



**OREGON MARINE SCIENTIST  
AND EDUCATOR ALLIANCE**

**Humpback Whale Entanglement on the Oregon Coast  
CURRICULUM MAPS AND PLANNING GUIDE**

Complete ORSEA Curriculum: <https://oregoncoaststem.oregonstate.edu/population-genetics>

**Curriculum Map Example #1 - Mr. Sapora's Biology / Honors Biology Class**

Monday	Tuesday	Wednesday	Thursday	Friday
<p><b>D1</b></p> <p><b>Intro to issue:</b> videos of whale entrapment and discussion questions.</p> <p><b>Population?</b> Explore what this means in biology.</p> <p><b>Presentation: Save the Whales!</b> Slides 5-9</p>	<p><b>D2</b></p> <p><b>Presentation: Save the Whales!</b> Slides 5-9</p> <p><b>Exploring Humpback Whales</b> worksheet</p>	<p><b>D3</b></p> <p><b>Entanglement Report 2018</b> Read over the report and take notes (15 min); then discuss as a class. What are the numbers, what are the locations, what species, sources of entanglement, responses and outcomes, what are we doing to address the issue?</p>	<p><b>D4</b></p> <p><b>Presentation: Save the Whales!</b> Slides 10-16 give background info on DNA and genetics</p> <p><i>DNA extraction demo</i></p>	<p><b>D5</b></p> <p><b>CSI Wildlife</b> - students complete over two days the interactive <b>Analyzing Genetic Evidence</b> packet (4pgs)</p>
<p><b>D6</b></p> <p><b>CSI Wildlife</b> - students complete over two days the interactive <b>Analyzing Genetic Evidence</b> packet (4pgs)</p>	<p><b>D7</b></p> <p><b>CSI Wildlife Analyzing Genetic Evidence</b> Wrap-up w slide show refresher of genetics, videos, and class discussion</p>	<p><b>D8</b></p> <p>Pt 1 <b>NP whale genetics worksheet</b></p> <p><b>NP whale data set</b></p>	<p><b>D9</b></p> <p><b>NP whale genetics worksheet</b></p> <p><b>NP whale data set</b></p>	<p><b>D10</b></p> <p>Finish pt1 <b>NP whale genetics worksheet</b></p> <p><b>NP whale data set</b></p>
<p><b>D11</b></p> <p><b>Presentation: Save the Whales!</b></p> <p>Pt 2 <b>NP whale genetics worksheet</b> pages 3-4</p>	<p><b>D12</b></p> <p>Pt 2 <b>NP whale genetics worksheet</b> pages 3-4</p>	<p><b>D13</b></p> <p>Finish packet.</p> <p>Re-Read <b>Entanglement Report 2018.</b></p> <p>Feedback session.</p>	<p><b>D14</b></p>	<p><b>D15</b></p>

Teacher's Class Website: <http://www.mrsapora.com/humpback-whale-project.html>

## Curriculum Map Example #2 - Ms. Randall's General Biology Class

<p>D 1 <b>Presentation: Save the Whales!</b> Slides 5-9</p> <p>Includes two videos</p>	<p>D2: Rewatch second video in the Presentation (<b>Teaming Up for Entangled Whales</b>) and take notes</p> <p>Work with table groups to discuss questions in Presentation.</p> <p>Introduce town hall meeting as culminating event</p> <p>Discuss: What are stakeholders?</p> <p>Begin <b>Endangered Species Act research</b></p>	<p>D3: Research <b>Endangered Species Act research</b> worksheet</p> <p><b>Exploring Humpback Whales</b> worksheet</p>	<p>D4: Discuss what students uncovered from the handouts</p> <p>How can researchers determine which population a whale belongs to if the whale is seen on the Oregon Coast? Why is it important to know?</p> <p><b>Presentation: Save the Whales!</b> Slides 10-16 give background info on DNA and genetics</p>	<p>D5 &amp; 6: <b>DNA Profiling Using STRs</b> - student handout from HHMI</p>
<p>D5 &amp; 6: <b>DNA Profiling Using STRs</b> - student handout from HHMI</p> <p><b>Case studies</b> from HHMI</p>	<p>D7-9: <b>CSI Wildlife</b> activity case #1 from HHMI</p>	<p>D7-9: CSI Wildlife activity from HHMI <b>Frequency Primer</b> contains a lot of math connected to the science content.</p>	<p>D7-9: CSI Wildlife activity case #2 from HHMI</p> <p>Math Extension: <b>Calculating Probability of Identification</b></p>	<p>D10: Share <b>Entanglement Report 2018</b> and point out the value of this document as they head into whale data and consideration of town hall/stakeholders. Look at <b>NP whale data set</b> - how will we create a visual to make sense of this data? Using methods studied during the HHMI work, each class decides on a method (i.e. band maps like from gel electrophoresis, frequency tables for each marker)</p>
<p>D11: <b>Mapping the location</b> of Humpback Whales. Students plot the sample location on a map</p>	<p>D12: <b>Genetic Marker Pop Quiz</b>; Discuss rubric; Determine stakeholders and groups</p>	<p>D13: <b>Strawberry DNA extraction</b></p>	<p>D14-16: Work on Town Hall arguments (see <b>Town Hall visual template and rubric</b>)</p>	<p>D14-16: Work on Town Hall arguments</p>
<p>Days 14-16: Work on Town Hall arguments</p>	<p>Day 17: Town Hall meeting</p>	<p>Day 18: <b>Post Town Hall Assessment</b></p>		