



# FINDING *Stories* BY THE SHORE

*Clams, Oysters, Cockles,  
Mussels, & Scallops*





## **Finding Stories By The Shore, Discover The Fantastic Life of Bivalves on our Beaches**

### **VISION BROCHURE. V1**

The idea behind this experience came from recent Explore Your Shore Hub training with Dave Wall, the Citizen Science Officer from the National Biodiversity Data Centre.

In developing this experience the Aquarium seeks to develop its own knowledge of the many Bivalves that are found across the Beaches of our Coastline, and encourage people to record the bounty of Biodiversity, including Biofacts found on our shores.

**We hope that this new experience will be fun, educational, and of course protect our species and coastlines through Clean Coasts Beach Cleans.**



Galway Atlantaquaria provides a unique, educational, and fun insight into the life of our rivers, lakes, and ocean. Set against the stunning backdrop of Salthill Galway Bay, we unveil the hidden wonders of life beneath the water. As an all-weather attraction with over 25 years of experience, we bring the underwater story of life to visitors of all ages.



## What is a bivalve?

Bivalves (e.g., clams, oysters, mussels, scallops) have an external covering that is a two-part hinged shell that contains a soft-bodied invertebrate.

Like fish, bivalve mollusks breathe through their gills. As filter feeders, bivalves gather food through their gills.

Some bivalves have a pointed, retractable “foot” that protrudes from the shell and digs into the surrounding sediment, effectively enabling the creature to move or burrow.

Bivalves even make their own shells. An internal organ called the mantle secretes calcium carbonate so that as the inner invertebrate grows, the outer shell provides a roomier home.

*Many bivalve species play important roles in aquatic and marine ecosystems by filtering the water and serving as habitat and prey for a variety of sea life.*

**This diverse group of species, estimated at about 9,200, inhabits virtually the entire world ocean, from the balmy tropics to the sub-zero Arctic, and from the deep ocean to sandy and rocky shorelines.**

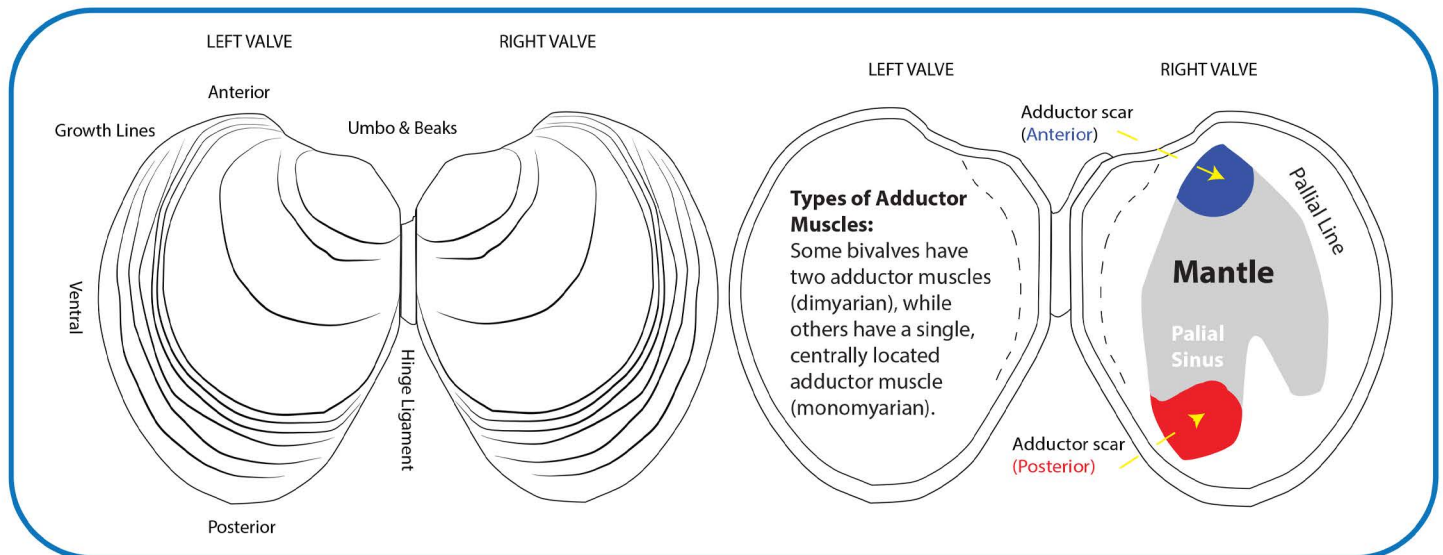


### Image. Drift Shells on the shore

For many years, we always focused our energy on finding fish and crabs in the Rockpools, we never realised that these ‘drift’ shells tell a much deeper and interesting story of the sea.



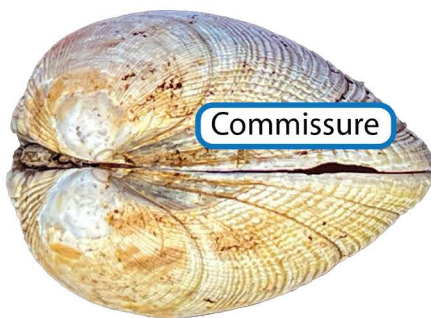
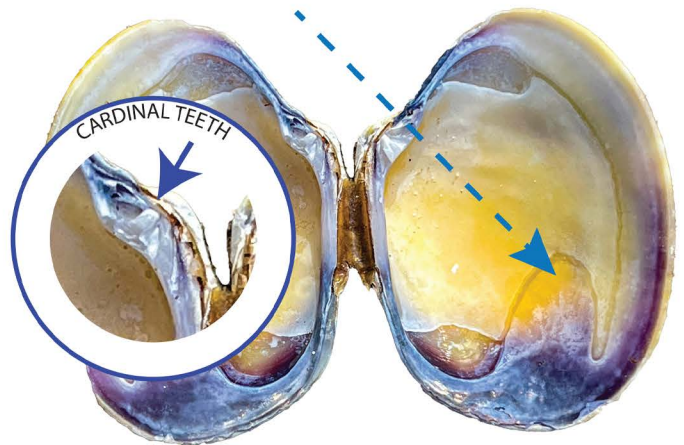
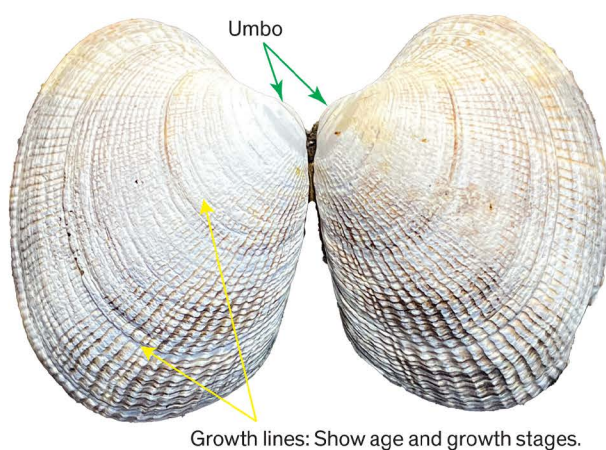
# Anatomy of a Bivalve



## Pallial Sinus

The pallial line traces where the mantle was attached.

The sinus appears as a **U-shaped indentation** (posterior side) if siphons were present.



The Commissure on a bivalve shell refers to the line where the two valves (halves) meet and articulate when the shell is closed.

## WHY IS IT IMPORTANT TO RECORD THE SEASHELLS FOUND ON THE SHORE?

Recording bivalves on the shore is important for various reasons, including ecological monitoring, geological insights, and understanding past environmental conditions.

*Bivalves can act as indicators of environmental health, provide clues about past ecosystems, and help track changes in biodiversity.*

## Basic Anatomy & facts of a Common Bivalve Shell

Two valves (left and right): Hinged together dorsally (top side).

Hinge ligament: Acts like a spring to open the shell when the adductor muscles relax.

Umbo: The oldest part of the shell, near the hinge.

Growth lines: Show age and growth stages.

Bivalves don't have a head or eyes (except scallops, which have tiny eyes around the shell edge).

Their nervous system is minimal, but they still react to touch and light.

Many can burrow using their foot, while others (like mussels) attach to rocks using byssal threads.

**Bivalves have existed for over 500 million years—before dinosaurs, birds, or even trees!**

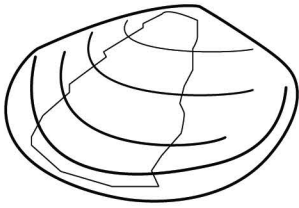
[www.nationalaquarium.ie](http://www.nationalaquarium.ie)





## Common Bivalves found on Grattan Beach, Salthill

Bivalves have a shell divided into two halves, known as valves. Connecting ligament forms a hinge between the valves in the living animal. But after death the ligament soon degrades, and the two valves fall apart. So an empty seashell washed up on the beach may actually be a single valve.

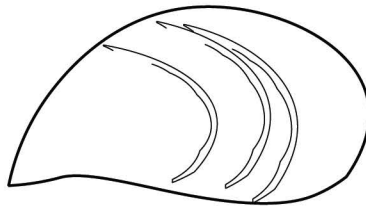


**Banded Carpet Shell**  
*Tapes rhomboides*

Light brown, yellowish, or grayish with distinct dark brown or reddish radial bands (hence "banded").

Texture: Smooth with fine concentric growth lines.

Pattern: The bands are a key identifier—they run from the hinge (umbo) to the shell edge.



**Common mussel**  
*Mytilus edulis*

Dark blue-black, brown, or purple (younger mussels may be lighter).

Interior: Smooth, pearly white or iridescent blue/purple (mother-of-pearl).

Texture: Smooth with fine growth lines (concentric ridges).

Periostracum (outer shell layer) may appear slightly glossy or fibrous.



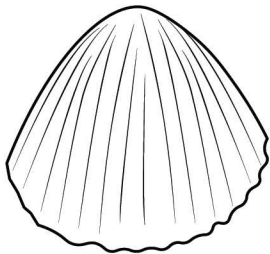
**Common razor shell**  
*Ensis ensis*

Pale cream, light brown, or grayish, often with darker radial streaks or mottling.

Interior: Smooth, white, and glossy (may show slight iridescence).

Texture: Smooth with fine growth lines (concentric ridges).

Periostracum (outer organic layer) is thin and may peel at the edges.



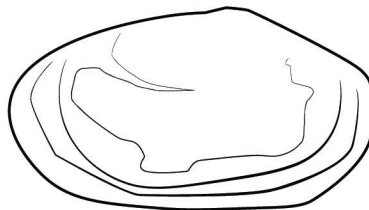
**Common cockle**  
*Cerastoderma edule*

Dull white, yellowish, or brown, often with darker radial bands or patches.

Interior: Smooth, white, sometimes with yellow/purple tinges near the margin.

Texture: 22–28 prominent, rounded ribs radiating from the umbo to the shell edge.

Ribs are crossed by fine concentric growth lines, creating a scaly or grooved texture.



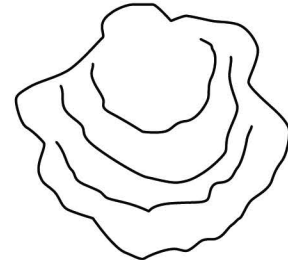
**Otter Shell**  
*Lutraria lutraria*

Dull white or pale yellow, often with a flaky brown periostracum (outer layer).

Interior: Smooth, white, and porcelaneous (slightly glossy).

Texture: Fine concentric growth lines but no strong ribs or sculpturing.

Shell is brittle compared to cockles or mussels.

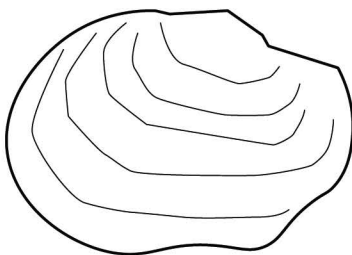


**Native oyster**  
*Ostrea edulis*

Color ranges from dirty white to grayish-brown. Surface shows layered, scaly growth rings (resembling tree rings). Often has irregular wavy margins.

Interior: Porcelain-white with mother-of-pearl luster.

Purple or brown muscle scar near center. No hinge teeth (unlike most bivalves).



**Blunt gaper**  
*Mya truncata*

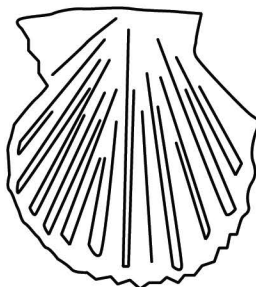
Chalky white to grayish.

Covered with flaky brown periostracum (often peeling).

Concentric growth rings but no radial ribs.

Interior: White with blue-gray tinges.

Spoon-shaped chondrophore (hinge plate) - a diagnostic feature.



**Variegated scallop**  
*Chlamys* or *Mimachlamys varia*

Extremely variable: red, orange, yellow, purple, brown (often multicolored).

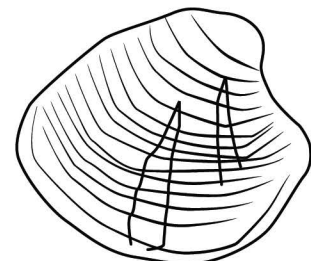
20–35 prominent radial ribs with smaller riblets between. Ribs often bear spines or scales, especially in juveniles.

Interior: Shiny, porcelaneous white.

Often shows color echoes of exterior patterns.

Single large adductor muscle scar\*.

\*a mark or impression found on the inner surface of a bivalve shell where the adductor muscles, responsible for closing the shell, were once attached.



**Striped venus clam**  
*Chamelea gallina*

Pale yellow, cream, or light brown background. Characteristic concentric bands of darker brown/purple (hence "striped").

Surface with fine concentric ridges and weak radial striations.

Interior: Smooth, white, often with purple tinges.

Three cardinal teeth in each valve (typical of Veneridae).



## After This Experience, will we be Bivalve Experts?

**NO!** As Dave Wall of the National Biodiversity Data Centre said, "This is all about getting people out and Explore The Shore".

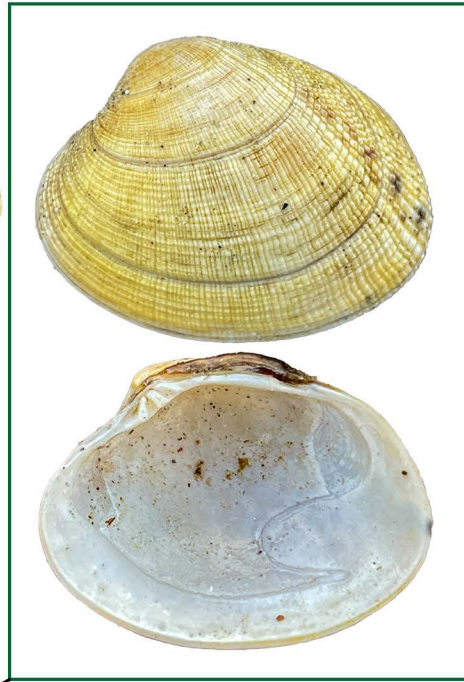
This means that we can only learn together, and we do have people who can help identify the many, many species that live in our Bay.



**Image. Some Shells are VERY easy to ID**

However, as the 'Drift' Shell on the shore may be damaged, discoloured it does take practice.





**Chequered carpet shell**  
*Ruditapes decussatus*



**Common mussel**  
*Mytilus edulis*



## Image. Some Shells we found!

We did try the experience ourselves, and found a host of Bivalve Species.

We could only confirm the identity of two species!

So, its not easy, but a fun and challenging part of Explore Your Shore.

### TIP

When photographing the shells, always take a photo of each side!





# Learn One Species at a Time

## **Marine Bivalves Common in Ireland**

Common Mussel – *Mytilus edulis*

Native Oyster – *Ostrea edulis*

Pacific Oyster - *Magallana gigas* (formerly *Crassostrea gigas*)

Razor Clam – *Ensis siliqua* (Pod Razor) / *Ensis ensis* (Sword Razor)

Common Cockle – *Cerastoderma edule*

Sand Gaper – *Mya arenaria*

Baltic Tellin – *Macoma balthica*

Thick Trough Shell – *Spisula solida*

Surf Clam – *Spisula subtruncata*

Warty Venus – *Venus verrucosa*

Striped Venus – *Chamelea gallina*

Great Scallop – *Pecten maximus*

Queen Scallop – *Aequipecten opercularis*

Horse Mussel – *Modiolus modiolus*

Fan Mussel (Critically Endangered) – *Atrina fragilis*





# Grattan Beach Bivalve Project

## How To Age a Cockle

*Cerastoderma edule*

# Count The Rings



*First Winter Ring*

XXXX 2023

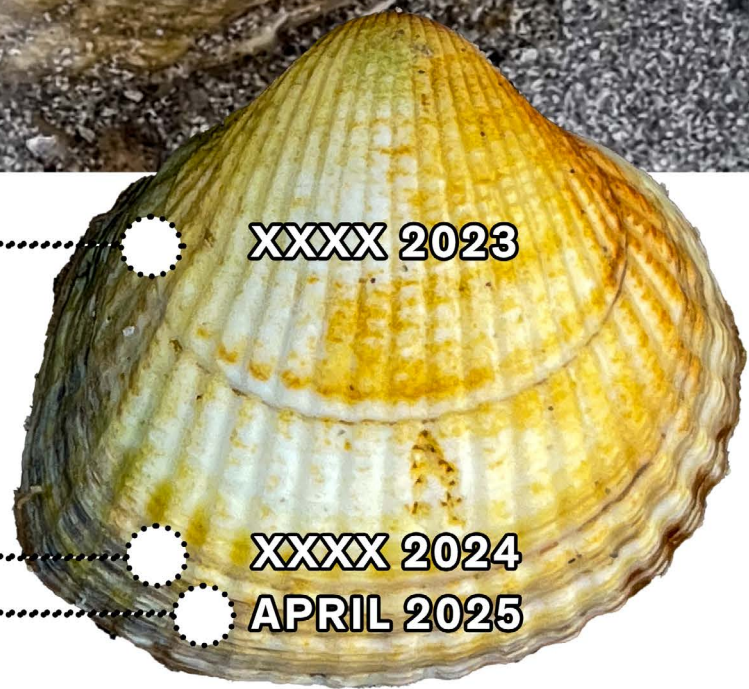
The spacing of growth rings on a cockle shell can indicate the duration of winter, with wider rings suggesting shorter, warmer winters and narrower rings indicating longer, colder winters. Cockles experience slower growth during winter, and the distance between growth rings reflects this slower growth rate.

*Second Winter Ring*

XXXX 2024

*Third Winter Ring*

APRIL 2025



### Key Points:

Cockles exhibit growth rings, primarily due to slowed growth during winter months.

The number of rings correlates with age, with each ring representing a year of growth.

Growth rate and ring visibility can vary depending on location and environmental conditions.





# Bivalves of Ireland

This is a selection of the 250-plus Bivalve species which have been recorded in Irish waters. The Big Beach Biodiversity Survey is looking for volunteers to conduct a timed survey, recording bivalve shells and other species cast up on the tide. To take part, please visit [ExploreYourShore.ie](http://ExploreYourShore.ie)



## Where Can We Learn More?

As you start your own Explore Your Shore Journey, there are a wealth of information sources.

We have used a lot of the resources from Explore Your Shore to develop this Vision Brochure!

## About

Ireland's Marine Biodiversity Citizen Science Platform Explore Your Shore! is building our knowledge of the occurrence of marine species around the Irish coast, and what they tell us about climate change and water quality.

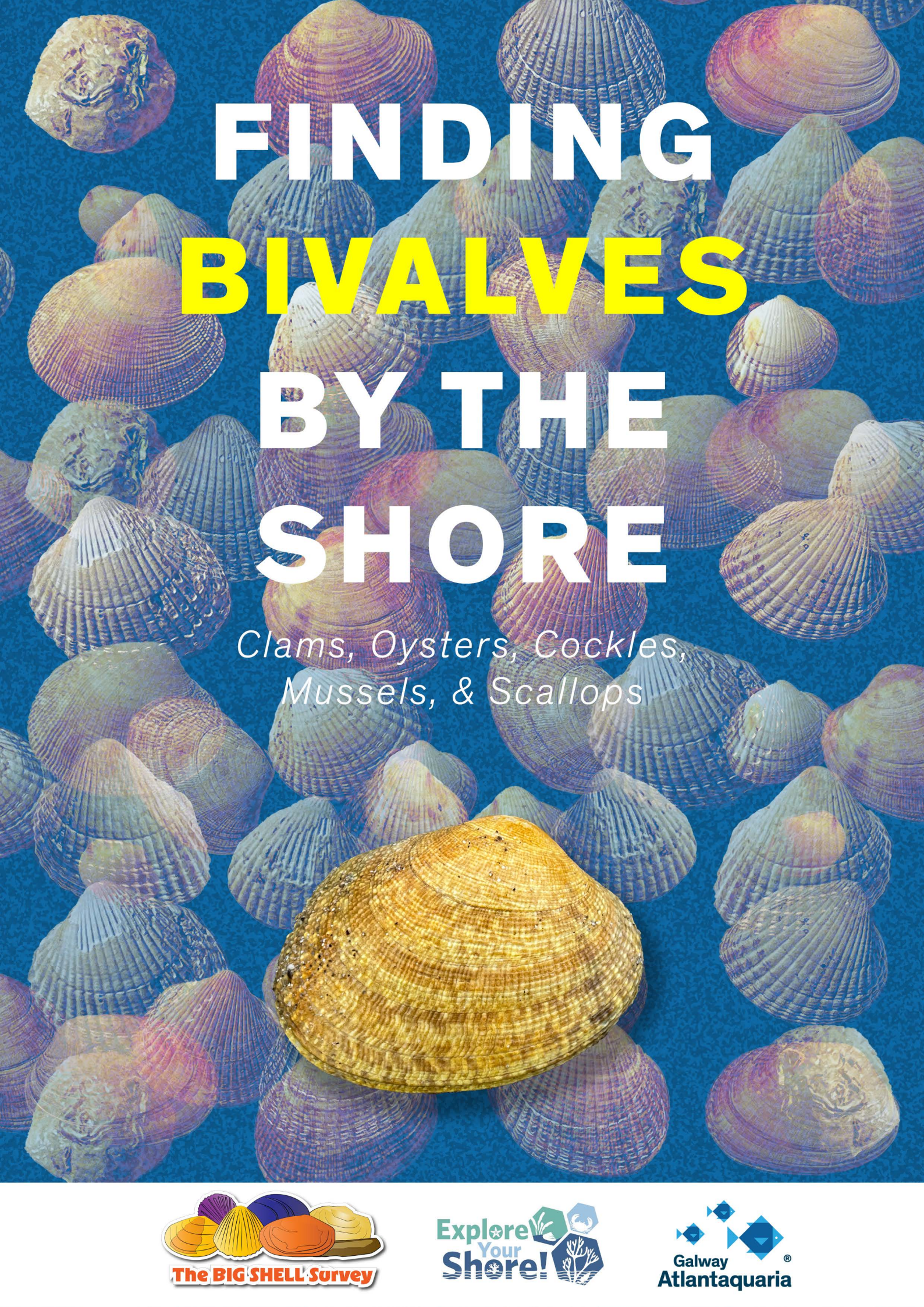
Free Resources & Posters, see;

<https://exploreyourshore.ie/>



# Let's Go Explore The Shore





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