

Western Conference of Veterinary Diagnostic Pathologists

Diseases of Animals Living In, On, Over or Around Water

. . . and Diseases of Camelids

- - Case Introductions - -

Moderator: Michael M. Garner
Founder of Northwest ZooPath
Monroe, Washington

Invited Contributors:

Allan Pessier
Clinical Associate Professor
Washington Animal Disease Diagnostic Laboratory
Washington State University

Robert Bildfell
Professor, Department of Biomedical Sciences
Carlson College of Veterinary Medicine
Oregon State University

Christiane Löhr
Professor, Department of Biomedical Sciences
Carlson College of Veterinary Medicine
Oregon State University

September 7 and 8, 2018

Best Western Agate Beach Inn
North Coast Highway
Newport, Oregon

Case #1 (15 A 3424) – Teresa Maria Garcia, Oregon Veterinary Diagnostic Laboratory, Oregon State University, and Donal O'Toole, Wyoming State Veterinary Diagnostic Laboratory, University of Wyoming

A female Canada goose (*Branta canadensis*) was found unable to fly in an urban park in Cheyenne, Wyoming, on 03/16/15. No other birds, including Canada geese, were identified by wildlife biologists as affected. The bird was euthanized and submitted for necropsy at the Wyoming State Veterinary Diagnostic Laboratory.

The carcass was in fair nutritional condition, with mild autolysis. There was moderate pectoral muscle atrophy. There was scant green staining around the vent. The gallbladder was distended with green, moderately viscous bile. The proventriculus was empty. The ventriculus contained a small amount of sandy grit. The mucosal surface of the ventriculus was green, with partial separation of mucosa from underlying muscle.

Case #2 (16-3934) – Tony Redford, British Columbia Ministry of Agriculture, Animal Health Centre

During the period of May to August 2016, over 450 moribund or dead rhinoceros auklets (*Cerorhinca monocerata*) were found washed ashore along the Pacific coast of British Columbia, Canada, and Washington State, USA. Birds found alive were very weak, and soon died or were euthanized. Collected carcasses were submitted to veterinary diagnostic labs in the jurisdictions in which they were collected. Gross findings included marked pulmonary consolidation and collections of fibrin in the air sacs and in the subcutaneous tissues along the neck and overlying the skull.

Case #3 (FI 17-10921) – Marek Tomczyk, Manitoba Agriculture, Veterinary Diagnostic Services

A 15-year-old koi, in the spring 2017, post-hibernation, developed cauliflower-like, tan, irregular lesions encompassing predominantly the top blade, but also the bottom blade, of the tail fin and anal fin. One of the pectoral fins was also thickened. Lesions were removed surgically, and tissues were sent for evaluation to VDS in Winnipeg, Manitoba.

Four samples were submitted for evaluation from the top and bottom blades of the tail fin. The tissue was pale grey to brown, focally hemorrhagic and semi-soft. Three pieces were received from the anal fin and were pale tan to dark grey / brown. One pale tan and moderately soft piece was received from a pectoral fin.

Case #4 (18-8593a) – Rob Bildfell, Oregon Veterinary Diagnostic Laboratory, Oregon State University

This subadult female beaver (*Castor canadensis*) was reported to have “neurologic signs” which included swimming in circles. The animal was euthanized by gunshot to the thorax. The animal was emaciated, weighing only 6 kg. Other than gunshot associated trauma, gross lesions were confined to 6 to 10, randomly located, 1 mm diameter white foci in the hepatic capsule and several dozen, 1 cm long, trematodes lightly attached to the cecal mucosa.

Case #5 (10-1034-1) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

A number of adult Atlantic salmon (*Salmo salar*) were exhibiting unusual behaviour and abnormal swimming patterns (e.g. “twirling”). Many of the affected fish had exophthalmia. On gross examination there were scattered foci of haemorrhage within the skeletal muscle, mesenteries and adipose tissue.

Case #6 (12-1846-8A) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

A number of adult Atlantic salmon (*Salmo salar*) in an open net pen were showing signs of lethargy. On closer inspection, the affected individuals had darker skin with red discoloration along the base of the fins. There was a moderate accumulation of fluid within the coelomic cavity, scattered foci of haemorrhage within the mesenteries and adipose tissue, and pallor of the gills, kidney, liver, and spleen.

Case #7 (16-3276-4A) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult Atlantic salmon (*Salmo salar*) was found dead with no clinical history. On gross examination the kidneys were swollen, the spleen was enlarged and there was pale mottling of the liver. Scattered foci of petechial haemorrhage were noted throughout the coelomic cavity.

Case #8 (16-6496-1A) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult Atlantic salmon (*Salmo salar*) was found dead at the bottom of an open net pen. On gross examination there was dark mottling of the skin, red discoloration at the base of the fins and mild exophthalmos. Scattered foci of petechial haemorrhage and small foci of pallor were noted through the coelomic cavity.

Case #9 (08-627-1B) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult Atlantic salmon (*Salmo salar*) was seen exhibiting abnormal swimming patterns (e.g. disequilibrium). On gross examination there was dark mottling of the skin and red discoloration at the base of the fins. On inspection of the abdominal cavity, most of the tissues were unaffected save for the spleen which was slightly enlarged with a mild spattering of 1 to 2 mm in diameter gray nodules.

Case #10 (15-9214-2) – T. William O'Neill and Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

Laboratory-hatched, 1- to 2-year-old spotted gar (*Lepisosteus oculatus*), a primarily carnivorous species, became infected with *Mycobacterium* spp. Mycobacteriosis was traced to feeding of live feed (zebrafish). An attempt was made to switch the gar to a non-live food source. Concurrently, fish were moved to a new flow through system. Subsequently, numerous gar developed buoyancy issues and spinal deformities and were submitted for complete diagnostic work-up.

Case #11 (18-11395: available as a digital slide) – T. William O'Neill and Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

Six common tortoises (*Testudo graeca*) were purchased at the age of 1-month from a breeder. The tortoises began showing signs of illness (lethargy) at 6-months of age. Per the owner, environmental temperatures were increased and animals were given regular soakings. No changes in diet or water consumption were reported. Five of the 6 tortoises died without gross or histopathologic examination. The sixth was submitted in formalin with the plastron and carapace removed to attempt to find a cause.

Case #12 (16-16585-1) – Dale Miskimins, Animal Disease Research and Diagnostic Laboratory, South Dakota State University

Two dead gulls were submitted for necropsy. Both carcasses were thin. Bird #1 had multifocal granulomas in the thoracic and abdominal cavities. Bird #2 had multifocal granulomas in the breast muscles.

Case #13 (00-33959-1) – Ursula Perdrizet and Trent Bollinger, Department of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan

Ten northern leopard frogs and 2 boreal toads were submitted for necropsy due to mass mortality. Approximately 25 frogs, from 1 pond in south-eastern Alberta, in October of 2000 were either found dead or were alive and then died. Additional sporadic mortalities were reported from nearby ponds since June of that year.

Case #14 (06-615-8) – Liam Broughton-Neiswanger, Washington Animal Disease Diagnostic Laboratory, Washington State University

A 10-year-old female Alpaca presented to the referring veterinarian with severe neurologic signs which progressed over a few days. The animal was euthanized and samples were submitted for rabies testing and histopathology.

Case #15 (08-2874-21) – Laura Williams, Washington Animal Disease Diagnostic Laboratory, Washington State University

A 7-month-old female alpaca initially presented to the referring veterinarian for increased respiratory effort. After referral to the WSU veterinary teaching hospital, the alpaca clinically declined, developed severe respiratory distress, and died despite aggressive supportive care. Grossly, the alpaca was emaciated and there was a moderate pleural effusion.

Case #16 (15-00686-8) – Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

A 6.2 kg, male alpaca fetus with a crown-to-rump length of 71 cm and complete placenta were submitted for an abortion work-up. The dam had delivered healthy crias in the past and had not been shorn due to late pregnancy.

Case #17 (15-14096-2) – Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

An adult intact male Huayaca alpaca was submitted for post-mortem diagnostics. The alpaca had presented with choke. The impaction was successfully removed. However, radiographs of the thorax showed lung patterns consistent with severe interstitial to alveolar pneumonia, and the alpaca was humanely euthanized. On necropsy, the animal was in good body condition (70 kg).

Case #18 (16-08121) – Ida Phillips and Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

A 16-year-old female Huayaca alpaca was submitted for post-mortem diagnostics. The owner thought the alpaca was slow moving and had reduced feed consumption over the last 3 days. The day of her death, the animal had stayed cushed all day and was found dead in the evening. A new horse that had been introduced to the farm 2-months ago had been dewormed 1-month prior to this incident. On necropsy the animal weighed 69 kg and had abundant adipose stores. Moist plant material was present in the oral cavity, oropharynx, esophagus and all stomach compartments. The lungs showed cranioventral consolidation.

Case #19 (18-11273-11) – Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

An 11-year-old intact male llama was submitted for post-mortem diagnostics. The llama had a history of inability to rise and diarrhea. A heavy gastrointestinal parasite burden had been diagnosed by the referring veterinarian in this and other llamas on the premises. The llama had been dewormed regularly 2x/year with ivermectin and 3-days prior to presentation at the teaching hospital with albendazole. On presentation at the hospital, the llama had a BCS of 1/9, low electrolytes (Na, K, Cl), a PCV of 25% and TP of 3.5g/dL. The llama was treated with plasma, hypertonic fluid, Banamine, oral vitamin E, oral ponazuril, oral sucralfate and assistance to rise every 4-hours. On the day of the necropsy, the animal acutely deteriorated, had an increased heart and respiratory rate, hypothermia, blood lactate of 8.9, acidemia, PCV of 35% and TP of 2.8 g/dL. Three units of plasma were administered. The llama died a few hours later.

Case #20 (16-29508) – Enrique Aburto and H       Philibert, Department of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan

A 46-day-old, male cria, with a history of sudden ataxia and head tilt that progressed rapidly to recumbency and loss of menace response.

Case #21 (18-015520-C) – Maria Spinato, Animal Health Laboratory, University of Guelph, on behalf of C       B. Larouche and Dale Smith, Toronto Zoo

A 21-year-old, female, Bactrian camel was euthanized due to cachexia and severe, chronic lameness affecting all limbs. Multiple, 2 to 8 mm diameter round, white, soft to gritty nodules are present throughout the hepatic parenchyma, representing approximately 5% of the liver volume.

Case #22 (06-7323) – Andy Allen, Department of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan

In March of the year, a 7-month-old, male llama was presented to the Large Animal Clinic of the Western College of Veterinary Medicine because of a 2- to 3-month history of lameness and increasing amounts of time spent in recumbency.

The findings of a CBC and serum chemistry analysis were consistent with muscle injury and insufficient ingestion or absorption of phosphorus and magnesium. Radiographs revealed osteopenia, irregularly widened physes, and pathological fractures of the femoral heads. Given the severe changes in the skeleton, poor prognosis for return to normal, and financial considerations, the llama was euthanised and submitted for necropsy.

Case #23 (18-051) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

A 20-year-old Bactrian camel was stiff and sore, which seemed to be worse in winter. About 3-weeks ago she slipped on the ice and then was having difficulty on both front and hind legs getting up and lying down. She did not use her left front leg after slipping. She was on butazone and previcox and the clinic would like to know if she had any gastric ulcers as a result.

Post-mortem examination revealed degenerative joint disease. However, this case is being submitted for suggestions and discussion as to the cause of the liver lesions: clusters of adipocytes and pigment accumulation.

Case #24 (slides A and B) (15-013) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

This fish had been reared in an aquatics research facility since birth and had been grouped with other fish of the same age and size for its entire life. It had not been used for testing thus far, but appeared to have physical injuries.

The male trout is in good general condition. There are multiple, 1 to 3 cm diameter, circular zones of necrosis of the skin. These are all heavily secondarily infected with thick mats of fungal mycelia. The necrosis extends through the skin, but does not appear to involve the underlying musculature. There is hemorrhage in the subcutis under each ulcer. The pectoral fins and anal fin are grey, significantly reduced in size, and the remaining free edges are thickened to as much as 5 mm. The free edges of the other fins are similarly thickened, firm and grey. Large zones of grey consolidation are present on both sides of the gills. Gill filaments in the consolidated areas are adherent to each other. The organs in the body cavity are all grossly normal.

Case #25 (15-140) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

This is a goldfish in good general body condition. The swim bladder is very distended and taut. All of the other internal organs are grossly normal.

Case #26 (16-166) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

Fish received from supplier with what appear to be sores on skin. Culled out and submitted for histopathology.

Case #27 (slides A and B) (16-173) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

This shark is in moderate condition. There are irregular ecchymotic hemorrhages in the skin of the ventral head and thorax. Internally, the abdominal fat pad is smaller than expected given the size of the fish, but is nevertheless present. The gastrointestinal tract is entirely empty. The wall of the colon is thickened and there is an area of intense hemorrhage through the full thickness of the colonic wall in the middle region. The mucosal surface has an irregular area of approximately 3 cm² of irregular erosion and ulceration. A muroid green plaque is present covering approximately half of this area. Hemorrhages extend irregularly from the ulcerated area into the surrounding mucosa. All of the other internal organs are grossly normal.

Case #28 (17-003) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

Tissues from 2 koi, Spot and Checkers, were submitted for histologic examination. Spot has a growth on the pelvic fin that was not present in the spring. Fish were trapped in a floating plant net when fish were brought in this fall, but not sure how long it was there. Checkers has a reddish, raised area on top of the head. This was friable and peeled off easily. Lesions were noticed about 2-months ago and are growing slowly, if at all, since noticed. Clinician would like histology before planning how much tissue to surgically remove.

Case #29 (17-010) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

Hagfish were brought into a research facility from Bamfield, September 27-28/16. We had 6 die in the first 48- to 72-hours. Each presented with a darkened spot visible externally in the region of the gall bladder. The researchers examined the affected fish and those showing the lesion were euthanized and each had a ruptured gall bladder on gross post-mortem performed by the PI. This hagfish was found on October 7 during AM check. It was missing some skin and couldn't swim for more than a few seconds without dropping to the bottom. It did not have the same discoloration seen in the others, but the researchers took samples for histology. As of October 19/16 no further cases have been identified and all hagfish are behaving normally.

Case #30 (17-036) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

The technician in a fish research lab noticed some extremely bloated zebrafish as well as fish with deep red colour around the gills.

Case #31 (17-056) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

This is a Bamboo shark in moderate body condition. There is a 4 cm diameter mass in the ventral neck region that is causing protrusion of the overlying skin. The gastrointestinal tract is empty. There are no other gross post-mortem abnormalities.

Case #32 (17-085)– Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

This fish has developed multiple raised epithelial lesions on fins and body. These were surgically removed and forwarded for histology.

Case #33 (18-027) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

Trout arrived in a research facility on October 10, 2017. They have been housed within this tank the entire time and no experiments have been done. There has been a decrease in city water temperature, but it has remained steady at 4 to 6 degrees since November 6. On Friday, December 8, the fish were starting to show lesions around the dorsal and pectoral fins. One fish was separated for the weekend and monitored for signs of distress. On Monday, December 11, 3 fish were euthanized for post-mortem investigation (histology and sample collection).

All 3 fish are similar. One has an approximately 5 cm² area of inflammation on the left side of the body, immediately caudal to the dorsal fin, and a similar area on the top third of the caudal fin. The areas are hyperemic and slightly thickened. The second trout has a similar, but smaller, area of dermatitis caudal to the dorsal fin and 2 areas of similar inflammation on the top and bottom of the caudal fin. In the third fish, the lesion was on the right side of the body over the thorax. This fish also has a problem with its melanophore system. There is a sharply demarcated zone of black skin pigmentation covering the right side from the dorsal midline to the ventral midline and from the mid-thorax anteriorly. The edges of this area are sharply demarcated and completely straight. The internal organs are grossly normal in all 3 fish.

Case #34 (18-037) – Nick Nation, Department of Laboratory Medicine and Pathology, University of Alberta

A shipment of 419 Zebrafish was received on December 15. Death losses began on December 21 when 67 fish were found dead unexpectedly. Fish start swimming slowly and progress to show red or pink spots on the body. Some also have local pigment changes: either depigmented or darker areas on the skin. Some have died while others were euthanized. Several were collected and placed in formalin while others were frozen fresh for possible microbiology studies.

All of the fish that were either euthanized or died naturally had areas of hyperemia located randomly on the skin surface and / or fins. Many had reddened areas in the abdomen. Occasional fish had exophthalmos. Some fish had local pale spots on the skin and occasionally there were areas of darkened pigmentation. Fish were selected for histology and a pooled sample of abdominal contents was taken for bacterial culture.

Case #35 (18-15510-3) – Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

Fixed tissues of an adult Grass rockfish (*Sebastes rastrelliger*) were submitted to the Oregon Veterinary Diagnostic Laboratory. The fish had been found dead by divers during routine cleaning of the (very large) tank. A field necropsy revealed a large, mottled red brown growth between the spine and esophagus. The fish also had a pale liver and thick yellow mucus in the swim bladder (not included in this submission). Culture of the mucus did not yield any bacterial growth.

Case #36 (14-4563-2) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

A university lab was experiencing a sudden increase in morbidity and mortality in a population of frogs that had been kept for research purposes. The mortality event began shortly after a massive escape involving hundreds of frogs. Although the frogs were eventually recovered from the sump, many of the escapees had abrasions of the skin or areas of hyperemia along the ventrum. An adult bullfrog was submitted for necropsy and histopathology.

Case #37 (15-442-4) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult Rio Cauca caecilian (*Typhlonectes natans*) was found dead in its enclosure with no clinical history. On external examination, there were several foci where the skin was sloughing. The affected areas were malodorous and covered by a thin, white film. Scattered foci of petechial haemorrhage were noted throughout the stomach and liver.

Case #38 (17-4104-6) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult male Oregon spotted frog (*Rana pretiosa*) was found dead in its enclosure. The client had noticed that the frog was not using its right forelimb properly in the time leading up to its death. On external examination, there was no evidence of trauma in the affected limb. Necropsy found no evidence of disease aside from a mild accumulation of red tinged fluid in the coelomic cavity and several foci of congestion throughout the liver.

Case #39 (slides A and B) (18-2101-1 and 18-2101-2) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

A hobby aquarist had placed an order for a pair of adult pea puffer fish (*Carinotetraodon travancoricus*) that were to be shipped to his place of residence. The fish were dead on arrival with no clinical history. On gross examination (which was conducted under the dissecting scope) there were a few patches of mild red discolouration of the skin.

Case #40 (18-1210-7) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult Polar cod (*Boreogadus saida*) was found dead in its enclosure with no clinical history. Two conspecific cohabitants were culled the day before on account of “unsightly growths” that had appeared on the skin. There was no evidence of disease on external examination. However, the peritoneum throughout the abdominal cavity was variably thickened by a fine granular to irregular nodular material. Many of the affected organs were also covered by a thin, friable membrane which was associated with multiple adhesions and a moderate accumulation of coelomic fluid.

Case #41 (18-1304-11) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An 8-year-old spotted pike characin (*Boulengerella maculata*) was brought to a veterinary clinic on account of a pale pink, 0.7 cm in diameter, irregular mass that was seen protruding from the right nare. A series of excisional biopsies were performed over the next few months as the mass continued to recur. Biopsy results were inconclusive. Not long after, a second mass was seen protruding from the left nare in addition to the right. Eventually, the animal was euthanized and submitted for necropsy.

Case #42 (18-2313-2C) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult Atlantic salmon (*Salmo salar*) was found dead with no clinical history. On gross examination there was pale mottling of the gills. The affected filaments were swollen with excess mucus production.

Case #43 (17-4455-6A) – Michael Pawlik, British Columbia Ministry of Agriculture, Animal Health Centre

An adult English sole (*Parophrys vetulus*) was submitted for histopathology as part of a research project to survey the health status of the population. On gross examination there was mild thickening of the gill filaments, particularly along the gill tips.

Case #44 (18-9109) – Danielle Meritet and Duncan Russell, Oregon Veterinary Diagnostic Laboratory, Oregon State University

An adult (20 kg), female Olive Ridley sea turtle (*Lepidochelys olivacea*) died while in a rehabilitation facility at the Oregon Coast Aquarium. She was in thin body (BCS 1/5) and good post-mortem condition when necropsied.

There was marked muscular atrophy and scant visceral body fat. There were multiple cutaneous ulcers, some of which were covered with fibrinous exudate, ranging from 0.5 to 4 cm long on the soft skin of the dorsal neck, cranial shoulder regions, at the angles of the mandibles, and distal extremities. There was a small amount of white crust between scales covering all limbs (approximately 100 to 200 in total); the thoracic limbs were more severely affected. Ulcers were also present along the plastron prominences (pressure points), ranging in length from 3 to 8 cm. The left caudolateral aspect of the carapace had 3, parallel, semi-curvilinear, minimally depressed, superficial (2 mm deep) scars measuring 12 cm long x 5 mm wide. The carapace also had dozens of circular to oval ulcers measuring 0.5 to 1.5 cm associated with a small amount of orange crust. There was approximately 50 mL of viscous, straw colored, slightly turbid fluid within the coelomic cavity. Throughout the parietal and visceral serosa of nearly every internal organ were thousands of small (0.5 to 1 cm in diameter), slightly raised yellow nodules to plaques. In some organs – the lungs, spleen and kidney – these nodules extended into the parenchyma and were solid yellow on section.

Case #45 (11-02079-4) – Katie Royer and Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

Fourteen fixed pieces of tissue from an approximately 1.5-year-old male octopus were received in 3 jars. The octopus had been found dead on exhibit without premonitory sign. The octopus was kept solitary and fed live crab. The field necropsy did not reveal any gross lesions.

Case #46 (11-04164-5) – Katharine Onofryton and Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

Two red-rock crabs were received alive at the Oregon Veterinary Diagnostic Laboratory, euthanized and submitted for post-mortem diagnostics.

Case #47 (18-10942) – Dawn Abbott, Department of Veterinary Pathology, and Lorraine Bryan, Canadian Wildlife Health Cooperative, Western College of Veterinary Medicine, University of Saskatchewan

A female, 400.5 g, Yellow perch (*Perca flavescens*) caught at Last Mountain Lake had “a growth on it” and was submitted, frozen, for diagnostic investigation. A relatively large (6.8 x 5 x 4.2 cm) mass was found in the abdominal cavity associated with the reproductive tract.

Case #48 (16-10786-7) – Rob Bildfell and Camila Does, Oregon Veterinary Diagnostic Laboratory, Oregon State University

This adult male California sea lion (*Zalophus californianus*) was found dead on the Oregon coast and a field necropsy was performed. The animal was assessed as in good body condition (4/5). Two cream coloured, intra-abdominal masses were located near the dorsal midline at the level of the caudal aspect of the kidneys; approximately 12 x 10 cm, with cavitated cores filled by cloudy fluid and necrotic debris. There was enlargement of a mesenteric lymph node and a sublumbar lymph node had multiple foci of friable necrotic tissue on cut surface. A poorly defined 5 cm diameter mass also distorted the shaft of the penis. The slide material is of one of the abdominal masses (ignore kidney section).

Case #49 (18-5813-8) – Rob Bildfell and Christiane Löhr, Oregon Veterinary Diagnostic Laboratory, Oregon State University

This subadult male California sea lion (*Zalophus californianus*) was found dead on Oregon coast.

Case #50 (18-13890-1) – Rob Bildfell and T. William O’Neill, Oregon Veterinary Diagnostic Laboratory, Oregon State University

This adult male harbour seal (*Phoca vitulina*) was found stranded alive on a beach, but died the following day. A field necropsy was performed. The animal was in excellent body condition. No gross lesions were found. Central nervous system sampling was restricted to a small amount of brainstem and cerebellum collected through the foramen magnum.