

OCEAN PRINCIPLE #6

**THE OCEAN AND HUMANS ARE
INEXTRICABLY INTERCONNECTED**





- humans harm several habitats in the ocean through their drastic influences changing natural cycles
- one of the most impacted cycles is eutrophication
- we affect this cycle by bringing excess amounts of nutrients (nitrogen and phosphorus) into the water through our everyday lifestyle activities
- some of these include agricultural fertilizers, food waste, industrial waste (paints, paper products), etc...

GAME TIME

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the eutrophication game





- split the class in quarters
- have a distinct space be the lake students can enter representing something
- one quarter of the class can be nutrients that goes into the lake as part of the natural cycle
- the second quarter will be algae
- the third quarter will be fish and sea life at the bottom of the lake
- the last quarter will be excess nutrients going into the lake due to human disruptions



- the natural cycle nutrients can go into the lake first, followed by the fish and sea life



- next the algae can go into the lake
- to become algae, each of the nutrients must attempt to attach themselves to the algae by first catching and tagging them, and then linking arms
- each of the pairs represents algae, and it is now a normal amount



- next the excess nutrients can go into the lake
- the excess nutrients can then turn into algae
- the algae now by far outnumber the fish and takeover most of the lake
- the algae can now tag the fish
- if a fish is caught they must crouch down
- **END OF GAME**

Anyone notice how the algae were blocking all the fish and sea life from getting to or seeing the top of the lake?

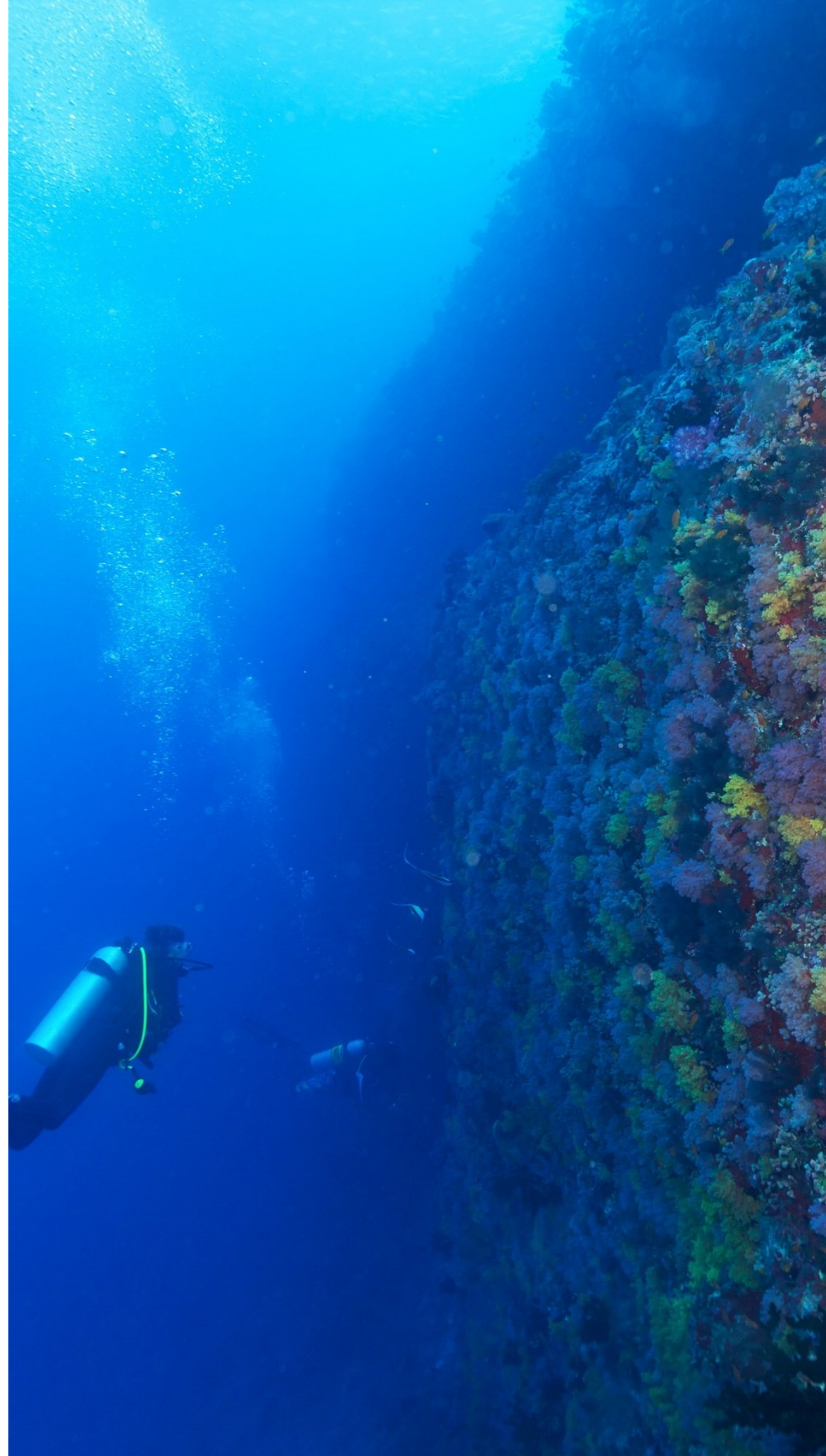




SO HOW DOES EUTROPHICATION WORK?

- basically the excess nutrients turns into an abundance of algae
- the algae stays at the top and blocks the sunlight from getting through to the bottom, consequently killing all the sea life in the bottom
- this starts at the bottom of the food chain with the plants, as they cannot carry out photosynthesis, and ends with the fish dying out due to lack of food
- this creates a huge problem, as it can destroy entire lake ecosystems and habitats

**WHAT CAN
WE DO?**





- many areas release untreated human waste directly into rivers
- we can reduce the nutrient load due to sewage disposal by stopping our expulsion of it directly into waterways, such as being careful of detergents we use that contain much phosphate
- also being aware of how much fertilizer we use in our gardens, as well as not supporting companies that are known to abuse amounts of fertilizer they use in the agricultural business

**WE ARE
CONNECTED**





- the eutrophication cycle is just one of many, many ways that we as humans are connected to and affect the ocean
- without the ocean, life on Earth would literally not exist
- we must learn to appreciate it and care for it in the ways it has cared and provided for us
- to learn more about ocean literacy, you can visit vanaqua.org



THANK YOU