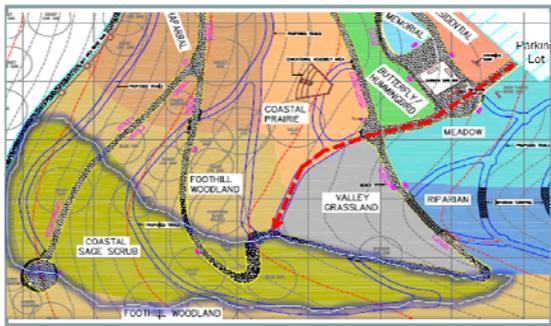




## Garden Learning – Coastal Sage Scrub

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 Coastal Sage Scrub community area.

The Coastal Sage Scrub community is located at the southern end of the Garden, shown in the chart below.



The name implies that this plant community lives on the coast and has scrubs and sages. A quick review of the plant listing for the Coastal Sage Scrub (page 4) shows 2 sages and 9 shrubs along with some trees and a vine. Let's use the 2 sages to investigate characteristics of plants in this area. From CALFLORA we learn the following:

Pitcher Sage:

*Lepechinia calycina*, a dicot, is a shrub that is native to California and is endemic (limited) to California alone.

Hummingbird Sage

*Salvia spathacea*, a dicot, is a perennial herb that is native to

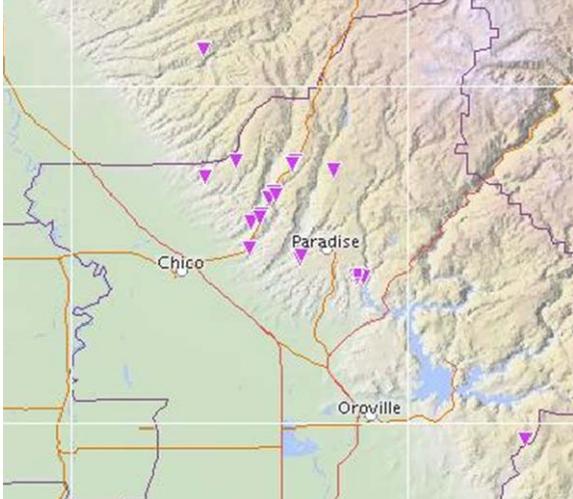
California and is endemic (limited) to California alone.

Wow, both sages are endemic to California. The word "endemic" means that these plants only grow in California.

From CALFORA we can also review the plant distribution across the state. Below is the distribution for Pitcher Sage:



From last month's Garden Learning we learned that the shaded areas show where there are recorded observations of plants growing within a county. From this map, it appears that the pitcher sage likes to grow at the coastal counties and but also in the Sierras! Can you imagine what these two locations have in common? county, clicking on each county provides a distribution of observations. Below is the sample for pitcher sage for a county in the Sierras:



Note that the observations are all on the western slope of the foothills. Eureka! That must be it! The slopes of foothills of the Sierras must be similar to the slopes of the coast. Pitcher sage must like to live on slopes.

Below is the distribution of observations for Hummingbird Sage:



This distribution shows a coastal preference except for maybe one county: San Bernardino.

If you notice San Bernardino stretches from the high desert area in the east to a point near the coast. In this case, the distribution of observations is important because the county covers different climates/conditions. Clicking on the county reveals there is only

one observation from 1928, with the comment “Aliso Canyon, Rancho Santa Ana. Altitude 750 ft”. In 1928 they didn’t have Global Station Positioning (GPS) like your smart phones have today; but it appears from the notes this single observation is close to the coast and in a canyon which would be on a slope!

So our initial hypothesis (fancy word for a “guess”) is that sages like to grow on slopes. There could be all kinds of reasons for this. Slopes provide well drained soil and some plants like to keep their roots dry. A western slope in California also faces weather; winds with moisture on routine basis. Some plants might like a daily moisturizing facial. I know some people that like those too. So maybe sages like to grow on slopes facing the weather. There are other factors that make up the environment like what’s in the soil, the amount of light from the sun, and what’s in the air.

The process of guessing or creating a hypothesis and then looking for observations to support that hypothesis is called the “Scientific Method”.

The Oxford English Dictionary says that scientific method is: "a method of procedure that has characterized natural science since the 17th century, consisting in systematic observation, measurement, and experiment, and the formulation, testing, and modification of hypotheses."

Before internet, Google, and CALFLORA, people had to manually find observations for their studies. Today, you can use the entire history of observations from these websites to find exciting connections for yourself. After all this fun, I did a simple Google search using the key words “Coastal Sage Scrub CALFLORA” and found the following site with a beautiful passage that describes the coastal sage scrub plant community. Note this passage was developed for

Southern California but many of the characteristics apply for Northern CA:

**Coastal sage scrub** is often referred to as 'soft chaparral' because its shrubs are not as densely-spaced or as rigid as those of true chaparral, and their leaves are not the thick, tough, sclerophyllous and drought-tolerant leaves that characterize that community. Coastal sage scrub exists mainly below about 3000' and occupies generally drier sites than does chaparral, being developed primarily on western slopes above the beaches, on steep, south-facing **wind-exposed slopes**, and in areas where the marine layer penetrates further inland to foothills and canyons. This community receives on average about 10"-20" of annual rainfall and is subject only rarely to frost conditions. Shrubs here are not the completely woody shrubs of chaparral and are adapted to long, dry summers in a number of ways. Remaining dormant through the dry season, they either drop leaves or produce smaller leaves on secondary shoots during the summer, which can result in a reduction of water loss by as much as 80%, a

characteristic known as seasonal dimorphism. Root systems are generally shallow because the plant is inactive so much of the time. Some shrubs may store water in succulent leaves and stems, and others produce aromatic oils from the leaf surfaces which makes them less appealing to grazing animals and may reduce water loss, but which also increases their flammability during the frequent fires. Coastal sage scrub shrubs are typically fire adapted by seed germination so that there are usually individuals of all ages present.

[http://www.calflora.net/botanicalnames/plant\\_communities.html](http://www.calflora.net/botanicalnames/plant_communities.html)

Now that you have experience with the Scientific method, try this approach on the 9 shrubs in the listing in the next section.



Spring in the Coast Sage Scrub Plant Community



Ribes malvaceum (Chaparral Currant)

## Native Plants of the Coast Sage Scrub Community

The Coastal Sage Scrub community consists of **18** species of perennials, shrubs, trees, and **1** vine native to Solano County. Several are special in that they are only found in California or the western region of North America. These are notated in the lists below with the following symbols:

**C** Found in California Only

**C+** Found in California and only slightly beyond the borders of CA

**W** Found in western North America Only

### Perennials:

Scientific Name		Common Name	Family
Castilleja foliolosa	<b>C+</b>	Woolly Indian Paintbrush	Liliaceae
Lepechinia calycina	<b>C</b>	Pitcher Sage	Lamiaceae
Salvia spathacea	<b>C</b>	Hummingbird Sage	Lamiaceae
Solidago californica	<b>W</b>	California Goldenrod	Asteraceae

### Shrubs:

Scientific Name		Common Name	Family
Artemisia douglasiana	<b>W</b>	Mugwort	Asteraceae
Ceanothus cuneatus	<b>W</b>	Buckbrush	Rhamnaceae
Eriodictyon californicum	<b>W</b>	Yerba Santa	Hydrophyllaceae
Lupinus albifrons	<b>W</b>	Silver Lupine	Fabaceae
Mimulus aurantiacus	<b>C+</b>	Sticky Monkeyflower	Scrophulariaceae
Rhamnus californica	<b>W</b>	Coffeeberry	Rhamnaceae
Rhamnus crocea	<b>W</b>	Redberry	Rhamnaceae
Ribes malvaceum	<b>C</b>	Chaparral Currant	Grossulariaceae
Solanum umbelliferum	<b>W</b>	Blue Witch	Solanaceae



Woolly Indian Paintbrush  
(*Castilleja foliolosa*)  
© 2003 Michelle Cloud-Hughes

Silver Lupine  
*Lupinus albifrons*  
© 2006 lara hartley



## Trees:

Scientific Name		Common Name	Family
<i>Acer negundo</i>	<b>C</b>	Box Elder	Aceraceae
<i>Arbutus menziesii</i>	<b>W</b>	Pacific Madrone	Ericaceae
<i>Quercus agrifolia</i>	<b>W</b>	Coast Live Oak	Fagaceae
<i>Quercus douglasii</i>	<b>C</b>	Blue Oak	Fagaceae
<i>Quercus lobata</i>	<b>C</b>	Valley Oak	Fagaceae

## Vines:

Scientific Name		Common Name	Family
<i>Clematis lasiantha</i>	<b>W</b>	Chaparral Clematis	Ranunculaceae



*Clematis lasiantha* (Chaparral Clematis)  
© 2007 Neal Kramer

## Native Plant Featured this Month

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This month's Native Plant of Month is *Salvia spathacea*, known by its common name Hummingbird Sage. As noted in the first page of this edition, *Salvia spathacea* is a dicot and a perennial herb that is native to California and is endemic (limited) to California alone. As we noted in the first section of this edition of Garden Learning, this plant only grows on coast of California. The Hummingbird Sage is in the family of Lamiaceae, which is a mint and like most mints, its stem will be square, not round. This is one of the characteristics of salvias that make it easy to identify them from other plants. In addition, the leaves will alternate on opposite sides of the stem. The flower of salvias will have 2 lips of unequal length. Pitcher sage is one of the 900 species of salvias, so next time while walking in the Garden look for the Pitcher sage in the Coastal sage scrub plant community.

**History Note:** There is a wonder book on Salvias by Betsy Clebsch called "A Book of Salvias – Sages for Every Garden". The book provides historic references back to the Roman scientist and historian "Pliny the Elder" who may have been the first to use the Latin name *Salvia*.

From CALFLORA:

***Salvia spathacea*** E. Greene

*hummingbird sage*

*Salvia spathacea*, a dicot, is a **perennial herb** that is **native** to California and is endemic (limited) to California alone.

Communities: Chaparral, Northern Oak Woodland, Southern Oak Woodland, Foothill Woodland, Coastal Strand

Habitat: coastal [Walker]

Family: **Lamiaceae**



*Salvia spathacea* in the Coastal Sage Scrub Community Garden  
© 2010 Norma Deaner

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

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This month’s Weed of the Month is the *Lepidium latifolia*, known by its common name Pepperweed. This weed grows all over the Garden, is a perennial herb that is non native to California and likes to live next to salt marshes and freshwater riparian areas. This is exactly where it grows in the Forrest Deaner Garden, in the Valley Grasslands and in areas where the rains this month have created pockets of micro-freshwater riparian drainage ponds. The Pepperweed can grow up to 3 feet if it has ample water and it’s roots can grow down to 10 feet!

Notes from the Weed Workers Handbook:

Perennial pepperweed spreads primarily from underground roots, in addition to root fragments, which can float in water for long periods and still sprout. It also spreads from abundant seeds, with a single plant producing thousands of seeds each year. Tiny, white 4-petaled flowers bloom in terminal clusters from June to September. The seed pods, maturing in August and September, are tan to red-brown, rounded, slightly hairy, approximately 1/6 inch long, and bear 2 tiny, flattened seeds. Seeds are dispersed by water, machinery, and passing animals or people. Their longevity is not known, but is probably no more than 2 years.

The best time to remove Pepperweed is when it is young and right after the rainy season when the ground is moist. Pepperweed can be pulled by hand when it is young, and mowed with a weed whacker prior to seed production.

Interesting Facts from the Weed Workers Handbook:

Perennial pepperweed is thought to originate in southwest Asia and to have spread to Europe many centuries ago. It came to California sometime in the 1930s, possibly as a contaminant of shipped seed. It seems likely that in ancient times the young leaves were served as a spicy salad green. In medieval Britain the seeds were “poor man’s pepper” and the roots were a substitute for horseradish. Perennial pepperweed has been used to treat medical conditions such as skin disorders and painful joints, and may contain insecticidal properties. The flowers are still used in dried flower arranging.



*Lepidium latifolia* (Pepperweed)  
© 2010 Zoya Akulova

From CALFLORA:

**Lepidium latifolium L.**

*broad leaved pepper grass, broadleaved pepperweed*

**Lepidium latifolium**, a dicot, 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 **Lepidium latifolium** as **high** ([plant profile](#)).

**Lepidium latifolium** is also classified by the California Department of Food and Agriculture as a **Noxious Weed List B**: Control required in nurseries, control elsewhere at the discretion of local County Agricultural Commissioner. [[CDFA Weeds 2000](#)]

- Communities: weed, species characteristic of disturbed places, wetland-riparian  
Habitat: disturbed [[Walker](#)]  
Wetlands: usually occurs in wetlands, but occasionally found in non wetlands [[U.S. Fish & Wildlife Service](#).]  
Elevation: between 0 and 6234 feet  
Family: [Brassicaceae](#)



Lepidium latifolia (Pepperweed)  
© 2010 Jean Pawe

# Puzzlers Page

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**Plant Riddle:** What Plant am I?

I grow on the hillside in the Coastal Sage Scrub community garden above my 2 older brothers who have never left California.

**Word Search:**

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U W D D G Z Y D R W V X F W J O H G T U B X K
D B D E G W H D F L L V S S X R V W C S S L K
P D O T R W V A Y C R U P D V I T O W B M I F
S A G E N L W H Q W S E M Z X E G O W U A K R
M C B J U I R M B A E O D H V A X I G S S O S
R I K X N D L F L K N L S B D K C W X I T B Y
B D L V E A R V R K Y U R I E Y O L L L O E O
L N S I O N I E E L R X L S Q R O C X V H Q X
Y M X G V A O Y X B N O D C T V R N O E P K N
J X O U N E F R K U S H X D Y P T Y T R Y N K
Y S E Q J L O C D Z J B E R O H E K B L M Z J
R Q Z G O D U A K A O C R U C R Q K S U S U V
K S R W J B X W K X M E S T B S K A J P U O E
A I E G O E H H E V B O I A C M D O L I X A P
S R I V N B S L S E T W S H Z R O E D N B D R
E A F F N Z D X E P E A L C P Y G U E E I K Z
N E L L I E N F R U N F J D P M K L H P Z P C
P B E T R M F K L T L H H A H T N B A L S V Y
Z L L X H O C B A W T K W P Z Y G M Z B N I R
R H T H C D H Q H Y D Z H K A O Y E L L A V B
  
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- |             |              |               |
|-------------|--------------|---------------|
| Blue Oak    | Blue Witch   | Box Elder     |
| Coffeeberry | Live Oak     | Madrone       |
| Mugwort     | Redberry     | Sage          |
| Salvia      | Solidago     | Valley Oak    |
| buckbrush   | monkeyflower | silver lupine |
| yerbasanta  |              |               |

## Test your Learning

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*Question 1:* What is another word for Sage?

*Question 2:* What is the scientific method?

*Question 3:* Who was the first person to use the name Salvia?

*Question 4:* What are three good ways to determine Salvias from other plants?

*Question 5:* How deep can the roots of a mature Pepperweed go into the Earth?

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

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CALFLORA: <http://www.calflora.net/botanicalnames/plantcommunities.html>

A Book of SALVIAS – Sages for Every Garden, Betsy Clebsch, 1997

Weed Workers Handbook: The Watershed Project and the California Invasive Plant Council, 2004

[www.thewatershedproject.org](http://www.thewatershedproject.org)

[www.cal-ipc.org](http://www.cal-ipc.org)

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

*Answer 1:* There were 1 million cattle grazing in California in 1848.

*Answer 2:* There are many benefits of planting natives, here are three major ones:

1. Native Grasses stabilize the dirt/soil
2. Native Grasses increase water infiltration which cleans the water as it goes into rivers that flow into the bay
3. Native Grasses recycle nutrients because they capture minerals and other materials that would have washed away. When grasses die off in the fall they tend to stay in the area of growth, recycling the nutrients back into the soil.

*Answer 3:* The "Nassella pulchra", known by its common name as "Purple Needlegrass" is the State Grass for California. Its roots can go down 20 feet.

*Answer 4:* One good way to identify Italian rye grass is to look at the base of the grass stalk; it will have a reddish tint.

*Answer 5:* Mowing with a weed whacker can keep this grass in check by reducing the seed bank, but it is important to mow before the formation of seeds (early May).

*Puzzle Page Riddle: Purple Needlegrass, Nassella pulchra*