

**Supplementary materials for Journal of Wildlife Diseases DOI: 10.7589/JWD-D-20-00049: Tiffany M. Wolf, Yvette M. Chenaux-Ibrahim, Edmund J. Isaac, Arno Wünschmann, Seth A. Moore. NEONATE HEALTH AND CALF MORTALITY IN A DECLINING POPULATION OF NORTH AMERICAN MOOSE (*ALCES ALCES AMERICANUS*).**

Table S1. Postmortem findings from nine moose calf carcasses from 2013-2015 and 2018 in Grand Portage, Minnesota. BVD: Bovine Viral Diarrhea. BHV-1: Bovine Herpesvirus-1. NA: No testing.

<b>Case No.</b>	<b>Sex</b>	<b>Age (days)</b>	<b>Mortality Classification</b>	<b>Primary Morphologic Findings</b>	<b>Parasitology</b>	<b>Bacteriology*</b>	<b>Virology</b>
1	Male	3	Predator-associated	1. Anemia. 2. Left radius and metatarsus, transverse fractures. 3. Subcutis, hemorrhage, multifocal, moderate. 4. Skull, puncture with mild acute cerebrocortical hemorrhage.	Feces: negative	<i>Leptospira interrogans</i> (kidney): PCR negative	BVD (pooled tissues): negative

2	Female	181	Predator-associated	1. Cachexia. 2. Dehydration. 3. Right elbow and surrounding soft tissue, arthritis and peri-arthritis, suppurative, chronic, marked with focally extensive necrotizing myositis. 4. Left front limb (metacarpus region), skin perforation with suppurative and necrotizing cellulitis.	Feces: negative; <i>Setaria</i> sp. nematode in abdomen	R elbow: <i>Trueperella pyogenes</i> and <i>Pasteurella multocida</i> ; L metacarpus: <i>T. pyogenes</i> , <i>P. multocida</i> , and <i>Staphylococcus aureus</i> ; Lung: <i>P. multocida</i> ; Kidney and liver: <i>P. multocida</i> ; <i>Mycobacterium paratuberculosis</i> (feces): negative	BVD (pooled tissues): negative
3	Female	2	Stillbirth	1. Lungs atelectic.	NA	Liver and gastric content: Beta hemolytic	BVD (pooled tissues): negative; BHV-

						<i>Escherichia coli</i> ; <i>L. interrogans</i> (kidney):	1 (pooled tissue):
						PCR negative	negative
4	Female	0	Stillbirth	1. Lungs, atelectasis, diffuse with numerous intra-alveolar keratin squames	NA	Liver, lungs, stomach: no growth; <i>L. interrogans</i> (kidney):	BVD (pooled tissues):
						PCR negative	negative; BHV-1 (pooled tissue):
							negative
5	Female	0	Generalized bacterial infection	1. Heart, pericarditis, sero-fibrinous, acute, mild to moderate. 2. Umbilical arteries and urachus: a. adventitial arteritis, suppurative, acute, marked. b. vasculitis, necrotizing and suppurative, with bacteria.	NA	Liver, kidney, intestine, umbilicus, lungs: no growth	NA

6	Male	198	Predator-associated	1. Cachexia. 2. Left carpal joint, arthritis and periartthritis, suppurative, chronic, marked. 3. Left hind limb musculature, myositis, suppurative, chronic, marked (draining tracts). 4. Heart and skeletal muscle, sarcocystosis, mild. 5. Lungs: a. congestion, acute, marked. b. hemorrhage, acute.	Feces: negative	Carpal joint: <i>T. pyogenes</i> and <i>Streptococcus</i> sp.; <i>L. interrogans</i> (kidney): PCR negative; <i>M. paratuberculosis</i> (feces): PCR negative	BVD (pooled tissues): negative
7	Female	0	Stillbirth	1. Lungs atelectic.	NA	NA	NA
8	Male	0	Stillbirth	1. Lungs atelectic.	NA	NA	NA
9	Male	0	Stillbirth	1. Lungs atelectic.	NA	NA	NA

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\*Bacteriology findings are cultured organisms unless otherwise indicated.

Table S2: Liver mineral concentrations of Minnesota moose calves (n=6) necropsied in years 2013-2015. Ages included stillbirths (n=2), 3-4 days (n=2) and approximately 6 months old (n=2). Results reported on a wet weight basis. MIN: Minimum concentration. MAX: Maximum concentration. BDL: Below detection limit.

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<b>Mineral</b>	<b>Median</b>	<b>MIN</b>	<b>MAX</b>	<b>Proportion BDL</b>
Arsenic (ppm)	BDL			
Cadmium (ppm)	0.24	<0.03	0.36	0.67
Cobalt (ppm)	0.04	<0.03	0.05	0.67
Copper (ppm)	700.10	57.20	1009.50	
Iron (ppm)	166.50	86.00	654.84	
Lead (ppm)	BDL			1.00
Manganese (ppm)	2.58	1.02	4.38	
Mercury (ppm)	BDL			1.00
Molybdenum (ppm)	0.37	0.23	1.30	
Selenium (ppm)	0.35	0.08	0.65	
Thallium (ppm)	BDL			1.00
Zinc (ppm)	45.20	30.00	147.00	

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