



Uterine hydrops in a pygmy sperm whale (*Kogia breviceps*)



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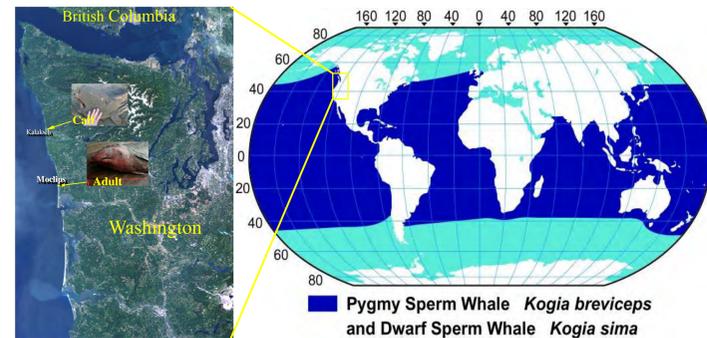
ABSTRACT

In winter 2005, a pregnant and lactating adult female and a calf pygmy sperm whale (*Kogia breviceps*) were recovered from the outer Washington coast, three weeks and 70 km apart. From 1930 – 2002, only eight pygmy sperm whale strandings were documented in Oregon and Washington, less than 1% of all reported strandings (Norman et al. 2004). Pygmy sperm whales prefer warm tropical waters but migrate to more temperate waters in the summer months; when mating usually takes place. After 11 months of gestation, calves are born in the spring weighing approximately 55 kg, they are about 1.2 m in length and nurse for roughly 12 months. Reports indicate that it is not unusual for females of this species to be pregnant while still lactating.

Based on the female's active lactation status, close spatial and temporal stranding proximity to the calf, known life history data, infrequent historical stranding information and live sighting reports in Washington, this event was most likely a mother/calf stranding. Comprehensive post-mortem examinations were performed and tissue specimens were systematically harvested. Tissue samples were collected in formalin or frozen at -20 and later submitted for histopathology and ancillary diagnostic workup.

The uterus was distended by approximately 27 L of clear serous pale yellow fluid and in the left uterine horn, a mid-gestational, anatomically normal female fetus was found. Uterine fluid accumulation is consistent with hydrops, specifically fluid within the allantois, termed hydrallantois occurs during mid- to late-pregnancy, resulting in a rapid accumulation of 10 – 40 times the normal amniotic fluid volume. It is commonly associated with diseases of the placenta, vascular disturbances of the endometrium or chorioallantois, adventitial placentation and fetal twinning; as documented in livestock, humans and terrestrial wildlife it is often fatal, while the fetus is normal and typically, there are clinical signs within the dam.

This is thought to be the first reported case of uterine hydrops (hydrallantois) in cetaceans and specifically a pygmy sperm whale. This condition is considered spontaneous and of limited implication for the population.



Map indicating the range of pygmy sperm whales and stranding sites of the adult female and calf; approx. 70 km apart on the outer coast of Washington in the U.S.

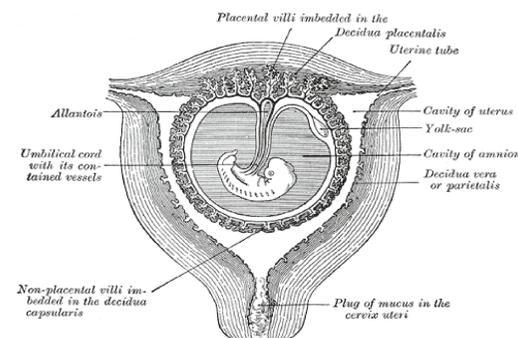


Diagram illustrating the allantois in relation to the uterus and fetus. <http://en.wikipedia.org/wiki/Allantois>



The adult female, fetus and calf. Total straight length, measured from tip of the snout to the fluke notch or center of the trailing edge of the fluke, is indicated for each individual. Photos are not relative to actual size.

CASE REPORT

ADULT FEMALE:

Morphological Diagnosis: Adult female presented in good body and fair post mortem (code 2) condition with multiple superficial curvilinear lacerations throughout the torso. On ballottement, abdomen was flaccid and fluid filled. Incision of abdominal musculature disclosed severe uterine hydrops, diagnosed by the presence of approximately 27 L of clear serous pale yellow fluid. Within left uterine horn was a mid-gestational, anatomically normal, female fetus. Accumulation of fluid within uterus and a membrane found around the fetus suggests hydrallantois. The precise nature of the hydrallantois cannot be conclusively determined, however effects of the condition likely caused the stranding. It was unclear if multisystemic microcavitation, bacteremia and muscle degeneration seen on microscopic exam would have contributed to ante mortem illness (morbidity) or was a terminal event associated with stranding.

Microbiology: Bacteriology- aerobic culture yielded light to moderate mixed growth of *E. coli* and α hemolytic *Streptococcus* spp. from lung and lymph nodes, with light pure growth of *E. coli* in the neck abscess tissue. No bacteria were recovered from the brain, amniotic fluid, uterus, umbilicus or placenta. Enrichment culture of the bowel was negative for *Salmonella* spp. Virology- No cytopathic effect was apparent after 3 weeks incubation in Mabin Dawby and Vero cell lines.

PCR: *Brucella* spp. (universal primers), dolphin morbillivirus and Mollicutes were negative on pooled tissues (lung, lymph node, spleen, liver, placenta, umbilicus and fetal lungs).

Trace Minerals: Calcium, cadmium, copper, iron, mercury, magnesium, manganese, selenium were within normal limits in the liver. No lead was detected.

Vitamin A: Retinyl palmitate and retinol levels were below detectable limits (<25 mcg/g dry wt).

Disease screening: Brucella-suspect titer; serum tested positive for the presence of antibodies to *Brucella* spp. on BAPA and Card test and negative for Rivanol using *B. abortus* antigen. Leptospirosis screening was negative using MAT for *Leptospira pomona*, *L. icterohemorrhagiae*, *L. hardjo*, *L. canicola* and *L. grippityphosa*.

Genetics: The species was confirmed as being a *K. breviceps*. Further analysis will establish if a mother/calf relationship exists by comparing haplotypes. Investigations are ongoing.



The accumulation of fluid within the uterus (left), the mid gestational fetus (center) and a membrane found around the fetus (partially ruptured amniotic membrane) (right), suggests hydrallantois.

FETUS:

Plaques, grossly noted along the umbilicus were attributed to squamous metaplasia and considered incidental findings. There were no lesions within the examined fetus and all samples appeared normal upon histology.

CALF:

The only tissues remaining were skin, muscle, skeletal material, and portion of brain. Due to post-mortem scavenging and decomposition, cause of stranding could not be conclusively determined however, based on the assumption that this is a mother/calf stranding event, cause of death may be due to abandonment, predation, and/or starvation.

ACKNOWLEDGEMENTS

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