MIGRATION HEADACHE *(adapted from Project Wild)*

LEARN ABOUT HABITATS AND WHY SOME ANIMALS MIGRATE AND SOME OF THE CHALLENGES THEY FACE DURING THEIR JOURNEY

Third Grade NGSS DCI Addressed:

LS1.B Growth and Development of Organisms
- 3-LS1-1

LS2.C Ecosystem Dynamics, Functioning and Resilience
- 3-LS2-1

LS2.D Social Interactions and Group Behavior

LS4.C Adaptation
- 3-LS4-3
- 3-LS4-4

LS4.D Biodiversity and Humans

Pre-Trip Information/Activities (to be done in class prior to trip)

- Bird Migration Video
- Biological Carrying Capacity Video
- Limiting Factors Video
- Bald Eagle NewsELA Article (3rd grade)

Background: Students simulate the challenges bald eagles face migrating between their summer habitat in Canada and their winter habitat at Millerton Lake.

Materials:
- 3 lines of Cones
- Squares of fake grass/paper plates (represent habitat) along each line.

Set Up:
- Set up the three lines of cones approx. 30 feet away from each other.
- Along each line of cones place 7 squares of "habitat" (fake grass squares, plates, etc.).

Introduction:
- Ask: What is migration? *When an organism moves from place to place during the different seasons.*
- Ask: What types of animals have to migrate? *Birds, deer etc.*
- Ask: Why do animals migrate? *Because it gets too cold or there is a lack of food, to get to breeding areas.*
- Ask: What do we call the areas that animals live in and/or pass through? *Habitat.*
- Ask: What do the animals get from the habitat? *Food, Shelter, Water, Space.*
- Ask: Who knows a bird that migrates to Millerton in the winter and Canada in the summer? *Bald Eagles.*

- Tell them that in this activity they are majestic bald eagles that have to face a migration headache.

Activity:

a) Have all the students line up at their summer habitat in Canada and put a foot on a habitat square. Each habitat square can support 3 bald eagles.
b) When you say "Migrate" they have to fly to the line of habitat in the middle. This represents areas of habitat that they would use to stop at during their 2,000 mile migration down south for the winter.
c) Each student should have lots of habitat to use at this first stop.
d) Say Migrate again and have the bald eagles migrate to their wintering grounds at Millerton lake.
e) Before you say "Migrate" again remove some habitat from the middle line.
f) Ask: What could have happened to the habitat? Where did it go? *Habitat destruction for houses, logging, factories, farms, pollution etc.*
g) When they migrate there will not be enough habitat to support them all.
h) Ask: What happens to a bald eagle that doesn't get enough food and water? *They die of starvation. Have the students act out their demise and stand off to the side for now.*
i) Continue to have the bald eagles migrate and continue to remove habitat. After each round discuss a different reason why the habitat was lost. You can add habitat also and call it habitat restoration *(planting trees, conserving land, picking up trash, etc).*
j) Have the students who have been killed reenter the game as natural disasters (flooding, tornado, hurricane, drought, etc.) and have allow them to try and catch an eagle during migration. Any eagles caught by are a natural disaster are 'killed.'
k) At random intervals declare one piece of habitat "polluted" and 'kill' the bald eagles that are currently standing on it. Ask: What kinds of pollution could it be? *Fertilizer, trash, oil, gasoline, etc.*
l) Once the Bald Eagle reach their breeding grounds in Canada again add back in students to represent reproduction.
    a. Continue the activity until the students understand the challenges and necessity of migration.

Scenario Suggestions:

- A new housing development has gone up in an area that was previously forest, removing lots of trees eagles use to rest or build nests (remove 1 or 2 habitat squares)
- An environmental non-profit acquired a piece of land and designated it for habitat, ensuring that space will be available for animals like the eagles (add 1 or 2 habitat squares)
- A forest fire burned a large amount of land used as overwintering habitat, destroying trees and forcing animals eagles use for food to flee (remove 2 or 3 habitat squares)
- A 3rd grade classroom hosted a tree planting event and planted over 100 new trees, creating habitat for eagles and many other animals (add 1 or 2 habitat squares)
- A drought in California caused the banks of the reservoirs to recede and the rivers to go down (remove 1 or 2 habitat squares)
- A heavy rain event brings lots of new water to the system (add 1 or 2 habitat squares)
- The heavy rain causes several mudslides, bringing down trees and adding lots of mud and dirt into the nearby water (remove 1 or 2 habitat squares)
- A local initiative brings awareness to the lack of bald eagle habitat and people donate thousands of dollars for habitat restoration (add 2 or 3 habitat squares)
- A chemical spill from an industrial plant dumps hundreds of gallons of pollution into the river, killing many of the fish (remove 2 or 3 habitat squares)
- The government provides funding for an emergency clean up and for additional restoration in the area (add 1 or 2 habitat squares)

Discussion:

- Ask: How many of you survived the entire time? What did you have to avoid to survive?
- Ask: What were the types of habitat destruction? *Housing, logging, pollution, etc.*
- Ask: How realistic do you think this simulation was to what bald eagles have to face in the wild?
- Ask: Why is it important to save habitat even if there aren't a lot of animals in it right now?
- Ask: What did you learn from this activity – give a couple of students a chance to answer.

Post-Trip Activity (to be done in the class after the trip)

- Have students research and map the migration of our west coast bald eagles. (W.3.7, SEP-8)
- Have students come up with a limiting factor that affects each component of an eagle's habitat (food, shelter, water, space). Are they the results of human impact? If so, brainstorm possible solutions to these impacts. (ETS1.A, ETS1.B, SEP-6)