

# THE FOREST



## PLANTS

The Mountain Holly and Tamarack plants cannot grow in salt levels higher than 170 mg/L.



**SALT** is not a normal part of this ecosystem.



## BIRDS

Seed eating birds may eat road salt crystals because they think they are seeds. These birds may then die.

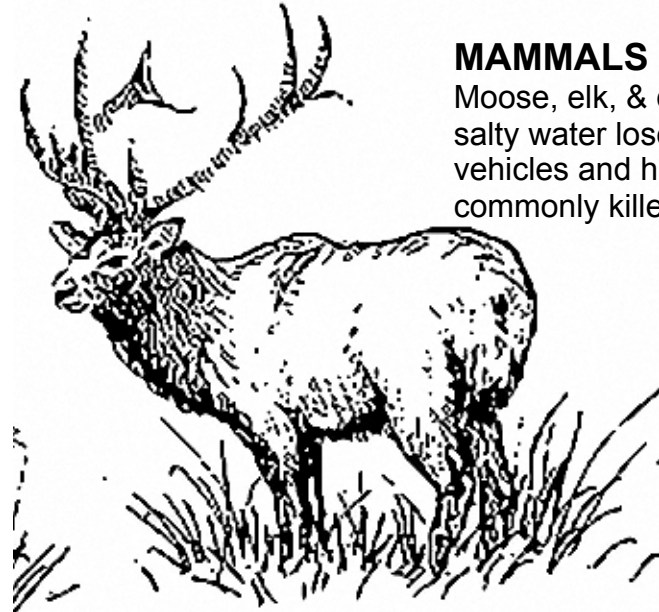
## DID YOU KNOW?

*About 8 to 12 million tons of road salt is used per year in the United States.*



## ROOTS AND SEEDS

Salt levels of 100 mg/L can affect water absorption, root growth, seed sprouting. The loss of habitat harms animals that depend on the land for food, shelter, and breeding sites.



## MAMMALS

Moose, elk, & deer that drink salty water lose their fear of vehicles and humans and are commonly killed by traffic.

# FRESHWATER



## FISH

like rainbow trout will die if they swim in water of 1,000 mg/L of salt.



**FRESHWATER** means that the water is **NOT SALTY.**



## FROGS

can die in salt levels of 400 mg/L.

## DID YOU KNOW?

*Most of the world's water is off limits for drinking! Only 3% of Earth's water is considered fresh, i.e. not salty. Most of it is locked up in ice as glaciers. Only 0.3% of Earth's water is found in rivers or lakes and 0.9% is found underground.*



## PEOPLE

can only drink freshwater. The Environmental Protection Agency (EPA) does not allow people to drink water with salt levels greater than 250 mg/L. Also, water begins to taste bad at this level.

**BRACKISH WATER** has 1,000 mg/L or more of salt and is considered to be too salty to drink.

**BRINE WATER** has 10,000 mg/L or more of salt and is considered to be very salty.



## SMALL FRESHWATER PLANTS AND ANIMALS

that are the basis of the food web will begin to die at salt levels of 226 mg/L.

# WETLANDS

## WHAT IS THE DIFFERENCE BETWEEN A SWAMP AND A MARSH?

A **SWAMP** is a wetland with woody plants like **trees** and often grows in freshwater.



**MARSHES**  
are **SALTY**.

**SWAMPS** are  
**NOT SALTY**.

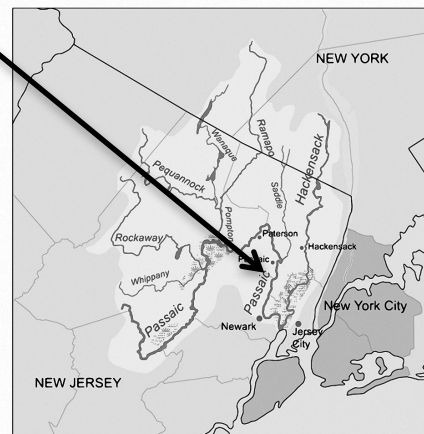
A **MARSH** is a wetland with **grasses**, but no trees. It often grows in brackish (1000 mg/L) or even saltier water.



## NEW JERSEY MEADOWLANDS: FROM SWAMP TO MARSH

### 200 years ago — Cedar Tamarack Swamp

The New Jersey Meadowlands used to be filled with tall cedars and tamarack trees that grew in the wet swampy habitat. People cut them down, and they were also killed by **SALT!**



### 1922 to Today—Reedy Marsh

In 1922, the Hackensack River was dammed, cutting off the flow of freshwater to the Meadowlands. The water became saltier, killing trees and leading to the growth of the salt tolerant reedy grasses that you can see today.

# ESTUARY

## WHAT IS AN ESTUARY?

An estuary is a semi-enclosed area where fresh water meets and mixes with salty ocean water. It is often called “the cradle of the ocean” because it is filled with life.

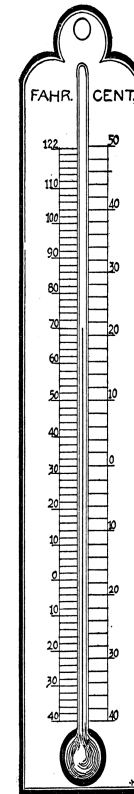


## ATLANTIC STURGEON

can be 15 ft long and weigh over 800 lbs. They are part of an ancient 200 million year old fish lineage – older than dinosaurs!



**SALT** in estuaries can range with the tide from 3,000 to 30,000 mg/L of salt.



## TEMPERATURES

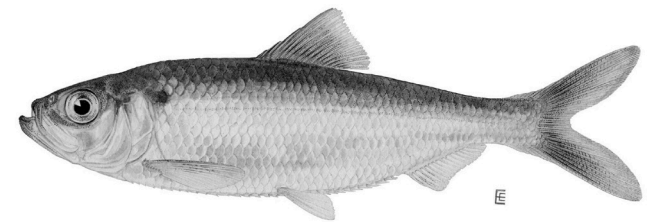
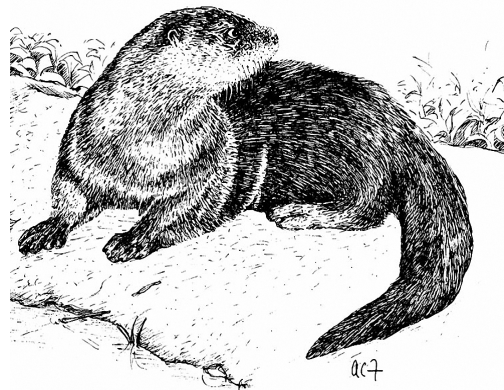
in shallow estuaries can range from freezing to more than 100 °F in the course of a year.

## DID YOU KNOW?

*Organisms that live in estuaries are unique because they are able to live in huge ranges of salt, temperature, tides and sunlight.*

## RIVER OTTERS

can sometimes be seen swimming at the mouth of the Hudson River.



## ALEWIFE

is a species of herring less than 1 foot long. Its name comes from its round body that people thought looked like an overweight wife of a bar owner (ale wife)

# OCEAN

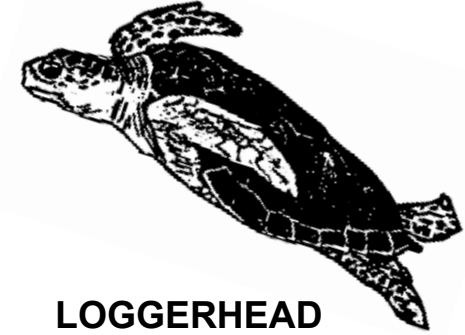


## GREAT WHITE SHARK

is found in all oceans, including off the coast of Long Island and NJ. It can be 20 ft long and weigh almost 5,000 lbs. Like other sharks, Great Whites have rows and rows of teeth, one behind the next that move forward to replace broken and worn teeth.



**SALT** levels are as high as 32,000 mg/L in the open ocean.



## LOGGERHEAD SEA TURTLES

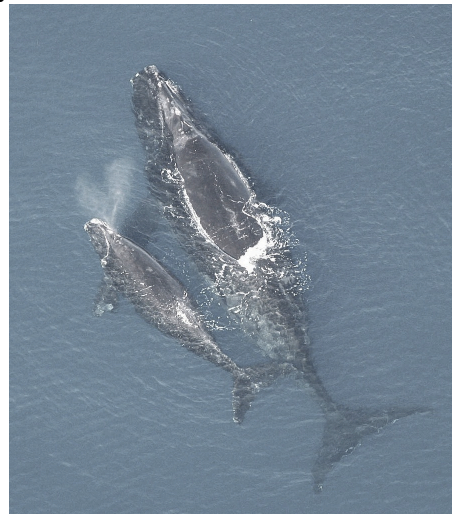
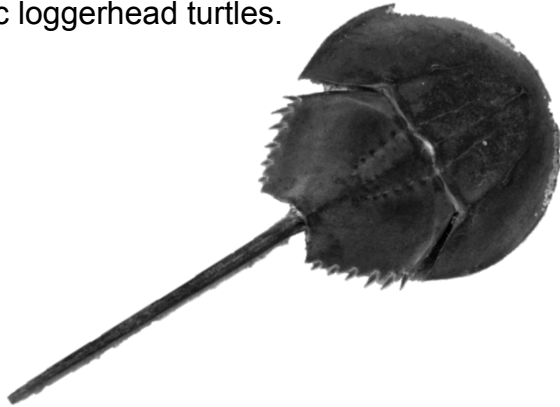
along with Green Turtles, Hawksbill Turtles, Leatherback Turtles, and Atlantic Ridley Turtles still sometimes swim in the Atlantic off the New York / New Jersey coast.

### *DID YOU KNOW?*

*97% of the Earth's water is salty and found in the oceans.*

## HORSESHOE CRABS

climb onshore in the spring to lay their eggs—each female lays 80,000! These eggs feed migrating shorebirds, fish, and Atlantic loggerhead turtles.



## NORTH ATLANTIC RIGHT WHALES

along with fin, humpback, minke, sperm, blue and sei whales, dolphins, pilot whales and porpoises can all be spotted off the coast of Long Island. Right whales were given the name because they were the “right” whales to kill for their oil. Today less than 300 of the 50 foot, 70 ton animals remain.

## A SALT CONCENTRATION GUIDE in mg/L:

67.5	Harms forest pine trees
100	Maximum allowed in NYC drinking water
226	Kills tiny freshwater plants and animals
250	Tastes salty. Maximum allowed in drinking water by the Environmental Protection Agency
400	Will kill some freshwater frogs
1,000	Will kill some freshwater fish like trout. Considered to be brackish or salty water
3,000	Lowest salt level found in the New York/New Jersey estuary
30,000	Highest level in the New York/New Jersey estuary
32,000	Average in ocean off of Long Island and New Jersey

## Image Credits

1. Tamarack: John Lillis  
Mountain Holly: Champlain Project  
Table Salt: Everything Kitchens  
Bird: US Geological Survey  
Mammal (Deer): Clker
2. Rainbow Trout: US Fish & Wildlife Service  
Table Salt: Everything Kitchens  
Frog: USGS  
Algae: US Department of Health & Human Services  
Tap Water: Food & Water Watch
3. Eastern White Cedar: Forests for Maine's Future  
Phragmites: Rob Bock/Sandbox  
Hackensack River: Karl Musser/US Geological Survey
4. Thermometer: Florida Center for Instructional Technology, College of Education/University of South Florida  
Otter: WA Department of Fish & Wildlife  
Alewife: Department of Natural Resources - Cornell University/NY Department of Environmental Conservation  
Atlantic Sturgeon: Department of Natural Resources - Cornell University/NY Department of Environmental Conservation
5. Great White Shark: Terry Goss  
Sea Turtle: NOAA  
Horseshoe Crab: NOAA  
Right Whale: NOAA