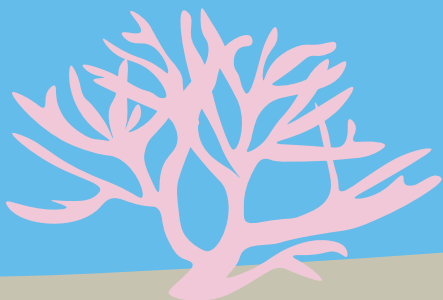


SAVING THE REEF

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ABSTRACT

The goal was to create a animation that focuses on the topic of how to save coral reefs. ocean acidification is one of the many things that is happening because of climate change. The animation highlights what's happening to the ocean and the creatures in it. The reason why I decided to pursue this topic is because I don't feel it's talked about enough in the media and most people don't even know what Coral bleaching is or why it was happening. The goal of the animation is to inform viewers about new technology that can save the reef as well as what the actual problem is. Spreading awareness of issues normally makes them more prevalent to be resolved on a social level which is normally reflected in an economic level with people who have the means to donate and invest in research.



RESEARCH

Most of the research was about answering questions that would be relevant factual information to put in the animation. I used many documentaries when conducting my research as well as articles, and studies. I came to the conclusion that I need to simplify my information no way that made it easy to understand for the viewer the following, why are corals dying?, at what rate are we losing coral reefs?, What research has been done to save the reefs? I needed to condense the information to get the key points across. Ocean Acidification | BBC Science Documentary | with English Subtitles gave me a basic understanding of coral bleaching. This source was used to compile factual information about what why coral reefs are dying. I watched a 2nd Ocean Acidification | BBC Science Documentary and this one when further in depth



then the first BBC documentary and I also use this for factual information.

Rob Dunbar: The threat of ocean acidification TED talk was helpful for gathering research about why coral reefs are important to many sea life and why they need to be saved

“Breakthrough for Coral Reef Restoration” is a documentary gave some insight on new ways of restoring Reefs with coral farming. Scientists Are Breeding “Super Coral That Can Survive Climate Change | VICE on HBO “ documentary was focusing on the different ways corals are being breed. I use this as other factual information. The Coral Gardeners: replanting corals in Thailand is a documentary was focusing on about replanting corals and other habitat as fake coral Reefs for fish to use. This is an article by National Geographic “can



new science save dying coral reefs?”

that focuses about replanting reefs used it for research purposes and possible medicinal research.

this article mainly focuses on how to preserve Australia’s Great Barrier Reef. “3 crazy ways to save corals” article talked about other more strange ways of saving the ocean like trying to lower the acidity levels.



DEVELOPMENT

After collecting research I gathered several key facts and new information about how scientists are trying to save the reef. I organize this information into three sections but I thought would be key for the animation. those three sections are the following: corals are dying, the cause of their dying, how coral reefs are being rebuilt by humans. After coming together with that conclusion I made script draft. This script draft was followed by several storyboards. Later on I realized the script to match different scenes with the storyboards. Next I created assets in illustrator drawing the images from the storyboard. All the corals and fish in my assets are based off of real species of coral and fish.

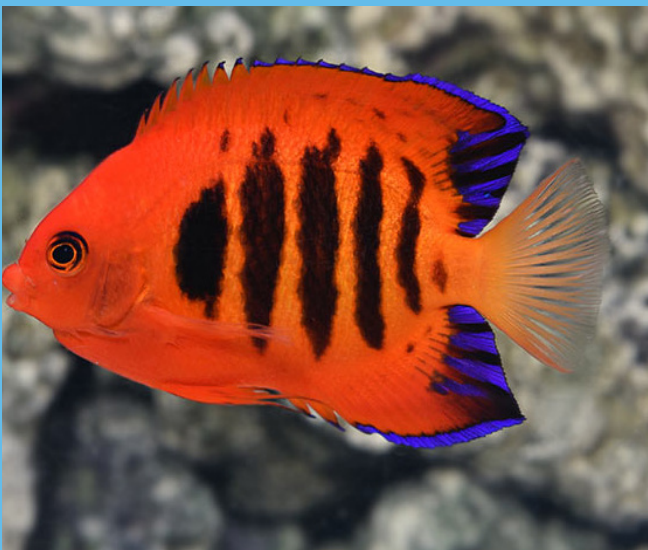


Keyframed a scene that took 3 hours and its 24 secs for the test of seeing how I was going to animation would fit together with The test audio. After making this test I feel I can put the scenes together in a timely fashion, But it will still take longer to make the keyframing smoother. After I finally put the two large compositions in After Effects together I started tweaking little hiccups along the way. I also played around with different types of background audio tracks that were loyalty free from freesound.org and YouTube's audio library. I made several adjustments with every meeting that I met with my professors and classmates to get the bugs worked out of the animation and audio.



VISUAL RESEARCH

The visual research mainly conducted was looking for a reference photos of corals and fish species. Watched animations that have Motion Graphics with fish in them. I knew when I started this project there were specific species of fish that I wanted to show viewers who would recognize them from the aquarium Hobby. I chose the flame angelfish because I have taken pictures of them in the hub Aquarium before and they're very striking fish that I knew would stand out from a blue background since they're Orange.



The yellow tang and the blue tang I chose because I knew that people would recognize them from the Pixar films. I chose a porcupine puffer fish puffer fish because most people recognize a puffer fish since it has spikes. I put different types of corals in the animation that I knew was given diapers from variety of the species. Some of the corals I chose or hard stony corals while others are more soft corals. Eye color palette for the animation I wanted to keep colorful and happy and bright so the animation doesn't seem too depressing. All of the corals and fish in my animation are to look like specific species. Visiting "The Coral Farm of Jason Fox Signature Corals" is just one of the many videos from Reef builders that I watch in my free time because



the corals look colorful. I figured this YouTube channel and their pictures on their blog would be great reference photos for different types of coral as well as color patterns to get me inspired with my color choice decisions in my animation. When animating the fish I wanted to make sure that they swam like they would as that particular species the pufferfish hovers more than the other fish because they swim differently than the other fish in the nation because that's how they swim in nature. I tried to make the pufferfish hover a little bit more like a helicopter. The reefbuilders website website posts lots of good information about different types of coral in the hobby as well as many really interesting photos of brightly colored corals to use for reference photos.





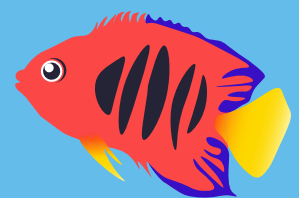
STORYBOARD

First I created a script with a storyboard. The storyboard had a scene that will go along with the script was made to be a narration of what is depicted on screen.

Ocean acidification will come down into the ocean. Fish swimming in the reef scene. Corals are some of the oldest living animals still on the planet. Coral reefs are colorful vibrant ecosystems blossoming with biodiversity. From the strange and usual to beautiful and rare many sea life creatures depend on these ecosystems. Coral Reefs are being wiped out by a plague know as Coral bleaching. The scene where the corals turn white, and then die. Some corals can recover from Coral bleaching but most have not been able to survive. A world without corals, is a world without biodiverse life under the ocean. Scene where fish disappeared. numbers kinetic typography scene. 50% of the world's corals have already been lost. Scene of the world spinning If there is no action taken to saving these ecosystems, extinction of coral reefs can be early as 2050. Scene of Australia's Reef disappearing. In Australia 30% of the Great Barrier Reef the biggest reef in the world has been lost. the cause of the coral bleaching is temperature rise and ocean acidification. kinetic typography what is ocean acidification question. What is a ocean acidification? Scene of the carbon dioxide cycle of ocean acidification. From Factory to Sky to water moving diagram .

when CO2 emissions given off by a pollution are dissolved into the water they turn into carbonic acid causing the oceans to be more acidic. Scene of Coral releasing it's symbiotic algae, next to a deformed lightning whelk. With the temperature rise and acidic environment Corals release their symbiotic algae know as bleaching. Mollusks aren't able to build their shells and the acidic environment causing deformities in these animals. scene kinetic typography how can coral reefs be saved question. How can the reefs be saved? Coral reefs grow unbelievably slow but scientists have found a method to make corals grow 25 times faster than in nature. scene of Coral being cut and growing faster. This process is called micro fragmentation. corals are cut and two single polyps which causes them to grow much faster than they normally would. These small Corals are called Frags. Reef scene slowly adding small Coral Frags. Environmentalists have been replanting the coral Reefs with Coral two of went through this process. Scene Coral eggs being bred with sperm. Scientists have been speeding up evolution, by breeding the hardest corals with new strains of symbiotic algae. By replanting the oceans with these new coral varieties the reefs have a fighting chance to survive. Kinetic typography scene showing the wording spreading support survive, saving species.

When I was thinking about the opening I really was picturing the sun up in the sky because that reminds me of all of the potential carbon emissions in the atmosphere and when people think of climate change they also think of the world's getting slowly



warmer as our oceans are also getting slowly warmer so I thought the sun would compliment that idea. The sun transforms into ocean acidification which parallels the change of a city in the water because it is warmer with more CO2 emissions available to be absorbed. Another key scene that I thought was important was to show the coral from the healthy stage to bleach staged to a dead stage. I wanted the viewer to understand that just because a coral is bleached does not mean it is already dead. In this particular scene I wanted to make sure that there were lots of fish swimming in and out of the scene. when the coral die off I also made it that the fish die-off to show that they depend on the reef for survival. The next scene I was thinking about was how to show that reefs globally are suffering. My thought process was why don't I just show a globe and the



pinpoint areas that are being bleached and then amplify that until all the points shelling eventually just fill up the whole world seeing with red to signify the extinction of coral reefs. I also thought making a globe would make a fun transition to talking about the Great Barrier Reef because it could spend to Australia and then people can visually see where the Great Barrier Reef is located. It was important for me to show a diagram of how carbon emissions dissolved into the ocean make the ocean more acidic by showing those chemical reactions with CO₂ and water. And this scene I was thinking more about showing it very clear diagram so it was easy for the viewer to see visually without a lot of fish and other distracting animation elements. When I was writing my script about how scientists are breeding corals





with hardy symbiotic algae. perfect place that I could show a petri dish with coral sperm with coral eggs to symbolize the lab-grown new breeds of corals. The idea of showing corals growing after micro-fragmentation came naturally because I knew that I had to take a coral and have it cut into single polyps and then have them grow quickly in the animation. The Next Step forward was to show that they're being put back into the ocean after being grown in in captivity. The ending needed to still reinforce the idea of the action humans take next to save the reef need to be soon and to support by being funned .

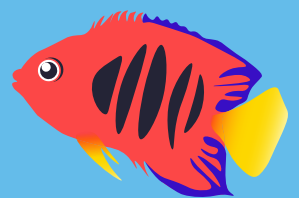


ASSET CREATION

Everything except for the text in my animation are all assets that I have created in illustrator files. When creating the assets I had was thinking about how to make them to work with the animation of my storyboard that would easily work when I imported them into after effects. When creating the Globe I made an asset of a flat map of the world and when use that to mimic the motion of rotation when it was put behind a layer showing negative space revealing the map. when creating the assets for the fish and the mollusk I got reference photos and use those to break down the fish into flat colors that were the patterns on their bodies. All the eyes on my little creatures mimic each other except for the puffer fish which I knew would have to look much differ-



ent because their eyes are very unique characteristic to that species. When creating the assets for the coral reef I knew I wanted to put in different types of corals. Shelf corals are massive Corals in the ocean but I knew I had to put in my animation because corals like that have been living for such a long time. I also wanted to make sure that I put lots of different soft corals as well as Stony corals. When looking for a reference photos of corals I mainly looked at the reef builders website because I knew that that Creator always post beautiful pictures of corals that are at Reef conventions showing the most vibrant bright Coral species. Different types of brain coral and smaller colorful polyps are shown on the blog as well as many other types.

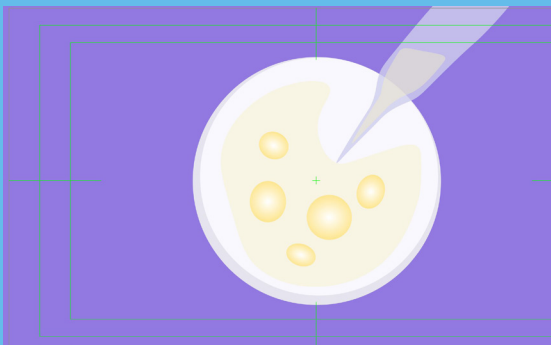


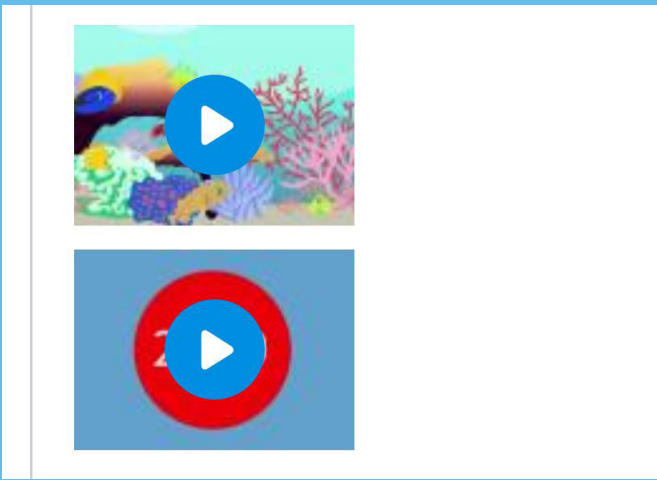
ANIMATION

First I made one test which had a scene to see how I was going to Animation would fit together with the test audio: originally recorded by myself just so I could get an idea of pacing.



I made several test scenes which were later refined.





I recorded new audio. I made several different nested compositions. When thinking about how to animate the fish since they're the most active animation in the work I knew that I would have to animate them as their own compositions so they would Loop their movements which I keyframed using the puppet tool in After Effects I ended up splitting the workload into two different larger nested compositions so I can get an idea of how to put together the two was a hole when resolving the issues with one and comparing it to the other.



OUTCOME

The final product of the animation informs viewers of basic understanding of what is currently happening to the corals in the ocean. The animation hits three key points : which are, inform the viewer about massive coral bleaching, give them a basic understanding of why this is happening to the corals, and in the last seen how new technologies are being developed to save coral reefs. The topic is serious but overall feel of the animation is still cute which keeps the viewer more interested. The animation starts off pretty depressing but I feel like the ending is somewhat uplifting with the new information and encouraging people to donate to the organizations that help recover coral reefs.

