



Red Rock Canyon NCA Environmental Education Program

Ancient Iron Chef

Grades: 6-12

Estimated Time: 30-45 minutes

Standards Met:

- 6-8 grade:
 - Social Studies H1.[6-8].12
Identify and describe the characteristics of pre-agricultural societies.
 - Social Studies H1.[6-8].17
Explain how a civilization's geographical location influenced its development.
 - Social Studies H3.[6-8].14
Analyze the social impact of technology, i.e. ships, iron, water delivery systems, wheel, and the printing press.
 - Social Studies G6.[6-8].7
Compare how cultural characteristics affect different points of view with regard to places and regions.
- 9-12 grade:
 - Social Studies H1.[9-12].8
Discuss the effects of early technologies on society, i.e. communication, transportation, and manufacturing
 - Social Studies G6.[9-12].1
Determine how relationships between humans and the physical environment lead to the development of and connections among places and regions.
 - Social Studies G6.[9-12].7
Determine how tools affect the way cultural groups perceive and use resources within places and regions.

Materials Needed:

- Large sheet of paper and marker
- One Needs worksheet per student (optional, attached)

(continued)

Objective:

Evaluate needs and resources necessary to satisfy them

Learn traditional and historical uses of desert plants

Procedure:

Begin by asking students to think about what needs they have. What do they need to live? What makes their lives enjoyable? Go over the difference between needs and wants if necessary. Have the class brainstorm what their collective needs are, writing them on the large paper. Once there is a good number of needs, go through them as a class and prioritize the top five or so needs that are the most important.

Note: Basic needs can be categorized into food and water, shelter, need to reproduce the culture (marriage, kinship, education), and need for explanation (religion, philosophy, science). While it isn't necessary for students to come up with or include all of these categories, this activity is based on and works best with food, water, and to a lesser extent shelter, being included on their top needs list.

Once there is agreement on the top basic needs the group has, discuss how we satisfy each of these needs today. If using Needs worksheet, hand out and have students complete. Have the group think about and discuss how they would fill their needs 100 years ago. What needs could be fulfilled the same, what needs would need to be fulfilled a different way? Discuss how they would fulfill those same needs 1,000 years ago.

Ask students to look around them. Discuss how they are surrounded by resources that were used regularly for thousands of years to fulfill the same needs on their needs list. Hand out Nature's Super Walmart worksheet and let students know that they are going to be participating in a competition later using the information they are collecting now, so they should take good notes.

Stop at one of the plants on the Plant Reference Guide. Point it out to the students, explain how

Materials Needed, continued:

- One Nature's Super Walmart worksheet per student (attached)
- One Ancient Iron Chef worksheet per 4-5 students (attached, print two sided)
- One writing utensil per student
- Clipboards or other writing surface (optional)
- Plant Reference Guide (attached, student copies optional)
- Ancient Iron Chef prize (optional)

Sources:

Needs chart and activity adapted from Project Archeology activity *Culture Everywhere*. Bureau of Land Management, 1996.

Indian Uses of Desert Plants. James W. Cornett, 2011

Photographs by Stacy Dahl.

Submitted by Anica Mercado

they would identify it, and ask them what they think it could be used for. Help as needed, mentioning how traditionally the plant was used, going into as much detail as appropriate for their age group. Continue until students have 5-10 resources on their list.

Note: *DO NOT LET STUDENTS EAT ANY PLANT! Make sure they know before you start identifying plants that there are numerous plants that can look the same, but some can be edible and some can be poisonous. Also remind them that as a National Conservation Area, Red Rock Canyon is protected and nothing can be removed from the area, including plants to eat. Also keep in mind that not all plants listed can be found on every trail. Consider handing out student copies of Plant Reference Guide or covering uses of plants not seen.*

Once the students have their resource list, split them into groups of 4-5. Inform them they are going to be competing in an Ancient Iron Chef match up. Each group gets an Ancient Iron Chef worksheet. As a group, they need to come up with a normal recipe they would enjoy at home, with at least three different ingredients, and how they

would make it here, in fifteen minutes. The secret ingredient is anything from Nature's Super Walmart, but they can use anything in the desert, including animals. Remind them that they not only need to come up with a recipe, but also include how it will be cooked, what it will be cooked in, etc.

A group, for example, could make pancakes. They could use flour made from fourwing saltbush, water from a spring to mix it with, and the brown residue from roasted agave leaves as a replacement for maple syrup. They would then need an agave roasting pit to roast the agave, something to grind the saltbush in, and a container to mix the ingredients together. They would also need firewood for the fire, which could be from a mesquite, and a cooking vessel. It is more important for the students to be creative and think of all the resources around them than for their recipe to be overly accurate.

Walk around and assist students as needed, or assign a chaperone to each group to supervise/assist. At the end of 15 minutes, each group has to present their dish to the class. The winner can be decided either by you, chaperones that were designated as judges, or a group vote. Feel free to include additional criteria recipes will be judged on, such as originality, creativity, and theoretical tastiness. If desired, the winning team can be awarded a prize.

Variation: If they are willing, the chaperones can form the "Iron Chef" team and participate as well.

After the competition, discuss how they see the resources around them differently now. How do they think their culture would be different if this was how they lived? Would their needs list be

any different? Would it have been different if we were in a different environment, like a forest? Would they feel differently about the area if they had to depend on mostly local resources? How would the introduction of different tools, like metal pots, or technologies, like electricity, change these views and needs?

Suggested Locations:

Needs and plant resources can be shown anywhere along the trail. Suggested locations for Ancient Iron Chef activity:

Pine Creek Trail:

3 or 7

Red Spring Boardwalk:

1,4, or between 8&9

Fire Ecology Loop:

4

Moenkopi Loop:

3,6,7,8, or 9

_____’s Needs
(Name)

_____’s Needs
(Name)

Needs	Today	100 Years Ago	1,000 Years Ago

Nature's Super Walmart

Material	Traditional Uses	Uses Today

Ancient Iron Chef

Whose ancient cuisine will reign supreme?

Team members:

Recipe you are recreating:

Ingredients and how you will obtain them :
(Remember: You need at least 3!)

Equipment and how you will obtain it:

Additional items used:

Procedure:

Final Result:

(Can be a drawing, written description, or both. Be creative!)

Plant Reference Guide

Agave

- Agave have succulent, spine-tipped leaves and a single, towering flower stalk.
- One of the most important plant groups, second only to yucca. Provided food, fiber, and was a valuable trade item.
- Leaves, flowers, stalks, blossoms, seeds can be eaten after cooking. Flower stalks harvested spring and summer. Leaves harvest November to May and provided food when other resources unavailable.
- Leaves and stalks roasted in large pits. Could be pounded into cakes and dried in the sun for later consumption. Leaves eaten like giant artichoke, inside leaves had brown juicy mass that tasted like molasses. Flowers boiled to remove bitterness and either eaten or sundried for later consumption.
- Seeds ground into flour.
- Fibers used to make bowstrings, brushes, cradles, nets, shoes, skirts, mats, rope, baskets, and snares. Leaves soaked and pounded to remove fibers, then dried and separated by combing.
- Roasting pit sites can be seen in Willow Springs and Lost Creek.



Barrel Cactus

- Barrel Cactus are a cylindrical shape with vertical rows of curved spines, 2-10 feet in height.
- Buds and flowers were collected in spring and fruits in early summer. Were plucked with two sticks to avoid spines and parboiled to remove bitterness. Seeds crushed and mixed with water to make gruel.
- A slice of cactus would have the spines removed, roasted, and then wrapped in cloth and put on sore places to relieve body pain.
- Hollowed out and used as a container.
- Common myth that you can cut it open to get life-saving water; liquid inside is alkaline and Natives knew it caused headaches, diarrhea, and pain in the extremities.



Beavertail Cactus

- Beavertail Cactus has low, spreading growth with flattened pads that are bluish green or lavender in color. There are no noticeable spines. Large pink or magenta flowers appear in the spring. Close relative to prickly pear.
- One of the most important cacti because of its predictable occurrence, very small spines, and relatively large yield of fruit.
- Stems or joints broken off with stick and rubbed in sand to remove tiny spines, then cut into small pieces, boiled in water, and either eaten as greens or mixed with other foods.
- Could be dried and stored to be boiled and eaten for later use.
- In spring, up to six flowers emerge from the top edge of a joint, with scores of fruit per plant. Fruits knocked off with stick, spines brushed off with handful of grass, then buried in an earthen pit with hot stones and cooked or steamed for up to twelve hours. Very sweet fruit eaten or stored for later use.
- Large seeds removed, ground into meal, and mixed with water to make an edible mush.
- Pulp scraped from a joint and put directly on the wound used to reduce pain and aid the healing of cuts and wounds. Small spines sometimes rubbed into moles and warts to remove them.



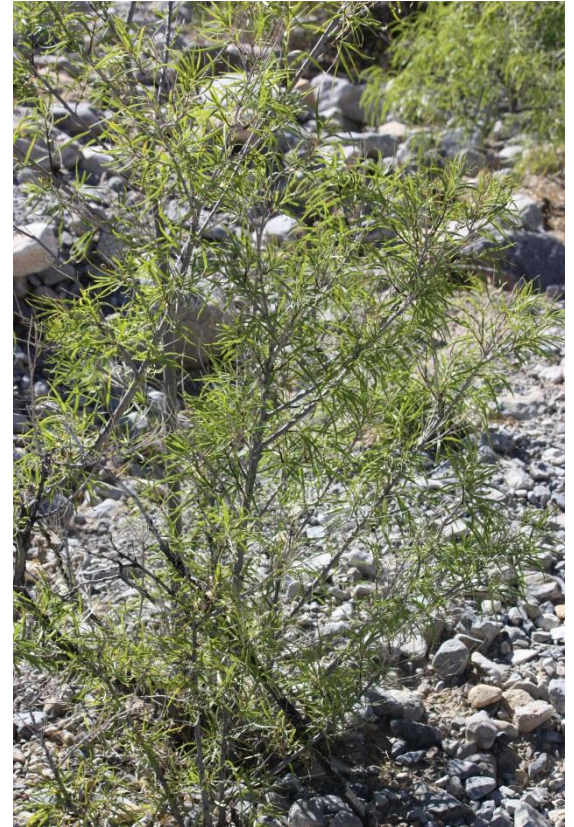
Creosote Bush

- Creosote grows 3-12 feet high and has small, yellowish-green leaves and dime-sized, yellow, five petal flowers.
- Flavors of certain foods enhanced over creosote wood fires.
- Dry powder made from leaves used as antibiotic on cuts, abrasions, and burns.
- Crushed stems and water rubbed on areas to reduce pain of rheumatism and sciatica.
- Drink made from stems and leaves boiled in water used to treat tuberculosis, respiratory infections, constipation, cramps associated with delayed menstruation, and venereal diseases.
- Lac scale insects leave a resin-like residue on creosote branches that is used to mend pottery and waterproof baskets.



Desert willow

- Desert Willow is a large shrub reaching twenty feet high and confined to usually dry, desert water courses. Pencil-wide, light green leaves fall in the autumn. Presence indicates groundwater is close to the surface for at least part of the year.
- Wood was most important part of the plant. Pliable branches can be bent nearly in half without breaking or cracking. Resistant to decay, strong, and not particularly heavy. Important construction material for houses, used in both rectangular and domed structures as support posts and beams.
- Preferred species for making granaries, large basket-like structures used to hold foods collected in large quantities. Long, straight branches used to knock fruit from plants that could not be reached by hand. Bows also made from branches.
- Occasionally bark removed and pounded and stretch to make nets and clothing.
- Not preferred as a food source. Flowers and seeds could be dried and made into a weak but pleasant tasting tea.



Fourwing Saltbush

- Fourwing Saltbush is a rounded shrub with long, narrow gray-green leaves. In autumn, yellow-green clusters of fruit cover most of the female plants
- Seeds knocked out of hanging fruits with a wooden beater into large, flat baskets, then ground into meal. Result was a nutritious flour with more than 10% protein.
- Leaves and stem tips contain salt. Mixed whole or ground in a variety of food preparations, such as mush and stew, to add pleasant salty taste. Could also be burned and the ashes used as a kind of baking powder.
- Grinding flowers and roots and mixing with saliva made a salve to relieve pain and irritation of insect stings. Chewing leaves soothed an upset stomach.



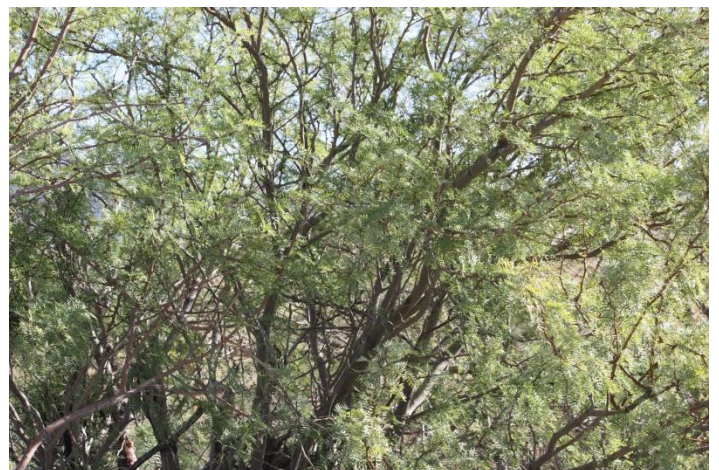
Juniper

- Juniper is a tree with tiny, scale-like leaves and small, round bluish cones that look like berries.
- Can be used as food, seasoning, medicine, tools, firewood, and structural material for houses.
- Bluish cones called juniper berries harvested in the autumn for food. Berries usually dried in the sun and stored for later use. Occasionally eaten raw, normally ground into a meal, mixed with water to form mush or pressed into cakes to be consumed later.
- Drink made by pounding the berries into pulp and placing the mass in water. Seeds and pulp discarded.
- Crushed leaves ingested as a tea to relieve body pain, stomach ache, or sore throat. Drink made from green branches relieve symptom of a cold. Salve made with leaves to lessen joint pain. Smoke from burning wood inhaled to relieve headaches. Extracts used as a remedy for nausea, acne, insect stings, and post-partum pain.
- Bark could be pounded into long fibers and twisted into rope or coiled to make a slow match - one end of the coil would be lit and kept smoldering for hours, making it easier to start new cooking fires. Bark used as tinder when rubbing pieces of wood together to create a fire.
- Bark used to fill the seams between logs in house construction and as stoppers for basket water bottles.
- Dead standing trunks of dead juniper used for bow making.



Mesquite

- Mesquite are large, spreading shrubs with long, compound leaves made up of tiny leaflets and long thorns on the branches.
- Most important food plant for tribes living in the desert. Produces fruit even in driest years because of deep taproots; reliable enough that in past times village sites usually selected by mesquite proximity. In good years a large mesquite produces over twenty pounds of fruit that can easily be collected by hand.



- Fruits ripen in summer and early autumn and were collected and stored in large basket granaries for use in the winter. Entire fruits, including enclosed seeds, were crushed in rock or wooden mortars. Resulting meal was placed in earthen bowl and thoroughly mixed with water. Resulting mush was eaten or made into cakes and dried. Cakes were an ideal food for transport during seasonal migrations or hunting trips.
- Flowers collected in the spring, roasted, then pressed into a ball for eating.
- Tea made by boiling the blossoms in water. Tea made from the leaves inhibited diarrhea. Concoction made from the leaves and twigs were used as a disinfectant on cuts and abrasions. Conjunctivitis (pink eye) was treated by washing the eyes with a rinse made from the pods.
- Sap used as an adhesive.
- Trunk hollowed out at the top and used as a mortar for grinding.
- Branches used to make superior bows.
- All woody parts excellent for firewood, adds a nice flavor to meat.

Screwbean mesquite pods (fruit)

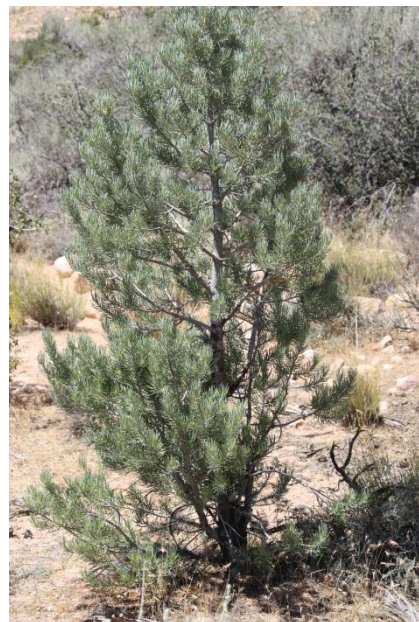


Honey mesquite pods (fruit)



Pinyon

- Pinyon is a short pine tree, often asymmetrical and gnarled with short needles.
- Nuts from cones collected in late summer or autumn. Nuts knocked out of already opened cones with long pole. Unopened cones placed on a fire causing them to open and release nuts. Nuts would be roasted and then cracked to remove shells.
- A family of four could harvest 120 pounds of shelled nuts in a day, enough to feed the family for six weeks.



Rush

- Rush are grass-like plants with green, round, erect, unbranching stems reaching from one to four feet in height.
- Used mainly for basket making. Used as temporary containers, long-term storage vessels, mixing bowls for food and medicine, elements in ceremonies, gifts, an item of trade, and hats. Baskets strong but lightweight, durable, and often designed to be aesthetically pleasing.
- New, tender stems could be eaten without preparation.
- Seeds harvested in the autumn and mixed with other seeds and ground into flour.



Yucca

- Yuccas have long, spine-tipped leaves, white to pale yellow blossoms, and large, massive flower clusters.
- Most important plant group. Source of food, fiber, soap, and used in ceremonial applications.
- Soap one of most important products. Pounding roots in water creates copious suds that were used to wash hair, clothes, and ritual cleansing for ceremonies.
- Best source of fiber, particularly Mojave yucca. Made by soaking leaves in water, placing on flat rock, and pounding the softer tissues with a wooden club. Remaining tough white filaments could be twisted to make threads. Fiber used to make sandals, rope, mats, clothing elements, nets, and mattresses. Also used in basket making.
- Flower stalks, blossoms, fruit, and seeds all eaten. Fruit could be eaten raw, baked, boiled, dried, or ground into meal.

