Self-declaration for the recovery of country freedom from infection with high pathogenicity avian Influenza viruses (HPAI) in poultry by Hungary

Declaration sent to WOAH on 20 July 2022 by Dr Lajos Bognár, WOAH Delegate for Hungary, Ministry of Agriculture.

1. Introduction

The objective of this declaration is to recover the self-declared freedom from infection with high pathogenicity avian influenza viruses, in accordance with the provisions of Article 10.4.6. of WOAH *Terrestrial Animal Health Code (the Terrestrial Code)*. This self-declaration covers **the whole country** and describes the HPAI-events in poultry that occurred in Hungary from November 2021 to January 2022 (hereinafter referred to as: "first wave") and from April to June 2022 (hereinafter referred to as: "second wave"). The starting date of this self-declaration is **27 July 2022**.

2. Avian influenza situation in Hungary

On 12 November 2021, the National Reference Laboratory (NRL) for avian influenza in Hungary detected the presence of highly pathogenic avian influenza virus (HPAI H5N1 subtype) in a white-fronted goose in Baranya County[1]. This was the second detection of HPAI in 2021 in Hungary after the avian influenza epidemic in the in the first half of the year.

First wave

On 16 November 2021 the NRL for avian influenza in Hungary confirmed the presence of HPAI (H5N1 subtype) in a breeding duck and a foie gras goose holding (two primary outbreaks) in Bács-Kiskun county[2]. From November 2021 to February 2022, outbreaks of the H5N1 subtype of the virus occurred in Békés, Csongrád-Csanád, Hajdú-Bihar and Szabolcs-Szatmár-Bereg county, as listed in Table 2.

Altogether 113 poultry outbreaks were confirmed in the 5 affected counties (Tables 1 and 2, Fig. 1 and 2). Most of the outbreaks (76) were in Bács-Kiskun county, which is the area with the highest poultry density. Over 2.3 million poultry (including animals of affected holdings as well as the ones subject to preventive killing) were killed due to the epidemic.

The last outbreak was confirmed in Bács-Kiskun county on 27 January 2022. The last restriction zones were lifted on 8 March. The final cleaning and disinfection were completed on 10 March.

In addition to poultry outbreaks the H5N1 subtype was confirmed in 4 captive bird establishments (Table 2, Figure 3) and in 33 wild birds (26 outbreaks) (Table 2, Figure 3).

[1] WAHIS report Ref. evt_4070
[2] WAHIS report Ref. evt_4077

Table 1. Number of affected holdings and birds by species

Species	Number of holdings	Number of birds
chicken	**5**	**515 437**
breeding	1	19 448
broiler	1	372 089
laying hen	3	123 900
turkey	**9**	**117 321**
breeding	2	20 369
fattening	7	96 952
duck	**55**	**1 399 904**
breeding	8	99 761
fattening	22	1 106 833
foie gras	25	193 310
goose	**35**	**116 331**
breeding	7	36 463
foie gras	28	79 868
backyard	**9**	**1 363**
Total	**113**	**2 150 356**

Table 2. Number of outbreaks (poultry, captive birds, wild birds) by county

	POULTRY	CAPTIVE BIRDS	WILD BIRDS	
COUNTY	Number of outbreaks	Number of outbreaks	Number of outbreaks	Number of wild birds
BÁCS-KISKUN	76	1	1	1
BARANYA			1	1
BÉKÉS	7		1	1
CSONGRÁD-CSANÁD	20		2	3
FEJÉR			1	1
GYŐR-MOSON-SOPRON			1	1
HAJDÚ-BIHAR	5		3	5
HEVES		1		
KOMÁROM-ESZTERGOM			5	6
PEST		1	3	3
SZABOLCS-SZATMÁR-BEREG	5		7	10
TOLNA			1	2
VAS			1	1
ZALA		1		
TOTAL	**113**	**4**	**27**	**35**

Fig 1. Location of HPAI outbreaks and restricted zones in poultry at the peak of the epidemic wave

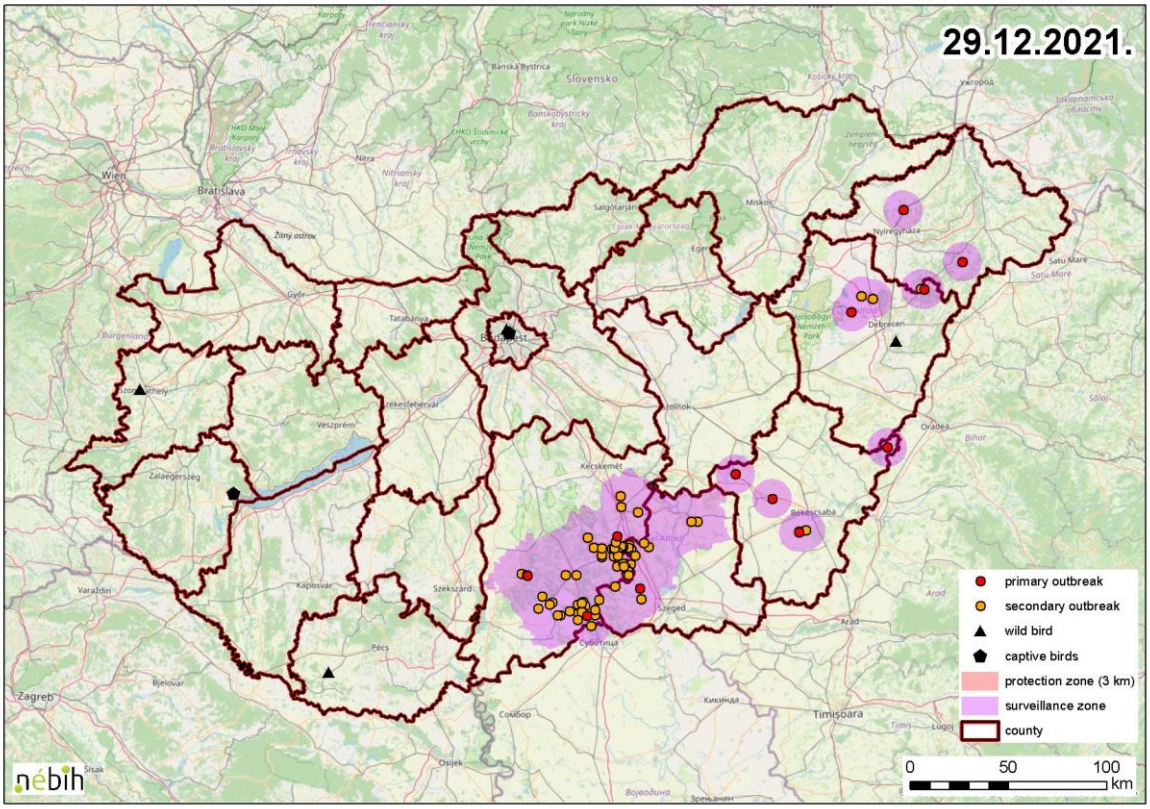


Fig 2. Location of HPAI outbreaks and restricted zones in poultry at the last outbreak of the first wave

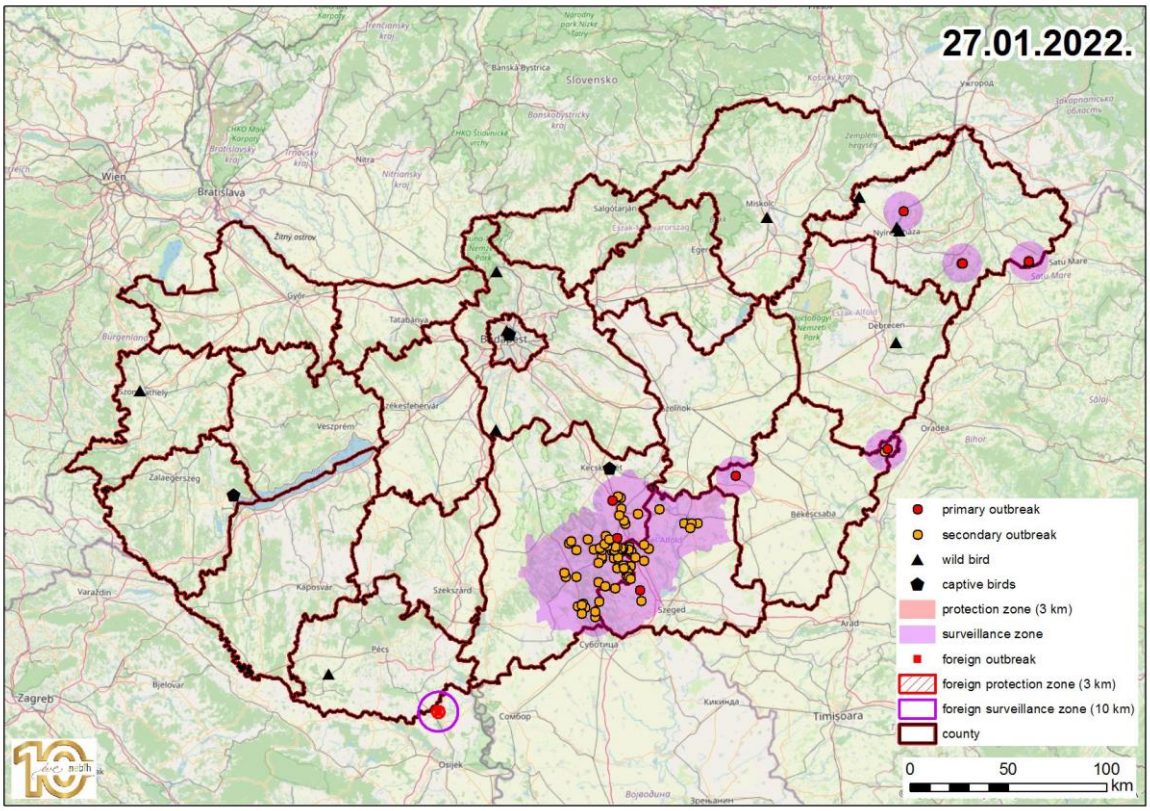
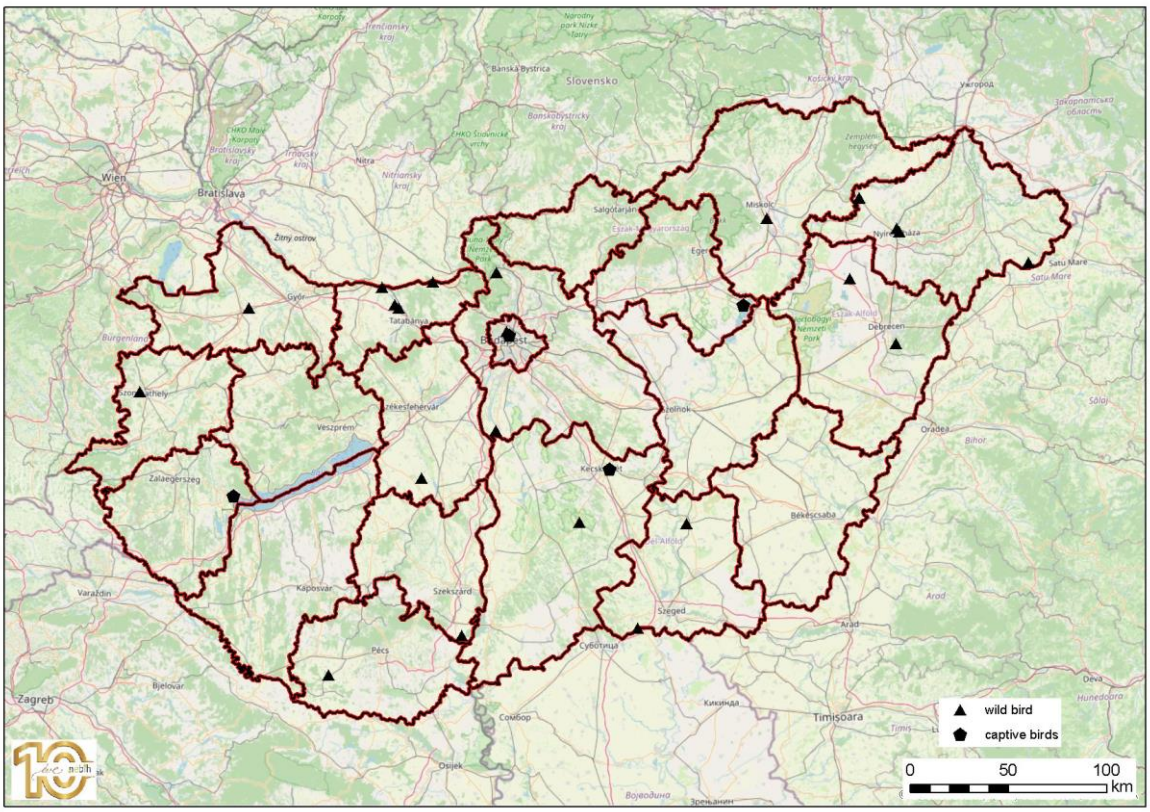


Fig 3. Location of HPAI outbreaks in captive birds and wild birds during the first wave



Second wave

On 14 April 2022 the NRL for avian influenza in Hungary confirmed the presence of HPAI (H5N1 subtype) in a foie gras goose holding in Bács-Kiskun county[3].

From April to June 2022, outbreaks of the H5N1 subtype of the virus occurred in Békés, Csongrád-Csanád, Hajdú-Bihar and Szabolcs-Szatmár-Bereg county, as listed in Table 3.

Altogether 176 poultry outbreaks were confirmed in the 5 affected counties (Tables 3 and 4, Fig. 4 and 5). Most of the outbreaks (135) were in Bács-Kiskun county, which is the area with the highest poultry density. Altogether over 3.3 million poultry (including animals of affected holdings as well as the ones subject to preventive killing) were killed due to the epidemic wave.

The last outbreak was confirmed in Hajdú-Bihar county on the 9 June 2022. The last restriction zones were lifted on the 15 July. The final cleaning and disinfection were completed on 28 June.

In addition to poultry outbreaks the H5N1 subtype was confirmed 3 wild birds (2 outbreaks) (Table 3, Figure 5).

Table 3. Number of affected holdings and birds by species

Species		Number of holdings	Number of birds
pheasant		**1**	**8563**
	breeding	1	8563
duck		**38**	**1128413**
	fattening	34	1098108
	breeding	4	30305
goose		**60**	**338801**
	fattening	10	110658
	breeding	7	31854

[3] WAHIS report Ref. evt 4411

	foie gras	43	196289
moulard duck		**51**	**387196**
	fattening	51	387196
turkey		**4**	**65017**
	fattening	4	65017
ostrich		**1**	**26**
	mixed	1	26
chicken		**19**	**1043365**
	laying hen	14	904795
	broiler	4	100700
	breeding	1	37870
backyard		**2**	**295**
Total		**176**	**2971676**

Table 4. Number of outbreaks (poultry, captive birds, wild birds) by county

	POULTRY	**WILD BIRDS**	
COUNTY	Number of outbreaks	Number of outbreaks	Number of wild birds
BÁCS-KISKUN	135		
BÉKÉS	14		
CSONGRÁD-CSANÁD	22		
HAJDÚ-BIHAR	1		
SOMOGY		1	1
SZABOLCS-SZATMÁR-BEREG	4		
TOLNA		1	2
TOTAL	**176**	**2**	**3**

Fig 4. Location of HPAI outbreaks and restricted zones in poultry at the peak of the epidemic wave

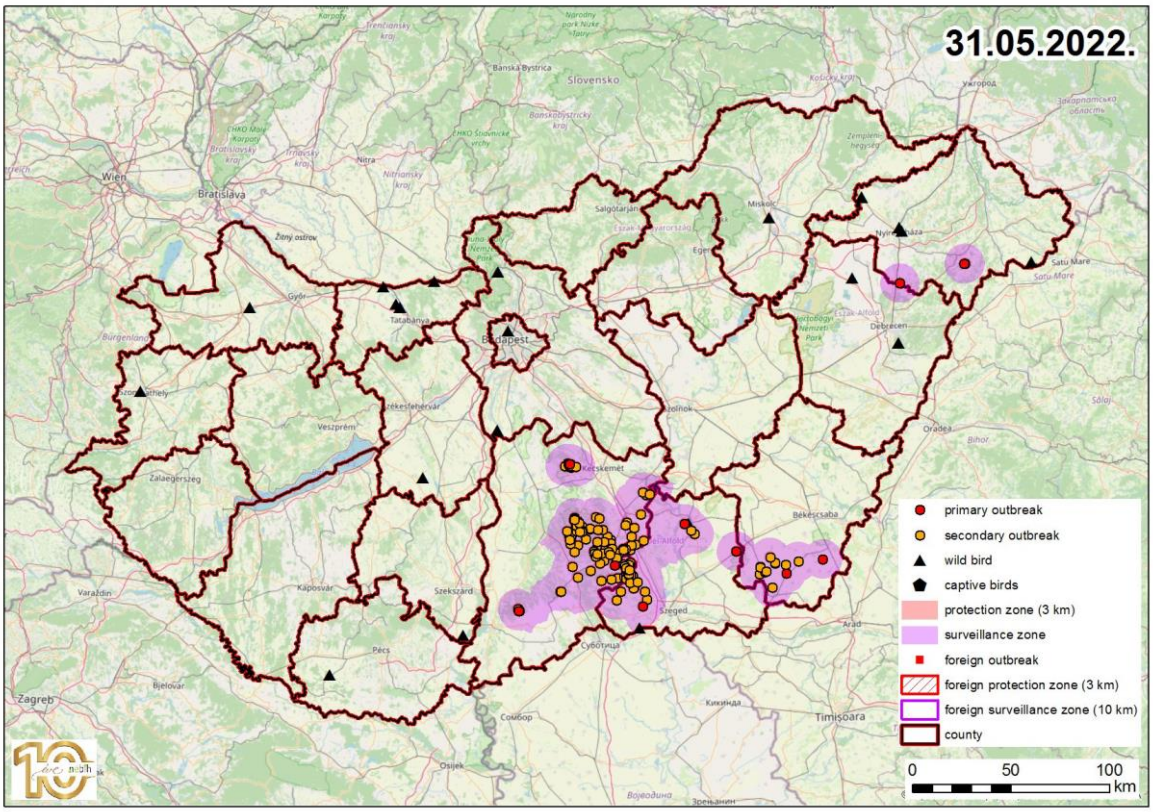
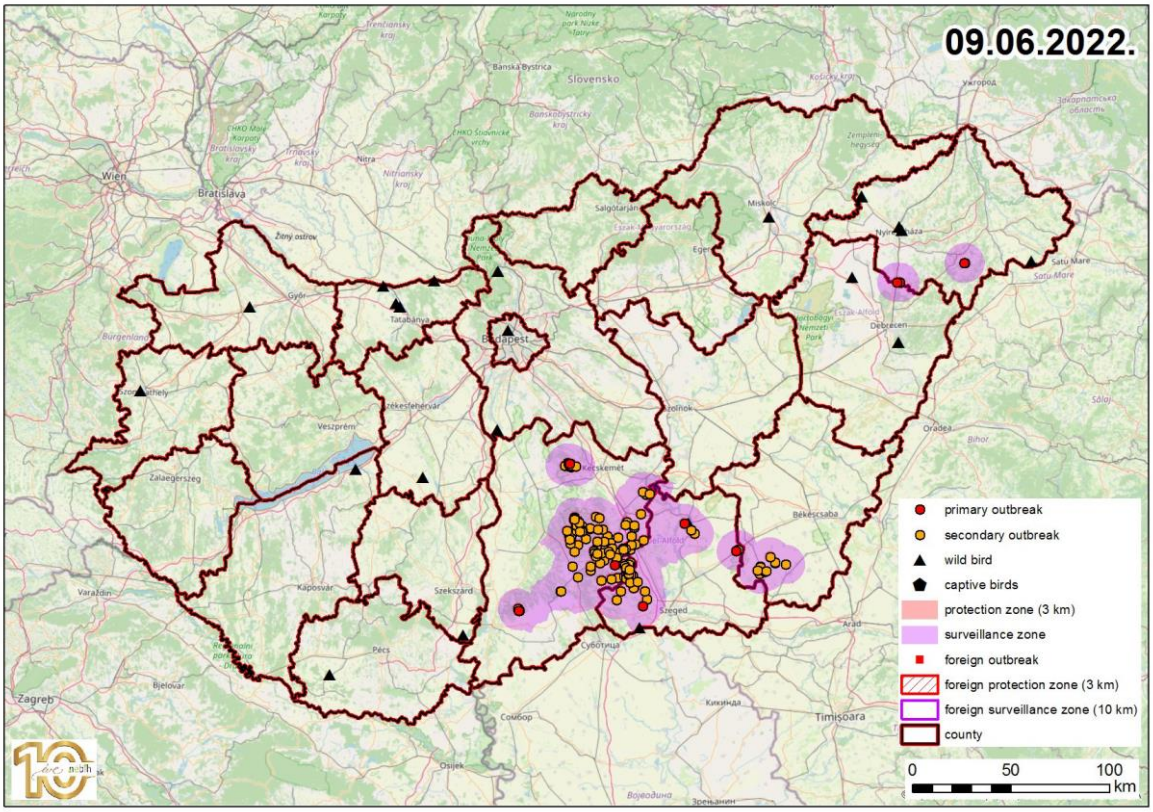


Fig 5. Location of HPAI outbreaks and restricted zones in poultry at the last outbreak of the second wave



3. Routine surveillance and early detection system

Awareness campaigns are conducted regularly for notifiable diseases. We continuously monitor the epidemic situation in the world and already launched our latest awareness campaign when HPAI was detected in Europe in October 2021. During the epidemic waves, numerous communiques, articles, radio and TV interviews took place with special emphasis on social media platforms. All information on avian influenza and an interactive map are available and constantly updated on the website of National Food Chain Safety Office (https://portal.nebih.gov.hu/madarinfluenza).

Avian influenza is a notifiable disease in Hungary. Animal keepers, veterinarians and anybody handling animals (e.g., transporters) should notify any illness or death of their animals to the veterinary authority. This obligation is detailed in Act No. XLIV of 2008[4] on Food chain and its official supervision. A list of suspect signs is laid down in Decree No. 143/2007 of the 'Minister of Agriculture and Rural Development' on the detailed rules on protection against avian influenza. These signs include: more than 20% of loss in water intake and food consumption; egg drop of at least 5% for more than 2 days; more than 3% mortality for one week and any clinical or pathological signs that can be associated with avian influenza.

Active surveillance in poultry and passive surveillance in wild birds have been going on since 2005 (Table 5).

The Hungarian Avian Influenza surveillance programme is based on representative sampling, therefore all counties' authorities (19) take part in the sampling.

The surveillance program is based on Commission Delegated Regulation (EU) 2020/689 of 17 December 2019 supplementing Regulation (EU) 2016/429 of the European Parliament and of the Council with regards to rules for surveillance, eradication programmes, and disease-free status for certain listed and emerging diseases[5]. Each county is involved in sampling, and the number of samples depends on the number and category of its poultry holdings. The number of samples are set out and controlled by the Animal Health and Animal Welfare Directorate of the National Food Chain Safety Office (as the central competent authority).

Local authorities should determine which holding will be sampled. Elements such as the location of the holding and its proximity to wetlands should be considered.

Sampling is carried out by veterinarians. Blood samples are collected from poultry for serological investigations according to the number fixed by the Central Authority for each county. Each concerned holding is sampled once throughout the year in case of negative results. Diagnostic method is haemagglutination-inhibition test (HI) to detect H5 and H7 (Chapter 3.3.4. of the WOAH (OIE) - *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*). Positive reactors to HI are followed by a PCR test to confirm or rule-out infection. None of the samples taken in the framework of routine active surveillance has been positive.

Table 5. Routine active surveillance* of poultry, Hungary, 1 October 2021 – 8 April 2022 (before and during the first wave of the epidemic)

Period	Holdings	Samples	No. of positive HI (H5)	No. of positive HI (H7)
1 October– 15 November 2021	305	4 706	0	0
16 November 2021 – 8 April 2022	30	481	0	0

*according to Commission Delegated Regulation (EU) 2020/689

From the 9th April until the 27th July, one sample was tested within the framework of the new monitoring plan for the routine active surveillance of poultry. The new monitoring plan – being based on risk assessment – was announced on the 29th June. The plan takes into account the period of increased movements of migratory wild birds of targeted species into and through the Union according Commission Delegated Regulation (EU) 2020/689. The sample sending schedule is adjusted to the migration period of wild birds starting in early-mid August. In the two waves of HPAI epidemic the passive and active surveillance of poultry was continuous.

The surveillance programme for avian influenza in wild birds (Table 6) is implemented in the whole country, considering that almost in every county there are either wetlands, lakes, rivers or backwaters as typical habitats

[4] Act. No. XLIV of 2008

[5] Commission Delegated Regulation (EU) 2020/689

for migratory wild birds, in particular water birds, as target species. Passive surveillance is in force, moribund or dead birds are collected for virological examination. Every year the sample size is reviewed.

Passive surveillance is targeted on birds belonging to "higher risk" species listed in EFSA report number EFSA-Q-2017-00649, other wild birds living in close proximity to these species and also on wild birds at risk of coming in close contact with domestic poultry holdings. Veterinarians or hunters are responsible for the implementation of the sampling. Bird watchers, ornithologists, hunters or anyone who discovers a dead or moribund bird shall deliver it to the competent authority, *i.e.* the competent veterinarians. From 11 November 2020 also the National Parks participate in the search of dead wild birds. Oropharyngeal/tracheal or cloacal swab samples, tissues or corpses are sent by the competent authority immediately to the NRL for virological examination. From November 2020, due to increasing risk - the veterinary authority requested "BirdLife Hungary" (the leading non-profit, apolitical, and charitable, nature conservation organisation in Hungary) to cooperate in active monitoring of wild birds (oropharyngeal/tracheal or cloacal swab samples from live wild birds during bird-ringing). They cooperate since then with the authority. The diagnostic method is PCR (Chapter 3.3.4. of the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*) (See table 6).

Table 6. Active and passive surveillance of wild birds *. Samples were oropharyngeal/tracheal or cloacal swabs, each bird was sampled once. Hungary, 1 October 2021 – 27 July 2022 (before, during and after epidemic waves)

Period	Number of wild birds	Positive wild birds	Negative wild birds
1 October– 15 November 2021	322	1	321
16 November 2021 – 10 March 2022	585	32	553
11 March – 8 April 2022	160	2	158
9 April – 13 April 2022	18	0	18
14 April – 27 July 2022	1 120	1	1 119

* according to Commission Delegated Regulation (EU) 2020/689

4. Epidemiological investigations

The results of epidemiological investigations suggested that for the first outbreaks, the source of infection was likely to be wild birds. For more detailed information on the phylogenetic examination conducted, please refer to Annex II.

5. Control and eradication measures

Control and eradication activities were carried out by the veterinary authority.

Procedures and measures implemented during outbreaks were based on Commission Delegated Regulation (EU) 2020/687 of 17 December 2019 supplementing Regulation (EU) 2016/429 of the European Parliament and the Council[6], with regards to rules for the prevention and control of certain listed diseases.

European legislation is implemented in Hungary by Decree no. 143/2007 of the Minister of Agriculture and Rural Development where the rules on control of avian influenza are detailed.

Strict measures were ordered, which included: killing of all birds at the affected holdings and safe disposal of carcasses and all contaminated material; cleaning and disinfection; establishment of the following restriction zones: at least 3-km radius protection zone and a 10-km radius surveillance zone around the infected holdings, where general movement restriction was in place. Movement of poultry could only take place with the permission of the veterinary authority and when applying additional biosecurity measures (e.g., for direct slaughter). In Bács-Kiskun and Csongrád-Csanád counties the surveillance zone was enlarged to the borders of administrative units. In the restriction zones, census of poultry holdings has been implemented.

Poultry in the affected holdings were killed in accordance with the rules of the European Union in line with Chapter 7.6. and other relevant chapters of the *Terrestrial Code*. Carcasses in most cases were destroyed at rendering plants, in a few cases they were destroyed with burial.

Besides the 2.1 and 2.9 million poultry killed at the affected holdings during the first and second wave respectively, another 465 000 and 475 000 birds were killed/slaughtered as a preventive measure. Altogether

[6] Commission Delegated Regulation (EU) 2020/687

around 2.3 and 3.3 million poultry were killed/slaughtered in connection with the two waves of the epidemic. Preventive killing/slaughter has been carried out – based on risk assessment – in protection zones.

The re-population of commercial poultry holdings could only take place 21 days following the date of completion of the final cleaning and disinfection. Disinfectants were purchased centrally, and the cleaning and disinfection procedure itself was supervised by official veterinarians in order to ensure that the disinfectants were used in required amount and concentration. Restocking procedure introduced in the areas affected in the 2020 epidemic is still in force. Restocking was implemented in accordance with Commission Delegated Regulation (EU) 2020/687.

In addition to all the above, during the second wave, further measures related to transport and loading were implemented. Besides the compulsory, prior notification of the date and duration of the loading procedure, the provision of textile protective clothing for loading workers was prescribed.

6. Surveillance related to the outbreaks (additional to routine surveillance)

In addition to the routine surveillance described in point 3, additional surveillance has been carried out in the affected holdings and in restriction zones in accordance with Commission Delegated Regulation (EU) 2020/687. For passive surveillance, dead birds from suspected farms were collected (See table 8.). For active surveillance, samples were oropharyngeal/tracheal or cloacal swabs from live birds before transport from restricted zones to the slaughterhouse (Table 7).

In addition to the above-mentioned measures, from 11 November 2020 the Chief Veterinary Officer ordered further compulsory samplings. In waterfowl (excl. day-old-chicks) samples had to be taken before transporting for further keeping. The laboratory test had to be performed within 72 hours of the transport, but the transport could already take place before the result was received. This measure is still in force in the whole country (Table 7).

From 17 November 2021 in whole area of Bács-Kiskun and in three districts of Csongrád-Csanád county, compulsory sampling before movement of poultry was ordered. From 10 December the measure was extend to the whole area of Csongrád-Csanád county. Movement can be allowed only with favourable result. This measure is still in force (Table 7).

The diagnostic method used was rt-PCR (Chapter 3.3.4. of the WOAH (OIE) - *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*).

The following tables show the number of samples taken and their results.

Table 7. Additional active surveillance in poultry due to the outbreaks, total number of individual samples – including sampling before dispatch to slaughterhouses outside restriction zones; sampling before dispatch to further keeping outside restriction zones; sampling before technological movement and sampling in the detailed territories of Bács-Kiskun and Csongrád-Csanád counties before dispatch for any kind of movement. Samples were oropharyngeal/tracheal or cloacal swabs from live birds before transport. Each bird was sampled once. Hungary, 16 November 2021- 27 July 2022

Year	Samples	Positive samples	Negative samples
16 November 2021 – 10 March 2022	136 221	859	135 362
11 March – 8 April 2022	21 855	0	21 855
9 April – 13 April 2022	5 100	0	5 100
14 April 2022 – 27 July 2022	121 391	1 585[7]	119 806

[7] The last sample giving positive result was confirmed the 9th June, 2022. Ever since, all samples were negative.

Table 8. Results of the diagnostic tests conducted following clinical surveillance in poultry, total number of individual samples. Samples were taken from birds found dead on the farms and one sample represents one bird. Hungary, 16 November 2021- 27 July 2022

Year	Samples	Positive samples	Negative samples
16 November 2021 – 10 March 2022	7 200	2 385	4 815
11 March – 8 April 2022	1 014	0	1 014
9 April – 13 April 2022	143	0	143
14 April – 27 July	3 687	933[8]	2 754

Lifting of the restricted zones was implemented in accordance with Commission Delegated Regulation (EU) 2020/687. As required by the Regulation in the protection zone the official veterinarians visit all poultry holdings and if necessary, collect samples for laboratory tests.

7. Measures implemented to maintain freedom in the country

Surveillance is carried out throughout the year to early detect any incursion of the disease.

Detailed biosecurity requirements are in force in order to reduce the risk of direct and indirect introduction of avian influenza virus into poultry premises from the wild birds, such as: stocking density, covered storage of feed and litter and the possibility to keep poultry closed if ordered, are in force. Repopulation of the affected area has been carried out after specific surveillance – as described earlier – following approval of the regional authority based on on-spot visits.

Import and intracommunity trade of live birds, poultry and their products health requirements are regulated by EU and national legislation, which comply with the WOAH (OIE) *Terrestrial Code*.

8. National Avian Influenza Reference Laboratory

The Directorate for Veterinary Diagnostics of the National Food Chain Safety Office is the national avian influenza reference laboratory (NRL) of Hungary. The NRL is accredited since 2005 through the Hungarian accreditation body and it operates and is assessed in accordance with European standards. The laboratory personnel consists of highly trained and skilled experts with experience in relevant work done in influenza virus research and molecular diagnostics. From 16 November 2021 until 31 March 2022, more than 150 000 swab samples and nearly 4 000 dead birds were analysed by real time RT-PCR methods recommended by the EU/WOAH (OIE) Avian Influenza reference laboratory. Between 1 April and 27 July, the numbers were around 140 000 and approximately 4000, respectively. In the first step a screening with an M gene AIV RT-PCR was performed and differential RT-PCR was used to determine the type of virus for the positive samples. In order to confirm the type and pathogenicity of the virus 41 and 28 Sanger sequencing of the full HA and N was performed during the periods of 16 November 2021 – 31 March 2022 and 1 April – 27 July 2022, respectively. Furthermore, complete genome of 30 highly pathogenic avian influenza viruses were selected for Next Generation Sequencing for epidemiologic and genetic studies. Sequences were submitted to the Global Initiative on Sharing All Influenza Data (GISAID) databases (http://platform.gisaid.org).

The average number of samples investigated per day by RT-PCR was 1 209 and 1 343 during the periods of 16 November 2021 – 31 March 2022 and 1 April – 27 July 2022, respectively. In these periods, the highest number of samples per day were 4 681 and 6725 with a final documented PCR result on the same day. In addition, urgent samples were received frequently, where a final PCR result including the type of virus was provided in 4-6 hours. Specific service was introduced to transport the samples every day to the NRL from the countryside.

Table 9. Number of tests carried out from 16 November 2016 to 27 July2022:

Test method	Number of tests (16 November, 2021 – 31 March, 2022)	Number of tests (1 April, 2022 – 27 July, 2022)
PCR	34 757	3 1354
HI	1 762	2 578
Virus isolation	171	28

[8] The last sample giving positive result was confirmed the 9th June, 2022. Ever since, all samples were negative.

9. Additional measures ordered by the Chief Veterinary Officer

The 3/2017 CVO order concerning the strengthening of biosecurity requirements has been in force since the 2016/2017 HPAI epidemic (e.g., poultry should be able to be kept closed if ordered, requirements on stocking density, etc.). As additional measures the Chief Veterinary Officer ordered with CVO Order 4/2021 the closed keeping of poultry in the counties identified as high risk in Hungary, namely Bács-Kiskun, Békés, Csongrád-Csanád, Hajdú-Bihar, Szabolcs-Szatmár-Bereg, Győr-Moson-Sopron and Komárom-Esztergom for the entire territory of these counties on 22 November 2021. This decision is still in force.

10. Conclusions

Considering that:

- Prior to the occurrence of outbreaks of HPAI in November 2021, Hungary had been free from infection with high pathogenicity avian influenza viruses in poultry since 10 June 2021.
- Stamping out measures were adopted that included cleaning and disinfection of all the affected farms which were completed on 28 June 2022.
- 28 days have elapsed and infection with high pathogenicity avian influenza viruses in poultry has not been present in the country, as stipulated in Article 10.4.6 of the WOAH (OIE) *Terrestrial Code.*
- Surveillance has been performed in accordance with Articles 10.4.26. to 10.4.30 of the *Terrestrial Code* during that 28-day period and has demonstrated the absence of infection.

The WOAH (OIE) Delegate of Hungary declares that the country has met the requirements to regain the country status as free from infection with high pathogenicity avian influenza viruses in poultry as of 27 July 2022, in accordance with Article 10.4.6. of the *Terrestrial Code* (2021 edition) and consistent with the information provided in WAHIS.

Annex I – Declaration of the Delegate

Annex I

Statement to be included in the self-declaration document.

I, the undersigned, LAJOS BOGNÁR,

the Delegate of

HUNGARY

to the World Organisation for Animal Health (WOAH, founded as OIE), takes responsibility for

the self-declaration of freedom

HIGHLY PATHOGENIC AVIAN INFLUENZA

DISCLAIMER

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(iii) Any direct or indirect consequences of any nature arising from or relating to the use of the information contained in a self-declaration.

Drawn up on 03. 08. 2022

Signature of the Delegate:

Agrárminisztérium Helyettes Államtitkár * 1. *

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Annex II – Information on phylogenetic examination

Phylogenetic examination:

Those avian influenza viruses present in Europe since October, 2021 can be traced back to three major sources:

1. Developed from strains introduced into Europe back in 2020
2. Arrived from Russia (Saratov) in the autumn of 2021
3. Arrived from Russia (Tyumeny) in the autumn of 2021

Strains present in Hungary form part of three bigger groups.

The Hungarian index case (*Anser albifrons*) shows the closest similarity to Russian strains: A/goose/Tyumen/33-52V/2021 | A/goose/Tyumen/33-52V/2021.

The epidemic in Bács-Kiskun county was caused by another strain – most similar to Italian, Croatian and Romanian ones: A/chicken/Italy/IZSLT-122448 21VIR9218-1/2021 | A/chicken/Italy/IZSLT-122448 21VIR9218-1/2021, A/mute swan/Croatia/146/2021 | A/mute swan/Croatia/146/2021,

A/Cygnus olor/Romania/16381 21VIR10306/2021 | A/Cygnus olor/Romania/16381 21VIR10306/2021.

This is the very strain that spread within the region causing the epidemic not only in Bács-Kiskun but in Békés and Csongrád-Csanád counties as well.

In Szabolcs-Szatmár-Bereg county a new variant also appeared – showing most similarity with Italian and Polish strains: A/turkey/Italy/21VIR8585-1/2021 | A/turkey/Italy/21VIR8585-1/2021, A/turkey/Poland/H1944-N/2021 | A/turkey/Poland/H1944-N/2021.