

Oceans

Humans both depend on it and threaten it with their activities



Oceans

- Water covers nearly $\frac{3}{4}$ of the Earth's surface
- More than 50% of the world's population lives within an hour of the coast
- Oceans play a role in both climate and day to day weather



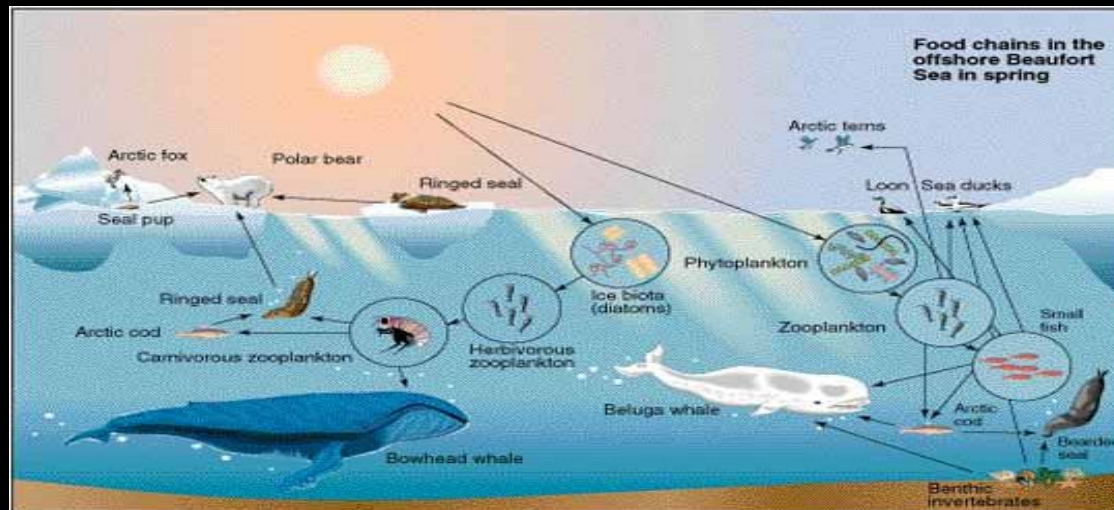
Human Dependence on Oceans

- The ocean is our life support system, giving us more than half of the oxygen we breathe, regulating climate, and providing valuable resources



How is Marine Life Dependent on Oceans Systems?

- The amount of sunlight, wave action, water temperature, water pressure, salinity levels and pH levels are important to maintain marine populations



Estuaries

- Estuaries - areas where freshwater flows into oceans, are rich in nutrients to support many types of organisms, and are nurseries for many marine species



Coral Reefs

- Coral Reef – ecosystems commonly found in shallow seas of many tropical regions. They provide a sheltered habitat to many types of animals.



Human Activities Modify the Ocean

Critical Ocean Issues:

- Overfishing
- Sea Temperature Rise
- Marine Pollution
- Ocean Acidification
- Marine Habitat Destruction
- Sea Level Rise
- Marine Invasive Species

- Overfishing is taking wildlife from the sea at rates too high for fish species to replace themselves
 - Fisherman remove more than 170 billion pounds of wildlife a year from the seas
 - Some scientists predict that if current fishing rates continue, *all* the world's fisheries will have collapsed by the year 2048

Overfishing



[Global Fisheries](#)

[Overfishing – The consequences](#)

[Ending Overfishing](#)


Fishing Limits

- Laws can help protect individual fish species.
- They may also limit the amount of fish that can be caught or require that fish be at least a certain size.
- If a fishery has been severely overfished, the government may need to completely ban fishing until the populations can recover.


ATTENTION ANGLERS

2005 NJ Minimum Size, Possession Limits & Seasons

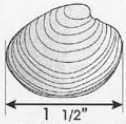
Fish are measured from tip of snout to tip of tail (except Black Sea Bass).
Cleaning or filleting of fish with a minimum size limit while at sea is prohibited.



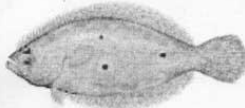
Weakfish
8 fish at 13 inches




Striped Bass or Hybrid Striped Bass
1 fish at 24" or greater, but less than 28"
1 fish 34" or greater




Hard Clam
recreational limit - 150 clams
No harvest on Sunday
License required




Summer Flounder (Fluke)
8 Fish at 16 1/2 inches
Open Season: May 7 - Oct. 10




Winter Flounder 11 inches
Open seasons: March 1 - May 31
Sept. 15 - Dec. 31
*Changes expected after August 1.
Refer to Division Website



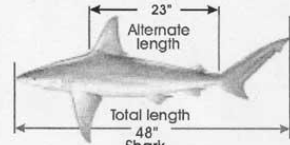
Tautog 14 inches
Open seasons:
4 fish Jan. 1 - May 31
1 fish June 1 - Nov. 14
8 fish Nov. 15 - Dec. 31



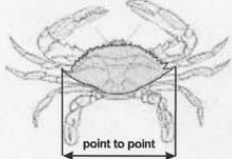
Black Sea Bass
25 FISH @ 12 INCHES
Open season: Jan 1 - Dec. 31



Bluefish
15 fish no minimum size



Shark
Alternate length 23"
Total length 48"
2 fish per vessel





Blue Crab
peeler or shedder - 3 inches
soft - 3 1/2 inches
hard - 4 1/2 inches
recreational limit - one bushel
Crab pot/iron line Seasons:
Delaware Bay & tributaries
April 6 - Dec. 4
All other waters
March 15 - Nov. 30

PROHIBITED SPECIES
It is illegal to take, possess or land any of the following species:

**BIGEYE SAND TIGER SHARK
SHORTNOSE STURGEON
ATLANTIC STURGEON
SAND TIGER SHARK
BASKING SHARK
WHALE SHARK
WHITE SHARK**

OTHER SPECIES	POSSESSION LIMIT	TOTAL LENGTH
AMERICAN EEL	50	6"
BLACK DRUM	3	16"
COBIA	2	37"
COD	NO LIMIT	21"
HADDOCK	NO LIMIT	21"
KING MACKEREL	3	23"
POLLOCK	NO LIMIT	19"
RED DRUM	1	18" - 27"
SCUP (PORGY)	50	9" (Jan.1-Feb.28) July 1-Dec.31
SHAD	6	NO LIMIT
SPANISH MACKEREL	10	14"
LOBSTER	6	3 3/8" (carapace length)

New Jersey Department of Environmental Protection
Division of Fish and Wildlife
www.njfishandwildlife.com

4/14

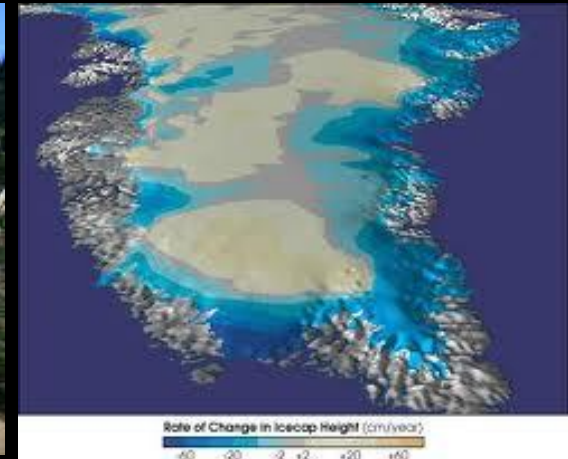
Fishing Methods

- Today fishing practices are regulated by laws.
- Some fishing crews now use nets with a larger mesh size to allow small, young fish to escape.
- Some methods have been outlawed: (i.e. poisoning fish and dynamite)



Resource Use

- Use of Resources
 - Burning Fossil Fuels and deforestation contribute to global climate change, which impact ocean warming, which has a cascading effect on earth



Sea Temperature Rise

- Some climate models predict that higher sea temperatures will lead to more frequent and more severe hurricane activity



Organisms Affected by Temperature Rise

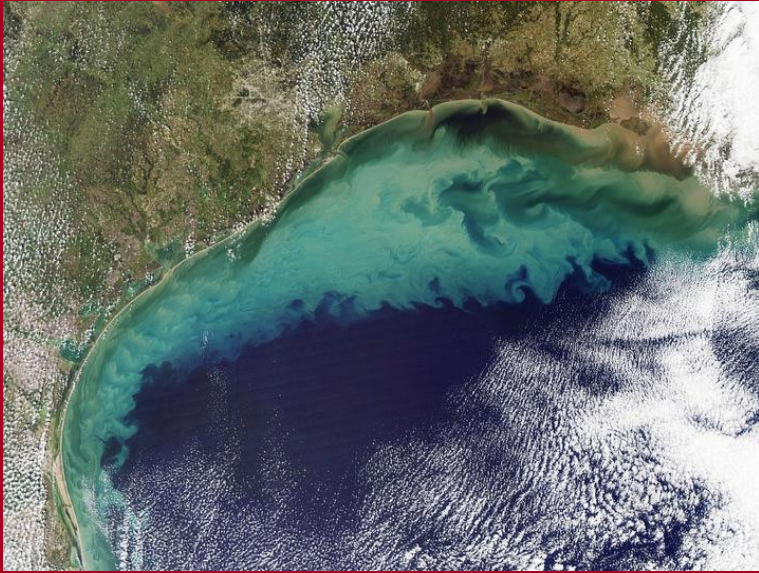
- Coral is vulnerable to temperature changes
 - Reefs will bleach (eject their symbiotic algae) at even a slight temperature rise
 - Bleaching slows coral growth makes them susceptible to disease, and can lead to large-scale reef die-off
- Research has shown that krill reproduce in significantly smaller numbers when ocean temperatures rise
 - This can have a cascading effect on marine food webs



Marine Pollution

- Many ocean pollutants are released into the environment far upstream from coastlines
- Solid waste like bags, foam, and other items dumped into the oceans are eaten by marine mammals, fish, and birds that mistake it for food





Runoff

- Use of excessive fertilizers and pesticides runoff into oceans
 - Agricultural practices enable erosion of soil into oceans



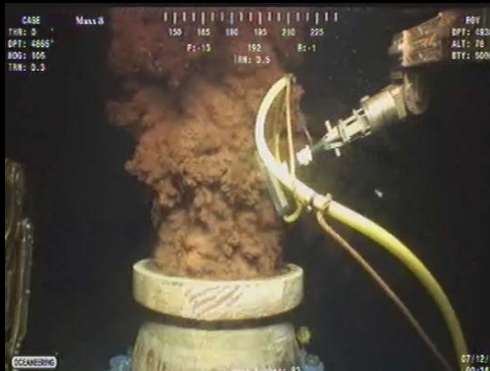
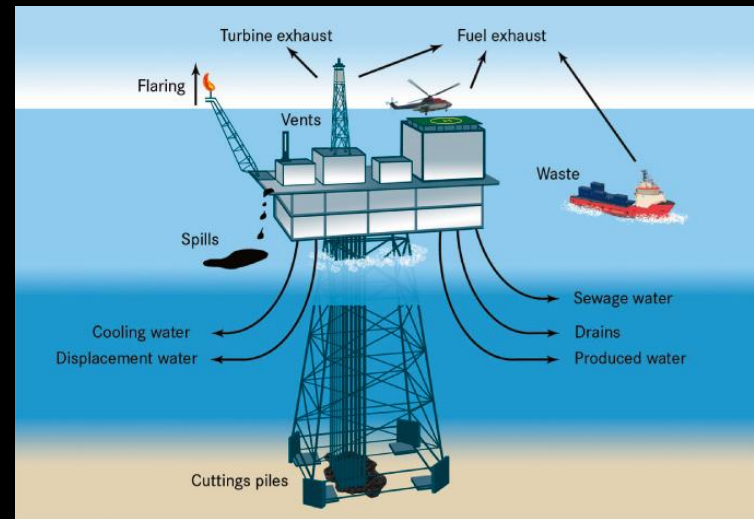
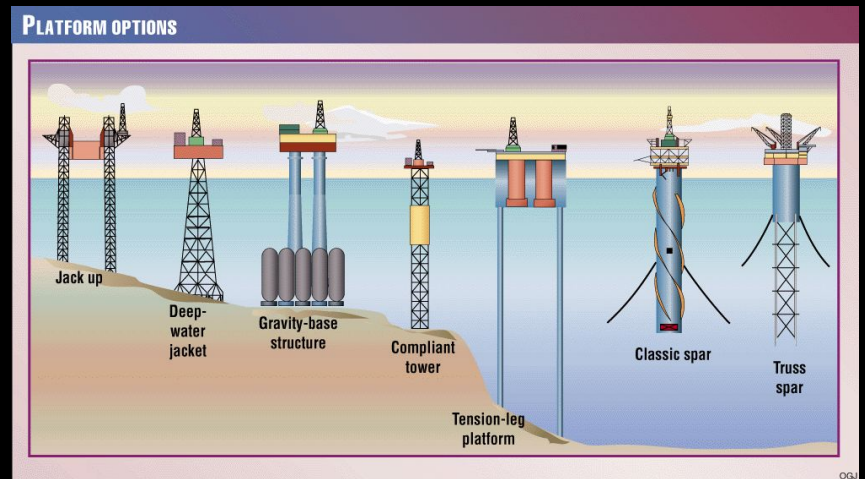
Great Pacific Garbage Patch



[Great Pacific Garbage Patch](#)

Drilling for Oil

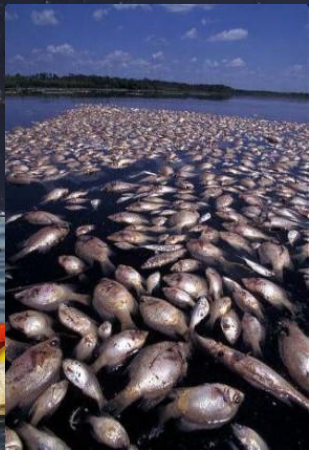
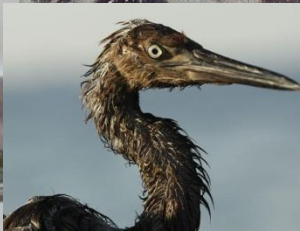
- Drilling for oil disturbs marine habitats
- Offshore oil platforms become a habitat for marine life but at great risk if a spill occurs

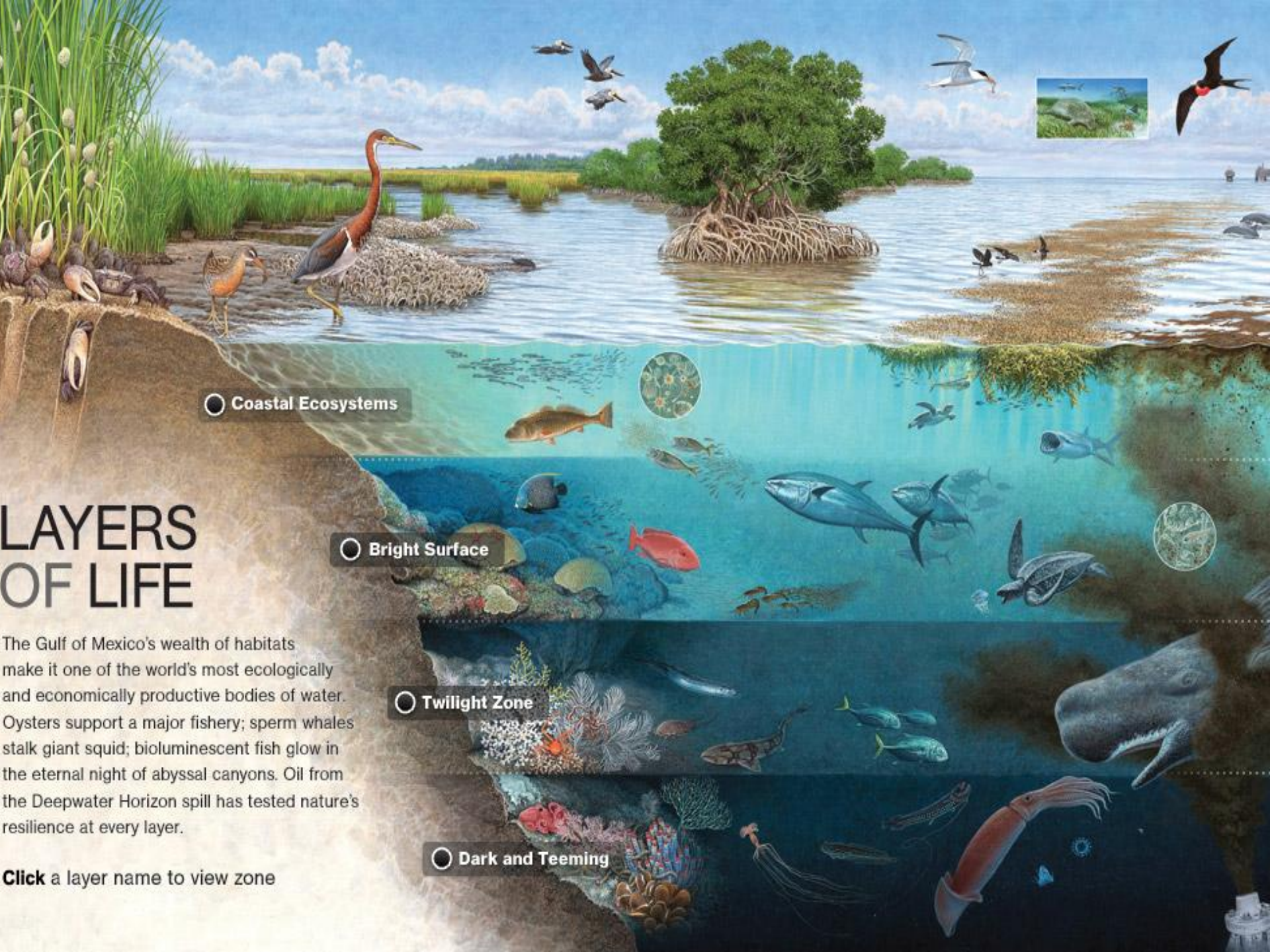


Gulf Oil Spill

- [Gulf Oil Spill](#)
- [Migrating Birds](#)







Coastal Ecosystems

Bright Surface

Twilight Zone

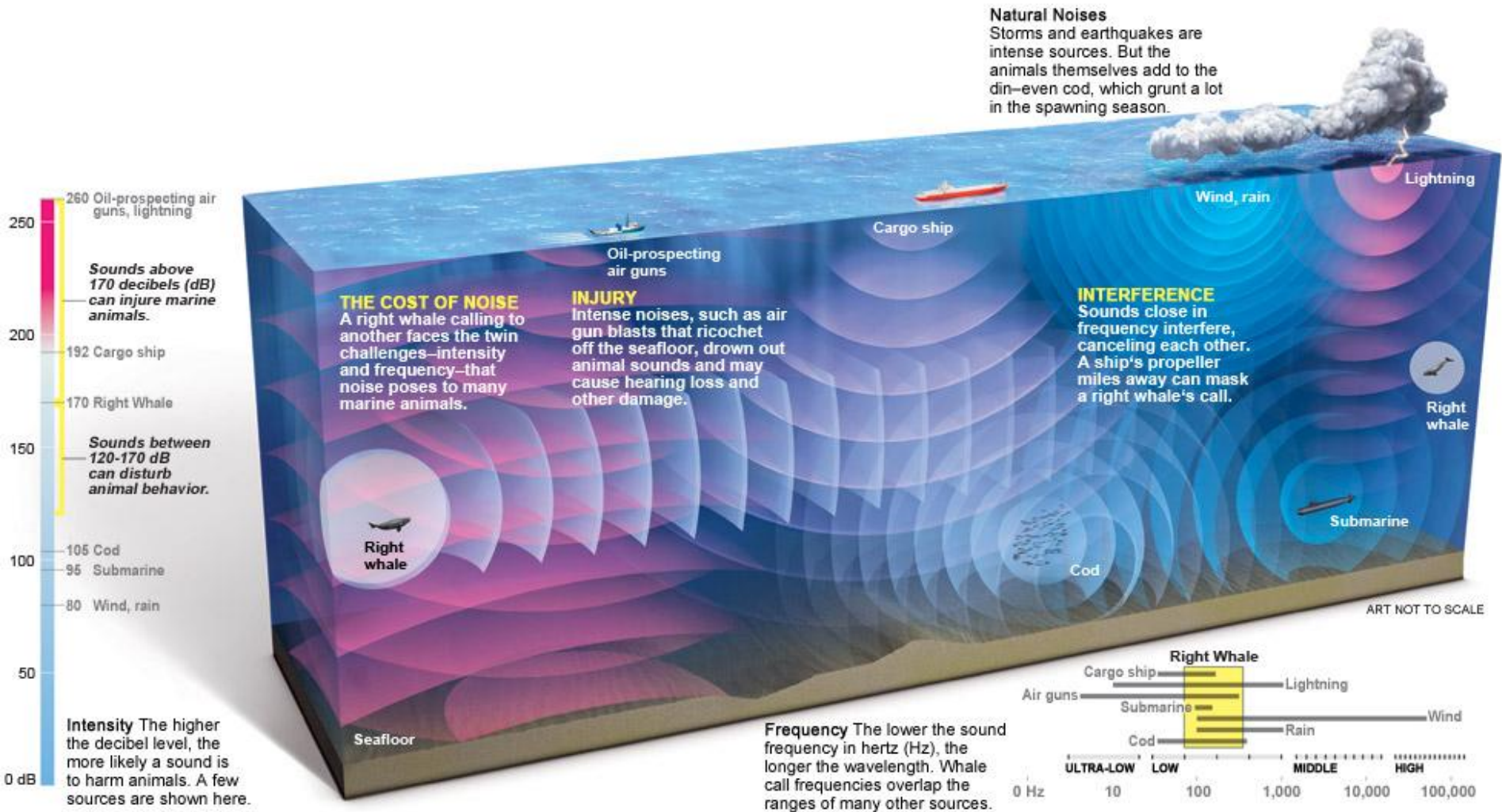
Dark and Teeming

LAYERS OF LIFE

The Gulf of Mexico's wealth of habitats make it one of the world's most ecologically and economically productive bodies of water. Oysters support a major fishery; sperm whales stalk giant squid; bioluminescent fish glow in the eternal night of abyssal canyons. Oil from the Deepwater Horizon spill has tested nature's resilience at every layer.

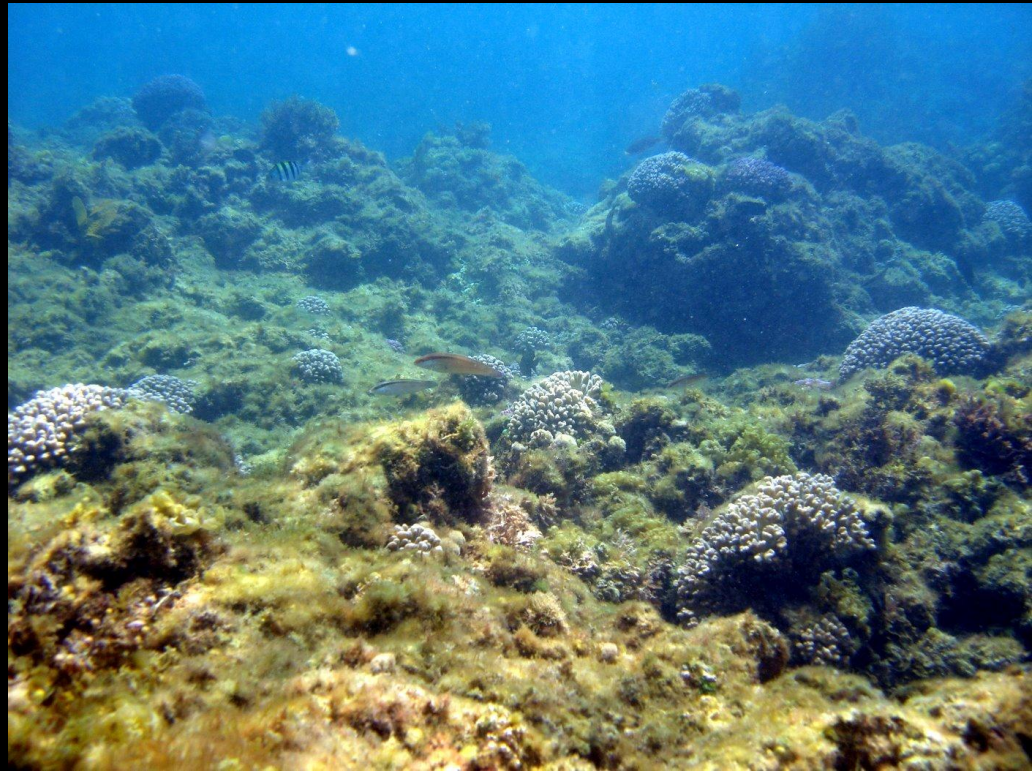
Click a layer name to view zone

Noise Pollution



Ocean Acidification

- When carbon dioxide dissolves in this ocean, carbonic acid is formed
- This leads to higher acidity, mainly near the surface, which has been proven to inhibit shell growth in marine animals



Habitat Destruction

- Most areas of the world's oceans are experiencing habitat loss
- Destructive fishing techniques like bottom trawling, dynamiting, and poisoning destroy habitats near shore as well as in the deep sea



[Bottom Trawling](#)

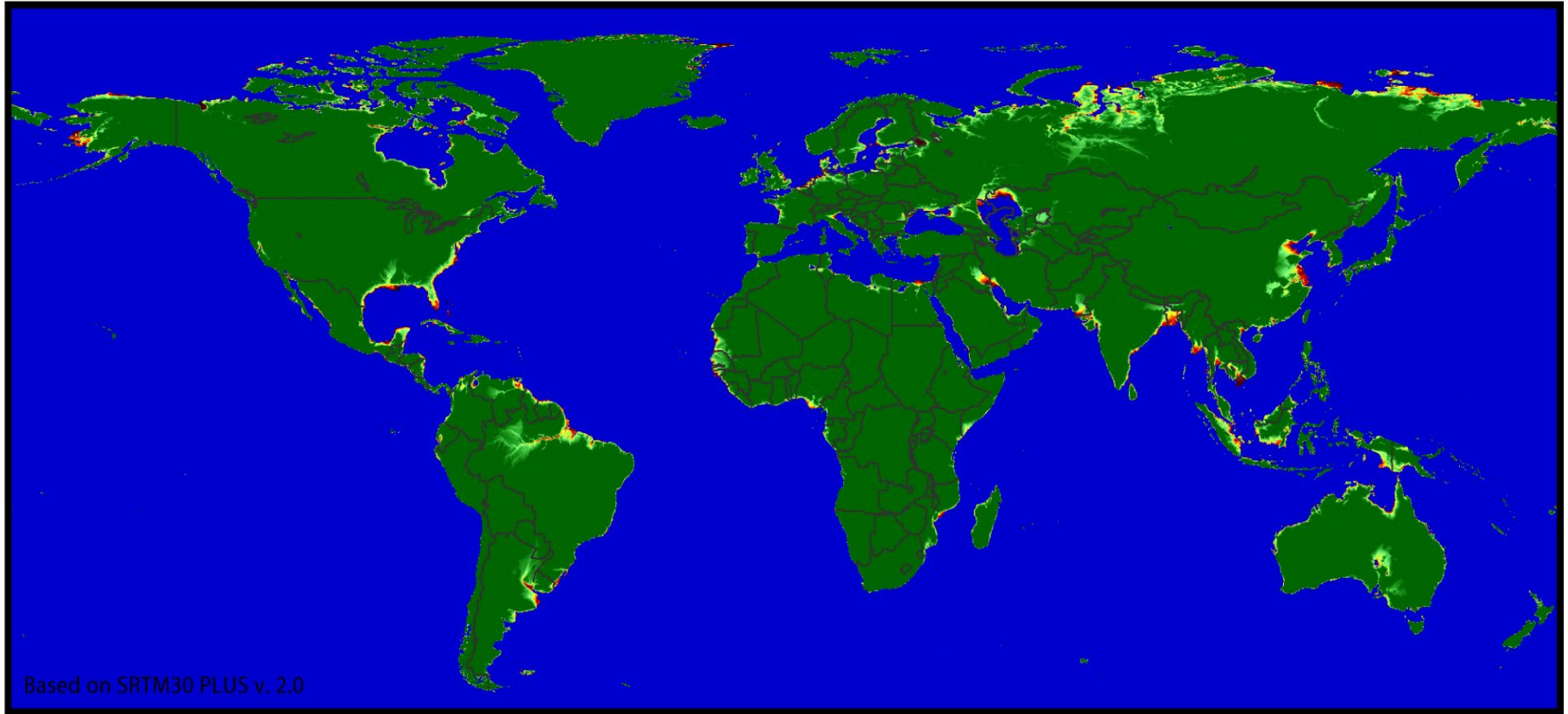
Rising Sea Levels

- When water heats up, it expands
- As seawater reaches farther inland, it can cause destructive erosion, flooding of wetlands, contamination of aquifers and agricultural soils, and lost habitat for fish, birds, and plants.



EXTRA HIGH TIDE FLOODS ROAD, FUNAFUTI, TUVALU (PACIFIC OCEAN) © 2005 GARY BRAASCH
RISING SEA LEVEL DOCUMENTED BY WORLD VIEW OF GLOBAL WARMING

Regions Vulnerable to Sea Level Rise



**Height Above
Sea Level (m)**

0 1 2 3 5 8 12 20 35 60 80



Boston

Philadelphia New York

Washington, D.C. Norfolk

Pine Bluff

Charleston

Houston

New Orleans

Tampa

Present-day shoreline

Miami

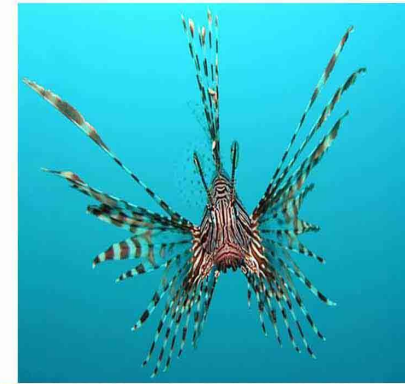
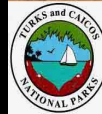
Invasive Species

- these species thrive in their new habitat, usually due to lack of natural predators to control their population
- do damage mainly by consuming native species, competing with them for food or space, or introducing disease
- hitch rides on the outside of ship hulls and on the millions of tons of plastics and other trash that floats around the globe in ocean currents

HAVE YOU SEEN THIS FISH?

WANTED!

**FOR INVADING TERRITORIAL WATERS &
PREYING ON NATIVE FISH**



The Red Lionfish (*Pterois volitans*)

Often seen hiding under ledges, coral heads, rocks and within crevices in shallow and deep water

Description: Red-and-White Zebra Stripes with long, showy pectoral fins

Size: 11.8 to 15 inches (30 to 38 cm) Weight: Up to 2.6 lbs (1.2 kg)

Diet: Just about anything that can fit in their mouths

Special Feature: Possess 18 venomous needle-like dorsal fins plus venomous anal and pectoral fins!!

A sting from a lionfish is extremely painful and can cause nausea and breathing difficulties, but is rarely fatal.

If stung immerse area in hot (bearable) water for 30-90mins and seek medical treatment immediately!

Please report sightings/captures to the Department of Environment and Coastal Resources:

Providenciales-941-5122 Grand Turk-946-2801 South Caicos-946-3306

Why Oceans Matter – NG

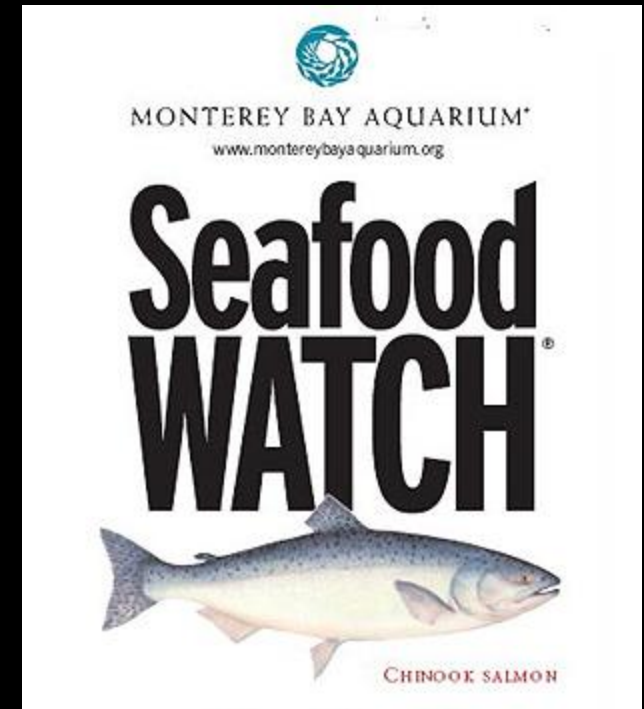


What you can do to help

- Make safe, sustainable seafood choices
- Use fewer plastic products
- Take care when visiting reefs and beaches
- Take part in a beach cleanup
- Educate and inform others of ocean issues

Make Wise Seafood Choices

- Making wise seafood choices
- Only purchase seafood that is certified sustainable



Marine Stewardship Council
Certified sustainable seafood

Aquaculture

- this is the practice of raising fish and other water dwelling organisms for food
- it is not a perfect solution
 - the artificial ponds and bays often replace natural habitats
 - maintaining the farms can cause pollution and spread diseases to wild fish populations



Aquaculture

- almost half of the seafood we eat comes from farms
- the rapid expansion of the aquaculture industry has not come without impacts
- when done responsibly, aquaculture's impact on wild fish populations, marine habitats, water quality and society is minimal



[Mobile Fish Farming](#)
[Fish Farming – The End of the Line](#)

Use Fewer Plastic Products

- Use a reusable water bottle
- Buy products with less packaging



[Midway Albatrosses](#)



Take Care When Visiting Reefs and Beaches

- Leave no footprint
 - Substantial damage has been caused by people touching coral, stirring up sediment, collecting coral, or dropping anchors on the corals
- Don't leave trash behind



Artificial Reefs

- sinking old ships helps to create new marine habitats
- artificial reefs created in Gulf of Mexico



Take Part in a Beach Cleanup



*Surfrider
Foundation*
San Diego Chapter

**STICK YOUR
NECK OUT
WHEN
IT COMES
TO TRASH ON
THE BEACH**



Time Taken For Littered Items To Breakdown

Cotton Rags	1-5 months	Alumunim Cans	80-100 years	Cigarette Butts	Forever
Paper	2-5 months	Glass Bottles	1M years	Plastic Bottles	Forever
Orange Peels	6 months	Nylon Fabric	Forever	Plastic 6-pack ring	Forever



Whale Shark Rescued from Discarded Net

Removing Straw from Sea Turtle's Nostril

International Conservation Efforts

Because the world ocean is a continuous body of water that has no boundaries, it is difficult to determine who, if anyone, should control portions of it. Nations must cooperate to manage and protect the oceans.

