

Viral disease challenges in gamebirds

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APHA

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Viral challenges in gamebirds

- Avian influenza – clinical signs and pathology
- Coronaviruses in pheasants
- Pheasant ataxia



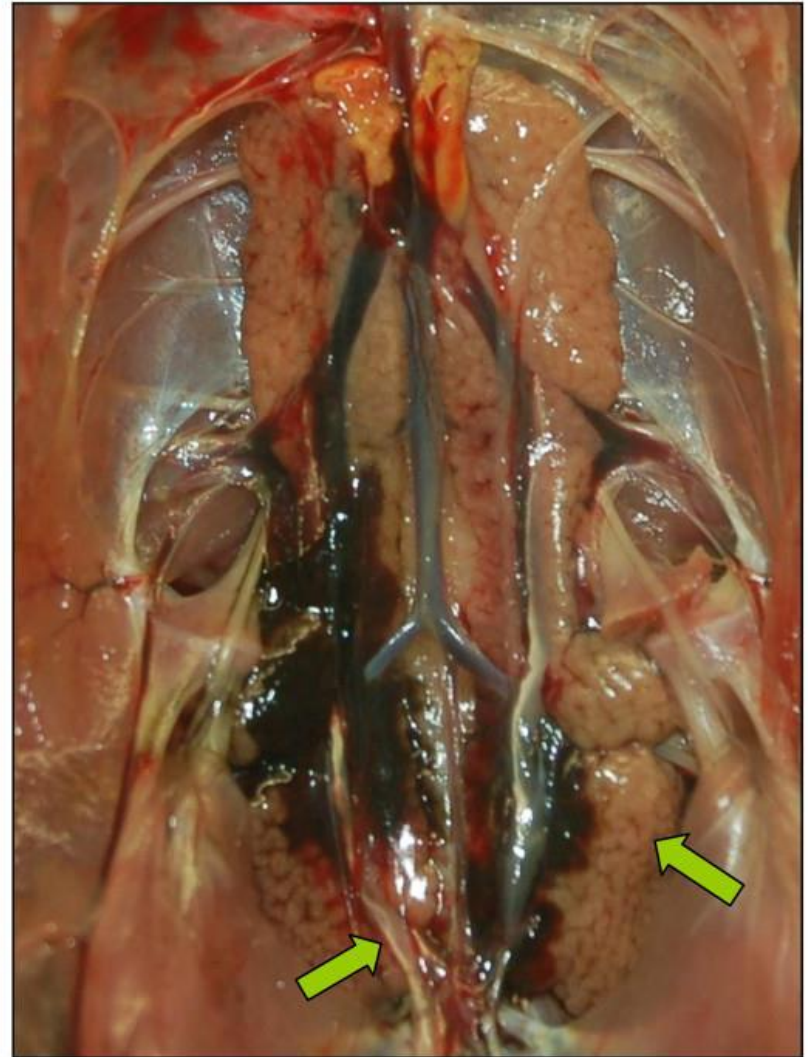
HPAI in game birds (esp. pheasants & red-legged partridges) (Bertran et al 2014)

- High morbidity and mortality
- Non-specific clinical signs
 - Anorexia, lethargy, ruffled feathers progressing to neurological signs
 - Time course and presentation varies with species and HPAI strain
 - Gastrointestinal signs; “Egg albumin faeces” (Perkins & Swayne 2001)
- Pathology
 - non-specific, may relate to rapidity of death
 - may see pancreatic necrosis, splenomegaly, pale kidneys with urates, fluid intestinal contents, fascial/muscular haemorrhages, lung changes etc etc
 - Findings may be less extensive and obvious than in chickens

HPAI pathology

Kidney lesions of a H7N1 HPAIV (A/Chicken/Italy/5093/1999) infected partridge consisting in parenchymal pallor, lobular surface architecture and urate deposits in the ureters, 6 dpi.

(Bertran K. et al (2011) Veterinary Research **42**, 24)



Field experience - 2017 (H5N8) – case 1

- **Field A** – rising mortality and morbidity
 - Hunched up, fluffed feathers, eyes closed
 - Reluctance to move
 - Several with **nervous signs**: nystagmus, torticollis, ataxia
 - Bright green droppings
 - Mortality exacerbated by concurrent Mycoplasma infection?

H5N8 HPAI



2017 H5N8 cases: 2 & 3

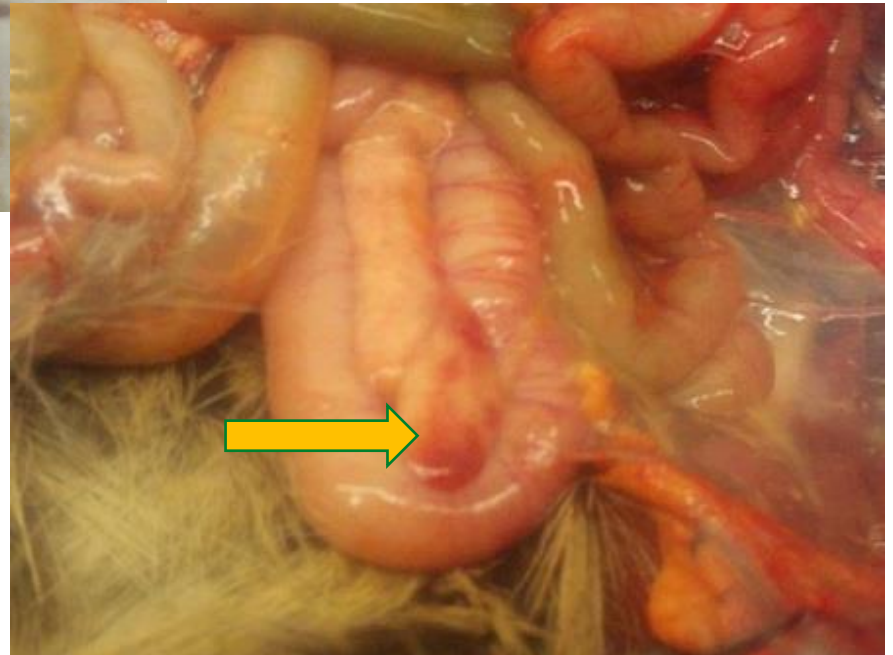
- **2 - adult pheasants**
 - Small number sudden deaths
 - 3 with tremors when trying to catch
 - 3 with nasal discharge
 - Most pens lively, no clinical signs
- **3 – adult pheasants – raised pens**
 - Few deaths
 - One with neurological signs, one torticollis, one ataxia
 - One with discharge
 - Slow lateral spread to neighbouring pens

Gamebirds – conclusions on H5N8 HPAI

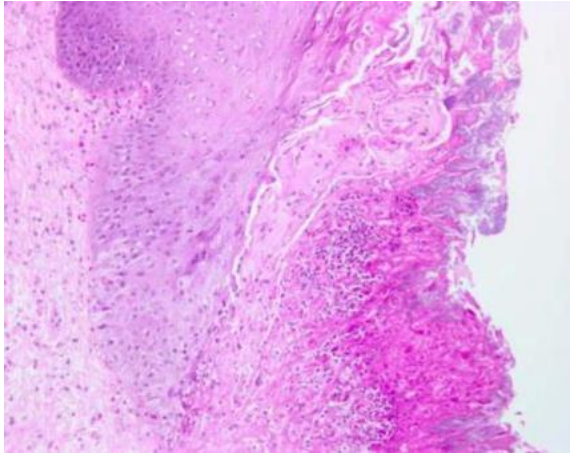
- Variable clinical signs (depending on management)
- Variable mortality, can be high
- *Mycoplasma* (and other infections) may exacerbate mortality
- Nervous signs and sudden death when stressed
- PM few findings
- Type of husbandry, density of birds and stage of production may affect spread



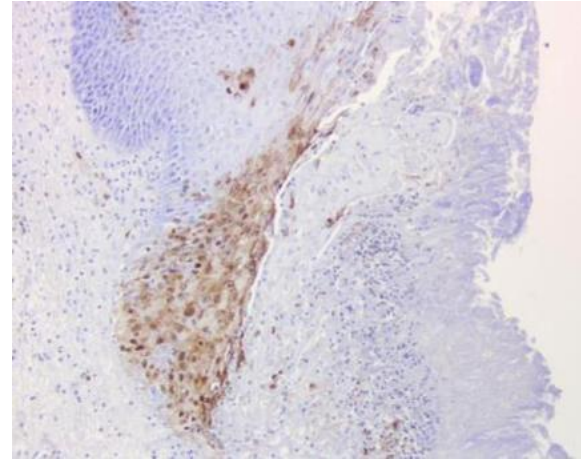
Pharyngeal lesions and
pancreatic
haemorrhages
from pheasants with
H5N8 HPAI, 2017



Immunohistochemistry H5N8 (Christopher Poulos et al, AAAP)

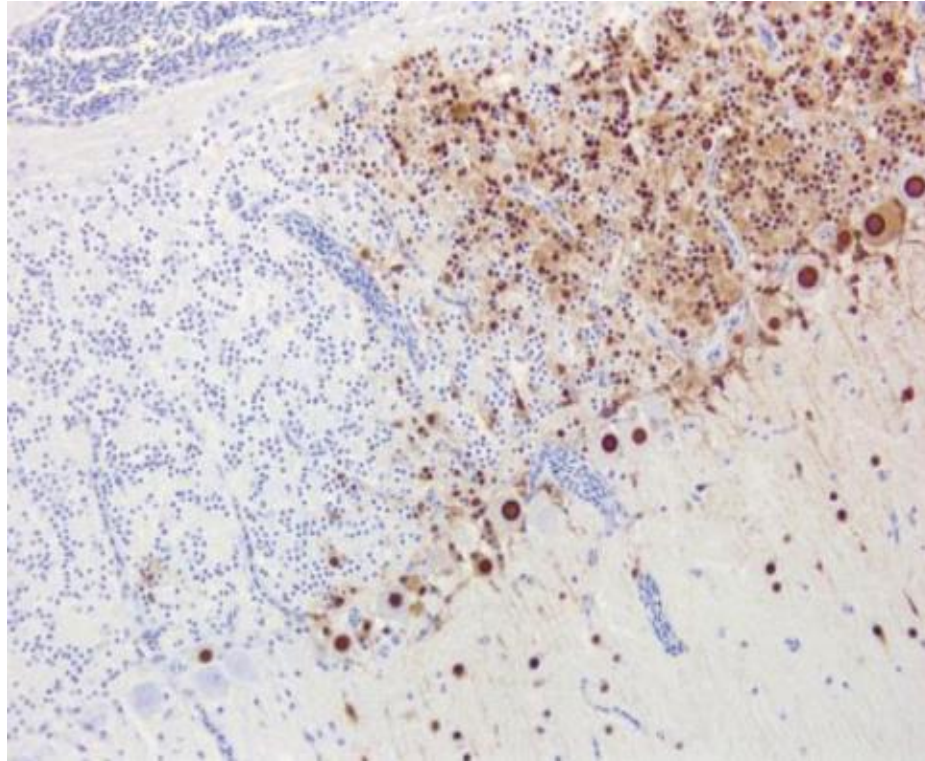


Necrotising and
ulcerative stomatitis with
secondary bacterial
infection



Immunohistochemistry
demonstrating
intralesional AIV
nucleoprotein

IHC – brain, H5N8 (Christopher Poulos et al, AAAP)



Immunostaining for AIV nucleoprotein in the cerebellum

Field experience 2021-22 (H5N1 HPAI)

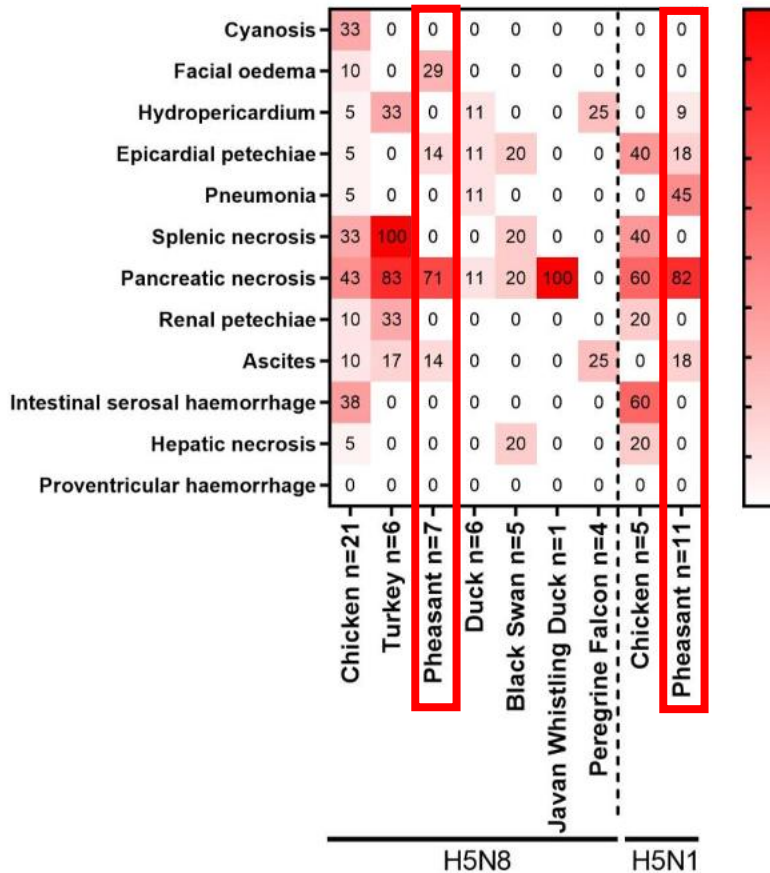
- Pheasants susceptible – clinical signs (adults):
 - Lethargy
 - Tremors
 - Ruffled feathers
 - Die in 1-2 hours
 - Some with torticollis, green diarrhoea
 - Reduced feed intake
 - Rapidly escalating mortality
- Partridges appear less susceptible

H5N1 pathology 2021 (courtesy the practitioner)

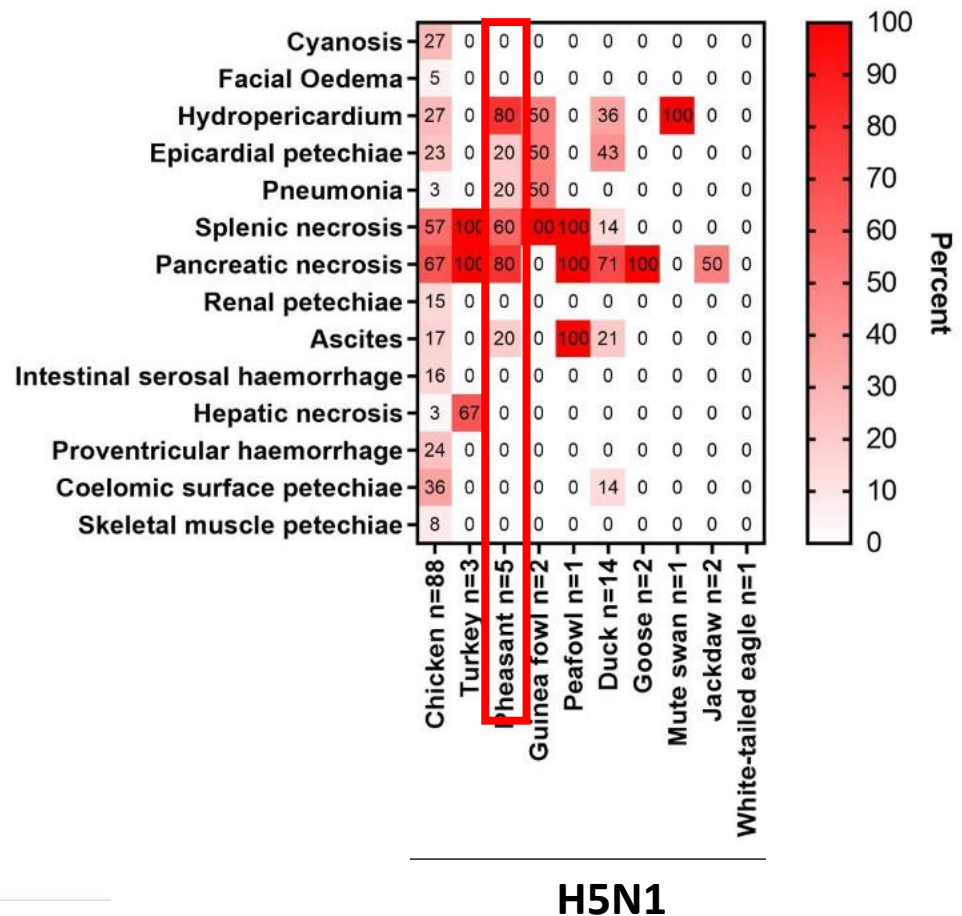


Pathology – H5N8, H5N1 (Courtesy Fabian Lean, APHA Weybridge)

HPAIV 2020-2021 Season



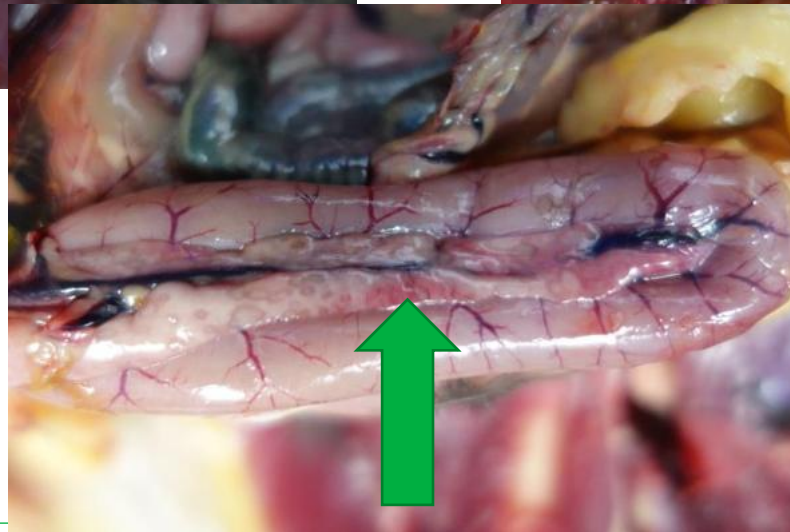
HPAIV 2021-2022 Season



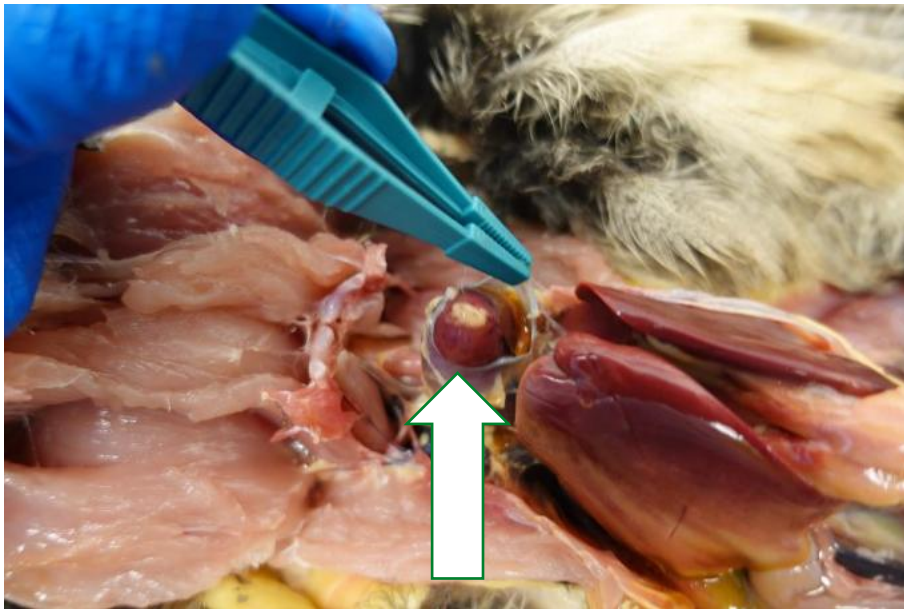
H5N1- Pneumonia



H5N1 – Pancreatic necrosis



H5N1 – Hydropericardium, splenomegaly

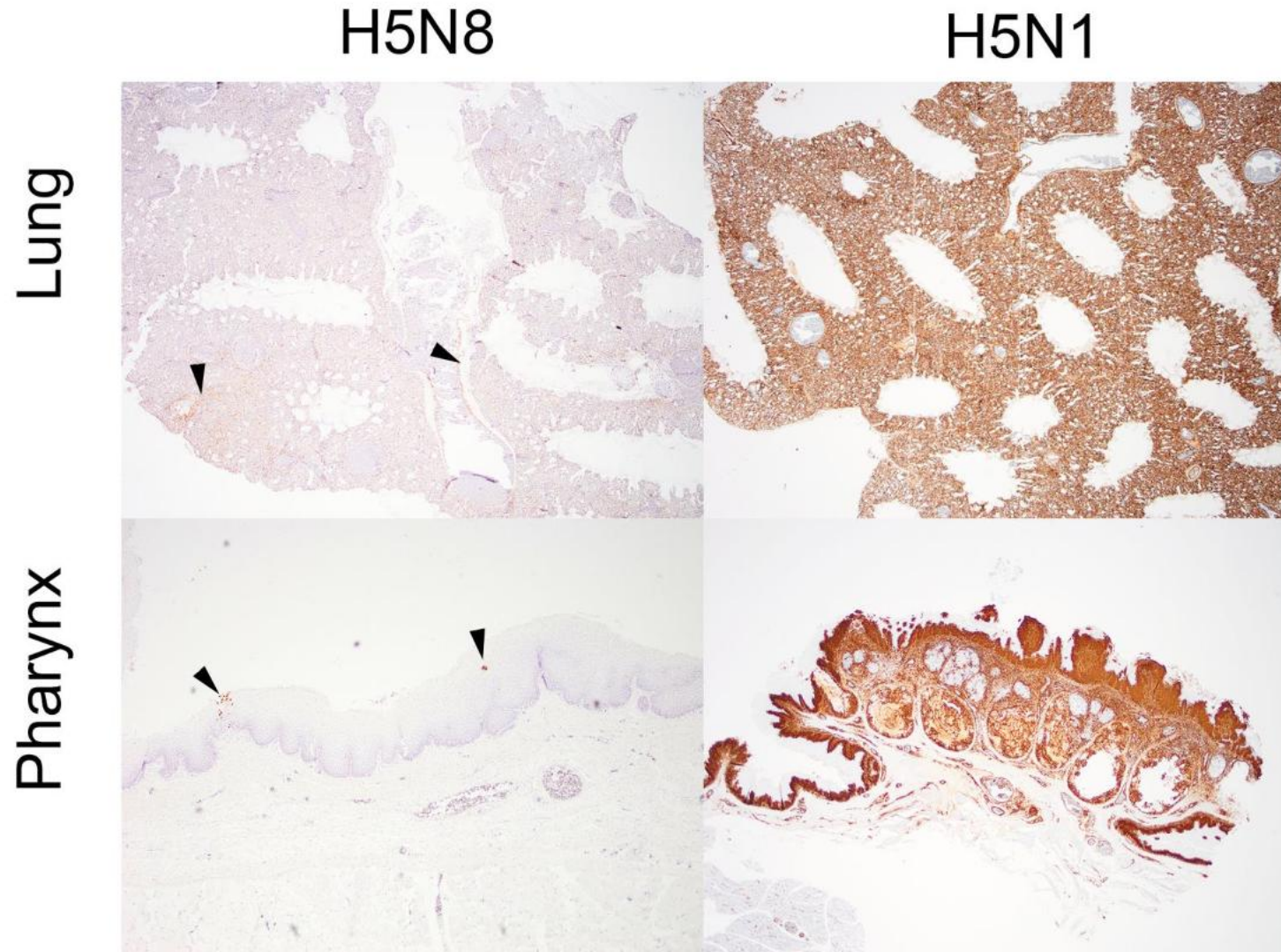


H5N1 pathology (courtesy Sarah Seery, APHA)

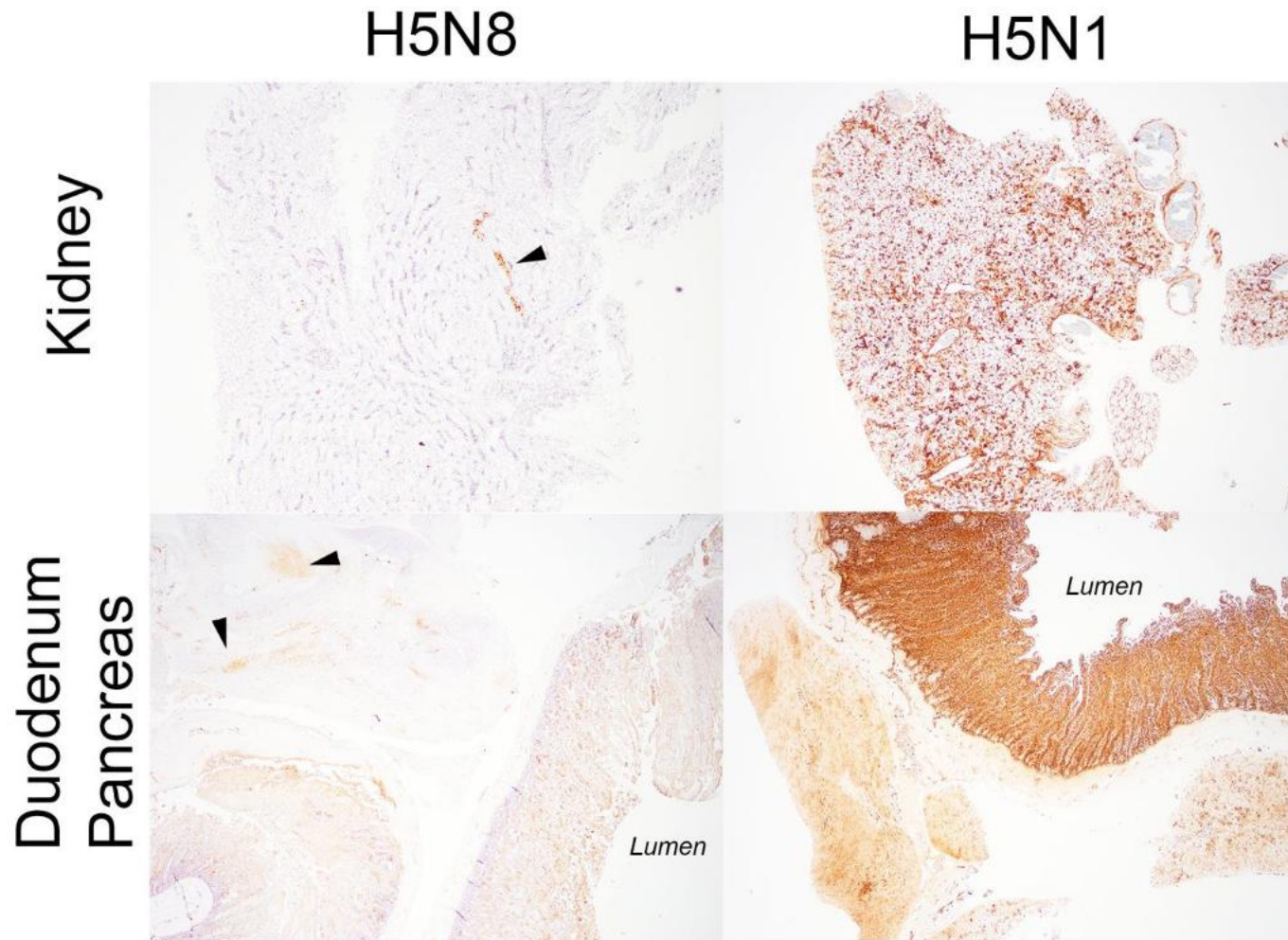


Bile staining of the
gizzard lining
(cf. Bertran et al
2014)

Immunohistochemistry for AIV (courtesy Fabian Lean)



Immunohistochemistry (courtesy Fabian Lean)



HPAI H5N1 (courtesy Sarah Seery, APHA)



Pheasant coronaviruses (1)

- **Respiratory disease** association – “IBV-like” coronaviruses
 - BVPA Mycoplasma project results: 9/49 outbreaks
PCR +ve in oropharyngeal swabs: all in pheasants
aged 16wks – adult
 - ? Synergism with *Mycoplasma gallisepticum* (J. Bradbury, GWCT)
 - Overall significance in project birds uncertain
 - Not detected in partridges
- No consistent variant of IBV detected



Pheasant coronaviruses (2)

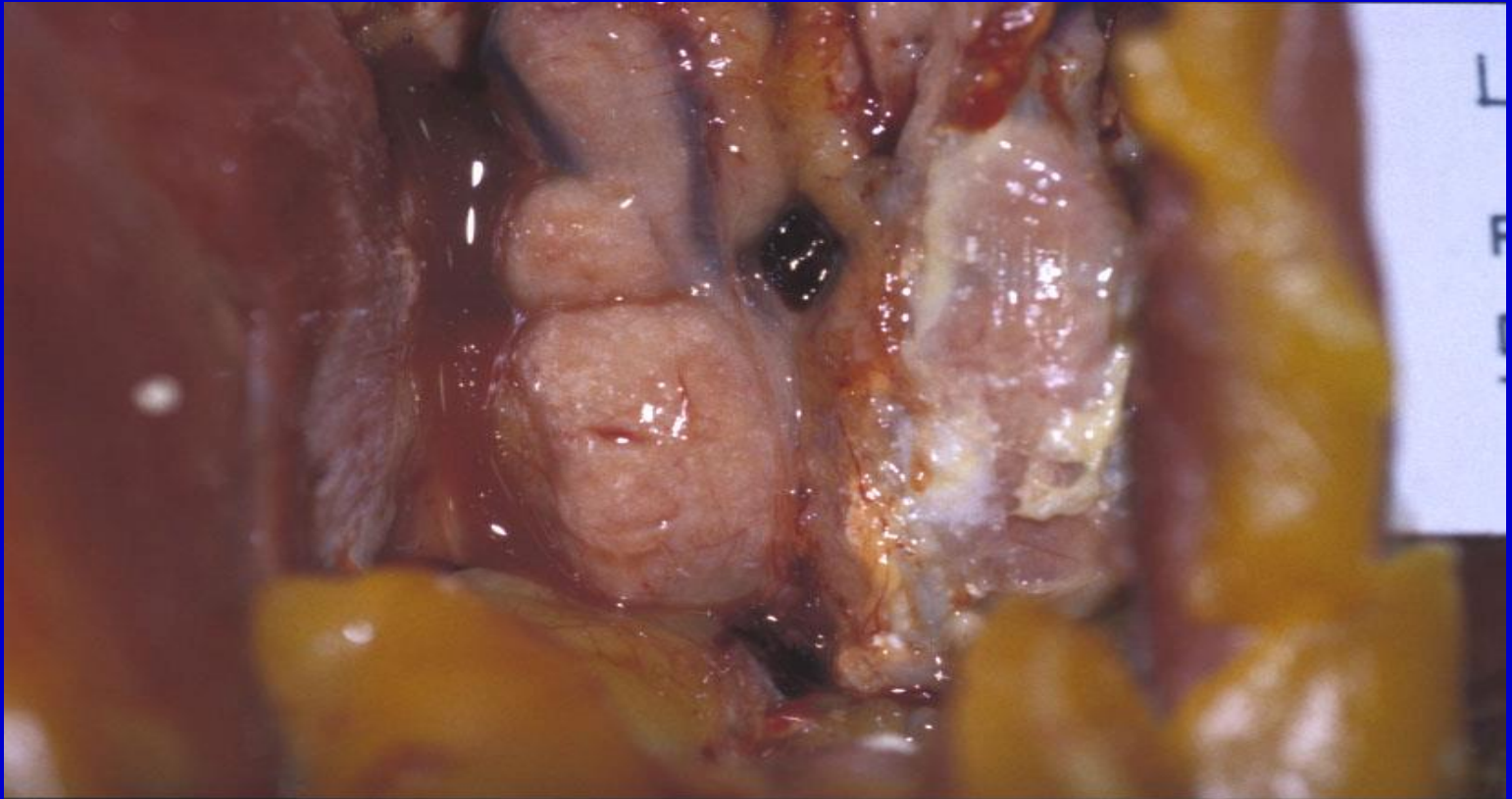
- **Coronavirus nephritis**

- Renal damage often in breeding birds, occasionally younger birds (eg 7-week-old poults)
- Usually not with respiratory signs – separate strain?
- IBV variant usually not identified
- APHA happy to receive fixed and frozen kidney tissue for further investigation incl. variants

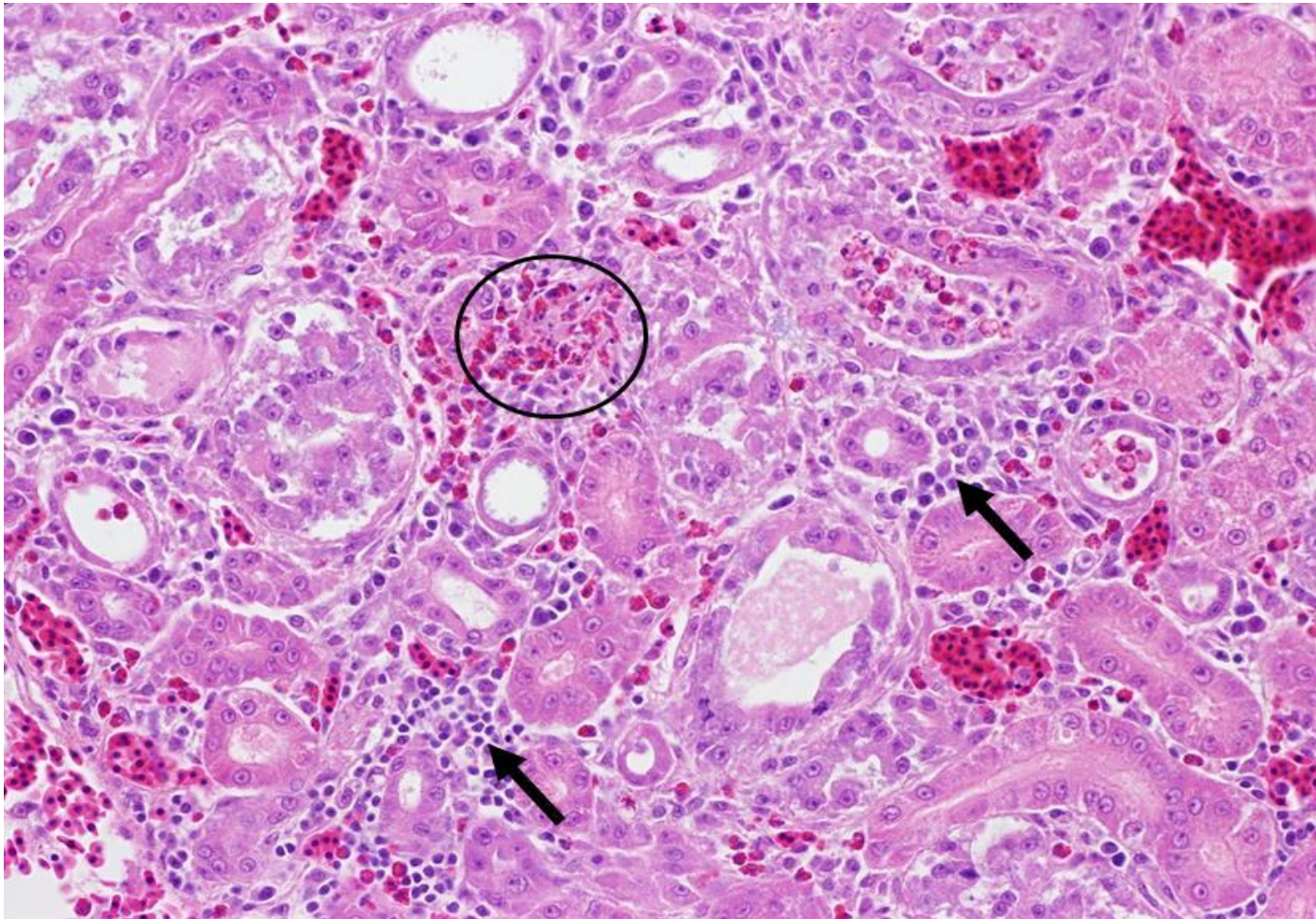
Pheasant coronavirus



NEPHRITIS/NEPHROSIS IN PHEASANTS



Coronavirus nephritis



Interstitial mononuclear infiltrate (arrows) and tubular necrosis (encircled). H & E

Neurological diseases in pheasants - “pheasant ataxia”

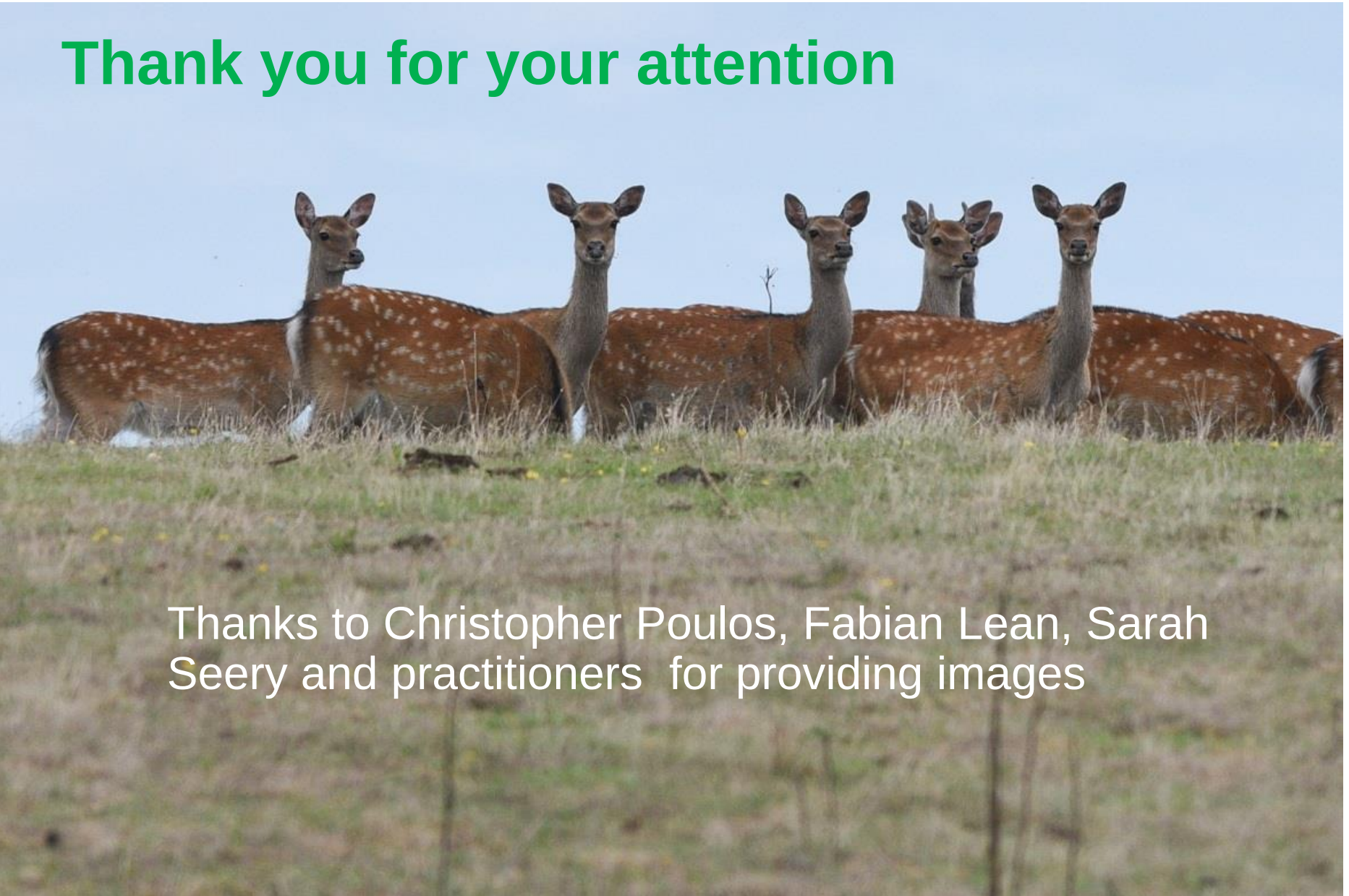
- *Sporadic* cases of incoordination seen on several sites in late 1990s
- Affected birds usually remained bright & alert
- Viral cause suspected (viral-type lesions in the cerebellum) but no specific virus identified
- Seemed to disappear– not definitely seen again until 2021
- APHA keen to investigate possible cases



Pheasant ataxia 2021 (courtesy Rita Allves)



Thank you for your attention

A photograph of a group of spotted deer, likely roe deer, standing in a grassy field. The deer are brown with white spots and are looking towards the camera. The background is a clear blue sky.

Thanks to Christopher Poulos, Fabian Lean, Sarah Seery and practitioners for providing images