



Garden Learning – Memorial Demonstration Garden

The Garden Learning program is a monthly publication that provides volunteers information about a specific area in the Forrest Deaner 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 Memorial demonstration garden.

The Memorial garden was designed to display plants that Forrest Deaner was particularly fond of and even planted at his own home garden in Benicia.

Forrest Deaner, founder and first President of the Willis Linn Jepson Chapter of CNPS had originally envisioned covering the open space of the Benicia hills with bright native spring flowers and native shrubs. After several proposals to the City of Benicia, it was decided that a native plant botanic garden would benefit the community and so our chapter was born. Initially, the garden would be the focal point of chapter activities. He had this vision of the Garden being “one of a kind in the state.” He recruited new members, including horticulture and landscape professionals, and most importantly negotiated and brokered with the State Parks to find the current site for Garden. He had that infectious enthusiasm and fiery passion that inspired members to volunteer, and after his death, in 2002, continue to make his dream a reality. The Botanic Garden is named in his honor and thrives today because of his dream.

The Forrest Deaner Native Plant Botanic Garden is special because it is a garden that demonstrates the diverse plant life of California and provides an opportunity for

education, recreation, conservation and research. Through its programs and facilities, the Garden fosters an understanding and appreciation of California’s native flora.



The Memorial Garden is located north of the display board, between the Sensory Residential and Butterfly/Hummingbird gardens (turn right after walking into the Garden).

In the center of the Memorial Garden is the Memorial Rock which Forrest picked out to be the cornerstone of the Garden and was placed at the ground breaking ceremonies in November 2000.

Factoid:

There are botanic gardens and arboreta in 148 countries worldwide and they maintain more than 4 million living plant collections. Our own local Forrest Deaner Native Plant Botanic Garden is a part of world’s community of places to see and learn about native plants of a region.

Native Plants of the Memorial Garden

The Memorial Garden consists of 14 species of shrubs and perennial plants native to California.

Recall that plants have both scientific names and common names. The scientific name has two parts: Genus and Species. Below is the plant listing of the natives you will find in the memorial garden:

Perennials:

Scientific Name	Common Name	Family
<i>Achillea borealis</i>	Island Pink Yarrow	Asteraceae
<i>Achillea</i> 'Moonshine'	Moonshine Yarrow	Asteraceae
<i>Epilobium canum</i> 'Solidarity Pink'	California Fuchsia 'Solidarity Pink'	Onagraceae
<i>Monardella macrantha</i>	Red Mountainbalm	Lamiaceae
<i>Monardella villosa</i>	Coyote Mint	Lamiaceae
<i>Satureja mimuloides</i>	Savory Monkeyflower	Lamiaceae
<i>Solidago californica</i>	California Goldenrod	Asteraceae

Shrubs:

Scientific Name	Common Name	Family
<i>Cercis occidentalis</i>	Western Redbud	Fabaceae
<i>Dendromecon rigida</i> ssp. <i>harfordii</i>	Bush Poppy	Papaveraceae
<i>Neviusia cliftonii</i>	Shasta Snowwreath	Rosaceae
<i>Rhamnus californica</i>	Coffeeberry	Rhamnaceae
<i>Ribes aureum</i>	Golden Currant	Grossulariaceae
<i>Spiraea densiflora</i>	Rose Colored Meadowsweet	Rosaceae
<i>Styrax officinalis</i> var. <i>californicus</i>	California Snowdrop Bush	Styraceae



Native Plant Featured this Month

The featured California Native Plant this month is the Coyote Mint. Its scientific name is “*Monardella villosa*”. This is a very special plant for the garden because it attracts the Anise Swallowtail butterfly (*Papilio zelicaon*). Other butterflies that just love coyote mint include the California Dogface (*Colias eurydice*) and the Painted Lady (*Vanessa cardui*). Note that butterflies also have scientific names and common names. I wonder if there are as many butterflies as native plants.

Coyote Mint smells like a minty toothpaste and was used by California Spanish between 1697 and 1821 as cure for sore throats. Butterflies use this plant as a nectar source. Ohlone Indians used coyote mint for hot compresses to draw out “bad blood” for bad cases of pneumonia. They also used it to make decoctions, poultices and salves for treating other respiratory problems.

- ❖ Coyote Mint is a drought resident plant using very little water throughout its life. This month, on October 10, 2010, we will be observing the International Climate Day of Action day. Plants like the Coyote Mint and other California natives are very good for water conservation projects like replacing lawns with colorful native plants.

Monardella villosa (from the CALFLORA website)

Monardella villosa, a dicot, is a **perennial herb** that is **native** to California and is also found outside of California, but is confined to western North America.

Common Name: coyote mint

Communities: Northern Coastal Scrub, Closed-cone Pine Forest, Redwood Forest, Douglas-Fir Forest, Mixed Evergreen Forest, Northern Oak Woodland, Foothill Woodland

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

Elevation: between 0 and 6000 feet

Family: Lamiaceae



Anise Swallowtail (*Papilio zelicaon*)
2007, Calibas



Coyote Mint (*Monardella villosa*)
© 2001 Jeff Abbas

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

Warning: This section may not be appropriate for all ages. Weeds are nasty and dangerous to not only botanic gardens, but also hazardous to native plants across California. Nightmares have been known to follow after reading this material.

This month’s Weed of the Month will focus on the Mustards. In their starting phase of life, they have a little bunch of leaves, that shoot out long stems with little bunches of pretty yellow flowers at the tips. Below the surface, these weeds have already created root structures that can go 6 inches into the ground (white and fleshy in maturity). The little leaves are slight hairy. Don’t be fooled. These little plants are always weeds and if left alone can grow up to 6 feet tall and take over an entire field!

Impact on Native Plants: Mustards grow very fast and produce a chemical (negative Allelopathy) that can inhibit the germination of native plants. They actually poison the environment to stop other plants from growing.

Mustard species are thought to be native to Eurasia, where they have been in cultivation for thousands of years. Field mustard is the wild ancestor of turnip, and its roots are often fed to livestock. Mustard greens are highly nutritious, and have been used in traditional medicine for cancer. The flowers are edible but may be allergenic to some people [Reference: The Weed Worker’s Handbook – The Watershed Project California Invasive Plant Council]. Below is a list of mustards that have been seen in the Forrest Deaner Native Plant Botanic Garden:

Brassica nigra (black mustard)

Brassica rapa (Field or Turnip Mustard)

Hirschfeldia incana (Mediterranean Hoary Mustard, Mustard, Summer Mustard, Wild mustard, short podded mustard, shortpod mustard)



Black Mustard
© 2009 Barry Breckling



Field Mustard
© 2009 Barry Breckling



Wild Mustard
© 2003 Keir Morse

An interview with Tim Sullivan (Botanic Garden Curator) provides some background on the mustards invading the Forrest Deaner Native Plant Botanic Garden:

Q: What is the most abundant mustard in the Forrest Deaner Garden?

TS: “Brassica nigra (Black Mustard) is one of the most abundant weeds we have at the garden. When we first started clearing the meadow/riparian areas about 6 yrs. ago, the Black Mustard was so entrenched, our garden weed whacker couldn’t handle it. I asked the State Park Ranger for some help and he was able to cut it back with his super heavy duty weed whacker. The only problem is that was just a temporary solution, as the Black Mustard returns each year.”

Q: What other mustards are in the Garden?

TS: “You will also find Field or Turnip Mustard/Brassica rapa which has similar characteristics to Black Mustard/Brassica nigra. I’m sure we have both at the garden, although Black Mustard is by far the most abundant. They are definitely the most invasive plant at the garden.

Black Mustard generally grows taller than Field Mustard. Its stems are usually covered with stiff hairs. The seeds (black or dark brown in color) of Black Mustard are ground and used as a spice in Indian Cuisine.

Field or Turnip Mustard usually has little to no hair on the stems, and if so the hairs are not stiff. Field Mustard greens are used as a common vegetable, and the seeds are used in the production of culinary and vegetable oils.”

- **Special Note:** While learning about mustard plants, the word “allelopathy” popped up and seemed like a really big word, so here is the definition from Wikipedia:

Allelopathy is a biological phenomenon by which an organism produces one or more [biochemicals](#) that influence the growth, survival, and reproduction of other organisms. These biochemicals are known as **allelochemicals** and can have beneficial (positive allelopathy) or detrimental (negative allelopathy) effects on the target organisms. Allelochemicals are a subset of [secondary metabolites](#)^[1], which are not required for metabolism (i.e. growth, development and reproduction) of the allelopathic organism. Allelochemicals with negative allelopathic effects are an important part of [plant defense against herbivory](#).

Basically, it means one plant puts out chemicals that get into another plants system to stop it from growing. Mustards are mean to Native Plants.

Final Note on Mustards: I was really surprised that the Calflora website had most of the mustards listed because I always thought the website was devoted to native plants only. So checkout the mustards next time you are browsing Calflora. Does anyone have a hotdog?

(Special Thanks to Tim Sullivan, Alison Fleck, and Sue Wickham for their input on information on Mustards).

Puzzlers Page

Plant Riddle: What plant am I if I am the only plant located in the Memorial Garden that has equidistance to many paths? [Clue: equidistance is a real word]

Work Search:

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

Achille

Coyote mint

Moonshine yarrow

Solidago

Bush Poppy

Golden Currant

Ribes

Western Redbud

Coffeberry

Island Pink

Snowdrop Bush

fabaceae

Test your Learning

Question 1: Who started the Solano County chapter of the California Native Plant Society?

Question 2: What butterfly is especially attracted to the Coyote Mint Plant?

Question 3: What did the California Spanish use Coyote Mint for between 1697 and 1821?

Question 4: What did the Ohlone Indians use Coyote Mint for?

Question 5: Why are invasive weeds bad for California Native Plants?

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

California Native Plant Society Website: <http://www.cnps.org/>

Calflora website: <http://www.calflora.org/>

Native Plants and Butterflies that like them: <http://www.ebcnps.org/Butterflies.htm>

Ohlone Medicine: <http://www.cabrillo.edu/~crsmith/OhloneMed.html>

Allelopathic Chemicals: <http://en.wikipedia.org/wiki/Allelopathy>

Anise Swallowtail Butterfly: http://en.wikipedia.org/wiki/Anise_Swallowtail



California Snowdrop Bush

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

Answer 1: There are 6 demonstration gardens in the Forrest Deane Botanic Garden. There are 5 plant community areas. So altogether there are 11 areas in the Garden.

Answer 2: The 2 names of the 2 parts used for the scientific names of plants are: Genus and Species.

Answer 3: Native Plants will be located 45 degrees up and to the right of where the sign is stuck in the ground.

Answer 4: A plant that does not hibernate in the rainy season (winter) is called a non-perennial. Note that the question was bad from the view point that the rainy season is not always thought of as winter.

Answer 5: The difference between sensory and residential in relation to the demonstration garden is that one (sensory) is used to group the plants that smell good together and one (residential) is used to group plants that are good for planting around a house. Of course both names are in the "name" of the same demonstration garden so another correct silly answer might be that there is no difference because they are both used in the same name. Our teachers advisors might cut this, lets see if they have a sense of humor. (Note from the Teacher Advisors: This is known as a "trick question" and is therefore admissible by this teacher. ☺)

Extra Credit Answer: A plant that does hibernate in the rainy season (winter) is called perennial.

Appendix A: Additional Information on Mustards

Below is the Jepson Manual treatment for Black and Field Mustards that describes their characteristics:

***B. nigra* (L.) W.D.J. Koch**

BLACK MUSTARD

Annual; hairs sparse to dense, stiff, especially below

Stem 4–20 dm, generally branched above

Leaves: basal pinnately lobed, serrate-dentate; cauline similar to basal but upper smaller, sessile, base tapered

Flower: petals 7–11 mm

Fruit erect, 1–2 cm; pedicel erect, \pm appressed

Seed \pm 2 mm wide, coarsely netted

Chromosomes: $2n=16$

Ecology: Abundant. Fields, disturbed areas

Elevation: < 1500 m.

Bioregional distribution: California Floristic Province

Distribution outside California: native to Europe

***B. rapa* L.**

TURNIP, FIELD MUSTARD

Annual, erect; hairs 0 or very sparse, not stiff

Stem simple to freely branched, 2–10 dm

Leaves: lower cauline \pm pinnately lobed, lateral lobes 2–4, terminal lobe obovate, wavy-dentate; middle, upper leaves sessile, base lobed, \pm clasping stem

Flower: petals 6–11 mm, yellow

Fruit ascending to \pm spreading, 3–7 cm; pedicel \pm ascending, 7–25 mm; beak (8)10–15 mm, narrowed to a slender style

Seed \pm 1.5 mm wide, very finely netted

Chromosomes: $2n=20$

Ecology: Grainfields, orchards, disturbed areas

Elevation: < 1500 m.

Bioregional distribution: California Floristic Province, East of Sierra Nevada

Distribution outside California: widespread US, native to Europe

Flowering time: Mostly Jan–May

Synonyms: *B. campestris* L.