



The Great Terrapin Race [MS]

Adapted from MATES Project Terrapin and New Wave of Learning

Grades: K-2

Time: 45 minutes to 1 hour

Goals: To understand the concept of predator-prey relationships in the salt marsh ecosystem with relation to Northern Diamondback Terrapins.

Objectives:

Students will be able to: understand the concept of predator-prey relationships and understand the necessity for terrapin conservation.

Materials:

- Predator and prey species cards (provided)
- Live species (if available)
- Crab pot
- Terrapin excluder devices
- Fishing nets or lines

Procedures:

1. Pre-Activity (introduction): Define the terms predator and prey within an estuarine watershed. Explain that one particular species, the Northern Diamondback terrapin, lives in the watershed and describe its prey species and some of its predators. Explain that the game they will play is to represent these predators and prey species and what will happen to the terrapins throughout their life cycle in the bay.

2. Activity: This game is best played outdoors in a wide open space but can be adapted to the classroom. Assign predators and prey species and the remainder of the group will be terrapins; give out their species cards. Begin with hatchlings. Hatchlings will eat plankton and small juvenile fish. They can be eaten by sea gulls, and raccoons. Set boundaries for where the students can go – for hatchlings it is a race to the bay from their nest. Hatchlings will have a certain amount of time to avoid getting tagged by predators as they tag their prey on their way to the water.

For the second round, the terrapin hatchlings have grown and are now juveniles living in the bay. They are now able to eat larger fish and fiddler crabs. Their predators are going to be foxes and bald eagles, as well as river otters. Assign different predators and prey and have the terrapins race from one bank of the salt marsh to the other in search of food, while avoiding their predators.



For the final round, the terrapins are now adults. They will be eating mostly the same prey species, but add in periwinkle snails and worms. Predators will still be bald eagles and otters but now add in the human induced predation – a crab pot drifting in the water column, fishing gear that can entangle the terrapins, and boats. Have the terrapins avoid predators and human impacts while still trying to tag their prey species.

3. Post-Activity (review): Collect the species cards and have the students come together as a group for a discussion of how difficult it was to be a terrapin. Explain that while terrapins live mostly in water, they have to avoid humans as well as natural predators. By introducing humans, they are less likely to catch their prey because they can be seriously injured in the attempt. Discuss with the students ways that humans can prevent being a part of this food web and make it easier for terrapins to survive.

Key Words:

Predator
Crab pot

Prey
Ghost net

Anthropogenic
Food web

Background Information:

Adapted from New Wave of Learning

Northern Diamondback terrapins are turtles that live in an estuarine environment and it is the only turtle to do so. Because they are reptiles, like their relatives the snakes, lizards, and alligators, their body temperature is regulated by the surrounding air and water, so they must come out on dry land during the day to keep warm. They feed in water and will hold their breath for up to ten minutes in order to reach the bottom where their prey species – primarily crabs, worms, and snails – live.

Terrapins are different from land turtles in that they have “swimming feet” – webbing between their toes and claws on their feet – instead of stocky flat feet that species such as giant tortoises have. They are different from sea turtles in that the latter have flippers and only one claw on each. Tortoises tend to feed on fruits and vegetables such as berries and grasses and sea turtles will eat a variety of oceanic prey such as fish, squid, and crabs.

All turtles, whether land, estuarine or marine, all have the same basic body plan. The top shell, called the carapace, is covered by many overlapping plates called scutes. Scutes are made of keratin, the same material that our hair and fingernails are made from. The rings on each scute are just like the rings of a tree and can tell you how old the turtle is. The bottom shell, called the plastron, is fused in such a way in land and estuarine turtles that the species can tuck its head and limbs inside its shell. The tail helps to provide balance and is used in distinguishing between male and female – a thicker, longer tail belongs to the males and a thinner, smaller tail belongs to the females.



Terrapins have powerful jaws that crush the shells of their prey easily. They feed during the warmer months of spring and summer and then go through a period called brumation in fall and winter. Brumation is similar to hibernation but instead of sleeping for months, their metabolism slows down so that their organs do not work as hard, creating a relaxed state in their bodies. They can hold their breath underwater for much longer during this period, since respiration rates have slowed.

As reptiles, all forms of turtles, including terrapins and sea turtles, lay a clutch of eggs on dry land. The eggs are soft, leathery and porous and easily susceptible to the elements, which is why they dig nests in the sand to protect them. Using her back feet as scoops, the females will dig a hole anywhere from six inches (terrapins) to three feet (Leatherback sea turtles). The eggs will remain in the nest incubating for up to 60 days. Most hatchlings will be no more than a quarter in size at birth. Predators of terrapin hatchlings are species such as crows, sea gulls, raccoons, and blue crabs and one out of every 1000 will survive to adulthood.

Terrapin habitat is highly important for both food sources and nesting areas. Humans can affect these areas by destroying eel grass beds, where their prey species live, as well as building along marshland areas. Many terrapin females are killed every year trying to cross major roads along marshes trying to find the right place to nest. Males are small enough to be trapped in crab pots and will drown if they are left unattended for more than twenty minutes at a time. It is not mandatory in some states, but turtle excluder devices can be placed over the openings in crab pots to keep males from getting in.

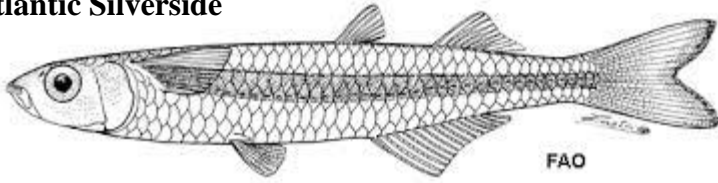
Both in the estuary and in the ocean, we need to be conscientious of these reptile species. Keep to the no wake zones in the marshes and be aware of turtle heads coming up for air. Throw away your trash in the proper bins instead of allowing it to reach our waters. Recycle old nets, fishing lines, and hooks; this helps to prevent entanglement, ingestion, or possible loss of limbs.

Species provided on the following pages.

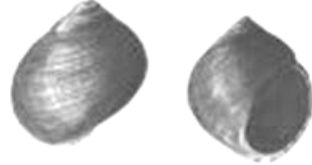


PREY SPECIES

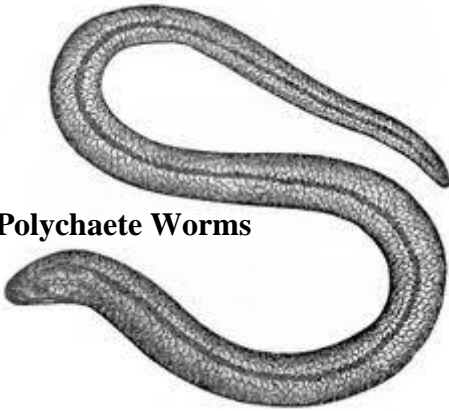
Atlantic Silverside



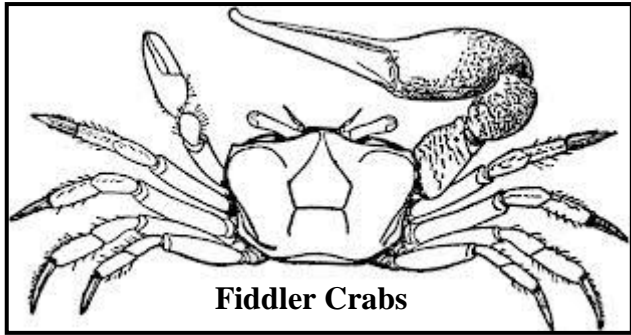
Periwinkle Snails



Polychaete Worms

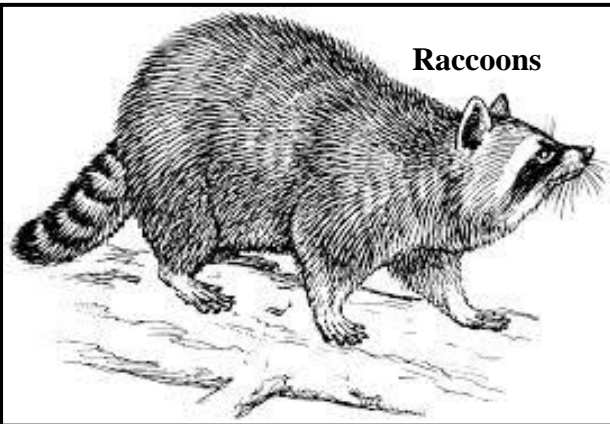


Fiddler Crabs

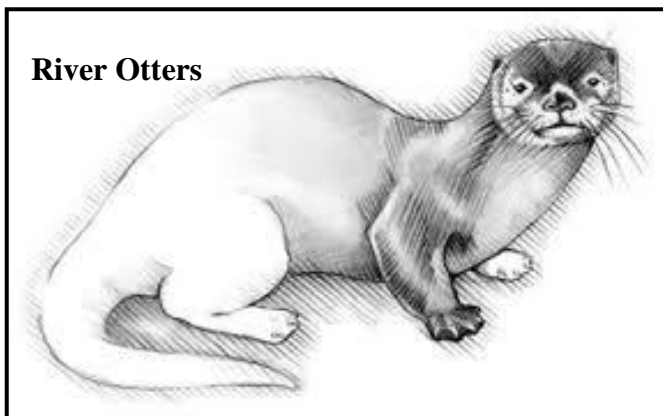


PREDATOR SPECIES

Raccoons

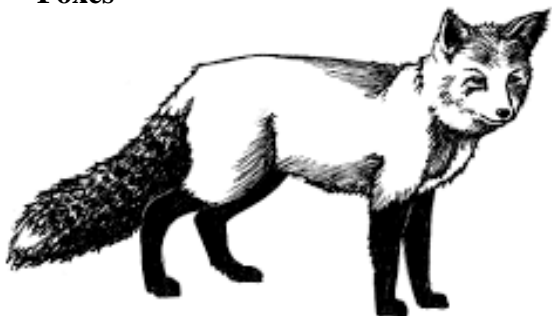


River Otters

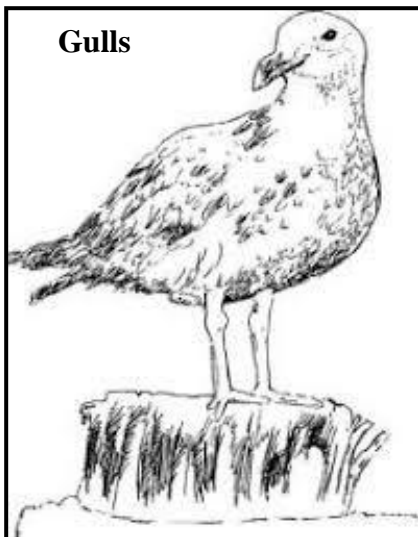




Foxes



Gulls



Bald Eagles

