

Institute for Conservation Medicine Newsletter

Summer 2024



Welcome

Director, Dr. Sharon L. Deem

Summer is here once again. It's a great time of year for the ICM team to look back on what we have accomplished to date and to motivate us in the months to come. Each time we send this out, we get to reflect on how far we've come and how grateful we are for our partners and that we get to do what we do

every day, working together for wildlife conservation. We are especially proud of the interest that the Forest Park Living Lab has generated in our supporters locally and around the world. Please enjoy this installment of the ICM Newsletter, and thank you for believing in our work for healthy animals and healthy people.

Research Projects

Forest Park Living Lab (FPLL)

The FPLL team has been hard at work monitoring, trapping, tagging, collaring and evaluating the health of wildlife in Forest Park. So far this year, we have successfully trapped and tagged/collared two coyotes, a barred owl, a wild turkey, a Canada goose, a Cooper's hawk, two wood ducks, a mallard duck, five raccoons, a pair of mated red-tailed hawks and two three-toed box turtles



FPLL team collects samples from hawks

The most exciting new additions to our urban study are the coyotes! After many months of camera trap monitoring, trap design and building with the Saint Louis Zoo's talented Facilities Management team, we successfully collared a male and a female coyote. Silver, a young male, was collared in late March. At capture, it was clear he had mange, but since release, he has explored the city and ventured far outside of Forest Park. We monitor his

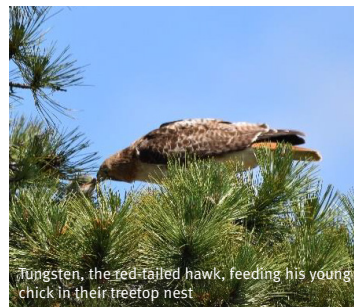
location regularly. Solar, a young pregnant female, was collared on April 8, the evening of the solar eclipse. The name felt fitting. Solar has gone on to have five pups and seems to be a wonderful mom. Based on camera trap footage, it looks like the dad might be helping her out with the pups as

well. We've had lots of interest in this coyote family in the surrounding neighborhoods with mostly positive feedback from the community. We realized it to be a prime opportunity for educating our neighbors on the importance of top predators in an urban landscape. In April, the FPLL was featured in a large Sunday front-page article in the St. Louis Post-Dispatch, broadening our reach in the community with urban wildlife education.



Left to right: Stella Utterwaal, Sharon Deem, and Jamie Palmer performing health assessment on a coyote in Forest Park

Animal Spotlight



Tungsten, the red-tailed hawk, feeding his young chick in their treetop nest

Importance of Predators in Urban Areas

Predators, such as hawks and coyotes, play a valuable role in our urban ecosystems. They help control the populations of prey species, which, in turn, affects the quantity of plants and animals further along the food web.

Predators and humans can peacefully coexist in urban areas by respecting each other's personal space. Wild animals' natural instinct is to avoid human contact. Many conflicts can be avoided by not approaching or intentionally feeding wild animals. Movement ecology and wildlife health research help answer questions about how the growing urbanization of wild areas impacts animals, people and the environment.

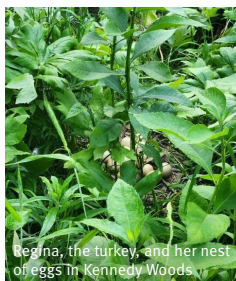
There are many challenges facing wildlife in urban areas. This spring, we discovered some fatalities among the animals in our study, including Topaz, the red-tailed hawk; Daffodil, a mallard duck; and an eastern snapping turtle. We believe Topaz was hit by a vehicle on highway 64/40, but we will



Solar, the coyote, and her five pups in a den in Richmond Heights



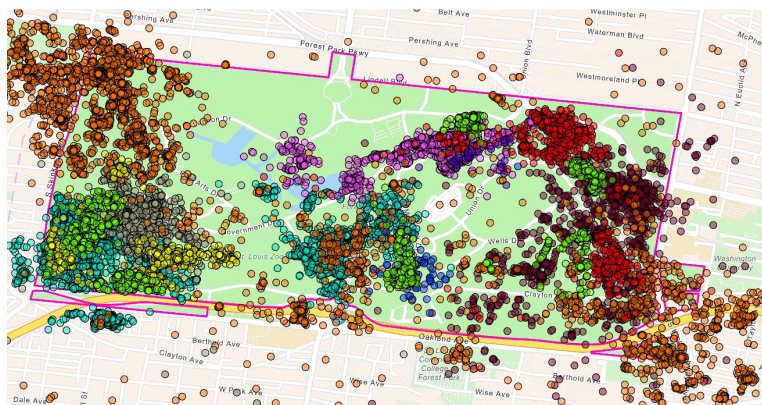
investigate possible underlying causes of death for these animals. What balances these unfortunate deaths are the many births among our target animals. We've documented five coyote pups, red-tailed hawk chicks, our turkey sitting on eggs, two barred owlets, and wood duck chicks. All the moms are animals in our study.



Regina, the turkey, and her nest of eggs in Kennedy Woods.

And if that isn't enough, there's more! Since August 2023, Dr. Stella Uiterwaal, FPLL Sr. Scientist, has conducted biweekly bird surveys at 22 points across Forest Park. The purpose of these surveys is to understand bird diversity and abundance by collecting observational data across different habitats, levels of development and seasons. In addition to providing a current snapshot, these data will be compared to historic survey data to see how the avian community within Forest Park has changed over time.

Here's a peek at the 50,000+ collared GPS data points the FPLL has collected so far:



Species	
	Cooper's Hawk
	Mallard
	Canada Goose
	Great Horned Owl
	Red-tailed Hawk
	Common Snapping Turtle
	Wild Turkey
	Raccoon
	Barred Owl
	Box Turtle

Cuban Crocodiles

As we've mentioned in past newsletters, we lead a health program for crocodiles in Cuba. This program is not without its challenges, one of which is that our Cuban partners have had difficulties acquiring enough food for the animals in their care over the last

three years. So, we were thrilled when we found out that one of our Saint Louis Zoo vendors, Mazuri, agreed to donate a year's worth of crocodile biscuits to Zapata Crocodile Farm in Cuba! This will be supplemental feed support for the animals there. Jamie Palmer, ICM Technician, is working with Mazuri to make a logistics plan for this process.

In May, Jamie traveled to the Zapata swamp. She was pleased to find that the crocodiles living at the farm looked to be in good overall health. Zapata Crocodile Farm is working closely with the government to find a better plan for animal management, given the difficulties finding food for their animals. Jamie delivered critical supplies and funding to our Cuban partners. This financial support allows them to maintain farm operations and provide educational activities for local schools. She planned to export samples out of Cuba for infectious disease diagnostics, but as it often happens, paperwork kept it from happening. Our partners in Cuba are working on their U.S. visas, and we still hope to import the samples to the Zoo this year.

Canid Conservation Initiative

In January 2024, the manuscript, "Insights into the spatial ecology of severely injured free-ranging felids: Iberian lynx, bobcat, and snow leopard," was accepted for Ecology and Evolution Journal. Fernando Najera, Stella Uiterwaal, Jamie Palmer and Sharon Deem are all co-authors among a list of many other collaborators from around the world.



Emma Vaasjo with a Galapagos giant tortoise

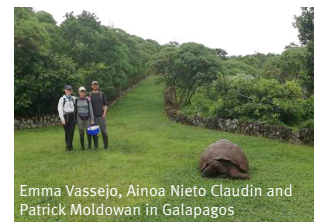
Galapagos Tortoise Movement and Ecology Programme (GTMEP)

In January 2024, Dr. Emma Vaasjo (clinical resident in the Saint Louis Zoo's Department of Animal Health) traveled to Galapagos to work with the Galapagos-based team and Ph.D. student

Emily Donovan. Emma, Dr. Ainoa Nieto Claudin (Chelonian Field Veterinarian), Dr. Patrick Moldowan (Sr. Scientist, Charles Darwin Foundation) and the rest of the GTMEP team spent several weeks in January in Galapagos working on a mix of field and lab work.

Madagascar Radiated Tortoises

The ICM hosted a radiated tortoise health meeting at the Saint Louis Zoo on March 11 and 12. Partners from across the U.S. and Madagascar attended in-person and remotely via Zoom. The ICM team was happy to host attendees Bonnie Raphael (Turtle Survival Alliance), Tsanta Rakotonanahary (Turtle Survival Alliance- Madagascar), Susie Bartlett (WCS – Bronx Zoo), Kate Leech (Zoo Atlanta), and Sean Perry (Mississippi Aquarium).



Emma Vassejo, Ainoa Nieto Claudin and Patrick Moldowan in Galapagos



Institute of Museum and Library Services (IMLS) One Health Education Grant



Mike Dawson and students is at a field trip to Riverlands Audubon Visitor Center in West Alton Spring 2024

In the spring of 2024, teams from the ICM and Saint Louis Zoo Conservation Education Department partnered with teachers and students from two north St. Louis County high schools to spread the One Health message. Our student interns were challenged to create One Health lessons and share them with their peers. Interns from the Innovation School at Cool Valley focused on the topic of fast fashion, and our Hazelwood School District intern focused on social justice issues. The internship culminated in a hands-on class field trip to study the environmental health of an aquatic ecosystem along the Mississippi watershed. Students helped complete soil, water and air quality testing and conducted a biodiversity survey of the area. After their investigation, our students concluded that the aquatic area they investigated was environmentally healthy. Special thanks to our Zoo's Conservation Education Liaisons, Mike Dawson and Grace Warshaw, for their help with this program.



IMLS students conducting environmental tests and biodiversity surveys

St. Louis Zoo Community Outreach

- Sharon gave a Zoo In-Depth presentation for docents and Zoo staff, March 2024.
- Stella shared her work with Zoo staff during a brown bag presentation titled "FPLL: Wildlife Conservation, Research, and Outreach in the Heart of St. Louis," April 2024.
- ICM staff participated in the Zoo's Party for the Planet event in April 2024, which helped promote the importance of One Health and climate sustainability to guests. Ahead of the event, ICM staff mentored teams of local medical and veterinary students, and the students engaged with Zoo guests at the event.
- ICM staff participated in the Zoo's Endangered Species Day in May 2024. At our booth, we answered questions from Zoo guests and shared information about our work in the St. Louis area and throughout the world.



Party for the Planet at the Saint Louis Zoo



Party for the Planet at the Saint Louis Zoo

In The News

- Sharon was a guest on the Master Minds Podcast, Washington University St. Louis, Episode 27 titled "A Conversation About Conservation", January 2024. She spoke about the ICM's work with endangered species and conservation in the St. Louis area.
- Dr. Steve Blake, FPLL Scientist, was featured in an article titled, "Fred: A Goose on a Mission", that was published on Saint Louis University Research Institute website and Annual Impact Report, January 2024.
- Ainoa was interviewed about our recent research study on giant tortoises ingesting plastics
 - ▷ "Galapagos giant tortoises under threat from plastics", SciDevNet website, Latin America & the Caribbean edition, January 2024.
 - ▷ "Currents bring life – and plastics: animals of Galápagos live amid mounds of waste", The Guardian news website, April 2024.
- Sharon and Steve were featured in the Zoo's announcement, "Saint Louis Zoo and Saint Louis University Scientists Co-Lead Two Groundbreaking Studies of Critically Endangered Giant Tortoises on Santa Cruz

February 23, 2024

Saint Louis Zoo and Saint Louis University Scientists Co-Lead Two Groundbreaking Studies of Critically Endangered Giant Tortoises on Santa Cruz Island in Galapagos, Ecuador

New scientific papers covering more than 10 years of study were published in collaboration with scientists from the Saint Louis Zoo, Saint Louis University, Charles Darwin Foundation and other partners

[Get the details →](#)



Island in Galapagos, Ecuador,” which was published on the Saint Louis Zoo website, February 2024. The announcement focused on their collaboration with the Charles Darwin Foundation and multidisciplinary team to investigate how:

- ▶ Invasive *Cedrela* trees pose a risk to the giant tortoise migration.
- ▶ Environmental variation shapes tortoise reproduction and survival.
- Steve and Sharon’s recent Galapagos tortoise work was also the focus of a news article titled, “Groundbreaking Studies of Critically Endangered Giant Tortoises on Santa Cruz Island in Galapagos,” AZA Connect, Association of Zoos and Aquariums website, March 2024.
- Sharon gave an interview on the Chris and Amy Show on KMOX radio. Livestream available on YouTube (go to the 2-hour & 18-minute mark), April 2024.
- Stella was interviewed for an article titled, “Scientists track red-tailed hawks nesting near WashU campus” that was published in The WUSTL Record, Washington University St. Louis, April 2024.
- A front-page article on our urban coyote research, titled “Scientists want to know why coyotes are in Forest Park,” was published in the St. Louis Post-Dispatch newspaper and stltoday.com, April 2024. Jamie Palmer lead-authored an article in the Turtle Survival Alliance magazine about our radiated tortoise work

Scientific Contributions

Presentations

- Sharon gave a presentation titled, “Wildlife conservation needs veterinary medicine: so what’s your role?” at the Veterinary Meeting & Expo (VMX), Orlando, FL, January 2024. She also served as program chair for the full day session titled “Advances in Wildlife Health, Conservation, and Rehabilitation”.
- Dr. Lilian Catenacci, Brazilian veterinarian and adjunct ICM scientist, presented the online talk, “Epizootics Surveillance Lab: Why investigate in Piauí State?” for the Intelligence Center for Emerging and Neglected Tropical Diseases (CIATEN), in Teresina, Brazil, February 2024.
- Ainoa gave a lecture titled, “Wildlife Illegal Trade: Implications for the Conservation of Tortoises in Galapagos and Madagascar” at her University in Madrid, Spain. Lilian presented at a conference for women in science in May 2024. Lillian’s laboratory continues to do great things for One Health in Brazil. It is great that Lillian and her lab continues to be a strong collaborator with the ICM.



Dr. Lilian Catenacci, Adjunct ICM Scientist

Publications

- **Nieto Claudin, A.**, Sacristán, C., **Deem, S.L.**, Lewbart, G.A., Colosimo, G., Esperón, F., Sevilla, C., and Gentile, G. Novel herpesvirus in the critically endangered Pink land iguana. *Acta Tropica*. 252: <https://doi.org/10.1016/j.actatropica.2024.107127>.
- **Nájera, F.**, **Uiterwaal, S. F.**, Crespo, E., Grande-Gómez, R., Sánchez, J. F., Mata-Huete, M., **Palmer, J.**, Iturrarte, G., Peña, J., Munkhtsog, B., Munkhtsog, B., Poyarkov, A. D., Hernandez-Blanco, J. A., Alexandrov, D. Y., Galsandorj, N., & **Deem, S. L.** (2024). Insights into the spatial ecology of severely injured free-living felids: Iberian lynx, bobcat, and snow leopard. *Ecology and Evolution*, 14, e11000. <https://doi.org/10.1002/ece3.11000>
- **Apakupakul, K.**, **Duncan, M.**, Subramaniam, K., **Brenn-White, M.**, **Palmer, J.L.**, Viadanna, P.H.O., Vann, J.A., Adamovicz, L., Waltzek, T.B., and **Deem, S.L.** 2024. Ranavirus (Frog Virus 3) Infection in Free-Living Three-Toed Box Turtles (*Terrapene mexicana triunguis*) in Missouri, USA. *Journal of Wildlife Diseases*. 60: 151-163.
- **Rooney, T.**, Fèvre, E.M., Villinger, J., **Brenn-White, M.**, Cummings, C.O., Chai, D., Kamau, J., Kiyong’a, A., Getange, D., Ochieng, D.O., Kivali, V., Zimmerman, D., Rosenbaum, M., Nutter, F.B., and **Deem, S.L.** 2024. *Coxiella burnetii* serostatus in dromedary camels (*Camelus dromedarius*) is associated with the presence of *C. burnetii* DNA in attached ticks in Laikipia County, Kenya. *Zoonoses and Public Health*, 00, 1-12. <https://doi.org/10.1111/zph.13127>.
- **da Silva, S.K.S.M.**, Fuentes-Castillo, D.A., Ewbank, A.C., Sacristán, C., Catão-Dias, J.L., Sevã, A.P., Lincopan, N., **Deem, S.L.**, Feitosa, L.C.S., and **Catenacci, L.S.** 2024. ESBL-Producing Enterobacterales at the Human-Domestic Animal-Wildlife Interface: A One Health Approach to Antimicrobial Resistance in Piauí, Brazil. *Veterinary Sciences*. 11, 195. <https://doi.org/10.3390/vetsci11050195>.
- **Blake, S.**, Cabrera, F., Cruz, S., Ellis-Soto, D., Yackulic, C.B., Bastille-Rousseau, G., Gibbs, J.P., and **Deem, S.L.** 2024. Environmental Variation Structures Reproduction and Recruitment in Long-Lived Mega-Herbivores: Galapagos Giant Tortoises. *Ecological Monographs* e1599. <https://doi.org/10.1002/ecm.1599>
- **Blake, S.**, Cabrera, F., Rivas-Torres, G., **Deem, S. L.**, **Nieto-Claudin, A.**, Zahawi, R. A., & BastilleRousseau, G. 2024. Invasion by *Cedrela odorata* threatens long distance migration of Galapagos tortoises. *Ecology and Evolution*, 14, e10994. <https://doi.org/10.1002/ece3.10994>
- Zhang, X.X., Lederman, Z., Han, L.F., Schurer, J.M., Xiao, L.H., Zhang, Z.B., Chen, Q.L., Pfeiffer, D., Ward, M.P., Sripa, B., Gabriël, S., Dhama, K., Acharya, K.P., Robertson, L.J., **Deem, S.L.**, Aenishaenslin, C., Dantas-Torres, F., Otranto, D., Grace, D., Wang, Y., Li, P., Fu, C., Poeta, P., Md Tanvir Rahman, Kassegne, K., Zhu, Y.Z., Yin, K., Liu, J., Wang, Z.J., Guo, X.K., Gong, W.F., Schwartländer, B., Ren, M.H., and Zhou, X.N. Towards an actionable One Health approach. *Infectious Diseases of Poverty*. 2024. doi: 10.1186/s40249-024-01198-0.



Funding

We received a \$50,000 Washington University in St. Louis “Here and Next” grant for our GTMEP through our work with the Forest Park Living Ling Lab at Washington University. The title of our funded proposal is “Expanding the Toolset for Conservation: Understanding the Diversity, Distribution, and Dynamics of Galápagos Giant Tortoise Microbiomes.”

People

- At the end of 2023, Kathy Zeigler left the ICM after many years with the team. She is greatly missed. In March 2024, a new member, Kate Burleson, joined the ICM team as administrative assistant. Welcome, Kate!
- We are deeply saddened by the passing of Dr. Stan Braude, a member of the FPLL team. Dr. Braude was a top-notch naturalist and the world expert on naked mole rats.



Dr. Stan Braude

Employee Spotlight



Dr. Stella Uiterwaal

Dr. Stella Uiterwaal

Community ecologist, LEC Biodiversity Postdoctoral Fellow, and Senior Scientist for the Forest Park Living Lab.

Stella has worked with the ICM for the last two years. She collects and analyzes data to understand the movement, health, and interactions of wildlife in human-modified landscapes, especially in Forest Park. She also mentors students and conducts outreach.

Favorite aspect of her job:

Getting up close with Missouri’s native wildlife and always learning new things about them!

Favorite animal:

Barn owl

Fun fact:

Stella loves gardening with native plants.

We hope you enjoyed this newsletter. Friends like you help us conduct the research and outreach described in these pages. If you would like to continue to support our various projects, please go to the Saint Louis Zoo website, select “GIVE” in the upper right, then select “General Gifts and Conservation Contributions” near the bottom. On the online form, there is a dropdown menu where you can select the Institute for Conservation Medicine. If that sounds like too many steps, we are happy to accept paper checks mailed to the Institute for Conservation Medicine, Saint Louis Zoo, P.O. Box 790290, St. Louis, MO 63179-0290.

As everyone knows, conservation is about people. This is especially true for One Health. If interested in funding people power, our wish list includes paid internships, post-doctoral fellows, and even a full-time wildlife veterinarian. This support would move our research to the next level. We’d also love to receive funding to take our mobile molecular lab on the road to assist Dr. Lilian Catenacci with her One Health research in Brazil.

To learn more how you can contribute to the work of the ICM, contact Director Dr. Sharon Deem at (314) 646-4708 or deem@stlzoo.org.

We can’t thank you enough for supporting animal, human and environmental health of our planet! For more information on the Institute for Conservation Medicine, visit stlzoo.org/ICM.

Our Mission:

The Saint Louis Zoo Institute for Conservation Medicine takes a holistic approach to wildlife conservation, public health, and sustainable ecosystems to ensure healthy animals and healthy people.



Saint Louis Zoo

Institute for Conservation Medicine

Healthy Animals. Healthy People.