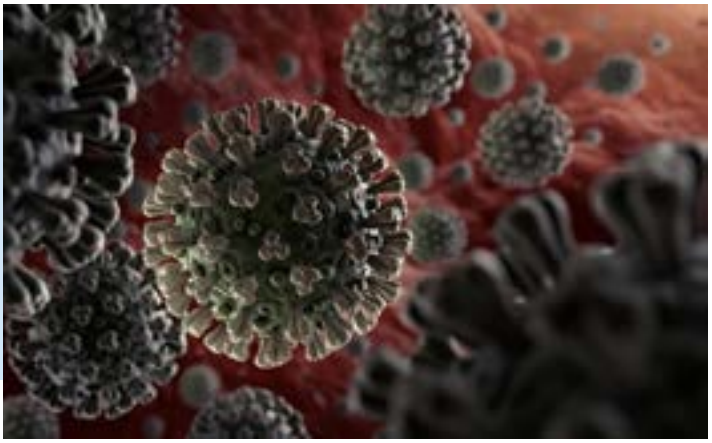
APRIL 2020

NEWSLETTER

Sarah Sirica, Quarterly Newsletter Manager | s.m.willarderoh@gmail.com

The WDA leadership recognizes that our members are working day and night either on the front lines or from their homes on this COVID-19 pandemic. We hope that you and your loved ones are staying healthy and as sane as possible during this unprecedented world event.



WHO image of SARS-CoV-2

CORONAVIRUS: WHERE WE STAND NOW

Sarah Sirica

We all received this statement in the WDA weekly news and announcements on March 25, 2020, and it continues to be in our inboxes each week. WDA members, across their many disciplines, have a unique scientific perspective during this crisis, and that affects, for good and bad, the personal hardships we are all enduring.

In late December of 2019, a pneumonia of unknown cause detected in Wuhan was reported to the World Health Organization Country Office in China.[1] It is now known that a novel coronavirus was circulating that month, causing a severe pneumonia in some patients. Most of the early cases can be traced back to a local market in Wuhan.[2] Samples from seven patients with severe pneumonia who were all hospitalized at the Jin Yin-Tan hospital were sent to the Wuhan Institute of Virology for diagnosis, and full-length genome sequences were obtained from five of those patients. Those sequences shared 79.6% sequence identity to SARS-CoV, the causative agent of a large-scale pandemic in 2002. The virus was thus named SARS-CoV-2, and the disease it causes was given the name COVID-19, for Coronavirus Disease 2019.

By March 11, the WHO declared the newly-named COVID-19 a pandemic. At the time, there were >118,000 confirmed human cases reported across 114 countries, with at least 4,300 deaths. By the first week in April, over 1.2 million cases had been identified, including almost 70,000 deaths, in the pandemic now affecting at least 211 countries, areas, or territories.[1]

Since the "SARS classic" outbreak in 2002, more research has been done studying coronaviruses than in previous decades, when they were commonly thought to be inconsequential viruses causing limited upper respiratory infections or gastrointestinal illness in humans and animals. Coronaviruses have been found in bats, cats, dogs, turkeys, cattle, swine, humans, and other species.[3] Bats appear to be a reservoir for a wide variety of coronaviruses (at least 120), many with zoonotic potential.[5,6] There is a general consensus that an intermediate host is required for this virus to have interspecies transmission between bats and humans. For the SARS from 18 years ago, masked palm civets were the intermediate host, and for the Middle Eastern Respiratory Syndrome (MERS-CoV) discovered in 2012, it was dromedary camels.[6] It is not currently

COVID-19 prevalence graphic from April 2020 (link in image to daily update)

known which species is the intermediate host for COVID-19, if there is one. The most likely contender for now is a Malayan pangolin *(Manis javanica)*. Two separate sub-lineages of coronaviruses have been identified in pangolins which are closely related (85.5% to 92.4% similarity) to SARS-CoV-2, and the receptor-binding domain of one of those strains (where it attaches to the new host's cells) is even more similar.[7,8] More research is needed, however, to prove this link.

There is also evidence of a reverse zoonoses aspect to SARS-CoV-2. A paper from March demonstrated that both domestic ferrets and house cats are susceptible to being infected, and the virus may even be able to circulate in individual animals.[9] A tiger in the Bronx Zoo in New York has also tested positive, and it and a few other large cats on site are symptomatic. It is unknown whether they became infected through direct contact or indirect contact, and if they passed it on to one another or all had the same exposure. For now, it is unknown if any of these species could pass their infection back to a human.[3] This information will certainly have impacts on how humans interact with their pets if they become infected with COVID-19, and how essential work on animals in captivity is handled.

In another realm of human-animal interaction, very quickly after finding that COVID-19 is a coronavirus, and likely a zoonotic disease, there were calls to shut down the wet markets in China and throughout Southeast Asia.[10] Wet markets are generally open marketplaces, where live fish, chickens, and wildlife are sold, along with fresh fruit and vegetables. The name comes from the melting ice used both to keep items fresh, and to wash the floors of the blood from animals butchered on-site. Some countries, including China and Vietnam, have introduced bans on farming and consumption of wildlife, which has brought both accolades for the action and criticism that it doesn't go far enough.

Along with those wet market-closures, many aspects of life and work worldwide have been limited or shut down completely. Many schools have closed their campuses, sent students home, and are trying to finish the school year remotely *(see the student section of this newsletter for a first-hand student account*

of the situation). Many institutions and workplaces are encouraged, or required, to work from home. There are a variety of limitations being imposed worldwide, from being told to limit contact and use appropriate "social distance" to complete shutdown or confinement, except for specific essential workers, who sometimes need a document to be in the street on their way to work.

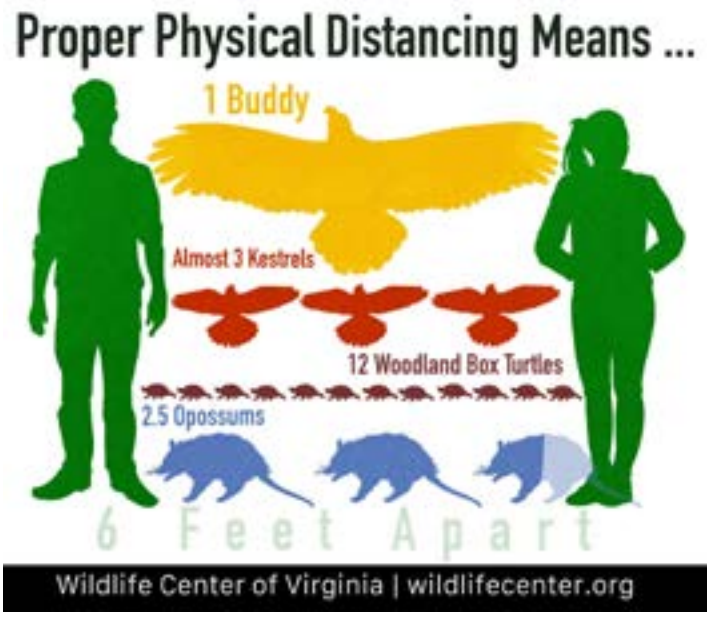
This is limiting crucial work for wildlife and conservation.[11] Many researchers and volunteers have had to limit, or discontinue, field work and reporting, which can have detrimental effects on data collection and interpretation and direct implications on the safety of vulnerable populations of animals. There have also been lab animals caught up in this predicament, some of whom are becoming secondary victims of the pandemic. Researchers who work with everything from special strains of immunocompromised mice to wild caught gar are facing difficult choices. Many animals have had to be euthanized, and some have been prematurely re-released into the wild, and others are becoming roommates with the researchers as they "shelter in place" at home.[12] The scientific and economic impact of this loss will be difficult to quantify. Additionally, there is a great concern over job loss of people in regions sensitive to poaching – there may be less patrol to ward against poachers, and more people who may see poaching as a solution to their economic needs.

There are some small upsides to this crisis. One is that there has been a measurable decrease in pollution.[13] Fewer people are travelling, commuting, and using fossil fuels in general. There may also be less disturbance to natural areas. There have been reports of water being clearer and heavy smog areas improving. There are also animals moving into spaces where they are not usually observed, and some animals are foraging in new areas, for good and for bad. Urban rats have been observed further afield than the dumpsters and restaurant food sources to which they have become acclimated, venturing into parks and even homes.[14] Whether this will have disease ecology implications remains to be seen. Curiously, there have also been many false reports of animal behavior – dolphins in Venice, orangutan hand washing as learned behavior, lions released into Russian streets, etc.[15] This attention can sometimes lift spirits of people anxious about the pandemic, but there is also concern that it will minimize the heavy-lifting, management aspect of conservation.

The pandemic has also brought more focus to movement of animals in general – legal and illegal, worldwide. Globalization has many benefits, but transportation and trade can bring novel pathogens at rapid rates around the world, just as we are now experiencing. In addition to wet market closure, there have been calls to discontinue "farming" of non-domestic animals in countries like China, where within the last year, the government had encouraged production of animals like bamboo rats, snakes, porcupines, and even civets. It was meant to boost eco-tourism, economic development, and alleviate poverty.[16] Now, as plans come together for these enterprises to be phased out, social and economic implications will have to be factored.

It is easy, of course, for the Western world to shame China and Southeast Asia for the expansion into novel habitat and trade of wildlife, but this corner of the world certainly does not deserve all the blame. Between 2000 to 2013, 114,927 bats were imported into the United States, most of them dead.[16] They are often sold as home decorations or "oddities," and some even come with an "ethically sourced" label – which is, of course, highly disputable. There is also a vast trade in live animals, like parrots or other exotic animals sold as pets, often seen as status symbols, not to mention trade in animal products for decoration or for use in the context of traditional Chinese medicine.[6,10] This isn't new information to scientists who study wildlife and disease, but perhaps this pandemic will educate the general public and bring more attention to why these practices have always been problematic.

On a different front, there has been some worry about great apes and their potential for susceptibility to human respiratory infections, which is already well known.[18,19] No great apes have tested positive for COVID-19, and it is currently unknown whether they are susceptible to SARS-CoV-2, but the potential is certainly there. There have been lethal outbreaks of viral respiratory disease in managed populations in the past, and in 2016 there was reported transmission of a human coronavirus in wild chimpanzees on the Ivory Coast. There have been tough decisions to be made with eco-tourism in general, and particularly that which puts humans in close proximity to primates, such as the Mountain Gorilla populations in Uganda.



While there may be acute crises in funding at zoos, national parks, and other places where people can see and learn about conservation, hopefully there will be a new and renewed long-term interest – both philosophically and economically – in preparing for both pandemic preparedness and zoonoses research. There already exists a small army of dedicated scientists backed up by international organizations who work on these subjects, and international projects with multi-disciplinary teams, many of whom are WDA members. This global crisis is something many of them have been warning is bound to occur.[6] One example is the US Agency for International Development (USAID) Emerging Pandemic Threat Program (EPT), consisting of four projects: PREDICT, RESPOND, IDENTIFY, and PREVENT. According to the EcoHealth Alliance (one of the major contributors to the EPT program) website, "The PREDICT project seeks to identify new emerging infectious diseases that could become a threat to human health. PREDICT partners locate their research in geographic "hotspots" and focus on wildlife that are most likely to carry zoonotic diseases- animals such as bats, rodents, and nonhuman primates."[20] New research centers are also gaining steam in the midst of the pandemic. For example, Cornell University in New York just opened the Cornell Wildlife Health Center, which aims to use multidisciplinary collaboration to address wildlife health challenges worldwide. The center aims to move its scientific findings into policy and action at a critical time, they say, for the future of life on Earth.[21]

Established agencies are likewise using their global recognition to push policy and action forward with a variety or infographics. The Wildlife Conservation Society released one in an easy-to-distribute platform in multiple languages, with a clear message: "Stop wildlife trade, wildlife consumption, and destroying nature to stop pandemics."

When "social distancing" became a primary means of decreasing transmission in most parts of the world, many wildlife organizations published colorful infographics explaining the distance in context of the animals they treat or study. See the one to the left from the Wildlife

Center of Virginia, with the wingspan of their resident Bald Eagle, Buddy, as a unit of measurement.

As students have been home from school, and adults are working from home, many wildlife educators and scientists have taken the opportunity to expand their online presence. It's possible that this tool will improve communication between researchers, students, and the public long-term. Many zoos and wildlife rehabilitation centers worldwide have added live video series on their websites and social media platforms. "Direct" contact has also increased on platforms like Skype a Scientist, which aims to increase opportunity for discourse and learning between scientists of a wide variety of backgrounds and students worldwide.[22] On their website, you can sign up to be a scientist or to chat with a scientist.

The scientific, economic, social, and other lessons the world learns through this pandemic are difficult to forecast but are sure to be numerous. In the coming months, we will learn more about the virus life cycle and the pathophysiology in humans and other species affected. We may learn more details about the ecology and geography of the virus origins. We will also learn difficult lessons about whether the emergency preparedness that had been coordinated (or not) were enough, which are the right things to focus on, and how to adapt for the future.

For further updates on COVID-19 and its impact, watch for the weekly news and updates from WDA in your email inboxes, and get up to date information from websites like the WHO: https://www.who.int/emergencies/diseases/novel-coronavirus-2019.

References:

1. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen
2. https://www.nature.com/articles/s41586-020-2012-7
3. https://www.avma.org/resources-tools/animal-health-and-welfare/covid-19
4. https://www.avma.org/javma-news/2020-04-15/can-veterinarians-prevent-next-pandemic?utm_source=email-optin&utm_medium=javma-news-200415&utm_campaign=public-health&utm_term=link&utm_content=pandemic
5. https://www.newyorker.com/science/elements/from-bats-to-human-lungs-the-evolution-of-a-coronavirus
6. https://www.ecohealthalliance.org/2018/02/heres-how-wildlife-trade-and-disease-spread-are-linked
7. https://www.nature.com/articles/s41586-020-2169-0
8. https://www.the-scientist.com/news-opinion/which-species-transmit-covid-19-to-humans-were-still-not-sure-67272
9. https://www.biorxiv.org/content/10.1101/2020.03.30.015347v1?fbclid=IwAR0DxkSEzs0Krin6DEPSLfa8tczgUr-v9d717UrgJ8-KQ0mqfme1IbpaG5s
10. https://www.bbc.com/news/science-environment-52125309
11. https://www.wired.com/story/coronavirus-lockdown-conservation
12. https://www.nature.com/articles/d41586-020-00964-y?utm_source=Nature+Briefing&utm_campaign=595eadff29-briefing-dy-20200331&utm_medium=email&utm_term=0_c9dfd39373-595eadff29-45123446
13. https://www.theguardian.com/environment/2020/mar/23/coronavirus-pandemic-leading-to-huge-drop-in-air-pollution
14. https://www.nationalgeographic.com/animals/2020/03/urban-rats-search-for-food-coronavirus/?fbclid=IwAR2N79oMITYeXi17ix6H7qA80ed2QdDaP9AdMXqGHXapvha_kKZodKgbXz0
15. https://www.nationalgeographic.com/animals/2020/04/coronavirus-fake-animal-news-part-two/?fbclid=IwAR06OPuyW007zKQEIukZGeKBKrjRTOSKMLcrhf7qVqzttN-WJXTPi1y78os
16. https://www.theguardian.com/environment/2020/feb/25/coronavirus-closures-reveal-vast-scale-of-chinas-secretive-wildlife-farm-industry?fbclid=IwAR0R3HLXkcoFrfBwqfW8knZYqTdAyfw4H-NSI3eFhD4qxsVlEwJlhm6q-Wo
17. https://www.newsweek.com/thousands-bats-slaughtered-annually-asia-end-ebay-and-etsy-artsy-americans-681147
18. https://www.gorilladoctors.org/coronavirus-and-disease-how-you-can-help-protect-mountain-gorillas/
19. https://www.theguardian.com/environment/2020/mar/24/coronavirus-poses-lethal-threat-to-great-apes-experts-warn
20. https://www.ecohealthalliance.org/program/predict
21. https://www.vet.cornell.edu/news/20200309/cornell-wildlife-health-center-launched-because-we-need-nature-and-now-nature-needs-us?fbclid=IwAR2Su3ADVaCFWE9wFleMocuk1sQVmsquAV0StAkt-gKl0AJk-lj2lJBO6uI
22. https://www.npr.org/transcripts/820859992

CONFERENCE GREENING: A LOOK AT PLANS FOR OUR FUTURE MEETING IN CUENCA

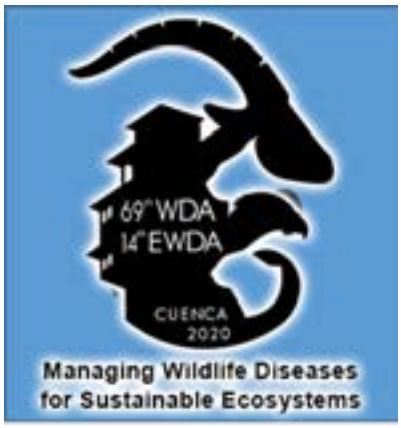
"Transformative Changes Towards Sustainability"

Jorge López Olvera

A WDA/EWDA Conference in summary: Old friends will meet again, new friends will be made, knowledge and ideas will be shared, and joint projects will be conceived to improve wildlife health and support nature conservation. One of the reports that has become relevant is the IPBES Global Assessment Report on Biodiversity and Ecosystem Services (https://ipbes.net/), which states: "Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors."

The large ecological impact of scientific conferences provides a good opportunity for us to make such transformative changes towards sustainability. The EWDA Membership was asked to come up with ideas for reducing our ecological impact, and the EWDA Sustainability Committee started evaluating and calculating CO_2 costs of previous conferences. The estimated carbon emission per participant of the previous joint WDA/EWDA conference in Lyon in 2012 was 2 tons CO_2-equivalent, which is about 25% of the average carbon emission per person in the European Union during a whole year. More than 90% of the carbon emissions of that joint conference were from air travel. The Organizing Committee has proposed several actions to decrease and compensate the carbon emission of the Cuenca 2020 joint WDA/EWDA conference.

First, reduced fees on national railways will make travelling by train more attractive for people living relatively close to Spain. To give one a better idea about carbon emissions from travel by train versus travel by air: for a one-way trip from Paris to Madrid (~1280 km), travelling by train (~15 kg CO_2-eq per person) emits 24 times less carbon than travelling by plane (~360 kg CO_2-eq per person) . Thus, taking the train achieves a reduction of over 300 kg CO_2-equivalent, comparable to the CO_2 storage of 15 growing trees over a year. Second, for people who will travel by air for various reasons, carbon offset options will be available. For this purpose, conference participants will be able to donate a voluntary fee at the time of registration. On the one hand, planting events will be carried out by EWDA volunteers in local areas recently affected by fires, within the frame of already existing reforestation projects. A target of 1,000 trees should compensate the estimated carbon footprint of the Cuenca 2020 conference over a 40-year period. Finally, attendants will be encouraged to share vehicles in case of choosing this option as mean of transport to reach the meeting. On the other hand, these donations will contribute to internationally certified CO_2 reduction programs (www.goldstandard.org).



The new EWDA Responsible Travel Award will give some tongue-in-cheek attention to the travel issue. This award is for the person or persons who have travelled to Cuenca in the most imaginative and (oh, yes) sustainable way, and are able to provide the most amusing report about their trip. The winner of this award will be allowed to look after EDWART, the amazing plastic yellow reindeer that is certified CWD-free.

Besides travel, the Organizing Committee has planned to experiment with other transformative changes (based in part on suggestions from the EWDA membership) to reduce the ecological impact of the conference. Conferences and meetings generate an estimated amount of about 2.8 kg of waste per person per event (https://www.hopesolutions.services/resources/). Therefore, conference participants are asked to bring their own mugs for coffee breaks in order to avoid the use of single-use glasses and cups. For those people who forget or are willing to get a souvenir, the Student Chapter will have reusable mugs for sale, with all proceeds going to student activities. Likewise, the traditional attendant kit provided will be sustainable and reduced to the minimum; the program, activities, abstracts and advertisements will be communicated through a specific meeting APP.

Choice of diet can have a big effect on ecological impact. A diet without animal products substantially reduces land use (76%), greenhouse gas emissions (49%), acidification (50%), eutrophication (49%), and freshwater withdrawals (19%) compared to current diet (Poore and Nemecek 2018). Therefore, all meals at the conference will have a vegetarian option, and attendants will be asked about the possibility of holding a full vegetarian day during the meeting.

Types of accommodation differ greatly in ecological impact, and 55% reduction in carbon emissions (from 6.9 to 3.1 kg CO_2 per person per night) can be achieved http://www.epe2013.com/index.php?page=how-carbon-emission-is-computed). The reduction for a four-night stay is almost 15 kg CO_2 per person, which is equal to travelling 1,200 km by train, or 80 km by car. In general, the more luxurious the hotel, the greater the ecological footprint: less stars, more eco-friendly! Hotels in Cuenca will be asked to provide information on their sustainability activities, so that conference participants can take this into account when choosing accommodation. Student participants mainly will be given the option to stay together in the University residency, both to reduce environmental impact and to enhance international exchange.

This is a non-exhaustive list of the measures planned to reduce the environmental impact of the conference and create awareness among the attendants and the local community. In this way, the Organizing Committee hopes that all participants will collaborate to maintain the benefits of its conference, while reducing its costs for nature.

The 69th WDA/14th EWDA Joint Conference Organizing Committee, and the EWDA Sustainablitly Committee

Submitted by Jorge López Olvera

References

Poore J, Nemecek T. 2018. Reducing food's environmental impacts through producers and consumers. Science 360, 987–992.

Smith G, Kuiken T, Vale A, Begeman L, Gilot-Fromont E. 2019. EWDA Conference carbon footprints. EWDA Newsletter, Summer 2019, 5.

TULAREMIA IN HARES AND HUMANS IN NORWAY AND SWEDEN 2019

A major zoonotic outbreak of tularemia was documented in 2019 in the Scandinavian peninsula

Erik Ågren Swedish National Veterinary Institute, Uppsala, Sweden
T*urid Vikøren, Knut Madslien, Jørn Våge* Norwegian Veterinary Institute, Oslo, Norway

The Norwegian Veterinary Institute has by the mid of December 2019, diagnosed tularemia (infection with *Francisella tularensis* subspecies *holarctica*) in 16 of 32 (50%) wild hares examined in Norway. The number of cases was unusually high in the early summer, showing a peak in July, while the disease in hares normally peaks during autumn. The tularemia cases mainly originated from the south-eastern part of the country (the counties of Østfold, Hedmark, Oppland). Fourteen of the cases were mountain hare (*Lepus timidus*) and two were European brown hare (*Lepus europeus*). Standard diagnostic procedures for tularemia include pathological examination and real-time PCR of liver and bone marrow. When tularemia is diagnosed in a hare, the Norwegian Food Safety Authority and the local public health authorities are informed.

In Sweden, the largest outbreak of tularemia in humans since the 1960´s occurred in the summer and autumn of 2019, with over 960 human cases at the end of September. The Swedish outbreak also affected hares with over 150 confirmed diagnoses or reports, with a high number of cases in the coastal area of Northern Sweden, and some cases from further south in Sweden (Blekinge county) than previously documented. An interactive map of reports and confirmed cases of tularemia in hares can be found at https://www.sva.se/smittlage/karta-over-harpest.

The main hare species in Norway is the mountain hare, found in most parts of the country, whereas the European brown hare is distributed only in the most south-eastern part (Østfold). Tularemia is sporadically diagnosed in hares (2018: 7 cases; 2017: 17 cases (4 captive); 2016: 6 cases). The situation in Sweden mirrors Norway.

The number of cases normally show an annual variation with the highest numbers in years with peaks in the small rodent populations like lemmings (*Lemmus lemmus*). In 2019, however, this correlation was not so clear in Norway, thus, other factors must be taken into consideration. The number of human cases in Norway (179, the Norwegian Surveillance System for Communicable Diseases) has also been higher than normal, with a main geographical distribution similar to the hare cases. Insect bites have been an important route of human infection in 2019, according to the Norwegian Institute of Public Health.

THE ITALIAN WILDLIFE DISEASE SURVEILLANCE NETWORK (2009-2018)

Riccardo Orusa[1,2], Serena Robetto[1,2], Bona Maria Cristina[1]

1. Istituto Zooprofilattico Sperimentale (IZS) del Piemonte, Liguria e Valle d'Aosta, Turin, Italy
2. National Reference Centre for Wild Animal Diseases (CeRMAS), Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Aosta, Italy.

The aim of this work is to show the results of the data collection carried out between 2009 and 2018. The reporting activity is based on data collection from referents for wild animal diseases throughout Italy. The most frequently reported diseases were West Nile fever, Newcastle disease, Trichinellosis, Brucellosis (*B. suis*) and Salmonellosis.

Introduction

As infectious diseases in wildlife can interfere in the health of domestic animals, of humans and wild populations, it is important to detect diseases and monitor their temporal trends and spatial distribution. In Italy, a wildlife disease network has been set up with the aim of collecting basic, valid and relevant information. The network involves laboratories throughout the country located at the Istituti Zooprofilattici Sperimentali (IZS) and refers to the National Reference Centre for Wild Animal Diseases (CeRMAS). The aim of the work presented is to illustrate, with the tools of descriptive epidemiology, the result of the data collection carried out over 10 years of activity (2009-2018).

Methods

Every year, on the basis of the reporting activity of a team of referents for wild animal diseases, the CeRMAS, on behalf of the Ministry of Health, collects and analyzes data about the presence of wild animal diseases. Local samples of any wild species are examined in each IZS regional lab; animal data and diagnoses are entered by the IZS referents in spreadsheet files and periodically sent to CeRMAS. National data are processed and, based on the OIE request of data in qualitative and quantitative forms, are used to fill the "OIE Wild animals diseases questionnaire". Then the overall Italian questionnaire is sent to feed into the OIE World Animal Health Information System. Data from 2009 to 2018 are considered here.

Results

During the 10 years of data collection, the volume of work was remarkable: 4,096 notifications have been made regarding 75 different diseases belonging to the two OIE lists (OIE listed diseases affecting wild animals, Non-listed pathogens and other disease-causing agents in wildlife) with a number of notifications which has been increasing over the years. 71 animal families, and 188 species have been investigated; the Suidae family is the most common, with 807 notifications, followed by Canidae (706, mainly fox and wolf) and Cervidae (459 roe deer, red deer and fallow deer). The most frequently reported diseases were West Nile fever, Newcastle disease, Trichinellosis and *B. suis* (diseases belonging to the OIE list) and *Salmonella enterica*, *Pasteurella*, and Morbillilivirus Infections, Sarcoptic mange, and poisoning in several species (diseases not belonging to the OIE List).

Conclusion

While taking into account the peculiarity of wildlife and limitations of surveillance systems, we were able to set up an efficient information system that is structured, standardized and computerized. It allows the description of the overall national epidemiological situation. This Italian surveillance network, born thanks to the OIE stimulus, provides insights in wildlife and helps to effectively manage potential problems such as zoonotic and emerging diseases (TBE), domestic livestock and wildlife interaction (Brucellosis) and species conservation (Pestiviruses).

2020 WDA Student Travel Grants

These grants provide small travel scholarships ($500- $1000) to individual WDA student members who plan to attend the annual WDA conference (this year at the same time as the EWDA conference), especially to those who may not be eligible to apply for the competitive WDA student awards. Students who reside near the conference location are NOT eligible to apply for this travel grant, as funds are intended to offset travel and lodging fees. The applicant review committee will award funds based on demonstrated interest and involvement in WDA as well as financial need.

Application materials can be found HERE.

Submission deadline is April 15, 2020.

Applications should be sent to Marianthi Ioannidis at **wdatravelgrant@gmail.com**

Notification of awards by May 15, 2020.

Student Chapter Grants

The student Activities committee (SAC) awards the Student Chapter Grants in order to facilitate student involvement in the activities of their local chapter and therefore the worldwide development of the Wildlife Disease Association. Student chapters are locally engaged in the organization of activities (lectures, workshop, field trips etc.) related to wildlife health. To help support these activities and the promotion of new chapters, the SAC annually offers **TWO** different grant amounts. **For more information about the following grants click HERE.**

1) **SEED GRANTS:** The purpose of this grant is to help smaller student chapters and stimulate smaller educational events.

   Applications will be accepted from:

   October 1st until October 31st: Result notification on November 15th, 2020

   March 1st until March 31st: Result notification on April 15th, 2020

   There will be a maximum of 2 winners for each application period and each winner can receive $500/winner.

2) **BLOSSOM GRANTS:** This grant was created to help student chapters in the organization of larger events.

   Applications deadline April 30th: Result notification on May 15.

   There will be a maximum of 2 winners and each winner can receive $1000/ winner.

DEGREE: DVM. FINAL YEAR SPECIALIZATION: COVID-19.

Manon Moullec & Anna Baauw, *Final year vet students at Vetagro Sup Lyon & Ghent University*

When asked to write a student perspective on experiencing the current COVID-19 pandemic, our first reaction was: 'what on earth can we add to the 1492321 articles published about this virus on a daily basis? As students?' Not so much probably, and you may read through this text and decide that it was a total waste of your time, just like the other 1492321 articles you already read. However, we decided that, at least, it would be a good reason to reflect properly on the situation (*egoistic reason*) and, reasoning from our past to our future, it leads us to conclude, that potentially even those 1492321 articles were not such a waste of our time after all (*lesson for all?*).

The past

A little over a year ago, we were in the middle of organizing the 7th EWDA Student Workshop, entitled *'Conflict or Coexistence: Facing the Human-Wildlife Interface'.* We were challenged to gather people from different but related fields and were looking for real interdisciplinary case studies to work with.

Also, a little over a year ago, one of us was working in Asia with pangolins, and on a daily basis, dealt with the victims of wildlife trade. How she wished for some magic solution to make an end to this horrible trafficking. Meanwhile, the other one, was making final decisions on a subject for her veterinary thesis, wanting to study the place of wildlife in human societies not only through a biological but also a sociological, anthropological and even political and economical point of view. Our state of mind was clear: reconsidering human behavior in order to protect wildlife was our leitmotiv.

Above all, a little over a year ago, we were both experiencing our modern, intense way of living, working, and travelling. Facing ever-growing-and-never-shrinking to-do lists and losing more or less sense of time and place just like everybody does in this crazy world. How we wished for empty time to pop up out of nowhere, unexpectedly, free to be filled in with all the things we wanted to do, or had to do, but never got to do.

The present

And now, we are in April 2020, in the midst of a global epidemiological crisis that *seems* to bring us exactly what we wished for. Here is a live, practical, interdisciplinary, and zoonotic disease case, making wildlife trade, and many human behaviors in general, debatable. Because of confinement, the same case offers us an undefined amount of 'free empty time' not only to do things, but also, to think. But this has not occurred exactly the way we hoped.

At first sight, this situation comes along with many adverse impacts on our personal and professional student life. Having to isolate ourselves, missing spending time with loved ones, or even having family and friends locked behind closed borders, and potentially becoming victims of COVID-19, are difficulties we all need to cope with right now. Additionally, the closure of educational institutions forces us to find new ways of training such as continuing the theoretical part of our education online or starting new digital case-study groups. But, most of all, it implies interrupting a crucial part of our final-year training: practicals, externships, experiments and clinical rotations.

Beyond these direct impacts on our lives, as wildlife-passionate veterinary students, this epidemiological crisis provides us with opportunities. Confinement has provided us time for progress of personal work and thoughts or time to enrich and deepen our professional knowledge. And not only that, it also provides us with a huge real-life interdisciplinary case study about problems at the human and wildlife interface that is worth dissecting.

Research studies are still in progress, but so far, the COVID-19 outbreak seems to be due to a species jump from wildlife to humans with bats as the main natural hosts and pangolins as potential intermediate hosts[1,2]. We have all learned in school that pathogens do not respect species barriers, and here, human beings are not different from other species.

Zoonotic disease outbreaks date back to the time when we began to modify our environment and interactions with other species[3]. At the current age of Anthropocene, our activities have reached a point where population densities, consumption patterns, movement, ecosystem destruction and climate change, altogether lead to increased interspecies interactions. In turn, these interactions (especially of stressed individuals), together with viruses' strategies to adapt to new hosts, enhance zoonotic disease transmissions and subsequent spreading[4]. This pandemic gives us a clear reason to reconsider human role in zoonotic disease outbreak occurrences.

With this in mind, the crisis brings the concepts we have learned into sharper focus, and urges scientists and people in general to deepen principles of crucial importance. Once again, the One Health concept is promoted, showing that human, animal and environmental health are closely interrelated. Above all, we are now pushed to go beyond this concept: the recent events have shown us that the understanding of health and disease is only useful when combined with proper policies, understanding of cultures, strong communication, and wise decision making skills.

The future

In the years to come, after the current generation of students finishes training, we will likely encounter a multitude of other issues to solve, as a result of our lifestyle and human-wildlife interactions: epidemics, antibiotic resistance, climate change, biodiversity loss... just to name a few. Today, our vulnerability, resulting from the destruction of the environment, has clearly been demonstrated. Our veterinary degree will provide us with a specific set of skills that can contribute to some of these solutions. However, none of these can be solved by medicine (or any other discipline) alone, and a transdisciplinary perspective will be key.

Cartoon from Alecus, March 2020, www.elsalvador.com.

To conclude, this crisis should be a lesson for the bigger issues we'll have to solve in our future careers. From this perspective, the current confinement is not an empty gap in our education, it is *part of* our education. Education is not about following the prepared path, it's about preparing a path for the future. This 'gap' may turn out to be the most important part of our veterinary training.

References

(1) Sansonetti P. Covid-19 ou la chronique d'une émergence annoncée. Lecture at *Collège de France*. March 18, 2020. www.college-de-france.fr.

(2) Lam, T.T., Shum, M.H., Zhu, H. et al. Identifying SARS-CoV-2 related coronaviruses in Malayan pangolins. ***Nature***. 2020. https://doi.org/10.1038/s41586-020-2169-0.

(3) Lebarbenchon C. Le problème ne vient pas des espèces animales mais des changements environnementaux issus de nos activités. Interview in *Actu Environnement*. March 24, 2020. www.actu-environnement.com.

(4) Vidal J. Destroyed habitat creates the perfect conditions for coronavirus to emerge. Article from *Ensia* in *Scientific American*. March 18, 2020. www.scientificamerican.com.

QUARTERLY WILDLIFE MORTALITY REPORT APRIL 2020

Written and compiled by members of the U.S. Geological Survey's National Wildlife Health Center.

New publication on Mycoplasma ovipneumoniae and bighorn sheep

U.S. Geological Survey (USGS) National Wildlife Health Center (NWHC) scientist, Dr. Daniel Walsh, has co-authored an upcoming publication titled "Removal of chronic *Mycoplasma ovipneumoniae* carrier ewes eliminates pneumonia in a bighorn sheep population," published in the journal Ecology and Evolution. This study demonstrated that the removal of bighorn sheep (*Ovis canadensis*) chronically shedding the respiratory pathogen *M. ovipneumoniae* (Movi) from a population significantly improved the health of the population. Specifically, the removal of chronically shedding ewes from our treatment population resulted in a marked increase in lamb survival compared to survival prior to removal and resulted in the inability to detect Movi or pneumonia in the herd. In contrast, the control population from which chronically shedding ewes were not removed continued to show poor lamb recruitment, pathogen presence, and disease during our study. These results support the hypothesis that Movi is a primary causative agent of persistent or recurrent respiratory disease in bighorn sheep populations and can be maintained by a few chronic carriers. Our findings provide direction for future research and management actions aimed at controlling pneumonia in wild sheep and may apply to other diseases. The article can be accessed at: https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.6146. For additional information, contact Dr. Daniel Walsh (dwalsh@usgs.gov).

National white-nose syndrome surveillance

Since Winter 2013/2014, the U.S. Geological Survey (USGS) National Wildlife Health Center (NWHC) has assisted State, Federal, and Tribal wildlife agencies nationwide with active surveillance for *Pseudogymnoascus destructans* (*Pd*), the causative agent of white-nose syndrome (WNS). Nearly 900 sampling kits have been provided to partners over the 6-year period, resulting in analyses of more than 12,000 bat and 4,900 environmental samples collected from 41 states and 441 counties. *P. destructans* has been detected at 174 locations, including 63 sites where clinical signs of the disease were not apparent at the time of sampling. Samples obtained from bats represent >90% of all positive detections as compared to environmental samples. Highlights from the 2018/2019 surveillance season samples analyzed by NWHC included the first detection of *Pd* in North Dakota (Mercer County) and the first confirmation of WNS in the Western long-eared bat (*Myotis evotis*). The Fringed bat (*M. thysanodes*) was also added to list of species confirmed with WNS in 2019 using an improved DNA microsatellite assay. The bat had been collected and diagnosed with WNS during a previous surveillance season but identified as an unknown *Myotis* species. A total of 13 species of North American bats have now been confirmed with WNS, while *Pd*, in the absence of clinical signs, has been detected on eight additional (sub)species of bats. Pursuant to early results from the 2019/2020 surveillance season, WNS has been confirmed in Texas (Gillespie County), bringing the total affected to 34 U.S. states and seven Canadian provinces.

Using the previous 10 years of data collected by NWHC and our many partners, we also introduced a new, model-derived sampling approach for WNS for the 2019/2020 surveillance season. Benefits of this data-driven approach include improved surveillance efficiency (compared to random sampling) by

targeting high risk areas for *Pd* emergence, thereby improving the use of limited surveillance resources and reducing the time to find new hotspots of *Pd* on the landscape. In addition, the new sampling scheme allows for quantitative analyses at a landscape scale necessary for the coordinated disease response planning and resource management actions. The sampling design can be updated to incorporate new pathogen distribution information each season. For additional information, contact Dr. Anne Ballmann (aballmann@usgs.gov).

WHISPers version 2.0 enhanced

Timely awareness of wildlife disease outbreaks can help State, Federal, and Tribal natural resource agencies better understand, manage, and respond to risks. Although individual staff may be aware of current and historic wildlife health issues within their jurisdictions, historically it has been challenging to share this information in real-time with other wildlife professionals and to visualize these events within regional and national contexts. WHISPers, the "Wildlife Health Information Sharing Partnership- event reporting system," is a free, secure tool designed to aid the community of natural resource management professionals in recording and sharing wildlife health event data to better understand potential risks.

With input from partners, the U.S. Geological Survey (USGS) National Wildlife Health Center (NWHC) released a newly designed WHISPers platform in July 2019. The system houses information on over 8,000 historic and current wildlife mortality events nationwide and allows verified partner natural resource management agencies to add and manage events in the system in real-time. Data security, integrity, and controlled access are central components of WHISPers. Several additional features will be released in Spring 2020 including notifications to alert users of new events involving species, locations, or diseases of interest; event summary reports; bulk data upload; and within-event collaboration capabilities. Further enhancements will be made following a user experience assessment currently underway by Purdue University and the Science Gateway Community Institute.

WHISPers' success depends on a vibrant community of resource management agency users. To learn more about WHISPers and how to join, please visit https://whispers.usgs.gov. For additional information contact: Bryan Richards (brichards@usgs.gov) or WHISPers@usgs.gov.

For additional information on the USGS National Wildlife Health Center see the following links:

- *Main website: www.usgs.gov/nwhc.*
- *Disease Investigation Services: www.usgs.gov/nwhc/services.*
- *Report Mortality Events and Submit Specimens: www.usgs.gov/NWHC/submit.*

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://whispers.usgs.gov/