THE ACORN

American River Natural History Association Members' Magazine - Summer 2020

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President's Message, Summer 2020

Hello Everyone! The contrasts in our lives could not be more stark. We have learned to adjust and live within the confines of a global pandemic, and all the while the Effie Yeaw Nature Center has never been more appreciated or more beautiful.

The late spring rains kept the grasses green longer at the Nature Center. When walking the trails, visitors frequently spot deer, turkeys and coyotes on their regular routes looking for food and raising their young. We are especially grateful to have a mated pair of red-shouldered hawks nesting in the top branches of the oak tree at the start of the main trail. The pair, constantly communicating during flight, can be seen bringing food to the nest and flying off again to continue the hunt. All of our wonder and delight in nature helps offset the considerable efforts that we have taken to assure the safety of our visitors, staff and volunteers as we face the threat of Covid-19.

A significant amount of time over the last several months has been dedicated to our ongoing response to the Covid-19 outbreak. Health and safety regulations and "shelter in place" orders were issued, revised and extended by the County of Sacramento. In response to intensified exposure and transmission concerns, the Nature Center made important changes intended to secure the health and safety of all who visit and work with us.

We have made a gradual re-opening of the entire facility under limited hours and capacity with heightened cleaning/sanitizing and one-way foot traffic protocols in place. We have established a facilities plan that allows for appropriate social distancing of staff and volunteers during work hours including: use of masks and gloves; reorganization of workstations to limit direct contact; installation of a physical barrier at the front desk; and set up of hand sanitizing stations at our entrance and exit. In addition, we have established staggered work schedules, mobile workstations located in the Assembly Building, and opportunities for limited "work from home" hours for staff.

We are pleased to see an increase in public use of the Nature Center trails! With the limited ability of staff to monitor the trails, we have expanded the interpretive signage and "rules" signage throughout the Nature Center to provide reminders of County regulations and health recommendations.

As reported elsewhere in this issue, much of our educational programming and event content has moved on-line and we have increased our presence on social media. We are extremely gratified to see our increased presence on social media so positively received! The number of followers, likes, and positive comments has increased so dramatically it has been breathtaking!

While this difficult time has brought serious negative financial impacts, we see and feel the love of our supporters who have been generous beyond our expectations. Your contributions have kept the Nature Center alive and healthy during this incredibly challenging time. We are honored and humbled. This outpouring of support inspires us to raise our sights and redouble our efforts to make your experience at Effie Yeaw Nature Center enriching, fun and memorable.

Come and join us. You are welcome and appreciated!

Laurie Weir



Laurie Weir with social distancing graphics at EYNC trail head.

The Acorn is published quarterly by the American River Natural History Association (ARNHA), a 501(c)(3) non-profit organization that supports the Effie Yeaw Nature Center and Nature Study Area.

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Cover: Second generation galls of the wasp *Callirhytis quercuspomiformis* on the leaves of an interior live oak tree. Photo by Mary K. Hanson





By Mary K. Hanson

You have no doubt seen the interpretive sign in the Effie Yeaw Nature Study Area that talks a bit about the large "oak apple" galls you see on the valley oak trees (*Quercus lobata*) in the spring and summer months. You may have also read the article on these galls by Mary Lou Flint on the Effie Yeaw blog [October 10, 2018], but these large obvious galls aren't the only ones around in the summer months. In fact, there are dozens of different galls to be found along the trails and around the Nature Center.

There are over 1,500 different insects that are associated with plant galls, and about 70 percent of all galls produced by insects form on oak trees. That's good news for visitors to the Effie Yeaw Nature Study Area because it contains several different species of oak trees, and each species of oak boasts its own kinds of galls. In this article, we'll be focusing on some of the galls associated with the tiny cynipid wasps, because their galls are most varied, colorful and interesting.

Cynipid wasps don't sting, so they're not a threat to humans. Most cynipid wasps are very tiny (imagine a wasp that's no larger than a sesame seed), and they're short-lived. You probably won't ever see them, but you will be able to see the galls associated with them.

Cynipid wasps lay their eggs within the leaf or stem tissue of a tree, but gall formation does not begin until eggs hatch and the larvae start feeding. As they chew through cell walls and consume the sap within, the larvae release a hormone-like substance that causes gall growth. The hormone continues to be released as the larva grows and the gall enlarges into a shape particular to its species. A single oak tree can accommodate a wide variety of species of the wasps, and grow a different kind of gall for each species — sometimes on the same leaf.

As you look at the photos in this article, keep in mind that everything you're seeing is **plant material** supplied by the tree, not something that's generated by the wasp larva itself. Also, keep in mind that the galls will continue to grow to accommodate the developing larvae. As they grow, the galls provide the larvae with all the food they'll need until the larvae pupate and mature into adult wasps. If you remove the gall-covered leaves or twigs from the tree, you'll stop that growth and the larvae will starve to death. So, leave the galls where they are until they're vacated.

When looking for galls, look on every part of the tree. Some of the cynipid wasps will only lay their eggs on the bark, twigs or stems of the tree. Some will only lay their eggs on the top surface of the leaves. Some will only lay their eggs on the underside of the leaves. Some galls will form only on the midvein of the leaf; some only form on the margins.

The wasps are choosy, too, about which kind of tree they'll lay their eggs on, so knowing what species of oak you're looking at will help you identify the particular galls you see. On the valley oak tree (*Quercus lobata*), for example, you may find the large oak apple galls along with red cone galls and flat-topped honeydew galls. On blue oaks (*Quercus douglasii*) you may find pink crystalline galls, flat green plate galls, and striped volcano galls. On interior live oaks (*Quercus wislizeni*) you may find barrel-shaped kernel galls, two-horned galls, and ruptured twig galls.

Galls may vary depending on "generation" as well. Most of the cynipid wasp species are single-generation "parthenogenetic females" that reproduce asexually. That's right: an entire species that produces nothing but cloned females. This is true of *Andricus quercuscalifornicus*, the wasp associated with the large oak apple galls (Figure 1). What's really fascinating, though, is that some species of cynipid wasps produce two distinct generations of offspring in a year: one generation is comprised of nothing but the parthenogenetic females that reproduce asexually, and a second generation is made up of males and females that reproduce sexually. Each generation gets its own special gall on a different part of the tree!



Figure 1 - Oak Apple Galls: These are the most visible wasp galls in the Effie Yeaw Nature Study Area and they're associated with the species *Andricus quercuscalifornicus*. This species is the largest of the cynipid wasps in California, and the galls can accommodate dozens of individual larvae. This species of wasp is made up of nothing but parthenogenetic females that reproduce asexually. That's right: all females, no males.

Callirhytis quercuspomiformis is one of those two-generation species (Figure 2). Its first generation galls (the ones that hold the parthenogenetic females) form on the stems and twigs of the interior live oak trees and look like balls covered with short spikes. Each ball can contain several larvae. The second generation galls look like small, capped funnels, and they form on the underside of the leaves. Each one of these funnels holds only one larva, either a male or a female that will reproduce sexually.



Figure 2 - Live Oak Galls: These are the galls of the cynipid wasp *Callirhytis quercuspomiformis*. On the left is the second generation gall that forms on the twigs of the interior live oak in the summer months. These galls can hold more than one parthenogenetic female larva. On the right is the first generation gall that forms on the underside of the leaves in the spring months. Each gall holds one larva that can be either a male or a female that will reproduce sexually.



Another interesting species of cynipid wasp is *Dishopcaspis el-doradrnsis*, which is associated with what are commonly called "flat-topped honeydew galls" (Figure 3). These galls are shaped like little muffins and grow on the twiggy stems of the valley oak trees. Each little muffin holds one larva, and these larvae have a very interesting way of protecting themselves against predators. Inside their galls, the larvae produce copious amounts of honeydew, a sweet sugar-rich substance, which is extruded through the porous top of their galls. This honeydew attracts "aggressor species", like ants or Yellowjackets, who in order to hoard the honeydew for themselves, will defend the galls against all other predators. So the wily larvae get free bodyguard service for the cost of some sugar.



Figure 3 - Honey Dew Galls: The larvae inside the flat-topped honeydew galls of the wasp *Dishopcaspis eldoradrnsis* produce honeydew to feed ants and yellowjackets, which then act as unwitting bodyguards, protecting the wasp larva from predators.

Although some of the wasp galls are visible on the oak trees in the Nature Study Area as early as April or May, the best variety and abundance of them can be seen in the late summer (July through September).



This pictorial provides a guide to some of the oak galls found at Effie Yeaw, but other great resources for gall identification include the iNaturalist app <u>inaturalist.org</u>, the Joyce Gross Photography website (<u>joycegross.</u> <u>com/galls_ca_oak.php</u>), and the book "Field Guide to Plant Galls of California and Other Western States" by Ron Russo.

On your next walk through the Effie Yeaw Nature Study Area, keep an eye out for the galls, and let us know what you find!

ON VALLEY OAKS: [1] Hairy ("Woollybear") gall of the wasp *Sphaeroteras trimaculosum*; [2] Spiny turban gall of the wasp *Antron douglasii*; [3] Rosette gall of the wasp *Andricus wiltzae*; [4] Yellow wig gall of the wasp *Andricus fullawayi*; [5] Disk ("Spangle") gall of the wasp *Andricus parmula*; [6] Red cone galls of the wasp *Andricus kingii*; [7] Club gall of the wasp *Xanthoteras clavuloides*; [8] Jumping galls of the wasp *Neuroterus saltatorius*; [9] Convoluted galls of the wasp *Andricus confertus*; and [10] Fuzzy leaf gall of the wasp *Besbicus conspicuous*.

ON LIVE OAKS: [11] Two-horned gall of the wasp *Dryocosmus dubiosus*; [12] Pumpkin gall of the wasp *Dryocosmus minusculus*; [13] Kernel flower gall of the wasp *Callirhytis serricornis*; and [14] Ruptured twig gall of the wasp *Callirhytis perdens*.

ON BLUE OAKS: [15] Saucer galls of the wasp *Andricus gigas*; [16] Crystalline galls of the wasp *Andricus cristallinus*; [17] Plate gall of the wasp *Liodora pattersonae*; [18] Urchin galls of the wasp *Antron quercusechinus*; [19] Striped volcano gall of the wasp *Andricus atrimentus*; and [20] Coral gall of the wasp *Disholcaspis corallina*.



Mary K. Hanson is an author, nature photographer and Certified California Naturalist. She got her naturalist certificate from the Effie Yeaw Nature Center and serves as a volunteer trail walker and member of the media committee. All of the photos shown with this article were taken by Mary in the nature study area.

A New Approach to Nature Education in the Age of Pandemic

By Joey Johnson

They say that necessity is the mother of invention and that old saw seems to be holding true for the Effie Yeaw Nature Center (EYNC). The Covid-19 threat began affecting our programs even before the nature center officially shut down. When schools were ordered closed, classroom visits by our Naturalists and school field trips to the Nature Study Area had to be cancelled. These school programs, which involve a dozen or more classes (and hundreds of children) each week, form the core of our educational outreach to children. Roughly 140 planned class visits or field trips were cancelled.

Soon we were also forced to cancel other educational programs such as the annual Bird and Breakfast events, nature badge hikes for Girl Scouts and weekend animal meet and greets for the public at the Nature Center. Clearly, a new approach for educational outreach was required. The EYNC staff and volunteers were up to the challenge and the creative work began immediately.

Staff recognized that social media provides a great platform for nature and environmental education at a time like this. Fortunately, EYNC already had a significant presence on social media. The pandemic has allowed staff to focus on ways to use online technology to educate people, keep them connected to the nature center and forward our mission. As a result, EYNC now has a substantial list of new online events and presentations.

If you haven't been on our Facebook page lately, you will have missed out on the Facebook Live presentations by our Naturalists. The first featured Clem, the western pond turtle, as he came out of brumation and moved back into his enclosure in the lobby of the museum building. Next, there was a live presentation on snakes and another on skulls. Naturalists also led a virtual hike into the Nature Study Area, followed by a presentation on galls. These 20 -30 minute events, presented weekly on Friday mornings, encourage interaction with the public in the form of questions, which are answered live by the Naturalists. If you missed these, they are available on the EYNC Facebook page in the video section. Please visit our Facebook page at www.facebook.com/EffieYeawNature-Center. So much to learn!

Another new educational tool created by our Naturalists is the "Ask a Naturalist" series, which provides quick answers to common questions. Each is posted in the Nature Blog section of our website and advertised through our various social media pages. At this writing, the most current topic is "What is the difference between horns and antlers?". Not only does each blog have great information on the topic, they also include hands-on activities for kids, short videos, additional activities and resources related to the topic. These blogs are a great resource for families as well as teachers and can be found at www.sacnaturecenter.net/visit-us/ nature-blog/.

Our adult learning series called "The Nature of Things" has always offered a variety of workshops to pique any interest. Now, you can participate in online workshops while we cannot gather in person. Recently, Rich Howard presented his amazing "Beginning Birding" workshop online. At this moment, all schools, from kindergarten up through college are providing education through distance learning. Even when schools begin to reopen, it is likely that activities such as field trips out to the Effie Yeaw Nature Center will be limited. The EYNC staff has developed online versions of some of our school classroom programs to fill in the gaps. Teachers will be able to remotely "host" programs for their classes this spring using these tools and also use them in classrooms in the future when students return to school. We all know that experiencing nature up close and personal is the ideal, but the world has changed, and it is still important that we educate future stewards of our planet.

A positive result of implementing all these creative ways of bringing nature to people has been the extension of our reach. The number of people engaging with our social media pages has taken a big jump. We even have people from out of state connecting with our online activities. Growing our social media presence is allowing us to reach more students through new program formats and be positioned to broaden our reach to middle and high school students and the general public. By educating more people about nature and about the Effie Yeaw Nature Center through online learning, we will enhance their experience when they get to visit in person.

Joey Johnson is Past President of ARNHA, a photographer and a nature lover.

Our Naturalists are going Live!

FRIDAY, APRIL 17 AT 11AM JOIN US FOR A LIVE Q&A ON SNAKES AND MEET VERY SSS-SPECIAL NATURE CENTER AMBASSADORS



Ask a Naturalist

NHAT'S THE DIFFERENCE BETWEEN ANTLERS & HORNS?





Bev Lewis and Gregg Hutchison—Featured Volunteers

Volunteers Bev Lewis and Gregg Hutchison are a couple who have made the Effie Yeaw Nature Center (EYNC) an important part of their lives. Together they make a huge difference at EYNC – each in a unique way.

Gregg and Bev met at AT&T where both worked. They retired in August 2010 with travel on the retirement agenda. They also took a lot of walks by the river, and at one point, picked up an invitation card at EYNC for the annual ARNHA meeting. At the meeting, they heard about volunteer opportunities and soon signed up. As Bev says, "We met on the job [at AT&T], and worked together; it only seemed natural to volunteer together. At the time, Director Marilee Flannery and her flock were still adjusting to being dropped from the county [budget] and being a nonprofit center. I was used to customer service and retail from my former life, so the reception job was perfect for me."

Putting her warm, friendly personality to good use, Bev began working reception Wednesday afternoons, and later added Tuesday mornings. When she and Gregg moved from Carmichael to Sun City in Roseville, they decided to reduce their commute time and dedicate all day on Wednesdays to EYNC.

Bev loves working reception. "The phone calls are like that 'box of chocolates' - you never know what you will get: the caller with questions about how to save an injured bird, or the people who want us to get 'our' turkeys (which 'must have escaped from EYNC') out of their yard. It is heartwarming to greet the visitor who comes back with her kids because she remembers coming here as a youngster, or to talk with someone who has just been on the trails and can't wait to show off their pictures of whatever creature they found."

Bev also loves working with the raptors, feeding Echo her mouse at the end of the day or walking the raptors back to the mew. But, Bev adds, "The hardest part of my day is finding Gregg at the end of the day (hopefully in one piece) and persuading him it is time to go." Bev's comment becomes clearer when you find out how Gregg spends his volunteer hours at EYNC.

Gregg initially thought he would enjoy volunteering as a trail walker - and he still does, he just didn't have time for it once EYNC discovered his other talents. Gregg is any homeowner's dream the person who can take the honey-do list and start knocking off the tasks. Just a few of Gregg's accomplishments have included: helping redesign and rebuild the mew, including installation and maintenance of a swamp cooler; refurbishing museum displays; building shelves for the AHRNA office and the movable reptile shelving in animal care; re-configuring the current warehouse from an auto shop to a storage facility, then helping move everything from the old warehouse to the new; installing interpretive signs in the Nature Study Area; and cutting trees that have fallen on pathways. Some of Gregg's never-ending tasks involve fixing lights and window coverings, designing and installing perches and ramps for animal enclosures, running wiring for computers that have to be moved or added, and hauling recycling and trash

to the dump. But, Gregg emphasizes: "My biggest ongoing project is yellow starthistle eradication!"

In addition to their normal Wednesday routine, Bev and Gregg can be found working hard before, during and after any special event – the Gala, Bird & Breakfast, Nature Fest, and donor events. They also represent EYNC at monthly Carmichael Chamber of Commerce mixers and run the EYNC booth at the annual Taste of Carmichael.

In addition to their EYNC commitments, travel remains an important part of retirement. "We are lucky," Bev says, "to have been to many wonderful places. The farthest was Australia/New Zealand a couple of years ago. Favorite places include lots of critters and pretty scenery, so Alaska and Yellowstone are way up there." Activities and volunteer opportunities at Sun City also keep them busy. "We held out for a house on the nature preserve [at Sun City], so I keep the [ARNHA] "150 Birds" book handy for the many birds that visit, and have a photo album of Sun City birds and other critters," says Bev. "It's almost like living at the Nature Center."

"We wanted to volunteer at Effie Yeaw Nature Center because of the wildlife and beautiful setting," continues Bev. "Now, along with those reasons, are the people - delightful co-workers, wonderful staff, and interesting visitors." EYNC is lucky to have found Bev and Gregg, a team with great people skills, a love of animals, and the ability to wield power tools!



Bev Lewis and Gregg Hutchison pursue their love of nature travel in New Zealand – wearing their EYNC sweatshirts!



A New Bird Joins the Nature Center

The Nature Center is welcoming a new member to our animal family. A kestrel has moved into the mew and is becoming accustomed to his new home. When he is ready, he will be added to the animal ambassador roster.

Kestrels are North America's smallest falcon and one of the few raptors that have sexual dimorphism, which means that the male and female look very different. Hunting for insects and other small prey in open territory, kestrels perch on wires or poles, or hover facing into the wind, flapping and adjusting their long tails to stay in place. They often look like they are bobbing up and down where they are perched.

Our guy was found in Esparto. He was in his hatch year when he was injured, so he is young. He was rescued from a dog's mouth and was taken to the California Raptor Center in Davis, CA. He had a fractured vertebra and humerus. Despite surgery and daily physical therapy, he was unable to regain full range of motion and flight. Because of the seriousness of his injuries, the Raptor Center kept him under observation for many months. In December of 2019, we obtained our permit to keep him and he moved to EYNC.





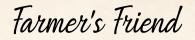
Photos by Joey Johnson



All of our ambassadors go through a process of getting acclimated to their new living quarters and to being around people, both staff and the public. Since he had been around people for his care and treatment, this kestrel is pretty used to people. He is learning to wear jesses, get on a glove, and respond to verbal commands, which are important skills for being an ambassador with the public and to facilitate health care. This training process can be lengthy because it involves building trust and must proceed at a pace determined by the bird's readiness to learn. It has been difficult to give him the training time our previous birds, such as Wek Wek, were given due to the reduced staff during the Covid-19 shutdown. Because learning is so crucial, this kestrel may go to a professional trainer to get the one-on-one attention he needs. Training programs use positive reinforcement (operant conditioning) to develop the skills needed to be an ambassador. We are confident that he will make a good ambassador in the future.

There is a small window by Kimberly's desk that looks into a window in the mew where our kestrel is living. He seems to like to sit near the window and look into the office. He also has been very vocal and bobs up and down quite bit. His favorite food is mice. Two of our animal care volunteers also volunteer at the Raptor Center and have known this little guy for about a year.

As with many our animal ambassadors, a contest will be held closer to the time he is introduced to the public to determine a name for him. People around the Nature Center office have given their opinions on what they think his name should be. But we must all wait for the official balloting to occur. Watch for the contest announcement and don't miss out on the opportunity to vote! - An American River Journal-



by Peter Hayes

This is a good time to see what the well-dressed bird will wear in Sacramento County. The American kestrel, perched atop telephone poles or dead tree tops, is the only small hawk with rusty-red back and tail, and the male has blue-gray wings. Distinctive sideburns accent handsome black, white and reddish face patterns on both sexes.

It's hard to miss the kestrel, the least wary of birds of prey. When not sitting erect eyeballing the landscape, this streamlined falcon is hunting with rapid wing strokes, making quick turns, hovering or floating down on long narrow wings to seize a grasshopper or deer mouse. Thus, it is the farmer's friend.

And the kestrel announces its presence with high-pitched "killy killy" calls.

Formerly known as the sparrow hawk, the kestrel has been known to make a meal of smaller birds, but the "sparrow" part of the old name overstated its diet preferences. The English name of kestrel is more appropriate. But sparrow hawk or kestrel, its colorful plumage and appetite for insects and rodents make it a valued member of our natural world.

From "An American River Journal," published by the American River Natural History Association (ARNHA). It features illustrations by ARNHA co-founder Jo Glasson Smith and nature essays by Peter J. Hayes, retired newspaper editor and ARNHA Associate Board member. The book is available for \$9.75 at the Effie Yeaw Nature Center, <u>sacnaturecenter.net/</u><u>arnha/shop-books/</u> and selected bookstores.







Follow us on Facebook and Instagram to keep up-to-date latest happenings at the Nature Center and in the Nature Study Area, discover fun facts about plants and animals, and join us on Facebook LIVE! for 'Ask a Naturalist' and more! <u>facebook.com/EffieYeawNatureCenter/</u> <u>instagram.com/effieyeawnaturecenter/?hl=en</u>



Did you know the Nature Center has a blog featuring fun articles about creatures, critters, and all kinds of life that can be found our region! The blog is also home to our new online environmental education program, 'Ask a Naturalist': Learn, create, and activate! Check it out: <u>sacnaturecenter.net/visit-us/nature-blog/</u>



Discover our region with activity and nature guides, children's books, and more created and published by the American River Natural History Association—the non-profit organization that runs the Effie Yeaw Nature Center. Shop Books: <u>sacnaturecenter.net/arnha/shop-books/</u>



A quarterly digital magazine for members featuring articles about our regional natural world, events at the Nature Center, volunteer features and opportunities, and more! Take a look at The Acorn archive: <u>sacnaturecenter.net/arnha/acorn-newsletter/</u>





Donors & New Members - January through March 2020

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Margaret Rogers in memory of

Christine Suarez-Murias in

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