

**ZC-10 Individual Animal Reports Excerpted from:**

**2005 Ketten, D. R., Beaked Whale Necropsy Findings for Strandings in the Bahamas, Puerto Rico, and Madeira, 1999-2002. WHOI Technical Report WHOI-2005-09. pp. 1-38 at**

<http://www.whoi.edu/csi/images/WHOI-2005-09.pdf>

**Analysis Requested by:** NMFS/T. Rowles; Bahamian Fisheries Service/ A. Bater

**Field Dissections:** 19-21 March, 2000

**Preliminary Oral Report:** 22 March, 2000

**Written Summary Report:** 13 April, 2000/revised 31 May 2000/finalized 25 October 2000

This report is based on dissections and computerized tomographic data as noted for each specimen. Each specimen is assessed individually and listed in chronological order of examination. Findings for each individual are summarized at the end of each specimen section.

**1 Specimen ID/sex: 10-Zc female 18 feet total length**

Species: *Ziphius cavirostris*

Date of stranding: reported 16/03/00; presumed 15/03/00

Location: Golden Rock Creek G.B 26.30N/78.22W

Preliminary condition: Code 3/Dead-decaying

Analyses to date: field dissection

Tissue Dispositions: Bater/Ewing unless otherwise noted

Skull– frozen

Right ear – formalin

Left ear *in situ*-frozen

Eye, lung, ovary -formalin

Stomach contents – frozen

Renal parasites – EtOH

Skin-frozen

Serum, hemolyzed blood-frozen

**Observations/other observers:**

The animal was first reported stranded at Gold Rock Creek, Grand Bahama, by Dr. Alan Bater of Freeport, Grand Bahama. Dr. Bater conducted a preliminary examination of the whale on March 17, and requested that a NMFS veterinary pathologist assist with the necropsy. Others who reported seeing the whale earlier said she stranded live but appeared debilitated. Dr. Bater and Mr. Chris Allison reported that the whale had blood coming from the eye sockets and mouth at the time of their exam. Samples of the blood from the eye area were obtained by Dr. Bater and refrigerated. Dr. Ruth Ewing from NMFS Southeast arrived on March 18 to assist. The whale, which had been buried on order of local authorities on the afternoon of March 17, was exhumed on March 18 at 1200. Dr. Ewing and Dr. Bater conducted the necropsy of the body cavity. Mr. Ken

Balcomb, Mr. Hoyt Peckham, and Ms. Nan Hauser assisted with the necropsy and documented it on film and video. The head was removed, transported to Dr. Bater's office, and placed in barrels with ice. Dr. Darlene Ketten (WHOI/HMS) and Mr. Charles Potter (Smithsonian MNH) arrived March 19 to conduct the cranial exam. The results from the body cavity will be reported by Dr. Ewing. All observations noted below were photo-documented.

**Observations/Ketten/Cranial/Temporal regions:**

The head was extracted from the ice bath and placed ventral up for examination. Most of the superficial tissue had been removed during the beach necropsy, including the majority of the dorsal, ventral, and lateral blubber layer, underlying fats, and musculature. There are extensive superficial deposits of sand and sediment.

Intermandibular length is 32.5 cm; interbullar length at mid-tympanic, 30 cm.

Basic condition of the residual head tissues is badly necrosed. The brain is fully autolyzed; no samples of residual central nervous system tissues were taken.

Gross examination of the major skull elements shows no evidence of fracture or dislocation. Sutures are intact and fused. The narial passages are clear although the mucosa has some necrotic regions. There are no gross hemorrhages in the mandibular fats or remaining jaw musculature and no overt contusions of the maxillary or mandibular bones.

The peribullar complex is somewhat bleached bilaterally.

The temporal bones (tympano-periotic complex) are normally positioned, and there is no indication of overt fracture in the bony elements of the tympanic or periotic bullae. The external surfaces of the tympano-periotic complex are clean and well-formed. The VIIIth nerve was absent and the cochlear windows were compromised. There is a moderate pooling of blood in the retrobullar space on the right. The left peribullar areas are unremarkable.

The right posterior tympanic prominence cartilaginous shield has moderate bruising. The middle ear corpus cavernosum is heavily invested with blood bilaterally. The right ear was extracted as a complete complex, perfused with buffered formalin via the round window, and placed in buffered formalin in a sealed whirl pak. The left ear was left *in situ* since the gross condition of the head did not appear to warrant a bilateral harvest of tissues.

**Findings:**

Because of the absence of gross damage, the state of the head (necrotic and flensed) makes any conclusion about trauma or disease equivocal. The superficial debris is consistent with burial. The condition of the tissues is consistent with 3 days or more post-mortem at the local temperatures. The dimensions and overall appearance of the head are consistent with an adult female. The lack of fracture and deep bone bruising in combination with a lack of preferential hemorrhage in the perimandibular tissues suggests the animal was not subjected to an intense pressure from a near-by blast or shock wave. The gross condition of the tympano-periotic complex is consistent with a healthy adult ear with no overt indicators of prior severe otitis media. Intra-labyrinthine condition cannot be assessed reliably in this examination because conventional indicators (e.g., fenestral integrity, VIIIth nerve dimensions and condition) are absent.

Exsanguination of the peribullar spaces is likely to be related to decapitation followed by soaking in the ice bath. Pooling of blood in retrobullar spaces, effusion of the corpus cavernosum, and the mottled appearance of the peribullar cap are suspicious but are also consistent with post-mortem artifact. The presence of blood on the right side may be attributed to post mortem lividity or to a unilateral insult. Histological analyses of the samples taken of the ear tissues may be warranted to address the question of whether the gross changes occurred ante or post mortem, but it is unlikely that the inner ear structures required to address acoustic or vestibular trauma remain. CT examinations of these tissues may be able to determine bilateral differences in intracochlear blood, but, again, such findings would be equivocal.

**Summary:**

Poor preservation/Extensive autolysis/Retrobullar blood Rt/Peribullar blood Rt