Updated Outbreak Assessment #24

Highly pathogenic avian influenza (HPAI) in the UK and Europe

25 April 2022 Ref: VITT/1200 HPAI in the UK and Europe

Disease report

Since our last outbreak assessment on 19 April 2022, there have been reports of high pathogenicity avian influenza (HPAI) H5 both in Europe and in the United Kingdom (UK). This includes one further confirmed infected premises (IP) with HPAI H5N1 in domestic poultry in the UK. In Europe, HPAI continues to be reported in wild birds, in addition to two outbreaks in domestic poultry reported by OIE in the last week.

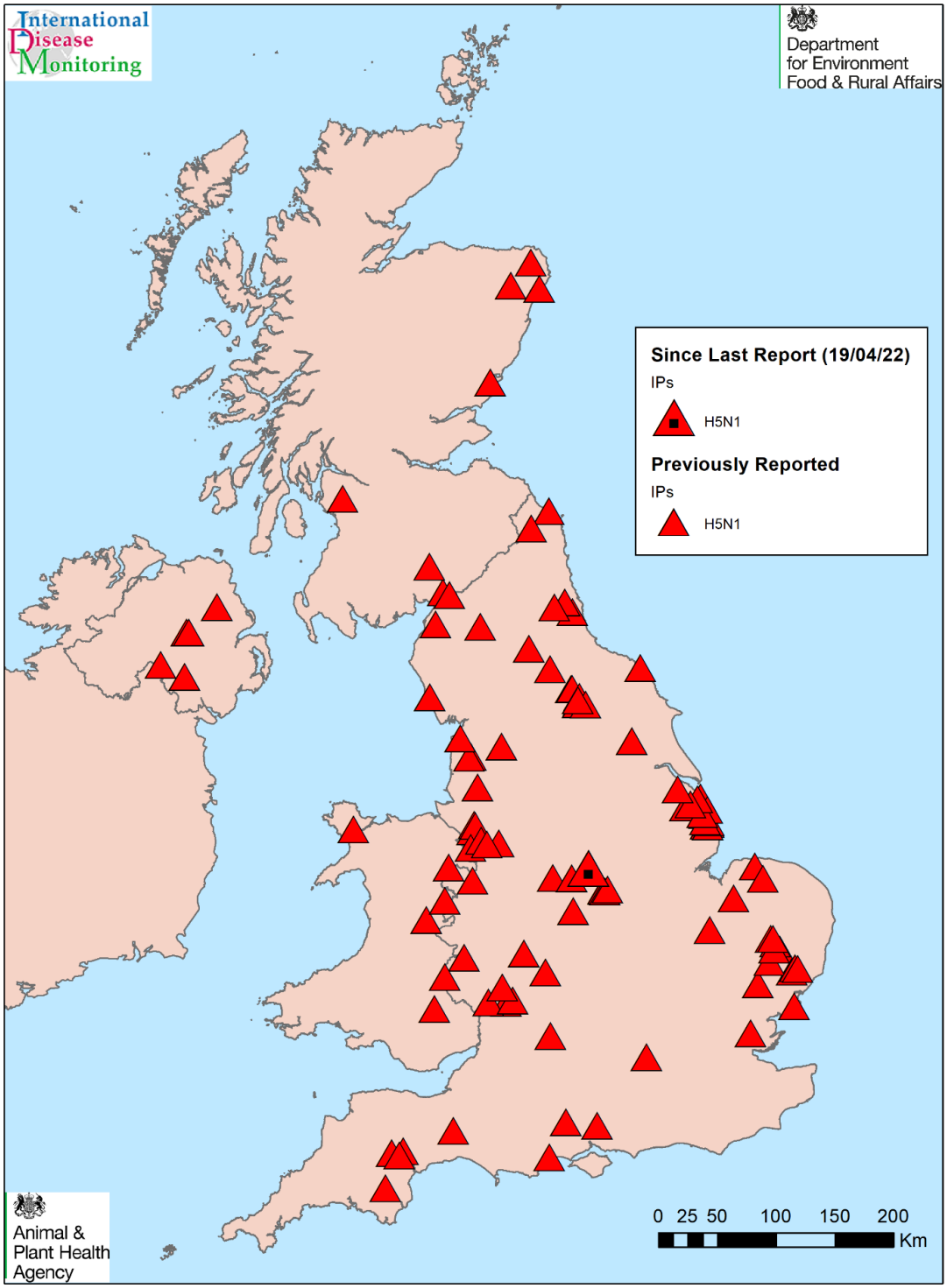
One new IP with HPAI H5N1 in domestic poultry has been confirmed in England and five further HPAI H5 events have been detected in wild birds in Great Britain (GB) since our last assessment. There have been no further HPAI H5N1 IPs confirmed in Northern Ireland since our last assessment (DAERA, 2022). A total of seven wild bird findings have been reported for Northern Ireland, during this 2021 to 2022 outbreak season (IZSVe, 2022).

The OIE has also reported new IPs with HPAI H5N1 in domestic poultry in Czech Republic, Germany and the Netherlands, since our last report.

Wild bird cases of HPAI H5N1 continue to be reported in Belgium and Greece.

The OIE has also reported untyped HPAI H5 in both domestic poultry and wild birds in Bulgaria.

Map 1: HPAI H5 outbreaks in domestic poultry[1] and captive birds across the United Kingdom, October 2021 to 25 April 2022.



Date: 25/04/2022
Map prepared by IDM

UK HPAI IPs
October 2021 - April 2022

Situation assessment

United Kingdom

The first detection of HPAI H5N1 virus this 2021 to 2022 HPAI season was in rescued wild swans and captive poultry at a swan sanctuary in Worcester (England) on 15 October 2021.

Since then, there have been 109 further confirmed IPs with HPAI H5N1 in poultry and captive birds across Great Britain (Map 1), (Table 1). Of these 110 IPs in total, 96 have occurred in England, nine have occurred in Scotland, and five in Wales.

In the week since our last assessment on 19 April 2022, HPAI H5N1 has been confirmed at one further poultry premises in England. The new IP was a smallholder premises with a mixed flock comprising of chickens, ducks and geese, in Derbyshire.

There have been no new premises with HPAI H5N1 confirmed in Northern Ireland since our last report on 19 April 2022. The total number of poultry IPs in Northern Ireland remains at six: across the counties of Tyrone, Antrim, Armagh and Fermanagh.

Table 1: Poultry[1] and captive bird premises with High Pathogenicity Avian Influenza (HPAI) H5N1 in Great Britain during the epizootic since 1 October 2021, as of 25 April 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
1	27 October 2021	Near Wychavon, Worcester	Rescued wild swans (adults and young), rescued and captive geese, ducks, and chickens.	27 November 2021
2	2 November 2021	Near Chirk, Cheshire	Backyard chickens	3 December 2021
3	4 November 2021	Near Arbroath, Angus	Mixed backyard flock of 16 chickens, 20	5 December 2021

[1] According to the 2021 OIE definition of poultry: Terrestrial Code Online Access - OIE - World Organisation for Animal Health

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
			guinea fowl and 12 ducks.	
4	8 November 2021	Near Alcester, Bidford	Small flock of 31 turkeys and 19 chicken	8 December 2021
5	11 November 2021	Near Kirby Cross, Essex	Small flock of mixed geese, chickens, guinea fowl	17 December 2021
6	12 November 2021	Near Preston, Lancashire	Commercial turkey premises	29 December 2021
7	13 November 2021	Near Northallerton, North Yorkshire	Commercial free range laying hens	5 March 2022
8	16 November 2021	Near Preston, Lancashire	Backyard chickens	29 December 2021
9	17 November 2021	Near Willington, Derbyshire	Commercial turkey premises	14 February 2022
10	19 November 2021	Near Pokesdown, Bournemouth	Backyard ducks	20 December 2021
11	19 November 2021	Near Silecroft, Cumbria	Commercial free range laying hens	4 January 2022
12	21 November 2021	Near Mouldsworth, Chester	Commercial turkey premises	8 March 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
13	21 November 2021	Near North Fambridge, Essex	Small flock of mixed geese, chickens, ducks	22 December 2021
14	21 November 2021	Near Holkham, Norfolk	Small flock of mixed chickens and turkeys	24 December 2021
15	21 November 2021	Near Thirsk, Yorkshire	Commercial turkey premises	5 March 2022
16	25 November 2021	Near Thirsk, Yorkshire	Commercial free range laying hens	5 March 2022
17	25 November 2021	Near Thirsk, Yorkshire	Commercial turkey premises	5 March 2022
18	26 November 2021	Near Loughborough, Leicestershire	Commercial free range laying hens	4 February 2022
19	26 November 2021	Near Thirsk, Yorkshire	Commercial turkey premises	5 March 2022
20	27 November 2021	Near Blackpool, Lancashire	Mixed ornamental birds	20 February 2022
21	26 November 2021	Near Anglesey, Wales	Backyard hobby farm	27 December 2021
22	26 November 2021	Near Clitheroe, Lancashire	Mixed captive birds	9 February 2022
23	28 November 2021	Near Thirsk, Yorkshire	Backyard hobby farm	5 March 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
24	29 November 2021	Near Thirsk, Yorkshire	Commercial turkey premises	5 March 2022
25	01 December 2021	Leicestershire	Commercial free range laying hens	4 February 2022
26	02 December 2021	Near Thirsk, Yorkshire	Commercial free range laying hens	5 March 2022
27	02 December 2021	Staffordshire	Backyard hobby farm	29 January 2022
28	02 December 2021	Herefordshire	Commercial broiler farm	14 January 2022
29	04 December 2021	Dumfries	Commercial laying hens	18 January 2022
30	04 December 2021	Powys	Mixed captive birds	10 January 2022
31	04 December 2021	Yorkshire	Backyard turkeys	6 February 2022
32	04 December 2021	Gloucestershire	Wildfowl Park	24 January 2022
33	04 December 2021	Yorkshire	Commercial laying hens	5 March 2022
34	06 December 2021	Leicestershire	Commercial laying hens	4 February 2022
35	07 December 2021	Leicestershire	Commercial laying hens	4 February 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
36	07 December 2021	Near Pocklington, East Yorkshire	Commercial ducks	19 February 2022
37	08 December 2021	Near Sudbury, South Suffolk	Commercial laying hens	26 January 2022
38	08 December 2021	Near Thirsk, North Yorkshire	Commercial turkeys	5 March 2022
39	09 December 2021	Cumbria	Commercial laying hens	31 January 2022
40	09 December 2021	Dumfries	Backyard mixed species	16 January 2022
41	10 December 2021	Near Moffat, Dumfriesshire	Backyard mixed species	14 January 2022
42	10 December 2021	Near Highworth, Wiltshire	Commercial turkeys	29 January 2022
43	10 December 2021	Near Clifford, Herefordshire	Commercial turkeys	25 January 2022
44	11 December 2021	Near Washington, Sunderland, Tyne & Wear	Mixed wildfowl	6 March 2022
45	11 December 2021	Near Alford, Lincolnshire	Commercial laying hens	24 March 2022
46	11 December 2021	Near Willington, Derbyshire	Mixed poultry	14 February 2022
47	12 December 2021	Near Alford, Lincolnshire	Commercial laying hens	24 March 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
48	12 December 2021	Near Alford, Lincolnshire	Commercial laying hens	24 March 2022
49	14 December 2021	Near Middleton-in-Teesdale, County Durham	Backyard chickens	17 February 2022
50	14 December 2021	Near Pocklington, Yorkshire	Commercial ducks	19 February 2022
51	14 December 2021	Near Alford, Lincolnshire	Commercial laying hens	24 March 2022
52	14 December 2021	Near Alford, Lincolnshire	Commercial broiler breeder and laying hens	24 March 2022
53	15 December 2021	Near Atherstone, Leicestershire	Backyard mixed species	9 February 2022
54	15 December 2021	Near Wem, Shropshire	Commercial mixed species	9 February 2022
55	15 December 2021	Near Lockerbie, Dumfries and Galloway	Backyard mixed species	18 January 2022
56	16 December 2021	Near Alford, Lincolnshire	Commercial chickens	24 March 2022
57	16 December 2021	Near Thirsk, Yorkshire	Commercial broiler chickens	5 March 2022
58	16 December 2021	Near Alford, Lincolnshire	Commercial laying hens	24 March 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
59	17 December 2021	Near Alford, Lincolnshire	Commercial laying hens	24 March 2022
60	18 December 2021	Near Alford, Lincolnshire	Commercial laying hens	24 March 2022
61	18 December 2021	Near Frodsham, Cheshire	Commercial mixed species	8 March 2022
62	22 December 2021	Near Alvanley, Cheshire	Backyard ducks	8 March 2022
63	22 December 2021	Near Buckfastleigh, Devon	Backyard ducks	11 February 2022
64	28 December 2021	Near Pentney, Norfolk	Commercial turkeys	9 February 2022
65	28 December 2021	Near North Somercotes, Lincolnshire	Commercial turkeys	27 March 2022
66	30 December 2021	Near Romsey, Hampshire	Backyard mixed species	5 February 2022
67	31 December 2021	Near Theddlethorpe, Lincolnshire	Backyard mixed species	24 March 2022
68	31 December 2021	Near Melton Mowbray, Lincolnshire	Commercial turkeys	28 March 2022
69	02 January 2022	Near Eton, Berkshire	Rescued wild swans	22 March 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
70	03 January 2022	Near Alford, Lincolnshire	Backyard chickens	24 March 2022
71	04 January 2022	Near Carlisle, Cumbria	Commercial mixed species	12 March 2022
72	05 January 2022	Near Louth, Lincolnshire	Commercial turkeys	27 March 2022
73	07 January 2022	Near Upholland, Lancashire	Backyard mixed species	14 March 2022
74	10 January 2022	Near Louth, Lincolnshire	Commercial laying hens	28 March 2022
75	13 January 2022	Near Tattenhall, Cheshire	Commercial grandparent breeder turkeys	29 March 2022
76	13 January 2022	Near Tarporley, Cheshire	Commercial breeder turkeys	5 April 2022
77	20 January 2022	Near Ross on Wye, Herefordshire	Backyard mixed species	2 March 2022
78	22 January 2022	Near Crewe, Cheshire	Commercial turkeys	5 April 2022
79	22 January 2022	Near Inverurie, Aberdeenshire	Backyard mixed species	
80	25 January 2022	Near Newcastle upon Tyne, Tyne and Wear	City farm smallholder mixed species	14 April 2022
81	26 January 2022	Near Whitby, North Yorkshire	Wildlife rescue centre mixed species	11 March 2022

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
82	28 January 2022	Near Calveley, Cheshire	Commercial turkeys	5 April 2022
83	28 January 2022	Near Ashleworth, Gloucestershire	Backyard chickens	15 March 2022
84	4 February 2022	Near Bishops Waltham, Hampshire	Commercial broiler breeder chickens	12 April 2022
85	5 February 2022	Near Fakenham, Norfolk	Conservation park mixed species	
86	9 February 2022	Near Berwick-upon-Tweed, Northumberland	Backyard mixed species	6 April 2022
87	14 February 2022	Near Wooler, Northumberland	Backyard mixed species	7 April 2022
88	21 February 2022	Near Grimsby, Lincolnshire	Commercial rearing turkeys	2 April 2022
89	21 February 2022	Near Newtown, Powys	Commercial breeding pheasants	30 March 2022
90	21 February 2022	Near Welshpool, Powys	Commercial breeding pheasants	30 March 2022
91	23 February 2022	Near Gateshead, Tyne and Wear	Commercial hobby flock mixed species	20 April 2022
92	25 February 2022	Near Ledbury, Herefordshire	Commercial game supplier	31 March 2022

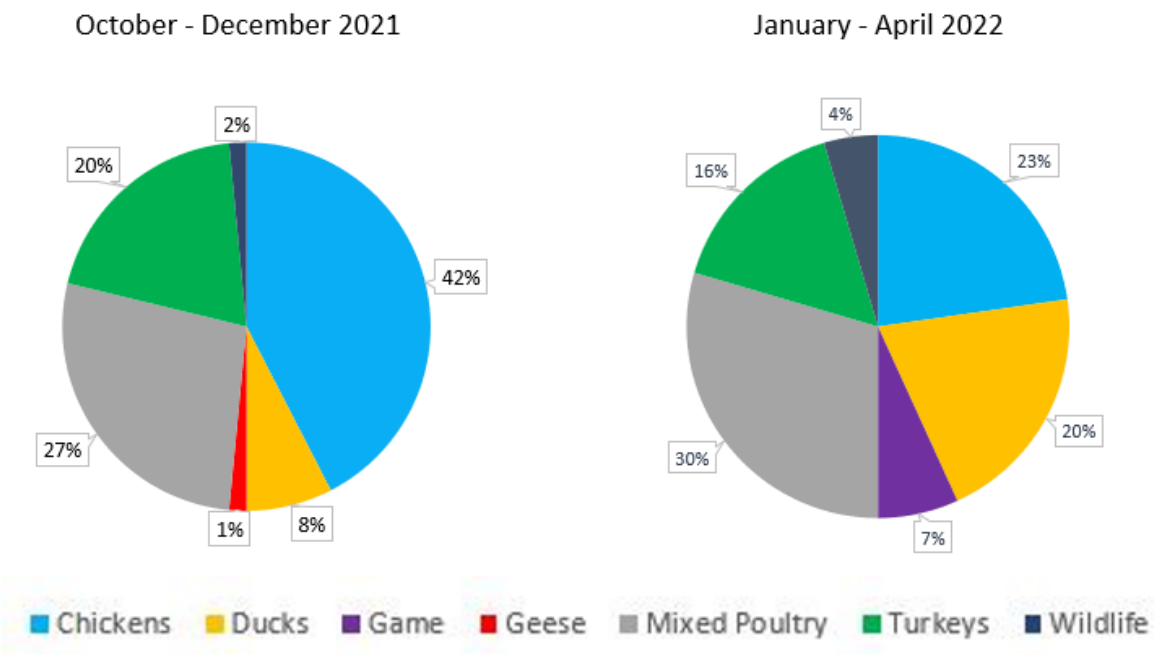
Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
93	26 February 2022	Near Westhorpe, Suffolk	Smallholding mixed species	
94	1 March 2022	Near Redgrave, Suffolk	Commercial fattening ducks	
95	11 March 2022	Near Ellon, Aberdeenshire	Backyard mixed species	12 April 2022
96	11 March 2022	Near Diss, Suffolk	Commercial fattening ducks	
97	12 March 2022	Near Diss, Suffolk	Commercial fattening ducks and chickens	
98	18 March 2022	Near Beith, North Ayrshire	Rescued pigeons, buzzards, swans, hens and ducks.	14 April 2022
99	19 March 2022	Near Strichen, Aberdeenshire	Commercial laying hens	
100	20 March 2022	Near Woodbridge, Suffolk	Commercial broiler ducks	
101	27 March 2022	Near Tuddenham St Martin, Suffolk	Commercial layer ducks	
102	28 March 2022	Near Stowmarket, Suffolk	Backyard mixed species	
103	30 March 2022	Near Woodbridge, Suffolk	Backyard chickens	
104	06 April 2022	Near Exeter, Devon	Commercial mixed species	

Outbreak Count	Date HPAI H5N1 confirmed	Location, County	Description	Date resolved[2]
105	06 April 2022	Near Ely, Cambridgeshire	Commercial fattening ducks	
106	07 April 2022	Near Exeter, Devon	Backyard mixed species	
107	08 April 2022	Near Ilminster, Somerset	Commercial mixed species	
108	08 April 2022	Near Eye, Suffolk	Commercial mixed species	
109	13 April 2022	Near Teignbridge, Devon	Commercial mixed species	
110	24 April 2022	Near Ilkeston, Derbyshire	Smallholder mixed species	

[1] According to the 2021 OIE definition of poultry: Terrestrial Code Online Access - OIE - World Organisation for Animal Health

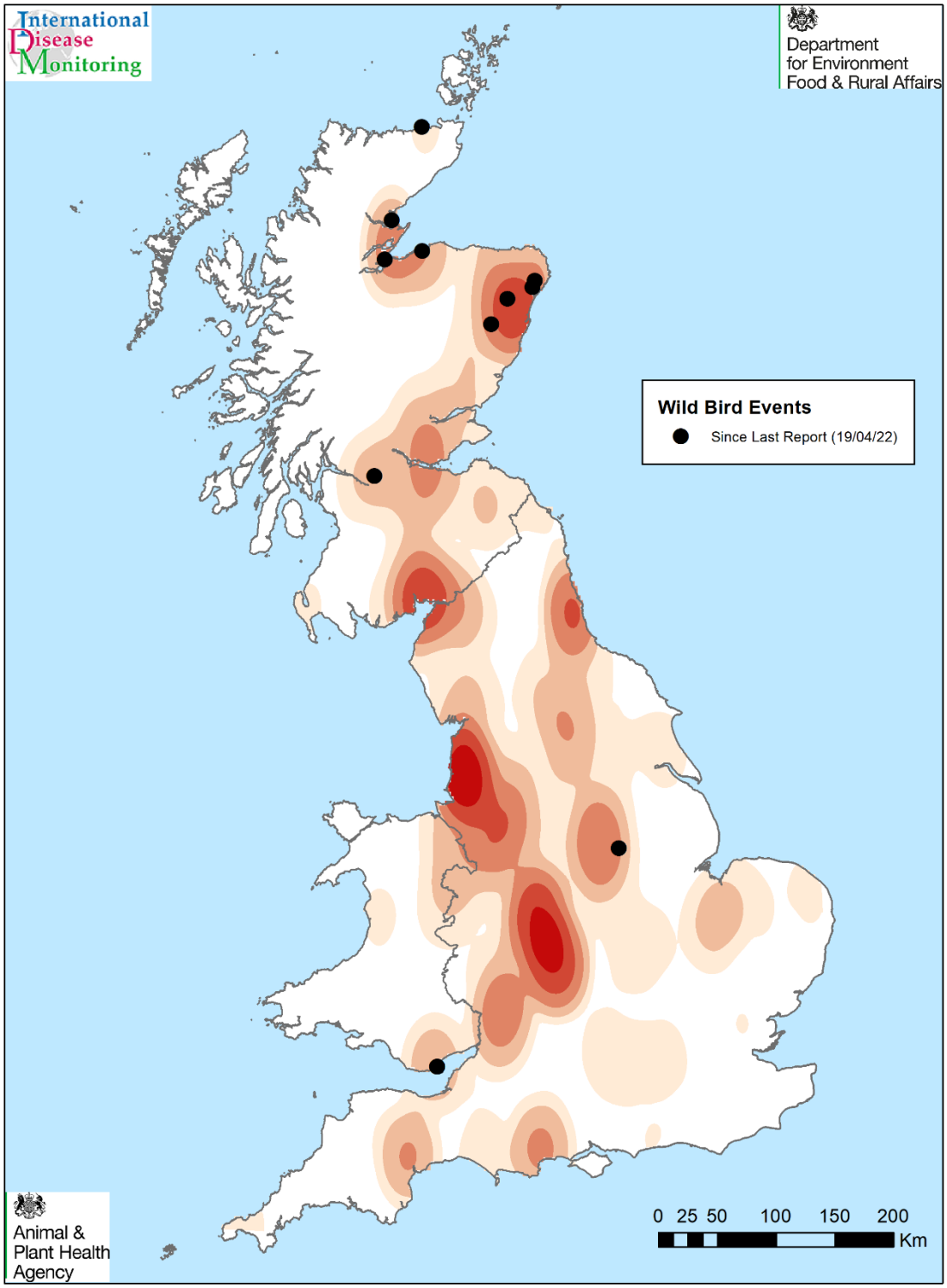
[2] Date resolved refers to the date when all disease control restrictions (3km Protection Zone, 10km Surveillance Zone, 3km Captive Bird Monitoring Controlled Zone) have been removed from the premises

Figure 1: Proportion of HPAI-positive premises according to species kept across the 2021 to 2022 season in Great Britain, as of 25 April 2022



Across the HPAI season in Great Britain, the majority of premises affected have been backyard (mixed species), commercial poultry (chicken, turkey and ducks) and captive birds (non-poultry species) (Figure 1). A greater proportion of the confirmed infected premises affected between January and April 2022 have been duck premises, compared with October to December 2021 (20% versus 8%, respectively), as the outbreak in Great Britain has progressed (Figure 1). There have also been some game premises affected between January and April 2022, whereas there were none between October and December 2021 (Figure 1).

Map 2: Map showing the relative density of and most recent HPAI H5 positive findings in wild birds across Great Britain October 2021 to 25 April 2022



Date: 25/04/2022
Map prepared by IDM

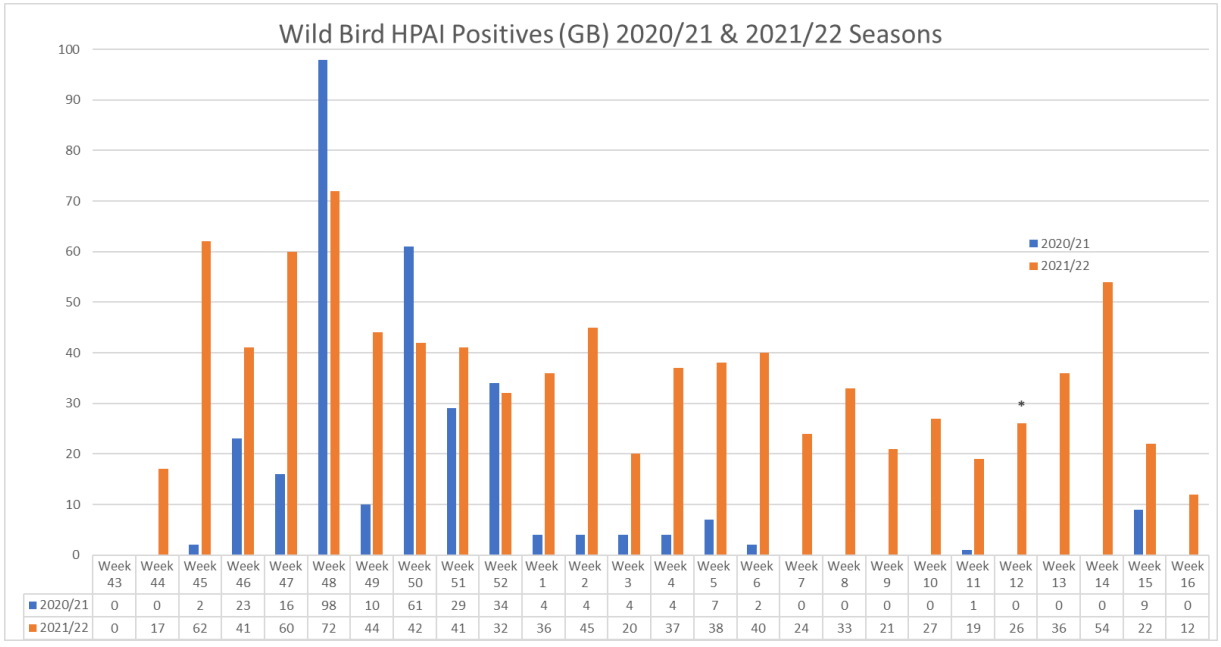
GB HPAI Wild Bird Events
October 2021 - April 2022

In the week since our last outbreak assessment on 19 April 2022, HPAI H5 has been detected in wild birds in one further location in Great Britain, bringing the total to 270 separate wild bird positive locations, involving 45 different bird species (listed in Table 2), in 74 separate counties. The total number of positive wild bird findings is 985, with most in England (Table 2). The findings reported within the last week are widespread across Great Britain, with multiple findings observed in north-eastern Scotland.

The majority of wild birds that have tested positive for HPAI in Great Britain during the 2021 to 2022 season have been infected with the H5N1 strain. HPAI continues to be detected in wild birds, with many more reports in the 2021 to 2022 season compared to the 2020 to 2021 season (Figure 2). The number of detections increased between weeks 12 and 14, coinciding with the threshold for collection of dead wild birds for HPAI surveillance in England being reduced from three birds to one bird; for duck, swan and goose species (denoted by asterisk in Figure 2). Weeks 15 and 16 have shown decreases in cases, with fewer than a quarter the number reported week 16 compared to week 14 (12 versus 54; Figure 2).

There have been 59 cases for which the HPAI H5 genotype has been identified, and characterisation of NA subtype is in progress due to low viral loads. The NA could not be determined for a total eight H5 HPAI samples from wild birds, due to very low viral loads.

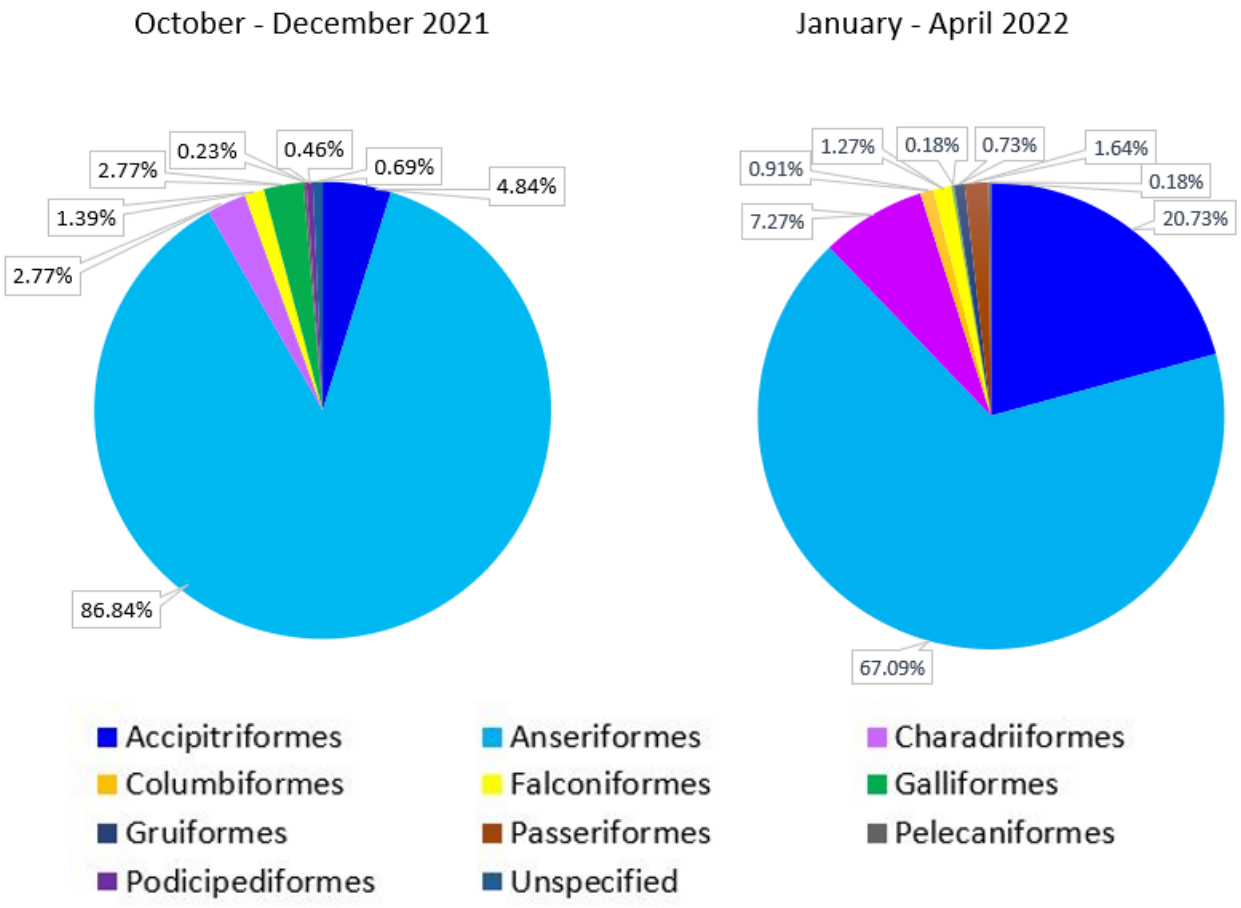
Figure 2: Wild bird HPAI H5N1 positives across Great Britain 2020 to 2021 and 2021 to 2022 seasons



	Week 43	Week 44	Week 45	Week 46	Week 47	Week 48	Week 49	Week 50	Week 51	Week 52	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16
2020/21	0	0	2	23	16	98	10	61	29	34	4	4	4	4	7	2	0	0	0	0	1	0	0	0	9	0
2021/22	0	17	62	41	60	72	44	42	41	32	36	45	20	37	38	40	24	33	21	27	19	26	36	54	22	12

Analysis of the Order profile of HPAI positive wild birds in Great Britain throughout the current 2021 to 2022 season has shown a shift to a greater variety of wild bird species overall. In particular, an increasing proportion of birds of prey/raptor (*Accipitriformes*) and other indigenous species (*Passeriformes, Columbiformes*) have become infected as the outbreak has progressed, although Anseriformes still represent the main order of birds affected, with some continued large mortality events (Figure 3); especially in North-East Scotland where birds are staging as part of their northward spring migration.

Figure 3: Proportion of HPAI H5 wild bird positives by Order across the 2021 to 2022 HPAI season in Great Britain as of 25 April 2022



For further details, please see the report (updated weekly) on findings of HPAI in wild birds in Great Britain and Northern Ireland.

Table 2: Wild bird species in Great Britain that have tested positive for HPAI H5 as of 25 April 2022

Region and species	Total number of birds testing positive
England	**629**
Barnacle Goose	13
Bewick's Swan	1
Black headed gull	17
Black Swan	2
Canada Goose	122
Common Buzzard	56
Common Eider	1
Coot	1
Curlew	2
Gadwall	1
Goshawk	1
Great-crested Grebe	2
Grey Heron	2
Greylag goose	30
Guillemot	1
Gull	6
Hen Harrier	1
Herring Gull	8
Kestrel	6
Kittiwake	1
Lapwing	1
Little Gull	1
Magpie	1
Mallard Duck	9
Moorhen	3
Mute Swan	226
Peregrine Falcon	5
Pheasant	8
Pied Wagtail	6
Pink Footed goose	16
Red Kite	2
Sea Eagle	1
Sparrowhawk	7
Tufted Duck	1
Unidentified Swan	17
Unspecified Dove	2

Region and species	Total number of birds testing positive
Unspecified Duck	1
Unspecified Goose	14
Unspecified pigeon	1
White Fronted Goose	1
Whooper Swan	31
Widgeon	1
Wales	**40**
Canada Goose	4
Common Buzzard	4
Goshawk	1
Greylag goose	1
Herring Gull	1
Mute Swan	15
Peregrine Falcon	1
Pheasant	5
Sparrowhawk	1
Unidentified Swan	1
Unspecified Goose	5
Unspecified pigeon	1
Scotland	**316**
Barnacle Goose	34
Bird of Prey Unspecified	3
Black headed gull	1
Blackbird	1
Canada Goose	3
Common Buzzard	52
Greylag goose	21
Gull	6
Herring Gull	7
Kestrel	1
Magpie	1
Mallard Duck	1
Mute Swan	26
Pink Footed goose	77
Red Kite	2
Sea Eagle	2
Sparrowhawk	5
Unidentified Swan	16
Unspecified Buzzard	1
Unspecified Duck	2

Region and species	Total number of birds testing positive
Unspecified Goose	42
Unspecified Gull	1
Unspecified waterfowl	1
Whooper Swan	9
Wood Pigeon	1
Grand Total	**985**

Europe

The total numbers of IPs with HPAI H5 in poultry and cases in wild birds in Europe are presented in Table 3. New disease reports are still being made to the World Organisation for Animal Health (OIE) on a daily basis. Numbers reported are from OIE's WAHIS platform.

Table 3: Events (to 25 April 2022) of HPAI H5 in domestic poultry (P) and cases in wild birds (WB) since 1 October 2021 in the UK and Europe, according to OIE report date

Country	H5 (WB)	H5 (P)	H5N1 (WB)	H5N1 (P)	H5N8 (WB)	H5N8 (P)	H5N2 (WB)	H5N2 (P)	H5N3 (WB)	H5N5 (WB)	Total
Albania			1			4					5
Austria			34								34
Belgium	6		63	3							72
Bosnia and Herzegovina			2								2
Bulgaria	1	12									13
Croatia			8	2							10

Country	H5 (WB)	H5 (P)	H5N1 (WB)	H5N1 (P)	H5N8 (WB)	H5N8 (P)	H5N2 (WB)	H5N2 (P)	H5N3 (WB)	H5N5 (WB)	Total
Czech Republic			18	5							23
Denmark		1	114	4	1	1					121
Estonia			10		2	1					13
Faroe Islands			1								1
Finland			15		2						17
France			83	895							978
Germany			995	69			1		1		1,066
Greece			6								6
Hungary			32	114							146
Iceland			1								1
Ireland			75	6							81
Italy			21	249							270
Latvia			2								2
Lithuania			3								3
Luxembourg			4								4
Moldova				1							1
Netherlands	1		204	33	2						240

Country	H5 (WB)	H5 (P)	H5N1 (WB)	H5N1 (P)	H5N8 (WB)	H5N8 (P)	H5N2 (WB)	H5N2 (P)	H5N3 (WB)	H5N5 (WB)	Total
Norway			8	2						2	12
Poland			32	100				1			133
Portugal			12	4							16
Republic of North Macedonia			3								3
Romania			14	3							17
Russia	35	12	12	9							68
Serbia and Montenegro			3		3		1				7
Slovakia			22	2	1						25
Slovenia			39	1							40
Spain			37	31							68
Sweden			37	4	1						42
Switzerland			3								3
Ukraine	2	1									3
United Kingdom			332	76	1						409

Northern Europe (OIE data only, by report date)

Since our last outbreak assessment on 19 April 2022, HPAI H5 has been reported in seven European countries excluding the United Kingdom (OIE). The total number of

European countries affected this HPAI season according to IZSVe (2022) is currently 34.

Belgium

Between 19 and 25 April 2022 there have been no further HPAI IPs reported in Belgium, but there has been one further HPAI H5N1 events involving wild birds. This event involved a great black-backed gull (*Larus marinus*).

Bulgaria

Between 19 and 25 April 2022 there have been two outbreaks of untyped H5Nx HPAI in Bulgaria. One premises was a farm with 93 layer hens and the other was a backyard premises of 40 birds. The bird types for this premises were not reported. There was also one reported case of untyped H5Nx in a wild bird in Bulgaria since our last assessment, involving the Eurasian magpie (*Pica pica*).

Czech Republic

Between 19 and 25 April 2022 there has been one outbreak of HPAI H5N1 in Czech Republic. This was in a backyard premises of 14 chickens. There were no reports of HPAI in wild birds in Czech Republic since our last assessment.

Denmark

Since our last assessment, no further poultry premises or wild birds with HPAI H5N1 in Denmark have been reported by OIE. There has been one further report of HPAI H5N8 in a harbour seal (*Phoca vitulina*).

Germany

There has been one further poultry premises with HPAI H5N1 reported for Germany since our last assessment. This was on a turkey farm with over 200 birds. There were no reports in wild birds in Germany since our last assessment.

Netherlands

There has been one further commercial poultry HPAI H5N1 IP reported since 19 April 2022. The premises had over 31,000 laying hens and was located in Barneveld, Gelderland. There were no HPAI H5N1 events reported in wild birds in Netherlands.

Southern Europe (OIE data only, by report date)

Greece

There have been no further IPs with HPAI reported in Greece since 19 April, but there have been two HPAI H5N1 events in wild birds, according to OIE reporting. These events involved dalmatian pelicans (*Pelecanus crispus*) and great white pelicans (*Pelicanus onocrotalus*).

According to OIE, there have been no further reports of HPAI H5N1 outbreaks in domestic poultry or cases in wild birds between 19 and 25 April in; Albania, Austria, Bosnia and Herzegovina, Croatia, Estonia, the Faroe Islands, Finland, France, Hungary, Iceland, Italy, Latvia, Lithuania Luxembourg, Moldova, North Macedonia, Norway, Poland, Portugal, the Republic of Ireland, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland or Ukraine.

Table 4: Number of HPAI H5 infected poultry premises (P) and findings in non-poultry (NP), including wild birds reported in the United Kingdom and Europe each month during the 2021 to 2022 epizootic, according to OIE report date as of 25 April 2022

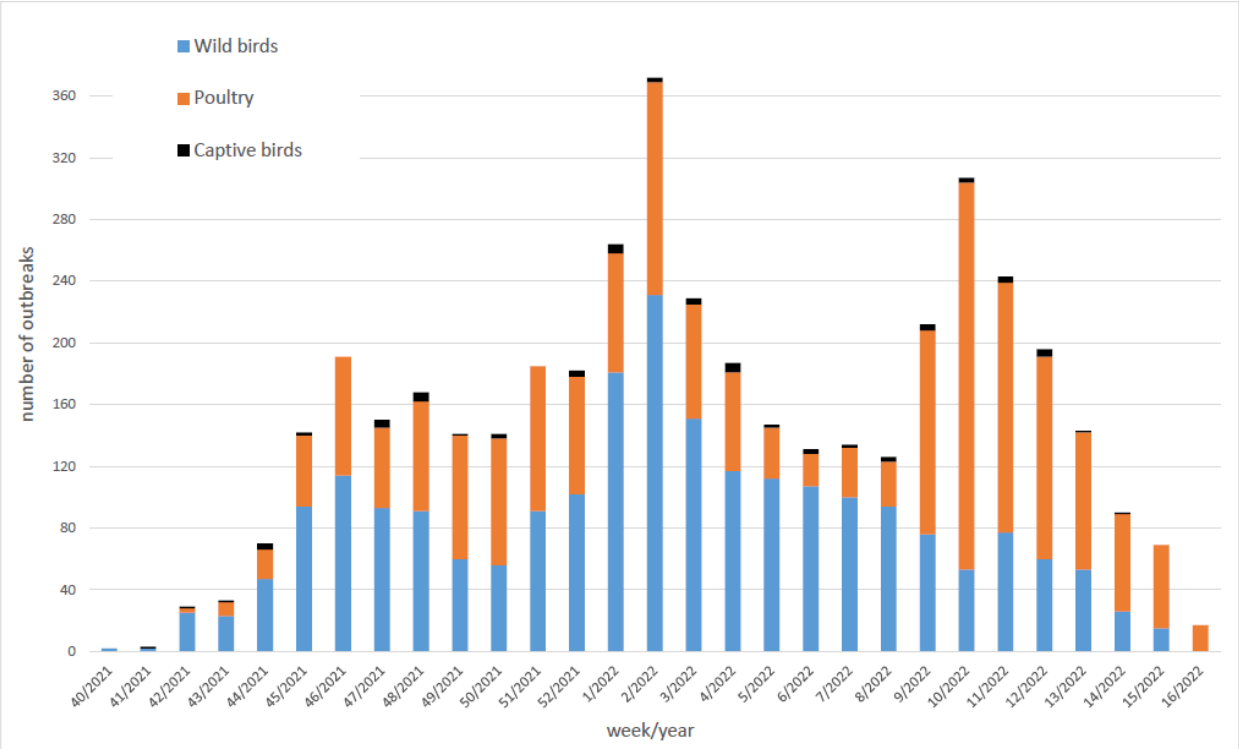
Country	Oct 21-P	Oct 21-NP	Nov 21-P	Nov 21-NP	Dec 21-P	Dec 21-NP	Jan 22-P	Jan 22-NP	Feb 22-P	Feb 22-NP	Mar 22-P	Mar 22-NP	Apr 22-P	Apr 22-NP
Albania	0	0	0	0	0	0	0	0	0	0	4	1	0	0
Austria	0	0	0	1	0	7	0	13	0	6	0	1	0	2
Belgium	0	0	0	11	2	5	1	20	0	25	1	9	0	3
Bosnia and Herzegovina	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Bulgaria	0	0	0	0	7	0	2	0	1	0	1	0	2	1
Croatia	0	0	1	2	0	4	1	5	0	2	0	0	0	0
Czech Republic	0	0	2	5	2	4	0	0	1	9	0	1	1	0
Denmark	0	2	1	19	1	14	3	39	2	23	0	12	0	6
Estonia	1	3	0	1	0	5	0	0	0	2	0	0	0	1

Country	Oct 21-P	Oct 21-NP	Nov 21-P	Nov 21-NP	Dec 21-P	Dec 21-NP	Jan 22-P	Jan 22-NP	Feb 22-P	Feb 22-NP	Mar 22-P	Mar 22-NP	Apr 22-P	Apr 22-NP
Faroe Islands	0	0	0	0	0	2	0	0	0	1	0	0	0	0
Finland	0	7	0	4	0	0	0	2	0	1	0	2	0	1
France	0	0	1	4	29	14	171	13	161	16	602	13	77	9
Germany	1	5	17	30	17	116	19	187	9	301	3	74	4	74
Greece	0	0	0	0	0	1	0	0	0	0	0	10	0	2
Hungary	0	0	20	2	52	5	41	11	0	9	0	3	1	1
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Ireland	0	0	2	17	4	12	0	5	0	4	0	8	0	0
Italy	4	0	113	4	168	10	23	4	4	5	5	0	1	0
Latvia	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	0	0	0	2	0	0	0	1

Country	Oct 21-P	Oct 21-NP	Nov 21-P	Nov 21-NP	Dec 21-P	Dec 21-NP	Jan 22-P	Jan 22-NP	Feb 22-P	Feb 22-NP	Mar 22-P	Mar 22-NP	Apr 22-P	Apr 22-NP
Luxembourg	0	0	0	2	0	1	0	1	0	1	0	0	0	0
Moldova	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Netherlands	1	0	7	40	2	64	6	102	11	93	7	40	2	59
Norway	0	0	2	2	0	2	0	3	0	1	0	0	0	4
Poland	0	0	23	3	40	5	16	18	5	6	9	0	1	1
Portugal	0	0	0	0	2	1	0	6	5	1	0	5	0	0
Republic of North Macedonia	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Romania	0	0	0	1	0	2	0	2	1	7	2	4	0	0
Russia	3	28	5	9	2	2	0	1	4	0	0	1	0	0
Serbia and Montenegro	0	5	0	1	0	0	0	0	0	0	0	0	0	0

Country	Oct 21-P	Oct 21-NP	Nov 21-P	Nov 21-NP	Dec 21-P	Dec 21-NP	Jan 22-P	Jan 22-NP	Feb 22-P	Feb 22-NP	Mar 22-P	Mar 22-NP	Apr 22-P	Apr 22-NP
Slovakia	0	0	1	1	0	2	1	2	1	3	0	5	0	0
Slovenia	0	0	0	0	1	2	0	35	0	0	0	0	0	0
Spain	0	0	0	0	0	0	1	4	17	15	23	12	0	3
Sweden	0	1	0	9	3	6	0	13	0	7	0	3	0	1
Switzerland	0	0	0	1	0	0	0	0	0	1	0	2	0	0
Ukraine	0	1	0	0	0	1	0	0	0	0	0	0	0	0
United Kingdom	0	1	12	53	38	96	8	64	7	45	6	49	3	14

Figure 4: Number of HPAI positive events reported in poultry, captive and wild birds each week in Europe from October 2021 to 21 April 2022 (IZSVe, 2022)



Across Europe, the number of poultry IPs reported weekly continues to decrease from around 100 outbreaks in week 13, to 60 in week 14, 55 IPs reported in week 15 and around 15 to date in week 16 (Figure 4). Cases of HPAI infection in wild birds have also shown a decreasing trend between weeks 13 and 16 in Europe (Figure 4).. Reinforcement of passive wildlife surveillance may also be expected in European countries due to the extent of this unprecedented epizootic (PAFF, 2022b, PAFF 2022c). There is a general decreasing trend in the number of poultry IPs with HPAI H5 reported per month for European countries (Table 4), though an increased number of wild bird cases of HPAI H5 reported in Germany and the Netherlands during April 2022 has been observed (Table 4), which may indicate spring migration patterns.

Further detailed genomic analyses of 103 H5N1 HPAI viruses from poultry and wild birds in the UK (detected in late 2021-2022) supports that all viruses belong to clade 2.3.4.4b and can be distinguished in the haemagglutinin gene between outbreak seasons (20/21 versus 21/22). Whilst the 2021/22 H5N1 viruses are related to those

detected during 2020/21, three UK genotypes (AIV07, 08, 09) have been identified that can be distinguished based on their genetic composition.

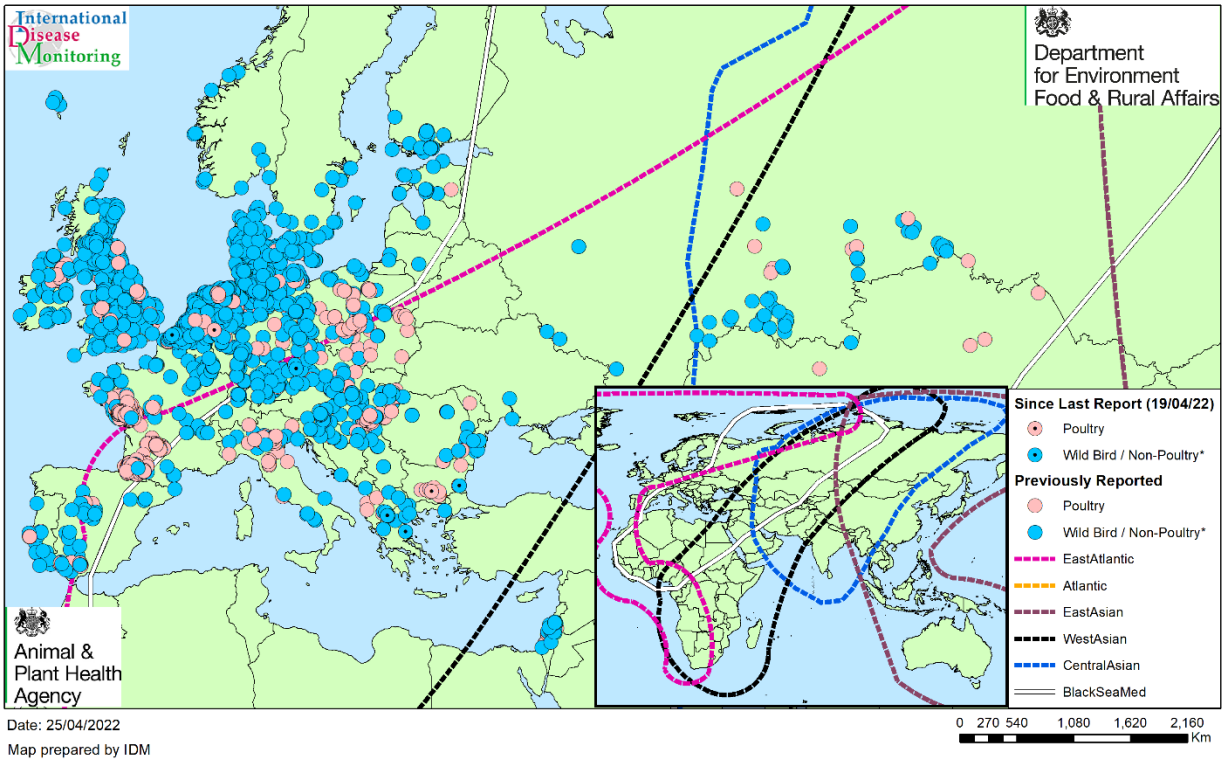
Genetic analysis of the viral sequences obtained from the first (and multiple others) poultry outbreak in the UK confirmed that it was highly similar to the clade 2.3.4.4b B1 H5N1 lineage (observed previously in northern Europe and the UK in summer 2021 in wild birds and associated with the majority of H5N1 European detections during the 2020/21 H5Nx epizootic) and has subsequently been referred to as the AIV07 genotype. It is hypothesised that the AIV07 genotype was re-introduced into the UK in late 2021 via Russia and eastern Europe, due to relatedness to sequences from this region detected in late 2021. Whilst it is most plausible that this virus was brought in with migratory waterfowl, it cannot be excluded that the source of some of these viruses was from local wild bird populations. The AIV09 genotype shares a high degree of similarity to the AIV07 genotype, but possesses the HA from the B2 H5N1 lineage, along with novel PB2 and PA genes. The PB2/PA genes are related to those from low pathogenicity avian influenza viruses (LPAIVs) detected in European wild birds. The third genotype AIV08 is a minor variant population, derived via reassortment of AIV07 B1 viruses with another avian influenza virus, inheriting a different PB2 gene.

Therefore, many of the UK H5N1 cases in 2021/22 epizootic are due to viruses that may have their origins in migratory waterfowl that arrived in the UK in late 2021 (some of these can be distinguished genetically from viruses over-summering in northern Europe), but which themselves likely separated into further genotypes following reassortment with other influenza viruses in wild birds.

Data generated at APHA Weybridge indicates that this H5N1 virus will retain infectivity in the environment at low temperatures, for up to 45 days at 4^{o}C (Ian Brown, EURL, Pers. Comm.). As higher temperatures, sunlight intensity and day length reduce virus survival, environmental decay will be occurring. at a faster rate. The survival at 20C drops to 18 days supporting declining virus infectivity in the environment as temperatures are averaging 14C have been occurring in the UK for the last few weeks.

Map 3 shows the distribution of HPAI H5 outbreaks in poultry and captive birds, together with cases in wild birds, in Europe reported to OIE between September 2021 and 25 April 2022. Those events reported since our last outbreak assessment on 19 April are identified with black central dots.

Map 3: HPAI outbreaks (from OIE) in poultry, captive, and wild birds across Europe, September 2021 to 25 April 2022.



Highly Pathogenic Avian Influenza in Poultry and Non-Poultry*
September 2021 - April 2022
Overlay: Migratory Bird Flyways

OIE Data Only
*OIE Defined

Implications for the UK

Though the detections of HPAI in wild birds and rate of new IP's is greatly decreased from what was observed earlier on in the season, the domestic poultry and captive bird populations in Great Britain continue to remain under a higher infection pressure, particularly where biosecurity is sub-optimal. Even where biosecurity is good, the ongoing high wild bird infection pressure is likely to expose any weaknesses that exist. While the infection pressure from wild birds continues to decrease, it is imperative that biosecurity is maintained to the greatest extent possible to mitigate against the ongoing risk of infection posed by wild birds across the UK.

There has been an unprecedented number of HPAI H5N1 IPs with domestic poultry and captive birds, as well as wild bird cases, reported in this 2021 to 2022 season: not only for the UK, but also across Europe. It should be noted that trends in wild bird cases in Europe are now of relatively minimal significance as a predictor for UK incursions during

the spring, although the downwards trend in wild bird cases (Figure 4) may also be reflected in UK wild bird cases.

Currently, although some traffic of birds migrating eastward from Ireland may occur where they briefly use stop-over sites in the UK, most eastbound migratory species will either overfly the UK, or move north from Ireland to breeding sites in Greenland and Iceland, with perhaps some flyway limited to over western Scotland.

The departure of migratory wildfowl is very well progressed, this year the timings of migratory movements appear ‘average’, and it is most likely that a substantial proportion of the migratory species will have already left the UK.

Resident birds (species which breed here and can be relatively sedentary) have also been infected, may continue to circulate viruses and consequently act as a source of infection to poultry. However, changes in their behaviour may also reduce this risk, as birds make regional or neighbourhood scale movements away from winter aggregations on larger waters into smaller groups at their breeding sites (often smaller waterbodies). This change in population structure and contact behaviour ought to reduce contamination risk in close adjacency to poultry production, and circulation of virus (as was experienced in 2016/17 and 2020/21).

It should be noted that the departure of migrant waterfowl does not mark the end of the risks produced by wild birds and HPAI. The virus is likely to continue to circulate in resident wild birds in GB over the next month, with sporadic detections, although the rate is predicted to continue falling throughout spring in line with previous epizootics, although detection in sentinel species (e.g., raptors) may continue for some time.

Increasing temperature and sunlight will reduce the level of environmental contamination as higher temperatures, sunlight intensity and day length reduce virus survival, environmental decay will be occurring at a faster rate. As the day length increases over the coming weeks the current warm weather is also expected to continue, the long-range forecast from the Met Office predicts that temperatures are likely to be close to or above normal until 4th May, after which predictions remain above normal (forecast until 19th May). With the average maximum temperature for May at 14.5°C, according to a 20-year average based on the West Yorkshire weather station as the centre of GB Bingley SAMOS (West Yorkshire) UK climate averages - Met Office.

Conclusion

Cases of HPAI H5 in wild birds and confirmations in poultry premises have continued to be reported across Europe and in Great Britain since our last assessment, though a downward trend is observed.

There have been 985 confirmed cases of HPAI H5 in wild birds in Great Britain to 25 April 2022 across a range of species, with multiple detections in wild birds each week (Figure 2). The wild bird species 'order shift' observed (Figure 3) demonstrates that a greater proportion of other species, including raptors and potential bridging species such as pigeons, gulls, pheasants and pied wagtails, have tested positive as the outbreak has developed. This reflects HPAI infection spreading initially from migratory water birds at incursion, to more native, sedentary wild bird species, likely via environmental exposure. The number of detections in wild birds, and wild bird infection pressure, is also decreasing (Figure 2).

At this stage of the season (end of April into May), migrating waterfowl are not expected to enter the UK from Continental Europe, even if the weather there were to deteriorate significantly in the coming weeks. Many will have already begun to make their return migrations, with the remainder of birds leaving in the next few weeks.

Even though many birds have been infected already and the remaining migratory waterbirds are departing the UK, there are still immunologically naïve susceptible resident bird species in the UK. However, as these birds disperse to their breeding grounds within the UK, bird-to-bird contacts will reduce, and with decreasing environmental levels of virus the wild bird transmission rate is also decreasing, and with it the wild bird risk. With the departure of the migratory waterbirds from the UK, resident wild bird species will now play a more important role in any residual spread of virus. Bridging species will play a less important role in onward spread of virus given the decrease in environmental contamination. Higher environmental temperatures, together with increasing sunlight intensities will reduce environmental levels of H5N1 and the associated risks in the spring months.

The risk of HPAI H5 infection in wild birds in GB is therefore reduced to **HIGH**.

Given the decreasing infection pressure from wild birds, the downward trend in confirmed Infected Premises, and changing environmental conditions, we consider the risk of exposure of poultry across the whole GB to be reduced. The risk of exposure of poultry across the whole of Great Britain is assessed as **low** (with high uncertainty) where good biosecurity is applied, and at **medium** (with high uncertainty) where biosecurity is suboptimal. This assessment takes into consideration the Avian Influenza

Protection Zone (AIPZ) and assumes that bird keepers are taking the additional biosecurity measures required.

On 24 November, the Chief Veterinary Officers for England, Scotland, Wales, and Northern Ireland announced housing measures, which came into force on the 29 November 2021. It is now a legal requirement for all bird keepers to keep their birds indoors, to exclude contact with wild birds, and to follow strict biosecurity measures in order to limit the spread of and eradicate the disease. These housing measures build on the strengthened biosecurity requirements that were introduced as part of the AIPZ in Great Britain on 3 November 2021, and in Northern Ireland on 17 November 2021. The housing measures will be lifted across the UK on Monday 2 May 2022, though the AIPZ will remain in place, and biosecurity requirements should be adhered to.

We are continuing to closely monitor the situation and reviewing the risk.

It is particularly important that stringent adherence to good biosecurity practices is now still maintained, even though the outbreak appears to be waning and the sunny weather is approaching. Strict attention should be made to ensure compliance with reviewed contingency plans, with regular maintenance checks and repairs being carried out promptly on roofs and fabric of buildings.

Reinforcement of good biosecurity awareness behaviours and practices should be a constant reminder to all personnel working with birds; any lapse of these measures could still easily result in disease being introduced to poultry and captive birds. Special consideration should be made when bringing in equipment and materials, especially bedding and outer packages which may have become contaminated following environmental exposure whilst stored outside.

If you keep poultry (including game birds or as pets), you should follow our biosecurity best practice advice on GOV.UK

Remain vigilant for any signs of disease in your flock and report any suspicious clinical signs of avian influenza to the Animal and Plant Health Agency.

- In England contact 03000 200 301
- In Wales, contact 0300 303 8268
- In Scotland, contact your local field services office

Further guidance about Avian Influenza including updated biosecurity advice for poultry keepers, in:

- England is available on GOV.UK
- Wales, is available on the Welsh Government's website
- Scotland, is available on the Scottish Government's website
- North Ireland is available on DAERA's website

The OIE, FAO International Reference Laboratory and the UK National Reference Laboratory at Weybridge has the necessary diagnostic capability for strains of avian influenza virus, whether of low or high pathogenicity, and continually monitors changes in the virus on a wide scale whilst utilising global networks to gain early insights to epidemiological trends and potential emergence of new genotypes which might change the risk profile.

We will continue to report on any updates on the situation in Europe and in particular, any changes in disease distribution or wild bird movements which may increase the risk to the UK.

In England, any findings of the following dead wild birds found at the same location at the same time should be reported to the Wild bird Helpline (Telephone: 03459 33 55 77 – select option 7):

- any number of swans, geese, ducks, gulls, waders and raptors
- five or more birds of any species

It is advisable that you do not touch these birds.

In Scotland and Wales, findings of any number of dead wild birds of any species, found at the same location at the same time should be reported to the Wild bird Helpline (Telephone: 03459 33 55 77 – select option 7). It is advisable that you do not touch these birds.

Authors

- Dr Sonny Bacigalupo
- Dr Lorna Freath
- Prof Ian Brown
- Dr Ash Banyard
- Dr Alex Byrne
- Anthony Pacey
- Dr Paul Gale
- Dr James Aegerter
- Dr Lauren Perrin

References

All outbreaks and cases were taken from the World Organisation for Animal Health (OIE). Please note that changes in format and level of detail are due to the change of data source for this report, from EU's Animal Disease Notification System (ADNS) to World Organisation for Animal Health (OIE).

- DAERA (2022) Department of Agriculture, Environment and Rural Affairs Avian influenza information page

- IZSVe (2022) IZSVe report - Number of highly pathogenic avian influenza positive events notified by country and poultry category (pdf)

- PAFF (2022a) https://ec.europa.eu/food/system/files/2022-04/reg-com_ahw_20220406_hpai_ita_0.pdf

- PAFF (2022b) https://ec.europa.eu/food/system/files/2022-04/reg-com_ahw_20220406_hpai_esp.pdf

This publication is available at https://www.gov.uk/government/collections/animal-diseases-international-monitoring

Any enquiries regarding this publication should be sent to us at iadm@apha.gov.uk