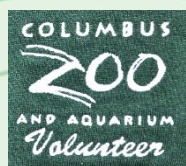


December 2022

The Columbus Zoo and
Aquarium Volunteer
Newsletter

ZooNews



FA-LA-LA-LA-LA,



LA-LA-LA-LA!



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The mission of ZooNews is to promote awareness, education, preservation and conservation of our natural world.

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FROM THE PRESIDENT AND CEO



Greetings,

As we enter the holiday season and begin to wrap up 2022, I wanted to share a few updates with all of you. It has been a busy and productive fall, many thanks to all of you who assisted us during Boo at the Zoo, it was very successful. Over 124,000 guests visited us during Boo, which is higher than last year and significantly higher than what we have budgeted. With an average ticket at over \$10 per guest, and over \$9 per guest spending, this program generated over \$2 million to support the Zoo.

We also have a new addition to our Columbus Zoo family - Sabu, an adult male Asian elephant, is visiting our herd from the Cincinnati Zoo. As part of a cooperative breeding and management program, we are hopeful Sabu's visit will result in a new elephant calf sometime in the future.

We also continue to finalize our new strategic plan, which will focus on efforts on three primary pillars: Our animal wellness and wildlife conservation programming, our long-term sustainability, and a focus to shift our operating plan from a seasonal attraction to more of a year-round destination. As you can imagine, these three pillars are intertwined, and all support each other. Once we finalize this plan, I look forward to sharing it with all of you. Our next step will then be to develop our new 20-year Framework. This new master plan will guide our growth, in all of our parks and facilities, over the next 10 to 20 years.

We have an incredibly exciting future ahead of us, and I am so thankful to have all of you as part of our team.

Tom Schmid, President/CEO

Tom Schmid photo courtesy of Graham S. Jones

Communiqué



Then suddenly it was December...

Thank you all for an amazing year! So far, through mid-November, 562 people have volunteered 74,480 hours. It hasn't been an easy year but when things get rough, we come together. When there was loss within our Zoo family many of you reached out and offered to help. The money collected for the Asia Quest animal care staff after the loss of Beco, was used to purchase a large screen monitor and multiple cameras so staff can more easily monitor the elephants. Contributions shared after the loss of Anana will benefit the North America animal care staff in an equally meaningful way and we will keep you posted.

Our AZA accreditation inspection date has been set. The delegation of five will be at the Zoo December 12 through 16. Visit the Portal to review the "Animal Welfare AZA" document found under the "Important Information" then the "Other Documents" tabs. If you have the opportunity to interact with the accreditation team there is no need to be nervous, just answer their questions honestly. We will soon be sending out a survey to our volunteers to help the accreditation team understand our volunteer program. Thank you for your support and assistance as we prepare for the inspection. We will likely learn if accreditation has been granted in March.

In November Tom Schmid shared updates of the Zoo's 2023 Operating Plan and Budget. The first draft was

shared with the Board Finance Committee in October. Here are the proposed objectives:

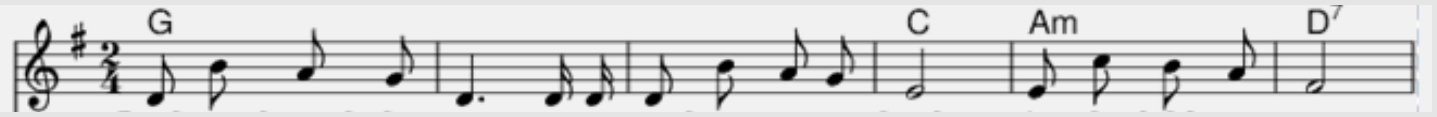
- Open the new Weedy Sea Dragon Exhibit
- Begin construction on our North America region
- Begin renovations of our indoor Bonobo habitat
- Host the 2023 AZA Conference
- Raise minimum wage to \$15 per hour
- Begin to shift our employment base from seasonal to full-time
- Launch the new Columbus Zoo Leadership Academy, in partnership with OSU
- Renovate our Fresh Water Mussel Conservation Center
- Create our new 20-year Framework (Master Plan)

We hope to have Tom speak to the volunteer group during our Kickoff Meeting which will be Tuesday April 4, 2023, at 7pm via Zoom. He will be able to update us on these objectives and the plan to put them in motion.

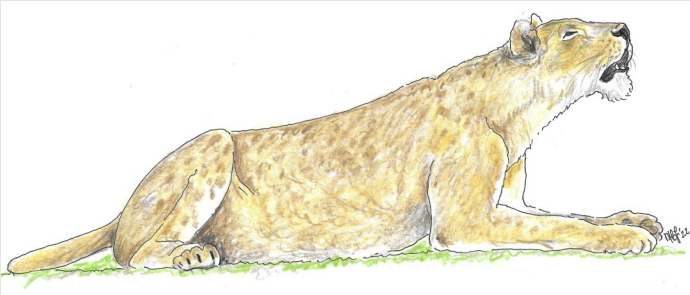
Please be safe this holiday season. We appreciate all you do and wish you a happy, healthy, warm and peaceful December and New Year.

The Volunteer Team,

Ginger, Carole, Mary, Kathy and Rachel



LIONS CAROLING



The holiday season is full of music and song. We sing carols at this time of year and we're not alone. Our lions sing too, and if you listen carefully, you might hear them caroling.

WHAT IS LION CAROLING?

Lions are both the most social and the most vocal of the cat species. "Caroling" is when a group of lions roars in sequence one after another after another after another in a cavalcade of spine tingling, eerie sounds that are almost musical.

WHY ROAR?

Lions roar to communicate with other lions, not to intimidate possible prey. In the wild lions roar to broadcast ownership of a territory, to stay in contact with other members of the pride and, in some instances, to attract mates. Females and males that are part of a pride roar for the same reasons. Nomadic males don't roar.

All cats hiss, spit, growl and snarl. In addition, they have one or two other vocalizations unique to their species. However, lions have more vocalizations than other wild cats. This would be about 12.

ZOO VOCALIZATIONS

Our lions probably roar to communicate. It's speculation as to the message but there are specific situations when you are more likely to hear them. They are a very talkative group.

- When Roary or Asali are in the habitat by themselves they often roar, probably to let the others know their location. In Roary's case he *bellows*. *Asali is much quieter. The roar of a female is softer and higher in pitch although all roars can vary in intensity and duration. If the public area is quiet, you might hear the females who are out of sight responding.*
- Any time the lion groupings change going into or out of the yard there is often "talk" between those moving.
- When keepers arrive at the building in the morning and close the building late in the afternoon there are also a lot of vocalizations. Are they communicating with their caretakers, saying hello and good night?



- Caroling proceeds on hierarchal lines. Imara, the most dominant of the females, will respond first, Asali is second and then Nyasi. Pride members recognize each other's roars.
- Most of the animals on the savanna ignore Roary and the others when they vocalize. The ostriches and giraffes appear to be more sensitive than the others but only if the sounds are loud snarls.
- Under optimal conditions ... flat terrain, minimal wind and high humidity ... a lion's roar can travel up to five miles away. People living close to the Zoo often remark that they hear the lions at daybreak and dusk during the warmer months and most find the sounds soothing.

—Nancy Mulholand

For more information: Why is That Lion Roaring? Zoo News, Oct., 2015; Feline Fun Facts Heart of Africa section of volunteer Portal

Sources: Samantha Frohlich, Columbus Zoo and Aquarium; Vocal Communication in Cats by Gustav Peters in Great Cats: Majestic Creatures of the Wild by John Seidensticker, Rodale Press, 1991

TOKEN TRAINING WITH THE ORANGUTANS

A new project in the orangutan building for our 3 red heads is token training. Keith von Stein graciously and enthusiastically explained this vending machine system. He and another of the Congo Expedition animal care team, Chelsea Massaroni, are the leads on this new enrichment.

The vending machine is from WildThink, a company that creates enrichment devices for animals in zoos. The Cheyenne Mountain Zoo in Colorado is the prototype for this program, and the emphasis is on orangutans at the moment, although gorillas and bonobos may be included in the future.



Zoos which have this WildThink device and are training their orangutans to find and utilize tokens for rewards include: The Columbus Zoo and Aquarium; Cameron Park in Waco, Texas; Woodland Park Zoo in Seattle; The Oklahoma City Zoo; The Toronto Zoo.

All five institutions are in the Beta group (zoos who use this device), and a Facebook group has been formed so the staff involved can communicate with one another.

The device, a black plastic box which can fasten to the mesh down low or up high in the orangutan indoor exhibit, was up and running for two weeks and then broke. There was an auto-dispensing error, which allowed the o's to put in nothing and still receive treats, and as every parent knows, that sets a bad example for learning!



Photo courtesy of Keith vonStein

The tokens used in this training system are bright pink, which stands out as the trainees go around their indoor habitat looking for them. Sulango was initially a little slow to pick up on what was intended, but the two girls got it right away, and in a matter of days, all three had caught on to the concept of exchanging tokens for something desirable, say popcorn or Cheerios.

Inside the black box are a computer, battery pack, a hopper (food dispenser) which turns when a token is inserted, and a sensor, which can tell if something unwanted is inserted into the slot of the machine. All three o's tried to get food in exchange for a piece of mulch or a stick, but no success. Do we consider that cheating or experimenting? Either way, pretty smart!

The number of times it takes for the hopper to turn and offer food enrichment can vary, which directly affects how much popcorn can be obtained in a given session. Also, the number of tokens distributed around the habitat varies. Right now, most are in full view to reinforce the desired behavior, but down the road, tokens can be hidden in the mulch or in unusual places so the subjects have to work a little harder and do some more thinking to find them.

Weekly surveys are done for WildThink. The Orangutan staff records how many tokens are distributed and their placement. So far, our keepers Chelsea and Keith have been trained for the token enrichment program, but down the road, other keepers will also be brought on line.

Friends of the Zoo purchased the token device for the Zoo at a cost of between two and three-thousand dollars. The device is mobile and can be transported like a suitcase. The actual container is a “Pelican case.” Replacement parts can be 3-D printed, and fortunately, a 3-D printer exists on Zoo grounds. There is even a “rodent block” to keep little visitors out, although so far, no such creatures have shown up in the orangutan indoor habitat.

Keith demonstrated the use of the vending machine and our animals’ use of it. He opened the locks and door to the indoor habitat, and scattered twenty pink tokens around the space in every place imaginable, up high, down low, on top of pillars, all in plain sight with the exception of one that was inside the second of three stacked containers. Then the three orangutans were invited inside, and came readily to see what was going on. Keith had said that Khali was the best token collector, hoarding them from the other two.

However, this session, Sulango came in first and began by munching on lettuce. He spent time at the mesh inspecting the token device, and then went around collecting tokens, holding them in his mouth. Dumplin’ had a token, but as Sulango approached her, she handed it over to him, possibly to avoid having it taken away. As the keeper says, “Males run the show,” but he also admits that at times Khali tries to be the boss.

Keith opened the side doors to let the public also see the orangutans at work with the token machine. It is very clear that everyone understands the point of the training exercise by now. They have been doing this steadily since July, and Sulango is a champ at inserting one token at a time and collecting his popcorn. Dumplin’ waits until Sulango moves on, and collects popcorn that has spilled onto the mulch. Khali tries to insert two tokens at a time, unsuccessfully. Apparently, the rule for orangutans is “watch and learn.”

By now, you might be asking, “What is the point of all this training?” The sessions are not done every day nor at the same time of day. They can even be done at night without keepers present as long as the tokens



hold out. We all know what enrichment is, and this is a highly motivating form for the orangutans. They need to think more deeply to get the most out of the program, and since the tokens bring such high-value treats, it affects the social interaction among our orangutan group.

The program also enriches the keepers, who will come up with even more inventive ways to place the tokens and to keep the subjects of the training interested and motivated. Records of every part of this are kept and sent via the cloud to WildThink.

The public is also enriched with this activity. Guests were absolutely fascinated during this demonstration by Keith. They were very interested in what was going on, and were amazed by the level of ability and intelligence the orangutans display in their efforts to get appropriate rewards for the tokens they discover.

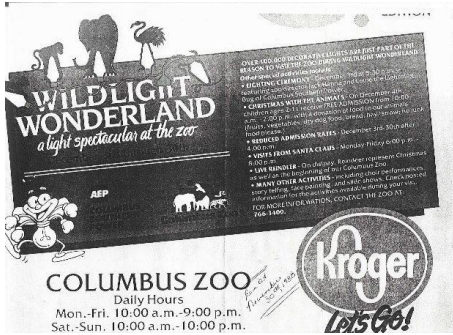
The time will come when those bright pink tokens will be hidden under the mulch or placed out of sight in unusual places, and our bet is that the orangutans will meet the challenge and then some. They love their popcorn!

Below is a link to WildThink with a video of the vending machine in use: [https:// www.wildthink.org/the-animal-vending-machine-1](https://www.wildthink.org/the-animal-vending-machine-1)

Special thanks to Keith vonStein who generously shared his passion, knowledge and love of these animals. CZA is lucky to have him.

—Cindy Payne and Cathy Shade

35 YEARS OF WILDLIGHTS



Many Zoo guests find the holiday Wildlights displays the most exciting time to visit our Zoo, regardless of traffic on some nights extending for miles in every direction. This spectacular event began in 1988 in an attempt to bring more guests to the Zoo during a month when attendance was normally low. Zoo Director Jerry Borin observed how holiday light displays at zoos in Toledo,

Cincinnati, and in other states boosted their attendance. He initiated the Columbus Zoo's holiday display, named Wildlight Wonderland. This name was used until it was changed to just Wildlights in 2000. The first event in 1988 drew over 53,000 visitors in December alone and has continued to grow over the years.

The first year over 100,000 lights and lighted displays were put up around the entrance and lake. The annual event quickly grew to a Zoo-wide extravaganza involving more than 3 million lights and additional lighted displays. LED lights began to replace incandescent bulbs in 2006 and the displays soon became one hundred percent

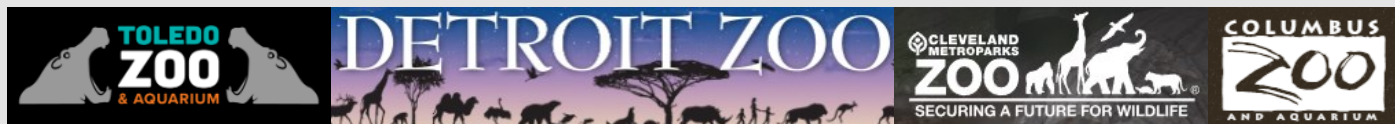


LED. Recently RGB (red, green, blue) LED lights also are being used. These permit individual bulbs to change to any color and allow the creation of spectacular animated displays like the one on the giant tree between Jack Hanna's Animal Encounters Village and Zoombezi Bay. There will be even more RGB LED displays in 2022 including a large animated panel outside the front entrance. Also, this year Zoo employees were asked for their favorite holiday songs and they are being used in the music for the lake light show.

It takes the Zoo staff about 3-1/2 months to install the lights and other displays and about the same amount of time to take them down with the help of volunteers. Many people ask why they take them down, why not just leave them up all year? Leaving them up offers animals the opportunity to damage the cords. It also would take more time to find and replace individual light strings that are bad than to take them all down, test them and store them until next year. Defective strings of lights are donated to Goodwill Industries for recycling.



—Harvey Castner



AZADV CONFERENCE

I am just back from the first AZADV conference in two years due to the pandemic, hosted by the Toledo Zoo. For those not familiar, AZADV stands for Association of Zoo and Aquarium Docents and Volunteers. It is a non-profit organization whose purpose is to support the conservation of species and facilitate communication between members to enhance educational programming and renew enthusiasm for the service that our members contribute to their institution. Their vision is to empower public commitment to conservation of our natural world.



This year's conference included side trips to the Detroit Zoo and the Cleveland Zoo. The ice breaker was at the Nature Museum at the Toledo Zoo. The Delegate Meeting included some minor bylaw changes, election of the board and the announcement that next year's conference will be at the Oklahoma City Zoo from October 2-8. There were 170 attendees from 33 facilities. The Conference Post Trip was to our Columbus Zoo and enjoyed by all.

The opening session was The Restoration of Lake Sturgeon by Dr. Matt Cross. Sturgeons are the largest fish in the Great Lakes and are endangered in Ohio. They take 15-20 years to mature. They are born in the freshwater rivers, mature while in the lake and then return to the rivers to spawn. They can become 6-8 feet long and weigh up to 200 pounds. In 1885 the maximum Great Lake harvest took 5.2 million from Lake Erie. The females were harvested for their eggs to be used for caviar. One female can have over 4,000 eggs. The Toledo Zoo is working in conjunction with Michigan, our government and Canada to collect gametes to raise until they are large enough to release into rivers, for Toledo that means the Maumee River. This has become an annual event.

During the paper presentations our own Bonne McGowan presented on Aldabra Tortoises Benefit from Volunteer Enrichment at the Columbus Zoo.

Of the 15 sessions available, I have chosen to highlight a couple presentations I attended.

- Connecting Corridors in Borneo to Help Save Wildlife. This is the work of the A.P.E Malaysia (Animal Project Environment Education) They have planted more than 20,000 trees in the lower Kinabatangan Wildlife Sanctuary. They also did school visits and discussed not littering in the rivers and made a game for the kids about how replanting trees helps Wildlife.
- The other presentation was on The Great Ape Heart Project: Heart Box Creation and Training. This was given by Tiara Kitzler, ape keeper, Toledo Zoo. They developed a steel mesh box that is placed inside the orangutan enclosure. On the keeper side of the mesh there is a small access hatch to do ultrasounds. The males are able to rest their air sacs on the top of the box and the sonographer is able to collect images through the hatch.



Photo courtesy of Peggy Heffelmire

Continued on page 9

The Closing Session was a presentation from Patti Rogan from the Center for Great Apes. She was very inspirational with many before and after pictures of the apes that are in their care. .

I hope this has sparked an interest and you will join AZADV and perhaps come to the next conference in Oklahoma.

—Pam Hancock



Photo by: Jackie Fazekas, docent from the John Ball Zoo



Lorikeets

Did you know that lorikeets spend about 70% of their day feeding?

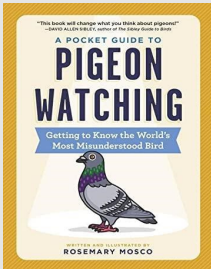


Reptile Encounter

Did you know that King Cobras are the only species of snake to build nests for their young, which they guard ferociously?

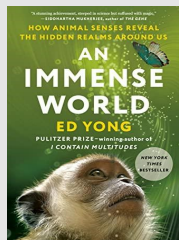
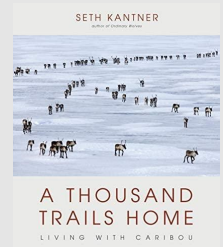
SOME OF THE BEST NATURE BOOKS 2022

Reviewed by Sheila Campbell



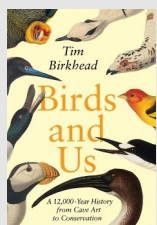
A Pocket Guide to Pigeon Watching: Getting to know the World's Most Misunderstood Bird (NF) by Rosemary Mosco. 2021. Workman. Part field guide, part history, part ornithology primer by Rosemary Mosco, a bird-lover, science communicator, writer, and cartoonist (and co-author of The Atlas Obscura Explorer's Guide for the World's Most Adventurous Kid). Once loved, and now disdained, pigeons are given a reboot here. Humans have held pigeon beauty contests, raced them, used them to carry messages, harvested their poop to fertilize our crops and cooked them. Called "rats with wings," humans have taught them many things, including how to play ping pong. This book changes the way you think about pigeons!

A Thousand Trails Home: Living with caribou. (NF) by Seth Kanter. 2021. Mountaineer Books. A firsthand account of a life spent hunting, studying, and living alongside caribou, that encompasses the historical past and present day. Learn about the intertwined lives of people and animals surviving on an uncertain landscape of cultural and climatic change sweeping the Alaskan Arctic, one of the largest remaining intact wilderness ecosystems on the planet and ground zero for climate change in the US. Gorgeous full color photography throughout.



An Immense World: How Animal Senses Reveal the Hidden Realms Around Us (NF) by Ed Yong. 2022. Random House. A tour of the incredible sensory diversity in the animal world, from sights and textures, sounds and vibrations, smells and tastes, electric and magnetic fields that animals use to live in their world. Yong includes every kind of animal, including humans, each "enclosed within its unique sensory bubble, perceiving but a tiny sliver of our immense world."

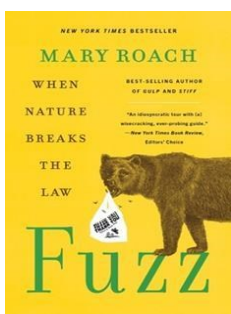
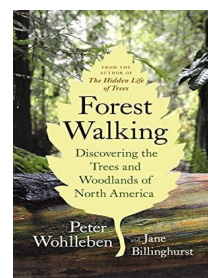
Bee People and the Bugs (NF) by Frank Mortimer. 2021. Kensington/Citadel. The author's humorous and entertaining personal stories of his journey to becoming a beekeeper. If you're thinking about becoming a beekeeper, he offers practical information. But he also writes about the interesting beekeepers he's met. Mortimer is an adjunct instructor at the Cornell University Master Beekeeping Program, former member of the New Jersey State Beekeepers Assn., and a certified Master Beekeeper. An entertaining book even if bees are not in your future. Check out his website, Frank the Beeman, at frankthebeeman.com



Birds and Us: A 12,000 Year History from Cave Art to Conservation (NF) by Tim Birkhead. 2022 Princeton. Chronicles the beginnings of a written history of birds in ancient Greece and Rome, the obsession with falconry in the Middle Ages, and the development of ornithological science while weaving in stories from the author's life as a scientist. The book is a blend of science, natural history, memoir, and travelogue. Birkhead is one of Britain's leading zoologists

Continued on page 11

Forest Walking: Discovering the Trees and Woodlands of N. America (NF) by Peter Wohlleben and Jane Billingham. 2022. Greystone. Learn how to use all five senses to become a forest detective and decode nature's signs to learn about a forest's history and what activities to use to engage children with the forest. What can you learn by following the spread of a tree root or by tasting the tip of a branch? How can you understand a forest's history by the feel of the path underfoot, the scars on a trees along the trail, or the play of sunlight through the branches? After reading this book, you will see the forest as more than a place, but also an experience.



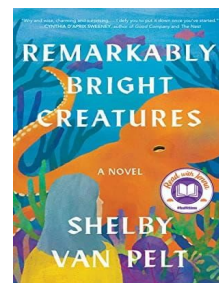
Fuzz: When nature breaks the law (NF) by Mary Roach. 2021. W. W. Norton. Mary Roach has been called "America's funniest science writer." Here she writes about the science of human-wildlife conflict, a discipline that combines human behavior and wildlife biology. The author has many humorous anecdotes about tagging along with animal-attack forensics investigators, human-elephant conflict specialists, bear managers, and "danger tree" faller blasters. You meet a jaywalking moose, a murderous tree, and a bear caught breaking and entering. She taste-tests rat bait, learns how to install a vulture effigy, and gets mugged by a macaque. But all in all she offers hope for peaceful coexistence between animals and humans.

The Last Winter: the scientists, adventurers, journeymen, and mavericks trying to save the world by Porter Fox. (NF) 2021. Little, Brown. The author travels along the edge of the Northern Hemisphere's snow line to track the scope of change global warming brings and highlight the importance of ice. He interviews idiosyncratic, but charismatic ski bums, glaciologists, Indigenous hunters, and explorers, and incorporates their takes into the narrative. This book is a well written blend of travelogue, history and climatology

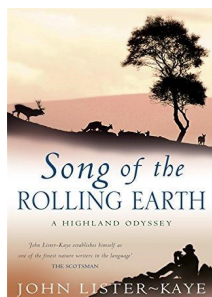


Melting Away: a 10-year journey through endangered Polar Regions by Camille Seaman. (NF) 2014. Princeton Architectural Press, 2014. Not new, but newly discovered by me, this collection of images, taken over a 10-year period, of the changing Polar landscape is gorgeous. Seaman spent five summers in the Arctic and five winters in Antarctica on various tourist and research vessels to document her own experience while also bringing this rapidly changing world closer to people who will never see it with their own eyes. Seaman is also a senior TED fellow and she created The Earth Academy, an online educational resource about sustainable living.

Remarkably Bright Creatures (Fiction) by Shelby Van Pelt. 2022. Ecco. About friendships that develop at the Sowell Aquarium between Tova, an older woman who takes a night job cleaning, Cameron, who is a temporary employee, and Marcellus, an octopus nearing the end of his lifespan, living in a tank. Tova, Cameron and Marcellus each have meaningful personal journeys when their lives intertwine at the Aquarium. Curmudgeonly Marcellus forms a remarkable friendship with Tova and is unforgettable. Somewhat predictable but great entertainment! Reviewers say it makes you smile the whole time you are reading it!! Recommended to those who liked "A Man Called Ove."



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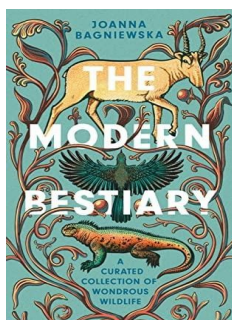
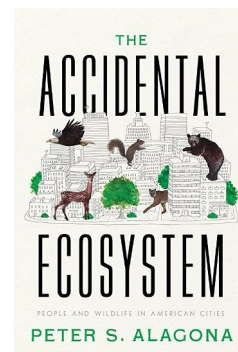


Song of the Rolling Earth: A Highland Odyssey (NF) by John Lister-Kaye (2003). Time Warner.

Although published before 2022, this is one of the best, if not the best book I read in 2022. And I can't help but encourage you to add it to your reading list--a memoir about establishing the Aigas Field Centre in the Highlands of Scotland in 1977, its first center for nature study. It's a book about belonging to a place and his passion for nature. Beautiful etchings accompanying this book inspired me to visit Aigas this past summer—a beautiful center that provides environmental education programs and supports Scottish wildlife conservation programs.

The Accidental Ecosystem: People and Wildlife in American Cities (NF) by Peter S.

Alagona. 2022 Univ. of California Press. About how wild animals increasingly seem to be adjusting to and coping with the challenges of urban living and how they make habitats out of cities. As wildlife, like bears, have more and more come to thrive in urban areas, we've created "accidental ecosystems." "So conservationists are spending a lot of time on this question of conflict and coexistence. But it's hard to find out how to coexist when there's not a long tradition of that." Alagona includes stories of nonhuman urbanites like the Hays bald eagles on the Monongahela River in Pittsburgh; Pedals, New Jersey's suburban black bear, who captured townspeople's and the internet's hearts in 2014–2016; Los Angeles's P-22 puma, who made an unlikely trek through Santa Monica around 2011; and Chicago's coyote 748, who in 2014 began attacking neighborhood dogs after he became a father.

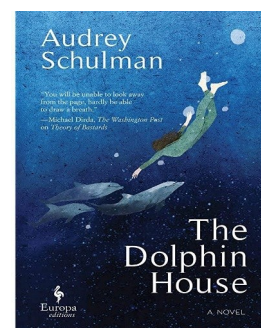


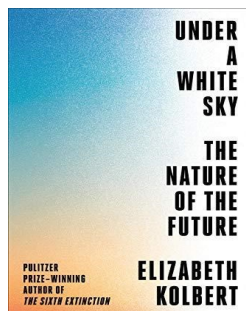
The Modern Bestiary: A Curated Collection of Wondrous Wildlife (NF) by Joanna

Bagniewska. 2022. Smithsonian Books. An encyclopedia of 100 real animals who are stranger than fiction with ornamental illustrations. Meet unfamiliar creatures like the deep-sea harp sponges who catch prey with their barbs and digest them whole, tarantulas that keep frogs as pets, zebra finches who sing to their eggs to warn them of hot weather, antechinus who mate themselves to death and other endearing, ruthless, and just plain weird creatures of nature. Bagniewska is a zoologist and science communicator whose humorous, but factual, writing has been compared to that of Mary Roach. You learn new things about species you know

and are introduced to many that you don't, but won't forget.

The Dolphin House by Audrey Schulman (Fiction) 2022. Europa Editions. Based on the true story of the 1965 "dolphin house" experiment, a NASA supported research project that attempted to teach a dolphin named Peter to understand and mimic human speech. In the novel, Cora, 21, who is Deaf but can hear underwater, comes across four dolphins that are part of a research project led by Dr. Blum, a Harvard professor. Blum, sensing the connection between Cora and the dolphins, hires her, initially to keep the dolphins happy and study their interactions, and eventually to teach them English. In order to save the dolphins, she agrees to be part of an experiment where she lives with one of them in a type of pool house, called an "homarium," and establishes a relationship while teaching the dolphin to speak English. As the experiment progresses, Cora forges a remarkable bond with the creatures, until her hard-won knowledge clashes with the male-dominated world of science. The book is a blend of science and literary fiction as Cora studies two different sets of minds, the dolphins' and the male scientists. A unique and intriguing story.

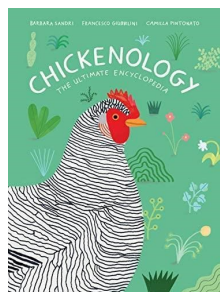




Under a White Sky (NF) by Elizabeth Kolbert. (NF) 2021. Crown. In *Under a White Sky*, the Pulitzer Prize winner Elizabeth Kolbert, author of the best-selling book, *The Sixth Extinction*, meets people who are trying to reverse the course of man-made problems. But these new efforts, in her telling, often risk making matters worse. She describes barriers erected to keep Asian carp out of the Great Lakes after the carp were brought to America in 1963 to “keep aquatic weeds in check;” of the divers who conduct a yearly “census” on the Devil’s Hole pupfish, a threatened species surviving in a single pond in the Mojave Desert. The dams and levees along the Mississippi River, another example, were “built to keep southern Louisiana dry” but have caused a massive “land-loss crisis” due to flooding elsewhere in the state. She covers interventions on the cutting edge of science, such as “assisted evolution,” which would help coral reefs endure warmer oceans. NPR says “What makes *Under A White Sky* so valuable and such a compelling read is Kolbert tells by showing. Without beating the reader over the head, she makes it clear how far we already are from a world of undisturbed, perfectly balanced nature — and how far we must still go to find a new balance for the planet's future that still has us humans in it.”

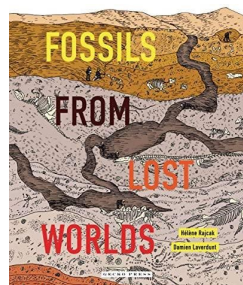


Children’s Books



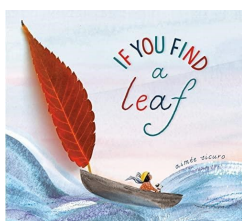
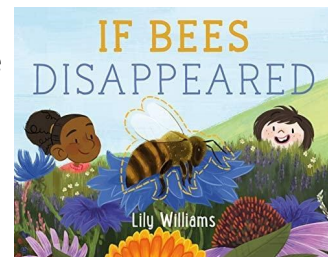
Chickenology: the ultimate encyclopedia by Barbara Sandri and Francesco Giubbilini. Illustrated by Camilla Pintonato. 2021. Princeton Architectural Press. K-Gr. 4. With a playful tone and charming illustrations, here is a visual encyclopedia that presents information about the incredible variety of chickens with different origins, breeds, and feather patterns. Learn incredible facts: did you know that chickens can learn to count up to four and have excellent hearing? Many even like to listen to music. **2022 American Association for the Advancement of Science (AAAS) Prize for Excellence in Science Books finalist.**

Eat Bugs!: #1: Project Startup (NF). By Heather Alexander. 2021. Penguin Young Readers / Penguin Workshop. Gr. 3-7. Based on the true story of a sustainable protein start-up company, this illustrated novel is a reimagining for a middle-grade reader. Chirps founders Rose Wang and Laura D'Asaro met as freshmen at Harvard University and cooked up the concept of selling chips made with cricket flour to help Americans feel more comfortable eating bugs. Together, Rose and Laura appeared on the TV show *Shark Tank* to pitch their idea and landed a deal with Mark Cuban. Chirps chips are now sold in stores across the nation.



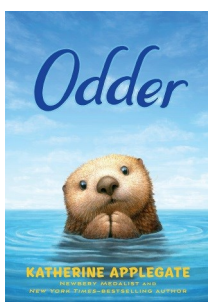
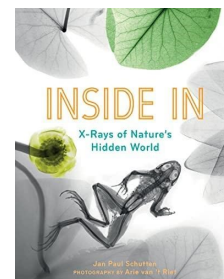
Fossils from Lost Worlds by Damien Laverdunt (Author, illustrator), Hélène Rajcak (Author, illustrator). Gecko Press, 2021. Gr. 4-8. Explore the story of a spiny sea worm without tail or head, a walking fish, a peaceful sea dragon, and many other amazing creatures. Told through comics, illustrations and data, this book is also a fascinating insight into paleontology itself. It shows how science is a process of thinking and rethinking, questioning and learning. Through illustrated timelines of animal reconstructions and major discoveries, we can track the beliefs and theories that have brought our knowledge to where it is today, including important personalities and historical female scientists. Beautifully illustrated. **Outstanding Science Book Winner 2022, National Science Teacher's Association and Children's Book Council.**

If Bees Disappeared by Lily Williams. 2021. Roaring Brook Books. Gr. 1-4. Colorful illustrations are packed with information about the kinds of bees, the inside of a hive, the process of pollination, and the foods that depend on honeybee pollination. Many essential vocabulary words and phrases are introduced, such as keystone species, pollinators, superorganism, and Colony Collapse Disorder. Each of these terms is clearly explained. At the beginning of the book, readers learn how honeybees impact life on earth, and then discover the threats to their survival and the ways humans can aid their survival. According to the text, if honeybees disappeared, most of the plants that bees pollinate would also disappear. Additionally, our favorite foods would become rarer, birds might disappear, and there would be a limited variety of crops. Extensive back matter includes a substantial list of ways to save the bees, a glossary, a bibliography, and additional sources. A standout among the many books about bees.



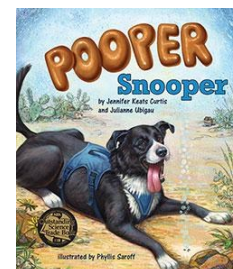
If You Find a Leaf by Aimee Siscuro. 2022. Random House. PreK-Gr.3. A picture book following a child as she collects leaves, imagining that the leaves can be used as different things—a hat, a sail for a boat, a superhero cape and more. A real colorful leaf is incorporated into the beautiful art work of each page, celebrating the fall season and encouraging children to see the leaves around them in an entirely new way. The endpapers identify different types of leaves. And for young readers who want to make their own leaf creations there are tips for including leaves in their artwork and additional fun craft ideas.

Inside In: X-rays of Nature's Hidden World by Jan Paul Schutten, photography by Arie van 't Riet; Translation by Laura Watkinson. Greystone Kids, 2021. Gr. 2-7. An amazing collection of x-ray photographs of animals and plants and their natural habitats with informative descriptions that encourage the reader to closely examine the photographs to uncover the hidden side of nature—an unusual way to look at nature. The x-rays are cool and fun to look at and simple text helps kids understand the organisms in each image and their unique bodies.

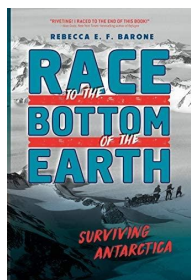


Odder by Katherine Applegate; illus. by Charles Santoso. 2022. Feiwel and Friends, Gr. 4-6. A story about Odder, a fearless daredevil of an otter who comes face to face with a hungry great white shark. The story is inspired by the Monterey Bay Aquarium and its otter rescue and fostering program. Written in free verse, Odder was once a young orphaned pup at the Aquarium, and she ends up recuperating there again after saving her otter friend, Kairi, from a shark attack. Written from the viewpoint of the otters, the author weaves in scientific information without anthropomorphizing any of the animals. Another winner from the author of *The One and Only Ivan*

Pooper Snooper by Jennifer Keats Curtis with Julianne Ubigau, illustrated by Phyllis Saroff. Arbordale Publishing, 2021. Gr. 4-6. Learn about Sam, a detective dog who is trained to track endangered animals so that researchers can track and learn more about them. In particular, Sam can locate the scat of a pocket mouse (once thought to be extinct)—about a third the size of a human eyelash—much more easily than a researcher can. Learn about a dog's sense of smell, about the pocket mouse and read a Q & A with a research scientist. Interesting look at a different career.

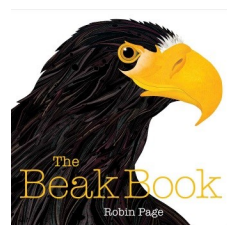


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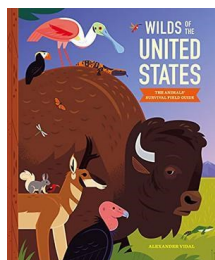
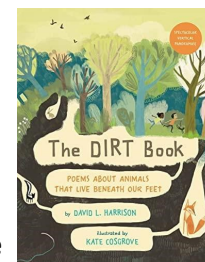
Race to the Bottom of the Earth: Surviving Antarctica (NF) By Rebecca E F Barone. 2021. Henry Holt. Gr. 3-4. A true adventure story lets readers follow along as Antarctic explorers—both historical and contemporary—embark on an adventure of a lifetime using STEM thinking to reach Antarctica and stay alive! Packed with pictures & maps, real-life quotes & timelines. Keeps you on the edge of your seat. Due to some content about the deaths of people and animals, it may not be the best fit for sensitive young readers.

Secrets of the Sea: The story of Jeanne Power, Revolutionary Marine Scientist (NF) by Evan Griffith; Illustrated by Joannie Stone. 2021. Harper Collins Children's Books/Clarion Books. Gr. 1-4. A curiosity about what creatures lived in the ocean set the wheels in motion for Jeanne Powers to do ground-breaking research that unlocked the mysteries of the amazing sea animals that lived beneath the water's surface in Sicily. She solved the mystery of whether the paper nautilus created its shell or stole it from another animal, an argument that scientists had been having for years. Jeanne invented the first recognizable glass aquarium to aid her observations and experiments on the nautilus.



The Beak Book by Robin Page. PreS-Gr.3.2021. Simon & Schuster. From Caldecott Honor Illustrator Robin Page. A STEM picture book that explores how beaks of different shapes and sizes are adapted to help birds sip nectar, make nests, battle for mates, and more! This beautifully illustrated book helps young children determine how the different sizes and shapes of bird beaks are adapted to help birds weave nests, catch fish or climb trees.

The Dirt Book: Poems About Animals That Live Beneath Our Feet by David L. Harrison, illustrated by Kate Cosgrove. 2021. Holiday House. K-Gr.4. Vertical panoramas illustrating life underground accompany 15 funny, fascinating poems that explore dirt and the many creatures that make their homes underground. Spiders, earthworms, ants, chipmunks and more crawl across the pages, between stretching roots and buried stones. Each beautifully illustrated double-page spread has a poem on one side and a complementary drawing on the other. **An NSTA Outstanding Science Trade Book for Students.**



Wilds of the United States: The Animals' Field Guide by Alexander Vidal; illus by the author. 2022. Chronicle. Gr. 3-6. Brings together information on a variety of creatures in the United States and the regions they inhabit with helpful maps and attractive, informative images. Highlights what animals can be found in each region and includes interesting facts (beavers can weigh up to 70 pounds, cicadas live for up to 17 years underground as larvae, and manatees' closest relatives are elephants). Uses icons to convey an animal's survival skills--an image of a leaf and an acorn accompanies information on how animals find food, while a leaping hare indicates info on strength and agility. Will appeal to reluctant readers with the colorful graphics and layout featuring bright outdoor scenes full of plants and animals.

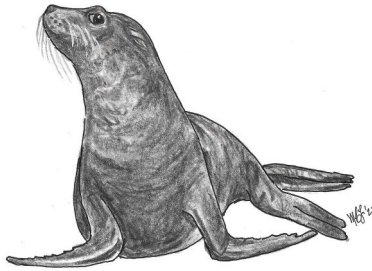
Thank You for Your Dedicated Service!



The individuals below recorded the most hours in each animal contact area from Jan. 1—Nov. 15, 2022*.

Adventure Cove Deck:

Roni Moore
Jennifer Davis
Sandy Crabtree
Mary Hiser
Brenda Baldinger
Jane Taylor
Jacob Fitch
Fred Colby
Beth King
Bridget McDaniel



Adventure Cove Tunnel:

Phil Ross
Steven Rice
Paul Bastian
Kathleen Hartley
Chad Spring
Jennifer Davis
Tom Berkemeyer
Sherry Hay
Wilson Stein
Michael Worley



Asia Quest Aviary:

Kevin Skehan
Elizabeth Schwartz
Matthew Gerardi
Tamara Galeckas
Diane Krakoff
Fred Colby
Judith Bennett
Judith Gardiner
Harvey Castner
Lori Sheppard

**Note that Stingray Bay, Adventure Cove Tunnel, Adventure Cove Deck and My Barn are open through Wildlights so the numbers for those contact areas could change.*

Giraffe Feeding:

Bev Larson
Gary Pedersen
Sue Grubaugh
Dianna Van Buren
Terri Siebert
Brenda Baldinger
Dawn Wendorff
Penny Hoffman
Jon Briney
Barbara Hermann



Kangaroo Walkabout:

Mike Gingras
Kevin Skehan
Nancy Montgomery
Richard Adams
Christina Scott
Catherine Dutkiewicz
Mark Hanson
Joyce Domijan
Jacob Fitch
Lisa Fulton

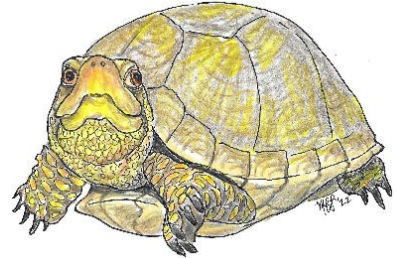
Lorikeets:

Mike Gingras
Sandy Crabtree
Terry Payne
Cynthia Previte
Bruce Lerner
Fred Colby
Matthew Gerardi
Susan Cross
Elaine Horr
Joe Knoch



My Barn:

Deborah Poling
Tara Trigg
Jacob Fitch
Michele Middleton
Keri Kotchounian
Gin Smith
Sally Rudmann
Matthew Gerardi
Taylor Stone
Emily Clark

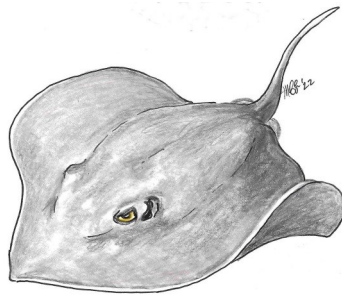


Reptile Encounter:

Susie Gray
Susan Messina
Michael StClair
Mary Ann Hudyk
Dorian Norstrom
Peggy Heffelmire
Joyce Swayne
Mila Wheeler-Hall
Sandy Crabtree
Michele Middleton

Stingray Bay:

Gary Pedersen
Nancy Montgomery
Joyce Domijan
Kathleen Willis
John Zimmerman
Michael Worley
Ann DeMuth
David Kieffer
Jerry Olmstead
Linda Meuser



Touch Pool:

Chris Lutmerding
Corrine Rogers
Tamara Galeckas
Mike Gingras
Terry Payne
Sandra Wilson
Christina Hochreiter
Judy Frey
Judith Gardiner
Charles Daily





*Wishing you and yours
a safe and happy
holiday season!*