



# Life Cycle of a River Rock

*story by Werner Raab, Ph.D.*

Those rocks along the American River, especially visible when water levels are low, may be easy to ignore. Sure, the small smooth ones may be suitable for skipping across the water, and the larger may be difficult to walk on, but mostly, they seem part of the river that must have been there forever. However, the story is not that simple.

Rather, it's long and complicated and entails millions of years of geological upheaval from the deep regions of the earth's crust, changes in form and chemical make-up, and many miles of travel and erosion on the earth's surface.

## Geological Framework

The cycle began approximately 210 million years ago (mya) when the oldest intrusive rocks of the Sierra Nevada are introduced as magmas many miles below the earth's surface. These rocks were created after ocean sediments (formed from the breakdown of river rocks into silt and clay particles) were transported many tens of miles below the surface of

the North American continent on a "conveyor belt" of oceanic crust known as a subduction zone. Sediments and oceanic crust (basaltic rocks) mixed and melted as a result of increased heat and pressure. Stresses in the earth's crust allowed the magmas to rise and eventually cool to form the intrusive rocks present in the crest of the Sierra. This process continued episodically to about 80-85 mya.

Two additional events occurred to expose the intrusive rocks to erosion and transport in the American River system. The most significant event occurred about 5 mya when faulting and uplift brought the intrusive rocks and the adjoining metamorphosed, sedimentary, and volcanic rocks (now slates, schists, and hornfelses) to great elevations. In the Sierra, multiple periods of uplift and subsequent erosion created complex gravel bodies and concomitant gold accumulations. The richest placer gold deposits were the result of repeated concentration before the miners discovered them.

The multiple erosion/deposition cycles over the last 5 million years impact our estimate of how long it took to wear rocks to the size and roundness we find at Effie Yeaw, but it does not affect our interpretation of how far the rocks have travelled to obtain their current size and shape.

The final event that modified the Sierra drainages was glaciation that ended around 10,000 years ago. Many of the river valley outcrops show signs of glacial scouring. Angular rocks carried on and in the ice were transported considerable distances downstream.

Two common rock types of the western slope occur at the

*see **Rocks**, page 4*



Photo by James F. Scott

*Future naturalists—Spencer, Stella and Sofia—examine river rocks.*

# President's Message

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## ARNHA

American River Natural History Association  
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Dear ARNHA Members:

I am writing this having just returned from NatureFest, the annual event at the Nature Center that draws more than a thousand people into nature on the first Sunday in October. NatureFest is a joyful way of fulfilling the mission of ARNHA and the Nature Center and a wonderful example of all ARNHA can do by leveraging the work of its small staff with the skills, talents, and generosity of its many supporters and friends.

Watching children connect with native animals—by seeing the living creatures up close and learning about their habitats and ways of life—is always thrilling. Usually we are introducing children to the natural world family by family, class by class, or even one to one. We do that every day, but the scale of NatureFest is truly inspiring: more than one thousand people in a single day!

The range of animals at NatureFest is also impressive: bats, rattlesnakes, lizards, newts, turtles, frogs, toads, coyotes, opossums, skunks, hawks, kites, eagles, turkey vultures, and more. In addition to the live animal presentations, NatureFest included many other activities and demonstrations: Native American basket weaving, fly-fishing, abalone necklace making, guided nature hikes, and children's crafting using recycled materials.

NatureFest promotes science and nature education, stewardship of the natural world, and outdoor recreation, and provides an excellent opportunity to learn more about local organizations that support our community. More than twenty local organizations concerned with nature and the environment exhibited. There are photographs and more information about the event elsewhere in this *Acorn*. If you couldn't make it this year, please plan to join us next year.

Thank you to all who made this ambitious event possible:

- The exhibitors and presenters who were there to educate and involve our visitors
- The Nature Center staff who planned and managed the event
- The more than 70 volunteers who helped make the event run smoothly
- The sponsors who generously donated to the event: Fred & Betsy Weiland, The Water Forum, Inside Publications, California American Water, Aerojet Rocketdyne Foundation, ReCreate, Sacramento County Regional Parks, Valley Community Newspapers, Audubon Society of Sacramento, Carmichael Parks and Recreation, Carmichael Water District, Sacramento Area Creeks Council, Sacramento Valley California Native Plant Society, and SMUD.

Thank you for all you do to help.

Sincerely,

Liz Williamson



photo by Susan Skinner

*Above: Liz and Echo,  
our animal ambassador  
Great Horned Owl.*

# Volunteers raise money and pool their time and talents to bring new interpretive and directional signs to Effie Yeaw Nature Center.

photos by Kari Bauer



For the full story of how this group of volunteers brought directional and interpretive signs to Effie Yeaw Nature Center, see “The Evolution of Trail Signs” by Cheryl Romo at [SacNatureCenter.com](http://SacNatureCenter.com)

*Above: Eagle Scouts Kevin Zeller, Jack Hawes and Quinn Sherry clean up signposts at Effie Yeaw Nature Center to prepare the signposts for new interpretive messages.*



*Above: Liam Brothers (on the right) raised \$1,000 and persuaded Matt McFetridge and 20 other Eagle Scouts and their leaders to help clean and paint existing signposts for the new interpretive signs going up at Effie Yeaw Nature Center Nature Study Area.*



*Above: Members of Carmichael Rotary prepare signpost for new directional signs at Effie Yeaw Nature Center.*



*Right: Mike Cardwell and nature artist Molly Keller inspect the new interpretive signs at Effie Yeaw Nature Center.*

## Rocks, *from page one*

Effie Yeaw beach. One is the igneous hornblende granodiorite, less common along the river but distinct. Hornblende is a green to black mineral, and granodiorite is a rock containing mostly feldspar minerals and less quartz than true granite but otherwise similar to granite. Hence, often the igneous rocks of the Sierra are referred to as granitic. The other type of rock is a mixture of very fine-grained metamorphic rocks commonly identified as hornfels and schist. Hornfels and schist are dense, tough, very fine grained, and often highly silicious, mostly black rocks that were modified by high temperatures, pressures, and chemical solutions during the intrusion of the igneous rocks. These processes modified the original sedimentary or volcanic rocks, and they are now recognized as metamorphic rocks.

The size of boulders and cobbles at Effie Yeaw implies that they were deposited prior to the completion of both Nimbus and Folsom dams in 1955. They were deposited during high water runoff because the carrying capacity of the river at normal levels was far too low to routinely transport boulders and cobbles now found on the beach.

## Rock Transport

High in the Sierra, long before these rocks came to rest along the river bank, a block of granodiorite fell into a small tributary to the American River. The rock was rough, its edges sharp, and its color a dull gray peppered with conspicuous black crystals (hornblende, Figure 1A). To the geologist's eye, the sparkling crystals that make up the rock are most important because the minerals identify the rock as hornblende granodiorite. During subsequent transport, the surfaces of this rock were modified substantially both physically and chemically.

The rock in Figure 1B, transported about one to two miles in a small stream with steep gradient, is completely smooth to the touch, and the dominant color now is light gray to white with black spots. Sharp edges have been worn away, but the many facets of the original broken surface are still visible. Four or five processes—abrasion/grinding/attrition, impact, chipping, splitting, and chemical alteration/

solution—rounded and reduced the size of this rock as it tumbled in the stream. All processes are mechanical except alteration and solution, which are chemical. This chemical alteration changed the rock's color from dull gray to light gray or white (compare Figures 1A and 1B) as molecular layers of clay minerals developed in the feldspar.

One characteristic of stream-transported boulders and cobbles is roundness, the reduction of sharpness and the removal of edges and corners. Initial rounding is achieved relatively rapidly, depending on the rock type and its toughness, within two to four miles of river transport. To achieve well roundedness, whereby the entire stone is characterized by broad curves without secondary corners and only a suggestion of the original shape, takes eight or more miles of transport (Figure 1C).

For the beach rocks, only minimum distances can be estimated. The nearest known outcrops of granodiorite in the American River are approximately 8 miles upstream from Effie Yeaw, yielding a minimum distance of transport. If the furthest outcrops of granodiorite were the source, then transport could have been as long as 60 miles. The granodiorite rocks on the beach mostly are smooth and oval with no rock facets remaining. The process of size reduction will continue until the entire rock has been reduced to sand, silt, and clay (Figure 1D).

Metamorphic rocks such as hornfels are by far the most common rocks on the beach. Their shape, just as did the shape of granodiorite, changed as they were transported down the river. The original shape of hornfels blocks entering a stream appears to have been more commonly tabular (flat) because of rock cleavage and foliation due to metamorphism (Figure 2A). The impact of stone against stone split, chipped, and shaped the hornfels rocks as they tumbled along.

At intermediate transport distances, the hornfels rocks still show surfaces controlled originally by rock cleavage (Figure 2B front) and rock facets (Figure 2B back), but edges have been smoothed and protrusions removed. The rocks feel smooth to the touch. Figure 2C shows cobbles of hornfels that in the future will be reduced in size largely by abrasion, grinding, and attrition in a river with low gradient from here to the sea.



Image 1A—1D: Progressive Erosion (Rounding) of Igneous Granodiorite. Photo by Kari Bauer

The preponderance at Effie Yeaw of metamorphic rocks (hornfels, schist, metavolcanics) sprinkled with a few granodiorites could be due to a number of factors. For example, metamorphic rocks dominate nearer to Effie Yeaw (more dilution of the granodiorite), or the entire river terrain contains proportionally more metamorphic rocks, or the two rocks offer different resistance to size reduction. Geologic maps showing the distribution of granitic and metamorphic rocks indicate the latter two ideas may pertain. While granodiorite is less common in both the drainages and on the beach, the rocks present on the beach indicate that rock characteristics may be the dominant factor for the observed proportions.

In the American River drainages, the toughness of the metamorphic rocks resulting from intrusions by magmas (providing heat, pressure, and chemical solutions) created dense and tightly cemented but very fine-grained rocks resistant to river wear and tear. In contrast to the black hornfels rocks, the granodiorite is composed of medium to coarse-grained interlocking crystals of quartz, feldspar, and hornblende that allow penetration of water into the inter-crystal boundaries and initiate alteration. This makes the granodiorite more susceptible to breakup and more rapid reduction to sand, silt, and clay. Many of the granodiorite cobbles show signs of this alteration on freshly broken surfaces, and these rocks tend to crumble more easily than do the dense and tough hornfels cobbles.

The processes acting on a block of hornblende granodiorite or hornfels are identical, but the characteristics of the rock may determine the effect of each individual action (abrasion, chipping, or grinding, etc.). Some are quickly reduced to sand, silt, or clay and readily washed out to sea (granodiorite). Others are tough and resistant to both physical and chemical attack and persist for many tens to hundreds of miles (hornfels). Eventually, only the finest sediments reach the deep sea where, with time, they may become subducted and reemerge in a volcano or intrusive mass thus completing the cycle of erosion and continent accretion.

*Werner Raab, born in Germany and reared in the Alps, emigrated to the USA in 1958. After earning a B.S. from Montana School of Mines (now Montana Tech) in Petroleum Geology and a Ph.D. from UC Riverside in geochemistry related to mineral/ore formation, he worked 23 years in mineral exploration research and ten years in the environmental industry. Retired now for more than ten years, he continues to travel the world.. ■*

## Know Your Rocks

### Magma

Molten rock material with volatiles (water and gases) from which igneous (both intrusive and volcanic) rocks form due to cooling

### Metamorphic Rock

The result of a transformation of a pre-existing rock. The original rock is subjected to very high heat and pressure, which cause obvious physical and/or chemical changes.

### Sedimentary Rock

Formed by the deposition of material at the Earth's surface and within bodies of water

### Volcanic Rock

Formed through the cooling and solidification of magma or lava, either below or above the Earth's surface

### Rock Hudson

Just checking to see who is reading

### Igneous Rock

Formed through the cooling and solidification of magma or lava

### Hornblende Granodiorite

Medium to coarse-grained igneous rock green to black

### Hornfels and Schist

Dense, tough, fine-grained metamorphic rock, mostly black

### Silicious

Containing, consisting of, or resembling silica

### Tabular Rock

Rocks that naturally break into table-like shapes



Image 2A—2C: Progressive Erosion (Rounding) of Metamorphic Hornfels. Photo by Kari Bauer

# ARNHA Unveils eBook

In an ARNHA first, The American River Almanac is now available in ebook form. Readers now can enjoy the experience and convenience of taking the collection of full-color photographs and nature essays with them on their favorite iTunes and iBooks-enabled devices by visiting these stores and querying American River Almanac.

Once there, they can quickly preview and even download sample pages from the book. And if they would like to purchase the ebook, it is offered at half the price of the hardback version, for \$19.99. Readers may also preview the book on the Web by simply Googling “American River Almanac iTunes.” ■

Daniel Aldridge, in dark glasses and black shirt, organized Eagle Scout Troop 320 to remove cattails from the Nature Study Pond, a service sorely needed.



photo by Kari Bauer

## New Members July-September

- Kathy Baxter
- Jairo E. Benavides
- Jack Berger
- Barbara Black
- Mary Dorris
- Trina Drotar
- Rochelle Fraizier
- Tricia Gaiduk
- Sanna Golod
- Kelly Hall
- Joan Haney
- Trish Harrington
- John, Mary & Kiera Hester
- Roxalie Jones
- Charles Klaiber
- Lannie Koch & Lloyd Strong
- Holly Krieger
- Sage LaPena
- Linda Martin
- Darlene McLean
- Anne Neville
- Robert Nichols
- Colette Noble
- Mark Nowell
- George & Margaret Oki
- Lee Pyle
- Linda Rau
- Naomi & John Rice
- Cheryl Romo
- Kathleen A. Sabatini
- Carol Sabin
- Janet Sandlin
- Elle Steele
- Bauthues Stewart
- Carolyn Streng
- Paul Tanner
- Kendra Torvestad
- Jennifer Truman
- Jonah & Lindsay Tzur
- Pamela Wendell

## Fall and Winter Nature Camps Offer Learning and Fun

Want to get down and dirty with earthworms? Learn how to track a coyote? Follow the journey of a raindrop? Learn outdoor survival skills like navigation, campfire-building, and tent set-up? Celebrate the Winter Solstice? Walk like a “ghost cat” and observe other woodland animals? You can do all these things and much, much more at EYNC’s Fall and Winter “Under the Oaks Nature Camps”! Explore the many aspects of winter at EYNC through science, crafts, nature observation, hiking, stories and more.

Camps will be held for campers ages 6 to 11 (see class descriptions for age requirements) from 10:00 a.m. to 1:00 p.m. during Fall vacation (November 23 and 24) and Winter vacation (December 21 through 23, and 28 through 30). Also available, Camp 5, for five-year-olds only, on November 24 and December 30.

Registration is now open, and camps typically fill quickly! Class descriptions and registration are available online at [www.sacnaturecenter.net](http://www.sacnaturecenter.net), or pick up a brochure and registration form at EYNC. ■

*Welcome!*



# 2015 Donors July-September

- Aerojet Rocketdyne
- Anonymous
- Arden Park Garden Club
- John Bach & Beryl Michaels
- Anna Barela
- Peggy Berry
- Sue & Brad Bristow
- Alex and Heather Brown
- Lon Burford
- Capital City L&J Inc.
- Carmichael Colony Neighborhood Association
- City of Sacramento Water Forum
- Community Health Charities
- Betty Cooper
- Gay Currier
- Donna D'Amico
- Krystin & David Dozier
- Sandra Dunn
- Dennis Eckhart
- Harvey & Scarlet Edber
- Evergreen Garden Club
- Nathan Fairman
- Marilee Flannery
- Flying Tiger Line Pilots Assoc. in honor of Susan Skinner
- Adam Fowler
- Mandi Garcia
- Michael Genovese
- Louis & Joanne Giorgi
- Ted Glum
- Gary Gravier in memory of Debby Gravier
- Deb & Jay Greenwood in memory of Tom McCampbell
- James & Janet Hill
- Louise Hirsch
- Claudia Hulbe
- Johnson Controls
- Peggy and Bruce Kennedy in honor of Hudson Mott and in memory of: Lyn Cast, Myra Erwin, Jim Kruger, and John Nunan
- Kiwanis Club of Carmichael
- Suzanne Krale
- Karon Larson
- Marjorie Lehr
- Christina Lewis
- Michele Long
- Anne McDonald
- John Moore
- Lestelle Nichols
- William Patterson & Doris Brown
- Kayla Paulick
- Petra Perez
- Jim & Kathy Phillips
- Daniel Reilly
- Sacramento Area Creeks Council
- Sacramento Audubon Society
- California Native Plant Society Sacramento Valley Chapter
- Pete Scheid
- Julie & John Serences
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- Douglas Souvignier
- Morna Stephens
- Kristie Stevens
- Alberta & Simon Vandermik
- Frederick & Betsy Weiland
- Bill & Nancy Whitaker
- Liz Williamson

- In memory of Jay Michael
- Nancy & William Bittner
  - Jacqueline Bremer
  - Kimberly Dobrinski
  - Beverly Geremia
  - Cyrus Johnson
  - Muriel & Ernest Johnson
  - Gloria Jones
  - Sally & Manuel Karkares
  - Aggie & William Keese
  - June Kelly
  - Julie Landis
  - Lois Mark
  - Warner & Mary Seargeant
  - Jan Stevens



Cedar Waxwings are seasonal in the Sacramento Valley

## Star Volunteers Recognized

James Basham, an Effie Yeaw Nature Center receptionist, and Bill Spaller, American River Natural History Association treasurer, led those honored at the August 26 Volunteer Appreciation Luncheon. Each had accumulated 1,000 hours of lifetime volunteering.

Ask James why he volunteers at Effie Yeaw, and he says, "I heard that it might be closing five years ago. I enjoyed walking in the area, and that it was a good place to educate children about nature. I wanted to help."

And Bill says he always thought he would like to volunteer at the nature center if he had some spare time from work. He became an ARNHA Board member, and when he was asked to be treasurer he stepped up because "I wanted to help the nature center."

About 80 people heard ARNHA President Liz Williamson and EYNC Director Paul Tebbel express appreciation to such volunteers as animal care attendants, fundraisers, habitat restoration workers, and trail walkers. A bountiful luncheon was prepared by EYNC staff members. Volunteer Director Jamie Washington once again served as Mistress of Ceremonies.

## Benchmark Award Recipients

- ❑ Connie Wade, ARNHA Committee Chair, 500 hours
- ❑ Trudy Ziebell, Landscape, 500 hours
- ❑ Sue Davis, Docent/Nature Educator, 500 hours
- ❑ Hunter Merritt, ARNHA Board, 250 hours
- ❑ Michele Beckwith, Animal Care, 160 hours
- ❑ Stephanie Cyr, Animal Care, 160 hours
- ❑ Roz Eliaser, Docent, 160 hours
- ❑ Ethan Hall, Animal Care, 160 hours
- ❑ Celia Karim, Animal Care, 160 hours
- ❑ Melissa Shumate, Docent, 160 hours
- ❑ Susan Solarz, Docent, 160 hours
- ❑ Jackie DeWeese, Animal Care, 160 hours
- ❑ Beryl Michaels, Special Events, 160 hours
- ❑ Krystin Dozier, Docent, 160 hours
- ❑ Smokey Murphy, Habitat Restoration, 160 hours
- ❑ Karin Richardson, Reception, 160 hours
- ❑ Dorothy Wagner, Reception, 160 hours
- ❑ Joe Ravers, Animal Care, 100 hours
- ❑ Ruth Younger, Docent, 100 hours
- ❑ Bob Brown, Docent, 100 hours
- ❑ Susan Brown, Docent, 100 hours
- ❑ Nancy Cieza, Animal Care, 100 hours
- ❑ DJ Deleon, Animal Care, 100 hours
- ❑ Mike Cardwell, Nature Educator/Exhibits, 100 hours
- ❑ Denise Cardwell, Reception/Nature Education, 100 hours

# Idyllic Evening, Reports, and Elections Highlight ARNHA Annual Meeting

by Margaret Leavitt

On a pleasant late-summer evening, deer grazed peacefully in the grass adjacent to the Maidu Replica Village at Effie Yeaw Nature Center (EYNC), and turkeys strutted through the village, stopping briefly to peck at an acorn or drink at the pond. Perhaps, they sensed that the human stewards of their home were on the premises and that their home was in good hands.

On that same evening, September 9, 2015, the American River Natural History Association (ARNHA) held its Annual Meeting. Members attended to hear reports on current financial and management conditions and to celebrate five years of stewardship of the EYNC and the Nature Study Area, since ARNHA took over from the County of Sacramento in 2010. After a reception in the Assembly Building organized by Betsy Weiland and featuring delicious food and drink contributed

by Betsy and other volunteers, members gathered under the oaks to hear reports from ARNHA Board Chair Liz Williamson, EYNC Executive Director Paul Tebbel, and EYNC Volunteer Coordinator Jamie Washington.

Liz Williamson opened the meeting by noting that when ARNHA took over financial and management for EYNC from the County five years ago, its fundraising goals “nearly quadrupled overnight!” Liz thanked those who have enabled ARNHA to meet those goals and ensure that EYNC continues to flourish: the ARNHA Board members who made the decision in 2010 to take over from the County, particularly ARNHA co-founder, the late Carol Doersch; a talented skeleton staff; a very generous community of donors and supporters; and Board members and volunteers who have donated close to 18,000 hours during this year.

EYNC has become a regional resource, Liz said, currently serving school children from schools “from Stockton to Grass Valley and from Placerville to Woodland.” She further noted that EYNC also provides free nature programs or guided hikes for families every weekend, vacation nature camps for children, and natural history courses for adults.

Liz mentioned highlights of the past year, including: the most financially successful year ever; a successful Spring Appeal that enabled the purchase of a new outreach van; the Carmichael Chamber of Commerce honoring ARNHA as “Non-Profit of the Year”; and, *Sacramento News and Review* readers voting EYNC the “Best Recreation Center” in the Sacramento region.

Liz also described future plans for expanding the mission to bring people to nature and nature to people, including taking educational programming to other parts of the American River and the greater Sacramento region and upgrading the inside of the Nature Center to make it more appropriate for nature education in the 21st century.

Executive Director Paul Tebbel reported on the state of the EYNC. The past year brought a great increase in school and other programs, Paul said - a seven to eight percent increase in school programs overall, including seven to ten additional Urban Nature Program tours; an increase in “The Nature of Things” programs for adults to 22 programs with a total of 650 attendees; and an increase of 12 percent in EYNC visitation. Currently in the works is the replacement of 49 interpretive trail signs and, with the assistance of Carmichael Rotary, upgrading of directional trail signs. Paul noted that the drought has caused the loss of some



photo by Kari Bauer

ARNHA Board members at the annual meeting are (from left to right) Don Mongeau, Joey Johnson, Bob McCleary\*, Claudia Hulbe\*, Hunter Merritt, Jackie DeLu, Bud Banker\*, Marsha Bedwell, Liz Williamson\*, and Sandra Dunn. Board members Noah Baygell\*, David Wade\*, Larry Washington, Bill Spaller, and Peggy Kennedy\* did not attend the annual meeting. Board Members with asterisks after their names were elected to new two-year terms. The rest of the Board members are completing the second year of two-year terms.

trees in the preserve and that volunteer efforts to remove duckweed and cattails from the nature pond and star thistle from the Study Area were ongoing. He also mentioned the discovery this spring of a coyote den in the Study Area with four or five pups.

The business portion of the Annual Meeting included two items: First, election of Board Members and Officers (see separate article and photo), and second, an amendment to the bylaws increasing the number of Board members from 15 to 17. Both items passed unanimously.

EYNC Volunteer Coordinator Jamie Washington announced ARNHA Recognition Awards to individual and group volunteers who have provided outstanding service this past year or in an on-going manner. Recipients were Celia Karim, a teen-age volunteer with over 168 hours assisting with Nature Camps since 2013; Jean Marcy, Docent and Nature Educator, who has taken a leadership position in refining nature tours and training other docents; Jackie De Weese, Lead Volunteer in Animal Care; Peggy Kennedy, ARNHA Board member, 2nd Vice President, and co-chair of the Media and Publications Committee; and in an unprecedented “group” award, the Carmichael Ki-

wanis, who have provided on-going and invaluable support, particularly in connection with Bird and Breakfast.

After a fun drawing for nature-related door prizes, the meeting adjourned. Members helped put away chairs and tidy the area before wending their way home, leaving EYNC Nature Study

Area and its inhabitants, and the many people who visit and learn there, in capable hands for another year.

*Margaret Leavitt is a docent, volunteer receptionist at EYNC, and member of ARNHA's Media/Publications Committee. ■*

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## Nature of Things Series Offers Opportunities to Learn

If you want to learn more about nature, Effie Yeaw Nature Center's rich schedule of lectures and workshops for the next few months may be what you're looking for.

Local experts on topics ranging from taking photos on the Parkway to birding to UC Naturalist training to the role of omnivores on the Parkway to Maidu life and customs will instruct and guide participants on field trips as they learn more about our local natural environment and Maidu heritage.

Extraordinary experiences await. For example, in the first session of the fall class on beginning birding with Rich Howard, the field trip offered views of Western Bluebirds bathing on the shore of the American River, a Western Screech Owl peeking out of its roost in a tree trunk, and the elusive Yellow Throat. Surely, the field trips in the spring will offer comparable thrills.

Both Ed Harper's Birds of Winter class and James Scott's Photos on the Parkway will feature amazing photographs of our local biome and offer a chance to hear about techniques that will help you improve photographic skills.

Allison Skidmore, Guy Galante, Brena Seck, and Vince LaPena will share their store of knowledge of local flora, fauna, and Maidu life and what these mean to each of us.

For more information and to sign up, see [SacNatureCenter.org](http://SacNatureCenter.org). ■

### Ask a Naturalist

**Q:** “Are there ticks in the Nature Area?”

**A:** EYNC Lead Naturalist Brena Seck:

“Yes, there are ticks in the Nature Area. Adult ticks are active in temperatures above freezing; in California, adult ticks are most common in fall and winter. Small immature, nymphal ticks, which are the primary vector of Lyme disease, are common in spring into summer. There are different kinds of ticks, but only the Western Black-legged Tick transmits Lyme disease. Ticks do not fly or jump onto people; instead they wait at the end of a piece of grass, “questing” or reaching out for a person or animal to brush against them. They may also be on logs, picnic tables, or rocks.

“To protect yourself from ticks, stay in the middle of the trail and wear insect repellent and light colored clothes, so ticks are easy to see. Wear a long-sleeved shirt tucked into long pants, and tuck your pants into your socks or boots. Check yourself for ticks for several days. To remove a tick, use tweezers, grasping it close to the skin and applying a steady, upward pressure to make sure the entire tick is pulled free. Wash or apply antiseptic to the tick bite and wash your hands. Saving the tick in a sealed container may be helpful to your doctor or health department if you get sick or develop a rash after a tick bite. Please do not use insecticides, lighted matches, gasoline, petroleum jelly or liquid soaps to remove ticks, as these techniques may cause injury and are usually ineffective.” ■

# HOLIDAY SALE

AT THE EFFIE YEAW  
NATURE CENTER



**Saturday, December 5th**  
**9:00am-4:00pm**

**Explorer Kits · Jewelry · Guest Vendors**  
**Art · Pottery · Toys · Garden Décor · Books**



*Enjoy Complimentary*  
*Refreshments & Gift Wrapping*

**20% discount in Discovery Shop**  
**for ARNHA Members**

## UC Naturalist Program at EYNC

*by Mary Jane Boxer*

Come spring, a group of about twenty students in the UC Naturalist Certification Program at EYNC will be investigating local and regional geology, local hydrology, local flora, and local fauna as well as relevant topics like renewable energy and modern threats to our natural world.

The fourth session of classes of The UC Naturalist program at EYNC, in conjunction with the UC Cooperative Extension, will consist of 40 hours of classroom lecture and field survey and investigation. The class will take one or more offsite field trips. The recent class went to Table Mountain in Butte County to observe the annual migration of swans.

Each participant is required to complete a Capstone Project designed to further citizen science and community stewardship. The program prepares students, upon graduation and certification, to continue to volunteer with and be a voice for a local entity in support and conservation of our natural world.

Allison Skidmore taught in the most recent class and will teach this spring's class. Her background is in conservation biology. She has done extensive field work and interpretation in South Africa, and most recently, in Montana on behalf of the reintroduction of wolves into Yellowstone National Park.

If you want to learn more about this spring's class and its instructor or sign up for the class, contact Mary Jane Boxer at [maryjaneb@SacNatureCenter.net](mailto:maryjaneb@SacNatureCenter.net). The cost of the class is \$385.

*Mary Jane Boxer is an EYNC naturalist.* ■

*Left to right: Allison Kunz, Elaine Applebaum, Ann Daniel, and Sarah O'Gara examine Horehound as part of their UC Naturalist Program.*



photo by Kari Bauer

# NatureFest 2015

by Margaret Leavitt



Autumn was in the air—Canada Geese and Sandhill Cranes overhead, acorns and dry leaves underfoot, and . . . at Effie Yeaw Nature Center . . . NatureFest! On Sunday, October 4, EYNC hosted its annual NatureFest, a fall event that truly exemplifies EYNC’s mission of bringing nature to people and people to nature. Over eleven hundred people of all ages gathered under the oaks to learn, experience, listen, and create, with contributions by over thirty exhibitors, including California Department of Fish & Wildlife, Carmichael Water District, NorCal Bats, the Mira Loma Arcade Creek Project, Folsom Zoo, and the Karuk and Maidu Tribes.

Sac-Sierra Trout Unlimited hosted its always-popular fishing exhibit, allowing future anglers to try out the challenges of fly fishing. Exhibitor “re/create” offered kids the chance to create art from recycled materials. Visitors delighted in the up-close observation of rattlesnakes and the chance to learn more about these often misunderstood animals at the Rattlesnakes! exhibit. And EYNC naturalists and docents gave hourly Critter Corner animal talks featuring EYNC animals, led nature walks, and assisted children in making Maidu-inspired abalone necklaces.

On the Main Stage, several groups educated and entertained, with demonstrations of physical science by Mad Science, and animal shows by the California Raptor Center and Wild Things, Inc. The California Raptor Center (CRC) presented some of its resident raptors, including a Golden Eagle, a Turkey Vulture, a White-tailed Kite, and a Swainson’s Hawk. CRC, based in Davis, takes in about 300 injured and rescued raptors a year with the goal of rehabilitating and releasing into the wild as many as possible.

Also on the Main Stage, Wild Things introduced some of its rescued and non-releasable animals, all of which are found locally. Wild Things presenter, Gabe, brought out “Flower,” a skunk; “Precious,” a Northern Pacific rattlesnake; “Opie,” an opossum; and “Whizzer,” a Turkey Vulture, among others. A big crowd-pleaser was “Cody,” a high-energy six-month old coyote, who had been kept by a family who had found him as a pup. With each animal he introduced, Gabe described the circumstances that prevent that animal from living in the wild—injury, being raised by people, etc.—and stressed that the wild is where each of these animals really belongs.

NatureFest would not be possible without the generous contributions of sponsors and countless hours donated by volunteers. On the Friday before NatureFest, sixty-eight 6th graders and a dozen parents from Mission Avenue School prepared the EYNC grounds by raking the village, sweeping the parking lot, washing tables, chairs, signs and amphitheater benches, and adding wood chips to the play area. Over seventy EYNC volunteers and some volunteers from Carmichael Kiwanis and Carmichael Rotary were on duty the day of NatureFest, many taking on multiple shifts to make sure all ran smoothly.

The success of NatureFest can best be gauged from the comments of those attending:

“Everyone that I interacted with was very friendly and incredibly helpful. Every year it’s the same thing, and I just love it!”

“Great to see families out there.”

“Baby rattlesnake, eagle and the tiny bats!”

“The beautiful setting, the abundance of things to do and see, something for everyone, relaxed yet fun environment, the overall organization.”

“This was our first time, and my three girls really enjoyed it. You had something for each age group. We will be back.” ■

*NatureFest attendees open a world of discovery and wonder.*

photos by Kari Bauer

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## ARNHA Calendar of Events

- **Fall Nature Camps**

November 24 & 25, 10 am to 1 pm  
Effie Yeaw Nature Center (see page 6)

- **Holiday Sale at Discovery Shop**

Saturday, December 5, 9 am to 4 pm  
Effie Yeaw Nature Center (see page 10)

- **ARNHA Wildlife Count**

Saturday, December 5  
7 am to 3 pm (see below)

- **Winter Nature Camps**

December 21 through 23 & 28 through 30  
10 am to 1 pm (see page 6)

- **Nature of Things Series**

Effie Yeaw Nature Center (see page 9)  
See [SacNatureCenter.org](http://SacNatureCenter.org) for more details

See [SacNatureCenter.net](http://SacNatureCenter.net) for more information.

## Birds, Otters, Beavers, Deer - Oh My! - The 31st Annual ARNHA Wildlife Count December 5, 2015

*by William E. Avery Ph.D.*

The 31st Annual ARNHA Wildlife Count will be held from 7 am to 3 pm on Saturday, December 5, 2015. New participants with birding experience are welcome. The count is now submitted by team leaders via eBird and available to citizens and scientists around the world. It is also used by the Staff of Effie Yeaw Nature Center and ARNHA to follow the population trends of various species of wildlife in the American River Parkway. Citizen Science efforts such as this assist us in tracking the potential effects of droughts and climate change on bird populations. Just a few of our local species at risk include the Black-crowned Night Heron, Western Grebe, Bufflehead, Common Goldeneye, and Western Bluebird.

Eleven teams, including one team in a canoe, participated in the 2014 Wildlife Count and counted 19,756 birds in 122 species (132 taxa including subspecies and other taxa) compared with 19,166 birds in 111 species in 2013 (and 115 species in 2012).

Our teams have been dwindling a little. Team 3 (the Ducks, traditionally covering Sacramento Bar) was unable to participate last year, for the first time in 30 years. Experienced birders, advanced beginners, and wildlife observers interested in joining up would be sincerely appreciated. Folks who are interested in participating in the 2015 Wildlife Count can email their name, email address, and phone number to Count Coordinator, Bill Avery ([averyw@csus.edu](mailto:averyw@csus.edu)). Unless you have a specific area of the Parkway you're interested in, your name will be provided to the Team Leaders who need more participants on their teams.

*William Avery is a frequent contributor to The Acorn and is a Professor in the Department of Biological Sciences, CSUS. He recently completed artwork for Field Guide to California Rivers, UC Press, 2012, and Field Guide to Oregon Rivers, OSU Press, 2014. ■*

