Marine Mammal Conservation Workshop
Marine Sanctuary Activity

Focus: Studentslearntheeffectsofoverfishing on fish populations and the role that marine reservesandsanctuariescanplay in maintaining sustainable fisheries.

Key Words:
BYCATCH -istheincidentalorunintentional capture of non-target marine life, such as dolphins,whales,seaturtles,seabirds, sharks, and undersized or un-quoted fish, during commercialandrecreationalfishingoperations. For NOAA Fisheries, bycatch refers to "discardedcatchofmarinespeciesand unobserved mortality due to a direct encounter with fishingvesselsandgear."Theseunintentionally caught animals often suffer injuries or die.
OVERFISHING-practiceofcatchingfish and other marine life faster than natural reproduction can replace them.
TRAGEDYOFTHECOMMONS-aneconomic and environmental concept where individualswithaccesstoashared,limited resource (the "commons") act in their own short-termself-interestandendupoverusing, degrading, or destroying it for everyone.
MARINERESERVE-astricttypeofmarine protected area that completely prohibits fishing, hunting,drilling,orextractingany natural or cultural resources. These are implementedtoeitherprotectvulnerable breeding grounds, allow ecosystems to recover fromoverfishingorhabitatdamage, and/or serve as outdoor laboratories for scientiststostudy naturalmarineprocesses and measure the impact of human activity.
SHIFTINGBASELINE-agradualchange of what people say is "normal" or healthy in the environment.

Materials:

-Plastic swimming pool (the "ocean")
-Candy fish of various sizes and shapes, including gummy dolphins (vaquita porpoises). You can also include variety of toys/other candies, which simulates organisms in the ocean

-Plastic cups (“boats”)
-Toothpicks (“fishing poles”)
-Small nets
-Plastic bowl - this will act as your “protected area”

Instructions:

Simulation of fishing with candy sea creatures. In a kid’s plastic pool there will be many different candy sea creatures that the kids “fish” for.

1. Give each child a “boat” (cup)
2. Explain the target species we are fishing for.
3. Pass out toothpicks as fishing poles, and give the children 30 seconds to catch as many fish as they can. Ask, was it easy to catch fish with the toothpicks? How many did you catch?
4. Put all the fish back in the pool.
5. Next give each child a net and have them go fishing again with the nets (works best if they put the net down on the bottom of the pool, scoop up a handful of fish and then pick up the net and dump the fish into their cup). Point out how many more fish they caught but that it included lots of bycatch and vaquitas (gummy dolphins).
6. Do not put the fish back, and give each child another boat and have them go fishing with nets a second time. Did you catch more or less fish this time? Were they bigger or smaller than the last time?
7. Put all the fish back in the pool.
8. Finally, we impose a “marine reserve” by covering some of the fish with a bowl. The children are able to fish with their nets again, however after they fish they have to throw back fish for all the fish that were saved by the reserve to represent successful reproduction that maintains the fishery. Go through two more rounds of fishing.
9. Ask, “How many fish did you catch this time?” How big were they? How many fish are left? Are the fish that are left bigger or smaller?
10. Finally, tie it all together, “If you were a fisherman, would you want to work in an area with a marine reserve or not?” Explain that even though there are less fish to catch in the short term, that marine reserves ensure that there is a constant

supply of fish and that they can successfully reproduce. This is a more sustainable method of fishing.