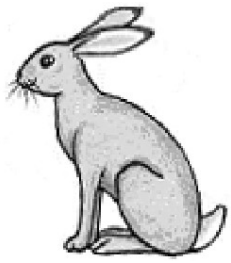
GB Wildlife Disease Surveillance Partnership quarterly report

Disease surveillance and emerging threats



Volume 30: Q3 – July-September 2020

Highlights

- **Highly Pathogenic avian influenza virus H5N8 in UK waterbirds - Page 5**
- **Usutu virus detection for the first time in the UK - Page 8 & 16**
- **Reimerella anatipestifer unusual mortality in gull chicks - Page 21**

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Introduction and overview

The GB Wildlife Disease Surveillance Partnership comprising the Animal and Plant Health Agency (APHA), Scotland's Rural College (SRUC) Veterinary Services, 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-gb-disease-surveillance-and-emerging-threats-reports

A full explanation of how data is analysed is provided in the annexe available on GOV.UK https://www.gov.uk/government/publications/information-on-data-analysis

Issues and trends

1. The value of the Great Britain Wildlife Disease Surveillance Partnership (GBWDSP) was underlined this quarter when one of our Partners, Garden Wildlife Health (GWH) working with the APHA Rabies and Viral Zoonoses Group made the first GB isolation of Usutu virus (USUV) in a wild blackbird (*Turdus merula*) in southern England, during August 2020 (see reports in this WQR). These and follow-up results indicate that in addition to incursion the transmission of USUV has also probably occurred in England for the first time.
2. Highly Pathogenic Avian Influenza virus H5N8 (HPAIV H5N8), in recent weeks has been identified in poultry and wild birds from several countries in Northern Europe. HPAIV H5N8 has now been detected in poultry and wild waterbirds in England.
3. A new variant of the COVID-19 virus (SARS-CoV-2 mink-associated variant strain) has been found in American mink (*Neovison vison*) and a small number of humans in Denmark. The risks associated with this new variant are being widely assessed. There is a potential risk that wild mink populations could become infected with the reference COVID-19 virus or the variant strain. Denmark is considering a cull of the Danish farmed mink population.
4. Tick borne encephalitis (TBE) is a tick borne viral disease, thought, until recently, not to occur in Great Britain. Researchers from Public Health England detected the virus for the first time following national targeted surveillance primarily focused on ticks and wild deer. In the last two years two human cases of TBE were probably acquired (although it is difficult to be definitive) in England.

Notifiable diseases

Avian Influenza (AI) Virus

Great Britain AI Wild Bird Surveillance (AIWBS)

Total wild bird surveillance

Following initial reports of highly pathogenic avian influenza (HPAI) among wild and domestic birds in the southern region of Russia at the end of July 2020, both Russia and Kazakhstan reported multiple outbreaks with high mortality. In Russia HPAI (H5N8) was been detected in four mute swans (*Cygnus olor*), four unknown species of anatids and one tufted duck (*Aythya fuligula*), along with 37 poultry outbreaks including one very large poultry farm (as of 22nd September). In North Kazakhstan HPAI (H5) was found in 86 corvids and 2 wild water birds of unknown species, along with 7 poultry backyard flocks. The source of infection in these outbreaks was most likely contact with wild birds followed by limited local spread.

The detection of HPAI H5N8 in this region has significant repercussions for the UK (H5N8 detected since, in wild birds and two cases in poultry); the area affected is a known autumn migration route for wild water birds heading for winter quarters in Europe. HPAI H5N8 virus was detected in the same area of Russia in the summer of 2016 prior to the largest known HPAI epidemic that followed in Europe from autumn 2016 to the first quarter of 2017. As winter approaches there will be an increasing risk from avian influenza in the UK from migrating wild birds with the potential to infect domestic poultry.

During the third quarter of 2020 a total of 157 birds were tested under the Avian Influenza Surveillance scheme, with no samples testing positive for Influenza A.

The most recent occurrence in the UK was in the second quarter of 2020 when wild birds were found to be Influenza A positive, but H5 negative, on two occasions.

Surveillance activity	Number of birds tested*	Positive AI virus result and species of bird	Comments
Found dead/injured	157 *(286)*	There were no positive cases found.	Scanning surveillance All-year-round

*Number of birds tested: figures for July – September 2019 are shown in brackets

Table 1: Number of wild birds tested and results in GB – 3rd Quarter

Table 1 shows the number of wild birds tested under the Avian Influenza surveillance scheme. The number of birds tested under the Avian Influenza in the third quarter (July - September) of 2020 was 157 as compared with 286 for the same period in 2019, the

reasons for this are unclear. Scanning surveillance continues year-round and all birds tested were found dead or injured.

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 of the warden patrol scheme 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 July to 30th September 2020 (Q3-2020), a total of 152 Warden Patrols were performed at sites across GB. This compares with a total of 173 Warden Patrols performed during the same period in 2019 (Q3-2019) in GB. Why the patrols were reduced in 2020 is not known but it could relate to covid restrictions. During Q3-2020, most Warden Patrols were performed by the Wildfowl and Wetlands Trust. In total during Q3-2020, 42 wild birds were reported found dead under the Warden Patrol Scheme of which 40 were tested, with no AI detections. This compares with a total of 69 wild birds found dead of which 67 were tested during Q3-2019, with three LPAI non-H5 AI detections.

In Q3-2020, Mallard ducks (8) and Moorhens (8) were the most common target species found, and birds were most commonly found in the South West region (19) with the lowest numbers in the East, Midlands and Scotland (all 0). Similarly, Mallard ducks (20) were the most common target species found in Q3-2019 and birds were most commonly found in the South West region (31) with the lowest numbers in the Midlands and North East (both 0).

Current EU situation

The current EU and UK outbreak situations can be found here:

https://www.gov.uk/government/publications/avian-influenza-bird-flu-in-europe

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

Current UK Situation

At time of writing (13/11/2020) there have been two cases of HPAI H5N8 in poultry farms, and HPAI H5N8 confirmed in wild geese and swans; all in England. The risk level for wild

birds has been raised to high, and for poultry it has been raised to medium. An Avian Influenza Prevention Zone has been declared in GB.

https://www.gov.uk/government/news/avian-influenza-bird-flu-national-prevention-zone-declared

There has also been a case of LPAI H2N2 at a poultry premises in Kent.

The current cases and the continuing threat of incursion of HPAI in Europe serves as a reminder that at all times, poultry keepers should maintain robust biosecurity measures (please see the link below). Advice for all poultry keepers regarding biosecurity and preventing welfare impacts in poultry and captive birds can be found at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/934688/biosecurity-poultry-guide.pdf

Be vigilant for clinical signs of disease and 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 Wales, the helpline number is 0300 303 8268
- In Scotland, 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:

- Avian influenza guidance: https://www.gov.uk/guidance/avian-influenza-bird-flu
- 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/nad/index.htm

References

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915180/poa-avian-influenza-H5N8-russia-Sep20.pdf

https://www.gov.uk/guidance/avian-influenza-bird-flu

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/608529/ai-birdflu-factsheet-170413.pdf

https://www.gov.uk/government/publications/avian-influenza-in-wild-birds

Gibbens N, Brown IH, Irvine RM. Testing for exclusion of notifiable avian disease. *Veterinary Record* 2014:**174**:534-535. http://dx.doi.org/10.1136/vr.g3412

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Wildfowl and Wetlands Trust's (WWT) role in GB Avian Influenza Wild Bird Surveillance (AIWBS)

Summary: Threats - HPAIV, targeted active surveillance of wetland birds

Throughout this quarter, WWT continued to carry out passive surveillance of avian influenza across the reserves. Between July and Sept 2020, 44 dead wild birds were found across seven WWT sites located in Gloucestershire, West Sussex, Tyne and Wear, Greater London, Lancashire and Carmarthenshire. Of the birds found, 41 were sampled for avian influenza virus, with three carcases being too heavily predated or in advanced decomposition to swab.

Nine priority target species were sampled during this quarter. These included species of geese, ducks, gulls, and rails. In addition, samples were also obtained from four non-priority species: a Eurasian crane (*Grus grus*), a mandarin duck (*Aix galericulata*), Eurasian curlew (*Numenius arquata*) and a rook (*Corvus frugilegus*).

No Influenza A viral RNA was detected via PCR in the 41 samples that were sent to the lab. During this quarter, swabs collected were refrigerated and sent in weekly batches, in order to comply with Covid-related regulations.

For further details of HPAI surveillance from across Great Britain, please refer to the APHA report for this quarter.

Rosa Lopez, WWT

Zoonotic Diseases

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

Threat: Zoonotic, 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.

There were no reports of *Salmonella* in wildlife for this quarter.

Catherine Man, APHA Diseases of Wildlife Scheme

Report from Wildlife Zoonoses and Vector Borne Disease Research Group

Summary - Zoonotic, farmed, pet animal and international trade risk

Passive surveillance for lyssaviruses in UK bats

Two hundred and thirty four bats were tested for lyssavirus under passive surveillance during this quarter. One Soprano pipistrelle (*Pipistrellus pygmaeus*) from Dorset tested positive for Lyssavirus by IFAT only and one Serotine bat (*Eptesicus serotinus*) was positive by PCR for Lyssavirus. Sequence analysis identified the strain as EBLV1.

Eight zoo bats were tested in this quarter for lyssaviruses. All were negative.

Rabies diagnosis

One dog as a suspect case as well as one cat and one bat that died in quarantine were tested for rabies with negative results.

Rabies surveillance in terrestrial wildlife

Vigilance continues for this notifiable disease in UK wildlife but no samples from terrestrial wildlife were submitted for testing this quarter.

West Nile virus and Usutu virus surveillance in wild birds SV3045

Brain and kidney tissue samples from 153 wild birds were tested for WNV with negative results during this quarter representing all birds received since the start of the year. Delays in testing of Q1 and Q2 birds were due to the application of Covid restrictions.

One hundred and eighteen serum samples from racing pigeons as potential imports to Australia/New Zealand were tested by competition ELISA for WNV. Three were positive for WNV.

These pigeons would have been gathered from various countries within Europe before quarantine in UK prior to pre-export testing.

First detection of Usutu virus in wild birds in UK

Between 15 July and 26 August 2020, tissues from five blackbirds (*Turdus merula*) and one house sparrow (*Passer domesticus*) were submitted from a single area in Greater

London. The blackbirds comprised three adult males in thin or emaciated condition and two juveniles of undetermined sex in normal body condition. Clinical signs had been observed in two of the blackbirds: one was dehydrated and unable to grip, and was therefore euthanised on welfare grounds; the second was found unresponsive and subsequently died. The house sparrow was an adult male in thin body condition that was found dead. Usutu virus (USUV) RNA was detected in brain and kidney samples from all six birds by both specific USUV RT-PCR as well as by pan flavivirus RT-PCR. Next Generation Sequencing produced sequences which formed a distinct clade within the African 3.2 lineage of USUV, among the 10 recognised USUV lineages co-circulating in Europe. In further studies Flavivirus envelope (E) antigen was detected by immunohistochemistry on formalin-fixed paraffin-embedded tissue sections from all six birds and USUV has been isolated in Vero cell cultures from brain and kidney tissues from all six birds.

This represents the first detection of USUV in wild birds from UK and a report of this finding has been published in Eurosurveillance.

Mosquito surveillance has been initiated in the area these birds were found in order to determine circulation in local vector populations. Results will be circulated in Q4 report.

Brain and kidney tissue samples from a further 40 passerines and 1 owl were tested for USUV with negative results.

West Nile virus surveillance in Equids

One horse from Essex showing neurological signs was tested by IgM ELISA for WNV with negative results.

The recent detection of WNV in wild birds and mosquito vectors in The Netherlands during the summer of 2020 illustrates the further spread of the virus within mainland Europe and highlights the need for ongoing vigilance.

Reference

Folly, A.J. et al (2020) Detection of Usutu virus infection in wild birds in the United Kingdom. Eurosurveillance 25 (41) https://doi.org/10.2807/1560-7917

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

Ongoing new and re-emerging diseases, unusual diagnoses and horizon scanning

Wildlife Diseases, horizon scanning; news items associated with wildlife populations and wildlife disease. Very brief summaries are given, including possible wildlife disease threats to human, livestock and biodiversity health.

1. COVID-19 virus found in farmed mink (*Neovison vison*) in Denmark and the United States of America.
2. References: PRO/AH/EDR> COVID-19 update (266): Denmark (ND) animal, farmed mink, 1st rep. Archive Number: 20200617.7479510.
3. PRO/AH/EDR> COVID-19 update (366): animal, USA (UT) mink. Archive Number: 20200818.7692815.
4. Published reviews of Covid-19 in animal species, risk of susceptibility and guidelines for working with wildlife. IUCN and OIE released guidelines to minimise the risk of covid-19 transmission from people to wild animals.
5. Reference: IUCN and OIE, ProMED 01/09/2020 and linked publication - http://www.iucn-whsg.org/COVID-19GuidelinesForWildlifeResearchers.
6. Raccoon dogs (*Nyctereutes procyonoides*) susceptible to experimental infection with Covid-19 virus.
7. Reference: ProMED and FLI publication in Emerging Infectious Diseases https://wwwnc.cdc.gov/eid/article/26/12/20-3733_article.
8. HPAIV H5N8 in free-living mute swans (*Cygnus olor*) near Utrecht, the Netherlands.
9. Reference: Wildlife disease colleague from the Netherlands correspondance. OIE Report - https://www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review?page_refer=MapFullEventReport&reportid=36235.
10. Mass mortality in arctic terns (*Sterna paradisaea*) not reported again in breeding colonies in 2020.. Significant because it adds to the theory that these mortalities may, at least in part, relate to a novel bacterial infection, as seen in North America, where deaths did not recur at sites.
11. Ref - Previous outbreaks in 2016 and 2019. APHA DoWS investigations.
12. Carbapenemase resistance and extensive antimicrobial resistance (AMR) in young common seal pups (*Phoca vitulina*) points to anthropogenic sources, probably sewage outflows including hospital sewage.
13. Reference: Duff JP, AbuOun M, Bexton S, Rogers J, Turton J, Woodford N, Irvine R, Anjum M, Teale C. Resistance to carbapenems and other antibiotics in Klebsiella pneumoniae found in seals indicates anthropogenic pollution. *Veterinary Record* 2020 **187**, 154. doi.org/10.1136/vr.105440.
14. First case of West Nile Virus (WNV) in Netherlands in a whitethroat (*Sylvia communis*).
15. Reference: Publication https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.40.2001704.

16. First incursion of Usutu virus in the UK.
17. Reference: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.41.2001732.
18. Two novel viruses (polyomavirus and anellovirus) from Iberian hares (*Lepus granatensis*).
19. Reference: Águeda-Pinto A, Kraberger S, Lund MC, et al. Coinfections of Novel Polyomavirus, Anelloviruses and a Recombinant Strain of Myxoma Virus-MYXV-Tol Identified in Iberian Hares. Viruses 2020;**12**:340. doi.org/10.3390/v12030340.
20. Risk of incursion of Crimean-Congo haemorrhagic fever (CCHF) in GB from migratory birds.
21. Reference: PHE's Emerging Infections Summary, June 2020. Reference https://comunicacion.jcyl.es/web/jcyl/Comunicacion/es/Plantilla100Detalle/1281372051501/NotaPrensa/1284960397145/Comunicacion.
22. What happens to the wild animals imported into the UK (3.4 million imported in a 5 year period)? Does the existing legislation protect from the risk of disease.
23. Reference: Green J, Coulthard E, Norrey J, Megson D, D'Cruze N. Risky Business: Live Non-CITES Wildlife UK Imports and the Potential for Infectious Diseases. *Animals (Basel)* 2020;**10**(9):1632. doi.org/10.3390/ani10091632

Garden Wildlife Health summary

The Garden Wildlife Health project (GWH) has continued to conduct scanning disease surveillance of garden birds, hedgehogs, reptiles, and amphibians.

Taxon	No. of disease incident reports (No. of sites)	Total No. of animals observed (sick/dead)
Amphibians	73 (63)	114 (36/78)
Birds	1920 (924)	2530 (1632/898)
Hedgehogs	184 (183)	253 (40/213)
Reptiles	5 (4)	5 (0/5)
Total	**2182 (1174)**	**2902 (1708/1194)**

Table 2 shows the numbers of Garden Wildlife Health disease incident reports submitted during Q3 2020

Taxon	No. of disease incident reports in Q3 (no. sick/dead) 2019	No. of disease incident reports in Q3 (no. sick/dead) 2020
Amphibians	78 (125/235)	73 (36/78)
Birds	898 (853/383)	1920 (1632/898)
Hedgehogs	149 (31/141)	184 (40/213)
Reptiles	5 (0/5)	5 (0/5)
Total	**1130 (1009/764)**	**2182 (1708/2902)**

Table 3 compares the numbers of Garden Wildlife Health disease incident reports for Q3 2019 and 2020

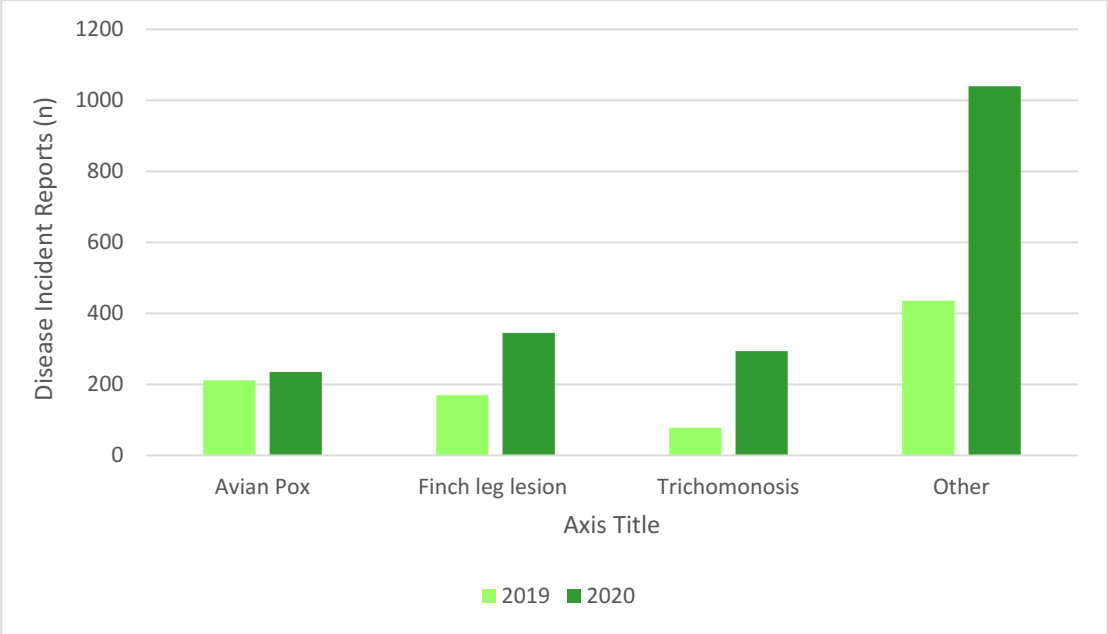

Figure 1 compares the numbers of Garden Wildlife Health avian disease incident reports (DIRs) allocated suspected diagnoses for Q3 2019 and 2020, with the category of 'other' mostly comprising reports of nestling mortality, trauma (e.g. window collision), predation or cases of birds exhibiting non-specific signs of ill health (e.g. fluffed-up plumage, lethargy). Further information on avian pox, finch leg lesions and trichomonosis is available by following the respective links.

There was no evidence of unusual patterns in the DIRs observed, with general trends being similar to the same period last year, however, the increase in overall DIRs from Q3 2019 to Q3 2020 is considered to be due to ongoing Covid-19 restrictions with more people working from home, spending time in their gardens and observing local wildlife, and the British Trust for Ornithology continuing to offer free subscription to their Garden BirdWatch (GBW) scheme.

IoZ

Mammal reports

Wild mammal reports from APHA DoWS

Mass mortality in swarming common pipistrelle (*Pipistrellus pipistrellus*) bats

Over a 3 year period (2017-19) APHA DoWS collaborated in an investigation into mass mortality among common pipistrelle (*Pipistrellus pipistrellus)* bats that has been recorded to occur annually since at least 1986 within the confines of a large building in northern England. The mortality occurs within the context of an annual 'pipistrelle invasion' or swarming event between July and September, which may involve site-location-learning by juvenile bats in relation to use of the site as a winter hibernaculum. Bats become grounded within the site and subsequently die unless recovered for rehabilitation, with 200 or more recoveries occurring in some years and up to 90 deaths.

Examinations were performed on 43 bats, but no consistent abnormalities or disease was found other than low body weights; European bat lyssavirus examinations were negative. Malnutrition and metabolic disease as a consequence of unknown factors cannot be ruled out. Preliminary analysis of the frequency of occurrence of grounded bats suggests a possible role for weather conditions, with a negative relationship between the number of groundings and minimum temperature the previous night. However, in the absence of any further positive evidence the cause of the annual mass mortality at the site remains unknown.

Squirrelpox in expanding population of red squirrels in North Wales

Squirrelpox was identified in a red squirrel (*Sciurus vulgaris*) from North Wales (Everest and others, 2020). This is unfortunate because red squirrels are expanding from a stable population in Anglesey onto the mainland, into coastal woodlands and this case is likely to represent infection caught from grey squirrels (*S carolinensis*) which are sympatric to the red squirrels and asymptomatic carriers of the virus. Protocols to respond to outbreaks have been developed (Everest and others, 2020). Further cases of squirrelpox could impede further expansion of these small populations of native red squirrels.

Figure 2: Typical squirrelpox lesions on the face of a red squirrel

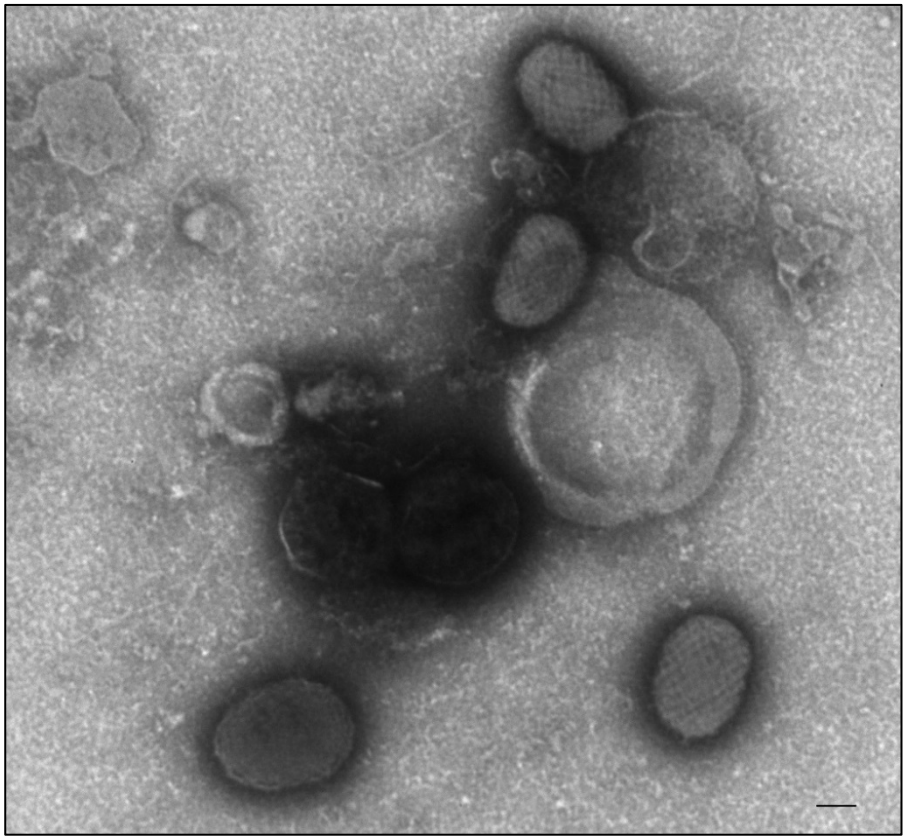

Figure 3: Negative contrast stain transmission electron micrograph displaying SQPV particles in facial skin lesion material from a dead red squirrel found in north Wales. Bar = 100nm

Adenovirus enteritis in a red squirrel (*Sciurus vulgaris*)

Adenovirus infection was identified in an adult male red squirrel (*Sciurus vulgaris*) with severe haemorrhagic enterocolitis and typhilitis, submitted in July. The animal came from a small wood in Northumberland which 2 years ago was reported to have a population of approximately 30 red squirrels. Several cases of adenovirus were diagnosed by APHA DoWS from the same wood in 2019 and the disease is now threatening the viability of this small, isolated population.

A similar history was reported by APHA DoWS describing a small, isolated population of red squirrels in a wood on the outskirts of Newcastle-upon-Tyne, where squirrel pox was detected. Conservation workers at this wood have now reported that the red squirrel population there has now unfortunately been extirpated. This is a repeating theme; the destruction of small, isolated populations in the north of England, falling victim to the combined threats of infectious disease, poor quality, restricted habitat and anthropogenic factors such as pets killing red squirrels and cars killing the animals on the roads.

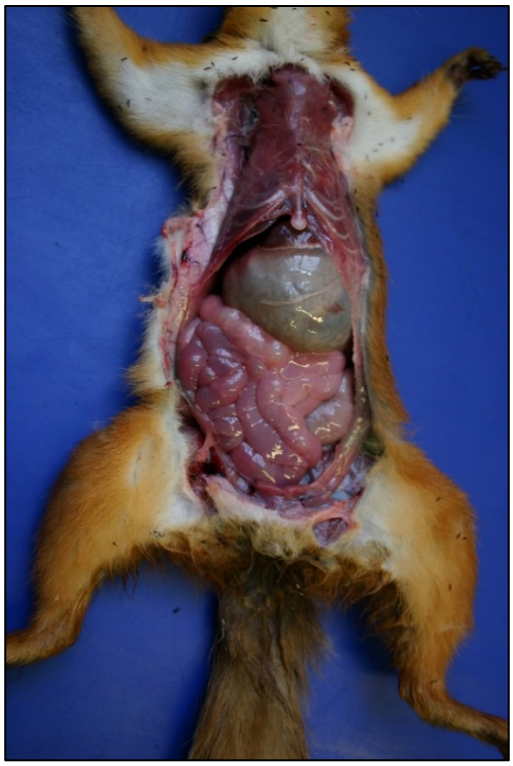

Figure 4: A red squirrel with adenovirus infection, showing enteritis and diarrhoeic staining typical of the disease.

Surveillance in a raccoon dog (*Nyctereutes procyonoides*)

A raccoon dog (*Nyctereutes procyonoides*) was submitted for post mortem examination following euthanasia. The female dog was in good body condition with no significant gross findings. Molecular testing and sedimentation and counting technique for *Echinococcus multilocularis* was negative. Raccoon dogs are known carriers of *E. multilocularis,* which is

not present in the UK but is found in continental Europe.

Figure 5: Photo of the submitted raccoon dog (*Nyctereutes procyonoides*)

References

Everest DJ, Shuttleworth CM, Holmes JP, Bell S. Maintaining wildlife surveillance and monitoring in a lockdown environment. *Vet Rec* 2020; 187:408-409. doi: 10.1136/vr.m4110

APHA Diseases of Wildlife scheme

Avian Reports

Wild Bird reports from the IoZ

Usutu virus infection in garden birds

In August 2020, five blackbirds (*Turdus merula*) and one house sparrow (*Passer domesticus*) from a single site in Greater London were examined post mortem and were found to have died from Usutu virus (USUV) infection (Folly et al., 2020), a mosquito-borne flavivirus that primarily affects birds belonging to the orders Passeriformes (perching birds) and Strigiformes (owls). From 2005-2013, our risk-based targeted approach for USUV surveillance did not detect evidence of infection in British birds (Horton et al., 2013; unpublished observations). Since 2013, kidney and brain samples from all avian cases submitted to GWH during the active mosquito season (March- November) have been screened for flavivirus and the six birds reported here are the first USUV-positive cases detected (Folly et al., 2020; please see also “Report from Wildlife Zoonoses and Vector Borne Disease Research Group” above).

Usutu virus has recently emerged in Europe where it poses a potential disease threat to both wild and captive birds. The first report of the disease in wild birds in a European

country was in Austria in 2001, although retrospective studies indicate it has caused mortality in blackbirds in Italy since at least 1996 (Weissenböck et al., 2013). The most common sign of USUV infection in birds in mainland Europe has been mortality events in the summer months affecting multiple passerine birds (typically blackbirds). When sick blackbirds have been observed, they have shown signs such as lethargy, weakness, loss of coordination and seizures.

A small number of cases of human illness due to USUV infection have so far been reported in mainland Europe, with most affected people exhibiting neurological symptoms. The virus is presumed to have been transmitted to people via the bite of an infected mosquito. Current evidence suggests that most human USUV infections are asymptomatic (i.e. do not cause disease) and the risk to human health is considered low.

More information on USUV infection in wild birds can be found in the Garden Wildlife Health disease factsheet (www.gardenwildlifehealth.org/portfolio/usutu-virus/), and on the revised HAIRS risk assessment on Usutu virus (www.gov.uk/government/publications/hairs-risk-assessment-usutu-virus).

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Folly AJ, Lawson B, Lean FZ, McCracken F, Spiro S, John SK, Heaver JP, Seilern-Moy K, Masters N, Hernández-Triana LM, Phipps LP. Detection of Usutu virus infection in wild birds in the United Kingdom, Eurosurveillance 2020: 25(41):2001732. doi.org/10.2807/1560-7917.ES.2020.25.41.2001732

Horton DL, Lawson B, Egbetade A, Jeffries C, Johnson N, Cunningham AA, Fooks AR. Targeted surveillance for Usutu virus in British birds (2005-2011). *Veterinary Record* 2013: **172**(1):17. doi.org.uk/10.1017/S095026881200177X

Weissenböck H, Bakonyi T, Rossi G, Mani P, Nowotny N. Usutu virus, Italy, 1996. Emerging Infectious Diseases 2013:**19**(2):274. doi.10.3201/eid1902.121191

Avian pox in garden birds

In August 2020, a thin juvenile male song thrush (*Turdus philomelos*) from Monmouthshire, Wales, was submitted for post mortem examination. Two skin lesions were located on the left side of the head: a large, brown, pedunculated lesion (7mm diameter) was situated ventral to the left eye with a smaller (1mm diameter), yellow, nodular lesion immediately caudoventral to the larger lesion (Figure 6). Histopathological examination confirmed avipoxviral dermatitis with secondary bacterial infection, predominantly Gram-positive cocci. *Staphylococcus xylosus,* a bacterium commonly isolated from the skin of birds and mammals, was isolated from the larger of the two skin lesions.

The right lobe of the liver contained circa four multifocal, flat, yellow parenchymal lesions (Figure 7). Whilst no significant bacteria were isolated from a sample of liver lesion, histopathology revealed a severe multifocal necrotising hepatitis with intralesional fungal

hyphae, which was considered the likely cause of death. It is possible that the avian pox skin lesions compromised vision, perhaps interfering with feeding and leading to generalised debility. Fungal infections diagnosed in garden birds as part of the GWH project are typically sporadic and considered likely secondary and opportunistic, often detected in combination with significant comorbidity.

Figure 6 Avian pox skin lesions (arrows) affecting a juvenile male song thrush (Turdus philomelos)

Figure 7 Multifocal, flat, yellow parenchymal lesions (arrows) in the liver of a juvenile male song thrush (*Turdus philomelos*).

In Great Britain, avian pox is primarily reported in great tits (*Parus major*) which, since 2006, have suffered from a severe form of the disease known as Paridae pox, which is also less frequently seen in other tit species (Lawson et al., 2012). Other garden birds are sporadically affected by avian pox, including dunnocks (*Prunella modularis*), house sparrows (*Passer domesticus*), starlings (*Sturnus vulgaris*) and woodpigeons (*Columba palumbus*); however, these species are typically affected by a milder form of the disease.

Since 2013, 1480 disease incident reports have been assigned the suspect diagnosis “avian pox”, based on descriptions and/or digital photos of affected birds. Of these reports, 906 (61%) have involved tit species, with a widespread distribution. The remaining 574

reports comprised mainly of incidents involving dunnocks (298; 20%), woodpigeons (85; 6%) and house sparrows (59; 4%). Whilst avian pox has been previously reported in this species (Thomas et al. (ed.), 2008), this report describes the first song thrush to be diagnosed with avian pox by GWH since its inception in 2013. Samples have been archived for PCR and sequence analysis to enable identification of the avipoxvirus clade (Gyuranecz et al., 2013).

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Wildfowl and Wetlands Trust (WWT) report

Passive surveillance of waterbirds

Post mortem examinations were performed on 46 wild birds originating from four WWT sites (Slimbridge, Gloucestershire; Arundel, West Sussex; Martin Mere, Lancashire and London Wetland centre, Greater London). A total of nine target species were examined, which included ten mallards (*Anas platyrhynchos*), one black-headed gull (*Chroicocephalus ridibundus*), one common shelduck (*Tadorna tadorna*), one greylag goose (*Anser anser*), one tufted duck *(Aythya fuligula),* six eurasian coots (*Fulica atra*), four herring gulls *(Larus argentatus),* 17 moorhens (*Gallinula chloropus)* and one canada goose (*Branta canadensis).* Four other species were also examined: a juvenile Eurasian crane *(Grus grus),* a jackdaw *(Corvus monedula),* an avocet *(Recurvirostra avosetta)* and a trumpeter swan (*Cygnus buccinator*). The primary causes of death are summarised below (Table 4).

The main causes of avian mortality during this quarter were predation (35%) and trauma (33%). Within the trauma cases, there were three mallards and one moorhen with cutaneous lesions compatible with interspecies and intraspecies aggression; one avocet, one jackdaw, one canada goose, one mallard, one coot and five moorhens that presented with internal haemorrhage of the coelomic cavity and/or oral cavity together with varied types of bone fractures affecting the skull, wing or limb structures indicating possible collision or motor-vehicle involved accidents as likely cause of these traumatic lesions. There was a juvenile Eurasian crane with a low body condition score, empty digestive tract, extensive muscular bruising on left flank, deep penetrating wound in the left inguinal fold, and numerous broken tail feathers, which in combination are suggestive of long-term

malnutrition, weakness and a severe collision. The majority of the predated birds collected presented intact skeletal structure with skin, minimal soft tissue, absence of internal organs and extensive maggot infestation. One mallard was found headless and with severe neck haemorrhage from ruptured vessels secondary to lethal pull injury from an unidentified predator.

Avian mycobacteriosis was the primary cause of mortality in 6% of the carcases found with a characteristic presentation of mutil-focal granuloma-like lesions in hepatic, splenic and/or renal tissues in all three birds (swan, mallard and coot). Advanced aspergillosis was detected in two herring gulls (one juvenile and one young adult female), both emaciated, poor feather condition, with pericloacal faecal staining, and with extensive fungal growth within cranial and caudal air sacs, as well as, lung parenchyma with multiple nodules.

Five wild birds (10%) included other causes that were of less prevalence, during this quarter, including mortality related to a potential underlying cardiovascular process in a greylag and a mallard, intestinal foreign body obstruction in a moorhen, euthanasia in a coot due to advanced bumblefoot causing severe lameness and pain, and lastly, drowning of a young coot. Five additional wild birds (10%) did not receive a diagnosis due to advanced decomposition or lack of obvious gross abnormalities.

Primary cause of death/PM findings	Total	Species (and notes)
Trauma	15	6 x moorhens*[1], 4 x mallards, 1 x jackdaw, 1 x crane†[1], 1 x coot, 1 x avocet, 1 x Canada goose,
Predation	16	1 x tufted duck, 1 x shelduck, 8 x moorhens, 3 x mallard, 1 x herring gull, 1 x coot, 1 x black headed gull
Avian mycobacteriosis	3	1 x trumpeter swan, 1 x mallard, 1 x coot
Aspergillosis	2	2 x herring gull†[1]
Other	5	1 x greylag (cardiovascular disease), 1 x mallard (internal haemorrhage), 1 x moorhen (intestinal obstruction), 1 x coot (bumblefoot), 1 x coot (drowned) †[1]
No diagnosis (due to decomposition or lack of or inconclusive gross abnormalities)	5	1 x coot, 1 x herring gull†[1], 1 x mallard, 2 x moorhens†[1]

Table 4 Confirmed & suspected causes of wild bird mortality (including morbidity meriting euthanasia on welfare grounds) at WWT reserves between July and September 2020; †n

denotes juvenile birds, and number of juvenile birds; *n denotes euthanased birds, and number of euthanased birds.

Sarcocystis surveillance project

With the start of the wildlfowl hunting season in September, six new cases were submitted to the *Sarcocystis* surveillance project via the Sarcocystis Survey website. One additional case was detected in May, at WWT Slimbridge Wetland Centre in Gloucestershire, during a post mortem examination on a dead male mallard presenting advanced avian mycobacteriosis. The majority of reported cases were mallards (*Anas platyrhynchos)* (5) and one Eurasian wigeon (*Mareca Penelope)* (1), and largely in females (66%) with fair body condition (plump breast muscle and minimal fatty tissue). This season's surveillance will continue to collate reports of infection until the close of the hunting season in early 2021.

As previously mentioned, continued monitoring is essential to further our understanding of this emerging infectious disease and its potential impact on host survival and fitness. Further information and previous reports are available on the Sarcocystis Survey website (http://www.sarcocystissurvey.org.uk/).

Rosa Lopez, Veterinary Officer (Conservation), Wildfowl & Wetlands Trust (WWT)

Wild Bird reports from Scotland

Riemerella anatipestifer was isolated from an outbreak of sinusitis in gull chicks in a wildlife rehabilitation centre. In 2018, a similar large outbreak of sinusitis was seen in mixed gull chicks, and swabs from two chicks were submitted, from which *R. anatipestifer* was isolated. In the 2020 outbreak, some affected gulls were also showing severe cervical oedema. Three female untreated chicks (mixed species, not individually identified at time of submission) were euthanased and necropsy carried out by SRUC Veterinary Services. Findings included oedema throughout the tissues of the neck in two, which extended from the top of the cranium down to the thoracic inlet, and in the third a cervical swelling was found not to be grossly oedematous, but to be a deposit of a pale tissue that resembled an organised exudate/cellulitis with loose fibrous tissue. Asymmetrical swelling of the palate was seen in the two gulls with cervical oedema, with pale friable masses in the left nasal turbinates in both. *R. anatipestifer* was isolated from the cervical subcutaneous tissue in all three gulls, and from the affected turbinates in the two gulls with rhinitis/sinusitis. Histopathology confirmed evidence of rhinitis/sinusitis and cellulitis in all three gulls. In addition, there was evidence of nematode parasitism in the first two gulls, suspected to be due to *Capillaria* sp. The cellulitis in all three appeared to be of bacterial aetiology and was almost certainly due to the *R. anatipestifer*. It was suspected that the infection may have started in the upper respiratory tract and then spread to cause cellulitis. The role of the worms was unclear.

This case was of interest due to the repeated mortality in rehabilitation centres in different years, as this infection may prove a barrier to successful rearing and rehabilitation of

groups of mixed gull chicks. *R. anatipestifer* has been isolated from gull species before this (Cha et al, 2015; Hinz et al, 1998); however, the pathogen is considered to be of most importance as a cause of infectious disease in farmed ducks, geese, turkeys and occasionally chickens, and also as a cause of outbreaks of mortality in migratory waterfowl (Cha et al, 2015).

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Caroline Robinson, SRUC Veterinary Services

Wild Bird reports from APHA DoWS

Avian Botulism

High bird mortality on one water body in England has been confirmed as due to avian botulism. Over 110 birds have died since the middle of August. The majority were teal (*Anas crecca*) but also a wide variety of others died including mallard (*Anas platyrhynchos*) and various gull species. Waders, including avocet (*Recurvirostra avosetta*), ruff (*Philomachus pugnax*), lapwing (*Vanellus vanellus*) and green sandpiper (*Tringa ochropus*) were also affected, and this is the first time in the UK that these wader species have been found dead in a botulism outbreak. Daily checks were made to collect carcases around the site and mortality peaked in the first two weeks of September. Carcases were received at APHA Shrewsbury Veterinary Investigation Centre (VIC) for Avian Influenza surveillance and diagnostic post mortem. A visit to the site was made by APHA to investigate and advise further. Serum was collected from a paralysed lesser black backed gull (*Larus fuscus*) before euthanasia. Botulinum toxin was detected in the serum and also detected in intestinal contents from a dead teal and mallard. Independent water analysis also indicated the presence of algal toxins and further testing of tissue samples collected is in progress to investigate further. Cattle are introduced for conservation grazing in the autumn and the risks to them from botulism were discussed and management advice given.

Figure 8: Lesser black backed gull paralysed due to avian botulism.

Figure 9: Carcase found on the edge of the lake where the poor water quality was likely to favour avian botulism.

Paul Holmes, APHA Diseases of Wildlife Scheme

Auk Wrecks

A wreck of auks was reported along western coasts from Cumbria to the southwest of Scotland. Precise numbers of carcases were not counted however it could have been in the hundreds. In similar incidents in the past, thousands of seabirds have been affected. Five razorbills (*Alca torda*) were submitted to APHA DoWS and post mortem findings in all showed emaciation and empty gizzards. Seabird wrecks normally follow stormy weather, but it is still unclear whether storm conditions affect the birds directly, or through restricted food availability. Wrecks of seabirds occur almost annually and can be due to several causes (e.g. oil pollution, marine toxicities, toxicity associated with ship discharges and food shortages) and investigation is important to establish the cause. Stormy weather at sea is however the most frequent cause. Storms occurred in the Irish Sea in late summer this year. These small birds, only 40 cms in length, spend the winter at sea and it is predominantly the inexperienced birds, born this year, that are thought to be at greatest risk.

APHA Diseases of Wildlife Scheme

Corvid deaths

An investigation into disorientated, distressed and dying corvids, some of which were described as ‘falling out of the sky’, submitted under the Wildlife Incident Investigation Scheme (WIIS), was unrewarding in determining the cause of the clinical signs and deaths. Between 20 and 30 corvids were reported to be affected, with eight being taken to a wildlife rehabilitation centre for treatment; two of which subsequently died.

Post mortem exanimations were undertaken on three rooks (*Corvus frugilegus*) at APHA Penrith VIC (one which was found dead initially and the two which died later). Toxicological testing of these rooks and some grains which were found in the area, did not identify any untoward pesticide residues. Histopathological examinations were undertaken on samples collected from the three carcasses. These found a mild rhinitis in the one found dead and acute mycotic pneumonias in the two which had died at the rehabilitation centre, but gave no indication as to the cause of the clinical signs described. Alcohol poisoning/inebriation due to the ingestion of fermented fruits or grains, was discussed as a possibility, although this has not been tested for to date.

Sue Neale and Elizabeth Dunnett APHA VIC Penrith

Parasitism in young mute swan (*Cygnus olor*) cygnets

Two dead mute swan (*Cygnus olor*) cygnets were submitted to investigate the cause of death. The cygnets were approximately six weeks old and were originally part of a brood of seven cygnets on a local lake. One cygnet had died at a few days old however, the remaining six had all died over a three to four day period. It was reported that some of the coots on the lake had also struggled to rear young as well, and that whole broods of cygnets had also died in previous years. The breeding pair of free-living mute swans have been resident for around three years. At gross necropsy, it was found that both cygnets

had a heavy endoparasitic burden of a variety of helminths. Histological examination found multiple species and developmental stages of parasites (trematodes, cestodes and nematodes) in various anatomical niches. It was concluded that the synergic action of the parasite and parasitic driven damage, including the necrotising enteritis in the examined section would account for the ill thrift and the demise of these birds. There was also evidence of ventricular cestodiosis (likely *Gastrotaenia* spp.) and schistosomosis (likely *Trichobilharzia* spp.). While schistosomosis is a common finding in swans and other wild waterfowl, the high number of parasites and the associated lesions were likely to be significant in this case. Cygnet parasitism is a relatively well recognised occurrence, although this case occurred much earlier in the season than is typically seen. Due to the free-living status of these birds, preventative interventions are rarely possible, although treatment of individual animals is sometimes undertaken by wildlife rescue centres.

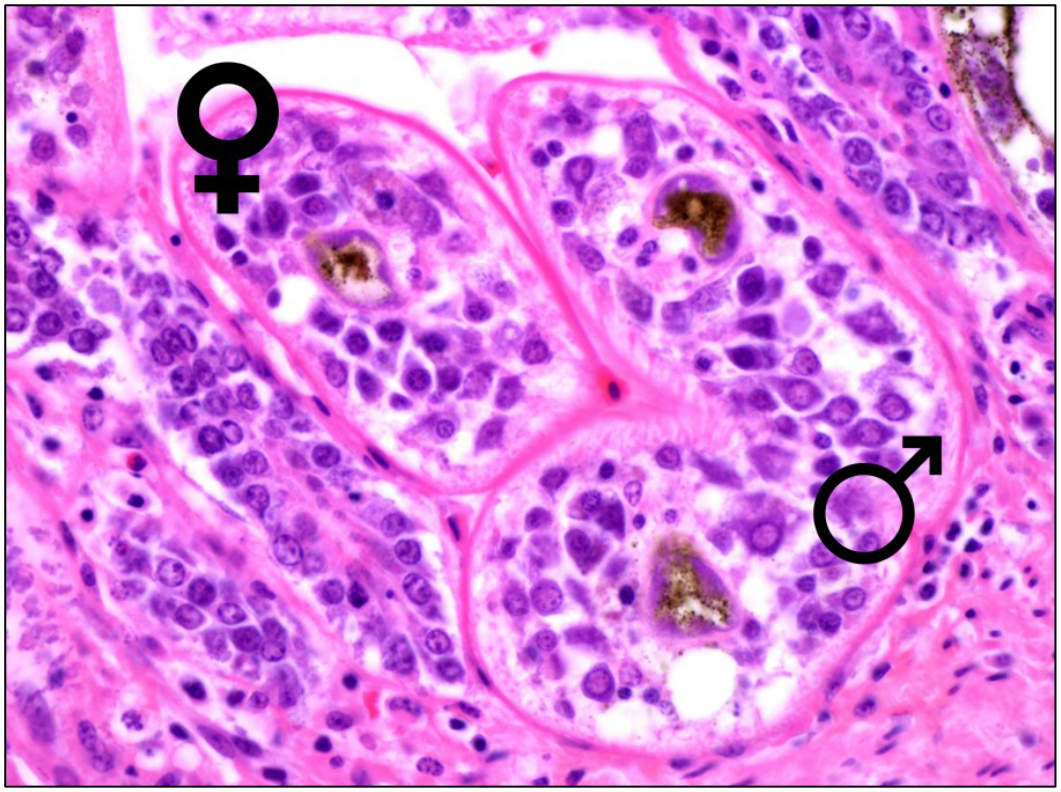

Figure 10 Histological section of the small intestine of a mute swan cygnet, with a male *Schistosomatidae* with the female lodged in the gynecophoric canal (Magnification 400X)

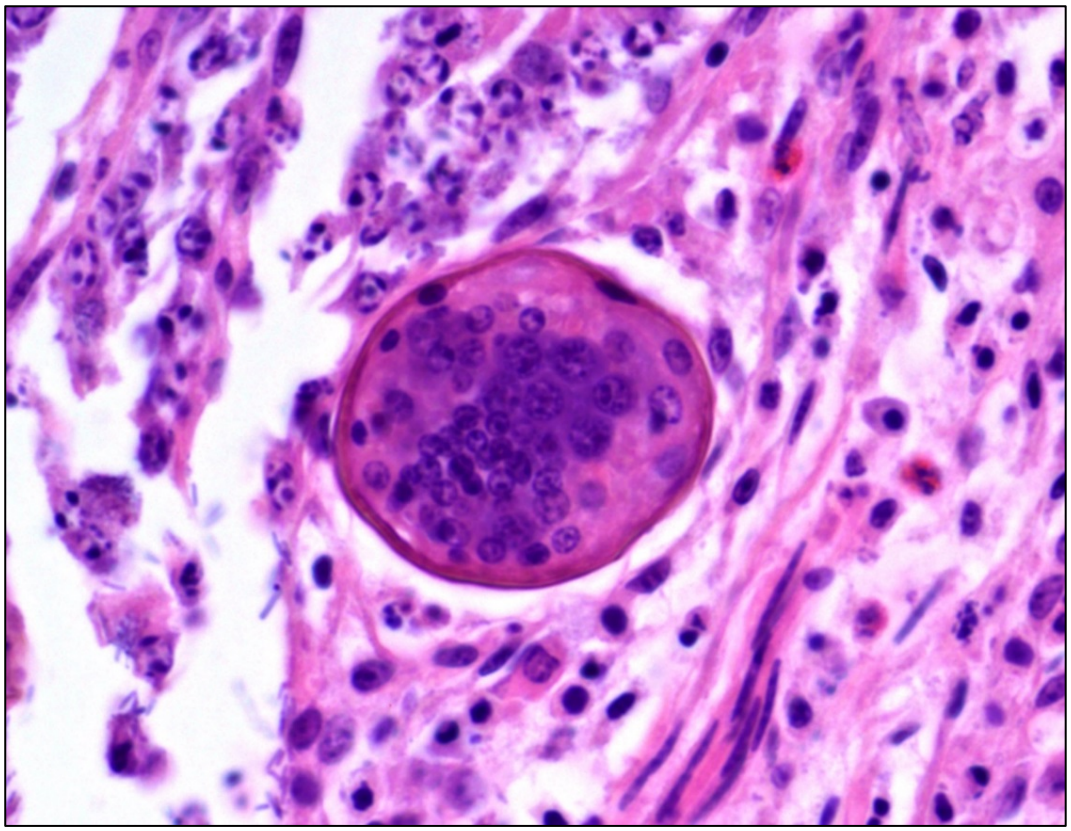

Figure 11 Histological section of the small intestine of a mute swan cygnet, showing the egg of *Schistosomatidae* within the small intestinal lamina propria (Magnification 400X)

Ed Fullick, APHA Diseases of Wildlife Scheme

The material in this report has been compiled by the Animal and Plant Health Agency (APHA) Surveillance Intelligence Unit in collaboration with the APHA Surveillance and Laboratory Services Department.

The report is available on GOV.UK at https://www.gov.uk/government/collections/animal-disease-surveillance-reports.

Any enquiries regarding this report should be sent to APHA's Surveillance Intelligence Unit by emailing SIU@apha.gov.uk.

More information about scanning surveillance reports is available on APHA's Vet Gateway at http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm.

APHA is an executive agency of the Department for Environment, Food & Rural Affairs, and also works on behalf of the Scottish Government and Welsh Government.