School of Veterinary Science

Pathology Report

Submitter Ref.: H299	Date Sent: 25/02/2022	Accession No.: **60420**

To: [redacted]
Department of Conservation
West Coast South Island
Email: [redacted]

Report Sent: 02/03/2022
Copy To: [redacted]

Species: Cetacean		Breed: Hector's Dolphin	
Age: Adult		Sex: Female	
Owner: Department of Conservation			Type: Post Mortem
ID: H299			Prev. Accn.:
Submitted:	At Risk:	Affected:	Dead:

History

History supplied:
Dolphin was reported dead on beach by [redacted] & recovered by [redacted]. Hind third of the dolphin was severed & missing from about the genitals back. Injuries were confirmed by [redacted] as shark bites, probably white shark. Photos taken for further investigation. Difficult to confirm if predation was cause of death or if bites were made post-mortem. But no other signs of cause of death, and no net marks apparent on fins or snout. Best guess is predation by white shark. Gulls had been observed by [redacted] scavenging on belly, body was otherwise very fresh. No evidence of fish/shark/seabird activity was seen offshore when I was there. Iwi agreement was received by email on 18-2-22: Massey may do necropsy and dispose of remains, skin may go to Auckland Univ.

Gross Findings

This dolphin arrived frozen and was thawed for necropsy. The body was in a good state of post mortem preservation, and a moderate body condition, with a slightly pronounced neck, some prominence of the vertebral processes, and reduced blubber depth (dorsal = 10mm, lateral = 9mm, ventral = 9mm). Standard length could not be assessed due to the absence of the distal portion of the body.
There were numerous deep ragged lacerations and puncture wounds over the body, particularly over the caudal and dorsal aspects. These wounds variably extended through the full skin/blubber thickness or more deeply into the underlying muscle and in some cases into the abdominal cavity. The intestines had herniated through one of these deeper wounds. Most wounds contained coarse sand embedded in the margins and the underlying tissues. The majority had no grossly identifiable haemorrhage or bruising associated with either the wound margins or with the surrounding soft tissue. Several irregular areas of dark red gelatinous discolouration, possibly pseudobruising (due to freeze-thaw artefact) were present in the blubber and superficial muscle layers distant (cranial) to the wounds. Several smaller, caudal wounds had a minimal amount of dark red discolouration within adjacent blubber, that did not extend to underlying muscle. The caudal body ("amputation") margin was irregular in outline, with a shallow scalloped appearance in some places, and a ragged 'torn' appearance in others.
There were no impression marks, encircling lesions or lacerations to the snout or head: skin preservation was excellent at this end of the animal so a clear assessment was possible. There were 5 closely-spaced lacerations to the leading edge of the dorsal fin, spaced over 2cm. Four parallel full skin/blubber thickness lacerations 4-5cm long and 2-3 cm apart were present on the flank, and similar sets of slightly curved parallel lacerations were present nearby, interspersed with myriad oval puncture wounds.
Large numbers of small (2-3mm long) maggots were present in the oral cavity. The teeth were in good condition.
The mammary gland was well developed and distinct, but did not exude milk on incision.
The lungs were well aerated with scant fluid in the airways. No bullae were apparent and there was no airway foam. In the dorsal aspect of the left lung lobe were 3 poorly circumscribed firm raised dark red plaques. On cut surface these were adherent to discrete masses of gritty pale yellow necrotic material. Adjacent to these and deeper into the lung parenvchyma were several irregularly rounded areas of green/grey discoloured parenchyma, poorly demarcated from surrounding lung tissue.
The stomach was empty other than moderate numbers of nematodes. The glandular mucosa was multifocally proliferative, with healed ulcers central to rims of proliferative tissue.
The uterus was mature, with faint linear striations.

Histopathology

Lung: Severe embolic/interstitial pneumonia, chronic-active
Kidney: Mild focal acute tubular necrosis and interstitial nephritis
Uterus: Mild chronic endometritis

Diagnosis

Shark predation with underlying pneumonia

Comments

The wounds on this dolphin were consistent with a shark attack. Determining whether wounds have occurred before death (predation) or after death (scavenging) is notoriously difficult, particularly in bodies that have been in water, and even more-so when the body has been frozen. Sometimes this can be clear-cut, if there is obvious haemorrhage or bruising associated with the wounds, but unfortunately this was not the case in this particular dolphin.
Histology showed severe, chronic (long-standing) pneumonia affecting the majority of the lung tissue. This severe lung disease would have impaired the dolphin's fitness and made it an easier target for a shark. While the post mortem could not confirm that the dolphin was alive at the time the shark bites were inflicted, we would expect the dolphin to have been thinner if it had died of pneumonia and then been scavenged. On this basis, the most likely diagnosis is shark predation, with underlying severe lung disease.

Date: 02/03/2022	Pathologists: [redacted]
Students:	