Surveillance Report

Wildlife

Quarterly Report Vol. No:10.3 October 2008 - December 2008; and 2008 review

HIGHLIGHTS

- Summary of Notifiable AI Events in Great Britain and Europe during 2008
- Disease in Biodiversity Action Plan Mammal Species
- UK chytridiomycosis survey
- SAC Veterinary Services; Avian report for 2008

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VLADoWs

VLADoWS - the **VLA Diseases of Wildlife Scheme** has provided wildlife disease investigation and surveillance in England and Wales since 1998. Go to www.vla.gov.uk and for reports, go to he VLADoWs Wildlife home page at: - <http://www.defra.gov.uk/vla/science/sci_wildlife.htm>

OVERVIEW

This Wildlife Quarterly Report (WQR) covers wildlife disease incidents for the period October – December 2008 and also summarises incidents throughout 2008.

An outbreak of HPAI H5N1 occurred in a large herd of Mute Swans in Dorset early in 2008. Virus was only isolated from ten birds and an in-contact Canada goose. There was no spread to domestic poultry.

Targeted surveillance showed no evidence of West Nile Virus in GB during the year.

Two cases of European bat lyssavirus type 2 (EBL-2) in Daubenton's bats were diagnosed this year.

NOTIFIABLE DISEASE

Great Britain AI Wild Bird Surveillance (AIWBS) results: October- December 2008

H5N1 Highly Pathogenic Avian Influenza (HPAI) was not detected from any of the 1,722 wild birds sampled and tested during the last quarter in Great Britain. Under the revised Defra AIWBS policy that is now operational, activities are focused on the patrolling of designated reserves by ecologists and wardens. The public are also asked to report 'mass mortality' incidents in England and Wales involving 10 or more birds (five or more birds in Scotland), to the Defra Helpline (**08459 33 55 77**).

Great Britain AIWBS Results during 2008

The most significant AIWBS event of 2008 in Great Britain occurred at the turn of the New Year with the detection of H5N1 HPAI from three Mute swan (*Cygnus olor*) carcases that had been collected from the South Dorset coast. In total, ten Mute swans and one Canada goose (*Branta canadensis*) carcases were positive for H5N1 HPAI, all having been found within the adjacent South Dorset coast during January and February with no evidence of spread to the domestic poultry population (Defra, 2008a). Overall in Great Britain during 2008, a total of 4,350 wild birds were sampled and tested for the presence of AI virus (AIV) infection, with thirty-five wild birds positive for AIVs, H5N1 HPAI, H5 LPAI or influenza A virus infection (Table 1). Within the European Union (EU), the United Kingdom was the only EU Member State to report H5N1 HPAI in wild birds during 2008 (EUROPA, 2008). In addition during 2008, there were several outbreaks of notifiable AI in poultry across Europe due to infection with H5 or H7 subtypes, serving as a reminder of the threat of occasional incursion of these viruses into poultry, presumably of wild waterfowl origin. Globally, reports of H5N1 HPAI during 2008 have continued across three continents. These disease events are described further in the current VLA Avian Disease Surveillance Report: http://www.defra.gov.uk/vla/reports/rep_surv_avian.htm. Furthermore, the UK outbreak of H7N7 HPAI during June 2008 (Defra, 2008b), in common with the H5N1 HPAI outbreak in November 2007 (Defra, 2007), clearly demonstrated the potent hazard of locating free-range poultry production units in close proximity to open water, both likely to attract wild birds and predispose to an increased likelihood of contact and risk of transmission of avian influenza viruses.

Avian Virology, VLA Luddington

References

Defra, (2008a). Highly pathogenic avian influenza – H5N1 in swans in Dorset. Epidemiology Report, 1A Page Street, London, SW1P 4PQ, United Kingdom. Version 2, Released 12 February 2008. http://www.defra.gov.uk/animalh/diseases/notifiable/ai/pdf/epireport-080212.pdf

EUROPA, (2008). Highly Pathogenic Avian Influenza (HPAI) Cases in Wild Birds in 2008 Notified by Member States to the Animal Disease Notification System (ADNS). http://ec.europa.eu/food/animal/diseases/adns/adns_wildbirds2008.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 July 2008. http://www.defra.gov.uk/animalh/diseases/notifiable/ai/pdf/epireport-080711.pdf

Defra, (2007). Preliminary epidemiology report: Avian influenza outbreak in Suffolk, November 2007 as at 26 November 2007; National Emergency Epidemiology Group. http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/pdf/ai-prelim-epireport071129.pdf

Table 1: AIWBS in Great Britain during 2008 - Number of wild birds tested & Results

Project	No. Birds Tested[†]	No. Positive	Species Positive	Results[‡]
Legally Shot[‡‡]	36 (590)	0	n/a	n/a
Legally Trapped	2,913 (3,742)	1	Mute swan	H5 LPAI
		2	Whooper swan	H1N1, M gene x1
		5	Teal	H6N2, H5 LPAI x2, M gene x2
		13	Mallard	H2N2, M gene x12
Found Dead	1,401 (1,934)	1	Herring gull	M gene
		1	Canada goose*	H5N1 HPAI
		12	Mute swan*	H5N1 HPAI x10, H3N8 x1, M gene x1
Live bird Faeces[††]	100 (1,330)	0	n/a	n/a

No. Birds Tested[†]: Comparative figures for 2007 are shown in brackets.

Results[‡]: M gene refers to the number of wild birds positive to influenza type A Matrix (M) gene RRT-PCR test and negative by H5 RRT-PCR and virus isolation in embryonated fowls' eggs. n/a = not applicable.

Legally Shot[‡‡]: No. of birds tested relates to samples from seasonal wildfowling activities received in early 2008. Sampling was then ceased.

* H5N1 HPAI detected from ten Mute swans (*Cynus olor*) and one Canada goose (*Branta canadensis*) during wild bird incident in Dorset (Jan/Feb).

[††] 100 wild bird environmental faecal samples tested during H5N1 HPAI wild bird incident in Dorset, January-February 2008. This sample type was also collected for testing during the Redgrave Park H5N1 HPAI poultry outbreak in November/December 2007.

ZOONOTIC DISEASE

Salmonellosis in Wildlife: -

VLA Diseases of Wildlife Scheme data this year indicates that garden bird submissions and cases of garden bird salmonellosis both declined relative to recent years. Anecdotal information suggested that other surveillance schemes may also have seen fewer cases of the disease. It will be of interest to know whether there is a real decline in prevalence and what factors may influence this. *Salmonella* Typhimurium was isolated from a Black-headed gull (*Larus ridibindus*) and a Mute swan (*Cygnus olor*).

VLA Penrith

October- December 2008

18 salmonella cultures were undertaken for the ED1600 project this quarter from 11 submissions involving eight birds, two seals, two red squirrels and one hedgehog. However there was only one salmonella isolate from routine bacteriology on a "Cetacean Strandings Project" submission. This was an incidental finding from the lung of a juvenile harbour porpoise (*Phocoena phocoena*) affected with parasitic bronchopneumonia. This case is reported in detail in the BAP species section. There were no isolates from the other wildlife.

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.

West Nile Virus (WNV) surveillance

During 2008, 250 wild birds of 42 species were examined for WNV by PCR. There were no positive results. This result concurs with previous years where VLA surveillance has not detected WNV infection in Great Britain. However on the continent WNV infection in wild birds has been reported in low but increasing numbers from France (magpie *Pica pica*) Spain (raptors) and Hungary (raptors).

Rabies and Wildlife Zoonoses Group, VLA Weybridge

Isolation of European bat lyssavirus type 2 (EBLV-2) in two Daubenton's bats (*Myotis daubentonii*)

On the 7th May European bat lyssavirus type 2 was detected in the brain of a bat submitted under the passive surveillance scheme to detect lyssaviruses in British bats. This scheme has been operating since 1987. Genomic sequence derived from the virus nucleoprotein revealed that this virus was 100% identical to an earlier isolation of EBLV-2 from a bat in Staines, Surrey. The bat was originally found injured, following a cat attack, by a member of the public in August 2007, in Bushy Park, Surrey. It was passed to a number of experienced bat handlers for rehabilitation, but required the amputation of one wing by a vet shortly after entering captivity. Over the winter months it appeared healthy but towards the end of April it became aggressive. It became progressively weaker and underwent euthanasia on May 2nd and sent to VLA-Weybridge on the 6th. This could be the longest documented incubation period (>8 months) for EBLV-2. This case is the 7th isolation of EBLV-2 from English Daubenton's bats since 1996 and once again emphasises the need for ongoing surveillance of UK bats and the need for bat handlers to obtain anti-rabies vaccination.

In September 2008 a dead juvenile (<1 year-old) male Daubenton's bat was found in Shropshire. This was in an area in which EBLV-2 had been previously isolated from a Daubenton's bat (Harris and others, 2007). Differential RT-PCR TaqMan assay confirmed the presence of EBLV-2 in this second bat. Also sequencing of a 405 base-pair fragment of the nucleoprotein gene proved 100 per cent identity to the previous EBLV-2 isolate. This case re-affirms the necessity for continued EBLV-2 surveillance in the UK, especially in places with a known prevalence of EBLV-2 in the Daubenton's bat population.

Reference: -

Harris, S., Mansfield, K., Marston, D., Johnson, N., Pajamo, K., O'Brien, N., Black, C., McElhinney, L.M. and A.R. Fooks. (2007). Isolation of a European bat lyssavirus type-2 from a Daubenton's bat (Myotis daubentonii) in Shropshire, UK. The Veterinary Record **161**(11); 384-386.

VLA Rabies and Wildlife Zoonoses Group, VLA Weybridge

EMERGING AND ENDEMIC DISEASES

A summary of wild bird submissions this quarter 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
January	32	62	57	
February	23	27	27	
March	20	65	30	
April	18	21	21	
May	20	34	34	250 birds examined.
June	14	48	38	WNV was
July	19	20	20	not isolated.
August	15	45	45	
September	20	41	31	
October	10	15	15	
November	6	6	6	
December	3	38	5	

WILD MAMMAL SUBMISSIONS TO VLADoWS 2008

Month	Number of ED1600 Wild mammal Submissions
January 12, February 13, March 13, April 13, May 19, June 13, July, 15, August 16, September 14, October 13, November 10, December 7, **Total = 158**	

Trichomonosis in Sparrowhawks (*Accipiter nisus*)
Granulomatous-type lesions typical of trichomonosis were seen in the oropharynx of a female and juvenile Sparrowhawk found dead together. Both birds were in very poor condition indicating that the lesions may have prevented feeding. Ingestion of infected pigeons or passerines (more likely prey in the smaller male and juveinile sparrowhawks) was thought to be the most likely source of the parasite.

Trichomonosis in garden birds is considered a new disease, and the condition in raptors that prey on them is therefore a potential new disease, the conservation importance of which may be important for sparrowhawks and the rarer goshawk (*Accipter gentilis*).
VLA Newcastle

Poxvirus in a Starling (*Sturnus vulgaris*)
Poxvirus was detected in samples of skin taken from a starling with raised nodular lesions on the eyelids and wing. The RSPB also report that for the past two or three years there have been cases of avian pox especially in tits and dunnocks, mostly between July and September. This year reports of suspected pox continued into November. There has been anecdotal information to suggest that the numbers of pox cases in a range of wild birds has increased in recent years.
VLA Newcastle and RSPB

Suspected Common gull (*Larus canus*) botulism on agricultural land
Two submissions of 6 common gulls, two of which were alive and showed clinical signs typical of avian botulism, were made in January 2009. A visit to one of the sites showed that the birds were on agricultural land away from water bodies. In February 2003 over 900 gulls (mainly Common gulls) died in the same area on lake Ullswater. Common gulls in the North of England feed predominantly on

agricultural fields and it was considered that botulinum toxin had been present in poultry slurry used to dress fields. The present incidents supported this premise because a site visit showed that the birds were affected on agricultural fields (and there were reports of recent manure spreading) but this time well away from water bodies (the usual source of botulinum toxin). Based on this circumstantial evidence this appears to be a case of wildlife mortalities caused by agricultural practices.

Biodiversity Action Plan Mammal Species

UK Biodiversity Action Plan (UK BAP); In 1993, the UK government consulted over three hundred organisations throughout the UK and held a two day seminar to debate the key issues raised at the Convention of Biological Diversity. The product of this was the launch of Biodiversity: the UK Action Plan in 1994, which outlined the UK Biodiversity Action Plan for dealing with biodiversity conservation in response to the Rio Convention (1992). There are 39 UK BAP mammal species consisting of 18 terrestrial mammal species and 21 marine mammal species.

Red Squirrel (*Sciurus vulgaris*)

Ectoparasitism

Two juveniles, which were found dead within 100 metres of each other, were submitted with a detailed history. The animals came from an area with a high density of red squirrels, mostly young, suggesting a good breeding season. It was reported that they showed antagonistic behaviour with 'noisy scolding and chasing' among the individuals. Also squirrels spent 'most of the time scratching'. Both animals had a very severe infestation of lice, both were in thin body condition and were anaemic. The high population density and contact behaviour may have predisposed to the ectoparasite infestation. In a separate incident a single juvenile red squirrel with similar post mortem findings was submitted from a different area in Northern England. Again there was a heavy louse infestation, the parasites being identified as *Neohaematopinus scurius*. A literature search has not been undertaken yet but we are not aware of louse infestation as a cause of ill-thrift and death in this species, populations of which are under threat in England.

VLA Penrith

Squirrel pox

During 2008 VLA DoWS diagnosed 31 cases of squirrel pox across the North of England highlighting the continuing heavy mortality due to the disease as the squirrel pox epidemic front passes north into Scotland. There had been a suggestion in the findings that the extent and severity of the lesions in recent years had declined. Had this been the case the significance would be difficult to interpret, however the animal examined in December had severe lesions. This individual had been treated at a veterinary surgery, with lesions that affected the eyelids, lips, muzzle, the left elbow, hock and digits on three paws, the inner thigh and the mucosae of the anus and vagina.

VLA Penrith

Otter (*Lutra lutra*) with uterine fibroleiomyoma

A two centimetre in diameter fibroleiomyoma of the uterus was an incidental finding in an otter from Wales submitted by the Cardiff University Otter Project (CUOP). The CUOP examines and samples dead otters from all over England and Wales. The main aim of the project is to monitor pesticide levels in otter tissues. This may be the first report of this lesion in UK otters.

VLA Langford

Harbour porpoise (*Phocoena phocoena*); Ectoparasitism, salmonellosis and brucellosis

A juvenile harbour porpoise was examined as part of the collaborative UK Cetacean Strandings Investigation Programme (CSIP). This is funded by Defra and the Welsh Assembly to investigate whale, dolphin, harbour porpoise strandings and the causes of mortality. This porpoise was live stranded and was in poor body condition. It had a parasitic bronchopneumonia in addition to a heavy whale lice infestation. The lice were colonising numerous skin wounds present on the animal. An untypable Group B Salmonella sp. was cultured from the lung. *Brucella ceti* was isolated in septicaemic distribution. This highlights the zoonotic risk associated with handling these animals.

VLA Truro

Common seal pup (*Phoca vitulina*); Parasitism and trauma

A common seal pup in thin body condition, which was euthanased by head trauma by unknown persons, was examined. It was evident that the animal had particularly heavy nematode parasite burdens in both the gastrointestinal and respiratory tracts. The finding of heavy endo-parasite burdens in some UK seal pups begs the question as to what is a normal parasite burden in healthy pups, and if some individuals have significantly higher numbers of parasites, why should the occur.
VLA Newcastle

UK chytridiomycosis survey
Chytrid fungal infection (chytridiomycosis) has been detected in two areas of England, coastal Cumbria and Kent. It is not clear yet whether this disease is causing amphibian population declines in this country. A nationwide survey in 2008 aims to establish whether chytrid fungus is localised to these known infected sites or if it is more widespread across the country. Information at -
https://www.zsl.org/field-conservation/uk-native-species/ukchytridiomycosis,842,AR.html

SAC VETERINARY SERVICES

AVIAN REPORT FOR 2008

Trichomonosis in garden birds
The spread of presumed trichomonosis in garden birds (necrotic oesophagitis/ingluvitis, *Salmonella* species not cultured) continued in Scotland in 2008. Cases were seen on 35 new sites in 2008, similar to 2007 (37 new sites). Species affected in 2008 were the chaffinch (*Fringilla coelebs*), greenfinch (*Carduelis chloris*), siskin (*Carduelis spinus*), goldfinch (*Carduelis carduelis*), tree sparrow (*Passer montanus*) and yellowhammer (*Emberiza citrinella*).

Salmonellosis in garden birds
Fewer cases of salmonellosis were diagnosed in January to March 2008 than in the same period in 2007 – 17 birds from 13 sites in 2008 compared with 32 birds from 26 sites in 2007. However more incidents involved siskins – seven siskins from seven sites in 2008, four siskins from two sites the previous year. All isolates were *Salmonella* Typhimurium DT 40 or 56 variant.

Chlamydiosis in garden birds
Chlamydiosis was diagnosed in a chaffinch and a robin (*Erithacus rubecula*) submitted from a garden in which the deaths of approximately 50 garden birds had occurred. Post mortem examination of the chaffinch revealed slight thickening of the oesophagus suggestive of mild trichomonosis, but the major lesion was the presence of a large white plaque on one abdominal airsac. No significant bacteria or fungi were isolated, but histopathological examination of tissues from the chaffinch found evidence of a fibrinous airsacculitis with necrosis and numerous unidentified rod-shaped bacteria within the lesions. The robin had an enlarged liver with a pale irregular focus of necrosis, an enlarged spleen and a purulent airsacculitis. No significant bacteria or fungi were isolated but *C. psittaci* was detected in pooled tissues by PCR. Histopathological examination of tissues from the robin found an hepatitis with acute focal necrosis, a chronic fibrinous airsacculitis, and a chronic splenitis with superimposed acute fibrinous splenitis. Immunohistochemical labeling for *Chlamydophila* was subsequently carried out at the Moredun Research Institute on fixed tissues from the chaffinch and robin, both with positive results, confirming the association between *Chlamydophila* and the gross and histopathological lesions observed in both birds. This incident highlights the need to inform members of the public about the zoonotic risks from handling the carcases of wild birds.

Starvation in buzzards
December saw the submission of six male buzzard (*Buteo buteo*) carcases, found dead or dying in six different locations. (In most months only one or rarely two buzzards are submitted) One bird had evidence of trauma and secondary cellulitis, but the remaining five birds were all in thin condition with an absence of food in the digestive tract. Dark red/black material was present in the proventriculus, gizzard and intestines typical of birds that have died from starvation. Some of the birds had concurrent helminth burdens, including hairworms (*Eucoleus species*) causing a necrotic glossitis, *Cyathostoma species* in the bony orbits, large roundworms (*Porrocaecum species*) in the duodenum and small intestine, and unidentified intestinal tapeworms. Reports were received of other dead buzzards in the west and

southwest of Scotland, initially prompting fears by those finding the birds of possible poisoning. The cause of the starvation in the buzzards most likely reflected the increased number of buzzards in recent years coupled with the very cold weather in December. Prolonged frosts result in limited access to earthworms, an important aspect of the diet of buzzards. Similarly, vole numbers have reduced, and carrion may have been unavailable due to the freezing conditions. The deaths probably represented "natural" limitations on buzzard numbers. An interaction between starvation and parasitism was present in some of the buzzards – weather conditions earlier in the year favoured the development of parasitism in farmed livestock such as cattle and sheep, and conditions may also have been favourable for parasites of wild birds such as raptors.

Appendix 1:-
Diagnosis not reached Analysis

The following is a summary of wildlife data analysed by the VLA from diagnostic submissions received by its 14 regional laboratories and 2 surveillance centres, which are situated within 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 new or emerging syndromes. The submissions are categorised and therefore reviewed by body system and by presenting sign.

Overview

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

In the 12 month period Q1 2008 to Q4 2008 there was a significant decrease in the proportion of submissions from terrestrial mammals for which no diagnosis was reached despite reasonable testing (%DNR), compared with prior years (Q1 2003 to Q4 2007) and the previous year (Q1 2007 to Q4 2007). See Table 1.

In the same period there was a statistically significant decrease in the proportion of submissions from native birds for which no diagnosis was reached despite reasonable testing (%DNR), compared with prior years but no significant difference compared with the previous year. See Table 1.

There was a statistically significant decrease in %DNR for terrestrial mammals.

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

	% of Submissions for which Diagnosis Not Reached (reasonable testing)						
	Latest 12 months Q1 2008-Q4 2008	Prior 5 years (Q1 2003 – Q4 2007)	z		Last year (Q1 2007 – Q4 2007)	z	
Terrestrial mammals	9%	19%	3.15	▼▼	17%	2.06	▼▼
Native birds	13%	25%	3.69	▼▼	12%	-0.35	▼

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

For other groups tested no significant increase in the proportion of submissions this year was found.

Full group results

	Latest 12 months Q1 2008-Q4 2008	Prior 5 years (Q1 2003 – Q4 2007)			Last year (Q1 2007 – Q4 2007)		
	% DNR	**% DNR**	**z**	**p-value**	**% DNR**	**z**	**p-value**
Wildlife	13	25	5.49	<0.05	15	0.89	ns
Wild mammals	11	20	2.83	<0.05	18	1.81	ns
Wild birds	15	25	3.39	<0.05	13	-0.57	ns
Squirrels	4	11	1.98	<0.05	13	2.18	<0.05
Bap mammals	4	20	3.67	<0.05	18	3.08	<0.05
Deer	8	23	1.17	ns			
Other mammals	29	37	1.01	ns	30	0.11	ns
Swan	12	25	2.70	<0.05	9	-0.68	ns
Water birds	10	25	4.02	<0.05	9	-0.15	ns
Seabirds	No dnr						
Birds of prey	42	29	-0.86	ns			
Bap birds	4	20	3.67	<0.05	18	3.08	<0.05
Other wild birds	28	25	-0.43	ns	20	-1.08	ns
Garden birds	29	23	-0.58	ns	21	-0.63	ns
Terrestrial mammals	9	19	3.15	<0.05	17	2.06	<0.05
Native birds	13	25	3.69	<0.05	12	-0.35	ns

Where no data too few observations were present