INTRODUCTION - It’s All Connected

Nature consists of complex relationships. Many animals depend on plants for food; in turn, the animals may also help the plants to reproduce by distributing seeds. In some cases, seeds may attach to an animal’s fur and fall off at a later time. In other cases, seeds may pass through an animal's digestive system. Other species may move from plant to plant helping to pollinate the blossoms and trigger the production of fruit.

Noise can change the behavior of animals. Scientists have observed birds avoiding areas of loud noises, while mice used the same sound to hide their movement through leaf litter. The mice ate the seeds where birds cached them. This had a negative effect on the trees in the area and limited their ability to successfully reproduce.

ACTIVITY INSTRUCTIONS - Sound Behavior

Materials
- Container of Poker Chips
- Recording of human made sounds on the thumbdrive

Instructions
- Divide the students into two groups. One group will be birds, while the other represent mice.
- Place the container of game chips in a central location. Each chip represents a seed from a piñon pine tree.
- During the round, birds can only approach the container and remove chips when the environment is quiet. Mice can only approach and take a chip when there is additional background noise. (Play recordings of human-made noise from the thumbdrive.)
- Birds and mice may only take one chip at a time; however they may return to the container to take additional chips throughout the round.
- For every other chip a bird takes, have them "cache" that seed by placing them on the ground. Let the mice know they cannot take the cached seeds. Mice will "eat" the seeds and can hold all of their seeds in their shirt or "stomach".

Vary the amount of time that the noise is played for each round of the activity.

- At the end of the round, observe how many chips are held by birds versus mice. How many are cached?
- What’s the difference? Birds, such as a Scrub Jay, will bury piñon pine seeds to consume in the future. Many of those seeds will not be consumed and have the chance to germinate into new piñon pine trees. On the other hand, the mice will consume the seeds immediately. Unfortunately, the soft pine seeds will not survive the process of passing through the mouse’s digestive system and will never reproduce.
Nature consists of complex relationships. Many animals depend on plants for food; in turn, the animals may also help the plants to reproduce by distributing seeds or pollinating the plant. In some cases, seeds may attach to an animal’s fur and fall off at a later time. In other cases, seeds may pass through an animal’s digestive system intact to become seedlings. Some animals, like birds, cache or hide the seed by burying it. The bird forgets where some of the seeds are buried and the bird just planted a tree!

Noise can affect these relationships. Scientists have observed birds, such as the Scrub Jay avoiding areas with loud noises. Meanwhile, mice use the same noise to hide their movement through leaf litter. While the Scrub Jays would cache a portion of the piñon pine seeds that could germinate into new trees, the mice would eat all of the seeds. Without the successful planting of piñon pine seeds, tree seedlings were reduced.

Make a hypothesis about how tree seed dispersal could be affected by noise disturbance like a new road.

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Round 1 Results:
Length of Music ___________ Number of seeds cached/planted? ______________________

How many seeds did mice eat____________ How many seeds did birds eat?________________________

Round 2 Results:
Length of Music ___________ Number of seeds planted? ______________________

How many seeds did mice eat____________ How many seeds did birds eat?________________________

Round 3 Results:
Length of Music ___________ Number of seeds planted? ______________________

How many seeds did mice eat____________ How many seeds did birds eat?________________________

Was your hypothesis correct? Did noise have an impact on more than one part of the ecosystem? What is your conclusion?

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How could you reduce noise to bring the birds back?_____________________

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