

Issue #42

UCCE Master Gardeners of Amador/El Dorado County E-News

January 2014

Attracting Pollinators To Your Garden

Kathy Keatley Garvey, UC ANR Communication Specialist



"How to Attract and Maintain Pollinators in Your Garden."

That's the title of a new publication by the University of California Agriculture and Natural Resources (UC ANR) and what a gem this is. It's not only a gem, but it's free. You can download the publication [on this site](#).

"Nearly all ecosystems on earth depend on pollination of flowering plants for their existence and survival; furthermore, from 70 to 75 percent of the world's flowering plants and over one-third of the world's crop species depend on pollination for reproduction," the authors write. "Take a stroll through your neighborhood or a botanical garden or hike in the hills, and experience the shapes and smells of flowers surrounding you. When most people look at a flower, they notice the shape, smell, composition, or structure of the flower, but few take a moment to consider why the blossom appears and smells as it does."

The publication is the work of a nine-member team: UC Berkeley entomologist Gordon Frankie and lab assistants Marissa Ponder (lead author), Mary Schindler, Sara Leon Guerrero, and Jaime Pawelek; international landscape designer Kate Frey; Rachel Elkins, UC Cooperative Extension pomology advisor, Lake and Mendocino counties; Rollin Coville, photographer, UC Berkeley; and Carolyn Shaffer, lab assistant, UC Cooperative Extension, Lake County. Native pollinator specialist Robbin Thorp, emeritus professor of entomology at UC Davis, helped edit the publication.

The publication asks and answers such questions as:

- What Is Pollination?
- Who Are the Pollinators?
- Why Should You Care About Pollination?
- How Can You Attract Pollinators to Your Garden?

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Contact Your Local Master Gardener

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Attracting Pollinators To Your Garden, (Continued from page 1)

Other topics include:

- General Design Recommendations for Pollinator Habitat
- Designs to Attract Specific Pollinators
- A List of Pollinator Plants That are Successful in Most California Gardens
- Nesting Resources for Native Bees



Metallic Green Sweat Bee

Of bees, the authors write: "Bees are the most important biotic agent for the pollination of agricultural crops, horticultural plants, and wildflowers...approximately 4000 species of bees exist in the United States, with 1600 of those residing in California. About 20,000 species have been recorded worldwide."

And, as they succinctly point out, "Native bee species come in a variety of shapes, colors, sizes, and lifestyles that enable them to pollinate a diversity of plant species." One of our favorites is the metallic green sweat bee (*Agapostemon texanus*).

Last September we enjoyed a tour of [Melissa's Garden](#), Healdsburg, a bee sanctuary owned by Barbara and Jacques Schlumberger and designed by the incredibly talented [Kate Frey](#).

"If a honey bee could design a garden, what would it look like?" That's what the Schlumbergers asked Frey back in November of 2007.

Although this is a private garden, the Schlumbergers host workshops for schoolchildren, beekeepers and UC Master Gardeners, among other groups. If you ever get the opportunity to tour the garden, you should. A sculpture of Bernard the Beekeeper graces the entrance.



Bernard the Beekeeper



*Kate Frey
Designer*

Melissa's Garden

Melissa's Garden is mentioned in the UC ANR Publication, as is the [Häagen-Dazs Honey Bee Haven](#) at UC Davis and the UC Berkeley-Oxford Tract Bee Evaluation Garden.

Also check out the [UC Berkeley Urban Bee Lab website](#).

Got The Winter Blues? Get Organized!

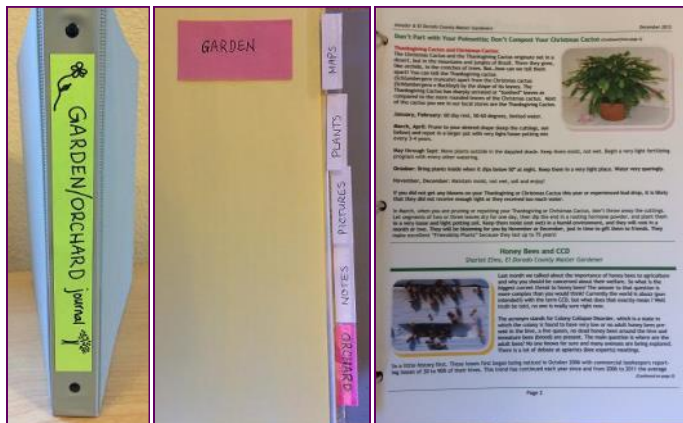
Sarah Preiss-Farzanegan, UCCE Master Gardener of El Dorado County

It is winter in El Dorado and Amador counties. Despite the cold weather, leafless trees and long nights this is a time of rejuvenation. It is a time of relative rest for gardeners and it is the best time to recharge your store of knowledge and arm yourself with the best chance for a happy and productive spring and summer gardening season!

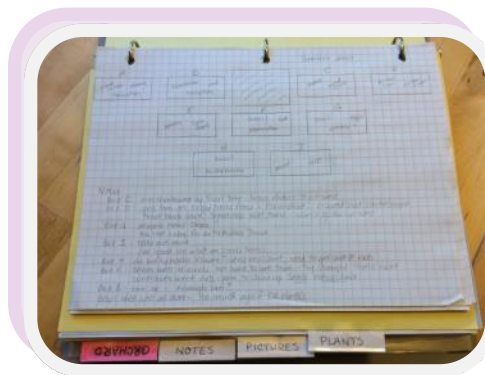
The winter months are a great time to catch up on all your favorite gardening topics. Visit our website for lots of great articles, resources and handy monthly gardening tips plus our series of great public education classes!! Learning new things is always exciting but what does one do with this plethora of information? If you are like me, there is no way it will all fit in my constantly multi-tasking brain. Luckily, there is an easy way to keep all your new gardening pearls organized and accessible: in your very own garden journal!

A garden journal can help you incorporate new information, track the successes and failures of your garden efforts and serve as a personalized reference guide and memoir for your garden or yard. I will share my garden journal with you but I encourage you to personalize the components, revise or add your own, to mirror your own personal preferences. This is but a template so read on and let the ideas flow!

Three ring binders are a great way to organize information. I started with a 1.5 inch binder with a display window for my handmade label. You can also find decorative binders at your local stationary, office supply or craft store. Tab dividers labeled with main topics make it easy to find what you are looking for at a moment's notice. The sections in my garden journal are: Map, Plants, Pictures, Notes, and Orchard.



Three Ring Binder with Tabs and Sample Houseplant Tips

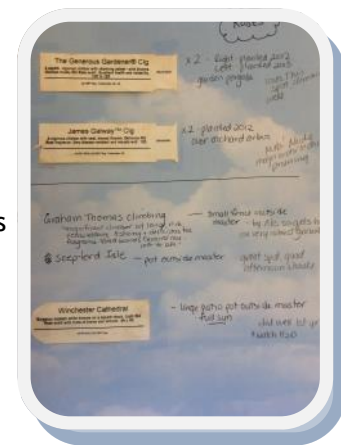


Map Template with Notes

Every year I use a fresh map of my garden boxes to map out where I plan to plant my vegetables; the first year I created a master and made enough copies to last about 10 years. You can do this for your garden or your whole yard. If the latter, draw out the landscaping, plants, trees, etc. as they relate to your home and hardscapes and label them by number with an accompanying identification key. At the end of the season I often go back and make notes on the maps. For example, last year I wrote: "the herb garden did not grow well in the box that was most shaded," "that box near the front was in full sun most of the day so make sure the irrigation works better," or "this irrigation pipe was acting up." These little notations make it easier to formulate more cohesive thoughts later on (see below).

The Plants section is where you can keep a plant identification key. I keep a record of what I planted, often just taping the plastic information labels to a piece of paper. If you are mapping more permanent plantings you can assemble a more professional list of plants and include their scientific names, date planted, expected size, watering needs, etc. Adding a photo of the plant in full bloom is a nice touch, and keeping a photo of the plant when it first comes up in the spring can save an established member of the garden from elimination by accidental weeding.

Currently the Pictures section of my garden journal is under construction. I have a collection of photos taken over the past several years in our garden, mostly of the plants themselves or my young daughter munching on them, that have yet to be adequately displayed. Taking photos of one plant at different times of the year or a



Recording What's Been Planted

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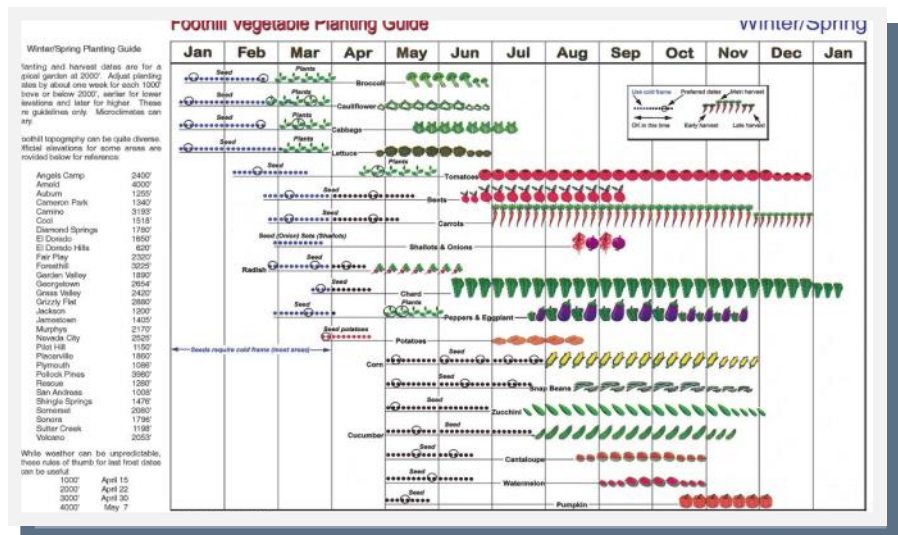
A collage of photographs from a garden journal, showing various plants and a person. The photos are labeled with handwritten notes: "Lemon verbena + a few samaras", "Armadillo", "Penny Macadam", "Kate", and "2011". The photos are arranged in a grid-like fashion on a light blue background.

snapshot of the same area in your yard from year to year is one way to remember and display established plants/foliage. You could artfully attach photos to stationary paper or cardstock or file in a clear photo page insert. I envision mounting each photo with photo corners and labeling each with a caption and/or date taken. This is a fun and creative way to document the growth and evolution of your garden and its caretakers!!

My Notes section is where I gather my thoughts and synthesize a plan for the next growing season. Each year I assess what went well, what not so well, the yields of various varieties, our favorites and any other nuggets I can use next winter when I start planning again. I jot down ideas I have for adding new features to the garden or include plans for a piece of furniture that would make a great addition to the space. Ditto for my Orchard section.

Don't forget to jot down the date of the next UCCE Master Gardeners of El Dorado County Plant Sale! Here you can also keep track of when you planted a round of seeds and remind yourself when it is time to plant another round to keep those veggies or flowers blooming continuously.

Your Garden Journal should reflect your personality and your garden or yard. You can keep it simple and fresh, or go nuts with scrapbook paper and shape punchers to create not only an organizing tool but a cache of memories that you will enjoy revisiting every season. It is also a great way to get those creative juices flowing ju out and get some exercise? Preparing the topic for another day!



Foothill Vegetable Planting Guides are available for sale at your local MG Office

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Debbie Hager, UCCE Master Gardener of El Dorado County



Winter garden chores are important for laying the groundwork of a successful spring growing season. It's time to pull spent garden annuals and vegetables and add them to the compost pile. Winter is the time to rake the remaining leaves and clean up plant debris. Another chore is to groom herbaceous perennials that are no longer blooming by pruning them to within four inches or so from the ground. All these plant materials may be composted unless there are any problems with plant diseases.

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Winter Garden Chores, (Continued from page 4)

Winter is a good time to amend your soil after a thorough clean up; to prepare garden beds for spring add finished compost and other organic amendments. These additions will increase the soil's ability to hold air, water and nutrients, which will lead to healthier plants. The winter rains will leach this material slowly into the soil. You can also plant cover crops to increase soil fertility and texture. Cover crops cut down on erosion and weeds and provide mulch material when you cut them down in the spring.

You've already turned off the irrigation systems or reset the timer on your sprinkler system. Another chore is to flush drip irrigation systems with water to clean out sediment and then drain lines to avoid or lessen the chance of breaking from winter freezing. It is important to remember to water plants in containers and pots that are under roof overhangs that may not get watered by rainfall. Have a plan in place to protect plants from freezing temperatures so you are prepared when temperatures drop. Cover cloth is useful for protecting tender plants from frost damage. It may also be wise to move tender plants indoors or under overhangs to over winter. ([See our December eNewsletter for proven techniques used by local Master Gardeners.](#))



It's time to move all your tools to a covered spot and clean and sharpen them as necessary. Store seeds in a cool, dry place until the next planting season and label them accordingly. Apply horticultural oil to fruit trees to control scale, mites and aphids after final leaf drop. Apply copper based spray on peach and nectarine trees to control peach leaf curl. If you aren't sure how to do these tasks, contact your local UCCE Master Gardener office for advice.

Look forward to a new season knowing that winter garden chores are accomplished and you have invited a successful spring.

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New ANR Publications



The UC ANR catalog is back online and sporting a brand new look and feel! You can purchase publications online at anrcatalog.ucanr.edu, or call your local UCCE office to see if they have any in stock.

[Weed Pest Identification and Monitoring Cards](#) - Based on the bestselling *Weeds of California and Other Western States*; this is the perfect pocket-sized companion for anyone working in the field. These 48 cards cover the most common weeds, grouped into 8 categories for easy identification. From pigweed to chickweed, dandelion to Bermuda grass, goose grass to ryegrass, these cards have you covered.

New Free Publications

These publications are available as downloadable PDF documents.

- [Community Gardens](#) - A community garden is a great place to grow nutritious food, fresh flowers, and even a more vibrant and sharing community! This



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New ANR Publications, (Continued from page 5)

publication tells about all sorts of community gardens and shows you how you can set one up in your own neighborhood.

Pest Notes

These official UC-approved guidelines for pest monitoring techniques, pesticide use, and non-pesticide alternatives for agricultural crops are essential tools for anyone making pest management decisions in the field and the home garden.

Updated:

[Peppermint](#)



[Pomegranate](#)



[Conenose Bugs](#)



[Fungus Gnats](#)



[Pitch Moth](#)

New:

[Myoporum Thrips](#)



[Eye Gnats](#)

Bumblebees!

Sharlet Elms, UCCE Master Gardener of El Dorado County



Do you enjoy those warm summer days when you take your tea out to your deck or patio and wander in the early morning hours into your garden? Is one of the essential ingredients to your garden the deep gentle 'buzz' of the bumblebee? It is in my garden; that short, oval, fuzzy yellow bee moving slowly from plant to plant seemingly in search of the perfect flower to enjoy the morning with. There is something about the almost lazy movement of the bumblebee within my garden which appeals to me. It is one of the most loved of all insects even by people who are otherwise afraid of bees.

So what is a bumblebee? There is no 'one' bumblebee; there are more than 250 species of bumblebees inhabiting North America and a few species in South America. It has also been introduced into Australia, New Zealand and Tasmania. They are often black and yellow striped with long body hairs making them appear large and fuzzy but they can also be orange or red or all black! All species belong to the family Apidae.

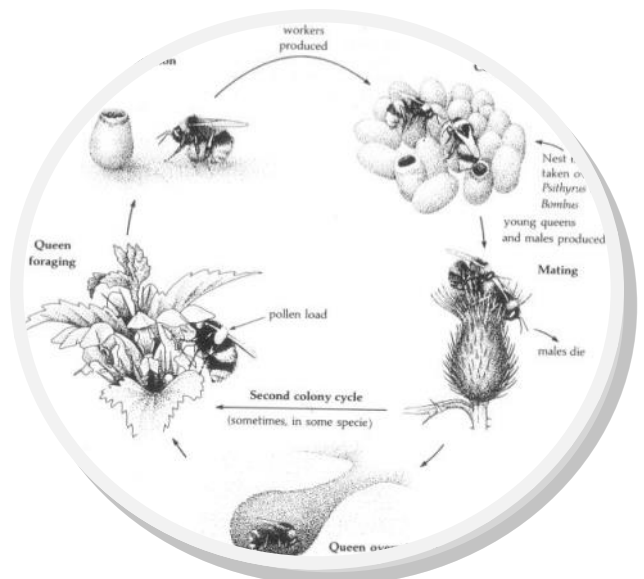


Bumblebee Nest

They are social like honey bees but live in smaller colonies. Usually a nest contains no more than 50 individuals as contrasted to a honey bee hive which can contain upwards of 60,000 individuals. The queen is entirely responsible for the construction of the nest and the entire colony exists generally for only 1 season! They often nest in burrows made by other animals and the queen will sometimes construct a wax canopy which is used as insulation and protection of the colony.

A queen who has overwintered will in the spring seek out an appropriate nesting site which varies from species to species. She then constructs wax pots to store honey and pollen and wax cells in which to lay eggs. After she lays her eggs the larvae hatch and begin a series of growth stages called instars and they become larger with each growth stage. Interestingly enough, bumblebee queens cannot directly feed the newly developing larvae. There are several ways in which honey and nectar are left for the larvae to feed themselves depending upon the species.

After the 4 growth stages are complete the larvae spins a silk cocoon within the wax cell and they begin a very intense growth phase and change into pupae and then into adult bees. When they first emerge they don't have their color yet so they stay within the colony for 24 hours before emerging. This entire process takes up to 5 weeks from egg to adult bumblebee. Once the



Bumblebee Growth Cycle

(Continued on page 8)

Bumblebees!, (Continued from page 7)

first or second groups of bees emerge, known as worker bees, the queen stays with the colony to tend the new larvae and lay more eggs. The worker bees take up foraging for food. Later in the colony cycle she will begin to lay eggs for males and more queens, both of which will leave the colony with the males being driven from the nest by the worker bees! Unlike honey bees the worker bees are not sterile and the queen uses physical aggression and pheromones to prevent the workers from laying eggs and producing more males! She wants to be the mother of the first males; later the workers will lay some eggs as her ability to prevent them diminishes.

Bumblebees will visit flowers searching for food upwards of 1 to 2 miles from their colony and they will generally visit the same area as long as they are finding food. So when out in your garden you are most likely seeing the same bumblebees as you did the day before! Some bumblebee species leave scent markings on the flowers they visit, sort of a 'MINE' billboard! Due to the fact that bumblebees store only a few days' worth of food, unlike honey bees, they are much more vulnerable because of food shortages.

Bumblebees are capable of stinging but unlike honey bees they have no barb on the stinger so they can sting over and over again without killing themselves. Bumblebees usually only sting in self-defense and to protect their hive. Many people are unaware of the fact that bumblebees can sting because they do it so rarely.

There is an often told folktale that aerodynamic laws prove that bumblebees can't fly! This is of course patently untrue as any gardener can attest! However it is true that using some simplified rules of aerodynamics it appears that the small wings in comparison to their body size they shouldn't generate enough lift or power to sustain flight. However the bumblebee has some adaptations in its tiny wings which allow them to sustain flight quite well as observed by many of us!

Many people believe that the buzzing sounds they hear around bumblebees are the beating of their wings. This is untrue. Actually, it is the shivering of their flight muscles, and not the movement of wings that people hear. This shivering is to warm up the bumblebee's internal body temperature. The bumblebee is unique among bees in being able to raise its internal body temperature. This allows it to fly at much cooler ambient temperatures than other bees.

Bumblebees can fly in temperatures as low as 5°C (41°F) as long as their flight muscles are at 30°C (86°F). At night bumblebees rest, males often inside a closed up flower and their body temperature drops to that of their surroundings. In order to take off they can shiver those flight muscles and warm from 10°C (50°F) to 30°C usually within 15 minutes! Wow, talk about a workout! It is the reason you see bumblebees working your garden so early in morning, much earlier than the honeybee who must have ambient temperature of 50°F before they will even exit the hive.

Bumblebees are excellent pollinators and as such are being used in commercial agriculture greenhouses for pollination because of their ability to 'buzz pollinate'. What is buzz pollination? The bee grabs the flower and shivers her flight muscles rapidly causing the flowers to vibrate and dislodge pollen. The flower can be pollinated in a single visit versus 7 to 10 visits by honey bees. This method is so efficient that commercial growers are now using bumblebees to pollinate large greenhouse crops, particularly tomatoes. It is also used for potatoes and eggplants. In our area manzanita (*Arctostaphylos*) and shooting stars (*Dodecatheon*) are buzz pollinated.

Bumblebees are now being commercially cultivated and shipped around the world but this has not been without

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BUMBLEBEE BOOK

Want to learn more about bumblebees? You can now order the book, titled [Bumble Bees of North America: An identification Guide](#), on the Princeton University Press website.

Billed as "the first comprehensive guide to North American bumble bees to be published in more than a century," it allows readers, both amateurs and professionals, to identify all 46 bumble bee species found in North America and learn about their ecology, changing geographic distributions, and the endangered and threatened species.

Native pollinator specialist [Robbin Thorp](#), emeritus professor of entomology at UC Davis, is one of the four authors. Thorp, a worldwide expert on bumble bees and other bees, is one of the instructors of [The Bee Course](#), an annual workshop held at the Southwestern Research Station, Portal Ariz., for conservation biologists, pollination ecologists and "other biologists who want to gain greater knowledge of the systematics and biology of bees."

[Click here for a book review on the Bug Squad blog.](#)

Bumblebees!, (Continued from page 8)

problems. There is some evidence that commercially cultivated bumblebees may also carry diseases which are harmful to wild bumblebees and honey bees. Since they can escape from commercial greenhouses they can also adapt in their new environment and compete with existing species. Bumblebees are also declining worldwide due to a number of factors and several species may already be extinct.

What can you do to help preserve the diversity of bumblebees? The same thing you would do to preserve all bees! Plant a variety of flowers that will bloom all throughout the year, have water available and limit the use of any pesticides as sparingly as you can. Not only do you help your garden and the environment but you can continue to enjoy the company of the amazing bumblebee each morning in your garden.

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Public Education Classes & Events for Amador and El Dorado Counties - Free!!



*Most classes are from 9 a.m. - Noon.
Please call ahead to confirm locations.*

Click on the class title to go to our public website and schedule an email reminder for the class.

Amador County

Unless otherwise noted, the location for all Amador County classes is the GSA Building, 12200-B Airport Road, Jackson. Questions? Call 209-223-6838.

January

11: [Mastering Foothill Gardening Basics](#)

February

15: [1\) Controlling Starthistle](#)
[2\) Grafting Fruit Trees](#)
 22: [Pruning and Grafting Grapes](#)

March

1: [Delectable and Delicious Veggies & Flowers](#)

April

5: [Celebrate Flowers for Eating & Enjoying](#)
 26: [1\) Shade Gardening with Ornamentals](#)
[2\) Conserving Water](#)

[Download the full 2014 Amador County schedule.](#)

Check out the  [UCCE Master Gardeners of Amador County Facebook page!](#)



El Dorado County

Unless otherwise noted, the location for all El Dorado County classes is the Veterans Memorial Building, 130 Placerville Drive, Placerville. Questions? Call 503-621-5512.

January

4: [Planting Bare Root Fruit Trees](#)
 11: [Greenhouse Gardening and Seed Propagation](#)
 18: [Rose Pruning](#)
 25: [Pruning Fruit Trees](#)

February

1: [The Art of Growing Succulents](#)
 8: [Beekeeping for the Backyard](#)
 15: [Spring & Summer Vegetables](#)
 22: [Worms and Worm Bins](#)

[Download the schedule for the first six months of 2014.](#)

Check out the [UCCE Master Gardeners of El Dorado County Facebook page.](#)





Winter Master Food Preservers Classes



Amador/Calaveras County

- Saturday, January 11, 10:00 a.m. - Noon: [Core Canning Techniques](#)**
Location: Calaveras County Senior Center, 956 Mountain Ranch Road, San Andreas
 New to canning, either pressure or boiling water canning? This class demonstrates the fundamentals of both boiling processes. Our demonstrations will include hearty home made soups and sauces.
- Saturday, February 8, 10:00 a.m. - Noon: [Preserving Fish and Game](#)**
Location: Amador County GSA Bldg., 12200-B Airport Road, Jackson
 Are you a hunter or fisherman? Or is there one in your house who brings home fresh game and fish that needs to be preserved? Come to this class and learn a variety of techniques for preserving your fish and game including marinating, smoking, pressure canning and freezing.

Both classes are free and no reservations are required. Call 209-223-6857 for more information.

El Dorado County

- Thursday, January 30 or Saturday, February 1, 9am-4pm: [Judging Preserved Foods at County Fairs](#)**
Location: El Dorado County Fairgrounds, Marshall Building, 100 Placerville Dr. Placerville
 Come to this all day workshop/lab and learn the guidelines for preserved food judging at fairs and other competitive events, including the rules used at our California State Fair.
Fee: \$50
Register: online at <http://ucanr.edu/edcmfpjudgingclass> or call 530-621-5528 by January 26



Pest Notes

Free Pest Notes are available on a variety of topics. For more information, call or email your local UCCE Master Gardener office.



To explore the Pest Notes on the UC Integrated Pest Management (IPM) website, go to <http://www.ipm.ucdavis.edu>.

Amador & El Dorado Counties Master Gardener Newsletter
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Get Answers to Your Gardening Questions Online

http://cecentralsierra.ucanr.edu/Master_Gardeners

- Information about Master Gardeners and how to become one
- List of public classes
- Calendar of Master Gardener events
- Useful links to gardening websites
- Home gardening publications

Got a specific question? Just email us!

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