

Necropsy Report for Six Sea Lion Deaths on May 4, 2008, at Bonneville Dam

This report is a compilation of various documents provided by scientists and veterinarians who performed necropsies on the animals and studied their tissue samples.

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Summary of data on cause of death of 4 California sea lions and 2 Steller sea lions at Bonneville Dam on 4 May 2008.

There are five sources of data which relate to the cause of death of the sea lions in the two live-capture traps at Bonneville Dam. 1) There are the necropsy reports prepared from notes taken during the necropsies of all 6 animals performed on 4 and 5 May. 2) There is the result of x-rays of all 6 sea lion heads conducted at the USFWS Forensic Laboratory in Ashland, OR on 6 May. 3) There are pathologist reports from the Diagnostic Laboratory at Colorado State University, College of Veterinary Medicine on tissues submitted from 4 of the 6 animals. 4) There is a summary of discussions regarding the possibility that the animals were poisoned. 5) And finally there are descriptions of the time and condition of animals in the traps during the morning of 4 May recorded by the Office of Law Enforcement, National Marine Fisheries Service from evidence gathered during their investigation.

The results of the x-ray examination of the heads and the references to the histology reports have been added to the necropsy reports. Although the animals were initially reported as having been shot, it was determined at time of necropsy that none of the open lesions on the skin of the animals were in fact bullet holes, being instead either fresh or old bite wounds. It is noteworthy that small caliber projectiles or single pieces of buckshot were either seen on x-ray or recovered from the soft tissues below the skin from 3 of the six animals. None of these projectiles was associated with open wounds or had penetrated vital organs; they were, therefore, not associated with the death of the animals. Three consistent findings during necropsy of all 6 animals were, the internal organs were elevated above normal body temperature, the fascia in the axillary region, beneath the scapulas, was edematous and congested, and internal organs were congested with blood and fluids. The elevated temperatures of the internal organs were even apparent in animals at necropsy the day following their death. Severe congestion of the lungs, bronchi and trachea, pathological changes that are consistent with severe hyperthermia, were noted on microscopic examination of the tissues. It was these observations on gross necropsy coupled with the pathologist's report which lead us to a diagnosis of death by heat prostration.

Robert L. DeLong, Ph.D.

Peregrine L. Wolff, DVM

Possible alternative explanations for mortality of California and Steller sea lions at Bonneville Dam, 4 May 2008: Toxicity

There was no visual, tactile, or olfactory evidence of any topical chemicals on the pelage or skins of the 4 California sea lions, the 2 Steller sea lions or the trap platform. If large amounts of a toxic chemical was topically applied to the sea lions there likely would have been over spray or run-off into the river resulting in mortality to adult spring Chinook which are migrating through the Columbia River at this time (there were in excess of 9,000 fish which passed through fish ladders on 4 May)

Delivery of a toxic substance or overdose of an anesthetic agent to sea lions contained in a floating trap would be extremely difficult. Injections could be done with a hand syringe, jab stick or projectile dart. Due to the skin and blubber thickness of the animals a 2" or greater length needle would have to be used to reach the muscle layers. The traps have inside dimensions of 12 X12 feet and 14X14 feet. It is unlikely that an individual could enter the traps and hand inject a drug into the body of a sea lion without suffering personal injury. Approaching the trap from the outside by boat would be possible but tends to cause animals to move away from the margins of the trap to the far corner, making reaching them with a jab stick nearly impossible. If animals were shot from outside the trap with a projectile dart, the darts and needles would have remained in the trap. None were found in the traps. During necropsy the skin was removed from all animals and there was no evidence of injection of a chemical compound into the fascia, blubber or muscle, but it is clear that some chemicals would be difficult to detect.

These animals would not accept any food, thus ruling out the ingestion of a toxic substance.

For these reasons we believe it is highly unlikely that the sea lions were poisoned via the topical application, ingestion or injection of a toxic compound or that they received an anesthetic overdose.

Peregrine L. Wolff, DVM

Robert L. DeLong, PhD

MARINE MAMMAL NECROPSY FORM

Acc#:		Name:		Necropsy by: Robert DeLong / Peri Wolff															
Species: <i>Z. californianus</i>				Necropsy Time: 11 PM		Date: May 4, 2008													
Orange Tag # & position:				Strand date:		Admit date:													
Other ID or tag #: Animal #1, trap #1				Strand County & location:															
Photograph Y/N	Oiled Sample Y/N	Wound sheet Y/N	Death date: May 4, 2008			Time:	Euthanasia: Y/N												
Carcass: 2-Fresh / 3-Fair, decomposed, organs intact / 4-Poor, advanced decomposition / 5-Macerated, Mummified						Scavenged Y/N	Frozen Y/N												
Sex: Male	Age: 8-10 yrs	SL: cm	BD: mm	AFL: cm	AG: cm	UG: cm	AGD: cm												
Weight 150 kg (est./actual)	SON emaciated	1	2	3	4	5	6	7	obese										
Heart wt g	LVFW mm	IVS mm	RVFW mm	Adrenal wt L	g	R	g	Thyroid wt L	g										
Radiograph Y/N Abnormal Y/N/NA																			
Human Interaction: [Yes, No, CBD] (describe type, evidence collected):																			
Stranding and Clinical History (relevant symptoms and treatment):																			
Gross Findings:																			
Total length =73"																			
Sternal blubber measurement = 37 mm																			
No external wounds noted																			
All internal organs were very warm																			
When cut the liver oozed blood																			
Spleen -4cm tan lesion with an irregular border. When cut this extends into the parenchyma 4 mm and appears to be an old abscess filled with thick grey-green pus																			
The fascial tissue of the flippers and axillary area were haemorrhagic, with a dark red "jelly like" appearance. When sectioned, the underlying muscle appeared to be normal																			
The head was removed just behind the laryngeal area and bagged for evidence and radiographed at USFWS Forensic Lab																			
The trachea contained frothy green fluid that contained particulate matter that extended down into the bronchi and the mucosal surface of the trachea was brown in color																			
Gall bladder was opened and examined and contained no flukes																			
GIT removed in total and saved																			
Reproductive tract was removed in total and placed in formalin																			
Kidney was saved frozen																			
Tissues were moderately autolyzed																			
Head (complete with hide) was Xraved at USFWS Forensic Laboratory, Ashland, OR on 6 May 2008. No significant findings.																			
Microbiology (tissue/swab & aerobic/anaerobic/fungal/enteric/other UCD Micro REQUEST #: _____):																			
Parasitology: Nasal Mites (NE, ND, <10, 10-20, 20-50, 50+) Otostrongylus (NE, ND, describe if present) Parafilaroides (NE, ND, 1+, 2+, 3+, 4+, 5+) Stomach Nematodes (NE, ND, <10, 10-20, 20-50, >50), Tapeworms (NE, ND, 1+, 2+, 3+, 4+), Flukes (NE, ND, 1+, 2+, 3+, 4+) Other:																			
Tissue Normal (N) / Abnormal (A) / Not examined or found (NE) / Submitted for Histology (H)																			
Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H
Skin-site:dorsum	X				Lung	X				Ureter					Lymph nodes:				
Blubber-site:					Heart	X				Urin. bladder	X				Mandibular				
Fat-site:					Aorta					Mamm. gland					Retropharyngl				
Muscle-Pectoral					Pulm art.					Gonad	X				Cervical				
Muscle-other:					Stomach	X				Urethra	X				Axillary	X			
Diaphragm	X				Duodenum	X				Prostate	X				Sternal	X			
Sciatic nerve					Pancreas	X				Penis	X				Mediastinal				
Bone marrow					Jejunum	X				Uterus					Tracheobronch				
Blow hole					Ileum	X				Cervix					Gastric				
Tongue					Cecum	X				Vagina					Mesenteric				
Tonsil					Colon	X				All Repro					Renal				
Salivary gland					Spleen	X				Placenta					Iliac				
Thyroid	X				Liver	X				Umbilicus					Inguinal				
Thymus	X				Gall bladder	X				Brain					Other Tissue:				
Esoph/cerv mus					Adrenal gland	X				Eye (L/R)									
Trachea					Kidney	X				Spinal cord									
Search Terms: Topography			Morphology						Etiology										

MARINE MAMMAL NECROPSY FORM

Preliminary Cause of Death:		
Histology Designation:	CSU/ DL # 078-74408	Date Shipped:

MARINE MAMMAL NECROPSY FORM

Acc#:		Name:		Necropsy by: Robert DeLong / Peri Wolff															
Species: <i>Z. californianus</i>		Necropsy Time: 13:00		Date: May 5, 2008															
Orange Tag # & position:		Strand date:		Admit date:															
Other ID or tag C-347 brand (# 2, Trap 1)		Strand County & location:																	
Photograph Y/N	Oiled Sample Y/N	Wound sheet Y/N	Death date: May 4, 2008		Time:	Euthanasia: Y/N													
Carcass: 2-Fresh / 3-Fair, decomposed, organs intact / 4-Poor, advanced decomposition / 5-Macerated, Mummified				Scavenged Y/N		Frozen Y/N													
Sex: Male	Age: 12 + yrs	SL: cm	BD: mm	AFL: cm	AG: cm	UG: cm	AGD: cm												
Weight 409+ kg (est. / actual)		SON emaciated 1 2 3 4 5 6 7 obese		Radiograph Y/N		Abnormal Y/N/NA													
Heart wt g	LVFW mm	IVS mm	RVFW mm	Adrenal wt L g	R g	Thyroid wt L g	R g												
Human Interaction: [Yes, No, CBD] (describe type, evidence collected):																			
Stranding and Clinical History (relevant symptoms and treatment):																			
Gross Findings:																			
Total length = 86"																			
Sternal blubber measurement = 80 mm																			
No external wounds noted																			
Dried blood on the Rt side of the head and around the nostrils. This animal was noted to have suffered a fracture to the jaw a number of years ago. The lower jaw is shifted to the RT and the lower Rt canine protrudes laterally. The gum tissue of the lower right arcade appears thickened.																			
All internal organs were very warm – even 24 hours after death																			
Bullet (22 slug) found in the blubber overlaying the lateral aspect of the Rt shoulder. Ventral to this pellet there is an area of abnormal blubber that has a tract like, granular appearance with a brownish discoloration																			
The fascial tissue of the flippers and axillary area were hemorrhagic, with a dark red “jelly like” appearance. When sectioned, the underlying muscle appeared to be normal																			
The head was removed just behind the laryngeal area and bagged for evidence and radiographed at USFWS Forensic Lab																			
The trachea contained frothy blood tinged fluid that extended down into the main stem bronchi and the mucosal surface of the trachea was brown in color																			
Approx 100 ml of hemorrhagic fluid within the pericardium. The epicardium was tan																			
Gall bladder was opened and examined and contained no flukes																			
GIT removed in total and saved																			
Kidney was saved frozen																			
There is abundant fat within the abdominal cavity along with pericardial and perirenal fat																			
Tissues were autolyzed																			
When cut the liver was grey-tan in color																			
Head (complete with hide) was Xrayed at USFWS Forensic Laboratory, Ashland, OR on 6 May 2008. No significant findings.																			
Microbiology (tissue /swab & aerobic/anaerobic/fungal/enteric/other)																			
Parasitology: Nasal Mites (NE, ND, <10, 10-20, 20-50, 50+) Otostrongylus (NE, ND, describe if present) Parafilaroides (NE, ND, 1+, 2+, 3+, 4+, 5+) Stomach Nematodes (NE, ND, <10, 10-20, 20-50, >50), Tapeworms (NE, ND, 1+, 2+, 3+, 4+), Flukes (NE, ND, 1+, 2+, 3+, 4+) Other:																			
Tissue Normal (N) / Abnormal (A) / Not examined or found (NE) / Submitted for Histology (H)																			
Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H
Skin-site					Lung					Ureter					Lymph nodes:				
Blubber-site:					Heart					Urin. bladder					Mandibular				
Fat-site:					Aorta					Mamm. gland					Retropharyngl				
Muscle-Pectoral					Pulm art.					Gonad					Cervical				
Muscle-other:					Stomach	X				Urethra					Axillary				
Diaphragm					Duodenum	X				Prostate					Sternal				
Sciatic nerve					Pancreas	X				Penis					Mediastinal				
Bone marrow					Jejunum	X				Uterus					Tracheobronch				
Blow hole					Ileum	X				Cervix					Gastric				
Tongue					Cecum	X				Vagina					Mesenteric				
Tonsil					Colon	X				All Repro					Renal				
Salivary gland					Spleen					Placenta					Iliac				
Thyroid					Liver					Umbilicus					Inguinal				
Thymus					Gall bladder					Brain					Other Tissue:				
Esoph/cerv mus					Adrenal gland					Eye (L/R)									
Trachea					Kidney	X				Spinal cord									
Search Terms: Topography				Morphology				Etiology											

MARINE MAMMAL NECROPSY FORM

Preliminary Cause of Death:		
Histology Designation:	Tissues not taken	Date Shipped:

MARINE MAMMAL NECROPSY FORM

Acc#:		Name:		Necropsy by: Robert DeLong / Peri Wolff															
Species: Eumetopia jubatus				Necropsy Time: 02:00			Date: May 5, 2008												
Orange Tag # & position:				Strand date:			Admit date:												
Other ID or tag#: Animal # 3 trap #1				Strand County & location:															
Photograph Y / N	Oiled Sample Y / N	Wound sheet Y / N	Death date: May 4, 2008			Time:	Euthanasia: Y / N												
Carcass: 2-Fresh / 3-Fair, decomposed, organs intact / 4-Poor, advanced decomposition / 5-Macerated, Mummified						Scavenged Y / N		Frozen Y / N											
Sex: Male	Age: 6-9 yrs	SL: cm	BD: mm	AFL: cm	AG: cm	UG: cm	AGD: cm												
Weight +/- 590 kg (est./actual)		SON emaciated 1 2 3 4 5 6 7 obese			Radiograph Y/N		Abnormal Y / N / NA												
Heart wt g	LVFW mm	IVS mm	RVFW mm	Adrenal wt L	g	R	g	Thyroid wt L	g	R	g								
Human Interaction: [Yes, No, CBD] (describe type, evidence collected):																			
Stranding and Clinical History (relevant symptoms and treatment):																			
Gross Findings:																			
Sternal blubber measurement = 75 mm																			
All internal organs were very warm																			
When cut the liver oozed blood																			
The fascial tissue of the flippers and axillary area were hemorrhagic, with a dark red "jelly like" appearance. This was pronounced in the Rt axillary area																			
When sectioned, the underlying muscle appeared to be normal																			
The head was removed just behind the laryngeal area and bagged for evidence and radiographed at the USFWS Forensics Laboratory																			
The trachea contained frothy red fluid that extended down into the bronchi and the mucosal surface of the trachea was brown in color																			
The epicardium was dark red in color																			
GIT removed in total and saved																			
Reproductive tract was removed in total and placed in formalin																			
Kidney was saved frozen																			
Abdominal, perirenal and pericardial fat was abundant																			
Tissues were moderately autolyzed																			
The gall bladder was opened and no flukes were seen																			
Head (complete with hide) was Xraved at USFWS Forensic Laboratory, Ashland, OR on 6 May 2008. No significant findings.																			
Microbiology (tissue /swab & aerobic/anaerobic/fungal/enteric/other UCD Micro REQUEST #: _____):																			
Parasitology: Nasal Mites (NE, ND, <10, 10-20, 20-50, 50+) Otostrongylus (NE, ND, describe if present) Parafilaroides (NE, ND, 1+, 2+, 3+, 4+, 5+) Stomach Nematodes (NE, ND, <10, 10-20, 20-50, >50), Tapeworms (NE, ND, 1+, 2+, 3+, 4+), Flukes (NE, ND, 1+, 2+, 3+, 4+) Other:																			
Tissue Normal (N) / Abnormal (A) / Not examined or found (NE) / Submitted for Histology (H)																			
Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H
Skin-site:dorsum					Lung	X				Ureter					Lymph nodes:				
Blubber-site:					Heart	X				Urin. bladder					Mandibular				
Fat-site:					Aorta					Mamm. gland					Retropharyngl				
Muscle-Pectoral					Pulm art.					Gonad	X				Cervical				
Muscle-other:					Stomach	X				Urethra	X				Axillary	X			
Diaphragm					Duodenum	X				Prostate	X				Sternal				
Sciatic nerve					Pancreas	X				Penis	X				Mediastinal				
Bone marrow					Jejunum	X				Uterus					Tracheobronch				
Blow hole					Ileum	X				Cervix					Gastric				
Tongue					Cecum	X				Vagina					Mesenteric				
Tonsil					Colon	X				All Repro					Renal				
Salivary gland					Spleen	X				Placenta					Iliac				
Thyroid	X				Liver	X				Umbilicus					Inguinal				
Thymus					Gall bladder					Brain					Other Tissue:				
Esoph/cerv mus					Adrenal gland	X				Eye (L / R)									
Trachea		X			Kidney	X				Spinal cord									
Search Terms: Topography				Morphology				Etiology											

MARINE MAMMAL NECROPSY FORM

Preliminary Cause of Death:		
Histology Designation:	CSU/ DL # 078-74408	Date Shipped:

MARINE MAMMAL NECROPSY FORM

Acc#:		Name:		Necropsy by: Robert DeLong / Peri Wolff															
Species: Eumetopia jubatus		Necropsy Time: 02:00		Date: May 5, 2008															
Orange Tag # & position:		Strand date:		Admit date:															
Other ID or tag#: # 4, Trap #2		Strand County & location:																	
Photograph Y/N	Oiled Sample Y/N	Wound sheet Y/N	Death date: May 4, 2008		Time:	Euthanasia: Y/N													
Carcass: 2-Fresh / 3-Fair, decomposed, organs intact / 4-Poor, advanced decomposition / 5-Macerated, Mummified				Scavenged Y/N		Frozen Y/N													
Sex: Male	Age: 7-8 yrs	SL: cm	BD: mm	AFL: cm	AG: cm	UG: cm	AGD: cm												
Weight +/- 681 kg (est./actual)		SON emaciated 1 2 3 4 5 6 7 obese		Radiograph Y/N		Abnormal Y/N/NA													
Heart wt g	LVFW mm	IVS mm	RVFW mm	Adrenal wt L	g R	g	Thyroid wt L g R g												
Human Interaction: [Yes, No, CBD] (describe type, evidence collected):																			
Stranding and Clinical History (relevant symptoms and treatment):																			
Gross Findings:																			
"Total length 103"																			
Sternal blubber measurement = 60 mm																			
11 cm superficial laceration on the ventrum just cranial to the right hip																			
All internal organs were very warm																			
The liver parenchyma is grey-tan in color																			
The fascial tissue of the flippers and axillary area were hemorrhagic, with a dark red "jelly like" appearance. This is pronounced in the axillary areas.																			
When sectioned, the underlying muscle appeared to be normal																			
The head was removed just behind the laryngeal area and bagged for evidence and radiographed at the USFWS Forensics Laboratory																			
The trachea contained frothy red fluid that extended down into the mainstem bronchi and the mucosal surface of the trachea was brown in color																			
GIT removed in total and saved																			
Reproductive tract was removed in total and placed in formalin																			
Kidney was saved frozen																			
Abdominal, perirenal and pericardial fat was abundant																			
Tissues were moderately autolyzed																			
The gall bladder was opened and no flukes were seen																			
Head (complete with hide) was X-rayed at USFW Service Forensic Laboratory, Ashland, Oregon on 6 May 2008. Showed the presence of a small, probably 22 cal., round (slug) in the soft tissue under the animal's mandible with no track to the surface. Wound healed and not fatal.																			
Microbiology (tissue /swab & aerobic/anaerobic/fungal/enteric/other)																			
Parasitology: Nasal Mites (NE, ND, <10, 10-20, 20-50, 50+) Ootstrongylus (NE, ND, describe if present) Parafilaroides (NE, ND, 1+, 2+, 3+, 4+, 5+) Stomach Nematodes (NE, ND, <10, 10-20, 20-50, >50), Tapeworms (NE, ND, 1+, 2+, 3+, 4+), Flukes (NE, ND, 1+, 2+, 3+, 4+) Other:																			
Tissue Normal (N) / Abnormal (A) / Not examined or found (NE) / Submitted for Histology (H)																			
Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H
Skin-site:dorsum					Lung					Ureter					Lymph nodes:				
Blubber-site:					Heart					Urin. bladder					Mandibular				
Fat-site:					Aorta					Mamm. gland					Retropharyngl				
Muscle-Pectoral					Pulm art.					Gonad	X				Cervical				
Muscle-other:					Stomach	X				Urethra	X				Axillary				
Diaphragm					Duodenum	X				Prostate	X				Sternal				
Sciatic nerve					Pancreas	X				Penis	X				Mediastinal				
Bone marrow					Jejunum	X				Uterus					Tracheobronch				
Blow hole					Ileum	X				Cervix					Gastric				
Tongue					Cecum	X				Vagina					Mesenteric				
Tonsil					Colon	X				All Repro					Renal				
Salivary gland					Spleen					Placenta					Iliac				
Thyroid					Liver					Umbilicus					Inguinal				
Thymus					Gall bladder					Brain					Other Tissue:				
Esoph/cerv mus					Adrenal gland					Eye (L/R)									
Trachea					Kidney	X				Spinal cord									
Search Terms: Topography		Morphology				Etiology													

MARINE MAMMAL NECROPSY FORM

Preliminary Cause of Death:		
Histology Designation:	Tissue not taken	Date Shipped:

MARINE MAMMAL NECROPSY FORM

Search Terms: Topography	Morphology	Etiology
Preliminary Cause of Death:		
Histology Designation: CSU/DL# 078-074409 &078-74441		Date Shipped:

MARINE MAMMAL NECROPSY FORM

Acc#:		Name:		Necropsy by: Robert DeLong / Peri Wolff																
Species: <i>Z. californianus</i>		Necropsy Time: 24:00		Date: May 4, 2008																
Orange Tag # & position:		Strand date:		Admit date:																
Other ID or tag #: Animal #6, trap #2		Strand County & location:																		
Photograph Y/N	Oiled Sample Y/N	Wound sheet Y/N	Death date: May 4, 2008		Time:	Euthanasia: Y/N														
Carcass: 2-Fresh / 3-Fair, decomposed, organs intact / 4-Poor, advanced decomposition / 5-Macerated, Mummified				Scavenged Y/N		Frozen Y/N														
Sex: Male	Age: 12 + yrs	SL: cm	BD: mm	AFL: cm	AG: cm	UG: cm	AGD: cm													
Weight 386+ kg (est. / actual)		SON emaciated 1 2 3 4 5 6 7 obese		Radiograph Y/N		Abnormal Y/N/NA														
Heart wt g	LVFW mm	IVS mm	RVFW mm	Adrenal wt L	g R	g	Thyroid wt L													
g R g																				
Human Interaction: [Yes, No, CBD] (describe type, evidence collected):																				
Stranding and Clinical History (relevant symptoms and treatment):																				
Gross Findings:																				
Total length =92.5"																				
Sternal blubber measurement = 70 mm																				
No external wounds noted																				
Generalized alopecia over the animal, most pronounced on the ventrum																				
All internal organs were very warm																				
When cut the liver oozed blood																				
There are 3-4, 5mm black irregular shaped scars on the surface of the liver that penetrate into the parenchyma approx 3-4 mm.																				
The fascial tissue of the flippers and axillary area were hemorrhagic, with a dark red "jelly like" appearance. When sectioned, the underlying muscle appeared to be normal																				
The head was removed just behind the laryngeal area and bagged for evidence and radiographed at USFWS Forensic Lab																				
The trachea contained frothy blood tinged fluid that contained particulate matter that extended down into the main stem bronchi and the mucosal surface of the trachea was brown in color																				
Approx 200 ml of hemorrhagic fluid within the pericardium																				
Gall bladder was opened and examined and contained no flukes																				
GIT removed in total and saved																				
Reproductive tract was removed in total and placed in formalin																				
Kidney was saved frozen																				
There is abundant fat within the abdominal cavity along with pericardial and perirenal fat																				
Tissues were moderately autolyzed																				
Xray examination of the head (in its entirety with skin attached) at USFW Service Forensic Laboratory in Ashland, OR on 6 May 2008 revealed what was described as most likely a single buckshot round in the soft tissue of the animals neck. (The wound was considered non fatal)																				
Microbiology (tissue /swab & aerobic/anaerobic/fungal/enteric/other UCD Micro REQUEST #: _____):																				
Parasitology: Nasal Mites (NE, ND, <10, 10-20, 20-50, 50+) Otostrongylus (NE, ND, describe if present) Parafilaroides (NE, ND, 1+, 2+, 3+, 4+, 5+) Stomach Nematodes (NE, ND, <10, 10-20, 20-50, >50), Tapeworms (NE, ND, 1+, 2+, 3+, 4+), Flukes (NE, ND, 1+, 2+, 3+, 4+) Other:																				
Tissue Normal (N) / Abnormal (A) / Not examined or found (NE) / Submitted for Histology (H)																				
Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H	Tissue	N	A	NE	H	
Skin-site:caudal ventrum	X				Lung	X				Ureter					Lymph nodes:					
Blubber-site:					Heart	X				Urin. bladder	X				Mandibular					
Fat-site:					Aorta					Mamm. gland					Retropharyngl					
Muscle-Pectoral					Pulm art.					Gonad	X				Cervical					
Muscle-other:					Stomach	X				Urethra	X				Axillary	X				
Diaphragm					Duodenum	X				Prostate	X				Sternal					
Sciatic nerve					Pancreas	X				Penis	X				Mediastinal					
Bone marrow					Jejunum	X				Uterus					Tracheobronch					
Blow hole					Ileum	X				Cervix					Gastric					
Tongue					Cecum	X				Vagina					Mesenteric					
Tonsil					Colon	X				All Repro					Renal					
Salivary gland					Spleen	X				Placenta					Iliac					
Thyroid	X				Liver	X				Umbilicus					Inguinal					
Thymus					Gall bladder	X				Brain					Other Tissue:					
Esoph/cerv mus					Adrenal gld	X				Eye (L/R)										
Trachea					Kidney	X				Spinal cord										
Search Terms: Topography				Morphology				Etiology												

MARINE MAMMAL NECROPSY FORM

Preliminary Cause of Death:		
Histology Designation:	CSU/ DL# 078-74407	Date Shipped:

Colorado State University
College of Veterinary Medicine and Biomedical Sciences
Veterinary Diagnostic Laboratories
300 West Drake Road
Fort Collins, CO 80523-1644
Phone 970-297-1281 Fax 970-297-0320



REVISED

DL#: 078-74406

Date: 5/14/2008

Vet/Clinic: Dr. Robert DeLong, San Miguel Island Project, National Marine Mammal Lab, Bldg. 4, 7600 Sand Point Way, Seattle, WA 981150070

Owner: National Marine Mammal Lab

Animal ID: *Eumatopia jubatus*-#3 trap #1

Date Specimen Taken: 5/4/08

Species: Pinniped **Breed:** Stellar Sea Lion

Age: 6 to 9 y **Sex:** Male

History: This animal was caught in a live trap and was found dead.

DIAGNOSES 1. Lung: severe congestion and edema.
2. Lymphoid tissue: Mild to moderate depletion.

REMARKS: No evidence of any type of infectious or degenerative disease is found in this animal. **The possibility of hyperthermia and over exertion associated with being trapped cannot be excluded.** The tissues were extremely autolytic and this was associated with heat and autolysis.

GROSS NECROPSY:

Sternal blubber measurement is 75 mm. All internal organs were still warm. Lungs and liver were severely congested. Hemorrhages were present in the fascial tissues of the flippers and in the axillary areas. The muscles appeared to be within normal limits. Lungs were severely congested and filled with a red froth. The remaining organs appeared to be severely autolytic but no other lesions were found.

HISTOPATHOLOGY:

Slide 1. Thyroid gland. No significant lesions.

Heart. No significant lesions.

Adrenal gland. No significant lesions.

~~Slide 2. Spleen. The lymphoid tissue is somewhat depleted.~~

~~Kidneys. No significant lesions.~~

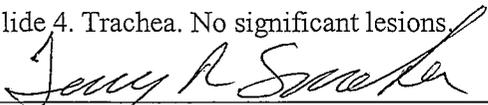
~~Thyroid. Another section of thyroid is examined and it is within normal limits.~~

Slide 3. Liver. Advanced autolysis. No significant lesions.

Lung. The lung is severely congested and a moderate degree of edema is present within alveolar spaces. No evidence of pneumonia is found in this section of lung.

Lymph node. This lymph node is somewhat depleted and severely edematous and autolytic but otherwise is within normal limits.

Slide 4. Trachea. No significant lesions.


Terry R. Spraker, DVM/PhD DACVP

Typed: 5/23/08 kw, 6/17/08 jr

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REVISED

DL#: 078-74407

Date: 5/15/2008

Vet/Clinic: Dr. Robert DeLong, San Miguel Island Project, National Marine Mammal Lab, Bldg. 4, 7600 Sand Point Way, Seattle, WA 981150070

Owner: National Marine Mammal Lab

Animal ID: *Zalophus californianus* #6 trap #2

Date Specimen Taken: 5/4/08

Species: Pinniped **Breed:** California Sea Lion

Age: 12+ years

Sex: Male

History: This animal was caught in a live trap and was found dead.

DIAGNOSES 1. Lungs: Severe edema with mild congestion.
2. Skin: *Pelodera (Rhabditis) strongyloides* folliculitis.

REMARKS: The lesions in this animal are consistent with stress and hyperthermia. The dermatitis/alopecia described on the gross exam was most likely associated with *Pelodera strongyloides* infection. This is a relatively common nematode in the hair follicles of marine mammals. This suggests that the animal has probably been lying in an area of relatively heavy fecal contamination.

GROSS NECROPSY: This is an adult male California Sea Lion that has a total length of 92½ inches. Sternal blubber measurement is 70 mm. There are no external wounds. There is a generalized alopecia over the body but it is most pronounced on the ventrum. All internal organs are still warm. The liver is severely congested. There are three to four 5 mm black irregularly shaped scars on the surface of the liver that penetrate into the parenchyma approximately 3 to 4 mm. The fascial tissues of the flippers and axillary areas are hemorrhagic with a dark red gelatinous appearance. When sectioned, the underlying muscle appears to be within normal limits. The lungs and trachea contain a red froth that contains a particulate matter that is probably regurgitation from the stomach. Approximately 200 mm of hemorrhagic fluid is present within the pericardial sac. The gallbladder is examined and contains no flukes. Reproductive tract is normal.

HISTOPATHOLOGY: Slide 1. Gallbladder. No significant lesions.

Liver. No significant lesions. Moderate autolysis.

Adrenal gland. No significant lesions.

Slide 2. Adrenal gland. No significant lesions.

Heart. No significant lesions.

Slide 3. Thyroid gland. No significant lesions.

Lymph node. Lymphoid tissue is somewhat depleted.

Urinary bladder. No significant lesions.

Slide 4. Lungs. The lungs are moderately congested and somewhat congested. No evidence of pneumonia is found.

Skin. This section of skin is moderately congested. Several of the hair follicles have a moderate infiltration of lymphocytes around them. Also within several of the hair follicles are larvae of a nematode, *Pelodera (Rhabditis) strongyloides*. The lesions associated with this parasite are minimal in this animal but can result in loss of hair and alopecia as described on the gross exam. These lesions are usually most severe on the ventral aspect of the body.

Slide 5. Trachea. This section of trachea is autolytic but within normal limits.

A handwritten signature in black ink, appearing to read "Terry R. Spraker". The signature is written in a cursive, flowing style.

Terry R. Spraker, DVM/PhD DACVP

Typed: 5/23/08 kw, 6/17/08 jr

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College of Veterinary Medicine and Biomedical Sciences
Veterinary Diagnostic Laboratories
300 West Drake Road
Fort Collins, CO 80523-1644
Phone 970-297-1281 Fax 970-297-0320



REVISED

DL#: 078-74408

Date: 5/15/2008

Vet/Clinic: Dr. Robert DeLong, San Miguel Island Project, National Marine Mammal Lab, Bldg. 4, 7600 Sand Point Way, Seattle, WA 981150070
Owner: National Marine Mammal Lab
Animal ID: *Zalophus californianus* -#1 trap #1 **Date Specimen Taken:** 5/4/08
Species: Pinniped **Breed:** California Sea Lion **Age:** 5-6 y **Sex:** Male
History: This animal was caught in a live trap and was found dead.

DIAGNOSES: 1. Lungs: Severe congestion and edema.
2. Spleen: Chronic abscess.

REMARKS: The abscess in this animal is relatively chronic. The cause of the abscess was not determined. However, it is probably causing minimal damage to the animal. **The lymphoid depletion and severe congestion of the lungs may be associated with the stress and hyperthermia experienced by these animals.**

GROSS NECROPSY: This is an adult male California Sea Lion that is estimated to be within 5 to 6 years of age. Total length is 73 inches. Sternal blubber is 37 mm. No external wounds are found. All internal organs are extremely warm. The liver is severely congested. The spleen has a 4 cm tan lesion with irregular borders on the surface. This lesion does extend into the parenchyma approximately 4 mm and appears to be an old abscess filled with green-gray exudate. The lungs are congested and edematous. Gallbladder is opened and contains no flukes. The remaining organs are moderately autolytic.

HISTOPATHOLOGY: Slide 1. Spleen. This section of spleen contains a large fibrous wall. This is most likely the wall of the abscess that is described on the gross exam.

Thyroid gland. No significant lesions.

Heart. An abundance of fat is present on the surface of the heart. The myocardium is within normal limits.

Slide 2. Lymph node. This lymph node is somewhat depleted of lymphocytes.

Lungs. The lungs are severely congested and edematous. No evidence of pneumonia is found in this section of lung.

Slide 3. Lymph node. This lymph node is relatively normal. Another lymph node on this section shows early depletion.

Kidneys. No significant lesions.

Liver. Severe autolysis. No significant lesions.

Slide 4. lymph node. This lymph node is moderately depleted.

Trachea. No significant lesions.

Thyroid. No significant lesions.

Urinary bladder. No significant lesions.

Slide 5. Lung. This lung is also severely congested and alveolar spaces are filled with fluid. No evidence of pneumonia is found.

A handwritten signature in black ink, appearing to read "Terry R. Spraker".

Terry R. Spraker, DVM/PhD DACVP

Typed: 5/23/08 kw, 6/17/08 jr

REVISED

DL#: 078-74409

Date: 5/15/2008

Vet/Clinic: Dr. Robert DeLong, San Miguel Island Project, National Marine Mammal Lab, Bldg. 4, 7600 Sand Point Way, Seattle, WA 981150070

Owner: National Marine Mammal Lab

Animal ID: *Zalophus californianus*-trap #2

Date Specimen Taken: 5/4/08

Species: Pinniped **Breed:** California Sea Lion

Age: 5 to 7 years **Sex:** Male

History: This animal was caught in a live trap and was found dead.

- DIAGNOSES:**
1. Lungs: Severe edema and congestion.
 2. Lymphoid tissue: Moderate lymphoid depletion.
 3. Skin: Cellulitis associated with previous laceration.

REMARKS: This animal does have severe congestion and edema of the lungs and lymphoid depletion. **This may be associated with the stress and hyperthermia experienced by these animals.** The cellulitis in the skin does suggest this animal had sustained some type of trauma to the skin probably 3 to 4, perhaps 5 days earlier, and there was a moderate infiltration or inflammatory response around this laceration of the skin that had penetrated relatively deep into the blubber layers.

GROSS NECROPSY:

Total length is 76". Sternal blubber thickness is 48 mm. The right side of the head from the eye to the lower lip is covered with dried blood. There is an approximately 2 cm longitudinal laceration that extends through the dermis below and just behind the right orbit. The right orbit has been punctured. Palpation behind the right orbit reveals no anomalies. There is a 1 cm full thickness laceration on the top of the skull. There is dried blood around this laceration and around the nose. There are numerous full thickness, 3 to 4 cm, lacerations over the proximal portion of the right flipper. Further caudally on the same flipper are four to five 1 to 3 cm lacerations that appear to be partially healed. Over the right shoulder, there is a 1 cm² full thickness wound. There is hemorrhage within the blubber layer underlying this wound, but there is no evidence of penetration into the abdominal cavity. The skin surrounding this wound is removed and bagged for evidence.

All internal organs are warm. The spleen is emphysematous. The liver is severely congested. The fascial tissue of the flippers and axillary areas are hemorrhagic with a dark red jelly-like appearance. When the muscles are sectioned, the muscles appear to be normal. The lungs are filled with a red fluid, both within the trachea and bronchi and alveolar spaces. The right axillary lymph nodes are reddened. Other organs are within normal limits. The animal is moderately autolyzed.

HISTOPATHOLOGY:

Slide 1. Kidney. No significant lesions.

Lungs. The lungs are severely congested and alveolar spaces contain a moderate degree of edema.

Skeletal muscle. No significant findings.

Continued on Page 2 of 2.

Slide 2. Lymph node. This section of lymph node is somewhat depleted.

Skin. This section of skin is taken from one of the lesions. There is an extensive degree of inflammation and hemorrhage around this laceration within the subcutaneous tissues.

Heart. No significant lesions.

Liver. No significant lesions.

Slide 3. Lymph node. This lymph node is somewhat depleted.

Heart. No significant lesions.

Thyroid gland. Follicles are of normal size and shape and the gland is consider to be within normal limits.

Slide 4. Lymph node. This lymph node is moderately depleted.

Thymus. The lymphoid tissue of the thymus is slightly thin, but otherwise the thymus is in relatively good condition.

Thyroid gland. No significant lesions.

Adrenal gland. There are a few areas of congestion within the cortex, but otherwise the adrenal gland is within normal limits.

Slide 5. Skin. No significant lesions.



Terry R. Spraker, DVM/PhD DACVP

Typed: 5/23/08 kw, 6/17/08 jr