Mollusc World

July 2022 • Issue 59

Mollusc recording news

Quagga mussels in the UK and Ireland

Slug embryo development

The seaslug *Ancula gibbosa*

Conchological obituaries

The Conchological Society of Great Britain & Ireland

Helping to understand, identify, record and conserve molluscs

From the Hon. Editor

Cat lovers among you might like this picture of our cat, Delilah, sunning herself under a window next to some shell books!

Welcome to another issue of the Conchological Society's magazine. This is the issue which, each year, includes the annual reports from the Society's officers. Far from being uninteresting, they are very informative of what has been carried out during the past year and I hope you enjoy reading them. The full set of reports are available on our Web site. The meetings diary as usual is on the back cover and page 35. Please consider attending what promises to be a fascinating regional meeting at the Liverpool World Museum on November 19th and our exciting full programme of field meetings continues. You might also consider a conchological project: applying for a grant from the Society is open to all (see p. 35 for details).

An article in the Guardian newspaper from 18th May highlighted the discovery by Dr Rob Enever and his team at Fishtek Marine that small LED 'potlights' they designed to help protect fish stocks, by replacing the need to use fish to bait crab and lobster pots, are actually attractive to scallops. Most scallops are caught by dredging, which at an industrial-scale is damaging to marine habitats. Enever hopes scallop potting could create a low-input, low-impact fishery that supplements the income of crab and lobster fishers with this high-value catch. Further work with modified pots is continuing at sites around the coast. See https://www.theguardian.com/environment/2022/may/18/accidental-discovery-that-scallops-love-disco-lights-leads-to-new-fishing-technique. My thanks to Bas Payne for alerting me to this item.

Earlier this year 'Mollusc of the Year 2022', an international public vote led by the Senckenberg Nature Research Society, the LOEWE Centre for Translational Biodiversity Genomics (TBG) and the Worldwide Society for Mollusc Research, was won by the Cuban painted snail, *Polymita picta*. Professor Angus Davison, from the School of Life Sciences at the University of Nottingham, and Professor Bernardo Reyes-Tur at the Universidad de Oriente, Santiago de Cuba, hope to better understand how this snail evolved, and ultimately, promote their conservation. As a result of winning the vote, funding will be made available to sequence the snail's entire genome, which will hopefully enable further research and conservation of this endangered species. Details of the other nominees can currently be found at https://tbg.senckenberg.de/molluscoftheyear-2022/.

Peter Topley

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.

Mollusc World

is intended as a medium for communication between Conchological Society members (and subscribers) on all aspects of molluscs, in addition to the material found on our web site where many back copies are available for viewing. Mollusc World will also be of interest to all those enquiring about this subject or the work of the Society. We welcome all contributions in whatever form they arrive (see page 34 for further details).

Contents

© 2022 The Conchological Society of Great Britain & Ireland

ISSN 1740–1070 Many thanks go to Janet Ridout Sharpe for help with copy editing.

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

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

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

Front Cover:
Introduced Quagga mussels (*Dreissena rostriformis bugensis*), Lough Ree, western Ireland. (photos: Dan Minchin) (see page 7).

Marine Recorder's report 2021

Simon Taylor

The year was again a relatively quiet one for the marine recording scheme, primarily due to the impact of the ongoing Covid pandemic. Activity was not as restricted as it had been in 2020, however, and the Society was able to run its annual marine week, in Pembrokeshire, while recorders were also more able to travel locally and nationally in order to pursue their interests.

Early in the year, as the country emerged from lockdown, there was an influx of records of strandings of the squid *Todarodes sagittatus* (Lamarck, 1798), focused on the north-east of the country from North Yorkshire to Orkney (figure 1). *T. sagittatus* is a large and impressive animal, deep red in colour (unless dead for some time) and with short tapering fins on the hind third of its mantle. Anecdotal and documentary sources (Stephen 1937) suggest there have been sudden peaks in strandings that occurred over the same area in the past, again in late winter/early spring, but separated by several years. Sundet (1985) noted the species' main spawning period is in the winter, while the work of Borges (1995) suggests an early winter migration north, particularly of sexually mature individuals. These strandings could therefore be a relic of post-mating mortality, although they could equally reflect the impact of certain weather patterns.

figure 1: *Todarodes sagittatus* stranded on Deerness beach, Orkney. (photo: Leslie Burgher)

Range extensions, including species found in British or Irish waters for the first time, are always among the highlights of any recording year. The fish egg-eating nudibranch *Calma gobioophaga* Calado & Urgorri, 2002 was first recorded in Britain in 2013. The discovery was made in Cornwall (Fenwick 2014) and the species has been only rarely recorded since. It was therefore some surprise when specimens were photographed by Alistair Shuttleworth and Neil Roberts under a stone at low tide on the Isle of Skye. The images (figure 2) were closely scrutinised and have withstood verification. To date there are no known intermediate records between Cornwall and north-west Scotland despite there being plenty of available habitat, some of it regularly and thoroughly surveyed.

figure 2: *Calma gobioophaga* from under a stone at low water, Elgol, Isle of Skye. (photo: Alistair Shuttleworth)

Another possible range extension is of potential concern. The muricid *Rapana venosa* (Valenciennes, 1846) is native to the north-west Pacific but since the middle of the 20th century it has proved to be a highly accomplished colonist with established populations in the Mediterranean and the eastern coasts of North and South America. There have been occasional records from the Spanish coast (Bañón *et al*. 2008) and a population is known from the North Sea (Kerckhof *et al*. 2006) but is considered to be limited to areas of deeper water. The dispersal vector is thought to be shipping (amongst hull fouling and as larvae in ballast water) although studies have also noted young specimens attached to loggerhead turtles (Harding *et al*. 2011). *R. venosa* is a very effective predator, particularly of bivalve molluscs, and has had a significant detrimental impact on mussel populations in areas it has colonised. It can also outcompete native whelk species, becoming so successful that in some colonised areas a *R. venosa* fishery has proved viable. The reported discovery of a dead shell of *R. venosa* on the shore at Kilchoan on the Ardnamurchan peninsula in western Scotland is therefore notable. The species is marketed as seafood so the specimen could simply be a discarded shell, but they are not widely available in the UK. Anybody surveying in or even just visiting western Scotland should be vigilant for this species (figure 3).

figure 3: Shell of *Rapana venosa* found on the shore at Kilchoan on the Ardnamurchan peninsula. (photo: Katy Armstrong)

An intriguing find was reported in 2021, although it was actually made in December 2020 when Luke Hines of Ocean Ecology Ltd was processing some benthic samples

taken earlier that year from the middle of the eastern English Channel. Luke noticed the turritellids seemed unusual and that the habitat suggested by the nature of the samples was different to that in which one would expect to find the familiar *Turritellinella tricarinata* (Brocchi, 1814) (formerly *Turritella communis* Risso, 1826). Upon investigation these unfamiliar specimens, many of which were live-collected, were determined as *Turritella turbona* Monterosato, 1877 (figure 4). Although recorded from Britain as a Pleistocene fossil, *T. turbona* has not previously been found alive any closer than the Atlantic coast of Iberia. It is possible it could previously have been confused with *T. tricarinata* but unlikely that the species would have been undetected by Victorian dredgers or by Norman Holme in his extensive dredging surveys of the Channel from the 1950s to the 1970s. It would therefore seem safe to conclude that it has arrived in the Channel within the last 40 years, if not much more recently, and hence can be added to the list of marine species known to have extended their range northwards over recent years, reflecting conditions conducive to their survival as a likely consequence of climate change.

figure 4: *Turritella turbona* (foreground) compared with *Turritellinella tricarinata* (formerly *Turritella communis*, background). (photo: Luke Hines)

Other new species added to the marine mollusc fauna of Britain and Ireland were, as has been a continuing trend in recent years, primarily discovered by molecular studies. Further to last year's report of the work of Sørensen *et al*. (2020), investigation of the nudibranch genus *Polycera* by Korshunova *et al*. (2021) has resulted in the description of yet another new species, *P. kernowensis*, recognised as distinct from *P. faeroensis* Lemche, 1929. This paper also concluded that, on the basis of external and radular morphology as well as DNA evidence, the recently described *P. norvegica* Sørensen *et al*., 2020 should be considered synonymous with the older taxon *P. capitata* (Alder & Hancock, 1854). All these species, along with *P. quadrilineata* (Müller, 1776), are known from British and Irish waters and can be distinguished by close examination of external morphology, for which readers are referred to Korshunova *et al*. (2021). It does, of course, mean that records of the previously cryptic species, unless supported by evidence which facilitates redetermination, must now be considered as 'agg.'.

A similar situation has impacted upon previous records of *Jorunna tomentosa* (Cuvier, 1804). Neuhaus *et al*. (2021) noted past observations had come to the familiar conclusion (particularly where nudibranchs are concerned) that *J. tomentosa* displays considerable morphological variation, although some authors had tentatively suggested recognisable morphotypes which might point to the existence of a previously undescribed taxon. Detailed molecular and morphological studies were therefore conducted on a large number of specimens from across a wide geographical range, the outcome being the description of a distinct new species, *Jorunna artsdatabankia* Neuhaus *et al*., 2021, alongside the suggestion that *J. tomentosa* is represented by two lineages (named 'A' and 'B') thought to possibly demonstrate a case of incipient speciation. Although the specimens used in the molecular study which formed the new species clade were all from Norwegian sites, the demonstrated ability to recognise the species in the field and from photographs (it is characterised by a uniformly coloured white to yellow dorsum with irregular small brown spots, although for full details readers are referred to the original paper (Neuhaus *et al*., 2021)) means it has now been recognised from numerous sites in the seas around northern Britain and Ireland. Indeed, one of the designated paratype specimens is from the northern North Sea off Shetland. The new species is named in honour of a Norwegian government body which supports the study of local biodiversity.

Aside from the activity of a core of workers, the majority of data are now received principally via online sources. The 'Groups' side of Facebook is very active and as well as having its own presence (facebook.com/groups/british.marine.mollusca/) the marine recording scheme works and interacts with numerous others. By this means it is possible to assist with determinations and glean useful, accurate data for the Society's marine dataset, some of which may otherwise simply go unrecorded (such as the *Rapana venosa* record above). Many more generalist marine workers are also happy to share their molluscan observations, such as Allan Rowat and Ann Wake in Anglesey, who have contributed several notable records and whose online photographic and video posts help to broaden the documented knowledge base of some species. For example, during 2021 they posted some very useful images of live specimens of *Tornus subcarinatus* (Montagu, 1803) (figure 5) and *Dikoleps nitens* (Philippi, 1844).

figure 5: Ventral view of *Tornus subcarinatus.* Specimen from Anglesey. (photo: Alan Rowat)

iRecord has become a very significant online portal through which the Society is able to verify reported observations and add them to its dataset. Each year several thousand records are imported into the dataset. Huge thanks are due to Ian Smith, who devotes significant efforts to verifying records (i.e. confirming that all details – primarily the species identification and spatial reference – are correct) and providing detailed feedback to field workers to help build their identification skills. Ian has also been publishing

more of his excellent species accounts which are available online at https://www.researchgate.net/profile/Ian-Smith-40/research). A recent development has been the inclusion of records reported via a similar online facility, iNaturalist, on the same verification facility as iRecord. This is still very much at the bedding-in stage: while it has the potential to add a significant number of records to the marine dataset, many are of the commoner species often encountered while beachcombing the strandline (rather more so than on iRecord) and often just of worn shells. That said, some expert workers are adopting iNaturalist; for example, Bernard Picton posted a photographic record of the rarely encountered solenogaster *Rhopalomenia aglaopheniae* (Kowalevsky & Marion, 1887) (figure 6).

figure 6: A 'classic' view of the solenogaster *Rhopalomenia aglaopheniae*. (photo: Bernard Picton)

The aforementioned core workers continue to survey and submit records. David McKay has been prolific as always and has contributed records of some rarely encountered deep-water species such as *Anatoma aspera* (Philippi, 1844) and the velutinid *Calyptoconcha pellucida* (A. E. Verrill, 1880). Adrian Brokenshire provided extensive lists compiled from analysis of West Country beach grit samples. Also in the south-west, Bas Payne continues to survey and to progress his work on various groups, notably cockles and patellid limpets. On the latter subject, many will have seen the excellent article in *British Wildlife* by long-time specialist Stephen Hawkins and co-workers (Hawkins *et al*. 2021) which provides much background and source information on the biology of the three larger intertidal species in Britain and Ireland – *Patella vulgata* L., 1758; *P. ulyssiponensis* Gmelin, 1791; and *P. depressa* Pennant, 1777 – and hints at the future publication of a book on limpets. The Society actively monitors the distribution limits of the last two species, present and historic.

The Society's 2021 field activities included a week in Pembrokeshire (Taylor 2022) which, through systematic surveying of caves in shoreline cliffs, generated numerous new records for *Paludinella globularis* (Hanley in Thorpe, 1844) and *Otina ovata* (T. Brown, 1827). Liaison that week with the Marine Biological Association also enabled participation in the Darwin Tree of Life project through provision of specimens of numerous targeted species for DNA sequencing. Fieldwork in West Solent and the Pagham area (Willing 2022) produced further records of the extreme eastern distribution of *Phorcus lineatus* (da Costa, 1778) while my own field studies expanded the known live range of the rock-boring bivalve *Barnea parva* (Pennant, 1777) from Kent into the southern North Sea at Harwich, Essex.

Mention must again be made of the continued efforts of volunteer data digitisers Brian Goodwin, Andrew Wright and Val Marshall, who have converted huge amounts of paper-based data into digital format which can then be imported into the Society's Recorder 6 database and shared openly via NBN Atlas. Their efforts, for which they are sincerely thanked, have significantly decreased the pile of hard-copy record cards and assorted other documents, many of which formed the basis of the various atlases produced by Dennis Seaward in the 1980s and 1990s. In the modern era of digital rather than census area mapping, these old records lost their relevance until they were accurately digitised and plotted. With the help of this small group of volunteers digitising historic data and the ongoing submission of new data, the Society's marine dataset has grown by over 53% since 2013 and at the time of writing contains 201,754 taxon observations.

If any members hold paper-based records which could be usefully added to the Society's dataset, they are encouraged to contact the Marine Recorder to arrange transfer, either of the originals or scans (originals can subsequently be transferred to the Society's archive to be retained in perpetuity). It was very welcome to recently receive a large bundle of records from Christine Street, resulting from her numerous travels in the Scottish islands during which she always explored the shore and collected shell grit samples for later analysis. All those so far provided have been digitised and we look forward to receiving many more in due course.

References

Bañón, R., Rolán, E. & García-Tasende, M. (2008) First record of the purple dye murex *Bolinus brandaris* (Gastropoda: Muricidae) and a revised list of non native molluscs from Galician waters (Spain, NE Atlantic). *Aquatic Invasions*, **3**(3): 331–334.

Borges, T.C. (1995) Discriminant analysis of geographic variation in hard structures of *Todarodes sagittatus* from the North Atlantic. *ICES Marine Science Symposia*, **199**: 433–440.

Fenwick, D. (2014) *Calma gobioophaga* Calado & Urgorri, 2002 – a new UK record. *Mollusc World*, **34**: 6.

Harding, J.M., Walton, W.J., Trapani, C.M., Frick, M.G. & Mann, R. (2011) Sea turtles as potential dispersal vectors for non-indigenous species: the veined rapa whelk as an epibiont of loggerhead sea turtles. *Southeastern Naturalist*, **10**(2): 233–244.

Hawkins, S., Hodgson, A. & Firth, L. (2021) Keystone snails: the biology, behaviour, ecology and conservation of patellid limpets. *British Wildlife*, **33**(3): 175–185.

Kerckhof, F., Vink, R.J., Nieweg, D.C. & Johannes, N.J. (2006) The veined whelk *Rapana venosa* has reached the North Sea. *Aquatic Invasions*, **1**: 35–37.

Korshunova, T.A., Driessen, F.M.F., Picton, B.E. & Martynov, A.V. (2021) The multilevel organismal diversity approach deciphers difficult to distinguish nudibranch species complex. *Scientific Reports*, **11**: 18323. Available online at: https://doi.org/10.1038/s41598-021-94863-5.

Neuhaus, J., Rauch, C., Bakken, T., Picton, B., Pola, M. & Malaquias, M.A.E. (2021) The genus *Jorunna* (Nudibranchia: Discodorididae) in Europe: a new species and a possible case of incipient speciation. *Journal of Molluscan Studies*, **87**(4). Available online at https://doi.org/10.1093/mollus/eyab028.

Sørensen, C.G., Rauch C., Pola M. & Malaquias, M.A.E. (2020) Integrative taxonomy reveals a cryptic species of the nudibranch genus *Polycera* (Polyceridae) in European waters. *Journal of the Marine Biological Association of the United Kingdom*, **100**: 733–752. Available online at: https://doi.org/10.1017/S0025315420000612.

Stephen, A.C. (1937) Recent invasion of the squid, *Todarodes sagittatus* (Lam.), on the east coast of Scotland. *Scottish Naturalist*, **225**: 77–80.

Sundet, J.H. (1985) A short review on the biology and fishery of the squid *Todarodes sagittatus*. *ICES Document CM 1985/K:*44, 10pp.

Taylor, S. (2022) Field meeting week in Pembrokeshire: 18th to 25th September 2021. *Mollusc World*, **58**: 4–6.

Willing, M. (2022) Field meeting report: Pagham Harbour and Medmerry, West Sussex, August 21st and 22nd 2021. *Mollusc World*, **58**: 8–15.

Non-Marine Recorder's report 2021

Ben Rowson

The second recording year of the Covid-19 pandemic was much less chaotic than the first. According to the annual summary by the Met. Office, 2021 was again slightly (0.1ºC) warmer than average, with rainfall totals variable, if unremarkable overall.

While desktop work continued, much postponed fieldwork took place including the Society's field meetings. These provided lists of records from sites visited in Carmarthenshire, Pembrokeshire, Shropshire and Worcestershire. One delicious aspect of these meetings is their thoroughness in including the smaller mollusc species that are often overlooked by more casual recording. Tom Walker has compiled details of the field meetings the Society has run since 1960 (almost 400 in all!) in a fascinating and useful list on the Society's website at: https://conchsoc.org/index.php/field_meeting_list.

New data received

At the time of writing (11 March 2022), over 16,000 new records had been received and readied for import into the Recorder 6 (R6) database. Altogether, the records once again represented over 180 mollusc species, from over 100 vice-counties. Just under 3000 (9%) were received or entered directly, while the remaining 13,600 (81%) were accepted from iRecord: 5495 (34%) of these originated in iRecord itself, while the other 8108 (50%) originated in iNaturalist. (This data flow is explained below). As usual, I am extremely grateful to Chris du Feu for dealing with the slug records on iRecord, which tend to make up 10-20% of the submissions.

Several recorders including Terry Crawford, Richard Marriott, Peter Topley and Martin Willing supplied batches of records made in previous years. Adrian Sumner was able to revisit his voucher specimens and records of *Euconulus alderi* and *E. fulvus* in Scotland, using the recent revision by Horsáková *et al*. (2020) (figure 1). Thank you to everyone who contributed or updated records.

figure 1: Tawny glass snails (*Euconulus fulvus*) with unusually dark bodies, from Duns, Berwickshire. (Photo: Adrian Sumner)

New VC records

This year I gave extra attention to new vice-county records. The 'Census' of vice-county occupation has been a general aim of the recording scheme since it began in 1876, when the Watsonian VCs were used as the basic units of recording (Kerney 1999). The Society has always tried to include the first record of each species from a VC in the dataset as soon as they become known to us. These are usually summarised in each annual report. The date of reporting is more relevant than the date of observation. So, as usual, the following list of new VC records reported in 2021 includes a number of observations made in earlier years.

The lack of a simple automated way of detecting these new VC occurrences, even within our own dataset, is something of a nuisance. This happens partly because R6 and iRecord require a VC field as an integral part of records, while the National Biodiversity Network (NBN) does not, and partly because our R6 database is set up more as an atlas than a census. The time-honoured solution has been to maintain a separate census for easy reference. This was done first in handwritten ledgers then as a series of published editions, the last of which appeared in 1982. The previous Recorder, Adrian Norris, digitised and maintained the list of VC occurrences until 2017, which I have done my best to keep up-to-date. The current census spreadsheet now includes over 18,000 occurrences and represents a huge amount of accumulated work.

However, it is possible that a few occurrences have been overlooked. This particularly affects common species that are less likely to catch one's eye in lists as being new to an area. A separate issue is that of species liable to be misidentified but recorded in data submitted to NBN by organisations other than this Society. Quite often these are freshwater species listed in surveys. A controversy over which record is 'first' in our dataset is something we aim to avoid whenever possible. Members are welcome to request a copy of this latest census spreadsheet, perhaps to help check their local region or fauna of interest. However, I would ask that this is on the condition that they supply the specific records required to correct any omissions found. Please highlight any potential new VC records you find (whether in the field, a collection, or the literature) to help us keep the census up-to-date and to ensure you get credit as the recorder.

A total of 34 new vice-county records were recognised this year, including a number made in previous years. The VC census has now been updated with all these finds (* indicates a record first noted via iRecord and ** via iNaturalist). The records were: *Ambigolimax nyctelius*, Potton, Bedfordshire (VC30), 1/4/2017, James Harding-Morris (conf. by dissection); *Ambigolimax nyctelius*, Cwmdu, Breconshire (VC42), 26/9/2016, Imogen Cavadino (conf. by dissection); *Ambigolimax nyctelius*, Barton-upon-Humber, North Lincolnshire (VC54), 30/8/2021, Adam Parker (conf. by dissection); *Ambigolimax nyctelius*, Elsecar, South-west Yorkshire (VC63), 24/9/2016, Robert Cameron (conf. by dissection); *Ambigolimax nyctelius*, Dumfries House, Ayrshire (VC75), 5/11/2021, Garth Foster***** (conf. by dissection); *Arion* sp. 'Davies', Beckingham, Nottinghamshire (VC56), 17/8/2021, Chris du Feu (conf. by dissection); *Gyraulus parvus* ***(=G. laevis)***, outfall stream at Gammaton Reservoirs, North Devon (VC4), 21/12/2021, Rachel Mackay-Austin; *Helix pomatia*, garden in Radyr, Cardiff, Glamorgan (VC41), 1/11/2002, John Scott (conf. Mary Seddon); *Menetus dilatatus*, near Frittenden, East Kent (VC15), 21/9/2021, Rachel Mackay-Austin*****; *Monacha cantiana*, Cumbernauld, Stirlingshire (VC86), 29/8/2021, emmalikesnature******; *Paralaoma servilis*, Holwell Ironworks, Ashfordby Hill, Leicestershire (VC55),

Dave Nicholls*; *Planorbarius corneus*, field west of Loch Spynie, Moray (VC95), 24/7/2014, Richard Marriott; *Planorbarius corneus*, Skelbo, near Dornoch, East Sutherland (VC107), 31/8/2021, Stephen Smith*****; *Planorbis carinatus*, Loch Spynie, Moray (VC95), 24/7/2014, Richard Marriott; *Physella acuta*, Loch of Strathbeg, North Aberdeenshire (VC93), 27/7/2015, Richard Marriott; *Selenochlamys ysbryda*, garden in Camberwell, London, Surrey (VC17), 29/3/2021, Katarzyna Davies; *Stagnicola fuscus*, Loch of Strathbeg, North Aberdeenshire (VC93), 27/8/2015, Richard Marriott (conf. Ron Carr from a photo of the anatomy, the first VC record for the *S. fuscus* segregate as opposed to the *S. palustris* aggregate); *Tandonia* cf. *cristata*, Abergavenny, Monmouthshire (VC35), 1/11/2015, Christian Owen; *Tandonia* cf. *cristata*, Cwmdu, Breconshire (VC42), 26/9/2016, Imogen Cavadino; *Dreissena polymorpha*, Reas Wood, east shore of Lough Neagh, Co. Antrim (VCH39), 16/11/2020, Rodney Monteith*****; Grand Canal, Co. Dublin (VCH21), Taly Williams (conf. Evelyn Moorkens); *Dreissena rostriformis bugensis*, x 6 new VC records from Ireland (see Baars *et al*. 2022): Parteen Dam Quay, Co. Clare (VCH9), Ballina Pile, North Tipperary (VCH10), Terryglass, South-east Galway (VCH15), Banagher, Co. Offaly (VCH18), Ballyglass Pile, Co. Westmeath (VCH23), Shannonbridge, Co. Roscommon (VCH25), all 2-14 July 2021; x 6 VC records from England from the Environment Agency (see Willing 2016 and Sales *et al*. 2020): Queen Mother Reservoir, Buckinghamshire (VC24), 13/10/2014, Bessborough Reservoir, Surrey (VC17), 17/10/2014, East Warwick Reservoir, South Essex (VC18), 20/10/2014, River Lee at Hoddesdon, Hertfordshire (VC20), 18/5/2017, River Stort at Spellbrook, North Essex (VC19), 18/5/2018, Eynsham, Oxfordshire (VC23), 5/5/2019; *Sphaerium lacustre*, Loch Spynie, Moray (VC95), 24/7/2014, Richard Marriott.

As usual the majority of these concern introduced species. Certainly the most significant is the first detection of the quagga mussel *Dreissena rostriformis bugensis* in Ireland, as reported in a paper by Baars *et al*. (2022) and in the Irish media. The quagga mussel (figure 2) is a high-profile invasive species, potentially causing a similar syndrome of problems to the related zebra mussel *D. polymorpha*. According to Baars *et al*. (2022), three specimens of *D. r. bugensis* were found in the River Shannon catchment on 28 June 2021 by Paul Murphy of EirEco (the exact site is not given). This was followed by a rapid dredge, scraper and boat survey between 2–14 July 2021 that found quagga mussels at 13 sites spanning over 100 km of the Shannon system, including the large Lough Ree and Lough Derg. The sites fall into up to six VCs (the river often forms the VC boundaries). The authors report that *D. r. bugensis* was the dominant fouling organism in some places, occurring at densities of over 1000 per m^2 in both Lough Ree and Lough Derg, and to depths of 32.5 m. It is unclear when the species arrived and whether it was brought from Britain or elsewhere, but Baars *et al*. (2022) predict that it will spread further. There were also two new VC records of *D. polymorpha* in Ireland, one from Lough Neagh (via iRecord) and the other from the Dublin Grand Canal (received thanks to Evelyn Moorkens).

In England, the quagga mussel has evidently spread over a similar area (over 100 km wide, seven VCs) since 2014 and the Society's records have been updated to reflect this.

figure 2: Quagga mussels (*Dreissena rostriformis bugensis*) from Lough Ree, western Ireland, showing the characteristic un-keeled ventral margin and variable (sometimes asymmetrical) pattern on each valve (see also front cover). (photos: Dan Minchin)

The mussel was first reported from the Wraysbury River, a tributary of the River Thames, in Surrey (VC17) by an Environment Agency survey in September 2014 (Aldridge *et al*. 2014). Subsequent survey work by the EA in 2014 also found it in nearby reservoirs in Surrey (VC17), Buckinghamshire (VC24), the main River Thames, and on the opposite side of London in the Lea (or Lee) Valley as far up as South Essex (VC18). (The original September 2014 site at Staines Moor in fact appears to be in Middlesex (VC21), as is the first record supplied to the Conchological Society from the adjacent Wraysbury Reservoir.) By 2016, *D. r. bugensis* was already frequent in the main River Thames between Chertsey and Hampton Court (confirmed by David Aldridge in Willing 2016). In the River Lee and its tributaries, the EA detected it on the borders of Hertfordshire (VC20) and North Essex (VC19) by 2018, and in the River Thames as far Eynsham, Oxfordshire (VC23) in 2019 (Sales *et al*. 2020). If colonised later than the downstream sites, these may reflect the spreading of the mussels by boat traffic. No records have been submitted directly to the Society since 2014 and there is certainly potential for confusion with *D. polymorpha*, as photos submitted to iRecord show. Nonetheless, Tim Johns of the EA is confident that the Eynsham records, acquired through airlift sampling, are correct. This has led me to enter the original earliest EA records for six additional VCs into the Society dataset to reflect the spread of the species. Please continue to check whether any *Dreissena* encountered are *D. r. bugensis*, submit any records, and retain photos or specimens if possible.

Each of the other new VC records for 2021 adds to the known ranges of other species, including the first trumpet ram's-horn *Menetus dilatatus* in Kent (figure 3), and the great ram's-horn *Planorbarius corneus* in northern Scotland, where it is a recent arrival. The confirmation of *Arion* sp. 'Davies' from Nottinghamshire (VC56), with a 2021 record from St. Nicks, North-east Yorkshire (VC62) by Jane Thomas (also confirmed by dissection), is gratifying. This large but mysterious species has barely been reported since it was first included in the FSC slugs guide by Rowson *et al*. (2014). The new VC records of *Tandonia* cf. *cristata* and some of those of *Ambigolimax nyctelius* are based on specimens I received and dissected prior to 2017. It is worth noting that four of the new VC records came via iRecord (one of them via iNaturalist), which shows how useful these sources can be to the recording scheme.

figure 3: Trumpet ram's-horn (*Menetus dilatatus*) from Frittenden, Kent. (Photo: Rachel Mackay-Austin, via iRecord)

Adventives and other noteworthy records

Large parts of the UK seem to receive a veritable shower of exotic species that arrive but do not form breeding populations. Unlike hothouse species, these adventive species are not included on the current checklist (Anderson & Rowson 2020). However, the Society does have a means of listing and recording them. They feature in the VC census (see above) and through initiatives like that by Imogen Cavadino who has been compiling records this year. I thank Imogen for bringing to our attention reports of live *Cantareus apertus* on organic spinach from Italy (Marian Davidson, 4/11/2021; via Facebook), and of *Lissachatina immaculata*, allegedly in the wild in Regent's Park, London (fieldmarshal, 15/8/2021; via iNaturalist).

It is widely believed that heavy rain flushes out slugs from the soil. In Gloucestershire this seemed to be proven in May 2021, when a large population of 24 *Testacella* cf. *scutulum* was noted in Leigh Woods by Marco Waites. Nearby, after heavy rains in October, a record-breaking haul of 49 *Selenochlamys ysbryda* was collected from a Dursley allotment by Tracey Organ. Collected over a 4 x 4 m area, the conditions that led to such a high density of this species (figure 4) are currently a mystery.

Finally, Martin Willing returned to survey the River Ouse, East Sussex, near which dead shells of the Asian clam (*Corbicula fluminea*) were first found in 2020. Live *C.*

figure 4: A host of ghost slugs (*Selenochlamys ysbryda)* from Dursley, West Gloucestershire. (Photo: Tracey Organ)

fluminea were found over 8.5 km of the tidal stretch, in places reaching densities of 600 m^{-2}. Size-frequency analysis suggests that the species first arrived between 6–10 years ago. Fortuitously, the survey also found living depressed river mussels (*Pseudanodonta complanata*) at two sites, these being the first records from the Ouse for over 50 years (Willing 2022).

Data imported from iNaturalist

2021 also saw further evolution in the ways in which biodiversity records are made and processed. The popularity of iNaturalist (https://www.inaturalist.org/), often used as a smartphone app, has grown to rival iRecord as a method of submission of mollusc records. It is used in many 'event'-style digital initiatives aimed at attracting beginners to biological recording, notably City Nature Challenge (https://citynaturechallenge.org/). This was started in the USA in 2016 and is now run in over 400 cities worldwide, including (in 2021) 14 cities and city areas in England, Scotland and Wales.

In September 2021 the Centre for Ecology and Hydrology (CEH) made it much easier for iRecord verifiers (including our Society) to assess records made using iNaturalist. The records imported into iRecord from iNaturalist are all those made in GB, NI, IOM and CI (not ROI) that have photos, dates and grid references. These are considered 'research grade' by iNaturalist when they have received matching identifications from at least two iNaturalist users (one of whom can be the original submitter). This sometimes attracts criticism but is not that different from the standard the Society has long used for verification. All the iNaturalist records imported are therefore pre-verified. The iNaturalist app also includes automated image identification that suggests options suitable for the country in which it is used. This is extraordinarily effective for many British mollusc species, less so for others. There is therefore a slightly lower identification error rate than among data submitted to iRecord directly. That said, both the automated ID and user community appear less reliable for tougher groups (e.g. *Oxychilus* species), so records still need checking.

The new pathway via iRecord thus allows the Society easy access to verifiable records that we might otherwise have overlooked. In 2021, a total of 9620 non-marine mollusc records were imported to iRecord: 5206 (54%) of these records were made during 2021 itself, while the others were a backlog mainly from the years 2019–2020. Records without at least a four figure (10 x 10 km) grid reference or with uncertain identifications were rejected, meaning that 8108 records were accepted; 4500 (56%) of these had been made during 2021. This last figure can be compared with the

2021 total of 5495 accepted records submitted directly to iRecord. This shows that iNaturalist already rivals iRecord as an annual source of new records and seems likely to overtake it in future.

However, there are issues. One is that the majority of iNaturalist users are identified by pseudonyms (usernames like 'rowson_ben'), unlike iRecord which uses real names. I would prefer we avoided pseudonyms, but there is no simple way to separate these records out. It remains possible to trace or contact the original recorder, should this ever be necessary (although in practice this is extremely rare).

A more serious issue is the strong bias of iNaturalist records towards large species that can be easily photographed using smartphones. This seems to compound an existing bias in the user base towards beginners, casual recorders of molluscs among other taxa, and people recording in their own immediate areas. (I cannot be the only person to have tested iNaturalist in my own garden!) Around 200 of the mollusc records were submitted between 30 April and 3 May 2021, the dates of City Nature Challenge, so may have been made as part of these events around Britain.

As a result, the iNaturalist records are strongly skewed towards a few large 'garden' species that are already very well-recorded and common. Of the 8108 records accepted, 6712 (83%) were of just eight species, with *Cepaea nemoralis* and *Cornu aspersum* alone making up 5453 (67%) of the records (figure 5). The top slug was *Limax maximus* (274 records) and the top freshwater species *Lymnaea stagnalis* (193 records). This bias is not necessarily a problem, but it does mean more of our limited verification resource is spent on very common molluscs. There are also computing considerations – the file size of the R6 database continues to grow and this is non-linear, making the files more difficult to handle. If the volume becomes too great in future we may have to prioritise rarer species. This risks introducing a different bias into the dataset, but reminds us that the less well-recorded molluscs are often the ones that most need our help!

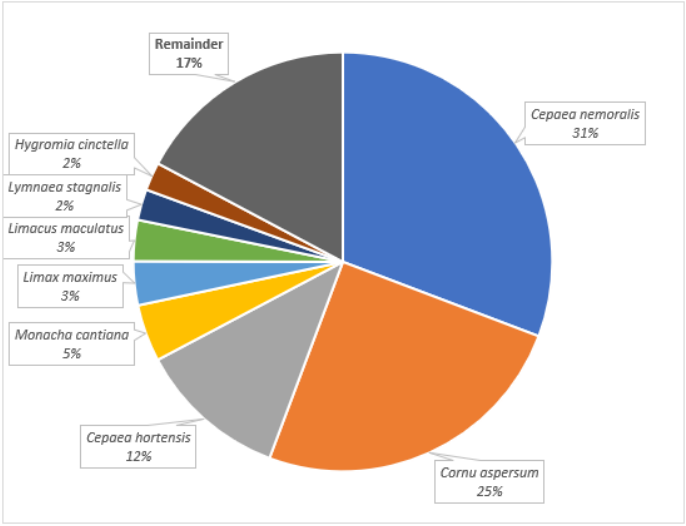


figure 5: Species composition of 'research grade' iNaturalist records imported into iRecord in 2021, and 'accepted' by the Society (total 8108 records). Eight large garden species make up 83% of the records.

References

Aldridge, D. C., Ho, S. & Froufe, E. (2014) The Ponto-Caspian quagga mussel, *Dreissena rostriformis bugensis* (Andrusov, 1897), invades Great Britain. *Aquatic Invasions* **9** (4): 529–535.

Anderson, R. & Rowson, B. (2020) *Annotated list of the non-marine Mollusca of Britain and Ireland*. Available online at: https://www.conchsoc.org.

Baars, J.-R., Caplice, M. B., Flynn, O., O'Leary, K., Swanwick, H. & Minchin, D. (2022) The Ponto-Caspian quagga mussel, *Dreissena rostriformis bugensis* Andrusov, 1897, is established in Ireland. *BioInvasions Records* **11** (1): 173–180.

Horsáková, V., Nekola, J. & Horsák, M. (2020) Integrative taxonomic consideration of the Holarctic *Euconulus fulvus* group of land snails (Gastropoda: Stylommatophora). *Systematics & Biodiversity* **18**: 142–160.

Kerney, M. (1999) *Atlas of the land and freshwater molluscs of Britain and Ireland*. Colchester: Harley Books.

Rowson, B., Turner, J. A., Anderson, R. & Symondson, W. O. C. (2014) *Slugs of Britain and Ireland: identification, understanding and control*. Telford: Field Studies Council Publications.

Sales, C., England, J., Johns, T. & Barrett, J. (2020) Quagga mussel – our latest Hertfordshire invader? *Transactions of the Hertfordshire Natural History Society* **52** (1): 78–81.

Willing, M. J. (2016) Invasive bivalve molluscs in Britain. *British Wildlife* **27** (5): 318–331.

Willing, M. J. (2022) *A survey of the lower River Ouse, East Sussex for the presence of the Asian clam* Corbicula fluminea *(June – November 2021).* Unpublished report to South East Water.

iNaturalist – a double-edged sword?

Chris du Feu

In the Non-Marine Recorder's report, Ben Rowson describes the background and some of the impact of mollusc records submitted through iNaturalist. Perhaps a word of explanation of what iNaturalist and iRecord are would be useful.

iNaturalist describes itself as *an online social network of people sharing biodiversity information to help each other learn about nature*. It is run by the California Academy of Sciences and the National Geographic Society. It aims to build a global database of species records. Users of iNaturalist (and anyone can be a user, it is free) submit photographic records and suggest an identification. Other users can look at the photograph and agree or redetermine the species. Once two people agree the record becomes 'research grade' and it will then be available for upload for research purposes or to other organisations – one in particular being iRecord. Many people prefer iNaturalist to iRecord because submitting records is said to be simpler.

iRecord is a British, rather than international system. The goal of iRecord is *to make it easier for wildlife sightings to be collated, checked by experts and made available to support research and decision-making at local and national levels*. Herein lies one major difference from iNaturalist – the records are checked by people (usually volunteers) appointed by iRecord to cover specific taxa. iRecord is a different organisation from the National Biodiversity Network but intimately connected with it. iRecord data are uploaded to the NBN and there can be free exchange between iRecord and specialist organisations such as the Conchological Society. As far as non-marine molluscs are concerned, the verifiers are Ben Rowson, Imogen Cavadino and me (slugs only). Verifiers can accept, reject or redetermine records as appropriate. Observers always receive at least minimal feedback of whether a record has been accepted or not and verifiers make additional comments if needed (for example to explain why the record has been redetermined).

Over the past year iNaturalist records of ‘research grade’ have been uploaded into iRecord where they are subject to the same verification as any other record submitted directly into iRecord.

Ben notes that there are some issues with records from iNaturalist, in particular the species bias, habitat bias and potential overloading of the verification system by the sheer number of records. In my capacity as slug verifier for iRecord, I have looked at around 1300 records submitted via iNaturalist and have kept a record of the species submitted and the actual species (where I could be sure of it).

Unlike with molluscs overall, where Ben reports iNaturalist rivalling records from other sources, I have found that iRecord produces about three times as many slug records as does iNaturalist. The picture for slugs looks rather different from that of molluscs overall. I have no idea why.

iNaturalist relies on the community of observers gradually building expertise through shared experience, discussion and learning from those who know. A novice submitting a record incorrectly identified as, say, *Limacus flavus* would, we hope, see that record reidentified by someone else as *Limacus maculatus.* Another person may also make the same reidentification and that makes two people agreeing. The record is now ‘research grade’ and is uploaded into iRecord. Next time the original observer sees a similar slug it will be submitted as *Limacus maculatus* and the observer will have learnt that not all yellow cellar slugs are *the* yellow cellar slug. If everything worked this well a very competent community of recorders would be built.

Sometimes, however, when the record is reidentified the original observer also re-identifies the record based on the other person’s identification. That makes two people agreeing even though it is based on the identification of the second person only. That is not really a robust method of peer verification. Any person should only be allowed a single identification and, at a minimum, ‘research grade’ should only be applied when at least two different observers agree.

Ben mentions a problem with the difficult species. *Arion (Arion) ater* is the outstanding example and illustrates the other side of the peer learning operation. The screenshot of some iNaturalist submissions is worth close examination. (for example, figure 1). A record is submitted with a picture of a large black slug. It is identified by the observer as *Arion ater* – which indeed is often a large black slug. A second person confirms this and the record becomes research grade and uploaded into iRecord. The first recorder is now happy in the identification of this species and can help other observers by confirming their identifications of such large black slugs. Unfortunately, there are five species of *Arion* slugs which could also be large and black, particularly when viewed from above without any of the foot fringe or sole being visible. To be sure which of these species it is, we need to know much more – image of the sole and of the open breathing pore, rocking behaviour etc. Even with the live slug in the hand we may not be sure of the species and it will need dissection or DNA analysis. The best that can be done is to redetermine it as *Arion (Arion) agg*. This is the other side of the iNaturalist system. It can build a community of confident slug mis-identifiers, continually strengthening its combined ignorance. By chance another excellent example arrived as I was writing this. It was identified as *Arion ater*. The second member disagreed and called it (correctly) *Arion ater* group (aka *Arion (Arion) agg*.) but a third person disagreed with that and called it, again, black slug. The first and third agree so it becomes research grade and that is how it arrived in iRecord – two incorrect identifications outweigh the one correct.

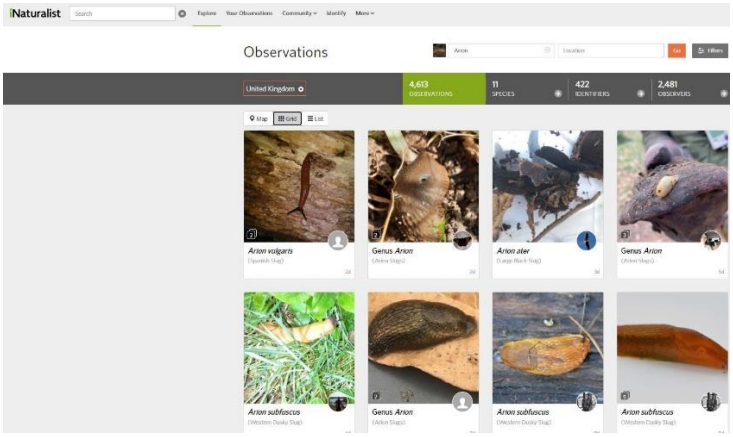


figure 1: Example of a screenshot from iNaturalist featuring *Arion* species.

With records submitted directly into iRecord, the verifier is able to send comments back to the observer. I have found this very helpful in encouraging people towards better identification (and probably increased sales of the FSC guide). In iNaturalist, members can make comments about identifications but it seems that they rarely do. I can understand – these comments take time and thought. Much easier just to reidentify and move on. However, the iRecord verifier (that is me) has no direct way of sending comments back to the original iNaturalist identifier. All I can do is accept, reject or redetermine the record. In order to send comments back I would have to register with iNaturalist and work from within. Ben mentioned the pressure on verifiers – and that is one reason why I do not have the time to do this. Even if I did, I fear it would be no use. By the time a record arrives in iRecord it is too late – the record is research grade.

Another irritation for the verifier is nomenclature. Species are identified primarily by the common name and that is often a far-from-common common name - chocolate arion for *Arion rufus*. Worse, although iNaturalist will identify some records just to sub-genus or genus level, when such a record arrives in iRecord only the genus is given. Thus a correctly identified (but badly named) *Arion ater* group is uploaded just as *Arion ater*. The iRecord verifier has to examine the iNaturalist history of the record and then, back in iRecord, redetermine or reject the record as appropriate – three steps instead of one. If records are rejected by the iRecord verifier this information is not passed back to iNaturalist and hence not back to the observer either.

Ben mentioned that some records which may be correct are inadequate and so rejected. These include those with uncertain identification and those identified less precisely than a 10x10 km square. I have seen some records (usually *Arion ater*) only to 100 x 100 km precision in a place called ‘Scotland’. Others have had a precise grid but a somewhat vague local place name: ‘England’. I imagine these records came from visitors from a little place called ‘USA’.

The overall picture of slug records from iNaturalist is shown in the pie chart (figure 2). Just over half the records are of two species – *Limacus maculatus* and *Limax maximus*. The former is now very common around houses and gardens and is brightly patterned and very obvious. *Limax maximus*, less abundant but widespread, is found in many habitats and is also very obvious. Half of the remaining records are of *Arion* slugs of which the greatest proportion has been those

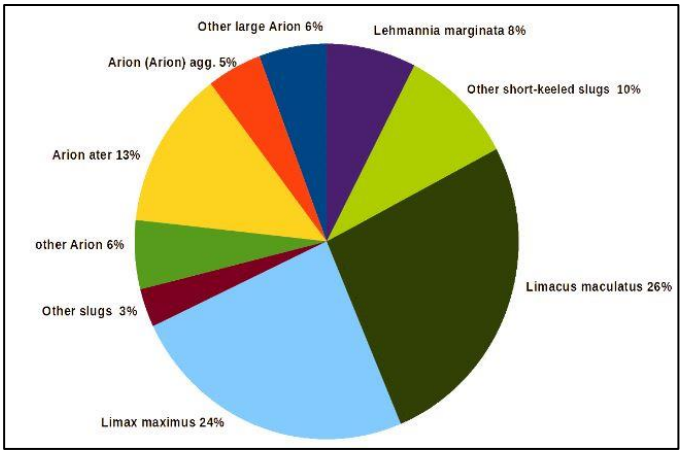


figure 2: Slug species records from iNaturalist.

named, mostly without adequate justification, as *Arion ater*. Perhaps surprising is the number of records of *Lehmannia marginata* – this is not a species that you will notice unless you are looking for it. The bias towards large species is very clear indeed, with less than a quarter of the records being of medium or small species.

The quality of identification varies between species as shown in table 1. The rows give the identification claimed in iNaturalist and the columns what the species was. For example, of the seven claimed records of *Arion hortensis (*right hand column), two were accepted as correct (green figure in the diagonal) and the misidentified ones included *Arion distinctus* and some unidentified member of the *Arion (Kobeltia*) sub-genus (black stars on yellow). On the other hand, looking down the *Arion hortensis* column apart from the two correctly identified, some had been identified as simply *Arion* (which is correct but useless) and others as *Arion ater*.

Browsing through the table shows that *Arion flagellus* is rarely recognised but could be misidentified as any of several other *Arion* species. At the other end of the scale comes *Limacus maculatus*, all records of which were correctly identified – the one rejected record was because of some inadequacy in location identification. There have been several instances, though, of records of claimed *Limacus flavus* being *L. maculatus*.

I have given a percentage score for each taxon. Note that some of the apparently very good scores of 100% are based on a very small sample indeed. Browsing through the table is instructive and does show the great differences between difficult species which Ben mentioned and also the strong bias towards large, distinctive species. We might speculate on some features. Why, for instance, is *Arion flagellus* so rarely identified and why is *Arion vulgaris* so much more commonly claimed. Perhaps *Arion vulgaris* has had a relatively high media profile in recent years and *Arion flagellus* does not appear at all in older guides which some observers seem to rely on.

Is there hope of improvement? After some months of a depressingly high rejection rate of *Arion ater* records I happened to notice a name I recognised – Steve McWilliam whom I had met when giving a slug identification course. I contacted Steve and asked if he would be willing to reidentify *Arion ater* as *Arion (Arion) agg.* And, importantly, add a comment to explain why. I provided a suitable comment which he can simply paste into the iNaturalist web page. He then began commenting on these records which he saw before they had reached research grade. We now have most records arriving which formerly would have been just *Arion ater* correctly identified only to sub-genus level. Even when the two groups are combined – *Arion ater* and the *Arion ater* group – the success rate is 60% overall (table 2). It is this improvement in identification of the large *Arion* group which is primarily responsible for the overall change in success rate for all slugs from 71% to 79% since Steve started working his magic. What a difference he has made. I am very grateful and I hope iNaturalist observers appreciate his efforts.

Undoubtedly iNaturalist is providing many useful species records and engaging many members of the public in species recording. Those things are to be welcomed. It seems that a few very small tweaks to the system would improve the quality of records and ease the load of the verifier.

Actual taxon → Claimed taxon ↓	Ambigolimax	Ambigolimax valentianus	Arion	Arion (Arion)	Arion ater	Arion circumscriptus	Arion distinctus	Arion fasciatus	Arion flagellus	Arion hortensis	Arion hortensis agg.	Arion (Kobeltia)	Arion intermedius	Arion rufus	Arion subfuscus	Arion vulgaris	Boettgerilla pallens	Deroceras laeve	Deroceras reticulatum	Lehmannia marginata	Limacus flavus	Limacus maculatus	Limax cinereoniger	Limax maximus	Malacolimax tenellus	Selenochlamys ysbryda	Tandonia budapestensis	Tandonia sowerbyi	Testacella scutulum agg.	Testacella halotidea	Rejected	%OK	total
Ambigolimax	12																														0	100	12
Ambigolimax valentianus	*	3										*																			1	75	4
Arion			1						*	*		*																			51	2	52
Arion (Arion) as ater group				58																											2	97	60
Arion ater					3		*		*	*	*																				165	2	168
Arion circumscriptus						2																									0	100	2
Arion fasciatus								1																							0	100	1
Arion flagellus									1																						0	100	1
Arion hortensis							*			2		*																			5	29	7
Arion intermedius									*				0																		1	0	1
Arion rufus									*					10		*															48	17	58
Arion subfuscus									*						9																1	90	10
Arion vulgaris									*					*	*	1															14	7	15
Boettgerilla pallens																	9									*					0	100	9
Deroceras laeve																		0	*												2	0	2
Deroceras reticulatum																			75												0	100	75
Lehmannia marginata																				97				*							1	99	98
Limacus flavus																					3	*									19	14	22
Limacus maculatus																						342									1	100	343
Limax cinereoniger				*																			5	*							5	50	10
Limax maximus	*			*																*		*		307							8	97	315
Malacolimax tenellus																									1						0	100	1
Selenochlamys ysbryda																										3					1	75	4
Tandonia budapestensis																											19				1	95	20
Tandonia sowerbyi																												6			0	100	6
Testacella scutulum agg.																													1		0	100	1
Testacella halotidea																														1	0	100	1

table 1: Quality of identification of slug species recorded in iNaturalist (see text for explanation).

		Before July2021	From July 2021
Records	*Arion ater* group	0	60
	Arion ater	131	37
	Combined	131	97
Success rate	*Arion ater* group	n/a	97%
	Arion ater	2.3%	0%
	Combined	2.3%	60%
Success rate	All species	71%	79%

table 2: Recent improvement in accuracy of *Arion ater* associated record submission to iNaturalist (see text for explanation).

I would suggest that 'research grade' be tightened. A minimum of two different members, excluding the original recorder, should agree. If there is any disagreement then research grade should be applied only if more than half of the determinations are the same.

Feedback from the iRecord verifier should go back through iNaturalist to the recorder. In cases where a record was not accepted by iRecord, research grade should be withdrawn from the record.

Finally – nomenclature. Subgenus should be uploaded into iRecord rather than just genus only. I can see why common names are used for the general public but, please, use the common common names.

For those of you who do use iNaturalist, I would urge you to work in the McWilliam style. Where a record needs to be redetermined make a comment, do not just redetermine. It takes a little more effort but the benefits will be immense.

Treasurer's annual report 2021

Brian Goodwin

As this is my first Treasurer's report, I would like to start with a 'thank you' to all Society members. As you can see below, membership subscriptions make up about two-thirds of the Society's income, so without this regular financial input we could not continue. The 'subs' enable the Society to produce five print issues every year (two journals and three *Mollusc Worlds*), and also to issue grants, produce ID guides and maintain the website. Incidentally, Peter Barfield has done a great job of improving the website – if you haven't visited recently, take a look! Of course, our income also contributes to other important tasks, such as recording and conservation, which are dealt with in other annual reports.

The last few years have encompassed an unprecedented amount of volatility in the financial markets. Together, Brexit and the Covid-19 pandemic undoubtedly produced a negative effect on the Society's investments in 2020, while more recently (as I write) the fall-out from the Russian invasion of the Ukraine seems to be producing a similar downturn during 2022. The markets recovered during the financial year 2021, and this enabled a robust recovery in our investments which is reflected in the figures attached. We will have to wait and see whether this can be maintained in future years. For the time being, however, the Society's financial situation can be described as satisfactory.

The two tables show the Profit & Loss Account, and Balance Sheet, for the year ending 31st December 2021. Note that you may spot a small £1 discrepancy due to 'rounding up'. I hope the tables are fairly easy to interpret but if not, or if you have any specific queries, please get in touch via treasurer@conchsoc.org.

I have already referred to our investments and would like to stress their importance. Their year-end value was £115K and in recent years they have produced an annual interest income in the region of £4K. This, for example, is more than enough to pay for the printing and distribution of an issue of *Mollusc World*!

Finally, another 'thank you' or two. Firstly, to the previous postholder, Nick Light, who has been an effective and skilful incumbent over many years and who also provided a great deal of patient support during the transition. Other Council members have also been supportive, as has Gill Earle, our excellent bookkeeper, who has assisted me with various challenges including preparation for this annual report. And last, but not least, the Society is very grateful for the efforts of our diligent examiner, Rupert Honnor.

CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND
FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2021

	Note	2021	2020
Incoming resources			
Fees and subscriptions	1	£11,913	£12,113
Investment income		£4,060	£4,049
Income generation	2	£945	£377
Other incoming resources		£34	£0
Donations and legacies		£32	£29
Total incoming resources		**£16,984**	**£16,568**
Expenditure			
Publications costs	3	£15,872	£15,476
Stationery, postage and advertising		£363	£426
Meetings costs		£788	£683
Sundry expenses and fees		£554	£244
Membership Services		£2,337	£1,386
Bookkeeping		£1,170	£880
Grants	4	£778	£1,879
Total expenditure		**£21,862**	**£20,974**
Net incoming resources		**-£4,878**	**-£4,406**
Gain/Loss on revaluation		**£7,846**	**-£4,746**
Net movement in funds		**£2,968**	**-£9,152**
Fund balances brought forward		**£113,537**	**£122,689**
Fund balances carried forward		**£116,506**	**£113,537**

Balance Sheet at 31st December 2021

	Note	2021	2020
Fixed Assets			
Investments at market value	5	£114,907	£113,061
Total fixed assets		**£114,907**	**£113,061**
Current Assets			
Debtors	6	£920	£950
Cash at bank and in hand		£6,913	£8,037
Total current assets		**£7,833**	**£8,987**
Short term creditors	7	£6,235	£8,511
Net current assets		**£1,598**	**£476**
Total assets minus current liabilities		**£116,506**	**£113,537**
Unrestricted income funds		**£116,506**	**£113,537**

[Notes to these financial statements are currently available as part of a pdf version of this report at https://conchsoc.org/AGM_2022_Officer_reports. (Ed.)]

Conservation Officer's report 2021

Mags Cousins

Various members, including Council, have been busy on different aspects of molluscan conservation work over the past year. Many thanks to those who have contributed material. I'm sure the following is only a fraction of what has taken place, so if you wish your voluntary conservation work to be shared with members in future do let me know during the year.

Invasive non-native species horizon scanning for Scotland

In late June 2021 Martin Willing was contacted by a representative of the UK Centre for Ecology and Hydrology (CEH) and invited to take part in a 'horizon scanning' study to produce lists of harmful invasive non-native species (INNS) that might invade Scotland within the next ten years. With numerous mollusc species to consider, it was decided to divide the initial work on terrestrial, marine and freshwater species between Society members Ben Rowson, Simon Taylor and Martin Willing respectively. The project ran between August and November 2021; further details will be given in a forthcoming article in *Mollusc World* 60.

The Wildlife and Countryside Act 1981: the 7th Quinquennial Review 2021 – first responses from the Conchological Society

Early 2021 saw the launch of the first consultation phase of the 7th Quinquennial Review (QQR7) of the Wildlife and Countryside Act. Martin Willing was approached by Buglife to work in partnership with them to submit proposals to the Government's Joint Nature Conservation Committee (JNCC). Following consultation with other Society members, a first set of proposals was submitted in 2021. This QQR review process is still ongoing, and a more detailed account will appear (alongside this Officer's report) in the next issue of *Mollusc World* (60).

***British Wildlife* magazine**

Three molluscan 'Wildlife Reports' were published in *British Wildlife* in 2021: **32** (5): 374–376; **32** (8): 607–609; **33** (2): 139–142. As in previous years, these covered a wide range of molluscan conservation news issues, partly drawing upon papers, reports and articles from *Mollusc World* and the *Journal of Conchology* and so publicising the Society's work to a wider audience.

Adastra

Each year the Sussex Wildlife Trust's Biological Records Centre publishes *Adastra,* a review of wildlife recording in the county during the previous year. In the 2020 issue (published 2021) Martin Willing included an annual mollusc recorder report for the year, including a wide-ranging review of molluscan news which can be viewed at https://sxbrc.org.uk/projects/publications/Adastra2020/.

Identification requests

Enquiries continue to come in from the public, often non-members, interested in molluscs they have come across. These ID requests arrive via Twitter, email and the two main molluscan Facebook groups which are not run by the Society although many members engage with them: Land & Freshwater Mollusca Britain & Europe and the British Marine Mollusca group. For example, a rather surprised shopper found a snail which turned out to be a Mediterranean snail, *Theba pisana*, in a packet of mint from Morocco bought from Sainsbury's; and a large and unusually pale shell from Wiltshire that was confirmed as the garden snail *Cornu aspersum*, not the Roman snail *Helix pomatia* as the enquirer initially thought.

Conservation news from Ireland *Evelyn Moorkens*

Freshwater pearl mussel *Margaritifera margaritifera*

The KerryLIFE project undertook conservation measures for the freshwater pearl mussel (FPM) in two catchments from 2014 to 2019. KerryLIFE is currently submitting its final report to the EU.

These two catchments and another six were brought on since 2019 by the 'Pearl Mussel Project'. This is a locally led European Innovation Partnership (EIP) where local farmers, researchers and advisors work together to develop a programme to rewet these FPM catchments to improve the hydrology, a very important aspect of restoring conservation status. Landowners are paid by results based on a scoring scheme for the recovery of indicator plants in their fields that demonstrate that their peat lands are rewetting.

This project is now being rolled out across the country via a new scheme for Common Agricultural Policy rural development payments. It is also being used in a new LIFE integrated project called Wild Atlantic Nature. The project aims to improve communication, cooperation and coordination of the protecting and restoration of Ireland's blanket bog Natura Network along the Atlantic seaboard. The restoration of blanket bog is essential to the recovery of the freshwater pearl mussel.

A further LIFE integrated project called Waters of LIFE aims to protect and restore high ecological status water bodies in Ireland. The project is set up to support the implementation of measures to protect and enhance high-status waters through a catchment-scale demonstration project. The project will develop, test and validate integrated catchment management measures to reverse the ongoing decline in the state of Ireland's Water Framework Directive high status water bodies. Again, FPM catchments have been prioritised for this project.

Conchological Society members Evelyn Moorkens and Ian Killeen are advising on all these projects and more details are available at https://ec.europa.eu.

Geyer's whorl snail *Vertigo geyeri*

A new project is underway to restore a site at Lough Talt in County Sligo which formerly hosted Geyer's whorl snail *Vertigo geyeri*. A drinking water abstraction that caused excessive drawdown is being closed, and rehabilitation efforts can now begin. This will include instrumenting the fen habitat here and at current sites for the snail, before translocating snails into suitable habitat to try to recover a population. Postgraduate students will undertake the work under the supervision of Evelyn Moorkens.

Kerry slug *Geomalacus maculosus*

A major road through Kerry slug habitat continues, along with the largest habitat creation project for slugs in Ireland to date. To compensate for the loss of habitat to the road, new habitat is being created, allowing for very interesting science to be collected! This research is also being done by Conchological Society members Evelyn Moorkens and Ian Killeen.

'He never overtook a car': a short history of Conchological Society of Great Britain and Ireland (CSGBI) obituaries

Brian Goodwin

To provide a reference point, this short history is based primarily on the list of 'Obituaries published in the *Journal of Conchology*', which formed Appendix 4 of T.E. Crowley's history of the Society (*Journal of Conchology*, **28** (1975): 265–293). Most of what is included therefore relates to the first 100 years or so of the Society. I make no apologies for the article's rambling nature and the occasional attempt to introduce a few moments of levity.

In the beginning …

Most societies include notices of recently deceased members – usually referred to as obituaries, more rarely as necrologies which sounds a tad creepy to me. Our Society is no exception, albeit many of the early recipients were not actually members, including the very first (and very brief) notice for **G.P. Deshayes** (figure 1).

We regret to announce the death of the distinguished French naturalist, Professor G. P. Deshayes, on the 9th of June last, after a long illness. He was well known as the author of the splendid work on the "Tertiary Mollusca," of the "Paris Basin," and other important conchological and palæontological publications

figure 1: From *The Quarterly Journal of Conchology*, **1**: 88 (August 1875).

The second recipient, **Richard Mosley Lloyd**, also warranted just a brief note. It was suggested, a little underwhelmingly, that he would *'be remembered by conchologists as having added two new and well-marked varieties to the British molluscan fauna, viz.,* Paludina vivipara *var.* atro-purpurea, *and* Planorbis glaber *var.* compressa*'* – a prophecy that seems unlikely to have been fulfilled!

Later, in volume 4 of the *Journal of Conchology* (1883–1885, p. 283–285), the eminent **John Gwyn Jeffreys** received a more fulsome valediction, while the first reports for actual members of the Society came along in volume 6. The **Rev. Churchill Babington** was first. Babington seems to have taken up conchology relatively late in life, but was reportedly *'contemplating a catalogue of Suffolk shells'* at the time of his death. A lesson to all of us – *tempus fugit*. Soon after, a pithy obituary recorded the demise of **Clifford Burkill** – someone who seemed potentially more interesting and worthy of a short diversion here.

Burkill, it was reported, died *'rather suddenly at Guernsey, on Sunday, the 22nd of February, whither he had gone on a six months' dredging excursion.'* He was described as *'a young collector and a recent member of the Society … most assiduous and energetic in the pursuit'*, who had carried out a *'thorough examination of the Scilly Islands'*. Apart from some speculation on what he might have achieved had he lived longer, that was about it.

A little genealogical investigation turned up that he had been born in Hunslet in 1845, married Miriam Grace Archbold in 1873, and had been a partner in a corn merchant business in Wakefield. In 1877 the partnership was dissolved and by the 1881 census, Clifford and Miriam were ensconced, in retirement, at Beach Villa, Scarborough. He was then just 35, so the business must have been highly profitable!

Burkill was still at Scarborough when he joined the Society in December 1888 but, having spent the summers of 1888 and 1890 dredging and collecting in the Isles of Scilly, he soon moved to Herm View, Guernsey, where, as we know, he continued his dredging activities. He was just 45 when he died.[1]

So, who gets one?

The fact that most of the early obituaries were for non-members was no doubt at least partly the result of the Society having so few members in its early history. It does however raise the interesting question of how one qualifies for inclusion? To my knowledge, this has never actually been recorded, although some matters of custom and practice can perhaps be discerned:

a) Often a member (not, as we have seen, exclusively so).
b) A contributor to CSGBI (as an officer, for example).
c) Some degree of conchological eminence or expertise.
d) And, sometimes, an 'opportunistic element', i.e. is there someone who is both willing and able to write it!

The last point seems more frequently to have been a factor than one might think.

Crowley's list

Terry Crowley's list, covering the first 100 years of CSGBI, contains 159 names. It is worth pointing out that it includes a number of inaccurate paginations and typos and is not entirely consistent about who is, or isn't, included. Quite a few inclusions were little more than simple notifications: an example is given in figure 2.

Two very well known French conchologists have also died comparatively recently:—Colonel Messager, of the Colonial Infantry, Commander of the Legion of Honour, died on December 4th, 1915, at his home at Rochefort-sur-Mer. He was best known for his researches in Tonkin. Dr. Pierre Marie Henri Fischer died on July 10th last, at 51, Boulevard St. Michel, Paris, at the age of fifty. He was editor of the *Journal de Conchyliologie*, and a member of very many learned societies.

figure 2. From Editorial Notes in *Journal of Conchology*, **15:** 123 (October 1916).

In his list, Crowley includes Fischer but not Messager – although neither seems to qualify as a proper obituary to me. Similar entries, such as a note on **C.R. Thatcher** (*Journal of Conchology*, **2** (1879): 172), failed to make his list. I also found one case where a published obituary was missed from the list – that for **J.C. Spence**, by J.W. Jackson (*Journal of Conchology*, **22** (1946): 206–207) – while for some reason **W.E. Collinge** is included on the list (along with the comment *'P. Malac. Soc. only'*), even though there was no obituary in our journal.[2]

So, applying the criteria for inclusion (a) to (d) above in turn:

Members and officers

Taking Crowley's list at face value, of the 159 individuals, it looks as though at least 19 were not members. That leaves a maximum of 140 members, of which I believe about 54 had served a term or terms as President (up to 1975). A few others (five or so) had also

served different officer roles, including Charles Oldham, a long-standing Treasurer from 1918 to 1939. Apparently, Oldham was offered the presidency on numerous occasions but could not be persuaded to take up the post. At least 20 others had been involved in running branches (e.g. W.E. Alkins and William Thurgood, who also qualified as Curator) or had served as Council members (Elsie May Morehouse, R.D. Darbishire, Fred Taylor, William Moss, A.W. Stelfox and others). In total, around 100 on the list were members involved in the running of the Society in one role or another.

I will return later to those who did not make it on to the list – they include a surprisingly large cohort of ex-presidents and some long-serving members of Council.

Conchological eminence

The inclusion of the non-member but eminent John Gwyn Jeffreys has already been noted. Others who undoubtedly fall into this category would be **Lovell Augustus Reeve** and **Charles Hedley** (figure 3), who was born in Masham, Yorkshire, but did most of his work in Australia.

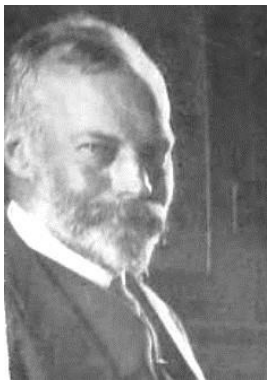


figure 3: Charles Hedley (Jackson Archive, courtesy of Buxton Museum & Art Gallery).

One might also mention here a number of Honorary Members such as **J.C.H. Crosse**, **Eduard von Martens** (figure 4) and **Rudolph Bergh**, all of whom, although eminent in the field, seem to have had little real connection to the Society.[3] As an aside, I must confess here to some mystification as to the purpose of such appointments. The post of Honorary Member was instigated by the Leeds founders early in the CSGBI history, and I can only assume it was intended to lend some (continental) gravitas to a parochial fledgling organisation. Beyond the possible donation of a few reprints to the Society's library, I can discern no other value arising from these appointments.

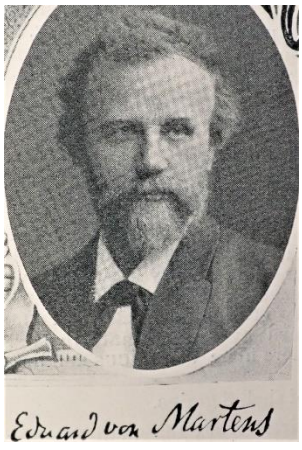


figure 4: Professor Edouard von Martens (from Taylor's *Monograph of the land and freshwater Mollusca of the British Isles* (1894–1921)).

Opportunistic entries

In a few cases, it seems likely that members with a fairly 'light' connection got an obituary simply because a friend wanted to commemorate them and used the vehicle of CSGBI to achieve that purpose. Examples might include such as the **Rev. John Hawell** and **R.J. Lechmere Guppy**. Hawell, it is reported, '*made geology his special study'*, while *'the history and archaeology of the district [North Cleveland] claimed no small share of his attention'*. Conchologically, he acquired *'a fine selection of American* Unios *and a smaller, but fairly complete, collection of local land and freshwater Mollusca'*. Without wishing to appear unkind, this is hardly 'the stuff of legend'. Hawell was clearly a pillar of society, but not a pillar of <u>this</u> Society, and there have been many, more worthy candidates who, as we shall see, failed to make the grade.

Lechmere Guppy[4] (figure 5) was a man of great interest and many talents, and an 'amateur' palaeo-conchologist of some repute (working mainly in Trinidad), but with no great connection with the Society. He published a few faunal lists for Trinidad and the Gulf of Paria in early journals but he had ceased membership in 1897, well before he died in 1916. It took the notes of his friend R.B. Newton, sent to the editor, to prompt a brief entry.

figure 5: R.J. Lechmere Guppy (Public Domain).

Better late than never …

Sometimes deaths weren't noticed and notifications could be rather delayed. In the case of **J.T. Marshall**, who died in January 1922, this was not so surprising as he had resigned his membership in 1919. Moreover, in 1903 he had sold his house in Torquay, parted with his shell collection[5] and *'for the rest of his life had no fixed home; he wintered regularly at Bournemouth and spent the rest of the year travelling'* (J.R. le B. Tomlin, writing in *Journal of Conchology*, **17** (1923): 99–103). Not surprisingly then, Tomlin only found out about Marshall's death in Jersey *'quite by accident'*, and his letter to Hon. Sec. J. Wilfrid Jackson of 22nd January 1926 (figure 6) records the detective work undertaken to compile the obituary.

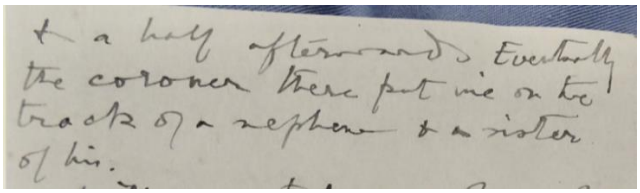


figure 6: Extract of a letter from Tomlin to Jackson (CSGBI Archive).

Perhaps the most extreme example of a delay concerns the **Rev. E. Percy Blackburn**, who died in 1940 un-commemorated by CSGBI despite having been a member for 43 years. More than two decades later, in 1962, when his collection and literature were given to Sunderland Museum, the curator C.A.B. Steel sought to rectify this omission. Even then, it was not until 1972 that what was effectively an obituary appeared in the *Journal of Conchology* (**27**: 353–355 and plate) (figure7).

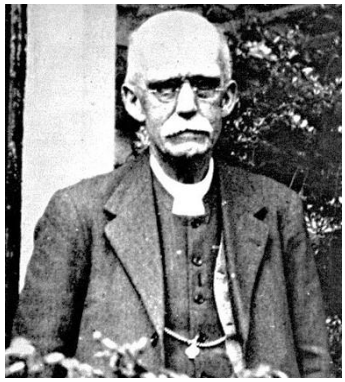


figure 7: Rev. E. Percy Blackburn.

The nature of the published obituaries can be covered under three main headings, namely: Content, Style and Author.

Content

A standard format would normally include some basic biography: dates, education and influences, sometimes details of family and work, and often a eulogistic reference to the subject's skills and character. Typically, a conchological connection was established, occasionally with a list of published works, and in a few cases a list of taxa (named for, or by the deceased) was appended. It was not unusual for details of other natural history interests to be included. A fairly typical example (here regarding **Robert Cairns**) would be:

> *'In his early days he was somewhat of a botanist, and he also collected birds' eggs. When the writer made his acquaintance, probably geology had the strongest attraction for him'.* (William Moss, writing in *Journal of Conchology*, **13** (1912): 290–293.)

Moreover, many of the earlier obituaries highlight individuals with an astonishing range of skills and aptitudes outside the world of natural history. For example, **Arthur Goodwin Stubbs** (1871–1950), we learn, was not only a competent cricketer but a Wimbledon standard tennis player and *'proficient at hockey, golf and billiards*'. In addition to his undoubted athletic prowess, he *'was a chess expert of international reputation, and contributed over 2,000 chess problems to various newspapers'.* And just when you wonder how he found the time for any conchology, it is revealed that:

> *'He was gifted with a high degree of artistic talent, and was awarded the Grenfell Medal (silver and bronze) for about 20 years in succession by the Royal Horticultural Society for his watercolour paintings of flowers.'* (*Journal of Conchology*, **23** (1950): 120.)

Less often, other notable but rather quirky interests crept in, thus *'for several years **[William] Thurgood** was honorary district organizer for the East Pennine section of the British Thunderstorm Survey'.* (*Journal of Conchology*, **23** (1950): 119.)

Style

Most obituaries, especially in the Victorian and early Georgian eras, were rather bland and invariably highlighted the recipient's sterling qualities and fine character. Indeed, one might assume from reading them that conchologists were universally a saintly lot. Fairly typical would be the 1904 description of **Walter Drawbridge Crick**, by Charles Oldham (figure 8).

Crick was a man of a fine presence and a hearty, genial manner. His kindly nature and integrity of character, coupled with an unbounded enthusiasm for whatever work he took in hand, won the esteem of all who knew him.

figure 8: *Journal of Conchology*, **11** (4): 116 (October 1940).

Any form of criticism was usually shunned although very occasionally something slipped through or it was possible to read between the lines. As an example, Tomlin's paragraph on **Oscar Boettger** is a candidate for more than one interpretation:

> [Dr Oscar Boettger] *'for nearly nineteen years… under the influence of a nervous disorder … utterly refused to come outside his house and garden'.* Eventually his brother *'induced him to come out of doors one evening after nightfall, by the promise of a rare stamp … from America! They even visited a tavern together, and from that evening Boettger was cured.'* (*Journal of Conchology*, **13** (1910–1912): 162–163.)

Of course, the alcohol may also have helped!

I believe Tomlin was also responsible for a comment (entirely justified, in my opinion) about W.H. Turton's *Marine Shells of Port Alfred*: *'[I] cannot call it anything but a most unfortunate and deplorable piece of work'.* Such comments were hardly the norm, but spoke volumes about Tomlin, who could do no other but tell it like it was.

Author

It is worth noting that many of the first obituaries published were either anonymous (we might assume that these were written by the editor, John W. Taylor) or were simply initialled. Fortunately, the context and reference to a membership list enables us to work these out with a good level of confidence. Thus, for the record: for R.M. Lloyd, G.S.T. would have been G. Sherriff Tye; for T. Glover, T.R. refers to Thomas Rogers; while for Rev. C. Babington, C.G. seems likely to have been his fellow Rev., Carleton Greene.

By and large, the authors of obituaries fall into two fairly obvious groups: 'volunteers', often a close friend or relative; and 'pressed (wo)men' – in practice, this might be someone 'persuaded' by the editors or, when all else failed, the editors themselves.

For a long period, obituaries in the *Journal of Conchology* were overseen by the highly efficient pairing of J. Wilfrid Jackson and his good friend John R. le B. Tomlin. Jackson served as Hon. Sec. from 1917 to 1945 (strictly speaking with a gap year in 1924 when he was President and his father-in-law Robert Standen was nominally the Hon. Sec.) while Tomlin was the journal editor for an astonishing 41 years between 1907 and 1947. Thus, the two overlapped for 28 years and during that period they kept a close watch on goings-on and their correspondence was peppered with musings, such as in figure 9.

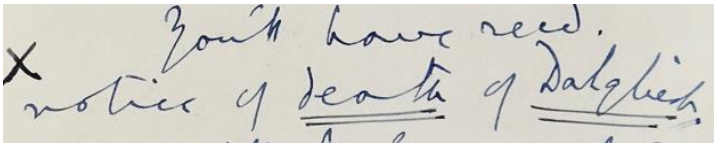
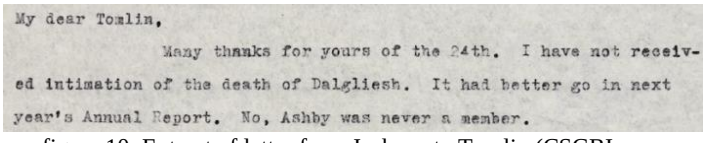


figure 9: Extract of letter from Tomlin to Jackson (CSGBI Archive).

Later in the same letter, Tomlin wondered *'Was Ashby a member? He died last month.'* Jackson replied on 1st March 1941 as shown in figure 10.



My dear Tomlin,

Many thanks for yours of the 24th. I have not received intimation of the death of Dalgliesh. It had better go in next year's Annual Report. No, Ashby was never a member.

figure 10: Extract of letter from Jackson to Tomlin (CSGBI Archive).

On 13th January 1942 Tomlin, ever the pragmatist, wrote to Jackson: *'Oldham is very bad & won't last long. Who can do his obit?'*

He ended up doing it himself! In fact, between them, they produced a great many of the obituaries. I haven't done an accurate count but I know of at least eleven from the pen of Jackson, and there were probably even more from

Tomlin. Where necessary, Tomlin resorted to borrowing from other publications. Thus **D.D. Baldwin**'s obituary came from *The Nautilus*; **J.W. Baldwin**'s (no relation) was courtesy of *The Lancashire Naturalist;* and that of the South African **H.F. Becker** came from the rather obscure *Grocott's Penny Mail*, a Grahamstown newspaper. One has to imagine that quite a lot of effort went into tracking down some of these sources.

Some of the best obituaries happened when the author attempted to showcase the deceased's character with personal anecdotes. A good example of this concerns **A.E. Boycott** and was written by his close friend Charles Oldham. After spending most of his life snail-hunting on foot or bicycle, Boycott finally *'availed himself of the convenience of a motor car*'. Oldham went on to relate that (for AEB):

> *'... Motoring was no affair of noisy haste. He used to say – half in jest – that only very exceptional circumstances could warrant a motorist in driving at a pace that made him incapable of identifying any butterfly he encountered, and more seriously, perhaps, that he could wish for no better epitaph than, "He never overtook a car".'* (*Journal of Conchology*, **21** (1938): 58–65.)

Autobiobituaries

There may be a recognised word for DIY obituaries (and this might even be it) but if not, I have taken the liberty to coin one. Self-penned efforts must be very useful to editors and I know of at least two cases (both published after Crowley's list) where colleagues have to a large extent written their own. The first was **Arthur Erskine Ellis**[4] who, having undertaken the role of journal editor, appreciated the difficulties involved. In 1964, he wrote to the then editor, Dr Paul:

> *'One of the headaches of an editor is the writing of obituaries of members of the Society on the melancholy occasions when this duty becomes due … I am therefore sending you the story of my life and list of publications, on which the writer of my obituary will be able to draw … Perhaps this document can eventually be placed with the Society's archives. I am also sending the last studio portrait I had taken, about 30 years or more ago I think.'*

As a postscript he added *'In common with all biographies, the really interesting parts are omitted of course!'*

The autobiobituary for **Bernard Verdcourt**[7] begins thus:

> *'Bernard Verdcourt, the well-known Kew botanist who has died aged [86], made contributions to two distinct fields of East African natural history, the vascular flora and the non-marine molluscs, over a period of some [60] years.'*

The figures were of course added later. It was, naturally, a disarmingly modest opening for a man of considerable intellect and achievement, and was accompanied by an equally informative 'Appreciation' by Ben Rowson and others (*Journal of Conchology*, **40** (2011): 681–704).

Interesting snippets …

Sometimes, interesting little quirks appeared. Thus, we learn:

- **H.H. Bloomer** had a *'pet aversion – Lloyd George'*!
- For many years **T.G.W. Fowler**'s *'collection was stored with his bootmaker'.*
- The species *Placostylus strattoni* Pain, named for **Leonard W. Stratton**, was *'always regarded as something of a joke as it was bought, with others, for 2s 6d. in a junk shop'.**

Obituaries reveal that a surprisingly large number of Society members seem to have been mountain lovers: **Henry Haversham Godwin-Austen** of K2 fame is perhaps the most obvious example but others include: **F.F. Laidlaw** *('an expert on the flora of Ben Lawers, which he had climbed about fifty times'*); **A.W. Stelfox** (who took *'a special delight in mountain plants'*); **K.H. Barnard** *('an enthusiastic mountaineer'*); **Rev. R. Boog Watson** (a favourite haunt was *'Bel Alp [Switzerland], where he did much climbing and botanising'*) and, **Thomas Rogers** who died on an ascent of Helvellyn.

Controversial characters

Certain of our fellows have been well known for their contrarian views, adversarial approaches and all round general curmudgeonly nature – but the usual anodyne style adopted by obituarists often smooths over what might be regarded as the more interesting aspects of their natures. **Alfred Santer Kennard** was a self-taught, often generous, 'salt-of-the-earth' type but even his close friends regarded him as prickly at times and someone who did not suffer (those who he thought were) fools gladly. As a self-confessed bigot he, at various times, expressed disdain for a whole litany of groups – including, but not restricted to, Scots, Germans, brass hats, degree men and RC priests![8] And yet, all these more colourful aspects of his character – essentially what made him a 'character' – were edited out by his obituarist.

figure 11: Hans Schlesch (CSGBI Archive).

Another controversial conchologist was **Hans Schlesch** (figure 11). Fortunately, Schlesch's CSGBI obituarist, the Rev. H.E.J. Biggs, presented a considered and reasonably balanced view of the man, and his life and times (*Journal of Conchology*, **25** (1963): 202–203) which is well worth reading. Biggs does rather gloss over what a group of eminent Danish conchologists characterised as plagiarism, fraud and deceit as 'some trivial scientific joke'[9], but queried his rush to publish *'without due reflection*' and whether some of his species and varieties were necessary. On the positive side, Biggs highlighted his role as a member of the Danish resistance, his generosity with duplicates, and his campaign for Danish nurses to be allowed to marry.[10] Appropriately for a man of the cloth,

Biggs was willing to forgive Schlesch's undoubted sins and look for positives where they occurred. He even seems to have forgiven him for describing others' specimens as new, including when this happened to Biggs himself:

> *'The present writer sent a sample of Mollusca from Persia in the early 1930's, with the special request not to describe anything as new but leave that to the finder. Schlesch immediately described one of them as a new species and another as a new variety … The former was placed in the wrong superfamily.'*

The duality of Schlesch's nature was summarised thus – a *'colourful, controversial, generous, mean, attractive, difficult person'*. Biggs was obviously keen to cover all the angles!

Notable omissions

I have already noted in a previous article ('The Ladies Who Conch', *Mollusc World*, **57** (2021): 20–26) the most egregious omission – that of Nora McMillan, albeit she died relatively recently and would not have featured on Crowley's list. Surprisingly, a total of eight Presidents (who had died pre-1975) never made the cut, together with T.W. Bell who was Hon. Secretary throughout the 1880s, Hon. Treasurer for most of that period, and a Council member for two years.

Others include at least six Council members who served a minimum of five years, of which the most notable are John Ray Hardy (11 years), Edward C. Stump (18) and A.K. Lawson (20/21). I plan to cover at least some of these 'notable omissions' in one or two future articles.

Some mistake, surely!

And it wasn't only these omissions that caused a raised eyebrow. There have been equally puzzling inclusions. Quite what journal editor Nora McMillan was thinking when she published an obituary for **Herbert Leader Hawkins** (*Journal of Conchology*, **26** (1971): 418–419) will forever remain a mystery. While he did actually belong to the Society, there is nothing regarding molluscs in the article and his interests seem to have been firmly rooted in fossil sea-urchins.[11] My tentative theory here is that somehow the author (N.E. Butcher) sent it to the wrong journal and Nora was far too polite to point out the mistake!

My favourite

In reading about the lives of so many former members, I was often reminded of the familiar expression often connected with Isaac Newton (but traced back at least to the 12th century and attributed to Bernard of Chartres): *'If I have seen further, it is by standing on the shoulders of Giants'*. It is a potent reminder of what we all owe to previous generations and a major factor in my own burgeoning interest in the history of conchology. I shall therefore nominate my (current) favourite, that of **Albert Edward Salisbury** (1876–1964), written by E.C. Badcock (1964). I will not spoil it by quoting from it, but instead urge all readers to see it for themselves on the Society website (*Journal of Conchology*, **25** (1964): 293 – 298) and to read and marvel! Of course, I haven't read every one so if you think there is a better one, please let me know.

In conclusion …

Having read through dozens of obituaries in preparing this article, a couple of things have become abundantly clear.

Firstly, while many obituaries have rightly commemorated the time and effort that colleagues expended in helping to make the Society a success and/or achieved significant recognition in the field of conchology (both amateur and professional), equally there have been many other worthy souls whose exploits are comparable but were not thus recognised.

Secondly, deserving though the 'conchological saints' were, and equally well-meaning the efforts of those who praised them, they are partial and give an incomplete picture of their subjects: their passions, peculiarities and peccadillos (we all have them). Nor are they very informative about the conchological focus or issues of the day. The best, and certainly the most interesting and informative, stories are those that incorporate the good, the bad, and even the ugly – in short, the span of our natures as human beings.

And so, I end on a plea to future obituarists – keep them coming for they enrich our historical perspective, but make them honest, 'warts (or, perhaps, tubercles) and all'.

Endnotes

[1] An older brother, Isaac Henry Burkill, who was also briefly a member of CSGBI, found greater fame as a botanist who worked at Kew and was Director of the Botanic Gardens in Singapore.

[2]I plan to include more on Collinge in a companion article to follow.

[3]None of these obituaries were actually written by CSGBI members, they were all sourced from countrymen (or women) who clearly knew them much better than anyone in the Society.

[4]He 'discovered' the guppy fish in Trinidad in 1866 but it had already been described from Venezuela at an earlier date. The eponymous name has persisted.

[5]Marshall was especially interested in micro-shells. The Pyramidellidae were his favourite and he estimated that his collection contained 40,000 specimens of the family.

[6]See: https://conchsoc.org/node/599.

[7]See: https://conchsoc.org/node/5506.

[8]A bit more detail regarding Kennard can be found in an article I wrote on 'J. Wilfrid Jackson's conchological correspondents' (*Mollusc World*, **32** (2013): 26–28) and, especially, in Preece, R.C., 'Alfred Santer Kennard (1870–1948): his contribution to malacology, Quaternary research and to the Geologists' Association' (*Proceedings of the Geologists' Association*, **101** (3) (1990): 239–258).

[9]Published as 'Ein malaklogischer Schwindel', see: www.biodiversitylibrary.org/item/52190#page/169/mode/1up.

[10]There was a significant element of self-interest here as Schlesch wished to marry one!

[11]In case you are wondering, it didn't make it onto the eminent conchologists page of the Society website!

*Alan Solem (*Fieldiana. Zoology* **41** (3) (1961): 483) states: '*This species was described from a single individual without precise locality data and may be based on a mislabeled shell from another archipelago or a juvenile of one of the other New Caledonia species*.' The species is no longer recognised. Ed.

9th European Congress of Malacological Societies – Euromal 2021

(Virtual conference 5th–9th September 2021)

Martin Willing

‘Euromal’ conferences are generally held every three years. The 9th Euromal (European Congress of Malacological Societies) was originally planned as an in-person meeting on the campus of the Czech University of Life Sciences in Prague in 2020. Due to Covid-19 issues, it was postponed and subsequently held online between September 5th and 9th 2021 thanks to organisation by malacologists from Prague and Brno (Czech Republic).

The conference was well attended by an international audience although, not surprisingly, particularly by malacologists from Eastern Europe. Conchological Society members participating included Jon Ablett, Robert Cameron, Imogen Cavadino, Anna Holmes, John Hutchinson, Richard Preece, Ben Rowson (see figure 1), Peter Tattersfield, Martin Willing and Harriet Wood.

The very wide range of talks was divided into themed blocks and abstracts of most of the talks can be found in the draft book (a final version to be released later) available at: www.euromal.cz/wp-content/uploads/2021/08/ABSTRACTS_Draft_31-08-2021-1.pdf. The book does not yet contain the ‘keynote’ talks which are available (together with much else) on Facebook, which can be accessed at: www.facebook.com/euromal2020.

Conchological Society members gave (or were participants in) the delivery of a range of talks including:

1. ***Islands and snails: unravelling processes*** … Robert A. D. Cameron
2. ***‘Slugs count’; using citizen science to understand terrestrial slug species diversity in UK gardens*** … Imogen Cavadino
3. ***Population genetics of an invasive and a resident slug; the races and hybrids of* Arion vulgaris *and* Arion ater *s.l.*** … John M.C. Hutchinson
4. ***Freshwater snails* Gyraulus parvus *(Say, 1817) and* G. laevis *(Alder, 1838): a story of the invasion at the population level*** … E. Šlachtová, L. Beran, M. Nováková , V. Horsáková, B. Rowson, J.Č. Hlaváč , J.C. Nekola. & M. Horsák.

At the start of talks each day the representatives of those malacological societies present delivered short talks describing their organisations. Ben Rowson gave an excellent talk summarising the work of the Conchological Society, including details of its history, meetings programme, recording schemes, publications, research grants and online presence.

An amusing overview of the conference was written by Tadeusz Zając for *Folia Malacologia* and can be accessed at: www.foliamalacologica.com/Virtual-Euromal-9th-European-Congress-of-Malacological-Societies,144583,0,2.html.

The 10th Malacological Congress (Euromal 2024) will be held in Heraklion (Iraklion), Crete. This is likely to be in September 2024 so add it to your diaries now!

For reviews of previous Euromal Conferences see:

Euromal 2014 (7th Congress of the European Malacological Societies): *Mollusc World*, **36**: 10–13.

Euromal 2017 (8th Congress of the European Malacological Societies): *Mollusc World*, **50**: 32–33.

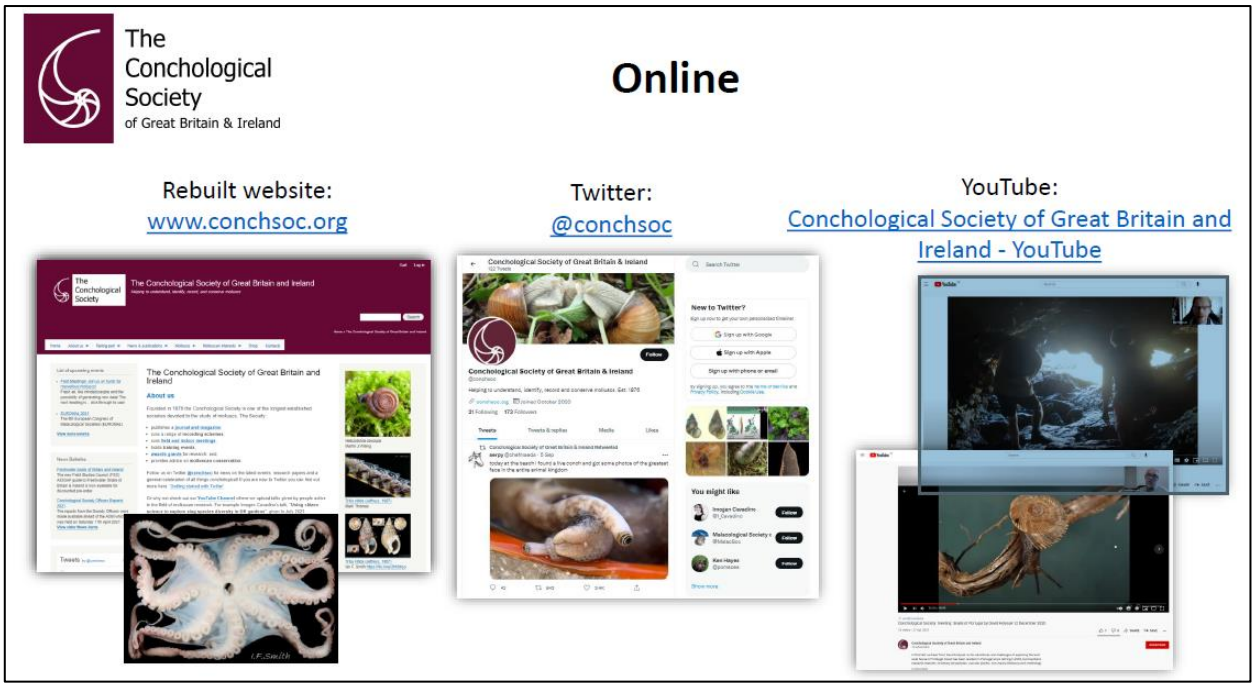


figure 1: A slide from Ben Rowson’s talk about the Conchological Society given at Euromal 2021 with examples of the Society online.

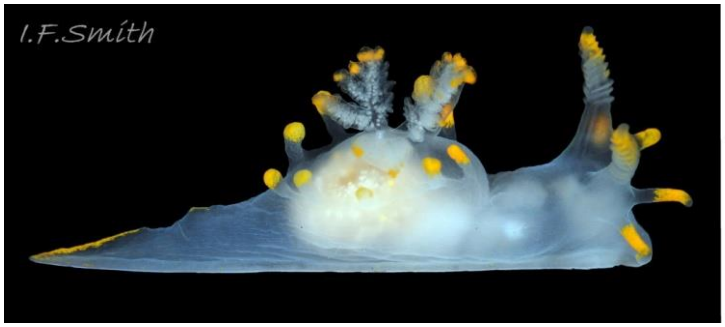
Ancula gibbosa (Risso, 1818): identification and biology

Ian F. Smith

Synonyms: *Tritonia gibbosa* Risso, 1818; *Polycera cristata* Alder, 1841; *Ancula cristata* (Alder, 1841).

Larger versions of the images in this article can be accessed at https://flic.kr/s/aHBqjzwy3h.

In Britain, adults of this small species are usually about 13 mm long (Alder & Hancock 1845–55) (figure 1) and many finds are much smaller (figure 15). Claims of up to 33 mm length probably relate to *A. pacifica* MacFarland, 1905, which was synonymised with *A. gibbosa* by Thompson & Brown (1984). The body is smooth, translucent white and sometimes reveals pinkish, brownish and opaque white viscera (figure 2 and figure 10). On the slender, tapering tail there is a yellow or orange, medial, dorsal ridge which extends part or all the way to the gills (figure 3). The mantle edge is indiscernible apart from a raised rim bearing up to seven elongate, distally slightly swollen, yellow- or orange-tipped pallial processes at either side of the gills (figure 4). Three tripinnate, white **gills**, with yellow or orange tips and opaque white spheroids in the translucent stems and branches, are arranged around the white anal papilla (figure 5); one at the anterior and one at either side (figure 6). The yellow or orange pigment is sometimes absent from some or all of the features above (figure 7).



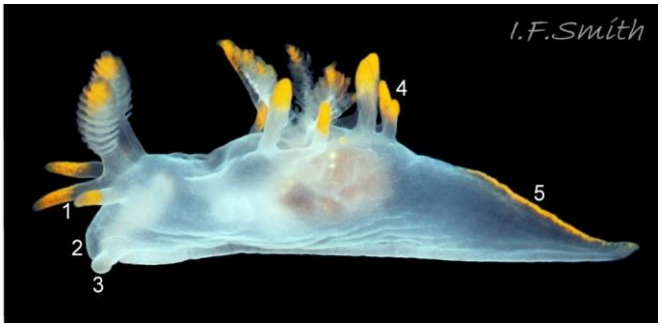


figure 1 (left): Length 12.8 mm. Menai Strait, Wales. June 2018. Leg. P. Brazier and L. Kay.
figure 2 (right): Smooth, translucent white body revealing pinkish ovotestes and brownish digestive gland.
1: Two forward-pointing, not strongly-curved, linear processes at base of each rhinophore; **2**: no linear processes on the anterior edge of the mantle over the head; **3**: short oral tentacle; **4**: several erect linear processes by each side of the gills; **5**: no orange or yellow pigment on main body except dorsal ridge on tail. Length 10 mm. Menai Strait, Wales. March 2011.

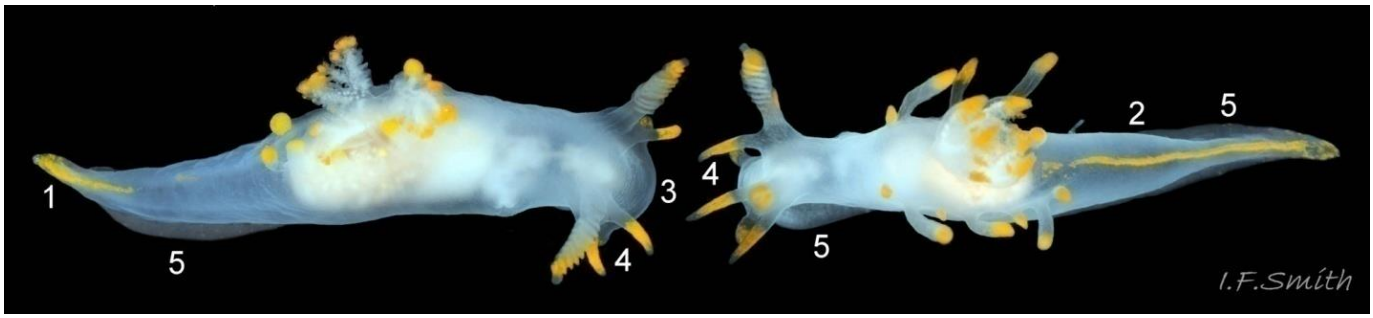


figure 3: Yellow dorsal ridge on tail extends part (**1**) or all (**2**) the way to the gills. No linear processes on the anterior edge of the mantle over the head (**3**), but the forward-pointing pallial processes at the base of the rhinophores are often mistaken for them in dorsal view (**4**). Only small parts of the foot (**5**) protrude in dorsal view. Menai Strait, Wales. September 2016 and June 2018. Leg. P. Brazier and L. Kay.

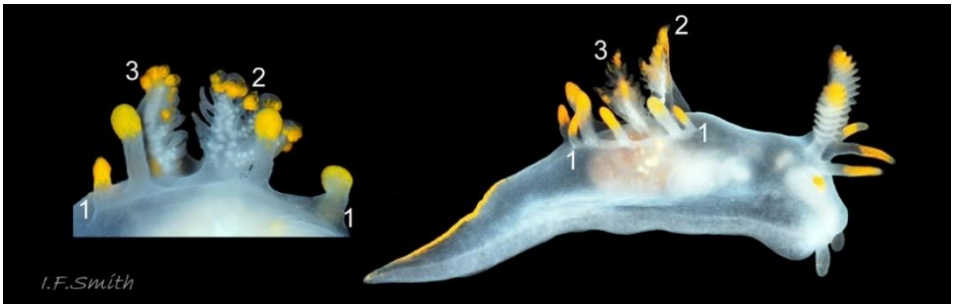
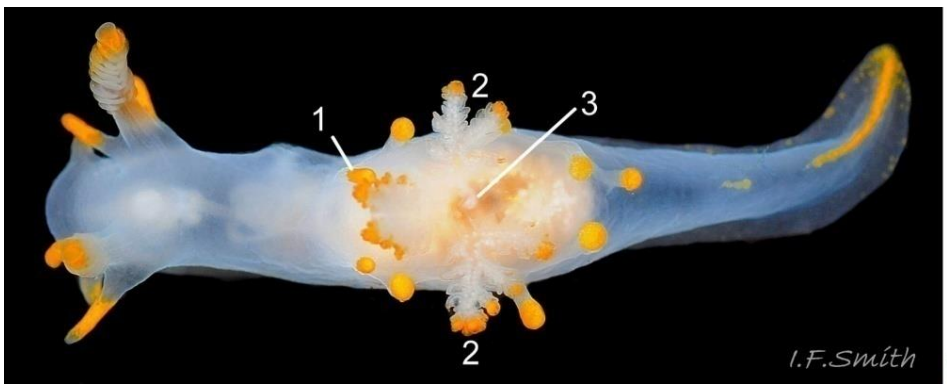


figure 4:
1: raised mantle rim bearing elongate, distally slightly swollen, yellow-tipped pallial processes; **2**: anterior gill; **3**: lateral gill. Length 10 mm. Menai Strait, Wales. March 2011.



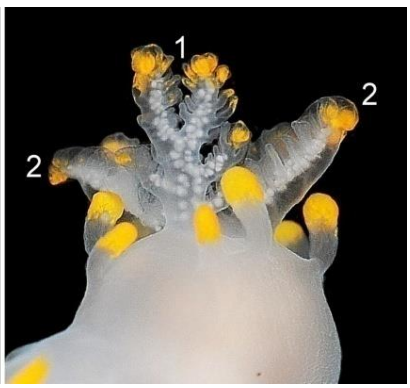


figure 5 (left): and figure 6 (right): Anterior (**1**) and lateral (**2**) tripinnate, fan-like gills around the white anal papilla (**3**). Length 12.8 mm. Menai Strait, Wales. June 2018. Leg. P. Brazier and L. Kay.

figure 7: Specimens with little or no yellow or orange pigment. Left: Yorkshire, England. May 2016 (© P. Lightfoot). Right: some yellow on rhinophoral processes. Lillebælt, Denmark. February 2013 (© J. Ari).

The **rhinophores** have up to twelve prominent, translucent white lamellae which are widely divided on the anterior and have yellow or orange pigment distally (figure 8). The blunt apex protruding above the lamellae is often tilted forwards. The translucent, swollen, smooth base has two forward-pointing, long, linear, finely tapered, white pallial processes which are usually yellow or orange distally. The yellow or orange pigment is sometimes absent from the rhinophores and pallial processes.
The **head** consists of the mouth, its surrounds and a pair of small, white oral tentacles (figure 9) which may have yellow or orange tips. There are no linear processes on the anterior edge of the head, but the forward-pointing pallial processes at the base of the rhinophores are often mistaken for them in dorsal view (figure 3). The long, narrow, white **foot** tapers evenly in its posterior half to a fine posterior point. It has no propodial tentacles (figure 9). Its translucency and that of the upper body may reveal several internal organs (figure 10). In dorsal view, only small parts of the foot protrude into sight (figure 3).

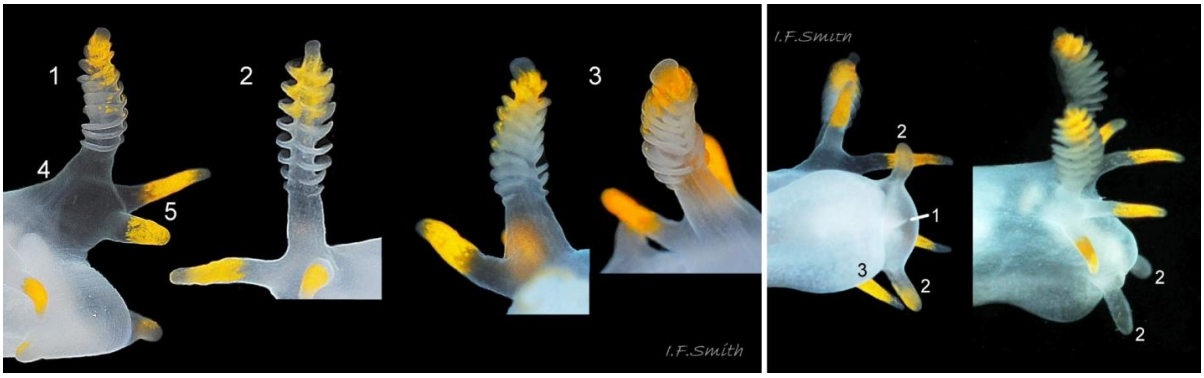


figure 8 (left): Lateral (**1**), anterior (**2**) and posterior (**3**) of rhinophores. Lamellae widely divided on anterior and meet in a 'V' on posterior. Translucent, swollen base (**4**) has two forward-pointing, tapered, pallial processes (**5**).
figure 9 (right): The head consists of the mouth (**1**), its surrounds and a pair of small, white oral tentacles (**2**) which may have yellow or orange tips. The foot has no propodial tentacles (**3**). Menai Strait, Wales.

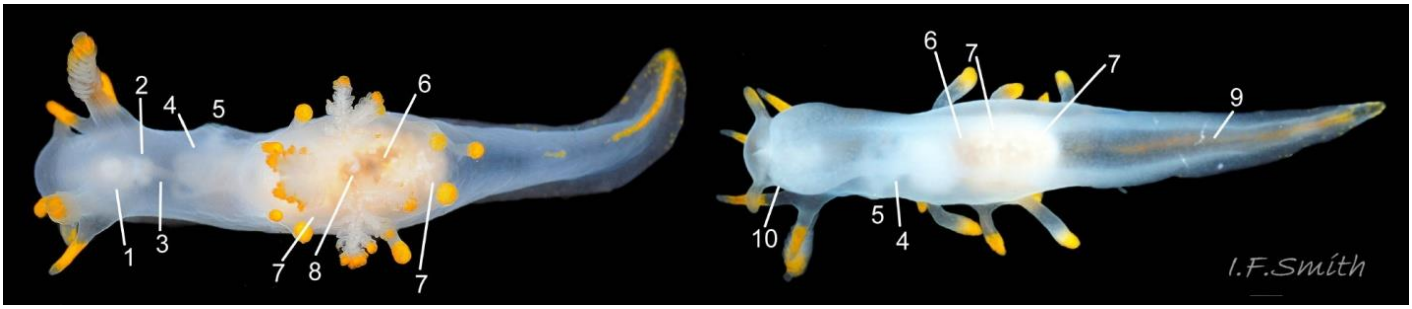


figure 10: **1**: buccal mass; **2**: circum-oesophageal nerve ring; **3**: oesophagus; **4**: reproductive system, except ovotestes; **5**: genital aperture; **6**: exposed brownish digestive gland (mostly concealed by ovotestes); **7**: pinkish ovotestes; **8**: white anal papilla; **9**: orange dorsal medial ridge seen through translucent body; **10**: no propodial tentacle on foot. Left: Length 12.8 mm. Menai Strait. June 2018. Leg. P. Brazier and L. Kay. Right: Length 11.6 mm. Menai Strait. September 2016.

Key identification features*

A. gibbosa (figure 2).

1) Two forward-pointing, not strongly-curved, linear processes at base of each rhinophore.
2) Several erect linear processes by each side of the gills. 3) Anterior of foot has no propodial tentacles (figure 9).
4) No linear processes on the anterior edge of the head.
5) Orange or yellow pigment, when present, confined to distal part of appendages and a medial line to the rear of the gills.
6) Adults usually reach about 13 mm length.

*These features relate to the form A of *A. gibbosa sensu lato* found in Europe. For American and Asiatic forms see 'Discussion of distribution and status' below.

Similar species

Ancula pacifica MacFarland, 1905 (figure 11).
A. pacifica occurs on the Pacific coast of the USA and possibly in Japan. Image labelled '*A. gibbosa*' [*sensu lato*] at https://en.seaslug.world/species/ancula_gibbosa (Baba 1990; Nakano 2018). All forms are regarded as a synonym of *A. gibbosa* by Thompson & Brown (1984) and on WoRMS (accessed 23 December 2021) but Atlantic *A. gibbosa* collected by J. Goddard from Maine, USA, were found by Harris (2011) to be genetically distinct from Pacific *A. pacifica* in the collections at the California Academy of Sciences (J. Goddard, pers. comm. 22 December 2021, via T. Gosliner).

1) to 4) Features as *A. gibbosa*.
5) Orange pigment distally on appendages, a dorsal line from between the rhinophores to the tip of the tail except the gills, and a dorso-lateral line from each rhinophore to under the processes by the gills and a short distance further (MacFarland 1905). Sometimes the lines are broken or fragmentary.
6) 'The largest specimen yet taken measured 29 mm in length' (MacFarland 1966).
7) CO1 sequences of Californian *A. pacifica* differ by over 10% from those of Atlantic *A. gibbosa* in Europe and eastern America (BOLD).

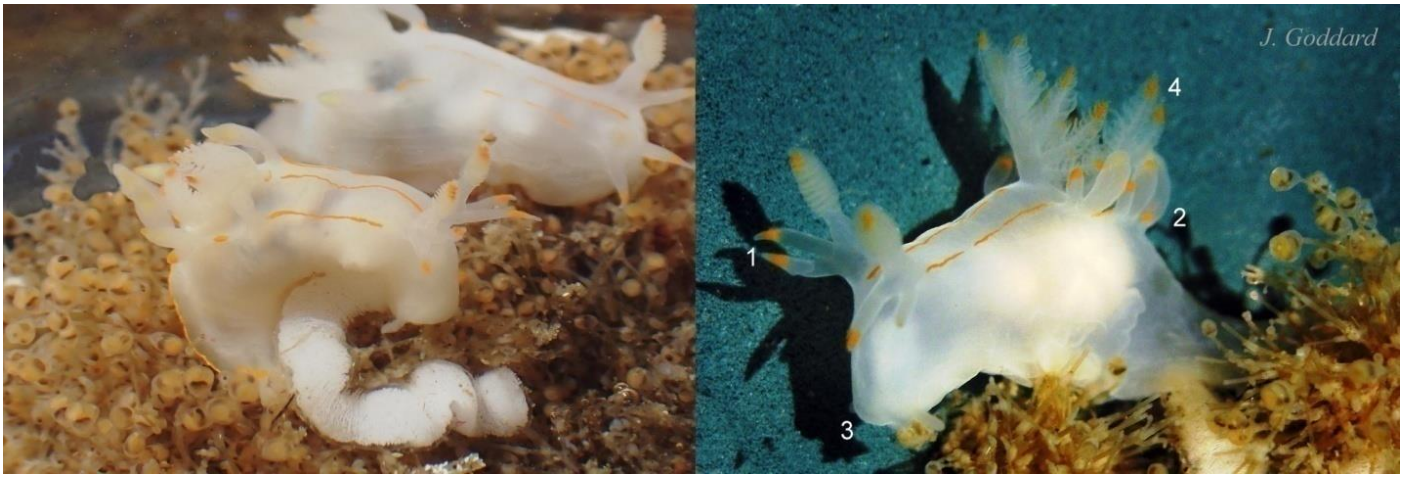


figure 11: *Ancula pacifica*. Spawn ribbon 2.6 mm wide in left image. May 2021. Right specimen 15 mm long. May 2011. Both from Pacific Ocean in California, USA (© J. Goddard). Features **1** to **4** are as on *A. gibbosa*. **1**: Two forward-pointing, not strongly-curved, linear processes at base of each rhinophore; **2**: several erect linear processes by each side of the gills; **3**: no linear processes on anterior edge of the head; **4**: orange pigment distally on appendages. **Distinguishing features** of *A. pacifica*: orange dorsal line from between the rhinophores to the tip of the tail, interrupted by the gills, and orange dorso-lateral line from each rhinophore to under linear processes by the gills and a short distance beyond the posterior process.

Trapania pallida Kress, 1968 (figure 12), ***T. tartantella*** (Ihering, 1886) (figure 13) and ***T. maculata*** Haefelfinger, 1960.

1) Single, elongate process curves backwards from the base of each rhinophore.
2) Single, elongate process curves backwards at each side of the gills.
3) Anterior of foot has distinct protruding propodial tentacles.
4) No linear processes on the anterior edge of the head.
5) Orange or yellow pigment conspicuous on body of *T. tarantella* and *T. maculata*; absent from *T. pallida.*

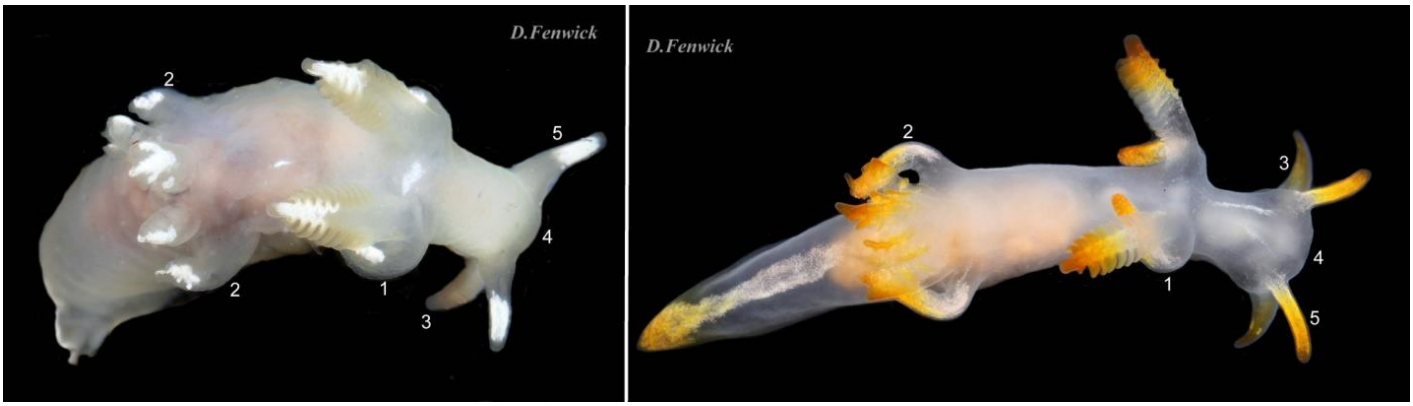
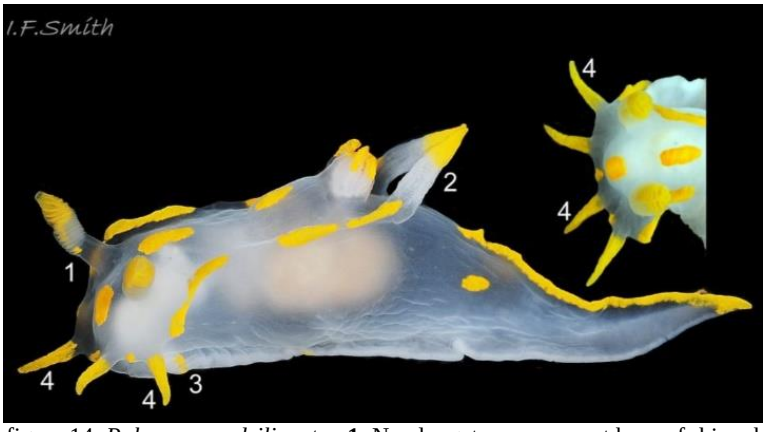


figure 12 (left): *Trapania pallida* Kress, 1968. **1**: Single, elongate process curves backwards from the base of each rhinophore; **2**: single, elongate process curves backwards at each side of the gills; **3**: anterior of foot has distinct protruding propodial tentacles; **4**: no linear processes on the anterior edge of the head; **5**: large oral tentacles. Length 10 mm. Cornwall, England. February 2016.
figure 13 (right): *T. tartantella* (Ihering, 1886). **1**: Single, long process curves backwards from the base of each rhinophore; **2**: single, long process curves back at side of gills; **3**: distinct propodial tentacles; **4**: no linear processes on the anterior edge of head; **5**: large oral tentacles. Cornwall, England. October 2020. (Both figures © D. Fenwick, https://www.aphotomarine.com.)

Polycera quadrilineata (O. F. Müller, 1776) (figure 14) and ***P. faeroensis*** Lemche, 1929.



1) No elongate processes at base of rhinophore.
2) Single, not strongly-curved, backward-pointing, linear process at each side of the gills.
3) Anterior of foot expanded into unobtrusive, small, propodial tentacles.
4) Four or more linear processes on the anterior edge of the mantle over the head.
5) Orange or yellow lines and marks frequent on body of *P. quadrilineata*, but usually confined to appendages, a dorsal line posterior of the gills and, occasionally, thin lateral lines on *P. faeroensis*.

figure 14: *Polycera quadrilineata.* **1**: No elongate processes at base of rhinophore; **2**: single, not strongly-curved, backward-pointing, linear process at each side of the gills; **3**: anterior of foot expanded into unobtrusive, small, propodial tentacles; **4**: four or more linear processes on the anterior edge of the mantle. Length 20 mm. North Wales. February 2011.

Habits and ecology

A. gibbosa lives on the lower shore and sublittorally to about 100 m. Formerly, it was thought to feed on compound ascidians (Thompson & Brown 1984) but this was because it was found feeding on small, overlooked Entoprocta growing epizoically on the ascidians. It is also found on Entoprocta living on other sessile organisms (figure 15) and inanimate objects, even in unpromising habitats such as a sand bag embedded in sand in the Mersey Estuary (figure 16). Like other nudibranchs, *A. gibbosa* is a simultaneous hermaphrodite. It deposits an irregularly curved ribbon of spawn which sometimes forms loops. It may be wrapped around sessile organisms or attached by its edge to hard surfaces. Spawn masses have been recorded in most months in Britain (figure 17). Shelled veliger larvae hatch from the spawn and live in the plankton before transforming into adult form.

figure 15 (left): *A. gibbosa*, length 3 mm, feeding on Entoprocta growing epizoically on another sessile organism. Lillebaelt, Denmark. December 2014 (© P.E. Rasmussen).
figure 16 (right): *A. gibbosa*, length 2 mm, found on Entoprocta growing on a sand bag embedded in sand opposite Liverpool in the Mersey Estuary, England. February 2010.

figure 17: *A. gibbosa* deposits an irregularly curved ribbon of spawn which sometime forms loops. It may be wrapped around sessile organisms or attached by its edge to hard surfaces. Spawn masses have been recorded in most months in Britain.
Left: captive laid spawn. North Wales. Right: laid in the wild, Maine, eastern USA. September 2021 (© J. Goddard).

Discussion of distribution and status

There is uncertainty about the limits of distribution because a complex of imperfectly understood species is reported from the Atlantic and Pacific in literature and recording schemes as *Ancula gibbosa* (Risso, 1818) *sensu lato* (see GBIF map https://www.gbif.org/species/2291976). The following forms are based on morphological features visible in images, some molecular sequencing and geographical locations (figure 22). Further sequencing will probably necessitate re-evaluation of the situation. If you are able and willing to supply specimens in 95% ethanol alcohol of *Ancula* specimens from anywhere in the world to assist molecular research, please contact Dr Marta Pola at marta.pola@uam.es.

Form A

Form A has a translucent white body with orange or yellow pigment restricted to the tips of appendages and a dorsal line to the rear of the gills (figure 3). Some or all of the orange/yellow may be missing (figure 7); the original description of the species by Risso (1818) seems to have been of an all-white specimen. Form A lacks any orange or yellow marks or lines on the main body in front of the gills.

This form is found on the coasts of Europe and, as the original description was made at Nice, should be accepted as *Ancula gibbosa* (Risso, 1818) *sensu stricto*. There are many records with photographs of it from Brittany northwards to the Arctic, except for the inner Baltic and parts of the southern North Sea. In Britain it is widespread but usually found in small numbers, perhaps owing to its small size and small, cryptic prey (U.K. distribution map: https://species.nbnatlas.org/species/NBNSYS0000173816). In contrast, there are remarkably few records with images from further south than Brittany. Of over 200 images on Flickr (https://www.flickr.com/search/?q=Ancula%20gibbosa, accessed 19 January 2022), not one was further south in Europe than Brittany. The image in a Galician mollusc guide (Trigo *et al*. 2018) is of an Irish specimen, but there are online photographs from Galicia at https://www.asturnatura.com/fotografia/submarina-fotosub/ancula-gibbosa-2/26750.html. The only photographs I have found of a Mediterranean specimen are from the wreck of the Paguro drilling platform at about 20 m depth, 22 km offshore from Ravenna in the northern Adriatic (figure 18).

A large group of divers and shore workers who search for nudibranchs in Catalonia have found no *A. gibbosa*. The only record, without supporting image, in their area was a find on ascidians fouling a ship at Barcelona (Arias & Morales 1963). It is possible that it was an alien stowaway or misidentification (M. Pontes, pers. comm. 5 January 2022). The only other published record of *A. gibbosa* in the Mediterranean traced by M. Pontes was of an apparently all-white specimen by Risso (1818) at the port of Nice, where it appears that no further records of the species with images have been made in the two centuries since.

figure 18: Photographs of European *A. gibbosa* are very scarce further south than Brittany. These are the only photographs found of a Mediterranean specimen from the wreck of the Paguro drilling platform at about 20 m depth, 22 km offshore from Ravenna in the Adriatic. June 2011 (© Filippo Ioni). See: www.facebook.com/filippo.subegoist/.
Images of this specimen are also at www.biologiamarina.org/ancula-gibbosa/ and in Rinaldi (2017).

An English translation of Risso's imperfect description is provided in an appendix to this account. Another possible explanation for the scarcity of southern records is that *A. gibbosa* lives in cooler water at greater depths beyond most diver activity in the Mediterranean and Portuguese Atlantic. Although the available southern specimens look like the northern ones, there remains the possibility that molecular sequencing might show genetic differences between them. If this proves to be the case, the northern specimens would probably revert to *Ancula cristata* (Alder, 1841), which was further described and illustrated in complete, precise detail in Alder & Hancock (1845–1855). That name was in general use until Thompson & Brown (1984) combined it with *Ancula gibbosa* (Risso, 1818).

Form B

Form B occurs on the Atlantic coast of North America from the St Lawrence Estuary to Maine or possibly Connecticut (figure 22). Seven of the eight images of it on iNaturalist (accessed January 2022) are all-white specimens (figure 19) resembling all-white specimens of form A; only one had yellow on the tips of some appendages and none had the orange or yellow dorsal line to the rear of the gills found on most of form A.

figure 19: Form B of *A. gibbosa sensu lato* from Maine, Atlantic coast of eastern USA. September 2021 (© J. Goddard). This form lacks an orange or yellow dorsal line to the rear of the gills like that found on many of form A in Europe. The single publicly available sequence of an *A. gibbosa* from eastern North America has a CO1 gene difference of over 3% from European specimens, raising the possibility of it being considered as a separate species.

The single publicly available sequence of an *A. gibbosa* from eastern North America in GenBank (KP340388) has a CO1 gene difference of 3.25% from European specimens in both GenBank and BOLD, raising the possibility of it being considered as a species distinct from *A. gibbosa sensu stricto* (K. Fletcher, pers. comm. 28 December 2021).

Form C

Form C is known on the Pacific coast of North America, mainly British Columbia, Canada, but extending from the southern tip of Alaska (Millen 1989) southwards to the north of California (Bairstow 2019) (figure 22). Sixteen of 20 images of it on iNaturalist (accessed January 2022) had small amounts of orange or yellow pigment on some appendages (figure 20); four were completely white and none had the orange or yellow dorsal line to the rear of the gills found on most of form A. Apart from the greater prevalence in the sample of orange or yellow tips on appendages, it is very similar to form B in the Atlantic coast of North America. Clarification with molecular sequencing of the relationship between it and forms A and B is needed.

figure 20 (left): Unlined and unspotted form C of *Ancula gibbosa sensu lato* from Pacific Ocean at Vashon Island, Washington. Similar appearance to Atlantic forms A and B of *A. gibbosa*, but there are no publicly available molecular sequences of unlined *Ancula gibbosa* from the eastern or western Pacific (© S. Thiebaud).
figure 21 (right): Form D of *A. gibbosa s.l.* with opaque white spots, and white or yellowish white pigment on appendages. From an abundant local population on a muddy substrate in Vancouver Harbour on the Pacific coast of Canada, February 2007. Amphipod on gills (© N. McDaniel). A similar form occurs on the Pacific coast of Russia. Their statuses are uncertain as there are currently no public molecular sequences of spotted *A. gibbosa* from the eastern or western Pacific.

Form D

Form D is translucent white with plentiful opaque white spots, and white or yellowish white pigment on appendages. There is a clear photograph of it from Vancouver where it was found locally abundant on a muddy substrate (figure 21) but it seems much rarer elsewhere than form C. Its extent beyond Vancouver is unknown, but two spotted specimens regarded as *A. gibbosa* are described and illustrated from the Russian Far East by Chichvarkhin (2016, figure 3G) (figure 22). Currently, there are no public molecular sequences of spotted *A. gibbosa* from the eastern or western Pacific (J. Goddard, pers. comm. 27 December 2021, via K. Fletcher).

Form E

Form E is the *Ancula pacifica* of MacFarland (1905). It occurs on the Pacific coast of California and sometimes, in years of warm El Niño events such as 2015, Oregon and Washington, overlapping the southern limit of form C (figure 22) (Goddard 1984; K. Fletcher and J. Goddard, pers. comm. 28 December 2021). It is easily distinguished from all the other forms by three orange lines, a dorsal and dorso-laterals, on the body in front of the gills (figure 11). The lines are sometimes fragmented. There is over 10% difference between CO1 sequences of Californian *A. pacifica* and forms A and B in the Atlantic. See 'Similar species' above for more details.

Line drawings of Japanese specimens in Baba (1990) resemble Californian *Ancula pacifica* with three fragmentary lines in front of the gills and the text states, 'My specimens are almost exactly the same as *Ancula pacifica* MacFarland, 1905 (s.s.) in the external body form, the dorsal color pattern and the internal structures such as the radular teeth and penial hooks'. Twelve photographs of Japanese specimens at https://en.seaslug.world/species/ancula_gibbosa/9002 (accessed January 2020) resemble the drawings in Baba (1990).

Californian *Ancula pacifica* MacFarland, 1905 is clearly a valid species, but molecular sequencing is required to ascertain its relationship with northern Pacific forms C and D and Japanese form E.

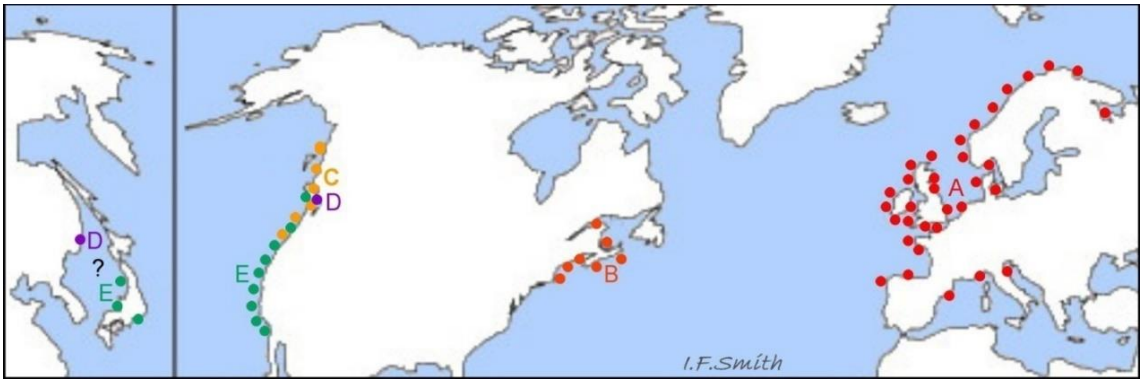


figure 22: Distribution of forms of *Ancula gibbosa sensu lato* described in 'Discussion of distribution and status' section. Based primarily on morphological features, some molecular sequencing and geographical locations.

Appendix

English translation of the original description of *Ancula gibbosa* (Risso, 1818) as *Tritonia gibbosa* Risso, 1818 from Nice, France:

> *'T. hunchback. T. gibbosa*', N. *'T. body yellowish white, humped on the back; lateral gills, arranged in rows of six*', N. 'Body swollen, oblong, pointed posteriorly, of a yellowish white, domed above, with a kind of denticulate bump in the middle of the back. Lateral sides furnished with six rows of tufts of hard, irregular tubercles. Membranous expansion of the underside of the mouth rounded. White tentacles, their tube divided at the top into three simple strips. Foot narrow, canaliculate whitish dotted with brown. Length 27-31.6 mm; width 6.8-9 mm. Appears in March April. Lives among *Corallina*.'

Parts of this description are difficult to understand and/or relate to body features of *A. gibbosa*. The translation was checked by French malacologists, who wrote: 'We have to admit that we also have difficulties with the description by Risso when looking at our photos. Even being native French speakers, we have problems understanding what he describes'. The description omits the diagnostic pair of processes at the base of each rhinophore, says the foot is dotted with brown, and seems to describe rhinophoral sheaths, making questionable the identity of what he described and the assumption that it is conspecific with *Ancula cristata* (Alder, 1841).

Acknowledgements

For use of images, I gratefully thank Jørn Ari, David Fenwick, Jeff Goddard, Filippo Ioni, Paula Lightfoot, Neil McDaniel, Poul E. Rasmussen and Sara Thiebaud. I thank Paul Brazier and Lucy Kay for specimens to photograph, and Marta Pola and Florence and Marc Cochu (http://nature22.com/) for information. I am greatly indebted to Karin Fletcher and Jeff Goddard for detailed information and advice about anatomy and Atlantic and Pacific species in North America. I am grateful to Miquel Pontes (https://opistobranquis.info/en/) for most useful information and literature about the status of *A. gibbosa* in Iberia and the Mediterranean.

References and links

Alder J. (1841) Observations on the genus *Polycera* with descriptions of two new British species. *Annals and Magazine of Natural History*, **6**: 337–342, pl. 9, https://www.biodiversitylibrary.org/item/19590#page/376/mode/1up (as *Polycera cristata*, p. 340 and plate X [error in text says IX], figs 10, 11 and 12 at: https://www.biodiversitylibrary.org/item/19590#page/372/mode/1up).

Alder, J. & Hancock, A. (1845–1855) *A monograph of the British nudibranchiate Mollusca*. London: Ray Society. Family 1, pl. 25, https://www.biodiversitylibrary.org/item/131598#page/218/mode/1up.

Ancula gibbosa iNaturalist (Map tab) (accessed 16 January 2022), https://www.inaturalist.org/taxa/47138-Ancula-gibbosa.

Ancula gibbosa Seaslug World (accessed 17 January 2022), https://en.seaslug.world/species/ancula_gibbosa.

Arias, E. & Morales E. (1963) Ecología del Puerto de Barcelona y desarrollo de adherencias orgánicas sobre embarcaciones. *Investigación Pesquera*, **24**: 139–163, https://digital.csic.es/bitstream/10261/189189/1/Arias_Morales_1963.pdf.

Baba, K. (1990) Notes on the rare genera *Trapania* and *Ancula* from Japan with the description of a new species (Nudibranchia: Goniodorididae). *Venus, Japanese Journal of Malacology*, **49** (1): 8–18, fig. 4, https://www.jstage. jst.go.jp /article/venusjjm/49/1/49_KJ00004343677/_pdf/-char/en.

Bairstow, A. (2019) Humped Ancula sea slug (*Ancula gibbosa*). (Image of unlined *Ancula cf. gibbosa* in Humboldt County, California), https://www.inaturalist.org/observations/28086517.

Ballesteros, M., Madrenas, E. & Pontes, M. *Ancula gibbosa* (Risso, 1818). OPK Opistobranquis (accessed 4 January 2022), https://opistobranquis.info/en/guia/nudibranchia/doridina/doridoidei/onchidoridoidea/ancula-gibbosa/.

Behrens, D.W. (2004) Pacific coast nudibranchs, supplement II: new species to the Pacific coast and new information on the oldies. *Proceedings of the California Academy of Sciences*, **55** (2): 11– 54, https://researcharchive.calacademy.org/research/scipubs/pdfs/v55/proccas_v55_n02.pdf.

Chichvarkhin, A. (2016) Shallow water sea slugs (Gastropoda: Heterobranchia) from the northwestern coast of the Sea of Japan, north of Peter the Great Bay, Russia. *PeerJ*, **4**: e2774, https://doi.org/10.7717/peerj.2774 (fig. 3G).

Goddard, J.H.R. (1984) The opisthobranchs of Cape Arago, Oregon, with notes on their biology and a summary of benthic opisthobranchs known from Oregon. *The Veliger*, **27** (2): 143–163, https://www.biodiversitylibrary.org/item/134487#page/159/mode/1up.

Hallas, J.M., Chichvarkhin, A. & Gosliner, T.M. (2017) Aligning evidence: concerns regarding multiple sequence alignments in estimating the phylogeny of the Nudibranchia suborder Doridina. *Royal Society Open Science*, **4**: 171095, http://doi.org/10.1098/rsos.171095.

Harris, J.K. (2011) A molecular phylogeny of Polyceridae (Nudibranchia) with comments on 'Phanerobranchia'. Unpublished M.S. Thesis, San Francisco State University, San Francisco, California. (Major advisor: T. M. Gosliner, California Academy of Sciences), https://scholarworks.calstate.edu/concern/theses/1g05fh02k?locale=it (accessed 25 Dec 2021, but full thesis not seen; sequence MF958422 of *A. pacifica* published in Hallas *et al*. 2017).

MacFarland, F. M. (1905) A preliminary account of the Dorididae of Monterey Bay, California. *Proceedings of the Biological Society of Washington*, **18**: 35–54, https://www.biodiversitylibrary.org/page/3336883#page/69/mode/1up.

MacFarland, F. M. (1966) Studies of opisthobranchiate mollusks of the Pacific coast of North America. *Proceedings of the California Academy of Sciences*, **6**: 1–546, pls. 1–72.

Millen, S.V. (1989) Opisthobranch range extensions in Alaska with the first records of *Cuthona viridis* (Forbes, 1840) from the Pacific. *The Veliger*, **32** (1): 64–68, https://www.biodiversitylibrary.org/item/137792#page/76/ mode/1up.

Nakano, R. (2018) *Field guide to sea slugs and nudibranchs of Japan*. Tokyo: Bun-ichi. [In Japanese.]

Paz-Sedano, S., Díaz-Agras, G., Gosliner, T.M. & Pola, M. (2021) Revealing morphological characteristics of Goniodorididae genera (Mollusca: Nudibranchia). *Organisms Diversity & Evolution*, https://link.springer.com/content/pdf/10.1007/s13127-021-00508-w.pdf.

Rinaldi, A. (2017) *Atlante della fauna e flora marina dell'Adriatico nord-occidentale*. Bologna: La Mandragora Editrice.

Risso, A. (1818) Mémoire sur quelques Gastropodes nouveaux, Nudibranches et Tectibranches observés dans la mer de Nice. *Journal de Physique, de Chimie et d'Histoire Naturelle*, **87**: 368–377. See p. 371, https://www.biodiversitylibrary.org/item/29610#page/387/mode/1up.

Rudman, W.B. *Ancula gibbosa* (Risso, 1818). Sea Slug Forum, http://www.seaslugforum.net/find/ancugibb (accessed December 2021).

Thompson, T.E. & Brown, G.H. (1984) *Biology of opisthobranch molluscs* 2. London: Ray Society.

Trigo, J.E., Diaz Agras, G.J., Garcia Alvarez, O.L., Guerra, A., Moreira, J., Pérez, J., Rolán, E., Troncoso, J.S & Urgorri, V. (2018) *Guia de los moluscos marinos de Galicia*. Vigo: Servicio de Publicaciónes da Universidade de Vigo.

Current taxonomy: World Register of Marine Species (WoRMS) http://www.marinespecies.org/aphia.php?p=taxdetails&id=140029.

Glossary

BOLD = Barcode of Life Database, www.barcodinglife.org.
buccal mass = organ system just inside the mouth that includes the odontophore, radula, and a complex of muscles to operate them. In some nudibranchs, including species of *Ancula*, this mass also includes a round, muscular buccal pump enabling suctorial ingestion of food.
circum-oesophageal nerve ring = ganglia-bearing nerve cord which encircles the oesophagus.
digestive gland = large organ in gastropods which acts like the liver and pancreas in mammals to absorb food.
distal = away from centre of body or from point of attachment.
Entoprocta = (a.k.a. Kamptozoa) a phylum of small, <7 mm, goblet-shaped, sessile animals. See http://www.seaslugforum.net/find/kamptozoa.
epizoic = growing or living on the exterior of a living animal.
ganglia = (sing. ganglion) swellings of the nervous system composed of clusters of nerve cells linked by synapses; they help process sensory stimuli and control organs.
hermaphrodite, simultaneous = individual acts as both male and female at the same time with similar partner(s).
lamellae = (sing. lamella) gill leaflets or small plates on rhinophores on nudibranchs.
mantle = (of nudibranchs) sheet of tissue forming part or all of notum (dorsal body surface).
oesophagus = tube from mouth to stomach.
ovotestis = (pl. ovotestes) hermaphrodite organ serving as both ovary and testis.
pallial = (adj.) of, relating to, or produced by the mantle (pallium).
papilla = (pl. papillae) small, nipplelike, sensory protruberance.
plankton = animals and plants that drift in pelagic zone (main body of water).
propodial = at the front of the foot.
radula = chitinous ribbon of teeth; extended on odontophore to acquire food.
sensu lato = (abbreviation s.l.) in the wide sense, possibly an aggregate of more than one species.
sessile = (adj.) of immobile animals living attached to substrate or other organisms.
tripinnate = (of gill plume) threefold branching; 'trunk, boughs, branches'.
veliger = shelled larva of marine gastropod or bivalve mollusc which moves by action of cilia on a velum (bilobed flap). Stage may be passed in plankton or within liquid-filled egg-capsule.

British Shell Collectors' Club

Saturday 20th August 2020
Chatsworth Shell Fayre

Displays of shells, shell art, fossils and several dealers selling shells from around the world.

Cavendish Hall, Chatsworth House, Derbyshire, DE45 1PJ

Saturday 29th October 2020
Shell Show

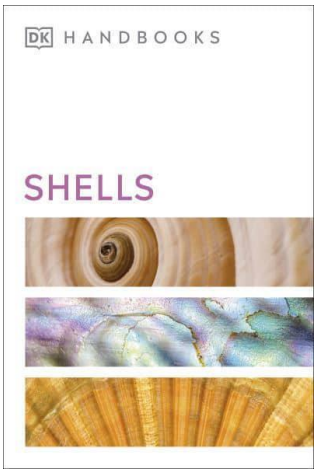
Shells for sale, prize competitions, dealers' tables all welcome – beginners to experts

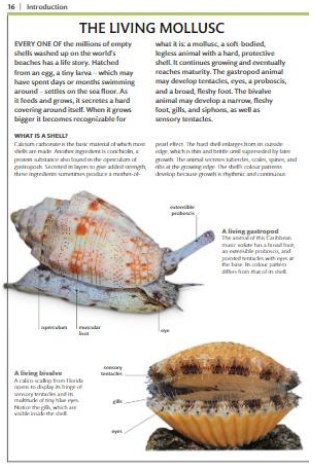
Theydon Bois Community Centre, Coppice Row, Theydon Bois, CM16 7ER.

Both events open from 9am to 4pm. Admission free.
see: https://www.britishshellclub.org/events-calendar.html for information on these and other planned events.

Book Review: *Shells* by S. Peter Dance, new edition revised by Simon Aiken

Dorling Kindersley 2022, ISBN 9780241515518. £9.99. 256 pages, softback.





First published in 1992 with the slightly different title 'Eyewitness Handbook: Shells' this book has for some 30 years been a good introduction to worldwide marine shells. During that time some 280,000 copies have sold with editions in at least eight different languages (Dance and Aiken, 2022). Allowing for library copies and 'family' use, readership must be nearer half a million people, and this book has clearly done much to stimulate interest in shells worldwide.

Peter Dance has handed the baton of editing to Simon Aiken for this revised and updated edition. Since 1992 there have been numerous changes to classification and nomenclature, as well as new knowledge on the habitats and distribution of individual species, so revising the work (within the basic framework of the original) cannot have been easy.

As in the original work, introductory sections include 'Collecting shells', 'Shell habitats', 'The living mollusc', 'The parts of a shell' and a 'Shell identification key'. These are followed by accounts of some 500 species. For each there is a description of the shell, notes on size (metric and imperial), indications of distribution and rarity, comments on habitat and additional remarks. For each species the superfamily, family and full scientific name is given together with an english 'common name'. Each species is illustrated with full colour photographs, often with several views. Key features of the shells are annotated in separate captions, linked to the illustrations with 'leader lines'. It is pleasing that the scientific names have been expanded to include dates of original description and brackets when needed, although of necessity the lengthened names have required a smaller type face. It is also good to see added notes on CITES protected species: queen conch, *Tridacna* spp. and chambered nautilus.

To follow current taxonomy the order of many plates have been changed (separating Mitridae and Costellariidae and conversly bringing together *Harpa* and *Morum* for example). Many generic names have changed, eleven species of *Strombus* in the first edition now being split between eight genera and twelve species of *Cypraea* split between nine genera for example; however it is perhaps surprising that all 22 cones are still listed under *Conus*.

The revision has provided the opportunity to add a few new species, often where these increase the breadth of coverage. For example *Niso splendidula*, *Alvania cancellata* and *Trivia radians* adding three more families (Eulimidae, Rissoidae and Triviidae respectively) to an already broad overall coverage. Nevertheless for every new inclusion something else had to be left out.

The original photographs were generously life size, however many of the figures in the new edition are slightly smaller, indicated by a magnifying glass symbol. To me it is noticeable that the figures of the newly added species are sharper than those 'carried over' from the original; something no doubt outside the authors' control, but regretable.

A two page glossary and an index complete the book, yet there are no bibliographical references to lead a novice further into the subject.

I am pleased to have this revised edition, for the updated names and added species alone, but if forced to choose would stick to the original edition for the clearer plates.

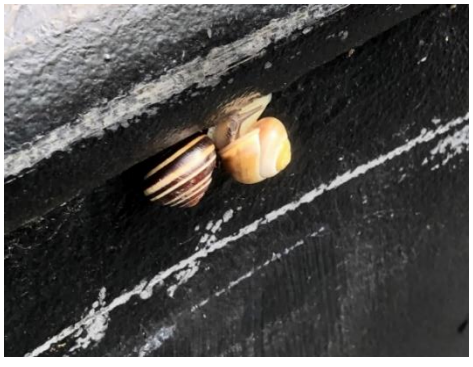
Kevin Brown

[above centre: Simon Aiken and Peter Dance signing copies of *Shells* at the BSCC convention, Theydon Bois, Essex, 30.04.2022. (photo: P. Topley)]

Have boat, will travel

Tom Walker

Some snails decided to have a holiday, and they wondered where to go and how to get there. They lived in some vegetation beside a canal and thought that this might offer a chance to see more of the country. So they hopped on board a passing narrow boat and set off for pastures anew. Where they got to is anyone's guess, but perhaps they avoided being flattened against a lock side and lived to see another day.



Cepaea hortensis on a narrow boat, Fobney Lock on the Kennet and Avon canal, 12 April 2022

Scarpetta di cristallo: a pseudoconch of the pteropod, *Cymbulia peronii*, Sicily, 19th April 2022

Peter Barfield

figure 1: Pseudoconch of the pteropod *Cymbulia peronii*, Sicily.

'*This is a very remarkable, though incompletely known, genus of animals of the order Pterodibranches, in the class of Cephalophores molluscs, established by MM. Péron and Lesueur for an animal they found in the Mediterranean, on the coast of Nice*.' H.M.D. de Blainville, 1818.

I came across this firm, gelatinous pseudoconch (figure 1) whilst walking along a beach in north-east Sicily. But my first thought as I bent to pick it up was that perhaps it was the remains of a lure used by local fisherman, punched out of some industrial mould in China. Roughly 6 cm in length and looking like a little slipper, there might equally have been some 'Cinderella-of-the-sea', wondering what had become of her shoe.

These idle holiday thoughts were soon dispelled when I used Google Lens to search for similar images online and saw very quickly that what I had found was the remains of a pteropod, most likely *Cymbulia peronii* Blainville, 1818. Images available for the species on MolluscaBase (2022) reinforced this identification.

Before travelling to Sicily I had downloaded the iNaturalist app in anticipation of doing a little biological recording whilst there, and the following day I submitted a record of the find using the app on my phone. This turned out to be the first record of the species entered into iNaturalist for Sicily. Interestingly, a second record from someone else was then entered at the beginning of May, although they had found their specimen a month previous to mine.

Molluscs in the order Pteropoda are thought to do well in spring and abundances can peak at this time (Wikipedia Contributors 2022). This may help to explain, in part, my good fortune in coming across this specimen. Given that the species, when living, has a reported depth range of between 150 and 2000 m, I feel doubly lucky to have found it (GBIF Secretariat 2021)!

'Pteropod' derives from the Greek and means 'wing-foot'. *C. peronii* has several common names. In the 18th century French fishermen referred to it as *papillon de mer* and this led to the English term 'sea butterfly'. Very apt for the living animal as the foot of this snail has formed wide, wing-like flaps which enable it to 'fly' through the water.

An Italian name captures the appearance of the species based on the pseudoconch, which is perhaps appropriate given that most of us will never see the live animal in the water: *scarpetta di cristallo* or 'crystal slipper'.

According to the checklist of the phylum Mollusca (Templado & Villanueva 2010), there are four species of Cymbuliidae found in the Mediterranean: *Cymbulia parvidentata* Pelseneer, 1888; *Cymbulia peronii* Blainville, 1827; *Corolla spectabilis* Dall, 1871; and *Gleba cordata* Forsskål in Niebuhr, 1776

At 4.5 cm the pseudoconch of *G. cordata* is smaller than that of *C. peronii* and is shaped differently, being more rounded and simply covered with a few warts (Naturalis Biodiversity Centre 2022a). The pseudoconch of *C. spectabilis* is up to 4 cm long with a broadly oval shape and covered in large warts (Naturalis Biodiversity Centre 2022b). That leaves *C. parvidentata* which has a similar slipper-like shape to *C. peronii* but is smaller at 3.5 cm and is pinched or laterally compressed in the middle (Naturalis Biodiversity Centre 2022c). Note the distinct spines, arranged in rows, which cover *C. peronii*. Some are quite large with others irregularly distributed between the rows.

This species was chosen as one of the five 'Molluscs of the Year 2022' by the LOEWE Centre for Translational Biodiversity Genomics. It did not win but was selected in part because sea butterflies are considered 'canaries in the coal mine' with regard to ocean acidification.

References

Blainville, H.M.D. de (1818) Cymbulie, *Cymbulia*. In Cuvier, F. (ed.), *Dictionnaire des Sciences Naturelles*, vol. 12. Strasbourg & Paris: F.G. Levrault and Paris: Le Normant: 332–333. Available online at: http://www.biodiversitylibrary.org/page/23002013.

GBIF Secretariat (2021) *Cymbulia peronii* f. *peronii* Blainville, 1818. In *GBIF Backbone Taxonomy*. Available at: https://www.gbif.org/species/7642027. Checklist dataset: https://doi.org/10.15468/39omei. Accessed on 18.05.2022.

MolluscaBase eds (2022) *Cymbulia peronii* Blainville, 1818. *MolluscaBase*. Accessed at: https://www.molluscabase.org/aphia.php?p=taxdetails&id=139494 on 18.05.2022.

Naturalis Biodiversity Centre (2022a) *Gleba cordata*. In *Pelagic Molluscs 2.0*. Accessed at: https://pelagic-molluscs.linnaeus.naturalis.nl/linnaeus_ng/app/views/species/taxon.php?id=116770 on 18.05.2022.

Naturalis Biodiversity Centre (2022b) *Corolla spectabilis*. In *Pelagic Molluscs 2.0*. Accessed at: https://pelagic-molluscs.linnaeus.naturalis.nl/linnaeus_ng/app/views/species/taxon.php?id=116768 on 18.05.2022.

Naturalis Biodiversity Centre (2022c) *Cymbulia parvidentata*. In *Pelagic Molluscs 2.0*. Accessed at: https://pelagic-molluscs.linnaeus.naturalis.nl/linnaeus_ng/app/views/species/taxon.php?id=116764 on 18.05.2022.

Templado, J. & Villanueva, R. (2010) Checklist of phylum Mollusca. In Coll, M. *et al*., The biodiversity of the Mediterranean Sea: estimates, patterns, and threats. *PLoS ONE* 5(8): 148–198.

Wikipedia Contributors (2022) Pteropoda. In *Wikipedia, Wikimedia Foundation*, updated 15 March 2022. Accessed at: https://en.wikipedia.org/w/index.php?title=Pteropoda&oldid=1077338032 on 18.05.2022.

Observations on the development of *Ambigolimax nyctelius* embryos *Jane Thomas*

figure 1: *Ambigolimax nyctelius*.

In October 2020 I collected an *Ambigolimax* sp. slug which I suspected might be *A. nyctelius* but needed to send it to Ben Rowson for confirmation (it was) (figure 1). I was concerned that the individual I had collected might be a juvenile, so decided to keep it and grow it up for a while before sending it to Ben. After about four weeks in captivity, it produced a batch of eggs which proved to be fertile. I decided to monitor the progress of the embryos as they grew. I'd previously observed slug embryos and knew that they could be very mobile inside their eggs.

I'd found in the past that I could see inside invertebrate eggs if I immersed the eggs in water. This technique will only work if the eggs are transparent or translucent. The eggs were quite large, so I glued an aluminium ring onto a cavity slide to give enough depth to fully submerge the eggs and place a coverslip on top. They were observed each week using a compound microscope at x40 and x100 magnification. Photographs and videos were taken with a Fuji X-A5 camera mounted on the microscope phototube. As the eggs developed I experimented with different lighting conditions, and found that by using crossed polarising filters the internal shell was nicely highlighted, as was a structure which I assumed was the larval kidney.

I have made a collage of the embryonic development (figure 2) and more photos can be seen at https://flic.kr/s/aHsmTehavG. I have also produced a film of the videos I made which can be viewed at https://youtu.be/Oay_WfOrCS4.

Week 0. The embryos appear to be a small ball of cells and I could see that the egg 'shells' were actually quite a complex set of many thin layers (figure 3).

Week 1. The embryos are obviously developing and have become a little larger and more elongated.

Week 2. The embryos are still fairly featureless but have started to move slowly, so my attempt at focus stacking ended up as a time-lapse video.

Week 3. The motion of the embryos is very obvious, they roll continuously inside their eggs. I understand that slug skin is ciliated, so I presume the movement is propelled by beating cilia, but I didn't see this directly. At this stage, the embryos were just visible to the naked eye.

Week 4. They are showing a lot more structure – although if I didn't know for certain these were slugs I'd think they were snails! The embryonic slugs don't have a heart yet and the circulation is by means of pumping between two structures which later disappear: the hepatic lobe (a ball-shaped structure) and the posterior sac, which looks like it should be the foot of the slug but is actually attached to the tip of what becomes the foot. According to Runham & Hunter (1970), the hepatic lobe is also the embryo's main digestive organ, and the posterior sac the main respiratory organ. The developing internal shell is just visible as a dark smudge.

Week 5. The embryos are much more active. The pulsing of the posterior sac is very obvious and they glide constantly round inside their eggs. The internal shell is now clearly visible as a dark smudge inside what will become the mantle.

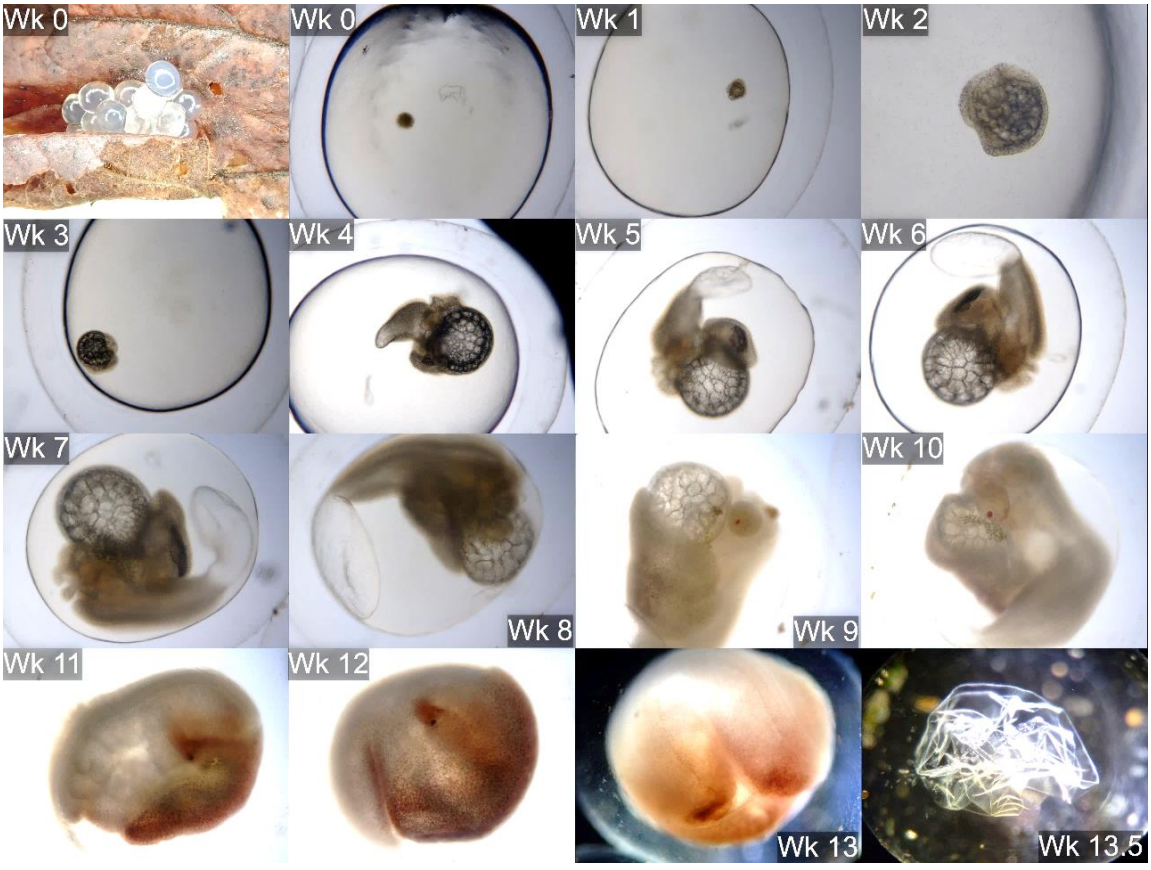


figure 2: Embryonic development of *Ambigolimax nyctelius*.

figure 3: Showing the layered nature of the egg shells.

Week 6. A row of dark speckles has appeared, which I assume is the larval kidney. The posterior sac has grown much larger, and the optic tentacles are starting to form (figure 4).

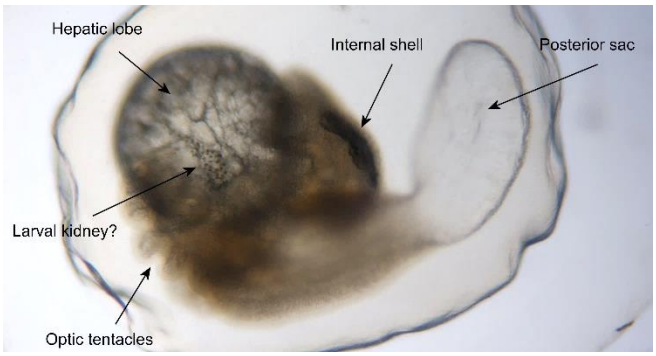


figure 4: Week 6, showing the main structures of the embryo.

Week 7. I started to experiment with different lighting – dark field reveals the egg is full of tiny particles which are being buffeted about as the embryo moves, probably by the beating of the cilia on the skin. Crossed polarising filters show both the developing internal shell and larval kidney are optically active (figure 5). The internal shells are roughly oval and seem quite variable between individual embryos. They also look quite scrappy but I don't know if this is an artefact of the crossed polarising filters. The embryos half fill the eggs and have grown a lot more complex. The movement has changed from constant gliding to more of a stop/start motion together with some squirming.

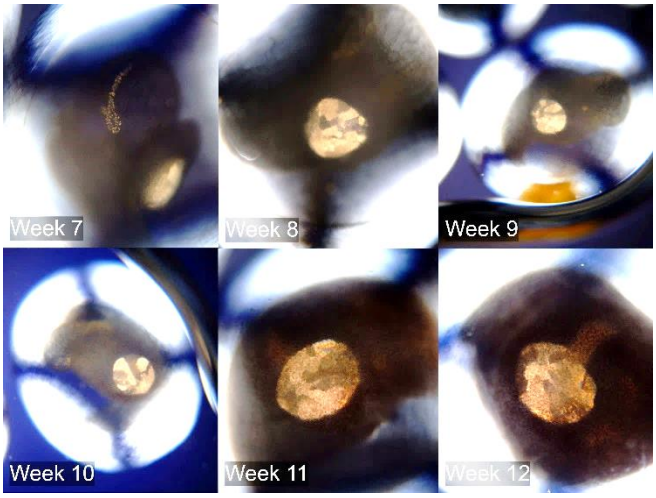


figure 5: Images taken using crossed polarising filters from week 7 to week 12. The image at week 7 also shows the speckled structure I assumed was the larval kidney.

Week 8. There's a lot of change over this week, the posterior sac seems huge when fully expanded and the optic tentacles are developing – there's the hint of an eye and the mouth has appeared (figure 6).

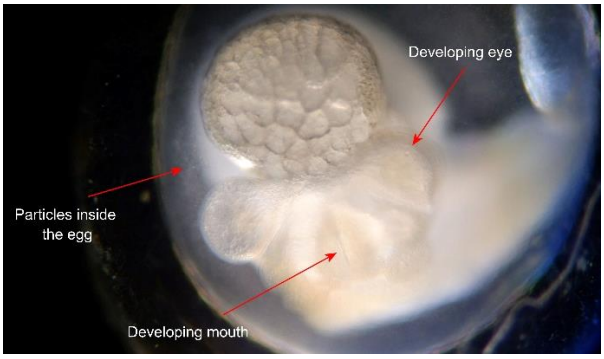


figure 6: Dark field image taken at week 8 showing particles inside the egg and the developing mouth and eyes.

Week 9. There's the first sign of a heartbeat and a red smudge has appeared where the eyes will be. The embryos are a lot more opaque now, and the main movements are squirming and the pulsing of the hepatic lobe and posterior sac, rather than the gliding I'd seen so far. The mantle is growing and is tinged with pigment.

Week 10. The heart is starting to take over the circulation but although the posterior sac has reduced in size, it is still being used to pump the haemolymph around the embryo's body. The gliding has just about stopped but squirming continues and the embryos look quite twisted. According to Runham & Hunter (1970), 'torsion of the body through 180° occurs by differential growth, but the details of this process are not clear'. The eye spots are much more pigmented and denser pigment is starting to develop on the mantle. The internal shells still look quite scrappy and lumpy, and not significantly different from when I first saw them.

Week 11. The embryos have almost filled their eggs. They have become a lot more opaque and the mantle is more pigmented which makes it very difficult to get meaningful images. They seem to have almost stopped moving, the posterior sac has almost gone, and the hepatic lobe is no longer visible. The heart is beating strongly. The embryos are finally starting to look like tiny slugs rather than snails.

Week 12. The embryos have filled their eggs. They are strongly pigmented, both in their skin and around their eyes, and continue to squirm. The heart is beating strongly and a pulse is visible down the length of the tail. It is still just about possible to see the internal shells with the crossed polarising filters.

Week 13. Squirming and pulsing continues and stripes of pigment are visible through the outside of the eggs (figure 7).

The embryos hatched at 13½ weeks – about 94 days after they were laid (figure 8).


figure 7 (left): Week 13, the eggs are almost ready to hatch. The stripes are clearly visible through the transparent eggs.
figure 8 (right): Newly hatched *Ambigolimax nyctelius.*

The embryos of other slug species may not follow this developmental pattern, and if the eggs are opaque they are much harder to study. Some species do not develop an internal shell but just a 'whitish paste of minute calcium carbonate crystals' (see Rowson *et al*. (2014) for images and descriptions of various slug eggs and shells).

I wish to thank Terry Crawford for his very helpful comments on a draft of this paper.

References

Rowson, B., Turner, J., Anderson, R. & Symondson, B. (2014) *Slugs of Britain and Ireland: identification, understanding and control.* Telford: FSC Publications.

Runham, N.W. & Hunter, P.J. (1970) *Terrestrial slugs.* London: Hutchinson University Library.

A shell by any other name

Paul Dansey

Shakespeare's Juliet says, 'What's in a name? That which we call a rose by any other name would smell as sweet'. It is the same for naming a mollusc because it is indifferent to what human beings call it. Names are utilised as a reference to tell other conchologists what is being described. Razor clams; razor shells; pencil bait; spout fishes: are some of the names used for the same mollusc. I discuss here how the names have evolved for the razor shell, using the World Register of Marine Species (WoRMS) online database as an authority for present day mollusc names (https://www.marinespecies.org).

Aristotle (384−322 BC), in his *Historia Animalium*, coined the word *solen* (meaning tube-like) for the razor shell, which he described: 'Other bivalves are closed on both sides alike, like the *solen.* Some are smooth-shelled, like the *solen*, the mussel, and some clams, viz. those that are nicknamed 'milkshells', while others are rough-shelled. However, the *solen* or razor-fish, if you make a noise, appears to burrow in the sand, and to hide himself deeper when he hears the approach of the iron rod (for the animal, be it observed, just a little out of its hole, while the greater part of the body remains within)' (Aristotle trans. Wentworth Thompson, 1910).

One of the early fathers of British conchology was Martin Lister. In his illustrative book (Lister, 1685–92), he gave names and descriptions of razor shells. One was '*Solen major, Subfuscus Rectus'* (pre-binomial, now *Ensis siliqua*) (figure 1); another was *'Solen curvus'* (now *Ensis ensis*).

Carl Linnaeus (1758) standardised the nomenclature with the introduction of his binomial system and named *Solen siliqua* and *Solen ensis* (both now placed in the genus *Ensis*). Names can be descriptive of the mollusc's morphology or a tribute to an individual, such as a conchologist, or can represent the geographical region where the mollusc was found. This geographical name often has the suffix '*-ensis'*, meaning this time that it originates in or is found in the region, e.g. *Ensis goreensis*, which lives in the Goree coastal region of West Africa. This species was named by Clessin (1888) who also named a species found on the Mexican coast as *Solen nitidus.* Names are often descriptive. For instance, Molina (1782) gave the name *Solen macha* (now named *Ensis macha*) to a razor clam found on the coast of Chile: '*macha*' referring to an Arabian or Persian sword.

Schumacher (1817) introduced *Ensis* as a genus with the naming of *Ensis magnus*, with which the name of *Ensis arcuatus* (Jeffreys, 1865), more familiar to many, is now synonymised. The genus *Ensis* took about 70 years to become widely accepted.

In the early 1800s the shell *Solen ensis* was thought to be present on the west North Atlantic coasts. However, Conrad (1843) named a fossil species *Solen directus* and this name was adopted for the living curved species previously known under the name *Ensis americanus* described by Gould (1870). Recently Huber (2015) found problems with both these names and has renamed it *Ensis leei.* Dall (1899) named two North American species of *Ensis*. One found off the Pacific coast of Mexico he called *Ensis californicus.* The other, found on the south-eastern coast of the USA, he described as *Ensis minor* but this has now been renamed *Ensis megistus* after Pilsbry and McGinty (1943) in order to distinguish it from the east Atlantic species *Ensis minor* (Chenu, 1843).

As with many groups of organisms, there is often dispute whether some razor clam names refer merely to a morphological or regional variety of a species or a genuinely distinct species. Naturalists who wish to separate out varieties are sometimes referred to as 'splitters' while those whose tendency is to combine varieties are called 'lumpers'. It is as Humpty Dumpty said in Lewis Carroll's 'Through the Looking Glass': 'When I use a word, it means what I choose it to mean'.

References

Aristotle trans. Wentworth Thompson, D'A. (1910) *The History of Animals* volume IV(8*)*. http://classics.mit.edu/Aristotle/history_anim.4.iv.html

Chenu, J.C. (1843) *Illustrations conchyliologiques, ou description et figures de toutes les coquilles connues, vivantes et fossils.* Paris: Bethune et Pion (*Solen* **2**: 143−151).

Clessin, S. (1888) Die Familie der Solenaceen. In: Kuster, H.C. & Kobelt, W. (eds), *Systematisches Conchylein-Cabinet von Martini und Chemnitz* (ed. 2) **11**(3): 1−106. Nürnberg: Bauer & Raspe.

Conrad, T.A. (1843) Descriptions of nineteen species of tertiary fossils of Virginia and North Carolina. *Proceedings of the Academy of Natural Sciences of Philadelphia* **1**: 323−329.

Dall, W. H. (1899) Synopsis of the Solenidae of North America and the Antilles. *Proceedings of the United States National Museum* **22**(1185): 107−112.

Gould, A.A. (1870) *Report on the Invertebrata of Massachusetts. Second edition, comprising the Mollusca.* Edited by W. G. Binney. Boston: Wright & Potter: 40−42.

Huber, M. (2015) *Compendium of bivalves 2.* Harxheim: ConchBooks: 559−560.

Linnaeus, C. (1758) *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis.* Editio decima, reformatat (10th revised edition), vol. 1. Holmiae: Laurentius Salvius.

Lister, M. (1685−92) *Historiae … Conchyliorum.* London: for the author.

Molina, G.I. (1782). *Saggio sulla storia naturale del Chili*. Bologna: Stamperia di S. Tommaso d'Aquino.

Pilsbry, H.A. & McGinty, T.L. (1943) *A West Flo*rida razor clam. *The Nautilus*. **57**(1): 33–34.

Schumacher, C. F. (1817) *Essai d'un nouveau systeme des habitations des ver testaces.* Copenhagen. Available at: www.biodiversitylibrary.org/item/81329#page/7/mode/1up.

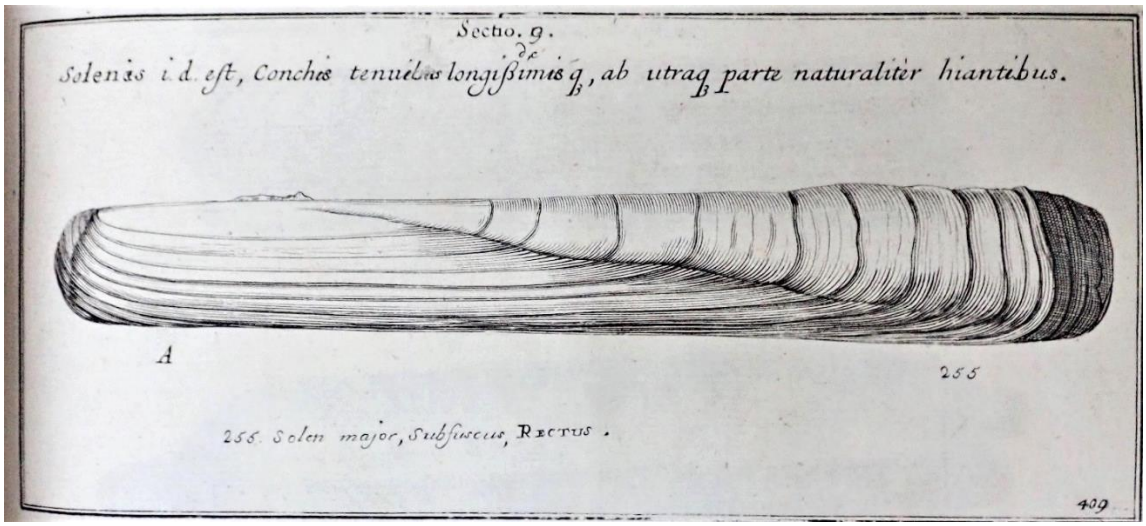


figure 1: '*Solen major, Subfuscus, Rectus'* (now *Ensis siliqua*). Illustration from the 1770 Clarendon Press edition of Martin Lister's *Historiae…Conchyliorum*, which used the original copper plates. (photo: Peter Topley)

Membership Secretary's report for 2021

Pat Robbins

In 2021 we had 241 members of all types (detailed below) and 56 subscribers to the journal. Of these, 21 were new members (including two junior members, two European members, two Rest of World members and four student members – two UK/Ireland & two Rest of World).

	2021	*2020*	*2019*
Members	**199**	195	198
Life	**14**	14	15
Family	**11**	13	12
Students	**8**	6	9
Honorary	**4**	4	5
Junior	**5**	3	3
Total	**241**	235	242

Institutional Subscribers

	2021	*2020*	*2019*
UK/Ireland	**11**	11	13
Rest of World	**45**	49	50
Total	**56**	60	63

Prospects for 2022:
With regard to renewal of our members from 2021, we were sadly notified during 2021 that four members (including two life members) had died, and that five members (including one family membership) wished to resign before 2022. Four institutions informed us that they were likely not to renew in 2022, but two of these have not been confirmed.

As of the start of March 2022, 153 members of all types have already renewed their memberships (not including the 16 honorary and life members), as have 50 institutional subscribers; we have 9 new UK/Ireland members so far in 2022 (including two students, one junior member and one family membership) and four new institutional subscribers.

The Society would like to thank Catherine Jagger of CIRCA Ltd for all her work during the year, her patience in handling enquiries and for circulating details and taking bookings for online meetings.

1st March 2022

Conchological Society of GB&I: *Report of the Council 2021*

Rosemary Hill

Council Positions
Dr TM Walker began his first year as President of the Society. The following Society Officers were elected: Hon. General Secretary Miss R E Hill; Hon. Treasurer Dr B Goodwin; Hon. Membership Secretary Ms P Robbins; Hon. Editor (*Journal*) Ms AM Holmes; Hon. Editor (*Mollusc World*) Mr P Topley; Hon. Marine Recorder Mr S. Taylor; Hon. Non-Marine Recorder Dr B Rowson; Hon. Conservation Officer Mrs M Cousins; Hon. Programme Secretary Vacant (currently Meetings Group); and Hon. Webmaster Mr PD Barfield. New Ordinary members of Council were Dr K.N.A. Alexander, Mr R Carr, Dr E. Moorkens and Mr H. Powell. Dr P.J. Cosgrove and Dr R.C. Honnor began their second year and Prof R.A.D. Cameron, Ms I.C.N. Cavadino, Mr I.J. Killeen began their third year.

Publications
Two issues of the *Journal of Conchology* (Volume 44: 1-2) and three issues of *Mollusc World* (Numbers 55-57, March, July and November) were published. The Society's website (www.conchsoc.org) has been updated and improved and a new initiative is a link to Society virtual meeting talks on YouTube. Please send any contributions to the Webmaster. The Society now has a Twitter account.

Other Council Matters
Six Council meetings were held, all of which were virtual because of the Covid-19 pandemic. Amongst the matters considered by Council were changes to the Society Officers, especially the Treasurer; progressing the website update; further work by the Online Journal Development Group towards the digital publication of the *Journal of Conchology*; the progress of the new freshwater gastropod book and a mollusc species champion.

Two applications for research grants were received in 2021 and one grant was awarded: Deborah Kent 'Molluscs and Mathematics: The collaboration of Ronald Winckworth and D'Arcy Wentworth'

The deaths of the following members were announced at Indoor Meetings: Dr (George) Tom Watters of Ohio State University who died in 2019; Thora Whitehead of Australia, member since 1965 who died in 2021; David Stansbury of Ohio University member since 1963 who died in 2017 and Richard Johnson of Massachusetts who died in 2020.

I would like to thank all members of Council and Society volunteers for their contributions without which the Society could not achieve its aims. If anyone would like to help in the running of the Society, please contact the President or any of the Society Officers. If anyone is interested in assisting with the production of ***Mollusc World*** please would you contact the current Editor, Peter Topley.

March 2022

Conchological Society AGM, NHM London, 10th April 2022, with members and guests attending in person and on 'Zoom'.
(photo: Peter Topley)

Some key Conchological Society contacts

(see web site [http://www.conchsoc.org/pages/contacts.php] for additional contact details)

The Conchological Society of Great Britain & Ireland

HON. PRESIDENT: Tom Walker,
38 Redlands Road, Reading, RG1 5HD
Email: president@conchsoc.org

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

HON. TREASURER: Brian Goodwin
44 Amber Crescent, Walton, Chesterfield, Derbyshire,
S40 3DH Email: treasurer@conchsoc.org

HON. EDITOR OF THE JOURNAL OF CONCHOLOGY
Anna Holmes, National Museum of Wales, Cathays Park,
Cardiff, CF10 3NP Email: journal@conchsoc.org

HON. EDITOR OF MOLLUSC WORLD: Peter Topley
The Rectory, 8 Rectory Close, Clifton, Shefford, Beds.,
SG17 5EL Email: magazine@conchsoc.org

FOR BACK NUMBERS OF CONCH. SOC. PUBLICATIONS

please apply to: Tom Walker Email: sales@conchsoc.org

RECORDING

HON. MARINE CENSUS RECORDER: Simon Taylor
Fiddlesticks, 44 Strawberry Lane,
Tolleshunt Knights, Essex, C05 0RX
E mail: marine@conchsoc.org

HON. NON–MARINE CENSUS RECORDER: Ben Rowson
Amgueddfa Cymru – National Museum of Wales, Dept. Biodiversity & Systematic Biology, Cathays Park, Cardiff, CF10 3NP Email: nonmarine@conchsoc.org

HON. CONSERVATION OFFICER
Mags Cousins E mail: conservation@conchsoc.org

SUBSCRIPTIONS and MEMBERSHIP

Please send subscriptions or directly related enquiries to
Catherine Jagger, CIRCA subscriptions, 14 St Barnabas Court,
Cambridge CB1 2BZ Email: shellmember@gmail.com

For general membership enquiries please contact: -
HON. MEMBERSHIP LIAISON OFFICER: Pat Robbins
125 East Lane, West Horsley, Leatherhead, KT24 6LJ
Email: membership@conchsoc.org

How to become a member

Subscriptions are payable in January each year, and run for the period 1st January to 31st December. Members joining later in the year will receive all publications issued during the relevant calendar year. • Ordinary membership £33 • Family/Joint membership £35 • Under 18 (receiving Mollusc World only) £5 • Student membership £15 • Institutional subscriptions £47
In view of the high cost of postage for distribution from the UK, members living in the Republic of Ireland and Europe will be asked to pay an additional postage charge of £8, and members living in the Rest of the World an additional postage charge of £17.
See website for further details. Payments in sterling only, to Catherine Jagger, CIRCA Subscriptions, 14 St Barnabas Court, Cambridge CB1 2BZ, (shellmember@gmail.com). For UK residents we suggest payment by standing order, and if a UK tax payer, please sign a short statement indicating that you wish the subscription to be treated as Gift Aid. Another simple and secure way of paying for both UK and overseas members is by credit card online via PayPal from http://www.conchsoc.org/join. Overseas members may also pay using Western Union, but a named person has to be nominated, so please use the Hon Treasurer's name, Brian Goodwin.

How to submit articles to Mollusc World

Copy (via e mail, typed or handwritten) should be sent to the Hon. Magazine Editor (contact details above). If sending copy using e-mail please include a subject line 'Mollusc World submission'. When emailing several large file attachments, such as photos, please divide your submission up into separate emails referencing the original article to ensure receipt. Electronic submission is preferred in Microsoft Word. Images and Artwork may be digitised, but we recommend that a digital image size 200Kb- 1Mb (JPEG preferred) be sent with your submission. All originals will be treated with care and returned by post if requested. Authors should note that issues of the magazine may be posted retrospectively on the Conchological Society's web site. Please aim for **copy intended for the November 2022 issue to be sent to him before 30th Sept. 2022**; 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.

Letter to the Editor

Dear Mr Topley,

This may not interest you at all (common knowledge, perhaps).

On my kitchen window I have a perspex bird feeder, in which the birds have shown very little interest. Often when it rains one, occasionally two, snails [*Cornu* aspersum] will somehow make their way up to the window, leave their trail and wander off again. However, we have just had a couple of days/nights of heavy rain and I was seriously surprised, when I went to make my morning coffee, to discover the bird feeder hosting about a dozen snails, some on the inside, some on the outside. The first lot took themselves off during the day, so I hope today's have also gone now! We do find snails sheltering / hibernating(?) under pots etc. and they do occasionally wander singly over the kitchen window. But I have never had a large cluster actually settling down in such a small area, so far from the ground.

How did they find the feeder, acute sense of smell perhaps?

With interest, *Diana Ireland* 20th May 2022

Diary of Meetings Continued from back cover

Saturday 15th October 2022: INDOOR MEETING with exhibits and lecture (NHM with Zoom link)
Guest speaker: Dr. Corina Ciocan (Brighton University) 'Fibreglass boats and oysters don't mix! Hazardous contaminants in the aquatic environment GRP (Glass reinforced plastic) accumulation & impact on bivalves' 14.00 –17.00 (13.45 Zoom sign in): Angela Marmont Centre, Natural History Museum, London SW7 5BD

Saturday 19th November 2022: REGIONAL INDOOR MEETING: World Museum, Liverpool, L3 8EN.
To include an opportunity to see some of the museum's mollusc collections, a demonstration of live projection facilities, an appreciation of Nora Mc Millan and talks on a range of molluscan topics which are still being arranged.
Please contact **Rosemary Hill** for more details if you are planning to come.
(A **meeting of the Conservation and Recording Committee** will be held on the following day (Sunday 20th November, 10:00 for 10:30 – 13:00). Agenda items will include recent developments with iRecord and iNaturalist, the Society's CC-BY-NC data license on NBN, and progress on conservation initiatives. Any Society member is welcome, but the venue size limits us to 20 people. Please contact the chair, **Ben Rowson** (nonmarine@conchsoc.org) if wishing to attend.)

Further INDOOR MEETINGS (NHM with Zoom link) on the following Saturdays (details TBA):
2022: 10th December. **2023**: 18th February; 15th April (AGM); 15th July (Zoom only, provisional date); 14th October; 18th November (**or** Regional Meeting outside London); 9th December.

Additionally:

Further FIELD MEETINGS planned opportunistically, often at short notice, may be posted onto the Conchological Society website. Society members are encouraged to check this regularly for notification of such meetings as well for updates on the other fixed dates.

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.

Meeting Programme compiled by Martin Willing. Contacts for meetings related matters are either Martin Willing (martinjwilling@gmail.com) OR Rosemary Hill (secretary@conchsoc.org).

Members – you too can apply for Conchological Society research grants!

Most of you will know that the Society has a fund for awarding up to 3 grants annually for molluscan research. However, you may think that applications are open only to PhD students or those working in academia, or you may feel that your research might not lend itself to publication in *Journal of Conchology* for example. As a result of recent discussions within Council we wish to encourage our British and Irish Members to apply for grants for small projects which focus on aspects of marine and non-marine recording, molluscan conservation, or historical research such as biographies on well-known conchologists, or projects that digitise old handwritten records.

A prominent feature of the Society's activities in the latter half of the 20th century was to survey non-marine molluscs for the 1976 and 1999 Atlases. A substantial number of the 10km records could now be 30 to 50 years old (precise dates for most records can be found via the NBN Atlas: https://registry.nbnatlas.org/public/show/dr677. With the environmental changes that have occurred since the 1999 Atlas, such as loss of habitat, increased urbanisation, and climate change, many of the species' distributions may have changed considerably. We are not suggesting new national surveys but very valuable information could be obtained by, for example, resurveying a 10km square which formerly had a very high number of species or notable species recorded. How much has changed in city habitats, how important are city ponds and parks for molluscs? Or there may be squares which have only a very few records. In the marine environment there are some sections of coastline and many offshore areas with few site-specific or up-to-date records. The possibilities for small projects are endless!

In 2017 our former Conservation Officer Martin Willing wrote an excellent article in *British Wildlife* (Vol 28 (6): 446 – 447 August 2017) in which he flagged up the Society's Research Grants awards and in which he outlined several suggestions for small marine and non-marine mollusc projects. These included monitoring the spread of species that may be expanding as a result of climate change such as the lined top shell *Phorcus lineatus*, or determining if the heath snail *Helicella itala* continues the decline shown in the Atlases.

There is plenty of help and advice available. The Society's non-marine recorders Ben Rowson and Evelyn Moorkens (who fulfils this role for all Irish non-marine records), marine recorder Simon Taylor, and Conservation Officer Mags Cousins (all email addresses on the website, or see opposite page) would all be pleased to give suggestions for projects and for sites that would merit study and provide any relevant historical information. The Officers and members with good knowledge of species or sites can also provide mentoring.

The Society will provide a small grant to Members (up to £500) to assist with expenses for small UK or Irish projects. In the first instance, brief applications outlining the project aims and objectives, and how the grant will be spent, should be sent to the Honorary Secretary Rosemary Hill. All recipients of grants would be expected to submit their mollusc records to the Society and ideally also write an article for Mollusc World.

We look forward to hearing from you!

Ian Killeen Chair, Grants Committee

Conchological Society of Great Britain and Ireland
Diary of Meetings

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

Field meetings
The Covid-19 uncertainties that impacted the 2021 field programme have declined and so it is anticipated that problems and restrictions will be minimal. We will, however, be keeping a close watch on developments; specific meeting arrangements and other changes will appear on the Society website which Society Members are advised to visit regularly.
It is essential for those wishing to attend ANY of the field meetings, to contact the leader in advance (ideally at least a few days before) to book a place and obtain further details.

Indoor meetings
Details of whether a meeting is 'live' plus Zoom or Zoom only, will be circulated to members prior to each meeting, together with instructions on how to access the NHM and /or the online Zoom. News updates will also appear on the Society's website.

It is ESSENTIAL to let Catherine Jagger at CIRCA (shellmember@gmail.com) know of your intentions to attend on Zoom or at the NHM, at least a week before each meeting. She will then send you joining instructions and an agenda. If you do not respond on time, it may not be possible to make the necessary access arrangements. Zoom meetings will open from 13.45 and please ensure that you join before the 14.00 start as late admissions may be impossible.

Saturday 23rd July 2022; ZOOM MEETING with online exhibits and lecture
Guest speaker: Dr. Jeremy Biggs (Director, Freshwater Habitats Trust)
'Understanding and protecting freshwater Mollusca: the work of the Freshwater Habitats Trust'.
14.00 ─16.00 approx. (13.45 Zoom sign in)

Saturday 6th August: FIELD MEETING (non-marine): Hartslock Nature Reserve, Goring, Oxfordshire.
Leader: Tom Walker This is a joint meeting with the Reading and District Natural History Society. We will be surveying the molluscs in this Reserve which lies on a chalk hillside overlooking the River Thames.
It is essential that you contact the leader prior to the meeting who will give directions to the difficult- to find parking area.

Wednesday 7th September: FIELD MEETING (non-marine): Cricklade.
Leader: Mags Cousins
This will be a training meeting, terrestrial and freshwater molluscs of meadows and lakes, joint with Wiltshire Wildlife Trust at Lower Moor farm complex, a group of Wiltshire Wildlife Trust reserves. Meet at 10 am at the car park of Lower Moor Farm, Cricklade, SN16 9TW, OS Grid Ref: SU007939. There are toilets, a cafe, and it is easy access.

Saturday 10th to Thursday 15th September 2022: FIELD MEETING (marine) mid-Northumberland coast.
Leader: Rosemary Hill This meeting will be examining shores which have been less well recorded in the mid part of the county between Amble and Bamburgh including the area Ted Phorson worked for shell sand. Members wishing to participate should find their own accommodation in Amble or up the coast from there.

Saturday 24th September 2022: FIELD MEETING (non-marine): Queenswood Country Park, central Herefordshire (SO 5051). Leaders: **Ben Rowson** and **Tim Kaye**
Non marine molluscan recording on a joint meeting held with the NLHF supported 'Hidden Herefordshire' project. Further details will appear on the website.

Saturday 1st October 2022: FIELD MEETING (non-marine): RHS Gardens, Wisley, Surrey.
Leaders: **Imogen Cavadino** and **Hayley Jones**
Native and introduced species with a focus on several established and newly created freshwater habitats. Additionally, there may also be opportunities to explore in the gardens, glasshouses and woodland. Meet at 10.30am. Participants must contact the leader in advance, for free access to the gardens and to confirm the meeting point. Places are limited, and members of other Societies may also be invited.

October Wednesday 5th October 2022: FIELD MEETING (non-marine): Wyre Forest, Worcs.
Leaders: Rosemary Winnall & **Rosemary Hill**
Joint meeting with Wyre Forest Study Group to look for *Malacolimax tenellus* in Hunthouse Wood, Worcestershire. This is a WT reserve down some steep wooded dingles with a mixture of ancient woodland and some coal mining sites and also tufa outcrops which have not been looked at previously by the CS. Further meeting and other details will appear on the Society website

Saturday 8th October: **FIELD MEETING (non-marine): Pewsey, Wiltshire.**
Leader: Mags Cousins
This will be a training and recording meeting focussing on Desmoulin's whorl snail (*Vertigo moulinsiana*) and other molluscs in the fen. Meet at 10.30am at Jones's Mill, the Vera Jeans Reserve, Wiltshire Wildlife Trust, Pewsey SN9 5JN. Parking at OS Grid Ref: SU 16966 61015. Not suitable for wheelchairs and pushchairs.

Saturday 8th & Sunday 9th October 2022: FIELD MEETING (marine): Solent, Hampshire
Leaders: **Bas Payne** and **Simon Taylor** A two-day meeting to work Solent shores during the October low spring tides, and also look at lagoon sites for *Cerastoderma glaucum*. Details and rendezvous to be announced on the website.

The meetings diary continues inside on page 35