

**LABORATÓRIOS FEDERAIS DE  
DEFESA AGROPECUÁRIA**

## **Searching order in the midst of chaos: an overview of HPAI H5N1 in South America**

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Federal Agricultural Defense Laboratory – LFDA-SP  
WOAH Reference Laboratory for avian influenza**

**MINISTÉRIO DA  
AGRICULTURA  
E PECUÁRIA**

**GOVERNO FEDERAL**  
**BRASIL**  
UNIÃO E RECONSTRUÇÃO



**“Everything that is good to pass is bad to tell. And everything that is bad to go through is good to tell.”**

*Ariano Suassuna*, Brazilian dramatist and fiction writer

# While the avian flu hadn't arrived...



Whatsapp group for communication between regional labs



Two rounds of inter-laboratory comparison for RESUDIA countries



Technical visits for molecular and serological training

# ...and suddenly avian influenza arrives



Buenos Aires, Argentina, October 19<sup>th</sup> 2022  
RESUDIA Workshop

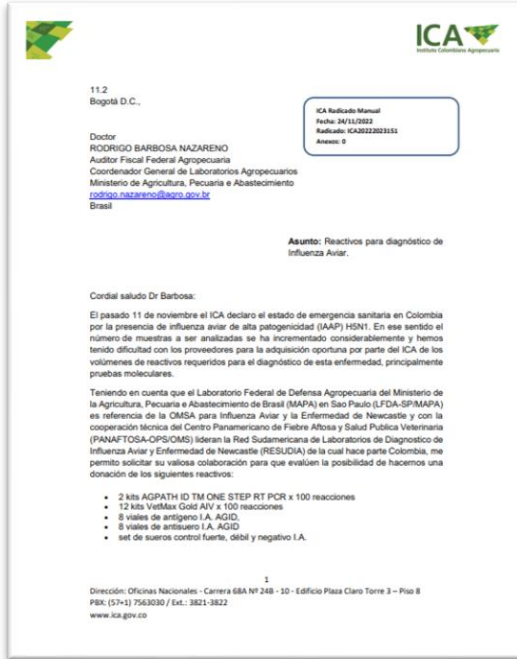
# The onset of chaos

## Support for Colombia's national reference laboratory

Donation of reagents for RT-qPCR and serology

Confirmation of RT-qPCR results

Sanger sequencing for pathotyping



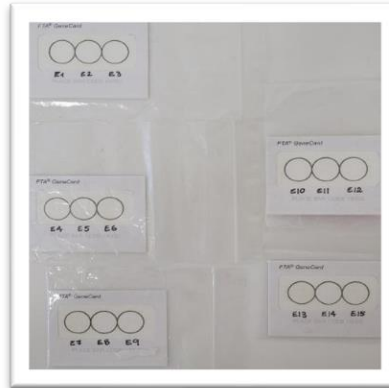
# HPAI H5N1




# Support for Ecuador's national reference laboratory

Donation of reagents for RT-qPCR  
Confirmation of RT-qPCR results  
Sanger sequencing for pathotyping

# HPAI H5N1



 **Gobierno del Encuentro** | **GUILLERMO LASSO PRESIDENTE**

Oficio Nro. AGR-AGROCALIDAD/DDA-001-2022  
Quito, 03 de diciembre de 2022

**PARA:** Rodrigo Barbosa Nazareno  
Auditor Fiscal Federal Agropecuario  
Coordenador-Geral de Laboratórios Agropecuários  
Ministério da Agricultura, Pecuária e Abastecimento

**ASUNTO:** Solicitud de apoyo con la donación de 4 kits para el diagnóstico de Influenza Aviar.

De mi consideración:

Ecuador, a través de la Agencia de Regulación y Control Fito y Zoonosario (AGROCALIDAD) reportó el primer caso de Influenza Aviar H5 en la provincia de Cotacachi en donde se registró una mortalidad de más del 13%, misma que entró en proceso de seguimiento bajo la siguiente cronología:


- 1.- Detección de granja con mortalidad inusual: 25 de noviembre de 2022
- 2.- Atención de evento sanitario con toma de muestras: 25 de noviembre de 2022
- 3.- Resultados de laboratorio de diagnóstico animal confirmatorios: 26 de noviembre de 2022

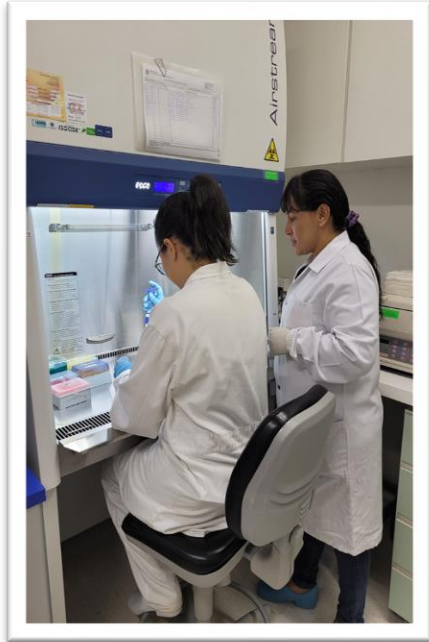
En base a la situación que se presenta, el Ministerio de Agricultura y Ganadería del Ecuador, por intermedio del Ministro de esta cartera de estado, el día 29 de noviembre del 2022 generó el Acuerdo Ministerial No. 134, en donde se declara mediante el "ARTICULO 1.- Declarar el estado de Emergencia Zoonositaria en el territorio ecuatoriano por un periodo de 90 días, por encontrarse presente el virus de INFLUENZA AVIAR ALTAMENTE PATÓGENO (HAAP) en aves de corral."

Ante esto, la Agencia ha incrementado la vigilancia sanitaria en territorio y la toma de muestras, y se estima que para el mes de diciembre se mantenga con un seguimiento a las granjas del foco y periférico mediante pruebas diagnósticas, las cuales deberán ser atendidas por los laboratorios de Serología y Biología Molecular de la Dirección de Diagnóstico Animal.

Al momento, los laboratorios están atendiendo las evaluaciones iniciales con adquisiciones planificadas para varias enfermedades pero no serán suficiente para atender la emergencia zoonositaria por Influenza Aviar, por lo cual, me permito solicitar a usted, la donación de 4 kits VetMax Gold AIV de la marca ThermoFisher para el Laboratorio de Biología Molecular.

**Agencia de Regulación y Control Fito y Zoonosario**  
Dirección: Av. Eloy Alfaro N30-250 y Av. Amazonas  
Código postal: T10518 / Quito-Ecuador  
Teléfono: +593 2 382 8800  
www.agrocalidad.gub.ec

 **República del Ecuador**



## Support for Bolivia's national reference laboratory

Confirmation of RT-qPCR results  
Sanger sequencing for pathotyping



# HPAI H5N1



## At this point, labs were dealing with...

Procurement of **reagents** and **reference materials**

**Reorganization** of the team to meet the demands of the emergency and to maintain the rest of the laboratory's routines

**Improving laboratory biosafety conditions** for the handling of suspicious samples

**Lack of trust in the NRLs** by the Veterinary Services and by the citizens

Raise awareness among Veterinary Services of the **importance of proper packaging and quality of samples** for a reliable diagnosis

**Mistrust and rumors from other countries** and trading partners regarding the work being done in the Region







# Argentina detects first case of bird flu in Jujuy province

National government to work with provinces on epidemiological measures



BUENOS AIRES HERALD

FEBRUARY 16, 2023



## Uruguay Detects Avian Influenza Virus for First Time

The Avian Influenza virus (H5) was detected in Laguna Garzón, departments of Maldonado and Rocha.



# NOTA OFICIAL

Brasil registra caso de gripe aviária em aves silvestres, Mapa alerta para cuidados.

Notificação não afeta condição do Brasil como país livre de IAAP e comércio internacional deve ser mantido.

[NOTA NA ÍNTEGRA](#)

NOTA OFICIAL

## Brasil registra primeiros casos de Influenza Aviária de Alta Patogenicidade em aves silvestres, Mapa alerta para cuidados

Notificação não afeta condição do Brasil como país livre de IAAP e comércio internacional deve ser mantido

Publicado em 15/05/2023 15h31 | Atualizado em 16/05/2023 09h24

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**D**iante da detecção dos primeiros casos do vírus da Influenza Aviária de Alta Patogenicidade (IAAP) em aves silvestre no litoral do Espírito Santo, o Ministério da Agricultura e Pecuária (Mapa) informa que:

1. Na quarta-feira (10), o Serviço Veterinário Estadual (SVE) iniciou a investigação de suspeita de influenza aviária após notificação recebida pelo Instituto de Pesquisa e Reabilitação de Animais Marinhos de Cariacica (Ipram), no Espírito Santo
2. Foram resgatadas duas aves marinhas da espécie *Thalasseus acutiflavus* (nome popular Trinta-réis-de-bando), uma localizada no município de Maratizes e outra no bairro Jardim Camburi, em Vitória, ambas no litoral do Espírito Santo. Nesta segunda-feira, após o fim das investigações epidemiológicas, foi confirmada também a detecção da IAAP em uma terceira ave migratória da espécie *Sula leucogaster* (atobá-pardo) que já se encontrava no Ipram
3. Material para diagnóstico, amostras biológicas foram colhidas pelo SVO e enviadas ao Laboratório Federal de Defesa Agropecuária de São Paulo (LFDA-SP), unidade de referência da Organização Mundial da Saúde Animal (OMSA), que confirmou se tratar de Influenza Aviária de Alta Patogenicidade (IAAP) de subtipo H5N1. Esses foram os primeiros casos de IAAP registrados no Brasil

**First detection in Brazil**

Samples received from:

Colombia  
Ecuador  
Bolivia  
Argentina  
Uruguay  
Paraguay




Same cleavage site:

PLREKRRKR/GLF


“Brazilian” cleavage site:

PLREKRKKR/GLF

 Investigations carried out

142

Total investigations of **suspected Avian Respiratory and Nervous Syndrome**, whose target diseases are Avian Influenza and Newcastle Disease. Suspicion can be ruled out based on the clinical-epidemiological evaluation carried out by the Official Veterinarian, ending the investigation without the need to collect samples for laboratory diagnosis.


 Investigations with sample collection

12

In investigations classified by the Official Veterinarian as **probable cases of Avian Respiratory and Nervous Syndrome**, it is **mandatory to collect samples for laboratory diagnosis**. Faced with negative results for Avian Influenza and Newcastle Disease, the cases are ruled out and the investigation is closed.


**Oct 19 to Dec 31, 2022**

## Passive surveillance

 Investigations carried out

900


Total investigations of **suspected Avian Respiratory and Nervous Syndrome**, whose target diseases are Avian Influenza and Newcastle Disease. Suspicion can be ruled out based on the clinical-epidemiological evaluation carried out by the Official Veterinarian, ending the investigation without the need to collect samples for laboratory diagnosis.

 Investigations with sample collection

383


In investigations classified by the Official Veterinarian as **probable cases of Avian Respiratory and Nervous Syndrome**, it is **mandatory to collect samples for laboratory diagnosis**. Faced with negative results for Avian Influenza and Newcastle Disease, the cases are ruled out and the investigation is closed.

**May 16 to Sep 30, 2023**

 Investigations carried out

385

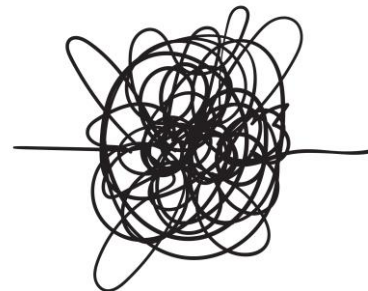
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 Investigations with sample collection

87

In investigations classified by the Official Veterinarian as **probable cases of Avian Respiratory and Nervous Syndrome**, it is **mandatory to collect samples for laboratory diagnosis**. Faced with negative results for Avian Influenza and Newcastle Disease, the cases are ruled out and the investigation is closed.

**Jan 1 to May 15, 2023**



what are other words for chaotic situation?

havoc, bedlam, chaos, mayhem, destruction, disorder, turmoil, disaster, confusion, devastation



 Thesaurus.plus

**Demand for results in a short time**

**Extended working hours**

**Excessive anxiety**


**Increase in administrative demands**

**Communication issues**

**Lack of supplies/consumables**

**Insufficient equipment**

**Large number of external requests**




Define  
priorities



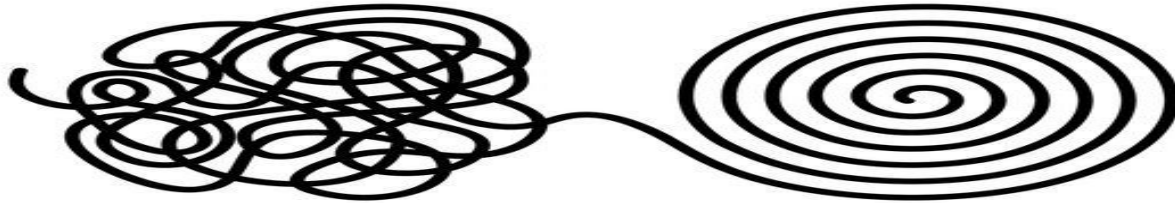
Taking care  
of the  
staff's  
health



Rapid  
response to  
the  
Veterinary  
Service



Rational use  
of supplies  
and  
resources





*Thalasseus acufilavidus*



*Thalasseus maximus*



*Sterna hirundinacea*



*Sterna hirundo*



*Vanellus chilensis*

# H FIVERS



*Cygnus melancoryphus*



*Nannopterum brasilianum*



*Megascops choliba*



*Chroicocephalus cirrocephalus*



*Fregata magnificens*



*Chroicocephalus maculipennis*



*Rupornis magnirostris*



*Urubitinga urubitinga*



*Caracara plancus*



*Sula leucogaster*

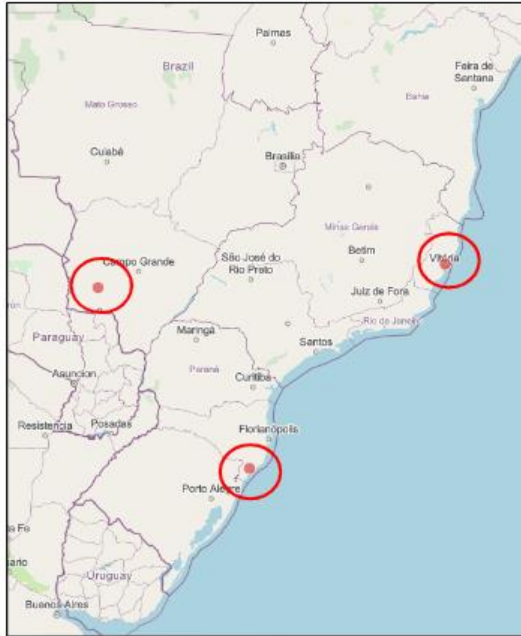


*Puffinus puffinus*



*Pachyptila desolata*

## Detections of H5N1 HPAI in backyard poultry



**3 outbreaks**



Source: State Veterinary Service



#Uruguay has reported an outbreak of #AvianInfluenza in South American coatis, an unusual host species. 16 coatis died due to the virus. Control measures have been applied to stop the spread. Consult the full report 📄

WAHIS IMMEDIATE NOTIFICATION

## Avian influenza in Uruguay

Consult the report now



MAY 26, 2023

Editors' notes

## Bird flu fells nearly 9,000 marine creatures in Chile



## Explosion of sea lion deaths in Peru amid deadly bird flu outbreak

By CNN's Philip Wang and CNNE's Abel Alvarado

Published 7:16 PM EST, Mon March 6, 2023



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## Uruguay, 400 sea lions and seals dead from avian flu

September 29, 2023 by [ItalianPostNews](#)



## International

MEXICO · CHINA · LATEST NEWS

ARGENTINA >

## Bird flu moves south, devastating sea lions in Argentine Patagonia

On August 11, the country's authorities detected the first case of the virus in the region. In the following weeks, the number of cases on beaches in the area have



Science



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## Deadly avian flu reaches Galápagos Islands

Concerns rise for boobies, finches, and other endemic species

25 SEP 2023 · 4:10 PM ET · BY ERIK STOKSTAD



## Despite the chaos...

Trained and committed human resources

Effective and efficient response from laboratories

Extraordinary budget for purchasing equipment and hiring staff

Implementation of new protocols (H5 clade 2.3.4.4b, N1 and rapid pathotyping)

Interaction and collaboration between different agencies from different disciplines

Fluid exchange of information between the NRLs and the reference laboratories

Learning and experience in dealing with an animal health emergency

Support from international organizations (FAO/IAEA, PAHO/WHO, WOAH)



**Biology is not  
Math**

**Labs can't work  
miracles**

**Samples are  
processed by  
people**

**Anxiety doesn't  
conclude tests**

**Your needs are  
unlimited, but our  
resources are  
limited**

**Help  
not hinder**



**REMINDER**

MINISTÉRIO DA  
AGRICULTURA  
E PECUÁRIA



**Saiba mais sobre o LFDA:**

<https://www.gov.br/agricultura/pt-br/assuntos/lfda>