

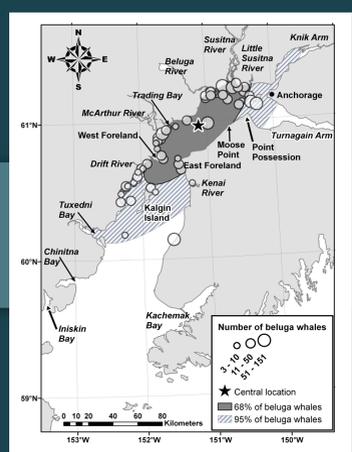
Range Contraction in a Beluga Whale Population



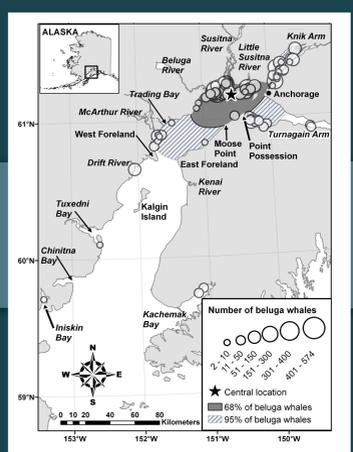
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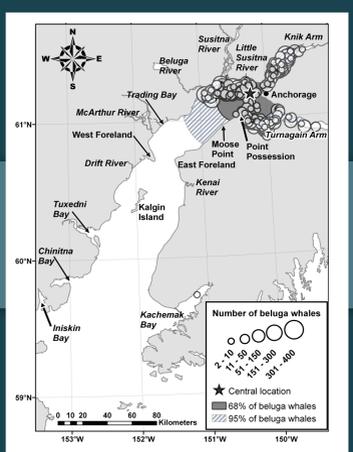
Northward contraction in range



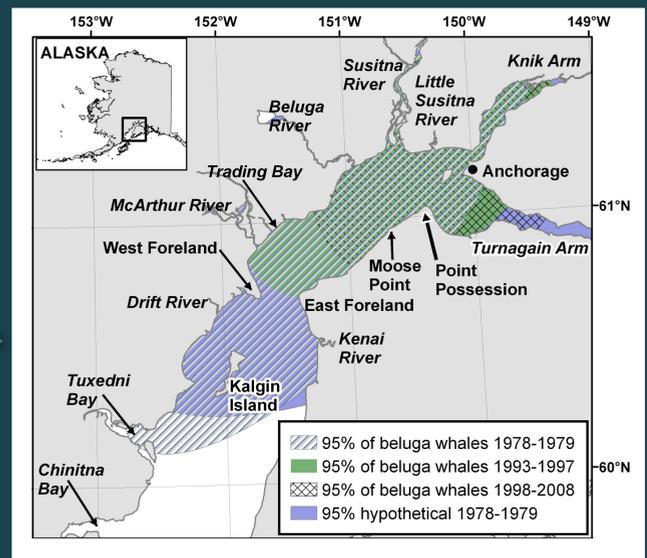
1978-1979
7,226 sq.km



1993-1997
3,715 sq.km

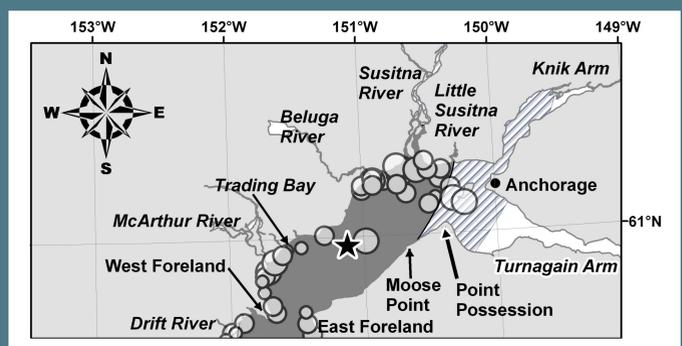


1998-2008
2,806 sq.km

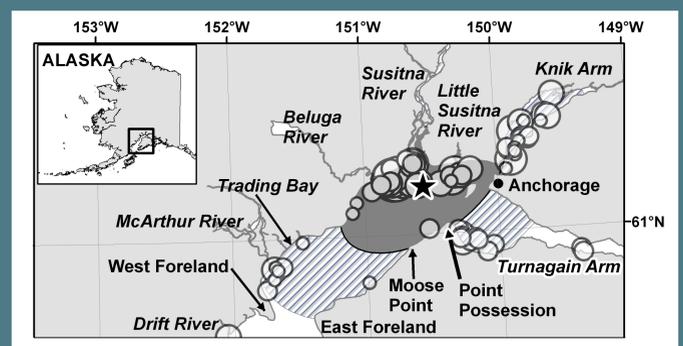


Area used reduced from
100% to 51% to 39%

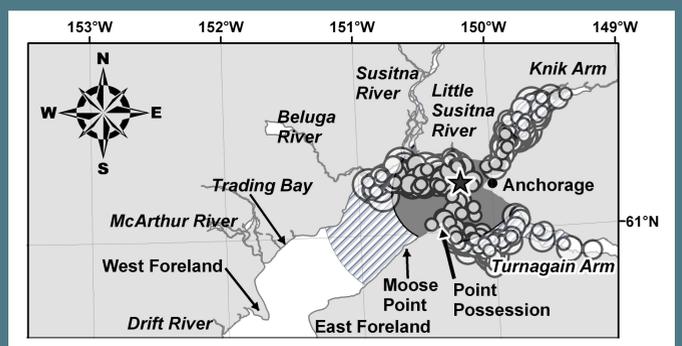
While Susitna delta density remains about the same



1978-1979
N = 251, 43% of belugas



1993-1997
N = 337, 58% of belugas



1998-2008
N = 172, 50% of belugas

Hypotheses

1. Habitat Change

One possibility is habitat change, such as prey availability. Fish runs may have declined in the southern portion of Cook Inlet, more so than in the north. Or fish runs may have declined throughout the inlet and only in the shallow river channels in the northern areas is it still relatively easy for belugas to catch fish. Belugas feed on anadromous fish that include eulachon and 5 species of salmon but we don't have long-term data for commercial species such as salmon and especially not for non-commercial species such as eulachon, that have been collected in a way that we can compare the fish run timing, location, and abundance to beluga distribution.

2. Killer Whales

Another possibility is avoidance of killer whales. Killer whale attacks on belugas in Cook Inlet are not uncommon, so do belugas retreat to the northern reaches of Cook Inlet to avoid killer whales? Belugas can hide from killer whales by entering shallow channels over mudflats, sometimes to the point where they strand through a tide cycle. However, predation on belugas has been documented in the northern portion of Cook Inlet, so this area is not a complete sanctuary. And to assume that killer whales are the primary factor driving beluga distribution would not explain why so many belugas were seen in the southern portion of the inlet in the past.

3. Optimal Habitat

Another possibility is that the few belugas that are left still remain in optimal habitat. The use of a limited range by the remnant population is consistent with the history of this population. The number of belugas in the Susitna area was consistently higher than in any other region of the inlet, even though this was the area in which most subsistence hunting occurred and although it is not far from ongoing coastal zone development near Anchorage. This does not explain why the upper inlet is preferred, but it seems reasonable that poorer quality habitat would be abandoned when the population gets smaller and there are fewer belugas competing for the same resources. This is particularly true for social animals like belugas that frequently gather in large groups and appear to return to the same summering areas their mothers use.