

St. Leger, Judy; Danil, Kerri; Dennison, Sophie; Scadeng, Miriam; Bernaldo de Quirós Miranda, Yara; Fernandez, Antonio; Cranford, Ted; Wilkin, Sarah; Rowles, Teri. Pathology of Barotrauma in Long-beaked Common Dolphins (*Delphinus capensis*). *19th Biennial Conference on the Biology of Marine Mammals, November 27 - December 2, 2011. Tampa, Florida.*

On March 4, 2011, a pod of long-beaked common dolphins (*Delphinus capensis*) was observed swimming towards the site of a controlled underwater explosion. Three motionless and floating dolphins were identified at the surface one minute after the detonation of the charge. The animals were declared dead soon afterwards. Within 24 hours, the carcasses were examined by computed tomography (CT), magnetic resonance imaging (MRI), morphometric measurements and gross necropsy were performed. Subsequent evaluations included histologic review of tissues, gas analysis of bubbles identified within vessels, screening for potential biotoxins, and prey identification. All three animals presented similar results with variations in severity. External and morphometric measurements indicate that these animals were an adult lactating female, a juvenile male, and a subadult male. Imaging studies demonstrated gas bubbles within vessels of the brain, vertebral canal, esophagus, larynx, intestines, liver, within the heart and pulmonary vasculature, free in the peritoneum, surrounding the renules and within perimandibular fat pads. One animal demonstrated acute fracture of the right tympanic plate with disruption of the ossicles. Gross necropsy revealed moderate to marked intravascular gas bubbles present in abdominal and thoracic vasculature. There were acute petechial to ecchymotic hemorrhages in the lungs, concentrated in the subpleural regions, in the mucosal and submucosa of the trachea, bronchi, esophagus, and in fat along the mandible (acoustic fat). Histologic review demonstrates no significant pathology other than changes associated with acute hemorrhage and embolism. Oil red O staining of lungs and lymph nodes demonstrated fat emboli within alveolar lumens and subcapsular sinusoidal spaces. Gas evaluations indicate gases with similar composition to inspired air or intestinal gases. The presumptive cause of death for each animal was acute vascular gas embolism. These findings provide a baseline of lesions from animals exposed to known barotrauma at shallow depth.