

# New York State Wildlife Health Program

Annual Report 2018-2019



**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 (NYSDEC) 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. Initiated in 2011, the program is responsible for monitoring wildlife disease and toxin impacts on species statewide, staff training and support, policy input and research. Our activities are reported by state fiscal year (April 1, 2018 - April 30, 2019).

This report covers the case submissions from January 1 - December 31, 2018. During that time, the program processed 1324 cases, including 908 necropsies at our three necropsy laboratories (DEC Wildlife Health Unit at Delmar, CWHL at the Animal Health Diagnostic Center in Ithaca, and Cornell Duck Research Lab on Long Island). In the winter and early spring of 2019 there was a significant increase in mortalities due to anticoagulant rodenticide poisonings, a long term focus of our research to develop better testing and documentation of the impact on multiple species. We catalogued significant disease outbreaks, including paramyxovirus in cormorants, distemper in urban raccoons; and noted an increased number of barred owls in our submission pool. We screened 2,371 hunter-harvested deer and 112 clinical deer for chronic wasting disease, with no positive cases recorded.

## Major staff changes

This year we had major changes in our staff. Joe Okoniewski, long-term biologist at the Wildlife Health Unit (WHU), retired in the summer of 2018, and Patrick Martin, our first program lead, retired after 30 years with NYSDEC in December 2018. Niki Dean, program aide at Cornell, moved on to a position at Hamilton College, and Ashley Ableman stepped into a new role as a Research Scientist at the Wildlife Health Unit. Brenda Hanley joined the group as a post-doctoral associate at Cornell, in charge of a multi-state project modelling bald eagle populations funded by the Morris Animal Foundation.

## Growth of communications and outreach efforts

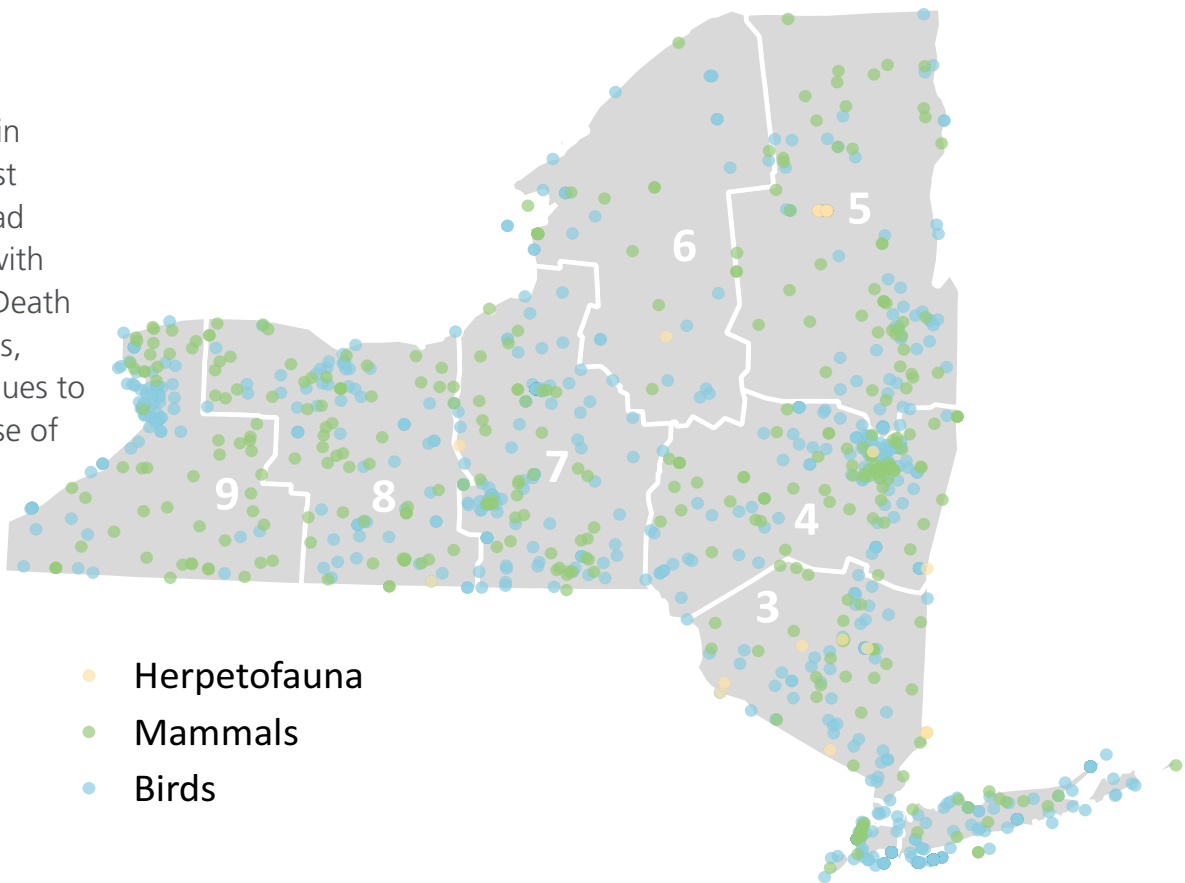
We increased our outreach efforts with multiple talks and workshops. We published 40 online articles on the CWHL website covering a variety of wildlife health topics. We also produced new training materials, wildlife disease fact sheets, and new analytical tools for wildlife professionals. In this third year of our 2016-2021 Strategic Plan we focused on ways to apply our surveillance and research data to solve real world problems.



# HEALTH AND DISEASE SURVEILLANCE

CASE SUBMISSIONS BY REGION

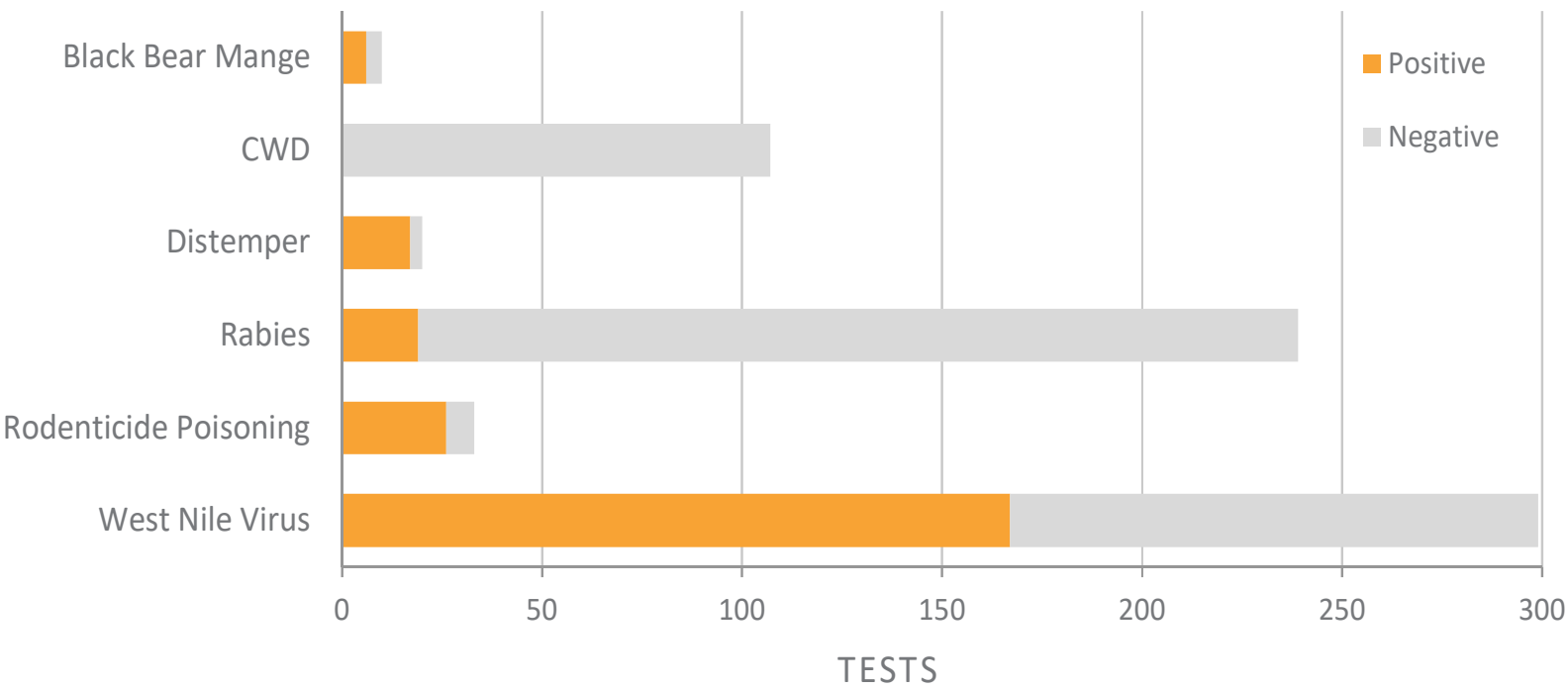
After an increase in cases in 2017 (due to a severe West Nile outbreak), our caseload returned to typical levels with 1324 animals submitted. Death from human related causes, particularly trauma, continues to be the most common cause of death for most species.



908 necropsies performed

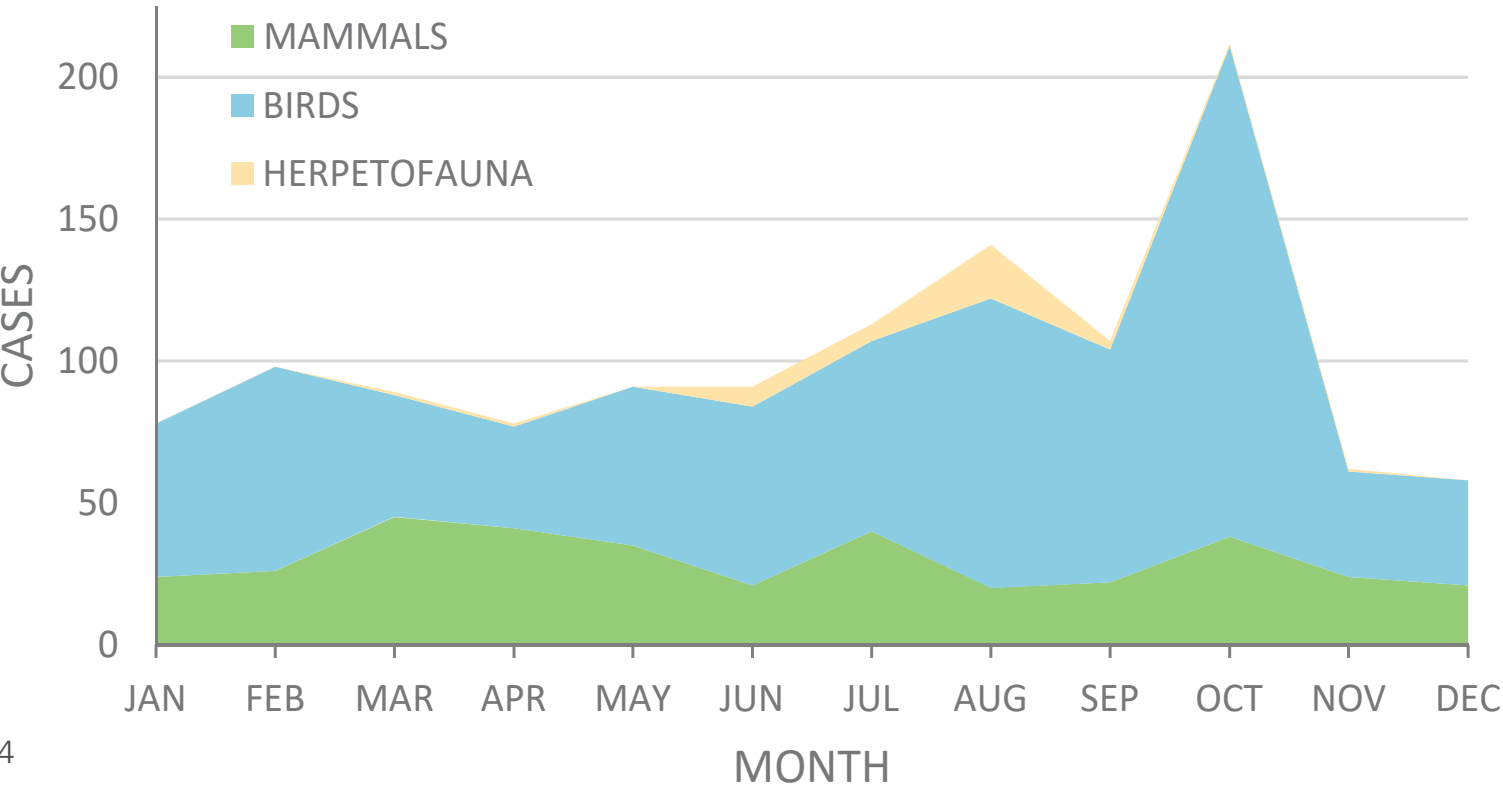
1324 animals examined  
28 forensic examinations

TARGETED DISEASE SURVEILLANCE

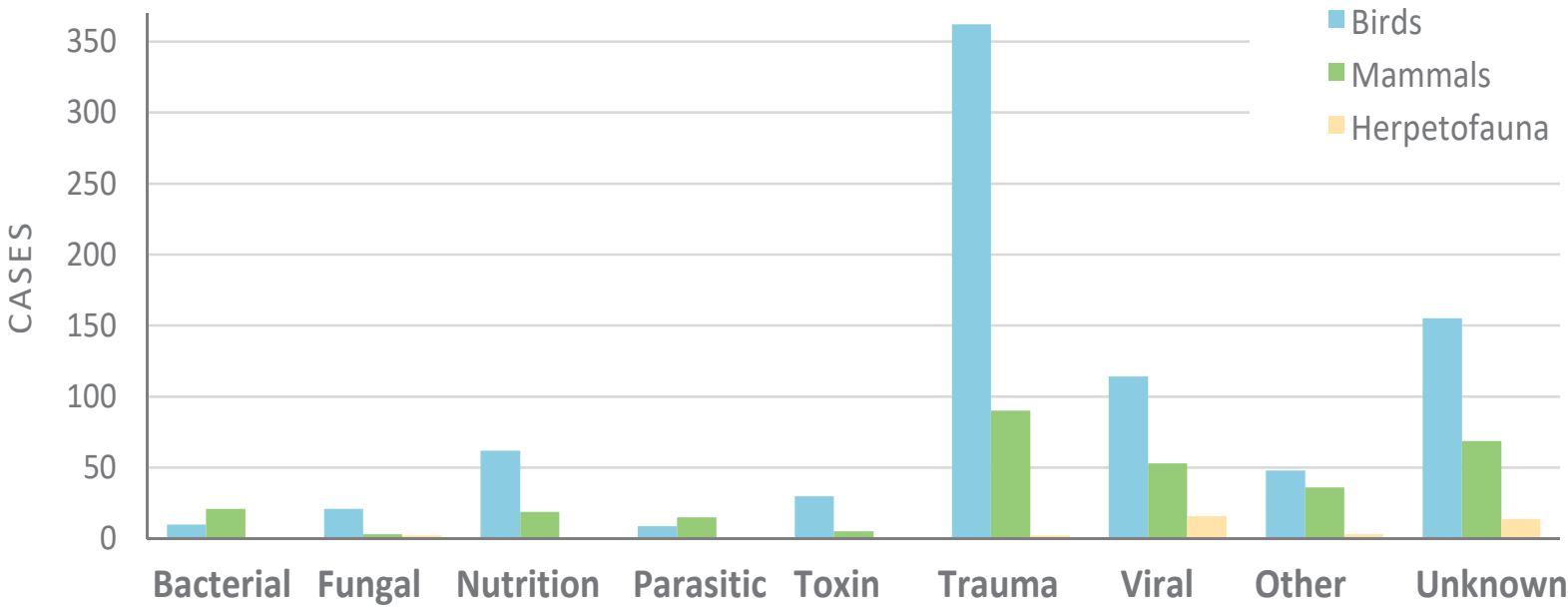


850 birds from 89 species  
389 mammals from 30 species  
44 herpetofauna from 10 species

MONTHLY CASELOAD



DIAGNOSED CAUSE OF DEATH





# TEST DEVELOPMENT

## eDNA

The WHP is working to develop new diagnostic tools for emerging wildlife diseases in New York State. Alyssa Wetterau (doctoral student) has been refining the technique of environmental DNA (eDNA) testing, which will allow us to detect the presence of pathogens and even rare or elusive wildlife species. During our regular regional workshops held throughout the state, Alyssa trained DEC biologists in eDNA sample collection.

Biologists are assisting with the field collection of samples from species such as the queen snake and tiger salamander to provide positive controls as well as test specimens to get the eDNA lab up and running. As long as a unique DNA sequence can be determined for an animal or microbe, this test method can provide detection for any number of aquatic species and pathogens and is even being developed for use in soil and snow.

## Rodenticide Testing

We saw a sharp increase this year in mortalities from exposure to anticoagulant rodenticides in both birds and mammals. These compounds are widely used for rodent control, but any predator that consumes the exposed rodents (or the products themselves) can die within days from hemorrhaging.

Previous studies by DEC and our program show that the majority of free-ranging raptor and the majority of tested fishers have rodenticide in their system, but the tests can only be done on liver samples.

The CWHL has teamed with the Comparative Coagulation Laboratory at the AHDC to develop a live animal test for rodenticide exposure that would be cheaper and more reliable.



**Alyssa Wetterau in the field collecting water samples for eDNA testing**

## Parasitology; Detection and Identification

Dr. Mani Lejeune, Director of Clinical Parasitology at the Animal Health Diagnostic Center is collaborating with the WHP to develop several DNA-based tests (commonly referred to as “PCR tests”) for the detection of wildlife parasites. The tests developed by Dr. Lejeune are expected to provide significantly improved reliability and accuracy over conventional methods, such as fecal sample examination.

## CWD Sampling Improvements

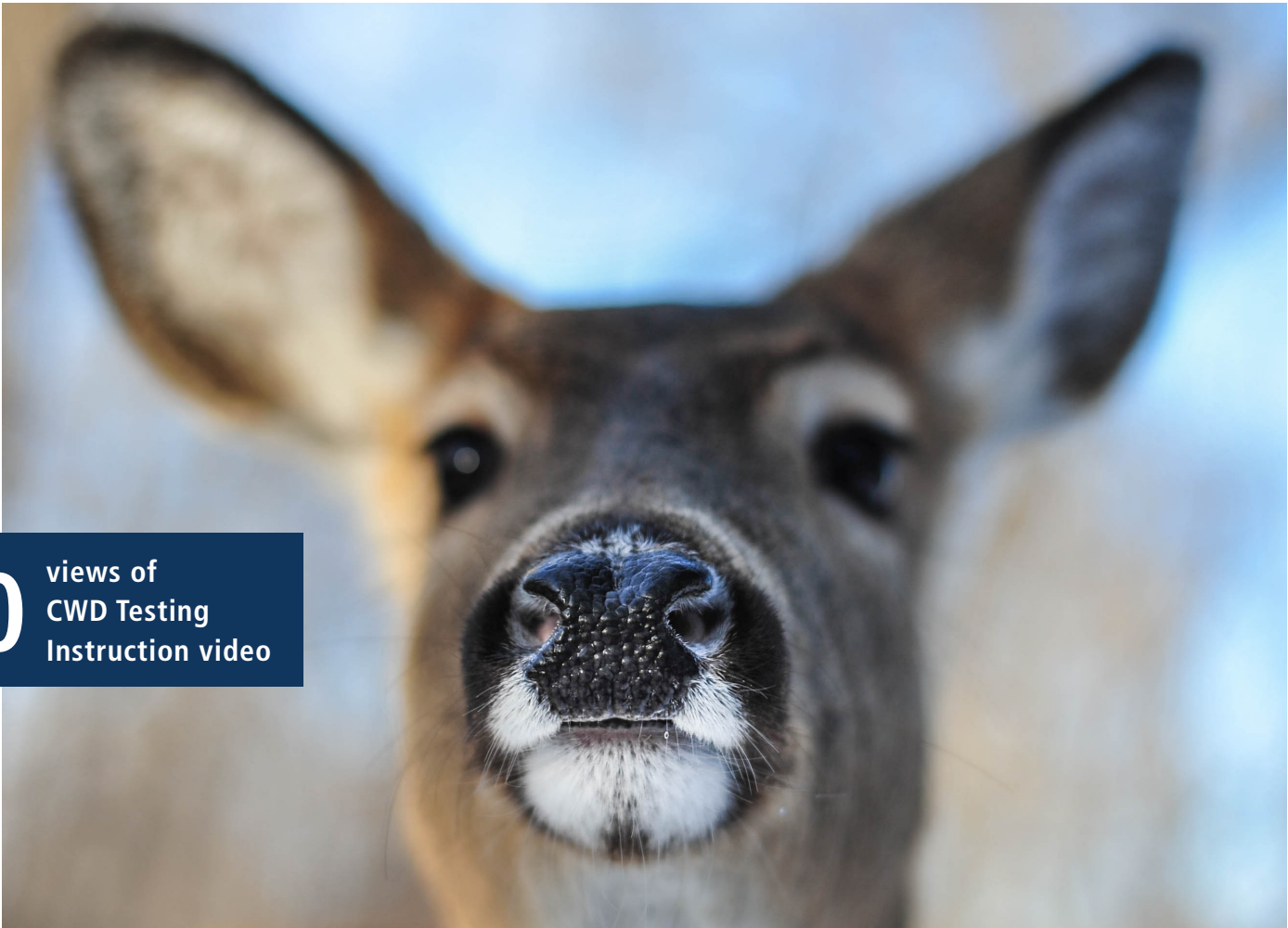
Due to public interest, the CWHL will now offer hunters the opportunity to have their harvested deer tested for CWD for a fee. Instructions, videos, and forms are available on the CWHL website (link below). Several hunters took advantage of this new opportunity in 2018.

## Hunter Harvest Submission Guidelines



**CWHL student prepping DNA samples in Parasitology for PCR testing**

The NYS Department of Agriculture and Markets also reached out to the DEC for assistance with captive cervid CWD testing. We developed a system to provide insulated boxes to owners for shipping heads to the labs directly. This system streamlines the process for both owners and state veterinarians, and reduces delays in testing.



80

views of  
CWD Testing  
Instruction video



# EMERGING AND SIGNIFICANT DISEASE ISSUES

## Paramyxovirus Outbreak in Cormorants

In mid-summer to early fall of 2018 we confirmed an outbreak of Avian Paramyxovirus 1 in double-crested cormorants in New York. The birds came from a wide geographic area along the southern shores of the St. Lawrence River, Lake Ontario and Lake Erie. The first cases were submitted in mid-July, with birds exhibiting signs of weakness and problems with balance. Several birds had coinfections with West Nile Virus, and all the birds were juveniles. The cormorant virus strains were different from the notifiable disease in poultry, and additional weeks of testing by our diagnostic lab virologists was essential to confirm the disease. During the same time period, additional cases were documented in Cape Cod, Massachusetts, Minnesota, and Toronto, Canada.

## Duck Viral Enteritis (DVE)

The CWHL assisted with confirmation of duck viral enteritis from several dead wild mallards and wood ducks found at a captive facility in Onondaga County in central New York. DVE is a serious disease affecting waterfowl species (ducks, geese, and swans), but is not a human or domestic animal health risk.

Caused by a herpesvirus (Anatid herpesvirus 1), DVE is spread through direct contact with infected birds and contaminated water, food, or feces. Signs include a bloody vent or bill area, diarrhea, balance problems, and inability to fly. About 90% of the infected birds can die, many before they display obvious signs of illness. This virus is very hardy and can last in the environment for extended periods of time, but biosecurity and disinfection at the facility contained this outbreak.



Wood and mallard ducks in flight

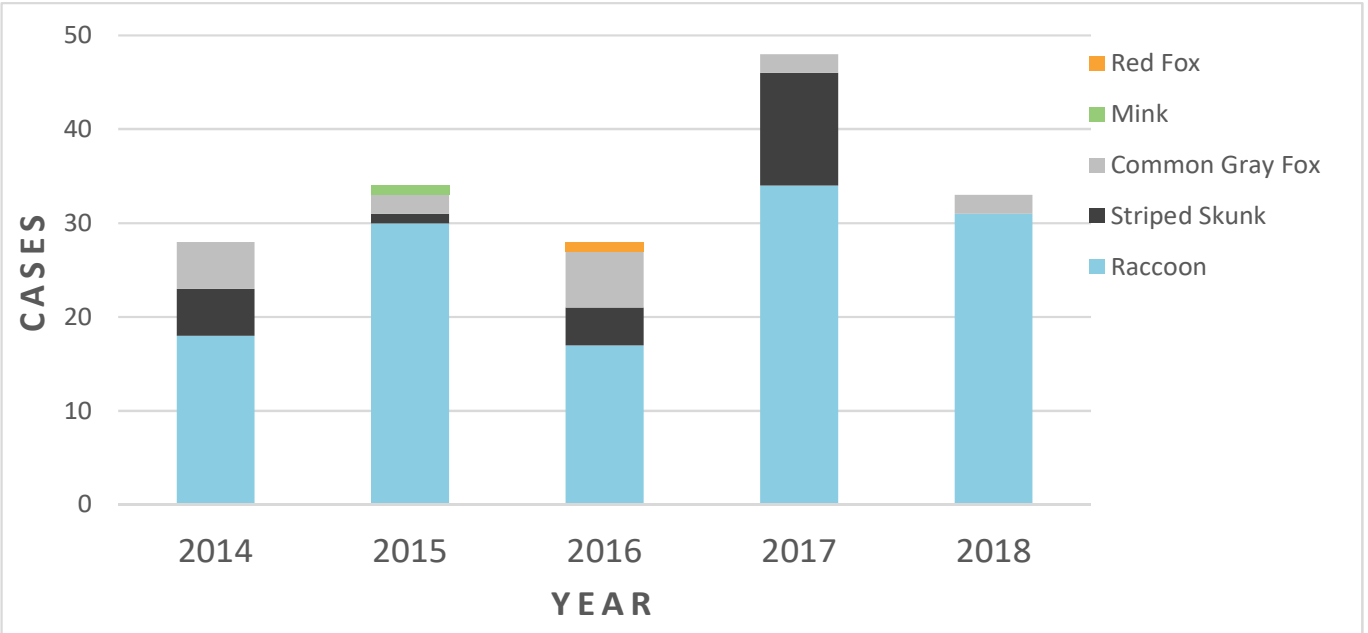


## Canine Distemper

Canine Distemper is common in the spring in raccoons, skunks and foxes when animals emerge and become more active. The CWHL sees cases every year, but in 2018-19 we received an increased number than the typical number of reports from the Niagara and New York City areas, and the cases continued throughout the summer and winter at higher numbers than usual.

Although distemper is transmissible to domestic dogs, comparison with the domestic dog submissions demonstrated different strains of the virus. Symptoms of distemper in animals are very similar to rabies, and it isn't possible to tell these diseases apart without laboratory testing. For this reason, we advise anyone who comes in contact with these animals to be extremely cautious and treat them like rabies suspects until proven otherwise.

Canine Distemper Cases





## CHRONIC WASTING DISEASE PREVENTION & UPDATE

## CWD Expanding

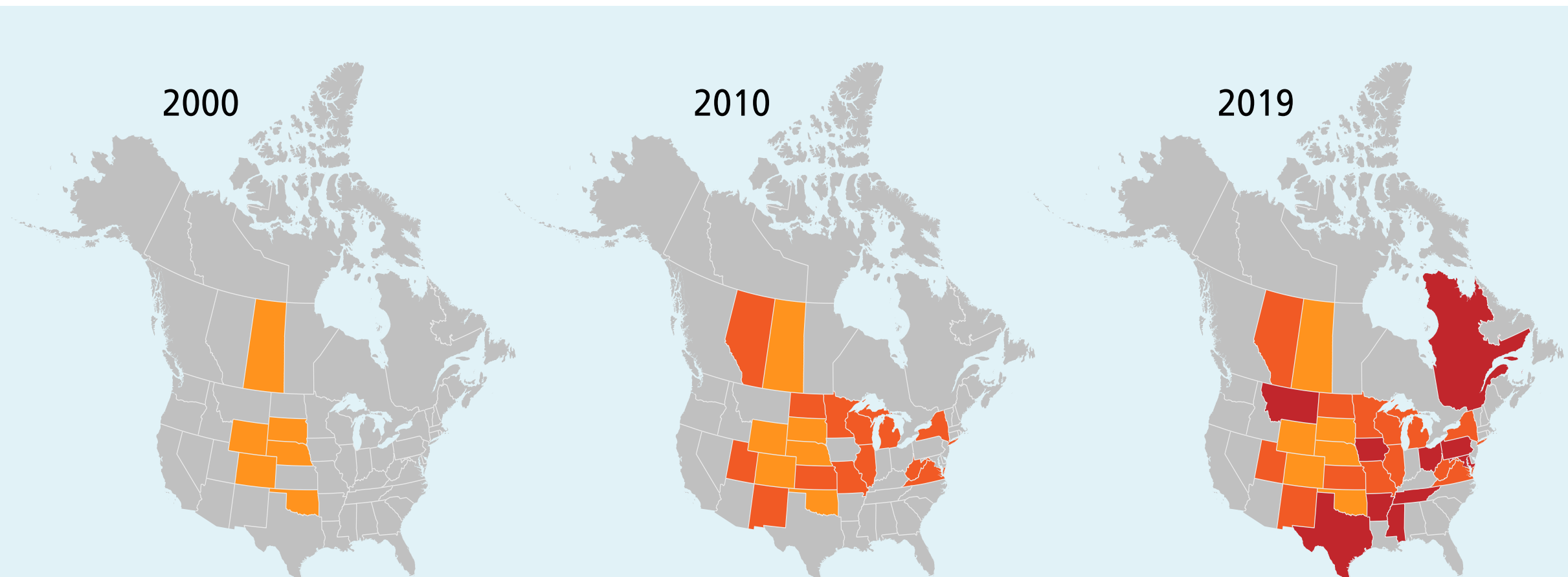
Chronic wasting disease (CWD) continues to be a major focus of the NYS Wildlife Health Program. CWD has now been found in 26 states with Mississippi and Tennessee joining the list in 2018. Because of the increasing risk for re-introduction of CWD into NY, The Interagency CWD Risk Minimization Plan was approved by the Departments of Environmental Conservation and Agriculture and Markets.

With the approval of this plan, New York State has taken a strong proactive approach to CWD prevention by prohibiting high-risk materials from entering the state and limiting opportunities for wild deer and moose to contact contaminated materials or animals.

For wildlife diseases like CWD, prevention is the most effective management policy.

This year, DEC sampled 2,483 white-tailed deer in surveillance efforts statewide. Overall, DEC has tested over 52,000 wild white-tailed deer since 2002. CWD surveillance efforts are increased in high risk areas, such as the border with Pennsylvania, and for deer at higher risk of carrying the disease, such as mature bucks. DEC partners with hunters, cooperating meat processors, and taxidermists in obtaining samples for testing each year.

**2483**  
white-tailed deer  
CWD tested in 2018



## Collaborative Prevention

Dr. Schuler has continued to cultivate new partnerships to improve CWD surveillance and management efforts throughout the country. This year, she has worked with the National Deer Alliance, Teddy Roosevelt Conservation Partnership, Camp Fire Conservation Fund, and Tennessee Wildlife Resources Agency. The CWHL has generated a variety of publications, presentations, and media interest in CWD this year.

Dr. Schuler co-authored several chapters in the Association of Fish and Wildlife Agencies CWD Best Management Practices. We are also partnering with Cornell's Center for Conservation Social Science to survey New York hunters and non-hunters to understand their views toward CWD.



# TRAINING AND TEACHING

## Regional Workshops

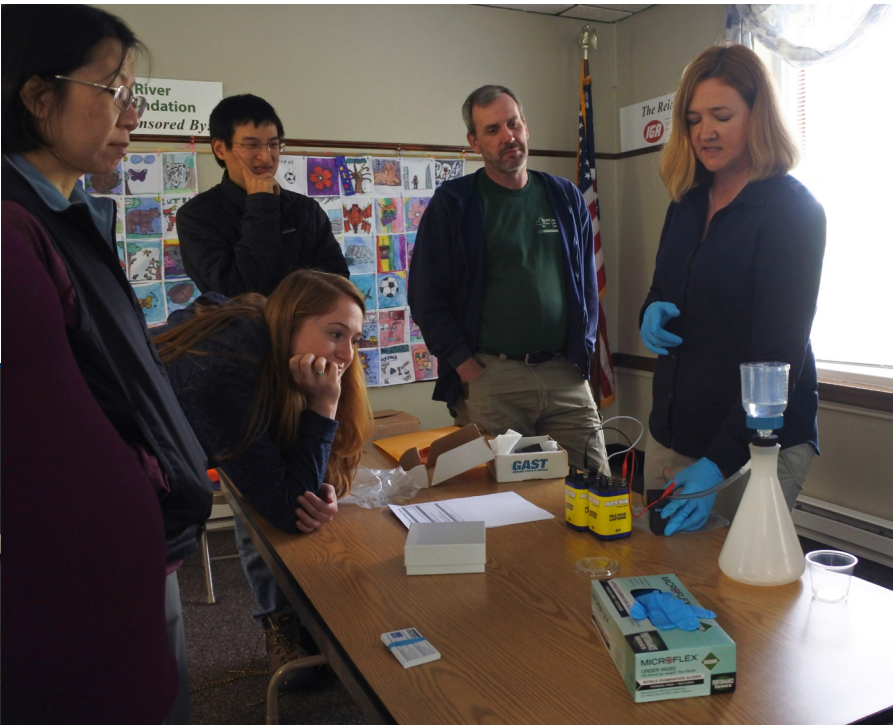
Educational endeavors continue to be a major focus of the WHP. This past year, we conducted a round of regional workshops across the state with 170 participants from:

- NYSDEC Bureau of Wildlife
- NYS Division of Law Enforcement
- NYS Division of Lands & Forests
- NYS Department of Parks, Recreation, & Historic Preservation
- Cornell University
- private veterinarians

Topics were based on feedback from DEC staff and include demonstrations of the CWHL website products and data analytics, case and research updates, CWD info,

rabies protocols, and hands-on “choose-your-own-adventure” with demonstrations of eDNA sampling and necropsy techniques.

Additional workshops were provided for DEC Law Enforcement, NYS Parks, NYS Fur School, NYSDEC Game Bird Banding, Cornell Lab of Ornithology, and the Northeast Wildlife Disease Cooperative.

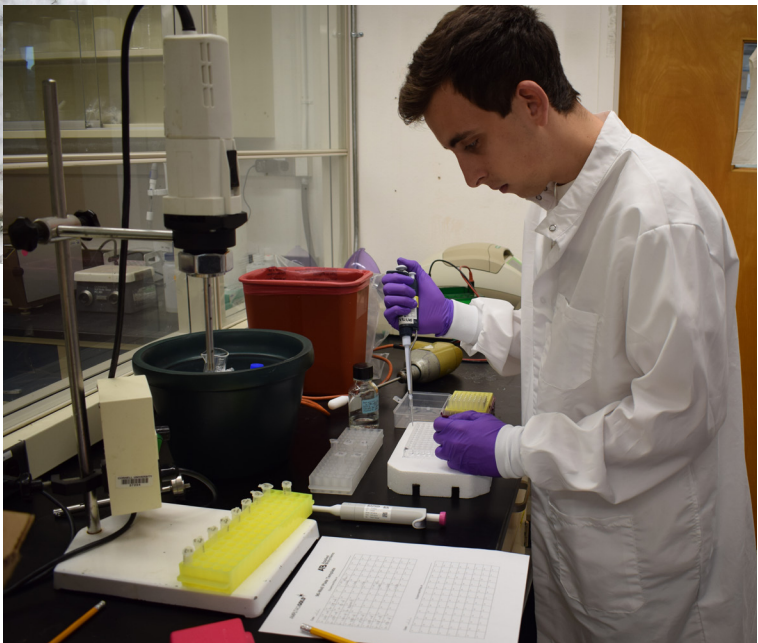


**Right:**  
Dr. Schuler giving an eDNA demonstration to DEC staff at a regional workshop

**Below:**  
Kevin Hynes discussing the importance of personal safety when handling wildlife in the field



**From the field to the lab:**  
CWHL student working with DEC field biologists to do health surveys on fishers and then back at the coag lab working on rodenticide test development.



## Student Education

Student teaching is a mainstay of work at the CWHL. CWHL staff guest lectured at a variety of institutions including Cornell, Tufts University, University of Vermont, SUNY-ESF, and SUNY-Cobleskill. At the AHDC, we have mentored over 80 undergraduate, graduate, and veterinary students. Students have opportunities to be involved in specific wildlife health research projects, diagnostic test development, and disease surveillance activities.

**80** students mentored overall

This year, we hosted intern Alvaro Eduardo Ponce Cosio through a research experience program in Peru. He assisted Dr. Hanley on a project modeling population impacts of lead toxicosis in bald eagles and presented his research at Harvard University in March 2019.

Drs. Schuler and Hanley welcoming Alvaro Cosio into the research team of CWHL.






The CWHL published over **40** articles including news reports, disease alerts, and research updates. We initiated social media accounts on Instagram and Twitter to increase public outreach and education and have consistently seen website visits spike following social media postings. We contributed to numerous articles in local and national media outlets, links can be found on our website.

Biologists Teaching Veterinary Students


Gordon Batcheller, retired chief wildlife biologist for NYSDEC, has worked to promote the use of non-lead ammunition by hunting communities. Fragments of lead shot can be accidentally ingested by any human or animal consuming hunter killed wild game, and safer alternatives are available, including copper.

Gordon was an invited speaker at the Cornell College of Veterinary Medicine. He presented a lecture titled “On the complexity of a contemporary wildlife management issue: The use of lead ammunition for hunting big game,” during the 2019 Conservation Medicine class. His presentation was well received and there were a number of questions from students and faculty. A [recording of the lecture](#) is available on the CWHL website.



Cornell University  
College of Veterinary Medicine

Please join the CWHL & Conservation Medicine (VTMED 6735) on **JANUARY 23 (WED)** 12:00 - 1:00pm in LH5



ON THE COMPLEXITY OF A CONTEMPORARY WILDLIFE MANAGEMENT ISSUE:

THE USE OF LEAD AMMUNITION FOR HUNTING BIG GAME

Gordon R. Batcheller

A Certified Wildlife Biologist and retired Chief of Wildlife for the State of New York in 2015 following a 35 year career with the New York Division of Fish and Wildlife. Gordon remains professionally active with the Northeast Association of Fish & Wildlife Agencies, Association of Fish & Wildlife Agencies, and The Wildlife Society.



As Chief of Wildlife in New York, he started an initiative to teach hunters about the benefits of using non-lead hunting ammunition, and he continues to actively promote a constructive dialogue nationally on hunting ammunition, especially for big game.



CWD in the News

Chronic wasting disease continues to make national news both in the public press and scientific society magazines. Dr. Schuler was quoted in The Wildlife Professional, along with media outlets like USA Today, and participated in a podcast with hunter Randy Newburg.

Public outreach and education about CWD continue to be important program priorities, as misinformation about the disease continues to appear in online publications and other media outlets. Dr. Schuler wrote a blog post titled “[Prion Hypothesis for CWD: An Examination of the Evidence](#)” to counter misinformation with the latest scientific evidence. It has been viewed over 7,200 times.

Prion Hypothesis for CWD: An Examination of the Evidence



Krysten Schuler  
February 21, 2019

Over **7200** views  
of the CWD Prion Blog  
posting

As a wildlife disease ecologist, I’ve been asked my opinion on the scientific support for prions as the agent of chronic wasting disease (CWD). I have been studying CWD for two decades. The spiroplasma (bacteria) theory<sup>1</sup> has been around for years, but has recently resurfaced. I’ll lay out the many reasons why prions are implicated in all transmissible spongiform encephalopathy diseases (TSE). No other infectious agent has the same amount of evidence.





Healthy looking white-tailed deer, infection status is unknown.



Mastering the Message

Dr. Beth Bunting and the DEC have been involved in a longterm project on hellbender population health and conservation. Dr. Bunting received a grant from Temper of the Times Foundation in April of 2018 to develop and test communications materials for web and social media applications, we thought - [Hellbenders!](#) The CWHL teamed with filmmaker David Brown to produce four videos about amphibian conservation and CWHL hellbender research. Each video varied in length and content in order to test messaging effectiveness. We have posted the videos and are collecting analytics on our website, [Instagram](#) and [Twitter](#) accounts.

Temper of the Times videos produced by David Brown

CORNELL WILDLIFE HEALTH LAB

ABOUTNEWSRESOURCESRESEARCHNY WILDLIFE HEALTH PROGRAMCONTACT US

Communicating Science Through Emerging Media - Hellbender!

Hellbender!

from David O. Brown

Hellbender!

02:30

vimeo

Our work made possible with the support and collaboration of the following partners:

• Buffalo Zoo

Communicating Science Through Emerging Media - Amazing Amphibians!

Amazing Amphibians!

from David O. Brown

Bat salamanders were first

02:13

vimeo

Our work made possible with the support and collaboration of the following partners:

- Buffalo Zoo
- Buffalo State College
- Lycoming State College
- SUNY ESF, College of Environmental Science and Forestry
- Janet L. Swanson Wildlife Health Center, Cornell University
- Upper Susquehanna Watershed Coalition



Working on hellbender health, research and conservation; Dr. Bunting in the field examining hellbenders.

Social Media and Analytics

An uptick in visits to the CWHL’s Twitter and Instagram feeds has garnered an increase in hits on our website, spikes in hits as high as **84%** following social media posts. Snake Fungal Disease still comes in as a hot topic of interest as well as anything related to baby animals, CWD and lead. Both accounts have led to national and international interest in our website and its pages covering a wide range of wildlife health topics.

Twitter Analytics - April 2019

AnalyticsHomeTweetsAudiencesEventsMore

Cornell Wildlife Health Lab

Sign up for Twitter Ads

Apr 2019 • 30 days

TWEET HIGHLIGHTS

Top Tweet earned 5,495 impressions

Now is the time of year that we start seeing baby animals out & about. Here are some helpful tips on what you may see, when to leave them alone, and the impact if you don't. [cwhl.vet.cornell.edu/article/april-...](#) More helpful tips from @NYSDEC can be found at: [dec.ny.gov/animals/6956.h...](#) [pic.twitter.com/TT4BJS8PvZ](#)

18 27

View Tweet activityView all Tweet activity

Top mention earned 17 engagements

**Melissa Osgood**  
@MissyOsgood · Apr 16

In 2017 the federal government lifted a ban using lead ammunition and fishing tackle on federal lands and waters. @CornellVet's Dr. Sarah Childs-Sanford predicted an increase in lead toxicity cases: [vet.cornell.edu/news/20180126/...](#)

Learn more:  
[cwhl.vet.cornell.edu/project/bald-e...](#)  
@Cornell\_CWHL [twitter.com/wildlifeDZeco/...](#)

1 1

View Tweet

Top media Tweet earned 2,428 impressions

Is there such as thing as #Fungus Friday? Actually, fungal diseases are no joke. They are serious & threaten many wildlife species including reptiles, amphibians, and bats. Everything you wanted to know about Snake Fungal Disease but were afraid to ask [cwhl.vet.cornell.edu/article/everyt...](#) [pic.twitter.com/qGD6gRmdop](#)

Top Follower followed by 7,513 people

**Joan Pope**  
@sexdeathrebirth FOLLOWS YOU

Lover of Nature. Artist, Musician, Video Editor. Purveyor of Sensual and Sacred Art. Interests: Myth + Religion. My current art/music project: @TempleOvSaturn

View profileView followers dashboard

APR 2019 SUMMARY

Tweets	14	Tweet impressions	17.5K
Profile visits	50	Mentions	8
New followers	15		

17,500  
TWEET views in  
April 2019



Bald Eagle Population Modeling

In July 2018, Dr. Brenda Hanley joined the CWHL to develop population models for bald eagles and eventually determine if lead toxicosis had impacted population recovery. This project involves multiple state and provincial agencies, federal agencies, universities, and non-government organizations. To date, 31 collaborators have contributed intellectual property, population data, and/or expertise to this endeavor. The team has already produced several manuscripts and online tools, which can be used to examine bald eagle life histories over 30 years of recovery in the northeast US and Canada under different hypothetical scenarios.

Using data from thousands of samples collected throughout northeast US and Canada, we are developing a database that will be integrated with the empirical data to create a “counterfactual” model to understand what would have happened to bald eagle populations had mortalities due to lead toxicosis not occurred.

We have been preparing a case definition of lead toxicosis with input from veterinarians, toxicologists, and statisticians to group our dataset into known, likely, and unlikely lead-associated mortalities.

Education and outreach are integral components of this population modeling research project. Several interactive software applications have been designed to allow stakeholders, resource managers, and members of the public to interact with the methods and results of our research.

Visit our online [TOOLS](#) page to check them out!

OVER 1200

bald eagle data  
records reviewed

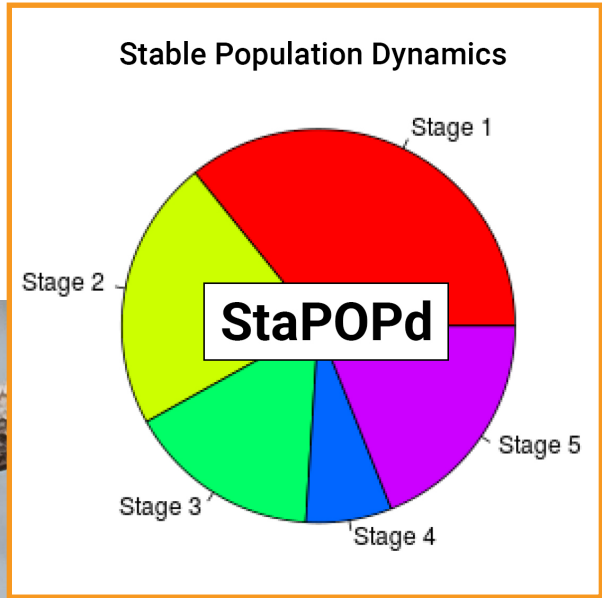




Interactive Apps!

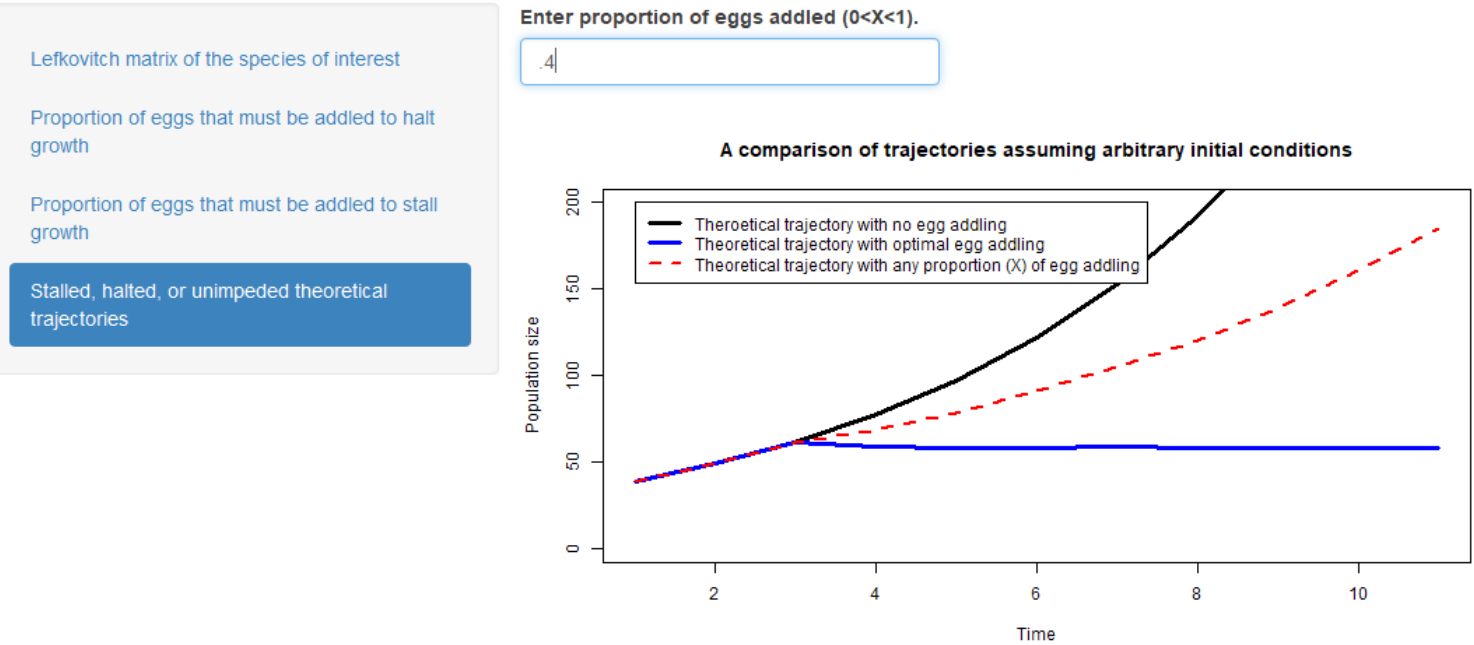
The Cornell Wildlife Health Lab has designed interactive software applications to translate theoretical mathematical knowledge into applied management options and to illustrate which relationships may be targeted for efficient and successful management of wildlife populations.

**StaPOPd** is designed to aid resource managers in planning reintroductions or restorations of floral or faunal species. Managers can identify the desired target population abundances and restoration timeline for any 2-, 3-, 4-, or 5-stage species. Using stable population theory, this app will align or monitor a release strategy in accord with those management goals.



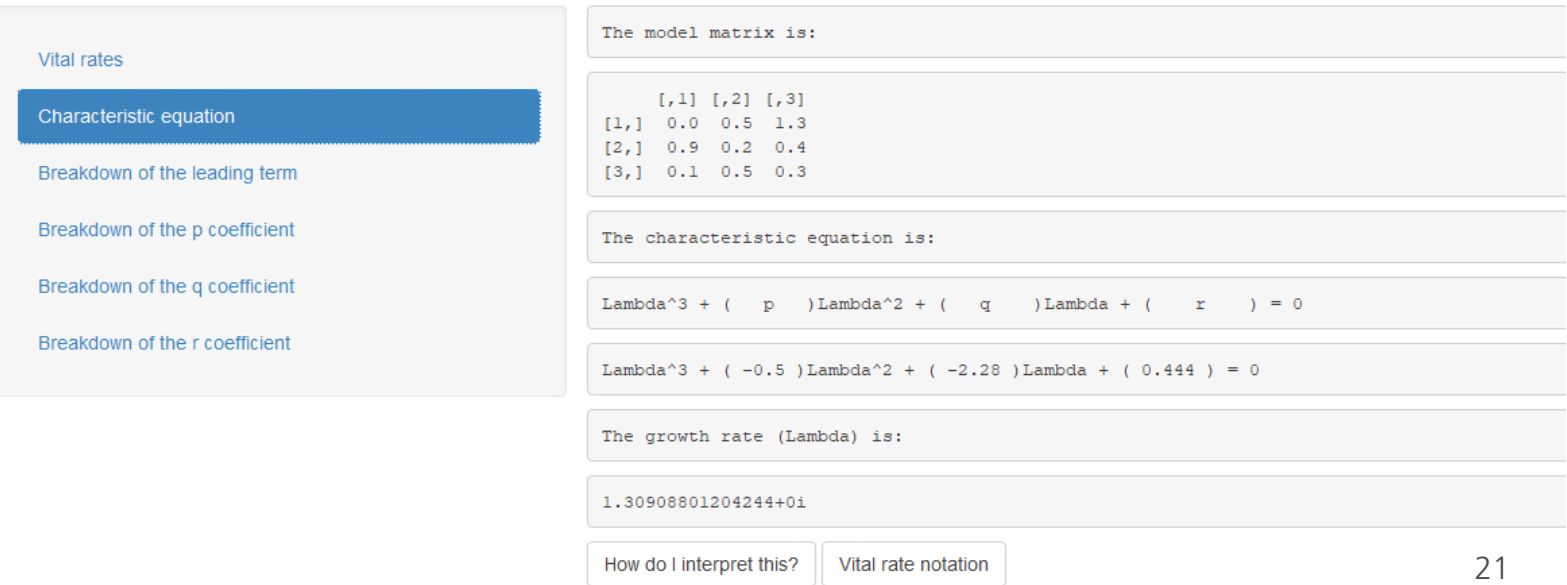
**StallPOPd** was designed to aid resource managers in mitigating impacts of subsidized predators on sensitive prey species, specifically for 3-stage species in desert and sage brush habitats. For example, this app identifies the proportion of eggs that must be oiled each year to stall or halt the growth of common raven populations that have been observed to follow expansion of human activities deeper into wildlife habitats.

Stage structured population models to aid in stalling or halting the growth of a subsidized predator



**IsoPOPd** was designed to aid in understanding how growth rates respond to perturbations in a life history. IsoPOPd is designed to assess population scale impacts in bald eagle, but it may be used to assess the perturbations in any 3-stage species. This app allows managers to identify how the growth rate would react to changes to any underlying vital rate that arise from any malady.

The characteristic equation governs the link between the vital rates and the growth rate





## Reovirus Mortality in Crows

Epizootic mortalities in American crows during the winter months have been recorded in North America for almost two decades and referred to as “winter mortality of crows.” We confirmed the causative role of an *Orthoreovirus* sp and determined its phylogeny based on 558 cases recorded between 2001-2017. Cases occurred almost exclusively in winter, and infected crows were 32 times more likely to die than uninfected crows.

## Wildlife Rehabilitation Record Examination

Wildlife rehabilitators have been licensed by the DEC since 1980, caring for and releasing hundreds of thousands of animals. New York State licensed wildlife rehabilitator records for 59,477 individual wildlife cases seen between 2012 and 2014 were digitized and evaluated to identify patterns in taxonomic representation, primary reasons for presentation, and ultimate disposition. The records represented 31,279 birds, 25,491 mammals, 2,427 reptiles, and 73 amphibians.

Major causes of distress identified were trauma (38%) and orphaning (37%) with habitat loss (6.3%), infectious disease (3.4%), and poisoning or toxin exposure (1.5%) playing lesser roles. The overall release rate for animals receiving care was 50%, while 45% (n = 27,004) were either euthanized or died during the rehabilitation process. Comparison to 1989 data revealed an increase in annual caseload (12,000 to an annual mean of 19,824, respectively) as well as improvement in release rate (44% to 50.2%).

## Fisher Research

In collaboration with SUNY-ESF and the DEC Furbearer Team, the WHP has assisted with capture, handling, and sample collection protocols for a fisher population study. Females will be captured and have blood drawn for pregnancy testing, after which, they are monitored for kit production and survival. Reproductive tracts have also been collected from trapped animals to assess productivity. A SUNY-ESF student is being trained by CWHL pathologist Dr. Elizabeth Buckles to examine preserved specimens. Liver samples are also being collected for future toxicological testing.

## Cause of Death in White-Tailed Deer

We conducted a retrospective examination of white-tailed deer records to understand the causes of death. Gross and histologic examinations were performed on 533 deer submitted to the program between January 2011 and November 2017.

The most common natural causes of disease or mortality were bacterial infection, trauma, and nutritional issues. We found a decreased risk of death from nutritional issues later in the year and an increased risk of death from fungal and nutritional causes in juvenile animals. By establishing routine baseline causes of death, these findings can help track changes in disease dynamics over time.





The CWHL is available to provide support on any wildlife health topic, and not just limited to disease outbreaks. We routinely review research permit requests, management plans and project proposals to see where we can assist staff in working safely with wildlife, and reduce any potential health impact on species. In 2018, major regulatory changes were reviewed for CWD and wildlife rehabilitation.

New Tools

The web-based case reporting system now has a weekly email update that goes out to all DEC staff. The email newsletter lets staff know when their cases have been updated or finalized, as well as a running list of new submissions. Links are provided to the individual case pages and disease alerts.

CWHL

NYS Wildlife Health Program Weekly Case Summary

What's Happening Now?

[Distemper](#)

Spring is in the air, and so is [distemper](#)- see our article from last year with updated data. We are getting a lot of calls and cases from around the state. We are interested in confirming cases from new areas, and in tracking length and severity of outbreaks. Remember, in most areas rabies is also common in raccoons and these diseases can look very similar, so be careful out there.

Like Visits From the In-Laws, Better If Planned In Advance

You know how it is when your mother-in law shows up unannounced, but with a casserole? Same for us when you surprise us with a submission. We always appreciate the effort, but we have to scramble to make sure the house is cleaned up before we open the door..... Please have mercy on us and shoot us an email, text, homing pigeon or smoke signal if you are headed our way- even if you can't get to the online forms on time.

Current Cases

The Wildlife Health Program has received or has updated diagnostic information for the following cases in the last 7 days. To view a full case report, click the Case ID. You must be logged in to see reports. If you have any trouble logging in, please contact [cwhl@cornell.edu](mailto:cwhl@cornell.edu).

Region: 1

Species (Case ID)	Date Received	County	Submitter	Updates & Results
<a href="#">merlin (NY_107344.1)</a>	10/04/2019	Suffolk	Mary Arnold - nys dec	Received

Region: 2

Species (Case ID)	Date Received	County	Submitter	Updates & Results
<a href="#">raccoon (NY_107587.1)</a>	04/01/2019	Kings	Conor Gilbertson - NYSDEC- Region 2	Received
<a href="#">red-tailed hawk (NY_107585.1)</a>	04/01/2019	New York	Conor Gilbertson - NYSDEC- Region 2	Received
<a href="#">eastern gray squirrel (NY_107548.1)</a>	03/19/2019	New York	Arina Hinzen - Urban Wildlife Alliance	Virology, Preliminary Diagnosis
<a href="#">eastern gray squirrel (NY_107549.1)</a>	03/19/2019	New York	Arina Hinzen - Urban Wildlife Alliance	Virology, Preliminary Diagnosis
<a href="#">eastern gray squirrel (NY_107550.1)</a>	03/19/2019	New York	Arina Hinzen - Urban Wildlife Alliance	Virology, Preliminary Diagnosis

Region: 3

Species (Case ID)	Date Received	County	Submitter	Updates & Results
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Rehabber Reporting- Beta test

Nick Hollingshead has been working with the Special Licenses Unit and the rehabber community to develop an online reporting system, and it is now in the hands of a small group of rehabilitators for testing.

The system is similar in design to our case database, and will allow rehabbers to record their case intake in real time. The rehabbers handle approximately 20,000 cases annually, and tracking their cases will provide useful information about disease patterns and species population trends.

DEC staff will be able to know which species are being taken in for care more regularly. Rehabbers will be able to perform analytics to calculate their release rates and evaluate likelihood of success.

Team Meetings

The Wildlife Health Team assists the program with regional communications and work planning. Health program staff routinely attend other specialty team meetings to keep informed about field projects and provide disease and research updates.



Spotted turtle, photo by David Brown

Turtle Confiscation

In August of 2018 NYSDEC Division of Law Enforcement confiscated nearly 300 turtles, eggs, Gila monsters, and king cobras from a residence in Olean, NY. The CWHL provided emergency housing, medical treatment and daily care for nearly 200 spotted, Blanding’s, bog and wood turtles, some with health issues, until October 2018 when they were transferred to other facilities.

We continue to provide support to these animals in their new locations, including husbandry recommendations and diagnostic testing.

Chemical Immobilization SOP

The chemical immobilization standard operating procedure document is completed. The document was written by a team consisting of Andy McDuff, Jeremy Hurst, Matt Merchant and Dr. Beth Bunting, with previous input from Patrick Martin. A field guide was created from the longer document for staff to use as reference.

New York State  
Department of Environmental Conservation  
Division of Fish and Wildlife  
Bureau of Wildlife



September 2019

CHEMICAL IMMOBILIZATION  
QUICK GUIDE



# 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.

Dr. Bunting discussing bird health with DEC staff at a regional bird banding workshop



## WILDLIFE HEALTH TEAM MARCH 2018-CURRENT

### DEC Personnel

Region 1	Leslie Lupo
Region 2	Sandy Chan
Region 3	Giovanni Pambianchi
Region 4	Karl Parker
Region 5	Tim Watson
Region 6	Joe Lydon
Region 7	Tom Bell
Region 8	Jenny Landry
Region 9	Ryan Rockefeller

### WHP Personnel

WHU	Kevin Hynes
Cornell	Krysten Schuler
Cornell	Beth Bunting
BMT Liaison Central Office	Kevin Hynes
DLE Liason	Major Matthew Revenaugh
BMT Liaison (Regional)	Sandy Chan



Kevin Hynes discussing the importance of PPE during a necropsy demonstration to DEC staff at a regional workshop



# ANNUAL WORK PLAN FY 2018-2019 REVIEW

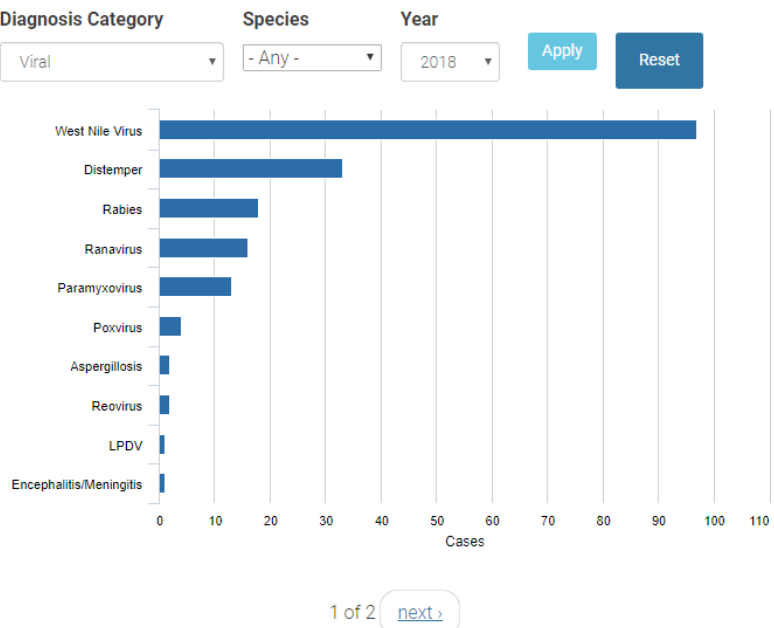
## Administrative

Create guidance document for facilities and equipment suitable for various levels of wildlife handling (ex. shipping, sampling)	Completed
Wildlife Resources Center (WRC) infrastructure, equipment management and maintenance	Continuous
WRC incinerator operation, lab maintenance, facility maintenance and grounds	In Progress
Annual Wildlife Health program report	Completed
Biannual wildlife health program review (Central Office or Cornell)	Completed

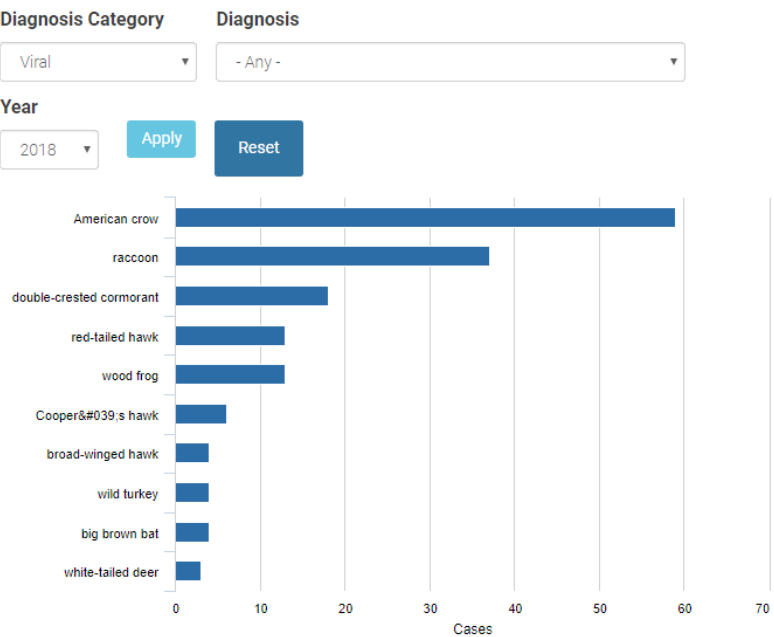
## Policy Support

Improve analytic tools on CWHL website for DEC	Completed
Participate in wildlife health related meetings IRC, CWD, BOW, Wildlife Health and other meetings	Completed
Providing scientific/medical wildlife health consultation (public, staff, One Health partners, regulatory, research projects, SLU licenses, etc.)	Completed
Converting SLU to electronic reporting system for select licenses (NWCO, Game Bird)	In Progress
Wildlife rehabilitation web-based data management and reporting system	In Progress
Wildlife rehabilitation procedures evaluation	In Progress

### Most Common Diagnoses



### Most Common Species



## Health and Disease Surveillance

Case management and reporting: Wildlife necropsies (>1000/yr)	Continuous
Participate with Northeast Wildlife Disease Cooperative as a partner	Continuous
Chemical Immobilization Protocol	Completed
Annual CWD surveillance (sample collection, Taxidermy Partnership Program, reporting)	Continuous
Development of eDNA tools for amphibian and virus detection (yr 4)	In Progress
Migrating to new CWHC case database (WHIP)	In Progress
Wildlife rehabilitation 2012-2014 evaluation (publication)	In Progress

## Training, Teaching, and Outreach

Regional Wildlife Health Workshops	Completed
Training workshops for DLE staff	Completed
Communicate with veterinarians regarding wildlife health issues	Continuous
Collaborate and coordinate with federal agencies on wildlife health issues under the One Health approach	Continuous
2018 Safe Capture International chemical immobilization training	Completed
Wildlife health presentations for public	Completed
Forensic services for DLE	In Progress
Furbearer training at NYSDEC Fur School	Completed
Provide the public information about wildlife health issues on CWHL website	Completed



CWD Wet Lab hosted by CWHL at Cornell AHDC, January 2019

## Disease Prevention and Response

Update CWD Surveillance Plan	Completed
Implement CWD Risk Minimization Plan action items	Completed
Moose population health assessment (publication)	In Progress
Summary and analysis of SLU data for wildlife disease risk assessment (NWCO, Game Bird reports)	In Progress

## Research

Complete tissue archive system	In Progress
Wildlife health and wildlife rehabilitators listserv maintenance	Completed
Bear mange statewide surveillance (publication)	In Progress
P. tenuis study (publication)	In Progress



Publications

**Hanley, B., E. Bunting, and K. Schuler.** 2019. How can we augment the few that remain? Using stable population dynamics to aid reintroduction planning. *Peer J* 7:e6873 DOI:10.7717/peerj.6873

Needle, D., V. Burnell, **M. Forzan**, E. Dubovi, **K. Schuler**, C. Bernier, **N. Hollingshead**, J. Ellis, B. Stevens, P. Tate, E. Anis, and R. Wilkes. 2019. Infection of eight mesocarnivores in New Hampshire and Vermont with a divergent clade of canine distemper in 2016-2017. *Journal of Wildlife Diseases*. DOI: 10.1177/1040638719847510.

**Forzán, M.**, R. Renshaw, **E. Bunting**, **E. Buckles**, **J. Okoniewski**, **K. Hynes**, **R. Melendez**, **A. Ableman**, M. Laverack, **M. Fadden**, A. Dastjerdi, **K. Schuler**, and E. Dubovi. 2019. Novel orthoreovirus associated with epizootic necrotizing enteritis and splenic necrosis in American crows, *Corvus brachyrhynchos*. *Journal of Wildlife Diseases*.

Song, H. K. McComas, and **K. Schuler**. 2018. Hunters’ responses to urine-based scent bans tackling chronic wasting disease. *The Journal of Wildlife Management* 83(2) 457-466. DOI: 10.1002/jwmg.21593

Song, H., K. McComas, and **K. Schuler**. 2018. Source effects on psychological reactance to regulatory policies: the role of trust and similarity. *Science Communications* 40(5):591-620. DOI: 10.1177/1075547018791293

Sasmal, I., N. P. Gould, **K. L. Schuler**, Y. F. Chang, A. Thachil, J. Strules, C. Olfenbottle, S. Datta, and C. S. DePerno. 2018. Presence of leptospirosis in urban/ suburban American black bears in western North Carolina. *The Journal of Wildlife Diseases* 55(1):74-83. DOI:10.7589/2017-10-263

**Schuler, K. L.** , J. A. Jenks, R. W. Klaver, and R. T. Bowyer. 2018. Chronic wasting disease detection and mortality sources in a semi-protected deer population. *Wildlife Biology*. DOI: 10.2981/wlb.00437

**Schuler, K. L.**, B. C. Brewer, K. A. Mayer, C. Perez-Heydrich, P. M. Holahan, N. J. Thomas, and C. L. White. 2018. Redefining aging criteria for northern sea otters in Washington State. *The Journal of Fish and Wildlife Management*. 9(1):208–221; e1944-687X. DOI:10.3996/052017-JFWM-040

**Schuler, K.L, N Hollingshead**, J Kelly, RD Applegate, C Yoest. 2018. Risk-based surveillance for chronic wasting disease in Tennessee. TWRA Wildlife Technical Report 18-4. 32 pp.

**Forzán MJ, J.Okoniewski**, Lejeune M, Morrissey S, Zitek W, **N. Hollingshead, E. Bunting**. 2018 Necrotizing enteritis in nesting adult eastern bluebirds, *Sialia sialis*. *Journal of Wildlife Disease*

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.

**Hanley, B.**, and B. Dennis. 2019. Analytical expressions for the eigenvalues, demographic quantities, and extinction criteria arising from a three-stage wildlife population matrix. *Natural Resource Modeling*. NRM-07-067

Shields, T., Currylow, A., **Hanley, B.**, Boland, S., Boorman, W., & Vaughn, M. 2019. Novel management tools for subsidized avian predators: a case study in the conservation of a threatened species. In press. *Ecosphere*.

Travis, K.B., E. Kiviat, J. Tesauro, L. Stickle, **M. Fadden**, V. Steckler, and L. Lukas. 2018. Grazing for Bog Turtle (*Glyptemys muhlenbergii*) habitat management: case study of a New York Fen. *Herpetological Conservation and Biology*. 13(3):726-742.

Presentations

**Bunting, Elizabeth.** “Careers in Wildlife Health.” Cornell University, Ithaca, NY, 2018; 2019.

**Bunting, Elizabeth.** Wildlife Health Training Workshops. NYS Department of Parks and Recreation. Saratoga Springs, NY, Romulus, NY, April 2018.

**Schuler, Krysten.** “Chronic wasting disease: the essential information.” Camp-Fire Conservation Fund, Chappaqua, NY, 2019.

**Schuler, Krysten.** “Wildlife health in New York State.” University of Albany, Albany, NY, 2018.

**Schuler, Krysten.** “Chronic wasting disease: More than just a ‘deer disease’.” Theodore Roosevelt Conservation Partnership, New York City, NY, 2018.

**Schuler, Krysten**, J. Fischer, J. Mawdsley, and M. Dunfee. “Chronic wasting disease 101: The most up-to-date science on what it is, where it is, and where it’s headed.” Theodore Roosevelt Conservation Partnership Western Media Summit, Bozeman, MT.

**Fadden, Melissa.** “Wildlife Health for Bird Banders.” USDA APHIS via Cornell Raptor Training Course. Ithaca, NY, 2018.

**Hynes, Kevin.** “Chronic Wasting Disease in Deer.” NYSDEC Region 4 Environmental Conservation Officers Bloc Meeting. Delmar, NY, 2018.

**Hynes, Kevin.** “Wildlife Forensic Evidence Collection Techniques.” NYSDEC Region 7 Environmental Conservation Officers, including segment on CWD in deer. Cortland, NY, 2018.

**Hynes, Kevin.** “What Sportsmen Need to Know About Chronic Wasting Disease.” Iroquois Rod and Gun Club. Albany County, NY; Guan-Ho-Ha Fish and Game Club. Schenectady County, NY, 2018.

**Hynes, Kevin.** “Furbearer Diseases in New York State.” NYSDEC Bureau of Wildlife Conference. Syracuse, NY, 2019.

**Hynes, Kevin.** “Examples of Forensic DNA Analyses in Wildlife Pathology and Law Enforcement Casework.” NYSDEC Bureau of Wildlife Conference. Syracuse, NY, 2019.

**Hynes, Kevin.** “NYSDEC Wildlife Health Program Overview and CWD Update. USDA APHIS Wildlife Services Annual Staff Meeting. North River, NY, 2019.

**Hanley, Brenda.** “Combinatorial Optimization for population matrix models.” Lab of Ornithology, Cornell University, Ithaca, NY, March 2019.

**Hanley, Brenda.** “How can we augment the few that remain? Using stable population dynamics to aid reintroduction planning for an iteroparous species.” Annual Conference of the Northeast Association of Wildlife Agencies, Groton, CT, April 2019.

**Hanley, Brenda.** “Population dynamics of Moose.” Moose working group -NYSDEC, Saratoga Springs, NY, 2019.

**Hanley, Brenda.** “Meta-analysis of lead toxicosis in bald eagle: the novel chain model for including toxicology into assessments of population dynamics.” Cornell University, Ithaca, NY. September & October 2018.

**Hollingshead, Nick.** “Developing a wildlife health surveillance system for the Northeast.” Northeast Association of Fish & Wildlife Agencies Annual Conference. Groton, CT. April 2019.

**Hollingshead, Nick.** “Going digital: an online wildlife rehabilitator log System for New York State.” New York State Wildlife Rehabilitator Council Annual Conference. Syracuse, NY. November 2018.

**Wetterau, Alyssa**, R. J. Ossiboff, **E. M. Bunting**, and B. Gratwicke. “Chytridiomycosis causes microbial community shifts in eastern hellbender salamanders (*Cryptobranchus alleganiensis alleganiensis*).” Smithsonian Conservation Biology Institute Emerging Scientists Symposium. Front Royal, VA. August 2018.

**Wetterau, Alyssa.**, R. J. Ossiboff, **E. M. Bunting**, and B. Gratwicke. “Chytridiomycosis causes microbial community shifts in eastern hellbender salamanders (*Cryptobranchus alleganiensis alleganiensis*).” Wildlife Disease Association 67th Annual International Conference. St. Augustine, FL. August 2018.

**Forzán, Maria.** “Perkinsus-like infection in amphibians - an emerging disease?” 74th Annual Northeast Association of Fish and Wildlife Agencies Conference, Burlington, VT, USA, April 2018.

**Forzán, Maria.** “Do mortalities in tadpoles due to Perkinsae parasites indicate an emerging disease?”

Amphibian Pathogens Annual Meeting, Phoenix, AZ, USA, November 2018.

Posters

**Forzan M, J Okoniewski**, M Lejeune, S Morrissey, W Zitak, **N Hollingshead, and EM Bunting**. “Nesting season mortality of adult eastern bluebirds, *Sialia sialis*, due to necrotizing enteritis.” Wildlife Disease Association Annual Conference. St. Augustine, FL. August 9, 2018.

**Wetterau, A. M., B.** Gratwicke, R. J. Ossiboff, and **E. M. Bunting**. “Chytridiomycosis causes microbial community shifts in eastern hellbender salamanders (*Cryptobranchus alleganiensis alleganiensis*).” Cornell University Biological and Biomedical Sciences Symposium; 17 Aug. 2018; Ithaca, NY.

**Wetterau, A. M.**, L. D. Nagel, T. E. Youker-Smith, **E. M. Bunting**, and M. P. Hare. “Cutting-edge approaches for viral pathogen surveillance in North American vernal pools.” Cornell University Center for Conservation Genomics Symposium. July 2018; Ithaca, NY.

**Hanley, B.** “How can we augment the few that remain? Using stable population dynamics to aid reintroduction planning for an iteroparous species.” College of Veterinary Medicine, Cornell University, Ithaca, NY, February 2019.

Grants

**Schuler, K.** and K. McComas. “Get the Lead Out:” Alternative Ammunition Can Solve a One Health Conundrum. Atkinson Center for a Sustainable Future Academic Venture Fund. 2 yrs. \$116,682.

Schneider, J., D. Walsh, P. Cross, A. Lomax, J. Pedersen, **K. Schuler**, and J. Jenks. 2019. Chronic wasting disease (5c) – Development or enhancement of CWD diagnostic tools. US Geological Survey – FY19 Emerging Diseases Cyclical Funds. \$114,480, 2 yrs.

Lejeune, M., **E. Bunting**, E. Berliner, L. Goodman, **K. Schuler**, and D. Bowman. 2018. Determining the sylvatic range of Feline Cytauxzoonosis in NE United States. Cornell Feline Health Center, \$17,925, 1 yr.

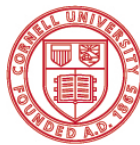
**Bunting, E. M.** 2018. Hope for Hellbenders. Temper of the Times Foundation. \$10,000;1 yr.







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