

Threats to the Ocean: Acidification

What is it?

Ocean acidification means that the chemical composition of the water in the ocean is changing over time. The PH of the water is decreasing and the water is becoming more acidic.

How is it caused?

Ocean acidification is caused mainly by the uptake of carbon dioxide (CO₂) from the atmosphere, the ocean absorbs about 30% of the CO₂ in the atmosphere, this happens wherever air meets the water. CO₂ emissions above water are increasing from human activity, such as burning fossil fuels, resulting in an increased amount of CO₂ getting into the ocean. Once in the ocean the CO₂ changes the chemical make-up of the water (H₂O). This results in the water becoming more acidic, this is carbonic acid.

Source: <http://oceans.digitalexplorer.com/resources/?controller=search>

What is the effect on the ocean?

The increased acidity of the seas and ocean can cause major problems for marine organisms and ecosystems. Many sea creatures are affected by acidification, for example it can prevent the building of shells or the formation of corals. It can even alter the feeding patterns of some fish. It can have a dramatic effect on the whole marine eco-system.2) **Scientific Research Paper** – culminates a scientific experiment or study. It discusses the background and topic of the study, describes the experiment so that other scientists would be able to reproduce it, and discusses the experiment/study findings. Typical scientific research papers involve these sections:

Introduction

Threats to the Ocean: Dead Zones

What is it?

A Dead Zone is an area of the sea that has very little marine life. They can occur naturally, but the real issue is when they occur as a result of human activity. Dead Zones are areas with low-oxygen, sometimes called hypoxic, it is difficult for plants or animals to survive in these conditions.

How is it caused?

There are many factors that can cause a Dead Zone, but nutrient pollution has been identified as one of the main human activities causing the problem. In order to increase their crop production, farmers often use fertilizer. Excess fertilizer can run off the land and into the ocean. The ocean can end up with excess nutrients leading to a process called eutrophication. This can encourage the growth of algae that can block sunlight from reaching the water. When the algae in the ocean dies it decomposes. As part of this process the oxygen in the water is used up. Without oxygen in the water, the animals and plant will not survive.

Source:

<http://www.bbc.co.uk/schools/gcsebitesize/science/edexcel>

What is the effect on the ocean?

In these Dead Zones it is usually hard for any marine life to survive. This can have a wide effect as it can disrupt food chains leaving some marine mammals without food. They can also result in the introduction of harmful chemicals into the food chain.

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Threats to the Ocean: Overfishing

What is it?

Overfishing occurs when we remove fish too quickly or in too large quantities from oceans (or rivers). When we are catching more fish than can naturally replenish (keep fish numbers at the same levels), overfishing happens. It is an unsustainable use of the ocean for fishing.

How is it caused?

A number of factors contribute to the overfishing of the ocean, including the development of fishing technology and the growing appetite for certain types of fish.

Growing demand: As populations increase, the need for food increases. People are also increasing their demand for varieties and amount of fish. Fisheries are meeting this growing demand and are able to increase their profits from using methods that result in a bigger and faster catch.

Unsustainable practices: A number of widely used practices have negative effects on marine life: blast fishing (the practice of using dynamite to kill schools of fish to maximise a catch), bottom trawling (using a heavy net to trawl along the ocean floor, damaging habitats) and bycatch (modern fishing nets can bring up unwanted fish or mammals with the catch, which then die and are discarded overboard).

Capacity: There are too many fishing fleets for the amount of fish available. It is estimated that there are four times the amount of fishing boats needed for our planet.

Source: <http://thecaudallure.blogspot.co.uk/2011/07/genetic-diversity-losing-out-to.html>

What is the effect on the ocean?

Extinction: Some species will become extinct if we continue to catch them in such high quantities, e.g. Bluefin tuna.

Destruction of ecosystems: Some of the less targeted fishing methods, such as blast fishing, can result in the destruction of whole areas of marine habitats. Additionally, reducing the numbers of specific species can change food chains, which can have destructive results across the ecosystem.

Appendix 2