Conservation of the marine environment
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What the threats to the oceans?
• Overfishing, and illegal fishing
  – Trawling, long-lining, purse seine, artisanal
• Coastal development and habitat loss
• Runoff from land (fertilizers, oil, sediment)
• Pollution (pcbs, heavy metals, oil, radioactive waste, garbage, ghost-nets)
• Invasive species
• Climate Change (seas are warming)

Consequences
• Loss of biodiversity
• Human health risks
  – Mercury in fish and shellfish (source: power plants)
  – Dirty water (source: urban runoff, dumping)
  – Loss of fresh water (SW intrusion, pollution)
• Habitat destruction/loss
  – 50% US population lives on coast (development)
  – Coral reefs dying (global warming)
  – Ocean floor destroyed (trawling)
  – Mangrove/wetlands replaced by shrimp farms/mariculture
  – 150 “dead zones” in 2004, doubled since 1990 (UN data)

What can we do?
• Stop overfishing!
• Regulate coastal development and fishing
• Identify threats & culprits
• Document loss of marine habitat and diversity
• Establish marine reserves
• Support non-governmental agencies
• Be aware, educate others

What can we do?
• Involve all stakeholders in the solutions
• Educate next generation so that they care
• Support conservation efforts with your $$ and votes
Four examples …

• Tuna fishery
• Worldwide decline in predatory fish
• Gulf of California - shrimp fishery
• Gulf of California - working with fishermen

• Blue fin tuna fishery (longline)
• Blue fin tuna farming
• Yellow fin tuna fishery (dolphin sets)
• Mercury in tuna

Tokyo fish market

• 5 million pounds of seafood per day
• 400 different types of seafood
• Imports from 60 countries on 6 continents
Many species of tuna are fished

IUCN List of Threatened Species:

Northern bluefin (Thunnus thynnus)
Southern bluefin (Thunnus maccocyis)
Bigeye tuna (Thunnus obesus)
Albacore tuna (Thunnus alalunga)

Yellowfin tuna (travel with dolphins in the Eastern Tropical Pacific)
Skipjack tuna

Tuna is the most traded fishery in the world

- 3 million tons of catch per year
- $6 billion per year
- Europe is top buyer for canned tuna, followed by US
- Heinz dominates 50% of the market

Still considered a sustainable fishery by US govt.
$180,000 for one bluefin (1000 lbs)
Northern bluefin tuna

Southern bluefin tuna

Longline-fishing, critically endangered, 500 individuals by 2105

Longline fishing

Bluefin tuna farming - a solution or a new problem?

Captured in purse seine nets
Towed to shore
Kept in pens and fed fish and fish meal
1000 lbs and up per fish
20 tons of wild fish for one ton of fattened tuna

Highly profitable, Spain, Croatia, Australia, Portugal
One more way to overfish a depleted species

• Blue Planet dvd
• (open ocean)

tuna dolphin controversy:
  yellow fin tuna

• 7-10 million dolphins have been killed by tuna fishing since the late 1950s (40 year period)
• Dolphins on surface, yellowfin tuna below
1. Dolphin-set fishing

Medina panels on nets
Backdown to lower nets

2. School-set fishing

3. Log-set fishing

Dolphin sets vs. log-set fishing for Tuna *

1000 nets on dolphins (purse seines):
300 dolphins
52 Billfish
10 sea turtles
0 sharks

1000 nets using logs (“dolphin-safe”):
2 dolphins
654 billfish
102 sea turtles
13,958 sharks

* Data from International Tropical Tuna Commission

- Unique relationship between tuna & dolphin - exploited since 1950s
- Fishers use dolphins to track and chase the tuna, then encircle both with nets (purse seines), haul in both, killing the dolphins, and saving the tuna.
- Defenders of wildlife video
- Humane society video
  - http://www.hsus.org/marine_mammals/marine mammals_news/us government report shows tuna fisheries are still a threat to dolphins.html

Eastern Tropical Pacific Tuna Fleet:

1950s  "dolphin sets" on tuna began
1959  590 sets on dolphins
      (mile long nets and hydraulics introduced)
1960  5400 sets on dolphins
      (helicopters and speed boats introduced)
1965  48,673 tons of tuna caught
1980  189,426 tons of tuna caught

"dolphin sets" = setting nets around dolphins in order to catch yellowfin tuna
Three species of dolphin in eastern tropical Pacific are officially listed as “depleted”*

- northeastern offshore spotted dolphin
- eastern spinner dolphin
- coastal spotted dolphin

* MMPA (Marine Mammal Protection Act)

**History of dolphin safe tuna label**

- 1980s: US tuna fleet can not encircle dolphins
- US embargo against other countries: no dolphin setting on tuna
- 1990: label on tuna cans

**“Dolphin safe” tuna...**

- Mexico protested embargo in 1990s: “product is not environmentally harmful”, claimed illegal restriction on free trade, also unilateral
- 1995: Mexico and other nations can sell dolphin-set tuna, under the dolphin safe label. Set quotas, or minimum levels for dolphin kills.
- Dec 31, 2002, Bush administration via Evans, US commerce secretary: dolphin sets OK as long as observers on ships claim no dolphins were harmed, redefined dolphin safe label.

**Earth Island Institute vs. Donald Evans**

- Judge Henderson ruled that what Evans and Bush admin wanted to do was illegal; they could not weaken dolphin safe label.
- Cannot “...drag its feet on congressionally mandated research, and then invoke a lack of evidence on the very subject of the research to justify removing a form of protection for depleted species.”
- “Best available scientific evidence, while not conclusive, is all suggestive that fishery is having a significant adverse impact”
- “the best scientific evidence does not demand conclusive evidence and is intended to give ‘the benefit of the doubt to the species.”
- Secretary’s final finding is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.”
- “Dolphin safe” shall continue to mean that “no tuna were caught on the trip in which such tuna were harvested using a purse seine net intentionally deployed on or to encircle dolphins, and that no dolphins were killed or seriously injured during the sets in which tuna were caught.” August 9, 2004

**2002, Bush administration tries to weaken “Dolphin-safe label”**

- Secretary of Commerce Donald Evans says that dolphins are not hurt by dolphin sets if they are done properly, no evidence that dolphins are hurt by dolphin sets.
- Proposed to allow Mexico and other nations to export tuna to sell in US with dolphin safe label, even if caught with dolphins
- Observers need to be on board ships to verify that no dolphins were hurt.
- Evans sued by wildlife organizations, taken to court in US District Court, Washington DC

**Judge upholds definition of dolphin-safe tuna label**

- A federal judge on Thursday upheld the definition of the dolphin-safe tuna label and barred the Bush administration from altering it.
- On Dec. 31, the Commerce Department announced that tuna caught by fishermen encircling dolphins with sets may be imported into the United States and bear the dolphin-safe label if observers certify that no dolphins were killed or seriously injured in the process. Environmentalists sued.

Why protect dolphins?

• Intelligent (social, recognize themselves in mirror along with humans and other primates)
• Beautiful
• Wild
• One of top predators in ocean food chain
• ??

What do you think?

• dolphin-safe label be maintained as is?
• tuna be caught using log sets instead?
• Should politics and trade issues be an allowable part of revisiting this issue?
• quota set on number of dolphins killed?

7-10 million dolphins killed over 40 year period from 1950s-1990s via tuna fishing.

• END OF LECTURE