



HIGHLIGHTS

- Avian Influenza virus surveillance
- WiREDZ Special Interest Group WILDLIST
- Mass stranding of common dolphins (*Delphinus delphis*)
- SAC Report – Trichomonosis in garden birds in Scotland

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The **VLA Diseases of Wildlife Scheme (VLADoWs)** has provided wildlife disease investigation and surveillance in England and Wales since 1998. Go to www.vla.gov.uk and for reports, go to the VLADoWs Wildlife home page at: http://www.defra.gov.uk/via/reports/rep_surv_wildlife.htm

OVERVIEW

This WQR contains details of recent disease investigations in two UK BAP (Biodiversity Action Plan) List of Priority Species and Habitats (<http://www.ukbap.org.uk/NewPriorityList.aspx>) species, the red squirrel (*Sciurus vulgaris*) and the water vole (*Arvicola terrestris*).

Diseases of conservation importance can significantly affect the ecology and survival of wild species. Squirrel pox disease is probably the example that comes to mind as it is now recognised as a threat to the continuing survival of red squirrel populations in mainland England and Wales.

Relatively little is known about disease in wild populations of several BAP priority rodent species. Carcasses are difficult to find and sick animals are presumably quickly removed by a wide range of predators.

NOTIFIABLE DISEASE

Great Britain AI Wild Bird Surveillance (AIWBS) results: April - June 2008

Avian influenza, including Highly Pathogenic Avian Influenza (HPAI) H5N1, was not detected from any of the wild birds sampled and tested during the last quarter (Table 1).

Surveillance activity	Number of birds examined	Positive AI virus result and species of bird	Comments
Legally trapped (ringing)	Nil	-	Outside seasonal targeted surveillance period.
Legally shot	Nil	-	Outside seasonal targeted surveillance period.
Found dead*	335	Nil	Scanning surveillance, all-year-round.

* Of the 'found dead' birds tested, pigeon paramyxovirus type 1 (PPMV-1) was isolated from a pigeon mortality incident in Scotland.

Table 1: Number of wild birds tested and results in Great Britain (April - June 2008).

Access to the Defra web page for AIWBS is available via this link:

<http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/wildbirds/survey-results.htm>

Notifiable Avian Influenza Events in the United Kingdom (UK) and Europe

Highly Pathogenic Avian Influenza (HPAI) H7N7 was confirmed on a laying hen farm in Oxfordshire on 4th June 2008 (Defra, 2008a). In addition to the 25,000 laying hens present on the infected premises (IP), thirty mallard ducks (*Anas platyrhynchos*), reared for sport shooting, resided on a pond on the IP close to the poultry ranges. The mallards were fed by the owner and were seen to be mixing with the poultry and with small numbers of wild birds, although wild bird activity in general was low around the IP. Whilst the definitive source of this outbreak remains undetermined, there are two likely hypotheses for the source of the outbreak: 1) Unidentified AI in domestic poultry premises in Great Britain, associated either by proximity or potential contact, or 2) AI in wildlife in contact with the IP. (Defra 2008a). Further investigations subsequent to the publication of the Defra epidemiology report have revealed that a recently isolated H7N7 LPAI virus from wild mallards in Sweden is very closely related (99.3 nucleotide homology) to the Banbury virus. Furthermore this virus shows the closest phylogenetic relationship amongst all viruses analysed to the Banbury viruses. This finding provides further circumstantial evidence that infection may have been introduced on to the farm by wild birds, probably attracted by the lake and the released mallards who may have served as an intermediary.

A 'die-off' of eight mute swans (*Cygnus olor*) near Caernarfon, North Wales during June prompted concerns of HPAI H5N1. Post mortem examination of the carcasses by VLADoWS revealed severe trauma, suspected to be due to predator attack (Holmes, 2008: see article page 9). Elsewhere in Europe, the Russian Federation reported an HPAI H5N1 outbreak affecting different species of unvaccinated, backyard poultry in Primorskiy Kray, the source of which was attributed to hunted wild ducks and geese (FAO, 2008; OIE, 2008).

References

- Defra, (2008a). Highly pathogenic avian influenza – H7N7 in egg laying poultry in Oxfordshire. Epidemiology Report. Nobel House, Smith Square, London, SW1P 3JR, UK. Version 1.2. Released 17 June 2008. <http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/pdf/epi-report080617v1-2.pdf>
- Defra, (2008b). Highly pathogenic avian influenza – H7N7 in egg laying poultry in Oxfordshire. Epidemiology Report, situation at 2 July 2008. Nobel House, Smith Square, London, SW1P 3JR, UK. Version 1. Released 11 July 2008. <http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/pdf/epireport-080711.pdf>

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Holmes (2008). PRO/AH/EDR> Undiagnosed die-off, swan - UK (03): (Wales), trauma. Archive Number 20080701.2013; Published Date: 01-JUL-2008.
http://www.promedmail.org/pls/otn/f?p=2400:1001:1929161885957696::NO::F2400_P1001_BACK_P AGE,F2400_P1001_PUB_MAIL_ID:1010,72991

OIE, (2008). Follow-up report No.: 7. Report reference: OIE Ref: 6957, Report Date: 11/04/2008, Country: Russia.
http://www.oie.int/wahid-prod/reports/en_fup_0000006957_20080411_155116.pdf

EU/ OIE/ FAO International Reference Laboratory for Avian Influenza and Newcastle Disease, VLA Weybridge, New Haw, Addlestone, Surrey, KT15 3NB.

ZOONOTIC DISEASE

Salmonellosis in Wildlife: - April–June 2008

Salmonella was only isolated from two wild birds this quarter. There were no isolates from other wildlife. Screening is targeted and there were 19 cultures from 16 submissions this quarter. *Salmonella* Typhimurium RDNC was isolated from an emaciated juvenile Black-headed gull (*Larus ridibundus*) that died shortly after being found. It had faecal soiling of the vent and *Salmonella* was isolated from the intestinal contents. Salmonellosis was diagnosed as the cause of death. The other isolate was an incidental finding. *Salmonella* Typhimurium DT135 was cultured from the intestines of a Mute swan (*Cygnus olor*). This bird was submitted for AIV screening. It was in good bodily condition but severely autolysed. Both isolates were sensitive to antibiotics.

Alex Barlow, 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.

Wildlife sources of enteric diseases

A Zoonoses Group meeting included a presentation from the National Centre for Zoonosis Research (NCZR), Faculty of Veterinary Science, University of Liverpool. The Centre has been studying VTEC (vero-toxigenic E.coli), *Campylobacter* sp. and *Salmonella* sp., and antibiotic resistance amongst farm animals and wildlife on farms in Cheshire and elsewhere. Key findings include:

- *Salmonella* infections are rare among most healthy wildlife (apart from badgers). Where *Salmonella* infections are found, evidence of transmission to farm animals is rare. The serotypes of *Salmonella* encountered in sick wild birds do not appear to be the same as those which usually cause disease in people.
- *Campylobacter* infections are common in wildlife, but are usually with species or strains seldom found in domestic animals or humans
- Antibiotic resistance is surprisingly common in the normal gut flora of wildlife from a variety of habitats, often with a wider range of pheno- and genotypes than found in in-contact domestic animals.

West Nile Virus surveillance – exotic mosquito vector *Aedes albopictus* in Northern Europe

A warning of the potential for *Aedes albopictus*, a mosquito vector of West Nile Virus, Chikungunya virus and other zoonotic arboviruses, to establish in the UK was published in *Takumi, E-J. et al (2008) Introduction, establishment and seasonal activity of Aedes albopictus in the Netherlands. Proceedings of 11th European Society of Vector Ecology Conference 2008, Fitzwilliam College, Cambridge.* The Asian tiger mosquito (*Aedes albopictus*) was detected for the first time in The Netherlands during 2005, probably introduced with importation of Bamboo plants from the Far East. Adults were regularly intercepted during 2006 both within and outside of glasshouses. It was concluded that climate in the Netherlands during 2006 was not a limiting factor for the establishment of *Ae. albopictus*.
Wildlife Zoonoses Group, VLA Weybridge.

**Wildlife Related Emerging Diseases and Zoonoses (WiREDZ)
The MedVetNet WiREDZ Special Interest Group**

<http://www.medvetnet.org/wiredzreg>

MedVetNet has sponsored a Special Interest Group (SIG) in WiREDZ. If you work, even part, time in this field please take 5 minutes to register on the WiREDZ WILDLIST. The web link above will take you to both the WiREDZ web page and also to view the complete WILDLIST. This register is designed to help collaboration, between scientists working on similar species or diseases in wildlife, in every European country.

There is a particular need to encourage colleagues from the following countries to register - Albania, Bulgaria, Cyprus Czeck Republic, Estonia, Finland, Greece, Ireland, Latvia, Lithuania, Luxemburg, Malta, Poland, Romania, Slovakia and Slovenia.

EMERGING AND ENDEMIC DISEASES

Summary of wild bird submissions to VLA DoWS is given below

Month	Number of ED1600 wild bird submissions	Number of ED1600 birds submitted	Number of wild birds examined	Wild birds examined for West Nile Virus
April	18	21	21	total 74 (26 species)
May	20	34	34	
June	14	48	38	

Trichomonosis in garden birds in Scotland

Trichomonosis or canker, caused by the protozoan organism *Trichomonas gallinae*, has been seen in pigeons and doves, birds of prey and budgerigars for many years. Infection can result in ulceration and necrosis of the oral cavity, oesophagus and crop, sometimes leading to the death of the bird.

In April 2005 the disease unexpectedly appeared in a wild chaffinch (*Fringilla coelebs*) in Ayrshire, with a few more cases seen in chaffinches and greenfinches (*Carduelis chloris*) in south-west Scotland later in 2005 (Figure 1). Infected birds (mostly greenfinches and chaffinches) were found on many more sites in 2006, again mostly in south-west Scotland but with a few cases in the Scottish Borders and on the east coast (Figure 2). The disease in finches continued to spread east and north in Scotland in 2007 (Figure 3) and the first half of 2008 (Figure 4).

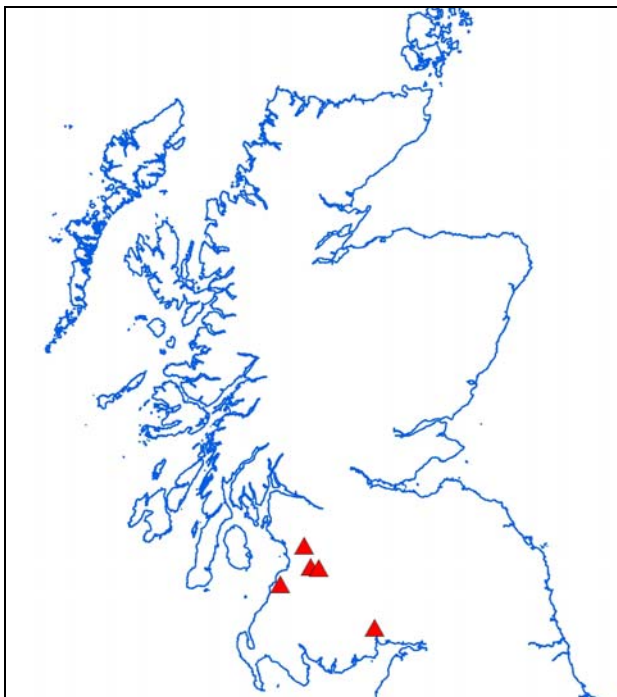


Figure 1. Trichomonosis in garden birds in Scotland 2005

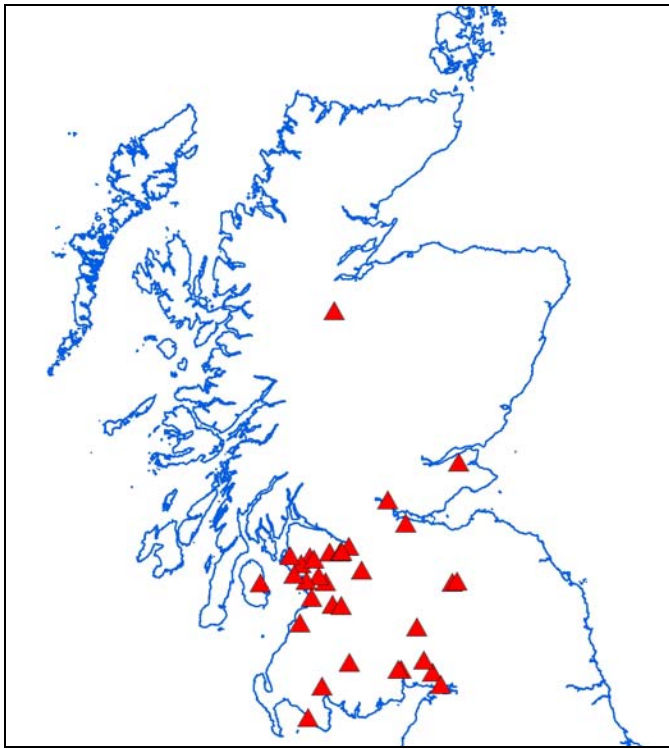


Figure 2. Trichomonosis in garden birds in Scotland 2005-2006

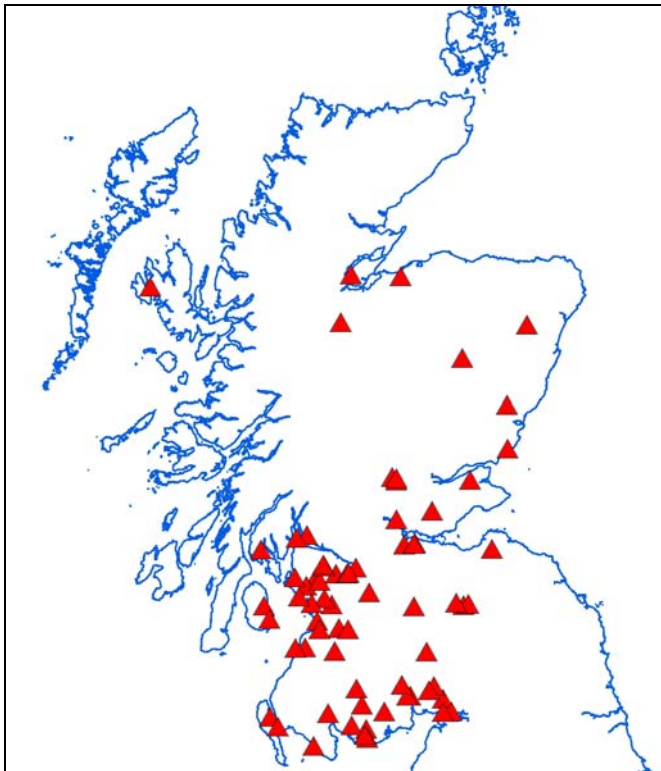


Figure 3. Trichomonosis in garden birds in Scotland 2005-2007

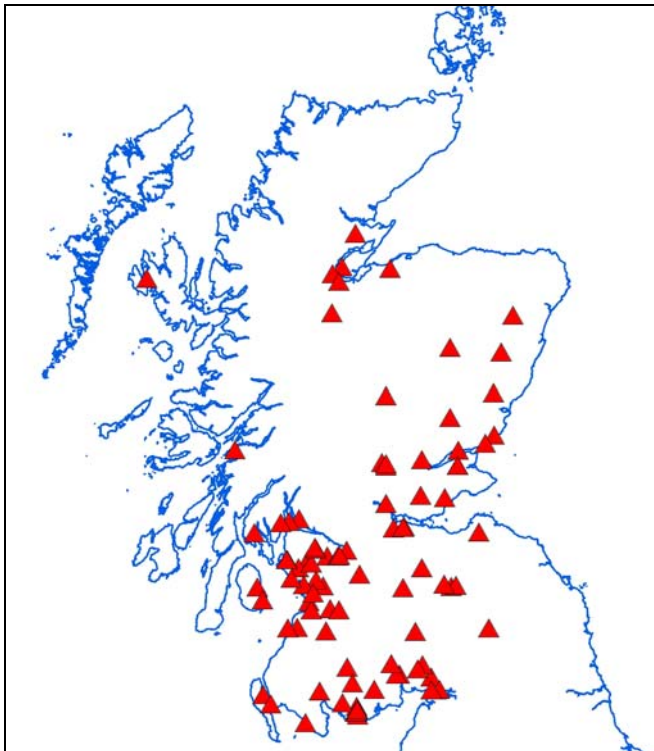


Figure 4. Trichomonosis in garden birds in Scotland 2005- July 2008

Greenfinches and chaffinches are still the species most frequently affected, but cases have also been seen in other species such as the house sparrow (*Passer domesticus*), dunnoek (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*), goldfinch (*Carduelis carduelis*) and siskin (*Carduelis spinus*). The first diagnosis of the disease in a yellowhammer (*Emberiza citrinella*) in Scotland was made in May 2008, and there is concern that the disease may eventually spread from the finch/sparrow/bunting type of bird to other groups of wild birds.

A seasonal pattern appears to be emerging, with most reported cases in Scotland in 2006 and 2007 occurring in the months July to December. An increase in the number of diagnosed cases has occurred again in July 2008 (Figure 5), and if this trend continues into August and September the losses in 2008 are likely to exceed those of 2006 and 2007.

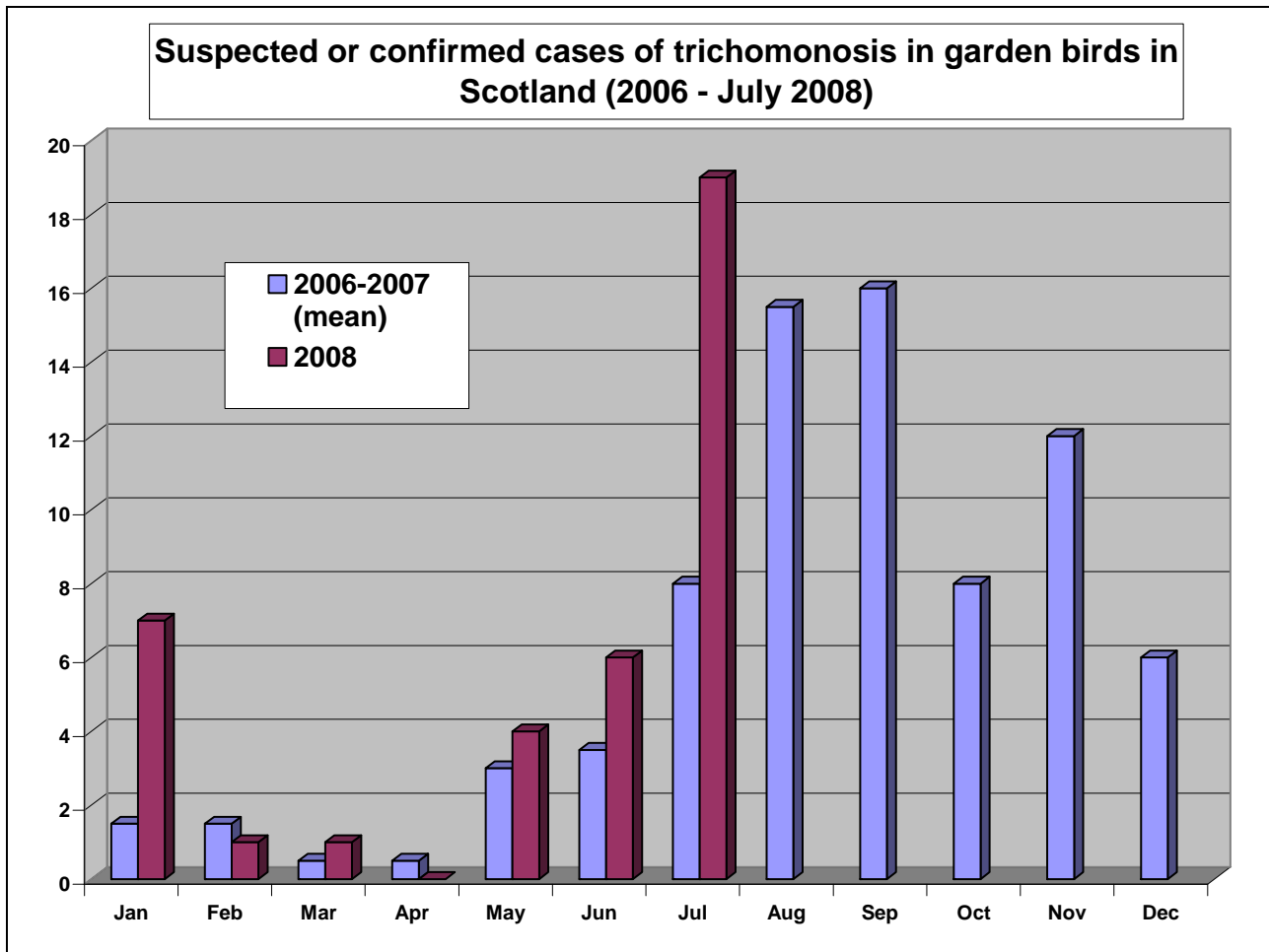


Figure 5. Seasonal occurrence of trichomonosis in garden birds in Scotland. 2008 figures (to July) compared with the monthly means for 2006-2007.

The Scottish Government funds wild bird surveillance under Advisory Activity 120. SAC.

Water Shrew mortality (*Neomys fodiens*)

A captive breeding programme for water shrews experienced severe mortality during May 2008 when all eight adults died. Clinical signs included malaise but the majority of cases were found dead over a period of 2-3 days. Individuals were housed in separate cages and fed a diet of proprietary tinned dog food and mealworms. Due to a change in keepers, they were incorrectly fed for 2-3 weeks with a reduction in mealworms.

The submission of five carcasses found mild hepatomegaly and yellow/orange discolouration or pallor of the liver in two individuals. Histopathology of major organs including liver indicated moderate periacinar and midzonal lipidosis with small numbers of necrotic hepatocytes and a mild lymphocytic and neutrophilic infiltrate within the affected zones. The archived livers of three wild caught water shrews were examined for comparison and there was no evidence of lipidosis.

Although no specific aetiology could be attributed to these changes it was felt the dietary imbalance with predominantly dog food of high calorific value and fat content being fed resulted in the lipidosis leading to hepatocyte necrosis. The main food source of water shrews is normally arthropods such as freshwater shrimps, pond skaters and caddis fly larvae. However in captivity a diet of mealworms and tinned dog food usually meets all their requirements without any adverse effects. It is considered in this case that with the withdrawal of mealworms, much more dog food was eaten.

VLA Preston

Mass stranding of common dolphins (*Delphinus delphis*), Roseland Peninsula, Cornwall

VLA Truro assisted the Institute of Zoology with the post mortem examination of common dolphins after an estimated 70+ animals got into difficulties in the shallows of a small creek on the Roseland Peninsula.

Nine of the 26 animals that died or were euthanased, were submitted for post mortem examination and only minor incidental and strandings-related pathology was observed, consistent with the findings from the remainder of the examinations carried out by IOZ and colleagues. The cause of the stranding remains unclear at the present time and further investigations including toxicology, virology and histopathology are underway.

VLA Truro

BBC Wildlife Magazine, August 2008, p38 indicated that 4 possible causes for the deaths were being considered— naval sonar, orca (killer whale) activity, lack of food or disease.

Water vole (*Arvicola terrestris*) intra-specific aggression

An adult male Water vole (*Arvicola terrestris*), a BAP (Biodiversity Action Plan) priority species, was submitted from the North Pennines Area of Outstanding Natural Beauty (AONB) Partnership by the area conservation officer. The animal, an adult male in reasonable condition, was found dead outside a burrow in an area where there were many water vole burrows. A careful examination revealed a small skin ulcer in the area between the anus and the genital opening. No other evidence of trauma was found. Internal examination revealed good body condition and that the testes and the accessory sex glands were enlarged relative to the body size, and it was assumed that this animal was sexually active at the time of death. *Pasteurella multocida* was cultured from lung and liver. The vole died of pasteurellosis and it is reasonable to assume that the wound near the anus was a bite wound and the probable source of the *Pasteurella* bacterium. Judging by the size of the wound and the fact that it was close to the testes there appeared to be a reasonable likelihood that this was produced by another water vole, i.e. this was a case of death caused by infection secondary to intra-specific aggression. *Pasteurella* in other wild and domesticated species has been associated with bite wounds. To our knowledge this is the first case, of which we are aware, of this condition in this species.

VLA Penrith, North Pennines AONB Partnership.

Viral Diseases in the Red Squirrel (*Sciurus vulgaris*): Quarterly Update April-June 2008

Squirrel poxviral disease (SQP) is still prevalent across both north Cumbria and Northumberland, with cases being confirmed in areas where disease was not previously recorded and cases appearing in locations where outbreaks occurred last year. All cases are confirmed by negative stain Transmission Electron Microscopy (TEM), as part of the VLA Diseases of Wildlife Scheme (VLADoWS), but in addition to these analyses, we undertake analyses of samples provided by the Institute of Zoology Red Squirrel Surveillance Scheme. During 2007, VLA confirmed 15 cases under the VLADoWS and 17 from the IOZ scheme, but already this year, we have confirmed 26 cases from the VLADoWS and 1 from the IOZ. Since March, the first case of SQP has been confirmed in Kielder Forest itself, considered to have the largest remaining English red squirrel population. Several cases have appeared around Alnwick in North East Northumberland, an area previously clear of disease. Additionally, following an illegal release of grey squirrels into the Gosforth Park area, a number of cases of SQP have since been confirmed among one of the few remaining red squirrel colonies in cities in England. Additional cases have also been seen from Wallington Hall in Northumberland, probably representing a continuation of an outbreak last year. Several cases were confirmed from an area of north Cumbria around Gelt Woods (Geltsdale).

On Merseyside, they have been battling a SQP outbreak since last October, which has accounted for around 40 confirmed cases in animals from the Sefton and Formby reserves. This work is undertaken at the University of Liverpool Veterinary School at Leahurst, utilising Polymerase Chain Reaction (PCR) analyses, but the cases that are confirmed are the few that are found, presumably more die undiscovered in woodlands or are removed by predators.

Additionally, we have been involved since April in providing additional TEM confirmation for the 7 SQP cases that have occurred in Scotland this year, bringing the total to 11, all in the Dumfries and Galloway region.

Adenovirus has also been confirmed in the red squirrel this year, with a single case in June, again from Cumbria. These identifications now total 13 in Cumbria since 2006 and 3 from Anglesey in late 2007, the first identified from Wales. Although small in number compared to SQP, the significance of this virus in the red squirrel population is still unclear.

Electron microscopy, VLA Weybridge

Mute swan mortality in North Wales

Seven Mute swans (*Cygnus olor*) were found dead on the coast of North Wales. The next day an eighth swan was found, and they were all received at VLA Shrewsbury for post-mortem examination and avian influenza (AI) screening. All of the birds had been in good bodily condition and had signs of traumatic damage to the skin and associated soft tissue, and some had skeletal damage. Gross findings included a broken neck, one had a broken thoracic vertebral column and ribs, one had a 2mm diameter circular hole in the surface of the scapula and 2 had damage to the pelvis. Haemorrhage was present in the majority of birds associated with the traumatic lesions. AIV infection was excluded, and radiographs taken to investigate the possibility of gun shot wounds revealed no metal fragments. It was suspected that the trauma was due to predator attack.

Due to interest in this incident on the ProMed website (the global electronic reporting system for outbreaks of emerging infectious diseases & toxins), the VLADoWS results were published on the site:-

http://www.promedmail.org/pls/otn/f?p=2400:1001:1929161885957696::NO::F2400_P1001_BACK_PAGE,F2400_P1001_PUB_MAIL_ID:1010,729911

VLA Shrewsbury

Death of a wildlife biologist in the USA from plague.

A tragic death through fatal pneumonia and septicaemia from plague infection (*Yersinia pestis*) in a 37 year-old wildlife biologist, near Grand Canyon National Park, USA was reported. The biologist had direct contact with wild rodents one week before death. Rodents and their fleas are infected with the bacterium in this area. This case highlights the elevated risk of zoonosis transmission for wildlife biologists and vets who have direct contact with wild animals.

Source - The Supplement of the Journal of Wildlife Disease, April 2008.

Diagnosis not reached Analysis – Analysis undertaken over the past year on submissions to the VLA Diseases of Wildlife Scheme (VLADoWS) have proven problematic due to a) limitations of low numbers of submission for most syndromes, and b) the number of different species submitted. This analysis has been discontinued but may be reinstated for specific analysis or interrogations.