		•	•	
Gyraulus albus										•	
Gyraulus laevis										•	
Potamopyrgus antipodarum		•			•		•			•	
Radix balthica						•				•	
Pisidium milium									•		
Pisidium personatum		•				•					
Pisidium subtruncatum										•	

Table 1: Non-marine mollusc species recorded 8th–12th September 2014 during the Conchological Society's field meeting to Yorkshire.

Yorkshire Field Meeting, September 2014 – the marine aspect *Simon Taylor*

Many of you will be aware of the Society's very strong historical links with Yorkshire so a week's field meeting in the county could have been considered overdue, seeing as the last such event was in 1992. The week combined marine and non-marine activities, with new Society member (and then Yorkshire resident) Paula Lighfoot putting together a very well organised and facilitated schedule, mixing coastal visits on good low tides with some diving and an offshore dredging trip, all followed up with the use of a very well appointed local laboratory to work the samples taken to maximum effect.

Although the programme of site visits did not officially start until Monday 8th September, the week could almost be considered as gestating in Chatsworth on the preceding Saturday as many of those active during the week attended the Shell Fayre being held there. Certainly on Sunday 7th there were a number of independent activities going on around the Yorkshire coast amongst conchologists already arrived in the area and eager to get busy, not least of which was a dive by Paula collecting samples at Gubby's Reef, just south of Scarborough. This meant that the introductory meeting in the facility that was to be our base for the week (Marine Lab 3 on the Scarborough Campus of the University of Hull) was rather more involved than anticipated as the microscopes were out and the species lists began to accumulate straight away (figure 1).

figure 1: Examining a sample from Gubby's Reef in the lab. L-R: Paula Lightfoot, Simon Taylor, Adrian Norris, Terry O'Connor (behind), Peter Topley, Brian Goodwin, Ian Smith, Bas Payne. (photo: Jan Light)

The Gubby's Reef samples, it turned out, contained a good range of species, particularly nudibranchs, and being a sublittoral sample some of these species – *Tritonia hombergi* (figure 2), *Lomanotus marmoratus* (figure 3), *Flabellina verrucosa* – were not recorded anywhere else during the week. Also at the introductory meeting, Adrian Norris relayed a message from Gavin Chambers of a recent find on Spurn Head of a dead *Capulus ungaricus*, a new record for Yorkshire.

On the subject of the laboratory, it is worthy of comment just how well appointed these facilities were, with all the mod cons one would expect of a modern university marine laboratory (even if the temperature in the fridge dipped alarmingly overnight and nearly froze the valuable sample from Gubby's Reef). Sadly the rumour was that they were due to be closed, despite appearing relatively new, so we were lucky to take advantage of them while they were still

figure 2: *Tritonia hombergi* from Gubby's Reef. (size <200 mm) (photo: Paula Lightfoot)

figure 3: *Lomanotus marmoratus* (c. 30 mm) from Gubby's Reef. (photo: Paula Lightfoot)

in existence. Whether the rumour was true or not, or whether perhaps the facilities are to move elsewhere under the auspices of the University of Hull, only time will tell.

Certainly Paula did very well to secure their use for the week, and she excelled herself again as, on the first organised day of marine activities, some of the group – myself, John Fisher, Brian Goodwin, Nick Light, Bas Payne and Peter Topley – were fortunate enough to take a sublittoral dredging trip she had arranged, out of Whitby harbour aboard the 26 metre inshore fishery patrol/research vessel North Eastern Guardian III (figure 4).

figure 4: North Eastern Guardian III moored at Whitby.

Driving from Scarborough to Whitby, early in the morning and full of anticipation, the view from the coastal road was of a flat and calm North Sea. The state-of-the-art vessel was wonderful for the task, with a keen and helpful crew, and we all felt tremendously honoured as we steamed out of Whitby's famous harbour. While the sea could not be described as rough, there was nevertheless a considerable swell and the shallow-draft vessel was soon bobbing around as the first van Veen grab samples were made; by the third or fourth sample, one or two of our number were beginning to feel the effects of the boat's motion. Using a grab is a hit and miss affair and some of the samples were little more than just mud. Attempts with the naturalists' dredges provided by Jan Light were not a huge success but perseverance with the grab (figure 5) meant that eventually 6 useful samples were retained, from a range of localities and substrates. It has also to be confessed that for one or two individuals involved, some semi-digested samples of breakfast were not retained for the entire voyage.

figure 5: collecting sediment from grab samples.
(photos: Peter Topley)

Initial inspection of the grab samples in the lab suggested they may hold more promise than was immediately evident: live *Nuculana minuta* were quickly spotted as was some hydroid which yielded the scarce nudibranch *Doto hystrix* (figure 6), a first record for the species in the North Sea. The samples were then divided up amongst those who were keen to go through them in detail at their leisure, who then sieved, washed and dried them) (see Editorial, page 2). Subsequent microscopic analysis has so far revealed a combined total of 90 shelled species, including several records representing significant species range extensions: *Aclis ascaris*; *Arca tetragona*; *Caecum glabrum*; *Crenella decussata*; *Eulimella ventricosa*; *Philine catena*; and *Teretia teres* (figure 7). Coincidentally, given the earlier report from Spurn Head, *Capulus ungaricus* was also present in several samples.

Those who decided not to opt for the dredging trip spent the day at Boggle Hole at Robin Hood's Bay instead. Even just working a moderately low tide, the fauna surveyed set the pattern for the intertidal rocky shores visited for the majority of the week. Almost every site had a core molluscan fauna of *Lepidochitona cinerea*, *Tectura* viginea, *Patella vulgata* (and usually *P. ulyssiponensis*), *P. pelludica*, *Gibbula cineraria*, *Lacuna pallidula*, *L. vincta*, *Littorina littorea*, *L. fabalis*, *L. obtusata*, *L. saxatilis*, *Rissoa parva* (usually form *interrupta*), *Nucella lapillus*, *Nassarius incrassatus* (though not *N.reticulatus*), *Goniodoris nodosa*, *Mytilus edulis*, *Heteranomia squamula*, *Hiatella arctica* and *H. rugosa*.

figure 6: *Doto hystrix* in grab sample. (photo: Paula Lightfoot)

figure 7: *Teretia teres* (h. 3.5 mm), grab sample. (photo: P. Topley)

Boggle Hole provided a few notable additions. One sought after species during the week was *Tonicella rubra*, if for no other reason than it is such an attractive little chiton, and a specimen turned up here (figure 8). As is standard practice with Conch. Soc. Shore work, weed samples were also taken for soaking and washing to check for nudibranchs and micros. Through the course of the week it was noticeable that this consistently revealed fewer species than were recorded in 1992, though the reasons for this can only be speculated and, nevertheless, several records were made that were not present in 1992. One such, for Boggle Hole, was the tiny sacoglossan *Limapontia capitata*. Other nice records from the washings were live *Retusa truncatula* and the attractive nudibranch *Polycera quadrilineata* (figure 9)

figure 8: *Tonicella rubra*, Boggle Hole. (photo: Paula Lightfoot)

figure 9: *Polycera quadrilineata*, Boggle Hole.
(photo: Paula Lightfoot)

Ian Smith visited Robin Hood's Bay with a very particular plan in mind (not unusual for Ian as those of us meeting him for the first time this week were to discover). He was aware of a study of the periwinkles in the Bay, specifically *Littorina saxatilis* and *L. arcana* (figure 10), which suggested a correlation between the level of exposure and the substrate lithology and the proportional presence of the two species and their various colour morphs (Dytham et al., 1990). Both species were found and confirmed by dissection, but it was not possible to replicate some of the detailed findings of the 1990 study as two of the sites have been radically altered by the dumping on them of many tonnes of rock for coastal defence. The *Littorina* species were to prove a recurring theme of interest and discussion for the week, particularly with Brian Goodwin keen to test and demonstrate the anatomical differences between the often confused species (equipped with his shell-cracking vice and copy of Reid (1996) (figure 11).

By then, the week was well and truly in full swing and Tuesday 9th September saw a large party of us descend

figure 10: *Littorina arcana* female, 10.6mm high. Grey is a common shell-colour of both *L. saxatilis* sensu stricto and *L. arcana* in Robin Hood's Bay. Microscopic examination of the soft parts is required to distinguish them. (photo: Ian Smith)

figure 11: In the lab.. Above: Ian Smith and Paula Lightfoot, below: Brian Goodwin. (photos: Jan Light and Paul Lightfoot)

enthusiastically upon Filey Brigg. The calcareously cemented grits of the foreshore here contrasted with the Lias shales of Robin Hood's Bay but the core molluscan fauna of the slabby shelves and rockpools was very much the same. The tide receded to expose the uppermost kelp zone but local diver and marine biologist Caroline Pindar graciously volunteered to snorkel in a deep pool and retrieved a good sample of weeds and kelp holdfasts (figure 12). Back in the lab these produced some further live species records (*Margarities helicinus*, *Skeneopsis planorbis*, both *Onoba* species, some particularly attractive *Alvania semistriata*, *Rissoella diaphana*, *Ancula gibbosa*, *Aeolidiella papillosa* (figure 13), *Musculus subpictus* (or whatever name WORMS is using for it this week), *Kurtiella bidentata* and *Turtonia minuta*, among others) and some impressive specimens of what is often still referred to as the *laevis* form of *Patella pellucida*. Another theme of the week was Bas Payne's obsession with *Patella vulgata* and *P. ulyssiponensis*, which he indulged fully at Filey, examining and collecting numerous specimens in an effort to further explore the consistency of the distinguishing characteristics between the two.

figure 12: Caroline Pindar holding her retrieved weed sample, with Brian Goodwin, Filey Brigg. (photo: Paula Lightfoot)

figure 13: , *Aeolidiella papillosa* from Filey Brigg. (photo: Paula Lightfoot)

On the southern side of the Brigg there extends a wide, sandy bay. While this was not the only sandy site explored during the week it was by far the most productive, containing several live infaunal species and with the remains of numerous others on the strand line. Bait diggers on site were exposing numerous live *Lutraria lutraria* and *Ensis siliqua* as well as lots of sea potato urchins (*Echinocardium cordatum*) although attempts to find and record the commensal *Tellimya ferruginosa* were unsuccessful. The species count was boosted by over a dozen species of stranded bivalve, including *Macoma balthica*, *Arctica islandica* and *Donax vittatus*.

There were two other finds of note at Filey. Ian found significant colonies of *Limapontia capitata* on patches of *Cladophora*, surprisingly high up the shore, while Paula found an intriguing squid egg sac which she collected in a bag of seawater, took back to the lab and placed in an aerated tank. The wonders of "social media" came into their own that night as photographs of the egg sac circulated online produced a positive identification of *Alloteithis subulata*, a common species of the Yorkshire coast (there are old stories of trawler nets appearing white due to the number of such squid clinging to them as they were hauled). Paula proceeded to brood over the egg sac for the remainder of the week as the eggs were evidently alive and developing day by day, for them to hatch at the very last on the final Saturday morning into beautiful, almost ghostly, little juveniles each with about 20 chestnut brown chromatophores and a pair of black eyes. They were then returned to the North Sea after their very unusual upbringing.

figure 14: Flamborough headland with chalk caves.

Wednesday 10th September brought another trip south from Scarborough, this time to the northern side of the chalk headland at Flamborough. Two small rocky bays were available for surveying here. Thornwick Bay, to the west, attracted many of those who arrived early but it delivered little of note other than: *Acanthochitona crinita*, which cropped up occasionaly during the week but was common nowhere; the week's only sea hare *Aplysia punctata*; *Rissoella diaphana* live from the weed washings; and abundant *Malarhaphe neritoides* on the splash zone of the cliff faces (figure 14). Others from the party opted to explore North Landing to the east, a similar bay with a rocky foreshore covered in wrack leading to the kelp zone at low water and lateral cliffs with extensive caving. One of the caves was accessible and Jan Light, following the instincts of her experience in exploring such sites for the specialist fauna they can contain, decided to investigate (figure 15). To her delight, and that of everyone else when the news spread, she found a living colony of *Otina ovata*. Not only is this a species rarely encountered alive (though not uncommon in shell sand in some areas), it had not previously been found on the east coast of Britain so this represented a very significant extension of the species' known distribution. Ian Smith has produced some excellent images of *O. ovata* from this location (figures 16 and 17)*.

figure 15: *Otina ovata* habitat at North Landing. Left: exterior of cave in highly fissured chalk. Right: dark interior, image brightened to show detail. (photos: Jan Light)

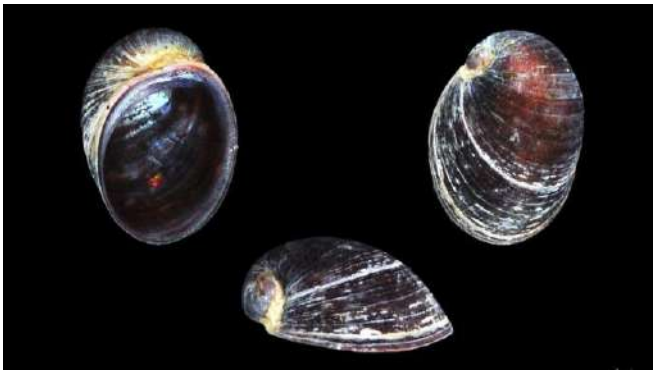


figure 16: *Otina ovata*. North Landing, Flamborough .Shell length 2.3 mm. Vacant shells photographed in water. The colour variation from reddish-brown to purple brown depends partly on the lighting and colour of the substrate and whether the shell is vacant or occupied, and in water or air. (photo and legend: Ian Smith)

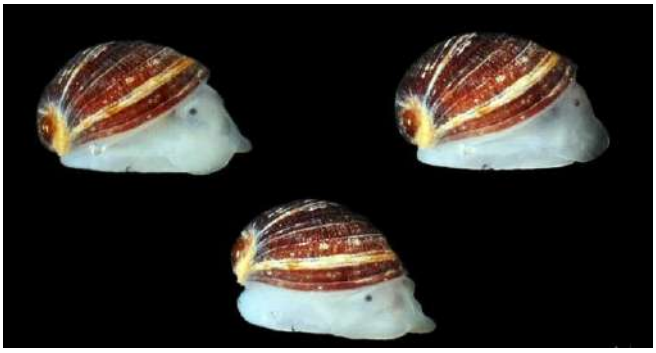


figure 17: *O. ovata*. Shell length 2 mm. Animal in seawater. (photo: Ian Smith)

Bas continued his Patellid investigations at North Landing and found an interesting specimen which, while otherwise a typical *Patella ulyssiponensis*, had a rather dark foot resembling that of *P. vulgata*, instead of the more typical "apricot" colour. Rob Durrant's photograph in figure 18 shows this dark foot contrasting with the white mantle margin tentacles so characteristic of *P. ulyssiponensis*.

figure 18: *Patella ulyssiponensis* with dark foot, North Landing. (photo: Rob Durrant)

Speaking of Rob, he is a new member of the Society, from North Devon, who is a very diligent shore worker with an interest in more than just molluscs. It was wonderful to have him join us during the week and at North Landing he turned up two species of Stauromedusae, the enigmatic "stalked jellyfish" - *Craterolophus convolvulus* (figure 19) and *Haliclystus octoradiatus* – which were fascinating to see.

figure 19: The 'stalked jellyfish' *Craterolophus convolvulus*, North Landing. (photo: Rob Durrant)

Thus far the weather had been very clement during the week and continued to be so on Thursday 11th. With low water creeping later into the day, the latter part of the week was spent north of Scarborough, with Hayburn Wyke being the target for this particular day. From the car park at the pub and hotel in lovely grounds by the valley, the footpath wound down through attractive woods to what felt like a rather isolated stretch of boulder-strewn shoreline. Again, the fauna followed the established pattern for the area. There were some notable additions; *Tonicella rubra* was not rare here and the sea lemon *Doris pseudargus* was found more here than at any other side visited. Weed samples yielded the usual mix of *Rissoa parva*, *Onoba*, *Retusa truncatula* and also a couple of Pyramidellids, namely *Odostomia turrita* and *Chrysallida pellucida* [=*Partulida spiralis*]. All in all, though a very pleasant spot, Hayburn Wyke did not prove interesting enough to prevent people drifting off fairly quickly, tempted by the pub lunch available beside the car park and the ever mounting number of samples to process back in the lab.

In fact, the demands of the lab (and possibly a few aching bones from what had been a fairly physically demanding week so far; smooth boulders covered in seaweed take considerable effort to negotiate safely) meant that only Paula, myself, John and Rob made the journey to Runswick Bay on Friday 12th, despite it promising to be a productive site with good species lists from past surveys. Our numbers were boosted however as we were joined for the day by representatives of a number of environmental organisations including Natural England. John, who does not like walking on gradients, was happy as there was no steep walk to and from the beach, the car park being down a steep lane from the main village. From here the bay sweeps away to the east, initially as a wide sandy beach with gravelly patches, leading to a rocky platform. The hopes were for a variety of stranded species on the sand and then a good low tide on the rocks with the possibility of borers other than the usual *Hiatella* in the rocks. These hopes were raised as broken valves of *Zirfaea crispata* were soon found on the beach. There were only a few other strand finds though (*Abra alba*, *Venerupis corrugata*) and once the receding tide had exposed the rocks there were no Pholad-type borings to be found. The highlights here were really non-molluscan - a live lobster and several large and colourful *Echinus esculentus* urchins – although Paula showed her chiton-charming powers by finding yet another pretty *Tonicella rubra*, and *Acanthochitona crinita* was commoner here than at any other site. We also found an attractive juvenile *Trivia*, the bivalve *Kellia suborbicularis* and, among the nudibranchs, *Limacia clavigera* (figure 20), *Acanthodoris pilosa* and *Jorunna tomentosa*.

figure 20: *Limacia clavigera*, Runswick Bay.
(photo: Paula Lightfoot)

Back at the lab that evening' lots of packing away of trays, microscopes, etc., suggested that most would be heading for home on Saturday. All agreed the trip was a great success and that as well as the molluscan (and other) finds and the learning opportunities always afforded by working with a group, it had been a wonderful social time too, some new friendships had been established and some established friendships had been renewed. It was a pity that due to ill health several stalwarts of the Society's field excursions were unable to attend, but the good numbers present, including some new faces, suggests that our appetite for marine recording remains strong.

To round off the week, Paula had scheduled a survey of Scalby Ness, just north of Scarborough, for the morning of Saturday 13th September but in the event the only person to do it was myself, perhaps in a determined effort to show boundless enthusiasm and energy. Even Paula herself didn't go (she was busy being midwife to her 'squidlets') and my patient travelling companion John Fisher watched me from the car whilst eating donuts. The site was very pleasant and I had it almost completely to myself despite it being Saturday and very close to Scarborough. If you enjoy *Lepidochitona cinerea* then this is a site for you as it is very common and in numerous colour forms. As on every occasion during the week, the core species group were all present, as well as more colourful *Echinus esculentus* urchins, another *Jorunna tomentosa* and, at last, after looking all week, I finally found a specimen of *Tonicella rubra* myself.

Huge thanks to Paula and her Yorkshire colleagues for putting together an excellent programme and sourcing great facilities.

References

Dytham, C., Grahame, J. & Mill, P.J. (1990) Distribution, abundance and shell morphology of *Littorina saxatilis* (Olovi) and *Littorina arcana* Hannaford Ellis at Robin Hood's Bay, North Yorkshire. *Hydrobiologia* **193**: 233-240.

Reid, D.G. (1996) Systematics and Evolution of *Littorina*. London: The Ray Society.

*See also Ian Smith's album of *Otina ovata* images at https://www.flickr.com/photos/56388191@N08/collections/ where anyone (no registration needed) can download a pdf of the account of *Otina* for fuller details.

British Shell Collectors' Club

Saturday 25th April 2015
Shell Convention
Saturday 31th October 2015
Shell Show
Both at: Theydon Bois Community Centre, Coppice Row, Theydon Bois, CM16 7ER.
Open from 9am to 5pm, admission free.

Saturday 5th September 2015
Chatsworth Shell Fayre, DE45 1PP.
Open from 9am, admission free.

For further information about the club see:
www.britishshellclub.org

FOR SALE as a single lot

JOURNAL OF CONCHOLOGY
Vol 18, part 1 (March 1926) to Vol. 41, part 6 (December 2015). 24 volumes in parts, complete.

CONCHOLOGISTS' NEWSLETTER
No. 1 (January 1961) to Vol. 41, part 6 (December 2015) 10 volumes in parts, complete.

MOLLUSC WORLD
Issue 1 (March 2003) to issue 36 (November 2014) Complete run.

All in excellent condition.

£200 the lot. Buyer to collect.

Contact Michael Kerney. Tel. 0208 692 8002
17 King George Street, Greenwich, SE10 8QJ

Haslemere Educational Museum has a batch of **Palaeontographical Society Monographs** (running from 1964 to 2005) and **Caenozoic Society Monographs** (running from 2002 to 2012) which they are looking to find a good home for. The Museum is offering them at no cost but they would need to be collected.
Please email collections@haslemeremuseum.co.uk or telephone 01428 642112 for more information

INTERNATIONAL SHELL SHOW, Belgium

17th and 18th October 2015
Opening hours for visitors:
Saturday 10am – 6pm, Sunday 10am – 5pm

at ECOLE DU CENTRE, Rue Célestin Freinet 1,
B-6230 Pont-à-Celles, Belgium.

For Reservation or information contact:
Alexandre Marc
Rue de la Libération 45, B-6182 Souvret, Belgium
E-mail : alexandremarc@skynet.be

Some shells from the Seychelles

Adrian T. Sumner

The Seychelles consist of several separate archipelagos of small islands, lying in the Indian Ocean a thousand miles or so off the east coast of Africa, just south of the equator. The most westerly are the coral atolls of the Aldabra Group, and several hundred miles to the northeast are the granitic islands, Mahé, Praslin and La Digue, where most people live, and where most visitors go. In between are several other groups of islands. While the coralline islands are low-lying, the granitic islands are quite hilly, Mahé rising to 905 metres. The granitic islands are a remnant of Gondwanaland, left over from when India and Africa split apart, and are therefore formed of very ancient rocks. Although the Arabs probably found the Seychelles much earlier, it was not until 1501 that the Portuguese discovered the archipelago that was later named the Farquhar group and the history of the islands began. However, the islands remained largely undisturbed until the seventeenth century, when they became a base for pirates, and in the late eighteenth century they were claimed by the French and began to be settled. In 1814 the Seychelles became a British colony, and in 1976 an independent republic. As well as the early French settlers, many Africans were brought to the islands, originally as slaves, and later Indians and Chinese arrived; in spite of the Seychelles being British, there was only limited settlement by Britons. Nevertheless, English is one of the languages used in the islands, the others being French and Creole, the last being largely derived from French but spelt phonetically. Today the economy is based mainly on tuna fishing and processing, and on tourism.

Although a fair amount of land has been cleared for agriculture and building, the granitic islands are still well covered with forests, and it is easy to agree with General Gordon's view that the Seychelles were the site the Garden of Eden. However, his idea that the endemic Coco-de-Mer Palm was the 'tree of the knowledge of good and evil' seems more fanciful. Nature reserves cover some 40% of the islands, and there are two World Heritage sites – Aldabra, and the Vallée de Mai on Praslin – which were designated because of their unique fauna and flora. The devotion to nature of the Seychellois is reflected in their coinage, which carries images of the natural history of the islands (figure 1). Like many remote islands, the Seychelles have a good many endemic species, but also several species which have either been introduced or reached the Seychelles by themselves.

figure 1: Seychelles one rupee coin bearing an image of *Triton* sp.

My wife and I visited the Seychelles in November 2013, staying a few days on each of the main granitic islands: Mahé, Praslin, and La Digue. We also took day trips to some of the adjacent smaller islands. Although we hoped to see some of the endemic fauna and flora, this was definitely a holiday and not a serious expedition. The first island that we stayed on was Praslin, and we very soon saw some incomers: the Madagascar Fody, a bright red sparrow-like bird, was everywhere, and so was the giant African land snail. There are said to be two species of these on the islands, but all the ones we saw seem to have been *Achatina immaculata* (figure 2). They were often active in the middle of the day, when they were sometimes cooked by the tropical sun, or at least died of dehydration. The giant African land snails were introduced by the French to feed the Africans, but the Africans wouldn't eat them. They have become very widespread, but I was told in the Veuve Reserve on the island of La Digue that they weren't a problem. That may be true there, but they are a pest in gardens, where they eat the vegetables. They can be killed with a mixture of papaya leaves and ashes; the snails like eating the papaya leaves, but the ashes kill them. Alternatively they can be killed with salt.

figure 2: A giant African land snail, *Achatina immaculata*, from La Digue.

The great attraction on Praslin, as already mentioned, is the Vallée de Mai, home to six endemic species of palms, as well as screw pines and other trees. Our guide soon pointed out to us the large snail *Stylodonta studeriana* (figure 3), which can grow up to 63 mm in diameter. This species is not simply endemic to the Seychelles, but in fact lives only on the Coco-de-Mer palms in the Vallée de Mai.

figure 3: The endemic snail *Stylodonta studeriana* on a Coco-de-Mer Palm in the Vallée de Mai, Praslin. This snail grows up to 63 mm in diameter.

We were not able to look for the Veronicellid slug *Filicaulis (*formerly *Vaginula) seychellensis*, which feeds on the flowers of the Coco-de-Mer. Leaving the official paths is forbidden in this reserve, let alone climbing the palms to look for slugs! The other snail we saw here, *Tropidophora pulchrum* (figure 4), which grows up to 14 mm diameter, has a less restricted distribution, being endemic on most of the granitic islands. Back at our hotel, the beach appeared to harbour no molluscs apart from a few tiny shell fragments; the beach itself consisted largely of coral fragments. This turned out to be true of many of the beaches we visited, and I was told that more shells were washed up in the 'winter', between May and October, when the southeast trade winds predominate.

figure 4: *Tropidophora pulchrum* from the Vallée de Mai, Praslin. Maximum diameter about 14 mm.

Just to the north of Praslin are two islands, Aride and Curieuse, which we visited the following day. Aride is a nature reserve where thousands of seabirds breed, and it is also home to various small endemic birds such as the Seychelles fody, Seychelles warbler, and the Seychelles magpie robin, all of which have only survived because populations have been carefully nurtured on offshore islands such as Aride, where potential competitors and predators can be eliminated. However, we saw no snails there. After a barbecue lunch on the adjacent Curieuse Island we took a walk through a mangrove swamp where the mud was covered with thousands – perhaps millions – of mud c reepers, *Terebralia palustris* (figure 5). These have large and heavy shells, up to 120 mm tall, and are a typical species of mangrove swamps; we also found some in a small swamp near our hotel on Praslin. It is a widespread species in the Indian and western Pacific Oceans.

figure 5: Mud creepers, *Terebralia palustris*, in the mangrove swamp on Curieuse Island. These grow up to 120 mm in height.

After Praslin, we spent a few nights on La Digue, a short ferry crossing from Praslin. Although the guide book seemed to suggest that ox carts were the main means of transport, there are a number of motor vehicles, but bicycles are the usual means of getting about on this small island, less than 4 miles from north to south, and half that distance across. Giant African land snails were soon spotted. They seemed to be as common here as elsewhere, in spite of the presence of *Gonaxis quadrilateralis* (figure 6), which has been introduced from Kenya to try and control the *Achatina*. In Hawaii, where it has been introduced for the same purpose, it is said to control the snails by eating their eggs (Davis & Butler, 1964). The shell of *G. quadrilateralis*, which is white and glossy, is of a rather peculiar shape, the first whorls being rather discoidal while the body whorl is much taller. The animal is yellow. It does not seem to have been recorded from La Digue previously (Gerlach, 2006). *Subulina octona*, apparently an indigenous species (Gerlach, 2006), was also found.

figure 6: A shell of *Gonaxis quadrilateralis* from Cerf Island. Shell height about 22 mm.

It was on La Digue that I began to find some marine shells, attached to granitic rocks on the shore. These included the small limpet, *Cellana radiata* (figure 7), *Nerita plicata* (figure 8), *Littorina kraussi* (figure 9), and a single specimen of *Nerita polita* (which, however, was much commoner by our hotel on Mahé). Curiously, many of these marine gastropods were found well above the sea level, and since the tidal range is rather small in the Seychelles (1.8 metres at spring tides at the granitic islands; Hill & Currie, 2007), they must live out of the water for most of the time. A few other shells that were found on the beach consisted of fragments that could only be identified tentatively. No doubt there would have been many more molluscs on the coral reefs surrounding the island, but we didn't venture out there in the hot tropical sun.

figure 7: The limpet *Cellana radiata* from Mahé.

figure 8: A cluster of *Nerita plicata* on granitic rock above the shore on La Digue. Grows up to about 25 mm diameter.

figure 9: *Littorina kraussi* from Mahé. Said to grow up to 25 mm high, but the specimens I saw were much smaller.

Our final few days were spent on the largest island, Mahé, where our hotel was on then northwest coast of the island, on the opposite side from the capital, Victoria. This turned out to be perfect for marine shells, as the verandah of the hotel was cantilevered out over some rocks at the edge of the bay, so that we could observe the marine life while sipping cocktails. Not only were there molluscs here that we hadn't seen before, but black sea urchins, Sally Lightfoot crabs, and some extraordinary fish called rock skippers, which spend most of their time out of the water, and scampered up the rocks away from the water as each wave came in. They never seemed to get washed off. The molluscs included a large chiton (figure 10), about 7.5 cm long, probably *Acanthopleura brevispinosa*, which is rather common in the Seychelles. The limpet *C. radiata, N. plicata,* and *L. kraussi* were all present, the last one again occurring commonly high up on the rocks well above the sea. Another shell, *Nerita polita,* was also here; this species is remarkable for the variety of its colours (figure 11). A solitary worn cowrie shell turned out to be *Cypraea lynx*, and there were lots of small mussels in crevices in the rocks.

figure 10: A large chiton, probably *Acanthopleura brevispinosa*, on Mahé.

On top of the rocks were some snails which puzzled me because I assumed, from their location, that they must be marine shells. However, Jarrett (2000) does not include them in his *Marine Shells of the Seychelles*. They turned out to be *Melampus lividus*, a member of the Ellobiidae, (figure 12), which Gerlach (1987) in *The Land Snails of the Seychelles* describes as an indigenous species found in coastal areas. He subsequently (Gerlach, 2006) regarded them as 'semi-terrestrial or estuarine', and did not describe them. I have been unable to find out much about them from the Web, but they are said to prefer brackish water and mangrove swamps (Peel, 1987). However, the coast where I found them was rocky, interspersed with sandy bays.

Our last day on the Seychelles was spent on two small islands off the east coast of Mahé. Moyenne Island had a very large number of shells of *Striosubulina striatella*, an introduced species, plus a few live animals under logs. There were just a few marine shells on the beach, but Cerf Island, where we had a barbecue lunch, turned out to have the most shells on the beach of any island we visited, even though there weren't very many by the standards I'm used to in Britain. There were several species of bivalves. The commonest was *Atactodea glabrata*, with a white triangular shell up to about 25 mm long. Another was *Anodontia edentula* (= *Lucina edentula*), a round white bivalve about an inch across, but the largest and most attractive was *Codakia tigerina*, the inside of which was delicate shades of pink and yellow (figure 13). There were several money cowries (*Cypraea moneta*) (figure 14). On the land there were many empty shells of *Achatina immaculata* and a few old shells of *Gonaxis quadrilateralis,* but no live ones. According to Gerlach (1987), Cerf is the only island in the Seychelles where *G. quadrilateralis* has been successful in controlling the giant African land snails.

No account of shells in the Seychelles would be complete without mentioning the creature with the biggest shell of all: the Aldabra Giant Tortoise. These have been introduced to several other islands from Aldabra, and are either kept in special enclosures, or are allowed to roam relatively freely on certain of the smaller islands where there are no roads. The population is now over 100,000, greater than the number of human inhabitants of the islands. Surely these animals, which like snails can retract their heads into their shells, should be regarded as honorary gastropods?

Acknowlegements

My thanks are due to Kevin Brown and Peter Topley for help with identifying some of the snails, which proved too difficult for me to determine.

References

Davis, C.J. and Butler, G.D. Jr. (1964) Introduced enemies of the Giant African Snail, *Achatina fulica* Bowdich, in Hawaii (Pulmonata: Achatinidae). *Proceedings of the Hawaiian Entomological Society*, **18**: 377–389.

Gerlach, J. (1987) *The Land Snails of Seychelles. A field guide*. Privately published.

Gerlach, J. (2006) *Terrestrial and Freshwater Mollusca of the Seychelles Islands*. Backhuys Publishers, Leiden, The Netherlands.

Hill, M. & Currie, D. (2007) *Traveller's Guide to Wildlife of Seychelles*. Harper Collins, London.

Jarrett, A.G. (2000) *Marine Shells of the Seychelles*. Carole Green Publishing, Swavesey, Cambridge.

Peel, O. (1987) A walk in the mangroves. *Hawaiian Shell News*, **35:** 9.

figure 11: *Nerita polita* colour morphs (Mahé). Grows up to about 35 mm diameter.

figure 12: *Melampus lividus* from the rocks by the sea on Mahé. The shell reaches a max. height of c. 14 mm.

figure 13: A shell of *Codakia tigerina*, from Cerf Island. Maximum dimension 61 mm.

figure 14: Money cowries, *Cypraea moneta*, from Cerf Island. The larger one is nearly 22 mm long.

Bournemouth, Dorset: Field meeting

June Chatfield

A third marine field meeting on the English Channel coast was held on 14th June 2014 to follow and compare with Titchfield, Hampshire in 2012 (Chatfield, 2012) and Bracklesham, West Sussex in 2013 (Chatfield, 2013). The earlier two were both on cold days with battleship grey skies but our luck changed this year with blue skies, sun and a comfortable temperature for field work. However, only two of us, the writer and Graham Long were there but we went ahead and had an interesting and useful afternoon.

Non-marine molluscs

From the meeting place at the car park off Manor Road, Boscombe (SZ907 192), we followed a sunken wooded path planted with the typical pine trees of Bournemouth, a late Victorian development, that led down to Boscombe Combe and the pier-head (SZ111 912). Although there had been some rain the previous night, the light sandy soil remained dry so conditions were not optimum for collecting but 14 species were recorded. Under plants overhanging walls in the more open area by the car park and the pier-head live specimens of *Cornu aspersum* (common garden snail), *Cernuella virgata* (banded snail), *Candidula intersecta* (wrinkled snail) and *Lauria cylindracea* (chrysalis snail) were found with the latter attached to the wall: this is a typical assemblage of dry coastal habitats as at Bracklesham last year. In the lower part of the combe ,there was a trickle of water giving pockets of dampness at the edge of the path providing a few slugs and glass snails. The remaining snails were mostly shells only with two dry grassland species, *Vallonia excentrica* (smooth grass snail) and *Cochlicopa lubricella* (slim slippery moss snail). The habitat, although sandy was not totally acidic (although soil was not tested) due to an origin from Bracklesham Beds of the Tertiary and wind-blown shell sand from the beach. The most exciting find (by Graham) was the empty external shell, of *Testacella haliotidea* (shelled slug), with periostracum still attached, that was found on the ornamental bed on top of the wall by the interpretation boards at (SZ11126 91237).

Scientific name	English name	Notes
Aegopinella nitidula	Waxy glass snail	Alive in damp vegetation at side of path to combe
Arion ater agg.	Great slug	Alive under dead wood
Candidula intersecta	Wrinkled snail	Alive in grass at tops of walls
Cernuella virgata	Banded snail	Alive beneath overhanging vegetation on walls and in dry grass of open coastal habitat
Cochlicopa lubricella	Slim slippery moss snail	Shell in debris and grass of dry site
Cornu aspersum	Common garden snail	Alive on walls, hidden by vegetation
Deroceras panormitanum	Caruana's slug	Alive in damp vegetation at side of path to combe
Deroceras reticulatus	Grey field slug	Alive in damp vegetation at side of path to combe
Lauria cylindracea	Chrysalis snail	Alive under vegetation on top of wall down to combe
Oxychilus alliarius	Garlic glass snail	Shell in debris at side of path to combe
Oxychilus draparnaudi	Draparnaud's glass snail	Shell in debris on ornamental plot by pierhead
Punctum pygmaeum	Pygmy snail	Shell in debris on ornamental plot by pierhead
Testacella haliotidea	Shelled slug	Shell in debris on ornamental plot by pierhead
Vallonia excentrica	Smooth grass snail	Shell in debris and grass of dry site

table 1: Non-marine molluscs at Boscombe, Bournemouth.

Marine molluscs

The shore of Poole Bay between the piers of Bournemouth and Boscombe is headed by a steeply shelving flint shingle with sand flats exposed at low tide, typical of south coast beaches (figure 1). There is longshore west to east drift of shingle from the southwest prevailing wind so wooden groynes and some concrete jetties divide up the beach on the upper shore and these provide a habitat for living molluscs. The brown pebbles are flint, originally from the chalk, but now worked by the sea and derived from plateau gravels of the former Solent River that formed when the continuous chalk ridge from the Needles on the Isle of Wight to Old Harry Rocks, Studland was breached in post-glacial times. This is explained on the information panels at the pier head. The mobile shingle does not support live molluscs but shells are cast up on it and are also found on the sands below.

figure 1: The beach at Bournemouth looking west.

The dominant live mollusc on both the wooden groynes and especially on concrete jetties with imported rock piles was *Patella vulgata* (common limpet) with many juveniles on the rock piles (settled in from planktonic larvae). A few *Nucella lapillus* (common dog-whelk), which would have been feeding on barnacles, also settled on the rocks from planktonic larvae. Due to strong sea currents around these structures the dog-whelks were nestled in crevices, being less firmly attached than the wide-based limpets with sucker-like foot or the barnacles cemented in position. Seaweeds, both the fine green ribbonweeds and dulse (*Porphyra*) and smaller encrusting growth, would be part of the limpet diet on the groynes.

All three beaches, Bracklesham, Titchfield and Bournemouth yielded around 30 species of marine shells during the field tripwith a small number of species making up the bulk. The finds at Bournemouth are given in table 2, to which has been added (in separate columns) finds from individual visits and following the meetings of preparation for our regional joint meeting with the Bournemouth Natural Sciences Society (Chatfield, 2013). The most abundant shell on the beach was *Crepidula fornicata* (Slipper Limpet) (figure 4) but no living specimens in chains had been washed up. The shells nearly all represented off-shore populations and occasionally much-worn shells of molluscs of rocky shores further west. In marked contrast with Bracklesham Bay was a lack of boring bivalves presumably due to lack of suitable rock of consolidated clay outcropping on the sea bed in this area. The special species for

Bournemouth, a shell that I find reliably, but not in huge numbers, in every visit to Bournemouth is the species used for the Conchological Society's emblem, *Aporrhais pespelecani* (pelican's foot).

Pelican's Foot – *Aporrhais pespelecani*

Beach combing from Boscombe pier to the Bournemouth chines to the west, one invariably comes across shells of *Aporrhais pespelecani*. On one occasion in April 2012, when on a visit in weather that turned out to be both wet and wild and I was the only person on the beach, a live one was found washed up (figures 2 and 3).

figures 2 and 3: Live *Aporrhais pespelecani* washed up on the beach by the Bournemouth chines in wild weather on 29th April 2012. The operculum was in place closing the mouth of the shell.

The pelican's foot is in the Strombiidae, a tropical family with large shells some of which have the flattened flared lip in the adult but our shell is much smaller and *Aporrhais* is a north Atlantic genus that extends no further south than the Mediterranean. Our species *A. pespelecani* is widely distributed around the British Isles, except in the Channel Isles and Isles of Scilly, and is more abundant in the north than it is in the south, being a cold-water mollusc. It lives in muddy gravel sediment just offshore so the live one found at Bournemouth would have been out-of-situ, being displaced by rough seas. Yonge and Thompson (1976) in *Living Marine Molluscs* give further details of the animal which lives in muddy gravel and uses the proboscis to feed on organic matter in the substratum. The inhalent and exhalent respiratory currents are separated by the secretion of mucus tubes (this is illustrated in Yonge and Thompson). Locomotion is slow and initial movement of the foot does not affect the position of the thick shell and then, the animal rears up and the cumbersome shell is heaved forward in a single convulsive contraction of the columella muscle. These observations were probably made in a marine aquarium using dredged live material, although Tom Thompson was a sub-aqua diver and brought his diving team to some of the Conch. Soc. field meetings on the Gower, south Wales, in the 1970s (these were reported in the old Conchologists' Newsletter). It is assumed that *A. pespelcani* spend most of their time buried in the gravel and their movement could be a response enabling them to reassert their position should currents disturb and expose them. The flared lip of the adult shell could also function as an anchorage.

Slipper limpet – *Crepidula fornicata*

This species was introduced to Britain with oysters imported to the Thames estuary in the late nineteenth century and has spread dramatically and is probably the most common beach shell on the south channel coast. Old museum collections show that small numbers of shells were proudly donated as a new discovery and entered in accession registers of the early twentieth century. Today numbers are such that donations could be by the sack load and harmlessly used for decorative purposes. The success is due to its reproduction. *Crepidula* occurs on hard substrata offshore or on very low shore rocks, as at Hastings, east Sussex. Young individuals are attracted to live shells of their own species and settle on them. They are often found washed up on the strand line in stacks, males above and females below and as they change sexes each individual serves a period of time at the top as a male and later at the bottom of the stack as a female, so fertilisation is assured. Egg capsules are laid on the substratum, sometimes on shells in the stack. As the adult slipper limpets are immobile, movement is confined to the young. Eggs hatch into floating veliger larvae that live in the plankton feeding on microscopic algae for a period of time during which they are dispersed to other locations and at a certain stage of development then drop to the bottom. With such a strategy they can hardly fail to spread. Being on the surface, slipper limpets are suspension feeders, not deposit feeders like pelican shells. Cilia beating on the gills create currents bringing in sea water for respiration but also suspended food that becomes trapped in mucus secreted by a glandular strip and wound into the mouth with a large rotating crystalline style in the stomach, a system seen commonly in bivalves (Yonge and Thompson, 1976).

figure 4: Shells of American slipper limpet *Crepidula fornicata* stranded on the sands at low tide.

References

Chatfield, J. (2012) Field meeting to Titchfield, Hampshire *Mollusc World* **29**: 18-21.
Chatfield, J. (2013) Bracklesham Bay, West Sussex: field meeting. *Mollusc World* **33**: 4-7.
Yonge, C.M. and Thompson, T.E. (1976) *Living Marine Molluscs.* Collins, London.

MARINE SHELLS AT BOURNEMOUTH

Scientific name	English name	Location	Notes	Titchfield	Bracklesham Bay
Acanthocardia echinatum	Prickly cockle	3C	29.4.2012, 14.6.2014	+	+
Aequipecten opercularis	Queen scallop	3C	29.4.2012, 14.6.2014	+	+
Anomia ephippium	Common saddle oyster	1C; 2C; 3C	29.4.2012, 14.6.2014	+	+
Aporrhais pes-pelecani	Pelican's-foot	2A; 3C	29.4.2012, 14.6.2014		
Buccinum undatum	Edible whelk	3C	29.4.2012 + egg cases, 14.6.2014	+	+
Calyptraea chinensis	Chinaman's hat		14.6.2014	+	
Cerastoderma edule	Edible cockle	1C; 3C	29.4.2012 & 24.9.2012, 14.6.2014	+	+
Cerastoderma glaucum	Brackish water cockle		14.6.2014		+
Chlamys varia	Variegated scallop	3C	24.9.2012, 14.6.2014		+
Crepidula fornicata	Slipper limpet	1C; 2A; 3A	29.4.2012, 14.6.2014	+	+
Diodora apertura	Keyhole limpet		14.6.2014		
Ensis ensis	Common razor	1C; 3B	29.4.2012		
Ensis siliqua	Pod razor	3B	29.4.2012, 14.6.2014		
Gibbula magus	Greater top shell	1C; 3C	29.4.2012, 14.6.2014		
Hinia reticulata	Netted dog whelk	1C; 3C	29.4.2012, 14.6.2014	+	+
Laevicardium crassum	Smooth cockle	3C	29.4.2012, 14.6.2014		
Littorina littorea	Edible winkle		14.6.2014	+	+
Littorina saxatilis	Rough winkle		14.6.2014	+	+
Lutraria	Otter shell	1C	29.4.2012		
Macoma balthica	Baltic tellin	1C	29.4.2012		
Mya arenaria	Sand gaper	2C	29.4.2012		
Mytilus edulis	Edible mussel	1C	29.4.2012, 14.6.2014	+	+
Nucella lapillus	Common dogwhelk		14.6.2014		
Ocenebra erinacea	Sting winkle	3C	29.4.2012, 14.6.2014		+
Ostrea edulis	Edible/flat oyster	1B; 3C	29.4.2012, 14.6.2014	+	+
Patella vulgata	Common limpet		14.6.2014	+	
Pecten maximus	Great scallop		14.6.2014		
Sepia officinalis	Common cuttlefish	3C	29.4.2012, 14.6.2014		+
Solen marginatus	Grooved razor	3B	29.4.2012, 14.6.2014	+	+
Spisula subtruncata	Trough shells	1C; 2C	29.4.2012, 14.6.2014		
Spisula solida	Solid trough shell	1C; 2B; 3B	29.4.2012, 14.6.2014		
Tapes decussata	Crosscut carpet shell		14.6.2014	+	+
Venerupis senegalensis	Pullet carpet shell	2C	29.4.2012		

Locations 1. Pier to first chine; 2. Branksome Road between shore defences; 3. Zigzag to pier from east; State of shell: A = alive; B = Freshly dead and bivalves as a pair; C = old shell. Various bivalve shells have predator holes; in *Spisula elliptica/subtruncata* usually near umbone, failed boring in *S. solida* (thicker shell).

table 2: Marine shells from Bournemouth and other south coast localities.

Mollusc courses at the Field Studies Council (FSC), 2015

Courses are running at three centres in Surrey, Pembrokeshire and Glamorgan, south Wales, two on land and one on marine molluscs. Both tutors are Conchological Society members.

Land snail identification at Juniper Hall in Surrey, Fri. 1st to Sun. 3rd May. Tutor June Chatfield, £240 residential. Based in the classic snail country of the North Downs, the weekend includes searching for land snails in their appropriate habitats with follow-up identification at the Centre. Unlike some invertebrate groups there is a limited number of species making it an accessible group to learn, but at the same time, the species are sensitive to conditions of habitat so are useful environmental indicators, both for conservation and archaeology. Come and enjoy a weekend looking at snails.
Juniper hall Field Centre, Dorking, Surrey, RH5 6DA Tel: 01306 734501 email: enquiries.jh@field-studies-council.org

Slugs and snails at Orielton, Pembrokeshire, Tues. 11th to Sat. 15th August. Tutor Ben Rowson, £415 residential. The 40+ species of slugs and 100+ species of land snails are a part of British life, but most are seldom noticed. They have fascinating lifestyles and varied roles in nature as composters, predators, and indicators of environmental history; a few are protected by law. This course covers finding and identifying both groups. The tutor co-wrote the new AIDGAP Guide *Slugs of Britain and Ireland* (2014).
Orielton Field Centre, Pembroke, Pembrokeshire SA71 5EZ Tel: 0845 3307372 email: enquiries.or@field-studies-council.org

Beachcombing and seashells at Margam Discovery Centre, Glamorgan, Fri. 21st to Mon. 24th August. Tutor June Chatfield, £323 residential. Investigate the seashells found on the sandy beach at Port Talbot (Aberavon), their identification and way of life. Visit a rocky shore at Porthcawl where different shells and other sealife will be found amongst seaweed and in the pools. We will also explore the limestone rocks which contain fossils. Specimens collected will be brought back to the Centre for closer examination and naming.
Margam Discovery Centre, Margam Park, Port Talbot, Glamorgan SA13 2UA
Tel: 01639 895636 email: enquiries.mp@field-studies-council.org

Shells from Alfred Russel Wallace in the National Museum of Wales

Ben Rowson and Harriet Wood*

Alfred Russel Wallace (1823–1913) is widely known as the 'father of biogeography' and for the joint announcement, with Charles Darwin, of the theory of evolution by natural selection (figure 1, left, in a photograph taken in Singapore in 1862 (public domain photo) and figure 4). The recent centenary of Wallace's death has seen a revival in interest in Wallace and brought his work to wider audiences. In Wales he has become something of a local hero (whether he was 'officially' Welsh or not is another question). The range of fields to which he contributed can be seen from his two-volume '*The Malay Archipelago*…', which records his eight-year voyage of discovery in Southeast Asia as a professional collector-naturalist. One of these fields was conchology. Wallace himself records collecting nearly 7500 shells during the *Malay Archipelago* years, taking any opportunity, but favouring land snails in particular (Wallace, 1869a,b). Perhaps it was already clear to him that terrestrial molluscs had great potential in biogeography. Much of the biological material Wallace collected was intended for immediate sale to museums and collectors in Britain and beyond. He shipped it in consignments to his London agent, Samuel Stevens. Samuel was the brother of the auctioneer John Crace Stevens of Covent Garden (Baker, 2001) whose auction house was the venue of the great shell sales of the 1860s onwards (Dance, 1986). Although it is commonly believed Wallace travelled and collected mainly to earn money through sales, he himself regarded this as a secondary objective and kept his best specimens for his own collection and study (G. Beccaloni, pers. comm.). Those specimens that Wallace instructed Samuel Stevens not to sell included material for Wallace's own collection and that put aside for the entomologist William Wilson Saunders (Baker, 2001).

Soon after his return from Asia, Wallace (1865) published his own list of Malay land snails. He found that his expeditions had collected 125 species, of which over 50 were new, and had provided the first accurate localities for many of the others. At the end of the paper, Henry Adams – the less well travelled of the two Adams brothers, but no less an authority on Asian land snails – wrote the descriptions for Wallace's last few new snail taxa. Although the types and other shells were said to be in Saunders' collection, their whereabouts are now unclear. The Moluccas work of Woutera S. S. van Benthem Jutting (e.g. 1941, 1953, 1958, 1959) cites several of the Adams/Wallace species. She examined collections in London, Frankfurt, Leiden and Amsterdam (1959), and mentions at least one 'original lot described by Adams after Wallace's collections' in London (1958: p.322), although its dimensions do not match those given by Adams in Wallace (1865). Saunders' collections were sold at two auctions in 1874, and the majority of his insects are now at the Oxford University Museum of Natural History. However, Saunders' shells have not yet been located at Oxford or at the Natural History Museum, London (D. J. Mann & J. Ablett, pers. comms).

Wallace (1865) says that all his shells were identified with reference to the incomparable collection of Hugh Cuming, which is now at the Natural History Museum, London. As Cuming's letters to others reveal, he had been a customer of Wallace (or Stevens) during the Malay Archipelago years (Dance, 1980), including obtaining several Moluccas species described by Louis Pfeiffer (e.g. Pfeiffer, 1861). As Cuming's collection remained in private hands until Cuming's death in 1866 (Dance, 1986), Wallace must have made use of it before then and one wonders whether the two men knew one another personally. Both knew Darwin, of course, and had much else in common as both field collectors and dealers (Dance, 1980). Alternatively, Saunders or Adams could have done the comparisons for Wallace without him meeting Cuming himself.

At this time, James Cosmo Melvill (1845–1929) was beginning to build up his own collection. Eventually, when combined with that of John Read le Brockton Tomlin, this was to become the biggest ever in private hands in Britain (Dance, 1986). Melvill later wrote an admiring obituary of Cuming, whom he encountered at one of J. C. Stevens' shell sales when Cuming was an old man (Melvill, 1895). He does not say whether they corresponded, but does point out one further similarity between Cuming and Wallace. Melvill notes that in Southeast Asia, both collectors obtained many land snails by paying local children to look in woods and forests, and also carried quinine and other medicines, each 'practising as a medicine man' (Melvill, 1895). This apparently aided relations with locals as well as – at least in Wallace's case – treating people directly and possibly saving his own life (Wallace, 1869a,b). Melvill says the effect was to raise superstitions about the travellers. Wallace (1869b) wrote that the people of the Aru Islands, New Guinea were 'imputing hidden medical virtue' to the land snails he collected. This, he thought, was their explanation of why he kept snails while rejecting the common, nacreous marine specimens they brought him.

The Melvill-Tomlin collection continued to be built up by purchase and exchange until the 1940s, before being bequeathed to the National Museum of Wales in 1955. Lists of secondary sources, with whom Melvill or Tomlin corresponded or obtained material from (Trew, 1987, 1990) suggest shells from Wallace could easily have made their way into the collections. Finding and investigating the relevant shells is now immeasurably easier, thanks to the careful curation and item-documentation of the Melvill-Tomlin collection during the late 1990s and early 2000s. The publication of many of Wallace's notes in recent years is also an aid to establishing what he collected (Baker, 2001; van Wyhe & Rookmaaker, 2013; see also http://www.nhm.ac.uk/wallacelettersonline).

*ben.rowson@museumwales.ac.uk

The Wallacean land snails

Our investigation shows the Melvill-Tomlin collection contains at least eight lots of tropical Asian land snails with labels reading either 'Wallace', 'Wallace coll.' or 'A. R. Wallace coll.' in a range of handwritings, including Melvill's and Tomlin's. Some labels include prices in shillings. The lots are labelled, and databased, as belonging to eight different species, most of which are relatively large and 'showy' (figures 2 and 3). Five of the species were mentioned in Wallace's snail paper (1865). Six of the species belong to the Helicoidea and are from various islands of the Moluccas (Maluku Islands), Indonesia. The Moluccas lie between continental shelves in the region now known to biologists as Wallacea (see van Benthem Jutting, e.g. 1941, 1953, 1958, 1959 for the snail fauna). Wallace spent several years visiting almost all the major Moluccas islands, collecting and exporting land snails from many of them (Wallace, 1865; Baker, 2001). Famously, it was in the Moluccas in 1858 that Wallace wrote up his ideas on evolution by natural selection – the 'Ternate Essay' – and sent them to Darwin. This led to the jointly credited announcement of the theory at the Linnean Society of London later that year, although the sequence of events is not without its controversies (van Whye & Rookmaaker, 2012; Davies, 2012).

Five of the helicoid lots belong to Camaenidae, and one to Bradybaenidae. The bradybaenid is a shell labelled 'Hel. pyrostoma Ind Islands' to which Tomlin has added '1512 Wallace Gilolo' and 'v. nigrescens Kobelt.' The shell seems correctly identified with *Phania pyrostoma* (Férussac, 1821) from Gilolo (Halmahera) in Wallace's list. Wallace even singled this species out in the *Malay Archipelago* as 'very fine and handsome' among those found by a local on Gilolo (Wallace, 1869b); Pilsbry (1891) also considered it 'a magnificent species'. The variety *nigrescens* Kobelt was acknowledged (in Additions and Corrections) by Pilsbry (1894). The genus (the name *Phania* was later replaced with *Pyrochilus*) is endemic to Gilolo, Batchian (Bacan) and Ternate in the Moluccas (Pilsbry, 1891; 1894; van Benthem Jutting, 1959; Schileyko, 2004).

The camaenids all belong to the genus *Planispira*, which ranges from Sulawesi and the Moluccas to New Guinea (Pilsbry, 1891; 1894; van Benthem Jutting, 1959; Schileyko, 2003). One lot of two shells has an old label reading 'P. kurri Pfr. Batchian Wallace Coll.' (handwriting unknown; see *Leptopoma* below); Batchian was a locality given for *P. kurri* by Wallace (1865). Two other lots, each containing one shell, are from localities not recorded by Wallace for their respective species. One has an old label in a different unknown handwriting reading 'Planispira zonalis Var [?] Wallace Batchian 1 at 4/- [i.e., 4 shillings]'. Tomlin has added 'Fer.' in pencil. Wallace records *P. zonalis* Férussac only from Gilolo. The other has a label in Tomlin's handwriting reading 'Planispira expansa Pfr. Bouru (Wallace)'. Wallace (1865) records *P. expansa* Pfeiffer only from Batchian, although lists several other snails from Bouru (Buru), where he collected widely (Baker, 2001). It is possible that there has been some confusion over identification, but both are a good match for illustrations in Pilsbry (1891), who also extended the known distributions of both species. So neither their names nor localities rule out their having been collected by Wallace, especially if they were despatched to Europe before being identified.

The remaining two *Planispira* lots, both from Ceram (Seram), bear species names introduced by Pilsbry (1891), long after Wallace's return to Britain and disposal of what he had retained as his personal collections (Wallace, 1865; Baker, 2001). Pilsbry described both species from the Moluccas without giving a further locality or collector. One lot, containing one shell, is labelled 'Planispira iaddae Pilsbry Ceram 5/-'. It seems correctly identified. It also contains a pale blue label reading 'Wallace' in unknown handwriting. The other lot, containing two shells, is labelled 'H nitidiuscula 4 at 3/-' Tomlin has added 'Bttg.' and a second label in his handwriting reads 'Ceram Wallace 28'. The identification with *P. chariessa* recorded on the label by A. Trew (c. 1997) seems less certain. According to Pilsbry (1891) both species are similar to the widespread and variable *P. zonaria* (Linnaeus, 1767); indeed, the name *nitidiuscula* Boettger, 1891, described from Amboina (Ambon) is considered a form of *P. zonaria* by Pilsbry (1894).

Finally there are the two non-helicoid 'Wallace' lots in the Melvill-Tomlin collection. One contains three shells of ariophantoids, with three labels. Apparently the oldest label, in unknown handwriting, reads 'Borneo Wallace Xestia citrina var. albocincta 3 at 3/-'. The reverse of this label reads 'large! Citrina [;] 2 small [illegible] sp !'. There are two labels in Tomlin's handwriting. One reads 'X. citrina L. v. albocincta Borneo Wallace'; the other reads 'v. coagulata Pfr. f. Fulton'. If the 'f.' is for 'fide' it would appear that the dealer Hugh Fulton reidentified at least one of the shells at some point; *Helix coagulata* Pfeiffer, 1856 was described from Amboina. Wallace (1865) was aware of the well-known species *'Nanina'* [i.e. *Naninia*] *citrina* (Linnaeus, 1758), at least when identifying his shells in London. He listed it from several islands of the Moluccas and noted its variation in colour and pattern. Wallace had also, of course, collected widely in Borneo and recorded shipping land-snails home (Baker, 2001). The problem is that *N. citrina* and other *Naninia* are species of the Moluccas and New Guinea (van Benthem Jutting, 1959; Schileyko, 2002). Borneo is on the other side of the famous biogeographical divide established by Wallace that became known as the Wallace Line. Wallace himself would have been unlikely to have made any mistake in this regard, noting that snails generally followed the same pattern (Wallace, 1865). Although some of the genera he records on both sides of the line include superficially similar species, we found it difficult to refute the identification of the Borneo shells as *N. citrina*, so the locality and identification seem to conflict.

The eighth lot comprises one shell of a caenogastropod with the operculum in place. It is labelled 'Leptopoma Batchian Wallace Coll.', in the same handwriting as appears on the lot of *Planispira kurri*. Another label, in the capitalised handwriting of Hugh Fulton, reads 'Leptopoma flammeum Pf. Ceylon Batchian Id'. On the reverse, Fulton has written 'Batchian Id is probably correct'. Wallace's Malay paper (1865) lists eight species of *Leptopoma* from Borneo, the Moluccas and New Guinea, but of course none from Ceylon (Sri Lanka). He is known to have visited Sri Lanka only en route to and from Europe – to change ships at Galle in 1854, and to call briefly in 1862 (van Wyhe & Rookmaaker, 2013). However, the shell does resemble the Sri Lankan species *Leptopomoides flammeus* (Pfeiffer, 1854), as figured by Reeve (1862) and Naggs & Raheem (2000). It does not look like any Moluccas *Leptopoma* we have been able to

figure 2: Land snails with Wallace associations in the Melvill-Tomlin collection, National Museum of Wales (a).

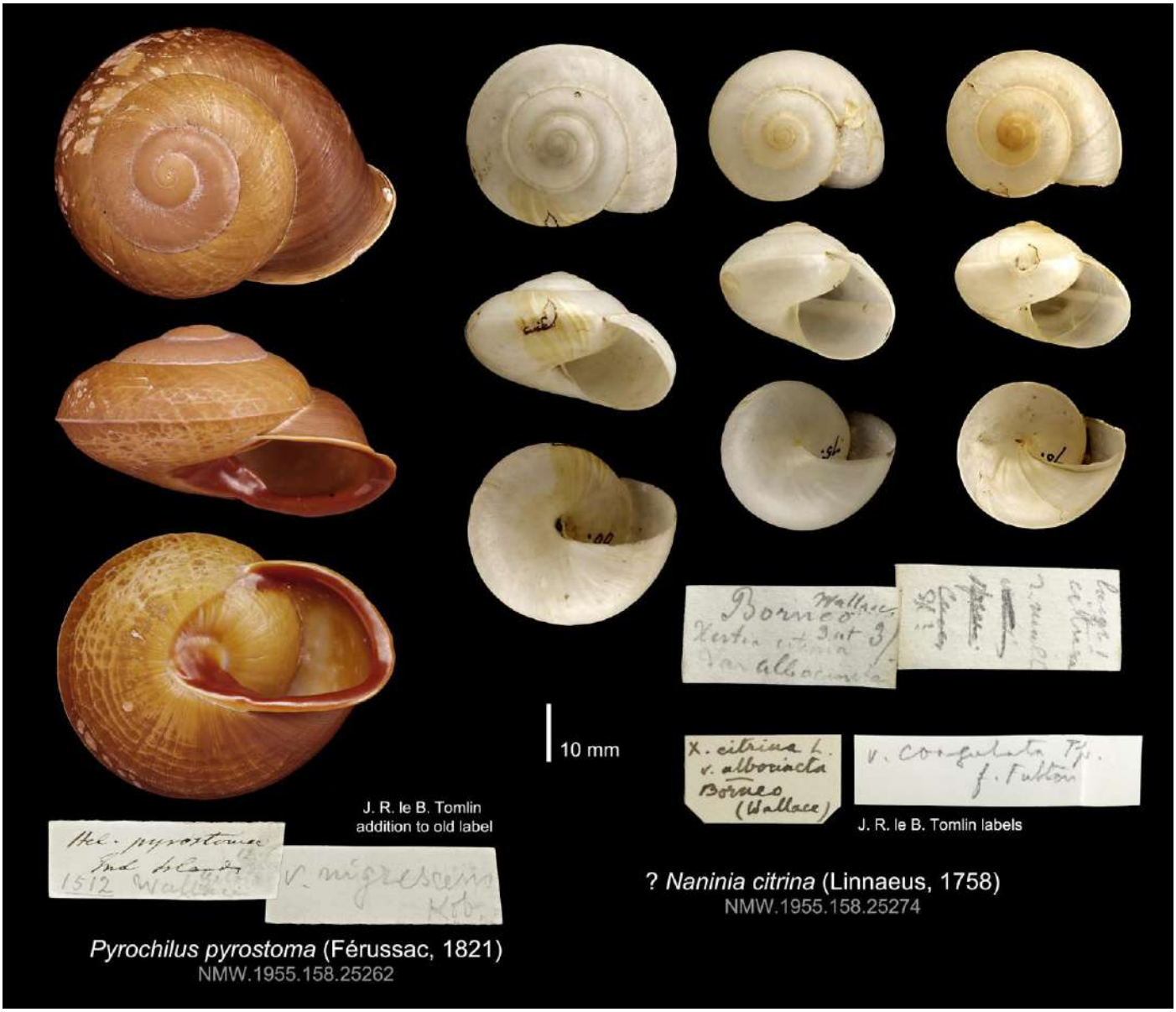


figure 3: Land snails with Wallace associations in the Melvill-Tomlin collection, National Museum of Wales (b).

examine. As with the *Naninia* shells, the Wallace locality and specimens seem to conflict. Interestingly, Fulton gave his opinion on both lots and may have had a similar problem; van Benthem Jutting (1959) gives other examples, some relating to Wallace.

Conclusions

It seems highly likely that the Melvill-Tomlin shells were indeed collected by Wallace from the Moluccas. The two non-helicoid lots are more dubious, given the mismatch between their identities and localities, so some mix-up may have occurred. The diversity of labels among the shells, some clearly from dealers, suggest they entered the collection by various routes, some perhaps bought from Samuel Stevens while Wallace was still overseas, and even from the period in which he was formulating his ideas on natural selection.

As Wallace's 1865 paper suggests, snails like these were among those that helped lead to his famous conclusions on species and biogeography. His name was evidently familiar to conchologists of his day, his conchological career overlapping that of Cuming and Melvill, and may well have known some collectors personally. Further conclusions on Wallace's molluscs would demand a more detailed study of his material in London and elsewhere.

Acknowledgements

We thank George Beccaloni (Natural History Museum, London) for helpful comments, and Jon Ablett (Natural History Museum) and Darren Mann (Oxford University Museum of Natural History) for their help with information on the Saunders collection.

References

Baker, D.B. (2001). Alfred Russel Wallace's record of his consignments to Samuel Stevens, 1854–1861. *Zoologische Mededelingen Leiden* **75** (16): 251–341.

van Benthem Jutting, W.S.S. (1941). On a collection of Non-Marine Mollusca from the Talaud Islands and From Morotai (Moluccas). *Treubia* **18**: 1–27.

van Benthem Jutting, W.S.S. (1953). Annotated list of the non-marine Mollusca of the Moluccan Islands Ambon, Haruku, Saparua and Nusa Laut. *Treubia* **22**: 275–318.

van Benthem Jutting, W.S.S. (1958). Non-marine Mollusca of the Island of Misool. *Nova Guinea* **9**: 293–338.

van Benthem Jutting, W.S.S. (1959). Non-marine mollusca of the North Moluccan Islands Halmahera, Ternate, Batjan and Obi. *Treubia* **25**: 25–87.

Dance, S.P. (1980). Hugh Cuming – prince of shell collectors. *Journal of the Society for the Bibliography of Natural History* **9**: 477–501.

Dance, S.P. (1986). *A History of Shell Collecting*. E. J. Brill – W. Backhuys, Leiden.

Davies, R. (2012). How Charles Darwin received Wallace's Ternate paper 15 days earlier than he claimed: a comment on van Whye & Rookmaaker (2012). *Biological Journal of the Linnean Society* **105**: 472–477.

Melvill, J.C. (1895). An epitome of the life of the late Hugh Cuming, FLS, CMZS etc. *Journal of Conchology* 8: 59–70.

Naggs, F., & Raheem, D. (2000). *Land Snail Diversity in Sri Lanka: an illustrated guide prepared for the launch of the Darwin Initiative programme*. Natural History Museum, London.

Pfeiffer, L. (1861). Descriptions of forty-seven new species of land-shells, from the collection of H. Cuming, Esq. *Proceedings of the Zoological Society of London* 1861: 20–29.

Pilsbry, H.A. (1891). *Manual of Conchology: structural and systematic, with illustrations of the species. Ser. 2, Vol VI: Helicidae, Vol. 4.* Academy of Natural Sciences, Philadelphia.

Pilsbry, H.A. (1894). *Manual of Conchology: structural and systematic, with illustrations of the species. Ser. 2, Vol IX: Helicidae, Vol. 7; guide to the study of Helices.* Academy of Natural Sciences, Philadelphia.

Reeve, L. (1862). Monograph of the genus *Leptopoma*. *Conchologica Iconica* 13: 8 pls.

Schileyko, A.A. (2002). Treatise on Recent terrestrial pulmonate molluscs, Part 9: Helicarionidae, Gymnarionidae, Rhysotinidae, Ariophantidae. *Ruthenica*, Supplement 2. Moscow.

Schileyko, A.A. (2003). Treatise on Recent terrestrial pulmonate molluscs, Part 11: Trigonochlamydidae, Papillodermidae, Vitrinidae, Limacidae, Bielziidae, Agriolimacidae, Boettgerillidae, Camaenidae. *Ruthenica*, Supplement 2. Moscow.

Schileyko, A. A. (2004). Treatise on Recent terrestrial pulmonate molluscs, Part 12: Bradybaenidae, Monadeniidae, Xanthonychidae, Epiphragmophoridae, Helminthoglyptidae, Elonidae, Humboldtianidae, Sphincterochilidae, Cochlicellidae. *Ruthenica*, Supplement 2. Moscow.

Trew, A. (1987). James Cosmo Melvill's new molluscan names. National Museum of Wales, Cardiff.

Trew, A. (1990). John R. le B. Tomlin's new molluscan names. National Museum of Wales, Cardiff.

Wallace, A.R. (1865). List of the land shells collected by Mr. Wallace in the Malay Archipelago, with descriptions of the new species by Mr. Henry Adams. *Proceedings of the Zoological Society of London* (1865): 405–416, pl. XXI.

Wallace, A.R. (1869a). *The Malay Archipelago: the land of the orang-utan, and the bird of paradise, with studies of man and nature.* Vol. 1. MacMillan & Co, London.

Wallace, A.R. (1869b). *The Malay Archipelago: the land of the orang-utan, and the bird of paradise, with studies of man and nature.* Vol. 2. MacMillan & Co, London.

van Whye, J., & Rookmaaker, K. (2012). A new theory to explain the receipt of Wallace's Ternate Essay by Darwin in 1858. *Biological Journal of the Linnean Society* **105**: 249–252.

van Whye, J., & Rookmaaker, K. (eds.) (2013). Alfred Russel Wallace: letters from the Malay Archipelago. Oxford University Press, Oxford.

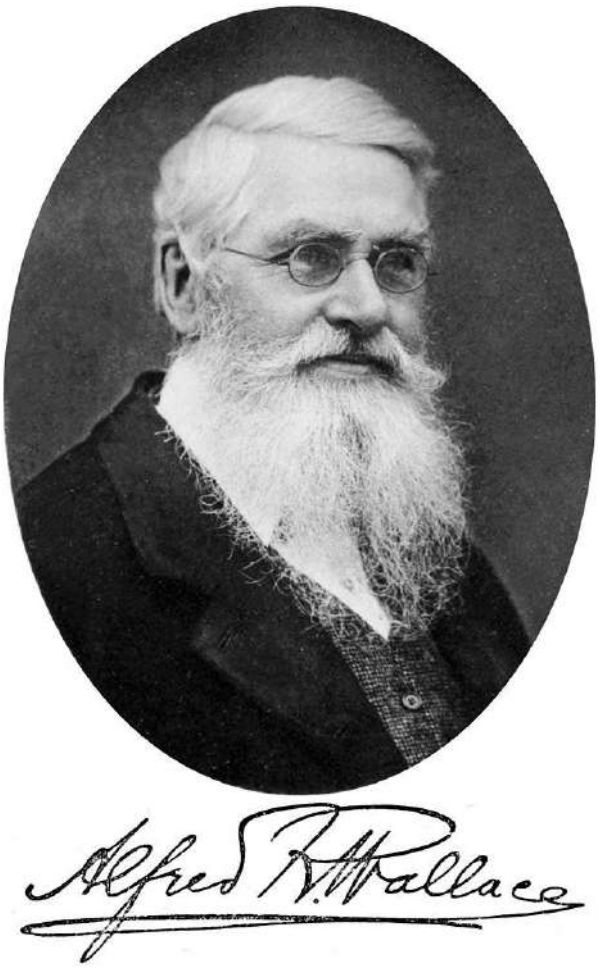


figure 4: portrait of Alfred Russel Wallace and his signature on the frontispiece of Darwinism (1889) (public domain image).

Errata, Mollusc World issue 36 (Nov. 2014)

Many thanks go to those who have sent in comments and suggestions after the last issue. John Crothers reminded me, regarding Martin Willing's article on the EuroMal conference (pages 10–13) that the spelling of the college in Cambridge, where the conference took place, is 'St Catharine's' and not 'St. Catherine's'! I also thank Chris du Feu for the comments in his e-mail reproduced opposite.

Readers will also have noticed that the page numbering was omitted from issue 36. My apologies for this, which only came to light after the issue was printed. Despite the Society's very limited resources every attempt is made to ensure accuracy, but inevitably errors will occasionally continue to creep in!

Hon. Editor

Dear Peter,

Another excellent issue of Mollusc World. The new head teacher at my former school was delighted to know that the speed record for slugs was recorded in the very school where he now presides [see issue 36, page 3. *Ed.*]. He has asked me to write a note about it for his school newsletter.

But another matter: on the second page of the Bedfordshire field meeting report you have a caption for figure 7 [page 15] stating it is *Arion fasciatus*. It looks a very odd specimen of this species to me. It is, without doubt, *Lehmannia marginata*. probably an error in photograph selection rather than species identification. Otherwise Treswell Wood [Retford, Nottinghamshire] is absolutely brimming with tree-climbing *Arion fasciatus*.

keep up the good work,
All the best,

Chris du Feu

Failing to define *Calliostoma* (and wondering who to blame...) *Graham Saunders*

figure 1: *Calliostoma conulum*. Left: La Palma, Canary Islands, height (h.) 19 mm; Right: Acitrezza, Italy, h. 25 mm.

How do I know I have got problems with the taxonomy of the marine top shells of the genus *Calliostoma*? Let me lead you into the maze. The problem is multi-layered as I can recognise no clear definition of what is or is not a *Calliostoma* or what is or is not a species.

In 1778, Emanuel Mendez da Costa published his *Historia naturalis testaceorum Britanniæ, or The British conchology...* in which he described the species *Trochus papillosum*. The book was published in both French and English in two stages and the description appears in the second stage. This species is now known as *Calliostoma papillosum* (da Costa, 1778) (figures 2 and 3) although *Trochus papillosum* would actually be the senior taxon. Mendez da Costa did not treat this as a new description, regarding it as already current. Sadly, he did not document his original sources. Note also that some references confuse matters by quoting a later date of publication.

figure 2: *Calliostoma papillosum*, North East Scotland, h. 29mm.
figure 3: (bottom right) *C. papillosum*, Oban, East Scotland.

Ignaz A. von Born first described the species *Trochus granulatum* (now known as *Calliostoma granulatum* (Born, 1778) (figure 4)) in his book *Index rerum naturalium Musei Caesarei Vindobonensis*. This is said to have been published in Vienna on von Born's 36th birthday in 1778 and near the

figure 4: *Calliostoma granulatum* (Born, 1778) trawled off Penzance, h. 37 mm, width (w.) 30 mm.

day of the death of Carl Linnaeus, having been written as part of his normal employment over a number of years.

We have no conclusive proof of the exact date of publication for the original descriptions of either *C. papillosum* or *C. granulatum* as they were not published in formal papers to be read in front of a learned society on a particular date but will have been released as individually bound copies were completed and the first copies issued to patrons, the Emperor's library or to scientific colleagues they wanted to impress. In those days priority copies would be more than a year ahead of the completion date of the last copy. This is evidenced by dated presentation copies of publications from that century with the dated dedication in the authors' own handwriting. As you may imagine, the dedication pages are vulnerable to wear and rebinding. The earliest may have been lost over the years but some remain with uncut pages, never having been read.

When I first took an interest in these problems, I naively assumed that *C. papillosum* and *C. granulatum* were both forms of a single species, but I am now no longer sure. Given that neither have a veliger stage but appear to have two, if not four, visually distinct forms in our waters with ranges potentially expanding to converge but not yet having done so, I may prove to have been wrong. If the level of differentiation is not deemed to justify specific separation of the two or more, then the logic supporting several other series of taxa must also fail.

The ICZN has not yet been invited to intervene.
Potential synonyms of these species include:

Calliostoma kochi Pallary 1902; but what was traded as *C. koch**i*** is now traded as *C. hernandezi*! There may still be a 'real' *kochi.*

Calliostoma hernandezi Salazar and Gubbioli 1993, as a synonym of *C. koch**i***! The Southern cline? (Non *Trochus kochi*, Philippi R. A., 1844) (figure 5)

Calliostoma gubbioli Nofroni, 1984 as a form of *C. granulatum*. A localised environmental variety? (figure 6)

Calliostoma kochi Pallary, 1902 has been offered commercially under the label '*Calliostoma dubia* Philippi R. A., 1844' but then, so have several other species! Rolan considers *C. dubia* to be a synonym of *C. conulus* which he says was described in 1758 not 1767.


figure 5 (left): *Calliostoma hernandezi*, Gabon.
figure 6 (right): *Calliostoma gubbioli*, Algarve.

Authorities seem agreed that *Trochus zizyphinus* (now *Calliostoma zizyphinum* (Linnaeus, 1758)) actually was described by Linnaeus in 1758. Several early authors gave '*Zizyphinus*' full generic status. There are many named *C. zizyphinum* derived gene pools in the Mediterranean, all visually different, and usually very beautiful. Rolan illustrates a shell he attributes to *lusitanicum* Nordseick & Garcia-Talavera, 1979. J. Hernandes figures the same form (figure 7 left). Some years before this, I found a series of dead shells, one of which actually resembled the type illustration with the others grading towards a small *C. zizyphinum*-derived morph sometimes called *C. dubia* (figure 7 right). But Rolan's figure looks much more like a derivative of the very variable *Calliostoma laugieri* **(**Payraudeau, 1826) (figure 8). Local collectors in the Canary Islands warn me that each island has distinct gene-pools.

figure 7. Left: potentially *Calliostoma lusitanicum*; right: potentially *Calliostoma dubia*, both from Lanzarote.

figure 8: *Calliostoma laugieri*, Spain.

There are many, many varieties or morphs of what we call *C. zizyphinum*. Some populations are homogenous while others are very variable (figure 9 a–d). This species is one of the few that may include blue phase pigment in its colour options but this degrades very quickly with exposure to daylight. C. *zizyphinum* appears consistent in shape and profile. We call two light-coloured forms *Calliostoma lyonsi* Leach, 1850 which are dominant in, but not exclusive in, some populations. The most abundant form is white and the same shape as *C. zizyphinum* excepting the vertical columella but the other is a more delicate convex shell appearing separable (figure 10).


figure 9a: *C. zizyphinum*, Walton-on-the-Naze, Essex, h. 22mm.


figure 9b: *C. zizyphinum* . Left: Intertidal, Jersey, h.24 mm. Right: Lampedusa h. 19 mm.


figure 9c: *C. zizyphinum*, albino, the Lizard, Cornwall. Left: h.16 mm. Right: sub adult h. 17 mm.

figure 9d: *C. zizyphinum*, mixed sample from two crab pot sites off the Lizard, Cornwall.

figure 10: Possibly a real *C. lyonsi* Guernsey, h. 19 mm.

The existence of more than one morph of *C. zizyphinum* invites confusion with *Calliostoma occidentale* Mighels & Adams 1841 (= *formosum* McAndrews & Forbes. 184?) (figure 11), *Calliostoma leptophyma* Dautzenberg & Fischer, 1896, *Calliostoma heugteni* Vilvens & Swinnen, 2003 and *Calliostoma hirondelli* Dautzenberg & Fischer, 1896 which are all rather similar but may not be synonymous.

figure 11: *Calliostoma occidentale*, Lewis, h. 8 mm.

Calliostoma virescens Renieri in Coen, 1933 appears distinct from *C. laugieri*, although that is variable and wide ranging.

We do not have (and may never get) access to enough data to authenticate relationships between these populations. It is generally believed that none of the group has a planktonic phase in their lifecycles so it is possible, although not proven, that physical barriers exist between populations. E. Rolan reports juvenile material from the Cape Verde Islands which might eventually prove to be genuinely *Calliostoma*, but he also suggests relationships which may prove to be *Jujubinus*. As far as we know, no true *Calliostoma* has a free-swimming larval stage, even though related groups such as *Gibbula* and *Osilinus* do normally have one, albeit brief. It appears that many species attributed to *Jujubinus*, *Cantharidus* or *Clelandella* have been documented as completing the larval stages within the egg mass and are without a free-swimming larval stage. The scope for justification of splitting at the generic or sub-generic level seems limited.

Fritz Nordseick and Francisco Garcia-Talavera recognized five *Calliostoma* species as present in the Canary Islands. These are *C. conulus*, *C. lusitanicum*, *C. lithocolletum*, (figure 12) and *C. saturale* (should it be *suturalis?*). Of these two may be endemic but evolved from *Calliostoma zizyphinum* (Linne 1758) and *C. granulatum*. There may actually be three other species present as neither of the two common species from material I collected in the 1970s compare convincingly with any of the figured specimens. Subsequent authors have been applying *C. lusitanicum* to material which appears to be a *C. lauguieri* derivative rather than a *C. zizyphinum* derivative as one might assume from the original description. They also recognize *C. gubbioli* and *C. heugteni*, both of which appear visually separable. Dispersal to the Canaries would have been physically difficult and certainly not recent. The real *C. granulatum* is reported as also present but could have been introduced more recently by fishing activity.

figure 12: *Calliostoma lithocolletum* , 100m, La Palma, h. 26 mm.

The relationship between logic and Taxonomy is, to put it politely, often rather nebulous, as some of us can be very selective in the criteria we use to separate species. The *Calliostoma* do not disperse easily so there must be a lot of isolated 'pocket' gene pools which, while not continuously linked, have not been isolated for long enough for us to split them with confidence.

What is a *Calliostoma*? What makes it different from other Trochids such as *Jujubinus*, *Gibbula*, *Cantharidus*, and *Osilinus* etc., *ad infinitum*? Is *Callumbonella suturalis*, described by Philippi in 1836 from a Pleistocene type, really a *Calliostoma*? There are lots of opinions, many based on incomplete information and some on very selective application of questionable logic. When I was younger, and even more naïve than I am now, I believed that somewhere there must be experts who actually know all the answers. The longer I observe and the more I read, the more sceptical I become.

Proving theories is far from simple and often prohibitively expensive. Can a single species employ different reproductive cycles in different environments and different populations? Some experts are apparently assuming they can, and at the same time, others are assuming that they can't.

Under an electron microscope the protoconch of a *Jujubinus* looks just like that of an *Osilinus*, but it is also clear that the comparison has been based on a small number of samples not covering the entire geographic ranges of the populations. On the basis of similarly small samples, while *Calliostoma* appear to have quite recognisable protoconchs, there are populations/species which are so variable that some individual specimens appear to belong in *Jujubinus* and others appear visually attributable to *Calliostoma*.
Dr Suzanne Williams (Natural History Museum, London) kindly read an earlier version of this article and reminded me that taxonomic theory bases *Calliostoma* on the Swainson designation in 1840 of the species described by

Linnaeus, in 1767 as *Trochus*. Some websites suggest Linnaeus spelled it *conulus* in the 1761 publication. There is a reference to a *Trochus conulus* Linnaeus, 1758 which Fretter & Graham regard as a junior synonym of *Calliostoma zizyphinum* (Linnaeus, 1758). I still lack confidence because about 50 years ago in Scandinavian museums I saw material labelled *Trochus conulus* Nardo, 1847 which looked very like what we currently call *Calliostoma conulus* but in context had to be forms and varieties of *C. zizyphinum*. Was the material Swainson examined the actual Linnean 'Type'? If so, was the type material derived from the Southern populations we currently differentiate as *C. conulus* from *C. zizyphinum*? There are Mediterranean populations with a range of intermediate forms. There is also *Calliostoma conuloides* (Lamarck, 1822) which appears to be a derivative of *C. conulus*, not closely resembling the forms of *C. zizyphinum* which are attributed to that taxon in many data sources (figure 13). Again, many visually different populations exist.

figure 13: *Calliostoma conuloides*, Lampedusa, h. 30 mm.

Dr Williams advises that a characteristic of all known *Calliostoma* is a honeycomb textured protoconch and none have free swimming larval forms. Are there other definitive constants? She explained that Cretella, Scillitani & Picardo (*Lavori della Societa´ Italiana di Malacologia*, **23**: 51–81 1990) had shown that *Clellandella* belong in the Trochidae based on external head, foot and radula morphology and that allozyme data confirms the very close relationship with *Jujubinus* and her data also places both genera (or should they be sub-genera?) in the *Cantharidinae*. There is some actual science being used.

The only thing I am totally convinced of is that the species concept as we define it is not yet fit for purpose and in general, taxonomists behave like lawyers rather than scientists. There must be a better way. Taxonomists have a lot in common with the tailors who made the 'Emperor's new clothes'. We all too easily reject the evidence of our eyes for fear of being considered stupid by our 'peers' and are reluctant to embrace embarrassing logic.

The shells originally described as *Trochus miliaris* Brocchi, 1814 give an inconvenient example (figure 14). There are more examples of the *Calliostoma*-like morph of this species in our collections than of the *Jujubinus*-like morph. The first appears to live in deep water, in general below 80 metres, all the way from the Faeroe Islands to Turkey and the Cape Verde islands. This form has been called *Clelandella clelandi* (W.Wood, 1828) by some authorities yet other authorities favour *Calliostoma*. Examples are recovered from crab pots set on the eastern side of The Lizard Peninsula, Cornwall, deeper than 80 metres. The other form has been found off the western side of The Lizard at 40 to 80 metres on hard ground via lobster traps and probably also from the Bay of Biscay. These are small shells and easily overlooked. Over the years they have attracted the interest of a series of conchologists. They have been attributed to various genera but in the UK, *Jujubinus miliaris* (Brocchi, 1814) and *Cantharidus* are currently popular for checklist purposes, while many Belgians and some Italians favour *Clelandella*. Some French, some Belgians and some Italians favour *Calliostoma*. There are certainly Mediterranean shallow water species which have very similar shape and sculpture to the deep water western Lizard material and, at this time, no one doubts that **they** are correctly called *Jujubinus*. The imperative of logic requires either one genus or two species! David McKay has provided me with material from some northern populations which look very different and much larger (figures 14 c).

figure 14a: '*Trochus miliaris*' form 1 from Lizard crab pots.

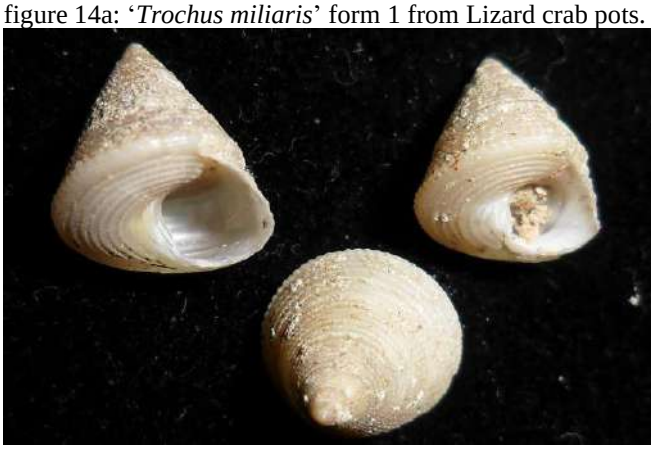


figure 14b: '*T. miliaris*' form 2, Lizard lobster pots. h.7 mm.

figure 14c: *'T. miliaris'* recovered from haddock stomachs, northwest Scotland h. <18 mm.

If we change our vocabulary and refer to 'nomenmorphs' rather than species we will be less distracted by the taxonomic debate. The nomenmorph concept was created by C. P. Palmer. We could rationally recognise as nomenmorphs a small number of overtly related 'complexes' within which we place gene-pools until we can resolve their specific status to everyone's satisfaction. Science does not yet have all the answers.

A History from a shell souvenir of SS 'Olympic'

John Llewellyn-Jones

figure 1: A shell roundel of the ill-fated SS Titanic (J. Llewellyn-Jones collection).

It's a very human trait to be attracted to tragedy while we tend to forget and even overlook the everyday but successful things in life. On 14th April 1912 the SS Olympic received a distress signal from her sister ship the SS Titanic (figure 1) saying that she had hit an iceberg and was sinking. This was the 'unsinkable ship'! But within hours she had sunk to a depth of 12,500 feet with the loss of 1500 lives. Unfortunately the Olympic was too far away to help.

This story is about the almost forgotten SS Olympic. The SS Olympic was one of three Olympic class 'floating palaces' built by the White Star Line to compete with Cunard's largest ships the Lusitania and Mauretania in size and luxury. The Olympic was built first, followed by the Titanic and then the Gigantic named after three mythological races: the Olympians, the Titans and the Giants. The Gigantic was renamed the Britannic following the sinking of the Titanic. The Britannic was launched at the beginning of the First World War and was immediately requisitioned as a hospital ship. She was torpedoed on 21st November 1916 and still lies at the bottom of the Aegean Sea.

So we come to RMS(SS) Olympic (figure 2) which served a long and illustrious career (1911–1935) and became known as the 'Old Reliable'. Olympic's keel was laid down by Harland and Wolff in December 1908 and she was launched on 20th 1910. On 20th September 1911 the Olympic was steaming down the Solent on her way to America when she collided with the British warship HMS Hawke. The Olympic was able to limp back to Southampton for repairs; the Hawke fared less well. At the resulting enquiry, the Royal Navy blamed the Olympic for the incident, alleging that her large displacement generated a suction that pulled the Hawke into her side. Interestingly the captain in command of the Olympic at that time was Edward Smith, who died at the helm of the Titanic a year later. Also one crew member, a Violet Jessop, survived not only the collision with the Hawke in the Olympic but also the sinking of the Titanic as well as the sinking of the Britannic in 1916.

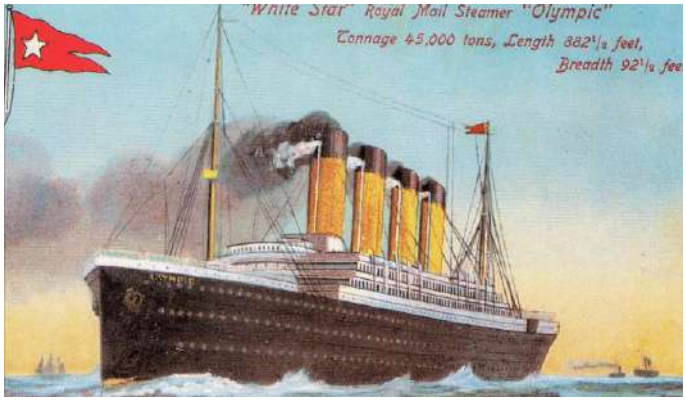


figure 2: A postcard of the RMS 'Olympic' (J. Llewellyn-Jones collection).

In September 1915 the Royal Navy summoned the Olympic to serve as a troop ship. She left Liverpool on 24th September 1915 carrying soldiers to the Gallipoli campaign, and continued serving routes to the Eastern Mediterranean until 1916 when she was chartered by the Canadian Government to carry troops from Halifax, Nova Scotia to Britain. In 1917 after the United States declared war on Germany the Olympic transported thousands of US troops across the Atlantic. On 12th May 1918 the Olympic, under the command of Capt. Bertram Fox-Hayes, rammed and sunk the U-boat U-103, the only known sinking of a warship by a merchant vessel during First World War. To summarise, her First World War effort the Olympic carried 201,000 troops, travelled about 184,000 miles, burned 347,000 tons of coal at the rate of 650 tons a day producing 24 knots of speed.

After the war she returned to Belfast for a refit for civilian service and started carrying passengers across the Atlantic in 1920. During the 1920s the Olympic aroused tremendous public interest and when she had her annual dry dock overhaul in Southampton, train excursions were organised from London costing 8 shillings (40p in today's money) to look at her. People were able to walk round her, enjoying the innovation, grandeur and luxury of this magnificent ship. They could also buy a number of souvenirs of their day out including an anchor shaped 'roundel' of shells surrounding a b/w postcard of the Olympic herself (figure 3).

She continued providing an express transatlantic service until 1934 when she again struck a ship. The approaches to New York were marked by lightships. On 15th May inbound, in heavy fog, she was homing in on the radio beacon of the Nantucket lightship but failed to turn in time and sliced through the smaller vessel which broke apart and sunk. Four of the crew went down with the vessel, seven being rescued of which three died later of their injuries.

At this time the White Star Co. was merged with Cunard Line and so the Olympic was retired. She was partially broken up at Jarrow and then in 1937 the hull was transferred to T. W. Ward's yard and demolished, providing work for Scottish shipyards suffering from the effects of the depression.

figure 3 (left): An anchor shaped roundel with a picture of the SS Olympic (J. Llewellyn-Jones collection).

Today the Olympic's panelling, mirrors, ceilings and stained glass can be seen in the 'Olympic Suite'; conference and dining rooms of the White Swan Hotel (an old coaching Inn) in Alnwick, northeast England. The hotel also has the Olympic's wooden staircase up to the first floor, and its revolving door is part of the hotels main entrance. – a wonderful memorial to the 'Old eliable'.

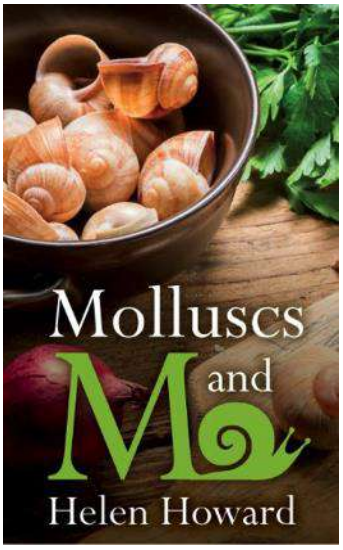
For those interested in her stats:- Length 882'9"; Tonnage 45,324 tons; Draught 34'7"; four funnels (one a 'dummy'). The engines produced 59,000 hp. and three propellers produced a speed of 24 knots (figure 4).

figure 4: Drawing of SS Olympic.

Book review: *Molluscs and me* by Helen Howard

Peter Topley

H&RH Escargots, Kent, 2013. 204 pages, paperback. ISBN: 9780992706401. c. £5.99 (Kindle edition £3.08)



Helen is a member of this Society and a snail farmer in East Kent. This short, well-written book is part autobiography, part snail recipe book and because of the latter it will be welcomed by those interested in snail gastronomy or who may wish to try their hand in this area for the first time. Following a time in teaching, Helen looked around for an alternative and chose an agricultural activity that would not need acres of space. Helen decided to start an edible snail farm, beginning by using her spare bedroom! In an entertaining style she describes the problems and prejudices she encountered in embarking upon her enterprise and her determination in finding a market for her product, including long hours searching out sympathetic chefs at restaurants and customers at farmers' markets and food shows, to appearing on TV, on the way discovering the necessary connection between snail farming and ferrets! The recipes, information about snail farming and snail cooking through history are included between the autobiographical chapters. Of conchological interest are the snails themselves, which were in the beginning the large *Cornu aspersum maxima* (Taylor, 1883) which is apparently a cultured form with African origins, having a somewhat higher temperature requirement than the *C. aspersum* familiar in our gardens (Ligaszewski *et al*., 2009). Helen now also breeds *Helix pomatia* from a commercial source (as opposed to the wild *H. pomatia* which are protected in the UK).

Reference

Ligaszewski M., Surówka K. and Stekla J. (2009) The shell features of *Cornu aspersum* (synonym *Helix aspersa*) and *Helix pomatia*: characteristics and comparison. *American Malacological Bulletin* **27**:173–181.

Recently described snail named in support of marriage equality

Peter Topley

figure 1: *Aegista diversifamilia* Huang et al., 2014. Living snail, Heren, Xiulin Township, Hualien County, Taiwan. (figure 8 in Huang et al., 2014).

The bradybaenid land snails of the genus *Aegista* have a distribution in eastern Asia, including Japan, Philippines, China ,Taiwan and Vietnam. Currently recognised in the genus are 75 species and 112 subspecies which can be generally divided in to arboreal or ground-dwelling species. Hirano *et al*. (2014) found that arboreal *Aegista* species tend to have a relatively high-spired shell with a narrow umbilicus whereas ground-dwelling species have a low-spired shell with a wide umbilicus. The authors go on to make the general suggestion that ecological divergence may be the primary cause of shell morphology divergence in land snails.

A snail recently described and named *Aegistya diversifamilia* (figures 1 and 2) was previously thought to be a variety of *A. subchinensis* (Möllendorff, 1884), a species distributed throughout most of Taiwan with differences recognised in the eastern and western populations of the species. Recently it has been established that the eastern population is a separate species, divided from *A. subchinensis* by the Lanyang river which flows through Yilan County in the northeast of Taiwan for 73 km (Huang *et al*., 2014). *A. diversifamilia* is physically distinguished from *A. subchinensis* by its larger shell size, aperture and apex angle; wider umbilicus and flatter shell shape. Furthermore Chih-Wei Huang and his collaborators at the National Taiwan Normal University used three molecular markers combined with morphological analysis to estimate the divergence and relationship among the closely related snails. The genetic phylogeny indicated that the eastern *A. subchinensis* was more closely related to *A. vermis*, a similar land snail species inhabiting Ishigaki Island, than to the western *A. subchinensis* (subsequently described as the new species).

However, the new species' 'claim to fame' (as far as the internet and the press are concerned) is its name. The name is derived from the Latin words *diversus* and *familia*, and was chosen in recognition of the same-sex marriage movement in Taiwan and worldwide. Co-author Yen-Chang Lee, said: 'When we were preparing the manuscript, it was a period when Taiwan and many other countries and states were struggling for the recognition of same-sex marriage rights. It reminded us that pulmonate land snails are hermaphrodite animals, which means they have both male and female reproductive organs in a single individual. They represent the diversity of sex orientation in the animal kingdom. We decided that maybe this is a good occasion to name the snail to remember the struggle for the recognition of same-sex marriage rights.'*

Acknowledgements

The figures are reproduced from the original paper with permission under Creative Commons Attribution License (CC BY 4.0).
I would like to thank co-describer of this new species Chih-Wei Huang, a PhD candidate at the Department of Life Science, National Taiwan Normal University for help in preparation of this article, and Kevin Brown for bringing this to my attention.

References

Hirano T., Kameda Y., Kimura K. and Chiba S. (2014) Divergence in the shell morphology of the land snail genus *Aegista* (Pulmonata: Bradybaenidae) under phylogenetic constraints. *Biol. J. Linn. Soc. Lond.* (on line early view Nov. 2014).

Huang C.-W., Lee Y.-C., Lin S.-M., Wu W.-L. (2014) Taxonomic revision of *Aegista subchinensis* (Möllendorff, 1884) (Stylommatophora, Bradybaenidae) and a description of a new species of *Aegista* from eastern Taiwan based on multilocus phylogeny and comparative morphology. *ZooKeys* 445: 31–55. doi: 10.3897/zookeys.445.7778

* http://www.eurekalert.org/pub_releases/2014-10/pp-anl101014.php

figure 2: Holotype of *A. diversifamilia*. Type locality: Taiwan, Hualian County, Xiulin Township, Forest around the Chongde Tunnel, 24°11'22.0"N, 121°39'36.8"E, elevation 56 m. (fig. 7a in Huang *et al*., 2014).

About the Conchological Society

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

Some key contacts (see web site [http://www.conchsoc.org/pages/contacts.php] and 2014 membership list for additional contact details)

HON. PRESIDENT: Mike Allen
Redroof, Green Road, Codford, Warminster,
Wiltshire, BA12 ONW
Email: president@conchsoc.org

HON. GENERAL SECRETARY: Rosemary Hill
447b Wokingham Road,
Earley, Reading, RG6 7EL
Email: secretary@conchsoc.org

SUBSCRIPTIONS and MEMBERSHIP
Please send subscriptions or directly related enquiries to
Carolyn Postgate, CIRCA subscriptions, 13-17 Sturton Street,
Cambridge, CB1 2SN
E mail: shellmember@gmail.com

For general membership enquiries please contact:-
HON. MEMBERSHIP LIAISON OFFICER: Briony Eastabrook
Rock cottage, Chapel Street,
Stow on the Wold, Glos., GL54 1DA
E mail: membership@conchsoc.org

HON. PROGRAMME SECRETARY: Sebastian Payne
(See bottom of back cover for contact details)

HON. EDITOR OF MOLLUSC WORLD: Peter Topley
7 Fairfax Close, Clifton, Shefford, Bedfordshire, SG17 5RH
E mail: magazine@conchsoc.org

HON. EDITOR OF THE JOURNAL OF CONCHOLOGY:
Dr Graham Oliver, 21 Romilly Road, Cardiff CF5 1FJ
E mail: journal@conchsoc.org.

HON. CONSERVATION OFFICER: Martin Willing
14 Goodwood Close, Midhurst, Sussex, GU29 9JG
Email: conservation@conchsoc.org

HON. MARINE CENSUS RECORDER: Simon Taylor
Fiddlesticks, 44 Strawberry Lane,
Tolleshunt Knights, Essex, C05 0RX
Email: marine@conchsoc.org Phone: 01621 810141

HON. NON–MARINE CENSUS RECORDER: Adrian Norris
17 West Park Drive, Leeds, LS16 5BL
Email: nonmarine@conchsoc.org

HON. TREASURER: Nick Light
The Old Workshop, West Street, Winterbourne Kingston,
Dorset, DT11 9AX. E mail: treasurer@conchsoc.org

How to become a member

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

• Ordinary membership £33 • Family/Joint membership £35
• Under 18 (receiving Mollusc World only) £5 • Student membership £15 • Institutional subscriptions £47

In view of the high cost of overseas postage, members living in Europe will be asked to pay an additional postage charge of £8, and members living in the Rest of the World an additional postage charge of £17. See website for further details.
Payments in sterling only, to Carolyn Postgate, CIRCA Subscriptions, 13-17 Sturton Street, Cambridge, CB1 2SN, (shellmember@gmail.com). For UK residents we suggest payment by standing order, and if a UK tax payer, please sign a short statement indicating that you wish the subscription to be treated as Gift Aid. Another simple and secure way of paying for both UK and overseas members is by credit card online via PayPal from http://www.conchsoc.org/join. Overseas members may also pay using Western Union, but a named person has to be nominated, so please use the Hon Treasurer's name, Nick Light.

How to submit articles to Mollusc World

Copy (via e mail, typed or handwritten) should be sent to the Hon. Magazine Editor (contact details above). If sending copy using e-mail please include a subject line "Mollusc World submission". When emailing several large file attachments, such as photos, please divide your submission up into separate emails referencing the original article to ensure receipt. Electronic submission is preferred in Microsoft Word. Images and Artwork may be digitised, but we recommend that a digital image size 200Kb- 1.5Mb (JPEG preferred) be sent with your submission. All originals will be treated with care and returned by post if requested. Authors should note that issues of the magazine may be posted retrospectively on the Conchological Society's web site. The general copy deadline for the July 2015 issue is 1st June 2015 but it would be helpful to the Editor to send articles by the second week of May in order to keep to publishing deadlines; inclusion in a particular issue is at the Hon. Editor's discretion and depends upon the space available but contributions are always welcome at any time.

Advertisements in Mollusc World

We are pleased to invite advertisements, provided they are in line with the Conchological Society's charitable objectives and responsibilities. Advertisements of shells for sale from commercial shell dealers will generally not be accepted. Please contact the magazine Editor for further details.

Membership update

The following members have joined the Conchological Society recently or have not previously been included in either this column of Mollusc World or in the latest edition of the Members' Guide (2014). **Please note that to be included here members must sign a data protection consent form.** If you have not been included and now wish to be please contact Carolyn Postgate at CIRCA subscriptions (details above).

Conchological Society of Great Britain and Ireland

Diary of Meetings

Please check the website (www.conchsoc.org) for further details and any updates, including other meetings arranged at shorter notice.
Many apologies that more details are still to be finalized than is usual at this stage.

Saturday 11th April 2015: FIELD MEETING (non-marine):
Downton Gorge NNR, Herefordshire. Organiser: Rosemary Hill (0118 966 5160, rosemaryhi@lineone.net).
A repeat visit to survey the molluscs of another section of this site, last visited by CS in April 2012. This is a permit only reserve and the visit will be escorted by the Warden. Advance booking essential by 7th April. Meeting point and time t.b.a. (please check website).

Saturday 18th April 2015:
ANNUAL GENERAL MEETING AND PRESIDENTIAL ADDRESS.
Speaker: The President, Dr Mike Allen - *A miscellany of mollusca*
14:00 – 17:30: Angela Marmont Centre, Natural History Museum, Cromwell Rd., London SW7 5BD.
The lecture will start shortly after 14:00.
(Council members please note that there will be a Council meeting before this meeting.)

Saturday 13th June 2015: FIELD MEETING (non-marine): Gillfield Wood, Totley, Sheffield, S. Yorkshire.
Organiser: Robert Cameron (0114 268 6675, radc@blueyonder.co.uk).
Contribution to the Sheffield Bioblitz; joint meeting with Sorby NHS. Gillfield Wood is on the south-western side of Sheffield, centred on SK 305 788. Meet at 10:30, meeting point t.b.a. (please check website).

Wednesday 17th June 2015: FIELD MEETING (non-marine and marine) : Godrevy Towans, Gwithian, Cornwall.
Organisers: Tom Walker (0118 987 4294, tom@tmwalker.co.uk) and Bas Payne (01647 24515, bas.payne@gmail.com).
A contribution to the National Trust Coastal Bioblitz, 2015*. Large area of sand-dunes and coastal heath, with long west-facing sandy beach, rocky shore and headland., LT 12:40, +0.8m. Meet at 10:30, at the car park (SW 584 423).
Also coming to a site near you! - the National Trust is organising bioblitz events at 24 other sites round England, Wales and Northern Ireland this summer – see the CS website for further details. Members are encouraged to take part by contributing records and helping with identifications – please contact site organisers.

Thursday 18th June 2015: FIELD MEETING (marine): St Ives area, Cornwall
Organiser: Bas Payne (01647 24515, bas.payne@gmail.com Further details t.b.a. (please see website); if interested, please contact Bas.

Saturday 20th June 2015: FIELD MEETING (non –marine): Thatcham, Berkshire RG19 3FU.
Organiser: Tom Walker (0118 987 4294, tom@tmwalker.co.uk).
The reserve contains extensive areas of reed bed where *Vertigo moulinsiana* is regularly found. There is a wide variety of freshwater habitats including the River Kennet, as well as some slightly elevated dryland areas.
Meet at 10.30 at the Discovery Centre, (SU 506671) where ample parking is available.

Provisional notices – place and/or date still not finally decided:

Probably Saturday 26th September – Saturday 3rd October 2015: FIELD MEETING (marine): place uncertain.
Further details t.b.a. (please check website); please contact Bas Payne (01647 24515, bas.payne@gmail.com) if you are interested in coming.

Date uncertain: FIELD MEETING (non-marine) Nonesuch Park, Surrey/London border.
Organiser June Chatfield (01420 82214: no e-mail).
Please see website or contact the organiser for further details.

Date uncertain: FIELD MEETING (non-marine, possibly + marine): Dorset.
Chris Gleed-Owen (07846 137 346, chris@cgoecology.com).
Please see website or contact the organiser for further details.

Please note the following dates in later 2015 for your diary:
Saturday 17th October 2015: INDOOR MEETING (and Council meeting). Speaker: Peter Cosgrove, fresh-water pearl mussels.
Saturday 7th November 2015: REGIONAL MEETING.
Saturday 12th December 2015: INDOOR MEETING (and Council meeting).

Indoor meetings at the Natural History Museum take place in the Angela Marmont Centre for UK Biodiversity, Darwin Building. From the main entrance hall, turn left at the tail of the *Diplodocus*, go past the dinosaur exhibition, then down the stairs, and then turn left. The door of the Centre will be locked; please ring the bell and someone will come to open it. ***Please bring plenty of exhibits and demonstration material.*** If you intend to attend a **field meeting,** please remember to inform the leader beforehand, and if, on the day, you are held up in traffic or your public transport is delayed, please try to contact the meeting leader if possible.

We are always happy to receive any suggestions for speakers for indoor meetings, or offers to lead field meetings, and also any suggestions about Society participation in the meetings of local and other societies. Programme Secretary: *Bas Payne, The Mill House, Clifford Bridge, Drewsteignton, Exeter EX6 6QE; 01647 24515,* programme@conchsoc.org