

Ruth Merrill

Children's Interpretive Walk



San Dieguito River Park

Highland Valley Trail

The Children's Interpretive Walk was dedicated in 1999 to **Ruth Merrill**, who contributed greatly to the preservation of open space through her dedicated volunteer work with the San Dieguito River Valley Conservancy and who worked for the betterment of children around the world through her volunteer efforts at UNICEF.

This brochure is printed in memory of
Charles "Chuck" Anderson (1934-2011),
a stalwart supporter of the San Dieguito River Park and
a great fan of the Highland Valley Trail.

Directions:

The Highland Valley Trail is located just south of Lake Hodges in Northern Rancho Bernardo. From I-15, travel toward the Lake Hodges area, exiting at the West Bernardo Drive/Pomerado Road interchange. Go east on Pomerado Road, turning left at the signal light onto Highland Valley Road. Immediately east of the intersection on the south side of the road is the Highland Valley Trail staging area. Turn right into the dirt driveway and follow the driveway up to the parking lot.

WELCOME!

You are about to begin the Ruth Merrill Children's Interpretive Walk, which travels along the Highland Valley Trail. On this walk, you will discover the importance of the San Dieguito River to the plants, animals, and people that live here. You will also explore the habitats found along the way. Habitats are local natural areas where specific plants and animals are found. San Diego County has a remarkable variety of habitats to explore. Just a few of these are found along the Highland Valley Trail.

This interpretive walk is 1.5 miles round trip, with a 2-mile option for those who want to learn more about the area. This is not a loop trail. You will travel out and back on the same path.

As you begin the walk, look for numbered posts along the trail. These are **Discovery Points**. At each of these Discovery Points, which are described in this pamphlet, you will learn how a river influences the land, and about the plants, animals, and people that share the environment.

THE SAN DIEGUITO RIVER

The San Dieguito River begins as a small stream up on Volcan Mountain near Julian. As the stream flows down the mountain, it is joined by many other streams and soon is large enough to be called a creek. This creek, called the Santa Ysabel Creek, continues to flow down into the San Pasqual Valley.

Just to the east of this trail, the Santa Ysabel Creek and the Santa Maria Creek merge to form the San Dieguito River. The San Dieguito River continues to travel west until it meets the Pacific Ocean, just south of the Del Mar Fairgrounds.

The Highland Valley Trail is located within the San Dieguito River Park. The River Park gets its name from the San Dieguito River, which flows in the valley below the trail. Even though you can't see the river from the trail, you will see evidence of how the river benefits and influences this area. A river plays many roles.

DISCOVERY POINT 1

As you begin to walk the trail, stop here for a moment to take a quick look at the surrounding area. Look to the north, south, east, and west. Look up in the sky and down on the ground. What do you see?

Do you hear any animal sounds? Can you identify any of those sounds? Could they be birds calling? Many different birds can be heard here. Insects and small reptiles can often be seen or heard in the grasses near the trail. Do you hear any human created sounds? You may hear sounds of the roads or homes nearby.

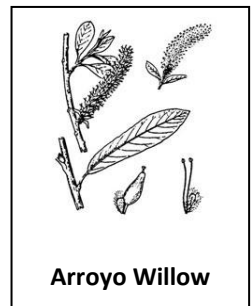
This area has a great variety of activity and most of it is because of the San Dieguito River. You won't see the river from this trail, but you will see the effects of the river. Can you pick out where the San Dieguito River travels through the valley below? The river is found where you see the thickest growth of trees and plants. This trail guide will help you read the signs of the river.

The habitat created by the trees and plants that grow along a water course is called **riparian habitat**. Riparian habitat is very important to wildlife. It provides a source of water and shelter particularly during our warm, dry summer season when permanent water sources may be hard to find.

Nature Scout

Some of the trees you can see growing along the river are the same trees that are growing in the drainage the separates the trail from the lot. Most of the trees you see in this small drainage are arroyo willow. These trees are easily identified by their long, narrow leaves. However, if you visit in late winter, you may find few if any leaves on the willows because they are **deciduous**. They lose their leaves in winter and grow new leaves in the spring. Trees that don't lose their leaves are called evergreens.

Willows need a constant source of water to survive. They have adapted to California's dry summers by developing long taproots that grow deep into the soil in search of water. Here is a picture of an arroyo willow branch. Can you find this tree along the trail?



Arroyo Willow

DISCOVERY POINT 2

A river provides a source of water for human use.

Looking to the north (left) you see Lake Hodges. Lake Hodges is a reservoir that was formed when a dam was built on the San Dieguito River. A reservoir is a lake or pond in which water is collected and stored for future use. The Lake Hodges Dam is not visible from this trail, but seeing the lake tells you there is one downstream if you are in arid southern California.

The reservoir was created to provide a permanent source of water for people in this area. Water from this reservoir has made it possible for homes, businesses, farms, and ranches to be built here. Lake Hodges is also used for recreational boating and fishing.

Wildlife also makes use of the lake. Many different types of ducks and other water birds can be found here. Lake Hodges is also important because it is located along the Pacific Flyway, the route birds use to travel or migrate between their summer breeding grounds and their winter homes. Many migrating birds stop here to eat and rest before continuing on their way north or south. In the spring and fall, you might hear the honking of Canada Geese that stop here by the hundreds.

Nature Scout

Even if you can't see any wildlife, it is all around you. Birds, mammals, and even reptiles are nearby. Stop and listen. Can you hear the different kinds of bird calls? Each species of bird has its own special call.

Red-tailed Hawk "Kee-ee-arr" House Finch "Chi-chuwee" Black Phoebe "Tee-hee Tee-hoo"

Do you hear the rustling of leaves? Could it be a mouse or a lizard? You can discover who lives here without even seeing them if you look, listen, or even sniff for the clues they leave behind.

There may be signs of wildlife on the trail – a footprint or track or maybe some droppings or scat. Stop and look. Coyote scat is always on the trail. Clues can even be found in the scat. Coyotes eat many things including rabbits and mice. If you see fur in the scat, you know that rabbits and mice live nearby. Sometimes even odors can tell you what animal might be about. Have you ever smelled the scent a skunk leaves behind?

How many signs of wildlife can you find? Check them off.

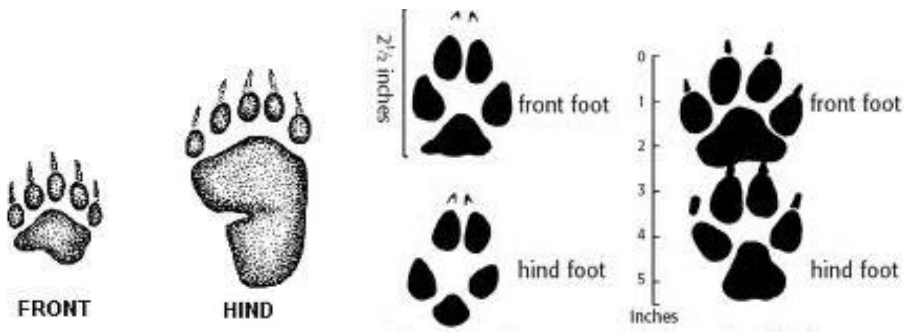
Tracks __ Strong odor __ Scat __ Snakeskin __ Bird calls __ Fur/Feathers __

Nature Scout

If you are lucky, you may find some **animal tracks** on or near the trail. Finding animal tracks is a good way to discover what mammals live in an area. Here are just a few of the tracks you might see.



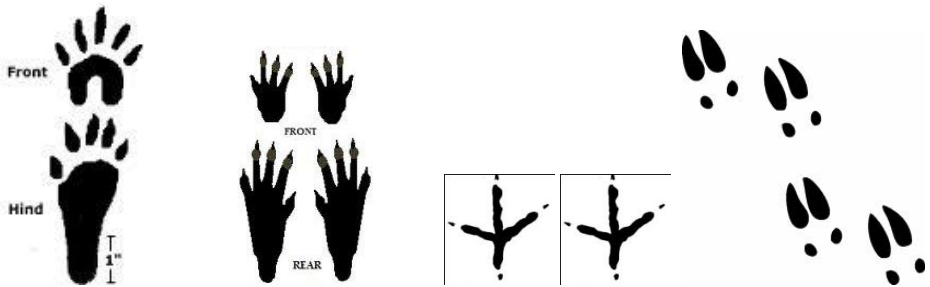
Rabbit Tracks



Skunk

Coyote

Dog



Raccoon

Wood Rat

Red-tailed Hawk

Mule Deer

Even if you don't see any tracks here, it is always fun to look for tracks whenever you are out on a trail.

DISCOVERY POINT 3

A river provides a source of water for plants, even during the dry season.

The riparian habitat that grows along the river can survive the long, hot summers because there is some water present. Even if the river bottom is dry, there is still a supply of water underground that the trees & plants can reach with their root systems.

Plants that don't grow near the river must find other ways to survive the dry season. Look closely at the slope to the right. This vegetation is known as the coastal sage scrub. Coastal sage scrub is not the name of one plant; it is the name of a group or community of plants that all grow together in one area. This **plant community** is made up of plants that share the same habitat requirements and many of the same identifying characteristics.

Most of the plants are short. Few trees or large shrubs are found in coastal sage scrub. Look at the leaves of these plants. Many are small and often have a covering of short hairs or a waxy or sticky coating. The short hairs and coatings are examples of plants adaptations that allow the plants to gather moisture from the air and hold it inside the leaves for the plants to use. The stems of coastal sage scrub plants are woody & rough.

Nature Scout

Look at these pictures. Can you find these plants on the slope along the trail?



White Sage



Flat-top Buckwheat



CA Sagebrush

A special group of birds lives in coastal sage scrub habitat. A very important one is the **California Gnatcatcher**, a little gray bird with a black cap and dark tail. You may not see it, but it is easy to hear. Stop and listen. Do you hear the sound of a small kitten mewing? That is a gnatcatcher. The California Gnatcatcher is in danger of becoming extinct because so much of its habitat has been destroyed. To prevent this, it is important to preserve areas of coastal sage scrub for gnatcatchers.



DISCOVERY POINT 4

On the north (left) side of the trail you can see a human made habitat. This pine tree farm has many trees that are the exact same size, same shape, same age, and same color.

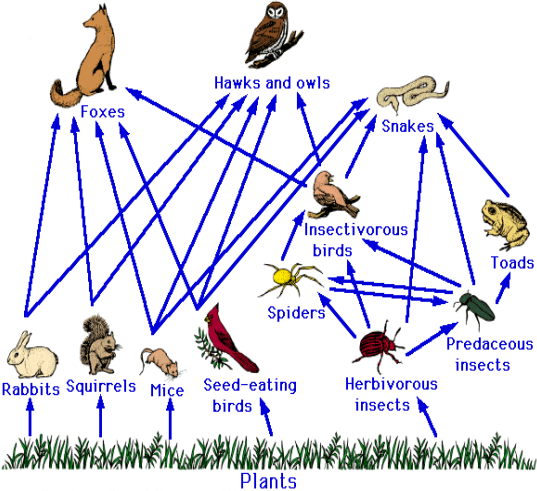
The natural area on the south (right) side of the trail contains plants that are different sizes, shapes, ages, and colors.

The plants in the tree farm grow here because humans planted and care for them. The plants in the natural area are growing here because they are adapted to live in this habitat. They are able to cope with only seasonal rainfall and an abundance of sunlight. The animals that live in this habitat are also adapted to the existing natural conditions. You would expect to find many more animals living in the natural area than you would in the tree farm. Can you think of some reasons why this is true?

A major factor that defines which habitat will be found in an area is the availability of water. In dry areas, the plants and animals must be able to gather up all available water and store it for future use. In wetter areas, the plants and animals can use water more freely. The plants in wetter areas usually grow faster and larger than those in drier areas. Watch for areas with larger trees and shrubs as you walk along the trail. Are they near a water source?

Nature Scout

The animal life found in an area is dependent on the plants that grow there. Plants can be a direct source of food, or they can provide food to wildlife indirectly through predator/prey relationships. For example, mule deer feed directly on the fresh green shoots of plants. Bobcats, on the other hand, do not eat plants, but instead eat rabbits and mice that survive by eating plants. The **food chain** connects plants and animals to their selected habitat.



DISCOVERY POINT 5

A river provides a source of water for animals.

Search the sky for signs of birds. Large birds such as Red-tailed Hawks are often seen in this area. The open fields provide good hunting grounds, and the large trees provide nesting and roosting spots.



Listen carefully. Do you hear water? Wildlife will come down to drink, bathe, and hunt in and near the water. Tracks of coyote, raccoon, and deer may be found along the trail.

Raccoon Tracks

You are moving from the coastal sage scrub to the riparian woodland. The area where you are standing is called an **ecotone**. An ecotone is the area where two types of habitats meet. You will see, hear, and find evidence of a greater variety of plants and animals in an ecotone because species from two different habitats are sharing the same space.

Nature Scout

When exploring riparian woodland, be on the lookout for **poison oak**. Shady, damp areas provide the perfect conditions for the growth of poison oak. Check out the picture to make sure that you can identify this plant.

Poison oak can grow as a small bush, a single plant, or a vine. The leaves look like an oak leaf even though the plant is not related to an oak tree. The leaves are usually divided into three leaflets. In spring, the leaves are bright green and oily, but in the fall or early winter the leaves may be red or yellow. The oily chemical on the poison oak can cause a painful, itchy, red rash in most people so be sure to stay on the trail to avoid this plant.



Poison Oak

Poison oak can be harmful to humans, but is important to wildlife. The plant and its berries provide food for deer, birds, mice, and wood rats, and the thick plant growth provides shelter for small animals.

DISCOVERY POINT 6

A river helps to determine the development of human civilizations.

The Kumeyaay have often been called the Indians of the Oaks. **Oak trees** play an important role in their culture. Oak seeds, called acorns, are still ground into flour for food. In the past, oaks provided shelter from harsh weather. Oak wood provided a hot, long burning fire needed for warmth and for baking or firing newly formed pottery. The Kumeyaay helped nurture the oaks by moving saplings to the best growing areas.

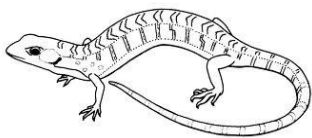
The cactus that you see growing here is prickly pear cactus. For the Kumeyaay, it was a good source of food.

Kumeyaay campsites from long ago have been discovered in the San Dieguito River Valley. Can you think of some reasons why this area would have been a good place for the Kumeyaay to establish a village? Check them off.

- ☐ Native plants and animals for food
- ☐ Close to oaks for shelter
- ☐ Rocks for grinding acorns into flour
- ☐ Above the river so they would not have to worry about flooding
- ☐ Good vantage point, you can see very far from the open areas on the hillsides

Nature Scout

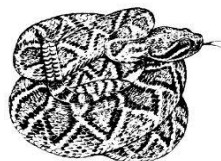
Snakes and lizards live in this area, so always be alert. You may see a rattlesnake or more likely an alligator lizard. On very rare occasions, you might even encounter a San Diego horned lizard. You should never disturb or pick up any of these creatures. They are all very important to the natural ecosystem.



Alligator Lizard



**San Diego
Horned Lizard**



Rattlesnake

DISCOVERY POINT 7

A river erodes rock and compacted material and carries it away.

Look at the steep hillsides both next to the trail and across the valley. Do you ever wonder about the large boulders that cover many of our hillsides? Some of these boulders are as big as a small house.

These boulders are a type of granite rock called gabbro. **Gabbro** is formed by volcanic action deep under the surface of the earth. Geologic forces have brought these rocks to the surface. Water flowing down the hillsides removes dirt and other loose materials from around these large boulders, leaving them exposed.

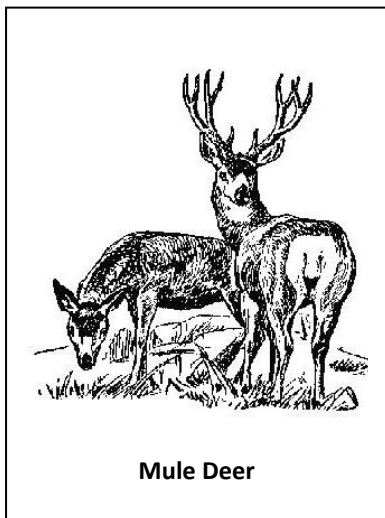
As the rock weathers, very small pieces of rock are washed off the slopes by the rains and into the San Dieguito River. The river carries these particles, in the form of sand, downstream. Before the dam was built, this sand would have been carried to the beach in Del Mar.

Nature Scout

As gabbro decomposes, it breaks into very small, angular pieces, which can be very hard to walk on. This can cause humans to slip and slide, especially on a steep hillside. Do you know of an animal that can move easily on this type of surface?

Mule deer have strong legs and hooves that are adapted to move easily up and down steep hillsides.

Before this area was used for agriculture, mule deer were very plentiful. Today, very few mule deer can be found here. If you travel to the east near the mountains, you will have a much better chance of seeing deer.



DISCOVERY POINT 8

For those who elect the 1.5-mile hike option, this is your turn around point. Pick up the trail guide descriptions again when you reach post number 11, which will be on your right side as you travel west.

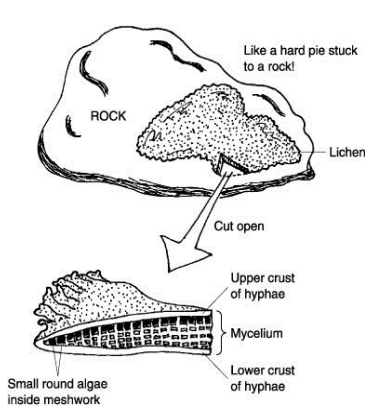


Lichens are important because they grow where nothing else will grow. What makes lichen unique is the symbiotic relationship between the fungi and algae. A symbiotic relationship is when two or more different organisms mutually benefit and depend on each other’s relationship.

In this case, the fungus benefits from the algae through photosynthesis and, in turn, the algae receive protection from the sun and water absorbed by the fungus.

In San Diego County, it is common to see a certain type of lichen called crustose lichen growing on rocks. Lichen is slightly acidic, and as it collects moisture from the air and absorbs minerals from the rock it gradually eats away at the rock’s surface, creating soil. Eventually, other plants might be able to take root in this space.

Look on the surface of the rocks around you. Do you see any pale green formations on the rocks around you?



DISCOVERY POINT 9

A river carries nutrients and deposits rich soil along its course.

Periodic flooding of the river deposits nutrients onto the river floodplain. The floodplain is low lying land along a river channel that regularly floods during periods of heavy water flow.

Nutrients are carried down the river as it erodes and washes material away. The increased flow of the river following a heavy rain can cause the river to go over its banks and deposit material on the floodplain.

This is the best soil for agriculture because it is rich with **natural nutrients**. The farm that you see from this spot relies on the river deposits to keep the soil healthy and full of nutrients. These nutrients are then passed on to the crops that are grown.

For those who elect the 2-mile hike option, this is your turn-around point.

Nature Scout

Before the valley was farmed, much of the area was covered by native grasslands. As you look down the trail to the east, you will see that the trail passes through a grassland area.

Today, many of the grasses you see in this area are not native to this area. They were brought to California from Europe by the early settlers.

The native California grasses are primarily **bunch grasses**, grasses that grow in clumps. A few pockets of bunch grass can be found in this area, but today, native grasslands are extremely rare in San Diego County.



Purple Needlegrass
(native bunch grass species)

DISCOVERY POINT 10

A river carves valleys.

Before you the land looks like a large bowl. The bowl has a large flat bottom and steep sides. This flat bottom is the river valley floor and floodplain. The San Dieguito River Valley floor and floodplain in this area have an average width of a half mile. The river created this bowl by both carving into the soil as it passed and by depositing rich nutrients.

Nutrients are brought into the valley by the erosion of hillsides. Loosened soil is washed off the hillsides by rainfall and the small streams that develop to carry the runoff. The streams flow rapidly down the hillsides and enter the San Dieguito River.

As the river passes over this wide, flat area, it slows down. Slower moving water cannot carry as much of the eroded material and the material settles out of the water. The deposit of this material enriches the soil and makes the floodplain a very fertile area. Across the valley you can see a farm that uses this naturally rich soil.

Nature Scout

You might not see a **wood rat**, or even its tracks. But if you look along the trail and see a big pile of neatly stacked sticks and twigs, you will probably have discovered the home of the wood rat.

These are not the same kind of rats that live wherever people do. Wood rats live in natural areas and eat the leaves and seeds of native plants. Wood rats were an important food of the Kumeyaay, who ground them up and cooked them as a kind of wood rat mush.



Wood Rat



Wood Rat Nest

DISCOVERY POINT 11

A river changes over time and distance.

The San Dieguito River changes as it flows down from the mountains. It starts as a small stream and widens and deepens as it comes down into the valley. The water is trapped in the reservoir at Lake Hodges until enough rain falls to fill the reservoir to the top of the dam, forcing the water over the top of the spillway. Eventually, this water will flow out to the ocean at Del Mar.

The river does not spill over the dam very often. In fact, during the life of the dam, there have been more dry years than wet years. In periods of low rainfall, you might not be able to see any water in the lake from here.

Natural areas change as conditions change and time passes. A flood can alter the course of a river, moving it from one side of the valley to the other. Human uses in natural areas can also change the natural conditions. Remember that before the dam was built, all of the sand carried by the river went to the beach. Now it ends up in the bottom of Lake Hodges.

Nature Scout

Although today you can see many kinds of trees growing around your neighborhood, most of these trees are not native to San Diego. Only a few kinds of trees actually grew in this area before the settlers arrived. Some of these native trees include oaks, willows, cottonwoods, and sycamores. There are many coast live oaks growing along this trail. Oaks are usually found near streams or rivers or in areas with moist soils.



Oak



Acorn

The seed from an oak is called an acorn. Many acorns grow on an oak tree during the year. Can you find one along the trail? These acorns may produce a new oak tree if they fall onto the ground and are not eaten. Do you see any young oak trees growing near the bigger trees? Acorns also provide food for birds, mammals, and insects. Acorns were also a very important source of food for the Native Americans who lived in the area long ago.

DISCOVERY POINT 12

Do you recognize this area as an ecotone? Remember that an ecotone is the area where two habitats meet. You are entering an area where the grassland and riparian woodland come together. The thick growth of trees and shrubs you see on the north side of the trail is a riparian area, so you know that you are near the creek, even if you cannot see it. You can see many different types of plants, including tall trees and understory, the leafy plants that grow under the trees. In San Diego County, oak, sycamore, and willow trees are found along stream corridors.

Riparian woodland habitat is an endangered habitat in San Diego County. The reasons for this are many. The beauty of the riparian area attracts people who wish to build their homes here. Humans have tried to control the flow of water by removing the plants and creating ditches and canals. The effect has been the replacement of wooded rivers and streams with concrete channels. Agencies and volunteers are now working to restore many of the rivers and streams damaged by past activities. Restoration of riparian areas is very important because many endangered birds, reptiles, and amphibians can survive only in these riparian woodlands.

Nature Scout

Rattlesnakes can often be found in the natural areas surrounding San Diego, but if you stay on the trail your chances of meeting a snake are very low. You should never put your hands or feet in rocky areas or under bushes, because if a snake is in the area that is the kind of place where one might be hiding.



Red Diamond Rattlesnake

Rattlesnakes can be dangerous if you get too close, but they are also very interesting. They play an important role in our environment, because they eat large amounts of mice, rats, and other rodents. They should not be disturbed or killed if they are found in natural areas.



Rattlesnakes get their name from the rattles on their tails. They use the rattles to warn people and other animals to stay away. They strike humans only when they are alarmed or surprised. So if you see one on the trail, don't panic, stay on the trail and move slowly out of its way.

DISCOVERY POINT 13

A river drains water from the surrounding area and is part of a larger system of water movement.

This creek starts in the hills above you and gathers flowing water as it travels downhill to join the San Dieguito River. The life in a stream may not always be readily visible to you, so look carefully. When studying a stream, it is important to stay away from the banks. Standing on the banks can harm the roots of plants. It can also speed up erosion, which increases siltation of the water. Increased amounts of silt in the water make it hard for wildlife to survive. These organisms are often on the base of the food chain, and their loss can have an impact on all the wildlife in the area.

The changing water level does not make this a good place for most plants. The most common plants found along a stream are mosses and ferns. The plants of a stream add oxygen to the water, provide shelter for small creatures, and provide food for plant-eating animals.

A variety of insects at various stages of their life can be found living in and on the surface of a stream. These insects are normally found in still pools along the stream sides. **Insects** attract birds to the stream, while the stream provides habitat for crayfish and amphibians such as frogs and salamanders.

Nature Scout

Many organisms depend on our streams and rivers to survive. Some, like willows and reeds, can be seen very easily, but others like insect larvae, small worms, and algae are so small that you might need a microscope to see them.

Here are some of the smaller organisms you might find in this stream:



Riffle Beetle



Water Boatman



Stone Fly



Water Penny

DISCOVERY POINT 14

A river provides transportation corridors for humans.

Humans and wildlife use the corridors carved out by rivers as highways to move from place to place. The river carves out an easy way to pass through an area. Food, water, and other resources for the trip are often available.

Beyond the lake on the north side of the river, you can see a rock-covered hill called Mule Hill. This is the site of an important event in the history of San Pasqual. In December 1846, on the day following the Battle of San Pasqual, General Stephen Kearny's Army of the West was attacked by the California's under the command of Andres Pico.

Kearny's army fled to Mule Hill, where they were trapped by Pico and his men. After several days, the group was rescued by soldiers sent from Old Town in San Diego. Kearny's army was short of food while on the hill, so they ate the only food available, mule meat. That is how Mule Hill got its name.



Nature Scout

Look out over the lake and trees for birds. You may see flocking birds flying in formation or single birds hunting or flying over the area. A bird called a **White-tailed Kite** can often be seen in the area. The kite is a white bird with black shoulder patches. It is easily identified, even from a distance, by its distinct flight while hunting. This bird will fly over an area and upon spotting prey will "kite" (hover) in one place by turning its body and rapidly beating its wings. When it has a good sight on its prey, it dives down to grab its meal.



White-tailed Kite

Do you see any other large birds of prey? Hawks, falcons, and on very rare occasions, Golden Eagles, have been seen in this area. So keep a lookout for these birds.

DISCOVERY POINT 15

We have seen many activities taking place in this area. People and wildlife depend on the river, as well as on the plants that can be found around it. People throughout time have made their home here. They have used what was available and changed the environment to make it more useful for them.

The river plays many roles, and both humans and nature depend on a healthy river for a healthy **environment**.

Nature Scout

How many kinds of birds have you seen or heard during your walk? Some of the birds that live here may also visit your backyard, but others can only be found in natural areas-those places where humans did not plant shrubs or disturb the soil. Some other birds you may hear or see in this area are:



**Northern
Mockingbird**



**California
Towhee**



**Anna's
Hummingbird**



California Quail



Red-tailed Hawk

QUIZ

1. What is the habitat created by the trees and plants that grow along a water course?
2. What is the term for a tree that loses its leaves in winter?
3. Reservoirs provide a permanent source of water that benefits people and _____.
4. What are some clues of animal life nearby?
5. What is the term for plants that share the same habitat requirements and have similar characteristics?
6. What bird did we learn that lives in coastal sage scrub and is endangered?
7. What is a term that describes the predator/prey relationship?
8. What is the word for an area where two habitats meet?
9. What is a plant we learned that can be harmful to humans?
10. What trees had an important role to the Kumeeyaay?
11. What is the term for a volcanic formation from volcanic action deep under the surface of the earth?
12. What kind of animal can easily walk on steep slopes?
13. The best soil for agriculture is rich in _____.
14. Most native grasses are what type?
15. What animal makes its home in large piles of neatly stacked sticks?
16. What type of habitat is endangered in San Diego County?
17. What animal is important to the environment because it eats large amounts of rodents?
18. What animal attracts birds to streams?
19. What type of bird is known for its distinct flight during hunting?
20. Humans and nature depend on a healthy river for a healthy _____.

Bonus Question: Name 5 important things rivers do.

Answers throughout text in bold and on page 22

Notes and Observations

READ MORE ABOUT IT:

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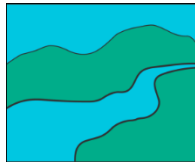
Answers to quiz:

- | | | |
|---------------------|-----------------------|-----------------------|
| 1. Riparian habitat | 8. Ecotone | 15. Wood rat |
| 2. Deciduous | 9. Poison oak | 16. Riparian woodland |
| 3. Wildlife | 10. Oak trees | 17. Rattlesnake |
| 4. Animal tracks | 11. Gabbro | 18. Insects |
| 5. Plant community | 12. Mule deer | 19. White-tailed Kite |
| 6. CA Gnatcatcher | 13. Natural nutrients | 20. Environment |
| 7. Food chain | 14. Bunch grasses | |

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Numbered posts were crafted and installed by Curtis Shipp, Jr., Scout Troop #227.

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The San Dieguito River Park Joint Powers Authority was created to preserve the biological, cultural, and scenic resources found within the San Dieguito River Valley, while also providing compatible recreational and educational opportunities for the enjoyment and enrichment of the public.