



Changing Communities and Populations

Driving Question:
How do populations change over time and impact the ecosystems around them?

learn how the fragility and elasticity of ecosystems relates to their own actions, their communities, and organisms in their own backyard.

Expert Involvement: Classrooms using experts invite students and experts to become acquainted through a forum discussion. Experts review and provide feedback to students on their remediation plan. Students revise their work in response to expert feedback. Local experts speak to students about invasive and endangered species—or other changing populations—at any point in the unit.

Primary Standards: Next Generation Science Standards- Performance Expectations

HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

HS-ESS2-7. Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.

HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

Context: Due to human actions, both intentional and accidental, ecosystems around the world are changing rapidly. Some ecosystems respond with remarkable resilience, while others hang in a delicate balance. This unit considers the complexities of patterns in populations of organisms within a community. Students investigate factors that determine whether populations grow or decline, as well as when these changes become an environmental concern. Students identify a local organism whose population is currently changing and develop a plan for dealing with the situation.

Project: Students identify and research a local organism of their choice—perhaps an endangered, threatened, or invasive species—and create a remediation plan to share to a larger audience.

Approach: Students use digital tools and engage in research, mathematical modeling, data analysis, labs, and activities that connect them to the scientific practices to help them understand shifting communities and populations. By studying shifting communities and populations, students