

Alive



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Making the Medicine Go Down

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Snowy Sights at the Zoo



The mission of the Zoological Society of Milwaukee is to conserve wildlife and endangered species, educate people about the importance of wildlife and the environment, and support the Milwaukee County Zoo.

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The news about our planet is often dire. Pollution, climate change and other threats are destroying habitats and putting many species in danger of extinction. Accredited zoos and aquariums preserve captive populations of endangered animals, but they also work to protect these animals in the wild. Milwaukee County Zoo staff participates in conservation projects around the world, from iguanas in the Caribbean to orangutans in Indonesia to giraffes in Namibia. We at the Zoological Society of Milwaukee are proud to support many of these projects. This year, our annual appeal will raise

money for Zoo and Zoological Society conservation efforts along with the Zoo's veterinary residency program. You can read about two recent conservation trips taken by Zoo curators on page 4. Visit zoosociety.org to donate to our annual appeal.

We also want to make sure the next generation understands the importance of caring for the planet. To that end, our Education Department has adopted a new vision statement emphasizing conservation. As part of this vision, the department is exploring innovative ways to help children make emotional connections to animals and nature and taking steps to reduce its own environmental footprint. See page 6 for more.

Some conservation work happens right here at the Zoo. For example, a tank at the Aquatic & Reptile Center houses about half of the genetic stock of the degeni cichlid, a fish that's extinct in the wild. If not for zoos, this species could be gone for good. You can see pictures of this cichlid and other fish and reptiles you don't typically see at the Zoo in our behind-the-scenes photo spread on page 8. Finally, don't miss photos of the Zoo in winter on page 14. Winter is a beautiful time at the Zoo as the cold-loving animals come into their element. We hope to see you here soon!

Jodi Gibson

Jodi Gibson, Zoological Society President & CEO

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ON THE COVER: An emerald monitor in the Aquatic & Reptile Center. Photo by Bob Wickland





Zoo Director Chuck Wikenhauser cuts the ribbon at the new elephant exhibit with his grandson, Kendrik Kahler. Surrounding them are Erin Dowgwillo, elephant care coordinator; Jodi Gibson, Zoological Society president and CEO; and Tim Wild, large mammal curator. Photo by Joel Miller

THIS YEAR, Chuck Wikenhauser reaches 30 years as director of the Milwaukee County Zoo, and he's celebrating by overseeing the largest physical change to the Zoo since it moved to its current location in 1961. The first phase of Adventure Africa, with new exhibits for the elephants and African hoofstock, opened in May 2019. The Zoo broke ground on phase two, a hippo exhibit with underwater viewing, in summer. The Zoological Society of Milwaukee is working to raise \$25 million toward Adventure Africa as a 50-50 funding partner with Milwaukee County. Here, Wikenhauser reflects on what has happened in Adventure Africa so far and what is still to come.

Adventure Africa has been in the planning stages since 2013. How did it feel when you finally cut the ribbon on the elephant exhibit?

I was so proud of the whole exhibit and the accomplishments of everybody, from the keepers who worked with the elephants to make them able to go outside, to the construction people who really worked hard to make sure everything we were supposed to have in that exhibit happened. The Zoological Society surprised me by naming one of the walkways Wikenhauser Way. I had some family in town, and that was a very nice surprise.

My favorite thing about it is just watching those elephants. They're so relaxed. They're walking and doing so much more than they used to. That's going to help their health. I love watching the natural behaviors they're doing through some of the enrichment the keepers have for them.

You've been on several safaris to Africa, including one this past summer. Was it important to you to bring that experience of the wild to Adventure Africa?

Yes. Seeing our elephants out there with this freedom, reaching up those first few days and weeks when they were pulling down willow branches, or watching them reach for the hay in the barrels, that's what they do in the wild. When we were on safari this summer, we came upon one elephant really close to us, and it was doing that exact same thing, reaching up into this tree and pulling stuff down so it could eat it. To be able to see that verified we had the right design for the elephant space.

How is construction going on the hippo exhibit?

All the demolition is complete. They have a lot of the outdoor rockwork done on the perimeter walls, and they are now doing the foundation and footings for the glass wall and the pool. They're pretty close to having all the plumbing in the floor in the basement of the former elephant building, and soon they'll be pouring the concrete floor in. The exhibit is scheduled to open in mid-June, and there's no reason right now, based on discussions at our construction meetings, that they're not going to meet that.

The Zoo is in the early planning stages for a new rhino exhibit. What do you expect to see there?

In the 2020 county capital budget, we got the funds to design the rhino exhibit. Right after the first of the year, we'll put out a request for proposals from design firms. Probably by the end of next year that will be designed, and we'll just see how the fundraising goes as to when that will start. We hope to use the former elephant exhibit. Then the pachyderm mall between the elephant exhibit and the big cats building, we hope to close that in with a roof so the rhinos and hippos have a soft, sandy area for the cooler months.

How has the community supported this process?

I'm so thankful that we have the kind, generous people in Milwaukee that want to help us continue to improve the Zoo and especially with Adventure Africa. I congratulate the Society on the success that they've had so far in fundraising. They're close to \$20 million. If we didn't have that support, the county can't afford to do that all by ourselves.

THE ZOOLOGICAL SOCIETY continues to raise money for **ADVENTURE AFRICA**.
To DONATE, visit HIPPOS.WIN2WILD.COM.

Conservation Here and Around the World

Many of the species at the Milwaukee County Zoo are endangered in the wild. That's why the Zoological Society's 2020 annual appeal will raise money to support Zoological Society and Zoo conservation initiatives. Supported efforts include Society programs, Zoo staff research trips and veterinary residency programs. Here are two examples of Zoo staff trips the Society supported in 2019.

Trish Khan: Orangutan Sanctuaries in Indonesia

Twenty years ago, Trish Khan's life changed when she traveled to Indonesia to learn about orangutan conservation. "That was the start of my passion for orangutans," says Khan, curator of primates and small mammals at the Milwaukee County Zoo. In July she returned to Indonesia, and what she saw was just as impactful. "The situation there was horrible 20 years ago, but that was just a drop in the bucket compared to now."

Orangutans are critically endangered on their island homes of Borneo and Sumatra, located mainly in Indonesia. Their forest habitat is rapidly disappearing, spurred on in recent years by the proliferation of palm oil plantations. Palm oil is found in many household items and packaged foods. Khan has been running the "MOMs: Missing Orangutan Mothers" campaign at the Milwaukee County Zoo for more than a decade, raising money and awareness for orangutan conservation on Mother's Day each year. She was invited on a trip to Indonesia by Richard Zimmerman, founder of Orangutan Outreach, to view the results of her efforts.

Over two weeks, Khan visited several sanctuaries that care for orphaned orangutans and train them to be released in the wild when possible. "We saw where our money is going, what their needs are and how we can support them," she says. She helped celebrate the grand opening of a new visitor center at one sanctuary, with schoolrooms to help educate local children and a research area. She

watched young orangutans learn skills such as climbing, finding food and building nests. Khan even shared some of the Milwaukee County Zoo's enrichment practices with sanctuary staff to give them ideas about how to train and engage their animals.

But her experiences weren't always so uplifting. "As we were traveling, we saw a lot of the deforestation and the devastation from illegal mining." She also saw the results of forest fires, which have become more extreme because of drought. She saw firsthand how dangerous, grueling and expensive it is to rescue, care for and release orangutans. "You think of all the time it takes to care for two orangutans every day at the Zoo, and then they have more than 300. It puts it in perspective."

She returned more committed than ever to helping orangutans. "I definitely have a better understanding of what messaging needs to be out there." She hopes to work with conservation organizations on efforts such as bringing

their veterinarians to the U.S. to learn from veterinarians here or even sending zookeepers from the U.S. to Indonesia on short-term conservation trips. She is inspired by the amazing conservation workers who have dedicated their lives to caring for these animals. "If they can keep going, with all the obstacles they have, I have no right to give up here."



Above: Trish Khan, Milwaukee County Zoo curator of primates and small mammals, visited several orangutan rescue sites in Borneo and Sumatra in summer 2019.

Photo submitted by Trish Khan

Below: Trish Khan photographed this young orangutan at Nyaru Menteng, a rescue site in Borneo.

Alex Waier: Humboldt Penguin Research in Peru

In October, Alex Waier, curator of birds and the family farm, went to Lima, Peru, for a week to participate in a population and habitat viability assessment for the Humboldt penguin. The assessment brought together, for the first time in more than 20 years, researchers, government officials, non-governmental organizations and other stakeholders to discuss the penguins' conservation status and develop an action plan.

Humboldt penguins live on the coast and islands of Chile and Peru. They face threats from fishing nets, introduced species such as cats and dogs, and strong weather patterns caused by El Niño and climate change, which can destroy their habitats. Waier attended the assessment meetings as coordinator of the Humboldt Penguin Species Survival Plan® through the Association of Zoos & Aquariums. The plan aims to keep the penguin population in North American zoos healthy and help Humboldts in the wild.

The participants spent the first two days comparing data on the penguin population and its threats. They concluded that the population continues to decline and, without direct action, could be extinct within 80 years. Then they broke into four working groups – communication/collaboration, fisheries, population biology/demography and human disturbance – to discuss ideas to mitigate the threats.

Waier joined the communication group. “It seems like there is considerable room to improve the awareness of the plight of Humboldt penguins in country, especially in the school curricula,” he says. The participants want to create educational materials such as flyers and interpretive signs to teach Chileans and Peruvians about Humboldt penguins and how to support them. Other groups suggested steps such as working with fisheries to prevent penguins from becoming entangled in nets, regulated fishing quotas and blackout dates during nesting seasons, and continued work with the government to manage the harvest of penguin guano for fertilizer. (Humboldt penguins also use guano, or droppings, to build their nests.)

He returned to the U.S. with plenty to do. Waier volunteered to create a listserv for communication among the stakeholders and help write the communications section of the group's final

report, which is expected in spring. He also hopes to connect with university and governmental sources in Chile and Peru to learn more about the research already taking place and how zoos can support it. “By connecting with researchers in the field, we can find out what they need from us,” he says. “One thing zoos can do really well is fundraise.”



Left: Alex Waier, curator of birds and family farm

Photo by Stacy Kaat


Below: Humboldt penguins stand on the rocky shoreline in Peru, South America.

Stock photo



HELP US support future conservation work!
The Zoological Society's **2020 ANNUAL APPEAL**
seeks to raise money for conservation initiatives
of the Zoological Society and the Zoo.

VISIT [ZOOSOCIETY.ORG](https://zoosociety.org)
for more information and to donate.



A new camp this summer for 4- and 5-year-olds will take advantage of the Zoo's Nature Play site, allowing children to explore the woods and form an emotional connection to nature.

Photos by Bob Wickland



PUTTING THE “CONSERVATION” IN CONSERVATION EDUCATION

Parents bringing their children to recent Zoo Classes and Camps might have noticed some subtle changes. For example, 4- and 5-year-olds in an October “Creatures of the Night” class drew pictures of nighttime animals on a whiteboard during free-choice time, whereas previously they might have glued animal shapes into a paper book. During circle time, in addition to listening to information from the instructor, the kids were encouraged to discuss questions with their grown-ups and draw imaginary nocturnal animals.

“They’re small changes, but I’ve already noticed a difference in how the kids engage with the material,” instructor Molly Del Vecchio says. Best of all, “these are reusable educational tools that don’t generate more stuff.” Even the imaginary animals were drawn on laminated paper that can be wiped off and used again.

These small changes are part of a big transition in the Zoological Society’s Conservation Education Department. The department, founded in 1976, has earned a well-deserved reputation for strong natural-science education. But staff saw an opportunity to really put the “conservation” in conservation education while at the same time appealing to new audiences and incorporating new educational methods. “We’re building on a strong foundation, and we are ready to push ourselves even further in the realm of conservation education,” says Julia Petersen, Zoological Society senior director of programs.

The staff participated in a three-day visioning process in late 2018 to focus on the department’s long-term direction and goals. Staff from other Zoological Society departments and the Milwaukee County Zoo also participated. At the end, the department created a new vision statement: *All members of our community are inspired and empowered to take conservation action.*

“Every word of the statement was deliberate,” Petersen says. For example, “all members of our community” emphasizes the department’s desire to not only welcome but actively include people of all income levels, races and abilities. “While our popular Animal Ambassador Program reaches more than 1,800 schoolchildren per

year from diverse populations, we knew we could do even more,” says Jodi Gibson, Zoological Society president and CEO.

To that end, the department has started staffing a table at some Family Free Days to talk with guests about conservation. It is working with All-In Milwaukee, a coalition to help low-income, high-potential students graduate college, to help diversify the pool of summer education interns. It also is working with Zoo staff to make the Zoo more welcoming to those with sensory issues, such as people with autism. “Our intent here is to be truly representative of the community around us and include broader perspectives, skill sets and capabilities,” Petersen says.

The department knew from the beginning it wanted to include conservation action in its new vision. Instructors have always aimed to instill a love of animals in their students, but now they want to make the conservation angle more explicit. “Our conservation message is stronger than ever, in everything from classes and camps to grant-funded programs in schools,” Petersen says. That includes Kohl’s Wild Theater, which will introduce a school show this winter about women leaders in conservation. This summer, the Zoological Society will add a weeklong camp for 6- and 7-year-olds called “Young Conservationists: Backyard and Beyond” and a two-day camp for 8- and 9-year-olds called “Where in the World is...?,” where campers will join a young conservationist on a mission to protect the planet.

Another new addition this summer is a half-day, weeklong summer camp for 4- and 5-year-olds based on the principles of Reggio Emilia, an early-childhood philosophy that emphasizes child-led, hands-on learning. The camp, written and taught by Del Vecchio, aims to establish an emotional connection between children and animals to inspire conservation action. Children will be able to explore nature and the outdoors, learning about concepts such as life cycles and habitats using resources such as the Zoo’s Nature Play site. “The weeklong format with a different approach to learning allows more time and a richer experience for children to have a deeper understanding and appreciation of the natural world and how they are connected to it,” Del Vecchio says.



The Zoological Society's Conservation Education Department presented information about conservation at the October 2019 Family Free Day and invited guests to decorate a conservation-themed banner.

Photo by Bob Wickland

Del Vecchio believes even small changes in her classroom, such as drawing nocturnal animals on a whiteboard, will help children connect more strongly to nature. "We allow them to draw to process their learning and express themselves," she says. "My hope is that the class experience is more inspiring and leads to a more meaningful connection between the children and the animals, which then leads to children feeling more empowered to take action to help animals."

To drive home the conservation message, the department also must "walk the walk." It aims to reduce paper use by 15% in 2020. Instructors now give reusable nametags to the students and have stopped handing out plastic shopping bags for families to take their projects home. Some classes might reduce the number of paper-heavy projects in favor of more hands-on activities. The changes have been well received so far, says Ana Suson, coordinator of middle and high school programs. "Our participants care about conservation too, and they have supported us."

While some changes have already been implemented, the department's focus is long-term. Petersen and Suson note that Wisconsin has a strong conservation legacy as the home of noted conservationists John Muir and Aldo Leopold and the birthplace of Earth Day, created by Wisconsin Sen. Gaylord Nelson. "We want Milwaukee and Wisconsin to be seen once again as conservation leaders, and we plan to be a part of it," Suson says.

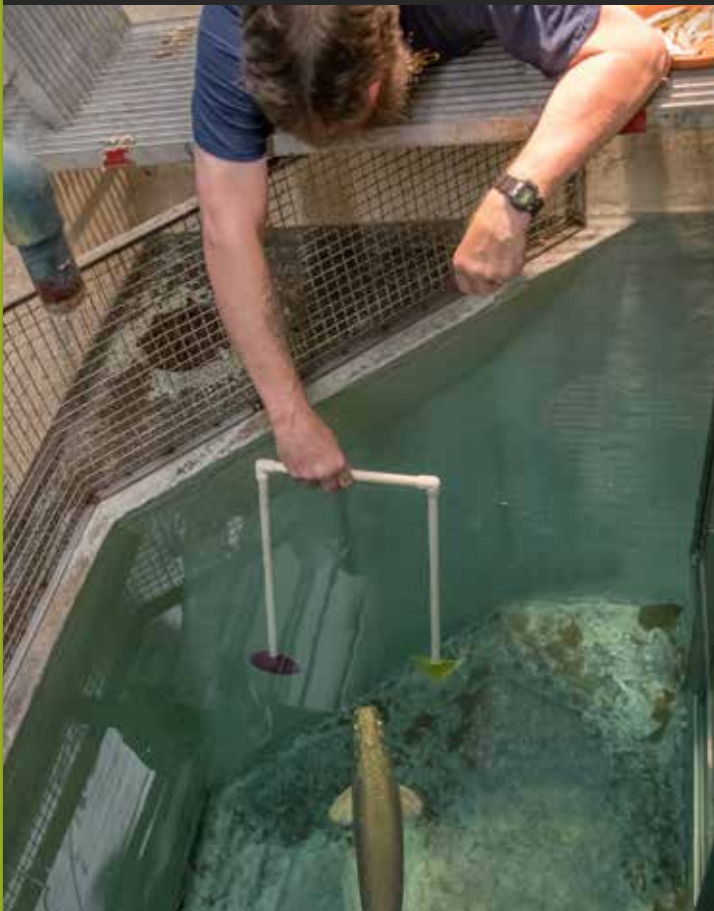
By Stacy Vogel Davis

Noelle J. draws a nocturnal animal on a whiteboard while wearing an owl puppet that she made during "Creatures of the Night" class for 4- and 5-year-olds. Photo by Paul Ruffolo



REGISTRATION for **ZOO SUMMER CAMPS**, sponsored by Penzeys Spices, starts Feb. 12. The Zoological Society is offering several weeklong camps this year for ages 4-11, including "Nature Builders" for 4- and 5-year-olds and "Young Conservationists: Backyard and Beyond" for 6- and 7-year-olds. Openings remain for **WINTER AND SPRING ZOO CLASSES** as well. Visit **ZOOSOCIETY.ORG/EDUCATION** to learn more.

The Aquatic & Reptile Center (ARC) has the most animals out of any area at the Milwaukee County Zoo. Fish alone make up more than half the total number of animals at the Zoo at about 1,300. But you might not know the ARC has hundreds of animals behind the scenes. Some of these animals are in quarantine before they can be introduced to their exhibit mates. Others, like its two arapaima fish, have to wait until they grow large enough that they won't be eaten by other fish in the exhibit. Still others are kept in an area dedicated to education classes and behind-the-scenes tours. Here's a peek at some of those animals and areas you won't find on display – at least not yet. Photos by Bob Wickland



^ Zookeeper Craig Pavlik target-trains a young arapaima above the Amazon flooded forest exhibit. The Zoo has two young arapaimas, and each is trained to respond to a specific target for feeding. These fish will eventually grow to be up to 10 feet long. For now they live in a separated area above the exhibit until they get large enough to defend themselves among the other fish.



^ The degeni cichlid is extinct in its natural habitat of Lake Victoria, a great lake that extends into Uganda, Kenya and Tanzania. About half of the genetic stock, or 70 fish, are behind the scenes at the ARC, while the other half are found at the San Antonio Zoo. Many cichlid species in Lake Victoria are endangered or extinct due to the introduction of Nile perch, which outcompetes the cichlids for food.



^ The fantastic leaf-tailed gecko, also known as the satanic leaf-tailed gecko, looks just like a shriveled-up leaf in the rainforests of its Madagascar home. The Zoo acquired two of them in 2019 and plans to put them on exhibit soon.



^ Eight rhinoceros vipers were born at the Zoo in summer 2019. This is the first time the vipers have been born at the Zoo and one of the first times they have been successfully bred within the Association of Zoos & Aquariums.



Blanding's turtle

^ The ARC keeps four spotted turtles and a Blanding's turtle behind the scenes above the Lake Wisconsin exhibit. Both species are endangered and native to the Midwest. These turtles, along with the coral reef tanks, are part of an educational area meant for Zoo Classes and behind-the-scenes tours.

Two Halmahera pythons were in quarantine in the ARC this fall. All animals that arrive at the Milwaukee County Zoo must stay in quarantine for at least 30 days before they can go on exhibit to make sure they don't have diseases that could be spread to other animals. These pythons will be part of a new "Snakes of Indonesia" exhibit expected to debut in early 2020.



Shawn Miller, ARC curator, and the rest of the ARC staff have been cultivating saltwater reef aquariums behind the scenes. Reefs around the world are dying because of pollution and climate change.



The coral reef tanks house Indo-Australian fish such as clownfish and melanurus wrasse. All melanurus wrasse start out as female, but this fish is transitioning to male.



SOMETHING FISHY



ROCKfish

From rockfish to sturgeons, catfish to sharks, there are more than 33,000 species of fish that swim all over this planet! These underwater animals rely on their gills to absorb the oxygen that has dissolved into the water in order to breathe. Almost all fish are cold-blooded, meaning they rely on the water temperature to keep their bodies functioning properly. Nearly 90 species of fish call the Milwaukee County Zoo home, including both freshwater and saltwater species. The largest fish here at the Zoo is the redbtail catfish, while the smallest is the ocellaris clownfish. You can make your own sparkly fish with the project below.

MAKE YOUR OWN CONSTRUCTION PAPER FISH

Materials Needed:

- Colored cardstock or construction paper
- Googly eyes
- Markers
- Sequins
- Stapler
- Scissors
- Glue

Directions:

1. Cut the colored paper in half length-wise. Use one of the halves as scrap paper, and cut out a large triangle shape from the end to make a tail.
2. Bend the other half-sheet so that the ends meet, but do not make a folded crease in the paper.
3. From the "bent" end, cut out a triangle shape for the mouth.
4. Flatten the piece you just cut to make a diamond. Cut this in half to make two smaller triangles.
5. Draw lines or scales onto the small and large triangle shapes with markers to give the fish fins, scales and a tail.
6. Re-bend the rectangle and place the large triangle in between the two ends. Staple the ends together so that the tail is secured.
7. Glue googly eyes onto each side of the fish, as well as the smaller triangle fins. To make the fins stand out more, bend the flat end outward.
8. Glue sequins wherever desired on the fish to create scales.
9. Let dry and repeat in different colors to make your own school of fish!



catfish



clownfish



MARSHMALLOW AQUARIUM POPS

The Zoo has three main aquariums: the Lake Wisconsin freshwater aquarium, the Amazon River flooded forest and the Pacific Coast marine aquarium. So many fish in all different colors and sizes! Create your own aquarium at home with these tasty marshmallow pops.

Ingredients:

- Marshmallows
- Blue candy melts
- Goldfish crackers
- Nerds
- Lollipop or popsicle sticks
- White sprinkles (optional)

Directions:

1. Put the lollipop or popsicle sticks into the marshmallows.
2. Place the candy melts in the microwave, following the recommended directions on the package to melt them.
3. Dip marshmallows into the candy melts, covering the entire marshmallow.
4. While the candy melt is still wet, dip the bottom into nerds.
5. Add goldfish on the sides of the marshmallow.
Optionally, you can then add the sprinkles to mimic bubbles.
6. Allow time for them to dry, then enjoy.



FISHY WORD SEARCH

E	K	V	F	B	Z	M	K	A	Z	U	Y	P	Q	S
O	Q	S	I	T	L	A	W	B	E	X	M	I	C	R
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B	I	H	S	J	Y	W	V	B	N	K	L	T	F	Q
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Z	S	R	L	A	K	E	C	E	O	E	F	I	S	H
U	O	G	F	H	S	C	C	S	S	U	P	R	X	Y
X	S	D	J	Z	Q	E	O	U	Z	A	X	R	M	T
B	B	W	S	S	V	A	S	E	A	W	E	E	D	B
C	T	X	I	B	H	F	O	F	P	K	V	K	L	Q
W	Y	A	S	M	D	R	H	A	O	C	E	A	N	L
Y	Y	N	D	K	H	G	N	P	Q	K	J	V	T	W
A	Q	U	A	R	I	U	M	F	E	F	H	V	Y	Q

AQUARIUM
BUBBLES

FINS
FISH

GILLS
LAKE

OCEAN
SCALES

SEAWEED
SWIM



MAKING THE MEDICINE GO DOWN



Dr. Vickie Clyde
Photo by Richard Brodzeller

A doctor has a lot to think about when writing a prescription: What's the best medication to treat this problem? What is the proper dosage? How is the medicine best administered? Now imagine that doctor is dealing with patients ranging in size from 10,000 pounds to just a few ounces, with wildly different body systems, none of whom can tell you what's wrong or how the medicine is working.

Welcome to the world of zoo medicine, where treatment is rarely simple. Dr. Vickie Clyde, Milwaukee County Zoo senior staff veterinarian, and the staff at the Animal Health Center care for more than 2,000 animals at the Zoo representing 354 species, from fish to armadillos to elephants. Although animal medicine has advanced in Clyde's 30-year career, "we remain with the dilemma of how you treat a wild animal, sometimes a species for which there isn't any medical data or there's limited medical data."

When an animal is sick, the veterinary staff has many resources to find an effective treatment. Dosages for different zoo species are published in zoo textbooks and journal articles that can be searched online. Zoos share information among themselves about what has worked in the past. Sometimes veterinarians consult with medical doctors, particularly when working with primates, which are genetically close to humans. Other times, they work with domestic-animal veterinarians. "I say 'Just tell me how to approach this problem in



Pharmacist Jeff Langer has been preparing medications for the Zoo for more than two decades, first through his traditional pharmacy and later as the founder of The Pet Apothecary in Milwaukee. Photo submitted by The Pet Apothecary



The Zoo tries to avoid anesthetizing animals when possible, but sometimes it's necessary, as in this checkup for a grizzly bear. Anesthesia drugs have come a long way in recent decades, according to Dr. Vickie Clyde, Zoo senior staff veterinarian. Photo by Joel Miller

the species that you're used to dealing with,' and then we make a plan of how we can apply that to our animals," Clyde says.

Once a medication is identified, the staff has to figure out how to get it into the animal. That's where a compounding pharmacy such as The Pet Apothecary can come in. Jeff and Patti Langer had already been working with the Zoo for several years at their traditional pharmacy when they sold that pharmacy and opened The Pet Apothecary in 1999. It's a compounding pharmacy, meaning it custom-makes each medication to order. "The Zoo offers us the most challenges because they have so many species and so many nuances to the species and the diets," Jeff Langer says.

The Pet Apothecary's most active "clients" from the Zoo are the Humboldt penguins, who must be preventatively

treated for avian malaria. They take a capsule with three medications in it every other day from around May 1 to the first frost. The capsules are inserted into fish to get the penguins to eat them. The Pet Apothecary has added other flavors for different species depending on the animals' tastes. "We provide a wide variety of flavors from fruits to meats, marshmallow to peanut butter," Langer says.

"Then there are drugs that no matter how you flavor it, they're not going to taste good," Clyde says. She remembers treating an orangutan that refused to take medication for pneumonia. "When I tasted it, I almost gagged and was nauseous for six hours. If I couldn't handle that little bit, how could I expect the orangutan to take it?" A different drug in the same treatment category was less bitter and could be flavored so the orangutan was willing to take it.

Medication can be administered in a variety of ways, depending on the species. For example, amphibians such as frogs have semipermeable skin, so keepers can put the medication in their

water or apply it to their skin, says Dr. Roberta Wallace, who retired last year as the Zoo's senior staff veterinarian. However, that method is not as sure-fire as injection because you have little

control over how much medication is absorbed.

Large animals present a special challenge. A hippo at the Zoo once developed skin lesions and needed a topical solution on its back, Wallace says. "Of course the keepers can't go in with the animal, and it was too far away for them to reach by hand, so they fashioned a paintbrush on the end of a stick and were able to lean over from above and paint the medication on top of the hippo's wounds." In other cases, staff uses an air gun to shoot a dart that injects the medication into the animal. This is especially helpful with hoofed animals. Whenever possible, the veterinarian selects a long-acting drug to avoid having to dart the patient daily, since being darted can stress the animal, which could weaken its immune system.

Of course, formulating medicine for very small animals is also difficult, Langer says. He sometimes has to create extremely concentrated medications for the smallest Zoo animals, which can make it hard to know how long the medication will last or how it will affect the animal. Early in his relationship with the Zoo, he helped treat a fruit bat for heart disease. "They were going to great lengths to find a way to get the heart medication into a one-drop dose that they could administer to a bat." It's that kind of dedication that makes him proud to work with the Zoo. "It's amazing that they take the time with every snake and every bat and every bird that goes in there. It's truly been an honor to work with the Zoo for all these years."

By Stacy Vogel Davis



Many Zoo animals are trained to allow injections for medications or blood draws without the use of anesthesia. Photo by Joel Miller



Keepers hide anti-malaria medication in the penguins' fish every other day. Photo by Richard Brodzeller



Everyone gets tired of staying indoors in the winter. Why not visit the Milwaukee County Zoo? There you will find carefully maintained walkways and plenty of buildings where you can warm up along your route. Think there aren't many animals out in winter? Think again! The Zoo is full of animals that enjoy the cold and snow.

Winter Greetings



You might even spot a wild animal on a winter walk in the Zoo. Photo by Bob Wickland



Snow leopards live in northern and central Asia, including the snowy Himalayan Mountains. Their large paws keep them from sinking into the snow. Photo by Bob Wickland



The Amur tiger, also known as the Siberian tiger, is built for frigid winters. Unfortunately, fewer than 600 are believed to live in the wild today. Photo by Bob Wickland



Red pandas prefer colder weather. Like snow leopards, they have long, bushy tails that they wrap around their bodies for warmth. Photo by Joel Miller

Snow Lilly is thought to be the oldest polar bear in human care in North America at age 35. Photo by Joel Miller



The North American river otters delighted guests last winter with their snowy antics. Photo by Joel Miller



Edan is one of three caribou, or reindeer, at the Milwaukee County Zoo and the only male. Both male and female caribou have antlers, but the male's are usually thicker. Photo by Bob Wickland



Elk were once widespread in Wisconsin but disappeared due to overhunting and habitat loss. The Wisconsin Department of Natural Resources reintroduced them in 1995, and now nearly 400 live in central and northern Wisconsin. Photo by Bob Wickland

Alive



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