

Great Lakes Wetlands



Climate Change **ADAPTATION** Lesson #5



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Lesson Five: Taking Action

What Stewardship Practices Help Protect and Restore Coastal Wetlands?

Lesson Overview:

This lesson focuses on helping students take action to protect and restore coastal wetlands and the surrounding watershed. Students will learn about how individual and group actions can have a positive impact on addressing many of the potential impacts of climate change. Students will plan a stewardship action and communicate their plan to the public.

Focus Questions:

Students answer these essential questions:

- How do my actions affect coastal wetlands and the greater watershed?
- What stewardship action could I plan to have a positive impact on coastal wetlands?
- How do I communicate what I have learned about climate change effects on coastal wetlands and actions everyone can take to help?

Next Generation Science Standards:

ESS3.C: Human Impacts on Earth Systems: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

ESS3.A: Natural Resources: Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes. (MS-ESS3-1)

Materials:

- Tip of the Mitt Watershed Council, *Climate Change Adaptations for Coastal Wetlands*
- Student Stewardship Plan
- National Oceanic and Atmospheric Association (NOAA) – 10 Things You Can Do for Coastal Wetlands – Posted or copy

Objectives:

Students will be able to:

1. Identify individual and group actions to help protect and restore coastal wetlands.
2. Understand how stewardship actions positively impact coastal wetlands and the surrounding watershed.
3. Create a stewardship action plan and communicate both the action and results to the public.

Advance Preparation:

1. Make copies of Student Stewardship Plan and NOAA – 10 Things You Can Do for Coastal Wetlands. One copy each per pair of students.
2. Have *Climate Change Adaptations for Coastal Wetlands: A Toolkit of Best Management Practices for Coastal Wetlands in Michigan* available digitally or printed copies for pairs of students. This document is critical for the mini-unit and it is recommended that copies be produced for use with all lessons.
3. Selected pairs/groups for brainstorming stewardship projects.
4. Listed websites for students to visit for background.

Common Misconceptions:

Students sometimes have the perception that they cannot make a difference, even though they have fabulous ideas and projects. The most important outcome of this lesson is that each student, individually or as a team, is confident that they can make an impact and help conserve and restore coastal wetlands. Individual efforts, like picking up waste, can collectively have a huge impact on the surrounding environment.

Background Information:

What is Stewardship?

Stewardship includes taking care of natural systems and ensuring their functioning in the future. (Notes on coastal stewardship from United Nations Educational, Scientific and Cultural Organization (UNESCO))

- Coastal stewardship is characterized by efforts to ensure the sound and sustainable use of coastal resources. The complex issue of promoting stewardship should be seen as a challenge to inform, educate, empower, and motivate people towards becoming managers and custodians of their coastal environment.
- Coastal stewardship should focus on conservation and sustainable use of coastal and marine environments so that future generations will be able to benefit from coastal and marine environments.

- Coastal stewardship incorporates tourism, recreation, and commercial uses of coastal areas. Stewardship activities may stimulate students to participate in decision-making that can improve and reverse the abuse of coastal resources.
- Stewardship projects can include education, monitoring, restoration, or many other activities.

First there is a **preparation phase**, which involves students in discussions about a question, problem, or issue. The **action phase** is next and includes an outdoor experience and making observations and collecting data. This phase could include helping with projects that result in positive impacts to the environment. Finally, there is a **reflection phase**, which includes evaluating the activity, analyzing conclusions, and sharing the results.

The stewardship project could be incorporated into the action phase or could be designed by the students during the reflection stage as a culminating follow up activity.

Ideally, stewardship projects should:

- Address a resource management need in the students' own area.
- Be student driven.
- Include outreach to a broader community (beyond their own class).
- Utilize knowledge or practice skills learned in class.
- Be an integral part of the instructional program.
- Include collaboration with a community organization or volunteer expert.

It can be very powerful for students to "adopt" the coastal wetland in their community. They could work to quantify and communicate the value of protecting or restoring their wetland. Students would learn all they can about their wetland, including the history of its use, area, species, and pressures on it. Students could teach the community about the ecological roles of their wetland and also about its aesthetic value, and they can emphasize the economic value it has as for its ecological services.

Procedure:

1. Ask students to read NOAA – 10 Things You Can Do for Coastal Wetlands and select one action from the list they could do. Discuss whether or not they would need to make a plan for this action.
2. Brainstorm actions that can be completed as a group, for example Great Lakes Adopt-A-Beach program, website listed below. Use actions listed in *Climate Change Adaptations for Coastal Wetlands: A Toolkit of Best Management Practices for Coastal Wetlands in Michigan* pgs. 15-30 for additional examples.

3. Hand out Student Stewardship Plan to pairs of students. Read through the plan and have students select an action from the brainstormed list they think would need a plan. Discuss how they would fill out the Stewardship Plan to carry out the action selected.
4. As a whole class, select an action as an example or class choice and fill out the plan together.
5. Discuss the following questions as a class:
 - Why is it important to make a plan for your stewardship action?
 - What is the difference between individual and group stewardship action?
 - Why should you care about the affect of climate change on coastal wetlands?
 - Describe the experience would you like to have while you/your class completes a stewardship plan.

Extensions:

Make a commitment to monitor and/or clean up a local wetland area.

Additional Resources:

NOAA:What You Can Do - 10 Thing You Can Do for Coastal Wetlands

<http://www.habitat.noaa.gov/protection/wetlands/whatyoucando.html>

Michigan Water Stewardship Program: Environmental Educator Resources

<http://www.miwaterstewardship.org/educators>

EPA: A Student's Guide to Global Climate Change – Interactive Website

<https://www3.epa.gov/climatechange/kids/index.html>

EPA: A Student's Guide – Taking Action/Stewardship

<https://www3.epa.gov/climatechange/kids/scientists/citizen-science.html>

Alliance for the Great Lakes: Great Lakes Adopt-A-Beach program - Stewardship

<https://greatlakes.org/get-involved/adopt-a-beach/>

University of Wisconsin – Environmental Resources Center: Give Water a Hand – Young People Taking Action - Stewardship

<http://erc.cals.wisc.edu/gwah/>

NOAA – What You Can Do

10 Things You Can Do for Coastal Wetlands

- Participate in programs that help protect and restore wetlands. Contact your local, state or federal agencies, community groups, environmental organizations or a non-government organization.
- Report illegal activity such as filling, clearing, or dumping in wetlands to government authorities, such as the U.S. Environmental Protection Agency or the Army Corps of Engineers.
- Pick up all litter and dispose in appropriate trash containers. Keep surface areas that wash into storm drains clean of pet feces, toxic chemicals, fertilizers, and motor oil, which eventually reach and impair our wetlands.
- Plant only native species of trees, shrubs, and flowers to preserve the ecological balance of local wetlands.
- Use “living shoreline” techniques that make use of plant roots to stabilize soil if you own waterfront property and your shoreline or riverbank needs to be stabilized.
- Avoid wetlands if you are expanding your home or installing a shed.
- Use phosphate-free laundry and dishwasher detergents. Phosphates encourage algae growth, which can suffocate aquatic life.
- Use paper and recycled products made from unbleached paper. Bleached paper contains toxic chemicals that can contaminate water.
- Use non-toxic products for household cleaning, lawn and garden care. Never spray lawn or garden chemicals on a windy or rainy day, as they will wash into the waterways.
- Reduce, reuse and recycle household items and waste.

NOAA - What You Can Do - 10 Thing You Can Do for Coastal Wetlands
<http://www.habitat.noaa.gov/protection/wetlands/whatyoucando.html>

Student Stewardship Plan

Planning Your Stewardship Project

Stewardship = to care for or maintain something

Team name: _____

Participants: _____

Project Title: _____

Thinking It Through

- What do you plan to do for your wetland or waterway?
- Describe your stewardship project idea in one or two paragraphs.
- What do you hope to accomplish by doing this project?
- How does your project help protect wetlands?
- How will this project make a difference and for whom?

Planning

- When do you plan to begin (now, next month, next semester, etc.)?
- How much time will you need to complete the project?
- To your knowledge, has this type of project been done before? If so, what were the results? How will your project be different?
- List any community members, community organizations, state or national organizations that might be able to help you with your project. Include names of individual contacts and how to contact them (email address, phone numbers, etc.)
- List any special services you might need to complete your project. (This might include things like transportation, garbage disposal, etc.)
- Will there be any costs associated with your project? If so, how do you plan to pay the costs? (List costs and possible sources of funding.)
- List any other resources, materials, or supplies that you will need for the project (gloves, trash bags, tarps, etc.):
- If your project requires group work, where and when can you and the other group members get together to work on the project?

Actions

Now outline the specific steps or actions your group will take to accomplish the project. Assign specific tasks to each person with clear instructions and completion times.

Action Item 1: _____

Lead Student: _____ Completion Date: _____

Action Item 2: _____

Lead Student: _____ Completion Date: _____

Action Item 3: _____

Lead Student: _____ Completion Date: _____

Action Item 4: _____

Lead Student: _____ Completion Date: _____

Action Item 5: _____

Lead Student: _____ Completion Date: _____

Reviewing & Reporting

- Did you complete your project and meet your goal?
- Did you learn anything that surprised you during your project?
- Were there any unexpected things you had to overcome in order to complete your project?
- How can you share the information you learned and results with others?
- Did your project bring up any other questions or issues that could become future project ideas?
- What is the most important thing you learned from doing this project?