

New York State Wildlife Health Program

Annual Report 2017-2018

Promoting the health and sustainability of wildlife populations through integration of wildlife ecology and veterinary medicine





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ADMINISTRATIVE SUMMARY

The New York State Cooperative 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 of wildlife in New York. The program completed its seventh year of operation and second year of the current five-year contract in March 2018. This report is submitted in fulfillment of the DEC contract requirements with Cornell. Program activities are reported for DEC Fiscal Year 2017 (April 1, 2017 to March 31, 2018); and disease surveillance case data are summarized for the calendar year (January 1, 2017 to December 31, 2017).

Case load increased by over 40%

Over 1600 wildlife cases were submitted to our three necropsy laboratories (WHU at Delmar, CWHL at the Animal Health Diagnostic Center in Ithaca, and Cornell Duck Lab on Long Island) in 2017, an increase of more than 500 from 2016. A significant increase in the apparent prevalence of West Nile virus since 2016, and a great shearwater mortality event along the east coast of the United States contributed to these numbers.

Expanded capabilities with more staffing

Regional caseloads were also shifted from the WHU in Delmar to the Cornell facilities to accommodate staffing changes. All cases from DEC Regions 7, 8 and 9 are now being processed at the CWHL, and cases from Region 1 are being processed at the Cornell Duck Lab. The addition of a full-time veterinary pathologist at the CWHL in January 2017 and the use of the Duck Lab facility helped absorb these changes and also reduced turn-around time for case reports.

Melissa Fadden, formerly a wildlife diversity technician in DEC's Region 3, was hired as a full time program technician at the CWHL to support the additional case load. As part of the strategic planning initiative to improve communications, Jennifer Peaslee was added to the CWHL team on a part-time basis to assist with designing educational materials, developing web content, and managing social media accounts.

Website launched to improve communication and operations

In late March of 2017, the CWHL launched a new website (cwhl.ahdc.vet.cornell.edu) to improve communication between the WHP and DEC staff. DEC personnel can use the site to access case reports, receive updates on diagnostic testing results, and examine historic case data through maps and other analytical tools. The website also includes a growing library of training resources, including videos and reports on current wildlife health topics, and a "basic training" series intended for new DEC staff.

Other significant accomplishments include the approval of the Chronic Wasting Disease Risk Minimization Plan, development of an online wildlife rehabilitator case reporting system, research grants to support moose and bald eagle health, and a collaboration with a wildlife filmmaker to create outreach materials.

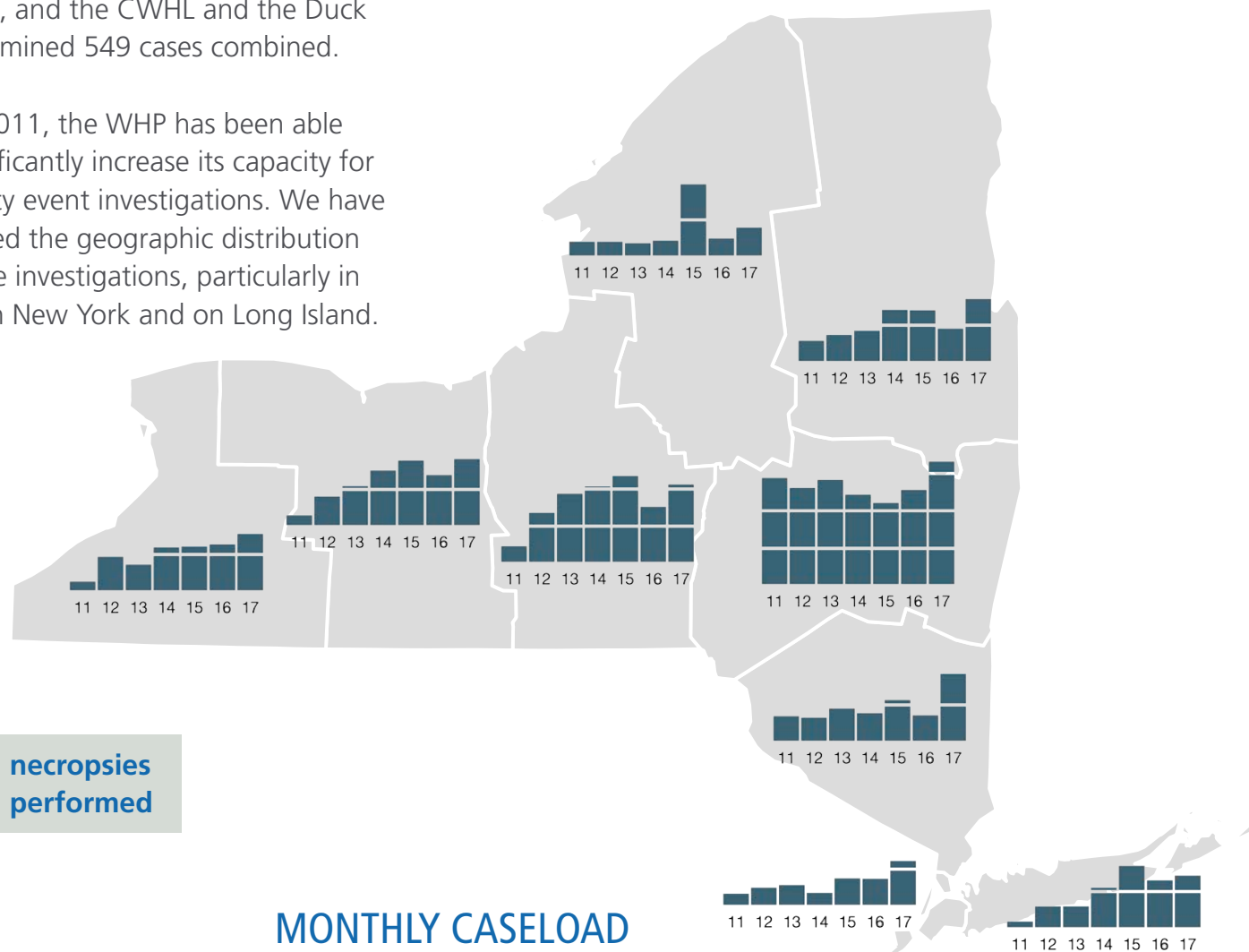
HEALTH AND DISEASE SURVEILLANCE

In 2017, the WHP examined 1,618 animals, an increase of 41% from 2016. The WHU in Delmar examined 1,086 animals, and the CWHL and the Duck Lab examined 549 cases combined.

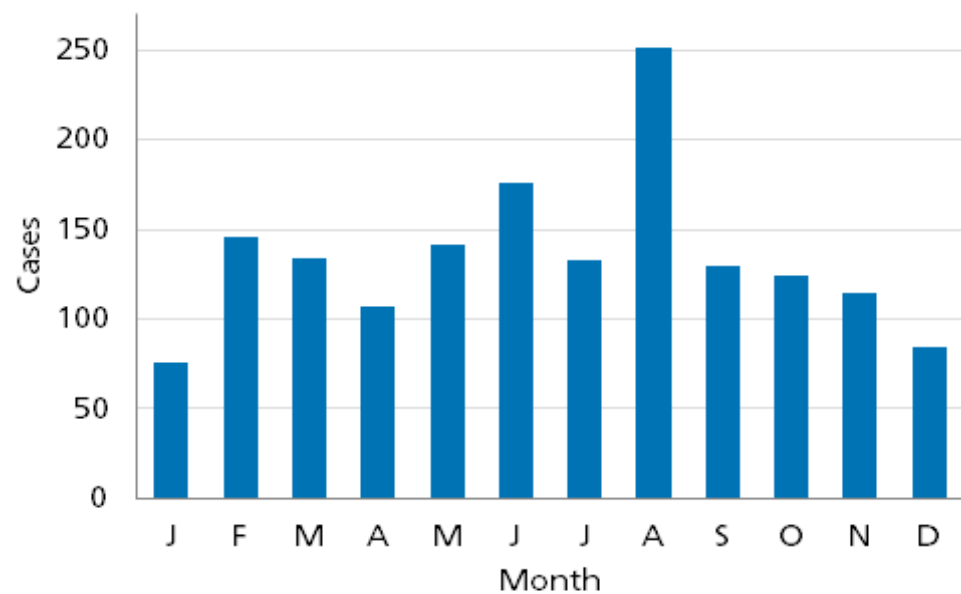
Since 2011, the WHP has been able to significantly increase its capacity for mortality event investigations. We have improved the geographic distribution of those investigations, particularly in western New York and on Long Island.

CASE SUBMISSIONS BY REGION 2011-2017

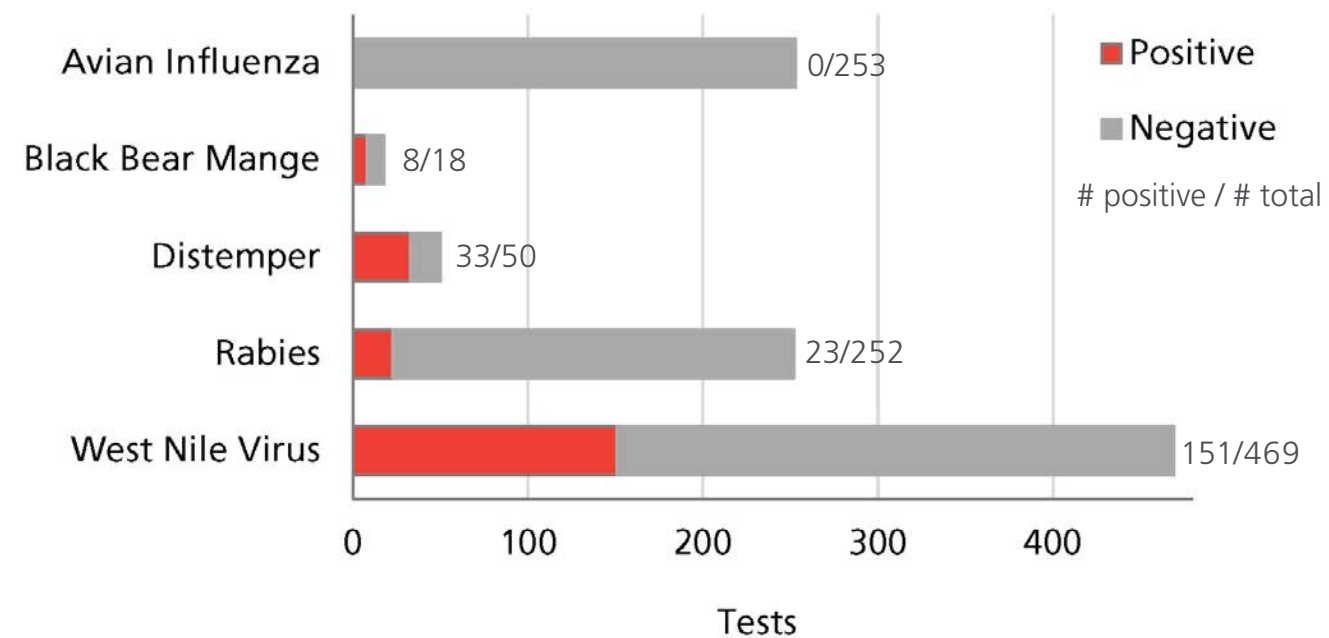
■ REPRESENTS 100 CASES



MONTHLY CASELOAD



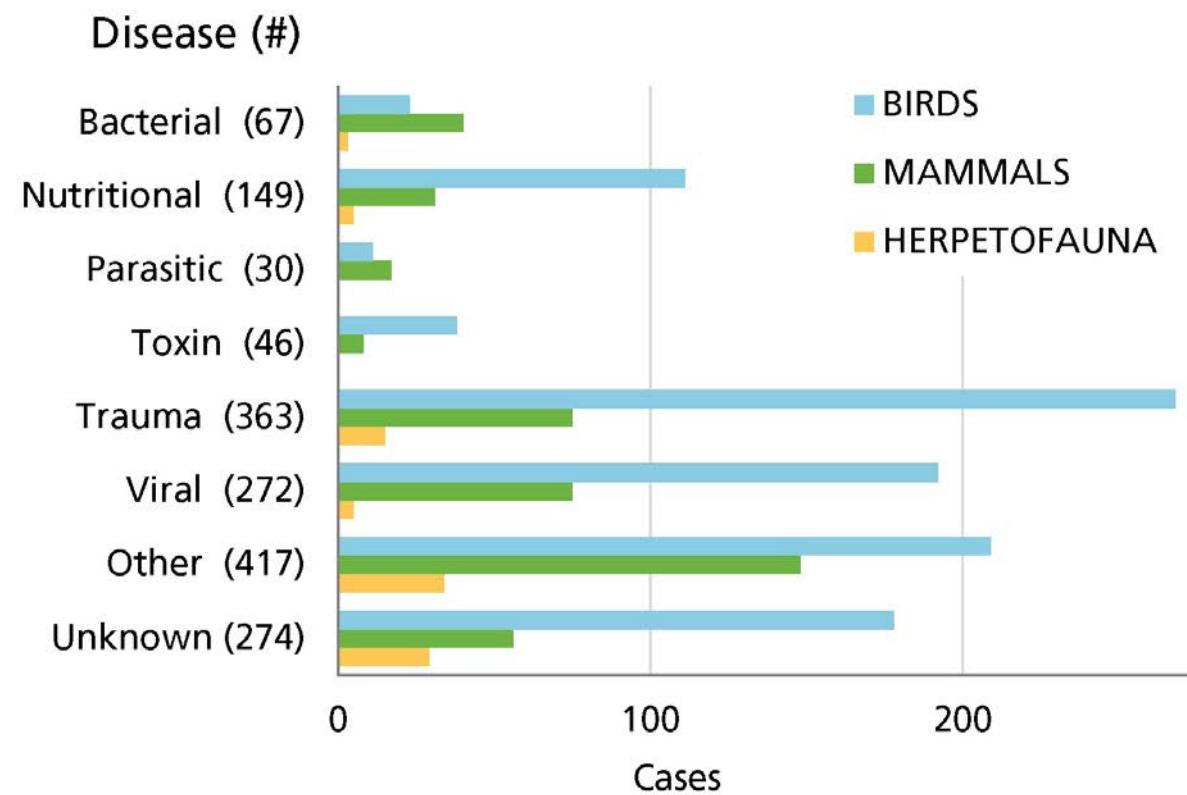
TARGETED DISEASES



1618 animals examined

1000 birds from **90** species
450 mammals from **32** species
90 herpetofauna from **23** species

DIAGNOSED CAUSE OF DEATH



1191 necropsies performed

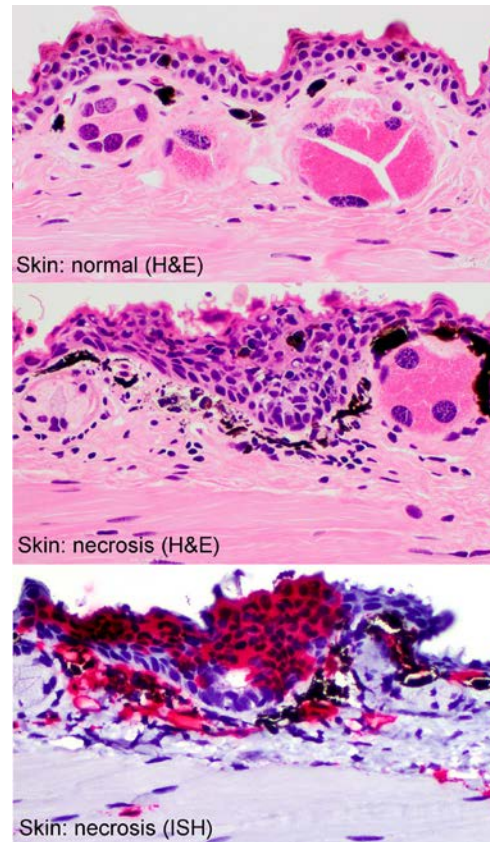
TEST DEVELOPMENT

We often use standard domestic animal tests to detect diseases in wildlife. Sometimes wildlife have diseases that are rare in domestic animals, and we don't have available tests. Some domestic animal tests may require antibodies that are species-specific so an antibody based test developed for a dog is unlikely to work in a red-tailed hawk. And sometimes we have newly introduced diseases for which tests don't yet exist.

The lab works to remedy these situations by adapting or developing entirely new diagnostic tests for wildlife. So far we have developed a new PCR for white nose fungus, added PCR testing for ranavirus, chytrid, trichomonas, avian herpesvirus, circovirus and lymphoproliferative disease virus and have tests pending for cytauxzoon (a parasite of bobcats) and Bsal.

It can be difficult to determine when a virus or bacteria is actually the cause of death, or when it might be just randomly present in the animal. For that we need to have in-situ hybridization (ISH). This test uses

probes to detect the DNA of a pathogen in microscopic sections of tissues, where we can see if it's associated with disease. Our new pathologist, Dr. María Forzán, has developed in-situ tests for ranavirus and reovirus and is now working on detecting two herp-related diseases, perkinsus and snake fungal disease.



Top, healthy newt: normal skin (H&E stain)
Middle, sick newt: lesion in skin with inflammation and tissue death, suspect ranavirus (H&E stain)
Bottom, sick newt: red dye confirms presence of ranavirus in lesion (ISH stain)



Cornell DVM student, Sean Stapleton collecting water samples for eDNA testing



Eurycea longicauda, long-tailed salamander

eDNA

Alyssa Wetterau, PhD student at the CWHL, is working on techniques that use environmental DNA (eDNA) for a wide range of applications, including disease detection and species identification. Probes are used to detect DNA that is shed in water samples.

This a new and promising field of research that can be used for detection of cryptic amphibians and pathogens around the state.

Alyssa is providing sampling kits to DEC staff and finalizing test protocols that would facilitate mapping of a number of rare and threatened amphibians around New York.



eDNA water pump set-up for DEC workshop demonstration

Parasitology technician preparing samples for cytauxzoon PCR testing



EMERGING AND SIGNIFICANT DISEASE ISSUES

West Nile Virus

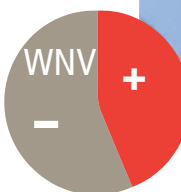
West Nile Virus, a disease that is endemic in New York, was very active in wildlife in 2017. Sixty different species of birds tested positive or suspect-positive for WNV. The total number of positive tests (195) was the highest that the WHP has seen. WNV was the single most common cause of death in animals submitted to the WHP in 2017.

In 2017, 68 of 241 raptors tested positive for WNV.

464 birds tested in 2017

Although our program saw a large increase in avian cases, human cases were similar to previous years: 56 human cases were documented in New York.

The CWHL is collaborating with the new Master of Public Health program at Cornell to analyze our WNV data for information that could be of use in predicting and reducing future cases in humans.



Great horned owl
14 of 32 birds tested positive



Red-tailed hawk
30 of 60 birds tested positive



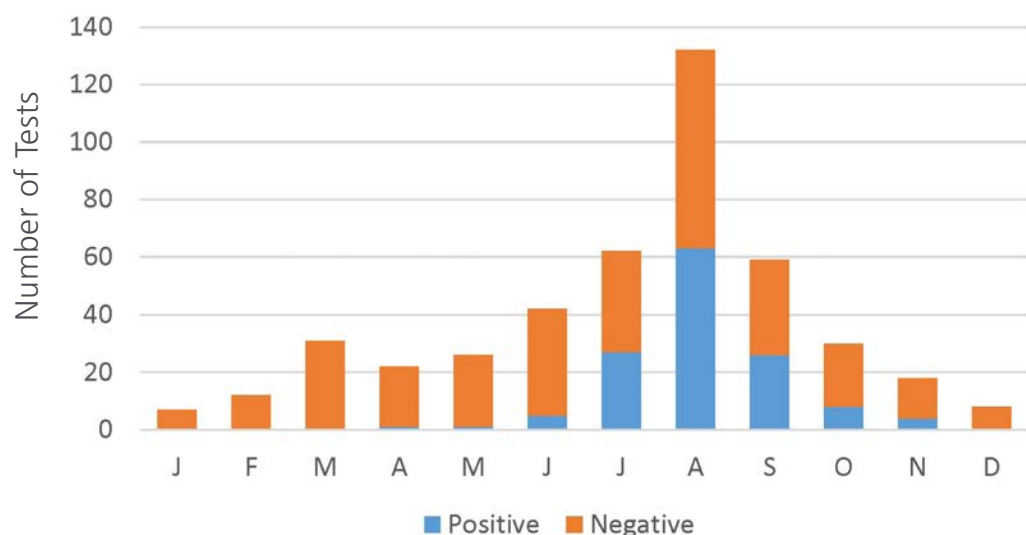
Bald eagle
5 of 50 birds tested positive

Crows are the most frequently affected bird species with WNV



American crow
64 of 118 birds tested positive

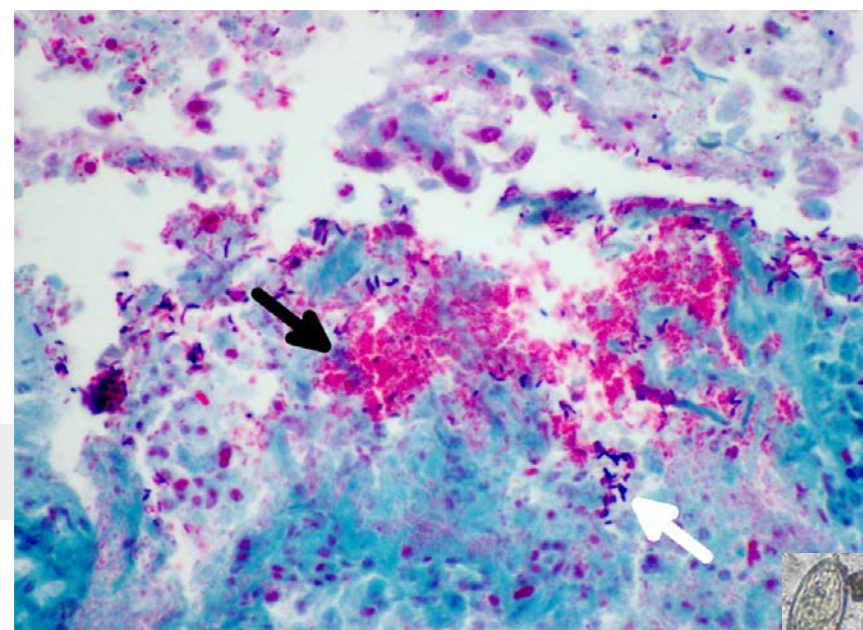
Monthly WNV Testing



Bluebird Mortality Event

Over three dozen adult Eastern bluebirds were reported dead by nest box monitors during the spring and summer of 2017. Of 23 examined by the WHP, the most common cause of death was a combination of trauma to the intestinal wall due to thorny-headed parasitic worms (*Acanthocephala* sp.) and a secondary bacterial infection.

The parasite is commonly found in otherwise healthy bluebirds and the bacteria are normal flora of the gut. Therefore, there seems to be an underlying factor, yet to be identified, that caused the infections and resulted in the birds' deaths. Dr. María Forzán continues to investigate those factors.



Numerous bacteria in a lesion in the intestine of a bluebird. The bacteria are both Gram (-), which are pink (black arrow), and Gram (+), which are blue and marked by the white arrow.



Microscope view of thorny-headed parasitic worm, *Acanthocephala* sp, found in the intestinal wall during necropsy. Photo provided by AHDC Parasitology lab.

Shearwater die off

In mid-June, during an extended period of strong onshore winds, ocean-going great shearwaters were observed unusually close to shore at various locations on the east coast of the U.S. from Long Island to Virginia. Some were found dead on the shore, many live birds were stranded, too weak to fly. The WHU received 55 birds (mostly juveniles) collected by the Town of Hempstead along the Atlantic shore of western Long Island. The majority of these birds were found alive but had died enroute to, or shortly after submission to, a wildlife rehabilitation facility.

Necropsy and histopathological findings indicated starvation as the cause of death, with no evidence of pathogens or parasites as important contributing factors. The cyanobacterial toxin beta-methylamino- L-alanine (BMAA) was detected by University of New Hampshire researcher Jim Haney in liver samples from a subset of the birds necropsied. The significance of the exposure to BMAA is unknown.

Similar mortality events involving this species in late spring or early summer have occurred sporadically along the east coast of the U.S. for at least the last few decades. The chief post-mortem findings in these events have all been similar: emaciation in young birds. It has been speculated that the emaciation might be a reflection of foraging conditions in the South Atlantic. Unfavorable weather events may also be an important factor. The significance of the non-juvenile birds in the 2017 event is unknown, although it could suggest that inexperience may play less a role in these events than might be intuitively surmised.



Specimens being prepped for necropsy by DEC wildlife biologist, Joe Okoniewski.



Some internal contents discovered include various plastic debris, ribbon pieces, and nematodes.



CWD PREVENTION AND RESPONSE

New York State continues to be a leader in chronic wasting disease management and prevention. After several years of development, the Interagency CWD Risk Minimization Plan was distributed for public comment and input was collected until September 15, 2017. DEC assembled responses from the public comment and provided an updated plan. A press conference was held on May 16, 2018 to announce release of the plan and included Commissioner Basil Seggos, DEC, Commissioner Richard Ball, Agriculture & Markets, Dr. Schuler, and Dr. Wayne LaRoche, Pennsylvania Game Commission.



Dr. Schuler co-authored chapters in the Association of Fish and Wildlife Agencies CWD Best Management Practices document. This will be a guiding document produced for state wildlife agencies.

Dr. Schuler and other Cornell researchers collaborated with the National Deer Alliance to

conduct a survey on messaging around CWD and use of deer urine lures for hunting. This study showed that while most hunters have used deer urine in the past, they supported a ban on natural deer urine because of the CWD risk. There are currently two manuscripts submitted for publication from this study.



Commissioner Basil Seggos, DEC, Tony Wilkinson, DEC, Dr. Wayne LaRoche, Pennsylvania Game Commission, Commissioner Richard Ball, Agriculture & Markets, and Dr. Krysten Schuler, Cornell Wildlife Health Lab at the press event to launch the CWD plan.

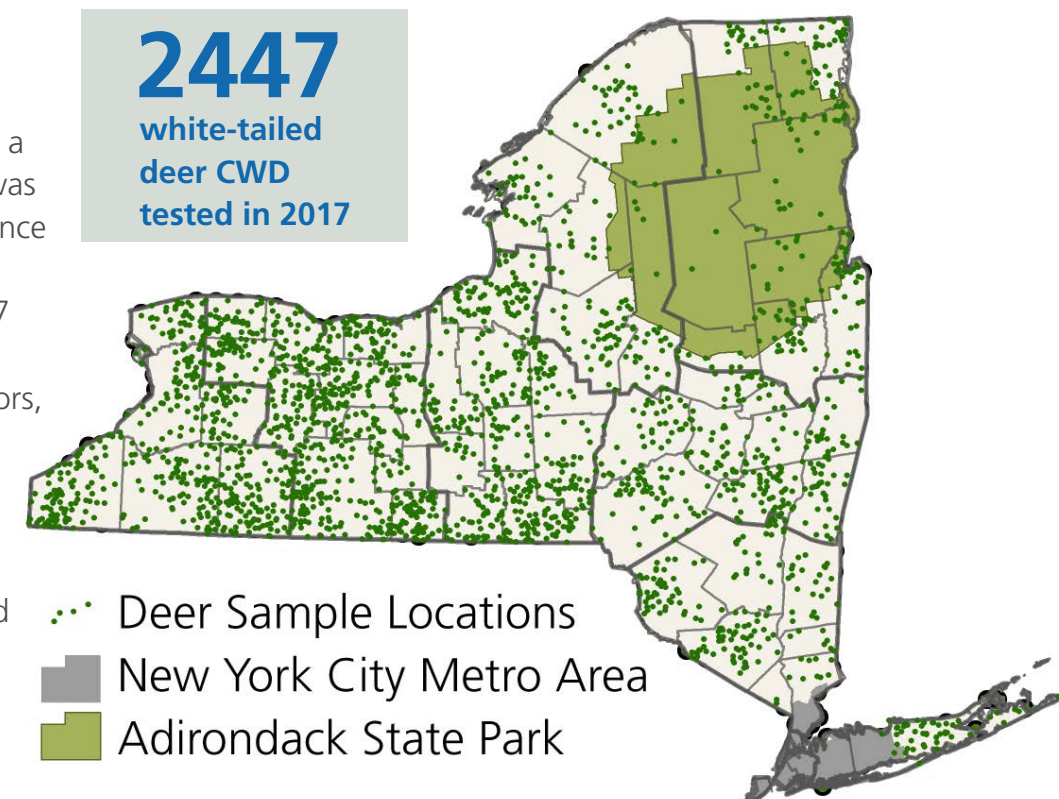


States and provinces where CWD has been detected, 2000-2018

CWD Surveillance Efforts Continue

Surveillance for CWD continues to operate using a weighted risk-based approach. There were 2447 deer sampled in 2017-18. Most are hunter-harvested samples collected from meat processors and taxidermists. Taxidermists were very successful in collecting lymph nodes for testing – 29 participating taxidermists submitted 693 lymph nodes. DEC staff submitted 169 clinical suspect deer, which are a valuable surveillance sample.

The current CWD surveillance plan has been in place for five sampling seasons. As planned, a reassessment of disease risks was initiated and a revised surveillance plan will be in place for the 2018 sampling season. In 2017 NYSDEC field staff interviewed taxidermists and meat processors, and captive cervid facilities were assessed by Agriculture & Markets veterinarians. We anticipate further joint agency activities, such as captive cervid facility inspections, sample collection and shipping, and paperwork streamlining.



Agency Chemical Immobilization Training

In 2017, 27 DEC staff attended the annual Safe Capture workshop, which was held for the first time at Greek Peak Mountain Resort. Of those, 11 were new trainees and 16 were refreshing their skills. Staff take the course every three years to keep training up-to-date.

WHP staff were guest instructors at both the Migratory Bird Banding Workshop held at the Montezuma National Wildlife Refuge and the annual Fur School for trapper education.

Academic Teaching

In late November, the WHP hosted a chronic wasting disease workshop at the AHDC for veterinary, graduate, and undergraduate students and DEC Region 7 staff. This workshop included a lecture and a wet lab that taught participants to collect lymph nodes. They also learned about deer brainworm and how to identify adult worms in the meninges of deer brains.

In April, Dr. Bunting held a career discussion session for the SUNY ESF pre-vet club. Dr. Schuler gave a lecture and wet lab for the SUNY-ESF Wildlife Field Techniques course. Students were introduced to the concept of wildlife health and had a necropsy demonstration and hands-on practice session with a variety of birds and mammals.

Student researchers make significant contributions to our program while gaining valuable training and experience. This past year, 12 students from high school to graduate level worked at the CWHL. They participated in moose and fisher research projects, assisted with developing our online resource library,

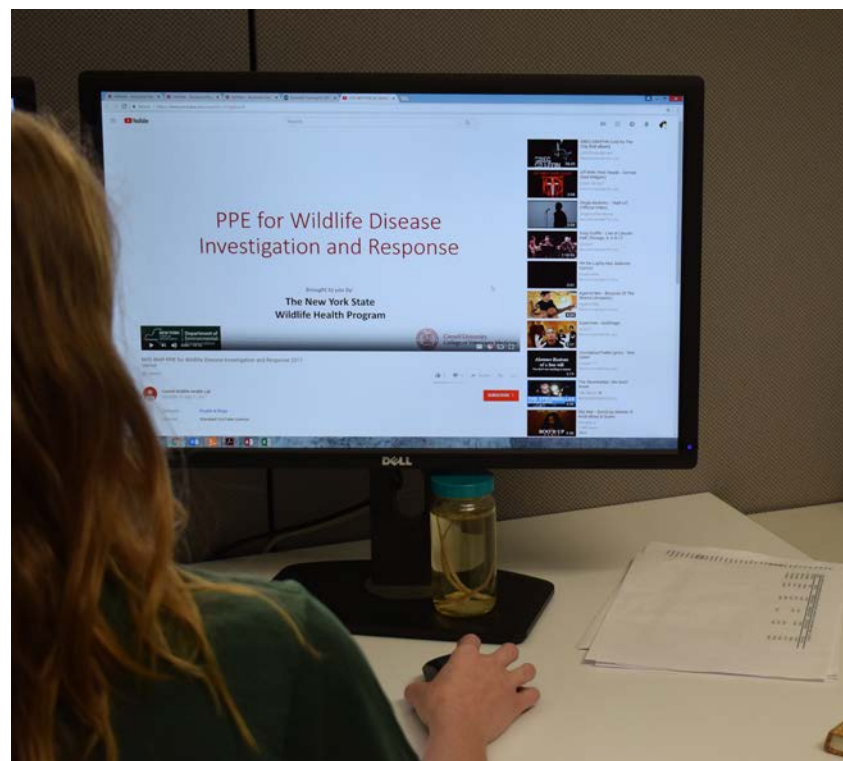
analyzed rehabilitator data and supported our day-to-day case surveillance operations.

Online Training

With the launch of the CWHL website in March 2017, DEC staff have access to a growing library of wildlife health-related training materials. The public and wildlife professionals can find videos and articles on current wildlife health and disease topics, including presentations on CWD by Dr. Schuler, and a recent presentation by Dr. Forzán on infectious disease testing for reptiles and amphibians.

An online library of Disease Fact Sheets focused on wildlife diseases of concern in New York is a useful tool for DEC staff and the public to view and print. These new references for wildlife diseases provide pertinent information on transmission, clinical signs, treatment, and prevention.

Staff watching a video on appropriate personal protective equipment (PPE) for handling wildlife



Wildlife Health Training Module for DEC Staff

One of the main priorities of the WHP is to provide training on wildlife health topics to DEC staff. By understanding wildlife disease, especially emerging diseases, DEC field staff can help safeguard the health of wildlife populations, as well as domestic animals and people. In the field, DEC staff may come in contact with sick or injured animals, and must understand how to protect themselves using personal protective equipment, and how to use safe handling techniques for the safety of the animal.

We created a series of videos and presentations aimed specifically at new staff, to provide information about common zoonoses, the appropriate use of personal protective equipment, the submission process, and responding to a wildlife disease outbreak in the field.

The series is divided into two segments, each containing four modules. Completion of the module series provides new DEC employees with the equivalent of our biannual half-day training workshop for DEC staff.

This series is available to all DEC staff and to the public through the CWHL website.

Course Components

I. Introduction to the Wildlife Health Program and wildlife disease

Module 1. Wildlife Health Program Overview

Module 2. Wildlife Diseases 101

Module 3. The 411 on Wildlife Disease: Zoonoses

Module 4. Wildlife Disease Outbreak Investigation

II. Personal safety and handling wildlife specimens

Module 5. PPE for Wildlife Disease Investigation and Response

Module 6. Disinfection Techniques

Module 7. Handling and Shipping Dead Wildlife Specimens

Module 8. Wildlife Sample Submission

Public Outreach

We encourage public engagement with our program through guest lectures, workshops, and discussion panels, in addition to online content. The website has undergone a user friendly redesign with multiple news and resource sections. Members of the public can read current topics of interest in wildlife health, find links to news articles about the program, be alerted to disease outbreaks, or explore our research projects.

We recently launched a CSI-style case report for members of the public to explore our most interesting and unusual submissions. We also post notices when we have significant disease outbreaks and update those regularly so that readers can follow them in real-time.

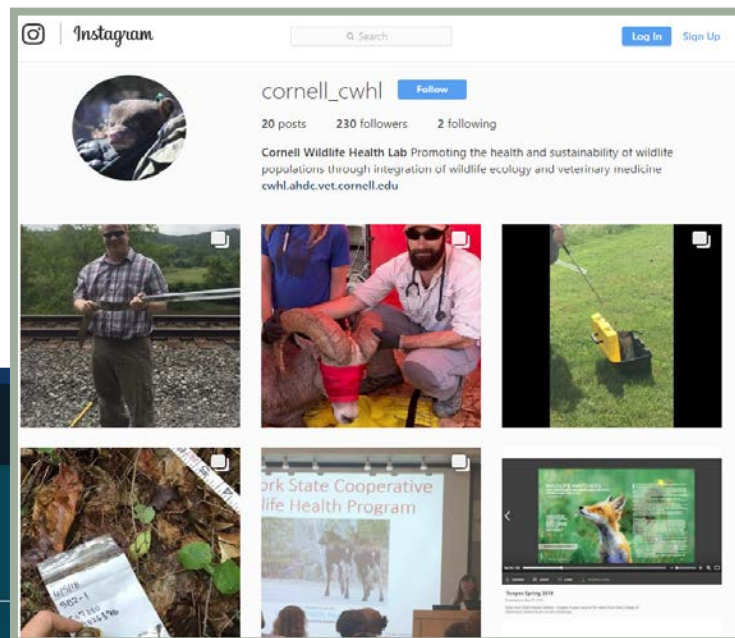
This year, we promoted media articles about the importance of using non-lead ammunition to reduce lead exposure in both bald eagles and hunters, emergence of harmful algal blooms, risks of CWD introduction through urine based lures,

and threat to the salamander population due to a new fungal disease.

The program also supports outreach by external organizations by providing data and medical expertise. We recently helped Audubon New York develop new brochures and handouts on the impacts of rodenticide in wild birds.

Finally, the CWHL opened social media accounts on Instagram and Twitter to promote wildlife health messaging and post our media articles and interviews.

Below: Instagram home page for cornell_cwhl
Bottom: CWHL website Disease Watch and public outreach content



Snake Fungal Disease

BASICS

The organism responsible is the fungus *Ophidiomyces ophiodiicola*, within the family Onygenacea. Snake Fungal Disease (SFD) was first definitively identified in a population of Timber Rattlesnakes residing in New Hampshire in 2006.

KNOWN AFFECTED species include milk snakes, black rat snakes, garter snakes, timber rattlesnakes, eastern massasauga, cotton mouth snakes, and black racer snakes.

The characteristic **CLINICAL SIGN** of SFD is facial swelling. The disease can progress from the nasal cavity internally via the eyes, throat, and lungs causing eye infections and pneumonia. The fungus additionally **SPREADS EXTERNALLY** along the neck, body, and tail forming scattered nodules (lumps) or ulcerations.

The fungus can be shed into the environment by infected animals and **SPREAD** from the environment to other snakes, particularly in animals that share dens. There is no definitive evidence of snake to snake transmission. Spread of the fungus to new locations may occur when people track contaminated **SOIL** imbedded in clothing or shoes.

SFD is **DIAGNOSED** by identification of the typical skin lesions as well as laboratory identification of the **FUNGUS** by culture or DNA detection and microscopic examination of tissues.

TREATMENT with antifungal medications has been successful in colubrid snakes.

DIRECT CONTACT WITH FUNGUS IN ENVIRONMENT

PIT VIPERS & COLUBRID SNAKES

Over 1500 views of the online Snake Fungal Disease Fact Sheet

The NYS Wildlife Health Program | cwhl.vet.cornell.edu
 A partnership between NYS Dept. of Environmental Conservation and Cornell Wildlife Health Lab

ALERT **HOW** **WHO**

Cornell University
CORNELL WILDLIFE HEALTH LAB
 ABOUT NEWS RESEARCH NY WILDLIFE HEALTH PROGRAM CONTACT US

DISEASE WATCH

 Canine Distemper and Raccoons

IN THE NEWS

 Communicating Science - Wildlife Health Through a Camera Lens

WILDLIFE 411

 BRRR! Worried about birds this winter?

WILDLIFE 411

 Of Mice and Wildlife - Rodent Roulette

IN THE NEWS

 Could this be another big year for northern "invaders"?



Above: Photographer/videographer David Brown during an underwater shoot
Below: Bald eagle nestling video shoot by David Brown

Expanding Science Communication

To jump-start our science communication, the CWHL partnered with professional photographer and award-winning nature videographer David Brown to shed some visual “light” on the science behind wildlife health. As a filmmaker with special expertise in aquatic species, he became interested in documenting our eastern hellbender salamander project as a way to highlight the struggles amphibians face in the wild.

Through a grant from the Temper of the Times Foundation, he will be helping the CWHL produce compelling visual media for distribution on the website and social media accounts. We plan to test media products for different demographics to see what communications strategies are most effective.



Photos by David Brown

Above: Hellbender health survey
Right: Hellbender transmitter surgery



Fishers and Rodenticide

Anticoagulant rodenticides are commonly used to control rodent populations. However, other wildlife can be accidentally exposed either by consuming the bait or by eating the poisoned rodents (secondary toxicity).

7 of 10
tested positive
for rodenticide

In 2017, ten fisher livers collected in 2013 and 2014 and stored in the CWHL wildlife tissue bank were tested for the presence of

anticoagulant rodenticides. Tissue bank samples are collected from animals submitted for either cause of death determination or training purposes in necropsy workshops or fur school demonstrations. Samples were tested for the most common compounds including chlorophacinone, diphacinone, warfarin, brodifacoum, bromodialone, difenacoum, and difethialone.

The majority of the samples tested positive for brodifacoum, followed by bromodialone and diphacinone. Of the seven samples that tested positive for rodenticide, three of them were positive for more than one type. Because there is only one rodenticide in any one commercial product, it shows that these animals are being exposed multiple times over a short period to these compounds.

The toxicity of rodenticides is dependent on both the dose and the susceptibility of the species. Unfortunately, such toxicity data is not available for wildlife species. However, levels were high enough in two samples to suggest that rodenticide poisoning could be the primary cause of death.

3 of 7
positives had more
than one type of
rodenticide



Cytauzoon

Cytauzoon felis is a protozoal blood parasite that affects felid species such as the bobcat and domestic cat. It is transmitted by dog ticks (*Dermacentor*) and Lone Star ticks (*Amblyomma*). Although we have these ticks in New York, the parasite hasn't been confirmed further north than Pennsylvania.

The WHP is engaged in research projects on a variety of species.

The WHP is working with the parasitology lab at AHDC to develop a test for cytauzoon. We have supplied the lab with tick samples from across the state. We are also providing tissue samples for examination. The tissue samples are from our tissue bank, hunter-harvest, and from road-killed animals.



Hellbenders

In our 4th year of field research on eastern hellbenders, we partnered with Buffalo State College to study release strategies with a small group of 20 animals. They were implanted with transmitters at Cornell and monitored by Master's student Megan Kocher during the summer of 2017.





Four-toed Salamander eDNA

Identifying cryptic or elusive species in their natural habitat is vital for conservation planning and habitat management. However, finding species that are small, well-camouflaged, or live in hard-to-reach places is challenging. Traditional survey methods are both time and labor intensive, and may still yield inadequate findings.

Environmental DNA (eDNA) is a novel approach for wildlife population monitoring. It works by identifying and quantifying traces of genetic material that an animal has left behind in the environment. We are applying this tool to detect the four-toed salamander (*Hemidactylium scutatum*), a cryptic amphibian species of concern in New York.

We are developing a new quantitative PCR (qPCR) test specific to the four-toed salamander. This will allow us to identify

DNA from four-toed salamanders in filtered water samples from candidate breeding ponds more quickly and accurately than with traditional survey methods.

We are validating this eDNA method by comparing the results with traditional survey methods at test ponds in New York. We collected water samples from May through July 2017 from ten pools with historic or contemporary reports of four-toed salamander presence. Once validated, we will be able to improve the distribution map for this species by testing water samples collected from locations across the state.

18 salamander species in NY



eDNA water sampling locations

Moose Health

We are wrapping up an intensive look at moose health in New York using both live-captured animals and investigation of mortalities. Between 2015 and 2017, we obtained samples from live moose to examine a variety of health parameters. From necropsies, we identified internal parasites: deer brainworm (*Parelaphostrongylus tenuis*), giant liver fluke (*Fascioloides magna*), *Echinococcus* (tapeworms) and *Neospora caninum* as threats to moose health.

1200 samples collected

We are in the third year of a study examining deer fecal samples and gastropods for brainworm and liver fluke to identify risk factors on the Adirondacks landscape. We are collaborating with SUNY-ESF to develop PCR tests for *Echinococcus* and *Neospora* in canid feces to better understand these parasite cycles.



Moose Health from field to lab: undergraduate and vet students collecting fecal and gastropod samples in the field and preparing them for PCR and Parasitology testing in the lab

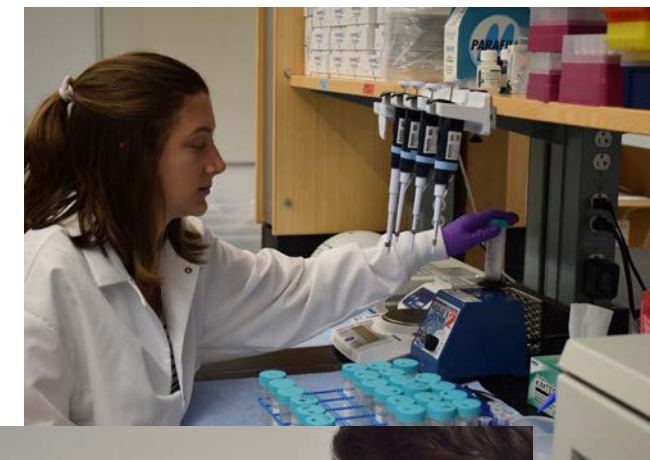


Bald Eagles

We are in the process of conducting a meta-analysis of lead-poisoned bald eagles for Northeast states and provinces.

The goal is to determine if lead is impacting eagles at a population level despite increasing overall numbers.

Data have been provided from New York, Pennsylvania, Maine, Massachusetts, Quebec, Prince Edward Island, and Newfoundland, beginning with samples collected as early as 1994. Current estimates indicate that 17% of annual mortalities are due to lead poisoning. We have secured funding from Morris Animal Foundation to fund a post-doctoral fellow to conduct more intensive population modeling to assess potential impacts.



Disease Prevention and Response

This year, we revised and finalized the Disease Response Framework. This document was created to guide the DEC's response in the event of any disease outbreak for which a specific response plan has not already been created.

As requested, we also continue to provide policy support to the DEC and Dept. of Agriculture & Markets on chronic wasting disease. We assessed and responded to public comments following the release of the CWD Risk Minimization Plan. We traveled to Albany to meet with lobbyists and attend public hearings on live captive-cervid import bans.

We were also engaged in CWD-related policy discussions at the national level. We submitted comments from the DEC and The Wildlife Society Wildlife Disease Working Group to the USDA on proposed changes to the CWD Herd Certification Program Standards.

Dr. Schuler co-authored chapters in the Association of Fish and Wildlife Agencies (AFWA) CWD Best Management Practices document. Dr. Schuler also gave a presentation on CWD to the Northeast Wildlife Administrators Association (NEWAA), which contributed to the group's decision to pass a resolution to ban the use of natural deer urine.

Dr. Forzán leads the Diagnostics Group of the North American Bsal Task Force, which aims at preventing the introduction of the deadly salamander chytrid fungus into the continent. The Task Force, which is composed of wildlife professionals from Canada, the USA and Mexico, has developed a Rapid Response Plan and is currently working on a Strategic Plan.

Public Health

We also worked with the DEC and the Department of Health to address issues of lead contamination from ammunition and venison donation. At the request of the Department of Health, we provided background information and recommendations. This resulted in a warning label at food pantries to alert potential consumers of the risks to children and pregnant women.

Wildlife Capture, Handling, and Safety

We regularly provided input on external research permit applications that involve wildlife, ranging from salamander to white-tailed deer. In addition, this year, we also provided reviews of the DEC's Coyote Capture Plan and its Peregrine Falcon Management Plan.

Disease Information and Prevention

To aid DEC field staff responding to suspected rabies and canine distemper cases, we developed user friendly disease fact sheets. We also assisted in the revision of DEC website pages on the Care of Young Wildlife, CWD, Rabies, Avian Influenza, EHD, and White Nose Syndrome.



Ambystoma tigrinum, tiger salamander. By Kuribo - Own work, CC BY-SA 3.0

Grant Reporting Requirements

An interim USFWS Federal Aid Performance Report was submitted in fulfillment of grant requirements.

Wildlife Rehabilitation Electronic Data Capture and Analysis

Each year, the DEC Special Licenses Unit collects data on tens of thousands of wildlife from licensee and permit holders, including bird breeders, wildlife rehabilitators, and nuisance wildlife control officers.

This data resource could provide valuable information for monitoring wildlife health, management decisions, and policy development – all issues important to the WHP.

The WHP is working with the SLU to modernize their approach to data collection. An online reporting system for license

and permit holders is being developed. Not only will this new system make it easier for license and permit holders to submit required documents and records, the SLU will also be able to shift away from an inefficient paper-based system for managing and reviewing reports.

The collaboration will focus first on the Wildlife Rehabilitator License. Wildlife rehabilitators come in contact with nearly 20,000 animals each year. Changes in the frequency of submissions, spatial distribution, or causes for presentation may be indicators of change in the health of a species.

The online reporting system for wildlife rehabilitators is expected to be made available in the first quarter of 2019. With its deployment, the WHP can begin using this valuable data resource as another tool for monitoring the health of New York's wildlife.

CWHL online database for rehabilitator submissions

WILDLIFE HEALTH TEAM

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.

Kevin Hynes preparing for a field necropsy demonstration given to DEC staff at a regional workshop



Dr. Bunting discussing disease surveillance



WILDLIFE HEALTH TEAM MARCH 2017-CURRENT

Region	Name		
Region 1	Leslie Lupo	WHU	Kevin Hynes (Chair)
Region 2	Sandy Chan	Cornell	Krysten Schuler
Region 3	Elaina Burns	Cornell	Beth Bunting
Region 4	Karl Parker	BMT Liaison Central Office	Patrick Martin
Region 5	Tim Watson	DLE Liason	Major Matthew Revenaugh
Region 6	Steve Heerkens	BMT Liaison (Regional)	Michelle Gibbons
Region 7	Tom Bell (Co-Chair)		
Region 8	Jenny Landry		
Region 9	Ryan Rockefeller		

ANNUAL WORK PLAN FY2017 REVIEW

Administrative

Administration: budgeting, fiscal, personnel, T&A, LATS, FMIS	Completed
Create guidance document for facilities and equipment	In Progress
Wildlife Resources Center (WRC) infrastructure, equipment management and maintenance	Completed
WRC incinerator operation, lab maintenance, facility maintenance and grounds	Completed
Annual Wildlife Health program report	Completed
Biannual wildlife health program review (Central Office or Cornell)	Completed

Policy Support

CWD Risk Minimization Plan out for public comment	Completed
Maintain wildlife health website and case data access (Cornell)	Completed
Amend CWD regulation (Part 189) as per Risk Minimization Plan	In Progress
Participate in wildlife health related meetings IRC, CWD, BOW, Wildlife Health and other meetings	Completed
Providing wildlife health consultation (public, staff, partners, regulatory, research projects, SLU licenses, etc.)	Completed
Wildlife rehabilitation, NWCO, and Game Bird electronic data capture and analysis	Completed

Health and Disease Surveillance

Case management and reporting: Wildlife necropsies (>1000/yr)	Completed
Participate with Northeast Wildlife Disease Cooperative as a partner	Completed
Chemical immobilization policy document (AFWA guidance document)	In Progress
2017 CWD surveillance (sample collection, Taxidermy Partnership Program, reporting)	Completed
Development of eDNA tools for amphibian and virus detection (yr 4)	In Progress

Training, Teaching, and Outreach

Advanced topic workshop for staff (Bird Banding, Fur School)	Completed
Create training module for new hires on wildlife health website	Completed
Training workshops for DLE staff	Completed
Communicate with veterinarians regarding wildlife health issues	Completed
Collaborate and coordinate with federal agencies on wildlife health issues	Completed
2017 Safe Capture International chemical immobilization training	Completed
Wildlife health presentations for public	Completed
Forensic services for DLE	Completed



Kevin Hynes and Dr. María Forzán demonstrating necropsy techniques



Megan Kocher (Buffalo State College), Shelby Priester (Buffalo State College), and Niki Dean (CWHL), doing a health survey on released hellbenders in the Allegany River system

Disease Prevention and Response

5-year CWD risk assessment update for CWD Surveillance Plan	In Progress
Hellbender vaccination field trial in Allegany River	Completed
Moose population health assessment	Completed

Research

Virtual Tissue Bank website (in partnership with NWDC)	In Progress
Wildlife health and wildlife rehabilitators listserv maintenance	Completed
Northeast bald eagle lead poisoning retrospective study (publication product)	In Progress
Bear mange statewide surveillance (publication product)	In Progress
P. tenuis study final report	In Progress
Development of a P. tenuis test for cervids	In Progress

PUBLICATIONS, PRESENTATIONS, AND GRANTS

Publications

Alger K, **E Bunting**, **KL Schuler**, CM Whipps. 2017. Risk Factors and Spatial Distribution of Lymphoproliferative Disease Virus (LPDV) in Wild Turkeys (*Meleagris gallopavo*) in New York State, USA. *Journal of Wildlife Diseases*. 53(3):499-508.

Fenton H, PY Daoust, **MJ Forzán**, RV Vanderstichel, JKB Ford, L Spaven, S Lair, S Raverty. 2017. Causes of mortality of harbor porpoises (*Phocoena phocoena*) along the Atlantic and Pacific coasts of Canada. *Diseases of Aquatic Organisms*. 122(3):171-183.

Forzán MJ, J Heatley, KE Russell, B Horney. 2017. Clinical Pathology of Amphibians: A Review. *Veterinary Clinical Pathology*. 46(1):11-33.

Forzán MJ, KM Jones, E Ariel, RJ Whittington, J Wood, RJF Markham, PY Daoust. 2017. Pathogenesis of Frog Virus 3 (*Ranavirus sp*, *Iridoviridae*) infection in wood frogs, *Rana sylvatica*. *Veterinary Pathology*. 54(3):531-548.

McBurney S, W Kelly-Clark, **MJ Forzán**, R Vanderstichel, K Teather, S Greenwood. 2017. Persistence of *Trichomonas gallinae* in bird seed. *Avian Diseases*. 61(3):311-317.

Peltier SK, JD Brown, M Ternent, KD Niederinghaus, **K Schuler**, **EM Bunting**, M Kirchgessner, MJ Yabsley. 2017. Genetic Characterization of *Sarcoptes scabiei* from Black Bears (*Ursus americanus*) and Other Hosts in the Eastern United States. *Journal of Parasitology*. 103(5):593-597.

Pessier AP, **MJ Forzán**, JE Longcore, L Berger, L Rollins-Smith, L Skerratt. 2017. Letter to the editor: Comment on chytrid *Batrachochytrium*

dendrobatidis fungal infection in freshwater prawn, *Macrobrachium rosenbergii* (de Man)-a new report. *Aquaculture*. 468(1):326-327.

White CL, EW Lankau, D Lynch, S Knowles, **KL Schuler**, JP Dubey, VI Shearn-Bochsler, M Isidoro-Ayza, NJ Thomas. 2018. Mortality trends in the Washington population of northern sea otters (*Enhydra lutris kenyoni*) during 2002-2017. *Journal of Wildlife Diseases*. 54(2):238-247.

Presentations

Bunting, Elizabeth. "Chronic Wasting Disease: Evaluating Public Health Risks." Eighth Annual Public Health Symposium, Cornell University College of Veterinary Medicine, Ithaca, NY, September 8-9, 2017.

Bunting, Elizabeth. "Wildlife Health At Cornell." Cornell Alumni Leadership Conference, Cornell University, Ithaca, NY, February 2, 2018.

Dean, Nicole. "New York Wildlife Health Program." State University of New York Oswego, Oswego, NY, 2017.

Driscoll, Cindy P. (presenter), Erica A. Mille, Sherrill Davison, Perry Habecker, Lisa Murphy, **Elizabeth M. Bunting**, Mark Pokras, Julie Melotti, Ginger Stout, Fiep De Bie, Anne Ballmann, David Earl Green, Susan Knowles, Julia S. Lankton, Marcos Isidoro Ayza, Valerie I. Shearn-Bochsler, Jason Weckstein, Ellen Bronson, Allison Wack. "Snowy Owl (*Bubo scandiacus*) Health and Mortality Investigations With Project SNOWstorm During the Great Irruption of 2013-2015 and Beyond." Wildlife Disease Association 66th International Conference, Chiapas, Mexico. July 23-28, 2017.

Hanson, Melissa. "NYS Wildlife Rehabilitator Reporting: Making Paperwork Work." Annual Conference, New York State Wildlife Rehabilitation Council, Binghamton, NY, November 10-12, 2017.

Hollingshead, Nicholas. "NYS Wildlife Rehabilitator Reporting: Making Paperwork Unnecessary." Annual Conference, New York State Wildlife Rehabilitation Council, Binghamton, NY, November 10-12, 2017.

Hopf, Cynthia (presenter), Noha Abou Madi, Marjory Brooks, **Elizabeth Bunting**. "Prevalence of Anticoagulant Rodenticide Exposure in Red-tailed Hawks (*Buteo jamaicensis*) in New York State and Diagnostic Utility of Russell Viper Venom Test for Detecting Associated Coagulopathies." Wildlife Disease Association 66th International Conference, Chiapas, Mexico. July 23-28, 2017.

Schuler, Krysten. "Once Bitten, Twice Shy: New York's Risk-based Approach to Chronic Wasting Disease." Disease: Science Politics, and Management, the 40th Annual Meeting of the Southeast Deer Study Group, St. Louis, MO, February 28, 2017.

Schuler, Krysten, Mary Wood, Kelly Straka, Darrel Rowledge, John Fischer (panelists). "Panel Discussion: What we know about chronic wasting disease." 2017 North American Deer Summit, National Deer Alliance, Austin, TX, June 7-8, 2017.

Schuler, Krysten. "Chronic wasting disease: current science and policy decisions." New York Farm Bureau, Albany, NY, 2017.

Schuler, Krysten. "Taking the piss out of CWD." Northeast Wildlife Agency Administrators, Minnowbrook, NY, 2017.

Schuler, Krysten. "Taking the piss out of CWD." Webinar for the Rhode Island Department of Environmental Management Division of Fish and Wildlife, 2017.

Forzán, María. "Influence of climate on emerging diseases of amphibians." Special Species Symposium, College of Veterinary Medicine, Cornell University, Ithaca, NY, April 22, 2017.

Forzán, María. "Forensic Pathology in Wildlife Cases." Mini-Symposium on Veterinary Forensic Pathology, College of Veterinary Medicine, Cornell University, Ithaca, NY, October, 2017.

Forzán, María. "Amphibian diseases and conservation medicine." Invited lecture for Conservation Medicine: A Veterinary Perspective. College of Veterinary Medicine, Cornell University, Ithaca, NY, July 21, 2017.

Forzán, María. "Bleeding techniques for amphibians." Filariasis Research Reagent Resource Center, University Wisconsin, Oshkosh, WI, April 2017.



Forzán, María. "Advanced Special Topics: Wildlife Disease." University of Vermont, Burlington, VT, March, 2017.

Posters

Song H, K McComas, **K Schuler**. "The role of similarity and trust in psychological reactance against public policy." Society for Risk Analysis, Arlington, VA. 2017. Awarded best student poster.

Wetterau A. "eDNA." Smithsonian Institute, Washington, DC, April, 2017.

Stapleton S, A Wetterau, M Hare, E Bunting. "Developing eDNA tools for elusive herpetofauna and viral diseases of conservation concern." Cornell Veterinary Investigators Symposium, Cornell University, Ithaca, NY, August 2017.

Grants

Schuler, K, A Fuller. Parasitic threats to moose on the Adirondacks landscape. USDA-National Institute of Food and Agriculture, Animal Health and Disease Program. \$87,409. (August 2017-August 2019)

Bunting, E. Hope for Hellbenders. Temper of the Times Foundation. \$10,000. (April 2018-April 2019)

Schuler, K, and also K Bischoff, B Bodenstein, J Brown, **E. Bunting**, **MJ Forzán**, S Gildos, **K Hynes**, M Pokras, and D Winn. Northeast regionals meta-analysis of lead toxicosis impacts on bald eagles. Morris Animal Foundation. \$105,043. (August 2018-February 2020)



Lithobates sylvaticus, Allegany County, NY, USA - Chubby Wood Frog, CC BY 2.0



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