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REPORT OF THE MEETING OF THE OIE WORKING GROUP ON WILDLIFE

Paris (France), 1 – 4 December 2020

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1. Summary

The Wildlife Working Group (the 'Working Group') met virtually owing to the exceptional circumstances brought about by the pandemic.

To support the OIE's core mission of transparency, and to improve comprehensive reporting of quality data about wildlife disease, the Working Group recommended that the OIE should do more to support Members in managing health events in wildlife. This should include strengthening wildlife surveillance at national level and facilitating the rapid transport of wildlife diagnostic specimens to laboratories for confirmatory testing and characterisation. The Working Group also contributed to a paper on "*Reporting of diseases in wildlife, Recommended actions for improvements*" (see Appendix III).

At each annual meeting the Working Group compiles comprehensive global information on emerging and noteworthy wildlife issues and disease occurrences (see Appendix IV). This is a unique source of information on emerging health issues in wildlife which allows the international community to develop and refine disease management strategies for both livestock and wildlife, and at the human-animal-ecosystems interface. The information also supports strategies to monitor and protect biodiversity. To ensure this information has maximum impact the OIE should ensure that this resource is visible and well communicated to stakeholders.

To support the OIE's core mission of Promotion of veterinary services, the Working Group proposed actions to strengthen the wildlife component of the OIE PVS tool, and to improve the functionality of the network of the OIE National Focal Points for Wildlife.

Finally, the Working Group contributed to the Concept Note for an OIE Wildlife Health Framework. This is a proposal to better integrate wildlife health into one health strategies through action and partnership. The Working Group made recommendations to support implementation, resource mobilization, and stakeholder engagement on this Concept Note.

2. Opening

The Working Group meeting was held by videoconference from 1 to 4 December 2020 and was chaired by Dr William Karesh.

Dr Matthew Stone, Deputy Director General of the OIE, welcomed the members and made the following points. He thanked them for their support to the OIE during the pandemic. He highlighted the importance of the updated Terms of reference for the Working Group. He thanked the Group for its contribution to the OIE Concept Note on a Wildlife Health Framework which incorporates the notion of One Health, a healthy environment and the importance of biodiversity, contributing to essential ecosystems services. The Concept Note should reflect the mandate of the OIE and the need for collaboration with partners to go beyond the OIE mandate to protect wildlife health worldwide. The Concept Note is closely aligned with the OIE's 7th strategic plan (2021-2025). Finally, Dr Stone outlined that the Working Group would continue to play an important role for the OIE.

3. Adoption of agenda and designation of rapporteur

Members were appointed as rapporteurs for each session of the meeting. The agenda and the list of participants are provided in Appendices I and II, respectively.

4. Disease reporting

Paula Caceres, Peter Melens and Paolo Tizzani represented the OIE World Animal Health Information and Analysis Department (WAHIAD) during the meeting.

Peter Melens informed the Working Group on progress and current timeline for delivery of the first release (R1) of the new OIE-WAHIS. R1 should happen at the beginning of 2021. The release of a module for voluntary reporting of non OIE-Listed disease in wildlife should take place six months after R1. Paolo Tizzani presented some preliminary screenshots of the module currently under development for official reporting of wildlife disease information, pointing out that the date of delivery of this module would depend on the date of final delivery of R1.

4.1. Information on submitted reports on OIE-non listed diseases in wildlife through the WAHIS-*Wild* and on OIE-listed diseases in wildlife through the WAHIS

Paolo Tizzani presented the current status of reporting of non OIE-Listed disease in wildlife. The data reported were similar to those presented at the previous meeting of the Working Group (March 2020), because, due to the launch of OIE-WAHIS, the OIE had asked countries to stop submitting voluntary reports on wildlife diseases. He also presented the geographic distribution of countries submitting voluntary reports, to highlight that Europe and North America regions had provided most reports.

As agreed with the Working Group during its meeting in March, Paolo Tizzani presented an analysis of countries reporting information on OIE-Listed diseases occurrence in wildlife. The information was presented using a regional approach, and for each country, the percentage of OIE-Listed diseases for which information was provided (out of the 81 terrestrial diseases for which reporting in wildlife is mandatory). On average, at global level there is underreporting for 29% of OIE-Listed diseases in wildlife. Europe has the most favorable situation, where 15% of diseases underreported, and the most critical situation is in Africa where 45% of diseases are underreported.

4.2. How to improve reporting of wildlife diseases to the OIE and proposed actions for improving the interest of the OIE Members to report wildlife diseases

The OIE presented to the attention of the Working Group several action for a mid and long-term strategy, to improve the situation of reporting diseases in wildlife. The feedback received from the Working Group was incorporated into the document, attached to this report in Appendix III, and it will serve as a basis to implement an action plan for next years.

5. Mechanisms to support Members to manage health events in wildlife

What should the expected situation be: When a disease event occurs in wildlife in an OIE Member, the Delegate of the Member should manage the event, including collecting specimens, transporting the specimens to a dedicated laboratory to make the diagnosis and implementing control measures, and in parallel or afterwards reporting the event to the OIE.

What is the current situation: When a disease event occurs in wildlife in an OIE Member, the Delegate often does not manage or only partially manages the response to the event owing to a lack of resources, a lack of knowledge of the event, or a lack of mandate or authority for the event.

Proposal on how OIE can play a meaningful role in this area and recommendation on mechanisms,

Goal:

Engage OIE National Focal Points for Wildlife ("Wildlife Focal Points") in a dynamic network (communication plan in between formal training workshops to share information/resources useful to them, involve them when developing documents and in expert groups etc.).

Provide timely support/coordination through the OIE Collaborating Centers wildlife network (mechanism to be found: emergency coordination cell or something equivalent), when an event affecting wildlife health happens (a procedure could be developed to help the OIE Members to manage this event from the collection of the specimen to the notification to the OIE of the event).

Recommendations:

- Designate a "Wildlife Focal Points Coordinator" as part of the back end support from OIE Headquarters. This Coordinator would be in charge of animating the network of the Wildlife Focal Points, to manage training seminars for the Wildlife Focal Points in the different regions worldwide and to encourage the reporting of non OIE Listed wildlife diseases to the OIE.
- To update the terms of reference of the Wildlife Focal Points so that it includes key attributes and competencies to enable them in their work (management of wildlife disease event in their country / reporting of OIE listed and non OIE listed wildlife diseases / development of national wildlife diseases surveillance system).
- Set up a procedure involving the Wildlife Focal Point/Delegate [*opening the procedure*], the OIE partners (WDA, IUCN, CITES and CBD) [*for providing support in the development of the reply to the event and for the transport of specimens*], and the OIE Collaborating Centres and their network [*to carry out or propose laboratory to carry out the diagnostic*] to manage on a voluntary basis the wildlife disease event.

6. OIE Wildlife Health Framework

6.1. Discussion on the most recent version of the Concept Note for an OIE Wildlife Health Framework (including external stakeholder comments and feedback from webinars) and adoption of a final version

The comments received from the OIE international partners on this Concept Note were reviewed by the Working Group and the last version of the Concept Note was revised based on these comments.

6.2. Discussion on implementation, resource mobilisation, and stakeholder engagement

The Working Group discussed implementation, resource mobilisation and stakeholder engagement and concluded that the concept note on the wildlife health framework was an ambitious programme that would need financial support and be implemented in collaboration with the OIE Partners for wildlife and one health. The concept note would also need a realistic work plan.

Recommendations:

- Draft a preamble to explain the context, the proposed role of the OIE, the relevance to OIE stakeholders, and that some of the activities would be done in collaboration with existing and to be identified international partners involved in wildlife and conservation, and One Health;
- Draft a short version of the concept note for a better communication to the OIE Partners and the donors that will financially support some of the activities.

7. Guidance on reducing risk of disease emergence and spillover through wildlife trade and along the supply chain

7.1. Development of a paper on risk-based decision framework regarding the wildlife trade

The recent emergence of potentially devastating infectious diseases at the human animal interface, including SARS, EBOV, and possibly COVID-19 (although more evidence was needed to establish the source of SARS-CoV-2 and its route of introduction to the human population) highlights the need to develop strategies to reduce the risk of future spill-over events. For the purposes of clear communication on this topic, the Working Group developed a risk-based decision framework for One Health outcomes regarding management of emerging diseases related to the wildlife trade which will be proposed for publication in a scientific journal.

7.2. Update on the literature review on wildlife trade

The purpose of this assignment was to undertake a comprehensive literature review to gather and present evidence from peer-reviewed literature to inform a process for developing guidance to reduce risks of disease emergence through wildlife trade, considering also the impacts on biodiversity. A consultant had been selected following a call.

7.3. Terms of reference and members of *ad hoc* Group

The Working Group finalised the Terms of reference of the future *ad hoc* Group to develop OIE Guidelines on reducing the risk of spill-over pathogen events at markets selling wildlife and along the wildlife supply chain. It also proposed some experts and international organisations to be invited to this *ad hoc* Group.

8. Integrate wildlife health needs into the OIE PVS tool

The Working Group discussed the current situation of information available from PVS assessments on country-level capabilities and efforts related to wildlife health. Currently, there is no capacity assessment tool for national wildlife or environmental services that serves as a parallel to available public health and PVS evaluations. A submitted manuscript prepared by three Working Group members, entitled *Wildlife and Environment Gaps in Pandemic Prevention and Preparedness* was also reviewed and indicated that of the PVS and Joint External Evaluation (JEE) reports publicly available, only 40% provided evidence of a functional wildlife disease surveillance program or wildlife-related activities and for all assessed countries, 83% explicitly cited specific gaps or did not include wildlife coverage. This could reflect the situation in countries or be a result of the processes used to produce the two reports.

The Working Group also discussed two assessment tools for environment and wildlife health systems and environment, one developed for the World Bank as a counterpart to JEE and PVS and third component of a One Health assessment, and another developed by the US National Wildlife Health Center (USNWHC) to be used to facilitate nation-level planning.

Recommendations and proposed actions:

- The PVS team contacts the Working Group to discuss possibilities for expansion of the PVS assessment process to include more information on wildlife health management capabilities and needs.
- For 2021 activities, the Working Group will more fully evaluate the two available assessment tools (World Bank and USNWHC) and report to OIE on a range of options for their use or adaptation for use for OIE purposes.
- OIE considers creating or assigning a full-time staff position devoted to coordination of wildlife health capacity assessments for Members.
- For the need to assess the surveillance of wildlife diseases, to develop a chapter in the *Terrestrial Animal Health Code* (*Terrestrial Code*) on the surveillance of diseases in wildlife, at the national level, based on the chapter 1.4. "Animal health surveillance" and 4.15. "Official health control of bee diseases", to serve as a reference.

9. Facilitate the transport of wildlife diagnostic specimens

The Working Group discussed the updated procedures from the Convention on International Trade in Endangered Species (CITES). CITES regulations can unintentionally impede movement of emergency diagnostic specimens from species of conservation concern, requiring lengthy processes to acquire both import and export permits before sending to a diagnostic laboratory outside the country of sample origin. From both a health and a conservation perspective, emergency diagnostic specimens warrant special attention and emergency procedures, as failure to move these specimens rapidly and efficiently increases conservation, animal, and public health risk. In recent years, investigations of major disease emergencies have been plagued by several administrative issues from a confusing and fragmented process.

To facilitate the transfer of biological samples where this is urgently required, Parties to CITES agreed on a set of simplified procedures for permits and certificates. In August 2019, the 183 Parties to CITES amended these procedures to further facilitate the rapid movement of diagnostic samples, and it was agreed that guidance for practitioners on their use should be developed. However, the simplified procedures still fall short for emergency diagnostics.

An upmost priority for disease control and conservation must be ensuring access to rapid and high-quality diagnostics for endangered species of all taxa. Utilizing the existing model of OIE Reference Laboratories, in coordination with CITES to facilitate selection, registration, and transport would enable rapid diagnosis while ensuring access and benefits sharing are fully respected via trusted reference laboratories. However, diagnostic testing centres recognized as an official reference laboratory or a collaborating centre by the OIE are not automatically included in the CITES register. Registration relies on the management authority of the hosting Party, which may not be familiar with wildlife health needs in country or internationally.

Recent mass mortality events in endangered species and the increasing frequency of emerging infectious disease from wildlife have reiterated the need to rapidly facilitate the transfer of biological samples where this is urgently required.

Recommendations:

- Invite the CITES secretariat representative to participate in a discussion of the issues with the Working Group.
- Explore options for requesting OIE Delegates and OIE National Focal Points for Wildlife to discuss the needs for rapid transfer of emergency diagnostic specimens with their CITES Management Authority counterparts in their respective countries.

10. Surveillance of wildlife diseases at the national level

Disease surveillance is an information-based activity involving the collection, analysis, and interpretation of large volumes of data regarding diseases in animals and humans. Surveillance is essential to ensure coherent and appropriate risk communication and risk management interventions to current and emerging health threats. Human health surveillance is the responsibility of the health sector, surveillance in animals is the responsibility of agriculture agencies, and wildlife surveillance is usually the responsibility of the environmental or wildlife sectors. The latter is often the weakest component of a comprehensive, integrated health surveillance system and national capabilities are very diverse, ranging from well-established to rudimentary programmes. Consequently, strengthening surveillance systems for pathogens in wildlife is critically needed to prevent and control spill-over of pathogens at the human-livestock-wildlife interface as to protect biodiversity and to promote healthy ecosystems.

The Working Group discussed options for building capacity for wildlife disease surveillance at the national level. It was discussed that the collaborating centres network would be a logical place to start developing a program, and this would likely be a long-term project with OIE staff and financial support. The Working Group also discussed the benefits of further development of a wildlife Focal Points network, with dedicated staff support from the OIE (see also recommendations under point 5). Partnering with Non-Governmental Organisations and other international institutions was also discussed.

There appears to be broad diversity of experience and capabilities among countries concerning wildlife disease surveillance, resulting in challenges in preparing training curricula for this multi-level audience. The Working Group discussed tailoring the training to needs of specific countries. The concept of conducting in-country needs assessments regarding wildlife disease surveillance and co-developing training programs that are tailored to the specific country needs was discussed. The needs assessment would describe the current program, help define the future desired state, and identify needs and gaps. Training modules on various aspects of wildlife disease surveillance could also be developed. Virtual platforms could be used for delivery of some of this training, and the needs assessment could be linked to the Performance of Veterinary Services tool.

The idea of the development of a *Terrestrial Code* Chapter on wildlife health surveillance was also raised, and the Working Group agreed this should be further pursued. The Guidelines for Prevention and Control of PPR in Wildlife could be a basis for this Code Chapter.

Recommendations:

- The Working Group would work with the Collaborating Centre for Research, Diagnosis and Surveillance of Wildlife Pathogens (Canada/USA) to develop a concept note for building national-level wildlife disease surveillance capacity.
- Propose to Code Commission and Scientific Commission for Animal Disease the development of a chapter in the *Terrestrial Code* on the surveillance of wildlife diseases at the national level based on the chapter 1.4. “Animal health surveillance” and 4.15. “Official health control of bee diseases” and the “Guidelines for Prevention and Control of PPR” (see also recommendations under point 8).

11. OIE National Focal Points for Wildlife Network

11.1. Next cycle of training seminars: content and dates

The Working Group was informed of the preparation of the sixth cycle of training workshops for the Wildlife Focal Points. The theme of this cycle would be wildlife disease surveillance and management, and a comprehensive manual would be produced to complement the workshops by the Collaborating Centre for Research, Diagnosis and Surveillance of Wildlife Pathogens (Canada/USA). A first draft was circulated for comments to the members of the Working Group in March 2020. A second version considering these comments was provided to the members of the Working Group at this meeting. The members based on the discussion for this item and the item on the Surveillance of wildlife diseases at the national level, will review this second version and provide their comments by the end of January 2021.

The training workshops originally planned in Europe, Africa and Americas in 2020 have been postponed, due to the Covid-19 situation, in 2021 or 2022. The meetings will be organised in person or virtual depending on the evolution and management of the Covid-19 pandemic worldwide.

The Working Group pointed out the importance of veterinary laboratories in the wildlife disease surveillance system. Therefore, they highlighted the interest to have in the same training workshop the OIE National Focal Points for Wildlife, Laboratories and Animal disease notification.

11.2. How to enhance Wildlife Focal Points network?

The Working Group discussed how to enhance the network of the Wildlife Focal Points and made some recommendations.

Recommendations:

– OIE designate a dedicated coordinator ("Wildlife Focal Points Coordinator") at OIE Headquarters to provide support for the Wildlife Focal Points. The Coordinator would work with the National Wildlife Focal Points in the different regions worldwide to encourage reporting of non OIE listed wildlife diseases to the OIE. She/he would assist in managing training seminars for the OIE and facilitate coordination and communication both amongst Wildlife Focal Points and also with the OIE. (see also recommendations under point 5)

– The terms of reference for the National Wildlife Focal Points be updated to state that the designated Wildlife Focal Points should, preferably, be located in the Authority in charge of wildlife or at least under the responsibility of the Delegate and in close contact with the Authority in charge of wildlife.

12. Emerging and noteworthy wildlife issues and disease occurrences with relevance to the OIE: reports from members of the Working Group on Wildlife

A written update on emerging and noteworthy wildlife issues and disease occurrences from each of the different regions was provided by members of the Working Group in advance of the meeting. Reports were collated and reviewed and are presented in Appendix IV. The report is a unique and valuable source of information which can inform disease control and conservation strategies. The format of the report was discussed.

Note that disease occurrence in the report in Appendix IV is biased towards countries who actively contributed to this report.

Recommendations:

– Future reports for each region should be organized in two parts:

  (1) Wildlife diseases or events of importance which are either OIE listed or non-listed wildlife diseases including: name of the disease or explanation of the event, species involved, number of animals infected [for a disease] and number of deaths [for a disease and events], control measures implemented if any and scientific references, and;

  (2) Wildlife diseases or events of importance which are not referenced by the OIE. The same detailed information as above should be included, as well as a statement as to whether the disease should be considered for listing by the OIE and why.

– Development and circulation of a standard template and style guide to facilitate production and collation of the report.

13. Strategy, work priorities setting and work programme for 2021

The Working Group identified the following list of activities as priorities for its work in 2021, in line with its Terms of Reference. In addition to this list, the Working Group will respond to ad hoc requests from the OIE.

- *Participate in the future* ad hoc *Group to develop Guidelines on reducing the risk of spill-over pathogen events at markets selling wildlife and along the wildlife supply chain, which is planned to meet in 2021.*

- *Contribute to the finalisation of the OIE concept note on the wildlife health framework.*

- *Review the second version of the training manual on surveillance and control of diseases in wildlife developed by the OIE Collaborating Centre for Research, Diagnosis and Surveillance of Wildlife Pathogens (Canada/USA) for the Wildlife Focal Points.*

- *Evaluate the two available assessment tools (JEE and PVS) and report to OIE on a range of options for their use or adaptation for use for OIE purposes.*

- *Contribute to the Technical item in May 2021 on Lessons learned from the pandemic: how OIE can support Veterinary Services achieve One Health Resilience.*

- *Assist the OIE to:*

    - *Review the Terms of Reference for the Wildlife Focal Points, to include a link with the authorities in charge of wildlife;*

    - *Develop and animate the network of the Wildlife Focal Points;*

    - *Develop a Concept note for the future Wildlife Focal Points trainings.*

- *Contribute to the extension of the number of Collaborating Centers for Wildlife and communicate with the current network of Collaborative Centres for Wildlife.*

- *Assist the OIE in maintaining and developing partnerships and activities with relevant international organisations [*update agreement with CITES and IUCN, new one with WDA*], providing contacts and insights as to OIE participation and representation.*

- *Support the WAHIAD Department to encourage Focal Points for Wildlife to report annually on non-listed wildlife diseases including:*

    - *Finalise the technical disease cards including case definitions and references to diagnostic methods appropriate for each pathogen of the non-OIE list wildlife diseases;*

    - *Assist in preparing information materials to be shared with the Wildlife Focal Points;*

    - *Compile references to diagnostic methods appropriate for each pathogen on the non-listed wildlife pathogen and disease list.*

- *Work with the appropriate Departments of the OIE and Specialist Commissions in the development of wildlife trade standards.*

- *Continue to serve on the GREN wildlife group and work through OIE to seek publication of the guidelines for prevention and control of PPR in wildlife.*

- *Provide support to the OIE, as needed, on the diseases for which there is an OIE control strategy.*

- *Assist the Aquatic Animal Health Standards Commission in identifying potential candidates for Reference Laboratories for amphibian diseases.*

- *Support:*

    - *OIE contributions to WHO RD blueprint committee on COVID-19 and providing information to Members.*

    - *OIE in its work with the Collaborative Partnership on Sustainable Wildlife Management.*

    - *OFFLU in its efforts to gather information on surveillance for avian influenza viruses in wildlife.*

14. Date of next meeting

The Working Group proposed the following dates for its next meeting: from Tuesday 7 to Friday 10 December 2021. It also proposed to have a virtual meeting from Tuesday 15 to Friday 18 June 2021 to address more efficiently the wildlife activities that got developed within the sanitary situation worldwide.

15. Adoption of report

The report was adopted by the Working Group.

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…/Appendices

Appendix I

MEETING OF THE OIE WORKING GROUP ON WILDLIFE

Paris (France), 1 – 4 December 2020

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1. Summary

2. Opening

3. Adoption of agenda and designation of rapporteur

4. Disease reporting

4.1. Information on submitted reports on OIE-non listed diseases in wildlife through the WAHIS-*Wild* and on OIE-listed diseases in wildlife through the WAHIS

4.2. How to improve reporting of wildlife diseases to the OIE and proposed actions for improving the interest of the OIE Members to report wildlife diseases

5. Mechanisms to support Members to manage health events in wildlife

6. OIE Wildlife Health Framework

6.1. Discussion on the most recent version of the Concept Note for an OIE Wildlife Health Framework (including external stakeholder comments and feedback from webinars) and adoption of a final version

6.2. Discussion on implementation, resource mobilisation, and stakeholder engagement

7. Guidance on reducing risk of disease emergence and spillover through wildlife trade and along the supply chain

7.1. Development of a paper on risk-based decision framework regarding the wildlife trade

7.2. Update on the literature review on wildlife trade

7.3. Terms of reference and members of *ad hoc* Group

8. Integrate wildlife health needs into the OIE PVS tool

9. Facilitate the transport of wildlife diagnostic specimens

10. Surveillance of wildlife diseases at the national level

11. OIE National Focal Points for Wildlife Network

11.1. Next cycle of training seminars: content and dates

11.2. How to enhance Wildlife Focal Points network?

12. Emerging and noteworthy wildlife issues and disease occurrences with relevance to the OIE: reports from members of the Working Group on Wildlife

13. Strategy, work priorities setting and work programme for 2021

14. Date of next meeting

15. Adoption of report

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MEETING OF THE OIE WORKING GROUP ON WILDLIFE

Paris (France), 1 – 4 December 2020

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Discussion paper: reporting of diseases in wildlife, Recommended actions for improvements

Background: currently the reporting of disease in wildlife is based on two different channels:

1. Official report for the 110 (81 in terrestrial animals and 29 in aquatic animals) OIE listed diseases (notifiable in wildlife and domestic animals) and

2. Voluntary report for 54 selected = non OIE-Listed diseases, when detected in wild species, because these diseases have special implication for wildlife health

Additionally, it is mandatory for some diseases affecting wildlife to be reported as *emerging disease* in line with Article 1.1.4 of the *Terrestrial Animal Health Code*.

Current reporting status: while there is a certain compliance with reporting the wildlife disease belonging to the OIE-List, and the ones officially recognize as emerging, for the non OIE-Listed diseases the reporting situation is very far from the optimal, even after several years of efforts to sensitize the countries. The main reasons for which countries do not report data seems to be: lack of capacity, lack of will, perceived risks, lack of feedback or value of sharing, etc.

Objective: discussion of action for improvements of wildlife diseases (mainly focus on the ones for which reporting is not mandatory)

Action needed: considering the situation, and the increased importance of reporting diseases in wildlife, this represents a strategic risk the OIE is taking in not supporting or encouraging more the reporting in wildlife and we need to consider some radical and stronger approaches to improve the situation.

In order to test the efficacy of the implementation of the actions described in the document, they could be tested on a reduced number of countries, selected on the basis of a gap analysis on reporting, and monitoring the improvements of selected indicators in time. The OIE role should be very important in promoting a non-conflictive approach to disease reporting.

***Possible solutions/points for discussion*:**

- Define the OIE strategic approach and definition of specific resource allocation:
    - Use the analysis presented at the WGW from WAHIAD and the information already collected from previous surveys (and already reported by the WGW in previous years) to highlight the area for improvements and the priority countries. This will help to define the next steps of OIE actions;
    - OIE would need a Coordinator of the OIE National Focal Points for Wildlife. This Coordinator will be in charge to animate the network of the focal points for Wildlife, to manage the training seminars for the OIE National Focal Points for Wildlife in the different regions worldwide and to encourage the reporting of non OIE Listed wildlife diseases to the OIE;
    - Resourcing and costs for OIE to provide the reporting framework could be shared with WHO, FAO, and other big NGOs.
- *Facilitate reporting*:
    - For diseases in the annual report for wildlife
        - Review the list of diseases with the purpose of reducing the number and focusing on the most relevant, based on the criteria already established by the group at its last meeting (March 2020).

        - Review wildlife National Focal Points TORs and strongly suggest that they should be under the government department with direct access to wildlife authorities to facilitate access to information related to diseases events. This may vary between countries. Moreover, the Focal Points for Wildlife should have a job description that includes key attributes and competencies to enable them in their work.
    - For other diseases of interest (not included in the two lists: OIE-listed and non OIE-Listed)
        - WGW should identify and submit for consideration of Scientific Commission for Animal Diseases or Aquatic Animal Health Commission, as relevant, a list of wildlife diseases considered as *emerging* (link to SOP currently under development) for which reporting is mandatory (Article 1.1.4)
- *Improve the legal framework*:
    - Consider making it mandatory to report the diseases in the annual report for wildlife
- *Improve and simplify the reporting mechanism*: idea is to make the reporting of information of high interest faster
    - For diseases in the annual report for wildlife:
        - Reporting through the new OIE-WAHIS wildlife annual report but adding the possibility to report with monthly frequency (not available currently, to be developed)
    - For diseases identified as emerging
        - Reporting through OIE-WAHIS as Immediate notification, in order to have a close to real time reporting
    - For any other information that countries would like to share:
        - Reporting through Article 1.1.6
- *Facilitate sharing / visibility*:
    - For information reported through usual OIE-WAHIS channel, present disease information on the new OIE-WAHIS Wildlife public interface
    - For information reported through different channels
        - create a dedicated webpage + dedicated list of distribution.
        - diffusion of information may be also done in partner with other institution like IUCN (Direct link between disease reports in wild animals and the IUCN Red List of Threatened Species) and other relevant partners
- *Incentive reporting*:
    - Set and agree targets with the World Assembly of Delegates to improve reporting i.e. 20% more reports in XX years, etc. and report on it each year's General Session, highlighting which countries have done a good job, and eventually highlight for which Regions / areas there is a need of improvement;
    - Link wildlife disease reporting to some kind of reward, for example expert advice from OIE CC or WWG to support management of a wildlife disease event;
    - Communication material highlighting that reporting of wildlife diseases demonstrates transparency, a holistic and progressive approach to animal health and one health, and demonstrates that robust surveillance is in place. This should build trust and confidence with other countries (particularly trading partners);

- Organise joint training between wildlife and disease notification focal points (and potentially also Laboratories focal points);

- Engage wildlife focal points in a dynamic network (communication plan in between seminars, to share information/resources useful to them, involved them when developing documents, in expert groups etc.);

- Provide timely support/coordination through our wildlife OIE Collaborating Centers network (mechanism to be found: emergency coordination cell or something equivalent), when an event affecting wildlife health happens (a procedure could be developed to help the OIE Members to manage this event from the collect of the specimen to the notification to the OIE of the event).

- *Improve system sensitivity*:

  - Conduct an assessment of which diseases have not been reported, which information are really missing;

  - Conduct a prioritization exercise to evaluate which are the important diseases (important role of wildlife) on which the OIE should focus more its attention;

  - Improve active search activity on important events in wildlife (dedicated algorithm for non-listed diseases and improve the source of information targeting more specifically wildlife diseases) to reduce as much as possible inconsistencies between countries reports and the information coming from other sources;

  - OIE should have at central level a person pursuing more the search for unofficial information and reduce inconsistencies between official reports and reality on the ground (Reality check). Consider to approach this reality check on a selected number of countries;

  - Think about dedicated review of scientific literature to detect inconsistencies with published papers (long term approach for reality check). An intern position could be propose to support this activity?;

  - Connection with WGW (creation of a dedicated community in EIOS including wildlife expert and other relevant partners).

Emerging and noteworthy wildlife issues and disease occurrences with relevance to the OIE: reports from members of the Working Group on Wildlife

AFRICA

Please note that due to lockdown there were many cases of wildlife disease deaths in Africa that went undiagnosed due to travel restrictions and lack of funding for proper diagnostic workup. This is a chronic problem in most African states and wildlife deaths are rarely followed up unless there is dedicated wildlife unit in the respective countries. The economic impact of the COVID-19 lockdown enforced on Africa and lack of tourism will result in very little improvement of wildlife disease surveillance and diagnostics in the coming year(s), something that OIE needs to have input into in regular calls with focal points of African OIE representatives.

Diseases reported here are focused on noteworthy and emerging, not on common diseases that are diagnosed readily and frequently (like rabies, foot & mouth disease etc. unless they are noteworthy or emerging).

Coronavirus has spread throughout Africa but with notably lower numbers as a percentage of infected persons. There has been one wildlife record in a puma (*Puma concolor*) belonging to a private collector in South Africa. The Puma was infected by a positive handler and recovered after symptomatic treatment. The case will be published.

Elephant deaths Namibia, Zimbabwe and Botswana: From March to May over 300 elephants died in North West Botswana. After much difficulty (due to COVID and permit restrictions) samples went to various laboratories and the Botswana government declared that deaths were caused by cyanobacteria toxicity from pans in the area. Published results were not released and from personal correspondence it was clear that samples were not of the best quality and suspicion over the final diagnosis remains. From May – September 34 elephant died in Zimbabwe and fresh samples were obtained and a definitive diagnosis of infection with *Pasteurella Multocida* made. There were several deaths (the number was not confirmed) in the Zambezi region of Namibia with a suspected diagnosis of anthrax. In November additional elephant mortalities were recorded in the Zambezi Region in Namibia (30) and in the central Okavango Delta in Botswana (30+) but no diagnosis was confirmed at the date of this report. A Kavango-Zambezi Transfrontier Conservation Area animal health working group meeting is convened for 8 December to discuss the elephant mortalities of this region and there is strong evidence that it was aligned with environmental conditions at the time.

Ebola: In the Democratic Republic of the Congo in humans. Since the start of the epidemic declared on 1 June 2020, the cumulative number of cases is 128 human cases, including 119 confirmed and 9 probable. In total, there were 53 deaths (44 confirmed and 9 probable) and 69 recovered (people cured or survivors of Ebola virus disease). 18 November 2020 marks the end of the 11th Ebola outbreak in the Democratic Republic of the Congo, nearly 6 months after the 1st cases were reported in Equateur Province. The outbreak took place in communities scattered across dense rain forests as well as crowded urban areas, creating logistical challenges. These were surmounted due to the leadership of the government and local communities, supported by the World Health Organization and partners. No records of wildlife cases could be found but is possible that primates were also affected.

Lassa fever: In Nigeria in humans. Cumulatively from week 1 to week 45, 2020, 234 deaths have been reported with a case fatality rate of 20.6%, which is lower than the case fatality rate for the same period in 2019 (20.9%). No information on wild animals could be obtained. We do know that rodents (squirrels) are asymptomatic carries of the disease and therefore is the source of the zoonotic infection.

Rift Valley fever: In Senegal. Outbreak location: Bango, Saint-Louis, Date of start of the outbreak: 3 September 2020 Outbreak status: continuing (or date resolved not provided) Total animals affected Species: Roan Antelope (*Hippotragus equinus* (Bovidae) / Susceptible: 3 / Cases: 1 / Deaths: 1

Yellow fever: Africa (21), Nigeria (Benue). Over 20 people have died as a deadly yellow fever outbreak continues to ravage some part Benue State. Nigeria is responding to [the latest] successive yearly outbreak of yellow fever since the return of the disease in September 2017. Since the beginning of 2020, a total of 1558 suspected cases and 46 confirmed cases have been reported from 481 (62%) local government areas across all 36 states and the Federal Capital Territory. There was no evidence or discussion given about potential wild animal involvement as reservoirs and transmission is suspected to be directly from mosquitoes.

Leprosy (*Mycobacterium leprae*): Guinea-Bissau's and Ivory Coast. Wild chimpanzees have been found to be infected with leprosy for the first time, in two locations in West Africa that are separated by hundreds of miles. Experts discovered two wild chimp populations, in Guinea-Bissau's Cantanhez National Park and Tai National Park in Ivory Coast, that are infected with the disease, as confirmed by faecal samples.

Anthrax: In wildlife in Uganda. The Uganda Wildlife Authority has registered over 150 deaths of wild animals due to anthrax at Queen Elizabeth National Park this year [2020]. The majority of the animals that died from anthrax included hippos (*Hippopotamus amphibius*), buffalos (*Syncerus caffer*) and bush pigs (*Potamochoerus larvatus*).

Plague *(Yersinia pestis):* In Democratic Republic of the Congo. Plague is endemic in Ituri province. Since the beginning of 2020 to date [Tuesday 20 October 2020], Ituri Province has reported a total of 124 human cases and 17 deaths (case fatality rate 18.7%) in 5 health zones, namely Aungba, Linga, Rethy, Aru, Logo and Kambala. In 2019, from week 1 to 52, a total of 48 cases of bubonic plague including 8 deaths have been reported in the country. It is suspected that fleas from rats are the source of the infection to the humans.

Monkeypox: Africa, Democratic Republic of the Congo. From 1 January through 13 September 2020, a total of 4594 suspected cases in humans of monkeypox, including 171 deaths (case fatality rate 3.7%), have been reported in 127 health zones from 17 out of 26 provinces in the Democratic Republic of the Congo. The transmission seems to be direct between humans and the source infection is not clear but may originally come from rodents and/or monkeys but outbreak now transmitted between people.

ASIA

Avian influenza: Large scale outbreaks of Highly Pathogenic Avian Influenza (HPAI) in poultry farms occur in some Asian regions such as Japan and South Korea this year-end.

Wild bird monitoring in Japan using 9 samples from three wild ducks, two feces of unknown species and four environment samples (water) showed that 6 HPAI (H5N8) positive cases has been observed in three Prefectures: Hokkaido, Kagoshima, Niigata of Japan by the end of November 2020 (Table 1).

In South Korea, H5N8 virus has been also found in samples from wild birds in Cheonan-si, Chungcheongnam-do, about 84 kilometers central west of capital Seoul and in Namdaecheon, a river leading to the East Sea in November. It is suspected that next year (2021) would be serious situation not only among poultry but wild birds. The cases of avian influenza including Low Pathogenic Avian Influenza (LPAI) infection of wild birds were reported from India, China, Russia, Philippines, and Japan from January to November this year (Figure 1).

In India, H5N1 avian influenza virus was detected from 9 dead zoo birds; three Lesser adjutants (*Leptoptilos javanicus*), 2 Oriental white ibises (*Threskiornis melanocephalus*), and four Eastern grass-owls (Tyto longimembris) at Bhagwan Birsa Biological Park of Jharkhand in February. And also, H5N1 was detected from 50 dead House crows (*Corvus splendens*), 7 Red-headed trogons (*Harpactes erythrocephalus*) in Patna of the state of Bihar between February and March.

In China, deaths had been reported in 58 migratory swans at 6 locations in 5 cities by January 2020. Highly pathogenic H5N6 virus was isolated from the samples of 11 Whooper swans (*Cygnus cygnus*) and two Mute swans (*C. olor*) collected in Xinjiang, western China.

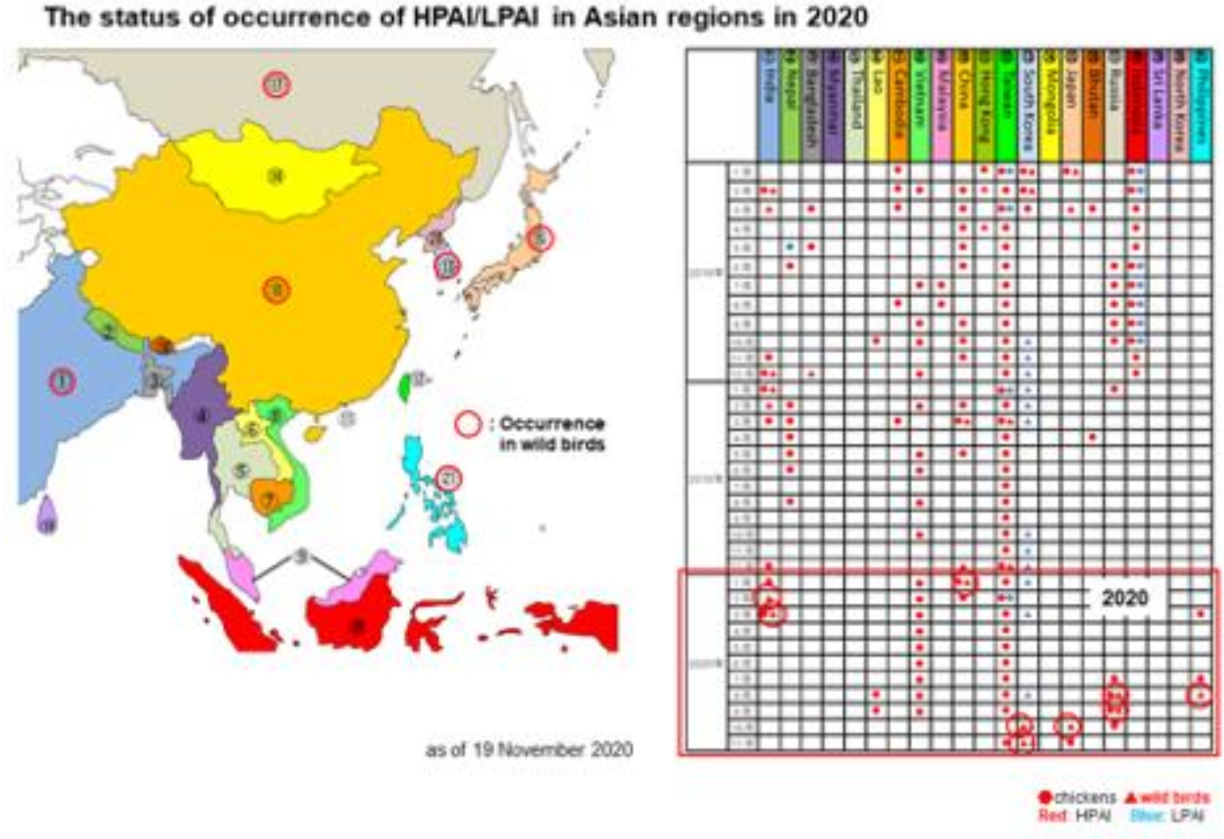

Figure 1. The occurrence of Avian influenza in Asian countries from January to November in 2020

Table 1. Avian influenza monitoring in Japan in 2020

Wild Bird AI Monitoring in Japan, 2020-2021 — As of 29 Nov 2020 — New information — Confirmed 6 cases in 3 prefectures

Translated from Public Announcement of Ministry of the Environment, Japan: http://www.env.go.jp/nature/dobutsu/bird_flu/index.html

No.	Prefecture	Location	Species	Scientific name	Sample	Sampling date	Rapid test for Influenza A	PCR screening for Influenza A	Diagnosis	Diagnostic Institution	Intensive Monitoring Zone (10km in radius)*	Emergency Survey**	OIE Report	Remarks
1	Hokkaido	Monbetsu city	(unidentified)	*NA*	Feces	24-Oct-20	NA	NA	H5N8 HPAIV Positive (30-Oct-20)	Hokkaido Univ	Set on 30-Oct-20	31 Oct -2 Nov		
2	Kagoshima	Izumi city	(Environment)	*NA*	Water	9-Nov-20	NA	NA	H5N8 HPAIV Positive (13-Nov-20)	Kagoshima Univ	Set on 13-Nov-20	A		
3	Kagoshima	Izumi city	(unidentified)	*NA*	Feces	5-Nov-20	NA	AIV Positive (10-Nov-20)	H5N8 HPAIV Positive (17-Nov-20)	Kagoshima Univ	Set on 17-Nov-20	A		
4	Kagoshima	Izumi city	Northern Pintail	*Anas acuta*	Carcass	15-Nov-20	NA	AIV Positive (17-Nov-20)	HPAIV Negative H2N9 subtype (21-Nov-20)	Kagoshima Univ	Set on 17-Nov-20 Remove 21-Nov-20	A		
5	Kagoshima	Izumi city	Greater Scaup	*Aythya marila*	Carcass	16-Nov-20	Negative	AIV Positive (17-Nov-20)	HPAIV Negative (21-Nov-20)	Kagoshima Univ	Set on 17-Nov-20 Remove 21-Nov-20	A		
6	Kagoshima	Izumi city	(Environment)	*NA*	Water	16-Nov-20	NA	NA	H5N8 HPAIV Positive (20-Nov-20)	Kagoshima Univ	Set on 13-Nov-20	A		
7	Niigata	Agao city	(Environment)	*NA*	Water	16-Nov-20	NA	NA	H5N8 HPAIV Positive (25-Nov-20)	Tottori Univ	Set on 25-Nov-20	A		
8	Hokkaido	Kuchian city	Mallard	*Anas platyrhynchos*	Carcass	17-Nov-20	Negative	AIV Positive (25-Nov-20)	under examination	NIES	Set on 25-Nov-20	A		
9	Kagoshima	Izumi city	(Environmental)	*NA*	Water	23-Nov-20	NA	NA	H5N8 HPAIV Positive (27-Nov-20)	Kagoshima Univ	Set on 13-Nov-20	A		

* Intensive Monitoring Zone will be lifted after 30 days if ther is no further incidence of HPAIV.

** Emergency Survey is to look for abnormality of wild birds such as mass mortality. If there is any abnormal findings, it is shown in remarks.

African swine fever: In South Korea, the number of cases of African swine fever has been rising steadily inside and outside of the demilitarized zone. Since three wild boars died of African swine fever were found at Gangwon-Do Province in January, totally 791 infectious cases of African swine fever in wild boars were reported to date.

In China, totally 22 cases of African swine fever in wild boars were reported from October to November (Figure 2).

In Papua New Guinea, it is reported the deaths of 396 out of 700 free-ranging pigs, across 4 villages in Mendi Munihu (within the Southern Highlands) were reported on 11 March 2020.

In India, the breeding center for Pygmy hog (*Porcula salvania*) located at Nameri in Assam has been locked down because of the outbreak of African swine fever.

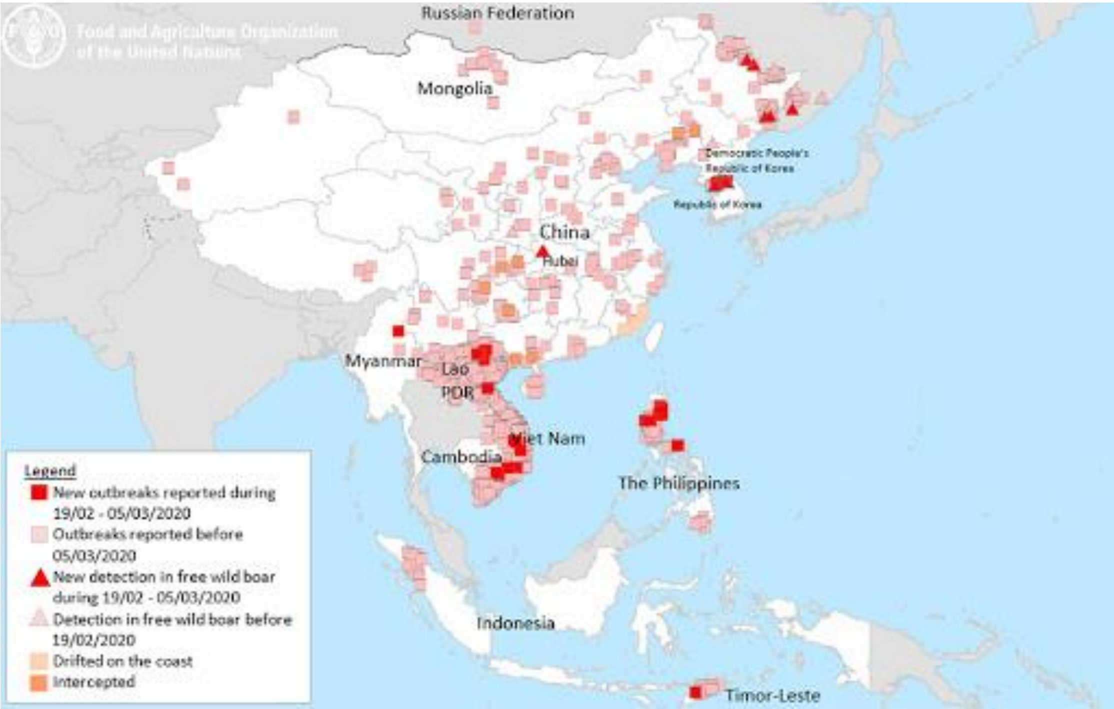

Figure 2. African swine fever situation in Asia (August 2018 to date) by FAO (http://www.fao.org/ag/againfo/programmes/en/empres/ASF/Situation_update.html)

Classical swine fever: In Japan, since an outbreak of classical swine fever in a pig farm of Gifu Prefecture was reported officially in September 2018, this virus infection of wild boars (*Sus scrofa*) is spreading to 21 prefectures by November (Figure 3). Totally 2,870 of 23,281 (12.3%) dead or captured wild boars there showed positive to classical swine fever.

Ministry of Agriculture, Forestry and Fisheries has set three vaccinating belts using oral vaccine in the western part in addition to the eastern part of Japan.

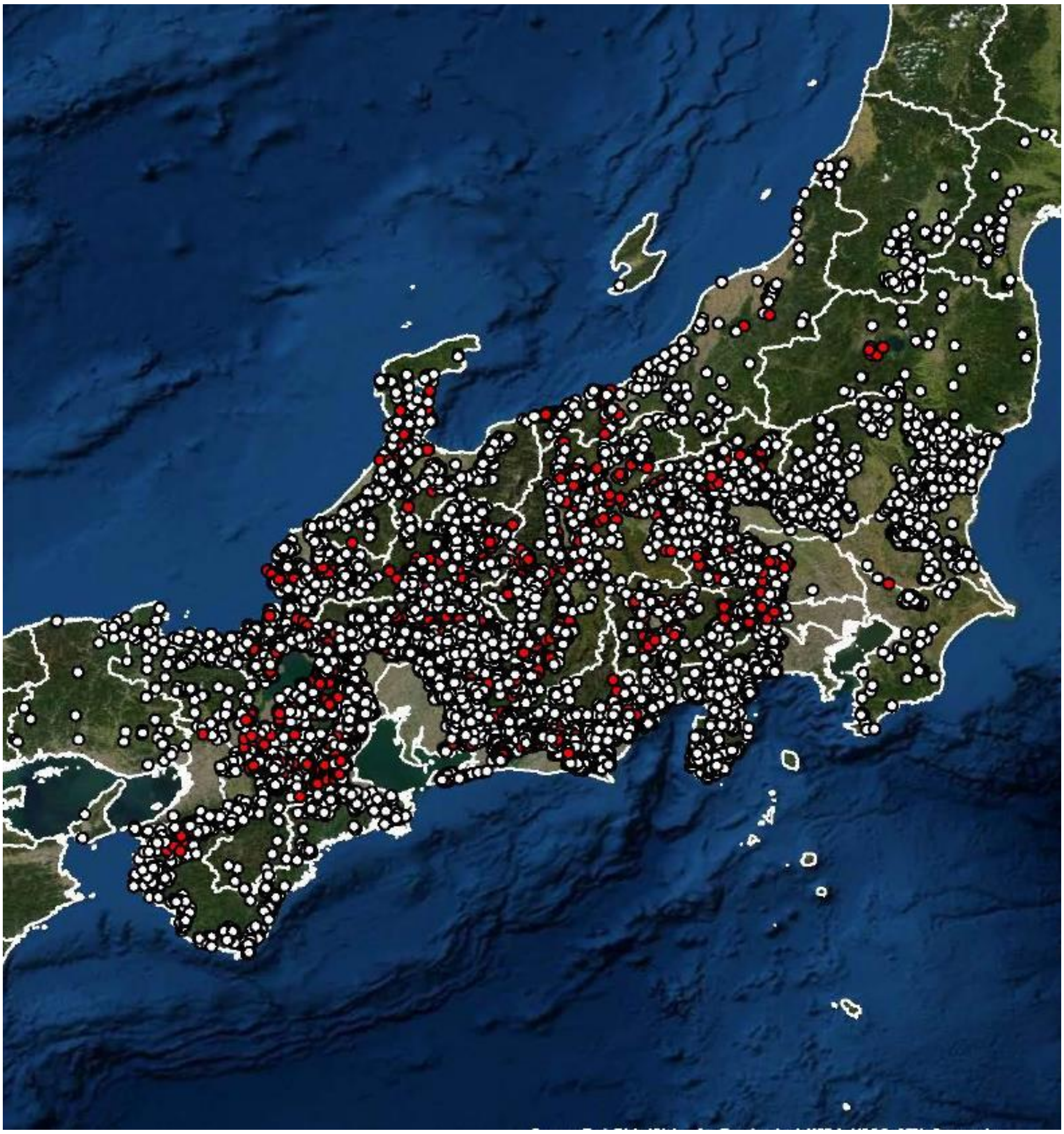

Figure 3. Locations of classical swine fever found in wild boars as of 18 November 2020.
Red circle: PCR positive. White circle: PCR negative.

Classical swine fever virus isolated from domestic pigs from 10 prefectures and wild boars from four prefectures in Japan from 2018 to 2020 was classified into the same cluster as Genotype 2.1 (Figure 4).

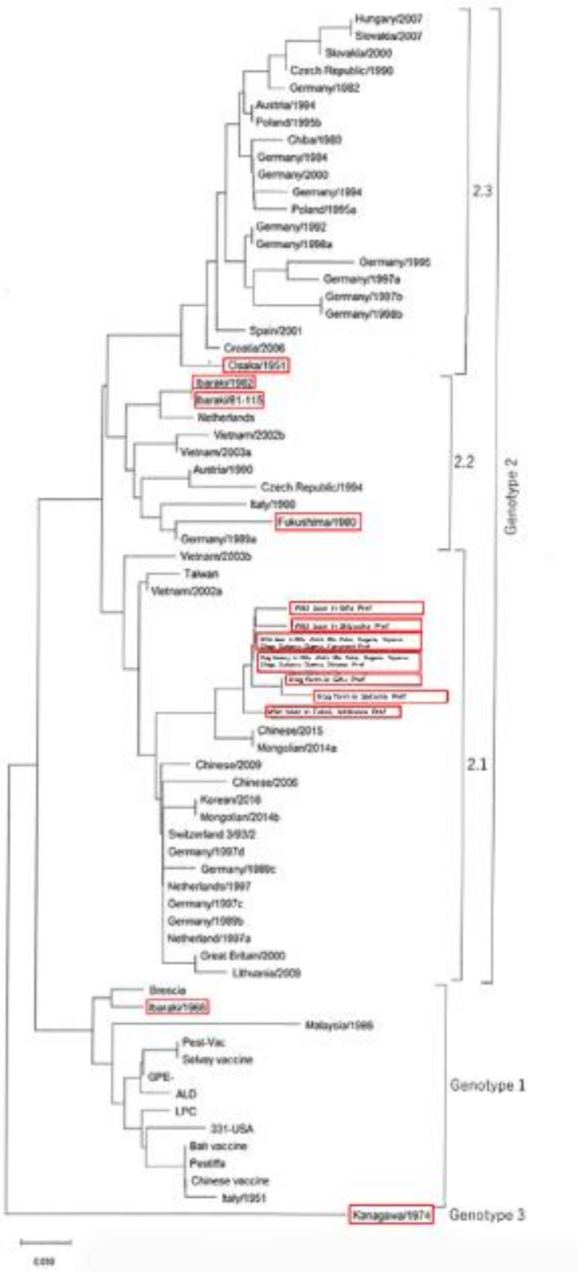

Figure 4. Phylogenetic tree of classical swine fever virus genes (5'UTR regions: 150bp) isolated from domestic pigs and wild boars in Japan (red frame) constructed using genetic sequences registered in DNA database all over the world. This was analyzed by National Agriculture and Food Research Organization in 2020.

African horse sickness: In Thailand, an outbreak of African horse sickness in domestic horses was notified on 23 March 2020. The outbreak has affected more than 2,200 horses and killing 562 by July. This was the first case of African horse sickness in South-East Asia. The virus isolated the horse kept at a farm in the Nakhon Ratchasima province was determined to belong to serotype 1 and is phylogenetically closely related to isolates from South Africa. It is suspected that the disease was brought into the country through Burchell's zebras (*Equus quagga burchellii*) importations from Africa. In February, some zebras were reported to have been resold to buyers and re-exported to China. It is trying to collect blood from about 500 captive zebras in Thailand, to trace infection sources.

EUROPE

COVID-19: SARS-CoV-2-infected American mink (*Neovison vison*) farmed for fur production have been detected by PCR on numerous distinct farms in Europe (62 out of approximately 125 farms in the Netherlands, 229 out of >1200 in Denmark, 10 in Sweden, one in Spain, and one in Italy). In all affected countries but Italy, infected farm employees were considered the source of infection. In Italy, the source of infection was unclear and a false positive test result was hypothesized. Infections emerged first on farms in the Netherlands (April) and Denmark (June), where the virus has rapidly spread among farmed mink, partly causing respiratory disease. Full-length virus genome sequencing conducted on Danish samples revealed novel virus variants in mink, which subsequently appeared within the local human community. A spillback from mink to humans was also suspected in the Netherlands when two employees from two different contaminated farms were found to be infected. In the Netherlands, total slaughter of contaminated farms was ordered as well as active surveillance on a weekly sampling basis on all other farms, but after the detection of a new case in August that suggested that the implemented control measures were insufficient, the Dutch authorities have considered moving to March 2021 the project to abolish mink farming by 2024. Denmark and Spain also ordered slaughtering on positive farms but Denmark then changed the strategy towards reinforcement of prevention and surveillance. Most recently, a mutated virus strain was also found on a mink farm in France. No farm employee has been found to be positive so far. All 1000 animals of the farm will be culled and all animal products will be eliminated.
(sources: Oreshkova *et al*. 2020, https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.23.2001005; Molenaar *et al*. 2020, https://journals.sagepub.com/doi/10.1177/0300985820943535; Hammer et al. 2021, https://wwwnc.cdc.gov/eid/article/27/2/20-3794_article; www.plateforme-esa.fr; media reports)

Chronic wasting disease: In September 2020 a 14 years old lame and unshy female moose (*Alces alces*) was put down and tested positive for chronic wasting disease (CWD) in Sweden, a year after and 200 km further South from the latest case of 2019. This fourth CWD case in a Swedish moose originated from a population that has been studied for decades by the Swedish University of Agricultural Sciences. Radio-telemetry data (including on home ranges) are available, which will be very valuable to further investigate the CWD situation in this region. So far, all CWD moose found in Scandinavia (four in Sweden and seven in Norway) were old animals and CWD prions were detected only in CNS tissue, suggesting that Nordic moose are affected by a spontaneous CWD variant in old individuals (isolated cases found far apart) rather than by the classical contagious CWD seen in North America and in wild reindeer in Norway (case clusters typical of a contagious disease; lymph nodes and other tissues also positive for prions that can be shed in urine, saliva, etc). In Norway, the disease highlight of the year has been the discovery in September 2020 of a male reindeer (*Rangifer tarandus tarandus*) positive for classical CWD outside the depopulated area where the disease had emerged in 2016. Further actions were put on hold when the reindeer hunting season ended, f. The authorities have requested a new scientific opinion to aid determining management actions. (sources: J. Våge and E. Ågren, EWDA Network Google group)

African swine fever: In September 2018 African swine fever (ASF) had taken a jump to Belgium (obviously man-made but still of unknown origin), from where it had progressively extended towards the French border. Control measures and intensified surveillance were quickly implemented on both sides of the border. Since then, over 800 wild boars were tested positive, all found in the core zone, while no case has been detected in France to date. The last confirmed case of a fresh carcass in Belgium was in August 2019; since then, there has been only six additional positive wild boars (all bone remnants), the last one found early March 2020. By late August, Belgium was hoping to get back its freedom-of-disease status by the end of the year. Nevertheless, while the situation at the Belgium/France border seemed to get under control, mid-November 2019 the Polish State Veterinary Institute confirmed the occurrence of a second case of African swine fever in wild boar about 70-100 km away from the German border, followed by a rapid increase of new African swine fever-confirmed wild boar cases in this area. In September 2020, the first case of African swine fever was diagnosed in Northern Germany close to the Polish border. More cases followed, including a hunter-harvested animal shot almost 70 km south from the initial outbreak. This distant African swine fever case was believed to be due to a distinct virus introduction (through a wild boar from Poland or an anthropogenic source). It is expected that disease control along the Polish border will be particularly challenging given the currently high case numbers on the Polish side. Until 25 November 2020, Germany had reported >300 confirmed outbreaks or cases. In September/October 2020, a total of nearly 1000 new wild boar cases have been announced from Bulgaria, Estonia, Latvia, Poland, Rumania, Slovakia and Hungary.
(sources: https://www.blv.admin.ch/blv/fr/home/tiere/tiergesundheit/frueherkennung/radar.html; www.plateforme-esa.fr; www.oncfs.gouv.fr/Reseau-SAGIR-ru105; https://www.fli.de/de/aktuelles/tierseuchengeschehen; M. Logeot, pers. comm.)

Rabbit hemorrhagic disease (RHDV-2): During May and June 2020, RHDV-2 infection was diagnosed in wild rabbits from two incidents in Great Britain. Accurate mortality estimates are difficult to obtain but in one of the outbreaks, which occurred in a nature reserve, mortality was estimated to be 30-40% of a population of approximately 1400 animals. The disease had been diagnosed in pet rabbits in the same area in November 2019. In contrast to classic rabbit hemorrhagic disease, which mostly occurs in autumn, RHDV-2 infections are mainly seen in late spring, suggesting that environmental factors influence disease occurrence. This disease is suspected to contribute to the on-going wild rabbit decline in Great Britain. Because RHDV-2 can infect several lagomorph species (differently from classic rabbit hemorrhagic disease virus) and considering that the virus seems to spread rapidly, there is concern that it could eventually challenge threatened wild lagomorph species around the world. (Source: Duff et al. 2020, veterinaryrecord.bmj.com/content/vetrec/187/3/106.full.pdf)

***Baylascaris procyonis* infestation:** In the framework of a targeted study conducted in the Netherlands, in 2020 *B. procyonis* was found in approximately half of the tested raccoons (). New occurrence of *B. procyonis* was also recently detected in France and Switzerland (once each, accidental findings). Such observations point at a range expansion of this zoonotic pathogen through invasive species in Western European countries. (Sources: M. Maas, EWDA Network Google group; Umhang et al. 2020, pubmed.ncbi.nlm.nih.gov/32512048/; quarterly reports of FIWI Bern)

Avian influenza (HPAI H5): In January 2020, H5N8 was detected in a radio-tagged Bonelli's Eagle (*Aquila fasciata*) with neurological signs in Jordan Valley, i.e., South-East of Europe. During the same month, infections were detected in poultry in several Eastern European countries. In October, it was found in two dead mute swans (*Cygnus olor*) in the Netherlands, likely due to virus introduction by migratory birds. Soon after, a noteworthy increase of simultaneous cases of HPAI infections (including H5N8 and H5N5, with similarities to strains of 2016/2017) was documented in several locations in Northern Germany. Affected birds were waterbirds and birds of prey, including Peregrine falcons (*Falco peregrinus*). All positive birds were found dead, except for a euthanized wigeon (*Anas* sp.) with unclear clinical history. More wigeons were found dead but not tested. By late November, over 300 wild bird cases had been confirmed in Germany and over 40 in the Netherlands. H5N8 was additionally found in October in wild waterbirds in Southern England, including geese (*Branta canadensis*, Anser anser). These detections were followed by recommendations to keep poultry indoor. Intensified surveillance has also been recommended, as more birds are expected to migrate from affected Asian regions to Europe in the next few weeks and months. (R. King and T. Kuiken, EWDA Network Google group;
www.dwhc.nl/en/; https://www.blv.admin.ch/blv/fr/home/tiere/tiergesundheit/frueherkennung/radar.html; www.plateforme-esa.fr; https://www.fli.de/de/aktuelles/tierseuchengeschehen)

Usutuvirus infection: In 2020 Usutuvirus was found for the first time in the United Kingdom, in wild birds including blackbirds (*Turdus merula*) near London. In France, three mortality events were recorded in blackbirds in August/September. Only a few blackbirds were found to be affected in Switzerland. Since the high mortality noticed in multiple European countries in 2018, case incidence seemed to have strongly decreased. (https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.41.2001732; A. Decors, pers. comm.; quarterly reports of FIWI Bern)

West Nile virus infection: Starting in June 2020, cases of West Nile virus infections have been recorded in wild birds and/or horses and/or humans in multiple countries (Greece, Spain, Italy, Portugal, France, Austria, Germany, Rumania, Hungary, Bulgaria). An autochthonous human case was detected for the first time in The Netherlands in October, following detection of the virus in the same region in August/September in mosquitoes and birds, including a passerine bird (common whitethroat, *Sylvia communis*).
(sources: www.dwhc.nl/en/; https://www.blv.admin.ch/blv/fr/home/tiere/tiergesundheit/frueherkennung/radar.html)

***Suttonella ornithocola* infection**: High morbidity and mortality in Eurasian blue tits (*Cyanistes caeruleus*) have been observed in Finland, Great Britain, Belgium, The Netherlands, Luxembourg and Germany. The most affected European region has been North-Western and Western Germany (approximately 26,000 reported dead birds). Affected birds were lethargic, fluffy and dizzy, and without escape behaviour when approached by people. There were also unusual deaths of weak blue tits after handling and ringing. Examined birds showed necrotizing pneumonia associated with *Sutonella ornithocola*. but the first disease description dates back to 1996 in Great Britain and this bacterium has caused high mortality in tits in Central and Western Europe since at least 2000. Many birds were found around feeding stations but the reason for disease emergence in spring 2020 is not known (Isumursu et al., EWDA Bulletin Summer 2020, http://ewda.org/bulletin-newsletters; pers. comm. G. Wibbelt; media reports).

Anisakidosis: An emerging trend of "spring emaciation and parasitism syndrome" associated with *Contracaecum* sp. (causing agent of anisakidosis) in cormorants (*Phalocrocoreax carbo*) is suspected in Great Britain. Although only small case numbers have been observed in recent years, this finding is noteworthy due to its relevance to human health (zoonotic parasite transmitted by ingestion of raw or undercooked sea food). (source: summary of wildlife disease surveillance information in Great Britain by P. Duff and colleagues)

Botulism: Unusual deaths of waders were recorded in a botulism outbreak in a wetland site in Great Britain (source: summary of wildlife disease surveillance information in Great Britain by P. Duff and colleagues).

Astro- and kobuvirus infections: Astro- and kobuviruses are zoonotic enteroviruses. New variants were detected in two juvenile grey squirrels (*Sciurus carolinensis*) with fatal enteritis in Great Britain (Dastjerdi *et al*. 2020, microbiologyresearch.org/content/journal/jgv/10.1099/jgv.0.001431).

OCEANIA

Ehrlichia canis: Detected in domestic dogs (*Canis lupus familiaris*) for the first time in two Australian Jurisdictions: Western Australia and Northern Territory. Wild dogs and dingoes (*Canis lupus dingo*) have been considered in nationally coordinated awareness campaigns in addition to response and surveillance activities. A simple disease risk assessment on the likelihood and potential consequences of *E. canis* entering and establishing in wild dingo populations in Australia is underway. [Further information here: https://www.outbreak.gov.au/current-responses-to-outbreaks/ehrlichiosis-dogs.]

Avian influenza: Between 31 July and 25 August 2020 three different strains of avian influenza [HPAI H7N7, LPAI H5N2, LPAI H7N6] detected across six infected farms in the Australian jurisdiction of Victoria. As part of the response, wild bird activities included expert ornithological field assessment, enhanced general surveillance, mapping waterbird data, assessment of previous national wild bird LPAI H5 and H7 results and assessment of possible wild bird source and spread pathways through expert input from the national avian influenza wild bird steering group. [Further information here: https://www.outbreak.gov.au/current-responses-to-outbreaks/avian-influenza.]

Tularaemia: Two probable human cases of tularaemia in New South Wales linked, in one case, to bites and scratches from a ringtail possum (*Pseudocheirus peregrinus*), and in the other to wildlife necropsy; no related detections in wildlife. [See AHSQ report 2020 vol 25 issue 2].

Avian chlamydiosis: In Australian king parrots (*Alisterus scapularis*) and crimson rosellas (*Platycercus elegans*) in the Blue Mountains region of New South Wales, and in crimson rosellas in Victoria. [See AHSQ report 2020 vol 25 issue 2].

Endemic leishmaniasis: In a wild agile wallaby (*Macropus agilis*) in the rural Darwin region in the Northern Territory [See AHSQ report 2020 vol 25 issue 1].

Other:

Bushfires: The unprecedented bushfire season of 2019-20 in Australia caused the estimated loss of three billion animals and 130 threatened ecological communities. Work is ongoing to identify and action priorities in the preparedness area for wildlife health and welfare in the face of natural disasters.

National guidelines in Australia: A national guidelines for the management of disease in free-ranging Australian wildlife have been developed. The guidelines are an overarching summary document outlining the options available for managing disease in Australian wildlife in an Australian context and are available here.

Antimicrobial resistance strategy: Australia's National Antimicrobial Resistance Strategy - 2020 and Beyond was released in 2020 and includes consideration of the environment and wildlife.

Wildlife Health Australia Annual Report: A summary of some other wildlife health activities in Australia is presented in the WHA annual report.

SOUTH AMERICA

***Klebsiella pneumoniae*:** Brazil. Outbreak of hypermucoviscous (hypervirulent) *Klebsiella pneumoniae* causing death of 11 marmosets (*Callithrix* spp.*)* in a rehabilitation center in the city of São Paulo. This bacteria is zoonotic and has been described before in non-human primates (e.g. Soto *et al*. 2012, DOI: 10.7589/0090-3558-48.3.603). Paper accepted in Emerging Infectious Diseases. Reported by Dr. Jose Luis Catao Diaz, University of Sao Paulo.

Ranavirus infection: Brazil. Escaped free-ranging North American Bullfrogs (*Lithobates catesbeianus*) were positive to ranavirus infection during a mortality event in 2017 in the state of Rio Grande do Sul, southern Brazil. Dying and dead bullfrog tadpoles were found in a pond with a few dead fish, all showing signs of ranaviral disease. Chytrid fungus was also detected in several tadpoles, including native and invasive species (Ruggeri *et al*. 2019. JWD. https://doi.org/10.7589/2018-09-224).

Chapare virus: Bolivia. Confirmation of Chapare virus and human to human transmission in 2019 human hemorrhagic fever outbreak (included in last year's report). Also, Chapare viral RNA was detected in pigmy rice rats (genus *Oligoryzomys*) and small-eared pigmy rice rats (*Oligoryzomys microtis*) near the outbreak area in La Paz department. Chapare virus is an arenavirus and had only been documented previously in an outbreak in 2004. It is likely that the virus has been circulating for several years, with some infected patients being wrongly diagnosed as suffering from dengue due to symptom similarities. In 2019 Chapare virus caused at least 5 human infections near La Paz, three of which were fatal, and infections occurred through encounters with infected patients. The two index cases were rice farmers.

Sarcoptic mange: Chile. Report on geographic and species expansion of sarcoptic mange over a 15-year period (2004–2018). Information from several sources suggests that observations of alopecic wild mammals, mainly foxes (*Lycalopex* sp.), their presence in the country, and the number of species with abnormal alopecia have increased over the last 15 years. This trend follows the current global emergence of sarcoptic mange in wildlife (Montecino-Latorre *et al*. 2020. https://doi.org/10.1016/j.pecon.2020.09.007).

NORTH AMERICA

Rabbit hemorrhagic disease (rabbit hemorrhagic disease virus 2): A large-scale outbreak of rabbit hemorrhagic disease, caused by rabbit hemorrhagic disease virus 2, involving both domestic and wild lagomorphs, began in the spring of 2020 in the southwestern United States and adjacent northwestern Mexico. As of September 2020, rabbit hemorrhagic disease virus 2 has been confirmed in wild black-tailed jackrabbits (*Lepus californicus*), antelope jackrabbits (*L. alleni*), desert cottontails (*Sylvilagus audubonii*), and mountain cottontails (*S. nuttallii*) in the states of Arizona, California, Colorado, Nevada, New Mexico, Texas, and Utah. For up to-date, continental-scale information on the rabbit hemorrhagic disease virus 2 event in wild lagomorphs, please visit the Wildlife Health Information Sharing Partnership-event reporting system (WHISPers).

Rabbit hemorrhagic disease virus 2 is categorized by the U.S. Department of Agriculture as both a Foreign Animal Disease (FAD) and a Notifiable Lagomorph Disease in the National List of Reportable Animal Diseases (NLRAD). Recently, the U.S. Department of Agriculture determined that rabbit hemorrhagic disease virus 2 outbreaks in some southwestern states and Washington state have reached "stable" status and has consequently disseminated virology testing procedures for rabbit hemorrhagic disease virus 2 to be conducted in additional laboratories. Specifically, the U.S. Geological Survey's National Wildlife Health Center (NWHC) and the Southeastern Cooperative Wildlife Disease Study (SCWDS) have been designated as primary laboratories for testing wild rabbits for rabbit hemorrhagic disease virus 2 in support of state, federal, and tribal wildlife management agencies.

The U.S. Geological Survey's National Wildlife Health Center has developed three overarching goals for rabbit hemorrhagic disease virus 2 response that align with our priority to assist state, federal, and tribal partners with their management response: (1) inform situational awareness, (2) mobilize knowledge, and (3) assess potential population-level impacts of this disease. To inform situational awareness by providing diagnostic services to state, federal, and tribal natural resource management partners to document both the (a) geographic and (b) host range of rabbit hemorrhagic disease virus 2. Data will be managed and served in WHISPers. Based on the above goals, the U.S. Geological Survey's National Wildlife Health Center has released submission guidelines for RHDV2 surveillance, provided guidance in a recent Wildlife Health Bulletin, and released "A Brief Overview of Rabbit Survey Methodology" to assist partners in their efforts to document the distribution and abundance of lagomorphs in their jurisdictions.

SARS-CoV-2 bat risk assessment: The novel coronavirus, SARS-CoV-2, causes COVID-19 in humans and is genetically similar to strains of coronavirus found in bats in China (Tang *et al*. 2020; https://doi.org/10.1093/nsr/nwaa036). Given the rapid spread of the virus, there is concern among natural resource management agencies that it may pose a threat to North American bat populations if: 1) bats are exposed to the virus through interaction with infected people, 2) the virus can subsequently infect bats and be transmitted among them, and 3) the virus causes illness or mortality in bats. Additionally, if sustained transmission of SARS-CoV-2 can occur in native bat populations, it could possibly become a source for new infection in humans, domestic animals, or other wild animals.

Out of an abundance of caution multiple and state and federal wildlife management agencies have issued interim guidance regarding bat handling; many have paused all direct handling of bats. To assist these agencies in their decision-making process, the U.S. Geological Survey, U.S. Fish and Wildlife Service, and the EcoHealth Alliance conducted a rapid risk assessment using a combination of expert elicitation, published data, and unpublished data previously collected by bat biologists. The risk assessment has been published by the U.S. Geological Survey (https://doi.org/10.3133/ofr20201060).

Based on the input from the expert panel, the risk assessment indicates that there is a non-negligible risk of transmission of SARS-CoV-2 from infected humans to bats. The level of risk varies across different groups that encounter bats, based largely on the type and amount of handling they engage in. Proper use of personal protective equipment, however, especially use of an N95 respirator, is expected to reduce the exposure risk from researchers by roughly 95%, but will not eliminate the risk altogether. If a bat were to become infected with SARS-CoV-2, the expert panel estimated that there is approximately a 33% chance the virus could spread within a bat population, however, there was considerable uncertainty associated with this estimate. Ongoing work by the U.S. Geological Survey and other partners is focused on reducing some of the key uncertainties and expanding the scope of this assessment.

White-nose syndrome/ *Pseudogymnoascus destructans* surveillance U.S. update for the 2019/2020 Season: A new surveillance approach for white-nose syndrome in bats was initiated this season. The approach was developed using 10 years of surveillance data and is based on a dynamic diffusion model that identified high risk areas where *Pseudogymnoascus destructans* was predicted to spread this year in western and southern states. Model development was a collaboration among the U.S. Geological Survey's National Wildlife Health Center, the University of Kansas, and the University of Wisconsin-Madison, and included input from an 18-member advisory team comprised of multiple state and federal partners. Benefits of this data-driven approach compared to previous years include improved surveillance efficiency by focusing limited resource allocation on areas predicted to be high risk for *Pseudogymnoascus destructans* emergence, reducing time to find new hotspots of *Pseudogymnoascus destructans* on the landscape, and allowing for quantitative analyses at a landscape scale for more coordinated disease response planning and management actions across jurisdictions.

Between December 2019 and May 2020, over 200 sampling kits were distributed to partners in 21 states to conduct hibernacula surveys and spring trap surveys at bat roost sites. Unfortunately, the SARS-CoV-2 pandemic response halted much of the planned spring surveillance activity this year. As of mid-May, only approximately 25% of distributed kits had been returned for analysis. To accommodate reduced sampling efforts, partners with unused surveillance kits were asked to collect guano and environmental swabs at above ground summer roosts as it does not require the direct handling of bats. Earlier experimental field studies coordinated by U.S. Geological Survey's National Wildlife Health Center demonstrated the ability of guano sampling to detect the presence of *Pseudogymnoascus destructans* at summer roosts.

This season, the fungus has been detected in new counties in Georgia (Carroll, Clarke, Monroe), Oklahoma (Major), and for the first time in Montana (Daniels, Fallon, Richland). Passive surveillance, consisting of opportunistic reports of sick or dead bats by the general public, confirmed white-nose syndrome for the first time in North Dakota (Billings County) and in 17 counties in south central Texas (Bandera, Bastrop, Bell, Burnet, Comal, Gillespie, Guadalupe, Kerr, Kimble, Lampasas, Llano, Mason, McCulloch, Sutton, Travis, Uvalde, Williamson). The number of states with confirmed cases of white-nose syndrome is now up to 35. The disease has yet to be confirmed in California, Mississippi, Montana, and Wyoming where the fungus has been detected.

Chronic wasting disease surveillance: According to state-based surveillance for chronic wasting disease, detections of chronic wasting disease in free-ranging cervids occurred in 38 new counties in 11 states in the United States in 2019. These detections were made in Arkansas (one county), Iowa (four counties), Minnesota (two counties), Mississippi (two counties), Montana (nine counties), North Dakota (two counties), South Dakota (eight counties), Tennessee (four counties), Texas (one county), Virginia (two counties), and Wisconsin (three counties). State-based surveillance during 2020 has already resulted in detections in three additional counties in three states (Minnesota, Montana, and Nebraska). As of May 2020, chronic wasting disease has been documented in free-ranging cervids in a total of 313 counties in 24 U.S. states. The distribution of chronic wasting disease in commercial captive cervid facilities has also expanded, with 19 new facilities in eight states in 2019 and seven additional facilities in six states as of May 2020. Captive facility detections during this time frame occurred in Colorado (two), Iowa (two), Michigan (two), Minnesota (two), Montana (one), Nebraska (one), Ohio (one), Oklahoma (one), Pennsylvania (10), South Dakota (two), Texas (one) and Wisconsin (two). To date, chronic wasting disease has been detected in 130 commercial captive cervid facilities in 17 U.S. states. The current chronic wasting disease distribution map, based on best-available data, is available from the U.S. Geological Survey’s National Wildlife Health Center [Expanding Distribution of Chronic Wasting Disease (usgs.gov)].
