Nimbus Fish Hatchery Tours—Correlations to California State Science Standards

Grade – Kindergarten

Life Science

2. Different types of plants and animals inhabit the earth. As a basis for understanding this concept:

a. Students know how to observe and describe similarities and differences in the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, insects).
Nimbus Correlation: types of fish and other animals in the American River

c. Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).
Nimbus Correlation: basic fish anatomy (e.g. fins, gills, teeth, scales)

Earth Science

3. Earth is composed of land, air, and water. As a basis for understanding this concept:

a. Students know characteristics of mountains, rivers, oceans, valleys, deserts, and local landforms.
Nimbus Correlation: features of the American River watershed

c. Students know how to identify resources from Earth that are used in everyday life and understand that many resources can be conserved.
Nimbus Correlation: water conservation at home

Grade -- 1

Life Science

2. Plants and animals meet their needs in different ways. As a basis for understanding this concept:

a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.
Nimbus Correlation: salmon live in fresh and salt water; camouflage

b. Students know both plants and animals need water, animals need food, and plants need light.
Nimbus Correlation: need for cool, clean water; salmon are both predators and prey

c. Students know animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.
Nimbus Correlation: salmon are predators and prey; salmon use gravel to make nests (redds)

d. Students know how to infer what animals eat from the shapes of their teeth (e.g., sharp teeth: eats meat; flat teeth: eats plants).
Nimbus Correlation: salmon have sharp, hooked teeth on their powerful jaws and tongues

Grade -- 2

Life Science

2. Plants and animals have predictable life cycles. As a basis for understanding this concept:

a. Students know that organisms reproduce offspring of their own kind and that the offspring resemble their parents and one another.
Nimbus Correlation: color and body changes occur repeatedly through salmon life cycle

b. Students know the sequential stages of life cycles are different for different animals, such as butterflies, frogs, and mice.
Nimbus Correlation: salmon life cycle from egg to spawning adult

c. Students know many characteristics of an organism are inherited from the parents. Some characteristics are caused or influenced by the environment. Nimbus Correlation: Physical characteristics—color, size, body shape
Behavioral—migration, return to home rivers

d. Students know there is variation among individuals of one kind within a population.
Nimbus Correlation: differences in size and age of returning salmon

Grade -- 3

Life Science

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.
Nimbus Correlation: adaptations of salmon, steelhead, other river plants and animals

b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.

Nimbus Correlation: diverse plants and animals visible in Visitor Center, along River Discovery trail, and in settling ponds

c. Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.
Nimbus Correlation: Salmon create redds in the gravel; decomposing salmon provide nutrients; humans build dams, replace gravel in river, pollute and clean up pollution

d. Students know when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.
Nimbus Correlation: Nimbus Hatchery built to mitigate for loss of habitat due to construction of dams

Grade -- 4

Life Science

2. All organisms need energy and matter to live and grow. As a basis for understanding this concept:

b. Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.
Nimbus Correlation: role of salmon/steelhead in food chains; steelhead love to eat salmon eggs

c. Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.
Nimbus Correlation: Dead salmon provide materials for decomposers

3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:

a. Students know ecosystems can be characterized by their living and nonliving components.
Nimbus Correlation: features of river and riparian ecosystems on site

b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.
Nimbus Correlation: changes to the river (both natural and human-caused) affect survival of salmon and other animals

c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and

shelter.
Nimbus Correlation: riparian plants provide shade and shelter for fish and their prey

Grade -- 5

Life Science

2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:

a. Students know many multicellular organisms have specialized structures to support the transport of materials.
Nimbus Correlation: gills for breathing, fins for swimming, teeth for eating

Earth Science

3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:

d. Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.
Nimbus Correlation: water conservation at home, importance for fish; consideration of other users (anglers, flood control, agriculture, industrial)

e. Students know the origin of the water used by their local communities.
Nimbus Correlation: watershed map in Visitor Center traces region's watershed

Grade -- 6

Earth Science

2. Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:

a. Students know water running downhill is the dominant process in shaping the landscape, including California's landscape.
Nimbus Correlation: watershed map, views of American River

b. Students know rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.
Nimbus Correlation: Area flood history is the main reason for Nimbus/Folsom Dams; erosion continues to occur along the banks

of the American River; gravel replacement projects in the river are ongoing

Life Science

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:

a. Students know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.
Nimbus Correlation: salmon/steelhead role in food chains

b. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.
Nimbus Correlation: predation, decomposition of dead salmon

c. Students know populations of organisms can be categorized by the functions they serve in an ecosystem.
Nimbus Correlation: salmon are consumers, predators, and prey

d. Students know different kinds of organisms may play similar ecological roles in similar biomes.
Nimbus Correlation: differences between salmon and steelhead; correlations to other fish species

e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.
Nimbus Correlation: food sources, water flows, water quality, temperature, and erosion all affect the carrying capacity of the river for salmon and other life forms

Resources

6. Sources of energy and materials differ in amounts, distribution, usefulness, and the time required for their formation. As a basis for understanding this concept:

b. Students know different natural energy and material resources, including air, soil, rocks, minerals, petroleum, fresh water, wildlife, and forests, and know how to classify them as renewable or nonrenewable.
Nimbus Correlation: water is a non-renewable resource and must be carefully managed to meet the needs of a wide variety of users