



Arroyo Hondo Preserve

A SELF-GUIDED NATURE TRAIL AT ARROYO HONDO PRESERVE

This self-guided nature trail is designed for use by school groups and families. This trail guide includes both walking directions and background information. Parents and teachers should print out this document or download it to a hand-held device before coming to Arroyo Hondo Preserve. Internet access is not available onsite, and, due to Covid 19 concerns, we currently do not provide any paper handouts.

For each of the 20 trail stops you will find one or more possible questions (Q) and one or more possible answers (A).

Encourage imagination and wonder. Please wait until all of the children have had time to think and have exhausted all answers before you read them the answers that we provide.

Directions: Walk across the bridge from the barn and turn right. Near the first trail marker you will see animal footprints painted on the blacktop.

1) Painted Tracks

STOP and LOOK: These tracks were painted over the muddy footprints of a nocturnal visitor.

Q: What big hairy mammal do you think made these tracks?

A: A bear

Q: What other big mammals do you think might live here?

A: Bobcats, mountain lions, coyotes, foxes, mule deer

Most wild animals are very shy. If you walk quietly, you will have a better chance of seeing animals. The best times to see wild animals are in the early morning or in the evening.

Directions: Stop just after the first open gate when you see the next trail marker on your left.

2) View of Habitats from the Meadow

There are many different animals and plants at Arroyo Hondo because there are many different habitats. You can see three habitats here, and you will see others later on during your walk.

STOP and LOOK: We are going to take three “mind photos” – one of each of three habitats you can see from here. First, look up canyon at the top of the sandstone cliffs. Focus on what you see, and keep that “picture” in your mind. Now, look at the ground next to the trail. What is different from what you saw up the hill? For example, notice the different colors of the plants. Finally, turn around 180 degrees and face the other way. Again, focus on what you see.

Q: Describe three differences you noticed. How is each habitat unique?

Q: What different colors did you notice? What different plants did you notice?

Q: What animals do you think might live in each of these habitats?

Chaparral Habitat:

STOP and LOOK: The plants that grow up on the rocky slopes get very little water. These are the tough plants of the thick, scratchy chaparral. It is very difficult to walk or ride through this habitat. Cowboys wear leather “chaps” when they ride their horses through rough country like this. There are many different kinds of shrubby plants in the chaparral.

Q: What animals and plants might be adapted to living in the dry Chaparral Habitat?

A: Examples: reptiles such as rattlesnakes and lizards, mammals like coyotes, bobcats, and various rodents, birds like the California thrasher, and many different insects. Many different species of tough-leaved shrubs grow here. All of these animals and plants are adapted to living in this difficult, dry habitat.

Grassland Habitat:

STOP and LOOK: See the grassland in front of you. Deer, rodents like mice, ground squirrels, and gophers, and insects like crickets and grasshoppers are common here. We often see birds like hawks and kestrels hunting for prey over the grassland. This is also a good place to see snakes.

Q: Why do we see animals such as deer and rodents in the Grassland Habitat?

A: Deer and rodents eat plants. There are lots of grasses and grass seeds here, and these foods are easy to eat and digest. Animals that eat only plants are called herbivores.

Streamside or Riparian Habitat:

STOP and LOOK: See where most of the tall trees grow in a curvy line? This is where Arroyo Hondo Creek flows down the canyon. “Riparian” is the name for the stream habitat. Many special animals and plants live in the Riparian Habitat.

Q: What things do all animals, including humans, need to live?

A: Food, water, shelter

Q: Which one of the three habitats do you think animals from all of the other habitats visit? Why?

A: The Riparian Habitat, because all animals need water to survive.

Directions: Continue walking along the road and through the next open gate. Look on your right for the next trail marker.

3) Poison Oak

STOP and LOOK: Look at the low-growing plants along the edge of the trail to your right ... but don't touch them!

Touching poison oak causes about 9 out of 10 people to get an itchy rash. A few hours after you touch this plant your skin may start to itch. If you think you have touched poison oak, wash your skin with soap and cold water as soon as you can. If you like, you may use cold stream water to wash your skin.

Q: Do you know what poison oak looks like during every season?

A:

In Winter poison oak has no leaves

In Spring it has bright green leaves and greenish white flowers

In Summer the leaves are darker green and it may have white berries

In Fall the leaves turn red, yellow, and orange before they fall off

Directions: Walk thirty steps further along the road.

STOP and LOOK: Can you see more poison oak?

Directions: Walk farther along the road. Look on your left for the thorny wild blackberry.

Both poison oak and wild blackberry plants have leaves in threes (actually, each leaf has three leaflets). Here is a saying to help you to tell the difference between these two plants:

“Leaves of three, let it be ... If it’s hairy, it’s a berry”

Directions: Continue on the road to the next trail marker.

4) Willow and Bay Trees

Willow trees and bay trees grow along the edge of the creek. Because they grow along the creek, they are riparian plants. It is difficult to tell them apart as their leaves are almost the same shape. Here are some differences between the two trees:

Willow Trees:

Their leaves are dark green on the top and silvery green on the underside. Willow trees are deciduous. This means that they lose their leaves in the fall or early winter.

Q: Can you bend a small willow branch? How do you think having bendy branches helps willow trees?

A: We think that the bendy willow branches are an adaptation to flooding. If a creek or river floods over these trees, their branches don’t break, they just bend and spring back up again when the water level goes down.

Bay Trees:

Their leaves are dark green and they are the same color on the top and the bottom. Bay trees are evergreen. This means that they have green leaves at all times of year.

STOP and SMELL: Rub a bay leaf and smell your fingers.

Q: How would you describe the smell of a bay leaf?

Q: How do you think the smell helps the bay tree?

A: The strong smell and taste of the leaves is an example of an adaptation. Most animals don’t like to eat plants that have a strong smell or taste, so this can protect plants from grazing animals.

Extension:

The word adaptation in Biology has two meanings:

- a) Adjustment to new or different conditions during an organism's lifetime.
- b) An inherited trait that increases an organism’s chance of reproducing and surviving in a particular environment.

Chumash people use bay leaves to protect stored acorns from insects. Some people also use them to protect stored grain and flour from insects like weevils.

Directions: Walk through the Sycamore Tunnel and look up at the huge big branches.

UPLAND PLANTS SIGN

Look at the colorful sign on your left and learn about our upland plants.

Directions: Continue walking until you reach the next trail marker on your right.

5) Sycamore Trees

STOP and LOOK: Look up at the beautiful sycamore trees.

Q: How would you describe the shape of the sycamore leaves?

A: Like a maple leaf. Botanists (scientists who study plants) say they are “palmate” which means shaped like a hand.

Q: What does the gray and white bark of the sycamore remind you of?

A: Camouflage, a jigsaw puzzle ...

Sycamore trees are very thirsty and they usually grow near creeks and rivers where water is plentiful. However, if you look across the trail and even up on the hillside, you will see more sycamore trees.

Q: Sycamore trees need lots of water. Why do you think some of these trees are able to grow far away from the creek?

A: There is probably underground water – perhaps a spring.

STOP and FEEL: Feel how soft the sycamore leaves are, especially underneath. Hummingbirds collect the soft hairs from sycamore leaves to line their tiny nests. Sycamore leaves turn bright yellow or gold color in fall and then they drop off.

Q: Do you remember the word for trees that lose all of their leaves in one season?

A: Deciduous

Q: Can you see the hole in the end of the branch? What animals do you think might live in this hole?

A: Mice, beetles, lizards, birds ...

Directions: Continue walking. You will see the next trail marker on your right, just before the stream crossing.

6) **First Stream Crossing**

STOP and LISTEN: Stand by the edge of the streambed and close your eyes for 3-5 minutes. Listen to the sounds of nature. Open your eyes and describe the sounds that you heard.

Q: Where do you think the water in the creek comes from?

A: The water comes from rainfall and also from springs higher up in the canyon that are fed by rainwater that travels through the ground. Arroyo Hondo Creek drains a very big, deep watershed. The water in this creek runs all the way to the Pacific Ocean.

A watershed is an area of land from which water drains by streams and rivers into lakes or an ocean

Q: Where do you think the big rocks in the streambed came from?

A: Many of these rocks are rounded. This shows us that they were carried downstream by the water from far above. Rolling around in the water wore off their rough parts and rounded them.

When a stream floods, the force of the water is very strong. A flooding stream can carry rocks and tree branches for long distances.

In summer, parts of Arroyo Hondo Creek dry up. Even then, there is still water flowing through the gravel underneath. Even in very dry years, some pools always remain in this stream. This means that aquatic animals can survive, and there is water for deer and all of the other animals that come to drink from the stream.

Directions: Soon after the stream crossing you will see the next trail marker on your right. Walk up the Hideout Trail that goes up the hill away from the main road.

7) **Hideout Trail**

At this point, you will enter a fourth habitat. This is the Coastal Sage Scrub Habitat.

STOP and SMELL: As you walk along the trail, rub the leaves of plants with your hands until you find two different fragrant (smelly) plants.

Q: Do you remember how strong-smelling leaves can help plants?

A: The strong smell is an adaptation that protects the plant from grazing by animals.

One of the plants is California sagebrush. It has thin silvery leaves. This plant is sometimes called “cowboy cologne”. Cologne is a word for perfume. When the Chumash prepared to go hunting for deer, they rubbed strong smelling plants like this one on their bodies.

Q: How do you think this would help a person who is hunting for deer?

A: The strong scent of the California sagebrush would hide (camouflage) the hunter’s human scent.

The other plant is black sage. It has dark green leaves that are bigger and wider than the leaves of sagebrush. It also has dark gray stalks with dry flowers in groups along them. Black sage is a favorite plant of honey bees. Bees collect nectar from sage flowers so that they can make honey. California black sage honey is delicious.

Directions: Continue up the Hideout Trail. When the trail makes a sharp turn to the right, turn around and face down hill.

STOP and LOOK: Now look up high at the rocks on your right.

Q: Can you see that there are lines in these rocks? What do you think made these lines?

A: These are the layers of sedimentary rock that were formed over thousands of years in a watery environment. Sedimentary rocks are made up of layers of sand, silt, mud, or gravel that fall to the bottom of an ocean, a lake, or a river. Over thousands of years, these sediments are packed and cemented together and they harden into rocks. You can often see layers in sedimentary rocks.

STOP and LOOK: At the top of these rocks you will see chaparral shrubs. Some of these have black, burned branches sticking up. These branches are left over from the big Gaviota Fire of 2004. This fire burned the whole west side of the canyon and all the way to the Gaviota Pass. Over 7,000 acres burned in the Gaviota Fire, an area almost ten times the size of the Arroyo Hondo Preserve.

Directions: Continue along the Hideout Trail which will go back down the hill and meet the main road again. Find trail marker # 8 on the lower edge of the road and then walk down past the picnic tables to the edge of the stream.

8) Picnic Area Pool

There is always water in this pool, even though other parts of the creek often dry up in the summer. Many different kinds of plants and animals live in this pool.

Q: How do you think the water in the creek helps the trees that live in this Riparian Habitat?

A: The trees that grow here like sycamores, willows, and bays are very thirsty species. In our dry climate these trees can only grow near water.

Q: Animals that live in water are called aquatic animals. How do you think the trees help these animals?

A:

Trees drop leaves and twigs into the water. These (as well as algae and diatoms in the stream) are food for herbivores that are important to the food web of the stream.

Overhanging trees provide shade that keeps the water cooler.

Cool water can hold more dissolved oxygen than warm water. All animals need oxygen to live, and we breathe oxygen from the air with our lungs. Aquatic animals also need oxygen to live. That is why it is important that the water where they live has lots of dissolved oxygen. Invertebrates, fish, developing eggs of fish and newts, and young amphibians are aquatic animals that need to live in water that has a high concentration of (lots of) dissolved oxygen.

Tree roots hold the stream banks and prevent erosion. Erosion makes the water cloudy with silt that covers and smothers the eggs of fish and amphibians.

Tree roots along the edge of the stream provide good hiding places for animals including fish.

Extension

Algae (singular alga) are single-celled, colonial, or many-celled organisms (forms of life) that live in damp or aquatic environments.

Diatoms are single-celled organisms. Each diatom has a two-part silica shell.

There are many different species of algae and diatoms. They are found in both fresh and salt-water habitats. These are “plant-like” photosynthetic life forms that are important primary producers in both fresh-water and salt-water aquatic food chains. Some people call diatoms “the grass of the sea.”

Q: What kinds of small animals do you think you might find in the stream?

A: Many small invertebrates (animals without backbones), including different kinds of aquatic insects, are found in the stream.

Some invertebrates live in the water for their whole life and others only stay in the water while they are young. Young insects are often called larvae or nymphs.

Invertebrates do not have internal skeletons but they have hard external exoskeletons. When they grow, they must molt or shed their exoskeleton and grow a new, bigger one.

STOP and LOOK: Look for water striders that walk on top of the water.

Q: How do you think water striders are able to walk on water?

A: Water striders have tiny waterproof (hydrophobic) hairs on their legs. These hairs spread their weight out and help them to stay on the surface.

Extension

Giant water bugs (toe biters) are big bugs that stay in water for their whole lives. Sometimes we see male toe biters carrying lots of eggs on their backs. The females lay the eggs and the males carry them around until they hatch.

Dragonfly nymphs (also called naiads) live in the water until they mature. They are carnivores and they hunt for small invertebrates. When young dragonflies grow up, they leave the water. Their outer skin cracks and they emerge as adult dragonflies. As soon as their wings dry, they can fly and will then spend the rest of their lives on land (as terrestrial invertebrates). Many aquatic insects including damselflies, stoneflies and caddisflies have similar life histories.

Q: Have you ever seen an adult dragonfly?

Dragonflies are fierce predators that catch flies and other insects. Some people call dragonflies “the hawks of the insect world.”

Vertebrates (animals with backbones) like fish, turtles, newts, and frogs live in and around the stream also. Vertebrates have internal skeletons (vertebral columns) that grow as the animals grow.

Because Arroyo Hondo Creek provides a very clean stream habitat with lots of food, some rare and endangered vertebrates are able to live here. Please do not pick up these animals as they are delicate and are protected by law.

Extension

Southern steelhead trout – these are the same species as rainbow trout. Rainbow trout stay in fresh water for their entire life. Steelhead swim to the ocean where they spend a few years feeding and growing much bigger. Later, they return to the stream to breed. Southern steelhead trout are very rare. Steelhead trout can make this trip 3 to 5 times in their lifetime if there is enough water during the winter months.

Pacific pond turtles – these are rare reptiles. They spend some time in the water and some time on land. They make nests and lay their eggs on land. Young turtles first come to the stream in April each year.

Red-legged frogs – these are very rare amphibians. Frogs lay masses of eggs in the water. The eggs are surrounded by protective jelly.

California newts – these are rare amphibians. They lay their eggs in springtime in this pool. Their eggs are also in gelatinous masses. The egg masses are attached to sticks under the water. California newts have toxic skin. This toxin is very strong and affects the nervous system so

please remember not to pick newts up. California newts have very few predators due to their toxins. California newts are brown and orange in color.

Q: Did you know that orange is a warning color in nature?

Extension

California newts, monarch butterflies, and ringnecked snakes are some animals with orange “warning” color that live at Arroyo Hondo Preserve. The newts and butterflies contain toxins. The snake produces a small amount of toxic venom. The scientific name for warning colors is “aposematic coloration.”

Directions: Continue up the road. At the second fork, veer left and take the “Jo and Ollie Trail. Look for the trail marker number 9 on your left.

9) Dead Oak Trees

STOP and LOOK: After you turn onto the Jo and Ollie Trail, you will see two big dead coast live oak trees. One is on your left, and the other is at the base of the hill in front of you. Arroyo Hondo is a Nature Preserve so we don’t cut trees down unless they block trails. Dead trees are important in nature. They are like “tree hotels” as they provide roosts, shelter, and homes for many different animals.

Q: What kinds of animals (big and small) do you think might roost on these trees or make their homes in them? Can you see any animals on the dead tree to your left?

A: Examples: lizards, beetles, spiders, rats, mice, and birds such as scrub jays, flickers, and acorn woodpeckers.

Q: Can you find some young, living coast live oak trees that may have grown from acorns produced by one of the old dead trees? These oak trees are evergreen and have dark green, shiny leaves.

STOP and FEEL: Feel the leaves of a coast live oak tree.

Q: Why do you think it helps an oak tree to have leaves with pointy ends?

A: The pointy ends help to collect fog and drip it down below the branches and above the roots. Coast live oak leaves also have sharp spines that help to protect them from grazing animals.

Extension

Researchers using “fog catchers” in the hills near San Luis Obispo measured a significant amount of extra water from summer fog.

In California’s Mediterranean climate region, we rarely have rain in summer and therefore summer fog is a very important source of water for plants.

The coast redwood trees that grow in Monterey County are completely restricted to the summer fog zone along the coast as they depend on this extra summer moisture.

A few redwoods were planted at Arroyo Hondo Preserve, but they do not grow in Santa Barbara County naturally.

Directions: Now, continue to the open, grassy upper meadow. You can see where the stream is to your left. It is lined with tall sycamores, bays, and other water-loving trees.

10) Upper Meadow

STOP and LOOK: Look carefully in the grass as you walk. If you spread out in a line, someone might see a snake. Snakes are beautiful reptiles and are very important to the ecosystem.

Don't pick up any snakes as they can all bite pretty hard!

We have many different snakes at Arroyo Hondo Preserve. Only one, the Pacific rattlesnake, is very poisonous. Rattlesnakes have special adaptations.

Q: How do you think poisonous venom and noisy rattles help rattlesnakes?

A: Venom is used to paralyze and digest prey. Rattles warn predators to stay away.

Rattles are segments made of keratin, like our fingernails, that fit loosely inside one another at the end of the snake's tail.

STOP and LOOK: In the middle of the meadow, turn slowly all the way around (360 degrees). Look at all of the patterns of the landscape and try to keep a picture of all of this in your mind.

Q: How many different shades of green do you see?

STOP and LOOK: Look up in the sky and see if there are any raptors (birds of prey) flying high overhead.

Q: Do you know the names of some local raptors?

A: American Kestrels, Peregrine Falcons, Red-tailed Hawks, Red-shouldered Hawks, Northern Harriers, Great Horned Owls, and Barn Owls. These are just some of the raptors that we at Arroyo Hondo Preserve.

Some people also include Turkey Vultures as raptors even though they are scavengers. Scavengers eat dead animals (carrion), but they do not hunt live prey.

Directions: Continue on the trail until you enter the woodland. Take about 20 steps and then stop.

11) Walk into the Oak Woodland

Now you are in a fifth habitat, the Oak Woodland Habitat.

STOP and FEEL: Does the temperature feel different here in the shade of the trees?

Q: Where do you think deer go on a hot summer day?

A: Into the woodland where it is cooler.

STOP and LISTEN: Close your eyes for 3-5 minutes and be very quiet. Listen for the sounds of nature. When you are ready, open your eyes and describe the sounds that you heard.

Directions: At the “Lower Outlaw Trail” sign, take the path downhill to your left. When you have almost reached the stream, look to your right for the next trail marker.

12) Smelly Sulfur Spring

STOP and SMELL: What do you smell here?

The air here often smells of rotten eggs. This is because you are near a sulfur spring. Water comes out of the ground here, and with it comes sulfur gases. Ferns and other plants that need permanently wet habitats grow here. The path gets wet and slippery here, so please watch your step.

STOP and LOOK: Look on the right for a gray, slimy, and smelly area where special bacteria grow. **Please don't touch the slimy area as the bacteria are alive and we don't want to disturb them.**

STOP and LOOK: Stop at the edge of the stream and carefully watch the pool near the crossing.

Q: Do you see gas bubbles rising to the top of the water? Do you think the bubbles might be more of the smelly sulfur gas?

STOP and LOOK: Before you cross the stream, look for rocks with lots of oyster shell fossils in them. Almost all of the rocks at Arroyo Hondo Preserve were formed under the ocean. If we see shell fossils in rocks, this tells us that the rocks were formed under a shallow part of the ocean where many shellfish lived.

Directions: After you cross the stream you will see the Canyon Wildlife sign on your right.

CANYON WILDLIFE SIGN

Look at this colorful sign and learn more about the wildlife of the canyon.

Directions: Now turn right, walk down the hill, and then cross back over the stream to the other side.

STOP and LOOK: Do you see any turtles or frogs in the water?

Directions: Now, take the trail up the hill. Look for the next trail marker on your right.

13) Sapsucker Tree and Weeping Tree

Sapsucker Tree:

STOP and LOOK: On your right, can you see rows of holes in the bark of an oak tree?

Q: What do you notice about the pattern of the holes? Who do you think made these holes?

A: The holes are lined up in rows. These holes were made by special woodpeckers called sapsuckers that live in the mountains and sometimes visit our area in the winter. Sapsuckers drill small holes or wells in rows with their sharp, hard beaks. They have stiff tail feathers that they sit on and, sitting down on the job, they scooch over sideways to make the next hole. That is why the holes are in rows.

Q: Why do you think sapsuckers drill holes in the trees?

A: Sapsuckers feed on the tree sap that rises up and drips out of the holes. They also eat ants and other insects that are attracted to the sweet sap. In this way, they are getting dinner and dessert all at once!

Sometimes hummingbirds follow sapsuckers.

Q: What do hummingbirds usually feed on?
Why do you think hummingbirds follow sapsuckers?

A: Hummingbirds usually feed on nectar from flowers. They sometimes follow sapsuckers and take some of the sap that flows from the sapsucker's wells.

We also eat tree sap! Have you ever had delicious maple syrup on your pancakes or waffles? This is sweet tree sap that is collected from maple trees that grow in the Eastern United States and in Canada.

Our more common woodpecker, the acorn woodpecker, makes single, larger holes that are not in rows. This bird pushes an acorn into each of the holes to store for later.

Weeping Tree:

STOP and LOOK: Up ahead on the left is a big oak tree with a trunk that leans over the trail. Look up. Can you see the big swollen growth on its trunk?

Q: What do you think caused this swollen growth?
Can you see dark stains on the tree trunk?
Is the soil wet or darker in color underneath the swelling?

A: We think that the swelling was caused by a microbial infection. As a protective reaction, the tree “weeps” sap. Some sap drips onto the ground which is stained and often wet below the growth.

Directions: Continue up the trail until you reach trail marker number 14. You will find a steep path with some rough steps that lead down to the stream. Walk carefully down and keep very quiet. As you cross the boulders in the stream, stay low so that the animals in the pool can't see you.

14) Steelhead Pool

STOP and LOOK: Now, very quietly, creep onto the big rock that overlooks the pool and lie on the rock with just your eyes sticking above the edge. Keep your head down and watch the water. Don't wave your arms as this will scare the animals in the pool and they will swim under the rocks and out of sight.

Look for Fish: These are rainbow trout and/or steelhead. Remember that these two are the same species, but the two types have different life styles. We don't know which are which until the steelhead swim out to the ocean. The rainbow trout will stay in the fresh water of the stream for their whole lives.

Look for California Newts: These amphibians start out life using feathery gills to obtain dissolved oxygen from the water. When they are adults, they use lungs to breathe air like humans do. If there are adult newts in the pool, and if you wait long enough, they will eventually have to swim up to the surface of the water to gulp air. Then they will swim quickly back down to the bottom again.

STOP and LOOK: Look up at the big rock face near the Steelhead Pool.

Q: Can you see oyster shell fossils in this rock? Look also for shell fossils in the boulders in and around the stream.

Look where the dainty maidenhair ferns grow out of the rock. Do you see where fresh water comes out of a pipe in this rock?

Q: Why do you think water comes out of the rock here?

A: The water probably comes from a spring higher up and drains through cracks in the rock.

Directions: Go back across the creek, up the steps, and down the trail the way you came. Cross back over the stream once. Follow the sign to Brandy's Trail. After a short while, turn to the right at marker number 15. Walk a few steps to the Fern Grotto. Beware of the poison oak that grows at the edge of the trail.

15) Fern Grotto

The big ferns that you see here are called giant chain ferns. They are the biggest native ferns in California. They grow in the shade under the oak trees and only in very wet places. This area is kept wet by a spring that comes out of the hillside above. Remember that the pointy leaves of oak trees catch fog and so this also help to keep the soil wet.

This is one of the biggest patches of giant chain ferns in Santa Barbara County. These ferns are not common in our area. They are found much more often up north with the Redwood Trees where there is more summer fog and more rain. In spring, we often see newts walking around on the wet soil among these ferns.

STOP and FEEL: Fern leaves are called fronds. Feel underneath some of the fern fronds.

Ferns are primitive or ancient plants that produce spores. Flowering plants are more advanced or modern and they produce seeds.

Q: Can you find bumpy areas underneath the fronds where the spores are produced?

Directions: Go back to Brandy's Trail. Turn right and continue walking a short distance until you see the next trail marker.

16) Woodrat Nest & Bathtub Tree

Woodrat Nest:

STOP and LOOK: On your left, look for a messy pile of sticks at the bottom of a tree.

This is the nest of a dusky footed woodrat. These woodrats build big nests or middens. They keep building on to them for many generations.

Extension

Nests of the related desert woodrat have been dated to 3,000 years old. The layers of plant remains in these nests are being used by scientists to study how the plant life in the desert has changed over time.

Even though woodrat nests look messy, they are very well organized inside. They have areas for a “bedroom”, a “bathroom”, and a “nursery nest” where the baby woodrats are born. Each nest has more than one entrance to allow easy escape from predators.

Q: Why do you think woodrats build their nests at the bottom of trees?

A: For easy escape from predators and so that they can get building materials easily. After they mate, male woodrats move to their own nests high up in the tree branches.

Q: Why do you think male woodrats make nests high up in the trees?

A: The males serve as sentries or guards. They protect the females and young from predators such as raptors like owls.

Q: Why do you think woodrats sometimes put chewed up bay leaves in their nests?

A: The strong smell of the bay leaves probably helps to keep keep fleas and other insects out of their nests.

STOP and LOOK: On your way back to the barn count how many more woodrat nests you can see among the trees. Remember to look up as you walk also as you might see nests of male woodrats high up in the tree branches.

Bathtub Tree:

STOP and LOOK: Now, look to the right of the trail and you will see the “Bathtub Tree.”

Q: Why do you think the tree has this shape with many trunks in a circle?

A: This is a very big and very old bay tree that probably burned down years ago and then grew up again from the roots with several trunks.

STOP and CLIMB: You can climb up into the bathtub if you like.

On the side of the tree away from the trail is a shelf fungus.

Look at this, but please do not use it as a step to climb into the bathtub.

Extension

The fungus, with its huge network of very fine threads or mycelium, is a parasite that is growing all through the inside of the tree. The shelf that you see is the part (like a mushroom) that

produces spores that are blown away. If a spore lands in moist soil in the woodland, it may germinate and grow into another shelf fungus.

Directions: Take about fifteen more steps and look on your right for a sycamore tree that is growing parallel to the ground.

Q: What direction do most tree trunks grow and why? Why do you think this tree is growing like this? Do you think it has roots at both ends?

A: Trees need sunlight and so they usually grow straight upwards. When it was young, this tree was injured and it fell sideways and continued to grow. We think the tree may have roots at both ends but we would have to dig down into the soil to find out.

Directions: Continue on until you reach a clearing in the trees.

17) Habitat Restoration Area

As you walk out of the trees, you will come to an area with many different types of plants. This is a habitat restoration area where native plants were planted by volunteers to fill in an area that was probably once farmed. By making this area more like the way it once was, we think this will make a better habitat for wildlife.

Q: How many different types of plants can you see growing here?

A: Sticky monkeyflower, bitter gooseberry, climbing penstemon, mugwort, lemonadeberry, elderberry, snowberry, Santa Barbara honeysuckle, and more.

STOP and LOOK: As you walk along the trail, be sure to look for scat (poop) and owl pellets.

On this trail we have seen the scat of coyotes, bobcats, and foxes. Sometimes we see very big piles of bear scat that are full of seeds and berries.

We sometimes see owl pellets. Owls spit these out. They are the parts of the prey animals that owls cannot digest and are usually full of tiny bones and fur. Barn owls hunt for mice and other small rodents. Great Horned Owls hunt for woodrats and other animals.

Directions: Walk on down the trail. You will see a turn to the West Ridge Trail to your right but keep on straight ahead. Later, when you come to a fork in the trail, veer to the right.

STOP and LOOK: Notice the round rocks on the ground at the fork in the trail. Remember what causes rocks to be round and smooth? Imagine what happens here when it rains hard. The stream overflows and this becomes part of the waterway. The rocks get tumbled by the rushing water and become round and smooth.

18) The Gnarly Old Tree

STOP and LOOK: Look at the leaves of this old tree.

Q: Do you recognize what kind of tree this is?

A: California bay

Q: This tree probably burned down close to its roots at one time. Can you tell which of its many trunks are older and which ones are younger?

Q: What kinds of animals do you think might make their homes in this tree, or in holes underneath it?

STOP and LOOK: Look for ferns on the bank near the roots of this tree. These are coastal wood ferns. They are much smaller and are more common than the big ferns at the Fern Grotto.

Directions: Continue walking down the trail until you reach the next trail marker.

19) Horsetails (Cola de Caballo)

STOP and LOOK: Can you see a patch of unusual bright green feathery-looking plants? These plants are called horsetails. Their scientific name is *Equisetum* (*Equus* is the Latin word for horse).

Horsetails and their relatives have been on earth for more than 300 million years. Giant horsetails grew on earth during the Age of Dinosaurs.

STOP and FEEL: Feel the horsetail stems. What do they feel like?

Horsetails are very scratchy as they have silica (glass-like material) in their cell walls.

We find many very old animal fossils in rocks because their hard bones and shells have been preserved. Very few types of plants have been preserved well as fossils as they are so soft and they rot easily.

Q: Horsetail fossils are often found. Why do you think this is?

A: Unlike most other kinds of plants, horsetails preserve well in rocks because they contain hard glass-like silica.

Extension:

Horsetails have been used in different ways by many different cultures:

The Pioneers used horsetails to clean pots and pans and so they are also called “scouring rushes.”

Chumash people use them like sandpaper to smooth the surfaces of wooden bowls.

In Mexico and other countries, horsetails are made into a tea that is used as medicine to help cure kidney problems.

RIPARIAN PLANTS SIGN

Look at this colorful sign and learn more about the plants that grow in streamside areas.

Remember: The word riparian means having to do with or in and around a stream or river.

Directions: Continue down the trail until you arrive at the next stream crossing.

20) Tree Roots by Stream Crossing

STOP and FEEL: Just before the crossing, you will see a big rock on your right. Feel how scratchy it is and look for the sedimentary layers. Do you remember when you looked up from the Hideout Trail to see the lines in the rocks?

This is a type of rock called sandstone. This is a type of sedimentary rock that is often formed under the ocean.

Q: Can you see the layers in this sandstone?

STOP and LOOK: Before you cross the stream, look at the beautiful exposed tree roots to your left. Think of a word to describe these roots. See how the roots are holding rocks between them.

Trees often have a very large part of their body under the ground. Roots hold a tree in place and they also pick up water and nutrients from the soil through tiny root hairs.

Did you know that a big oak tree can take up thousands of gallons of water each year through its roots? Most of this water is eventually lost through little holes in the leaves.

STOP and LISTEN: Sit on a rock and close your eyes for a few minutes. Listen to the music of the stream. Listen for other sounds like the rustling of the leaves on the trees.

Directions: Now cross the stream and turn right. Walk down the road and return to the barn.

There are many more interesting things to see at Arroyo Hondo Preserve. We hope that you have had fun and that you will come back again with your family and friends.