

**Testimony of Stephen Guertin
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U.S. Fish and Wildlife Service, Department of the Interior
before the
Senate Committee on Environment and Public Works
regarding
“Examining the Impacts of Disease on Wildlife
Conservation and Management”**

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Good morning Chairman Barrasso, Ranking Member Carper, and members of the Committee. I am Stephen Guertin, Deputy Director for Policy for the U.S. Fish and Wildlife Service (Service) within the Department of the Interior (Department). Thank you for the opportunity to discuss wildlife disease and the challenges it poses to wildlife conservation and management. My testimony will focus on the Service’s role in addressing wildlife disease, as well as the role our various programs play.

Introduction to Wildlife Health and Disease

The Service’s mission is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. Wildlife disease presents multifaceted and dynamic challenges to fulfilling that mission. Partnering with states is key for the Service to be able to address these multi-jurisdictional challenges, and our seamless relationship with the Association of Fish and Wildlife Agencies is a great example of this partnership and our shared goal of combating wildlife disease with the states.

In the last fifty years, there has been a steady increase in wildlife mortality caused by infectious diseases. When combined with other stressors, diseases in wildlife can result in serious conservation challenges for wildlife management agencies and necessitate increased species protections. Beyond conservation concerns, the impacts of wildlife disease on species are a clear and present danger to the economy. Wildlife associated recreation like hunting, angling, and wildlife watching generated \$156.9 billion in total expenditures in 2016 (most recent data). Pollinator species like bats and bees are critical to agriculture. Wildlife diseases also impact the domestic animals that serve as a food resource and as our companions. In addition, the majority of animal diseases that are transmissible to humans originate in wildlife species.

Diseases that are impacting wildlife populations, as well as negatively affecting human and domestic animal health in the United States, include: chronic wasting disease in deer, elk, and moose; white-nose syndrome in hibernating bats; West Nile virus, botulism, avian cholera, and avian malaria in birds; ranaviruses and fungal diseases in amphibians and reptiles; rabies and plague in mesomammals; and harmful algal blooms in fresh and saltwater ecosystems affecting a variety of species. The United States is also under constant threat from foreign animal diseases such as highly pathogenic avian influenza, New World screwworm, cattle fever carried by cattle fever ticks, African swine fever, foot and mouth disease, Rift Valley fever, and Ebola hemorrhagic fever. Driving the emergence and impacts of these diseases are a number of factors

including invasive species, the wildlife trade (both legal and illegal), feeding of wildlife, land-use changes, and increased contact between humans, domestic animals, and wildlife.

As stewards of wildlife, the Service and our partners implement strategies to prevent the introduction of disease into susceptible populations and to respond to and manage wildlife diseases if they become established. Wildlife disease issues and their solutions vary greatly across the country, and within the National Wildlife Refuge and Hatchery Systems. Disease outbreak locations are shifting and spreading over time in response to changes in land use and climatic conditions. To address the dynamic nature of wildlife disease, the Service houses several nationwide programs that plan for and help respond to wildlife disease issues including the Wildlife Health Office, the Aquatic Animal Health Program, and the white-nose syndrome program, as well as the global programs of the Service's International Affairs program and the Office of Law Enforcement.

The success of this work is dependent on the Service's collaboration with many partners, including: State wildlife management agencies and the Association of Fish and Wildlife Agencies; Southeastern Cooperative Wildlife Disease Study; Universities; Non-Governmental Organizations; U.S. Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS)-Wildlife Services; Department of Commerce-National Oceanic and Atmospheric Administration (DOC-NOAA); National Park Service; and the U.S. Geological Survey (USGS) National Wildlife Health Center. In addition to our conservation partners, the Service also works closely with human and animal health experts at the Centers for Disease Control and Prevention, U.S. Agency for International Development (USAID), U.S. State Department and county public health departments, state agricultural agencies, and USDA-APHIS-Veterinary Services.

Disease Prevention, Management, and Emergency Response

Disease prevention is far more effective and less costly than disease control. Diseases can be a normal, balanced component of the natural world, but they can also be a red flag that a wildlife population has lost its resilience due to stressors such as habitat loss, genetic bottlenecks, invasive species, a lack of biodiversity, failures in land management, or poor water quality and quantity. The Service applies specific conservation practices that are key to disease prevention in order to protect and restore resilient ecosystems and wildlife populations, which are then able to better withstand disease impacts and return to pre-disease abundance and health. These conservation practices work to achieve intact and diverse ecosystems, as well as connectivity between wildlife habitats and populations. Connected landscapes in the United States that are under these types of conservation protections help to provide a buffer to the increasing stressors on wildlife health.

Other preventive measures to decrease the spread of disease include reducing activities that unnaturally congregate animals into small geographic areas (e.g., feeding, baiting, and scent lures); restricting wildlife rehabilitation and release practices; curtailing wildlife translocations; reducing interactions between humans, domestic animals, and wildlife; limiting captive propagation of wildlife; and restoring natural water quality, quantity, and flow to landscapes. In some cases, once a new wildlife disease has been introduced to a wildlife population, eradication is not possible.

Once wildlife illness and mortalities are detected in wildlife populations, disease contingency plans, wildlife disease surveillance, investigation of mortality events, and appropriate disease management strategies are vital components of an effective response. The Service works closely with wildlife disease diagnostic laboratories throughout the United States including the USGS National Wildlife Health Center, the Southeastern Cooperative Wildlife Disease Study, and university and state-run diagnostic laboratories to conduct cause-of-death analyses for wildlife species found sick or dead, and to make management recommendations for the prevention of future cases where possible.

While many wildlife disease events are predictable and can be planned for, some outbreaks (such as foreign and emergency animal diseases) are unexpected, fast-moving, and require an emergency response with a full multi-agency incident command structure. Preparation for these events, both through training and acquisition of the necessary tools for response, is extremely important. The Service works closely with the Department's Office of Emergency Management to ensure that personnel obtain the appropriate emergency response certifications and wildlife disease training.

The Service's Work on Wildlife Diseases

The Service has been on the front lines addressing wildlife disease and has multiple active programs that perform collaborative work across the country to combat specific wildlife diseases. Those diseases and programs include leading efforts to combat white-nose syndrome, New World screwworm, chronic wasting disease, harmful algal blooms, bison disease, cattle fever tick, fish disease, and wildlife-to-human transmitted disease.

White-nose Syndrome Response

White-nose syndrome (WNS) is a fungal disease affecting hibernating bats that is estimated to have killed more than 6 million bats in the United States and Canada alone. The fungus responsible for this disease has now spread to 38 U.S. states and seven Canadian Provinces. Twelve hibernating bat species, including two endangered and one threatened species, have been confirmed with WNS in the United States.

Through annual appropriations language, Congress designated the Service as the lead agency to manage the national response to WNS, working with federal, state, tribal, and international partners. Since 2008, the Service has been coordinating the response to this disease and leading the implementation of a national multi-agency response plan. To date, the Service has awarded over \$35 million to researchers and state agencies to contain the spread of WNS and develop tools to increase the survival of affected bat species.

In the past decade, the WNS response community has made extraordinary progress to understand the disease and develop tools to study and reduce the devastating effects of WNS on bats in North America. Several experimental management tools for WNS are in various stages of testing. These include: a fungal vaccine; biologically derived compounds or use of UV light to kill or inhibit growth of the fungus; living microbes or viruses that may provide mechanisms for bats to resist or avoid infection; and manipulation of temperature and humidity in winter roosts to reduce infection severity. The North American Bat Monitoring Program (NABat) is another

important product of the national response to WNS. NABat is the first program to establish standardized monitoring protocols for bats across the continent and the infrastructure needed to understand population trends for several important bat species affected by WNS and other stressors.

Disease Response in the Refuge System

The National Wildlife Refuge System's Wildlife Health Office supports the Service's work on wildlife disease by conducting surveillance, emergency response, on-site animal disease training, and research to determine the health impacts of environmental changes on wild populations. The office delivers consistent, high-quality, wildlife health services to the Refuge System and other Service programs.

Examples of the work and diseases tackled by the Wildlife Health Office include: deploying veterinary staff to the National Key Deer Refuge during the New World screwworm outbreak emergency response in the Florida Keys in 2016-2017, and providing harmful algal bloom response, test kits, diagnostics, and technical recommendations. The office also led on guidance for the Service's bison conservation program and providing bison disease surveillance, low-stress handling training, and genetic diversity testing. Finally, the Wildlife Health Office spearheaded the development of several wildlife health-oriented emergency management positions to provide integrated support during all-hazards emergencies.

Cattle Fever Tick

One example of this work is the Service's response to the cattle fever tick, which once ranged from Texas to Virginia. Cattle fever ticks are vectors for *Babesia spp.*, a protozoa that causes cattle fever, which ultimately results in cattle deaths. In February 2018, the Service, USDA-APHIS, and the Texas Animal Health Commission (TAHC) cooperated in finalizing an Environmental Assessment on cattle fever tick eradication to assist in the control of this invasive species. The debate about how to control fever ticks, prevalent from 2014-2017, has subsided after the agreed upon control techniques were established by the Service and USDA-APHIS/TAHC.

In early 2018, fever tick control agencies formally requested national wildlife refuge Special Use Permits for the use of Ivermectin-laced corn on Service-managed lands as a method to kill fever ticks, which die after feeding on ungulates that have eaten the Ivermectin-laced corn. After approval by the Service, Ivermectin-laced corn feeders were installed and are still in operation at Laguna Atascosa National Wildlife Refuge and Lower Rio Grande Valley National Wildlife Refuge. Currently, Laguna Atascosa is seeing a decrease in cattle fever tick numbers based on inspection of harvested ungulates during public hunts.

Chronic Wasting Disease

The Service's Wildlife Office has also played an important supporting role responding to chronic wasting disease (CWD). CWD is a contagious, fatal disease that is becoming more prevalent in wild North American cervid populations, such as deer, elk, and moose. Unfortunately, there is no known treatment or cure for CWD and eradication of the disease from free-ranging cervids is not a realistic objective. Therefore, prevention of the disease and limiting its spread is essential. To

date, there have been no reported cases of CWD infection in people but research on this topic is ongoing.

Currently, 49 National Wildlife Refuges, 24 Waterfowl Production Areas, and 8 Fish Hatcheries are located in counties already affected by CWD. The Service is working with state fish and wildlife agencies to ensure that activities on Service-managed lands are focused on preventing the further spread of CWD and minimizing the impacts of CWD on already-affected populations.

A high level of collaboration between federal and state agencies, tribes, non-governmental organizations, and academia is needed to address the growing threat of CWD. States are the ultimate leaders for CWD, but the Department can contribute significantly to managing the disease by supporting states, other stakeholders, and taking prudent actions on lands managed by the Department's agencies. Since 2004, the Service has supported state-led CWD management through the Wildlife Health Office. The office funds CWD work on state and Service lands and provides training on CWD sample collection to state and federal personnel. The Wildlife Health Office also collects and tests samples for CWD in direct support of state activities, and works with states to develop collaborative plans that include CWD management and monitoring strategies.

Aquatic Animal Drug Approval Partnership

The Service's Aquatic Animal Drug Approval Partnership (AADAP) program is the only program in the United States singularly dedicated to obtaining U.S. Food and Drug Administration (FDA) approval for new medications needed to combat disease in fish culture and for fisheries management. Since the late 1990's, working with other federal agencies, Native American tribes, state agencies, universities, and private partners, AADAP has contributed to virtually every new fish medication approved by the FDA. The program allows fisheries professionals to more effectively rear and manage a variety of fish species. Aquatic animal health biologists working at the Service's six Fish Health Centers detect, monitor, and mitigate disease-causing pathogens that threaten aquatic species across the nation. Their findings inform management decisions that improve the health of captive-reared fish both at hatcheries and among fish populations in the wild. Service fish health professionals also investigate emerging aquatic animal health issues, such as invasive species that can be vectors for disease, to help prevent the introduction and spread of aquatic pathogens.

Through AADAP, the Service provides research that facilitates the approval of critically important drugs for federal, state, tribal, and private hatcheries that have saved 40 million freshwater fish each year for restoration, recovery, and recreation. This work is essential in ensuring: (1) the efficient and effective propagation at fish hatcheries across the nation; (2) that the introduction of hatchery fish to streams, lakes and rivers does not introduce disease to native wild populations; and, (3) robust populations of fish for recreational anglers, who contribute \$46 billion to the national economy each year.

Aquatic Invasive Species

Adverse impacts from invasive species are among the most significant challenges facing the conservation of native fish and wildlife populations and can be an expensive burden for public and private sectors alike. The Service relies on Title 18 of the Lacey Act (18 U.S.C. § 42(a)(1))

to prohibit the importation and transport of injurious species across international, U.S. territorial, and limited state, lines, to prevent the introduction, establishment and spread of harmful invasive species. While Title 18 does not allow the Service to designate pathogens such as viruses, bacteria, and fungi that cause disease as “injurious wildlife”, the host organisms may qualify for such a listing.

In 2016, the Service listed 201 species of salamanders as injurious wildlife (50 CFR §16.14) because of their capacity to carry salamander chytrid fungus and serve as the vector for this fungus to enter into U.S. ecosystems. In addition, live or dead (uneviscerated) fish from the salmon family are prohibited entry into the United States for any purpose except by direct shipment containing the requisite health certificate noting testing for the *Oncorhynchus masou* Virus, Viral Hemorrhagic Septicemia Virus, Infectious Hematopoietic Necrosis Virus, and Infectious Pancreatic Necrosis Virus (50 CFR §16.13). This listing became effective in 1968 to mitigate the risks posed to wild fisheries of the United States from these harmful pathogens being imported with salmonid fish.

Future Challenges

The Service and its partners will continue to face complex wildlife disease challenges in the future. Two of those new challenges are carcass management and chemical immobilization of wildlife. There is a decreasing willingness of municipal solid waste landfills to accept animal carcasses potentially infected with CWD. This places pressure on state and federal wildlife management agencies to find safe, alternative means of carcass disposal that fit within their budgets, which is a difficult task considering the fast pace spread of CWD. There has also been a tightening of restrictions on veterinary controlled substances for the chemical immobilization of wildlife due, in part, to the opioid crisis. This has drastically reduced the Service’s ability to conduct field work such as placing radio and GPS collars on animals for the monitoring of migration patterns and behaviors as they relate to wildlife diseases.

Conclusion

The many challenges posed by wildlife disease are diverse in their nature and inevitably present surprises. The Service will continue to work closely with our partners at home and abroad to address these challenges together, because wildlife diseases do not respect political boundaries and threaten every corner of our country. The Service thanks the Committee for its interest in this critically important aspect of environmental conservation and management.