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Recently released ID guide - Marine Bivalve Shells of the British Isles

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The Project

In 2006 the Department of Biodiversity and Systematic Biology at the National Museum of Wales began a project to produce an identification guide to the bivalves found in British waters. This project, funded by the Department of Energy and Climate Change (formerly the Department of Trade and Industry) was to create a taxonomic tool for use by biologists and ecologists carrying out Environmental Impacts Assessments (EIAs) in locations that are likely to be exploited for oil and gas. Correct identifications in these EIAs are essential, however, most benthic samples include juveniles and minute species, which can be very tricky to identify. Large illustrations and size series are required in many cases to show enough detail to separate species. To provide full colour plates to cover all of these requirements would make a publication expensive so a web-based product was decided upon. An electronic product has the added advantage of being quick and easy to update and amend.

The Website

In June of this year the open access website was released, with illustrations and descriptions of 360 species of bivalves found in the waters around the British Isles (Fig. 1).

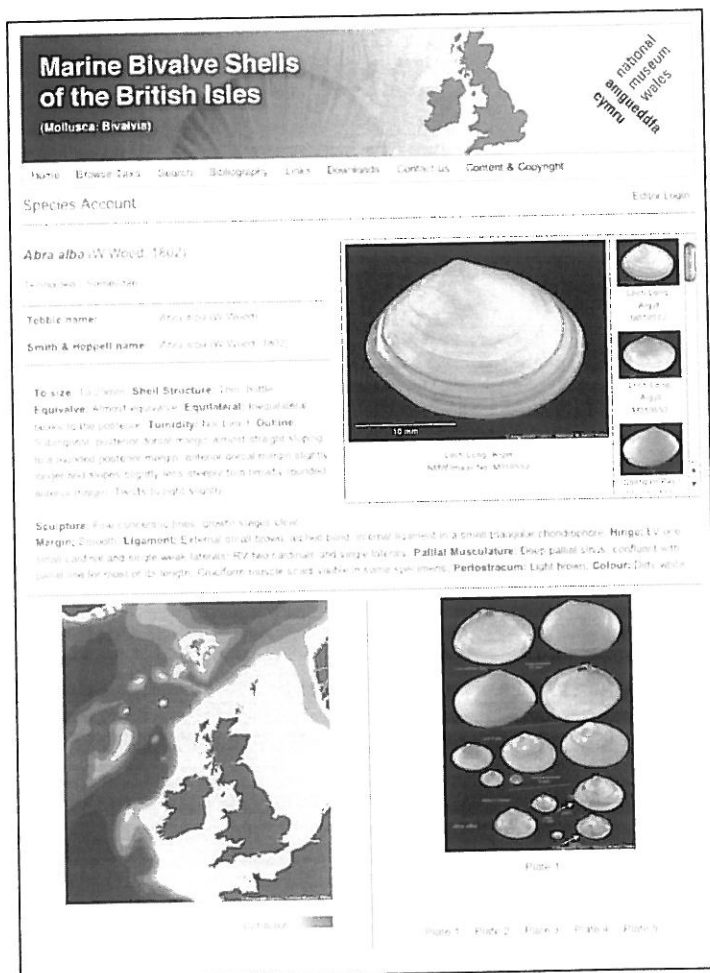


Fig. 1. Screenshot of a species page from the Marine Bivalve Shells of the British Isles website.

The last illustrated guide to British bivalves, written by Tebble in 1966, only covers continental shelf species to around 200m depth. To provide us with a comprehensive list of bivalves we used, as a starting point, a checklist written by Smith & Heppell (1991), which included Tebble's species along with many deep-water additions. This checklist teamed with recent deep-sea papers has provided us with as full a coverage list as possible (Fig. 2).

Each species page contains a full description of the shell and, where required, a description of the anatomy, along with plates showing size series, variations, shell internals and externals and distinguishing characteristics highlighted. Distribution information, maps and habitat information are also provided.

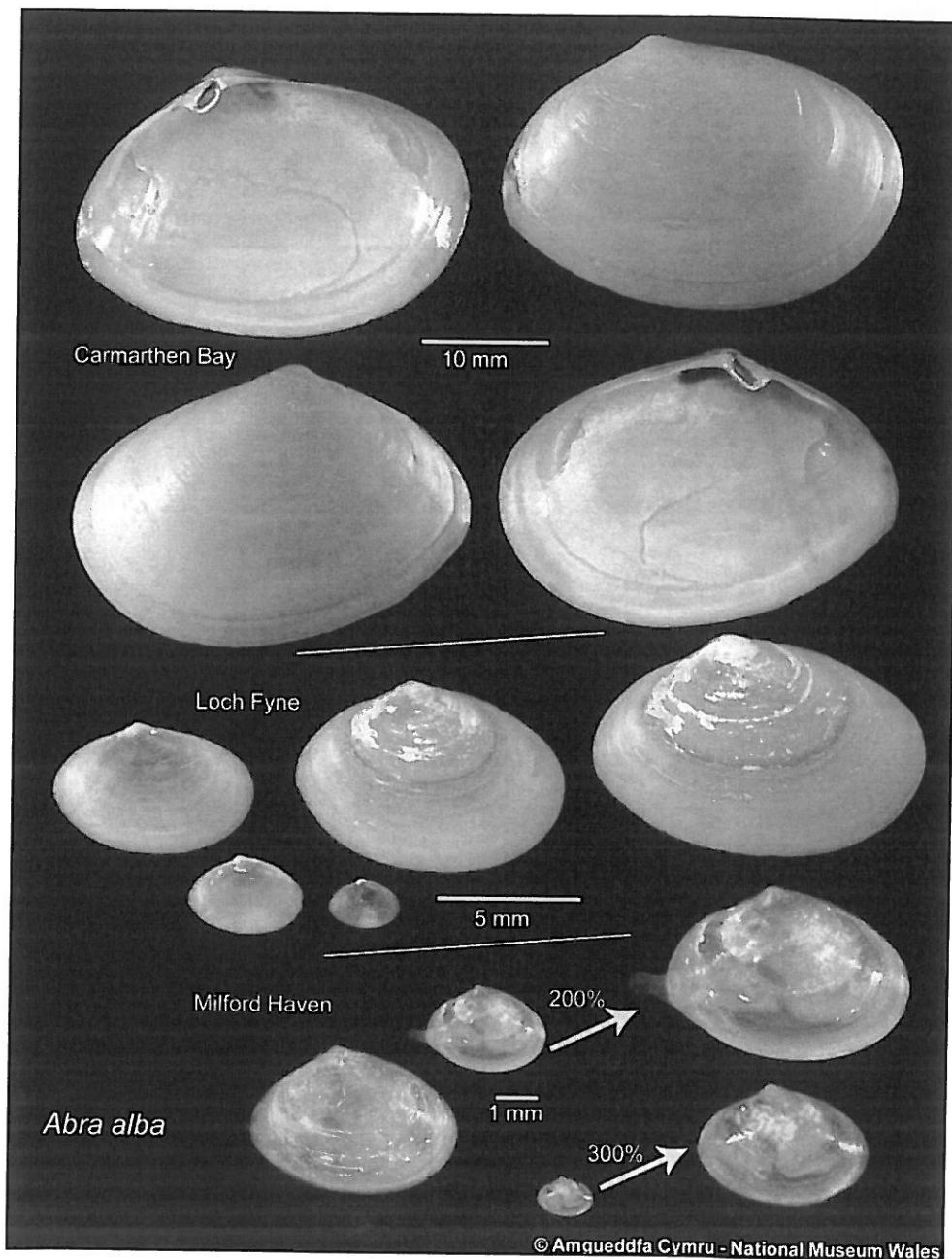


Fig. 2. Species plate for *Abra alba*. Includes size series images to make the job of identifying juveniles easier and more accurate.

Geographical Coverage

It was necessary to cover the Exclusive Economic Zone of the UK as the project was funded by the Governmental Department of Energy and Climate Change. This Zone stretches seaward from the coast for 200 nautical miles. Rockall extends the Zone westward to 24°W, the Shetlands extend the Zone northward to 64° to include the Faroes, the tip of Cornwall extends the Zone southward to 48° towards the Biscay Basin and a line is drawn down the middle of the North Sea (Fig. 3). Once squared off, this area covers deep waters to 5000m southwest of the Celtic Sea, west of the Hebrides and the Faroe-Shetland Channel. Some species found just south or north of the geographical coverage area have also been included because of the possibility of them cropping up in benthic surveys.

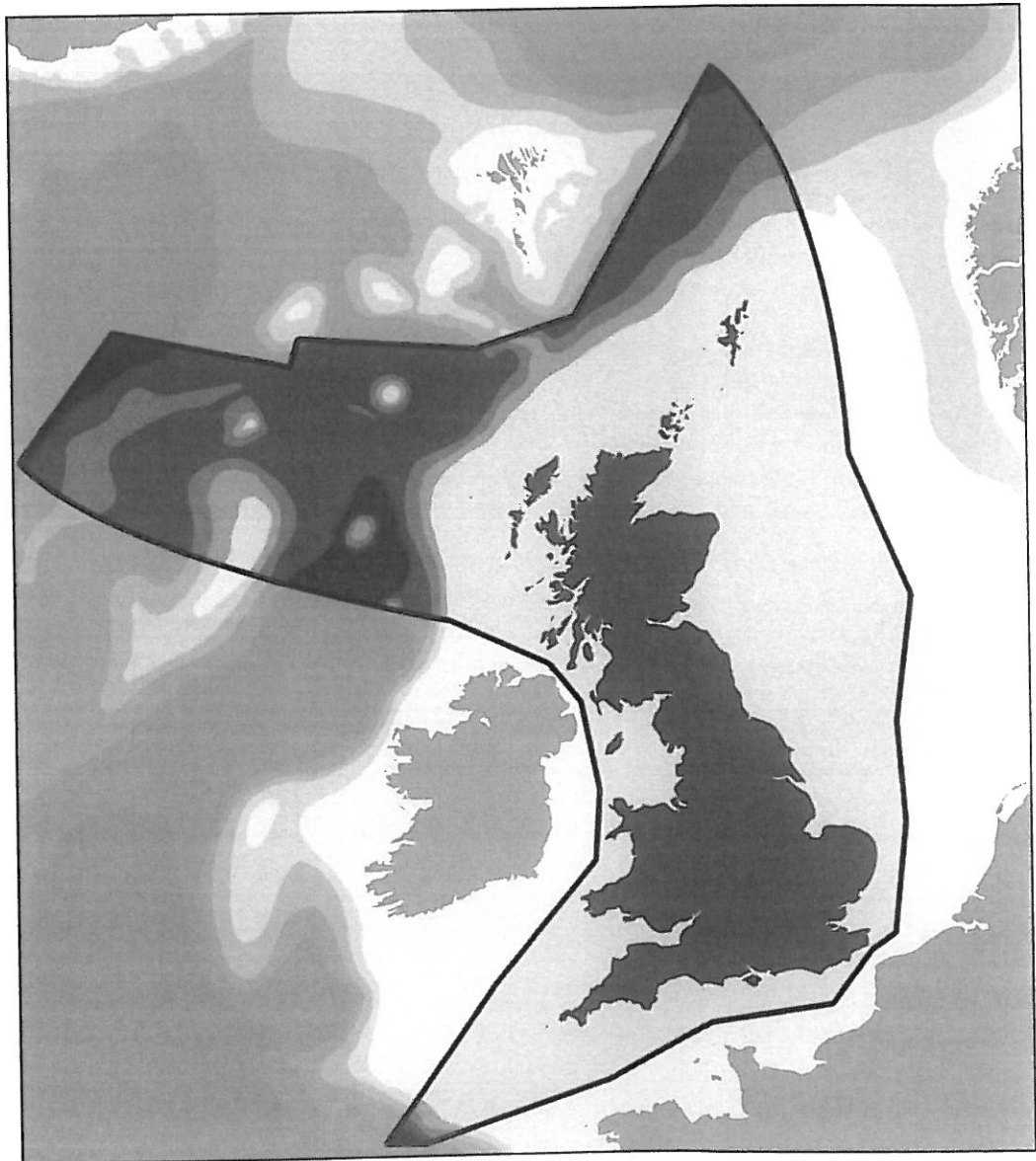


Fig. 3. Map highlighting the Exclusive Economic Zone of the UK.

The Images

Achieving a satisfactory depth of field in images of very small specimens is problematic. Images were taken using a microscope with camera attached and Automontage softwareTM. Using this software the photographer can combine many images of a specimen taken at different focal depths into a beautifully sharp image, even for tiny or very tumid specimens. Scanning Electron Microscope (SEM) pictures showing details of hinges and surface sculpture of shells have also been included in the Guide. As well as images of the shells, anatomical pictures were taken for some groups such as the Thyasiridae, some of the genera of which can be clearly distinguished by their gill structure (Fig. 4).

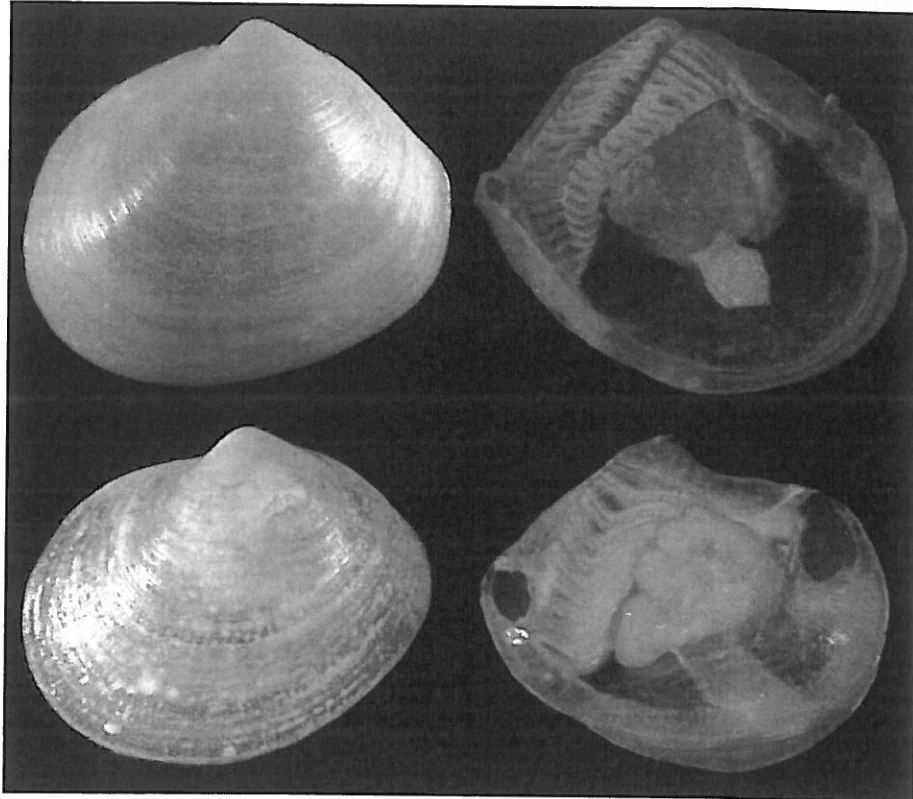


Fig. 4. Two different genera from the family Thyasiridae showing similarity of shells and distinguishing character of single or double demibranch gill (top left of anatomy pictures).

Collections used for Imaging

The majority of images are of specimens from the collections of the National Museum of Wales, which in this specialism are vast. The British material from the Museum's Melvill-Tomlin collection is placed at the end of each superfamily, which made relevant material for this project very accessible. One of our most recent acquisitions is a collection of UK shells from IJ Killeen with excellent data - most lots have grid references, collection dates, exact collection points and relevant ecological information, invaluable for the production of this type of ID Guide. We were also fortunate enough to receive a bequeathed collection of shells by JE Phorson, a large percentage of which are tiny juveniles stuck onto pieces of card, these provided material for the series of images of juvenile specimens.

Some specimens, such as those found in the very north of our coverage area, were borrowed from various institutions to fill in any gaps in our image database.

Locality data and an image number are attached to each image on our website to provide further information to the user and to allow us to find the imaged specimen in our collections if required.

Feedback and future work

As soon as the website was released the discovery of a species new to our area was made on the south coast of England – a Mediterranean species called *Chama gryphoides* – which was sent to us, imaged and added to the ID guide (Fig. 5). Also, a new record east of the River Humber has been added for *Coracuta obliquata*, previously known from just a few scattered locations in the west of the UK.

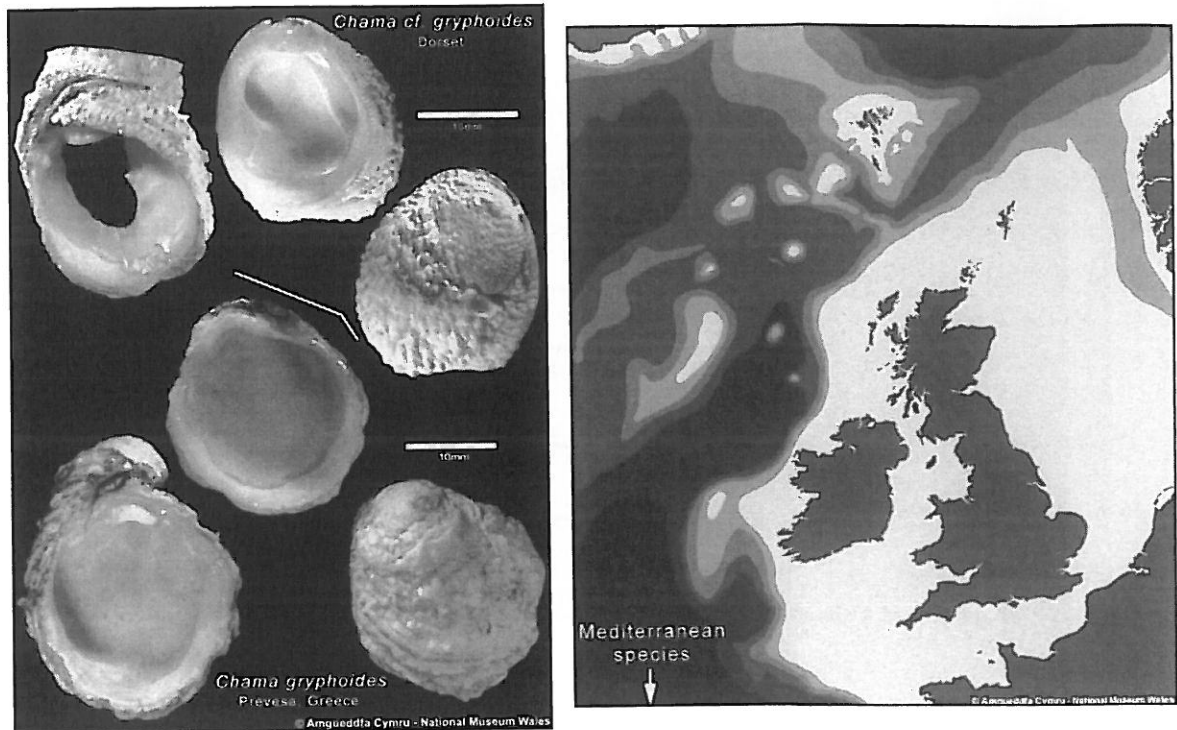


Fig. 5. Species plate and distribution map for *Chama gryphoides*.

We are now working on adding several keys to the Guide as well as some new species and more comparison plates. The beauty of the website is the ability to immediately add species, add further locality data to maps and any other details as they come to us. We want to encourage people to use the site and inform us of any gaps in our records.

Please feel free to visit the site and send comments to me.

References

<http://naturalhistory.museumwales.ac.uk/britishbivalves/>

Smith S. & Heppell, D. 1991. *Checklist of British Marine Mollusca*. National Museums of Scotland Information Series, No 11: 114pp.

Tebble N 1966. *British Bivalve Seashells*. The British Museum (Natural History) pp 212.