LABORATÓRIOS FEDERAIS DE
DEFESA AGROPECUÁRIA

Diagnóstico de la IAAP en la fauna silvestre

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RAPID COMMUNICATION

Emergence and potential transmission route of avian influenza A (H5N1) virus in domestic cats in Poland, June 2023

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Highly pathogenic avian influenza A (H5N1) virus infections in wild carnivores connected to mass mortalities of pheasants in Finland

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Mass mortality event in South American sea lions (Otaria flavescens) correlated to highly pathogenic avian influenza (HPAI) H5N1 outbreak in Chile

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Mass Mortality of Sea Lions Caused by Highly Pathogenic Avian Influenza A(H5N1) Virus

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Characterization of neurotropic HPAI H5N1 viruses with novel genome constellations and mammalian adaptive mutations in free-living mesocarnivores in Canada

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RAPID COMMUNICATION

Highly pathogenic avian influenza A(H5N1) virus infection in farmed minks, Spain, October 2022

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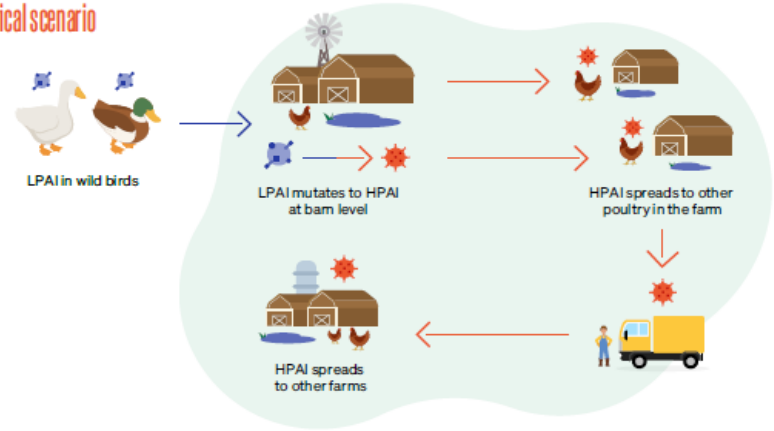
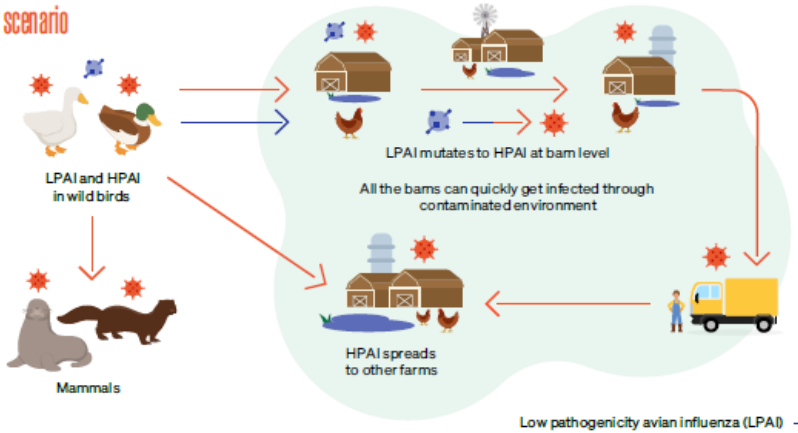
Avian influenza: understanding new dynamics to better combat the disease

The spread patterns of high pathogenicity avian influenza (HPAI) have recently evolved from a historically known scenario to a new one.
Both scenarios coexist in the current epidemiological situation.

Historical scenario



New scenario



Prevention and control measures

- Biosecurity at **farm** level
- Mass culling
- Movement restriction

+

- Biosecurity at **barn** level
- Constant monitoring and surveillance

World Organisation for Animal Health
Founded as OIE

https://www.woah.org/app/uploads/2023/06/avian-influenza-understanding-new-dynamics-to-better-combat-the-disease.pdf

Thalasseus acuflavidus

Thalasseus maximus

Sterna hirundinacea

Sterna hirundo

Vanellus chilensis

Pluvialis dominica

Cygnus melancoryphus

Nannopterum brasilianum

Megascops choliba

Chroicocephalus cirrocephalus

Fregata magnificens

Chroicocephalus maculipennis

Ardea alba

Sula leucogaster

Puffinus puffinus

Pachyptila desolata

Investigaciones de Síndrome Respiratorio y Nervioso en Aves realizadas por el Servicio Veterinario Oficial

Rupornis magnirostris

Urubitinga urubitinga

Caracara plancus

148 focos

140 aves silvestres
03 aves traspatio
05 mamíferos marinos

23 espécies silvestres afectadas
04 espécies amenazadas de extinción:

Thalasseus acuflavidus

Sterna hirundinacea

Thalasseus maximus

Procellaria aequinoctialis

¡Atención
a las aves carroñeras!

Otaria flavescens

Arctocephalus australis

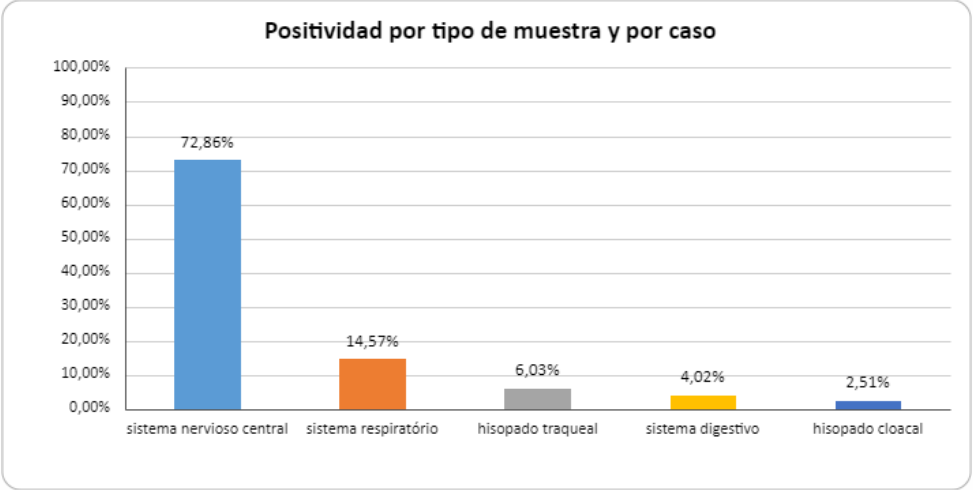
Investigaciones de Síndrome Respiratorio y Nervioso en Aves realizadas por el Servicio Veterinario Oficial

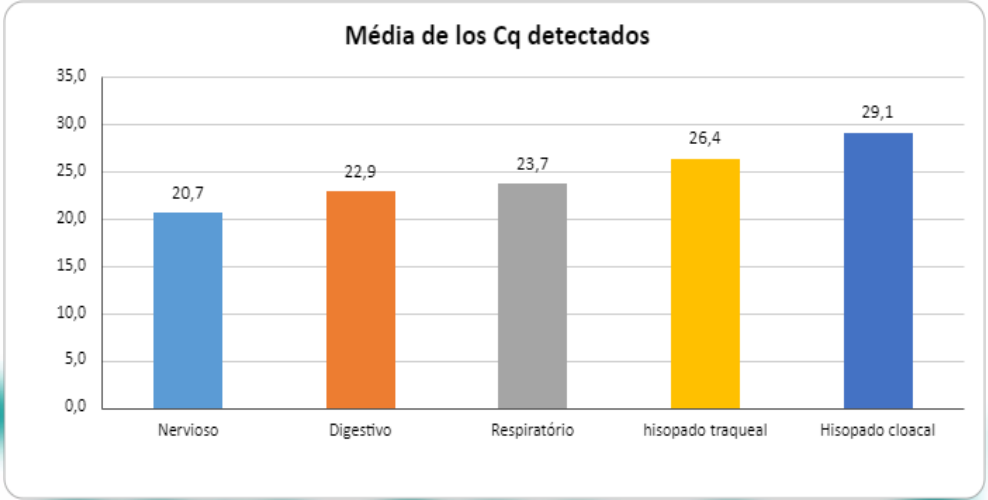
Muestras para el diagnostico

Hisopos orofaríngeos/traqueales
de aves gallináceas

Hisopos cloacales
de aves acuáticas

Tejidos:
Sistema nervioso central
Sistema respiratorio
Sistema digestivo



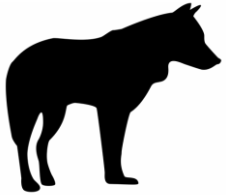


En **72,86%** de las muestras, el Cq más bajo fue detectado en **tejidos del sistema nervioso central (encéfalo).**

En **2 de los 3** focos en **aves de traspatio** no hubo detección del virus en muestras de **hisopados traqueales y cloacales.**

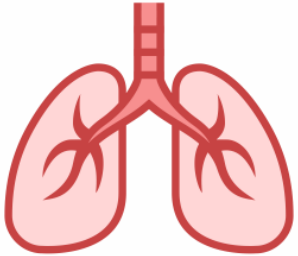
En el foco de Bonito – MS hubo detección del H5N1 solamente en **muestras del sistema nervioso** y en **01 muestra del sistema respiratorio.**

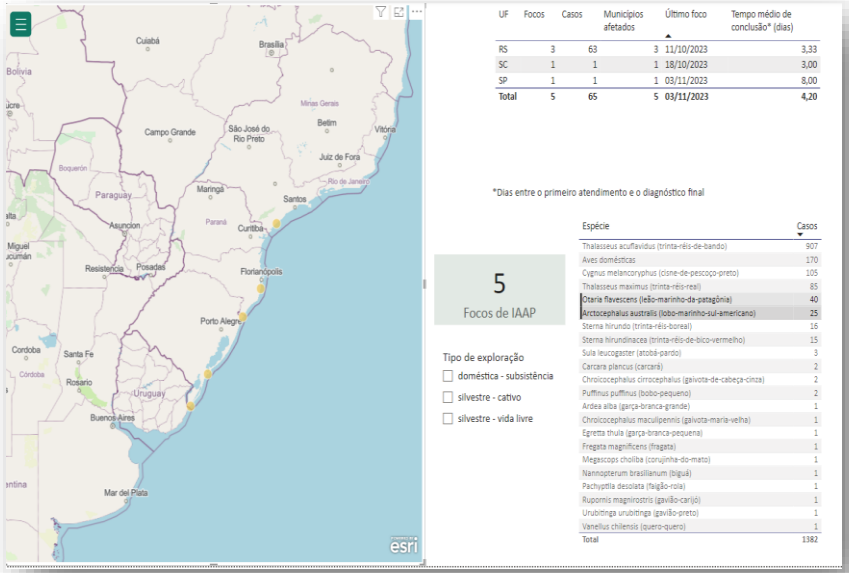
Muestras para el diagnostico
(mamíferos)



Mamíferos que han dado positivo a la influenza A (H5N1) hasta la fecha:

- han sido **encontrados muertos** o
- han mostrado **signos respiratorios** (secreciones nasales o bucales) **o neurológicos** (temblores, convulsiones, parálisis)





UF	Focos	Casos	Municípios afetados	Último foco	Tempo médio de conclusão* (dias)
RS	3	63	3	11/10/2023	3,33
SC	1	1	1	18/10/2023	3,00
SP	1	1	1	03/11/2023	8,00
Total	**5**	**65**	**5**	**03/11/2023**	**4,20**

*Dias entre o primeiro atendimento e o diagnóstico final

5
Focos de IAAP

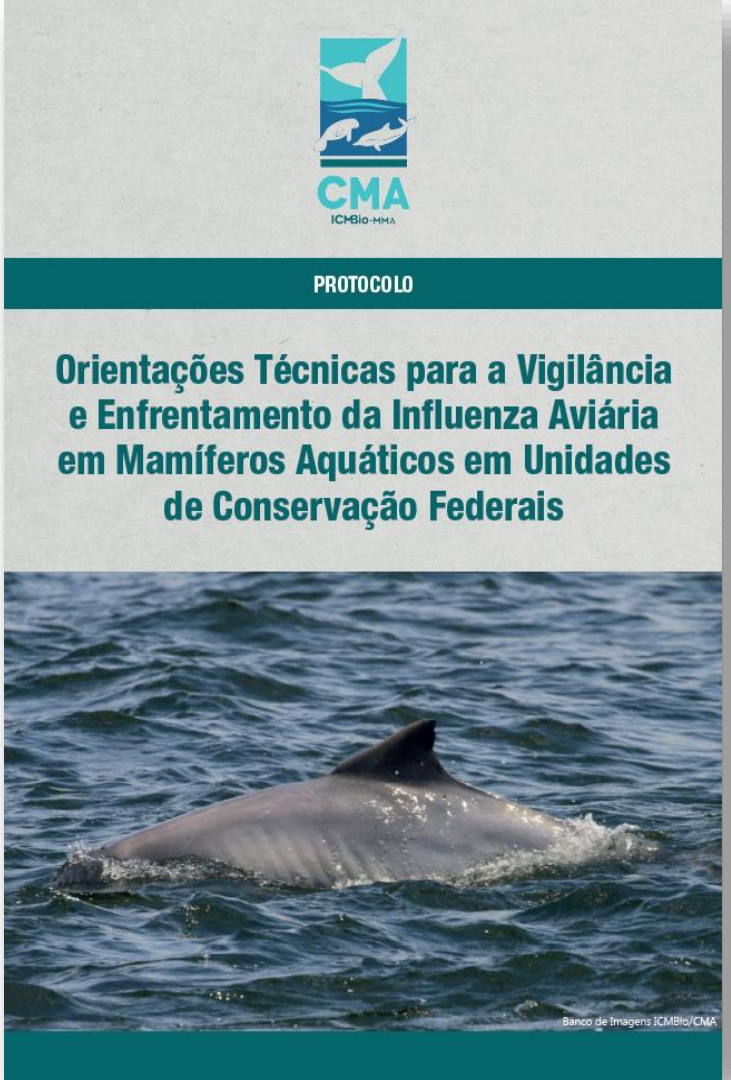
Tipo de exploração
- ☐ doméstica - subsistência
- ☐ silvestre - cativo
- ☐ silvestre - vida livre

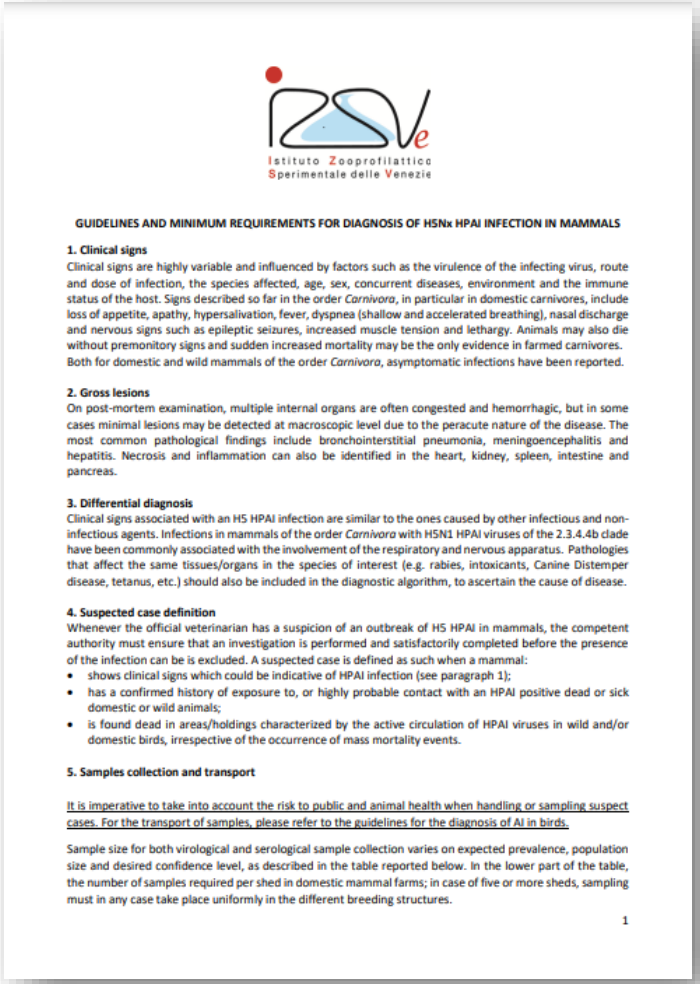
Espécie	Casos
Thalasseus acuflavidus (trinta-réis-de-bando)	907
Aves domésticas	170
Cygnus melancoryphus (cisne-de-pescoço-preto)	105
Thalasseus maximus (trinta-réis-real)	85
Otaria flavescens (leão-marinho-da-patagônia)	40
Arctocephalus australis (lobo-marinho-sul-americano)	25
Sterna hirundo (trinta-réis-boreal)	16
Sterna hirundinacea (trinta-réis-de-bico-vermelho)	15
Sula leucogaster (atobá-pardo)	3
Carcara plancus (carcará)	2
Chroicocephalus cirrocephalus (gaivota-de-cabeça-cinza)	2
Puffinus puffinus (bobo-pequeno)	2
Ardea alba (garça-branca-grande)	1
Chroicocephalus maculipennis (gaivota-maria-velha)	1
Egretta thula (garça-branca-pequena)	1
Fregata magnificens (fragata)	1
Megascops choliba (corujinha-do-mato)	1
Nannopterum brasilianum (biguá)	1
Pachyptila desolata (faigão-rola)	1
Rupornis magnirostris (gavião-carijó)	1
Urubitinga urubitinga (gavião-preto)	1
Vanellus chilensis (quero-quero)	1
Total	1382

Animales vivos:
Hisopados oculares y **orofaríngeos***

Animales muertos:
hisopos o fragmentos del **cerebro*** y del bazo

*mayor carga viral





Istituto Zooprofilattico Sperimentale delle Venezie

GUIDELINES AND MINIMUM REQUIREMENTS FOR DIAGNOSIS OF H5Nx HPAI INFECTION IN MAMMALS

1. Clinical signs

Clinical signs are highly variable and influenced by factors such as the virulence of the infecting virus, route and dose of infection, the species affected, age, sex, concurrent diseases, environment and the immune status of the host. Signs described so far in the order *Carnivora*, in particular in domestic carnivores, include loss of appetite, apathy, hypersalivation, fever, dyspnea (shallow and accelerated breathing), nasal discharge and nervous signs such as epileptic seizures, increased muscle tension and lethargy. Animals may also die without premonitory signs and sudden increased mortality may be the only evidence in farmed carnivores. Both for domestic and wild mammals of the order *Carnivora*, asymptomatic infections have been reported.

2. Gross lesions

On post-mortem examination, multiple internal organs are often congested and hemorrhagic, but in some cases minimal lesions may be detected at macroscopic level due to the peracute nature of the disease. The most common pathological findings include bronchointerstitial pneumonia, meningoencephalitis and hepatitis. Necrosis and inflammation can also be identified in the heart, kidney, spleen, intestine and pancreas.

3. Differential diagnosis

Clinical signs associated with an H5 HPAI infection are similar to the ones caused by other infectious and non-infectious agents. Infections in mammals of the order *Carnivora* with H5N1 HPAI viruses of the 2.3.4.4b clade have been commonly associated with the involvement of the respiratory and nervous apparatus. Pathologies that affect the same tissues/organs in the species of interest (e.g. rabies, intoxicants, Canine Distemper disease, tetanus, etc.) should also be included in the diagnostic algorithm, to ascertain the cause of disease.

4. Suspected case definition

Whenever the official veterinarian has a suspicion of an outbreak of H5 HPAI in mammals, the competent authority must ensure that an investigation is performed and satisfactorily completed before the presence of the infection can be is excluded. A suspected case is defined as such when a mammal:

- shows clinical signs which could be indicative of HPAI infection (see paragraph 1);
- has a confirmed history of exposure to, or highly probable contact with an HPAI positive dead or sick domestic or wild animals;
- is found dead in areas/holdings characterized by the active circulation of HPAI viruses in wild and/or domestic birds, irrespective of the occurrence of mass mortality events.

5. Samples collection and transport

It is imperative to take into account the risk to public and animal health when handling or sampling suspect cases. For the transport of samples, please refer to the guidelines for the diagnosis of AI in birds.

Sample size for both virological and serological sample collection varies on expected prevalence, population size and desired confidence level, as described in the table reported below. In the lower part of the table, the number of samples required per shed in domestic mammal farms; in case of five or more sheds, sampling must in any case take place uniformly in the different breeding structures.

1

https://www.izsvenezie.com/documents//reference-laboratories/avian-influenza/diagnostic-protocols/guidelines-diagnosis-h5nx-mammals.pdf

Investigación en carnívoros

- Signos clínicos que podrían ser indicativos de una infección por IAAP (respiratorios y neurológicos)
- Historial confirmado de exposición o contacto altamente probable con animales domésticos o salvajes muertos o enfermos positivos a HPAI;
- Se encuentra muerto en áreas/explotaciones caracterizadas por la circulación activa de virus de IAAP en aves silvestres y/o domésticas, independientemente de la ocurrencia de eventos de mortalidad masiva.

Toma de muestras en carnívoros

Animales vivos

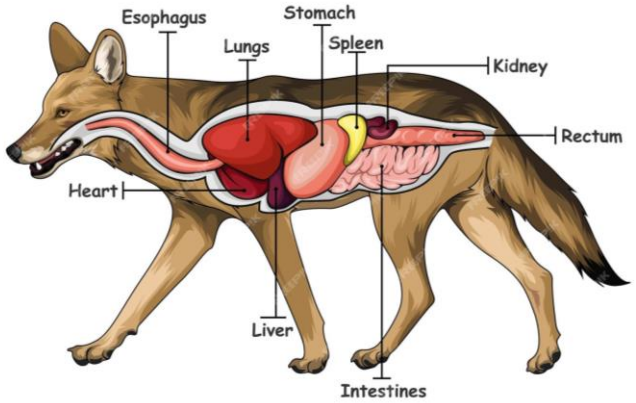
Hisopos nasales o traqueales/orofaríngeos y, en menor medida, en hisopos rectales.

Muestras del tracto respiratorio inferior (por ejemplo, lavado bronco alveolar): muestra de mayor riesgo

Animales muertos

Muestras del tracto respiratorio inferior (múltiples partes del pulmón; diferentes lóbulos; no solo el tejido alveolar sino también parte del árbol bronquial)

Sistema nervioso central: parte craneal/frontal del cerebro y el cerebelo (mayor carga viral)

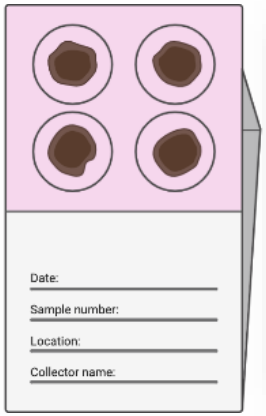


¡Atención a los mamíferos carroñeros!

Toma de muestras

SIEMPRE tener en cuenta el **riesgo para la Salud Pública y Animal** al **manipular o tomar muestras de casos sospechosos**.

VTM/UTM, caldo BHI
Cadena de frio
Permiten aislamiento viral



Medios inactivantes
Temperatura ambiente
Riesgo insignificante

Red mundial de expertos en influenza animal;

Gestionada conjuntamente por WOAH y la FAO;

Compartir datos sobre la influenza animal con la Organización Mundial de la Salud (OMS) para ayudar con la selección y actualización de virus candidatos para vacunas (CVV) con fines de preparación previa a una pandemia;

Enviar las muestras a uno de los laboratorios de referencia de la OMSA y/o

Compartir los datos de secuenciación en las bases de datos como GISAID/GenBank.

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