The VIDA diagnoses are recorded on the AHVLA 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 AHVLA and SAC consulting 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.

AHVLA RL/VICs and SAC Consulting Veterinary Services have UKAS accreditation and comply with ISO 17025 standard.

HIGHLIGHTS

- Notifiable disease – PPMV-1; mortality incidents in East Anglia and Scotland
- Emerging disease reports
  - Salmonella Typhimurium DT 160 in sparrow
  - First Seoul hantavirus in UK wild rodents
  - PIB sea bird mass mortality
  - Puffin mass mortality Scotland and England coasts
- British wild deer seropositive for Schmallenberg virus

Contents

<table>
<thead>
<tr>
<th>HIGHLIGHTS</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERVIEW</td>
<td>1</td>
</tr>
<tr>
<td>FERA Wildlife merges with AHVLA to become the NWMC</td>
<td></td>
</tr>
<tr>
<td>NOTIFIABLE DISEASE</td>
<td>2</td>
</tr>
<tr>
<td>Great Britain AI Wild Bird Surveillance; PPMV-1</td>
<td></td>
</tr>
<tr>
<td>International H5N1 HPNAI events</td>
<td></td>
</tr>
<tr>
<td>ZOONOTIC DISEASE</td>
<td>2-3</td>
</tr>
<tr>
<td>Salmonellosis in wildlife: Report from IoZ</td>
<td></td>
</tr>
<tr>
<td>Lyssavirus, rabies and West Nile virus surveillance</td>
<td></td>
</tr>
<tr>
<td>Report from former FERA on fox zoonoses</td>
<td></td>
</tr>
<tr>
<td>EMERGING AND ENDEMIC DISEASES</td>
<td>4-6</td>
</tr>
<tr>
<td>Wild birds: Reports from IoZ, SAC Consulting Veterinary Services, Scotland</td>
<td></td>
</tr>
<tr>
<td>WWT, NWMC (FERA) and AHVLA DoWS. Sea bird mass mortalities</td>
<td></td>
</tr>
<tr>
<td>Aquatic animals; Amphibians ranavirus infections</td>
<td></td>
</tr>
<tr>
<td>UK Priority and Conservation concern Species</td>
<td>13</td>
</tr>
<tr>
<td>Wild birds: Great Crane project</td>
<td></td>
</tr>
</tbody>
</table>

APPENDIX 1 Diagnosis not reached analysis
APPENDIX 2 Horizon scanning

The VIDA diagnoses are recorded on the AHVLA 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 AHVLA and SAC consulting 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.

AHVLA RL/VICs and SAC Consulting Veterinary Services have UKAS accreditation and comply with ISO 17025 standard.
INTRODUCTION

The GB Wildlife Disease Surveillance Partnership comprising the Animal Health & Veterinary Laboratories Agency (AHVLA), Scottish Agricultural College Consulting (SAC Consulting), Institute of Zoology (IoZ), the Food and Environment Research Agency (FERA now incorporated into AHVLA see Overview), the Centre for Environment, Fisheries and Aquaculture (CEFAS), the Wildfowl and Wetlands Trust (WWT), Natural England (NE) and the Forestry Commission England (FCE) produces the GB Wildlife Disease Surveillance Quarterly Reports. The details of the individual partners’ areas of surveillance and research can be found at:-

OVERVIEW

The Food and Environment Research Agency (FERA) sections dealing with wildlife disease and related disciplines has now been incorporated into the AHVLA. This provides a stronger unit for delivering wildlife services to the government, in particular the Defra customer. The move is welcomed as a strengthening of resources and opportunity to bring together wildlife disease expertise from two agencies. The sections of FERA are called the National Wildlife Management Centre of the AHVLA, for more information see the AHVLA website:

NOTIFIABLE DISEASES

Wildfowl and Wetlands Trust’s (WWT) role in GB Avian Influenza Wild Bird Surveillance (AIWBS): January–March 2013

As part of the GB AIWBS, WWT conducted at least weekly patrols of its eight GB wetland reserves. Dead birds were reported from 5/8 reserves, constituting 25 individual birds from eight species (mute swan (1), whooper swan (11), greylag goose (1), mallard (4), European pochard (1), moorhen (2), coot (2) and black-headed gull (3)). Cloacal and buccal swabs were submitted to AHVLA Weybridge and no AIVs were isolated.

WWT Slimbridge

Great Britain AI Wild Bird Surveillance (AIWBS): January –March 2013

H5N1 Highly Pathogenic Notifiable Avian Influenza (HPNAI) was not detected from any of the 153 found dead wild birds tested in Great Britain (GB) during the quarter. Evidence of other influenza A virus infections was also not detected (Table 1). This included investigation of wild bird mass mortalities, including seabird mortalities (puffin wreck on north east England and east Scotland coast; polyisobutene (PIB) associated losses of mainly guillemots (Uria aalge) along the south coast of England; RSPB, 2013 – see later reports) and incidents involving feral pigeons where pigeon paramyxovirus (PPMV-1) infection was confirmed. The last detection of H5N1 HPNAI in wild birds in GB was during January-February 2008, from ten Mute swans (Cygnus olor) and one Canada goose (Branta canadensis) in South Dorset (Defra 2008).

Table 1: Number of wild birds tested and results in GB – 1st Quarter

<table>
<thead>
<tr>
<th>Surveillance activity</th>
<th>Number of birds tested*</th>
<th>Positive AIV result and species of bird</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found dead</td>
<td>153</td>
<td>Nil</td>
<td>Scanning surveillance All-year-round</td>
</tr>
<tr>
<td></td>
<td>(196)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Number of birds tested: figures for January – March 2012 are shown in brackets.
During October 2010 Defra revised the AIWBS policy and approaches in GB following changes to European Commission guidelines. The main emphasis is on AIWBS in found dead wild birds, including mass mortality events, and patrols of designated reserves by skilled wild bird ecologists and wardens. As such, from April 2011 onwards AIWBS activities have not included sampling during routine wildfowl trapping activities in GB. Warden Patrols continue all-year-round and are also seasonally targeted in the winter and spring periods (March to October) each year. During the period 1 January to 31 March 2013, 330 Warden Patrols were performed at sites across GB, principally by Natural England (n=172) and the Wildfowl and Wetlands Trust (WWT; n=134). Warden Patrols were also carried out by four other voluntary organisations. In total, 29 wild birds found dead were tested, all with negative AI results. In total, from 1 October 2012 to 31 March 2013 there were 730 patrols carried out, of which 410 were carried out by Natural England and 267 by the WWT. This was 212 fewer patrols than were reported in the same period during 2011/12. Overall, 59 wild birds found dead were tested, all with negative AI results (10 fewer birds than were sampled in the same period of 2011/12). Birds were most commonly found in the North West and South West of England, and Whooper swan (Cygnus cygnus) was the most common target species.

Members of the public are also asked to remain vigilant for mass mortality incidents and report these to the Defra Helpline: 08459 33 55 77. The criteria for a mass mortality incident are five or more wild birds of any species at any location (irrespective of county) in England, Scotland and Wales. Further information is available at: http://www.defra.gov.uk/animal-diseases/a-z/bird-flu/public/.

During Q1-2013 infection with an H9N2 LPAI virus (European lineage) was detected from turkey breeders on premises in East Anglia. Notifiable H5 and H7 LPAI outbreaks were also officially reported in northern Europe (Defra 2013a,b). These incidents serve as a reminder of the potential risks to poultry health from contact with wild birds, as well as potential zoonotic hazards. The risk also exists of more extensive secondary spread in areas of higher poultry population density. LPAI viruses can often cause subclinical infections in poultry making recognition and detection of disease more difficult, a further potential contributory factor conducive to spread.

**Horizon-scanning**

**H7 HPAI in wild birds**

As reported previously (Anon 2013), during January 2013, the Danish Veterinary and Food Administration (DVFA) officially reported the detection of H7 highly pathogenic avian influenza (HPAI) from wild mallard ducks (Anas platyrhynchos) as part of the Danish avian influenza wild bird surveillance programme (OIE 2013a). However, further analyses, including those conducted at the EU/OIE/FAO International Reference Laboratory for Avian Influenza & Newcastle disease, AHVLA Weybridge, were not able to reproduce this result. Therefore, the DVFA have concluded that there is insufficient scientific evidence for the declaration of H7 HPAI infection in wild birds in Denmark and official reports have been subsequently withdrawn (Defra 2013c; OIE 2013b).

AHVLA, in collaboration with Defra, monitors the international situation and distribution of avian influenza detections: http://www.defra.gov.uk/animal-diseases/monitoring/poa/. As a result, Defra currently considers there is an ongoing, low risk of introduction of notifiable avian influenza to the UK via a number of routes, including wild birds (Defra, 2013). The importance for all poultry keepers to maintain robust biosecurity measures, vigilance for clinical signs of disease and to promptly report suspect cases of avian notifiable disease remains undiminished. Other avian influenza and Newcastle disease/PPMV-1 events, including H5N1 HPNAI internationally, are summarised in previous GB Wildlife Disease Surveillance Partnership quarterly reports: http://www.defra.gov.uk/ahvla-en/publication/wildlife-survreports/.

**References**


Defra (2013b) Low Pathogenic Avian Influenza (H7N7) in Germany - Preliminary Outbreak Assessment (23 April 2013) available online: http://www.defra.gov.uk/animal-diseases/files/lpai-h7n7-germany-20130423.pdf [accessed 08 May 2013]


Avian Virology AHVLA Weybridge

Pigeon Paramyxovirus
Feral pigeons (Columba livia) and doves (Streptopelia decaocto) were submitted to investigate a mass mortality incident at private premises where these birds had been fed. It was estimated that the group size was up to 300 and at least 50 had died in the previous ten days. Prior to death the birds became recumbent and died within 24 hours. Pigeon paramyxovirus infection was confirmed. Appropriate investigation of notifiable disease was completed, as there were poultry on site, which remained healthy. AHVLA Bury St Edmunds

ZOONOTIC DISEASES

Salmonellosis in wildlife
There is no routine monitoring of Salmonella in wild birds or wild mammals. Therefore all isolates are usually from clinical cases, although Salmonella may often not be the primary cause of disease. Salmonella Agama was isolated from a badger (Meles meles) at a wildlife hospital. Its clinical significance was uncertain. S. Agama is a found relatively frequently in badgers and infection occasionally causes disease in cattle.

There were no AHVLA Diseases of Wildlife Scheme (DoWS) isolations of bird variant S. Typhimurium DT40, DT56 or DT56 from wildlife or domestic species during this quarter. It is suggested that host adapted salmonellae from garden birds may be a source of infection for domesticated species.

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

AHVLA Wildlife Group

Salmonellosis report from IoZ
Passerine salmonellosis was diagnosed in two birds in this quarter. Throughout the 1990s, salmonellosis was the most frequently diagnosed infectious disease in British passersines with marked winter seasonality; however, the number of incidents has reduced markedly since 2007. This decline is coincident with the onset of epidemic finch mortality due to trichomonosis (Robinson et al. 2010). Salmonella Typhimurium DT40 and DT56(v) are the predominant host-adapted phage types responsible for passerine salmonellosis in England and Wales, accounting for 37% (84/229) and 56% (129/229) respectively of the incidents with available isolate biotype information examined at the IoZ (1993-2012).
In January, a single house sparrow (*Passer domesticus*) was submitted for postmortem examination from a site in Hampshire. A total of 7 house sparrows had been found dead over the previous month in this garden. The bird was in thin condition with mild hepatomegaly and splenomegaly. *Salmonella Typhimurium* DT160 was recovered from multiple organs. This *S.* Typhimurium phage type was last isolated from a wild bird at the IoZ in 1997 (Lawson et al. 2010). Epidemic mortality due to DT160 infection occurred in wild birds, humans and other livestock in New Zealand when this novel phage type was first observed in 2000 (Alley et al. 2002).

In February, a single lesser redpoll (*Carduelis cabaret*) was observed fluffed-up and lethargic in a garden in North Yorkshire. No further sick or dead birds were observed. On postmortem examination, marked hepatomegaly and splenomegaly, in combination with focal lesions in the spleen and upper alimentary tract, were observed. *Salmonella Typhimurium* DT37 was recovered from multiple organs. From 1993-2012, this *S.* Typhimurium phage type was isolated only from a single house sparrow at the IoZ; in 1996. Continued surveillance of the predominant *S.* Typhimurium phage type(s) responsible for passerine salmonellosis will be undertaken in collaboration with Public Health England.

References

IoZ

Rabies and West Nile Virus surveillance

**Passive surveillance for lyssaviruses in UK bats**  
Forty one wild bats, and four zoo bat carcasses were tested at AHVLA in this quarter for lyssaviruses. All samples tested were negative.

**Illegal landing**  
A bat suspected to have originated in the USA was detected in a container on arrival in the UK. The bat was tested for lyssaviruses as a precaution, but was negative.

**Rabies surveillance in terrestrial wildlife**  
Vigilance continues for this notifiable disease in UK wildlife but no samples were submitted for testing this quarter. Two dogs and one cat that died in quarantine tested negative for lyssaviruses.

**West Nile surveillance on wild bird tissues**  
WNV surveillance in dead birds is planned to commence in April, to coincide with candidate vector activity season. Three horses with neurological disease were tested for WNV antibodies by ELISA, all with negative results.

Wildlife Zoonoses and Vector Borne Diseases Research Group, AHVLA Weybridge

Endoparasites in wildlife

**Trichinella surveillance in wild red foxes (*Vulpes vulpes*)**  
Surveillance of red foxes for *Trichinella* is ongoing, with 578 foxes from mainland Britain tested between October 2012 and April 2013. Funding is provided by the Food Standards Agency. All samples tested to date have been negative for *Trichinella*. Samples of cetaceans and pinnipeds were included in the testing, whenever they became available through our partner organisations.

**Echinococcus surveillance in wild red foxes (*Vulpes vulpes*)**  
A Defra funded one year study of red foxes for *Echinococcus multilocularis* was completed in April 2013 to provide further data to justify the UK’s disease free listing. Faecal samples from 398 foxes collected between October 2012 and March 2013 were examined for both *E. multilocularis* and *Echinococcus*
granulosus using an egg isolation procedure followed by PCR method, based on published primer sets with all samples negative.

**Taenia and related species in red foxes**

A non-specific primer set that amplifies *Taenia* spp. as well as *Mesocestoides*, *Dipylidium* and *Diphyllobothrium*, which may be commonly found in foxes, was used to test faecal material from foxes. Results for 20% of the samples indicated the presence of *Taenia* spp. or other closely related cestodes. Of 383 foxes tested between 2005 and 2008, 35% were positive and of 569 foxes tested between 2010 and 2011, 30% were positive. It is possible, therefore, that 20% is at the lower end of a normal prevalence for these species.

**NWMC**

**Taenia serialis in a wild rabbit from East Anglia**

A rabbit with unusual cyst-like sub-cutaneous lesions was submitted through the AHVLA Diseases of Wildlife Scheme (DoWS) to the AHVLA Laboratory in Bury St Edmunds. Following laboratory examinations the cysts were tentatively identified as those of the cestode parasite, *Taenia serialis*. The life cycle of this parasite involves a carnivore definitive host, often fox, with the rabbit being an intermediary host. It is considered that this parasite has a low zoonotic risk potential, significant clinical signs are not reported in any hosts, however the parasite is common in hunting dogs fed on wild rabbits and regular treatment of hunting dogs is recommended. This is the first case of *T. serialis* infestation in wild rabbits diagnosed by DoWS since inception of the Scheme in 1998.

Figure – Sub-cutaneous cestode cysts, presumptive *T. serialis*, in hind limb area of a wild rabbit.

AHVLA Bury St Edmunds

**First Seoul hanta virus in wild rodents in the UK**

An investigation by the Health Protection Agency (HPA), following a human case of Hantavirus infection in a farmer from Yorkshire, has resulted in the isolation of a hantavirus from wild rodents in the UK. This investigation confirms the presence of a pathogenic Seoul virus in Europe. Human infection probably arose from infected brown rats (*Rattus norvegicus*) present on the patient's property. Increased surveillance in rodents to ascertain if this virus is a new introduction to the UK or if rodents were endemically infected in the UK may be relevant.

http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20344

**Horizon scanning - Novel clade 2c betacoronaviruses in bats**

Novel clade 2c betacoronaviruses have been detected in *Pipistrellus* bats in Europe that are genetically related to the novel hCoV EMC/2012 virus that caused several human fatalities in 2012. Evidence of clade 2c betacoronavirus infection was detected in 15.1% of three pipistrelle species from the Netherlands, Romania and the Ukraine. These bat species are common in Britain and frequently roost in houses. This strengthens the evidence that hCoV EMC/2012 originated in bats and that bats may act as a reservoir for zoonotic coronaviruses. Surveillance for lyssavirus in UK bats is currently undertaken by AHVLA and this activity could possibly be extended to include other relevant pathogens.

AHVLA Weybridge
EMERGING AND ENDEMIC DISEASES

Wild bird submissions this quarter to AHVLA DoWS – January – March 2013*

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of ED1600 wild bird submissions</th>
<th>Number of ED1600 birds submitted</th>
<th>Number of wild birds examined</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>5</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>February</td>
<td>11</td>
<td>78</td>
<td>76</td>
</tr>
<tr>
<td>March</td>
<td>5</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

AHVLA DoWS (Diseases of Wildlife Scheme) wild mammal submissions January - March 2013*

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of ED1600 wild mammal submissions</th>
<th>Number of ED1600 mammals submitted</th>
<th>Number of wild mammals examined</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>15</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>February</td>
<td>12</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>March</td>
<td>17</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

*For each submission more than one carcase may be submitted; not all carcases are suitable for examination (e.g. severe autolysis may render the carcase unsuitable for postmortem examination)

Number of carcase submissions to the IoZ; January – March 2013 (and number of sites from which carcases were submitted)

<table>
<thead>
<tr>
<th>Birds</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passeriformes (‘perching birds’)</td>
<td>14 (10)</td>
</tr>
<tr>
<td>Columbiformes (pigeons and doves)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Psittaciformes</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Falconiformes, Strigiformes and Accipitriformes (birds of prey)</td>
<td>5 (5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mammals</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harbour porpoise (Phocoena phocoena)</td>
<td>16 (16)</td>
</tr>
<tr>
<td>Short-beaked common dolphin (Delphinus delphis)</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Humpback whale (Megaptera novaeangliae)</td>
<td>1 (1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amphibians</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common frogs (Rana temporaria)</td>
<td>20 (6)</td>
</tr>
</tbody>
</table>

During this quarter, eight amphibian morbidity and/or mortality incidents, comprising around 90 common frogs, were made directly to the IoZ. This low number of incidents may have been influenced by the long period of unseasonably cold temperatures experienced across GB until the end of March, which are likely to have caused a delayed emergence/spawning in the amphibian populations. Since the rise of ambient temperature at the beginning of April, which also coincided with the increasing collaborative work between the IoZ and Froglife (a non-government organisation committed to the conservation of
amphibians and reptiles; http://www.froglife.org), the number of reports has risen considerably. This should be reflected in the second quarterly report of 2013.

**Wild bird report from the IoZ**

A total of 44 avian morbidity and/or mortality incidents, comprising 23 different species, were received by the IoZ. The most frequently reported birds were chaffinches (*Fringilla coelebs*) with 30 birds from 7 sites, followed by great tits (*Parus major*) with 15 birds from 12 different sites and house sparrows (*Passer domesticus*) with 7 birds from a single site.

**Avian Pox**

Although no birds were submitted for postmortem examination with avian pox this quarter, 12 incidents of great tits with avian pox-like lesions were reported to the IoZ from 12 counties in England in Wales. Paridae pox has spread from an initial focus in South-East England, both northward and westward, and is now established as far as North Yorkshire and across Wales. Whilst Paridae pox is an emerging infectious disease of British birds with a characteristic peak in the late autumn months, cases previously have been observed throughout the calendar year (Lawson et al. 2012).

**Trichomonosis**

Trichomonosis was diagnosed in 4 of 20 birds examined during the first quarter, from four different incidents in four counties (Cambridgeshire, Cumbria, Nottinghamshire and Norfolk). These comprised two chaffinches; one collared dove (*Streptopelia decaocto*); and one Brambling (*Fringilla montifringilla*). Although the number of avian submissions was unusually low, these numbers are consistent with the seasonality of this disease which peaks during the late summer and early autumn (Lawson et al. 2012). However, contrary to previous years, no affected greenfinches (*Chloris chloris*) were submitted in this quarter.

Whilst bramblings are not one of the species in which finch trichomonosis has been frequently confirmed, this species is infrequently submitted for postmortem examination. Indeed, trichomonosis was confirmed in 6 of 7 bramblings (submitted from 7 sites in England) examined at the IoZ from January 2005 to March 2013, making it the most frequently diagnosed infectious disease in this species in recent years.

**Salmonellosis**

Salmonellosis caused by *Salmonella Typhimurium DT40* was diagnosed in a goldfinch (*Carduelis carduelis*) and a siskin (*Carduelis spinus*) found dead in two gardens in the same neighbourhood. No gross lesions were noted in the goldfinch but the siskin had diffuse liver enlargement and nodular enlargement of the spleen.
Nodules in the oesophagus were found in a chaffinch and a brambling (F. montifringilla) that had died at two different garden sites. A presumptive diagnosis of trichomonosis was made in the chaffinch, and Salmonella Typhimurium RDNC (reacts, does not conform) was recovered from the tissues of the brambling.

Six buzzards (Buteo buteo) from five different locations were examined in February. All appeared to have starved, possibly as a result of the prolonged cold wet weather. One bird also had severe necrotic stomatitis associated with large numbers of hairworms (Eucoleus sp.) and one bird had yellow nodules in the lungs and a caseous airsacculitis from which Aspergillus fumigatus was isolated. Another thin bird was X-rayed and there was evidence of two pieces of shot, but there were no injuries to suggest that shooting had been the cause of death. More wild birds that appeared to have died from starvation during adverse weather conditions were examined in March. These included three buzzards, a sparrowhawk (Accipiter nisus) and a kestrel (Falco tinnunculus). Two other thin buzzards had evidence of previous injuries that had most likely interfered with their ability to find food. A grey heron (Ardea cinerea) was found to have the wing of another bird with flight feathers measuring up to 18cm lodged in its gizzard. SAC C VS speculated that the heron had consumed this unsuitable material due to inability to find food.

An adult rook (Corvus frugilegus) was found alive but euthanized because it was thin and unable to fly. A large caseous mass surrounded the region of one shoulder joint, but no significant bacteria were isolated or demonstrated in smears. In addition over 50 white acanthocephala (thorny-headed worms) measuring 2mm in diameter and up to 12mm in length were present in the lower intestine, the wall of which was thickened. The identity of the thorny-headed worms was unclear.

Seven pigeons found dead near to a block of flats where about 50 of the birds were roosting were submitted for postmortem examination. One bird had extensive haemorrhage surrounding the liver and another had similar haemorrhages in the anterior 50% of the lung fields. A third had firm, pale, tan foci in the liver and a fourth had foci of crumbling brown material in the lungs. No influenza virus was detected in any of the birds; PPMV-1 was identified in two of three birds tested. Despite suspicions of rodenticide poisoning, no coumarin derivatives or other poisons were detected. No cause was identified to explain the haemorrhages, which did not appear to be traumatic, however histopathology of lung of the fourth bird listed above demonstrated numerous branching septate fungal hyphae consistent with Aspergillus sp.

Unusually large numbers of puffins (Fratercula arctica), guillemots (Uria aalge) and razorbills (Alca torda) were found dead on the east coast of Scotland or found dead further inland in March. Similar events were described on the east coast of England. Postmortem examination of birds submitted from Kirkcaldy, Arbroath and St Andrews showed that the birds had not been eating and had died in poor condition. Such mass mortality incidents, sometimes referred to as wrecks, are not unusual and are thought to arise due to a combination of adverse weather and inability to find sufficient food. Most commonly guillemots and razorbills are the species affected, but other species such as puffins can also be involved. A representative sample of birds was screened for avian influenza virus, with negative results.

SAC Consulting Veterinary Services

Wildfowl and Wetlands Trust (WWT) report January–March 2013

Passive surveillance of (mainly) waterbirds
Between January and March 2013, 51 wild birds of 12 species from five WWT centres (Slimbridge, Gloucestershire; Caerlaverock, Dumfries; Martin Mere, Lancashire; Welney, Norfolk; Arundel, West Sussex) were submitted for postmortem examination. The bird species examined were: mute swan (3), whooper swan (15), western greylag goose (1), common shelduck (2), mallard (4), northern pintail (1), European pochard (1), coot (4), moorhen (2), black-headed gull (5), wood pigeon (12) and sparrowhawk (1).

Infectious causes of death were responsible for 67% (34/51) of deaths including: 11 wood pigeons which died from trichomoniasis; nine cases of avian mycobacteriosis; three cases of necrotic enteritis in mute and whooper swans; haemorrhagic enteritis was responsible for the deaths of two black-headed gulls and a juvenile mute swan; two cases of aspergillosis in whooper swans; one shelduck death was caused by duck virus enteritis; and peritonitis was responsible for the death of a coot and a mallard.
Traumatic injuries were responsible for 18% (9/51) of the deaths, these injuries included: ruptured liver (a moorhen and a juvenile whooper swan), contusion and haemorrhage in the head and neck (coot and a black-headed gull), an abdominal injury (sparrowhawk), various leg injuries (resulting in euthanasia) in a mute and whooper swan and a mallard, and drowning (juvenile greylag goose).

Lead poisoning from ingested spent gunshot caused the deaths of five (10% (5/51)) whooper swans; between 4 and 28 lead pellets were found in the gizzards of these birds.

**Active Surveillance in swans**

Complete health screening results from mute swans and migratory Bewick’s and whooper swans caught at three sites during January and February are awaited. However, radiographs indicated 5/19 (26%) of the former to be carrying embedded shot in body tissues. A multi-partner illegal shooting project (involving countries and agencies across their flyway) is currently being developed at WWT.

**Avian diseases & NWMC**

NWMC/FERA continue to strengthen a strategic partnership with the Wildfowl and Wetlands Trust, WWT. The aims of this partnership are to provide scientific support to the WWT Wildlife Health Team and to enhance NWMC’s capability in the area of avian diseases.

**Suspected *Sarcocystis rileyi* in wild ducks**

Following a European wildlife disease web-based discussion group, photographs of lesions were circulated, showing lesions in the breast musculature of a Mallard duck (*Anas platyrhynchos*) from Finland, caused, or presumptively caused, by *Sarcocystis rileyi*. This parasite produces dramatic white, rice-grain sized streaks parallel to the muscle fibre grain in the musculature of affected ducks. The AHVLA Diseases of Wildlife Scheme (DoWS) had a case of sarcocystosis in a hunter-shot wild wigeon [duck] (*Anas penelope*) six years ago. Sarcocystosis was diagnosed histologically at the time, and the similarity of the lesions now suggests that the species is presumptively *S. rileyi*. Follow-up emails from the discussion group indicated that the disease has a widespread but very sporadic occurrence in Europe. This is the only case of sarcocystosis in waterbirds diagnosed by DoWS in its 15 year history of national wildlife disease surveillance. The zoonotic risk to humans is considered negligible, however the unaesthetic appearance of muscle would prevent eating - as was the case in the DoWS submission.

J P Duff AHVLA DoWs, Penrith

**Mass mortalities in sea birds off British coasts**

**Sea bird mass mortality in the English Channel considered to be due to PIB toxicity**

Mass mortality in sea birds, mainly guillemots (*Uria aalge*), but also gannets, cormorants, gulls and small numbers of puffins, 18 species in all, in the English Channel has been recorded on two occasions this year. With help from the RSPCA and local people, birds from both incidents were examined by AHVLA DoWS with consistent postmortem findings. Dead birds coated with a sticky substance that formed a scum on the feathers were first found in mid April on the South Cornish coast; however a second and probable separate incident occurred several weeks later with birds affected off the Devon and Dorset coasts. It was estimated that approximately 3,000 birds have been found dead or clinically affected by the sticky substance. The hundreds that have been found alive have been taken to wildlife rescue centres run by the RSPCA.

In marine pollution incidents affecting sea birds it is estimated that many more birds die unrecorded at sea than are found ashore (perhaps by factors of x3 – x10) however according to wildlife charities quoted by the press the dead body count alone makes this the worst sea bird mass mortality for decades, worse than that following the beaching of the MSS Napoli. The pollutant has been identified by Plymouth University as polyisobutene (PIB) which is a generic name for a synthetic chemical which can exist in forms from a gas to a solid depending on the length of the carbon chains in its molecules. The form involved in this incident, and the early case in February, is a waxy, sticky soft solid. Under the MARPOL convention (which regulates pollution from ships) PIB, although considered to present a hazard to the marine environment, can still be legally discharged in prescribed quantities directly into the sea under certain conditions. Several wildlife charities including the RSPB, RSPCA and Wildlife Trusts are requesting that international legislation should stop the discharge of PIB from ships into the marine...
environment. Charities, through press articles, are also advocating that the discharge of any chemicals from ships should be made illegal.

AHVLA DoWS Langford, Rachel Collins AHVLA Starcross

Mass mortality of puffins and other sea birds, East coasts of Scotland and England
A mass mortality of sea birds mainly puffins (*Fratercula arctica*) found on beaches along the East coast from Perth in Scotland, to Mablethorpe in Lincolnshire took place over a three week period up to the 3rd April 2013. Postmortem findings from birds submitted to AHVLA DoWS and SAC Consulting (see the Scottish report above) were consistent with starvation in all the birds examined by each Agency. Tests for AIV gave negative results. Several organisations are involved in the investigation and counts by individuals and groups estimate 2,000 and 1,000 dead puffins counted in Scotland and England respectively. The puffin is not the commonest sea bird in the area and the reason why they appear to be selectively affected is not clear. The English breeding population is variable but is approximately 20,000 birds. It is not known why these birds died of starvation or if this is linked to a wider potential threat to the East Coast marine environment. In addition, there may also be a threat to the relatively small English puffin breeding population; the few birds found with rings were ringed at the Farne Island colony.

AHVLA Penrith

Starvation in common buzzards (*Buteo buteo*) and oystercatchers (*Haemtropus ostralegus*)
Similar to cases noted in the Scottish Report, AHVLA DoWS has diagnosed starvation in three buzzards. Also in one incident on the Pennines, in a group of 13 oystercatchers – considered to be related to the prolonged winter weather conditions.

Mass mortality of corvids in Lancashire
More than 30 corvids were found dead in a woodland roost close to a reservoir. Postmortem examination did not reveal the cause of death and the case was referred the Wildlife Incident Scheme as a possible poisoning. The results were not available at the time this report was written.

AHVLA DoWS Preston

Mammalian diseases

Mycotic encephalitis in a grey seal
A 6-week-old grey seal (*Halichoerus grypus*) pup was presented for postmortem examination. Two days after admission to a local rehabilitation facility, the seal developed neurological signs and was euthanized. Gross examination was unrewarding; however histopathology of the brain detected a mild to severe subacute leuocytoclastic necrotising cerebral vasculitis, encephalitis and meningitis associated with intralesional fungal hyphae. A Periodic acid-Schiff stain suggested fungal morphology consistent with the order Zygomycetes, which to our knowledge has not been reported in association with meningoencephalitis in this species before. Unfortunately, the fungus could not be isolated on culture; attempts are being made to extract DNA from fixed tissue.

AHVLA Truro and Exeter University; AHVLA Preston.

Parasitic hepatitis in a grey seal
Multifocal pinpoint areas of pale discolouration throughout the liver were evident on postmortem examination of a Grey seal pup that had been found dead in a power station water intake. Histological changes in the liver were consistent with parasitic hepatitis which, although dramatic, did not appear to have compromised the liver parenchyma or bile ducts. It was suggested that starvation and stress was the most likely cause of death.

AHVLA Newcastle and Truro

Taenia and related species in red foxes
Lamb losses may be associated with infection of skeletal muscle with *Cysticercus ovis*, the metacestode (intermediate) stage of *Taenia ovis*, or infection of the liver with *Cysticercus tenuicollis*, the metacestode (intermediate) stage of *Taenia hydatigena*. Dogs and wild canids are the final hosts for both these parasites and pasture contamination with ova shed in faeces can result in ingestion by grazing sheep. A non-specific primer set that amplifies *Taenia* spp. as well as *Mesocestoides*, *Dipylidium* and *Diphyllobothrium* was used to test faecal material from foxes. Results for 20% of the samples indicated the presence of *Taenia* spp. or other closely related cestodes.

NWMC
UK deer seropositive for Schmallenberg infection
Serological confirmation of infection by Schmallenberg virus (SBV) in UK wild deer sampled between February and March 2012 was reported in the Veterinary Record. Limited blood sampling of deer in Southern Belgium and Austria has also confirmed SBV infection in those countries. Deer could be a transient reservoir host for SBV however no clinical cases or fetal malformations have been identified so far in wild deer species in Great Britain or continental Europe.


Starvation in British wild deer
In two submissions of fallow deer (Dama dama) and roe (Capreolus capreolus) starvation, usually with trichostrongylus worm and fluke parasitism, were diagnosed. Long winter weather conditions are likely to be at least a contributory factor (see starvation reports in the Bird Section).

Amphibian diseases

Ranavirus
Twelve common frogs (Rana temporaria) from 5 different sites were submitted to the IoZ for postmortem examination during the first quarter of 2013. Two out of 12 frogs (17%) from one site in Kent were PCR-positive for ranavirus using the protocol published by Mao et al. (1999). In addition, PCR testing was also performed on a further 14 amphibians (9 common frogs and 5 alpine newts [Mesotriton alpestris]) from five sites submitted in the last quarter of 2012: four amphibians from three different sites (three common frogs from Essex and Sussex and one alpine newt from Cornwall) were PCR-positive. Only 2/8 common frogs, from the same incident and site, presented gross postmortem lesions compatible with the haemorrhagic syndrome described for ranavirus. The state of carcass decomposition prevented detailed examination of the remainder of the specimens. However, all PCR-positive specimens originated from ponds where multiple amphibian mortality occurred; therefore ranavirus infection is a plausible cause of death.

Viruses in the genus Ranavirus, family Iridoviridae, infect amphibians, reptiles and fish. In amphibians, ranaviruses have been isolated from a range of free-living native and non-native species in Great Britain (GB). These include the common frog and the common toad (Bufo bufo) (Cunningham et al. 1999, 2007a, 2007b). Infection also has been found in free-living alpine newts in GB.

Ranavirosis in common frogs can cause two disease syndromes; ulcerative skin syndrome, characterized by dermal ulceration, and haemorrhagic syndrome, characterized by systemic haemorrhaging within the skeletal muscles and visceral organs (Cunningham et al. 1996). Other clinical signs include lethargy and loss of limb muscle mass. Amphibians can become infected by direct and indirect routes of transmission and the virus can be detected on dry surfaces for several months or even longer in the aquatic environment (Crashaw 2012).

Ranavirus infection often causes explosive disease outbreaks and in GB it has been shown to cause long-term population declines and population extinctions of the common frog (Teacher et al. 2010).

References


Cunningham AA, Hyatt AD, Russell P & Bennett PM (2007b) Experimental transmission of a ranavirus disease of common toads (Bufo bufo) to common frogs (Rana temporaria). Epidemiology and Infection 135: 1213–1216. doi:10.1017/S0950268807007935


**Amphibian Chytridiomycosis**

Twelve common frogs from five sites from this quarter and 17 amphibians from five sites from the last quarter of 2012 were screened for *Batrachochytrium dendrobatidis* (Bd) using a modified version of the protocol published by Boyle et al. (2004) and found to be negative.


Oak processionary moth in England

As previously reported in a Wildlife Quarterly Report, the Forestry Commission England (FCE) have again issued warnings about the oak processionary moth (OPM) which was accidentally introduced into England from continental Europe in 2006. The caterpillars damage oak trees by feeding on the leaves, in some cases defoliating the trees. The caterpillars pose a risk to human and animal health because they have tiny toxin-containing hairs which on contact can cause itchy skin rashes in people and animals. Eye and throat irritations have also been reported. The hairs can be blown in the wind and also left in the silken web-like nests which the caterpillars construct in oak trees. The risk period is between May and July, although the silken nests on the oak trees should not be approached at any time.

AHVLA Langford from FCE press reports

UK Priority and Conservation Concern Species

In collaboration with the Institute of Orthopaedics, Royal National Orthopaedics Hospital, Stanmore, we recently investigated the death of a satellite-tracked hen harrier (*Circus cyaneus*) on a grouse moor in Yorkshire and determined that there was a high probability that the bird had been shot, using a new forensic technique incorporating a scanning electron microscope equipped with an energy dispersive x-ray analyser, and receiving coverage in the media, including in The Independent, The Financial Times and BBC News On-line.

http://www.independent.co.uk/environment/nature/tests-reveal-that-rare-bird-of-prey--was-shot-illegally-8397633.html

Great Crane Project

Post release health monitoring of the released cranes found both *Eimeria gruis* and *reichenowi* cysts and *Echinuria unicinata*, a nematode, more frequently found infecting the proventriculus of wildfowl. *Campylobacter spp.* was isolated from one of six samples only. All samples were negative for *Salmonella* spp, *Yersinia* spp. and *E. coli* O157. No clinical signs were observed in any birds.

WWT Slimbridge
Horizon-scanning – other risks identified

Appendix 1

Diagnosis not reached Analysis January - March (Q1) 2013

The following is a summary of wildlife data analysed by the AHVLA 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

In the last 12 months (Q2 2012 – Q1 2013) there was a significant reduction in the proportion of submissions from wildlife for which a diagnosis was not reached despite reasonable testing (%DNR) compared with the previous year (Q2 2011 – Q1 2012). However, there was no significant change in the %DNR in the last 12 months compared with the last 5 years (Q2 2007 – Q1 2012) (Table 1).

For wild birds a significant reduction was also observed in the %DNR for the last 12 months compared with the previous year, and also the previous 5 years.

For wild mammals, there was no significant change in the %DNR when comparing submissions in the last 12 months with both the previous year and the last 5 years (Table 1).

Table 1. Changes in % of undiagnosed submissions for all wildlife, wild birds and mammals.

<table>
<thead>
<tr>
<th></th>
<th>Percentage of Submissions for which Diagnosis Not Reached with reasonable testing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Latest 12 months (Q2 2012 – Q1 2013)</td>
</tr>
<tr>
<td>All wildlife</td>
<td>9.78% (N=225)</td>
</tr>
<tr>
<td>Wild mammals</td>
<td>10.0% (N=160)</td>
</tr>
<tr>
<td>Wild birds</td>
<td>9.23% (N=65)</td>
</tr>
</tbody>
</table>

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

As previously, the low numbers of submissions per quarter, and the low number of DNRs mean comparisons by quarter is not reliable for the majority of species groups examined.

During the first quarter of 2013, no diagnosis was reached for 13 of the 45 wildlife submissions undergoing reasonable testing over the period. These were 11 mammals and two birds. Species for which a diagnosis was not reached include: one bat (species unknown), one roe deer (Capreolus capreolus), one fallow deer (Dama dama), one hedgehog (Erinaceus europaeus), two rabbits (Oryctolagus cuniculus), five red squirrels (Sciurus vulgaris), one swan (Cygnus sp.) and one blue tit (Cyanistes caeruleus).

Epidemiology, Surveillance and Risk Group, AHVLA Weybridge
## APPENDIX 2: International horizon scanning – wildlife disease
Summary of wildlife disease event monitoring for January – March 2013

<table>
<thead>
<tr>
<th>Date recorded</th>
<th>Species</th>
<th>Disease/Event</th>
<th>Type of agent</th>
<th>Country</th>
<th>Brief description/further information</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/01/2013</td>
<td>Waterfowl</td>
<td>Avian Bornaviruses (ABV)</td>
<td>virus</td>
<td>USA</td>
<td>Avian Bornaviruses and wild waterfowl</td>
<td><a href="http://www.ncbi.nlm.nih.gov/pubmed/23253163">http://www.ncbi.nlm.nih.gov/pubmed/23253163</a></td>
</tr>
<tr>
<td>05/01/2013</td>
<td>Crayfish</td>
<td>Chytrid fungus</td>
<td>fungus</td>
<td>USA</td>
<td>Crayfish have been spreading an amphibian epidemic</td>
<td><a href="http://www.promedmail.org/direct.php?id=20130105.1483017">http://www.promedmail.org/direct.php?id=20130105.1483017</a></td>
</tr>
<tr>
<td>03/02/2013</td>
<td>Rats</td>
<td>Hantavirus</td>
<td>virus</td>
<td>UK</td>
<td>Seoul Virus found in pet rats</td>
<td><a href="http://www.promedmail.org/direct.php?id=20130302.1567709">http://www.promedmail.org/direct.php?id=20130302.1567709</a></td>
</tr>
<tr>
<td>05/01/2013</td>
<td>Wild boar</td>
<td>Trichinellosis</td>
<td>parasite</td>
<td>Italy</td>
<td>Human cases of Trichinellas after consuming wild boar sausages</td>
<td><a href="http://www.promedmail.org/direct.php?id=20130104.1482068">http://www.promedmail.org/direct.php?id=20130104.1482068</a></td>
</tr>
<tr>
<td>06/02/2013</td>
<td>Crimean-Congo Hemorrhagic Fever Virus</td>
<td>virus</td>
<td>Morocco</td>
<td>Morocco</td>
<td>Crimean-Congo Hemorrhagic Fever Virus in ticks from migratory birds</td>
<td><a href="http://wwwnc.cdc.gov/eid/article/19/2/12-1193_article.htm">http://wwwnc.cdc.gov/eid/article/19/2/12-1193_article.htm</a></td>
</tr>
<tr>
<td>15/03/2013</td>
<td>Bats - potential</td>
<td>Coronavirus</td>
<td>virus</td>
<td>Worldwide</td>
<td>Researchers identify the target protein of a recently discovered human coronavirus, shedding light on infection and possible interspecies spread</td>
<td><a href="http://www.the-scientist.com/?articles/view/articleNo/34698/title/Novel-Virus-Entry-Portal-Found">http://www.the-scientist.com/?articles/view/articleNo/34698/title/Novel-Virus-Entry-Portal-Found</a> <a href="http://mbio.asm.org/content/3/6/e00515-12">http://mbio.asm.org/content/3/6/e00515-12</a></td>
</tr>
<tr>
<td>24/01/2013</td>
<td>Amphibians</td>
<td>Harmful effects of pesticides</td>
<td>pesticide</td>
<td>Research into harmful effect of common pesticides on frogs</td>
<td><a href="http://www.nature.com/srep/2013/130124/srep01135/full/srep01135.html">http://www.nature.com/srep/2013/130124/srep01135/full/srep01135.html</a></td>
<td></td>
</tr>
</tbody>
</table>