



SEPTEMBER 2022

# NEWSLETTER

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## Madison 2022 welcomed, inspired and challenged

Henry Adams

The Wildlife Disease Association has been a scientific home for me since 2016 when I attended my first conference in Ithaca, NY. Though intimidated by the massive ski lodge filled to the brim with expertise, at that conference I was lucky enough to be shown how warm, welcoming and supportive our wildlife health community can be. For a young queer scientist at the beginning of their career and dreaming big about the future, this meant the world. I felt galvanized and I felt inspired.

Fast forward six years to 2022. We are all still learning how to navigate a global pandemic and it has been three years since I have been able to be with my WDA community. The drive from Chicago to Madison was filled with anticipation and joy. And on the beautiful shores of Lake Mendota, at the 2022 conference's opening mixer, I was able to greet colleagues, mentors and friends old and new with smiles, waves and embraces.

In those beautiful July golden hours, there was a sense of homecoming.



The WDA's 70th conference in Madison was a time for Henry Adams to reconnect with colleagues and friends.

From my perspective, the Wildlife Disease Association's 2022 conference was marvelous and dynamic; it of course highlighted the amazing work of our members, but it also provided our community the much-needed opportunity to reconnect in a relaxed environment, and highlighted the deep desire for systemic change within the field of wildlife health.

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THERE WAS A SENSE  
OF HOMECOMING.



The talent exemplified by WDA's membership at our conferences has always been staggering, and 2022 certainly did not disappoint. From white nose syndrome immunology and vaccine administration to the role of ticks in the transmission of chronic wasting disease, the research presented at this year's conference by students and seasoned professionals alike had me seeing stars.

It was inspiring and empowering to see the brilliant work being done by our membership, not only because it is done to better understand and benefit the world around us, but also because it is done by so many kind and generous people. I'm perpetually grateful to the wildlife health mentors who move through their professional lives with love and abundance, who hold space for their accomplishments and the accomplishments of others, and who constantly seek to build genuine community so that we may all be greater than the sum of our parts.

In previous years, I would come home from WDA conferences elated, yet extremely exhausted.



This year, however, I came home feeling rested and energized.

On a societal level, there have been so many things we have had to learn and relearn over the past few years, the enormous importance of rest being one of those things. I feel that this conference exemplified the need and value of rest. The inclusion of panels and other diverse programming was a great way to break up our conference days and keep the mind fresh. The ample scheduling of relaxed social events provided much-needed time for us all to reconnect with each other. Lastly the intentional incorporation of free time was so deeply appreciated, especially being in a city as enjoyable as Madison.



Panel events were part of the diverse programming while visits to the International Crane Foundation, early morning activities like birding and social events like Madison's Concert on the Square gave conference-goers breathing space.



These factors combined helped me feel ever the more energized and present for the entirety of the conference.

The One Health concept showcases the intrinsic ties between wildlife health, ecosystem health, human health, and the enormous variety of socioeconomic and environmental inequities that plague human societies. In order to create lasting positive change for coexisting wildlife and human communities, these inequities need to be combated and rectified at every opportunity.

It's no secret that wildlife conservation

and health have historically been dominated by white, heteronormative, cisgendered men of financial means, who perpetuate barriers that keep themselves and people like them in power. It was enormously encouraging to hear at this year's conference the intense desire to combat the inequities within our organization and deconstruct oppressive barriers, including the perpetuation of free and underpaid labor, requisite of multiple expensive degrees, cost of conference participation, and a large lack of accessible safe spaces, specifically for BIPOC, queer, neurodivergent and disabled professionals.

I'm excited to see how we, as the Wildlife Disease Association, will put our words into action to create an equitable and universally welcoming environment in which all members of our global community have safe access to opportunities and feel celebrated for their perspectives and talents.

This is the only way to create a better WDA and a healthier world for people and wildlife. I look forward to working lovingly with you all to actualize that future.

Thank you all for a fantastic 2022 conference. To many more and much love,

**Henry Adams, Urban Wildlife Institute,  
Lincoln Park Zoo**



## What stays on tour ... the WDA conference gallery

### Award winners



Left to right: Dr Michael Miller was the Ed Addison Distinguished Service Awardee, The Tom and Beth Memorial Award was presented to Dr Tonie Rocke and The Emeritus Award winner was Dr Joshua Dein.

# The students and the auction



# Out and about



# The banquet



# Official business



# Accolades celebrate excellence of student scientists

Our student members provide a tantalising and inspiring glimpse of the future, of the potential, the unbridled, almost boundless, possibilities that young researchers have to shape wildlife health for decades to come.

The WDA Student Awards are instruments of hope, of change, in the hands of an empowered, energised and engaged generation. They recognise outstanding student research and scholarship in the wildlife health field, encourage student participation in the WDA and attendance at our annual international conference.

Remember, they are open to every student member of the WDA, and offer an opportunity to test the waters among friends and mentors, tap into countless years of expertise and wisdom, connect with others who are sharing your journey and, above all, showcase your passion.

Find more about all the awards available [here](#).

## Student Research Recognition Award



### Kayla Buhler

Kayla is a PhD Candidate at the University of Saskatchewan and her project Emerging California serogroup viruses in northern Canadian wildlife, examined exposure of northern wildlife from multiple ecosystems to CSV.

I completed my undergraduate studies (biological sciences) at the University of Northern British Columbia and Simon Fraser University (Canada). I became interested in emerging diseases during a parasitology course, and went on to complete a MSc in infectious diseases at the University of London (UK). I am currently finishing my PhD in veterinary microbiology at the University of Saskatchewan (Western College of Veterinary Medicine, Canada).

My research focuses on zoonotic vector-borne pathogens. Our knowledge of these pathogens in northern Canada is extremely limited, and the data that we have in the literature dates back to the 1970s and '80s. Canada's Arctic is experiencing three times the rate of warming when compared to the global average, which sets the stage for rapid emergence of diseases that are influenced by temperature.

Warming temperatures change insect activity, breeding and the rate at which they can transmit diseases. My research reveals the prevalence of these pathogens in wildlife across the Canadian Arctic and identifies how they are transmitted in their environment, two key factors that can be used in the future to monitor how climate change may influence disease transmission in the Arctic.

I am excited to start looking at how changes in biodiversity impact disease transmission. Migration during the summer months significantly increases biodiversity in the Arctic and may have some interesting seasonal effects on the transmission of endemic pathogens.

I have no doubt that I will continue working in the field of wildlife health. Ideally, I hope to continue working with northern wildlife as a researcher in an academic or government position.

## Graduate Student Scholarship Awards



### Kayla Buck Garrett

I am currently a PhD student at the University of Georgia with the Southeastern Cooperative Wildlife Disease Study. I have been a part of SCWDS for around ten years as I was involved in my undergraduate and masters there as well. I started in the field of wildlife disease my freshman year at UGA when I took a wildlife parasites course with Dr Michael Yabsley, which sparked an interest in parasitology.

In my time at SCWDS I have worked on a variety of projects including haemogregarines in turtles, *Baylisascaris procyonis* in rodents, *Babesia* species in meso-mammals, and various projects included in the SCWDS diagnostic work.

I worked at SCWDS as a technician and then Dr Yabsley's lab coordinator and through that have had the opportunity to see a number of different wildlife pathogens. I decided to pursue a PhD in *Echinococcus* species with Dr Chris Cleveland to get more experience with a zoonotic parasite. Through this project we are conducting surveillance for *Echinococcus* species in the eastern United States, which is an area that *Echinococcus* species have not normally been present. We then plan to conduct a population genetics analysis of *Echinococcus* species in North America.

A parasite lover at heart, I am intrigued by pathogens that play a role in wildlife, human and livestock/domestic animals; therefore, *Echinococcus* species allow me the perfect avenue to work with a parasite that affects all these different groups. After my PhD I hope to continue research on wildlife parasites and zoonotic diseases.



## Sophie Zhu

I completed my BS in Animal Science at Cornell University in 2016 and I am currently a fifth-year PhD candidate at the University of California, Davis.

Although I was initially interested in veterinary medicine, my path changed when I started work in an epidemiology lab during undergrad. I have always been interested in wildlife, and I had the good fortune of interning with the Cornell Wildlife Health Lab working on mortality of white-tailed deer in New York State. Additionally, I also did a short stint at the Smithsonian Conservation Biology Institute Global Health Program where I worked on emerging zoonotic diseases in dromedary camels.

My current research focuses on the environmentally-resistant stage (oocysts) of the protozoan parasite *Toxoplasma gondii*. In my PhD I investigated the shedding patterns of feral cats in Monterey Bay. This area is home to the Southern sea otter, a wildlife species that has experienced high numbers of toxoplasmosis fatalities. We detected *T. gondii* DNA in feral cat feces, including evidence of strains previously associated with mortality in sea otters. Another part of my dissertation looks at climatic and anthropogenic factors as potential predictors of *T. Gondii* oocyst shedding in free-ranging domestic cats and wild felids.

I am most interested in emerging pathogens, specifically how climate change will alter pathogen transmission and spillover in the future. As a One Health researcher I'd like to incorporate more human and environmental themes into my research repertoire, especially DEI, but wildlife health will always be my first passion.

## Terry Amundson Student Presentation Award



**Best student presentation - Janine Mistrick**, University of Minnesota - "Effect of Food Addition and Helminth Removal on Spatial Overlap Networks in Wild Bank Voles".

I received my BS in Ecology and French & Francophone Studies from Penn State University in 2016. During my undergrad, I had conducted fieldwork in the western Greenland tundra for my honors thesis in a climate change ecology lab, but in my final year of undergrad I discovered disease ecology through a research course in Tanzania and immediately fell in love.

After graduation, I worked in a disease ecology lab at Penn State studying wild rodents and ticks before starting my PhD at the University of Minnesota in 2018.

My graduate research has a few angles, but is broadly focused on understanding how environmental heterogeneity affects the prevalence and transmission of pathogens in wild rodents. For my main project, I'm part of a research team conducting a large-scale field experiment in southern Finland where we are manipulating food availability and helminth infection in wild bank voles to investigate the effects on transmission of an endemic hantavirus. I am using spatial network analyses to examine how the manipulations affect vole space use and spatial overlap and how this could impact transmission.

As a side angle of my dissertation I'm sequencing the bacterial community of feces from wild *Peromyscus* mice to examine the presence and diversity of foodborne and pathogenic bacteria across a rural-urban habitat gradient in Minnesota.

I'm excited about wildlife disease ecology and I love conducting field research because it enables me to really engage with my study system and experience the interactions I'm studying first-hand. I plan to continue pursuing my passion as a post-doc after my PhD, hopefully studying the interactions between the environment, wildlife and their pathogens and traveling to new big, beautiful places.



**Honourable Mention - Olivia Choi** University of Maine - "Avian haemosporidian infection and cloacal bacterial diversity in Maine waterfowl".

I am a PhD candidate in the Ecology & Environmental Science program at the University of Maine in my final year of study. I became interested in wildlife disease research after taking a parasitology course during my undergraduate degree in biology at Northeastern Illinois University.

My interest in parasitology turned into a masters degree through the same university where I examined intestinal helminth parasite communities between spring and fall migration of three migratory songbird species. This research helped me develop a love for birds and introduced me to disease and molecular ecology, my fields of interest.

My current research focuses on migratory birds, exploring how movement, such as migration, impacts pathogen transmission and host microbiome composition. There are large gaps in our understanding of the microbiome communities of wildlife and even less is known about the interaction of pathogens, movement and the microbiome.

In my research, I use molecular techniques to investigate how these three factors

interact in host-pathogen community dynamics. With next-generation sequencing becoming increasingly affordable and new technologies improving the way we study pathogens, I am excited to see where this research takes me and the field.

I will complete my PhD in 2023 and afterwards, I plan to continue my study of wildlife disease ecology, specifically in zoonotic diseases. I hope to continue adding to my repertoire of molecular techniques and apply what I've learned to new study systems.

## WDA Poster Award



**Best student poster - Alaina Woods, University of Maine - “Co-infection of anaplasma and winter tick decreases moose calf survival in Maine”.**

I completed my undergraduate degree in the Fisheries and Wildlife Sciences program at Paul Smith's College. After this, I completed my master's degree in Marine Biology from Texas A&M University at Galveston, with a thesis focused on environmental microbial ecology. I am currently a second year PhD candidate at the University of Maine in the Ecology & Environmental Sciences program and the One Health and Environment National Science Foundation Research Traineeship co-advised by Drs Pauline Kamath and Sandra De Urioste-Stone.

My current research is focused on parasitic infections in the Maine moose populations. Moose populations in Maine are hypothesized to be in decline due to severe winter tick parasitism.

However, wildlife population declines are often caused by more than one factor.

My research leverages a combination of samples collected from hunter-harvested and live captured moose to address multiple objectives regarding the relationship between moose and their parasites. We are aiming to: (1) determine the impacts of co-infecting parasites on moose fitness; (2) evaluate risk factors associated with parasitic infection; and (3) explore if there is a genomic component to parasite tolerance in moose. Furthermore, using social science methodologies we plan to determine how information regarding the moose-winter tick system is communicated in news media.

I have enjoyed working with the moose-parasite system in Maine and would like to continue participating in research that evaluates parasitic impacts on large cervids in the future.



**Honourable mention - Jayne Ellis**, Michigan State University-  
“Novel avibacterium species associated with sinusitis and conjunctivitis in merriam’s wild turkey in Colorado”.

I am a current dual veterinary pathology and toxicology resident at Michigan State University. I completed my undergraduate studies in Wildlife Conservation Biology at Colorado State University (CSU), and my vet school at CSU

in conjunction with the University of Alaska Fairbanks.

Throughout vet school, and now within my residency position, research has acted as my anchor, keeping me connected to my purpose/passion for promoting wildlife health. The research I presented at WDA was on a project I worked on with Colorado Parks and Wildlife during veterinary school, exploring a novel species of *Avibacterium* associated with sinusitis and conjunctivitis in wild turkeys – find our open access article in the latest volume of the Journal of Wildlife Diseases

Currently I am working on three projects including a multi-agency collaborative publication on highly pathogenic avian influenza in mammals across the United States, an exploration of a mortality event in white ibis exposed to theatrical fog at a Halloween event, and surveillance for avian bornavirus in free-ranging raptors.

I am looking forward to staying connected to this field through my research while completing my residency training.

Eventually, I hope to work in a position where I collaborate with biologists, clinical veterinarians and policy makers, to incorporate what I’ve learned through my training and research to positively impact wildlife health and conservation.

## About these awards

**GRADUATE STUDENT RESEARCH RECOGNITION AWARD (SRRA)** - presented to the student determined to have the best research project in the field of wildlife health or disease. The winner is the keynote speaker during the student presentation session at the annual international WDA conference.

**WDA GRADUATE STUDENT SCHOLARSHIP AWARD (SSA)** - acknowledges outstanding academic and research accomplishment, productivity and future potential in pursuit of new knowledge in wildlife health or disease. Two scholarships are awarded annually.

**WDA TERRY AMUNDSON PRESENTATION AWARD** - acknowledges outstanding oral presentation of research findings at the annual international WDA conference.

**WDA STUDENT POSTER AWARD** - goes to the best student poster detailing a wildlife disease or wildlife health research project presented at the annual international WDA conference.

# What's up Down Under? WDA-Australasia news

Dr. Laura Grogan, Chair, Wildlife Disease Association-Australasia



The Australasian section (WDA-A) has undergone some big changes in the past year with a new chair, Laura Grogan, and a new treasurer in Nick Doidge, a leadership transition substantially assisted by the reappointment of Chloe Steventon as secretary, and an experienced, supportive section executive. In addition, a new communications officer role has been created to oversee the website and our social media presence and content with Christina Karagiorgis, outgoing Student Chapter president, appointed. New Western Australia representative Helena Stokes, and new Student Chapter president and WDA-A Student Chapter representative Jess Whinfield too were welcomed.

Recognising the risk of cultural drift as members retire we formed the WDA-A History Subcommittee in 2017 which, in the past year, has initiated: (1) A memorabilia book '50 years of WDA Australasia'; (2) An oral history project (interviews with long-time members); (3) Digitisation of official documents, photos and memories; and (4) Blending our material (to create a living digital record to be hosted on our website).

The section continues to be an advocate

for wildlife health in Australasia, most notably in Australia, despite the pandemic. We have maintained high-level involvement with Wildlife Health Australia and note a major new initiative, announced by the Australian Minister for Agriculture on January 3, 2022, aims to bolster Australia's wildlife health and disease surveillance and management capabilities. It includes a \$8.4 million investment by the Australian government over the next four years towards preventing, detecting and mitigating the impacts of emerging animal diseases.

WDA-A members have also been closely involved in the ongoing Australian Wildlife Health Institute Initiative dedicated to solving priority wildlife health issues which has thus far led to several workshops, the development of a comprehensive literature review, and a 10-year Roadmap for Research, Development and Extension strategies for wildlife health in Australia (with input and representation from WDA-A members).

With the recent Australian federal election and major shifts in the party representation, we anticipate greater traction on wildlife health and conservation issues. For example, there is currently a call for an Australian equivalent to a Centre for Disease Control.



The lovely Kinglake where the next WDA-A conference will be held in late November.

Given the current climate crisis, at the 2020 AGM section members strongly supported the development of a formal WDA-Australasia position statement on climate change, which led to the formation of a WDA-Australasia Climate Change Subcommittee. A letter stating our section's support for action on climate change, drafted by Sarah Alexander, Jemima Amery-Gale, Chloe Steventon and Helena Stokes, was sent to the (then) Australian Prime Minister and federal Minister for the Environment prior to the 2021 United Nations Climate Change Conference (COP26). A WDA-Australasia Climate Change Statement has also been drafted and published on our website: <https://www.wda-a.org/climate-statement>.

In addition, the WDA-A, led by treasurer Nicholas Doidge, drafted a letter to Westpac (where our core operating funds are held) calling for an update to their policies and lending practices to better reflect and address the climate

crisis and rapidly transition away from the fossil fuel industry. This letter informs Westpac that WDA-A cannot in good conscience allow our money to remain in the hands of a financial institution prepared to fund companies and projects expanding the scale of the fossil fuel industry, and that we will otherwise move our funds to a different bank that better aligns with our organisation's values.

With the recent updates to the WDA parent body website, a separate WDA-A website was needed and a new subcommittee, led by Laura Grogan, undertook consultation on the appearance of a new website and a domain name, as well as drafting and publishing the new website at <https://www.wda-a.org/> using webhost Wix for ease of maintenance.

WDA-A continues to support students through improved organisation, funding and functioning of the of the Australasian Student Chapter.

The WDA-A Student Chapter currently has over 300 members (many of whom are WDA members) from all the vet schools and many other faculties across the region. Thanks to generous donations from members, particularly during the annual conference auction, this chapter is well-funded and can support activities that make a real difference to student development and engagement in wildlife health.

After welcoming a new president (Jess Whinfield) and committee in the past year, they are planning affiliate student events at the upcoming WDA-A 2022 conference.

Due to the COVID-19 pandemic, WDA-A didn't hold a section-wide conference in 2021, but instead arranged to financially support regional mini-conferences and associated social events to enable WDA-A members to get together (while the state borders were still closed).

Several of these events were held with great success and participation in 2021, including in Tasmania, Queensland and South Australia.

However, with Australia's state borders open and the resumption of international travel, the WDA-A conference returns this year to a more traditional section-wide format at Kinglake Forest Adventure Camp, Kinglake, Victoria, from November 27 to December 2, 2022.

The conference will be a typically-relaxed, family affair aimed at fostering networking, with a rich social program including our annual student fundraising auction, field trips, student social event, local wildlife viewing and a few surprises. Planning for 2023 is also already underway, with the intention to hold it in Darwin in September 2023.

WDA-A always seeks to recognise the excellence of our members, and at the 2021 WDA-A AGM A/Pro Dr Andrew Peters was presented with the Barry L. Munday Recognition Award for "significant contributions to wildlife health made by a member of the Australasian Section in the past five years". Dr Jenny McLelland received the Dave Spratt Award, to "honour a long-standing WDA Australasia member who has made an outstanding contribution to our Section".

In 2021 WDA-A also granted \$2000 Research Awards to five member applicants to support their research, including Josephine Humphries, Kerri Morgan & Emily Short, Christina Næsborg-Nielsen, Luisa Helena Monteiro de Miranda & Andrew McPherson and Melanie Wells.

In 2022, WDA-A has similarly provided five \$2000 Research Awards to member applicants Adelaide Martin, Richelle Butcher, Diane Barton, Viviana Gonzalez-Astudillo and Tia Chen.

Congratulations to all award recipients.

# All set for another great Antipodean adventure



Tasmania played host to WDA-A members in 2019.

Still in Australia and the WDA-A is preparing for its annual conference, the first face-to-face meeting since 2019 when the crew came together in the wilds of Tasmania

Registration is now open for the conference, planned for November 27 to December 2, 2022 at <https://wdaa2022.exordo.com/login>

Early pricing ends on October 31, two weeks after the abstract submission on October 16.

As always the conference promises an exciting scientific program, allowing delegates to reconnect with friends and colleagues and explore the beautiful forests of Kinglake, Victoria that have burst back to life since the devastating Black Saturday bushfires of 2009.

Keynote speakers and information about submitting abstracts will be released closer to the dates, with a preliminary agenda for the conference to be announced.

**NB: Abstract submissions close October 16, 2022.**

Kinglake Forest Adventure Camp is an oasis less than an hour's drive (60km) north-east of Melbourne airport. The family-friendly venue, surrounded by native bushland, has a variety of activities for everyone including bushwalking, mountain biking, adventure courses and lots of wildlife and bird spotting.



How does an Emergency Animal Disease Response work in Australia? A 2019 conference mini-workshop by Kevin Cooper.

The conference will be fully catered, but there is also a cafe on site for those needing barista coffee to start the day. The venue is also close to Healesville Sanctuary, Yarra Valley cheese and wine regions and the stunning Dandenong Ranges.



A friendly Tasmanian local on Maria Island,

Prices are inclusive of accommodation and catering onsite. Students do not have to be WDA-A members (although this is welcome!), they but must be able to show a student card on arrival to the conference if requested to confirm their status.

Field trips may incur an additional cost to be confirmed. Activities are an optional extra and require a minimum number of people to go ahead - you will be reimbursed if they do not occur.

### Early pricing ends October 31



A trip to Maria Island was just one of the field trips on offer at the Tasmanian 2019 WDA-A conference.

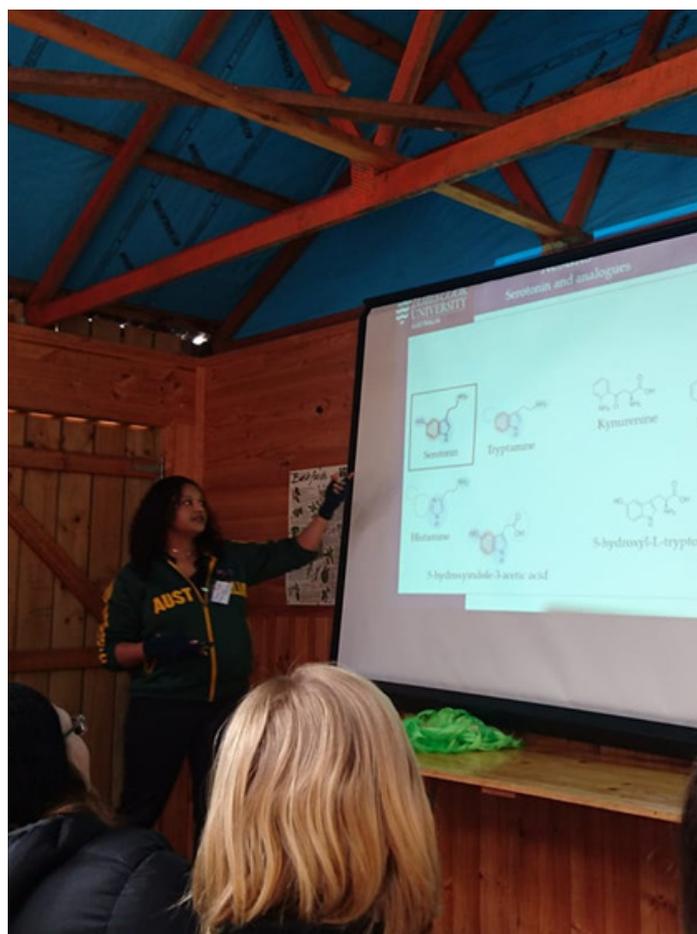
## CONFERENCE PRICES

### MEMBERS

- Early full registration \$625
- Regular full registration \$750

### STUDENTS

- Early full registration \$425
- Regular full registration \$500
- One-day registration \$200
- Two-day registration \$400
- Three-day registration \$600



Serotonin appears to have immunosuppressive effects in frogs, but also suppresses chytrid fungal growth ... it's complicated says Siara Claytor.

### NON-MEMBERS

- Early Full Registration \$825
- Regular Full Registration \$950
- Students Early Full Registration \$525
- Students Regular Full Registration \$600
- One-Day \$250
- Two-Day \$475
- Three-Day \$700

### GUESTS

\$515 Adults, \$445 Children

Field trips and workshops TBA

Online options are also being explored but are yet to be confirmed.



## News from the EWDA

### Banning lead - From wildlife conservation to Olympic rule change

Anne-Fleur Brand, Newsletter Editor, EWDA board

On May 4, lead-ban advocates from all over Europe met in Spain to discuss and join forces on (i) the implementation of the restriction on the use of lead ammunition in EEA wetlands and (ii) the advocacy work on a full ban on the use of lead ammunition in all hunting/sport shooting and the use of lead in fishing weights.

The EWDA previously submitted both evidence and a response to a consultation from the European Chemicals Agency (ECHA) to support:

- Restriction of lead gunshot in wetlands in all European Union Member States under REACH (the EU's framework regulation for chemicals).
- Restriction on the placing on the market and use of lead in projectiles (for firearms and air guns), and in fishing sinkers and lures for outdoor activities (excluding military use), also under REACH.

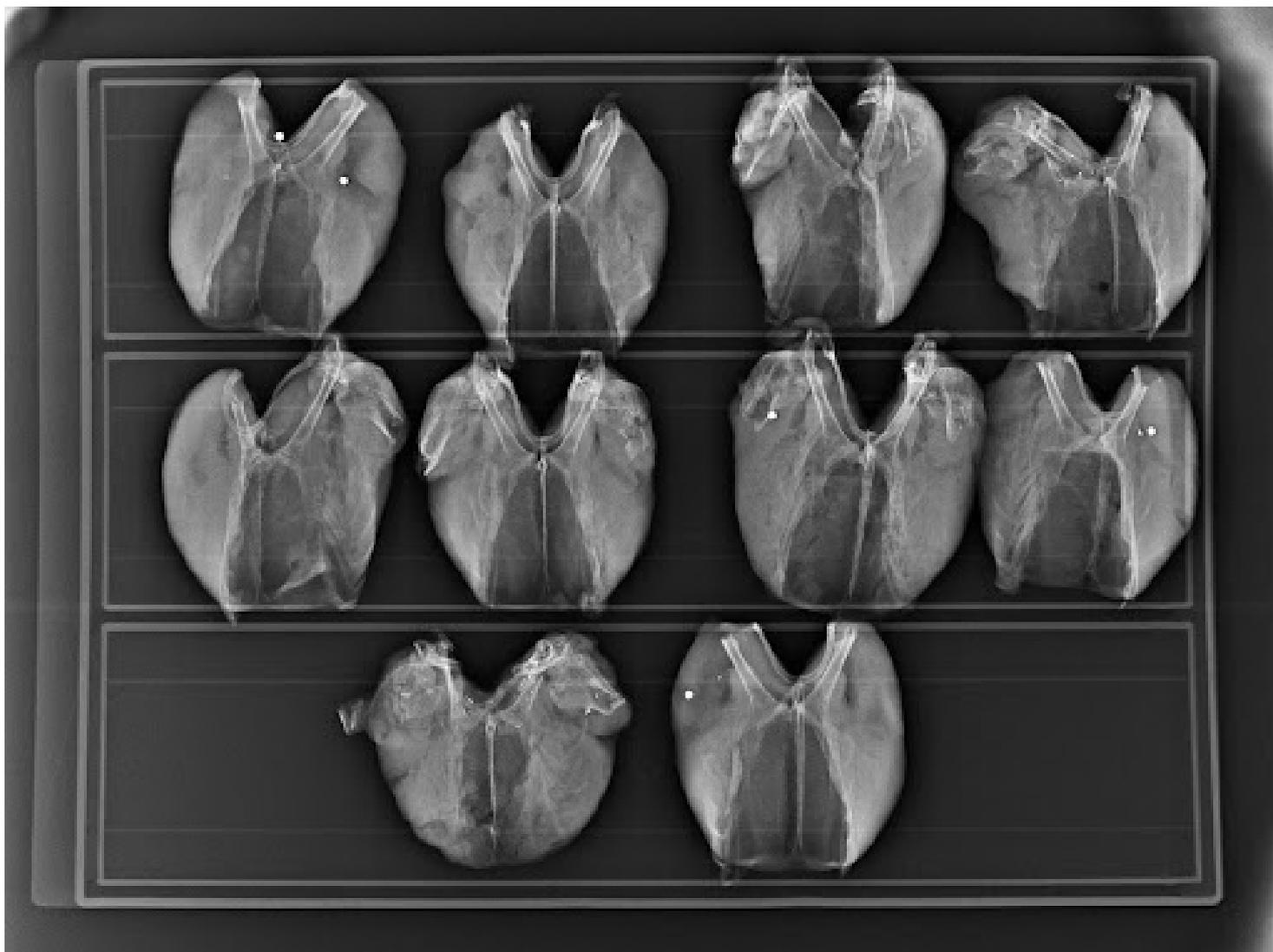
The “wetland lead ban” was adopted in January 2021, and from February 15, 2023, legislation must be in place



Embedded shot in a wounded pink-footed goose is an animal welfare issue but does not induce lead poisoning in the bird as ingested lead shot does.

in all 27 EU Member States. The extent to which the ban has been implemented varies between countries, ranging from a lead ban in specific wetlands or for waterbird hunting to a national ban on the use in all wetlands.

The restriction also allows Member States to ban lead gunshot in all areas if 20 per cent or more of the country's territory is wetlands. It seems that Ireland may be trying to recalculate the proportion of land classified as wetlands to avoid this.



Lead shot pellets and lead fragments in hunted avian breast muscle is an unnecessary source of lead ingestion for humans, and for raptors scavenging on wounded or discarded game bird carcasses. Radiograph: Erik Ågren, SVA

On the other hand, Denmark and The Netherlands have had a total ban on lead gunshot use in all types of habitats for over 20 years.

For the full lead ban, the science is sound, but more work needs to be done to convince policymakers.

The wetland lead ban is/will be mostly implemented in sanitary regulations, not hunting laws, meaning big fines. Opponents of the ban argue that a lead ban in wetlands will be difficult to

enforce - who is willing to go out and check whether hunters are using the correct ammunition? This argument supports a full lead ban!

Other commonly used arguments against a lead ban:

- “There is an increased risk of exploding guns/choke bulging/ricocheting shots when using non-toxic ammunition”.
- “Lead alternatives are more expensive, and a limited variety is on offer”.

Hunter, wildlife conservationist and lead-ban advocate Niels Kanstrup (Aarhus University, Denmark) investigated these claims and found no increase in accidents with non-toxic ammunition in Denmark. Furthermore, he found that tungsten and copper are more expensive, but steel is as expensive as lead.<sup>1</sup>

“If the demand for non-toxic ammunition is there, availability and variety of non-lead alternatives will follow (law of supply and demand).”

Read more from hunters who are also scientists:

Alternatives to [Lead Ammunition](#) - [Sorting Fact From Fiction](#)



## Olympic Regulations

Another argument against a full lead ban is that the Olympic regulations only accept lead ammunition in official competitions, meaning that “EU athletes will be disadvantaged”. Recruiting sport shooting athletes who are willing to back a change in Olympic regulations is therefore on the list of things to be done. If not for wildlife conservation and public health (by reducing lead intake by consumers from game meat), it would reduce their own exposure to lead dust which is discharged each time they fire a gun.

“California hosting the 2028 Olympics offers a spark of hope: they have a full lead ban to conserve the Californian condor.”

Another important task ahead is to carefully review ECHA’s and its committees’ evaluation of the socio-economic impacts of a full lead ban, which will be published this Summer. Interested parties will have no more than 60 days to provide feedback on the draft.

The opposition’s main argument will be that it is too costly to implement a full lead ban. Unlike the evidence that those in favour of a ban provided previously in the form of peer-reviewed scientific papers to support both bans, the industry provides data (eg production volumes) which are impossible to verify. It will therefore be essential to closely assess whether the

required data is both (i) correct eg where do the provided numbers come from? and (ii) present, as currently the costs to poisoned wildlife and losses of birds of conservation importance are not included.

Besides the technical side of this proposal, it is important to communicate that the ban is not an anti-hunting ploy. The image of hunters in a modern society is simply not compatible with lead ammunition and meat cannot be marketed as sustainable and healthy if it may contain a potent neurotoxicant.

Another observation from Denmark is that during the time since a complete ban on the use of lead gunshot, mean concentrations of lead in meat from small game animals substantially decreased. In contrast, elsewhere in Europe, meat lead concentrations increased over time<sup>2</sup>.

If adopted, a full lead ban would reduce lead emissions to the environment by approximately 1.7 million tonnes over 20 years, protecting wildlife and humans<sup>3</sup>.

Ending lead poisoning from ammunition and fishing weights in the EU would be a great benefit to European wildlife health and allow conservationist, veterinarians etc. to focus their efforts on other issues.

The EWDA will submit a response to the consultation, and I hope that individual members can do likewise.

## References

1. Kanstrup, N., 2019. Lessons learned from 33 years of lead shot regulation in Denmark. *Ambio*, 48(9), pp.999-1008.
2. Pain, D.J., Green, R.E., Taggart, M.A. et al, 2022. How contaminated with ammunition-derived lead is meat from European small game animals? Assessing and reducing risks to human health. *Ambio*. <https://doi.org/10.1007/s13280-022-01737-9>
3. European Chemicals Agency, 2021. Towards sustainable outdoor shooting and fishing – ECHA proposes restrictions on lead use. ECHA/NR/21/07.

## Wildlife disease highlights from Sweden

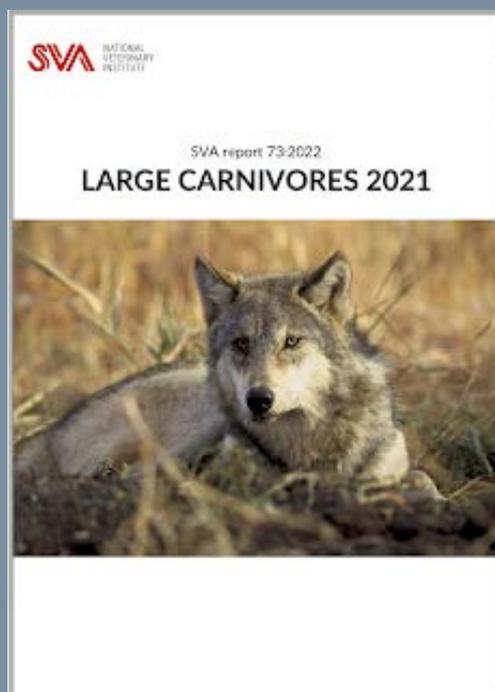
Erik Ågren, National Veterinary Institute (SVA), Uppsala, Sweden, EWDA Newsletter editor



Northern gannet die-off and continued avian influenza cases have been dominating wildlife diseases in Sweden, based on the surveillance work at SVA in Uppsala.

In Sweden, in addition to the high number of avian influenza cases among geese, swans and birds of prey seen through 2021, there have in the past months been reports of numerous dead and debilitated Northern gannets (*Morus bassanus*) along the Swedish west coast where examinations are ongoing, some cases positive for avian influenza. Dead gannets have also been reported along the coasts of neighbouring countries. In addition, there have been large influenza-driven mortalities in Sandwich tern (*Thalasseus sandvicensis*) colonies, a tern species of concern in Sweden, and conservation efforts have been ongoing for a long time. The die-off now threatens the 2021 breeding season in some colonies.

With inspiration from the Garden Wildlife Health set-up in the UK, in 2021 we initiated a similar programme at SVA in Sweden. So far, we have over 700 interested people who feed garden birds. They are encouraged to report sick and dead birds or urban wild mammals in the online reporting form [rapporteravilt.sva.se](http://rapporteravilt.sva.se). As reptiles and amphibians have seldom been reported or submitted to the general disease surveillance programme, we are now asking in our newsletters to the Garden Wildlife members, specifically for reports and attention on these animal groups to improve screening of some of their diseases, such as chytridiomycosis and ophidiomycosis.



The English report on Swedish wildlife disease surveillance 2021 is now available online, and for the first time, also the large carnivore report has also been published in English, <https://www.sva.se/en/animals/wildlife/>

# New communications officer ready for telling tails



For more than 70 years, the WDA has been at the forefront of wildlife health, its membership spanning every aspect of wildlife research and myriad species. And the council thought it was time everyone knew about it.

To do this a new position has been created, the Wildlife Disease Association Communications Officer, a role designed to raise the profile of the organisation with those who don't know us, strengthen connections with those who do and help us communicate better with each other and the membership as a whole.

The successful candidate, Lyndell Whyte, has been a member of the WDA since 2016. Initially joining to assist the Australasian section with its social media, as so often happens, she was lured into joining the WDA-A committee as the Tasmanian representative.

“Almost since the day I joined I have been telling anyone who would listen WDA needed to improve its communications. Andrew Peters, the former chair of WDA-A and then Scott Carver were both subjected to my, shall we say, persistence,” Lyndell remembers.

“Patience was never my strong suit.”

Lyndell comes to the role with 20 years experience in communications ranging from journalism to newspaper editing, advertising creative writing and even teaching media. She managed communications for two of Tasmania's premier animal welfare organisations, RSPCA Tasmania and Ten Lives (formerly Hobart Cat Centre), and spent time as a live export campaigner for RSPCA Australia.

Most recently she has worked as a contributed content journalist for Australian Community Media which operates 140 mastheads around the country.

The one constant in her life is her love of animals, and while a career in veterinary science was stymied by a seemingly-genetic aversion to maths and chemistry, she has pursued this passion in as many other ways as possible both professionally and personally.

In addition to her work in animal welfare, Lyndell has volunteered at a donkey sanctuary in NSW and completed a Cert III in vet nursing.

"My life, most of the time, revolves entirely around animals.

"I am also active in the wildlife rehabilitation sphere, from a policy and administrative perspective, as a founding member of the Tasmanian Wildlife Rehabilitation Council and part of a committee, established by the Tasmanian government, developing and implementing Tasmania's first sector-wide wildlife rehabilitation strategy. I also sit on the University of Tasmania Animal Ethics committee.

"Then there's my attempt to break the record for the longest-lasting zoology degree ... 17 years and counting. I have faith that one day, it will be mine."

When it comes to the WDA, Lyndell is excited by the endless storytelling possibilities.

"This is an incredibly rich organisation in terms of its heritage and more importantly its future.

"Our greatest resource is our membership which is on the cutting-edge of animal health, conservation, epidemiology and so much more, disciplines more critical now than any other time in history.

"It is so important that their work and the knowledge they have acquired is shared and promoted. It is vital the world hears their voices.

"There are so many creative opportunities for telling those stories.

"It is a very exciting time."

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## Thank you Sarah

As we pass on the quarterly baton, we do so with a huge WDA thank you to Sarah Sirica who has curated, coaxed and wrangled the quarterly for more than three years.

Sarah has kept members up to date with WDA events and section activities, significant research being undertaken and wildlife health across the globe, and we owe her an immense debt of gratitude.

We now happily release her back to the wild.

Images courtesy New Mexico Wildlife Center



# Quarterly Wildlife Mortality Report July 2022

Written and compiled by members of the U.S. Geological Survey's National Wildlife Health Center.

## ***Highly pathogenic avian influenza (HPAI) in colony nesting birds in Northern Lake Michigan***

The northern portions of Lake Michigan contain several small state, federal and privately owned islands that support high densities of colonial nesting water birds. These birds, including double-crested cormorants (*Phalacrocorax auritus*), American white pelicans (*Pelecanus erythrorhynchos*), herring gulls (*Larus argentatus*), ring-billed gulls (*L. delawarensis*) and Caspian terns (*Hydroprogne caspia*; a Wisconsin state-listed endangered species and Michigan state-listed threatened species), begin occupying nesting sites each April.

Reports of breeding bird mortality began on May 4, 2022, when Wisconsin Department of Natural Resources (WI DNR) biologists observed 15 dead herring gulls, including some found dead on nests, on Jack Island. Two gulls were submitted to the U.S. Geological Survey National Wildlife Health Center (NWHC) where highly pathogenic avian influenza virus (HPAIv) was preliminarily detected in both birds. The United States Department of Agriculture (USDA) National Veterinary Services Laboratory (NVSL) later characterized the virus as EA 2.3.4.4 HPAI H5N1.



HPAI-associated mortality event in Caspian terns on Gravel Island, Green Bay National Wildlife Refuge, June 2022. Photo credit: Sadie O'Dell, USFWS.

Between May 24 and June 15, 2022, additional mortality was observed on four breeding colony islands along the Door County, Wisconsin peninsula, a single island off the Garden Peninsula, Delta County, Michigan, and a single island off Leelanau County, Michigan. Approximately 130 dead gulls and pelicans were reported, but mortality was greater for Caspian terns and cormorants with more than 2500 of these birds observed sick or dead. All diagnostic submissions from these events tested positive for HPAIv at NWHC and NVSL.

A subsequent impact of this disease event is that Caspian terns appear to have suffered almost complete breeding failure at some of these locations. At Gravel Island, Green Bay National Wildlife Refuge, 391 active nests, along with 329 sick and dead terns, were counted in early June. During a follow up visit, 184 additional dead birds were found, and only one active nest remained. On the island off Leelanau County, MI, 201 active nests were counted in the last week of May. Three weeks later, only a single active nest was located, and 255 dead Caspian terns were counted. Caspian tern nests on these islands are spaced as closely as five-centimetre densities which likely exacerbate HPAI transmission. Additional information regarding these mortality events can be viewed in the Wildlife Health Information Sharing Partnership – event reporting system ([WHISPerS](#)) at events [202208](#), [202272](#), [202285](#), [202386](#) and [202404](#).

We thank the WI DNR, the U.S. Fish and Wildlife Service (USFWS) Horicon and Green Bay National Wildlife Refuges, the USDA – Animal and Plant Health Inspection Service - Wildlife Services – National Wildlife Disease Program, and associated university and independent partners, for reporting and submitting carcasses from this event for diagnostic evaluation.

For more information, please contact Robert Dusek, [rdusek@usgs.gov](mailto:rdusek@usgs.gov).

## ***SARS-CoV-2 and Mexican free-tailed bats***

As SARS-CoV-2, the virus that causes COVID-19 in humans, continues to circulate globally, questions persist about the potential for humans to transmit the virus to North American wildlife, its potential effects on native wildlife populations, and the resultant possibility and consequences of establishing a persistent wildlife reservoir.

North American bat species are of special interest, as evidence suggests that SARS-CoV-2 originated in Asian bats.

To address bat vulnerability, a series of experimental SARS-CoV-2 inoculation trials with North American bat species have now been completed at the U.S. Geological Survey National Wildlife Health Center (NWHC).

In the initial trial, big brown bats (*Eptesicus fuscus*) demonstrated resistance to infection ([Hall et al. 2021](#)). Results of the third trial, with little brown bats (*Myotis lucifugus*), are pending laboratory analyses. Results for the second trial, with Mexican free-tailed bats (MFTB; *Tadarida brasiliensis*), are complete and have been posted to the preprint server bioRxiv: <https://www.biorxiv.org/content/10.1101/2022.07.18.500430v1.full.pdf>.

In this study MFTB were collected, with the assistance of the Texas Parks and Wildlife Department, in Williamson County, TX, and transported to NWHC.

Ten bats were orally and nasally inoculated with SARS-CoV-2; nine of these bats were then co-housed in cages with a control bat to monitor for potential bat-to-bat transmission. Five of the ten bats became infected and tested positive for SARS-CoV-2, via qRT-PCR analysis of oral swabs, for between six- and 18-days post inoculation. These same five bats mounted an immune response, with SARS-CoV-2 antibodies detected by competitive ELISA (cELISA).

No signs consistent with clinical disease were observed in any of the inoculated bats. In addition, none of the co-housed control bats became infected during the 21-day trial. Experimental inoculations were performed under Biosafety Level-3 conditions at the NWHC. These results indicate that Mexican free-tailed bats can be infected with SARS-CoV-2, but the lack of clinical disease suggests infection is not lethal to individual bats.

Additional research is called for to determine whether infection and transmission have occurred in free-ranging populations.

For more information, contact Jeff Hall, [jshall@usgs.gov](mailto:jshall@usgs.gov).

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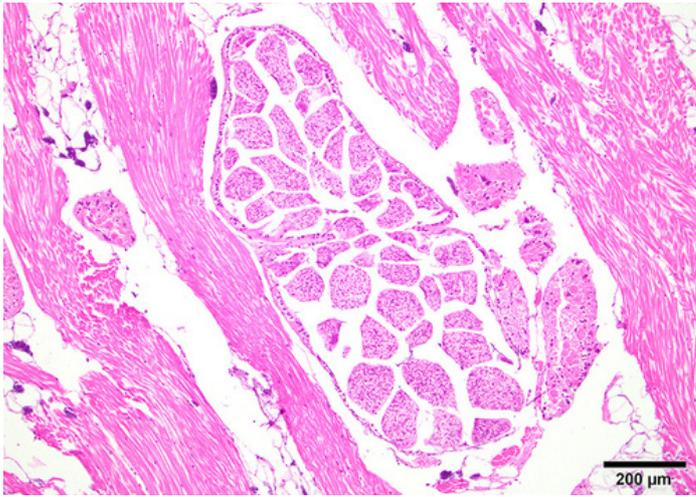
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## ***Gonadal microsporidiosis in pheasantshell mussels (Actinonaias pectorosa)***

North America is home to over 300 freshwater mussel species and nearly a third of those are endangered or threatened.

Population declines are commonly attributed to habitat alteration and destruction, but some recent mortality events have occurred in apparently healthy ecosystems.

A mass mortality event in the Clinch River (a river that flows southwest for



Photomicrograph of an ovarian acinus of a wild pheasantshell (*Actinonaias pectorosa*) from the Clinch River, USA showing oocytes infected with *Microsporidium clinchi* n. sp. Photo credit: Susan Knowles.

more than 300 miles through the Great Appalachian Valley in the U.S. states of Virginia and Tennessee) between 2016–2019 resulted in an 85 per cent loss of pheasantshell mussels (*Actinonaias pectorosa*). In response, a multi-agency team including the U.S. Geological Survey (USGS), the U.S. Fish and Wildlife Service, and the University of Wisconsin - Madison, investigated the mortality event.

Forty-one pheasantshell carcasses, collected from six locations in the Clinch River, were submitted to the USGS National Wildlife Health Center (NWHC) for histological examination. A novel microsporidia, *Microsporidium clinchi* n. sp., was observed in 65 per cent (17/26) of the female mussels.

Microsporidia were present in the cytoplasm of oocytes and were also observed in ovarian acini, in the lumen of ciliated gonadal ducts, within the water tube between gill filaments and

free within ovarian tissue. Transmission electron microscopy showed the proliferative and sporulation stages of the microsporidia.

Microsporidia are obligate, intracellular, spore-forming fungal-like parasites that infect invertebrates and vertebrates, including humans, in terrestrial, marine and freshwater ecosystems. Microsporidia in the genus *Steinhausia* are known to infect the oocytes of marine bivalves, but their morphology differs significantly from *Microsporidium clinchi* n. sp. No genetic sequences for *Steinhausia* spp. are available in [GenBank](#); molecular comparison was therefore not possible.

Microsporidia were also observed in healthy mussels in the upper Clinch River, beyond the extent of the pheasantshell mortality event. It is therefore unlikely that microsporidia were the primary cause of mortality. Microsporidia could, however, be contributing to decreased fecundity and recruitment.

Additional research will be required to better assess the relationship between mussels and microsporidia, whether *Microsporidium clinchi* n. sp. is transmitted vertically (which may be consequential for mussel restoration efforts), and surveying mussels in different geographic areas for the presence of microsporidia.

For more information, please contact Susan Knowles, [sknowles@usgs.gov](mailto:sknowles@usgs.gov).

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For additional information on the USGS National Wildlife Health Center see the following links:

- Main website: [www.usgs.gov/nwhc](http://www.usgs.gov/nwhc).
- Disease Investigation Services: [www.usgs.gov/nwhc/services](http://www.usgs.gov/nwhc/services).
- Report Mortality Events and Submit Specimens: [www.usgs.gov/NWHC/submit](http://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/>

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## Save the Date



**DO YOU HAVE A BRIGHT IDEA???**

The WDA Small Grants Program is now open for any member with a project that supports the WDA's mission and involves non-research activities.

Submissions close **October 15, 2022**

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