Volume 10, Issue 2

TWS WILDLIFE DISEASES WORKING GROUP

Summer 2016

The Vector

The Newsletter of The Wildlife Society Wildlife Diseases Working Group

Special points of interest:

- **WDWG-sponsored Symposium on One Health**

The Vector Timeline

Fall (Vol. 10, Iss. 3)	Winter (Vol. 10, Iss. 4)
Submissions Due 16-Sep-16	Submissions Due 16-Dec-16
Publication Date 30-Sep-16	Publication Date 30-Dec-16

The editors of The Vector welcome your contributions. If you wish to submit an article, but suspect you will not quite make the deadline, please contact Samuel M. Goldstein.

Inside this issue:

Your membership in the WDWG can only be obtained by joining and renewing your annual TWS Membership each year. At the time that you join simply indicate that you want to be a member of this working group on the TWS application. Membership dues are $5.

With your membership you will receive our quarterly newsletter to keep up-to-date with our group business and the most current disease issues. Your membership also provides an opportunity to work closely with other wildlife disease professionals.

From the Chair:

Chronic wasting disease in Norway and Arkansas. White-nose syndrome in Washington. Who would have guessed that these devastating diseases would have shown up so far from their previously known distributions? But they did and it really got me thinking about the importance of wildlife disease surveillance. To quote Tyrion Lannister (that's a reference to *Game of Thrones* for those of you who have real lives), "It always seems a bit abstract, doesn't it?...Other people dying." The same goes for detecting a disease as dreadful as CWD or WNS. You've watched what has happened in other locations or with other agencies, but truly understanding the impact on the resource, your agency and its stakeholders, your work load, isn't real until it happens locally.

I've been peripherally involved in the CWD detection in Arkansas this past winter. The Arkansas Game and Fish Commission (AGFC) had been conducting surveillance in deer and elk for over a decade and had implemented regulations to reduce the risk of introduction of CWD, so it was a surprise to find an infected hunter-harvested elk. The initial hopeful response is always denial (maybe the lab mixed up samples) or that this is one of the first cases in the state. But when the first phase of monitoring resulted in 62 positive deer out of 266 randomly sampled (23%), a different type of disbelief takes over. A realization that, at least in our careers, things are going to be much different. AGFC staff had conducted admirable work continuing CWD surveillance after federal funding and headlines faded. But unfortunately it wasn't enough to detect the disease until it was well established.

As wildlife health practitioners and advocates disease surveillance seems obvious to us. And not just surveillance, but surveillance conducted at an adequate level to detect diseases early before they become estab-

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Call for Written Contributions to The Vector

The Wildlife Diseases Working Group is just one of 26 other working groups in TWS, but it has one of the largest memberships—close to 200!! You should be proud to be part of a group with such a dedicated group of researchers, biologists, managers, students, and others who have a commitment to furthering our mission. That being said, let's share our knowledge and passion with each other!

Each quarter, the WDWG distributes The Vector showcasing the wonderful work of our students, ongoing research, and current topics related to wildlife disease. We need your help!! With writings contributed from our large and diverse membership, we can supplement the content of The Vector and augment the number of informative articles disseminated through the newsletter. This is an opportunity for you to share information on a topic you find important and valuable to our members.

Please consider providing a short article about your profession or path to becoming a wildlife disease expert, major projects, research findings, or a hot topic in the wildlife disease field. Senior-level professionals may feel free to share lessons learned in their career to benefit students and early career professionals. Please encourage your students or technicians to do the same. Articles are not only a great way to share your current work, but they can also open doors for future collaboration. Articles need not be long or formal, and will go through an editing process by the editors and/or Student Affairs Committee upon submission. We encourage you to submit a few photos to accompany your writing.

Please jump at this opportunity to get involved, give back to your profession, share a little bit about what you do, and help shape your working group for the future. Inquiries and articles can be submitted at any time to Sam Goldstein (Samuel.M.Goldstein@aphis.usda.gov) or Michelle Clayson (rosenmi1@gmail.com).

From the Chair (Continued from page 1)

lished. We realize that surveillance for early detection is an integral component of disease management. If there is any silver-lining to these daunting reports it is first that the surveillance systems worked. And further, if we're really fortunate, it may have raised awareness of the importance of the work wildlife managers and health professionals do and the need for continued support for disease surveillance and prevention efforts. The Wildlife Diseases Working Group (WDWG) works to facilitate communication and cooperation and to enhance knowledge and public awareness of wildlife diseases. Unfortunately, we continue to add more examples we can draw upon to demonstrate this importance. But at the same time the professionalism and expertise to address these issues continues to grow, in part due to the contribution of professional groups such as the WDWG.

Symposium:
Big Science and Wildlife Diseases: Applying One Health Approaches in the Real World

Organizers: *Kezia Manlove, Penn State, Bozeman, MT; Alan Franklin, USDA APHIS Wildlife Services, Fort Collins, CO; Rich Chipman, USDA APHIS Wildlife Services, Concord, NH*

Supported by: *Wildlife Diseases Working Group*

http://www.twsconference.org/sessions/big-science-and-wildlife-diseases-applying-one-health-approaches-in-the-real-world/

When: *October 18, 2016 • 1:10 pm–5:00 pm*

Disease is a growing threat to wildlife conservation. Emerging infectious agents, such as white nose syndrome (WNS) in bats and Batrachochytrium dendrobatidis (Bd) in amphibians, significantly impact population dynamics and animal health of wildlife throughout the United States. Despite this conservation threat, researchers and management agencies continue to struggle to identify and implement comprehensive surveillance and management strategies that effectively reduce risks and mitigate impacts of disease on wildlife populations. One Health approaches that bridge disciplinary boundaries provide a means of integrating animal health and population ecology, yet constructing effective One Health collaborations is sometimes difficult.

In this symposium, we will provide an in-depth discussion of the challenges associated with understanding and responding to wildlife disease across agencies, organizations and professions under the umbrella of One Health. We will integrate talks on overarching concepts with real-life case studies on two systems of major importance to wildlife health: white nose syndrome in bats, and pneumonia in bighorn sheep. Speakers will represent a variety of perspectives including wildlife biologists and managers, veterinarians, wildlife health experts, and quantitative disease ecologists. The goal of the case studies is to offer "worked examples" of One Health in action; they will serve as a basis for identifying factors that impede and facilitate management response to wildlife disease. The symposium will culminate in a discussion among speakers and the audience aimed at synthesizing proposed solutions, with the ultimate goal of generating a white paper laying out possible pathways toward collaborative response to emerging wildlife diseases.

Proposed Schedule with Potential Speakers

TIME	PRESENTATION	SPEAKER
1:10-1:30 pm	*The increasing problem of disease in wildlife management*	Kezia Manlove
1:30-1:50 pm	*What is One Health?*	Margaret Wild
Case Study 1: Bighorn pneumonia		
1:50-2:10 pm	*Pathogen/within host (Identifying causal agents of a multifactorial wildlife disease)*	Tom Besser
2:10-2:30 pm	*Transmission Dynamics (Spillover to endemism: Feedbacks between pathogen transmission and population dynamics of bighorn sheep)*	Raina Plowright
2:30-2:50 pm	*Management (Inducing pathogen fade-out in free-ranging bighorn sheep)*	Frances Cassirer
2:50-3:20 pm	**BREAK**	
3:20-3:40 pm	*Application of "big science" to wildlife disease management*	Jonathan Sleeman
Case Study 2: White-nose Syndrome in Bats		
3:40-4:00 pm	*Pathogen/within host (Metabolic consequences of White-nose syndrome in bats)*	David Hayman
4:00-4:20 pm	*Transmission Dynamics (Ecological drivers of White-nose Syndrome)*	Winifred Frick
4:20-4:40 pm	*Management (The North American Bat Monitoring Program)*	Jeremy Coleman
4:40-5:00 pm	*Panel Discussion*	All Presenters

Current Research in Wildlife Disease

Tracy A Nichols, Justin W Fischer, Terry R Spraker, Qingzhong Kong, and Kurt C VerCauteren. CWD PRIONS REMAIN INFECTIOUS AFTER PASSAGE THROUGH THE DIGESTIVE SYSTEM OF COYOTES (*CANIS LATRANS*). Prion, 9:367-375, 2015. doi:10.1080/19336896.2015.1086061. Chronic wasting disease (CWD) is a geographically expanding prion disease of wild and captive cervids in North America. Disease can be transmitted directly, animal to animal, or indirectly via the environment. CWD contamination can occur residually in the environment via soil, water, and forage following deposition of bodily fluids such as urine, saliva, and feces, or by the decomposition of carcasses. Recent work has indicated that plants may even take up prions into the stems and leaves. When a carcass or gut pile is present in the environment, a large number of avian and mammalian species visit and consume the carrion. Additionally, predators like coyotes, likely select for disease-compromised cervids. Natural cross-species CWD transmission has not been documented, however, passage of infectious prion material has been observed in the feces of crows. In this study we evaluated the ability of CWD-infected brain material to pass through the gastrointestinal tract of coyotes (*Canis latrans*) following oral ingestion, and be infectious in a cervidized transgenic mouse model. Results from this study indicate that coyotes can pass infectious prions via their feces for at least 3 days post ingestion, demonstrating that mammalian scavengers could contribute to the translocation and contamination of CWD in the environment.

Michele Miller, Peter Buss, Lin-Mari de Klerk-Lorist, Jennifer Hofmeyr, Guy Hausler, Konstantin Lyashchenko, Emily P. Lane, Louise Botha, Sven Parsons, and Paul van Helden. APPLICATION OF RAPID SEROLOGIC TESTS FOR DETECTION OF *MYCOBACTERIUM BOVIS* INFECTION IN FREE-RANGING WARTHOGS (*PHACOCHOERUS AFRICANUS*)-IMPLICATIONS FOR ANTEMORTEM DISEASE SCREENING. Journal of Wildlife Diseases 52(1):180-182, 2016. Doi: http://dx.doi.org/10.7589/2015-07-186. Warthogs (*Phacochoerus africanus*) have been implicated as potential maintenance hosts of *Mycobacterium bovis*. Our preliminary investigation of bovine tuberculosis in three warthogs describes pathologic findings and associated positive serologic results in two infected animals. This demonstrates the potential use of serodiagnostic tests for *M. bovis* infection in this species.

Thibault Saubusse, Jean-Daniel Masson, Mireille Le Dimma, David Abrial, Clara Marcé, Regine Martin-Schaller, Anne Dupire, Marie-Frédérique Le Potier, and Sophie Rossi. HOW TO SURVEY CLASSICLA SWINE FEVER IN WILD BOAR (*SUS SCROFA*) AFTER THE COMPLETION OF ORAL VACCINATION? CHASING AWAY THE GHOST OF INFECTION AT DIFFERENT SPATIAL SCALES. Veterinary Research 2016, 47:21. Doi: 10.1186/s13567-015-0289-6. Oral mass vaccination (OMV) is considered as an efficient strategy for controlling classical swine fever (CSF) in wild boar. After the completion of vaccination, the presence of antibodies in 6–12 month-old hunted wild boars was expected to reflect a recent CSF circulation. Nevertheless, antibodies could also correspond to the long-lasting of maternal antibodies. This paper relates an experience of surveillance which lasted 4 years after the completion of OMV in a formerly vaccinated area, in north-eastern France (2010–2014). First, we conducted a retrospective analysis of the serological data collected in 6–12 month-old hunted wild boars from 2010 up to 2013, using a spatial Bayesian model accounting for hunting data autocorrelation and heterogeneity. At the level of the whole area, seroprevalence in juvenile boars decreased from 28% in 2010–2011 down to 1% in 2012–2013, but remained locally high (above 5%). The model revealed the existence of one particular seroprevalence hot-spot where a longitudinal survey of marked animals was conducted in 2013–2014, for deciphering the origin of antibodies. Eleven out of 107 captured piglets were seropositive when 3–4 months-old, but their antibody titres progressively decreased until 6–7 months of age. These results suggest piglets were carrying maternal antibodies, few of them carrying maternal antibodies lasting until the hunting season. Our study shows that OMV may generate confusion in the CSF surveillance several years after the completion of vaccination. We recommend using quantitative serological tools, hunting data modelling and capture approaches for better interpreting serological results after vaccination completion. Surveillance perspectives are further discussed.

Wildlife Diseases
The Wildlife Society
Working Group

Mission Statement

The mission of the Wildlife Diseases Working Group is to promote better scientific understanding of the causes and consequences of disease in ecosystems and wildlife populations; to apply the principles of wildlife science, ecology, and epidemiology to the prevention and management of diseases in wildlife; to foster education and transfer of information on diseases to wildlife management professionals and the public; and to apply this knowledge to enhance the health and conservation of wildlife populations and their interactions with humans and domestic animals.

Have you worked on a wildlife disease research project?
Have you engaged in a wildlife-related veterinary externship?

We want to hear about it!

'The Vector' is the quarterly newsletter distributed by the Wildlife Disease Working Group.

We feature a student article in every newsletter, which highlights how students across the country are involved in wildlife disease projects.

As an appreciation for preparing the article, the WDWG is happy to **sponsor a 1-year membership to <u>both</u> TWS and WDWG** for student and postdoctoral authors!

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Interested in learning more?
Contact a member of the WDWG Student Affairs Committee:

- Katrina Alger: kealger@syr.ued
- Sarah A. Hamer, Texas A&M University: shamer@cvm.tamu.edu
- Michelle Clayson: rosenmi1@gmail.com
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