

# Scales and Tails

## Activity Description

This activity teaches students about commercial fishing and the impacts it has on the fish population in the local fishing grounds. It also serves as an introduction into the different types of fish found around Cape Cod.

## Take Home Message

The Fishing industry has a direct impact on biodiversity and therefore directly affects the local economy.

## Massachusetts Frameworks

Life Science

Adaption of Living Things #10

Classification of Organisms #1

## Supplies and Materials

- Map
- Whiteboard and marker
- Bag of fish (make sure you always have several tuna. If they walk off, get more)
- Magnetic rods (have 6 on hand plus 2 extras in case any break or get tangled)
- Enough cups for everyone
- Tupperware container (to cover fish until activity starts. The kids are very distracted by them otherwise)

## Set-up

- Tape map down and dump fish out. Try and have them facing up, though this isn't always possible during very busy WetFests.
- Cover fish with Tupperware to hide them until you start
- Good job, you're all set!

## Script/Activity Procedure

- **Write students' names on whiteboard** so you can tally points later. **Make sure you spell names correctly** or they'll be offended.
- **Introduce yourself.**
- **Tell them "Welcome to Scales 'n' Tails. Today we will learn about the fishing industry and marine conservation.**
- **Ask the students, "Who's heard of conservation before? What does it mean?" (To protect or save)**
- **Ask the students, to raise their hands if they've ever gone fishing before.**
  - You can also ask them what types or species of fish they caught, but only if you want to waste a lot of time listening to fishing stories.
- **Tell the students, "This is a map of Nantucket Sound! If you look closely, you'll see a bunch of tiny numbers. Any guesses as to what those numbers are? (Depth)**
  - Point out a shallow area and a deep area and explain that it's measured in meters.
- **Ask why it's important to know the depth of the ocean when fishing.** (Different species of fish thrive better in some areas of the water column than in others.)
  - Examples – flounder are found in the Benthic Zone (bottom dwelling fish) while Tuna and swordfish are large pelagic (open ocean/surface-middle of water column) fish.
- **Tell the students, Today you will be the fishermen!**
  - Pass out rods and cups to put the fish in.
  - Go over market prices. **Stress that tuna and swordfish are valuable and flounder is worthless.**
    - Tuna – 4 points
    - Swordfish – 3 points
    - Haddock – 2 points
    - Herring 1 point
    - Flounder – WORTHLESS TRASH FISH
- **The Game!**

- Tell the students to wait for your mark. Lift the Tupperware and spread the fish across the map. Try and distribute the tuna and swordfish fairly equally.
- Go! The students will use their magnetic rods to catch fish. They can use their hands to remove fish to put in the cups.
  - Tips: the rods will stick to each other. Encourage the students to gently pull them apart; if they're hopelessly tangled, untangle the rods yourself or quickly pass them new ones.
  - Try not to let the students steal fish from each other if possible. They will get upset.
- I usually let the students fish until all the tuna and swordfish are gone, since different groups have different skill levels and take different amounts of time. Pretend to time them. If you'd prefer, you can actually time them (30-45 seconds). Give them a 5 second warning before you ask them to pull their rods out of the water.
- Grab all remaining fish and place them under the Tupperware.
- Ask the students to dump out their fish and sort them by color.
  - Tip: Collect the rods at this point or the students will be distracted by them later.
- Quickly tally the points on your board. Declare the winner to be the master fisherman/woman and congratulate them.
- **After the points have been tallied**
  - Tell the students "Let's take a look at the fish we left in the wild!" Lift the Tupperware.
  - Ask them what they notice about these fish. (They're not worth much, the tuna and the swordfish are gone)
  - Tell them that we call this **overfishing** or **exploiting** a population, and this can happen with any type of hunted animal.
  - Ask them how they think this will affect the marine ecosystem off the coast of Cape Cod. If tuna are at the top of the food chain, what will happen to all the fish lower on the food chain?
    - The balance will be offset. There will be an **increase of animals below tuna** in the food chain (because one of their major predators is gone) and a **decrease in animals above tuna** in the food chain (because one of their main food sources is gone).
  - Ask them how we can make fishing fairer for both the fishermen and the fish populations. Try to encourage them to come up with these ideas on their own if possible and briefly explain each one they touch on. (It's okay if they don't get all of these, but go over at least three if you can.)
    - Make rules/regulations
      - Catch and release if fishing for sport
      - Can only fish during **certain seasons** and in **certain areas**.
      - Can only catch a certain **quantity of fish** and the quantity depends on the species ("catch limits")
      - All fish caught have to be a certain **size** (adults). If no one says this, ask what you'd do with a baby tuna.
      - Controlling the **type** and then amount of **gear** used.
    - Have environmental police to **enforce the rules**.
- Conservation Agencies (previous member says she never has time to go over this, and thinks it would be good to add but isn't sure how to do it)
  - **New England Fishery Management Council** – Works to adjust Fishery Management Plans (FMP) depending on the **status of fish stocks** in the Northeast Atlantic.
  - Fisheries **managers** are **obligated** to meet all of the **regulations** discussed previously and document it in their FMP.
  - **Sustainable Fisheries Act** – Primary law **governing marine fisheries** and also requires the **health** of the fish stocks in a region to be **regularly assessed**.
- **Conclusion**
  - Tell the students, "After having done this activity, **raise your hand** if you think that it is important for us to have **rules** about fishing."
  - Ask them if anyone can explain **why this is related to conservation**.
  - Sum up the activity by saying that if fishing is too intense, stocks begin to shrink and society's benefit from the resources is diminished. More importantly, the balance of life in the ocean is disturbed when there are rapid fluctuations in fish populations. Every animal plays a role and if any link in the food chain is missing it could spell catastrophe for a marine ecosystem.
  - If they want to fish again, give them a chance to do it now.