

Lesson Plan

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Title: Repopulating Michigan's Waterways

Time: several class periods plus out-of-class time

Target Learners: 11th grade environmental science students

Background: This lesson is the culminating activity of a freshwater ecology unit.

Content Standards (Michigan Science Curriculum):

- Students will explain how parts of an ecosystem are related and how they interact.
- Students will investigate and explain how communities of living things change over a period of time.
- Students will analyze how humans and the environment interact.

Learning Objectives:

- Students will be able to analyze changes in stream habitat and fish population over time.
- Students will formulate habitat remediation/restoration and fish repopulation plans.

Relevant Vocabulary:

- restocking
- spillover
- reproductive output
- source
- mouth
- watershed

Materials:

- *Repopulating Michigan's Waterways* handout
- Michigan watershed map
- Michigan road map
- Michigan waterways map
- various land use maps
- computers for research

Procedures:

1. Each group of 4 students is assigned a species of fish with a declining population and a Michigan waterway.
2. Students work in pairs to research the fish, its habitat, and its waterway.
3. Students develop a plan to repopulate the waterway that includes habitat restoration and increased population.
4. Students will present the plan to the class.

Assessment:

Students' mastery of these concepts will be assessed through their PowerPoint presentation.

NAME: _____ DATE: _____ HOUR: _____

Repopulating Michigan's Waterways

As we have discussed in class, many of Michigan's native fish populations are greatly declining in both the rivers and lakes. As an environmental scientist, you will develop a plan to restore one of Michigan's native fish populations that addresses both habitat remediation/restoration and increased population. Long-term sustainability of your species is the goal.

fish species: _____ *waterway:* _____

Procedure:

1. *Research and graph your fish population over the last 50 years.*
2. *Postulate reasons for the decline in population - invasive species, habitat destruction, pollutants, etc. - and give evidence from your watershed to support your ideas.*
3. *Research your fish species - food, habitat, threats, life cycle, etc.*
4. *Research fisheries.*
5. *Locate and study a land use map of your waterway.*
6. *Identify sources of habitat destruction along the waterway.*
7. *Develop a plan to remediate or restore habitat.*
8. *Create a PowerPoint presentation that outlines your fish species and repopulation plan. You should include the following:*
 - *background of your fish species*
 - *population graph of your species*
 - *details of your waterway - name, location, source, mouth, watershed, land use, sources of habitat destruction, etc.*
 - *possible reasons for population decline*
 - *remediation plan*
 - *repopulation plan - How will you increase the current fish population? Future populations? Reproductive output?*
 - *population study - How will you know if your plan worked? How will you monitor future fish populations?*
9. *Present your PowerPoint to the class.*