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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 National Wildlife Management Centre at AHVLA, 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 Partnership Quarterly Reports. The details of the individual partners’ areas of surveillance and research can be found at: http://www.defra.gov.uk/ahvla-en/files/pub-gbwsp.pdf

NOTIFIABLE DISEASES
Wildfowl and Wetlands Trust's (WWT) role in GB Avian Influenza Wild Bird Surveillance (AIWBS): January–March 2014
As part of the GB AIWBS, WWT conducted at least weekly patrols of its eight GB wetland reserves. Dead birds were reported from 6/8 reserves, constituting 27 individual birds of nine species (mute swan Cygnus olor (3), whooper swan Cygnus cygnus (14), pink-footed goose Anser brachyrhynchus (1), Canada Goose Branta canadensis (2), mallard Anas platyrhynchos (2), wigeon Anas penelope (1), lesser black-backed gull Larus fuscus (1), herring gull Larus argentatus (1) and black-headed gull Chroicocephalus ridibundus (2)). Cloacal and buccal swabs from all birds WWT Slimbridge

Great Britain AI Wild Bird Surveillance (AIWBS): January – March 2014
H5N1 Highly Pathogenic Notifiable Avian Influenza (HPNAI) was not detected from any of the 118 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 ‘wrecks’ associated with the extreme weather and storm conditions at sea experienced during January/February 2014, mortality of Starlings (Sturnus vulgaris) attributed to a murmuration ‘crash’ due to presumed in-flight error, and incidents involving feral pigeons where pigeon paramyxovirus (PPMV-1) infection was confirmed. Yersinia pseudotuberculosis and Trichomonosis were identified as the cause of a further wild pigeon mass mortality. 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).

Figure (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 AI virus result and species of bird</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found dead</td>
<td>118 (153)</td>
<td>Influenza A virus positive†, 1x Whooper swan (Cygnus cygnus) H5 LPAI‡, 1x Razorbill (Alca torda)</td>
<td>Scanning surveillance All-year-round</td>
</tr>
</tbody>
</table>

*Number of birds tested: figures for January – March 2013 are shown in brackets.
†Influenza A virus infection refers to the detection of influenza A viral RNA by Matrix (M) gene RRT-PCR test in samples from this bird. H5 RRT-PCR testing and attempted virus isolation in SPF embryonated fowls’ eggs were negative. This Whooper swan was found dead by a Warden Patrol.
‡H5 LPAI infection detected by molecular testing methods comprising initial M gene RRT-PCR followed by H5 RRT-PCR and HA cleavage site sequencing. N1 RRT-PCR and attempted virus isolation in SPF embryonated fowls’ eggs were negative. This Razorbill was reported by a member of the public.

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, but are also seasonally targeted in the winter and spring periods (March to October) each year.

During the period 01 January to 31 March 2014 (Q1-2014), a total of 301 Warden Patrols were performed at sites across GB. This compares with a total of 330 Warden Patrols performed during the same period in 2013 (Q1-2013) in GB. During Q1-2014, the Warden Patrols were mainly performed by two organisations; Natural England (n=135) and the Wildfowl and Wetlands Trust (WWT; n=136). Warden Patrols were also carried out by six other voluntary organisations. In total during Q1-2014, 25 wild birds found dead were tested, and evidence of influenza A virus infection was detected from one Whooper swan (Table 1). This compares with a total of 29 wild birds found dead and tested during Q1-2013, all with negative AI results.

In total, from 01 October 2013 to 31 March 2014 there were 621 (730) patrols carried out by nine organisations, of which 286 patrols were carried out by Natural England and 268 by the WWT. This was 109 fewer patrols than were reported in the same period during 2012/13. Overall, 49 wild birds found dead were tested, with negative AI results recorded for 48/49 birds and influenza A virus infection detected from one Whooper swan, as described above. During the same period of 2012/13 a total of 59 wild birds were found dead and tested, all with negative AI results. During the 2013/14 Warden Patrol season 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:


**Horizon-scanning**

AHVLA, in collaboration with Defra, monitors the international situation and distribution of avian influenza detections: [http://www.defra.gov.uk/animal-diseases/monitoring/poa/](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/](http://www.defra.gov.uk/ahvla-en/publication/wildlife-survreports/)

**References**


Richard Irvine, Avian Virology, AHVLA Weybridge

**ZOONOTIC DISEASES**

**Salmonellosis in wildlife AHVLA Diseases of Wildlife Scheme**

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. There were no isolations of any *Salmonella* species from wildlife during January –March 2014. Also there were no isolations of any bird associated S. Typhimurium DT40, DT56 or DT56 variant from any species during October - December 2013. 
Quality statement regarding this data: - UK 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.

Alex Barlow, AHVLA Wildlife Group

Salmonellosis report from IoZ

Passerine salmonellosis

Passerine salmonellosis has a marked seasonality, occurring principally during the winter months. The number of diagnosed incidents in Great Britain remained low this quarter as has been the case since 2009. Two salmonellosis cases were diagnosed, both of which had lesions with the characteristic appearance and distribution (i.e. involving oesophagus and spleen) of this disease. In February, a single lesser redpoll (Carduelis cabaret) with salmonellosis was found dead in a garden in Powys, Wales and S. Typhimurium DT 56(v) was isolated. In March, a siskin (Carduelis spinus) was submitted from a garden in southern Scotland and Salmonella Typhimurium U277 was recovered from this bird. Whilst the majority of passerine salmonellosis incidents diagnosed since the 1990s have been caused by S. Typhimurium definitive phage types 40, 56(v) and 160, a small number of other strains have been isolated on rare occasion (Lawson and others, 2014). These include S. Typhimurium U277 which was previously isolated from a house sparrow (Passer domesticus) submitted from West Yorkshire in 2005 (Garden Bird Health initiative, unpublished data).

In Britain, the S. Typhimurium phage types that commonly cause passerine salmonellosis are considered highly host-adapted to their avian hosts with a high degree of genetic similarity amongst isolates. Passerine salmonellosis is an important disease for study, not only as a cause of wild bird mortality but also because the bacterium may pose a threat to public, companion animal and livestock health. A recently published 20-year study, found that similar temporal and spatial trends of infection with these S. Typhimurium phage types occurred in both the British garden bird and human populations (Lawson and others, 2014). The hypothesis that garden birds act as the primary reservoir of infection for these zoonotic bacteria was supported by this study.

The bacterium may be shed in the faeces of infected birds. Since passerine salmonellosis outbreaks typically occur at and around feeding stations, which are potential sites of public exposure to sick or dead garden birds and their faeces, the public are advised to practise routine personal hygiene measures when feeding garden birds, or when handling sick wild birds. Further detailed information on best feeding practice for garden birds, including hygiene measures, is available at www.gardenwildlifehealth.org. Nevertheless, the risk of human infection is considered low and these garden bird-associated strains accounted for only 0.2% of the 147,495 Salmonella infections diagnosed in humans by Public Health England between 2000 and 2010 (Lawson and others, 2014).

Reference

Salmonellosis report from WWT

Salmonella in house sparrows

In the second half of January there was a small outbreak of salmonellosis in house sparrows in an off-show area at WWT Slimbridge. These birds inhabit an outhouse adjacent to the Slimbridge duckery and feed in neighbouring livestock farm buildings which house cattle and an associated dung heap. Around 8-10 dead birds were reported during a short period of about 15 days. Two birds (found dead on the 27th January) were submitted for postmortem examination and a sample was also sent to the AHVLA for serotyping.

Salmonella typhimurium Copenhagen, sub genus I, serogroup B, phage type 193 was isolated. This serotype has been reported in cattle previously (e.g. Baggesen and Wegener 1994; Hedge et al. 2005) but only rarely from wild birds (Lawson et al. 2010). No subsequent bird deaths have been reported from the remaining flock since this time.
References

Rabies and West Nile Virus surveillance

Passive surveillance for lyssaviruses in UK bats
Fourteen wild bats and two zoo bat carcasses were tested at AHVLA in this quarter for lyssaviruses. All samples tested were negative.

Rabies surveillance in terrestrial wildlife
Vigilance continues for this notifiable disease in UK wildlife but no samples from terrestrial wildlife were submitted for testing this quarter. One cat which was euthanized following human bite/scratch contact tested negative for lyssaviruses. Three cats which were illegally imported into Ireland also tested negative for lyssaviruses.

West Nile virus surveillance on wild bird tissues
Between January 1st and March 31st 2014, brain and kidney samples from three starlings, as part of a mass die-off of 50 or more birds, were tested with negative results by real-time PCR for WNV. West Nile Virus (WNV) surveillance in dead birds re-commences in April, to coincide with candidate vector activity season.

West Nile virus surveillance in Equids
Between January 1st and March 31st 2014, three horses were tested by cELISA for WNV. One of these was tested for international trade health certification purposes and was negative. Two were tested as part of differential diagnoses of horses with neurological signs. One of these horses had shown signs of ataxia, pyrexia and tachycardia followed by recovery and was negative by cELISA for WNV. The second horse was positive by cELISA for WNV but negative by IgM capture ELISA. The case notes of this horse, a 14-year-old polo pony imported from Argentina in 2004, described fitting and ataxia with no history of vaccination for WNV. A further blood sample was submitted a week later as part of an AHVLA notifiable disease investigation (NDI) and was again positive by cELISA but negative by IgM capture ELISA for WNV. These results indicated either a historic WNV infection or a serological cross reaction to infection with a related flavivirus. The horse made a full recovery and the NDI was closed.

Wildlife Zoonoses and Vector Borne Diseases Research Group, AHVLA Weybridge

EMERGING AND ENDEMIC DISEASES

RHDV2 in wild rabbits
Following several years where there were no diagnoses of Rabbit Haemorrhagic Disease (RHD), a small but sustained increase in RHD diagnoses in both domesticated and wild rabbits (*Oryctolagus cuniculus*) was noted at AHVLA. This, coupled with horizon scanning and consultation with experts in Brescia, Italy, lead to suspicions that the RHD virus type 2 strain may be present in the UK, having been first identified in France in 2010. Sequencing of viral isolates has now resulted in the identification of this strain in both wild and domesticated rabbits from England and Wales. RHD affects only the European rabbit and there is no known zoonotic risk. The available commercial vaccines are not reported as providing protection against RHDV2 and AHVLA has diagnosed RHDV2 in vaccinated animals. In the small number of identified RHDV2 outbreaks in wild animals there has been significant mortality and, although based on a very small dataset, there are suspicions that RHDV2 will replace classical RHD virus in both wild and domestic populations. Initial findings have been published and further papers are in preparation.
The Moredun Research Institute has also reported on commercial rabbits with RHDV2 in Scotland in a letter to the Veterinary Record.

Reference

AHVLA Diseases of Wildlife Scheme

Wild bird report from the IoZ

1 Finch leg lesions

Finch leg lesions consistent with ‘scaly-leg’ or ‘tassel foot’ are one of the most frequently reported conditions of British garden birds. Since they are highly visible (Figure 2), this condition generates considerable concern amongst the general public. As affected carcasses are infrequently recovered for examination (possibly because the causes are not generally fatal), we use symptomatic surveillance to monitor any trends in the occurrence of the condition. There are two known causes, a mite infestation (Cnemidocoptes sp.) and a viral infection (Fringilla papilloma virus). Chaffinch (Fringilla coelebs) is the species most frequently affected, however, rare cases of similar leg lesions have also been observed in bullfinch (Pyrrhula pyrrhula) and brambling (Fringilla montifringilla).

In this quarter, the Garden Wildlife Health project received reports of one or more finches with leg lesions from 124 sites from all nine English government office regions, North and South Scotland and Wales (Figure 3). Whilst the majority of reports originated from England, this geographical distribution might reflect observer effort rather than the true disease distribution. Of the total reports of passerine morbidity and mortality received over this period, reports of leg lesions accounted for 30% (183/600) of which 87% involved chaffinches (160/183) and 5% involved bullfinches (10/183). In bullfinches, 40% (10/25) of all reported incidents included leg lesions (five reports included the submission of photographic evidence). This indicates that the importance of this condition in bullfinches, a UK Biodiversity Action Plan-listed species, may have been previously underestimated.

Whether the prevalence of this condition varies by season is unclear however, 54% (56/104) of finch morbidity and mortality reports in January were associated with limb lesions followed by 56% (73/118) in February and 51% (45/88) in March.

A retrospective study of finches with leg lesions is underway, in collaboration with the Complutense University of Madrid and the AHVLA, using molecular, parasitological and histopathological techniques to evaluate the frequency of infection and the relative importance of the two known causative agents.
2 Avian trichomonosis

This quarter, trichomonosis was confirmed or suspected in 13 of 37 birds (four collared doves [Streptopelia decaocto], three greenfinches [Chloris chloris], two chaffinches [Fringilla coelebs], two sparrowhawks [Accipiter nisus], one feral pigeon [Columba livia], one house sparrow [Passer domesticus] and one siskin [Carduelis spinus]). These birds originated from 13 sites in 12 counties across England, Scotland and Wales.

Whilst finch trichomonosis incidents have a seasonal peak in the late summer months, which was particularly marked during the early years of epidemic mortality following the initial emergence of this disease (Lawson and others, 2012), finch trichomonosis mortality incidents occur year round. Indeed, in this winter quarter, finch trichomonosis was the most frequently diagnosed infectious disease of passerines examined at the IoZ, representing 7 of 11 of such cases.

The majority of passerines with finch trichomonosis (six of seven) that were examined had marked gross lesions characteristic of the disease (i.e. necrotic ingluvitis). However, one of the finches examined had minor or absent gross oesophageal lesions yet was culture positive for the *Trichomonas gallinae* parasite. A small number of similar finch cases were reported in 2013 (see 2013 4th quarter report). Histopathological examination of these cases is planned to differentiate early disease from potential parasite carriage.

Reference

3 Starling (Sturnus vulgaris) mortality incident due to trauma

A mass mortality incident involving over fifty starlings (*Sturnus vulgaris*) occurred in March in Greater Manchester. The birds were found in a semi-rural area on an exposed stretch of a busy single carriageway. The carcasses were discovered in the late morning on a clear and sunny day. A small number of moribund starlings were recovered at the site and died within a short period.

Post-mortem examinations were performed on three adult starlings (two male, one female) from the incident. Each bird was in excellent body condition and had recently fed on an invertebrate-based diet of normal appearance. Evidence of blunt trauma (including fractures of the coracoid, beak tip and severe internal haemorrhage) consistent with death following collision was present in each bird. Microbiological examination of the liver and small intestinal contents found no significant isolates. AHVLA Weybridge conducted RT-PCR screening of various tissues from each bird for avian influenza, West Nile virus and Usutu virus and all test results were negative.

Given the exposed locality, and since there was no known roost reported in the immediate area, it seems likely that the starlings were flying as a flock when the incident occurred. It is unclear what caused this incident. Speculative causes include a mistake in navigation that led to the birds to misidentify the road surface and to crash land, collision with a high-sided vehicle, and a weather anomaly, such as a sudden down-draft of wind. We have found no evidence to date of an underlying health condition which might have led to this incident.

There are previous reports of starling incidents where flocks of birds have been killed in road traffic incidents and concerns have been raised that these rare events may pose a risk to motorists. Various potential causes have been proposed, including roost proximity to roads, navigation error, predator evasion and distraction by local factors (e.g. traffic, light) (Duff 2013; Barlow and Sparkes 2014). It is also noteworthy that these incidents frequently generate media attention, as occurred in this incident, therefore prompt investigation is required to manage and alleviate public concern.

References
Wildfowl and Wetlands Trust (WWT) report January–March 2014

Passive surveillance of waterbirds

Between January and March 2014, 40 wild birds of 15 species from six WWT sites (Slimbridge, Gloucestershire; Caerlaverock; Dumfries and Galloway; Martin Mere, Lancashire; Arundel; West Sussex; Welney, Norfolk; London Wetland Centre; Greater London) and one reintroduction release site (Somerset Levels), were submitted for postmortem examination. The species examined were: European crane *Grus grus* (1), mute swan (5), whooper swan (15), Canada goose (1), pink-footed goose (1), mallard (4), wigeon (1), coot *Fulica atra* (3), herring gull (1), lesser-black-backed gull (1), black-headed gull (2), lapwing *Vanellus vanellus* (1), kingfisher *Alcedo atthis* (1), house sparrow *Passer domesticus* (2) and sparrowhawk *Accipiter nisus* (1).

Overall, infectious diseases were responsible for (or likely to be involved in) 38% (15/40) of deaths. Seven swans (five whooper and two mute) from three sites died with necrotic enteritis. Aspergillosis was responsible for three deaths (a mute swan, a whooper swan and a lesser-black-backed gull) and avian mycobacteriosis was the cause of death in a mallard and a coot. There was one case of pericarditis and peritonitis in two whooper swans. Details of a small outbreak of salmonellosis in house sparrows near some agricultural buildings at WWT Slimbridge are given above.

Traumatic injuries were involved in 23% (9/40) of deaths. Shotgun injuries resulted in the death of a pink-footed goose and a wigeon. Flying accidents precipitated the deaths of a mute swan which flew into power lines at WWT Martin Mere and a sparrowhawk which died with cerebral haemorrhages (likely caused by a collision whilst flying) at WWT Arundel. A European crane, which had been released as part of the Great Crane Project, was found with compound fractures of its left ulna and radius (likely following a flying accident); this bird was taken to the local RSPCA wildlife hospital however euthanasia was required. Parasites found within its proventriculus are being speciated currently. A whooper swan, with apparent lead poisoning, suffered severe head injuries possibly following attack by a conspecific. The cause of a deep puncture wound in the pectoral muscle of a kingfisher was unknown. Two female mallards drowned during forced copulation, a relatively common cause of death of female mallards in the springtime.

Lead poisoning was responsible for the deaths of three whooper swans. Between 1-5 lead shotgun pellets were found in the gizzards of these birds. There was also an unusual case of apparent copper poisoning in a Canada goose which had 12 grams of eroded copper wire in its gizzard.

Other causes of death included a coot with a gall bladder disorder, and two black-headed gulls one with renal failure and the other with visceral gout. A whooper swan with severe plumage damage (possibly from an oiling incident) was euthanized. A lapwing was too decomposed to allow full postmortem examination however three large unidentified nematodes were found in its air sacs.

WWT Slimbridge

Amphibian morbidity and mortality reports IoZ

Amphibian morbidity and mortality incidents involving one or more individuals were described at 52 sites in the first quarter. These comprised 41 common frog (*Rana temporaria*) reports, 10 common toad (*Bufo bufo*) reports and one report involving both common frog and smooth newt (*Lissotriton vulgaris*) species. The reports were from all nine English government office regions, North and South Scotland, and Wales. Post-mortem examinations were carried out on 30 amphibians from 14 sites which comprised 18 common toad and 12 common frog carcasses. There was only one mortality report in January and no carcass submissions which reflects the amphibian hibernation period. The anticipated seasonal increase in amphibian incidents occurred in early spring, with nine cases submitted for post-mortem examination in February and 21 cases in March. All 30 cases were negative for the chytrid fungus, *Batrachochytrium dendrobatidis* using real-time PCR testing of skin swabs.

Two common toads from a single-species multiple mortality event in West Sussex tested positive for ranavirus by real-time PCR testing. One carcass displayed a slight reddening of the skin; otherwise no obvious gross changes associated with ranavirus disease were seen in either case. Tissues will be examined histologically to determine if the cause of death in these amphibians can be attributed to

WWT Slimbridge
ranavirus infection. Samples tested from the remaining 28 amphibian carcases examined were RT-PCR negative for ranavirus.

On postmortem examination, we found evidence of significant trauma or predation in 27% (4/15) of amphibian mortality incidents submitted. Eurasian otter (Lutra lutra) predation was suspected as the cause of a mortality incident involving circa 12 common frogs in Scotland. Predation of anurans (frogs and toads) by otters can be recognised since they often skin carcases (Figure 4) and have a predilection for the hind legs of their prey in order to avoid toxins in the parotid glands of toads (Slater 2002; Cogălniceanu and others, 2010).

During mating, male anurans grasp females in a behaviour known as amplexus. Inappropriate amplexus, such as when multiple males attempt to mate a single female or when amplexus occurs between two males, is known to occur in frogs and toads and may lead to drowning (Davies and Halliday 1979; Sztatecsny and others 2006; Mollov and others 2011). This behaviour was suspected to be the cause of death in several incidents, although definitive diagnosis is often limited by the lack of specific abnormalities found on postmortem examination.

The results from this quarter emphasise that there are various infectious and non-infectious diseases that cause multiple mortality incidents in British amphibians which can only be determined by systematic postmortem examination and follow-up diagnostics.

References
IoZ

Aquatic animal diseases - CEFAS
Anguillid herpesvirus

Anguillid herpesvirus (AngHV-1) was first detected in eels sampled from a disease outbreak at a fishery (angling water) in the English Midland’s in 2009. The herpesvirus was then isolated in eel kidney cells from diseased eels collected during a second outbreak at an east Midland fishery in 2010. This virus was then used to develop an ELISA to detect antibodies to AngHV-1 in eel sera and was used to screen blood samples from eels collected by the Environment Agency, from 2011-2013, for an eel herpesvirus distribution survey. Yellow and silver eels have been sampled from rivers across England and Wales, including primary catchments in each River Basin District. Overall the seroprevalence of AngHV-1 has been low but some samples have shown moderate to high seroprevalence. In particular, eels collected from the River Parrett catchment have shown a high seroprevalence and the levels of antibodies in a small number of individual eels has been high.
Disease outbreaks have been reported at two more fishery sites in the north and east of England in 2013 and AngHV-1 was again detected and antibodies to the virus were also detected in surviving eels at both sites. To date, all of the disease outbreaks have occurred in still-water fisheries and it has been estimated, from post-event sampling, that up to 90% of the eel populations were lost during these events. Mortalities were reported between July and September of each year, with water temperatures between 17 and 21°C, and no other fish species have been affected. Eels examined from the affected sites measured between 520 and 1180mm and were aged from 17 to 26+ years. It has been proposed that the onset of silverying combined with barriers to escapement may have served as triggers for the disease outbreaks.

**CEFAS Weymouth**

**UK Priority and Conservation Concern Species**

**Great Crane Project**
Post release health monitoring of the released cranes found both *Eimeria gruis* and *reichenowii* cysts (*E. gruis* in three of five samples and *E. reichenowii* in all five samples). All samples were negative for *Salmonella* spp, *Campylobacter* spp., *Yersinia* spp. and *E. coli* O157.

**WTW Slimbridge**

**Red kite (Milvus milvus) disease surveillance**
Three red kites were examined at the IoZ this quarter. Two of these birds had internal haemorrhage consistent with traumatic injuries but which might have been due to, or exacerbated by, anticoagulant toxicity. Tissues from these cases have been submitted to the Predatory Bird Monitoring Scheme for routine toxicological monitoring.

**IoZ**

**Common dormouse (Muscardinus avellanarius) disease surveillance**
The Disease Risk Analysis and Health Surveillance (DRAHS) project at the IoZ performed retrospective postmortem examinations on 22 free-living dormice this quarter (comprising three adults, one juvenile and five litters of 3-5 neonates). An adult female dormouse that had been found dead in a nest box in Cambridgeshire had lesions consistent with predation (haemorrhage and fractures) that included a small (0.7mm diameter) circular puncture in the skull, possibly indicative of predation by a small mammal. In many cases, decomposition precluded a full diagnosis, but trauma consistent with predation was confirmed or suspected in five further cases (one adult, one juvenile and a litter of three neonates), and starvation was suspected to have contributed to the death of another litter of three neonates.

**IoZ**

**Sperm whale (Physeter macrocephalus) disease surveillance**
A 15.3 m male sperm whale (national reference SW2014/46, Figure 4) was found dead stranded on sandbanks in the Swale in Kent on 20th February. The body was eventually recovered and taken to the nearby port of Sheerness, where a Cetacean Strandings Investigation Programme (CSIP) team from ZSL attended and conducted a necropsy. The whale was judged to be in reasonable nutritional condition. The fresh nature of the carcass and stranding orientation/location were consistent with live stranding. The stomachs were empty, there was no evidence of recent feeding and the gastrointestinal tract contained pockets of bile stained fluid, indicating that the animal had not fed for some time prior to stranding. Both these sets of findings are consistent with many of the post-mortem examinations carried out on UK stranded sperm whales by the CSIP. From 2009-2013, a mean of five sperm whales have been reported
stranded around the UK, many of them on the North Sea coastline. Sperm whale strandings have occurred throughout recorded history, with many famous historical accounts, including mass strandings, in countries bordering the North Sea (Smeenk, 1997).

Reference

HORIZON-SCANNING – OTHER RISKS IDENTIFIED

*International horizon scanning – wildlife disease*

Summary of wildlife disease event monitoring for January – March 2014

<table>
<thead>
<tr>
<th>Date recorded</th>
<th>Species</th>
<th>Disease or Event</th>
<th>Country</th>
<th>Brief description/further information</th>
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<td>15/03/2013</td>
<td>Bats</td>
<td>Coronavirus</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/articleN">http://www.the-scientist.com/?articles.view/articleN</a> o/34698/title/Novel-Virus-Entry-Portal-Found/</td>
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<td>31/05/2013</td>
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<td>Chytrid fungus</td>
<td>Genome of the chytrid fungus shows more variation than excepted</td>
<td><a href="http://phys.org/news/2013-05-genome-clues-amphibian-killing-fungus.html">http://phys.org/news/2013-05-genome-clues-amphibian-killing-fungus.html</a></td>
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<td>31/05/2013</td>
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<td>Canada</td>
<td>Chytrid fungus widespread in British Columbia, Canada</td>
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<td>02/06/2013</td>
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<td>mass-die off</td>
<td>USA</td>
<td>Puffin die off - Climate change suspected</td>
<td><a href="http://beta.promedmail.org/direct.php?id=20130610.1765362">http://beta.promedmail.org/direct.php?id=20130610.1765362</a></td>
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