

Lesson G: Improving the Marine Soundscape

<p>Unit Questions</p> <p>How is sound related to marine species survival? What is the relationship between a marine animal's soundscape, sound output, sound reception and the overall survival and well being of that animal?</p> <p>Lesson Question</p> <p>How can improvements be made to the soundscape of marine mammals through action, legislation and information?</p>	<p>Suggested Prior Lesson</p> <p>Any lesson from the unit</p> <p>Suggested Follow Lesson</p> <p>None</p>
<p>Grade Level</p> <p>6-8</p>	<p>Time Required</p> <p>2-4 sessions, depending on the scope of the final project.</p>

Abstract

Throughout the unit, students have been exploring the science of sound as well as acoustical data collected throughout the Ocean Networks Canada hydrophone network. Students have been asked to think critically about how whales experience the marine soundscape, various human impacts on the marine soundscape, and how marine mammals (specifically killer whales) function in the marine environment. In this final lesson, students are asked to create an answer to the question “How can improvements be made to the soundscape of marine mammals through action, legislation and information?” Students are tasked with coming up with an action plan to either inform, illicit action or inspire legislation about the marine environment.

Prior Knowledge/ Background for Students

Students should have explored the six previous lessons in the *Shouting Whales* unit. Students should have an understanding of natural and anthropogenic noises in the marine environment, the possible impact on marine mammals and how scientists explore and understand this sound data. They have also (directly and indirectly) explored the question, “How is sound related to marine species survival, and what is the relationship between a marine animal's soundscape, sound output, sound reception and the overall survival and wellbeing of that animal?”

<p>Objectives</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students will address noise pollution in a way that informs others about noise pollution issues, showing what they have learned or explored over the unit. <input type="checkbox"/> Students are invited to explore their own ideas using an enquiry based model. 	<p>Materials</p> <p>none</p>	<p>Suggested Links and Downloads</p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>Climate Change Action Plan</i> http://www2.gov.bc.ca/gov/topic.page?id=9DF88AF901A14DE59BF3CF4B8A6B17EB <input type="checkbox"/> <i>How to Create an Effective Action Plan</i> http://www.wikihow.com/Create-an-Effective-Action-Plan <input type="checkbox"/> <i>How to Write Letters to the Editor</i> http://www.wikihow.com/Write-Letters-to-the-Editor <input type="checkbox"/> Prezi http://prezi.com <input type="checkbox"/> Glogster http://www.glogster.com/ <input type="checkbox"/> Youtube http://www.youtube.com/ <input type="checkbox"/> <i>Lesson G Interviews.mp4</i> <input type="checkbox"/> <i>Lesson G Rubric, Letter.docx</i> <input type="checkbox"/> <i>Lesson G Rubric, Media.docx</i> <input type="checkbox"/> <i>Lesson G Rubric, Legislation.docx</i>
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The “Hook” (Suggested Introduction)

- Discuss with students: What is the value of information without action? When we learn about an issue or problem, are we responsible for using that knowledge to inform our actions? For example, if you learned that plastic bottles were hard on the environment, are you responsible for finding an alternative such as a reusable bottle or can you still use plastic? Do you feel obligated to choose something other than plastic? Some other examples where people have changed their behavior based on new information: composting, BPA free plastic products, corn plastics and driving gas-electric vehicles. In these examples, people chose different actions when they became informed, would these examples be as meaningful if people had been informed, but did not change their behavior?
- Discuss: What is an action plan for change?
 - Example:
Climate Change Action Plan
<http://www2.gov.bc.ca/gov/topic.page?id=9DF88AF901A14DE59BF3CF4B8A6B17EB>
 - *How to Create an Effective Action Plan*
<http://www.wikihow.com/Create-an-Effective-Action-Plan>
- What are some memorable action plans they have taken part in? For example, do the students participate in the pink t-shirt campaign to end bullying? Do they participate in other “take action plans”? What draws them to these plans?
- If you do not live near the ocean, consider discussing with students why it is important to be aware of what is happening in the world’s oceans and to be involved in protecting them.
- Brainstorm: What steps would you take to inspire action in your school about an issue? Discuss this in general terms.

Activity Outline

In this lesson, students are encouraged to choose ONE of the activities. Although it is possible to use all three, students may find this very redundant. Three are included to give the students and the teacher different choices (you can also make your own).

Activity	Resources	Teaching Points
Making a Difference Through Letters	<i>How to Write Letters to the Editor</i> http://www.wikihow.com/Write-Letters-to-the-Editor	Have students draft letters, being sure to help them address the following: <ul style="list-style-type: none"> □ Where will the letter go? <ul style="list-style-type: none"> ○ Magazine or specialty publication? ○ Newspaper ○ Person of influence, such as a CEO, politician or public figure □ What issue do they want addressed, and what evidence will they use to validate their opinion in the letter? □ What response do they expect, and what value will that response bring to the recipient?
Informing Others Through Media	Prezi http://prezi.com Glogster http://www.glogster.com/ Youtube http://www.youtube.com/	Have students create digital or print media (poster, pamphlet, PowerPoint presentation or other media) that addresses the following: <ul style="list-style-type: none"> □ What do you want viewers to know? □ How will you engage them so that they stop and view your media? □ How will you present your message? What evidence will you cite, and how will you lead viewers to more evidence that supports your view?

- ☐ How long will your viewer need to engage in your media to get the complete message?
- ☐ How will you validate your opinion (what evidence will you use to make your point)?
- ☐ What response do you hope to illicit, and what will that response bring to the recipient?
- ☐ How will your viewer share your media?

Legislation or Council

Have the students decide on legislation, policy or law that would cause change. Be sure the students address the following:

- ☐ What specific behaviour they want changed
- ☐ In what way they want the behaviour to change, and who this applies to
- ☐ How will this change impact the population, and the issue they want addressed?
- ☐ How would the change in policy be enforced? How would enforcement be funded?
- ☐ Is there a penalty for non-compliance? What is it?
- ☐ How would inform people of change? Would you have a grace policy or any 'grandfathering' (excluding a party from any changes because they were in place before the change in policy)
- ☐ How and when would your new policy be assessed for success or failure? What measurements would each one use?
- ☐ How would you get people to support your policy change?
- ☐ How would you address concerns of people against or in resistance of your change?

Researcher Interviews

Lesson G Interviews.mp4

Researchers interviewed:

- ☐ Lance Barrett-Lennard
Research Scientist, Vancouver Aquarium

Questions asked:

- ☐ What is the role of the killer whale in the ecosystem?
- ☐ What is the current state of the orca population here in BC?
- ☐ How has technology, such as the hydrophone helped the public understand what is happening to killer whales?
- ☐ What can the public do to protect whales?

Suggested Summary

- ☐ How do the students feel about their campaigns or ideas? What was successful and what wasn't?
- ☐ When do the students expect to see the results of their ideas and actions? What markers and indicators will they look for as a way of determining success or failure?
- ☐ Is it important to have their campaign validated? For example, if the students put their poster up around the school and inform other students, is that enough of an action for them? Why or why not?
- ☐ Discuss: How can they continue with their campaigns or ideas after this unit is complete? If inspired to help, where can they continue these goals and ideas (i.e. Can they volunteer with certain groups? Can they write certain magazines? Which ones? What else can they do to continue supporting issues?)

Assessment Options

- ☐ See assessment rubrics:
 - *Lesson G Rubric, Letter.docx*
 - *Lesson G Rubric, Media.docx*
 - *Lesson G Rubric, Legislation.docx*
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