

WILDLIFE INCIDENT UNIT

WILDLIFE INCIDENT REVISED REPORT

17/24



Original thinking... applied

INCIDENT NUMBER 17/24
PART OF STUDY WIIS23
REGIONAL NUMBER W/24/01
OTHER REFERENCES 28-M0107-02-24
SENDER APHA Carmarthen VIC
LOCATION Magor
Monmouthshire
GRID REFERENCE ST4387
INCIDENT DATE 17 February 2024
SUSPECTED CAUSE OF INCIDENT disease
DATE OF REPORT 17 July 2024

REPORTING OFFICER [REDACTED]

SIGNED [REDACTED]

NUMBERS AND SPECIES INVOLVED

1 fox

COPIED TO

[REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED]

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Samples received			Date received	Sample identifier
101269	fox	body fluids	26/2/24	APHA re: 28-M0107-02-24
101269	fox		26/2/24	APHA re: 28-M0107-02-24
101366	fox	tissues	25/4/24	APHA ref 28-M0107-02-24
101366	fox		25/4/24	APHA ref 28-M0107-02-24

Summary of field data

A fox was found dead in a garden. The fox had been seen alive but apparently unwell a few days before its' death. This is a semi-rural area on the edge of an urban area, with rural area on one side consisting of farmland and some small pockets of woodland.

Summary of post mortem report

One male fox, 63cm in length in poor body condition with moderate to severe autolysis was submitted for postmortem. All subcutaneous tissues were yellow. There were wounds to right hind leg: a full thickness 2cm wound ventral to calcanean tendon spanning from one side of limb to the other with some associated haemorrhage, and a second, approximately 2cm, oval wound on ventral surface of limb distal to hock with some associated haemorrhage. In the mouth, calculus and gum recession with root exposure affected upper molars and premolars on both sides of mouth, and longitudinal fractures of both upper canines with sections missing. The oesophagus contained small amount of yellow, mucoid content, the stomach was empty other than small amount of thick grey liquid and the small intestine contained dark brown liquid proximally, black liquid in mid small intestine and dark green content with fibres distally. One approximately 5cm section of distal small intestine moderately distended with oval ball of fibres. The caecum contained small (approximately 1cm diameter) amount of brown solid soft material and the rectum contained thick dark grey liquid content. In the respiratory system there was yellow mucus and thin white worms (approximately 3cm in length) in trachea, which was reddened. There was a very small amount of lung reddening affecting ventral tips of all lung lobes. In the urinary system the left kidney - pelvis dilated and dark red mottling of cortex and medulla; the right kidney - petechiae on serosal surface. The bladder was full of yellow urine and contained two clumps of thick yellow material approximately 0.5cm in diameter. The endocrine system was not examined. All other organ systems were unremarkable. The fox was in poor condition and had not eaten recently. The fox was jaundiced with yellow conjunctiva and yellow subcutaneous tissues throughout the carcass. Both kidneys were abnormal, and the faeces was liquid. The fox also had some minor wounds on both distal hindlimbs with some associated haemorrhage. These may have occurred close to the time of death and are unlikely to have contributed to the death of the fox. *Streptococcus canis* was isolated from liver and kidney in mixed flora. *S. canis* occurs as a commensal of the GI tract (especially the mouth) of foxes as well as in the pharynx, genital mucosa, and skin of a wide range of animals. Histopathology identified a background of chronic interstitial nephritis, with a more acute pyelonephritis accompanied by abundant bacteria, suspected to represent an ascending bacterial infection; a possible source for septicaemia/bacteraemia. *S. canis* has been associated with urinary tract infections and is likely to be responsible for the changes seen. Histopathology also identified evidence of a mild chronic hepatitis. However, autolysis restricted interpretation. The changes observed in the liver and kidney are similar to some of those seen in a case of fatal leptospirosis in a red fox. However, no pathogenic *Leptospira* DNA was detected making this unlikely. Within the lung there was a mild bronchiolitis/bronchitis likely related to the trachea worms, *Eucolus aerophile* (syn. *Capillaria aerophile*), found. *E. aerophile* is a common parasite of the respiratory tract of the fox and light infections are usually inapparent. Severe infections can result in respiratory signs with young animals being most susceptible. *Uncinaria stenocephala* (hookworm) eggs were also found in the faeces. This is an intestinal parasite commonly found in foxes. The ticks found on the fox were identified as *Ixodes hexagonus*.

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Analysis : metaldehyde & carb (LC) analysis suite

101269	faeces	no metaldehyde & carb (LC) detected	detection limit	0.04	mg/kg
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Original thinking... applied

Analysis : organophosphate analysis suite

101269	faeces	no organophosphate detected	detection limit	0.2	mg/kg
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Analysis : rodenticide & chloralose analysis suite

101269	faeces	difenacoum	confirmed	0.0012	mg/kg
101269	faeces	brodifacoum	confirmed	0.005	mg/kg
101269	faeces	bromadiolone	confirmed	0.00059	mg/kg
101366	liver	difethialone	confirmed	0.0059	mg/kg
101366	liver	difenacoum	confirmed	0.059	mg/kg
101366	liver	brodifacoum	confirmed	0.41	mg/kg
101366	liver	bromadiolone	confirmed	0.057	mg/kg
101366	liver	coumatetralyl	confirmed	0.0075	mg/kg

Conclusion

It was suspected that this fox had been poisoned. Laboratory analysis for a range of likely pesticides has been undertaken on the submitted sample of fox faeces. These tests have detected and confirmed a residue of difenacoum, bromadiolone and brodifacoum in the sample of faeces tested. This confirms that the fox has been exposed to more than one anticoagulant rodenticide. Additional postmortem histopathological findings indicate presence of worms and potential bacterial infections that led to the poor condition of this fox. This bacterial infection may have contributed to the death of this fox, which has been attributed to disease. The APHA sent tissues for this fox several weeks after the faeces sample. Given these findings - residues of rodenticides detected in the faeces sample - the liver of this fox will be screened for rodenticides only; these will be reported once these tests have been completed.

Tests on the tissue samples submitted later have now been completed. Laboratory analysis for rodenticides have detected and confirmed a residue of brodifacoum, and smaller residues of difenacoum, bromadiolone, coumatetralyl and difethialone in the liver of this fox. The brodifacoum residue is significant, at a level at which haemorrhagic lesions would normally be observed in the post-mortem. These were not noted in the post-mortem for this fox, but the carcass had undergone moderate to severe autolysis so these lesions may have been masked by the decomposition process. The difenacoum, bromadiolone, coumatetralyl and difethialone were measured at levels consistent with exposure only. These results appear to support the previous analysis of the faeces, in which brodifacoum was measured at a higher level than difenacoum and bromadiolone, but with additional smaller residues of coumatetralyl and difethialone confirmed in the liver. This fox was in a poor condition and may have struggled to feed itself, thus leading to an increased likelihood of exposure to rodenticides, through eating animals affected by rodenticide treatments. This fox has been exposed to a wide range of rodenticides especially brodifacoum. Hence this incident has also been attributed to an unspecified use of brodifacoum, though the primary cause of death is likely to be due to disease. The source of brodifacoum is uncertain at present, but it is likely to be from a rodent control treatment in the area.

This replaces the earlier report issued on 16th May 2024.