All roads lead to Athens

While it only seems like last week that the 70th Annual International Conference came to an end, it may surprise you to realise it was actually almost four months ago, and in the interim the conference committee has been locked in, fired up and getting ready for 2023.

Each WDA Annual International Conference is unique, its flavour defined by its theme, its location and the program offered to delegates.

But several aspects remain constant.

There’s that palpable sense of excitement and anticipation for the knowledge and information to be presented, and the chance to catch up with friends and colleagues, those like-minded souls who share so much. Then there’s the opportunity each and every conference offers - an opportunity to build understanding - scientific, professional and cultural, to make new connections, to learn more, to grow more and to take another step forward in a career.

In 2023, the 71st Annual International Conference of the Wildlife Disease Association, planned for July 29 to August 4, will offer all this and more to those attending

This year’s theme People, Passion and Purpose - The pathway to wildlife health emphasises the critical elements needed to achieve holistic solutions to some of our planet’s greatest challenges. These challenges, which include climate change, pollution, deforestation, habitat loss and invasive species, form a nexus with wildlife and wildlife health, making their management and, where possible eradication, a priority for the survival of all species, humans included.

While the formal program is yet to be finalised, it will have all the elements WDA conferences are famous for - key note speakers, plenary sessions and student presentations. There are also the workshops which this year will include bee health and conservation, sea turtle rehabilitation and conservation, science communication, the American College of Zoological Medicine Ultrashort Examination Preparation Course and the ever-popular wildlife disease investigation workshop which gives students and early career professionals a chance to get up to their elbows in ... well ... we’ll keep that as a surprise.

This year, to make sure there’s plenty of time to manage the flood of abstracts, the dates for submissions have changed, opening December 15 and
WDA NEWSLETTER

October 2022

Closing March 1, 2023. Submissions will be through Exordo and guidelines will soon be available. Keep an eye on WDA social media channels for updates.

Almost as important as the academic program are the events which don’t involve Powerpoints and podiums, where everyone can ditch the laptops and just relax.

The social program for Athens takes in a picnic in the Botanical Gardens, the student auction at the 40 Watt Club, field trips and the banquet and award ceremony. In addition, Athens is home to a multitude of gastronomic, sporting and artistic pursuits. There truly is something for everyone.

And speaking of auctions, it’s never too early to donate to those live and silent student auctions.

Previous lots have have included items made by members (photographs etc), paintings, wildlife-themed objects, outdoor gear, experiences (eg. guided fishing trips), gift baskets, wine and much more, so if you would like to contribute send your donation to:
Dr. Danny Mead
589 D.W. Brooks Drive, Athens, GA 30602.
Alternatively, email dmead@uga.edu and shernz@uga.edu with subject line: WDA Auction Items.

The host with the most

Host city Athens, Georgia, USA, located 60 miles (or just under 100ks) northeast of Atlanta, is a vibrant, creative and eclectic city, and home to the University of Georgia, the birthplace of higher public education in America. With its blend of whimsy, academic excellence and dynamic cultural energy, Athens is sure to inspire.

There are award-winning restaurants, a thriving craft beer scene and an impressive musical pedigree, spawning bands like REM, the B52’s and Widespread Panic.

The centrally located Classic Center, home to the conference for its duration, is close to the university and local restaurants, and is in walking distance to several hotels offering conference rates, including major chains and more boutique accommodation such as LEED-certified and historic venues.

While Athens does have a small airport, Athens-Ben Epps Airport, perhaps the most convenient arrival point is Atlanta’s Hartsfield-Jackson International Airport. From here there are a variety of transport options to get to Athens including bus and hire car.

Visit the conference website to find out more about getting to and staying in Athens.
The WDA family extends almost literally from pole to pole, and it’s a family made up of a vast array of different disciplines and specialities.

But it is that very diversity which unites the WDA ... that thirst for knowledge, that passion to help wildlife thrive and survive, that need to explore, to expand and to share discoveries.

Another common thread within the organisation is the desire to support each other and strengthen that complex web of connections that have helped build the association’s ecosystem.

One of the best ways to achieve those goals is through our membership program which in 2022 has evolved, not only to reflect the changing global economic climate, but also a drive to expand our horizons, embrace even more diversity and be truly representative of the entire wildlife community.

After all, the more we can assist those on the frontlines of wildlife health and conservation, the greater the chances of success.

For these reasons, the WDA membership program will continue to offer the 20 per cent discount, introduced during the pandemic, which now applies whether you renew for one, two or three years.

In addition, we have introduced two new membership categories designed specifically to support and encourage members from an even wider geographic area - those countries currently defined as low income or low-middle income by the World Bank. Residents of these 82 countries will enjoy the new Discounted Associate Membership for just $15 or the new Discounted Student Membership for only $10.

Both new categories also include free access to the Journal of Wildlife Diseases as well as other membership benefits such as standing and voting in council elections, joining committees and receiving the WDA newsletters and updates.

Our members are the very heart and soul of the WDA and without them we simply could not do all we do including:

• supporting scientists across our geographic sections through grants and the new discounted memberships;
• encouraging our future researchers through awards and scholarships bestowed by WDA, IAAAM and the BioOne Ambassador Award; and
• advocating on regional and global issues impacting wildlife health

We hope we can count on each and every one of you again this year.

To find out more about these new memberships and, of course, to renew your existing membership, please visit the WDA website.

Remember, you can streamline the membership process with the click of a button. By selecting auto-renew, you’ll always be up to date with your WDA membership, and can opt out just as easily at any time.
Cuenca project growing greener future

The mission of the Wildlife Disease Association is to promote healthy wildlife and ecosystems, preserve biological diversity and seek environmentally sustainable solutions to global health challenges. Seeking to fulfill this mission and to mitigate carbon emissions caused by the joint virtual conference held in Cuenca (Spain) in 2021, the WDA together with the EWDA and the Organizing Committee of the 69th WDA/14th EWDA Joint Conference, sponsored the planting of some 1800 trees in a fire-devastated area in Cuenca.

The growth of these trees in this area will not only offset the environmental cost of the last two WDA/EWDA joint conferences, but will also fix the soil and contribute to a healthier ecosystem for wildlife and humans in the Cuenca mountains.

The project started immediately after the end of the 2021 Joint Conference, but the severe drought that has affected the Iberian Peninsula since that year has not made it possible to plant the seedlings until October 2022. The project, jointly funded with the environmental authorities of the autonomous community of Castilla-La Mancha, Don Quixote's homeland, has included the perimeter fencing of the three hectares of land to be reforested (to protect the seedlings from the abundant wild ungulates), the preparation of the land and the planting of the trees. The project will also entail the monitoring and care of the trees during the first years after plantation until they are big enough to grow by themselves.

Hope sprouts in Cuenca

DEER DEFENCE: The three-hectare site has been fenced to protect the seedlings from determined ungulates.

SEEDS OF HOPE: Just one of 1800 trees sprouting in a fire-devastated part of Cuenca.
Hope sprouts in Cuenca

As representatives of the WDA in this project, we will follow the evolution of the plantation and we will duly inform you every few years about its evolution.

It will be a project of the whole WDA family for a better and healthier planet as our dearest colleague, Dr. Sophie Rossi, of the French Office National de la Chasse et la Faune Sauvage, who sadly passed away on September 1, 2021, would have wished. To her, a tireless and fervent enthusiast for wildlife health and a better friend, colleague, and person, we have dedicated this project.

Authors: Dr. Francisco Ruiz-Fons (Spanish Game & Wildlife Research Institute – Spanish Research Council (CSIC); Ciudad Real, Spain) Dr. María Ángeles Risalde (Animal Health & Zoonoses Research Group – University of Córdoba; Córdoba, Spain)

PASSION PROJECT: This fire-blasted, lunar landscape (above and left) will be transformed into a living, breathing ecosystem thanks to the tireless efforts of the WDA family, as outlined in the banner below.
The Wildlife Disease Association Latin America hosted an incredibly successful biennial conference, November 8 to 11, in Valdivia, Chile.

Its theme of Present and Future explored a host of topics including conservation medicine, disease ecology, ecotoxicology, infectious and non-infectious diseases in wildlife, antimicrobial resistance in wildlife and more.

Gabriela Mastromonaco from Toronto Zoo delivered the keynote address on Measurement of hormones as non-invasive biomarkers of health in wildlife and was joined in master talks by Nilton Lincopan, Sonia Hernandez, Marcela Orozco, Mauricio Seguel, Lucila Moreno Salas and Andrea Chaves.

To find out more visit the conference website.

Nordic Congress breaks professional ice

September 19 to 23, the NWDA co-hosted the 17th Nordic Congress of Wildlife Research in Uppsala, Sweden with 165 participants from Europe and across the world.

The aim of the Nordic Congress of Wildlife Research is to bring together all those active in wildlife research and management to meet and discuss challenging issues in wildlife ecology and management in a broad sense. This includes natural and social scientists, wildlife and land managers, political decision-makers, and anyone else working with related questions, eg. at non-governmental, governmental and intergovernmental organizations.

The theme for the 17th Congress was bringing wildlife ecology, health and management together, and for the first time, focused on wildlife health in relation to wildlife management, uniting wildlife ecology and wildlife veterinary science professionals to enhance cooperation and understanding.

Delegates enjoyed excellent presentations on the threat of CWD, ASF and HPAI to European wildlife and the management and mitigation of the diseases as well as a diverse program ranging from disease surveillance, camera trapping, transboundary movements, large carnivore management, welfare issues in trapping and culling, assessment of wildlife damage to farmland and forests, conservation efforts, gender effects in wildlife management and social scientific perspectives on the management of human–wildlife conflicts.
Podcasts great for talking wildlife

Watching conference talks is great. You get a good idea of what your colleagues have been working on and what results they came up with. But we rarely hear the background story of their research.

How did Heather get the idea to collect ticks to study chronic wasting disease in deer? Or what was it like when Jenny had to euthanize a beached 15-metre sperm whale when she had never done this before. How did Carlos become the research director of the Norwegian Veterinary Institute, overseeing all national wildlife health projects?

Well with WDA planning its own podcast, Wildlife Health Talks, we may just be able to fill in the gaps. It’s hoped the new podcast will get you up close and personal with the exciting work of our members and their background stories, as well as spreading the word of the WDA and its mission to future members and the public.

As a vet, wildlife health researcher and science communicator based in Sydney, Australia, I have been hosting and producing science podcasts for nearly five years. What do I love about podcasting? You get to ask your guests all the burning questions ... well, maybe not all of them - we keep it professional.

For me, it’s the best way to satisfy my curiosity and thirst for knowledge from the very source. And spreading that enthusiasm and fascination to my audience is most satisfying.

Listening to a science podcast you get to learn intriguing facts from the experts themselves while driving to work, vacuuming your living room or doing your grocery shopping. Podcasts fit right in with our increasingly fast-paced lives, and yet they have the power to bring us calm and take us on a journey to another place, away from our daily chores.

Have you ever considered starting your own podcast?

The WDA plans to host a ‘How to podcast’ workshop early next year where we will cover the different podcast formats, what equipment is needed and where to upload your podcast to distribute it to a broad audience. Producing a podcast yourself will not only give you the opportunity to spread the word about your important work, it’s also a great way to practice public speaking and to make peace with listening to your own voice. As I was once told by an amazing communication coach, we only have this one voice, so we better make it count.

Stay tuned for Wildlife Health Talks and the podcasting workshop coming soon.

- Cat Vendl

Would you like to be a guest on Wildlife Health Talks and share your research and career story with your colleagues and a wider audience? Please email communications@wildlifedisease.org or catharinavendl@gmail.com.
New EWDA chair is in the hot seat

Gudrun Wibbelt is a wildlife pathologist at the Leibniz Institute for Zoo and Wildlife Research (IZW) in Berlin, Germany. After graduating from Hannover University, she was a resident for veterinary pathology at Liverpool University, UK. In 2002 she began work at the IZW with captive and free-ranging wildlife. Her research interests include wildlife infectious diseases particularly in small mammals like bats. A Diplomate of the European College of Zoological Medicine (Wildlife Population Health) Gudrun is also the new chair of the EWDA, so let’s get to know her a little better.

What inspired you to join the wildlife health sector and why specifically veterinary pathology?
For as long as I can remember, wildlife has always played a role in my life. My father was a forester, so I was taught about the interrelationships of nature from an early age. Especially observing animals in the forest was always the greatest experience.

During my veterinary studies, wildlife took a back seat, but the fascination of being able to look at things closely remained. So pathology is actually a logical consequence - you can’t look any more closely than that. And being able to hold a position as a wildlife pathologist is a fantastic circular reasoning.

What has been the highlight of your career so far? Tell us about your best day on the job.
After my studies and doctoral thesis in Hannover, Germany, I was able to take up a residency in veterinary pathology at the University of Liverpool, which was great in itself. The fact that this was followed by the opportunity to work as a pathologist in an institute for zoo and wildlife research is a (continuous) highlight for me. The versatility alone makes many days special. But of course it is especially exciting when you discover something unexpected. A few years ago, for example, we found a previously unknown orthopox virus in juvenile European squirrels.

Can you share some of your most recent research?
I have a special personal interest in bats. There are over 1400 species with the most fascinating ecological niches and even though only a small fraction of them occur in Germany, it is great to be able to work on these animals. At the moment, for example, we are trying to gain further insights into the lethal effects of wind turbines on the animals.

What do you see as the biggest challenges in your field and more broadly in wildlife health globally?
One would have thought that the ever-present headlines on climate change and loss of biodiversity could have shaken people up to take the consequences of their own actions seriously. Instead, the corona pandemic has led to a seemingly even more irrational attitude towards wildlife than before. We must not tire of continuing to advocate for wildlife and the integrity of its habitats as an important good for all.
You joined the WDA a little over ten years ago, what was it that drew you to the organisation?
When I attended the first EWDA conference, I was carried away by the open and friendly atmosphere on the one hand and the high-quality scientific presentations on the other. It hasn’t changed since; there is this relaxed down-to-earthness whether someone is one of the most recognised scientists or a first year PhD student, and everyone talks to everyone. Compared to a number of other associations, that’s very remarkable. Difficult not to want to become a member here. ;)

As a wildlife professional, what do you see as the best and most significant benefits of belonging to the WDA family?
The exchange of experience and knowledge seems to be of particular importance in the wildlife sector, as classical approaches from the domestic or livestock sector do not work in a wildlife setting. Working in the wildlife field often requires new, creative solutions that go further than just focusing on a single individual - being able to ask for advice from a large group of people in this area is an important resource. And because the WDA is a worldwide organisation, you can learn things about species that you might never come into contact with yourself. That is simply exciting and fun at the same time.

You recently assumed the role of Chair of the EWDA, so tell us a little about your section.
Geographically, Europe may not seem that big, but with the many countries that are part of it, it is very diverse in its composition and it is a nice fact that many of the countries are represented by members in EWDA. But while the common language of EWDA is of course English, the language barrier at individual national levels sometimes makes it difficult to easily share insights and advice with citizens in the countries. This is why EWDA members are important mediators, eg. to improve the harmonisation of approaches in wildlife health. This aspect in particular has a long EWDA tradition and led to the establishment of an “EWDA Network” many years ago, which then became a standing committee and promotes a Europe-wide communication of people dealing with wildlife diseases inside and outside EWDA.

However, the diversity of countries also means different financial and/or human resources for wildlife research and management. This is clearly reflected in the disparity in membership between Western and Eastern European countries.

What are your hopes for your tenure? Are there any specific goals you see as vital for the section to achieve?
First of all, of course, I hope that EWDA will continue to have as many active members as it currently has. What I would very much like to see, however, is that we succeed in including the Eastern European countries in our community to a greater extent. Wildlife research has a long tradition in many Eastern European countries and there would undoubtedly be a fruitful exchange of ideas and experiences. Perhaps the reason for the difficulties so far lies in the language barriers. The fact that English has become the main foreign language in the whole of Europe will hopefully contribute to EWDA members coming from all over Europe.

What advice would you give someone considering a career in wildlife health?
The path may not always be straightforward, but just as wild animals have found their own niches, niches can be discovered in the field of wildlife health that allow you to follow your own path. Just keep going as long as you feel happy doing so.

Finally, what inspires you?
People who have gone through life with an open mind and who have known how to combine their knowledge with the experiences of others to gain new insights, to start with seemingly few resources and then gradually managed to achieve a change. For example Tony Rinaudo, who received Right Livelihood Award in 2018 for his pioneering work on regrowing trees in places where forests had disappeared by “farmer-managed natural regeneration.”
Fighting for academic freedom

For months after her arrival in Belgium, a knock at the door was enough to set Dr Merry’s heart racing.

It instantly transported her back to the months after the military took over her native Myanmar when soldiers would repeatedly raid the home which was her secret sanctuary.

“At nighttime, because of the curfew, the road was really quiet and we would hear when they [were] coming in because it was an old car ... and we could hear the soldiers jump out of the car and could hear their footsteps,” Dr Merry remembers.

What followed the rattle and clatter of an ageing engine and the crunch of feet on gravel was nothing short of traumatic as household members, including children, were dragged from the room next to where Merry was hiding and out into the street. It was a far cry from her previous life as a former employee of the nation’s government and a well-respected member of an international scientific community.

Following the coup in February 2021, it became apparent that life for scientists like Dr Merry was about to become very difficult.

“For me there was no way to work under the military ... I used to work under ex-military people and they never appreciated researchers at all, they never appreciated science and they never appreciated women scientists.”

So she stopped working for the government and joined some 70 per cent of government staff in a civil disobedience movement, during which time, her international reputation and connections drew requests for help and also the unwanted attention of the new military leaders.
“For me it was easy because I knew a lot of international people.

“Because some people needed money or because of their safety they needed to be moved to a safe place and we needed to organize that, but that got all the attention from the military and from some researcher who stayed in the government system.”

Merry left her parents and sister, evading scrutiny until she could leave the country legally on her passport, while the junta’s attention was focused inwards rather than outwards.

“My international scientists’ network, they knew I was under risk so they said ‘Merry we couldn’t leave you in that situation; we want to get you out of the country.’”

Assisted by a close colleague from the University in Belgium, in May 2021 Merry traveled to Belgium as a visiting researcher, and again with support from her global network, money from the Institute of International Education (IIE) Scholar’s Rescue Fund, matched by a sponsor in Australia, allowed her to stay in Belgium until June of 2022.

It was then Scholars at Risk (SAR), a New York-based, international not-for-profit and IIE partner, stepped in to support her for a fellowship opportunity at a research institute in Germany.

The Scholars at Risk Network formed in 2000, recognizing the need to provide temporary academic opportunities to scholars, researchers and practitioners facing the most grave threats. These threats, as reported by SAR’s Academic Freedom Monitoring Project and annual Free to Think reports, can range from travel restrictions and loss of position at universities, to wrongful imprisonment, violence, disappearances and/or killings. Around the globe, actors including government authorities, armed militant and extremist groups, police and military forces, and even members of the higher education community target scholars and students. They censor teaching and scholarship, and punish critical dissent, fearing what the university in its fullest sense represents: the freedom to think, question and share ideas.

According to SAR’s Senior Program Officer on the Advocacy team Daniel Munier, academics have faced many dangers in 2022.

“Over the last year, we have seen overwhelming and diverse attacks on higher education communities around the world,” he said.

“Scholars and students are fleeing war in Ukraine and an oppressive Russian government, the Taliban has reversed decades of progress for women’s academic freedom in Afghanistan, the Nicaraguan government has taken over a number of private universities and tightened control on the higher education sector, and lawmakers in the United States continued to restrict campus discourse.”

Beyond the profound impact on scholars’ individual lives, these types of attacks also undermine higher education systems, impairing the quality of teaching, research and discourse on campus. They impact everyone by damaging higher education’s unique capacity to drive the social, political, cultural and economic development from which we all benefit.
Protecting academic freedom means protecting the rights of scholars to teach and discuss, carry out and publish research results, freely express opinions about their academic institutions or systems, participate in professional or representative academic bodies, and ultimately, not to be censored for their academic work.

SAR is an international network of over 650 institutions and associations and 16 sections worldwide.

Since SAR’s inception in 2000, it has supported over 1700 scholars and created over 1700 positions at 300 host campuses, representing over US $42 million of support for colleagues under threat. This growth is possible thanks to the tremendous efforts of its network members, and the organization encourages individuals and institutions to get involved by learning more about academic freedom, joining the network, supporting advocacy efforts for at-risk scholars and signing up for SAR’s email list.

When the conflict between Russia and Ukraine began, the lives of millions changed almost overnight, and WDA member Bridget Baker from the University of Florida’s Wildlife Ecology and Conservation Department felt she needed to do something. “At that point, I started networking with colleagues around the world, including through WDA, to try to identify a Ukrainian ecologist who might be in need of assistance,” she said.

“However most were looking to stay in Europe. Many of our European colleagues were helping place them with academic institutions in Europe using the SAR network. It was helpful to learn about the SAR network, which I had not known about previously, as well as the program and process for hosting a scholar at risk.”

She said raising awareness about SAR would hopefully spur more members on to help others through the network or advocate for a formal program at their own institution.

Merry’s experience with SAR in many ways poignantly manifests the hopes and fears that first inspired the organization; the potential catastrophe of knowledge lost counterbalanced and exceeded by the knowledge and wisdom gained and, more importantly, shared.

That sharing of knowledge is a process she is reveling in, immersing herself in projects both in Asia, where food security is the primary motivator, and in Europe where her research is investigating urban rats as a vector for human disease.

Her work also includes supervising PhD students in Sri Lanka and contributing her expertise in the Philippines.

“There are not many people working on my research area,” she said.

But a dearth of expertise is by no means the only reason Dr Merry is in such high demand. Her energy and passion for her subject are unrelenting, dimmed only slightly by a fleeting sadness that she is so far from the home she treasures, a home she continues to nurture, from nigh on 8000 kilometres away.

“I have a great passion for the country,” she says. So much so that she is still working with people in Myanmar.

“We want to make sure they do not get depressed, or they do not lose their motivation or they do not lose their hope.”

This work includes weekly capacity building webinars for former colleagues and training for people to make sure they can still reach new technologies.

“Even though we kept to our belief to leave the government system we don’t want to leave our people behind,” she says, although the successful program has been hampered by poor internet services.
Equally as important as the capacity to continue her research has been the emotional and professional support she has received from her colleagues and friends.

“The institute is really grateful that I got the fellowship,” she said.

“I was very welcomed ... They did not feel like they hosted me only like a researcher at risk from other country, they really appreciate me ... I became like an asset for them.

“I still have trauma but I still survived mainly because of all the people around me; they know me quite well and know how to support me emotionally, not just physically.”

Similarly, she is grateful for the support this opportunity has allowed her to provide to others.

“With the salary I receive ... I contribute to people who lost their homes; after the military burnt their homes I can contribute to systems and those who lost homes and jobs, even the farmers.”

Ultimately Merry of course hopes to return home, and again a little sadness creeps in.

So much has been lost in a country which boasts an incredibly diverse social and cultural heritage including 135 separate ethnic groups.

“My plan is to go back to the country when it is safe to go back ... and bring my international network. We will need a lot of intellectual contribution ... because the country really was destroyed. We really need a lot of people to come back ... and work together.

“Within two years I hope to go back home.

“There’s still a lot of work to be done. We are losing the younger generation. They have lost their education, their home and their family.

“I want to go back home for them.”

If however, the unthinkable happens and Merry is unable to return to Myanmar, she believes Germany is a good place to land, and while many milestones will help her settle in, learning German, how to drive and getting a job, she has one dream above all others ... a furry companion of the canine kind ... or even better, five.

- Lyndell Whyte

*Please note some names and details have been changed for safety reasons

LOOKING FORWARD: Dr Merry is hoping that she will be able to return home in the future.
HIGHLY PATHOGENIC AVIAN INFLUENZA UPDATE

Since the initial detection of highly pathogenic avian influenza (HPAI) H5N1 in North America in late 2021 in the Avalon Peninsula of Newfoundland and Labrador, Canada, the current set of viruses in North America have caused substantial and ongoing impacts to commercial poultry, backyard flocks, wild birds, and wild mammals.

Unlike the previous HPAI outbreak in 2014/2015, the current epizootic persisted through the summer months (Figure 1) and recent reports suggest increased transmission.

While cumulative impacts to the commercial sector between these two outbreaks are similar (211 facilities, ~50 million poultry in the U.S. in 2014/2015; 240 facilities, ~47 million poultry in 2022), observations from other affected sectors suggest order of magnitude increases and a much more ubiquitous presence of virus in North America in the current epizootic. For example, in 2022 there have been 288 infected backyard flocks and approximately 3500 wild bird detections (110 species in 595 counties in 45 states and 13 provinces) as compared to 21 backyard flocks and 100 wild bird confirmations.
(18 species in 35 counties in 16 states and one province) in 2014/2015, and confirmations in nine species of scavenging mammals and three species of marine mammals in 2022, vs. no wild mammal detections in 2014/2015.

Moving through the spring months, a leading question was whether and to what degree this outbreak would follow the pattern observed in Europe a year prior where the virus returned during fall migration.

While that question remains at least partially open, it is clear that the virus remained active in numerous North American locations and species during the summer 2022 months.

Key observations reported to USGS National Wildlife Health Center (NWHC) include:

- avian scavengers (especially black vultures, Coragyps atratus) are suspected to have maintained local epizootics in eastern states via intraspecific scavenging;
- spillover occurred into marine mammals including harbor seals (Phoca vitulina) and grey seals (Halichoerus grypus) along the northeastern Atlantic coast, and a bottlenose dolphin (Tursiops truncates) on the Florida gulf coast;
- spillover continued into scavenging mammals, including red fox (Vulpes vulpes, the majority of detections), striped skunk (Mephitis mephitis), Virginia opossum (Didelphis virginiana), raccoon (Procyon lotor), bobcat (Lynx rufus), American mink (Neovison vison), coyote (Canis latrans), fisher (Pekania pennanti), and black bear (Ursus americanus);
- substantial impacts, including nearly 100% nest failure at some locations for colony-nesting species such as northern gannets (Morus bassanus), common terns (Sterna hirundo), and Caspian terns (Hydroprogne caspia);
- recent localized mortality (eg., individual lakes and complexes) of hatch year geese and ducks, suggesting that these young naïve, susceptible hosts may have helped maintain local outbreaks;
- increasing proportion of reassortant viruses including those with multiple inserted gene segments from North American viruses that have not yet demonstrated a decline in virulence;
- recently, detections have been reported in dabbling ducks sampled during late summer waterfowl banding activities; results suggest a low overall incidence, but high localized prevalence, again suggesting that the virus persisted through the summer months in some localized populations; and
- most recently, sampling based on early teal hunting seasons has documented HPAI-positive blue-winged teal (Anas discors) and American green-winged teal (A. carolinensis) in multiple locations, including southern latitude states (e.g., Louisiana, Mississippi, Texas), suggesting early migrating waterfowl were infected with HPAIv.

Fall surveillance in the U.S. is now underway, being led by the U.S. Department of Agriculture (USDA) - Animal and Plant Health Inspection Service - Wildlife Services National Wildlife Disease Program, in collaboration with state and federal partners and according to the 2022/2023 Implementation Plan for Avian Influenza Surveillance in Waterfowl in the United States.

NWHC provides diagnostic support for the Implementation Plan, primarily related to investigation of morbidity/mortality events.

Data collated for this report are publicly available and reported by USDA, the Canadian Food Inspection Agency (CFIA), and the World Organisation for Animal Health, (WOAH) as of October 14, 2022.

Confirmed locations in North America (all sectors) are being mapped and served by NWHC (Figure 2). Information on wild bird morbidity and mortality events is maintained in the Wildlife Health Information Sharing Partnership – event reporting system (WHISPers).

For more information, please contact Bryan Richards, brichards@usgs.gov.
Microcystin, a class of natural algal toxins produced by freshwater cyanobacteria (blue-green algae), is increasingly reported in freshwater systems throughout the United States. In mammals, known consequences of microcystin exposure include liver cancer and fertility decline, but effects in other species are not well described. Microcystin is also known to inhibit protein phosphatase activities (e.g., PP1, PP2A), disrupting important downstream metabolic pathways including those that inhibit diseases. As such, microcystin may have longer-term effects in exposed animals, exacerbating disease susceptibility and morphology.

A recent study involving the USGS National Wildlife Health Center (NWHC) investigated whether little brown bats (Myotis lucifugus) could be naturally exposed to microcystin through consumption of Hexagenia mayflies that ingested the cyanobacterium Microcystis aeruginosa in lake sediment (Jones et al. 2022).

To examine diet composition, bat feces were collected from under a little brown bat maternity roost in Leelanau County, Michigan, during a Hexagenia emergence near a lake with annual M. aeruginosa blooms. Additionally, nineteen female little brown
bats were collected from the same maternity colony to directly analyze microcystin exposure in liver and feces. Composition of the bats’ insect diet was assessed by molecular analysis of fecal material from under the roost. Microcystin levels in feces from collected bats were measured by enzyme-linked immunosorbent assay (ELISA) and liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS). Liver was assessed by light microscopy for evidence of microcystin toxicosis. The study found that aquatic insects, including Hexagenia, were common in the bats’ diet and microcystin was detected in high concentrations (up to 129.9 μg/kg dw) in feces by ELISA, indicating that consumption of aquatic insects is a possible mechanism of trophic transfer of microcystin to bats. However, microcystin was not detected in the bat livers and histopathological examination showed no evidence of toxicosis, suggesting that these bats were not accumulating dietary microcystin in the liver.

Microcystin has also been reported in association with wild bird mortality events, but there is little data available to evaluate the contribution of toxin to those events. USGS researchers at NWHC, Wetland Aquatic Research Center and Eastern Ecological Science Center are investigating effects of microcystin exposure by quantifying bird liver biomarkers and changes in the intestinal microbiomes in controlled exposures. Current research is using experimental exposures of mallard ducks (Anas platyrhynchos) to low dose microcystin to examine the health effects of this algal toxin to wild birds.

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References

APPLICATION OF A SYSTEMS APPROACH FOR MANAGEMENT OF CHRONIC WASTING DISEASE

In 2021, the USGS National Wildlife Health Center began collaborating with the Wisconsin Department of Natural Resources (WDNR) and Ventana Systems, Inc., to dynamically map the complex relationships between biological, social, and political processes affecting chronic wasting disease (CWD).

During the first year of the project, modeling efforts focused primarily on describing CWD epidemiology and the potential impact of various management interventions (e.g., targeted harvest, baiting and feeding bans, testing, carcass movement restrictions and disposal, etc.) on disease processes.

The project was integrated into a structured decision-making framework which used the model to evaluate the predicted outcomes of various proposed policies posed by stakeholders participating in the current five-year review of Wisconsin’s CWD Response Plan. Preliminary findings demonstrate that no single management policy is likely to reduce disease transmission by the 50-80% needed to arrest and reverse growth of CWD in Wisconsin, but rather that a portfolio of actions will be needed.

Additionally, it became clear that even though there are multiple opportunities for intervention in the various transmission pathways, the authority to intervene is fragmented and actions that would impact hunting are both complex and likely to have unintended consequences (e.g., negative impacts to economic sectors).

A prototype management flight simulator (Figure 3) has been constructed from the model that allows managers and stakeholders to simultaneously evaluate the consequences of various actions on CWD prevalence, as well as other factors of interest (deer density, sex ratios, mature male population segment, etc.).
In 2022, we have begun adding environmental, socio-economic, and political factors to the model and management flight simulator. While some aspects of socio-economic and political constraints may be jurisdiction-specific, our intent is to generalize how these dynamic and influential factors impede managers’ ability to affect CWD and improve overall deer and ecosystem health.

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For additional information on the USGS National Wildlife Health Center see the following links:
Main website: www.usgs.gov/nwhc
Disease Investigation Services: www.usgs.gov/nwhc/services
Report Mortality Events and Submit Specimens: www.usgs.gov/NWHC/submit
To view, search, and download historic and ongoing wildlife morbidity and mortality event records nationwide visit the Wildlife Health Information Sharing Partnership event reporting system (WHISPers) online database: http://whispers.usgs.gov/