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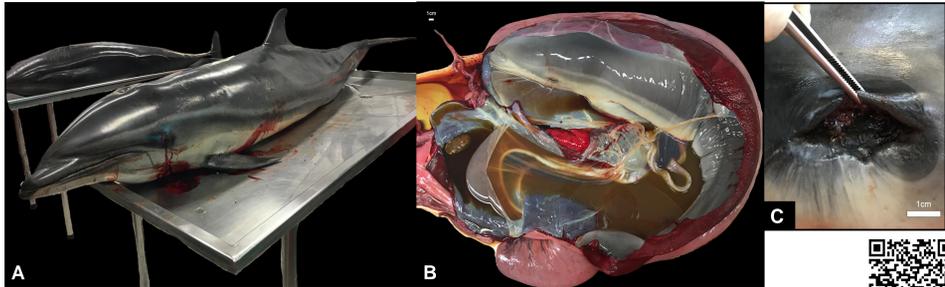


Figure 1. (A) Adult Fraser's dolphins (*Lagenodelphis hosei*) females stranded at Boraceia beach, ii163235 (right) and ii163238 (left). (B) Individual ii163237 was pregnant (fetus ii949881) and didn't had the left eyeball (C).



MATERIALS AND METHODS

- Complete necropsies were performed with representative samples collected: swabs for culture, formalin-fixed and frozen tissue samples for histopathology and Polymerase Chain Reaction - PCR, respectively.
- Selected samples were molecularly tested for the following pathogens: morbillivirus [reverse transcription-PCR targeting the RNA polymerase gene]¹, herpesvirus [nested-PCR partially amplifying the DNA polymerase gene of subfamilies *Alpha*, *Beta* and *Gammaherpesvirinae*; and of the glycoprotein B, subfamily *Gammaherpesvirinae*]^{2,3}, Adenovirus [nested-PCR partially amplifying the DNA polymerase gene]⁴ and *Brucella* spp. [conventional PCR amplifying the IS711 gene]⁵.

RESULTS AND DISCUSSION

PATHOLOGICAL FINDINGS: included muscular atrophy (4/7), lymphoid atrophy/depletion (2/7), interstitial pneumonia (2/7) and parasitosis by *Phylobotrium delphini* (blubber, 4/7), *Monorygma grimaldii* (peritoneum, 4/7) and an unidentified cestode (intestines, 2/7), Tab. 2.

Case 1. presented a para-uterine abscess, renal necrosis with intratubular casts, tonsillar necrosis and necro-suppurative gingivitis and glossitis with eosinophilic intracytoplasmic inclusion bodies, suggesting involvement of a viral agent (Fig 2.).

Case 3. absence of the left eyeball (Fig 1C.).

CULTURE: several microorganisms comprising *Pseudomonas* sp., *Aeromonas* sp., *a-hemolytic Streptococcus*, *Mannheimia haemolytica* and *Candida parapsilosis* were isolated from different cases (lung n=4, reproductive tract n=4, oropharynx n=4 and skin=1), Tab. 2. displaying variable antibiotics resistance (data not shown).

PCR: All cases were PCR-negative for tested viruses, however, **case 1.** was *Brucella* spp.-positive (detailed results in oral presentation).

Case No.	Summary of histopathological, culture and parasitology results
1	Histopathology: Moderate suppurative and necrotic gingivitis with intraepithelial pustules and eosinophilic intracytoplasmic inclusion bodies; mild to moderate renal necrosis and tubular degeneration with hyaline casts presence; moderate suppurative glossitis; marked tonsil necrosis with calcification; moderate pulmonary hemorrhage; moderate subcapsular and medullary sinus mesenteric lymph node ectasia; marked lymph node hemosiderosis; mild encephalic perivascular and esophageal hemorrhage; focal parasitic cyst in small intestine; systemic hyperaemia/congestion (kidney, lung, brain, thyroid, medulla). Culture: Oropharynx / nasopharynx: <i>Pseudomonas koreensis</i> , <i>Pseudomonas rhodesiae</i> , Paraurterine abscess: <i>Pseudomonas putida</i> , <i>Pseudomonas fragi</i> . Uterine horn: <i>Pseudomonas putida</i> . Lung: <i>Escherichia coli</i> Parasitology: Peritoneum: <i>M. grimaldii</i> , Skin: <i>P. delphini</i>
2	Histopathology: Systemic congestion (adrenal glands, spleen, encephalon, liver, laryngeal tonsil, pulmonary and mesenteric lymph node, kidneys, thyroid and parathyroid, trachea, hypophysis, urinary bladder); Mild oedema and marked pulmonary congestion; Moderate pulmonary lymph node lymphoid atrophy; Moderate muscular atrophy; Granulomatous moderate parasitic dermatitis. Culture: Lung: Negative, Oropharynx/nasopharynx: <i>Pseudomonas rhodesiae</i> , <i>a-hemolytic Streptococcus</i> and <i>Candida parapsilosis</i> . Parasitology: Skin: <i>P. delphini</i> , Peritoneum: <i>M. grimaldii</i>
3	Histopathology: Moderate pyogranulomatous phrenitis; Mild lymphoplasmacytic interstitial pneumonia; Moderate mesenteric lymph node lymphoid depletion; Mild suppurative pulmonary lymph node lymphadenitis; Systemic hyperaemia/congestion (brain, stomach, lung, liver, hepatopancreatic lymph node; kidney; thyroid); mild haemorrhage in brain and stomach and mild placental hemosiderosis. Culture: Lung: <i>Pseudomonas</i> sp.; Uterine corn: <i>Pseudomonas tolaasii</i> Parasitology: Peritoneum: <i>M. grimaldii</i> , Skin: <i>P. delphini</i> , Small intestine: unidentified cestode
4	Histopathology: Systemic hyperaemia/congestion (adrenal glands, spleen, encephalon, stomach, liver, pulmonary, mesenteric, pancreatic, submandibular and pre-scapular lymph node, lungs, kidneys, thyroid and parathyroid, rete mirabile and hypophysis); Lymphoid hyperplasia of pre-scapular pulmonary lymph node; Muscular moderate atrophy. Culture: Oropharynx/nasopharynx: <i>Providencia rustigianii</i> Parasitology: Skin: <i>P. delphini</i> , Peritoneum: <i>M. grimaldii</i>
5	Histopathology: Systemic hyperaemia/congestion (adrenal glands, spleen, encephalon, stomach, liver, ovary, pulmonary and pre-scapular lymph node, medulla, pancreas, lung, kidneys, thyroid and parathyroid and rete mirabile); Mild steatosis; Mild lymphoid hyperplasia (laryngeal tonsil, thymus, and rectal, pulmonary, mesenteric and pre-scapular lymph node); Mild muscular atrophy; Marked multifocal to coalescent granulomatous panniculitis with fibroplasia; Mild lymphocytic interstitial pneumonia and focal haemorrhage in rete mirabile. Culture: Lung: <i>Mannheimia haemolytica</i> , <i>Serratia liquefaciens</i> , <i>a-hemolytic Streptococcus</i> and <i>Aeromonas bestiarum</i> . Skin: <i>Pseudomonas antarctica</i> , <i>Pasteurella</i> sp., <i>Pseudomonas oleovorans</i> . Oropharynx/nasopharynx: <i>Serratia liquefaciens</i> , <i>Hafnia alvei</i> , <i>Pasteurella</i> sp., <i>Pseudomonas oleovorans</i> . Parasitology: Large intestine: unidentified cestode
6	Histopathology: Systemic congestion (adrenal glands, spleen, cerebellum, hypophysis, stomach, liver, small and large intestine, pulmonary, pre-scapular, submandibular and mesenteric lymph node, pancreas, kidneys, thymus, thyroid and parathyroid, trachea, urinary bladder); Mild oedema and moderate pulmonary congestion; Moderate muscular atrophy (epaxial muscle and diaphragm); Marked umbilical cord perivascular haemorrhage. Culture: Placenta: <i>a-hemolytic Streptococcus</i> , <i>Pseudomonas cedrina</i> Histopathology: Systemic hyperaemia/congestion (liver, encephalon, kidney, thyroid gland). Culture: Placenta: <i>Pseudomonas gessardii</i> . Lung: <i>Pseudomonas fluorescens</i> .
7	Histopathology: Systemic hyperaemia/congestion (liver, encephalon, kidney, thyroid gland). Culture: Placenta: <i>Pseudomonas gessardii</i> . Lung: <i>Pseudomonas fluorescens</i> .

Table 2. Summary of histopathological, culture and parasitology results of Fraser's dolphins stranded in Boraceia beach, Sao Paulo State, Brazil.

INTRODUCTION

The Fraser's dolphin (*Lagenodelphis hosei*) is an extremely rare species inhabiting neritic or oceanic tropical waters, having unknown population and conservation trends, with few strandings registered. On August 24, 2021, five *L. hosei* females; one juvenile and four adults (two of them pregnant), Tab. 1., stranded alive at Boraceia beach, Bertioga (São Sebastião, São Paulo state, Brazil), dying shortly after. Another *L. hosei* female stranded in advanced decomposition code (Tab. 1), 12 days after at approximately 28 Km away (Maresias beach, São Sebastião, São Paulo state, Brazil). This study compiles the results of the analyses performed to elucidate the cause of this mass stranding event.

Case No.	Specimen identification	COD	Sex	Age class and sexual maturity	Weight and total body length -TBL	Nutritional condition	Estimated age (years)
1	ii163235	2	F	A (mature)	107,4 kg / 250 cm	Poor	12
2	ii163236	3	F	A (mature)	121,5 kg / 235 cm	Poor	11
3	ii163237	3	F	A (mature, pregnant)	128,8 kg / 246 cm	Poor	8
4	ii163238	2	F	A (mature, pregnant)	128,5 kg / 242 cm	Poor	16
5	ii163239	2	F	J (immature)	64 kg / 192 cm	Poor	2
6	ii949881	3	F	Fetus of 163238	6,2 kg / 88,9 cm	Good	-
7	ii950124	3	M	Fetus of 163237	12,99 kg / 98,3 cm	Good	-
8	ii163242	4	F	J	94,5 kg / 221 cm	Poor	10

Table 1. Decomposition code, sex, age class and sexual maturity, weight and TBL, nutritional condition and estimated age in years of Fraser's dolphins stranded in Boraceia and Maresias beach, Sao Paulo State, Brazil.

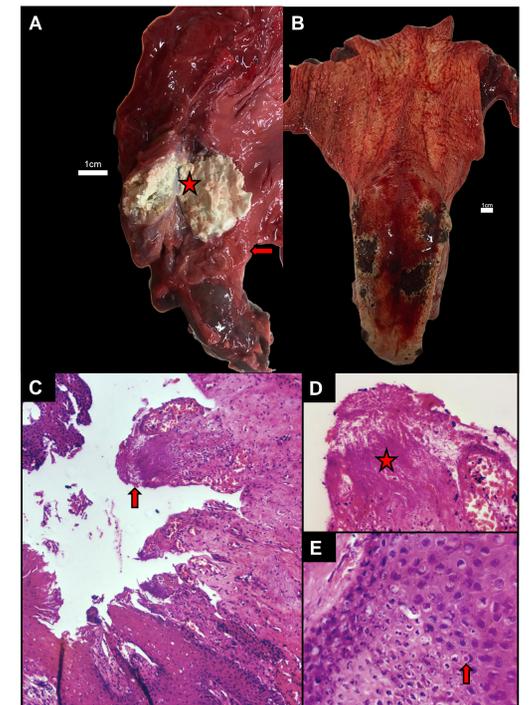


Figure 2. (A) Case 1, para-uterine abscess, presenting abundant creamy whitish content when cut (star). Regional lymphadenomegaly was also noted (arrow). (B) Case 1, moderate suppurative and necrotic glossitis associated with ulceration and intralesional bacteria (C) HE, 10X (arrow) and (D) HE, 40X (star). (E) Case 1, eosinophilic intracytoplasmic inclusion bodies (arrow) observed in the gingival lesions.

CONCLUSIONS

This work constitutes the first register of *L. hosei* mass stranding on this region. Despite we provide valuable data regarding their health status, we couldn't establish the primary cause of this atypical event. Further studies will be conducted in an attempt to clarify it.

LITERATURE CITED: ¹Tong et al. 2008. J. Clin. Microbiol., v.46(8):2652-2658; ²Ehlers et al. 2008. J Virol. 82:3509-3516; ³Vandevanter et al. 1996. J. Clin. Microbiol. 34:1666-1671; ⁴Li, Y. et al. 2010. Virol. 84, 3889-3897; ⁵Batinga et al., 2018. Mol. Cell. Probes., v.39:1-6.