

# Stranding response and skeletal rearticulation of a harbor porpoise (*Phocoena phocoena*)

## INTRODUCTION

Harbor porpoises (*Phocoena phocoena*) are found in northern temperate, subarctic, and arctic waters. In the North Atlantic, they range from West Greenland to Cape Hatteras, North Carolina. Live, presumably healthy, harbor porpoises have rarely, if ever, been seen in North Carolina, but sub-adults often strand dead in the late winter. On April 17, 2014, Karen Clark of the Outer Banks Marine Mammal Stranding Network and the NC Wildlife Resources Commission responded to a dead harbor porpoise on the ocean beach of Kill Devil Hills, NC (Fig. 1).

## METHODS

The carcass (#. KLC196), a 129 cm subadult female (Fig. 2), was transported to the NC Maritime Museum in Beaufort, NC. After a 30-month burial in a shallow, sandy grave (Figs. 3-5), the bones were cleaned and soaked in a Dawn/ammonia solution, then soaked for 5 days in a 3.5% hydrogen peroxide solution and sealed (Fig. 6). After necessary bone repairs, the pectoral fins bones were mounted using  $\frac{1}{16}$ " stainless steel rod, plexiglass, and E6000 adhesive. A 3/8" stainless steel rod extends through the vertebral centra and into the cranium (Fig. 10). Ribs were attached using PVC coated wire and casting resin mixed with bone dust (Figs. 7-10). Polyethylene foam represents the intervertebral disks. Monofilament fishing line supports the mandibles and chevrons.

## RESULTS

The total bone and teeth weight was 0.99 kg (2.18 lbs). The modular (six sections) portable display (Fig. 11) weighs 1.32 kg (2.9 lb.) Approximately 420 person hours were dedicated to this project. The cost of tools, materials, and supplies was approximately \$1,200.



**Fig. 1.** Coastal North Carolina with a red star at the Kill Devil Hills stranding site.



**Fig. 2.** The dead stranded harbor porpoise on the ocean beach of Kill Devil Hills, NC on April 17, 2014.



**Fig. 3.** We wrapped the carcass in nylon netting and hardware cloth then buried it in a shallow, sandy grave for 30 months to remove the soft tissue and degrease the bones.



**Fig. 4.** The exhuming team on October 11, 2016, included (L to R) Barbie Lebrun, Keith Rittmaster, Jeremy Dugas, Josh Summers, Nan Bowles, and LaNelle Davis.



**Fig. 5.** The bones after exhuming and before cleaning/sealing.



**Fig. 6.** After exhuming and brushing off the bones, further treatments included A) a warm 2-week soak in 10% household ammonia solution with a bit of Dawn dish soap to degrease the bones, B) a 5-day soak in 4% hydrogen peroxide to kill bacteria and dissolve proteins, C) drying bones in sunshine for 2 weeks, then D) applying 2 coats of diluted Jade 403 bookbinding glue to strengthen fragile areas and seal bones.



**Fig. 7.** Once matched to their correct vertebrae, growth plates (epiphyses) were attached using E6000 adhesive.



**Fig. 8.** A temporary jig supporting the thoracic vertebrae and ribs facilitated adjustments prior to permanent fastening.



**Fig. 11.** The 1.32 kg (2.9 lb.) 132 cm (4.3') portable modular skeletal mount can be displayed on tripods or suspended. Approximately 75% of the final display weight is bone, the rest is steel, adhesives, resins, and plexiglass.

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