

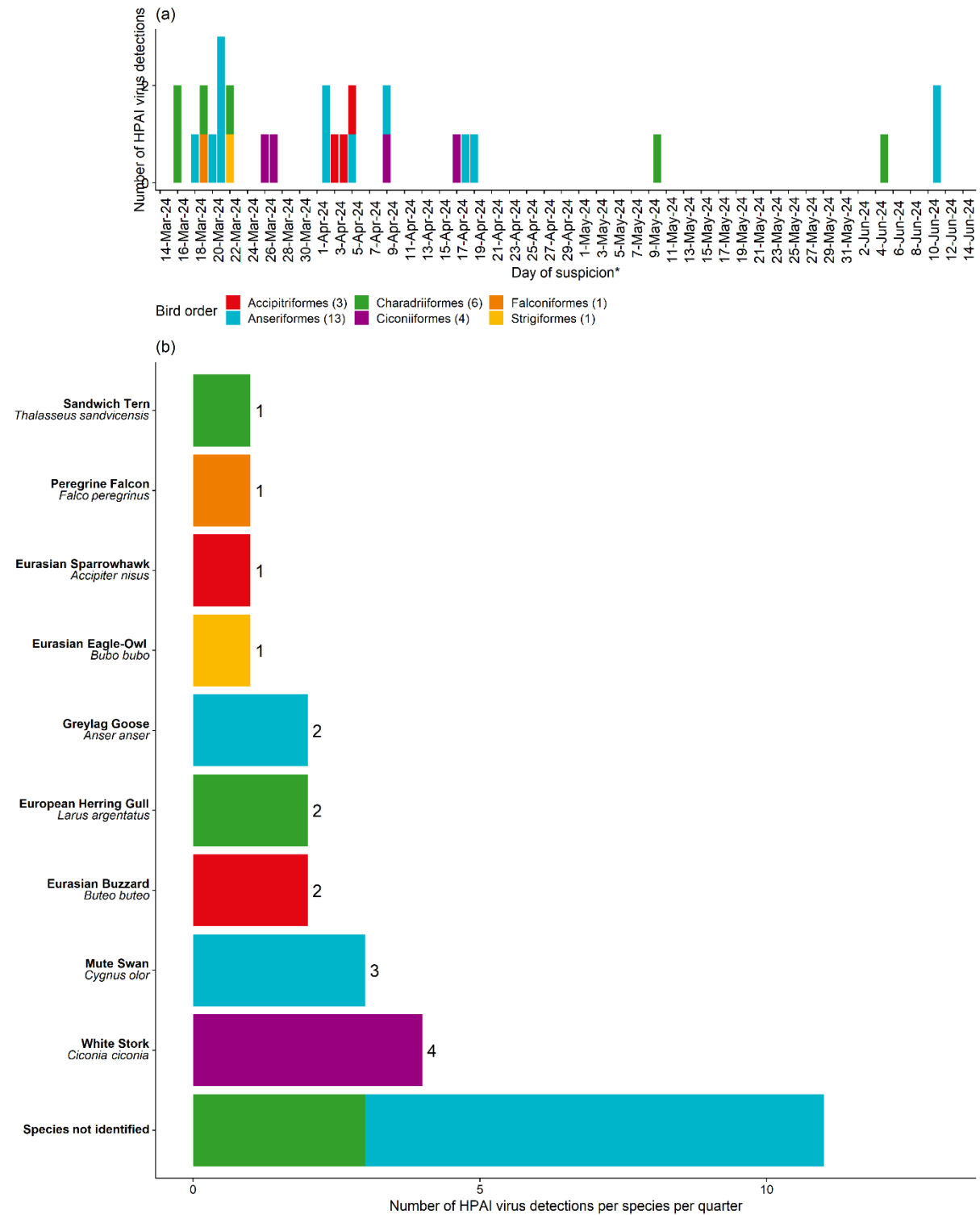
## **Annex to:**

EFSA (European Food Safety Authority), ECDC (European Centre for Disease Prevention and Control) and EURL (European Reference Laboratory for Avian Influenza), 2024. Scientific report: Avian influenza overview March–June 2024. EFSA Journal 2024;22(7):8930, 72 pp. doi:10.2903/j.efsa.2024.8930

©2024 European Food Safety Authority, European Centre for Disease Prevention and Control, European Union Reference Laboratory for Avian Influenza.

## **Annex A – Data on birds and mammals**

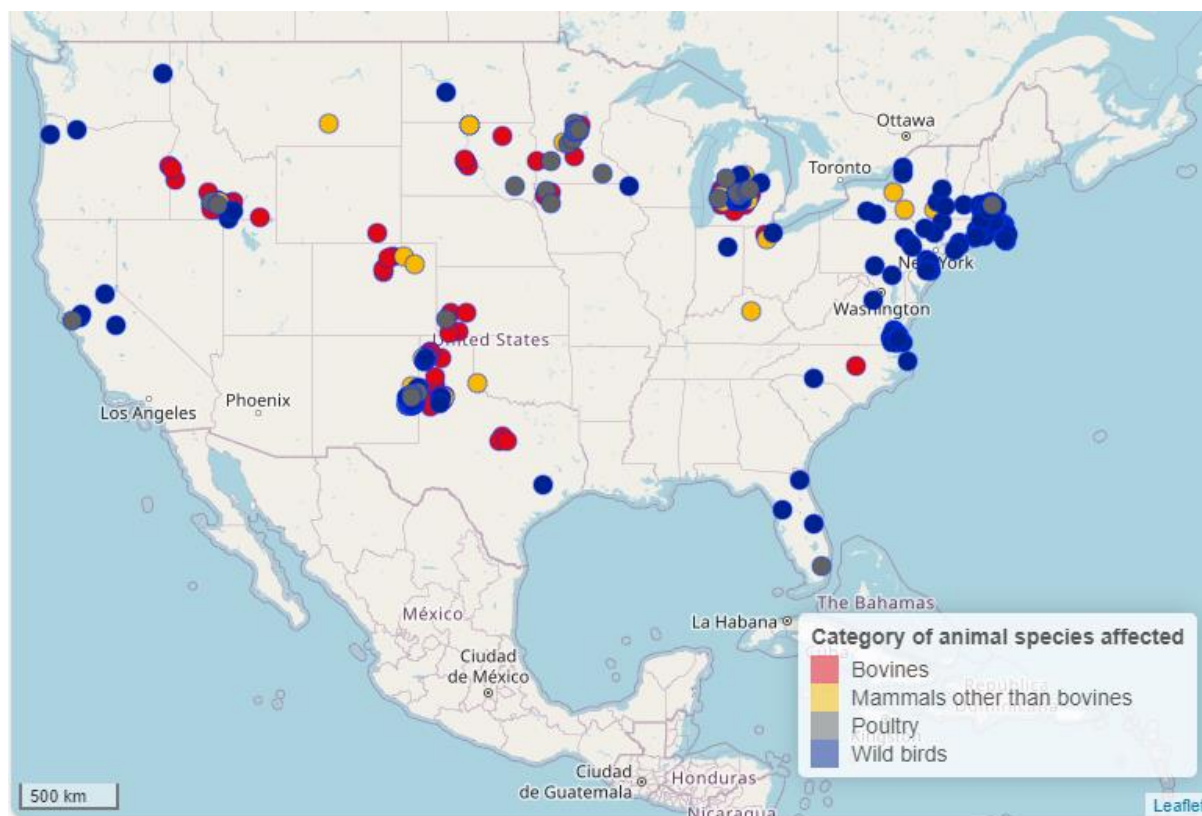
The annex contains figures and tables on birds and mammals, including HPAI virus detections in these species.



**Figure A.1:** Number of HPAI A(H5) virus detections in wild birds by (a) bird order and week of suspicion and (b) wild bird species in the EU/EEA and United Kingdom, from 16 March to 14 June 2024

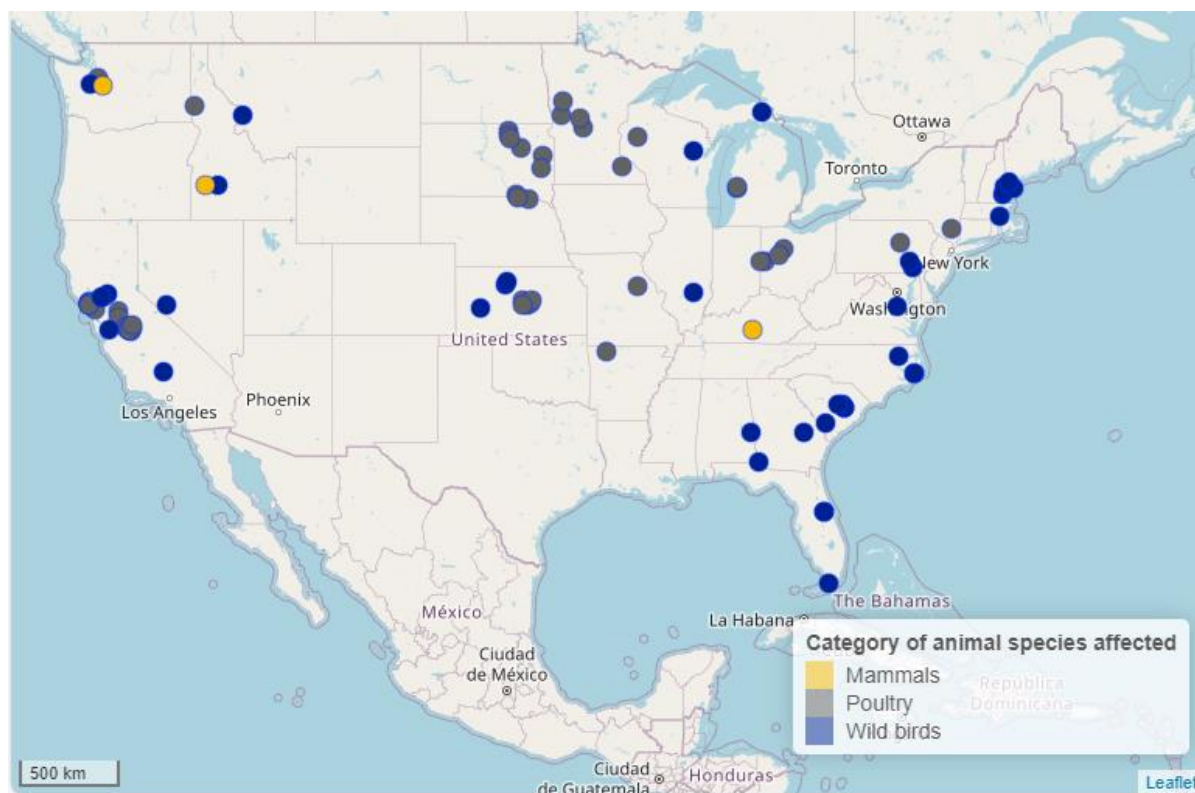


**Figure A.2:** Number of HPAI A(H5) virus detections in wild birds by (a) bird order and week of suspicion and (b) wild bird species in the EU/EEA and United Kingdom, from 2 December 2023 to 15 March 2024



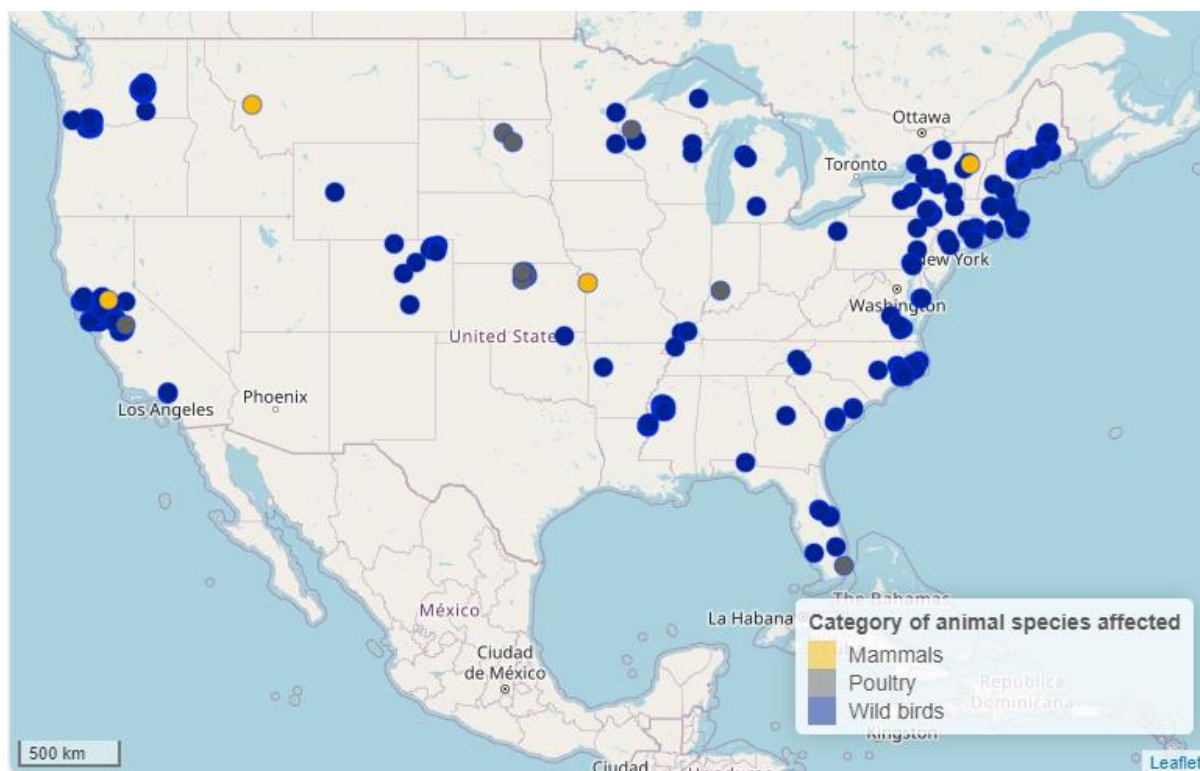
Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively). Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

**Figure A.3:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA between March and June 2024



Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively). Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

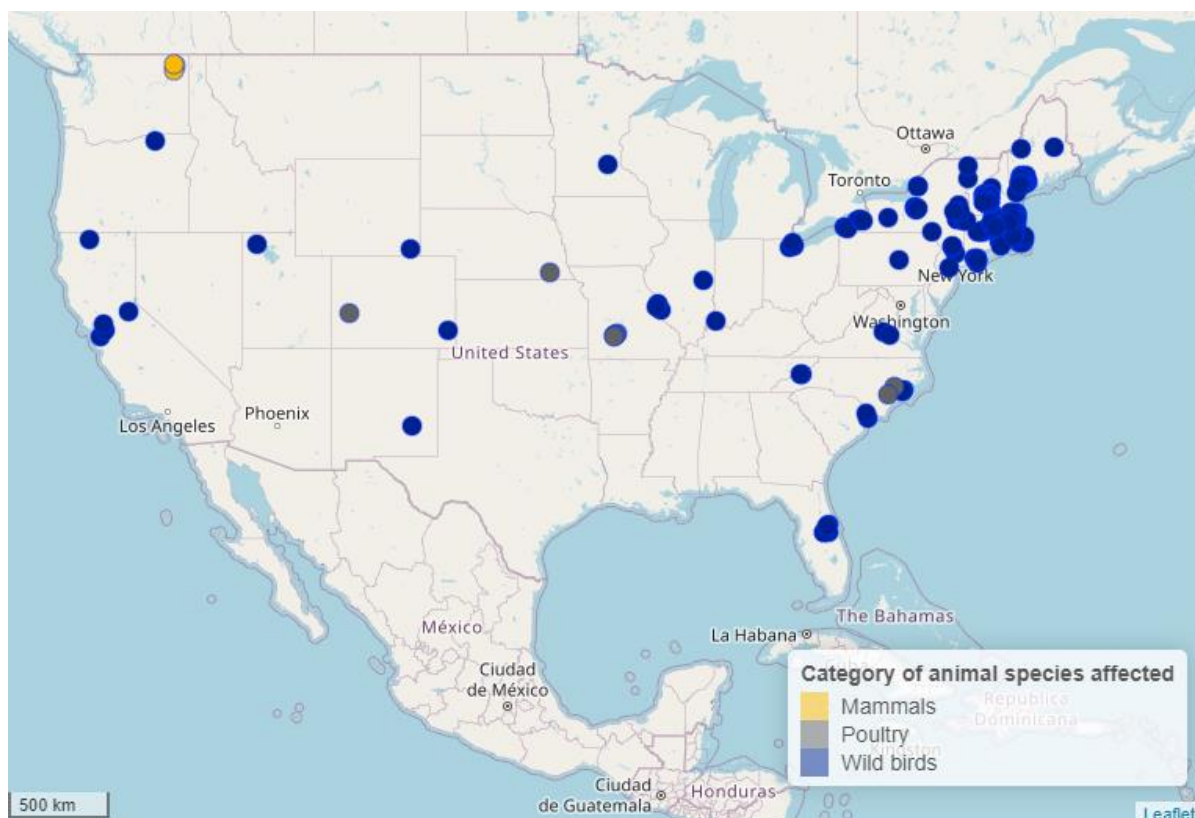
**Figure A.4:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA in December 2023



Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively)  
 Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

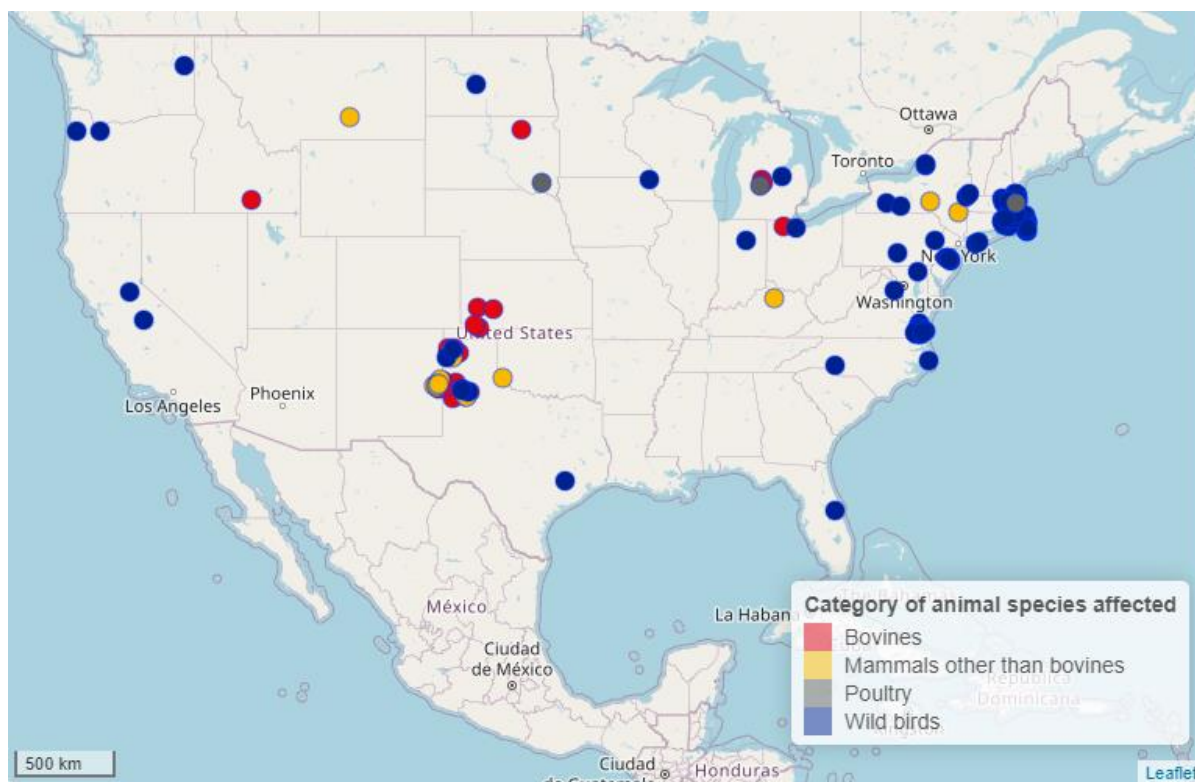
**Figure A.5:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA in January 2024





Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively). Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

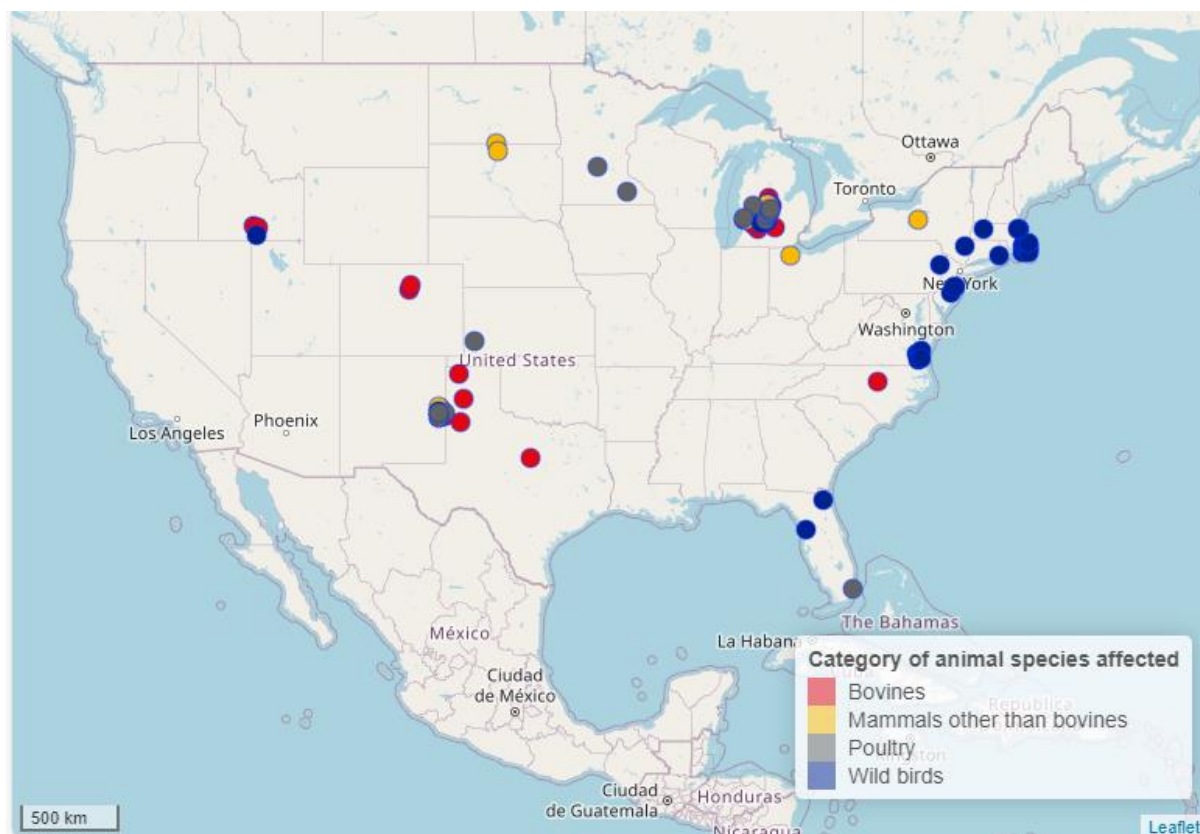
**Figure A.6:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA in February 2024



Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively). Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

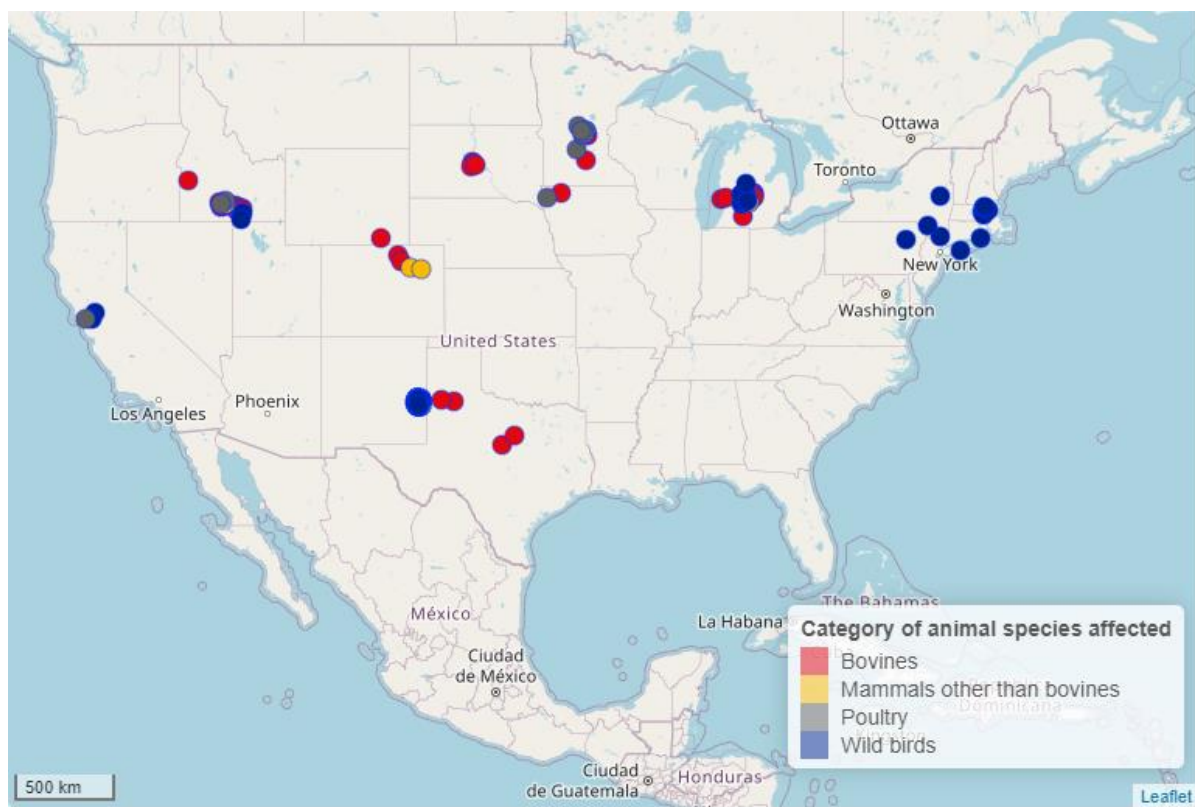
**Figure A.7:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA in March 2024





Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively)  
 Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

**Figure A.8:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA in April 2024



Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively)  
 Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

**Figure A.9:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA in May 2024



Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively)  
 Data from USDA-APHIS for detections in wild birds and mammals other than bovines. Date used is collection date. Points on the map indicate the county of detection with a jitter function to eliminate completely overlap of points. Data from WOA-H-WAHIS for detections in bovines and poultry. Month refers to the month when the outbreak started. Data retrieved on 24 June 2024 when 94 outbreaks of HPAI in cattle had been notified to WOA-H. Points on the maps are based on geocoordinates from the WOA-H-WAHIS database and are approximate locations of outbreaks based on county, with a jitter function to eliminate completely overlap of points. Data includes backyard poultry flocks. Map data from OpenStreetMap (<https://www.openstreetmap.org/copyright>) were used.

**Figure A.10:** Detections of HPAI A(H5) virus in mammals, poultry and wild birds in the USA in June 2024. Source: USDA-APHIS and WOA-H-WAHIS (data extraction carried out on 26 and 24 June 2024, respectively)

**Table A.1:** HPAI virus notifications reported to WOAHA in wild birds from 16 March to 14 June 2024. In one single reported HPAI virus detection in wild birds, more than one bird and bird species might be involved

Region	Country	Wild bird species	Number of HPAI virus detections
Africa	South Africa	<i>Thalasseus bergii</i>	1
Americas	Brazil	<i>Sterna hirundo</i>	2
		<i>Thalasseus acuflavidus</i>	3
	Canada	<i>Corvus brachyrhynchos</i>	1
	United States of America*	<i>Streptopelia decaocto</i>	1
		<i>Sturnus vulgaris</i>	1
		<i>Zenaida macroura</i>	1
Asia	China	'European wild bird'	3
	Iraq	'Laridae'	1
	Japan	<i>Corvus corone</i>	2
		<i>Corvus macrorhynchos</i>	13
		<i>Haliaeetus albicilla</i>	1
		<i>Spizaetus nipalensis</i>	1
		<i>Strix uralensis</i>	1

\*Many more HPAI virus detections in wild birds are reported on the USDA websites.  
Source: WOAHA-WAHIS (data extraction carried out on 14 June 2024).

**Table A.2:** Categorisation of the wild bird species detected as HPAI virus-positive in Europe between 1 October 2016 and 14 June 2024

Raptor	Waterfowl	Colony-breeding sea birds	Other wild bird species
Accipitriformes	Anatidae	Alcidae	Anampra waxbill
American kestrel	Anatinae	Arctic herring gull	Ardeidae
Bald eagle	Anserinae	Arctic tern	Black-faced spoonbill
Bearded vulture	Barnacle goose	Atlantic puffin	Black stork
Common barn-owl	Bean goose	Auk	Calidris
Common kestrel	Black swan	Black guillemot	Carrion crow
Eagles	Bufflehead	Black-headed gull	Cattle egret
Eastern imperial eagle	Brent goose	Black-legged kittiwake	Charadriidae
Eurasian buzzard	Canada goose	Brown-headed gull	Chilean flamingo
Eurasian eagle-owl	Common eider	Cape gannet	Ciconiidae
Eurasian hobby	Common goldeneye	Caspian gull	Columbidae
Eurasian sparrowhawk	Common pochard	Common murre	Common chaffinch
Falcons and caracaras	Common shelduck	Common tern	Common coot
Golden eagle	Common teal	Cormorants and shags	Common crane
Griffon vulture	Coscoroba swan	Crowned cormorant	Common moorhen
Gyrffalcon	Cygnus	Dalmatian pelican	Common pheasant
Hen harrier	Duck	European herring gull	Common raven
Kites, hawks and eagles	Egyptian goose	Glaucous gull	Common redshank
Lanner falcon	Eurasian wigeon	Great black-backed gull	Common ringed plover
Lesser kestrel	Ferruginous duck	Great cormorant	Common snipe
Little owl	Gadwall	Great skua	Common starling
Merlin	Garganey	Grey-headed gull	Common woodpigeon

Montagu's harrier	Goosander	Gulls, terns and skimmers	Corvids, jays and magpies
New Britain sparrowhawk	Goose	Laridae	Cranes
Northern goshawk	Greater scaup	Laughing gull	Curlew sandpiper
Northern long-eared owl	Greater white-fronted goose	Lesser black-backed gull	Dunlin
Osprey	Greylag goose	Little auk	Eurasian blackbird
Peregrine falcon	Lesser white-fronted goose	Manx shearwater	Eurasian bullfinch
Red kite	Mallard	Mediterranean gull	Eurasian collared-dove
Rough-legged buzzard	Mandarin duck	Mew gull	Eurasian curlew
Saker falcon	Muscovy duck	Northern fulmar	Eurasian jackdaw
Short-eared owl	Mute swan	Northern gannet	Eurasian jay
Spotted harrier	Nene	Pallas's gull	Eurasian magpie
Strigidae	Northern pintail	Pelecanidae	Eurasian oystercatcher
Strigiformes	Northern shoveler	Procellariidae	Eurasian spoonbill
Tawny owl	Pink-footed goose	Razorbill	Eurasian woodcock
True owls	Red-breasted goose	Ring-billed gull	European goldfinch
Ural owl	Tufted duck	Royal tern	European greenfinch
Western marsh-harrier	Whooper swan	Sandwich tern	European turtle-dove
White-tailed eagle	Wood duck	Silver gull	Finches
		Slender-billed gull	Game or wild bird
		Spotted shag	Glossy ibis
		Sulidae	Great blue heron
		Western gull	Great crested grebe
		Yellow-legged gull	Great spotted woodpecker
			Great white egret
			Greater flamingo
			Green sandpiper
			Grey heron
			Grey plover
			Gruidae
			Guineafowl
			Haematopodidae
			Hooded crow
			House sparrow
			Ibises and spoonbills
			Little blue heron
			Little egret
			Little grebe
			Northern bald ibis
			Northern lapwing
			Passeridae
			Pheasants and allies
			Pied avocet
			Podicipedidae

			Rallidae
			Recurvirostridae
			Red knot
			Red-legged partridge
			Red-throated loon
			Rock dove
			Rook
			Ruddy turnstone
			Sanderling
			Scolopacidae
			Semipalmated sandpiper
			Snipe
			Song thrush
			Turdidae
			Western grebe
			Western sandpiper
			Western water rail
			Whimbrel
			White stork
			White-rumped sandpiper

**Table A.3:** Common and scientific names of the wild bird species detected as HPAI virus-positive in Europe between 1 October 2016 and 14 June 2024

Common name	Scientific name	Common name	Scientific name
American kestrel	<i>Falco sparverius</i>	Crowned cormorant	<i>Microcarbo coronatus</i>
Anambra waxbill	<i>Estrilda poliopareia</i>	Curlew sandpiper	<i>Calidris ferruginea</i>
Arctic herring gull	<i>Larus smithsonianus</i>	Dunlin	<i>Calidris alpina</i>
Arctic tern	<i>Sterna paradisaea</i>	Dalmatian pelican	<i>Pelecanus crispus</i>
Atlantic puffin	<i>Fratercula arctica</i>	Egyptian goose	<i>Alopochen aegyptiaca</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>	Eurasian blackbird	<i>Turdus merula</i>
Barnacle goose	<i>Branta leucopsis</i>	Eurasian bullfinch	<i>Pyrrhula pyrrhula</i>
Bean goose	<i>Anser fabalis</i>	Eurasian buzzard	<i>Buteo buteo</i>
Bearded vulture	<i>Gypaetus barbatus</i>	Eurasian collared-dove	<i>Streptopelia decaocto</i>
Black-faced spoonbill	<i>Platalea minor</i>	Eurasian curlew	<i>Numenius arquata</i>
Black guillemot	<i>Cephus grylle</i>	Eurasian eagle-owl	<i>Bubo bubo</i>
Black stork	<i>Ciconia nigra</i>	Eurasian jackdaw	<i>Corvus monedula</i>
Black swan	<i>Cygnus atratus</i>	Eurasian jay	<i>Garrulus glandarius</i>
Black-headed gull	<i>Larus ridibundus</i>	Eurasian magpie	<i>Pica pica</i>
Black-legged kittiwake	<i>Rissa tridactyla</i>	Eurasian oystercatcher	<i>Haematopus ostralegus</i>
Brent goose	<i>Branta bernicla</i>	Eurasian sparrowhawk	<i>Accipiter nisus</i>
Brown-headed gull	<i>Chroicocephalus brunnicephalus</i>	Eurasian spoonbill	<i>Platalea leucorodia</i>
Bufflehead	<i>Bucephala albeola</i>	Eurasian wigeon	<i>Mareca penelope</i>
Calidris	<i>Calidris</i> spp.	Eurasian woodcock	<i>Scolopax rusticola</i>



Common name	Scientific name	Common name	Scientific name
Canada goose	<i>Branta canadensis</i>	European greenfinch	<i>Chloris chloris</i>
Cape gannet	<i>Morus capensis</i>	European herring gull	<i>Larus argentatus</i>
Carrion crow	<i>Corvus corone</i>	Ferruginous duck	<i>Aythya nyroca</i>
Caspian gull	<i>Larus cachinnans</i>	Finches	<i>Fringillidae</i>
Common barn-owl	<i>Tyto alba</i>	Gadwall	<i>Mareca strepera</i>
Chilean flamingo	<i>Phoenicopterus chilensis</i>	Garganey	<i>Spatula querquedula</i>
Common coot	<i>Fulica atra</i>	Glaucous gull	<i>Larus hyperboreus</i>
Common crane	<i>Grus grus</i>	Glossy ibis	<i>Plegadis falcinellus</i>
Common eider	<i>Somateria mollissima</i>	Golden eagle	<i>Aquila chrysaetos</i>
Common goldeneye	<i>Bucephala clangula</i>	Goosander	<i>Mergus merganser</i>
Common kestrel	<i>Falco tinnunculus</i>	Great black-backed gull	<i>Larus marinus</i>
Common moorhen	<i>Gallinula chloropus</i>	Great blue heron	<i>Ardea herodias</i>
Common murre	<i>Uria aalge</i>	Great cormorant	<i>Phalacrocorax carbo</i>
common pheasant	<i>Phasianus colchicus</i>	Great crested grebe	<i>Podiceps cristatus</i>
Common pochard	<i>Aythya ferina</i>	Great skua	<i>Catharacta skua</i>
Common raven	<i>Corvus corax</i>	Greater flamingo	<i>Phoenicopterus roseus</i>
Common redshank	<i>Tringa totanus</i>	Great white egret	<i>Ardea alba</i>
Common ringed plover	<i>Charadrius hiaticula</i>	Greater scaup	<i>Aythya marila</i>
Common shelduck	<i>Tadorna tadorna</i>	Great spotted woodpecker	<i>Dendrocopos major</i>
Common starling	<i>Sturnus vulgaris</i>	Peregrine falcon	<i>Falco peregrinus</i>
Common teal	<i>Anas crecca</i>	Pied avocet	<i>Recurvirostra avosetta</i>
Common tern	<i>Sterna hirundo</i>	Pink-footed goose	<i>Anser brachyrhynchus</i>
Common woodpigeon	<i>Columba palumbus</i>	Razorbill	<i>Alca torda</i>
Greater white-fronted goose	<i>Anser albifrons</i>	Red-breasted goose	<i>Branta ruficollis</i>
Grey plover	<i>Pluvialis squatarola</i>	Red kite	<i>Milvus milvus</i>
Grey-headed gull	<i>Larus cirrocephalus</i>	Red knot	<i>Calidris canutus</i>
Greylag goose	<i>Anser anser</i>	Red-legged partridge	<i>Alectoris rufa</i>
Griffon vulture	<i>Gyps fulvus</i>	Ring-billed gull	<i>Larus delawarensis</i>
Guineafowl	<i>Numididae</i>	Rock dove	<i>Columba livia</i>
Gyrfalcon	<i>Falco rusticolus</i>	Rook	<i>Corvus frugilegus</i>
Hen harrier	<i>Circus cyaneus</i>	Rough-legged buzzard	<i>Buteo lagopus</i>
Hooded crow	<i>Corvus coronus</i>	Royal tern	<i>Thalasseus maximus</i>
House sparrow	<i>Passer domesticus</i>	Ruddy turnstone	<i>Arenaria interpres</i>
Lanner falcon	<i>Falco biarmicus</i>	Saker falcon	<i>Falco cherrug</i>
Laughing gull	<i>Leucophaeus atricilla</i>	Sanderling	<i>Calidris alba</i>
Lesser black-backed gull	<i>Larus fuscus</i>	Sandwich tern	<i>Thalasseus sandvicensis</i>
Lesser kestrel	<i>Falco naumanni</i>	Semipalmated sandpiper	<i>Calidris pusilla</i>
Lesser white-fronted goose	<i>Anser erythropus</i>	Short-eared owl	<i>Asio flammeus</i>
Little auk	<i>Alle alle</i>	Silver gull	<i>Chroicocephalus novaehollandiae</i>

Common name	Scientific name	Common name	Scientific name
Little egret	<i>Egretta garzetta</i>	Slender-billed gull	<i>Chroicocephalus genei</i>
Little grebe	<i>Tachybaptus ruficollis</i>	Song thrush	<i>Turdus philomelos</i>
Little owl	<i>Athene noctua</i>	Spotted harrier	<i>Circus assimilis</i>
Mallard	<i>Anas platyrhynchos</i>	Spotted shag	<i>Phalacrocorax punctatus</i>
Manx shearwater	<i>Puffinus puffinus</i>	Tawny owl	<i>Strix aluco</i>
Mew gull	<i>Larus canus</i>	Tufted duck	<i>Aythya fuligula</i>
Mediterranean gull	<i>Larus melanocephalus</i>	Ural owl	<i>Strix uralensis</i>
Merlin	<i>Falco columbarius</i>	western grebe	<i>Aechmophorus occidentalis</i>
Montagu's harrier	<i>Circus pygargus</i>	Western gull	<i>Larus occidentalis</i>
Muscovy duck	<i>Cairina moschata</i>	Western marsh-harrier	<i>Circus aeruginosus</i>
Mute swan	<i>Cygnus olor</i>	Western sandpiper	<i>Calidris mauri</i>
Nene	<i>Branta bernicla</i>	Western water rail	<i>Rallus aquaticus</i>
New Britain sparrowhawk	<i>Accipiter brachyurus</i>	Whimbrel	<i>Numenius phaeopus</i>
Northern bald ibis	<i>Geronticus eremita</i>	White stork	<i>Ciconia ciconia</i>
Northern fulmar	<i>Fulmarus glacialis</i>	White-rumped sandpiper	<i>Calidris fuscicollis</i>
Northern gannet	<i>Morus bassanus</i>	White-tailed eagle	<i>Haliaeetus albicilla</i>
Northern goshawk	<i>Accipiter gentilis</i>	Whooper swan	<i>Cygnus cygnus</i>
Northern lapwing	<i>Vanellus vanellus</i>	Yellow-legged gull	<i>Larus michahellis</i>
Northern long-eared owl	<i>Asio otus</i>	Red knot	<i>Calidris canutus</i>
Northern pintail	<i>Anas acuta</i>		
Northern shoveler	<i>Spatula clypeata</i>		
Osprey	<i>Pandion haliaetus</i>		
Pallas's gull	<i>Ichthyaetus ichthyaetus</i>		
Red-legged partridge	<i>Alectoris rufa</i>		
Ring-billed gull	<i>Larus delawarensis</i>		
Rock dove	<i>Columba livia</i>		
Rook	<i>Corvus frugilegus</i>		
Rough-legged buzzard	<i>Buteo lagopus</i>		
Royal tern	<i>Thalasseus maximus</i>		
Ruddy turnstone	<i>Arenaria interpres</i>		
Saker falcon	<i>Falco cherrug</i>		
Sanderling	<i>Calidris alba</i>		

## Overview of recent literature on influenza A receptors in cows

Two pre-prints and one peer-reviewed study investigating the distribution of influenza A receptors in cows have recently been published. These three demonstrated that receptors preferentially bound by avian influenza A viruses (sialic acid linked to galactose via  $\alpha 2,3$  linkage) are abundantly displayed in the mammary glands of cows. Additionally, the two pre-prints highlighted that the upper respiratory tract lacks significant expression of receptors for avian or human influenza A viruses, whereas the lower part does display these receptors (Kristensen et al., 2024; Ríos Carrasco et al., 2024). The peer-reviewed study came to a different conclusion, showing that both upper and lower respiratory tissues isolated from naturally infected cows display the receptors for avian and human influenza A viruses (Nelli et al., 2024). Another discrepancy appears between the studies regarding the presence of human influenza A receptors (sialic acid linked to galactose via  $\alpha 2,6$  linkage) in mammary glands. While the first pre-print published (Kristensen et al., 2024) and the peer-reviewed article (Nelli et al., 2024) demonstrate their presence, the second pre-print did not, specifying that the methodology used in the two other studies (use of plant lectins) may lead to an overestimation of these receptors (Ríos Carrasco et al., 2024). Therefore, there is disagreement regarding the potential of the udder to act as a mixing vessel for influenza A viruses. Although these studies have confirmed the hypothesis that virus introduction likely occurs in mammary glands, further investigation with adapted and harmonised methods should be conducted to draw conclusions about the route of viral infection and transmission, as well as the potential organs where A(H5N1) virus might migrate and replicate in cows. A study on the receptor specificity of A(H5N1) virus associated with outbreaks in dairy cows in the USA was shared in another pre-print later on. In the paper, the authors highlighted that a mutation near the receptor binding site of A/Texas/37/2024 virus confers an increase in binding flexibility of the H5 of this virus. According to this study, the virus responsible for outbreaks in dairy cattle in the USA is capable of binding to a broader range of glycans bearing terminal  $\alpha 2,3$  sialic acids compared to historical and most recent 2.3.4.4b A(H5N1) virus, such as the A/Colorado/18/2022 isolated from a human in 2022. Furthermore, the study showed that this virus does not bind to any human influenza A virus receptors.