



Garden Learning – Butterfly/Hummingbird/Native American

The Garden Learning program is a monthly publication that provides volunteers information about a specific area in the Forrest Deane Native Plant Botanic Garden. As we learned in the September edition, there are six demonstration gardens and 5 plant community areas. This month we will focus on the Butterfly/Hummingbird/Native American (BHN) demonstration garden. The BHN garden is one of 2 demonstration gardens designed with a combined/blended concept. The southern end of the area is composed of plants that attract hummingbirds and butterflies. The northern end of the area is devoted to plants that were used by Native (Solano County) Americans for building materials, medicines and food. The transition section in between contains plants from both areas.

The Common Manzanita (*Arctostaphylos Manzanita*) is an example of a native plant that attracts hummingbirds. Also, every part of the plant was used by Native Americans: the berries were eaten fresh or dried and ground into meal and even crushed to make a cider-like drink. The leaves were used to make tea to treat stomach and digestive ailments, and the wood was fashioned into double-pointed fishhooks, harpoon heads and bull-roarers (noise maker).

Another example of a plant with Native uses and animal attraction is the Buck Brush (*Ceanothus cuneatus*). Flowers mixed with water for shampoo and its flexible branches used as the framework for baskets.



The BHN garden starts at the main Garden entrance and extends north as indicated in the diagram above.

While it is possible that Native Americans actually walked the same ground as the BHN garden, it is more likely they used a path closer to the water's edge while exploring out from their main settlements in Rock Creek in the winter, and Suisan Marsh in the summer. These were the Patwin, a Native American tribe that belonged to a larger group, the Wintun. Five other tribes in what became Solano country were part of the Wintun:

- | | |
|----------|---------------------|
| Ululatos | Vacaville |
| Libaytos | Putah Creek |
| Malacas | Lagoon Valley |
| Tolenas | Upper Suisun Valley |
| Suisunes | Susiun |

Their winter houses were built by digging a sunken floor (3 to 4 feet deep), then using



willow saplings to construct a dome-like frame (diameter 60 feet, height 20 feet) which was then covered with grass and reeds. Mud was then plastered over the entire structure. The summer home, called a "Tule" hut, was built on a raised dirt area. The frame of the summer home was made first by bundling willow branches, other tree branches, and a tall plant with fibrous. This bundle was then tied at one end and stuck in the ground at the other end. The walls were made out of rushes or tall grasses bundled together and laid over the frame. Inside, earth was hollowed out to make a sunken floor. In this a fire would be built to keep the mosquitoes away.

Buck Brush (*Ceanothus cuneatus*)

© 2009 Neal Kram



Common Manzanita (*Arctostaphylos Manzanita*)

© 2009 Norma Deaner



Buck Brush (*Ceanothus cuneatus*)

© 2009 Norma Deaner

Native American Uses of Plants:

Native Americans used a wide variety of native plants for food, shelter, and medicine. Their skills in plant identification and process preparation took many years to develop and were passed from generation to generation. The following table lists native plants found in the Forrest Deaner Native Plant Botanic Garden and the Native American use of them.

Plant	Native American Use
Poppies	Yellow die for basket decoration and the root was crushed and used as a tooth ache gum
Camas	One of the most important bulbs used by the Native Americans. The bulbs were cooked in stone-lined earth pits for 24 hours. When taken out they were soft and darkish in color and very sweet. They could be eaten after baking or pressed into cakes and dried in the sun, preserving them for later. The taste is much like a chestnut.
Milkweed	Used in chewing gum preparation. The tough fibers were used for making cords, ropes, and for weaving coarse cloth. Juice used for rattle-snake on bites. Teas were made from the root for cures for coughs and as a wash for rheumatism. The mashed roots moistened with water could be used to reduce swellings.
Soap Plant	Tender spring shoots were a nutritious food in the Spring. Bulbs were roasted and used as a tea for stomachaches or put on rashes or sores. The inside of the bulb could be used as a glue and a sealant for seed gathering baskets. The bulb fibers were often made into brushes for sweeping acorn from the rock mortars. They used the soapy substance in bulb to taint the waters to stun fish for netting and used as a shampoo.
Deergrass	Basket Making Material. The seeds were a good source of protein. The seeds were tossed in baskets with hot coals to to slight toast them. They were then made into cakes or pounded into flour.
Common Manzanita	The berries were used to make a Vitamin C apple cider like drink. Burring the wood produced very hot long lasting coals which were tossed in baskets with seeds to burn off chaff and parch them. The antler-like forked branches were in ceremonies by hunters of the tribe.
Ceanothus (Maritime and Buck Brush)	Flowers mixed with water for shampoo. Flexible branches used as the framework for baskets. The roots were crushed and boiled to make a red dye for coloring baskets. The seeds were prepared just like deer grass seeds.
Redbuds	Basket Making Material. They pruned redbuds in the winter to stimulate growth of straight branches in the spring. Materials had to be gathered, soaked, peeled, and split. Weaving took 600 to 1000 hours for a large water-tight basket.
Hazelnut	The nuts were dried, shelled when ready to eat. Sometimes roasted. Shoots were used in basket making and sometimes used for making animal traps.
Yerba Santa	The leaves were chewed to treat a cough and a tea was made from the green shoots and leaves for treatment of colds and sore throats.
Grey Pine	Pine cone seeds contain seeds rich in fat and protein. Soft pine needles used for thatching and bedding. Sometimes baskets were made from the needs too. The sap was used for waterproofing baskets and as a gum to treat sore throats and rheumatism. The hard seeds were used in necklaces and decorating clothing

Plant	Native American Use
Blue Oak	The rose colored galls that grow on the blue oak were collected for their juice, which was diluted and used as eyewash. By putting rusty iron into it, a black dye was made which could be used in place of ink.
Black Oak	Acorns were gathered and stored in specially built granaries (caches). Shelled and pounded in a mortar then leached in a sand basin to remove the bitter tannin. The meal was then made into mush, soup, and bread.
Creeping Mahonia	Berries were used to make a pleasantly acid drink and tart preserve. Probably most important use was in making a good yellow dye for baskets, buckskins, and fabrics. The roots and stems were crushed and boiled to obtain the color. The bark was used as a laxative and to make a lotion to treat skin diseases. The leaves were boiled to make tea to cure general aches & rheumatic pains.
Valley Oak	Also used for mush, or bread. Rose colored galls also grow on valley oaks
Buckeye	The fruit of the buckeye is poisonous (contains aesculin) so they leached out the poison before eating them. They used the poisonous unripe seeds to stun fish by tossing them in the water. The straight branches could be used as drills or fire starters.
Blue Elderberry	The soft insides of the straight branches were removed and fashioned into whistles, flutes, clappers, and pipes. The wood was also used for arrows and fire starter. The flowers were brewed into teas which were helpful in treating colds, flu, upset stomachs. The berries in the fall were eaten dried or cooked another source of Vitamin C.



Blue Elderberry Flower (*Sambucus mexicana*)
© 2009 Norma Deaner

Native Plants of the Butterfly/Hummingbird/Native American (BHN) Garden

The BHN garden consists of **55** species of annuals, grasses, ground cover, perennials, shrubs, trees and vines native to California. The following key is used to identify plants that were useful to American Natives, and both plants that attract butterflies and hummingbirds:

-  Native American Use
-  Butterfly
-  Hummingbird

Annuals:

	Scientific Name	Common Name	Family
	<i>Eschscholzia caespitosa</i>	Tufted Poppy	Papaveraceae
	<i>Eschscholzia californica</i>	California Poppy	Papaveraceae
	<i>Linum lewisii</i>	Western Blue Flax	Linaceae

Bulb Plants:

	Scientific Name	Common Name	Family
	<i>Camassia quamash</i>	Camas	Liliaceae
	<i>Chlorogalum pomeridianum</i>	Soap plant	Liliaceae

Grasses:

	Scientific Name	Common Name	Family
	<i>Festuca idahoensis</i>	Foothill Fescue	Poaceae
	<i>Muhlenbergia rigens</i>	Deergrass	Poaceae
	<i>Nassella pulchra</i>	Purple Needlegrass	Poaceae



California Poppy (*Eschscholzia californica*)
©2006 Dan Jensen



Tufted Poppy (*Eschscholzia caespitosa*)
© 2003 Michael Charters

Ground Cover:

	Scientific Name	Common Name	Family
	<i>Dudleya cymosa</i> ssp. <i>cymosa</i>	Liveforever	Crassulaceae
	<i>Dudleya farinose</i>	Powdery Dudleya	Crassulaceae
	<i>Sedum spathulifolium</i>	Broadleaf Stonecrop	Crassulaceae

Perennials:

	Scientific Name	Common Name	Family
	<i>Aquilegia Formosa</i>	Scarlet Columbine	Ranunculaceae
	<i>Castilleja foliolosa</i>	Woolly Indian Paintbrush	Scrophulariaceae
	<i>Epilobium canum</i> 'Calistoga'	California Fuchsia	Onagraceae
	<i>Lomatium californica</i>	California Lomatium	Apiaceae
	<i>Salvia spathacea</i>	Hummingbird Sage	Lamiaceae
	<i>Scrophularia californica</i>	California BeePlant	Scrophulariaceae
	<i>Sidalcea malvaeflora</i>	Checker Bloom	Malvaceae
	<i>Wyethia angustifolia</i>	Gray Mules' Ear	Asteraceae
	<i>Achillea millefolium</i>	Common Yarrow	Ranunculaceae
	<i>Asclepias fascicularis</i>	Narrow-leaf Milkweed	Asclepiadaceae
	<i>Asclepias speciosa</i>	ShowyMilkweed	Asclepiadaceae
	<i>Eriogonum fasciculatum</i>	California Buckwheat	Polygonaceae
	<i>Erysimum franciscanum</i>	San Francisco Wallflower	Brassicaceae
	<i>Heuchera</i> 'Canyon Delight'	Canyon Delight Coral Bells	Saxifragaceae
	<i>Lewisia cotyledon</i> (pink)	'Cliff Maids' Pink	Portulacaceae
	<i>Lewisia cotyledon</i> (white)	'Cliff Maids' White	Portulacaceae
	<i>Phacelia californica</i>	California Coast Phacelia	Hydrophyllaceae
	<i>Wyethia helenioides</i>	Mule's Ears	Asteraceae



Liveforever (*Dudleya cymosa* ssp. *Cymosa*)
© 2009 Barry Breckling



Broadleaf Stonecrop(*Sedum spathulifolium*)
© 2005 Steve Matson

Shrubs:

	Scientific Name	Common Name	Family
	<i>Arctostaphylos manzanita</i>	Common Manzanita	Ericaceae
	<i>Arctostaphylos tomentosa</i>	Wooley Leaf Manzanita	Ericaceae
	<i>Ribes menziesii</i>	Canyon Gooseberry	Grossulariaceae
	<i>Mimulus aurantiacus</i>	Sticky Monkeyflower	Scrophulariaceae
	<i>Ribes aureum</i>	Golden Currant	Grossulariaceae
	<i>Ribes malvaceum</i>	Chaparral Currant	Grossulariaceae
	<i>Ribes sanguineum</i> var. <i>glutinosum</i>	Pink-Flowered Currant	Grossulariaceae
	<i>Ribes speciosum</i>	Fuchsia-Flowered Gooseberry	Grossulariaceae
	<i>Sambucus mexicana</i>	Blue Elderberry	Caprifoliaceae
	<i>Baccharis pilularis</i> 'Twin Peaks'	Dwarf Coyote Brush	Asteraceae
	<i>Berberis repens</i>	Creeping Mahonia	Berberidaceae
	<i>Ceanothus cuneatus</i>	Buck Brush	Rhamnaceae
	<i>Ceanothus maritimus</i>	Maritime Ceanothus	Rhamnaceae
	<i>Cercis occidentalis</i>	Western Redbud	Fabaceae
	<i>Corylus cornuta</i> var. <i>californica</i>	California Hazelnut	Betulaceae
	<i>Eriodictyon californicum</i>	YerbaSanta	Hydrophyllaceae
	<i>Garrya elliptica</i>	Coast Silktassel	Garryaceae

Trees:

	Scientific Name	Common Name	Family
	<i>Pinus sabiniana</i>	Gray Pine	Pinaceae
	<i>Platanus racemosa</i>	Western Sycamore	Platanaceae
	<i>Quercus douglasii</i>	Blue Oak	Fagaceae
	<i>Quercus kelloggii</i>	Black Oak	Fagaceae
	<i>Quercus lobata</i>	Valley Oak	Fagaceae
	<i>Aesculus californica</i>	California Buckeye	Hippocastanaceae

Vines:

	Scientific Name	Common Name	Family
	<i>Aristolochia californica</i>	California Dutchman's Pipe	Aristolochiaceae

Native Plant Featured this Month

This month's Native Plant of Month is "Sambucus mexicana", known by its common name as "Blue Elderberry". From the CALFlora website, we find that Sambucus Mexicana is a dicot and is a tree or shrub that is native to California. It is also found elsewhere in North America and beyond. In last month's newsletter we learned how plants are sometimes are grouped into Moss, Herbs, Shrub, and Trees. Why do you think Calflora says it is a tree or shrub, don't they know? The definitions of a shrub and a tree from the USDA are:

Shrub:

Perennial, multi-stemmed woody plant that is usually less than 4 to 5 meters (13 to 16 feet) in height. Shrubs typically have several stems arising from or near the ground, but may be taller than 5 meters or single-stemmed under certain environmental conditions.

Tree:

Perennial, woody plant with a single stem (trunk), normally greater than 4 to 5 meters (13 to 16 feet) in height; under certain environmental conditions, some tree species may develop a multi-stemmed or short growth form (less than 4 meters or 13 feet in height).

Notice that these definitions use similar adjectives as characteristics. I wonder if every shrub can grow up to be a tree. The other term used to define this plant is "dicot". Dicot is the nickname for the word **dicotyledons**, which is a fancy name to describe flowering plants which have 2 leaves inside the plant's seed before it grows. If only one leaf is present it is a monocot (monocotyledons). There are around 199,350 species of dicots!

Native Americans used the straight branches of the Blue Elderberries to make whistles, flutes, clappers, and pipes. The flowers were brewed into teas which were helpful in treating colds, flu, upset stomachs. The berries in the fall were eaten dried or cooked another source of Vitamin C. Hummingbirds can be seen often in the branches of the Blue Elderberry shrub/trees in the Forrest Deaner Native Plant Garden, resting between nectar gathering activities.



Blue Elderberry (*Sambucus mexicana*)
© 2009 Norma Deaner



Blue Elderberry Berries
© 2009 Norma Deaner

Invasive Plant Featured this Month, otherwise known as “Weed of the Month”

For this month’s Weed of the Month, we focus on Harding Grass (*Phalaris aquatic*). This invasive weed grows in large clumps in coastal areas, grassland, ranges, and watercourses and has been seen in our garden growing among the Foothill Fescue. It can be mistaken for a native bunching grass. A flowering seed grows up to 4 feet tall and turns green to creamy white during May and June. Likely this invasive is a slow growing weed and its life cycle is only 1 to 3 years. Once it gets established, it can be a chore to dig it out. The picture below shows Harding Grass compared to the Foothill Fescue.



Harding Grass (*Phalaris aquatic*) - BAD
© 2002 Tony Morosco



Foothill Fescue (*Festuca idahoensis*) - GOOD
© 2010 D. Jensen

One way to determine the “good” native grass from the invasive grass is to look at the seed pattern. The invasive grass has a large bulky seed stalk, whereas the native seed is delicate.



Harding Grass - BAD
© 2008 Neal Kramer



Foothill Fescue - GOOD
© 2005 Steve Matson

From CALFLORA:

Phalaris aquatica L.

Harding grass, bulbous canarygrass

Phalaris aquatica, a monocot, is a **perennial herb** that is **not native** to California; it was introduced from elsewhere and naturalized in the wild.

! The [California Invasive Plant Council \(Cal-IPC\)](#) lists plants that cause serious problems in native ecosystems. In the 2006 list, Cal-IPC classifies the statewide impact of **Phalaris aquatica** as **moderate** ([plant profile](#)).

Communities: introduced plant which is becoming naturalized, wetland-riparian

Wetlands: equally likely to occur in wetlands or non wetlands [[U.S. Fish & Wildlife Service.](#)]

Elevation: between 0 and 3937 feet

Family: [Poaceae](#)

From CALFLORA:

Festuca idahoensis Elmer

Blue Fescue, Blue bunchgrass, Idaho fescue

Festuca idahoensis, a monocot, is a **perennial herb** that is **native** to California and is also found elsewhere in North America and beyond.

Communities: Yellow Pine Forest, Foothill Woodland, Chaparral, Valley Grassland, (many plant communities)

Affinity to serpentine soil: 1.3 ([weak indicator / indifferent](#)) [[Safford et al 2005](#)]

Wetlands: occurs in wetlands in another region, but occurs almost always under natural conditions in non wetlands in California [[U.S. Fish & Wildlife Service.](#)]

Toxicity: [DERMATITIS \(GRASS\)](#) [California Poison Control System 2010]

Elevation: between 0 and 5000 feet

Family: [Poaceae](#)

Puzzlers Page

Plant Riddle: What tree am I if my characteristics are similar to a Blue Oak but I have more historic uses by Native Solano Country Americans?

Word Search:

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

- | | | |
|--------------|-------------|-----------------|
| Black Oak | Camas | Deergrass |
| Elderberry | Festuca | Foothill Fescue |
| Liliaceae | Liveforever | Mules Ears |
| Patwin | Redbud | Soap Plant |
| Tuffed Poppy | Tule | Wintun |
| Yarrow | | |

Test your Learning

Question 1: What two plants attract both butterflies and hummingbirds and were used by Native Americans for building materials, food, and medicine?

Question 2: What was the major difference between the winter and summer homes of the Patwin Native Americans?

Question 3: What is the difference between a shrub and a tree?

Question 4: What does it mean to be a Dicot plant?

Question 5: How do you tell the difference between Harding Grass and Foothill Fescue?

Read more about this Month's Topics at these References:

Information on Dicots: <http://en.wikipedia.org/wiki/Dicotyledon>

Growth Habit Codes: http://plants.usda.gov/growth_habits_def.html

“Native American Garden, A Guide to Plants and Their Uses”, Bothe-Napa Valley State park, Calistoga, California

“California Natives: Plants and People, A Self-Guided Tour”, University of California Botanic Garden, Berkley CA

“Early Uses of California Plants”, Edward K. Balls, 1962, UC Press

Humming Birds and Butterfly References:

<http://www.laspilitas.com/garden/hummingbird.html>

<http://www.nativeplants.org/attractbutterflies.pdf>

Native American Websites:

<http://www.napanet.net/~lotus72/ABC/P.htm>
<http://www.accessgenealogy.com/native/tribes/californiatribes.htm>
http://nrs.ucdavis.edu/quail/natural/Human_Patwin.htm
http://ucdavismagazine.ucdavis.edu/issues/fall09/garden_slideshow/
<http://www.nativevillage.org/Archives/2009%20Archives/DEC%202009%20News/UC%20Davis%20Dedicates%20Historic%20NA%20Garden.htm>
http://www.fs.fed.us/psw/publications/documents/psw_gtr217/psw_gtr217_39.pdf
http://www.dateline.ucdavis.edu/dl_detail.lasso?id=11387
http://solanocountygeneralplan.net/EIR_04-18-08/16_Section%204.10%20-%20Cultural%20Resources.pdf (see Page 5)

Answers to Last Month's "Test your Learning":

Answer 1: There are many definitions of a meadow and most have the word "grass" in them.

"A meadow is land that is covered or mostly covered with GRASS; *especially* : a tract of moist low-lying usually level grassland"

Answer 2: An annual herb is a plant that completely dies after the growing season. It is survived only by its seeds.

Answer 3: A perennial plant dies down to the soil level, but parts of the plant below and near the soil survive and grow back season to season.

Answer 4: The Yellow Starthistle has been in California for over 140 years.

Answer 5: The Yellow Starthistle can produce up to 75,000 seeds from a single plant and since it is an annual, its life cycle is 1 season, so 75,000 is the most a single plant can produce in its life time.

Puzzle Page Riddle: The Sticky Monkeyflower (*Mimulus aurantiacus*) used be to in the family Scrophulariaceae but in 2003 was moved to the family Phrymaceae. **A special Thank-you to Alison Fleck, from Simply Perfect Gardens for providing the reference for the change:**

<http://www.fsfed.us/global/iitf/pdf/shrubs/Mimulus%20aurantiacus%20without%20picture.pdf>

