



Next Generation Science Standards

Lesson: [Wetlands](#)

Activity: [Wetland in a Pan](#)

Prior Knowledge Should Include:

- Living things need water, air and resources from the land and they live in places that have the things they need. Humans use natural resources for everything they do.
- Human activities have altered the biosphere, sometimes damaging it. Although, changes to environments can have different impacts on different living things.
- Populations of organisms live in a variety of habitats. Changes in those habitats affect the organisms living there.

Performance Expectations:

- MS-LS2-5 Ecosystems: Interactions, Energy and Dynamics. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
- MS-ESS3-3 Earth and Human Activity. Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.
- MS-ESS3-4 Earth and Human Activity. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

Disciplinary Core Ideas:

- **LS4.D Biodiversity and Humans:** 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. 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 overpopulations, 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.
- **ESS3.C Human Impacts on Earth Systems:** Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts for different living things. Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities are engineered otherwise. Scientists and engineers can make major contributions by developing technologies that produce less pollution and waste and preclude ecosystem degradation.



Practices:

- **Constructing Explanations and Designing Solutions (6)** – Progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles and theories.
- **Engaging in Argument from Evidence (7)** – Progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).

Crosscutting Concepts:

- **Sustainability and Change** – For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study.
- **Cause and Effect** – Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.

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