Wildlife disease education and prediction at the
human – animal interface
14 December 2022
Online

MEETING REPORT

Background

Global challenges involving wildlife health, such as emerging infectious diseases at the human-livestock-environment interface, human-wildlife interactions, biodiversity loss, climate change and natural disasters, are still posing public and animal health risks. The World Organization for Animal Health is steadily moving forward to address these challenges by promoting a One Health approach, through the global implementation of the WOAH Wildlife Health Framework (WHF) aiming at providing guidance on how to reduce the risks of disease spill over through wildlife trade and along the wildlife supply chain as an essential component of prevention.

So far, five training cycle rounds of WOAH National Focal Points (NFP) for Wildlife have been conducted in favour of the 53 WOAH Members of the Europe region under the technical supervision of the WOAH Scientific and Technical and Programmes Departments. The 6th one will be held in Poland in June 2023.

Within this period, it was deemed it opportune to maintain a constant interaction with the NFP for Wildlife and engage them in an "intermediate cycle" training course aiming at gaining a more in-depth understanding of NFP's challenges and training needs to fulfil their duties, collecting their views and suggestions on how they could better align their tasks to the WHF workstreams.

Objectives

The WOAH approach emphasises the need for international and cross-sector cooperation, along with the importance of networking and looking at illegal animal trade issues to protect wildlife health to achieve One Health.

Towards this goal, the WOAH Sub-Regional Representation in Brussels organised a thematic webinar on "Wildlife disease education and prediction at the human – animal interface" to connect wildlife health stakeholders with a target audience of 53 WOAH National Focal Points on Animal Welfare of the European region. The WOAH Data Integration and Preparedness and Resilience Departments supported the event. Regional and sub-regional offices strongly promoted the webinar among their contacts and provided full support to the organization of the event.

Participants had the opportunity to exchange their views on how they could better align their tasks to the WOAH initiatives relating to wildlife health; to take stock of the WOAH Wildlife Health Framework 'Protecting Wildlife Health to Achieve One Health' program progress and results, and the role of WOAH NFPs in reducing the health risk for human and animal populations related to the illegal animal trade; to improve understanding of key issues relating to the illegal exotic wild meat trade involving Europe; to increase the capacity to engage regional stakeholders to support the WOAH Wildlife Health Framework.

The day also offered the opportunity to familiarise with the early education and early prediction concepts applied within the framework of the One Health cycle at the human-wildlife diseases interface.

Participants

The target group included the 53 WOAH National Focal Points on Animal Welfare of the European region. Forty-seven participants joined the online meeting in representation of 31 WOAH Member countries, including 10 speakers (RR/SRR representatives, WOAH staff, FAO/WHO, WWF and other international experts).

Summary

The agenda (Annex I) comprised two main sections on "Updates on the World Organisation for Animal Health (WOAH) initiatives on Wildlife" chaired by Tomasz Grudnik and "One Health approach to wildlife diseases surveillance" chaired by Paolo Dalla Villa, followed by two plenary discussion sessions.

The works were opened by **Estelle Hamelin**, who thanked the speakers and participants, and gave the floor to **Budimir Plavsic,** the WOAH Regional Representative in Moscow, who offered his congratulations on the event, to be considered a very good opportunity to increase awareness and knowledge on the importance of wildlife health management in Europe and recalled the WOAH global leadership in sharing transparent and timely information on livestock and companion animal diseases - including those in wildlife - to the international community, through the World Animal Health Information System (WAHIS). Since 2020, the WOAH has increased its efforts in preparing Members for managing health risks at the animal-human-environment interface by supporting Veterinary Services in achieving One Health resilience. These risks are increasing as more contacts between people and animals occur. The next human pandemic will almost certainly spill over from wildlife to humans, as already happened for the Ebola, Nipah and Avian Flu viruses. Developing new policies, investing in research, improving cross-sectoral wildlife health management, and strengthening existing partnerships in environment sectors, remain essential to promote the One Health approach through intersectoral collaboration with public Health Authorities an wildlife management agencies at national, regional and international level.

The first presentation was made by **Dharmaveer Shetty**, who opened the session on the "Updates on the WOAH initiatives on Wildlife" by proposing an overview for the WAOH National Wildlife Focal Points and reminding the historical General Session when the network was conceptualized by the WOAH Member in 2008. Since that time, the Wildlife Focal Points have been situated in the broader wildlife health efforts within WOAH, which include the Working Group on Wildlife, the Wildlife Expert Network, the Wildlife Collaborating Centres and partners, the Wildlife Health Programme, and the EBO-SURSY Project. Subsequently, the Terms of Reference for the Wildlife FPs were presented, and the wildlife health framework was displayed along with the various capacity building programs. The Terms of Reference for WOAH Focal Points for Wildlife are currently being updated and a new version will be shared in 2023.In 2008, the World Assembly of Delegates also re-iterated the importance of the Focal Points for Information on Animal Diseases. Consequently, the WOAH launched a global programme of capacity building, aiming at providing them with good governance concepts for improving animal health (including wildlife health), animal welfare and food safety of animal origin products at national, regional, and international level, and to explain and clarify their role and responsibilities within WOAH activities. The training is conducted in cycles focusing on selected major topic and it includes the organization of training events at regional level. Today's event falls in the 6th Cycle of the Training Program (2022-2023).

Roberto Balbo outlined the main outcomes of the 2021 intermediate cycle training round by focusing on the results of the last Inter-Regional Training of National WOAH Focal Points for Wildlife webinar. The three-day meeting was designed around three major time zones and three official languages (English/Spanish, French-only and English-only respectively; with additional simultaneous translation to Arabic and Russian). The programme was purposely identical, except for the interactive sessions aiming at receiving FP contributions to be used for updating the FP Terms of Reference. Whereas from the polls it emerged that two key points to support FP actions are disease communication and awareness, it appears that contribution to the standard making process and capacity building is still perceived as difficult tasks. Main steps proposed at the end of the seminar were (1) to envisage more frequent engagement with FP on wildlife (e.g., in the occasion of the launch of the WAHIS-Wild information system) and plan similar inter-regional webinars with other categories of FPs (e.g. animal welfare, aquatic animals, veterinary products) and (2) to integrate Wildlife Focal Points feedback into the revision of their Terms of Reference. A short overview of the seminar held for wildlife day was also presented. The event was conceived to celebrate World Wildlife Day 2022 to increase awareness and knowledge of WOAH activities relating to wildlife health; improve understanding of key issues relating to wildlife health worldwide; engage stakeholders in considering the importance of ecosystem health and biodiversity and promote the organization of a global networking event for wildlife health stakeholders. "Hot topic" diseases were

selected for each region: ASF in Asia and the Pacific, PPR in the Middle East, Rabies in Europe, Anthrax in Africa, and White-Nose syndrome in the Americas.

This speech was followed by a presentation of **Claire Cayol**, who described the background of wildlife disease reporting to WOAH and presented key points of the long-term strategy regarding wildlife health data management, reporting and optimal information systems. The ongoing WOAH activities for the development of the temporary reporting module for non-listed diseases in terrestrial and aquatic wild species also aim at understanding and reinforcing data management and notification capacities at national level. Over the time, non-listed diseases have been reported in in quite diverse ways and sometimes still by using paper records, spreadsheet, and local computers, with a considerable risk of data loss. To date, most European countries maintain records and data from wildlife mortality/morbidity events and consider the use of centralized databases the better and safer way to collect and manage this information. Defining the scope of epidemiological surveillance and the use of wildlife health data at national level remains essential. A quick online survey will be launched over the next few weeks to identify good data management systems and best practices already in place at country level. This event offered an excellent opportunity to encourage the FP active participation in the development of the best scope driven, user friendly, energy efficient and mobile wildlife disease data management and notification system, to be launched in early 2023.

Paolo Tizzani closed the first session with a speech on the WOAH wildlife disease reporting system by reminding the Members' obligations to report any important information related to 117 listed diseases of domestic animals and wildlife through the renovated WAHIS System, the most technologically advanced reference platform for animal disease and veterinary capacities reporting at global level. To date, 182 WOAH Members and 24 territories are also asked to provide information on 4 emerging diseases (including SARS-CoV in 30 wildlife species). The new WAHIS has been upgraded with new functionalities in order to make animal health information more easily available and usable. Today it allows the WOAH Members to easily collect and report information. Its user-friendly interface will allow for data to be viewed, analysed and extracted in different formats. However, since the interruption of the old OIE - WAHIS System in 2019, it is not possible to report information on the 53 non-listed diseases in wildlife. A new "WAHIS Wild" IT system will be made available in January 2023. According to the WAHIS statistics, 31% of all outbreaks reported in WAHIS are related to wildlife, with ASF and HPAI top reported, mainly in Europe and with very significant regional disparities. However, only 20% of the countries reported not-listed wildlife diseases during the period 2000-2018. Therefore, the WOAH should strengthen its efforts to promote the reporting on non-listed diseases in wildlife. In 2021, in collaboration with the WOAH USGS National Wildlife Health Center (WOAH Collaborating Centre) it was published a set of technical cards to clarify which kind of information should be reported for each non listed disease. A guidance on notification procedure for the reporting of non-listed disease is being developed and it will be published soon in Spanish, French and English versions. To help even more the submission of information, a step-by-step guide with a video tutorial has been created to facilitate the use of the new system.

The second session on "One Health approach to wildlife diseases surveillance" was opened by **Paolo Zucca**, who started by highlighting the importance mental errors caused by the simplification of our information processing strategies. The bias of "loneliness of species" wrongly makes man believe that he is a different creature from other living species and generates a dangerous tendency to underestimate natural risks, including zoonotic diseases. More than 60% of the 1,700 infectious diseases that affect humans come from animals like and often start from sporadic phenomena limited to rural areas to become a global emergency. The only way to avoid "cognitive biases" and prevent the dangerous tendency to underestimate biological and zoonotic risks, passes through the education of young people. At the same time, with the development of information technology and the Internet, the

creation of large databases and advanced machine learning, computational linguistic and artificial intelligence technologies, today we can go beyond disease prevention. Medical intelligence, thanks to the work of computer scientists, statisticians, epidemiologists, veterinarians, physicians, psychologists, and other professionals with transversal skills provides predictions accurately on the times and places of onset of probable future outbreaks in wildlife before the spill over can occur. Furthermore, optimising a wildlife health emergency management also passes through the (1) assessment of the data sources for avoiding infodemic and (2) monitoring, analysis and understanding of the psychological impact that the emergency generates on the human population. Computational linguistic techniques have been developed for analysing huge quantities of text, extracting from them a broad spectrum of subjective and emotional information from the authors of the texts like author's attitude towards certain topics, the desired emotional communication, or the overall contextual polarity of a document.

Daniel Beltran-Alcrudo from the FAO Regional Office for Europe and Central Asia (FAO REU) opened the FAO/WHO/UNEP contribution to wildlife diseases surveillance in a One Health perspective and presented the main FAO activities conducted in Europe, mostly related to wild boar and African swine fever (ASF). FAO analysed the ASF-infected wild boar carcasses in 10 European countries from 2017 to January 2021 in order to identify the risk factors to design a spatio-temporal search strategy to find ASF-infected wild boar carcasses. Certain land uses, the distance to paths and a higher abundance of wild boar resulted to be the main risk factors. Another tool was developed by the FAO to estimate the risk of ASF introduction, spread and capacity of detection at hunting ground level in the Balkans. Hunting ground managers were interviewed to assess general management, husbandry, and biosecurity practices, assess the feasibility of changing current practices, and how the risk would decrease if changes were implemented. A good example of collaboration between FAO and MammalNet was the updating of the iMammalia App for citizens to report wildlife sightings. So far 1,270 observations of dead animals have been reported in 9 European countries. Over the last two years, FAO has also implemented a network of regional Virtual Learning Centres (VLC), which have offered a variety of training opportunities on One-Heath, such as ASF and avian influenza preparedness certified courses to field veterinarians in different languages. Face-to-face trainings on wild boar management and hunting biosecurity have been offered to hunters in Kosovo, Serbia, Rep. of North Macedonia and Montenegro, along with national trainings and simulation exercises. Technical materials on ASF and wildlife have been also developed, including the second edition of the handbook on ASF in wild boar ecology and biosecurity (under GF-TADs), a 2-pager on "What hunters need to know about African swine fever and biosecurity measures during hunting", and a Template for a control and eradication plan for African swine fever in wild boar.

Netanyahu Sinaia joined the meeting from WHO European Center for Environment and Health in Bonn and congratulated the work of WOAH on Wildlife Health Framework at the regional level. WHO does not have its own wildlife surveillance and until recently the environment was the "neglected sector" in One Health. However, the recent report "A health perspective of the role of the environment in One Health" contains interesting points connected to three topics: 1. the triple ecological crisis that affect the health sector and how environmental degradation and pollution, climate change and biodiversity loss and habitat degradation compromise wildlife immunocompetence. This increases pathogen shedding to the environment and to other species, therefore expediting evolution of new, potentially zoonotic, strains 2. the geographical distribution of environmental degradation and how it can be used to inform surveillance efforts of wildlife and the environment for emerging pathogens 3. Development, that is land change, urbanization and land-use change to urbanization and animal agriculture increases contact points between wildlife and livestock/humans. These insights can contribute to the understanding and to the development of educational material on "Wildlife disease and prediction at the human-animal interface".

Lorélie Escot Wildlife Trade Project Officer, WWF France presented the main findings from a survey addressed to European authorities in charge of monitoring, controlling, regulating and/or investigating exotic wild meat trade, and from analyses carried out within the WWF France's study. Being at the crossroads between public health, conservation, food security and socio-economic development, wild meat trade brings many benefits but also raises diverse concerns across the globe. Most of the wild meat volumes are consumed at a local and country scale, but major quantities also illicitly enter the international market. In Europe, estimates indicate that several tonnes of wild meat are illicitly imported every week via airports such as Paris-Charles de Gaulle, Geneva or Zurich. Limited academic research has investigated these illicit flows to and within Europe as well as into the European demand, despite the potential serious concerns associated to this trade. WWF France decided to further explore this illegal exotic wild meat trade involving Europe, and to better understand how European countries deal with this crosscutting issue. There are many blind spots regarding the illicit exotic wild meat trade involving Europe and its associated risks. This hinders law enforcement, policy development and Europe's ability to prevent zoonotic spill over events. A report gathering the main findings of the study carried out by WWF France will be released in early 2023.

Points for discussion:
- The need to strengthen the Veterinary Services' capacity to collaborate with competent authorities on wildlife management and reinforce their progressive integration at national and international level;
- The key role of the quadripartite alliance in strengthening public health systems under a One Health approach;
- The impact of social media on public awareness and how Veterinarians can meet the social expectations around their role in wildlife diseases prevention and control (I.e., rabies);
- How to include One Health education in the school curricula and the role of new generations as agents of change and public health promoters. The importance of comparative psychology in understanding the patterns of social transmission information;
- How to improve an effective zoonotic risks communication with external stakeholders and citizens, by defining the target audience, balance the output ad avoid sending hidden counterproductive messages;
- The need to educate undergraduates veterinarians on the One Heath principles with an interdisciplinary approach, based on a preliminary knowledge gap and learning needs assessment;
- The opportunity to promote good examples of intersectoral collaboration (I.e., ASF surveillance and wild boar carcasses management) and the importance of acknowledging the role of hunters in wildlife disease surveillance and control.

The Sub-Regional Representative in Nur-Sultan **Mereke Taitubayev** delivered the closing remarks, congratulated organizers, and thanked the speakers and the participants for their active engagement in the successful event. He summarized the main conclusions and reminded the importance of addressing global challenges involving wildlife health, such as emerging infectious diseases at the human-animal-environment interface, by considering the multiple factors causing the emergence and resurgence of zoonotic diseases. The WOAH Wildlife Health Framework remains a key element of international and cross-sectoral cooperation for the prevention of illegal animal trade and the protection of wildlife health from a One Health perspective.

Next steps:
Next NFP meeting in presence in June 2023 - Poland (TBC)

"Wildlife disease education and prediction at the human – animal interface"

Online event – 14th of December 2022
Draft agenda

14th of December 2022 – Moderator: Estelle Hamelin		
20 min	**09.30 BXL Time** - *Zoom open (Tomasz)*	*Host: WOAH SRR Bruxelles*
10 mins	Welcome and opening remarks	**Budimir Plavsic**, WOAH RR for Europe, Moscow
10.00 BXL Time - Updates on the World Organisation for Animal Health (WOAH) initiatives on Wildlife [Chair: Tomasz Grudnik] (1 hour /45 mins)		
25 mins	WOAH Wildlife Focal Point ToRs, role, training cycles	**Dharmaveer Shetty** WOAH - Coordinator for Wildlife Networks
25 mins	Outcomes of the 2021 intermediate cycle training round	**Roberto Andrea Balbo**, Former WOAH SRR Representative Bruxelles
25 mins	WOAH Wildlife surveillance system	**Claire Cayol** (WOAH HQ – Wildlife)
30 mins	QA/ Plenary discussion	Chair: Tomasz Grudnik
15 mins	Coffee break (10.45 BXL Time)	
12.00 BXL Time - One Health approach to wildlife diseases surveillance [Chair: Paolo Dalla Villa] (1hour/ 50 mins)		
10 mins	WAHIS wildlife disease reporting system	**Jingwen Wang / Paolo Tizzani** WOAH – World Animal Health Information and Analysis Department WOAH – Data Integration Department
30 mins	Early education and Early prediction at the human-wildlife diseases interface	**Paolo Zucca**, Lead Partner Bio-Crime Project Central Directorate for Health, Social Policies and Disability, Friuli Venezia Giulia Autonomous Region
30 mins	FAO/WHO/UNEP approach to wildlife diseases surveillance in a One Health perspective (10 mins each)	**FAO - Beltran Alcrudo, Daniel** (REU) **WHO - Netanyahu Sinaia** **UNEP** – (tbc)
20 mins	Results of the WWF survey on exotic wild meat trade involving European Countries	**Lorélie Escot** Wildlife Trade Project Officer, WWF France
20 min	QA/Plenary discussion	Chair: Paolo Dalla Villa
10 min	**14.00 BXL Time** - Conclusions and closing remarks	Mereke Taitubayev, WOAH SRR for Europe, Nur-Sultan