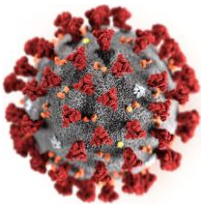


EWDA
European Wildlife Disease Association

NEWSLETTER // WINTER 2020

CONTENT

ON THE COVER

Red deer (*Cervus elaphus)*
Cover photo by **Josh Jaggard**, wildlife photographer
Website: click here Twitter: click here Vimeo: click here

Coronavirus: Wikimedia commons

Editors: Anne-Fleur Brand annefleurbrand@gmail.com & Erik Ågren erik.agren@sva.se

President's Corner

"Here's hoping 2020 really is hindsight!"

Oh goody… so as the newly elected chair of the EWDA, I get to close this "unique" year in this newsletter address. Please excuse me as I revert to my favourite coping mechanism and fill this page with little memes and sarcasm that I hope will make you smile.

It is hard to look back on this year without a heavy heart. 2020 certainly has thrown us for a loop, and we have all been forced to adapt and re-evaluate our personal and professional ways of life. Sadly, some have come close to a breaking point, others have been plagued by loss and pain. My heart goes out to you all.

Amidst all this, there have also been tremendous beacons of Hope. The (E)WDA, through the creativity and resilience of its members has certainly been a bright light in the dark.

In September we experienced a first of possibly many other virtual gatherings of WDA sections around the world. Many of us who cannot attend conferences in these regions were able to catch a glimpse of what other members (continue to) do.

The WDA has launched a Strategic Committee that will focus on Growing our Impact and Growing our Family with some very ambitious goals that will be presented to the sections in the upcoming months.

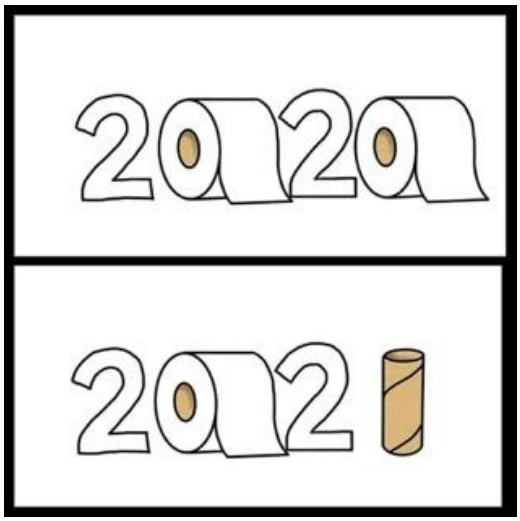
The newly elected board has been hard at work to bring new ideas and benefits to EWDA members. Of worthy mention: the Small Grants Committee is working on new grant opportunities and the new Website Working Group will be giving our website a facelift and new added features, in parallel to a similar initiative by the students.

The EWDA student chapter has not been deterred by the pandemic and in place of their traditional workshop is working on their first online version which is certain to be an exciting opportunity for those who will attend.

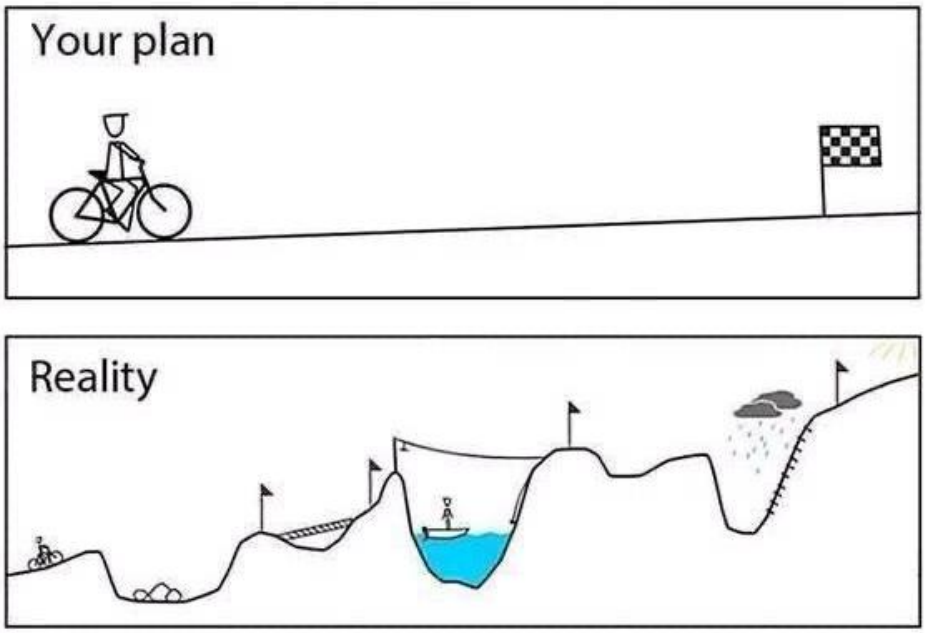
President's Corner

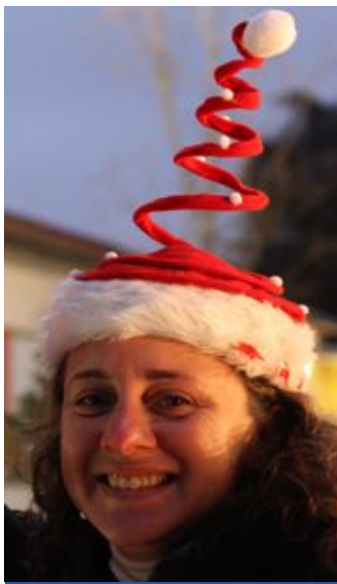
2021 is upon us and the uncertainty remains on when we will go back to a somewhat normal life and 'hug your colleagues' will again be a possibility.
But I invite you all to continue this trend of making the most of what we have and learning new skills, be it crochet, ice fishing, vegan recipes, biostatistics and other weird ideas.

I challenge you to document these and we will find creative ways of featuring them, be it on our newsletter or website. Because we all need some good news from our EWDA family.



Happy holidays everyone and take good care !





Karin Lemberger
Vet Diagnostics and Faunapath,
Lyon,France

News from the Board

"EWDA board – summer and autumn months"

With a lot of excitement and suspense the EWDA board had looked forward to the first virtual general assembly meeting in late August and it was great to see that so many EWDA members indeed managed to join the event. Thank you to all who could make it! For those who were prevented from joining, please find the minutes of that meeting distributed alongside with this newsletter.

Since that meeting the new EWDA board was set in place:
Chairperson - Karin Lemberger, Vice-chair - Becki Lawson, Secretary - Gudrun Wibbelt, Treasurer - Philippe Berny, Website Coordinator - Alberto Casado Gómez, Newsletter Editors - Anne-Fleur Brand and Erik Ågren, Student Activities - Jorge Ramón López Olvera, Research Advisor - Paul Holmes, Eastern Countries Communications - Gábor Czirják & Gorazd Vengušt, Member at Large - Riccardo Orusa, Student Representative - Marco Vecchiato, Past Chair - Marie-Pierre Ryser. Visit: https://ewda.org/ewda-board/.

A brief note for those who still need to renew their membership for the 2021:
If you live in the EWDA's geographic region you automatically become a section member and do not need to check a tick box for EWDA membership. An option for members living outside of EWDA's geographic region is to join the EWDA with no extra fee - those need to check the tick box.

In addition there are three donation options for members to contribute to EWDA:
i) a general donation to the section, ii) toward the EWDA student chapter and iii) the Vic Simpson travel grant.

Currently 235 EWDA members are living in the geographic region. EWDA members by choice, i.e. those living outside EWDA's geographic region, account for 35 members living in Scandinavia and 60 members living abroad (e.g. Brazil, Canada, India, Peru, USA, Vietnam, …)

It is very nice to see that EWDA website's contact form is frequently used by people interested to join the association – with subsequent membership registration. And while a new website group has been established, it still needs the support from the members community: Please send your photos from any wildlife animal or wildlife related project work to help to illustrate the website to make even more people interested.

Thanks a lot and best wishes for 2021 !!

Gudrun Wibbelt
Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany

Announcements

WDA Student Awards Committee is seeking judges to help

i) score students abstracts for the WDA/EWDA conference in CUENCA and/or
ii) ii) student presentations (oral and poster presentations) at the conference.

Student abstract scoring will take place between the 18th of April until the 26th of May 2021.

There are two rounds of scoring for student abstracts, with 4 weeks for the initial abstract review followed by a 1-week period for scoring of round 2.

Student presentation scoring occurs at the conference and completed before the conference banquet. The more judges we have, the easier it is to divide and conquer the work.

Please email Tiggy Grillo (tgrillo@wildlifehealthaustralia.com.au) and let her know if you can participate in student abstract and/or student presentation scoring. More details about the SAwC Awards can be found here:

https://www.wildlifedisease.org/wda/Portals/0/StudentChapters/2021_WDA_Student_Awards_Competition_-_Description_FINAL.pdf

STUDENT CHAPTER
EWDA
European
Wildlife Disease Association

Save the dates!

The EWDA Student Board is announcing the Student Workshop for 2021:
"Communicating Science in Wildlife Conservation"
an online event in three phases.

18th of March and 19th - 22nd of April 2021

Keep an eye on our new website for more information:
https://ewdastudents.weebly.com/

Assessing sand lizard health before reintroduction

The sand lizard (*Lacerta agilis*) has disappeared over much of its former range in the United Kingdom (UK). Habitat loss and fragmentation are cited as the main factors in the species' decline.

The sand lizard and its habitat are now protected under European Union (EU) law and British law. A major component of the Species Recovery Programme (SRP) for the sand lizard in the UK has been the reintroduction of sand lizards into their former range, using captive bred animals. Releases have been taking place since 1969. This work has involved the British Herpetological Society (BHS), Natural England (NE) and the Amphibian and Reptile Conservation Trust (ARC). The Disease Risk Analysis and Health Surveillance (DRAHS) team at the Zoological Society of London (ZSL) has contributed through a disease risk analysis (DRA) to assess the risk from disease in sand lizard translocations and a disease risk management (DRM) and post-release health surveillance (PRHS) protocol, which includes pre-release health assessments on sand lizards intended for release into the wild and undertaking post-mortem examinations on sand lizards found dead.

In September 2020 the DRAHS team travelled to Lancashire and to Dorset to carry out health examinations on juvenile sand lizards reared for release. Full personal and protective equipment (PPE) was worn by both vets and biologists to ensure there was no transfer of infectious agents between personnel and the sand lizards and from the sand lizards to other reptiles. Careful handling of the sand lizards was necessary in order to minimise stress and to avoid tail autotomy. Photographs were taken of each animal to aid individual identification. Assessment involved examination of the eyes, ears, oral cavity and skin for lesions. A body weight measurement was taken and an overall assessment of body condition was made. A doppler ultrasound probe was used to assess the cardiovascular system. The lungs were auscultated through a stethoscope and a respiratory rate was calculated. Gentle coelomic palpation was carried out to detect abnormalities. Faeces were collected both from individuals and from groups for parasitology testing, specifically for *Entamoeba* spp. protozoa and for *Strongyloides* spp. helminths both of which can cause gastrointestinal disease in lizards.

The importance of pre-release health examinations and controlled release protocols cannot be overemphasised. Uncontrolled sand lizard releases do unfortunately occur. In 2019 DRAHS examined free-living sand lizards in Wales thought to have been released unofficially. One individual was found to be in low body weight and harbouring a tick (*Ixodes ricinus*). An unknown gram-negative enteric bacterium was isolated from an individual faecal sample and a novel atadenovirus (AdV) identified from a pooled faecal sample from three sand lizards which included this individual. The case highlights the potential risk of introducing infectious agents into the free-living populations if translocation occurs without a disease risk analysis. DRAHS continues to work with collaborators to ensure the health of the sand lizard population in the UK. ☐

Tammy Shadbolt
ZSL, United Kingdom

A wild life in Barcelona

One of the challenges students chasing a career in wildlife encounter in their final years is to find a wildlife-oriented externship or internship placement.

These places are not easy to find and often have long waiting lines. Here we would like to present to you the opportunities at the Wildlife Ecology and Health (WE&H) group and at the Wildlife Health Service (SEFaS) of the Autonomous University of Barcelona (UAB) in Barcelona, Spain.

Coming down from the high mountain ranges of the Pyrenees heading to the south, passing the lower rocky Catalan Coastal Mountain Chain, and stopping at the northeast part of the Collserola mountain, one ends up in the Faculty of Veterinary Medicine of the UAB, where you can find the WE&H and SEFaS group. WE&H and SEFaS are formed by a group of senior scientists, PhD, master, internship and undergraduate students, who focus on understanding the link between environment, infectious diseases and wildlife population health, and on using this knowledge for wildlife population management and conservation measures.

The diversity of habitats and species of the area reflects well the diversity of the work and opportunities within the WE&H and SEFaS. From this location, a wide array of wildlife issues is within reach. Urban settlements growing into remaining natural areas, and their wild boars causing disturbances in human dominated landscapes are plain examples of human-wildlife-conflicts. The same wild boars are a potential reservoir for emerging zoonotic diseases. Meanwhile, in the Pyrenees or in the rocky mountains of Catalunya, where flocks of sheep and goats and cattle herds mingle with wild ungulates, clear examples of shared diseases between domestic animals and wildlife are found. All of these are topics of research covered by WE&H and SEFaS with a One Health approach.

There is no typical day to describe what it means to be part of the team. One day may consist of necropsies of various wild animals from several species, during which mysteries and aspects of wildlife pathology are explained by the pathologist of the team. The next day could be spent strolling the mountains surrounding Barcelona looking for the best spots to place camera traps - and fighting thorny plants along the way.

Another day hiking in the mountains to perform health monitoring or population census of wild ungulates. Besides, tele-anesthesia and cage trapping of wild boars, ibex or small rodents, and post-capture handling are just some other examples of the many hands-on experience opportunities. On top of this, there are many chances to train essential research skills, such as project management and planning, statistical analysis and scientific reading and writing.

Last, but not least, a time spent at WE&H and SEFaS is an opportunity to collaborate with and learn from excellent professionals, eager to introduce the wonderful and challenging world of wildlife investigation. Every week, month, or year at SEFaS and WE&H offers a rich diversity of learning opportunities - a taste of everything. This is a place where wildlife health research and management interventions come together, where science and the real world connect. ☐

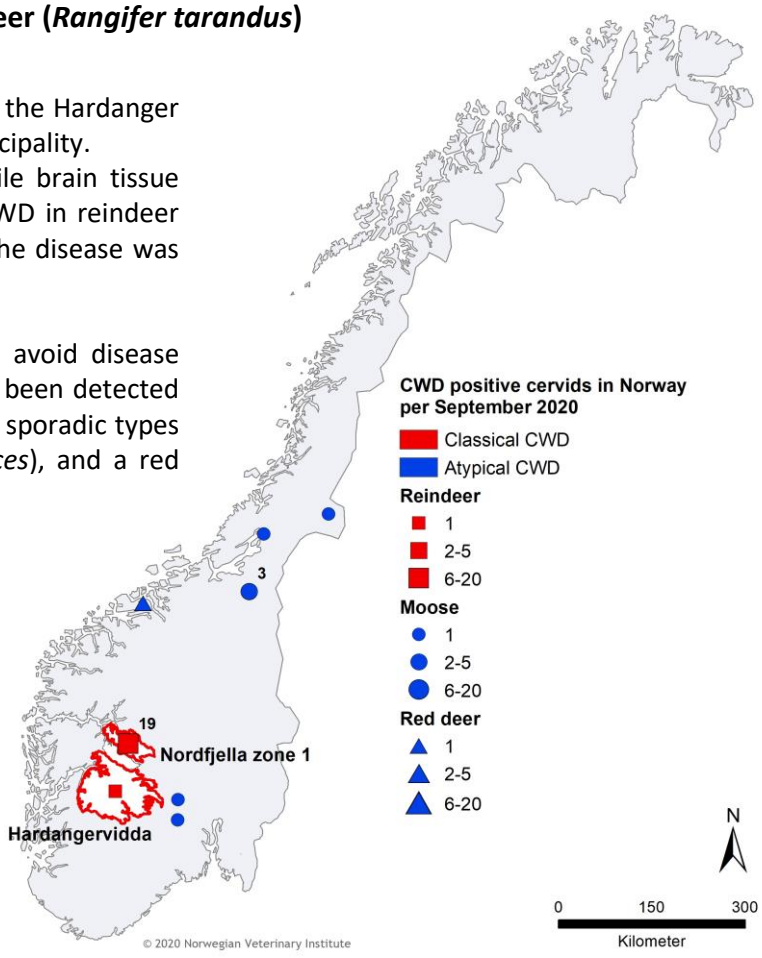
Stefania Tampach
Anna Baauw
EWDA Student Chapter Board

Latest detection of CWD in wild reindeer from Norway

On 10th of September 2020, the Norwegian Veterinary Institute notified the 20th case of CWD in a wild reindeer (*Rangifer tarandus*)

The animal was shot during the ordinary hunt on the Hardanger plateau in central southern Norway, in Vinje municipality.
Material from lymph nodes tested positive, while brain tissue was negative. This is the first case of classical CWD in reindeer identified outside the Nordfjella zone 1, where the disease was first detected in 2016.

In 2018, this affected population was culled to avoid disease spreading. The type of CWD in reindeer has not been detected in other species in Europe, but atypical and likely sporadic types has been discovered in Nordic moose (*Alces alces*), and a red deer (*Cervus elaphus*) from Norway.



The Hardanger plateau ("Hardangervidda") is Northern Europe's most extensive mountain plateau and Norway's largest wild reindeer area with around 8000 to 10 000 animals. Since 2016, more than 100,000 cervids have been tested for CWD in Norway.

From the "Hardangervidda" population about 3500 animals had been tested (2016-2020) and found CWD-negative prior to the detection in September. The hunting period ended in October and possible management actions are not yet announced, though the responsible authorities have ordered a scientific report due detection. ☐

Jørn Våge
Norwegian Veterinary Institute, Norway

First detection of HPAI in Norway

On November 27th, 2020, the Norwegian Veterinary Institute (NVI) notified the Norwegian Food Safety Authority (NFSA) of a confirmed case of HPAI virus, subtype H5N8, in a wild pink-footed goose (*Anser brachyrhynchus*) in Sandnes municipality, Rogaland county, south-western Norway. The goose was found in a diseased state and died 22nd November 2020.

Despite widespread monitoring of both domestic and wild birds since 2005, Norway is one of the few countries in Europe that previously have not detected HPAI virus.

The detection was performed with PCR against Influenza A virus and subtype-specific PCRs, followed by sequencing of the cleavage site of the haemagglutinin molecule for determination of the pathogenicity.

The sequence result show that the virus belongs to the clade 2.3.4 like the other H5N8 detected in wild birds, poultry and turkey in other countries close to Norway.

As an immediate response to the detection of HPAI in Norway, a curfew for backyard flocks and a ban of waterfowl hunting, was introduced in southern Norway.

Based on currently available knowledge, we believe that H5N8 most likely was introduced by pink-footed geese and/or barnacle geese (*Branta leucopsis*) migrating to Norway from common night roots along the west coast of Denmark, or from the Netherlands during fall 2020. However, more detailed studies of migratory routes of wild bird species, bird genetics and molecular studies of the virus, are needed to answer this crucial question. ☐

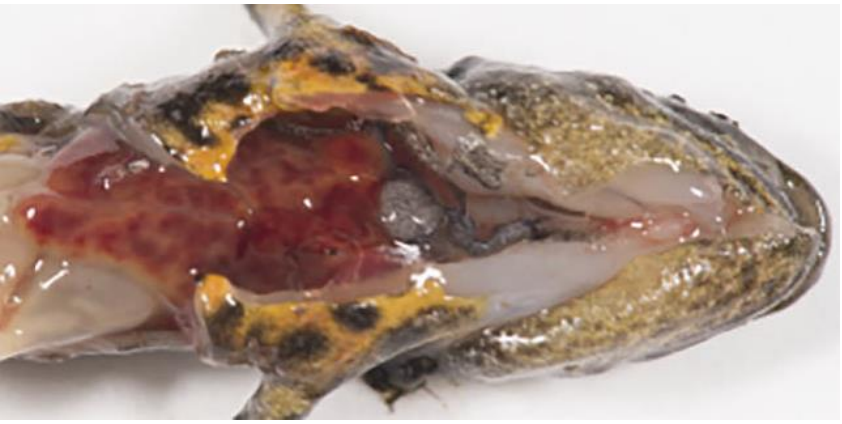
Knut Madslien
Norwegian Veterinary Institute, Norway

EWDA grant recipient

Using aptamers for ranavirus detection (RANAPTA)

In 2018, we were very happy to obtain an EWDA grant that allowed us to screen a commercially available aptamer library, in view of making an informed 'go-no-go' decision regarding whether to pursue the development of an aptamer-based lateral flow immunoassay for detecting ranavirus in waterbodies.

Ranaviruses are large, dsDNA viruses belonging to the family Iridoviridae (1). They are important pathogens in fish, amphibians, and reptiles, causing severe disease outbreaks in captive and wild animals (1-3). They have been associated with population declines in amphibians in various parts of the world (4-6). The virus is known to persist for months as viable virions in water and sediment (7).



Internal inspection of a ranavirus infected great crested newt (*Triturus cristatus*) with hepatic necrosis and haemorrhage. Photo: B. Saucedo.

Ranaviruses can be spread by trade, which has led the World Animal Health Organization (OIE) to request for surveillance and reporting of ranavirus disease in *Anura* and *Caudata* and of epizootic haematopoietic necrosis in fish (8). In the Netherlands, registered trade involved more than 18 million ornamental fish in several thousands of batches and more than 24000 amphibians and reptiles in 2018 (9).

Speedy detection of ranavirus infection is highly advantageous for the development of efficient strategies to reduce the risk of introduction of ranavirus by means of trade and to minimize the risk of human-mediated spread in nature.

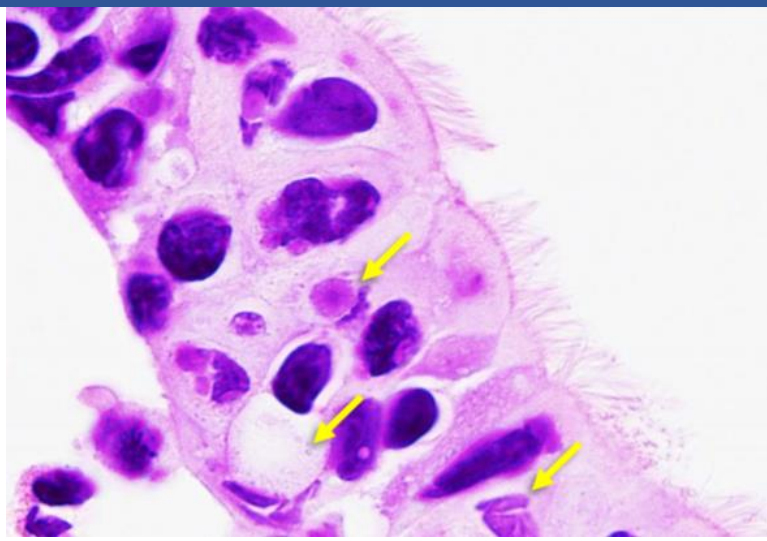
We hypothesized that an aptamer-based lateral flow immunoassay (LFIA) could potentially be a quick and cost-effective test for diagnosing ranavirus infections in water samples. Aptamers are short single-stranded nucleic acid oligomers (DNA or RNA) capable of folding into highly organized, complex structures enabling ligation to molecular targets with high affinity. Most LFIAs are antibody-based, but some aptamer-based assays have been developed successfully for virus detection (10-12). However, it was unknown if existing aptamers bind to ranavirus.

Using EWDA grant funding, we screened aptamers from an existing aptamer library (DNA Library for DNA Aptamer Selection kit – Tri Link Biotechnologies) to select for aptamers binding to ranavirus.

Continued

Using aptamers for ranavirus detection (RANAPTA) continued

The target virus used was CMTV-NL III, a ranavirus isolated in 2016 from a wild edible frog (*Pelophlax esculentus*) that had died of ranavirus infection in the South of the Netherlands (Limburg) (13). Stocks of this virus were grown in fish cell culture cells and purified by sucrose cushion ultracentrifugation, as described elsewhere (13, 14), and were then used for aptamer selection. Aptamers against CMTV-NL III were selected by the established Systematic Evolution of Ligands by EXponential enrichment (SELEX) method, as described elsewhere (15, 16). After 10 rounds of SELEX, the DNA pool was cloned into a vector and subsequently sequenced.



Upper respiratory tract section of a ranavirus infected smooth newt showing intracytoplasmic inclusions (arrows) in epithelial cells (H&E) Photo: B. Saucedo

We found that it was possible to select at least 10 unique aptamers from the library through SELEX using CMTV-NL III as target virus. At this stage it is not possible to say whether this was aspecific binding or specific binding to ranavirus, but the result is encouraging for pursuing the development of a LFIA that is aptamer-based.

Wild water frog infected with ranavirus. Photo: J. Rijks.

The use of aptamers in the context wildlife health is likely to increase in the coming years. In diagnostic tests, the substantial advantages of aptamers over antibodies include no involvement of laboratory animals, cheaper production, and a higher stability under a wide range of environmental conditions (12). Aptamers offer many opportunities not only in diagnostics but also in therapeutics and many other fields, and their use is likely to expand (17). ☐

Jolianne Rijks
Dutch Wildlife Health Centre
NL

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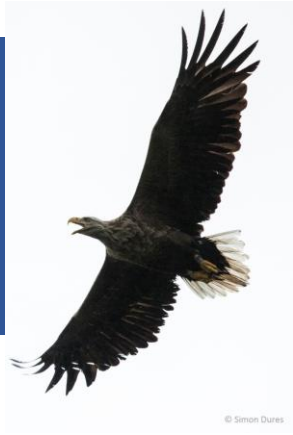
EWDA grant recipient

Using raptors to understand environmental health



"How can raptor health inform us about the health of our environment?"

This project developed a toolbox for health assessment of the Scottish environment by using the health of raptors, the birds found at the top of the Scottish food chain, as indicators.

Health examination and blood sampling of live golden eagle chicks (*Aquila chrysaetos*) were used to develop blood reference intervals to assess individual health. Biometrics obtained from the same birds were analysed in an attempt to develop a minimally invasive method for sexing nestlings to help inform population sex ratios.

Post mortem examinations of individuals from 15 raptor species (excluding suspected persecution cases) were performed to assess individual health at the time of death and then used to discern the health of the wider raptor population across Scotland. Finally, essential and toxic elements, pesticides, pharmaceuticals and poisons in raptor tissues and blood from both live and dead individuals were analysed in order to obtain an overview of chemicals present and their distribution and prevalence across the Scottish environment.

This project involved four years of work, multiple collaborators, over 88 citizen submitters, more than 170 carcasses processed, 50 live golden eagle chick examined and chemical analysis run in over 100 individuals. Part of this work was made possible with the helping hand of an EWDA small grant.

Reference values for 23 blood parameters in golden eagle chicks have been developed and are in the publication process. This will be of use to veterinarians, wildlife rehabilitation centres and the current Scottish Borders translocation project. Based on the morphometrics evaluated, it was determined that golden eagle chicks do not show any sex dimorphism when under 7.5 weeks of age.

Cadmium was detected in all species tested and in over 40% of individuals. Lead was detected in 13 of 14 species tested and in more than 80% of individuals. Mercury was detected in all individuals and both mercury and lead concentration increased across the country from east to west, matching a higher incidence of respiratory disease and higher mortality of golden eagle chick towards the west of the country. Arsenic was found in five of 14 (35.7%) species tested. A combination of the most commonly used rodenticides, was detected across eight raptor species, with highest levels found in buzzards (*Buteo buteo*) and barn owls (*Tyto alba*). No intact pharmaceutical or poison compounds were detected across the sampled population. Not all pharmaceutical or poison metabolites could be screened for.

It is hoped that this work can become a long term monitoring tool for raptors in Scotland for detecting local and regional patterns of raptor and ecosystem health. ☐

Gabriela Peniche
University of Edinburgh, UK

EWDA grant recipient

Unravelling stork MBD

MBD in stork nestlings seems to be triggered by calcium-phosphorus imbalance in primary prey

Yearly sampling of white stork nestlings during a study on the role of white storks in avian influenza virus maintenance and transmission, detected significant nestling mortality in a colony from a National Park. The EWDA microgrant partly allowed further study of the causes.

Since 2014, we detected severely diseased, dead and dying white stork nestlings in a small white stork colony in a natural environment in a National Park. Pairs would abandon breeding after two consecutive years of nestling loss and by 2017 the colony was dwindling. Diseased nestlings would present normal sized but severely decalcified bones with numerous greenstick and bending fractures. Recently deceased nestlings showed enlarged parathyroids. Histological decalcification of trabecular and cortical bone, and depleted hypertrophic parathyroid were confirmed indicating a condition known as secondary hyperparathyroidism or “metabolic bone disease” (MBD). This condition is known from captive birds of prey in relation to calcium deficient diets and has only rarely been described in free-living birds. One study described MBD in cattle egrets in a newly established colony in a suboptimal habitat due to a calcium-phosphate imbalance in the diet (Phalen et al., 2005). In our case, the sudden although gradual onset of the process in a well established traditional colony (one of the breeding birds was >25 years old according to ringing data) suggested a different scenario. The microgrant supported prey item collection, blood chemistry and contaminant analysis in prey items and blood of diseased and healthy nestlings in 2018.

Comparative analysis of gut and cast contents of healthy vs affected stork nestlings revealed grasshoppers and beetles as predominant prey items in diseased individuals. Contaminants such as heavy metals, and organic compounds were similar between healthy and diseased birds. Lead was slightly elevated in affected nestlings and associated with an elevated alkaline phosphatase suggesting blood lead levels to result form mobilization with bone demineralization. While blood Calcium and phosphorus levels were similar between healthy and affected nestlings. Calcium levels were considerably lower in grasshoppers, especially in the surroundings of the colony and less so in near cornfields, suggesting that nestlings fed a predominantly grasshopper based diet were compensating the calcium/phosphorus imbalance by mobilization of bone deposited calcium. Potential causes may be lack of more balanced prey such as small rodents This warrants further study but could also allow for problem management by park authorities.

Ursula Höfle
SaBio working group
IREC,
Ciudad Real
Spain

Heat-inactivated *M. bovis* vaccine in badgers: a promising alternative to BCG

Animal tuberculosis (TB), caused by infection with members of the *Mycobacterium tuberculosis* complex (mainly *M. bovis* and, to a lesser extent, *M. caprae*), is a major economic disease of livestock worldwide that can also cause zoonotic TB in humans.

Despite major efforts invested in the control of the disease in cattle, its major domestic reservoir, TB is still present in many European countries. Wildlife hosts are also susceptible to *M. bovis* and can act as a reservoir for the infection for livestock. In Europe, badgers (*Meles meles*) are recognized as major TB reservoir hosts with the potential to transmit infection to associated cattle herds.

TB vaccination of badgers has been proposed as a long-term control strategy for the disease in the United Kingdom (UK) and Republic of Ireland and experimental studies have demonstrated that vaccination with live attenuated bacillus Calmette-Guérin (BCG) vaccine is protective in badgers. However, the use of a live vaccine (BCG) at protective doses in badger is only licensed in the UK by the intramuscular route and its use in baits is controversial. In this sense inactivated vaccines are attractive for field delivery because they are expected to be more stable in baits, especially under high environmental temperatures, and safer in the field conditions as it is a vaccine based on the dead bacteria.

Sett and bait

Recent studies in Spain have begun to address these issues by demonstrating that oral vaccination with a heat-inactivated *Mycobacterium bovis* vaccine (HIMB) successfully protects captive wild boar and red deer against progressive disease.

Field studies have also demonstrated the efficacy of oral HIMB vaccination of piglets against TB in endemic free-ranging wild boar populations. If this was also true for badgers, it would address one of the major constraints of delivering vaccine in wild populations.

Two research Spanish projects have been funded to address this issue. In the first one both vaccines (BCG and HIMB) orally administered directly in tonsils conferred protection against experimental TB in badgers, as measured by a reduction of the severity and lesion volumes. The second ongoing project is evaluating the protection of HIMB orally administered using baits. Based on preliminary data, HIMB vaccination appears to be a promising TB oral vaccine candidate for badgers in endemic countries. ☐

Ana Balseiro
University of León-IGM (CSIC-ULE), Spain

Wildlife health surveillance in Italy

In Italy, the reference point for monitoring and surveillance of wild animal diseases is represented by the National Reference Center for Wild Animal Diseases (CeRMAS)

CeRMAS was officially established at the Aosta Division of Istituto Zooprofilattico Sperimentale of Piemonte, Liguria and Valle d'Aosta by the Ministry of Health Decree of the 4th October 1999 and is involved in diagnostic and research activities, in spreading scientific publications during national and international congresses, and in meeting organisations to increase collaboration among professionals.

The primary aim of the Center is the diagnosis of diseases concerning wildlife, in particular: notifiable diseases, emerging infectious diseases, and zoonoses transmittable to domestic animal and man. Laboratory diagnosis is performed using both traditional methods; i.e. serology, bacteriology, histology, and molecular methods. In particular, since 2010 there is a Real time PCR laboratory with the aim of carrying out direct diagnosis of infectious diseases. The main goal is to prepare operating procedures according to a quality system, to offer validated methods for diagnosis on wild animals from the whole country.

To date, the laboratory is involved in diagnosis of bacterial and parasitic pathogens relevant for public health (Salmonella, Yersinia, Echinococcus) and emerging viral pathogens such as Kobuvirus and Hepatitis E virus. Diagnostic and research activities are closely interconnected, as the development and the application of new diagnostic methods is an important step to deepen the knowledge on the ecology of wildlife pathogens, and this is a dominating part of the research performed at CeRMAS. Research projects also represent a way to establish effective collaborations with universities, other research institutions, associations (e.g. EWDA) and organizations (e.g. OIE).

Current research projects concern vector-borne disease, emerging enteric viruses, and food safety. Until now, research is approved and totally financed by the Health Ministry which recognizes wild animals as indicators of environment health and potential spreaders of disease. Moreover, in the common interest of the surveillance and protection of wildlife and biodiversity, CeRMAS collaborates with Gran Paradiso National Park since 1999.

The targets of the current collaboration are to verify, study, and analyse some pathologies that in various ways influence the biology of the Alpine Ibex. In the frame of the monitoring plan established by WP3 Interreg ALCOTRA LEMED-IBEX, serological, bacteriological, and molecular analyses were used to detect a number of infectious diseases.

CeRMAS is also interested in disease epidemiology to find animal reservoirs and spreading, and if the disease cycle includes man and domestic species. Future goals of CeRMAS are the improvement of viral pathology diagnostics and greater interaction with human medicine in a One Health perspective. □

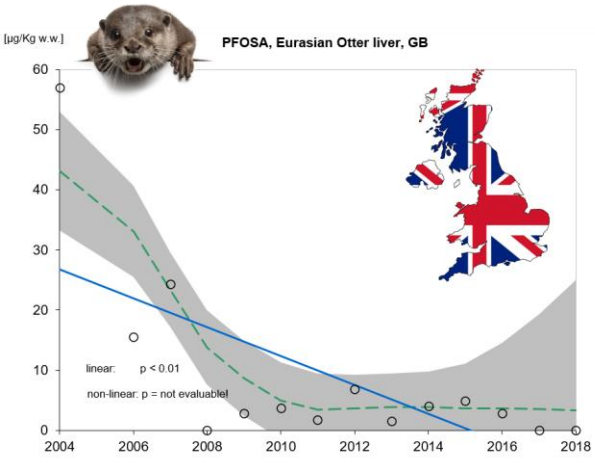
Riccardo Orusa
National Reference Center for Wild Animal Diseases, Italy

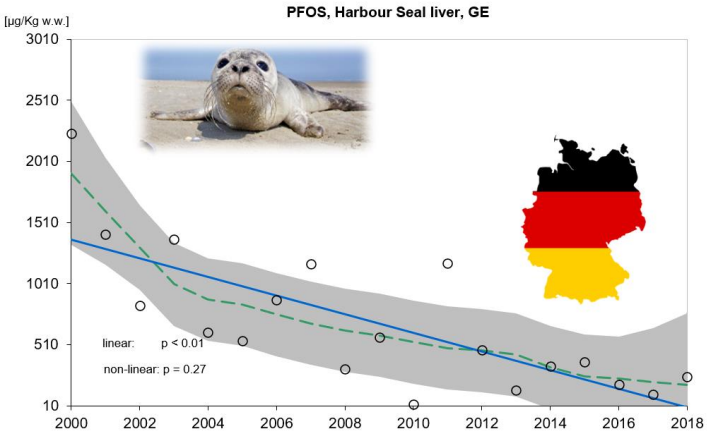
Life APEX

"Systematic chemical monitoring data from apex predators and prey"

The AIM of LIFE APEX is to improve systematic use of chemical monitoring data from apex predators and prey for protecting human health and the environment. LIFE Apex involves making better and more cost-effective use of chemical monitoring data from the large, valuable but under-used resources from environmental samples in Europe's Environmental Specimen Banks, Natural History Museums and other research collections. The project makes use of state-of-the-art analytics (e.g. wide-scope target, suspect and non-target screening) that allow for screening of several thousands of chemicals in each sample and prioritization of frequently occurring pollutants and their mixtures.

For more information, please check out our new project video (https://youtu.be/7y3zDawHDCk), our project webpage (www.lifeapex.eu) as well as our Twitter account (@LifeAPEX1) .





Among per- and polyfluoroalkyl substances (PFAS), perfluorooctancesulfonamide (PFOSA) shows a declining trend in livers of otters from the UK. Similar trends were observed for perfluorooctanesulfonate (PFOS) in harbour seals from Germany. Results are accessible through online tools and novel databases.

Digital sample freezing platform: Collects chromatograms and allows for retrospective screening of compounds in each sample. ☐

University of Athens

German Environment Agency

UK Centre for Ecology & Hydrology

University of Florence

Natalia Glowacka
Environmental Institute
Koš, Slovakia

Driving rabies awareness

World Rabies Day 2020, Vienna, Austria

While the COVID-19 pandemic has focused global attention on emerging infectious diseases, the fight against neglected diseases continues, often far away from the public eye. Rabies is one such neglected disease – neglected for the very reason that many developed nations have successfully controlled this lethal disease such that rabies is eliminated from the minds of those with the financial means to support global health programmes. World Rabies Day (WRD), held annually on 28th September, was created with the goal of raising awareness of, and uniting against, this neglected disease. As with most community events in 2020, many WRD initiatives had to be altered, cancelled or postponed due to lockdown measures. Despite these trying circumstances, rabies prevention activists around the globe managed to spread the message of rabies prevention, and in many cases, safely carry out rabies vaccination campaigns.

EWDA member, Dr Anna Haw, was hoping to raise funds for a rabies prevention initiative in southern Zimbabwe by hosting a dog walk in Vienna, Austria on World Rabies Day. Due to COVID-19 restrictions, the event morphed into an online Instagram competition, hosted in collaboration with the University of Veterinary Medicine, Vienna (Vetmeduni Vienna). Thanks to successful vaccination programmes (in both dogs and foxes), Austria, like many European countries, has been free from rabies since 2008. Dr Haw, a South African who has worked in communities where rabies is still a huge social, economic and health burden, was determined to remind Europeans that a global effort is needed to end rabies for all.

The University of Veterinary Medicine, Vienna, jumped on board with supporting an Instagram competition, and hosting Vienna's first World Rabies Day event. In collaboration with the Instagramers Vienna (@igersvienna) a kick-off Instawalk event at Lainzer Tiergarten, Vienna, organised by Karin Svadlenak-Gomez, was used to promote the WRD photo competition and bring people together in a safe, socially-distanced manner to unite against rabies. Members of Instagramers Vienna took the rabies mission to heart, and many of the exquisite photos found on Instagram with #WRDvetmeduni2020 are thanks to them. This Instawalk was followed by a month-long Instagram competition with the WRD 2020 theme, 'End Rabies: Collaborate, Vaccinate'. The competition, expertly promoted by the Vetmeduni Vienna PR team, culminated on World Rabies Day. With over 100 submissions from around the world, the diverse panel of expert judges had their time cut out in selecting the top pics.

Competition was tough, but in the end, the top three places went to Mayra Wozniak (the picture heading this article), Georg Herder and Sandra Purwin. Their pictures are currently displayed at the University of Veterinary Medicine, Vienna. Prizes were awarded to the top 10 places, thanks to generous donations from Vetmeduni Vienna & the Research Institute for Wildlife Conservation and Ecology, FALTER, Revolution Fitness, René Anour, and Peter Steiger. Dr Haw is grateful that this WRD Instagram competition helped raise awareness about rabies prevention, how far we have come, and what is still needed to achieve the global goal of **ZeroBy30** – zero deaths from rabies by 2030. Importantly, Dr Haw is now aiming to continue rabies prevention work in southern Zimbabwe, where economic barriers are hindering much-needed control measures. It is hoped that the awareness raised through this Instagram competition will compel those with means to support initiatives, such as rabies vaccination campaigns, to help end the suffering from neglected diseases. Apart from those already mentioned above, thanks goes to Alexandra Eder, Annika Posautz and Stephanie Scholz for making Vienna's 2020 WRD virtual event a success. ☐

Anna Haw
University of Veterinary Medicine, Austria

Additional author information for Newsletter contributions

Assessing the health of sand lizards before reintroduction

Contributors : Tammy Shadbolt, Helen Donald

Organisation: Disease Risk Analysis and Health Surveillance, Zoological Society of London, United Kingdom

Website: https://www.zsl.org/science/wildlife-health/disease-risk-analysis-and-health-surveillance

Surveillance of wildlife health in Italy

Contributors : Riccardo Orusa, Serena Robetto, Emanuele Carella e Cristina Guidetti

Organisation: National Reference Center for Wild Animal Diseases (CeRMAS), Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Italy

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First detection of HPAI in Norway

Contributors : Knut Madslien, Torfinn Moldal, Britt Gjerset, Sveinn Gudmundsson, Grim Rømo Organisation: Norwegian Veterinary Institute, Norway

Latest detection of CWD in wild reindeer from Norway

Contributors : Jørn Våge, Knut Madslien, Malin R. Reiten, Turid Vikøren

Organisation: Norwegian Veterinary Institute, Norway

Using aptamers for ranavirus detection (RANAPTA)

Contributors: Hélène Verheije, Andrea Laconi, Bernardo Saucedo, Alinda Berends, Jolianne Rijks, Andrea Gröne

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Heat-inactivated M. bovis vaccine in badgers

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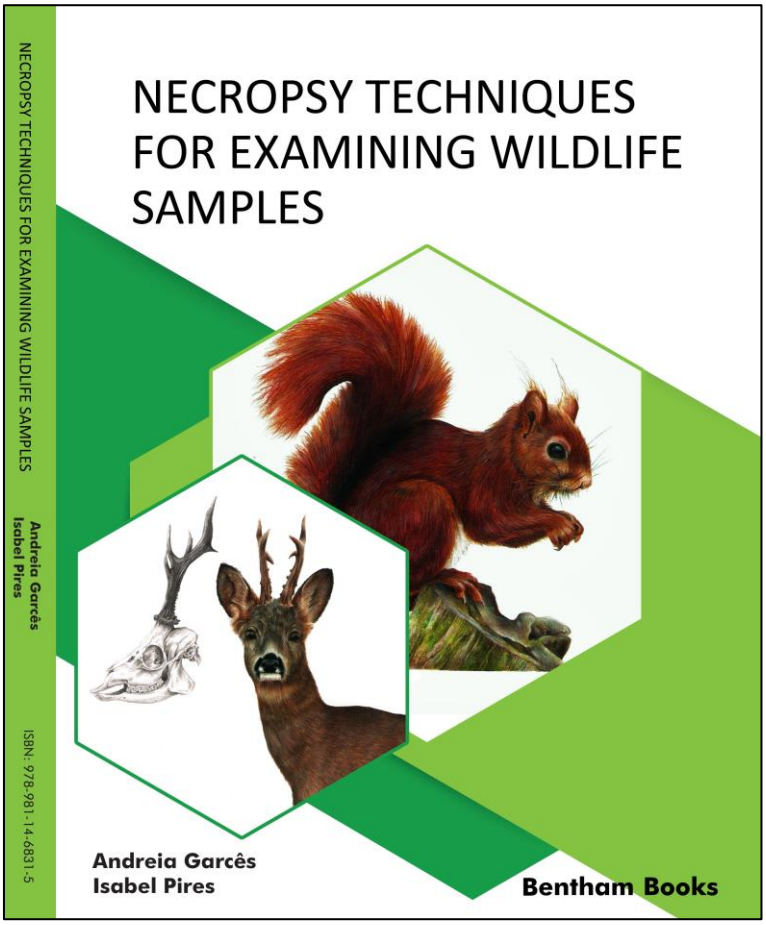
Acknowledgements: Thanks to all colleagues from University of León, SERIDA, NEIKER, VISAVET, ISCIII, SaBio-IREC and Government of the Principality of Asturias from Spain, DEFRA, APHA and PHE from England and ANSES and INRAE from France for their collaboration in those challenging projects.

BOOK PROMOTION:

Necropsy techniques for examining wildlife samples

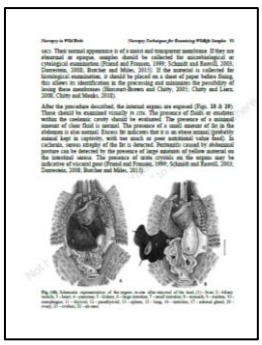
"Post-mortem examination is an essential tool for determining the cause and circumstances of death. Even in the era of molecular pathology, necropsy remains the most valuable tool for understanding the whole organism and the disease."

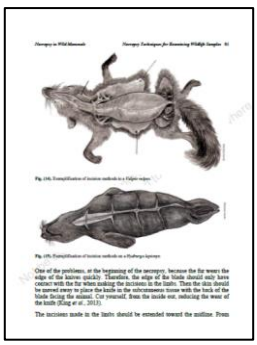


In wildlife, the knowledge obtained from necropsy is much more comprehensive not only in pathology but also in several areas of biology. The correct interpretation of the phenomena surrounding the death can contribute to the identification of new diseases, re-emerging diseases, to the preservation of wildlife by identifying risk factors and threats to species survival. This should always be applied in a global health context.

One of the critical points of wildlife necropsy is the knowledge of anatomy, physiology and pathology of the different classes, and ultimately of a particular species. A necropsy of a different species is always challenging. More than an anatomoclinic necropsy, with the objective of reach a diagnosis, the necropsy in wildlife is a unique moment to understand not only the death but also the life of the dead animal and its species and the health of its ecosystems.

In this publication, the authors aim to provide a practical, easily accessible guide of necropsy techniques in wildlife, addressing briefly some of their peculiar characteristics. It is mainly intended for students and professionals of biology and veterinary medicine areas. Being easy to consult, it also intends to be an auxiliary to professionals who work in natural parks, wildlife rehabilitation centers, biological or zoological parks, alerting the importance of necropsy of wildlife. You will appreciate the beautiful artistic scientific drawings and images which bridge the distance between the unknown and the pleasure of understanding *post-mortem* examination techniques for unusual species.





Book and Ebook (English) available on
https://www.eurekaselect.com/node/185115/necropsy-techniques-for-examining-wildlife-samples
Book and Ebook (Portuguese) available on
https://www.artelogy.com/pt/store/andreia-garc%C3%AAs-e-isabel-pires-manual-de-t%C3%A9cnicas-de-necr%C3%B3psia-em-animais-selvagens

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