

REPORT OF THE MEETING OF THE OIE WORKING GROUP ON WILDLIFE DISEASES
Paris, 1 – 4 February 2010

The meeting of the OIE Working Group for Wildlife Diseases was held from 1 to 4 February 2010, at the OIE Headquarters in Paris. The meeting was chaired by the President of the Working Group, Dr William Karesh, and Prof. Frederic Leighton was appointed as rapporteur. The Agenda and complete list of participants are provided in Appendices I and II, respectively.

1. Opening Remarks and Welcome

Dr Bernard Vallat, Director General of the OIE, welcomed the participants and thanked them for their work. He emphasised that the OIE wishes to move quickly to improve surveillance and diagnostic tools for wildlife. Wildlife diseases are emerging as a priority for the OIE. The Terrestrial Code Commission, in particular, is seeking input from the Working Group on these matters so as to update the *Terrestrial Code*. He also requested the strong commitment of the Working Group to developing a programme for the OIE Global Conference on Wild Animals, to be held in February 2011. Dr Vallat highlighted the importance of focal points for wildlife to inform and advise the Members' Chief Veterinary Officers or Delegate on wildlife-related matters. A global network of 175 focal points from OIE Members is under construction and will be a key tool in the promotion of basic concepts in this field. The Working Group asked Dr Vallat if it was possible to discuss agreements with hunters' organisations (such as the International Council for Game and Wildlife Conservation based in Hungary) at the global level in order to have access to wildlife samples. Dr Vallat fully supported this request.

2. Terms of Reference for the Working Group

The Terms of Reference proposed by the Working Group in its 2008-09 report had been reviewed by the OIE Scientific Commission on Animal Diseases and returned to the Working Group with revisions. The Working Group accepted these revised Terms of Reference (Appendix III).

3. WAHIS-Wild Update

The Working Group was informed by Dr Karim Ben Jebara Head of the Animal Health Information Department of OIE of the development of the wildlife components of the WAHIS and *WAHIS-Wild* systems for reporting disease occurrences in wild animals. The regular WAHIS system now permitted reporting of OIE listed diseases occurring in wild animal species in the semi-annual reports submitted by member countries. The anticipated activation of *WAHIS-Wild* was late February-early March of 2009. With this system, wildlife focal points for each country would be provided with the information already reported for occurrences of OIE listed diseases in wild animal species. They would be able to verify or add to these reports and to add reports for wildlife diseases not on the OIE list. For OIE-listed diseases information in wild animals, the on-line report would then be passed on to the CVO for verification and final submission to the OIE. The Working Group would review all information in the *WAHIS-Wild* system on an annual basis to detect trends or other significant developments, and would work with the OIE's Animal Health Information Department to evaluate how to best utilize the information on a long-term basis.

4. Newly Emerging Issues with Disease

African Swine Fever: Following its introduction in 2007 in Georgia, African Swine Fever had persisted in the Caucasian region for three years. Currently only Russia continued to report ASF outbreaks, mostly in domestic pig operations. However, cases and outbreaks were sporadically recorded in the Wild Boar (*Sus scrofa*) suggesting that the infection could spill-over or be maintained in wildlife.

Anthrax: Two focal outbreaks were reported in wildlife in the Kruger National Park and Northern Cape Province in South Africa, respectively. A recent anthrax outbreak in both wildlife and livestock was reported from Mashonaland West in Zimbabwe. An additional outbreak was reported in buffalo (*Syncerus caffer*) in Serengeti National Park in Tanzania.

H5N1 Highly Pathogenic Avian Influenza (HPAI): HPAI H5N1 virus continued to be reported periodically among dead wild birds in Asia. An exception was the March 2009 detection of the virus in an apparently healthy hunter-killed mallard (*Anas platyrhynchos*) in Germany. Surveillance for the virus in wild waterfowl and the environment continued to be conducted in several countries. The virus had not been detected among wild birds in the Western Hemisphere, but avian influenza viruses of low pathogenicity were found regularly, as expected.

Chronic Wasting Disease: In early 2010, chronic wasting disease (CWD) of cervids was confirmed for the first time in wild white-tailed deer (*Odocoileus virginianus*) in Virginia, United States of America. The animal was taken by a hunter within a mile of the state border with West Virginia, where CWD had been found in wild deer since 2005. In other areas of the United States where CWD had been observed in wild animals since the 1980s, the prevalence had continued to increase and is up to 40% in some mule deer (*Odocoileus columbianus*) despite management efforts. A recent report in the literature indicated that predation by mountain lions (*Felis concolor*) was four times more likely in infected deer, and the authors concluded that CWD could account for a significant decrease that has been observed in the studies population over the past twenty years. CWD continued to be diagnosed in free-ranging and captive cervids in Canada and the United States.

Filoviruses: An outbreak of Ebola hemorrhagic disease occurred in 13 humans in Kasai Occidental in the Central Democratic Republic of Congo (DRC). Nine deaths were reported. In unrelated studies, epidemiological investigations involving sampling of more than 2 000 bats captured in the DRC and Gabon provided strong evidence that Egyptian fruit bats (*Rousettus aegyptiacus*) were reservoirs of both Ebola and Marburg viruses. In addition, other fruit bats that were often shot or captured for use as food had been suggested as the source of certain outbreaks of Ebola in DRC and Gabon though live virus from these bat species had yet to be isolated. Ebola Reston virus field research found one species of fruit bat to be seropositive in the Philippines.

Pansteatitis of Nile Crocodiles: For the second consecutive year, a pansteatitis mortality cluster involving a significant number of crocodiles (*Crocodylus niloticus*) was observed during the winter months in the Olifants River in the Kruger National Park of South Africa.

Rabies: A significant outbreak in domestic dogs was reported in Mpumalanga Province adjacent to the Kruger National Park in South Africa. Significant numbers of confirmed infected dogs were destroyed inside the Park and adjoining private nature reserves.

Rabies was re-introduced in a previously rabies-free country of the European Union, Italy, in October 2008. Since then, rabies had been confirmed in 119 animals (105 foxes, 5 badgers, 3 roe deer, 3 dogs, 1 beech marten, 1 cat and 1 donkey) distributed in the regions of Friuli-Venezia Giulia and Veneto. Fox oral vaccination campaigns had been implemented to bring the outbreak under control.

Rift Valley Fever: An epidemiologically unusual outbreak of RVF occurred in the Northern Cape Province of South Africa during the dry season. This outbreak appeared to have been associated with crop irrigation of agricultural land bordering the Orange River.

White Nose Syndrome of Bats (WNS): Since February 2006, a new disease syndrome had been recognized among cave-dwelling insectivorous bats during winter hibernation in the north-eastern United States. Affected bats had been thin, had been seen flying outside in daylight during the period of hibernation, and found dead in caves and outside on the landscape. White fungal growth on the muzzle of affected bats was a striking finding in many of these affected bats and was the basis of the name given to this syndrome. Through the

winter of 2008-2009, WNS was observed in bats at more than 65 sites in nine states, with mortality rates greater than 95% in affected caves. The white fungus, a new psychrophilic species called *Geomyces destructans*, was found on the muzzles, ears, and wings of most affected bats and was believed to play a strong role in WNS due to the lesions it causes at these sites. However, it should be noted that *G. destructans* had been cultured in France from the muzzle of a bat with no apparent clinical disease. Also interesting was the observation of a few dead bats in Canada with visually-similar fungal growth on their muzzles; however, investigators were unable to diagnose *G. destructans* in the animals by fungal culture or polymerase chain reaction (PCR) tests, and did not observe the histological lesions seen in affected bats in the United States. White Nose Syndrome was of great concern to biologists, cavers, and others for several reasons: the high mortality rates at affected sites; the rapid spread of the disease in a short period of time, which was believed to be due to bat movements as well as inadvertent human contamination of new sites via movement from affected to unaffected caves; and the involvement of all six cave dwelling bats species in the northeastern United States, including one nationally threatened species. Additional information on WNS was available at the website of the Northeastern Region of the U.S. Fish and Wildlife Service: (www.fws.gov/northeast/white_nose.html) and in the CCWHC Newsletter.

The Working Group recommended that White Nose Syndrome be added to the list of wildlife diseases reported to the OIE.

Other Diseases of Concern: The Working Group noted that the following diseases or situations were reported around the world in 2009 warrant continued attention:

- Harmful algal blooms - Large blooms of certain marine algae could cause of wildlife mortality. Most often this was through production of powerful neurotoxins which were ingested during feeding. However, in the fall of 2009, intense coastal blooms of the dinoflagellate *Akashiwo sanguinea* caused considerable mortality of marine birds on the west coast of North America by a very different mechanism. This organism produces a chemical surfactant which eliminates the water-repellent capacity of bird feathers. Water then penetrates through the feathers and birds died from hypothermia and drowning. This is a newly-recognized form of wildlife mortality associated with harmful algal blooms and was first documented in 2007.
- Human infections with food-borne pathogens, including Nipah virus, Ebola virus, and *Trypanosoma cruzi*, via consumption of fruits that have been contaminated by wild animals or vectors shedding or carrying the causative agents
- Extensive outbreaks of trichomoniasis (*Trichomonas gallinae*) in wild finches or numerous bird species of the family Fringillidae.

5. Draft Policy on Implications of Livestock Wildlife Interface

The Working Group had began work on draft policy on implications of livestock wildlife interface in 2009 and concluded the work at its present meeting. Dr Kris De Clerk representing the Scientific Commission for Animal Diseases and Dr Howard Batho representing the *ad hoc* Group on Epidemiology participated in the discussions at the Working Group meeting. The Working Group reviewed the report on these same items produced by the *ad hoc* Group on Epidemiology and applauded their work and conclusions.

The following terms of reference had been formulated by the Scientific Commission on Animal Diseases for the development of a draft policy for the OIE on the wildlife-domestic animal interface following the discussions. Response to the eight questions or points of discussion from the Working Group is provided in Appendix IV:

- Develop and propose a definition for *wildlife* for the purpose of the *Terrestrial Code*;
- Assess the advantages and disadvantages of different approaches in the *Terrestrial Code* for recognition of disease status for those diseases where wildlife plays a role in the epidemiology of the disease;

- Assess the trade facilitation issues such as zoning and compartmentalisation in the *Terrestrial Code* in relation to the wildlife/domestic animal interface and how this should/could be amalgamated or harmonised;
- Assess current disease specific surveillance guidelines for those diseases for which wildlife is implicated in terms of cost, need, implementation and impact;
- Trade issues related to wildlife – trade in wildlife *per se* and commodities of wildlife species origin;
- Review of the policy for reporting of disease occurrences in wildlife taking into consideration trade concerns;
- The need to alter the focus on wildlife diseases to a pathogen approach versus a species approach and how this would impact on the current policy for developing international standards;
- The implications in the development of OIE standards of the role of wildlife in the *One-World-One-Health* concept and the recommended approach the OIE should consider.

In summary, the Working Group found that the approach of OIE addressing issues related to wildlife on a disease-by-disease, risk-based analysis was appropriate.

6. Matters of Interest for the WDWG from FAO

A presentation about the FAO EMPRES Wildlife Unit was made by Dr Scott Newman (FAO Observer to the working group meeting) and described their programme and activities. Opportunities for collaboration with OIE (and WHO when appropriate) included capacity building and training, building wildlife disease reporting networks, wildlife disease surveillance and disease reporting, and data sharing among WAHIS and EMPRES facilitated through the tri-partite GLEWS relationship. This demonstrated that wildlife health issues and disease transmission among wildlife, livestock, and humans was becoming an increasingly important issue that needs to be addressed by the international organisations.

The Observer from FAO requested clarification regarding diagnostic testing, surveillance, and reporting avian influenza in wild birds. The Working Group indicated that the OIE *Manual* was clear on the diagnostic tests to be applied and recalled that the Working Group had reviewed this chapter last year. The OIE *Code* chapter on avian influenza excludes wild birds from the specific sections on surveillance for highly pathogenic avian influenza (HPAI) in wild birds. For HPAI discovered in wild birds, OIE does not require a control response in measures for trade. If HPAI occurs in poultry, *Code/Manual* do not provide guidelines on surveillance in local or other wild birds. Unrelated to trade status, the Working Group saw high value in surveillance for AI viruses in wild birds since this furnishes the background information required to understand transmission, and the basis for understanding actual risk to poultry and to wild bird populations. (see item 7 of this report)

There was concurrence on the importance that OIE should not accept reports of the occurrence of HPAI attributed to “wild birds,” unless the source has been verified by verifiable criteria. The OIE *Manual* already provided requirements for the diagnostic identifying HPAI in any species.

The Observer from FAO expressed its appreciation for being invited to serve as an Observer to the Wildlife Disease Working Group meeting and saw this as a very positive step in helping develop collaboration between the organisations. FAO would welcome further mutually beneficial opportunities.

7. Request for guidance on avian influenza surveillance from OFFLU

The Working Group received a request from OFFLU (OIE/FAO network of expertise on animal influenza), through its Coordinator Keith Hamilton, to develop an OFFLU module or protocol for surveillance for avian influenza (AI) in wild birds following the same format used in the modules for surveillance of H1N1 in domestic pigs and poultry. This was undertaken and completed during the meeting of the Working Group and is provided in [Appendix V](#).

8. Reports from the OIE Collaborating Centres engaged with wildlife

The annual reports from the OIE Collaborating Centres for (i) Training in Integrated Livestock and Wildlife Health and Management (South Africa) and (ii) Wildlife Disease Surveillance and Monitoring, Epidemiology and Management (Canada) were reviewed by the Working Group. Dr Roy Bengis explained the development and orientation of the new Collaborating Centre in South Africa. This Collaborating Centre was just beginning to operate. Its first activity would be the presentation of a workshop for wildlife focal points in March 2010, in which the Canadian Centre also would participate. The Canadian Centre reported on a range of international activities undertaken to help build capacity for wildlife health management in OIE member countries.

9. Training Workshops for OIE Focal Points

Participants from the OIE Headquarters and from the Collaborating Centres that organised the first two workshops for wildlife focal points reported on the meetings held in Panama (for the Americas Region) and in France (principally for countries in eastern Europe)¹. The purpose of these workshops was to prepare focal points to assist the OIE delegate to report to the OIE on occurrences of diseases in wild animals. At each workshop, OIE participants presented information concerning the structure and function of the OIE, including the system for reporting diseases in wild animals. The basic wildlife curriculum for these workshops had been prepared by the Canadian Cooperative Wildlife Health Centre (the OIE Collaborating Centre for Wildlife Disease Surveillance and Monitoring, Epidemiology and Management, Saskatoon, Canada) and had been adapted and used for both workshops. This curriculum included lectures on a range of relevant topics, and small group sessions focused on wildlife disease surveillance. These workshops were well received by the participants. The Working Group expressed full support for these training workshops and for new offerings in other OIE regions. It was noted that a major outcome of value from these workshops could be the creation of regional networks of wildlife focal points which could be mutually supporting of focal point work.

The Working Group recommended that:

1. The OIE work with the Canadian Collaborating Centre to make the Course Manual developed for these training workshops available on the OIE website in the three official languages for use by wildlife focal points and others as a reference.
2. That OIE Regional Offices and the Collaborating Centres on wildlife take coordinated steps to maintain and keep active the networks among wildlife focal points created by these workshops.
3. That the Information Department of the OIE undertake analysis of the results wildlife disease reporting to assess the effect these workshops may have on this reporting activity.

10. OIE Global Conference on Wildlife (February 2011)

The Working Group developed a general concept for a conference on wildlife to be hosted by the OIE from 23-25 February 2011. This solution-focused conference should address the socio-economic benefits that may accompany integrated management approaches for the health of the environment, wildlife, domestic animals and people. The purpose of the meeting would be to inform responsible parties and decision makers about the important linkages between the health of wildlife, environment, domestic animals and people. This high-profile meeting would bring together leaders and experts from both the public and private sectors to explore the societal benefits to be gained from protecting the health of wildlife and our shared environments. The audience would include OIE Delegates and wildlife focal points, professionals and policy makers engaged in natural resource management, animal and human health, and economic development. Areas of attention proposed for this meeting would have significant implications for health both now and into the future, and would include:

- Social and Economic benefits of integrated approaches to health that include wildlife, domestic animals and people.

¹ Slideshow available at: http://www.oie.int/RR-Europe/eng/events/en_Wild.htm

- Land-use choices, ecosystem goods and services and animal and human health
 - Natural resource extraction/consumption
 - Meeting demands for protein
 - Facing climate change
- Global movement of people and animals: travel, trade, migration
- Disease problems affecting international trade versus small-scale holders

11. Presentation on WildTech

Dr Lisa Yon, University of Nottingham (UK), was invited to join the group for a presentation on an UE-funded cooperative programme on “*Novel technologies for surveillance of emerging and re-emerging infections of wildlife*” (acronym: WildTech). The consortium consisted of 13 multidisciplinary partners, and was coordinated by the University of Nottingham. The programme had started in July 2009 and was funded for four years.

WildTech’s objective was to establish a framework for pan-European surveillance for wildlife pathogens. This framework would include developing microarray tests for the detection of known agents, for the detection and identification of the nucleic acids of novel and unknown infectious agents, and for the serological screening of wildlife populations. The WildTech program aimed at the utilization of these technologies to assess the spread of selected priority pathogens, and the development of data management tools for the surveillance, early detection and control of wildlife pathogens in Europe at affordable costs.

The Working Group expressed interest in the project and recognized that it addressed questions which needed scientific investigation. The work to be carried out in order to validate the tests would implicate OIE Reference Laboratories and eventually would bring global benefits in the form of diagnostic tests for diseases in wild animals. The Working Group would follow up on WildTech programme with great interest.

12. Emerging Pandemic Threats initiative

Dr William Karesh provided an overview of the Emerging Pandemic Threats Program recently created and funded by the US Agency for International Development that intends to improve the global capacity to predict and prevent emerging diseases with pandemic potential. Dr Karesh is the Chief Technical Officer for one (PREDICT) of the 5 major sub-projects in the USAID Program. A large focus of the program is targeted towards diseases associated with wildlife. Areas of work for the overall program include: pathogen detection, risk modelling, risk reduction, wildlife surveillance capacity building, information sharing and management, and advanced training in human and veterinary public health. Dr Kate Glynn of the Scientific and Technical Department of the OIE also participated in the discussion. She described OIE’s role in one project within the EPT initiative, which has a specific focus on improving laboratory capacity and laboratory networks

13. Orbiviruses of wild Ruminants (Bluetongue Virus and Epizootic Hemorrhagic Disease Virus)

In response to a request from the Scientific and Technical Department, the Working Group discussed the merits of developing a new *Code* chapter on Epizootic Haemorrhagic Disease (EHD). The Working Group recommended that because of great similarities of EHD and Bluetongue and their etiologic agents, EHD-specific information and guidance should be added to the Bluetongue chapter in the *Terrestrial Animal Health Code* and the *Terrestrial Manual*. The chapters in the *Code* and *Manual* would then require new titles to indicate that both Bluetongue and EHD are considered in those chapters. The Working Group had suggested revisions to the Bluetongue chapter when it met in February 2009 and those suggested revisions were available in the report from that meeting. The Working Group would be available to assist in future updates of the bluetongue chapter, or, if a separate chapter is preferred, to assist in the drafting of a chapter on EHD.

14. Need for Guidance on validated diagnostic tests for traded susceptible wild animals

The Working Group had reviewed this issue in 2002, 2003, 2004, 2005, 2006 and 2009 and had agreed that an orderly review of the suitability for wildlife disease surveillance and diagnosis of current diagnostic tests for OIE Listed diseases should be undertaken. The process involved consultation with each relevant OIE Reference Laboratory to determine what diagnostic tests were available for a list of diseases, which of these tests would be suitable for use in some or all wild animal species, and what problems in sensitivity and specificity were recognized or anticipated when each test was applied to species for which it has not been validated. In 2005, the Working Group started to report results of this inquiry for several diseases, and it was suggested that the list currently ordered by diseases, in alphabetical order, could be updated each year by the Working Group. The previous lists can be found in reports of the Working Group from 2005 and 2006.

The general considerations and recommendations when using diagnostic tests in wildlife, produced by the Working Group, are attached as [Appendix VI](#), whereas the recommendations on the most suitable pathogen-specific diagnostic test, can be found in reports of the Working Group from 2005 and 2006.

15. Other Business

a) Guide on Terrestrial Animal Health Surveillance

A “Guide on Terrestrial Animal Health Surveillance” was discussed including aspects on surveillance in wildlife. Dr Lea Knopf of the Scientific and Technical Department of the OIE introduced the background of this project which had been initiated by the Scientific Commission and the ad hoc Group on Epidemiology. A new OIE *ad hoc* Group, composed of representatives of OIE Collaborating Centres in the field of veterinary epidemiology, was convened specifically for the editing of this Guide and included representatives from both the Canadian and the South African Collaborating Centres on wildlife. The Guide would be a practical document for use in the field and was not intended to duplicate or reiterate the content of text books and documents about animal disease surveillance already available. The Scientific Commission and the *ad hoc* Group had decided to integrate wildlife-specific aspects of surveillance into the Guide where ever appropriate, and not to treat wildlife issues in a separate chapter.

The Working Group supported the decision of the *ad hoc* Group to integrate wildlife components throughout the Guide. In addition, the Working Group proposed to review a draft of the Guide at an appropriate time in order to comment on the inclusion of wildlife-specific issues.

b) Information on the *ad hoc* Group on Bee Diseases

Francois Diaz from the Scientific and Technical Department of the OIE reported to the Working Group on the deliberations of the *ad hoc* Group on Diseases of Honey Bees. Domestic bee populations had declined importantly in Europe and North America while their status was not clearly documented in other regions. Domestic bees had many pathogens which are not on the OIE list of diseases. It was not yet clear whether any of these met the criteria for being added to the OIE list. There was potential for transmission of pathogens between domestic and wild bee populations.

The Working Group requested that the report from the *ad hoc* Group on Bee Diseases be sent to its members. The Working Group had the capacity to seek comments from experts in the biology and conservation of wild bees if this seemed warranted after its review of the report.

c) Timing of future meetings

In order to work more closely with the Scientific Commission and, through it, with other OIE Specialist Commissions, it would be highly advantageous for the Working Group to meet in the October-November period rather than in the January-February period. Such a mid-year meeting would require that the Working Group manage to evaluate the annual reports of wild animal diseases received through WAHIS-Wild, and emerging disease issues relevant to wildlife, through teleconferences and other remote means in order to include comments on these in its report to the General Assembly in May.

The Working Group noted the tentative dates of 11-15 October 2010 for its next meeting, pending confirmation.

.../Appendices

MEETING OF THE OIE WORKING GROUP ON WILDLIFE DISEASES
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Agenda

1. Opening Remarks and Welcome
2. Terms of Reference for the Working Group
3. *WAHIS-Wild* Update
4. Newly Emerging Issues with Disease
5. Draft Policy on Implications of Livestock Wildlife Interface
6. Matters of Interest for the WDWG from FAO
7. Request for guidance on avian influenza surveillance from OFFLU
8. Reports from the OIE Collaborating Centres engaged with wildlife
9. Training Workshops for OIE Focal Points
10. OIE Global Conference on Wildlife (February 2011)
11. Presentation on WildTech
12. Emerging Pandemic Threats initiative
13. Orbiviruses of wild Ruminants (Bluetongue Virus and Epizootic Hemorrhagic Disease Virus)
14. Need for Guidance on validated diagnostic tests for traded susceptible wild animals
15. Other Business
 - a) Guide on Terrestrial Animal Health Surveillance
 - b) Information on the *ad hoc* Group on Bee Diseases
 - c) Timing of future meetings

MEETING OF THE OIE WORKING GROUP ON WILDLIFE DISEASES

Paris, 1 – 4 February 2010

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WORKING GROUP ON WILDLIFE DISEASES: TERMS OF REFERENCE

1. The Working Group functions in liaison with the Scientific Commission and will report to the Scientific Commission of OIE.
2. Maintain global perspective and foresight on wildlife health and disease issues of importance to the OIE.
3. Assist the Scientific Commission and other OIE Specialist Commissions to incorporate wildlife issues into OIE Standards, as appropriate
4. Assist OIE Members to build or improve their capacity to meet OIE standards and obligations with respect to diseases in wild animals
5. Assist the OIE to receive, record, and interpret information on wildlife disease occurrence from official sources through WAHIS, and support an international network to provide information on wildlife disease occurrences from non-official sources.
6. Advise the Scientific Commission on risks, surveillance, responses and management with respect disease issues associated with wildlife.
7. Address specific issues brought to the Working Group by the Scientific Commission or the OIE Headquarters
8. Assist the OIE to communicate and disseminate information about wildlife disease issues, and represent OIE as requested.
9. Assist OIE to incorporate wildlife appropriately in its educational and scientific programs and publications
10. Assist OIE in supporting the activities of Collaborating Centres on wildlife diseases

MODE OF OPERATION FOR THE WORKING GROUP ON WILDLIFE DISEASES

1. The Working Group normally will hold annual one face-to-face mid-year meeting in Paris.
 2. The Working Group will meet by teleconference two or more times each year. These teleconferences will include representation from the Scientific and Technical Department of the OIE.
 3. The Working Group will establish a secure Internet forum through which to manage discussion, document reviews and related matters and through which OIE personnel also can access output from the Working Group's activities.
 4. The Working Group President will maintain additional regular communication with the OIE Scientific and Technical Department, and the OIE Animal Health Information Department as appropriate.
 5. The Working Group will revise its work plan annually.
 6. The operating language of the Working Group will be English
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RECOMMENDATIONS FOR A DRAFT POLICY ON THE WILDLIFE-DOMESTIC ANIMAL INTERFACE

1. Develop and propose a definition for *wildlife* for the purpose of the *Terrestrial Code*

Definitions of Wild, Captive Wild, Domestic, and Feral Animals

The Working Group revisited the issue of the definition of wildlife and recognized that ‘wildlife’ is defined in many different ways in jurisdictions around the world. After discussion, the WG recommended for the purposes of the *Terrestrial Animal Health Code* that four categories of animals be defined as they originally were in the 1999 OIE Wildlife Disease Working Group Report and more recently revised by the OIE *Ad hoc* Group on Epidemiology.

		PHENOTYPE SELECTED BY HUMANS	
		YES	NO
ANIMALS LIVE UNDER HUMAN SUPERVISION OR CONTROL	YES	Domestic Animals (a)	Captive Wild Animals (c)
	NO	Feral Domestic Animals (b)	Wild Animals (d)

- a) **Domestic Animals:** Animals with a phenotype selected by humans and that live under supervision or control by humans.
- b) **Feral Domestic Animals:** Previously domestic animals that now live without supervision, control by or dependence on humans.
- c) **Captive Wild Animals:** Animals that have a phenotype not significantly affected by human selection but that are captive or otherwise live under supervision or control by humans.
- d) **Wild Animals:** Animals that have a phenotype unaffected by human selection and live independent of direct human supervision or control.

The Working Group recognized that the Working Group most frequently uses the term “wildlife” to include c) Captive Wild Animals and d) Wild Animals. Feral Domestic Animals are sometimes considered “wildlife” by management authorities, since this group of animals can epidemiologically play a similar role as wildlife, or as alien invasive species.

The Working Group conducted a quick electronic search of the *Terrestrial Animal Health Code* and found the word “wild” used 90 times, and recognized that the word may need further clarification within the *Terrestrial Animal Health Code* to be consistently applied to specify which of the four defined animal groups above are being described.

The Working Group also noted that the above definitions should be considered for use with Reptiles and Amphibians.

2. Assess the advantages and disadvantages of different approaches in the *Terrestrial Code* for recognition of disease status for those diseases where wildlife plays a role in the epidemiology of the disease

The Working Group noted the analysis of the ad hoc Group on Epidemiology and modified in the following way:

Currently, the *Terrestrial Code* considers, for the purpose of country or zone freedom, different approaches for diseases that have a wildlife component. The specific question is how does the status of wildlife affect the disease status of a country or zone?

The analysis identified two approaches followed in the *Terrestrial Code*:

1. The status of infection in feral domestic animals, captive wild animals and wild animals does not affect the status of domestic animals because:
 - a. Little or no control in feral domestic animals, captive wild animals and wild animals is possible and every country essentially shares the same risk.
 - b. Control of transmission is feasible and an effective separation and reduction of transmission is achievable between wild and domestic populations
2. The status of infection in domestic animals, feral domestic animals, captive wild animals or wild animals affects the status of the other group because:
 - a. The disease is vector-borne and therefore an effective separation and reduction of transmission is difficult to implement
 - b. The disease is highly infectious and spreads readily from wild to domestic populations

The conclusion of the Working Group is that having these two separate approaches is useful and can be further refined or developed if needed in the future. For the purposes of chapters in the *Terrestrial Animal Health Code* and the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*, the Working Group continues to support an approach that diseases which may involve or affect captive wild animals and wild animals should be considered at a chapter by chapter, or specific disease approach based on best available science. The Working Group is available to review chapters at the request of the Scientific Commission on Animal Diseases.

In 2009, the Working Group reviewed the chapters in both the *Terrestrial Code* and *Terrestrial Manual* for: Bovine Tb, avian influenza, Newcastle Disease, Foot and Mouth Disease, African Swine Fever, and Classical Swine Fever.

3. Assess the trade facilitation issues such as zoning and compartmentalisation in the *Terrestrial Code* in relation to the wildlife/domestic animal interface and how this should/could be amalgamated or harmonised

The Working Group recognised that these issues are disease-dependent, and could include in addition to zoning and compartmentalization, specific commodities from both domestic and wild animal populations.

As in number 2 above, these approaches can be evaluated in terms of risk, integration of factors related to feral domestic animals, captive wild animals or wild animals into individual *Terrestrial Code* and *Terrestrial Manual* chapters is recommended.

4. Assess current disease specific surveillance guidelines for those diseases where wildlife is implicated in terms of cost, need, implementation and impact

Currently, the *Terrestrial Code* does not require specific surveillance of for all diseases where captive wild animals or wild animals are implicated and there is variation in recommendations for surveillance. Guidelines focused on the goal of ensuring safe trade in domestic animals and domestic animal products could be significantly different than guidelines that include protection of wild animals from diseases as a part of the goal. Depending on the goal of the surveillance, costs of surveillance of wildlife that may inform disease control efforts of domestic animals may be relatively low compared to the costs of not conducting that surveillance and may also contribute to determining the effectiveness of and improving bio-security methods of disease transmission in both directions – wild to domestic and domestic to wild.

Vaccination of wild animals to prevent disease transmission to domestic animals or people is not widely applicable for most diseases, but where it is, wild animal surveillance is an important component of control strategy monitoring and evaluation. Where vaccination is in rare cases used for wild animals and more commonly in captive wild animals, surveillance of some form is obviously needed for monitoring effectiveness. Testing of vaccination and surveillance techniques in captive wild animals provides unique opportunities to contribute to future disease control efforts, examples of which include rabies and canine distemper.

As the economic or societal value of wild animals increase, the benefits of surveillance of wildlife may exceed costs. The epidemiology of many infectious diseases in many wild animal species in many countries is poorly understood. Surveillance of wild species could also contribute to this understanding, which is needed, but not always necessary to meet conditions for trade. Information systems for diseases of wild animals such as OIE's WAHIS – Wild, will also contribute significantly to this body of knowledge over time.

Due to the spectrum of variables and the temporal nature of the cost - benefit ratios, it is recommended that OIE continues to consider surveillance of wild animals in terms of cost, benefits, practicality and impact on domestic animals, feral domestic animals, captive wild animals or wild animals at the individual *Code* and *Manual* chapter level.

It may be beneficial for OIE if the Working Group was to develop a clear rationale for wildlife disease surveillance, when it is needed and why it is useful, etc.

5. Trade issues related to wildlife – trade in wildlife *per se* and commodities of wildlife species origin

Once again, as the economic or societal value of wild animals increase, the benefits of surveillance of wildlife may exceed costs. The epidemiology of many infectious diseases in many wild animal species in many countries is poorly understood. Surveillance of wild species could also contribute to this understanding, which is needed, but not always necessary to meet conditions for trade. As for domestic animals, surveillance of wild animals or products in trade will depend on disease status of source and destination, and in many cases, control methods such as quarantine or long-term surveillance of populations can provide risk reduction methods similar to those used in domestic animals.

As diagnostic test methods improve, *Code* and *Manual* chapters should be updated to reflect new knowledge of diagnostic capabilities for wild animals. Traditional validation of diagnostic tests for most species will be rare for certain types of testing, while science-based decisions can be made about others. In many cases, work with captive wild animals may serve to further understanding in these areas.

6. Review of the policy for reporting of disease occurrences in wildlife taking into consideration trade concerns

The rapid development of *WAHIS-Wild* capabilities reminds us of the need to ensure Members have a clear understanding of when disease occurrences in wild animals affect trade and when they do not. This fact should be made apparent whenever practical, such as on the user interface for WAHID and *WAHIS-Wild*, in appropriate *Codes* chapters, during wildlife focal point training, etc. Where disease in wild or domestic animals does indeed threaten the movement of the disease via either the trade of wild animals or domestic animals or products, the need for reporting should be further emphasized.

7. The need to alter the focus on wildlife diseases to a pathogen approach versus a species approach and how this would impact on the current policy for developing international standards

The Working Group is in agreement that the *Terrestrial Code* and *Terrestrial Manual* should be organised by pathogen and not by host species. As noted by the *ad hoc* Group on Epidemiology, this is valid both for domestic and wild animals for the purposes of reporting to the OIE (see OIE list of notifiable diseases).

The *ad hoc* Group on Epidemiology also noted, “The *Terrestrial Code* follows a pathogen approach for all diseases with the exception of bovine tuberculosis and bovine tuberculosis of farmed cervidae, which is the same agent in a different species. In the case of the brucellosis chapters the approach is originally species based, however several species may be susceptible to the same pathogen. In addition there is an inconsistency between the list of notifiable diseases and the titles of the chapters in the *Terrestrial Code*.” The Working Group shares this observation as was noted in the report of the 2009 Working Group.

8. The implications in the development of OIE standards of the role of wildlife in the One World - One Health concept and the recommended approach the OIE should consider

The basic tenet of the One World – One Health approach as first described in 2005², maintains that human, domestic animal, and wild animal health are inextricably linked and the expertise from people working in these fields can achieve more by working together than they can working independently. The OIE has the opportunity to demonstrate this in a tangible and “real-world” manner by highlighting the importance of protecting the health of wild animals in its standards, and by taking leadership in making connections between the fields of animal health and wildlife conservation and management.

The Working Group can assist in facilitating the connections between the OIE and wildlife affiliated organizations such as the World Conservation Union (IUCN) Wildlife Health Specialist Group, the United Nations Environmental Program, the Wildlife Disease Association, and international NGO’s such as the Wildlife Conservation Society, the World Wildlife Fund, Wetlands International, Birdlife International, etc.

The proposed 2011 global conference on wildlife could serve as an important tool to help build these relationships with OIE and begin exploring mutual areas of interest such as policy development, best practices, cross-training, etc.

Related to impacts on OIE standards, as the interest in the value of wild animals increases, the Working Group anticipates a growing need for OIE guidance on guidance and standards for trade, best practices, etc. This could increasingly include *Terrestrial Code* chapters written for diseases that affect mainly wildlife and that may not be significant for domestic animals.

² Karesh & Cook, The Human Animal Link, Foreign Affairs, July, 2005

SURVEILLANCE³ FOR AVIAN INFLUENZA VIRUSES IN WILD BIRDS

Wild birds play important roles in the global circulation of avian influenza viruses and are reservoirs particularly of sub-types of low pathogenicity. Avian influenza viruses in wild birds can be transmitted to and from poultry and potentially to and from other domestic animals and people. In order to reduce health risks to wildlife, domestic animals and people, it is important to understand all aspects of the circulation of avian influenza viruses among susceptible populations: wild animals, domestic animals and humans. Thus, surveillance for avian influenza viruses in wild birds can supply critically important information.

Main objectives for surveillance of avian influenza viruses in wild birds

- To detect virus strains highly pathogenic to wild and domestic animals and to people.
- To detect virus strains of low pathogenicity of any sub-type that may pose risks to human and animal health.
- To detect infection of wild birds with virus sub-types derived from poultry.
- To gain a full understanding of the epidemiology and ecology of avian influenza viruses.

Surveillance approaches

General Surveillance (passive surveillance):

Avian influenza virus can be detected, through appropriate laboratory tests, in samples of wild animals received in diagnostic laboratories as part of programmes of general disease surveillance in which all causes of morbidity and mortality are under investigation. Most often, general surveillance is carried out on wild animals found dead. General surveillance based on wild birds found dead has proven to be the most effective form of surveillance to detect highly-pathogenic virus strains in wild birds.

Targeted Surveillance (active or risk-based surveillance):

Targeted surveillance focuses on samples that meet specified criteria such as species, sex and age of bird, geographic location, and time of year. The objective of targeted surveys often is to obtain a large collection of influenza viruses (pathogenic and non-pathogenic) in order to characterize these in terms of genetic and pathogenic properties, and to estimate infection rates. For these objectives, it may be most efficient to focus surveillance on bird species which use aquatic habitats since influenza viruses have been found most often in aquatic birds species, particularly ducks, geese and swans. Most commonly, birds included in targeted surveys are apparently healthy live wild birds, but such surveys can be carried out with samples from live birds, dead birds and freshly-expelled bird feces.

Sampling:

The samples to be taken from each bird, whether alive or dead, are a sample of oro-pharyngeal fluid and a sample of cloacal content. These two samples from each bird may be analyzed separately or combined for analysis. These samples are best taken with swabs (with tips and handles composed of synthetic materials) which then are placed in an appropriate virus transport medium. It is essential that samples be refrigerated or placed on ice as soon as they are collected and either analyzed immediately or frozen immediately for future analysis. Additional issues associated with sample procurement include possession of the necessary legal permits, training and competence to catch, handle, mark and release wild birds in keeping with international standards of animal welfare, and competence to identify correctly the species, and also often the sex and age, of each bird sampled. If serum samples are required, competence to obtain, handle and preserve blood samples and separate and freeze the serum will be required.

³ In this document, the word “surveillance” is used to include the activities sometimes separated under strict definitions of surveillance, monitoring and disease investigation.

Laboratory testing:

Only validated laboratory tests should be used to test samples for the presence of virus or to test sera for antibodies to avian influenza viruses. To test for virus, PCR procedures using internationally accepted primers for the matrix protein gene, or virus isolation carried out by techniques compatible with the OIE Manual, are the methods of choice. Tests for antibodies in sera must be valid for the species of bird being tested. In general, standard ELISA procedures are not acceptable because these require species-specific reagents. Blocking ELISA tests and virus neutralization procedures, as outlined in the OIE Manual, are recommended. Currently, serological tests have very limited capacity to distinguish among strains of influenza viruses to which the bird may have been exposed, and a positive test may indicate only that the bird was exposed at some time in the past to some strain of influenza A virus.

Categories of data needs

Basic epidemiological information includes:

- Location (Latitude and Longitude or UTM coordinates)
- Date of sample collection
- Species (*Latin* name), and sex and age where possible
- Number dead and number alive at location
- Morbidity, mortality and clinical signs, where relevant
- Co-occurrence of disease in other species, including domestic animals and humans

Molecular genome sequencing:

Full genome sequencing provides important information about the origins, evolution, and characteristics of the virus, including genetic reassortment. Full genome sequencing is preferred, and is important in assessing the genetic basis of antiviral resistance and pathogenicity in different species. If full genome sequencing is not possible, partial genome sequencing can provide some important information.

All sequence data must be clearly linked to the date, location and species from which the sample was taken, particularly when deposited in public-access data banks.

Antigen data:

Antigen data can provide important information to ensure that diagnostic reagents are compatible with circulating field viruses and that diagnostic tests are therefore fit for purpose. It is also important to ensure that vaccine efficacy is optimal in terms of matching vaccine antigen to field viruses.

Reporting and response

- The OIE must be notified of any infection of wild birds with H5 or H7 virus sub-types.
- All additional relevant findings from surveillance for avian influenza viruses in wild birds should be reported to wildlife, domestic animal and public health authorities at the appropriate level. It is recommended that countries share information with other relevant stakeholders.
- Results of surveillance for avian influenza viruses in wild birds should be included in the annual report on occurrence of non-listed infections in wildlife through the *WAHIS-Wild* reporting system of the OIE.
- The occurrence of Highly Pathogenic Avian Influenza viruses in wild birds, including H5 and H7 subtypes, does not justify the imposition of trade restrictions.
- In the event of wild bird mortality caused by Highly Pathogenic Avian Influenza, local poultry farms should be advised to verify or implement appropriate biosecurity measures.

Risk communication

It is important that wildlife, veterinary and public health authorities develop a coordinated risk communication strategy following positive surveillance findings. The risk communication strategy should strive to maintain an appropriate level of awareness among key stakeholders and the general public while not creating undue concern.

Since avian influenza viruses occur regularly in wild birds, it is expected that wild bird surveillance efforts will detect these viruses irrespective of any role wild birds may play in local epidemiological events involving poultry. It is not justified to attribute the source of avian influenza virus infection in poultry to wild birds unless complete investigations have been carried out and the results fully support such attribution. Response actions such as killing wild birds or destroying their habitat should be prohibited.

Outbreak investigation

Under some circumstances, it may be appropriate to remove and properly dispose of the carcasses of wild birds which have died from avian influenza, to prevent or reduce the spread of infection.

In the event of an outbreak of avian influenza in poultry, there may be some value in undertaking surveillance for the causal virus in live and dead wild birds in the vicinity of the affected farm to determine whether or not the causal virus is present in local wild birds. Interpretation of results will not permit determination regarding the direction of transmission of the virus between poultry and wild birds, but may inform biosecurity measures on other premises.

Role of epidemiological studies and research

It is recognised that valuable information can be gathered through ecological and epidemiological studies and other research to improve our understanding of the movement, maintenance, transmission and persistence of influenza viruses across the wildlife-domestic animal-human interface. Countries should maximise the use of such studies and research to improve local, regional and global understanding.

SENSITIVITY AND SPECIFICITY OF SOME DIAGNOSTIC TESTS FOR WILDLIFE DISEASES

Routine diagnostic tests that have been developed and are currently used for detecting or confirming diseases in domestic livestock have generally not been validated for wildlife. The question remains as to whether there are any essential differences in sensitivity or specificity of these tests when they are applied to wildlife samples and whether the Working Group for Wildlife Diseases should put forward suggestions for amending and updating the next edition of the OIE *Terrestrial Manual* where relevant.

Diagnostic tests can arbitrarily be divided into two categories:

- 1) AGENT IDENTIFICATION TECHNIQUES, which includes both directly visual diagnostics as well as antigen detection techniques.
- 2) INDIRECT TECHNIQUES

There will, however, always be some overlap in these categories.

1. AGENT IDENTIFICATION TECHNIQUES

a) Directly visual diagnostics

1. Macroscopic – identification of macroparasites (helminths, ectoparasites and larval myiasis) and disease vectors (winged and flightless arthropods) OR pathognomonic macroscopic lesions at necropsy.
2. Microscopic
 - i) Detection and identification of micro-parasites in body fluid or tissue smears, skin scrapings, faecal examinations and urine sediments. Examples are haemoparasites, anthrax bacilli, microfilaria, dermatomycoses, entero-protozoons, helminth eggs and micro-ectoparasites. Specific stains may be required.
 - ii) The typical light microscopic appearance or electron-microscopic features of specific diseases in histopathological organ sections, e.g. mycobacteriosis, spongiform encephalopathies, systemic mycoses, viral inclusion bodies, systemic protozoa etc, etc Specific stains may be required.
 - iii) Making use of fluorescent conjugates to identify aetiological agents in tissue smears, e.g. fluorescent antibody techniques used for diagnosis of rabies and clostridial infections.
 - iv) Immunohistochemical techniques for demonstration of the aetiological agent in tissue sections, e.g. rabies, Rift Valley fever, spongiform encephalopathies.

b) Antigen detection

There are various direct and indirect methods of detecting infectious agents and antigen in specimens. These include :

1. In vitro or in vivo culture – commonly used to isolate bacteria, viruses, fungi and some protozoa.
2. Molecular techniques – including PCR amplification of the agent's genetic material, and specific DNA probes to detect antigen.

What is very important is that all of these agent identification diagnostic techniques should theoretically not be affected by the species of the host, i.e. domestic livestock or wildlife. There may be some species variation in the proliferation rate or amplification of the agent, which may affect the amount and distribution of antigen in the tissues.

2. INDIRECT TECHNIQUES

These techniques are mainly serum / plasma based immuno-assays which rely on detecting the host's response to the antigen. These assays directly or indirectly measure antibody levels or cellular immune responses to the specific agent, which may have resulted from exposure, infection or disease. Examples are virus neutralisation tests, all the various ELISA techniques, complement fixation tests, haemagglutination inhibition tests, precipitin tests, gamma interferon tests and intradermal antigen response tests.

Most of these tests involve the comparison of results with known positive and negative controls, and interpretation of the results depends on set "cut off" point levels. These serological tests are frequently used in specific disease surveys, or to test batches of animals prior to certification or movement. They are also used in individual diagnostics where repeat testing is used to assess sero-stability. Some indirect technique tests for specific diseases have been used for many years in certain wildlife species with excellent results. However, it is with these indirect test techniques that we may have a problem with sensitivity and specificity, and where species validation becomes important

Overview of the quality of diagnostic tests for wildlife diseases: state of the art

The methods used in some tests assure that results obtained are not adversely affected by differences in the animal species to which the tests are applied. Many of the standard tests to identify infectious agents are in this category - culture for bacteria and viruses, and PCR for example. Other test methods only can be applied to one or a small number of species. Examples are all Indirect ELISA tests, in which an antibody that reacts with the immunoglobulin molecules of the host animal species is required within the test. Thus, unless such host species-specific antibodies have been developed, the results of these tests are not valid and will be highly misleading if applied to samples from other species of animals. On the other hand, competitive and blocking ELISA tests and the Fluorescence Polarization Assay do not require host species specific antibodies and thus can be applied to samples from any species of animal.

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