New York State Department of Environmental Conservation
Division of Fish and Wildlife
Bureau of Wildlife
Wildlife Health Program
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Field Response for Wildlife Diseases

Introduction

The New York State Department of Environmental Conservation (DEC) has responsibility for conserving, improving, and protecting New York State's natural resources, including management of wildlife populations. The purpose of the DEC Wildlife Health Program (WHP) is to serve the Division of Fish and Wildlife (DFW) in areas of wildlife health, including policy and management recommendations, response to disease outbreaks, and coordination with other state and federal agencies and other wildlife health professionals. The WHP will lead the response when a disease threatens or is discovered in New York's wildlife. The WHP will collaborate with health professionals and Regional Wildlife staff to provide recommendations to DFW management.

Routine enzootic diseases typically will not require action by the DEC. Situations where a disease of concern has entered the state (i.e., chronic wasting disease, foot and mouth disease, tuberculosis, highly pathogenic avian influenza) or has reached an epizootic level that could pose a threat to public health (zoonoses), domestic livestock, or wildlife populations (i.e., rabies, tularemia, Newcastle disease) will likely require a response action by the DEC. This response plan will identify steps to take if morbidity or mortality is detected in wildlife and a response is appropriate. Because the disease-causing agents are typically unknown until completion of diagnostic testing, operations may be scaled up or back depending on incoming information. A diagnostic confirmation will be required before any recommendations should be implemented.

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Purpose

Wildlife are integral to a healthy, diverse ecosystem and the health of wildlife is closely intertwined with human and domestic animal health. The One Health concept recognizes the connections between all living things and the environment and seeks promote a collaborative effort of multiple disciplines to attain optimal health for people, animals and the environment. While disease and death are part of the normal life cycle that maintains a balanced ecosystem, there are factors that can alter the equilibrium so that the health and long-term well-being of a species is threatened. Some of these threats include introduction of invasive species or a new and emerging disease, climate change, habitat destruction, and human development.

The goal of the Wildlife Health Program is to identify and monitor both infectious and non-infectious diseases in wildlife populations, put that information to use in making sound management decisions, and to be prepared to intervene where necessary to ensure that New York has sustainable, healthy and diverse wildlife populations for the future.

Scope

The WHP integrates statewide wildlife health activities into a single unified program to address wildlife health issues, prevent the introduction of disease, develop rapid disease response capacity, provide a suite of veterinary services, and represent the DFW health programs in multi-agency state and national wildlife health programs. This manual will serve as a reference for Bureau of Wildlife staff investigations of wildlife morbidity and mortality events. The intent is to provide general information and direction that can be modified to fit different circumstances. The WHP consists of personnel at both the Wildlife Health Unit (WHU) at Delmar and the Cornell Animal Health Diagnostic Center (AHDC) in Ithaca. They will provide situation consultation regarding sample collection, storage, transport, personal protective equipment, and disease management.

Roles and Responsibilities

Regional Wildlife Biologists and Wildlife Technicians (“First Responders”) that receive calls from the public about sick or dead wildlife, investigate the reports, and submit specimens for examination and diagnosis are a vital component of wildlife health surveillance. DEC’s WHU and Cornell’s AHDC personnel will work cooperatively to support Regional Wildlife staff by critically evaluating submissions on a case-by-case basis in order to improve diagnostic capabilities, communication, and data management/analysis related to wildlife health issues.

Regional Wildlife staff will have primary responsibilities for routine day-to-day activities regarding wildlife health issues. This includes taking calls from the public, investigating wildlife mortalities, transport or shipping specimens to the diagnostic laboratory, and reporting results back to the public.

The Division of Law Enforcement (DLE) will also provide specimens for wildlife health or forensic examination. Their assistance may be requested by Regional Wildlife staff because of DLE’s

ability to respond quickly at all hours and days. The DLE has 24/7 phone availability with two dispatch centers at Ray Brook and Albany to ensure that calls are answered promptly. DLE staff are familiar with areas of patrol and have a variety of equipment issued to each officer that allows response while minimizing delays. In many cases, DLE members may have received the information directly from the public or may discover evidence of a wildlife health issue while engaged in normal patrol activities. They are able to secure the site and aid other Divisions in making a determination on the best course of actions. DLE staff assistance will be requested as necessary to secure a site and to determine if there is any criminal activity associated with the wildlife health incident.

The WHU at Wildlife Resources Center in Delmar and AHDC at Cornell University are both able to accept diagnostic specimens and provide guidance to wildlife personnel (see "Who to Contact" below). Staff at these facilities are available by phone and email for consultation and information. They will also provide results and management recommendations back to submitters in a timely manner. In some cases, WHU or AHDC personnel will be available to pick-up or meet Regional Wildlife staff to transfer carcasses or specimens.

The Central Office staff will be available to facilitate day-to-day activities and provide assistance in large-scale wildlife die-offs. Press releases, briefings, and media communications will be facilitated through Central Office DFW staff and Regional staff. In some situations, equipment and personnel arrangements will be arranged by Central Office. Other divisions may be called upon to provide assistance as needed.

The WHU will maintain a concerted effort to foster a One Health approach to wildlife disease events to ensure that a comprehensive, effective response is made. As appropriate, other Federal or state agencies may be alerted or asked to participate in wildlife disease events by WHU, AHDC, or Central Office. These include NYS Dept. of Health (NYSDOH), NYS Dept. of Agriculture and Markets (NYSDAM), U.S. Dept. of Agriculture Animal Plant Health Inspection Service (USDA-APHIS) and Wildlife Services (USDA-WS), USDA Veterinary Service (USDA-VS), U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service (USFWS), and the Environmental Protection Agency (EPA). Several NYSDOH Laboratories are used in diagnostic testing for zoonotic diseases such as rabies and tularemia, and select agents such as botulism.

The NYSDOH, NYSDAM, and USDA-APHIS will be informed of potential disease threats affecting humans or domestic livestock, and kept abreast of developments as new information arises. Staff from these agencies may be involved during field investigations. USDA-WS may be called upon for control operations exceeding DEC staff capacity or requiring certain specialized equipment not available to DFW. USGS will be informed of substantial wildlife mortality events to include in the national wildlife epizootic reporting. USFWS will be informed of disease events impacting migratory or threatened/endangered species, such as bald eagles or bog turtles. In serious disease events, other potential cooperators may be called upon to provide assistance. These may include local sporting clubs or cooperating organizations (Audubon Society, National Wildlife Federation, New York State Wildlife Rehabilitation Council, Ducks Unlimited) and those

people who have been issued a special license by DEC to handle wildlife, such as wildlife rehabilitators or nuisance wildlife control operators.

Authorities

Environmental Conservation Law (ECL) Article 11 Section 11-0325 states whenever it is determined by the DEC that an epizootic disease, which endangers the health and welfare of native fish or feral animal populations only, exists in any area of the state, or is in imminent danger of developing or being introduced into the state, the DEC may adopt any measures or regulations with respect to the taking, transportation, sale, offering for sale or possession of native fish or feral animals deemed necessary in the public interest to prevent the development, spread or introduction of such disease.

Objectives

1. Prevent the establishment of new or exotic diseases in native wildlife populations.
2. Reduce economic, recreational, ecological, and societal losses due to diseases.
3. Minimize the impact of disease outbreaks on wildlife populations, humans, and domestic species.
4. Limit potential spread of contagious diseases to new areas.

Section II – Wildlife Disease Investigation

It's often not easy to determine if an animal is "diseased" or has a dysfunction that impedes its normal functioning. Sick or abnormal wild animals are notoriously difficult to detect, recover, and diagnose. The first challenge is obtaining appropriate data to determine if further investigation is warranted. Detailed information is contained within this document on steps for Regional Wildlife field staff to follow during wildlife disease investigations.

General Guidance for Responding to Public Calls

Many of the calls from the public involving wildlife mortalities are not appropriate for wildlife mortality investigations. In other cases, other state agencies may have jurisdiction. Here are a few common scenarios you may encounter. It is not your responsibility to diagnose a case over the phone, but to ascertain when it is important to conduct further investigation.

- If you are called about a **roadkill animal**, we generally do not investigate unless is a group of animals (not including a mother and offspring), an animal of special interest or protected (ex. bald eagles), or an animal that was spotted by the road but may not have been a vehicle strike.
    - If you are called about dead deer in yards or on roads in front of properties: 1) if they are on/near the road, we advise the caller to contact their local highway dept. for removal; 2) if it looks like a healthy roadkill deer, but it's on their property we advise the caller to contact a nuisance wildlife control operator (NWCO) for removal; 3) if the deer is fresh and looks sick/skinny, we are interested in obtaining the carcass.
- If you are called about an **animal acting aggressively** that is potentially rabid, you should field the call to DLE or local police if the caller is in danger. On rabies cases, the County Health Dept. has jurisdiction for testing the animal. Ask if there has been any possibility of contact with the affected animal (including pets) and if so, direct the caller to County Health Dept. DEC staff should not make a determination if there has been a contact between a possible rabid animal and a person or a person's pet. That is the responsibility of the local County Health Dept. If County Health Dept. declines the animal, DEC may take it. If DLE fields the call, they will send someone if possible if it is a public safety concern or there is contact. Remind them to avoid euthanizing the animal by shooting it in the head. In general, we are interested in animals acting abnormally; however, raccoons, skunks and foxes are likely rabid and should be directed to the County Health Dept.
- If you are called about an **animal with mange** (scabies, hair loss) and the animal is still alive, there isn't a treatment we can deliver. You can direct them to a licensed wildlife rehabilitator. You can tell the caller that the animal may resolve the issue on it's own, but red fox are very susceptible to mange. Bear also get mange. Deer appear with seasonal hair loss that's often visible on trail cameras.
- If you are called about an **animal with an injury**, have the caller email a photograph if possible. It is difficult to ascertain the severity of the injury otherwise. If law enforcement is going to euthanize the animal, remind them to avoid shooting it in the head if possible. DLE is familiar with this procedure, but many local enforcement officers often are not aware that the brain must be relatively intact for rabies testing to be completed. If it is possible for the animal to recover, direct the caller to one of the licensed wildlife rehabilitators in their area.
- If you are called about an **escaped owned wildlife** (captive wildlife**:** deer or elk with an ear tag, feral swine, exotic goat, ram, or other hoof stock), have the caller give detailed information on when and where the animal has been sited. Photographs are helpful if the species cannot be readily identified. Contact DLE to assess the possibility for removal under the "Escaped Cervids SOP."

- If you are called about **dead songbirds associated with a bird feeder**, try to collect some specimens for examination if this is a new event or species. Salmonella and mycoplasma conjunctivitis outbreaks are common at bird feeders, but laboratory testing is necessary for confirmation. If 1-2 birds are observed, have the caller bag the birds without touching them (invert a plastic bag) and dispose of them. They can clean and disinfect their bird feeder with a 10% bleach solution. Encourage them to clean their bird feeder on a regular basis. They can dispose of the carcass in a landfill together with their household garbage.
- If you are called about a **deer or bird with strange growths on the head or body**, there are diseases that commonly cause these conditions. Fibromas on deer commonly occur in New York and may grow to the size of softballs. Unless they impede the ability to forage, they generally do not impact the deer. The growths may fall off after a period of time. Turkeys and other birds may be affected by avian pox where growths form on the head and other featherless areas of the body. Again, they are only lethal if they impair the ability to feed.

Whether or Not to Investigate

Wildlife present unique and difficult challenges in diagnosing disease-related events. Sick and dead wild animals are often likely to be removed from the landscape by predators or scavengers before detection by humans. Recovery of suitable specimens is challenging not only in reaching the animals, but in mitigating the conditions, such as hot weather causing decomposition, that would make a carcass unsuitable for postmortem examination.

Death of a few animals may seem inconsequential, but multiple occurrences of such events assumes a greater importance. Linking a disease's cause to a particular factor is not possible without diligent investigation. A wildlife professional's obligation is to the wildlife populations and potential disease events should be considered seriously and investigated whenever warranted. Guidelines to judge which animals are wildlife health priorities are provided below. A printable version can be found in Appendix VI.

Routinely Submit

- Animals found dead in groups with no apparent cause
- Animals that appear sick, are acting abnormally, or easy to approach
    - Especially white-tailed deer or moose
- Exotic or escaped captive cervids
- Bobcats, mink, fisher, river otter, weasel, or marten found dead without obvious cause
- Raptors (Bald or golden eagles, Peregrine falcons, hawks, owls, vultures)
- Threatened or endangered species
- Banded or marked wildlife (radio collars, wing or ear tags, leg bands, shell notches)
- Swans, loons and ravens

Do not routinely submit

- Common birds that struck a window
- Animals that are struck on the road
- Domestic or feral animals (cats, dogs, pigeons)
- Newborn wildlife (nestling birds, rabbits)
- Raccoons or other rabies vector species with potential human risk – call County Public Health

Pre-Response Activities

As noted above, initial reports of sick and dead wildlife requiring a response often come as a telephone call from a member of the public. It is important to gather as much information as possible during the call to decide if further action is necessary or to provide that information to the Wildlife Health Program to make an assessment.

Questions to ask the caller/finder

1. Caller's name, contact information including address, telephone, agency (if any), and email (if possible)
2. What animals (species) were involved? Number of sick/dead/unaffected, age and sex (if known), any observed behavior or other signs of illness
3. Where is the incident? Address, latitude/longitude, intersection, or mile marker with detailed description of the site
4. When did the event occur? Is this new or on going? Do the carcasses appear fresh or decomposed? Are the carcasses intact? Scavenged and decomposed carcasses do not make good diagnostic specimens
5. Are there any pictures or video they could send?
6. Is there anything unusual at this site? Waste grains, weather events, habitat conditions, power lines, train tracks, oil spill, chemicals, etc.
7. Is there anything unusual about the animals? Migration, molt, birthing, hunting seasons, near a road, house, or other structure, etc.
8. Has anyone had any contact with the animal/carcass? Have any pets had contact with the animal/carcass?

Once it is determined that a field response is appropriate, taking the following steps will ensure a comprehensive assessment.

Field Response Steps

Field Investigation

The most critical step in determining a cause for the event is collecting appropriate information at the scene. This includes thinking broadly about possible conditions, including weather and hazards. Notes should be taken in the field on the environment, habitat, and animals, including number and species affected/unaffected, signs in live affected animals, and any other pertinent circumstances (human or domestic animal interactions with wildlife). This information included with the specimens collected can help guide the diagnostic testing and interpretation of the event.

Collection and Shipment to a Diagnostic Laboratory

Timely shipment of chilled specimens to the WHU at Delmar or the AHDC at Cornell in most cases will be the preferred option. Email or telephone consultation with WHP staff at either the WHU or AHDC should be initiated before shipping any specimens. In some rare cases, transport of specimens may not be recommended. See instructions below for appropriate shipping guidelines. If the mortality event appears to be limited in scope and not an on-going event, carcasses may be held frozen if timing of shipping or transport is difficult to arrange or may be

delayed. All eagle specimens should go to the WHU at Delmar. All carcasses from Regions 7 – 9 should go to the AHDC, except the aforementioned eagles or forensic cases.

Gross Examination of Specimens

Necropsy (autopsy) of the specimens will occur in a prioritized manner as they are received. Animals are generally weighed, sexed, and aged. Measurements are collected for certain species of interest, such as bald eagles. Gross abnormalities observed during the necropsy will be noted in a report. Tissue samples may be collected and sent for further testing. The remainder of the carcass will be disposed of by either incineration or alkaline digestion.

If the specimen is not able to be transported to the WHU or AHDC, you can perform a field necropsy. See form in Appendix III.

Laboratory Testing

The choice of which specific diagnostic tests to run is based on the species, season, location, nutritional condition, gross exam, and experiences of the examiner. In addition, the notes made in the field during specimen collection are crucial in determining which diagnostic tests to run. Please remember to complete the WHP Specimen Submission form (Appendix VII) in detail. Tests may include microscopic examination of the fixed (formalin) tissues for histopathology and testing for viruses, bacteria, parasites, toxins, or fungi. The most likely causes are explored first, but negative findings may result in additional rounds of testing for causes that are more unusual. More than one disease may be present, which complicates diagnostic interpretation.

Determining Cause of Morbidity or Mortality

It is important to "close the loop" with the finder/submitter to relate findings from the necropsy and testing. What disease was present, if any, and why the disease occurred are critical elements to guide disease control and management not only for the present incidence, but also for future disease events. In addition, there may be a need to follow up with the finder/submitter if the diagnosis reveals a zoonotic disease.

Disease Control or Management

'Large-impact' wildlife disease events may involve a significant number of animals, a major disease agent, or an important species. The majority of situations will not involve a field response, but newly discovered or introduced diseases or zoonotic pathogens will elicit additional testing or control measures. Some events may be able to be curtailed or effectively addressed through effective and expedient management or response strategies. Field staff will be involved in these events, which will also be coordinated with other agencies as appropriate.

Who to Contact for Assistance

Contact Information at:
NYSDEC Wildlife Health Unit
108 Game Farm Road
Delmar, NY 12054

Kevin Hynes, kevin.hynes@dec.ny.gov 518-478-3034, 518-283-6628 (Residence)
Therese McNamee, therese.mcnamee@dec.ny.gov, 518-478-3046
Landon Miller, landon.miller@dec.ny.gov, 518-478-7858

Contact Information at:
Animal Health Diagnostic Center
Cornell University College of Veterinary Medicine
240 Farrier Road
Ithaca, NY 14853

Jenny Bloodgood, DVM, PhD, jcb469@cornell.edu 607-253-3534, cell 706-206-3254
Krysten Schuler, PhD, ks833@cornell.edu 607-253-3629, cell 607-227-9026
Melissa Fadden, mf766@cornell.edu, 607-253-3134

Preparation

When responding to a wildlife disease event, both biological and logistical factors should be taken into consideration. Thinking about the conditions on that given day will assist the diagnosticians in obtaining a timely and accurate cause of the event. For instance, the species and population should be taken into account, as well as movement patterns, migration, weather, hunting seasons, and past history of disease. Often, juveniles might be more likely to experience mortality because of lack of experience with a hazard, or high density species might have higher mortality after a harsh winter.

Before heading into the field, it is also important to think about the conditions you will encounter and equipment that may be necessary to complete carcass collection and shipment. Provided below are instructions for shipping specimens to the WHU or AHDC, but you may need additional resources to obtain the carcasses, such as assistance from other personnel, vehicles, or boats to transport carcasses. Overnight lodging may be necessary depending on the situation. DEC staff do not require permits or licenses to respond to any wildlife disease event as part of their job. If there are live wildlife, you will want the ability to hold wildlife (provide food, water, refuge) or deny access (scare tactics, fencing). In some situations, you will need to capture wildlife for sampling, immunization, or other procedures.

Personal Protective Equipment (PPE)

The most important element of any wildlife disease event is ensuring your personal safety. If, for any reason, you do not feel comfortable handling or collecting specimens, you are not obligated to do so. Staff who respond to disease events involving mammals should have pre-exposure rabies vaccinations. Staff are encouraged to wear protective clothing whenever handling wildlife. Minimally, these include rubber, latex, or nitrile gloves, and coveralls. In some cases, disposable Tyvek suits, safety glasses or goggles, disposable N-95 respirators (or surgical masks with face shields), and rubber boots or boot covers may be recommended. Rain gear, waders, and disposable aprons and arm sleeves are additional layers of protection. Care should be taken to not contaminate clothing that cannot be readily disinfected prior to leaving the area. Additional caution should be used if pesticide poisoning is suspected.

*All PPE is available from the WHU at Delmar and can be ordered through your Regional Wildlife Health Team representative or the CWHL website. You should not respond to any wildlife die-off without the appropriate PPE (*Appendix II*).*

Field Investigation

One sick or dead animal

While single cases of dead animals are not indicative of a disease event, on occasion they may be important in identifying a unique pathogen or emerging disease outbreak. Many wildlife health problems go undetected so this single case may represent an opportunity to identify a situation before it grows into a larger problem. For example, chronic wasting disease (CWD) is a serious disease that may be reintroduced into New York State and our best chance for eradication is at the beginning of the outbreak. For that reason, we ask DEC staff to be vigilant to all reports of abnormal deer that may have early signs of CWD, such as poor body condition (thin or emaciated), walking in circles, drooling, or loss of fear of humans. Similarly, there are other species or situations that are important to investigate because they are not often seen or submitted for necropsy. These typically include raptors, including bald or golden eagles, peregrine falcons, snowy owls; some other avian species, such as swans or loons; threatened and endangered species, including reptiles; furbearers, such as bobcats, fishers, and martens; and abnormal large game, such as turkeys, white-tailed deer, moose, and bear. It is not possible to know in advance if a single animal is the beginning of an important disease event or an inconsequential finding. If you are unsure if a single animal is of interest, please call or email the Wildlife Health contacts.

Outbreak or die-off

Mass mortality events involving multiple animals or species should be investigated as soon as possible. Most wildlife disease events are transitory so there is a sense of urgency to get to the field as soon as possible. Small songbirds may be removed by scavengers or decompose on the landscape within 1 day. Larger birds typically last for 2-4 days, depending on conditions, but the diagnostic value of a carcass declines rapidly. Because of the need for quick action, it is essential that disease response equipment be ready for use immediately. Each office and field staff should have a supply of basic equipment including gloves and bags readily available. More complete disease response kits have been distributed to regional offices (Appendix V). DEC personnel should be prepared to collect data and specimens at their first field visit. *Again, appropriate PPE is an essential part of your disease response equipment.*

Prior to leaving for an investigation, review the information you have and consider the species and number of animals reported dead or sick. Request assistance if the situation is more than one person can handle, e.g., lifting a large bear, euthanizing animals, handling public inquiry. Contact Wildlife Health personnel to inform them of the situation and get species-specific recommendations for collecting specimens or information.

Generally, it is preferred to have the whole carcass submitted so the need for field necropsies should be relatively infrequent. During large-scale mortality events the WHU prefers to receive as many carcasses as possible; with a minimum of 5 of each species. Both the WHU and the AHDC will dispose of carcasses through incineration or alkaline digestion. Waste going to the AHDC should have carcasses separated out from other trash.

Warning signs for high risk diseases that warrant additional guidance include multiple dead beavers or muskrats in an area (possible tularemia), white-tailed deer with blood coming out of several orifices (possible anthrax), or dead waterfowl that may be avian influenza. You should also avoid handling carcasses if you suspect a pesticide poisoning.

The equipment to take in the field for wildlife disease investigation varies, but recommendations here are appropriate for a variety of conditions.

- A cooler and ice packs to transport samples are essential items
- Gloves. Gloves stored in hot vehicles will decay so change glove supplies regularly.
- Plastic bags. Specimens should be double-bagged in the field to prevent perforation and contamination of coolers or vehicles. Smaller baggies can be used for amphibians or they can be placed in jars of ethanol post mortem. To prevent cross-contamination, specimens should be individually bagged and then single bags can be combined into a second bag to save materials and space.
- Plastic screw-top jars can be used to collect water or other environmental samples. It's a good idea to collect water, grain, or other substances at the scene that might be involved in wildlife mortality at the time of the event.
- Ice packs or plastic bottles can be filled and frozen in advance to keep specimens cool.
- Protect delicate specimens (nestlings, amphibians, etc.) from being crushed by placing them in a rigid container, such as a food storage container. Place amphibians in *alcohol* instead of freezing them if unable to ship/deliver as fresh specimens.

Record data on the situation in a field notebook or manila submission card (if available). Forms should be completed as soon as possible so all data is recorded correctly. Take photographs of the scene and individual specimens. Record video of sick animal behaviors. Record geographical coordinates if carcasses are dispersed or sketch a map of locations. Be cognizant of the fact that this event may be the result of criminal activity (e.g. illegal dumping, illegal use of pesticide). Notify DLE if you suspect illegal activity.

If a variety of species are present, try to collect a representative sample for examination (species/sex/age). Collect the freshest specimens. Typically, these will not have an odor (or much of an odor), the body cavity will be intact and not opened, and the eyes will not be sunken in. If it is not possible to recover the carcass from the field, you can attempt a field necropsy if you consult with the WHP and there are no warning signs (noted above).

A field necropsy can be completed with just a knife but is easier if you have the appropriate supplies on hand (scissors, cutting board, scalpel and handle, forceps, ruler, limb loppers or saw). Use a sharpie to label sample bags (whirl-paks or baggies) with major organs before beginning: heart, lung, liver, kidney, brain or whole head, intestine, spleen, feces, blood, muscle, fat. Examine the external surface and collect any parasites. Note any abnormalities. Take pictures as you go. Make a midline incision and examine the internal organs. Take pictures. Collect a sizeable portion (3-6 oz) of each tissue. Collect anything that appears abnormal. If you have access to formalin, put ½ in slices of each tissue in the formalin.

Specimen history and location data collection:

- Please complete the online Wildlife Health Program specimen submission form for each animal or group of animals submitted. (Appendix VII)
- *Print 2 copies of the completed form:* 1) to accompany the specimen being shipped and 2) save the completed form for your records. An email copy of the PDF form will be sent to the receiving lab (WHU in Delmar or AHDC) after clicking the SUBMIT button. Information from this form is used to compile a statewide wildlife disease database; therefore, it is critical to complete all information fields.
    - *A completed specimen history should include:* the name, phone number (including area code), e-mail address, and mailing address of the finder. This is critical information in case we have a need to contact the finder for health and safety reasons.
    - *In order to accurately map and track wildlife mortalities it is very important that precise location information is provided with the specimen including:* GPS coordinates (Lat/Long in decimal degrees), street address, and/or distance and direction from nearest cross street/landmark, Township, and County.
- *Include any observations* of the behavior of the animal prior to death, details related to the carcass (e.g. dead in open field, dead under porch, found dead in dumpster), description of euthanasia technique, if applicable, any details related to human or domestic animal contact with the specimen, your appraisal of the situation and/ or any testing requests beyond determining cause of death, and complete contact information for the submitter (don't just write Region X Wildlife).
- *If a group of carcasses of the same species* are found in the same general location on the same day, one form will be adequate for submitted specimens. If multiple animals are present, collect representative samples by species, sex, and age (at least 1-5 of each).
- Select the carcasses that are in the best condition with minimal scavenging or shortest time since death.
- Call Wildlife Health Program staff at the WHU or AHDC to assist with information about packing multiple specimens.

Specimen packaging:

Potentially diseased wildlife carcasses need to be packaged to prevent the leaking of body fluids that may contaminate vehicles or coolers. At a minimum, carcasses the size of a raccoon, fox, or smaller should be individually bagged in two separate 3 or 4 mil plastic bags with the open end twisted and tied in a tight knot. Beaks, teeth, and claws will puncture the bags; tucking the beak of a bird under the wing or strategic positioning the feet prior to bagging may help alleviate bag punctures. If available, the absorbent pads used for CWD tissue extraction or layers of newspaper or other absorbent paper will help prevent beak and claw punctures and will also absorb body fluids. Carcasses larger than fox or raccoon should be bagged in suitable sized 3 to 6 mil plastic bags with enough room to close the bag with twist and knot or twist and secure with duct tape.

Large 4 X 8' 6 mil bags have been provided to the Regions for CWD clinical deer, and should be used for all deer carcasses. Large bagged carcasses, or multiple bagged carcasses, should be transported in large plastic tub or cooler to contain any fluids from leaking bags. ***All bags will eventually leak, especially if the carcass is frozen, so use as many bags as necessary***. A copy of the specimen submission form should be included in a separate plastic bag inside the box but outside of the specimen bag.

Refrigeration vs. freezing:

Specimens that will be shipped or transported to the WHU within 48 hours should be kept refrigerated. Freezing and thawing damages tissues and can complicate microscopic evaluation and the isolation of some pathogens. Freezing is recommended if the specimen has many active maggots or if it cannot be delivered within 48 hours. During mass mortalities, it is a good idea to freeze a subsample (3-12) of the freshest carcasses in case a toxicant is involved. Call the WHU or AHDC to determine shipping and transport times.

Euthanasia

Guidance on euthanasia of sick and abnormal animals is available in the Wildlife Euthanasia SOP. (Appendix VII)

Transport of specimens to laboratory

Large specimens or specimens from mass mortality events that can be transported should go to either WHU or AHDC (whichever is closer), or arrangements may be made (if personnel are available) for staff to meet at an intermediate location to transfer the specimens. Alert the lab that you are delivering a specimen and give your estimated time of arrival.

The specimens should be bagged and tagged as described above and transported in the large plastic tubs or coolers. Moose are typically transported in an open bed pick-up truck or on a trailer, if possible wrap the head in an absorbent pad and bag the head with a suitable sized bag and duct tape to contain leaking blood or rumen contents. In warmer months try to keep the head cool with ice packs and keep the carcass out of the sun.

Shipping

Specimens up to the size of a small deer (60-70 lbs.) can be shipped to the lab via United Parcel Service (UPS). UPS Ground will typically arrive at the lab the next day if shipped from Regions 3-9; specimens shipped from Regions 1 & 2 need to be shipped ground (Monday-Wednesday) and air saver (Thursday) in order to ensure they will arrive the next day.

All shipped specimens need to be kept cold and properly packaged to prevent leaks and should be shipped in a rigid plastic cooler; the cooler should be lined with a plastic bag and absorbent material (newspapers or absorbent pads), and re-usable ice packs or water frozen in sealed plastic bottles should be used to keep specimens cool. ***Do not ship ice cubes or loose ice.*** Frozen specimens typically do not need ice packs unless they weigh less than 2 lbs. The plastic cooler lid

should be sealed/secured with packing tape. Put the cooler in a cardboard box to avoid a UPS surcharge.

The WHU has boxes available if you need them, they are reusable as well. On the outside of the box attach a UN3373 Biological Substance Category B label (use sticker or download and print from Cornell AHDC website and ship most specimens to: *Specimen Delivery NYSDEC Wildlife Health Unit 108 Game Farm Road Delmar, NY 12054.*

Shipping Instructions:

- Fill out the electronic specimen submission form, print a copy and hit SUBMIT. An electronic copy is automatically emailed to the appropriate lab. Place the printed copy of the specimen submission form in a Ziploc bag and seal. Tape to the inside lid of the shipping container.
- Place each tagged carcass in an individual plastic bag. Arrange claws, beaks, and teeth to minimize bag punctures. Close and seal the bag.
- If you are shipping specimens or samples in jars, ensure that they are plastic rather than glass if possible. Wrap tape around the lids. If shipping blood tubes, we can provide tube holders. If supplies are not available, make sure tubes or jars are well insulated against breakage. Place secured tubes or jars in a plastic bag as well.
    - If you are shipping tissues that are in formalin or ethanol, let tissues fix for at least 24 hours before planned shipping time. Pour out as much fluid from the container as possible prior to shipping.
- Cover sealed zipper bag openings with tape (duct or strapping).
- Twist non-zipper bags closed, tie, and fold over on itself. Secure with tape.
- Place the 1st bag inside a 2nd bag, close and seal. More than one bagged animal can be put inside the 2nd bag. Add absorbent materials (absorbent pads supplied for CWD tissue extraction, disposable diapers, paper towels, newspapers) to the inside of the 2nd bag to soak up liquids and pad the carcasses.
- Large carcass bags (4x8 6 mil) have been provided to Regions and can be used for bigger carcasses, such as CWD-suspect deer.
- Line a cooler with a third bag and place frozen ice packs (NOT ice cubes or dry ice) in the bottom of the bag. Use enough to keep the carcass cool.
- Ice packs can be obtained from online supply order form, hardware, sporting goods, or grocery stores.
- Frozen water can be used if sealed in a plastic container (soda/water bottle)
- Seal the 3rd bag and tape the end shut.
- Tape shut (packing, strapping, or duct tape) with a continuous wrap around the cooler lid and a wrap at each end. Coolers must be encased in a cardboard box. Hard-sided coolers can be disinfected and returned.

Shipping to WHU or AHDC:

- Fully remove or cover any old shipping labels existing on your box. Failure to do this will cause the box to be returned.
- Use the appropriate shipping label for either WHU or AHDC.
- Coolers must also have a UN 3373, BIOLOGICAL SUBSTANCE, CATEGORY B label attached to show they are biological specimens. Stickers are available, or the label can be downloaded and printed from the AHDC website

Shipping Addresses:

Specimen Delivery
NYSDEC Wildlife Health Unit
108 Game Farm Road
Delmar, NY 12054

Animal Health Diagnostic Center
Cornell University College of Veterinary Medicine
240 Farrier Road
Ithaca NY, 14853

Decontamination

Before leaving the investigation site, it is important to disinfect equipment. If it's not possible to disinfect on site, bag equipment and disinfect it at the office. At a minimum, wash hands or use hand sanitizer as soon as possible after handling animals. ***This is mandatory to avoid exposure and contamination.***

Rubber boots/aprons, tools, waders, and other equipment can be disinfected with a 10% bleach solution or other viricide/bacteriostat (e.g. Virkon). Use a brush to remove any mud or debris before disinfecting. Rinse surfaces with water after disinfecting; do not allow disinfectants to enter ponds, lakes, or streams. Sprayers are a good investment for quick disinfection. Remember to disinfect if you are visiting more than one site in a day. Truck beds can be sprayed and washed out as well. Avoid inhaling the aerosol generated from the spray and consider wearing an appropriate respirator for disinfection involving a zoonotic disease.

Disease Control

Disease control activities are determined by the type of disease, environmental factors, species involved, and zoonotic potential. Control actions are implemented for major die-offs and have special activities that are not necessary in daily wildlife health operations. For the most extreme situations, incident command procedures may be implemented.

After disease control operations have ended, the area should be monitored for up to 30 days to watch for additional mortality. Contact WHP staff to discuss monitoring sites after die-offs.

Forensic specimens

In any case where you strongly suspect death is a result of unlawful activity (poaching, poisoning) contact Regional Law Enforcement and request that they come to the scene. It is best if DLE staff document, collect, and submit forensic cases directly to the WHU in Delmar with appropriate chain-of-custody documents. If DLE is not available document the scene with photographs and sketches and submit evidence carcasses with a fully completed chain-of-custody record (Appendix V). Contact Kevin Hynes for guidance as soon as possible.

Disposal

Disposal of wild animal carcasses is desirable for both disease control and aesthetics. The need for carcass collection and disposal will depend on each situation and the nature of the event. Many infectious diseases and toxins can remain viable for hours to days in decomposing carcasses. These carcasses represent sources of infection to naïve animals, both wild and domestic. Many of the municipal landfills will accept carcasses with prior notification. For instance, bird carcasses that died of botulism retain *Clostridium botulinum* and maggots can concentrate the toxin. Many disposal methods do not result in elimination of the pathogen. For example, composting and burning do not eliminate infectious prions from CWD-infected deer. If laboratory confirmation of a source for the mortality is not possible, a precautionary approach should be applied to ensure public health and tolerance towards wildlife.

If the pathogen is particularly virulent (i.e., anthrax, highly pathogenic avian influenza), carcass disposal may need to occur on site. Burning and burying are the most commonly used methods, provided they conform to environmental pollution standards. Buried carcasses should be deep enough to prevent excavation by scavengers. Groundwater contamination should also be considered in choosing a location. Many areas of New York are not appropriate for carcass burial.

Carcasses can be treated with lime prior to burial to deter scavenging. Burning carcasses on site requires a hot fire with good air flow and supplemented with a fuel. Open pit burning may not be possible and requires consultation with DEC Waste Management personnel. Disposal in a landfill, chemical digestion, or composting are also options for disposal in some cases, provided carcasses are completely covered and not available to scavengers. Portable incinerators or digesters may be available from other agencies. Carcasses should be completely removed, preferably after being counted to determine the extent of the disease outbreak. Depending on the

pathogen, the area affected may also need to be sanitized. Animals that are euthanized with lead ammunition or veterinary drugs should be removed from the landscape to prevent secondary poisoning by scavengers.

If DEC personnel are involved in carcass disposal, they should wear protective equipment that can be removed and disposed of or disinfected (gloves, rubber boots, rainwear or coveralls). In the event that a homeowner or member of the public calls about a carcass that cannot be removed by DEC or another agency, they should be advised not to touch the carcass with their bare hands. If they are capable of removing it, it should be bagged and either disposed of in the municipal waste stream or buried at least 2 feet and completely covered by soil.

Communication

Communications will be handled through DEC's Office of Communication Services either in the Central Office or the affected Region. A variety of media outlets should be targeted depending on the scope of the incident, including television, radio, newspaper, website, and social media. If game species are involved to a degree that hunting or trapping seasons may be affected or there is overwhelming interest, public meetings with stakeholder groups should be scheduled to provide information and obtain feedback.

Important messages to communicate to the public are the timeline for diagnosis of the event (e.g., examination and laboratory diagnostics will take a few days to weeks), current management actions, potential future actions (if known), and impacts to human or domestic animal health (if known). In the event of a zoonotic disease (i.e., anthrax, botulism, West Nile virus, eastern equine encephalitis), it is important to frame wildlife disease messaging in a context that maintains support for the wildlife resources and wildlife conservation and involve NYSDOH in public messaging.

Appendix I

Glossary

Autolysis – Destruction of cells after death
Acute – Rapid onset and short duration
Biosecurity – Procedures intended to protect humans or animals against disease or harmful biological agents
Chronic – Persisting over a long period of time
Decontamination – The physical removal of contaminants to reduce further or eliminate exposure, transmission, and physical effects and to prevent from further spreading of disease
Depopulation – The method by which animals must be humanely euthanized quickly and efficiently with as much consideration given to the welfare of the animals as practicable
Disinfectant – A chemical or mechanical means of rendering the virus unviable
Edema – Fluid in the tissue
Emaciation – Excessive leanness, no fat
Enzootic – Relating to a disease that regularly affects animals in a particular area or during a particular season
Epizootic – Relating to a disease that is temporarily prevalent and widespread in an animal population
Eradication – Reducing to zero the incidence of infection
Freeze artifact – Damage to cellular tissues from water expansion during freezing
Hemorrhage – Bleeding
Histopathology – Microscopic examination of tissues
Lesion – Injury/harm to a tissue
Monitoring – Keeping tabs on disease activity
Morbidity – Condition of being diseased (sick)
Mortality – Death
Necropsy – Dissection and exam of an animal after death
Necrosis – Destruction (death) of living cells
One Health – Phrase or concept that demonstrates a collaborative effort by multiple disciplines working on all scales to attain optimal health for people, animals, and the environment
Outbreak – The occurrence of cases of a disease are in excess of what is normally expected in a given population
Pathogen – Any disease-producing agent (i.e. virus, bacterium)
Personal Protective Equipment (PPE) – Equipment worn to minimize exposure to biohazards
Quarantine – A strict isolation imposed to prevent the spread of a disease
Reservoir – Host or environment that maintains a pathogen
Serology – Test that detects antibodies in the blood
Surveillance – Looking for a disease
Systemic – Affects the whole body
Transmission – The act or process by which something is spread or passed from one person or animal to another
Toxin – A poisonous substance
Vector – Carrier of disease (i.e. tick, mosquito)
Zoonoses/Zoonotic – Disease communicable between animals and humans under natural conditions

Appendix II

Personal Protective Equipment Guidelines for NYSDEC Employees

Personal Protective Equipment Guidelines for NYSDEC Employees						
Environment	Suspect Diseases not Diagnosed in the U.S.		Suspect Disease Diagnosed in the United States			
			Suspect Disease Outbreak Investigation	Confirmed Diagnosis of Suspect Disease-Emergency Response Activities		
				General Operations Areas Surveillance	Biological Control Area Activity	
Equipment	Routine Surveillance	Suspect Disease Outbreak Investigation	Routine Surveillance	Routine Surveillance Operations	Routine Surveillance Operations	Any Cleaning and/or Disinfection Activity
Coveralls, Work Uniforms, etc.	X					
Tyvek Coveralls		X	X	X		
Tychem Coveralls	X	X			X	X
Exam gloves (heavy disposable)			X	X	X plus	X plus
Rubber gloves (heavy duty)		X			X	X
N-95 or N-100 Filtering Face piece*			X	X	X	X plus
Goggles (indirect vented)**						X or
Full-face APR with N-100 Canister						X
Self-contained breathing apparatus SCBA**						+/-
Boot Covers (Disposable)	+/- OR	+/- OR	+/- OR	+/- OR		
Rubber Boots	X	X	X	X	X	X

Appendix III

Field Necropsy Checklist

Label whirl-paks or bags before beginning exam (see *). Leftover bags will let you know you forgot a sample. Label boxes (Y/N) if area or organ was examined and/or a sample was collected. Add notes even if a sample was not taken and appeared normal.

*Date:*_____ *Suspect COD:*_____

ID#:_____SEX: M / F AGE:_____Location:

Area/Organ	Examined? (Y/N)	Submitted Sample?	Notes
BODY CONDITION	Y / N	NA	POOR MODERATE GOOD (circle one and describe)
HAIR/COAT	Y / N	NA	
HEAD/SKULL	Y / N	Y / N	
EYES	Y / N	Y / N	Whole head is preferred
EARS	Y / N	NA	
MOUTH	Y / N	NA	
TEETH*	Y / N	Y / N	Incisor collected for aging if whole head not collected
PARASITES**	Y / N	Y / N	Ticks/Keds/Lung worms/Brainworm/Liver fluke (**bag separately)
HOOVES	Y / N	NA	
INJURIES	Y / N	NA	
MUSCLE*	Y / N	Y / N	
FAT*	Y / N	Y / N	
LIVER*	Y / N	Y / N	
SPLEEN*	Y / N	Y / N	
FECES*	Y / N	Y / N	
STOMACH *	Y / N	Y / N	Empty or full stomach? Contents?
KIDNEY*	Y / N	Y / N	<25% / 26-50% / 51-75% / >75%
HEART*	Y / N	Y / N	
BLOOD*	Y / N	Y / N	Collect if possible.
FEMUR*	Y / N	Y / N	Is marrow white, pink, or red?
LYMPH NODES/OBEX*	Y / N	Y / N	Whole head is preferred.
Other:			

Appendix IV

Evidence and Chain of Custody Form (Division of Law Enforcement)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF LAW ENFORCEMENT

EVIDENCE AND CHAIN-OF-CUSTODY RECORD

1. CASE NAME		**2. CASE/ECAT NUMBER**	
3. ADDRESS	**4. CITY/STATE/ZIP CODE**	**5. COUNTY**	
6. MEMBER		**7. TIME TAKEN**	**8. DATE TAKEN**
9. OFFICE/REGION		**10. SHIELD NUMBER**	

11. DESCRIPTION OF EVIDENCE SEIZED:

12. SPECIFIC LOCATION OF EVIDENCE (When Seized)

13. NAME OF PERSON FROM WHOM EVIDENCE WAS OBTAINED

☐ Owner _____

☐ Other _____

14. ADDRESS

15. EVIDENCE PROCESSED:

☐ Evidence NYSPIN: ☐ Yes ☐ No If Yes, by Whom: _____ Con Sheet # _____

☐ Evidence Photographed: ☐ Yes ☐ No If Yes, by Whom: _____ Con Sheet # _____

☐ Evidence Diagramed: ☐ Yes ☐ No If Yes, by Whom: _____ Con Sheet # _____

16. WAS SEARCH WARRANT ISSUED: ☐ Yes ☐ No

If search warrant was issued, Court of Issuance: _____ Court, _____ of _____

_____ County _____ Date of Issuance: _____

17. THE FACTS NOTED IN SECTION 11 ABOVE CONSTITUTE A TRUE AND ACCURATE DESCRIPTION OF THE ITEMS SEIZED

Member: _____ Subscribed and Sworn to before me this _____ Day of _____ 20 _____

Magistrate: _____ Title _____

18. ACKNOWLEDGEMENT OF OWNERSHIP

I _____ acknowledge that I am the sole owner of the item(s) listed in Section 11 above, alleged to have been used in an act constituting a violation of Section _____ of _____Law.

I understand that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Signed: _____ Date _____

FORM MUST BE PRINTED 2 SIDED - FRONT AND BACK MUST BE ON 1 PAGE

19. CHAIN OF CUSTODY			
DATE	RELINQUISHED BY	RECEIVED BY	PURPOSE OF CHANGE OF CUSTODY
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	
	Printed name	Printed Name	
	Signature	*Signature*	

20. FINAL DISPOSITION

FORM MUST BE PRINTED 2 SIDED - FRONT AND BACK MUST BE ON 1 PAGE

Appendix V

Disease Response Kit Supply Listing

Equipment	Description	√
Personal Protection		
Disposable exam glove	Vinyl Medical Exam Gloves (100/box)	
Disposable shoe covers	Polypropylene Shoe Covers (300/case)	
Lightweight disposable coveralls	Tyvek Coveralls (25 per case)	
No-Cut gloves		
Eye protection	Vented goggles	
N95 masks (minimally dust masks)	N95 Particulate Mask with Valve (10 per box, 12 boxes/case)	
Clerical		
Pencils	Mirado Pencils, #2 med. Soft lead (Dozen)	
Permanent marker	Sharpie Industrial Permanent Markers (Dz)	
Carcass tags	Tyvek pre-wired, tear & moisture resistant tags, #5, 4 ¾ x 2 ⅜" (1000 per case)	
Flagging	Ultra flagging tape 1 3/16 " width	
Field notebook	"Rite in the Rain" 4 ⅝ x 7" Field Notebook	
Mailing forms	Mailing Forms	
Specimen history forms	DEC specimen history forms	
Shipping instructions	DEC laminated shipping instructions	
Sanitation		
Hand sanitizer	Purell Hand Sanitizer (16oz)	
Concentrate bleach	Clorox Bleach (96oz)	
Plastic dish pan	11.5 QT plastic dish pan	
Paper towels	Bounty (12 roll pack)	
Trash bags	42 Gal. Heavy Duty Contractor Bags 50 Ct.	
Instruments/Equipment		
Scissors	Gerber Scissors	
Plastic bags for collection (Gallon)	Ziploc Commercial Double Zipper Plastic Freezer Bags, Gallon (case 250)	
Plastic bags for collection (2 gallon)	Ziploc Commercial Resealable Bags, 2 Gallon (Case 100)	
Plastic bags for collection (Large)	Ziploc Large Heavy Duty Big Bag #65676 (5 pack)	
Plastic Bags for collection (XL)	Ziploc XL Heavy Duty Big Bag #65644 (4 pack)	
Cooler	52 Qt Coleman Cooler	
Biohazard bags	23 x 23 " biohazard bag (500 bags)	
Duct tape	Office Depot Brand Duct Tape (60 yard roll)	
Strapping tape	Scotch High-tensile filament tape (60 yard roll)	
Cable ties (various sizes)	GB 50098 Electrical Assorted Cable Ties, 500-Pack	
Blue ice	Rubbermaid 1080-16-220; Blue Ice Block Module Ice Pack	
Instant cold compress	6 x 9 instant cold compress (Pack of 20)	
Scalpels-disposable with handles		
Forceps		
Sharps container		
Whirl-paks		
Sterile swabs		
Total		

Appendix VI

Categories of Interest for Wildlife Specimens

Submission Category	Species
Routinely of Interest	Unusual patterns of mortality (out of the expected season, higher than normal numbers, multiple species involved)
	More than a single animal found dead in a small area or short time frame
	White-tailed deer or Moose
	Bald or Golden Eagles, Peregrine Falcons
	Raptors
	Loons, Swans, Ravens, Avian vagrants
	Banded wildlife
	Species of Special Concern, Endangered or Threatened Species
	Bobcat, Otter, Fisher, Weasel, and Mink
	All reptiles, salamanders, and frog
	Exotic or farmed species
Possibly of Interest	Single animals found dead
	Neurologic birds and mammals
Not of interest	Window strikes or cat attacks of common bird species
	Banded racing/homing pigeons
	Common road kill animals
	Domestic animals
	Common species of newborn/nestling animals

Appendix VII

Useful Web links

Licensed wildlife rehabilitator:
https://www.dec.ny.gov/cfmx/extapps/sls_searches/index.cfm?p=live_rehab

Nuisance Wildlife Control Operator:
https://www.dec.ny.gov/animals/7005.html

Escaped Cervids SOP:
http://internal.dec.state.ny.us/docs/DFWdocs/sopdeercap.pdf

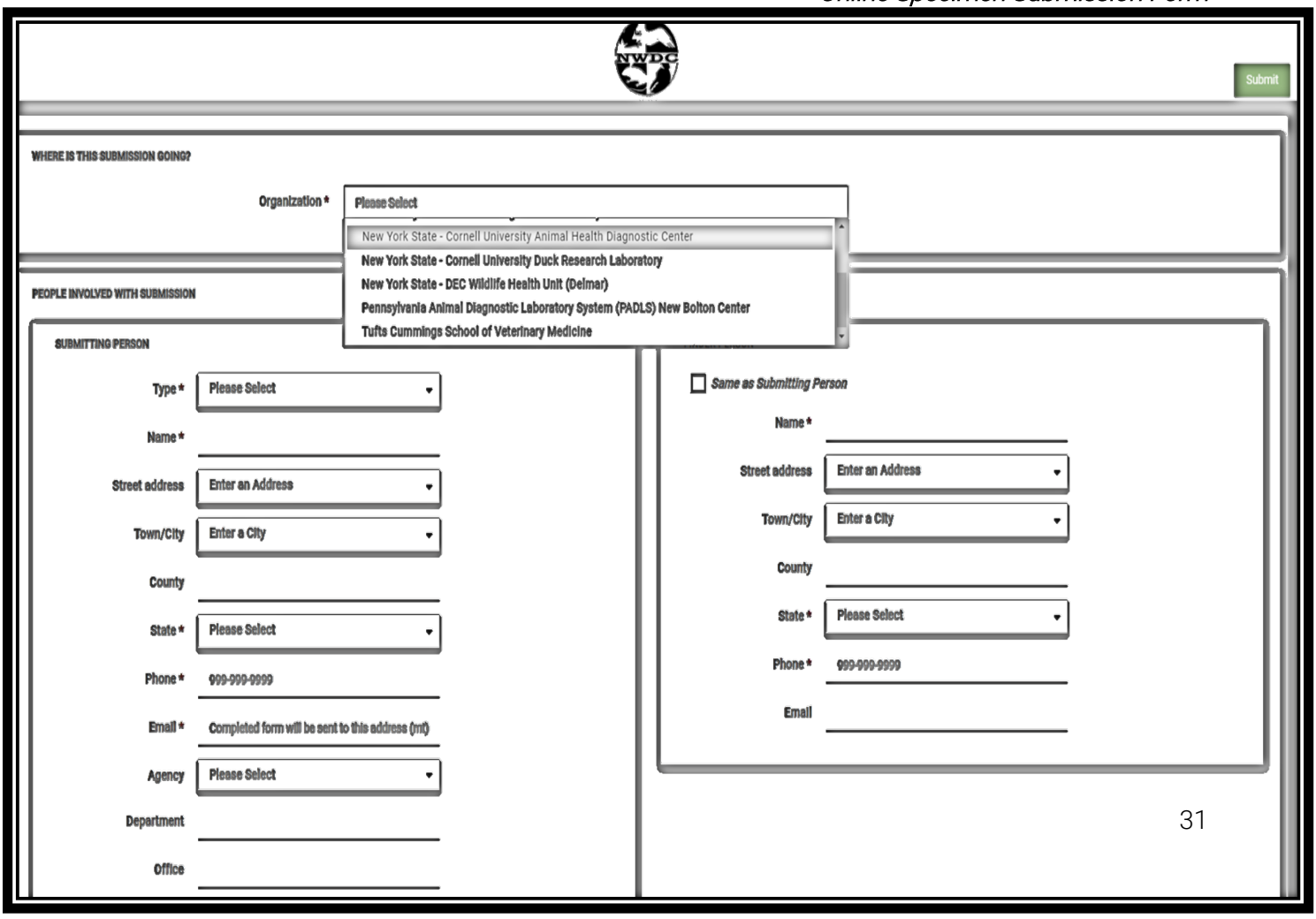
Wildlife Euthanasia SOP:
https://cwhl.vet.cornell.edu/system/files/dec/euthanasia-wildlife-booklet-web.pdf

Cornell AHDC Specimen Shipping Guidelines:
https://www.vet.cornell.edu/animal-health-diagnostic-center/testing/how-to-send-specimens

UN 3373 - Biological Substance, Category B label
https://www.vet.cornell.edu/sites/default/files/Shipping_Label_for_Biological_Substances_CategoryB.pdf

Specimen Submission Form:
http://nwdc.wildlifesubmissions.org/

Online Specimen Submission Form



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WILDLIFE RESTORATION