Oregon State University
Oregon Veterinary Diagnostic Laboratory

Accession Number: C253230062
Account Number: 95032

Testing Lab:	Oregon Veterinary Diagnostic Laboratory	**Client:**	Marine Mammal Institute NA416A 2030 SE Marine Science Drive Newport, OR 97365
Case Coordinators:	Kurt Williams, Senior Pathologist		
Date Received:	11/19/2025	**Owner/Premises #:**	Marine Mammal Institute NA416A / NI
Report Date:	03/31/2026		

AMENDED REPORT

Case Summary:

Final Diagnosis:
Chronic left-sided congestive heart failure
Chronic myelopathy
Chronic eosinophilic enterocolitis
Entanglement and stranding with secondary acute heart failure

Comments: Thank you for choosing the OVDL for your diagnostic needs.

The findings from this case were reviewed and discussed with marine mammal pathologists and scientists in the United States, Canada and Italy. We hope the findings from this case expand our understanding of whale diseases and will spur future investigations to understand and improve the health of whales and the oceans around the globe.

Please see the full case comments included with the histopathology findings.

Medical History: Medical History on File

Animal ID: HMSC25-11-15-Mn Humpback Whale Mammal, other :: Whale NFS / Male / 1 years

ANATOMIC PATHOLOGY

Test: Gross Necropsy Report **Specimen:** Animal :: Body **Collection date:** 11/18/2025

Report

Morphologic Diagnoses:
Abdominal, thoracic and pericardial spaces: Moderate effusion
Thoracic cavity: Focal acute blood clot (euthanasia artifact, presumptive)
Liver: Focal chronic mass
Spleen: Multifocal chronic splenic capsular fibrous thickening
Lungs: Multifocal alveolar congestion; moderate diffuse edema
Integument: Multifocal erosions and ulceration (post-entanglement)
Oral cavity: Rope entanglement

Comments: Thank you for choosing the OVDL for your diagnostic needs.

Many of the changes noted grossly, eg. multicavity effusion, pulmonary edema and congestion in the lung parenchyma, are suggestive of congestive heart failure. There are no gross lesions in the heart itself to suggest a putative cause of heart failure.

The nature of the mass in the liver is not grossly apparent. Its significance as well as the significance of the other gross lesions noted is not known at this time.

Though there were a small amount of feces in the rectum, the absence of contents in the stomach and entire length of the intestine suggests this animal did not feed for a considerable period of time before stranding.

Tissues have been processed for histologic evaluation. These findings will be released in the final report.

Gross Description: This is the body of a 7.92 meter long, estimated 1–2-year-old male Humpback whale in fair nutritional condition with mild autolysis. There is a length of yellow/red rope lodged in the mouth through baleen plates, extending out of the left side of the mouth. Multiple entanglement marks are present on the left pectoral flipper and around the tail stock and flukes. These mostly linear foci consist of regions of epidermal erosion and ulceration. The largest and deepest foci are present at the tail stock and caudal edge of the flukes.

There are approximately 3 liters of pale-yellow clear fluid in the abdomen. Approximately 5 liters of clear fluid are present in the thoracic cavity and approximately 500ml of similar fluid is present in the pericardial sac. There is an approximately 40cm x 10cm irregular blood clot in the thoracic cavity.

The stomach and entire intestinal tract are largely empty except for small amounts of fluid contents mixed with mucus. Moderate amounts of watery olive-green feces are present in the distal colon / rectum. Two off-white, approximately 6 cm long by 4mm wide parasites are found in the small intestine. The 'head' of the parasites are embedded in the intestinal mucosa.

The lungs are glistening, and the visceral pleural lymphatics are prominent. On cut section moderate amounts of clear fluid weep from the cut surface. There are numerous variably sized (up to approximately 2cm) discreet regions of lung parenchyma that are dark red compared to the adjacent more normal lung.

A single 2.5cm well demarcated off-white firm mass is present in the liver beneath the capsule. There are multiple 1-2cm foci of hepatic parenchyma with moderately prominent congested sinusoids. Three 1-2cm well demarcated off-white oval foci of collagen are present in the splenic capsule. On cut section they do not extend into the underlying splenic parenchyma.

Test: Histopathology Report **Specimen:** Tissue :: Fixed **Collection date:** 11/18/2025
Specimen split from original Animal

Report

Morphologic Diagnoses:

Lung: Moderate pulmonary edema with alveolar macrophages with erythrophagocytosis and hemosiderophages, multifocal moderate alveolar capillary congestion; moderate to marked chronic adventitial collagen surrounding pulmonary veins

Heart: Marked chronic myofiber atrophy (wavy attenuation) with multifocal acute myofiber degeneration and interstitial edema

Liver: Moderate diffuse cord cell dissociation with moderate hepatocellular cytoplasmic eosinophilic droplets and inclusions and rare single necrotic hepatocytes; moderate acute centrilobular sinusoidal congestion

Brain: Marked acute interstitial and perivascular edema with multifocal acute neuronal degeneration and multifocal astrogliosis

Spinal cord: Marked chronic gray commissure degeneration and astrogliosis with multifocal microgliosis

Liver mass: Biliary adenoma (presumptive)
Small intestine/colon: Severe multifocal eosinophilic and granulomatous enterocolitis with intralesional metazoan parasites, multifocal eosinophilic leiomyositis, acute mural smooth muscle degeneration and necrosis and myenteric plexi axonal loss

Kidney: Focally extensive chronic eosinophilic and granulomatous perinephritis with intralesional parasite fragments (*Crassicauda sp.,* presumptive)

Skin: 1) Moderate neutrophilic superficial dermatitis; 2) Marked locally extensive epidermal hyperplasia with surface necrosis, multifocal thrombosis and moderate dermatitis; 3) Locally extensive ulceration with surface mixed bacterial and focal acute arterial thrombosis

Microscopic Description: Details of the microscopic findings can be found in the attached PDF ' Whale histopathology' file.

Comments: Thank you for choosing the OVDL for your diagnostic needs.

The findings from this case were reviewed and discussed with marine mammal pathologists and scientists in the United States, Canada and Italy. We hope the findings from this case expand our understanding of whale diseases and will spur future investigations to understand and improve the health of whales and the oceans around the globe.

As noted from the gross pathology, this animal had a small amount of feces in the rectum, but no food in its stomach and little ingesta in the intestinal tract, suggesting a protracted period without feeding before stranding, further supported by the paucity of subcutaneous and cavitary adipose stores.

There are significant acute and chronic disease processes present in the whale. Much of the pulmonary edema noted grossly and acute edema noted histologically, likely reflect acute heart failure precipitated by stranding and the resulting severe negative impacts on cardiopulmonary function in stranded large whales.

Significant chronic disease processes in multiple organ systems likely contributed to the stranding independent of entanglement. Evidence of chronic spinal cord disease, chronic left-sided congestive heart failure and severe widespread inflammatory disease of the intestine and colon is present in the examined tissues.

The cause of the intestinal disease is, in part, likely related to endoparasitism. The extension of inflammation into the inner circular muscle of the intestine, myodegeneration and vasculitis are not a typical reaction to intestinal parasites. The inflammatory response, smooth muscle degeneration and vasculitis suggest exaggerated immune-mediated disease.

The most likely cause of the spinal cord disease is an infectious agent (protozoal or viral). PCR testing of spinal cord for *Toxoplasma gondii, Sarcocystis neurona,* highly pathogenic avian influenza virus and Cetacean morbillivirus were all NEGATIVE.

Very low levels of saxitoxin were detected in feces and urine. These levels are considered insufficient to be clinically significant at the time of death. That said, there is little known regarding the toxicokinetics of these toxins in whales, therefore we cannot completely rule out saxitoxin exposure playing a role in the pathology and stranding.

The cause(s) of the cardiac pathology and related congestive heart failure are not known. Wavy attenuated myofibers have been documented in stranded beaked whales (N. Camara, A. Fernandez et. al 2022, Microscopy and Microanalysis, 28 (5): 1641-1648). Similar pathology in domestic dogs is associated with some forms of dilated cardiomyopathy and heart failure. This is not to suggest

this finding is identical to the canine condition; rather they are noted for its contribution to comparative pathology and medicine.

Three processes were noted in the skin: 1) in intact skin the neutrophilic infiltrate in the dermal pegs that extend into the epidermis is likely reflective of bacterial infection; 2) the focal mass is most consistent with a virally-induced skin lesion with secondary bacterial infection at the site; 3) the ulcerated skin considered to be from rope rubbing had no appreciable inflammation at the surface, was covered in numerous bacteria and had a single thrombosed vessel in the deeper dermis.

Additional serologic testing for protozoal and viral pathogens is pending. These results will be released in an addendum to this report.

The other lesions noted, eg. biliary adenoma, renal *Crassicauda sp.* infection and dermatitis, are considered incidental to the stranding event.

Authorized by: Kurt Williams
DVM, PhD, DACVP, Director OVDL, Anatomic Pathology

OVDL BUSINESS OFFICE

Test: Out of Lab Test **Specimen:** Tissue :: Fixed **Collection date:** 11/18/2025
Specimen split from original Animal

Referral Test Information	1/26/2026- Slides returned from Cornell. BW

Test: Out of Lab Test **Specimen:** Brain :: Fresh **Collection date:** 11/18/2025
Specimen split from original Animal

Referral Test Information	1/22/2026- Results from the Michigan State University Veterinary Diagnostic Laboratory are attached. BW

Test: Out of Lab Test **Specimen:** Brainstem **Collection date:** 11/18/2025
Specimen split from original Animal

Referral Test Information	1/23/2026- Results from the University of Illinois Veterinary Diagnostic Laboratory are attached. BW

Authorized by: Maggie Hammond
Exec Support Specialist

NECROPSY

Test: Prescott Grant: Marine Mammal Necropsy

Animals::Specimens	Collection Date	Result
HMSC25-11-15-Mn Humpback Whale :: Animal :: Body	11/18/2025	complete 11.18. 25

Authorized by: Sadye Steele
Supervisor, Necropsy

HISTOPATHOLOGY

Summary: Immunohistochemistry Prep :: IHC Prep

Animals	CK (WSS) IHC Prep	GFAP IHC Prep	OTHER IHC Prep	Total Tested
HMSC25-11-15-Mn Humpback Whale	1	1	1	3
Total	**1**	**1**	**1**	**3**

Summary: Special Stains :: Special Stain

Animals	Holmes	Iron (Fe)	Luxol Fast Blue	Trichrome	Verhoeff's Stain for Elastin	Total Tested
HMSC25-11-15-Mn Humpback Whale	1	3	1	1	1	7
Total	**1**	**3**	**1**	**1**	**1**	**7**

Specimens	Details
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	Specimen split from original Animal :: Body

Test: Unstained Slide from Paraffin Block

Animals::Specimens	Collection Date	Slides Cut
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	8
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	4

Specimens	Details
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	Specimen split from original Animal :: Body

Test: Special Stains

Animals::Specimens	Collection Date	Special Stain	# of Slides
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	Iron (Fe)	1
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	Luxol Fast Blue	1
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	Verhoeff's Stain for Elastin	1

Animals::Specimens	Collection Date	Special Stain	# of Slides
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	Trichrome	
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	Iron (Fe)	1
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	Holmes	2
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	Iron (Fe)	1

Specimens	Details
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	Specimen split from original Animal :: Body

Test: Immunohistochemistry Prep

Animals::Specimens	Collection Date	IHC Prep	# of Slides
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	GFAP IHC Prep	1
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	CK (WSS) IHC Prep	
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	OTHER IHC Prep	1

Specimens	Details
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	Specimen split from original Animal :: Body

Test: H&E Recut

Animals::Specimens	Collection Date	# of Slides
HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed	11/18/2025	7

Section Comments
IHC Prep: Other = Iba1

Authorized by: Misty Corbus-Wallin
Histotechnologist

Notice: *The Oregon Veterinary Diagnostic Laboratory (OVDL) will charge interest on outstanding balances older than 30 days, at the rate of one percent per month, or 12% APR. A one-time collections processing fee of $20.00 will be added to all accounts with balances that are 60 days or more past due.*

Previous versions of this report
We have previously issued interim and/or final reports for this accession with the following names:
preliminary_report_C253230062_2025-12-05_14-31-42.pdf, preliminary_report_C253230062_2026-02-04_16-15-30.pdf, finalized_report_C253230062_2026-02-05_09-58-05.pdf, amended_finalized_report_C253230062_2026-03-16_10-29-40.pdf

Change History

Changed

Test Results
- HMSC25-11-15-Mn Humpback Whale :: Tissue :: Fixed :: Histopathology Report :: Report: Result

Comments
- Master Coordinator: Value