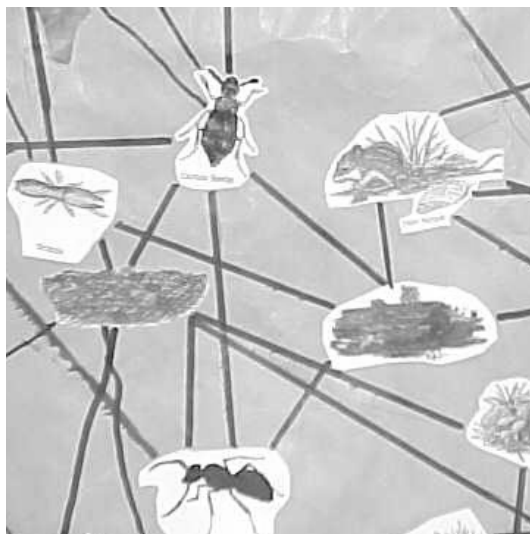


Fish and Wildlife Conservation Literacy: Systems



When integrating science and social science to understand fish and wildlife natural systems, teachers asked:

“What is essential to know and be able to do in order to sustain the health of fish and wildlife through our natural and social systems?”

“Why should learners care?”

Learners can share their understanding of systems using the following process. The steps are listed in order, and prepare the learner to present their recommendations for those that have a stake in the system.

Step 1: Define a local, national or global ecosystem (Essential Question:

Describe the biological, geological, chemical and physical properties of your ecosystem.

- Define you ecosystem address: Identify you local ecosystem and provide an overview of the fish, wildlife and habitat currently present (*Sources: F&W websites, EPA, local Environmental Impact Statements*)
- Describe the other natural resource components of your ecosystem, who they belong to, and how they interrelate with the presence of fish ad wildlife (vegetation, invasive plants and wildlife, soil type, geology and landforms) in the system.

Step 2: Identify problems/concerns/issues related to the future health/state of fish and wildlife in your ecosystem. Conduct a citizen science field investigation.

- Describe your region’s concerns for fish and wildlife (*Source: Review literature and websites of Public and private fish and wildlife stakeholders*)
- Identify a fish and wildlife condition to study in more depth so risks to the future health of the system and/or the fish and wildlife that depend upon it are well documented.
- Conduct a field study to answer questions about a fish and wildlife species or habitat of focus in your area.
 - Conduct a seasonal analysis of fish, wildlife and habitat changes in your backyard, schoolyard and community. Report to citizen science stakeholder groups (Wildlife Mapping, NatureMapping etc)

Step 3: Assess how the ecosystem has influenced humans (individuals & communities, past and present)

- Conduct research to describe the history of the region on how the presence of fish and wildlife influenced tribal and non tribal communities to
 - Settle in the area
 - Develop political systems with government & laws

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- Look for national and state laws that resulted controlling fish/wildlife hunting, fishing and their methodologies. Analyze the stakeholders who benefit and why.
 - Endangered species Act
- Identify government agencies responsible for fish and wildlife population presence and recreation – describe their role, mission and summarize their goals and strategic plan.
- Develop economic systems: taking advantage of fish and wildlife presence (e.g. goods and services, trade, production, labor)
 - Identify ways in which fish and wildlife has provided for human health and well being in your area.
 - Describe how your state agencies responsible for fish and wildlife presence are funded
- Evolve culture (equity, beliefs, rituals, visual arts, music dance foods language)
- Analyze the history of the conservation movement and how this movement influenced individual and community cultural and recreation interests.
 - Identify state and local conservation leaders of the past and present and describe the difference they made for fish and wildlife.

Sources: Review scientific and social research: state DFW website, state and local historical archives, National Wildlife Federation, Defenders of Wildlife

Step 4: Assess human impacts on fish and wildlife

Review how cultural, economic and political factors have affected the ecosystem's fish and wildlife health now and in the past.

- Find evidence for the following impacts on fish and wildlife:
 - Cultural patterns: Tribal websites that describe tribal science and traditional science interests in fish, wildlife and habitat
 - Economic patterns: Determine how activities in your area use fish and wildlife to be successful – Eco-tourism, recreation that involves hunting, fishing, wildlife watching
 - Political factors: Determine how government impacts fish and wildlife
 - Federal government: Focus on Dingell Johnson and Wallup Breaux federal legislation and how it impacts states
 - State government
 - Tribal governments

Sources: Federal (EPA, state and NGO (NWF, WWF) fish and wildlife stakeholder websites

Step 5: Identify fish and wildlife stakeholders

Identify the roles and relationships between the groups of people/stakeholders who influence, manage and regulate the system.

- Identify and describe how at least three major stakeholders regulate, manage and conserve fish and wildlife resources (include: government, private industry, non-government organizations (NGO's), consumers, residents).
- Experience how these stakeholders operate to sustain fish and wildlife:

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- Volunteer to ride along with a conservation agent – interview to understand their role of conservation agents – what is the law and policy that gives them authority – what is their role and responsibility
- Define each stakeholder's definition of and position on sustainability of fish and wildlife. Include perspectives, justifications, biases, ethical and justice issues and values.

Step 6: Generate alternatives to solve fish and wildlife concerns

Generate alternative solutions to solve problems you describe affecting the health of the fish and wildlife in your ecosystem, and identify the steps needed to implement the solution.

For fish and/or wildlife regulation, management or recreation:

- Identify major policy in your state that provides solutions supported by scientific evidence— go to the state agency strategic plan –
 - Summarize the problems these policies are addressing?
 - Describe the steps needed to implement the solution – and programs that may implement those solutions.
 - Ecomanagement action as a result of this policy – at the government, private organization and individual level?
 - Persuasive action: through education
 - Legal: through regulation

Step 7: Evaluate the trade-offs for alternative solutions

Evaluate and describe environmental, economic, social (aesthetic, legal, recreation, cultural and human health trade-offs among the alternative solutions, providing evidence.

- Analyze current legal solutions and their impacts:
 - the Endangered Species Act solution
 - the Wallup Breaux and Dingell Johnson federal legislation solution
 - the No Child Left Inside federal legislation solution – Children and Nature Network

Human health tradeoff re solution:

- Research: limits to research from public and private sector
- Stewardship: Review the Best Practices Manual for Stewardship
- Recreation
 - Hooked on Fishing Not On Drugs
 - Aquatic Resource Education

Step 8: Communicate findings

Prepare a written or oral presentation appropriate for an audience with a stake in the health of the ecosystem.

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