Contents

Introduction & Overview 2
Notifiable Diseases 2
Zoonotic Disease 4
Ongoing new and re-emerging diseases and unusual diagnoses and horizon scanning 6
UK Priority and Conservation Concern Species 13

Highlights

- Increased threat of incursion of avian influenza virus H5N8 into the UK 2
- Threat of possible incursion of Usutu virus incursion into the UK 5
- Predicted emergence of RHD2 in wild hares in Britain 7

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.
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. :- https://www.gov.uk/government/publications/wildlife-disease-surveillance-reports-2016

OVERVIEW
Issues and trends. Possible emergence of three pathogens/emerging diseases in wild species
2. Usutu virus incursion in wild birds – Recent widespread isolations in the Netherlands from blackbirds (Turudus merula) and captive owls indicate that this disease may occur in Great Britain this year (unlikely as vector mosquitoes now near the end of the their flight season) or next year during the vector season from April to the end of October. Please be aware of this disease, the likely target species and blackbirds and owls, particularly captive owls.
3. Emergence of RHD2 in brown hares (Lepus europeaus) in Britain is considered likely. Please report unusual mortality in hares to the nearest APHA Veterinary Investigation Centre.

NOTIFIABLE DISEASES
Avian Influenza Virus
RISK: Exotic notifiable disease; threat to UK farming, international trade and potential zoonosis

H5N1 Highly Pathogenic Notifiable Avian Influenza (HPNAI) was not detected from any of the 96 found dead wild birds tested in Great Britain (GB) during the quarter. Evidence of other influenza A virus infection was detected in a tufted duck, found dead in Greater London during August (Table 1). This included investigations of wild bird mass mortalities such as the investigation into the mortality event in Arctic Terns on the Skerries, Anglesey, in July. The last detection of H5N1 HPNAI in wild birds in GB was during January-February 2008, from ten Mute swans and one Canada goose (Branta canadensis) in South Dorset (Defra, 2008).

Table 1: Number of wild birds tested and results in GB – 3rd 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>88 (116)</td>
<td>Influenza A viral RNA was detected in the cloacal swab from a Tufted Duck. No H5 viral RNA was detected and live virus was not isolated.</td>
<td>Scanning surveillance All-year-round</td>
</tr>
</tbody>
</table>

*Number of birds tested: figures for July - September 2015 are shown in brackets.

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**. 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 by entering the following link into a internet search engine:-
https://www.gov.uk/guidance/avian-influenza-bird-flu

During the period 01 July to 30 September 2016 (Q3-2016), a total of 151 Warden Patrols were performed at sites across GB. This compares with a total of 149 Warden Patrols performed during the same period in 2015 (Q3-2015) in GB. During Q3-2016, the Warden Patrols were mainly performed by one organisation, the Wildfowl and Wetlands Trust (WWT n=136). Warden Patrols were also carried out by four other voluntary organisations. In total during Q3-2016, 19 wild birds found dead were tested, with no evidence of influenza A virus infection detected. This compares with a total of 35 wild birds found dead and tested during Q3-2015, again, all with negative AI results.

Overall, from 01 July 2016 to 30 September 2016, 29 birds were found through patrols, of which 19 were sampled. This is 10 fewer birds found (39) and 16 fewer birds sampled (35) than for July 2015 – September 2015. Mallards (9) were the most common target species found and birds were most commonly found in the South East region with the lowest numbers in Scotland, East, North East, North West and the Midlands.

**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](https://www.gov.uk/government/collections/animal-diseases-international-monitoring). Most recently, in June, the Russian Authorities have reported H5 HPAI viruses of the 2.3.4.4 clade in several species of wild bird in Tuva Republic region, on the border with Mongolia, and the virus strain has been confirmed as H5N8 by the EURL (Defra, 2016e). As a result, Defra currently considers there remains an ongoing, low, but heightened, risk of introduction of notifiable avian influenza to the UK via a number of routes, including wild birds (Defra, 2015a, b, c and d and f).

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 in poultry to APHA:

- In England – call the Defra Rural Services Helpline on **03000 200 301**. The Helpline is open Monday to Friday, 8.30am to 5pm and there is an out of hours facility on the same number for reporting suspicion of disease in animals.

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

- When and how to register your poultry flock, and which species must be registered in Great Britain: [https://www.gov.uk/guidance/poultry-registration](https://www.gov.uk/guidance/poultry-registration).
- 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](http://ahvla.defra.gov.uk/vet-gateway/nad/index.htm).


**References**

Defra (2008) Highly pathogenic avian influenza - H5N1 in swans in Dorset. Epidemiology Report. 1A Page Street, London, SW1P 4PQ, United Kingdom. 12 February 2008 - available online:
d/diseases/atoz/ai/documents_epi/epireport-080212.pdf [accessed 24 October 2016]

Defra (2016a) Preliminary Outbreak Assessment - Outbreaks of H7N8 avian influenza in poultry in the USA. Ref: VITT/1200 HPAI in USA; 19th January 2016 - available online:
Jane Clark, Avian Virology, APHA Weybridge

Wildfowl and Wetlands Trust’s (WWT) role in GB Avian Influenza Wild Bird Surveillance (AIWBS): July – September 2016

WWT’s avian influenza surveillance was undertaken between July and September 2016 by conducting at least weekly patrols of its eight well established GB wetland reserves and ad hoc patrolling of the WWT-managed wetland, Steart Marshes in Somerset. Seventy three dead birds of 11 species were found from seven reserves, 18 of which had cloacal and buccal swabs taken and these were submitted to APHA Weybridge for virological examination. No AIVs were found (the discrepancy in numbers of samples submitted is related to an on-going predation and possibly other disease issue in a black-headed gull (Chroicocephalus ridibundus) breeding colony – only a representative sample of which were submitted for virological testing. See below for more details).

RISK: AIV, targeted active surveillance of wetland birds

WWT Slimbridge

ZOONOTIC DISEASES

APHA Diseases of Wildlife Scheme (DoWS): Salmonellosis in wildlife

THREAT: Zoonotic, farmed and pet animal risk

July - September 2016

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. Occasionally it is isolated from small-scale surveys. Two hedgehog (Erinaceus europaeus) hoglets were submitted from a hedgehog rescue centre. There had been a number of recent deaths with affected animals showing rapid weight loss, light green slimy diarrhoea and death within a relatively short period. Endoparasitism had been diagnosed by faecal examination in some previous cases. Endoparasitism due mainly to intestinal fluke was involved as the cause of death of one these hoglets. Salmonella septicemia/enteritis due to Salmonella Enteritidis phage type 11 was diagnosed as the cause of rapid...
death of the other hoglet. Cleansing and disinfection advice was given regarding this zoonotic disease and that the rescue centre should contact their PVS for treatments. Subsequent screening of other hedgehogs was carried out but no further cases of salmonellosis were identified. 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. There were no reports of bird variant S. Typhimurium DT40, DT56 or DT56v from domestic species.

References

Quality statement regarding these 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 and Wales.
No salmonella infections were identified by DoWS this quarter.
Alex Barlow, APHA Diseases of Wildlife Scheme

Report from Wildlife Zoonoses and Vector Borne Disease Research Group; 3rd Quarter 2016

THREAT: Zoonotic, farmed, pet animal and international trade risk

Passive surveillance for lyssaviruses in UK bats
Two hundred and eighteen wild bats and 6 zoo bats were tested for Lyssaviruses at APHA in this quarter. Two of the wild bats were positive and all others tested were negative. Of the two positive wild bats, one juvenile Daubenton’s bat (Myotis daubentoni) was found dehydrated and undernourished in the daytime at Bolton Abbey, Yorkshire and died whilst attempts were made to revive it. No contact with humans, no biting or scratching was recorded. The second bat, also M. daubentoni was found weak and distressed on a footpath at Haydon Bridge, Northumberland and also died whilst attempts were made to revive it. No human biting or scratching incidents were recorded.

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.
Three cats (of which one was a death in quarantine and two were suspects) and 6 dogs (one quarantine, one suspect and 4 illegal landings) were also tested, all returning negative results for Rabies.

WNV surveillance in wild birds SV3045
Seventy-three wild bird tissue samples representing 24 species were tested for WNV during the period 1st July – 30th September 2016 all with negative results.

West Nile virus surveillance in Equids
One serum sample from a horse showing neurological signs was tested for WNV by cELISA with negative result.
One hundred and thirty three horses destined to travel to The Olympic Games in Rio as well as third countries were tested by cELISA for WNV, all with negative results.
Paul Phipps, Wildlife Zoonoses and Vector Borne Disease Research Group, APHA Weybridge

Flavivirus surveillance
IoZ routinely collects brain and kidney samples from all wild bird post-mortem examinations during the mosquito season, April to September inclusive, for flavivirus surveillance (including West Nile virus (WNV) and Usutu virus). In 2016, we submitted samples from 75 birds from 72 sites for testing at APHA, of which 42 have been screened to date using WNV-specific real-time PCR and were negative: results from the other samples are pending.
Usutu virus originates from South Africa but has caused multiple mortality incidents of wild birds in Europe since 1996, in multiple countries including Italy, Austria, Spain, Croatia, Hungary, the Czech Republic, Germany and Switzerland. In 2016, Usutu virus was detected as a cause of multiple mortality of wild birds in the Netherlands, particularly affecting blackbirds (Turdus merula).
Targeted surveillance for Usutu virus has been undertaken in GB through retrospective screening of archived wild bird tissues using PCR and no evidence of infection was detected (Horton and others, 2012): this study, combined with subsequent surveillance findings, supports the understanding that Usutu virus is not currently circulating in British wild birds. In light of the recent findings in the Netherlands, vigilance has been raised for blackbird multiple mortality incidents. In total, reports of blackbird morbidity or mortality have been received from 38 sites in 2016, of which 22 were received in Q3. The majority involved single birds only. Three reports involved two dead blackbirds; trauma was confirmed at post-mortem examination as the likely cause of death in one incident (Wiltshire February 2016); trauma was suspected based on the history in the second incident (Worcestershire August 2016), and no apparent cause of death was available in the third incident for which carcasses could not be recovered for examination (Oxfordshire August 2016). Post-mortem examinations were performed on four blackbirds in Q3 submitted from four sites: the likely causes of death included two birds with trauma, one with trichomonosis and one undetermined. Samples from these blackbirds have been submitted for Usutu virus screening by real time-PCR at APHA and the results are pending.

References:

Ongoing New and Re-emerging Diseases, Unusual Diagnoses and Horizon Scanning

Mammals

Report from Scotland; July – September 2016

Threat: OIE Listed disease

Myxomatosis was diagnosed in two juvenile rabbits (Oryctolagus cuniculus) which were two of four that had been brought into a home in East Lothian by the resident domestic cats. At necropsy, poor body condition, periorbital swelling and ocular and nasal exudate were noted. The significance of this case lay with the fact that the owner had mistaken the animals to be leverets, and had become very concerned that there was a potential new highly infectious and fatal disease of European brown hares in the area. Myxomatosis is also one of the OIE listed diseases, the incidence of which is reported twice yearly to the OIE.

Threat: Zoonotic disease

Multi-systemic Toxoplasma gondii infection was diagnosed in Perth in an adult female grey squirrel (Sciurus carolinensis) which was found moribund in a garden in Fife and bit a human shortly before death. At necropsy, body condition was reasonable, the lungs were moderately congested and the larynx contained mucus. The stomach contained feed material, the liver showed occasional pale spots and the spleen appeared slightly enlarged. The uterus contained three mid-gestation feti. Histopathology found a non-suppurative panencephalitis, nonsuppurative interstitial pneumonia and non-suppurative myocarditis. Protozoal structures were seen in the brain. T. gondii DNA was detected in lung and brain tissue: this protozoan has previously been recorded as the cause of encephalitis and interstitial pneumonia in Sciurus carolinensis.

This case caused alarm in the patient exposed to the bite, and consequent concern in the health professionals involved in the medical treatment and care of the patient afterwards. The patient commenced a course of amoxicillin and clavulanic acid on the day of the bite and no adverse clinical outcome was reported.

Reference:

Caroline Robinson, SAC Consulting Veterinary Services
APHA Diseases of Wildlife Scheme (APHA DoWS) Report Mammals

Rabbit Haemorrhagic Disease 2 (RHD2) was detected in wild rabbits (*Oryctolagus cuniculus*) from different locations on three occasions. In the Midlands, 5 animals were easily caught by the submitter’s dogs with another 4 deaths reported by neighbours, describing the animals as appearing ‘stunned’. One animal was received and this had a haemorrhagic carcase. A second, unrelated, case from the Midlands showed CNS signs including opisthotonus and fitting prior to death. Only one dead rabbit was found and this was submitted. Finally, another single animal was submitted and confirmed as RHD2 PCR positive from the South west England. In the last two cases no other rabbits were reported dead in the vicinity. It is therefore difficult to assess what the prevalence of the disease is in many areas where it has occurred and it is assumed that many affected rabbits die underground in warrens.

With reports of RHD 2 Virus causing mortalities in wild brown hares (*Lepus europaeus*) in Spain, France and Italy, the APHA Diseases of Wildlife Scheme has encouraged submission of animals from hare mortality incidents. Three separate submissions of three animals were received. One in good condition was a victim of trauma and no disease processes were found. The animal was pregnant with well-developed foetuses and no evidence of superfetation, sometimes seen in hares. In another submission, a juvenile hare in poor condition with enteritis, coccidiosis was diagnosed. The animal had behaved abnormally prior to death. In the case of the third animal, amyloidosis was diagnosed from histopathological findings. Two animals were examined for European Brown Hare Syndrome Virus (EBHSV) and RHD 2 virus with negative results. APHA DoWS considers that at some time in the future RHD2 is likely to occur in hares in Britain. The few reports from the continent indicate local mortalities may occur but have not been significant. RHD2 in hares in itself is significant because it indicates an increased host range for a virus which has previously been confined to the European rabbit.

**Summary, Threat – changes in epidemiology of lagoviruses in wild (and domesticated) lagomorphs including a new RHDV variant (RHDV2) and expanding host range for RHDV.**

*Mycobacterium bovis* was diagnosed from lesions in gralloch submitted from a wild red deer (*Cervus elaphus*) from the South-west of England. **Threat to livestock from notifiable disease, possible (rare) zoonosis.**

An adult roe fallow deer (*Dama dama*) found in a garden in South West England showing vague CNS signs was euthanased and submitted to APHA DoWS. The animal had post mortem findings of hepatopathy and histological examinations are on-going. Also following the confirmation of Chronic Wasting Disease (CWD) in deer in Norway, the brain stem was screened for CWD but with negative results. CWD causes nervous signs and wasting.

A wild boar (*Sus scrofa*) was seen alive early in the morning in a garden in Southern England but was dead within half an hour. No obvious external wounds were seen however post mortem examination revealed trauma considered probably to be the result of a road traffic collision. There was no evidence of tuberculosis.

**Summary, Point for information – public nuisance potential from wild boar in domestic settings**

An otter (*Lutra lutra*) submitted in Wales was found dead 2 miles from a river where a possible pollution incident had occurred. It was emaciated with no food in the stomach. No other pathology was noted and death was thought to have been due to starvation.

**Biodiversity point for information – species now recovering after decades of population depression.**
Metaldehyde Poisoning of badger (*Meles meles*); Wildlife Incident Investigation.

A dead badger was submitted from woodland that backs onto a suburban area. Blueish staining of the perineal area had been noticed. This was a boar in good bodily condition. There was scant contents in the stomach which was discoloured blue/green. The contents of the rest of the intestinal tract were a striking turquoise colour (photo). Metaldehyde poisoning was suspected and a high level of metaldehyde was confirmed in the intestinal contents. However exposure to several anticoagulant rodenticides was also found. **Summary including threats:** illegal poisoning of protected species, danger to livestock and pets.

**APHA DoWS**

**WILD BIRDS**

**APHA Diseases of Wildlife Scheme: Birds**

Over 500 terns, predominantly Arctic terns (*Sterna paradisaea*), were found dead over several weeks at a breeding colony. They were found spread over a wide area of land, often in sternal recumbency, several with wings outstretched, whilst at the colony many decaying carcases were present. A few affected birds that were seen alive, were easy to approach and flew off a short distance before landing, or were found on the ground weak, unresponsive and unable to move before death. The clinical signs, gross post-mortem findings, with minimal pathological lesions, minimal food material in intestinal tracts, and laboratory findings with lack of evidence of an infectious disease and positive ELISA tests for *Clostridium botulinum* toxin type III (C/D) from intestinal samples, were consistent with the involvement of botulism. Avian Influenza Virus (AIV) was not found in the several submissions of birds that were received (nor in submissions of waterbirds to APHA DoWS made during the year to date, including the other cases here).

**Summary – biodiversity threat**

Duck Virus Enteritis (DVE) was diagnosed in a mute swan (*Cygnus olor*) found dead in a lake in Yorkshire in July. This timing was unusual as the disease is usually seen in the spring months, or less frequently in the autumn, associated with migration. The disease, often carried subclinically by wild waterbirds, is a potential cause of significant loss in domesticated birds, and farmers require good site biosecurity to prevent incursion of waterbirds particularly on migration. This year APHA investigated an outbreak of DVE in commercial waterbirds.

**Summary – potential threat to livestock from DVE**

Six mute swans were found dead in the Cardiff area over a period of two weeks, a local wildlife rescue centre were involved in further cases and reported this and malnourished birds. Only one bird was available for submission, and post mortem revealed nasal leeches, tape worms and emaciation. Some authors suggest that leeches may contribute to mortality in young swans. The bird was examined for DVE, no evidence was found from histopathology or viral examination. DVE was important to exclude because the disease caused a mass mortality in mute swans in this area which is an important communal moulting area for mute swans in 2012.

**Summary – suspicions of DVE after previous swan mass mortality in this area**
During the summer months APHA DoWS investigated several suspect avian botulism mass mortalities. In one from the Midlands, eight mallard (Anas platyrhynchos), four tufted ducks (Aythya fuligula) and a black headed gull (Larus ridibundus) were submitted. Carcase autolysis was prevalent; the presumptive diagnosis of botulism was based on the clinical history and the lack of specific pathology and pathogens. A further, large, suspect botulism outbreak occurred for the second year running in the south of England. Over the summer, 150 water birds of a variety of species died in a municipal lake. Six birds were submitted, in reasonable condition with no obvious pathology. Clinical history, post-mortem findings and the lack of pathogens were suspicious of botulism. A further suspect botulism case occurred in Essex with 15 ducks and four cygnets affected.

**Summary – point for information, public concern from waterbird mass mortality in water bodies**

Eight immature herring gulls (Larus argentatus) were submitted from a site in East Anglia. The birds were emaciated, feed material was not present in the gizzards of any and moderate intestinal parasite infestations were seen. Starvation was the suspected cause of the deaths, possibly linked to inexperience in food foraging in immature birds.

**Summary – unusual mass mortality incident**

A sparrow hawk (Accipiter nisus) was received from the police as it was suspected to have been shot. At post-mortem, trauma consistent with being shot confirmed the suspicion.

**Summary – illegal killing; helping with police enquiries**

A juvenile house martin (Delichon urbica) found moribund on the ground and dying shortly afterwards, was infested with louse flies (Crataerina hirundinis). House martins are a known host for this relatively large dipteran ectoparasite and also for the martin bug (Oeciacus hirundinis – which was not found) both of which live on the birds and in the birds’ domed nests. This juvenile was thought to have died from starvation and abandonment, with louse fly ectoparasites possibly contributing. Only one bird was found, however the colony had produced very few young this year. Predation of martin nests by jackdaws (Corvus monedula) was observed and considered to the primary cause of the colony failure.

**Summary – point for information, unusual ectoparasite.**

**Amyloidosis and necrotic enteritis in mute swans (Cygnus olor)**

An adult cob mute swan and a cygnet were received. Both were in poor bodily condition. The adult swan had an enlarged liver, which was friable. The kidneys were also pale and mottled. Histology revealed the presence of Congo Red positive material in both the liver and kidney, confirming the suspected diagnosis of amyloidosis. The significant finding in the cygnet was a necrotic intestinal mucosa, typical of necrotic enteritis. This is predisposed by supplementary feeding with grain, which may have occurred in this case. Elsewhere, among swan submissions, avian tuberculosis was diagnosed. Routine screening for AIv and West Nile Virus (WNV) were negative in all swan submissions.

**APHA DoWS**

**Wild bird report from the IoZ**

**Finch trichomonosis**

Finch trichomonosis is an emerging infectious disease (EID) first confirmed in GB in 2005 that has since spread to continental Europe, likely through migrating chaffinches. This parasitic condition, caused by a clonal strain of Trichomonas gallinae, has caused epidemic finch mortality each subsequent year in GB (Lawson and others 2012). Greenfinch (Chloris chloris), chaffinch (Fringilla coelebs) and goldfinch (Carduelis carduelis) are most commonly affected by finch trichomonosis and criteria have been developed based on the number of sick and dead birds of these species observed which are used to identify suspected incidents. During Q3 2016, GWH received reports from members of the public of suspected finch trichomonosis incidents from a total of 224 sites. Sick or dead chaffinches were observed at 55 sites; greenfinches at 163 sites and goldfinches at 67 sites: multiple finch species were affected at some of these sites. Incidents had a wide distribution across all nine England government office regions (total 201 sites), with the largest number in the East of England (total 61 sites), Scotland (total 9 sites) and Wales (total 14 sites). Whilst finch trichomonosis incidents are diagnosed year round, there remains a seasonal peak in Q3, particularly
August/ September. The absolute number of suspected finch trichomonosis incident reports received in Q3 was large; however, analyses of systematic surveillance data collected by citizen scientists, once available, is required to compare the scale of mortality in 2016 with recent years. Post-mortem examinations were conducted on 33 garden birds and trichomonosis was confirmed or suspected to be the cause of death in 19 of these submitted from 14 sites: these comprised, 10 greenfinch, 5 chaffinch, 2 goldfinch, one blackbird (Turdus merula) and one robin (Erithacus rubecula). As reported in Q2, the most recent Breeding Bird Survey data (Harris and others 2016) indicate an ongoing population decline with a 60% reduction in the UK breeding population of greenfinch since the disease emerged (2006-2015), which is believed to have occurred as a result of this EID. This represents the greatest mortality of a British wild bird due to infectious disease on record. Garden Wildlife Health (GWH) continues to provide the public with information on best practice for feeding garden birds, on the signs of ill health in affected birds to look out for, and recommends temporary removal of supplementary food and water at sites with disease outbreaks to encourage dispersal of finches, reducing the opportunities for parasite transmission between birds of the same or different species (www.gardenwildlifehealth.org).

**Summary including possible threats – Alert:**

**Biodiversity threat to British populations of greenfinch with continued significant population decline, animal welfare, cause of considerable public concern**

IoZ

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**Wild bird report from Scotland; July – September 2016**

Avian tuberculosis was diagnosed in a female adult mute swan (Cygnus olor) which was one of a pair living in an old quarry in Fife. It was found dead by a member of the public with an apparent hole in the dorsum. Body condition was very poor, and severe pneumonia and polyserositis were noted at necropsy. Histopathology confirmed the condition to be due to infection with an acid alcohol fast organism consistent with Mycobacterium avium.

This case did not post a significant threat to human health, but did cause alarm to a member of the public, who mistook the finding for a shooting due to lesions of predation on the dorsum.

**THREAT: unusual/new disease presentation**

Adenocarcinoma of intestinal origin was diagnosed in an adult female red grouse (Lagopus lagopus) which had been found dead on a managed moor in Perthshire. At necropsy, body condition was very poor, and small, gritty pale white nodules were seen in the lung, liver and throughout the pancreas, mesentery, and intestinal serosa. Histopathology revealed a well differentiated adenocarcinoma which bore a close resemblance to normal intestinal epithelium. The tumour present in a piece of intestine appeared to be continuous with normal non-neoplastic mucosal epithelium, providing convincing evidence that the primary tumour was an intestinal adenocarcinoma, with multiple metastases in lung, liver and pancreas/mesentery.

The significance of this case lay with the fact that adenocarcinomas of intestinal origin are rare in birds, and a literature search did not reveal any other reports of such a tumour in wild red grouse.

**THREAT: unusual/new disease presentation**

Forty starlings (Sturnus vulgaris) were submitted after discovery in a small swimming pool in a garden in Ayrshire. They were all in good bodily condition and showed no obvious signs of trauma, and no evidence of disease or poisoning was detected following investigation. ‘Pilot error’ (following the flight path of the leading bird) and consequent drowning were suspected in this case. Suspected pilot error has been reported in several cases of mass mortality of starlings.

The presentation of this case as a mass mortality necessitated investigation, and the location in a body of water in a residential garden caused concern to the residents in the area.
Reference:

Peritonitis due to *Erysipelothrix rhusiopathiae* was diagnosed in a buzzard (*Buteo buteo*) found dead in a wood in Dumfrieshire. Poor body condition and greenish grey deposits on the abdominal air sacs were noted at necropsy and *E. rhusiopathiae* was isolated from the liver and air sacs.

**THREAT: threats to biodiversity**
Louping ill was diagnosed in a red grouse (*Lagopus lagopus*) which was found weak and recumbent on a managed moor on which the female breeding grouse were showing ill thrift. The population density had been low, with surplus grouse for shooting not available for several years. Tick attachment and poor condition were noted at necropsy. Louping ill serology returned a positive result.

Caroline Robinson, SAC Consulting Veterinary Services

**Wildfowl and Wetlands Trust (WWT) report**

**July – September 2016**

**Passive surveillance of waterbirds**

Between July and September 2016, 19 wild birds of 10 species from four WWT sites (Slimbridge, Gloucestershire; Arundel, West Sussex; London Wetland Centre, Greater London and Steart, Somerset), were submitted for *post mortem* examination (Table 1). The birds examined were: mute swan (*Cyanus olor*) (4), Canada goose (*Branta canadensis*) (2), western greylag goose (*Anser anser*) (2), common shelduck (*Tadorna tadorna*) (1), mallard (*Anas platyrhynchos*) (4, including one hybrid), gadwall (*Anas strepera*) (1), coot (*Fulica atra*) (1), moorhen (*Gallinula chloropus*) (2), black-headed gull (1), and collared dove (*Streptopelia decaocto*) (1).

<table>
<thead>
<tr>
<th>Primary cause of death</th>
<th>Total</th>
<th>Species (and notes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma</td>
<td>5</td>
<td>Mute swan, greylag, 2 x moorhen (1 x juv), collared dove</td>
</tr>
<tr>
<td>Avian mycobacteriosis</td>
<td>2</td>
<td>Mallard (with tapeworm infestation)(euthanased), mute swan (with pododermatitis)</td>
</tr>
<tr>
<td>Intestinal infection</td>
<td>2</td>
<td>Gadwall (juv), Canada goose* (juv)</td>
</tr>
<tr>
<td>Euthanasia due to blindness/cataract</td>
<td>1</td>
<td>Mallard (hybrid)</td>
</tr>
<tr>
<td>Gall bladder disorder</td>
<td>1</td>
<td>Mute swan (in very poor body condition with shrunken liver as well as highly enlarged gall bladder)</td>
</tr>
<tr>
<td>Gizzard impaction</td>
<td>1</td>
<td>Greylag goose (juv)</td>
</tr>
<tr>
<td>Hepatitis</td>
<td>1</td>
<td>Canada goose (in poor body condition)</td>
</tr>
<tr>
<td>Euthanasia on welfare grounds due to poor</td>
<td>1</td>
<td>Shelduck (juv) (with endo and ectoparasitic infection)</td>
</tr>
<tr>
<td>body condition and leg damage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal failure</td>
<td>1</td>
<td>Mute swan</td>
</tr>
</tbody>
</table>
No gross abnormalities found  1  Black-headed gull (euthanased – possible avian botulism based on clinical signs)

No diagnosis  3  2 x mallard (1 x downy), coot (poor body condition, enlarged spleen and kidneys)

<table>
<thead>
<tr>
<th>Causes of Mortality</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>No gross abnormalities found</td>
<td>1</td>
</tr>
<tr>
<td>Black-headed gull (euthanased – possible avian botulism based on clinical signs)</td>
<td>1</td>
</tr>
<tr>
<td>No diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>2 x mallard (1 x downy), coot (poor body condition, enlarged spleen and kidneys)</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 1. Primary causes of wild bird mortality found at WWT reserves Jul-Sep 2016.

This quarter’s ‘found dead’ birds included a number of juveniles as to be expected for the time of year including losses from parasitic infections and traumatic causes of death. The latter included one mute swan which died at WWT Steart Marshes from a suspected dog attack and a greylag which was seen injured and was eventually found dead with multiple gunshot wounds in its torso and legs (including multiple fractures). Another case of blindness in a mallard from the same area as previous cases is still under investigation.

Targeted Surveillance for Sarcocystis

A joint project harnessing wildfowlers’ ability to identify sarcocystis within dabbling ducks in shot birds and report them via the website sarcocystissurvey.org.uk brought the first few cases of the season in a gadwall, wigeon (Anas penelope) and mallard in Northern Ireland, England and Scotland respectively. A fuller commentary will be provided in the next quarterly report as the shooting season will have progressed further and more cases will have been submitted.

Mass mortality in a black-headed gull (Chroicocephalus ridibundus) colony

A mortality event in a colony of black-headed gulls was reported on a nature reserve in West Sussex from late May through to early July 2016. Over 250 gulls, predominantly nestlings, were found dead, most of which appeared to have suffered head and/or neck injuries. Two nestlings, found dead at approximately one-week old, were submitted for post mortem examination. Both birds had severe head injuries associated with small puncture wounds, consistent with predation by a small mammal. Each bird also had a notably soft and pliable beak, skull and limb bones, and histological findings were consistent with fibrous osteodystrophy, i.e. metabolic bone disease (histology was performed by the International Zoo Veterinary Group). This diagnosis could not be confirmed, however, due to the lack of an age-matched specimen for histological comparison. Metabolic bone disease may, therefore, have been an underlying factor in this mass (apparent) predation event. Black-headed gulls are on the amber list of Birds of Conservation Concern in the UK (Eaton et al. 2009): mass mortalities in gull colonies due to infectious diseases such as avian botulism or avian cholera have been reported relatively often (Thomas et al 2007), but this may be the first report of (suspected) metabolic bone disease in wild gulls (Family Laridae) and should be borne in mind as a potential cause of disease or mortality in gulls in future.

References


Summary; Sarcocystis Surveillance in dabbling ducks. Suspected metabolic bone disease in wild gulls – New disease

Ruth Cromie, WWT
UK Priority and Conservation Concern Species

MAMMALS

APHA Diseases of Wildlife Scheme: Mammals

Toxoplasmosis in a red squirrel (*Sciurus vulgaris*)

THREAT: Zoonosis

An adult male red squirrel, from a British mammal wildlife park, that died suddenly with no premonitory clinical signs was necropsied. It was in good bodily condition but not obvious gross pathology was seen. Histopathology revealed multifocal non-zonal severe hepatic necrosis and *Toxoplasma gondii* infection was confirmed by immunohistochemistry. This parasite is potentially zoonotic however the risk to human health from infected red squirrels is limited (see the report from Scotland, page 6). Fatal toxoplasmosis is not an uncommon finding in red squirrels, probably related to their arboreal habitat and relatively infrequent contact with contaminated cat faeces.

**Point for information – zoonotic disease in a wild species, negligible direct threat to human health**

APHA DoWS

Report from Scotland: July – September 2016

THREAT: threats to biodiversity

Exposure to louping ill virus was confirmed in a blood sample from a mountain hare (*Lepus timidus*) co-grazing a grouse moor in Aberdeenshire, in which the grouse population were showing poor condition. The perceived risk of mountain hares as reservoirs of louping ill by gamekeepers and subsequent control of population numbers has been discussed in mainstream media, with a substantial airing of differing opinions about the practice from various charitable organisations, stakeholders in rural industry, and sections of the public in Scotland.

Caroline Robinson, SAC Consulting Veterinary Services

Cetacean Strandings Investigation Programme (CSIP)

First female sperm whale stranding

A 10.3 metre long adult female sperm whale (*Physeter macrocephalus*) live stranded and died on Perranporth beach, Cornwall, in July 2016. Examination revealed it was in reasonable nutritional condition but the gastrointestinal tract was empty. No gross evidence of significant disease was found, or any traumatic lesions consistent with ship strike or entanglement. The whale died from the pathophysiological effects of live stranding, but investigations are ongoing to determine if there is evidence of underlying disease.

Globally, segregation exists between male and female sperm whales, including in North Atlantic populations, with the matriarchal pods containing females normally resident in temperate to tropical waters much further south of the UK, whereas males generally travel in more temperate waters. We have historically only ever had juvenile/subadult male sperm whale strandings in the UK and this is the first confirmed female sperm whale to be recorded stranded in the UK, since routine collection of strandings data by the Natural History Museum began in 1913, illustrating the unusual nature of this stranding event. This was also only the sixth sperm whale to be recorded stranded in Cornwall in this same 100+ year period.
Summary including possible threats – Alert; Incident of public interest which generated media attention involving species of conservation concern IoZ

**BIRDS**

**Great Crane Project**
Post mortem examination (not undertaken by WWT hence not included above) of an adult female crane from the Great Crane Project in Somerset, at the end of September, found that it had been shot. This is an unfortunate set-back for the project to re-establish cranes in the South West of England as the bird was the Project’s most successful breeding female having reared, with her partner, two chicks last year and one this year (which currently remains with the male). The case is being investigated currently.

**AMPHIBIAN REPORTS**

**Chytrid fungi and ranavirus surveillance**
Amphibian morbidity or mortality incidents were reported from a total 27 sites this quarter of which the majority involved anurans (frogs and toads). Multiple mortality was observed at 8 sites (range 2-8 dead amphibians) and a single amphibian seen sick or dead at the remaining 18 sites. These incidents had a wide distribution with no apparent geographical clustering, reported from eight of the nine government office regions of England and also from Scotland. A single newt mortality incident from Devon was reported in July 2016 where two newts of an unidentified species were found dead but not available for examination.

Post-mortem examinations were conducted on seven amphibians submitted from a subset of these reported incidents, and comprised four common frogs (*Rana temporaria*; 4 sites) and three common toads (*Bufo bufo*; 3 sites). Liver samples were screened from all seven amphibians using real-time PCR for ranavirus and tested negative. Skin swabs were tested from the seven amphibians and were real-time PCR negative for chytrid fungi (*Batrachochytrium dendrobatidis* (*Bd*) and *B. salamandrivorans* (*Bs*)).
Batrachochytrium dendrobatidis was detected by rt-PCR in a skin swab from a natterjack toad (Epidalea calamita) examined from a site in Lancashire in April 2016. Histopathological examination confirmed cutaneous chytridiomycosis which was considered the likely cause of death. Bd infection has previously been detected in natterjack toads from multiple locations in north west England, particularly in the spring, and its implications for the health of this population require further investigation (Cunningham and Minting, 2009).

Vigilance for possible incursion of Bs into wild free-living amphibians in GB continues as a scanning surveillance priority. There is considerable concern regarding the threat Bs may pose to native newts in GB should it become established in the wild, particularly the great crested newt (Triturus cristatus) which is known to suffer mortality due to Bs infection (Martel and others, 2013).

**Summary including possible threats – Alert**

**Horizon scanning for Bs; potential threat to newt health and biodiversity if Bs becomes established in wild in GB**

**References:**


Phaeohyphomycosis in a common toad (Bufo bufo)

An adult female common toad was found dead in a garden pond in Ayrshire, Scotland, in September 2016. No other sick or dead amphibians had been observed. At post-mortem examination, the toad was in normal body condition. Significant abnormalities included numerous dark red papular skin lesions over the back and dorsal aspect of the limbs; liver enlargement and discolouration and a large mass in the coelomic cavity. Histopathological examination revealed severe hepatitis and coelomitis with intralesional pigmented fungal hyphae. These findings are consistent with phaeohyphomycosis (i.e. generalised infection with pigmented fungi). Mycological examination of the liver yielded a fungal isolate which has been submitted for species identification using morphological and molecular techniques.

Phaeohyphomycosis has been previously reported in wild and captive amphibians caused by various fungal pathogens (Densmore and Green, 2007; Seyadmousavi and others 2013); however, as far as we are aware, this is the first report in a wild free-living amphibian in Great Britain. Whilst we found no evidence of significant concurrent infection or generalised debility in this common toad, it has been postulated that immunosuppressed or stressed amphibians are most susceptible to infection, and that traumatic injury to the skin may predispose to infection with these environmental fungi.

Based on available information, this seems most likely to be a sporadic cause of mortality in individual wild amphibians but adds to our knowledge of the growing list of infectious diseases that affect these species in Great Britain, and illustrates the value of pathological examination from scanning surveillance.

**Summary including possible threats – Point of information (PFI) for wild amphibian health**

**References:**


Lucilia bufonivora (“toadfly”) in common toads (Bufo bufo)

An adult female common toad was found dead at a garden site in Leicestershire in June 2016 and submitted for post-mortem examination. A second adult female common toad was found sick at a site in Shropshire in July 2016: blowfly larvae were observed in the enlarged nostrils of this animal which subsequently died. Post-mortem examination conducted 24-48 hours after death revealed similar findings in both cases. Both toads were in good body condition and had recently been feeding on an invertebrate diet. The majority of the head was absent and numerous white blowfly larvae were present.
in the exposed tissues. No other significant abnormalities were detected. A presumptive diagnosis of Lucilia bufonivora parasitism was made and larvae from these cases have been submitted to the University of Exeter for molecular studies. Lucilia bufonivora, commonly known as ‘toad fly’, is a species in the blowfly family (Calliphoridae) that is an obligate parasite of anurans. Adult flies preferentially lay their eggs on the head and shoulders of subadult and adult toads during the summer months. Larvae then hatch and enter the nostrils where they develop and feed on the local tissues of the host (myiasis), leading to its death within a few days. This parasitic infection has been reported in many countries across multiple continents including Great Britain, although cases have infrequently been submitted for examination through scanning surveillance schemes. Studies in the Netherlands and Germany have found variable, sometimes high, prevalence of this parasitic infection with varied resultant mortality. Information on the impact of L. bufonivora on common toad populations is limited in GB; however, there is no evidence to indicate this endemic parasite causes significant impact at a population level. Nevertheless, given the recently identified significant and ongoing decline of common toad populations in GB (Petrovan and Schmidt, 2016), continued investigation of causes of mortality is worthwhile. When observed, these cases can cause public concern due to their striking appearance; therefore raised awareness of this “natural” amphibian parasite may be beneficial in providing an explanation.

Summary including possible threats – Point of information (PFI) for wild amphibian health

References:
Petrovan SO, Schmidt BR (2016) Volunteer conservation action data reveals large-scale and long-term negative population trends of a widespread amphibian, the common toad (Bufo bufo). PLOS ONE 11(10): e0161943
IoZ