School of Veterinary Science

Pathology Report

Submitter Ref.: H305	Date Sent: 08/08/2022	Accession No.: **61016**

To: [redacted]
Department of Conservation
Takaka

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Report Sent: 13/09/2022
Copy To:

Species: Cetacean		Breed: Hector's Dolphin	
Age: Adult		Sex: Female	
Owner: Department of Conservation			Type: Post Mortem
ID: H305			Prev. Accn.:
Submitted:	At Risk:	Affected:	Dead:

History

Found at Lagoon Creek, Farewell Spit.

Gross Findings

This dolphin was chilled and freighted by air.
The body was in a good state of post mortem preservation (Code 2) and in good body condition. The teeth were moderately to markedly worn.
Weight = 50.0 kg; Standard length = 1.47m. There was good blubber coverage (20mm dorsal, 18mm lateral, 20mm ventral).
The left eye was missing, presumed scavenged, with scavenger damage around the orbit. There were two linear indentations on the white skin ventral and slightly caudal to the left orbit. The first was 35mm long, oriented in a transverse plane at the level of the caudal orbit, extending from the base of the periorbital scavenged skin. The second was parallel to and 20mm caudal to the first indentation, approximately 50mm long, extending from the lateral to the ventral throat region. There was also an 8mm shallow partially healed (non recent) laceration to the lower left lip, approximately 20mm from the tip of the mandibles.
The mammary gland was well developed and exuded milk when incised.
There were two irregular rounded ulcers, approximately 5mm diameter, on the tongue, and a similar, smaller ulcer (approx. 2mm) on the hard palate. The oesophagus was coated with a small amount of sand. The stomach contained a small amount of prey hard parts, including small cephalopod beaks, fish vertebrae, small fish bones, lenses and otoliths. The glandular mucosa was extensively thickened, with multiple chronic craterous ulcers surrounded by a rim of proliferative tissue. The intestinal lymphatics did not contain chyle.
The lungs were hyperinflated, and mottled red/pink on cut surface. There were myriad small (1-4mm) gritty white to caseous yellow foci throughout the lung parenchyma (lungworm granulomas). The airways contained a small amount of watery pink-tinged fluid. There were no bullae.
The uterus was markedly distended with a diffusely dark red, thickened mucosa. The left ovary had a large corpus luteum and multiple follicles. The right ovary was smooth and mottled dark red.
The bladder was empty.

Histopathology

Reproductive tract: severe acute neutrophilic and necrotising metritis with oophoritis and mesosalpingitis
Lung: mild interstitial pneumonia with alveolar oedema; multifocal chronic parasitic granulomas
Adrenal: corticomedullary haemorrhage
Liver: mild diffuse subacute vacuolar hepatopathy (likely lipid)
Kidney: mild multifocal glomerular sclerosis
Tongue: mild multifocal neutrophilic and necrotising/haemorrhagic myositis
Skeletal muscle: mild multifocal chronic-active myositis with rare sarcocysts
Peritoneal cavity: multifocal granulomatous peritonitis with intralesional fluke eggs

Microbiology

Brucella PCR (uterus and spleen) was negative.

Diagnosis

1. Severe reproductive tract infection (metritis, oophoritis, salpingitis) with possible septicaemia
2. Possible bycatch

Comments

This female had recently calved. She had a very severe metritis (uterine infection) which also involves the ovary and surrounding tissue. There are several bacterial infections that can cause this type of inflammation, including brucellosis, however molecular tests (PCR) for Brucella were negative.

The dolphin also had two linear impressions on the skin of the throat. Neither mark is visible on photos of the dolphin that were taken at the site it was found, so it is possible that the marks were made during transport or packaging, but the images from the beach were not really clear enough to be sure about this. Alternatively, the marks could represent interaction with fishing gear, although they are not the 'typical' encircling lesions that we tend to see.

Overall, this is a complicated case and it is impossible to be 100% certain of the cause of death. Based on the post mortem findings the two possibilities are: (1) septicaemia (blood poisoning) from the uterine infection or (2) drowning following entanglement in fishing gear (bycatch). The degree of confidence is higher for the septicaemia, as the histology shows damage that was sufficient to at least cause severe illness, and possibly death.

Conversely, the two marks on the throat area, while not 'typical' of entanglement, mean that we also have to consider bycatch as a possible cause of death. Making a definitive diagnosis of bycatch is difficult, because there are no specific lesions of drowning. A recent paper by IJsseldijk et al. (Veterinary Pathology, 2021) on dolphins that were known to have drowned in nets found that encircling net marks or lacerations on the head, tail stock and/or leading edges of the flukes and flippers were the most common post mortem lesions. The presence of undigested prey in the stomach (not seen in this dolphin) was the second most useful indicator of bycatch deaths.

In many beachcast dolphins bycatch can be ruled out because there is clearly another cause of death and there are no typical entanglement marks on the skin. The complicating factor in this current case is that while there is definitely a severe disease present, there are also marks that could have been caused by fishing gear. For this reason we can't rule out bycatch, but have classified this case as 'possible bycatch' to reflect the low degree of certainty.

Note: molecular testing for morbillivirus is pending. Morbillivirus testing is being conducted on a number of recent beachcast Hectors to investigate the possibility that this immunosuppressive virus is playing a role in these deaths.

Date: 09/08/2022	Pathologists: [redacted]
Students:	