

Connecting to the *Next Generation Science Standards* (NGSS Lead States 2013)

MS-LS2: Ecosystems: Interactions, Energy, and Dynamics

<https://www.nextgenscience.org/dci-arrangement/ms-ls2-ecosystems-interactions-energy-and-dynamics>

The chart below makes one set of connections between the instruction outlined in this article and the *NGSS*. Other valid connections are likely; however, space restrictions prevent us from listing all possibilities.

Dimensions	Classroom Connections
Science and Engineering Practices	
Analyzing and Interpreting Data - Analyze and interpret data to determine similarities and differences in findings Planning and Carrying Out Investigations - Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim. - Conduct an investigation and/or evaluate and/or revise the experimental design to produce data to serve as the basis for evidence that meet the goals of the investigation - Apply scientific ideas, principles, and/or evidence to construct, revise and/or use an explanation for realworld phenomena, examples, or events.	- Students interpret multiple graphs of data collected throughout the investigation looking for patterns and connections - Students plan many aspects of the investigation including parameters for study sites and measures to improve accuracy of data collection - Students conduct an ongoing investigation into bird biodiversity - Students analyze data to construct an explanation for the differences in bird biodiversity observed between the sites
Disciplinary Core Ideas	

LS2.A: Interdependent Relationships in Ecosystems - Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1) 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.	- Students consider relationships such as predator/prey and invasive species, as well as abiotic factors to explain differences in observed biodiversity - Students consider different methods - species richness, abundance, and diversity indexes to evaluate the health of bird populations at different sites on campus
Crosscutting Concepts	
Cause and Effect Cause and effect relationships may be used to predict phenomena in natural or designed systems.	Students make predict and observe what variables may affect bird diversity throughout the school campus
<i>Building Towards Performance Expectation</i> MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. [Clarification Statement: Emphasis is on cause-and-effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.]	