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Activities of the Specialist Commissions

SCIENTIFIC COMMISSION FOR ANIMAL DISEASES

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A meeting of the WOAH Scientific Commission for Animal Diseases (the Commission) was held from 11 to 15 September 2023 at the WOAH Headquarters in Paris, France.

1. Welcome

Dr Montserrat Arroyo, WOAH Deputy Director General, International Standards and Science, welcomed members of the Scientific Commission and thanked them for their ongoing contributions to the work of WOAH. Dr Arroyo also extended these thanks to the members' employing institutions and national governments.

Dr Arroyo informed the Commission that the Organisation is currently dedicating efforts to various IT projects with the aim of creating tools that will facilitate access to WOAH services and practices as detailed in the organisation's Basic Texts. Among these tools are the evolution of the system for collecting annual reports from Reference Centres, a digitised system for navigating the Code and Manuals, an improved system for self-declaration of disease status, and a repository of PVS reports, all with the goal of improving and simplifying access to these tools, ensuring transparency, and enhancing the traceability of WOAH's work, while also interconnecting all the tools.

Dr Arroyo also expressed her satisfaction with the past General Session and highlighted that the Organisation will celebrate its 100th anniversary in the coming year. She congratulated the Commission on its interactions with the other Specialist Commissions, emphasising the importance of harmonising and adopting a consistent approach to common work themes.

The members of the Commission thanked Dr Arroyo for the excellent support provided by the WOAH Secretariat.

2. Meeting with the Director General

The WOAH Director General, Dr Monique Eloit, met with the Commission on 14 September and thanked the Commission for their continued commitment to working with the WOAH to meet its objectives.

Dr Eloit remarked on the positive outcomes of the 90th General Session, highlighting the favourable response to the change in the Session's format, which included an Animal Health Forum on Avian Influenza. Dr Eloit emphasised that the forum facilitated interactive discussions and encouraged exchanges from both an administrative and technical perspective.

Dr Eloit informed the Commission that WOAH is currently undergoing a consultancy to evaluate the Organisation's Basic Texts from both a technical and legal viewpoint. The importance of this consultancy is to introduce a more robust and transparent approach to the organisation's procedures, supported by a solid legal basis. Dr Eloit pointed out the need to determine which fundamental documents or standard operating procedures necessitate revision and subsequent endorsement by the Assembly. The revision of the Basic Texts is essential to maintaining WOAH's credibility among stakeholders, and Members. This assessment will be completed in time for the celebrations of WOAH's 100th anniversary in May 2024.

In addition, Dr Eloit provided an update of the status of the call for nomination to establish a list of experts for the WOAH Specialist Commissions, which closed on 8 September 2023.

The members of the Commission thanked Dr Eloit for taking the time to meet, and appreciated the opportunity to be kept up-to-date on various developments of WOAH.

3. Adoption of the agenda

The draft agenda was adopted by the Commission. The meeting was chaired by Dr Cristóbal Zepeda and the WOAH Secretariat acted as rapporteur. The agenda and list of participants are attached as Annexes 1 and 2, respectively.

4. Terrestrial Animal Health Code

4.1. Member comments received for Commission consideration

4.1.1. Chapter 1.6. Procedures for official recognition of animal health status, endorsement of an official control programme, and publication of a self-declaration of animal health status, by WOAH

At its September 2022 meeting, the Code Commission considered a request from a Member to amend Chapter 5.8. International transfer and laboratory containment of animal pathogenic agents, and to improve clarity as to whether Members can hold pathogenic agents in laboratories without affecting their animal health status. The Code Commission noted that in addition to Chapter 5.8., references relevant to recommendations for laboratories were also included in Chapter 3.2., Chapter 3.4. (Article 3.4.7.), and Chapters 1.7. to 1.12. in the *Terrestrial Code* and in Chapters 1.1.3. and 1.1.4. of the *Terrestrial Manual*. The Code Commission agreed that this specific request should be addressed in the context of official status recognition by WOAH by amending Chapter 1.6.

At its February 2023 meeting, the Code Commission proposed to develop a new Article 1.6.4. to clarify that the presence of a pathogenic agent in an approved laboratory with an appropriate level of containment and biosecurity in accordance with the *Terrestrial Manual* will not impact the animal health status of a country or zone. The Code Commission also agreed to cover in the same article other similar provisions currently included in other horizontal chapters.

This draft revised Chapter 1.6. including the draft new Article 1.6.4. was submitted to the Scientific Commission for its consideration.

At its September 2023 meeting, the Scientific Commission agreed to improve the text further, also to clarify that Members may work with pathogenic agents in approved animal experimental facilities with the appropriate level of biosecurity, without affecting their animal health status.

While suggesting using the Glossary definition of ‘laboratory’, the Commission noted that it only includes veterinary diagnostic testing and proposed to review the definition, in consultation with the Biological Standards Commission, to also consider approved facilities for other purposes, such as experiments.

The opinion of the Commission was forwarded to the Code Commission.

4.1.2. Chapter 8.8. Infection with foot and mouth disease virus

The Commission addressed selected comments, forwarded by the Code Commission, which were received from Members during and after the 2023 General Session on the revised draft chapter proposed for adoption.

General comments

In response to a Member’s comment suggesting to elucidate the carrier status durations, the Commission clarified that the objective of the general provisions was to explain the epidemiological significance of the carrier state in different species and to emphasise that the only species for which transmission of FMDV has been proven for carrier individuals is the African buffalo. Considering that the duration of carrier state in ruminants is largely strain and species dependent and variable within species, the Commission considered that describing all the different carrier time periods was of much less importance. Nevertheless, the Commission acknowledged that the terminology ‘persistently infected individuals’ could

give the wrong impression of existence of lifelong carriers and agreed to replace it with 'carriers'.

Article 8.8.3. Country or zone free from FMD where vaccination is practised

The Commission clarified the description of the target population for compulsory systematic vaccination according to the provisions under Chapter 4.18. of the *Terrestrial Code*.

Article 8.8.5bis. Establishment of a protection zone within a country or zone free from FMD

For the implementation of a 'protection zone,' the Commission was of the opinion that the increased/enhanced surveillance in the rest of the country/zone might be overly demanding as long as there is an effective early warning system in place, and agreed that 'enhanced awareness' in the rest of the country or zone would be sufficient.

The Commission considered a question regarding the fate of a protection zone after the period of 24 months from the date of its approval by WOAH. The Commission clarified that a protection zone should not last more than 24 months and that, during this period, the Member should either inform WOAH of the lifting of the protection zone or apply for its official recognition as a free zone in accordance with either Article 8.8.2. or 8.8.3.

Article 8.8.6. Establishment of a containment zone within a country or zone previously free from FMD

The Commission discussed the practicalities of the implementation of containment zones and noted for future discussion the need for maintaining both options (a and b) for the containment zones in Article 4.4.7.

The Commission clarified that if recovery of the free status of the containment zone is not achieved within 24 months, the 'free status' of the rest of the country/zone would be suspended.

Articles 8.8.10. Recommendations for importation of susceptible animals from countries, zones or compartments free from FMD where vaccination is not practised

With regard to the testing of vaccinated animals (point 4 of Articles 8.8.10. and 8.8.11.), the Commission was of the opinion that, regardless of the vaccination status of the FMD-free country/zone where the animals are originating from, the objective would be to demonstrate that vaccinated animals had not been exposed to FMDV, both past infection (NSP serological testing) and recent infection (virological testing).

Article 8.8.11. Recommendations for importation of domestic ruminants and pigs from countries, zones or compartments free from FMD where vaccination is practised

In response to a question on why Article 8.8.11. refers to domestic ruminants and pigs and not to susceptible animals, as Article 8.8.10., the Commission explained that the validation of FMD serological tests is generally proven for domestic ruminants and pigs but not for other species.

Regarding a question of the need for both virological and serological testing of unvaccinated animals, the Commission explained that both serological and virological testing would be necessary to detect both past and recent infections, and considering the detection of disease through passive surveillance is less sensitive in unvaccinated animals existing within a vaccinated population.

Article 8.8.40. General principles of surveillance

The Commission reiterated its disagreement with comments that importing vaccinated animals from 'FMD-free country/zones/compartments with vaccination' entails an increased risk. The Commission acknowledged that the importation of vaccinated animals might require adjusting the surveillance strategy of the importing country. Nevertheless, the Commission maintained its position stated in its last February 2023 meeting that the mitigation measures, including testing, described in Articles 8.8.11. and 8.8.11bis. result in a negligible risk.

The opinion of the Commission was forwarded to the Code Commission and addressed at its September 2023 meeting.

4.1.3. Chapter 12.1. Infection with African horse sickness virus

Article 12.1.2. Country or zone free from AHS

At its February 2023 meeting, the Code Commission proposed amendments to points (c) and (d) related to the occurrence of infection and surveillance for freedom for clarity and requested the Secretariat to seek the opinion of the Scientific Commission on the proposed amendments at the same time they were circulated to Members.

The Commission clarified that adjacency to an infected country does not entail loss of free status but requires surveillance according to Articles 12.1.11. to 12.1.13.

The Commission agreed with the amendments to points (c) and (d) proposed by the Code Commission in response to Members' comments, except for point d) iii). The Commission proposed deleting this point, as reference to Chapter 1.5. had already been included under Articles 12.1.11. to 12.1.13. The Commission also discussed that climate change is likely to change the distribution of *Culicoides.* The Commission considered that there are few, if any, countries that could be considered free of all species of *Culicoides.*

The opinion of the Commission was forwarded to the Code Commission and addressed at its September 2023 meeting.

4.2. Other considerations

4.2.1. Chapter 1.11. Application for official recognition by WOAH of free status for foot and mouth disease

At its February 2023 meeting, the Commission had considered a comment proposing the revision and parallel adoption of Chapter 1.11. Application for official recognition by WOAH of free status for FMD with the adoption of the revised Chapter 8.8. In response to this comment, the Commission revised the questionnaire of Chapter 1.11. and proposed amendments to Article 1.11.3. The revised article was forwarded to the Code Commission and addressed at its September 2023 meeting.

4.2.2. Chapter 14.8. Scrapie

The Commission was informed by the Secretariat that scrapie has been raised to priority '2' of the work programme of the Code Commission, based on requests by Members to update the recommendations for live animal testing and testing for genetic resistance; the Secretariat invited the Scientific Commission to consider whether an update of Chapter 14.8. may be included in its work programme.

Prior to incorporating this work into its work programme, the Commission requested the Secretariat to obtain more information on the specific requests from Members, and to seek the opinion of the Biological Standards Commission on testing of live animals and testing

for genetic resistance. The Commission will consider this information at its February 2024 meeting and agree on the next steps with the Code Commission.

5. Ad hoc and Working Groups

5.1. Meeting reports for consideration

5.1.1. Ad hoc Group on surra and dourine

The Commission was informed that an *ad hoc* Group meeting on surra and dourine was convened in-person in July 2023 to continue the work on updating *Terrestrial Code* Chapter 12.3. Dourine and to recommend amendments to draft Chapter 8.Z. Infection with *Trypanosoma evansi* (surra) to address some concerns raised by Members. The Commission noted that the Code Commission would address the proposed amendments to Chapter 8.Z. in response to Member comments, and therefore focused its review on the updates to Chapter 12.3., which the *ad hoc* Group developed based on the draft chapter on surra.

The Commission agreed with the recommendation of the *ad hoc* Group to limit the scope of animal hosts to be covered in the case definition for infection with *Trypanosoma equiperdum* (dourine) to domestic and captive wild equids. The Commission considered that the risk of wild equids transmitting the infection to domestic and captive wild equids is not a significant transmission pathway, as dourine is primarily spread by coitus and wild equid populations are normally segregated from the domestic population. In view of the mode of transmission, the Commission also agreed with the recommendation of the *ad hoc* Group to include meat as a safe commodity, as peroral spread is not a natural exposure pathway. However, the Commission noted that in the case of surra where peroral transmission is a significant pathway for spread, meat should not be considered a safe commodity, and therefore agreed with the *ad hoc* Group's recommendation to include draft Article 8.Z.11bis. 'Recommendations for importation of fresh meat from susceptible animals from countries or zones infected with *T. evansi*'. In addition, the Commission was uncertain that standard slaughter practices would satisfy the waiting period of 48 hours and supported the Group's proposal to specify recommendations for maturation in Article 8.Z.11bis.

In draft Article 12.3.7. 'Recommendations for importation of equids from countries, zones or compartments not free from dourine', the Commission noted the *ad hoc* Group's use of the term 'isolation' with the rationale that equids are not necessarily held in quarantine stations. However, as the Commission was unclear as to how 'isolation' would be interpreted by Members given it is not a defined term, it proposed to replace 'isolation' with clear measures on what this 'isolation' should entail, i.e. separation from any source of infection. Therefore, it proposed to describe the measures that the *ad hoc* Group had originally proposed under draft Article 12.3.8. 'Recommendations for the temporary importation of horses', namely that the equids were not used for any breeding and did not have sexual contact with other horses and were not subjected to any practice that could represent a risk of transmission of infection. To avoid repetition of text, the Commission amended point 2) of Article 12.3.8. to refer to this point in Article 12.3.7.

With regard to the recommendation by the *ad hoc* Group for a waiting period of 45 days in Article 12.3.7., the Commission noted that this was to align with the changes proposed by the *ad hoc* Group to Article 8.Z.7. on recommendations for importation of susceptible animals from countries or zones infected with *T. evansi*, in response to a Member comment to shorten the quarantine period. The Commission was informed that the rationale for this is based on a peer-reviewed paper which had established that seroconversion takes place between 10 – 20 days of infection, and 'non-infected status' can be established if negative

results were obtained in a quarantine context, tested twice at a one-month interval[1]. However, the Commission also noted that a member of the *ad hoc* Group had raised that this did not apply to camels, and requested the Secretariat to seek the opinion of camel experts.

In draft Article 12.3.8. on the temporary importation of horses, the Commission proposed to require both that the horses be accompanied by a passport in accordance with the model contained in Chapter 5.12., and be individually identified as belonging to a high health status subpopulation as defined in Chapter 4.17. The Commission noted that Chapter 5.12. is a template for competition horses, which includes a range of populations, including those that do not qualify as high health population, and these should be moved according to the provisions in Article 12.3.7. The Commission noted that this would also concur with point 3.7. of the report of the *ad hoc* Group which stressed that temporarily imported horses are under the supervision of the Veterinary Authority, and therefore it was important for the horse to be part of the high health status subpopulation; having a model passport alone would not be sufficient.

In draft Article 12.3.9. 'Recommendations for importation of semen from countries, zones or compartments free from dourine', the Commission did not agree with the *ad hoc* Group's recommendation to require that the donor males were kept for six months prior to semen collection in an establishment in which surveillance demonstrates that no case had occurred during the period. The Commission highlighted that this article refers to countries, zones or compartments that are free from dourine and this recommendation to attest establishment freedom would be excessive. For consistency with equivalent articles in other disease-specific chapters, the Commission proposed to replace this with an attestation that the donor males were kept for the six-month period in a free country, zone or compartment.

In draft Article 12.3.10. on the importation of semen from countries, zones and compartments not free from dourine, the Commission proposed to delete 'compartment' from the title as by default, a compartment should be free of infection. As this article refers to establishment-level surveillance, the Commission recommended that further elaboration be provided in draft Article 12.3.14. 'Surveillance for demonstrating freedom from dourine' on what this surveillance should entail. It therefore proposed supplementary text to draft Article 12.3.14.

The opinion of the Commission was forwarded to the Code Commission. The endorsed report of the *ad hoc* Group is available on the WOAH website.

5.1.2. Ad hoc Group on biosecurity

The Commission received an update of the progress made by the *ad hoc* Group on biosecurity for terrestrial animals, which met for the second time in May 2023. The Commission was presented with the initial draft of the chapter, which took into account their previous comments. The Commission acknowledged the efforts of the *ad hoc* Group and commented positively that the chapter is taking a risk-based approach.

The Commission provided comments related to the proposed glossary definition for 'swill' to include the intention for feeding to animals, and additional comments related to the draft chapter.

The opinion of the Commission was forwarded to the Code Commission.

[1] Desquesnes M, Sazmand A, Gonzatti M, *et al*. Diagnosis of animal trypanosomoses: proper use of current tools and future prospects. Parasit Vectors. 2022;15:235. doi:10.1186/s13071-022-05352-1

5.2. *Planned ad hoc Groups and confirmation of proposed agendas*

With regard to the *ad hoc* Groups on the evaluation of animal health status and official control programmes for WOAH endorsement, the Commission was briefed on the proposed agendas, including information on the applications submitted to the WOAH so far. With the exception of the meeting of the *ad hoc* Group on the evaluation of FMD status which will occur in a physical format, the rest of the *ad hoc* Group meetings (not cancelled) are planned to take place virtually.

5.2.1. *Ad hoc Group on the evaluation of AHS status: 28–29 September, 5 October 2023*

5.2.2. *Ad hoc Group on the evaluation of BSE risk status: 3–5 October 2023 (cancelled)*

5.2.3. *Ad hoc Group on the evaluation of official control programmes for dog-mediated rabies: 4 and 6 October 2023*

5.2.4. *Ad hoc Group on the evaluation of PPR status: 17–19 October 2023*

5.2.5. *Ad hoc Group on the evaluation of FMD status: 23–26 October 2023*

5.2.6. *Ad hoc Group on the evaluation of CSF status: 7–9 November 2023 (cancelled)*

5.2.7. *Ad hoc Group on the evaluation of CBPP status: 5–7 December 2023 (to be confirmed)*

5.2.8. *Meeting reports for information*

5.2.9. *WOAH Working Group on wildlife*

The Commission was provided an update of the December 2022 and June 2023 meetings of the Working Group on Wildlife (WGW) by the WGW Secretariat.

The Commission noted that the WGW had provided feedback on the definition of 'emerging disease' in its December 2022 report, and requested the WGW Secretariat to provide more details on the specific recommendations of the WGW. The Commission also noted the importance of sharing this feedback with the Code and Aquatic Commissions.

The Commission was also informed of an article by the WGW on 'Early warning and early action – the coming El Niño Southern Oscillation phenomenon and health impacts', and that its previous suggestion on the paper on the vaccination of animals of high conservation value had been incorporated.

6. Official animal health status

6.1. *Annual reconfirmations for maintenance of status*

6.1.1. *Selection of status for comprehensive review of 2023 annual reconfirmations*

The Commission selected the list of Members' 2023 annual reconfirmations for comprehensive review during its forthcoming meeting in February 2024. The selection was based on a set of criteria described in the SOPs. The Commission will comprehensively review a total of 48 annual reconfirmations during its February 2024 meeting. The Members selected for comprehensive review of their annual reconfirmations will be notified officially by letter from WOAH in October 2023.

6.2. *Specific update on official animal health status*

6.2.1. *Update on situation of countries/zone with suspended status*

6.2.1.1. *Thailand AHS status recovery*

Thailand was officially recognised as free from AHS in May 2014 but following an outbreak, Thailand's 'AHS-free country' status was suspended on 27 March 2020. In March 2023, the Commission reviewed Thailand's application for recovery of its AHS status and recommended the reinstatement of Thailand's AHS-free status.

6.2.1.2. *Malaysia AHS status recovery*

Malaysia was officially recognised as free from AHS in May 2013 but following an outbreak, Malaysia's 'AHS-free country' status was suspended on 6 August 2020. The Commission reviewed Malaysia's application for recovery of its AHS status and recommended the reinstatement of Malaysia's AHS-free status.

6.2.1.3. *Botswana FMD status recovery with the establishment of a containment zone*

Zone 6b consisting of part of Francistown of Botswana was officially recognised as having an 'FMD-free where vaccination is not practised' status, but following an outbreak, this status was suspended on 18 August 2022. The Commission reviewed Botswana's application for the establishment of a containment zone within Zone 6b, located in Bisoli North and concluded that the containment zone was compliant with Articles 4.4.7. and 8.8.6. of the *Terrestrial Code*. Subsequently, the 'FMD-free zone where vaccination is not practised' status of the territory outside of the containment zone of Zone 6b was re-instated with effect from 03 March 2023.

6.2.2. *Update on FMD status application of Republic of Korea (2022-2023 evaluation cycle)*

The Commission was informed that following the notification of an outbreak of FMD in Cheongwon-gu, Cheongju-si in May 2023, the recommended recognition of the Republic of Korea's 'FMD-free country where vaccination is practised' (cf February 2023 report of the Commission) was no longer included in the relevant resolution for adoption at the last General Session.

6.3. *State of play and prioritisation of expert mission to Members requested by the Commission*

6.3.1. *Follow-up of field missions*

6.3.1.1. *Malaysia FMD*

Based on the review of the past annual reconfirmations and the recent change in FMD epidemiology (i.e., outbreak in Indonesia), the Commission had recommended a field mission to assess Malaysia's compliance with the relevant requirements of Chapter 8.8. of the *Terrestrial Code* for the maintenance of the FMD-free zonal status.

The Commission considered the detailed report of the FMD mission conducted in July 2023 and recommended the maintenance of Malaysia's FMD-free zonal status. The Commission commended the mission team for the thorough assessment undertaken in the limited time of the mission. The Commission also commended Malaysia for their continuous collaboration in WOAH activities and agreed with the recommendations provided in the report.

6.3.1.2. *Türkiye FMD*

Following a mission in Türkiye in June 2022 and the annual reconfirmation in November 2022, the Commission agreed with the maintenance of Türkiye's 'FMD-free zone where vaccination is practised'. Considering the recent change in FMD epidemiology in Türkiye (i.e., introduction of a new FMDV serotype SAT2 in Anatolia, FMD-infected zone), the Commission reviewed a list of questions proposed by the Secretariat to be sent to Türkiye for providing information during the upcoming annual reconfirmation campaign.

6.3.1.3. *Other missions*

The Commission considered and endorsed the detailed reports of another mission (Kazakhstan FMD and CSF) conducted in April 2023 to assess compliance by the country with the relevant provisions of the WOAH *Terrestrial Code* for reinstate of its official status. The Commission commended the mission team for the thorough assessment undertaken in the limited time of the mission, as well as the country for their continuous collaboration in WOAH activities. The Commission did not recommend the reinstatement of the status and the final reports accompanied by the Commission's recommendations were referred to the Member concerned.

6.3.2. *State of play and prioritisation*

The Commission reviewed and prioritised the missions for the maintenance of disease status and the endorsement of official control programmes to be undertaken, considering the priority issues identified by the Commission when reviewing the annual reconfirmations submitted in November 2022 as well as recent changes in the epidemiological situation in certain regions. The prioritised list of missions will be confirmed following consultation with the Director General of the WOAH.

6.4. *Standards and procedures related to official status recognition*

6.4.1. *Update on the progress of activities subsequent to the adoption of Chapters 11.4. and 1.8. on BSE*

The Commission was informed of the activities implemented by WOAH following the adoption of Chapters 1.8. and 11.4. of the *Terrestrial Code* at the General Session in May 2023:

- Publication of the years of recognition (at the bottom of the Official Disease Status webpage) of BSE risk status after Members' agreement on the year and status to be published.
- Publication of BSE surveillance guidelines on the General Information webpage, and their advertisement in the WOAH Bulletin (September issue).
- Update of the Official Disease Status and General Information webpages.
- Update of the Standard Operating Procedure for suspension/recovery of official status.

The Commission trusts that the aforementioned updates and developments will be useful to Members.

6.4.2. *Form for the annual reconfirmation of the BSE risk status of Members*

Further to the adoption of Chapters 1.8 and 11.4 of the *Terrestrial Code,* and the publication of the BSE surveillance guidelines, a draft BSE annual reconfirmation form prepared in consultation with BSE *ad hoc* Group experts was reviewed and endorsed by the Commission and is attached as Annex 3 of this report. According to Resolution No. 20 adopted during the last General Session, Member's having an official BSE-risk status by WOAH should use this new form from November 2024 to reconfirm their status.

6.4.3. *Non-compliance of Members having an official animal health status by WOAH with provisions of the Terrestrial Code for imports of commodities from countries not officially recognised as free by WOAH*

At its February 2022 and 2023 meetings, the Commission discussed the issue of certain Members with an official animal health status (mainly for PPR and CSF and in some cases for AHS, CBPP and FMD) importing commodities from countries not officially recognised as free by WOAH for the respective disease without fully complying with the relevant provisions of the *Terrestrial Code* for importation from infected countries or zones.

The Commission took note that the rationale provided by Members in some cases was that legislation/regulation of regional economic or political unions was followed especially to facilitate movements of commodities between countries of the same region.

The Commission reiterated its recommendations from its previous meetings that all Members having an official animal health status should comply with the relevant requirements of the *Terrestrial Code* for importation from countries or zones with undetermined animal health status. In case alternative measures to the ones stipulated in the *Terrestrial Code* were followed, the Commission requested Members to provide scientific evidence that these measures achieve an equivalent level of risk mitigation in accordance with Chapter 5.3., which defines the principle of 'equivalence of sanitary measures'.

The Commission stressed that, considering that the procedure for the official recognition of animal health status by WOAH is voluntary, the responsibility lies with all Members benefiting from this procedure to either comply with WOAH standards or demonstrate that alternative measures in place provide a level of protection that is equivalent. The Commission encouraged Members to seek support from their regional bodies in this regard, if needed.

6.4.4. *Development of the Official Status Management Platform*

The Commission received an update on the development of the online platform dedicated to disease status management that is aimed to serve as a secure centralised system to archive, track, search, and submit all relevant dossiers related to the official recognition and maintenance of animal health status, and self-declarations of disease freedom. The Commission took note that the component of the platform dedicated to annual reconfirmations for maintenance of status was close to being finalised and expected to be launched for the annual reconfirmation campaign of 2023.

7. Global control and eradication strategies

7.1. *Update on the FMD global situation and activities of the Reference Laboratory Network*

Dr Donald King (WOAH FMD Reference Laboratory, Pirbright Institute, United Kingdom) updated the Commission on the activities of the WOAH/FAO FMD Reference Laboratory

Network and on significant FMD-related events that occurred globally in recent years, with emphasis on the past 12 months.

Dr King noted that FMD continues to be endemic in much of Asia and Africa and due to the continuing long-distance movement of FMDV. One of the recent key events was the new FMD outbreaks due to serotype SAT2 in the Middle East and North Africa and that this may be the first time that serotype SAT 2 has been detected in Iraq, Jordan and Türkiye. Whilst vaccine matching results (in vitro) are quite positive, he noted the uncertainty regarding the performance of the vaccine in the field; some in vivo studies were planned to take place before the end of 2023. Furthermore, as vaccination against serotype SAT2 is rare, there is potential for rapid spread.

Serotype O remains the dominant serotype. O/ME-SA/Ind-2001 continues to represent a potential source for future spread as the source of multiple escapes from Pool 2 with many events involving long-distance spread.

Dr King highlighted that gathering information on the distribution of the FMD virus lineage in each of the seven pools of virus circulation is fundamental for vaccine matching in these regions and stressed the key role of the WOAH/FAO FMD Reference Laboratory Network in sharing field samples, sequences and information. He also mentioned ongoing studies on vaccine selection for endemic pools, FMD vaccine testing to identify indicative responses on performance, and on the correlation between vaccine-induced antibodies and protection.

The Commission commended the FMD Reference Laboratory Network for their efforts.

7.2. Peste des Petits Ruminants. Global Control and Eradication Strategy

The Commission was informed on the recent activities of the PPR Global Control and Eradication Strategy (GCES).

The Commission was reminded that, with the first phase (2017-2021) of the PPR Global Eradication Programme (GEP I) having come to an end, the joint WOAH/FAO PPR Core Expert Team undertook to review and formulate the second phase of the PPR Global Eradication Programme (GEP II) having received feedback from all regions globally in the period 2021-2022. The draft was subjected to review by PPR experts, as well as social economic and gender experts, the PPR Advisory Committee, key donors and other stakeholders. The finalised draft was validated by the joint management of WOAH and FAO. The short version of the document 'Overview of the Plan of Action: Peste des Petits Ruminants Global Eradication Programme II & III – Blueprint' was launched on 4 November 2022 in Rome and the longer one is under preparation for publishing.

On the sidelines of the launch of the PPR GEP II & III Blueprint, the 5th Advisory Committee meeting was held in Rome on 2–3 November 2022 and made several recommendations touching GEP Blueprint and episystem approach, as well as Advisory Committee leadership and terms of reference.

Following the launch of the PPR GEP II and III Blueprint, the joint FAO/WOAH PPR Secretariat organised PPR Blueprint and roadmap consultation meetings for the countries of the Economic Cooperation Organisation/Eurasia (25-27 April 2023, Baku, Azerbaijan), Intergovernmental Authority on Development (IGAD)/Eastern Africa (3-5 May 2023, Kampala, Uganda) and South Asia (7-13 May 2023, Paro Bhutan). Prior to these meetings, the PPR Regional Advisory Group of each region was trained on its roles and responsibilities with regard to the new PPR Monitoring and Assessment Tool and its guidelines through webinars.

In addition, the following PPR related meetings were organised by WOAH or jointly with FAO:

- The fifth PPR Global Research and Expertise Network (GREN) meeting was held from 7 to 9 December 2022 in Montpellier, France;

- A Workshop for the technical enrichment and alignment of the phase II document of the national plan for the control and eradication of PPR in Cameroon was held from 19 to 23 December 2022, in Edea, Cameroon;
- A meeting was held on 8 March 2023 for the finalisation of the WOAH Twinning Project on PPR between the national laboratory of Senegal (ISRA/LNERV) and CIRAD;
- The Fifth PPR Vaccine Producers Workshop was held from 27 to 30 April 2023 in Ahmedabad, India;
- A meeting to discuss the North Africa PPR strategy was held on 21 June 2023 in Ioannina, Greece. This is the first regional strategy being revised with the aim to being aligned to the PPR GEP II and III Blueprint;
- The PPR and Lumpy Skin Disease meeting for East Asia was organised by WOAH from 24 to 26 July, in Qingdao, China. An item on Standing Group of Experts on ASF was also included in the agenda of the meeting.

The Commission was further informed that, following the finalisation of the revised PMAT in December 2022, the tool is in the process of being edited for publishing. The development of a digitised version of the tool and of PMAT training e-modules has also been initiated.

Finally, the Commission was informed that the EC Directorate General for International Partnerships (DG INTPA) has pledged to support the Pan-African PPR eradication Programme. In this regard, an Action Document was jointly developed by AU-IBAR, WOAH and FAO for the first phase of funding and submitted to the EC for its approval.

The Commission noted that, despite the numerous meetings organised, little progress has been achieved to date by Members, with some having moved from stage 1 of the stepwise approach to stage 2 but none having managed to eradicate the disease. For the next update, the Commission requested the Secretariat a presentation of measurable indicators on the progress achieved. The Commission noted that the need for improving the management and monitoring of the implementation of the programme, to enhance its effectiveness, was identified during the development of the PPR GEP II & III Blueprint, which envisages the establishment of an updated Monitoring and Evaluation Framework with revised indicators to improve accountability and reporting of the impact of the programme.

7.3. Avian Influenza. Global Control Strategy. Animal health forum. OFFLU

In light of the ongoing global avian influenza crisis, WOAH hosted its first Animal Health Forum (AHF), fully dedicated to the disease during WOAH's recent 90th General Session. The Technical Item titled 'Strategic Challenges in the Global Control of High Pathogenicity Avian Influenza' presented at the event set the stage for the AHF, and WOAH Members adopted the Resolution N.28 which will serve as a basis for shaping future avian influenza control activities. The Resolution underscores the importance of Members respecting and implementing WOAH international standards to effectively combat avian influenza.

The Commission was updated on the WOAH avian influenza framework that was being developed to implement the Resolution. The framework defines the activities, outputs and expected outcomes for the next two years to address the strategic challenges in the global control of HPAI that were discussed during the 90th WOAH General Session. This framework has been developed in consultation with the WOAH scientific network, the technical departments at headquarters and regional and Sub-regional offices.

The Commission was updated on OFFLU (Joint WOAH-FAO Network of Expertise on Animal Influenza) activities. OFFLU experts participated in multiple technical meetings, conducted risk shared important data with the scientific community and policy-makers. The network released scientific statements to address emerging animal influenza threats which include statement on high pathogenicity avian influenza caused by viruses of the H5N1 subtype, avian

influenza events in mammals and cats. The Commission was briefed on OFFLU's contribution to the February 2023 WHO Consultation on the Genetic and antigenic characteristics of zoonotic influenza A viruses and development of candidate vaccine viruses for pandemic preparedness. The network provided sequence data gathered from laboratories in Europe, Asia, Africa, Oceania, and the Americas. For the avian influenza report, the network collected 795 avian influenza virus sequences of H5, 34 of H7, and 305 of H9 subtypes. Additionally, for the swine influenza report it gathered 69 swine influenza virus sequences of H1 and 7 of H3 from WOAH Reference Centres, national veterinary laboratories, and research networks via the OFFLU network.

An OFFLU avian influenza matching (AIM) initiative is underway to provide information on the real time antigenic characteristics of contemporary avian influenza viruses is underway. This information will facilitate selection of appropriate vaccines for poultry and updating of poultry vaccine antigens in places where vaccines are being used. A report presenting the results of the pilot project will be made available to stakeholders in October 2023 and networking and expanding the geographical reach of this project with select partners is ongoing. The OFFLU wildlife technical activity have been sharing data and offering support to countries and working close with their local public health counterparts to track and monitor risk in response to the H5 mammalian spill overs experienced throughout 2022 and 2023. OFFLU experts released statements to update the H5N1 events in wild birds in the Americas and the Europe and also contributed to the Scientific task force on avian influenza and wild birds statement.

Finally, the Commission was updated on the progress of updating the GF-TADS avian influenza global strategy. The strategy is expected to be a short high-level document presenting the background, objectives, theory of change and the governance that rely on strong involvement at regional level. The strategy's purpose is to guide and create a global coordination framework to support regional and country action plans dedicated to the prevention and control of HPAI. The final version of the strategy is expected to be available by the end of the year.

The Commission commended the various activities presented to address the current global avian influenza crisis. The Commission supported the idea of developing guidance for surveillance in vaccinated populations and the implementation of vaccination, zoning and compartmentalisation. The Commission mentioned the importance of providing guidance to Members in the selection of vaccines. The Commission believed that the outcomes of the animal health forum and the adopted resolution will pave the way forward for shaping future avian influenza control activities and Members respect and implement WOAH international standards to effectively combat the disease.

7.4. African swine fever. Global Control Initiative

The Commission was updated on the activities conducted under the Global Initiative (GI) for the Control of African swine fever (ASF), noting that the GI is managed by the FAO and WOAH under the GF-TADs. The responsibility for chairing the GF-TADs ASF Working Group alternates annually between FAO and WOAH, with FAO holding this position for the upcoming year (July 2023 to June 2024).

At the level of the ASF Working Group, a significant activity was the launch of the Global Coordination Committee for ASF (GCC ASF), aimed at strengthening inter-regional cooperation and dialogue on ASF prevention and control and strengthen relevance of the GI through sharing of good practices and lessons learnt, discussion on key developments and provide advice to the ASF Working Group. The inaugural meeting was held on 23 May 2023 at the sidelines of the 90th WOAH General Session. Priority areas identified in common across the regions were: biosecurity on smallholder farms, the impact of wild pigs on disease epidemiology, issues around the use of illegal vaccines and provision of information on quality and safety of vaccines and transparency of the ASF situation and exchange of information. The Chairs of the GF-TADs Regional Steering Committees had agreed that the meeting was a useful mechanism to exchange information and expertise, and committed to continuing

meeting yearly at the margins of the WOAH General Session, with the option for virtual meetings where necessary.

The Commission was informed that under a Cooperative Agreement between the WOAH and the Agricultural Research Service of the United States Department of Agriculture (USDA-ARS), the engaged consultant has concluded his work in the drafting of guidelines for the manufacture and development of safe and efficacious ASF vaccines. The first product, a review of current approaches in ASF vaccine development may be found here. The second product, a set of guidelines on the manufacture of safe and efficacious ASF vaccines have been developed after a series of surveys, in-person exchanges with subject matter experts, five technical workshops, including one with key vaccine regulatory bodies. This set of guidelines have been drafted in the form of standards for *Terrestrial Manual* Chapter 3.9.1. African swine fever, and have been shared with the ASF Reference Laboratory Network for comments. The guidelines were presented to the Biological Standards Commission at its September 2023 meeting for its consideration. See the September 2023 report of the Biological Standards Commission for more information.

The Commission was also informed that the WOAH had piloted a methodology for WOAH PVS Evaluation with ASF specific content mission to allow Members the option of submitting to a specific evaluation on the strengths and weaknesses in the prevention and control of ASF whilst undergoing a PVS Evaluation.

At the regional level, the Commission noted that regional Standing Groups of Experts (SGE) continue to be organised in the Africa, Asia-Pacific and Europe regions, and an upcoming meeting is planned for the Americas region.

7.5. Bovine tuberculosis. Global Strategy for zoonotic tuberculosis. Guidelines for alternative strategies for the control of Mycobacterium tuberculosis complex infection in livestock

The Commission was updated about the recommendations of the WOAH *ad hoc* Group on Alternative Strategies for the Control and Elimination of Mycobacterium tuberculosis complex infection in livestock on identifying actionable strategies to control tuberculosis (TB) in livestock other than by test and slaughter.

Based on the *ad hoc* Group recommendations, the Commission was informed about the WOAH consultancy project to develop guidelines for alternative control strategies. These guidelines would be generated after eliciting science-based opinions from experts and community members through literature reviews, surveys, and focus group discussions. This project would also contribute towards the priority areas identified by the *ad hoc* Group.https://www.woah.org/app/uploads/2021/03/roadmap-zoonotic-tb.pdf

The Commission supported the initiative and recommended WOAH to assess the burden of bovine tuberculosis in the mycobacterium tuberculosis complex (MTBC). The Commission also suggested adding information about new tools used to diagnose MTBC in these guidelines.

The Commission nominated a member to follow the work on TB and to participate as an observer at the next WOAH *ad hoc* Group meeting on Alternative Strategies for the Control and Elimination of mycobacterium tuberculosis complex infection.

8. Liaison with other Commissions and Departments

8.1. Terrestrial Animal Health Standards Commission (Code Commission)

The Commission was updated on relevant ongoing activities of the Code Commission, including the development of a framework for Terrestrial Code standards to serve as reference for those revising or developing a new chapter. In terms of prioritising *Terrestrial Code* chapters for revision, the Commission highlighted that sheep and goat pox is an emerging issue that requires expert opinion and regional engagement to assess whether existing Chapter 14.9. is still fit-for-purpose, noting that the chapter has not been revised since adoption in 1986.

8.2. Biological Standards Commission

The Commission and the Biological Standards Commission both have responsibilities in the ongoing work on develop of case definitions, and in the assessment of pathogenic agents against the criteria for listing in Chapter 1.2. of the *Terrestrial Code*. At this meeting, the Commission considered the Biological Standards Commission's opinion on two proposed case definitions (see items 9.3.2.1. and 9.3.2.3.).

9. Disease control: specific issues

9.1. Emerging diseases

9.1.1. Annual re-assessment of emerging disease: infection with SARS-CoV-2

The Commission noted that infection with SARS-CoV-2 was considered an emerging disease for the purpose of notification to WOAH since 2020. In accordance with point 5.1 of the Standard Operating Procedure for determining whether a disease should be considered as emerging, the Commission was asked to recommend if, based on new evidence, the disease should be assessed against the listing criteria of WOAH *Terrestrial Code* Chapter 1.2., or (if not) confirm that the disease should be maintained as emerging for the purpose of notification to WOAH.

The Commission noted since the onset of the pandemic, multiple animal species including cats, dogs, ferrets, fruit bats, mink, pigs, rabbits and white-tailed deer were reported to be naturally infected with SARS-CoV-2. With the exception of transmission observed in farmed minks and white-tailed deer, there have been no evidence of animal-human or animal-animal transmission in the other species of animals. However, so far in 2023, the number of reports of infections in animals, including farmed mink has been less than in the previous years.

The Commission noted that the primary purpose of listing is to assist Members in implementing effective measures to prevent the transboundary spread of diseases. The Commission also noted that animals do not seem to play a significant role in the global transmission of SARS-CoV-2. In addition, the Commission did not consider there was a need to recommend specific risk mitigation measures beyond basic hygiene measures and farm biosecurity when handling susceptible animals to mitigate any potential risk of transboundary spread. Thus, subjecting SARS-CoV-2 to the listing criteria may not be appropriate with the current knowledge, as it would not meet this overall objective of listing.

Nonetheless, taking into account the massive consequences arising from the SARS-CoV-2 pandemic, the potential for virus mutations and the recommendations of the World Health Organization to continue with surveillance in animals, the Commission advised that SARS-CoV-2 should remain an emerging disease of animals at this current time and to continue

to monitor the situation and evidence that may arise in the next 12 months. The Commission would include this point for discussion at its September 2024 agenda.

9.2. Evaluation of pathogenic agent against the listing criteria of Terrestrial Code Chapter 1.2.

9.2.1. Equine encephalitides

At the September 2022 and February 2023 meetings, both the Commission and the Code Commission agreed to assess the following four equine encephalitides against the listing criteria before discussing the approach to reviewing the corresponding chapters in the *Terrestrial Code:* Chapter 8.10. Japanese encephalitis, Chapter 12.4. Equine encephalomyelitis (Eastern and Western) and Chapter 12.11. Venezuelan equine encephalomyelitis.

At this meeting, the Commission reviewed the assessments by subject-matter experts.

Japanese encephalitis (JE)

The Commission agreed with the experts that international spread of the pathogenic agent has been proven and that criterion 1 has been met. Japanese encephalitis is an arbovirus with a natural life cycle involving birds as reservoir hosts, with humans and horses as dead-end hosts and pigs as amplifying hosts. The Commission agreed with the assessment that criterion 2 has been met, as cases of JE are localised to the Asia-Pacific region and there are countries with official programmes in place to control and prevent the spread of the agent. The Commission further agreed that criteria 3 and 4 (4a and 4b) have been met. The Commission also took note of experts' recommendation that horses are dead-end hosts, and as such should not be subject to trade restrictions in Chapter 8.10. of the *Terrestrial Code*, although surveillance in horse populations should be maintained. The Commission also noted that recommendations should cover the movement of live pigs, given that they act as amplifying hosts.

The Commission therefore, agreed with the experts that JE should remain listed. The report of the experts may be found in Annex 4 (English report only).

Eastern (EEE) and Western equine encephalitis (WEE)

The Commission noted that one expert did not agree that criteria 1 and 2 have been met, with the rationale that there has not been any historical precedent confirming global spread as the disease is limited to Western Hemisphere (criterion 1), and he was unaware of any country, zone or compartment in the Western Hemisphere with a history of endemicity for EEE or WEE that has recovered and demonstrated freedom (criterion 2). The Commission also noted the opinion of the same expert that natural spread mechanisms involve the movement of migratory birds and mosquitoes, and management of such transmission pathways is outside the realm of what could be considered logistically feasible by Veterinary Authorities.

The Commission agreed with the other two experts that criteria 1 and 2 have been met and clarified that criterion 1 would be satisfied if vectors and live animals, in this case mosquitoes and birds respectively, are involved in the international spread of the virus, even if the movement of mosquitoes and wild birds was outside the control of Veterinary Authorities. The Commission considered that wild birds are a natural reservoir and play a direct role in the maintenance of enzootic cycles and are a source of virus for mosquitoes. The Commission also considered that criterion 2 has been met as countries outside the Western hemisphere were free, and control programmes are in place within countries in the Western hemisphere, both infected and free, for control and prevention.

The Commission further agreed with the experts that criteria 3 and 4 have been met, and supported the continued listing of EEE and WEE. The report of the experts may be found in Annex 5 and Annex 6.

Venezuelan equine encephalomyelitis

The Commission agreed with all the experts that the VEE should continue to be listed. The Commission agreed that criteria 1 and 2 have been met, as the virus has been shown to spread to other countries, which is postulated to be through wind-borne carriage of infected mosquitoes and infected equids, and the virus is largely confined to the Western hemisphere, and control programmes are in place in several countries for prevention and control.

The Commission considered the opinion of experts that only the epizootic subtypes 1AB and 1C should be listed, and requested this to be explored further by the *ad hoc* Group which would be convened to develop and review these chapters. The Commission noted that it would be important to clarify whether the epizootic feature of these subtypes is a function of the host status or a natural feature of the virus.

The Commission further agreed that criteria 3 and 4 have been met, and supported the continued listing of VEE.

The report of the experts may be found in Annex 7.

The opinion of the Scientific Commission on the listing of the above encephalitides was forwarded to the Code Commission.

9.2.2. Theileria orientalis (Ikeda and Chitose)

At its February 2023 meeting, the Commission had requested the Secretariat to refer comments raised by a Member regarding the continued listing of *T. orientalis* (Ikeda and Chitose) to the experts who conducted the listing assessment. This was in response to a comment made by the Member at the time of adoption of Chapter 11.10. Infection with *Theileria annulate*, *T.orientalis* and *T.parva* during the 89th General Session in May 2022 that *T.orientalis* should be delisted.

Regarding the Member comment that *T. orientalis* (Ikeda and Chitose) have a worldwide distribution and therefore would not meet point 2 of Article 1.2.2. of the *Terrestrial Code,* the Scientific Commission agreed with the experts that the geographic distribution of these genotypes were limited to Asia-Pacific and Southern Asia. The experts had also noted that the papers cited by the Member do not report a worldwide distribution for these genotypes.

In response to the Member comment that *T. orientalis* (Ikeda and Chitose) do not have the ability to transform leukocytes of host animals to allow infected cells to proliferate indefinitely and therefore was not of the same pathogenicity as the other listed genotypes *T. annulata* and *T. parva*, the experts considered that even if these genotypes were not 'transforming', they were nevertheless still pathogenic and have been described to cause outbreaks in cattle. The experts did not agree with the Member that there is limited information on outbreaks from *T. orientalis*, or that *T. orientalis* (Chitose) has a variant subpopulation with questionable pathogenicity, noting evidence of studies that suggest the Chitose genotype may directly cause clinical disease and reiterated papers from its previous assessment demonstrating the impact from *T. orientalis* (Ikeda and Chitose).

The Commission agreed with the experts that there is significant evidence of clinical signs, pathogenicity and economic losses associated with *T. orientalis* (Ikeda and Chitose) infection, and therefore supported the continued listing of *T. orientalis* (Ikeda and Chitose).

The report of the experts and supporting literature may be found in Annex 8 (English report only).

The opinion of the Scientific Commission on the listing of *Theileria orientalis* (Ikeda and Chitose) was forwarded to the Code Commission.

9.3. Development of case definitions

9.3.1. Case definition process and progress update

The Commission received an update on the status of case definitions under development and noted the efforts by the Secretariat to also seek feedback from the Biological Standards Commission on the proposed case definitions and extended its appreciation to the Biological Standards Commission for its feedback.

9.3.2. Case definitions

9.3.2.1. Infestation with Old World and New World Screwworms

The Commission reviewed the draft case definition prepared by the experts, along with the accompanying technical report and the Biological Standards Commission opinion on the case definition.

The Commissions noted the suggestion from one expert on using the term 'myiasis' and was of the opinion that 'myiasis' or 'infestation' could be applicable, however the existing WOAH convention was to use the term 'infestation'. The Commission agreed with the recommendation of the Biological Standards Commission to refer to the name of the pathogenic agent instead of 'New World Screwworm' and 'Old World Screwworm' and therefore proposed modifications to the draft case definition.

The Commission did not agree with the recommendation of the experts to exclude birds from the proposed case definition. The Commission considered that even though the frequency of reports of infestation in birds was low, birds, like mammals, host stages of the life cycle of screwworms, from which the larvae fall off and subsequently develop to adult flies, thereby perpetuating the life cycle of the parasite. In addition, screwworm myiasis in birds reflects the existence of fertile *Cochliomyia hominivorax* and *Chrysomya bezziana* flies in the locality, which is important information in order that Members may take action to apply measures. Therefore, Members should notify the occurrence of screwworms in domestic and wild birds.

The Commission agreed with the diagnostic criteria proposed by the experts and noted that this was in line with the *Terrestrial Manual*. Due to the potential for conflict between the endorsed case definition and the *Terrestrial Code* Chapter 8.13. in terms of animal hosts, the case definition will be forwarded to the Code Commission and the Biological Standards Commission to inform their revisions as appropriate, to Chapter 8.13. of the *Terrestrial Code* and Chapter 3.1.14. of the *Terrestrial Manual*. The case definition will not be made available to Members on the WOAH website. However, the experts' report is annexed to this report as Annex 9.

9.3.2.2. Infection with Nairobi sheep disease virus (Nairobi sheep disease)

The Commission was informed that in the process of case definition development for Nairobi sheep disease virus (NSDV), the Secretariat had consulted an expert who queried the continued listing of NSDV, as it has limited impacts to animal health. The expert noted that the virus has been present in some localities without causing disease. The Commission was also informed that in the past ten years, no Member had reported the occurrence of NSD and there was a paucity of literature on NSD outbreaks in the last few decades.

The Commission discussed that although no significant outbreaks have been reported in the recent years, there is the potential for NSDV to cause outbreaks in naïve populations, through animal movements and ecological changes that could drive the expansion of the range of competent tick species.

Before making a decision on whether to proceed with case definition development for NSDV or to propose NSDV for an assessment against the listing criteria, the Commission requested the Secretariat to obtain more information from other experts in the field, namely where the virus is known to circulate.

9.3.2.3. Infection with Crimean-Congo haemorrhagic fever virus (CCHFV)

The Commission reviewed the draft case definition for infection Crimean-Congo haemorrhagic fever virus (CCHFV), which had been further refined by the lead expert and the Biological Standards Commission at this September 2023 meeting.

The Commission noted the clarification from the lead expert on the diagnostic protocols for serological evidence of active infection (option 3), including using two different serological tests each based on a different antigen for the detection of IgM antibodies given the potential for cross-reactivity, or by seroconversion based on a rise in total or IgG antibody titres on samples taken at two to four weeks apart. The Scientific Commission also noted that 'seroconversion' is defined in the Glossary of terms of the *Terrestrial Manual*.

The revised case definition was endorsed by the Commission and it advised to upload the case definition onto the WOAH website. The Commission advised the Biological Standard Commission to clarify the test protocol for option 3 in the *Terrestrial Manual* Chapter.

The experts' report is provided as Annex 10. The opinion of the Commission was forwarded to the Code Commission.

The Commission was also requested to provide its opinion on the scope of a disease-specific chapter for CCHF and considered the report of the *ad hoc* Group on Crimean Congo haemorrhagic fever which met in February 2010. The Commission noted that whilst CCHF is not a priority disease for Veterinary Services given that animals do not develop clinical signs, it is a priority disease for the human health sector where infections of humans can result in the development of severe disease.

After reviewing the information in the report of the *ad hoc* Group, the Commission recommended that for the time being, the *Terrestrial Code* chapter should include an article with the case definition and a full chapter could be considered when there is further data on animal-human transmission. The Commission noted that Chapters 1.4 and 1.5. of the *Terrestrial Code* are relevant for Members conducting surveillance on CCHF, and advised the WOAH to include guidance on the surveillance for CCHF when developing surveillance guidelines for zoonotic haemorrhagic fevers.

9.3.2.4. Infection with Avian metapneumovirus (Turkey rhinotracheitis)

The Commission was informed that the Code Commission, at its February 2023 meeting, had requested for its clarification on some points in the case definition. At this meeting, whilst reviewing the comments from the Code Commission, the Commission noted that some information on the recommended diagnostic criteria was missing in the *Terrestrial Manual* chapter on avian metapneumovirus, and requested the Secretariat to seek clarification from the lead expert and the Biological Standards Commission.

The Scientific Commission will discuss the case definition at its next meeting in February 2024.

10. For Commission information

10.1. Update on the STAR-IDAZ International Research Consortium

The Commission was informed about the activities of the Global Strategic Alliances for the Coordination of Research of Major Infections Diseases of Animals and Zoonosis (STAR-IDAZ) International Research Consortium (IRC) and its Secretariat (SIRCAH2), co-hosted by WOAH.

The last IRC Executive and Scientific Committee (SC) met at ILRI, Nairobi, Kenya on 13–15 June 2023. Members shared information on their research activities and discussed how the IRC can improve its impact in advocating for STAR-IDAZ IRC and enlarge the network. Advocacy activities focused on increasing partners in underrepresented Regions had its start and 2 new partners joined recently the IRC. To facilitate engagement with industry and scale up from idea to product, it was agreed that STAR-IDAZ, trough SIRCAH 2 funding, could support participation of two selected applicants for the innovation spotlight sessions Discovery to Innovation in Animal Health (DIAH) Conference.

Updates on the following working groups activities were provided: Influenza, One Health, AMR and the Alternative to Antibiotics, ASF, Coronavirus, bovine tuberculosis, diagnostics, mycoplasmas, vaccinology, vector biology and disease transmission were discussed. Current identified priority topics remain important working areas for STAR-IDAZ IRC, moreover it was agreed to establish a WG on aquaculture. The focus of this WG should be determined by consultation within SC, funders and experts of this field. Further engagement has also been agreed with the Global Foot-and-Mouth Research Alliance (GFRA) and the Global African Swine Fever Research Alliance (GARA).

STAR-IDAZ Regional Networks (for Africa & the Middle East, the Americas, Asia & Australasia, and Europe) periodically facilitate regional cooperation and coordination among more than 50 countries around the globe, by identifying common research priorities in the Regions, opportunities for sharing resources including access to samples, specialised facilities, and expertise, and international or regional funding opportunities. The Africa and Middle East Regional Network met virtually on 1 August 2023, the next in-person meeting is alongside the 13th International Veterinary Immunology Symposium (IVIS 2023) in Kruger, South Africa on 16 November 2023. The Americas Regional Network met on 17 March 2023 virtually and in person in Quito, Ecuador on 22 August 2023 with a focus on AMR and alternatives to antimicrobials. The Asia and Australasia Regional Network met virtually on 4 April 2023 and the next meeting will also be virtually in October 2023. The European Regional Network (operated through the SCAR CWG-AHW) met in Vienna, Austria on 4–5 May 2023. The next meeting will be held virtually in Autumn 2023.

The Commission acknowledged the challenges in maintaining and growing a global international consortium for animal health and highlighted the importance to reinforcing Regional Networks to bring forward solutions for regional research priorities. Moreover, the Commission suggested engaging more with less active partners and finding strategies to monitor impacts of the Consortium.

10.2. Update on the WOAH antiparasitic resistance activities

The Commission was updated on the work of the Electronic Expert Group (EEG) on Antiparasitic Resistance, which led to the publication of the document on 'Responsible and prudent use of anthelmintic chemicals to help control anthelmintic resistance in grazing livestock species'. The last meeting of EEG took place on 17 April 2023.

The implementation of the recommendations of the publication started in 2023. The publication was presented with a call for implementation to WOAH Members during the Focal Points Seminar for English-speaking countries in the African region from 5 to 7 September 2023, in Lilongwe, Malawi to identify Members that could participate in the pilot implementation phase.

The Commission was also informed of the work initiated by FAO on acaricide resistance management, which also involves WOAH and its Collaborating Centres for Veterinary Drug Regulatory Programmes (Food and Drug Administration, United States of America [US]) and Veterinary Medicinal Products (ANMV, within the Agence Nationale Sécurité Sanitaire Alimentaire Nationale, France), with the objective to publish guidelines based on Community of Practice in 2025.

Noting that the work on antiparasitic activities largely applied to terrestrial animals, the Commission suggested including aquatic animals considering WOAH's focus on improving aquatic animal health and building more sustainable aquatic animal health systems under the WOAH Aquatic Animal Health Strategy. The Commission provided the Secretariat with a paper by Buchmann, K. (2022)[2], which could be a useful reference.

10.3. Update on the Global Burden of Animal Diseases programme and the WOAH Collaborating Centre for the Economics of Animal Health

The Commission was updated on the progress of the Global Burden of Animal Diseases programme (GBADs). The objective of GBADs is to systematically assess the economic burden of animal diseases including net loss of production, expenditure, and trade impacts to improve investment decisions in the livestock and aquatic sectors as a result of the incorporation of standardised economic analysis and publication of data, analysis, and reports. Activities since February 2023 include (i) the submission of publications on the GBADs methods to peer-review journals; (ii) the second evaluation of the GBADs programme by an external independent reference group; (iii) the GBADs case studies in Ethiopia (proof-of-concept study), Indonesia (initial stages), Senegal (launched in September 2023); (iv) the establishment of the Collaborating Centre for the Economics of Animal Health (CCEAH) for the Americas; and (v) WOAH's expanded activities on the economics of animal health to include a project on the Economics of Antimicrobial resistance. The Commission encouraged GBADs to ensure that the approach designed is inclusive of the differences in economic realities and livestock systems in different countries.

10.4. Composition of the WOAH Editorial Board

WOAH Head of the Publications Unit explained the need to establish a new Editorial Board for WOAH's peer-reviewed journal, the *Scientific and Technical Review*. Although the content is of high-quality and robust editorial and reviewing processes are in place, the publication lacks governance to maintain its scientific credibility.

The Editorial Board will monitor and foster the quality and impact of the *Scientific and Technical Review* and will also advise on WOAH's overall publications strategy on request. The role of the Board will be mainly advisory but it will also participate in reviewing content occasionally and will attend two meetings per year.

The Commission was asked to nominate a candidate for the Editorial Board who could commit to the role. Given that the mandate of the current Commission will end in May 2024, the term of the first nominated candidate will run until September 2024.

The Commission agreed that the creation of a new Editorial Board would be a positive step forward for WOAH's publications and agreed to nominate a member to be part of the board.

[2] Buchmann, K. (2022). Control of parasitic diseases in aquaculture. *Parasitology*. 149 (14), 1985 - 1997

10.5. WOAH Standards Online Navigation Tool Project

The Commission was informed by the WOAH Standards Department of a project to develop a new WOAH Standards Online Navigation Tool. This project is an initiative to change how WOAH Standards are displayed and made available to Members and other users. The project will enhance the display of the *Aquatic Code*, *Terrestrial Code*, *Aquatic Manual*, and *Terrestrial Manual* on the WOAH website. The project will also comprise a specific tool aiming at providing specific search functions for the visualisation of sanitary measures recommended for the international trade of commodities for terrestrial animals. In addition, the new tool is expected to simplify the annual updating process of the content of the Standards.

The project is aligned with the goals of the 7th Strategic Plan (7SP) and will provide significant benefits for WOAH and its Members, including enhanced accessibility to WOAH Standards, efficiency in information retrieval, supporting lastly the implementation of WOAH Standards. The project will also bring gains to the organisation itself, by improving the efficiency of internal processes and the interoperability across various datasets related to WOAH Standards.

The Commission expressed interest and support for the project and recognised the importance of facilitating Members' access to achieve better understanding and use of WOAH Standards.

11. Programme and priorities

11.1. Update and prioritisation of the work plan

The Commission updated its work programme, identified the priorities, and scheduled the dates for the various *ad hoc* Group meetings, which will be accessible to Members through the WOAH website. The updated work programme is attached as Annex 11.

12. Adoption of the meeting report

The Commission adopted the report that was circulated electronically after the meeting.

13. Date of the next meeting

The next meeting of the Commission is scheduled to take place between 12 and 16 February 2024.

14. Meeting Review

A meeting review was conducted in accordance with the Commission Performance Management Framework.

Annex 1: Adopted Agenda

1. **Welcome**
2. **Meeting with the Director General**
3. **Adoption of the agenda**
4. **Terrestrial Animal Health Code**
   - *4.1. Member comments received for Commission consideration*
     - 4.1.1. Chapter 1.6. Procedures for official recognition of animal health status, endorsement of an official control programme, and publication of a self-declaration of animal health status, by WOAH
     - 4.1.2. Chapter 8.8. Infection with foot and mouth disease virus
     - 4.1.3. Chapter 12.1. Infection with African horse sickness virus
   - *4.2. Other considerations*
     - 4.2.1. Chapter 1.11. Application for official recognition by WOAH of free status for foot and mouth disease
     - 4.2.2. Chapter 14.8. Scrapie
5. **Ad hoc and Working Groups**
   - *5.1. Meeting reports for consideration*
     - 5.1.1. Ad hoc Group on surra and dourine
     - 5.1.2. Ad hoc Group on biosecurity
   - *5.2. Planned ad hoc Groups and confirmation of proposed agendas*
     - 5.2.1. Ad hoc Group on the evaluation of AHS status: 28–29 September, October 2023
     - 5.2.2. Ad hoc Group on the evaluation of BSE risk status: 3–5 October 2023 (cancelled)
     - 5.2.3. Ad hoc Group on the evaluation of official control programmes for dog-mediated rabies: 4 and 6 October 2023
     - 5.2.4. Ad hoc Group on the evaluation of PPR status: 17–19 October 2023
     - 5.2.5. Ad hoc Group on the evaluation of FMD status: 23–26 October 2023
     - 5.2.6. Ad hoc Group on the evaluation of CSF status: 7–9 November 2023 (cancelled)
     - 5.2.7. Ad hoc Group on the evaluation of CBPP status: 5–7 December 2023 (to be confirmed)
     - 5.2.8. Meeting reports for information
     - 5.2.9. WOAH Working Group on wildlife
6. **Official animal health status**
   - *6.1. Annual reconfirmations for maintenance of status*
     - 6.1.1. Selection of status for comprehensive review of 2023 annual reconfirmations
   - *6.2. Specific update on official animal health status*
     - 6.2.1. Update on situation of countries/zone with suspended status
       - 6.2.1.1. Thailand AHS status recovery
       - 6.2.1.2. Malaysia AHS status recovery
       - 6.2.1.3. Botswana FMD status recovery with the establishment of a containment zone
     - 6.2.2. Update on FMD status application of Republic of Korea (2022-2023 evaluation cycle)
   - *6.3. State of play and prioritisation of expert mission to Members requested by the* Commission
     - 6.3.1. Follow-up of field missions
       - 6.3.1.1. Malaysia FMD
       - 6.3.1.2. Türkiye FMD
       - 6.3.1.3. Other missions
     - 6.3.2. State of play and prioritisation
   - *6.4. Standards and procedures related to official status recognition*
     - 6.4.1. Update on the progress of activities subsequent to the adoption of Chapters 11.4. and 1.8. on BSE
     - 6.4.2. Form for the annual reconfirmation of the BSE risk status of Members

6.4.3. Non-compliance of Members having an official animal health status by WOAH with provisions of the Terrestrial Code for imports of commodities from countries not officially recognised as free by WOAH
6.4.4. Development of the Official Status Management Platform

7. Global control and eradication strategies
7.1. Update on the FMD global situation and activities of the Reference Laboratory Network
7.2. Peste des Petits Ruminants. Global Control and Eradication Strategy
7.3. Avian Influenza. Global Control Strategy. Animal health forum. OFFLU
7.4. African swine fever. Global Control Initiative
7.5. Bovine tuberculosis. Global Strategy for zoonotic tuberculosis. Guidelines for alternative strategies for the control of Mycobacterium tuberculosis complex infection in livestock

8. Liaison with other Commissions and Departments
8.1. Terrestrial Animal Health Standards Commission (Code Commission)
8.2. Biological Standards Commission

9. Disease control: specific issues
9.1. Emerging diseases
9.1.1. Annual re-assessment of emerging disease: infection with SARS-CoV-2
9.2. Evaluation of pathogenic agent against the listing criteria of Terrestrial Code Chapter 1.2.
9.2.1. Equine encephalitides
9.2.2. Theileria orientalis (Ikeda and Chitose)
9.3. Development of case definitions
9.3.1. Case definition process and progress update
9.3.2. Case definitions
9.3.2.1. Infestation with Old World and New World Screwworms
9.3.2.2. Infection with Nairobi sheep disease virus (Nairobi sheep disease)
9.3.2.3. Infection with Crimean-Congo haemorrhagic fever virus (CCHFV)
9.3.2.4. Infection with Avian metapneumovirus (Turkey rhinotracheitis)

10. For Commission information
10.1. Update on the STAR-IDAZ International Research Consortium
10.2. Update on the WOAH antiparasitic resistance activities
10.3. Update on the Global Burden of Animal Diseases programme and the WOAH Collaborating Centre for the Economics of Animal Health
10.4. Composition of the WOAH Editorial Board
10.5. WOAH Standards Online Navigation Tool Project

11. Programme and priorities
11.1. Update and prioritisation of the work plan

12. Adoption of the meeting report

13. Date of the next meeting

14. Meeting Review

Annex 2: List of Participants

MEMBERS OF THE COMMISSION

Dr Cristóbal Zepeda
(President)
Regional Manager - Director
North America Region
USDA-APHIS-International Services
U.S. Embassy, Mexico City
MEXICO

Dr Trevor Drew
(Vice-President)
CSIRO Australian Centre for Disease Preparedness
AUSTRALIA

Dr Misheck Mulumba
(member)
Senior Manager Research
Agricultural Research Council
SOUTH AFRICA

Dr Kris De Clercq
(Vice-President)
Department of Infectious Diseases in Animals
Exotic and Vector-borne Diseases Unit
Sciensano
BELGIUM

Dr Silvia Bellini (Remote participation)
(member)
Staff Director
Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna
ITALY

Dr Baptiste Dungu
(member)
Veterinary Specialist
Afrivet Business Management
SOUTH AFRICA

WOAH HEADQUARTERS

Dr Gregorio Torres
Head
Science Department

Dr Min Kyung Park
Head
Status Department

Dr Anna-Maria Baka
Disease Status Officer
Status Department

Dr Charmaine Chng
Deputy Head
Science Department

Dr Monal Daptardar
Scientific Coordinator
Science Department

Dr Natalie Moyen
Disease Status Officer
Status Department

Annex 3: 6.4.2. Form for the annual reconfirmation of the BSE risk status of Members

Specific period (cover a period of 12 months) *:

* *Please make sure that the current 'specific period' is directly consecutive with the previous reporting period (i.e. that there are no gaps, nor overlaps between this 'specific period' and the one from last year's annual reconfirmation).*

	QUESTION	YES	NO
1.	Has the risk assessment for BSE in accordance with Article 11.4.3 been reviewed by the Competent Authority of the country/zone, through incorporation of documented evidence, in the past 12 months?	Please provide the conclusions of the review and any subsequent actions/updates that may have been taken.	Please explain why and provide the tentative date of completion of the review.
2.	a) Have there been any changes in the livestock industry practices during the specific period, as described under Point 1.b.i of Article 11.4.3., including any changes in auditing practices or any increase in non-compliances detected?	Please provide an updated description of the industry practices preventing bovines from being fed ruminant-derived protein meal, as per Point 1.b.i of Article 11.4.3. Please provide the rationale for the changes in auditing practices.	
	b) Have there been any changes to the BSE-specific risk mitigation measures (other than import requirements addressed under question 4b) during the specific period, as described under Point 1.b.ii of Article 11.4.3., including any changes in auditing practices or any increase in non-compliances detected?	Please provide an updated description of specific risk mitigation measures preventing bovines from being fed ruminant-derived protein meal. Please provide the rationale for the change in measures.	
3.	Have any modifications in the legislation regarding BSE (except for import requirements addressed in question 4b) been made during the specific period?	Please summarise the modification(s) made, highlighting their potential impact on BSE risk mitigation measures, including surveillance. Please explain how the updated legislation still aligns with Articles 11.4.4 and 11.4.5. Please provide the rationale for the change in legislation.	

QUESTION			YES	NO
4.	a) Have the following commodities been imported during the specific period? If yes, please indicate the quantities imported during that period by commodity and origins in Table 1.	i. Bovines		
		ii. Ruminant-derived protein meal		
		iii. Feed (not intended for pets) that contains ruminant-derived protein meal		
		iv. Fertilizers that contain ruminant-derived protein meal		
		v. Any other commodity that either is, includes, or could be contaminated by commodities listed in Article 11.4.15.		
	b) Have there been any changes to the import requirements of the following commodities during the specific period?	i. Bovines	Please summarise the modifications, the rationale for the changes, and highlight their potential impact on BSE risk mitigation measures. Please describe how the updated legislation is still aligned with Articles 11.4.3. and 11.4.4.	
		ii. Ruminant-derived protein meal		
		iii. Feed (not intended for pets) that contains ruminant-derived protein meal		
		iv. Fertilisers that contain ruminant-derived *protein meal*		
		v. Any other commodity that either is, includes or could be contaminated by commodities listed in Article 11.4.15.		
5.	a) Has the surveillance programme continued to report and test all animals that show signs on the clinical spectrum of BSE during the specific period, as described under Points 1 & 2 of Article 11.4.20.?		Please provide supportive information by completing Table 2.	Please describe why the system has not continued to report and/or test all bovines that show signs on the clinical spectrum of BSE during the specific period. In addition, please

	QUESTION	YES	NO
			provide the corrective measures implemented/to be implemented and the timeline for implementation.
	b) Have the awareness and training programmes for the different stakeholder groups been implemented during the specific period as described under Point 3a of Article 11.4.20.?	Please provide a summary of the activities conducted, including the target audience.	Please describe why and provide the corrective measures and the timeline for implementation.
	c) Has BSE continued to be notifiable throughout the whole territory during the specific period (Point 3b of Article 11.4.20)?		Please describe why and provide the corrective measures implemented/to be implemented and the timeline for implementation.
	d) Have all tests for BSE been conducted in accordance with the *Terrestrial Manual*? (Point 3c of Article 11.4.20)		Please describe why and provide the corrective measures implemented/to be implemented and the timeline for implementation.
	e) Is the surveillance system still supported by robust, documented evaluation procedures as listed in Point 3d of Article 11.4.20?	Please provide a summary of these procedures and, if applicable, non-compliances and subsequent corrective measures.	Please describe why and provide the corrective measures implemented/to be implemented and the timeline for implementation.
6.	a) Have any cases of atypical BSE occurred during the specific period?	Please include the number of cases and how the cases were identified. Please also provide documented evidence that the case was atypical and assurance that it wasn't recycled (i.e. that measures were taken to ensure that all detected cases have been completely destroyed or disposed of to ensure they did not enter the feed or food chain, as per point 4 of Article 11.4.4.)	

QUESTION		YES	NO
	b) Have any cases of classical BSE occurred during the specific period?	Please attach the final epidemiological investigation report that was provided to WOAH further to the notification. Please describe any measures that may have been taken to avoid reoccurrence. Please describe the measures taken to ensure that all detected cases have been completely destroyed or disposed of to ensure they did not enter the feed or food chain, as per point 4 of Article 11.4.4.	
7.	Have any changes in the epidemiological situation or other significant events occurred during the specific period?	Please describe the 'significant event(s)' and any significant changes in the epidemiological situation and the actions taken in response to such events/changes.	

Table 1. Record of imports since your last submission (cover a period of 12 months). Specific period (check one of the boxes below):

□ same as period at the top of the form
□ different, if so, please specify:

***** *Please make sure that the current 'specific period' is directly consecutive with the previous reporting period (i.e. that there are no gaps, nor overlaps between this 'specific period' and the one from last year's annual reconfirmation).*

Describe bovines, ruminant-derived protein meal and other commodities imports from all countries in this table.

Country of origin of import	**Commodity and quantity**									
	Bovines		**Ruminant-derived protein meal**		**Feed (not intended for pets) that contains ruminant-derived protein meal**		**Fertilizers that contain ruminant-derived protein meal**		**Any other commodity that either is, includes, or could be contaminated by commodities listed in Article 11.4.15.**	
	Number of animals	**Intended use**	**Amount**	**Type of commodity (+)**	**Amount**	**Type of commodity (+)**	**Amount**	**Type of commodity (+)**	**Amount**	**Type of commodity (+)**

(+) Specify the type and intended use of feedstuff or species composition of ingredients

Table 2. Record surveillance conducted since your last submission (cover a period of 12 months).
Summary of all bovines with clinical signs suggestive of BSE that were reported and evaluated by the Veterinary Services.

Specific period (check one of the boxes below):

□ same as period at the top of the form
□ different, if so, please specify:

Provide the adult bovine population size (24 months and older):

Clinical presentation (See Point 2 of Article 11.4.20)	Number reported	Number tested for BSE
Bovines displaying progressive clinical signs suggestive of BSE that are refractory to treatment and where the presentation cannot be attributed to other common causes of behavioural or neurological signs		
Bovines showing behavioural or neurological signs at antemortem inspection at slaughterhouses/abattoirs		
Bovines presented as downers (non-ambulatory) with an appropriate supporting clinical history (i.e., the presentation cannot be attributed to other common causes of recumbency)		
Bovines found dead (fallen stock) with an appropriate supporting clinical history (i.e., the presentation cannot be attributed to other common causes of death)		

Annex 4: 9.2.1. Listing Assessment for Equine Encephalitides (JEE)

SUMMARY OF THE EXPERT ASSESSMENT OF JAPANESE ENCEPHALITIS AGAINST THE LISTING CRITERIA OF *TERRESTRIAL CODE* CHAPTER 1.2.

Three experts participated in this consultation:

- **Peter Timoney** (IHSC Consultant, Gluck Equine Research Center, US)
- **Ann Cullinane** (Irish Equine Center, Ireland)
- **Alf Fussel** (IHSC Consultant, retired from European Commission, Belgium)

Criterion	1	2	3
Criterion 1: International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven.	YES	YES	YES
Criterion 2: At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.	YES	YES	YES
Criterion 3: Reliable means of detection and diagnosis exist, and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.	YES	YES	YES
Criterion 4a: Natural transmission to humans has been proven, and human infection is associated with severe consequences.	YES	YES	YES
Criterion 4b: The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.	YES	YES	NO
Criterion 4c: The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.	YES	NO	NO
CONCLUSION: Does infection with Japanese encephalitis virus match the listing criteria that are described in the Terrestrial Animal Health Code Chapter 1.2?	YES	YES	YES

Assessment for Japanese Encephalitis: Peter Timoney

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes ☒ No** □

Scientific rationale:

First described in Japan in 1871, Japanese encephalitis (JE) occurs across a wide swath of countries in East, South and Southeastern Asia and the Western Pacific (World Health Organization, 2015; NHS-UK, 2019). A source of increased concern has been the expanding geographic distribution of the disease that has taken place over the past several decades. The causal virus has spread westward into Nepal and Pakistan, and eastward into Papua New Guinea and islands to the north of Australia (Mackenzie, 1998; Mackenzie *et al*., 2002).

JE is an arboviral disease of humans, equids and pigs and certain other domestic species. The natural life cycle of JE virus involves wading and water birds especially Ardeid species such as herons and egrets as reservoir hosts. Unlike pigs, humans and equids are dead-end or tangential hosts that fail to develop viremias of sufficient magnitude to infect mosquitoes competent to transmit the infection. Pigs, on the other hand, develop significant viremias and act as important amplification hosts of the virus (Scherer *et al.,* 1959).

In countries in which JE is endemic, outbreaks of encephalitis in equids due to this virus tend to coincide with seasonal occurrences of the disease in humans. Frequency of the disease in equids has been reduced very significantly in countries practicing annual vaccination.

There can be no doubt from the ever-widening global distribution of JE within the past 30–40 years, that international spread of the causal virus has taken place between countries in Asia and the Western Pacific on various occasions. The likelihood is that such incursions have arisen following wind-borne carriage of the disease agent via infected mosquitoes from an endemic country or countries (Ellis *et al.,* 2000; Ritchie and Rochester, 2001). Changes in climate, destruction of natural habitats and other factors can bring about changes in vector distribution and relocation to new regions or countries (Connor and Bunn, 2017). There is no documented evidence in support of an alternative explanation associating these events with the movement of animals, animal products, or the transfer of fomites or people. The most recent instance exemplifying international spread of JE virus was a report of an increased incidence of reproductive problems on commercial breeding pig farms in the states of Queensland, New South Wales, and Victoria, Australia in February 2022. Investigation of cases of stillbirths, weak piglets and neonatal deaths led to confirmation of a diagnosis of JE infection (Australian Government Department of National Pest & Disease Outbreaks, March 2022). South Australia was added to the number of known affected states in early March 2022. This was the latest but not the first incursion of JE virus either onto some of the islands of the Torres Strait in 1995 (Hanna *et al.,* 1996) or Cape York Peninsula on the Australian mainland in 1998 (Hanna *et al.,* 1999). Subsequent surveillance studies provided serologic evidence that JE virus had been circulating in the feral and domestic pig and cattle populations in Northern Australia.

By April 2022, JE virus had been detected in 73 pig farms across the four afore-mentioned states (WHO Outbreak News, 2022). In light of the known distribution of the disease in the affected states and the fact that it is very probable that the virus continues to circulate in the feral pig population in Northern Australia, the Veterinary Authorities are now considering JE as an endemic disease and at least for the time being, no longer a transboundary disease in the affected states.

In summary, in the author's opinion, international spread of JE virus has taken place on at least several occasions since the 1990s, either to islands in the Torres Strait in 1995 or to the Australian mainland as identified on the Cape York Peninsula in 1998 and most recently in early 2022. Such incursions likely arose following wind-borne carriage of the virus via infected mosquitoes from an endemic country, possibly Papua New Guinea. This provides the proof needed to meet Criterion 1 required for listing in the *Terrestrial Code*.

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

Regarded as an emerging disease of international concern because of its expanding encroachment into previously non-endemic regions, JE is considered a very significant human and equine pathogen. Countries long affected by the disease have resorted to vaccination as an effective strategy for reducing the incidence of clinical disease and losses attributable to the virus. Official programs to control and prevent the spread of JE have been implemented by various countries including but not necessarily exclusive of: Japan (Nakamura, 1972); Singapore (Loke, 1981; Ismail, 1989); China (Huang, 1982); Malaysia and Hong Kong (Ellis *et al.,* 2000). While the majority of programs have emphasized vaccination of at-risk susceptible human and equine populations, some have been expanded to include additional strategies aimed at vector control, limiting exposure of equids to infected mosquitoes, and very importantly, limiting amplification of JE virus in pigs. Because of JE's zoonotic significance, Public Health and Veterinary Authorities need to work in concert at all levels in striving to prevent this disease in human populations. Although the focus of these programs has been on prevention and control of JE, to the author's knowledge, none of the countries concerned have as yet been in a position to eliminate this virus and declare country freedom from the disease. The challenge is especially daunting for countries in which the sylvan cycle of the virus has become established or where there is a significant risk of periodic reintroduction of virus from neighbouring countries where the disease is also endemic.

Prior to the latest discovery of JE in southeastern Australia in early March 2022, the Veterinary Authorities had formulated a plan many years earlier detailing measures that ought to be taken in the event of an incursion of JE into the country (Agriculture and Resources Management Council of Australia and New Zealand, 1998). In light of the current situation, the Australian government has declared the multistate outbreaks of JE a Communicable Disease Incident of National Significance (Australian Government Department of Health, May 2022). JE is a notifiable disease in both humans and animals in Australia. Of primary importance in controlling future spread of the disease is to develop and implement a national surveillance plan to determine the area(s) and extent to which JE virus is circulating in the country. Emphasis is being placed on piggeries and mosquitoes because of their significance in amplification and transmission of the virus. This will likely present a major logistical challenge, considering the very extensive land area involved. While JE vaccine(s) is/are available for immunization of human at-risk groups, no vaccines for animals are currently registered for general use in Australia (WHO Outbreak News, April 2022). A vaccine for use in horses being exported to a JE endemic country will hopefully be approved for use domestically by horse owners to protect their animals. Furthermore, there is an urgent need to develop a vaccine for use in pigs because of their major role in amplification and spread of the virus. An Achilles heel in implementation of the surveillance program is the feral pig population in northern Australia. While this population can be logistically difficult to trace and sample, it is important to monitor since it can play a contributory role in the spread of JE virus.

Additional to targeted surveillance, such a plan should also emphasize strategies for reducing vector populations, especially in proximity to piggeries; restricting the movement and congregation of pigs and the potential for transfer of virus by viremic animals; limiting exposure of horses to the virus by accommodating them in screened barns from dusk to dawn; and more widespread use of insect repellents on at-risk horses (Ellis *et al.,* 2000).

The National Plan that the Australian government has launched in response to the current JE situation in four southeastern states Queensland, New South Wales, Victoria, and South Australia, represents a highly comprehensive, well-integrated approach to bringing this disease under control not only in the affected states, but also in the longer term on a national scale. It remains to be seen how effective these collective efforts will turn out and whether it will be possible to permanently eliminate the virus from the states in question. It would be very encouraging if it did. Success even at a state level would hopefully augur well for accomplishing disease freedom on a much wider scale, even perhaps at a national level. As it currently stands, given time, Australia has the potential to comply with the requirements to be considered free from JE, in accordance with the surveillance principles outlined in Chapter 1.4 of the *Terrestrial Code*. Only time will tell what the eventual outcome will turn out to be at the state and national level.

In summary, the author considers that Australia, among a number of other countries, measures up to the basis for Criterion 2 with respect to listing in the *Terrestrial Code*. Australia has the potential to comply with requirements to be considered free from JE, in accordance with the surveillance principles outlined in Chapter 1.4 of *Terrestrial Code*.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

A variety of diseases, infectious and non-infectious, can be associated with the development of neurologic signs in horses and other equid species. Among viral diseases, there are an increasing number caused by different arboviruses, all of which can give rise to neurologic disease that is very similar in nature, range of clinical signs, and course of the disease to JE. A provisional clinical diagnosis must always be substantiated by laboratory confirmation of the responsible etiological agent (Ellis *et al.,* 2000), in this case JE virus. This can only be arrived at following testing of appropriate clinical/post-mortem specimens by a laboratory having the capability, expertise and experience in conducting the tests needed to establish a diagnosis.

A range of virus detection and identification tests as well as antibody determination tests are available for the diagnosis of JE infection. JE virus can be isolated from serum, cerebrospinal fluid or the brain of a horse with neurologic disease or a case of subclinical infection. Isolation of virus can be attempted in a susceptible strain of mice inoculated intracerebrally, or in certain cell lines. Identification of viral isolates as JE virus is best accomplished using the plaque-reduction neutralization test or a molecular, nucleic acid based assay viz. polymerase chain reaction assay (Ellis *et al.,* 2000). Most recently, JE virus infection has been confirmed by RNA-based metagenomic next-generation sequencing (Maamary *et al.,* 2023), as yet not available in most testing labs. Virus-specific antigen has been demonstrated immunohistochemically in the brain of some cases of the disease. Several serological tests can be used in investigating suspect cases of JE virus infection, of which the JE specific enzyme-linked immunosorbent assay (ELISA) and the plaque-reduction neutralization test offer the most definitive results. Other serological tests lack specificity due to serologic cross-reactions with related flaviviruses (Ellis *et al*., 2000).

In summary, a range of lab tests are available for the detection and identification of cases of JE infection. These enable confirmation of a diagnosis of the disease and its differentiation from cases of infection caused by other viral or microbial agents. As such, JE meets Criterion 3 for listing in the *Terrestrial Code* with respect to the availability of lab tests capable of confirming a diagnosis of the disease.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

The zoonotic significance of JE virus has been recognized for well over 100 years. Prior to the availability of a vaccine with which to protect against the disease, epidemics of encephalitis in the human population were frequently recorded in the various countries in South and Southeastern Asia in which the disease was endemic. JE has been estimated to be responsible for 100,000 cases annually worldwide (Maamary *et al.,* 2023). Two types of transmission patterns have been described: 1) seasonal epidemic transmission in temperate regions; and 2) low endemic transmission in tropical regions throughout the year (Mehta *et al*., 2021). The clinical features associated with JE virus infection range from asymptomatic infection to a fulminant encephalitic syndrome with a case fatality rate of between 20-30%. Upwards of 50% of survivors are left with neurological sequelae. Most human infections with JE virus are asymptomatic. Symptomatic cases are uncommon, occurring in an estimated one in 250 cases of infection. They are more common in children. In fact, JE is

regarded as a disease of children (Mehta *et al.,* 2021). Even to this day, JE is a highly significant cause of serious illness and death in humans, despite the availability of vaccines known to be effective in protecting against this very important disease.

In summary, JE meets Criterion 4a for listing in the *Terrestrial Code* by virtue of its proven ability to cause human disease of very major clinical significance.

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone, taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ **No** ☐

Scientific rationale:

Analogous to the situation in humans, JE has been proven to have a significant impact on the health of two species of domestic animals, horses including other equid species and pigs, specifically pregnant sows. The outcome of JE infection in horses parallels that in humans, (Burns *et al.,* 1949; Nakamura, 1972). Horses and donkeys are susceptible to infection with the virus (Huang, 1982). Horses are most likely to develop inapparent infections than observable signs of disease (Burns *et al.,* 1949). That notwithstanding, periodic epidemics of encephalitis in horses in summer have been documented, the majority during the 20th century. Case fatality rates in such events have varied from 5-15% to as high as 30-40% (Nakamura, 1972).

The frequency of epidemics in endemic countries has diminished in more recent times with greater widespread use of vaccine against the disease. Three clinical syndromes have been described in horses infected with JE virus, transient, lethargic, and hyperexcitable. Horses exhibiting the transient or lethargic forms of the disease usually recover in a matter of several days. Individuals afflicted with the hyperexcitable manifestation of JE may recover but more commonly succumb to the disease. Residual neurologic sequelae may supervene in horses that survive the encephalitic form of JE.

Except for pregnant sows, JE virus infection in pigs is asymptomatic. Infection of pregnant sows can frequently result in abortion, or the birth of mummified weak piglets (Burns, 1950). Affected piglets can develop neurologic disease and frequently die. Losses at piggeries can be very high in the face of peak virus transmission, with up to 1/3 of infected sows losing their litters (Takashima *et al.,* 1988).

In summary, historical and current experience has shown that JE virus can have a significant impact on the health of equids and pigs. The series of outbreaks of JE infection in breeding sows on multiple piggeries in four states in Australia exemplifies the direct economic and production losses that can occur, given the circumstances that the at-risk pig population was fully susceptible to the effects of the virus. In the author's opinion, these data support the listing of JE in the *Terrestrial Code*.

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☒ **No** ☐

Scientific rationale:

There is a dearth of published information on the impact of JE virus infection on the health of wildlife. Beyond infecting various species of wading and water birds in nature, and chickens, ducks and pigeons under experimental conditions, all of which can develop high viremias similar to pigs, infection is not associated with development of clinical signs of disease. It is presumed that JE infection in feral pregnant pigs will produce the same pathologic response as characterized in the domestic pig, namely reproductive losses from abortion, stillbirths, mummified fetuses and neonatal deaths. Under such circumstances, JE virus will have the potential

to impact the health of feral pig populations. That being so, it will match with Criterion 4c for listing in the *Terrestrial Code*.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

Japanese encephalitis virus is exceptional among the group of equine encephalitic viruses in that its known global distribution has expanded significantly over the past 30-40 years. It has spread westward into Nepal and Pakistan and eastward into Papua New Guinea and islands to the north of Australia. Aside from humans and horses that are dead-end hosts of the virus, pigs are highly susceptible to infection, developing very high viremias and acting as efficient amplification hosts of the virus. Spread of JE virus in East, South and Southern Asia and the Western Pacific has likely been associated with wind-borne carriage of the disease agent via infected mosquitoes from an endemic country. This is the most logical explanation to account for the incursion of JE into offshore islands in the Torres Strait in 1995, Cape York Peninsula on the Australian mainland in 1998, and most recently, discovery of the virus in pigs associated with reproductive losses in three southeastern states, Queensland, New South Wales and Victoria in March 2022. A fourth state, South Australia, was added a month later. The Australian Veterinary Authorities are now considering JE as an endemic disease in the four affected states. The most recent series of events is confirmation of the incursion of JE into Australia, most probably by infected vectors (mosquitoes) perhaps from Papua New Guinea. This matches Criterion 1 with respect to proven international spread of a disease agent. Australia has a highly comprehensive and well-integrated official plan in place to combat and prevent further spread of JE virus. An integral component of this plan is in-depth targeted surveillance of the mosquito and pig populations initially in the four affected states and on a wider scale later, to determine the extent of distribution of the virus in the respective populations. The surveillance plan is structured so that it is in accordance with the surveillance principles outlined in Chapter 1.4 of the *Terrestrial Code*. Whereas the plan is conditional at this point in time, it is in keeping with the terms of Criterion 2 with reference to listing in the *Terrestrial Code*. A range of laboratory tests are available that enable the diagnosis of JE virus infection. Some are directed at detection and identification of the causal agent, whereas others, for example certain serologic tests, can be used to investigate suspect cases of this infection. It needs to be borne in mind that some serologic assays lack specificity due to cross reactions with related flaviviruses. The availability, sensitivity and specificity of laboratory tests for confirmation of a diagnosis of JE matches Criterion 3 in the *Terrestrial Code*. The zoonotic importance of JE for human populations in countries in which this disease is endemic is widely accepted. Epidemics of disease continue in susceptible populations notwithstanding the availability of safe, effective vaccines against the disease. JE is more common in children in which it can be a serious if not infrequently fatal illness. The disease continues to be of major clinical significance and matches with Criterion 4a for listing in the *Terrestrial Code*. Analogous to the JE in humans, JE has been proven to have an important impact on the health of horses and other equid species, and pigs. JE virus has the potential to cause encephalitis in horses, with fatality rates in some outbreaks as high as 30-40%. Residual neurologic sequelae may supervene in horses that survive the encephalitic form of JE. With the exception of pregnant sows, JE infection is asymptomatic in pigs. Infection in pregnant sows can frequently result in abortion, stillbirths, and mummified piglets. Losses in affected piggeries can be very significant. The impact of JE virus on the health of horses and pigs matches Criterion 4b for listing in the *Terrestrial Code*. There is very little published information on the impact of JE virus infection on the health of wildlife with one exception, namely that of the pregnant feral pig population. It is reasonable to assume that this population will suffer the same reproductive losses as encountered in the domestic pig. Under such circumstances, JE virus will have the potential to impact the reproductive health of feral pig populations and match with Criterion 4c for listing in the *Terrestrial Code*. JE virus matches important Criteria 1 and 2 (conditional) and also Criteria 3, 4a, 4b and 4c. The conditional match under Criterion 2 is based upon the following: 1) Australia has a National Surveillance Plan in place to control and prevent the further spread of JE virus; and 2) the country has the potential to comply with the requirements to be considered free from the disease or infection in accordance with the surveillance principles outlined in Chapter 1.4 of the *Terrestrial Code*.

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Assessment for Japanese Encephalitis: Ann Cullinane

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Japanese Encephalitis (JE) is primarily prevalent in Asia but recent cases in Pakistan, Papua New Guinea and Australia suggest that its geographic range is expanding (Pierson and Diamond, 2020). In 2022, Japanese Encephalitis virus (JEV) was detected in Australia on a hitherto unprecedented scale, with local transmission by indigenous mosquitoes, disease outbreaks in piggeries and fatalities in humans https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON365 and https://www.health.gov.au/health-alerts/japanese-encephalitis-virus-jev/japanese-encephalitis-virus-jev. The virus was identified as of the G4 genotype, the least common genotype worldwide. Until 2017 G4 was found only in Indonesia and Papua New Guinea. The method of international spread was not proven but introduction by migratory birds or mosquitoes was suggested (Pham *et al.,* 2022).

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

There have been no documented cases of JE in Europe https://www.ecdc.europa.eu/en/japanese-encephalitis/facts or the Americas https://www.cdc.gov/japaneseencephalitis/maps/index.html (Mulvey and Duong, 2021).

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

Currently available methods for JEV diagnosis including serology, nucleic acid amplification testing, virus isolation, sequencing and metagenomics (Pham *et al.,* 2022). A highly sensitive JEV specific RT-qPCR assay has been developed (Bharucha *et al.,* 2018). Serology tests cross reactivity with other flaviviruses but the plaque reduction neutralisation test is considered specific. Reliable means of diagnosis are described in the Terrestrial Manual https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/3.01.10_JEV.pdf . There is no precise case definition in the WOAH *Terrestrial Code*.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

Natural transmission to humans is through the bite of infected Culex species mosquitoes (Solomon, 2006). JE is considered the most important viral encephalitis of humans, particularly in children up to 14 years of age in South Eastern Asia and the Western Pacific (Erlanger *et al.,* 2009), https://www.cdc.gov/japaneseencephalitis/transmission/index.html. The disease is most prevalent where there are rice fields (breeding sites for mosquitoes), and pigs (natural virus reservoirs) (Erlanger *et al*., 2009, van den Hurk *et al.,* 2009). There are over 67 thousand new cases each year with 20-30% fatalities (Erlanger *et al*., 2009, Pierson and Diamond, 2020). Over 30% of survivors suffer neurological deficits (Erlanger *et al*., 2009, Solomon *et al*., 2000).

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ **No** ☐

Scientific rationale:

In horses, symptoms include fever, profuse sweating, muscle tremors, hyperexcitability, loss of vision and coma (Kumar *et al*., 2018). Mortality rates can reach 30%. Vaccination against JEV is mandatory for designated horse populations in Hong Kong (China), Malaysia, Japan, and Singapore. In pigs the virus primarily affects reproductive performance. Sows may abort or give birth to mummified and stillborn or weak piglets, some with neurological signs (Mansfield *et al*., 2017).

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ **No** ☒

Scientific rationale:

There is no evidence that the disease represents a threat to the viability of a wildlife population although wild

mammals, reptiles and amphibians may be sub-clinically infected and feral pigs serve as a reservoir (Impoinvil *et al.,* 2013, Mackenzie *et al*., 2022).

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

JE satisfies the WOAH criteria for listing but unlike pigs which are reservoir hosts, horses do not amplify the virus efficiently and are considered 'dead-end' hosts. Thus, the international movement or trade of horses should not be restricted due to JE.

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The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Both humans and horses are thought to be dead-end hosts.

References:

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AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

WOAH WAHIS 2015-2022: disease only present in South and South-east Asia.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

https://www.woah.org/fileadmin/Home/fr/Health_standards/tahm/3.06.05_EEE_WEE_VEE.pdf
https://sitesv2.anses.fr/en/minisite/equine-diseases/sop

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

https://www.who.int/news-room/fact-sheets/detail/japanese-encephalitis
https://www.cdc.gov/japaneseencephalitis/index.html
https://www.ecdc.europa.eu/en/japanese-encephalitis/facts

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☐ **No** ☒

Scientific rationale:

References:

Mansfield K.L., Hernández-Triana L.M., Banyard A.C., Fooks A.R, Johnson N. 2017. Japanese encephalitis virus infection, diagnosis and control in domestic animals; *Veterinary Microbiology*, Volume 201, March 2017, Pages 85-92

Morita K., Nabeshima T. & Buerano C.C. 2015. Japanese encephalitis; *Rev. Sci. Tech. Off. Int. Epiz.*, 34 (2), 441-452 (https://doi.org/10.20506/rst.34.2.2370)

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ **No** ☒

Scientific rationale:

Reports about JE do not indicate any threat to the viability of a wildlife population.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

Infection with the Japanese Encephalitis Virus meets the listing requirements set out in Chapter 1.2. of the *Terrestrial Code*.

This conclusion concourse with the outcome of the respective EFSA report (doi: 10.2903/j.efsa.2017.4948) and the conclusion of the European Union as set out in Annex II to Regulation (EU) 2016/429. (OJ L 84, 31.3.2016, p. 1.).

However, any possible measures to prevent the spread of the virus through international trade in certain captive birds and porcine animals should be set out in Section 8 ‘Multiple Species’.

The requirements in Chapter 8.10. in respect of trade in equines should be removed, since equine animals are considered to be dead-end hosts due to the low-level and short duration of viremia following the accidental infection from vector insects.

Since individual equine animals may be affected by the infection and because of the zoonotic nature of the infection, it is advised to maintain surveillance, not least to allow the vaccination of equines resident in, or intended to be moved to, endemic areas.

Annex 5: 9.2.1. Listing Assessment for Equine Encephalitides (EEE)

SUMMARY OF THE EXPERT ASSESSMENT OF EASTERN EQUINE ENCEPHALOMYELITIS AGAINST THE LISTING CRITERIA OF *TERRESTRIAL CODE* CHAPTER 1.2.

Three experts participated in this consultation:

- **Peter Timoney** (IHSC Consultant, Gluck Equine Research Center, US)
- **Ann Cullinane** (Irish Equine Center, Ireland)
- **Alf Fussel** (IHSC Consultant, retired from European Commission, Belgium)

Criterion	1	2	3
Criterion 1: International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven.	YES	YES	YES
Criterion 2: At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.	YES	YES	YES
Criterion 3: Reliable means of detection and diagnosis exist, and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.	YES	YES	YES
Criterion 4a: Natural transmission to humans has been proven, and human infection is associated with severe consequences.	YES	YES	YES
Criterion 4b: The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.	YES	YES	NO
Criterion 4c: The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.	YES	NO	NO
CONCLUSION: Does infection with Japanese encephalitis virus match the listing criteria that are described in the Terrestrial Animal Health Code Chapter 1.2?	YES	YES	YES

Assessment for Eastern Equine Encephalomyelitis: Peter Timoney

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☐ **No** ☒

Scientific rationale:

Eastern equine encephalitis (EEE), which was first clinically characterized and etiologically determined to be caused by a virus in the early 1930s, has a geographic range extending from Argentina in South America through countries in Central America, the Caribbean, Mexico, the US and Canada (Hanson, 1973; CDC retrieved 30 April 2017). Historically, no proven instances have been reported of the international spread of the disease outside of the Western Hemisphere. It has been postulated that because of its complex biological cycle, it is unlikely that EEE could become established in other parts of the world (Hanson, 1973). Aside from the effectiveness of commodity-based preventive measures implemented under the mandate of Veterinary Authorities, a critical factor in greatly reducing the risk of transboundary spread of EEE, is that infected equids are considered 'dead-end hosts' of the virus. They do not develop viremias of sufficient magnitude or duration to transmit the virus to mosquito species capable of spreading the disease (Spickler, 2017). An alternative and less significant pathway to the movement of live equids, with potential to spread EEE between countries in the Western Hemisphere, is via migratory birds infected with the virus (Calisher, *et al.* 1971; Hanson, 1973). The extent to which this occurs in nature is difficult to determine and likely outside the realm of what could be considered logistically feasible by the appropriate Veterinary Authorities.

A final point that warrants consideration with respect to spread of EEE concerns the role that wind-blown carriage of infected vectors, viz. mosquitoes might play in dissemination of the virus over variable distances (Calisher *et al.,* 1971). This could be over land or water within states, from state to state, and even from country to adjacent country in the Western Hemisphere, depending on prevailing weather conditions. While this undoubtedly can occur, it is outside the realm of possibility regarding the transport of virus over very large expanses of water that separate the Americas from the nearest European or Asian countries.

In summary, since there has been no historical precedent confirming global spread of EEE, it is the opinion of the author that there is minimal risk of the likelihood of it occurring in the foreseeable future. Based on available scientific knowledge and history of EEE, international spread of the causal virus via live animals, their products, vectors or fomites has not been proven and accordingly, EEE does not therefore meet Criterion 1 for listing in the *Terrestrial Code*.

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☐ **No** ☒

Scientific rationale:

The author is unaware of any country that has demonstrated freedom or impending freedom from EEE, the disease or the infection, in a population of susceptible equids, based on the provisions of Chapter 1.4, in the *Terrestrial Code*. While cases of EEE in equids and certain species of birds are reportable to the Veterinary Authorities in some countries, for example North America (US and Canada), there are no known official programs in place in other countries to control or prevent spread of the causal virus (Spickler, 2017). Although not mandated, veterinarians, equine owners, breeders and other stakeholders in the US and Canada are strongly encouraged to report details of any case of EEE to the Equine Disease Communication Center at the national headquarters of the American Association of Equine Practitioners (AAEP), Lexington, Kentucky, US (www.AAEP.org). EEE is one of a short list of 'core diseases' that the AAEP considers are a priority for veterinarians, horse owners and equine stakeholders to vaccinate their horses or other equids with on a regular basis in accordance with vaccine manufacturer's guidelines (AAEP, 2022). Voluntary-based supportive control measures against EEE include mosquito abatement, housing of horses in screened barns from dusk to dawn, and use of mosquito repellents.

On the matter of demonstrated freedom or impending freedom of a country from EEE, the author is unaware of any country zone or compartment in the Western Hemisphere with a history of disease endemicity where the Veterinary Authorities can claim to have achieved disease/infection freedom from EEE virus. Furthermore, the author has been unable to identify any country zone or compartment that purports to have a control program in place and is at a point of impending freedom from the disease/infection in accordance with established surveillance principles outlined in Chapter 1.4 of the *Terrestrial Code*.

In summary, based on available scientific knowledge and history of EEE, the latter does not meet Criteria 2 for listing in the *Terrestrial Code* with regard to demonstrated freedom of at least one country from the disease or infection or providing evidence of impending freedom from the disease/infection.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

Neurologic syndromes in equids can be symptomatic of a variety of diseases, some infectious, and others non-infectious. The clinical picture caused by a range of arboviruses is symptomatically similar and cannot be defined as caused by any one particular virus on clinical grounds alone. Determination of which specific etiological agent is responsible can only be arrived at following testing of appropriate clinical/postmortem specimens by a laboratory that has the capability, expertise and experience in conducting the tests needed to provide a diagnosis.

A range of agent detection and identification tests as well as antibody determination tests are available for the diagnosis of EEE infection (WOAH, 2022). These provide the ability to differentially distinguish cases of EEE from other neurological diseases both arboviral and non-arboviral. EEE can be isolated from the brains of horses that exhibited antemortem clinical signs of neurological disease, in certain cell culture systems, newborn mice, or less successfully, in chick embryos. Rapid detection and identification of the virus is most frequently accomplished using molecular, nucleic acid based assays (polymerase chain reaction) and less often by immunological techniques (Monroy *et al*., 1996; Patterson *et al.,* 1996). A range of serological tests (complement fixation, enzyme-linked immunosorbent assays [ELISA], hemagglutination- inhibition and plaque reduction neutralization) can be used in investigating suspect clinical cases of EEE infection. The IgM capture ELISA test is widely used for this purpose and the most popular differential diagnostic assay to confirm a case of EEE virus infection (Sahu *et al.,* 1994).

In summary, EEE meets Criterion 3 for listing in the *Terrestrial Code* insofar as reliable means of detection and identification are available that allow diagnosis of the disease and its differentiation from other diseases or infections.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

Ever since its discovery in the late 1930s, natural transmission of EEE to humans has been proven year-in year-out in those countries in the Western Hemisphere in which the disease is endemic (Calisher, 1994; Morens *et al.,* 2019). Whereas EEE tends to occur as isolated cases in humans, clusters of cases have infrequently been recorded in areas in which there are high levels of virus in circulation in the mosquito population. Infection with EEE virus can be potentially life-threatening. Two forms of the disease have been described: systemic and encephalitic. Whereas the systemic form is generally the less severe of the two, giving rise to influenza-type symptoms in affected individuals, the encephalic form is very frequently fatal. The

mortality rate in human cases of EEE can be as high as 75% or even greater (Calisher, 1994). Those that survive suffer from significant neurologic sequelae that are usually long-term.

In summary, EEE meets Criterion 4a for listing in the *Terrestrial Code* in terms of a proven cause of human disease of major clinical significance.

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ **No** ☐

Scientific rationale:

Analogous to the consequences of infection in humans, EEE virus has a proven history of significantly impacting the health of horses and other equids in countries or zones in which the virus is endemic (Hanson, 1973). Clinical disease has also been reported infrequently in other domestic species inclusive of swine, cattle, sheep, camelids and dogs (Spickler, 2017). Historically and to the present day, EEE takes the greatest toll on susceptible horse populations. Even in countries such as the US and Canada, in which vaccines are available to protect against this disease, illness and death in horses continues to be reported every year. The incidence of the disease can vary from year to year depending on the seasonally prevailing climatic conditions. The vast majority of cases are fatal and are in unvaccinated individuals or those with incomplete vaccination histories. Apart from the economic losses involved, this is especially regrettable since EEE vaccines are included among the 'core vaccines' that the AAEP very strongly recommends that horses need to be vaccinated with on a regular basis (AAEP, 2022).

In summary, EEE fully satisfies Criterion 4b concerning impact on the health of domestic species as defined for listing in the *Terrestrial Code*.

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☒ **No** ☐

Scientific rationale:

Aside from its importance as a human pathogen and a cause of illness and death in a number of domestic animal species, EEE can also impact a not insignificant number of species of wildlife (Spickler, 2017). Clinical disease associated with infection with the virus has been recorded in deer, a harbor seal, certain non-human primates, Chukar partridges, pheasants, turkeys, ratites (emus and ostriches), pigeons, egrets, ibises, whooping cranes and African penguins. Direct economic loss has on occasion been documented in some species such as pheasants, partridges and ratites based on the mortality rates in affected flocks of birds. The author does not consider that the frequency and extent of the outbreaks of EEE that have been recorded in certain wildlife species have been sufficiently impactful to have posed a threat to the viability of the population(s) concerned.

In summary, EEE can be considered to meet Criterion 4c of impacting susceptible wildlife populations as defined for listing in the *Terrestrial Code*.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☐ No ☒

Summary Conclusion:

In summary, since there has been no historical precedent confirming global spread of EEE, it is the opinion of the author that there is minimal risk of the likelihood of it occurring in the foreseeable future. Based on available scientific knowledge and history of EEE, international spread of the causal virus via live animals, their products, vectors or fomites has not been proven and accordingly, EEE does not therefore meet Criterion 1 for listing in the *Terrestrial Code*.

Based on available scientific knowledge and history of EEE, the latter does not meet Criteria 2 for listing in the *Terrestrial Code* with regard to demonstrated freedom of at least one country from the disease or infection or providing evidence of impending freedom from the disease/infection.

EEE meets Criterion 3 for listing in the *Terrestrial Code* insofar as reliable means of detection and identification are available that allow diagnosis of the disease and its differentiation from other diseases or infections.

EEE meets Criterion 4a for listing in the *Terrestrial Code* in terms of a proven cause of human disease of major clinical significance.

EEE fully satisfies Criterion 4b concerning impact on the health of domestic species as defined for listing in the *Terrestrial Code*.

EEE can be considered to meet Criterion 4c of impacting susceptible wildlife populations as defined for listing in the *Terrestrial Code*.

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Assessment for Eastern Equine Encephalomyelitis: Ann Cullinane

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Eastern equine encephalomyelitis virus (EEEV) has been identified in at least 35 species of mosquitoes and over 200 species of birds, various domestic animals, wild mammals, reptiles, and amphibians. Eastern equine encephalomyelitis (EEE) is endemic in parts of North and South America and the Caribbean. With climate change, it is considered an emerging disease. In the US there was increased incidence in 2019 and over the past decade the virus has spread to areas where its circulation was previously unknown or rare (Lindsey *et al.,* 2020), https://www.cdc.gov/easternequineencephalitis/index.html.

Re international spread there is some circumstantial evidence to support that outbreaks in Canada were the result of spread from the US but the method of spread (infected birds or mosquitoes) was not proven (Chénier *et al.,* 2010). Similarly, genetic studies suggest that the temporary introduction of North American strains of EEEV were responsible for outbreaks in Jamaica and the Dominican Republic (Weaver *et al.,* 2012). It is believed that as a vector borne disease, EEE is likely to expand in range due to global warming and emerge more broadly in human and animal populations but there is a knowledge gap relating to the dynamics of EEEV spread (Corrin *et al.,* 2021).

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

To-date EEEV transmission is limited to North and South America and the Caribbean. Other areas such as Europe are historically free.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

Reliable means of detection and diagnosis exist as documented in the WOAH Manual. Virus detection methods include virus isolation on a variety of vertebrate cells and RT-PCR. Serological confirmation is based on the detection of IgM during the acute phase, or the seroconversion between acute and convalescent phases (Weaver *et al.,* 2012). However, vaccination history must be taken into account when interpreting results of any serological tests.

There is no precise case definition in the WOAH *Terrestrial Code* (Chapter 12.4). The WOAH Manual states that the definitive method for diagnosis of EEE is virus isolation followed by typing. EEEV can usually be isolated from the brains of horses, unless more than five days have elapsed between the appearance of clinical signs and the death of the horse. Specific and highly sensitive RT-PCR assays have been developed. The plaque reduction neutralisation test is also very specific and can be used to differentiate between EEE, WEE and VEE virus infections.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

EEEV is classified as a Category B agent by the Centers for Disease Control and Prevention, Atlanta (https://emergency.cdc.gov/agent/agentlist-category.asp). EEE has a fatality rate 33% to 50% in humans and recovered individuals frequently suffer neurological deficits often necessitating institutionalised care (Weaver *et al.,* 2012, Corrin *et al.,* 2021). Natural transmission to humans occurs by mosquito bite and human risk has been shown to correlate with equine infection rates as equine cases often precede human cases (Tang *et al.,* 2021).

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ **No** ☐

Scientific rationale:

EEE is an important cause of disease in equids with fatality rates of up to 75% (Mackay,2009). High mortality rates also occur in swine (Elvinger *et al.,* 1994). Many domesticated birds develop clinical disease including pheasants, partridges, emus, chickens and quail (Corrin *et al.,* 2021). Viscerotropic disease after EEEV infection is associated with decreased egg production (Williams *et al.,* 2000). Fatalities are common in turkeys (Ficken *et al.*, 1993), pheasants (Weinack *et al.,* 1978), ostriches (Brown *et al.,* 1993) and emus (Tully *et al.,* 1992). Camelids and swine are also susceptible (Corrin *et al.,* 2021).

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☒ **No** ☐

Scientific rationale:

High attack and mortality rates occur in cranes (Dein *et al.,* 1986). Clinical signs have been described in white

tailed deer and in camelids (Corrin *et al.,* 2021). During the 2019 Eastern equine encephalitis virus (EEEV) outbreak in the US two 2-month-old Mexican wolf pups experienced neurologic signs and sudden death in a zoo in Michigan (Thompson *et al*., 2021).

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

EEE is an important neurotropic disease that satisfies the criteria for listing and notification, but care needs to be exercised that international movement of 'dead-end hosts' such as horses that do not normally develop viremia sufficient to enable transmission by mosquitoes, is not unnecessarily restricted.

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Assessment for Eastern Equine Encephalomyelitis: Alf Fussel

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Transport of the EEEV by migratory birds from North to South America.

References:

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AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

WOAH WAHIS 2015-2022: disease not present in Eastern Hemisphere

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

WOAH *Terrestrial Manual* 2021

https://www.woah.org/fileadmin/Home/fr/Health_standards/tahm/3.06.05_EEE_WEE_VEE.pdf
https://sitesv2.anses.fr/en/minisite/equine-diseases/sop

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

https://www.cdc.gov/easternequineencephalitis/index.html

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☐ **No** ☒

Scientific rationale:

A/APHIS reports 111 equine cases in 2022 (equine population about 7 mil.) references: https://www.aphis.usda.gov/animal_health/downloads/animal_diseases/2022-eee-report-monthly.pdf https://horsesonly.com/horseindustry/#:~:text=3.,million%20horses%20in%20the%20U.S.&text=This%20is%20because%20there%20are,organization%20counts%20the%20numbers%20differently.

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ **No** ☒

Scientific rationale:

Reports about EEE in Pheasants and Emus do not indicate any threat to the viability of a susceptible wildlife population.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

Infection with the Eastern Equine Encephalomyelitis Virus meets the listing requirements set out in Chapter 1.2. of the *Terrestrial Code*.

This conclusion concourse with the outcome of the respective EFSA report (doi: 10.2903/j.efsa.2017.4946) and the conclusion of the European Union as set out in Annex II to Regulation (EU) 2016/429 (OJ L 84, 31.3.2016, p. 1.)

Any possible measures to prevent the spread of the virus through international trade in certain captive birds, reptiles or rodents should be set out in Section 8 ‘Multiple Species’.

The requirements in Chapter 12.4. should be removed, since equine animals are considered to be dead-end hosts due to the low-level and short duration of viremia following the accidental infection from vector insects.

Because of the zoonotic nature of the infection and since individual equine animals may be affected by the infection, it is advised to maintain surveillance, not least to allow the vaccination of equines resident in, or intended to be moved to, endemic areas.

Annex 6: 9.2.1. Listing Assessment for Equine Encephalitides (WEE)

SUMMARY OF THE EXPERT ASSESSMENT OF WESTERN EQUINE ENCEPHALITIS AGAINST THE LISTING CRITERIA OF *TERRESTRIAL CODE* CHAPTER 1.2.

Three experts participated in this consultation:

- **Peter Timoney** (IHSC Consultant, Gluck Equine Research Center, US)
- **Ann Cullinane** (Irish Equine Center, Ireland)
- **Alf Fussel** (IHSC Consultant, retired from European Commission, Belgium)

Criterion	1	2	3
Criterion 1: International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven.	NO	YES	YES
Criterion 2: At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.	NO	YES	YES
Criterion 3: Reliable means of detection and diagnosis exist, and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.	YES	YES	YES
Criterion 4a: Natural transmission to humans has been proven, and human infection is associated with severe consequences.	YES	YES	YES
Criterion 4b: The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.	YES	YES	NO
Criterion 4c: The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.	NO	YES	NO
CONCLUSION: Does infection with Western equine encephalitis virus match the listing criteria that are described in the Terrestrial Animal Health Code Chapter 1.2?	NO	YES	YES

Assessment for Western Equine Encephalomyelitis: Peter Timoney

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☐ **No** ☒

Scientific rationale:

In the early 1930s, Western equine encephalitis (WEE) was identified as one of the two arboviral diseases responsible for extensive outbreaks of equine encephalitis in the US at the time, the other being EEE (Meyer *et al.,* 1931; Meyer, 1933; TenBroeck and Merrill, 1933). WEE virus is the most important member of a complex of closely related disease agents that can be found from Argentina to North America in the Western Hemisphere. In North America, WEE has occurred primarily in US states and Canadian provinces west of the Mississippi River. Similar to EEE, there have been no proven instances where cases/outbreaks of WEE have taken place outside the US and Canada nor elsewhere in the Western Hemisphere as documented in the scientific literature (Byrne and Robbins, 1961; Hanson, 1973; Calisher, 1994). Akin to its ancestral relative EEE, horses and other equids infected with WEE virus do not develop viremias of sufficient magnitude and duration to transmit the agent to mosquito species potentially capable of spreading the disease. As such, they are deemed to be 'dead-end hosts' in terms of virus transmission. They are not considered to play an active role in the maintenance of WEE in nature nor in the global spread of the virus. Although incidents of WEE were relatively common in the US and Canada for many years, the frequency of such events has declined significantly in more recent decades (Spickler, 2017). While an explanation for this change in virus behaviour has not yet been determined, it does not appear to have resulted from a reduction in viral virulence.

Analogous to EEE, there is a plausible alternative pathway with the potential to spread WEE between countries in the Americas, that involves migratory birds infected with the virus (Calisher *et al.,* 1971; Hanson, 1973). How significant this pathway may be in the case of WEE is a matter for speculation. Aside from the current commodity-based measures mandated by Veterinary Authorities to prevent the global spread of WEE, it is highly improbable that measures can be formulated that could curtail/eliminate the risk of virus spread through migratory birds.

In summary, there has not been any historical precedent that attests to the international spread of WEE from the Western Hemisphere. Accordingly, the disease cannot be considered to meet Criterion 1 regarding its international spread as required for listing in the *Terrestrial Code*.

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☐ **No** ☒

Scientific rationale:

Very few countries in the Western Hemisphere have an official program in place to control or prevent the spread of WEE virus. The US and Canada are two countries in which cases of the disease in equids are reportable to the Veterinary Authorities. Veterinarians, equine owners, breeders and other stakeholders are strongly encouraged to report details of any case of WEE to the Equine Disease Communication Center at the national headquarters of the American Association of Equine Practitioners (AAEP), Lexington, Kentucky, US (www.aaep.org). WEE is one of the short list of 'core diseases' that the AAEP considers are a priority for veterinarians, horse owners and equine stakeholders to vaccinate their horses or other equids with on a regular basis in accordance with vaccine manufacture's guidelines (AAEP, 2022). Voluntary based supportive control measures against WEE include mosquito abatement, housing of horses in screened barns from dusk to dawn, and use of mosquito repellents. On the matter of demonstrated freedom or impending freedom of a country from WEE, the author is unaware of any country, zone or compartment in the Western Hemisphere having a history of disease endemicity, where the Veterinary Authorities can claim country freedom from the disease or the infection.

As already noted, certain countries have reported a progressive decline in the number of reported clinical cases of WEE in equids and humans in recent decades (Spickler, 2017). This is supported by data from human studies that have shown the seropositivity rate in healthy humans has also decreased from 34% in 1960 to less than 3% in the 1990s. Because of the range of variables that can influence the circulation of WEE virus in nature, it is questionable if this trend will continue in the future. Were it to do so, however, it might convince a country to declare that its WEE status had reached the point of impending freedom from the disease.

In summary, based on available scientific knowledge and history of WEE, the disease does not currently meet Criterion 2 for listing in the *Terrestrial Code* in terms of demonstration of freedom of at least one country from the disease or infection, or of providing evidence of impending freedom from WEE or infection with the virus.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

WEE is analogous to EEE in that there is no means of differentiating each disease from one other on clinical grounds alone. This also applies to a range of other neurological diseases with special reference to those caused by different arboviruses. Confirmation of the etiology of a case of neurological disease can only be determined by resorting to laboratory testing of appropriate clinical/postmortem specimens by a laboratory with the capability, expertise and experience in carrying out the tests needed to confirm a diagnosis of a disease.

Diagnosis of a case of WEE or virus infection is based on agent detection and identification or antibody determination depending on whether the test subject is dead or alive (WOAH, 2022). Currently available tests for this purpose are both highly sensitive and specific and those in greatest demand, timely in providing a test result. Unlike cases of EEE, WEE virus is rarely isolated from the brain or other tissues of infected horses (Spickler, 2017). WEE virus can be isolated in certain cell culture systems, newborn mice, and less successfully, in chick embryos. Rapid detection and identification of the virus is most frequently accomplished using molecular or nucleic acid based assays (polymerase chain reaction) and less often by immunological techniques (Lambert *et al.,* 2003). Antibody determination is indicated when dealing with suspect cases of WEE infection with or without clinical signs. A range of serological tests (complement fixation, enzyme-linked immunosorbent assays [ELISA], hemagglutination-inhibition, and plaque reduction neutralization) are available diagnostic tests for confirming WEE infection. The IgM capture ELISA is widely used for this purpose and enables differentiation of cases of WEE from EEE infection.

In summary, a wide range of laboratory tests are available for the detection and identification of cases of WEE infection based either on agent detection or antibody determination. These enable confirmation of a diagnosis of the disease and its differentiation from cases of neurologic disease caused by other viral or microbial agents. As such, WEE meets Criterion 3 for listing in the *Terrestrial Code* with respect to the availability of laboratory tests capable of confirming a diagnosis of the disease.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

WEE, like its arboviral counterpart EEE, was recognized as a human pathogen in the early 1930s when the disease was associated with epidemics in birds and horses (Meyer *et al.,* 1931; Calisher, 1994). Unlike EEE, cases or outbreaks of WEE in humans or equids do not occur with regularity every year, even in regions or countries in which the disease is endemic. Reports of WEE in humans have been limited and sporadic. The virus has been associated with isolated cases, and very infrequently large numbers of cases in at-risk

susceptible human populations in areas where there are high levels of WEE virus in circulation in the mosquito population. In contrast to EEE, the clinical response to WEE virus infection is generally less severe in most age groups. An exception is infants and young children, who are more likely to develop neurologic disease. The latter is uncommon in healthy humans, who very often experience a subclinical infection or a flu-like illness. Mortality in human cases of WEE is low, approximately 3-4%, and most frequently associated with disease in the elderly. Children that survive the disease are likely to experience serious sequelae that may be lifelong.

In summary, WEE meets Criterion 4a for listing in the *Terrestrial Code* in being a proven cause of human disease that can be of major clinical significance.

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone, taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ No ☐

Scientific rationale:

Since the late 1920s, WEE was a life-threatening disease responsible for widespread losses in susceptible populations of horses and other equid species in San Joaquin Valley in Southern California (Meyer *et al*., 1931). In the years that followed its discovery and before the development and availability of vaccines to protect against the disease, WEE exacted a significant toll on the horse populations along the coastal states in the US and the prairie provinces of Saskatchewan, Alberta and Manitoba in Canada (Hanson, 1973). Epizootics of WEE have been recorded in Mexico, Central and South America, especially Argentina. Aside from equids, WEE causes disease in certain domesticated species of birds, including emus, turkeys, pheasants and Chukar partridges (Spickler, 2017). Historically, WEE has had the most significant impact on susceptible horse populations, causing mortality rates of 15–20%. (Minnesota Department of Health, 2018). Incidents of the disease can vary significantly over time, with zero confirmed cases reported in some years. Most of the deaths attributable to WEE are in unvaccinated individuals or those with incomplete vaccination histories. WEE vaccines are included in the group of 'core vaccines' that the AAEP very strongly recommends that horses need to be vaccinated with on a regular basis (AAEP, 2022).

In summary, WEE satisfies Criterion 4b regarding its impact on the health of domestic species, in particular equids for listing in the *Terrestrial Code*.

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ No ☒

Scientific rationale:

WEE is principally a pathogen of humans and equids with very little impact on the health of wildlife. The virus can cause disease of variable clinical severity in emus and turkeys, that in the former species can result in hemorrhagic enteritis, neurologic disease and death. Drop in egg production is the sole outcome of infection in turkeys (Spickler, 2017). Based on the very limited host range of wildlife species affected by WEE virus, there is little indication that the disease agent has a significant impact on the health of wildlife, nor that it poses a threat to the viability of any wildlife population.

In the opinion of the author and with reference to Criterion 4c, there are insufficient grounds for supporting the listing of WEE in the *Terrestrial Code*.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☐ No ☒

Summary Conclusion:

In summary, there has not been any historical precedent that attests to the international spread of WEE from the Western Hemisphere. Accordingly, the disease cannot be considered to meet Criterion 1 regarding its international spread as required for listing in the *Terrestrial Code*.

Based on available scientific knowledge and history of WEE, the disease does not currently meet Criterion 2 for listing in the *Terrestrial Code* in terms of demonstration of freedom of at least one country from the disease or infection, or of providing evidence of impending freedom from WEE or infection with the virus.

A wide range of laboratory tests are available for the detection and identification of cases of WEE infection, based either on agent detection or antibody determination. These enable confirmation of a diagnosis of the disease and its differentiation from cases of neurologic disease caused by other viral or microbial agents. As such, WEE meets Criterion 3 for listing in the *Terrestrial Code* with respect to the availability of laboratory tests capable of confirming a diagnosis of the disease.

WEE meets Criterion 4a for listing in the *Terrestrial Code* in being a proven cause of human disease that can be of major clinical significance.

WEE satisfies Criterion 4b regarding its impact on the health of domestic species, in particular equids for listing in the *Terrestrial Code*.

In the opinion of the author and with reference to Criterion 4c, there are insufficient grounds for supporting the listing of WEE in the *Terrestrial Code*.

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Assessment for Western Equine Encephalomyelitis: Ann Cullinane

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Western Equine Encephalitis (WEE) was historically detected primarily in the western US with extension to Canada, Mexico and South America (Aréchiga-Ceballos and Aguilar-Setién, 2015; Kumar *et al.,* 2018; Morris, 1989; Reisen & Monath, 1989; Walton, 1981). WEE virus is maintained between passerine birds and its primary mosquito vector *Culex tarsalis.* The mode of introduction of virus into new areas is unproven but international spread may potentially occur by infected vectors or reservoir species. Horses are considered dead-end hosts and do not play a role in virus circulation.

Note that in recent years there has been a dramatic decline in WEE virus enzootic circulation and spillover into humans and horses. Since 2005 there have been no cases reported in the US, although positive mosquito pools have been identified (Robb *et al.*, 2019). A fatal human case was reported in Uruguay in 2011 (Delfraro *et al.*, 2011). This was an isolated case but the report stated that the etiology of many viral encephalitides in Uruguay remains unknown. This is also true of many other countries in the region.

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

To-date WEEV transmission is limited to the Americas. Other areas such as Europe are historically free (Durand *et al.,* 2013).

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ No ☐

Scientific rationale:

Reliable means of detection and diagnosis of WEE exist as documented in the WOAH Manual. Virus isolation and RT-PCR are recommended for confirmation of clinical cases. Virus isolates can be identified by specific RT-PCR or neutralisation tests.

There is no precise case definition in the WOAH *Terrestrial Code* (Chapter 12.4).

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ No ☐

Scientific rationale:

WEEV is classified as a Category B agent by the Centers for Disease Control and Prevention, Atlanta (https://emergency.cdc.gov/agent/agentlist-category.asp). Humans are infected by mosquito vectors and the majority of cases are asymptomatic or similar to influenza. The very young and the aged are most susceptible to encephalitis and approximately 5-15% of encephalitis cases are fatal. Approximately 50% of surviving infants suffer permanent brain damage (Weaver *et al.,* 1997). Fatalities have been recorded in laboratory workers.

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ No ☐

Scientific rationale:

Horses are more susceptible to WEE than people with a mortality rate of 20-50% in clinical cases. Clinical signs include fever, inappetence and lethargy, followed by excitability and then drowsiness, paresis, seizures and coma (CFSPH, 2015). WEE has also been reported to cause fatal disease in ratites (Tengelsen *et al.,* 2001).

The largest epidemic was recorded in 1938 in the US and Canada when an estimated 264,000 equids were infected with a morbidity of 21.4% (Cameron, 1942).

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☒ No ☐

Scientific rationale:

Spillover into wild mammals has been recorded and a secondary transmission cycle involves Aedes malanimon and the Black-tailed Jackrabbit (Hardy *et al.,* 1977). Several amphibian and reptile species are suspected overwintering hosts (Thomas and Eklund, 1962) and it is likely that additional hosts remain unidentified.

There is a lack of evidence that WEE represents a threat to a wildlife population.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

WEE satisfies the criteria for WOAH listing but the evidence from surveillance in North America suggests that the virus may have ceased circulating enzootically. The reason for this decline is unknown. WEE remains a notifiable disease in many parts of the world as it has the potential to re-emerge either naturally or as a result of bioterrorism. Thus on balance, WEE should be included in the WOAH list as a significant zoonotic neurotropic pathogen with the historical potential to cause disease outbreaks in horses and possibly birds. However, at present such listing should have minimal impact on animal trade policy.

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Assessment for Western Equine Encephalomyelitis: Alf Fussel

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

References:

Durand B., Lecollinet S., Beck C., Martinez-Lopez B., Balenghien T. & Chevalier V. 2013. Identification of hotspots in the European union for the introduction of four zoonotic arboviroses by live animal trade. *PLoS ONE*, 8, 16.

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'Both humans and horses are thought to be dead-end hosts, although some equids, such as burros and ponies, develop low to moderate levels of viremia (slightly under 10 to the 4 PFU/ml), which could allow these hosts to contribute to epizootic amplification.' (Western Equine Encephalitis Virus: Evolutionary Analysis of a Declining Alphavirus Based on Complete Genome Sequences)

Bergren N.A., Auguste A.J., Forrester N.L., Negi S.S., Braun W.A., Weaver S.C. (https://journals.asm.org/doi/epub/10.1128/JVI.01463-14)

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

The WEE virus is found in the western United States, western Canada, and as far south as Argentina.

WOAH WAHIS 2015-2022: disease not present in Eastern Hemisphere

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

There are reliable means of detection and diagnosis:

https://www.woah.org/fileadmin/Home/fr/Health_standards/tahm/3.06.05_EEE_WEE_VEE.pdf
https://sitesv2.anses.fr/en/minisite/equine-diseases/sop

However, the case definition used in the USA does not allow a clear differential diagnosis from EEE, unless laboratory investigations identify the WEEV.

https://www.aphis.usda.gov/vs/nahss/equine/ee/case_definition_western_equine_encephalitis_01_18_11.pdf

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

In the United States, the virus is transmitted by *Culex tarsalis* in an enzootic cycle with passerine birds. There have been 639 human cases of WEEV in the United States since 1964, but none since 1994. (www.cdc.gov)

'CDC has received reports of 37 western equine encephalitis (WEE) cases among humans and 132 cases among horses in the Plains and Rocky Mountain states thus far this year [i.e. in 1987]. This outbreak is the largest in the United States since 1977, when 41 cases among humans were reported. Active, hospital-based surveillance in Colorado has identified 29 cases, including one fatality. Passive surveillance has revealed three cases in Nebraska, two in Texas, two in North Dakota, and one in Montana. Colorado, Iowa, Nebraska, and North Dakota also reported sporadically occurring cases of St. Louis encephalitis (SLE), concurrently with the WEE epidemic. The diffuse character of the outbreak has made it difficult to assign a denominator to the human population at risk. However, the crude attack rate in Colorado, where there is evidence of statewide virus transmission, is 1.0/100,000.'

https://www.cdc.gov/mmwr/preview/mmwrhtml/00000983.htm

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☐ **No** ☒

Scientific rationale:

There is an equine population of about 7 million animals in the US.

https://horsesonly.com/horse-industry/#:~:text=3.,million%20horses%20in%20the%20U.S.&text=This%20is%20because%20there%20are,organization%20counts%20the%20numbers%20differently

USDA/APHIS reports 111 equine arboviral encephalomyelitis cases in 2022, predominantly EEE.

https://www.aphis.usda.gov/animal_health/downloads/animal_diseases/2022-eee-report-monthly.pdf

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on

the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ No ☒

Scientific rationale:

Reports about WEE do not indicate any threat to the viability of a wildlife population.

WEE virus is maintained in an enzootic cycle involving passerine birds and Culex tarsalis, a mosquito particularly adapted to irrigated agricultural areas. The feeding pattern for Culex tarsalis changes from birds in spring and early summer to increasingly include mammals in late summer when mosquito populations peak, depending on climatic factors and irrigation practices.

Other secondary mosquito vectors include Aedes melanimon and Ae. dorsalis, which can facilitate a secondary cycle of infection among lagomorphs and, with *Culex tarsalis*, transmit virus to horses and humans.

Serosurveys have confirmed WEEV infection in various rodents, rabbits, bats, squirrels, ungulates, tortoises, and snakes, suggesting that non-avian species may be important reservoir hosts.

Emus are susceptible to WEEV infection, but with considerably lower mortality rates than those associated with EEEV infection.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ No ☐

Summary Conclusion:

Infection with the Western Equine Encephalomyelitis Virus meets the listing requirements set out in Chapter 1.2. of the *Terrestrial Code*.

This conclusion would concur with the outcome of the respective EFSA report and the conclusion of the European Union as set out in Annex II to Regulation (EU) 2016/429. (doi: 10.2903/j.efsa.2017.4946)

However, any possible measures to prevent the spread of the virus through international trade in certain captive birds, reptiles or rodents should be set out in Section 8 ‘Multiple Species’.

The requirements in Chapter 12.4. should be removed, since equine animals are considered to be dead-end hosts due to the generally low-level and short duration of viremia following the accidental infection from vector insects.

Since individual equine animals may be affected by the infection and because of the zoonotic nature of the infection, it is advised to maintain surveillance, not least to allow the vaccination of equines resident in, or intended to be moved to, endemic areas.

Annex 7: 9.2.1. Listing Assessment for Equine Encephalitides (VEE)

SUMMARY OF THE EXPERT ASSESSMENT OF VENEZUELAN EQUINE ENCEPHALOMYELITIS AGAINST THE LISTING CRITERIA OF *TERRESTRIAL CODE* CHAPTER 1.2.

Four experts participated in this consultation:

- **Peter Timoney** (IHSC Consultant, Gluck Equine Research Center, US)
- **Ann Cullinane** (Irish Equine Center, Ireland)
- **Alf Fussel** (IHSC Consultant, retired from European Commission, Belgium)
- **Roberto Navarro Lopez** (US-Mexico Commission for the Prevention of FMD and other exotic animal diseases (SENASICA), Mexico)

Criterion	1	2	3	4
Criterion 1: International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven.	YES	YES	YES	YES
Criterion 2: At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.	YES	YES	YES	YES
Criterion 3: Reliable means of detection and diagnosis exist, and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.	YES	YES	YES	YES
Criterion 4a: Natural transmission to humans has been proven, and human infection is associated with severe consequences.	YES	YES	YES	YES
Criterion 4b: The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.	YES	YES	YES	YES
Criterion 4c: The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.	NO	YES	NO	NO
CONCLUSION: Does infection with Venezuelan equine encephalitis virus match the listing criteria that are described in the Terrestrial Animal Health Code Chapter 1.2?	YES	YES	YES	YES

Assessment for Venezuelan Equine Encephalomyelitis: Peter Timoney

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Venezuelan equine encephalitis (VEE), first discovered in 1938, has a wide geographic distribution range throughout the Western Hemisphere with the exception of the US and Canada (Kubes and Rios, 1939). Outbreaks of disease in humans and equids due to this virus have been reported in at least 12 countries extending from Argentina to numerous other countries in South and Central America, Trinidad, Mexico and the US (Osorio and Yuill, 2017; Weaver *et al*., 2004).

Epidemics or epizootics of VEE occur periodically, not annually nor on a regular basis but rather following the emergence of one of the two subtypes 1AB or 1C that evolve from genetic modification of circulating enzootic subtype 1D strains, (Powers *et al*., 1997; Brault *et al.,* 2002). To date, there has been one incursion of VEE into the US. Late in 1969, epizootics of VEE spread northwards from El Salvador and Guatemala into most of Central America and Mexico (Forrester *et al.,* 2017). The disease extended into 17 Mexican states before it crossed the border into southern Texas in 1971 (Zarate, 1978; Morilla-Gonzales, 1976). The virus spread along the Rio Grande and up the Gulf Coast between June and August of that year, infecting close to 2000 horses including 1426 associated deaths. Some 110 human cases were confirmed during the epidemic (Aguilar *et al.,* 2011). Since its discovery in 1938, VEE has not been confirmed outside the Western Hemisphere.

VEE comprises a complex of viruses that include six antigenic subtypes, with antigenic variants in each subtype (Spickler, 2017). Each of these subtypes exhibits unique characteristics with respect to ecology, epidemiology and virulence for humans and equids (Aguilar *et al.,* 2011). Two, 1AB and 1C, are designated epidemic or epizootic subtypes, historically identified with causing large-scale outbreaks of disease in susceptible populations of horses and humans that may last for several years. Both subtypes are highly pathogenic and can spread quickly through equine populations. The remaining subtypes 1D to 1F and II to VI, are categorized as enzootic or endemic (Spickler, 2017). They generally circulate among rodents in forests and swampy habitats and are typically avirulent for equids but can cause disease and even death in humans similar to that seen in cases of infection with either of the epidemic/epizootic subtypes. In sharp contrast to both EEE and WEE viruses, equids infected with the 1AB or 1C subtypes of VEE virus develop high levels of viremia that can last up to seven days (Rico-Hesse, 2000; Walton *et al*., 1973). Equids are considered the key reservoir species and amplification hosts for both epidemic subtypes of the virus. Viremic horses can also shed VEE virus in body fluids and could be a potential source of infection for humans through direct contact or inhalation of aerosolized material (Johnson and Martin, 1974). Counter to typical behaviour of endemic/enzootic subtypes of the virus, subtype 1E strains responsible for extensive outbreaks of disease in equids in Mexico in 1993 and 1996, were equine neurovirulent although not shown to develop high titered viremias (Gonzalez-Salazar *et al.,* 2003). Under this circumstance, it is questionable whether equids infected with this particular variant of subtype 1E can act as efficient amplification hosts for virus transmission to appropriate mosquito vectors (Sahu *et al.,* 2003).

To date, there has been only one historical precedent since the original discovery of the virus of VEE occurring outside of the countries in South and Central America and Mexico in which the disease is endemic. This took place in the US in 1971. In the opinion of the author, this unique event constituted a proven instance of the international or transboundary spread of VEE into a country that, up to that point, enjoyed historical freedom from the disease. The mode of introduction of the virus is highly likely to have been via wind-borne carriage of infected vectors (mosquitoes) from the Gulf Coast of Mexico where VEE had been progressing northwards towards the border with the US at an estimated rate of 4-5 miles/day (Zarate, 1978; Morilla-Gonzales, 1976). It is also possible that there might have been illegal movement of infected equids across the border into the US that could also have been contributory sources of the virus. The incursion of VEE into the US for the first and only time in 1971, is proof of the international spread of this disease. As such, it meets Criterion 1 for listing in the Terrestrial Code.

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ No ☐

Scientific rationale:

The Veterinary Authorities in the US and Canada have always designated VEE a highly important transboundary disease insofar as its major significance as a human and equine pathogen. Were it to be introduced into either country, the economic consequences would be disastrous for the respective equine industries in terms of losses of animals that succumb from the disease and disruption of international trade. It is mandated in both countries that any suspect case of VEE must be reported immediately to federal and state authorities and an investigation undertaken to confirm/refute a diagnosis of the disease. The Veterinary Authorities, members of the veterinary profession, and equine industry stakeholders in the US were alerted to the very real risk of the introduction of VEE into the country in the months leading up to the event in 1971. At the time, the disease was continuing to spread northwards from El Salvador and Guatemala through Mexico, and sooner rather than later, measures needed to be taken to prevent and control spread of the virus were it to be introduced into the country.

Those fears were realized when the first case of VEE was confirmed in a horse in Texas in late June 1971. A three-pronged approach was taken to minimize the extent of the epidemic or epizootic. This included: 1) enforced restriction of movement of equids out of the affected state; 2) mandated vaccination of at-risk equids with the modified live TC-83 vaccine against VEE; and 3) implementation of aerial and ground vector control measures to reduce mosquito populations in the region. In total, over 8 million doses of vaccine were administered to equids during the epizootic. Vaccination was used to establish a 'cordon sanitaire' around the area affected with the disease. These collective efforts were successful in confining the epizootic and in restoring the US's disease-free status for VEE.

In the opinion of the author, the US successfully eliminated VEE following its incursion into southern Texas in 1971 and has since demonstrated continued freedom from the disease, thereby meeting the second criterion for listing in the Terrestrial Code.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ No ☐

Scientific rationale:

VEE virus can cause a spectrum of clinical signs ranging from a mild flu-like illness to severe and not infrequently neurologic disease. It can be symptomatic of a variety of diseases, some infectious, others non-infectious. Differentiation of neurologic disease caused by VEE virus as opposed to other arboviral infections is not possible on clinical grounds alone. Confirmation of a provisional clinical diagnosis of VEE must be based on laboratory detection and identification of the virus or by demonstration of antibody conversion in serum or cerebrospinal fluid. Testing of appropriate clinical or post-mortem specimens from a suspect case of VEE virus infection requires a laboratory with the capability, expertise and experience in conducting the tests needed to furnish a diagnosis.

Epidemic strains of VEE can be isolated from blood in the early febrile phase of the disease but seldom once the affected individual has developed neurologic disease, at which point viremia has ceased (Spickler, 2017). Frequently, VEE viruses cannot be isolated from the brains of infected equids but may be found in other tissues such as the pancreas. Systems for the isolation of VEE virus include: 1–3-day old mice, hamsters or Guinea pigs; certain cell culture systems, or chick embryos. Rapid detection and identification of the virus is most frequently accomplished by using molecular nucleic acid based assays (polymerase chain reaction assays), and less often, by immunological techniques (Pisano *et al.,* 2012). A range of serological tests (complement fixation, enzyme-linked immunosorbent [ELISA] assays, hemagglutination-inhibition and plaque reduction neutralization) can be used in investigating suspect clinical cases of VEE virus infection. The IgM capture

ELISA is widely used for this purpose and the most popular differential diagnostic test to confirm a case of this infection. Vaccination histories must be taken into consideration when interpreting any of the VEE serological test results.

In summary, a range of laboratory tests are available for the detection and identification of cases of VEE virus infection. These enable diagnosis of the disease and its differentiation from cases of neurologic disease caused by other disease agents. Therefore, in the author's opinion, VEE meets Criterion 3 listed for inclusion in the Terrestrial Code.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

Ever since its discovery in 1938, VEE virus has been recognized as a highly important pathogen of humans and equids. Extensive occurrences of this disease caused by the epidemic subtypes 1AB or 1C have on occasion been associated with tens and even hundreds of thousands of cases of human infection (Osorio and Yuill, 2017; Weaver *et al.,* 2004). In addition, epizootic strains belonging to subtype 1 variants D-F and subtype II-VI, while typically non-pathogenic for equids, can cause clinical disease and even death in humans that is indistinguishable from that caused by the epidemic strains (Calisher, 1994). VEE virus infection in healthy humans usually results in a mild systemic flu-like illness that resolves in one to two weeks (Public Health Agency of Canada, 2011). Neurologic disease of variable severity can develop in a small percentage of individuals, especially in young children and in elderly adults (Spickler, 2017). Fatality rates in humans are less than 1% of symptomatic cases. VEE virus can affect the fetus in pregnant women and give rise to teratological abnormalities, abortion, pre-term deliveries or stillbirths. Vertical transmission of the virus from mother to fetus has been documented.

In summary, natural transmission of VEE virus to humans has been proven many times and the resultant human infection can be serious and even fatal. Accordingly, VEE virus meets Criterion 4a for listing in the Terrestrial Code with respect to its ability to cause human disease with severe consequences.

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ **No** ☐

Scientific rationale:

VEE virus is a highly significant pathogen of equids as well as humans (Walton, 2008). For over 100 years, the virus has been identified with periodic occurrences of disease in susceptible populations of horses and other equid species in South and Central America and also, Mexico. These have been associated with infection with one or other of the two epizootic subtypes of the virus 1AB and 1C. Some of these epizootics have been very extensive, involving up to hundreds of thousands of equids as well as humans (Weaver *et al.,* 2004). The duration of these events can be variable; some have been known to last several years. The morbidity rate in at-risk equid populations can range from 10-40% in some locations to 50–100% in others. Case fatality rates in horses have been estimated at 30-90% (Spickler, 2017). Whereas most enzootic subtypes of VEE virus do not cause clinical disease or death nor are amplified in equids, certain strains of subtype IE virus emerged in Mexico in 1993 and 1996 that caused outbreaks of neurologic disease in affected individuals. The mortality rate associated with these occurrences was 30-50%.

In summary, there is undeniable proof that over many years, VEE has had a highly significant impact on the health of equid populations in regions/countries affected by epizootics of the disease. The impact includes

production losses and mortality losses from the disease. Accordingly, VEE fully qualifies for listing in the Terrestrial Code.

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ No ☒

Scientific rationale:

Besides humans and equids, the host spectrum of VEE virus is very limited (Spickler, 2017). The epizootic subtypes 1AB and 1C can infect and cause disease in rodents, especially hamsters and Guinea pigs. Subclinical infection has been demonstrated in rabbits and some bird species. Enzootic subtypes of the virus can infect wild rodents, opossums and bats but are not known to cause clinical disease in any of the aforementioned. Based on these limited data, VEE virus cannot be considered to have a significant impact on the health of wildlife nor does the virus appear to pose a threat to the viability of any wildlife population. In summary, there are insufficient grounds to support the listing of VEE in the Terrestrial Code with respect to Criterion 4c.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ No ☐

Summary Conclusion:

To date, the author is only aware of one historical event of VEE reported outside the countries of South and Central America and Mexico in which the disease is endemic. It took place in the US in 1971. In the author's opinion, this event constituted a proven instance of the transboundary spread of VEE into a country that had been previously free of the disease. The source of the virus for this epidemic was almost certain to have been wind-borne carriage of infected mosquitoes northwards from Mexico into southern Texas. This very significant event confirmed the international spread of VEE and matched Criterion 1 described in the Terrestrial Code. The collective measures that were implemented by the US Veterinary Authorities at the time comprised: mandatory vaccination with TC-83 VEE vaccine within and ahead of the affected zone along the Rio Grande and up the Gulf Coast; enforced restriction of movement of equids out of the state; and aerial and ground vector control measures. Collectively, these measures were successful in confining the epizootic and in restoring the disease-free status of the US for VEE that has remained ever since. This event and its outcome, namely elimination of VEE from the US, matches Criterion 2 for listing in the Terrestrial Code. A range of laboratory tests are available for the detection and identification of cases of VEE virus infection. They enable diagnosis of the disease and its differentiation from cases of neurologic disease caused by other disease agents (Criterion 3). VEE virus has been proven on numerous occasions to be a highly significant human pathogen and a source of very high morbidity though limited mortality caused by infection with strains of subtypes 1AB or 1C. Enzootic subtypes of the virus can also cause sporadic cases of fatal infection in humans. Additionally, VEE virus can give rise to abortion, stillbirths and teratological abnormalities in the fetus of women exposed to the virus during pregnancy. VEE virus certainly matches Criterion 4a in terms of its significance as a human pathogen. For over 100 years, VEE has given rise to periodic epizootics of major magnitude in susceptible equid populations, the vast majority of which were caused by subtypes 1AB or 1C of the virus. While enzootic subtypes of VEE do not normally cause disease nor death in horses, there is confirmed evidence of the existence of neurovirulent strains of subtype 1E that have the ability to cause neurologic disease in infected horses and an associated 30-50% mortality rate. Based on its importance as an equine pathogen, VEE certainly matches Criterion 4b with respect to it being listed in the Terrestrial Code. The range of wildlife species susceptible to developing clinical disease upon infection with VEE virus, epizootic subtypes, is very limited. Accordingly, there are insufficient grounds to support the listing of VEE virus in terms of it impacting the health and viability of wildlife as per Criterion 4c. With the exception of Criterion 4c, VEE virus

matches Criteria 1 and 2, also Criteria 3, 4a and 4b. There are insufficient grounds for supporting matching with respect to Criterion 4c.

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Assessment for Venezuelan Equine Encephalomyelitis: Roberto Navarro Lopez

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Venezuelan equine encephalomyelitis viruses (VEEV) are taxonomically classified within the genus Alphavirus of the family Togaviridae. The EEV virus complex includes six antigenic subtypes (I-VI) divided by antigenic variants. They are divided into enzootic (endemic) and epizootic (epidemic). The purpose of this evaluation is to present inclusion criteria, so only the epizootic variants corresponding to viral genotypes I-AB and I-C, which are the only ones that have a biological behaviour associated to equine-arthropod-equine epizootic activity, are considered in the Terrestrial Animal Health Code. It has been demonstrated that these viral genotypes are not found in natural reservoirs, and that their presence is due to punctual mutations that occur in the IE enzootic variants in some South American countries and south of Panama. These mutant viruses (genotypes IAB and C), when reaching an amplifying host, such as equines, causes epizootics and epidemics by allowing multiple arthropod vectors to become infected, therefore affecting other equines and people.

On the other hand, the genotypes called enzootic, have a rodent-arthropod-rodent transmission cycle and their presence does not represent a possibility of generating epizootic disease, since they can sicken an equine or a person, but are considered terminal hosts, as is the case with other arboviruses such as VON, EEE and EEO.

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

Venezuelan equine encephalomyelitis virus (EEV) caused by genotype IAB has caused periodic epidemics among humans and horses in Latin America from 1920s to early 1970s. The IAB and C genotypes have arisen

from specific mutations of the IE genotype, present in Venezuela, Colombia, Ecuador, Peru, Trinidad and Panama. The first and only major epizootic outbreak from this South American region documented by the IAB genotype spread from these countries to Central America, Mexico and the US in the late 1960s and early 1970s. The first major outbreak since 1973 occurred in Venezuela and Colombia during 1995 and affected some 75 000 to 100 000 people, this epidemic-epizootic caused by the IC genotype arose in Guajira, which is a region shared by Venezuela and Colombia.

References:

Aguilar P.V., Estrada-Franco J.G., Navarro-Lopez R., Ferro C., Haddow A.D. & Weaver S.C. (2011) Endemic Venezuelan equine encephalitis in the Americas: hidden under the dengue umbrella. *Future Virol.* 6(6):721-740. doi: 10.2217/FVL.11.5. PMID: 21765860; PMCID: PMC3134406.

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Weaver S.C., Ferro C., Barrera R., Boshell J. & Navarro J.C. Venezuelan equine encephalitis. Annu Rev Entomol. 2004;49:141-74. doi: 10.1146/annurev.ento.49.061802.123422. PMID: 14651460.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

A presumptive diagnosis of VEEV can be made when susceptible horses show the characteristic somnolence and other signs of neurological disease in areas where hematophagous insects are active. Confirmatory diagnosis of VEEV is based on virus isolation and identification or demonstration of seroconversion, but VEEV viruses are rarely isolated. Viruses can be isolated from field samples by inoculating embryonated chicken eggs or cell cultures. The virus can be identified by reverse transcription polymerase chain reaction (RT-PCR), complement fixation (CF), immunofluorescence or plaque reduction neutralization tests (PRN).

Specific identification of epizootic variants of VEEV can be performed by indirect fluorescent antibody testing, or a differential PRN test using subtype- or variant-specific monoclonal antibodies, or by nucleic acid sequencing. Virological diagnosis: Viral isolation or RT-PCR in tissues, blood or cerebrospinal fluid (CSF).Serological diagnosis: Determination of IgM or IgG during the acute phase (1 to 7 days after the onset of symptoms) and in the convalescent phase (14 days after the onset of signs), using ELISA, hemagglutination inhibition technique, neutralization or similar.

References:

Pan American Health Organization. Pan American Foot and Mouth Disease Center. Document: Equine Encephalitis transmitted by arthropods.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ No ☐

Scientific rationale:

The epizootic subtypes IAB and IC can cause significant disease in both humans and equines. VEE can occur in all age groups, and there is usually no sex bias during outbreaks. However, infected children are more likely than adults to develop long-lasting neurological sequelae and fatal encephalitis. Pregnant women infected with VEEV are at risk of congenital disabilities, miscarriages, premature births and stillbirths.

References:

Weaver S.C., Ferro C., Barrera R., Boshell J. & Navarro J.C. Encefalitis equina venezolana. *Anu. Rev. Entomol*. 2004; 49 :141-74.

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OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ No ☐

Scientific rationale:

In equines, generalized signs usually appear about 2–5 days after infection with epizootic VEEV, including fever, tachycardia, depression, and anorexia. Some or most animals go on to develop encephalitis 5–10 days after infection, with signs of circling, ataxia, and hyperexcitability. Death usually occurs about one week after experimental infection. Encephalitis and death are correlative with the magnitude of equine viremia, but even equine-avirulent enzootic strains produce lethal encephalitis when inoculated intracerebrally. This suggests that virulence is related to the ability of VEEV to replicate extracerebrally and spread to the brain, rather than to innate neurovirulence.

The first well-documented outbreak of VEE involving equids occurred in the central river valleys of Colombia in 1935 and spread to Venezuela the following year. By 1943, the outbreak had spread to Trinidad. Additional epizootics were reported on the coast of Peru from 1942 to 1946.

One of the largest outbreaks of VEE began in La Guajira, Colombia, in 1962. It initially involved approximately 3000 human cases, of which 20 were fatal. This outbreak then spread to Venezuela, where it caused 23,283 human cases, including 960 neurological cases and 156 deaths, reported during a 26-month period. Data on the number of equine cases in this outbreak are scarce. During 1967 and 1968, epizootics were observed in Colombia, but exact numbers of human and equine cases were not documented. In early 1969, a large outbreak was reported in Ecuador involving approximately 31,000 human cases with 310 deaths and approximately 20,000 equine deaths. In late 1969, epizootics were reported in El Salvador and Guatemala; these outbreaks eventually spread to throughout Central America and Mexico [15,16]. During this outbreak, approximately 50 000 horses died, in addition to approximately 52 000 human cases, of which 93 were fatal in Mexico only. In the summer of 1969, equine deaths were initially reported in the state of Chiapas, Mexico near the border with Guatemala. By 1970, approximately 10,000 equine deaths were reported in the Pacific region of Chiapas and Oaxaca. This outbreak spread to northern Mexico, affecting 17 states, the Gulf Coast and eventually south to Texas. The last Mexican equine case was recorded in September 1972 in Islas Marias, Nayarit. In Texas, between June and August 1971, almost 2000 infected horses were reported, with 1426 deaths. During the same period of time, 110 human cases were confirmed.

In 1992, an initial outbreak was reported in Venezuela. In 1995, both Venezuela and Colombia reported outbreaks involving approximately 100,000 human cases, 3000 of which experienced neurological complications, with 300 associated deaths. There were also at least 4000 equine deaths associated with this outbreak.

Aguilar PV, Estrada-Franco JG, Navarro-Lopez R, Ferro C, Haddow AD, Weaver SC. Endemic Venezuelan equine encephalitis in the Americas: hidden under the dengue umbrella. Future Virol. 2011;6(6):721-740. doi: 10.2217/FVL.11.5. PMID: 21765860; PMCID: PMC3134406. In equines, generalized signs usually appear about 2–5 days after infection with epizootic VEEV, including fever, tachycardia, depression, and anorexia. Some or most animals go on to develop encephalitis 5–10 days after infection, with signs of circling, ataxia, and hyperexcitability. Death usually occurs about one week after experimental infection. Encephalitis and death are correlative with the magnitude of equine viremia, but even equine-avirulent enzootic strains produce lethal encephalitis when inoculated intracerebrally. This suggests that virulence is related to the ability of VEEV to replicate extracerebrally and spread to the brain rather than to innate neurovirulence.

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In 1992, an initial outbreak was reported in Venezuela. In 1995, both Venezuela and Colombia reported outbreaks involving approximately 100,000 human cases, 3000 of which experienced neurological complications, with 300 associated deaths. There were also at least 4000 equine deaths associated with this outbreak.

References:

Aguilar P.V., Estrada-Franco J.G., Navarro-Lopez R., Ferro C., Haddow A.D. & Weaver S.C. Endemic Venezuelan equine encephalitis in the Americas: hidden under the dengue umbrella. *Future Virol.* 2011;6(6):721-740. doi: 10.2217/FVL.11.5. PMID: 21765860; PMCID: PMC3134406.

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ **No** ☒

Scientific rationale:

There is no evidence of serious effects of these viruses on wildlife.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

The Terrestrial Animal Code of the WOAH in its chapter 12.11. about Venezuelan equine encephalomyelitis, establishes the zoosanitary measures that countries must apply for the international trade of equines. So the countries that declare activity of any VEEV, are required among other measures, to quarantine the equines at the border, without discriminating if the VEEV are epizootic or enzootic. Even though this situation is well established epidemiologically in the Manual of Terrestrial Animals of the WOAH, but it is not taken up by the Code.

According to WOAH's guidelines for listing criteria for terrestrial animal diseases, it is recognized that some pathogens have different subspecies, lineages, or strains that may have different hosts, as well as different impacts on domestic or wild animals or humans. Therefore, it is possible that the criteria for listing a disease may specify only those subspecies that meet the criteria for listing.

Such is the case of epidemic VEE, in which only genotypes of subtypes I-AB and I-C have a biological behaviour associated with epidemic activity in equids and humans; and that meet the criteria of having the potential for transboundary dissemination by vectors; according to their distribution, there are countries free of this epidemic subtype I-AB and I-C; There is a specific diagnostic test; Natural transmission to humans has been proven and the disease in humans can have severe consequences such as death.

Therefore, the epidemic VEE caused by strains I-AB and I-C are the ones that should be listed, differentiating the strains of the enzootic cycle that do not represent any risk of epizootic diseases that endanger people or other countries.

Assessment for Venezuelan Equine Encephalomyelitis: Ann Cullinane

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Epizootic Venezuelan Equine Encephalitis (VEE) was initially limited to northern and western South America but spread to other regions and to Central America, Mexico, and the southern US. The mechanism of international spread is poorly understood. Phylogenetic studies suggest that VEEV is maintained primarily in situ, with only occasional spread to neighbouring countries for example from Mexico into Southern US, probably reflecting the limited mobility of rodent hosts and mosquito vectors. However, this mobility may increase due to habitat disturbance resulting from continued deforestation in areas such as the Amazon basin. Virus evolution also plays a role in spread as some strains of Venezuelan Equine Encephalitis (VEEV) have acquired infectivity for mosquito species with increased dispersal and a preference for large mammals. Furthermore, climate change has resulted in the spread of mosquito species to new areas. The recent appearance for the first time of Culex (Melanoconion) species in southern Florida increases the potential for other VEEV subtypes to spread northwards and establish enzootic transmission cycles (Forrester *et al.,* 2017, Guzmán-Terán *et al.,* 2020).

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

VEE is confined to South, Central and North America. Historically other regions are free.

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

Reliable means of detection are described in the WOAH Manual, Chapter 3.6.5 https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/3.06.05_EEE_WEE_VEE.pdf .

Specific identification of epizootic VEE virus variants can be made by the indirect fluorescent antibody test, or a differential plaque reduction neutralisation (PRN) test using subtype- or variant-specific monoclonal antibody, or by nucleic acid sequencing.

There is no precise case definition in the WOAH Terrestrial Code.

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ **No** ☐

Scientific rationale:

VEEV is categorised as Category B agent by the Centers for Disease Control and Prevention, Atlanta (https://emergency.cdc.gov/agent/agentlist-category.asp). Equines are the key reservoir species for the epizootic strains of VEEV that cause fatal clinical disease in horses and humans. Transmission is by haematophagous insects but aerosol transmission has been reported in laboratory workers. Epidemics involving thousands of people have been reported with 4–14% mortality associated with neurological disease. Children are most susceptible to encephalitic disease in contrast to adults who tend to experience a mild febrile disease or influenza like symptoms (Kumar *et al.,* 2018). Children are also more likely to suffer permanent neurological damage such as mental incapacity, epilepsy, learning difficulties, hydrocephalus, personality changes, and paralysis than adult survivors. A 1995 outbreak of VEE in Colombia and Venezuela affected an estimated 75,000 humans; 3000 people developed neurologic complications, and 300 fatalities occurred (Rivas *et al.,* 1997).

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ **No** ☐

Scientific rationale:

Epizootic subtypes of VEEV are highly pathogenic to Equidae and a fatality rate of 19-83% has been recorded during epidemics (Weaver *et al.,* 2004). The disease in horses is characterized by fever, loss of appetite, somnolence and disorders of the central nervous system, such as muscle deterioration, blindness, and seizures. In acute cases death may occur without neurological signs. One outbreak in Colombia was associated with 100,000 equid deaths.

Fatalities have also been recorded in other domestic animals for example sheep, goats, rabbits and dogs (Kumar *et al.*, 2018).

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☒ **No** ☐

Scientific rationale:

VEEV reservoirs include rodents, birds and possibly bats (Guzmán-Terán *et al.,* 2020). Virus has been isolated from wild mammals such as foxes and opossums during epizootics. However, the impact on the health of wildlife requires further investigation.

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

VEE satisfies the criteria for WOAH listing. Equines are the key reservoir species for the epizootic strains of VEEV that cause fatal clinical disease in horses and humans.

Reference:

Forrester N.L., Wertheim J.O., Dugan V.G., Auguste A.J., Lin D., Adams A.P., Chen R., Gorchakov R., Leal G., Estrada-Franco J.G., Pandya J., Halpin R.A., Hari K., Jain R., Stockwell T.B., Das S.R., Wentworth D.E., Smith M.D., Kosakovsky Pond S.L. & Weaver S.C. 2017. Evolution and spread of Venezuelan equine encephalitis complex alphavirus in the Americas. *PLoS Negl. Trop. Dis.*, 11, e0005693.

Guzman-Teran C., Calderon-Rangel A., Rodriguez-Morales A. & Mattar S. 2020. Venezuelan equine encephalitis virus: the problem is not over for tropical America. *Ann. Clin. Microbiol. Antimicrob.*, 19, 19.

Kumar B., Manuja A., Gulati B.R., Virmani N. & Tripathi B.N. 2018. Zoonotic Viral Diseases of Equines and Their Impact on Human and Animal Health. *Open Virol. J.*, 12, 80-98.

Rivas F., Diaz L.A., Cardenas V.M., Daza E., Bruzon L., Alcala A., De La Hoz O., Caceres F.M., Aristizabal G., Martinez J.W., Revelo D., De La Hoz F., Boshell J., Camacho T., Calderon L., Olano V.A., Villareal L.I., Roselli D., Alvarez G., Ludwig G. & Tsai T. 1997. Epidemic Venezuelan equine encephalitis in La Guajira, Colombia, 1995. *J. Infect. Dis.*, 175, 828-32.

Weaver S.C., Ferro C., Barrera R., Boshell J. & Navarro J.C. 2004. Venezuelan equine encephalitis. *Annu. Rev. Entomol.*, 49, 141-74.

Assessment for Venezuelan Equine Encephalomyelitis: Alf Fussel

The criteria for the inclusion of a disease, infection or infestation in the WOAH list are as follows:

1) International spread of the pathogenic agent (via live animals or their products, vectors or fomites) has been proven. **Yes** ☒ **No** ☐

Scientific rationale:

Infection with the VEEV can cause very high morbidity in humans and equines with a case-fatality rate of 50–70% in horses and less than 1% in humans. Domestic rabbits, goats, dogs and sheep are also potentially

susceptible animals. While the main route of transmission is by infected mosquitoes, VEEV is highly infectious as an aerosol. Mechanical transmission of epizootic VEEV has been demonstrated for blackflies (*Simulium spp.*) (Homan *et al.,* 1985). Horse to human and human to human transmission has not been recorded. No contact transmission experiments have been found and transplacental infection has not been reported.

References:

Adams A.P., Navarro-Lopez R., Ramirez-Aguilar F.J., Lopez-Gonzalez I., Leal G., Flores-Mayorga J.M. *et al*. 2012. Venezuelan Equine Encephalitis Virus Activity in the Gulf Coast Region of Mexico, 2003–2010. *PLoS Negl. Trop. Dis.* 6(11): e1875. https://doi.org/10.1371/journal.pntd.0001875

Durand B., Lecollinet S., Beck C., Martinez-Lopez B., Balenghien T. & Chevalier V. 2013. Identification of hotspots in the European union for the introduction of four zoonotic arboviroses by live animal trade. *PLoS ONE*, 8, 16.

Estrada-Franco J.G., Navarro-Lopez R., Freier J.E., Cordova D., Clements T., Moncayo A., Kang W., Gomez-Hernandez C., Rodriguez-Dominguez G., Ludwig G.V. & Weaver S.C. 2004. Venezuelan equine encephalitis virus, southern Mexico. *Emerg. Infect. Dis.* 2004 Dec; 10(12):2113-21. doi: 10.3201/eid1012.040393. PMID: 15663847; PMCID: PMC3323369. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3323369/pdf/04-0393.pdf

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the provisions of Chapter 1.4.

Yes ☒ **No** ☐

Scientific rationale:

VEE is a zoonotic disease first discovered in horses in the 1930s in South America and is considered to be native to the Americas, including North and South Americas.

WOAH WAHIS 2015-2022: disease not present in Eastern Hemisphere

AND

3) Reliable means of detection and diagnosis exist and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections or infestations.

Yes ☒ **No** ☐

Scientific rationale:

There are at least 14 subtypes and varieties within the VEE complex but only subtype I, varieties AB and C have been associated with major equine epizootics and epidemics (Aguilar *et al.,* 2011). The IA and IB strains are considered genetically indistinguishable and are thus classified as IAB. Epizootic strains from subtypes IAB and IC are highly pathogenic for horses, with reported case-fatality rates of between 20% and 80%.

References:

Enzootic strains are not known to cause illness in equids, other domesticated livestock, dogs or cats, with the exception of one Mexican I-E variant, which is pathogenic for equids (Brault A.C., Powers A.M., Ortiz D., Estrada-Franco J.G., Navarro-Lopez R., Weaver S.C.. Venezuelan equine encephalitis emergence: enhanced vector infection from a single amino acid substitution in the envelope glycoprotein. Proc Natl Acad Sci U S A. 2004 Aug 3;101(31):11344-9. doi: 10.1073/pnas.0402905101. Epub 2004 Jul 26. PMID: 15277679; PMCID: PMC509205.)

https://www.woah.org/fileadmin/Home/fr/Health_standards/tahm/3.06.05_EEE_WEE_VEE.pdf
https://sitesv2.anses.fr/en/minisite/equine-diseases/sop

AND

4a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

Yes ☒ No ☐

Scientific rationale:

References:

Aguilar P., Estrada-Franco J. & Navarro-Lopez R., Ferro C., Haddow A. & Weaver S. (2011). Endemic Venezuelan equine encephalitis in the Americas: Hidden under the dengue umbrella. *Future virology*. 6. 721-740. 10.2217/fvl.11.50.

Lord, R.D. 1974. History and geographic distribution of Venezuelan equine encephalitis. *PAHO Bulletin*, Vol. VIII, No. 2.

OR

4b) The disease has been shown to have a significant impact on the health of domestic animals at the level of a country or a zone taking into account the occurrence and severity of the clinical signs, including direct production losses and mortality.

Yes ☒ No ☐

Scientific rationale:

'In early 1969, a large outbreak was reported in Ecuador involving approximately 31,000 human cases with 310 fatalities and approximately 20,000 equine deaths. Late in 1969, epizootics were reported in El Salvador and Guatemala; these outbreaks eventually spread to most of Central America and Mexico [15,16]. During this outbreak, an estimated 50,000 horses died, in addition to an estimated 52,000 human cases, of which 93 were fatal in Mexico alone [13,17,18]. Initially, equine deaths in Mexico were reported in Chiapas state near the Guatemalan border in the summer of 1969, but by 1970, approximately 10,000 equine deaths had occurred in the Pacific states of Chiapas and Oaxaca. This outbreak then spread northward into 17 Mexican states, following the path of the susceptible equids, to the Gulf coast and eventually into southern Texas [18,19]. The outbreak was finally contained when more than 8 million doses of TC-83 vaccine were administered to equids and vector control was implemented [19]. The last Mexican equine cases were recorded in September 1972 on the Islas Marias, Nayarit [19]. In Texas, between June and August of 1971, almost 2000 infected horses were reported, including 1426 associated deaths. During the same time period, 110 human cases were confirmed.'

Reference:

Aguilar P.V., Estrada-Franco J.G., Navarro-Lopez R., Ferro C., Haddow A.D. & Weaver S.C. 2011. Endemic Venezuelan equine encephalitis in the Americas: hidden under the dengue umbrella. *Future Virology*, 6, 721–740.

OR

4c) The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife taking into account the occurrence and severity of the clinical signs, including direct economic losses and mortality, and any threat to the viability of a wildlife population.

Yes ☐ No ☒

Scientific rationale:

There are no reports indicating any significant impact on the viability of a wildlife population.

Reference:

Recent surveys demonstrated that cattle, swine, chickens and dogs have been shown to seroconvert after epizootics; and mortality has been observed in domesticated rabbits, dogs, goats and sheep (WEAVER *et al.,* 2004; MESA *et al.,* 2005; ZACKS and PAESSLER, 2010; FAD-PReP/USDA, 2013; CFSPH, 2015; WOAH, 2013b).

Conclusion regarding [pathogenic agent name]:

Does **[pathogenic agent name]** match the listing criteria that are described in the *Terrestrial Animal Health Code* Chapter 1.2.?

Yes ☒ **No** ☐

Summary Conclusion:

This conclusion concourse with the outcome of the respective EFSA report (doi: 10.2903/j.efsa.2017.4950) and the conclusion of the European Union as set out in Annex II to Regulation (EU) 2016/429 (OJ L 84, 31.3.2016, p. 1.). Any possible measures to prevent the spread of the virus through international trade primarily in equine animals should be set out in Chapter 12.4. of the Terrestrial Code and should provide for the possibility to be adapted to the circulating serotypes identified through surveillance. Since individual equine animals may be affected by the infection and because of the zoonotic nature of the infection, it is advised to maintain surveillance, not least to allow the vaccination of equines resident in, or intended to be moved to, endemic areas.

Annex 8: 9.2.2 Listing Assessment for Theileria orientalis (Ikeda and Chitose)

Expert opinion on the listing of *T. orientalis*:

- Dr Frans Van Gool (Member of the AHG on theileriosis)
- Dr Andrew MacFadden (Veterinary epidemiologist/principal advisor, New Zealand)
- Dr Philip Toye (Member of the AHG on theileriosis) – agreed with all the comments provided by the other two experts,

Experts provided their opinion on the following points raised by the Member:

Several papers report a worldwide distribution (Khukhuu *et al*. 2010, Bogema *et al*. 2015). This would mean that the pathogen does not meet criterion in Article 1.2.2.2.
(Dr Frans Van Gool) *Theileria orientalis* genotype chitose and *Theileria orientalis* genotype Ikeda do not have a worldwide distribution, as indicated in the papers mentioned here above, they have both a geographic distribution limited to Asia-Pacific and Southern Asia. Also, many other papers are indicating the same geographic distribution. (Dr Andrew MacFadden) Yes agree. The recent outbreak of disease spread in America, after the importation of the HL tick, shows that significant naïve populations exist and how effectively it can spread. It is now in about 10 -12 states and spreading very efficiently. In addition, significant parts of the Pacific are free of *theileria orientalis* (anecdotal evidence from a small survey in Fiji). Myself and my team are conducting surveys in other Pacific nations; however, we have no indication that there has been clinical Theileria and cattle populations in these countries are assumed at this stage to be free and naïve. Surveys and testing is underway in a number of nations and we will have more data over the next 12 months.
The much greater pathogenicity of *T. annulata* and *T. parva* may be due to these species having different disease mechanisms to *T. orientalis*. For example, *T. annulata* and *T.parva* are considered 'transforming' as they have the ability to transform leukocytes of host animals to allow infected cells (and thus infecting parasites) to proliferate indefinitely. *T orientalis* does not have this ability and is termed 'non-transforming'. Transforming Theileria have undergone drastic genetic evolution, with greater genetic variation that is often linked to increased virulence and evasion of host immune defences (Sivakumar *et al*. 2014).
(Dr Frans Van Gool) I agree with this. But even if *T.orientalis* genotype Chitose and *T. orientalis* genotype Ikeda are not considered 'transforming' they are pathogenic (but have lower pathogenicity than *T. annulate* and *T. parva*) and can also cause disease outbreaks in cattle, as described in the paper of C. Jenkins (Jenkins *et al*. 2015) (Dr Andrew MacFadden) The impacts from ikeda and chitose as a result of their pathogenicity are alluded to in the previous assessment and below.
Kim *et al* (2017) states 'There is limited information on disease outbreaks related to the genotypes of *T. orientalis* and the clinical relevance of the various MPSP types has not been clearly elucidated' (Kim *et al*. 2017).
(Dr Frans Van Gool) In the paper of C. Jenkins (Jenkins *et al.*, 2015) it is clearly indicated that *T. orientalis* genotype Ikeda caused clinical outbreaks of Theileriosis in Australia, as a sole infection, but more commonly as a mixture of genotypes, with as prevalent genotype, Chitose. '[...]Recent outbreaks of clinical theileriosis in Australasia have been linked to infection with the Ikeda genotype. In one study, this genotype was found to be present in clinical cases as a sole or mixed infection (Eamens *et al.*, 2013), but most commonly co-occurred with the Chitose genotype. In contrast to the Ikeda genotype, the Chitose genotype was rarely found to be associated with disease when present as a sole infection (Eamens *et al.*, 2013); however other studies have suggested that the Chitose genotype may directly cause clinical disease (McFadden *et al.*, 2011).'

(Dr Andrew MacFadden) Yes agree. There are number of papers that myself and others have published on the clinical effects of Theileria in NZ. It is very clear that there was significant impact from ikeda. Thus, from this and other reports (e.g. Japan and Australia) it is inappropriate to suggest that there is limited information on disease outbreaks.

In Australia, *T. orientalis* genotype Chitose has two variant subpopulations, with one being strongly associated with clinical disease and almost always occurring as a coinfection with the Ikeda genotype, and the other appearing to have questionable pathogenicity (Jenkins *et al*. 2015). Despite expert assessment identifying anaemia as a significant impact of *T. orientalis* Ikeda and Chitose, the report fails to quantify the direct production losses that result from the anaemia. Thus, with current scientific literature showing limited understanding of the different genotypes of *T. orientalis,* and their ability to cause disease, inclusion into the WOAH disease list is overly premature at this point in time.

(Dr Frans Van Gool) There are papers (Aparna *et al.*, 2011; McFadden *et al.*, 2011; Eamens *et al.*, 2013) indicating that disease outbreaks and economic losses related to farm animals with *T. orientalis* genotype Ikeda was found to be present in clinical cases as a sole or mixed infection (Eamens *et al.*, 2013), but most commonly co-occurred with the Chitose genotype. In contrast to the Ikeda genotype, the Chitose genotype was rarely found to be associated with disease when present as a sole infection (Eamens *et al.*, 2013); however other studies have suggested that the Chitose genotype may directly cause clinical disease (McFadden *et al.,* 2011). So, in my opinion, inclusion of *T. orientalis* genotype Ikeda and *T.orientalis* genotype Chitose into the WOAH disease list are justified.

(Dr Andrew MacFadden) Yes agree. The coinfection of chitose and ikeda represents different periods of introduction e.g. chitose introduced some time ago enabling general and widespread exposure (vs the recent introduction of ikeda). Given that Ikeda introduction is a recent phenomenon in both NZ and Australia, coinfection is often detected during clinical events. However, anaemia/clinical impacts were directly associated with the detection of ikeda. The study in 2011 (McFadden *et al.*, 2011) showed that chitose can have a clinical effect in its own right. Our observations from the clinical impacts in naïve herds was that the impacts from ikeda were more dramatic and severe.

Mortality as a direct effect from anaemia (associated with ikeda) was observed in NZ outbreaks. Death is clearly a production effect. Outside of the impacts from mortality, varying levels of anaemia occur; however, in surveys we have published this can reach very high levels and the majority of animals within an affected herd. Some attempts have been made to quantify the effects of anaemia; however, as you know this is incredibly difficult to do, although some have attempted to do this on a small scale (McDougall, S. *et al.*, 2014; Perera *et al.*, 2014).

References:

Aparna M. *et al.* (2011). 'Molecular characterization of Theileria orientalis causing fatal infection in crossbred adult bovines of South India', *Parasitology International*, 60(4), pp. 524–529. Available at: https://doi.org/10.1016/j.parint.2011.08.002.

Eamens G.J. *et al.* (2013) '*Theileria orientalis* MPSP types in Australian cattle herds associated with outbreaks of clinical disease and their association with clinical pathology findings', *Veterinary Parasitology*, 191(3), pp. 209–217. Available at: https://doi.org/10.1016/j.vetpar.2012.09.007.

Jenkins C. *et al.* (2015) 'Temporal dynamics and subpopulation analysis of *Theileria orientalis* genotypes in cattle', *Infection, Genetics and Evolution*, 32, pp. 199–207. Available at: https://doi.org/10.1016/j.meegid.2015.03.017.

McDougall S. *et al.* (2014). 'Effect of *Theileria orientalis* Ikeda on reproductive performance of a dairy herd', In *Proceedings of the Society of Dairy Cattle Veterinarians of the New Zealand Veterinary Association Annual Conference*. Hamilton, New Zealand, pp. 103–118.

McFadden A.M.J. *et al.* (2011). 'An outbreak of haemolytic anaemia associated with infection of *Theileria orientalis* in naive cattle', *New Zealand Veterinary Journal*, 59(2), pp. 79–85. Available at: https://doi.org/10.1080/00480169.2011.552857.

Perera P.K. *et al.* (2014) 'Oriental theileriosis in dairy cows causes a significant milk production loss', *Parasites & Vectors*, 7, p. 73. Available at: https://doi.org/10.1186/1756-3305-7-73.

Annex 9: 9.3.2.1 Report of the Development of the Case Definition for New World Screwworms and Old World Screwworms, 11 April to 22 August 2023

The objective of this report is to provide the rationale and scientific justification for elements of the case definition for infestation with (a) New World screwworm and (b) Old World screwworm which was developed via videoconference with the lead expert and email exchanges with the other experts between 11th of April 2023 and 22nd August 2023.

The purpose of the case definition is to support notification to the World Organisation for Animal Health (WOAH, founded as OIE) as described in the WOAH *Terrestrial Animal Health Code* (the *Terrestrial Code)* Chapter 1.1.

Details of the external experts and WOAH staff who contributed to the drafting process are provided in *Appendix* 1.

1. Process

The Official 2021-1 provides a synopsis of this initiative: 'Developing case definitions for OIE-listed diseases for terrestrial animals' [3].

This report and the draft case definition will be presented for consideration first to the Biological Standards Commission (BSC) and then to the Scientific Commission for Animal Diseases (SCAD) at their next meetings. After endorsement by SCAD, and provided there is no conflict with either the WOAH *Terrestrial Code* or the WOAH *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (the *Terrestrial Manual)*, the finalised case definition will be published on the WOAH website and, following the standard-setting process, eventually will be included in the *Terrestrial Code*.

2. Background

New World screwworm (*Cochliomyia hominivorax*) and Old World screwworm (*Chrysomya bezziana*) are listed in the *Terrestrial Code* Chapter 1.3. 'Diseases, infections, and infestations listed by the OIE' in Article 1.3.7. in the category of 'multiple species'.

There is a disease-specific chapter in the *Terrestrial Code* Chapter 8.13., 'New World screwworm (*Cochliomyia hominivorax*) and Old World screwworm (*Chrysomya bezziana*)' with the most recent update adopted in 1998. There is no case definition for the infestation although the provisions for importation from infested countries referred to 'domestic and wild mammals'. The *Terrestrial Manual* contains Chapter 3.1.14. 'New World screwworm (*Cochliomyia hominivorax*) and Old World screwworm (*Chrysomya bezziana*)' (version adopted on May 2019).

WAHIS was consulted on 4th of May 2023 for summary information [4] on 'New World screwworm' and 'Old World screwworm' developed from data contained in official reports (six-monthly reports, immediate notification, and follow-up reports). Figure 1 and Figure 2 summarise the total number of new outbreaks reported to WOAH between January 2005 and December 2022 for New World screwworm and Old World screwworm respectively.

[3] https://oiebulletin.fr/?officiel=10-3-2-2021-1_case-definitions
[4] https://wahis.oie.int/#/dashboards/qd-dashboard

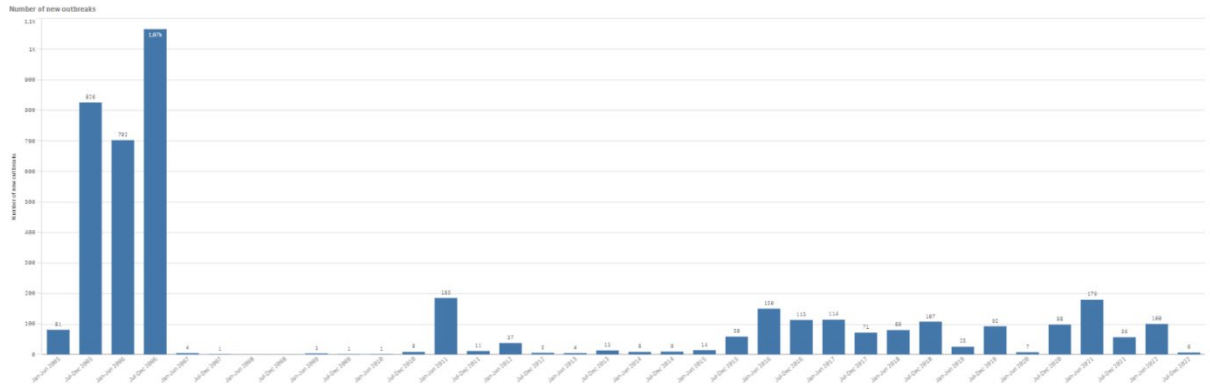

Figure 1. New outbreaks of 'New World screwworm' notified to WOAH-WAHIS by Members between January 2005 and December 2022.

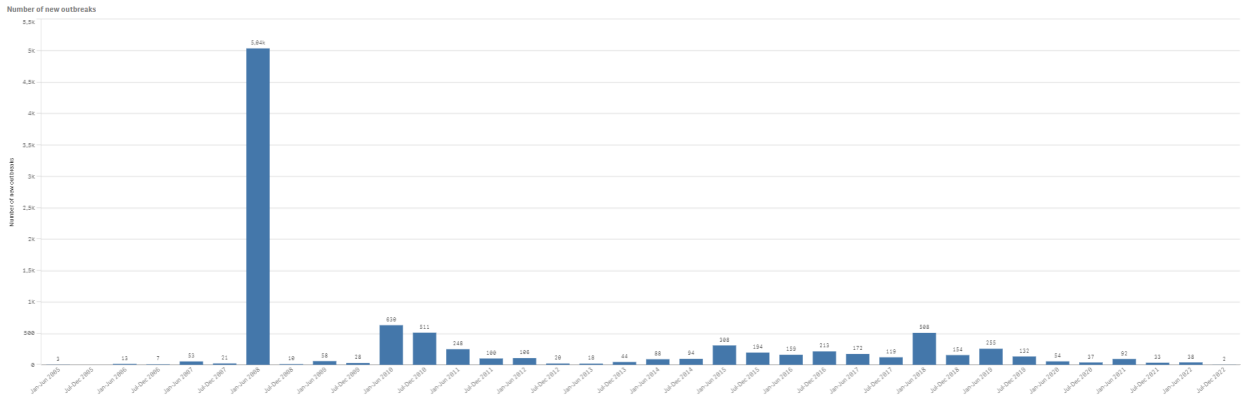

Figure 2. New outbreaks of 'Old World screwworm' notified to WOAH-WAHIS by Members between January 2005 and December 2022.

3. Discussion

Given the similar biology between New World screwworm and Old World screwworm, in consultation with the lead expert, it was agreed to embark on the case definition development for both screwworms in parallel by the same pool of experts.

3.1. Disease name

The experts agreed on the use of the name 'New World screwworm' for the infestation caused by Cochliomyia hominivorax and 'Old World screwworm' for the infestation caused by Chrysomya bezziana. An expert proposed to consider the use of 'myiasis' that would more accurately describe the clinical syndrome caused by screwworms, i.e. myiasis caused by [parasite].

3.2. Pathogenic agent

The experts agreed that the pathogenic agent for 'New World screwworm' is *Cochliomyia hominivorax*, and the pathogenic agent for 'Old World screwworm' is *Chrysomya bezziana,* which are species of two genera of the subfamily Chrysomyinae of the family Calliphoridae.

3.3. Hosts

Humans and a wide range of domestic and wild warm-blooded animals, are susceptible to infestation with *Cochliomyia hominivorax* and *Chrysomya bezziana.* Both are obligate parasites during their larvae stages in these hosts [1–6], feeding on living tissues and causing myiasis [7].
Among various wild species, cases of New World screwworm have been found in Asiatic water buffalo, *Bubalus bubalis* [7] ; feral swine, *Sus scrofa* [8]; beaver, *Castor canadensis* [9]; camel, *Camelus dromedarius* [3]; giant otter, *Pteronura brasiliensis* [10]; white-tailed deer, *Odocoileus virginianus texanus* [11,12]; Amazonian porcupine, *Coendou prehensilis prehensilis* [13]; Texas cottontail rabbits, *Sylvilagus floridanus chapmani* [14]; mantled howler monkey, Alouatta palliata [15].

Cases of Old World screwworm have been found in the following wild animals: Buck, *Kobus ellipsiprymnus*; impala, *Aepyceros melampus*; rhinos, *Rhinocerus spp.* Linnaeus; elephants, *Loxodonta spp.*; Eland (*Taurotragus oryx*) [16] and numerous zoo species [17]. It is also discovered in livestock such as buffaloes, cattle, horses, sheep, pigs and goats, including cats, dogs, deer and humans.

In relation to wild mammals and screwworm myiasis, the interpretation of the literature and the lead expert's personal experience is that the risk of transmission or transport of screw worms into a new area by an infested wild animal is low, as wounded wild animals tend to lay down in a safe and quiet area to heal and avoid predators. However, wild animals serve as a reservoir for screwworms because untreated wounds will allow the life cycle of screwworms to continue in nature.

The transport by humans, of infested animals, is an important pathway for the spread of screwworms [18–22].

With regard to the involvement of birds, the only literature of screwworm myiasis in birds was from Lindquist, 1937 [12], which reported infestation in domestic turkeys. The demonstrated risk of wild birds being infested with but also transporting screwworms is very low. According to the personal experience of one expert, in New World screwworm-endemic countries, presentation in birds occurs but is rare, compared to the occurrence in cattle, horses, and pigs. It is not reported because it is considered to have a lesser impact and the existence of effective treatment. It generally affects large chickens, turkeys, ducks, and geese. Commonly the parasitized anatomical region is the breast muscles, which makes it difficult for the bird to fly and thereby reduces the risk of spreading the parasitosis [23]. Therefore, the experts considered that the role of birds in the epidemiology of screwworms is limited, and advised to limit the case definition to domestic and wild mammals.

3.4. Epidemiologic and diagnostic criteria

The experts identified **ONE option** for confirming a case of infestation with New World or Old World screwworm for the purposes of notification to WOAH. Other options commonly incorporated in other WOAH case definitions (detection of nucleic acid, antigen or antibodies) were not used by the experts for defining infestation as screwworms are parasites which require direct morphological observation and identification of the parasite. There is at present time no applicable serological tests [24] for the diagnosis of screwworms.

3.4.1. Option 1

The observation and identification of Cochliomyia hominivorax and Chrysomya bezziana as per the standards described in the Chapter 3.1.14. of the WOAH Terrestrial Manual is sufficient to confirm a case of infestation with screwworm (New World or Old World).

References:

Cushing E.C. & Patton W.S. (1935). Studies on the higher Diptera of medical and veterinary importance. *Annals of Tropical Medicine and Parasitology*, 29, 19–32.

Gingrich R.E. (1964). Nutritional studies on screw-worm larvae with chemically defined media. *Annals of the Entomological Society of America*, Volume 57 (Issue 3), Pages 351-360. doi:https://doi.org/10.1093/aesa/57.3.351.

Food and Agricultural Organization of the United Nations (1992). *The New World Screwworm Eradication Programme North Africa 1988 – 1992*. Italy. Available at: https://www.fao.org/3/t0629e/t0629e.pdf.

Harwood R.F. & James M.T. (1979). *Entomology in human and animal health*. 7th ed., Bailliere Tindall., UK. Available at: https://www.cabdirect.org/cabdirect/abstract/19802256996.

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Mastrangelo T. & Welch J.B. (2012). An overview of the components of AW-IPM campaigns against the New World screwworm. Insects. *Insects*, 3 (Pest Control and Management), 930–955. doi:https://doi.org/10.3390/insects3040930.

Spradbery J.P. 1994. Screw-worm fly: A tale of two species. *Agricultural Zoological Review*, 1–61.

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…/Appendix

Appendix 1

9.3.2.1 Report of the Development of the Case Definition for New World Screwworms and Old World Screwworms

11 April to 22 August 2023

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Annex 10: 11.3.2.3 Report of the Development of the Case Definition for Infection with Crimean-Congo Haemorrhagic Fever Virus (CCHFV)

The objective of this report is to provide the rationale and scientific justification for elements of the case definition for infection with Crimean-Congo haemorrhagic fever virus (Crimean Congo haemorrhagic fever) which was developed via videoconference and email exchange between 21 April and 30 January 2023.

The purpose of the case definition is to support notification to the World Organisation for Animal Health (WOAH, founded as OIE) as described in the WOAH *Terrestrial Animal Health Code* (the *Terrestrial Code)* Chapter 1.1.

Details of the external experts and WOAH staff who contributed to the drafting process are provided in Appendix 1.

1. Process

The Official 2021-1 provides a synopsis of this initiative: 'Developing case definitions for OIE-listed diseases for terrestrial animals' [1].

This report and the draft case definition will be presented for consideration first to the Biological Standards Commission (BSC) and then to the Scientific Commission for Animal Diseases (SCAD) at their next meetings. After endorsement by SCAD and provided there is no conflict with either the *Terrestrial Code* or the WOAH *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (the *Terrestrial Manual)*, the finalised case definition will be published on the WOAH website and, following the standard-setting process, eventually will be included in the *Terrestrial Code*.

2. Background

'Crimean Congo haemorrhagic fever' is listed in the *Terrestrial Code* Chapter 1.3 'Diseases, infectious and infestations listed by the OIE' in Article 1.3.1. in the category of 'multiple species'. There is no disease-specific chapter or case definition in the *Terrestrial Code*. The *Terrestrial Manual* contains Chapter 3.1.5 'Crimean-Congo haemorrhagic fever' (version adopted in May 2014) [2].

WAHIS was consulted on 21 July 2022 for summary information[5] on 'Crimean Congo haemorrhagic fever' (CCHF) developed from data contained in official reports (six-monthly reports, immediate notification, and follow-up reports).

Figure 1 summarises the total number of countries reporting CCHF as present or suspected in domestic and wild animals to WOAH between 2006 and 2021.

[5] https://wahis.oie.int/#/dashboards/qd-dashboard

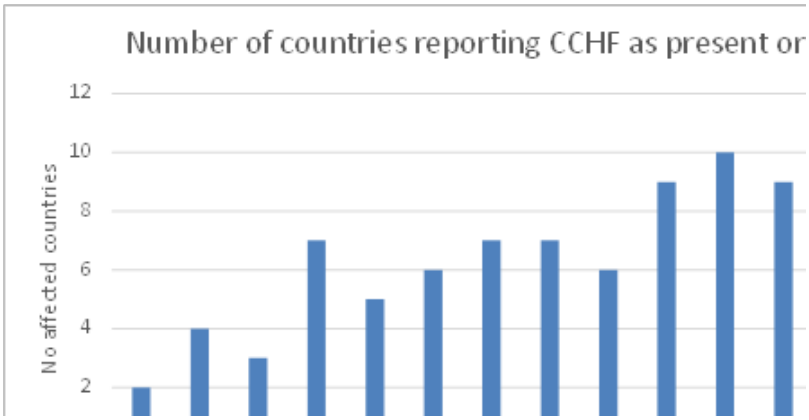

Figure 2. Total number of countries reporting 'Crimean Congo haemorrhagic fever' to WAHIS by Members between 2006 and 2021.

3. Discussion

Transmission of CCHFV to humans occurs primarily through bites from an infected tick, or by contact with the blood or bodily fluids of an infected person or animal.

3.1. Disease name

As disease-specific chapters in the *Terrestrial* Code are created or updated, the convention is to refer to the disease or infection as 'infection with [pathogenic agent]' and to reflect this in the corresponding listed entry in Chapter 1.3 or in any disease-specific chapter that may be developed in the future. In consequence, the experts recommend that the entry for Crimean Congo haemorrhagic fever in Chapter 1.3 be updated to the hyphenated version of 'infection with Crimean-Congo haemorrhagic fever virus (Crimean-Congo haemorrhagic fever)' for consistency with the *Terrestrial Manual*, the International Committee on Taxonomy of Viruses (ICTV) and with the World Health Organisation (WHO).

3.2. Pathogenic agent

The experts agreed that the pathogenic agent for this disease is the Crimean-Congo haemorrhagic fever virus (CCHFV) which belongs to the genus *Orthonairovirus* of the family *Nairoviridae* of the order *Bunyavirales* [3].

3.3. Hosts

Hyalomma spp. ticks have been identified as the natural vector and reservoir for infection with CCHF, and the distribution of human cases of CCHF closely matches that of the vector [4]. The epidemiology of CCHF is complex where the role of ticks in transmitting the disease and that of wildlife in maintaining the disease through tick infestation are important. A wide range of domestic and wild species are susceptible to infection with CCHFV [5–8], although viraemia tends to be transient and infection usually is asymptomatic. Many species (particularly larger vertebrates) can serve as amplification hosts for CCHFV, and domestic animal species often are implicated when human cases are detected [4,9,10]. High seroprevalences frequently are found in cattle, sheep, goats, and camels, indicating high levels of exposure on a population basis [6]. Noting the potential for wild ruminants to similarly act as amplification hosts, the experts considered that host animals for the purposes of notification of infection with CCHFV to WOAH should consist of domestic and wild animals of the suborder Ruminantia, and dromedary camels (*Camelus dromedarius)* [4,6,11].

3.4. Epidemiologic and diagnostic criteria

The experts identified **four options** (any one of which is sufficient) for confirming a case of infection with Crimean Congo haemorrhagic fever virus for the purposes of notification to WOAH.

3.4.1. Option 1

The experts agreed that isolating CCHFV in samples from the host species listed above would be sufficient to confirm a case of infection with CCHFV. They elected to omit 'excluding vaccine strains' as there is currently no approved vaccine available [16].

3.4.2. Option 2

The experts agreed that detection of nucleic acid specific to CCHFV is suitable for confirmation of a case, provided this is accompanied by either an epidemiological link to a suspected or confirmed case of CCHF, or the animal is suspected to have been bitten by a tick positive on an antigen test or nucleic acid test specific to CCHFV.

The experts elected to not include 'antigen specific to CCHFV' in the option for the case definition at this time; this technique is not one of the methods recommended for identification of the agent in Table 1 of the *Terrestrial Manual*.

The experts elected to omit the text 'the [animal] host is showing clinical signs or pathological lesions consistent with infection with pathogen' as in livestock, the infection is usually asymptomatic or may occasionally result in mild fever [6].

3.4.3. Option 3

The experts agreed that seroconversion would be sufficient to confirm a case of infection with CCHFV, and noted that currently a few in-house systems have been published. Most commercial test systems for IgM or IgG by ELISA or immunofluorescence are designed for human diagnostics, but it is possible to adapt them for serological testing in animals.

3.4.4. Option 4

The experts agreed that the presence of antibodies in an animal host that is epidemiologically linked to a suspected or confirmed human or animal case of CCHF or that is suspected to have been bitten by a tick positive on an antigen test or nucleic acid test specific to CCHFV would constitute a confirmed case of CCHF.

The experts elected to omit 'that are not the consequence of vaccination' as there is currently no approved vaccine available [16].

The experts also elected to omit the text 'the [animal] host is showing clinical signs or pathological lesions consistent with infection with pathogen' as the infection in animals is usually asymptomatic or may occasionally result in mild fever [6].

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…/Appendix

Appendix 1

Report of the development of the case definition for infection with Crimean-Congo haemorrhagic fever virus (Crimean Congo haemorrhagic fever)

21 April – 30 January 2023

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Annex 11: Work programme

Abbreviations: BSC: Biological Standards Commission; SCAD: Scientific Commission for Animal Diseases; TAHSC: Terrestrial Animal Health Standards Commission (Code Commission).

		September 2023	Next steps	Timeline
Update of WOAH Standards				
	Glossary	Not on agenda		
1	Ch. 1.2. Criteria for the inclusion of diseases, infections or infestations in the WOAH list	Not on agenda; at its February 2023 meeting, revisions had been proposed to the guidance document aimed at improving experts' interpretation of the listing criteria and the revised guidance was applied to the listing assessment for equine encephalitides. At this time, no specific revisions to Chapter 1.2. are recommended but SCAD welcomes the opportunity to be involved in discussions when the chapter is opened for revision.	Continue to review experts' interpretation of listing criteria and ensure consistency in application.	N.A.
1	Ch. 1.3. Diseases, infections and infestations listed by the WOAH	Not on agenda.	N.A.	N.A.
	Ch. 1.6. Procedures for official recognition	Revised draft Article 1.6.4 proposed by TAHSC regarding the holding of pathogenic agents without affecting the animal health status.	SCAD opinion forwarded to TAHSC.	
1	Ch 4.X. New chapter on biosecurity	Provided comments on chapter structure and glossary definitions that were proposed by the *ad hoc* Group on biosecurity.	SCAD opinion forwarded to TAHSC and addressed at its September 2023 meeting.	SCAD to consider relevant comments in February 2024.
1	Ch.8.8. Infection with foot and mouth disease virus	Considered selected comments forwarded by TAHSC received from Members during and after the 2023 General Session on	SCAD opinion forwarded to TAHSC and addressed at its September 2023 meeting.	

		September 2023	Next steps	Timeline
		the revised draft chapter.		
1	Chapter 8.X. Infection with *Trypansoma evansi* (surra)	Provided some comments on proposed amendments by the *ad hoc* Group on surra and dourine. Opinion was forwarded to the TAHSC. Requested Secretariat to consult experts on infection dynamics in camels.	The draft chapter will be circulated by TAHSC after its September 2023 meeting.	SCAD to consider relevant comments and expert opinion in February 2024.
1	Ch. 12.1. Infection with African horse sickness virus	Reviewed and provided comments on amendments proposed by TAHSC.	SCAD opinion was forwarded to TAHSC and addressed at its September 2023 meeting.	
1	Ch. 12.3. Dourine	Reviewed draft revised Ch.12.3. prepared by the *ad hoc* Group on surra and dourine.	Forward opinion and revised draft chapter to TAHSC. The draft chapter will be reviewed by the TAHSC at its February 2024 meeting.	SCAD to consider relevant comments in September 2024.
	Ch. 1.11 FMD Questionnaire	In response to a comment considered at its February 2023 meeting, proposing the revision and parallel adoption of Chapter 1.11. with the adoption of the revised Chapter 8.8., SCAD revised Chapter 1.11. and proposed amendments.	The revised article was forwarded to TAHSC and addressed at its September 2023 meeting.	
Official animal health status recognition				
1	Evaluation of Member dossiers	Not applicable. SCAD was updated on the state of play of applications submitted by Members for evaluation and potential recognition at the GS in May 2024.		
2	Expert missions to Members	SCAD considered the reports of two missions that took place after its February 2023 meeting and followed	Follow-up of actions taken by the respective Members in response to the recommendations	

		September 2023	Next steps	Timeline
		up on a past mission after some epidemiological changes in the country and region.	from the missions during the review of 2023 annual reconfirmations in Feb 2024. Review in February 2024 the priority list of missions to be conducted taking into account the recommendations of the *ad hoc* Groups on applications.	
2	Follow up of Members with official animal health status or with suspended status	SCAD reviewed Malaysia's application for recovery of its AHS status and recommended the reinstatement of Malaysia's AHS-free status.		
	Non-compliance of Members having an official animal health status by WOAH with provisions of the Terrestrial Code for imports of commodities from countries not officially recognised as free by WOAH	SCAD discussed different scenarios and options and possible next steps.	A discussion paper will be produced by the Secretariat for SCAD and TAHSC to further discuss this issue in February 2024.	
1	Review of annual reconfirmations	SCAD identified 49 annual reconfirmations for comprehensive review at its February 2024 meeting.		
1	Harmonisation of the requirements in the *Terrestrial Code* Chapters for recognition and maintenance of official animal health status	Not on agenda	Continue follow-up on the progress of the remaining chapters (AHS, CBPP and FMD) before proposed for adoption.	
2	BSE Annual Reconfirmation form	SCAD reviewed and endorsed the draft form based on the newly adopted BSE standards in May 2023.	The form will be annexed to SCAD's September 2023 report and published on the website. No further action required from SCAD.	

		September 2023	Next steps	Timeline
Disease control issues				
2	Advise on global strategies and initiatives (FMD, PPR, rabies, ASF, AI, zTB)	Updates were provided on the global strategies/initiatives for FMD, PPR, ASF, AI and zTB.		
1	Consider non-disease-Status and non-standard-setting *ad hoc* Groups reports falling into the SCAD remit	Not on agenda		
2	Assess recent developments in control and eradication of infectious diseases	Addressed under the respective updates on global strategies and initiatives (PPR, ASF, AI, zTB)		
1	Evaluation of emerging diseases	Assessed and recommended the continued maintenance of SARS-CoV-2 as an emerging disease.		
1	Evaluation of pathogenic agents against the listing criteria of Chapter 1.2.	***Theileria orientalis***: SCAD considered expert opinion, which was sought in response to Member comments querying continued listing of *T.orientalis* Ikeda and Chitose. **Japanese encephalitis, eastern and western equine encephalitis, Venezuelan equine encephalomyelitis**: SCAD considered expert opinion on listing of the equine encephalitides.	Forward opinion to TAHSC.	
1	Development of case definitions	SCAD commended the work on the internal processes for case definition development and noted progress made. **Avian metapneumovirus (turkey**	Secretariat to follow-up with lead expert and BSC to clarify information in *Terrestrial Manual*.	SCAD to consider expert and BSC opinion at its February 2024 meeting.

		September 2023	Next steps	Timeline
		rhinotracheitis): SCAD discussed comments from the TAHSC, and requested Secretariat to seek clarification from lead expert and BSC. **Crimean-Congo haemorrhagic fever**: case definition discussed with BSC and revised with expert. SCAD endorsed case definition. SCAD also provided opinion on coverage of disease-specific chapter for CCHF in the *Terrestrial Code.* **New World and Old World screwworms**: case definition discussed with BSC, SCAD made refinements. **Nairobi sheep disease**: SCAD noted paucity of reports and literature on NSD outbreaks and requested Secretariat to obtain more information from experts in the field.	Secretariat to upload case definition for Crimean-Congo haemorrhagic fever onto WOAH website. Forward opinion and revised case definition to TAHSC. Secretariat to consult experts in the field for occurrence and impact of NSD.	SCAD to consider expert opinion at its February 2024 meeting.
3	Insects	None at this meeting.		
Liaison with other Specialist Commissions				
1	Terrestrial Animal Health Commission	None at this meeting.		
1	Biological Standards Commission	No liaison meeting, but through coordination by Secretariat, discussed case definition for Old World and New World screwworms and CCHF.		

		September 2023	Next steps	Timeline
Working Groups				
2	Antimicrobial Resistance Working Group	Not on agenda.		
2	Wildlife Working Group	Noted discussion of the Working Group as captured in the December 2022 and June 2023 reports and requested for more details on the WGW discussion and recommendation on definition of 'emerging disease'.	WGW Secretariat to provide more details on the specific recommendations of the WGW.	SCAD to consider specific recommendations of the WGW, if provided, at its February 2024 meeting.
Other activities that could impact SCAD work programme				
1	Evaluation of applications for WOAH Collaborating Centre status	None at this meeting		
3	Update on the main conclusion/ recommendations of meetings relevant for the work of the Commission	None at this meeting		
3	Updates provided for SCAD information	SCAD was updated on: STAR-IDAZ International Research Consortium; Global Burden of Animal Diseases (GBAD) programme and the WOAH Collaborating Centre for the Economics of Animal Health; composition of the WOAH Editorial Board and project on WOAH Standards Online Navigation Tool.		
	Any other business	None at this meeting		

Scientific Commission for Animal Diseases Report. February 2024

Contents

List of Annexes

A meeting of the WOAH Scientific Commission for Animal Diseases (the Commission) was held from 12 to 16 February 2024 at the WOAH Headquarters in Paris, France.

1. Welcome

Dr Monique Eloit, WOAH Director General and Dr Montserrat Arroyo, WOAH Deputy Director General, International Standards and Science, met with the Aquatic Animals Commission, Scientific Commission for Animal Diseases and the Code Commission on 14 February 2024, to welcome all Commission members and thank them for their ongoing contributions to the work of WOAH. Dr Eloit thanked the Commission members for their hard work throughout this term and the tremendous amount of work achieved. She acknowledged that this was the last meeting of the current term for each of the Specialist Commissions and wished all well, whether standing for re-election or stepping down.

Dr Eloit provided updates on the selection process for election to one of the four Specialist Commissions and the review of the WOAH's Basic Texts that will be presented to the World Assembly at the 91st General Session in May 2024.

Dr Eloit highlighted there will be a global focus on antimicrobial resistance (AMR) throughout 2024, including a UN General Assembly high-level meeting in September 2024 to highlight the global public health threat of AMR, and that WOAH will continue to participate actively in these fora and discussions on AMR.

Dr Arroyo recognised the work of each of three Commissions present throughout this term, and provided an overview of key accomplishments, and commended them on their commitment to this work.

Dr Arroyo provided a brief update on a number of topics, including the WOAH Standards Online Navigation Tool project, the decision to put the Diagnostic Kit Register activities on stand-by, an overview of the General Session kiosk topics, the work to coordinate the WOAH standard-setting process, and the publication of Member comments to the draft standards.

Dr Arroyo thanked the Commission Presidents for agreeing to deliver pre-General Session webinars again this year and emphasised that they are an important contribution to the engagement of Members and partners in the standard-setting process. Dr Arroyo noted that the pre-General Session webinars will be held on 16 April, 17 April and 18 April from 12:00 – 14:00 (CEST) for the Biological Standards Commission, the Code Commission and the Aquatic Animals Commission, respectively. The webinars will have simultaneous interpretation into French and Spanish and will be recorded and uploaded onto the WOAH website.

The Commission members thanked Dr Eloit and Dr Arroyo for their appreciation and these updates, and for their leadership and support throughout the current term. The Commission Members also acknowledged the important work of the WOAH Secretariats in support of their work.

2. Adoption of the agenda

The draft agenda was adopted by the Commission. The meeting was chaired by Dr Cristóbal Zepeda and the WOAH Secretariat acted as rapporteur. The agenda and list of participants are attached as Annexes 1 and 2, respectively.

3. Terrestrial Animal Health Code

3.1 Member comments received for Commission consideration

3.1.1 Chapter 1.11. 'Application for official recognition by WOAH of free status for foot and mouth disease' and Chapter 8.8. 'Infection with FMD virus'

The Commission addressed selected comments that were forwarded by the Code Commission on the amended chapters, which had been circulated in the Code Commission's September 2023 report.

General comments

The Commission considered a Member comment suggesting the development of a design of the annual reconfirmation of officially recognised animal health status, which would minimise the administrative burden for all involved parties. The Commission reiterated that based on the provisions for retention on the list of countries or zones free from FMD officially recognised by WOAH, supportive information for reconfirmation of the officially recognised status should be provided annually on surveillance according to the freedom article of the disease-specific chapter (i.e., Articles 8.8.2. or 8.8.3. of Chapter 8.8.) and point 4 of Article 1.4.6. of the Terrestrial Code. In addition, the annual reconfirmation should include supportive information on any significant changes to legislation, infrastructure and diagnostic capability as well as other risk factors including trading partners. The Commission requested the WOAH Status Department secretariat to develop a modified design of the annual reconfirmation form to simplify and clarify the type of the documented evidence required while still respecting the requirements of the Terrestrial Code for maintenance of officially recognised animal health status by WOAH.

The Commission considered a suggestion by Members to propose amendments to Chapter 1.11. to simplify the surveillance data required for the annual reconfirmation of officially recognised animal health status, in order not to overburden Members in case of imports of animals vaccinated against FMD. The Commission clarified that Chapter 1.11. refers to the application for initial recognition of FMD official status. The data required for the maintenance of officially recognised animal health status are described under Articles 8.8.2. and 8.8.3. The Commission highlighted that surveillance should consider the presence of vaccinated animals, which does not necessarily imply testing vaccinated animals (other than prior to import). The Commission reiterated that upon adoption of Chapter 8.8., guidelines for surveillance will be developed taking into account the number, distribution and species of vaccinated animals imported.

The Commission agreed with Members' comments that the adoption of the revised Chapter 1.11. should be contingent on the adoption of the revised Chapter 8.8.

Article 1.11.1. Country free from infection with foot and mouth disease virus where vaccination is not practised

The Commission agreed with the replacement of 'vaccinated animals' with 'vaccinated animal populations' under point 5. c) proposed by the Code Commission at its February 2024 meeting.

Article 8.8.11. Recommendations for importation of susceptible animals from countries, zones or compartments free from FMD where vaccination is practised.

With regard to the testing of unvaccinated animals (point 3 of draft Article 8.8.11.), the Commission noted the amendment circulated in the Code Commission's September 2023 report and emphasised that serological testing alone would not detect recently infected sub-clinically animals (i.e., sheep). Therefore, the Commission was of the opinion that the requirement for virological testing should be maintained.

The opinion of the Commission was forwarded to the Code Commission for consideration at its February 2024 meeting and were discussed at the meeting of the Bureaus of both Commissions.

3.2 Other considerations

3.2.1 Chapter 4.4. 'Zoning and Compartmentalisation' and plan to develop new chapter on implementation of zoning

The Commission was informed that the Code Commission noted differences of understanding around critical aspects of the implementation of zoning based on the comments received by Members on other disease-specific chapters in its September 2023 meeting. The Commission was further informed of a thematic study that was recently done by the WOAH Observatory on this topic providing valuable information on the current state of implementation of related WOAH Standards and challenges faced by Members. The Commission agreed to collaborate with the Code Commission in the development of a new chapter on the implementation of zoning to clarify critical concepts of Chapter 4.4. 'Zoning and compartmentalisation'.

Reference should be made to the relevant past meeting reports of the Commission, highlighting recommendations and clarifications with regard to the establishment of the containment zones and protection zones. The Commission noted the need for further guidance on implementation and lifting of a protection zone within a country or zone having an officially recognised animal health status by WOAH. The Commission agreed with the proposed next step by the Secretariat to draft Terms of Reference to be presented in the September 2024 meeting.

3.2.2 *Chapter 11.5. 'Infection with Mycoplasma mycoides subsp. Mycoides SC (Contagious bovine pleuropneumonia)'*

See item 7.1.

3.2.3 *Chapter 12.1. 'Infection with African horse sickness virus'*

See item 7.1.

3.2.4 Surra in camels

At its September 2023 meeting, the Scientific Commission had requested the Secretariat to seek the opinion of camel experts regarding the waiting period applicable to camels in the *Terrestrial Code* Article 8.Z.7. on 'Recommendations for importation of susceptible animals (except dogs and cats) from countries or zones infected with *T. evansi*', arising from a comment from one of the *ad hoc* Group members that camels could carry the parasite in the absence of an antibody response.

The Secretariat consulted CaMeNet, whose opinion was also forwarded to the *ad hoc* Group on Surra and Dourine for feedback. The Commission noted the expert opinion that there is currently insufficient knowledge regarding the pathogenesis and dynamics of the immune response in camels, and that it was not possible to predict how long time a camel could carry *T. evansi* in an extra-vascular focus without exhibiting any seropositivity. A relapse was also possible following stress, such as during transportation. The Commission also reviewed the proposal from the CaMeNeT experts to impose post-arrival measures at the importing country, including a quarantine period of one month and combination of tests.

The Commission thanked the experts for their opinion. However, considering the lack of scientific information on the dynamics of seroconversion in camels and the possible relapse in response to stress, and that the trade recommendations in disease-specific chapters of the *Terrestrial Code* should be designed to prevent the pathogenic agent(s) from being introduced into an importing

country, the Commission was of the view that it was not possible to mitigate the risks of introduction of *T. evansi* through camels to an acceptable level with the proposed measures.

Consequently, the Commission recommended excluding camels from *Terrestrial Code* Article 8.Z.7. It noted that Members wishing to import camels from infected countries should conduct a risk analysis according to the principles in Chapter 2.1. 'Import risk analysis', and refer to Chapter 3.1.21. of the *Terrestrial Manual* for described diagnostic methods.

The opinion of the Commission was forwarded to the Code Commission.

4. Ad hoc and Working Groups

4.1 Meeting reports for endorsement

4.1.1 Ad hoc Group on the Evaluation of African Horse Sickness Status of Members: 28-29 September and 5 October 2023

The Commission reviewed and endorsed the report of the *ad hoc* Group on the evaluation of applications from three Members for the recognition of their AHS-free status.

The Commission agreed with the conclusions of the *ad hoc* Group and recommended that the Assembly recognise Egypt as having an AHS-free status.

The Commission concurred with the conclusion of the *ad hoc* Group on one other application that it did not meet the requirements of the *Terrestrial Code*. The dossier was referred to the respective applicant Member. Suggestions on actions to be taken to comply with the requirements of the *Terrestrial Code* were provided.

The Commission also considered the recommendation of the *ad hoc* Group regarding the application from another Member and provisionally concluded that it fulfilled the requirements of the *Terrestrial Code*. However, the Commission recommended to the Director General to mandate a mission to the country to verify compliance with the provisions of the *Terrestrial Code,* before any final decision be taken. Pending the outcome of the mission, the tentative decision of the Commission would be confirmed, and the country would be proposed for official recognition at the 91st General Session in May 2024.

The endorsed report of the *ad hoc* Group is available on the WOAH website.

4.1.2 Ad hoc Group on the Evaluation of Official Control Programmes for Dog-mediated Rabies: 4 & 6 October 2023

The Commission reviewed and endorsed the report of the *ad hoc* Group on the evaluation of an application from a Member for the endorsement of its official control programme for dog-mediated rabies.

The Commission agreed with the *ad hoc* Group and concluded that the application did not meet the requirements of the *Terrestrial Code*. The dossier was referred to the applicant Member. Suggestions on actions to be taken to comply with the requirements of the *Terrestrial Code* were provided.

The endorsed report of the *ad hoc* Group is available on the WOAH website.

4.1.3 *Ad hoc Group on the Evaluation of Peste des petits ruminants Status of Members: 17–19 October 2023*

The Commission reviewed the report of the *ad hoc* Group on the evaluation of applications from Members for the recognition of their PPR-free status and the endorsement of official control programme.

- *Evaluation of an application from a Member for official recognition of PPR-free status*

The Commission agreed with the conclusion of the *ad hoc* Group and recommended that the Assembly recognise Azerbaijan as having a PPR-free status.

- *Evaluation of an application from a Member for the official recognition of a PPR-free zonal status*

The Commission agreed with the *ad hoc* Group and concluded that the application did not meet the requirements of the *Terrestrial Code*. The dossier was referred to the applicant Member. Suggestions on actions to be taken to comply with the requirements of the *Terrestrial Code* were provided.

- *Evaluation of an application from a Member for the endorsement of its official control programme for PPR*

The Commission considered the recommendations of the *ad hoc* Group on an application and concluded that it did not meet the requirements of the *Terrestrial Code* for the endorsement of its official control programme for PPR. The dossier was referred to the applicant Member indicating the main aspects that should be improved in order to comply with the requirements of the *Terrestrial Code* before resubmitting its dossier. The Commission recommended to the Director General to mandate a mission to the country to support the Member in identifying and bridging the gaps.

Furthermore, the Commission considered the detailed explanations of the *ad hoc* Group in response to a request from the Commission's February 2023 meeting regarding a study suggesting that suids were an unexpected possible source for PPR virus infection, and how PPRV-infected meat of small ruminants could play a role in the transmission of PPR virus. The Commission noted that, while experimental transmission from pigs to goats had been shown to be possible, there was insufficient scientific evidence at the time to suggest that pig commodities including meat could play a role in transmitting the PPR virus. Based on this clarification of the *ad hoc* Group, the Commission reviewed and agreed with the risk mitigation measures proposed by the *ad hoc* Group for importation of domestic small ruminants destined for slaughter from countries or zones infected with PPRV. The Commission was of the opinion that such alternative provisions would respond to the needs of some Members to safely import/trade small ruminants for direct slaughter (see item 5.4.1. of this report).

The endorsed report of the *ad hoc* Group is available on the WOAH website.

4.1.4 *Ad hoc Group on the Evaluation of Foot and Mouth Disease Status of Members: 23-26 October 2023*

The Commission reviewed and endorsed the report of the *ad hoc* Group on the evaluation of applications from Members for the recognition of their FMD-free status.

- *Evaluation of an application from a Member for the official recognition of an FMD-free status where vaccination is not practised*

The Commission agreed with the conclusion of the *ad hoc* Group and recommended that the Assembly recognise Liechtenstein as free from FMD where vaccination is not practised.

- *Evaluation of an application from a Member for the official recognition of an FMD-free status where vaccination is practised*

The Commission agreed with the conclusion of the *ad hoc* Group that the application from a Member did not meet the requirements of the *Terrestrial Code*. The dossier was referred to the applicant Member along with the rationale for the Commission's position. Suggestions on actions to be taken to comply with the requirements of the *Terrestrial Code* were provided.

- *Evaluation of applications from a Member for the official recognition of FMD-free zonal status where vaccination is practised*

The Commission agreed with the *ad hoc* Group and concluded that the applications from one Member for two FMD-free zonal status where vaccination is practised did not meet the requirements of the *Terrestrial Code*. The dossiers were referred to the applicant Member. Suggestions on actions to be taken to comply with the requirements of the *Terrestrial Code* were provided.

The endorsed report of the *ad hoc* Group is available on the WOAH website.

4.1.5 Ad hoc Group on the Evaluation of Contagious Bovine Pleuropneumonia Status of Members: 5–7 December 2023

The Commission reviewed and endorsed, with minor comments, the report of the *ad hoc* Group on the evaluation of the applications from two Members for the recognition of their CBPP-free status.

The Commission agreed with the conclusions of the *ad hoc* Group and recommended that the Assembly recognise the Czech Republic and Norway as having a CBPP-free status. The Commission encouraged the Czech Republic and Norway to take into consideration the recommendations of the *ad hoc* Group and the Commission, and to submit documented evidence of the implementation of the recommendations in the annual reconfirmation.

The endorsed report of the *ad hoc* Group (including minutes of the Commission's discussions) is available on the WOAH website.

4.2 Meeting reports for information

4.2.1 Working Group on Wildlife

The Commission was provided an update of the December 2023 meeting of the Working Group on Wildlife (WGW) by the WGW Secretariat.

The Commission noted that a representative from the Working Group on Wildlife (WGW) had participated as an observer at the WOAH *ad hoc* Group on Emerging Diseases that met from December 5-7, 2023, providing wildlife inputs to the issue and exploring synergies (see Item 4.2.2.).

The Commission was informed that the WGW had developed a set of considerations for emergency vaccination of wild birds against high pathogenicity avian influenza (HPAI) in specific situations, which was available online. The WGW was also developing a statement on protecting wildlife in the face of the current HPAI epidemic, and would soon release a practical guide on the management of HPAI in marine mammals.

The Commission was also informed of the different activities of the WGW relevant for the Scientific Commission, including the upcoming publication of guidelines for addressing disease risks in wildlife trade. The Commission expressed its interest in the guidelines and requested to be updated on its publication.

4.2.2 *Ad hoc Group on Emerging Diseases (including re-emerging diseases) and Drivers of Disease Emergence in Animals*

The Commission was briefed on the establishment and meeting of the *ad hoc* Group on Emerging Diseases (including re-emerging diseases) and Drivers of Disease Emergence in Animals that met in December 2023.

The Commission noted that there might be similarities in terms of reference and activities with the WGW and recommended that the *ad hoc* Group could coordinate with the WGW to avoid duplication of work. The Commission also recommended the *ad hoc* Group to look into climate change and changes to vector population dynamics as drivers of disease emergence.

The Commission expressed interest in the deliverables of the *ad hoc* Group, especially the twice-yearly review report on emerging and re-emerging diseases and contributions to the WOAH Incident Management System. In particular, the Commission would like to find out more about the latter and requested for an update at its next meeting.

The Commission also appreciated the *ad hoc* Group's intention to provide its expertise on case definition development for specific emerging diseases. Noting that the recommendations and work of the *ad hoc* Group would have an impact on the ongoing work of the Commission and the Code Commission on emerging diseases, the Commission requested that the work of the *ad hoc* Group is well coordinated with the two Commissions.

4.2.3 *Ad hoc Group on Alternative Strategies for the Control and Elimination of Mycobacterium tuberculosis complex Infection (MTBC) in Livestock*

At its September 2023 meeting, the Commission had been informed of the WOAH consultancy project to develop guidelines for alternative control strategies to assist endemic Members in reducing the burden of TB in livestock through strategies other than test and slaughter. These guidelines would be generated through the consultancy eliciting science-based opinions from experts and community members through literature reviews, surveys, and focus group discussions. The recommendations would be reviewed by an *ad hoc* Group in January 2024, for which the Commission had nominated an observer.

At this meeting, the Commission was updated on the discussion of the *ad hoc* Group which reviewed the first draft of the guidelines. The *ad hoc* Group discussed the strategies for disease management and control, as well as important components such as an understanding of the epidemiological situation, resourcing and infrastructure. The *ad hoc* Group discussed that it was important to provide guidance on monitoring reduction of within-herd prevalence which could assist Members in assessing the burden of the MTBC infection in the herd and monitor the progression of control strategies. However, the *Terrestrial Code* Chapter 8.12. does not provide any specific surveillance recommendations and therefore, it invited WOAH to consider providing more guidance to Members on surveillance. The Group also suggested updating the Roadmap for zoonotic tuberculosis to incorporate new and updated science, including diagnostic techniques.

The Commission appreciated the work initiated by WOAH and agreed to review and provide its comments to the guidelines. Regarding the Group's suggestion to provide disease-specific surveillance guidance to Members, the Commission agreed that this was important and considered that such guidance would be unique to different epidemiological scenarios, and the level of information required may be too detailed for the *Terrestrial*

Code. Noting that the guidelines were still being finalised, the Commission would provide its feedback on after reviewing the guidelines.

4.3 Planned ad hoc Groups and confirmation of proposed agendas

- *Ad hoc* Group on Biosecurity: 26-28 March 2024
- *Ad hoc* Group on Scrapie: April 2024
- *Ad hoc* Group on Equine Encephalitides: June 2024
- *Ad hoc* Group on the Evaluation of BSE Risk Status: 1-3 October 2024 (to be confirmed)
- *Ad hoc* Group on the Evaluation of AHS Status: 8-10 October 2024 (to be confirmed)
- *Ad hoc* Group on the Evaluation of the Endorsement of Dog-mediated Rabies Control Programmes: 8-10 October 2024 (to be confirmed)
- *Ad hoc* Group on the Evaluation of CBPP Status: 29-31 October 2024 (to be confirmed)
- *Ad hoc* Group on the Evaluation of FMD Status: 5-7 November 2024 (to be confirmed)
- *Ad hoc* Group on the Evaluation of PPR Status: 12-14 November 2024 (to be confirmed)
- *Ad hoc* Group on the Evaluation of CSF Status: 19-21 November 2024 (to be confirmed)

4.3.1 Chapter 14.8. 'Scrapie'

At its September 2023 meeting, the Commission was informed by the Secretariat that scrapie had been raised to priority '2' of the work programme of the Code Commission, based on requests by Members to update the recommendations for live animal testing and testing for genetic resistance. The Commission was invited to consider including an update of the *Terrestrial Code* Chapter 14.8. Scrapie in its work programme. The Commission had also requested to seek the opinion of the Biological Standards Commission on testing of live animals and testing for genetic resistance.

At this meeting, the Commission agreed on the need to convene an *ad hoc* Group to comprehensively review Chapter 14.8. The Commission, together with the Code Commission at the Bureau meeting, reviewed and agreed with the Terms of Reference of the *ad hoc* Group. The Scientific Commission also requested that the recommendations of the *ad hoc* Group on testing for genetic resistance be shared with the Biological Standards Commission for its consideration for incorporation in the *Terrestrial Manual*, as genetic resistance is regarded as a valid tool in the prevention and control of scrapie.

4.3.2 Revision of Terrestrial Code chapters on equine encephalitides

In September 2023, in coordination with the Code Commission, the Commission agreed with the experts' proposal to continue listing Japanese encephalitis, Equine encephalitis (Eastern and Western), and Venezuelan equine encephalomyelitis.

At this meeting, the Commission agreed with the draft terms of reference of the *ad hoc* Group to be tasked with the revision of the disease-specific chapters, and provided advice on the potential experts of the *ad hoc* Group. The Commission noted that the first meeting of this *ad hoc* Group is tentatively planned for June 2024, and the report of the meeting and the draft revised chapters will be presented to the Commission at its September 2024 meeting.

5. Official animal health status

5.1 *Annual reconfirmations for maintenance of status*

The Commission was updated on the development of the Disease Status Management Platform (DSMP) initiated in 2023 in line with the strategic objectives of the WOAH 7th Strategic Plan for optimising data governance through digital transformation. The DSMP is aimed to serve as a secure, centralised system for archiving, tracking, searching, and submitting all necessary documents related to the official recognition and maintenance of animal health status, and the self-declaration of disease freedom. At the same time, it aims to facilitate information exchange between WOAH and Members, ensure Members have an easy and secure access to their documents and reports, and also are able to consult all relevant guidance related to these procedures.

The Commission was informed that the first component of DSMP on the annual reconfirmation procedure was launched for the 2023 campaign. The DSMP consists of two more components, one related to the submission of applications for official recognition of animal health status and endorsement of official control programmes and the other on the publication of self-declarations, which are under development.

5.1.1 *Comprehensive review of annual reconfirmations for pre-selected status and all WOAH-endorsed official control programmes*

The Commission comprehensively reviewed the annual reconfirmations of the Members who were preselected at its last meeting in September 2023. A summary of the Commission's discussions and recommendations on this matter can be found in Annex 3.

The Commission noted with appreciation that, despite this 2023 campaign being the first time to use the newly launched DSMP, a high proportion of Members (80%) successfully submitted their annual reconfirmations by the deadline. Nevertheless, taking the example of its decision to suspend for a first time a Member's official status due to failure of submission of the annual reconfirmation and documented evidence by the end of January of the following year, the Commission re-emphasised the importance of timely submission of annual reconfirmations. According to the relevant Resolutions adopted by the World Assembly of Delegates and the Standard Operating Procedure on reconfirmation of animal health status and of endorsement of official control programmes of Members, Members should reconfirm during the month of November each year providing the information as prescribed in the *Terrestrial Code*.

5.1.2 *Report of the annual reconfirmation assessments by the Status Department*

The Commission reviewed and endorsed the report prepared by the Status Department on the remaining annual reconfirmations (those that were not selected for comprehensive review). The Commission also reviewed the annual reconfirmations, for which the Status Department required the Commission's scientific advice.

The report of all annual reconfirmations, including the recommendations and conclusion of the Commission, is attached as Annex 3.

5.1.3 *Form for the annual reconfirmation of the BSE risk status of Members*

Considering the changes in the BSE surveillance requirements of the newly adopted BSE standards in May 2023, which no longer involve minimal target surveillance points, the Commission agreed with the WOAH Status Department Secretariat to replace the request to provide a specific reporting period at the top of the annual reconfirmation form for BSE by the request to provide data for 'the past 12 months'. The updated form is available in Annex 4.

5.2 Specific update on official animal health status

5.2.1 Update on situation of countries/zone with suspended or reinstated animal health status

The Commission took note that the 'FMD free zone where vaccination is not practised' status of the zone including central and eastern parts of Karaganda region and southern parts of Akmola and Pavlodar regions of Kazakhstan had been suspended for more than two years and, according to the requirements of the Terrestrial Code, future recovery of FMD free status would have to follow the provisions of Articles 8.8.2 or 8.8.3.

5.3 State of play and prioritisation of expert mission to Members requested by the Commission

5.3.1 State of play and prioritisation

The Commission reviewed and prioritised the missions for official recognition and for maintenance of animal health status and the endorsement of official control programmes to be undertaken, considering the priority issues identified by the Commission when reviewing the applications for official recognition as well as the annual reconfirmations submitted in November 2023. The prioritised list of missions will be confirmed following consultation with the Director General.

5.4 Standards and procedures related to official status recognition

5.4.1 Official status recognition & maintenance: Non-compliance vs Equivalence

The Commission continued its discussions from previous meetings on the issue of certain Members with an official animal health status importing commodities from countries or zones not officially recognised as free by WOAH for the respective disease without fully complying with the relevant provisions of the *Terrestrial Code*.

The Commission took note that the rationale provided by Members in some cases was that legislation/regulation of regional economic or political unions was followed especially to facilitate movements of commodities between countries of the same region considered disease-free based on a risk assessment by the importing country or on the reporting of the exporting country to WAHIS (e.g., disease never reported or not recently reported).

The Commission reiterated that, according to the definition of 'infected country or zone' under the chapters of the *Terrestrial Code* for the diseases for which WOAH grants an official status, a country or zone shall be considered as infected when the requirements for acceptance as a disease-free country or zone are not fulfilled. The Commission acknowledged that countries not officially recognised by WOAH as free from one of these diseases of concern could not be considered as infected by default. Nevertheless, the Commission emphasised that, in case alternative measures to the ones stipulated in the relevant articles for imports from infected countries are applied to imports from such countries, Members should provide documented evidence that Chapter 5.3. 'WOAH procedures relevant to the Agreement on the Application of Sanitary and Phytosanitary Measures of the World Trade Organization' has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of the disease-specific chapters of the *Terrestrial Code* (Figure 1).

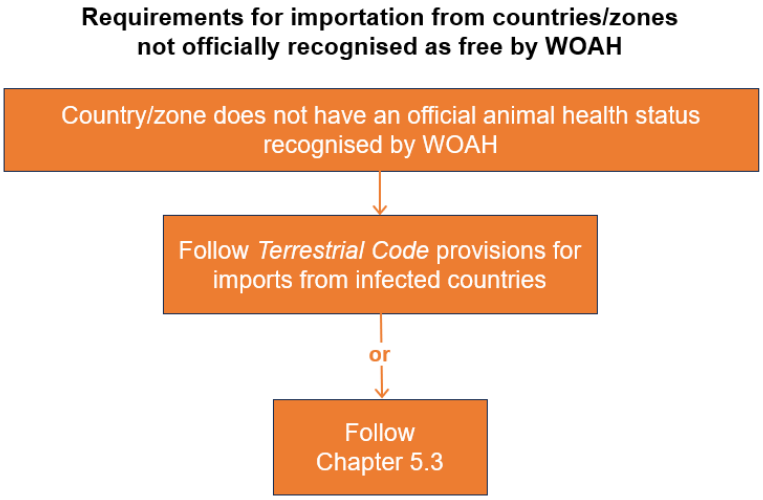

Figure 1. Requirements for importation from countries/zones not officially recognised as free by WOAH.

The Commission reiterated that Members having an official animal health status recognised by WOAH have the responsibility to comply with WOAH standards under the disease-specific chapters or demonstrate that alternative measures in place provide a level of protection that is equivalent, in accordance with Chapter 5.3. The Commission recommended that Members having an officially recognised status that apply alternative measure to those described in the disease-specific chapters should, within a period of five years, provide WOAH with the relevant documentation demonstrating that their measures meet the criteria of equivalence in Chapter 5.3.

The Commission had discussed in previous meetings that some of the non-compliances observed could be resolved by inclusion of additional articles in the disease-specific chapters of the *Terrestrial Code*. Taking the example of FMD and CSF for which the provisions already exist, having recommendations for importation of domestic small ruminants destined for slaughter from countries or zones infected with PPRV under Chapter 14.7. could respond to the needs of some Members in providing alternative provisions to safely import/trade small ruminants while saving the cost of testing every individual animal according to Article 14.7.10. of the *Terrestrial Code* (see item 4.1.3. of this report). The Commission agreed to consult the Code Commission on this matter for inclusion in its future work programme.

6. Global control and eradication strategies

6.1 Rabies. Global Strategic Plan to End Human Deaths from Dog-Mediated Rabies: Zero by 30

The Commission was informed that the United Against Rabies (UAR) Forum now encompasses 70 organisations from a diverse range of sectors, with representation from more than 30 countries, all supporting the implementation of activities in 'Zero by 30: the Global Strategic Plan to end human deaths from dog-mediated rabies by 2030' (Zero by 30). During 2023, key outputs of this network included 'Oral vaccination of dogs against rabies: Recommendations for field application and integration into dog rabies control programmes', a 'Public Information Toolkit for Rabies Prevention' and the 'Dog vaccination – barriers and solutions' guidance outlining solutions to help stakeholders overcome key barriers to dog vaccination.

The Commission was updated about the UAR continued advocacy and communication efforts, with six podcast episodes of 'Rabies Today' produced, regular United Against Rabies

webinars (Rabies surveillance: what gets measured gets done; Oral Rabies Vaccination; Voices for Change: The power of communication for rabies control; Eliminating dog-mediated rabies: addressing barriers to scaling up dog vaccination campaigns), quarterly newsletters disseminated outlining key events and outputs, and an 'Experts Call to Action on Rabies' which contributed to the unpausing of Gavi's commitment to include post-exposure prophylaxis in their investment strategy.

The Commission was Informed about the 2023 United Against Rabies Forum Stakeholder meeting was held 6-8 November 2023 as a hybrid event, with in-person participation taking place at the headquarters of the Food and Agriculture Organization of the United Nations, in Rome, Italy. This hybrid format allowed wider and more inclusive participation of United Against Rabies Forum members and ensured that all members had an opportunity to review the activities and outputs of 2023 and propose priority activities for 2024. The 2023 United Against Rabies Forum Review outlines the key outputs of 2023, and priority areas for the network to focus on in 2024.

The Commission commended the progress made by the UAR forum so far and acknowledged the support provided to Members for dog mediated rabies control through the forum.

6.2 Avian Influenza. Global Control Strategy. Animal Health Forum. OFFLU

The Commission was briefed on OFFLU's (Joint WOAH-FAO Network of Expertise on Animal Influenza) and WOAH activities on avian influenza. During the reporting period, the avian influenza epidemic continued with high numbers of detections reported globally in poultry and non-poultry including wild birds and the first incursion of the HPAI H5 virus in the Sub-Antarctic region was detected in October 2023 in South Georgia. OFFLU experts pointed out that the negative impact of HPAI H5 on Antarctic wildlife could be immense and can result in high mortality.

The Commission was also informed that in December 2023, WOAH published a policy brief on the use of avian influenza vaccination: *' Avian influenza vaccination: Why it should not be a barrier to safe trade'*. The purpose of this document is to remind national authorities that vaccination, when used in accordance with WOAH international standards, is compatible with safe trade in domestic birds and their products.

For the September 2023 WHO vaccine composition meeting, data for 1368 HPAI H5 and 117 H9 avian influenza genetic sequences were contributed by animal health laboratories in countries representing Africa, the Americas, Asia, Europe and Oceania. Additionally, data for 191 swine H1 sequences and 49 swine H3 sequences were analysed and submitted. Antigenic characterisations were undertaken by OFFLU contributing laboratories and subsequently there were updates to the WHO recommendations for the development of new candidate vaccine viruses for pandemic preparedness purposes.

The Commission was informed of OFFLU embarking on a project called avian influenza matching (AIM) to provide real time antigenic characteristics of circulating avian influenza viruses in different regions to support poultry vaccination. A preliminary pilot project has been taking place involving selected Reference Centres and OFFLU experts. In October 2023, the report was released presenting the results of this project to support stakeholders and countries in their decisions regarding vaccine selection and vaccine match.

The Commission was informed about the revision plan of the *Terrestrial Manual* chapter on avian influenza by the Biological Standards Commission with the support of WOAH Reference Laboratories avian influenza experts for an in-depth revision with the aim for adoption in May 2025.

The Commission was informed of the progress in implementing the framework on avian influenza (June 2023 – May 2025) for the implementation of Resolution No. 28 how the

progress is monitored through a dedicated monitoring and evaluation tool that collects, tracks, and evaluates the execution of activities on a quarterly basis.

Lastly, the Commission was informed about the development of the new GF-TADs HPAI strategy for 2024–2033 that is ongoing and the draft strategy is set to undergo consultations and commenting process with different stakeholders including Members in March 2024 aiming for a launch in May 2024. The Commission was also invited to be part of this process and provide its feedback.

The Commission commended the publication of policy brief on vaccination and noted that it was indeed a useful document for Members. The Commission appreciated the progress so far in the implementation of Resolution No 28 and also agreed to provide feedback on the draft HPAI strategy.

7. Liaison with other Commissions and Departments

7.1 Terrestrial Animal Health Standards Commission (Code Commission)

The Bureaus (i.e. the President and two Vice-Presidents) of the Code Commission and the Commission held a meeting chaired by Dr Montserrat Arroyo. The purpose of the meeting was to provide joint updates on relevant standing items, to agree on how to address any points that may impact the potential adoption of important standards and to agree on the plans to undertake work of common interest.

At the meeting, the Bureaus were updated on ongoing works based on the SOP for listing decisions for pathogenic agents and the SOP for determining whether a disease should be considered as emerging. The Bureaus also discussed subjecting Nairobi sheep disease virus to an assessment against the criteria for listing (see Item 8.2.) and agreed on the next tranche of case definitions to be developed for terrestrial animal listed diseases to support notification (see Item 8.3.1.).

The Bureaus discussed the following *Terrestrial Code* chapter to be proposed for adoption in May 2024:

- Chapter 8.8. 'Infection with foot and mouth disease virus' (see Item 3.1.1.);

Acknowledging the impact of the adoption of revised Chapters 11.5. and 12.1. on the procedure on annual reconfirmation for maintenance of officially recognised AHS and CBPP status of Members and the related administrative work for both Members and WOAH, the Bureaus agreed that it would be beneficial that the revised Chapter 11.5. 'Infection with Mycoplasma mycoides subsp. Mycoides SC (Contagious bovine pleuropneumonia)' and revised Chapter 12.1. 'Infection with African horse sickness virus' are not presented for adoption at the upcoming General Session. and rather re-examined in September after review of the potential the consequences on the procedure by the Secretariat.

The Bureaus also discussed plans for the following works which require the Commissions' coordination:

- Chapter 4.4. 'Zoning and compartmentalisation' and development of a new Chapter 4.Y. 'Implementation of Zoning' (see Item 3.2.1.);
- Chapter 14.8. 'Scrapie' (see Item 4.3.1.);
- Revision of *Terrestrial Code* chapters on equine encephalitides (see Item 4.3.2.);
- Framework for *Terrestrial Code* standards (see Item 7.1.1.);
- Animal hosts to be targeted by WOAH Standards for a listed disease (see Item 7.1.2.) and associated implications on notification obligations.

7.1.1 Framework for Terrestrial Code standards

The Commission was briefed that in February 2021, the Code Commission had agreed to develop a framework for Terrestrial Code Standards that would serve as a useful guide to ensure standardisation of *Terrestrial Code* content. Since then, the Code Commission has worked closely with the Secretariat, in consultation with the Commission and the Biological Standards Commission where relevant, to develop a document that provides a detailed description of the structure and content of a disease-specific chapter, i.e. Volume II of the *Terrestrial Code*, including key references to other parts of the *Terrestrial Code* and other WOAH Standards, and conventions regarding the use of terms and structure. The Commission was presented with the first edition of the framework and noted that it would be a living document, used as reference for those undertaking work on the development of new or revised chapters.

The Commission commended the effort that has gone into developing the framework, agreeing that it would be a useful reference for experts undertaking work on disease-specific chapters of the *Terrestrial Code* and to promote consistency across the chapters. The Commission also recommended that the framework be shared with the *ad hoc* Groups on Scrapie and Equine Encephalitides for their use and to solicit feedback.

7.1.2 Animal hosts to be targeted by WOAH standards for a listed disease

The Commission was informed of the discussion of the Code Commission at its September 2023 meeting to develop a clear and consistent approach to defining how animal hosts for a listed disease, infection or infestation would be included in the *Terrestrial Code* and the *Terrestrial Manual*, and considered a proposal from the Secretariat of both Commissions to approach this work through a joint taskforce, given that this dovetailed with the Commission's work on case definitions.

From its experience in reviewing case definitions proposed by subject-matter experts and *ad hoc* Groups, the Commission had noted the varying considerations that were raised when determining animal hosts to be included in the case definition, notwithstanding epidemiological significance. The Commission supported this work to establish consistency across listed diseases, infections and infestations, and noted that any guidance or criteria used should not be rigid, but serve to provide experts with a set of considerations that they should take into account whilst assessing the relevance of animal hosts.

The Commission was also briefed that the Code Commission had received a Member's request for clarity on notification obligations in Chapter 1.1. when it comes to unusual host species, and noted that this would also be addressed as part of the work on animal hosts.

7.2 Biological Standards Commission

The Commission and the Biological Standards Commission both have responsibilities in the ongoing work of developing case definitions, and in the assessment of pathogenic agents against the criteria for listing in Chapter 1.2. of the *Terrestrial Code*. At this meeting, the Commission considered the Biological Standards Commission's opinion on two proposed case definitions (see Items 8.3.2.1. and 8.3.2.3.).

8. Disease control: specific issues

8.1 Emerging diseases

The Commission was informed that currently there were no ongoing assessments and requests received for whether a disease should be considered emerging as per the Standard Operating Procedure.

8.2 Evaluation of pathogenic agent against listing criteria of Terrestrial Code Chapter 1.2.

The Commission noted that there were no ongoing assessments of pathogenic agents against the listing criteria of *Terrestrial Code* Chapter 1.2. In its discussion on Nairobi sheep disease (NSD), the Commission recommended assessing NSD against the criteria of Chapter 1.2. 'Criteria for the inclusion of diseases, infections and infestations in the WOAH list' of the T*errestrial Code* (see Item 8.3.2.2.).

The Commission was also informed that there had been a Member request to reinstate low pathogenicity avian influenza (LPAI) as a listed disease and the Code Commission's assessment to not embark on this work, given that the listing of avian influenza viruses had recently been reviewed, along with corresponding standards in Chapter 10.4. 'Infection with avian influenza viruses'. The Commission concurred with the recommendation and highlighted the importance of continuing to monitor circulating strains and implementation of the recently revised standards (see Item 7.2.).

8.3 Development of case definitions

8.3.1 Case definition process and progress update

The Commission noted the progress made with development of case definitions to date, and appreciated the opportunity to review this with the Code Commission at the meeting of the Bureaus of the two Commissions. Furthermore, the Commission reviewed three case definitions (infection with avian metapneumovirus, infection with Nairobi sheep disease virus and infection with *Francisella tularensis*). The Commission noted the efforts made to incorporate feedback received in the development of new case definitions and the usefulness of the joint review of case definitions with the Biological Standards Commission.

The Commission was briefed by the Secretariat on the remaining listed diseases, infections and infestations for which a case definition was missing or incomplete in the *Terrestrial Code*. The Commission, in agreement with the Code Commission at the Bureaus meeting, supported the Secretariat proposal to focus on the following diseases in the upcoming year: paratuberculosis and caprine arthritis-encephalitis (CAE) and maedi-visna (MV). The Commission noted that case definition development for scrapie and equine encephalitides (Eastern, Western, Venezuelan), would be undertaken through the WOAH *ad hoc* Groups which would be convened to work on *Terrestrial Code* Chapters for equine encephalitides (see item 8.1.) and Chapter 14.8. Scrapie (see item 5.2.4.).

In addition, the Commission recommended prioritising case definition development on sheep and goat pox, due to its incursion into new areas, apparent under-reporting, and purported difficulties in diagnosis owing to recombination between lumpy skin disease virus and sheep and goat pox virus. Furthermore, the Commission noted that since *Terrestrial Code* Chapter 14.9. on sheep and goat pox has not been updated since its adoption in 1986, it recommended to review Chapter 14.9. thoroughly to include up-to-date recommendations on disease prevention, control and surveillance which would benefit Members in controlling the disease. The Commission recommended developing the case definition for sheep and goat pox as part of the revision of the Chapter.

In reference to the proposal to develop case definitions for CAE and MV, the Commission noted that since both diseases are similar and grouped together as the small ruminant lentiviruses in the *Terrestrial Manual* Chapter 2.7.23., it would be possible to invite the same experts to work on the case definitions. Resource-permitting, the Commission recommended to also develop a case definition for contagious caprine pleuropneumonia in the next tranche, as it is a significant disease in endemic areas.

8.3.2 Case definitions

8.3.2.1 Infection with Avian metapneumovirus (Turkey rhinotracheitis)

At its September 2023 meeting, the Commission had received a point of clarification from the Code Commission regarding the animal hosts to be included in the case definition for infection with avian metapneumovirus (turkey rhinotracheitis). Whilst reviewing the comment from the Code Commission, the Commission also noted that information on detection of antigen in respiratory tissues, which was recommended as a diagnostic criterion by experts, was not described in *Terrestrial Manual* Chapter 3.3.15. 'Turkey rhinotracheitis (avian metapneumovirus infections)'. The Commission therefore requested the Secretariat to seek additional clarification from experts.

At this meeting, the Commission reviewed the clarification provided by the experts. The Commission was also informed that the Biological Standards Commission will propose an amendment to *Terrestrial Manual* Chapter 3.3.15. to remove antigen detection in respiratory tissues from Table 1, after considering expert comments that this was an outdated method and that there is no standardised protocol. Correspondingly, the Commission amended the draft case definition to delete 'antigen detection' as one of the diagnostic criteria.

Regarding the scope of animal hosts, the Commission confirmed that the most epidemiologically relevant species are 'poultry', as currently defined in the Glossary of the *Terrestrial Code and* that the animal hosts for notification should not be expanded to 'aves'. It considered that the other subpopulations outside of 'poultry', including wild birds, do not play a significant role in the epidemiology of the disease. Furthermore, the Commission noted that this is aligned with the approach that has been applied to the case definitions for recently adopted avian disease chapters in the *Terrestrial Code* (e.g. Chapter 10.4. 'Infection with avian influenza viruses' and Chapter 10.9. 'Infection with Newcastle virus').

The opinion of the Commission was forwarded to the Code Commission.

8.3.2.2 Infection with Nairobi sheep disease virus (Nairobi sheep disease)

At its September 2023 meeting, the Commission considered the information provided by the Secretariat on the absence of reporting of Nairobi sheep disease (NSDV) by Members and apparent limited impacts to animal health, and was requested to provide guidance on next steps for developing a case definition. The Commission had requested the Secretariat to consult experts from the field to acquire more information on the occurrence and economic importance of NSDV. Based on the new information, the Commission would make the decision on whether to proceed with the development of a case definition or its assessment against the listing criteria.

At this meeting, the Secretariat presented the Commission with the opinion from two experts who operate in areas where NSDV had been detected in ticks. The actual incidence of NSDV in animals is unknown given the lack of apparent outbreaks, and NSD is not a priority disease in their countries. One expert suggested that the absence of reported cases could be due to the circulating strains being of a weak virulence. Nonetheless, given that transmission occurs via ticks, caution should be exercised with environmental factors favouring expansion of vector range to reach naïve populations.

The Commission considered the experts' opinions and noted that since infection with NSDV had not been reported by Members, there have been no significant outbreaks in the last ten years and there was an apparent lack of pathogenicity of the virus even if it was known to be circulating in ticks. The Commission recommended subjecting NSDV to an evaluation against the listing criteria of *Terrestrial Code* Chapter 1.2.

(Step 1.1.b of the standards operating procedure for listing decision for pathogenic agents of the terrestrial animals).

8.3.2.3 *Infection with Francisella tularensis (Tularemia)*

The Commission reviewed the draft case definition for infection with *Francisella tularensis* (tularemia) prepared by the experts, along with the accompanying technical report and the Biological Standards Commission's opinion on the case definition. This report summarises their combined position.

In terms of the pathogenic agent, both Commissions agreed with the experts' opinion that for the purposes of notification, only two subspecies, *Francisella tularensis subsp. tularensis* (Type A) and *Francisella tularensis subsp. holarctica* (Type B) are relevant.

The Commission also agreed with the experts' view that all animals under the Orders *Lagomorpha* and *Rodentia* are epidemiologically relevant and important to be considered as the animal host species for notification for tularemia. The Commissions noted that animals in the aforementioned orders are natural hosts for *Francisella tularensis* and despite the reports of tularemia occurring in other animal species such as dogs and sheep, these are considered to be incidental or dead-end hosts. The Commissions also considered that the risk of transmission via mechanical carriage from these other animal species is low, and therefore agreed with the experts to exclude these from the case definition. The Commissions also agreed that as tularemia is primarily a disease of wild lagomorphs and rodentia, wild animals of these orders should also be included in the case definition.

Both Commissions noted that the experts had recommended three options (isolation, nucleic acid and antigen detection, and antibody detection, excluding seroconversion) as part of the diagnostic criteria to confirm a case of infection with *Francisella tularensis.* The Biological Standards Commission agreed with the expert's opinion that detection of nucleic acid specific to *Francisella tularensis* without any evidence on clinical and epidemiological criteria is sufficient, but in case of antigen detection, it would be insufficient and recommended combining with supporting clinical and epidemiological evidence as per usual case definition construct. The Commission, however, considered that an epidemiological link is essential even in the case of detection of nucleic acid to rule out false positives. Furthermore, adding the requirement for clinical or epidemiological link would be consistent with the case definition approach used for other diseases, given that it is unlikely for Veterinary Services to rely on a diagnostic test result alone (with the exception for isolation) to classify a positive detection as a case. Therefore, the Commission recommended that both nucleic acid and antigen detection should be complemented with clinical signs and/or epidemiological links to a confirmed case, and this could also be a human case.

Regarding the detection of antibodies, both the Biological Standards Commission and the Commission did not agree with the experts' opinion that the detection of antibodies alone is sufficient to define an animal host as a case, as it was important to rule out the possibility of false positives since cross-reactions may occur. In view of this, both Commissions recommended reinstating the option for seroconversion. Instead of having 'seroconversion' as a standalone option, the Commission recommended including this under the option for antibodies, noting that 'seroconversion' is defined in the *Terrestrial Manual* as a four-fold or more rise in antibody titres or a change from seronegative to seropositive condition. As an additional observation, both the Commissions proposed to not refer to antibodies 'specific to (pathogenic agent)' if the antibodies mounted are not specific. The experts' report is provided as Annex 5.

The opinion of the Commission was forwarded to the Code Commission.

9. For Commission information

9.1 Updates on standing items

9.1.1 WOAH Standards Online Navigation Tool Project

The Commission was updated on the WOAH Standards Online navigation tool project, which is a project aimed at providing users with streamlined access and navigation of WOAH Standards.

The project will deliver three new user interfaces, on the WOAH Website:

- Navigation and search tool; this interface will provide a guided navigation experience that will allow users to navigate through the WOAH Codes and Manuals.
- Recommendations for safe international trade, by commodity; this interface will enable users to easily visualise recommendations for safe international trade by commodity through a comprehensive filtering system.
- Management of Standards; this interface will enable WOAH staff to efficiently manage and update WOAH International Standards, following adoption of new or revised text at the WOAH General Assembly.

The tool will be demonstrated at a kiosk at the 91st General Session in May 2024 and is projected to go 'live' in July 2024.

This project represents a significant milestone in WOAH's commitment to enhance access and utilisation of WOAH standards and contributes to the objectives of the 7th Strategic Plan to implement digital transformation, respond to Members' needs and improve WOAH's efficiency and agility.

The Commission commended the efforts on developing the tool which would be useful for Members and Commission members alike. The Commission recommended connecting the diseases displayed as a result of a search of the Recommendations for Safe International Trade tool to the corresponding diagnostic tests from the *Terrestrial Manual*. In addition, the Commission enquired whether a similar search function could be developed for *Terrestrial Manual.* The Commission was informed that the different interfaces mentioned above rely on the digitisation of the four sets of WOAH Standards but as yet, there are still some limitations in the current content. Nevertheless, this, together with other useful connecting links across the standards could be explored in a potential sequel of this project. The Commission expressed its appreciation for the work and looked forward to receiving further updates.

9.1.2 WAHIAD and WAHIS platform updates

The Commission was updated on the state of play and timeline of the development and evolutions of the platform in 2023 which included the optimisation of the early warning and six-monthly report modules, and the development of the annual report module. The Commission was informed that sessions had been organised in 2023 with selected members of the Commissions to demonstrate WAHIS functionalities and to gather feedback on their needs. Similar sessions will follow in 2024 and the Commission was encouraged to take part in them.

The Commission was briefed on the relevant updates of the WAHIS Reference Tables completed in December 2023. The objective of this work was to align with the changes adopted in the *Terrestrial* and *Aquatic Animal Health Code, Manual of Diagnostic Tests Aquatic Animals*, and *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* at

the 2023 General Session. The Commission commended this work and agreed that good communication between the Secretariat and World Animal Health Information and Analysis Department (WAHIAD) regarding the work that might result in changes to the *Codes* and *Manuals* which will need to be reflected in WAHIS behaviour or functionality. This would enable WAHIAD to advise of any limitations or constraints that might exist from a platform reporting perspective.

Finally, the Commission was informed that WAHIAD will collaborate with Standards Department to actively participate in the standard-setting process by providing inputs to the relevant Commissions. This collaborative work will start with the *Terrestrial Animal Health Standards Commission,* but the aim is to progressively also extend it to the other Commissions.

The Commission appreciated the work done on WAHIS so far and further suggested to conduct frequent workshops for the delegates to improve their understanding of this platform.

9.1.3 Updates from WOAH Observatory

The Commission was updated on the activities of the WOAH Observatory, which aimed at monitoring the implementation of WOAH Standards by Members. The recently published thematic study on the use, challenge and benefit of zoning (report and factsheet) was presented. The following main points were highlighted:

- Zoning is mainly used to control diseases and less for trade purposes and import risk analysis
- The use of zoning has a positive impact on disease control
- A significant proportion of Members have not yet integrated WOAH standards on zoning in their regulatory framework or practices.
- Acceptance of free zones by trading partners is still a challenge and further analysis is being conducted to try to identify the factors influencing this acceptance.

The Commission provided positive feedback on the importance of the work conducted by the Observatory and discussed the case of a country infected by highly pathogenic avian influenza that not only maintained but increased the international trade of poultry products as a result of zoning.

Specifically, the Commission highlighted one of the challenges identified in the zoning report on the enforcement of biosecurity requirements, concurring that buy-in and commitment from farmers and other stakeholders were an important component to ensuring that the requirements of the Veterinary Services are well understood and applied. Additionally, the Commission suggested the importance of considering social sciences to provide a comprehensive understanding of this issue.

The Commission queried the level of understanding of Members regarding the concept of zoning as some Members may not be aware of standards in Chapter 4.4. of the *Terrestrial Code* and could already be implementing zoning in response to outbreaks even without a clear notion of the zoning principles described in the *Terrestrial Code*.

When asked about the information that would be relevant to include in an Observatory report specifically dedicated to newly elected Specialist Commissions, the Commission suggested: i) a summary of what the Observatory is and intends to do, as well as a description of the frequency, content and purpose of each type of report to provide the newly elected members background on the Observatory, and ii) the key findings of the

Observatory on the main challenges related to the standards and recommendations of where the thematic focus should be.

9.1.4 Global Burden of Animal Diseases Programme (GBADs)

The Commission was updated on the progress of the Global Burden of Animal Diseases programme (GBADs) to date and noted the activities completed since February 2023 included the completion of a case study in Senegal and demonstration of utility of the GBADs approach in investment decision making processes in Senegal and Ethiopia. The Commission was also informed of WOAH's decision to reposition its involvement in GBADs from a co-leadership to an advisory and steering role, so that it may continue to evaluate the programme's scientific robustness in terms of being fit-for-purpose for WOAH Members and advise on the programme direction to ensure consistency and usefulness for WOAH Members' policy needs. The Commission appreciated the progress made by GBADs so far and looked forward to understanding the final methodology developed through this project that may inform WOAH standards and guidelines.

10. Programme and priorities

10.1 Update and prioritisation of the work programme

The Commission updated its work programme, identified the priorities, and scheduled the dates for the various *ad hoc* Group meetings, which will be accessible to Members through the WOAH website. The updated work programme is attached as Annex 6.

11. Adoption of the meeting report

The Commission adopted the report that was circulated electronically after the meeting.

12. Date of the next meeting

The next meeting of the Commission is scheduled to take place in September 2024. The dates will be determined with the newly elected Commission.

13. Meeting Review

A meeting review was conducted in accordance with the Commission Performance Management Framework.

Annex 1: Adopted Agenda

1. **Welcome**
2. **Adoption of the agenda**
3. **Terrestrial Animal Health Code**
   - *3.1. Member comments received for Commission consideration*
     - 3.1.1. Chapter 1.11. 'Application for official recognition by WOAH of free status for foot and mouth disease' and Chapter 8.8. 'Infection with FMD virus'
   - *3.2. Other considerations*
     - 3.2.1. Chapter 4.4. 'Zoning and Compartmentalisation' and plan to develop new chapter on implementation of zoning
     - 3.2.2. Chapter 11.5. 'Infection with *Mycoplasma mycoides* subsp. *Mycoides SC* (Contagious bovine pleuropneumonia)'
     - 3.2.3. Chapter 12.1. 'Infection with African horse sickness virus'
     - 3.2.4. Surra in camels
4. ***Ad hoc* and Working Groups**
   - *4.1. Meeting reports for endorsement*
     - 4.1.1. *Ad hoc* Group on the Evaluation of African Horse Sickness Status of Members: 28-29 September and 5 October 2023
     - 4.1.2. *Ad hoc* Group on the Evaluation of Official Control Programmes for Dog-mediated Rabies: 4 & 6 October 2023
     - 4.1.3. *Ad hoc* Group on the Evaluation of Peste des petits ruminants Status of Members: 17–19 October 2023
     - 4.1.4. *Ad hoc* Group on the Evaluation of Foot and Mouth Disease Status of Members: 23-26 October 2023
     - 4.1.5. *Ad hoc* Group on the Evaluation of Contagious Bovine Pleuropneumonia Status of Members: 5- 7 December 2023
   - *4.2. Meeting reports for information*
     - 4.2.1. Working Group on Wildlife
     - 4.2.2. *Ad hoc* Group on Emerging Diseases (including reemerging diseases) and Drivers of Disease Emergence in Animals
     - 4.2.3. *Ad hoc* Group on Alternative Strategies for the Control and Elimination of Mycobacterium tuberculosis complex Infection (MTBC) in Livestock
   - *4.3. Planned ad hoc Groups and confirmation of proposed agendas*
     - 4.3.1. Chapter 14.8. 'Scrapie'
     - 4.3.2. Revision of Terrestrial Code chapters on equine encephalitides
5. **Official animal health status**
   - *5.1. Annual reconfirmations for maintenance of status*
     - 5.1.1. Comprehensive review of annual reconfirmations for pre-selected status and all WOAH-endorsed official control programmes
     - 5.1.2. Report of the annual reconfirmation assessments by the Status Department
     - 5.1.3. Form for the annual reconfirmation of the BSE risk status of Members

5.2. Specific update on official animal health status

5.2.1. Update on situation of countries/zone with suspended or reinstated animal health status

5.3. State of play and prioritisation of expert mission to Members requested by the Commission

5.3.1. State of play and prioritisation

5.4. Standards and procedures related to official status recognition

5.4.1. Official status recognition & maintenance: Non-compliance vs Equivalence

6. Global control and eradication strategies

6.1. Rabies. Global Strategic Plan to End Human Deaths from Dog-Mediated Rabies: Zero by 30

6.2. Avian Influenza. Global Control Strategy. Animal Health Forum. OFFLU

7. Liaison with other Commissions and Departments

7.1. Terrestrial Animal Health Standards Commission (Code Commission)

7.1.1. Framework for *Terrestrial Code* standards

7.1.2. Animal hosts to be targeted by WOAH standards for a listed disease

7.2. Biological Standards Commission

8. Disease control: specific issues

8.1. Emerging diseases

8.2. Evaluation of pathogenic agent against listing criteria of Terrestrial Code Chapter 1.2.

8.3. Development of case definitions

8.3.1. Case definition process and progress update

8.3.2. Case definitions

8.3.2.1. Infection with Avian metapneumovirus (Turkey rhinotracheitis)
8.3.2.2. Infection with Nairobi sheep disease virus (Nairobi sheep disease)
8.3.2.3. Infection with *Francisella tularensis* (Tularemia)

9. For Commission information

9.1. Updates on standing items

9.1.1. WOAH Standards Online Navigation Tool Project

9.1.2. WAHIAD and WAHIS platform updates

9.1.3. Updates from WOAH Observatory

9.1.4. Global Burden of Animal Diseases Programme (GBADs)

10. Programme and priorities

10.1. Update and prioritisation of the work programme

11. Adoption of the meeting report

12. Date of the next meeting

13. Meeting Review

Annex 2: List of Participants

MEMBERS OF THE COMMISSION

Dr Cristóbal Zepeda
(President)
Regional Director
North America Region
USDA-APHIS-International Services
U.S. Embassy, Mexico City
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Dr Trevor Drew
(Vice-President)
AUSTRALIA

Dr Misheck Mulumba
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Senior Manager Research
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Dr Gregorio Torres
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Dr Monal Daptardar
Scientific Coordinator
Science Department

Dr Min Kyung Park
Head
Status Department

Dr Charmaine Chng
Deputy Head
Science Department

Dr Natalie Moyen
Disease Status Officer
Status Department

Dr Anna-Maria Baka
Chargée de mission
Status Department

Annex 3: Report of the annual reconfirmation assessments for maintenance of official animal health status and of the endorsement of official control programmes

During its February 2024 meeting, the Scientific Commission for Animal Diseases (the Commission) comprehensively reviewed all annual reconfirmations provided by Members having an endorsed official control programme on the progress made, as well as a selection (approximately 10%) of the annual reconfirmations for officially recognised status. The Commission pre-selected these annual reconfirmations at its September 2023 meeting based on the list of technical and administrative considerations according to the Standard Operating Procedures (SOP) on reconfirmations: Official Disease Status - WOAH - World Organisation for Animal Health.

A reminder letter was sent in October 2023 by the Director General of WOAH to the Delegates of Members having at least one officially recognised animal health status or an endorsed official control programme. The pre-selected Members were also informed of their official status being selected for a comprehensive review.

In accordance with the Standard Operating Procedures governing the official recognition of animal health status, all annual reconfirmations were screened by the Status Department. When necessary, additional information was requested in accordance with the relevant provisions of the *Terrestrial Animal Health Code (Terrestrial Code)*. A report was prepared and provided for the Commission's consideration and endorsement, as presented below.

1. Maintenance of the AHS-free status

1.1. Annual reconfirmations comprehensively reviewed by the Commission

The annual reconfirmations of Austria, Kazakhstan, Oman, Philippines and Romania were selected for comprehensive review by the Commission. Specific comments made by the Commission were:

Austria: The Commission noted that horses were imported from countries not officially recognised AHS-free by WOAH and that the conditions applied to these imports were not fully aligned with Article 12.1.7 of the Terrestrial Code. The Commission strongly encouraged Austria to provide in its 2024 annual reconfirmation documented evidence demonstrating full compliance with Article 12.1.7. of the Terrestrial Code or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 12.1.

Kazakhstan: The Commission commended Kazakhstan for addressing the Commission's recommendations. The Commission encouraged Kazakhstan to continue providing information on the importation of equids, including documented evidence demonstrating compliance with Chapter 12.1. and in particular Article 12.1.7. of the Terrestrial Code in future annual reconfirmations.

Oman: The Commission acknowledged that Oman had addressed the request from the Commission further to the annual reconfirmation of 2023 by updating the general conditions for permanent importation of horses and the correspondent health certificate in order to comply with Article 12.1.7. of the Terrestrial Code. However, the Commission noted that the same conditions were not implemented for the temporary importation of horses from countries not officially recognised AHS-free by WOAH. In particular, horses were not submitted to a 28-day quarantine in vector-protected facilities and AHS testing prior to shipment. The Commission stressed that

Article 12.1.7 applies to all horse imports from infected countries regardless of the duration of the import (permanent or temporary). In this regard, the Commission requested Oman to revise the provisions for temporary imports of horses from countries not officially recognised AHS-free by WOAH and provide an updated veterinary health certificate for such imports to WOAH showing full compliance with Article 12.1.7. of the Terrestrial Code when reconfirming in November 2024, or provide documented evidence that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 12.1.

Philippines: The Commission noted the information provided by the Philippines on AHS surveillance activities and ongoing efforts to participate in an international proficiency testing scheme for AHS diagnostic tests organised by a WOAH Reference Laboratory. The Commission looks forward to receiving the outcome of the Philippines' national laboratory's participation in the interlaboratory proficiency testing for AHS in its annual reconfirmation in November 2024.

Romania: The Commission noted that horses were imported from countries not officially recognised AHS-free by WOAH and that the conditions applied to these imports were not fully aligned with Article 12.1.7 of the *Terrestrial Code*. The Commission strongly encouraged Romania to provide in its 2024 annual reconfirmation documented evidence demonstrating full compliance with Article 12.1.7. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 12.1.

Conclusion: The Commission recommended the maintenance of the officially recognised AHS-free status of the above-listed Members.

1.2. Annual reconfirmations screened by the Status Department

The Status Department reviewed the rest of the annual reconfirmations for AHS-free status and reported the outcome of its analysis to the Commission as follows:

The annual reconfirmations for the following Members were reviewed:

Algeria	Cyprus	Kuwait	Portugal [1]
Andorra	Czech Rep.	Latvia	Qatar
Argentina	Denmark	Liechtenstein	Singapore
Australia	Ecuador	Lithuania	Slovakia
Azerbaijan	Estonia	Luxembourg	Slovenia
Bahrain	Finland [2]	Malaysia	Spain [3]
Belgium	France [4]	Malta	Sweden
Bolivia	Germany	Mexico	Switzerland
Bosnia and Herzegovina	Greece	Morocco	Thailand
Brazil	Hungary	New Caledonia	The Netherlands
Bulgaria	Iceland	New Zealand	Tunisia
Canada	India	North Macedonia (Rep. of)	Türkiye
Chile	Ireland	Norway	United Arab Emirates
China (People's Rep. of) [5]	Italy	Paraguay	United Kingdom [6]

[1] Including Azores and Madeira.
[2] Including Åland Islands
[3] Including Balearic Islands and Canary Islands.
[4] Including French Guiana, Guadeloupe, Martinique, Mayotte, Réunion, Saint Barthélémy, Saint Martin, Saint Pierre and Miquelon.
[5] Including Hong Kong and Macau.
[6] Including Cayman Islands, Guernsey (incl. Alderney and Sark), Isle of Man, Jersey, Saint Helena and Falkland Islands (Malvinas). (A dispute exists between the Government of Argentina and the Government of the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas) (see resolution 2065 (XX) of the General Assembly of the United Nations).

Chinese Taipei	Japan	Peru	United States of America[7]*
Colombia*	Korea (Rep. of)	Poland	Uruguay
Croatia			

The Status Department raised the Commission's attention to the Members marked with an asterisk (*). The corresponding annual reconfirmations were discussed during the Commission's meeting as follows:

Colombia: The Commission noted that horses from Colombia had been exported for a temporary period to a country not officially recognised by WOAH as AHS-free and returned to Colombia without having been subjected to quarantine in vector protected facilities and laboratory testing for AHS prior to shipment, as per Article 12.1.7. of the *Terrestrial Code*. The Commission requested Colombia to provide documented evidence demonstrating full compliance with Article 12.1.7. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 12.1. when reconfirming in November 2024,

United States of America: The Commission noted that horses were imported from countries not officially recognised as AHS-free by WOAH. As a consequence of the different status recognition followed by the United States of America, horses were imported from those countries without having been subjected to quarantine in vector-protected facilities and laboratory testing for AHS prior to shipment, as per Article 12.1.7. of the *Terrestrial Code*. The Commission strongly encouraged the United States of America to provide in its 2024 annual reconfirmation documented evidence to demonstrate full compliance with Article 12.1.7. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 12.1.

Conclusion: The Commission recommended the maintenance of the officially recognised AHS-free status of the above-listed Members.

2. Maintenance of BSE risk status

With reference to the adoption of the new BSE standards at the 2023 General Session, the Commission noted that the specific reporting period of this annual reconfirmation covers the transition between the past and current standards. In light of this, the Commission agreed to maintain the BSE risk status of the Members who had not reached minimal target surveillance points or sampled from less than three of the four subpopulations (routine slaughter, fallen stock, casualty slaughter, and clinical suspects).

2.1. Maintenance of the controlled BSE risk status

2.1.1. Annual reconfirmation comprehensively reviewed by the Commission

The annual reconfirmations of **Ecuador** and the **United Kingdom** were selected for comprehensive review by the Commission. Specific comments made by the Commission were as follows:

Ecuador: The Commission acknowledged the information provided by Ecuador about the audits of rendering plants and testing for cross-contamination in feed mills, where some investigations are still in progress. The Commission underlined the importance of continuing inspections of feed mills and rendering plants to prevent the potential recycling of the BSE agent and its entry into the feed chain and requested that the outcomes of corrective measures still being implemented be provided in next year's annual reconfirmation.

United Kingdom (**one zone** consisting of England and Wales as designated by the Delegate of the United Kingdom in documents addressed to the Director General in September and October 2016 and in November 2021): The Commission commended the

[7] Including American Samoa, Guam, Northern Mariana Islands, Puerto Rico and US Virgin Islands.

UK for having developed a Code of Practice for farmers concerning the cleaning and disinfecting of feed silos, for the BSE awareness activities implemented, having progressed on the analysis of silo samples, and the online survey of cattle farmers. The Commission would appreciate receiving an update, including the pending test results, when the UK reconfirms its controlled BSE risk status (Zone covering England and Wales) in November 2024.

Conclusion: The Commission recommended the maintenance of the officially recognised BSE risk status of the above-listed Member and zone.

2.1.2. Annual reconfirmations screened by the Status Department

The Status Department reviewed the rest of the annual reconfirmations for controlled BSE risk status and reported the outcome of its analysis to the Commission as follows:

The annual reconfirmations for the following Members were reviewed:

Chinese Taipei	United Kingdom[8]
Greece	Russia

Conclusion: The Commission recommended the maintenance of the officially recognised controlled BSE risk status of the above-listed Members and zones.

2.2. Maintenance of a negligible BSE risk status

2.2.1. Annual reconfirmations comprehensively reviewed by the Commission

The annual reconfirmations of **Austria**, **China (People's Rep. of), India** and **Panama** were selected for comprehensive review by the Commission. Specific comments made by the Commission were as follows:

Austria: The Commission noted the information provided by Austria in the annual reconfirmation and encouraged Austria to continue its activities regarding the maintenance of its negligible BSE risk status.

China (People's Rep. of)[9]: The Commission noted that China would provide its updated risk assessment following the provisions of the new BSE standards in June 2024. The Commission further noted that live cattle had been imported into China from a country with an undetermined BSE risk status and concluded that the provisions for these imports were compliant with Article 11.4.10. of the *Terrestrial Code*. The Commission requested that China clearly describe in the updated risk assessment how the risk of such imports is being managed to ensure no potential recycling of the BSE agent in China. The Commission requested that the updated risk assessment be evaluated by the *ad hoc* Group on BSE risk status evaluation of Members at its 2024 meeting prior to further consideration by the Commission.

India: The Commission appreciated that India had replaced ELISA with PCR for the analyses of bovine protein in feed samples collected from feed mills producing feed for bovines, as per the Commission's recommendation. The Commission further noted that India would provide its updated risk assessment following the provisions of the new BSE standards in June 2024. The Commission requested that the updated risk assessment be

[8] One zone consisting of Scotland as designated by the Delegate of the United Kingdom in documents addressed to the Director General in September and October 2016 and in December 2018.

[9] A zone designated by the Delegate of China in a document addressed to the Director General in November 2013, consisting of the People's Republic of China with the exclusion of Hong Kong and Macau.

evaluated by the *ad hoc* Group on BSE risk status evaluation of Members at its 2024 meeting prior to further consideration by the Commission.

Panama: The Commission noted the information provided by Panama in response to the recommendations of the *ad hoc* Group on the revision of BSE standards and the maintenance of official BSE risk status in June 2022 and thanked Panama for the additional information on the changes in the surveillance programme coordination. The Commission encouraged Panama to continue strengthening its surveillance.

Conclusion: The Commission recommended the maintenance of the officially recognised BSE risk status of the above-listed Members and zone.

2.2.2. Annual reconfirmations screened by the Status Department

The Status Department reviewed the rest of the annual reconfirmations for negligible BSE risk status and reported the outcome of its analysis to the Commission.

The annual reconfirmations for the following Members were reviewed:

Argentina	Germany	Norway
Australia	Hungary	Paraguay
Belgium	Iceland	Peru
Bolivia	Ireland	Poland
Brazil	Israel	Portugal [10]
Bulgaria	Italy	Romania
Canada	Japan	Serbia [11]
Chile	Korea (Rep. of)	Singapore
Colombia	Latvia	Slovakia
Costa Rica	Liechtenstein	Slovenia
Croatia	Lithuania	Spain [12]
Cyprus	Luxembourg	Sweden
Czech Republic	Malta	Switzerland
Denmark	Mexico	The Netherlands
Estonia	Namibia	United Kingdom [13]
Finland [14]	New Zealand	United States of America
France	Nicaragua	Uruguay

Conclusion: The Commission recommended the maintenance of the officially recognised negligible BSE risk status of the above-listed Members and zones.

3. Maintenance of the CBPP-free status

3.1. Annual reconfirmations comprehensively reviewed by the Commission

The annual reconfirmations of **Colombia** and **Mongolia** were selected for comprehensive review by the Commission. Specific comments made by the Commission were as follows:

Colombia: The Commission appreciated the information on the actions taken by Colombia in addressing the recommendations made by the CBPP *ad hoc* Group and the Commission when the application was evaluated. The Commission reiterated its recommendation to Colombia to provide information on a documented traceback exercise showing that imported genetic material

[10] Including Azores and Madeira.
[11] Excluding Kosovo administered by the United Nations.
[12] Including Balearic Islands and Canary Islands.
[13] One zone consisting of Northern Ireland as designated by the Delegate of the United Kingdom in a document addressed to the Director General in September 2016 and one zone consisting of Jersey as designated by the Delegate of the United Kingdom in a document addressed to the Director General in August 2019.
[14] Including Åland Islands.

can be traced back from the final destination at the farm level to the importing establishment authorised by Colombia. The Commission encouraged Colombia to continue its efforts to follow the recommendations and make progress on the activities to ensure successful maintenance of the official CBPP-free status.

Mongolia: The Commission commended Mongolia for the activities implemented to address the recommendations of the Commission and appreciated the detailed information provided particularly on the clinical and bacteriological surveillance conducted at slaughterhouses.

The Commission took note that Mongolia was planning to contact a WOAH Reference Laboratory in 2024 in order to request the participation of its laboratories in proficiency tests for CBPP diagnosis and to resume the annual serological surveillance, as foreseen in their five-year (2021-2025) CBPP Strategy, as soon as reagents for CBPP serology become available.

The Commission noted that, while the prohibition of the importation of CBPP-vaccinated animals had not been addressed through a revision of current legislation, the relevant requirements for such prohibition have been incorporated into bilateral agreements with trading countries. However, the Commission noted with concern that no information was provided by Mongolia on the formal prohibition of vaccination against CBPP in the country. The Commission, therefore, requested Mongolia to provide documented evidence that the legislation has been updated to formally prohibit both the use of vaccines and the importation of vaccinated animals. The Commission requested Mongolia to provide an update on the points above when reconfirming in November 2024.

Conclusion: The Commission recommended the maintenance of the officially recognised CBPP-free status of the above-listed Members.

3.2. Annual reconfirmations screened by the Status Department

The Status Department reviewed the rest of the annual reconfirmations for CBPP-free status and reported the outcome of its analysis to the Commission as follows.

The annual reconfirmations for the following Members were reviewed:

Argentina	Eswatini	Peru
Australia	France [15]	Portugal [16]
Bolivia	India	Russia
Botswana	Italy	Singapore
Brazil	Mexico	South Africa
Canada	Namibia [17]	Switzerland
China (People's Republic of)	New Caledonia	United States of America
Ecuador	Paraguay	Uruguay

Conclusion: The Commission recommended the maintenance of the officially recognised CBPP-free status of the above-listed Members and zone.

4. Maintenance of the endorsement of the official control programme for CBPP

The annual reconfirmations of **Namibia** and **Zambia** were comprehensively reviewed by the Commission. Specific comments made by the Commission were as follows:

Namibia: The Commission acknowledged the information provided by Namibia in support of the reconfirmation of its endorsed official control programme for CBPP. The Commission commended Namibia for successfully completing the interlaboratory proficiency testing but noted the low

[15] Including French Guiana, Guadeloupe, Martinique, Mayotte and Réunion.
[16] Including Azores and Madeira.
[17] One zone located south to the Veterinary Cordon Fence, designated by the Delegate of Namibia in a document addressed to the Director General in October 2015.

vaccination rate and falling short on clinical surveillance. The Commission appreciated that Namibia had started implementing corrective measures to address these gaps. The Commission noted that the construction of a physical barrier will be based on the results of a feasibility study to be conducted in 2024. Considering that the construction and maintenance of such a barrier is challenging, the Commission recommended that Namibia start exploring alternative control measures to be implemented in case the feasibility study does not support the construction of the barrier. The Commission requested an update on the progress made on this and the vaccination coverage when reconfirming in November 2024.

Zambia: The Commission acknowledged the information provided by Zambia on the progress of its endorsed official control programme for CBPP. While noting some delays in meeting the annual targets due to the increased incidence of CBPP, the Commission also noted the follow-up action taken by establishing laboratory diagnostic capacity for CBPP in the infected zone. The Commission took note of the progress made regarding the legal framework for facilitating the implementation of the animal identification system and requested an update on the progress when reconfirming in November 2024. In addition, the Commission requested an update on the outcome of the expert consultation to improve the contingency plan for CBPP that is planned for 2024, as well as on the progress made on the annual targets for vaccination coverage, the employment of veterinary staff, the re-demarcation of veterinary camps and the procurement of vehicles, when reconfirming in November 2024.

Conclusion: The Commission considered that the annual reconfirmations of the above-listed Members were compliant with the relevant provisions of Chapter 11.5. of the *Terrestrial Code* for an endorsed official control programme for CBPP.

5. Maintenance of the CSF-free status

5.1. Annual reconfirmations comprehensively reviewed by the Commission

The annual reconfirmations of **Bulgaria**, **Latvia, Luxembourg, Poland** and **the United Kingdom** were selected for comprehensive review by the Commission. Specific comments made by the Commission were as follows:

Bulgaria: The Commission acknowledged the detailed information provided by Bulgaria in support of the annual reconfirmation of its CSF-free status. The Commission encouraged Bulgaria to continue its activities to ensure the successful maintenance of its CSF-free status.

Latvia: The Commission noted that commodities were imported from countries not officially recognised CSF-free by WOAH and that the conditions applied to these imports were not fully aligned with Article 15.2.10 of the *Terrestrial Code*. The Commission strongly encouraged Latvia to provide, in its 2024 annual reconfirmation, documented evidence demonstrating full compliance with Chapter 15.2. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 15.2.

Luxembourg: The Commission acknowledged the information provided by Luxembourg in support of the annual reconfirmation of its CSF-free status. The Commission recommended Luxembourg to carry out CSF (and other exotic diseases) awareness activities targeted to professionals and the general public and to submit the next annual reconfirmations before the set deadline of 30 November 2024.

Poland: The Commission noted that commodities were imported from countries not officially recognised CSF-free by WOAH and that the conditions applied to these imports were not fully aligned with Articles 15.2.25 and 15.2.10 of the Terrestrial Code. The Commission strongly encouraged Poland to provide in its 2024 annual reconfirmation documented evidence demonstrating full compliance with Chapter 15.2. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 15.2.

The United Kingdom[18] **:** The Commission acknowledged the information provided by the UK in support of the annual reconfirmation of its CSF-free status, and the actions taken in response to the Commission's request from last year to comply with Article 15.2.24. The Commission encouraged the UK to finalise the review of its import requirements and to provide, in its 2024 annual reconfirmation, documented evidence demonstrating full compliance with Chapter 15.2 of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 15.2.

Conclusion: The Commission recommended the maintenance of the officially recognised CSF-free status of the above-listed Members.

5.2. Annual reconfirmations screened by the Status Department

The Status Department reviewed the rest of the annual reconfirmations for CSF-free status and reported the outcome of its analysis to the Commission as follows:

The annual reconfirmations for the following Members were reviewed:

Argentina	Croatia	Italy	Slovakia
Australia	Czech Republic	Liechtenstein	Slovenia
Austria	Denmark	Malta	Spain[19]
Belgium	Ecuador[20]	Mexico	Sweden
Brazil[21]	Finland[22]	New Caledonia	Switzerland
Canada	France[23]	New Zealand	The Netherlands
Chile	Germany	Norway	United States of America[24]
Colombia[25]	Hungary	Paraguay	Uruguay
Costa Rica	Ireland	Portugal[26]	

Conclusion: The Commission recommended the maintenance of the officially recognised CSF-free status of the above-listed Members and zone.

6. Maintenance of the endorsement of the official control programme for dog-mediated rabies

The annual reconfirmations of **Namibia,** the **Philippines,** and **Zambia** were comprehensively reviewed by the Commission. Specific comments made by the Commission were as follows:

Namibia: The Commission acknowledged the information provided by Namibia in support of the reconfirmation of its endorsed official control programme for dog-mediated rabies. The Commission commended the progress on stakeholder involvement and quarterly rabies plan monitoring meetings. The Commission, however, reiterated that Namibia should utilise methods for population estimation and

[18] Including Guernsey (incl. Alderney and Sark), Isle of Man and Jersey.
[19] Including Balearic Islands and Canary Islands.
[20] One zone consisting of the insular territory of the Galápagos, as designated by the Delegate of Ecuador in a document addressed to the Director General in October 2018.
[21] One zone composed of the States of Rio Grande do Sul and Santa Catarina as designated by the Delegate of Brazil in a document addressed to the Director General in September 2014 and one zone covering the States of Acre, Bahia, Espírito Santo, Goias, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Rio de Janeiro, Rondônia, São Paulo, Sergipe and Tocantins, Distrito Federal, and the municipalities of Guajará, Boca do Acre, South of the municipality of Canutama and Southwest of the municipality of Lábrea in the State of Amazonas as designated by the Delegate of Brazil in a document addressed to the Director General in September 2015 and in October 2020; and one zone consisting of the State of Paraná as designated by the Delegate of Brazil in a document addressed to the Director General in October 2020.
[22] Including Åland Islands.
[23] Including French Guiana, Guadeloupe, Martinique, Mayotte and Réunion.
[24] Including Guam, Puerto Rico and US Virgin Islands.
[25] One zone designated by the Delegate of Colombia in a document addressed to the Director General in September 2015; and the central-eastern zone as designated by the Delegate of Colombia in a document addressed to the Director General in October 2020.
[26] Including Azores and Madeira.

vaccination monitoring described in Articles 7.7.5. and 4.18.9. of the *Terrestrial Code*, as planned, and provide an update during the next annual reconfirmation. The Commission appreciated that Namibia had identified gaps, such as the lack of data collection of dog bites and rabies post-exposure prophylaxis and was working to address it. The Commission requested Namibia to provide when reconfirming the endorsement of its official control programme in November 2024, a detailed update and review of the objectives and indicators and the stage of completion, including:

i. The progress on the implementation of IBCM and a summary of joint investigations undertaken.
ii. Detailed information on the surveys to estimate the free-roaming dog population and understand its role in rabies transmission.
iii. Progress on dog vaccination and post-vaccination monitoring, including that of oral bait vaccines.
iv. Progress on collection of data on dog bites and Rabies Postexposure Prophylaxis.

Philippines: The Commission noted with concern the increase of rabies incidents and new incidents in areas that the Philippines had previously declared free from rabies. It also expressed concerns about the ongoing constraints preventing the country from meeting the targeted annual progress based on the performance indicators of the programme. The Commission acknowledged that, although with some delay, the Philippines had conducted a comprehensive review of the programme and strategic planning for rabies control activities in selected clusters for the year 2023 and was in discussions with resource partners to explore funding opportunities for these activities. The Commission took note that the Philippines was still in the process of collating information on conducted dog vaccinations and requested the Philippines to provide an update on these activities as soon as relevant data became available. The Commission urged the Philippines to start implementing the revised programme and provide an update on the progress achieved when reconfirming in November 2024.

Zambia: The Commission acknowledged the information provided by Zambia in support of the reconfirmation of its endorsed official control programme for dog-mediated rabies. The Commission commended the progress made on awareness-raising activities and having the rabies strategy endorsed by all relevant stakeholders. The Commission noted additional activities and partnerships planned on dog population management and recommended Zambia utilise methods for population estimation and vaccination monitoring described in Articles 7.7.5. and 4.18.9. of the *Terrestrial Code.* The Commission recommended Zambia continue its effort to make progress as per the revised work plan and timelines and provide i) the results of baseline studies conducted, ii) detailed information on the estimation of the free-roaming dog population and its management, and iii) results and figures from joint rabies outbreak investigations conducted under the IBCM framework when reconfirming the endorsement of its official control programme in November 2024.

In addition, the Commission reiterated its recommendation with regard to S.M.A.R.T.[27] indicator number 4 on laboratory capacity building, that Zambia could strengthen the efficiency of the laboratory network by establishing a national/central reference laboratory and regional laboratories at strategic locations rather than by increasing the number of regional laboratories with advanced rabies diagnostic capacities. The Commission also recommended reconsidering the need for Fluorescent Antibody Test (FAT) facilities in all seven regional laboratories. Finally, the Commission wished to highlight Section 1.3.3 of Chapter 3.1.18. of the *Terrestrial Manual* regarding LFDs and the need for further improvements in sensitivity, consistency and validation using appropriate diagnostic samples. The Commission further stressed that LFDs are not included in Table 1. 'Test methods available for the diagnosis of rabies and their purposes', under section B of this Chapter.

Conclusion: The Commission considered that the annual reconfirmations of the above-listed Members were compliant with the relevant provisions of Chapter 8.15. of the *Terrestrial Code* for an endorsed official control programme for dog-mediated rabies.

[27] Specific, Measurable, Achievable, Relevant, Time-bound

7. Maintenance of the FMD-free status

7.1. Annual reconfirmations comprehensively reviewed by the Commission

The annual reconfirmations of **Albania, one zone of Bolivia, three zones of Botswana, one zone of Colombia, Cuba, Guatemala, Guyana, five zones of Kazakhstan, Lesotho, one zone of Malaysia, one zone of Russia and one zone of Türkiye** were selected for comprehensive review by the Commission. Specific comments made by the Commission were as follows:

Albania: The Commission acknowledged the supportive information provided by Albania regarding import requirements for FMD susceptible animals from countries not officially recognised as free from FMD by WOAH, which were compliant with Article 8.8.12. The Commission also acknowledged the recent updates made to the National surveillance programme for FMD, and the information on active and passive surveillance activities that took place in 2023. The Commission took note of some unsatisfactory results in the interlaboratory proficiency testing, for which recommendations were delivered by the WOAH Reference Laboratory. The Commission requested Albania to provide the corrective measures taken to address these recommendations when reconfirming in November 2024.

The Commission concluded that the annual reconfirmation of Albania was compliant with the relevant requirements of Chapter 8.8 of the *Terrestrial Code* for the maintenance of the officially recognised FMD-free status and encouraged Albania to continue providing information on the importation of FMD susceptible animals and their products, including documented evidence demonstrating compliance with Chapter 8.8. in future annual reconfirmations.

Bolivia (one zone without vaccination consisting of the Department of Beni and the northern part of the Department of La Paz merged with the zone consisting of the Department of Pando (August 2018), as designated by the Delegate of Bolivia in a document addressed to the Director General in September 2022):

The Commission appreciated Bolivia's detailed report following its recommendations, in particular the detailed information regarding the activities conducted on surveillance, awareness campaigns and control of movements. The Commission strongly recommends that all vesicular disease suspicions are tested using virological methods, since serology alone may not pick up active infection. The Commission further noted that few vaccinated cattle from the FMD-free zone with vaccination were temporarily moved into the zone for exhibition/competition. While highlighting that the introduction of vaccinated animals – even from FMD-free zones with vaccination – into an FMD-free zone without vaccination is currently not allowed, the Commission was satisfied with the stricter measures applied to such movements. Nevertheless, these types of temporary movements should be restricted, and Bolivia should report all such movements.

In this regard, the Commission recommended Bolivia continue the progress made and submit an update on the conditions to move vaccinated animals into the FMD-free zone when reconfirming its status in November 2024.

Botswana (One zone without vaccination covering Zone 3b designated by the Delegate of Botswana in a document addressed to the Director General in August 2016; **two zones without vaccination**, namely Zone 3c and 6a, designated by the Delegate of Botswana in documents addressed to the Director General in August and November 2014 as follows): The Commission acknowledged the information submitted by Botswana on investigations following the buffalo's incursion and finding the FMD virus in the animals that entered the FMD-free zone. The Commission recognised the amount of work in response to an incursion that spanned over several FMD-free zones. Although hard to accomplish, preventing incursions by faster identification of fence damage could prevent an outbreak of FMD. There is concern that the amount of time to respond to a large incursion will allow time and opportunity for exposure of susceptible animals, spread of the disease and loss of status. Considering that these fences serve as a crucial barrier between the free zones of Botswana, tThe Commission encouraged Botswana to maintain the fence control activities in place.

Colombia (one zone, namely Protection Zone I (PZ I) covering 29 municipalities of the Department of Norte de Santander, as designated by the Delegate of Colombia in a document addressed to the Director General in September 2022):

The Commission appreciated the detailed information provided by Colombia and the actions initiated in addressing the recommendations made by the FMD *ad hoc* Group and the Commission when the application was first evaluated. The Commission took note of the activities conducted with regard to animal identification, surveillance, awareness campaigns and measures to prevent the entry of the FMD virus.

The Commission acknowledged that, due to sociopolitical factors invoked by Colombia, implementation of animal identification on the total susceptible population was challenging and urged Colombia to explore alternative methods to monitor the animals not individually identified.

The Commission noted that the investigation of NSP reactors included only the collection and testing of a paired serum sample from the reactors and clinical examination of the animals, which were part of the initial survey. The Commission emphasised that, in accordance with the provisions of Article 8.8.42 of the *Terrestrial Code*, the epidemiological investigation of each herd with NSP reactors should include serologically sampling not only the animals that tested positive in the initial survey but also from all animals in direct contact with the reactors. In other words, the investigation should include the reactor animals, susceptible animals of the same epidemiological unit and susceptible animals that have been in contact or otherwise epidemiologically associated with the reactor animals. The Commission further stressed that the animals initially sampled should remain in the establishment pending test results, should be clearly identified and accessible, and should not be vaccinated during the investigations so that they can be retested after an appropriate period of time. The Commission requested Colombia to review the procedures to follow-up on NSP reactors in that sense and provide documented evidence of the updated protocol implemented when reconfirming its status in November 2024.

The Commission appreciated the transparency demonstrated by Colombia in providing information on the detection of illegal imports of animal products or products non-compliant with import requirements and commended Colombia for the efficient monitoring system, enabling the detection of illegal imports before the products enter the FMD-free zone. The Commission encouraged Colombia to continue the intensive inspections and provide an update on the findings when reconfirming in 2024.

Cuba: The Commission acknowledged the information provided by Cuba regarding the measures for FMD prevention and early detection and the results of the NSP serological surveys conducted in 2023. The Commission further noted that Cuba had continued to import commodities from an FMD-infected country. Despite reiterated requests, Cuba did not provide information about viral and serological diagnostic tests carried out to detect FMD virus infection in the imported animals prior to shipment in accordance with Article 8.8.12. of the *Terrestrial Code*. The Commission strongly encouraged Cuba to provide, when reconfirming its status in November 2024, documented evidence demonstrating full compliance with Chapter 8.8. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 8.8. The Commission further mentioned that such non-compliance can lead to suspension of official status.

Guatemala: The Commission acknowledged Guatemala's efforts to comply with the requirements of the *Terrestrial Code* and to address the recommendations for surveillance improvement made by the Commission. The submission of the annual reconfirmation in time and prompt responses to WOAH communications, along with the reduction in time for laboratory test submission, showcase the improvements made. However, the Commission reiterated the importance of revising the protocol for investigating suspect cases of vesicular diseases. The Commission emphasised again that Guatemala should implement a follow-up procedure involving virological and serological laboratory testing of all suspicious cases and in-contact animals as per Articles 8.8.40. to 8.8.42. of the *Terrestrial Code* and urged Guatemala to reduce the time from notification of suspicion to laboratory results. The Commission suggested that such revision should be done before the FMD simulation exercise so further improvements can be made during the event. The exercise should

reveal areas needing improvement that can be easily achieved without additional resources and improve the overall disease surveillance programme. The Commission appreciated Guatemala's efforts to explore the establishment of partnerships in order to secure funds for the implementation of the activities needed to maintain the official status. In this regard, the Commission recommended that Guatemala continue the progress made and submit an update on these activities, including lessons learnt from the FMD simulation exercise when reconfirming in November 2024.

Guyana: The Commission noted that the 2023 report was sent with an excessive delay and after the deadline. It also lacked the information needed to substantiate the absence of FMD in the country, and requested updates were not provided in time. Guyana also indicated that FMD surveys were planned for 2023, but the results were not provided. The Commission repeatedly underlined the importance of the timely submission of updated information and documented evidence associated with the reporting year to substantiate the responses and statements made in the annual reconfirmation following Article 8.8.2. of the Terrestrial Code. In accordance with the Standard Operating Procedure on the reconfirmation of officially recognised animal health status, the Commission regretted that this has resulted in the suspension of official status.

Kazakhstan (five zones with vaccination)[28]: The Commission acknowledged the supportive information provided by Kazakhstan. The Commission commended the actions taken by Kazakhstan to address the recommendations of the Commission and WOAH Expert mission and encouraged Kazakhstan to continue considering these recommendations until they are all fully addressed and adequately implemented. The Commission noted that SOPs had been developed and implemented for the follow-up of NSP reactors. However, documented evidence demonstrating their implementation was not provided. The Commission requested Kazakhstan to submit those data when reconfirming in November 2024.

The Commission acknowledged the efforts to rectify the current policy allowing processed products of animal origin to be imported without an international veterinary certificate to comply with the relevant articles in Chapter 8.8. of the *Terrestrial Code*. However, it is unclear whether these measures are uniformly implemented and effective. The Commission requested Kazakhstan to provide documented evidence, including the directive in use, on the compliance on imports from all countries. An updated version of the legislation is expected when available.

The Commission advised Kazakhstan to continue participating in the interlaboratory proficiency testing and provide an update when reconfirming in November 2024.

Lesotho: The Commission commended Lesotho for the activities implemented to address its recommendations and acknowledged the detailed information provided on cross-border coordination, imports, surveillance, and laboratory proficiency testing.

However, the Commission expressed its concerns that point 4 of the Veterinary Health Certificate to import animals from FMD-infected countries is not followed. The commission reminded Lesotho that both serological and virological tests should be requested prior to importation from FMD-infected countries, as per Article 8.8.12. This is of importance as the virological test can detect an early infection while the serological NSP test is only positive from 9-11 days post-infection. The Commission encouraged Lesotho to provide, in its 2024 annual reconfirmation, the revised conditions applied to imports of commodities from FMD-infected countries to ensure compliance with the *Terrestrial Code* or to provide documented evidence that Chapter 5.3 has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 8.8.

[28] Five zones with vaccination as designated by the Delegate of Kazakhstan in documents addressed to the Director General in August 2016 as follows: one zone consisting of Almaty region; one zone consisting of East Kazakhstan region; one zone including part of Kyzylorda region, northern part of South Kazakhstan region, northern and central parts of Zhambyl region; one zone including southern part of Kyzylorda region and south-western part of South Kazakhstan region; one zone including south-eastern part of South Kazakhstan region and southern part of Zhambyl region.

The Commission noted the successful completion of the inter-laboratory proficiency testing in 2023 and the planned ring trials in 2024.

With regard to FMD surveillance, the Commission noted that Lesotho used an NSP test to rule out an FMD-suspected case, which is not in accordance with Chapter 3.1.8. on FMD of the *Terrestrial Manual*. As NSP antibodies can only be detected 9-11 days post-infection, serological tests can easily produce false negatives. Therefore, they are not fit for purpose for the early detection of an FMD case. The Commission encouraged Lesotho to follow the provisions of the *Terrestrial Manual* to always use a virological test in case of clinical suspicion of FMD. Furthermore, the Commission noted from the surveillance results provided that the procedure in case of positive test results is not compliant with Article 8.8.42 of the *Terrestrial Code*, and strongly encouraged Lesotho to retest seropositive reactors and in-contact animals using repeat and confirmatory tests and to conduct epidemiological investigations (i.e. serologically, clinically, etc.) in all herds with at least one laboratory confirmed reactor.

Lastly, the Commission observed that Lesotho only provided the Proficiency testing (PT) performed for NSP testing, substantiating the capability to perform a test for serological screening but not for virological tests which are of paramount importance for the early detection of FMD cases. The Commission encouraged Lesotho to participate in inter-laboratory PTs for virological tests for FMD as soon as possible.

In this regard, the Commission recommended Lesotho continue the progress made and submit an update on these activities when reconfirming in November 2024.

Malaysia (one zone without vaccination consisting of the provinces of Sabah and Sarawak as designated by the Delegate of Malaysia in a document addressed to the Director General in December 2003):

The Commission appreciated Malaysia for fully supporting the expert mission in Sabah and Sarawak, Malaysia, in July 2023, and for acting upon the recommendations aimed at improving prevention and emergency preparedness.

The Commission further noted that Malaysia is considering revising the surveillance design, as the surveillance target could not be achieved this year due to the emergence of other competing diseases. However, it is recommended that the design be scientifically sound, with the appropriate confidence level and statistical power to demonstrate the absence of FMD virus circulation in Sabah and Sarawak.

The Commission requested Malaysia to provide progress reports on the expert's mission recommendations and the actions taken to prevent the risk of incursion in the free zone when reconfirming in November 2024.

Russia (one zone with vaccination - Zone V 'Far East' - consisting of five Subjects: Amur Oblast, Jewish Autonomous Oblast, Primorsky Krai, Khabarovsky Krai, Zabaykalsky Krai, as designated by the Delegate of Russia in a document addressed to the Director General in September 2022): The Commission acknowledged the supportive information provided by Russia and actions taken in response to the recommendations of this Commission. The Commission encouraged Russia to continue monitoring and improving immunity levels in all vaccinated species and to review the design of its serological surveys by using a two-stage sampling design, geographically stratified and weighted by the number of farms by oblast to seek the best representativeness of the population in the samples as possible. The Commission requested Russia to continue providing the investigation results concerning low immunity levels (below 80%), corrective actions implemented based on the results, as well as any further adjustments made on the design of the serological survey and on the procedure for following-up of NSP reactors to ensure its alignment with Article 8.8.42, when reconfirming in November 2024.

Türkiye (one zone with vaccination designated by the Delegate of Türkiye in a document addressed to the Director General in November 2009): The Commission acknowledged the prompt response and control measures implemented by Türkiye after the FMD SAT2 incursion in Anatolia.

However, the Commission was concerned about the spread of the virus in the naïve population and highlighted the importance of continuing intensified control measures for the movement of animals into the FMD-free zone for the Kurban festival.

The Commission noted the use of NSP ELISA testing for triage of animals in Anatolia to source the Kurban festival in Thrace. The Commission reiterated its recommendation to Türkiye to also conduct post-monitoring vaccination studies in animals in Anatolia vaccinated against SAT2 prior to their movement to Thrace for the Kurban festival.

The Commission noted that Türkiye's aim with regard to FMD in Anatolia had shifted towards keeping the disease under control without applying for the endorsement of its FMD control programme due to the regional epidemiological situation. Türkiye further informed that the plan to submit a dossier to WOAH will be reassessed after the epidemiological analysis, following the introduction of the FMD-SAT2, has been completed. The Commission encouraged Türkiye to continue its efforts to progress along the Progressive Control Pathway for FMD (PCP-FMD). An update on the FMD situation in the country should be provided when reconfirming in November 2024.

Conclusion: Except for Guyana, the Commission recommended the maintenance of the officially recognised FMD-free status of the above-listed Members and zones.

7.2. Annual reconfirmations screened by the Status Department

The Status Department reviewed the rest of the annual reconfirmations for FMD-free status and reported the outcome of its analysis to the Commission as follows:

The annual reconfirmations for the following Members were reviewed:

Australia	El Salvador	Luxembourg	Romania
Austria	Estonia	Madagascar	San Marino
Belarus	Eswatini	Malta	Serbia [29]
Belgium	Finland [30]	Mexico	Singapore
Belize	France [31]	Montenegro	Slovakia
Bosnia and Herzegovina	Germany	New Caledonia	Slovenia
Brunei	Greece	New Zealand	Spain [32]
Bulgaria	Haiti	Nicaragua	Suriname
Canada	Honduras	North Macedonia (Rep. of)	Sweden
Chile	Hungary	Norway	Switzerland
Costa Rica	Iceland	Panama	The Netherlands
Croatia	Ireland	Paraguay	Ukraine
Cyprus	Italy	Peru	United Kingdom [33]
Czech Rep.	Japan	Philippines	United States of America [34]
Denmark [35]	Latvia	Poland	Uruguay
Dominican Republic	Lithuania	Portugal [36]	Vanuatu

[29] Excluding Kosovo administered by the United Nations
[30] Including Åland Islands.
[31] Including French Guiana, Guadeloupe, Martinique, Réunion, Saint Pierre and Miquelon.
[32] Including Balearic Islands and Canary Islands.
[33] Including Guernsey (incl. Alderney and Sark), Isle of Man, Jersey and Falkland Islands (Malvinas). (A dispute exists between the Government of Argentina and the Government of the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas) (see resolution 2065 (XX) of the General Assembly of the United Nations).
[34] Including American Samoa, Guam, Northern Mariana Islands, Puerto Rico and US Virgin Islands.
[35] Including Faroe Islands and Greenland.
[36] Including Azores and Madeira.

Argentina: **Three zones without vaccination**

- one zone designated by the Delegate of Argentina in a document addressed to the Director General in January 2007;

- the summer pasture zone in the Province of San Juan as designated by the Delegate of Argentina in a document addressed to the Director General in April 2011;

- Patagonia Norte A as designated by the Delegate of Argentina in a document addressed to the Director General in October 2013;

Two zones with vaccination designated by the Delegate of Argentina in documents addressed to the Director General in March 2007 and October 2013, and in August 2010 and February 2014;

Bolivia: **One zone without vaccination,** consisting of:

- one zone in the Macro-region of the Altiplano designated by the Delegate of Bolivia in documents addressed to the Director General in November 2011;

One zone with vaccination covering the regions of Chaco, Valles and parts of Amazonas and Altiplano as designated by the Delegate of Bolivia in documents addressed to the Director General in October 2013, February 2014 and August 2018;

Botswana: **Three zones without vaccination** designated by the Delegate of Botswana in documents addressed to the Director General in August and November 2014 as follows:

- one zone consisting of Zones, 4b, 5, 8, 9, 10, 11, 12 and 13;

- one zone covering Zone 4a;

- one zone covering Zone 6b, with the exclusion of the containment zone as designated by the Delegate of Botswana in documents addressed to the Director General in November 2022 and February 2023;

One zone without vaccination covering Zone 7 designated by the Delegate of Botswana in **a** document addressed to the Director General in August 2018;

Brazil: **One zone without vaccination** – State of Santa Catarina designated by the Delegate of Brazil in a document addressed to the Director General in February 2007;

Three zones without vaccination as designated by the Delegate of Brazil in a document addressed to the Director General in August 2020 as follows:

- State of Paraná;

- State of Rio Grande do Sul;

- one zone (Block 1) including the States of Acre and Rondônia and 14 municipalities in the State of Amazonas and five municipalities in the State of Mato Grosso;

One zone with vaccination consisting of two merged zones designated by the Delegate of Brazil in documents addressed to the Director General in August 2010, September 2017 and September 2019, covering the States of Alagoas,

Amapá, Amazonas, Bahia, Ceará, Espíritu Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Maranhão, Minas Gerais, Pará, Paraíba, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Roraima, São Paulo, Sergipe, Tocantins and Distrito Federal, with the exclusion of the municipalities of the States of Amazonas and Mato Grosso that are part of the zone of Block 1 (free from FMD where vaccination is not practised) as addressed to the Director General in August 2020;

Chinese Taipei: **One zone without vaccination** covering Taiwan, Penghu and Matsu areas, as designated by the Delegate of Chinese Taipei in a document addressed to the Director General in August 2019;

One zone with vaccination: one zone consisting of Kinmen County as designated by the Delegate of Chinese Taipei in a document addressed to the Director General in September 2017;

Colombia: **Two zones without vaccination:**

- one zone designated by the Delegate of Colombia in documents addressed to the Director General in November 1995 and in April 1996 (Area I - Northwest region of Chocó Department);

- one zone designated by the Delegate of Colombia in documents addressed to the Director General in January 2008 (Archipelago de San Andrés and Providencia).

Three zones with vaccination designated by the Delegate of Colombia in documents addressed to the Director General in September 2019 as follows:

- Zone I (Northern border) consisting of Departments of La Guajira, Cesar and part of the Department of Norte de Santander;

- Zone III (Trade) consisting of the Departments of Atlántico, Córdoba, Magdalena, Sucre and part of Antioquia, Bolívar and Chocó Departments;

- Zone IV (Rest of the country), consisting of the Departments of Amazonas, Caldas, Caquetá, Cauca, Casanare, Cundinamarca, Guainía, Guaviare, Huila, Meta, Nariño, Quindío, Putumayo, Risaralda, Santander, Tolima, Valle del Cauca, Vaupés and part of Antioquia, Bolívar, Boyacá, and Chocó Departments.

One zone with vaccination consisting of two merged zones designated by the Delegate of Colombia in documents addressed to the Director General in September 2019 and in August 2020, which includes Zone II (Eastern border) and the former high surveillance zone covering the Departments of Arauca and Vichada and the municipality of Cubará of the Department of Boyacá;

Ecuador: **One zone without vaccination** consisting of the insular territory of the Galápagos, as designated by the Delegate of Ecuador in a document addressed to the Director General in August 2014;

One zone with vaccination consisting of the continental Ecuador, as designated by the Delegate of Ecuador in a document addressed to the Director General in August 2014;

Moldova: **One zone without vaccination** designated by the Delegate of Moldova in a document addressed to the Director General in July 2008;

Namibia: **One zone without vaccination** designated by the Delegate of Namibia in a document addressed to the Director General in February 1997;

Russia: **One zone without vaccination** designated by the Delegate of Russia in documents addressed to the Director General in August 2015 and March 2016;

Two zones with vaccination designated by the Delegate of Russia in documents addressed to the Director General in August 2020 as follows:

- Zone-South including Southern and North Caucasian Federal Districts, consisting of 13 Subjects: Rostov Oblast, Stavropol Krai, Krasnodar Krai, Volgograd Oblast, Astrakhan Oblast, Republic of Kalmykia, Chechen Republic, Republic of Ingushetia, Republic of Dagestan, Kabardino-Balkarian Republic, Karachay-Cherkess Republic, Republic of North Ossetia-Alania, Republic of Adygea;

- Zone-Sakhalin consisting of the Island of Sakhalin and the Kurile Islands;

One zone with vaccination - Eastern Siberia consisting of two Subjects (Republic of Tuva and Republic of Buryatia) and one administrative Raion of the Republic of Altai (Kosh-Agachsky Raion) designated by the Delegate of Russia in a document addressed to the Director General in August 2021;

The Status Department informed the Commission that the annual reconfirmations that were received and assessed were compliant with the relevant provisions of Chapter 8.8. of the *Terrestrial Code*.

Conclusion: The Commission recommended the maintenance of the officially recognised FMD-free status of the above-listed Members and zones.

8. Maintenance of the endorsement of the official control programme for FMD

The annual reconfirmations of **Botswana**, **China (People's Rep. of)**, **India**, **Kyrgyzstan**, **Morocco**, **Namibia** and **Thailand** were comprehensively reviewed by the Commission. Specific comments made by the Commission were as follows:

Botswana: The Commission acknowledged the information submitted by Botswana on progress made on FMD risk analysis and control activities in the northern part of the country. While some progress was made in some zones, others had no progress, and it was observed that laboratory results were pending. The Commission also noted that limited resources were the reason for the lack of progress, and some of the activities were diverted to 2024. The Commission encouraged Botswana to continue its activities to control and eradicate FMD in the northern parts of the country and to inform of any changes in the goals or objectives of the FMD control programme. The Commission will continue to monitor the progress of these activities in Botswana's annual reconfirmation in November 2024.

China (People's Rep. of): The Commission acknowledged the information submitted by China regarding the progress made in implementing its official FMD control programme. The Commission noted that, as per recommendations by the Commission, China had followed up on FMD outbreaks by investigating the vaccination status and the herd immunity level of the farms where clinically positive animals had been detected and performed PVM data analysis stratified by age. However, the Commission noted that FMDV-positive animals detected through pathogenic surveillance were not classified as FMD cases or outbreaks. The Commission considered that this is a critical component of an endorsed programme, and whilst noting that some of the recommendations had been addressed, this remained pending. In addition, the Commission noted that the revision of the prevention and control targets and performance indicators of the FMD official control plan initiated three years ago had not been finalised. Therefore, the Commission concluded that China no longer fulfils the requirements in Articles 1.6.2. and 8.8.39. of the *Terrestrial Code* for a country having an endorsed official control programme for FMD, and recommended the withdrawal of the endorsement. The Commission stressed

that should China wish to apply for the endorsement of an FMD official control programme, an updated plan must be submitted including a revised case definition aligned with Article 8.8.8.

India: The Commission acknowledged the information submitted by India regarding the progress made in implementing its official FMD control programme. The Commission appreciated that, as per its recommendations, India had started working on implementing appropriate follow-up investigations on NSP positive reactors countrywide, which included supplementary testing and clinical inspection of the seropositive animals and in-contact animals, and that India was planning to conduct extensive sampling in 2024 for the follow-up of NSP reactors. The Commission also took note of India's reporting of a gradual increase in the population immunity levels.

The Commission acknowledged the updated work plan with a timetable and performance indicators provided by India for the next five years of the programme. The Commission requested India to submit the following as part of its 2024 reconfirmation: i) progress made in implementing appropriate follow-up investigations on NSP positive reactors over all states, ii) progress achieved along the updated work plan.

Kyrgyzstan: The Commission acknowledged the continuing efforts of Kyrgyzstan on serosurveillance and vaccination activities, as well as on the progress made on the traceability of animals and the control of movements of animals and animal products.

With regard to the follow-up investigations of NSP reactors and related epidemiological investigations, the Commission noted that NSP reactors were re-tested, and clinical examination was conducted only in the animals in contact. The Commission emphasised that in accordance with the provisions of Article 8.8.42 of the *Terrestrial Code*, the epidemiological investigation of each herd with NSP reactors should include a second serological sample from the animals tested in the initial survey with emphasis on animals in direct contact with the reactors. Thus, the investigation should include the reactors, susceptible animals of the same epidemiological unit, and susceptible animals that have been in contact or otherwise epidemiologically associated with the reactor animals. For this reason, the animals initially sampled should remain in the establishment pending confirmation of the results; they should be clearly identified and accessible and should not be vaccinated during the investigations. The Commission strongly recommended Kyrgyzstan to review the procedures for follow-up on NSP reactors, in particular as this has already been identified and communicated in the past and provide documented evidence of the epidemiological investigations conducted. This will help to understand the NSP-positive reactions in cattle and exclude a possible FMDV transmission.

The Commission appreciated that following the participation of the National Laboratory in a proficiency test organised by a WOAH FMD Reference laboratory, an interlaboratory testing was organised for the country's regional laboratories. The Commission encouraged Kyrgyzstan to provide the results of the interlaboratory testing for regional laboratories when reconfirming in 2024.

The Commission expressed concerns regarding the population immunity levels in cattle and requested Kyrgyzstan to investigate and address the reasons for the low immunity levels detected. The Commission requested Kyrgyzstan to provide an update on the implemented activities and progress made against the work plan and performance indicators when submitting the annual reconfirmation in November 2024.

Morocco: The Commission acknowledged the information submitted by Morocco on the progress of FMD control activities, including the updated work plan for the next three years. The Commission noted that the serological surveillance implemented had revealed a 2.08% seropositivity level. The Commission stressed that, unless these positive reactors are followed up to rule out FMD, they should be reported as FMD outbreaks through WAHIS. The Commission was concerned that the updated programme included few indicators with identical targets over the years, making it challenging to monitor the progress of the programme. The Commission encouraged Morocco to consider revising the programme and include further activities to address the risk of FMD introduction due to the situation of the disease in the region and enable progress towards eradication. The Commission will continue to monitor the progress of these activities in Morocco's annual reconfirmation in November 2024.

Namibia: The Commission acknowledged the information provided by Namibia in support of the reconfirmation of its endorsed official control programme for FMD and, in particular, the revised work plan submitted for the coming years. The Commission noted that the construction of a physical barrier to strengthen livestock movement control is planned but based on the results of a feasibility study to be conducted in 2024. The Commission was concerned about the delay as this is an important element in controlling the movement of animals between the two countries.

The Commission commended Namibia for the advances in vaccinating against all circulating FMD serotypes in the infected zone. The Commission recommended using the same vaccines in the protection zone. It was also noted that the results of the longitudinal post-vaccination monitoring (PVM) study revealed flaws in the study design and logistics, which impaired the data analysis and interpretation. In this regard, the Commission recommended that Namibia implement corrective measures to address this issue before the next PVM study and provide an update on these actions as well as on the construction of the physical barrier when submitting its annual reconfirmation in November 2024.

Thailand: The Commission noted that Thailand had achieved the vaccination coverage target set at 100% for FMD-susceptible animals. The Commission also took note of the significant decrease in FMD outbreaks in 2023 compared to the number of FMD cases reported in 2022.

Nevertheless, the Commission noted that, according to the results of the post-vaccination monitoring (PVM), the immunity levels remained low despite the corrective action taken, which included awareness-raising activities for farmers on the importance of vaccination as a tool to prevent and control the spread of diseases. Thailand explained that these results were mainly observed in young calves (beef cattle), as 50% of samples collected for PVM were from such animals, and attributed them to the limitations in implementing boosters in young beef calves compared to dairy cattle due to the farming system and animal handling and restraint. The Commission appreciated that Thailand had acknowledged this gap in the KAP[37] study on FMD vaccination and had started working to address it by sensitising farmers on the importance of FMD vaccine boosters in young calves and by planning a PVM in this population to evaluate the effectiveness of the vaccine booster programme. However, the Commission recommended that Thailand conduct further analysis of the PVM results, including age-specific stratification, which may lead to a revision of the PVM study design and strategy for vaccination.

The Commission appreciated that Thailand had initiated in November 2023 a study on vaccine stability planned to be completed in November 2024 in response to the Commission's recommendations to implement quality controls for vaccines not only immediately after their production but also a few months after manufacturing to verify their stability. The Commission requested Thailand to provide in its annual reconfirmation of 2024 an update on the results of this study as well as on the progress of the corrective actions taken to ensure an adequate level of vaccine efficacy and effectiveness and on PVM results after the next vaccination campaign.

Conclusion: Except for China, the Commission considered that the annual reconfirmations of the above-listed Members were compliant with the relevant provisions of Chapter 8.8. of the *Terrestrial Code* for an endorsed official control programme for FMD.

9. Maintenance of the PPR-free status

9.1. Annual reconfirmations comprehensively reviewed by the Commission

The annual reconfirmations of **Germany**, **Greece**, **Italy**, **Madagascar**, **Mauritius**, and **Spain**[38] were selected for comprehensive review by the Commission. Specific comments made by the Commission were as follows:

[37] Knowledge, attitude and practice
[38] Including Balearic Islands and Canary Islands.

Germany: The Commission noted that commodities were imported from countries not officially recognised PPR-free by WOAH and that the conditions applied to these imports were not fully aligned with Article 14.7.10 of the *Terrestrial Code*. The Commission strongly encouraged Germany to provide in its 2024 annual reconfirmation documented evidence demonstrating full compliance with Chapter 14.7. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 14.7.

Greece: The Commission appreciated Greece's actions in response to its recommendations and concluded that imports of small ruminants were in accordance with Chapter 14.7. of the *Terrestrial Code*. The Commission recommended that, in future annual recommendations, Greece continue providing information on the importation of PPR-susceptible animals and their products, including documented evidence demonstrating compliance with Chapter 14.7. of the *Terrestrial Code*. In case measures alternative to the ones stipulated in Chapter 14.7 are applied, especially on imports of commodities from countries not officially recognised PPR-free by WOAH, the Commission stressed that documented evidence should be provided demonstrating that Chapter 5.3. has been followed to determine that these measures achieve an equivalent level of risk mitigation as the provisions of Chapter 14.7.

Italy: The Commission noted that Italy has raised the issue of misalignment in the PPRV inactivation treatment protocol for raw hides and skins (as well as for pig bristles for CSFV) to the European Commission, of which, as an EU Member, Italy is obliged to follow the regulations. The Commission recommended that, in future annual reconfirmations, Italy continue providing information on the importation of PPR-susceptible animals and their products, including the progress made on the revision of the EU Regulation and documented evidence demonstrating compliance with Chapter 14.7. of the *Terrestrial Code* or that Chapter 5.3. has been followed to determine that the alternative measures applied to such imports achieve an equivalent level of risk mitigation as the provisions of Chapter 14.7.

Madagascar: The Commission commended Madagascar on the efforts to implement its recommendations regarding the development of the legal framework and the steps taken towards the identification of small ruminants. However, the Commission was concerned by the slow progress made towards individual identification of small ruminants. It strongly encouraged Madagascar to continue its activities to ensure the effective implementation and operation of the remaining recommendations for the successful maintenance of the official PPR-free status. In addition, the Commission remained concerned by the absence of positive reactors during the cross-sectional survey as well as the absence of clinical suspects. In this regard, the Commission requested that Madagascar show evidence of awareness activities on PPR, specifically targeting farmers and other key stakeholders to strengthen the passive surveillance system. Finally, the Commission commended Madagascar for successfully taking part in a PPR proficiency test and recommended regular participation. The Commission requested an update on the progress made when reconfirming in November 2024.

Mauritius: The Commission appreciated Mauritius' efforts to address the Commission's recommendations and took note that the Animal Health Bill enforcing PPR notifiability and general disease control measures had been submitted to the State Law Office for final approval in 2024. The Commission further noted changes in diagnostic capability and that a Molecular Unit had been established, and Mauritius was planning to procure kits for PCR diagnosis for PPR. The Commission was, however, concerned that Mauritius was still encountering issues to promptly procure serological test kits for PPR. The Commission requested Mauritius to confirm the date for the Bill's approval and provide drafts of regulations on imports that are planned to be prepared after the Bill's enactment, as well as updates on the progress made with regard to improving laboratory capacity for serological and molecular (PCR) diagnosis of PPR in the country when reconfirming its PPR status in November 2024.

Spain: The Commission acknowledged the information provided by Spain in its annual reconfirmation and noted that the imports of commodities of PPR susceptible animals were solely from countries with an officially recognised PPR free by WOAH. The Commission recommended that Spain continue providing, in future annual reconfirmations, information on the importation of

PPR-susceptible animals and their products, including documented evidence demonstrating compliance with Chapter 14.7. of the *Terrestrial Code.* In case measures alternative to the ones stipulated in Chapter 14.7 are applied, especially on imports of commodities from countries not officially recognised PPR-free by WOAH, the Commission stressed that documented evidence should be provided demonstrating that Chapter 5.3. has been followed to determine that these measures achieve an equivalent level of risk mitigation as the provisions of Chapter 14.7.

Conclusion: The Commission recommended the maintenance of the officially recognised PPR-free status of the above-listed Members.

9.2. Annual reconfirmations screened by the Status Department

The Status Department reviewed the rest of the annual reconfirmations for PPR-free status and reported the outcome of its analysis to the Commission as follows:

The annual reconfirmations for the following Members were reviewed:

Argentina	Czech Republic	Lithuania	Portugal[39]
Australia	Denmark	Luxembourg	Romania
Austria	Ecuador	Malta	Russia
Belgium	Estonia	Mexico	Singapore
Bolivia	Eswatini	Namibia[40]	Slovakia
Bosnia and Herzegovina	Finland[41]	New Caledonia	Slovenia
Botswana	France[42]	New Zealand	South Africa
Brazil	Hungary	North Macedonia (Rep. of)	Sweden
Canada	Iceland	Norway	Switzerland
Chile	Ireland	Paraguay	The Netherlands
Chinese Taipei	Korea (Rep. of)	Peru	United Kingdom[43]
Colombia	Latvia	Philippines	United States of America[44]
Croatia	Lesotho	Poland	Uruguay
Cyprus	Liechtenstein		

Conclusion: The Commission recommended the maintenance of the officially recognised PPR-free status of the above-listed Members and zone.

[39] Including Azores and Madeira.
[40] One zone located south of the Veterinary Cordon Fence, designated by the Delegate of Namibia in a document addressed to the Director General in November 2014.
[41] Including Åland Islands.
[42] Including French Guiana, Guadeloupe, Martinique, Réunion, Saint Barthélémy, Saint Martin, Saint Pierre and Miquelon.
[43] Including Cayman Islands, Guernsey (incl. Alderney and Sark), Isle of Man, Jersey, Saint Helena and Falkland Islands (Malvinas). (A dispute exists between the Government of Argentina and the Government of the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas) (see resolution 2065 (XX) of the General Assembly of the United Nations).
[44] Including American Samoa, Guam, Northern Mariana Islands, Puerto Rico and US Virgin Islands.

Annex 4: Revised form for the annual reconfirmation of bovine spongiform encephalopathy (BSE) risk status of WOAH Members

	QUESTION		YES	NO
1.	Has the risk assessment for BSE in accordance with Article 11.4.3 been reviewed by the Competent Authority of the country/zone, through incorporation of documented evidence, in the past 12 months?		Please provide the conclusions of the review and any subsequent actions/updates that may have been taken.	Please explain why and provide the tentative date of completion of the review.
2.	c) Have there been any changes in the livestock industry practices in the past 12 months, as described under Point 1.b.i of Article 11.4.3., including any changes in auditing practices or any increase in non-compliances detected?		Please provide an updated description of the industry practices preventing bovines from being fed ruminant-derived protein meal, as per Point 1.b.i of Article 11.4.3. Please provide the rationale for the changes in auditing practices.	
	d) Have there been any changes to the BSE-specific risk mitigation measures (other than import requirements addressed under question 4b) during the past 12 months, as described under Point 1.b.ii of Article 11.4.3., including any changes in auditing practices or any increase in non-compliances detected?		Please provide an updated description of specific risk mitigation measures preventing bovines from being fed ruminant-derived protein meal. Please provide the rationale for the change in measures.	
3.	Have any modifications in the legislation regarding BSE (except for import requirements addressed in question 4b) been made during the past 12 months?		Please summarise the modification(s) made, highlighting their potential impact on BSE risk mitigation measures, including surveillance. Please explain how the updated legislation still aligns with Articles 11.4.4 and 11.4.5. Please provide the rationale for the change in legislation.	
4.	c) Have the following commodities been imported during the past 12 months? If yes, please indicate the quantities imported during that period by	vi. Bovines		
		vii. Ruminant-derived protein meal		
		viii. Feed (not intended for pets) that contains ruminant-derived protein meal		
		ix. Fertilizers that contain ruminant-derived protein meal		

QUESTION			YES	NO
	commodity and origins in Table 1.	x. Any other commodity that either is, includes, or could be contaminated by commodities listed in Article 11.4.15.		
	d) Have there been any changes to the import requirements of the following commodities during the past 12 months?	vi. Bovines	Please summarise the modifications, the rationale for the changes, and highlight their potential impact on BSE risk mitigation measures. Please describe how the updated legislation is still aligned with Articles 11.4.3. and 11.4.4.	
		vii. Ruminant-derived protein meal		
		viii. Feed (not intended for pets) that contains ruminant-derived protein meal		
		ix. Fertilisers that contain ruminant-derived *protein meal*		
		x. Any other commodity that either is, includes or could be contaminated by commodities listed in Article 11.4.15.		
5.	f) Has the surveillance programme continued to report and test all animals that show signs on the clinical spectrum of BSE during the past 12 months, as described under Points 1 & 2 of Article 11.4.20.?		Please provide supportive information by completing Table 2.	Please describe why the system has not continued to report and/or test all bovines that show signs on the clinical spectrum of BSE during the past 12 months. In addition, please provide the corrective measures implemented/to be implemented and the timeline for implementation.
	g) Have the awareness and training programmes for the different stakeholder groups been implemented during the past 12 months as described under Point 3a of Article 11.4.20.?		Please provide a summary of the activities conducted, including the target audience.	Please describe why and provide the corrective measures and the timeline for implementation.
	h) Has BSE continued to be notifiable throughout the whole territory during the past 12 months (Point 3b of Article 11.4.20)?			Please describe why and provide the corrective measures implemented/to be implemented and the timeline for implementation.
	i) Have all tests for BSE been conducted in accordance with the *Terrestrial Manual*? (Point 3c of Article 11.4.20)			Please describe why and provide the corrective measures implemented/to be implemented and the timeline for implementation.

QUESTION		YES	NO
	j) Is the surveillance system still supported by robust, documented evaluation procedures as listed in Point 3d of Article 11.4.20?	Please provide a summary of these procedures and, if applicable, non-compliances and subsequent corrective measures.	Please describe why and provide the corrective measures implemented/to be implemented and the timeline for implementation.
6.	a) Have any cases of atypical BSE occurred during the past 12 months?	Please include the number of cases and how the cases were identified. Please also provide documented evidence that the case was atypical and assurance that it wasn't recycled (i.e. that measures were taken to ensure that all detected cases have been completely destroyed or disposed of to ensure they did not enter the feed or food chain, as per point 4 of Article 11.4.4.)	
	b) Have any cases of classical BSE occurred during the past 12 months?	Please attach the final epidemiological investigation report that was provided to WOAH further to the notification. Please describe any measures that may have been taken to avoid reoccurrence. Please describe the measures taken to ensure that all detected cases have been completely destroyed or disposed of to ensure they did not enter the feed or food chain, as per point 4 of Article 11.4.4.	
7.	Have any changes in the epidemiological situation or other significant events occurred during the past 12 months?	Please describe the 'significant event(s)' and any significant changes in the epidemiological situation and the actions taken in response to such events/changes.	

Table 1. Record of imports in the past 12 months.

Describe bovines, ruminant-derived protein meal and other commodities imports from all countries in this table.

Country of origin of import	Commodity and quantity									
	Bovines		Ruminant-derived protein meal		Feed (not intended for pets) that contains ruminant-derived protein meal		Fertilizers that contain ruminant-derived protein meal		Any other commodity that either is, includes, or could be contaminated by commodities listed in Article 11.4.15.	
	Number of animals	Intended use	Amount	Type of commodity (+)	Amount	Type of commodity (+)	Amount	Type of commodity (+)	Amount	Type of commodity (+)

(+) Specify the type and intended use of feedstuff or species composition of ingredients

Table 2. Record surveillance conducted in the past 12 months.

Summary of all bovines with clinical signs suggestive of BSE that were reported and evaluated by the Veterinary Services.

Clinical presentation (See Point 2 of Article 11.4.20)	Number reported	Number tested for BSE
Bovines displaying progressive clinical signs suggestive of BSE that are refractory to treatment and where the presentation cannot be attributed to other common causes of behavioural or neurological signs		
Bovines showing behavioural or neurological signs at antemortem inspection at slaughterhouses/abattoirs		
Bovines presented as downers (non-ambulatory) with an appropriate supporting clinical history (i.e., the presentation cannot be attributed to other common causes of recumbency)		
Bovines found dead (fallen stock) with an appropriate supporting clinical history (i.e., the presentation cannot be attributed to other common causes of death)		

Annex 5: Report of the Development of the Case Definition for Infection with *Francisella tularensis* (tularemia), (1 November 2023 to 30 January 2024)

The objective of this report is to provide the rationale and scientific justification for elements of the case definition for infection with *Francisella tularensis* (tularemia), which was developed via videoconference and email exchange between 1 November 2023 to 19 January 2024.

The purpose of the case definition is to support notification to the World Organisation for Animal Health (WOAH, founded as OIE) as described in the WOAH *Terrestrial Animal Health Code* (the *Terrestrial Code)* Chapter 1.1.

Details of the external experts and WOAH staff who contributed to the drafting process are provided in Appendix 1.

1. Process

The Official Bulletin 2021-1 provides a synopsis of this initiative: 'Developing case definitions for OIE-listed diseases for terrestrial animals'[50].

This report and the draft case definition will be presented for consideration first to the Biological Standards Commission (BSC) and then to the Scientific Commission for Animal Diseases (SCAD) at their next meetings. After endorsement by SCAD and provided there is no conflict with either the WOAH *Terrestrial Code* or the WOAH *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (the *Terrestrial Manual)*, the finalised case definition will be published on the WOAH website and, following the standard-setting process, eventually will be included in the *Terrestrial Code*.

2. Background

Tularemia is a zoonosis caused by *Francisella tularensis*. It occurs naturally in lagomorphs (rabbits and hares) and rodents. Transmission to humans can occur through direct contact with sick animals, infected tissues, consumption of infected animals, drinking or direct contact with contaminated water, and inhalation of bacteria-loaded aerosols [1]. *Francisella tularensis* is considered a potential agent of biological warfare because inhalation of an aerosol containing as few as 10–100 colony-forming units can cause severe and fatal disease in humans [2].

Tularemia is listed in the *Terrestrial Code* Chapter 1.3. Diseases, infections, and infestations listed by the WOAH in Article 1.3.7. in the category of 'multiple species'. While there is a corresponding disease-specific chapter in the *Terrestrial Code* (Chapter 8.20., most recent update 2014), it does not include a case definition to guide notification by WOAH Members. The *Terrestrial Manual* contains Chapter 3.1.23. on tularemia, which was last adopted in 2022.

WAHIS was consulted on 1st December 2023 for summary information[51] on '*Francisella tularensis* (tularemia)' developed from data contained in official reports (six-monthly reports, immediate notification, and follow-up reports). To date, the disease has been reported from 38 species. In addition to rabbits and hares the disease has been reported in cattle (N=5), sheep (N=8), dogs (N=11) and wild fox (N=16) among domestic and wild animals. Figure 1 . Below a table that summarises the total numbers of countries reporting this disease to WOAH between January 2005 and December 2023 is presented.

[50] https://oiebulletin.fr/?officiel=10-3-2-2021-1_case-definitions
[51] https://wahis.oie.int/#/dashboards/qd-dashboard

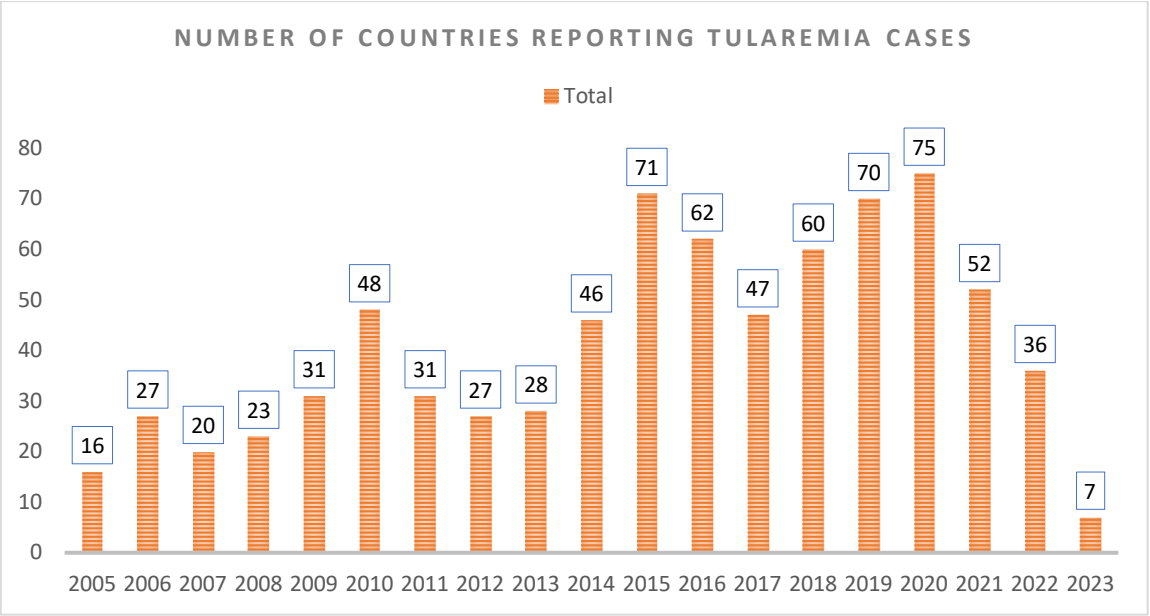

Figure 3. *Number of new cases of 'tularemia' notified to WOAH-WAHIS by Members between January 2005 and December 2023.*

3. Discussion

3. 1. Disease name

The experts agreed to use the term 'tularemia' to describe the disease caused by Gram-negative bacterium *Francisella tularensis*.

3.2. Pathogenic agent

The experts agreed that the pathogenic agent for 'tularemia' is *Francisella tularensis* subsp. *tularensis* (Type A) and *Francisella tularensis* subsp. *holarctica* (Type B). Hereafter, '*Francisella tularensis*' is used to collectively refer to these two subspecies.

Experts noted that there are two other subspecies of *Francisella tularensis* – *F. mediasiatica* that is circulating in Central Asia [1,2] but there is little information on this subspecies, and *F. novicida* which is less virulent but can cause disease in immunocompromised humans. In the case of *F. mediasiatica*, experts noted that it could be more widespread than what is currently known, but no cases have been reported in humans thus far. There is some suggestions that its virulence is compatible with *F. holarctica* but again, there is not much documentation on this.

In addition, experts considered that most laboratories would not have the capacity to perform typing to the subspecies level, and may simply report the case as a case of *Francisella tularensis.*

3.3. Hosts

The experts discussed that tularemia is primarily a wildlife disease with a complex ecology. Multiple ecological factors, such as exposure to contaminated natural water, an increase in the population of microtine rodents and vector species, can increase the risk of contact of susceptible hosts with infected animals which could lead to infection. Considering tularemia is primarily a disease of wildlife and the domestic rabbit is less susceptible (see next paragraph), the experts made a separate observation that it may not be a disease of priority for Veterinary Authorities.

The experts noted that *Francisella tularensis* has been isolated from more than 300 species of vertebrates and invertebrates, but it is primarily the disease of rodents and lagomorphs [3]. It occurs naturally in lagomorphs (rabbits and hares) and rodents, especially microtine rodents such as voles,

and muskrats, and beavers [4]. The experts agreed that all animals under the Order *Lagomorpha* and *Rodentia*, both domestic and wild, are susceptible to infection with *Francisella tularensis*. However, the experts noted that some species, such as the European wild rabbit (*Oryctolagus cuniculus*) and the domestic rabbit could be presumed to be relatively resistant to *Francisella tularensis* [5]. Nonetheless, the experts considered that host animals for the purposes of notification of infection with *Francisella tularensis* to WOAH should consist of all domestic and wild animals of the Order *Lagomorpha* and *Rodentia*. In particular, the experts were of the view that including wild species is justified as it is quite 'common' for hunting dogs to acquire infection from wild hares.

In discussing the animal hosts to be covered in the case definition, the experts considered that even if cases have been sporadically reported in other animal species such as dogs and sheep, such reports are rare and these species are considered incidental and dead-end hosts [6]. The experts acknowledged the possibility of these dead-end hosts to serve as mechanical carriers, such as cats that have been documented to carry the bacterium in their claws or mouths and subsequently infecting humans [6,7], however they did not advice to include them in the case definition.

3.4. Epidemiologic and diagnostic criteria

The experts identified **three options** (either/any one of which is sufficient) for confirming a case of infection with *Francisella tularensis* for the purposes of notification to WOAH.

3.4.1. Option 1

The experts agreed that isolating the organism from the samples from host species would be sufficient to confirm a case of infection with *Francisella tularensis*.

3.4.2. Option 2

The experts discussed whether the detection of antigen or nucleic acid (and antibodies for that matter) alone from the host species would be sufficient, or whether additional criteria, such as supporting clinical signs and epidemiological evidence would be required to classify the animal host as a case. All experts agreed that for animal hosts under the Orders *Lagomorpha* and *Rodentia*, the detection of antigen or nucleic acid alone would be enough to consider the animal host as a case. This is in contrast to incidental or dead-end hosts like dogs and cats, which can show seropositivity even after abortive infections.

3.4.3. Option 3

The experts did not recommend the inclusion of seroconversion in the diagnostic criteria as they considered that the detection of antibodies alone is sufficient to satisfy the definition of a case (see elaboration under Option 4).

3.4.4. Option 4

The experts noted that to their knowledge that there is currently no approved vaccine for *Francisella tularensis* in humans and animals and therefore any detection of antibodies in animals could only be from infection with *Francisella tularensis*.

However, experts noted that it is important to exclude serological cross-reactions with *Brucella spp*, *Yersinia spp*, *Legionella spp* and further tests would have to be performed to exclude these. In particular, the European brown hare could be infected with *Brucella suis* biovar 2 as well, and both this and *Francisella tularensis* shows a positive result on the slide agglutination test. This has to be followed up with a tube agglutination test with both antigens to see which produces a higher titre (these methods are described in Chapter 3.1.23.). Alternatively, serology could be combined with PCR and/or bacteriology to discriminate these bacteria spp. However, it was also noted that it could be rare to find a positive RT-PCR and/or 16S rRNA PCR for *Francisella tularensis* in laboratory setting.

Two of the three experts considered that the detection of antibodies, even if in the absence of clinical signs, pathological lesions and supporting epidemiological history (e.g. previous exposure or contact with suspected/ infected animals or vectors) would be sufficient to classify an animal host as a case. Notwithstanding, these experts also noted that serology has limited value as animal hosts often die before the development of antibodies. However, one expert, while acknowledging that serological tests in animals are the most sensitive and practical diagnostic tests, pointed out that these tests have some limitations, such as low sensitivity, especially during the first two weeks of pathogenesis of the disease, and the possibility of false positives in some animals. Therefore, this expert recommended additional supporting evidence such as epidemiological data or confirmation of the presence of the pathogen.

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…/Appendices

Appendix 1

REPORT OF THE DEVELOPMENT OF THE CASE DEFINITION FOR INFECTION WITH PATHOGENIC AGENT (OLD DISEASE NAME)

1 November – 30 January 2024

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Annex 6: Work Programme

Abbreviations: BSC: Biological Standards Commission; SCAD: Scientific Commission for Animal Diseases; TAHSC: Terrestrial Animal Health Standards Commission (Code Commission)

		February 2024	Next steps	Timeline
Update of WOAH Standards				
	Glossary	**Not on agenda**		
1	Ch. 1.2. Criteria for the inclusion of diseases, infections or infestations in the WOAH list	Not on agenda; at its February 2023 meeting, revisions had been proposed to the guidance document aimed at improving experts' interpretation of the listing criteria and the revised guidance was applied to the listing assessment for equine encephalitides. At this time, no specific revisions to Chapter 1.2. are recommended but SCAD welcomes the opportunity to be involved in discussions when the chapter is opened for revision.	Continue to review experts' interpretation of listing criteria and ensure consistency in application.	N.A.
1	Ch. 1.3. Diseases, infections and infestations listed by the WOAH	Not on agenda.	N.A.	N.A.
	Ch. 1.6. Procedures for official recognition	Not on agenda.	N.A.	N.A.
1	Ch. 1.11. FMD Questionnaire	Considered comments forwarded by TAHSC received from Members after the September 2023 meeting on the revised draft chapter.	SCAD opinion forwarded to TAHSC and addressed at February 2024 SCAD-TAHSC Bureau meeting	N.A.
1	Ch 4.X. New chapter on biosecurity	Not on agenda, SCAD noted that next meeting of the *ad hoc* Group will take place in March 2024; a representative from	N.A.	N.A.

		February 2024	Next steps	Timeline
		the SCAD will attend the meeting.		
1	Ch 4.4. Zoning and compartmentalisation	SCAD informed of plan to develop new chapter on implementation of zoning	Secretariat to prepare proposal on development of chapter of implementation of zoning.	SCAD to review proposal at its September 2024 meeting.
1	Ch.8.8. Infection with foot and mouth disease virus	Considered selected comments forwarded by TAHSC received from Members after the September 2023 meeting on the revised draft chapter.	SCAD opinion forwarded to TAHSC and addressed at February 2024 SCAD-TAHSC Bureau meeting.	
1	Chapter 8.X. Infection with *Trypansoma evansi* (surra)	Considered expert opinion on surra in camels and made recommendations to Article 8.Z.7.	SCAD opinion forwarded to TAHSC and addressed at its February 2024 meeting.	N.A.
1	Ch. 11.5. Infection with *Mycoplasma mycoides* subsp. *mycoides SC* (Contagious bovine pleuropneumonia)	SCAD considered the impact of the adoption of the revised chapter on the procedure on annual reconfirmation for maintenance of officially recognised AHS status of Members. SCAD and TAHSC agreed that the revised chapter will not be presented for adoption at the upcoming GS.	SCAD to review draft revised chapter at Sept 2024 meeting.	
1	Ch. 12.1. Infection with African horse sickness virus			
1	Ch. 12.3. Dourine	Not on agenda.	N.A.	N.A.
Official animal health status recognition				
1	Evaluation of Member dossiers	SCAD considered five reports of *ad hoc* Groups on the evaluation of Members' status and endorsement of official control programmes (AHS, CBPP, FMD, dog-mediated rabies and PPR). No applications were received for BSE and CSF. Six applications were recommended for recognition of official		

		February 2024	Next steps	Timeline
		status/endorsement (including one pending a mission) and seven applications were rejected.		
2	Expert missions to Members	SCAD prioritised four missions with two of them to be conducted possibly before its September 2024 meeting. One mission related to recognition of official status, one on maintenance of official status and two missions to offer support to applicant Members.	SCAD to consider the reports and recommendations of the missions after their completion.	
2	Follow up of Members with official animal health status or with suspended status	SCAD was informed about the withdrawal of status of a Member that could not recover the suspended status within two years.	No actions, until any applications are submitted for SCAD's assessment using the fast-track procedure.	
	Non-compliance of Members having an official animal health status by WOAH with provisions of the *Terrestrial Code* for imports of commodities from countries not officially recognised as free by WOAH	SCAD considered a discussion paper prepared by the Secretariat and proposed a way forward.	SCAD to continue monitoring the compliance of Members with provisions of the *Terrestrial Code* for imports of commodities from countries not officially recognised as free by WOAH during upcoming annual reconfirmations.	
1	Review of annual reconfirmations	SCAD comprehensively reviewed the annual reconfirmations preselected at its September 2023 meeting as well as additional annual reconfirmations brought to its attention by Status Dept.	Maintain work strategy for the assessment of the annual reconfirmations selected for comprehensive review in the future February meetings.	
1	Harmonisation of the requirements in the *Terrestrial Code* Chapters for recognition and maintenance	Completed for FMD. SCAD agreed to postpone the adoption	SCAD to review draft revised chapters at Sept 2024 meeting.	

		February 2024	Next steps	Timeline
	of official animal health status	of the Chapters on CBPP and AHS.		
2	BSE Annual Reconfirmation form	SCAD reviewed and endorsed the draft form based on the newly adopted BSE standards in May 2023.	The form will be annexed to SCAD's February 2024 report and published on the website. No further action required from SCAD.	
Disease control issues				
2	Advise on global strategies and initiatives (FMD, PPR, rabies, ASF, AI, zTB)	Updates were provided on the global strategies/initiatives for AI, rabies and zTB. SCAD requested for outcome-based updates.	N.A.	SCAD to receive updates on global strategies and initiatives (FMD, PPR, ASF, AI)
2	Assess recent developments in control and eradication of infectious diseases	SCAD raised the growing concern of sheep and goat pox and requested to prioritise case definition development and preferably review *Terrestrial Code* Chapter 14.9.	Secretariat to follow-up with a proposal on reviewing Chapter 14.9.	SCAD to review proposal of Secretariat in September 2024.
1	Consider *ad hoc* Groups reports falling into the SCAD remit (that are not related to disease-Status or standard-setting)	SCAD was updated of the meeting of *ad hoc* Group on emerging diseases.	N.A.	N.A.
1	Evaluation of emerging diseases	N.A.	N.A.	N.A.
1	Evaluation of pathogenic agents against the listing criteria of Chapter 1.2.	SCAD proposed to subject Nairobi sheep disease for evaluation against the listing criteria	Secretariat to follow-up with experts on evaluation.	SCAD to consider expert opinion at its September 2024 meeting.
1	Development of case definitions	SCAD reviewed the following case definitions: **Avian metapneumovirus (turkey rhinotracheitis)**: SCAD discussed the opinion of the BSC and experts and	Forward opinion and revised draft case definition to the TAHSC.	

		February 2024	Next steps	Timeline
		proposed changes to the case definition. It also provided clarification to the query from the TAHSC on animal hosts. ***Francisella tularensis* (Tularemia)**: case definition discussed with BSC; SCAD made refinements to proposed case definition. **Nairobi sheep disease (NSD)**: SCAD requested to put case definition development on hold and subject NSD to evaluation against the listing criteria. Next tranche of diseases for case definition development was identified and agreed with TAHSC.	Forward opinion and endorsed case definition to the TAHSC. (see above) Secretariat to follow-up with experts on case definition development	(see above) SCAD to consider draft case definitions at its September 2024 meeting.
Liaison with other Specialist Commissions				
1	Terrestrial Animal Health Commission	Bureau meeting took place; agreed on next tranche of case definition work, to subject NSD to listing assessment, plan of action for status related chapters (FMD, AHS, CBPP), agreed on convening *ad hoc* Group meetings on scrapie and equine encephalitides and taskforce to rationalise animal hosts.		
1	Biological Standards Commission	No liaison meeting, but through coordination by Secretariat, discussed case definition for		

		February 2024	Next steps	Timeline
		tularemia and avian metapneumovirus.		
Working Groups				
2	Antimicrobial Resistance Working Group	Not on agenda.		
2	Wildlife Working Group	Noted discussion of the Working Group as captured in the December 2023 report and requested to be updated on the publication of guidelines addressing disease risks in wildlife trade.	WGW Secretariat to update on publication when released.	N.A.
Other activities that could impact SCAD work programme				
1	Evaluation of applications for WOAH Collaborating Centre status	None at this meeting		
3	Update on the main conclusion/ recommendations of meetings relevant for the work of the Commission	None at this meeting		
3	Updates provided for SCAD information	SCAD was updated on: WOAH Standards Online Navigation Tool Project, WAHIAD and WAHIS platform updates, updates from WOAH Observatory and Global Burden of Animal Diseases (GBADs) programme.		
	Any other business	None at this meeting		