

THE **Q** UARTERLY

1/4:2023

ON TOP OF THE WORLD

Wildlife work in Nepal Q2

FORGING THE FUTURE

WDA's mentor program Q10

SUSTAINABLE SCIENCE

Transforming wildlife
research Q16



PEAK PRACTICE

BY LYNDELL WHYTE

Nepal's image has been largely shaped, not by its geographic reality, but by those seeking to conquer its mountain peaks. It is a country seemingly as rarified as its air, but in truth, when it comes to wildlife conservation and health, Nepal is facing the same challenges as every other nation on earth.



In January, this year Dr Parbat Jung Thapa trekked more than 12 hours through Nepal's mountainous terrain and landslides to treat an injured Himalayan ghoral, a goat-like ruminant listed as Near Threatened on the IUCN Red List. The trip was worth it and the animal recovered, and it is merely a day in the life of a wildlife vet in this place of mists and marvels.

When not scaling the heights Dr Parbat is a veterinarian at the National Trust for Nature Conservation (NTNC) Central Zoo who began his career as many vets in Nepal do, working with domestic animals. He sterilised approximately 3000 dogs in 18 months, but says numbers are still too high which poses significant risks to wildlife.

"Dogs and common leopards and canine distemper [are] directly linked, as well as other diseases," he said.

"The job I did first was in [the] Kavre district of Nepal and still there are many, many common leopards that come around with neurological disorders from that district and might be, we haven't tested yet with canine distemper, but I think there are some signs we should consider, and we should be aware that something is going to happen in the future if we don't control the population of dogs, and if we don't control that [it] will directly impact on the wildlife as well."

But not all of the animals exhibiting neurological signs are suffering from canine distemper, adding to the challenges facing wildlife vets. Leopards also feature consistently in another universal issue - wildlife/human conflicts.

"Due to ... unmanaged urbanisation as well as scarcity of food in the wild, common leopards start to roam nearby villages and ... eat dogs," he said.

"People see them and they hit the animal hard in the head and that may be the cause of neurological disorders."

Dr Parbat assists with between 10 and 15 leopard rescues a year in the Kathmandu Valley region, part of around 300 wildlife interventions he and the Central Zoo team are involved in each year. These include sick, injured and orphaned animals and those confiscated from the illegal wildlife trade. This last group the zoo cares for until the legal process decides the animals' fate, which can take seven or eight years, adding to the strain.



ABOVE: Dr Parbat is involved in between 10 and 15 leopard rescues a year in and around the Kathmandu Valley. Animals can display neurological symptoms due to the presence of canine distemper, but they can also be the result of head injuries after encounters with humans.

BELOW: As with many vets in Nepal, Dr Parbat worked with domestic animals at the beginning of his career including a sterilisation program to help reduce stray dog numbers and curb the risks they pose to wildlife. He sterilised approximately 3000 dogs in 18 months, but says the numbers are still far too high.





Wildlife vets in Nepal face endless challenges in their quest to treat their patients.

The most frequent rescue subjects are common leopards, black kites, barn owls, rhesus macaques, the Himalayan griffon, wild boar, the ghoral, the large Indian civet, the leopard cat, serows (goat-like mammals), danfes (the National Bird of Nepal), turtles, tortoises, Himalayan black bears and more.

In addition to the wildlife/human conflict exacerbated by habitat loss, parasitic infestations and bacterial diseases like tuberculosis, *E.coli* and salmonellosis and viral diseases such as avian influenza, foot and mouth disease, canine distemper and Newcastle disease have all been seen in wildlife.

However, diagnosis can be problematic.

"We don't have [many] resources in Nepal ... we don't get proper treatment in Nepal with humans. So with animals it is ... difficult but we are trying our best. With injuries we have no problems, but with diagnosis [of] serious viral and bacterial disease it is very, very difficult. We go with the signs and symptoms they have and we give them symptomatic treatment. After we are sure it's the disease then we start with the medical procedures.

"We don't have much equipment ... we have a small

pathology lab to do blood tests, faecal sample tests, a biochemistry analyser and a year ago we purchased an x-ray machine."

Add to this the small number of wildlife vets in the country.

"It's a very tough job to be a veterinarian with wildlife. There are not many wildlife vets in Nepal ... all the vets who come to the zoo are here for two or three years and they go abroad," he explained.

"Right now students are also interested in wildlife but two or three years ago no one was interested in wildlife because [firstly] working on wildlife there is no time ... and another thing is money; we don't get paid as much as other vets."

He says there is also a general lack of awareness among vets about wild animals and a lack of skilled personnel working on wildlife.

But things are changing.

As well as the growing interest in wildlife from an educational perspective, vet numbers are also on the rise. Dr Parbat was Nepal's 939th vet in 2016, but that now stands at around 1600. Dr Parbat and the Central Zoo

team, as part of the NTNC, are also working with other government agencies.

“Everywhere around Kathmandu Valley and around Nepal we provide the medicines for the NTNC dart procedures, and there are departments initiating rescue work ... right now the Division of Forest Kathmandu is also well equipped with dart equipment as well as manpower. We train the personnel who deal with dart equipment as well as the personnel who work with wildlife. We organise different wildlife handling and restraint technique training. They should also know the procedures when handling wildlife.”



Dr Pam Whiteley met Dr Parbat in India in 2020 and encouraged him to join the WDA.

A fortuitous meeting in 2020 helped Dr Parbat expand his own knowledge and skills. Attending the Intervention in Wildlife Animal Health field course in India, a joint initiative of the Zoological Society of London, The Wildlife Institute of India, The Royal Veterinary College, The University of Edinburgh and The University of Melbourne, gave him an opportunity to gain valuable expertise in working with wild species. He also met Dr Pam Whiteley, a WDA stalwart and tireless advocate for wildlife health.

“She gave me exposure [to] many platforms from which I can gain my knowledge and skills in the field of wildlife.”

Pam also encouraged Dr Parbat to join the WDA, which he did.

“It is very important for me to gain the current scenarios of diseases of wildlife, to extend my network among wildlife professionals and to easily access different

journals related to wild animal diseases.”

Then there is the growing awareness of One Health.

“Right now it is growing in every aspect ... at university level they teach about One Health. At the Department of Health Services they are very concerned ... mostly I see the Department of Veterinary Medicine is much more concerned than other departments because they are aware of the One Health concept. They are doing different programmes and the Department of Health Services is also doing different programmes for the enhancement of the vet profession as well as the medical profession. We have many, many experts, veterinary experts, working on One Health from different agencies. One of my teachers, Dr Surendra Karki, is working with [the] FAO and doing a great job implementing the One Health concept, organising different programmes to make aware every vet, every health worker and every environmental worker.”

Five thousand kilometres away Nepalese ecologist Rajan Paudel is completing his doctorate with WDA's Asia-Pacific chair Dr Toshio Tsubota at Hokkaido University in Japan with a focus on sloth bears.

He began his career working on a project at the Ministry of Forests and Environment before moving to a not-for-profit and eventually landing at the NTNC - a journey that was far from easy.

“I was born in a village in Nepal called Arghakhanchi, 16 hours' drive from the capital city Kathmandu. We had to walk for 1.5 hours through the forest every day to reach the only school. So, my father decided to put me in a boarding school nearby in Butwal where I completed my high school studies,” Rajan explains.

The situation is better now, but Rajan believes a persistent lack of quality education will hamper the country's conservation efforts.

“I think that is the base of what will come up for the policy implications in all fields. Education is the basis for all the science we are doing [and] quality education starts with primary level. Still in many rural parts [regarding] conservation- and veterinary-related programs they don't have much access to such ... information.”

Even at the highest levels of education wildlife health doesn't have the focus it deserves.

"Most of the wildlife-related works are done by ecologists and the education system we have promotes more forestry-related management and ecological things ... issues of health and wildlife disease are not much currently involved in the curriculum. When I was going through my bachelor's degree and my master's degree I didn't care much about wildlife disease as we were not taught to think in that way, but it's a crucial aspect. We need to start training more and more ecologists on One Health and wildlife disease, trying to help them collaborate with more veterinarians or people working on this field.

"During the internship (at the University of Melbourne, again under the guidance of WDA's Dr Pam Whiteley) and PhD course, I learned about the risk and impacts of disease on wildlife survival and its potential to impact ecosystem and human health.

"I realised that the achievements made in biodiversity conservation could turn into futile attempts if adequate attention is not provided to disease epidemiology, surveillance and control."

This knowledge was enhanced by the Hokkaido University's [WISE Program](#) which introduces students to the principles and practicalities of One Health.

But with most Nepalese vets focused on livestock and domestic animals and ecologists primarily concentrating on wildlife population and forest management, wildlife health and disease is "in shadow".

"Scientists and academics within this community, we communicate a lot and try to bring people together ... we all gather within the conference, all the same faces, all the people from the same fields but what is important is to try to bring in more people from diverse fields, our policy makers and business persons and all the faces within our society; if we could bring them I think then one day we can make this more a reality," he said.

It's a somewhat ironic circumstance given the close connection Nepalese people have with wildlife, culturally and physically.



"Wildlife has always been very close to people. For an outsider it is very difficult to imagine that kind of interface where you live with wildlife in your backyard."

With its unique geographic, physiographic and climatic features, Nepal is a biodiversity hotspot.

Divided into three distinct areas - the Himalayas, the hills and terai (plains), it is home to unique and diverse ecosystems and fauna including 212 mammal, 889 bird, 143 reptile, 57 amphibian, 252 freshwater fish and 692 butterfly species. Royal Bengal tigers, the greater one-horned rhinos, Asian elephants and sloth bears are found in Nepal's southern lowlands while Asiatic black bears, common leopards and Asiatic wild dogs are mostly seen in the middle mountains. However, camera traps have recorded tigers at an elevation of more than 10,000 feet, habitat offering potential micro-refuges as climate changes and tiger populations increase¹. The enigmatic snow leopard, wolves, lynxes and brown bears favour the high Himalayas.

"Conservation of these species contributes to protecting a vast area of natural land that provides essential ecosystem services. Many species have strong cultural significance to local communities and contribute to the economy through activities like ecotourism," Rajan said.



Unmanaged urbanisation is contributing to wildlife/human conflicts across Nepal.
Photo by Ben Pauer on Unsplash

Nepal has also garnered international attention recently thanks to its success with tigers; it's the only country to almost triple its population to an impressive 355. Rhinos too have enjoyed a revival with animals numbering 752.

"[Nepal] is very significant in terms of biodiversity in global context but ... it's still not mainstreaming within the national agenda because the government has a lot of different priorities."

One of those priorities is the construction of infrastructure which is contributing to habitat loss and wildlife/human conflict.

"Population is expanding ... rhinos and tigers are in the area where a lot of population is also growing. More now I think it's the need for infrastructure construction that is the main threat for habitat degradation because we need roads and ... hydro power lines, and if you want to develop the country a lot of industries and most of the government focus on taking the forest areas and building, making it difficult for wildlife managers to ensure the long-term viability of wildlife.

And while Rajan says wildlife-friendly infrastructure is on the radar, it's a relatively new concept and there is a lot of room for improvement. It also means govern-

ment-protected areas and community conserved forests like Chitwan National Park and its buffer zones are vital havens for many species threatened with extinction.

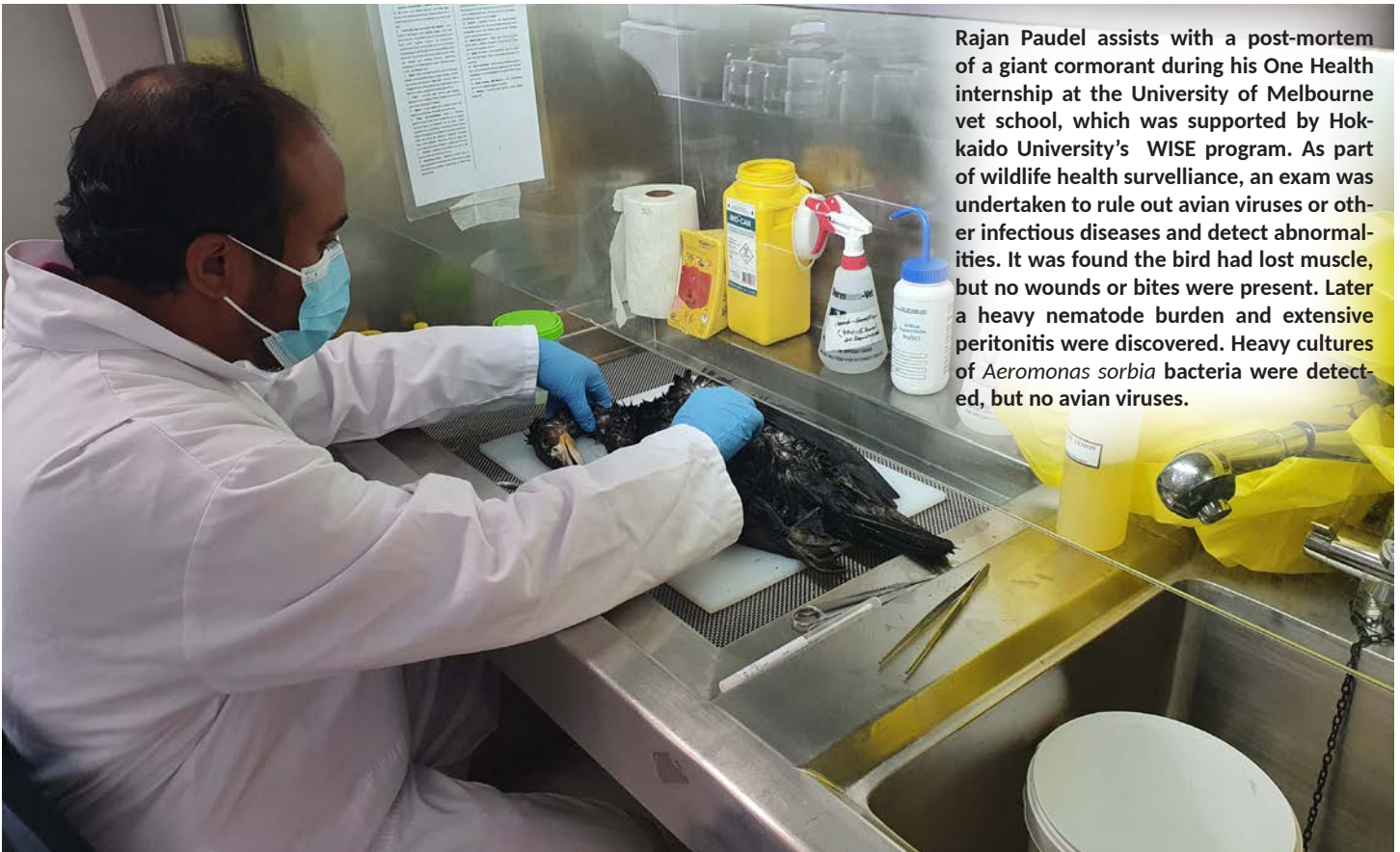
Adding the well-documented environmental and anthropogenic threats to wildlife, Rajan also cites low genetic diversity as another challenge as habitats are fragmented and population numbers decline.

"This can contribute to a reduction in the genetic diversity of many wildlife, as seen in sloth bears. Reduction in genetic diversity increases the vulnerability of species to act as a host for different pathogens and diseases. Understanding this link between genetic diversity, disease susceptibility and resistance is a pertinent issue that needs further exploration."

This makes the work Rajan has done on the shy and gentle sloth bear, a species about which little is known, so critical.

"My goal is to prepare strong scientific knowledge of sloth bears, ensure their long-term survival, and foster human-bear coexistence."

He also employed non-invasive monitoring techniques using faeces and hair which could improve disease



Rajan Paudel assists with a post-mortem of a giant cormorant during his One Health internship at the University of Melbourne vet school, which was supported by Hokkaido University's WISE program. As part of wildlife health surveillance, an exam was undertaken to rule out avian viruses or other infectious diseases and detect abnormalities. It was found the bird had lost muscle, but no wounds or bites were present. Later a heavy nematode burden and extensive peritonitis were discovered. Heavy cultures of *Aeromonas sorbia* bacteria were detected, but no avian viruses.

surveillance and research in the country given the many limitations exerted by remoteness and terrain.

Then there is the illegal wildlife trade, facilitated by what Rajan describes as a porous border with India and China, insufficient quarantine measures and a lack of national surveillance. The trade includes livestock, birds and small mammals like primates and pangolins, reptiles and amphibians, body parts and skins from tigers and leopards and bear gall bladders.

“When you go out in the field people are telling you numbers of the bears they have seen being poached or being traded; that information doesn’t come up the national level.”

Ultimately, connecting wildlife and high-value tourism could be one solution to a pervasive lack of funding.

“Tourism is very important for Nepal in terms of the economy and also very important in terms of sustaining our conservation efforts, mostly for the wildlife because if we can’t link the wildlife with the economy I think that’s not going to be very sustainable for the long term.

“But currently the type of tourism we are focusing on is not quality tourism. If we could bring people into this wilderness experience, put more value on this, raise the level of different experiences, have all the mechanisms in place, we can minimise the impacts yet provide [a richer] experience of nature and wildlife, so tourists could have that sense of conservation and education.”

Nepal is walking the wildlife tightrope, trying to strike that delicate balance between what’s good for nature and what’s good for the nation, although they are utterly inseparable. Fortunately, these two passionate voices for wildlife, along with countless others, are embracing the challenges and finding solutions. They offer hope of a global future where wildlife is treasured, respected and celebrated.

REFERENCE

1. Kanchan Thapa, Samundra Ambuhang Subba, Gokarna Jung Thapa, Karun Dewan, Bishnu Prasad Acharya, Dabal Bohara, Suman Subedi, Madhuri Thapa Karki, Bharat Gotame, Gautam Paudel, Shiv Raj Bhatta, Shant Raj Jnawali, Sabita Malla. *Wildlife in climate refugia: Mammalian diversity, occupancy, and tiger distribution in the Western Himalayas, Nepal* <https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.9600>

Debris sealing mammals' fate

Researchers from Sealcentre Pieterburen in collaboration with ASeal, Ecomare, and the Max Planck Institute for Psycholinguistics, have found that the number of seals affected by marine debris has quadrupled in eleven years.



Last August, a team of researchers from the three seal rehabilitation centres in the Netherlands, in combination with researchers from the Max Planck Institute, published an article regarding entanglements and ingestion of marine debris in Dutch seals across an eleven-year period.

The researchers looked at several details including: the species, age and sex of the affected animals; the type of entanglement and the material causing it; and the location where the animal was found.

The main findings of this research are:

- The number of entanglements has quadrupled during the study period.
- Grey seals (*Halichoerus grypus*) are more affected than harbour seals (*Phoca vitulina*).
- Animals younger than 3 years of age are the most affected ones.
- The majority of the entanglements were located around the neck of the animals.
- Harbour seals had a higher incidence of ingested debris when compared to grey seals.

- Almost 90% of the material originated from boats or the fishing industry.

The researchers state in the article that although the explanations for such results might be difficult to find, several hypotheses and facts need to be taken into account:

- The amount of (plastic) debris in the Wadden Sea has increased in the last decades.
- Grey seals are more curious and playful than harbour seals.
- Young animals are more curious than adults and tend to swim further away to avoid competition.
- Differences in foraging techniques between these two species could explain why harbour seals tend to ingest more debris than grey seals.

These facts could bring seals in close proximity with human activities and discarded debris, increasing their chances of becoming entangled.

Furthermore, an increase in public awareness and in the facility to report entanglements could explain an increase in the number of reported animals.

The researchers conclude that more research is needed to assess further the effects of marine debris in the ecosystem and that a decrease of marine debris is crucial to the future survival of whole species.

REFERENCE

Salazar-Casals A, et al.
Increased incidence of entanglements and ingested marine debris in Dutch seals from 2010 to 2020. *Oceans*. 2022; 3(3):389-400.
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SCAN ME

A helping hand

WDA's mentoring programme begins

The Mentoring Program is a joint initiative between the Wildlife Disease Association (WDA), the European Association of Zoo and Wildlife Veterinarians (EAZWV) and the European Association of Avian Veterinarians (EAAV) that aims to promote the sharing of knowledge and skills, helping to maintain strong connections between the professionals of our organisations.

Wild animal health is a broad scientific field that can be competitive and hard to navigate, making it difficult for students and recent graduates to find opportunities or identify the right steps to advance in their careers. The objective of this program is to connect students and recent graduates with professionals of the free-ranging and captive wildlife field so they can receive guidance on their early careers.

As well as providing members of the three associations with mentorship from already-established professionals, the project also aims to motivate these new professionals to take a more active role in their fields and their associations, creating positive feedback that encourages communication and scientific exchange.

To achieve these objectives, the mentoring program recruited the help of a professional coaching and mentoring company, Transcape.

The first edition of the 2022/23 is starting with a trial cohort of up to 30 pairs across the three organisations. Unlike with previous mentoring programs, in this new edition the mentors receive training and all participants benefit from support in the form of guidelines and other useful documents, as well as the possibility to contact the organisers through the whole year of the mentorship. Feedback will be gathered at various stages during the program.

Following a hopefully successful pilot, the aim is to

increase the number of participants to benefit as many members as possible while maintaining an appropriate level of support for everybody involved.

Applications were open in Autumn 2022 with 79 mentee and 31 mentor applications submitted for the program, resulting in 30 mentees and 27 mentors selected (three mentors agreed to work with two mentees each). Sadly, as the preparation for the program progressed, a few participants had to drop out from the project, reducing the number of final pairs to 27.

Participants come from 25 different countries and all six inhabited continents. The WDA has a wonderful representation on the program, with 20 mentors and 19 mentees being members of the association.

Mentors were able to attend several training sessions, in which Transcape provided them with information and resources to help them in their mentorship roles. Likewise, mentors were able to discuss with the organisers any questions or doubts they had about the program.

Currently, the program is almost ready to begin. The final participants are confirming their satisfaction with their paired mentor/mentee and we hope to give to give an official start to the programme in the coming days.





Barcelona beckons

The first European post-pandemic event solely targeted at students, the [EWDA Student Chapter Workshop](#), will be held April 1 to 4 at the Autonomous University of Barcelona. All interested students are warmly invited to the event, featuring lectures, discussions, and practical exercises all about the topic of multidisciplinary cooperation in wildlife health and how to become part of that.

Attendees may join as either “passive participants” for April 1 and 2 and enjoy talks by international wildlife experts as well as a lot of time to network and meet like-minded students from all over the continent, or as “active participants”, staying until April 4, and investigating a wildlife disease outbreak scenario, working closely with one of five mentors.

A diverse selection of speakers will guide students through wildlife health management in this era of One Health. On April 1, attendees will hear all about the initial response to a wildlife disease outbreak, while April 2 will give students a glimpse into the “bigger picture”.

Have a look at who will be joining us in April (mentors for April 3 and 4 marked in blue)!

On April 3 and 4, 20 students will be able to investigate a disease outbreak scenario in groups of 3-4 people. Each group will investigate their own case, which will involve fieldwork to locate the outbreak, performing a post-mortem investigation, and finally, determining the cause of the outbreak. However, wildlife health involves much more than just pinpointing the pathogen responsible for mass-mortalities. Are we always dealing with a pathogen? What does this die-off mean for the ecosystem? And what happens if a member of the public accidentally stumbles across the scene?

All of these may be challenges to overcome, designed to give students an idea of the complexity of wildlife health management, and how multidisciplinary cooperation is becoming ever-more important – we simply cannot do this alone.

[Registration](#) is now open with [plenty of spaces](#) available to join the workshop on April 1 and 2.

So get ready for this [multinational event](#) - We look forward to welcoming you in Barcelona this spring!

¡Hasta luego! See you soon!

The European Wildlife Disease Association (EWDA) Student Chapter.
Anna, Loic, Irene, Garu and Marco

Johan Espunyes	Universitat Autònoma de Barcelona		First Response	A p r i l 1 s t
Karin Lemberger	Vet Diagnostics		PM investigations	
Karoli Erdelyi	MTA Centre for Agricultural Research		Regional collaboration	
Becki Lawson	Zoological Society of London		Monitoring wildlife health	
Katharina Seilern-Moy	Zoological Society of London		Citizen Science	
Mariano Domingo	Universitat Autònoma de Barcelona		“One Health”: Really all it’s made out to be?	A p r i l 2 n d
Thijs Kuiken	Erasmus MC		International Collaboration	
Ruth Cromie	Wildfowl & Wetlands Trust		Policy	
Vicky Tzatzaki	Ministry of Environment and Energy		Environmental Law	
Amandine Gautier & Sebastien Gardon	VetagroSup, ENSV		Social Science and Politics	

Greetings from Kinglake ...

Chloe Steventon and Sarah Alexander

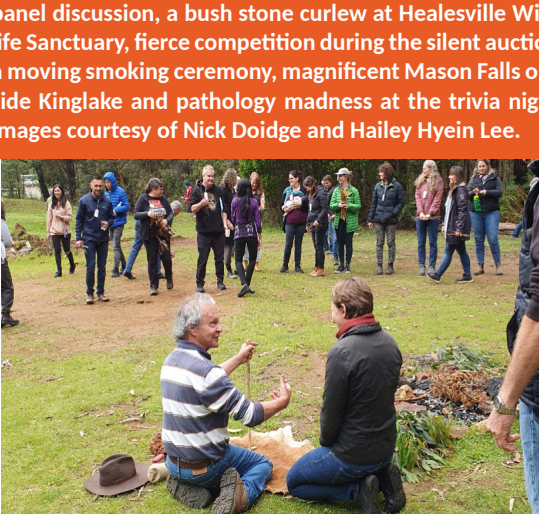


The Australasian section saw out the end of 2022 with our first face-to-face conference post-pandemic. We've held smaller regional meet ups within states throughout Australia, but it was really incredible to see (nearly) everyone in person again.

Sixty-five people submitted papers and there were 103 registrants.

One of the highlights was Peri acknowledging Pam Whiteley for being awarded the Ed Addison Distinguished Service Award and some great talks around the general theme of the climate crisis.

A team of people worked hard within the organising committee to successfully make our conference carbon neutral and we've learnt some techniques we'll continue with going forward. We calculated emissions using the BP Events carbon calculator for flights and catering, a different online calculator for vehicle transport, and electricity usage data provided by Kinglake. Ultimately, the conference generated a total of 44.95 tonnes of CO₂ (see graph Q13 for breakdown).

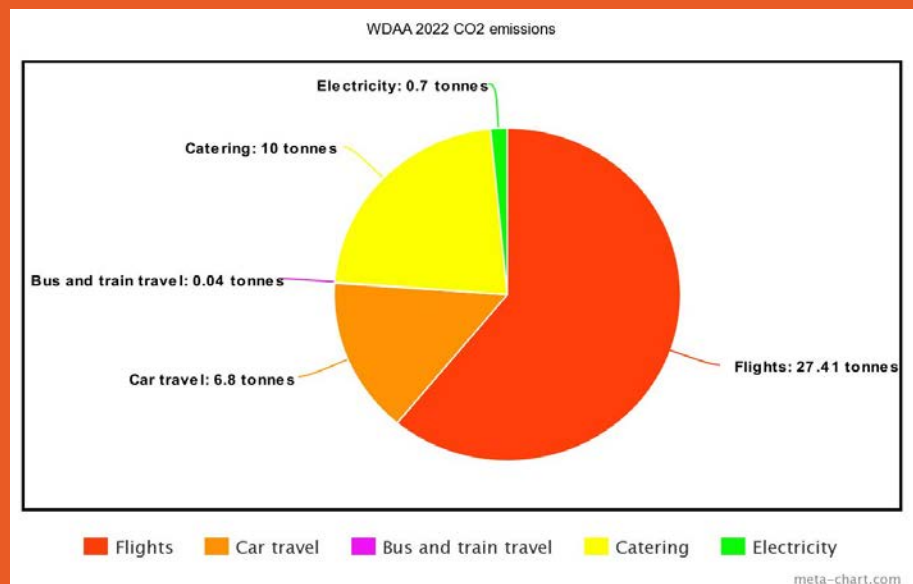


WDAA memories: (clockwise from top) The diversity panel discussion, a bush stone curlew at Healesville Wildlife Sanctuary, fierce competition during the silent auction, a moving smoking ceremony, magnificent Mason Falls outside Kinglake and pathology madness at the trivia night. Images courtesy of Nick Doidge and Hailey Hyein Lee.

Our colleagues at Doctors for the Environment conducted a review recently of Australian-based carbon offset programs and found them to be inadequate for many reasons; they do not adhere to the Kyoto Protocols and Paris Agreement, and are often paying inappropriately small amounts of money for vegetation to not be cleared rather than actually removing carbon from the atmosphere.

They recommended the use of Gold Standard Offsets, which have a variety of international offset projects with differing prices per tonne based on their social, environmental and financial costs and impacts (<https://www.goldstandard.org/>).

As expected the majority of our emissions were from transport. Interestingly, if the conference had been 100% vegetarian we would have saved an additional 6.4t of CO₂.



We have chosen a portfolio of projects that completely offsets our emissions and uses the entirety of the voluntary donations raised. It is worth noting that projects with an environmental focus have a higher cost per tonne, so any increase in funds generated at future conferences would allow us to purchase offsets from programs that more closely align with WDAA's mission.

V CONFERENCIA BIENAL DE LA SECCIÓN LATINOAMERICANA



Valdivia, 8-11 de noviembre 2022

In November 2022, the V Biennial Conference of the Latin American Section was held in Valdivia, Chile. The plan of organising this event in South America is to continue disseminating the work performed in Latin America and promote the subscription of members from the Southern region.

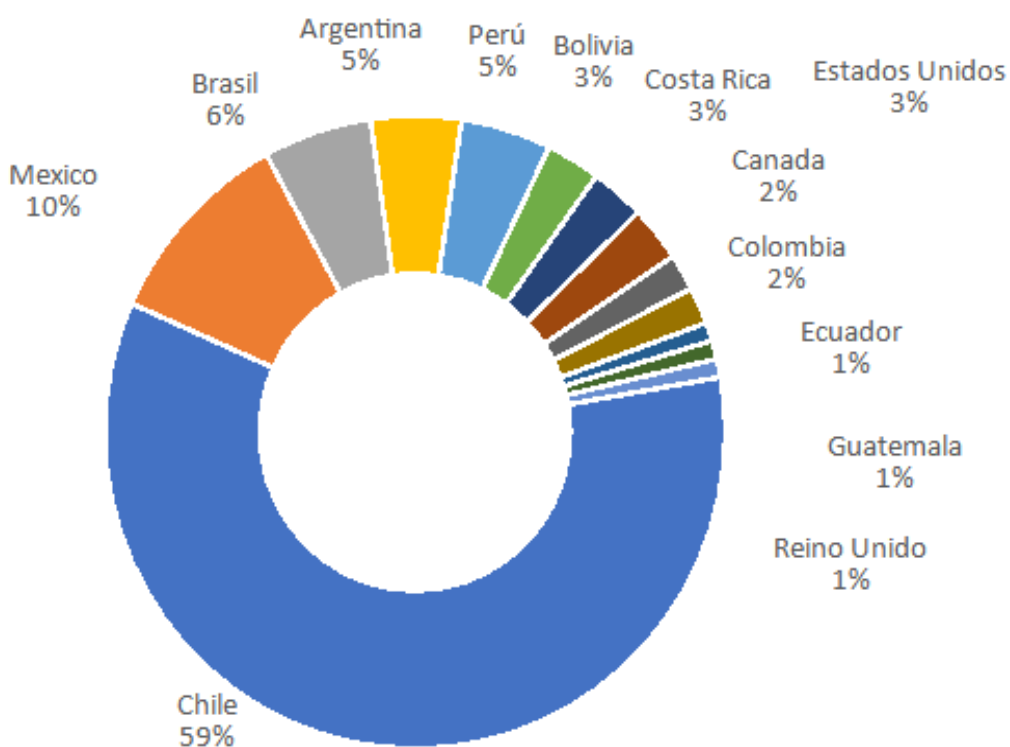
Our goal for the V Biennial Conference 2022 was to create a platform for participants to disseminate the work carried out in Latin America on issues related to wildlife health, highlighting the work accomplished in the conservation of local wildlife through multi- and interdisciplinary work. In addition, we created and promoted networking among experts, young professionals and Latin American students pursuing undergraduate and postgraduate programs worldwide.

The V Biennial Conference 2022 identified the desire to work in an integrated manner as sister countries with common goals, which leads us to the following motto: Opening bridges for wildlife conservation in Latin America. The conference topics were: Infectious and Non-Infectious Diseases in Wildlife, Disease Ecology, Ecotoxicology, Wildlife Diseases, Conservation Medicine, Ecosystem Health and One Health.

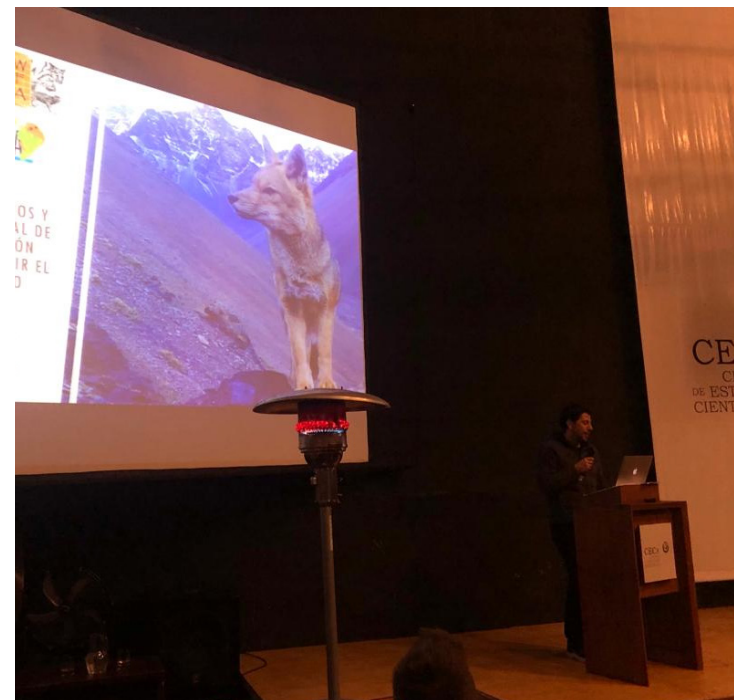
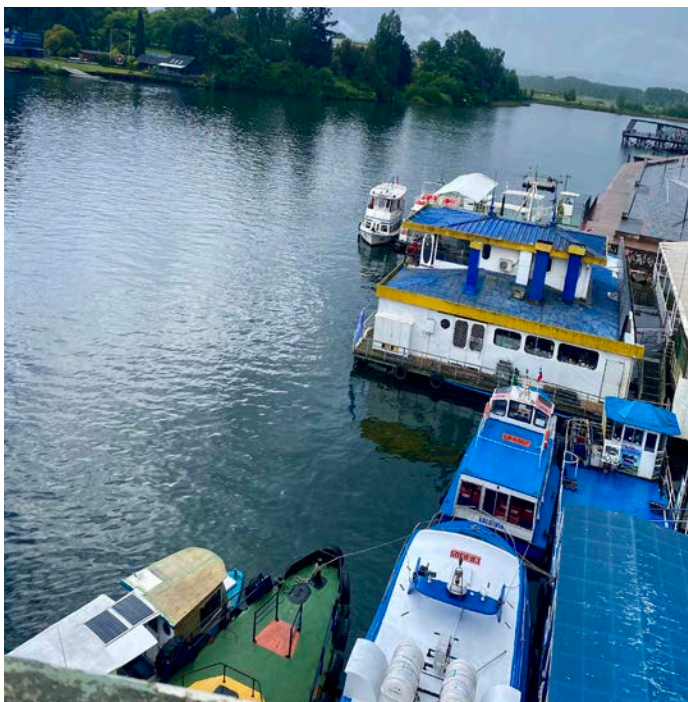
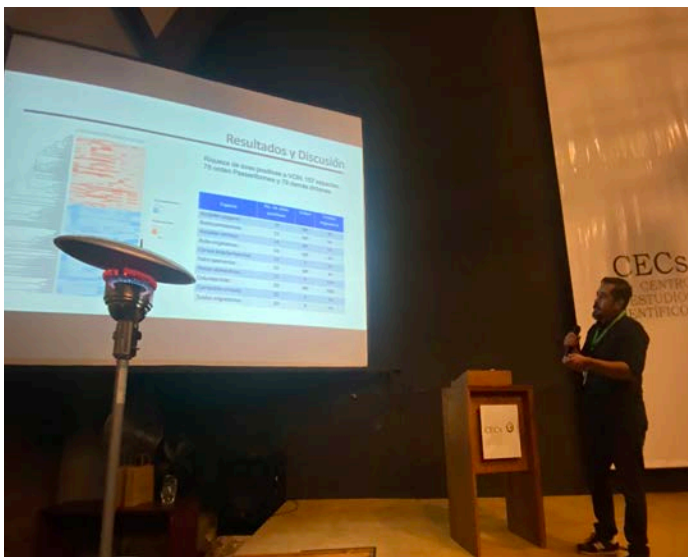
The organising committee that managed and coordinated the conference was led by Dr Gerardo Acosta in collaboration with Dr Constanza Napolitano (president of Scientific Committee), Dr Cristóbal Briceño, Dr Galaxia Cortés, Dr André Rubio, Dr Claudio Soto and Dr Claudio Verdugo.

HIGH POINTS

- The number of participating countries remained since our 2019 Conference in Costa Rica despite the current pandemic, being one of the first massive in-person events after COVID restrictions. The initial expectation of 100 participants was surpassed with 107 attendees, 39 oral presentations and 70 poster presentations from: Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, United States, Guatemala, Mexico, Perú and the United Kingdom.



- Dr. Gerardo Acosta on behalf of the conference committee



A monarch butterfly is shown emerging from its white, segmented chrysalis, which is attached to a green plant stem. The butterfly's wings are partially spread, revealing a vibrant orange color with black veins and a black border with white spots. The background is a soft, out-of-focus green.

The science of transformation

by Thijs Kuiken, DVM PhD DACVP on behalf of
the EWDA Sustainability Committee

Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and may only be achieved through "transformative changes". The EWDA shows how such transformative changes could be implemented in wildlife health research.

The unparalleled alteration of the biosphere and rapid decline of biodiversity are undoubtedly of concern to all of us in the wildlife health community.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) published an [authoritative global report](#) on the state of nature in May 2019. IPBES concluded that “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.”

By “transformative changes”, they meant a fundamental, system-wide reorganisation of human society across technological, economic, and social factors, including paradigms, goals and values.

In the EWDA Sustainability Committee, we discussed how to implement such transformative changes in our work as wildlife health scientists. We shared the results of our discussions at the 2020 EWDA/WDA conference in Cuenca in the oral presentation “Thinking about transformative changes in wildlife health activities.” As a result, a larger group from the (E)WDA community met twice for discussions in the course of the past year.

We thought a good starting point for making transformative changes might be to gauge the paradigms, goals and values we aspire to, that promote a sustainable way of living and conserve nature.

After looking through the IPBES report, we realised that our own [WDA Charter of Values](#) provides suitable guidance.

These statements represent the basic, common goals and values WDA members hold in common:

- That the conservation of biological diversity is of benefit and essential to human societies now and in the future;
- That the health of wild animals, humans and domestic animals are interconnected and interdependent within a shared environment (‘One Health’);
- That wildlife health is a global challenge transcending cultural and political boundaries and demanding international integration and cooperation of the scientific community, stakeholders and society;

- That knowledge of wildlife health is best achieved through rigorous science, recognition of other accumulated forms of knowledge (e.g., traditional, experiential, professional), and open and respectful debate;
- That our Association is most effective by being multidisciplinary, diverse, inclusive, fair and equitable;
- That communicating the science of our members and values of our Association through advocacy and outreach is integral to achieving our mission;
- That the future of our community and accomplishment of our mission depends on the fostering of student and early career learning and professional development;
- That our Association should conduct its business according to principles of environmental sustainability.

In the above Charter of Values, the goals and values of the WDA are eloquently defined. However, these only become meaningful if we act accordingly, for example in our research.

But ... how to do so?

To support you, we made a triage protocol that can help you to design a wildlife health study according to the WDA Charter of Values (with thanks to Beatriz Rubio Alonso).

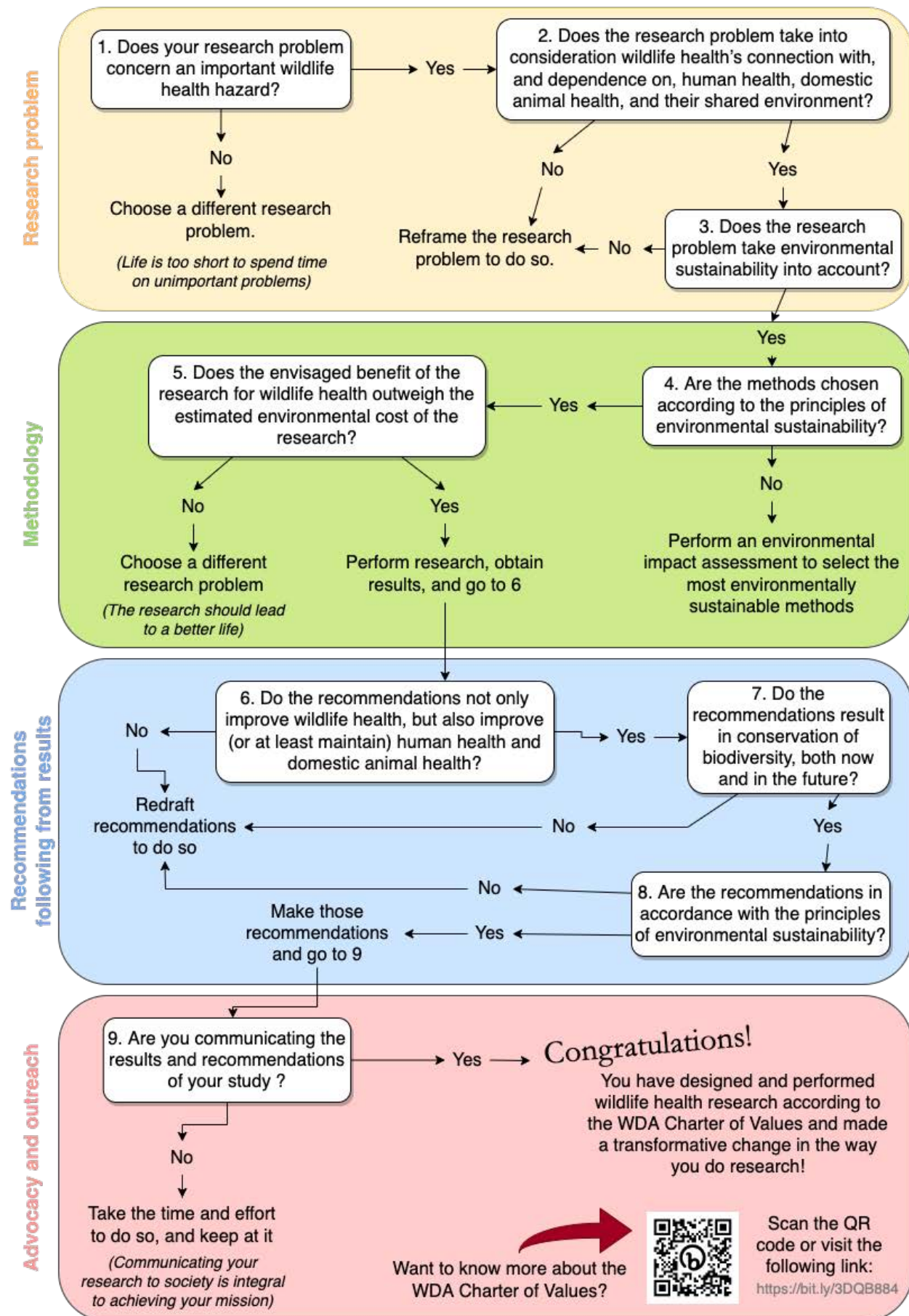
Please note: this protocol is a work in progress, and still being discussed with other WDA members.

We realise that the constraints of current society may not allow you to actually carry out your research according to this protocol. However, by going through this exercise, you may have a better idea what the ideal wildlife health study would look like, and so provide you with a ‘dot on the horizon’ to aim for.

By transforming the way that we perform wildlife health research, we can help to make the transition to a sustainable human society.

EWDA Sustainability Committee members are: Lineke Begeman, Ana Vale, Beatriz Rubio Alonso, Graham Smith, Barbara Vogler, Karin Lemberger and Thijs Kuiken

Triage Protocol of Implementation of the Charter of Values into Wildlife Health





Invitation

Dear,

Save the date, and register now for a lecture organized by the sustainability committee of the EWDA: 14th of April, from 02.00 - 03.00 PM, with time for discussion upto 04.00 CEST.

The lecture will be given by Marjan Minnesma.

Marjan Minnesma is the founder and director of Urgenda, a non-profit foundation that successfully prosecuted the Dutch Government when it did not keep to the Paris Agreement and has been involved in investigating and developing solutions to battle global warming. During the lecture Mrs Minnema will address what we as wildlife health researchers might learn from the Urgenda climate case to battle biodiversity loss. Afterwards she is available to discuss further about this topic and answer any questions you might have.

Location: Online
Date: Friday, April 14th 2023
Start webinar: 02.00 PM CEST
End of webinar: 04.00 PM CEST

I hope to see you at the webinar.

Kind regards,

Thijs Kuiken, on behalf of the Sustainability committee of the EWDA

Register!



Discover WDA Asia-Pacific



A brief history

The newest member of the WDA family, the Asia-Pacific section came into being on January 1, 2019.

From the beginning its primary goal has been strengthening the global network and collaboration with WDA members from other geographical regions.

Since its establishment, WDA-AP has reached out to other organisations and societies in the Asia-Pacific region, such as the Asian Society of Conservation Medicine (ASCM) and the Federation of Asian Veterinary Associations (FAVA), to reinforce its regional network and spread the One Health message.

An example of this collaboration was the section's support of the 15th International Conference of Asian Society of Conservation Medicine in Chiang Mai, Thailand in October 2022. The theme of the hybrid conference was 'Moving Forward: Challenges in One Health and Conservation Medicine'.

This activity aligns with one of the section's primary goals which is to continue supporting the annual ASCM conference. Other goals include:

- expanding WDA membership to low-middle income countries in the Asia Pacific region;
- increasing international collaboration and networking;
- hosting regular meetings and webinars for the Asia Pacific region; and
- communicating widely with members via social media and the section's newsletter.

Section leadership

The goals of the section will be pursued and achieved by a dedicated leadership team and the officers for the 2023-24 period are:

Chair: Toshio Tsubota - Japan
tsubota@vetmed.hokudai.ac.jp

Vice Chair: Truong Son Nguyen - Vietnam
truongsoniebr@gmail.com

Secretary: Chen-Chih Chen - Taiwan
ychih0502@gmail.com

Treasurer: Chihiro Ishii - Japan
chihiro.ishii15@gmail.com

Auditor: Tin Tin Myaing - Myanmar
dr.tintinmyaing@gmail.com

International Representative: Lesa Thompson - Japan
l.thompson@woah.org

Student Representative: Miaka Ogawa - Japan
miaka.ogawa@gmail.com

Newsletter/Homepage Editor: Alice C.C. Lau - Japan
alicelau.cc@gmail.com

Publication Editor: Mitsuhiko Asakawa - Japan
askam@rakuno.ac.jp

Get involved

Website: <https://www.wildlifiedisease.org/PersonifyEbusiness/Sections/Asia-Pacific>

Follow WDA-AP on Facebook: <https://www.facebook.com/WDA.Asia.Pacific>

Email: wda.asiapacific2019@gmail.com

Vultures putting up resistance

Wild Eurasian griffon vultures in north-eastern Spain are carriers of widespread AMR zoonotic Salmonella and Campylobacter. Many isolates found, such as monophasic Salmonella typhimurium, are of public health concern and the amount of AMR to critically important antimicrobials for human medicine is worrying.

The emergence and spread of antimicrobial-resistant (AMR) bacteria is one of the greatest threats to public health worldwide. This situation reduces our ability to effectively treat infectious diseases, raises health care costs, and could be responsible for up to 10 million deaths annually worldwide by 2050.

While the occurrence of AMR in livestock has been extensively studied, the role of wild animals in their maintenance and transmission is still poorly understood.

In general, free-ranging wildlife does not naturally come into contact with antimicrobials; however, AMR bacteria can be acquired from human and livestock sources such as agricultural facilities and refuse dumps. In that sense, scavengers, due to their feeding habits and their position in the food chain, are expected to be more prone to carrying AMR bacteria, facilitating their dissemination in the environment.

Spain is home for 90% of the European population of Eurasian griffon vultures (*Gyps fulvus*). Vultures are particularly exposed to AMR bacteria due to the frequent consumption of infected livestock carcasses in supplementary feeding stations (established to boost their recovery after a critical decline in the 1980s due to the indiscriminate use of poison) and organic waste in landfills.

In this study, we assessed the prevalence and potential anthropogenic origin of *Salmonella* and *Campylobacter*, as well as the presence of AMR isolates in cloacal swabs (n = 218) from a population of griffon vultures in north-eastern Spain. In the EU, both bacteria are leading causes of human gastrointestinal infections.

We found numerous emergent isolates that are of



public health concern, including monophasic *Salmonella typhimurium* which is causing a global public health emergency. Genotyping analysis revealed that these monophasic *S. typhimurium* strains were also shared by gulls, livestock, and even humans. Therefore, wild Eurasian griffon vultures in north-eastern Spain are carriers of widespread zoonotic bacteria, which in some instances may have an anthropogenic origin due to their scavenging feeding habits.

We also described the first report of *Campylobacter lari* in an avian scavenger in the northern hemisphere.

Concurrently, a significant proportion of both zoonotic bacteria isolates were resistant to critically important antimicrobials for human medicine (e.g., ciprofloxacin), which is worrying. However, more in-depth studies are still needed to understand the potential risk of spill-over from wild birds to humans.

REFERENCE

Espunyes J., et al. (2022) Eurasian griffon vultures carry widespread antimicrobial resistant *Salmonella* and *Campylobacter* of public health concern. STOTEN 844, 157189.

Quarterly Wildlife Mortality Report - January 2023

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

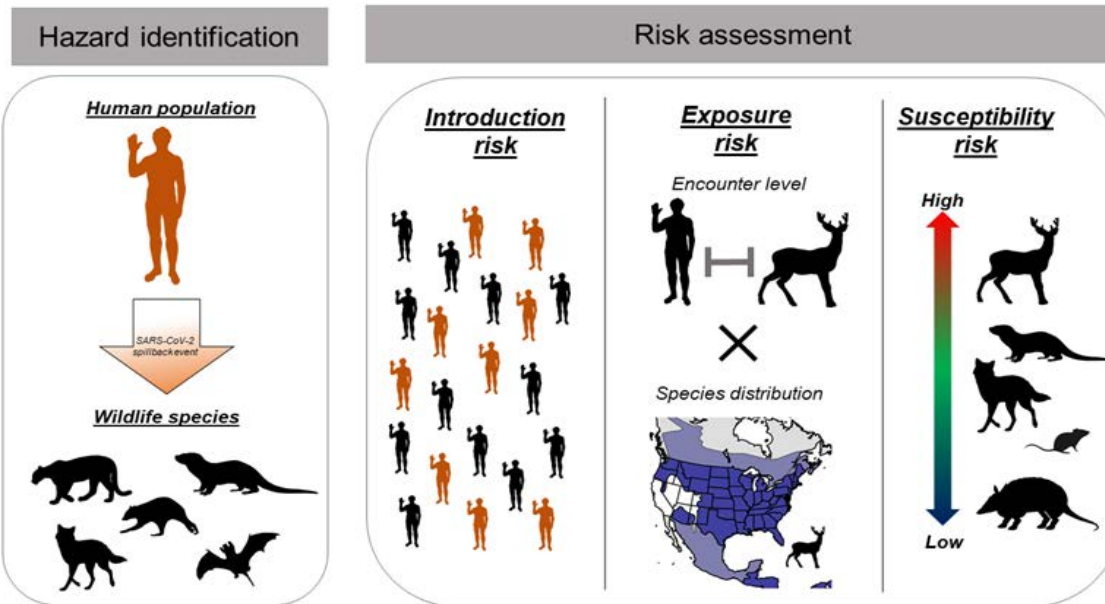


Figure 1. A conceptual drawing of the components of risk assessment for SARS-CoV-2 infection in wildlife used in a recent model developed by USGS-National Wildlife Health Center. Our primary identified hazard is the risk of SARS-CoV-2 spillback events into wildlife populations. We have identified three key risk factors that will influence our model: (1) introduction risk or an estimate of infectious agent at a given location, (2) exposure risk that estimates contact levels between wildlife and humans, as well as the spatial distribution of wildlife species, and (3) the susceptibility risk of different wildlife species to SARS-CoV-2.

Risk assessment of transmission of SARS-CoV-2 between humans and wildlife

The global spread of SARS-CoV-2, the virus that causes COVID-19 in humans, has led to concern about virus spillover to wildlife populations. Of particular concern is that if wildlife become infected, it may result in a wildlife reservoir.

A significant spillover of SARS-CoV-2 to white-tailed deer (*Odocoileus virginianus*) in the United States has been previously reported (for a discussion of recent publications please see [April 2022 Quarterly Report](#)) and data on wildlife susceptibility to SARS-CoV-2 is expanding through laboratory studies and comparative and structural analyses of the angiotensin-converting enzyme 2 (ACE2) receptor in wildlife ([Damas et al. 2020](#)). However, the infection status of most free-ranging wildlife populations remains largely unknown. To help bridge this gap, scientists at the U.S. Geological Survey National Wildlife Health Center, in collaboration with the U.S. Centers for Disease Control and Prevention, are developing a risk assessment to elucidate where SARS-CoV-2 is most likely to be transmitted from humans to wildlife species and the consequences of infection in wildlife.

The project involves developing a metric that captures

SARS-CoV-2 spillover risk (and uncertainty of that risk) that can be used to inform and focus surveillance on species and locations with higher relative likelihoods of spillback events. We examined exposure risk to 291 mammalian species based on their range and indices of wildlife-human interface. Preliminary model results suggest that total risk is highly sensitive to introduction risk. In other words, total risk is most sensitive to areas where people have the highest infection rates and where susceptible species occur. This effort will be applied to prioritize SARS-CoV-2 sampling protocols for wildlife populations and formulate testable predictions regarding possible transmission routes.

For more information, please contact Dan Gear, dgear@usgs.gov or Travis McDevitt-Galles, tmdevitt-galles@usgs.gov.

REFERENCE

• Damas J, Hughes GM, Keough KC, Painter CA, Persky NS, Corbo M, Hiller M, Koepfli K-P, Pfenning AR, Zhao H, Genereux DP, Swoford R, Pollard KS, Ryder OA, Nweeia MT, Lindblad-Toh K, Teeling EC, Karlsson EK, Lewin HA. 2020. Broad host range of SARS-CoV-2 predicted by comparative and structural analysis of ACE2 in vertebrates. *Proceedings of the National Academy of Sciences*. 117 (36) 22311-22322; <https://doi.org/10.1073/pnas.2010146117>.

Suspected Highly Pathogenic Avian Influenza mortality in snow geese and Ross' geese throughout the United States from October 2022 to December 2022

Each year in early fall, snow geese (*Anser caerulescens*) and Ross' geese (*A. rossii*) depart from their northern breeding grounds across the arctic, migrating to their overwintering grounds across the southern latitudes of North America. Migration begins in September, with snow geese arriving at their wintering habitats by November and December.



Between November 1 and December 31, 2022, the U.S. Geological Survey National Wildlife Health Center (NWHC) and partner natural resource agencies and laboratories recorded the deaths of thousands of Snow and Ross' geese across the United States, including in the Pacific, Central, Mississippi, and Atlantic flyways. Forty mortality events from 11 states involving one or both of these species were entered in the Wildlife Health Information Sharing Partnership - event reporting system ([WHISPers](#)) during this timeframe, including 3,750 geese affected at a single event. Collectively, the estimated mortality at these events exceeded 9,400 geese; true mortality may have been much higher.

Confirmed or suspect Highly Pathogenic Avian Influenza (HPAI) was attributed as the event diagnosis in 31 of the 40 snow and Ross' geese events entered during this timeframe. In WHISPers, HPAI "suspect" is listed at the event level when preliminary diagnostic testing results identify HPAI virus in collected samples. All suspect diagnoses must be confirmed by the U.S. Department of Agriculture National Veterinary Services Laboratory. States with suspect or confirmed HPAI diagnosis in snow and/or Ross' geese during this timeframe include Arkansas, California, Indiana, Kansas, Louisiana, Missouri, New Mexico, South Dakota, Tennessee, and Washington.

The NWHC would like to thank our partners from the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture, the Southeastern Cooperative Wildlife Disease Study, as well as state wildlife management agency partners for their continued support and for reporting and/or submitting these cases.

For more information, please visit the Wildlife Health Information Sharing Partnership - event reporting system (WHISPers), or contact Bob Dusek, rdusek@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/>.



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ATHENS, GEORGIA, USA
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WWW.WDA2023.COM

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