



WINTER 2018

# LINCOLN PARK ZOO

FOR WILDLIFE. FOR ALL.



## Wintry Wonders

Holiday magic, snow  
monkey science & more

A MAGAZINE FOR MEMBERS OF LINCOLN PARK ZOO

## WINTER 2018

VOLUME 17, NUMBER 3 •  
FOR MEMBERS OF LINCOLN PARK ZOO

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Cover: Japanese macaques, commonly called “snow monkeys”, are among the zoo’s holiday card options. See page 7. Illustration by Ashley Bedore.



#### Porcelain Ornament

Handmade by local artist Jan Heyn-Cubacub. \$36

See page 11 for purchasing details.

### Our Impact Depends on You

Who funds Lincoln Park Zoo? You do! Zoo members, donors and visitors help cover around 80% of our annual operating costs to keep this non-profit, privately managed institution open and free every day and support its mission of wildlife conservation, animal care and learning. Support the zoo at [lpzoo.org/donate](http://lpzoo.org/donate).



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#### Go Online for More

Visit [lpzoo.org/magazine](http://lpzoo.org/magazine) for special web-only features—including photos, video and blog posts—inspired by the stories in this issue.



## Celebrating Our Community

In 2018, Lincoln Park Zoo celebrated its 150th anniversary. Naturally, this prompted reflection on the zoo's history and the people who made 150 years possible. That's six generations and millions of families and individuals visiting and donating time, money, and energy to sustain this special place. Our members, donors, trustees, and guests have made Lincoln Park Zoo the strong institution we are today, one that continues to forge new paths in animal care, conservation, science, and learning.

The zoo still receives a portion of its funding from the Chicago Park District (CPD)—which operated the zoo for decades until our privatization in 1995—but today more than 80 percent of our day-to-day costs are funded by contributions from people like you.

Your generosity helps keep the zoo free and enables significant initiatives. In 2018 alone we expanded the international reach of our Urban Wildlife Information Network and ZooMonitor app, a behavioral monitoring tool that's part of the zoo's new Animal Welfare Science Program. We welcomed polar bear Talini and penguin chick Oliver, constructed Searle Visitor Center, and partnered with CPD and Little Village's OPEN Center for the Arts on programs that connect Chicago residents to nature. A world away, our scientists in Africa led community-based conservation programs to protect endangered wildlife. This November we're hosting a global conference where pioneering wildlife biologists will explore challenges and opportunities around restoring wildlife back to the wild. Its planning was led by Megan Ross, Ph.D., recently named Zoo Director. With her passion for conservation, animal welfare, and community engagement, Megan is uniquely equipped to further those central aims of the zoo's mission.

That calls for celebration. Happily, we're preparing one you'll take a shine to: ZooLights Presented by ComEd and Invesco QQQ, a free Chicago holiday tradition for you—the people who will inspire and support the zoo's next 150 years of care, conservation, and community. Please visit [lpzoo.org/support](http://lpzoo.org/support) if your seasonal giving plans include a contribution to the zoo. ADOPT packages, zoo memberships, and Wish List purchases also make great gifts for family, friends, and your favorite animals at the zoo!

Happy holidays and thank you for your support. ■

A handwritten signature in dark ink that reads "Kevin J. Bell". The signature is written in a cursive, flowing style.

KEVIN J. BELL  
PRESIDENT AND CEO

BY EMILY ALTIMARI

## International Animal Crossing

Sure, Lincoln Park Zoo's Urban Wildlife Information Network's (UWIN) trail cameras have photographed squirrels, but moose? That's a first, thanks to our neighbors to the north in Edmonton, Canada, the first international member of UWIN. The world's largest urban wildlife monitoring infrastructure has gone continental with the City of Edmonton and the University of Alberta.

The multi-city study seeks to help people and animals thrive together by gathering and analyzing data on urban biodiversity and, ultimately, discovering and applying solutions to existing or potential human-wildlife conflicts. Also

new to the UWIN crew is Delaware's Brandywine Zoo, the first Association of Zoos and Aquariums (AZA)-accredited zoo member.

"These new members represent endless possibilities on behalf of wildlife," says Urban Wildlife Institute Director Seth Magle. "As we begin to analyze the similarities and differences across cities and countries, we can truly begin to understand human-wildlife conflict and implement solutions to better coexist with species right in our backyards."

What's next? Currently, UWIN is also piloting a program in South Africa and aims to be intercontinental by 2020. Baboon pics await. Until then, it seems all 12 UWIN cities have one thing in common: lots of deer.



Photo by Chris Bjelba

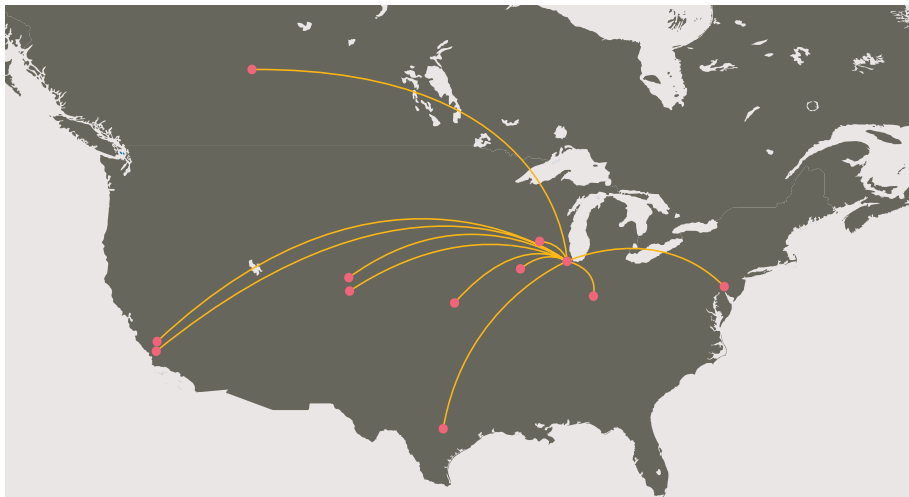
## In Spine Form

If visitor numbers spike at Regenstein Small Mammal-Reptile House it may be due to lesser Madagascar hedgehog tenrec babies. A prickly pair of these small mammals was born on June 23 to their first-time mom as a part of the Lesser Madagascar Hedgehog Tenrec Species Survival Plan® (SSP).

Their sex is yet to be determined, though zoo vets deemed them healthy after their initial examination. About a month after birth, the babies were fully spined and half-adult-size.

"Hedgehog" is actually a misnomer in the species' name. Tenrecs belong to a different taxonomic family and separately evolved a similar appearance and defensive adaptation: rolling into spiny spheres for protection from predators. This tenrec subspecies is native to the forests of Madagascar. Tenrecs, primarily nocturnal, communicate through touch, scent, and even echolocation clicks.

Curator Dan Boehm reports that the youngsters have been climbing on tree branches and exploring their exhibit. Their dad remains behind-the-scenes, as male tenrecs are not involved in rearing offspring. They'll stay with their mom throughout the winter, then will likely be transferred to another Association of Zoos and Aquariums-accredited institution in spring as a part of the SSP.



### UWIN membership (as of early October, 2018)

- **Chicago, Illinois:** Lincoln Park Zoo's Urban Wildlife Institute
- **Indianapolis, Indiana:** The Center for Urban Ecology at Butler University
- **Madison, Wisconsin:** University of Wisconsin-Madison
- **Manhattan, Kansas:** Kansas State University
- **Fort Collins, Colorado:** Colorado State University
- **Denver, Colorado:** University of Colorado Denver
- **Austin, Texas:** St. Edward's University
- **Long Beach, California:** California State University Long Beach
- **Los Angeles, California:** National Park Service
- **Iowa City, Iowa:** University of Iowa
- **Wilmington, Delaware:** Brandywine Zoo
- **Edmonton, Alberta, Canada:** City of Edmonton and University of Alberta

## Mountain Ghosts: Protecting Snow Leopards in Kyrgyzstan

The passion Lincoln Park Zoo’s keepers have for animals extends far beyond zoo grounds. For Keeper Allycia Darst, this meant traveling to the Tien Shan Mountains of Kyrgyzstan in Central Asia to assess habitat quality for the ever-elusive snow leopard thanks to the generous support of donors Bruce and Mary Feay through the Feay Scholarship Fund.

There are between 4,000 and 7,500 snow leopards in the wild across 12 countries. In Kyrgyzstan, the species’ population sits between an estimated 150 to 500 individuals. Though the International Union for Conservation of Nature (IUCN) changed the snow leopard’s status in the wild from endangered to vulnerable last year, the wild population is still in decline due to poaching and retribution killings by shepherds for livestock loss.

Turns out, snow leopards are hard to spot. Darst’s team, which included 13 scientists, spent 12 days in the field hiking up to elevations of 12,800 feet on the lookout for leopards. They didn’t encounter any leopards, but Darst says this was expected and the expedition was still a success. The team encountered evidence of snow leopard prey species—ibex goats, argali sheep, marmots, and snowcock pheasants—in 23 of the 34 two-by-two-kilometer areas they surveyed, indicating these areas were viable habitat for the stealthy predators. The trackers also encountered snow leopard tracks likely belonging to a female and a cub.

Looking back on the trip, Darst says, “As an animal keeper, I obviously feel a great connection to the animals in my care. But I am also very passionate about conservation and doing my part to help the wild counterparts of the animals I work with. This expedition was a great opportunity to contribute to the protection of a high-profile species at Lincoln Park Zoo.”



*Keeper Allycia Darst, who cares for carnivores at the Kovler Lion House, traveled to Kyrgyzstan to help assess habitat quality for wild snow leopards. Zoo donors Mary and Bruce Feay generously supported her participation in the conservation project.*



*Photos by Allycia Darst*

## New Visitor Center Opens

Lincoln Park Zoo is free and open 365 days a year, providing 3.6 million annual visitors with access to the wonders of wildlife. We needed a visitor center to match. This fall, the new Searle Visitor Center will become the welcoming gateway for guests entering the zoo on the east side.

The \$9 million center, designed by Ross Barney Architects, will house restrooms and a Member Lounge, and be a guest services hub with informational kiosks, stroller and wheelchair rentals, and more. Echoing the sculpted flora-and-fauna archway that preceded it, the center will have nature-inspired awnings; in warmer months a retractable wall will convert the building into an open-air space.

Searle Visitor Center was made possible by The Pride of Chicago capital campaign and a generous contribution from the Women’s Board of Lincoln Park Zoo.



Photo by Mary Kate Lucarescu



## Summer Learnin'

This past summer, the zoo welcomed dozens of interns—from high school to college students—who picked up career-path experience under the mentorship of zoo educators, scientists, and other staff.

The Malott Family Research Apprenticeship Program (RAP) immersed high school students in scientific inquiry alongside zoo researchers at the Urban Wildlife Institute (UWI) and the Davee Center for Epidemiology and Endocrinology. The Malott Family Zoo Intern Program (ZIP) let high schoolers teach zoo guests about the animals,



Top left (center): Mekaylah Grear; below: Dan Herrera; this photo: Omar Magaña and Joselyn Ortega with their collaborative artwork.

Photo by Carlos Aaron Magana

conservation, and science at Lincoln Park Zoo alongside zoo educators. From teaching guests about behind-the-scenes science at the zoo to reintroducing rehabilitated snapping turtles to Nature Boardwalk, these teens rolled up their sleeves in the name of nature.

Mekaylah Grear, a ZIP last year, returned this summer as a ZIP mentor. “Last year I did the ZIP program, and it was one of the best experiences I’ve had in my entire life,” says Grear. “I became a mentor this year so other people could have the same experience I did.”

Dan Herrera, a Conservation & Science intern funded through the Dr. Scholl Foundation, worked with UWI during the past two summers. In 2017, he helped the staff organize geographic information systems (GIS) data that assesses habitat for urban wildlife species. This summer he helped researchers monitor the wild, endangered black-crowned night heron colony that nests yearly at the zoo. Herrera commemorated his experience by illustrating some of the urban wildlife that call Nature Boardwalk home. He hopes to work in urban ecology, using art and science to advocate for urban wildlife.

## Weld Done

The zoo’s WILD Marshall Square project with Chicago’s Little Village neighborhood took an artistic Arctic turn with three whimsical polar bear sculptures.

Situated near Walter Family Arctic Tundra, they were fabricated from recycled metal by artist J. Omar Magaña of Little Village’s OPEN Center for the Arts. The designs replicate illustrations of the zoo’s male polar bear, Siku, by students from Little Village’s Saucedo, Kanoon and Our Lady of Tepeyac elementary schools. During a zoo field trip the kids observed Siku and learned about the species through talks and activities with animal care staff, educators, and OPEN Center collaborators. A panel of judges selected three finalists. Magaña matched the children’s drawings squiggle for squiggle.

The sculptures will later be installed on Marshall Boulevard in Little Village, joining a trio of chimpanzee sculptures previously created and displayed in the same way. The polar bear project was partially funded by an IncentOvate Grant from the City of Chicago Department of Cultural Affairs & Special Events, which supports arts initiatives for youth throughout the city.

# Whimsical Wonderland

BY JILLIAN BRAUN

Over the holiday season Lincoln Park Zoo transforms into a magical land of twinkling lights and merriment. Experience the zoo at its cheeriest with special event nights, one-of-a-kind gift ideas, and enchanting illuminations. This year, ZooLights Presented by ComEd and Invesco QQQ—Chicago’s most radiant holiday tradition—glows on select nights from November 23–January 6, with an exclusive member preview on November 16. See our full calendar on page 11 to plan your holiday adventures at the zoo.



## Notes from the North Pole

Lincoln Park Zoo’s official holiday greeting cards highlight Bactrian camels, Chilean flamingos, polar bears, and Japanese macaques. Snow is no foe to these hardy species, who

thrive in all types of weather. Custom imprinting is available. Illustration by the zoo’s very own Ashley Bedore. *Single card \$2.25. Assorted 12 for \$24, 24 for \$46, 48 for \$90. See page 11 for purchasing details.*





Photo by Chris Bijlba

## Memories for Members

Lincoln Park Zoo members and their guests get exclusive access to ZooLights Presented by ComEd and Invesco QQQ for an entire evening before it opens to the public! Start your holidays off right, celebrate traditions, and make memories with Members-Only Night at ZooLights on Friday, November 16, from 4:30–9 p.m. Plus, free carousel, train rides, and Light Maze (page 9) and a 20 percent discount on purchases at Wild Things! Learn more at [lpzoo.org/zoolights](http://lpzoo.org/zoolights).

**Members-Only Night:  
Nov. 16**

## Blueprints for the Man in Red

Months of planning go into producing ZooLights’ magnificent light displays and icy artworks. Likewise for a less conspicuous but equally vital part of the spectacle: the themed interior tableaux and décor produced by local event-design firm Ivan Carlson & Associates for the past several years. We asked Tina Carlson, the company’s president, what went into Santa’s dapper digs and other inspirations.

### What does it take to execute designs for ZooLights?

Approximately 20 people work on the design, construction, and installation.

The design process starts early with key learnings from the prior year included in our overall design approach. We know from experience at the zoo that we need to keep our actual design footprint pretty tight in certain areas but still need to make a great statement for the event. So color, texture, proportion, and scale become central considerations.

### What inspired this year’s designs?

They have a distinctly vintage feeling and color story. Our creative director, Gary Jackson, pulled images of ornamentation from the 1940s and expanded on the traditional shapes and materials used in that era to deliver especially innovative designs for the Santa vignette in the Helen Brach Primate House as well as in Regenstein Center for African Apes.

### Where are the installation pieces produced?

All of the custom pieces for ZooLights are fabricated in our studio. Our facility

is over 36,000 square feet and includes a scenic shop; art, fabrication, and floral departments; audio and lighting. All of them are engaged in ZooLights, including the floral department, of course. They’re the best bow-makers in the building!

### What do you find most challenging about the work?

The zoo’s event team is very collaborative, knows the spaces so well, and shares their vision about what will be successful or an issue. We have to consider construction projects, available power, and of course, the requirements placed on design from the zoo keepers’ and animals’ perspectives. There are certain limitations we need to work within every year, and we all challenge ourselves to come up with a design that will be a surprise for the legacy guests.

### What is Ivan Carlson’s legacy?

The company was started by my father, Ivan Carlson, in 1972. He was a stage-hand and built sets for industrial shows on the side. He had a huge contract with Volkswagen when the Rabbit was introduced to the U.S., and that is the project that bankrolled the start of the company.



Photo by Julia Fuller

### Metal Lion Ornament

This stylish, handcrafted lion will be the pride of any home holiday décor. \$10. See page 11 for purchasing details.





Photos by Julia Fuller



**Sequined Sloth Ornament**  
Hand-stitched in small villages, this sparkling sloth ornament invites leisurely appreciation. \$16

**ZooLights 2018 Ornament**

It's no mystery why this metallic Loch Ness

Monster is a luminous favorite of ZooLights fans. Nestle up to Nessie. \$15

**Hand-Knitted Hippo Ornament**

Handmade from alpaca wool, this fair-trade hippo will submerge itself in the



branches of your tree with colorful pizzazz. \$16.95

See page 11 for purchasing details.

## ZooLights Match Quiz

ZooLights Presented by ComEd and Invesco QQQ is a huge holiday production. We've scrambled these numbers and details from last year's ZooLights below. Can you match the number in the left column to its corresponding statistic in the right column?

51,958	Gallons of mulled wine served
2,200	Pounds of ice carved
51,000+	Lights across zoo grounds
2 million+	Different LED light displays
100+	Working hours to create ZooLights
7,200	Cups of hot chocolate served

Answers: 51,958 cups of hot chocolate served; 2,200 gallons of mulled wine served; 51,000+ pounds of ice carved; 2 million+ lights across zoo grounds; 100+ different LED light displays; 7,200 working hours to create ZooLights.

## Treats for the Whole Troop

ZooLights is fun for all family members with ice carvers, carolers, and the **Light Maze Presented by Invesco QQQ** (located at Foreman Pavilion; tickets: 1 for \$3, 10 for \$27, 20 for \$51)!

On Mondays, celebrate a little extra with **ZooLights Family Nights**, when carousel and train rides are complimentary and parking is free for all levels of membership. Kids also eat free at Park Place Café with a paid adult entree.

Searching for the perfect gift? All are welcome to **Holiday Market** on Giving Tuesday, November 27. Stroll through the magnificent work of dozens of local artisans for a truly unique gift.

Planning to visit Santa at ZooLights? You'll find jolly, old St. Nick taking gift requests amid festive décor inside the Helen Brach Primate House. Or ask him over waffles: reserve a table during one of four seatings at **Breakfast with Santa** at landmark Café Brauer on Sunday, December 16.

Learn more about these special events at [lpzoo.org/zoolights](http://lpzoo.org/zoolights).



Photo by Brigid Gallagher



Photos by Julia Fuller

## Wishes for Fishes

Polar bears may not know what the holidays are, but that doesn't stop them from enjoying presents! Allison Kao, the zoo's behavioral husbandry and enrichment manager, makes a list and checks it twice for every species at the zoo—all year long. This then turns into the zoo's Wish List ([lpzoo.org/wishlist](http://lpzoo.org/wishlist)), where guests can purchase items that help enrich the lives of animals in the zoo's care. We asked Allison to provide the bigger picture.

### What is enrichment?

Enrichment is an addition or modification to an animal's habitat that enhances the environment, offers choices or challenges, and encourages natural behaviors.

### What is the goal?

First, we research the natural history of each species. For example, we look at how they find food, how they eat it, and

how they move around their habitat. We explore their social structures and other natural behaviors—such as rhinos wallowing to stay cool and keep bugs away—and use those to create our enrichment goals.

### How do you determine which items to add to Wish List?

Items must go through an approval process to make sure they are safe and will be beneficial for our animals. Once they have been approved by our veterinary and animal care teams, keepers decide which items will be best for the species in their care.

### How do food items play into training?

We use a positive reinforcement technique when we teach animals new ways to participate in their own care. Most simply, we offer something they really like as a reward for the right behavior. Most of our animals love food. We can use their daily diet, and sometimes unique or novel items, to help reinforce the right behavior, such as opening their mouth for a wellness check.

### How do you keep coming up with new ideas for enrichment?

Zoos across the country and world share

ideas with one another. However, most often our keepers are the ones to come up with new and exciting ideas!

### If you could have anything in the world for enrichment, what would it be?

This is a very hard question! We have so many species here at the zoo, and every animal has different behavioral needs. PVC has been extremely useful in different sizes, lengths, and thickness—we can make just about anything with it for various species!

### What is the best part of your job?

Building a relationship with an animal and gaining a deep understanding of ways we can provide for them with the best possible care is

so rewarding! I love seeing our keepers' passion and helping them reach the training and behavior goals we have set in place for the species here at the zoo.

Shop our holiday Wish List at [lpzoo.org/wishlist](http://lpzoo.org/wishlist)!



Photo by Veronika Hernandez



Photo by Julia Fuller

## All Glown Up

Calling all adults! Looking for a way to spice up ZooLights? Cool cats ages 18 and older can join in the winter fun at **Adults Night Out: Holidayze** on Thursday, November 29. Come for the 2.5 million lights, stay for the Gnome Hunt, zoo-themed trivia, live music, cash bars (ages 21+) and animal chats.

Warm your jolly bellies at **BrewLights Presented by Lakeshore Beverage** on Thursday, December 6. Hosted by the zoo's Auxiliary Board, this festive ode to craft brews spreads across zoo grounds under the glowing haze of ZooLights.

Keep the party going and ring in 2019 at **Zoo Year's Eve**, from 9 p.m.-1 a.m. on Monday, December 31, surrounded by the glow of ZooLights.

These after-hours ticketed events help the zoo stay free and open 365 days a year! Learn more and buy tickets at [lpzoo.org/zoolights](http://lpzoo.org/zoolights).





### Sloth Mom and Baby Brass Ornament

Don't be fooled by the sloth's slow nature. These ornaments featuring a fan favorite will go quick! \$16

### Carousel Glass Ball

You'll be merry when this carousel collectible, featuring a mandrill, goes 'round your tree. \$24



## Animal Adornments

Purchase this season's ornaments, holiday card and more at [lpzoo.org/holidayshop](http://lpzoo.org/holidayshop), at Wild Things! gift shop during your next zoo visit, or by calling 312-742-2265.

## A.D.O.P.T.: Animals Depend On People Too

Give family and friends a wildly unique gift by ADOPTing an animal! These precious plushes help the zoo provide its animals with the best care possible and promote animal welfare.

This holiday season's featured ADOPTs include an armadillo, a giraffe, lion, and sloth. (Tune into the zoo's Facebook Live broadcast "Lettuce with Luigi" to see our "star" sloth really chew the scenery.) Each ADOPT comes with an ADOPTION certificate, magnetic photo frame, and a fun fact sheet.

Want a little something extra? Add on a zoo membership for the biggest fans of fauna or add on an ADOPT when you purchase your Holiday Market tickets!

Shop at [lpzoo.org/ADOPT](http://lpzoo.org/ADOPT), 312-742-2322 (Monday-Friday, 9 a.m. - 5 p.m.), or at the zoo at Member Services and Wild Things! gift shop.



Photo by Julia Fuller

# Holiday Festivities

## November

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

## December

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9*	10	11	12	13	14	15
16*	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31*					

## January

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

### Open and free to all

- ZooLights Evenings
- Family Nights

### Special ZooLights events: Open to visitors with tickets

- Members-Only Night (show member card for entry)
- Holiday Market
- Adults Night Out: Holiday!
- BrewLights

\*Special ticketed events taking place during ZooLights:

December 9: Chris White Trio Tribute to *A Charlie Brown Christmas*

December 16: Breakfast with Santa

December 31: Zoo Year's Eve (ZooLights closes at 8 p.m.)

For more details, visit [lpzoo.org/zoolights](http://lpzoo.org/zoolights)

# The Right Touch

BY KATE SILVER

Since they debuted at the zoo in 2015, the Japanese macaques have had a lot to learn, and to teach, using touchscreen computers

*A Japanese macaque sequences colored dots in previous tests that laid the groundwork for more sophisticated challenges posed by researchers like Sarah Huskisson (opposite page).*



Photo by Chris Bijlba

*In the final installment of our year-long magazine series on the care and conservation of primates, we catch up with the snow monkeys at Regenstein Macaque Forest and see how science supports their welfare while also expanding knowledge in primatology.*

Beyond their red-tinged faces, their thick fur, and their intense gazes, the Japanese macaques at Lincoln Park Zoo all have something else in common: they dislike celery.

While hatred of celery, in and of itself, is nothing particularly unusual, the way that zoo staff learns this—and about the monkeys’ shared love of peanuts and “jungle pellets,” a pre-formed monkey food—is actually quite remarkable: they ask them.

That’s what’s happening on a busy Monday in July. Sarah Jacobson, a former research assistant with the Lester E. Fisher Center for the Study and Conservation of Apes, sits inside a small booth—a.k.a. the “cog booth”—next to the Regenstein Macaque Forest, toggling between two computers and taking notes. On the other side of the booth, in two small rooms accessed by a kind of swinging doggy door, Japanese macaques who choose to participate are using a touchscreen. Options displayed over the course of about an hour use photos to ask questions, and include options like *peanut or celery? Blue or yellow?*

“Sometimes their response seems to be quicker than what I think I would be able to do,” says Jacobson.

The macaques’ answers to these cognitive tests are helping scientists and keepers at the zoo gain valuable insights about their individual preferences. At the same time, for visitors looking on, the testing is a window into the mission of Lincoln Park Zoo, where science, research, and animal care go hand-in-hand. The zoo was in the vanguard of touchscreen testing with gorillas and apes

when the Regenstein Center for African Apes opened in 2004, and regularly fields calls from facilities around the world asking for advice on cognitive research. Completely voluntary, these tests challenge primates to problem-solve in a dynamic way, much as they do with enrichment devices provided by caregivers. Since the macaques arrived four years ago, they, too, have been fueling research and knowledge about the species at the zoo and beyond.

***“We’re letting the animals tell us what their preferences are,” says Maureen Leahy.***

“Really, we’re letting the animals tell us what their preferences are,” says Maureen Leahy, the zoo’s vice president of animal care and horticulture.

### A scientific approach

Scientifically informed exhibit design supporting natural behaviors for the monkeys, as well as behavioral-monitoring and cognitive research by zoo scientists, was at play even before the macaques left Japan in a cargo plane for Lincoln Park Zoo in 2014. Back then, recalls Leahy, space was available for a new exhibit near the West Gate. They wanted to create something with a “wow” factor, she says, and that would be dynamic and exciting for guests. Their focus turned to primates, but not just any primate. Japanese macaques are the northernmost-living non-human primate, meaning they would be a good fit for Chicago’s weather, which is similar to Japan’s.

The zoo team set out to design a forest fit for these curious and social monkeys. “We really wanted to create a habitat that could allow our macaques to express the full repertoire of all of their complex behaviors,” says Leahy. That meant building a series of tall trees with canopies of branches the monkeys could cross like they do in the wild. Rocky outcroppings would offer quiet, private areas and a variety of microclimates, like heated rocks, cooling fans, a hot spring, and temperate stream. And a series of 300-pound stone Japanese lanterns weren’t just placed for decoration—they house automatic feeders, which dole out food at different times, encouraging the monkeys to forage.

Then it was time to bring the Japanese macaques to their new home. The troop came from an accredited facility called Japan Monkey Centre Museum and Zoo for Nonhuman Primates in Inuyama, Japan. There, they lived in a much larger group. “We worked with the zoo there to identify animals that would be good to bring here, to our new exhibit, to bolster the genetic diversity in the accredited zoo population in North America,” says Leahy. As with all species at the zoo, the goal would be to create a healthy, sustainable zoo population through a Species Survival Plan (SSP) and educate visitors. After the Japanese macaques flew to

Chicago, the animals—five females and three males, all around 9 or 10 years old and named by Lincoln Park Zoo staff for cities in Japan—had a lot to adjust to: they would need to negotiate their new social structure while exploring their new habitat.

From day one, the team at Lincoln Park Zoo began collecting data using ZooMonitor, an app created onsite and used at facilities around the world to record animal behavior and exhibit space use. From that information, it was clear the monkeys were taking well to their new home. “We saw very quickly where the dominance hierarchies were lining up,” says Leahy. Akita, the leader to this day, quickly assumed the role of alpha male, while Izumi, the dominant female to this day, reigned supreme among females. The others fell in line below.

They also adapted well to the space, says Leahy. “Throughout the year, the animals have the choice to go behind the scenes or be on exhibit, and when we take a look at the ZooMonitor data, 70 percent of the time they’re using the exhibit space, based on their preferences. That tells us that we’ve created an environment that really meets their needs,” says Leahy.

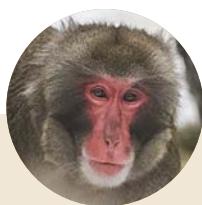
Just as important, they’ve taken well to sharing it with their new family members: since 2015, three of the females have had babies. Obu, a male, was born in the spring of 2015 to Ono, and now resides at Minnesota Zoo, based on a recommendation by the Japanese macaque SSP. Otaru, Iwaki, and Nagoya, daughters of Ono, Izumi, and Nara, respectively, were born in the spring of 2016, bringing the troop numbers to 11. All three girls have the same father: Miyagi, who the staff has nicknamed “Mr.

Mom.” When the kids were young, he would watch and play with them and never seemed too far away.

The newest generation is also carrying on cultural traditions of the greater macaque population. Because macaques are a matrilineal society, the babies inherit the social standings of their mothers. In other words, Iwaki, as the daughter of the queen-bee Izumi, was basically born with a silver spoon. “Even when she was just starting to wean and forage for food on her own, at about 4 months of age, she had the social standing to go sit right next to the males or other females and even displace them over food,” says Leahy.

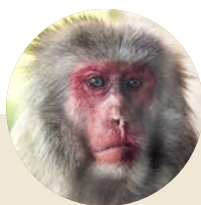
#### Finding their voices through technology

It’s the juveniles, now nearing their third birthdays, who have proven to be quick learners. “All three of the young girls in the Japanese macaque group have quickly adopted using the touchscreen from a really, really young age,” says Lydia Hopper, Ph.D., who designs and oversees the experiments and serves as assistant director with the Lester E. Fisher Center for the Study and Conservation of Apes. While the older macaques had to learn how to lift the dog-style doors to enter the booth and then figure out the devices themselves, the technology has always been there for the younger ones. Much like the digital native generation of humans, they’ve seen their mothers using the touchscreens since their earliest days. The little ones have also brought a lot of laughs to visitors. When they’re not using



**Akita, 12**

The boss man is extra suave with the touchscreen, confidently using one finger or sometimes pinching the screen with two. When he’s around, others know it’s time to get out—and stay out—of the booth.



**Izumi, 12**

As the dominant female and queen bee, Izumi is quick with the touchscreen—and even used it to choose her daughter’s name.



**Iwaki, 2**

Izumi’s daughter is the troop’s “princess”, because she inherited her mom’s rank. She’ll boss around most of the gang, and usually, they’ll listen. On the touchscreens she’s the quickest of the bunch.



**Miyagi, 12**

Known as “Mr. Mom”, Miyagi is father to all three of the juvenile girls. He’s laid-back, enjoys playing with his daughters—and lets them get away with things their mothers might not.



**Nara, 12**

Impatient and not exactly graceful, Nara’s style with the touchscreen is known as “pancake hand” for the way she palms the device. If the test pauses, she’ll just keep pushing the screen while staring at the human researcher.

## Meet the Troop

the touchscreens the three girls like to bounce off the walls and hang from the ceiling of the cog booth until they're told by an older macaque to leave.

The troop is involved in a series of cognitive tests right now. One study, as mentioned earlier, uses photos to ask about food preferences, pitting two food choices against each other, so that monkeys can choose, say, carrot versus cereal and be rewarded with their choice (that's where the detested celery comes in). Another tests their propensity for risk taking, posting a photo of one of the food choices next to a question mark. Will the animal be more likely to choose, say, a green bean, or gamble on the question mark? Hopper says that, for all of the tests, researchers have seen individual variation, from how quick participants are at learning new memory tasks to which foods they prefer to how risk-averse they are.

The potential for future tests is vast. Hopper says that, down the line, they could ask the monkeys what type of enrichment (i.e. activity) they prefer; which monkey they enjoy spending time with; if they like summer better than winter, and so much more. By performing a test during the annual Chicago Air and Water Show—a time that could potentially be more stressful at the zoo, with the constant roaring airplane engines—the scientists have even been able to discern how stress impacts the way the macaques respond. All of this has the potential to change how they're cared for, not just at Lincoln Park Zoo, but at facilities worldwide. “We know that for zoo animals, choice and



Photo by Chris Bijlba

control is so important for their well-being,” says Hopper. “We know that it alleviates stress—the more choices that animals are able to make.”

Even though they can't speak in words, technology is giving macaques at Lincoln Park Zoo a loud and clear voice.

*Want to see the macaque cognitive testing in action? It takes place at the Regenstein Macaque Forest every weekday from 11:45 a.m. to 12:15 p.m.*

*Above: Nutritious food items provide positive reinforcement during touchscreen cognition sessions.*



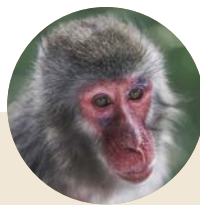
**Nagoya, 2**  
Nara's daughter is perhaps the most food-motivated of all. Researchers know that she's in the cog booth because she'll often stick her hand up the tube where the drops where the drops food out.



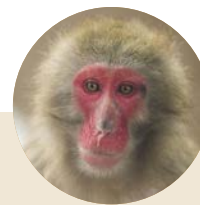
**Ono, 12**  
A middle-ranking female, Ono is stubborn. When she gets in the cog booth, she likes to stay there. She's not afraid of causing drama and chasing around the other monkeys.



**Otaru, 2**  
Like her mother, Ono, Otaru is a drama queen. She'll start screaming for seemingly no reason and cause chaos, just because she can.



**Mito, 12**  
Feisty and ambitious, Mito tries to rise above her low rank, but the others keep putting her in her place.

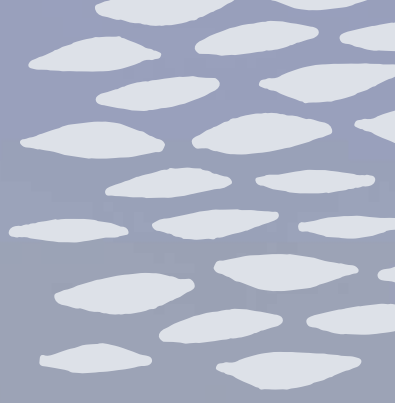


**Yuki, 12**  
With her striking good looks (her identifying marking looks like eye shadow), Yuki tends to stay below the radar and avoid conflict.



**Kuma, 12**  
The subordinate male, Kuma can be a little aloof at times, and challenging to keep on task in the cog booth. Something of a dreamer, he loves to chase birds around Regenstein Macaque Forest.

*Macaque inset photos by Todd Rosenberg and Sarina Benoit*



# Return Engagement

As Lincoln Park Zoo hosts the second International Wildlife Reintroduction Conference we share an update on this flourishing scientific field and how the zoo contributes to its growth and goals.



BY CRAIG KELLER

In the 1890s a New Zealander named Richard Henry tried to save the kakapo, now critically endangered, from invasive stoats by transporting the flightless birds to a nearby offshore island (alas, not far enough to elude its short-tailed weasel predators). Around the same time, Tabasco sauce tycoon Edward McIlhenny located and moved surviving snowy egrets to his coastal Louisiana refuge and breeding facility, Bird City, helping to save the species from extinction. In 1905, the American Bison Society formed at the Bronx Zoo, and two years later released 15 bison at a protected reserve in Oklahoma.

By the 1970s and '80s, wildlife reintroductions, or “conservation translocations”—involving the release of captive-born animals or moving animals between habitats in the wild—still seemed as novel as those earlier anomalies.

That landscape has dramatically changed. In recent years, the International Union for the Conservation of Nature’s (IUCN) Reintroduction Specialist Group—Lincoln Park Zoo’s cohost for the second International Wildlife Reintroduction Conference, taking place November 13-16 at the zoo—has tracked an expansion of conservation translocations for more than 1,500 animal and plant species, from the yellow-spotted mountain newt in Iran to the guanaco in Argentina. Reintroduction biology, driven by a greater awareness of the Earth’s shrinking biodiversity and habitat transformations wrought by climate change, has emerged as a critical, new scientific field.

Its pace has accelerated since 2008, when the zoo hosted the inaugural conference. Today, the field’s practitioners span a diversity of disciplines, from ecologists to animal behaviorists, hailing from academia, zoos, and wildlife reserves.

“This is an opportunity for them to come together as a community to talk about the science of reintroductions,” says Lincoln Park Zoo Director Megan Ross, Ph.D., who has been involved in reintroduction programs for Bali mynahs, Guam rails, and trumpeter swans. “Lincoln Park Zoo is all about advancing science to help save species from extinction, and this is one more layer we can contribute to affect that change.”

The attendees include some of the field’s foremost authorities, scientists from every continent except Antarctica, and students who represent the field’s next generation.

As was true at the first gathering, presenting case studies is secondary to synthesis: drawing big-picture lessons from successes and failures alike to determine best practices that apply to multiple species across a wide array of habitats and conditions threatening their survival.

“We’re looking to raise our game, prove success rates, and make sure we’re learning globally whether something succeeds or not,” says Phil Seddon, Ph.D., a New Zealand

zoologist, academician, author, and advisor of reintroduction projects in Oceania and the Middle East. “We’ve seen an explosion of people using this as a conservation tool in terms of the number of programs, species, and geographical spread. Research outputs, including some major books, have been published since the first conference. We’ve come up with a new set of IUCN guidelines on how to reintroduce species. So we’re well overdue to meet again as a group.”

Seddon has been integral in distinguishing the many subtle shades of wildlife conservation translocations, from “population restorations” of species in their historic range to “ecological replacements”. In both cases they may be done to correct

***“Lincoln Park Zoo is all about advancing science to help save species from extinction, and this is one more layer we can contribute to affect that change,” says Megan Ross.***



an ecological imbalance. Giant tortoises brought to the Seychelles Islands to graze on weedy vegetation, for instance, or the gray wolves restored to Yellowstone National Park in the mid '90s to prey on a booming population of elk whose overgrazing was altering vegetation and—some scientists theorize—causing erosion that redirected the flow of rivers. The related Yellowstone to Yukon Conservation Initiative helped spawn the so-called “rewilding” movement, based on bringing back apex predator species, protecting large areas, and establishing connectivity between them.

“Assisted colonization” is yet another, somewhat controversial, variation: intervening to move a species population out of its historic range, where threats (habitat loss, invasive predators, poaching, or, more recently, climate change) doom its existence, and into a new, suitable habitat where it’s never been before. The Guam rail, a flightless bird decimated in its endemic Pacific island by the invasive brown tree snake, is one such

example. The species survived through dedicated captive breeding on Guam and in U.S. zoos. Thanks to a coalition that includes Lincoln Park Zoo, it now has a fighting chance with a small, translocated population on Rota, an island in the Mariana archipelago more than 40 miles northeast of Guam. “It’s an experimental reintroduction,” says Ross. “Rota didn’t have brown tree snakes. The hope is to establish a healthy population on Rota while still investigating the possibility of restoration on Guam.”

The scientific and technological tools of the trade have greatly improved and help today’s practitioners better manage risk and adapt to unexpected challenges in complex situations, says Mark Stanley Price, Ph.D., another conference participant and one of the field’s pioneers.

In the 1980s, the British conservation scientist managed the successful reintroduction of the Arabian oryx to a protected area in Oman, part of the historic range where it had been extinct since 1972. Collaboration was essential.

Price had the support of the nation’s sultan as well as Bedouin tribes, who agreed not to herd their livestock in the moist areas to which the reintroduced antelopes migrated following rains. They also had help from the Phoenix Zoo, which provided oryx from a captive-bred population begun in the early 1960s with just nine animals—an early example of the cooperative population management strategies now integral to zoos in the Association of Zoos and Aquariums.

“We were in the middle of the desert without email, GPS, sat nav, or mobile phones,” says Price. “We did our best and produced an interesting prototype, but it’s been taken much further by others.”

The scientific management Price, Seddon, and their colleagues advocate insists on behavioral hypotheses formed from thorough consideration of current and future conditions, as well as a long-term commitment to monitoring released animals that helps managers adapt to unexpected challenges.

“Why do they move? Where do they move to? Why are some dying or some breeding better than others?” asks Price. “If we don’t have those records, we can’t manage better for success.”



### Meet Mark Stanley Price

On Friday, November 16, Mark Stanley Price is the featured speaker at a special Wine & Wildlife presentation open to the public at the zoo: “Reintroducing Animals to the Wild: Can Conservation Keep Up with Extinction Risks?”

Buy tickets at [lpzoo.org/wine-wildlife](http://lpzoo.org/wine-wildlife).



Photo by Lincoln Park Zoo

Lincoln Park Zoo's biologists at its Alexander Center for Applied Population Biology and AZA Population Management Center help fill that need in AZA's cooperative Species Survival Plan breeding programs—some of which have reintroduction components—as well as for *in situ* programs with other conservation partners, such as the U.S. Fish and Wildlife Service. The team analyzes demographic and genetic data to help maintain core “assurance populations” while making recommendations for the right number of births and hatches and wild releases to grow a reintro program's wild population sustainably over time.

Lisa Faust, Ph. D., the zoo's vice president of conservation and science, who is sharing a talk about these tools at the conference, says adaptive management is key in this area as well. That's true whether the challenge comes from North Carolina, where a reintroduced population of critically endangered red wolves is threatened by hunters who often mistake them for coyotes, or from Puerto Rico, where a natural disaster—Hurricane Maria—devastated a released flock of rare Puerto Rican parrots captive-bred at two aviaries on the island.

“Releasing animals into the wild is the flashy moment, but it's just the beginning,” says Faust. “The real work of conservation means being there for the long haul, monitoring and adapting when new challenges or threats arise for that species. That work is never done.”

Visit [lpzoo.org/conservation-science](http://lpzoo.org/conservation-science) to learn more about Lincoln Park Zoo's current and past contributions to wildlife reintroduction programs. Plus: Read web-exclusive Q&As with Price and Faust at [lpzoo.org/magazine](http://lpzoo.org/magazine).

Page 16: Arabian oryx provided a reintro blueprint in Oman . Left, top: Guam rails hatched at Lincoln Park Zoo were brought to Rota. Above: Zoo-bred red wolf pups were “cross-fostered” at wild release sites.

# Take Action With Us

BY MEGAN ROSS, PH.D.  
ZOO DIRECTOR



Reintroducing wildlife to habitats impacted by urbanization is a complex challenge. But we can all protect and improve nearby green spaces that provide resources and shelter for the urban wildlife with whom

we share our own ecosystem.

Whether you embrace the winter chill or prefer to hibernate until spring, here are some steps you can take to support local wildlife in the colder weather.

➔ Birds and insects eat seeds and hide among plant stems and withered leaves. Leave some ornamental grasses and perennial plant stems in the garden for wildlife habitat. Clean-up can wait until spring. For once, procrastination pays! An added bonus is the interest that woody stems add to a more barren landscape.

➔ While your garden beds may look dead in the winter, there may be tender plants underfoot. A misplaced step can hurt sensitive plants that are waiting for spring. Give them some space and stay on the path.

➔ In the winter, animals roam a long way in search of food. Now more than ever, it is critical that the animals don't gain access to human garbage, which is unhealthy for them and can lead to dependency. Secure your garbage cans against wildlife.

➔ Keep your cats inside. This is always a positive step to support wildlife but becomes especially important in the winter. Birds that overwinter in Chicago may be more sluggish and have trouble evading your pet.

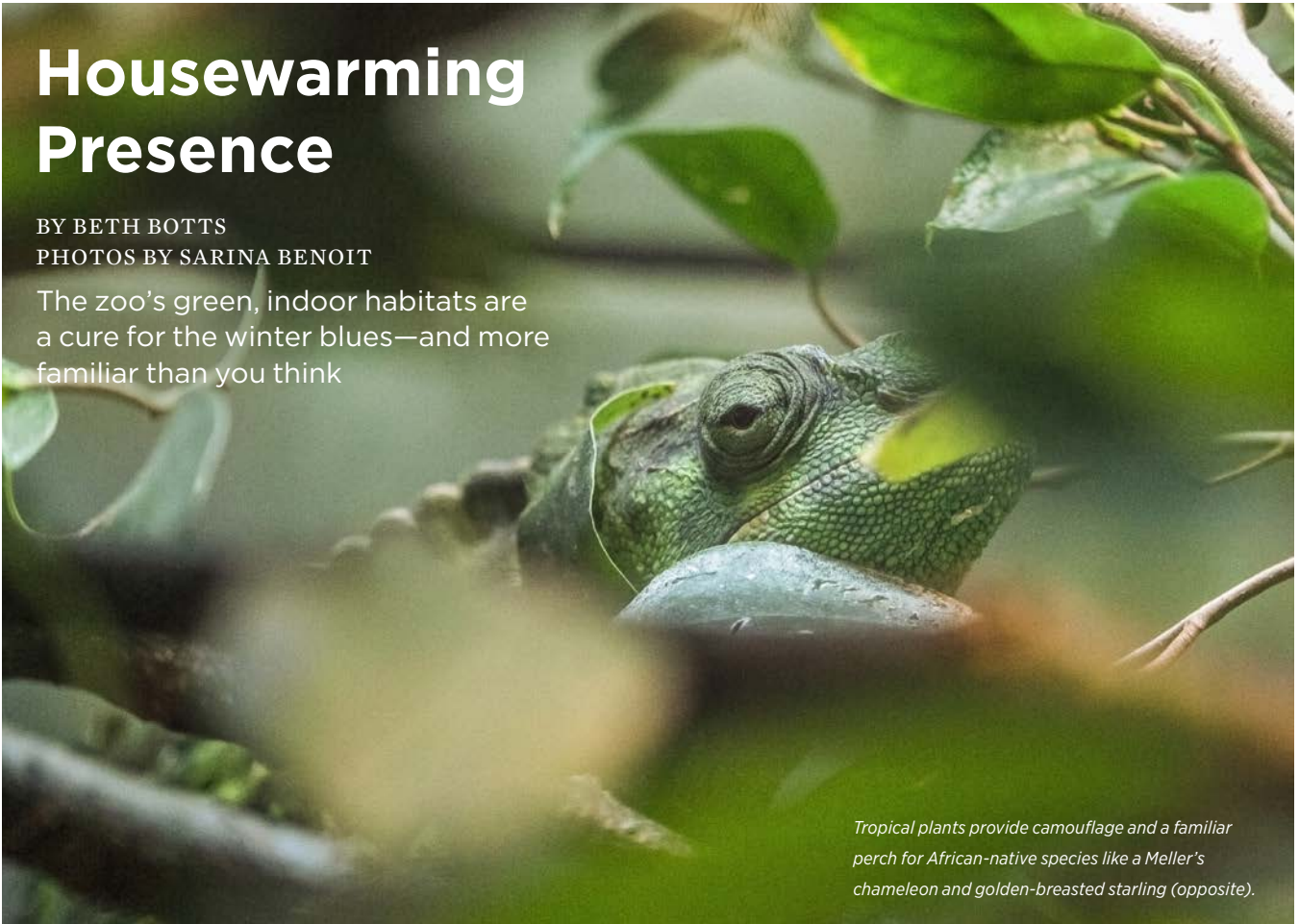
➔ Get outside! Take a walk and pick up litter and trash in your neighborhood. More natural spaces are better habitat for wildlife. Or join the fitness trend that is “sweeping” the nation. “Ploggers” (from the Swedish phrase *plocka upp*, which means “to pick up”) wear gloves and bring trash bags to pick up trash while jogging!

# Housewarming Presence

BY BETH BOTTS

PHOTOS BY SARINA BENOIT

The zoo's green, indoor habitats are a cure for the winter blues—and more familiar than you think



*Tropical plants provide camouflage and a familiar perch for African-native species like a Meller's chameleon and golden-breasted starling (opposite).*

On a cold Chicago day, you escape into the warm, lush, exotic world of the Regenstein African Journey. Vines twine overhead. Huge leaves create a sense of the tropics. The spoonbills and meerkats are unlike any animals you know from the Midwest. Yet if you lift your eyes from the pygmy hippo or the dwarf crocodile to the plants, you might find some of them strangely familiar.

That's because many of the plants that enrich indoor exhibits at Lincoln Park Zoo are the same species we grow as houseplants in our living rooms. Indoors is indoors, whether it's your apartment or a newt's enclosure, and only certain kinds of plants can survive there, according to Joe Rothleutner, director of horticulture.

These plants all tend to come from similar habitats: the understory of tropical forests. Because they're from the tropics, they can live through the winter in our centrally heated rooms and exhibits. And because they evolved to grow beneath a dense, year-round canopy of tall trees, they are adapted to shade—like the shade we have inside buildings.

"It may feel to you like you're in a bright room, but that's nothing compared to the brightness of the sun," Rothleutner

says. "Any plant we grow indoors needs to be able to get along on an extremely low level of light." The big leaves of many houseplants evolved as solar collectors with plenty of surface area in places where sunlight is scarce.

If you look closely at the zoo exhibits, you might be able to pick out some leaf shapes that you know from living rooms—broad fiddleleaf fig, fanlike lady palm, holey Swiss cheese plant, grassy spider plant, heart-shaped philodendron, swordlike snake plant.

The greenery is not just there for decoration. "Having plants in the exhibits helps the animals engage in natural behaviors," says Rothleutner. "They'll scamper up the plants, or hide underneath them. It enriches their experience."

Weaving plants into a green tapestry to surround animals (and visitors) takes expertise in science and horticulture. Some plants are toxic to some animals, so indoor plants, like those outdoors at the zoo, must be screened by Kathryn Gamble, D.V.M., the zoo's Dr. Lester E. Fisher Director of Veterinary Medicine. A philodendron makes a charming backdrop for a rattlesnake, which is a carnivore and not likely to take a nibble, but the horticulturists wouldn't use it in the habitat of any plant-eater.



Plants are arranged to suit the space of the exhibit and the animals' needs. Large, branching species, such as fig trees, are good for birds to perch on. Mammals may like to hide under big leaves. Reptile habitats in the Regenstein Small Mammal-Reptile House, which often are on the dry side, may need drought-tolerant plants, such as snake plant. You won't see cacti, though: No prickly spines are allowed near these animals.

The plants don't necessarily match the animals' native places. "We can only grow a limited range of plants indoors," Rothleutner says, "so we use what we have to create a generally green, tropical feeling." The African spoonbills seem perfectly happy with Swiss cheese plant, which (despite the nickname) comes from Mexico.

Most of the plants are in pots or in depressions formed in the concrete of the exhibits. The zoo uses a custom potting mix with no fertilizer or mineral pellets that might be harmful to an animal. The animals' caregivers water the plants, guided by "some pointers from Horticulture," Rothleutner says. Overwatering is as great a danger to plants in an exhibit as on a sun porch.

The plants grow more slowly indoors than they would in nature—probably a good thing, since many can grow quite large back in the rain forest.

"It's not that different from growing these plants in the house," Rothleutner says. And having greenery in their homes improves the animals' lives in the dark of winter, just as it does ours.

## Tips for Growing Houseplants



**Here are some tips from Joe Rothleutner, the zoo's director of horticulture, for growing houseplants at home.**

**Don't water too often.** Soak a plant well, and then let the soil dry out before you water again. Soil that is constantly wet can cause the plant's roots to rot or invite insects called fungus gnats.

**Empty the saucer.** After you water, wait a few minutes. Then dump out any water that has collected in a saucer or in a container around the pot.

**Fertilize with care.** "Fertilizer can help a plant stay healthier," Rothleutner says. "But you don't want to overdo it. It can damage the roots." He recommends using water-soluble fertilizer at half the strength recommended on the

label. The zoo uses fish emulsion, which is a mild, organic fertilizer, although its aroma may take some getting used to if you're not a pygmy hippo.

**Protect plants from cold.** When you buy a houseplant, wrap it up well when you carry it to the car. "These are tropical species that can't tolerate any cold at all," Rothleutner says.

BY CRAIG KELLER

## Kristine Schad

Director, AZA Population Management Center (PMC) at Lincoln Park Zoo

### What does the PMC do?

Our team provides scientific analyses and advice for healthy, sustainable populations to the Association of Zoos and Aquariums' (AZA) nearly 600 animal programs. I manage a staff of six here and also work with 10 other adjunct population biologists across the country.

### Which resources do you depend on?

Studbook keepers at AZA institutions maintain electronic database records about each animal in an AZA species population. SSP [Species Survival Plan] coordinators talk to institutions to learn their wants and needs: do they want to breed or only have education animals, for instance? They also ask about individual animals: who's healthy, who's getting along, so we can make the best decisions, with the help of specialized software, for their well-being and welfare.

### Animals in these managed populations are not taken from the wild, but do you consider a species' natural history when recommending moves and matches

We want animals to act as naturally as they can. If they live in groups in the wild, we want them to live in groups in zoos and aquariums. Previous research done in the field helps us and vice versa.

### Such as advice you give to conservation partners for wildlife reintroduction programs?

In those cases it's important to keep traits as diverse as possible, so reintroduced animals can interact with wild counterparts. Our focus on small population biology lends itself well to smaller populations we're unfortunately seeing in the wild.



Photo by Veronika Hernandez



Photo by Chris Bijalba

## John, Susan, and Margot Ettelson

Past Chairman, Board of Trustees; Conservators' Council donor; Auxiliary Board member

### Three generations of Ettelsons have supported Lincoln Park Zoo. That's quite a tradition.

**John:** The zoo was a family-bonding experience for us. It formed an important part of all our childhoods. There aren't many places a family can inexpensively spend a day being entertained and educated in a beautiful place. That didn't occur to me much as a kid. Today, seeing the benefits it provides strikes me as spectacular.

### What was your earliest experience at the zoo, Susan?

**Susan:** My parents would drive us in from Glencoe when I was very young. It's wonderful to see how the zoo continues to connect young people to animals and their importance to our planet, particularly for visitors who may never go to Africa or see an animal in the wild.

### What was it like growing up near the zoo?

**Margot:** Our school was so nearby we could hear the lions roaring from there. It felt like the zoo was my backyard. We would wander in and out. I think Chicagoans sometimes take the free admission for granted. Having visited other zoos that are very expensive, I want to give back so other kids have the same opportunity to enjoy the zoo like I did.

### How has the zoo transformed over the years in your eyes?

**John:** For the local neighborhood zoo to have such a global impact in conservation is remarkable. It continues to reinvigorate itself in a way other institutions don't—getting better with each generation. ■

# Green Tree Frog

## *Hyla cinerea*

Pine trees, wreaths, and garlands aren't the only greenery brightening moods during Chicago's holiday season. The green tree frogs at Pritzker Family Children's Zoo are emerald cures for the snowy winter blues.

Common in wetland habitats throughout the southeastern United States, and ranging as far north as southern Illinois and Delaware, this small amphibian also packs a colorful array of adaptations. Acute hearing that picks up vibrations through the ground. Long legs and big, sticky, toe pads that cling to aquatic

plants. An organ on its head that may help it with compass orientation and thermoregulation. A rain call that forecasts stormy weather. And, of course, uncanny camouflage.

External temperatures, stress, and sexual arousal can shift those vivid hues, which tend toward duller grayish-green during dormancy in cooler weather. As the species' Muppet likeness, Kermit, once lamented, it's not easy being green. He must have been an environmentalist. ■  
—Craig Keller





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water



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**11,157**  
pounds of  
CO2

# Upcoming Events

Go to [lpzoo.org/calendar](http://lpzoo.org/calendar) for details on upcoming events.

## November

**Saturday, 3**

Family Nature Day

**Monday, 12**

Veterans Day Camp

**Friday, 16**

Members-Only Night at ZooLights

Wine & Wildlife:

*Reintroducing Animals to the Wild*

**Friday-Sunday, 23-25 & 30**

ZooLights Presented By ComEd and Invesco QQQ

**Tuesday, 27**

Holiday Market

**Thursday, 29**

Adults Night Out: *Holidaze!*

## December

**Saturday-Monday, 1-2, 7-23 & 26-31**

ZooLights

**Thursday, 6**

BrewLights Presented by Lakeshore Beverage

**Sunday, 9**

The Chris White Trio Tribute to A *Charlie Brown Christmas*

**Sunday, 16**

Breakfast with Santa

**Thursday-Friday, 27-28**

Winter Break Camp

**Monday, 31**

Zoo Year's Eve (ZooLights closes at 8 p.m.)

## January

**Tuesday-Sunday, 1-6**

ZooLights

**Sunday, 6**

Glow Flow Yoga

**Wednesday-Friday, 2-4**

Winter Break Camp

**Wednesdays, 9-March 6**

**Thursdays, 10-March 7**

**Saturdays, 12-March 9**

LEAP: Learn, Explore and Play

**Monday, 21**

Martin Luther King Jr. Day Camp