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Rapid Risk assessment

on highly pathogenic avian influenza H5 (HPAI H5) clade 2.3.4.4B

Update for the period
1 February to 6 March 2023

Risk assessment on highly pathogenic avian influenza H5 (HPAI H5) clade 2.3.4.4B

Situation in Germany

Between 1 February and 6 March 2023, 16 HPAI outbreaks in poultry including non-commercial poultry holdings were reported in Germany (Tab. 1). The outbreaks were distributed across the whole of Germany and affected both small holdings and large laying hen farms (n=3, in the districts of Emsland, Ostholstein and Paderborn) and one turkey fattening farm in the district of Cuxhaven (Tab. 1, Fig. 1). All outbreaks were caused by the HPAIV subtype H5N1.

In Baden-Wuerttemberg, HPAIV H5N1 was detected in a Nandu in the Walldorf Zoo, Rhein-Neckar district.

The number of reported cases in wild birds has more than doubled compared to the previous month (n=218). Most cases were now reported from Baden-Wuerttemberg and Bavaria (Tab. 1, Fig. 1). A strikingly high number of reports concerned gulls (88) followed by wild geese (71), swans (38), birds of prey (12) and occasionally wild ducks, cormorants, herons and owls. Only the HPAIV subtype H5N1 was detected.

In early March, HPAIV H5N1 infection was confirmed in a dead grey seal at the Friedrichskoog seal station (Dithmarschen district, Schleswig-Holstein).

***Table 1**: Number of reported HPAI outbreaks in poultry flocks (includes non-commercial holdings), captive birds (zoos or wildlife sanctuaries) and wild birds for the period 1 February to 6 March 2023 by federal state. The number in brackets quantifies the number of outbreaks in the previous month (January 2023). Data source: TSN, FLI.*

Federal State	Poultry	Captive Birds (Zoo)	Wild Birds
Baden-Wuerttemberg		1 (1)	90 (11)
Bavaria	6 (4)		51 (11)
Berlin			1 (0)
Brandenburg			5 (4)
Hamburg		0 (2)	2 (18)
Hesse		0 (1)	2 (1)
Mecklenburg-Western Pomerania	1 (4)	0 (1)	5 (7)
Lower Saxony	5 (4)		17 (26)
North Rhine-Westphalia	1 (0)	0 (1)	15 (6)
Rhineland-Palatinate	1 (0)		5 (0)
Saarland			2 (0)
Saxony-Anhalt	0 (1)	0 (2)	0 (0)
Schleswig-Holstein	1 (3)		22 (17)
Thuringia	1 (3)		1 (2)
Total	**16 (19)**	**1 (8)**	**218 (103)**

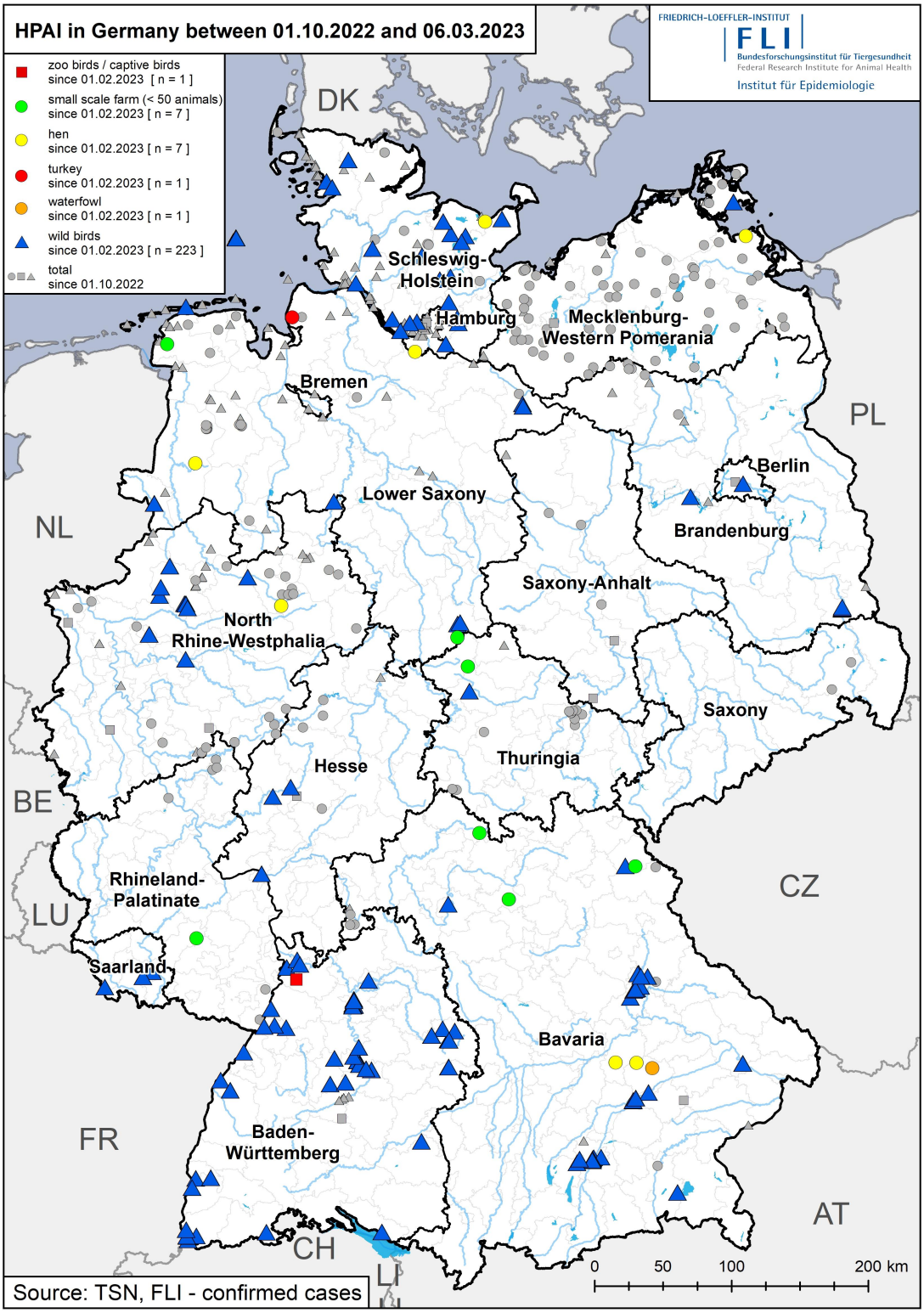

***Figure 1**: Outbreaks of HPAIV H5N1 in Germany in poultry (dots), other kept birds (zoo/wildlife sanctuary) (squares) and cases in wild birds (triangles) since 1 October 2022. In colour current outbreaks and cases since 1 February 2023. Different colours: see legend. Data status: 6 March 2023; data source: TSN, FLI.*

Situation in Europe

Across Europe, the number of outbreaks in poultry is slightly decreasing. Between 1 February and 6 March 2023, France (23), Poland (17) and Hungary (17) reported the most outbreaks, followed by the Czech Republic with 6 outbreaks, the United Kingdom with 5 outbreaks, and Slovenia, Spain, Belgium, Estonia, Austria and Turkey with 1 outbreak each (Fig. 3). Brittany in France is severely affected, where 20 outbreaks in a narrowly defined region have led to significant animal losses (>1 million), the majority of which are due to inter-farm virus spread. In Hungary, an outbreak is also almost exclusively confined to the Bács-Kiskun region and is due to carry-over. In Poland, an outbreak cluster in the central part of the country (Wielkopolskie region) has led to a large number of outbreaks.

In captive birds, most outbreaks were reported in France (11) and Belgium (8). Other reports came from Austria (1), the Netherlands (2) and Slovenia (1).

The number of cases in wild birds has increased to over 700 for the EU (including Germany) and the UK since February 2023. Besides Germany, the following countries reported cases in wild birds: France (91), Belgium (84), the Netherlands (82), Italy (54), Switzerland (30), Austria (28), Denmark (23), Poland (18), Sweden (15), Hungary (12), the United Kingdom (11), Norway (9), Slovenia (9), Spain (7), Ireland (6), Romania (5), the Czech Republic (3), Slovakia (2) and Luxembourg (1) (Fig. 3). There is a noticeable shift in the number of affected bird species towards gull-birds (Fig. 2). Except for one case in southern Sweden (Barnacle Goose, HPAIV H5N5), all infections are due to the H5N1 subtype.

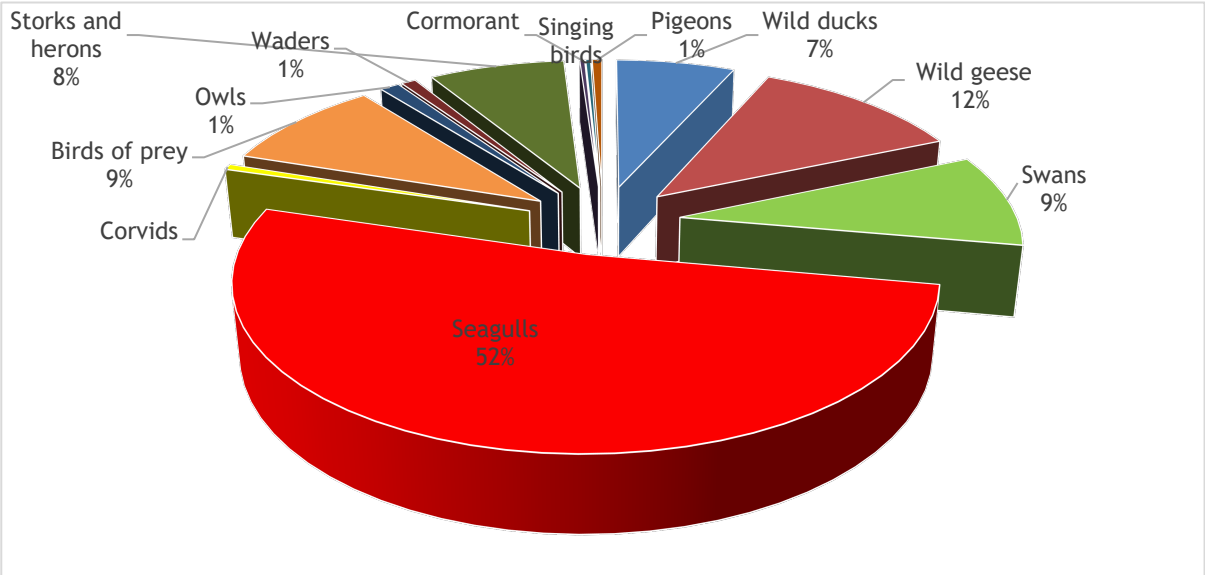

***Figure 2**: Percentages of affected bird groups in the total of all reported HPAIV H5 cases in wild birds in the EU (n=694) in the last 33 days (1 February to 6 March 2023). Data source: ADIS.*

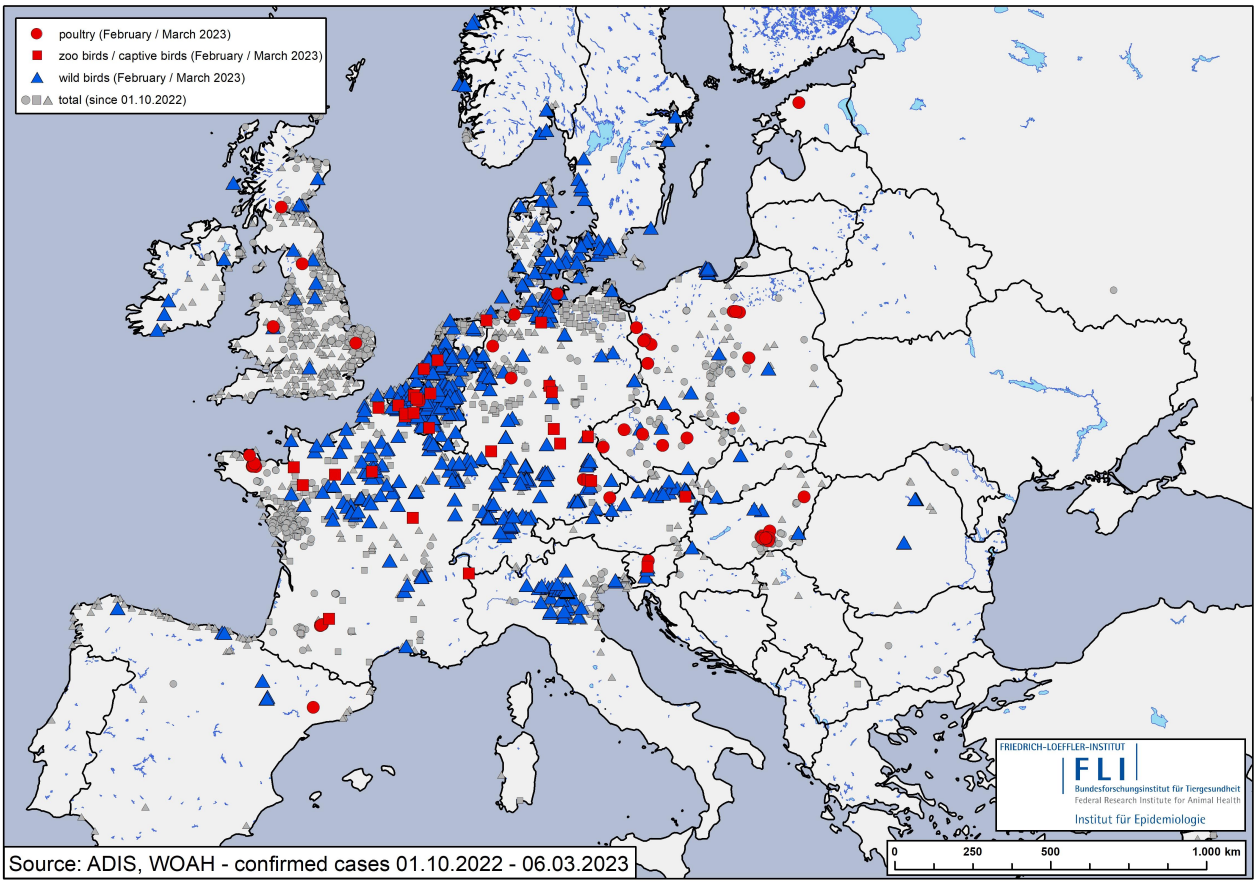

***Figure 3**: HPAI cases in poultry, kept birds and wild birds reported in ADIS and to WOAH from 1 October 2022 to 6 March 2023. Current cases as of 1 February 2022 in red and blue; poultry = (domestic) poultry kept for commercial purposes; zoo birds / other birds = other captive birds. Data query done on 6 March 2023.*

Situation in the world/special events

A high number of reports of HPAI H5 clade 2.3.4.4.B have been received worldwide since October 2022 (countries newly added since February 2023 are underlined):

In poultry and wild birds from Russia, Asia (Israel, India, China, Vietnam, Taiwan, Japan, South Korea, Nepal), Africa (Niger, South Africa) as well as Greenland, North (Canada and USA), Central (Panama, Guatemala), Cuba and South America (Colombia, Peru, Ecuador, Venezuela, Chile, Uruguay, Argentina). In South America, the virus has spread along the Pacific coast and across the interior (especially Argentina) to the Atlantic coast of Uruguay. Poultry, farmed birds and wild birds are equally affected.

Despite the very high number of outbreaks in poultry worldwide and presumed multiple contacts between humans/mammals and infected birds, infections with HPAIV H5 clade 2.3.4.4b in humans are still very rare events. However, in terrestrial and marine mammals, the numbers of reported cases appear to be increasing more rapidly as the panzootic ("pandemic among animals") progresses. The following reports of newly affected **mammals** were published in February 2023:

On the east coast of Scotland, HPAIV H5N1 was detected in seals recovered dead.

In the USA, a total of 22 mammals have tested HPAIV H5 positive since 1 February 2023 (bear, lynx, otter, striped skunk, cougar, raccoon, fox).

In Peru, in addition to extensive bird deaths along the coast, authorities reported the occurrence of clustered deaths (up to 1,000) in maned seals (*Otaria flavescens*) found to be infected with HPAIV H5N1. Also in Chile, a dead maned seal tested HPAIV H5N1 positive in February. Especially in the wake of the mass deaths of maned seals, virus transmissions from seal to seal cannot be ruled out.

In four cases of **human infection** in Europe and North America, the affected individuals had only very mild to no clinical symptoms. After the Ecuadorian Ministry of Health reported HPAIV infection in a 9-year-old girl in the central province of Bolivar on 10 January 2023, an 11-year-old girl in Cambodia contracted HPAIV H5N1 and died on 22 February 2023. The girl's father also tested positive but remained asymptomatic. Other contact persons were tested with negative results. Sequence analysis of the virus in Cambodia showed that it belongs to a different clade (2.3.2.1c), which has been circulating endemically in Cambodia since 2014. This clade is clearly different from clade 2.3.4.4b, to which the viruses of the current panzootic belong. However, a short time later, the case of a 53-year-old woman from China who had been infected with HPAIV H5N1 of clade 2.3.4.4b became known. There is no information about the course of the disease.

According to a current assessment by the European Centre for Disease Prevention and Control (ECDC), the risk of zoonotic influenza virus transmission to humans with public health implications is still considered low, but a moderate risk is assumed for occupationally exposed groups who have close contact with infected poultry (Source).

Risk assessment

In Europe, fluctuations in waterbird movements are to be expected due to changing weather conditions, as a result of which waterbirds on the coasts migrate in south-westerly directions or return to the coasts or also to their breeding areas. Weather-induced small- to medium-scale movements of waterbird species take place mainly in coastal areas, viruses can spread well in waterbird populations and be introduced into other populations over short distances, so that viruses can be exchanged within different resting populations. Cool temperatures and weaker UV radiation favour persistence of HPAI viruses in the environment.

The risk of spread and further spread of HPAI H5 viruses in waterbird populations in connection with fluctuations at collection sites within Germany is classified as ***high***.

The risk of HPAIV H5 introduction into German poultry holdings and bird populations in zoological institutions through direct and indirect contacts with wild birds is considered ***high***.

The number of outbreaks in poultry and captive birds in Europe is slightly decreasing. Therefore, a ***moderate*** risk of introduction through spread of the virus between holdings (secondary outbreaks) within Germany is assumed. The risk of introduction through the sale of live poultry through travel trade or poultry exhibitions within Germany and Europe remains ***high***.

For waterfowl farms, the risk of undetected circulation of HPAI H5 viruses and consequently of spread between poultry flocks is also considered to be ***moderate***.

Current recommendation

The top priority is to protect poultry from the introduction and possible further spread of HPAIV infections. To this end, the relevant recommended biosecurity measures and surveillance or clarification examinations must be checked and consistently adhered to. Poultry farmers are legally obliged to comply with basic biosecurity rules. The reporting of deaths in poultry holdings to the veterinary authority with subsequent official investigation is considered a measure for early detection of the disease, which is fatal in chickens and turkeys.

A nationwide ban on poultry or bird shows or the sale of live poultry (via travel trade) should still be implemented or maintained to prevent the spread of HPAI infections, also in supra-regional traffic.

Staff caring for poultry should work exclusively on a single holding and be vaccinated against human influenza viruses.

Veterinarians and other persons visiting poultry flocks on a professional basis should stop their tour and observe a 48-hour grace period if they have entered a flock where clinical signs, including increased mortality, indicate HPAI.

Sharing of equipment, carcass bins and vehicles between multiple poultry holdings should be discontinued. The movement of vehicles and people on poultry holdings should be restricted to the minimum necessary. Prohibitions on re-housing should also be taken into account.

Increased attention should also be paid to compliance with biosecurity measures in the case of intra-Community movements of poultry, especially to or from EU countries with current outbreaks. Careful cleaning and disinfection should be carried out on poultry transport vehicles returning from affected countries.

In the vicinity of HPAIV-infected wild birds, a risk-based restriction of free-range poultry (stabling) is recommended. The use of TSIS to view wild bird cases in the counties (TSIS-query) is possible.

In poultry farms, zoos and animal parks, especially those with open-air and free-range systems, prevention and biosecurity measures should be urgently reviewed and, if necessary, optimised. Animal keepers can check the biosecurity of their farms, among other things, by means of the so-called "AI risk traffic light" (https://risikoampel.uni-vechta.de/) free of charge and anonymously.

It is hardly possible to influence the course and spread of HPAIV infections in wild bird populations. However, the collection of carcasses has proven to be useful. The top priority remains the protection of poultry against the entry and possible further spread of HPAIV infections.

Conspicuous behaviour and dead finds in wild birds and mammals in connection with wild bird deaths should be reported immediately to the veterinary authorities for recovery and, if necessary, investigation.

An overview of further options for action, i. e. a catalogue of recommendations is available here.

Data Sources: TSN, ADIS, WOAH
Query period: 1 February 202 to 6 March 2023
Query date: 6 March 2023

Further references

The data situation in the databases is dynamic and changes daily, therefore there are shifts in the figures if they are queried at other times.

The European Food Safety Authority (EFSA) offers an up-to-date edition of the scientific evaluation of what is happening in Europe: Avian influenza overview December 2022 – March 2023 | EFSA (europa.eu)

In addition to weekly updated outbreak maps, the FLI also provides information on molecular virological investigations of HPAI viruses in Germany (HPAIV genotypes in Germany) and a questionnaire (FAQ).

The European Reference Laboratory for Avian Influenza has launched a new HPAI Dashboard (https://eurlaidata.izsvenezie.it/) regarding the detection of HPAI in the EU.

EFSA has also set up an HPAI dashboard where the numbers in Europe can be viewed in real time. EFSA HPAI dashboard (aus.vet)

The WHO published a risk assessment on 21 December 2022. Assessment of risk associated with recent influenza A(H5N1) clade 2.3.4.4b viruses (who.int)

US authorities publish daily mammal cases on a website: USDA APHIS | 2022-2023 Detections of Highly Pathogenic Avian Influenza in Mammals

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