

**Institute of Veterinary, Animal and Biomedical Sciences
Massey University**

PATHOLOGY REPORT

Status: Final
Date: 16/09/2013
Type: Mortality

Submitter	Submission Details
Anja Meduna Department of Conservation Dargaville	Lab. Case/Spec ID: 50066 Submitter's Ref: H243 Date Submitted: 14/09/2013 Date Received: 14/09/2013 Previous Case ID: WMD Case/Spec ID: 7257/1
Animal Details	Epidemiology
Animal ID: H243 Animal Name: W13-17Ch Species: <i>Cephalorhynchus hectori maui</i> Common Name: Maui's Dolphin Sex Class: Female Age Class: Adult Date Died:	Number Dead: 1 Number at Risk: Number Sick: Number Submitted: 1

Growth and Development

Parameter	Result Description	Value	Date Measured	Age Group
Depth of Tail Notch		.03 m	16/09/2013	Adult
Dorsal Blubber Depth		15 mm	16/09/2013	Adult
Eye to Blowhole Length		.165 m	16/09/2013	Adult
Eye to Corner of Mouth Length		.05 m	16/09/2013	Adult
Girth at Anus		.503 m	16/09/2013	Adult
Girth at Eye		.64 m	16/09/2013	Adult
Girth at Flippers		.775 m	16/09/2013	Adult
Girth at Navel		.83 m	16/09/2013	Adult
Height of Dorsal Fin		.12 m	16/09/2013	Adult
Lateral Blubber Depth		12 mm	16/09/2013	Adult
Length of Base of Dorsal Fin		.235 m	16/09/2013	Adult
Length of Flipper		.231 m	16/09/2013	Adult
Length of Flukes		.135 m	16/09/2013	Adult
Snout to Anus Length		1.065 m	16/09/2013	Adult
Snout to Corner of Mouth Length		.18 m	16/09/2013	Adult
Snout to Genital Slit Length		1.01 m	16/09/2013	Adult

Snout to Origin of Dorsal Fin Length	.735 m	16/09/2013	Adult
Snout to Origin of Flipper Length	.355 m	16/09/2013	Adult
Total Length	1.51 m	16/09/2013	Adult
Ventral Blubber Depth	14 mm	16/09/2013	Adult
Width of Flipper	.095 m	16/09/2013	Adult
Width of Flukes	.52 m	16/09/2013	Adult
Weight	42 kg	16/09/2013	Adult

DIAGNOSIS

Emaciation

Severe parasitism (liver and intestinal tract)

COMMENTS

This dolphin was in very poor condition, having lost a large proportion of her muscle mass. Her worn teeth along with the degree of calcification of her airways suggests that she was fairly old. The fibrosis of her liver and pancreas are likely to be due to severe parasitism, and would have contributed to her poor body condition. Her stomach was empty at the time of her death.

Although it is impossible to definitively exclude entanglement, there was no convincing evidence that this dolphin had been caught in a net. Post mortem findings in marine mammals that have been entangled include encircling linear impressions or lacerations (net marks), usually around the snout or leading edges of flippers and fins; fluid or froth in the lungs; large air bubbles in the lung tissue (bullae); recently ingested prey in the stomach; and a lack of other cause of illness or death. The marks on the throat of this dolphin were not typical of entanglement, and could possibly have been caused by a surface she has lain against during her stranding. In addition, her poor body condition and empty stomach indicate that she hasn't been foraging well for some time.

Further testing will be conducted to investigate the cause of her poor body condition, but parasitism seems likely to have played a role.

ADDENDUM (Post histological examination)

Histology confirms that this was an older female dolphin with severe parasitism of the liver and moderate parasitism of the gastrointestinal tract. Toxoplasmosis has been ruled out.

ANIMAL HISTORY

Found at high tide mark on Ripiro Beach, Dargaville area. Recovered, chilled and air-freighted to Massey for necropsy.

GROSS PATHOLOGY

The body was in a moderately fresh state of preservation, with minimal skin sloughing and intact internal organs. There was superficial scavenging affecting the skin and blubber at the following sites: peri-anal area, peri-genital area, peri-orbital areas, blowhole. The left eye was proptosed (lying outside the socket) and had been damaged by scavengers (likely birds). On the throat there were three linear indentations in the skin. The most cranial mark was the shortest, and was placed slightly left of the midline. The two marks behind this were longer, with the most caudal mark extending almost to the edge of the white body markings on both the left and right. This most caudal mark curved at either side, with the convex part of the curve pointing forward. A short (approx. 1.5cm) laceration was present on the left upper lip. There was an elongated area of abrasions along the left mandible. There was no subcutaneous bruising.

Body condition was extremely poor, with a pronounced 'neck' and marked wasting of the thoracic and lumbar spinal muscles. When flensed, the ribs were extremely prominent due to atrophy of the thoracic musculature. The teeth were extremely worn: rostral teeth were worn to gum level and many teeth were broken. There was marked gum recession, and most teeth were mobile within their sockets. There were multiple ulcers over the dorsal (upper) surface of the tongue.

There was superficial sloughing of the oesophageal mucosa. The stomach contained a small amount of sand and a few nematodes, but no prey items. There was a 10 x 20 mm ulcer in the glandular portion of the stomach with raised smooth margins (likely parasitic ulceration). A black/red soft mass measuring approximately 2cm in length and 1 cm in diameter projected from the mesenteric lymph node. The liver was extremely firm and the bile ducts were thickened. The pancreas was nodular and also fibrotic. The left kidney had a focal cluster of renules which contained cystic cavities measuring 2-3 mm in diameter. The mucosal surface of the uterus was dark greenish. The serosal surface had multiple shallow linear indentations, and both ovaries had numerous follicles. The mammary gland was small and did not contain

milk.

The sternal lymph node contained a 12 x 12 mm area of caseous necrosis (abscessation). The bronchioles were calcified (associated with aging) and moderate numbers of lungworm were present. There was no froth or foam in the airways, and no bullae or emphysema.

The brain was grossly normal.

HISTOPATHOLOGY

Histological diagnoses:

1. Liver: Severe diffuse periportal fibrosis with bile duct proliferation and intralesional trematode eggs
2. Kidney: Moderate chronic glomerulonephritis with mineralised protein casts in tubules
3. Gastrointestinal tract: Moderate to severe gastrointestinal parasitism
4. Nodule in mesenteric lymph node: Parasitic granuloma (trematode eggs)
5. Lung: Diffuse severe calcification of alveolar cartilage
Mild multifocal intra-alveolar proteinaceous oedema
6. Spleen: Focal fibrosis and haemosiderosis
Follicular hyalinosis
7. Ovaries: Mineralisation of vascular media
Multiple corpora albicans; no corpora lutea
8. Mammary gland: Normal involuted gland
9. Heart: Multifocal mild acute myocyte degeneration
Mild interstitial fibrosis
Diffuse intramyocyte ceroid accumulation and basophilic inclusions
10. Brain: Moderate intraneuronal and parenchymal ceroid accumulation
12. Tongue: Multifocal ulceration
13. Adrenal: Mild nodular cortical hyperplasia
14. Sternal lymph node: Focal necrosis and mineralisation
15. Pancreas. Mild interstitial fibrosis

Interpretation:

The histological lesions show severe liver disease due to trematodes (liver fluke) as well as marked parasitism of the intestinal tract. Other findings are consistent with age (e.g. calcification of the airways and accumulation of ceroid (age pigment) in the heart and brain). There is no indication of any bacterial, protozoal or viral disease.

Pathologist:

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