Marine Mammal Adaptations and Climate Change

Northeast Fisheries Science Center

NOAA Fisheries

Wood's Hole Oceanographic Institution

Coasts, Oceans, And Stewardship Program (COAST)
What is a marine mammal?

Mammals adapted for life in the marine environment

Cetaceans  
(whales, dolphins, porpoises)

Sirenians  
(manatees, dugongs)

Pinnipeds  
(seals, sea lions, walruses)

Sea otters

What are some local marine mammals and why study them?

Polar bears

Photo: Jake Levenson
Marine Habitat

Temperature?

Rough or Calm?

Dark or Light?

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Marine Mammal Adaptations

- Fins & flippers
- Feeding structures: baleen or teeth
- No outer ear flap
- Insulating blubber
- Blowhole
- Echolocation/Communication abilities
- Streamlined bodies
- Camouflage coloring (dark top, light bottom)

Photo: Ian Stirling
Coasts, Oceans, And Stewardship Program (COAST)
Short-Beaked Common Dolphin

Photo Credit: NOAA/NEFSC/Pete Duley

Image collected under MMPA Research Permit #775-1875

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Activity 2: Compare and contrast skeletons

What is the same?

What is different?

Figure: Amer. Mus. Nat. Hist. Guide

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Climate versus Weather

Types of Climate on Earth

World Climate Regions
- Tropical climates
- Subtropical climates
- Cyclonic climates
- Polar climates
- Highland climates

East Falmouth, Falmouth, MA
Monday 8:00 AM
Sunny

Temperature: 35°F
Humidity: 100%
Wind: 7 mph

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Some of the things that produce heat trapping gases are...

http://www.carclipart.com/

http://www.designedfloat.com/summer2.shtml
The Heat Trapping Blanket

Photo credit: http://tiki.oneworld.net/planet-boundaries/pb5climate.html

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Photo credit: http://devilsinquisitor.com/tag/heat/
As global temperature rises:
- sea temperature rises
- sea level rises
- icebergs melt

Results:
- Where animals live shifts
- Loss of habitat
- Change in where food is

Photo credit: Gordon Waring, NOAA/NEFSC
Sea level rise

SIMULATION

Normal High Tide

Coasts, Oceans, And Stewardship Program (COAST)
Sea level rise simulation

SIMULATION

Normal High Tide
Kimberly Murray looks at Harbor and Gray Seals numbers and where they are located. She analyzes how they are using their habitat and how that habitat usage changes depending on the season (winter, spring, summer, and fall).
Our very own Woods Hole Sea Grant scientist...

**Greg Berman** provides technical assistance to local towns on coastal geology topics such as shoreline change, erosion control alternatives, potential effects of various human activities on the coast, coastal flood plains, and dune restoration techniques.
How can we help?

- Don’t litter
- Recycle
- Buy eco-friendly products
- Conserve

Spread the word