

Pathology Report

Submitter Ref.: H320	Date Sent: 08/12/2023	Accession No.: 62907
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To: [REDACTED]
Department of Conservation
Christchurch

Report Sent:
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Species: Cetacean	Breed: Hector's Dolphin		
Age: Adult	Sex: Male		
Owner:			Type: Post Mortem
ID: H320			Prev. Accn.:
Submitted:	At Risk:	Affected:	Dead:

History

Found near Rakaia Huts, Southbridge on 22/10/23. Frozen pending shipping to Massey.

Gross Findings

This dolphin was received via airfreight on 8 December and thawed in the chiller pending necropsy.

Standard length = 1265mm. This dolphin was not weighed as a significant proportion of the body was missing (predated/scavenged). The state of preservation was poor, due to a combination of predation/scavenging and autolysis (code 3-4).

There were multiple shark bites over both sides of the body, with extensive loss of underlying tissue, including body organs. The wound edges were mostly scalloped, measuring 10-11cm across the maximum dimension of each scallop. The wound margins were washed out with no evidence of haemorrhage or bruising. Numerous pebbles were present in the body cavities.

The body condition was poor, with prominent dorsal and lateral vertebral spinous processes, and a flat to concave profile of the caudal lumbar muscles; portions of the more cranial epaxial muscles were missing.

There were several areas of gelatinous dark discolouration in the muscle of the head; since this animal had been frozen it is not possible to determine whether this represents true (ante-mortem) bruising or freeze-thaw damage. The penis was present, as was most of one testis (71g with epididymis; but note that some testicular tissue was missing).

Within the thoracic cavity, only the cranial portion of one lung and most of the heart remained. The lung was well inflated, and moderately autolysed.

Most of the abdominal organs had been removed, leaving the stomach (with a bite removed), a portion of the gastric lymph node and one testis. The stomach was empty other than a few ascarids. The lymph node had multiple protruberant, soft, dark brown cystic structures projecting from the surface. On cut surface these oozed brown fluid (possible parasite reactions).

On removal of the head, the tip of the cerebellar vermis was visible in the spinal canal, distal to the foramen magnum (cerebellar herniation).

Provisional Diagnosis

1. Shark predation or scavenging
2. Poor body condition
3. Cerebellar herniation (brain swelling or freeze/thaw artefact)

Diagnosis

1. Severe pneumonia, likely bacterial
2. Possible cerebellar herniation

3. Shark-bite lesions, likely scavenging

Comments

While the shark bites on this dolphin were definitely severe enough to be fatal, it is impossible to tell whether these occurred before (i.e. predation) or after death (i.e. scavenging). The standard way to diagnose pre-mortem injuries is by looking for haemorrhage at the wound margins and bruising in the adjacent soft tissues. Unfortunately, immersion in water causes 'washing out' of wound margins, meaning that bodies that have been in water will often lose the tell-tale haemorrhage associated with fatal wounds. Bruising of the soft tissues is more likely to persist in submerged bodies, but isn't always present in pre-mortem injuries, so while this dolphin did not have bruising, its absence doesn't conclusively prove that this was scavenging.

On gross necropsy, the poor body condition of this dolphin supported the possibility that it may have died due to a chronic illness and then been scavenged by a shark. Samples of tissue remnants from the body were examined histologically to further investigate this possibility. Autolysis (post mortem degeneration of tissues) made it impossible to accurately interpret the brain tissue, but sections of lung showed a severe pneumonia. Special stains demonstrated large numbers of filamentous bacteria within macrophages (inflammatory cells), with staining characteristics typical of a group of bacteria that includes *Nocardia*, *Actinomyces* and (less likely) *Mycobacterium*.

Herniation of cerebellum into the spinal canal could be due to brain swelling (e.g. from trauma or infection) or it could be a freeze/thaw artefact. I have not seen this change as a result of freezing in other dolphin carcasses, hence it seems more likely that this occurred while the dolphin was alive.

On balance, the most likely order of events is that this dolphin was ill due to a bacterial infection of the lungs and possibly the brain. This could either have been fatal (with subsequent shark scavenging of the body) or it could have weakened the dolphin and made it an easier target for predation. Based on the severity of the lesions in the lungs, my opinion is that the disease process was severe enough to be fatal.

Date: 12/12/2023	Pathologists: 
Students:	