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REPORT OF THE MEETING OF THE OIE WORKING GROUP ON WILDLIFE DISEASES

Paris, 4-6 April 2000

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The meeting of the Working Group on Wildlife Diseases was held from 4 to 6 April 2000 at the OIE Central Bureau.

Dr J. Pearson, Head of the OIE Scientific and Technical Department, 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.

1. Regional review of selected wildlife diseases*

List A diseases

Classical swine fever

Several areas are affected by the infection of wild boars (*Sus scrofa*) in central Europe and Sardinia. Local long-term outbreaks (apparent endemic disease situation or very slow decrease in infection rate observed by positive serological reaction) are being observed in Lombardia (Italy), Bas-Rhin and Moselle (France) and several 'länder' in Germany. In addition to these, an outbreak was observed in the province of Varese (Lombardia, Italy) in May 1997, which afterwards extended up to the canton of Ticino (Switzerland) one year later. For the first time in Europe, the European Union recommendations for control measures were applied. Hunting was banned during the first six months of the epidemic in Ticino. Italy also banned hunting in the most affected zone and in a narrow strip along the Swiss border. In Switzerland, some forest paths were closed so as to avoid human disturbance. The purpose of these measures was to keep the disturbance of the wild boars to a minimum level. Then, in order to target specifically the susceptible individuals, mainly the squeakers (piglet of less than 10 kg), controlled hunting, targeting young animals, was performed in the following winter (1998/99). During the same

* This report is shorter compared with previous reports due to the shorter surveillance period since the last meeting of the Working Group in October 1999.

period, several measures were applied to prevent the transmission of the virus from wild boars to domestic pigs (public awareness by information, captive wild boars slaughter, confinement of pig settlements). As a result, no new cases were recorded since March 1999. Young animals shot in Switzerland during the winter 99/00 hunting period had no specific antibodies (through January 00) and sera were collected from a total of 431 wild boars shot outside the risk zone. No antibodies were found except in one older female, and the domestic pig population remained free of the infection. No virus was isolated from animals during the summer hunting period.

Foot and mouth disease

In south eastern Zimbabwe, an outbreak of foot and mouth disease (FMD) caused by SAT 3 virus type was diagnosed in a greater kudu (*Tragelaphus strepsiceros*) in the Malilangwe and Chiredzi Districts. High levels of antibody to SAT 1, SAT 2 and SAT 3 were also found in kudu and impala (*Aepyceros melampus*) in the nearby Save Valley Conservancy. An SAT 1 outbreak in cattle was also identified on a property adjoining this conservancy.

In East Africa, reports of FMD in cattle in the Mara region of the Serengeti were received between April and May of 1999. In June 1999, widespread lameness was noticed in wildebeest herds (*Connochaetes taurinus*) migrating towards the villages of Bunda and the Serengeti districts. Close examination of affected individuals revealed lesions of the interdigital space, and coronary band, sometimes accompanied by sloughing of the hoof. No oral lesions were seen. A total of 21 wildebeest were immobilised and sampled, but results have not yet been received. Clinical signs were not seen in any other species. The cattle infection has been confirmed to be caused by an SAT 1 type FMD virus.

Foot and mouth disease has been reported in gaur (*Bos gaurus*) in Kerala State, India in March/April 2000.

Newcastle disease

In North America, Newcastle disease killed an estimated 1,000 double-crested cormorants (*Phalacrocorax auritus*) in Canada at two locations, and approximately 100 cormorants in Utah (United States of America [USA]).

Newcastle disease was reported from one pigeon (*Columba livia*) from Austria and from pigeons and one ring-necked dove from Italy. Serological investigations of cormorants (*Phalacocorax carbo sinensis*) in France, Switzerland and Sweden demonstrated that cormorants are exposed to paramyxovirus type 1, but antibody levels seem to occur at a low prevalence.

Rift Valley fever

During February 1999, the first outbreak of Rift Valley fever (RVF) in 18 years was detected in South Africa. It is interesting to note that the diagnoses were made on aborted fetuses from a group of African buffalo (*Syncerus caffer*) being used in a pilot study designed to produce 'disease free' calves. Six of fifty pregnant buffalo cows held in captivity at Skukuza aborted within a period of one week. The necropsy findings were typical of a haemorrhagic disease with hepatic involvement, and RVF virus was isolated from five of six of these fetuses. This appears to be the first ever report of clinical RVF in African buffalo.

Recent buffalo aerial census results however show that buffalo calf recruitment in 1999 was not significantly different from previous years, indicating that RVF-induced abortions in free-ranging buffalo were not widespread if they occurred at all.

Rinderpest

In the current reporting year, major rinderpest sero-surveys were undertaken during the Pan African Rinderpest Campaign **(**PARC) in East, Central and West Africa. The only results available concerning wildlife sampled in these surveys were from Tanzania. Serum samples from 60 ungulates, including buffalo, giraffe (*Giraffa camelopardalis*), eland (*Tauratragus oryx*), greater kudu, lesser kudu (*Tragelaphus imberbis*), kongoni (*Alcelaphus buselaphus*), and oryx (*Oryx gazella*), were obtained from Serengeti, Ngorongoro, Tarangire, Lolkisale, Naberera, Engasimet and Mkomazi areas of northern Tanzania. All tested negative for rinderpest.

List B diseases

Anthrax

A species breakdown of confirmed anthrax cases in the Kruger National Park (KNP) epizootic reported in October 1999 is as follows:

African buffalo (*Syncerus caffer*)	41	Greater kudu (*Tragelaphus strepsiceros*)	65
African elephant (*Loxodonta africana*)	1	Impala (*Aepyceros melampus*)	13
Black-backed jackal (*Canis mesomelas*)	3	Leopard (*Panthera pardus)*	2
Blue wildebeest (*Connochaetes taurinus taurinus*)	6	Lion (*Panthera leo*)	11
Burchells zebra (*Equus burchelli*)	4	Steenbuck (*Raphicerus campesbris*)	2
Chacma baboon (*Papio ursinus*)	1	Waterbuck (*Kobus ellipsiprymnus*)	1
Cheetah (*Acinonyx jubatus*)	1	White rhinoceros (*Ceratotherium simum*)	1
Giraffe (*Giraffa camelopardalis*)	4		

From this breakdown it is apparent that kudu and buffalo are the most susceptible and vulnerable species in the KNP ecosystem, together making up 68% of all cases. The outbreak eventually covered an area of 6000 square kilometres. Nine of the eleven lions and one of the two leopards found infected were immobilised and treated with high doses of antibiotics. These animals all survived. Anthrax in these large predators is generally not a peracute disease and most infected lions present with massive swollen faces due to cellulitis of the head and oral structures. They usually die after a protracted course lasting several days, because they can no longer eat or drink due to swelling of the tongue, and lips and ulceration of the oral mucous membranes.

In southern Ethiopia, a major outbreak of anthrax occurred in the Omo/Mago National Park. A breakdown of the species which were found dead as follows:

Bushbuck (*Tragelaphys scriptus*)	6	Lelwel hartebeest (*Alcelaphus* sp.)	4
Defassa waterbuck (*Kobus defassa*)	2	Lesser kudu (*Tragelaphus imberbis*)	794
Dikdik (*Modaqua saltiana*)	4	Warthogs (*Phacochoerus aethiopicus*)	10
Gerenuk(*Litocranius walleri*)	11		

In 1998, a cluster of elephant mortality was recorded in the Linyanti area of the Chobe National Park in Botswana. The field diagnosis of anthrax was confirmed by the National Veterinary Laboratory in Gaborone. A total of 36 elephant carcasses was located and burned.

Following a major outbreak of anthrax in impala in south western Serengeti National Park in Tanzania in 1997, the infected area was burned by hot fire as a control measure. Subsequently, only sporadic cases of anthrax were documented in this National Park between April 1998 and April 1999.

Anthrax was reported in Asian elephants (*Elephas maximus*) in North Bengal, India in March 2000.

Avian cholera

In the USA, avian cholera was confirmed primarily in multiple species of duck and geese and in low numbers of other avian species in California, Nevada, Oregon, and Texas.

Avian influenza

Epidemiological and serological evidence indicates that the virus occasionally circulates in wild birds in Australia.

Avian mycoplasmosis

In Canada, in addition to the house finches (*Carpodacus mexicanus*), *Mycoplasma gallisepticum* occurred in two new avian host species: the pine grosbeak (*Pinicola enucleator*) and evening grosbeak (*Coccothraustes vesperticus*).

Bovine tuberculosis

Bovine tuberculosis (BTB) continues to be a major cause for concern in buffalo populations in the KNP. In 1998, a BTB survey was conducted during which 640 buffalo out of 32 herds were randomly sampled. The objective of this exercise was to determine the changes in prevalence and distribution of BTB since the last comprehensive survey conducted in 1992. The following disturbing results were obtained during this survey:

Districts	Zonal prevalence 1992	Zonal prevalence 1998	Herds infected (%) 1992	1999
Southern District	27.1%	42%	95%	100%
Central District	4.2%	20.8%	50%	90%
Northern District	0%	1.5%	0%	8.3%

This disease is obviously spreading in and between herds, and several deaths from BTB in buffalo were documented in the past year.

With regard to 'spill-over' hosts, further reports of greater kudu with tuberculous abscessation of the head lymph nodes were received from the KNP. No further cases were diagnosed in baboons (*Papio ursinus*) or cheetahs (*Acinonyx jubatus*). However, since 1995, 50 positive cases have been confirmed in lions in the KNP, and a comparative intradermal tuberculin test with acceptable sensitivity and specificity has been developed for use in lions.

In Canada, bovine tuberculosis is endemic in one herd of wild bison (*Bison bison*).

In the USA, the State of Michigan has recognised a problem with BTB, caused by *Mycobacterium bovis*, in wild white-tailed deer (*Odocoileus virginianus*) from a six-county area in northeastern lower Michigan since 1994. The disease has been found in five other wildlife species, in one herd of captive deer, and in five herds of domestic cattle. During the 1999 fall hunting season, surveillance disclosed BTB in individual deer in three additional Michigan counties remote from the BTB endemic area.

In New Zealand, bovine tuberculosis continues to be reported, notably in brushtail possums (*Trichosurus vulpecula*).

Bovine brucellosis

In South Africa, seroprevalences of between 8 and 20% have recently been documented in the KNP in various buffalo herds.

In the USA, bovine brucellosis in elk (*Cervus elaphus*) and bison near Yellowstone National Park remains a significant animal health issue. During the 1999 hunting season, surveillance of hunter-killed animals from non-fed elk herds located within Wyoming's portion of the Greater Yellowstone Area detected a seroprevalence of approximately 2% in adult female elk, which is significantly lower than the seroprevalence rates of elk using winter feedgrounds.

Rabies

Rabies is endemic in many African countries in both domestic animals and wildlife. Amongst domestic animals, dogs play the most important epidemiological role, whereas in wildlife, jackals, bat-eared foxes and the yellow mongoose are most frequently affected.

In South Africa, 110 cases of rabies were confirmed in wildlife. A breakdown of these cases is as follows:

Aardwolf (*Proteles cristatus*)	2	Ground squirrel (*Xerus inauris*)	1
African wild cat (*Felix lybica*)	3	Honey badger (*Mellivora capensis*)	1
Bat-eared fox (*Otocyon megalotis*)	15	Mongoose (spp. unknown)	3
Black-backed jackal (*Canis mesomelas*)	18	Slender mongoose (*Galerella sanguinea*)	6
Black-footed cat (*Felis nigripes*)	1	Striped weasel (*Poecilogale albinucha*)	1
Cape fox (*Vulpes chama*)	1	Suricate (*Suricata suricatta*)	8
Caracal (*Felis caracal*)	2	Water mongoose (*Atilax paludinosus*)	3
Common duiker (*Sylvicapra grimmia*)	1	Yellow mongoose (*Cynictis penicillata*)	41
Common genet (*Geneta geneta*)	1	Zorilla (*Ictonyx striatus*)	1
Greater kudu (*Tragelaphus strepsiceros*)	1		

Also in South Africa, an outbreak of rabies was diagnosed in one of the African wild dog (*Lycaon pictus*) packs in Madikwe Game reserve. As the wild dogs in this reserve have had a previous history of rabies, the more recently introduced packs have all been vaccinated against the disease. It is interesting to note that all the vaccinated animals were protected, and it was the unvaccinated progeny born in 1999 that became affected. Two out of three remaining pups, which were subsequently vaccinated, have survived. The vaccination regimen appears critical, and the best results using diploid cell injectable vaccines, were obtained by giving the first two vaccinations, one month apart, followed by a booster dose within one year. It is planned to evaluate oral vaccine baits in the coming year.

In Namibia, rabies was diagnosed in aardwolf, bat-eared fox, cheetah, duiker, eland, hartebeest, honey badger, hyaena (*Crocuta crocuta*), jackal, kudu, mongoose, steenbuck, suricate and black-footed cat. Of these species, jackals and kudu were most frequently affected.

Rabies was also confirmed in one elephant, several civets and many jackal in Zimbabwe.

In the Serengeti National Park in Tanzania, rabies was reported to be still present, and possibly increasing, despite vaccination of domestic dogs in the Serengeti district.

Most positive cases were recorded in bat-eared foxes. It is not clear whether this is an outcome of improved surveillance, or due to the presence of a wild maintenance host or possibly the presence of other reservoir dog populations in other neighboring districts.

Terrestrial rabies is enzootic in several species of wildlife in the USA, and oral rabies vaccination programmes are ongoing in areas in five states.

The raccoon (*Procyon lotor*) strain of rabies virus reached Canada from the USA for the first time in 1999. From January to October 1999, rabies was recognised in 17 foxes (*Vulpes/Alopex*), 260 striped skunks (*Mephitis mephitis*), 41 bats, 9 raccoons, 2 wolves (*Canis lupus*), 2 woodchucks (*Marmota monax*) and 1 American bison in Canada.

Rabies in Europe was reported to occur in red foxes (*Vulpes vulpes*), badger (*Meles meles*), raccoon dog (*Nyctereutes procyonoides),* mustelids, wild boar (*Sus scrofa*), brown hare (*Lepus europaeus*), wild cat (*Felis silvestris),* wolf, mouflon (*Ovis musimon*) and deer in Austria, Germany, Hungary, Latvia and Slovakia. No cases of rabies were reported from northern Europe, Benelux, France or Switzerland, with the exception of an imported fruit bat in France that died of Lagos bat strain rabies.

Duck virus enteritis

In the USA, duck virus enteritis occurred in wild and feral ducks and geese in Arkansas, California, Pennsylvania, and Virginia.

Echinococcus multilocularis

A European parasite of special concern is the small zoonotic tapeworm *Echinococcus multilocularis*, which is frequently observed in the Alpine countries in Europe. The red fox population in Europe has increased dramatically during the last decade and this has also lead to an increased occurrence of this small tapeworm outside the endemic alpine area. The parasite is today reported to occur in the Netherlands and most recently in Denmark. The parasite in these areas is not well known and the risk for humans of infection from eating contaminated wild berries and mushrooms should not be overlooked.

Salmonellosis

In North America, infection with *Salmonella typhimurium* occurred in pine siskins (*Carduelis pinus*) over a large geographic area and in both summer and winter.

A large number of infections with *Salmonella typhimurium* in passerine birds such as bullfinch (*Pyrrhula pyrrhula)*, greenfinch (*Chloris chloris*), siskin (*Carduelis spinus*) and redpolls (*Carduelis flammea*) was reported from Northern Europe in the late winter and spring. The number of reports was significantly higher than in 1998. Infections with *S. typhimurium* were also reported in other passerine birds, in gulls and mammals such as raccoon dog (*Nyctereutes procyonoides)*, moose (*Alces alces*) and European brown hare (*Lepus europaeus*). In Sweden, an outbreak of salmonella infection due to the same phagetype occurred in cats and humans at the same time as the wild bird infections.

Theileriosis

Fatal theileriosis caused by an unknown *Theileria* spp. was diagnosed in a sable antelope (*Hippotragus niger*) and a buffalo in Zimbabwe, and three waterbuck in South Africa.

Leptospirosis

Leptospirosis has been reported in Feral pigs, wombats (*Lasiorhinus latifrons*) and possums (*Trichosurus vulpecula*) in Australia.

Trichinellosis

Trichinella pseudospiralis has been reported to occur in Tasmanian *devils (Sarcophilus harrisi*) in Tasmania.

Rabbit haemorrhagic disease

Following the illegal introduction of rabbits, rabbit haemorrhagic disease is now enzootic in New Zealand.

Wildlife list diseases

Botulism

In Canada, type C botulism killed approximately 1,000,000 waterbirds in a large number incorporating different locations. Type E botulism occurred among fish-eating birds on Lake Erie and Lake Huron. Over 700 common loons (*Gavia immer*) and over 1,000 red-breasted mergansers (*Mergus serrator*) died in these outbreaks.

Chronic wasting disease

Cases of chronic wasting disease (CWD) were diagnosed in captive commercial elk herds in Colorado and Montana. The Montana herd was depopulated in autumn 1999. All captive elk herds that were linked epidemiologically to affected herds are being held under close surveillance.

In the western USA, both targeted and harvest-based surveys of CWD in wild deer and elk have continued for several years in the endemic zone in north-eastern Colorado and south-eastern 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, Oklahoma, South Dakota, and Utah, as well as outlying parts of Colorado and Wyoming. In all, brainstems from over 3,500 free-ranging deer and elk from western ranges outside the known CWD-endemic areas have been examined microscopically for evidence of CWD infection. All have tested negative, indicating that CWD is probably not widespread among native deer and elk populations. Additional sampling was conducted in a number of western and midwestern states during the autumn 1999 hunting season and test results are pending.

In the eastern USA, less surveillance of CWD has been carried out because there has been no infection detected. Microscopic examinations of brain sections have failed to detect any positive or suspect animals since surveillance began in late 1997. Animals tested include white-tailed deer and elk that show signs consistent with CWD, animals collected and examined during routine health monitoring of wild deer populations, hunter-killed animals, and illegally held cervids that are confiscated. To date, animals with CWD have not been detected in wild or captive cervid herds in the eastern USA.

The Southeastern Cooperative Wildlife Disease Study at the University of Georgia distributed a surveillance questionnaire during late 1999. Respondents were asked to provide information on any cervid that was a potential CWD case where the animal fit a 'target animal profile.' Preliminary results indicate that 28 non-affected states responded that no target animals were identified. Eight non-affected states reported that 14 animals were tested for CWD because they fit the definition of target animals and were found to be negative or results are pending. Six non-affected states also responded that they had ongoing surveys in hunter-killed deer or elk, and reports are pending from 10 states.

Update on haemorrhagic disease in deer

Haemorrhagic disease activity in the USA in 1999 was very different compared with recent years. After many years of dominance by serotype 2 of epizootic haemorrhagic disease virus (EHDV), the other serotype, EHDV serotype 1, caused mortality in white-tailed deer in Georgia, Maryland, New Jersey, North Carolina, and Virginia. It is logical to speculate that the mortality events occurred due to a low level of immunity to EHDV-1 as opposed to EHDV-2, but there are no serological data to confirm this.

During 1999, personnel at the Southeastern Cooperative Wildlife Disease Study made 30 virus isolations from white-tailed deer and cattle. Isolations of viruses from deer included 18 viruses identified as EHDV-1, 8 isolates of EHDV-2, and a single bluetongue virus serotype 13 from a deer pen in North Carolina from which EHDV serotype 2 also was isolated. All 3 cattle isolates were serotyped as EHDV-2, and all came from clinically affected animals in Dallas County, Iowa.

Canine distemper

Over the past 24 months, sera have been collected from carnivore carcasses, road kills and animals immobilised for various purposes, in Serengeti National Park. Out of the 51 samples analysed, 24 tested positive for canine distemper. However only four (4) positive animals were young enough to have been born after the 1994/95 canine distemper epidemic. This implies that although many of the survivors retain high levels of immunity to the disease, it would appear that the virus is still actively cycling, albeit at a low level, within these carnivore populations. Most individuals with antibodies were found in the western and south-western areas of Serengeti, bordering on the Magu and Bariadi Districts, where incidence of the disease in domestic dogs is high. A vaccination campaign for domestic dogs in those districts is underway.

In Namibia, three jackal and one lion were found to be positive histopathologically for canine distemper.

In Canada, one case of morbillivirus infection indistinguishable from canine distemper was recognised in a bobcat (*Lynx rufus*).

Sarcoptic mange is reported to affect red foxes (*Vulpes vulpes*) and wombats (*Lasiorhinus latifrons*) in Australia.

Hendra virus has been reported to infect pteropid fruit bats in Australia.

Lyssavirus has been reported to infect both frugivorous and insectivorous bats in Australia.

Additional diseases

Avian vacuolar myelinopathy

Since 1994, approximately 70 bald eagles (*Haliaeetus leucocephalus*) have died of a neurological disease of unknown cause while wintering in Arkansas, Georgia, North Carolina, and South Carolina. In November 1996, American coots (*Fulica americana)* with neurological signs were observed at DeGray Lake, Arkansas and eagle mortality began shortly thereafter. Coots and eagles with avian vacuolar myelinopathy (AVM) had identical brain and spinal cord lesions of intramyelinic oedema, and lesions also were 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 remains undetermined despite extensive laboratory and field investigations; however, an unknown man-made or natural neurotoxin is suspected.

In 1999, a new federal initiative commenced to investigate AVM as a national problem. The primary goal of the federal initiative 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, with the assistance of several state and federal wildlife resource agencies, conducted a 2-year research project to investigate the epidemiology of AVM. During the 1998-1999 migratory season, field crews visited sites in eight south-eastern states to observe coots for clinical signs of AVM, and brains from more than 900 coots were examined microscopically. During the 1999-2000 wintering season, more than 1,500 brains were examined from American coots collected in 13 states as well as Texas and California. To date, affected coots have been detected in Arkansas, Georgia, North Carolina, and South Carolina.

Buffalo population decline in Northern Serengeti

Animal census results appear to indicate a significant decline in buffalo population numbers in the northern Serengeti, compared with other parts of the Park. A similar decline has been reported in the adjacent Maasai Mara National Reserve in Kenya. The possible causes been suggested include drought and poaching. The Veterinary Department is investigating the possible role of diseases in this population trend. Serological samples collected in collaboration with PARC in 1997 and again in 1999, have failed to detect the presence of antibodies to rinderpest in the area. The sera were also tested for brucellosis with negative results. Plans are underway to test for other diseases, such as bovine tuberculosis and *Neospora* infection.

Bushbuck mortality in Kibale National Park, Uganda

Large-scale bushbuck mortality was reported in Kibale National Park in Uganda. The cause of the mortality is unknown, but fly worry and possibly nematode-associated mortality similar to that reported in bushbuck in the Aberdares National Park (1996), and in bongo (*Tragelaphus euryceros*) and other forest antelope in the Congo/Gabon may be responsible. The possibility of rinderpest cannot be ruled out, and sero-sampling of buffalo in this Park is currently underway to look at this possibility.

Haemorrhagic fever with renal syndrome and nephropathia epidemica

Nephropathia epidemica (NE) is a mild form of haemorrhagic fever with renal syndrome (HFSR) occurring in Northern and Central Europe. The pathogen responsible for the disease in humans is the Puumala virus (an Hantavirus, family Bunyaviridae). The reservoir of the infection is the bank vole (*Clethrionomys glareolus*); human epidemics are related to a high peak of vole population. Episodes of NE occurred between the autumn

1998 and the following autumn 1999 in the Ardennes region, on both sides of the border of Belgium and France. In addition, simultaneous HFSR/NE epidemics were reported in Bashkortostan (Bashkiria), Samara and Tatarstan (Russia) at the end of the year 1999/beginning of 2000.

Kyasanur forest disease in India

The death of monkeys in Avarli Village in Joida Taluk has been linked to sickness in the human population. Kyasanur forest disease (KFD), which is confined to India, is a fatal viral disease of monkeys that is transmitted by ticks. The local reservoir species concerned include black-faced langurs (*Presbytis entellus*), macaques (*Macaca radiata*), shrews (*Suncus murinus*), rats (*Rattus wroughtoni*), birds, squirrels and bats. The tick vectors are: *Haemaphysalis spinigera*, *H. turturis* and *H. papuana*. The appearance of sick and dead monkeys in an area may herald an epizootic.

Population crash of the Gyps vultures in India

The situation in India of the white-backed vulture (*Gyps bengalensis*) and the long-billed vulture (*Gyps indicus*) must now be regarded as critical; extinction of either or both species, which were both common throughout India until as recently as three years ago, appears to be a possibility. The population decline over parts of the vultures' range exceeds 95%. Current investigations indicate that the most likely cause of the population crash is a viral infection.

Neurotoxic/neuromuscular disease in alligators in Florida

A neurotoxic/neuromuscular disease has been reported to have occurred since 1997 in alligators (*Alligator mississipiensis*) in Lake Griffith, Florida (USA). The disease outbreaks have coincided with *Cylindrospermopsis* sp. blue green algae blooms. Most animals are found dead, floating on the surface of the water. Post-mortem examination has included electromyography, electroencephalography, histology and immunochemistry. More than 160 adult alligators have died since 1997.

Wildlife diseases in Nepal

In Nepal, the following pathological conditions have been noted in one Asian rhinoceros (*Rhinoceros unicornis*): leptospirosis (serology, *L. bratislava*) and echinococcosis (observation); and in one Nilgai (*Boselephus tragocamelus*): salmonellosis, Group C (serology).

Seven rhinoceros, one gaur and one nilgai were tested serologically for: brucellosis, salmonellosis, leptospirosis, bovine viral diarrhoea, toxoplasmosis, ephemeral fever, chlamydia and Q fever. All were negative, except for those animals listed above. Results for FMD and rinderpest are pending.

Paramphistomiasis

Several deaths in sable antelope in Zimbabwe were attributed to the rumen fluke *Paramphistoma* spp.

West Nile virus epizootic update

An outbreak of human illness began in August 1999 in the New York City area and caused 7 deaths and 61 additional cases of viral encephalitis. The causative virus has been identified as West Nile virus that genetically is most closely related to strains of the virus found in the Middle East. This is the first time West Nile virus has been recognised in the Western Hemisphere. The epidemic ceased as cold weather curtailed mosquito activity. However, the virus apparently has survived through the winter as viral RNA was detected in pooled mosquitoes collected in New York and in a dead red-tailed hawk (*Buteo jamaicensis*) in Connecticut in February 2000. Surveillance of birds for West Nile virus infection is planned for 2000 in areas where the disease occurred in 1999 as well as in areas to the South where migrating birds may have carried the virus.

Primate diseases

In Gombe National Park in Tanzania, yaws disease, which has been diagnosed in baboons (*Papio* spp.), has been found to be caused by a spirochaete closely related to the aetiological agent of human syphilis (*Treponema pallidum)*, and may be sexually transmitted. This disease has now spread to three large troops of baboons at

Rutanga, Linda and Mitumba. Individuals with clinical signs can be successfully treated with antibiotics. Yaws is also believed to be transmitted by flies.

Respiratory problems and heavy parasitic worm infestations were diagnosed in chimpanzees (*Pan troglodytes*) in Gombe National Park, Tanzania.

Pure isolates of a pathogenic *Escherichia coli* were cultured from chimpanzees with respiratory signs in Kibale National Park in Uganda. Thirteen animals were affected, of which one died. A similar strain was isolated from immuno-compromised humans with lower respiratory infections, from the immediate vicinity.

2. Status of proposed Reference Laboratory for Tularemia

The request to establish a reference laboratory for tularemia was referred to the Working Group on Wildlife Diseases. This Group unanimously supported the request and recommended that the National Veterinary Institute, Uppsala, Sweden, be considered for this purpose.

3. Discussion of a Risk Analysis Protocol for International Translocation of Wild Animals

The Working Group unanimously approved the draft risk analysis protocol for international translocation of wild animals, which may be submitted to the International Animal Health Code Commission for incorporation in the *OIE International Animal Health Code*. This protocol is available in Internet format, and the Group requested that this document be made available on or linked to the OIE Web site. The Group also recommended that the definition of 'Animal' in the OIE *International Animal Health Code* be amended or redefined to explicitly include wild animals, be they free-ranging, or captive. The Group also recommended that this wildlife translocation risk analysis protocol (guidelines) be translated into French and Spanish by the OIE.

4. Discussion of the validity of diagnostic tests for wildlife diseases

This discussion was held together with Dr Pierre-Yves Moisson from the European Association of Zoo and Wildlife Veterinarians. The Group suggested that the OIE send a letter to OIE Reference Laboratories requesting them to indicate which of their specialist tests are appropriate or have been validated for wildlife diseases. This information should then be supplied to the Group and to the Standards Commission.

5. Listing of selected diseases of Cervidae

The Group urges OIE Member Countries to take cognisance of several important cervid diseases when importing cervidae from potentially infected populations. These diseases include chronic wasting disease, meningeal worm (*Parelaphostrongylus tenuis* and *Elaphostrongylus* sp.), epizootic haemorrhagic disease and adenovirus haemorrhagic disease of deer. The Group also strongly recommends to the Code Commission that chronic wasting disease be made a List B Disease.

6. Composition of the Group

A search for a potential member of the Group from South America was initiated.

7. OIE Web site

The Group asked that a draft of future OIE press-releases on its activities be reviewed by Group members before release. The Group will work with the OIE to develop a suitable Web page.

8. Convention on International Trade in Endangered Species of Wild Fauna and Flora Resolution

A letter of support for a current proposal before the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to expedite international shipment of diagnostic specimens from CITES-listed species was reviewed. It sent from the OIE Director General.

9. Discussion of bio-terrorism as it might affect wildlife

The Group noted problems associated with deliberate introduction of a bio-terrorism agent via a wildlife conduit. These include:

a) delay in detection of the disease

b) facilitation of spread of the disease

c) difficulty of control of disease in free-ranging wild populations.

10. Consultation on anthrax in African wildlife

The Group reviewed anthrax in free-ranging populations of African wildlife.

11. Wildlife Disease Association Meeting in South Africa in 2001

The OIE Working Group will not attempt to meet in association with Wildlife Disease Association meeting in South Africa in 2001. Group members were encouraged to attend this meeting, but the Group will convene its next meeting in Paris in March 2001.

12. OIE *Scientific and Technical Review*

The Group identified potential chapter topics for a special issue of the OIE *Scientific and Technical Review* entitled Wildlife - domestic animal disease interactions and related issues (Vol. 21, 2002). Drs M. Artois and V. Nettles will be asked to lead the Group in selecting appropriate authors and reviewers for this issue. Dr Blancou will also be asked to contribute in the preparation of this publication. The members of the Working Group will supply additional subjects and suggested authors by 20 June 2000.

13. Post-mortem procedures for wildlife veterinarians and field biologists booklet

The Group reviewed a draft of this booklet and approved some illustrations.

14. Other matters

Proposed date for the next meeting is 13-15 March 2001.

.../Appendices

Appendix I

MEETING OF THE OIE WORKING GROUP
ON WILDLIFE DISEASES

Paris, 4-6 April 2000

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Agenda

1. Regional review of selected wildlife diseases
2. Status of proposed Reference Laboratory for Tularemia
3. Discussion of a Draft Animal Disease Risk Protocol
4. Discussion of the validity of diagnostic tests for wildlife diseases
5. Listing of selected diseases of Cervidae
6. Composition of the Group
7. OIE Web site
8. Convention on International Trade in Endangered Species of Wild Fauna and Flora Resolution
9. Discussion of bio-terrorism as it might affect wildlife
10. Consultation on anthrax in African wildlife
11. Wildlife Disease Association Meeting in South Africa in 2001
12. OIE *Scientific and Technical Review*
13. Post-mortem procedures for wildlife veterinarians and field biologists booklet
14. Other matters

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MEETING OF THE OIE WORKING GROUP

ON WILDLIFE DISEASES

Paris, 4-6 April 2000

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