

WILDLIFE DISEASES IN THE UK

CASES REPORTED IN THE YEAR 2003

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



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Cover Photographs: Pigeon Paramyxovirus (PMV 1) infection causing abnormal head carriage and nervous signs in a feral dove. Several similarly affected doves from a city park in the North of England were examined and virus isolated from brain examinations. These clinical signs are typical of PMV infection but similar signs are also reported in birds suffering from other viral encephalitic infections. These, including West Nile Virus infection, need to be considered as differential diagnoses.

The photographs also prompt the question – what is a wild animal? These doves were housed at night but free-flying during the day-time. They may have become exposed to infection from contact with infected free-living, feral town pigeons.

WILDLIFE DISEASES IN THE UK 2003

Report to Defra and to the OIE 2003

INTRODUCTION

1. The Wildlife Diseases Report for the year 2003, to Defra, and ultimately to the OIE is compiled as an objective of Project ED1600 and follows the same format as in the previous 8 years. 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 2003, together with some 2002 incidents that were not reported previously. The absence of a particular condition does not necessarily mean that it was not present.
2. Each incident has been numbered to allow for referencing. The majority referred to infectious diseases, however a few non-infectious incidents that were considered worthy of note have been added. Conditions not recorded in previous UK OIE Reports, or considered unusual, have been annotated by the letter 'N'. The data that has been contributed by investigators is gratefully acknowledged.
3. Further to the key aims of both Defra and VLA with respect to wildlife, Defra now supports the VLA: Diseases of Wildlife Project. The principal objectives of this Project are to investigate unusual wildlife mortality and to provide wildlife disease surveillance. Data from several Project investigations in 2003 are presented in the lists and the tables of this Report, including the West Nile Virus surveillance in wild birds.
4. During 2003, the Phocine Distemper Virus (PDV) epidemic in UK seals ended. Preliminary evidence of European Bat Lyssa virus type 2 (EBL 2), sero-positive Daubenton's bats (*Myotis daubentoni*), has been reported in UK populations. Among waterfowl, there were several incidents of avian botulism and one relatively large lead (gun shot) poisoning incident. West Nile Virus has not been isolated following examinations of almost 1000 wild birds.
5. In this edition produced for the web the report has been de-personalised.

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*Veterinary Laboratories Agency,
Penrith Regional Laboratory,
Cumbria CA11 9RR, UK
Ph. 01768-885295 fax 01768-885314
E-mail: penrith@vla.defra.gsi.gov.uk*

OIE REPORT ON UK WILDLIFE DISEASES, 2003 - **OIE LIST 'A' DISEASES**

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
No List 'A' diseases reported					
Please see Table 7 for Avian Influenza virus surveillance					

OIE REPORT ON UK WILDLIFE DISEASES, 2003 - **OIE LIST 'B' DISEASES** MAMMALS

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
NOTE Other List B diseases in mammals and birds are given in Tables B1, B2 and B3. The <i>Mycobacterium bovis</i> infections listed below, do not appear in those tables.					
NOTE Atypical <i>Brucella spp.</i> in marine mammals are given on Tables 9 and 9a. These isolates do not conform, using classical techniques, to the recognised species of <i>Brucella</i>.					
03/1	Badger (<i>Meles meles</i>)	<i>Mycobacterium bovis</i>	N England Wildlife hospital	1	Radiology, confirmed by culture
/2	Badger	<i>Mycobacterium bovis</i>	Northern Ireland	2	Necropsy Histology
/3	Red deer (<i>Cervus elaphus</i>)	<i>Mycobacterium bovis</i> Generalised infection	SW England	1 Cause of death not specified	Necropsy. Mycobacterial culture
/4	Red deer	<i>Mycobacterium bovis</i> Generalised infection	W. England	1 Cause of death not specified	Necropsy. Mycobacterial culture
/5	Red deer	<i>Mycobacterium bovis</i> Generalised infection and severe tubercular pneumonia	SW. England	1 Cause of death not specified	Necropsy. Mycobacterial culture
/6	Red deer	<i>Mycobacterium bovis</i> Cultured from lung lesion	SW. England	1 Culled, injured deer	Necropsy. Mycobacterial culture
/7	Red deer	<i>Mycobacterium bovis</i> Culture of unspecified lymph nodes	SW. England	2 Cause of death not specified	Necropsy. Mycobacterial culture
/8	Red deer (park deer)	Suspected paratuberculosis <i>Mycobacterium avium paratuberculosis</i>	E England	1 affected weight loss	Typical acid-fast bacilli by ZN in faeces
/9	Roe deer (<i>Capreolus capreolus</i>)	<i>Mycobacterium bovis</i> Isolated from unspecified tissues	S England	1 Shot	Necropsy. Mycobacterial culture
/10	Roe deer	<i>Mycobacterium bovis</i> cultured from mesenteric lymph nodes	SW. England	1 Cause of death not specified	Necropsy. Mycobacterial culture
/11	Roe deer	<i>Mycobacterium bovis</i> cultured from mesenteric lymph nodes	SW. England	1 Shot	Necropsy. Mycobacterial culture

OIE REPORT ON WILDLIFE DISEASES, 2003 - **OIE LIST 'B' DISEASES** – cont'd

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
03/12	Roe deer	<i>Mycobacterium bovis</i> cultured from unspecified tissue	SW. England	1 Shot	Necropsy. Mycobacterial culture
/13	Roe deer	<i>Mycobacterium bovis</i> cultured from multiple abscesses	SW. England	1 Cause of death not specified	Necropsy. Mycobacterial culture
/14	Fallow deer (<i>Dama dama</i>)	<i>Mycobacterium bovis</i> cultured from unspecified tissue	SW. England	1 Shot	Necropsy. Mycobacterial culture
/15	Fox	<i>Mycobacterium bovis</i> cultured from tubercular lesions	S. England	1 Cause of death not specified	Necropsy. Mycobacterial culture
/16	Rabbit (<i>Oryctolagus cuniculus</i>)	Myxomatosis	SW. England Results from Wildlife Hospital	17	Clinical history
/17	Rabbit	Myxomatosis	N. England Results from Wildlife Hospital	14	Clinical history
/18	Rabbit	Myxomatosis	SW. England	2	Clinical history
/19	Rabbit	Viral haemorrhagic disease	N. Ireland	1	Necropsy Histology
- OIE LIST 'B' DISEASES BIRDS					
/20	Greylag goose (<i>Anser anser</i>) Mallard (<i>Anas platyrhynchos</i>) Pochard (<i>Aythya ferina</i>) Shelduck (<i>Tadorna tadorna</i>) Mute swan (<i>Cygnus olor</i>) Coot (<i>Fulica atra</i>) Moorhen (<i>Gallinula chloropus</i>) Jackdaw (<i>Corvus monedula</i>)	Avian tuberculosis	2 5 3 1 2 (total 27) 5 4 5	WWT reserve S. England	Necropsy
/21	Mute swan	Avian tuberculosis	SW. England Wildlife Hospital	1	Necropsy, histopathology
/22	Mute swan	Avian tuberculosis	N. England Wildlife Hospital	1	Necropsy, histopathology
/23	Mute swan	Duck virus enteritis	N. England	1	Necropsy only
/24	Shelduck, Mallard, Gadwall (<i>Anas strepera</i>)	Duck virus enteritis	S. England	5 (total)	Associated with minor outbreak in captive birds
/25	Merganser (<i>Mergus serrator</i>) Smew (<i>Mergus albellus</i>)	Avian tuberculosis	Northern Ireland	2 1	Necropsy, histology

OIE REPORT ON WILDLIFE DISEASES, 2003 - **OIE LIST 'B' DISEASES**

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
BIRDS					
/26	Feral pigeon (<i>Columba livia</i>)	Avian tuberculosis	Northern Ireland	1	Necropsy, histology
/27	Feral pigeon	<i>Chlamydophila</i> demonstrated by PCR See Table 13 for detail	Scotland, Avian Health Unit SAC Auchincruive	1	Necropsy, laboratory examinations
/28	Collared dove (<i>Streptopelia decaocto</i>)	<u>Paramyxovirus 1</u> With concurrent <i>Pasteurella pneumotropica</i> infection, trichomoniasis and candidiasis	N. England	2	Necropsy and laboratory examinations, including virology
/29	Collared dove	Avian cholera (<i>Pasteurella multocida</i> septicaemia)	E England	1	Necropsy, bacteriology, virology
/30 N	Rook (<i>Corvus frugilegus</i>)	<i>Chlamydophila</i> PCR positive. See Table 13 for detail	Scotland, Avian Health Unit SAC Auchincruive	1	Necropsy and laboratory examinations

Footnote

- N indicates selected diseases that are new (not reported previously) to the UK OIE Report; indicating a new pathogen, new host species or a previously unreported disease.

OIE LIST 'B' DISEASES - *Mycobacterium bovis* infections

***Mycobacterium bovis* infections in UK wildlife, 2003**

Data supplied by VLA Weybridge

Table B1 Examinations of RTA (Road Traffic Accident) Badgers, England, 2003

RTA badgers collected in 2003 (suitable for post-mortem)	834
Number of above cultured so far	691
Number of above <i>M. bovis</i> positive	71

Table B2 Results of an intensive field study of *M. bovis* infection in badgers carried out in Gloucestershire, England, 2003

Data supplied by Central Science Laboratory

Badger, live-capture results

	<u>Badgers</u>
Negative	141
Elisa positive only (serology)	103
Culture positive	10

Culture results represent microbiological culture of clinical samples (i.e. sputum, faeces, urine or swabs of wounds and abscesses)

Badger post-mortem results

Negative	12
Elisa positive only	n/a
Culture positive	4

Culture results represent microbiological culture of tissue samples.

OIE LIST 'B' DISEASES - *Mycobacterium bovis* infections - continued

***Mycobacterium bovis* infections in UK wildlife, 2003**

Table B3 Wildlife species (cadavers) from South West England examined for *M. bovis* infection – excluding badgers
Data supplied by the Central Science Laboratory

Cadavers examined during 2003			
		Negative	Positive
Brown hare (<i>Lepus europaeus</i>)		2	0
Brown rat (<i>Rattus norvegicus</i>)		43	0
Common shrew (<i>Sorex araneus</i>)		5	0
Fallow deer (<i>Dama dama</i>)		43	7
Feral ferret (<i>Mustela putorius</i>)		4	0
Fox (<i>Vulpes vulpes</i>)		182	11
Grey squirrel (<i>Sciurus carolinensis</i>)		81	0
Mink (<i>Mustela vison</i>)		7	0
Mole (<i>Talpa europaea</i>)		4	0
Muntjac (<i>Muntiacus reevesi</i>)		13	2
Polecat (<i>Mustela putorius</i>)		3	0
Pygmy shrew (<i>Sorex minutes</i>)		6	0
Rabbit (<i>Oryctolagus cuniculus</i>)		22	0
Roe deer (<i>Capreolus capreolus</i>)		74	0
Weasel (<i>Mustela nivalis</i>)		16	0
Wood mouse (<i>Apodemus sylvaticus</i>)		80	0
Bank vole (<i>Clethrionomys glareolus</i>)		83	0
Feral Wild Boar (<i>Sus scrofa</i>)		1	0

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST**

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
<u>MAMMALS</u>					
03/31	Fox (<i>Vulpes vulpes</i>)	Sarcoptic mange	SW England	6 affected	Clinical history and skin scrape
/32 N	Fox	Obstructive hydrocephalus in cub. Cerebral cavitation, vestigial thymus, cerebellar prolapse through foramen magnum. Cause unknown, aqueductal stenosis possibly caused by viral insult	SW England	1	Histopathology Previously recognised e.g. See Ref. 29, (p 163)
/33	Badger	<i>Salmonella agama</i> cultured from liver and faeces, badger found dead, (and from cattle on same farm)	W England	1	Clinical disease due to <i>S agama</i> in cattle 100 metres from badger sett See ref 28
/34	Otter (<i>Lutra lutra</i>)	Brucellosis survey. Pneumonia and renal calculi reported in 2 animals	SW England	0/45 seropositive. No <i>Brucella</i> sp isolated	Brucella ELISA serology
/35	Roe deer	<i>Yersinia enterocolitica</i> cultured from mesenteric lymph nodes	Scotland	1 Shot	Necropsy, bacteriology. Mycobacterial culture negative.
/36	Roe deer	<i>Yersinia pseudotuberculosis</i> cultured from mesenteric lymph nodes	Scotland	1 Shot	Necropsy, bacteriology. Mycobacterial culture negative.
/37	Roe deer	Lungworm, <i>Ostertagia</i> spp in abomasae, terminal septicaemia	E England	1 found dead in cattle shed	Necropsy and microbiology
/38	Roe deer	Lungworm, pneumonia (dictyocaulosis)	N England	1	Necropsy and microbiology
/39 N	Rabbit	Vascular thrombosis and subcutaneous abscesses. Cause not found	SW England	1 examined but several affected	Necropsy and laboratory examinations
/40	Rabbit	Hepatic coccidiosis	SW England	1 reported	Necropsy Microbiology
/41	Brown hare (<i>Lepus europeus</i>), 3 week-old leverets	Colisepticaemia, Coliforms cultured in profuse, pure growths from several tissues	E England	2	Necropsy, bacteriology, histopathology
/42	Brown hare	Trauma due to seasonal behaviour (territorial/sexual). Hind limb paresis bruising in lumbar spine area.	E England	2 reported in field. 1 submitted	Necropsy
/43	Brown hare	Coccidiosis. <i>E.coli/Shigella</i> -type organism also cultured	Scotland	Several on estate	Necropsy, microbiology

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST**

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
03/44	Brown hare	EBHS	N. England	6 dead, 1 examined	Necropsy, histopathology First case in this county
/45	Red squirrel (<i>Sciurus vulgaris</i>)	Bronchopneumonia reported by submitting lab. <i>Bordetella bronchiseptica</i> isolated	Isle of Wight	1	Bacteriology
/46	Red squirrel	Parapox infection	N. England	1	Necropsy and electron microscopy
/47 N	Red squirrel	Parapox infection Parapox seropositive. <i>Staphylococcus siuri</i> pneumonia. <i>S sciuri</i> not previously reported as a pathogen.	N. England	1	First case in new area following incursion of grey squirrel in area, 2 years ago.
/48 N	Red squirrel	Red squirrel parapox seropositive. No pox lesions although skin oedematous in one. Both poor condition, one with significant parasites	N England Two separate incidents	2 Precise cause of death not found	Significant, as indicates that red squirrels in wild can occasionally survive parapox infection
/49	Red squirrel	Focal mycotic gastritis	Wales	1 found dead	Necropsy, Histopathology
/50	Red squirrel	Pneumonia, Dermatophilus dermatitis.	N England	1	Necropsy, Histopathology
/51	Hedgehog (<i>Erinaceus europaeus</i>)	Ringworm, cryptosporidiosis, parasitic-gastroenteritis	E. England	1	Necropsy and laboratory examinations
/52	Hedgehog	Chronic purulent meningitis, encephalomalacia, septicaemia, mange.	E. England	2 several months apart	Necropsy Histopathology bacteriology (no bacterial cause found).
/53	Hedgehog	Spastic paresis with hypermetria. Possibly associated with salmonellosis	E. England	1	Necropsy and laboratory examinations
/54	Hedgehog	<i>Salmonella enteritidis</i> infection	E. England	1	Necropsy and laboratory examinations
/55	Hedgehog	Exudative dermatitis probably bacterial, secondary to contact dermatitis, at hospital	E England Animal in wildlife hospital	1	Necropsy, histopathology
/56	Hedgehog	Parasitic pneumonia (<i>Capillaria</i> +/-or <i>Crenosoma</i> spp.)	SW England Wildlife Hospital	58 affected	Clinical history and faecal parasitology
/57	Hedgehog	<i>Staph aureus</i> isolated from purulent pneumonia	SW England	1	Bacteriology
/58	Hedgehog	Myiasis (Fly-strike)	N England Wildlife Hospital	16 affected	Clinical signs
/59 N	Hedgehog	Staphylococcal MRSA rhinitis (Methicillin resistant <i>Staphylococcus aureus</i>)	N England Wildlife Hospital	1 affected	Clinical signs Culture, antibiotic sensitivity.

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST**

NCI-DENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
<u>MARINE MAMMALS</u>					
03/60	Common Dolphin (<i>Delphinus delphis</i>)	Bycatch – entrapment in fishing nets. Separate incidents	S. England	13	Necropsy. A <i>Brucella</i> sp. isolated from one of these.
/61	Common Dolphin	Net entrapment and pneumonia	England	1	Necropsy. <i>Aeromonas hydrophila</i> from lung lesions
/62	Common Dolphin	Net entrapment. Ulceration of cardiac stomach. Numerous gastric nematodes	S. England	1	Necropsy
/63 N	Common Dolphin	Possible decompression sickness. Liver enlarged due to numerous gas-filled fibrous lesions (like 'bubblewrap') See Ref. 25	S. England	1	Necropsy, Histopathology. Lesions may be initiated by expansion of microscopic nitrogen gas nuclei like decompression sickness in man
/64	Common Dolphin.	Ulceration in fundic stomach. Numerous gastric nematodes	S. England	1	Necropsy
/65	Striped dolphin (<i>Stenella coeruleoalba</i>)	Net entrapment	S. England	3	Necropsy
/66	White sided dolphin (<i>Lagenorhynchus actus</i>)	Net entrapment	S. England	1	Necropsy
/67	Harbour porpoise (<i>Phocoena phocoena</i>)	Net entrapment	S. England	4	Necropsy
/68	Harbour porpoise	Net entrapment. Numerous nematodes in lungs. Trematode parasites in liver.	S. England	1	Necropsy
/69	Harbour Porpoise	Ante-mortem trauma of unknown origin	S. England	1	Necropsy
/70	Harbour porpoise	Parasitism. Numerous nematodes in lungs and stomach	S. England	1	Necropsy
/71 N	Grey Seal (<i>Halichoerus grypus</i>)	<i>Erysipelothrix rhusiopathiae</i> isolated from flipper abscess, 5-week-old seal	S. England Seal sanctuary	1 affected	Bacteriology.

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST**

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
<u>MARINE MAMMALS</u> Continued					
03/72	Grey Seal pups	Haemorrhagic enteritis No pathogens isolated	S. England Seal sanctuary	2 affected	Bacteriology and parasitology
/73	Grey Seal 7 month-old pup	<i>Staphylococcus aureus</i> isolated from ear swab.	S. England Seal sanctuary	1 affected	Bacteriology
/74	Grey Seal Pup	Purulent and verminous pneumonia	S. England Seal sanctuary	1 affected	Necropsy and histopathology
/75 N	Grey Seal	<i>Salmonella typhimurium</i> pt 104 (Retesting of <i>S typhimurium</i> 104 infected seal identified in December 2002)	S. England Seal sanctuary	1 affected	Bacteriology
/76	Grey seal	<i>Citrobacter freundii</i> pneumonia	N England	1	Necropsy, bacteriology
/77	Seals (species not specified)	<i>Mycoplasma phocarhinis</i> and 2 unidentifiable mycoplasmas from lung.	Scotland	Isolates from 3 affected seals. Clinical significance unclear	Microbiology. Mycoplasma culture
//78	Seal "	<i>M. phocacerebrale</i> from tooth abscess	SW England	1 affected	As above
/79 N	Seal "	<i>Salmonella typhimurium</i> isolated (resistant to Ampicillin and Tetracycline)	SW England	1 affected. Probably from seal sanctuary	Bacteriology only

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST**

αINCI - DENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
<u>BIRDS</u>					
03/ 80	Mallard (juvenile), Mute swan (juvenile), Tufted duck (<i>Aythya fuligula</i>), (juvenile)	Helminthiasis (<i>Acuaria uncinata</i>) infestation	W. England One reserve	7	Necropsy
/81	Mallard, Coot, Mute swan, Teal (<i>Anas crecca</i>), Black headed gulls (<i>Larus ridibundus</i>)	Avian botulism	W. England Outbreaks in area in July/August 2001 and 2002	30+	Clinical history Necropsy
/82	Mallard, Teal, Mute Swan, Canada goose, Tufted duck, Shoveller (<i>Anas clypeata</i>), Coot, Moorhen, Black- headed gull	Avian botulism August – September, October	S. England At wildfowl reserve	600 (total)	Clinical history Necropsy
/83	Mixed duck species and 4 mute swans	Avian botulism	S. England	40	Clinical history Necropsy
/84	Greylag goose (<i>Anser anser</i>), Mute swan, Canada goose, Pochard (<i>Anas ferina</i>)	Lead poisoning	W. England	5	Necropsy (one Greylag goose had 438 shotgun pellets in gizzard)
/85	Canada goose (<i>Branta canadensis</i>), Greylag goose, pink-footed goose (<i>Anser brachyrhynchus</i>)	Lead poisoning, Lead (gun) shot found in gizzards	Central England	102 cadavers found over 4 weeks from flock of 280 geese (mainly Canada geese)	Clinical history, necropsy, tissue biochemistry, gizzard analysis.
/86	Mute Swan	Egg peritonitis	N. England	1	Necropsy
/87	Mute Swan Juvenile	Aspergillosis	W. England	3	Necropsy
/88	Mute Swan	Aspergillosis	N. England+ Wales	8 affected, some fatalities	Necropsy and cytology
/89	Mute Swan	Gizzard worms; <i>Amidostomum</i> , <i>Epimidiostomum</i> spp	N. England	4 affected	Necropsy, microbiology, faecal examination
/90	Mute Swan	Lead poisoning	N. England Several localities	93 affected, some fatalities	Clinical signs blood biochemistry
/91 N	Mute Swan	(Overhead) Power line injuries	N. England + Wales	17	Clinical history Wildlife hospital
/92	Mute Swan	Haemochromatosis	N. England	1	Necropsy and histopathology
/93	Mute Swan	Botulism	N. England	1	Clinical history
/94	Mute Swan	Neoplasia, (fibroma)	N. England	1	Necropsy and Histopathology

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST** BIRDS

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
BIRDS Continued					
/95	Mute Swan	Nasal leech	N. England	9 affected, clinical in 2	Clinical history
/96 N	Mute swan	Necrotic enteritis, As for previous case	W. England	3	Necropsy, bacteriology, histopathology
/97	Whooper Swan (<i>Cygnus Cygnus</i>)	Lead poisoning	Scotland (reserve)	3	Necropsy
/98	Whooper swan	Aspergillosis	N. England	3	Necropsy and microbiology
/99 N	Whooper swan	Necrotic enteritis. <i>Clostridial</i> infection suspected. Condition possibly previously not reported in the UK	E. England	30+/2200	Necropsy, bacteriology, detection of clostridial α toxin, Histopathology
/100	Canada goose	(Overhead) power line injury	N. England	2	Clinical history
/101	Moorhen (<i>Gallinula chloropus</i>)	Botulism	N. England	3	Clinical history response to treatment
/102	Manx shearwater (<i>Puffinus puffinus</i>)	Marine oil pollution	Wales	27 Picked up from ship	Necropsy
/103	Eider duck (<i>Somateria mollissima</i>)	Aspergillosis	Wales	1	Necropsy
/104	Herring gull (<i>Larus argentatus</i>)	Avian botulism (suspected)	W. England	2	Clinical history
/105	Gulls, 4 common species	Avian botulism	N. England Wales	11, In separate incidents	Clinical history
/106	Guillemot (<i>Uria aalge</i>)	Marine oil pollution	Wales	5 in 3 incidents	Necropsy
/107	Guillemot	Keratinised tissue excrescence on beak. Cause not found	Wales	1	Necropsy, bacteriology, histopathology
/108	Razorbill (<i>Alca torda</i>)	Helminthiasis. <i>Contraecum</i> sp. in proventriculus	Wales	1	Necropsy and parasitology
/109	Buzzard (<i>Buteo buteo</i>)	Trichomoniasis	SW England Wildlife Hospital	1 affected	Clinical findings and microscopy
/110	Buzzard	Trichomoniasis	N England Wildlife Hospital	5	Clinical findings and microscopy
/111	Buzzard	Neoplasia, (renal carcinoma)	N England Wildlife Hospital	1	Necropsy, histopathology
/112	Kestrel (<i>Falco tinnunculus</i>)	Capillariasis	N England	3 affected	Necropsy (1) Faecal parasitology
/113	Peregrine (<i>Falco peregrinus</i>)	Trichomoniasis	N England	1 affected	Clinical signs microbiology

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST** BIRDS – cont'd

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
03/114	Peregrine	<i>Serratospiculum tendo</i> helminths in air sacs. 100 <i>Ixodes</i> ticks	N England	1 Death due to traumatic injury	Necropsy in 1999, helminth identified in 2003
/115	Tawny Owl (<i>Strix aluco</i>)	Trichomoniasis	SW England Wildlife Hospital	1 affected	Clinical signs microscopy
/116	Tawny Owl	Trichomoniasis	N England Wildlife Hospital	2 affected	Clinical signs microscopy
/117	Little Owl (<i>Athene noctua</i>)	Helminthiasis <i>Porrocaecum</i> (possibly <i>P spirale</i>)	E England	1 Cause of death not specified	Parasitology
/118	Pheasant	<i>Mycoplasma synoviae</i> infection in pheasants introduced onto grouse moors	N England	Not known. Clinical significance unknown	Bacteriology. Supports concerns about introducing disease into hitherto naive wild grouse populations
/119	Collared dove Wood Pigeon (<i>Columba palumbus</i>)	Trichomoniasis	W. England	8 13 (21 total)	Necropsy
/120	Collared dove	Trichomoniasis	E. England	5	Necropsy
/121	Collared dove	Trichomoniasis	N England	2	Necropsy
/122	Collared dove	Trichomoniasis	Scotland	13	Necropsy
/123	Collared dove	Trichomoniasis	N England	12 affected	Clinical signs
/124	Collared dove	Helminthiasis (Ascarids) and <i>Mycoplasma columbinasale</i> infection	E. England	1	Necropsy and laboratory examinations
/125	Collared dove	Sub-cutaneous hemorrhage in head region. Tick infestation	E England	8-10 in autumn months, annual	Necropsy. Similar condition last year Ref. 02/79
/126	Wood pigeon	Trichomoniasis	N England	14 affected	Clinical signs, microscopy
/127	Wood pigeon	Candidiasis	N England	1	Necropsy
/128	Wood pigeon	Pox	N England	2	Clinical signs
/129	Feral Pigeon (<i>Columba livia</i>)	Oral candidiasis (including asphyxiation due to peanut in oropharynx in one)	E England	Several over one month	Necropsy and microbiology
/130	Feral pigeon	Trichomoniasis	N England	8	Clinical signs, microscopy
/131	Blackbird	Helminthiasis <i>Acanthocephala</i> sp. <i>Polymorphus</i> sp. & <i>Ascarid</i> spp.	S England	1 Cause of death not specified	parasitology
/132	Blackbird	Pulmonary aspergillosis and staphylococcosis	E England	1	Necropsy microbiology histopathology
/133	Blackbird	Coccidial enteritis	S England	3	histopathology
/134 N	Reed bunting (<i>Emberiza schoenicus</i>)	Predation of nestlings by radulae of the Large Black Slug <i>Arion ater</i> agg.	Not given	Several nestlings including deaths from wounds	Clinical signs Ref 1. Also reported in Eastern Europe.
/135	Bullfinch (<i>Pyrrhula pyrrhula</i>)	<i>Salmonella typhimurium</i> (Garden bird mortality)	Wales	2	Necropsy and bacteriology

OIE REPORT ON WILDLIFE DISEASES, 2003 - **WILDLIFE DISEASE LIST** BIRDS cont'd

INCIDENT NO	SPECIES AFFECTED	DISEASE	LOCALITY	REPORTED MORTALITY	COMMENT
/136	Greenfinch (<i>Chloris chloris</i>)	Salmonellosis (Garden bird mortality)	N. England	15	Necropsy and bacteriology (identification pending)
/137	Greenfinch	<i>Salmonella typhimurium</i> pt 40 (Garden bird mortality)	N. England	1	Necropsy and bacteriology
/138	Greenfinch	Garden bird mortality	SW England Wildlife Hospital	1	Bacteriology
/139	Greenfinch	<i>Salmonella typhimurium</i> pt U288 from liver and intestine	W England	1 examined 4 dead	Necropsy, bacteriology
/140	Greenfinch, Chaffinch (<i>Fringilla coelebs</i>), House sparrow (<i>Passer domesticus</i>)	Salmonellosis (Garden bird mortality)	W. England	15 in 5 separate incidents reported by same laboratory	Necropsy and bacteriology
/141	Greenfinch, House sparrow, bullfinch	Garden bird mortality (GBM) <i>S typhimurium</i> pt 40 and 56 (<i>Stm</i> pt 40, 56)	SW England	15 in 9 incidents	Necropsy and bacteriology
/142	Greenfinch	GBM <i>Stm</i> pt 40	N England	several	Bacteriology
/143 N	Greenfinch	GBM <i>Stm</i> pt 40 3 isolates from different birds all sulphonamide resistant – this organism usually fully sensitive	SW England	3	Bacteriology
/144	House sparrow	GBM <i>S typhimurium</i>	W England	6	Necropsy and bacteriology
/145	Carrion crow (<i>Corvus corone</i>)	<i>Salmonella bredeney</i> isolated. Bird died from Difenacoum and Brodifacoum poisoning	SW England	1	Necropsy, toxicology and bacteriology
/146	Magpie (<i>Pica pica</i>)	Ovarian neoplasia	Wales	1	Necropsy only

SURVEYS

Table 4 West Nile Virus (WNV) surveillance in wild birds and free-living game birds 2001 – 2003, England, Wales and Scotland

2001 – 2003

Wild bird submissions received diagnostic examinations. Brain and viscera (kidneys), in all, were examined by WNV PCR. In the majority of cases these tissues were also examined for WNV by virus isolation (cell culture).

Number of Wild Birds Examined. 2001-2003	Number of wild species	Results of brain histopathology	Virus Isolation For WNV	WNV PCR
2001 – 80	83	Brains from approx. 30 wild birds examined. A range of lesions recorded including meningitis, cerebral abscesses, suppurative and non-suppurative encephalitis. All 30 also examined by WNV PCR and Virus isolation for WNV	All negative	All negative
2002 – 235				
2003 - 675				
<u>Total - 990</u>				

NOTES

- Examinations are part of the VLA Diseases of Wildlife Project, ED1600
- Diagnostic data from some of the birds examined also appears in the Wildlife List.

- Data from free-range poultry and captive birds kept in outside aviaries not shown

No evidence of West Nile virus infection has been found from VLA surveillance, to date

5. The help of Tom Pennycott (SAC), Jason Waine, RSPB, BTO, RSPCA Wildlife Hospitals and independent wildlife hospitals is particularly acknowledged.

Table 5. West Nile Virus serology (published results. Reference 6, page 28)

WNV serology in British wild birds trapped at two sites in Southern England

Species examined	Number sampled	Number WNV sero-positive by PRNT serology	Comment
20 species	172 birds	36 (22.7%)	Birds clinically normal when trapped

SURVEYS cont'd

Table 6 2003 Rabies Surveillance – Free-Living Species.
Data supplied by Dr Antony Fooks, Rabies Unit, VLA Weybridge

Species	Number Examined	Locality	Test	Result
Badger	1	UK	Rabies FAT on brain smears and RT-PCR	Negative
Bats	924	UK	Rabies FAT on brain smears and RT-PCR. RTCIT and MIT on biting/scratching incidents.	Negative

2002 Rabies Surveillance – Free-Living Species. Bat Speciation

Bats –	Number Examined	Locality	Test	Result
<i>R. hipposideros</i>	4	UK	Rabies FAT on brain smears and RT-PCR	Negative x 211 Positive x 1, - a juvenile Daubenton's bat (<i>Myotis daubentonii</i>), also tested by RTCIT and MIT. Refs. 11, 12
<i>Myotis daubentonii</i>	5			
<i>M. brandt</i>	2			
<i>M. mystacinus</i>	2			
<i>M. nattereri</i>	4			
<i>Pipistrellus pipistrellus</i>	109			
<i>P. nathusii</i>	1			
<i>Nyctalus leisleri</i>	1			
<i>N. noctula</i>	2			
<i>Barbastella barbastellus</i>	1			
<i>Plecotus auritus</i>	34			
Unidentified bats	1			
Zoo Fruit Bats	46			

Table 6c European Bat Lyssavirus Serological Survey
preliminary results published in the Veterinary Record, see Reference 33.

Species Examined	Number Sampled	Locality	Test	Result
Daubenton's bat <i>M. daubentonii</i>	183	Scotland	Serology for EBL2	6-19% positive (Daubenton's bat only)
Natterers bat <i>M. nattereri</i>				
Pipistrelle bat <i>P. pipistrellus</i>				

Table 7 Influenza virus surveillance in wild birds
 Data supplied by Ruth Manvell, Avian Virology, VLA Weybridge

Species examined	Test:	Number tested	Number of Influenza virus isolates
Wild birds primarily waterfowl, also waders and raptors	Virus isolation from cloacal swabs.	Approx. 250 swabs	0

Table 8 Phocine Distemper virus (PDV) 2002/2003

Data covers the whole period of the epidemic, which is now considered to be finished. The last confirmed positive case on 23.01 2003, was a Common Seal found on the East Scottish coast,

Compiled by Nick Davison, VLA Truro, from data sourced from the Sea Mammal Research Unit and the Zoological Society of London. **See Ref 24.**

England	Number of animals
Total dead seals	3163
Total confirmed PDV cases	75
Total Common seals	74
Total Grey seals	1
Scotland	
Total dead seals	968
Total confirmed PDV cases	21
Total Common seals	12
Total Grey seals	9
Wales	
Total dead seals	178
Total confirmed PDV cases	0
Northern Ireland	
Total dead seals	110
Total confirmed PDV cases	2
Total Common seals	2
Total Grey seals	0
Total October 2003	4419

Table 9. Brucella Isolates and Serology Results from Marine Mammals
Data supplied by Simon Brew, VLA Weybridge

Note 1: These isolates are atypical *Brucella* spp. and do not conform, using classical techniques, to the recognised species of *Brucella* (e.g. *B abortus*, *B melitensis*, *B ovis*, *B suis*).

Note 2: Samples received from GB only. (More have been received from abroad)

Atypical *Brucella* spp. culture isolates received at VLA Weybridge during 2003

SPECIES AFFECTED	DISEASE	LOCALITY	NUMBERS AFFECTED	METHOD OF DIAGNOSIS
Common seal (<i>Phoca vitulina</i>)	Brucellosis	Inverness, Scotland (SAC)	2	Culture and PCR
Common seal (<i>Phoca vitulina</i>)	Brucellosis	Veterinary Services Division (Northern Ireland)	5	Culture and PCR
Common dolphin (<i>Delphinus delphis</i>)	Brucellosis	VLA Truro	1	Culture and PCR
Harbour porpoise (<i>Phocoena phocoena</i>)	Brucellosis	Inverness, Scotland (SAC)	11	Culture and PCR
Harbour porpoise (<i>Phocoena phocoena</i>)	Brucellosis	VLA Truro	1	Culture and PCR
White-sided dolphin (<i>Lagenorhynchus actus</i>)	Brucellosis	Inverness, Scotland (SAC)	1	Culture and PCR

Table 9B Brucellosis in Marine Mammals

Serum samples received at VLA Weybridge during 2003 for *Brucella* ELISA serology:-

WILDLIFE SPECIES AFFECTED	TOTAL TESTED	TOTAL POSITIVE	TOTAL NEGATIVE	LOCATION (SENDER)
Common dolphin (<i>Delphinus delphis</i>)	20	7	13	VLA Truro
Harbour porpoise (<i>Phocoena phocoena</i>)	8	3	5	VLA Truro
Otter (<i>Lutra lutra</i>)	51	0	51	VLA Truro
Striped dolphin (<i>Stenella coeruleoalba</i>)	3	0	3	VLA Truro
Atlantic White-sided dolphin (<i>Lagenorhynchus actus</i>)	1	0	1	VLA Truro

Table 10 **Salmonella wildlife vectors on pig and poultry farms, 2003**

Data from Dr Ian McLaren, VLA Weybridge
See also Reference 4

Species	County / England	No. faecal samples positive for salmonella/ No. samples taken	Serotype
House mouse <i>(Mus musculus)</i>	Gloucestershire	0/4	-
	Bedfordshire	2/6	typhimurium 104
	Suffolk	3/6	typhimurium 104B, U302
	Norfolk	0/3	-
	Lancashire	0/12	-
	Carmarthen	0/1	-
	Hampshire	3/13	enteritidis
Beetles (not identified)	Hampshire	0/7	-
	Lancashire	0/2	-
Wild Birds (not identified)	Bedfordshire	0/2	-
	Berkshire	0/1	-
	Gloucestershire	2/3	agona
	Norfolk	1/8	typhimurium
	Dorset	0/3	-
	Suffolk	2/9	reading, manhattan
	Wiltshire	1/7	4,5,12:
Flies (not identified)	Hampshire	1/3	enteritidis
	Devon	0/6	
	Suffolk	0/1	
	Carmarthen	2/25	enteritidis
	West Sussex	2/6	enteritidis
Brown rat <i>(Rattus norvegicus)</i>	Bedfordshire	0/1	
	Berkshire	4/7	enteritidis
	Devon	0/1	
	Gloucestershire	0/4	
	Dorset	0/1	
	Oxfordshire	11/14	enteritidis
	Suffolk	4/9	london (2), manhattan, reading
	West Sussex	1/4	enteritidis
	Wiltshire	0/2	
Fox	Berkshire	0/1	
	Dorset	0/1	
Maggots	Lancashire	0/2	
Totals		39/175	

Table 11 - Wildlife disease surveillance, Northern Ireland 2003
Data supplied by Dr Seamus Kennedy

Species Affected	Disease / Infection	Numbers affected	Method of Diagnosis	County location
Badger	Pyothorax	1	Necropsy	D
Hare	Coccidiosis	1	Parasitology	T
Hare	Mucoid enteritis	1	Necropsy	T
Hare	Liver necrosis	1	Necropsy, histology	L
Rabbit	Viral haemorrhagic disease	1	Necropsy, histology	D
Fox	Mange	1	Necropsy, histology	N Ireland
Fox	<i>Salmonella dublin</i>	2	Bacteriology	N Ireland
Fox	<i>Salmonella derby</i>	1	Bacteriology	N Ireland
Fox	<i>Campylobacter sp</i>	2	Bacteriology	N Ireland
Fox	<i>Leptospira sp</i>	3	Bacteriology	N Ireland
Common seal	Pneumonia (mycotic)	1	Necropsy, histology	D (coast)
Common seal	<i>Brucella sp</i>	2	Bacteriology	D,D (coast)
Common seal	Enteritis (parasitic)	1	Necropsy, parasitology	D (coast)
Common seal	Gastric ulceration	1	Necropsy	D (coast)
Common porpoise	Salmonellosis	1	Bacteriology	D (coast)
Common porpoise	Encephalitis (fungal)	1	Histology	D (coast)
Swan (mute)	Parasitic enteritis	1	Necropsy, parasitology	D
Swan (mute)	<i>Clostridium perfringens</i> enteritis	2	Necropsy, bacteriology	A,D
Pigeon	Nephritis	1	Necropsy, histology	D
Smew	Fungal air-sacculitis	1	Necropsy, histology	D
Merganser	Amyloidosis	1	Necropsy, histology	D
Scoter	<i>Salmonella typhimurium</i>	1	Bacteriology	D
Scoter	Amyloidosis	1	Necropsy, histology	D
Sparrowhawk	Parasitic enteritis	1	Necropsy, parasitology	A
Counties A - Antrim, D – Down, L – Londonderry, T - Tyrone				

Table 12a Dead birds found in gardens or near bird feeders, 2003
Phoned reports from the public to the RSPB

Data supplied by Kersi Peck, RSPB

Bird mortality incidents were reported from 32 English counties, Wales, South Scotland, East Scotland, Highland and Northern Ireland.

2003	
Total number of reported incidents	181
Incidents involving greenfinches, house sparrows, chaffinches, siskins and goldfinches	166
Incidents involving collared doves and wood pigeons (many of which will be trichomoniasis incidents)	18

Notes

1. Further data for the six most frequently affected species in these incidents are given in Table 12b below; many of these incidents are attributable to *Salmonella typhimurium* infection ('garden bird mortality').

2. Many garden bird mortality incidents will involve deaths of more than one species.

Table 12b Species of bird affected See note above

Species	No of reported incidents / species	Reported mortality / species. (max mortality/incident)	Average incident mortality / species
Greenfinches	92	515 (35)	5.6
House sparrows	25	116 (21)	4.6
Chaffinches	24	76 (18)	3.2
Goldfinches	10	55 (30)	5.5
Siskins	20	126 (22)	6.3
Collared doves (probable trichomonas)	16	68 (9)	4.3

Table 13

Avian wildlife diseases in Scotland- 2003

**Diseases diagnosed in wild birds submitted to SAC Veterinary Science Division, Avian Health Unit, Auchincruive, Ayr, Scotland, in 2003
Data supplied by Tom Pennycott, SAC**

Disease/infection	Species affected	Details
Avian botulism (suspected or confirmed)	Miscellaneous species of gull, a gannet	August, September
<i>Salmonella Typhimurium</i> DT 56 variant	House sparrow, siskin, greenfinch	January, May, December
<i>Salmonella Typhimurium</i> DT 40	House sparrow, chaffinch, greenfinch	January, February, November
<i>Salmonella</i> species, to be further identified	Goldfinch	December
<i>E coli</i> O86	Greenfinch, siskin	March, April, May
Lead poisoning	Mute swan	February. Kidney lead 148 ppm DM
Presumed starvation	Wren, shag, golden eagle, starling, guillemot	January, May, December
Trauma	Chaffinch, carrion crow, jackdaw, rook, song thrush, blackbird, gull	January, February, March, April, June, July
“Corvid respiratory disease” Airsacculitis, pneumonia, early pericarditis	Rook	January. <i>Chlamydophila</i> PCR positive. OIE List B disease, see page 6
Squamous papilloma See Reference 30	Chaffinch	January
<i>Staphylococcus aureus</i> septicaemia	Robin	February
<i>N. Haemorrhagic enteritis</i> associated with large numbers of intestinal flukes (<i>Ichthyocotylurus platycephalus</i>)	Common gull	February
Helminthiasis - hairworms	Woodpigeon	January
<i>N Serratospiculum</i> sp. in airsac. Cause of death trauma.	Peregrine	March See also case 03/114
Inclusion body hepatitis, <i>Chlamydophila</i> demonstrated by PCR	Feral pigeon	July OIE List B disease, see page 6
Helminthiasis – <i>Syngamus trachea</i>	Blackbird (immature)	August. 12 pairs of <i>Syngamus</i> , consolidation of lung
Trichomoniasis (presumptive)	Collared dove	March, October

Table 13 Avian wildlife diseases in Scotland- 2003 – cont'd

**SAC Veterinary Science Division, Avian Health Unit
Data supplied by Tom Pennycott, SAC**

Disease/infection	Species affected	Details
Pox	Starling, house sparrow	February, April
Aspergillosis	Blackbird, mute swan	April, August
Mycotic pneumonia, airsacculitis, nodule on lumbar spine. Bird presented with coughing and leg weakness	Jackdaw	Gross lesions and histopathology but no fungi cultured. August.
CNS of unknown aetiology	Starling	May
Suspected cyanobacterial poisoning	Mute swan	September/October
Hepatitis, unknown cause	Blackbird	December

Table 14 Data from the Wildlife Veterinary Investigation Centre, Truro, Cornwall

Data supplied by Vic Simpson FRCVS and Becki Lawson MRCVS

Species Affected	Disease / Infection	Numbers affected	Method of Diagnosis	County location
Fox	Ascarids, probably <i>T canis</i> or <i>T leonina</i>	1	PM examination	Cornwall
Fox	Sarcoptic mange, <i>Sarcoptes sp</i>	1	PM examination and microscopy	Cornwall
Otter N	Septic bite wounds, mostly streptococcal	41/63 bitten/examined	PM examination and culture	Southern and SW England
Otter	<i>Brucella sp</i>	0/33 seropositive 0/36 culture positive	PM, ELISA on blood PM, organ culture	S & SW England
Otter N	<i>Listeria sp</i> septicaemia	1	PM, bacterial culture	Cornwall
Bats	Rabies Results in table 6	21 screened, all negative	FAT on brain	Cornwall and Devon
Bats N	<i>Bartonella spp</i>	2/41	PCR on blood	Cornwall and Devon
Bats N	<i>Babesia vespertilionis</i>	4/41	PCR on blood	Cornwall and Devon
Stoat N	<i>Skrjabinogylus spp</i> helminths	2/6	PM and microscopy	Cornwall
Greenfinch	<i>Salmonella typhimurium</i> phage type 40	Incident No 2 1 submitted, 6 deaths Incident No 5 Garden mortality, many deaths Incident No 6 Garden mortality, 3 submitted	PM and bacteriology " "	Cornwall " "
Greenfinch	Group B <i>Salmonella spp</i> isolated, phage type pending	Incident No 8 1 case submitted Incident No 9 2 cases submitted	PM and bacteriology "	Cornwall "

Species Affected	Disease / Infection	Numbers affected	Method of Diagnosis	County location
Tree sparrow	<i>Salmonella typhimurium</i> phage type 56 (variant)	Incident No 1 Farm house / yard incident, 1 submitted	PM and bacteriology	Dorset
House sparrow	<i>Salmonella typhimurium</i> phage type 40	Incident No 2 1 submitted, 6 deaths in total Incident No 5 Garden mortality, many deaths	PM and bacteriology “	Cornwall “
House sparrow	Group B <i>Salmonella</i> , phage type pending	Incident No 7 Many deaths around stables, 1 submitted	PM and bacteriology	“
Bullfinch	<i>Salmonella typhimurium</i> phage type 40	Incident No 3 1 submitted	PM and bacteriology	“
Bullfinch	<i>Salmonella typhimurium</i> phage type 40 and 56 (NB: Not 56 variant)	Incident No 4 5 bullfinches died; 2 submitted	PM and bacteriology	Devon
Barn owl	Severe nematode infection, probably <i>Porrocaecum sp</i>	1 nestling	PM	Sussex
Barn owl	Coccidiosis, species unknown	1	PM and parasitology	Devon

Table 15 **Louping-ill and squirrel parapox wildlife sero-surveillance undertaken by the Moredun Research Institute.**

Data supplied by Peter Nettleton. See also Ref. 27

Disease / infection	Species affected	Numbers affected	Method of diagnosis	Locality
Louping ill	Red grouse (<i>Lagopus lagopus scoticus</i>)	1414 sera tested, 125 sero-positive (8.8%) No disease seen	Haemagglutination inhibition serology	Various locations, in Scotland and England
Louping ill	Mountain hare (<i>Lepus timidus</i>)	161 sera tested, 44 sero-positive (27%) No disease seen	Haemagglutination inhibition serology	Various locations in Scotland
Louping ill	Roe deer (<i>Capreolus capreolus</i>)	23 sera tested, 10 sero-positive (43%) No disease seen	Haemagglutination inhibition serology	Aberdeenshire, Scotland
Disease / infection	Species affected	Numbers affected	Method of diagnosis	Locality
Squirrel parapox	Grey squirrels (<i>Sciurus carolinensis</i>)	483 sera tested, 231 sero-positive (48%) No disease recorded	ELISA to measure antibody against red squirrel poxvirus	Various locations in England and Scotland
Squirrel parapox	Red squirrels (<i>Sciurus vulgaris</i>)	28 sera tested 2 sero-positive (7%)	ELISA to measure antibody against red squirrel poxvirus	Various locations in England and Scotland

Abbreviations :

Defra	Department of Environment, Food and Rural Affairs
OIE	Office International des Epizooties
VLA	Veterinary Laboratories Agency
SAC	Scottish Agricultural Colleges
RSPB	Royal Society for the Protection of Birds
BTO	British Trust for Ornithology
RSPCA	Royal Society for the Prevention of Cruelty to Animals
WWT	Wildfowl and Wetlands Trust
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
PRNT	Plaque reduction neutralisation test (WNV serological test)
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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Jonathan Cracknell MRCVS, RSPCA Wildlife Hospital, Nantwich

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Jason Waine MRCVS, Southcrest Veterinary Centre

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