GB Wildlife Disease Surveillance Partnership


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Highlights

- *Mycobacterium avium paratuberculosis* (MAP) in wild rabbits
- Fungal disease in salmonids
- Amphibian disease surveillance

VIDA diagnoses are recorded on the APHA FarmFile database and SAC Consultancy: Veterinary Services LIMS 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 APHA and SAC C VS are widely acknowledged, and unusual disease problems tend to be referred to either. However recognised conditions where there is either no diagnostic test, or for which 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.

APHA VICs have UKAS Accreditation and comply with ISO 17025 standard. SAC C VS have UKAS accreditation at their central diagnostic laboratory and at the Aberdeen, Edinburgh, Perth, Ayr, Dumfries, Inverness, St Boswells and Thurso Disease Surveillance Centres which comply with ISO 17025 standard.

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INTRODUCTION

The GB Wildlife Disease Surveillance Partnership comprising the Animal and Plant Health Agency (APHA), Scottish Agricultural College Consulting (SAC Consulting), Institute of Zoology (IoZ), the Centre for Environment, Fisheries and Aquaculture (CEFAS), the Wildfowl and Wetlands Trust (WWT), Natural England (NE), the Forestry Commission England (FCE) and the Garden Wildlife Health (GWH) project produces the GB Wildlife Disease Surveillance Partnership Quarterly Reports.

NOTIFIABLE DISEASES

Avian Influenza Virus

Great Britain AI Wild Bird Surveillance (AIWBS): April – June 2015

H5N1 Highly Pathogenic Notifiable Avian Influenza (HPNAI) was not detected from any of the 133 found dead wild birds tested in Great Britain (GB) during the quarter, and infection with other influenza A viruses was also not identified (Table 1). Investigations also included wild bird mass mortality incidents (five or more wild birds of any species at any location in GB). For example, mortality of corvids (attributed to trauma) and two separate incidents involving mortality of mainly black-headed gulls (Chroicocephalus ridibundus) as well as small numbers of waterfowl, which were considered most likely to have been caused by avian botulism. 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 – 2nd 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>133 (85)</td>
<td>Nil</td>
<td>Scanning surveillance, all-year-round, including Warden Patrols.</td>
</tr>
</tbody>
</table>

of birds tested: figures for April - June 2014 are shown in brackets.

During October 2010 Defra revised AIWBS approaches in GB following changes to European Commission guidelines. The main emphasis is on AIWBS in found dead wild birds, including mass mortality incidents, and patrols of designated reserves by skilled wild bird ecologists and wardens. These Warden Patrols continue all-year-round, but are also seasonally targeted in the winter and spring periods (October to March) each year.

Members of the public are also asked to remain vigilant for mass mortality incidents and report these to the Defra Helpline: 03459 33 55 77 or 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
APHA, in collaboration with Defra, monitors the international situation and distribution of avian influenza detections: https://www.gov.uk/government/collections/animal-diseases-international-monitoring. As a result, Defra currently considers there is a heightened, but still low risk of introduction of notifiable avian disease into UK poultry throughout the year via a number of routes. This has been in place since November 2014 when H5N8 HPAI was detected from wild birds and poultry flocks in the UK and Europe (Defra 2015a,b). Furthermore, epidemiological investigations following the recent notifiable avian influenza events in the UK and Europe involving H5N8 HPAI, H7N7 Low Pathogenicity Avian Influenza (LPAI) LPAI and H7N7 HPAI viruses suggested recent introductions of virus from wild bird sources (Defra 2015b,c,d). Therefore, all poultry keepers are advised to maintain robust biosecurity measures, vigilance for clinical signs of disease and to promptly report suspected cases of notifiable avian disease to a local APHA office.

Further information regarding avian influenza in poultry and wild birds is available:

- Members of the public are also asked to remain vigilant for any wild bird mass mortality incidents and report these to the Defra Helpline: 03459 33 55 77 or 08459 33 55 77.
- APHA office contact details and further information about avian influenza, and when and how to register your poultry flock are available on the APHA website: https://www.gov.uk/government/organisations/animal-and-plant-health-agency.
- APHA, in collaboration with Defra, also monitors the international situation and distribution of avian influenza detections and further information can be found online at: https://www.gov.uk/government/collections/animal-diseases-international-monitoring#preliminary-outbreak-assessments.
- Information about the chargeable testing scheme offered in GB by APHA that enables veterinarians to request ‘Testing for Exclusion of notifiable avian disease’ in chicken and turkey flocks, in circumstances that would not require the implementation of statutory disease control measures (Gibbens and others, 2014): http://ahvla.defra.gov.uk/vet-gateway/nad/index.htm.

Avian influenza and Newcastle disease/PPMV-1 events, including H5 HPAI internationally, are also summarised in previous GB Wildlife Disease Surveillance Partnership quarterly reports: http://webarchive.nationalarchives.gov.uk/20140707135733/http://www.defra.gov.uk/ahvla-content/174/21/534.3.full.pdf+html

References


APHA Weybridge

Wildfowl and Wetlands Trust's (WWT) role in GB Avian Influenza Wild Bird Surveillance (AIWBS): April – June 2015

Between April and June of 2015 WWT conducted at least weekly patrols of its eight well established GB wetland reserves and ad hoc patrolling of the new WWT-managed wetland, Steart Marshes in Somerset. One hundred and twenty eight dead birds from 10 species were found on six reserves; 45 from nine species had cloacal and buccal swabs taken and these were submitted to APHA Weybridge for virological examination: whooper swan *Cygnus cygnus* (1), mute swan *Cygnus olor* (5), greylag goose *Anser anser* (4), common shelduck *Tadorna tadorna* (4), mallard *Anas platyrhynchos* (10), coot *Fulica atra* (4), moorhen *Gallinula chloropus* (1), black-headed gull *Chroicocephalus ridibundus* (15) and herring gull *Larus argentatus* (1). No AIVs were found. The discrepancy between number of dead birds found and submitted was due to a botulism outbreak at WWT Arundel at the end of June (see below).

WWT Slimbridge

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* Enteritidis phage type 11 was isolated from a rectal swab of an immature female hedgehog (*Erinaceus europaeus*) with diarrhoea. This was submitted from a wildlife hospital. S. Enteritidis phage type 11 is common and widespread in hedgehogs in England (Keymer and others, 1991). Robinson & Routh (1999) suggest that S. Enteritidis phage type 11 appears to be endemic in hedgehogs.

Bird variant *Salmonella* Typhimurium (Copenhagen) DT40 was isolate on three occasions from pheasants (*Phasianus colchicus*) on game farms. Two of these affected groups were chicks, four- to five-days-old. The other was from poults. There were no isolations of bird variant S. Typhimurium DT56 or DT56 from wildlife or domestic species during April – June 2015. It is suggested that host adapted salmonellae from garden birds may be a source of infection for domesticated species.

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

References


**APHA Diseases of Wildlife Scheme**

Passive surveillance for lyssaviruses in UK bats

Eighty wild bats and five zoo bat carcasses were tested at APHA in this quarter for lyssaviruses all with negative results.

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 dog that had died in quarantine and 10 puppies that had been illegally landed in UK, had shown neurological signs in quarantine and euthanased were all tested for rabies with negative results.

WNV surveillance in wild birds SV3045
Seventy five wild bird tissue samples representing 21 species were tested during the period 1st April – 30th June 2015, all with negative results.

**West Nile Virus surveillance in Equids**
Between 1st January and 31st March 2015 no equine serum samples have been submitted for WNV cELISA testing as part of investigation of neurological disease in horses.

Wildlife Zoonoses and Vector Borne Disease Research Group, APHA Weybridge

**EMERGING AND ENDEMIC DISEASES**

**Wild bird report from Scotland; April – June 2015**

Avian tuberculosis was diagnosed in an emaciated adult female common buzzard (*Buteo buteo*) which was found dead on farmland. Two large fawn coloured caseous masses were found in the caudal thoracic airsacs adjacent to the lungs. Histopathology revealed acid-alcohol fast bacilli in the lesions, with a chronic multifocal granulomatous pneumonia and airsacculitis consistent with mycobacterial infection. A very low residue of difenacoum was found in liver tissue as an incidental finding.

Spontaneous internal haemorrhage in a male barn owl (*Tyto alba*) was suspected to have been precipitated by exposure to anticoagulant rodenticides. The owl was found dead in a field in good bodily condition, and postmortem examination revealed haemorrhage into the thoracic air sacs, the pericardium and the right lung. There was no evidence of trauma. Toxicology screening confirmed the presence of low residues of difenacoum, bromadiolone and brodifacoum in liver tissue. Given the pathology seen and the combination of rodenticides present, it was suspected that the exposure to several rodenticides combined may have contributed to the death of the bird. The incident was recorded as an unspecified use case in the Wildlife Incident Investigation Scheme (WIIS) database.

Two incidences of detection of DDE, a breakdown product of the banned persistent organochlorine insecticide DDT, were seen.

In the first, a sparrowhawk (*Accipiter nisus*) found dead next to a public footpath, the cause of death was starvation due to a swollen, infected lesion on the dorsum of the left foot which prevented the bird from hunting. Toxicological analysis found a low residue of DDE in the scant fluid stomach content. This finding, along with the low residues of bromadiolone and difencoum found in liver tissue, were recorded as incidental.

In the second case, a juvenile female grey heron (*Ardea cinerea*) was submitted after being found dead on a footpath. It was in very poor body condition, and again, the only stomach and intestinal content was dark brown fluid consistent with altered blood and bile. A low residue (1mg/kg) of DDE was identified in liver tissue and recorded as an incidental finding.

Although an EU-wide ban on DDT was enacted over thirty years ago, a study into the prevalence of DDT in the environment in Scotland in 2010 - using eels (*Anguilla anguilla*) as a biomonitor species due to their high lipid content, longevity and limited freshwater ranges - found that the persistence of the banned pesticide was such that DDT and its derivatives were still detected in almost all samples taken from 30 sites in Scotland in 2010. Concentrations of DDE were, however, also found to be decreasing with time.

Necrotic enteritis was observed in an adult male mute swan (*Cygnus olor*) found dead in a pond in a park. One other showed malaise. Intestinal contents were fluid throughout and the mucosal surface appeared thickened and necrotic in areas. A low number of worm eggs were detected in intestinal content (50 eggs per gram). Histopathology revealed necrotic enteritis along with necrotic/fibrinous hepatitis and splenitis. The lesions in the liver and spleen were consistent with the effects of bacteria and their toxins. SAC C VS noted that, while NE in waterfowl can resemble that seen in domestic poultry, where it most often results from an overgrowth of clostridia following digestive disturbance/over consumption of certain types of fermentable foodstuffs, NE in swans has also been reported in association with cyanobacterial toxicity. The widespread feeding of swans and ducks in parks with highly processed white bread or large amounts of grain may therefore have been a predisposing factor in this case; however the presence of bright green cyanobacterial bloom on a pond, where present, represents another potential aetiology for this condition.
Two cases of death due to heavy intestinal parasitism and starvation were recorded in birds of prey. The first, a male peregrine falcon (*Falco peregrinus*) was found dead in very poor body condition on a farm. No food content was observed in the gastrointestinal tract, but the intestinal lumen contained a large number of nematode worms. In the second case, an adult buzzard (*Buteo buteo*) was found dead in very poor body condition in an area of rough ground on a golf course. Again, a lack of food material combined with at least 30 large nematode worms was observed in the intestinal tract.

References

SAC Consulting Veterinary Services

Wildfowl and Wetlands Trust (WWT) Report: January – March 2015

Passive surveillance of waterbirds
Between April and June 2015, 43 wild birds of 11 species from six WWT sites (Slimbridge, Gloucestershire; Martin Mere, Lancashire; Arundel, West Sussex; Caerlaverock, Dumfriesshire; Washington; Tyne and Wear; Steart; Somerset), were submitted for post mortem examination. Table 1 summarises the main findings.

<table>
<thead>
<tr>
<th>CAUSE OF DEATH</th>
<th>TOTAL</th>
<th>SPECIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avian botulism</td>
<td>9</td>
<td>8*2 x black-headed gull (5 x juv, 3 x adult), greylag (juv)</td>
</tr>
<tr>
<td>Avian mycobacteriosis</td>
<td>8</td>
<td>coot, 3 x mallard<em>1, 3 x mute swan, shelduck</em>1</td>
</tr>
<tr>
<td>Trauma (various causes)</td>
<td>6</td>
<td>2 x mallard, shelduck, coot, green-winged teal, oystercatcher*1 (juv)</td>
</tr>
<tr>
<td>Egg peritonitis</td>
<td>3</td>
<td>mallard, moorhen, greylag*1</td>
</tr>
<tr>
<td>Renal failure/nephritis</td>
<td>3</td>
<td>black-headed gull, coot, mute swan</td>
</tr>
<tr>
<td>Duck viral enteritis</td>
<td>2</td>
<td>shelduck, mallard</td>
</tr>
<tr>
<td>Aspergillosis</td>
<td>1</td>
<td>whooper swan</td>
</tr>
<tr>
<td>Cardiac failure (ruptured right ventricle)</td>
<td>1</td>
<td>common shelduck</td>
</tr>
<tr>
<td>Lead poisoning (with 2 lead pellets in gizzard)</td>
<td>1</td>
<td>whooper swan (juv)</td>
</tr>
<tr>
<td>Visceral gout</td>
<td>1</td>
<td>mallard</td>
</tr>
</tbody>
</table>
## Table 1. Primary causes of wild bird mortality (or morbidity requiring euthanasia) found at WWT reserves Apr-Jun 2015. *1/2 denotes one/two individuals euthanased. †Suspected avian botulism.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Count</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal haemorrhage (related to ruptured vessels in right testis)</td>
<td>1</td>
<td>mallard</td>
</tr>
<tr>
<td>Trematode infestation</td>
<td>1</td>
<td>greylag*1</td>
</tr>
<tr>
<td>No diagnosis</td>
<td>6</td>
<td>3 x black-headed gull<em>1, 1 x mallard, 1 x pintail, 1 x coot</em>1</td>
</tr>
</tbody>
</table>

This quarter saw some of the typical diseases for this time of year. There were two likely outbreaks of avian botulism featuring mainly black-headed gulls in nesting colonies from two different locations namely Martin Mere, Lancashire, beginning in mid-May and involving fewer than a dozen birds, and a larger outbreak at Arundel, West Sussex which began towards the end of June. Both outbreaks have a presumptive diagnosis of avian botulism based on clinical signs, epidemiology and the good body condition and lack of other obvious pathology from those carcases examined. Samples from the second outbreak are awaiting typing (including some fish samples which may be involved or incidental). The Arundel outbreak began in the same area as last year i.e. a large area of reedbed where it is difficult to detect carcases thus allowing the outbreak to become established. Thorough daily searches of the reedbed and surrounding areas to remove carcases and thus break the cycle of the intoxication were undertaken. The outbreak involved mainly black-headed gulls (~100) but also small numbers of wildfowl, rails (coot and moorhen) and corvids. At time of writing it would appear that the outbreak is under control and mortalities have reduced significantly.

Duck viral enteritis, with typical pathology, was likely responsible for two deaths (a shelduck and mallard) at Slimbridge. The trematodes responsible for morbidity of a juvenile greylag goose at Arundel are being speciated currently.

The traumatic injuries (fatal or requiring euthanasia) include two male mallards likely to have been involved in fighting (contusions to head, neck and back) and a juvenile oystercatcher (*Haematopus longirostris*) with a dislocated tibia and associated muscle damage.

Suspected avian botulism in waterbirds was investigated by APHA regularly last summer from late July onwards, with at least 18 submissions in total from mass mortality incidents during 2014. During July 2015 we have investigated one suspect incident and heard of a second, both in the south of England.

### Little tern mortality

Three dead little terns (*Sternula albifrons*), a scarce breeding species on British coasts, were found in a one square metre area of beach in the North-East of England in June. All were female and in poor to emaciated body condition. They had marked trauma to their beaks but interestingly only one beak (one mandible) on each bird was affected. Feather loss including loss of the primary flight feathers was also noted and one bird had a blood clot between the cerebral hemispheres. A possible cause of the trauma may be an attack by a larger bird species such as a crow which may have caught hold of the little terns' beaks and caused them to bend/break and may also have pulled out the flight feathers. The finding of the bodies together would suggest that the terns may have been defending nests. There are currently 40 birds on site and no eggs were being incubated. Some eggs were laid but were subsequently scavenged by crows due to the low number of little terns in the colony to defend the nests. In previous years there have been reports of about a hundred breeding pairs in the colony. There are concerns about malnourishment in the colony this year and birds have been seen courting without sand-eels, which is unusual. AIV and West Nile virus monitoring gave negative results.
A male black grouse (*Tetrao tetrix*) with severe unilateral conjunctivitis and sinusitis was submitted from a northern grouse moor to investigate whether it had respiratory cryptosporidiosis. This recently described condition causes sinusitis in red grouse (*Lagopus lagopus subsp scotica*) and on some shooting moors is responsible for significant mortality. In the current black grouse, PCR testing detected cryptosporidial nucleic acid however the parasite was not seen in stained preparations or on histopathology. We are concerned that the host range for the disease in red grouse may extend to the much scarcer black grouse that live in proximity to red grouse. Although several black grouse with sinusitis have previously been examined by APHA, convincing evidence that cryptosporidia were causing clinical disease and the sinusitis lesions noted was not found.

Second generation anticoagulant rodenticide poisoning may have contributed to the death of a female barn owl (*Tyto alba*) found dead below a roosting ledge. The ledge was part of an open barn which was known to have a mixed rodent population and where poison-baited rat boxes were regularly used. Although haemorrhages were not noted at post mortem examination, a partially digested rodent was found in the gizzard. Rodenticide analysis confirmed a high and likely lethal residue of a second generation anticoagulant in the owl's tissues.

Chronic, multifocal, non-suppurative myocarditis with intralocular nematodes was diagnosed histopathologically in an adult mute swan (*Cygnus olor*) that was found dead. The nematodes were most likely the result of an infection by *Sarconema eurycerca*, a filarial nematode which is transmitted by biting lice usually during the birds’ breeding season and which may, as in this case, cause occasional deaths. Gross examination of the bird revealed a severe pericarditis and pale 2mm foci scattered in the cardiac muscle particularly around the base of the heart.

Among birds submitted in unusual circumstances we detected a number of ‘background diagnoses’ in the quarter. These included egg-peritonitis in mute swans (*Cygnus olor*) and a Canada goose (*Branta canadensis*), emaciation in a red kite (*Milvus milvus*), lead poisoning in mute swans and carrion crows (*Corvus corone*) that had been shot and dumped in a field.

**APHA Diseases of Wildlife Scheme**

**Mammals**

**Reports from Scotland:**

Two cases of anticoagulant rodenticide poisoning of foxes (*Vulpes vulpes*) were recorded, one in Perthshire and the other in Inverness-shire. In the first, a pregnant vixen was found on a woodland path. Body condition was good and the mucous membranes were pale. A severe haemothorax, with mild bruising over the right lateral aspect of the ribs, were found. A high residue of bromadiolone (0.176 mg/kg) was found in liver tissue, along with a very low residue of difenacoum. The bromodialone level approached that which is considered significant (ref >0.2mg/kg), and when considered along with the pathological findings, it was thought likely that anticoagulant rodenticide toxicity contributed to the death, in conjunction with unidentified blunt trauma to the thorax. The incident was recorded as an unspecified use case in the WIIS database.
In the second case, bromadiolone residues within the anticipated lethal range were found in two foxes submitted by police after the discovery of three dead foxes on a small agricultural premises. Two of the carcases had six inch nails driven through the skulls. Residues of 0.850 mg/kg bromadiolone and 0.520 mg/kg bromadiolone were detected in liver tissue from two of the foxes. Autolysis hampered the investigation: the presence or absence of haemorrhage or other pathological evidence consistent with fatal rodenticide poisoning could not be evaluated. Intentional and fatal rodenticide poisoning was suspected.

*Mycobacterium avium paratuberculosis* (MAP) was detected in wild rabbits (*Oryctolagus cuniculus*) on Shetland as part of an ongoing study looking at the role of rabbits in the persistence of Johne’s disease in cattle. This is a longitudinal study mapping the trajectories of MAP prevalence in sympatric rabbit and cattle populations: the aim is to further understand whether rabbits undermine paratuberculosis control in cattle, or if infection in sympatric cattle populations is the main driver of infection in wild rabbits. A random sample (up to 24 rabbits) was shot on each participating farm - some premises with a persistent prevalence of Johne’s disease and some without. Samples from the appendix, small intestine, large intestine, sacculus and mesenteric lymph node were pooled for each rabbit. Out of 86 pools tested this quarter, 33 were positive for MAP on culture and PCR. The farms will be repeatedly sampled over subsequent years.

**SAC Consulting Veterinary Services**

**APHA Wildlife Reports: Mammals**

Three harbour seals (*Phoca vitulina*) were submitted in July to the APHA Diseases of Wildlife Scheme (DWS) following positive Point of Care Test (PoCT) results for Influenza virus. Tissue testing by PCR at APHA Weybridge gave negative results for Influenza virus in tissues and swabs taken from the three animals. A more detailed report on the post mortem findings will follow in the next Wildlife Quarterly Report.

In June, a dead harbour seal pup was submitted for post-mortem examination from the North-East coast of England. It was autolysed and there was a minimal blubber fat layer. The lack of milk within the gastrointestinal tract suggested either agalactia in the dam, stillbirth/unviable pup or death as a consequence of abandonment.

Dead rabbits (*Oryctolagus cuniculus*) were found in the grounds of a hospital where rodenticide was used and this was queried as the possible cause of death. The precise number of deaths was not known and two rabbits were found and submitted. Myxomatosis was diagnosed in the fresher carcase and an outbreak of the disease, which occurs regularly in Britain, was assumed to be the cause of the deaths.

**APHA Diseases of Wildlife Scheme**

**AQUATIC ANIMAL DISEASES**

**Fungal disease in wild migratory salmonids**

The oomycete fungal pathogen *Saprolegnia pasitica* is ubiquitous in the freshwater environment and can infect a wide range of fish. Post-spawning adult salmonids are particularly prone to infection, and wild Atlantic salmon (*Salmo salar*) and sea trout (*Salmo trutta*) exhibiting extensive skin lesions are frequently observed in rivers in autumn and winter.

Unusually, during the spring of 2015, reports were received of salmon smolts on their seaward migration with skin lesions in the dorsal area of the back. In some rivers over 5% of smolts were affected. The only pathogen consistently isolated from the lesions was *Saprolegnia*. Such lesions are unusual in salmon smolts. As *Saprolegnia* will not survive in full seawater it is hoped that these lesions will resolve once the smolts reach the sea.
Furthermore there has been an increase in the number of reports of fungal infections in adult Atlantic salmon and sea trout in the rivers of south-west England. The Environment Agency and the Cefas Fish Health Inspectorate are monitoring the situation to establish the extent of the problem.

CEFAS

UK Priority and Conservation Concern Species

WILD BIRDS

Summary findings from the scanning surveillance of birds of prey

From January to June 2015 inclusive, a total of 33 birds of prey have been examined post mortem from 31 sites from eight English government office regions and North Scotland. This represents a marked increase in the number of submissions when compared with the 45 birds of prey examined over the whole year in 2014. The reason for this increase is not understood but may partially reflect the success of the established collaboration with the RSPB Investigations Unit who refer cases of suspected bird of prey persecution for examination to Institute of Zoology (IoZ), in addition to reports received direct from the general public through the Garden Wildlife Health website.

Of those carcases in which the cause of death could be ascertained, 76% (13/17) died due to trauma. The high proportion of birds of prey that had suffered trauma indicates the importance of non-infectious disease as a cause of death in this group of birds. In eight birds, trauma due to persecution was suspected due to various causes such as projectiles and traps.

Three birds died due to infectious disease which comprised two tawny owls (Strix aluco) and a sparrowhawk (Accipiter nisus) with trichomonosis.

During the same time period, we have suspected pesticide poisoning as the cause of death for three raptors and referred samples from these cases to the Wildlife Incident Investigation Scheme (WIIS) for toxicological analyses.

We routinely collect a suite of tissue samples from every bird of prey that is examined, for submission to the Predatory Bird Monitoring Scheme (PBMS). The PBMS is a long-term, national monitoring scheme that quantifies the concentrations of contaminants in the livers and eggs of selected species of predatory and fish-eating birds in Britain.

In addition, tissue samples are collected for flavivirus screening at APHA Weybridge during the period of peak insect vector abundance, April to September inclusive.

IoZ and Royal Society for the Protection of Birds Investigations Unit

Great Crane Project

Post-release health screening of faecal samples from free-living cranes in Somerset released as part of the Great Crane Project included the majority of samples being positive for Eimeria gruis and E. reichinowi (8/10 and 9/10) respectively. Trichostrongyles were found in 2/10 samples. Some 7/10 faecal samples were positive for Campylobacter spp. All were negative for Salmonella spp, Yersinia spp and E.coli O157. No clinical consequences were noted.

WWT

Corncrakes reintroduction project and disease surveillance

The corncrake (Crex crex) reintroduction programme in the Nene Washes, Cambridgeshire is continuing. Following the diagnosis of metabolic bone disease in captive-bred corncrakes in 2012 and 2013, and further dietary analysis, the birds’ diets were adjusted again in early 2014 and this has reduced the incidence of this condition.

IoZ
MARINE MAMMALS

Pygmy sperm whale stranding

A pygmy sperm whale (*Kogia breviceps*) was reported dead stranded at Weston-Super-Mare in Somerset on 16\textsuperscript{th} May. A Cetacean Strandings Investigation Programme team from IoZ carried out a field necropsy and found that the 2.96m adult male whale was in moderate nutritional condition at death. A copious volume of sediment and muddy water was present throughout the oesophagus and the first two stomachs, indicating that the whale probably live stranded prior to death. IoZ

Pygmy sperm whale (SW2015/150) stranded at Weston-Super-Mare in Somerset (Images credit CSIP-ZSL)

Possible fin whale ship strike

The body of a fin whale (*Balaenoptera physalus*) was brought into Harwich Port on the prow of a vessel inbound from Egypt on 14\textsuperscript{th} June. The remains of the whale subsequently stranded on land adjacent to the port that is owned by the Royal Society for the Protection of Birds. Approximately 9.4m of the whale was intact, with around a third of the body missing. No evidence of haemorrhage was found during the field examination, which although not conclusive, may indicate the whale was already dead prior to being ship-struck. IoZ

Fin whale (SW2015/189) stranded near Harwich harbour (Images credit CSIP-ZSL)

AMPHIBIAN REPORTS

Amphibian morbidity and mortality reports

(a) Anuran (frog and toad) reports

Anuran (frog and toad) morbidity and mortality incidents involving one or more individuals were described at 50 sites in the second quarter of 2015, the majority of which were reported in April, at the end of the breeding season. These came from 29 different counties across England, Wales and Scotland. The species comprised common frog (*Rana temporaria*) at 42 sites and common toad (*Bufo bufo*) at eight sites.
Post mortem examinations were conducted on 33 anurans from 21 sites which comprised 31 common frog and two common toad carcasses. These anurans came from 17 different counties across England and Scotland. This represents over a 50% increase in the total number of anurans examined during this quarter when compared to 2014.
All anurans were negative for the chytrid fungi, *Batrachochytrium dendrobatidis* (*Bd*) and *B. salamandrivorans* (*Bs*) and ranavirus using real-time PCR testing.
Ranavirus infection has been known as a cause of amphibian mortality in GB since the 1990s. The FV3-like strain of the virus is reported to occur in GB and has been shown to cause long-term population declines of the common frog in the UK (Teacher and others 2010). In response to the emergence of the novel ranavirus, Common Midwife Toad Virus (CMTV) in continental Europe (Price and others 2014; Kik and others 2011; Sharifian-Fard and others 2011), we are performing a retrospective study of British ranavirus samples using a recently developed qPCR methodology for virus detection supported by sequencing to confirm they are of the FV3-like clade and to determine whether these findings support current understanding that the UK is free from CMTV and therefore at risk of incursion.

The majority (28) of frogs and toads were submitted during April; three were submitted in May and two were submitted in June. Mating season is the time of the year when frogs are more active and therefore more visible and most of the frog and toad mortality reports are received during this time of the year. During the breeding season, female frogs and toads are occasionally drowned or die due to problems that could be associated with breeding activity. In many of the cases we examined, the cause of death could not be determined, with significant findings being limited to thin or emaciated body condition and variable loads of intestinal metazoan parasites. There was evidence of trauma and/or predation in only two of the anurans. Histopathological examination of tissues from the three freshly dead common frogs examined to date revealed no significant lesions and confirms the presence of intestinal nematodes, cestodes and trematodes. Further investigations are needed to determine which factors play a role in the peak observed mortality during the mating season (March-April).

(b) Newt reports

From January to June 2015 inclusive, 14 mortality incidents involving newts were reported from nine sites from all nine English government office regions, Scotland and Wales. Of these, three reports involved the death of two or more newts and one multiple mortality incident comprised of smooth newt and common frog deaths. A total of 15 newts were examined post mortem, comprising 13 smooth newts (Lissotriton vulgaris), three great crested newts (Triturus cristatus) and a palmate newt (Lissotriton helveticus) from five sites across England including two in the East of England, two from the South East and a single report from Yorkshire. The reports from two of these sites involved multiple mortality of smooth newts (three and four deaths respectively) and a third report involved both smooth newt and great crested newt deaths (total observed mortality six newts). The other newts examined post mortem were all from sites with single animal mortality.

All newts tested negative for the infectious agents, ranavirus, Bd and Bs using real-time PCR testing.

Since the emergence of Bs in the Netherlands and Belgium in 2013 (Martel and others 2013) we have been vigilant for newt mortalities, particularly incidents with multiple mortalities or those involving the great crested newt (known to be highly susceptible to Bs on experimental challenge). In response to the detection of Bs in a captive collection the UK in spring 2015, the IoZ and others published a letter in the Veterinary Record calling on veterinary professionals to be vigilant for this disease (Cunningham and others 2015). In addition, the IoZ co-ordinated creation of an advice document, in collaboration with BIAZA, RAWG, WWT, ZSL, APHA, Caudata.org, REPTA and OATA, detailing how to minimise the risk of inadvertently spreading amphibian diseases within or between captive collections and also to wild populations.

References


**Pool frog disease risk analysis (DRA)**

Pool frogs (*Pelophylax lessonae*) were reintroduced from Sweden to England between 2005 and 2008. We undertook a DRA prior to reintroduction and we have subsequently monitored the health of the released frogs and native amphibians. A further intervention is underway; head-starting frog spawn from the reintroduction site to supplement the population. Therefore, the DRA has been updated to take these changes into account and recently disease risk management protocols have been produced to cover the second reintroduction site.

**REPTILE REPORTS**

**Reptile morbidity and mortality reports**

During the months of April, May and June, a total of four reptiles were examined, two grass snakes (*Natrix natrix*), an adder (*Vipera berus*) and a smooth snake (*Coronella austriaca*) from three different sites in three counties across England and Wales.

A total of 96 dead reptiles and amphibians were received in April from a fire site at Ash Ranges, Surrey. These comprised 77 slow worms (*Anguis fragilis*), eight adders, three sand lizards (*Lacerta agilis*), three unidentified lizards and a grass snake. Around 160 hectares of heathland were burnt during the fire, which was almost certainly started deliberately. Amphibian and Reptile Conservation (ARC) staff and volunteers searched around 40 hectares of the most suitable habitat to rescue live animals and recover dead ones. In total around 70 live amphibians and reptiles were rescued, and relocated to safe, unburnt areas of the site.

The fire service did an excellent job of tackling the enormous blaze. The extremely dry conditions in April, combined with strong winds, seem to have exacerbated the ever-present threat of fires on heathlands. Sadly, many other sites in southern Britain suffered heath and grass fires this spring. ARC and other land managers are working to mitigate the impacts by enhancing remaining unburnt habitat, and ensuring that recolonization will be feasible when the vegetation eventually regrows.

Most of the carcasses were unsuitable for post-mortem examination, due to severe burning of soft tissues. Post mortem examination of the grass snake revealed no significant gross findings. Histopathology is pending and may help determine if the snake died as a consequence of smoke inhalation.
Smooth snake post-release health surveillance, Surrey
Smooth snakes (*Coronella austriaca*) have been reintroduced to several sites in England and post-release health surveillance of these populations is ongoing. In June 2015, three individuals in West Sussex were examined and all were in good health. Smooth snake populations at the reintroduction sites are apparently stable.

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INVERTEBRATE REPORTS

Wart-biter cricket disease risk analysis (DRA)
Wart-biter cricket (*Decticus verrucivorus*) populations have been reintroduced after captive breeding in the late ‘90s. Currently a translocation is planned in East Sussex. The donor and recipient site were visited with representatives from Natural England in July 2015 and a DRA was prepared for this upcoming intervention.

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