

Activity 1 Handouts

If following the lesson plan exactly, the teacher can print 1 copy **total**, single sided, in order to distribute one recipe to each group.

Indian Paintbrush

Navajo Name: dahitxjhidaa'

Botanical Name: *Castilleja integræ*

The Navajo name means hummingbird food. It grows one to one and one-half feet tall and is found in the lower parts of the mountains. Either the flowers alone or the entire plant may be used for dye purposes. It blooms in June and July and is used while fresh.

Dye recipe

Tan (Navajo Native Dyes, Color 49)

4 pounds Indian paintbrush blossoms

Cold water to cover

1 pound yarn

Pour enough cold water over the blossoms to cover. Soak a day or two and mash up the blossoms. Remove hard stems. Add wet yarn to dyebath and allow to ferment in a warm place for 1 week. Work the dye into the yarn often. Rinse.

Greenish Yellow (Navajo Native Dyes, Color 50)

2 pounds Indian paintbrush (stems, leaves, and blossoms)

¼ cup raw alum

1 pound yarn

Boil Indian paint brush in 5 gallons of water in an enamel or granite vessel for 2 hours. Strain. Add the raw alum to the dyewater. Stir and let boil 10 minutes. Add wet yarn and stir again. Boil 2 hours. Leave in dyebath overnight. Rinse.



Castilleja integræ A. Gray (Plantae Dicotyledonae Scrophulariales Scrophulariaceae), collected by Paul C. Standley in 1911 from New Mexico. US National Herbarium Sheet 687048. Barcode 03912318.

Dye recipes are from Stella Young and Nonabah G. Bryan, eds., *Navajo Native Dyes: Their Preparation and Use* (United States Department of the Interior, Bureau of Indian Affairs, Branch of Education, 1940); and Isabel Deschigny, *Native Plant Dyes* (Window Rock, Arizona, 1984).

All botanical specimen images are courtesy of the United States National Herbarium, Smithsonian Institution.

Purple Larkspur

Navajo Name: txadidijdootł'izh

Botanical Name: *Delphinium scaposum*

This dainty plant with a purple flower grows in timber on the desert where there is a little moisture. It is a sacred plant to the Navajo, its purple petals being used in some of their ceremonies. For this reason many Navajo will not use it for dye. It has been reported that the purple petals yield a purple dye. The experiments at the school have failed to give a color even approaching it either by fermenting the plant or boiling it. The purple petals or the entire plant may be used for dye.

Dye recipe

Greenish Gray (Navajo Native Dyes, Color 29)

2 pounds purple larkspur petals.
1 pound yarn

Pour enough warm water over the petals to cover. Soak a day and then mash them. Add wet yarn and allow to ferment in a warm place for 1 week. Work the dye into the yarn often. Rinse.

Light Greenish Yellow (Navajo Native Dyes, Color 30)

2 pounds purple larkspur (flowers, leaves, stems)
¼ cup raw alum
1 pound yarn

Boil larkspur in 5 gallons of water in a granite or enamel vessel for 2 hours. Strain. Add the raw alum to the dyewater. Stir and let boil 10 minutes. Add wet yarn. Stir again. Boil 2 hours. Leave in dyebath overnight. Rinse.



Delphinium scaposum Greene (Plantae Dicotyledonae Ranunculales Ranunculaceae Ranunculoideae), collected by W. W. Eggleston in 1924 from Arizona. US National Herbarium Sheet 1522932. Barcode 035

Dye recipes are from Stella Young and Nonabah G. Bryan, eds., *Navajo Native Dyes: Their Preparation and Use* (United States Department of the Interior, Bureau of Indian Affairs, Branch of Education, 1940); and Isabel Deschigny, *Native Plant Dyes* (Window Rock, Arizona, 1984).

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Mountain Mahogany

Navajo Name: tse'esdaaziih

Botanical Name: *Cercocarpus montanus*

The bark of the root of this tree is red and is the part used for dye. It gives the strongest color when dug in the fall. The tree which grows four to eight feet in height is found commonly in the mountains and on the foothills at an elevation of 7,000 to 10,000 feet.

Dye recipe

Soft, Reddish-Brown (Navajo Native Dyes, Color 35)

2 pounds mountain mahogany root bark
1 pound yarn

Boil mountain mahogany root bark for 2 hours in 5 gallons of water. Strain. Add wet yarn and boil for 2 hours. Stir well. Leave in dye bath overnight. Rinse thoroughly.

Deep Reddish-Brown (Navajo Native Dyes, Color 36)

2 pounds mountain mahogany root bark
Water from 1 cup juniper ashes
1 pound yarn

Boil mountain mahogany root bark in 5 gallons of water for 2 hours. Strain. Add juniper ash water to the dye bath. (The method of preparation is described under "Mordants.") Stir and boil 15 minutes. Add wet yarn and stir well. Boil 1 hour and leave in the dye bath overnight. Rinse thoroughly.



Cercocarpus montanus var. *glaber* (S. Watson) F. L. Martin (Plantae Dicotyledonae Rosales Rosaceae Dryadoideae), collected by Lester F. Ward in 1895 from California. US National Herbarium Sheet 135700. Barcode 01163514.

Dye recipes are from Stella Young and Nonabah G. Bryan, eds., *Navajo Native Dyes: Their Preparation and Use* (United States Department of the Interior, Bureau of Indian Affairs, Branch of Education, 1940); and Isabel Deschigny, *Native Plant Dyes* (Window Rock, Arizona, 1984).

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Wood Lichen (Ground Lichen)

Wood Lichen Navajo name: tsin dlaad

Wood Lichen botanical name: *Letharia vulpina*

Ground Lichen Navajo Name: nj'hadlaad

Ground Lichen Botanical Name: *Parmelia molluscula*

Many varieties of lichen have long been used for dyeing in the North American Southwest. The following recipe uses ground lichen. These tiny plants cling to the ground under sagebrush and trees on certain mesas in the Southwest. The entire plant is boiled for dye. They may be used fresh or dried. Stone lichen (tsedlaad) may be similarly used. They grow on stones in the foothills of the mountains in the Southwest and are easily scraped off after a rain loosens them.

Dye recipe

Light Orange (Navajo Native Dyes, Color 31)

1 pound ground lichens

¼ cup raw alum

1 pound yarn

Boil lichens in 4 gallons of water for 1 hour. Strain. Add alum and let boil. Stir well. Add wet yarn and stir again. Boil ½ hour. Rinse.

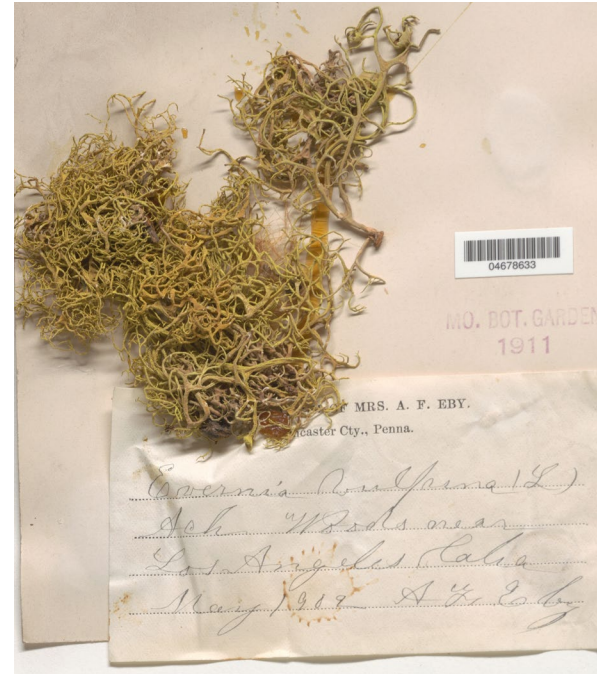
Reddish-Tan (Navajo Native Dyes, Color 32)

½ pound ground lichens

¼ cup raw alum

1 pound yarn

Boil lichens in 4 gallons of water for 1 hour. Strain. Add alum and let boil. Stir well. Add wet yarn and stir again. Boil 1 to 2 hours, depending upon depth of color desired. Less alum and a shorter boiling time produces a lighter color. Leaving it in the dye bath overnight gives a deeper shade. Rinse.



Letharia vulpina (Parmeliaceae), collected by Mrs. A. F. Eby s.n. in 1902 from California. Barcode 04678633.

Yellow-Tan (Navajo Native Dyes, Color 33)

Prepare as for “Reddish-Tan” except that the water from 1 cup juniper ashes is used instead of raw alum as a mordant.

Ground lichens may also be used with mountain mahogany root to produce light red-brown. The recipe for this dye is given under “Mahogany.”

Dye recipes are from Stella Young and Nonabah G. Bryan, eds., *Navajo Native Dyes: Their Preparation and Use* (United States Department of the Interior, Bureau of Indian Affairs, Branch of Education, 1940); and Isabel Deschigny, *Native Plant Dyes* (Window Rock, Arizona, 1984).

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Small Rabbit Brush

Navajo Name: g'iitsoididjoolih

Botanical Name: *Chrysothamnus bigelovii*

This species of rabbit brush is found out on the flat open mesas but is not very common. It grows about two feet high and blooms during the late summer and early fall. The twigs and blossoms are used for dye.

Dye recipe

Bright Yellow (Navajo Native Dyes, Color 56)

3 pounds rabbitbrush blossoms and twigs

½ cup raw alum

1 pound yarn

Boil the blossoms and twigs in 6 gallons of water for 1 to 2 hours. Strain. Add the alum. Stir well and boil 10 minutes. Add the wet yarn and stir again. Boil 1 to 3 hours, depending upon the depth of color desired. Allowing it to remain in the dyebath overnight will also deepen and brighten the color. Fewer blossoms will make a lighter shade. Boil in an enamel vessel for this bright yellow color. Rinse.

Light Canary Yellow (Navajo Native Dyes, Color 57)

Prepare as for “Bright Yellow” except that the yarn is boiled only ½ hour and removed immediately from the dyebath.

Mustard (Navajo Native Dyes, Color 58)

Prepare as for the “Bright Yellow” except that the yarn is dyed in a tin or aluminum vessel.



Ericameria nauseosa var. *bigelovii* (A. Gray) G. L. Nesom & G. I. Baird (Plantae Dicotyledonae Asterales Asteraceae Asteroideae), collected by Paul C. Standley in 1911 from Arizona. US National Herbarium Sheet 686340. Barcode 01575816.

Dye recipes are from Stella Young and Nonabah G. Bryan, eds., *Navajo Native Dyes: Their Preparation and Use* (United States Department of the Interior, Bureau of Indian Affairs, Branch of Education, 1940); and Isabel Deschigny, *Native Plant Dyes* (Window Rock, Arizona, 1984).

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Canyaigre Dock Root (Canyaigre Dock Root)

Navajo Name: chaad'iniih

Botanical Name: *Rumex hymenosepalus*

Canyaigre grows on sandy mesas on the reservation. It is a large native dock with leaves which grow about two inches in width, dark green in color and meaty in substance. It has one flower stock arising from the center. The roots of the plant, which are the part used for dye, resemble sweet potatoes, and are very rich in tannic acid. They may be used fresh or after having been split and sundried.

Dye recipe

Medium Brown (Navajo Native Dyes, Color 15)

1 pound dried canyaigre roots
1 pound yarn

Boil canyaigre roots in 4 gallons of water for 1 hour. Mash to liberate the dye substances. Strain. Add wet yarn. Stir well. Boil 1 to 2 hours. Leave in dyebath overnight if a deeper color is desired. Rinse.

Yellow-Orange (Navajo Native Dyes, Color 16)

½ pound canyaigre roots
¼ cup raw alum
1 pound yarn

Boil the canyaigre roots in 4 gallons of water for 1 hour. Mash to liberate dye substances. Strain. Add alum. Let boil. Stir well. Add wet yarn. Stir again. Boil 1 to 2 hours. Leave in dyebath overnight if a deeper color is desired.



Rumex hymenosepalus Torr. (Plantae Dicotyledonae Polygonales Polygonaceae), collected by George Conway in 1981 from New Mexico. US National Herbarium Sheet 2918262. Barcode 03284097.

Dye recipes are from Stella Young and Nonabah G. Bryan, eds., *Navajo Native Dyes: Their Preparation and Use* (United States Department of the Interior, Bureau of Indian Affairs, Branch of Education, 1940); and Isabel Deschigny, *Native Plant Dyes* (Window Rock, Arizona, 1984).

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Navajo Tea

Navajo Name: ch'ilgohwehiih

Botanical Name: *Thelesperma gracile*

Navajo tea is common in the timber regions on the mountains and around the edges of cultivated land at high elevations if the moisture is sufficient. It grows from one to two feet tall and its orange blossoms appear in July. The leaves, stems, and flowers are used for dye purposes and may be either fresh or dried. The Navajo twist the stems into small uniform-sized rolls before drying.

Dye recipe

Orange (Navajo Native Dyes, Color 73)

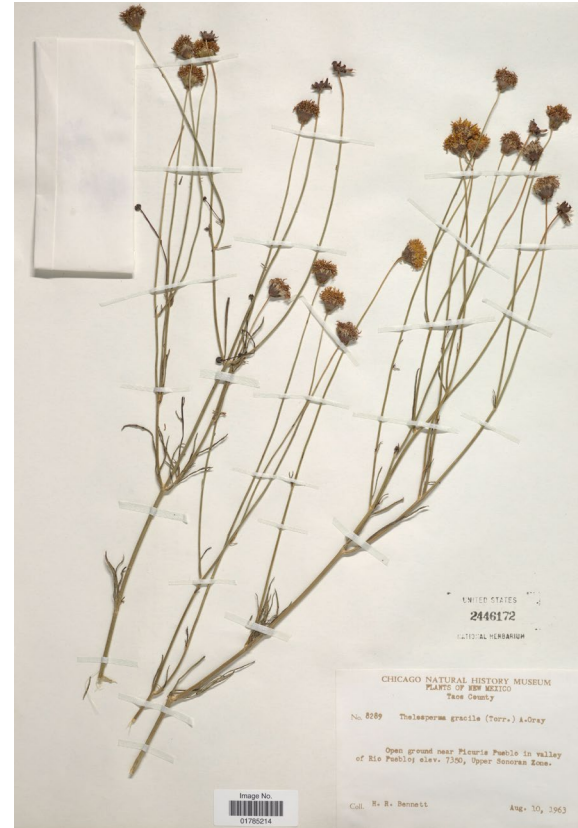
2 pounds dried Navajo tea
½ cup raw alum
1 pound yarn

Boil tea in 5 gallons of water for 1 hour. Strain. Add alum. Let boil. Stir well. Add wet yarn. Stir again. Boil 2 hours and remove immediately from dyebath for this tone of color. Rinse well.

Light Orange (Navajo Native Dyes, Color 74)

Afterbath dyewater from the Navajo tea in the above recipe
¼ cup raw alum
1 pound yarn

Bring afterbath dyewater to a boil and add raw alum. Stir well. Add wet yarn. Stir again. Boil 2 hours and leave in the dyebath over night. Rinse thoroughly.



Thelesperma gracile (Torr.) A. Gray (Plantae Dicotyledonae Asterales Asteraceae Asteroideae), collected by H. R. Bennett in 1966 from New Mexico. US National Herbarium Sheet 2576534A. Barcode 01785210.

Light Olive Green (Navajo Native Dyes, Color 75)

2 pounds fresh Navajo tea (must be fresh for this color)
1 pound yarn

Boil tea in 4 gallons of water for 1 hour and strain. Add wet yarn. Stir well. Boil 1 hour. Remove immediately from dyebath. Rinse well.

Dye recipes are from Stella Young and Nonabah G. Bryan, eds., *Navajo Native Dyes: Their Preparation and Use* (United States Department of the Interior, Bureau of Indian Affairs, Branch of Education, 1940); and Isabel Deschigny, *Native Plant Dyes* (Window Rock, Arizona, 1984).

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