

Lab: Bycatch MAKEUP ASSIGNMENT

Remember: As per GHHS Policy, you have two days for each day absent to makeup assignments.
(modified from NSTA and Oceana)

Background: Research estimates that as much as 40% of the seafood caught worldwide is discarded (up to two billion pounds annually in the United States), while countless sharks, whales, dolphins, birds, sea turtles, and other animals are unintentionally killed or injured by fishing gear (Kledji, 2014). This capture of non-targeted species—known as bycatch—is a worldwide challenge to maintaining sustainable fisheries and protecting endangered species. Target species are species that the fisher seeks to catch. Non-target species are unwanted species found in the same waters. Bycatch are non-target species caught in the fishing gear



What We Did in Class:

Students engineered a new fishing net to reduce bycatch in our model. The species present in this ecosystem include shrimp (*garbanzo beans*), squid (*red beans*), herring (*white beans*), tuna (*marbles*) and dolphins (*ping-pong balls*). Using the materials provided, students designed a net that will maximize capture of the target species (tuna) and minimize all bycatch. It was fun! We missed you. As a makeup, please answer the questions below.

Analysis Questions:

1. In this activity, would you consider some non-target species more important to protect than others? Why or why not?
2. Describe the limitations that real engineers would consider in their development of a net that reduced bycatch.
3. Describe roadblocks to the implementation of a new standard in fishing nets that would reduce bycatch.
4. Name three species that are susceptible to bycatch.
5. What is the Magnuson-Stevens Fishery Conservation and Management Act and how does it relate to this activity?

6. What is the difference between Maximum Sustainable Yield and Optimal Yield?

7. How does the harvesting of fish at Maximum Sustainable Yield and Optimal Yield influence long-term populations of those species?

Watch the video <https://www.youtube.com/watch?v=NklxOhr2fal> and answer the following questions:

8. What are the two examples of commercial fishing discussed in the video?

9. Name three bycatch species discussed in the video.

10. Why is simply throwing bycatch back not a reasonable solution?

11. How is predator-prey balance impacted by bycatch?

12. What did you learn from this makeup lab?