New York State Wildlife Health Program

Annual Report 2024-2025

Promoting the health and long-term sustainability of wildlife populations by advancing scientific tools and sharing knowledge to protect and improve the health of native wildlife populations

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Cover photo: Blanding's turtle

Fisher

ADMINISTRATIVE SUMMARY

The New York State Wildlife Health Program (WHP) is a partnership between the New York State Department of Environmental Conservation (DEC) and Cornell University's College of Veterinary Medicine Wildlife Health Lab (CWHL) that works to safeguard the long-term health and sustainability of wildlife in New York. Initiated in 2011, the program is responsible for monitoring wildlife disease and toxin impacts on species statewide, staff training and support, policy guidance, and research.

The New York State Wildlife Health Program is consistently recognized as a leader across the country in supporting healthy wildlife and contributing to the sustainability of wild species populations. This past year, we assisted several states by sharing our knowledge. Notably, we have been collaborating with MassWildlife as they build their statewide wildlife health program. We also were invited to University of California – Davis to participate in a workshop focused on bringing together different agencies and universities to build a One Health network across California. We continue to support multiple states through our work in the Surveillance Optimization Project for Chronic Wasting Disease (SOP4CWD) and appreciate the DEC's recognition and commitment that diseases do not stop at state borders.

A broader effort to coordinate across the country also has driven our work in data and data systems. Building off the successful CWD Data Warehouse, we have been working on a new case management system, CORVUS, that will be a data pipeline for DEC biologists and staff all the way from the field, through the lab, and back to analysis and mapping. Because of our involvement in wildlife health data, several team members have been asked to provide feedback on the National Wildlife Disease Database, in development through the U.S. Geological Survey – National Wildlife Health Center and the Pacific Northwest National Laboratory.

While we were fortunate not to encounter any new diseases in 2024, we saw a resurgence in highly pathogenic avian influenza cases (HPAI). The detection in dairy cattle in western states demonstrated a new strain of HPAI that has now become dominant in wildlife as well. The increased public attention to HPAI and larger number of mortality events in waterfowl necessitated the launch of the public reporting website for HPAI, which lessened the calls to DEC offices. Unfortunately, CWD was also detected in a captive red deer herd in Herkimer County. There was a coordinated effort between DEC, NYS Dept. of Agriculture & Markets, and U.S. Dept. of Agriculture – Wildlife Services to depopulate and sample the herd, collect additional wild white-tailed deer near the affected property, and deploy head drop-off bins in towns nearby. While there were more positive cases within the fence, no wild deer cases were detected.

On the personnel side, we are proud to report Kevin Hynes was promoted to Research Scientist III, and is head of the Wildlife Health Program section. Landon Miller and Therese McNamee were promoted to Research Scientist II. Dr. Rachel Abbott retired in June 2024 after five years with the CWHL to spend her time on Cape Cod hiking and sailing. Mariel Vandergrift joined the CWHL in January as a laboratory technician working on eDNA and RT-QuIC assays.
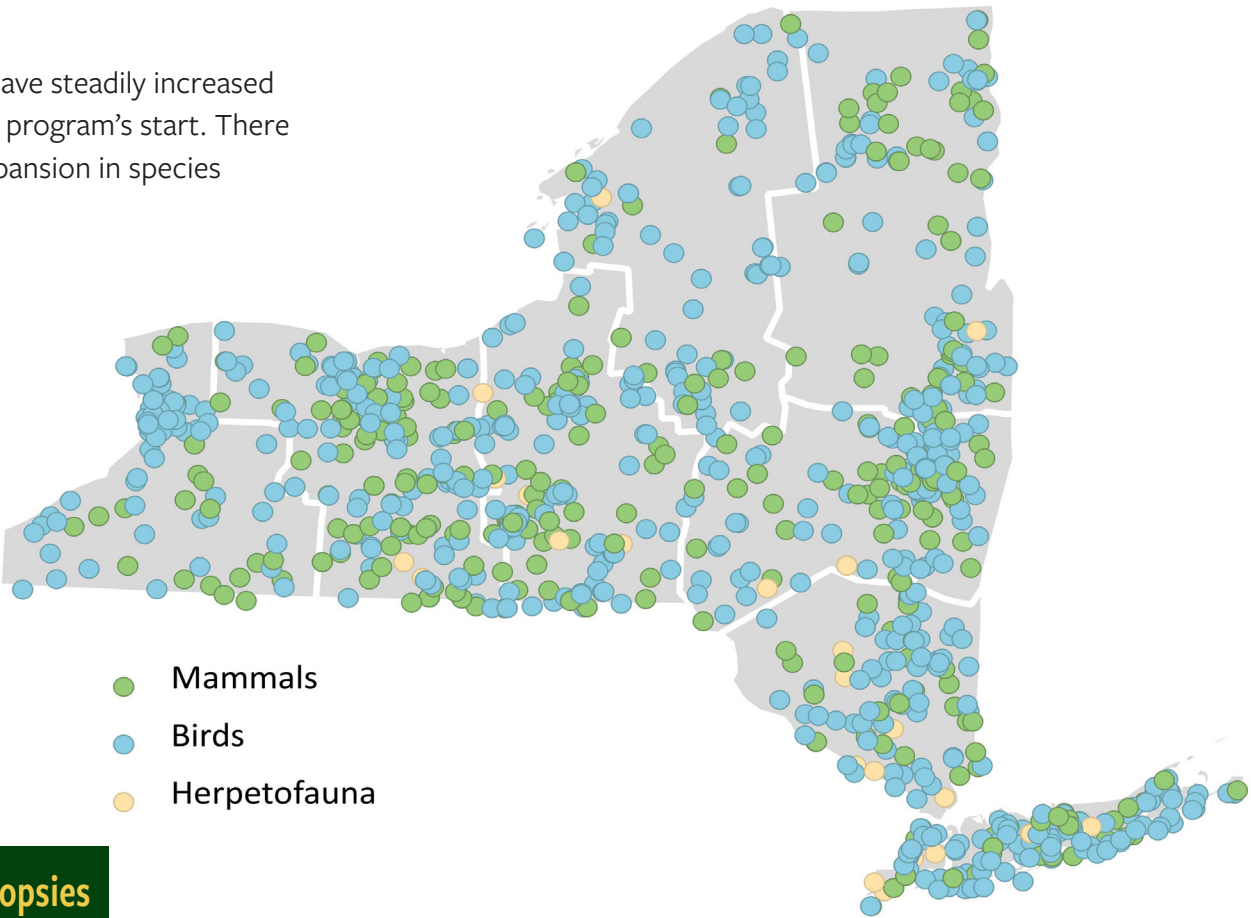
We are grateful to the DEC Bureau of Wildlife for their support in administering the program. Our One Health partners across New York and other states are wonderful colleagues and collaborators.

This report covers WHP activities for DEC fiscal year 2024-2025 and case submissions are summarized for the calendar year January 1- December 31, 2024.
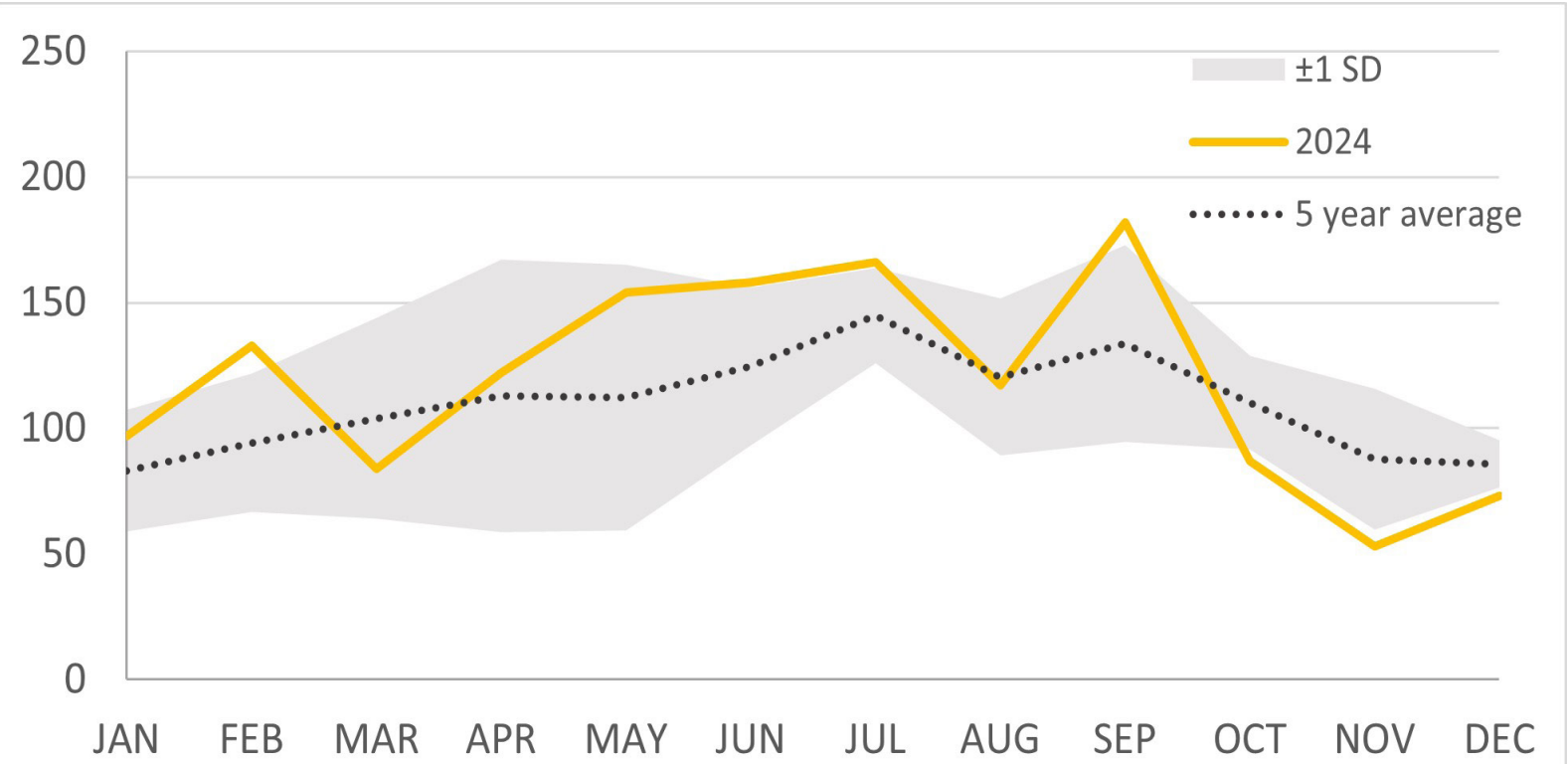
HEALTH & DISEASE SURVEILLANCE

CASE SUBMISSIONS BY REGION

Case submissions have steadily increased each year since the program's start. There is also a notable expansion in species diversity in cases.
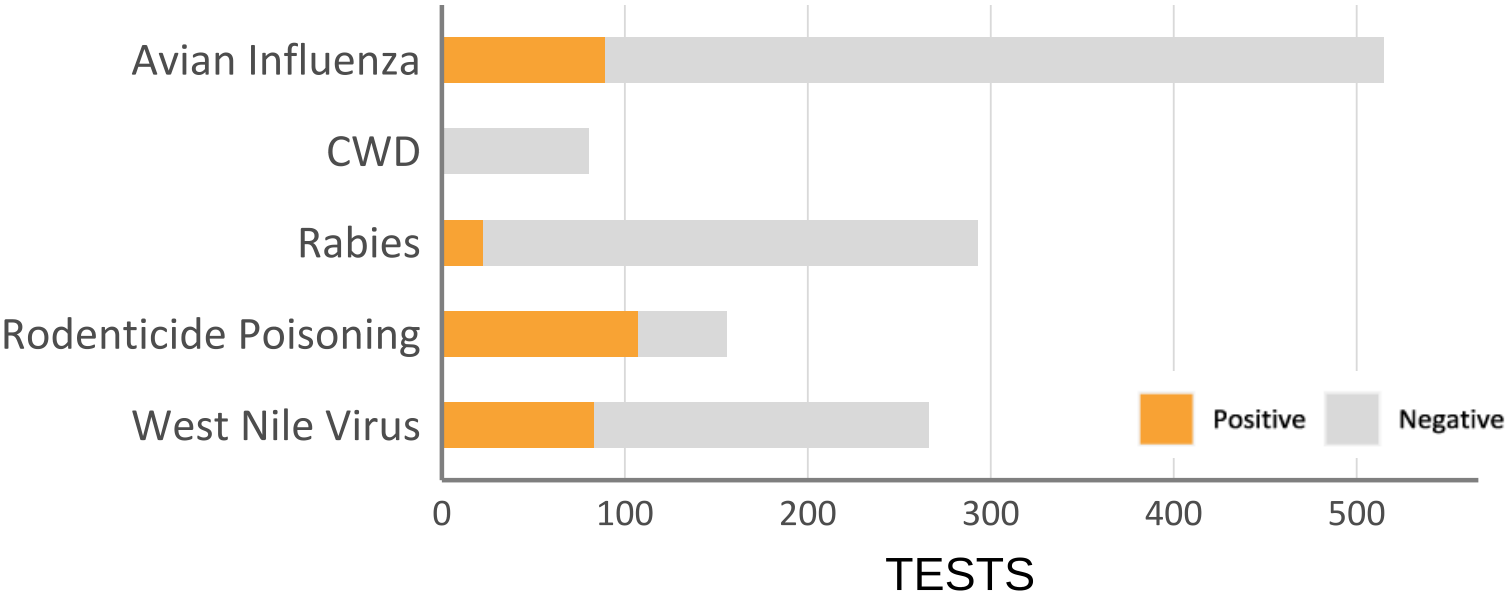
- Mammals
- Birds
- Herpetofauna

1257 necropsies performed

TARGETED DISEASE SURVEILLANCE

Avian Influenza
CWD
Rabies
Rodenticide Poisoning
West Nile Virus

Positive   Negative

TESTS

1426 animals examined
39 forensic examinations

931 birds   **103** species
435 mammals   **31** species
39 herpetofauna   **24** species

MONTHLY CASELOAD

±1 SD
2024
5 year average

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

DIAGNOSED CAUSE OF DEATH

CASES

BACTERIAL FUNGAL NUTRITION OTHER PARASITIC POISONING TRAUMA VIRAL UNDETERMINED PENDING

Mammals   Birds   Herpetofauna
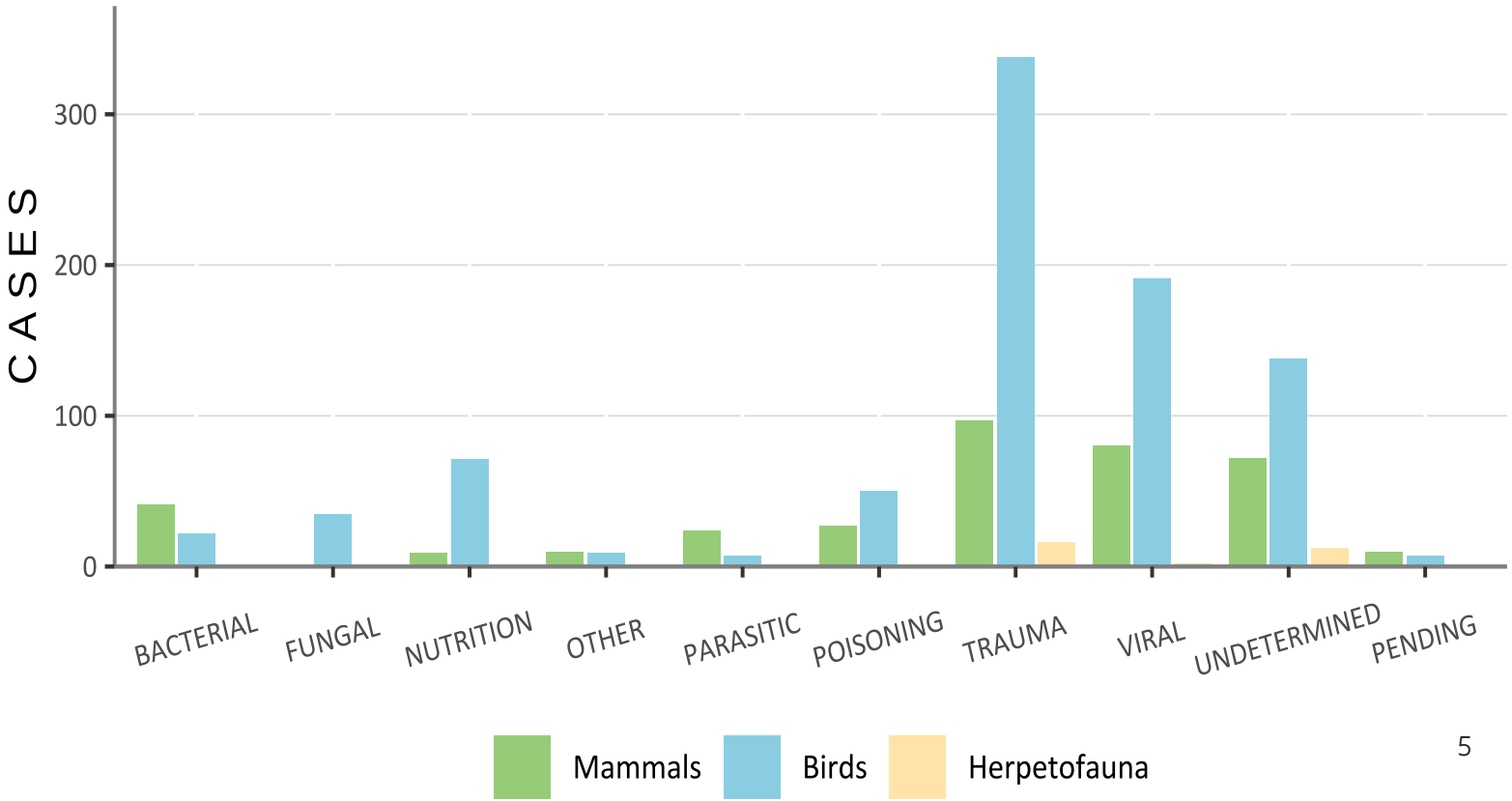
EMERGING & SIGNIFICANT DISEASE ISSUES

HIGHLY PATHOGENIC AVIAN INFLUENZA

The WHP continues to monitor cases of highly pathogenic avian influenza (HPAI) virus H5N1 clade 2.3.4.4.b throughout NY. In 2024, 619 avian influenza PCR tests were completed. Through our surveillance, the virus was detected in 79 avian cases; American crows were the most commonly affected species, followed by bald eagles, Canada geese, and red-tailed hawks. One outbreak in American crows had 10 individuals with detections. Thus far in 2025, 679 PCR tests have been completed with 267 detections. Canada geese, bald eagles, and red-tailed hawks have been the most affected avian species.

Since 2024, the virus has been detected in 12 mammal cases, including six red fox, two raccoons, one bobcat, one gray fox, one muskrat, and one Eastern gray squirrel.

We also collected samples from waterfowl during banding events with DEC biologists in Region 7. Choanal and cloacal swabs were collected to look for the virus, and blood samples were collected to look for antibodies. Nearly 10% of individuals were positive for H5 on a swab sample, and 53% were positive for antibodies to H5N1.Check out our public or internal agency dashboards for an up-to-date map of counties affected and the latest information about the virus.

RABIES IN URBAN AREAS

Long Island has experienced a spike in rabies cases over the past year, affecting both Nassau and Suffolk counties. In July 2024, Nassau County reported its first locally transmitted cases of rabies in raccoons (*Procyon lotor*) and stray cats since 2007. The disease has since spread eastward, with Suffolk County confirming its first rabid raccoon since 2009 in January 2025. In response, the county health departments have been increasing surveillance and distributing oral rabies vaccine baits in affected areas.

White-tailed deer

Raccoon family

HEMORRHAGIC DISEASE & MIDGE TESTING

As part of our investigation of hemorrhagic disease in New York, the final season of biting midge surveillance was completed in 2024, utilizing over a dozen sites in Dutchess, Westchester, and Bronx counties, including livestock farms, natural areas, and a zoo. Through a collaborative partnership with the USDA Arthropod-Borne Animal Diseases Research Unit, we will determine local *Culicoides* species diversity and abundance, perform blood meal analysis to determine host preference, and investigate whether we can detect EHDV or BTV from pooled samples using PCR and viral isolation. Over the course of our two-year trapping effort which ran during the summer and early fall, we have trapped over 100,000 individual midges. Preliminary results from USDA found individuals from the putative vector species, *C. stellifer, C. variipennis,* and *C. crepuscularis* were present in New York during the summer and fall of 2023. No individuals of proven vector, *C. sonorensis,* have yet been identified. Several hundred blood-fed individuals have been isolated and metabarcoding is ongoing.

eDNA - TIGER SALAMANDER

CWHL is collaborating with DEC Region 1 on a second year of sampling to further hone our eDNA detection methods for tiger salamanders (*Ambystoma tigrinum*). Our goal this year is to determine the minimum number of eDNA samples that must be collected from a pool to give us confidence that if all our eDNA tests are negative, tiger salamanders are truly absent from the pool. This can help us better prioritize sites for more intensive surveys to hone occupancy maps, identify field sites in need of protection, and improve conservation and management for this endangered species.

eDNA *AMBYSTOMA* SPECIES COMPLEX

CWHL is collaborating with researchers at the University of Maine to develop eDNA methods to differentiate between members of the *Ambystoma* species complex. This species complex is unique in that it links several independent species including Jefferson salamanders and Blue-spotted salamanders with a separate unisexual *Ambystoma* lineage of exclusively female animals that steal genetic material from other species in the complex as a necessary part of their reproductive cycle. This means that the genetics of the species complex are extremely complicated, which is a problem when trying to tease apart occupancy for species with diverse threat classifications. This new tool will enable us to differentiate between specific species, or the unisexual lineage, when testing eDNA samples for salamander occupancy.

RODENTICIDE BIOMARKER

In collaboration with the AHDC Coagulation Lab and Janet L. Swanson Wildlife Hospital, we are working to validate a biomarker for anticoagulant rodenticide (AR) poisoning in wildlife using a Catalyzing Conservation Fund grant through the Cornell K. Lisa Yang Center for Wildlife Health.

We are developing a biomarker to detect the clinically toxic effects of AR in living birds. ARs are poisons commonly used to control rodent pests worldwide. These chemicals work by disrupting the blood's ability to clot, leading to severe internal bleeding and death.

Unfortunately, when birds of prey eat rodents that have ingested ARs, they can also succumb to the effects of these poisons via secondary poisoning. Currently, detecting AR exposure in wildlife involves analyzing liver tissue after death because detection methods in live animals are unreliable. Furthermore, the AR concentrations measured in postmortem liver samples that cause bleeding in birds are unknown. This limits our ability to provide effective treatment to individual birds and predict population risks. To address these problems, we aim to create a test to detect the clinical effects of exposure in live birds of prey with a blood sample.

Ultimately, this test could be used to check for AR poisoning in any bird species and for any type of anticoagulant compound. Defining the relationship between varying concentrations of tissue residue with their toxic effects in birds will provide guidelines for management strategies that mitigate wildlife morbidity and mortality caused by ARs.

Broad-winged hawk
Photo by Art Kirsch

CHRONIC WASTING DISEASE UPDATE

NEW YORK STATE CWD

It had been 19 years since the last detection of CWD in NYS, which also was found in captive cervids. In October 2024, testing by NYS Agriculture & Markets identified a red deer (*Cervus elaphus*) herd with a CWD-positive case. This herd had been closed with no new animals added for over a decade. The Interagency CWD Response Plan was activated and an incident command system was in place on the ground for depopulation activities. All 194 animals remaining in the herd were euthanized over the course of three days. Veterinarians from AGM and USDA – Veterinary Services and biologists from Cornell and DEC were on hand to collect samples and ensure containment and disinfection. Prior to the depopulation, DEC and USDA-WS had a week of deer removal in the vicinity of the property; after the depopulation, hunters were asked to submit the heads from their harvest to bolster testing numbers for the area. No wild white-tailed deer (*Odocoileus virginianus*) were detected with CWD. Three additional red deer were found to be infected, all adult females. The owners were cooperative throughout the process and agreed to maintain fencing around the affected pasture for five years to guard against environmental transmission. We will continue to work on identifying the source of the disease and testing wild deer to ensure spillover has not occurred.

Krysten Schuler demonstrating appropriate lymph node removal at a CWD Wet Lab at Cornell AHDC in October 2024.

SURVEILLANCE OPTIMIZATION PROJECT FOR CHRONIC WASTING DISEASE (SOP4CWD)

The Surveillance Optimization Project for Chronic Wasting Disease (SOP4CWD), started in 2020, continues to grow and generate new information and tools to improve CWD surveillance planning nationwide.

The quantitative team churns out new models to help the WHP respond to CWD and other wildlife diseases. In addition to the sample size models and apps (Booth et al. 2024, 2025; Hanley et al. 2024, 2025), we published another two novel models, including a spatial risk epidemiological model in Spatio-temporal Epidemiology (Walter et al. 2024) and the **first ever** machine learning model in wildlife health in Scientific Reports (Ahmed et al. 2024), which contained 750,000 data points on CWD in deer. Both models aid in designing surveillance plans to detect emerging diseases at the earliest possible moment of intrusion.

The CWD Data Warehouse, first released in 2022, helps the DEC and other wildlife agencies conduct more efficient and effective CWD surveillance. DEC uses the platform as a central hub for CWD surveillance planning and data management. The Warehouse has continued to see increased adoption in the US and Canada, which enhances our collective situational awareness, improves our understanding of CWD spread, and generates collaborative research efforts with wildlife agencies and academic research groups. The Warehouse now includes over one million CWD sample records, 2,600 cervid facilities, 5,600 meat processors and taxidermists, as well as a diversity of cervid demographic data. These data are used in statistical analyses, models, and data visualizations.

CWD SAMPLING

During the 2024-2025 hunting season, we tested 3,189 hunter-harvested deer for CWD. We also examined 106 CWD-clinical suspect cervids during the reporting period. We have successfully engaged taxidermists to expand our surveillance efforts; during the 2024-2025 sampling season, 995 of the CWD surveillance samples were collected by trained taxidermists through our Taxidermist Partnership Program.

Since 2002, DEC has collected and tested more than 69,000 deer for CWD. No positive cases of CWD have been detected in wild deer since 2005, but we are concerned about recent CWD detections in Pennsylvania that are close to the NY border and spillover from the red deer herd in Herkimer County.

3295
white-tailed deer CWD tests in 2024-25 season

2024-25 CWD Samples Tested

5 — 196
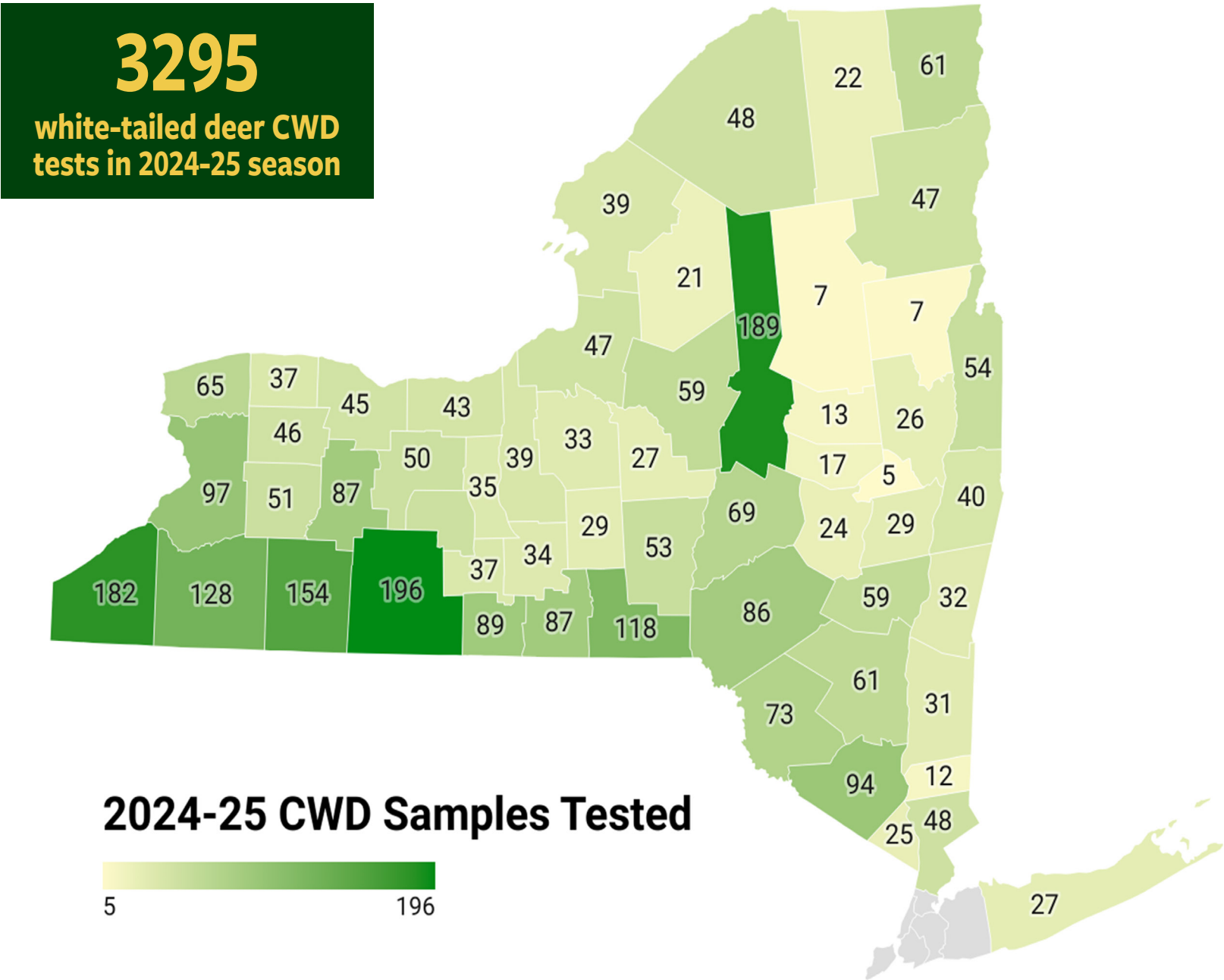
TRAINING & TEACHING

CHEMICAL IMMOBILIZATION 2.0

Jenny Bloodgood visited each region to participate in chemical immobilization training to develop a standardized yearly training course that is NY-focused. The CI Working Group, comprised of Dr. Bloodgood, DEC biologists, and DLE personnel, they reviewed and updated the Chemical Immobilization SOP and Quick Guide to better support personnel while in the field during an immobilization event. We are planning for an in-person DEC CI training that is slated for May 2025.

SUNY COBLESKILL

The SUNY Cobleskill Wildlife Damage Management class had their annual visit to the WHU in October for a presentation and necropsy demonstration by Kevin Hynes. This visit resonated with multiple students, which led to more interest in the WHP program and career paths in wildlife health. Following up, Landon Miller and Therese McNamee visited SUNY Cobleskill to speak with interested students. They discussed their own career journeys and experiences working in the field. One student from the class even took the initiative to shadow at the WHU over their winter break. Therese McNamee also attended the annual SUNY Cobleskill The Wildlife Society Chapter Women in Wildlife Campfire Cookout, where she shared her experience with a group of over 60 students.

WATERFOWL BANDING WORKSHOP

Jenny Bloodgood attended the DEC Waterfowl Banding Workshop in Montezuma National Wildlife Refuge in September 2024 with Wildlife Health Veterinary Interns Emily McDermott and Jill Western. Jenny gave presentations on safe handling, animal care, euthanasia, common diseases, and field sampling of waterfowl. The workshop also included hands-on demonstrations of air cannon netting and trap setting, as well as live animal handling.

FUR SCHOOL

DEC operates Fur Schools each year for new wildlife staff and SUNY-ESF wildlife students. The multi-day course covers all aspects of trapping, including laws, trap sets, species-specific techniques, skinning, fur handling, and sales. Kevin Hynes and Melissa Fadden both lead sessions last year covering furbearer diseases, how to protect yourself from infection, and a necropsy demonstration.

SPECIAL SPECIES SYMPOSIUM

In March 2025, Jenny Bloodgood led two workshops for the Cornell University College of Veterinary Medicine Special Species Symposium (SSS) attended by veterinary students from across North America. One was a marine mammal necropsy workshop in which students necropsied a harbor porpoise, two gray seals, and two harbor seals (below). The other was an outbreak response workshop where students learned proper communication, biosecurity, sampling, and testing protocols for a mock fungal disease outbreak in amphibians.

ADIRONDACK CENTER FOR LOON CONSERVATION

The WHU hosted the Executive Director, Education and Communication Director, and Research Biologist from the Adirondack Center for Loon Conservation (ACLC) at the lab in Delmar for a comprehensive, hands-on educational experience focused on loon health. Research Scientists Landon Miller and Therese McNamee demonstrated loon necropsies and discussed pathologies that impact loons with a large focus on lead poisoning, which has been studied at the WHU for decades. In turn, ACLC staff shared their extensive knowledge of field natural histories of this iconic Adirondack species, fostering a valuable exchange of expertise.

HUYCK PRESERVE PRESENTATION/ WORKSHOP

WHU's Therese McNamee presented an introduction to wildlife health and lead a mock mortality investigation activity at the Huyck Preserve's Wildlife Ecology Research Program for high school students.

WILDLIFE HEALTH WORKSHOP

At the Northeast Association of Fish and Wildlife Agencies annual conference held in Cape Cod in April 2024, Landon Miller, Therese McNamee, and Krysten Schuler assisted Melanie Kunkel in teaching a workshop on wildlife health, (below) along with MassWildlife host, Martin Feehan. This workshop focused on basic principles in field investigation, including personal protective equipment, and diseases of concern in the Northeast. There was a hands-on mock disease outbreak for participants to recover carcasses and record data. Finally, David Needle from University of New Hampshire conducted necropsy demonstrations of a moose head and bird carcass to illustrate what happens at the laboratory after specimens are collected.

WILDLIFE PATHOLOGY ROUNDS

WHP staff from both Delmar and CWHL, as well as associated wildlife pathologists and clinicians, hold monthly case rounds over Zoom. Rounds are an excellent way to disseminate knowledge between people with different skill sets or trainings, and to provide an opportunity to look at novel cases from various perspectives- the natural history of the species, to the field, to the wildlife hospital or rehabilitator, to necropsy and histology, and everything in between depending on the case or specimen in question.

WILDLIFE HEALTH REGION WORKSHOPS

With a focus on sampling, safety, and biosecurity the WHP gave in-person training to all region staff, including DLE, last summer. Regional AGM, DOH, and State Parks staff were also invited. With a mock outbreak investigation focusing on hands-on experience, staff had the opportunity to participate in collecting samples in the field (below).

COURSE TEACHING

Alyssa Kaganer has continued to teach scientific writing skills for graduate students, including those engaged in conservation research. Guest lecturing for Animal Science: Immunology in Animal Health and Disease with "Can we leverage amphibian immunology to slow the 6th mass extinction?"

Jenny Bloodgood guest lectured for courses at Cornell's College of Veterinary Medicine, including Conservation Medicine, Fish Health Management, Conservation with Communities for One Health. and Cell Biology and Genetics course.
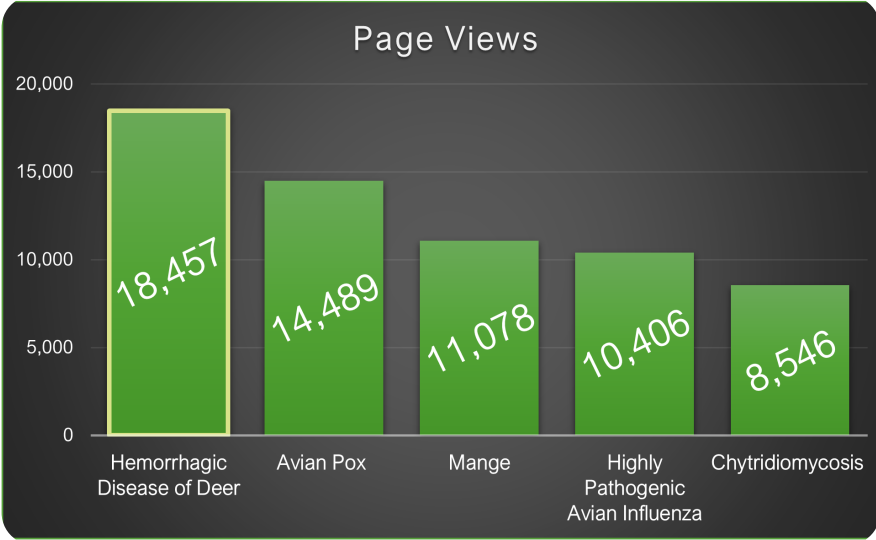
COMMUNICATION & OUTREACH

WEBSITE

Website visits averaged over 450 daily with over 240,000 page views and engagement event rates of nearly 863,000 for the year. The CWHL website is a valuable resource for wildlife health and is popular among DEC staff and the public. DEC's case reports were viewed over 1,400 times last year by personnel.

Wildlife Disease Fact Sheets

From 2024-25, the WHP has added three new disease fact sheets to the resource library on the website: Avian Trichomonosis, Molting, and Morbillivirus.

Currently, there are 58 available fact sheets, which receive 13,500 views a month and have been seen over 162,000 times during this past year. Fact sheets are the most viewed item on the CWHL website. We recently printed and distributed binders with all fact sheets across the nine DEC regions.
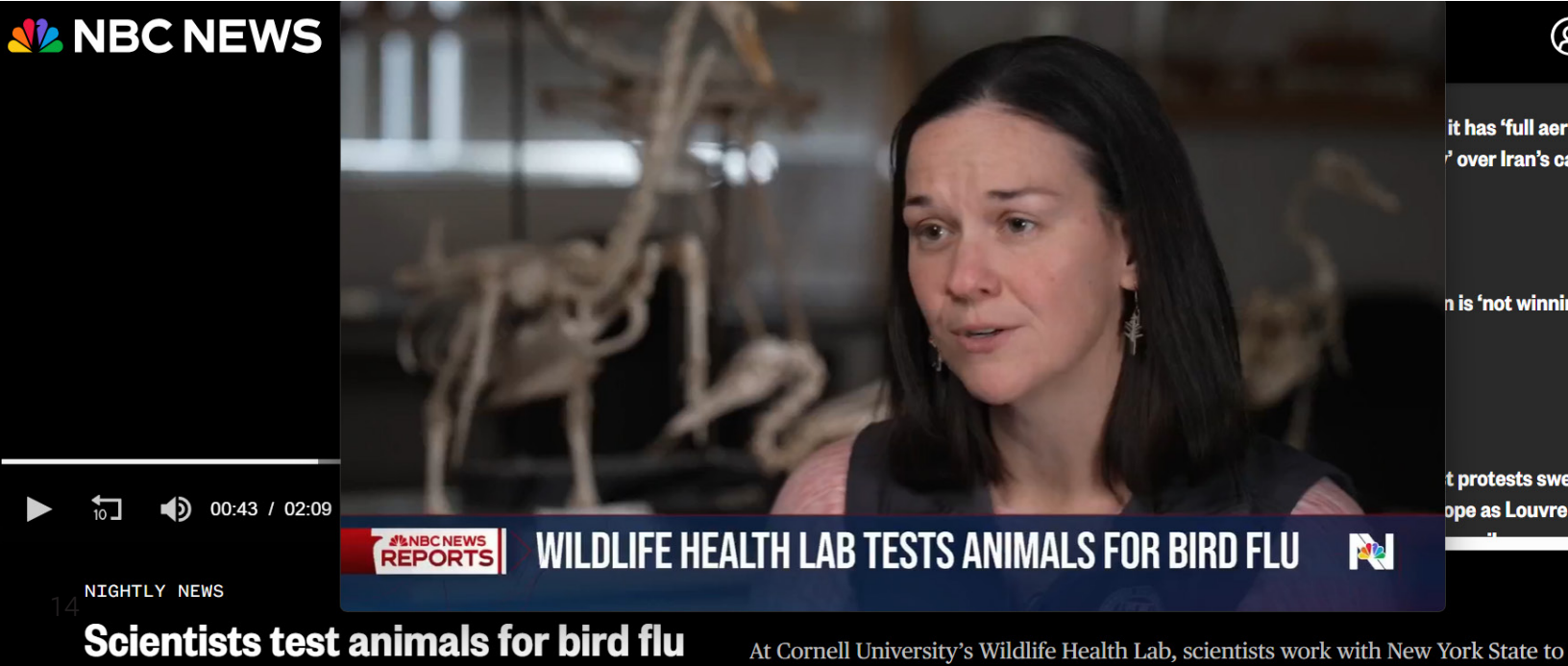
Page Views

Hemorrhagic Disease of Deer	18,457
Avian Pox	14,489
Mange	11,078
Highly Pathogenic Avian Influenza	10,406
Chytridiomycosis	8,546

Field Safety documents

The WHP updated and expanded our technical documents library to include updates on Mange Guidance, HPAI Field Safety, Amphibian Specimen Submission, and Euthanasia protocols.

MEDIA

NBC Nightly News

Jenny Bloodgood and Christina Hoh, DEC Region 8, took Anne Thompson into the field, trapping ducks on Cayuga Lake, and discussed the impacts of HPA on wildlife populations. The news crew set up a mobile studio in the Cornell Vet College's Anatomy Lab for an interview with Jenny.

NBC NEWS REPORTS — WILDLIFE HEALTH LAB TESTS ANIMALS FOR BIRD FLU

NIGHTLY NEWS

Scientists test animals for bird flu

At Cornell University's Wildlife Health Lab, scientists work with New York State to

Native America Calling

Krysten Schuler answered questions about the impact of HPAI on bald eagle populations with Clamping down on the eagle feather black market podcast.

Kaatscast: the Catskills Podcast

Jenny Bloodgood discussing ongoing research into the impact of HPAI on New York's bobcat population with Bobcats and Bird Flu: Research Insights Emerging from Cornell

Accuweather

Krysten Schuler explains why climate change impacts wildlife disease with an update; Bird flu continues to spread across the US.

Facebook LIVE: HPAI with Kevin Hynes

Kevin Hynes appeared on DEC's Facebook LIVE to discuss the Basics about Highly Pathogenic Avian Influenza (HPAI).
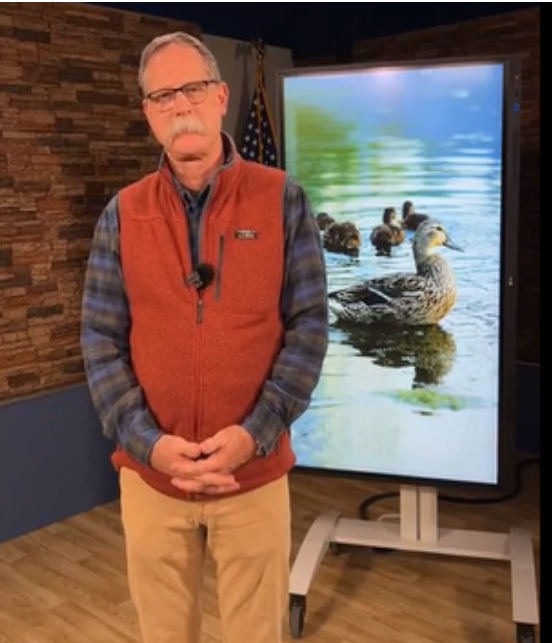
SCIENCE OUTREACH

College-wide Virtual Forum on Highly Pathogenic Avian Influenza (HPAI)

Organized by Krysten Schuler to inform and engage colleagues across Cornell Univeristy College of Veterinary Medicine on research efforts, impacts across species and One Health. The result was a comprehensive website on HPAI: Highly Pathogenic Avian Influenza (Bird Flu) Resource Center.

Skype a Scientist

Alyssa Kaganer has continued to participate in classroom outreach with Skype a Scientist. This year she connected with students in Georgia, New Mexico, Louisiana (x2 classrooms) and Alberta, Canada.

Theodore Roosevelt Conservation Partnership Science Speaker Series

Krysten Schuler presented for the TRCP on CWD: The Threats to Wildlife, Public Lands, Hunting, & Health.

Wildlife Health Expertise

WHP personnel have been invited to speak on public health, to serve a peer reviewers in global journals such as Ecology and Evolution, Ecotoxicology, Theoretical Ecology, Ecological Modeling, and International Journal of Infectious Diseases One Health, Prairie Naturalist, and more.

Public Health Spring Seminar Series
Tuesday, March 4th, 4 - 5:30 PM | Schurman Hall, LH1

Krysten Schuler

ALT "Wildlife health in the Anthropocene world"

RESEARCH

NORTHEAST FURBEARER HEALTH

In January, Drs. Melanie Kunkel, Jacqueline Frair, David Needle, and Krysten Schuler were awarded a Multistate Conservation Grant to assess health of furbearers in Northeast states. This work builds on the body of knowledge gathered on rodenticides and lead in fisher. State biologists expressed interest in focusing on gray foxes because of declining populations across much of the region. To ensure adequate sample size and assess trends over time, fisher were included as study animals as well. Over the next year, states will submit carcasses and samples for a suite of diagnostic tests and histopathology examination to determine factors that may influence survival, reproduction, and resilience.

Northern Cricket Frog

PATHOGEN SURVEILLANCE TO SUPPORT NORTHERN CRICKET FROG REINTRODUCTION

CWHL is collaborating with DEC Region 3 to support plans to reintroduce Northern Cricket Frogs (*Acris crepitans*) at sites where the species was historically present, but is no longer found. We are working to monitor the presence of two amphibian pathogens, Ranavirus and the chytrid fungus, in animals and environmental samples at sites with remaining populations and candidate sites for reintroduction.
This can be used to help inform selection of source and reintroduction sites to give Northern Cricket Frogs the best possible chance of rebounding in New York.

WATERFOWL CONTAMINANTS

The WHP concluded an assessment of environmental contaminants in frequently harvested waterfowl in the Northeast Atlantic Flyway, recently published in Science of the Total Environment. Overall, our study suggested that Canada geese and wood ducks had lower contaminant levels than green-winged teal, black ducks, and mallards, although we did find PCBs and at least one OCP and PFAS in every bird collected. These data are being used by state health departments to update consumption advisories for hunters, if necessary.

Former WHP student David Dayan, currently working on a PhD at University of Minnesota, was invited to present this work at the first Safe Game Meat Conference in Porto, Portugal. This project was funded by an Association of Fish and Wildlife Agencies Multistate Conservation Need Grant and biologists from NY, PA, NJ, and CT contributed birds to the study.

Canada goose
Photo by Art Kirsch

DETERMINANTS OF CWD FOUND IN FECAL SAMPLES

We are working on a project to understand the different factors that affect chronic wasting disease (CWD) infection and progression in white-tailed deer. With funding from the CWD Alliance, we are using paired fecal samples from CWD-detected and CWD-non detected deer across the Eastern and Central U.S., we are investigating the relationship between deer genetics and deer gut bacteria in the probability that a deer will have a CWD infection. In CWD-detected animals, we are also looking at whether genetics and microbes interact with prion strain to affect disease. In addition to better understanding CWD dynamics on the landscape, this work has allowed us to hone methods to detect CWD prions in non-invasively collected fecal samples, which can be easily collected by hunters.

White-tailed deer

WILDLIFE HEALTH SAMPLE SIZE SOFTWARE

Diseases like chronic wasting disease (CWD) and avian influenza (HPAI) can influence whether a hunter should eat the animal they harvest. However, knowing if a certain disease exists in a population is difficult to assess in many free-ranging species. A foundational question spanning all disease/hosts systems is, 'how many negative tests do we need before we can know the population is free-from-disease?'

The WHP teamed with Cornell's Department of Statistics and Data Science to create interactive apps to help wildlife managers plan for disease surveillance. Complete with over 30 examples, the models behind the apps leverage wild animal's natural clustering behavior to estimate the number of tests necessary to find at least one case of disease.

App tutorials include systems of interest in NYS, include CWD in deer schemes, reovirus in birds, distemper in skunks, tularemia in beavers, adenovirus hemorrhagic disease in deer, avian influenza in geese, mange in foxes, and more. The new interactive apps (Hanley et al. 2024, 2025), are openly available.

- The Simple Sample Size App compares sample sizes with and without clustering behavior.
- The Efficient Sample Size App compares sample sizes with various sampling schemes, such as hunter harvest, random sampling, and two-stage clustering.

BOBCAT POPULATION HEALTH

As a complement to ongoing research to estimate population density and space usage of NY bobcats (*Lynx rufus*), Dr. Jenny Bloodgood worked with collaborators Dr. Angela Fuller and her master's student, Haley Turner, to examine bobcat health and investigate potential impediments to population growth. In the winters of 2023-2024 and 2024-2025, we trapped 26 bobcats that were included in the health study. We tested the bobcats for pathogens, including *Cytauxzoon felis*, feline leukemia virus, and SARS-CoV-2, as well as exposure to pathogens including, SARS-CoV-2, *Toxoplasma*, parvovirus, canine distemper virus, and avian influenza virus. All 26 individuals were negative for *C. felis*. All tested bobcats were also negative for feline leukemia virus and SARS-CoV-2. Looking at the antibodies, however, 1/12 bobcats had evidence of exposure to SARS-CoV-2, 22/23 had exposure to Toxoplasma, 18/23 were exposed to feline parvovirus, and 16/23 were exposed to canine distemper virus. In a recently published report in the *Journal of Wildlife Diseases*, we assessed the presence of antibodies to avian influenza virus in 16 of the bobcats trapped during the first season. Nine of these individuals (56%) tested positive, and four of these were positive for antibodies to the influenza virus H5 and N1 proteins, which are the components of the currently circulating HPAI strain.

Movement data on these four bobcats showed that all remained alive until the time their GPS collars either dropped off or stopped communicating. One additional bobcat, which was negative for antibodies at the time of capture, died from highly pathogenic avian influenza H5N1 infection within 5 weeks. Our results demonstrate that while bobcats can survive exposure to avian influenza virus, they can also succumb to infection, and avian influenza virus may represent a threat to bobcat population health. Interestingly, results from eight bobcats trapped during the second season were all negative for influenza antibodies; most of these were from a similar location to antibody-free individuals trapped during the first season.

Our work overall shows that bobcats in NYS face a variety of health challenges and highlights the importance of collaborative studies pairing monitoring data with health examinations to holistically inform management decisions surrounding hunting and trapping seasons. Keep an eye out for more information on NY bobcat health in the future!
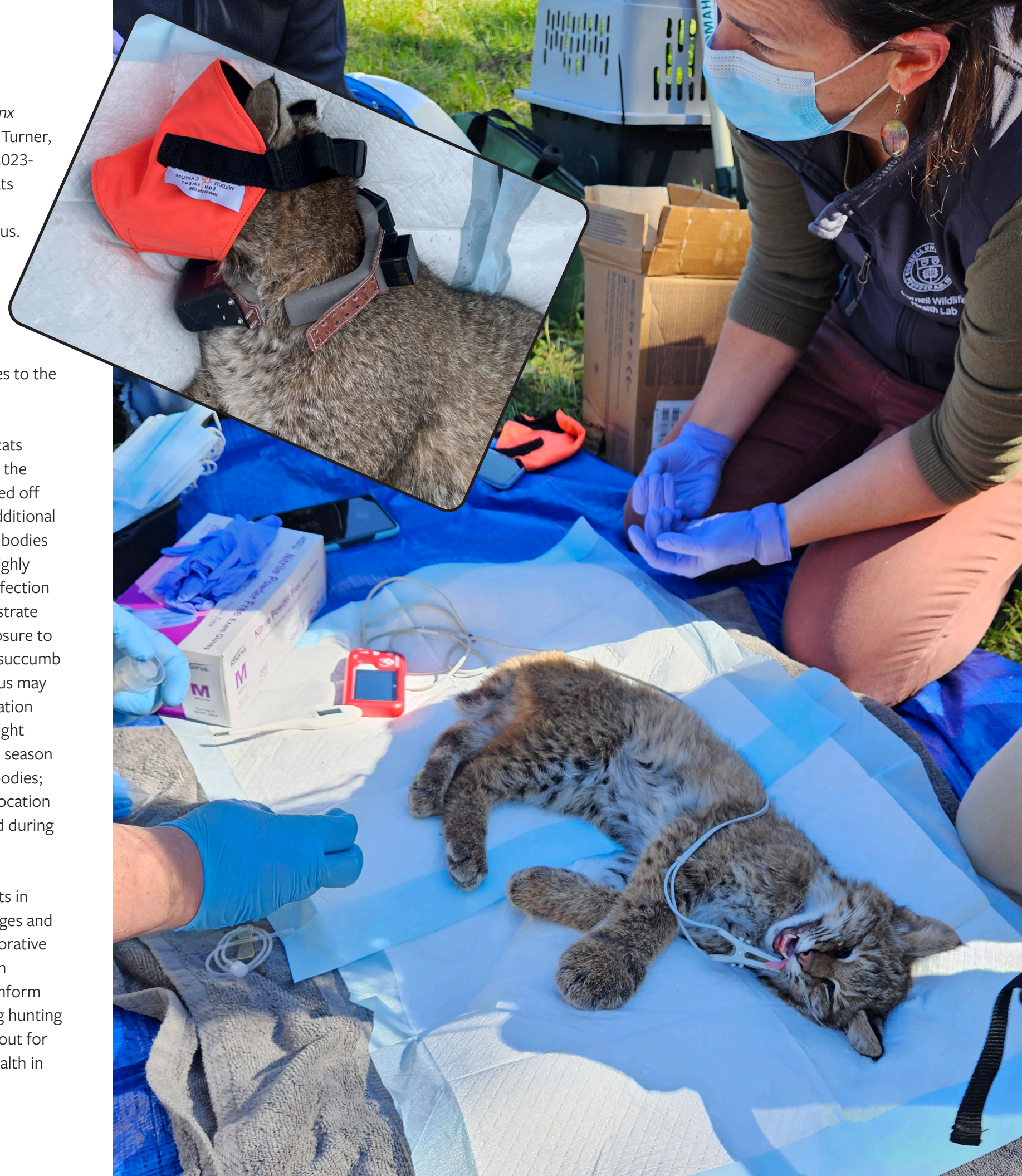
PINE MARTEN REPRODUCTIVE HEALTH

Beth Buckles and pathology resident, Darian Giannino ,are using histology to assess the reproductive health of NY pine martens (*Martes americana*). Ovaries and uteruses collected by DEC personnel over the course of several years are being examined to look for evidence of ovulation, placental implantation, and previous pregnancy. Histology information will be combined with natural history data from individual martens to assess overall population health and impacts from anthropogenic changes to the environment.

Fisher

LEAD EXPOSURE IN FISHERS

Recent DVM graduate, Amanda Bielecki, has been investigating the prevalence and distribution of lead exposure in New York's fisher (*Pekania pennanti*) population. This project is part of a broader interagency effort with SUNY ESF and the DEC to assess lead risks in wildlife across the state. Our approach involves analyzing previously collected liver lead concentrations to identify spatial trends.

Potential sources of exposure, including proximity to federal Superfund sites, scrap metal yards, active landfills, and seasonal variation with respect to regular deer hunting season, are being considered. Furthermore, we are also evaluating reproductive impacts of lead toxicity by quantifying corpus

luteum counts in female fisher ovaries. These counts serve as a proxy for reproductive potential to assess whether lead exposure may negatively influence reproductive health in this mesocarnivore species. Preliminary results indicate that lead showed no significant direct effect on corpora lutea counts; however, hotspots for lead exposure corresponded with lower reproductive indicators.

INVESTIGATING PARVOVIRUS

From January to March 2025, a Cornell University combined degree DVM-PhD student, Isha Chauhan, joined the CWHL to assist with a project investigating parvovirus in rehabilitation mammals. She completed a literature review on canine parvovirus in raccoons and also interviewed 13 rehabilitators in NYS to better understand intake and release, biosecurity, testing, and vaccination protocols. Information gained from this survey will guide future work to create a more uniform protocol for rehabilitators in NYS to improve wildlife health and biosecurity.

RESEARCH COLLABORATIONS

In addition to collecting diagnostic and disease surveillance samples for the WHP from specimens, tissues are often collected for research projects and collaborators at the time of necropsy. Because the WHP has access to many species including including those that may be rare or endangered, samples are shared to learn as much as possible from each animal.

Example of graduate student studies or wildlife agency assessments that the WHP has shared samples with include: the Northeast Regional Furbearer Health Assessment, Florida Fish & Wildlife Commission, Southeastern Cooperative Wildlife Disease Study Mange Research, and NYS Department of Health emerging tick-borne viruses research.

The WHP is committed to contributing to wildlife health research and One Health projects beyond NY for the benefit of wildlife populations.

Diamondback terrapin

HERPESVIRUS IN DIAMONDBACK TERRAPINS

CWHL undergraduate researcher, Dante Napoletano, is revisiting archival samples from a diamondback terrapin (*Malaclemys terrapin*) die-off in 2015 associated with saxitoxin. During the original diagnostic investigation of the die-off, preliminary evidence of herpesvirus was found in a handful of tested animals. Now, he is working to clarify whether these samples truly have herpesvirus and characterize the specific virus if it is found. While herpesvirus would be a secondary finding to the primary toxicant cause of the die-off, this work can help us better understand the diverse threats to our marine turtle populations.
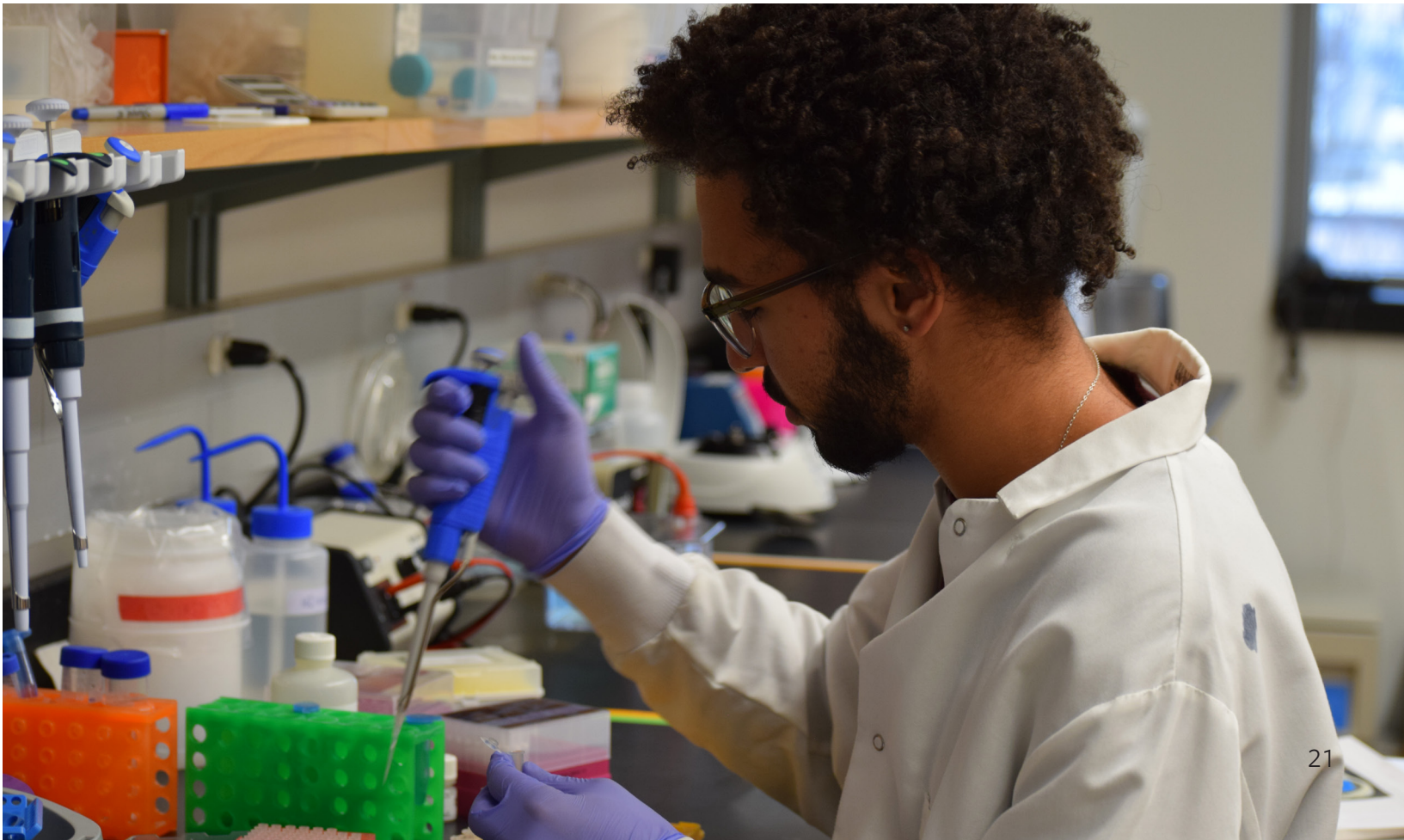
MOOSE HEALTH IN NEW YORK STATE

The moose health project was concluded this year with the completion of PhD dissertation work by Jen Grauer in December 2024. This multi-year study included an analysis of cause-specific survival of moose calves, where 67% of calves that died during the study experienced mortality from infections with giant liver fluke (*Fascioloides magna*). Survival probabilities were driven by moose use of wetlands where they can acquire *F. magna* infections, along with their number of co-infecting endoparasite species at capture. Higher monthly nutritional energy available to moose increased survival, buffering against the negative effects of endoparasite infection. Other dissertation work included summarizing information on the health status of moose in New York from opportunistic necropsy samples and captured moose tissue samples, revealing that moose found in the state predominantly died from vehicle collisions and parasite infections. We examined competition between moose, white-tailed deer, and their shared parasites using camera trap data and parasite sampling, and found that deer exert indirect competitive pressure on moose via parasite-mediated competition. Finally, we constructed a population model to predict the effects of potential management decisions under future scenarios of varying parasite impacts.

An undergraduate student, Carol Newman-Rivera, successfully completed her Animal Science Senior Honors Thesis project in May 2025, summarizing challenges of and findings from non-invasive approaches to understand parasitic threats to moose in the Adirondacks. One component was the screening of aquatic habitats for environmental DNA from giant liver flukes. Of 105 sites sampled, *F. magna* eDNA was detected at 18 sites, including predominantly streams, ponds, and marshes. The pilot eDNA work from the moose project provides a working genetic assay to detect *F. magna* eDNA in these habitats and the basis for future studies to optimize sampling of these important parasites.
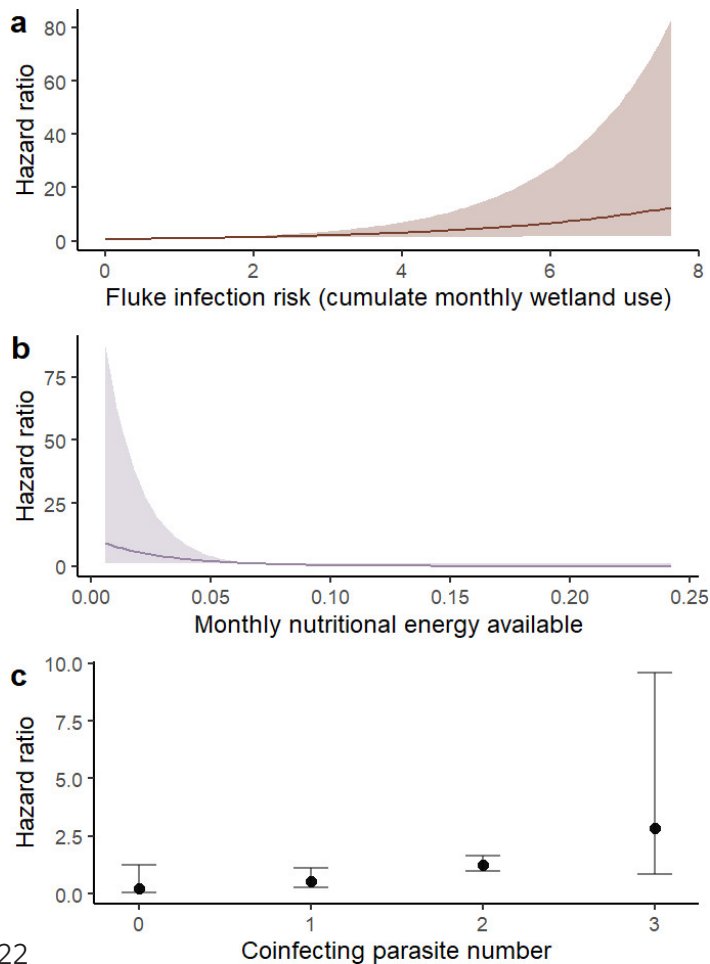
STILL INVESTIGATING

Ongoing work includes the investigation of factors influencing mortality risk during capture, considering three of 15 juvenile moose in the first year of capture work experienced cervical vertebrae fractures. Although body condition of captured moose was good and bloodwork did not indicate compromised condition, future scanning of bones for mineral density and bone ash compared to moose bones from neighboring states may help uncover whether New York moose were predisposed to fracturing.

Figure 1 (left). Predicted hazard ratios for fluke infection risk (a), nutritional energy available (b), and number of co-infecting parasites (c) for calf moose (*Alces alces*; n=27) in the Adirondack Park, New York, USA from 2022-2024. Shaded region and error bars represent 95% confidence intervals from the top Cox proportional hazards model including each factor additively.
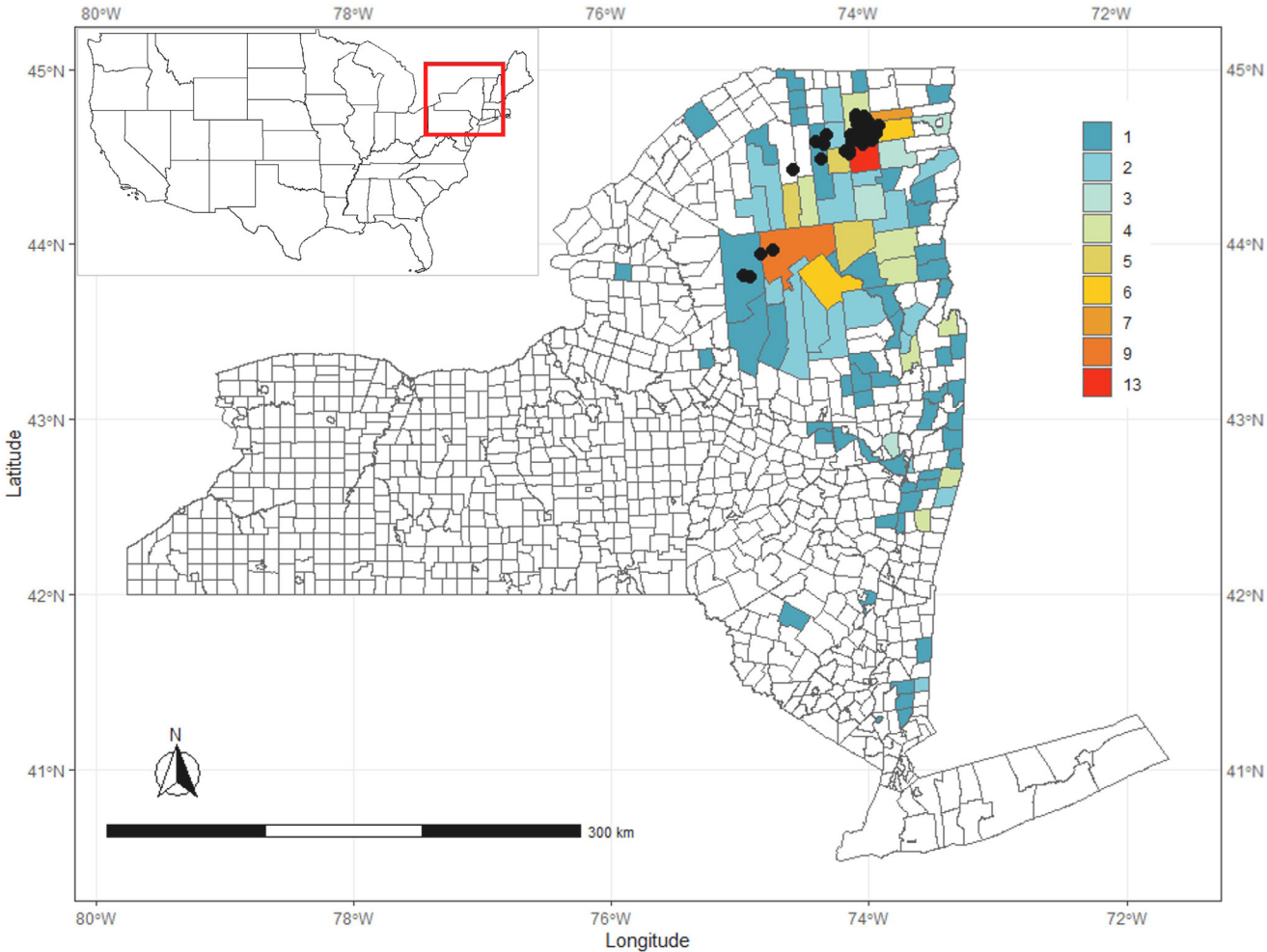

Figure 2 (above). Township locations of moose (*Alces alces*) necropsies in New York State conducted 2000-22. Colors correspond to the number of necropsied moose found in each township. Black dots show the locations of live-captured moose that were sampled 2015-23.

Moose

POLICY SUPPORT

The WHP provides support on any wildlife health topic, not just limited to disease outbreaks. We routinely review research permit requests, management plans, and project proposals to assist staff in working safely with wildlife and reduce potential health impacts.

REHABBER DATABASE UPDATE

The Wildlife Rehabilitator Digital Log system continues to see increased adoption by New York State's wildlife rehabilitation community. Currently, the system provides a digital record keeping system for 89 active wildlife rehabilitators. During the 2024 reporting period, rehabilitators entered over 3,000 animals into the system. We expect to see increased use of the system in the coming years.

WILDLIFE HEALTH INFORMATION SYSTEM DEVELOPMENT

We are preparing to launch a new wildlife health information platform, CORVUS, to replace our current database. With several new features, this system has integrated submission and reporting and will better enable us to manage and display data by providing analytics and summaries. It also promotes a streamlined workflow and will integrate with Cornell's veterinary diagnostic laboratory software to automatically order testing and disseminate results. The system is designed in a way that can hold data from a variety of sources, including wildlife observations, disease surveillance activities, morbidity/mortality events, research endeavors, and sample management.

CWD PUBLIC MESSAGING

A sub-group from the Wildlife Health Big Game Teams organized billboard messages along the PA/NY border. We identified locations for billboards that would reach the greatest number of hunters traveling between states to remind them of CWD regulations prohibiting whole carcass movement.

WORKING WITH LAW ENFORCEMENT

DEC's Division of Law Enforcement (DLE) Wildlife Response Team (WRT) is a special duty team comprised of Environmental Conservation police Officers (ECOs) throughout the state. When cases arise, collaboration with the Wildlife Health Team is used in situations from events during the daily patrol and response of the DEC-DLE. DLE members rely on our partnerships for specialized training, as well as for equipment, supplies, and technical support.

ECO TRAININGS

Kevin Hynes (right) visited all nine regions between March-May 2025 to provide training on wildlife health and forensics to ECOs at their annual HAZWOPER refresher training. He discussed safe handling of sick and dead wildlife, common disease of concern, and walked through multiple forensic case scenarios. Krysten and Jenny partnered with Kevin at a portion of the trainings for western NY regions.

EXPANDING THE MESSAGE

Outside of NYS, WHP personnel are sought to provide policy support and guidance to wildlife managers across the nation and world. For example, Jen Grauer and Brenda Hanley conducted the demographic modeling of guanaco for the government of Argentina to produce a conservation management plan for the province of Santa Cruz. The Provincial Management Plan was enacted into law in spring 2025. Similarly, following publications involving the CWHL, the USFWS has enacted conservation policies in the desert southwest to protect the threatened desert tortoise.

NATIONAL DEER ASSOCIATION

The CWHL hosted the NDA for their annual board meeting in June 2024, providing logistics support, including a full necropsy tour and demonstration.

ONE HEALTH LAB UPDATE

Kevin Hynes has been actively promoting the development of a new DEC One Health Laboratory Research and Training Center, which will house multiple DEC laboratories in a new state of the art building or complex. Most of the labs are in outdated facilities that are difficult to renovate to modern standards. The new facility is envisioned to significantly enhance the state's capabilities in addressing interconnected environmental, wildlife, and public health issues. The proposed lab would serve as a hub, housing multiple units together to foster collaboration among professionals in various disciplines. By bringing these labs together, the One Health Lab will improve current state laboratory capabilities and dramatically increase the capacity to study, monitor, prevent, and respond to threats in New York's natural resources and public well-being. This includes a strengthened ability to tackle pressing concerns such as zoonotic disease outbreaks, water and air quality contamination, impacts to forest health, and spread of invasive species.

FACILITY NEWS

The staff in Delmar is looking forward to construction starting later this year to upgrade their building. This will include replacing the aging incinerator with a new chemical digester for biological materials, and making key improvements to safety and biosecurity for the lab.

The AHDC expansion is also moving forward. With $19.5 million from New York State, Cornell is working on a new footprint and architectural site planning is underway.

HPAI REPORTING TOOL

In January 2025, the WHP developed an online avian influenza public reporting system. Between January 30, the day the system was announced by the DEC, and March 31, over 1,800 reports of sick or injured wild birds were submitted. The online reporting system was integrated into the WHP's wildlife health surveillance workflows using automation and data pipelines. This allowed agency staff to respond quickly to public reports, prioritize sample collection, and maintain situational awareness. In total, 557 animal samples collected during this time period were tested for avian influenza, of which 44% were positive. During this time period, the WHP provided daily status updates to the public through the HPAI page.
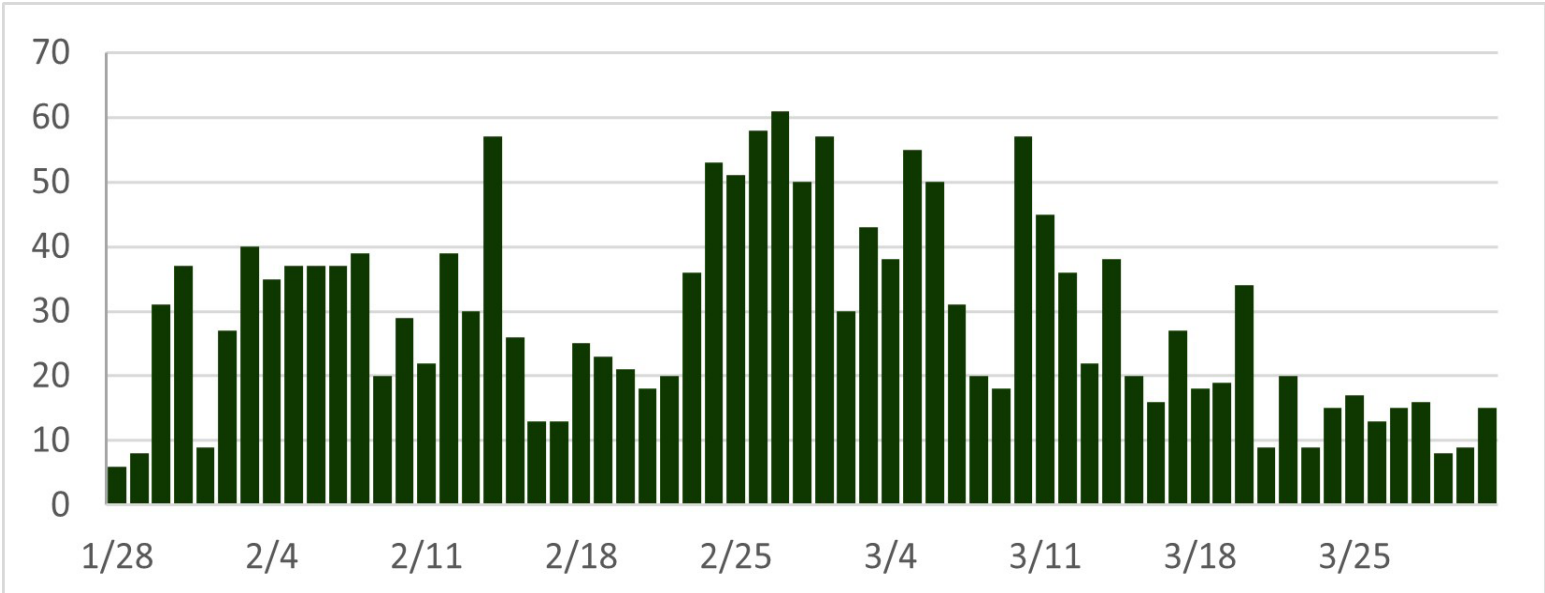
Above: Public HPAI reports by day from January through March.

Right: Regional map with HPAI testing results

- ● Negative
- ● Preliminary Positive
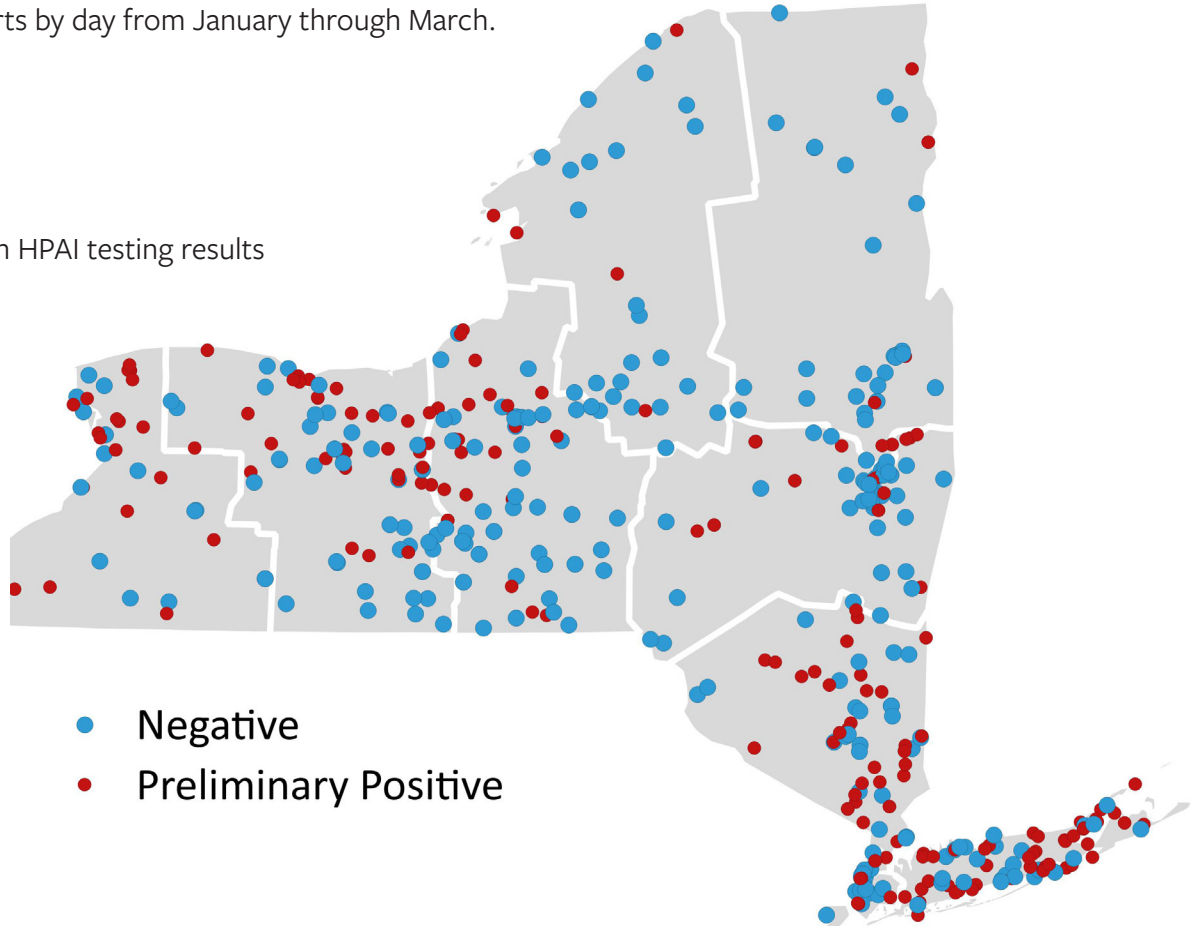
BUREAU OF WILDLIFE HEALTH TEAM MEETINGS

Between 2024-25, representatives of the WHP attended 20 meetings with the Big Game, Herp, Migratory Game Bird, Bird and Mammal Diversity, Upland Gamebird, Land Management and Habitat Conservation, and the Furbearer and Small Game Mammal teams to provide updates on current and emerging wildlife health issues.

The scope of the wildlife health team encompasses all wildlife health related issues involving Bureau of Wildlife programs and responsibilities.

The Wildlife Health Program incorporates the One Health concept, which fosters collaboration among multiple disciplines involving health of humans, domestic animals, and ecosystems. Other specialists from the academic community, Departments of Health and Agriculture & Markets, and federal agencies may participate or provide information as needed.

WHP, Region 8, and Region 9 staff at John White Game farm for the annual CWD sample collection.

CURRENT WILDLIFE HEALTH TEAM

DEC Personnel

Region 1	LESLIE LUPO
Region 2	CHRISTINA KNOLL
Region 3	VACANT
Region 4	NICOLE CAMPBELL
Region 5	TIM WATSON
Region 6	CRISTINA MACKLEM
Region 7	ASHLEY MEYERS
Region 8	JESSICA HAGGERTY
Region 9	RYAN ROCKEFELLER

WHP Personnel

WHU	Kevin Hynes (chair)
Cornell	Krysten Schuler/Jenny Bloodgood
BMT Liaison Central Office*	Kevin Hynes
DLE Liaison*	Major Matthew Revenaugh
BMT Liaison (Regional)*	Christina Knoll

*DEC Personnel

ANNUAL WORK PLAN

Program Management

Participate in wildlife health related meetings IRC, CWD, BOW, Wildlife Health and other meetings	Ongoing
Biannual wildlife health program review (Central Office or Cornell)	Complete
Wildlife Resources Center (WRC) infrastructure, equipment management and maintenance	Ongoing
WRC incinerator operation, lab maintenance, facility maintenance and grounds	Ongoing
Administration: budgeting, fiscal, personnel, T&A, LATS, FMIS	Ongoing
Prepare 2026-2031 Strategic Plan, budget, and scope of services for next CWHL contract	In progress
Support the development of state and/or regional wildlife health programs	Ongoing
Develop relationships with tribal nations	Ongoing

Policy Development

Develop or provide input to "best practices" guidance	
Update Chemical Immobilization SOP and Quick Guide	Complete
Update Euthanasia SOP and CO_2 Guidelines	Complete
Wildlife rehabilitation procedures evaluation	In progress
Providing scientific/medical wildlife health consultation (public, staff, One Health partners, regulatory, research projects, SLU licenses, etc.)	Ongoing
Bog turtle translocation at Bog Brook	Not started
Develop a digital permit reporting system for wildlife rehabilitators	Completed
Develop training module for RVS rehabilitators	Completed

Preparedness and Response

Collaborate with federal agencies on wildlife health issues under the One Health approach	Ongoing
Regularly update DEC Field Investigation and update/develop Disease Response Plans	
Develop flow chart for DEC on field investigation and disease response	Complete
Update CWD Response Plan for 2025-2035	In progress
Develop Bsal response plan	In progress
Add workshop on disease response plans to bi-annual WHP training	Complete
Develop guidance/SOP for sick/diseased animal response	
HPAI Guidance for rehabilitators and DEC staff	Complete
Mange guidance for rehabilitators and DEC staff	Complete
DLE Wildlife Response Team working group	Complete

Surveillance and Monitoring

Necropsy evaluation for cause of death (>1200/yr)	Ongoing
Timely case management and reporting	Ongoing
Annual CWD surveillance (sample collection, Taxidermy Partnership Program, reporting)	Complete
Forensic services for DLE	Ongoing
Identify emerging threats that may spillover to humans or be shared with domestic animals	
SARS-CoV-2 in WTD	Complete
NY wildlife salmonella study	Ongoing
Anticoagulant rodenticide evaluation of NY wildlife	In progress
Support coordinated surveillance within NYS and national/international agencies	
SOP4CWD westward expansion	In progress
Regional bear mange study	Complete
Regional BAEA HPAI antibody study	In progress
PA/NY mustelid versteria study	Complete
Development of eDNA tools for herp and pathogen detection	
RT-QuIC investigation of HERKIMER01 wild WTD	Not started
Ranavirus eRNA study	In progress
Cricket frog Bd & Ranavirus eDNA study	In progress
eDNA Jefferson x Blue Spotted salamander study	In progress
eDNA Tiger salamander study	In progress
eDNA Queen snake study	In progress
eDNA Hellbender study	In progress

Wood frog
Photo by Jennifer Peaslee

Research

Participate in multi-state/interagency projects to increase understanding of disease ecology at the landscape scale	
Fisher project - toxin effect on reproduction	In progress
Northeast mesocarnivore assessment	In progress
Curate a wildlife tissue biobank for use by researchers	Ongoing
P.tenuis in white-tailed deer	In progress
Advance ability to understand and manage disease threats to wildlife	
Omics study of WTD fecal samples for CWD markers	In progress
Bobcat health study	In progress
Anticoagulant rodenticide biomarker development	In progress
Interviews of meat processors to understand knowledge of lead issues	In progress
Support cricket frog introduction	In progress
BAEA and PEFA HPAI analysis	In progress

Information Management

Provide technical guidance and support related to geospatial data collection, management, and pipelining	Ongoing
Support development of mobile app and web-based field and public data collection	Ongoing
SLU data summary and analysis (captive cervids, taxi/processors, NWCO, Game Birds, Shooting Preserves reports)	In progress
Converting SLU to electronic reporting system for select licenses (NWCO, Game Bird)	Not started
Provide data/specimen portal for researchers	Ongoing
Provide additional mapping capabilities for the public on CWHL website	Ongoing
Development of new Laboratory Information Management System (CORVUS)	Ongoing
Development of a new CWHL website to integrate with CORVUS	In progress
Participate in National Wildlife Disease Database development process	In progress
Integration of NYSDAM into SOP4CWD NY access	In progress
SOP4CWD NAHLN - Data Warehouse integration	In progress

Training and Development

Develop NYS chemical immobilization training for DEC staff	Complete
Annual Furbearer training at DEC Fur School	Complete
Training workshops for DLE staff	Complete
Co-mentor 2 Wildlife Health Veterinary Interns	Complete
Regional wildlife health workshops	Complete

Communication

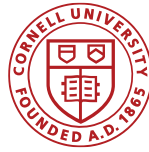|	
Increase public awareness of emerging wildlife health issues	
Increase engagement with the general public through online resources, popular press, lectures, and social media	Ongoing
Wildlife health presentations for public	Ongoing
P.tenuis white paper for livestock owners	In progress
Annual and Quarterly Wildlife Health program reports	Complete
Targeted newsletter communication with WHT, DEC , DAMS and rehabbers	Ongoing
Wildlife health and wildlife rehabilitators listserv maintenance	Ongoing
CWD National Communication Strategy	In progress

Veterinary Support Services

Provide support and consultation to cooperating veterinary practitioners	Ongoing
Establish a relationship with Tri-State Bird Rescue for oil spill response	In progress
Review and provide standards for BOW practices and procedures involving the handling of live wildlife	Ongoing

Bobcat

Bullfrog
Photo by Art Kirsch