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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/collections/animal-disease-surveillance-reports#wildlife

Overview

Issues and trends
For the third quarter running, APHA Diseases of Wildlife Scheme (APHA DoWs) submissions have been dominated by wild waterbirds for highly pathogenic avian influenza virus H5N8 (HPAIV H5N8) monitoring. Wherever possible we have undertaken diagnostic examination of post mortem carcases and this has resulted in some interesting cases, including several in gulls where birds appear to be dying quickly due to engorgement of physically unsuitable diet. There has also been a late case (i.e. later than the reporting period of this report) of H5N8 in a mute swan from Norfolk. This has occurred several months after the last confirmed case in wild birds so it is uncertain at present how long the increased surveillance efforts for H5N8 will need to continue.

Paul Duff, APHA Diseases of Wildlife Scheme

Notifiable Disease

Avian Influenza Virus
SUMMARY: Notifiable disease; threat to UK farming and international trade, not recorded as a zoonosis
Great Britain AI Wild Bird Surveillance (AIWBS): April – June 2017

Total wild bird surveillance
The second quarter of 2017 saw a reduction in the number of H5N8 outbreaks in wild birds in Europe and in the UK. Of 194 wild bird carcases tested under the surveillance scheme, one bird was reported positive (Mute Swan (Cygnus olor) found in Cornwall), on 10th March 2017. Wild bird surveillance remained heightened with a reduction in threshold numbers for target species. APHA has worked with other groups to increase surveillance in wild birds. Particularly, two buzzards (Buteo buteo) collected as part of another monitoring scheme were found to be H5N8 positive as part of a cohort submitted to APHA in June. The original submission of both birds to the non-government organisation (NGO) was within the same period and geographical locations of other H5N8 positive wild birds.

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/injured</td>
<td>194 (96)</td>
<td>One mute swan was found to be H5N8 positive (found in Cornwall in March 2017)</td>
<td>Scanning surveillance All-year-round</td>
</tr>
</tbody>
</table>

*Number of birds tested (figure may be slightly different from other reports due to exact query run on dataset). figures for April - June 2016 are shown in brackets.
In March 2017, changes were made to surveillance requirements and for certain target species (wild geese, wild ducks including mallards (*Anas platyrhynchos*), swans, gulls and birds of prey) the surveillance threshold was reduced to the finding of one dead bird. Despite a reduction in the number of H5N8 positive birds disclosed, the decreased threshold has remained during the second quarter of 2017 to increase surveillance sensitivity. In addition, APHA has collaborated with NGOs to engage in an active surveillance programme to gather immunological data in resident species of wild waterfowl. Early indications from this work have shown that some wild birds have been exposed to, and recovered from, H5N8 within their natural environment.

Members of the public are asked to remain vigilant and report findings of target species in addition to mass mortality incidents 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.

**Warden Patrol Scheme**

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.

During the period 1st April – 30th June (Q2-2017), a total of 192 Warden Patrols were performed at sites across GB. This compares with a total of 157 Warden Patrols performed during the same period in 2016 (Q2-2016) in GB. During Q2-2017, the Warden Patrols were mainly performed by Natural England and the Wildfowl and Wetlands Trust. Warden Patrols were also carried out by three other voluntary organisations. In total during Q2-2017, 74 wild birds found dead were tested, with no H5N8 detections. This compares with a total of 32 wild birds found dead (30 of which were tested and found to be H5N8 negative) during the same period of 2016.

In Q2-2017, Mallard ducks were the most common target species found, and birds were most commonly found in the South East and South West regions with none submitted from the Midlands and North East. This contrasts with Q2-2016, where Black-headed gulls (*Choriocephalus ridibundus*) were the most common target species found and birds were most commonly found in the southeast and southwest regions with the lowest numbers in Scotland, east, northeast, northwest and the Midlands.

**Current EU situation**

In Q2 2017, there was a decrease of numbers of new outbreaks of H5N8 in wild birds and commercial flocks across Europe. However, sporadic cases have been identified, some of which have been disclosed in previously uninfected geographical areas. The current EU outbreak situation can be found here:

https://science.vla.gov.uk/flu-lab-net/docs/outbreak-hpai-h5n8-europe.pdf

APHA, in collaboration with Defra, monitors the international situation and distribution of avian influenza detections:


**Current UK Situation**

Avian Influenza Prevention Zones (AIPZ) which were in place across England, Scotland, Wales and Northern Ireland were lifted on 30th April in Scotland and Wales; and 31st May in Northern Ireland. In England, the housing requirement was lifted on the 13th April but the mandatory biosecurity measures remained in place. The AIPZ was lifted in England on 15th May in all areas apart from Lancashire, Merseyside and Cumbria, which was assessed as a higher risk area based on the higher number of outbreaks in these locations and the new cases in two backyard flocks. This extended AIPZ was lifted on 14th June 2017 and no other restrictions are currently in force.

The last reported outbreak in poultry was confirmed on the 3rd June in south Norfolk. All disease control zones have now been lifted.

At all times, 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.

• In Scotland and Wales, contact your local APHA Field Services Office: https://www.gov.uk/government/organisations/animal-and-plant-health-agency/about/access-and-opening.

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.

• 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/tte/nad.htm

Avian influenza and Newcastle disease/PPMV-1 events, including H5 HPAI internationally, are also summarised in GB Wildlife Disease Surveillance Partnership quarterly reports.

References
https://www.gov.uk/guidance/avian-influenza-bird-flu
Wildlife: disease surveillance reports, 2016 - GOV.UK
https://science.vla.gov.uk/flu-lab-net/docs/outbreak-hpai-h5n8-europe.pdf
Avian influenza (bird flu) - GOV.UK
Avian influenza in wild birds: winter 2016 to 2017 - GOV.UK
Rowena Hansen, Avian Virology, APHA Weybridge

Wildfowl and Wetlands Trust's (WWT) role in GB Avian Influenza Wild Bird Surveillance (AIWBS):-
SUMMARY: Threats - HPAIV, targeted active surveillance of wetland birds
Vigilance for dead waterbirds at WWT sites continued, following this winter’s incursion of H5N8 HPAI into the UK and associated detections in wild birds from December 2016 to March 2017. Some 80 dead waterbirds were sampled, comprising 12 surveillance-priority waterbird species (including swans, geese, ducks, gulls, rails and two grey herons (Ardea cinerea)) from across England and also Wales and Scotland. See APHA report for fuller details on HPAI surveillance results from across GB.
In an attempt to better understand how HPAI H5N8 infection affected wild bird populations this winter, swab and blood samples were collected from 61 wild waterbirds at Slimbridge (April-July), for testing at APHA Weybridge.

Zoonotic Diseases

APHA Diseases of Wildlife Scheme (DoWS): Salmonellosis in wildlife; January – March 2017
SUMMARY - THREAT: Zoonotic disease, farmed and pet animal risk
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. No *Salmonella* species were isolated from wild mammals or birds this quarter. Also there were no reports of bird variant S. Typhimurium DT40, DT56 or DT56v from domestic species. No salmonella infections were identified by DoWS this quarter. 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; 2nd Quarter 2017**

**SUMMARY - THREAT: Zoonotic, farmed, pet animal and international trade risk**

**Passive surveillance for lyssaviruses in UK bats**

Ninety wild bats and 10 zoo bats were tested at APHA in this quarter for lyssaviruses. All 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.

Two dogs which had died in quarantine were tested for rabies with negative results.

**WNV surveillance in wild birds SV3045**

Thirty nine wild bird brain and kidney tissue samples representing 22 species were tested for WNV during this period with negative results

Brain and kidney tissues from two Blackbirds (*Turdus merula*) and one Tawny owl (*Strix aluco*) were also tested for Usutu virus with negative results.

**West Nile Virus surveillance in Equids**

No serum samples from horses showing neurological signs were received for WNV cELISA testing during this period.

Paul Phipps, Wildlife Zoonoses and Vector Borne Disease Research Group, APHA Weybridge

**Usutu virus surveillance**

**Summary including possible threats – Point of information**

**Horizon scanning for Usutu virus; potential threat to blackbird and owl health and biodiversity if Usutu becomes established in the wild in GB**

Usutu virus has been detected in multiple countries in mainland Europe since 2001, and was most recently detected in The Netherlands in 2016 (Rijks and others, 2016). Blackbirds (*Turdus merula*) are the wild bird species most frequently affected in multiple mortality incidents due to Usutu virus. Whilst mosquito species that can act as Usutu virus vectors are present in GB, no cases of this virus infection have been confirmed to date. Consequently, horizon scanning and investigation of the aetiology of blackbird mortality reports remains a priority for early detection should incursion occur.

Eight reports involving sick or dead blackbirds were received in Q2. Post-mortem examinations were performed on four blackbirds, submitted from individual sites in three counties in England. Brain/ kidney samples were submitted to APHA laboratories for panflavirus real-time PCR testing from these four blackbirds and an additional 25 garden birds examined in Q2.

**References**


Garden Wildlife Health Usutu virus factsheet: (http://www.gardenwildlifehealth.org/files/2013/06/Avian-Usutu-virus_disease-factsheet_GWH.pdf)
IoZ

Usutu virus surveillance – APHA DoWS
APHA Diseases of Wildlife Scheme (APHA DoWS) were informed of a mass mortality of blackbirds in an area of Surrey. In the event although 6 birds had been reported dead over a period of about one week only one was collected. This bird was submitted to APHA Weybridge for post-mortem examination and Usutu examination. The post-mortem examination did not reveal a cause of death, and no viruses were identified in the tissues (brain and kidney) collected and examined for Usutu virus. Histopathology did not provide a diagnosis. Veterinary staff at APHA have been alerted about Usutu in wild birds and asked to keep this disease in mind particularly in unusual mortality events.

APHA Diseases of Wildlife Scheme

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

MAMMAL REPORTS

APHA Diseases of Wildlife Scheme
Foxes – found dead together
Summary and Point for information Two foxes (Vulpes vulpes) found dead within 100 metres of each other in a horse paddock were submitted as an unusual incident. Post-mortem examination showed that both had been shot with a shotgun.

Fox – pulmonary nematodes and mediastinal mass
Summary and Point for information - pathology resembling notifiable disease – exclusion (Mycobacterium bovis infection).
A third fox in an unrelated incident was submitted after being found dead in a garden in Wales. The animal was emaciated and was found to have a pulmonary nematode infestation and a large mediastinal mass caused by aberrant localisation of nematodes. Mycobacterial infection could not be ruled out; however, this possibility was excluded following the use of specific histopathological stains. Five nematode species were considered as possible causes of the lesions and although a definitive identification was not possible from histopathology, it was noted that, according to the literature, similar florid tissue reactions have been reported towards the larvae of Filaroides hirthi and Andersonstrongylus milksi.

RHD in wild rabbits
Summary and Point for information – data are limited; however, widespread diagnoses at APHA suggest severe and widespread disease caused by the new variant RHD2 virus is causing a decline in wild rabbit populations at the national scale. This may be responsible for habitat changes in the Brecklands (pers communication) and possibly also on chalk downland; wild rabbits are important for maintenance of these habitats. These declines are probably transient and populations will recover over a period of years, as was the case in the previous ‘classic’ RHD epidemic. No reports of RHD in British wild hares to date, however this has been widely reported in continental Europe and is anticipated at some future date in the UK.

RHD continues to cause severe mortality among wild rabbits (Oryctolagus cuniculus). Thirty dead animals were reported by a member of the public in the Midlands over a two to three week period. Some had been seen running in circles and then becoming paralysed prior to death. Two animals were submitted to APHA Diseases of Wildlife Scheme by the RSPCA. Post-mortem findings included froth in the tracheas, dark congested lungs, enlarged spleen and haemorrhages in an 8cm section of jejunum in one animal. These findings were suspicious of rabbit haemorrhagic disease (RHD) and this was confirmed when virus was seen in liver by electron microscopy. There are no data indicating national mortality or prevalence of RHD in wild rabbits in Great Britain. All recent outbreaks including the current are considered to be due to the variant RHD2 virus. It is suspected that the disease is widespread and may be reducing wild rabbit populations nationally, albeit on a temporary scale.

References
AVIAN REPORTS

Wild bird report from the IoZ

_Suttonella ornithocola_ infection in tit species

Summary including possible threats – Point of information; Animal welfare concern

_Suttonella ornithocola_ is a recently identified Gram-negative bacterium isolated predominantly from the lungs of wild tit (Paridae and Aegithalidae) species submitted from sporadic multiple mortality incidents. Histopathological examination has confirmed multifocal acute necrotising pneumonitis and pulmonary congestion in infected birds from several incidents and it is hypothesised that _S. ornithocola_ can act as a primary pathogen. Mortality incidents occur at apparently low prevalence with a widespread geographical distribution in GB and recurrent spring seasonality, consistent with an endemic infection (Lawson and others 2011).

_Suttonella ornithocola_ has fastidious culture requirements which might lead to missed detection, thus a nested PCR targeting the 16S rRNA gene was designed to provide an additional detection tool (Peniche and others 2017). DNA was extracted from combined lung and trachea samples from 114 Paridae and five Aegithalidae. These wild birds were found dead across England and Wales, 2005-2012 inclusive, and examined post-mortem. The PCR detected _S. ornithocola_ in 15 birds from the Paridae family from 13 mortality incidents. A combination of molecular, microbiological and histopathological examinations is recommended to further investigate the epidemiology and significance of _S. ornithocola_ infection.

_Suttonella ornithocola_ was detected for the first time in Finland in spring 2017 associated with blue tit and coal tit mortality with similar pathological findings and seasonality as observed in the condition in GB (EVIRA 2017).

**Q2 update:** A total of 23 disease incident reports of tit species were received in Q2 2017, of which five sites observed multiple birds affected. Five tits were submitted for post-mortem examination which comprised great tits (n=2), blue tits (n=2) and a long-tailed tit (n=1); lung samples were taken from each bird which were all culture-negative for _S. ornithocola_.

References


IoZ

Wildfowl and Wetlands Trust (WWT) report:- April – June 2017

Passive surveillance of waterbirds

Post-mortem examinations were performed on 74 wild birds that had been found dead between April and June 2017. These comprised 14 species from five WWT sites (Slimbridge, Gloucestershire; Arundel, West Sussex; London Wetland Centre, Greater London; Welney, Norfolk; and Martin Mere, Lancashire).

The birds examined were: mallard _Anas platyrhynchos_ (30), black-headed gull _Larus ridibundus_ (11), European herring gull _Larus argentatus_ (9), greylag goose _Anser anser_ (8), Canada goose _Branta canadensis_ (3), moorhen _Gallinula chloropus_ (3), common shelduck _Tadorna tadorna_ (2), grey heron (2), mute swan _Cygnus olor_ (1), coot _Fulica atra_ (1), tufted duck _Aythyca fuligula_ (1), jackdaw _Corvus monedula_ (1), oystercatcher _Haematopus ostralegus_ (1) and domestic pigeon _Columba livia domestica_ (1).

Notable cases included an outbreak of blindness in wild mallards at Slimbridge: several blind mallards had been observed there in 2016, one of which had been examined post-mortem, and further cases were observed in 2017, of which six were examined post-mortem in June. The majority of observed cases, including all of those examined post-mortem, were male birds, blind either in the right eye or both eyes. All of five birds in which tissues were examined histologically +/- through microbiology (including
the 2016 case) (International Zoo Veterinary Group, Leeds) were found to have unilateral or bilateral ‘Morgagnian’ cataracts. There were additional ocular lesions (particularly uveitis) in the majority of cases, which were considered likely to have developed as a consequence of the cataract. One case also had concurrent ulceration over the eye surface, associated with *Pseudomonas aeruginosa* infection, and another had concurrent inflammation at the rear of the eyeball associated with a trematode infection (the trematode species was undetermined). One of the mallards had a concurrent testicular infection; in the other cases, there were no gross abnormalities in any of the other organs. Investigations are ongoing, but, currently, the cataracts seem most likely to have developed either as a consequence of trauma (seasonal intraspecies aggression), or possibly inbreeding (probable resident birds, possibly with a small gene pool).

Trauma was the cause of 19% of mortalities (14/74). As in the previous quarter, a number of mallards (1 female, 3 males) died through mating-related aggression. A grey heron, which had been found in proximity to power cables, had post-mortem lesions consistent with powerline collision. Severe gastrointestinal (GI) parasitism was a suspected cause of several multiple-mortality incidents involving (predominantly) juvenile birds: greylag goslings from Arundel (n=3), herring gulls from Slimbridge (n=7: GI parasitism diagnosed in 2 juveniles and 1 adult; an additional 4 juvenile carcases were too decomposed for detailed examination), and jackdaws from Arundel (severe intestinal nematode infestation diagnosed in 1 juvenile; 2 other juvenile jackdaws reported dead).

**Targeted Surveillance for Sarcocystis**

Wildfowlers continued to report having seen, in winter 2016/17, distinctive lesions in the breast muscle of wildfowl typical of *Sarcocystis* sp. infection – submitting their reports through the website sarcocystissurveys.org.uk. It is not clear if the increase in reports for this last season represents increased prevalence of infection, better awareness of the reporting mechanism, or a combination of both. A questionnaire survey of wildfowlers’ experience of encountering infection over time has been launched in collaboration with the British Association for Shooting and Conservation. Further investigation of the infection, using tissues submitted as part of this project, is currently being undertaken, in collaboration with the University of Liverpool and the Royal Veterinary College, University of London. Further results will be provided in the next report.

*Ruth Cromie, WWT*

**Wild bird report from Scotland;**

**Summary report only; points for information – mostly related to biodiversity**

A summary report has only been possible, a more complete coverage of cases should be possible from Scotland in the next Wildlife Quarterly Report. Many submissions over the past quarter have been either crime-related, starvation, or too autolysed to diagnose. In the non-crime cases where a diagnosis was reached, and the cause of death was not trauma/RTA, there were:

- A siskin and chaffinch, oesophageal lesions, presumptive trichomonosis
- A red grouse with suspected coccidiosis
- Siskins with presumptive trichomonosis
- A red grouse chick with *Staphylococcus aureus* septic arthritis in the wing
- Grey partridges with gapeworm
- Chaffinches with presumptive trichomonosis
- Siskins with presumptive trichomonosis
- A hen harrier with trichomonosis
- A buzzard with egg peritonitis
- A mountain hare with pyelonephritis, bacteriology not carried out
- Wild rabbits with myxomatosis
- Wild rabbits with enteritis, unspecified
- A hedgehog with scrotal hernia and subsequent infection
- A mountain hare with a suspected protein-losing enteropathy, unspecified

*Caroline Robinson, SAC Consulting Veterinary Services*
APHA DoWS Report Wild birds

Summary and Threats
The high numbers of submissions of wild waterbirds for HPAIV (High path avian influenza virus) monitoring continued during the months covered by this report (April-June). The majority of birds submitted were given a diagnostic post-mortem examination however for a variety of reasons (e.g. autolysis, lack of resource) in some, only sampling for Avian Influenza Virus was undertaken.

Breeding gulls
Summary and point for information - biodiversity threats – most species of gulls are declining as breeding species in Britain. Declines at least partly related to prevention of use of waste and recycle plants as sources of food for gulls.

Chicks were submitted from Herring gull (Larus argentatus) and Lesser black-backed gull (Larus fuscus) colonies for post-mortem examination. Only a few diagnoses were obtained from those fresh enough for meaningful examination, these included pneumonia possibly the result of mis-mothering; however, there were no consistent post-mortem findings.

Summary/point for information – death in adult gulls due to eating/engorging on unsuitable feedstuffs.
Significance – possibly a new cause of mortality and, to our knowledge, not reported as a cause of death in British gulls before in the literature.

In 4 incidents in gulls, deaths were reported due to adult birds eating inappropriate feedstuffs. One herring gull found dead in a garden in Blackpool died as a result of having an entire slice of pizza wedged intact in the oesophagus. Another bird in Cumbria had yellow/brown pasty, fluid contents (unidentified) filling the mouth and the entire upper alimentary tract and covering the feathers of the head. This fluid contained large numbers of earthworms. In two geographically separate incidents (SW England and NW England) both of which occurred in May, herring gulls died from eating unidentified sloppy/sticky feedstuffs. Deaths in 20 herring gulls were reported and three were submitted, one of the three died from trauma, while the other two had thick porridge-like ingesta filling the upper alimentary tract. The bird from the north of England was submitted after being seen to fly in an incoordinated manner and then drift into the pillar of a garden gate. This bird was in good condition with no obvious pathological processes however the entire upper alimentary tract and mouth were filled with pale grey coloured homogenous material (unidentified). This material entirely covered the opening to the trachea, however careful examination did not reveal inhalation of ingesta into the deep airways, or pulmonary changes; it is thought that trauma to the head was the immediate cause of death. In the cases of the last three birds it is considered that ingestion of copious, unidentified, pasty fluid content compromised the birds physiologically and lead to either regurgitation and possible inhalation in the first two individuals, and abnormal behaviour and a fatal collision in the case from the North of England. We are not aware that we have read scientific reports of this type of acute death in adult British gulls due to engorgement of unsuitable feedstuffs/ingesta before.

UK Priority and Conservation Concern Species

MAMMAL REPORTS

APHA Diseases of Wildlife Scheme

Red squirrels in England and Wales
Summary and Threats – several biodiversity threats to the remaining threatened population of red squirrels (Sciurus vulgaris) on the English/Welsh mainland.
APHA DoWS in conjunctions with other workers published a letter in the Veterinary Record detailing the detection of potentially pathogenic viruses from the naturally expanding population of red squirrels on the Welsh mainland close to the island of Anglesey. The Anglesey population of red squirrels has been increasing in recent years and individuals have crossed over to the mainland by way of the bridges. There is a small but increasing red squirrel population now on the mainland, in an area with many grey squirrels (Sciurus carolinensis); grey squirrels are actively controlled on Anglesey. Investigation of a mortality of red squirrels in North Wales indicated that the six deaths were unlikely to be linked. A variety
of diagnoses were obtained in carcases that were fresh enough for post-mortem examination, the most frequent of which was trauma. In addition, rotaviruses and adenoviruses were detected in some individuals possibly linked to clinical disease (this could not be confirmed as histopathological diagnosis was not possible due to significant autolysis). Squirrelpox virus was not detected. In summary, while the natural expansion of this red squirrel population is good news from the biodiversity point of view, the presence of viral pathogens and a population of grey squirrels in the area also known to carry these viruses, means that the chances of success for the future for these red squirrels is guarded.

In Cumbria, where grey squirrels are widespread, a few colonies of red squirrels still survive in the south of the county. A small red squirrel population in the vicinity of Grasmere is protected from grey squirrels because this species accesses the area by travelling along a valley, where they can be effectively controlled. The last few years in the area have seen good breeding seasons for both red and grey squirrels; however, this has resulted in record numbers of grey squirrels overwhelming control methods in the valley and then entering the Grasmere area. As was then predicted, only a few months after grey squirrels entered the area, the first cases of poxvirus occurred in red squirrels and the disease was confirmed in one animal by the APHA Diseases of Wildlife Scheme. Nearly 18 of a possible population of about 30 animals succumbed to suspected pox over a period of approximately two years; however, the red squirrel population in the area is now building up again.

There are more red squirrels in north Cumbria than in the south of this county; however, in the north grey squirrels are also relatively common with widespread and expanding populations. Several outbreaks of squirrelpox disease in red squirrels are occurring concurrently. A few animals are submitted to the Diseases of Wildlife Scheme from areas where the disease has not been previously reported. From one of these animals, lesions were noted on the nipples of a lactating female. Virus was detected in association with the nipple lesions and this, without doubt, will have facilitated transfer of virus from mother to suckling squirrel kits.

There were several submissions of pipistrelle bats (*Pipistrellus pipistrellus*). One bat was submitted from a house where 4 dead bats were found together under the eaves. Despite autolysis, evidence of external trauma was noted and considered the cause of death. It was tempting to suspect cat predation from these findings.

**BIRDS**

**Project Godwit**

Project Godwit is a conservation initiative for the black-tailed godwit (*Limosa limosa limosa*; Western European race) – a wading bird that has been declining in Western Europe, and which is on the UK’s Red List of Birds of Conservation Concern (Eaton and others 2015). This EU-funded WWT and RSPB project aims to increase the size and range of the breeding population of black-tailed godwits in the UK, which is predominantly situated on the Ouse and Nene Washes in East Anglia. Alongside habitat improvements and monitoring work, the project includes an annual ‘headstarting’ programme (2017-2021), whereby eggs are collected under licence from wild black-tailed godwit nests, chicks are reared in captivity and then released at approximately 1 month old (when they can fly), which is a means of reducing chick losses to threats such as predation, i.e. of increasing population productivity.

A disease risk analysis was conducted, and strict biosecurity measures were implemented, prior to this year’s headstarting programme, involving egg collection on the RSPB Nene Washes, and rearing and release of chicks at WWT Welney on the Ouse Washes. In light of the HPAI H5N8 outbreaks this winter, disease screening in headstarted birds included targeted surveillance for HPAI – for which all birds were negative (APHA). Pooled faecal samples from the birds’ outdoor aviaries (but not from their early-stage indoor coops) were positive for *Campylobacter* sp. (Greendale Veterinary Diagnostics Ltd., Woking), which is a common, commensal infection of wild waterbirds, and did not appear to be associated with clinical disease; all faecal samples were negative for parasites, and no infectious diseases of particular concern were detected.

Twenty-six headstarted chicks were successfully released in June and July, and a good number have since been re-sighted, in advance of their migration southward from the UK. Further information is available on the project website [https://projectgodwit.org.uk/](https://projectgodwit.org.uk/).
Reports

References

Ruth Cromie, WWT

APHA DoWS Report Wild birds

Roseate tern

**Summary and threat** – biodiversity threat to a rare British breeding seabird

A single roseate tern (Sterna dougallii) was submitted, this species is probably Britain’s rarest breeding seabird. The APHA Diseases of Wildlife Scheme received one carcase from the only regularly used breeding colony of this species on mainland Great Britain. Five birds in total had been found dead or found ill and subsequently died, over a period of a few weeks in June. In addition two fulmars (Fulmarus glacialis) were also found dead but not submitted. Following a range of examinations in which pathogens were not identified and histopathology did not suggest infectious processes, a diagnosis of starvation was reached. The clinical history, where available in the other terns found also suggested starvation as a likely cause of death. The assumption is that suitable fish prey was not available in the area of the breeding colony.

Little terns

**Threat** – biodiversity threat to rare British breeding seabird

Another threatened British breeding tern species, the little tern (Sterna albifrons), suffered a small mortality at one of its monitored breeding colonies on the north-east English coast. This followed human disturbance at the colony where, as is typical for the species, was a sandy beach. The birds were found dead within a metre of each other. Post-mortem examination revealed that they were both in good condition with feed in gizzards; however, very subtle signs of trauma were noted, with haemorrhages around the heart in one and blood in the mouth of the other. No evidence of infectious disease was found. The precise cause of the trauma is not known. Possibly it was small carnivores like stoats or weasel. Another possibility is intra-specific aggression with birds stabbing each other with their fine, very sharp bills. We found similar findings several years ago in another species of tern on an offshore island which had no mammalian predators and considered intra-specific aggression as the possible cause of stab wounds on the backs of birds penetrating the lungs.

APHA Diseases of Wildlife Scheme

**AMPHIBIAN REPORTS**

First detections of common midwife toad virus-like ranavirus in Britain

**Summary including possible threats – Alert;**

**Horizon scanning for CMTV-like ranavirus; potential threat to amphibian health and biodiversity**

Frog virus 3 (FV3)-like Ranavirus has been known to affect wild amphibians in Britain since at least the early 1990s, most frequently common frogs (Rana temporaria). Reports of severe disease outbreaks in amphibian communities in mainland Europe (E.g. Spain, Netherlands) due to strains of the common midwife toad virus (CMTV)-like clade of Ranavirus have increased in recent years and generated concern due to their considerable population impacts (Price and others 2014). Genetic characterisation of the ranaviruses present in GB was assessed using an available 25-year tissue archive collected from mortality incidents of herpetofauna species in the British Isles. Ranavirus was detected using PCR in 41 incidents from England: sequencing confirmed the majority were FV3-like as anticipated. However two incidents involved CMTV-like viruses that were separated by 300 km and 16 years (1996 and 2011). This demonstrates that CMTV-like viruses have been in Britain for at least a similar period of time to FV3-like viruses. Whole-genome sequencing is required to further characterise the two British CMTV-like viruses and their relationship to strains in mainland Europe, which will be important in understanding the risk of incursion by virulent strains such as the CMTV-like viruses found in Spain.

**Q2 update:** In Q2 2017, a total of 47 incidents of sick or dead amphibians, involving 80 individuals, were reported from 36 sites, the majority of which involved anurans (frogs and toads; 28 sites of which 14
sites with multiple mortality), nine involved urodelans (newts; 7 sites of which 3 sites with multiple mortality) and a single site where both anurans and urodelans were affected. Based on investigation of ranavirus disease incidents to date, a suspected incident definition was created with criteria comprising common frog morbidity or mortality during the summer months (June-September) with observation of skin ulcers, suspect haemorrhage or limb necrosis: two of the incidents in Q2 fulfilled these criteria. Post-mortem examinations were conducted on seven amphibians from five sites, which comprised four species including the common frog, common toad (Bufo bufo), midwife toad (Alytes obstetricans) and smooth newt (Lissotriton vulgaris). Liver samples were collected from four amphibians (where the state of carcass preservation permitted) for real-time PCR screening for ranavirus: one sample was found to be negative in April, further results are pending.

Guidance: The chances of introducing ranavirus disease to a new site can be minimised by avoiding the introduction of potentially-infected material (spawn, tadpoles, amphibians, water or water plants) to new sites and by cleaning and disinfecting boots and equipment that might be used in different ponds or other water bodies.

References

Chytrid fungi surveillance
Summary including possible threats – Alert;
Horizon scanning for Batrachochytrium salamandrivorans (Bs); potential threat to newt health and biodiversity if Bs becomes established in the wild in GB
Skin swabs were collected from each of the seven amphibians examined in Q2 for real-time PCR for chytrid fungi (Batrachochytrium dendrobatidis (Bd) and B. salamandrivorans (Bs)) respectively: a single common toad from a site in Kent was positive for Bd and all other samples tested negative. Bd infection has a widespread but patchy distribution in GB and common toads are known to be susceptible to chytridiomycosis. Unfortunately the state of tissue preservation did not permit meaningful histological examination in this case to assess the significance of the Bd infection.

REPTILE REPORTS
First detection of snake fungal disease in European wild snakes
Summary including possible threats – Alert;
Animal welfare and possible conservation concern
Background from North America: Snake fungal disease (SFD) caused by the fungal pathogen Ophidiomyces ophiodiicola is an emerging infectious disease known to affect wild snake species in North America which was first detected in 2006 and causes skin lesions (Lorch and others 2016). It is unclear what is driving the emergence of SFD in the USA. Possible explanations include introduction of the fungus from another part of the world, changing climate, or other environmental changes that stress snakes and make them more susceptible to disease.
Situation in GB: Post-mortem examination on a grass snake (Natrix natrix) from England in 2015 found evidence of severe skin lesions associated with fungal infection. Molecular and microbiological examination confirmed the presence of O. ophiodiicola. As far as we are aware, this is the first report of SFD in a wild snake in Europe.
An archive of 303 archived shed skins and 33 snake carcasses from all three British snake species was screened for evidence of skin lesions. Skin lesions of variable severity were detected in both sample sets and real-time PCR for O. ophiodiicola confirmed 26 (8.6%) positive samples from across England and Wales since 2010. A single skin shed with lesions from a dice snake (Natrix tessellata) from the Czech Republic was also PCR-positive for O. ophiodiicola.
Sequence data and culture characteristics indicate that *O. ophiodiicola* isolates from European wild snakes are novel and distinct from those from wild snakes in North America: consequently there is no evidence to support introduction of the fungus into Europe from North America, or vice versa. Our findings indicate that *O. ophiodiicola* has been present but previously undetected since at least 2010 in wild snakes in GB; whether it is a native pathogen or introduced requires further research. There is a need for enhanced and continued surveillance of wild snakes to gain a better understanding of the species affected by SFD (specifically, whether the adder (*Vipera berus*) and smooth snake (*Coronella austriaca*) are susceptible), the frequency and severity of skin lesions, and the impact of SFD on the health of native grass snake populations. 

**Guidance:** SFD has been documented in captive snakes from multiple countries, including GB since the 1980s. It is possible that *O. ophiodiicola* may be transmitted between wild and captive snakes, but since pet snakes are typically housed indoors within vivaria, the pathways for transmission are limited. Captive snake owners (pets and zoological collections) are recommended to maintain good biosecurity and remember that it is illegal to release non-native snake species to the wild in the UK under the Wildlife & Countryside Act 1981. 

Ecological consultants and herpetologists are advised to consider biosecurity protocols as routine, particularly between sites. Special dedicated equipment should be used when working with wild snakes and must never be shared between captive and wild snakes. There is need to incorporate disease risk assessment and disease management before undertaking wild to wild translocations of snakes. 

**Q2 update:** Post-mortem examinations were conducted on two adders submitted from Herefordshire in May and from Surrey in June. Skin swabs and skin tissue samples were collected for real-time PCR for *O. ophiodiicola* at IoZ and tested negative.

**References**


SFD disease factsheet ([http://www.gardenwildlifehealth.org/files/2013/06/Reptile-Snake-Fungal-Disease-factsheet-GWH.pdf](http://www.gardenwildlifehealth.org/files/2013/06/Reptile-Snake-Fungal-Disease-factsheet-GWH.pdf))

IoZ

**Detection of *Salmonella enterica* subspecies *diarizonae* (IIIb) in a wild adder (*Vipera berus*)**

**Summary including possible threats – Point of information;**

**Possible animal welfare and public health concern**

*Salmonella enterica* subsp IIIb *diarizonae* (IIIb 58:z52:z) was isolated from multiple sites (liver, small intestinal contents and skin lesion on head) from an adult male adder from Herefordshire examined in May 2017. The snake was in good body condition and no significant macroscopic or microscopic abnormalities were noted on examination of the viscera.

Reptiles are known to act as reservoirs of various *Salmonella* sp. sometimes at high prevalence. *Salmonella enterica* subsp IIIb *diarizonae* (IIIb) has been previously reported in both captive and wild snakes, including wild adders in Germany (Krautwald-Junghanns and others, 2013; Schröter and others, 2004).

The Garden Wildlife Health project has conducted post-mortem examinations on 45 wild reptiles (including 17 adders) since 2013 and this is the first *Salmonella* sp. isolate recovered. Further work is required to investigate the clinical significance of *Salmonella* infections to wild snakes in GB; whilst clinical disease may occur, the literature indicates that it is rare and a carrier state occurs in apparently healthy snakes (Schröter and others, 2004).

Reptile-associated salmonellosis has been reported with increasing frequency in humans who have contact with pet reptiles. Whilst herpetologists should be aware of the potential health risk and need for routine hygiene precautions when conducting field work which involves handling reptiles, the risk from
wild snakes to the general public is likely to be very low due to the limited pathways for contact and transmission, particularly with a venomous species such as the adder. Guidance is available to owners of captive reptiles on methods to safeguard public health (CDC 2017; PHE 2015).

References


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