These reports aim to identify new, emerging and re-emerging animal-related diseases and threats. Their production is underpinned by a large amount of surveillance data and information compiled as part of Defra’s animal disease surveillance programme. Some of these data can be viewed on the AHVLA website: http://www.defra.gov.uk/ahvla-en/disease-control/surveillance/emerging/

VIDA diagnoses are recorded on the AHVLA FarmFile database and SAC Consulting LIMS databases and comply with agreed diagnostic criteria against which regular validations and audits are undertaken.

The investigational expertise and comprehensive diagnostic laboratory facilities of both AHVLA and SAC Consulting 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.

AHVLA Laboratories and SAC Consulting Veterinary Surveillance Centres have UKAS Accreditation and comply with ISO 17025 standard.

### Contents

<table>
<thead>
<tr>
<th>Contents</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to GB Report</td>
<td>2</td>
</tr>
<tr>
<td>New &amp; Re-emerging diseases &amp; threats</td>
<td>3</td>
</tr>
<tr>
<td>Ongoing New &amp; Emerging disease investigations</td>
<td>4</td>
</tr>
<tr>
<td>Unusual diagnoses</td>
<td>4</td>
</tr>
<tr>
<td>Changes in the industry, disease patterns and risk factors</td>
<td>5</td>
</tr>
</tbody>
</table>

### Highlights

- **Submission trends**: Increase of 1.3% in the total number of avian diagnostic submissions to AHVLA and SAC during Q3-2013 compared with Q3-2012. Drop of 7% in avian carcase submissions and increase of 12% in non-carcase diagnostic submissions. Approximately 25% of Q3 avian diagnostic submissions were from game bird flocks and two-thirds from chicken flocks (pages 2-3).

- **New & Re-emerging diseases**: Re-emergence of Fowl Typhoid (Salmonella Gallinarum) in the UK, affecting two linked free-range layer flocks. Ongoing diagnoses and investigation of reovirus-associated tenosynovitis in broilers and respiratory cryptosporidiosis in free-living red grouse (pages 3-4).

- **Unusual diagnoses**: Myeloid leukemia diagnosed in a backyard flock, with ALV ‘J strain’ isolated. A selection of other cases has been described in the monthly surveillance highlights reports published in the Veterinary Record (pages 4-5).

- **Changes in the industry and disease patterns**: Confidence and growth sustained in the broiler sector. Some respite for egg producers as demand and egg prices increased and size of the national flock and feed prices decreased. However, egg market is considered likely to remain ‘finely balanced’ (pages 5-6).
INTRODUCTION

DIAGNOSTIC SUBMISSION TRENDS: July to September 2013

July to September 2013 (Q3-2013) saw a 1.3% increase in the total number of avian diagnostic submissions received by AHVLA and SAC Consulting (SAC) compared with Q3-2012 (838 vs. 827). Half of the total number of avian diagnostic submissions received in Q3-2013 were carcasses (n=421), and half were non-carcase submissions (n=417). Over the same period, the total number of avian diagnostic submissions received by AHVLA reduced by 3.5% (670 vs. 694), of which carcase submissions fell by 15% (279 vs. 329). However, non-carcase submissions to AHVLA rose by 7.1% (391 vs. 365). There was an increase of 26% in the total number of submissions received by SAC (168 vs. 133) during Q3-2013 compared with the same period last year (Figure 1). During Q3-2013 the numbers of diagnostic submissions received were increased from Eastern England and Scotland and reduced from the other parts of Great Britain (GB) compared with Q3-2012 (Figure 2).

Figure 1: Number of avian diagnostic submissions (excluding wild birds) examined in Great Britain by the AHVLA and SAC during Q3 (July-September) 2009-2013

Figure 2: Number and species of avian diagnostic submissions examined by the AHVLA and SAC from poultry premises in Great Britain* during Q3 (July-September) 2012-2013

Comparing the four-year average for this quarter (Q3-2009 to Q3-2012) and Q3-2013 showed a 10% drop in the total number of avian diagnostic submissions (non-carcase and carcase) to AHVLA and SAC Consulting (935 vs. 838). There was a 9% increase in the total number of avian non-carcase submissions (384 vs. 417) and a 24% drop in the total number of avian carcase diagnostic submissions (552 vs. 421) to AHVLA and SAC when comparing the same periods.

**Comments**

The total number of avian diagnostic submissions received by AHVLA and SAC during Q3 from 2009 to 2013 has fluctuated, rising from 2009 to a peak in 2011, and then falling in 2012 and 2013 to a similar level. In addition to this variability, the numbers and proportions of carcase and non-carcase avian diagnostic submissions have also changed (Figure 1). The peak in total avian diagnostic submissions during Q3-2011 was due to a 57% increase in the number of avian non-carcase diagnostic submissions to AHVLA compared with Q3-2010 (500 vs. 317). This rise (n=183) was largely from chicken flocks (broiler, broiler breeder, layer, layer breeder, backyard, other); both the numbers (446 vs. 239) and proportion (90% vs. 75%) increased. Over the same period, the numbers of avian carcase diagnostic submissions to AHVLA were nearly the same (432 vs. 416). Overall, from Q3-2009 to Q3-2013 there has been a progressive increase in the proportion of non-carcase submissions from 35% to 50%, and a reduction in the proportion of carcase submissions from 65% to 50%.

This quarter also typically marks the peak in the number of diagnostic submissions from game bird flocks during the rearing season. The total number of game bird diagnostic submissions received by AHVLA and SAC in Q3-2013 was nearly identical to that of Q3-2012 (204 vs. 203), following reductions in submissions from this sector from Q3-2011 to Q3-2012 (Anon, 2012a). The proportions of diagnostic submissions from chicken and game bird flocks have also changed over time. During Q3-2013, two-thirds and one-quarter of all avian diagnostic submissions were from chicken and game bird flocks respectively. This compares with the four-year averages (Q3 2009-2012) of 60% (chicken) and 29% (game bird).

These changes are considered to be a result of a number of different factors, including: (i) the availability of relevant diagnostic assays at AHVLA, eg. IBV molecular tests (Jones and others, 2011), histopathology, virology; (ii) sustained growth in poultry meat sectors, notably broilers (Anon, 2012b); (iii) market conditions, including pressure on producer profit margins due to rising costs of production, including increased and volatile feed prices (Anon, 2012c). This may lead to attempts to limit costs of investigation by submitting samples instead of carcases for post-mortem examination (PME). Field reports also suggest that there may be: (a) greater use of alternative veterinary service providers, eg. for seasonal game bird work, as reported previously (Anon, 2012a,c; Anon, 2013) and/or poultry PME submissions; (b) reductions during 2013 in submissions to some AHVLA regional laboratories due to PVS concerns regarding loss of service provision (following laboratory testing rationalisation) and uncertainty pending the outcome of Surveillance 2014 (AHVLA, 2012). Avian diagnostic submissions data, trends and other information will continue to be analysed and closely monitored to understand relevant risk factors for scanning surveillance in GB.

**NEW AND RE-EMERGING DISEASES & THREATS**

During Q3-2013 one re-emerging disease threat was identified through AHVLA horizon-scanning surveillance activities affecting commercial layers. No new and re-emerging diseases or threats were identified for broilers, broiler breeders, layer breeders, turkeys, turkey breeders, ducks, geese, game birds and backyard flocks in GB. Investigations also continued into two other emergent poultry threats reported previously, affecting broiler flocks and game birds in GB, as described below.

**Re-emergence of Fowl Typhoid in the UK**

An outbreak of Fowl Typhoid (FT), a disease caused by *Salmonella* Gallinarum biovar Gallinarum, has been reported in Northern Ireland involving two separate free-range layer premises during September 2013 (OIE, 2013). The affected sites are owned by the same company and are located two miles apart. At the time of the outbreak the flocks comprised 6,000 and 24,000 hens respectively aged approximately 40-weeks. At both sites acute onset losses were experienced in one house with a cumulative 2% mortality. All birds were culled voluntarily within one week of the diagnosis and intensive cleansing &
disinfection is in progress. This follows a previous outbreak that started in September 2012 and involved two separate commercial poultry premises (Anon, 2012a). There is no apparent epidemiological link between these two outbreaks and the free-range layer sites are located approximately 50 miles distant from the premises affected during 2012.

S. Gallinarum (SG) is not notifiable in the UK and is not considered to be of public health significance. However, it can have serious implications for poultry health and welfare, economics of production and may also affect international trade, particularly of poultry breeding stock/hatching eggs (Council Directive 2009/158/EC; Poultry Health Scheme). There are no licensed SG vaccines available in the UK.

This outbreak in free-range layer premises represents a re-emerging threat to UK poultry. Prior to the outbreak during 2012, FT was last reported in GB during 2005 and 2006 following a gap of 20 years after the end of the statutory eradication programme (Anon, 2012a). Vertical and horizontal transmission are key features of FT epidemiology. Recovered birds can also act as carriers and fomites, red mites (*Dermanyssus gallinae*), people, wildlife and environmental persistence are also important factors. Movements of birds or hatching eggs, contaminated equipment (e.g. egg trays) and/or red mite carriage on equipment and people present potential risk pathways for SG introduction into the poultry industry on mainland Britain. The situation will continue to be monitored and AHVLA are interested to hear from any colleagues who encounter cases of suspected Fowl Typhoid. Further information is also available at: http://www.defra.gov.uk/ahvla-en/disease-control/non-notifiable/fowl-typhoid/.

**ONGOING NEW AND EMERGING DISEASE INVESTIGATIONS**

**Reovirus-associated tenosynovitis/arthritis in broilers**

Investigations of lameness and tenosynovitis problems in broilers continued during Q3-2013, mainly due to concerns relating to reovirus-associated disease, as described previously (Anon, 2013). Three further cases from different regions of GB were confirmed during the quarter following the isolation of a reovirus from affected hock tissues. This gives a total of four cases diagnosed by AHVLA since Q2-2013 in GB. Serological testing has also been performed by Virus Neutralisation Test (VNT). Sera from several affected broiler flocks from one broiler integration were tested with positive results. The reovirus isolated from the index case flock in this company was used in the VNT assay. Reoviruses are considered ubiquitous in poultry, can cause other diseases in chickens, and are not associated with public health or international trade implications. Veterinary investigation of affected flocks and differential diagnoses is important so that appropriate treatment, prevention and control measures can be implemented (Anon, 2013). We would also be interested to hear from colleagues who have experienced cases. Investigations are continuing and the situation will continue to be monitored through AHVLA scanning surveillance activities and poultry PVS (PPVS) contact.

**Sinusitis in free-living red grouse in northern England & southern Scotland**

This seasonal condition has been reported previously (Anon, 2012d) and is associated with *Cryptosporidium baileyi* infection, giving a ‘bulgy eye’ appearance in affected birds (Coldwell and others, 2012). Further cases have been investigated by both SAC and AHVLA during Q3-2013, with cases being diagnosed in the Scottish Borders and from a moor in Lancashire respectively. These incidents represent the likely northern and most southerly reports of confirmed disease to date, and provide evidence of the further spread of this new and emerging disease. AHVLA have also been investigating comparative testing approaches to enable timely and cost-effective laboratory diagnosis. However, further investigations will be required to better elucidate the epidemiology of this condition.

**UNUSUAL DIAGNOSES**

Endemic poultry diseases, including some unusual cases, continued to be diagnosed in backyard and commercial poultry during Q3-2013 in GB, with some interesting and unusual investigations outlined below. A selection has also been described in the monthly surveillance highlight reports published in the Veterinary Record (SAC, 2013a,b,c). In these cases no wider threats were recognised and no specific actions required other than for producers and veterinarians to maintain vigilance for disease problems and investigate as appropriate.
Myelocytoma: Avian Leukosis Virus ‘J strain’ associated disease

A 12-month-old backyard bantam chicken presented with partial paralysis, lameness and audible croaking respirations. It was purchased at four months of age, and five other chickens were reported by the owner to have died with similar signs over several months, out of a small, mixed species flock of eleven birds. At PME widespread, pale, tumour-like infiltrations were present in the majority of organs and histopathology indicated a myelocytoma. This is a variety of myeloid leukemia, one of the many types of tumour that can occur in chickens infected with Avian Leukosis Viruses (ALV). Whilst myelocytomas can rarely arise spontaneously, in the past they have been typically associated with the so-called J strain of ALV (ALV-J). This strain has been eliminated from commercial broilers and has not been recorded in the UK for several years. Virus isolation has resulted in the detection of ALV-J in this case, indicating the parent birds are likely to also be infected. This could result in further localised cases in related backyard birds. Investigations are ongoing and the situation will continue to be monitored through scanning surveillance activities and PVS contact.

Biosecurity-related disease problems in backyard flocks

Several cases investigated this quarter illustrated issues associated with suboptimal biosecurity in the backyard sector. Infection with strains of the European QX-like variant of Infectious Bronchitis virus (IBV) was reported in small, mixed age flocks following the purchase of hens, sometimes from a variety of sources, and resulted in mortality and significant respiratory disease. Infectious laryngotracheitis (ILT) resulted in 12 deaths and extensive respiratory disease in a group of 20 chickens aged 4-months. The outbreak was linked to birds returning to the premises from a poultry show. Purchased hens were also thought to have introduced Avian Intestinal Spirochaetosis into a backyard flock. AHVLA scanning surveillance activities continue to highlight common endemic poultry disease problems, eg. Marek’s disease in chickens, ILT, IBV, mycoplasmiosis, egg peritonitis, adenocarcinoma, ectoparasite (eg. red mite, lice) and endoparasite infections. In addition, presentations of disease in unusual host species are also detected, notably in the last 12-months, Marek’s disease in turkeys (Deuchande and others, 2012).

CHANGES IN THE INDUSTRY, DISEASE PATTERNS AND RISK FACTORS

Broilers

The rate of growth of commercial broiler chick placings from UK hatcheries has slowed slightly during Q3-2013, but was 2.1% higher than in Q3-2012. During 2013 to date there have been 3% more broiler chicks placed on UK farms compared with the same period last year. This equates to an estimated 20 million additional birds placed during the first nine months of 2013 (approximately 237 million day-old broiler chicks placed each quarter). These trends continue to reflect consumer demand for chicken meat.
Layers
The number of layer chicks placed declined in Q3-2013 compared with Q3-2012 (Figure 5). The size of the UK laying flock has continued to decline from its historically high level of 2010-2011 and is anticipated to be approximately 1 million birds smaller than the 2013 peak of nearly 33 million birds during Q2 (Anon, 2013). During Q3-2013 feed prices continued to decline (from the peak this year of £290/tonne, to around £245/tonne) and wholesale egg prices increased. Packing station throughput decreased slightly, but remained higher than in Q3-2012 (Figure 6). Free-range and organic eggs accounted for 46.6% of eggs packed during Q3-2013. As described in the Q2-2013 avian Emerging Threats Report, the layer sector has been taking steps to balance egg supply and demand (Anon, 2013). Whilst the size of the national laying flock has been decreasing and prices have improved over recent months, domestic market conditions are reported to be ‘finely balanced’. Changes in the European egg market have also been relevant, and it is considered to be oversupplied. Whilst the H7N7 HPAl outbreak in Italy (involving six infected premises) resulted in the culling of approximately 1 million hens (IZSVe, 2013), egg (and poultry meat) exports from Ukraine are anticipated to enter the European market shortly.

An imbalance between input costs and the prices paid for products affects profitability for producers. This is considered a risk factor for both prevention and control of disease and scanning surveillance coverage as diagnostic services may be less likely to be sought. These issues were also described in previous quarterly avian disease Emerging Threats Reports. Issues relating to feed and egg prices and the size of the national laying flock (including the impact of the EU-wide conventional layer cage ban) have also been discussed previously (Anon, 2011; 2012c,d).

Turkeys
The numbers of turkey poults placed during Q3-2013 (6.85 million) were slightly lower when compared with Q3-2012 (6.99 million), a reduction of 2% (Figure 7). June, July and August typically represent the yearly peak in turkey poult placings for Christmas market production. Overall, an estimated 400,000 less turkey poults have been placed during the first nine months of 2013 compared with the same period last year, a 2.8% drop. The annual total number of turkey poults placed peaked during 2012 (18 million birds), but was the largest number of turkeys put into commercial production since 2005.

Avian diagnostic submission rates and surveillance information will continue to be monitored to assess, where possible, the impact of financial and poultry demographic changes on scanning surveillance activities and endemic, exotic, new and emerging or re-emerging avian disease threats.

References
- IZSVe, (2013). H7N7 HPAI outbreaks in Italy - Updated to 9 September 2013. Presentation to the European Commission's Standing Committee on the Food Chain and Animal Health (SCoFCAH): [accessed 08 November 2013]

Further information about poultry industry statistics can be found at:

Specific information relating to the most recent statistics is also available online at:

The comments are supplemented by reports from industry and Poultry World.