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Game diagnostics... or is the keeper actually always right

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ST DAVIDS GAME BIRDS SERVICES



- Background
- Industry Updates
- The biosecurity issue
- Game diagnostics overview
 - Breeders
 - Rearing pheasants and partridges
- Intestinal microscopy
- Going forwards
 - New Research..
 - Assurance/ regulation
- Discussion



Background

- Started out with St Davids back in 2020 out of the Newark Office then moved down to the Cotswolds.
- Covering Gloucestershire, Midlands, Hereford Etc...
- During summer 90% game, 10% broilers. Outside of rearing season 10% game, 90% others.
- St Davids- 15 branches across the UK and Ireland. ~28 vets



Industry Updates

- Covid, AI, import restrictions (large number of RL partridge from France)
- Significant industry
 - Peak of 55 million in 2019.
 - Prediction of around 36million pheasants and partridge released in the UK this year.
 - Predicted £3-4 billion industry in the UK.
- Regulation and assurance still an important topic- only voluntary schemes currently



Disease control with questionable biosecurity

- **Variable biosecurity**
 - Often same ground each year. (treated-rotate, lime, plough)
 - Boot dip/changing boots
 - Often multi age batches
 - Workers going between batches
 - Variable cleanouts- each year/same year
 - Exposed to the elements
 - Historical reliance on medication



- Disease burden increases
 - Parasites
 - Viral
 - Bacteria



Diagnostic overview

- Age of the bird
- History of the bird
- History of parent flock- Imported, overwintered/caught up, disease status
- Variance between species.



Breeders

| Test | Sex | Line | No Tested | ART A | IBV | WG | ORT |
|-----------|-----------------|------|-----------|--------------|-----------|--------------|--------------|
| AVIAN | Pheas-es-layers | | 1 | Detected Ctr | | | |
| OTIBACHEI | | | | 36.2 | | | |
| ECTIOUS | Pheas-es-layers | | 1 | | Inhibited | | |
| INCHITIS | | | | | | | |
| OPLASMA | Pheas-es-layers | | 1 | | | Detected Ctr | |
| SEPTICUM | | | | | | 30.1 | |
| THOBACTE | Pheas-es-layers | | 1 | | | | Detected Ctr |
| IL | | | | | | | 23.2 |

- Overwintered - usually early rearing stock form the previous year.
- Caught up- wild birds caught up in pens before the 1st Feb. High disease risk., poor genetics? Quarantine.
- Main disease considerations- mycoplasma gallispeticum, IB, TRT, ORT, AI
- Pheasants- flock system, raised laying units (8 hens to 1 cock bird with rotation).
- Partridge- eggs often imported. Usually paired boxes. Some flock mated (risks).



Breeders

Mycoplasma Gallisepticum

- Major issue- infectious sinusitis (bulgy eyes)- own experience approx. 85% cases are MG.
- Major risk factor is catching up. Vertical + horizontal transmission
- Observations- Chronic swollen sinuses forcing the eye out. Young birds- sudden onset squinty eyes.



Breeders

Mycoplasma Gallisepticum

- Testing options-
 - PCR for confirmatory testing of birds with clinical signs.
 - Serology- controversial (concerns regarding specificity), important tool for caught up birds or brought in to be used as laying stock. Ideally 60 birds to be over 90% confident.
 - Culture and sensitivity- for autogenous if an option.
- Results influence decision making- depends on point in the season, risks involved etc.
 - Medicate or cull.

| Num | Neg | Inc | Sus | Pos |
|-----|-----|-----|-----|-----|
| 20 | 17 | N/A | 3 | |
| 24 | 24 | N/A | | |
| 19 | 17 | N/A | | 2 |
| 20 | 20 | N/A | | |
| 21 | 21 | N/A | | |

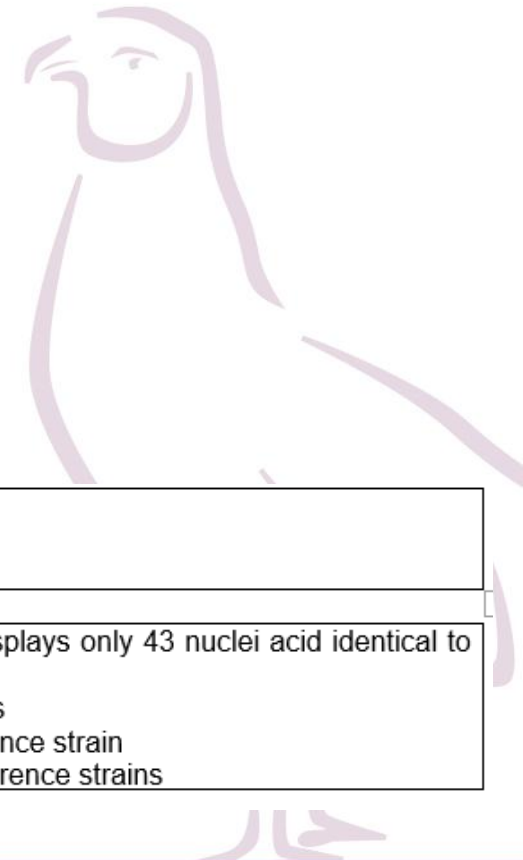


Breeders Viral Challenges

- Infectious Bronchitis – Corona Nephrosis
 - Often novel (~80% homologous). CT value often very low
 - Limited to breeders, occasionally on shoots (bulgy eyes when x with ORT).
 - Mortality- coronanephrosis. Rarely egg drop except QX. Live vaccine?

- TRT- Bulgy eyes when x ORT as well.

| | |
|----------------|---|
| CT Value | Sample 1 (swab) Ct - 17.98 Sample 2 (Vacc) Ct- 23.62 Sample 3 (Un Vacc) Ct - 20.78 |
| Interpretation | Sample 2 – Novel Field Virus – displays only 43 nucleic acid identical to 793B-like strains Sample 1 and 3 – Novel Field Virus 83% Homologous to Italy-07 reference strain 81% Homologous to 793B-like reference strains |



Breeders

Bacterial and parasites

- Rarely bacterial in breeders.
- Parasites-lice, northern fowl mite- predispose pecking damage. Saddles a risk.
 - Microscopy, scrapes.
- Motile protozoal parasites- hexamita possible (partridge)
- ORT- often found. Assumed combination with viral challenge. PCR test now to anicon. Vaccine?



Rearing pheasants overview

- 7-8 week rearing period: 3-4 week inside, gas heaters. Out to night shelter slowly. 4 – 8 weeks access to grass.
- Release pens in woods fenced in. Held for about a week and then pop holes open, as soon as pop holes open, classed as wild birds



Pheasants

0-7days

- Bacterial- YSI, septicaemia, salmonella
- Culture and sensitivity- often high levels of resistance.
- Rotavirus
 - 5-10d- blunted villi- emaciation, mortality, very uneven.
 - Test- electron microscopy, PAGE (accuracy?). Ongoing unevenness. Hatcher related. Fog, secondary issues. Extent of mortality related to brood.
- Often hatchery cleanliness related.
- Environmental parameters- often too warm (bacterial gut leakage), poor ventilation, dirty drinker systems. Piling.



Pheasants

7 days - 3 weeks

- Often management related issues.
- Bacterial risk ongoing
- Motile protozoal parasites possible, usually older batches contamination.
- Others- MG possibility, aspergillosis.



3 week- 8 weeks Coccidiosis

- Coccidiosis- 3 weeks onwards. Unevenness. Mortality?
 - Macroscopic evaluation- caecal thickening, occasional cores with high levels.
 - Microscopy- grade mild, moderate, high. Oocyst counts?
 - How significant?
 - Caution with concurrent motile protozoals.

Rarely issue 7 weeks+.



3 week- 8 weeks

Motile protozoal parasites

- 'Hexamita', trichomoniasis
- Will come back to



8 weeks+ - Release pen

- Stress- Move to release pen + predators + exposure.
- Viral similar to breeders
- Motile protozoal parasites (hexamita) big risk

- Parasites- gape worms, ascarids, blackhead.
- Normally 12 weeks+ then major issues with parasites decreased.
- AI...
- 'Others'



8 Weeks + AI

- High mortality and morbidity in pheasants- neurological + death
- Time element from first observation
- Classed as wild birds once pop holes open
- Mitigation- Cull affected areas hard, switch to hopper fed, spread far and wide. Etc
- Partridges non indicator- viral dose much higher.



Partridge

- 0-7days- similar to pheasants. A little more sensitive to environmental parameters. More prone to smothering.
- Coccidiosis (3wk+)- much more significant.
 - Microscopy will detect oocysts a day or 2 before. Caecal presence more significance. Early duodenal presence less associated with morbidity
 - Hunched birds then rapid progression with ataxia and mortality within a day.
 - Prominent caecal cores macroscopically.



3wk- 16wk Partridge

- Motile protozoal parasites- hexamita
 - Not quite as significant mortality as pheasants.
- Necrotic enteritis- macroscopic identification of lesions in caeca and hind gut.
 - Often large birds dead with few clinical signs- perforation.
- Cocci less significant 10wk+.



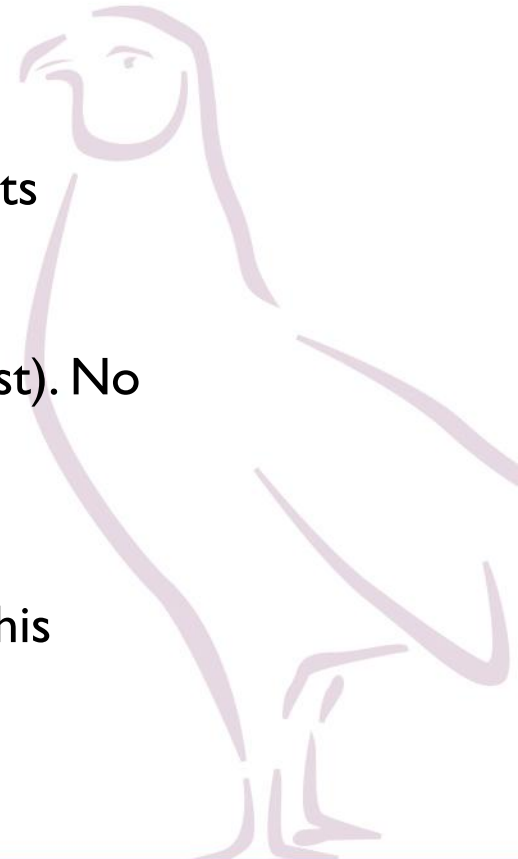
Motile protozoal parasites

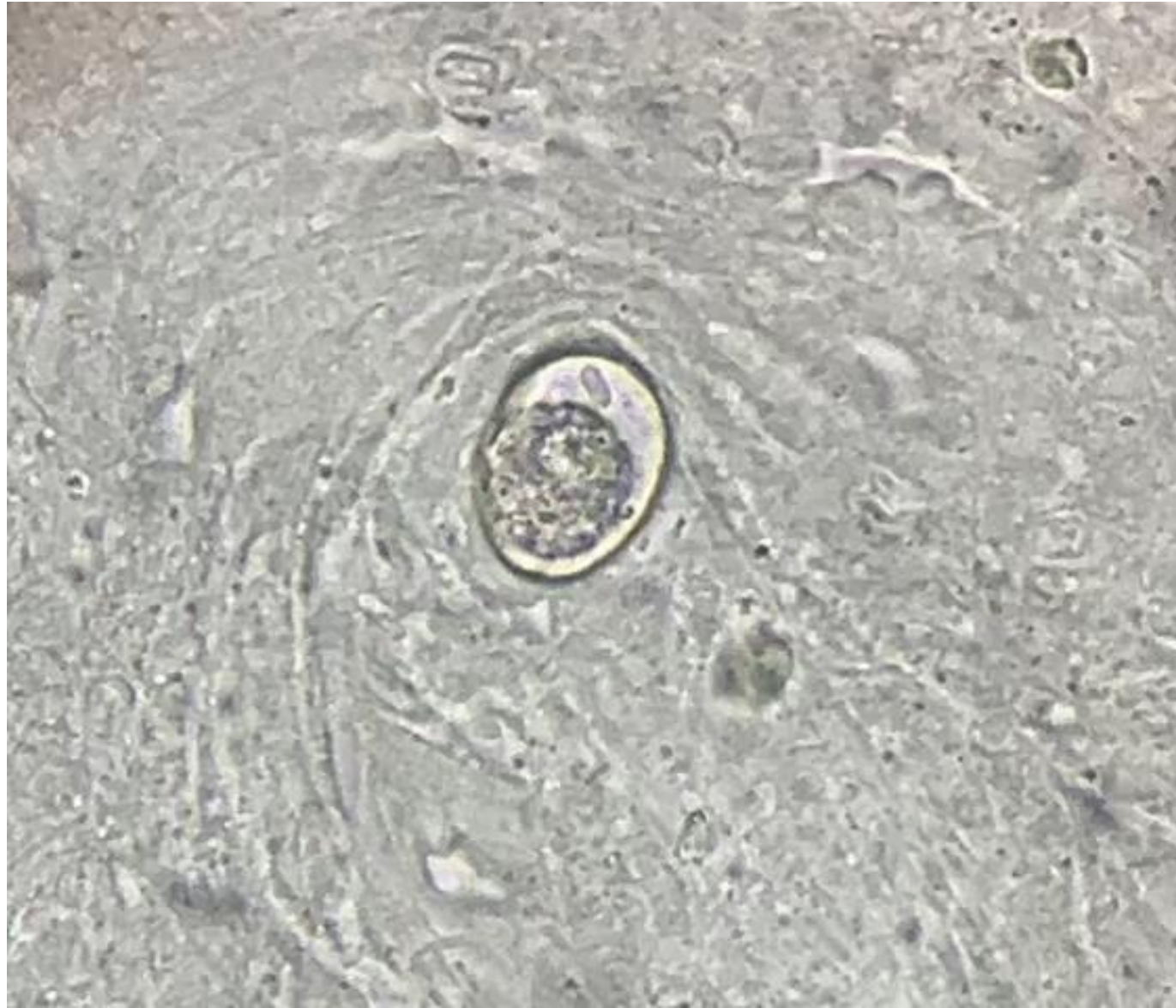
- 2 morphologies, typically referred to as:
- Hexamita/spironucleosis
 - Severe emaciation, rapid mortality, stress related.
 - Diagnosis- microscopy- hindgut just before caeca optimal location. Leaf shaped, highly motile.
 - Macroscopically- emaciation of breast muscle, severely dehydrated carcass, enteritis, dysbiosis of caeca.
- Trichomoniasis
 - Microscopy Slower moving larger, circular shaped motile protozoa in the caeca
 - Less pathogenic. Sometimes found incidentally?



Hexamita or something else

- More like a syndrome than individual parasite.
- Large dysbiosis allowing proliferation of a motile protozoal parasite which then seems to amplify further
- Surrey University, Ben South Mark Elliot- Gut microbiome research in rearing pheasants
- Evidence to suggest presence of Chilomastix species (know to form environmental cyst). No clinical relevance in chickens, perhaps driver in pheasants. More research needed.
- Overwintering? Cocci involvement? Motile protozoa more than once within oocysts this season
- Searching for more funding for a PHD student





Sustaining the shooting industry

- Assurance progress? Aim to sustain, trusted game.
- Licensing? Grouse...
- Urgent need for progression
- Market for game meat (lead shot vs steel shot)



Questions ?

