

Hon. Non-Marine Recorder's Report 2021

11 March 2022

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 (0.1°C) 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 database. Altogether, the records once again represented over 180 mollusc species, from over 100 vice-counties. Just under 3,000 (9%) were received or entered directly, while the remaining 13,600 (81%) were Accepted from iRecord. 5,495 (34%) of these originated in iRecord itself, while the other 8,108 (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) (**Fig. 1**). Thank you to everyone who contributed or updated records.



Fig. 1. Tawny Glass Snails (*Euconulus fulvus*) with unusually dark bodies, from Duns, Berwickshire.
Photo: Adrian Sumner.

New VC records

This year I gave a little 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 summarized 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 include 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 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 was Kerney (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 than the 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 of course 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**, Cwmdru, 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**, Cwmdru, 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 (**Fig. 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 m² 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).



Fig. 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. Photos: Dan Minchin.

In England, the Quagga Mussel has evidently spread over a similarly-sized area (over 100 km wide, 7 VCs) since 2014 and the Society's records have been updated to reflect this. 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 (cited as 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 (**Fig. 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, but found I had not yet submitted the records for. 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 Scheme.



Fig. 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 Nov 2021; via Facebook), and of *Lissachatina immaculata*, allegedly in the wild in Regent's Park, London (fieldmarshal, 15 Aug 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 (**Fig. 4**) are currently a mystery.



Fig. 4. A host of Ghost Slugs (*Selenochlamys ysbryda*) from Dursley, West Gloucestershire. Photo: Tracey Organ.

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. 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 Mussel (*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 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 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. the *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 9,620 non-marine mollusc records were imported to iRecord. 5,206 (54%) of these records were made during 2021 itself, while the others were a backlog mainly from the years 2019-2020 (so hopefully a one-off). Records without at least a four figure (10 x 10 km) grid reference or with uncertain identifications were Rejected, meaning that 8,108 records were Accepted. 4,500 (56%) of these had been made during 2021. This last figure can be compared with the 2021 total of 5,495 Accepted records submitted directly to iRecord. This shows that iNaturalist already rivals iRecord as an annual source of new records. It 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. And it remains possible to trace or contact the original recorder, should this ever be necessary (though 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 – 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 8,108 records Accepted, 6,712 (83%) were of just eight species, with *Cepaea nemoralis* and *Cornu aspersum* alone making up 5,453 (67%) of the records (**Fig. 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 even computing considerations – the file size of the Recorder 6 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 also reminds us that the less well-recorded molluscs are often the ones that most need our help!

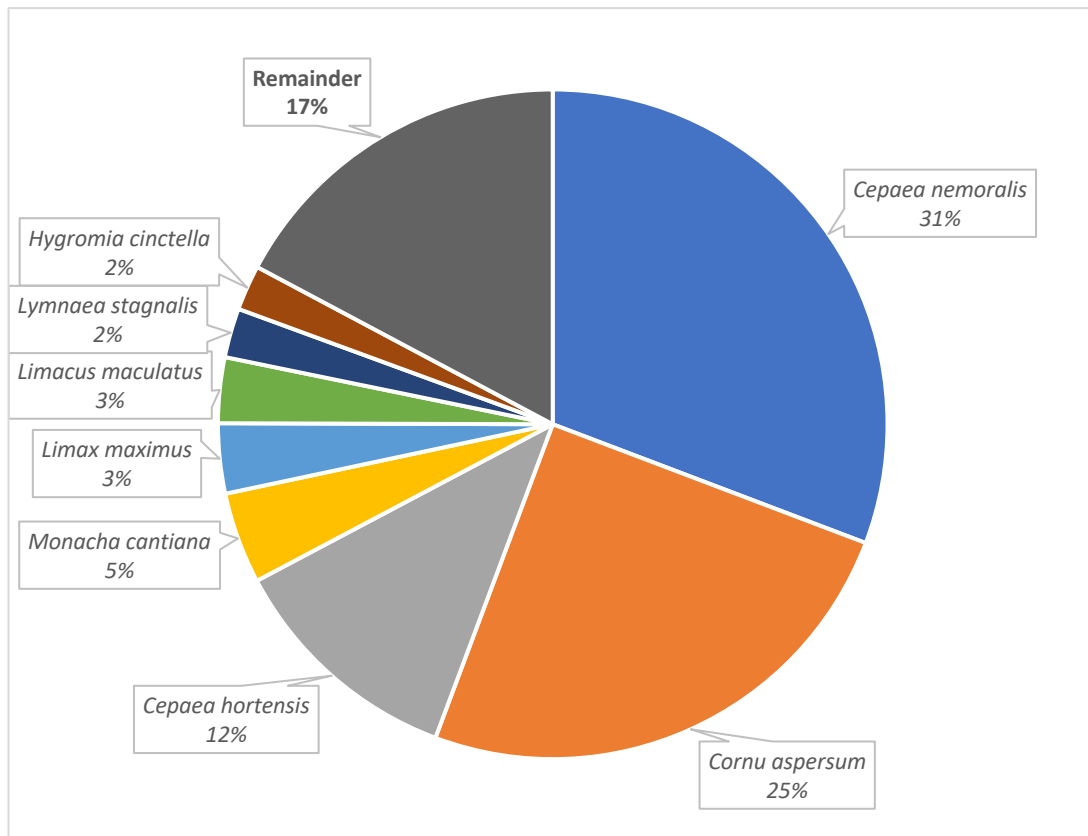


Fig. 5. Species composition of “Research Grade” iNaturalist records imported into iRecord in 2021, and “Accepted” by the Society (total 8,108 records). Eight large garden species make up 83% of the records.

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.
- Rowson, B., Turner, J. A., Anderson, R., & Symondson, W. O. C. 2014. *Slugs of Britain and Ireland: identification, understanding and control*. Field Studies Council, Shropshire, UK. 140 pp.
- 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)*. Report to South-east Water. 24 pp.