



Matter and Energy Cycling in the Chihuahuan Desert 9th & 10th grade

Overview

Researchers in Las Cruces studying the impact of urban development on wildlife populations found that there are more coyotes in some neighborhoods on the fringes of Las Cruces than in the surrounding wildland areas. Students will seek to explain this phenomenon by considering how the flow of matter and energy through a food chain can impact population sizes. Students will examine data on Las Cruces plants and animals to discover the factors that influence wildlife populations. On day two students will investigate the flow of energy through the trophic pyramid, to understand the chemical processes involved in the trophic pyramid. They will build a quantitative model of the movement of matter and energy in a Chihuahuan Desert ecosystem and consider how those processes change in a Las Cruces neighborhood.

Phenomenon

Why are more coyotes found in exurban Las Cruces neighborhoods than in the desert?

Next Generation Science Standards Addressed

HS-LS2-4 Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

Asombro lessons are aligned with the three-dimensional learning model of the Next Generation Science Standards.

Science & Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts
Using mathematical and computational thinking	LS2.B Cycles of matter & energy transfer in ecosystems	Matter and energy
Developing and using models		Systems and system models
Collecting and analyzing data		

Common Core State Standards Addressed

MP.4: Model with mathematics.

HSN-Q.A.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

HSN-Q.A.2: Define appropriate quantities for the purpose of descriptive modeling.

HSN-Q.A.3: Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.