

Killer Whale Recovery

High school: Cooperative management and Stewardship
Lesson 5: NOAA Representative: Action Plan and Stewardship

	Subject Area(s): management, government, community support, and stewardship	Duration: one 50 minute period
	Key words: debating strategies, mitigate, conflict resolution, advocate, campaign message, stewardship	
Materials:	worksheet Post Test (re-use the Pre-Test and have them add to it)	
State Standards: WA, OR, and ID	WA: EALR 1, 9-12 SYSD (systems can be changing or in equilibrium) *math connection *b A1-8B (select and apply strategies to solve problem) EALR 4, 9-11 LS2F (sustainable development) EALR 2, 9-12 INQC (explain or draw conclusions supported by evidence) OR: H.2E.4 (evaluate the impact of human activities on environmental quality) SS.HS.GE.06.01 (evaluate the consequences of economic, cultural, and environmental changes on a given population) ID: 9-10.B.1.6.2 (utilize the components of scientific problem solving to design an investigation) 9-12.G.5.1.2 (discuss the mutual impacts of ideas, issues, and policies among nations)	
Focus Questions:	In order to protect, restore, and manage...what has to happen? Once those threats are identified, how does one prioritize them in order to address recovery? How can individuals participate in killer whale recovery? Why is it important to involve different levels of governments in recovery efforts?	
Learning Objectives:	At the end of this lesson students will be able to: <ul style="list-style-type: none"> • Prioritize actions that could reduce human impacts and help promote recovery of this species. • Distinguish how stewardship can be individual acts or large scale community efforts 	
Engage and Encounter	A NOAA scientist or manager will introduce themselves and explain their role in killer whale recovery	
Explore and Investigate	Problem solve in groups actions that could address the threats criteria of the recovery plan and make recommendations	
Reflect and Explain	Summarize this whole curriculum and emphasize how individuals and community groups, science, and managers can work together.	
Apply and Extend	Stewardship Challenge: Create a campaign, get involved in a stewardship activity, and share what you accomplished.	
Background for teacher	The oceans and humans are inextricably interconnected; humans affect the ocean in a variety of ways. Laws, regulations, and resource management affect what is taken out and put into the ocean. This lesson is intended to empower the community to participate in the decision making process and having a voice is vital to the success of conservation and recovery of endangered and threatened species. We believe that people of any age and in any geographic region can make a positive impact on the marine environment. We hope to strengthen the link between scientific knowledge, resource management and being active stewards in their environment.	
NOAA and Teacher	Thank the teacher for piloting. Remind or give another copy of evaluation to the teacher; collect or photo copy both the Pre-Post Test and Lesson 5 if possible.	

Lesson 5 Procedures:

NOAA Representative: Stewardship and Problem Solving using Delisting Criteria

I. Anticipatory Set: (10 minutes)

- A. Introduce yourself and share what role you play in killer whale recovery.
- B. Ask if there are any questions that arose from prior lessons that might be addressed before today's activity on recovery strategies.

II. Direct Instruction: (40 minutes)

- A. **Share the logistics of how this activity works:** Tell students that they will be working in groups of three today, their letter group. In that group, there will be a manager, a scientist, and a community member.
- B. The student who is the manager in their letter group will be guiding today's activity. This student will pick up their groups' delisting criteria from the NOAA representative and be in charge of writing down all of the comments and suggestions their group comes up with. Both the scientist and the community member can propose what actions they want to address in recovery efforts, but ultimately the final decision or solution will come down to the manager.
- C. Students will have 7-8 minutes to work on the Action Plan to propose solutions, evaluate the options, and make recommendations based on scientific evidence or sound practices. On worksheet, if students use fictional names, encourage titles too.
- D. Supervise and walk around the room to prompt ideas, give minor suggestions if you see them struggling. This would be a good time to hand out any brochures to help the stakeholders or provide more insight on who these stakeholders are.
- E. Remind the managers to be thoughtful listeners, problem solvers, and to use negotiating strategies when necessary. Students might need to compromise, but most importantly keep the whales health the top priority.
- F. Present recommendations from each team, less than 45 sec each (12 min total)
- G. Wrap up (15 minutes)
Ask students how education and stewardship can play a vital role in recovery. Take them back through each lesson and highlight what they've learned and be open to any questions.
 - 1. Lesson 1: social organization, longevity, mortality
 - 2. Lesson 2: comparison between NRKW and SRKW
 - 3. Lesson 3: Issues (comment on their thoughtful recovery recommendations from today's lesson was evident of how they understand the issues) Ask them what the population is currently and what it needs to be to delist if the population increases at a rate of 2.3% for the next 28 years.
 - 4. Lesson 4 and 5: Emphasize that all of us can make a difference.
- H. Lastly, emphasize stewardship and how NOAA would like to promote your efforts within our watershed.

III. Assessment:

- A. Participation in class activity
- B. Worksheet provided
- C. Post-Test (go back to Pre-Test and have students answer the questions again)

IV. Apply/Extend:

- A. **Stewardship Challenge:** There is a stewardship action on each Killer Whale Trading Card, have students reflect or brainstorm other ways to share what they have learned about this endangered population of whales.
- B. Again, NOAA would like to celebrate your stewardship efforts toward killer whale recovery. Let us know what you have accomplished.



Killer Whale Action Plan

Recovery Plan section IV-1 through 11

Threats delisting criteria: Recovery Plan section IV-3, IV-6-8

Group letter:

Manager's title:

Scientist title:

Community member:

Goal: Remove from Endangered Species List or delist them from endangered to threatened as a first step.

Objectives: How are you going to do it? What actions will be established to address the biological and threats criteria.

Threats delisting criteria:

1st solution:

Pros

Cons

2nd solution:

Pros

Cons

3rd solution:

Pros

Cons

Prioritize them and then choose one solution:

Make a plan of how this will be accomplished: Recommendation

Who is going to do this task(s)?

When will you evaluate or monitor the progress:

What adjustments could be made:

How long will it take?



Stewardship Challenge: How can you inspire others to make a difference?

Ocean Literacy Principle: The oceans and humans are inextricably interconnected

On each of the killer whale trading cards there is a stewardship action. How many of those actions do you think you already do or might consider trying?

Your challenge is three-fold. The first is to come up with a campaign message, a way to promote one or more of the stewardship actions on a larger scale. You will want to raise awareness about the health of our watersheds and inspire others to take care of it. The second challenge is to participate in a large scale stewardship action or event and the third challenge is to share what you did to help recover killer whales and their habitat and inspire others to participate.

Challenge #1

“Create a Campaign”

65 points total

1. Categorize the stewardship actions from the trading cards or come up with your own.
2. Sort the trading cards by scale: what can be done at home; projects that your school could participate in, and community projects. Decide as a class how you can cover most of the topics.
Work in groups of 2-3 to produce a campaign message that raises awareness, educates, or motivates action to promote killer whale recovery.
3. Evaluate how your campaign worked and show evidence of your original goal.

Challenge #2

“Participate in or organize a stewardship event”

25 points total

How can you and your classmates participate in a large scale stewardship action or event that promotes healthy watersheds (rivers, streams, Puget Sound), salmon, or killer whales. You could partner with organizations that might be doing something within your community. Or you can organize an event that encourages your community to help or support your efforts. If there are school clubs or events that the school already participates in this might be a perfect opportunity to partner with; or recruit people to partake in an activity or help out; or create a challenge for your community or neighboring high school to participate in an event or activity.

Challenge #3

“Share your Stewardship Efforts”

10 points total

The third challenge is to share what you did to help recover killer whales and/or their habitat and inspire others to take these challenges. When highlighting your success share how your campaign influenced your target audience and your stewardship actions. NOAA would like to hear how your efforts help support killer whale recovery and want to celebrate your efforts.

Team members: _____ Period: _____



Stewardship Challenge #2 and #3

Ocean Literacy Principle: The oceans and humans are inextricably interconnected

Challenge 1

Phase 1: 10 points	Phase 2: 10 points	Phase 3: 25 points	Phase 4: 10 points	Phase 5: 10 points	Challenge 1 Total points
Have teacher approve your goal, objectives, and target audience.	Draft message, mascot, format, and distribution.	Final product (video, cartoon to be placed by garbage/recycling bins, etc.)	Plan for how you will follow up or evaluate that your campaign worked.	Proof or evidence that your campaign raised awareness or produced stewardship actions that will ultimately protect the marine environment and orcas.	/65
Due:	Due:	Due:	Due:	Due:	

Challenge 2: Summarize what activity you organized or participated in.

X _____ signature of activity coordinator	Challenge 2 Total points /25
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Challenge 3: Who did you share your success with?

Attach evidence that you shared your work with others (email, photos, etc.)	Challenge 3 Total points /10
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Killer Whale Recovery Action Items (cut by row and hand to appropriate group of three)

<p>Group Letter: A</p> <p>Management: Canadian manager (#1) Science: NOAA salmon scientist (#2) Community: Salmon sports fisherman (#3)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information. Threats delisting criteria:</p> <p>Rebuild depleted population of <u>salmon</u> (largest historical Chinook stock) in regards to <u>harvest</u></p>
<p>Group Letter: B</p> <p>Management: NOAA manager listed ESA (#4) Science: DFO toxins in blubber scientist (#5) Community: Allergic college student (#6)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information. Threats delisting criteria:</p> <p>Minimize pollution and <u>chemical</u> contamination</p>
<p>Group Letter: C</p> <p>Management: Soundwatch coordinator (#7) Science: Acoustics scientist (#8) Community: Kayak company owner (#9)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information. Threats delisting criteria:</p> <p>Minimize disturbances from <u>vessels</u></p>
<p>Group Letter: D</p> <p>Management: San Juan Island Marine Resource Committee member (#10) Science: Canadian biologist TDRs (#11) Community: Oil Tank captain (#12)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information. Threats delisting criteria:</p> <p>Minimize the risk of <u>oil spills</u></p>
<p>Group Letter: E</p> <p>Management: WA Dept. of Fish & Wildlife manager (#13) Science: Biologist with WDFW (#14) Community: Seattle Aquarium educator (#15)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information. Threats delisting criteria:</p> <p>Develop <u>educational or outreach tools</u> to increase awareness</p>
<p>Group Letter: F</p> <p>Management: NOAA recovery manager (#16) Science: NOAA salmon biologist/dams (#17) Community: Commercial salmon fisherman (#18)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information. Threats delisting criteria:</p> <p>Rebuild depleted populations of <u>salmon</u> in regards to <u>habitat</u> (fresh and salt water ecosystems)</p>
<p>Group Letter: G</p> <p>Management: Elected official allocating \$ (#19) Science: Canadian genetic researcher(#20) Community: Port Supervisor-superfund site (#21)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information. Threats delisting criteria:</p> <p>Minimize pollution and <u>chemical</u> contamination in marine sediments</p>

<p>Group Letter: H</p> <p>Management: Enforcement officer/vessels(#22)</p> <p>Science: UW grad student/acoustics (#23)</p> <p>Community: Concerned citizen use of sonar/seismic surveys on habitat (#24)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information.</p> <p>Threats delisting criteria:</p> <p>Minimize <u>sound</u> from all sources</p>
<p>Group Letter: I</p> <p>Management: Canadian manager- A73 (#25)</p> <p>Science: Sea World Vet/Springer (#26)</p> <p>Community: Child who read about Springer (#27)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information.</p> <p>Threats delisting criteria:</p> <p><u>Transboundary</u> and Interagency coordination and cooperation in recovery efforts</p>
<p>Group Letter: J</p> <p>Management: Puget Sound Partnership (#28)</p> <p>Science: Center for Whale Research (#29)</p> <p>Community: Whale Museum (#30)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information.</p> <p>Threats delisting criteria:</p> <p>Develop public information and <u>education</u> programs</p>
<p>Group Letter: K</p> <p>Management: NOAA stranding network (#31)</p> <p>Science: NOAA's necropsy scientist: (#32) tissue, blubber, immune system</p> <p>Community: Naturalist educating public (#33)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information.</p> <p>Threats delisting criteria:</p> <p>Respond to <u>stranded</u>, sick, injured, isolated, and possible threat to public</p>
<p>Group Letter: L</p> <p>Management: EPA official (#34)</p> <p>Science: Veterinarian (#35)</p> <p>Community: Non-Governmental organization (NGO) member killer whale recovery (#36)</p>	<p>Read the Goal and objectives of the Action Plan and fill in the worksheet with the following information.</p> <p>Threats delisting criteria:</p> <p>Monitor and minimize the risk of <u>infectious diseases</u></p>

****HINT:** If you have a group of two, join that group. If you have a group of one, add them to another group. You might not have 36 students in your class, but these are written in order of importance, so start with A. If you have more than 36 students, double up to accommodate.