

# Highly pathogenic Avian Influenza in Italy: epidemiological update

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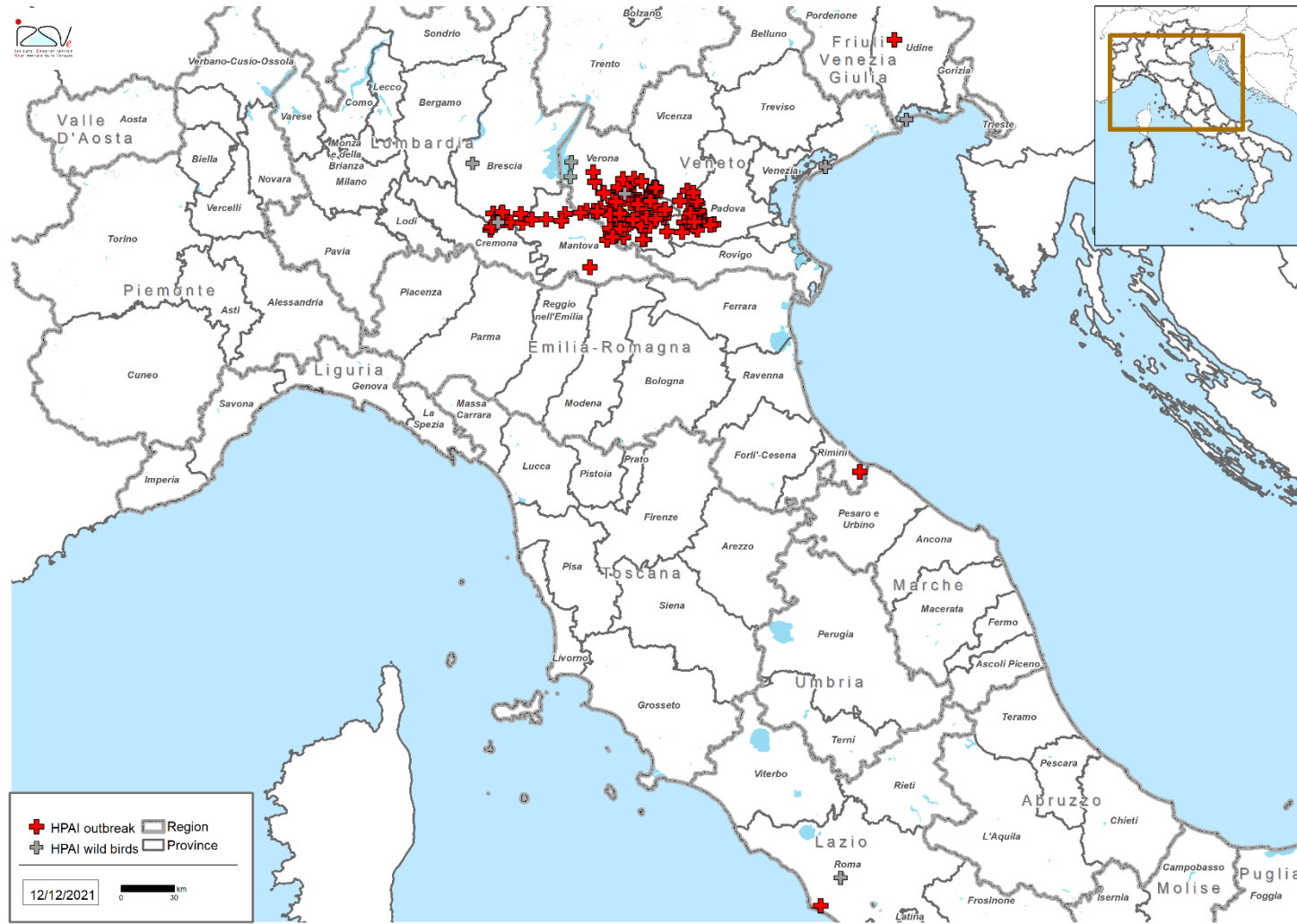
**SCoPAFF AHW**

15 December 2021

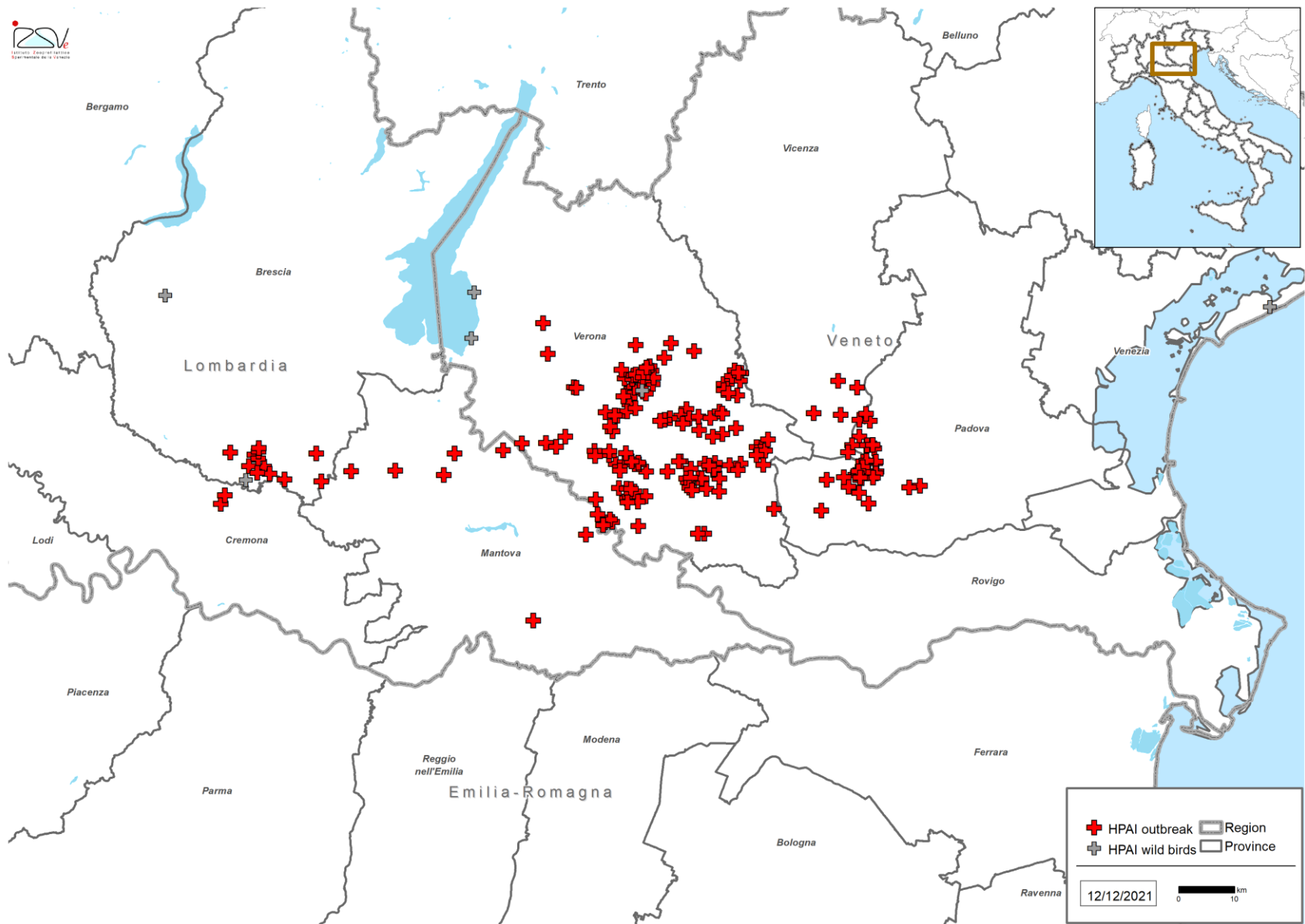
# HPAI H5N1 in Italy

last update 12/12/2021

- HPAI in **wild birds**
  - **4** in Veneto
  - **2** in Lombardia
  - **1** in Friuli-Venezia Giulia
  - **1** in Lazio
  
- HPAI in **domestic poultry**
  - **166** in Veneto
  - **22** in Lombardia
  - **1** in Lazio
  - **1** in Friuli-Venezia Giulia
  - **1** in Emilia-Romagna



# HPAI H5N1 in domestic poultry: geographical distribution northern Italy

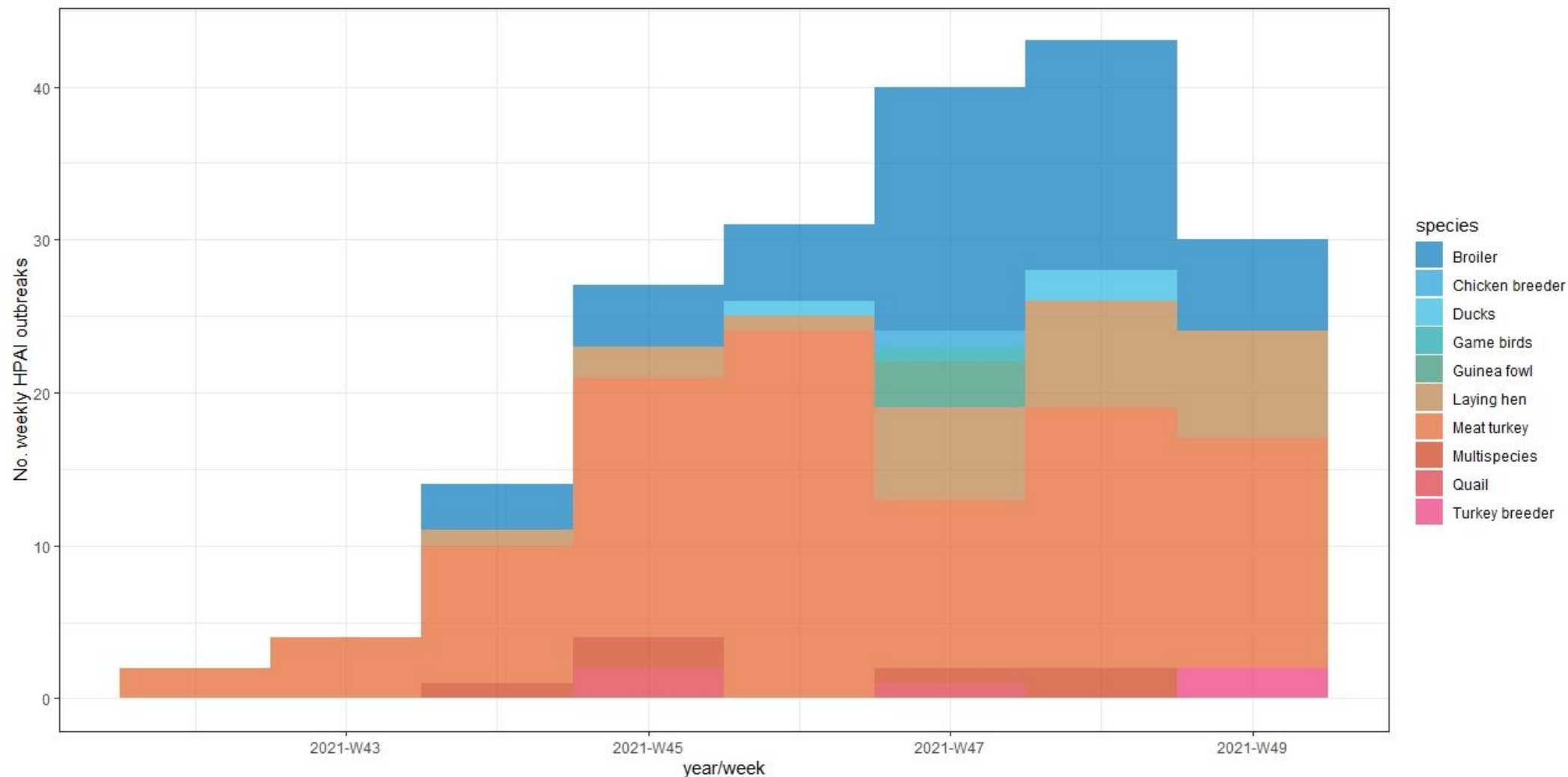


# HPAI H5N1 in domestic poultry: distribution and type of affected farms

REGION	PROVINCE	Meat turkey	Broiler	Laying hen	Multi species	Guinea fowl	Ducks	Quail	Game birds	Turkey breeder	Chicken breeder	TOTAL
ER	Rimini				1							1
FVG	Udine		1									1
Lazio	Roma				1							1
Lombardia	Brescia	3	3	3			2					11
	Cremona	1	1									2
	Mantova	3	2	3	1							9
Veneto	Padova	12	11	4	1		1					29
	Vicenza	4	3							1		8
	Verona	76	28	14	2	3		3	1	1	1	129
<b>TOTAL</b>		<b>99</b>	<b>49</b>	<b>24</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>191</b>

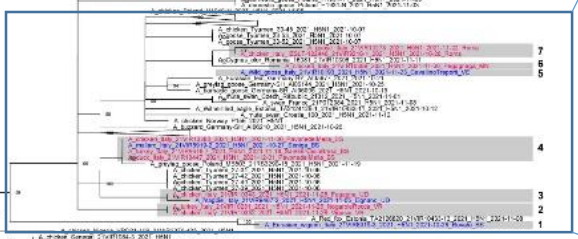
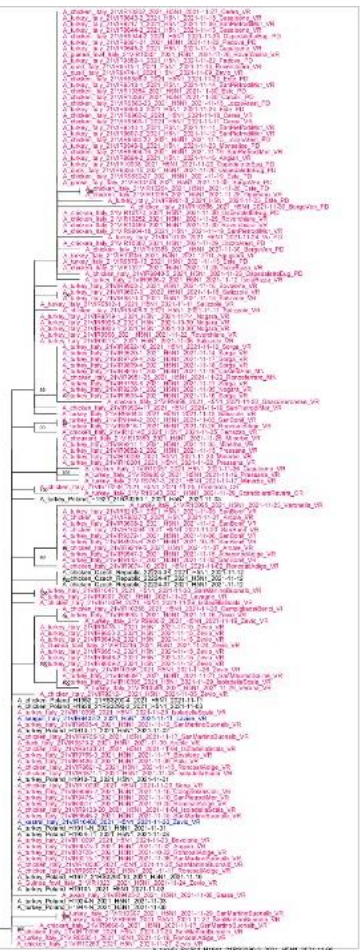
\*rural (backyard, agrotourism)

# Weekly incidence of HPAI H5N1 cases, by poultry species

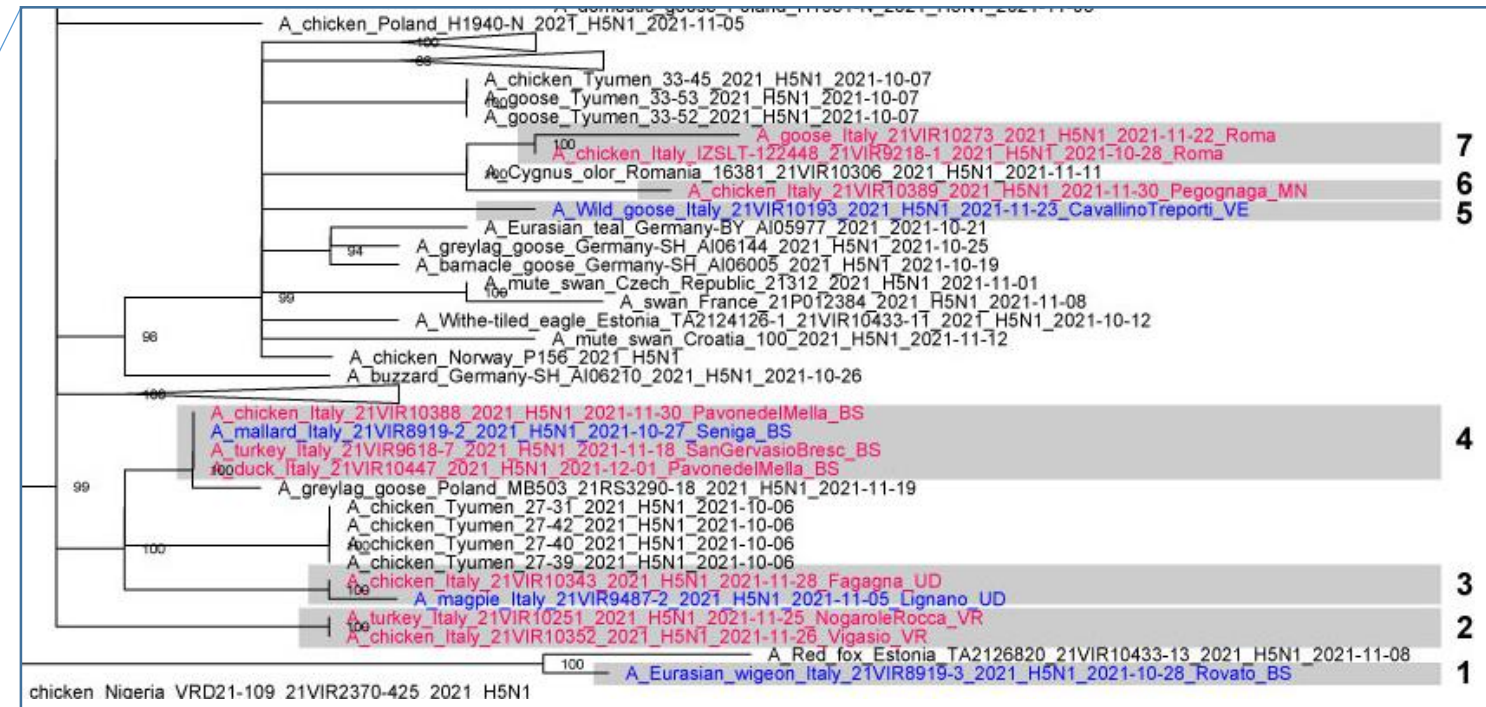


Domestic birds

Wild birds



- The **HA phylogenetic tree** indicates the occurrence of multiple H5N1 virus introductions.
- At the bottom of the tree (box below), at least 7 distinct introductions can be clearly observed

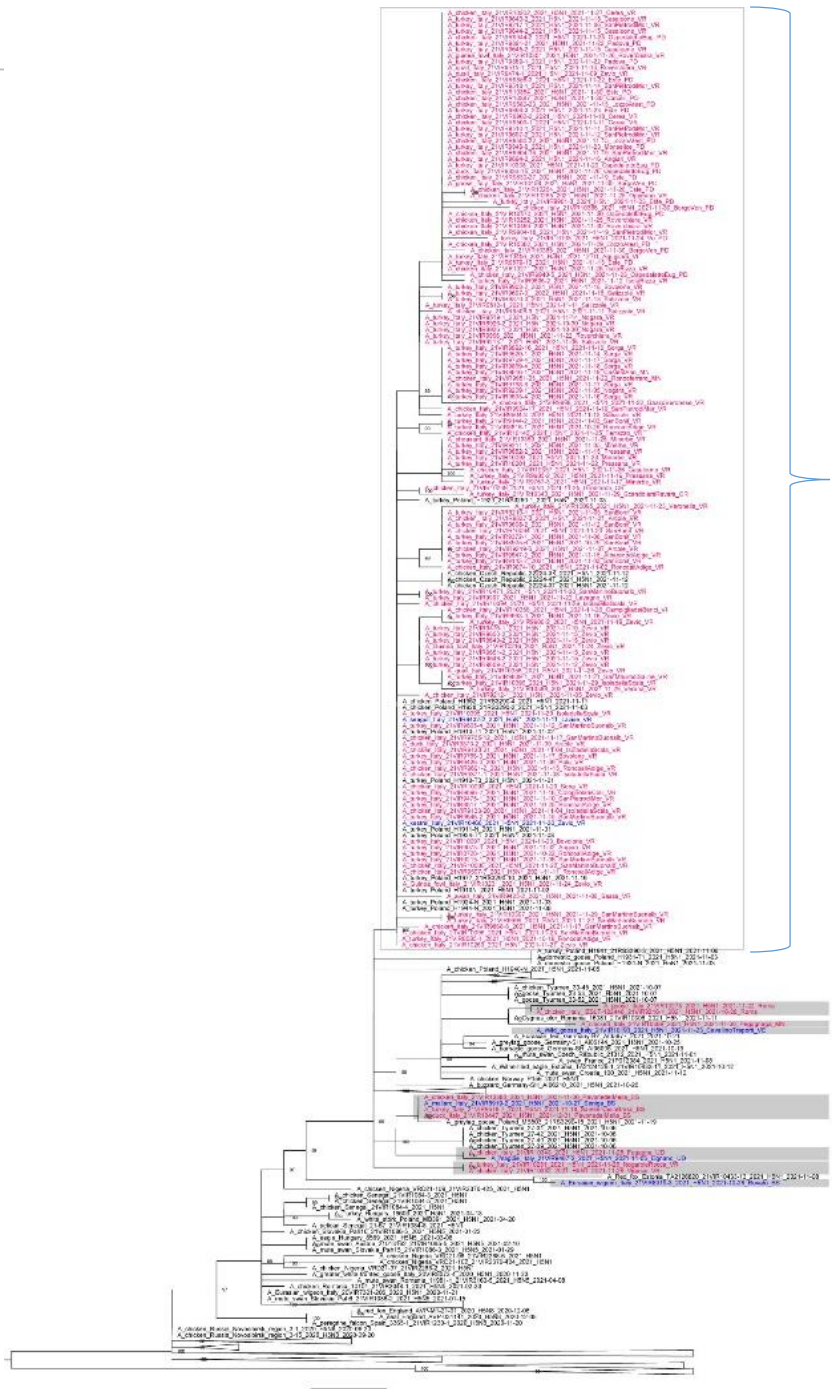


# Median-Joining Network

- Provincia
- VR
- PD
- MN

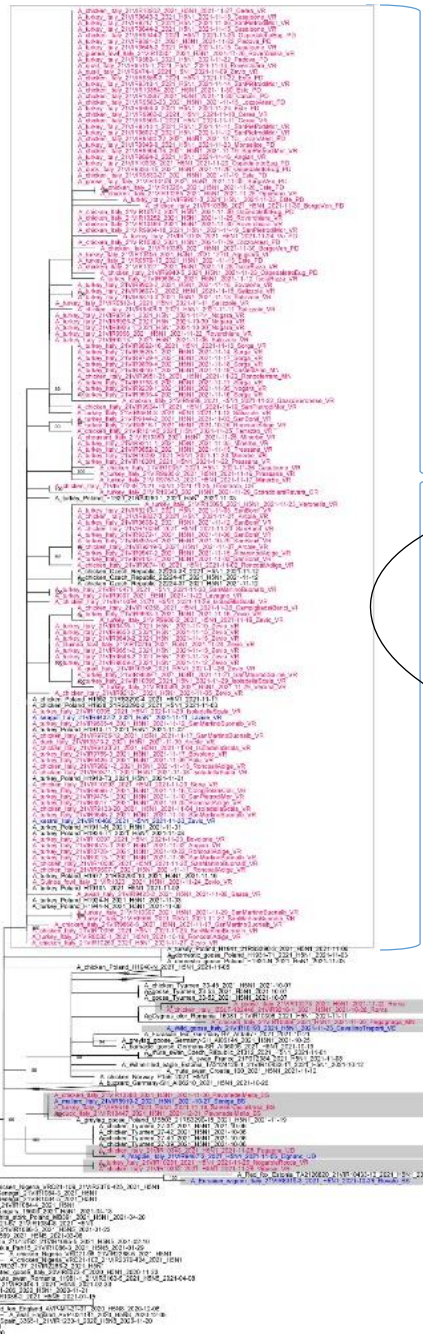
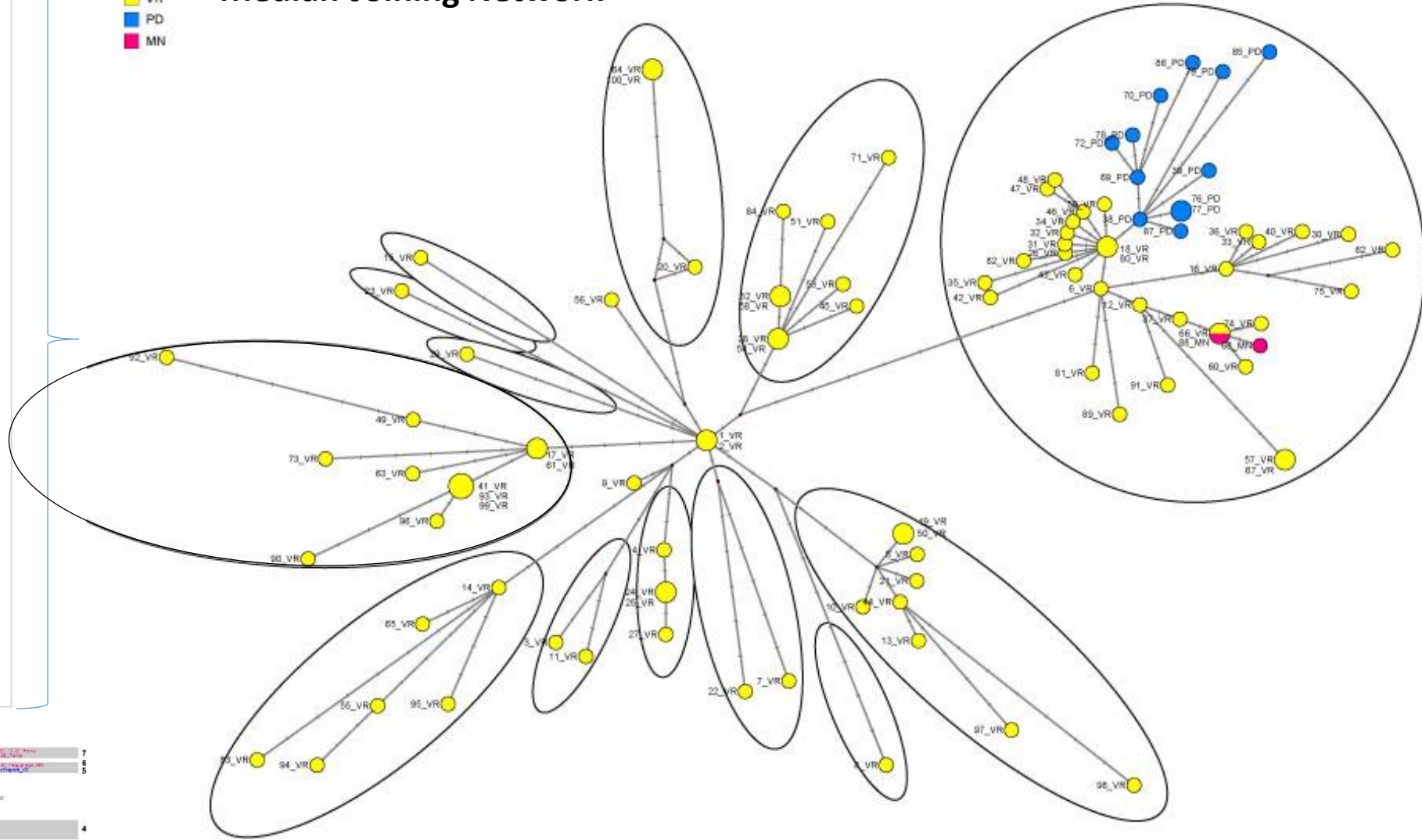


**Median-Joining Network analysis:** carried out on the **complete genome** (8 gene segments) of **100** H5N1 viruses (1 virus for each farm) identified in 3 different provinces (VR, PD, MN) between 10/18/2021 and 11/23/2021. The analysis highlights the correlation between viruses based on nucleotide differences. Each circle represents 1 genotype (viral variant). The length of the branches is proportional to the number of nucleotide differences between two genotypes. The size of the circles is proportional to the number of viruses sharing the same genotype. This network is colored according to the province. The cases of Verona (VR) are highlighted in yellow, the cases of Padua (PD) in blue and two cases of Mantua (MN) in pink.



# Median-Joining Network

- Provincia
- VR (Yellow)
- PD (Blue)
- MN (Pink)



The Median-Joining Network analysis of the complete genome of the viruses responsible of several outbreaks in northern Italy indicates a **wide genetic diversity**, which may be associated to multiple introductions and subsequent lateral spread.



# ● Integration of epidemiological evidences with genetic analyses - 1

- High concentrations of susceptible poultry production types in a limited geographic area (DPPA)
- Veneto and Lombardia strong vocation for agriculture
- After the 2017-2018 H5N8 HPAI epidemic, a thorough work to assess and improve structural and operational biosecurity at the farm level
- Infected premises: close to hunting areas or wetlands/presence of wild birds
- Contact tracking activities identified potential at-risk contacts
  - Company veterinarian/technician
  - Feed lorries
  - Other visitors (e.g. owner's relatives, etc)
  - Proximity to infected premises (within 1,500 m)

## ● Integration of epidemiological evidences with genetic analyses - 2

- Slowing-down in the eradication of the single outbreaks (lack of culling/disposal capacity)
- Weekly cases, even if stable, interfere with the eradication capacity
- Chicken broiler production sector affected as never before (birds do not show clinical signs or increased mortality at the beginning of the infection, delaying the diagnostic capacity of the surveillance system)
- Increasing number of outbreaks in laying hen farms (require longer time for eradication)
- High environmental viral load: ventilation system in broiler and laying hen farms (high % of extraction fans) might have contributed to the involvement of these production types

# Measures to mitigate the risk of AI virus introduction and spread since summer 2021

- **18/08/2021 (Ministerial provision n° 19716):**
  - Using live decoy birds belonging to the Orders Anseriformes and Charadriiformes for hunting is allowed provided an accurate risk assessment and regular testing of birds and investigation of any clinical sign/health parameters
- **15/10/2021 (Ministerial provision n° 23818):**
  - Strengthening biosecurity measures (other than poultry confinement)
  - Housing order for poultry in high risk areas
  - Early detection of HPAI in poultry (*any change in normal production and health parameters such as mortality rate, feed and water intake and egg production*)
  - Early detection of HPAI in wild birds (passive surveillance activities)
  - Increasing awareness of the stakeholders and the general public
- **22/10/2021 (Ministerial provision n° 24347):**
  - Using live decoy birds belonging to the Orders Anseriformes and Charadriiformes for hunting is suspended
  - The release of poultry intended for restocking wild game is suspended (with derogations)
  - Enhanced surveillance during fairs, bird exhibitions and any other gatherings of poultry or other captive birds

# ● Disease control measures in accordance with EU regulations

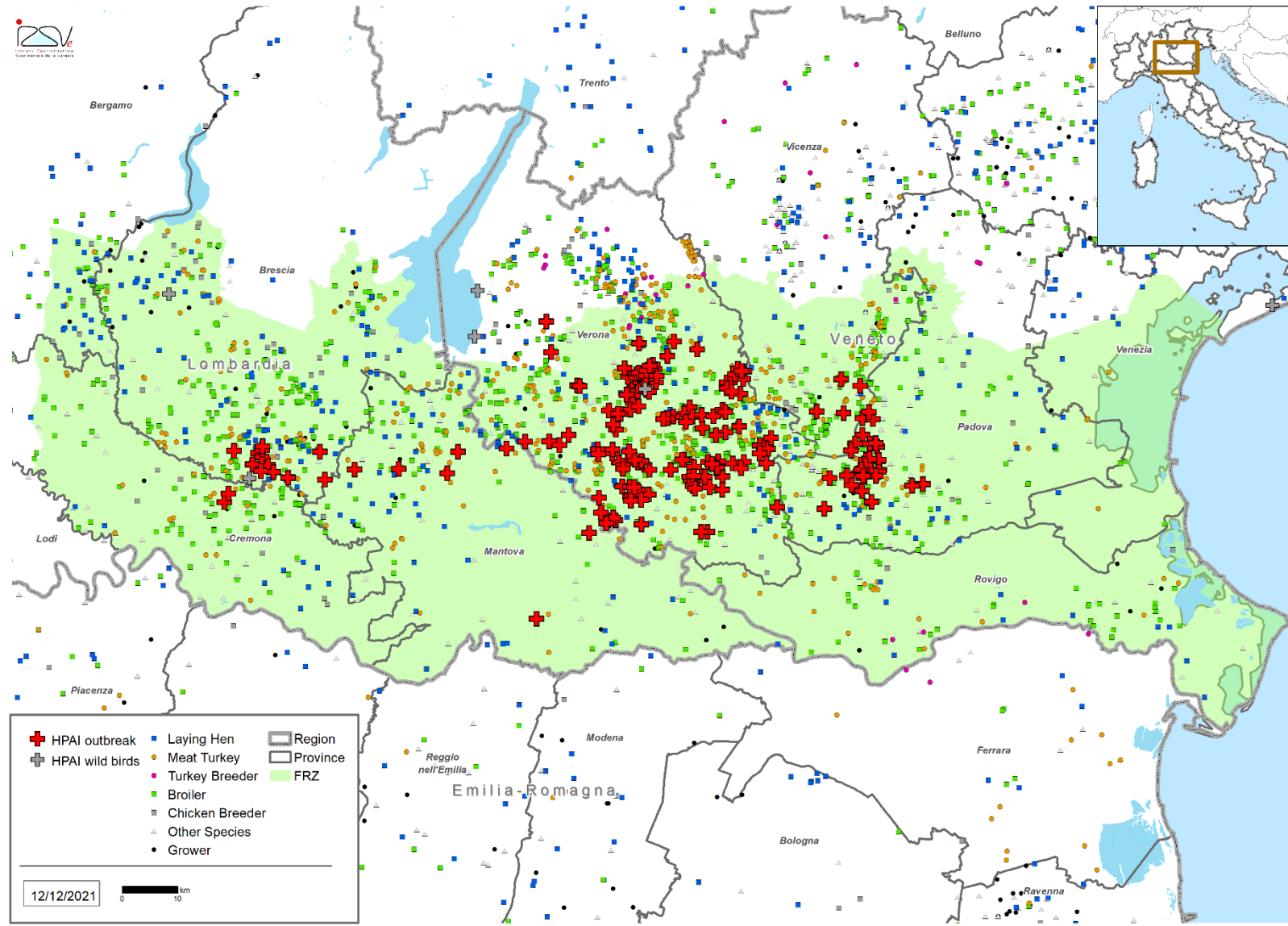
as provided by Commission Delegated Regulation (EU) 2020/687

- Culling, disposal of carcasses, cleaning and disinfection procedures
  - Establishment of protection and surveillance zones (3 and 10 km)
  - Restrictions on movements of poultry and poultry products (with derogations)
  - Epidemiological investigation
  - Preventive culling in at-risk contact farms/Pre-emptive culling in meat turkey farms in protection zone
- 
- At holding level **poultry companies** applied enhanced biosecurity measures
    - Increasing awareness of the evolving epidemiological situation
    - Movements of people (including company technicians and veterinarians) are blocked
    - Farm activities: raking litter must be drastically reduced or stopped
    - Agriculture practices: mowing/ploughing should be suspended in fields close to the poultry holding



# Control measures – Establishment of a Further Restricted Zone (FRZ)

A FRZ has been established (Ministerial provision n°25660 of 5 November) and ***further amended*** according to the evolving epidemiological situation (Ministerial Provision n°27237 of 22 November 2021)



# ● Measures applied within the Further Restricted Zone - 1

- Census of industrial poultry holdings
- Enforcement of increased biosecurity measures (vehicles, personnel, etc.)
- Birds shall be kept inside closed buildings and measures should be taken to reduce the risk of direct/indirect contacts with wild birds
- Any significant productive or sanitary changes observed must be reported immediately to the Veterinary Services (clinical symptoms, increased mortality rate, decrease in feed and/or water consumption, decreased production of eggs)
- Meat turkey older than 30 days will be tested by tracheal swabs once a week
- Laying hen/pullet will be tested by tracheal swabs once a fortnight
- Poultry companies must ensure that there is a functional separation of activities, personnel and facilities between at-risk regions

## ● Measures applied within the Further Restricted Zone -2

- Movement to the slaughterhouse subjected to clinical inspection and virological testing
- Derogation from measures in restricted zones: based on a scoring system considering risk factors (poultry species susceptibility, distance from nearest infected premises, no. infected premises within 3km....)
- Gathering of domestic birds for fairs, exhibitions and live-bird markets are banned
- Release of game for hunting is prohibited
- The use of live decoy birds belonging to the orders *Anseriformes* and *Charadriiformes* for hunting is suspended
- Re-stocking of meat turkey farms is prohibited
  - A derogation can be authorised, following verification of compliance with biosecurity standards, and evaluation of geographical risk (according to the location of the farm within densely populated poultry areas)

## ● Further control measures implemented

- implementing **alternative measures** for carcasses **disposal**
  - temporary storage of dead birds using methods similar to composting (the products will be sent for destruction at a later stage),
  - burial of carcasses in the rare areas with no hydrogeological risk



a 40 % increase in the rate of extinction of outbreaks in the most critical provinces with respect to the previous weeks

- other methods: the disposal in biofuel facilities, subjected to authorisation by the Competent Authority



## ● Further control measures scheduled to be implemented

- further amendment of the Further Restricted Zone with a re-modulation of the measures to be applied to different at-risk areas for the introduction and spread of HPAI viruses (to avoid stopping the poultry production areas),
- regulating the housing of new batches of poultry (chicken broilers and fattening turkeys) to reduce the density in the affected areas, by defining zones homogeneous for the risk of disease spread (e.g. productive types, age of birds)

**Thanks for your attention**