

THE RAPTOR CENTER | *Ensuring the health of raptors and the world we share*

Raptor Release

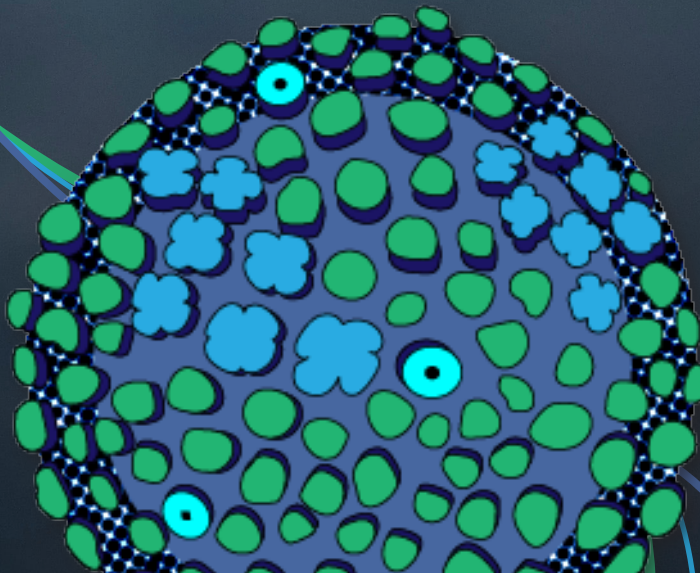
Fall 2022



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RAPID RESPONSE

TRC leads charge in highly pathogenic avian influenza (HPAI) response, biosecurity, and educational outreach at home and abroad



HPAI virus
Illustrations by
Daynen Paddock

Letter from the director

As the year comes to a close, we have more to be thankful for than ever before. It has been an incredibly challenging year with an unprecedented outbreak of highly pathogenic avian influenza (HPAI) hitting our wild birds harder than we have ever seen. During the spring of 2022, we were admitting three to four times our usual number of birds. Some days, almost every bird was positive for this virus that is extremely fatal to raptors. It challenged our staff, volunteers, and our entire community, and was both emotionally and physically draining as we worked tirelessly to keep helping every bird that came into our care.



Dr. Victoria Hall | Photo by Jess Larson

In the midst of emergency events, you see the true value of a team and I could not be more proud of ours. Our staff members worked hours upon hours in Tyvek suits and respirators admitting new birds into our rapidly designated triage building. Our volunteers adapted to new biosecurity protocols and transported critically ill birds suffering from the end stages of the virus. Our supporters helped spread the word about what was happening to wildlife, with many giving generously to our emergency fundraising efforts so we could keep our doors open during such trying times. This incomparable community is the gold standard of what it can look like when caring people come together to make a difference.

The Raptor Center stood as a leader in the middle of a crisis across the United States and was able to not only continue helping birds in need but also serve as a global resource to others as the outbreak continues.

I find myself feeling an incredible sense of gratitude for the community around The Raptor Center and in awe at the force for good that it is in the world. The support we have received for almost 50 years has enabled us to treat our 30,000th patient this fall. To think of the 30,000 lives that we have been able to impact and the number of people associated with each of those birds, all trying to make the world a little bit better, gives me incredible hope for the future. I know that no matter what disease, health condition, or challenge our environment faces next, The Raptor Center will be there in full force to help protect the world that we all share.

In this issue of *Raptor Release*, we hope to delve deeper into the actions taken throughout our departments to provide aid during this HPAI crisis and to highlight and celebrate the selfless efforts of each sector. We thank you from the bottom of our hearts for being part of our team this year and we look forward to soaring even higher in the year to come.

Victoria Hall

- Victoria Hall, DVM, MS, DACVPM
Executive Director and Redig Endowed Chair
in Raptor and Ecosystem Health

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On the cover: Juvenile red-tailed hawk
| Photo by Frank Cone

What's in a number?

TRC admits its 30,000th patient, marks a milestone in decades of data-driven care

by Lori Arent

On Jan. 1, 1974, a northern goshawk suffering from a wing injury after being shot was admitted as the first official patient to The Raptor Center's (TRC) veterinary clinic.

Nearly five decades later on Aug. 12, 2022, the clinic reached another memorable milestone: It admitted its 30,000th avian patient. This bird, an adult red-tailed hawk, also sustained a wing injury after being trapped in electric netting often used to contain poultry.

Over the past 48 years, the clinic has experienced a 10-fold increase in annual admissions—from 106 birds in 1974 to more than 1,050 birds in 2021—and every patient has given TRC the gift of data.

The clinic has used this impressive caseload to develop, improve, and share new treatment techniques; provide in-person training for veterinary professionals in 27 different countries; expand accessibility by creating a digital learning platform; and participate in a variety of research and reintroduction projects. All of this advances learning that helps conserve raptors and the world we share.

TRC has been witness to changes such as:

- The population recovery of peregrine falcons and bald eagles and their removal from the endangered species list.
- An increase in urban raptor populations such as bald eagles, peregrine falcons, merlins, and Cooper's hawks.
- A decline in the population of American kestrels.
- A reduction in pole trap injuries and an increase in entrapment injuries from sports netting (e.g. soccer nets, fishing line).

Through their rescue and admission, every patient has a story to tell, stories that are shared with the public through outreach programs.

These stories and the milestone they represent would not be possible without community support. The impact of TRC's supporters has been felt throughout the decades. Their generosity continues to help TRC serve raptors and engage the community in conserving the natural world.

30,000

30,000th patient
2022

25,000th patient
2017

20,000th patient
2011

15,000th patient
2004

10,000th patient
1997

5,000th patient
1989

First patient
1974



Watch a video of the 30,000th patient at z.umn.edu/30kpatient



TRC's 30,000th avian patient: an adult red-tailed hawk tangled in poultry netting.

| Photo submitted by the finder



Raptor Spotlight: Alula the Red-Tailed Hawk

by Melissa Moore

As clearly witnessed over the past few years with COVID-19 in people and highly pathogenic avian influenza in birds, diseases can cause a wide range of challenges and issues for humans and wildlife alike. Due to their position at the top of the food chain, raptors often serve as sentinels for the existence of infectious diseases in the environment.

Flash back to the early 2000s when raptors were being admitted to The Raptor Center's (TRC) clinic with neurological and visual deficits due to a then-new virus circulating in the ecosystem: West Nile virus (WNV). In July 2007, a young red-tailed hawk was brought to the TRC clinic starving and weak.

She showed classic signs of infection in her eyes, consistent with WNV. Following supportive treatments, this hawk regained her strength, but the virus caused permanent damage to one of her eyes, resulting in significant vision loss and thus preventing her release back to the wild.

She joined TRC's raptor ambassador collection and can be seen in many education programs. She was given the name "Alula" after the specialized feathers birds have near their wrists that aid in flight maneuvers such as soaring. While she will never regain full sight, Alula lives comfortably under the watchful eyes of the education team, helping share the beauty and importance of raptors with TRC's audiences.

Season of growth TRC welcomes new staff members

by TRC staff

Summer is a time of development for many young raptors in the Midwest, and The Raptor Center (TRC) has been growing alongside them. TRC is excited to introduce several additions to its team of experts.

The education department welcomed its new education director, Melissa Moore, in May. Prior to joining TRC, Moore was the curator of animals at the Peoria Zoo and brings years of experience managing ambassador collections to the team. In June, Max Borge transitioned into the position of outreach coordinator after serving as a naturalist at TRC since 2021.

The education team also gained two interpretive naturalists this fall, Scarlet Fitzsimmons and Jenna Kopp. Fitzsimmons has worked with the education department in various roles since 2018 and transitioned to the naturalist position in August. Kopp joined TRC in September after serving as a wildlife education specialist at Howell Nature Center in Michigan.

In June, TRC welcomed a new volunteer coordinator, Tori Lafky, who manages more than 300 volunteers providing essential services in every department. TRC also is thrilled to announce its first full-time communications coordinator, Jessica Larson, who joined the team in August. TRC looks forward to utilizing Larson's extensive communications background to share its mission and ongoing work with the public.



From left: Tori Lafky, Jenna Kopp, Melissa Moore, & Jessica Larson.

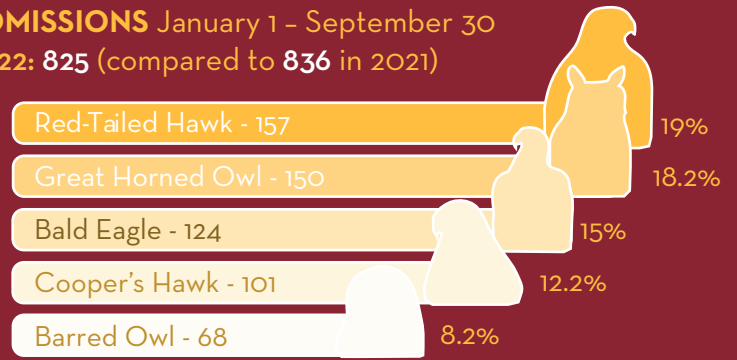
| Photo by Rob Kulhanek

Clinic statistics

Despite the challenges of a raging bird virus, The Raptor Center's clinic admitted 825 raptors as of Sept. 30, just a few less than this same time period last year. Species numbers are a little different with more great horned owls, red-tailed hawks, and bald eagles, but these numbers include fewer juveniles which may reflect the impact of HPAI on the breeding success of these species.

ADMISSIONS January 1 – September 30
2022: 825 (compared to 836 in 2021)

Top 5 Species:



Beyond raptors

TRC works with bird owners, health officials to preserve ecosystem health during HPAI outbreak

by Victoria Hall

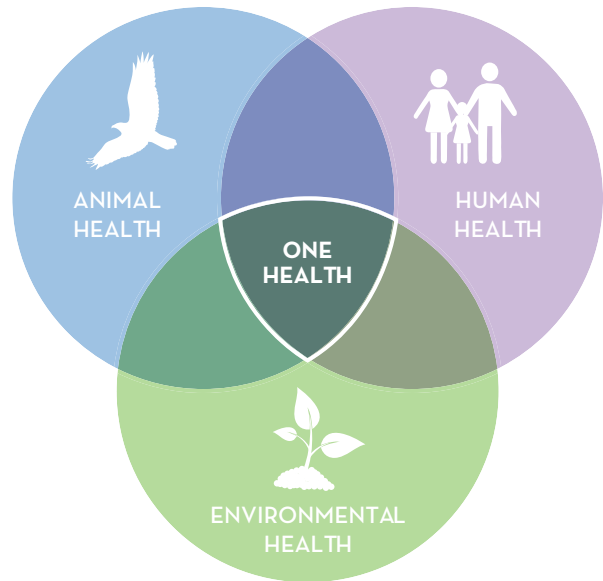
In a world of ever-growing human populations and decreasing wild spaces, humans, domestic animals, and wildlife are living closer to each other than ever before.

It is estimated that 60 percent of known infectious diseases and 75 percent of new or emerging infectious diseases are zoonotic, meaning they can be transmitted between humans and animals. The health of humans is dependent on that of the animals around us and the environment we all share.

The global outbreak of highly pathogenic avian influenza (HPAI) illustrates the risks. At The Raptor Center (TRC), staff is always working at the human/animal/environmental health interface, using raptors as an indicator for the health of the ecosystem. HPAI is a fatally devastating disease to both poultry and raptors, resulting in global trade restrictions and implications for the agricultural sector, and can, in rare instances, be transmitted to humans.

At the start of this outbreak, TRC quickly enacted protocols to help protect not only its raptors but also the surrounding ecosystem. Alongside various partners, staff members worked to contact trace any positive-testing raptor that entered the hospital. This allowed staff to expedite testing of raptors found near poultry facilities and in the backyards of people who keep poultry, and alert bird owners if their animals may have been exposed to the virus. TRC also shared its disease transmission observations with bird owners across the region, better equipping them to assess the environmental risk and enact mitigation procedures.

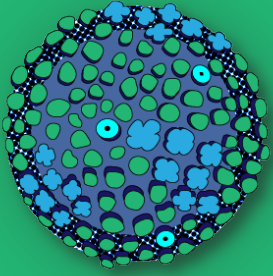
On the human side, TRC worked to protect the public and its amazing responders who rescue and care for sick birds. After learning that concerned citizens had been highly exposed to infected birds without personal protection



equipment (PPE), TRC partnered with the Minnesota Department of Health (MDH) to follow up with these individuals and inform them of symptoms to watch for and whom to call if they did become ill.

Additionally, as the clinic staff of TRC was highly exposed to positive birds every day (while wearing extensive PPE), TRC partnered with MDH and the Centers for Disease Control and Prevention to better understand transmission risk to wildlife workers and how to best protect clinic staff members as they continue the crucial work of caring for raptors.

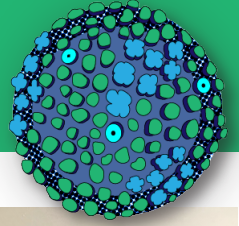
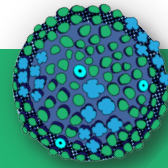
Diseases will continue to emerge and reemerge at this human/animal/environment interface, and the experts at TRC will be there to help raptors in need and collect crucial data to better care for all.



Rapid response

TRC leads charge in HPAI biosecurity and educational outreach at home and aboard

by Brandi Rupard



When the first migratory birds hit the skies in spring 2022, trouble came with them. Over the past year in Europe, a deadly disease called highly pathogenic avian influenza (HPAI) was circulating and hitched a ride on birds making their spring migration in North America.

Unlike previous outbreaks of this virus, this year's HPAI strain spread more rapidly and fiercely in wild birds along migratory routes in the U.S. and Canada. It infected wild populations and poultry operations alike. With an estimated mortality rate of 90-100 percent in raptors, the virus left devastation in its wake.

Staff at The Raptor Center (TRC) knew it was a matter of when, not if the virus would reach bird populations in Minnesota. A nearly five-decade history of excellence in raptor and ecosystem health combined with a record of preparedness for disease response allowed staff to spring into action on the frontlines of the outbreak.

While many other wildlife rehabilitation centers closed their doors or stopped admitting certain avian patients, TRC staff rallied to continue providing care to injured raptors and collect data on each case to better inform their biosecurity protocols and responses to future outbreaks.

“Because we decided to safely stay open and keep receiving and treating birds, we were able to collect probably the largest source of raptor data at one time, in one location that’s ever been collected during an active outbreak of highly pathogenic avian influenza,” says Dr. Victoria Hall, executive director of TRC. “And because of that, we then became a substantial source of data to the global community about HPAI, especially in wildlife rehabilitation.”



Dr. Dana Franzen-Klein and a newly admitted HPAI-positive bald eagle. | Photo by TRC Staff



TRC Clinic staff undergoing biosecurity training with MN Dept of Health expert Leslie Kollmann (right). | Photo by TRC Staff

CAREFUL CARE

Staying open in the midst of a pandemic meant the daily operations of TRC would need to drastically shift in order to safely admit new patients and preserve the health of current patients, education ambassador raptors, and staff members.

That meant using existing research to inform, develop, and adapt biosecurity protocols. Quarantine procedures were created and revised. Visitors to the center were prohibited as the virus can survive on surfaces such as shoes and spread to new areas and hosts.

To safely admit new patients, TRC staff retrofitted a nearby building to serve as a space to conduct intake exams, administer basic medical treatments, and isolate raptors for their first round of quarantine. Patients then underwent a second round of quarantine in TRC's lower level.

“Quarantine groups, personal protective equipment, testing, and more disinfectant than you could ever imagine allowed us to admit hundreds of birds over the first four months of the outbreak without any virus transmission escaping our quarantine process,” Hall says.

Containing HPAI is critical as the virus can spread through anything exiting a raptor’s body, including feces and respiratory secretions. It has a range of clinical presentations, but symptoms that stem from its impact on the bird’s brain and central nervous system are often the most apparent.

“The type of clinical signs we see depends on which part of the brain is affected. Abnormalities range from being very quiet and seemingly unaware of their environment to uncoordinated movements and seizures,” says Dr. Dana Franzen-Klein, medical director of TRC.

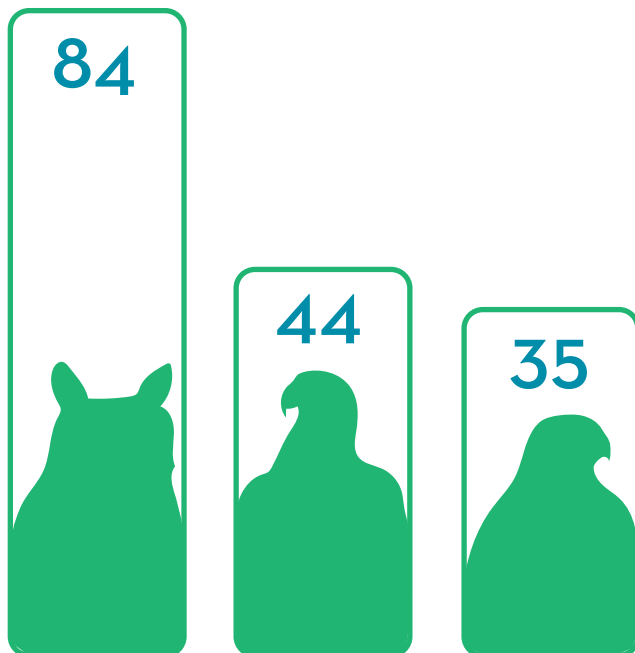
Recovery from HPAI is extremely rare thus far in raptors, and a vast majority of raptors infected with the virus die or are euthanized. From March 28 to Sept 4, 2022, TRC tested 701 individuals for HPAI upon admission to TRC, with 187 raptors testing positive for the virus. One great horned owl beat the odds, recovered from HPAI, and was released in May.

The extensive testing and extra biosecurity procedures significantly increased TRC staff workload, but the dedication of its members helped the center carry on its mission through the worst of the spring outbreak.

“The staff put in a lot of hours and a lot of effort,” Franzen-Klein says. “It took blood, sweat, tears, and passion to be able to do what we did. Our staff definitely went above and beyond to make it happen.” The community also played a significant role in helping TRC navigate the outbreak. Members of the public called in sightings of birds in distress and gave financial support to cover increased costs associated with the heightened biosecurity measures, such as purchasing personal protective equipment and other medical supplies. Volunteers also provided vital transport services for birds found around and outside of the Twin Cities.



A newly admitted great horned owl suffering with HPAI. | Photo by TRC Staff



The number of positive testing great horned owls, bald eagles, and red-tailed hawks - the three most commonly affected species that entered the care of TRC.

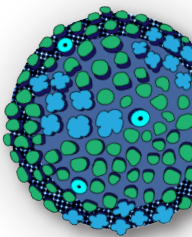
GLOBAL REACH

Throughout the pandemic, TRC’s impact extended beyond the patients in its clinic. Each raptor admitted represented a trove of data that could be used to help organizations across the world.

Collaboration among these organizations, which included other wildlife rehabilitation centers, zoos, government health agencies, and agricultural operations, is vital in tracking and responding to HPAI outbreaks.

In this ongoing 2022 outbreak, virus transmission has ramped up during fall and spring migrations. As wild birds move, so too does the virus, increasing the chance that it can jump from wild birds into poultry. The USDA estimates more than 40 million birds in poultry flocks across 36 states were infected during the 2022 spring outbreak.

The total impact on wild bird populations remains unknown as testing continues, but more than 2,200 confirmed HPAI



Visit our website for more data and resources on HPAI: raptor.umn.edu/about-us/our-research/HPAI

cases in 44 states were reported to the USDA by state and federal wildlife agencies as of July 2022. Cases detected in wildlife rehabilitation are not included in any federal data.

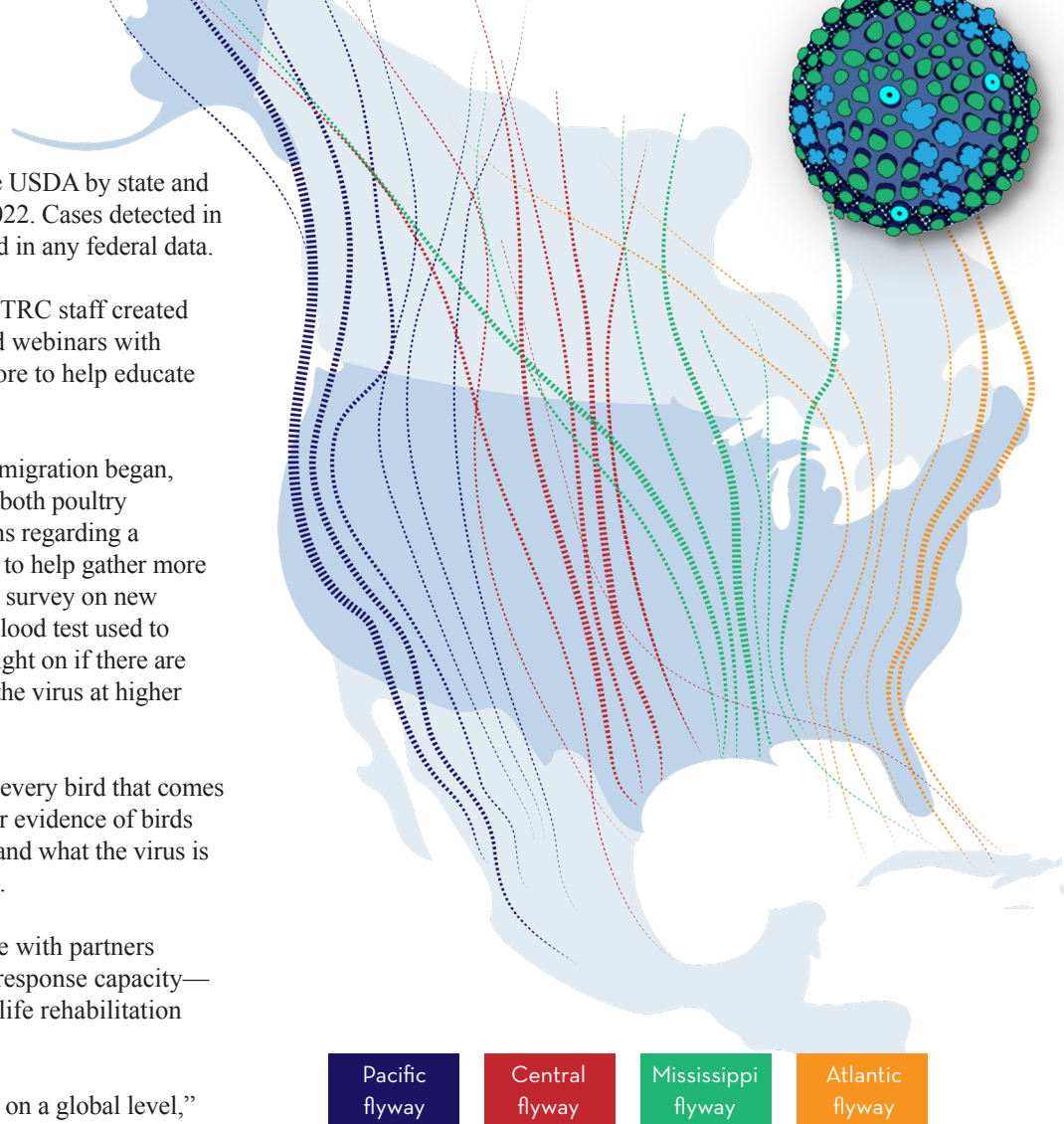
As part of its HPAI outreach efforts, TRC staff created resources, shared patient data, hosted webinars with international attendees, and much more to help educate others across the world.

And the center isn't done. As the fall migration began, Minnesota saw the return of HPAI in both poultry operations and in wild birds. Decisions regarding a response to the virus require data and to help gather more of it, TRC is conducting a serological survey on new admissions. This type of survey is a blood test used to detect antibodies and will help shed light on if there are raptors in the wild that are surviving the virus at higher rates than previously thought.

“We're going to be drawing blood on every bird that comes in this fall and spring to try to look for evidence of birds who have recovered to better understand what the virus is really doing to these birds,” Hall says.

TRC also will continue to collaborate with partners across the world to increase disease response capacity—for HPAI and beyond—at zoos, wildlife rehabilitation centers, and poultry operations.

“This disease, in particular, circulates on a global level,” Hall says. “It's not a United States problem. It's not a North American problem. It's a global problem. It's not just an agriculture or wildlife or human problem—it impacts everything. You have to have a collaborative ecosystem health approach if you want to address it.”



Pacific flyway Central flyway Mississippi flyway Atlantic flyway

Avian influenza is able to be maintained in wild bird populations because it is often carried asymptotically in birds like ducks and geese as they take their migratory journeys around the world.

| Illustration by Daynen Paddock

Help TRC reach new heights through Give to the Max Day on November 17

by Brandi Rupard

Each year, Give to the Max Day represents the largest fundraising event of the year for many nonprofit organizations around Minnesota, and this year is no different. For The Raptor Center (TRC), the support it receives on this day is more vital than ever.

TRC found itself on the frontlines of the highly pathogenic avian influenza (HPAI) outbreak earlier this year. That meant adapting its protocols and procedures to keep this deadly virus from spreading among the hundreds of patients it admitted throughout spring and fall as well as preserving the health of its education ambassadors and staff members. Staff also made a global impact by putting together resources and offering support in educating people working with wildlife and the general public about the impact of HPAI.

Conquering crisis through communication: P4W connects, educates wildlife rehabbers during HPAI pandemic

by Rob Kulhanek

Partners for Wildlife (P4W) is centered around communication—creating connections, sharing resources, and building a stronger, more resilient wildlife rehabilitation community. Nothing this year has brought that more to the forefront than the devastating challenge of highly pathogenic avian influenza (HPAI).

As a unit within The Raptor Center (TRC), P4W monitored the emergence of HPAI while leaping into action to provide critical messages and assistance to audiences beyond TRC's immediate scope, particularly vulnerable individual rehabilitators and smaller centers. Gail Buhl, P4W partnership coordinator, and Dr. Michelle Willette, P4W intern

program supervisor, spearheaded many of these efforts.

The pair co-led a biosecurity workshop during the annual National Wildlife Rehabilitators Association Symposium in March 2022, which led to the formation of a multi-state email group centered on HPAI updates. Buhl published a special Wildlife Rehabilitation: From Rescue to Release podcast episode on HPAI with Dr. Victoria Hall, TRC's executive director. Buhl and Hall went on to host a pair of webinars, each attended by 300+ individuals, sharing critical HPAI information and updates on what TRC was learning from its own biosecurity efforts.

Beyond these coordinated activities, both Buhl and Willette provided individual consultations to countless home- and center-based rehabilitators, assisting them in securing their collections and strengthening their biosecurity. The constant stream of communication between the P4W team and folks throughout the sector was a lifeline for many, including TRC's own team, in a tumultuous and uncertain time. While extremely challenging, this pandemic illuminated the power of open communication and its role in building resilient communities.



Screen capture of Gail Buhl hosting one of two HPAI webinars.

Responding to this outbreak and protecting the health of its ambassadors prevented TRC from appearing in outdoor programming at events such as fairs and festivals. This resulted in a loss of income for the center. More than 60 percent of TRC's budget and nearly 100 percent of its clinic work are funded through donations from public support.

On November 17, your support is more important than ever. Help TRC continue to ensure the health of raptors and the world we share by participating in Give to the Max Day. The first \$60,000 in gifts to TRC will be matched by:

- Robert & Susan Wilder
- Rachel Hollstadt
- Acorn Charitable Trust
- Sarah J. Andersen Fund of the Hugh J. Andersen Foundation

Contact Ellen Orndorf, development officer for TRC, at eorndorf@umn.edu or 612-624-8457 with questions or to make a gift.



A great horned owl undergoing an eye exam in the TRC's clinic.

| Photo by Lori Arent

TRC director makes global impact through One Health workshop in Kenya

by TRC staff

Wild animals such as raptors don't adhere to human borders like those outlining states and countries. They also don't exist in a vacuum and are impacted by the human, animal, and environmental factors around them.

For these reasons, The Raptor Center's (TRC) mission extends beyond the state of Minnesota and is applicable beyond birds of prey. While its primary focus is studying and saving raptors, its work and mission are fueled by a commitment to One Health and Ecosystem Health. The One Health approach seeks to understand the intersections of animal, human, and environmental health and improve the complex overlapping systems between them.

This recent June, TRC Executive Director Dr. Victoria Hall helped to facilitate a global workshop in Kenya, sharing her One Health expertise with participants from across Africa, Southeast Asia, the United Kingdom, Australia, and the United States.

The workshop, which included wildlife veterinarians, scientists, epidemiologists, and experts from animal sanctuaries, took pressing, real-life issues facing wildlife and reframed them through the lens of One Health. It enabled participants to identify and understand the complex systems that impact and are affected by these issues in order to better innovate solutions to protect human, animal, and environmental health.

Additionally, Hall met with wildlife partners including local rehabilitation centers, The Peregrine Fund, Kenya Wildlife Services, and national laboratories to discuss crucial issues facing raptor species in Kenya. Critical issues such as habitat changes, environmental contamination (e.g. lead poisoning and rodenticides), human/wildlife conflict, and electrocutions are global wildlife concerns. Together, people across borders can work toward making a difference and finding innovative solutions to better protect the future of all.



Members of the workshop facilitation team.

| Photo courtesy of Dr. Victoria Hall



A free ranging elephant at the workshop location in Ol Pejeta Conservancy. | Photo by Dr. Victoria Hall



Contact us

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Ellen Orndorf, 612-624-8457, eorndorf@umn.edu

Sponsor-a-Raptor program:

Jessica Larson, jlar@umn.edu

EDUCATION PROGRAMS

Field trips, outreach programs, and events:

612-624-2756, RaptorEd@umn.edu

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Front desk: 612-624-4745

Email: raptor@umn.edu

Fax: 612-624-8740

Address: 1920 Fitch Ave, St. Paul, MN 55108

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EDITORIAL TEAM:

Managing Editor: Brandi Rupard

Assistant Director: Lori Arent, MS

Writers: Lori Arent, MS; Victoria Hall, DVM, MS, DACVPM; Rob Kulhanek, Tori Lafky, Melissa Moore, Brandi Rupard

Executive Director: Victoria Hall, DVM, MS, DACVPM

Director of Advancement: Martin Moen

DESIGN TEAM:

Graphic Designers: Daynen Paddock, Nathan Pasch

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Please notify us of your change of address or duplicate mailing by calling 612-624-7624, emailing cvmcomm@umn.edu, or writing to:

The Advancement Department
College of Veterinary Medicine
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