GF-TADs Africa

GLOBAL FRAMEWORK FOR THE PROGRESSIVE CONTROL OF TRANSBOUNDARY ANIMAL DISEASES

Food and Agriculture Organization of the United Nations

World Organisation for Animal Health
Founded as OIE

African Union

The OFFLU perspective on the spread of H5N1 highly pathogenic avian influenza in Africa

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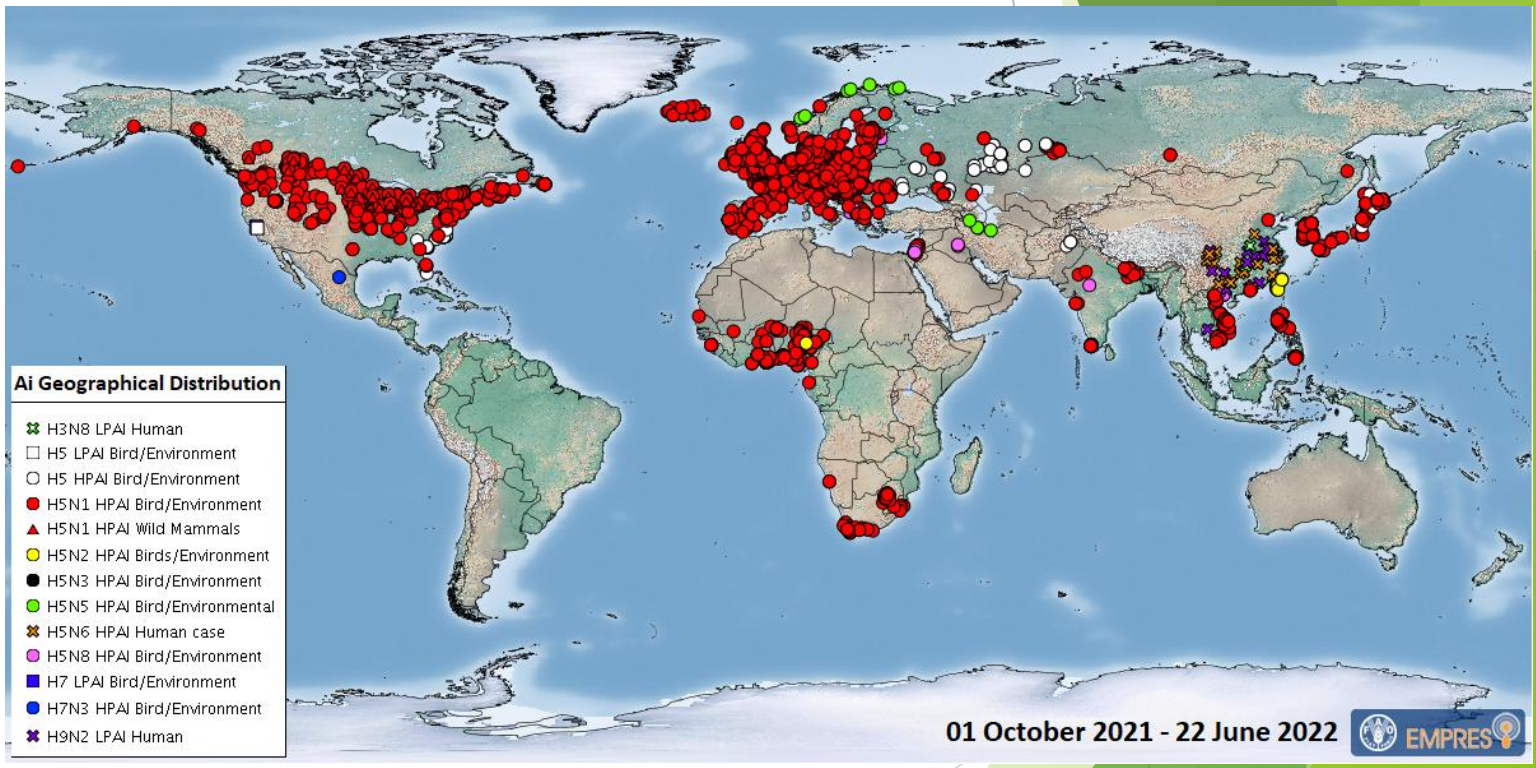
Global spread of AI since October 2021

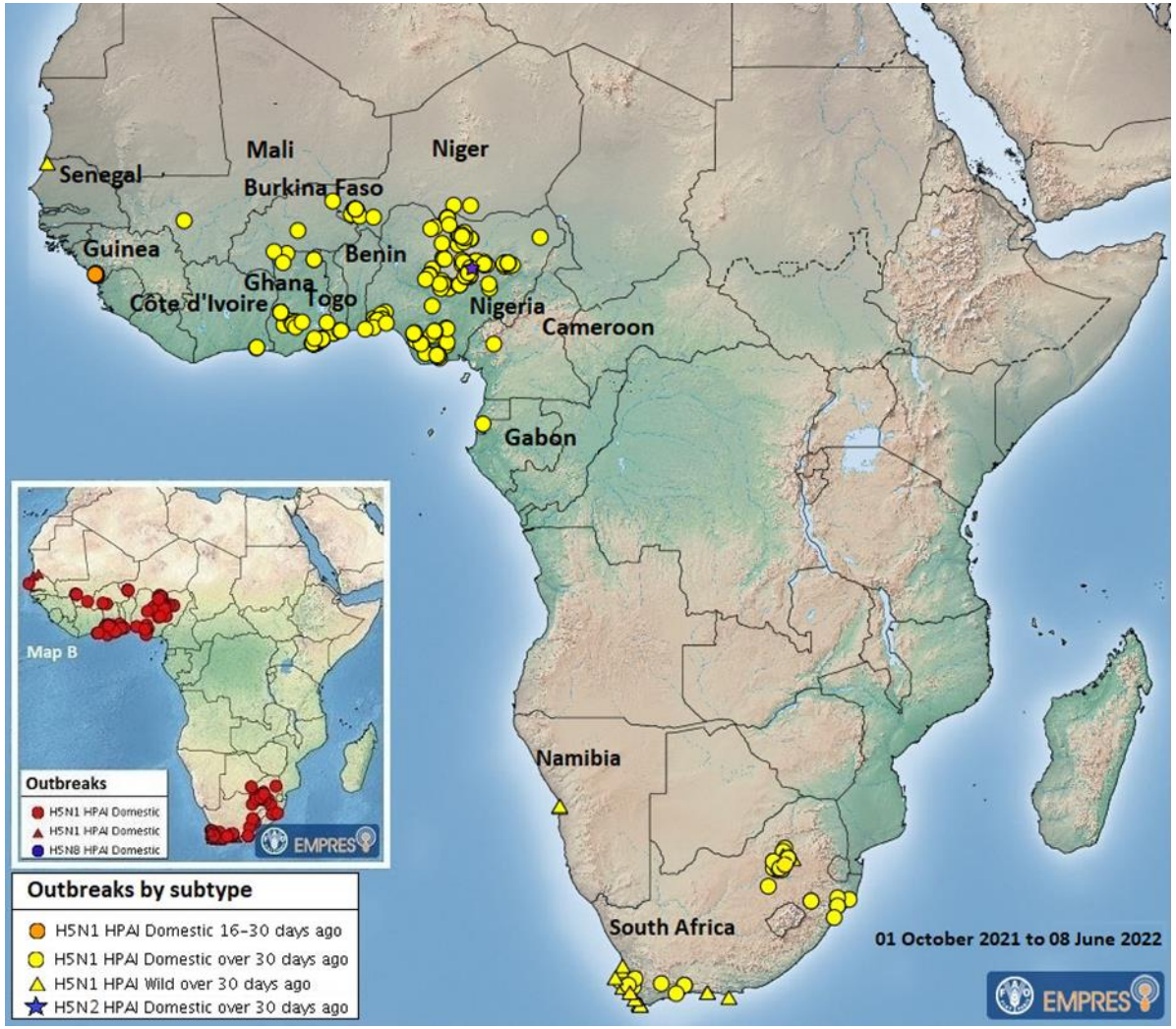
- ~6800 H5 HPAI events and about 70 countries affected across Eurasia, Africa, and the Americas
- Diversification of H5 HPAI virus subtypes within clade 2.3.4.4b
- Currently period of "reduced" HPAI activity
- FAO Alerts sent to CVOs globally in 2021 and 2022, latest in February
- Monthly global avian influenza updates



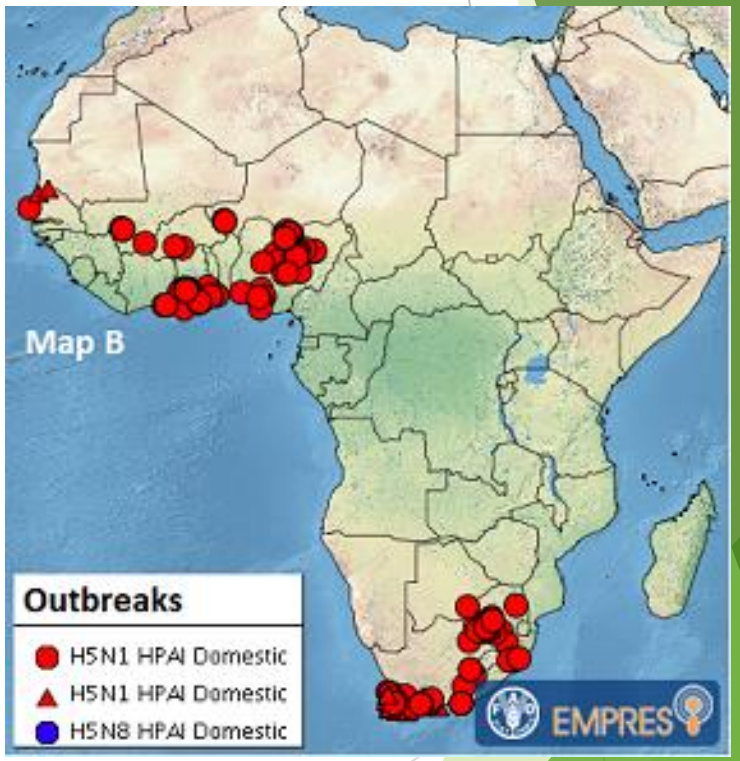
Global AI situation update

Focus on HPAI in Africa since 1 October 2021

Current wave: Oct 2021- 22 Jun 2022



Previous wave: Oct 2020 - Sep 2021



H5N1 replaced **H5N8**

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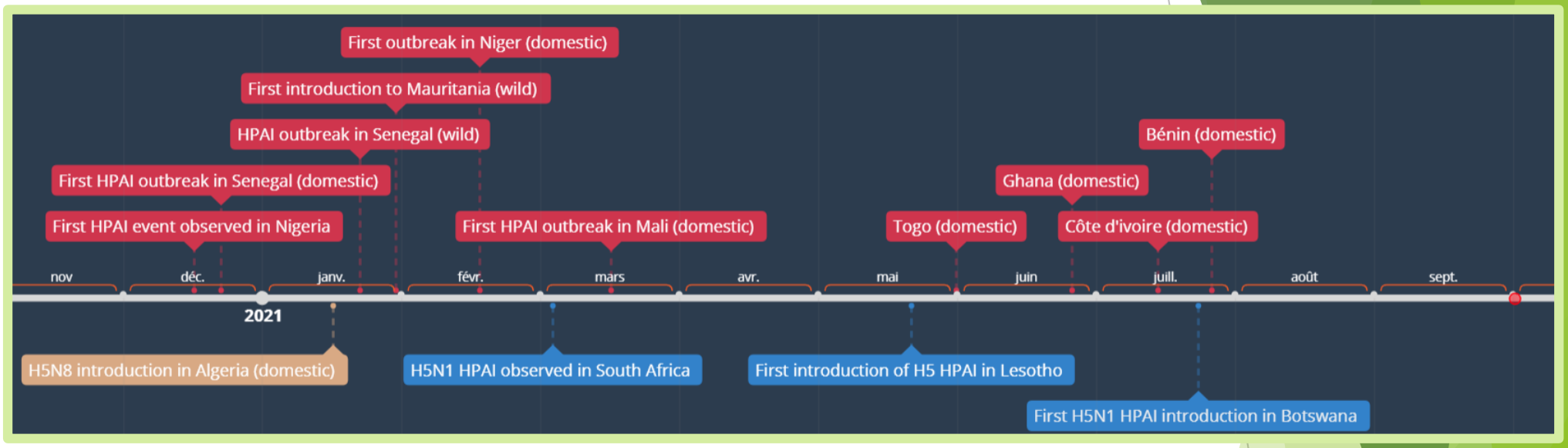
Timeline of H5 HPAI introduction events in Africa December 2020 to July 2021

West Africa

North Africa

South Africa



H5N8 HPAI

- First introduction detected in a poultry farm in **Algeria** in **January 2021**.

H5N1 HPAI

- First observation of H5 HPAI in **December 2020** in **Nigeria** and **Senegal**.
- Spread of the virus in domestic poultry in Western Africa since then
- In parallel, introduction of H5N1 HPAI in **Southern Africa**, first observation in **March 2021**
- First introduction ever of H5 HPAI in Algeria, Botswana, Lesotho, Mali, Mauritania, Senegal… **in 2022 also Guinea and Gabon**

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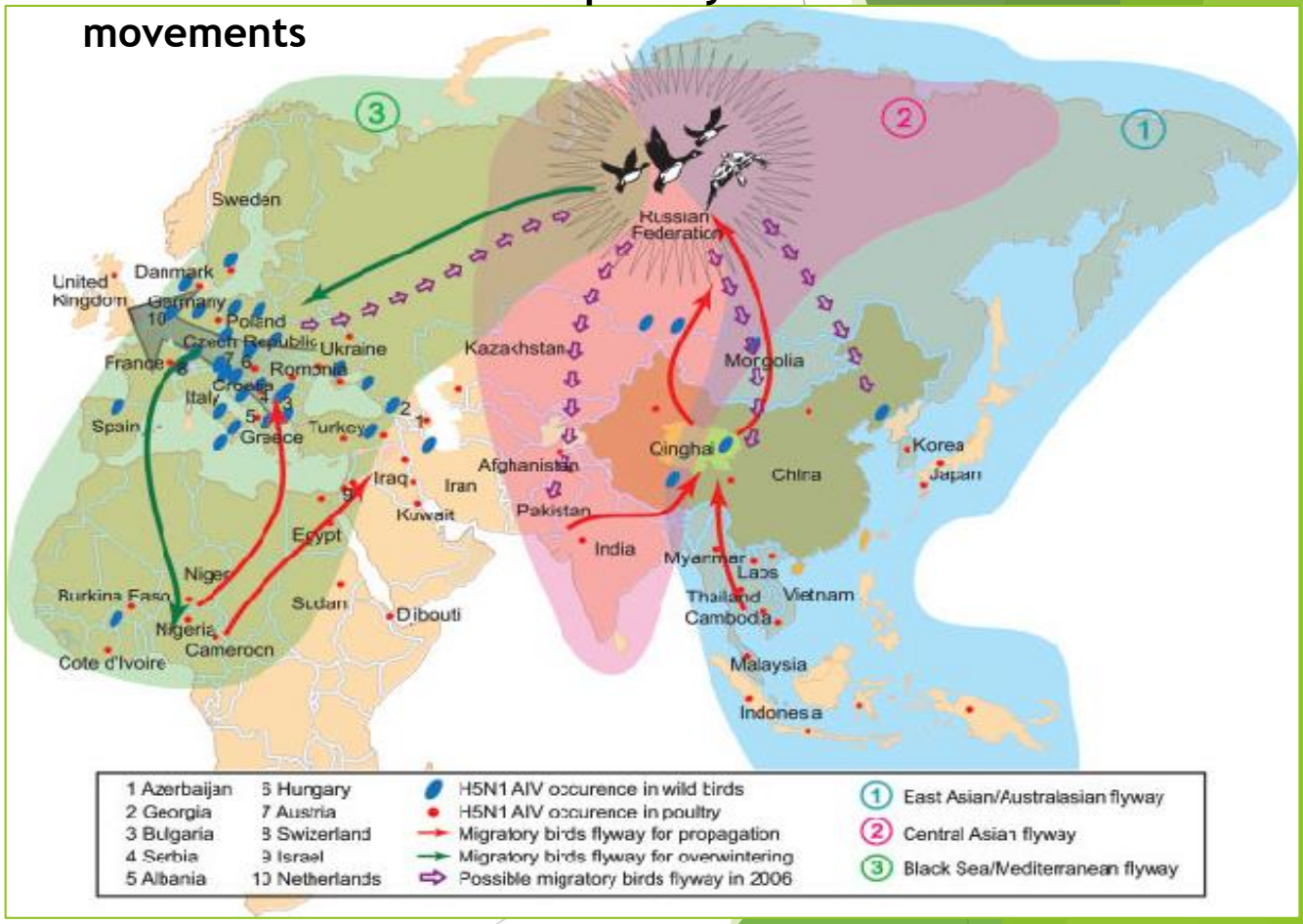
Migratory bird flyways and long distance spread of H5 HPAI

- Wild waterfowls as **natural** AIV **reservoir**
- Significant **congregations of wild waterfowls** in Central/North Asia during April/May-September
- Opportunities for **virus reassortments**
- October: south migration -> risk of spillover to poultry farms along migratory flyways
- Wild birds may travel all the way down to sub-Saharan Africa region for overwintering
- **Migratory flyways** are not fixed, they depend on climate and food availability
- **Risk factors**: abundant wild bird populations/congregations, lakes, ponds, …

H5N1 HPAI occurrence in poultry correlated with wild bird movements



Wang et al., 2008

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Poultry trade and H5 HPAI spread

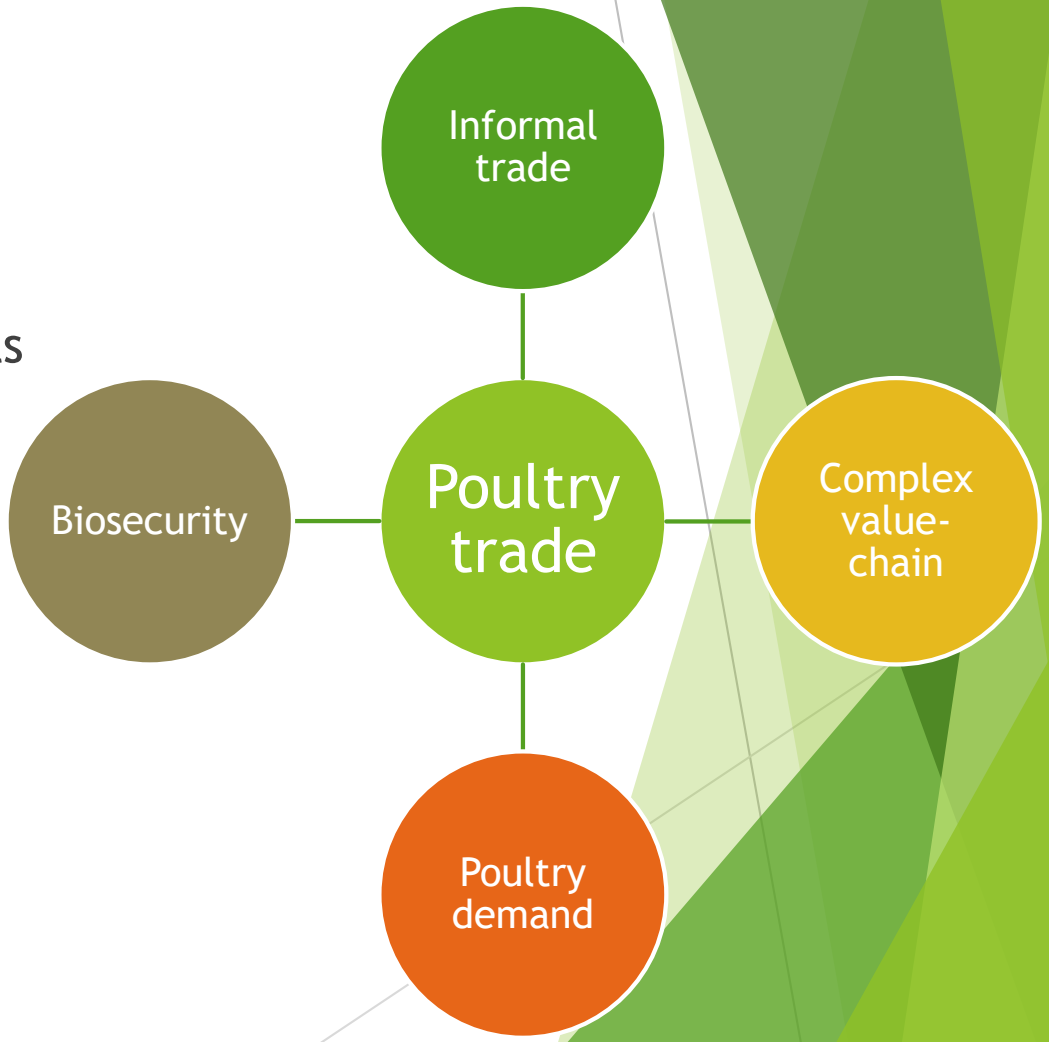
Poultry trade = major driver of HPAI spread

- Informal trade is a challenge for countries (cross-border or within countries)
- Influenced by demand for poultry meat and products sometimes correlated to major festivals
- HPAI spread via **live poultry**, **eggs**, **materials/environment** including manure, crates, vehicles, boots, etc…

Complex poultry value-chain in North Africa

- Family backyard to integrated commercial farm
- Live bird markets and other poultry gathering sites
- Several intermediaries from farm to the consumer

Biosecurity is key in preventing H5 HPAI introduction and spread, and other poultry diseases!



HPAI risk analysis in WCA 1/3 (FAO)

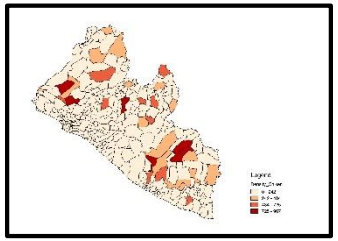
Probability of occurrence

- Estimate for introduction
- Estimate for spread

= prob. of animals that may be exposed to the pathogen; transmission, persistence and spread of the pathogen.

Probability of spread

Poultry density

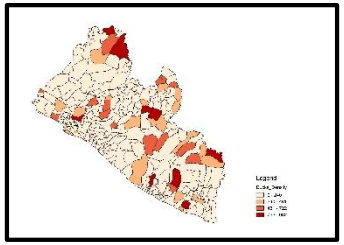


Poultry density

Duck density

→Markets, allotment center, etc.

→Water points

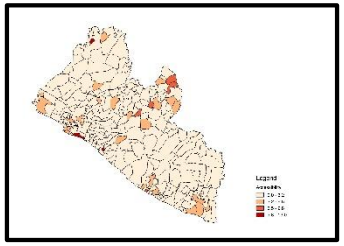


Duck density

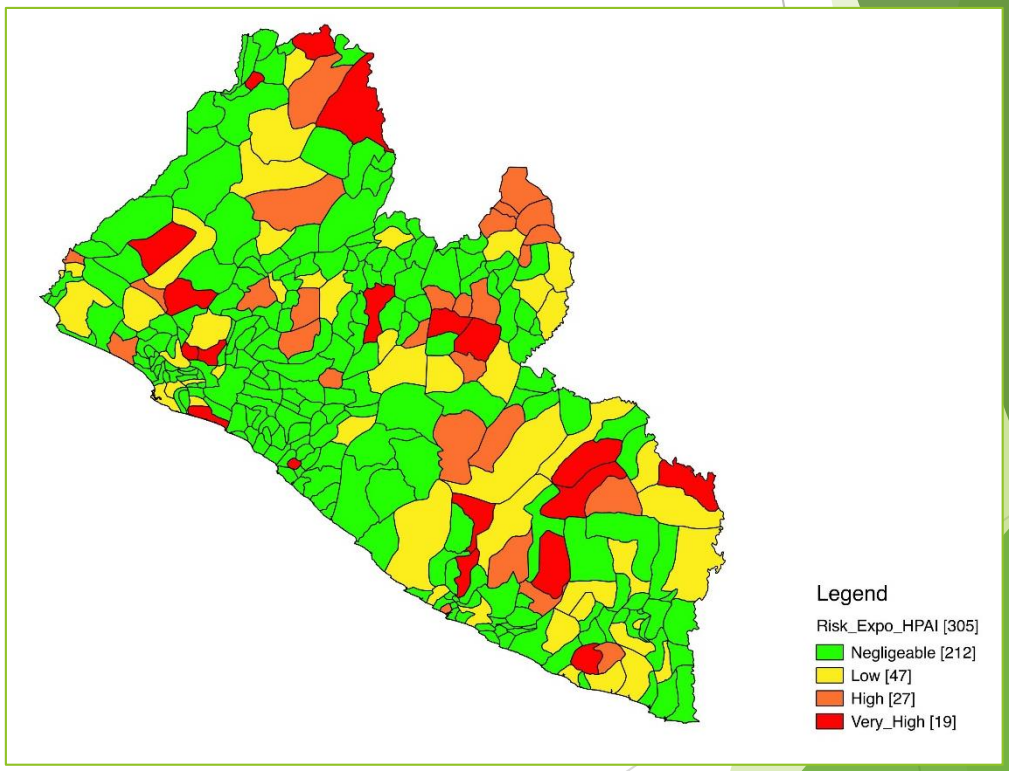
Road density

→National SNA data

→Accessibility



Accessibility



Tools: GIS (QGIS) and 'R' (SNA, animal mobility)

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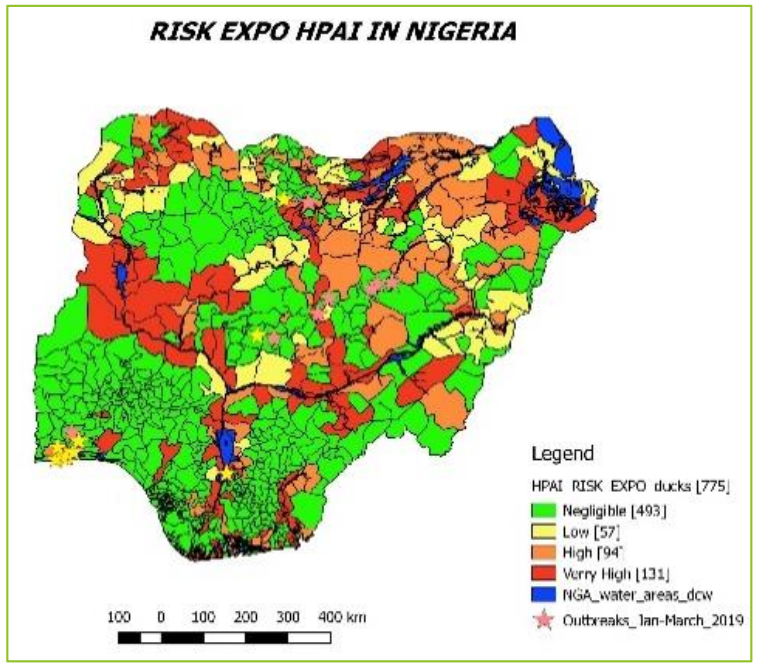
HPAI risk analysis in WCA 2/3 (FAO)

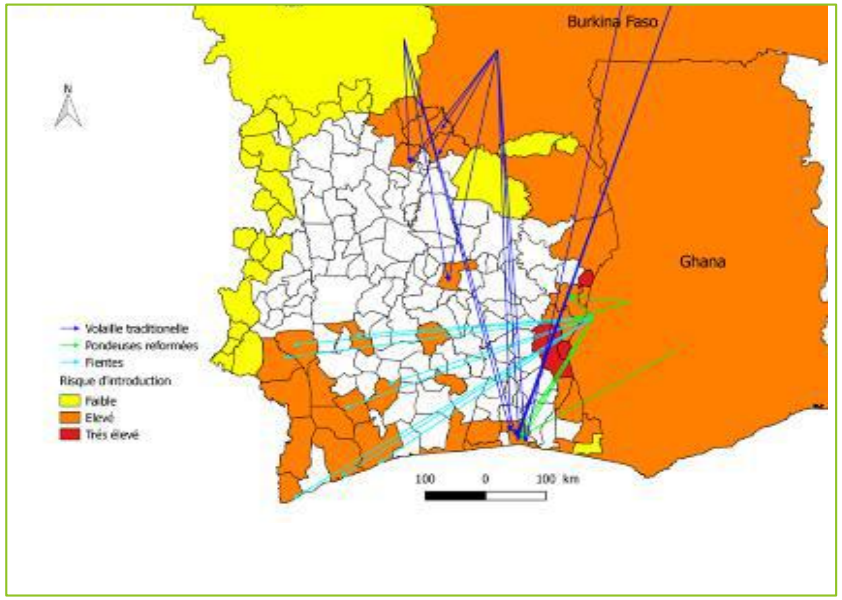
Nigeria



- 16,90% of very high-risk
- 12,12% at high risk
- 7,35% at low risk
- 63,61% at negligible risk

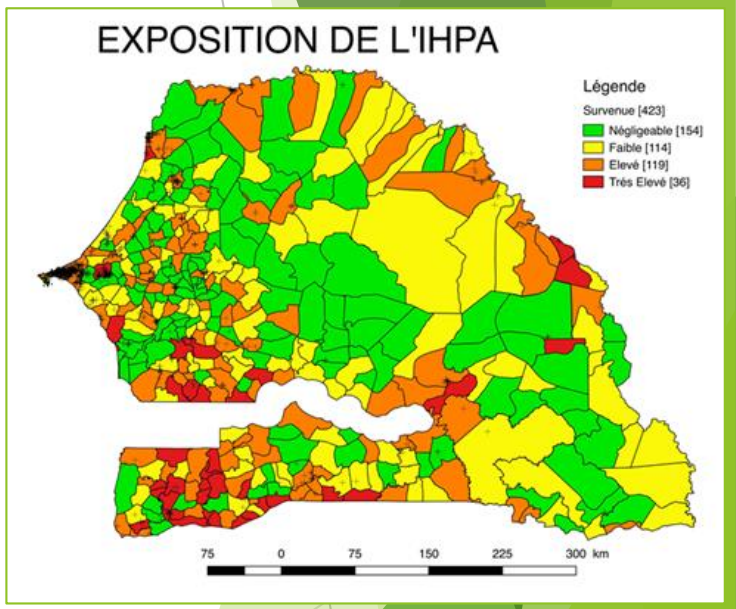
Integrated risk based surveillance at the interfaces using OH approach

Cote D'Ivoire



Strengthen active surveillance

Senegal



- 19,34% of very high-risk
- 48,69% at high risk
- 10,40% at low risk
- 29,55% at negligible risk

Strengthen border control and test contingency plans

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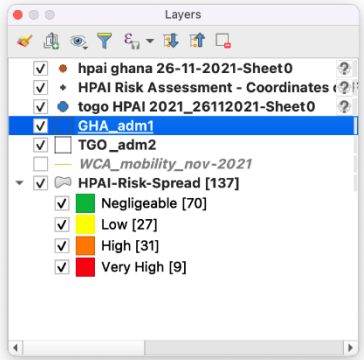
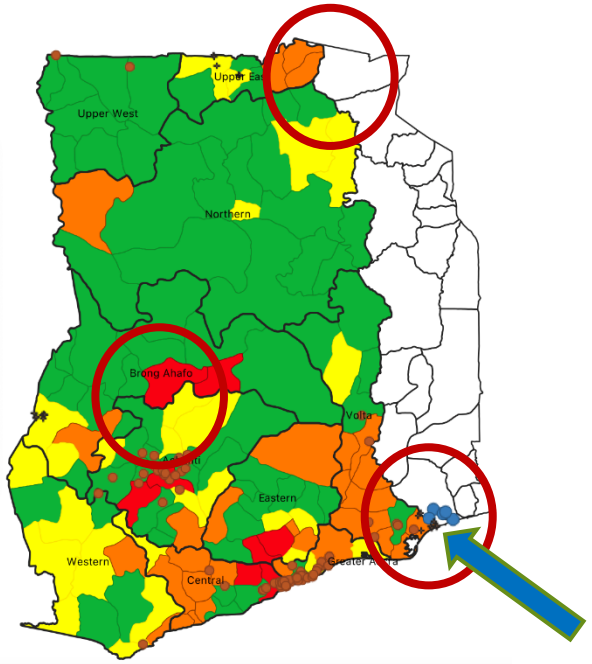
HPAI risk analysis in WCA 3/3 (FAO)

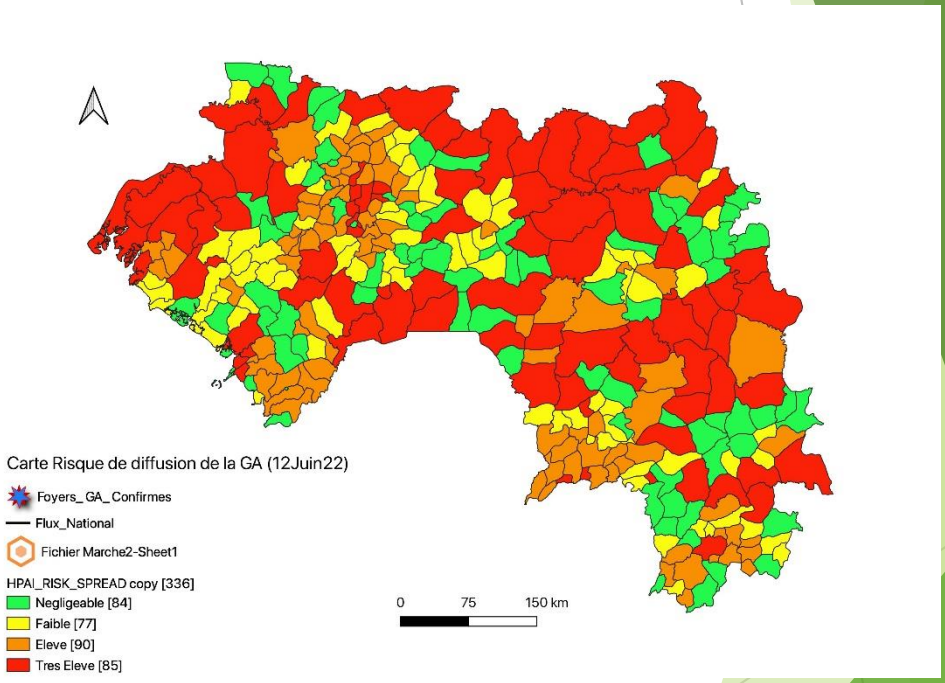
Ghana





Integrated risk-based surveillance including the EVC data collecting during the pilot phase strengthening border control

Guinea



- 25,29% of very high-risk
- 26,78% at high risk
- 22,92% at low risk
- 25% at negligible risk

Risk based sampling to screen the national spread of HPAI in Guinea

OFFLU: the WOAH and FAO network of influenza expertise

Established in 2005 to support and coordinate global efforts to prevent, detect and control important influenzas in animals.

OFFLU is a global open network with diverse technical experts and robust mechanisms for the exchange of information between human and animal health sectors

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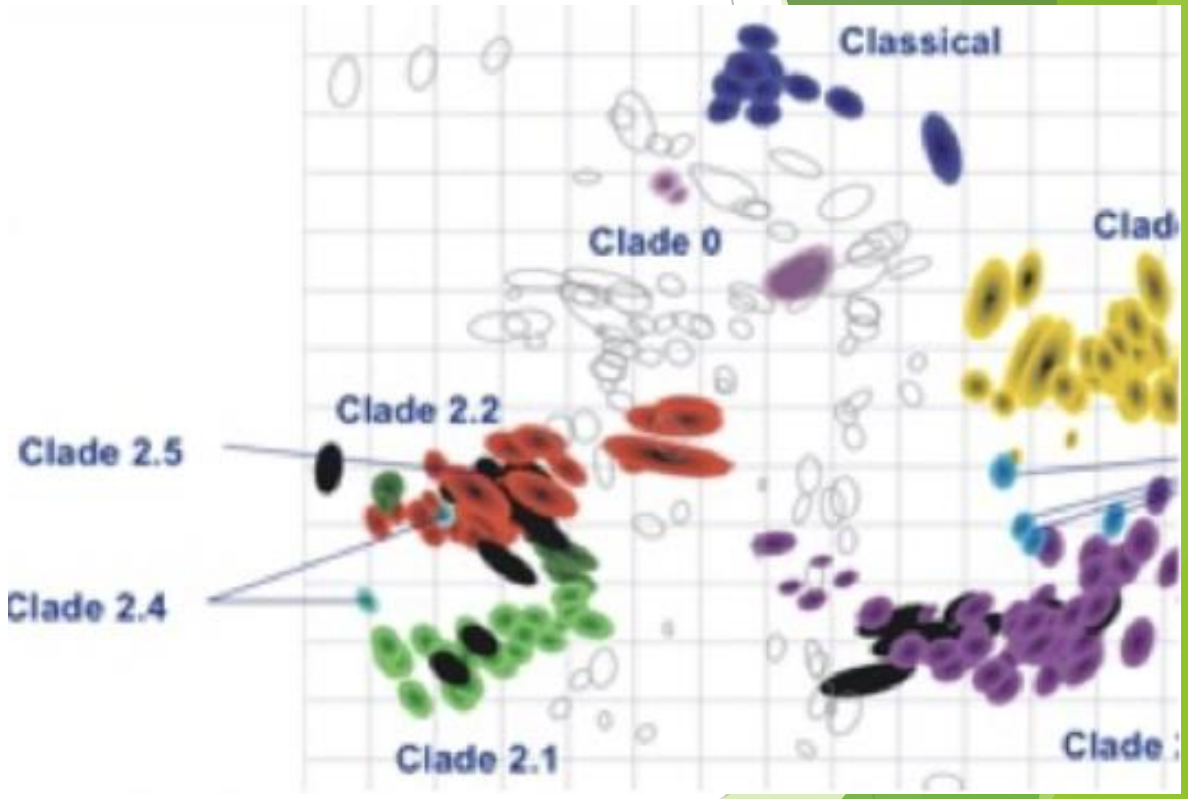
OFFLU's contribution to the WHO's Vaccine Composition Meeting (VCM)

- 68 sequences from African countries were contributed to OFFLU's **VCM data package** in March 2022
- Epidemiologic and genetic analysis were carried out
- H5N1 HPAI sequences from between September 2021 and March 2022 from Benin, Botswana and Egypt were **genetically characterised**
- Four viruses from Ghana (2) and Nigeria (2) were antigenically characterised using harmonized protocols in OFFLU contributing laboratories and showed **reactivity to current candidate vaccine viruses**



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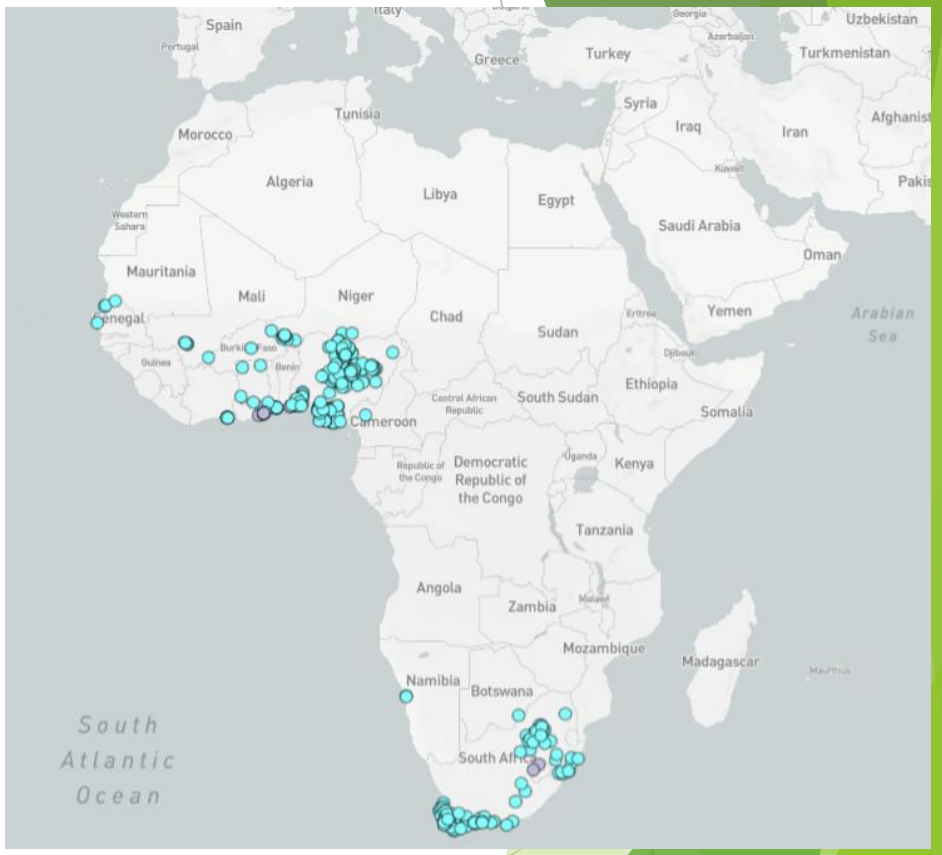
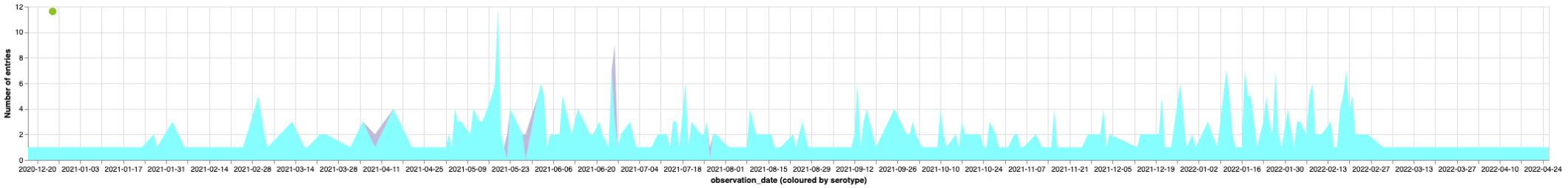
Geo-special distribution of H5N1 outbreaks in poultry and wild birds in Africa

- The **broad host range** of clade 2.3.4.4b likely contributed to its spread in geographic areas that had never before experienced HPAI outbreaks
- There is **persistent circulation** of the virus in West Africa **as well as introductions** of Gs/Gd H5 HPAI viruses from Eurasia
- Identification and monitoring of sites hosting large congregations of wild birds from various species, geographic origins and destinations could improve our understanding of the means and routes of virus diffusion between African sub-regions and continents





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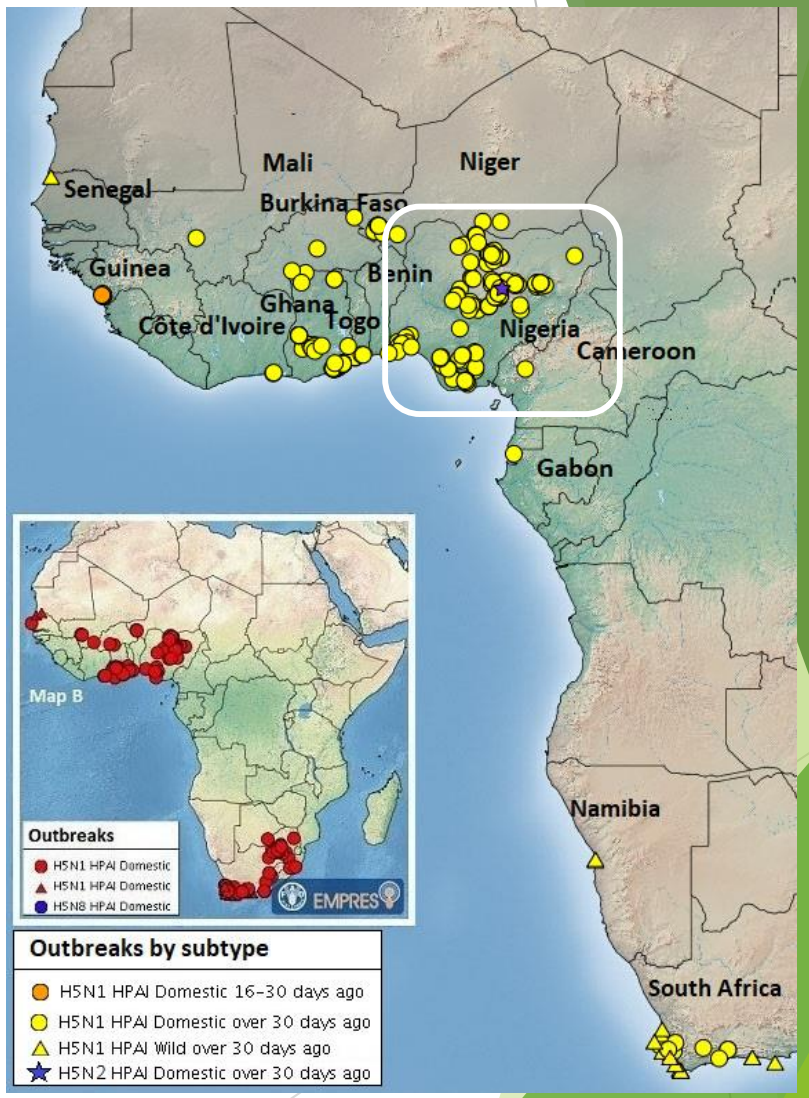
H5N1 in Nigeria

- Nigeria is a **regional hotspot** of HPAI since 2006 and remained the most affected country in sub-Saharan Africa
- **Several waves of introduction** from overseas
  - H5 clade 2.2 ->> winter 2005-2006
  - H5 clade 2.3.2.1c -> winter 2014-2015
  - H5 clade 2.3.4.4b -> winter 2016-2017 and 2019
- Detection of **different subtypes** including H5N1, H5N2, H5N6, H5N8 HPAI and H9N2 LPAI
- H5N1 HPAI viruses currently detected in Nigeria are closely related to those circulating in Senegal, Niger and Nigeria since early 2021 - suggesting persistent circulation of the virus in West Africa



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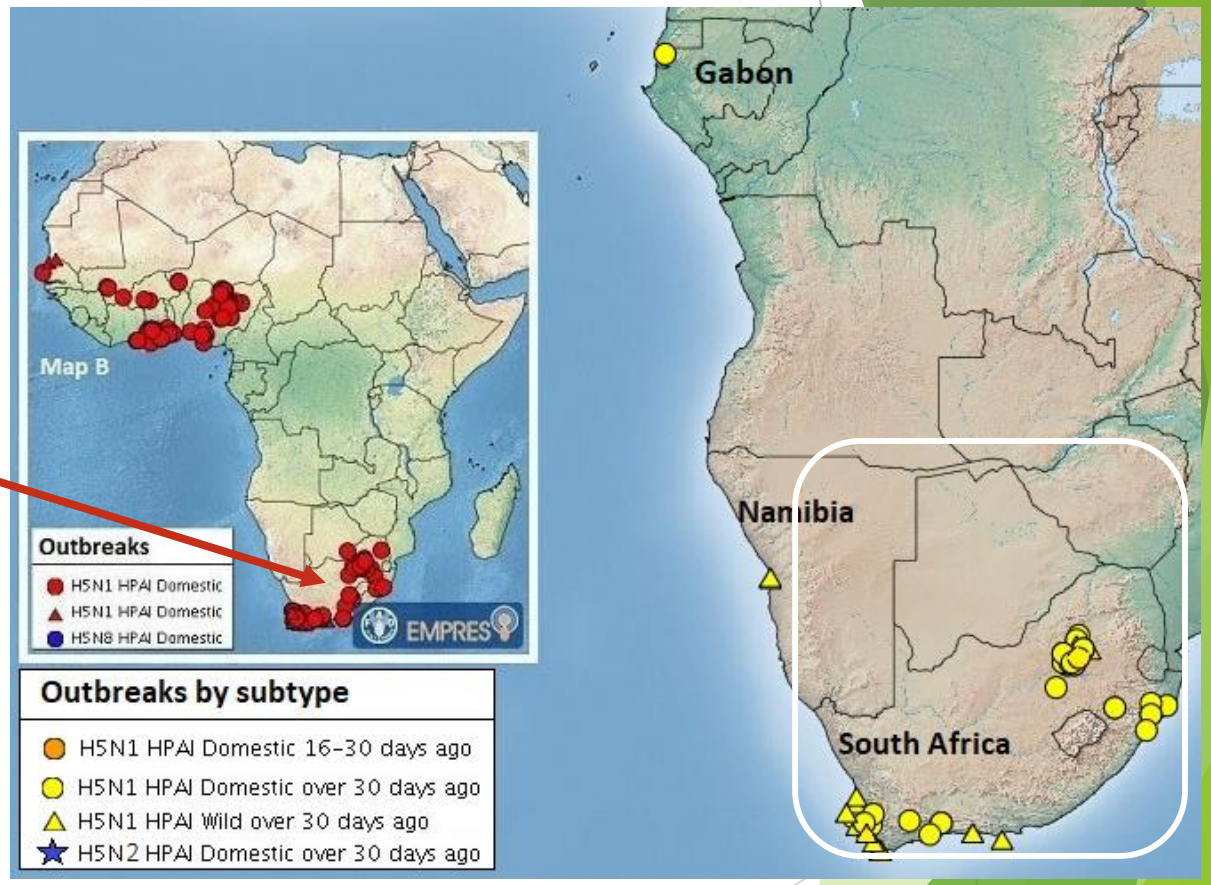
H5N1 in South Africa and Botswana

South Africa

- **Few sporadic cases** of H5N1 detected **in wild birds** (found dead or moribund) or poultry since the beginning of 2022
- Viruses closely related to the strains causing the epidemic in 2021
- No new incursions of H5N1 detected to date

Botswana

- Virus detected in **non-migratory birds** - the species introducing the virus remains unidentified
- Targeted surveillance and early detection need to be improved in remote areas through engagement and collaboration with local departments, especially in areas where migratory birds reside



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Africa hotspot: broad genetic diversity of AIV and co-circulation of different subtypes

- **Co circulation** of different H5 lineages in diverse bird populations and a variety of species lends itself to further virus evolution through drift and reassortment creating an **ever evolving complexity**
- There are genetically distinct 2.3.4.4b subclades circulating which are further diversifying and it is difficult to understand their origins
- Viruses of the H9N2 subtype are also entrenched in the poultry population leading to **reassortment** – these viruses and the extent of their circulation are poorly understood
- Africa is turning into a **new hotspot for the emergence** of new genotypes of HPAI, having animal health implications and negative economic drawbacks

>>> Increased sampling efforts in poultry and wild birds and improvement of viral genomic surveillance and sharing of data is needed <<<

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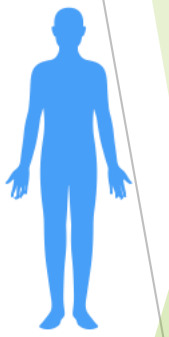
RSC 11 Conclusions

- Africa is a **vulnerable territory** for the introduction but also geographical dissemination of the virus
- There has been recent emergence of H5N1 HPAI/H9N2 **reassortant viruses with unknown zoonotic potential** (in Nigeria: H5N2 HPAI)

It is important, now more than ever, to:

- **Raise awareness** of the general population, poultry producers or marketers and hunters about HPAI
- **Step up biosecurity measures** to prevent virus introductions and spread
- **Assess levels of preparedness**: field and diagnostic capacities, material and equipment for rapid response including disinfectants and personal protective equipment sets



OFFLU is closely tracking these events and working with colleagues to survey emergence and provide support to better manage the risks

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Establishment of a GF-TADs task force on Avian Influenza

- Co chaired by FAO and WOAH, 4 members, WHO, UNEP, Global Secretariat + *ad hoc* invitation as needed

- **Collaboration/exchange:**

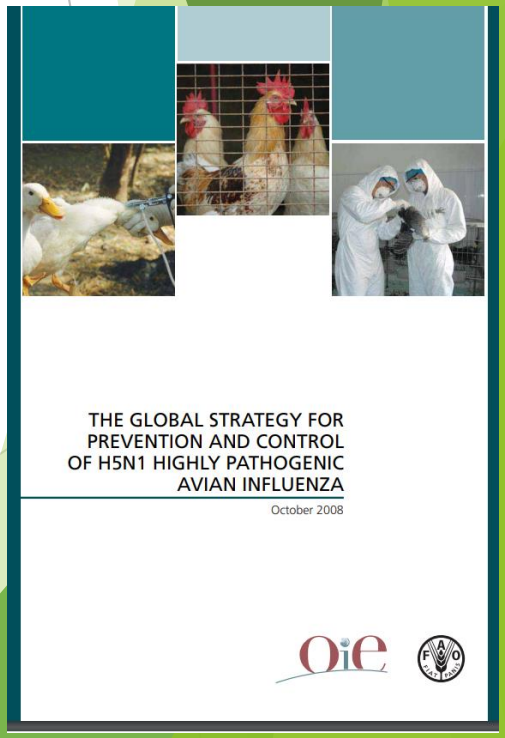
- OFFLU
- Tripartite zoonotic influenza group
- Quadripartite – esp. AT-2
- OIE/FAO Reference Labs/Centres
- Regional secretariats and RSCs
- Stakeholders

Main Tasks:

- Update/redraft the Global FAO/OIE AI Strategy

Work plan:

- Six-monthly, updated in Nov and May each year
- First draft work plan (Jun-Dec 2022) has been prepared
- From 2023: establish the mechanisms to support implementation and monitoring of revised strategy



Thank you for your attention

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Please visit: www.offlu.org for more information

For any questions please contact: secretariat@offlu.org