

BE THE WAVE AR FRIG Y DON

Biodiversity

Lesson Plan



cadwch keep
gymru'n wales
daclus tidy

**MARINE
CONSERVATION
SOCIETY**



UNDEB EWROPEAIDD
EUROPEAN UNION



Llywodraeth Cymru
Welsh Government

**Cronfeydd Strwythurol a
Buddosoddi Ewropeaidd
European Structural
and Investment Funds**



Ariennir gan
Lywodraeth Cymru
Funded by
Welsh Government



Aims
<ul style="list-style-type: none"> Pupils will gain a general understanding and appreciation of the wide variety of species and habitats found in our coastal waters in Wales.
Objectives
<ul style="list-style-type: none"> Define the terms biome, ecosystems, biodiversity and species. Identify key marine habitats found in Wales. Name at least two marine species found in Wales and be able to explain how they are adapted to their habitat. Understand how species are connected to form an ecosystem.

Eco-schools topic	Global Goals
Biodiversity	14 – Life Below Water

Purpose	
Ambitious, capable learners who are:	
<ul style="list-style-type: none"> Building up a body of knowledge and have the skills to connect and apply that knowledge in different contexts. 	
Ethical, informed citizens who:	
<ul style="list-style-type: none"> Find, evaluate, and use evidence in forming their views Show their commitment to the sustainability of their planet 	
What Matters	Progression Step: Four
Science and Technology	
<ul style="list-style-type: none"> Describe how the impact of our actions contribute to the changes in the environment and biodiversity Describe the interdependence of organisms in ecosystems and explain how this affects their chances of survival 	
DCF	Progression Step: Four
<ul style="list-style-type: none"> Search a variety of sources using relevant search techniques with increased complexity. 	
LNF	Progression Step: Four
Reading	
<ul style="list-style-type: none"> read closely, follow up and use additional material in texts to extend understanding Summarise, synthesise and analyse information to gain in-depth understanding e.g. of causes, consequences, patterns, using different sources. 	
Cynefin	
All species and habitats are found in the coastal waters of Wales	



Activity 1	Resources and Equipment
<p>Marine Habitats in Wales</p> <p>Use the Biodiversity in Wales PowerPoint to introduce the topic of biodiversity and relevant terms. There are suggested questions for students within the notes section of the PowerPoint.</p> <p>Use the images and notes in the PowerPoint to explore key marine habitats. After introducing the habitats, split the class into small groups of 3-4 and allocate a habitat to each group. Provide each group with a laptop and complete the habitat worksheet making notes on location around Wales, the physical and biological characteristics of their habitat, and the diversity of animals and plants living there. Students should then present their findings back to the class.</p> <p>Recommended websites: www.marlin.ac.uk/ www.wildlifetrusts.org/about-us/vision-and-mission/living-seas https://mhc.jncc.gov.uk/ https://gov.wales/sites/default/files/publications/2018-05/wales-marine-evidence-report-wmer-summary.pdf</p>	<p>Biodiversity in Wales PowerPoint</p> <p>Laptops Habitats worksheet</p>

Activity 2	Resources and Equipment
<p>Marine Species in Wales</p> <p>Use the Biodiversity in Wales PowerPoint to introduce some key charismatic and important species that live in Wales. Share facts provided in the notes section of the PowerPoint.</p> <p>The last species to be introduced is the Angel shark, a critically endangered species found in Wales. Students should use the electronic book to gain knowledge of angel sharks, their anatomy, their distribution and threats, before completing the quiz at the end of the book. angelsharknetwork.com/ebook/</p>	<p>Biodiversity in Wales PowerPoint</p> <p>Laptops</p>



Activity 3	Resources and Equipment
<p>Food webs</p> <p>Use the Biodiversity in Wales PowerPoint to discuss the difference between food chains and food webs.</p> <p>Play the food web game using the cards and instructions provided to highlight to students how animals in the ocean are all interconnected, and how pressure on one animal can cause pressure on several parts of the food web. Explain to students that the game is just a snapshot of a possible food web and that in the wild food webs are more complicated and species diets often vary depending on their location.</p> <p>After you have completed the food web game students should complete the food web worksheet.</p>	<p>Biodiversity in Wales PowerPoint</p> <p>Food web resource</p> <p>6 balls of string / wool</p>



#BeTheWave

Apply the knowledge gathered in the lesson into action as ethical and informed citizens. It is important to ensure students know they have the power to enact and make changes within their own lives and within the school. It is also a positive step which helps to balance some of the negative impacts explored within the lesson.

Decide on an action or actions to take forward either as individuals, as a class or a whole school. Below are some suggestions, or the class could generate their own.

School:

- Improve ocean literacy within your school by introducing ocean topics into PSHE, geography, science, history, art, design technology, English and drama.
- Does your school have a green/eco club? It is a great way to help students learn more about our incredible natural environment, including diversity within your school grounds and further afield. The group could dedicate a term to explore the underwater world in Wales.
- If your school is near the coast, why not take your students out for a day trip to the beach. This could be linked to the curriculum or as part of an experience day. If you want a helping hand the Marine Conservation Society offer free seashore safaris for school groups.



Individual:

- Inspire your friends and family by sharing with them what you've learnt about the incredible diversity of habitats and species in coastal waters around Wales.
- The sea and coastline around Wales is fantastic. The best way to learn more about it and to stay inspired is to get out there and enjoy it.
- If you live near the coast there are several citizen science projects you can get involved with to help record the diversity on the coast and increase our scientific knowledge. Record seaweed diversity on the shore to help us understand how this is changing overtime:
www.mcsuk.org/what-you-can-do/volunteering/big-seaweed-search/
 Report any sightings of jellyfish and turtles:
www.mcsuk.org/sightings/
 Record quantity and variety of shark egg cases:
www.sharktrust.org/great-eggcase-hunt

Alternative Activities	Resources and Equipment
<p>Activity 1 – Project Seagrass case study Project Seagrass is a marine conservation charity working in Wales to conserve and restore seagrass. Their website is full of useful information about the ecology and biodiversity of seagrass meadows. There is also information on the ecological importance of seagrass, threats and conservation projects aimed at restoring meadows. Use information on their website to build up a case study of a marine habitat. Students could present their case study in a variety of ways, for example as a PowerPoint presentation, a news article, scientific report, habitat infographic or a campaign for protection. www.projectseagrass.org/seagrass-ocean-rescue/</p> <p>Activity 2 – Diversity of plankton Looking at plankton samples under the microscope is a fantastic activity for exploring the diversity of living things. Students are always fascinated by the amount of life invisible to the naked eye, and the amount of life that can be seen in such a small area. If your school is close to the sea your students could analyse marine plankton, but if not, students could look at plankton from rivers, lakes, ponds or streams instead. If you can't take your class out it's a good idea to team up with your school's eco group and suggest they collect and analyse plankton as an activity. They could then provide your class with the samples.</p> <ul style="list-style-type: none"> • Some amazing facts about plankton • Instructions on how to build a plankton net and examples of freshwater plankton 	<p>Plankton net (or create our using tights, string, tape and plastic bottle)</p> <p>Microscope Petri dish Pipet Microscope slides Magnifying glass</p>



- [How to make a phone microscope and sample puddle water](#)
- [Page 52-59 of this document has an ID guide for marine plankton](#)

The incredibly diversity in size, shapes and patterns of plankton makes it a fantastic subject to focus on to create an art piece. Students could take inspiration from the artwork suggested below to create their own plankton artworks.

- https://farm5.staticflickr.com/4480/38082617326_6b76076559.jpg
- <https://www.deepimpressions.co.uk/wp-content/uploads/2019/06/plankton72.jpg>



Habitats Worksheet

What is the name of the marine habitat?

Where along the Welsh coastline can this habitat be found?

What are the physical characteristics of the habitat?

Name two species of animals that live in the habitat and describe how they are adapted to the habitat

Species:

Adaptation feature:

Species:

Adaptation feature:

Name one species of plant or algae that live in the habitat and describe an adaptation feature.

Species:

Adaptation feature:

Draw a sketch of the habitat and include annotated labels of species of plants and animals.



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33-35 Heol yr Eglwys Gadeiriol, Caerdydd, CF11 9HB | 33-35 Cathedral Rd, Cardiff, CF11 9HB
029 2025 6767 keepwalestidy.cymru info@keepwalestidy.cymru

Cadwch Gymru'n Daclus yn gwmni wedi ei gyfyngu trwy warant. Rhif Cwmni: 4011164 Rhif Elusen: 1082058 Rhif TAW: 850 3958 13
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