COASTAL CONNECTIONS

LOCATION: Indoors and Outdoors

ENERGY LEVEL: Low to Medium

AGE GROUP: 10+

GROUP SIZE: Up to 30

Description: This friendly competition will have students exploring the connections between terrestrial, coastal and ocean ecosystems through the lens of Eelgrass, a misunderstood keystone species that plays a crucial role in all three regions. Topics include food webs, erosion, climate change solutions, career exploration.

OBJECTIVE(S):

- Students will be able to recognize key coastal species of New Brunswick
- Identify the importance of eelgrass in coastal habitats
- Students will be able to describe what a keystone species is
- Students will learn ways that the coast, oceans and land are connected
- Students will be able to identify the benefits of healthy coasts for humans
- Students will be able to describe ways humans can take action to preserve coastal habitats
- Students will explore career options in conservation

CURRICULUM LINKS:

Grade X:

- **Number** Description

MATERIALS AND RESOURCES:

- 2 Eelgrass Towers
- 1 Scenario Dice
- Laminated Pictures for "Find Your Food Chain" Species
- Trivia Props: survey tools/Techniques

TIME-LINE:

A. Introduction / Preliminary Talk	10 minutes
B. Instructions	10 minutes
C. Play Eelgrass Towers	30 minutes
D. Debrief	10 minutes
Total Time	**60 minutes**

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CONTENTS AND METHODS:

A. INTRODUCTION

Introduce self. *(Include quick description of career pathway)*

Introduce Nature NB. Ask "What kinds of things do you think we do at Nature NB?" Students will often say things like "Help animals" or "Clean up nature". Explain "Yes, we help animals (and plants) by teaching people across the province why nature is important. Today, I'm here to teach you some things about ….."

Q. What is your favorite part of going to the beach?
Q. What are species that live on the coast?
Q. Is there anything we don't like about the beach?

A. Seaweed? Not many people like swimming with seaweed or all that dead stuff left behind by waves. It can be kind of stinky, and weird to step on. But seaweed is actually really important part of our ecosystems. Eelgrass is a type of "seaweed" that we find in New Brunswick and are actually a keystone species.

Q. Any guesses as to what keystone means?

A. Imagine a stone archway. The key stone is the wedge shaped one at the top, this stone is the one that locks the structure into place and allows the arch to support a ton of weight. This one stone plays a bigger role then most of the other stones. Keystone Species therefore are species that play a disproportionate role in their ecosystem.

Today we're going to have a little competition to explore what makes Eelgrass and Healthy Coasts so important.

B. INSTRUCTIONS

- **Set up the Eelgrass Towers**
  - Blocks with root and tip design in the correct place
  - With enough space for it to topple and for participants to walk around
- **Begin away from the blocks so students aren't tempted to play prematurely**

C.SET UP TEAMS: FIND YOUR FOOD CHAIN

- Pass out species cards to students.
  - 28 cards total (2 cards per species)
- **Step 1.** Students find the other student with the matching card.
- **Step 2.** Students organize themselves into 2 food chains.

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- Give students a minute to see what they come up with. After a minute you can give them clues - remind them about predator/prey relationships (find the species that you eat), think about the habitat that you live in.

Oceanic Food Chain	Terrestrial Food Chain
Eelgrass	Dead Eelgrass
Gammaridean Amphipod	Sandhopper
Green Crab	Rove Beetle*
Striped Bass	Sanderling
Grey Seal*	Arctic Fox
Great White Shark*	Polar Bear*
Hagfish	American Carrion Beetle

- Tips for managing different class sizes.
    - 28 students use all the base cards.
    - More than 28, add a card for any species.
    - uneven number - only use 1 eelgrass and 1 dead eelgrass card
    - Less than 28
        - remove rove beetle, grey seal.
    - 14 students -don't double up the cards.
    - Very small groups
        - teacher/presenter are eelgrass/dead eelgrass
        - Remove great white shark and polar bear
        - Remove Decomposers
- Web building *(Optional)*
    - So we've now created some neat food chains. But are some of these animals predators of other animals in the system? The chains become webs.
    - Use yarn, hands or verbally point out other connections.
    - Other connections:
        - Polar Bear - Seal
        - Sanderling - green crab
        - Sanderling - Gammeridean Amphipod/Sandhopper
        - Great White Shark - Striped Bass
        - Decomposers will actually eat everyone

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D. Eelgrass Towers

- Have Teams stand near their tower. To determine who will go first we will put ourselves in the shoes of an Ornithologist - anyone know what ornithologists study?
    - A big part of an ornithologist's work is to go out and see what birds they find, and count them. On the coast, that sometimes means seeing a large group of birds in one place, and you don't have time to count each bird. So the challenge is, you will have 30 seconds to count or estimate the number of birds on the sheet. The team that gets the closest number will get to go first.
    - Place a copy of the photo in front of each group. On the count of 3, you will flip it over
    - You've got 30 seconds to estimate the # of birds, you will write your estimate directly on the back of the photo.
- First team rolls the dice, each number (or image) is associated with a scenario.
    - Scenario sheet
    - Each team will alternate who rolls - read through the scenarios.
    - If a team pulls out a block with an animal name it triggers a trivia question. If they get it correctly, they get to place a block back anywhere on their tower. Everytime a trivia question is triggered, the difficulty level increases by 1.
        - Trivia Questions
        - 7 questions per team
    - Play until a tower topples

D. DEBRIEF

- Was restabilizing the tower useful? What technique worked best? What were the limitations?
    - Do you think it's easier to fix the problem or try to make the problem not happen at all?
    - If you were able to restabilize it, did it look the same? Did you get it to be fully stable?
- Why do you think there were species written on certain blocks?
    - How do you think they are connected to eelgrass?
    - Do you think any other creatures or habitats rely on those species?
    - What about humans? How do we rely on eelgrass and healthy coasts?
- What did you notice about the tower throughout the game - How are the towers representative of ecosystems?
    - What do you think would happen to the ecosystem if we did not have any Eelgrass?
    - Do you think other ecosystems function in this way?
- What kind of careers can you think of that are connected with healthy coasts?
    - What kind of skills do you think you need to develop for these careers?
    - Would anyone be interested in working in these domains?
- Create your own trivia question

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raise your hand if

- did you like the trivia questions
- were they too hard
- more of the trivia questions

Did everyone get a chance to participate