



# UCRBG Newsletter

## BUTTERFLY CORNER - PALE SWALLOWTAIL

Article and photos by Ann Platzer

The Pale Swallowtail (*Papilio eurymedon*) is a large, spectacular butterfly with a wingspan that is typically 3.5 – 4.5 inches. The background color of the male is white while that of the female is a very pale yellow. In both sexes the upper surfaces of the front wings are accentuated by four heavy black vertical bold stripes and a wide black marginal band. The front wings are narrow and pointed while the hind wings are long, slender and twisted. The hind wing has a narrow tail. The two male Pale Swallowtails pictured here are both taking nectar from thistle.



Photo 1: Dorsal view

The Pale Swallowtail is rarely a visitor to urban areas, but is found in deciduous open woodlands and chaparral-covered foothills or mountainous areas, especially in mountain canyons with permanent bodies of water such as ponds. A spectacular sight to see is a large number of adults, usually males, at puddling parties, where they may join other species to suck water from the moist soil in order to obtain nutrients for mating. Although both male and female butterflies are known to puddle, it is mainly a male behavior.

Females lay yellowish green eggs singly on host plants such as wild lilac (*Ceanothus* spp.), cherry and plum (*Prunus* spp.), buckthorn (*Rhamnus* spp.) and California coffeeberry (*Rhamnus californica*). Caterpillars feed on leaves and rest on silken mats in shelters of curled leaves. Like most swallowtails they have a red wishbone-shaped defensive organ called the osmeterium that pops out from behind the head and releases a very foul odor to warn off predators. The caterpillars turn brown just before the final molt. These brown pupae hibernate over winter on their host plants looking like a piece of bark, providing great camouflage! They don't emerge as adults until the spring.

The adults are non-migratory butterflies but males may fly several kilometers between hilltops searching for a female. Adult butterflies nectar on such plants as thistles (*Cirsium*, *Carduus* and *Silybum* spp.), yerba santa (*Eriodictyon* spp.), California wallflower (*Erysimum capitatum*), and California buckwheat (*Eriogonum fasciculatum*).

Adults are abundant from February through October in southern California and have several broods. However, in the north they only have one brood. The Pale Swallowtail is a relatively common swallowtail found throughout western North America. Its range is from southern British Columbia east to Montana, south to New Mexico, throughout California and Baja California.

The Western Tiger Swallowtail (see Newsletter Vol. 32, No. 3, Fall 2012), with its yellow ground color, is a frequent visitor to urban areas, but also frequents the same moist canyons as the Pale Swallowtail and can easily be mistaken for the pale yellow female. However, the Pale Swallowtail has a wider black forewing margin and thicker black tiger stripes (Photo 1) than the Western Tiger Swallowtail.

Thanks to Edward Platzer for reviewing this article

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Photo 2: Ventral view

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## Director's Report - Dr. Jodie Holt



As summer nears and we approach the one-year anniversary of our safe reopening, I remain awed by how adaptable, resilient, and cheerful our staff and volunteers have been during a year of great change and unpredictability. Over the past year we have made copious quantities of lemonade out of the lemons we were all dealt by the pandemic, as evidenced by the health and wellbeing of our staff, beautiful and well-tended state of the Gardens, and new initiatives launched.

The Gardens are flourishing and awash in color right now. Our Rose Gardens have responded to expert pruning in January by Master Gardeners and UCRBG volunteers, led by Janine. The Iris Garden is experiencing a resurgence, with spreading growth and abundant blooms. Many trees, such as the redwoods in Alder Canyon, are providing a colorful backdrop, and the North American and South African Desert Gardens are coming into their true colors. Even the weeds are in bloom, making them a bit easier to tolerate until they can be controlled.

Our operations also benefited from enforced changes due to Covid. In addition to all-online volunteer recruitment, onboarding, scheduling, and hours reporting mentioned last time, we launched online admission donations at the gate, which is receiving increasing use by visitors. We have now held three successful online plant sales with in-person pickups, which save dozens of hours of staff time, reduce costs, and allow shoppers to select plants at their leisure from home. We are discussing how and when to resume in-person sales, but online sales are certainly here to stay.

New online and virtual activities have helped us reach out to campus during a time when working on site is restricted. Surprisingly, many UCR faculty, staff, and students have not visited the Gardens in years, or ever! If I had a nickel for every time a UCR person has said "I really need to visit the Gardens" or "I've been meaning to visit the Gardens," I could fund a whole new project. Even while the campus remains closed and Covid restrictions are in place, for nearly a year we have been welcoming visitors safely and offering a healing nature experience.

So, for all of you who say you will, just do it! Come see for yourself how your Botanic Gardens has rebounded, thrived, and moved forward from the last year and launched new gardens, plantings, initiatives, and activities.

We continue to plan for the reopening of campus this fall and the return of more normalcy. However, many of our "lemonade projects" will continue, as will our ability to regroup, adapt, and move forward into the unexpected. Please stay connected through our website, eNews, and social media to find out what's new, and send your thoughts and feedback to me at [bgdirector@ucr.edu](mailto:bgdirector@ucr.edu) or 951-827-7095.

Jodie

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## Wildlife of the Gardens

### Red-eared Slider

By Michele Felix-Derbarmdiker

A common feature in the Botanic Gardens pond, and unfortunately an increasingly common sight within the watersheds of California, is the red-eared slider (*Trachemys scripta elegans*), a turtle that found its way into our waterways primarily through the pet trade. Locally, many slider occurrences are the result of owner releases. Many owners sour to the amount of care it takes to maintain a species that can live for 20-40 years and as a result release the turtle into the nearest waterway. This simple act, believed to be relatively innocent, has actually created one of the top 100 most invasive species in the world.

#### Habitat/Diet

The red-eared slider is a freshwater turtle typically found in the Mississippi Valley, east to West Virginia and as far west as New Mexico. They prefer calm waters with an abundance of vegetative cover. This species is comfortable in natural areas and manmade waterways. It has a surprisingly high tolerance for poor water quality. This writer speaks from experience, having been called out to rescue several living in a wastewater treatment pond. Its ability to tolerate a wide range of habitats makes it a fierce competitor with our native species of freshwater turtle (southwestern pond turtle, *Actinemys pallida*). In addition to competing for habitat, the slider can also outcompete our native pond turtle for food. The two species eat mostly the same items: invertebrates, crustaceans, mollusks, fish, insects, snails, frogs, tadpoles, and aquatic plants. As they age, aquatic plants tend to comprise the majority of their diet.

#### Breeding

In their native habitat in the continental US, breeding typically occurs between March and June. Favorable climates allow females to lay up to 5 clutches of eggs a year, resulting in up to 200 eggs in a single year. This vastly outnumbers our native pond turtle, which may lay up to 22 eggs in a good year. A female slider can reproduce at 2-5 years old. She will lay her eggs in a self-dug hole in an open sunny area, sometimes far from water. It can be a common sight to see female turtles crossing roads to reach an appropriate nest site. Incredibly, the female can store sperm until there are desirable conditions for depositing eggs. After about 3 months, the hatchlings will emerge or overwinter and emerge in spring. Once their yolk sack is absorbed and their plastron healed from hatching, they will enter the water.



Red-eared sliders at the Turtle Pond

#### Identification

This species is identified by its olive shell coloring, serrated scutes and red stripe behind the eyes. There are several color variations, including melanistic. Melanistic and old sliders are often missing their characteristic red ear, causing misidentifications to occur. They also tend to be on the skittish side and the slightest disturbance will cause them to dive into the water from their basking spot.

#### Threats

This species has no current conservation listing in the state of California and is considered an invasive species. In its native range, it does face pressures from the illegal pet trade and Asian meat market. Despite the species being readily bred for the pet industry, poachers continue to degrade wild stocks to satisfy illegal trades. Both legal and illegal trade of this species has given the slider a foothold in aquatic habitats worldwide. Other fresh water turtles must now compete with red-eared sliders for habitat, food, basking spots and egg laying sites.

#### A Final Note

The turtles in the Gardens pond are from pet owners who could no longer keep them. Because our pond is contained and does not empty into another waterway, we will continue to protect our small population of non-native red-eared sliders. However, we hope this article will remind our readers that pets, particularly exotic ones, should never be released into natural areas, especially waterways. Be sure to do your research before purchasing or acquiring any pets!

*Michele is a UCR graduate who worked as a field biologist for six years throughout Riverside County and is currently a naturalist for Riverside-Corona Resource Conservation District.*

## Spotlight On...Steve Morgan

By Janine Almanzor



Many people ask me about Steve since he has been behind the scenes for five years. That's how long it's been since his retirement from 31 years as Curator of the Botanic Gardens. All who know him are amazed at his plant knowledge. He is like a walking plant encyclopedia, or in today's terms, he's a living plant identification app. With all that knowledge in his brain, he certainly doesn't have a "big head."

He is the humblest, most non-condescending mentor and friend anyone can have. Steve has never once made me feel stupid for a poor attempt at pronouncing a botanic name or misidentifying a plant.

I said Steve is "behind the scenes" because he hasn't left the scene. Steve has continued as a volunteer since 2016, when I became the Curator. He comes in two mornings a week, working mainly on the plant records. During his tenure, Steve worked 60-80 hours per week and still had piles of problems with the plant collection that he was unable to devote time to. He was extremely busy with administrative duties, newsletters, enormous plant sales, Primavera, a multitude of other events, supervising

volunteers, etc... Although his favorite part of the job was working with the plant records, he scarcely had the time to devote to that. Now he can.

Steve came to the Gardens in 1985 with a B.S. degree in ornamental horticulture from Cal Poly University, Pomona. He also was a horticultural lecturer and had seven years of experience working at Fred A. Stewart Orchids in San Gabriel and six years as the Horticultural Manager in the Biology Department at Pomona College.

As Curator, Steve gave great care to every project he was working on, and to every person. He made each volunteer and employee feel important because he took the time to listen and talk with them, even though it meant he would need to stay late to finish a task. Now as a volunteer he doesn't get out in the Gardens too much to socialize because he's busy on the computer and answering all my questions. Almost every morning he volunteers, I come to his little office with a list of questions. He has over 30 years of knowledge that I'm trying to get from his head and into the records as much as possible. The Gardens is very fortunate to have Steve as a volunteer.

Since retirement, besides volunteering at the Gardens, Steve loves to participate in square dance related activities with his life partner of 17 years, Jim Spence. He also spends his time tending to his many orchids, tillandsias, cacti and other succulents, palms, fruit trees and more.

Although Steve is thinner these days and a little unstable due to Parkinson's, it's still hard to keep up with him out in the Gardens. He often says he doesn't remember plant names as well as he used to, but that just means it takes him five seconds to identify a plant instead of one.

## Successful Online Spring Plant Sale

This Spring's Online Plant Sale was a huge success! We sold more plants and had more customers than the previous online sales, even though we didn't have as many plants available. We had the good problem of selling out of plants, for which we apologize. Uncontrollable events over the past year contributed to the shortage of plants this time. During the initial pandemic shut-down of the Gardens all propagation for Plant Sales was curtailed. Without volunteers and student workers during that time, the focus of essential staff was on much needed maintenance and security. The Gardens was also hit with a hail storm before this most recent sale, which resulted in hundreds of damaged plants. We also had more customers than usual because Director Holt was interviewed on KVCR where the Plant Sale was mentioned, greatly increasing our outreach to the public. Overall, the customers were very pleased with their plants and the pick-ups for 230 orders of nearly 2,000 plants went smoothly.

Because our inventory was very depleted by the spring sale, we are ramping up propagation for our Fall Plant Sale, which will be online. We will also implement some changes to improve the shopping experience for all. Friends members will have access to the sale one day before the public, and it will run from 6 am to midnight each day. We greatly appreciate your support of the Gardens and will do our best to continue to provide this popular benefit to members and offer high quality, Gardens-grown plants, while also promoting the Botanic Gardens to the larger community.



Lee Bayer volunteering



## What to See in the Gardens

Article and photos by Miguel Estrada



Cork oak bark

What makes a plant worth seeing? For myself, it is something that stops me from my work and allows me to appreciate a moment at the Gardens. The two selections below have done this for me and it is primarily because of their interesting bark. I hope these two make your list for your next visit.

My first recommendation is in the Mediterranean area, right behind the Herb Garden. There you will see a medium sized *Quercus suber*, commonly known as cork oak. The bark on this oak is the most distinguishing feature, as it can grow to be 4 inches thick and deeply fissured. If you have ever opened a bottle of wine, then chances are that you encountered a stopper made from this very material. The uses for this tree go beyond this, of course. At the Gardens, it provides shade, interesting texture, and a good size coverage in an area where a larger tree would have caused problems for our retaining wall. The cork oak can live up to 300 years in the wild and about half that in an urban setting. It has an irregular broad canopy and can reach heights of up to 60 feet. They are often multi-trunk and low branching. It is not native to California and rarely forms natural hybrids with California native oak species. The tree is evergreen, which means long-lived leaves drop continually rather than seasonally all at once as in deciduous trees. At the Gardens we are putting this feature to good use. We collect the leaves from the pavement and redistribute them to the area around the oak. It is working marvelously to suppress grasses that in times past would have to be weed-whacked to control.

The next tree is equally astounding. The winged elm, *Ulmus alata*, is located to the west of our steep driveway. It is currently pushing out new leaves, and by the time this article is published, might have a full crown. If you look beyond the leaves, you will see that, just like the cork oak, the bark is the most distinguishing feature of this species. As the branches mature, cork-like ridges form. The tree crown is round to oblong with branches that spread out but also grow into the interior. Ideally, cross branches should be pruned to improve structural integrity. The tree is native to the south eastern United

States where it grows to a height of about 50 feet, putting it in the medium tree category. The leaves are serrated and have a deep green color providing contrast to the bark. Despite its beauty, this species is susceptible to many diseases such as Dutch elm disease, powdery mildew, and phloem necrosis, to name a few. Fortunately, you don't have to worry about diseases or cultural practices to see these special trees. Simply plan a visit and take a quick stroll to see two specimens that I feel are worth stopping for.



Winged elm bark

For additional What to See in the Gardens please visit our webpage on what blooms each month throughout the year, at <https://gardens.ucr.edu/information/bloom>.



*As we continue to follow COVID-19 guidelines, the Gardens are open partial days but all gatherings are still prohibited, including Primavera in the Gardens for the second year in a row. We regret that we cannot welcome those who continue to support us through their Primavera attendance and sponsorship, and that our special collection of Primavera wine glasses will have a gap year!*

*We are working on plans for a virtual fundraiser in the fall so we can stay connected with you, support our loyal Primavera vendors, and generate support for the Gardens' important initiatives. Please check our website, <https://gardens.ucr.edu>, and look out for emails to stay informed about Gardens events. We greatly appreciate all of our long-standing Primavera guests and sponsors, and hope to see you in the Gardens soon!*

## Plants & Human Affairs Series

### The Cacao Tree and the Vanilla Orchid

By Jo Ann Anderson

Imagine a world without chocolate, vanilla, potatoes, corn, or peanuts, just to name a few of the contributions of the Americas and unknown to Europe, Asia, and Africa until the 15th century. The name chocolate is a derivation of the Aztec word *xocolati*, which in the Nahuatl language may have sounded very much like our word today for the product of the cacao tree, *Theobroma cacao*.



*Theobroma cacao*  
fruit

Today's chocolate treat is far removed from its origins in the jungles of Central and South America. The taste of dark chocolate today is not the bitter taste of the cacao as it was used in pre-Columbian cultures. I remember when my mother used Baker's chocolate for cooking, how excited I was to see all that dark brown treasure, and then my bitter disappointment, literally, at the first bite. Baker's chocolate may bear the closest resemblance to the cacao so prized by pre-Colombian cultures. So prized, in fact, that it was known to be used as money in their trade.

Kakow, as it was called by the pre-Olmecs, has been a staple food of Central and South America for at least 4,000 years. Extracted from the seed pod of the cacao tree, the bitter drink made from the crushed seeds and mixed with cornmeal (maize) into a frothy broth became known as the "Food of the Gods." This description is reflected in the Latin name, *Theobroma cacao*, which comes from the Greek words *theos* (God) and *broma* (food).

Even Cortez, despite his disdain for native customs, extolled the properties of the bitter cacao drink as a food that would sustain a person for a full day despite distance traveled or work done. Cacao is said to be the most pharmacologically complex food in nature. It continues to be in widespread use today for ritual and medicine as well as a favorite drink, not only in Mesoamerica but throughout the world. However, today's chocolate differs greatly from the bitter drink because of the addition of powdered milk, sugar, and vanilla, which became prevalent in the 16th century after the importing of cacao to Spain and later the rest of Europe.

The story of cacao is intertwined with that of vanilla, *Vanilla* spp. Vanilla and cacao, like latex and morning glory juice, became a pairing that resonated throughout the world after their discovery by Europeans. Although



*Vanilla planifolia* flower

the Aztecs were known to mix vanilla with their cacao drink, it was not until Cortez brought it with cacao to Europe that vanilla became a favorite partner of chocolate.

In the early 1600's, Queen Elizabeth I was introduced to vanilla by her apothecary Hugh Morgan. She adored it and subsequently from Great Britain the popularity of vanilla as a flavoring spread throughout Europe. Thomas Jefferson discovered vanilla flavored ice cream in Paris in the 1780's, and brought it home to America, completing the circle. Then in the 1890's a recipe book by Virginian Mary Randolph included vanilla as an important favoring.

Although vanilla was cultivated by some early Mesoamericans through natural pollination by a specific bee or hummingbird, its large-scale cultivation was unsuccessful until 1841, when a boy on an island in the Indian Ocean discovered a way to physically pollinate the flower with a stick and his finger. Although each orchid has both male and female organs, they must be brought into contact by a pollinator for successful reproduction, resulting in the treasured vanilla bean. Thus, after the mid 1800's cultivation of the vanilla orchid spread quickly, with Madagascar being a primary location. But even today, vanilla crops can be quickly decimated by natural disasters, and the time and labor to extract vanilla is costly, thus vanilla remains the second most expensive spice in the world after saffron.

As tropical plants requiring protection from our climate, both cacao and vanilla plants are grown inside our greenhouse, and will be displayed in the Conservatory once it is completed and open to the public.

**For campus status and updates regarding  
Covid-19 please visit  
<https://campusstatus.ucr.edu>.**



## In The Works

### By Botanic Gardens Staff

With warmer weather and the easing of Covid restrictions, our staff and volunteers have made great progress on Gardens projects. Here is a summary of our recent activities, some of which are described more fully in articles elsewhere.

#### On-site:

- ▶ We are working with UCR's Planning, Design, & Construction to develop a conceptual design for a replacement of the geodesic dome, which is structurally unsound and closed to the public.
- ▶ Small group tours led by BG-trained docents have resumed.
- ▶ A group of volunteers led by Karen Fleisher, has "adopted" the Butterfly Garden. Weeding, pruning, and planting has taken place and signage will be coming soon.
- ▶ Special Projects volunteer Doug has added two directional signs to the pond, one in Alder Canyon and one on the railroad tie wall by the Iris Garden.
- ▶ A successful Spring Online Plant Sale was held in April, and thanks to many volunteers, a very organized pick-up took place April 21 – 22.
- ▶ Many plants from our potted collection were planted in the South African Garden along with three *Encephalartos ferox*.
- ▶ Abatement for fire prevention is in progress, currently focused on removing *Encelia* under trees and in the grassy area east of the perimeter road.
- ▶ Propagation of the ground cover *Lampranthus spectabilis* from South Africa is being done to restore the garden slope in fall and *Epilobium canum* from the North Coast for a mass planting.
- ▶ The beds in the Rose Gardens have been mulched.
- ▶ In the greenhouse, plants from the first section have been moved to begin site preparation for the Conservatory, which will involve removing gravel, pavers, and the concrete walkway.
- ▶ The maintenance team is working to knock down weeds in Latin America and Australia.

#### Remote work:

- ▶ The Gardens participated in the 2021 UCR Staff Assembly Community Partner Week, a virtual vendor fair, to promote the Gardens to the UCR community and hundreds of vendors who work with UCR departments.
- ▶ Director Holt was interviewed by KVCR radio's Lillian Vasquez for Inland Edition, which aired on April 14 and is posted under Featured News on our website.
- ▶ Working with the CNAS Development team we revised our Friends Membership Brochure to reflect recent additions to member benefits, new membership discount for faculty and staff, and other updates.
- ▶ Janine, Jim Clark and native plant expert George Spiliotis have completed 33 short videos describing California native plants for the home landscape.
- ▶ In addition to totes, t-shirts, hats, water bottles, coasters, kneeling pads, and mugs we have added mouse pads, journals, and cleaning cloths to our branded swag items.



Butterfly Garden



Directional Turtle Pond sign



*Encephalartos ferox*



New mouse pad and cleaning cloth

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# UCRBG Virtual Opportunities

## GIS Map App

<https://gardens.ucr.edu/all-virtual-tours>

## Plant Ecology in the UCR Botanic Gardens Story Map

<https://arcg.is/H8fO>

## Deserts of the Southwest Story Map

<https://arcg.is/1n9WGa>

## Plant Diversity at the UCRBG Conservatory Story Map

<https://arcg.is/1HHPzj>

Please note: The UCRBG hours are Monday - Wednesday 9:00 am - 12:00 pm,  
Thursday - Friday 9:00 am - 2:00 pm  
and the first and third Sundays 8:00 am - 2:00 pm until further notice.