May 2021

Student Pages - Answer Key - Sounds Around Your Study Site: Conducting a Noise Survey

Center for Urban Resilience

Name: _Teacher Version_____ Date: _____Class/Period: _____

Lesson 2: Sounds Around Your Study Site: Conducting a Noise Survey

Purpose: The goal of this lesson is to conduct a survey of noise at your study site. In small groups, you will use a decibel meter, data sheet and an aereal photograph of your site to collect data on a particular section. You will then share this information with your classmates to create a map of the noise of your schoolyard.

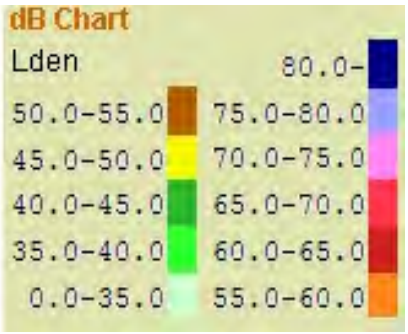
Background: You may be wondering how a physical energy source, such as *noise* fits into an understanding of *ecology*. Here's the connection. In an ecological community, all variables, including noise, are distributed unequally. Important resources, such as food and water are found only in certain areas. Therefore, plants and animals compete with each other for the best patches of habitats. Ecologists describe this unequal distribution as a patchwork, or *mosaic* of resources. A mosaic is a term for art that is made by assembling many different pieces of stone and glass. Viewed from a distance, the picture looks complete and smooth. As you get closer, the picture begins to look chunky and uneven. A mosaic of a lily is pictured below and you can see the effect of the stones in the patchwork of colors used to create the image.

http://www.flickr.com/photos/barry_thompson/3527569163/in/photostream/

Let's use an example of a bird species such as a cardinal to illustrate the idea of an ecological mosaic. These bright red birds need food, water and trees in which to build their nests. If these resources are missing, they cannot complete their life cycles. When we think of the more traditional resources, such as fresh water, it is easy to understand that in any given ecosystem, some parts are dry and others wet. If you are a cardinal and need fresh water, you need to locate your nest in a tree by a pond or stream. From this example, it is easy think of physical resources as being available in some locations and not in others. What about other ecological variables such as noise, sunlight and heat?

Noise is also a mosaic. Some parts of the city are quiet and others quite noisy. The noise level of a city can also vary according to the time of day. For some species of wildlife, too much noise can be just as limiting to the habitat as no water or trees. Humans can also be impacted by too much noise. Excess noise is harmful to all species. Cities often create noise maps as a first step to addressing issues of noise. Below is an example of a nosie map for a section of London, England. The noisiest areas are red violet and blue. The quietest areas are light blue and green. As you can see, the areas near the roadways are the most noisy.

We can use the lesson activity below to investigate the noise in your schoolyard.



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Time started: _____ Time completed: _____
Location: (describe where the survey is taking place)

Weather:

Air Temperature: _____
Circle the weather conditions:


Clear


Partly Cloudy


Cloudy


Rain


Snow

Describe the Weather Conditions:

Activity 2.2 Collecting the Noise Survey Data

Datasheet: Grid method

X-coordinate	Y-coordinate	Description of Noise
		Here students should describe the source of the noise – heating duct, traffic, trolley, etc.

X-coordinate	**Y-coordinate**	**Description of Noise**

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Activity 2.3 Mapping your data

Now that you've collected your noise data, we want to go back and color code our maps.

Procedure:
For each sample you measured, place a colored dot on the map at its location. The colors you use should follow this table:

Decibel level (dB)	Color
< 50	Brown
50-55	Purple
55-60	Blue
60-65	Green
65-70	Yellow
70-75	Orange
> 75	Red

Reflection:
Looking at the completed class noise map. What do you think this map tells you about your study site? What consequences might this have on the birds and people that use this space?

Hopefully, students will have a patchy distribution of noises that they sampled. These data should strengthen the idea that variable in ecological systems are often uneven and distributed in surprising ways.

The impact of the noise data may be to point out areas that are better for nesting and those that might be too noisy.