

Dear Teachers,

Within this binder you will find a collection of native plants gathered here in the Grand Valley. These same plants have been utilized by native peoples for thousands of years. Groups native to this area followed the seasons and life cycle events of available plant life. In summer time Indians would migrate to higher elevations, when plants would leaf out and bud under optimal temperatures. In fall pinon pinecones along canyons and mesas would open and release the nutrient packed pinenuts concealed inside. To survive and thrive in this region, you had to be a close observer of nature's cues. You had to be in the right place at the right time, in order to prepare food, water, and shelter. Many native American cultures developed methods for tracking time and seasonal changes.

In the Canyon Pintado region, between Grand Junction and Rangely, some archaeologists believe Fremont Indians created solstice markers. During the winter and summer solstices a dagger-like shadow pierces through a pictograph at a specific point and time, where it doesn't do this on other days throughout the year.



Possible solstice maker in Canyon Pintado near Rangely

The study of how people in the past developed astronomical markers is called archaeoastronomy. Understanding the sky and the positioning of celestial objects, was an important skill that was necessary for successfully living off the land—especially a land as arid as ours.

If you'd like plant samples that students can work with in a more hands-on way in class, we recommend using the samples in this binder as a guide for collecting additional examples on public lands. The following link hosts information on recreational access to areas managed by the Bureau of Land Management where collection is allowed <http://www.blm.gov/co/st/en/fo/gjfo/recreation/hiking.html>

Four-wing Saltbush

Description

Four-wing saltbush are shrubs that grow an average of two to three feet tall although they may reach eight to fifteen feet in height. It has many branches; some twigs are spiny. The young stems and leaves are covered with minute white scales called scurf, which helps protect the plant against water loss. Long linear-shaped leaves are three eighths to one and one half inches long, grow either singly or in small clusters from alternate nodes, and are covered with small scales. These plants are dioecious—the Latin word for "two homes." Male and female flowers are found on separate plants (mostly). The tiny yellow male flowers grow in tiny globular clusters called glomerules. Five sepals are fused into a small cup, from which the five stamens arise. Female flowers grow in open, elongated clusters two to sixteen inches long, arising from the sides of the stem. The seeds, called utricles, have four large, membranous fringed wings that arise at right angles to the seed. The flowers bloom from mid-spring to mid-summer. Some years, plants may be cloaked with seeds.

Native Uses

Native Americans of the Southwest harvested the leaves and seeds of the plant for food. Seeds were cooked like oatmeal, and the leaves were either eaten raw or cooked. Sometimes the ashes of the plant were used as a leavening ingredient for breads or were used in making a lye to soften the hulls of corn. However the seeds were prepared, they represented a good source of niacin. The ground-up seeds were mixed with sugar and water for a drink called pinole.

At Zuni, handfuls of the male blossoms were crushed and mixed with a little water to create a soap for washing or treating ant bites. This suggests that the plant contains saponins, soaplike compounds. Navajos made a yellow dye from an infusion of the twigs and leaves.

Animal Uses

Four-wing saltbush is an important browse plant for wildlife. Deer, pronghorn and rabbits feed on the leaves, while some birds and small mammals feed on the seeds. Small rodents use the shrub's protective form for excavating their burrows.



Pinon Pine

Description

Pinon-juniper evergreen woodlands dominate mesas and lower mountain slopes in the Four Corners region. Few trees produce bountiful seed crops every year, and the pinon is no exception. Initial cone formation is dependent upon moisture in the late winter or early spring; once formed, the cones and nuts do not mature until eighteen months later. Nuts are fully developed and ready for gathering in late August, but a bumper crop can be expected only once every six years.

Native Uses

For Archaic Indians, Ancestral Puebloans, and historic tribes living in this region in the early days, pinon pine was surely the tree of life. Cracked nutshells are found at virtually all Ancestral Puebloan sites. Any native group that inhabited this area would have ate wild pinon nuts, and most do today. In earlier times the cones may be been green when picked and stored, protecting the nuts from rodents. In winter the cones were put on hot coals that forced them to spring open. Of course, roasted or raw pinon nuts are delicious by anyone's standards, but more important is their caloric value: pinon nuts contain more than three thousand calories per pound. They also contain the twenty amino acids that make up complete protein, and the value of the nut's protein on a per-pound basis is comparable to that of steak. Of the nine amino acids essential to human growth, seven are more concentrated in these nuts than in corn. Along with peppergrass greens and seeds, pinon nuts are an excellent source of potassium.

Several tribes applied pitch, which oozes out of the tree trunk and collects on the bark, to cuts and sores to protect them from exposure to air. Navajo burned this resin to create fumes to cure a head cold. Navajo households remedies included preparing an extract made from Earaches were treated by fumigation with pulverized dry buds.

Pinon pitch, usually boiled down, had many practical uses as an adhesive and sealer. It was used by the Hop to waterproof and repair pottery, by the Navajo to cement turquoise stones into silverwork, and by the Ute to repair sandals. Traditional water jugs woven from branches are sealed on the inside and outside with melted pinon gum. With their shiny appearance these containers are easily identified among other baskets displayed at trading posts. Ute Mountain Utes smoked hides for tepees and various bags over pinon wood fire to produce a light yellow tine. Navajo Indians mix the pitch with a boiled extract of threeleaf sumac leaves and yellow ocher to make a black dye for wool. Before the day of Wrigley's, many chewed on pinon pitch for the simple pleasure of it.



Utah Juniper

Description

Although several species of juniper grow in Four Corners country, Utah juniper is by far the most common. This evergreen tree is sturdy-trunked and can grow to twenty-five feet tall. The tiny scale like leaves are aromatic, and the gray-blue, globular, one-seeded berries produced on female trees are up to one-half inch in diameter.

Native Uses

Throughout the Southwest, junipers have enjoyed a greater variety of Native American uses than any other group of wild plants. The berries were regularly eaten. Although the berries of Utah juniper are rather dry and mealy, they make up for it in their generous size. All native peoples living around the Four Corners have relied on juniper berries for food at one time or another, especially during famine.

Juniper wood and bark are used to construct Navajo sweathouses. Various infusions of juniper twigs and leaves, sometimes mixed with other plants, are used by Navajo to treat colds, headaches, stomachaches, nausea, acne, and spider bites.

Pueblo women have a tradition of drinking juniper sprig tea during labor or immediately after a child is born. An extract of juniper and sagebrush leaves has long been used to treat indigestion by the Hopi.

Juniper bark is easily stripped in long, loose strands from mature trees, and it was used by Ancestral Puebloans to manufacture cordage, legging insulation, roofing material, and even toilet paper. At Aztec Ruins, juniper bark was wrapped with yucca to fashion prehistoric pot rests.

A boiled mixture of juniper and pinon sprigs plus mistletoe is made into a lotion used to treat ant and other insect bites.



Mormon Tea

These stark, small to medium sized evergreen shrubs symbolize the Four Corners . They grow nearly everywhere in our region except in higher mountains. They are easily recognized from their numerous upright jointed branches that appear to bear no leaves, although in actuality they have minute ones. Member of this genus are distantly related to pines, and some people think they resemble a stunted long-needled pine—hence, the common name.

Native Uses

The fibrous stems preserve well and have been recovered from many different archaeological settings, so it is assumed that this was an important plant for making beverages in Ancestral Puebloan times. What we don't know is whether it was brewed for a pleasant-tasting tea or as a stimulating medicinal beverage.

Hopi, Ute and other native American groups have definitely used it for medicine, the latter for treating stomach pains and nasal congestions, as well as for bladder and kidney problems. Boiled roots served as a treatment for colds.

Contemporary Indians attest that the tea they steep today from the ephedra laden twigs is consumed both for medicinal purposes and for pleasure. The effect of the tea can be compared to that of caffeine.



Drawing by Mimi Kamp

Amaranth

Amaranth is a low growing annual plant that sprouts up in disturbed places in early summer. They thrive in old fields and pastures, volunteer generously in gardens, and often remain as living relics in prehistoric ruins. By the end of summer the inconspicuous bristly green flowers have produced seed heads bearing dark, pin-head sized seeds that number in the tens of thousands for a single plant.

Amaranth seeds are an especially good source of protein, containing more of the essential amino acid, lysine, than most true cereal crops. The greens are a healthy food, too, being rich in vitamins A and C plus iron and calcium.

Native Uses

Hopi Indians still eat both the seeds and greens of wild amaranth plants. They thresh and grind the seeds into gruel to be eaten with goat's milk, or chew a handful of parched seed meal for a quick pick-me-up. Ute Indians used to collect seeds in autumn, grinding them into flour for cakes or mush.



Big Sagebrush

Big sagebrush if not the most common, is certainly the most conspicuous. Vast stands of pale gray-turquoise announce the presence of this shrub. Even from a distance big sagebrush can be recognized by its smoky color and uniform spacing of plants. Up close its strong turpentine fragrance, especially after a rainstorm, is a dead giveaway. It usually grows from two to five or more feet tall as a dry-looking shrub with long, soft bark that hangs in shreds. The leaves are about an inch long and wedge-shaped, with three teeth at the end. Flowers are tiny and non-descript.

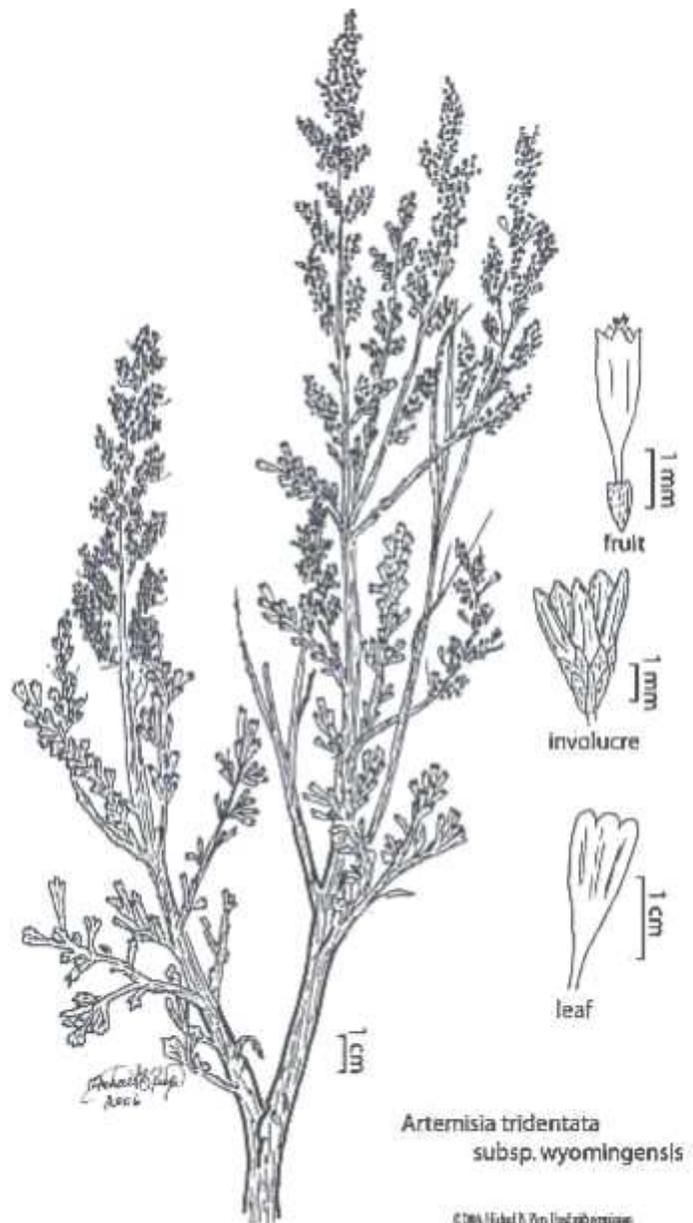
Native Uses

Fremont people developed an industry where much of everything that was woven or crafted from plant material was of big sagebrush.

Ancestral puebloans also used the bark and other parts of the plant. On the Colorado Plateau and southward, sagebrush was one of the principal shrub fuels during Archaic, Puebloan, and early historic times.

Native people ate the flowers, seeds, and leaves. Sagebrush leaves are a good source of iron and vitamin C. However sagebrush has poisonous properties that can cause birth defects. It is also an effective combatant against intestinal worms. Ancients probably knew how much could be ingested for food with no aftereffects and to what degree it could be used to kill parasites.

In more recent times plant parts have been collected principally for medicinal and ceremonial purposes. The leaves are used to combat digestive problems, headaches, and colds and as a general stimulant by the Hopi.



Fremont Barberry



<http://seedsofsuccess.smugmug.com/>

Fremont Barberry (also known as Fremont's Mahonia) is an evergreen shrub growing approximately 8ft by 6ft at a slow rate. It leafs out in late winter, and flowers from April to May. Fremont barberry is a roundish stiff, erect branches; showy yellow flowers; blue-green, prickly foliage and yellow to red berries. The prickly foliage resembles that of holly, but the two species have no relation.

Native Uses

The fruit produced by this shrub is edible raw or cooked. The flesh is limited and the seed large, so a beverage was often concocted rather than eating individual berries.

The plant has been used as an aid for the gums. The roots are bitter tonic, hepatic and laxative . An infusion has been used to promote digestion . Berberine, universally present in rhizomes of Mahonia species, has marked antibacterial effects. So this plant may have been ingested to combat intestinal infections.

The roots were used for buckskin dye.

