

Informative Speech Outline

Introduction:

I Hook:

We have all watched “Finding Nemo” and remember how Nemo lives with his father in a coral reef, but why is he living there? What even is a coral reef?

II Preview Main Points (Tell audience what you will discuss in the body of the speech.

After extensive research, I have learned the answer to these questions and more. I am here to tell you about what coral reefs are, what it means when coral reefs are bleached, and why these beautiful undersea wonders are even important.

Body:

III What are coral reefs?

- Individual polyps come together to form reefs
- Exoskeletons are made of calcium carbonate
- Contain algae called zooxanthellae underneath
- Zooxanthellae produce the nutrients the coral needs

Transition: These zooxanthellae are vital to a coral’s health, but sometimes they are expelled from the coral, leading to something called coral bleaching

IV Coral bleaching

- Rising temperature of waters cause coral to expel zooxanthellae
- This drains them of their color
- Can lead to the coral’s death

Transition: With global warming happening, our waters are getting much warmer and more acidic, leading to more coral bleaching. Why should we stop this?

- V Why coral reefs are important
- 25% of the ocean's fish rely on coral reefs
 - Provide shelter for offspring

Conclusion:

VI Summarize Main points

Throughout this speech, we have covered what coral reefs are, what it means when they are bleached, and why they are important

VII) Catchy, closing statement that ties it all up.

So, next time you watch "Finding Nemo," remember just how instrumental these reefs are to the ocean's biodiversity. Especially for raising curious offspring.

At least two credible sources listed here (just copy and paste the URL of each source)

<https://www.noaa.gov/education/resource-collections/marine-life/coral-reef-ecosystems>

Shallow water, reef-building corals have a symbiotic relationship with photosynthetic algae called zooxanthellae, which live in their tissues. The coral provides a protected environment and the compounds zooxanthellae need for photosynthesis. In return, the algae produce carbohydrates that the coral uses for food, as well as oxygen. The algae also help the coral remove waste. Since both partners benefit from association, this type of symbiosis is called mutualism.

Other threats are caused by people, including pollution, sedimentation, unsustainable fishing practices, and climate change, which is raising ocean temperatures and causing ocean acidification. Many of these threats can stress corals, leading to coral bleaching and possible death

<https://www.nhm.ac.uk/discover/quick-questions/what-is-a-coral-reef.html>

Coral reefs are made up of colonies of hundreds to thousands of tiny individual corals, called polyps. These marine invertebrate animals have hard exoskeletons made of calcium carbonate, and are sessile, meaning permanently fixed in one place. Polyps grow slowly, forming different shapes and sizes depending on their species.

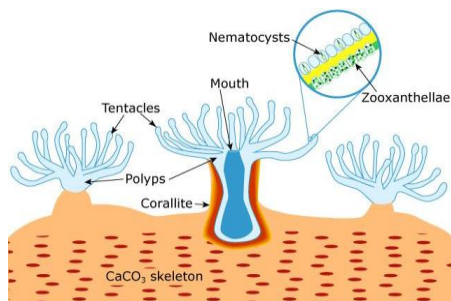
Assisted by other animals with calcium carbonate skeletons and also coralline algae, corals form complex, three-dimensional reefs.

https://oceanservice.noaa.gov/education/tutorial_corals/coral02_zooxanthellae.html

In addition to providing corals with essential nutrients, zooxanthellae are responsible for the unique and beautiful colors of many stony corals. Sometimes when corals become physically stressed, the polyps expel their algal cells and the colony takes on a stark white appearance. This is commonly described as “coral bleaching”. If the polyps go for too long without zooxanthellae, coral bleaching can result in the coral's death.

<https://www.usgs.gov/media/images/simplified-coral-anatomy>

The hard skeleton of coral is formed by the secretion of calcium carbonate by the polyp. The cup-like skeleton deposited by an individual polyp is called a corallite. Polyps gather food particles with the nematocysts (stinging, venomous cells) in their tentacles, and feed from sugars produced by photosynthesizing zooxanthellae, a type of algae. The coral tissue protects these algae from herbivorous grazers, and the algae in turn use many of the polyps' waste products such as carbon dioxide, nitrogen, and phosphorus



<https://education.nationalgeographic.org/resource/coral-reefs>

This symbiotic relationship is strongly dependent on the temperature of the surrounding water. As the water warms, zooxanthellae are expelled from a coral's tissue, causing it to lose its color and a major source of food. This process is known as “coral bleaching.”

Speech

We have all watched “Finding Nemo” and remember how Nemo lives with his father in a coral reef, but why is he living there? What even is a coral reef? After extensive research, I have learned the answer to these questions and more. I am here to tell you about what coral reefs are, what it means when coral reefs are bleached, and why these undersea wonders are even important. If you listen closely, you too can become a true underwater expert.

What are coral reefs? You may know them as the pretty rock-like formations seen in the clear blue waters of the Caribbean. You may have even snorkeled above them and seen all the beautiful colored fish swimming in and out of the many holes. You might think they are some dead plant because they never move, but let me tell you, these corals are some of the most important animals in the ocean. Coral reefs actually start out as individual corals, called polyps. As different polyps grow and reproduce, they start twisting and curving and intermingling with the polyps around them. Eventually, you are left with a coral reef. Coral reefs are normally only seen in warm waters, which is why you probably have snorkeled around one before, and need this temperature in order to survive. They are made up of calcium carbonate, also known as chalk, protecting the coral from animals getting inside. The exoskeleton also protects another essential part of the coral: algae that live inside it called zooxanthellae. Now, I know what you are wondering, what the heck are zooxanthellae, well, these algae are the reason coral are alive.

Coral has no way of making its own food, so it needs something else to make the glucose for it and then transmit it into the coral. This is exactly what zooxanthellae do. In return, the coral provides shelter for these algae so they can survive. According to the National Oceanic and Atmospheric Administration, “The coral provides a protected environment and the compounds zooxanthellae need for photosynthesis. In return, the algae produce carbohydrates that the coral uses for food, as well as oxygen... Since both partners benefit from association, this type of symbiosis is called mutualism.” Zooxanthellae also serve another very important cause, that is, important to us who look at it. Zooxanthellae are the reason why corals are so vibrantly colored. This is explained by Keene State College Students in ‘A Student’s Guide to Tropical Marine Biology’ who state, “These zooxanthellae produce pigment, and because they reside in the clear tissue of the polyp, the pigments are visible, and the corals get their beautiful colors.” These pigments are produced during photosynthesis, but as ‘A Student’s Guide to Tropical Marine Biology’ explains, “The brighter the color of the coral, the more photosynthesis and oxygen production.” So, just by looking at a coral reef, we can tell which pieces are undergoing more photosynthesis versus ones that are not. This is why we associate healthy corals with being such an extreme color because those are the ones that are getting enough nutrients from their zooxanthellae. These zooxanthellae are crucial to a coral’s health, but sometimes they are expelled from the coral, leading to something called coral bleaching.

You may have a vague understanding of what coral bleaching is if you have seen coral looking like this: stark white, devoid of any color, and almost eerie looking. No fish or animals are seen surrounding these reefs, furthering their ominous presence. For a technical definition,

we can look at National Geographic in their article titled 'Coral Reefs.' They explain, "This symbiotic relationship [between coral and the algae] is strongly dependent on the temperature of the surrounding water. As the water warms, zooxanthellae are expelled from a coral's tissue, causing it to lose its color and a major source of food. This process is known as 'coral bleaching.'" We just talked about how important the zooxanthellae are to coral reefs because of the food they supply. So, it makes sense that when these are gone from the coral, they start becoming weaker and risk dying. Also, it explains their white appearance because there is no pigment being produced to be seen through their clear skin. With global warming happening, our waters are getting much warmer and more acidic, leading to more coral bleaching. What does this mean for the fish who live in them?

Most people don't understand just how important coral reefs are to our oceans, but they are the reason for so many different creatures being able to survive. The National Oceanic and Atmospheric Administration elaborates on this, saying, "Reefs are often called the 'rainforests of the sea.' About 25% of the ocean's fish depend on healthy coral reefs." They are like an apartment complex, but for fish. With the many nooks and crannies available, the undersea creatures don't need to worry about finding a place to lay their eggs. This gives baby fish a safe place to grow up, leading to the rise of their population and that of the others who feed on them. These reefs are a vital part of the food chain and circle of life in the oceans, to get rid of them would be to practically throw away an entire ecosystem. There is no denying the fact that these reefs are some of the most important providers in the whole animal kingdom.

Throughout this speech, we have covered what coral reefs are, what it means when they are bleached, and why they are important. So, next time you watch "Finding Nemo," remember just how instrumental these reefs are to the ocean's biodiversity, especially for raising curious offspring.