



## BIODIVERSITY

### *a wealth of species in the American River Parkway*

by William E. Avery

**B**iodiversity, short for biological diversity, is an ecological buzzword that generally translates to species diversity or richness (the number of plant and animal species in a given area). With biodiversity threatened and diminishing nearly everywhere on the planet, locations known to have a relatively high biological diversity are being seen as increasingly precious. The American River Parkway is one such precious place.

Snorkeling down a stretch of the lower American River will reveal many different kinds of algae, water weed, invertebrates such as tubifex worms, clams, dragonfly, caddisfly and mayfly larvae, crayfish, and many species of fishes. Canoeing, or rafting, the same stretch one will see muskrat, beaver, deer, otter, and a variety of waterfowl and wading birds. Hiking or biking the parkway one notices an abundance of grasses, flowers, shrubs and trees spanning a wide range of habitat types. A patient and persistent birder may see 70 or more species of birds in a single day! This is biodiversity! With its 200 species of plants, hundreds of species of invertebrates (aquatic and terrestrial), 20 species of fishes, dozen spe-

cies of reptiles and amphibians, 110 to 175 species of birds (including the many seasonal migrants, see results of 2006 annual wildlife count [www.arnha.org](http://www.arnha.org)), 20 species of mammals (including bats!) the American River Parkway has a high species richness indeed adding new meaning to the idea that the Parkway is

a crown jewel in the Sacramento region. Though the biodiversity of the American River Parkway is far less than that of a tropical rainforest or coral reef, it does have a high local diversity relative to its Central Valley surroundings.

As with most forms of wealth, this species richness is the result of a long-term investment, it is an investment that can yield dividends of enjoyment for many but it is also an increasingly precious commodity that we want to thoughtfully protect.

Species richness is a sign of a healthy ecosystem. At the base of the Parkway food web, algae, aquatic plants, land plants, shrubs and trees convert Sacramento's abundant sunlight into vegetation that can be consumed or utilized by aquatic insect lar-

vae and terrestrial herbivores. Many fishes (such as the several species of minnows), small amphibians and reptiles (such as the Western fence lizard), resident and migratory birds (such as robins and warblers) consume these insects and other herbivores. Larger predatory fishes (such as striped bass), reptiles (rattlesnakes and gopher snakes), raptors (such as the red-shouldered hawk and great-horned owl), and mammals (such as otters and coyotes) make up the top level of the food web. Because energy is lost in each conversion (producer to herbivore to primary carnivore to secondary carnivore), the higher-level predators are necessarily less-common than herbivores or plants closer to the

base of the food web. Individual species of plants and animals all have their own relative abundance on the parkway. Some, like coyote brush and the California quail are relatively common, others like pipevine swallowtail butterfly and osprey or great-

horned owls are relatively rare. Wildlife biologists will often look specifically for the relatively rare top-level carnivores (sometimes called indicator species)

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## Annual meeting

ARNHA's annual meeting this year promises to be more a party than a mere business gathering. It will begin with refreshments and displays by artists and end with a guided twilight nature walk through the grounds of the Effie Yeaw Nature Center.

"We want it to be something people can come to and enjoy. We want to see lots of members there," said Jamie Washington, the board member in charge of orchestrating the meeting.

The gathering was being planned for 6:30 p.m. on Wednesday, June 13, at the Nature Center. Copies of the annual report will be available, and a major item on the agenda will be recognition of volunteers, Jamie said. "That's a huge resource. We had 7,175 hours logged by volunteers last year; 45 logged 250 or more hours, and 17 worked more than 1,000 hours."

The nature walk is a sure-fire hit, she said. "You never know what you'll see, but you can almost always count on a deer, a turkey, maybe an owl." ■

## ARNHA Forum

### Butterflies in Peril

Dr. Arthur M. Shapiro, widely-known butterfly authority at the University of California, Davis, will be featured at an ARNHA free public forum, "Butterflies in Peril," at an ARNHA free public forum at 7 p.m., Wednesday, June 20, at the Effie Yeaw Nature Center Assembly Building in Ancil Hoffman Park.

"Since the late 1990s species that had been very successful in ...transformed landscapes are disappearing from our area at an alarming rate, and the trend seems to be accelerating," Dr. Shapiro says.

He and artist Tim Manolis collaborated on *Field Guide to Butterflies of the San Francisco Bay and Sacramento Valley Regions*, published this spring by the University of California Press. The volume will be available for purchase and signing at the June 20 program. Dr. Manolis is also the author and illustrator of *Dragonflies and Damselflies of California*, from UC Press. Light refreshments will be served. ■

## Letter to the Editor

### Dear ARNHA:

Thank you for your donation that helped educate the 2<sup>nd</sup> grade students on the science program at the Effie Yeaw Nature Center. We found the program very much worth our time. I know the students did find the hands-on-activities and experiences to be very educational during our theme on "Animals, Habitats and Camouflage."

This field trip is helping to teach the Science Content Standard Earth Science, 2<sup>nd</sup> Grade (#3, c and e). The students loved to see deer in their natural habitat. Also, they loved meeting the snake and feeling its scales. The other exciting part was getting to go under the wetlands (in the Discovery Room exhibit) and see the truly unique plants that grow there. We really appreciate your association funding this event, so Ethel Phillips 2<sup>nd</sup> grade students could experience the "wonders of nature!"

Sincerely,

Pauline Wilson, 2<sup>nd</sup> Grade Teacher

Ethel Phillips Elementary School, Sacramento ■

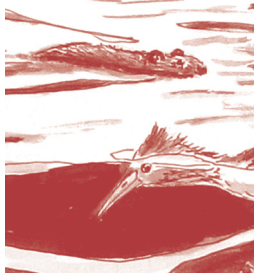
## *Biodiversity, from page 1*

such as otters or great-horned owls to determine whether or not the ecosystem, as a whole, is healthy enough and productive enough to support that level of consumer. A healthy ecosystem can sustain both rare and common species.

Whether rare or common, in order to have sustainable populations, that reproduce and remain present over time - even in the face of normal environmental fluctuations, a relatively large area is required. Area, or total contiguous

acreage, is the single most important factor influencing species diversity. In every case ever studied by ecologists, whether in the tropics or here in California, a large contiguous habitat area is correlated with high species diversity. Larger areas have greater habitat diversity and thus more niches available for different species. Larger areas also support larger populations of any given species. Larger populations mean greater chances of survival under the always fluctuating conditions of the environment. Scientists who study wildlife reserve design also know that the shape of a reserve is important. Reserves should have deep interior space for secretive species. Interior spaces are also less subject to human disturbance. Such undisturbed areas are important in most animal life histories during breeding season. Studies show that at high rates of disturbance species richness decreases significantly.

Reserves should also connect to each other, via corridors, so all species (animals or plants) can move or be moved about as seasons or environmental conditions change. Corridors effectively increase the area of a reserve by giving species access to more space and greater habitat diversity. With its 5000+ acres, the American River Park-



way can be considered to be a large area – at least from an urban/suburban park perspective. The Parkway is renowned as being the longest urban parkway in the United States. It acts as an important corridor connecting the California coast to the Sierra Nevada foothills. By virtue of it being a relatively protected parkway on both sides of a river it serves as a relatively low-disturbance corridor allowing movement of animals as seasons and conditions change. This can be especially important for songbirds that migrate to

higher elevations in the hot summers. Decisions that add to the area or add corridors that connect it to other parks or reserves will maintain or increase its wealth of species. Setting aside new open-space areas between Sacramento and the foothills and including corridors to connect them with the Parkway would be additional investments toward biodiversity. On the other hand, decisions that decrease any amount of area, or decrease interior area by increasing disturbance, or that reduce connectivity by blocking corridors, will reduce the wealth of species.

Two other factors that influence species richness are pollution and invasive species. Pollution ranges from lubricants to pesticides and herbicides to fertilizers. These make their way into the Parkway largely through urban runoff from storm drains. Efforts to educate the public about the dangers of the misuse of storm drains, and the sensitivity of the American River Parkway (especially aquatic invertebrates and fish eggs and larvae) to these substances must continue. All these substances will reduce biological diversity on the American River.

Invasive species, on the other hand, are non-native species that have the ability to increase rapidly in population numbers, unchecked by native disease, herbivores or predators. Examples of invasive plants include red sesbania and false bamboo. These plants can out-compete important native riparian plants such as willows, white alder, and Fremont cottonwood. As native riparian shrubs and trees become less-abundant less food or habitat may be available to species that depend on these plants. In some cases invasive plants (i.e. red sesbania) are highly toxic to herbivores such as beaver and mule deer. The addition of invasive species can collapse large segments of a native food web with effects that cascade throughout the entire food web and significantly reduce biological diversity. Efforts to control and eradicate invasives should be strongly encouraged. Efforts to study the less-obvious impacts of non-native species whether plant or animal (i.e. domestic geese, housecats, etc) on the parkway should also be encouraged.

Biological diversity is a beautiful and precious attribute of the American River Parkway. How do we protect this wealth of species as human population increases and the global climate changes? We must continue to encourage public appreciation of the various plant and animal species of the Parkway. There is nothing like the love of a place and the creatures that live there to motivate a protective attitude in people. We must continue to encourage decisions that will maintain or increase the total area of the Parkway and never diminish the total area. We must maintain or increase the Parkway's connectivity to other parks and protected areas, always minimizing disturbance while protecting it from pollution and preventing the spread of invasive species. Though it might seem

*see Biodiversity, page 6*

that the several hundred species that call the American River Parkway their home are trivial when compared to the world's 1.75 million known species, and that other riparian areas in California could serve as alternate homes should something impact the American River Parkway, protection of the Parkway is still essential. It is at local levels that specific protected areas are created, maintained and linked with protected corridors. With global biodiversity threatened by human population and climate change it is ultimately local conservation efforts, whether in the tropical rainforests, coral reefs, or in California's central valley, that will ensure the protection of planet Earth's wealth of biodiversity.

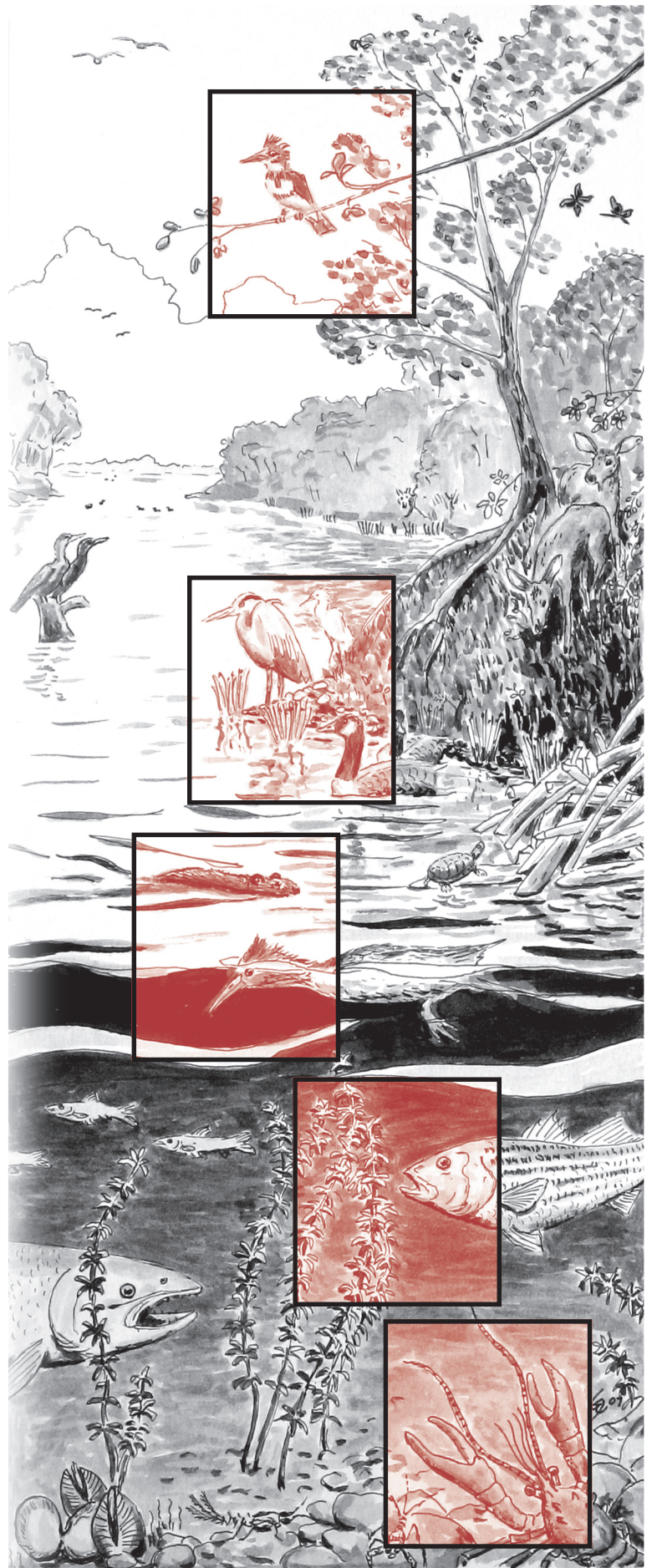
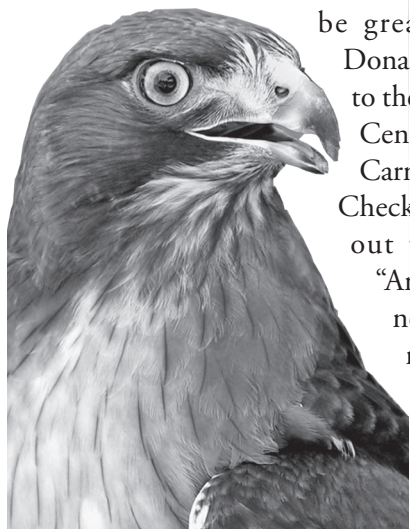
Biodiversity represented in the artwork (in major taxonomic order from bottom to top and left to right if at same level): *Elodea*, rushes (*Juncus*), white alder, Himalayan blackberry\*, willows, Fremont cottonwood; Asian clam\*, tubifex worms, damselfly larva, mayfly larva, signal crayfish\*, pipevine swallowtail butterfly; Chinook salmon, striped bass\*, Sacramento pikeminnow; Western pond turtle; common merganser, Canada goose, great blue heron, snowy egret, double-crested cormorant, common goldeneyes, belted kingfisher, California gulls; muskrat\*, beaver lodge, mule deer, coyote. (\*introduced, non-native, in the California central valley). ■

### Room to Spread Their Wings

The Nature Center's raptors need more space and a project is planned to enlarge their enclosures. Volunteer labor will be used but the budget for materials is \$6,700. This expenditure will have to come from donations and grants. If you can help the Nature Center with a donation for this project, it will be greatly appreciated.

Donations should be sent to the Effie Yeaw Nature Center, P.O. Box 579, Carmichael, CA 95609. Checks should be made out to ARNHA with "Animal Care" in the notes section. Tanner, Skye, Rocky and Luna will thank you personally! ■

EFNC's Tanner



# Paula Baldi Named 2006 Volunter of the Year

The Sacramento County Board of Supervisors has singled out long-time ARNHA activist Paula Baldi as the 2006 Volunteer of the Year for the county's Regional Parks department.

In an elaborate ceremony April 10, the board issued a proclamation that zeroed in on Paula's "generosity, Hospitality and elegance" in planning, organizing and orchestrating a host of activities to support ARNHA and the Effie Yeaw Nature Center, including the annual Bird & Breakfast extravaganza and ARNHA annual meetings.

"She's been doing this for more than 25 years — more than 4,000 hours — so she was certainly due for the recognition," said nature center director Marilee Flannery after the ceremony. "She's such a warm, friendly person that when she comes in to visit everyone has a smile on their face when she leaves."

Paula said she began her work as an ARNHA volunteer "sometime around 1980," when another ARNHA stalwart, Carol Doersch, knocked on her door soliciting money for seeds for the center's Maidu exhibit.

"I was hooked. What a wonderful idea," said Paula. "I believe in volunteering anyway. I learned it from my mother. When somebody asks you pitch in, you do it. But volunteering for ARNHA has been special."

She pitched in and took the lead in establishing the Salmon Festival while branching out to take part in virtually every major public event at the center.

Paula is ARNHA's corresponding secretary and has served on the board since 1991, holding such positions as vice president and treasurer.

Her recognition as Volunteer of the Year puts her in good company. She is the fifth ARNHA recipient since 2000 to be so named, joining Jack Heihle, 2005; the ARNHA board, 2004; Roberta Wilner, 2003, and Richard Horgan, 2001.

"ARNHA volunteers are so active and do so much we really ought to win every year, but they have to give the award to people from other organizations just to keep the peace," said Marilee.



Paula proudly displays the resolution given by the Sacramento County Board of Supervisors. ■

## FROM THE ALMANAC

### River walk

The maturing spring seems to signal a stepped-up tempo of natural rhythms along the river. What better example than five male mallards, glossy-green heads and necks tipped upward, wings beating furiously, flying in close formation under a bridge like a flight of jet-jockeys?

A yellow swallowtail butterfly with black wing margins and black tiger stripes hurries through shrubby willows along the shore. Pale pink blossoms presage the juicy sweetness of wild blackberries, a reminder of what the Nisenan and pioneers knew, that the best things in life are free.

The booming *jug-o'-rum* of a bullfrog echoes from a hidden pond, apparently indicating its availability for parenthood. Without even seeing him, we'd risk 40 dollars that he can outjump any frog in Calaveras County. And a tiny wren flits through the underbrush, wagging its tail from side to side, singing high, singing low, trilling counterpoint to the bullfrog's resounding call.

The bright green, feathery leaves of sweet fennel tickle yet another sense. Squeeze one and it gives off a fine licorice fragrance; come back in a month or two and savor the tasty seeds, which folks in the old country long ago discovered enhance cookies, soups and stews.

Overhead, bits of cottony masses from the tall cottonwoods drift like lazily-moving gulls against the bright blue sky. Fleets of snowy cumulus clouds are anchored near the horizon, slowing down the action on a late spring day against the backdrop of the river, always the river. . . .

*Reprinted from ARNHA's "An American River Almanac: Reflections on nature throughout the year," with essays by Peter J. Hayes and color photographs by Tom Myers and George Turner. It can be purchased at the Effie Yeaw Nature Center and selected book stores. ■*

## American River Natural History Association

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## ARNHA Calendar of Events

- **Rex Cycle Bike Ride**  
Saturday, June 9  
www.arpf.org/rex, (916) 486-2773
- **Summer Fun Days**  
June 11 to August 17, 9 am to noon  
Effie Yeaw Nature Center (story page ?)
- **ARNHA Annual Meeting**  
June 13, 6:30 pm  
Effie Yeaw Nature Center (story page 3)
- **Down River Day**  
Saturday, August 4  
www.arpf.org, (916) 486-2773

# Welcome New Members

Janelle Auyeung  
Kara Buck  
Donna Carrillo  
Cindy Centerwall  
Katrine Charamuga  
Richard Cristofani  
Kimberly Dunn  
Jeremy Emmons  
Jennifer Enos  
Cynthia Fagan  
Elizabeth Faxon  
Peter Fickenscher  
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Thomas Flood  
Joseph Gallegos  
Suzanne Gibbons  
Troy and Erin Givans  
Laurie Givant  
Heather Goodman  
Elizath Gurev

Janea Marie Hackett  
Valeris Hanson  
Deborah Haravego  
Martin Helmke/Joan Williams  
Beidget Henderson  
Anne Hiles  
Lisa Hilger  
Magan Kalustian  
Annie Kaplon  
Heidi Konarski  
Richard and Carol Laursen  
Janea and James Little  
Kristin Lloyd  
Ken Mack  
Bruce Mapes  
Cindy Martin  
Fumiko Morita  
Randy and Maureen Morris  
Sallie and Dan Musso  
Kelly Norris

Jeff O'Mealy  
Maureen Pascoe  
Kristi Perry  
Kathy Phillips  
Tam A Pine  
Liane Randolph  
Michael Rogawski and Julie Schweitzer  
Anna Ryan  
Vera Sandronksy  
Richard Searle  
Gordon and Aliceon Sloss  
Anne Spies  
Jake Steward  
Molly and David Sutherland  
Taina Valone  
Thomas and Catherine Vigrn  
Julie Yee  
Sabrina Zamudio ■

Tell Your Friends About ARNHA – Recruit a New Member Today