



Priyum Koonjul

Fisheries over view

# Fisheries and the World around Us

- What is a Fishery?
- Why are Fisheries important?
- What are the different kinds of Fisheries in Hawaii and around the world?
- How is fishing changing the ocean?
- How do we study these changes in the ocean?



# What is a Fishery?



- An organized effort by humans to catch fish or other aquatic species
- A fishery is just like a large predator in the foodweb. Often there will be fisheries for several different animals at different levels in the foodweb

Examples include:

Lobster fishery Hawaii, Coral fishery, Tuna fishery E. Pacific





# Why are fisheries important?

A woman with dark hair and sunglasses is sitting on the white deck of a boat, smiling and holding a large, silver fish with yellow fins. The boat is on a blue body of water under a clear blue sky. In the background, there are distant mountains. A yellow outboard motor is visible on the left side of the boat. An orange bucket is on the deck to the right of the woman. A speech bubble is positioned to the right of the woman.

I like to eat fish!



- Food
- Money
- Fun
- Culture
- Tourism
- Medicine
- Minerals
- Fuel
- Fertilizer
- Food for pets or farms
- Beauty products





# 3 types of fisheries

1. Subsistence  
→ to survive



2. Recreational  
→ for fun and food



3. Commercial  
→ For money

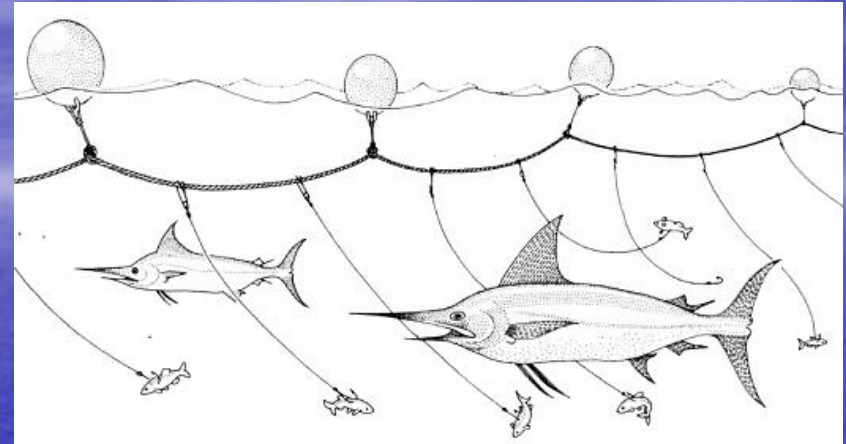




# Types of Commercial Fishing



Seining



Longline

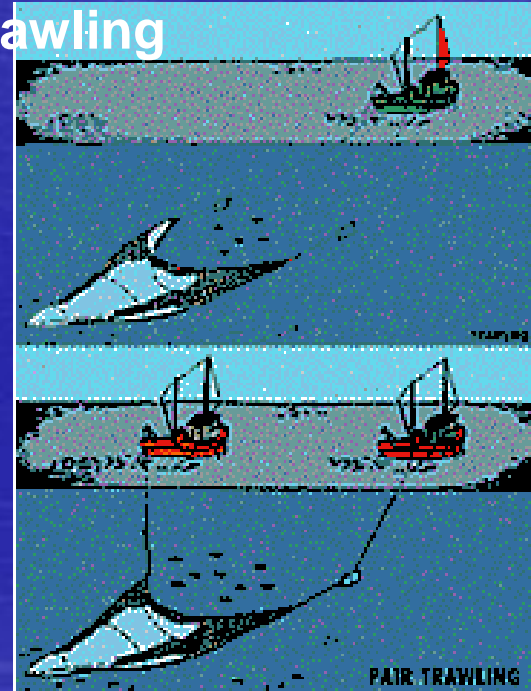


Handline



Trapping

Trawling



# Major Fisheries in Hawaii

Tuna- 28 million pounds

Swordfish- 5 million pounds

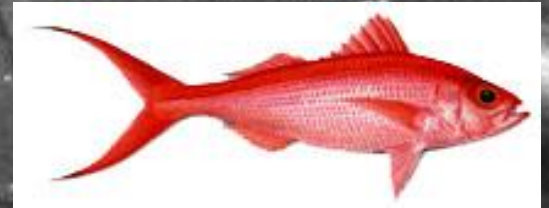
Bottomfish- 600,000 pounds

Coral- unknown

Akule/Opelu- 1 million pounds

Reeffish- 289,000 pounds

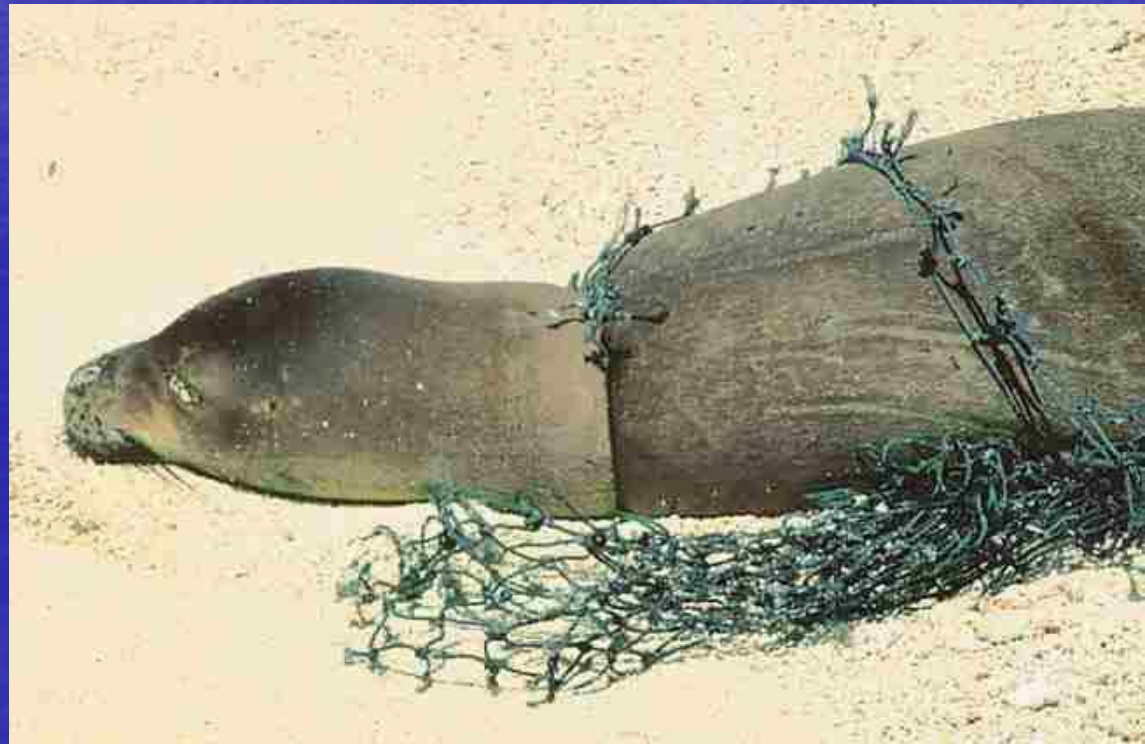
Aquarium Fish- 312,000 pounds





# What happens when we fish the wrong way?

- Overfishing
- Bycatch/Waste
- Habitat Destruction
- Size of Fish
- Marine Debris

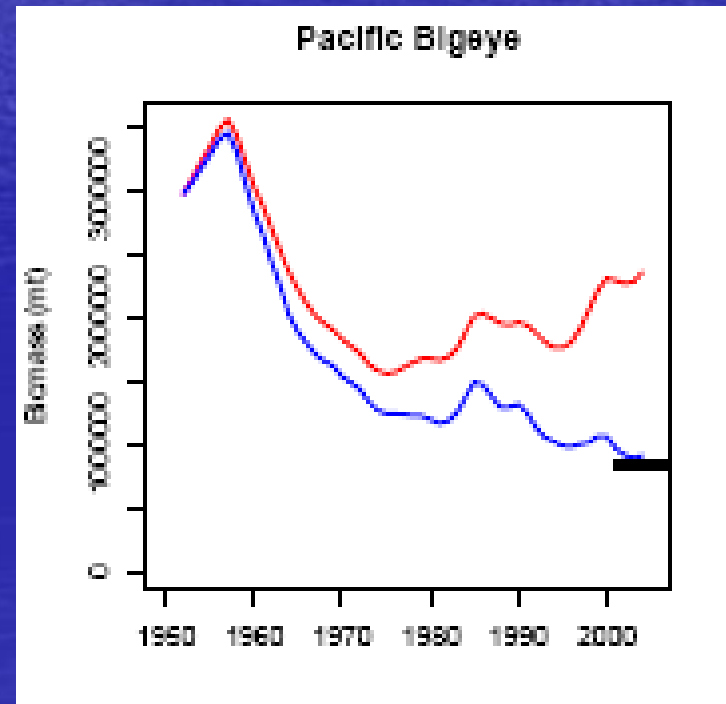
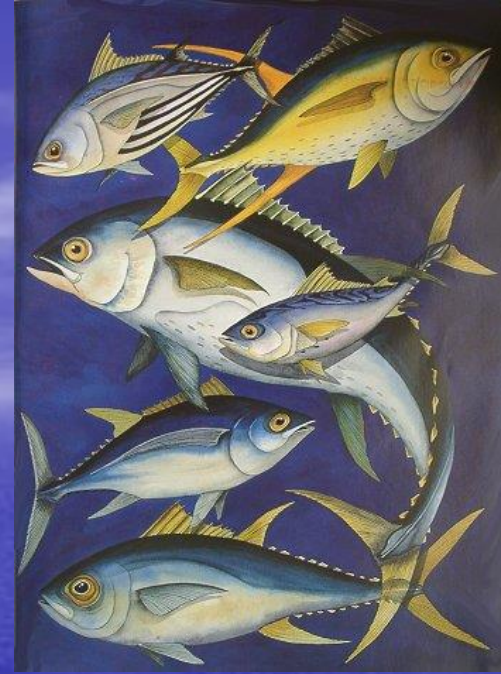




# Overfishing

A reduction in the number of fish over time

- The biomass of the NWHI is 3.6x that of the Main Hawaiian Islands
- Impact of commercial fishing on Pacific Bigeye biomass: 1960-2000: Notice the severe downward trend.





# Bycatch/Waste

The total worldwide catch of all fishery species is about 93 million tons. Approximately one-third of that catch is wasted—thrown back into the sea dead or dying. That's around 30 million tons—as heavy as 525 average-sized cruise ships! These unwanted marine organisms are called bycatch, or incidental take.

## Common Types of Bycatch

**Dolphins (see picture)**

**Seabirds**

**Whales**

**Sharks**

**Turtles**

**Rays**

**Young fish**





# Some Solutions to Bycatch

- Turtle Excluders

- Allow turtles to escape nets

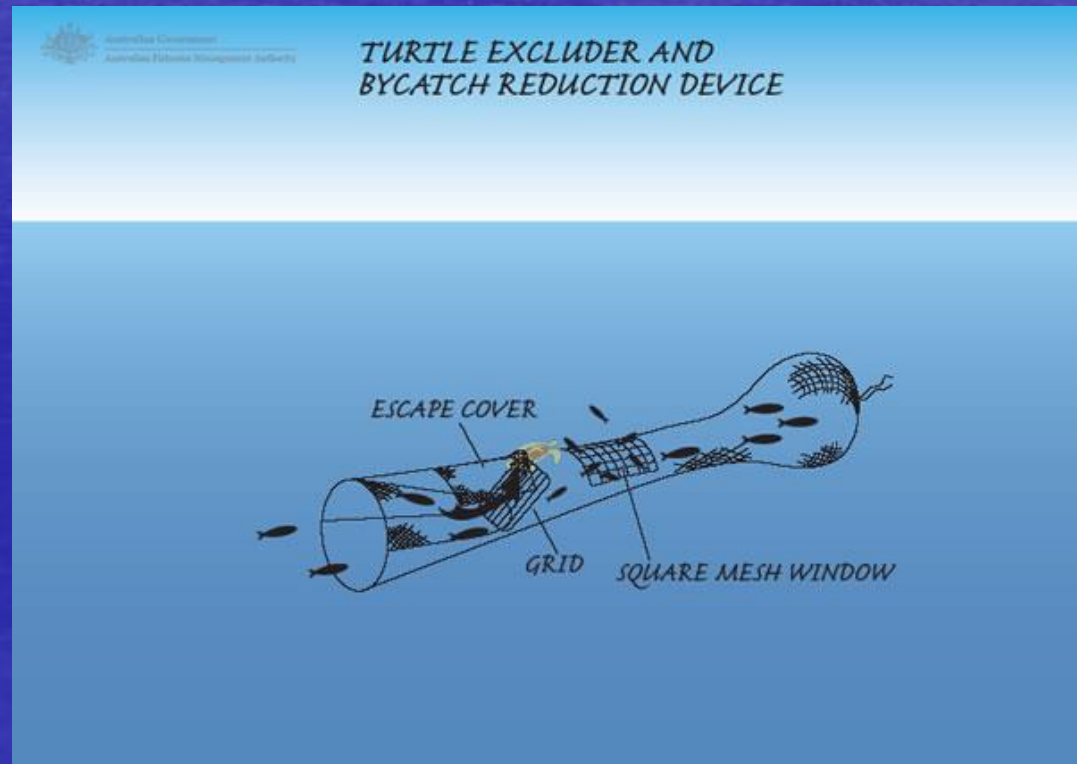


- Circle Hooks

- Keep some species from biting

- Large Mesh sizes

- Let some smaller fish escape net



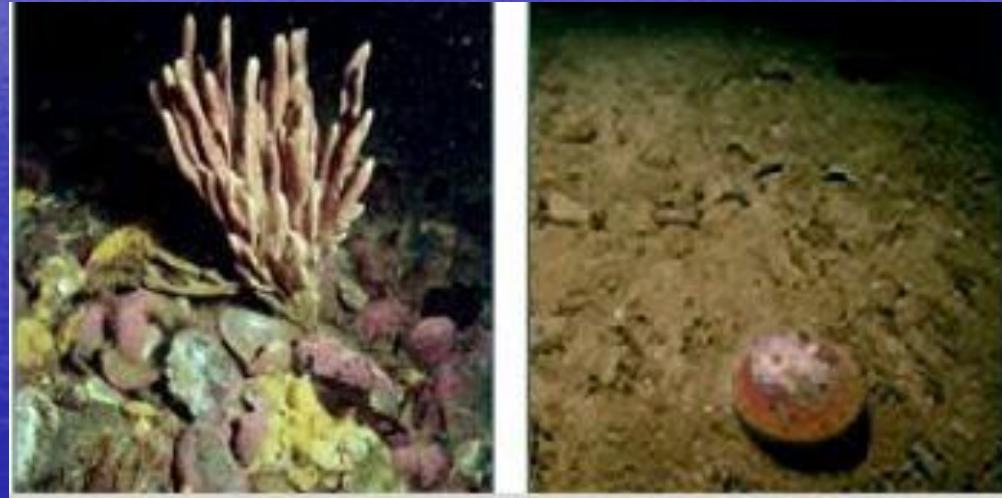


# Habitat Destruction



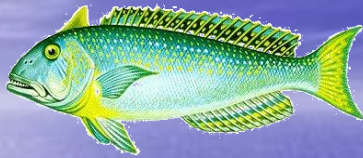
- (1) Directly removing animals
- (2) Digging up the bottom from dragging fishing gear or using dynamite to blow up reef
- (3) Introducing habitat – buoys or fish aggregating devices and Marine Debris

<http://www.youtube.com/watch?v=ti5H9zR1-no>





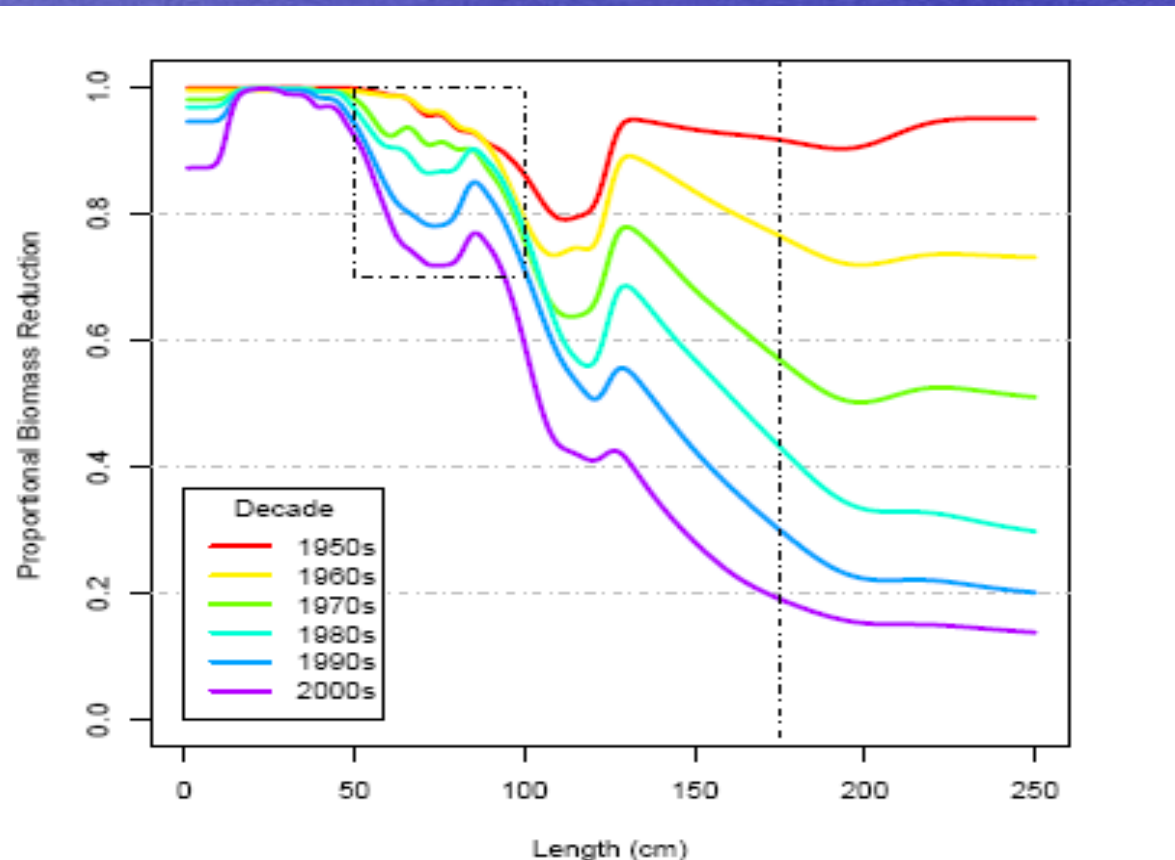
# Impact on Fish Size



YOU SURE LOOK SMALL!

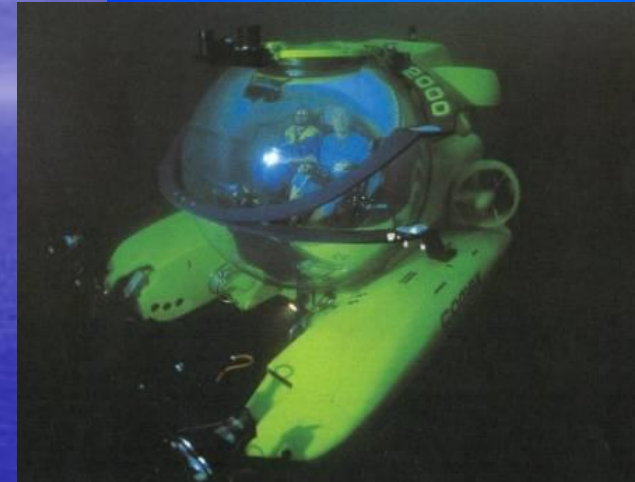


- A significant change in average fish size per catch Overtime
- Fish get smaller and may therefore have less babies. Does this help???

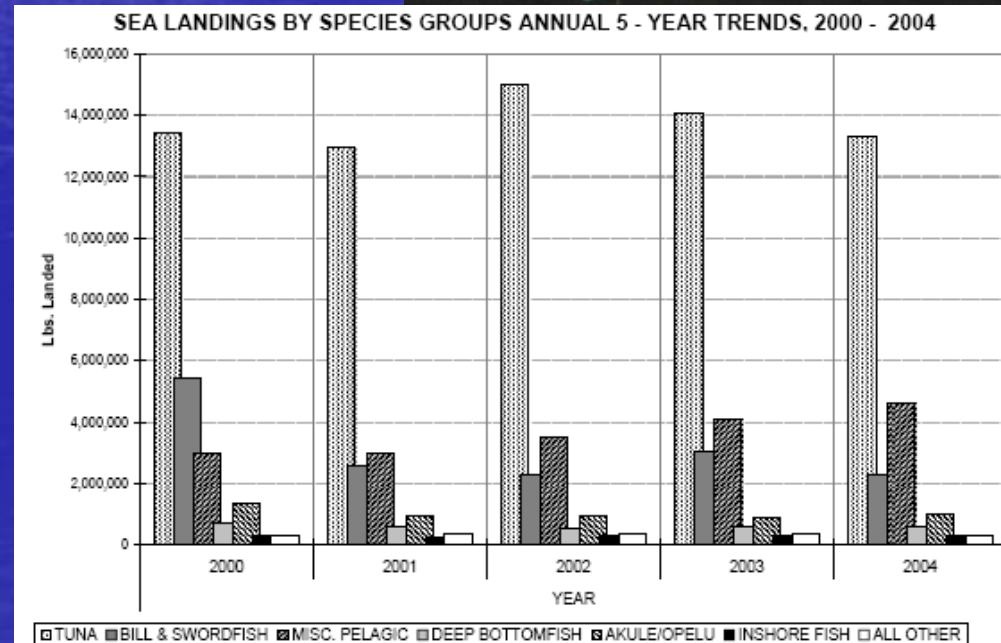




# How do we study fisheries and fish?



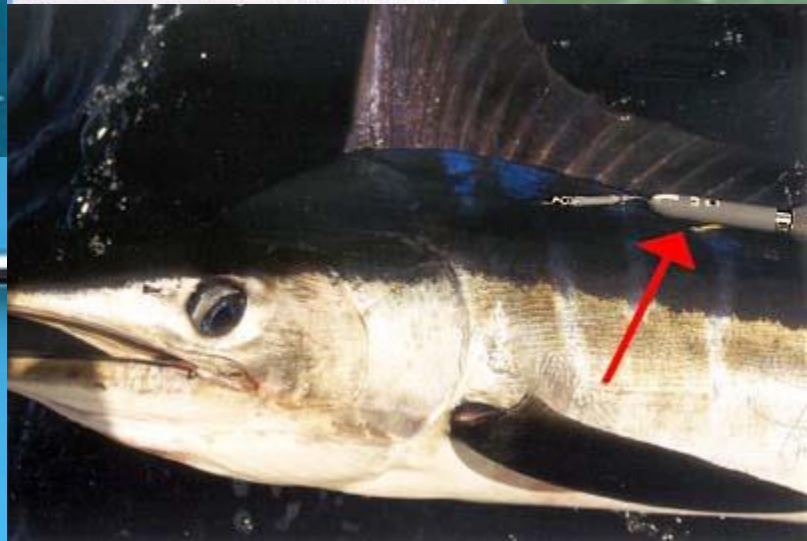
- Count the amount of organisms caught
  - This info usually comes from the fishermen and may be unreliable
- Directly observe animals
  - This may be difficult or very expensive
- Tag Fish
  - This is becoming a well used method as the technology gets better
- Use Sonar
  - Sonar may be used to map or count fish underwater





Tags may be used to track the movements of the fish as well as measure their depth, temp, speed, etc.

There are many kinds of tags (conventional, radio, sonic, popup, satellite).





Measuring a sound signal that is transmitted, bounces off a target, and received is called sonar. Fishermen use sonar to find fish. Marine scientists use sonar to count fish and determine their size.

