

# Plastic Seas

## Overview and Learning Outcomes

### Session Overview:

Your pupils will begin Plastic Seas by thinking about the importance of diet and nutrition for different animals. They will then be given Virtual Reality headsets to explore the Midnight Zone and discover what a marine animal might eat. Once completed, pupils take part in a structured discussion to identify the features and diet of a marine animal. They will then be given the recreated stomach contents of the marine animal and asked to investigate and classify their findings. This will include organic material such as fish and squid from a local supplier, as well as plastic waste from a local beach clean. Pupils will be asked to think about the origins of these materials, how they got there, and ultimately, what we can do to help protect our marine life.

	<b>Foundation Phase:</b>	<b>Key Stage 2:</b>	<b>Key Stage 3:</b>
<b>Learning Outcomes</b>	<p>Our younger learners investigate different types of macro-marine litter and the potential threats they pose to our marine wildlife. They explore the potential sources of litter and pledge to make actions that reduce plastic pollution in our Oceans.</p>    <ol style="list-style-type: none"> <li>1. Recognise that plastic pollution can harm or kill marine animals</li> <li>2. Discuss how we can impact our environment</li> <li>3. State the Pro-Ocean behaviours we can take to become responsible citizens</li> </ol>	<p>Our Junior pupils will discover different types of macro-marine litter, and microplastics. We will learn about where microplastics come from and how they are transferred between trophic levels in the food chain, accumulating in apex predators.</p>   <ol style="list-style-type: none"> <li>1. Recognise that plastic pollution can be macro- or microplastics</li> <li>2. Discuss how plastics can move up through the food chain</li> <li>3. Describe the different pathways that plastics can follow to enter the marine environment.</li> <li>4. State the Pro-Ocean behaviours we can take to become responsible citizens</li> </ol>	<p>Our Key Stage 3 pupils will not only learn about macro-marine litter but they will also discover how plastic is everywhere in modern living. From microbeads in household items to microfibers from our clothes, discover how our ocean ecosystems are affected.</p>   <ol style="list-style-type: none"> <li>1. Recognise that plastic pollution can be macro-, microplastics or microfibers</li> <li>2. Discuss bioaccumulation in a pyramid of biomass</li> <li>3. Explain the relationship between plastic pollutants (microplastics and microfibers) and marine apex-predator's health</li> <li>4. Evaluate the impact that Pro-Ocean behavioural changes on the health of our oceans</li> </ol>

### Pre-Workshop Ideas

- Learn about predator, prey relationships and food chains
- Classify a range of animals as herbivores, carnivores or omnivores
- Keep food diaries for a week to explore your own diet
- Research the diet of different animals and how this makes animals dependent on one another
- Investigate the diet of different marine animals and note how they are different to land animals

### Post-Workshop Ideas

- Make a wall display about plastic in the oceans in school
- Set up a Reduce, Reuse, Recycle scheme at home
- Get involved in a NMA or local beach clean
- Carry out a microbead investigation using a range of household products (<http://www.scienceinschool.org/content/microplastics-small-deadly>)
- Hold a discussion to think about other impacts that humans have on the ocean and its' habitats

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## Welsh Curriculum links

### National Curriculum for Wales 2022: SCIENCE AND TECHNOLOGY

Being curious and searching for answers helps further our understanding of the natural world and helps society progress.

	Progression Step 2:	Progression Step 3:	Progression Step 4:
Inquiry	I can ask questions and use my experience to suggest simple methods of inquiry.		
Models		I can use physical and conceptual models to represent the behaviour of real-world physical and digital systems.	
Evaluating Evidence		I can engage with scientific and technological issues to inform my own opinions.	I can review my own opinions based on new scientific evidence.
Science & Technology	I can recognise that what I do, and the things I use, can have an impact on my environment and on living things.  I can suggest how to use and dispose of everyday materials responsibly.	I can take responsible actions in my daily life that take into account the impact on the environment and others.  I can describe the positive and negative impacts of Science and Technology in my everyday life.  I can identify which of the Earth's resources are in short supply and describe how they can be used sustainably.	I can explain why we sometimes choose to act in ways that impact negatively on the environment.  I can describe the positive and negative impacts of Science and Technology on society

The world around us is full of living things which depend on each other for survival.

	Progression Step 2:	Progression Step 3:	Progression Step 4:
Diversity of Life	I can recognise and compare some features of living things and discuss similarities and differences.	I can use scientific criteria to describe the features of living things and use these to classify.  I can describe how living things compete for specific resources and depend on each other for survival.  I can discuss the positive and negative impact that changes in the environment and human activity have on living things and habitats.	I can explain the interdependence of organisms in an ecosystem and how this leads to survival.  I can analyse how environmental factors and human activity can contribute to changes in habitats and population size.
Health and Disease	I can identify things in the environment which may be harmful and can act to prevent harm to myself and others.	I can describe the impact of lifestyle choices on organ systems, development and health.	I can explain the effect of different lifestyle choices on organ systems and their impact on health.

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## Ocean Conservation links

### Ocean Literacy Principles

The Ocean Literacy Principles are international standards of education. The following Principles are achieved through this workshop:

1. The Earth has one big ocean with many features
2. The ocean and life in the ocean shape the features of Earth
3. The ocean is a major influence on weather and climate
4. The ocean makes Earth habitable
5. The ocean supports a great diversity of life and ecosystems
6. The ocean and humans inextricably interconnected
7. The ocean is largely unexplored

To find out more, please visit our website: <http://www.national-aquarium.co.uk/education/lessonideas/>.

### OCT Generic Learning Outcomes

The Generic Learning Outcomes are a collection of conservation guiding principles that the OCT aim to achieve in all aspects of our work. The following GLOs are achieved through this workshop:

#### 1). Knowledge & Understanding

- A) Broaden knowledge of the marine environment and associated species.
- B) Deeper understanding of the relationship between myself and the seas.
- C) Raise awareness of the role that science plays in understanding our seas.

#### 2). Skills

- A) Develop observation skills.
- B) Formulate scientific questions based on observations.
- C) Develop communication (speaking and listening) and social (learning together, working together, meeting people) skills.

#### 3) Attitudes & Values

- A) Appreciate the value of the marine environment and develop respect and empathy for its inhabitants.
- B) Promote a positive view of science and scientists.
- C) Recognise that learning can be a positive process.

#### 4) Enjoyment, Inspiration, Creativity

- A) Have fun with the National Marine Aquarium.
- B) Be surprised by the variety of marine life.
- C) Be inspired by the experience.

#### 5) Activity Behaviour and Progression

- A) Motivation to go out and explore the marine environment further.
- B) Take steps to further understanding of the relationship between myself, my actions and the sea.
- C) Take action to reduce my negative impacts & increase my positive impacts on the marine environment.