Member Newsletter of the Los Angeles Zoo and Botanical Gardens

JULY-AUGUST 2016

water world

"Water quality is the key in keeping fish and amphibians," explains Curator of Reptiles, Amphibians, and Fish Ian Recchio. In his 20-plus years at the Los Angeles Zoo, he has seen a steady evolution in technology and advances in water quality science that have made the aquatic exhibits at the Living Amphibians, Invertebrates, and Reptiles and Rainforest of the Americas possible. In addition to rare frogs, newts, turtles, and salamanders, the Zoo is now home to a variety of unusual fish.

Archer fish (above) and rainbow fish (below) share habitat with a Fly River turtle in the LAIR.

🍯 Make It a Date

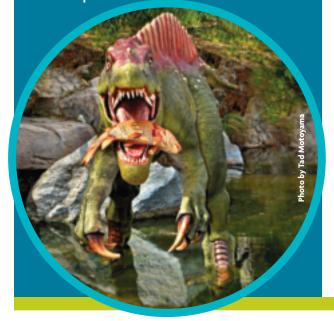
Dinosaurs: Unextinct at the L.A. Zoo For a limited time, magnificent creatures of the Mesozoic are enjoying a return engagement at the Zoo. Come face-to-face with 17 life-size, lifelike animatronic dinosaurs during an adventure that includes photo ops (for the ultimate #SelfieSaurus), a fossil dig, and 3D "augmented reality" content that can be unlocked on your smartphone through the Dinosaurs: Unextinct at the L.A. Zoo app. This experience isn't only about traveling to the past it's also about life on Earth today. Modern animals share many similarities with dinosaurs, including the threat of extinction. Discover fascinating connections between dinosaurs and Zoo residents as well as ways you can help protect endangered species. Separate admission required. Tickets cost \$5 (children under two are admitted free) and are available at the Zoo and online at www.lazoo.org/dinos. Daily through October 31 10 a.m.-4 p.m.



Roaring Nights

These wild summer evenings feature live bands, DJs, animal encounters, pop-up keeper talks, L.A.'s best food trucks, and more. July's theme is Country Night, August is Indie Night, and September celebrates the 1980s with special tributes to David Bowie and Prince. Guests can add more "roar" to their night by exploring *Dinosaurs: Unextinct at the L.A. Zoo.* Must be at least 18 years of age to attend. For details and tickets, go to www.lazoo.org/roaringnights. July 29 (Friday), August 26 (Friday), and September 16 (Friday)

See pg. 2



Brew at the L.A. Zoo

Spend a summer evening sampling beer from local craft and microbreweries, live entertainment, and delicious pub-style food while visiting many of the Zoo's animal residents. General admission tickets cost \$65 presale and \$75 at the door (subject to availability); \$60 presale for GLAZA members and \$70 at the door (subject to availability). Designated drivers pay \$25. VIP access (\$125 per person) includes admission to exclusive lounges with food and specialty drinks/pours plus early entry to the entire route. You must be at least 21 years of age to attend this event. This event does not include admission to Dinosaurs: Unextinct at the L.A. Zoo. Tickets are now on sale at www.lazoo.org/brew. August 5 (Friday) 7–11 p.m. VIP 6–11 p.m. Last pour 10:45 p.m.

7–11 p.m.



zoo update by John Lewis, **Zoo Director**

The L.A. Zoo is a living, breathing organism made up of the myriad species that reside here, people who visit and benefit from the Zoo, and Zoo staff. And, like any living thing, the Zoo changes with age. Animal residents change demographically and by species as the Zoo strives to contribute to the care and sustainability of different animals and plants. Individual visitors

certainly change over time, while visitors in general change demographically and by expectations. Zoo staff changes, too, as they pursue other opportunities or move on to other stages of their lives. The Zoo has been fortunate to have a lot of stability within its employees, several of whom have served for decades. Two such individuals are Curators Jennie Becker and Jeff Holland.

Jennie has retired after a full career here, during which her many meaningful achievements benefitted the Zoo and the animals under her care. Jennie started at the Zoo as an animal keeper and worked in several locations before she became the curator in charge of primates, carnivores, elephants, and tapirs. She successfully developed husbandry and care programs that supported long lives and reproduction

WATER WORLD Continued

"Over the last two decades or so, technology has come a long way," Recchio says. "In the past, water changes were the key to keeping tropical fish—a lot of water changes—because the particulates (poop and other waste) were being filtered out mechanically. You'd drain the old water, clean out the sponge or whatever filtration was in there, add fresh water along with chemicals to neutralize additives that are routinely added to tap water that might be safe for us to drink but not for fish to live in. That's a lot of work with a ten-gallon tank, so you can imagine the process for a huge exhibit aquarium."

Maintaining water quality is a balancing act. Municipal water not only contains chlorine (to control pathogens) and fluoride (which reduces tooth decay), but the water itself varies in its mineral levels and pH depending on the source, the season, and the weather. So purification is important—but it's also possible to over-filter and create a situation in which the water actually draws minerals or other compounds from the tissues of the animals living in it. With each water change, an aquarium environment might fluctuate significantly. Fortunately, new technology makes achieving consistency a smoother, if not simpler, task.

Ultraviolet (UV) sterilization has existed for more than a century, but it wasn't implemented on a large scale for drinking water until the 1950s in parts of Europe. It works because ozone in the Earth's atmosphere blocks most UV wavelength light, so most bacteria, viruses, and fungi cannot tolerate intense UV exposure, which inhibits their ability to reproduce. Once the undesirable microorganisms are eliminated, biofiltration maintains the environment. This method employs a different array of bacteria to break down fish waste and convert it into harmless elements. (See "Something In the Water," page 3.)

"UV sterilization and biofiltration are state of the art for maintaining water quality," Recchio observes. "They're probably less labor intensive in terms of manual work, but they require constant monitoring of water conditions and a thorough grasp of some really sophisticated machinery. Thankfully, our aquarists, Thomas Taira and Micah Hagen, are virtuosos at life support systems, and that means a healthy, stable environment for the animals."

Fish, of course, spend their lives in water and breathe through it, so for them water quality is critical. But amphibians spend the first two stages of life (as eggs and larvae) leading a totally aquatic existence, and as adult frogs, salamanders, and newts, they continue to depend on clean water. Many are also highly sensitive to temperature.

"With species such as the mountain yellow-legged frogs, which have evolved in pristine mountain streams where the water is as clean as it gets, it's vital to have consistency," Recchio adds. "In the Zoo's old reptile house, there was no flexibility for us to create optimal conditions for animals with specific requirements. The LAIR and the Rainforest of the Americas are equipped so that we can monitor and adjust temperature and humidity levels for individual habitats, and UV sterilization and biofiltration enable us to maintain some of the world's most environmentally sensitive and endangered animals."

Amphibians and fish are important indicator species. Thriving populations of these animals are a sign of healthy aquatic habitat. It's true in the wild and it's true in captive settings. Thanks to advances in technology and an ever-increasing understanding of these creatures' needs, they are thriving at the Zoo.



animal activities at your Zoo

Spring hatchings for the months of March and April included three California condors, five **black-headed weavers**, and a greater flamingo. One butaan (Gray's monitor), five knob-tailed geckos, a Madagascan day gecko, and a Mexican beaded lizard. The bevy of hoofstock births included two **Nubian ibex**, one gerenuk, three Tadjik markhors, and a bighorn sheep. Two Kikuyu colobus monkeys and a **pale-headed saki monkey** were born;

rounding out the births were eight Yarrow's spiny lizards.

Arrivals included a group of reptiles from Australia—ten Australian red-eyed tree frogs, seven Boyd's forest dragons, two knobtailed geckos, two golden-tailed geckos, and two perentie monitor lizards. Among the other incoming animals were four **tiger** salamanders, a Speke's gazelle, a Nubian ibex, and a male okapi. Two female mandrills, three African wild dogs, and two Anatolian shepherd dogs also arrived.

Departing animals included a Komodo dragon, two giant horned lizards, four knobtailed geckos, two butaans, seven South American bushmasters, two bighorn sheep, and a red-flanked duiker. Two California condor eggs laid at the Zoo were transferred to wild nests.

perentie monitor lizard

of many species. She was especially talented in communicating with domestic and foreign colleagues working in the field and at other zoos for the benefit of animals. And she was very successful when working with state and federal regulators and permit offices to facilitate the movement of protected species.

Jeff is moving on to another facility to share his passion and expertise on

hooved animals including deer, antelope, and swine. At the L.A. Zoo, Jeff oversaw programs for the hooved animals, pigs and peccaries, hippos, marsupials, and seals. Jeff was very active in working with European and Australian colleagues to exchange animals for the mutual demographic and genetic benefit of each population. He was instrumental along with Association of Zoos and Aquariums (AZA) staff in working out agreements with the U.S. Department of Agriculture so that exotic hooved animals could more easily be moved from European zoos into the United States. Jeff was active in fieldwork, including the reintroduction of peninsular pronghorn back into Baja California, Mexico and studying the status of Chacoan peccaries in Paraguay.

Both Jennie and Jeff contributed much

by Jamie Phan

to the Zoo during their time here, and I wish them well in their new endeavors. While things will be different without them, I look forward to the opportunities that change will afford so we can build on the work they started. Building on their work, the Zoo and its animal residents will continue to live and breathe and inspire new visitors, thereby making a difference every day.

NATIONAL ZOO KEEPER WEEK

As the need to protect wildlife and vanishing habitat increases, the role of animal keepers in zoo education and outreach has become essential. As people who work most closely with the animals, they offer unique professional and personal insights. During the third week of July, zoos across the country celebrate National Zoo Keeper Week—this year July 17 through 23. Created by the American Association of Zoo Keepers (AAZK), it recognizes the accomplishments of animal care professionals who are responsible not only for the wellbeing of animal ambassadors in America's zoos, but who, in many cases, are involved in conservation causes that make a difference for wildlife in the field around the world. For all our keepers do for the L.A. Zoo, we thank you!

Check our website during Zoo Keeper Week for profiles of some our fantastic animal care staff.

Animal Keeper Art Gonzales with okapi.



As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles and the Los Angeles Zoo do not discriminate on the basis of disability and, upon reasonable advance notice, will provide reasonable accommodation to ensure equal access to its programs, services, and activities. Sign language interpreters, assistive listening devices, or other auxiliary aids and/or services may be provided upon request. To ensure availability, you are advised to make your request

SOMETHING IN THE WATER

By Thomas Taira, Aquarist

As a result of climate change, many more people are familiar with the carbon cycle, but nitrogen is the most abundant element in our atmosphere, and it, too, has a cycle that goes on all around us. A primer on the nitrogen cycle: fish waste is mostly ammonia and is highly toxic to fish, even in small quantities. Certain bacteria convert ammonia to nitrite (less harmful); another species converts nitrite to nitrate (barely harmful). A common saying with aquarists is "taking care of an aquarium is more about taking care of bacteria than it is taking care of fish."

A brand new tank is sterile, so you first have to establish a healthy population of bacteria. There are a few ways to do this. The old school way is to throw the fish in and change the water as water quality (WQ) goes south. Nitrobacter, nitrosomonas, and nitrosococcus are everywhere, and this method relies on airborne bacteria to land in your tank. A variation involves taking soil from a garden and filling a bag filter (or pantyhose) with it and placing it in the tank. The bacteria in the soil colonize the aquarium a bit faster than airborne stuff. Either of these methods has your fish suffering through bad WQ and wild fluctuations in pH and nitrogen.

The more humane way is to do fishless cycling. I take a sterile tank and add ammonium chloride (fish poop analog) and sodium nitrite to the tank and then add commercially purchased bacteria (a mixture of nitrobacter, nitrosomonas, and nitrosococcus). I measure the concentrations of ammonia, nitrate, and nitrite daily. Things start looking good when ammonia starts dropping—that means the nitrobacter is getting established. Things look even better when nitrate starts showing up and nitrite drops. That means nitrosomonas and nitrosococcus are taking hold and synthesizing the nitrite into nitrate. When the tank can bring ammonia from 1.0 part per million (ppm) to zero overnight, then I'd say it's safe to add fish (after doing a water change to dilute any nitrate). If the tank is going to be fishless for a while, you have to add ammonia regularly to feed the bacteria.

These important bacteria are mostly self-sustaining. They stick to everything—walls, gravel, windows, pipes. Most aquariums have a bio-tower on their life support, which is designed to facilitate the growth of the bacteria; they're jam packed with biospheres, which are small rubber balls covered with projections that provide more surface area and gas exchange. Barring a catastrophic accident, I don't think about bacteria after they are established—though at the start it's all I think about.

Rainforest of the Americas is home to a school of piranhas.



While you may be 65 million years too late to ADOPT a dinosaur, you can still ADOPT a crocodilian! Many Zoo residents—from the tomistoma to the African wild dogs and the cassowary—share features with dinosaurs, and you can help guarantee their survival. Support the L.A. Zoo's wildlife conservation efforts by making a gift to the ADOPT (Animals Depend On People, Too) program. Animal ADOPTions make great gifts! Starting at \$35, recipients receive a personalized ADOPTion certificate and fact sheet; additional benefits are available at various levels (up to \$1,000). Funds help the Zoo participate in more than 30 international conservation efforts working to protect endangered species and their dwindling habitats. For details, visit www.lazoo.org/adopt or contact the Development Division at 323/644-6035.

CONSERVATION CORNER

If you're hiking in the San Gabriel or San Jacinto mountains, you may be fortunate enough to see a mountain yellow-legged frog in its native habitat; however, its numbers are low and it is at risk of disappearing completely. In fact, the San Gabriel frog sub-population is critically endangered with only a few hundred adults remaining in the wild. Since 2010, the L.A. Zoo has been involved with a working group to help save this species. Our partners include San Diego Zoo Global, U.S. Forest Service, U.S. Geological Survey, California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service. Under the guidance of Curator of Reptiles, Amphibians, and Fish Ian Recchio, the Zoo's role has been to focus on reproduction of Rana muscosa. To date, we have reproduced more than 300 mountain yellow-legged frogs in our facility as part of this recovery project, 160 of which were released back into the wild. With the help of recent funding from the U.S. Forest Service, we have been able to upgrade a biosecure frog room (in an area located away from the rest of the collection) in which this critically endangered species can be bred and raised. The space now has a modernized life support system as well as new terrariums and aquariums to house mountain yellow-legged frogs at different life stages, which allow us greater flexibility in determining next steps. At present, we are raising 45 young frogs from the San Gabriel Mountains to adulthood in our frog room. Next season, the L.A. Zoo, along with its partners, will discuss whether to breed these frogs as an assurance population or release them back into their native area. The Zoo is proud to play an important part in this local conservation story, and we are working hard to give it a happy ending. —Jan Frazier

mountain yellow-legged frogs

with reasonable advance notice prior to the event or activity you wish to attend. For further information, please contact: 323/644-4200 (voice/TTY).



Greater Los Angeles Zoo Association Annual Memberships: Individual \$55, Individual Plus \$75, Family \$126, Family Deluxe \$165, Contributing Associate \$250, Wildlife Associate \$500, Conservation Associate \$1,000. Each membership category includes unlimited admission to the Los Angeles Zoo for one year, one-year subscriptions to *Zoo View* and *Zooscape*, 10-percent discount at Zoo restaurants and shops, and invitations to special events. Students and seniors receive \$10 off an annual membership.

The Los Angeles Zoo and Botanical Gardens is located in Griffith Park at the junction of the Ventura (134) and the Golden State (1-5) freeways. We are open from 10 a.m. to 5 p.m. daily, except December 25. For information, phone 323/644-4200, or visit us on the Internet at www.lazoo.org. Sandy Masuo, Editor Pickle Group, Graphic Design Tad Motoyama, Zoo Photographer Jamie Pham, GLAZA Photo Editor Copyright © 2016 GLAZA. All rights reserved. Printed on 30-percent recycled stock

Nurturing wildlife and enriching the human experience



Acalendar of events

MEMBERS ONLY

Twilight at the Zoo

During this special twilight walking tour, you will meet and learn about some of our engaging animal residents. Then, head to Reggie's Bistro and enjoy delectable hors d'oeuvres and crafts for the young at heart. This event is open to L.A. Zoosociates/ Donor Circle at the Contributing Associate/Donor, Wildlife Associate/ Donor, and Conservation Associate/ Donor levels only. To upgrade your GLAZA membership and join us for this enchanting evening, please phone 323/644-4244. **September 24 (Saturday)**

September 24 (Saturday) 5:30–7:30 p.m.

SPECIAL TOURS

These tours are free to GLAZA

members, but space is limited. To

register, e-mail docents@lazoo.org

and be sure to include "Bird Walk"

or "Bat Walk" in the subject line. You

will receive a link to complete your

registration through Eventbrite.com.

You may also phone 323/644-4703.

Zoorific Picnic:

Members Only Night Watch for Zoomail with details. August 20 (Saturday) 6–9 p.m.

Member Appreciation Month

To show our appreciation to our members, we're offering extra incentives and benefits during the month of August! August 1–31

Member Appreciation Morning Early morning is the ideal time to see many of the Zoo's residents

Have you met your wild neighbors?

wild birds. During this morning bird

maybe spot an exotic visitor or two.

you to your avian neighbors and

walk on Zoo grounds, we'll introduce

The Zoo is home to a variety of native

Wings of Summer

August 20 (Saturday)

8–10 a.m.

at their best, and GLAZA offers three opportunities a year for our members at all levels to explore the Zoo before it opens to the public. Reservations are not necessary; bring your membership card and photo ID for entry. Guest passes will not be honored. August 13 (Saturday) 8:30–10 a.m.

Member Tours

Night Flight

Docent-led tours are available to GLAZA members only and are free for everyone eligible on your membership. No confirmations will be mailed. Please make reservations at least two weeks

Griffith Park is an important oasis

including bats. Strolling Zoo grounds

for local and migratory wildlife,

at dusk is a perfect opportunity

to see resident bats take to the air. Children attending this event must

be at least four years of age. Due to

limited spaces and high demand,

in advance by phoning 323/644-4244. July 9 (Saturday) July 10 (Sunday) July 23 (Saturday) July 24 (Sunday) August 6 (Saturday) August 7 (Sunday) August 20 (Saturday) August 21 (Sunday) September 10 (Saturday) September 11 (Sunday) September 17 (Saturday) September 18 (Sunday) (Meet at the waterfall near the entrance to the International Marketplace at 10:30 a.m.)

a maximum of four people may register per membership. July 30 (Saturday) and August 27 (Saturday) 6–8 p.m.

SAFARI SOCIETY ONLY

GLAZA's upper-level annual giving program offers donors a range of exclusive events and unique opportunities to explore the Zoo. To join, phone the Safari Society Access Line at 323/644-4717, e-mail nsimerly@ lazoo.org, or visit www.lazoo.org/ support/safarisociety. Conscientious corporate leaders support the Zoo through Business Partners. For details about this program, contact Jan Frazier at 323/644-4722.

Sunset Safari

This perennially popular and exclusive after-hours event features animal encounters, dinner, and music. Business Partners and Safari Society donors, watch the mail for your private invitation. September 3 (Saturday) 6–8 p.m.



JULY-AUGUST 2016 ZOO SCAPE

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ED-ZOO-CATIONAL Adventures

FOR MORE DETAILS, GO TO WWW.LAZOO.ORG/EDUCATION/CHILDRENSCLASSES/. TO REGISTER, GO TO WWW.LAZOO.ORG AND CLICK ON "BUY TICKETS." **Registration Policy:** Registration for Ed-zoo-cational Adventures begins two months prior to the program date. Please check www.lazoo.org for class availability. For more information, phone 323/644-4211.

L.A. ZOO PHOTO DAY

FAMILY JAM

Creature Camp-Out

Your overnight adventure begins with a guided tour that leads to base camp, where your tent awaits. The evening is filled with family adventures complete with a sweet treat and beastly bedtime stories. Wake to the lion's roar and hooting chimps, enjoy a continental breakfast, meet some of the Zoo's early risers, and have a special animal encounter. Then take your memories home with a souvenir Creature Camp-Out T-shirt. Registration fee for GLAZA members is \$75 per person; nonmembers pay \$85 per person. Creature Camp-Out begins at 6:30 p.m. and ends at 10 a.m. the next day. Please note that dinner is not included in this program. For details visit www.lazoo.org or phone 323/644-4211. Registration forms will be posted at 10 a.m. two months prior to the overnight date.

Photo Day 2016 takes place on November 6 from 7:30 a.m. to 4 p.m. This fantastic opportunity for photographers of all ages and skill levels is presented jointly by Paul's Photo and GLAZA. Paul's Photo experts and representatives from the greatest brands in photography will be on hand to assist you. Take advantage of limited-loan equipment from major manufacturers and enjoy a catered lunch, a T-shirt, and a full day of photography. (Guests receive lunch and early Zoo admission only.) Registration begins July 1—sign up early for significant savings! Photographers who are GLAZA members, students with valid school ID, or Paul's Photo Club members receive a \$10 discount (no discount for at-the-door registration). To register, phone 323/644-4703, e-mail volunteers@lazoo.org, or go to www.lazoo.org/photoday. **Registration fees are:**

Before August 1: photographers \$110/guests \$50 August 1–31: photographers \$135/guests \$60 September 1–November 3: photographers \$175/guests \$70 November 4–6: photographers \$200/guests \$80

ZOO CAMP

Summer Zoo Camp

Children will have the time of their lives discovering the Zoo's amazing animals and engaging in fun, safe activities. Each camp is led by experienced, specially trained adult staff. Registration for summer Zoo Camp is now open. Visit www.lazoo.org for details and get ready for a wild summer of creature camp adventure!



Through August 12 (Friday) 9 a.m.-3 p.m.

Morning and afternoon extended care will be available for an additional fee.

Join us for a family-friendly evening of "Dinos, Dragons, and Dancing," with live music, keeper talks, animal encounters, and food truck delectables. Experience *Dinosaurs: Unextinct at the L.A. Zoo* and follow the clues to find Pete's Dragon from Disney's upcoming theatrical release. Ticket pricing: \$22 for GLAZA member adults/\$25 for nonmembers and \$17 for GLAZA member children/\$20 for nonmembers. For details and tickets, go to www.lazoo.org/familyjam. July 9 (Saturday) 6–9 p.m.

WORLD ELEPHANT DAY

To celebrate World Elephant Day, the Zoo will host two fun-filled days of educational activities and entertainment designed to spread awareness about the importance of protecting elephants. Visitors will have a rare opportunity to explore our state-of-the-art Elephants of Asia exhibit with barn tours and demonstrations of daily enrichment activities for our three elephant residents: Billy, Jewel, and Tina. Learn how elephants are cared for at the Zoo, discover insights into their behaviors and special adaptations, and participate in the #elephantyogachallenge. August 13 (Saturday) and 14 (Sunday) 10 a.m.-4 p.m.



Cancellation Policy: The Zoo must receive at least two weeks (14 days) advance notice by phone (323/644-4211) or fax (323/644-4299) in order to issue a full refund. No refunds will be issued after this period. No refunds or transfers will be honored for no-shows. Prices and program dates are subject to change without notice. For more details about cancellation, transf<u>er, refund, and booking policies, visit www.lazoo.org.</u>