

Determining How Noise Affects Other Species

Description:

Students will research and learn how noise affects our urban ecosystem. In groups, students will investigate the specific impact noise has on a species to determine what the noise disturbance is, how it interferes with the species, and how to develop a campaign to address the problem.

Objectives:

- Identify the impact sound and noise has on non-human animals' functions
- Develop research skills and learn to identify reliable sources
- Develop a solution to mitigate the effects of anthropogenic sound and noise on wildlife

Vocabulary:

Anthropogenic, echolocation, navigation, noise pollution

Materials:

- Computer, laptop, or tablet with internet access
- "Who Else Does Noise Affect?" worksheet

Background Information:

Sound and noise are often thought of as an environmental problem that solely impacts humans, but in reality, it greatly affects the functioning of a number of other animal species. Human produced sound and noise interferes with animal communication, mating behavior, foraging behavior, and spatial orientation on land and in aquatic ecosystems. Some species may be able to acclimate to these disturbances while other species are less able to do so.

Method:

- Have students discuss with a partner how we use sound in our lives. Once students have had time to talk, ask them to share their ideas with the class.
- Next, ask students how other animals use sound in their lives. Students should be able to connect the idea that animals use sound to perform the same necessary functions as humans: to obtain food, to form relationships, to navigate, announce danger, etc. They should also discuss differences in the ways in which humans and animals use sound. For example, many humans use sound to communicate through oral language while animals such as bats use echolocation for spatial navigation.
- Have students read the article ["What are the Effects of Underwater Noise Pollution?"](#) and ["Noise Pollution"](#). Students can discuss the new information they learned. What surprised them?
- For educators teaching about climate change, watch this [TED Talk](#). After watching, answer questions 2, 3, and 10 on the list of questions in the "Think About It" section provided under the TED Talk.
- Have students examine the [JONAS Ocean Soundscape Infographic](#). What surprised them? Do they notice any anthropogenic sources in their local waterways?
- Ask students to think about species they know and how they use sound. On the board write down a list of the animals mentioned. Some animals to consider in our unique urban ecosystem include red tailed hawks, house sparrows, eastern grey squirrels, bullfrogs, spring peepers, humpback whales, and cicadas.
- Have students write down on a piece of paper their top three animal choices to research and break the class into research pairs based on their choices.

- There has been a lot of scientific research to help us understand how sound affects different animal species. Identifying credible sources and useful information is a skill students will practice strengthening through this exercise. Schedule a class visit with your school librarian or a technology expert to expose your students to these concepts.
- Have students research how sound and noise affect the animal they have selected. They will determine how they use sound in a beneficial way, and also identify sources of noise disturbance and predict how it interferes with the functioning of their animal. Students can explore both the behavioral and physical impacts of noise pollution on their animal. They can use the attached graphic organizer to structure their research and ideas.
- Students will develop a solution to mitigate the effects of the disturbance. This can be in the form of a policy, a new technology, or a feat of engineering. To accompany their proposal, students can also design a campaign to promote awareness of both the problem and their proposed solution in the form of artwork, diorama, video or other creative expression.
- Students will present their findings, proposals, and awareness campaigns to their classmates.

Discussion:

- What are the impacts of noise pollution on non-human animals?
- Do you think humans and non-human animals experience noise pollution the same? Why or why not?
- How can we mitigate noise pollution for animals?
 - What are some mitigation strategies we can use to decrease the impacts of anthropogenic noise pollution on animal species in our urban environment?

Extension:

- Get creative! Create a research poster using the information collected. Display the posters in a gallery walk in your classroom or school hallway.
- Did you know that noise can also affect plants? Students can listen to the RadioLab podcast [Smarty Plants](#) to learn about the impact of sound and noise on plants.
- Visit the American Museum of Natural History and using their [Unseen Ocean Educator's Guide](#) for activities and more information about the impacts of sound on ocean life.
 - If visiting the museum, access and complete the "[American Museum of Natural History Interactive Sound and Noise Data Collection](#)" worksheet activity from DEP.
- Use DEP's Listening to Underground Sound in New York lesson to learn more about how humans and other species contribute to and interact with underground sounds.

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For more information visit www.nyc.gov/dep

Name: _____ Date: _____

Who Else Does Noise Affect?

Directions: Use this page to take notes and guide your thinking as you conduct your research.

ANIMAL SPECIES: _____

Drawing of the Animal Species:

A large, empty rectangular box with a black border, intended for drawing the animal species.

Description of animal species:

1. How does this species use sound for survival?

2. What types of anthropogenic (human-caused) noises affect your species? Examples might include noise from boat traffic, cars, planes, etc.

Where did you find this information?

3. How does anthropogenic noise affect your species? What behaviors does noise disrupt? Examples might include mating behaviors, communication, foraging behaviors, etc.

Where did you find this information?

4. How can we mitigate (reduce) the impacts of noise on this species? Do we need to pass a new law or policy, create a new technology, or change our own behavior?

5. Describe how you will spread the word about your noise issue. What steps will you take to advocate for your species and educate others on this noise issue?

