The Next Generation Science Standards (NGSS) are organized by life science, earth science, and history/social science. Each having a different focus at different grade levels. We have organized the activities offered to conform with that format, so it will be easier for educators to choose lessons for their class visits.

Life Sciences:

**Beak Adaptations** - Students discover that bird beaks are multi-function tools. Students use tools or their fingers as beaks to gather food. Survival depends on the right kind of beak for the available food.

**Building a Bird Nest** - Different species of birds build different types of nests in a variety of places from directly on the ground to high up in trees. Students build nests and learn how difficult it must be for birds without hands to help them.

**Bio-Monitoring** - Aquatic invertebrates indicate water quality. Students collect aquatic macro invertebrates and identify them to test the health of Cache Creek. This activity may not be available at times as it is determined by the depth and flow of Cache Creek.

**Changing a grizzly bear population** - Students explore what is a population and the four causes of changes in population size using manipulatives. Students create populations, and track, graph and assess their data population sizes over time. Population extinction or recovery are considered. Student questions and ideas are discussed.

**Energy Pyramid and Food Webs** - Students learn about the complex relationships within ecosystems. Students create food chains and then find examples of food chains in the area. Students will become a part of a food web and learn how all organisms in any ecosystem affect each other.

**Extinction of the grizzly bear in California** - Students will keep a journal, discover how we know that grizzly bears lived on-site and elsewhere in California, explore why and how people drove grizzlies extinct, and use maps to determine in which states grizzly extinction occurred or was prevented. Questions and ideas will be discussed.

**Grizzly Bear as Omnivore/Top of the Food Web** - Students learn about teeth types and uses for herbivores and carnivores using skulls and jaws, and apply this to figuring out and justifying what types of foods grizzly bears probably ate and where grizzlies were in the food web. Students then review historic lists to assess their conclusions.

**Habitat (Scavenger) Hunt** - Small groups of students look for various natural objects, examine relationships, and explore examples of biological concepts in the context of a scavenger hunt.

**Identify and measure grizzly and black bears** - Students learn characteristics for telling black and grizzly bears apart and use these characteristics to identify the bear on the California flag. Students act as field scientists by measuring life-size wooden models of black and grizzly bears, comparing their own heights with the bears, and keeping a nature journal with notes, measurements, and observations to analyze their results. They discuss their ideas and questions.

**Life in the Oaks** - Students investigate tree rings, oak galls, snags, and the role of acorns in this unique and diminishing ecosystem. Heritage oaks are identified and examined as are the creatures that depend on them. This lesson may include a math component scaled to be appropriate to various grade levels.

**Observing Leaves** - In this activity, students will discover the great variety amongst leaves. Many facets of leaves are observed and studied as students learn about leaf structure and function. Leaf prints culminate this activity.

**Owl Pellet Dissection** ($2 per student materials fee) - Students learn how owls and hawks are adapted to a predatory life style. In pairs, students will dissect a sterilized Barn Owl pellet and examine it for skeletal remains. The bones will be catalogued and the students will determine what the owl ate. Recommended for students in grade 3 and higher.
**Riparian Mammals** - Students examine pelts, skulls, and other specimens to learn about the adaptations, natural history, and behaviors of these fascinating creatures.

**Tracks, Scat, and Signs** - Students learn about basic track and scat identification. They discover what we can learn about an animal, and the state of its habitat, by what it leaves behind.

**Earth Science:**

**Cache Creek Resource Model** - This is a large on-the-ground structure depicting the Cache Creek Watershed; it begins in the Coast Range Mountains to the west and ends with a meandering stream emptying into wetlands and irrigating an agricultural field. Through “hands on” activities, students explore the model and the actual creek. This is a large group activity to schedule at the end of a visit.

**Rock Cycle** ($2 per student materials fee) - Students will learn about the Rock Cycle and the processes that form rocks. Then students will make their own “model rocks.”

**Stream Table** - Students will explore stream morphology by watching and manipulating water flow through sand to observe geological processes too slow to experience in real time.

**Un-nature Trail** - Students take a walk along a nature trail. Along the way they will record and identify obvious and not so obvious non-native and manmade objects. Students will learn of the impacts of what we leave behind and how they can help to preserve our natural places. Further emphasis will be on recycling and the time it takes for man-made materials to decompose.

**Water Cycle** - Students will learn the stages within the water cycle. Further focus will stress the importance of water as one of our natural resources and how humans impact the environment.

**Wetlands** - Students explore what wetlands are and how they work. Students use scientific methods to learn about wetland hydrology.

**History / Social Science:**

**Cache Creek, Grizzlies and the California Flag** - Students learn how to confirm that the bear on the California flag is a grizzly. Students use stories and descriptions of the early history of Cache Creek that depict the astonishing strength and resistance of grizzly bears, to understand why the grizzly was chosen to be placed on the California flag.

**Cache Creek Resource Model** - Students use the Resource Model as a means of understanding how Cache Creek has historically influenced settlement in this area, its importance in the economy of the region, and how human activities can be influenced by natural forces such as floods and droughts.

**Tule** - Students learn to make cordage (rope, bracelets, dolls, etc.) from Tule. The technique is widely used by indigenous people worldwide and is still used by California Native American people, such as the Wintun. Depending on the availability of Tule, this activity may not be offered.

**Wetlands** - Students learn about the historic importance of wetlands in the Central Valley, their role in supporting local Native American communities along Cache Creek, and impact of human activities on the distribution and health of wetlands.
The following life science activities are also available, but are not specifically aligned with Next Generation Science Standards:

**Coexistence with Black Bears in California and with Grizzlies Elsewhere** - Students will interpret evidence about how Californians and wild black bears are learning to coexist. Students then consider exhibits on how people coexist with grizzlies in the northern Rockies. Student questions and ideas on coexistence will be discussed.

**Nature Walk** - This activity is designed to supplement the volunteer-led activity stations. Time permitting; the Education Specialist will lead the entire group on a discovery nature hike. This activity is best for smaller groups.

**“Oh Beaver” Simulation Game** - Students participate in a game that examines the interrelations of food, water, shelter, and predators in an ecosystem. (This activity requires whole class participation.)

**Pet Rocks/Rock Painting** ($2 per student materials fee) - This is a make and take activity in which students collect and decorate a river rock. (Best for the younger children, but can be fun for all ages.)

**Sense A Tree** - Students learn to become better observers by using their touch, smell and hearing. Students are blindfolded and taken to a nearby tree; there they examine everything they can to recognize it again when the blindfold is removed.

**Wildlife and Bird Watching** - Students use binoculars to get a close up look at the various animals and birds that depend on the wetlands.