UNUSUAL MORTALITY IN THE DEPLETED COOK INLET BELUGA
(DELPHINAPTERUS LEUCAS) POPULATION

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In 2003, an unusually high number of beluga (Delphinapterus leucas) deaths occurred in Cook Inlet, Alaska. This small population of whales is segregated geographically and genetically from all other populations of belugas in Alaska waters (O’Corry-Crowe and others 1997). Cook Inlet belugas display strong site fidelity and many remain year-round in the Inlet (Rugh and others 2004), making this population vulnerable to impacts from anthropogenic and environmental hazards (Calkins 1983; Moore and DeMaster 2000; Moore and others 2000). Factors that may presently impact the Cook Inlet beluga population include harvest by Alaska Natives, contaminants, boat traffic, killer whale (Orcinus orca) predation, strandings, disease, forage base decline, human-induced habitat changes, and an ocean regime shift (Vos 2003).

The National Marine Fisheries Service (NMFS) receives reports of live strandings and dead whales from a variety of sources that include the public, air taxi services, State troopers, and other agencies. When possible, NMFS biologists go to live strandings and conduct aerial surveys after stranding events to search for dead whales. A concerted effort is made to confirm any reports of dead whales, to examine carcasses, and to take appropriate samples. A veterinary pathologist is contracted to help perform necropsies and analyze results. Samples taken from dead belugas (depending on stage of decomposition) may include skin for genetic analysis; blubber, kidney, liver, and muscle for contaminant analyses; histology samples from organs to be examined for abnormalities and disease; a lower jaw with teeth intact for aging; blubber for fatty acid analysis; the stomach for diet analysis; and the female reproductive tract for fecundity analysis. Dead whales are examined for tumors, parasites, and other abnormalities, and also for trauma from such sources as killer whales, boat strikes, net entanglement, and gun shots.

Between 1994 and 2002 (years in which records are fairly reliable), the average number of beluga deaths reported was 9.6 (Table 1: range = 3 to 13 deaths per year, excluding Alaska Native harvest). The high number of documented beluga mortalities in Cook Inlet in 2003 may be partially attributed to a greater awareness and increased reporting by the public. Since the decline of the beluga population (documented from 1994 to 1998; Hobbs and others 2000), there has been extensive media coverage on belugas and widespread public awareness.

During 2003, there were 20 confirmed beluga deaths in Cook Inlet (Fig. 1 and Table 2). Several of the documented mortalities in 2003 were large adults. Of the 17 whales of known length, 8 were over 400 cm (13’1”) long, with the largest being 477 cm (15’8”) long (Table 2). Some of these deaths may have resulted from live strandings. Cetaceans have difficulty shedding heat even in cold weather, and the lack of water to support the body can cause compression of the chest cavity leading to respiratory fatigue and distress. Within a few hours of stranding, some may go into shock or vascular collapse leading to poor circulation and impaired organ function. Once the animal goes into shock, even if it is able to swim free, its health has been impaired, which may prevent recovery (Geraci and Lounsbury 2002).

Mass live-strandings are not uncommon in Cook Inlet where tidal ranges exceed 9.5 m (30 ft), and tidal bores of up to 3.2 m (10 ft) occur in Turnagain and Knik Arms (Moore and others 2000). Belugas often survive stranding through part of a tide cycle (up to 6 h) to refloat and swim away on the incoming tide. Deaths during strandings appear to be rare (total known mortalities = 12 belugas out of 650 that stranded between 1988 and 2000; Moore and