

# Pathology Report

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To: [REDACTED]  
Christchurch

Report Sent: 01/03/2024

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Species: Cetacean	Breed: Hector's Dolphin		
Age: Adult	Sex: Male		
Owner:			Type: Post Mortem
ID: H327			Prev. Accn.:
Submitted:	At Risk:	Affected:	Dead:

## History

Found on island in early February. Recovered to Christchurch and frozen pending shipping for necropsy.

## Gross Findings

This dolphin was received frozen via air freight and was thawed before necropsy.

The body was in a moderate state of post mortem preservation (code 3), with some skin slippage, early discolouration of the blubber, and scavenging of the soft tissue of the oral cavity.

Body condition was assessed as poor, with a prominent neck, palpable lateral vertebral processes and a reduced blubber depth (dorsal = 8mm; lateral = 8mm; ventral = 6mm). The dolphin weighed 29.8kg and measured 1.265m in length.

Externally, there was moderate post mortem skin damage on the right side of the body, most likely due to being beachcast lying on the right side in shallow surf or on a hard, pebbly substrate. There were 4 linear transverse skin 'cracks' on the right side at the level of the anus; these appeared to be post mortem damage. There were no flank or head lacerations typical of trawler bycatch, no nicks to fins or flippers, and no net impressions. Flensing of the body showed no subcutaneous bruising. The teeth were in good condition (no excessive wear or loss).

Blood tinged fluid was present within the thoracic and abdominal cavities and in airways, consistent with freezing and thawing of the body. The right lung was pale pink and well aerated, while the left was dark red, firm and partially collapsed. Both lungs had rib impressions. The tracheal and lower airway cartilage were calcified. There was no foam in the airways. The endothelial surface of the aortic bulge and proximal aorta contained multiple poorly demarcated pale thickened firm areas (likely sclerosis or calcification), and a focal area of papillary muscle felt firmer than normal.

The stomach contained only nematodes, a few copepods and muddy brown fluid. There was no chyle in the intestinal lymphatics. The peri-renal tissue and subcapsular space did not contain bubbles. The bladder was partially full, containing thick yellow/cream turbid fluid.

The brain was extremely friable. Sectioning of the brain did not reveal any gross lesions.

## Histopathology

Histology summary:

All tissues were moderately to markedly affected by autolytic changes, making it difficult to interpret histological changes. There was no indication of a clinically significant inflammatory or infectious process, however there were several chronic (long-term) degenerative changes. The most severe changes were in the heart, where there was marked fibrosis (scarring) of the heart wall, with disorganisation of the myocytes (individual heart muscle cells). Numerous cardiac muscle cells contained large accumulations of inclusion bodies.

Sections of aorta show multifocal arteriosclerosis (thickening of the aortic wall).

Within the kidney multiple tubules contained mineralised material. It was not possible to assess the kidneys in detail due to autolytic changes.

## Diagnosis

1. Severe chronic myocardial fibrosis and myocyte disarray with intracytoplasmic basophilic inclusion bodies
2. Marked multifocal aortic arteriosclerosis
3. Kidney: tubular mineralisation

## Comments

### Preliminary findings:

This was a very thin dolphin, with no obvious cause of illness on gross necropsy. A full set of tissues will be processed for microscope examination (histology) and a further report will follow. The degree of post mortem degeneration of the body organs may mean, however, that we aren't able to make a definitive diagnosis as to cause of death. Note that in this case there is nothing to suggest that this dolphin was bycaught.

### Final comment (incorporating histology):

This dolphin had severe degenerative changes in the heart which are likely to have compromised its fitness. We have observed inclusion bodies in cardiac muscle cells of a number of Hector's dolphins, and our preliminary studies suggest that they are more common in older dolphins, and that they are more frequent in Hector's dolphins than in other cetaceans. In most Hector's the inclusions aren't associated with any other changes, but some dolphins that have large numbers of inclusions also have scarring (fibrosis) of the heart muscle. This current dolphin is one of the most severely affected we have seen, and the degree of scarring is likely to have affected its heart function, leading to poor body condition and ultimately death. The changes in the aorta and the kidneys are also degenerative.

The most appropriate cause of death category for this dolphin is chronic degenerative (non-infectious) disease.

Date: 01/03/2024	Pathologists: <span style="background-color: black; color: black;">[REDACTED]</span>
Students:	