Publications Links

WDA Publications

Publications For Purchase

Journal of Wildlife Diseases

- Online Journal
- Press Releases
- Online Submission and Review
- Author Video Guidelines (JWDV)
- Author Charges and Payment Information
- Advertise in JWD
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JWD Supplements

JWD Aquatic Animal Articles

WDA Newsletter

- Current Issue
- Archive

Proceedings of Conference Publications

Reports from the Field - Open Access

Newsletter

April 2018

Sarah Sirica, Quarterly Newsletter Manager

s.m.willarderoh@gmail.com

Rapid Response Teams for wildlife: A case of Kenya's Mobile Veterinary Units

By Francis Gakuya and Vincent Obanda

Kenya is one of the countries in East Africa, well known for its rich wildlife and its safaris. Wildlife in Kenya teems in the thousands and even millions, creating a breath-taking spectacle of landscape at its best. Indeed the massive migration of wildebeest across Serengeti – Maasai Mara plains is an annual spectacle not known anywhere else. With this kind of magnificent resource comes immense responsibility, not just for Kenyans, but for the world, for now and future generations. This responsibility is on the shoulders of Kenya Wildlife Service (KWS), a state corporation whose mandate is to protect

and conserve wildlife in Kenya. The corporation was established in the 1990's, at the peak of wildlife poaching that nearly decimated some species such as the elephant and rhinos, the effects of which are still haunting and impeding population recovery of these threatened species. On this backdrop, although poaching threats have persisted, often with variable intensity, new conservation challenges have emerged.

About 70% of wildlife spends some of the time in community or privately owned land despite a large portion (8.01%) of Kenya's land being designated as wildlife protected areas (55 National parks, reserves and sanctuaries). Changes in land use systems from pastoralism to agro-sedentary systems characterized by encroachment in wildlife habitats, followed by human settlements, and fencing and establishment of crop farms, have fueled animosity and conflicts between people and wildlife. Consequently, wild animals suffer injuries, deaths and juveniles become orphaned.

When it comes to alleviating suffering, provision of clinical interventions and care as well as translocation of vulnerable animals from harm, the responsibility is on the veterinary services department of KWS. The department has a team of well trained and experienced veterinarians, scientists and capture rangers. Currently, there are 12 wildlife field veterinarians shouldering the heavy burden of providing diverse veterinary services to their wild patients, who naturally are in areas remote from Nairobi, the headquarter of the KWS.

It was realized that providing veterinary service response from Nairobi was not cost-beneficial and very inefficient. On average, after a distress message had been received from a field station, it would take several days to facilitate a response team from Nairobi who might require 3 more days locating and providing the required intervention to a single wildlife victim. It was the rare and often a lucky case to locate and access a distressed animal and complete treatment in a single day. Some situations required urgent or critical attention, such as de-snaring a trunk of a baby elephant, removing a dangling spear from the head of a lion, or a major disease outbreak and die-off investigations.

To enhance response, efficiency and effectiveness, KWS management adopted a strategy first piloted in Tsavo National Park in 2003. The strategy entailed decentralization of veterinary services, with satellite mobile veterinary units established in various conservation regions and

coordination and management centralized at the Headquarter in Nairobi.. The mobile veterinary units are comprised of a well-equipped team including a veterinarian, capture rangers and a driver. The vehicles are equipped with immobilization drugs, dart guns, animal restraint gears, and battery-powered refrigerator for sample storage.

Currently, there are seven mobile veterinary units located in Nanyuki, Lewa, Tsavo, Naivasha, Maasai Mara, Amboseli and Meru National Parks. In areas with difficult terrains, the mobile veterinary units are able to call for back-up support from the 'sky vet', out of Nairobi. The sky vet responds on a helicopter or fixed-wing plane to aid in locating the required animal, darting or rescuing abandoned orphans. On average, the cases attended by each mobile veterinary unit range 90 – 100 annually.

This strategy is being supported through a public –private partnership between KWS and conservation NGOs. Through this strategy, our presence is felt, our impact is appreciated immensely by the community, and the role of veterinary medicine in conservation is much appreciated by Kenyans.

Below are examples of field interventions carried out by the KWS Mobile Units:

This field intervention involved de-snaring and treating a wound of an elephant (Figures 1-4). Snares are indiscriminate and inflict severe wounds to victims that if not treated may lead to maiming or death:

Figure 1. An injured sub-adult male elephant reacts to a dart that landed on its rump. *Photo credit- author*

Figure 2. The vet team is positioning the animal and monitoring its physiological parameters. The team has realized that the elephant had a deep cut wound inflicted by a wire snare. *Photo credit-author*

Figure 3. To begin treatment, the wire snare is removed, the wound washed and treated. *Photo credit- author*

Figure 4. The elephant is back on its feet post-treatment. *Photo credit – author*

Rescue of a mature Nile hippopotamus that had fallen into a ditch and was stuck (Figures 5-7):

Figure 5. The team is digging the sides of the ditch to enlarge the hole. A lasso has been placed in position to pull the animal out. *Photo credit- Edward Kingori ©*

Figure 6 and 7. The animal had been in the ditch for hours and due to struggling to free itself and hot weather, it was both exhausted and thirsty. Everyone was relieved to see the front limbs firmly out of the pit. The animal finally walked free without need of being pulled out by the lasso. *Photo credit- Edward Kingori ©*

An Eland that had a strange sloughing of its skin. The team immobilized the animal (Figure 8) and topically treated the animal (Figure 9) and released it (Figure 10). The animal was monitored and within 2 weeks it was on a path to recovery. *Photo credit- Edward Kingori ©*

Figure 8 Figure 9

Figure 10

Want to be famous? WDA adds another benefit for publishing in Journal of Wildlife Diseases

David A. Jessup,

WDA Executive Manager and Website Editor

The value of publishing wildlife health research in a high quality peer reviewed journal is clear, and Journal of Wildlife Diseases (JWD), with its long history, wide

reach, and solid impact factor is a very good choice. But, traditional publication doesn't allow authors to convey their personal interest and enthusiasm for the work. Nor does it offer the public an opportunity to see what the author is doing and share those visuals with friends. But Wildlife Disease Association (WDA) wants to break down barriers between authors and their wider potential audience, as well as provide our members and readers a quick visual snippet to whet their appetite for whole articles.

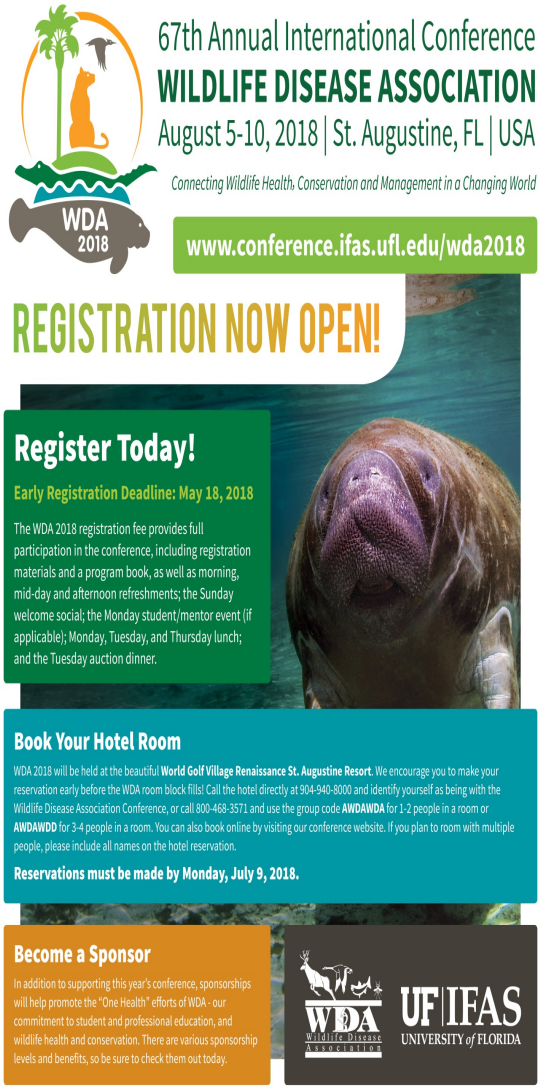
Now authors of selected articles in JWD have an opportunity to have a short video posted on the WDA YouTube website: https://www.youtube.com/channel/UCUr9s1EMDoSDeMfa82-P6Qg. This will allow authors and their employers an opportunity to reach many more colleagues with a short synopsis of their research and findings. This is a valuable and tangible new benefit to publishing in JWD and may help attract high quality articles and authors looking for increased public as well as professional impact. It will allow WDA members and readers to quickly see what an article is all about. It may, and likely will, increase public awareness of, and access to, wildlife health research and concepts, and the people who do this work. If indeed people will only save what they love, and love what they understand, we hope this new program will contribute to conservation and improving wildlife health.

The rules and directions are now posted at 'Instructions to Authors', but briefly:

- ·Articles will be from current issues of JWD
- ·Articles with highly significant findings and about species of conservation interest will receive highest consideration
- ·Authors and/or their employers must provide a rough video of approximately 2 minutes
- ·Good story telling, clear presentation, and high quality video are important
- ·WDA Website Editor will determine acceptability and work with interested authors to refine the video
- ·WDA will approve and post the final product with author(s) agreement
- ·Videos will be advertised in the weekly WDA News and Announcements
- ·Videos will be accessible via the WDA website

Stuart Patterson and Cindy Serraino are working with me on developing this new

program. The first video is from JWD 54(1), **Amy Gilbert's ONRAB bait optimization for** skunk study. The next two videos from JWD 54(2) are **Emily Witmer's** findings on dispersed oil on common murres, and **Chloe Steventon's investigation of** blind kangaroos**.**



WDA Elections **are underway.** We have four candidates for two WDA Council at Large seats. They are **Justin Brown, Fernando Esperon, Jenny McLelland** and **Michelle Verant.** If you would like details on what the expectations of Council Members include, you can find them here: WDA Council Expectations. Current WDA members were sent ballots via email. **Please vote!** If you don't receive

a ballot it's likely your email on file does not match the one you are using, or because you have not paid your membership for 2018.

Here, in alphabetical order, is a personal agenda statement from each of the candidates. You have until *April 14*:

Justin David Brown has previous experiences as a research scientist, member of the WDA Student Awards Committee, and state wildlife veterinarian, which he feels enables him to represent a wide-diversity of the WDA membership and provide unique perspective as a member of Council. Many of the topics that are of utmost importance to him are consistent with the recent membership survey results, including maintaining the high quality of articles published in the Journal of Wildlife Diseases (JWD), increased accessibility of JWD and other informational materials, further diversification of WDA membership, and increased support of student involvement in the WDA.

Fernando Esperón is a staff researcher of the Animal Health Research Centre (INIA-CISA), a government institution of Spain. He coordinates the BSL-2 labs, and he is the responsible of the Wildlife Diseases Diagnostic Unit of the Epidemiology and Environmental Health Group (EySA). His main research line is to develop diagnostic methods to study the health status in the domestic animal-wildlife interface. His professional skills are mainly focused on molecular diagnostics. Fernando collaborates with different international institutions, mainly in Latin America. He is author of 34 peer-review articles and more than 70 communications in national and international congresses. He has been a WDA member since 2013, and has participated on the scientific committee and as reviewer at the 2nd Congress of the LA-WDA and the 66th Congress of the WDA, and he currently belongs to the Student Awards Committee of the WDA.

Jenny McLelland states that as a member of council of the WDA, she will provide an international perspective and help to implement the findings of the WDA futures committee. She will work with council to continue to improve support for students and quality research as well as communication and dissemination of research findings to the broader community. She feels that maintaining strong linkages between current and future WDA-sections is important to our global organisation. As a member of WDA since her undergraduate degree, she has benefited greatly from the organisation and the people within it and would welcome the

opportunity to give back through serving on council.

Michelle Verant feels that we have unique opportunities to create and share a wealth of knowledge critical for sustaining healthy ecosystems. The Journal of Wildlife Diseases is a valuable asset. It is important to continually improve the quality and accessibility of its information for the benefit of members, as well as engaging the broader community of wildlife management and health professionals. The true strength of WDA is in the diversity and passion of its members, and the relationships we build at conferences and in working together. If elected to Council, she will strive to increase international representation and opportunities for conference attendance and collaborations.

Milestone reached in CWD management in Norway

Norwegian Veterinary Institute

https://www.vetinst.no/en

Recently, the Norwegian Veterinary Institute detected chronic wasting disease (CWD) in one of the last remaining reindeer in the area of Nordfjella, Zone 1. This was the 18th case of CWD in wild reindeer in Norway, and might also be the last now that nearly all wild reindeer *(Rangifer tarandus*) in this region have been culled.

Following the first detection of CWD in wild reindeer in 2016 in Norway, extensive testing of cervids from all over the country was initiated. Simultaneously, it was decided that the entire population of wild reindeer in Nordfjella, in which CWD had been detected, should be culled. This has now been accomplished – two months ahead of schedule. The culling of the Nordfjella reindeer may signify the eradication of classical contagious CWD from Norway, although it is too early to conclude. Sampling and testing of cervids will continue for many years to reveal possible spread of the disease to other regions.

Right premises for culling of the Nordfjella reindeer:

The initial premises for the decision to cull have been proven correct. Prior to the culling of the reindeer in Nordfjella last autumn, researchers from NINA, UiO and the Norwegian Veterinary Institute, in cooperation with local management, had estimated the population to comprise of 2150 animals (+/-200). So far, before a last search for any remaining animals has been performed, 2027 animals have been culled.

Based on knowledge regarding the age composition of the herd, and presuming that the two first CWD-positive animals taken out in regular hunting during 2016 represented a random selection, researches had estimated the flock prevalence of CWD to be around 1% (with a margin of error).

A higher herd prevalence and an extended culling period would have reduced the likelihood of achieving the final goal, which was to secure a healthy population of wild reindeer in Nordfjella, and healthy cervids elsewhere in the country, says CWD-coordinator Jørn Våge at the Norwegian veterinary Institute.

He emphasizes that the project has not been based on removing diseased animals only, but was about eradicating infection and preventing further spread of CWD, which is a serious and deadly disease for cervids.

A lot remains before the eradication plan can be deemed a success. Screening in other regions, like Hardangervidda, will continue for many years and Nordfjella zone 1 must lie fallow without reindeer for at least five years due to the risk of environmental sources of infection.

It is encouraging that this phase of the eradication process is nearing completion earlier than anticipated. A massive and impressive job has been done by all parties involved, particularly by hunters from the Norwegian Nature Inspectorate and laboratory personnel at the Norwegian Veterinary Institute, says Våge.

Two types of CWD:

In addition to the 18 confirmed cases of classical CWD in Nordfjella, CWD has also been detected in three moose (*Alces alces*) and a red deer (*Cervus elaphus*) elsewhere in Norway. These four cases differ from the Nordfjella-cases. All four animals were old individuals with an atypical form of the disease that is believed to occur sporadically and to arise spontaneously.

Recently, CWD was detected in a moose in Finland, with similar findings to those in the three Norwegian moose.

The case in Finland was not unexpected following the intensified CWD testing in Europe in 2018. We have no reason to believe that there is any connection between the case in Finland and the occurrence of CWD in Nordfjella, says senior researcher Sylvie Benestad at the Norwegian Veterinary Institute.

The Norwegian Veterinary Institute regularly performs testing of cervids from all over Norway. So far, samples from

more than 39,000 animals have been analyzed in what has been the largest surveillance program since the BSE-scare was at its peak.

CWD research at the Norwegian Veterinary Institute currently encompasses studies on disease progression and pathogenesis, diagnostics, epidemiology and genetics.

Wildlife Veterinary Section Travel Award for Wildlife Disease Association Annual Meeting

Purpose: to provide travel support ($500 US) for a wildlife professional from a less financially advantaged country with the aim of increasing global participation at the annual meeting and providing opportunities for professionals from developing countries.

Eligibility qualifications:

1) Must be a current WDA and Wildlife Veterinary Section member.
2) Must be a citizen of one of the 126 countries identified by the World Bank as having a low income or lower middle income economy.
3) Must have an abstract accepted for oral presentation at the upcoming Wildlife Disease Association (WDA) Annual Meeting.
4) This award is for individuals who do not qualify for a student award (as offered by WDA or AAWV).

Application Process:

Please submit the following documentation to the Wildlife Veterinary Section Chairperson (ajustice-allen@azgfd.gov) by May 1st, 2018.

1) Submission of application form.
2) Copy of the notification of acceptance to WDA Annual meeting of the abstract.
3) Copy of the abstract.
4) Resume or curriculum vitae.
5) Cover letter indicating/describing the need for the travel grant and how the individual will benefit

professionally from being able to attend the meeting.

Selection Process:

Applications will be judged on the following criteria:

1) Relevance of abstract topic to the role of veterinary medicine in wildlife conservation and/or disease management in wildlife populations.
2) Quality of abstract.
3) Level of need as expressed in the cover letter.

Award recipient will be notified by May 15th, 2018. You must attend the WDA Annual Meeting and give your oral presentation to receive the Wildlife Veterinary Section Travel Award.

PLEASE SEE THE WDA-WVS WEB PAGE FOR APPLICATION AND ADDITIONAL INFORMATION

Student Corner
What's on?

Student Chapter Grants and Progress Reports

Spring is almost here. As with every year, that means that the deadline for Student Chapter Progress Reports and Grants is approaching. Make sure your chapter sends in the Progress Report before April 30th! This year there will be a drawing (AWARD MONEY) for all quality reports that follow the guidelines. Details will be announced soon on FB and on the WDA website. Also don't miss out on applying for the Student Chapter Grants!

New WDA Students logo

We have a new logo! Many thanks to the very talented artist:

Matilde Tomaselli!

Logo designed by Matilde Tomaselli (https://matildetomaselli.weebly.com/artwork.html) for the WDA Students. This logo is distributed under the terms of the Creative Commons Attribution 4.0 International License (https://creativecommons.org/licenses/by/4.0/).

SOUTHERN AFRICA WDA STUDENT CHAPTER WILDLIFE PATHOLOGY WORKSHOP AT THE SAVA WILDLIFE GROUP CONGRESS 2018

Written by Friederike Pohlin

Vice-president and Founder of the SA-WDA SC

PhD candidate at the University of Pretoria.

The Southern Africa WDA Student Chapter (SA-WDA SC) was approved by the WDA council in December 2017.

With this exciting news, we started the New Year with a kick-off event at the Wildlife Group of the South African Veterinary Association (SAVA) Annual Congress 2018 (http://vets4wildlife.co.za/events/). Wednesday, February 28th, was the pre-congress day where all the workshops took place. We organized a free “WORKSHOP in WILDLIFE PATHOLOGY” for all students interested in wildlife health and disease. The workshop took place at the University of Pretoria, Faculty of Veterinary Science, Onderstepoort and was sponsored by the wildlife group of the SAVA. The wildlife professionals attending the congress said they were all jealous!

The day began with lectures in the morning, followed by a lunch break, then practicals in the afternoon. For the evening, we organized a student-mentor mixer. Forty students, who registered beforehand, attended the mixer, which included local undergraduate veterinary

students and national and international postgraduate students from several wildlife-related fields of study.


At the student mentor mixer

The event started with a brief introduction to the WDA and the newly founded SA-WDA SC. It was followed by an interactive discussion on One Health and the interaction between wildlife, humans, the environment and emerging diseases, led by Dr. Katja Koeppel. After a short tea break, Dr. Emily Mitchel explained the importance of performing wildlife pathology and showed us what to look for when performing post mortem examinations in different species. Lastly, Dr. Michele Miller, the SA-WDA SC faculty advisor and Chair in Animal Tuberculosis at Stellenbosch University, gave valuable insight in the role of pathology in wildlife research, and encouraged students to cooperate and collaborate.

After a quick lunch with pizza & juice, Dr. Mitchel along with Dr. Alfredo Guiot from Mexico, demonstrated comparative post mortem examinations in reptiles, birds, and fish. First, we performed a necropsy on a Hadida ibis with a history of leg paralysis, then a chicken, and a pet snake that had not been eating voluntarily for 4 months before being euthanised. We also learned about pathologies in fish.

In the evening, we held out first-ever mentor mixer. “La Fiamma” sponsored five bottles of champagne for this event. The student-mentor mixer provided students a chance to meet and talk to wildlife professionals and ask them about their career. In order to get the chance to talk to all mentors, the students rotated through five tables, for fifteen minutes each, with two mentors on each table.
We, the SA-WDA SC members, were overwhelmed by the enthusiasm and active participation of the students in the workshop. Thank you very much to all our speakers for their support. We were very touched by the motivation and passion of our mentors, particularly Michele Miller, Emily Mitchel, Katja Koeppel, Michael Kock, Richard Burroughs, Leith Meyer, Gareth Zeiler, Angela Bruns, Greg Simpson and Silke Pfitzer.

Thank you for inspiring our students!
We would like to take this opportunity to also thank everyone that contributed to the WDA student membership fundraiser to

subsidize the expansion of our student chapter. We congratulate the fortunate students that were awarded sponsorship and are looking forward to the opportunity to connect and cooperate with like-minded students from all over Southern Africa. We will hold SA-WDA SC officer elections later this year and would like to invite the awarded students, and any WDA student members from Southern Africa, to run for officer positions: president, vice-president, treasurer, secretary, and communications officer.

Young wildlife professional in focus

Where does the road lead you? Field researcher, academic, National Park vet? The options are plentiful. However, getting the job of your dreams often appears like a long and rocky path. In this rubric we introduce outstanding early career scientists who followed that rocky road all the way through.

Kim Gruetzmacher's journey to a career in Wildlife Conservation

Written by Catharina Vendl


Kim as cowgirl in the Rocky Mountains

Connecting wildlife conservation with global health – the health of humans, animals (wildlife and domestic) and ecosystems, that's Kim Gruetzmacher's passion. But how do you find your true passion? Kim spent many years answering this question. After high school, she worked as a cowgirl in the Rocky Mountains. She loved this lifestyle; but after more than three years, she realized that something was lacking. And that was purpose. Looking to fulfil this need, Kim signed up as a deckhand on *the Odyssey*, the research vessel of Ocean Alliance.

Ocean Alliance is a US-based organization dedicated to the conservation of whales and the oceans through research and education. Kim stayed on board for more than a year and assisted in the voyage's mission to collect data on persistent organic pollutants in the world´s oceans, using sperm whales as an indicator species. Kim was fascinated to learn about human-wildlife-ocean connectedness, where anthropogenic pollution causes damage to marine ecosystems and their inhabitants. Absorbed by marine creatures,

those contaminants eventually end up on our plates and inflict harm on us. Becoming a doctor who would be able to understand these connections, seemed the next logical step for Kim, and she started studying human medicine. A field called ‘environmental medicine’ caught her attention and she felt like she had finally found her calling. However, One Health hadn’t yet become popular, and Kim’s desired specialization turned out to focus on health effects of immediate human surroundings like hospital hygiene and allergies rather than the complex interactions with the natural world. Inspired by a female vet who led a research project on board of the Odyssey, Kim switched to veterinary medicine. In addition to her coursework, to receive the education she felt she needed, Kim did many externships in zoos, wildlife rescue centres and national parks in Mexico, South Africa, Indonesia, Australia and Canada. She also attended conferences, workshops and courses all over the world, to educate herself in wildlife health and conservation and its importance for human and environmental health and prosperity.


Kim durring hippo training at Hanover Zoo

After finishing her veterinary degree, Kim volunteered at a wildlife rescue center in Cambodia, worked in a small animal vet clinic, and finally as a zoo vet at Hanover Zoo, in Germany. Despite being convinced of the important role zoos can play for conservation, Kim wanted to do more. Her PhD project at the Robert Koch Institute in Berlin, finally gave her that opportunity.

The project managers of a WWF project, habituating western lowland gorillas for research and tourism in the Central African Republic, were worried that people might carry pathogens with zoonotic potential and infect the local gorilla population. Thus, they approached Fabian Leendertz, a world-leading expert in zoonotic diseases in wild primates at the Robert-Koch-Institute in Berlin. The WWF needed an on-site lab to test all humans who entered the area for respiratory pathogens. Kim took on the job as the main focus for her PhD. With an entire PCR-based field lab in tow, she arrived in the Central African Republic. At the same time, a group of habituated gorillas showed the first symptoms of

respiratory illness, while the local human population had been struggling with a respiratory disease outbreak for weeks. Kim spent two months setting up the field lab, testing gorilla fecal samples and human throat swabs. These tests covered the most common suspects, including the human metapneumovirus and the human respiratory syncytial virus. The latter turned out to be the culprit. Additionally, Kim performed opportunistic wildlife necropsies on carcasses found in the forest. By doing that she got involved in a rather delicate discovery. Among the carcasses she examined there was a forest elephant that showed all signs of having died from anthrax. However, the usual perpetrator, *Bacillus anthracis*, was nowhere to be found. Instead, *Bacillus cereus*, a usually harmless relative of *Bacillus anthracis*, was found. It turned out that Kim was dealing with *Bacillus cereus* biovar *anthracis* (Bcbva). This newly identified biovar possesses virulence plasmids associated with anthrax clinical disease. Kim found this unusual “forest anthrax” also in a chimpanzee, which had died in a nest, and later in one of the habituated gorillas. This strain has now been found to threaten the lives of many more wildlife species throughout Central Africa.

Kim at one of her opportunistic wildlife necropsies in the Central African Republic during her PhD

Kim recently finished her PhD and moved on to a new level of tasks. She took on the role of Manager, German Relations of the Wildlife Conservation Society (WCS), in Berlin. The WCS is based in New York City, maintains more than 500 field conservation projects in nearly 60 countries and publishes more than 300 peer-reviewed papers per year.

Kim enjoys her new position, as it provides the opportunity to contribute to conservation on a very different

Kim at one of her placements in South Africa

level and she
feels that she is learning a lot about many different aspects of wildlife conservation. Her career goal is to work at the interface of research, public policy and health management. It's only sometimes when spending all day in meetings and on her computer that Kim misses getting her hands dirty in some real hands-on vet work.

References:

The official WCS website: https://www.wcs.org/

The Leendertz-Lab: https://www.leendertz-lab.org/

Publication on respiratory disease outbreak investigations in the Central African Republic: https://www.ncbi.nlm.nih.gov/pubmed/27436109

Bacillus cereus devastating wildlife populations: http://www.sciencemag.org/news/2017/08/anthrax-s-cousin-wreaks-havoc-rainforest

If you have any suggestions for the next wildlife professional in focus or for another story in the Students' Corner, please send an email to Catharina Vendl, Student Representative on Council, (catharinavendl@gmail.com).

Quarterly Wildlife Mortality Report

April 2018

Written and compiled by members of the U.S. Geological Survey National Wildlife Health Center - Wildlife Epidemiology & Emerging Diseases Branch.

Tyzzer's Disease Causes Muskrat Mortality

In November 2017, a landowner in northern Ohio discovered 18 dead muskrats (*Ondatra zibethicus*) while waterfowl hunting. The Ohio Department of Natural Resources, in collaboration with the U.S. Geological Survey's (USGS) National Wildlife Health Center (NWHC), investigated this mortality event; and post-mortem diagnostics attributed the deaths to Tyzzer's disease in five of five carcasses examined. Tyzzer's disease is caused by the bacterium *Clostridium piliforme,* which infects the liver and causes necrosis and hemorrhage. All muskrats examined had similar bacterial necrosis on histology and three had grossly visible white pinpoint

lesions in the liver. The presence of *C. pilliforme* in the liver was confirmed through PCR and sequencing. Tyzzer's disease has been reported rarely from wild rodents, lagomorphs, and raccoons in North America; however, it causes disease in a wide range of domestic, captive wild, and laboratory mammals. The transmission route in wild animals is not well characterized but is likely through ingestion of an environmental stage of the bacterium that is shed fecally or released after death of an infected animal.

White-nose Syndrome Surveillance in Mexico

The U.S. Geological Survey's (USGS) National Wildlife Health Center (NWHC) is collaborating with partners from Mexico to initiate a surveillance program for white-nose syndrome (WNS) and the causative fungus *Pseudogymnoascus destructans* (Pd) on bats and at hibernacula in that country. Sampling kits have been distributed for winter surveillance activity, which will be analyzed at the NWHC and parallel analyses are planned at the National Autonomous University of Mexico in consultation with NWHC. This collaboration supports an international letter of intent signed by the United Mexican States, the United States of America, and Canada (April 2015) to increase coordination and cooperation to conserve bat species on a continental scale.

The NWHC Winter 2017/2018 Bat Submission Guidelines are now available. NWHC can answer questions about designing WNS surveillance and response plans relevant to your State, and help with testing samples collected as part of opportunistic or targeted surveillance efforts in accordance with the national *Pd* surveillance strategy. Tribal, State, and Federal agencies that have questions about ongoing surveillance efforts or who may wish to participate should contact Anne Ballmann (608-270-2445, aballmann@usgs.gov).
Please visit www.whitenosesyndrome.org for more information about the national multi-agency WNS response effort. A recently completed fact sheet titled "White-Nose Syndrome in North American Bats – USGS updates" is available online. Also, a WNS poster and handout are available for use as needed at https://www.whitenosesyndrome.org/resource/white-nose-syndrome-poster-available-your-use.

For additional information regarding white-nose syndrome surveillance efforts in North America, please contact Anne Ballmann (608-270-2445, aballmann@usgs.gov).

Avian Cholera Mortality Events in the Mississippi and Pacific Flyways

Avian cholera has been confirmed as the cause of waterfowl mortality in Arkansas, Illinois, Indiana, Kentucky, Missouri, and Tennessee in the Mississippi Flyway, and Utah and California in the Pacific Flyway. This represents the first known detection of avian cholera in wild birds in Indiana. Mortality in the recent events has ranged from dozens of waterfowl to an estimated 50,000 eared grebes in Utah. Following standard procedures for all waterfowl received at the USGS National Wildlife Health Center, all specimens were tested for highly pathogenic avian influenza virus and all results have been negative thus far.

Avian cholera, caused by the bacteria *Pasteurella multocida,* is a common, contagious disease that has been documented in over 100 species of wild birds. Large outbreaks generally occur in the fall and winter and primarily involve wild waterfowl. Acute mortality is typical in avian cholera outbreaks, and common clinical signs displayed by infected birds include lethargy, convulsions, swimming in circles, and erratic flight. Birds may also exhibit mucous discharge from the mouth and nose, and soiling of the feathers around the vent, eyes, and bill. The disease often spreads to other waterfowl and shorebirds, although many additional avian species are susceptible. Avian scavengers such as eagles, hawks, and owls are known to become infected by consuming infected waterfowl; therefore mortalities in these species should also be investigated.

For additional information on avian cholera please visit:

https://www.nwhc.usgs.gov/publications/field_manual/chapter_7.pdf

https://www.nwhc.usgs.gov/publications/fact_sheets/pdfs/cholera091

To view, search, and download historic and ongoing wildlife morbidity and mortality event records nationwide visit the Wildlife Health Information Sharing Partnership event reporting system (WHISPers) online database:
http://www.nwhc.usgs.gov/whispers/
To request disease investigation services or report wildlife mortality:
http://www.nwhc.usgs.gov/services/