Signalment: Pup (6 month old), male, Pacific walrus (*Odobenus rosmarus divergens*)

History:

Animal stranded and was rescued on September 20, 2007 in Alaska, moved to SeaWorld California on October 26, 2007. This animal had a history of a firm mass in the right thoracic body wall associated with a number of ribs. The mass was partially excised three days prior to euthanasia. On the morning of December 16th, 2007, the animal was found with a wound dehiscence and severe herniation of bowel with devitalization. Surgical examination and possible repair was initiated. The animal was euthanized due to poor prognosis.

Gross description:

Necropsy examination of juvenile male Pacific walrus began on December 16th, 2007 and revealed the following: There is a 15 cm surgical wound in the right cranial abdominal wall just caudal to the last remaining rib (this was the site of intestinal herniation and was extended for replacement of bowel under anesthesia). Cranial to this, there is an intact 25 cm surgical wound between the ribs. The muscle and rib tissue in this area are variably tan and friable. One rib has a loss of integrity over an area of approximately 5cm (neoplastic invasion and bone loss). Two ribs were removed during the previous surgery. The intestines are congested and devitalized from the mid duodenum to the termination of the ileum (near total damage of the entire small intestine). There is a 15cm diameter hematoma in the muscles of the cranial abdomen and caudal thorax just ventral to the surgical site. There is a firm, tan, 1 cm x 3cm diameter plaque-like mass with central hemorrhage overlying the cerebellum.

**Figure 1:** Neoplastic invasion of the caudal thoracic body wall with replacement of the lateral aspect of the caudal most remaining rib.

**Figure 2:** Devitalized, red and congested small intestine (normal colon above).
Figure 3: Dorsal view of cerebellar meningeal mass.

Figure 4: Lateral midline view of meningeal mass (see arrow).
Signalment: Slide: A12-5214

Adult, male, yellowtail rockfish (*Sebastes flavidus*)

History:

A yellowtail rockfish, a temperate marine teleost fish, was housed with other rockfish species in a 40,000 L, closed recirculating tank that contained 13-15 °C, 31-34 ppt artificial seawater. The rockfish had a chronic history of treatment for exophthalmia, hyphema, hypopion, and a cataract. The fish spontaneously died while anesthetized with 80 mg/L tricaine methanesulfonate to be examined for an acute onset of anorexia and abnormal positioning in the water column.

Gross description:

A 30 cm tail fork length, 1.05 kg, male rockfish was in good body condition. The gross findings included moderate exophthalmia of the right eye, with hyphema, hypopion, and lenticular opacity. The gills were markedly pale, with large widespread black stippling (Figure 1). Mesenteric adipose contained small numbers of ecchymoses. Visceral organs were pale. Blood pooling within the coelomic cavity was pale and watery but clotted normally.

Figure 1. Gross photograph of gills from a yellowtail rockfish. Abundant elongated organisms with internal dark pigmentation are present throughout the gill filaments.
Laboratory diagnostics:

Gill clip wet mounts revealed large numbers of polyopisthocotylean monogeneans with most filaments containing 1-4 organisms (Figure 2 and 3). Skin scrapes were negative.

Figure 2. Photomicrograph of a gill wet mount from a yellowtail rockfish displaying a polyopisthocotylean monogenean attached to the gill.

Figure 3. Photomicrograph of a gill wet mount displaying the attachment organ (haptor) of the polyopisthocotylean monogenean. The haptor contains 31 pairs of clasping suckers arranged in two rows along its ventral margin.
**Summary of diagnosis:**

Gill: Branchitis, lymphocytic, multifocal, mild, with mild epithelial and goblet cell hyperplasia, synechia, lamellar thromboses, and intralesional polyopisthocotylean monogeneans

- Death is presumptively secondary to anemia, indicated by marked tissue pallor, resulting from branchial parasitism by abundant polyopisthocotylean monogeneans consistent with *Microcotyle sebastis*.

**Case relevance:**

Yellowtail rockfish, found off the western coast of North America from California to Alaska, are a common species in mariculture, specifically in Asia. Monogeneans are common parasites of the skin, gills, and occasionally internal sites in both marine and freshwater fish. Monogeneans are divided into two subclasses: Monopisthocotylea and Polyopisthocotylea. Polyopisthocotyleans are seen less commonly but are generally considered more pathogenic than the more common monopisthocotyleans that browse on epithelial surfaces. Parasitism by large, blood feeding *Microcotyle sebastis* is a known impediment to rockfish mariculture in Asia and is suspected in this case based on the fish host and on the presence of 31 pairs of marginal clamps on the haptor. The direct life cycles of monogeneans promote rapid proliferation to pathogenic levels in small closed aquarium systems and high stocking densities of aquaculture.
Signalment:  Slide: A17-42134

Pregnant adult 14.5 m female bowhead whale (Balaena mysticetus) with a 1.7 m female fetus

History:

This mature female bowhead whale (15B24) was harvested by aboriginal whaling crews during fall 2015 in Barrow, Alaska (71.2906° N, 156.7886° W). Aboriginal bowhead whale hunting occurring during spring and fall in eleven Alaskan whaling communities has been regulated by a quota system under the authority of the International whaling Commission (IWC) since 1977. In cooperation with the Alaska Eskimo Whaling Commission (AEWC) and whaling captains, subsistence harvested bowhead whales have been regularly inspected (post mortem evaluation) by hunters, whale biologists, and veterinarians to assess the health status of the landed whales and to collect tissue specimens and baseline data on life history, natural diseases, and marine threats.

Gross description:

Five clusters of approximately 100 sessile (depression of underlying parenchyma) and pedunculated, rounded, and semi-firm masses ranging from 0.2 x 0.2 to 1.6 x 1.6 cm were present on the mesovarium of the left ovary. On cut surface, the core was grey within a solidly red parenchyma.

Diagnostics:

Cytologic evaluation revealed abundant red blood cells primarily with few mesothelial cells.
Acknowledgements: We thank the captains and the community of Barrow and the Alaska Eskimo Whaling Commission for allowing us to examine their landed bowhead whales and to conduct the study. This study is funded by qualified outer continental shelf oil and gas revenues by a substantial grant from the Coastal Impact Assistance program, Fish and Wildlife Service, US. Department of the Interior and the North Slope Borough Department of Wildlife management. Collection of marine mammal tissues was conducted under NOAA-NMFS permit No. 17350–01.
**Signalment:** Slides: SW061075 H&E and SW061075 GMS

Yearling, female, hooded seal (*Cystophora cristata*)

**History:**

This is a yearling female hooded seal that stranded and was recovered by SeaWorld of Florida staff in July of 2006. She originally presented with presumed shark bite lacerations across her head and neck. Those wounds healed well, and she made good early progress, putting on weight and looking clinically normal. After about 40 days, she began to manifest a profound leukocytosis, and had periodic bouts of anorexia. Despite some early response to antimicrobial therapy, her leukocytosis, and poor clinical condition became refractory to therapy. During an anesthetic event on 10 November 2006, she nearly died, but was resuscitated, only to die later that day. Antemortem, a large abscess presumed to be the prescapular lymph node was lanced and flushed over her left shoulder. Radiographs showed changes consistent with pneumonia and possible cranial mediastinal lymphadenopathy.

**Gross description:**

Necropsy examination of a female Hooded Seal yearling was performed on November 11, 2006 and revealed the following: There was a moderate amount of purulent exudate within the thorax. The lungs were bilaterally wet, firm, meaty and red to purple. Firmness was increased within the cranial lobes, but there were no gross abscesses. The left prescapular and axillary lymph nodes were grossly enlarged, white to tan and exuded purulent debris on cut surface. The cranial mediastinal lymph nodes were also grossly white to tan, and enlarged and similarly necrotic. The animal has multiple healed lacerations across the head (from the prior shark bite described in the clinical history).