ABM Project 4: 3D Ocean Ecosystem

**Why this example?**

* It was shark week recently and who doesn’t enjoy shark week?
* This concept seemed easy enough to implement in 3D and still take advantage of the new features.

**What is it?**

* This project depicts an ocean ecosystem that contains Red Snapper and Tiger Sharks. The Tiger Sharks will eat the Red Snapper if they get too close to each other. It is a scaled back version of project 1 essentially where we have an ecosystem where one species eats the other but in 3D.

**How does it work?**

* Not too different from prior projects.
* We have breeds to handle the different fish species. (Apparently sharks are fish, I thought they were their own thing but according to the stuff on shark week, they are fish)
* There is also a new command or two to handle moving up and down in 3D space.

**How to use it?**

* Beyond the straightforward buttons, there are buttons to toggle on pen trail mode and turn it off.
* There is also an option to clear the pen trails completely.
* You can also follow an agent.

**Things to Notice**

* Honestly not a whole lot to notice apart from the monitors of the current number of fish and sharks so that you can tell when a shark has eaten a fish.

**Things to Try**

* Can see how long the fish survive at a severe disadvantage or do the reverse and start off with a huge ratio of fish to sharks and see how long it takes to dwindle the fish population.

**Extending the Model**

* There are many things I would like to add to this model with enough time and know-how. One would be to get the water appearance working correctly as well as other evolutionary and biological features like energy and birthing. Just didn’t have enough time.

**NetLogo Features**

* Breeds
* The tilt-up command was used to help the turtles move up and down in 3D space.

**Credits and References**

* Wilensky, U. (1999). NetLogo. http://ccl.northwestern.edu/netlogo/. Center for Connected Learning and Computer-Based Modeling, Northwestern University, Evanston, IL