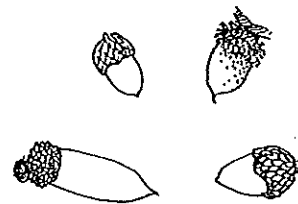


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Illustrations by Nancy Baron.

Native People, Native Plants

The native plant collections at the San Francisco Botanical Garden (SFBG) display a condensed version of some of the natural habitats of California, and provide the material for a living lesson in how California's first people made use of the plants in their environment. We look forward to guiding your class through this special landscape, where you will learn about native uses of a variety of native plants.

This teacher's guide is designed to help you and your students make the most of your visit. It includes some general background information for you to share with your class before your visit, activities to help prepare for the walk, other activities to extend the experience back in the classroom, and an annotated bibliography of useful materials. We strongly encourage you to prepare your class by making use of these materials, especially if you are just beginning your exploration of these concepts.

In addition to introducing students to a number of native plants and their uses, the garden walk is designed to illustrate four basic concepts:

1. California native plants are plants that were growing in California before plants from other parts of the world were introduced.
2. Native plants helped provide almost everything the native people of the Bay Area needed to live, including food, medicine, shelter, tools, crafts, transportation, and recreation.
3. Through years of observing and experimenting, the Indians of this area learned when and where to collect and how to store and use the many plants in their environment.
4. The California Indians valued their environment and developed ways to use the resources of their world without destroying them.

The Bay Area Indians before 1700

California was home to over a hundred different Indian tribes before contact with Europeans in the 1700s. Living from the mountains to the seashore, in deserts, grasslands and forests, these people had many different ways of life, but all shared a deep knowledge of the plants that grew around them.

During that time, the coastal Bay Area was home to at least forty different tribal groups. Though they had similar ways of life and knew about one another through trading and feasts, they had their own territories, chiefs, and languages. The Coast Miwok were the major tribe in Marin and Sonoma. Many small tribelets now known as the "Ohlone" or "Costanoan" people lived from San Francisco south to Monterey.

The native people of the Bay Area lived in a plentiful land. At different times of year, streams teemed with salmon, the shore was rich in shellfish, and wetlands were home to huge flocks of ducks and geese. Antelope, bear and elk roamed the land, while whales and sea lions swam in the ocean and bay. The Indians were skillful hunters and fishers, but the plants that grew in the area provided much of their food, as well as many other useful materials.

The native people of the Bay Area used their deep knowledge of the life cycles and seasonal changes of the natural world to help them lead rich and peaceful lives. They knew the plants, animals, weather, land and water around them in a way that most people no longer do. The native people skillfully used and managed the resources in their environment, following a simple basic rule: take what you need with respect. This idea of respect came naturally from the belief that all things in nature have importance in the world, just as people do.



Using California Native Plants

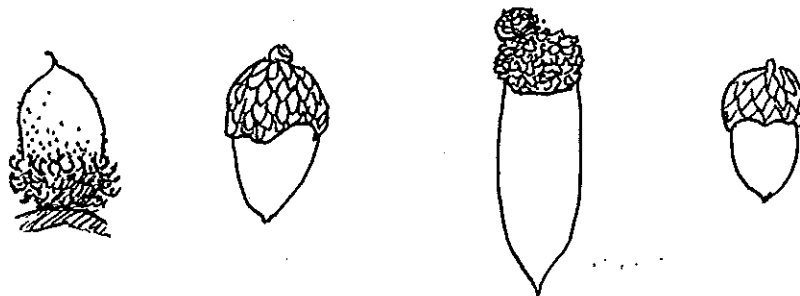
The landscape of the Bay Area today looks very different from the world occupied by the early native people. Think of a world with no streets, cars, large buildings, stores – no metal or wheels! But here and there native plants still grow in the hills, valleys and wetlands, just as they did then. And in the SF Botanical Garden, we can see native plants from different parts of California on display.

We know about some of the ways the native people used these plants in the past because the knowledge has been passed down by showing and telling. Some of the information was written down by early settlers and scientists, but a lot of what we know comes from modern native people who learned from their older family members and friends. Some of them are still showing and teaching those who want to learn.

Plants as food

The native people of the Bay Area had a healthy and varied diet that included many plants. Depending on the season, they could gather blackberries, grapes, many kinds of greens, tender cattail bulbs, wild onion and other bulbs, pine nuts, and many kinds of nutritious seeds. They knew just when and where to collect these and other plants, and knew many ways to prepare them so they were safe and tasty.

There was one plant food that the Indians ate year round with almost every meal. A good source of protein and fat, acorns were collected in the fall and stored to be used as a staple food. It took a lot of time and work to process and cook acorns, but acorns were as important as bread, rice or corn are to many of us today. Some native families still prepare acorns in traditional ways to enjoy for special occasions and celebrations.



There are several different kinds of oak trees native to California, and all of them produce acorns. In the fall, large family groups would travel to certain groves of trees to collect acorns. They were gathered in special baskets and then spread in the sun to dry. Back in the village, the people built covered granaries to store the acorns and keep them clean and dry through the year. They used bay leaves and other fragrant plants to keep pests away from the acorns.

Each day, Indian women would prepare acorns by taking the nutmeats out of the shells and then pounding them with a special stone. They used small brushes made out of soaproot fiber to brush the acorn meal into baskets. Then they had to run water through the acorn meal to take out a bitter chemical called tannin. The amount of time to get rid of the bitterness depended on the kind of acorn, so it was important for a good cook to know how to treat each kind. Finally they could cook the acorn meal, which was mixed with water in a tightly woven basket and cooked by putting hot rocks in the mush.

During some years there weren't very many acorns. Then the Indians knew how to prepare buckeyes or bay seeds as a substitute. Buckeyes had to be prepared very carefully, since they are poisonous otherwise. In fact, Indians used crushed buckeyes to catch fish – they threw the buckeyes in the water and the poison temporarily knocked out the fish, making them easy to catch.

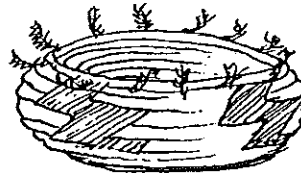
Plants for Shelter and Transportation

The Indians in the Bay Area used native plants to build shelters, sweat lodges and granaries. The frames were usually made of willow, which could easily be bent into shape. Mats or bundles made of tule or cattail gave the structures a water resistant covering. Tule and cattail grow in marshy areas, and are similar in some ways. Both have long, green stems, but tule is round while cattail is flat. Tule is very light and strong, and bundles of tule were tied together to make rafts or boats to travel on the bay. There was always plenty of tule and cattail available, so it was easy to build new structures or boats when the old ones wore out.

Plants for Crafts, Tools and Baskets

Native plants provided many of the tools Indians used. Tule, cattail leaves, milkweed and other plants were used to make thread and rope, which could be used for sewing or made into slings, nets, and bags. Spears and traps used in hunting and fishing were all made from plant fibers and branches. Horsetail stems were used like sandpaper to smooth arrows and spears. To start fires, the wood of a buckeye tree was used as a fire drill. Sharpened sticks were twirled in holes made in a stick or stone to create fire by friction.

California Indians were excellent basket makers, and their descendants carry on this tradition to this day. Each group of people had their own designs, shapes and decorations. Baskets were used for all kinds of things – gathering acorns, carrying babies, trapping fish, as hats, for games, even for carrying water! Basket makers were serious about their art and the baskets were treated with care and respect. Willow and redbud shoots were commonly used as the base for baskets. Sedge roots, grasses, tule, cattail and other fibers were also used in weaving while other plants were used for dyes. The basket makers protected the sources of their plant materials and tended them carefully to produce the kinds of materials they needed.



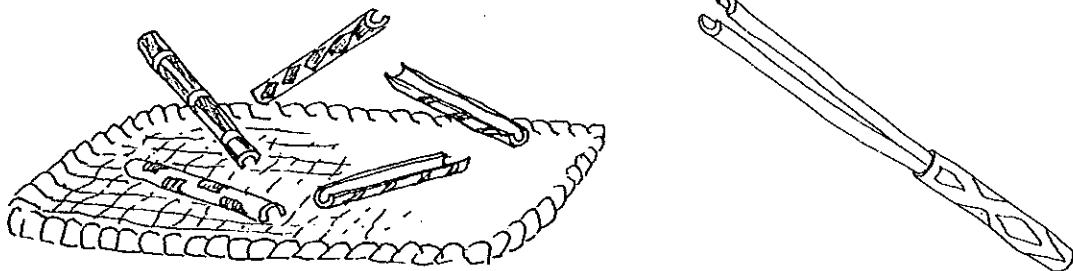
Plants as Medicine

Native people had medicinal uses for many of the plants around them. Through years of testing and observing, they had discovered ways to use plants to cure sickness and relieve pain. California poppy root could be chewed to relieve toothaches, which were common. Elderberry leaves could treat a skin rash, buckwheat flowers made a tea to cure stomach aches, and bay leaves could help a headache. Almost every plant could be used in some way, and different tribes used different plants to help and heal their people.

Plants Used in Ceremonies and Games

The beliefs of the California Indians were tied to their relationship to their environment. Many beliefs, songs and stories had to do with native plants. Sometimes plants were the reason for feasts and ceremonies, as when the people celebrated the harvest of acorns. People used plant fibers, berries, bark, and pods to decorate their bodies with tattoos, paints, and special clothing. Some plants provided music for celebrations and ceremonies – elderberry shoots were made into flutes and clapper sticks, and the tree was known as the music tree.

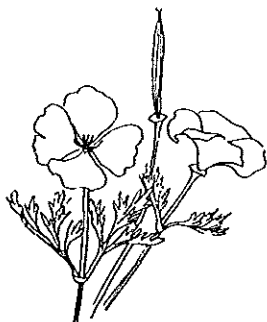
Both children and adults loved playing games, and plants were used to make game equipment and toys. People rolled hoops made from coiled willow branches and tried to throw sticks through them. Gambling games were popular, using gambling sticks and counting sticks made of willow and elderberry wood.



The Indians believed that if they cared for and respected their land and its resources, nature would provide them what they needed. Although we have lost many of their skills in using native plants, there is a lot that we do know about how they lived with the plants around them. Many California Indians today continue to use some of these skills as part of their daily life or for special occasions. These traditions and skills are important reminders of a different way of life and can give us a greater appreciation of the native plants around us.

Some native plants and their uses

California poppy – mashed stems and roots could be chewed to relieve toothache and other pains



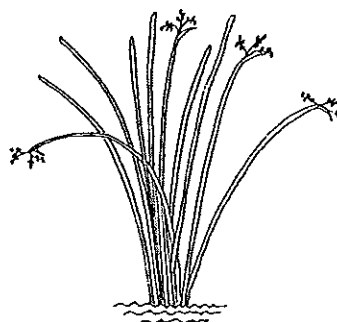
Ceanothus bush – flowers and fruits used as soap; bark and roots used as tea



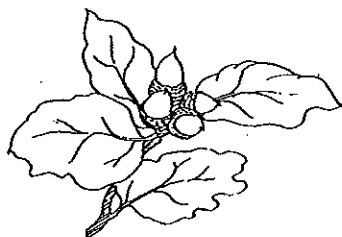
Manzanita bush– berries eaten, dried or made into cider; leaves used to make lotion for sores



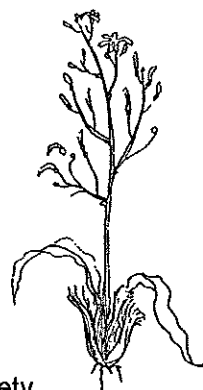
Tule – long waterproof stems used for boats, rafts, duck decoys, mats, moccasins and coverings for shelters



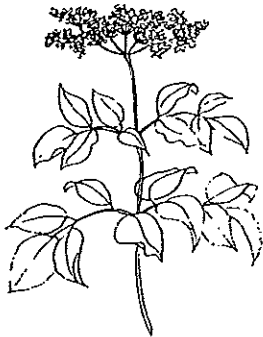
Oak tree– acorns, properly prepared, were an important food; bark was used to tan animal skins



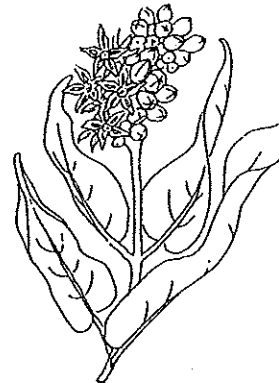
Soaproot – bulb used as shampoo, or cooked and made into glue; fibers covering bulb used to make brushes



Elderberry tree – straight stems made into flutes, clappers, arrows and gambling sticks; berries eaten raw or dried; flowers used for skin rash



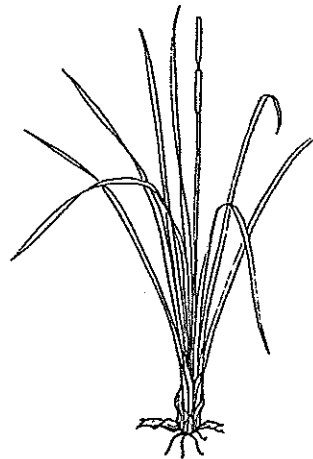
Milkweed – dried stalks used for making rope, string, woven into cloth; sap made into chewing gum, or used to cure warts



Buckeye tree - crushed seeds thrown in the water could paralyze fish; seeds could be eaten after careful preparation, if acorns were not available



Cattail – leaves used to make string and rope, mats, baskets and shelters; underground tuber eaten as a vegetable; pollen used for flour; seed fluff used to line baby baskets



Vocabulary Words

We will use these words during your visit to the Garden. You may wish to share these definitions with your students, or have them use their dictionaries to find other definitions.

acorn – the nut produced by oak trees



custom – a traditional or special way of doing something

fiber – stringy or threadlike parts of plants which can be separated from stems, leaves or bark

granary – a storehouse with a raised floor for storing acorns and other food

Indian – a word used to identify most of the native people of the Americas. When early European explorers landed in America they believed that they had found a new way to India, so they called the native people “Indians.” Now the word is used even by native people themselves when speaking of many different tribes. When possible, it is more accurate to use specific tribal names – Miwok, Pomo, etc.

legend – a traditional or popular story passed down through the generations

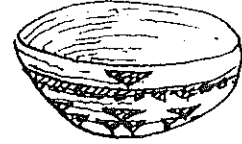
native – the first to live in a place. Native people lived in California before Europeans and others arrived. Native plants grew in California before plants from other parts of the world were introduced.

Ohlone – a word used as a general tribe name for the many small groups that lived from San Francisco down to Monterey

staple food – a food that is eaten at almost every meal. Rice is a staple food for many Asian people, and acorns were a staple food for native Californians.

tribe – a group of people sharing language and beliefs, living in an area with one leader

Pre-visit Activities



How do we use plants?

Every culture makes use of plants in different ways - the study of how a culture uses plants is called ethnobotany. However, your students, being city dwellers, may have little practical experience with or knowledge of plants. Because we are generally not involved in the gathering, processing or creating of plant products, it takes some probing, thinking, perhaps some research to think of the ways we use plants in our lives today.

Go over the introductory material with your students or have them read it themselves. Begin a discussion by asking questions to help them to think about ways that plants are used in our daily lives. Did anyone eat something made of plants today? Is anyone wearing anything made from plants today? Have you ever made something with plant material? What is the classroom doorframe made of? Where do you think that came from?

Divide your class into three or four groups. Have each group choose a recorder and a speaker. Then ask each group to think about how we use plants for food, clothing, shelter and recreation. The group recorder should write down all the ideas the group comes up with. Give the students enough time to consider all the categories. Bring the groups together and, covering one category at a time, ask the speakers to report on the uses their group came up with.

Here are some ideas if your students need some help to get started:

Food - fruits, vegetables, grains, bread, pasta, tofu, popcorn

Clothing - rubber soles, cotton jeans, canvas sneakers, cotton T-shirts

Shelter - timbers, boards, shingles, bamboo, canvas tents

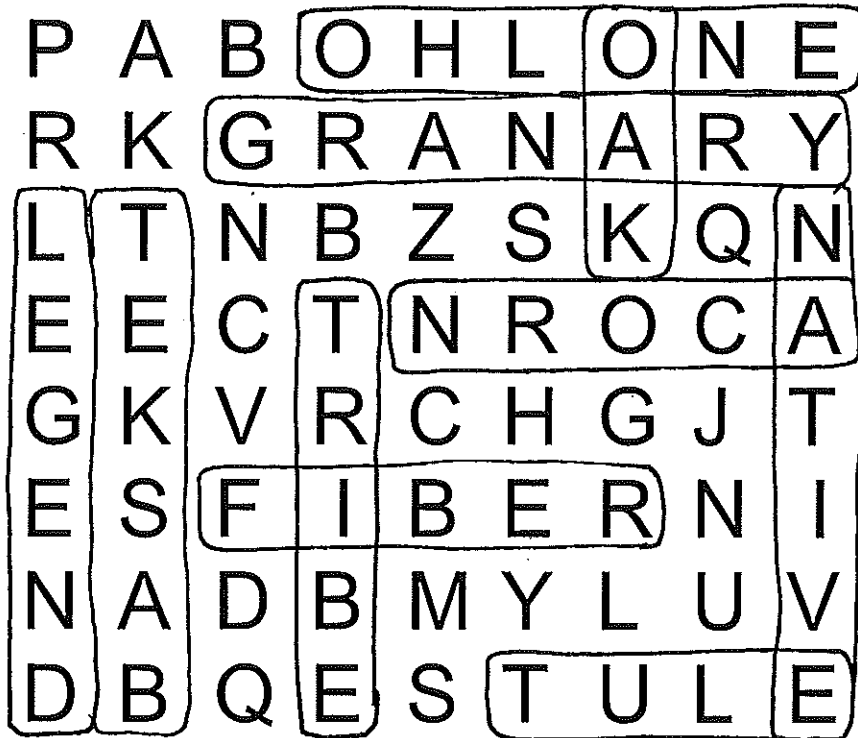
Recreation - baseball bats, hockey sticks, boats, musical instruments

How could you learn more about the plants we use in our culture?

Hidden words

Use this scramble to help familiarize your students with some of the words we will use on our walk! Student version is on the reverse.

oak	Ohlone
acorn	fiber
tule	basket
tribe	granary
native	legend



FIND THE HIDDEN WORDS!

Here is a list of words about California Indians and native plants that you will find hidden in the puzzle below. Circle as many of the words as you can find. They may be written up or down, from side to side, and even backwards or forwards! Good luck!

oak
acorn
tule
tribe
native

Ohlone
fiber
basket
granary
legend



P A B O H L O N E
R K G R A N A R Y
L T N B Z S K Q N
E E C T N R O C A
G K V R C H G J T
E S F I B E R N I
N A D B M Y L U V
D B Q E S T U L E



Plant Scouts

This activity will help students think about how native people learned about the plants they could use. They may also come up with some new ways to use familiar plants!

Collect an assortment of plants and plant parts - whole plants, leaves, branches, nuts, seed pods. If possible, collect native plants, such as California bay, willow, buckeye, redwood, ceanothus, and cattail. If necessary, get plants from the grocery store, such as greens, herbs, nuts.

Review with students the ways they can use their senses and their minds to explore the world around them. Divide students into small groups and give them each a plant or plant part. Give your students this task: Imagine you are an Indian and you have found this new plant. How would you examine it? How could you find out what you could use this plant for? Examine your plant and think of some ways you might be able to use it. How could you test your plant to find out if your ideas work?

Bring students together to share the ways they examined their plants and the ideas they came up with. Here are some questions you may want to discuss with your class:

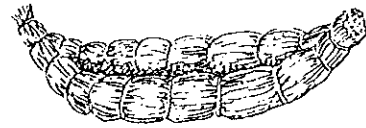
What was the hardest thing to find out about your plant? What was the easiest?

What kinds of tools do you think native people used to learn about the plants around them? What kind of tools do scientists have today to help them learn about plants?

How long do you think it took native people to learn about the plants in their area? How do you think they kept track of what they had learned? How do we keep track of what we learn about plants?

Has anyone in your family ever told you a special way to use a plant?

Post Visit Activities



Myths and Legends

The California Indians, like people everywhere, have stories that tell how the world came to be the way it is. We call these stories myths or legends. In this activity, students will create their own story explaining something that they saw on their visit to the botanical gardens.

Begin by reading your students this story, which explains why we see the sun during the day and the moon at night. It is a story from the Maidu tribe in northeastern California.

Sun and Moon

Sun and Moon were sister and brother. They did not rise at first. Many different animals were sent to see if they could make the two rise, but failed. None of them could get into the house in which the brother and sister lived. The house was of solid stone, and was far away to the east.

At last Gopher and Angle-Worm went. Angle-Worm made a tiny hole, boring down outside, and coming up inside the house. Gopher followed, carrying a bag of fleas. He opened it, and let half of the fleas out. They bit the brother and sister so, that they moved from the floor where they were sleeping to the sleeping platform. Then Gopher let out the rest of the fleas, and these made life so miserable for Sun and Moon, that they decided to leave the house. The sister was afraid to travel by night, so the brother said he would go then, and became the Moon. The sister travelled by day, and became the Sun.

From The Way We Lived

By Malcolm Margolin

Ask your students to share some of the things they remember seeing when they visited the botanical gardens. If you wish, look at things they collected on their visit to help them remember. Each student should think of something they saw at the garden and then write a short story, like the one they just heard, that explains what they saw. Be sure each story has a title, like "Why the California Poppy is Orange" or "How the Quail Got its Topknot."

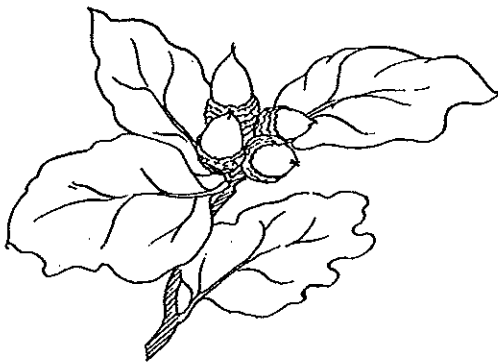
A Native Plant Study Book

Your class can create a book illustrating native plants and describing their uses to share with other students or with their families. Students can work with partners to create pages for the book, or each student can create his or her own page. Alternatively, use the pages to create a display for all to see.

Review your trip to the botanical garden with your students. See how many different plant names they can remember. What do they remember about how different plants were used? Use any materials they may have collected to help them review.

You can assign each student or pair of students a plant to research, or let them make their own choice. Plants may be ones they actually saw in the garden or ones they or you have read about. Distribute copies of the plant worksheet (on reverse). Students should provide the information requested on the worksheet, using classroom and library resources to help them complete the form. If they can find a sample of their plant, you could encourage them to press and mount it on their sheet or on an accompanying sheet.

Once students have completed their pages, have them share their plant with the rest of the class. Then bind the pages into a book or create a display to share with others. Other classes will enjoy learning from your students!



Here is a picture of a special plant.

The name of this plant is _____

You can find this plant growing in _____

Native people used this plant for _____

To use this plant, native people had to _____

Name:

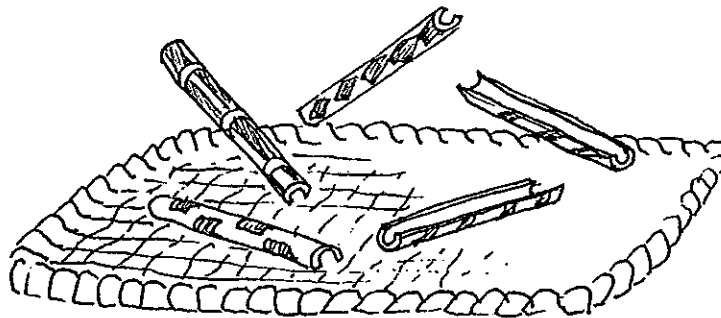
Stick Dice Game

California Indians enjoyed playing many different kinds of games. Some of the games were played outside, like our games of tag or races. Many games were good ways of teaching or practicing skills needed in life. Guessing games and games of chance were also popular. The objects used in these games, such as sticks and nut shells, were often beautifully carved or painted. The trays used for gambling games were some of the largest and most intricate baskets made by the California native people, who are among the best basket makers in the world.

In native California tradition, gambling well requires skill as well as luck. Even getting good luck requires special preparation, such as fasting or cleansing oneself. While they very much enjoyed their games, the California Indians also knew that it was a bad idea to spend too much time playing games or gambling.

Students can make their own stick dice game using simple materials. Each student needs five small sticks (collected outside or you can use craft sticks). Have them paint one side of each stick red and the other side white. When the sticks are dry, they can be used to play a simple traditional game.

To play, two players sit facing each other. Each player takes turns dropping their bundle of sticks on the ground or on a mat between them. The player who has the most sticks drop with the white side up wins that round. Students can play as many rounds as they like.



Additional Activity Ideas

Here are some suggestions for exploring the world of native plants through writing, art and special projects.

1. **GROWING A NATIVE PLANT GARDEN** - Students may want to try growing some native plants. Many native plants used by the Indians are used today as drought-tolerant landscape plants. Students can set up a small garden plot outside the classroom or add a few plants to an already landscaped bed on the school grounds. Wildflowers like poppy and baby blue eyes could be grown in containers. The SFBG can provide you with information about plants, and they offer native plants at plant sales and seeds are available at the book store. There are many books on growing native plants, or students can write to the California Native Plant Society, 909 12th Street, Sacramento, CA 95814

2. **STORYTELLERS** - have students become storytellers for their tribe. Divide the class into four groups, the "four winds" and have groups go to the north, south, east and west corners of the room. Let them choose and memorize a short story or make one up. Bring the four winds together and have them tell their stories to the other groups.

3. **MURAL** - Draw a mural of an Indian village. Draw in the Indians working with a variety of native plants - cooking, weaving, making baskets, preparing acorns, building shelters, fishing in boats, etc.

4. **PEN PALS** - Write to Indian students your own age to ask questions about their lives and about their knowledge and use of plants today. A list of reservation schools is available from the The Office of Public Affairs, Bureau of Indian Affairs, 1951 Constitution Ave. Washington D.C. 20245.

5. **READING** - Read Indian legends and myths about plants and the natural world. See bibliography for suggested books.

6. **POETRY** - Read some of the chants and stories from books about California Indians and ask the students to create a poem inspired by that example. For instance -- write a poem that is about the natural world to be read to the rhythm of a drum beat.

7. **BASKETRY** - Research the many types of baskets the Indians made. Copy pictures from books of the different shapes and designs. Discuss what kinds of plant materials made good baskets and how baskets might be made. Bring in some baskets (Indian if possible but not necessary). Have your students draw a basket design for a specific purpose and with a design of their own making.

8. **PLANT JOURNALS** - Have students keep a plant journal for a week. Each day they must find a plant, scotch tape a leaf onto a page, identify the plant (if possible), tell where it was found and what it is used for. (Plants can be found in the refrigerator, in the school yard or in a pot at home -- anything goes so long as it is a plant and gathering a leaf is okay. Explain about poison oak!)

Bibliography and Resources

If these books are not available in your library, you can find most of them at the Helen Crocker Russell Library at the SFBG.

Native Ways - California Indian Stories and Memories. Malcolm Margolin, Yolanda Montijo, eds. Berkeley CA: Heyday Books, 1995.

Simply written and illustrated with photographs; an excellent source of information and stories as told by California Indians.

When the World Ended - Rumsien Ohlone Stories. Linda Yamane. Berkeley CA: Oyate, 1995.

A children's book - one of the only books specifically telling the stories of the Rumsien Ohlone of the San Francisco Bay area.

Fire Race - A Karuk Coyote Tale. Retold by Jonathon London, illustrated by Sylvia Long. San Francisco CA: Chronicle Books, 1993.

Beautifully illustrated, lovingly exact drawings of Karuk material culture in a traditional tale.

The Ohlone Way. Malcolm Margolin. Berkeley CA: Heyday Books, 1978.

A description of life of the Bay Area people before contact with Europeans; very informative, for older readers.

In Full View - Three Ways of Seeing California Plants. Glenn Keator, Linda Yamane, Ann Lewis. Berkeley CA: Heyday Books, 1995.

A limited number of plants described from points of view of a botanist, an artist, and a Bay Area Indian.

Early Uses of California Plants. Edward K. Balls. Berkeley CA: University of California Press, 1962.

A good, simple resource and reference for native plant uses.

"News from Native California - an Inside View of the California Indian World." Magazine published 4 times/year. Berkeley CA: Heyday Books.

What California Indians are doing today.