Midwest Wildlife and Fish Health Committee Meeting

April 17-18, 2017

Bellevue, IA

Hosted by:

The Iowa Department of
Natural Resources

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Meeting Time and Place

April 17-18, 2017
Bellevue, IA

Agenda: see Appendix I

Attendance

Attending this year's Midwest Wildlife and Fish Health Committee Meeting were representatives from 11 state fish and wildlife agencies: Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, North Dakota, South Dakota, Virginia, and Wisconsin; and representatives from three federal agencies:

- the United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (USDA-APHIS-WS),
- the United States Geological Survey, National Wildlife Health Center (USGS-NWHC), and
- the United States Fish and Wildlife Service (USFWS)

A total of 26 individuals attended (Appendix II), including two invited guests from Iowa State University. In addition, 4 individuals participated in the meeting via WebEx, including representatives from 3 state or provincial fish and wildlife agencies (Ohio, Manitoba and Saskatchewan). Kansas, Nebraska and Ontario were not represented.

Executive Summary

Disease Reports

Each state or province in attendance (in person or via Web-ex), the National Wildlife Health Center, and USDA-Wildlife Services provided an update on the wildlife disease issues within their jurisdiction. The states or provinces that did not provide written disease updates were Nebraska, Ohio, and Saskatchewan. For your convenience, an index of disease reports is included in Appendix III.

Iowa's CWD Management Program, Dale Garner, Iowa DNR

Deer hunting is an important source of income for Iowa DNR. Deer license sales produces $10 million annually, which accounts for about 1/3 of the total license revenue and roughly 20% of the C&R Division (Wildlife, Fisheries and Law Enforcement Bureaus) revenue each year. Anything that has an impact on deer hunting from disease to regulations will have a direct impact on the agency's revenue stream.

On July 18, 2012, the first CWD positive animal was detected in Iowa on a private hunting preserve in Davis County. Iowa DNR does not have regulatory authority over cervid breeding facilities but it does regulate shooter facilities. Iowa DNR pays for CWD testing conducted on these shooter operations. The affected facility was placed under quarantine by Iowa Department

of Agriculture and by Iowa DNR. The facility was depopulated and the fence was maintained. There are still legal issues being handled in the court system.

There were trace outs to 3 facilities from the original Davis County facility; one in south central Iowa, one in north central Iowa and one in western Iowa. Animals were moved regularly between these facilities. There were 199 white-tailed deer and 9 elk on the Davis county facility. Two more positive deer were found in follow-up testing. The Cerro Gordo breeder facility sampled 14 deer and found 1 positive. The Pottawattamie County breeder facility tested 13 deer and found 9 positives. Ultimately the Cerro Gordo facility was indemnified and depopulated. There were 183 males and 173 females. A total of 284 animals were positive (79.8%); the remainder were fawns (<12 month old) and were not tested. In response, the Iowa DNR collected 351 samples from deer around these facilities and 405 from buffer zone near cases in Wisconsin. All wild deer samples were negative.

Statewide CWD surveillance started in 2002. 47,136 samples from wild deer and 3,124 from hunting preserves have been collected. During the 2013 hunting season, the first case of CWD in a wild deer in IA was identified in Allamakee County, which is located in northeast IA. In the 2015/2016 hunting season, 426 additional samples were collected and two more positives were found in northeast Iowa. In the 2016/2017 collection season, surveillance focused on road-kills, targeted, and hunter-harvested animal which a sample goal of 400. Eleven new positives were detected in Allamakee County which makes a total of 17 there, and 1 new case in Clayton County. During post-season, an additional 202 samples were collected and 1 more positive was found in Allamakee County. Post-season in Clayton County, 138 additional samples were tested and no new positives were found. To date 62,482 samples have been collected in Iowa for CWD surveillance. Plans for the 2017/2018 CWD surveillance include sampling along the Nebraska border as a result of the discovery of new positives in eastern Nebraska.

Population Genetic Structure of White-tailed Deer in Iowa, Dr. Julie Blanchong, ISU

Movement of infected animals plays a major role in the spread of CWD but landscape can also influence the movement and spread of disease. Distance and the direction that deer move is influenced by landscape features, such as forested versus agricultural lands, rivers, roads, and developed areas (e.g., cities and towns). The objective of the present study was to reconstruct the genetic structure of deer populations in Iowa and identify which, if any, factors influence the local transmission and spatial spread of CWD.

Genetic data from 29 study areas were collected from hunter-harvested lymph node samples. Investigators looked at 9 microsatellite foci to determine the local genetic structure and compare it to other study areas. From this information, they were then able to make inferences about deer movements via similarity of genes. The genetic information gives information about how generations have moved over time, but not specifically on movements occurring today. From 2010-2014, a total of 688 hunter-harvested deer were sampled; 25 deer per surveillance unit. Ideally, the majority of samples were females, since they have more limited movements. However, they looked at markers passed on by both sexes and at mitochondrial DNA.

The genetic structure *within* study sites and the proportion of closely related deer were examined, as well as the land composition within study areas such as row crop, agricultural, forested, and developed. They used deer density information from hunter-harvest data collected by Iowa DNR. Anything with more than 10% development was considered urban. There was a statistically significant relationship between forested habitat and genetic relatedness. The same thing held true for animals from urban areas. There was a negative correlation for row crops and genetic relatedness. As population densities increased, so did genetic relatedness, which is similar to studies in other states.

They also looked at genetic structure among study areas to see relationships between genetic distance versus geographic distance, males versus females, ecoregion, main interstates, and land use type. The genetic distances between study areas was relatively small. There was a male-biased dispersal, but overall there was a "medium" amount of genetic difference. Forest had the biggest difference on genetic differences and interstates had some difference, but not at a biologically significant level.

What are the genetic structure implications for local transmission of disease? There is a slightly stronger structure in forested and urban areas which means there is a greater chance of local disease spread in these areas with higher rates of disease transmission from local interactions. In urban environments with non-hunted populations, this promotes older females and higher transmission. There appeared to be no true barriers to spread of disease via genetic structure but rates of transmission may vary some by habitat type.

An annotated white-tailed deer genome will soon be publicly available which could eventually lead to more focused genetic studies that relate to specific genes and their function. There is an effort to develop a standardized method of sequencing WTD genetics so that comparisons across larger scales can made.

Wisconsin CWD Response Plan Review, Tami Ryan- Wisconsin DNR

After a lengthy review, Wisconsin's CWD management plan was changed to a CWD response plan. It was changed to a longer-term, 15 year plan, with reviews in 5-year increments. The first 5-year review period ended in 2015. The Natural Resources Board (NRB) requested a review process that began in the spring of 2016. As result, the Governor announced the following directives for WIDNR: 1) seek input using Citizen Deer Advisory Councils (CDAC); 2) a comprehensive study of deer population dynamics, 3) conduct more frequent fence inspections; 4) develop BMP's for urine- based scents; and 5) develop quicker test results for hunters. Overall the main goal has not changed and that is to minimize the area of WI affected by CWD.

An internal review of the plan started in December 2015 and has been completed. Input was sought from the conservation congress, which is a citizen-based delegate system unique to WI that is made up of 5 members from each county that advises the NRB, other state agencies, and the CDAC. Final recommendations went to NRB in March 2016. The review process resulted in the plan going from 24 to 62 action items. Most of the major action items will remain the same, just with more detail. Action items are grouped under Outreach, Research and Disease Assessment. New additions include working with adjacent states on CWD, developing an action

plan template for new detections, and preventing new introductions. Annual updates on CWD are provided to the NRB each December.

Minnesota CWD Update, Erik Hildebrand, Minnesota DNR

In 2010, Minnesota detected their first CWD positive wild white-tailed deer. It was found immediately outside of a captive elk facility in Pine Island that had been depopulated in 2009 due to CWD. During 3 consecutive years of aggressive sampling, no additional cases of CWD were found. In 2014, surveillance was started near the Iowa border in southeast MN in response to Iowa's finding of CWD in Allamakee County. In the fall of 2016, approximately 3,000 deer were tested in southeast MN and two CWD-positive animals were found from voluntary hunter-harvest sampling. An additional sample from a taxidermist was also positive. All 3 cases were adult males harvested in Fillmore County.

MNDNR response plan was to do surveillance in 10 mile circles around the positives and have mandatory testing on all animals harvested within these areas. This created a new CWD Management Area called Zone 603. A carcass movement ban was set in place, preventing deer from leaving the area until it tested negative. Deer feeding bans were put in place in the 5 counties surrounding the area. A special hunting season was created from Dec 31 to Jan 15, landowner shooting permits were issued for 4 weeks following the special hunt, and a follow-up cull was performed by USDA APHIS WS in February. A survey conducted in December 2016 estimated an average of 23.6 deer/mi^2 in Zone 603 and within the core areas immediately surrounding the CWD-positive cases, there were 35 deer/mi^2.

During the special hunt, 626 adult animals were sampled and 3 additional CWD positive animals were detected. A total of 411 shooting permits were issued to landowners and 3 more positives were detected. For landowner permits, 133 permit-holders removed at least one deer, 71 took only 1, and only 10 took 5 or more deer. USDA-WS removed 238 deer by sharpshooting, and 2 more positives were found. The estimated prevalence is 2% in the core areas but 0.6% overall for Zone 603. In the end, 10 of the 11 animals detected were non-clinical. Minnesota DNR believe this is a recent infection, given the limited spread and low prevalence of disease.

Surveillance is planned again in the fall of 2017 in Zone 603 and around newly detected CWD-positive game farms in north central MN (at least 2 farms, maybe more). There will be mandatory sampling for the first 2 days of the firearm season.

HPAI Surveillance in small birds and mammals, Dr. Jim Adelman, ISU

During the most recent HPAI outbreaks in the US the source of the spread of the avian influenza viruses was "elusive". The question arose as to what, if any, role small birds and mammals play in the transmission cycle for HPAI. Could these species have active infections or did they serve as a fomite?

In the fall of 2015 and spring of 2016, small bird and mammal surveys were conducted at poultry facilities and nearby wetlands in Iowa. Internal and external swabs were taken for avian influenza testing and pooled into batches. There were 450 individual animals collected

representing 39 species of animals. Some species were caught at both poultry facilities and at wetlands but most were caught at only one or the other. Overall the communities of small birds and mammals varied by sites. They used a multiplex qPCR and two viral matrix genes for testing. No HPAI was found. Additionally, no antibodies to HPAI were found.

Avian influenza viruses were on the landscape at the time of this study, but none of the species tested were carriers or exposed to AI virus. In four different studies conducted, only 3 out of 1485 animals tested positive. It is safe to conclude that the species tested were not likely the source of spread. Based on USDA work, biosecurity methods and practices are a better predictor of when and where an outbreak is likely to occur. More study needs to be done on those species that use both wetlands and poultry houses.

Bat activity monitoring and goat respiratory disease, Dr. Julie Blanchong, ISU

Brief overviews of several projects Dr. Blanchong is involved in were discussed.

Bat monitoring project in Iowa.

There are three big pressures on insectivorous bats: infectious diseases, windmill farms and habitat loss. Three large projects were undertaken to get a better idea of bat activity, monitoring techniques and distribution of bats. Iowa has a large wind farm industry and has White Nose Syndrome (WNS), so it is important to document baseline populations. More than a third of Iowa's electricity comes from wind power and wind towers have a huge impact on bat mortality during fall migration.

Acoustic sampling is used to identify the presence of individual bat species. Even after 4 years of data collection, it is apparent more data is needed. What can be determined at this point is that more bats are present in eastern Iowa and the bats of concern for contracting WNS are in eastern Iowa. Little brown bats (which are likely to be listed soon) have preferred habitat in north central Iowa and northern long eared bats (already listed) prefer this area too. The project is transitioning to a citizen-based data collection project where citizens collect the data and then it is analyzed by ISU.

Respiratory disease in mountain goats in Nevada.

This project was initiated following a pneumonia outbreak in bighorn sheep in the East Humboldt range to determine if mountain goats would act as a disease reservoir for respiratory diseases of bighorn sheep. Goat kids were identified by locating previously-collared does and observing the kids from a distance. Goat kids that died were collected and necropsies were performed. In total, 5 carcasses were recovered. All had some level of lung consolidation, lesions, adhesions, and otitis. All tested PCR positive for *Mycoplasma ovipnuemoniae* and some were culture positive for *Pasturella spp*.

Grazing behaviors of the kids were observed to identify whether or not that could be used as a metric for predicting disease. In most cases, decreased time grazing was a predictor of disease. Kids will show classic signs of respiratory disease. They have low overall summer survival,

similar to what is seen in bighorn sheep. Aerial surveys were observing less recruitment during the fall flights. Overall, many questions are left unanswered for the population of mountain goats in the East Humboldt range and which direction the population is heading. The finding of respiratory disease in mountain goats raises questions regarding reintroduction of bighorn sheep into areas where mountain goats exist. Additional evidence suggest that goats and sheep exchange bacterial strains when sympatric.

Global Highly Pathogenic Avian Influenza Update, Tom DeLiberto, USDA APHIS-WS

Avian influenza viruses are RNA viruses so there is a high mutation rate. Genetic drift is the result of point mutations between the eight genes that make up avian influenza viruses. The classification system (clades) was established to keep track of strains of avian influenza, more specifically H5 lineages. Clades are named based on 1.5% or less nucleotide diversity. This is the first time a particular lineage has been maintained in the wild for so long that it has evolved this far. The particular lineage of concern, Clade 2.3.4.4, found in outbreaks in China in 2005, is really good at reasserting itself and has a high rate of genetic drift.

Clade 2.3.4.4 circulated and reassorted in China from 2005-2014 (H5N1, H5N2, H5N5, H5N8) before moving intercontinentally. Termed icA's, these viruses moved into South Korea in the winter of 2014 and into Japan the following spring. As migratory birds moved to breeding grounds in the arctic that summer they brought the viruses with them. In the fall of 2014, wild birds likely brought the viruses south from the breeding grounds to North America (September/early October). These H5 viruses reassorted with North American lineage N1's.

Sampling efforts for detection has three components: year round passive sampling of morbidity and mortality events; active sampling of apparently healthy birds; year round targeted environmental sampling via fecal samples. Surveillance system is maximized to detect HPAI at a 1% prevalence.

Watershed sampling is prioritized based on several factors: areas open to wild duck occurrence; LPAI virus clusters detected in the nationwide surveillance from 2006-2011; and areas with high numbers of domestic poultry. In FY2016, it cost $7.5 million to sample 45,549 waterfowl. Only two birds, both mallards (one each in Utah and Oregon), were positive via unconfirmed PCR. In FY2017, funding was cut by $2 million and testing decreased to 34,744 birds. There were 2 confirmed-positive mallards, one each in Montana and Alaska. The risk may seem low based on the level of testing but looking to the lessons from Asia, the longer the viruses stick around and reassort the more problematic they become. Finding the virus in MT and AK this past year indicates the virus is still out there circulating.

Ducks are the primary reservoir for AIV. Experimental studies and testing of other wild birds have shown that Canada geese are susceptible, goslings are acutely sensitive and geese can act as a good sentinel species; raptors are acutely sensitive; experimentally passerines and small mammals can be infected but are not likely a reservoir based on field studies. Several other studies are pending at this point.

When outbreaks in poultry occur, it is typically in the spring and 3-4 months after peaks in wild birds. It takes time for the viruses to jump from wild birds into poultry, adapt to poultry and then cause mortality in poultry. So when there is a die-off in poultry, going in and looking at wild birds after the die-off occurs does not make biological sense. The time to have looked would have been 3-4 months prior.

Two more groups of viruses evolved through reassortment in Asia in the Clade 2.3.4.4 viruses both are H5N6's. These viruses are zoonotic and are circulating in Asia right now. Since February 2013 there has been an Influenza A (H7N9) virus Asia with pandemic potential. There have been 1,342 people confirmed infected with 494 deaths. The outbreak that occurred in the southern US in March 2017 was an unrelated H7N9 in commercial broiler flocks in TN. There has been LPAI H7N9 circulating in KY, TN, AL and GA. At the time of reporting, the outbreak was still being investigated.

Global CWD Update, Bryan Richards USGS NWHC

There have been a total of 83 CWD positive captive cervid facilities in the US and 96 in Canada. All 96 of the Canadian facilities have been depopulated. Since 2012, there have been 30 new positive facilities in the US in 9 different states, 8 were shooter facilities, 1 was an exhibition facility, and 21 were breeding facilities. Nearly 60% (12/2) of these farms had 5 or more years of CWD testing, and 43% (9/21) were enrolled in the USDA CWD monitoring program at the time there were found to be infected with the disease.

Norway has had three CWD-positive reindeer and two moose to date. The degree of lymphatic system involvement in infected reindeer is not yet known, which makes it hard to quantify shedding. Norway has a 100% cull planned on the affected reindeer herd which represents about 6% of the total population. The plan is to leave the land barren for 5 years before allowing animals back into the area. The genetics of the Norwegian CWD strains are not consistent with what has been found in North America.

ACTION ITEMS

- **Multistate Conservation Grant**
  Dr. Kelly Straka introduced the idea of applying for funding to create CWD national outreach materials that could be incorporated into state's hunting regulation books. This could take the form of a 2-page centerfold and billboard signs.

- **Committee Elections**
  After 5 years of serving in the role of Chair of this Committee, Dr. Michelle Carstensen is stepping down and Dr. Dan Grove is promoted from Vice-Chair to Chair, effective June 2017. Dr. Kelly Straka was nominated and elected to serve as the new Vice-Chair**.**

Director Action Item

Resolution in Support of Restricting the Importation of Hunter-Harvested Cervid Carcasses to Minimize Risks of Chronic Wasting Disease Spread

The Midwest Wildlife and Fish Health Committee discussed and proposed the following resolution in support of consistent language among states to restrict the importation of hunter-harvested cervid carcasses to minimize further spread of chronic wasting disease.

SUPPORTING RESTRICTING IMPORTATION OF HUNTER-HARVESTED CERVID CARCASSES FROM KNOWN CWD-INFECTED STATES AND PROVINCES.

WHEREAS, chronic wasting disease (CWD) is a fatal neurological disease of mule deer, white-tailed deer, elk, moose and reindeer/caribou;

WHEREAS, CWD has been detected in captive and/or free-ranging cervid populations in 24 states (including Arkansas, Colorado, Illinois, Iowa, Kansas, Maryland, Michigan, Minnesota, Missouri, Montana, Nebraska, New Mexico, New York, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming), 2 Canadian provinces (Alberta and Saskatchewan), the Republic of Korea, and Norway;

WHEREAS, the geographic distribution and prevalence of CWD continue to grow; yet there is a lack of consistency among states in CWD surveillance activities, and this poses increased risk of undiscovered areas with disease;

WHEREAS, CWD poses a threat to the health of cervid populations wherever it occurs;

WHEREAS, consequent to the ongoing spread of disease, domestic livestock and human exposure to the causative agent of CWD are increasing;

WHEREAS, all states have a percentage of resident hunters that travel out-of-state to pursue game hunting opportunities and, if successful, return to their home state with their harvest;

WHEREAS, some states already have regulations that prevent importation of cervid carcasses harvested from known CWD-affected areas or from anywhere outside their borders (e.g., blanket ban), with the exception of cut/wrapped meat, quarters with no part of the spinal column attached, deboned meat, cleaned skulls or skull cap, shed antlers, hides, canine teeth, and finished taxidermy mounts;

WHEREAS, efforts to educate hunters on importation laws remain a challenge; hunters are often directed to search for the CWD status of areas they intend to hunt or hunting regulation books in the destination state;

In an effort to minimize risk of further disease spread and simplify carcass importation laws for out-of-state hunters, all states should consider adoption of consistent language that

disallows intact cervid carcasses to come from the entirety of any state or province where CWD is known to occur, with the exception of cut/wrapped meat, quarters with no part of the spinal column attached, deboned meat, cleaned skulls or skull cap, shed antlers, hides, canine teeth, and finished taxidermy mounts.

NOW, THEREFORE, BE IT RESOLVED, that the Midwest Association of Fish and Wildlife Agencies Directors, at its annual meeting in Ashland, Nebraska on June 27, 2017, supports restricting importation of intact cervid carcasses from the entire states and provinces where CWD has been detected in either captive or free-ranging cervid populations, with the exception of cut/wrapped meat, quarters with no part of the spinal column attached, deboned meat, cleaned skulls or skull cap, shed antlers, hides, canine teeth, and finished taxidermy mounts. Nonresidents transporting whole or partial cervid carcasses on a direct route through states (e.g., interstate movements) are exempt from this restriction.

Director Information Item

Best Management Practices for Minimizing Disease Risks during Wildlife Captures

Introduction

As new diseases emerge in wildlife populations, wildlife managers are increasingly tasked with preventing disease spread into naïve populations. In certain instances, management activities could potentially play a role in introducing disease from one population to another. Natural movement of animals and controlling the flow of diseases amongst these populations is a difficult task to accomplish. Limiting and controlling the artificial movement of animals and potential disease spread falls to wildlife managers. Whether it is through regulations restricting carcass movements in and out of a known disease endemic area or by testing animals prior to translocations into new habitats, consideration must be given to the potential for people, including wildlife professionals, facilitating the movement of pathogens. The following information is a general overview of the considerations that should be taken into account before, during, and after capture operations to best mitigate the potential spread of disease. Not every scenario that applies to every disease, weather conditions, species, etc. can be addressed here, but basic concepts and strategies can be implemented and adapted to individual capture events, regardless of whether the disease status of a source population is known.

Disease Agents

It would be impossible to completely cover every disease agent, species, and specific disinfection strategy to minimize the risk of disease transmission in this document. Instead, these guidelines focus on the various ways in which capture projects can facilitate movement of pathogens, and the type of cleaning protocols that are needed to achieve the best decontamination to prevent capture-related spread of wildlife disease. If a disease is known to exist in an area, it is important to research the specific disease and what is currently known about its life cycle, mechanism of spread, species it infects and what sanitization is needed if capture work is to occur. Knowing this information will keep personnel and animals safe and help to mitigate disease spread. Some of the basic questions to be asked are:

- What kind of agent is it? Examples: virus-enveloped or non-enveloped, bacteria-lipid membrane or not, fungus, prion etc.
- What species does it infect? Examples: species specific, multiple species in the same class, multiple classes of animals, etc.
- How is it spread? Examples: bodily fluids, feces, urine, aerosolized, etc.
- How long can it persist outside of the host species?
- Is there concern for environmental contamination?
- Is it zoonotic?
- What cleaning agents work best on this class of disease agent?

The answers to these questions are useful in determining the risk level associated with spreading a disease via capture equipment and personnel, and what decontamination protocols are best for an individual capture operation.

Basics of Sanitization

Most if not all sanitizers are inactivated in the presence of organic material and many are inactivated when they come into contact with detergents or other chemicals. As such, all visible organic matter, debris, and other cleaning agents should be thoroughly removed prior to applying any sanitizer. Standard cleaning protocol is a multiple step process:

- Rinse away all visible debris.
- Scrub all surfaces with a detergent or degreasing agent.
- Rinse thoroughly. Allow to dry.
- Apply sanitizer according to recommendations to all exposed surfaces.
- Allow sanitizer to set for recommended time.
- Rinse thoroughly. Allow to dry.

Sanitizing products work based on contact time with the potentially contaminated surface, so allowing an appropriate amount of time for the sanitizer to be in contact with the potentially contaminated item is crucial. In the case of surgical equipment or instruments, an additional step of sterilization by autoclaving may be warranted. Many sanitizers, like bleach, are highly effective but can be caustic at high concentrations and damaging to the skin, the respiratory system, and to equipment. Always follow the manufacturer's recommendation for handling and diluting sanitizing products.

Field Equipment

Sampling tools and instruments: Thermometers, stethoscopes, pulse oximeter probes, biopsy punches, syringes, needles, mouth gags, ear tag applicators, etc.

The most likely source of cross contamination and potential disease spread amongst individual animals is the equipment that comes in direct contact with bodily fluids and excretions (e.g. saliva, feces, ocular secretions, urine). When possible, this kind of equipment should be disposable and, if not practical, the equipment should be readily sanitized and autoclaved. If field sanitization is not an option, then enough equipment should be available so that dirty equipment is not reused prior to appropriate sanitization. Having dedicated containers to store equipment in once it has been used is recommended. Placing dirty equipment back into packs, bags, or other containers without proper isolation increases the potential for cross-contamination of clean equipment by contact with potentially contaminated equipment.

Animal capture equipment: Hobbles, blindfolds, slings, stretchers, nets etc.

In most cases, capture equipment is used repeatedly in multiple regions and locations. It is impractical and cost prohibitive to dispose of this kind of equipment from one capture to the next. This kind of equipment should be made of durable, chemical resistant, non-porous materials when possible. These qualities allow for proper cleaning and sanitizing. Having enough equipment such as blindfolds and hobbles for single daily use would be ideal to prevent disease spread from animal to animal via equipment during capture events. In known disease endemic areas, having equipment dedicated for use only in these areas is preferred.

Personnel equipment: Clothing, gloves, boots etc.

Consideration should be given to cross-contamination by personnel via clothing and outerwear. In known endemic disease areas, use of disposable outer coverings (e.g., gowns, boot covers, nitrile gloves etc.) are ideal when practical. When using disposable outerwear is not practical,

frequent cleaning or changing of soiled outerwear is recommended. As with individual animal capture equipment, separate outerwear should be worn by personnel when working in known endemic areas and unknown disease status areas.

Contract Capture Companies

When agencies are hiring contractors to handle their animal captures, consideration should be given to where the capture company has been (including what species were targeted, methods used, and disease risks of those populations) prior to doing the capture work in their state. If they are working within a known disease endemic area within the contracting state's jurisdiction, consideration should be given to where the capture crew goes from the disease endemic area. All of the same procedures used within an agency for cleaning potentially contaminated equipment should be applied to the equipment used by these contract capture companies. Proper cleaning and sanitization of equipment or procurement of new equipment should be incorporated into the contract language to prevent the potential spread of disease from state to state.

AFWA Federal Appropriations Recommendations for 2019 Federal Budget

We recommend the following funding is needed to support state and tribal monitoring, research and management of these diseases in free-ranging wildlife:

- Ranking #1, Chronic Wasting Disease for $30M
- Ranking #2, Bovine Tuberculosis for $15M
- Ranking #3, White Nose Syndrome for $15M
- Ranking #4, Invasive Species for $30M
- Ranking #5, Neonicotinoids for $3M
- Ranking #6, Avian Health for $5M
- Ranking #7, Aquaculture/VHS for $3M
- Ranking #8, Amphibians and Reptile Health for $5M

We recommend funding is continued $500,000 for Southeast Cooperative Wildlife Disease Study. We also recommend funding for USDA-APHIS-WS for the Wildlife Disease Monitoring and Surveillance program for $10M. This program provides wildlife disease assistance to states at no cost, such as CWD and bovine TB surveillance, feral hog control, and participation of wildlife disease biologists in state agency wildlife disease management activities

Time and Place of Next Meeting

During the wrap-up, the committee decided the location for the 2018 meeting would be in Michigan in early April.

This year's meeting was a success and we want to thank the Directors who sent representatives to this meeting and encourage those who did not to consider sending one to next year's meeting. Also, we thank Iowa Department of Natural Resources for hosting this year's meeting.

Submitted by: Michelle Carstensen, Chair and Dan Grove, Vice-Chair

APPENDIX I. AGENDA

Monday, April 17

12:00	Arrival and welcome	Dale Garner
12:15	Opening remarks and introductions	Michelle Carstensen
12:30	State disease reports	State Representatives
2:15	*Break*	
2:30	State disease reports (continued)	State Representatives
5:00	*Break for dinner*	

Tuesday, April 18

8:00	Iowa CWD Management Program	Dale Garner
8:30	**Invited presentation:** Deer genetics and CWD	Dr. Julie Blanchong,
9:15	External review of Wisconsin's CWD Response Plan	Tami Ryan
9:45	Point source introduction of CWD in southeast Minnesota	Erik Hildebran
10:15	*Break*	
10:30	BMPs for minimizing disease risks during wildlife captures	Drs. Long, Straka & Grove
11:00	**Invited presentation:** HPAI surveillance in small birds and mammals	Dr. Jim Adelman
11:45	National Update on HPAI	Dr. Tom DeLiberto
12:15	*Lunch*	
1:15	**Invited presentation:** Research updates on bat monitoring for WNV and pneumonia in mountain goats	Dr. Julie Blanchong
2:00	CWD Surveillance & Management	Facilitator, Bryan Richards /All
3:30	*Break*	
3:45	Resolutions	Dan Grove, Tami Ryan
4:00	AFWA Federal Appropriations Recommendations	All
4:30	Action Items	All
5:00	Wrap up and next year's host	

Appendix II. ATTENDEE NAMES AND CONTACT INFORMATION

Attendees	Affiliation	E-mail	Phone
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