

GB surveillance wildlife diseases partnership



Quarterly Report: **SECOND QUARTER 2009 – Vol 11.1**

Date: April – June 2009



The VIDA diagnoses are recorded on the VLA FarmFile database and comply with agreed diagnostic criteria against which regular validations and audits are undertaken.

The investigational expertise and comprehensive diagnostic laboratory facilities of both VLA and SAC are widely acknowledged, and unusual disease problems tend to be referred to either. However recognised conditions where there is either no diagnostic test, or a clinical diagnosis offers sufficient specificity to negate the need for laboratory investigation, are unlikely to be represented. The report may therefore be biased in favour of unusual incidents or those diseases that require laboratory investigation for confirmation.

VLA RLs have UKAS Accreditation and comply with ISO 17025 standard. SAC Veterinary Services have UKAS accreditation at their central diagnostic laboratory and at the Edinburgh and St Boswells Disease Surveillance Centres which comply with ISO 17025 standard.

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HIGHLIGHTS

Partnership Introductions – VLA, IoZ, Fera and SAC

Salmonellosis, West Nile Virus and Avian Influenza wildlife surveillance

Garden bird surveillance

Cardio-respiratory parasites in foxes

INTRODUCTION

The GB Wildlife Disease Surveillance Partnership which includes the Veterinary Laboratories Agency (VLA), Scottish Agricultural College (SAC), Institute of Zoology (IoZ) and the Food and Environment Research Agency (Fera) produces the GB Surveillance - Wildlife Diseases quarterly reports. Introductions to the Partners are given below.



The Veterinary Laboratories Agency Diseases of Wildlife Scheme (VLADoWS)

Since 1998 the collaborative VLADoW Scheme funded by Defra and devolved administrations has delivered national surveillance for wildlife disease in England and Wales, with strong links to a similar scheme in Scotland run by SAC. The VLADoW Scheme investigates disease in vertebrate terrestrial wild species and seals at Regional Laboratories in England and Wales

17 VLA Regional Laboratories and Surveillance Centres where wildlife are examined



VLADoWS incorporates both scanning and targeted surveillance components.

The triggers for scanning surveillance are unusual mortalities in any wild species. Specimens submitted under scanning surveillance are given post-mortem diagnostic examinations in UKAS accredited laboratories, and reports are sent to the submitter. Generally the examinations are undertaken at no charge to the submitter. Submitters may be members of the public, wildlife organisations and charities, other government agencies and wildlife hospitals.

The VLADoWS objectives in investigating diseases of wildlife are –

- to investigate new and emerging disease
- to provide surveillance for zoonotic disease
- to investigate diseases of wildlife that have conservation importance
- to provide surveillance for disease risks to livestock
- to provide surveillance for exotic infectious diseases such as West Nile fever
- to investigate diseases that may reflect pollution
- to investigate wildlife mass mortality incidents

VLADoWS also delivers-

- consultation to Defra and government on wildlife disease
- maintenance of expertise in wildlife disease
- collaboration with other organisations
- reports to government for example the annual OIE Report

Reference – *Microbiology Today* (2003) Vol 30,157-159. Nov 2003

Partners at the Institute of Zoology (IoZ), Zoological Society of London, manage the following wildlife disease surveillance projects:



Cetacean Strandings Investigation Programme (CSIP)

The collaborative UK Cetacean Strandings Investigation Programme (CSIP) has been running since 1990 and is funded by Defra and the Devolved Administrations. It investigates all whales, dolphins and porpoises (collectively known as cetaceans), marine turtles and basking sharks that strand around the UK coastline. As well as documenting each individual stranding, a number are also retrieved for investigation at post mortem to allow a cause of death to be established. The data and samples collected during the course of these investigations have also facilitated a large number of international collaborations, helping to address a wide range of scientific questions. Further information on the CSIP can be found at www.ukstrandings.org, or can be requested from the project manager, Rob Deaville (rob.deaville@ioz.ac.uk, 020 74496672).



Garden Bird Health initiative (GBHi)

The Garden Bird Health *initiative* (GBHi) was established as a working group of the Universities Federation for Animal Welfare (UFAW) in 2003. The GBHi set out to undertake a major garden bird health surveillance and research project, and to develop and publish guidelines on how to best feed garden birds in order to maximize the benefits for their welfare and conservation. Disease outbreaks occur quite commonly in garden birds and the research, started in March 2005, investigates their causes and prevention. The project involves collaboration with the Scottish Agricultural College, British Trust for Ornithology (BTO), RSPB, and UFAW, and, until recently, Liverpool University and the Wildlife Veterinary Investigation Centre, Cornwall. The project has been generously sponsored by a number of wild bird food companies, the Birdcare Standards Association, the British Veterinary Association Animal Welfare Foundation, the RCVS Trust, RSPB, BTO, UFAW and the John and Pamela Salter Trust. Further information is available on the project's website (<http://www.ufaw.org.uk/gbhi.php>), or can be requested by email (ufaw@ufaw.org.uk), or from the project co-ordinator, Katie Colvile (020 74496685).

Health Surveillance for the Species Recovery Programme (SRP)

For the past 17 years, ZSL has carried out health surveillance for English Nature's Species Recovery Programme (SRP). Native species translocations (reintroductions and re-stocking) present disease and welfare risks for the animals being translocated and other native species. We undertake to minimize these risks through disease risk analysis prior to translocation, disease risk reduction if a translocation proceeds, and post-release health and welfare surveillance to monitor the effect of translocation on translocated and sympatric species at the reintroduction site. Projects have concerned the following species: the field cricket (*Gryllus campestris*), barberry carpet moth (*Pareulype berberata*), pool frog (*Rana lessonae*), sand lizard (*Lacerta agilis*), ciril bunting (*Emberiza cirilus*), corncrake (*Crex crex*), red kite (*Milvus milvus*), common dormouse (*Muscardinus avellanarius*), red barbed ant (*Formica rufibarbis*) and red squirrel (*Sciurus vulgaris*). We also carry out disease monitoring on populations of declining native species, for example the remnant red squirrel populations in the north of England. New projects for which disease risk analysis is currently being undertaken include the potential re-introduction of the Eurasian crane (*Grus grus*) and the British short-haired bumblebee (*Bombus subterraneus*). Enquiries should be addressed to Dr. Tony Sainsbury (020 7449 6668, Tony.Sainsbury@ioz.ac.uk) or Dr. Rebecca Vaughan (020 7449 6488, rebecca.vaughan@ioz.ac.uk).

Amphibian Disease and Mortality Project

This project, in conjunction with Amphibian and Reptile Conservation (ARC), formerly Froglife, deals with amphibian mortalities across the UK. Reports of amphibian mortality received at ARC that are of unknown cause are forwarded to the Wildlife Epidemiology Group, IoZ. All amphibians that arrive at the IoZ undergo systematic post mortem examinations and samples are routinely taken for both ranavirus

and *Batrachochytrium dendrobatidis* (chytrid fungus) screening. This project has examined the population genetic response of the common frog (*Rana temporaria*) to ranavirus emergence (work done by Dr. Amber Teacher, now at Royal Holloway, University of London). Current work examines the ecology of ranavirus in Britain and its impact on host population dynamics (Amanda Duffus, QMUL and IoZ). Two PhD students (Jennifer Sears and Peter Minting) are currently investigating the impact and spread of amphibian chytridiomycosis in Britain. Further work on both chytridiomycosis and ranavirus is planned. Further information on amphibian conservation and specimen and data submission is available at www.arc-trust.org, or can be requested from ARC (Wildlife Information Service 01733 558960 or enquiries@arc-trust.org).

Hedgehog health

The IoZ plans to establish a new disease surveillance project to investigate the health of wild hedgehogs in the UK, in partnership with the BTO and other organisations. Reports of dead and sick hedgehogs from across the UK are currently being received. Enquiries should be addressed to hedgehog@zsl.org

Wildlife Health Surveillance in Scotland – the role of SAC Veterinary Services

The England Wildlife Health Strategy was launched on June 15th 2009. Animal Health is a devolved issue and the England Wildlife Health Strategy does not directly apply to Scotland. However Great Britain can be regarded as a single epidemiological unit for many infectious and non-infectious diseases, and the Scottish Government supports a similar programme as part of its Public Good Veterinary and Advisory Services. Key areas of concern are diseases of wildlife that pose a threat to human health, livestock health, wildlife populations and biodiversity. All eight Disease Surveillance Centres of SAC VS contribute to wildlife surveillance, but most of the mammalian surveillance is conducted by the Wildlife Unit at SAC VS Inverness, and most avian surveillance is performed by SAC VS Ayr.

Both scanning and targeted surveillance is carried out by SAC VS as part of Scottish Government's Public Good Veterinary and Advisory Services to look for diseases of wild birds and wild mammals that could affect livestock, humans or wildlife populations. SAC VS has a database with the results of over 2400 wild bird necropsies carried out from 1994, and since April 2005 samples have been collected from over 1200 wild birds for avian influenza screening and from over 200 wild birds for West Nile virus screening.

Wildlife surveillance by SAC VS covers a wide range of mammalian and avian species, from cetaceans weighing over 70 tonnes to garden birds weighing less than 10g! The SAC VS Wildlife Unit in Inverness has managed the Scottish Marine Mammal stranding scheme since 1992. This project manages the Scottish operation of the UK Cetacean Strandings Investigation Programme (CSIP), in addition to supplementary work identified as important for Scotland (an increased number of cetacean postmortems and the extension of surveillance to seals, turtles and basking sharks). In collaboration with other research groups, the Wildlife Unit provides a co-ordinated investigation of marine mammal strandings in Scottish waters in order to: (i) assess the numbers and trends of stranded marine mammals and the potential causes of death, (ii) identify and determine the prevalence of disease and contaminants in marine mammals and (iii) improve knowledge of life history parameters in order to identify any substantial new threats to their conservation status. From 1992 to January 2009, 1365 postmortem examinations have been carried out under this scheme. At the other end of the weight range, SAC VS is one of the founder members of the Garden Bird Health Initiative, set up in 2005 and collaborating with the Institute of Zoology, Liverpool University and others to investigate deaths in garden birds throughout Great Britain.

The results from the scanning and targeted surveillance are summarised for Scottish Government and for partners in the GB Wildlife Disease Surveillance Partnership. Where appropriate, results are disseminated to Health Protection Scotland, public and environmental health professionals, veterinary surgeons, non-governmental organisations, the popular press, and members of the public.

SAC VS is a partner in the Wildlife Incident Investigation Scheme (WIIS), set up to investigate incidents in which pesticide poisoning may be involved. Postmortem examinations are carried out on wild animals and birds (especially birds of prey), and if poisoning is suspected samples are sent to the Scottish

Agricultural Science Agency for toxicological examination. Welfare incidents in wildlife are also investigated on behalf of statutory enforcement authorities and other organisations such as the SSPCA.

In addition to surveillance activities the Wildlife Unit at SAC VS Inverness is collaborating with the Sea Mammal Research Unit (SMRU) to devise monitoring systems to estimate contact networks in wildlife populations, and with SMRU and Moredun Research Institute on the development of a pan-morbillivirus PCR to detect phocine distemper virus (PDV) and cetacean distemper virus (CDV). Both these collaborations are focused on developing the surveillance tools necessary to detect, identify and monitor endemic and new and emerging diseases, ultimately with the aim of establishing risk pathways for the source and outcome of diseases reservoired and vectored by wildlife.

SAC VS Ayr

Wildlife Unit SAC VS Inverness

Fera

Fera's contribution to the GB wildlife disease surveillance partnership scheme relates principally to wild carnivores. The Fera Wildlife and Emerging Diseases Programme team draws on expertise from veterinarians, ecologists, mathematical biologists and specialists in wildlife management. We have post-mortem and laboratory facilities at two of our sites, one near York and one in Gloucestershire. A carcass collection network for foxes (*Vulpes vulpes*) is already functional and it is the breadth of disciplines in our team that puts us in a position to set up other networks as required. We are also well-placed to interpret disease data, explore epidemiological trends and assess the ecological implications of disease, utilising the broad skill base we have in the team.

Fera Woodchester Park

OVERVIEW

National weather during the quarter, April - June 2009

Mean temperatures across Great Britain in April, May and June were 0.5 to 2.0 °C above the average (of 1971-2000). In the first two months of the quarter, eastern England experienced the largest increases in temperature. In June, this occurred in western parts of Britain and Western Scotland experienced the warmest June since 1992. By contrast, temperatures were close to the average in parts of North-east Scotland and England in June.

In 2009, only in January have temperatures been below average in GB.

The rainfall pattern in the quarter was less consistent: In April, rainfall ranged from above normal in the western fringes of Scotland, Wales and south-west England to well below normal in much of eastern Scotland and England, with less than 40% of average across East Anglia. Generally over England and Wales, April was the third consecutive month to be markedly drier than average.

In May, rainfall was above normal in north-west England and much of Scotland, with most of north-west Scotland receiving more than 160% of the average. By contrast, it was drier in southern England, with East Anglia and the south-east receiving less than 75%. Elsewhere, rainfall was mostly close to average. Rainfall in June was below normal in most of GB, but above normal in a few small areas, with parts of the West Midlands receiving around double the long-term average for June. The driest regions included Kent and Cornwall with around a third of the June average.

NOTIFIABLE DISEASE**GB Avian Influenza Wild Bird Surveillance (AIWBS) Results: April – June 2009**

H5N1 Highly Pathogenic Avian Influenza (HPAI) was not detected from any of the 125 wild birds tested during the last quarter in Great Britain, with no other avian influenza (AI) virus infections detected from any of the birds sampled.

Surveillance activity	Number of birds examined*	Positive AI virus result and species of bird	Comments
Legally trapped (ringing)	12 (Nil)	Nil	Seasonal targeted surveillance (Spring & Autumn).
Found dead	113 (335)	Nil	Scanning surveillance, all-year-round.

* Number of birds examined: figures for April to June 2008 are shown in brackets.

Avian Virology, VLA**International H5N1 HPAI events in wild birds Update**

This quarter there were no reported detections of H5N1 HPAI in Member States of the European Union (ADNS, 2009; UNFAO, 2009). However H5N1 HPAI incidents in wild birds were reported from Asia during May and June 2009 (Defra, 2009). In May H5N1 HPAI was reported in wild birds found dead at Genggahu Lake, Hainan Prefecture, Qinghai, China (OIE, 2009b), comprising 107 Great crested grebes (*Podiceps cristatus*), three Bar-headed geese (*Anser indicus*), and 11 brown headed gulls. Further wild bird mortalities (162) were reported during late May in the Nanhai Prefecture, Qinghai (OIE, 2009b). Approximately 23,700 poultry were pre-emptively culled in the region. Also in late May Mongolia reported an outbreak of H5N1 HPAI in migratory Whooper swans (*Cygnus cygnus*) from Arkhangai, a central Mongolian region over 900 miles from Qinghai (OIE, 2009b; PROMED, 2009a). Furthermore, during June 2009, Russia reported the detection of H5N1 HPAI in 58 wild birds found dead at a lake (Ubsu-Nur) in Respublika Tyva (OIE, 2009b), a border region with north-western Mongolia. Hong Kong also reported H5N1 HPAI from wild birds and poultry found dead during February and April (OIE, 2009b). In combination, these seasonal and geographical patterns of H5N1 HPAI detections, notably those from wild birds in Central Asia (Qinghai, China followed by incidents in central Mongolia), are reminiscent of those seen during April-June 2005 and 2006 (Defra, 2005; PROMED, 2009b). There was similar spread across Asia to the north and west at that time, and ultimately towards and across Europe, as well as Africa, during 2006 (Defra, 2009). Interestingly, Bar-headed geese have been identified as a migratory species that provide a spring migratory connection between Qinghai and breeding areas in central Mongolia (Prosser and others, 2009). It has also been suggested that migratory Whooper swans in Mongolia may act as sentinel species that become infected as a result of contact with other wild birds (Newman and others, 2009).

It is not yet known if these epidemiological patterns and events will be repeated during 2009. However, they do serve as a reminder of the global hazard posed by H5N1 HPAI. This highlights the importance for all poultry keepers to maintain robust biosecurity measures, vigilance for clinical signs of disease and to promptly report suspect cases. A more detailed summary can also be found in the VLA Avian Surveillance Report: http://www.defra.gov.uk/vla/reports/rep_surv_avian.htm.

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 UNFAO, (2009). FAOAIDNews, Avian Influenza Disease Emergency - Situation Update 60 (30 June 2009).
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Avian Virology, VLA

ZOONOTIC DISEASE

Salmonellosis in Wildlife: -

April – June 2009

16 carcasses of seven wild bird and five wild mammal species were sampled for salmonella during this quarter under the Diseases of Wildlife Scheme. The birds included blackbird (*Turdus merula*), rook (*Corvus frugilegus*), mute swan (*Cygnus olor*), mallard duck (*Anas platyrhynchos*), tawny owl (*Strix aluco*), goldfinch (*Carduelis carduelis*) and siskin (*Carduelis spinus*) and the mammals were red squirrel (*Sciurus vulgaris*), fallow deer (*Dama dama*), red deer (*Cervus elaphus*), fox (*Vulpes vulpes*) and mole (*Talpa europaea*). No *Salmonella* species were isolated or associated with the deaths of these wild birds and mammals.

A wild bird strain of Salmonella, *S. Typhimurium* DT 56 variant was isolated during this quarter from a seven month-old pet collie bitch with diarrhoea.

VLA Langford

Quality statement regarding this data: - UK data and the output of ad-hoc data retrieval from VLA FarmFile database. These figures are provisional. Research project and game bird isolates were excluded. All are from England or Wales.

Cetaceans (CSIP)

Eight cetacean carcasses of 4 different species were sampled for *Salmonella* spp. under the CSIP. A monophasic Group B Salmonella 4,12:-:- was isolated from the lung of Harbour porpoise (*Phocoena phocoena*) that had died due to dolphin attack (See below). It was also isolated from a lungworm from this porpoise. Historically, although salmonella has on occasion been isolated in septicaemic distribution or from the gastrointestinal tract, most isolates have been solely from the lungs of this species. This raises the possibility of lungworm being involved in its transmission.

ZSL and VLA Truro

Garden birds (GBHi)

All of 43 carcasses of 19 garden bird species examined as part of the GBHi during this quarter were sampled for *Salmonella* spp but no *Salmonella* spp. were isolated.

Other zoonotic infections diagnosed in wild birds (GBHi)

Pasteurellosis

Pasteurellosis appeared to have been the cause of death in a first-year tree sparrow (*Passer montanus*), secondary to presumed predation. *Pasteurella multocida* was isolated from the liver, intestine, and a peritoneal wound. In addition to the wound there was a fracture and haemorrhage, consistent with predation. Pasteurellosis is observed in sporadic cases of a variety of species submitted to the GBHi, and in the majority of cases there is evidence of predation or trauma. *P. multocida* is a commensal bacterium in the oral cavity of cats, and pasteurellosis is a recognised sequela of cat predation (Ritchie et al. 1994).

IoZ, GBHi***Campylobacter* sp.**

Campylobacter sp. was isolated from two garden birds, a blackbird and a great tit, examined as part of the GBHi. In neither case were there lesions indicative of campylobacteriosis (the great tit appeared to have died from predation); in both cases the bacterium appeared to be an incidental finding.

Campylobacter sp. is isolated from sporadic cases of a variety of species submitted to the GBHi, most commonly blackbirds and house sparrows. It is usually considered an incidental finding, and in some cases appears to be an opportunistic infection.

IoZ, GBHi***E. coli* 2 in wild birds**

E. coli 2 was isolated from the intestine of a thin adult male chaffinch (*Fringilla coelebs*), which appeared to have died from trichomonosis: *Trichomonas* sp. was isolated from necrotic pharyngeal and oesophageal lesions, and the gizzard was empty of food. There were no gross lesions suggestive of colibacillosis, and *E. coli* 2 appeared to be an incidental finding.

References

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West Nile Virus (WNV) surveillance

Since 1st April 2009 brain and kidney tissue samples have been received from 69 wild birds of 21 species including water birds, corvids, raptors, sea birds and small passerines. Samples from 64 of these birds have been screened by virus isolation test in Vero cells but no virus has been isolated. WNV RT-PCR has been completed on 50 birds so far with negative results.

There have been no submissions since 1/04/09 from UK Vets from horses showing neurological signs. Samples for WNV testing were received from horses from Ireland and Turkey.

Rabies and Wildlife Zoonoses Group, VLA Weybridge**EMERGING AND ENDEMIC DISEASES****SUBMISSIONS: Wild bird submissions this quarter to VLA DoWS –**

Month	Number of ED1600 wild bird submissions	Number of ED1600 birds submitted	Number of wild birds examined
April	4	18	7
May	3	3	3
June	6	12	12

Wild bird submissions to projects managed at the IoZ, April – June 2009

Month	Number of wild bird submissions	
	GBHi	Species Recovery Programme
April	13	1
May	14	0
June	16	0

Trichomonosis

Trichomonosis was suspected or confirmed in 10 garden birds submitted to the GBHi this quarter (N=43): 5 greenfinches (*Carduelis chloris*), 3 collared doves (*Streptopelia decaocto*) and 2 chaffinches. It appeared to have been the cause of death in all cases. Since the *Trichomonas* sp. emerged as a novel infection of finches in 2005 there has typically been a seasonal peak in trichomonosis incidents in August and September, with a lower number of cases throughout the rest of the year. We would

therefore expect the number of cases diagnosed with trichomonosis to increase in the next quarter, in line with this seasonal pattern.

IoZ, GBHi

Lead poisoning in Mute Swans (*Cygnus olor*)

Four mute swans were reported to have died on the same stretch of river over the previous six months. Post mortem examination of one showed marked distension of the oesophagus with green liquid and ingested food. Further undigested food was present in the proximal small intestine with sloughing of the mucosa and mucosal casts. Although *Clostridium perfringens* was isolated following anaerobic culture no toxins were identified by ELISA testing. However lead assay of the kidney revealed a level of 2,963 mmol/kg DM indicating lead poisoning as the cause of death. Despite guidelines and changes in legislation to control lead contamination in the environment, lead poisoning remains a relatively frequent cause of mortality and occasional mass mortality in British wildlife, particularly water birds.

VLA Langford

Buzzard (*Buteo buteo*); Mycosis

Examination of a buzzard found dead and submitted under the Wildlife Incident Investigation Scheme revealed a fungal air sacculitis and mycotic pneumonia from which *Aspergillus fumigatus* was isolated. Aspergillosis is a relatively frequent cause of sporadic death in wild birds particularly those in wildlife rescue centres. Humans may be infected with the organism however the risk is considered to be very small.

VLA Langford

Wild Mammal submissions April – June 2009 VLADoWS 2009

Month	Number of ED1600 wild mammal submissions	Number of ED1600 mammals submitted	Number of wild mammals examined
April	21	23	23
May	14	16	16
June	26	29	29

Wild mammal submissions to projects managed at the IoZ, April – June 2009

Month	Number of wild mammal submissions	
	Species Recovery Programme	CSIP
April	0	3
May	0	6
June	0	2

Cardio-respiratory parasites in foxes (*Vulpes vulpes*)

Fera as part of continuing work on archived material from wild foxes, examine heart and lung samples for the presence of cardio-respiratory parasites using methods described in Morgan *et al.* 2008. During this quarter, 12 samples from foxes collected from the south-east of England were examined. Five (42%) were positive for the presence of *Angiostrongylus vasorum* and three (25%) were positive for *Eucoleus aerophilus*.

Morgan, E.R., Tomlinson, A, Hunter, S, Nichols, T., Roberts, E., Fox, M.T, Taylor, M.A. (2008).

Angiostrongylus vasorum and *Eucoleus aerophilus* in foxes (*Vulpes vulpes*) in Great Britain. *Veterinary Parasitology* **154**, 48-57.

Fera Woodchester Park

***Pseudamphistomum truncatum* surveillance in American mink (*Mustela vison*)**

Fera as part of ongoing American mink surveys, the livers and gall bladders from 18 mink from the Western Isles in Scotland and 7 from Gloucestershire were examined for the presence of *P. truncatum*, using methods described in Simpson *et al.* 2009. No positive cases were found.

Simpson, V.R., Tomlinson, A.J. and Molenaar, F.M. (2009) Prevalence, distribution and pathological significance of the bile fluke *Pseudamphistomum truncatum* in Eurasian otters (*Lutra lutra*) in Great Britain. *Veterinary Record* **164**, 397-401.

Fera Woodchester Park**Mole (*Talpa europaea*); Necrotising pneumonia and mycosis**

A mole (*Talpa europaea*), presented due to concerns that a large abscess on the right shoulder may have been tuberculous, was found to have a second abscess in the right axilla and a third in the right caudal lung lobe. No acid-fast organisms were detected and histopathology detected severe focal subacute necrotising pneumonia, likely to be bacterial in origin, and fungal hyphae in the subcutaneous abscess. We include this case because moles are rarely submitted for examination. The case also reflects that we are particularly alert to the possibility of bovine tuberculosis occurring in a range of wild mammal species

VLA Truro***Cryptosporidium parvum* in red deer (*Cervus elaphus*) calves**

An investigation was undertaken in June into the cause of a sudden increased mortality in neonatal Red Deer calves managed in a parkland setting. *Cryptosporidium parvum* had been diagnosed in the herd in 2008 and investigations into the 2009 problem revealed *Cryptosporidium* to be the cause again. In 2008, the herd lost 40 calves from a herd of 180 hinds and at the time of the 2009 investigation, 30 had been lost from the herd. Initially, calving proceeded with minimal problems, but suddenly large numbers of dead or moribund calves were found. A visit was undertaken to try to provide some support and advice. Several interventions were suggested including managing the herd in small groups around calving and keeping these in smaller fields rather than allowing access to all the parkland, preventing access to stagnant water and boggy areas in the periparturient period, and providing water troughs supplied by mains water. Monitoring faecal shedding of *Cryptosporidium* in the hinds was also suggested and the possibility of prophylactic treatment of hinds was discussed.

The problem is fairly well documented in veterinary literature, although no British articles have been published for about 15 years. It seems that once the pathogen becomes established in the herd, it can be extremely difficult to control. There also seems to be a reluctance to openly discuss the problem within the deer farming community so it may be more widespread than is immediately obvious. There is a need to raise the awareness of this disease, not only because of the distressing nature of such high mortality and the obvious adverse economic implications, but also due to the zoonotic potential of *Cryptosporidium* and the difficulty of treatment in managed wildlife in such extensive management systems.

VLA Thirsk**Wild amphibian submissions**

No post mortem examinations of wild amphibians were conducted at the IoZ during this quarter.

Biodiversity Action Plan and conservation concern Mammal Species**Red Squirrel (*Sciurus vulgaris*)**

Several Red squirrels were submitted from the North of England. One animal died from adenovirus enteritis making four cases of this disease diagnosed this year by VLA from a small area in North Cumbria. We are only beginning to build up information on this disease and it appears to be able to cause localised outbreaks with deaths occurring over several months, however we know that affected populations have recovered, possibly through immigration and we have not seen the disease recurring in the same locality. There is increasing evidence that adenovirus enteritis may cause significant mortality in captive red squirrel populations and there is some evidence that it may prove to be of conservation importance particularly in areas such as North Cumbria where red squirrel populations are fragmented, isolated and numerically small.

Three cases of squirrel pox were diagnosed. One of these was found dead in a car park, and the accompanying history indicated that red squirrels had disappeared from the village over the past months. A provisional diagnosis of peritonitis was made in the case of a very decomposed animal where inflammation of cervix and uterus suggested that the genital tract may have been the initial source of infection. Two squirrels died from predator attack (probably domestic dogs or cats). One squirrel died from pneumonia and pleurisy, with multiple large and small abscesses found throughout the lungs. From one very large pulmonary abscess, mixed growths of *E.coli* and *Staphylococcus sciuri* were cultured. *S.sciuri* has been previously identified at VLA Penrith as a probable opportunistic pathogen in squirrels. A squirrel found dead at the foot of a tree was found at postmortem to have a friable yellow liver and a significantly enlarged spleen. Histopathological examination revealed subacute necrotising hepatitis, splenitis, pneumonia and myocarditis, and subsequent specific staining confirmed an associated systemic toxoplasma infection. Subacute systemic toxoplasmosis is identified sporadically in Red squirrels (Duff & others, 2001, *Veterinary Record* 148, 4, 123-124) and it is tempting to speculate that Red squirrels with their arboreal habits may infrequently come into contact with infective cat faeces and therefore may have little innate immunity to the parasite.

Water voles

Water voles (*Arvicola terrestris*), a conservation priority species and, as such, of interest to VLA wildlife disease surveillance, were submitted from a captive breeding project. One of the animals had a fungal gastritis. This individual had been transported many miles by road just prior to death and it was considered that stress may have played a part in the disease.

VLA Penrith

Common dolphin (*Delphinus delphis*); Bycatch

An adult lactating female common dolphin (*Delphinus delphis*) was presented as part of the collaborative DEFRA-funded UK Cetacean Strandings Investigation Programme (CSIP), after being found stranded on the North Cornwall coast. It had a clean amputation of the tail flukes and a linear encircling wound containing monofilament netting at the anterior insertion of the left pectoral fin; the piece of net (140mm mesh size) covered much of the body from the pectorals to just caudal to the dorsal fin. In addition, a characteristic skin tag on the trailing edge of this fin and a series of parallel encircling 7-10 mm spaced wounds at the anterior insertion of the right pectoral fin, from which faint linear impressions ran to the trailing edge, confirmed this as a case of bycatch.

Harbour porpoise (*Phocoena phocoena*); Dolphin attack and salmonellosis

A pregnant adult female harbour porpoise was also submitted from the north coast of Cornwall as part of the collaborative UK Cetacean Strandings Investigation Programme (CSIP). The presence of rake (teeth) marks of between 8 and 15mm spacing on tail flukes, head, thorax and tail stock, with subcutaneous haemorrhage, blubber separation from underlying muscle, intercostal muscle haemorrhage and multiple rib fractures, and separation of muscle from the transverse processes of the lumbar vertebrae were consistent with bottlenose dolphin (*Tursiops truncatus*) attack. In addition a monophasic Group B Salmonella 4,12:-:- was isolated from lung and a lungworm. Historically, although salmonella has on occasion been isolated in septicaemic distribution or from the gastrointestinal tract, most isolates have been solely from the lungs of this species and this finding raises the possibility of lungworm being involved in its transmission.

VLA Truro

Cetaceans (CSIP)

Infectious disease was not considered to have contributed to death in any of the 11 cetaceans (5 harbour porpoises [*Phocoena phocoena*], 3 striped dolphins [*Stenella coeruleoalba*], 1 short-beaked common dolphin [*Delphinus delphis*], 1 bottlenose dolphin [*Tursiops truncatus*] and 1 white-beaked dolphin [*Lagenorhynchus albirostris*]) examined under the CSIP from April to June 2009.

ZSL

Appendix 1

VLA Diagnosis not reached Analysis April - June (Q2) 2009

The following is a summary of wildlife data analysed by the VLA from diagnostic submissions received by its 15 regional laboratories and 2 surveillance centres situated in England and Wales. The aim of this report is to review data where a diagnosis was not reached despite the sample receiving testing which was deemed adequate to allow the potential of a diagnosis to be reached. This allows monitoring of this class of submission with the aim of providing information on, and the early detection of new or emerging syndromes.

Overview

Data analysis revealed no changes thought to constitute evidence of emergence of new, undiagnosed disease

During the second quarter of 2009, a diagnosis was reached for 74 of the 77 wildlife submissions undergoing reasonable testing over the period. For only three of the submissions was no diagnosis reached despite reasonable testing (1 vole, 1 squirrel and 1 badger).

In the 12 month period Q3 2008 to Q2 2009 there was a statistically significant decrease in the proportion of submissions from terrestrial mammals for which no diagnosis was reached despite reasonable testing (%DNR) compared with the last 5 years (Q3 2003 to Q2 2008). There was no significant difference compared to the proportion of DNR in the previous year (Q3 2008 to Q2 2009). See Table 1.

Likewise, there was a significant decrease in the proportion of submissions from wild birds for which no diagnosis was reached, compared with the previous 5 years prior years but no difference compared to the previous year. See Table 1. This analysis does not include Avian Influenza wild bird submissions which undergo limited testing.

Table 1. Changes in % of undiagnosed submissions for native birds and mammals.

	% of Submissions for which Diagnosis Not Reached (reasonable testing)						
	Latest 12 months Q3 2008-Q2 2009	Prior 5 years (Q3 2004 – Q2 2009)	Z		Last year (Q3 2007 – Q2 2008)	z	
Terrestrial mammals	3.6%	9.3%	2.08	▼▼	8.5%	1.67	▼
Wild birds	9.3%	20.6%	2.20	▼▼	14.8%	1.04	▼

▲▲ or ▼▼ Statistically significant increase or decrease ($z > 1.96$ or $z < -1.96$)
(not calculated where $N < 40$)

The low numbers of submissions per quarter, and low number of DNRs mean comparisons by quarter is not reliable.

For other species groups examined no significant increase in the proportion of submissions for which Diagnosis Not Reached over the last 12 months was found.

Wild animal submissions to projects managed at the IoZ for which a diagnosis was not reached, April – June 2009

Animal group	Species	Number of examinations	Number 'diagnosis not reached'	Proportion 'diagnosis not reached' (%)
Garden birds				
	Blackbird (<i>Turdus merula</i>)	6	1	
	Blue tit (<i>Parus minor</i>)	3	2*	
	Bullfinch (<i>Pyrrula pyrrula</i>)	2	1	
	Goldfinch (<i>Carduelis carduelis</i>)	1	1	
	Greenfinch (<i>Carduelis chloris</i>)	6	1	
	Robin (<i>Erithacus rubecula</i>)	4	3*	
	Siskin (<i>Carduelis spinus</i>)	1	1	
	Swallow (<i>Hirundo rustica</i>)	2	2*	
	Total	43	12	28
Birds of prey		1	0	0
Cetaceans		11	1	9

*Examinations for which 'diagnosis not reached': one of these two blue tits was a nestling, the three robins were all nestlings from one clutch, and the two swallows were also nestlings from one clutch

From 2005 to 2008, the proportion of cases submitted to the GBHi in which a diagnosis was not reached ranged from 11% to 15% per year (from yearly totals of 266 to 729 birds). The figure of 28% of submissions for which no diagnosis was reached in April to June 2009 is therefore high in comparison to the yearly averages, but no inferences should be made until figures for the remaining months of 2009 have been collated.