The meeting of the Working Group on Wildlife Diseases was held from 19 to 21 October 1999 at the OIE Central Bureau.

Dr J. Pearson, Head of the Scientific and Technical Department of the OIE, welcomed the participants on behalf of Dr J. Blancou, Director General of the OIE. Dr M.H. Woodford was elected chairperson of the meeting and Drs R. Bengis and M. Artois were appointed rapporteurs. The agenda and list of participants are given in Appendices I and II, respectively.

The Working Group would like to commend the following countries for their positive contributions: Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Iceland, India, Italy, Kenya, Latvia, Namibia, New Zealand, Norway, Portugal, Saudi Arabia, South Africa, Spain, Sweden, Switzerland, Uganda, the United Kingdom, the United States of America, Zambia and Zimbabwe.

Despite the widespread circulation of the standardised wildlife disease reporting questionnaire, few reports were received from certain large geographical areas, including Central and South America, West, Central and Northern Africa, South-East Asia and Australia.

This means that there are large gaps in our knowledge of important listed and emerging diseases of wildlife throughout the world.

The Group would therefore urge the Chief Veterinary Officers of all Member Countries to assist the OIE to broaden the scope of its global wildlife disease surveillance.

It would appear that some OIE Member Countries did not respond to the questionnaire due to fear of the potential impact on their trade status. This matter was addressed by the incorporation into the questionnaire of a statement requesting that the facts relating to any trade-sensitive disease in wildlife should first be cleared by the Chief Veterinary Officer of that country.
1. Regional review of selected wildlife diseases

**List A diseases**

**Classical swine fever**

Classical swine fever (CSF) among wild boar (*Sus scrofa*) remains a problem of great concern in Europe. During the reporting period (1998), outbreaks were reported from the Czech Republic, France, Germany, Italy and Switzerland.

In May 1998, wild boar with signs of CSF were detected in the canton of Ticino, Switzerland; CSF virus was isolated and RT-PCR\(^1\) showed that this virus was identical to an isolate previously recorded in wild boar from the area of Varese (Italy). This outbreak is the only one recorded in Europe in an area where no cases had been registered previously.

Several reports were published in 1998/99 under the auspices of the European Commission on the control of CSF among wild boar. Meetings were held, proceedings were published, and a Working Group provided a report. In countries with CSF in domestic pigs, wild boar may be infected due to contact with infected pigs. Once introduced, the virus is spread by direct and indirect contact between infected and susceptible wild boar. Persistently infected piglets are said to contribute to virus circulation. The virus may be transmitted directly (when contact is possible) or more often indirectly (farmers who are hunters, contaminated food) from wild boar to domestic pigs. In Germany and Italy, epidemiological evidence suggests cross-over transmission of the CSF virus between domestic pigs and wild boar. Where appropriate separation exists between domestic pigs and wild boar, human activities are the main explanation for the introduction of CSF from the wild to the domestic porcine populations or *vice versa*. The disease can die out spontaneously or persist without signs of self-limitation. Endemic CSF situations seem to have become more prevalent in Europe in recent years.

When the infection is confirmed, several actions should be carried out to monitor and control CSF. Different control strategies must be considered in accordance with the trends in the percentage of infected or seroconverted wild boar over time, the size of the wild boar population and the existence of natural barriers. (Documents can be requested from the Scientific Committee on Animal Health and Animal Welfare, Directorate General XXIV, European Commission).

**Foot and mouth disease**

A clinical outbreak of foot and mouth disease (FMD), caused by the SAT 1 virus type, was reported in impala (*Aepyceros melampus*) in the Kruger National Park (KNP) in South Africa. This epizootic was detected in May 1998 at an early stage of its development, when it was localised to an area of approximately 50 square kilometres. By the time that the clinical end-point had been reached in October 1998, impala had become infected in an area of approximately 2,000 square kilometres.

A total of 238 impala were sampled during this outbreak, of which 32% were macroscopically positive and/or sero-positive. No age or sex predilection was noted. This was the first impala outbreak involving a SAT 1 virus to be detected in 16 years, and the virus strain isolated was similar to, but not homologous with, a buffalo isolate collected 60 km to the north of this outbreak in 1996. This particular virus strain is highly pathogenic in impala, and severe and extensive oral and hoof lesions were seen in many of the infected animals.

In another observation from the KNP, SAT 3 virus was isolated from a sheath washing and the sperm-rich fraction of semen from a buffalo bull (*Syncerus caffer*), and a vulval swab from a buffalo cow. This buffalo population is endemically infected with SAT 1, 2 and 3, and these findings raise the question as to the possible role of sexual transmission of FMD in buffalo.

\(^1\) RT-PCR: reverse-transcription polymerase chain reaction
An illegal movement of seven buffalo out of the FMD control area was detected this year. All seven animals were destroyed and all had positive titres to SAT 1, 2 and 3. Virus was also isolated from some pharyngeal tissue. Fortunately, no transmission to domestic stock occurred, and quarantine was lifted after six months.

A few impala serum samples from the Lake Mburo National Park in Uganda were found to be sero-positive for SAT 1 and SAT 2.

Two Asian elephants (Elephas maximus) in southern India (one domestic and one semi-domestic) developed clinical signs of FMD. No virus was isolated, but both animals were reported to be sero-positive.

**Newcastle disease**

In Austria, Newcastle disease (ND) was detected in pigeons (Columba livia) by serological tests, virus isolation and intracerebral pathogenicity index.

ND virus and pigeon paramyxovirus were obtained from pigeons from 1992 to 1997 in Germany.

ND was not reported in Canada, but ND virus was isolated from cormorants (Phalacrocorax auritus) in California (USA) in 1998.

In Zimbabwe, ND reportedly killed more than 200 ostrich (Struthio camelus) at one location in 1998. Neurological signs predominated, encephalitis was present and the diagnosis was confirmed by virus isolation.

**Rift Valley fever**

Following the El Niño associated torrential rains that occurred in East Africa during 1997/1998, major outbreaks of Rift Valley fever (RVF) were reported in that region. In 1998/1999, the above average precipitation moved southwards into Southern Africa and significant population explosions of endemic haematophagous arthropods took place. A predicted increase in the incidence of arthropod-borne diseases also occurred. In South Africa, the first outbreak of RVF in 18 years was detected in a group of captive African buffalo in the KNP, and was characterised by an abortion storm in pregnant cows. The necropsy findings were typical of an haemorrhagic disease with hepatic involvement and RVF virus was isolated from the tissue of five out of the six fetuses presented. This appears to be the first ever report of clinical RVF in African buffalo.

Post-outbreak buffalo aerial census results are currently being evaluated in an attempt to determine whether similar abortions (possibly indicated by reduced calf recruitment) occurred in free-ranging herds.

RVF virus was also isolated from a waterbuck (Cobus ellipsiprymnus) carcass from a private nature reserve adjoining the KNP. No outbreaks in, or spread of infection to, adjoining farming areas were documented.

**Rinderpest**

In the current reporting years, several significant rinderpest sero-surveys were undertaken by the Pan-African Rinderpest Campaign (PARC) in East, Central and West Africa. No results have been received as yet on the wildlife component sampled in these surveys.
**List B diseases**

**Anthrax**

A significant epizootic of anthrax occurred in the KNP and adjoining private nature reserves in South Africa during the winter of 1998-1999. More than 160 cases involving 15 species were confirmed. Greater kudu (*Tragelaphus strepsiceros*) and African buffalo together constituted 68% of the positive carcasses; these species appear to be the most readily infected and are major amplifiers of this disease. Small numbers of the other 13 species were incidentally and sporadically infected. A significant number of lions (*Panthera leo*) became infected from feeding on diseased carcasses. Lions generally develop subacute disease, characterised by massive swelling of the soft tissue of the head. Subacute infections in lions were treated successfully with antibiotics in several private nature reserves.

The outbreak eventually covered an area of 6,000 square kilometres and appeared to reach a clinical end-point with the advent of the first spring rains.

In Namibia, 76 cases of anthrax were reported in wildlife, of which most cases occurred in the endemically infected Etosha National Park. Eleven species of wildlife were affected, most commonly African elephant (*Loxodonta africana*), zebra (*Equus burchelli*), blue wildebeest (*Connochaetes taurinus*) and springbok (*Antidorcas marsupialis*).

In Canada, three bison (*Bison bison*) and one white-tailed deer (*Odocoileus virginianus*) were reported to have died of anthrax. They were all captive animals in a zoo.

**Avian cholera**

Avian cholera occurred in double-crested cormorants in Canada and in wild waterfowl in California and Utah (USA).

**Bovine tuberculosis**

Bovine tuberculosis continues to be a major cause for concern in certain wildlife populations on several continents. These concerns relate to both the potential effects this disease may have on certain wildlife populations, as well as the regulatory and veterinary public health concerns of having sylvatic reservoirs of infection in countries with active ongoing bovine tuberculosis eradication schemes and in countries that already have bovine tuberculosis free status in their national cattle herds.

In Africa, bovine tuberculosis is a major problem in:

- The KNP and Hluhluwe/Umfolosi Park in South Africa, where an increase in bovine tuberculosis prevalence and an expansion of the spatial distribution of the disease have been reported in African buffalo, and incidental ‘spill over’ of infection has occurred in five sympatric species, including greater kudu, baboon (*Papio ursinus*), lion, cheetah (*Acinonyx jubatus*) and leopard (*Panthera pardus*).

- In Uganda, where bovine tuberculosis, which has already been documented in the Queen Elizabeth National Park (QENP) since the late 1960s, has now also been confirmed in buffalo in the Kadepo Valley National Park in that country.

- In Zambia, where for some years, the presence of bovine tuberculosis in Kafue lechwe (*Kobus lechwe*) and cattle has been documented on the Kafue flats. In 1998, spillover of infection into sympatric wildebeest herds was documented for the first time.

In Europe, bovine tuberculosis was reported from the following countries:

- In Spain, bovine tuberculosis was confirmed in fallow deer (*Dama dama*): 7 cases; red deer (*Cervus elaphus*): 13 cases; wild boar (*Sus scrofa*): 22 cases, and lynx (*Lynx lynx*): 1 case.
• In the United Kingdom, bovine tuberculosis was reported in badgers (*Meles meles*): 367 cases; roe deer (*Capreolus capreolus*): 1 case; fallow deer: 2 cases, and red deer: 3 cases; a further 3 cases were reported in domestic cats.

• In Italy, *Mycobacterium* infection has been recorded on a regular basis in the region of Liguria, for several years. The origin of the contamination is still not known and extension of the foci of infection remains to be clarified.

In the United States of America, the bovine tuberculosis outbreak in white-tailed deer (*Odocoileus virginianus*) in the State of Michigan continues to be a cause for concern, with spill-over documented in coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), black bear (*Ursus americana*), bobcat (*Lynx rufus*) and cattle.

Attempts are being made to contain and control the disease by:

a) reducing deer population densities in the affected counties;
b) banning the practice of supplementary feeding and baiting of deer.

In Hawaii, the search for a sylvatic reservoir of bovine tuberculosis has begun, following the diagnosis of this disease in a slaughtered cow (first case in 10 years). At this stage, feral swine appear to be the most likely source of infection, following PCR detection of *Mycobacterium tuberculosis* complex in 2 out of 82 animals.

In Canada, bovine tuberculosis is endemic in one bison subpopulation, and a single case in an elk was also confirmed.

**Brucellosis**

Bovine brucellosis remains endemic in several free-ranging populations in Africa. Primary species affected include buffalo, hippopotamus (*Hippopotamus amphibius*) and waterbuck.

In Europe, *Brucella suis* biovar 2 was detected in wild boar in France and Italy, and in brown hare (*Lepus europaeus*) in Austria, the Czech Republic, France and Switzerland. A recent increase in *B. Suis* biovar 2 infection in domestic swine bred in the open air, lead to the proposition that a wild reservoir is a source of the pathogen.

Brucellosis was reported in chamois (*Rupicapra rupicapra*) and red deer (*Cervus elaphus*) in the Alps (France).

In Canada, *B. abortus* was isolated from American bison and *B. suis* biovar 4 was cultured from reindeer and caribou (*Rangifer tarandus*). *Brucella* sp. was isolated from beluga whale (*Delphinapterus leucas*), narwhal (*Monodon monoceros*) and ringed seal (*Phoca hispida*).

In the United States of America, brucellosis was reported in elk (*Cervus elaphus canadensis*) in eastern Idaho. Previously, Wyoming was the only State reporting infected elk. Surveillance of hunter-harvested elk detected 7% sero-prevalence in eastern Idaho. Trapping and testing of 111 elk at a feeding site revealed that approximately 50% of the elk were sero-positive or sero-positive suspects. Elk have received supplementary feed in eastern Idaho for several years and this artificial situation greatly enhances the potential for transmission of the disease agent.

In Peru, antibodies against *B. mellitensis* were detected in fur seal (*Arctocephalus australis*). Antibodies to *B. suis* were not detected in white-lipped peccaries (*Tayassu pecari*).

**Duck virus enteritis**

Duck virus enteritis was diagnosed in Indiana and Virginia (USA). The disease was diagnosed in mute swans (*cygnus olor*), shelducks (*Tadorna tadorna*) and mallards (*Anas platyrhynchos*) in the United Kingdom and in migratory birds in India.
Rabies

Terrestrial rabies is enzootic in wildlife in parts of the United States of America and Canada. Oral rabies vaccination programmes are ongoing in four States and one Canadian province.

The rabies epidemic in foxes continues to abate in western Europe in the wake of oral vaccination campaigns. Other forms of rabies, in particular infection in bats by the EBL virus (European bat lyssavirus) persist with no notable change. However, in early 1999, an Egyptian fruit bat (Rousettus aegyptiacus) was found to be infected with a strain of a rabies virus of African origin in the south of France. Fruit bats (fruit-eating megachiroptera) are not present in Europe, but they have been sold as pets in recent years. This specimen had been imported directly from Africa (country unknown) in January 1999 into Belgium, sold to a pet shop in Bordeaux (Gironde, France) in March 1999, and died in the Gard (France) in May of the same year. One hundred and twenty two people had to follow a course of preventive treatment against rabies. The sale of the Egyptian fruit bat, and certain other chiroptera, which is legal in the European Union, will certainly have to be swiftly reviewed in view of the health risks now identified in various countries (Lyssavirus and Hendra and Nipah viruses, for example).

Tularemia

Outbreaks of tularemia (Francisella tularensis type B) were observed in Scandinavia, Austria and Spain in 1998. The outbreak in Spain started in late 1997 and continued in early 1998. The disease was observed in Iberian brown hares (Lepus granatensis), European brown hares and one rabbit (Oryctolagus cuniculus). Several human cases were also reported. The disease is believed to have been introduced into Spain with imported hares. The outbreak of tularemia in Spain is thought to be the first outbreak of this disease on the Iberian Peninsula.

Avian vacuolar myelinopathy in the United States of America

Since 1994, a total of 56 bald eagles (Haliaeetus leucocephalus) have died while wintering in Arkansas of a neurological disease of unknown causes but described as avian vacuolar myelinopathy (AVM). In November 1996, American coots (Fulica americana) with neurological signs were observed at DeGray Lake, and eagle mortality began shortly afterwards. Affected coots and eagles had identical brain and spinal cord lesions of intramyelinic oedema, and lesions were also detected in coots without neurological signs. It is believed that eagles acquire AVM by ingesting affected coots; however, independent exposure of both species to the cause of AVM cannot be ruled out. The cause of AVM remains undetermined, despite extensive laboratory and field investigations, but an unknown man-made or natural neurotoxin is suspected.

In 1997, AVM was detected in coots in Georgia and North Carolina. A subsequent epidemiological investigation revealed that AVM may have occurred as early as 1990 in coots at the North Carolina site. During 1998-1999, AVM caused bald eagle and coot mortality in Georgia, North Carolina and South Carolina. Additionally, AVM was confirmed in mallards (Anas platyrhynchos) and ring-necked ducks (Aythya collaris) and was suspected in buffleheads (Bucephala albeola), an American widgeon (Anas americana) and a northern shoveler (Anas clypeata) at a single North Carolina residential lake. The finding of AVM at several remote locations indicates that the disease is more widespread than previously recognised, and that the Arkansas area may not be the only source of exposure to the cause. The discovery of ducks with AVM broadens the known species’ distribution of this disease, including one domestic species.

In 1999, a new federal initiative to investigate AVM as a national problem commenced, whose primary goal is to determine the cause of AVM and identify management techniques that may minimise or eliminate this problem in wild birds. The Southeastern Cooperative Wildlife Disease Study (SCWDS), with the assistance of several state and federal wildlife resource agencies, began a two-year research project to investigate the epidemiology of AVM. Field crews visited sites in eight southeastern States to observe coots for clinical signs
and to collect normal and affected coots for necropsy and microscopic examination of brain tissue for lesions. Light microscopic examination of more than 900 brains detected lesions in coots at locations in Arkansas, Georgia, North Carolina and South Carolina.

**Chronic wasting disease**

In the western United States of America, both targeted and harvest-based surveys for chronic wasting disease (CWD) in wild deer and elk have been continuing for several years in the endemic zone in northeastern Colorado and southeastern Wyoming. More recently, surveillance efforts have expanded to include deer and elk populations outside the endemic zone. Since 1997, harvest-based surveys have been conducted in Arizona, Kansas, Montana, Nebraska, Nevada, South Dakota and Utah, as well as outlying portions of Colorado and Wyoming. In all, brainstems from over 3,500 free-ranging deer and elk from western ranges outside known CWD-endemic areas have been examined microscopically for evidence of CWD infection. All have tested negative, indicating CWD is probably not widespread among native deer and elk populations. Additional sampling is planned in a number of western and midwestern States during the hunting seasons in autumn 1999.

In the eastern United States of America, less surveillance has been conducted as no infection has been detected. Microscopic examinations of brain sections have failed to detect any positive or suspect animals since surveillance began in late 1997. Animals examined for CWD lesions include 86 white-tailed deer collected for herd health examinations, 33 privately held white-tailed deer that were seized for illegal ownership, 19 white-tailed deer and 4 elk that were submitted for diagnostic service, and 10 hunter-killed elk from Arkansas. Additional white-tailed deer that were collected during the summer and autumn of 1999 are being tested in conjunction with herd health checks in several southeastern States.

The SCWDS at the University of Georgia conducted a surveillance questionnaire that was distributed during the autumn of 1998. Respondents were asked to provide information on any cervids that were potential CWD cases where the animal fit a ‘target animal profile’. Thirty-five non-affected States and one territory responded that no target animals had been identified. Eleven non-affected States reported that 23 animals were tested for CWD, as they fit the definition of target animals and were found to be negative. Five non-affected States also responded that they had ongoing surveys in hunter-killed deer or elk.

Two cases of CWD were diagnosed in captive elk; one case was in Nebraska and the other in Colorado. All associated captive elk herds are being held under close surveillance.

**Crocodile diseases**

A high number of cases of crocodile pox have been diagnosed in farmed reptiles (Crocodylus niloticus) in Zimbabwe. Several outbreaks of crocodile mycoplasmal polyarthritis have also been diagnosed in these farms, based on clinical appearance and confirmed by culture as well as frequent cases of chlamydial hepatitis, diagnosed and confirmed by IFT2 and histopathology.

Twelve out of thirty-eight farms were found to be infected with crocodile trichinosis in Zimbabwe.

**Escherichia coli O157:H7 survey in deer**

An investigation was carried out on the role of white-tailed deer as potential carriers of Escherichia coli O157:H7 at a site where the organism was cultured from wild white-tailed deer (Odocoileus virginianus). The objective was to identify any possible inter-relationships between E. coli O157:H7 in domestic cattle and free-ranging deer at the same location. Field work for this project began in November with the collection of faeces from hunter-killed deer at a site where deer were previously found to be infected; faecal samples from 3 out of 77 hunter-killed deer had tested positive for E. coli O157:H7 in November 1997. In November and December 1998, a total of 140 deer faecal samples were cultured and found to be negative for E. coli O157. To date, 305 beef and dairy cattle samples from this location have been cultured for the organism, and 13 positive animals have been detected. DNA fingerprinting indicated that the deer isolates from 1997 were not the same as the isolates obtained from cattle in 1999.

**Floppy trunk syndrome**

2 IFT: Immunofluorescence test
Six cases of floppy trunk syndrome were diagnosed in Matusadona National Park and two at Malilangwe in Zimbabwe. A further three cases were observed in the KNP, South Africa. The aetiology of this syndrome still remains unknown.

**Haemorrhagic disease outbreaks in the United States of America**

After many years of dominance by serotype 2 of epizootic haemorrhagic disease virus (EHDV), EHDV serotype 1 has caused mortality in white-tailed deer in Georgia, Maryland, New Jersey, North Carolina and Virginia in 1999. The SCWDS has also isolated bluetongue virus serotype 13 from one white-tailed deer in North Carolina. The mortality events that are occurring may be due to a low level of immunity to EHDV-1 as opposed to EHDV-2, but there are no serological data to confirm this supposition.

The initial case was submitted from Georgia on 19 August 1999. All cattle isolates were serotyped as EHDV-2, and all came from clinically affected animals in Dallas County, Iowa.

**Mongolian gazelle die-off**

In 1998, a die-off of "thousands" of gazelles in Mongolia has been diagnosed as due to foot rot caused by *Fusobacterium necroforum*. This outbreak is said to have been associated with unusually heavy rains in July and August 1998. In 1963-64, large numbers of Mongolian gazelle (*Procapra gutturosa*) died in an outbreak of FMD, and in 1974, 140,000 gazelle are said to have died of pasteurellosis.

**Mycoplasma gallisepticum in house finches and other wild birds near poultry**

During the winter of 1994, acute conjunctivitis, subsequently associated with *Mycoplasma gallisepticum* (MG), was reported in house finches (*Carpodacus mexicanus*) in the mid-Atlantic States (USA). Since then, MG-infected house finches have been detected throughout the eastern United States of America. The adaptation of MG to a free-living avian species presents many potential problems for future control of this pathogen in poultry. To evaluate the risk associated with this emerging problem, the prevalence of MG infection in house finches and other common passerine species must be determined at the farm level. The specific objectives of this field study were to: (1) determine the prevalence of MG infection among house finches and other passerines commonly associated with poultry production facilities; and (2) evaluate existing MG diagnostic techniques for use in house finches and other passerine birds.

Between November 1997 and March 1999, over 1,000 birds were captured at poultry farms and non-poultry sites in the same area. After capture, blood samples were collected and tested by serum plate agglutination (SPA) for antibodies to MG. A sample of house finches and 11 other passerine species were retained for necropsy based on positive SPA tests, and samples were collected for testing by culture, polymerase chain reaction (PCR), haemagglutination inhibition (HI) testing, and histopathology. SPA testing revealed 19% of birds caught at farms and 11% of birds caught at non-poultry sites were sero-positive for MG. Only house finches were positive for MG by culture and PCR, but tufted titmice (*Baeolophus bicolor*) were positive by PCR only. Results indicate that MG remains at low levels in house finches in the area, but that tufted titmice may be potential carriers. Non-specific reactions or contact exposure are probable explanations for positive SPA reactions in other species.

**Ostrich pox**

Three cases were diagnosed in farmed ostriches (*Struthio camelus*) in Zimbabwe, based on clinical appearance and histology.
Paratuberculosis (Johne's disease) in wallabies on Kangaroo Island, South Australia

Paratuberculosis is reported to infect Tammar wallabies (*Macropus eugenii*) on Kangaroo Island, South Australia, but so far there has been no evidence of transmission amongst the wallabies or to the domestic sheep population. This is said to be the first time paratuberculosis infection has been detected in Australian wildlife.

Sarcoptic mange

Sarcoptic mange continues to be a common and severe disease in animal populations in different parts of the world. In most parts of Europe, sarcoptic mange in red foxes (*Vulpes vulpes*) is still very common. In these areas, fox mange also occurs in other carnivores, such as lynx (*Lynx lynx*), pine marten (*Martes martes*) and raccoon dog (*Nyctereutes procyonoides*). In the Alps and Iberian mountains, sarcoptic mange continues to be a common disease in chamois (*Rupicapra rupicapra*) and ibex (*Capra ibex*). An increased incidence of sarcoptic mange was reported from the Masai Mara and Tsavo National Parks in Kenya, in cheetah and lion.

Sero-survey of lions in Queen Elizabeth National Park, Uganda

A sero-survey of lions captured in the Queen Elizabeth National Park (QENP) in Uganda gave the following results:

<table>
<thead>
<tr>
<th>Disease</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feline infectious peritonitis</td>
<td>9/9 Negative</td>
</tr>
<tr>
<td>Feline calicivirus</td>
<td>7/9 Positive</td>
</tr>
<tr>
<td>Feline herpesvirus</td>
<td>4/9 Positive</td>
</tr>
<tr>
<td>Feline panleucopaenia</td>
<td>9/9 Negative</td>
</tr>
<tr>
<td>Feline immunodeficiency virus</td>
<td>6/9 Positive</td>
</tr>
<tr>
<td>Canine distemper virus</td>
<td>1/9 Positive</td>
</tr>
<tr>
<td>Toxoplasmosis</td>
<td>9/9 Negative</td>
</tr>
</tbody>
</table>

West Nile-like virus epizootic update

An outbreak of human illness due to a ‘West Nile-like’ virus that has been diagnosed in the New York City area has caused 5 deaths and over 50 additional cases with viral meningitis. Centres for Disease Control (CDC) laboratories have sequenced a portion of the viral genome and determined it to be 90% homologous with West Nile virus. Two laboratories have confirmed that the virus from human cases is the same virus as that isolated from birds. West Nile virus is a mosquito-borne virus that has never before been diagnosed in the Western Hemisphere. The outbreak was detected in mid-August, and the last human case was diagnosed on 16 September 1999. Public health officials have encouraged people to take precautions to reduce exposure to mosquitoes, and an intensive mosquito-spraying programme was implemented.

West Nile virus is within a large group of viral agents that are spread by biting arthropods, hence the classification arthropod-borne virus or ‘arbovirus’. Originally discovered over 60 years ago in Uganda, West Nile virus has been found later or in countries throughout Africa, the Middle East, southern Europe, the Mediterranean and Eurasia. Human illness usually manifests as flu-like signs, such as fever, headache, muscle soreness, sore throat and rash. Severe cases involve inflammation of the brain and meninges (meningo-encephalitis) and heart (myocarditis). Overall mortality in people ranges from 3 to 15% and is more common in the elderly.

West Nile virus has been isolated from over 40 species of mosquitoes and also from some ticks. In nature, the virus cycles between apparently healthy birds and biting mosquitoes, and birds are considered to be the maintenance vertebrate hosts for the agent. The current problem in the New York area is unique from previous occurrences, as wild birds are dying from infection. American crows (*Corvus brachyrhyncos*) have been the hardest hit; crow mortality has been seen in New York, Connecticut and New Jersey. The New York Department of Environmental Conservation has examined over 70 confirmed cases in birds. One well-publicised site is the Bronx Zoo where about 20 birds, including a bald eagle, Chilean flamingos (*Phoenicopterus chilensis*), exotic pheasants and a Guanay cormorant (*Phalacrocorax bougainvilli*) died. Native birds with confirmed mortality include American crow, fish crow (*Corvus ossifragus*), bluejay...
(Cyanocitta cristata), laughing gull (Larus atricilla), American robin (Turdus migratorius), rock dove (Columba livia), mallard (Anas platyrhynchos), sandhill crane (Grus canadensis) and black-crowned night heron (Nycticorax nycticorax).

Wildlife and public health authorities in the region are considering crows to be an ‘indicator’ species for viral activity, because of their apparent susceptibility to the virus, and diagnostic investigations of bird mortality events are encouraged, particularly for corvids, such as crows, ravens and jays. The epizootics in crows is characterised by an accumulation of individual bird mortality over time in contrast to a sudden event, such as a pesticide poisoning. Necropsy findings are nonspecific and include weight loss, heart muscle necrosis, enlarged spleen and liver, haemorrhage in the upper intestine and on the liver surface, and occasionally, visible inflammation of the brain.

2. Compartmentalisation

Dr Victor Nettles reported to the Working Group on Wildlife Diseases that he had represented the Group at the January 1999 meeting of the OIE Foot and Mouth Disease and Other Epizootics Commission. He had been invited by the Commission to assist with discussion on how a Member Country's status should be determined when List A diseases are present in wildlife. The Commission was in agreement that one generalised OIE position could not be made to address all List A diseases for which there could be wildlife involvement. The Commission felt that it was better to have a general procedure on how to address the potential significance of wildlife involvement with List A diseases, but that more specific recommendations should be developed for each disease on an individual basis.

The concept of compartmentalisation was discussed by the Working Group and there was general agreement with the definition given by the FMD Commission's report. As the FMD Commission had expressed a specific interest in Newcastle disease and classical swine fever, the Working Group discussed these two diseases in detail and prepared the following statements that should be considered by the Commission for use in the OIE International Animal Health Code in addressing country status where wildlife are potentially infected or known to be infected.

2.1. Paramyxovirus 1

It is assumed that migratory and resident wild birds in all countries may be infected with various strains of avian paramyxovirus 1, some of which may cause Newcastle disease in poultry and/or be pathogenic for other birds propagated for commercial use.

**Newcastle-disease-free country/zone**

Poultry and birds propagated for commercial use may be considered to be free from Newcastle disease if the following criteria are met:

1. Poultry and other birds bred for commercial use are shown to be free from Newcastle disease for at least 3 years. This period shall be 6 months after the slaughter of the last affected animal for countries in which a stamping-out policy is practised with or without vaccination against Newcastle disease.

2. There is a record of regular and prompt surveillance with mandatory reporting for Newcastle disease in poultry and/or other birds bred for commercial use. Occurrence of Newcastle disease in wild birds should be reported, but will not affect the Newcastle disease status of a country/zone for poultry and other birds bred for commercial use.

3. Husbandry systems are employed that eliminate or minimise exposure of poultry or other birds bred for commercial use, to wild birds. These systems would include the following:

   a) Spatial segregation of commercially bred birds from wild birds by means of housing, fencing, and habitat modification.

   b) Avoidance of exposure to potentially contaminated water, feed or fomites.
Racing pigeons

Racing pigeons might be exposed to wild birds. For the purposes of the International Animal Health Code they should therefore be treated as wild birds with respect to Newcastle disease.

2.2. Classical swine fever

Infection in wild suids

Wild suids, notably the European wild boar, are susceptible to classical swine fever, and the disease may be transmitted among these susceptible species and domestic pigs through direct and indirect contact.

Domestic pigs in countries/zones in which wild suids are infected with the classical swine fever virus are at risk of becoming infected unless they are effectively separated from direct or indirect contact with wild suids. Conversely, wild suids in countries/zones in which domestic pigs are infected with the classical swine fever virus are at risk of becoming infected unless they are effectively separated from direct or indirect contact with domestic pigs.

Domestic pigs raised in countries/zones in which wild suids are infected

It may be possible to separate domestic pigs from direct or indirect contact with wild suids sufficiently to raise domestic pigs that are free from classical swine fever in countries/zones in which wild suids are infected. Domestic pigs may be certified as free from classical swine fever if they are produced under a comprehensive biosecurity programme that takes into account all potential routes of exposure to wild suids, including physical contact, feeding of swill or garbage, and secure transportation, processing and storage. In addition, precaution must be taken to ensure that there is no mixing of domestic and wild suid meat products during processing and storage.

Risk of spread among wild suids

Regulatory decisions should take into account that any actions or policies that increase the likelihood that classical swine fever will be spread to uninfected wild suid populations may increase the overall problem of classical swine fever world-wide.

Movement or shipment of live wild suids or meat and products from wild suids must follow the same regulations that apply to domestic pigs, meat and products with respect to diseases.

Wildlife management and disease risk

Management policies for wild suids must include as objectives the reduction of prevalence and spatial distribution or elimination of classical swine fever. In particular, management activities must be avoided that enhance transmission or increase the prevalence or geographic distribution of classical swine fever. Examples of such management practices include artificial feeding, overstocking, translocation of animals, and interbreeding with domestic pigs.

2.3. Other diseases

The points made above regarding classical swine fever in domestic pigs and wild suids apply to several other important diseases in these animals, including Aujeszky's disease, swine brucellosis and bovine tuberculosis.
3. Rabies and canine distemper in Africa

The OIE Working Group on Wildlife Diseases is in full support of the objectives of scientifically sound project proposals that address specific disease threats to endangered wild animals as presented in the International Union for the Conservation of Nature Subcommittee report*.

4. Definition of ‘wildlife’ in relation to feral and domestic animals

In response to a request from the International Animal Health Code Commission, the OIE Working Group developed definitions of domestic animals, feral animals, captive wildlife and wild animals. The following is their recommendation:

- For the purposes of the OIE International Animal Health Code, the Working Group on Wildlife Diseases proposes that the definition of ‘Domestic animal’ be based on the definition and discussion of Corbet and Clutton-Brock (1984)**.

- With this as a background, the Group proposes that individual animals be placed in one of four categories defined by two binary selection criteria as follows:

<table>
<thead>
<tr>
<th>Phenotype selected by humans</th>
<th>Animals live under human supervision or control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes: Domestic (a)</td>
</tr>
<tr>
<td></td>
<td>No: Captive wildlife (c)</td>
</tr>
<tr>
<td></td>
<td>Feral (b)</td>
</tr>
<tr>
<td></td>
<td>Wild (d)</td>
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a) **Domestic animals**: Animals with a phenotype selected by humans and that live under supervision or control by humans [‘Anciently domesticated forms that are distinctive, are rarely bred with their wild ancestors (e.g. common cattle, domestic dog) or distinctive domesticated forms that are readily distinguishable from their wild ancestral species (e.g. reindeer, silver fox)’].

b) **Feral animals**: Previously domestic animals that now live without supervision, control by or dependence on humans.

c) **Captive wildlife**: Animals that have a phenotype not significantly affected by human selection but that are captive or otherwise live under supervision or control by humans [‘wild species that are commonly bred or kept in captivity but in which the majority of domesticated individuals are not readily distinguishable as a group from the wild species (e.g. Asian elephant, red deer)’, Corbet and Clutton-Brock, 1984].

d) **Wild animals**: Animals that have a phenotype unaffected by human selection and live independent of direct human supervision or control.

5. Proposal to designate a Reference Laboratory for Tularemia

The OIE Working Group on Wildlife Diseases supports the proposal that there should be an OIE Reference Laboratory for Francisella tularensis and tularemia.

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* Report of the meeting of the IUCN Camid Specialist Group Disease Sub-committee, Nancy (France) 26-28 April 1999
6. **Constraints on shipment of diagnostic specimens**

The OIE Working Group on Wildlife Diseases requests that the OIE re-approach the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in order to expedite an exemption process for the international transport of diagnostic specimens to OIE Reference Laboratories.

7. **Validity of diagnostic tests for wildlife diseases and proposed collaboration with the European Association of Zoo and Wildlife Veterinarians**

The OIE Working Group on Wildlife Diseases will approach both the American Association of Zoo Veterinarians and the European Association of Zoo and Wildlife Veterinarians to encourage these groups to prepare documentation on diagnostic tests for List A and List B diseases of wild and captive animals and the specific problems associated with diagnosis of disease in wildlife.

This information is required by the OIE Working Group for later incorporation into the OIE *Manual of Standards for Diagnostic Tests and Vaccines*.


The OIE Working Group on Wildlife Diseases requests the opportunity to be involved in the review of the OIE *International Animal Health Code* (the Code) revisions in order to contribute information on wildlife disease matters.

9. **Draft protocol on wildlife translocation**

A draft of a protocol for assessing health-related risks associated with international movement of wild animals, prepared for the Working Group by the Canadian Cooperative Wildlife Health Centre (CCWHC), was reviewed and discussed by the Group. The draft protocol was considered to be comprehensive and a valuable tool for such risk assessment.

The Group requested that the protocol be published in its current form, preferably in the OIE *Scientific and Technical Review*. The Group also requested that a condensed version of the protocol that conforms to the style and format of the OIE *International Animal Health Code* be drafted by the CCWHC. The Group will review the draft and, if deemed appropriate, recommend to the Code Commission its incorporation into the Code.

10. **Consultation on bovine tuberculosis in the Kruger National Park**

The expertise of members and observers of the Working Group were requested to evaluate the management options identified to address the complex problem of bovine tuberculosis (BTB) in the Kruger National Park in South Africa.

This highly emotional issue was discussed in light of the current available knowledge and the following comments were made:

- No containment procedures to prevent further spread of the disease northwards should be initiated until the northernmost point of infection has been identified, and the status of all the northern herds are known.

- No intervention involving large-scale depopulation of buffalo is appropriate until there is reasonable certainty that no other maintenance host is present in the ecosystem, and that no other potential sources of infection are present on the Park boundary.

- Major destruction of infected buffalo herds should only be initiated if there is reasonable certainty that entire herds and eventually entire subpopulations could be totally extirpated.

- In Canada, total isolation of an endemic focus in bison has been accepted as a TB management option.
• The ecological implications of a major depopulation of buffalo should be seen in the long-term perspective as a short ‘window’ in time. Buffalo repopulation after the rinderpest pandemic of 1898-1902 took approximately 50 years.

• Control exercises designed to reduce prevalence and spread of infection, such as selective depopulation of high prevalence herds or buffalo exclusion zones, may be appropriate in the interim management of the disease.

• Total eradication of BTB in this population is probably not feasible in the short term.

11. Listing of selected diseases of Cervidae

The Working Group encourages the OIE to consider having a selected group of diseases of Cervidae reportable as List B diseases. Included are chronic wasting disease, epizootic haemorrhagic disease virus, adenovirus of deer, bovine tuberculosis and paratuberculosis.

.../Appendices
MEETING OF THE OIE WORKING GROUP ON WILDLIFE DISEASES
Paris, 19 - 21 October 1999

Agenda

1. Regional review of selected wildlife diseases
2. Compartmentalisation and Newcastle disease
3. Rabies and canine distemper in Africa
4. Definition of ‘wildlife’ in relation to feral and domestic animals
5. Proposal to establish a Reference Laboratory for Tularemia
6. Constraints on shipment of diagnostic specimens
7. Validity of diagnostic tests for wildlife diseases and proposed collaboration with the European Association of Zoo and Wildlife Veterinarians
8. Review of the OIE *International Animal Health Code*
9. Draft protocol on wildlife translocation
10. Consultation on bovine tuberculosis in the Kruger National Park
11. Listing of selected diseases of *Cervidae*
### MEETING OF THE OIE WORKING GROUP ON WILDLIFE DISEASES

Paris, 19-21 October 1999

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