

# Wildlife Corridor Curriculum

## by Brandon Hammerli

### NGSS Standards

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**MS-LS1-4.** Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. [Clarification Statement: Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds, and creating conditions for seed germination and growth. Examples of plant structures could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.]

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**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.]

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**MS-LS2-4.** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.]

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**MS-LS2-2.** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.]

**MS-LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.\* [Clarification Statement: Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.]

## Goals

Through the lens of urban ecology, students will gather, analyze, and interpret empirical evidence to craft an explanation for adaptations and patterns in characteristics of plants and animals that allow the local web of life to thrive. They will evaluate best practices for designing solutions that support this healthy biodiversity in the San Gabriel Mountains foothill communities.

## Objectives

1. Identify characteristic animal behaviors that support their survival and reproduction
2. Identify specialized plant structures that support their survival and reproduction
3. Hypothesize and gather evidence for the interactions and mutual relationships of plants and animals
4. Analyze local geography and its influence on these topics
  - Maps of urban/wilderness interface, particularly to understand movements of mammals and significance, spatially, of wildlife corridors.
  - Analyzing the effects of urbanization on ecosystem health through historical maps and photographs to understand habitat disturbance
5. Evaluate design solutions for wildlife corridors

## Topics

- Historic grizzly bear populations of CA
- Mountain lions of the L.A. suburbs
- Steelhead trout of the Arroyo Seco
- Urbanization of LA, habitat transformation, and human/animal relationships
- Rats to cats cycle ---> Rodenticide and mange (chemistry/biology understanding)
- Ecological conditions ideal for effective wildlife corridors
- Habitats of local mammals: urban vs. natural, the adaptations that animals have made
- Black bears having visited Oak Knoll Campus on Loma Alta, factors leading to this
- Tactics for survival of young in large mammals
- Reciprocal and dependant relationships between mammals and plants and its effect on ecosystem health
- Tracking of wildlife to understand movement and behavior

## Resources

- [Path of the Puma \(Book\)](#)
- Arroyos & Foothills Conservancy
- Arroyo Seco Foundation
- Natural History Museum of L.A.
- Aquarium of the Pacific

- Transition Habitat
- Citizens for Los Angeles Wildlife
- P22 Day @ Griffith Park
- Save LA Cougars
- Johanna Turner (Cougar Magic)
- Rachel-Ann Arias

#### Field Trips

- Cottonwood Canyon
- Devil's Gate Dam
- Verdugo Mountains Corridors
- Rosemont Preserve