



"I still believe the cod fishery. . . . and probably all the great sea-fisheries are inexhaustible; that is to say that nothing we can do seriously affects the number of fish."

-- Thomas Huxley 1883

NEARLY 3 BILLION PEOPLE RELY ON FISH AS THEIR MAJOR PROTEIN SOURCE.

>10% OF THE WORLD'S POPULATION RELIES ON FISHING OR AQUACULTURE FOR THEIR LIVELIHOOD

90% OF STOCKS ARE BEING FISHED AT OR OVER CAPACITY

DEMAND FOR FISH IS EXPECTED TO DOUBLE IN 25 YEARS

Average per capita fish consumption globally increased from 9.9kg in the 1960s to 19.2kg in 2012 (FAO 2014b).

#1 Marine Threat: Overfishing

Part I

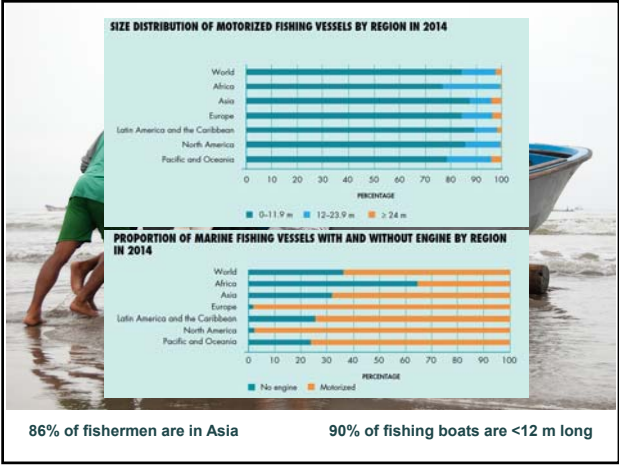
- Who catches and eats fish?
- Who sets the rules?
- What fish are caught and how?

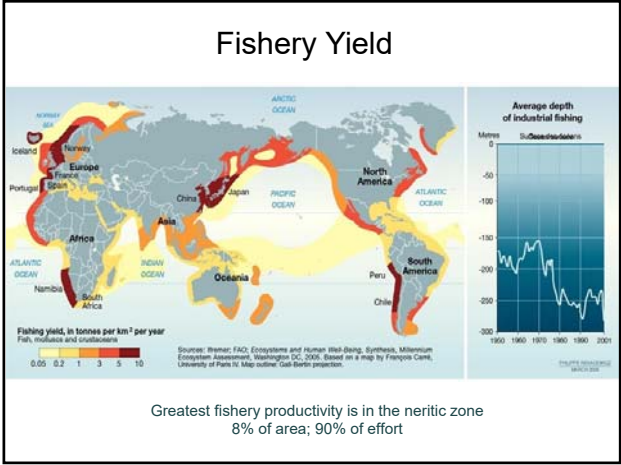
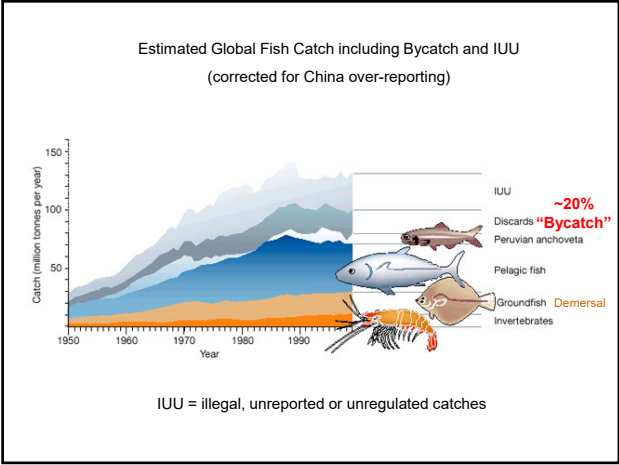
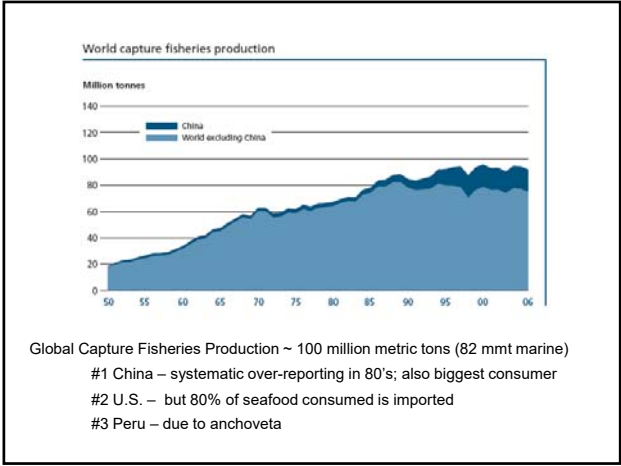
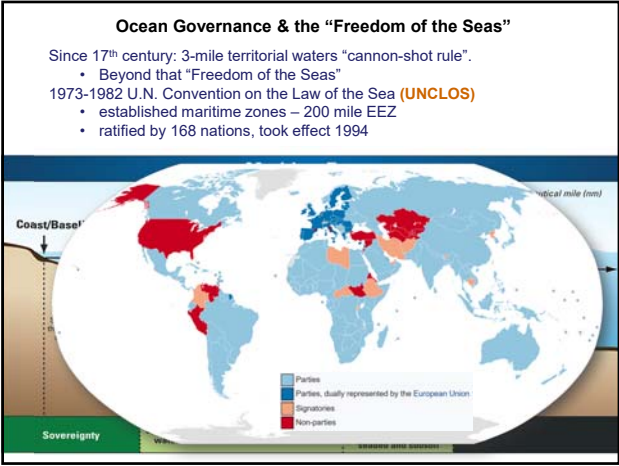
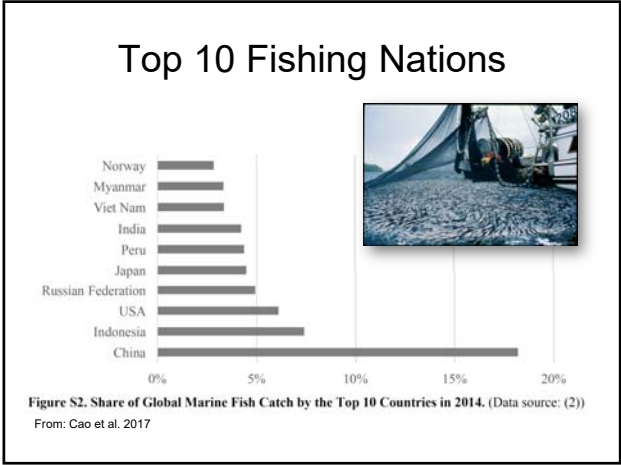
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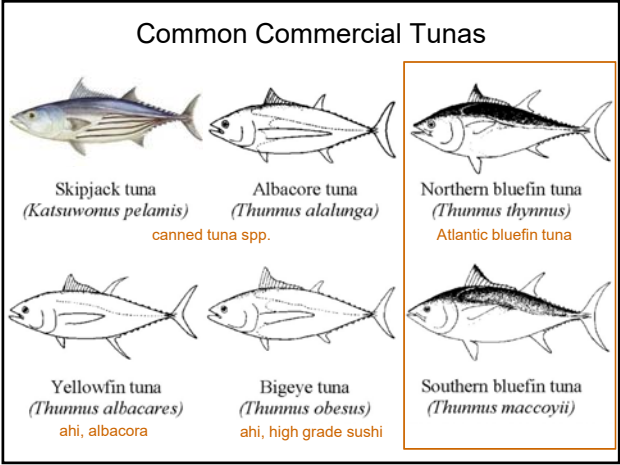
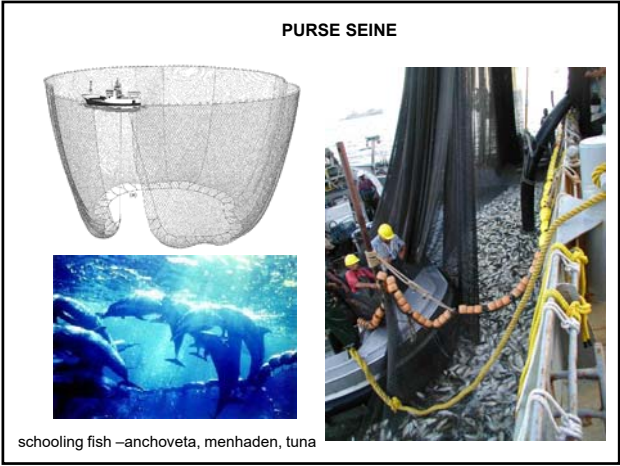
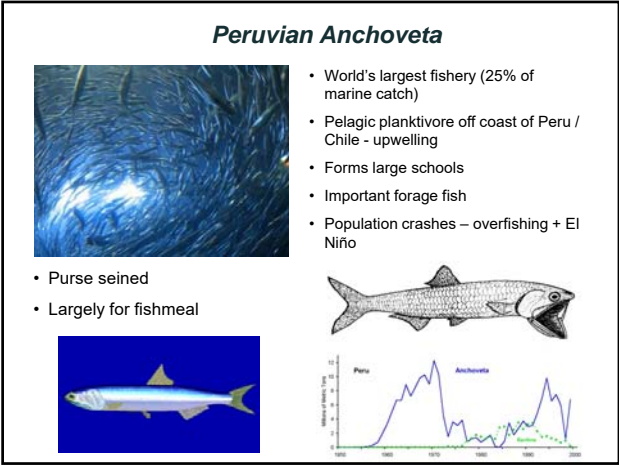
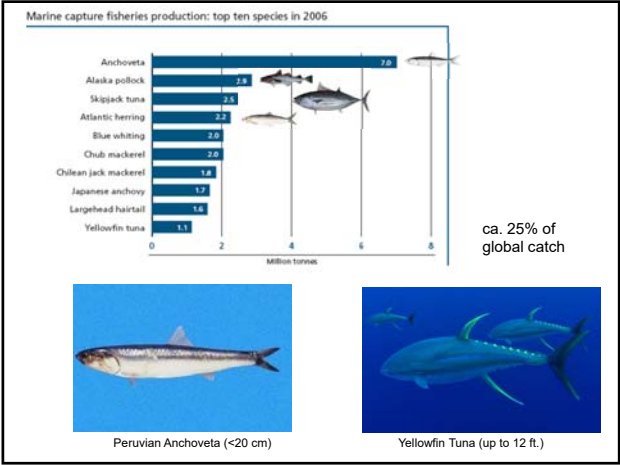
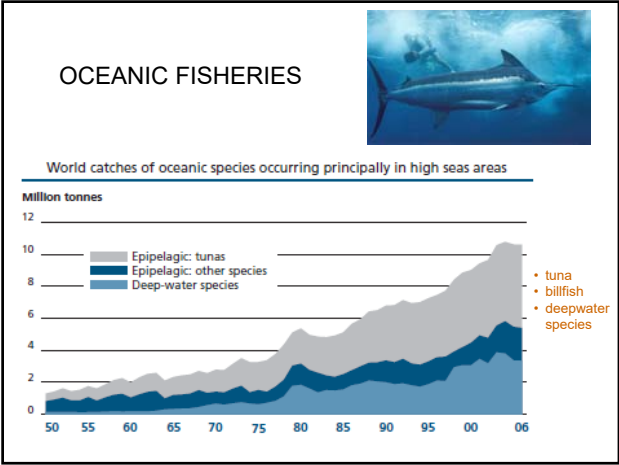
- What are the signs that overfishing is occurring?
- Why is overfishing occurring?
- How do we know how many fish can be caught?

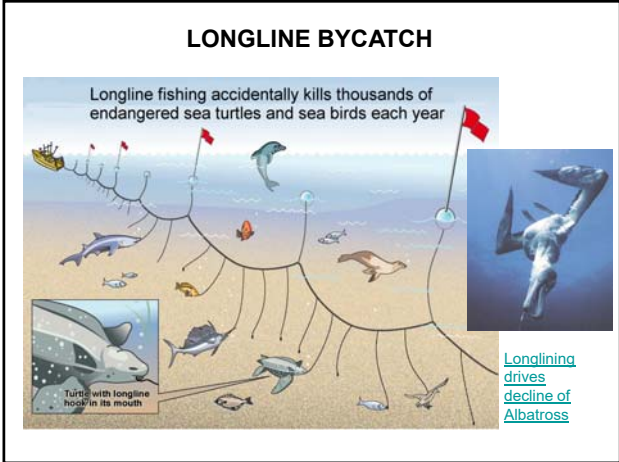
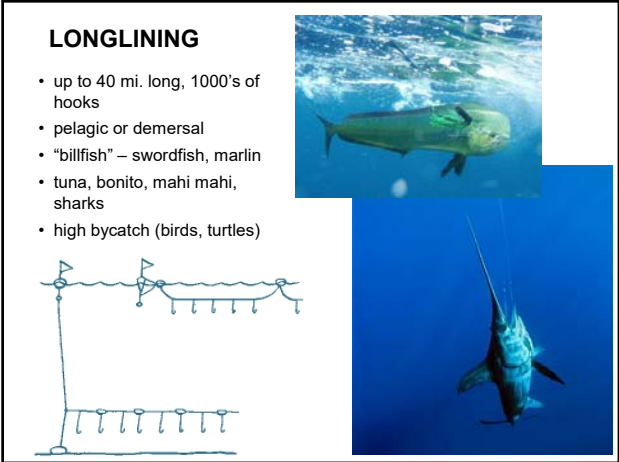
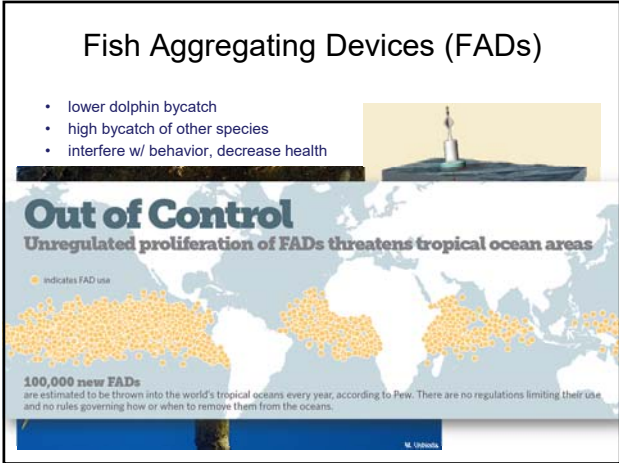
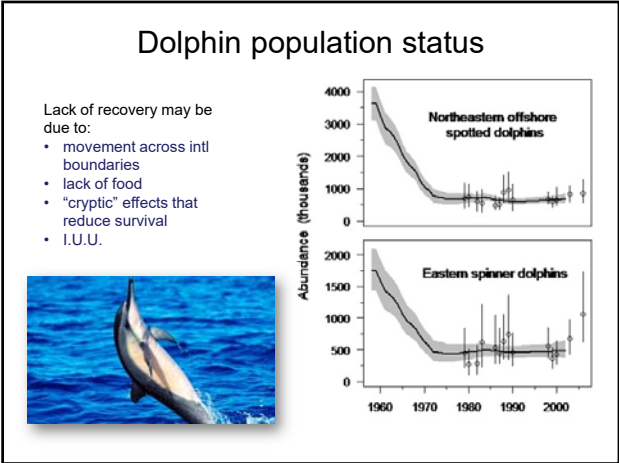
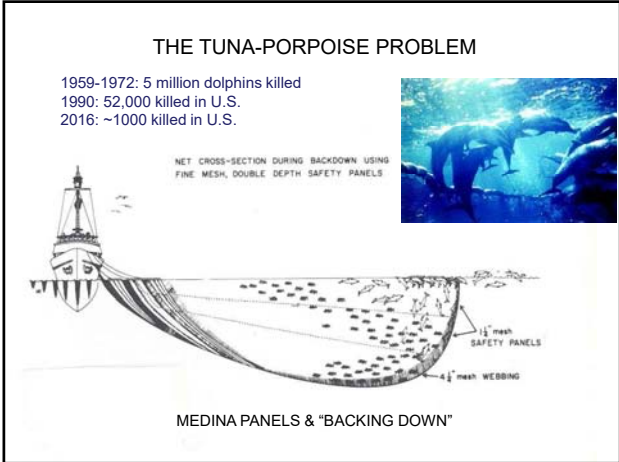
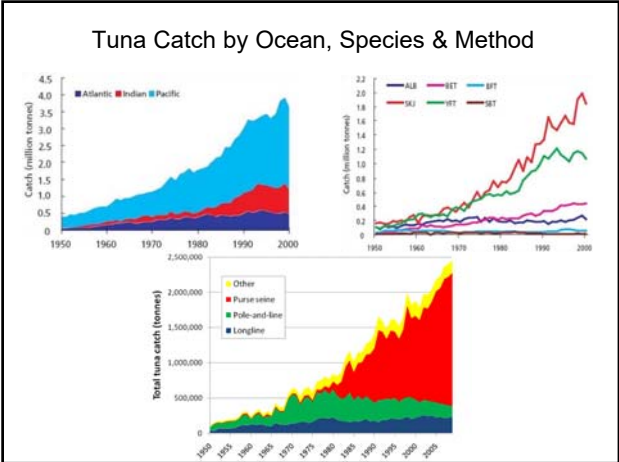
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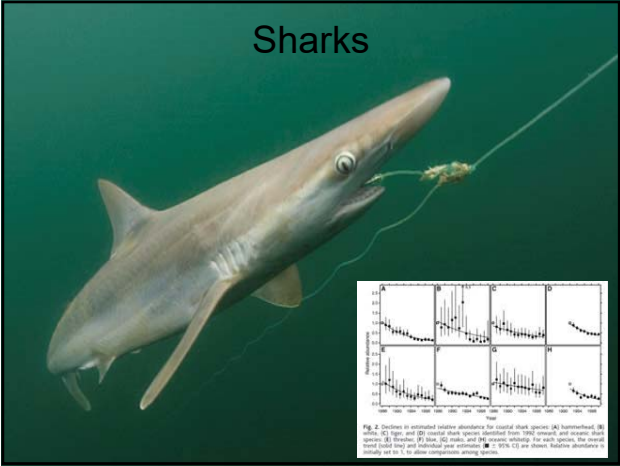
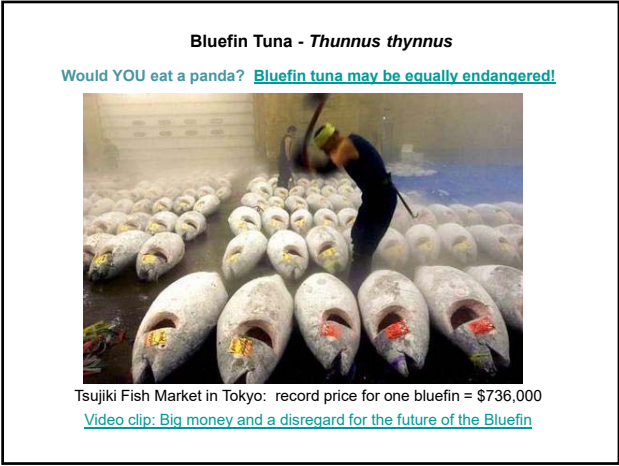
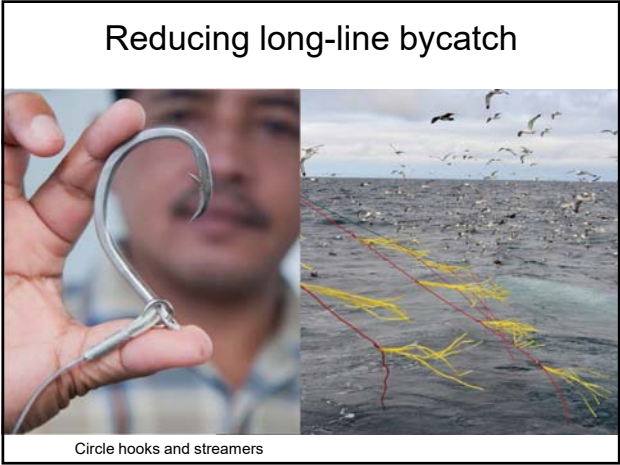
- What can be done about overfishing?
- What's the role of aquaculture?











3/14/2017

U.S. ban on shark fin proposed

U.S. ban on shark fin proposed

Lawmaker's bill would follow California in prohibiting purchase or sale of the delicacy.

Los Angeles Times · 13 Mar 2017 · LOUIS SAHAGUN louis.sahagun@latimes.com Twitter: @LouisSahagun

It's been four years since California's ban on the purchase and possession of shark fins went into effect. And yet, more than 60 tons of shark fins arrive at the Port of Los Angeles each year, bound for chefs and grocers in states where sales of the Asian delicacy remain unfettered.

Rep. Ed Royce (R-Pullerton) hopes to change that. On Thursday, he introduced a bill in Congress that would prohibit the buying, selling and possession of shark fins throughout the United States. If all goes according to plan, the measure would discourage the practice around the world.

The Shark Fin Sales Elimination Act "is needed to eradicate shark finning for good," Royce, chairman of the House Foreign Affairs Committee, said in a statement last week.

"While California led the way with a statewide ban, there are still almost 40 states where the purchase of shark fins is legal," he said. "The United States can set an example for the rest of the world by shutting down its market for shark fins, which are often harvested by leaving these animals to die a slow and painful death at the bottom of the ocean."


Experts estimate that as many as 73 million sharks become victims of the shark-fin trade each year. The fins sold for as much as \$2,000 a pound in California before the ban took effect in 2013.

So far, 11 states including New York, Washington and Hawaii have joined California in banning the sale of shark fins. So have the Pacific territories of Guam, American Samoa and the Commonwealth of

"GROUND FISH" - DEMERSAL FISHES


"Whitefish" - Family Gadidae
Cod, pollock, haddock, whiting
Alaskan pollock = #1 US fishery


Atlantic cod – *Gadus morhua*



"Flatfish" - Family Pleuronectidae
Halibut, flounder, plaice, turbot, sole

Flounder

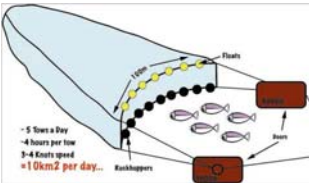

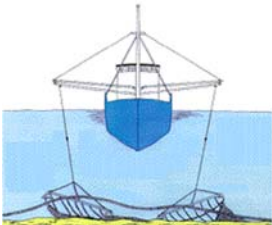




Halibut

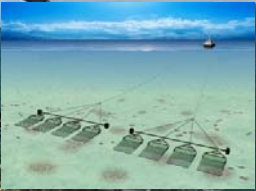
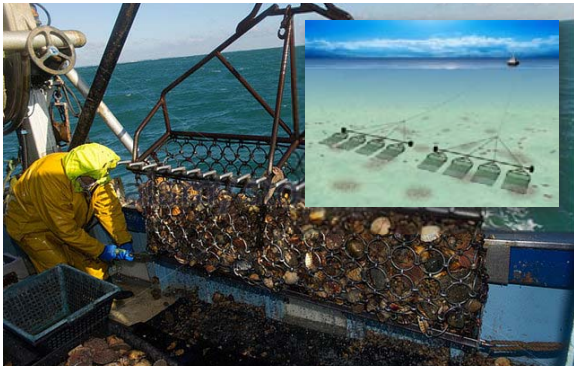
TRAWLING

- weighted net dragged behind boat
- Bottom Trawl
 - groundfish
 - squid
- Midwater Trawl
 - Shrimp
 - Deepwater pelagics



DREDGING

Scrape bottom for benthic invertebrates: scallops, clams, mussels

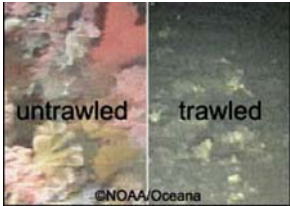


BOTTOM TRAWLING & DREDGING

Environmental Impacts of Bottom Trawling

- 5-40% direct mortality of benthic organisms
- massive by-catch
- HUGE area of impact: 2X area of U.S. per year.
 - like clearcutting the entire Amazon every year
 - Every sq. m. of North Sea trawled 1-7X per year!
- impact & recovery depends on bottom structure, species, and "return interval"

[View current restrictions](#)



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BEFORE



Natural

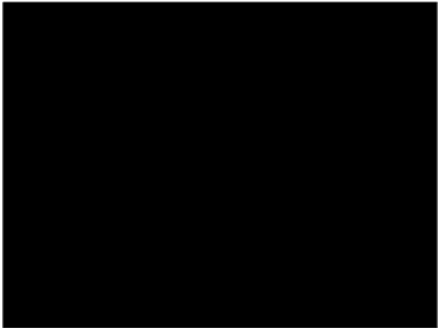
same site 2days later

AFTER




Scallop Dredged

BOTTOM TRAWLING



DREDGING



Ecological impacts depends on:
Substrate type, Return interval, Species


WILD SHRIMP

Shrimp - #1 consumed seafood organism in U.S.

- Trawled or farmed
- most imported

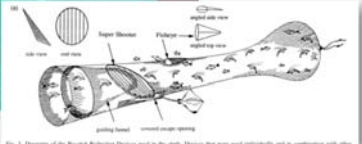
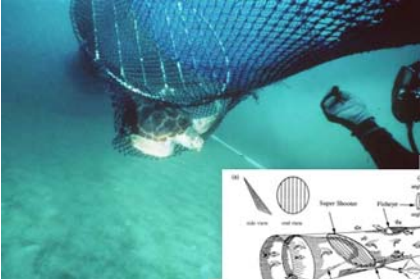


SHRIMP BYCATCH






>8:1 bycatch (by weight)

TEDs = Turtle Excluder Devices
& other Bycatch Reduction Devices (BRDs)



required by U.S. trawlers in 1990

DEEPWATER FISHERIES



- Orange Roughy, Patagonian Toothfish
- Deep water, demersal fish
- Relatively new fisheries (mid-90s)
- Very slow growing, long-lived, K-selected
- Deepwater trawling
- Cannot be sustainably exploited

Ex: Orange Roughy

- Orange Roughy (6,000 ft)
- live 150 yrs; 20-30 yrs at 1st reproduction!
- Stocks down 90% in <20 yrs – **do not eat!**

