Nature Hikes: K-6th

- Students learn scientific facts about California plants and animals and make observations in the field to describe and compare patterns and answer questions about the natural world.
- Students will learn to describe and identify the challenges and threats wildlife face in their habitats.
- Students learn about what plants and animals need in their habitats and how their specific body parts and behaviors (***adaptations***) help them survive in their habitats.
- Students learn about human impact on the environment and share ideas of how we can have a positive impact and help wildlife.

Grade	NGSS Disciplinary Core Idea	Examples
K	**LS1.C: Organization for Matter and Energy Flow in Organisms -** All animals need food in order to live and grow. They obtain their food from plants or from other animals. (K-LS1-1) **ESS3.A: Natural Resources -** 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. (K-ESS3-1)	**LS1.C:** *Students are introduced to the concepts of carnivore, herbivore, and omnivore and their interconnected relationships.* **ESS3.A:** *Students learn that the wood humans harvest from the environment contributes to deforestation that reduces habitats for creatures like the Spotted Owl.* **ESS3.A:** *Students learn how different animals have different habitats that provide food, water,*

		shelter, and space just like humans need in their homes.
1st	**LS1.A: Structure and Function** - All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. (1-LS1-1) **LS1.B: Growth and Development of Organisms** - Adult animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-1) **LS1.D: Information Processing** - Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. **LS3.A: Inheritance of Traits** - Young animals are very much, but not exactly, like their parents. (1- LS3-1).	**LS1.A:** *Students learn that some plants have thorns to protect them from being eaten.* **LS1.A:** *Students learn that redwood trees have special adaptations to help them be more resistant to fire and insects.* **LS1.B:** *Students learn that fawns have no scent to help them hide from predators while their mother is foraging for food for 6-7 hours each day.* **LS1.D:** *Students learn that animals have unique body parts (adaptations) that allow them to survive in certain habitats. For example, deer have large ears that they can move independently to sense potential predators.* **LS1.D:** *Students learn how Turkey Vultures have adapted to have an excellent sense of smell to better find their prey and a larger olfactory part of the brian to better identify scents.* **LS3.A:** *Students learn that fawns have spots that help them camouflage on the forest floor but adults do not.*

2nd	**LS4.D: Biodiversity and Humans -** There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1) **LS2.A: Interdependent Relationships in Ecosystems -** Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)	**LS4.D:** *Students learn about a variety of California's native wildlife like wild turkey, deer, lizards, quail, and vultures.* **LS4.D:** *Students learn about the many different habitats California's wildlife inhabit. At Muir Woods they will learn about the Coastal Redwood Forest; at Ring Mountain they will learn about grasslands and mixed Oak Woodland Forest; at Miwok Meadows they will learn about grasslands, wetlands, and Oak Woodland forests.* **LS2.A:** *Students learn about the interdependence of plants and animals. For example, how coyotes eat fruits and disperse the seeds by depositing scat throughout their habitat.*
3rd	**LS1.B: Growth and Development of Organisms** - Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1) **LS2.C: Ecosystem Dynamics, Functioning, and Resilience** - When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4) **LS2.D: Social Interactions and Group Behavior** - Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (Note: Moved from K–2.) (3-LS2-1) **LS4.C: Adaptation -** For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)	**LS1.B:** *Students learn that cynipid wasps lay eggs on oak stems and leaves. This results in Oak galls, in which the larva mature into pupa and eventually adult wasps.* **LS2.C:** *Students learn about how some birds migrate to different locations seasonally to find food, mate, or escape adverse weather conditions.* **LS2.D:** *Students learn how the California Quail live in groups with sentries that keep watch to help protect the covey from predators.* **LS4.C:** *Students learn about many adaptations California wildlife have to survive including how predators' eyes tend to be in the front to help*

	LS4.D: Biodiversity and Humans - Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)	*them hunt.* **LS4.D:** *Students learn how the Dusky Footed Woodrat is a keystone species, creating large stick nests that become habitat for many other woodland creatures.*
4th	**LS1.A: Structure and Function -** Animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1) **LS1.D: Information Processing -** Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2) **ESS2.E: Biogeology -** Living things affect the physical characteristics of their regions. (4-ESS2-2)	**LS1.A:** *Students learn how fawns hide from predators and have no scent to help increase their chances of surviving infancy.* **LS1.D:** *Students learn how Turkey Vultures have adapted to have an excellent sense of smell to better find their prey and a larger olfactory part of the brian to better identify scents.* **ESS2.E:** *Students learn how the roots of trees hold the soil in place and slow the rate of erosion.*
5th	**PS3.D: Energy in Chemical Processes and Everyday Life -** The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1) **LS1.C: Organization for Matter and Energy Flow in Organisms -** Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1) **LS2.A: Interdependent Relationships in Ecosystems -** Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which	**PS3.D:** *Students learn about the interrelationship between carnivores, omnivores, herbivores and decomposers and the way they cycle energy in the ecosystem.* **LS1.C:** *Students learn that many animals store and eat acorns because they are rich in fat, proteins, carbohydrates and fiber and also contain potassium, iron, and vitamins A and E.* **LS2.A:** *Students learn that Turkey Vultures are scavengers that eat carrion to help return energy from dead organisms to the ecosystem.* **ESS3.C:** *Students learn that humans have*

	multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1) **ESS3.C: Human Impacts on Earth Systems -** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)	*harvested 95% of the original Coast Redwood forests endangering many endemic species. Much is being done to preserve what remains of old growth redwoods.*
6th	**LS1.B: Growth and Development of Organisms -** Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4) **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) In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1). Growth of organisms and population increases are limited by access to resources. (MS-LS2-1) **LS2.B: Cycle of Matter and Energy Transfer in Ecosystems -** Food webs demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-1) **LS4.C: Adaptation** - Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS1-4)	**LS1.B:** *Students learn that bucks have antlers that are used to compete for mates. The strongest males will pass on their genes to the next generation increasing their odds of survival.* **LS2.A:** *Students learn the interconnected nature of some California food webs, the interrelationship between carnivores, omnivores, and herbivores and the way they cycle energy in the ecosystem.* **LS2.B:** *Students learn how scavengers such as Turkey Vultures and Banana Slugs play an important role in the ecosystem by consuming dead organisms and converting the dead material into nutrients, making them available to plants.* **LS4.C:** *Students learn about the variety of adaptations that California wildlife have including how Banana Slugs have developed slime to discourage predation and Fence Lizards change their skin color in response to temperature.* **ESS3.C:** *Students learn about the threats facing various animals that come from human*

	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 (negative and positive) for different living things. (MS-ESS3-3)	*influences as well as the benefits to some animals. Deforestation is devastating to many species while the creation of trails creates corridors that wildlife can utilize.*