Freshwater Molluscs in the River Severn at Yew View in 2023, and notes on some invasive species in the area

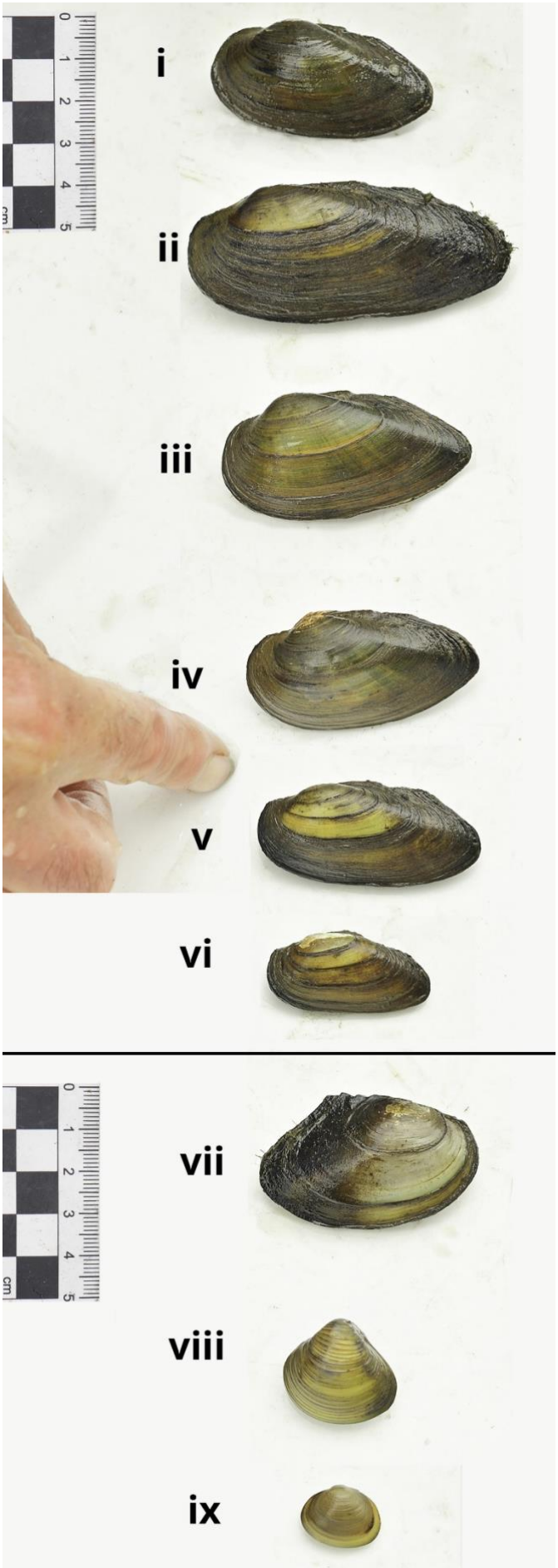
Will Watson

In 2015 I carried out a river survey at Yew View and found the rare riffle beetle *Macronychus quadrituberculatus* Müller on submerged dead wood close to a fishing platform (Watson 2015). On a return visit on 2nd September 2023, I was hoping to find *Macronychus* again but conditions had changed and there was very little in the way of the dead wood habitat that the beetle depends on, so I was not surprised that I found no riffle beetles. Instead I decided to focus my attention on finding freshwater molluscs (Table 01). At the point where the river bed drops off steeply at approximately 50 degrees, using my sturdy dip net, I dragged the top 20cm layer of river silt into the bag and immediately started finding molluscs (01).

01. Will Watson at Yew View on 2nd September 2023. Roger Plant.

In 2015, I found large numbers of Painter's Mussels *Unio pictorum* and in 2023 they were by far the most common species (02 *i* to *vi*). They are so called because historically, the shells were used as a convenient receptacle for artists' paint.

Three other species of bi-valve were found during the day including a single Duck Mussel *Anodonta anatina*, (02 *vii*) : the dorsal view shows the typical wedge-shaped outline enabling it to be easily distinguished from the Painter's Mussel. The Nut/River Orb Mussel *Sphaerium rivicola* (02 *ix*) is a ubiquitous species ~~found~~ in the Severn and other main rivers in the region. It is found in slow-flowing rivers buried in the top layer of silt typically at water depth of greater than 0.5 metre. Lastly I found the Asiatic Clam *Corbicula fluminea* (02 *viii* & 03), a species I hadn't seen before. As its name indicates, it is an introduced non-native species. It is very distinctive with its raised regular concentric ribs and is unlikely to be confused with any other species. It was first recorded in the UK in 1998 in the River Chet on the Norfolk Broads. Records submitted by the Environment Agency to the NBN Atlas indicate that it may be widespread along the course of the Severn through Worcestershire. The earliest record I can find on the NBN is September 2014 from Haw Bridge.



02. A selection of the freshwater bi-valves from the River Severn at Yew View on 2nd September 2023 (finger shown for scale).
i – vi *Unio pictorum*. vii *Anodonta anatina*. viii *Corbicula fluminea*. ix *Sphaerium rivicola*. Roger Plant.

The environmental impact of the Asiatic Clam according to the Non-native Species Secretariat is described as follows:
"The combination of this species' high filtration rates, ability to produce large quantities of pseudofaeces and attain enormous population densities (> 2500 individualsm2) can alter ecosystem dynamics. For example, production of pseudofaeces increases sedimentation and changes substrate composition. It can sequester an enormous portion of the carbon available for benthic production, thereby altering ecosystem functioning. It also competes with native filter feeding bivalves and snails feeding on organics in sediments. Accumulations of shells can block water intakes and irrigation channels. It is common on oxygenated muddy to sandy sediment."
At Yew View it was not in large numbers, therefore not causing these serious issues. However, there is clearly a need to monitor its spread in the river, particularly where it may cause issues such as around locks, inflows and submerged infrastructure. An observation worthy of mention is that in the warmer months there is a steady stream of pleasure boats on the river, many of whose owners don't abide to the national speed limit of 6 miles per hour, and as witnessed, the wash from the larger motor cruisers creates waves which are constantly shifting the river silt. In some bankside areas the silt has been removed exposing the river gravels and within a couple of metres the shifted silt is deposited in deep drifts over a metre in depth in places. As the clam thrives in well oxygenated conditions, could this environmental impact be favouring its spread? The wave action is certainly impacting the marginal river habitats to a lesser or greater extent and again requires monitoring.

03. *Corbicula fluminea* from the Severn at Yew View (cm scale) 02.09.23. Will Watson.

The other non-native species of bi-valve found in the Severn is the Zebra Mussel *Dreissena polymorpha* (04). Although I didn't find any at Yew View in 2023, I did find several present at Pixham in 2015 attached to a discarded wheel rim. Pixham is just over a mile upstream of Yew View. The latest NBN maps show that the Zebra Mussel is now very well established in rivers Severn and Avon with records dating back to the 1970s, so it is highly likely that it also occurs near Yew View on suitable substrates.

04. Invasive *Dreissena polymorpha* from Pixham in 2015. Will Watson.

In addition to the bi-valves, I found seven species of freshwater snail. The snails tend to be attached to the emergent vegetation or located on submerged stones, pieces of wood and man-made structures. The most common species was the diminutive Jenkins' Spire Snail or New Zealand Mud Snail *Potamopyrgus antipodarum* (05). This species is very common in a range of different aquatic habitats, but because of its small size it can be overlooked. It is not native to Britain, being first found here in 1852 but does not generally cause the serious problems associated with the other two non-native species of molluscs mentioned above. Other species found were the Common Bladder Snail *Physa fontalis* (05) which is identifiable from the characteristic pale tentacles in live specimens.

05. Common Bladder Snail showing characteristic pale tentacles, and a Jenkin's Spire Snail (above right) 02.09.23, Yew View. Will Watson.

It was pleasing to find the Common River Snail *Viviparus viviparus* (06) again. This calcicole species is in decline nationally. As calcium levels in the Severn are only 60% of that from the middle river Thames, it is likely that Viviparus will be present in relatively low numbers in the Severn.

06 Common River Snail, Yew View 02.09.23. Will Watson.

The remaining species found were the Wandering Snail *Ampullaceana balthica* which along with the Great Pond Snail *Lymnaea stagnalis* are both common in ponds and slow flowing rivers. The Common Bithynia *Bithynia tentaculata* which is a medium-sized spire snail, is found mainly in slow flowing rivers, but also adapted to drainage ditches, canals and eutrophic lakes. A single specimen of the Keeled Ram's-horn *Planorbis carinatus* was found in the river, but this species is not typically found in rivers and was abundant in the man-made ponds located in the floodplain at Yew View. These are located only metres away from the river and so the specimen was probably washed into the river during floods.

Conclusion

11 species of mollusc were found in 2023 compared with just five in 2015 (Table 01). This is a good total from a single river sample point. This diversity and richness is encouraging, but the presence of Asiatic Clam is a concern as it has the potential to negatively impact other species. Regular monitoring is required to assess the level of impact on the other mollusc species.

Common Names	Species Names	2015	2023
Painter's Mussel	*Unio pictorum*	✓	✓
Duck Mussel	*Anodonta anatina*		✓
Asiatic Clam	*Corbicula fluminea*		✓
Nut Orb Mussel	*Sphaerium rivicola*	✓	✓
Zebra Mussel	*Dreissena polymorpha*	Pixham only ✓	
Jenkin's Spire Snail	*Potamopyrgus antipodarum*	✓	✓
Common River Snail	*Viviparus viviparus*	✓	✓
Common Bladder Snail	*Physa fontalis*		✓
Wandering Snail	*Ampullaceana balthica*		✓
Great Pond Snail	*Lymnaea stagnalis*		✓
Common Bithynia	*Bithynia tentaculata*		✓
River Nerite	*Theodoxus fluviatilis*	✓	
Keeled Ram's-horn	*Planorbis carinatus*		✓
Totals		5	11

Table 01. Aquatic Molluscs found at Yew View: Comparison Table between two visits 2015 and 2023.

Acknowledgements

The river Severn is not the safest of places to carry out a survey and certain precautions are required. I am grateful for Roger Plant and Dr. Ann Hill for acting as safety anchors in this respect. I would also like to thank Ben Rowson, Conchologist at the Museum of Wales for determining the Common River Snail which can be confused with another very similar species.

References

Farmer, G & N, 2014. Shell bank in the River Avon at Nafford, *Worcestershire Record 36:29-30.*

Foster. G.N. 2010. *A review of the scarce and threatened Coleoptera of Great Britain. Part 3: Water beetles of Great Britain*. JNCC.

Kerney, M. 1999. *Atlas of the Land & Freshwater Molluscs of Britain & Ireland.* Harley Books, Essex.

Killeen, I., Aldridge, D. & Oliver G. 2004. *Freshwater Bivalves of Britain & Ireland*. FSC Publications, Shropshire.

NBN Atlas Trust. Asiatic Clam and Zebra Mussel data. Available at: https://nbnatlas.org/about-nbn-atlas/ [Accessed 23.12.23]

Non-native Species Secretariat Website "Asiatic Clam Corbicula fluminea" Available at: https://www.nonnativespecies.org/non-native-species/information-portal/view/897 Last edited in November 2015. [Accessed 26.12.23].

Ricardo (2022) Severn Thames Transfer (STT) Solution, Environmental Water Quality Assessment Report, Issue 005 11-10-22. Severn Trent, Thames Water and United Utilities. Website severntrent.com/content/dam/sros-gate-2-documents/stt/assessment-reports/STT-G2-S3-113-Water-Quality-Assessment.pdf

Rowson, B., Powell, H., Willing, M., Dobson, M., & Shaw, H. 2023. *Freshwater Snails of Britain and Ireland*. FSC Publications, Shropshire.

Watson, W.R.C. 2015. Molluscs and Riffle Beetle *Macronychus quadrituberculatus Worcestershire Record 39:57.*

Images

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