Merry Lea
Environmental Learning Center
of Goshen College

Standards Correlations

Water Quality 6th - 12th

Program Synopsis

What, if anything, is wrong with our water? How did it get that way? What can be done about it now? Students address these questions using modern equipment and techniques to conduct water sampling experiments. Explore a lake ecosystem in canoes and waders to assess biological indicators, pollution, siltation and human impacts on water quality.

Indiana Academic Standards for Science

Middle School

LS2.B **Cycles of Matter and Energy Transfer in Ecosystems:** Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)

LS2.C **Ecosystem Dynamics, Functioning, and Resilience:** Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-5)

LS2.D **Social Interactions and Group Behavior:** Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. (secondary to MS-LS2-5)

continued on next page

P.O. Box 263, Wolf Lake, IN 46796 | **260.799.5869** | merrylea@goshen.edu

High School

LS2.C **Ecosystem Dynamics, Functioning, and Resilience:** A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability. (HS-LS2-2),(HS-LS2-6)

LS4.D **Biodiversity and Humans:** Humans depend on the living world for the resources and other benefits provided by biodiversity. But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value. (secondary to HS-LS2-7) (HS-LS4-6)

ESS3.C **Human Impacts on Earth Systems:** Scientists and engineers can make major contributions by developing technologies that produce less pollution and waste and that preclude ecosystem degradation. (HS-ESS3-4)

continued on next page

Merry Lea
Environmental Learning Center
of Goshen College

Indiana Environmental Literacy Guidelines

for up to 8th Grade

Questioning, Analysis and Interpretation

- Identify specific environmental questions, problems, or situations related to local, national and global environmental issues.
- Use a variety of methods and sources to locate and collect reliable information and data about environmental topics.
- Design focused environmental investigations using appropriate measurements, observations and tools.

Knowledge of Environmental Process and Systems

- Explain how the ways in which we manage our natural resources can impact the quality, availability and productivity of the resources.
- Identify and analyze individual, local, regional, national, and global effects of pollution.
- Explain how humans' use of our resources can impact the environment and deplete resources.

Skills for Understanding and Addressing Environmental Issues

- Identify different forms of action that citizens can take: actions in the economic, political, and legal spheres; actions designed to directly improve or maintain the environment; or actions that persuade others to take action.
- Analyze the effects decisions, policies, and actions taken by individuals and groups on a particular issue have had on the elements, systems and processes of the environment.
- Use environmental monitoring techniques to collect data about environmental issues.

Personal and Community Action

- Develop a sense of place and understand their unique position in the global environment.
- Expand their personal connections with their local environment.

Document prepared by Merry Lea according to current Indiana Academic Standards from the Indiana Department of Education website and according to Indiana Environmental Literacy Guidelines from the Environmental Education Association of Indiana.

P.O. Box 263, Wolf Lake, IN 46796 | **260.799.5869** | merrylea@goshen.edu

goshen.edu/merrylea

Merry Lea
Environmental Learning Center
of Goshen College

Indiana Environmental Literacy Guidelines

for up to 12th Grade

Questioning, Analysis and Interpretation

- Develop, modify, clarify, and explain questions about important environmental issues, and describe why and how they arrived at those questions.
- Use appropriate problem solving methods, tools, and technology to do the investigations.
- Design and develop investigations to specific questions, problems or phenomena.

Knowledge of Environmental Process and Systems

- Assess how changes in the availability and use of natural resources (especially water and energy sources) will affect society and human activities such as transportation, agricultural systems, and manufacturing.
- Analyze environmental cause and effect relationships and differentiate between correlation and causation.
- Predict how changes in the environment will impact populations.

Skills for Understanding and Addressing Environmental Issues

- Evaluate the consequences of an environmental issue, taking into consideration historical perspective, impacts of technological developments, and knowledge of similar issues.
- Design and conduct a field investigation to gather information and data on an environmental issue in order to guide decisions on action steps.
- Evaluate the effects, intended or unintended, of citizen action on the environment, political situation, and individuals involved.

Personal and Community Action

- Articulate their personal beliefs regarding their relationship to the environment and how they arrived there by citing personal experiences, alternative viewpoints, and the research of scientifically-relevant sources.
- Understand the history of environmentalism and be able to reference environmental legislation and related social movements, and articulate actions that are still needed.

Document prepared by Merry Lea according to current Indiana Academic Standards from the Indiana Department of Education website and according to Indiana Environmental Literacy Guidelines from the Environmental Education Association of Indiana.

P.O. Box 263, Wolf Lake, IN 46796 | **260.799.5869** | merrylea@goshen.edu

goshen.edu/merrylea