



### Lesson: Bioaccumulation - the problem of plastic waste and responsible consumption.



#### ACTIVITY OUTLINE



Using the powerpoint slides explore definitions of food webs and interdependence through feeding relationship within an ecosystem.

Students can demonstrate their understanding of food chains, the role of producers and decomposers within them using the worksheet “Food chains found in the desert food web”.

Explore the meaning of the arrows in a food chain as indicating the flow of energy and matter between organisms. There is an opportunity to look at the way matter is recycled within the food web, this natural system producing no pollution ( unused waste).

There is the opportunity to expand this activity with teaching on the key terms of interdependence, population and community. Non-food matter (toxins, plastics) can also pass along a food chain when they have been ingested by organisms at a lower trophic level.

Where this material is not excreted or broken down it can be subject to Bioaccumulation. Although not yet well understood, there is evidence that microplastics are accumulating in marine food webs.

Students give a written explanation of how persistent materials such as microplastics increase in concentration in top predators (including humans). Some students may be helped to achieve this outcome by the support of a writing frame or the diagrammatic representation given in the bioaccumulation summary sheet.

Expanding the lesson to consider the broader environmental and social costs of unsustainable plastic pollution. Students can find out about the effect of plastic on seabirds through watching the trailer for the albatross film (please watch this before showing it to students as it is a very moving clip).

Following the film which shows the impact of plastic waste, the lesson explores where plastic comes from, the impact on low-income countries of dealing with waste from developed countries.

The plastic pollution and the economy activity and worksheet look at a life time scenario for plastic. The PDF shows a higher resolution image which could be used alongside the plastic pollution and the economy worksheet. - Personal action is encouraged in the plenary/ home learning activity.



#### CURRICULUM OUTCOMES



Relationships in an ecosystem, the interdependence of organisms in an ecosystem, including food webs.

How organisms affect, and are affected by, their environment, including the accumulation of toxic materials.

Describe how a species' population changes as its predator or prey population changes.

Explain effects of environmental changes and toxic materials on a species' population.

Combine food chains to form a food web.

Develop an argument about how toxic substances can accumulate in human food.



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#### GLOBAL LEARNING OUTCOMES



#### RESPONSIBLE CONSUMPTION AND PRODUCTION



Students can explain the relationship between production processes and the production of toxic waste

Students can provide examples of how mass consumption processes can lead to the degradation of natural resources

Students can describe how consumer's decisions can have an impact on global issues

Students understand how businesses can design products responsibly and work towards a circular economy where products can be repaired and reused

SMSC / British Values - Understanding of the consequences of their behaviour and actions

## Action



Making your own cleaning products is a great way to reduce plastic pollution and avoid harmful chemicals entering our oceans. Research the different ingredients you could use to make cleaning products that are less harmful to our planet!

You can also help by joining thousands of people asking the government to cut the plastics pouring into our oceans.

Go to Friends of the Earth's website for more tips:

<https://friendsoftheearth.uk/natural-resources/homemade-cleaning-products-5-fantastic-recipes>



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