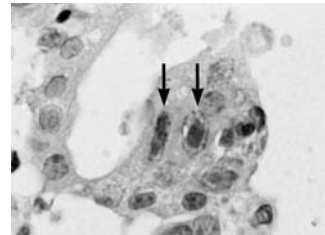


# WILDLIFE DISEASES IN THE UK

REPORTED IN THE YEAR 2007

REPORT TO  
THE DEPARTMENT OF ENVIRONMENT, FOOD AND RURAL AFFAIRS  
(Defra)  
AND THE  
OFFICE INTERNATIONAL DES ÉPIZOOTIES (OIE)



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### **Cover photograph** Adenovirus enteritis in red squirrels – a new disease in a threatened species

Adenovirus enteritis in the red squirrel (*Sciurus vulgaris*) is a new and emerging disease. The base of the tail in the animal in the photograph has hair stuck together with diarrhoeic faeces. For several years squirrels with undiagnosed diarrhoea were examined - few however were found in a fresh enough condition to perform all relevant laboratory examinations. Two fresh animals with diarrhoea were found dead in a farmer's garden, examinations revealed that the intestinal tracts of both animals contained adenoviruses (photo to the left). Critically, histopathological examination identified lesions and inclusion bodies in the cells (photo to right) of the intestine typical of those caused by adenoviruses in other species. This was evidence that the virus was causing lesions in the intestine. During 2007 six cases of the disease were identified in Northern England

## **WILDLIFE DISEASES IN THE UK 2007**

### **Report to Defra and to the OIE 2007**

#### **INTRODUCTION**

1. The Wildlife Diseases Report for 2007, to Defra, and ultimately to the OIE, is compiled as part of the VLA Diseases of Wildlife Surveillance Scheme (ED1600: VLADoWS). The format has been changed in 2007 to provide data on an Excel format as required by the OIE. A Word report accompanies the Excel Report.
2. This Report is a summary of diseases in free-living animals and wildlife investigated by government and non-government agencies, and independent workers, for the year 2007. Data for 2006 is included for diseases where there is a longer diagnostic process or where the dataset for 2007 is not complete, for example the data for stranded cetaceans and pesticide cases. Data for 2006 is also included if it was not reported previously. The earlier deadline this year precluded data for December 2007. The absence of a particular condition does not necessarily mean that it was not present. Due to the quantity of wildlife disease records reported in recent years some selection of data is now required.
3. The majority of incidents refer to infectious diseases however non-infectious incidents that were considered worthy of note have been added.
4. Further to the key aims of both Defra and the VLA with respect to wildlife, Defra, since 1998, has supported the VLA: Diseases of Wildlife Surveillance Scheme (VLADoWS). The principal objectives of which are to investigate unusual wildlife mortality and to provide wildlife disease surveillance. Data from several Project investigations in 2007 are presented in the lists and the tables of this Report, including West Nile Virus and diagnostic data from Avian Influenza surveillance in wild birds.
5. In addition to informing the OIE and Defra, it is intended that these Reports, by updating the list of recorded diseases and by providing further information on UK wildlife disease, will also serve to inform other workers in the field. The Reports have been made available on the internet (web address on page 9) and are now being used and referred to by ecologists, biologists and veterinarians.
6. To make the data more accessible, explanatory notes on disease designations and specific incidents are given in this part of the Report. These notes are selective and not intended to be comprehensive. They have been compiled with the general reader in mind.

*Compiled by: - VLA Wildlife Group January 2008*

*Please send records of diagnosed diseases in wildlife to -  
Veterinary Laboratories Agency, VLA Penrith, Cumbria CA11 9RR, UK  
Tel. 01768-885295 fax 01768-885314;*

## **Notes**

### **The OIE Wildlife Disease Report 2007**

OIE- Office International des Épidémiologies [the World Organisation for Animal Health]

The role of wildlife diseases and their potential importance for man, domestic animals, wildlife and the environment is being increasingly recognised world-wide. Regular surveillance is important for proof of national disease-freedom status as well as for detecting the emergence of significant diseases.

Wild animals function as components of ecosystems however they may also, unfortunately, be reservoirs of OIE reportable diseases, as well as other important diseases of domestic animals and humans. Consequently surveillance for known diseases of economic or public health importance amongst wildlife is beneficial to the national interest.

Since 1993, a Working Group on Wildlife Diseases of the OIE in Paris has collected information on wildlife diseases by distributing a questionnaire to all country CVOs (Chief Veterinary Officers). The UK has for several years produced an official response to this questionnaire in the form of the annual OIE report.

### **Disease designations – ‘OIE Reportable Diseases’ and ‘OIE Wildlife Diseases’**

OIE Reportable Diseases - These are animal diseases of world-wide significance, due to the risks they pose to human health and national economies.

OIE Wildlife Diseases - The remaining diseases of wildlife are classified as ‘OIE Wildlife List’ diseases.

Of the 44 OIE Reportable Diseases, 12 have been recorded in UK wildlife. They are-

anaplasmosis (*Anaplasma phagocytophila* infection),  
avian chlamydophilosis (*Chlamydophila* sp. infection)  
avian cholera (*Pasteurella multocida* infection)  
avian influenza  
avian tuberculosis (*Mycobacterium avium* infection)  
duck plague (or duck virus enteritis/DVE)  
leptospirosis  
malignant catarrhal fever  
myxomatosis  
paratuberculosis (*Mycobacterium avium paratuberculosis* infection/Johnes disease)  
rabbit haemorrhagic disease/RHD  
bovine tuberculosis (*Mycobacterium bovis* infection)

Most of these diseases in UK wildlife are endemic, that is, they are considered to exist in wild populations from year to year, and incidents are reported in most years. It should be noted that for several of these conditions, the form of the disease that we have in the UK in wildlife species is not as severe as that found in other countries in the world. For example, anaplasmosis in UK wildlife is frequently a very mild condition that causes little disease in the species that are affected.

Swine fever and foot and mouth disease have occurred transiently in the UK in the present century, however neither were recorded in wildlife species.

The status of diseases on the OIE Lists may vary. For example, a disease may be re-assessed should it change in nature and become more pathogenic (i.e. produce disease of greater severity), or infect new host species. Each country may also have its own designation for animal diseases.

## OIE The Wildlife Disease Report 2007

### Disease surveillance and disease incidents 2007

#### Avian Influenza in wild birds summary 2007

During 2007 virological surveillance for avian influenza in wild birds in Great Britain has been maintained as part of the European Union (EU) supported active surveillance programme conducted to provide an early warning of the presence of AI viruses, notably Asian lineage highly pathogenic avian influenza (HPAI) H5N1, in the EU (European Commission, 2007). This has included sampling of live, trapped wild birds, wild birds shot during normal wildfowling activities and screening of wild birds, mostly of specific 'higher risk' duck, goose and swan species found dead. No incidents in wild birds associated with HPAI H5N1 have been reported in Great Britain during 2007 to date (data compiled 18 December 2007). In addition to the low pathogenicity avian influenza (LPAI) subtypes reported, a further twelve birds were identified as being positive for influenza type A infection by matrix gene real time RT-PCR. H5 real time RT-PCR and virus isolation results were negative for these birds. Overall, seven wild waterfowl species comprising 3,826 individual birds tested yielded a positive result. A further 3,544 individual wild birds from 79 different species have also been tested with negative results.

#### Reference

European Commission, (2007). DG Health and Consumer Protection. Wild bird surveillance in the EU: See Guidelines for AI surveillance in wild birds and poultry. [http://ec.europa.eu/food/animal/diseases/controlmeasures/avian/eu\\_resp\\_surveillance\\_en.htm](http://ec.europa.eu/food/animal/diseases/controlmeasures/avian/eu_resp_surveillance_en.htm)

Avian tuberculosis – This bacterial disease in wild birds is not uncommon in the UK and has been recorded for many years, and in many species. Water birds primarily are infected and in some localities the bacterium may survive in the environment and be a source of infection to birds feeding there. The disease is usually fatal.

Bovine tuberculosis – In June 2007 the Independent Scientific Group on TB in Cattle presented its final report, which included a summary of the results of the 10 year Randomised Badger Culling Trial (more details at <http://www.defra.gov.uk/animalh/tb/isg/index.htm>). The implications of these findings for future TB control in the UK are currently being considered by the Department for Environment, Farming and Rural Affairs. Work continued through 2007 at the VLA on the evaluation of the safety and efficacy of BCG vaccine for badgers, and the development of a vaccine formulation that would permit the oral delivery of BCG in bait.

#### Bluetongue (BTV-8):- England

Red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), fallow deer (*Dama dama*) and muntjac (*Muntiacus reevesi*) with possibly low numbers of sika (*Cervus Nippon*) and Chinese water deer (*Hydropotes inermis*) are present within the bluetongue control area. However no suspect clinical disease has been reported in any deer in England and at this stage no serosurveillance has been carried out. The recent experience with BTV-8 in Europe suggests that "spillover" into deer occurs only when there are high infection levels in farmed ruminants. Also at present wild ruminants do not seem to be an important reservoir for BTV-8.

#### Foot and Mouth Disease (FMD) :- England

Red deer (*Cervus elaphus*), Fallow deer (*Dama dama*) and Roe deer (*Capreolus capreolus*) were present in FMD infected areas of Devon and Cumbria in 2001. There was no evidence of recrudescence of FMD following negative serosurveillance of farmed livestock; consequently even if deer were infected in 2001 they did not act as a maintenance/reservoir host for the virus. During the 2007 outbreak, free-living roe and muntjac were ubiquitous but in low numbers in the Protection and Surveillance zones. Red deer were present in fenced parks. Cattle/deer interactions occur with red and fallow deer but not directly with roe and muntjac. Severe clinical FMD has been reported from experimental infections in both Roe and Muntjac.

The main deer variables between 2001 and 2007 were: -

- Different habitats thus deer concentrations.
- This could lead to an altered pattern of deer interactions with farmed livestock.
- Muntjac were probably not present in 2001 outbreak infected areas.
- In 2007 a single RTA roe deer but with no lesion suggestive of FMD was screened for FMD with negative results.

There was no evidence of FMD in any deer species during 2007, and no suggestion of deer being involved with any recrudescence of disease in farmed stock.

### **OIE Wildlife Disease List**

This is the second of the OIE designated Lists. In effect it is a general list and includes any disease that is infectious in nature (caused by virus, TSE agent, bacterial, fungal or parasitic infection) that can infect wild mammals, birds, reptiles or amphibians. Several of these conditions may affect more than one species, and many may also infect man and domesticated stock. It is difficult to summarise their significance, as this may vary from country to country; some may occur sporadically; some may infect animals but cause little recognisable clinical disease, while others (for example salmonellosis) have the potential to infect many species and cause severe disease. Over 50 examples of Wildlife Disease List conditions are presented in the questionnaire but this is by no means exhaustive. New conditions are reported regularly in UK wildlife and these require additional work to assess their potential risks to man, domestic stock, the environment and the species affected.

### **Incidents of suspected myxomatosis in wild rabbits, autumn 2007 England**

Myxomatosis is endemic in wild rabbits in the UK. Each year mass mortalities occur and wildlife rescue centres receive significant numbers of affected animals, as recorded in previous OIE Wildlife Disease Reports. Press reports from August 2007 described widespread losses presumed to have been of myxomatosis in Central and Southern England. These caused public nuisance and concern when people saw affected animals in the open with typical skin lesions that often attracted flies. It is surmised that factors contributing to the incidents included higher than normal rabbit populations in many areas and a warm autumn that encouraged insect vectors of the disease.

### **Salmonellosis in Wildlife**

Among mammals *Salmonella* Ajibo was an incidental isolate from the stomach contents of a young dog otter (*Lutra lutra*) that died suddenly in a rehabilitation centre. *Salmonella* Ajibo has been previously isolated from badger and fox faeces. *Salmonella* Enteritidis phage type 11 was isolated from an emaciated juvenile hedgehog (*Erinaceus europaeus*). This phage type is specifically associated with hedgehogs in the UK. Garden bird salmonellosis occurred frequently and is being investigated by the Garden Bird Health initiative (GBHi). While VLA monitors farm animals and pets for serotypes that appear to 'spillover' from garden birds (see Wildlife Quarterly Reports). *Salmonella* Typhimurium phage type 56 variant is in this category and was isolated from a young alpaca where the infection caused fatal septicaemia. The organism was also isolated from poultry and pigs during 2007.

### **Autumn mortality in leverets (*Lepus europaeus*) due to coccidiosis.**

Coccidiosis caused by *Eimeria leporis* and *E semisculpta* caused the deaths of approximately 70 leverets in an estate in Oxfordshire. A smaller incident with six reported deaths occurred in Staffordshire. Typically the disease is seen in leverets in late summer and autumn and is associated with wet weather.

### **Offspring bats abandoned, adverse weather suspected**

The BBC website on September 2007 reported that bats were abandoning their offspring as the animals struggled to survive in a wet and cold summer.

### **Auk shoreline wreck (mass mortality) on the East Anglian coast**

Shoreline wrecks of dead seabirds are examined frequently by the VLA Diseases of Wildlife Scheme, and starvation is a frequent but not universal finding. In 2007 these included starved arctic tern (*Sterna paradisaea*) chicks from the North East coast. VLA Bury St Edmunds received about 40 sea birds, primarily guillemots (*Uria aalge*), washed up dead around the coast at Yarmouth, again the consistent finding was starvation. Starvation is probably multifactorial in origin, involving low fish stocks in the areas affected, stormy weather affecting hunting opportunities and young birds that are inexperienced in finding food, particularly fish. A mass mortality in puffins (*Fratercula arctica*) resulted in submission of nine birds all in good condition with evidence of traumatic injury. The precise cause of the trauma was not found however local contacts considered that fishermen in the area killed puffins in their nets.

### **Smooth newt mortality incident, East Anglia**

Deaths in adult smooth newts (*Tritus vulgaris*) were investigated, and although a diagnosis was not reached the isolation of a ranavirus from one individual was of interest as ranaviruses have been implicated in common frog disease incidents.

## OIE The Wildlife Disease Report 2007: Disease surveillance and disease incidents 2007

### Investigation of the suspected illegal use of a physical method of pest control, wild rabbits

Two rabbit carcasses with lesions similar to those reported in human victims of explosions were examined on behalf of Natural England. The animals were killed following a pest control method that involved the injection and then ignition of a mixture of propane gas and oxygen into the warren.

### Starling (*Sturnus vulgaris*) mass drowning incidents

During 2006-07 VLADoWS has investigated four incidents where large numbers of starlings drowned. It is possible that this species, for some reason, is susceptible to drowning or incapable of getting out of water bodies when they enter them, alternatively the incidents may reflect strong flocking and dense roosting behaviour in this species. Following a night of torrential rain, several hundred juvenile starlings were found dead or weak under trees in a city park in Hull that is used as a roost. In total 706 dead (and soaked) starlings were collected; it was assumed that the birds were knocked from roosting perches by the rain and then died from the effects of hypothermia. The owner of a house in coastal Sussex awoke one morning and found 18 starlings in the garden's small ornamental pond. It is believed that they entered the pool to bathe/drink but could not then get out of the water and drowned. In 2006, two garden owners from East Anglia submitted several carcasses of dead starlings found drowned in their garden swimming pools.

### Waterbird mortality in a Central London park

Mortality of 600 waterbirds at St James's Park between July 2006 to February 2007, resulted in avian botulism, lead poisoning and salmonellosis (one case only) being diagnosed, although the clinical history suggested that botulism was the underlying cause of the deaths. There is a long history of wild bird mortalities in the park, one approximately 20 years ago and another due to botulism in the summer of 1969 (Keymer and others, *Vet Record* 1972, 90, 111-114). The recent high mortality rate may have arisen as a result of decreased water levels in the lake due to high environmental temperatures and defects with the water circulation equipment. A build up of silt on the lake bottom has also been suggested as an underlying factor.

**Mass mortality of seabirds associated with beaching of the MSC Napoli** – The Wildlife Trusts reported that 5 tonnes of oil escaped from the ship and more than 1000 seabirds were washed up along beaches (*Natural World, Spring 2007, page 10*). 997 guillemots, 50 razorbills, four shags (*Phalacrocorax aristotelis*), four great northern divers (*Gavia immer*), and one gannet (*Morus bassanus*) were admitted to the RSPCA West Hatch Wildlife Centre, Somerset, from the Lyme Bay area and to VLA Starcross. Of the guillemots, approximately 40% were released following rehabilitation. Approximately 55% were euthanased, the remainder having been dead on arrival, or having died in care. Gross post mortems showed evidence of weight-loss and dehydration, consistent with loss of waterproofing (resulting in an inability to feed, and hypothermia), and enteritis following ingestion of oil.

**Red squirrel pox** This disease is of conservation importance and is currently threatening the English and Welsh populations of the red squirrel (*Sciurus vulgaris*). The pox virus is carried by the expanding population of the otherwise healthy grey squirrels (*Sciurus carolinensis*). The current areas affected by the disease are primarily across the North of England however grey squirrels have now crossed the border and extended their range into Scotland possibly moving up wooded river valleys and during 2007 the first cases of pox disease in red squirrels were confirmed in Scotland. Meanwhile in Southern Cumbria pox disease has within 15 years reduced the once healthy continuous red squirrel population to a few isolated populations. From one locality in this area, VLA has diagnosed the disease in the years 2001, 2003, 2006 and 2007.

**Garden bird salmonellosis** This is the term used to describe deaths in garden birds (often near bird feeders) caused by *Salmonella typhimurium* (phage type 40 and 56) infections. These (phage) types appear to be relatively specific to finches and other garden birds, but human infection and pet (cats) infections are also potentially possible.

**Garden bird trichomonosis.** Was first described in 2005 and a recent publication looking at patterns of garden bird submissions, disease occurrence and the possibility that other condition could have been mistaken for the disease since 2001 showed that it probably was a new disease that first appeared in 2005 (Ref Duff et al 2007). Deaths are most frequent during the summer and autumn months.

## Wildlife Incident Investigation Scheme (WIIS), 2006

The Wildlife Incident Investigation Scheme investigates deaths of wildlife (including companion animals such as pets and working dogs, some livestock and beneficial insects such as honeybees and bumblebees) where there is evidence that pesticide poisoning may be involved. The Scheme is used to monitor pesticide use after approval, so that product approvals can be revised if necessary. It also provides a measure of the success of the pesticide registration process, and helps in the verification and improvement of the risk assessments made in this process. Evidence from the Scheme can also be used to enforce legislation on the use of pesticides and the protection of humans, food, the environment and animals.

There were 111 incidents attributed to pesticides during 2006: two incidents involved pesticides used in line with the conditions of their approval (approved use); 22 incidents involved pesticides that were used carelessly and not in line with the conditions of their approval (misuse); 67 incidents involved the deliberate and illegal use of pesticides (abuse); 19 incidents involved pesticides where how they had been used was uncertain (unspecified use) and one incident involved a pesticide formulated as a veterinary product (veterinary use). If a veterinary product is suspected to be involved in an incident it should be reported to the Veterinary Medicines Directorate on: 01932 338427.

The pesticide incidents reported in Table 33 account for over half of the pesticide poisoning incidents reported by the Scheme during 2006 (for details on these and other incidents see Ref. 1 or the website). Different pesticides and uses are associated with these wild bird and mammal incidents. For example, incidents with wild mammals were almost exclusively attributed to anticoagulant rodenticides and nine of these pesticide poisoning incidents involved foxes. For incidents with wild birds, nearly half of the pesticide poisoning incidents were attributed to carbofuran and 24 these pesticide poisoning incidents involved raptors.

The Scheme relies on individuals to report suspected incidents and so if you encounter dead animals and believe pesticides may be involved, please report this on 0800 321600.

**Table 33 Pesticide Poisoning of Animals in 2006** investigation of suspected incidents in the UK

Category of incident investigated	Number of incidents investigated	Number in which pesticide poisoning was identified	Number in which diagnostic examinations identified another cause of death (e.g. disease, trauma, starvation, or non-pesticide poisoning)
Wildlife-mammals	47	14	18
Wildlife- birds	194	57	47
TOTAL*	240	70	65

\* Wildlife from more than one category may be involved in a single incident.

Data and text supplied by CSL, and is a selected summary of data available in the Panel's report (see reference and website link, Barnett and others, 2007, page 14).

Please note that 2007 data is currently being compiled and was not available when this Report was produced, but quarterly updates are available on the above website.

### **Abbreviations:**

Defra	Department of Environment, Food and Rural Affairs
OIE	Office International des Epizooties
VLA	Veterinary Laboratories Agency
VLADoWS	VLA Diseases of Wildlife Surveillance Scheme
SAC	Scottish Agricultural Colleges
SVS	State Veterinary Service
RDS	Rural Development Service
RSPB	Royal Society for the Protection of Birds
BTO	British Trust for Ornithology
RSPCA	Royal Society for the Prevention of Cruelty to Animals
CSL	Central Science Laboratory (Defra)
N	Selected diseases that are new to the UK OIE Report, indicating a new pathogen, new host species or a previously unreported disease
WNV	West Nile Virus, indicates that incident was WNV monitored
AIV	Avian Influenza Virus, indicates that incident was AIV monitored
WQR	VLA Wildlife Quarterly Report
<b>Laboratory tests</b>	
PRNT	Plaque reduction neutralisation test (WNV serological test)
DGGE	Denaturing Gradient gel Electrophoresis
FAT	Fluorescent antibody test
ELISA	Enzyme linked immuno-assay
PCR	Polymerase chain reaction (test)
ZN	Ziehl Nielsen
Rabies MIT	Mouse inoculation test
RTCIT	Rabies tissue culture inoculation test

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## **REFERENCES AND 2007 WILDLIFE DISEASE PUBLICATIONS**

### **Defra and VLA wildlife reports and information**

Recent OIE Wildlife Disease Reports for 2002 to 2006  
[http://www.defra.gov.uk/vla/reports/rep\\_wildlife.htm](http://www.defra.gov.uk/vla/reports/rep_wildlife.htm)

VLA Wildlife Disease Quarterly Reports – 3 monthly surveillance updates  
[http://www.defra.gov.uk/vla/reports/rep\\_surv\\_wildlife.htm](http://www.defra.gov.uk/vla/reports/rep_surv_wildlife.htm)

Defra wildlife and wildlife disease websites  
<http://www.defra.gov.uk/animalh/diseases/vetsurveillance/species/wildlife/index.htm>

Defra's work on the conservation of wildlife and landscape, and on countryside recreation.  
<http://www.defra.gov.uk/wildlife-countryside/index.htm>

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<http://www.defra.gov.uk/animalh/diseases/vetsurveillance/species/wildlife/hws.htm>

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VLA Penrith, typing and formatting

Questionnaire for diseases in wildlife in

UK in 2007

Excel file format

See last page  
for collaborating  
agencies  
information

OIE listed disease	Animal species	Latin name	Disease seen 2007	# animals/ cases	Diagnostic methods				Agency
					Clinical	Pathology	Culture, agent identification	Serology	
African Horse Sickness									
African Swine Fever									
Anaplasmosis									
Anthrax									
Aujeszky's Disease									
Avian Chlamydiosis									
Avian Cholera									
Avian Infectious Bronchitis									
Avian Influenza HPAI	-	-	No	-	-	-	-	-	A
Avian Influenza LPAI	Mallard duck	<i>Anas platyrhynchos</i>	Yes	5 isolates / 1310 birds tested			H3N6		A
Avian Influenza LPAI	Mallard duck	<i>Anas platyrhynchos</i>	Yes				H5N2		A
Avian Influenza LPAI	Mallard duck	<i>Anas platyrhynchos</i>	Yes				H6N2		A
Avian Influenza LPAI	Mallard duck	<i>Anas platyrhynchos</i>	Yes				H1N2		A
Avian Influenza LPAI	Mallard duck	<i>Anas platyrhynchos</i>	Yes				H5N1		A
Avian Influenza LPAI	Mallard duck	<i>Anas platyrhynchos</i>	Yes				H5		A
Avian Influenza LPAI	Greylag goose	<i>Anser anser</i>	Yes		1 / 163		H2N9		A
Avian Influenza LPAI	Mute swan	<i>Cygnus olor</i>	Yes		1 / 1012		H5		A
Avian Influenza LPAI	Pintail	<i>Anas acuta</i>	Yes	1 / 239		H5N2		A	
Avian Influenza LPAI	Teal	<i>Anas crecca</i>	Yes	1 / 281		H3N8		A	
Avian Influenza LPAI	Pintail	<i>Anas acuta</i>	Yes	1		LPH5		X	
Avian Influenza LPAI	Mute swan	<i>Cygnus olor</i>	Yes	1		LPH5		X	
Avian Influenza LPAI	Mallard	<i>Anas platyrhynchos</i>	Yes	1		H3N8		X	
Avian Influenza LPAI	Teal	<i>Anas crecca</i>	Yes	2		H3N8		X	
Avian Influenza LPAI	Teal	<i>Anas crecca</i>	Yes	1		H3N8		X	
Avian Tuberculosis	European Wigeon	<i>Anas penelope</i>	Yes	2		Y	ZN staining	B	
Avian Tuberculosis	Fallow Deer	<i>Dama dama</i>	Yes	6 cases / 111 examined		Y	Y	C	
Avian Tuberculosis	Mallard	<i>Anas platyrhynchos</i>	Yes	12		Y	ZN staining	B	
Avian Tuberculosis	Muntjac	<i>Muntiacus reevesi</i>	No	0 cases / 5 examined		Y	Neg	C	
Avian Tuberculosis	Mute Swan	<i>Cygnus olor</i>	Yes	1		Y	ZN staining	B	
Avian Tuberculosis	Mute swan	<i>Cygnus olor</i>	Yes	1		Y		D	
Avian Tuberculosis	Northern Pintail	<i>Anas acuta</i>	Yes	1		Y	ZN staining	B	
Avian Tuberculosis	Pink-footed Goose	<i>Anser brachyrhynchos</i>	Yes	2		Y	ZN staining	B	
Avian Tuberculosis	Red Deer (Wild)	<i>Cervus elaphus</i>	Yes	4 / 70		Y	Y	C	
Avian Tuberculosis	Red Deer (Park)	<i>Cervus elaphus</i>	No	0 / 3		Y	Neg	C	
Avian Tuberculosis	Roe Deer	<i>Capreolus capreolus</i>	Yes	3 / 217		Y	Y	C	
Avian Tuberculosis	Whooper Swan	<i>Cygnus cygnus cygnus</i>	Yes	1		Y	ZN staining	B	

Avian Tuberculosis	Mallard	<i>Anas platyrhynchos</i>	Yes	1		Y	Y		E
Avian Tuberculosis, cutaneous	Buzzard	<i>Buteo buteo</i>	Yes	1		Y	Y		E
Bovine Tuberculosis	Badger RTA Hotspot Survey	<i>Meles meles</i>	Yes	0/5		Y			Z
Bovine Tuberculosis	Badger	<i>Meles meles</i>	Yes	7/53		Y	Y		X
Bovine Tuberculosis Trapped study site area	Badger	<i>Meles meles</i>	Yes	4/165		Y	Y		AA
Bovine Tuberculosis Found dead: study area	Badger	<i>Meles meles</i>	Yes	2/9		Y	Y		AA
Bovine Tuberculosis	Fallow Deer	<i>Dama dama</i>	Yes	2 / 111		Y	Y		C
Bovine Tuberculosis	Muntjac	<i>Muntiacus reevesi</i>	No	0 / 15		Y	Neg		C
Bovine Tuberculosis	Red Deer (Wild)	<i>Cervus elaphus</i>	Yes	16 / 70		Y	Y		C
Bovine Tuberculosis	Red Deer (Park)	<i>Cervus elaphus</i>	Yes	3 / 3		Y	Y		C
Bovine Tuberculosis	Roe Deer	<i>Capreolus capreolus</i>	Yes	4 / 217		Y	Y		C
Bovine Herpesvirus (IBR)									
Bovine Spongiform Encephalopathy (BSE)									
Brucella melitensis									
Brucella abortus									
Brucella suis									
Brucella sp.	Brown long eared bat	<i>Plecotus auritus</i>	No	0 / 1			Neg	Neg	F
Brucella sp.	Horseshoe bat (lesser)	<i>Rhinolophus hipposideros</i>	No	0 / 1			Neg	Neg	F
Brucella sp.	Pipistrel bat	<i>Pipistrellus pipistrellus</i>	No	0 / 2			Neg	Neg	F
Brucella sp.	Field vole	<i>Microtus agrestis</i>	No	0 / 1			Neg	Neg	F
Brucella sp.	Hare	<i>Lepus europaeus</i>	No	0 / 16			Neg	Neg	F
Brucella sp.	Hedgehog	<i>Erinaceus europaeus</i>	No	0 / 1			Neg	Neg	F
Brucella sp.	Otter	<i>Lutra lutra</i>	Yes	1 / 35			Neg	Pos	F
Bluetongue									
Caprine Arthritis/Encephalitis (CAE)									
Contagious Bovine Pleuropneumonia									
Classical Swine Fever									
Duck Plague (DVE)	Mallard	<i>Anas platyrhynchos</i>	Yes	2		Y			B
DVE	Feral duck	<i>Anas platyrhynchos</i>	Yes	6		Y			E
Duck Hepatitis									
Echinococcus granulosus									
Echinococcus multilocularis									
Equine Herpesvirus									
<i>Erysipethothrix rhusiopathiae</i>	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1 / 8		Y	Y		HG
Foot and Mouth Disease									
Leishmaniasis									
Leptospirosis	Fox	<i>Vulpes vulpes</i>	Yes	1 cub		Y	PCR		E
Lumpy Skin Disease									
Maedi/Visna			No						
Malignant Catharral Fever									
Myxomatosis	Rabbit	<i>Oryctolagus cuniculus</i>	Yes	193		Y			Y
Myxomatosis	Rabbit	<i>Oryctolagus cuniculus</i>	Yes	33		Y			I
Myxomatosis	Rabbit	<i>Oryctolagus cuniculus</i>	Yes	50		Y			D
Newcastle Disease									
Paratuberculosis									
Peste des Petits Ruminants									
Q-fever									
Rabbit Haemorrhagic Disease (RHD)									
Rabies (terrestrial)	Fox	<i>Vulpes vulpes</i>	No	0 / 5				FAT, RTCIT, MIT, RT-IV	
Rift Valley Fever									
Rinderpest									
Scrapie									
Sheep/Goat Pox									
Swine Vesicular Disease									

Trichinellosis	Fox	<i>Vulpes vulpes</i>	Yes (Ireland),no cases in England, Scotland and Wales	1 / 150 tested in Northern Ireland but 0 of 650 for GB					XJ
Trichinellosis	Badger	<i>Meles meles</i>	No	0 / 16 tested in Northern Ireland					X
Tuberculosis Human									
Tularemia									
Vesicular Stomatitis									
Wildlife List Disease									
Arboviruses									
Abortion	Hedgehog	<i>Erinaceus europaeus</i>	Yes	1		Y			G
Acanthacephalan infection	Herring gull	<i>Larus argentatus</i>	Yes	1		Y	Y		X
Air sacculitis	Whooper swan	<i>Cygnus cygnus</i>	Yes	1		Y	Y		X
Air sacculitis	Mute swan	<i>Cygnus olor</i>	Yes	3		Y	Y		E
Adenovirus enteritis in red squirrels	Red squirrel	<i>Sciurus vulgaris</i>	Yes	6		Y	EM		E
Amyloidosis hepatic	Widgeon	<i>Anas penelope</i>	Yes	1		Y			X
Arthritis -osteo, degenerative	Muntjac deer	<i>Muntiacus reevesi</i>	Yes	1		Y	histo		E
Aspergillosis	Herring gull	<i>Larus argentatus</i>	Yes	1		Y			D
Aspergillosis	Whooper swan	<i>Cygnus cygnus</i>	Yes	3		Y	Y		E
Atoxoplasmosis ( <i>Isospora</i> sp.)	Cirl bunting (wildcaught/captive). Species recovery project	<i>Emberiza cirlus</i>	yes	7/32		1	1		BB
Avian Malaria									
Avian Vacuolar Myelinopathy									
Avian Pox	Chaffinch	<i>Fringilla coelebs</i>	Yes	1 / 8		Y			I
Avian pox	Collared dove	<i>Streptopelia decaocto</i>	Yes	1		Y	Y		D
Avian pox	Dunnock	<i>Prunella modularis</i>	Yes	1 / 2			Y	Y	H
Avian pox	Dunnock	<i>Prunella modularis</i>	Yes	1		Y			E
Avian pox	Great tit	<i>Parus major</i>	Yes	1			Histopathology		D
Avian pox	Wood pigeon	<i>Columba palumbus</i>	Yes	9		Y	Y		D
Avian pox	Woodpigeon	<i>Columbia livia</i>	Yes	1			Y		K
Babesiosis									
Bat Lyssaviruses	Bats, 11species	<i>Microchiroptera</i>	Yes - EBLV-2 in one Daubenton's bat ( <i>Myotis daubentonii</i> )	1 / 1192, One Daubenton's			FAT, RTCI	Y	V
Baylisascaris spp.									
Besnoitiosis									
Bordetella bronchiseptica	Hedgehog	<i>Erinaceus europaeus</i>	Yes	1		Y	Y		G
Botulism	Lesser Black-backed Gull	<i>Larus fuscus</i>	Yes	1 / 12 suspect		Y			I
Botulism	Herring Gull	<i>Larus argentatus</i>	Yes	1 / 33 suspect		Y			I
Botulism (suspected)	Great black backed gull	<i>Larus marinus</i>	Y	2		Y			D
Botulism (suspected)	Herring gull	<i>Larus argentatus</i>	Y	2		Y			D
Botulism	Greylag goose Tufted duck	<i>Anser</i>	Y			Y		ELISA	E
Botulism	Mallard	<i>Anas platyrhynchos</i>	Y	11		Y		ELISA	E
<i>Campylobacter jejuni</i>	Cirl bunting (wildcaught/captive). Species recovery project	<i>Emberiza cirlus</i>	yes	4/32		1	1	1	BB
Capariniosis mange	Hedgehog	<i>Erinaceus europaeus</i>	Y	85		Y		Micro	Y
Capariniosis mange	Hedgehog	<i>Erinaceus europaeus</i>	Y	6				Parasitol	D
Circoviruses									
Coccidiosis	Rabbit	<i>Oryctolagus cuniculus</i>	Y	1				parasitol	Y
Coccidiosis	Hedgehog	<i>Erinaceus europaeus</i>	Y	3				parasitol	D
Coccidiosis	Red squirrrel	<i>Sciurus vulgaris</i>	Yes	3 / 3 - Northumberland			Y	Y	L
Coccidiosis	Wood pigeon	<i>Columba palumbus</i>	Yes	3				parasitol	D
Coccidiosis	Corncrake (captive bred. Species recovery project)	<i>Crex crex</i>	yes	4/4		1	1		BB

Colibacillosis (Agent: E.coli Serotype 086 )	Siskin and Goldfinch	<i>Carduelis spinus and Carduelis carduelis</i>	Yes	Case(s) confirmed at 6 sites	No	Gross pathology	Microbiological examination. Characteristic <i>E.coli</i> 086 API20E profile, some isolates pending serology.	No	M
Colibacillosis (Agent: <i>E.coli</i> O86 profile )	Siskin and Goldfinch	<i>Carduelis spinus and Carduelis carduelis</i>	Yes	11 / 145	No	Gross pathology	Culture. Characteristic <i>E.coli</i> O86 API20E profile.	No	N
E coli 08 K+ colisepticaemia	Greenfinch	<i>Carduelis chloris</i>	Yes	1 confirmed 5 suspected		Y	Y		D
Contagious Ecthyma,									
Corvid respiratory disease; cause unknown	Rook	<i>Corvus frugilegus</i>	Yes	60 estimated	Y	Y	Y		E
<i>Corynosoma strumosum</i> (acanthocephalan, usually associated with seals)	Mink	<i>Mustela vision</i>	Yes in Outer Hebrides, Scotland	17 / 76					J
Cnemidocoptiasis (Agent: <i>Cnemidocoptes</i> sp.)	Chaffinch	<i>Fringilla coelebs</i>	Yes	Single case	No	Gross pathology	Microscopic examination of lesions	No	M
Dermatophytosis Trichophyton	Hedgehog	<i>Erinaceus europaeus</i>	Yes	10	Y	Y			Y
Dermatophytosis Trichophyton	Hedgehog	<i>Erinaceus europaeus</i>	Yes	1			Y		E
Drowning - pond	Starling	<i>Sturnus vulgaris</i>	Yes	18	Yes	Yes			E
Drowning -after heavy rain	Starling	<i>Sturnus vulgaris</i>	Yes	706	Yes	Yes			E
Drowning - weather related	Starling	<i>Sturnus vulgaris</i>	Yes	200	Yes	Yes			E
Ebola Virus Hemorrhagic Fever (EVHF)									
Encephalitis, cause not known	Whooper swan	<i>Cygnus cygnus</i>	Yes	2	Yes	Yes	Yes		E
Epizootic Haemorrhagic Disease (EHD)									
Elephant Herpesvirus									
Enteritis - unknown cause	Red squirrel	<i>Sciurus vulgaris</i>	Yes	2 / 32 - Formby		Y	Y		L
European Brown Hare Syndrome (EBHS)									
Explosion associated trauma	Rabbit	<i>Oryctolagus cuniculus</i>	Yes, pest control method	2		Y	Histo		E
Feline Leukaemia (FLV)									
Feline Panleucopenia,									
Large Liver Flukes									
Brachylaemus fluke	Hedgehog	<i>Erinaceus europaeus</i>		3		Clinical signs & faecal smear			D
Garden Bird Mortality, phone reports, usually salmonellosis or trichomoniasis	Blackbird	<i>Turdus merula</i>	Yes	40 dead birds/ 28 incidents					O
Garden Bird Mortality, phone reports, usually tichomoniasis	Collared dove	<i>Streptopelia decaocto</i>	Yes	137 deaths/ 130 incidents					O
Garden Bird Mortality, phone reports, usually tichomoniasis	Wood pigeon	<i>Columba livia</i>	Yes	53 deaths / 56 incidents					O
Garden Bird Mortality, phone reports, usually tichomoniasis	Feral pigeon	<i>Columba livia</i>	Yes	12 deaths / 5 incidents					O
Garden Bird Mortality, phone reports, usually salmonellosis or trichomoniasis	Goldfinch	<i>Carduelis carduelis</i>	Yes	344 birds / 161 deaths					O

Garden Bird Mortality, phone reports, usually salmonellosis or trichomoniasis	Chaffinch	<i>Fringilla coelebs</i>	Yes	1223 deaths/ 494 incidents							O
Garden Bird Mortality, phone reports, usually salmonellosis or trichomoniasis	Greenfinch	<i>Carduelis chloris</i>	Yes	6674 deaths/ 1468 incidents							O
Garden Bird Mortality, phone reports, usually salmonellosis or trichomoniasis	House sparrow	<i>Passer domesticus</i>	Yes	232 deaths/ 123 incidents							O
Garden Bird Mortality, phone reports, usually salmonellosis or trichomoniasis	Siskin	<i>Carduelis spinus</i>	Yes	169 deaths / 27 incidents							O
Granulosa cell tumour	Wood pigeon	<i>Columba palumbus</i>		1					Histopathology		D
Hantaviruses											
Haemorrhagic gastritis	European otter	<i>Lutra lutra</i>	Yes	1				Y			G
Helminthiasis ostertagiasis abomasitis	Roe deer	<i>Capreolus capreolus</i>	Yes	2				Y	para		E
Helminthiasis <i>Amidostomum anseris</i>	Mute swan	<i>Cygnus olor</i>	Yes	1				Y			E
Histomoniasis											
<i>Hepatozoon sciuri</i>	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1 / 5				Y			H
<i>Hepatozoon griseisciuri</i>	Grey squirrel	<i>Sciurus carolinensis</i>	Yes	1 / 4				Y			H
<i>Hepatozoanosis</i>	Red squirrel	<i>Sciurus vulgaris</i>	Yes	3 / 32 - Formby				Y	Y		L
Hepatic capillariasis	Red squirrel	<i>Sciurus vulgaris</i>	Yes	2				Y	histo		E
Immunodeficiency viruses (Feline, Simian)											
Inclusion Body Hepatitis											
Inguinal hernia, intestine	Water Vole	<i>Arvicola terrestris</i>	Yes	2				Y			E
Interspecific aggression	Blackbird	<i>Turdus merula</i>	Yes	1			Y	Y			E
Lead toxicosis	Mute swan	<i>Cygnus olor</i>	Yes	12						Clinical signs & blood analysis	D
Lead toxicosis	Mallard	<i>Anas platyrhynchos</i>	Yes	2						Clinical signs & blood analysis	D
Lead toxicosis	Mallard	<i>Anas platyrhynchos</i>	Yes	12				Y	Y		X
Lead toxicosis	Wood pigeon	<i>Columba palumbus</i>	Yes	1						Radiography & blood analysis	D
Lead toxicosis	Mallard	<i>Cygnus olor</i>	Yes	2				Y	tox		E
Listeriosis (monocytogenes)	European otter	<i>Lutra lutra</i>	Yes	1					Y		HG
Louping ill	Red Grouse	<i>Lagopus lagopus scoticus</i>	Yes	67 / 1428							Y P
Louping ill	Hare	<i>Lepus timidus</i>	Yes	17 / 109							Y P
Lyme borreliosis											
Marburg virus											
Malnutrition	Red squirrel	<i>Sciurus vulgaris</i>	Yes	4				Y			E
Meningeal worms of cervids											
Mycotic pneumonia aspergillosis	Chough	<i>Pyrhocorax pyrrhocorax</i>	Yes	1				Y	Y		E
Necrotic enteritis clostridial	Mute swan	<i>Cygnus olor</i>	Yes	1				Y	Y		X
Necrotic enteritis clostridial	Mute swan	<i>Cygnus olor</i>	Yes	2				Y	Y		E
Neoplasia-mammary adenocarcinoma	Roe deer	<i>Capreolus capreolus</i>	Yes	1				Y	histo		E
Oil pollution incident marine	Auks		Yes	900			Y	Y			
Osteodystrophy (chronic)	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1			Y	Y			E
Lungworm (non fatal)	Roe deer	<i>Capreolus capreolus</i>	Yes	1				Y			E
Paramyxoviruses Paramyxovirus 1	Feral pigeon	<i>Columbia livia</i>	Yes	13			Y	Y	Y		E
Suspected Pigeon Paramyxovirus 1 (PPMV-1)	Feral pigeon	<i>Columba livia</i>	Yes	Two cases at separate sites.			Clinical history of polyuria and CNS signs affecting multiple birds	Gross pathology (exclusion of other causes)	No virology carried out	No serology carried out	N
Paramyxoviruses (Bat, Canine, Cetacean, Phocine)											
Parasitic bronchopneumonia, <i>Capillaria aerophila</i>	Hedgehog	<i>Erinaceus europaeus</i>	Yes	243					parasitology		
Parasitic bronchopneumonia	Hedgehog	<i>Erinaceus europaeus</i>	Yes	248					Clinical signs & faecal smear		D
Parasitism/anaemia	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1 / 32 - Formby				Y	Y		L
Pasteurellosis											

Pasteurellosis (Agent: <i>Pasteurella multocida</i> )	Siskin, house sparrow	<i>Carduelis spinus, Passer domesticus</i>	Yes	2 / 2	No	Gross pathology	Culture of organism from viscera	No	N
<i>Pasteurella multocida</i> + <i>Strep. equisimilis</i>	Eurasian otter	<i>Lutra lutra</i>	Yes	1 / 6		Y	Y		H
Pasteurellosis ( <i>P. multocida</i> )	Pipistrelle bat	<i>Pipistrellus pipistrellus</i>	Yes	1			Y		G
Pesticide poisoning 2006 data	Mixed wild mammal species		Yes	14 incidents positive					Q
Pesticide poisoning 2006 data	Mixed wild avian species		Yes	57 incidents positive					Q
Pestiviruses	Beaver	<i>Castor fiber</i>	Neg	1			Y		P
Pneumonia - unknown cause	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1 / 32 - Formby		Y	Y		L
Pneumonia - unknown cause	Red squirrel	<i>Sciurus vulgaris</i>	Yes	2		Y	Y		E
Pneumonia	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1		Y			G
Pneumonia	Hedgehog	<i>Erinaceus europaeus</i>	Yes	1		Y			G
Predation/trauma	Red squirrel	<i>Sciurus vulgaris</i>	Yes	5 / 32 - Formby		Y	Y		L
<i>Pseudamphistomum truncatum</i>	Eurasian otter	<i>Lutra lutra</i>	Yes	10 / 34		Y	Y		H
<i>Pseudamphistomum truncatum</i>	American mink	<i>Mustela vison</i>	Yes	1 / 2		Y	Y		H
Pseudotuberculosis									
Yersiniosis (Agent: <i>Yersinia pseudotuberculosis</i> )	Chaffinch, Blackcap, Barn swallow	<i>Fringilla coelebs, Sylvia atricapilla and Hirundo rustica</i>	Yes	Single case confirmed at 3 sites	No	Gross pathology	Microbiological examination.	No	M
Psoroptic Mange									
RTA	Red squirrel	<i>Sciurus vulgaris</i>	Yes	5 / 32 - Formby		Y	Y		L
Salmonellosis	Bullfinch	<i>Pyrrhulla pyrrhulla</i>	Yes	2 / 4		Y	Y		H
Salmonellosis	Greenfinch	<i>Carduelis chloris</i>	Yes	1 / 12		Y	Y		H
Salmonellosis	Greenfinch	<i>Carduelis chloris</i>	Yes	3		Y	Y		B
Salmonellosis	Goldfinch	<i>Carduelis carduelis</i>	Yes	1 / 3		Y	Y		H
Salmonellosis	House Sparrow	<i>Passer domesticus</i>	Yes	5		Y	Y		B
Salmonellosis	European otter	<i>Lutra lutra</i>	Yes	1			Y		
Salmonellosis (S. enteritidis)	Mouse ( <i>Mus musculus</i> )		Yes	6 / 11					R
Salmonellosis (S. enteritidis)	Rat	<i>Rattus norvegicus</i>	Yes	2 / 9					R
Salmonellosis (S. enteritidis)	Hedgehog	<i>Erinaceus europaeus</i>	Yes						D
Salmonellosis (S. enteritidis PT11)	Hedgehog	<i>Erinaceus europaeus</i>	Yes	2 / 2					S
Salmonellosis (S. typhimurium DT40)	Goldfinch	<i>Carduelis carduelis</i>	Yes	1 / 3					S
Salmonellosis (S. typhimurium DT41)	House Sparrow	<i>Passer domesticus</i>	Yes	1 / 1					S
Salmonellosis (S. typhimurium DT56var)	Greenfinch	<i>Carduelis chloris</i>	Yes	3 / 3					S
Salmonellosis (S. typhimurium DT56var)	Goldfinch	<i>Carduelis carduelis</i>	Yes	1 / 4					S
Salmonellosis (S. typhimurium DT104)	Mixed avian		Yes	1 / 1					S
Salmonellosis (S. typhimurium DT40 & DT56v)	Chaffinch, Goldfinch, Greenfinch, House sparrow, Siskin and Tree sparrow	<i>Fringilla coelebs, Carduelis carduelis, Carduelis chloris, Passer domesticus, Carduelis spinus and Passer montanus</i>	Yes	43 / 166	No	Gross pathology	Confirmed through culture and phage typing	No	N
Salmonellosis (S. typhimurium DT 40 & DT56)	Bullfinch, Chaffinch, Goldfinch, Greenfinch, House sparrow, Siskin and Tree sparrow	<i>Pyrrhulla pyrrhulla, Fringilla coelebs, Carduelis carduelis, Carduelis chloris, Passer domesticus, Carduelis spinus and Passer montanus</i>	Yes	Multiple mortality incidents confirmed at 33 sites.	No	Gross pathology	Confirmed through bacti and phage typing	No	M
Salmonellosis (S typhimurium DT56)	Goldfinch	<i>Carduelis carduelis</i>	Yes	2		Y	Y		X
Salmonellosis (S typhimurium DT56)	Redpoll	<i>Carduelis flammea</i>	Yes	1		Y	Y		X
Salmonellosis	Badger. Group study	<i>Meles meles</i>	infection identified	124 positive, from 187 tested		y			AA
Sarcoptic Mange	Red fox	<i>Vulpes vulpes</i>	Yes	20	Y		Y		Y
Sarcoptic Mange	Red fox	<i>Vulpes vulpes</i>	Yes	8 / 138	Y				I

Staphylococcal septicaemia	Brown hare	<i>Lepus europeus</i>	Yes	1		Y	Y		E	
Staphylococcal septicaemia	Red Squirrel	<i>Sciurus vulgaris</i>	Yes	1		Y	Y			
Sylvatic Plague										
Squirrel Pox Virus	Grey Squirrel	<i>Sciurus carolinensis</i>	Yes	439 / 1424				Y	P	
Squirrel Pox Virus	Red Squirrel	<i>Sciurus vulgaris</i>	Yes	10 / 121				Y	P	
Squirrel Pox Virus	Red Squirrel	<i>Sciurus vulgaris</i>	Yes	3 / 4	Y				I	
Squirrel Pox Virus	Red Squirrel	<i>Sciurus vulgaris</i>	Yes	3 / 6 examined - Northumberland		Y	Y		L	
Squirrel Pox Virus	Red Squirrel	<i>Sciurus vulgaris</i>	Yes	9 / 32 examined - Formby		Y	Y		L	
Squirrel Pox Virus	Red squirrel	<i>Sciurus vulgaris</i>	Yes	9/62 examined	Y	Y	Y		E	
Starvation	Arctic tern, juveniles	<i>Sterna paradisaea</i>	Yes	22		Y			E	
<i>Thalazia callipaeda</i>	Fox	<i>Vulpes vulpes</i>	No	0 / 400					J	
Tibial granulomatous osteomyelitis	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1 / 32 - Formby		Y	Y		L	
Tick Borne Encephalitis										
Tick-related syndrome	Collared dove	<i>Streptopelia decaocto</i>		19				Clinical findings	D	
Toxoplasmosis										
Transmissible Spongiform Encephalopathies (TSE, CWD)	Red deer (wild)	<i>Cervus elaphus</i>	No	0 / 258	BioRad Elisa				T	
Trichomoniasis	Bullfinch	<i>Pyrrhula pyrrhula</i>	Yes	1 / 4		Y	Y		H	
Trichomoniasis	Chaffinch	<i>Fringilla coelebs</i>	Yes	1 / 1		Y	Y		H	
Trichomoniasis	Collared Dove	<i>Streptopelia decaocto</i>	Yes	8	PM	Microscopy			B	
Trichomoniasis	Collared dove	<i>Streptopelia decaocto</i>	Yes	26	Y				Y	
Trichomoniasis	Collared Dove	<i>Streptopelia decaocto</i>	Yes	5 / 147	Y				I	
Trichomoniasis	Collared Dove	<i>Streptopelia decaocto</i>	Yes	11		Microscopic confirmation			D	
Trichomoniasis	Dunnock	<i>Prunella modularis</i>	Yes	1 / 2		Y	Y		H	
Trichomoniasis	Greenfinch	<i>Carduelis chloris</i>	Yes	9		Y			Y	
Trichomoniasis	Great tit	<i>Parus major</i>	Yes	1		Y			Y	
Trichomoniasis	Greenfinch	<i>Carduelis chloris</i>	Yes	7 / 12		Y	Y		H	
Trichomoniasis	Goldfinch	<i>Carduelis carduelis</i>	Yes	1 / 3		Y	Y		H	
Trichomoniasis	Goldfinch	<i>Carduelis carduelis</i>	Yes	3		Y	Y		X	
Trichomoniasis	Sparrowhawk	<i>Accipiter nisus</i>	Yes	2	Y				Y	
Trichomoniasis	Kestrel	<i>Falco tinnunculus</i>	Yes	2		Microscopic confirmation			D	
Trichomoniasis	Magpie	<i>Pica pica</i>	Yes	1		Y			Y	
Trichomoniasis	Magpie	<i>Pica pica</i>	Yes	1		Y	Y		X	
Trichomoniasis	Little owl	<i>Athene noctua</i>	Yes	2		Microscopic confirmation			D	
Trichomoniasis	Racing pigeon	<i>Columba livia</i>	Yes	5 / 81	Y				I	
Trichomoniasis	White dove	<i>Columba livia</i>	Yes	3 / 12	Y				I	
Trichomoniasis	Feral pigeon	<i>Columba livia</i>	Yes	10	Y				Y	
Trichomoniasis	Stock dove	<i>Columba oenas</i>	Yes	1	Y				Y	
Trichomoniasis	Woodpigeon	<i>Columba palumbus</i>	Yes	104	Y				Y	
Trichomoniasis	Woodpigeon	<i>Columba palumbus</i>	Yes	14 / 575	Y				I	
Trichomoniasis	Woodpigeon	<i>Columba palumbus</i>	Yes	13	PM	Microscopy			B	
Trichomoniasis	Woodpigeon	<i>Columba palumbus</i>	Yes	28		Microscopic confirmation			D	
Trichomoniasis	Tawny Owl	<i>Strix aluco</i>	Yes	9	Y				Y	
Trichomoniasis	Tawny Owl	<i>Strix aluco</i>	Yes	2	PM	Microscopy			B	
Trichomoniasis	Tawny owl	<i>Strix aluco</i>	Yes	4		Microscopic confirmation			D	
Trichomoniasis (Agent: Trichomonad parasite)	Blackbird, Bullfinch, Chaffinch, Collared dove, Dunnock Goldfinch, Great tit, Greenfinch House sparrow, Wood pigeon and Yellowhammer	<i>Turdus merula</i> , <i>Pyrrhula pyrrhula</i> , <i>Fringilla coelebs</i> , <i>Columba decaocto</i> , <i>Prunella modularis</i> , <i>Carduelis carduelis</i> , <i>Parus major</i> , <i>Passer domesticus</i> <i>Columba palumbus</i> and <i>Emberiza citrinella</i>	Yes		Multiple mortality incidents confirmed at >100 sites.	No	Gross pathology	Confirmed through culture and/or PCR	No	M

Trichomonosis (Agent: trichomonad parasite) in garden birds	Chaffinch, Dunnock, Goldfinch, Greenfinch	<i>Fringilla coelebs</i> , <i>Prunella modularis</i> , <i>Carduelis carduelis</i> , <i>Carduelis chloris</i>	Yes	Trichomonosis diagnosed in 71 garden birds from 46 sites in Scotland. 150 finches or dunnocks examined	No	Gross pathology	Gross pathology, exclusion of <i>Salmonella</i> by culture	No	N
Trichomonosis (Agent: trichomonad parasite) in raptors or pigeons/doves	Sparrowhawk, Barn owl, Collared dove, Wood pigeon,	<i>Accipiter nisus</i> , <i>Tyto alba</i> , <i>Streptopelia decaocto</i> and <i>Columba palumbus</i>	Yes	Individual birds at 4 sites.	No	Gross pathology	Diagnosed on gross pathology	No	N
Trichomonosis/trichomoniasis	Greenfinch	<i>Carduelis chloris</i>	Yes	15		Y			E
Tyzzler's Disease	Eurasian otter	<i>Lutra lutra</i>	Yes	1 / 42	Y	Y	Y		H
West Nile virus	36 species tested	Multiple species tested	No	WNV not isolated. Tissues from 226 birds (45 birds from Scotland) tested for West Nile virus		Y	PCR + virology	No	N
(Agent: <i>Suttonella ornithocola</i> )	Blue tit	<i>Parus caeruleus</i>	Yes	Two cases at separate sites.	No	Gross pathology	Confirmation through microbiological examination and DNA sequencing.	No	M
Severe oesophagitis due to <i>Candida albicans</i>	Red squirrel	<i>Sciurus vulgaris</i>	Yes	1		Y	Y		G
Yersiniosis ( <i>Yersinia pseudotuberculosis</i> )	Brown hare	<i>Lepus europeus</i>	Yes	1		Y	Y		E
<b>Reptiles</b>									
<i>Brucella</i> sp.	Loggerhead turtle	<i>Caretta caretta</i>	No	0 / 1			Neg	Neg	F
Fibropapillomatosis in sea turtles									
Inclusion Body Disease,									
Papillomatosis in crocodiles									
Pneumonia, Unknown Aetiology	Loggerhead turtle	<i>Carretta caretta</i>		1		Y			U
Trichinellosis									
Starvation	Loggerhead turtle	<i>Carretta caretta</i>		1		Y			U
<b>Amphibians</b>									
Chytridiomycosis									
Rana virus - significance uncertain	Smooth newt	<i>Triturus vulgaris</i>	Yes	1		Y	Y PCR		BB
Iridovirus diseases									
<i>Burkholderia cepacia</i> (Sweden)	Pool frog (imported from Sweden; translocated. Species recovery project)	<i>Rana lessonae</i>	yes	2/6				1	BB
<b>Marine Mammals</b>									
<i>Brucella</i> sp.	Atlantic white sided dolphin	<i>Lagenorhynchus acutus</i>	Yes	6 / 6			Y	Neg	F
<i>Brucella</i> sp.	Bottlenose dolphin	<i>Tursiops truncatus</i>	Yes	1 / 3			Y	Y	F
<i>Brucella</i> sp.	Bottlenose dolphin	<i>Tursiops truncatus</i>	Yes	1			Y	Y	G
<i>Brucella</i> sp.	Common dolphin	<i>Delphinus delphis</i>	No	5 / 9			Neg	Y	F
<i>Brucella</i> sp.	Common Dolphin	<i>Delphinus delphis</i>	No	4				Neg	G
<i>Brucella</i> sp.	Common seals	<i>Phoca vitulina</i>	No	0 / 9			Neg	Neg	F
<i>Brucella</i> sp.	Grey seals	<i>Halichoerus grypus</i>	No	0 / 4			Neg	Neg	F
<i>Brucella</i> sp.	Harbour porpoises	<i>Phocoena phocoena</i>	Yes	5 / 10			Y	Neg	F
<i>Brucella</i> sp.	Northern bottlenose whale	<i>Hyperooden ampullatus</i>	No	0 / 1			Neg	Neg	F
<i>Brucella</i> sp.	Striped dolphin	<i>Stenella coeruleoalba</i>	No	1 / 1			Neg	Y	F
<i>Brucella</i> sp.	White-beaked dolphin	<i>Lagenorhynchus albirostris</i>	No	1 / 1			Neg	Y	F
Bycatch	Common dolphin	<i>Delphinus delphis</i>	Yes	5		Y			G
Bycatch Note U = (toZ) = 2006 data	Common dolphin	<i>Delphinus delphis</i>	Yes	12		Y			U
Bycatch	Harbour porpoise	<i>Phocoena phocoena</i>	Yes	3		Y			G
Bycatch 2006	Harbour porpoise	<i>Phocoena phocoena</i>	Yes	11		Y			U
Bycatch	Bottlenose dolphin	<i>Tursiops truncatus</i>	Yes	1		Y			G

Bycatch 2006	Whitebeaked Dolphin	<i>Lagenorhynchus albirostris</i>	Yes	1		Y			U
Bycatch	Striped dolphin, blue-white dolphin	<i>Stenella coeruleoalba</i>	Yes	1		Y			U
Calicivirus Marine Mammals									
Chronic decompression sickness	Harbour porpoise	<i>Phocoena phocoena</i>	Yes	1		Y			X
Chronic perivaginal adhesions	Harbour porpoise	<i>Phocoena phocoena</i>	Yes	1		Y			G
Deformity of thoracic vertebrae	Common dolphin	<i>Delphinus delphis</i>	Yes	1		Y			G
Emaciation/starvation (intestinal parasitism)	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y			U
Endocarditis	Grey seal	<i>Halichoerus grypus</i>	Y	1		Y			G
(Meningo) encephalitis/gilosis	Northern bottlenose whale	<i>Hyperoodon ampullatus</i>	Y	1		Y			U
Gastropathy&/or Enteropathy Salmonellosis	Harbour porpoise	<i>Phocoena phocoena</i>	Y	4		Y			U
Gastropathy&/or Enteropathy	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y			U
Gastropathy&/or Enteropathy	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y			U
Generalised Bacterial Infection - Erysipelas	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y	Y		U
Generalised Bacterial Infection	Bottlenose Dolphin	<i>Tursiops truncatus</i>	Y	1		Y	Y		U
Generalised Bacterial Infection - possible polymic	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y	Y		U
Generalised Mycotic Infection Aspergillosis	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y	Y		U
Herpes virus infection	Common seal	<i>Phoca vitulina</i>		3				IPX stain	D
Hiatus hernia	Common seal	<i>Phoca vitulina</i>	Y	1		Y			D
Live stranding	Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>		4					U
Live stranding	Common dolphin	<i>Delphinus delphis</i>		3					U
Live stranding	Harbour porpoise	<i>Phocoena phocoena</i>		5					U
Live stranding	Northern bottlenose whale	<i>Hyperoodon ampullatus</i>		3					U
Live stranding	Sperm whale	<i>Physeter catodon</i>		2					U
Live Stranding	Striped dolphin, blue-white dolphin	<i>Stenella coeruleoalba</i>		1					U
Lungworm mostly Otostrongylus	Grey seal	<i>Halichoerus grypus</i>		c. 30				Parasitol	D
Lungworm mostly Otostrongylus	Common seal	<i>Phoca vitulina</i>		c.30				Parasitol	D
Malnutrition/hypothermia	Grey seal	<i>Halichoerus grypus</i>	Yes	1		Y			G
<i>Mycoplasma phococerebrale</i> arthritis	Grey seal	<i>Halichoerus grypus</i>	Yes	1		Y	Y		E
Other - Liver Infection Streptococcus equi	Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Y	1		Y			U
Others - disseminated fungal ear infection (pendil)	Whitebeaked Dolphin	<i>Lagenorhynchus albirostris</i>	Y	1		Y			U
Other - Shot	Grey seal	<i>Halichoerus grypus</i>	Y	1		Y			U
Parasitic bronchitis	Bottlenose dolphin	<i>Tursiops truncatus</i>	Yes	2		Y			G
Parasitic pneumonia (Otostrongylus)	Common seal pup	<i>Phoca vitulina</i>	Yes	1		Y			X
Parasitic bronchitis	Harbour porpoise	<i>Phocoena phocoena</i>	Yes	1		Y			G
Parasitic gastritis	Bottlenose dolphin	<i>Tursiops truncatus</i>	Yes	2		Y			G
Parasitic gastroenteritis due to <i>Anisakis</i> sp.	Grey seal	<i>Halichoerus grypus</i>	Yes	1		Y			G
Perihepatitis	Bottlenose dolphin	<i>Tursiops truncatus</i>	Yes	1		Y			G
Peritonitis	Grey seal	<i>Halichoerus grypus</i>	Yes	1		Y			G
Peritonitis	Bottlenose dolphin	<i>Tursiops truncatus</i>	Yes	1		Y			G
Persistent ductus arteriosus	Grey seal	<i>Halichoerus grypus</i>	Y	1		Y			D
Physical trauma	Common dolphin	<i>Delphinus delphis</i>	Y	1		Y			U
Physical Trauma	Harbour porpoise	<i>Phocoena phocoena</i>	Y	5		Y			U
Physical trauma (bottlenose dolphin attack)	Harbour porpoise	<i>Phocoena phocoena</i>	Y	19		Y			U
Physical trauma (possible boat strike)	Harbour porpoise	<i>Phocoena phocoena</i>	Y	4		Y			U
Pneumonia, Parasitic	Harbour porpoise	<i>Phocoena phocoena</i>	Y	12		Y			U
Pneumonia, Parasitic and Mycotic	Whitebeaked Dolphin	<i>Lagenorhynchus albirostris</i>	Y	1		Y			U
Pneumonia, Parasitic and Bacterial	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y			U
Pneumonia, Parasitic and Bacterial	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y			U
Pneumonia, Unknown Aetiology	Harbour porpoise	<i>Phocoena phocoena</i>	Y	1		Y			U
Salmonellosis (iS. <i>bovis/morbificans</i> )	Grey seal	<i>Halichoerus grypus</i>	Yes	1		Y	Y		X
Salmonellosis ( <i>Salmonella</i> sp)	Grey seal	<i>Halichoerus grypus</i>	Yes	1 / 3					I
Salmonellosis ( <i>S. Hindmarsh</i> )	Seal		Yes	1 / 1					S
Septic arthritis due to <i>Streptococcus phocae</i>	Grey seal	<i>Halichoerus grypus</i>	Yes	1		Y	Y		G
Septic bite wound due to <i>Streptococcus phocae</i>	Grey seal	<i>Halichoerus grypus</i>	Yes	1		Y	Y		G
Starvation	Common dolphin	<i>Delphinus delphis</i>	Y	2		Y			U

Starvation (neonate)	Harbour porpoise	<i>Phocoena phocoena</i>	Y	5		Y		U
Starvation	Striped dolphin, blue-white dolphin	<i>Stenella coeruleoalba</i>	Y	1		Y		U
Starvation	Harbour porpoise	<i>Phocoena phocoena</i>	Y	2		Y		U
Starvation/hypothermia	Harbour porpoise	<i>Phocoena phocoena</i>	Y	20		Y		U
Starvation/hypothermia	Grey seal	<i>Halichoerus grypus</i>	Y	1		Y		U

### Invertebrates

Eugregarine parasites	British field cricket (free-living, Species recovery project)	<i>Gryllus campestris</i>	yes	2/4		1	1	BB
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### Agency abbreviations

#### Letter in column

#### Agency

A	VLA (Veterinary Laboratories Agency) Avian Virology, Richard Irvine
B	WWT (The Wildfowl and Wetlands Trust) Martin Brown
C	VLA SB4510, Bovine TB in wildlife other than badgers, Tim Crawshaw
D	RSPCA (Royal Society for the Prevention of Cruelty to Animals), East Winch Wildlife Centre
E	VLADoWS (VLA Diseases of Wildlife Scheme)
F	VLA Brucella, Claire Dawson
G	VLA Truro, Nick Davison
H	Wildlife Veterinary Investigation Centre, Vic Simpson
I	RSPCA Stapeley Grange Wildlife Centre, Cheshire
J	Central Science Laboratory, England, Survey
K	VLA Diseases of Wildlife Scheme
L	University of Liverpool, J Chantrey
M	GBHi (Garden Bird Health initiative) Institute of Zoology, Zoological Society of London, London, NW1 4RY
N	Scottish Agricultural College, Avian Health Unit, Tom Pennycott
O	RSPB (Royal Society for the Protection of Birds), Kirsi Peck
P	More dun Research Unit, Scotland, Linda Marriott
Q	Wildlife Incident Investigation Scheme (WIIS), Central Science Laboratory, Libby Barnett
R	VLA Salmonella Surveillance Team, CERA, Project FZ2000, Ian McLaren
S	VLA Salmonella Surveillance Team, CERA, Project FZ2000, Sue Kidd
T	VLA Surveillance for CWD in wild deer project, Alan Wight
U	UK Cetacean Strandings Investigation Project (UKCSIP), Institute of Zoology, Paul Jepson
V	VLA Rabies and Wildlife Zoonoses, A. R. Fooks
X	Northern Ireland data, Agri-Food and Biosciences Institute, Tony Patterson
Y	St Tiggywinkles Wildlife Hospital, England, Dot Walton
Z	VLA TB (tuberculosis) Section, Hotspot Survey, Andy Mitchell
AA	Central Science Laboratory's Wildlife Disease Ecology Team, England
BB	Institute of Zoology, London, F Molenaar, T Sainsbury