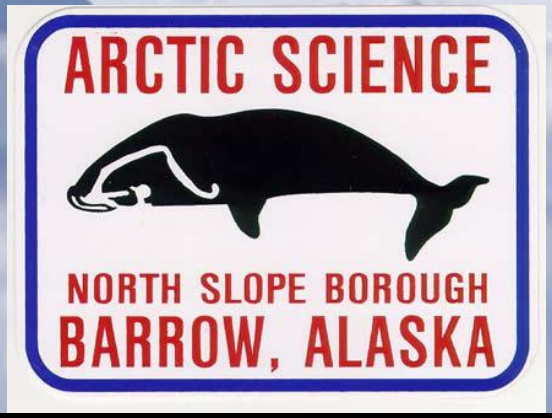
BOWHEADS: THE "STAY AT HOME" WHALES



John "Craig" Craighead George
North Slope Borough
Department of Wildlife Management

Why Migrate at all?

Food
Breeding
Predators
Calving
Environmental conditions

Types of migration

Seasonal

Latitudinal migration

Altitudinal migration

Reproductive migration

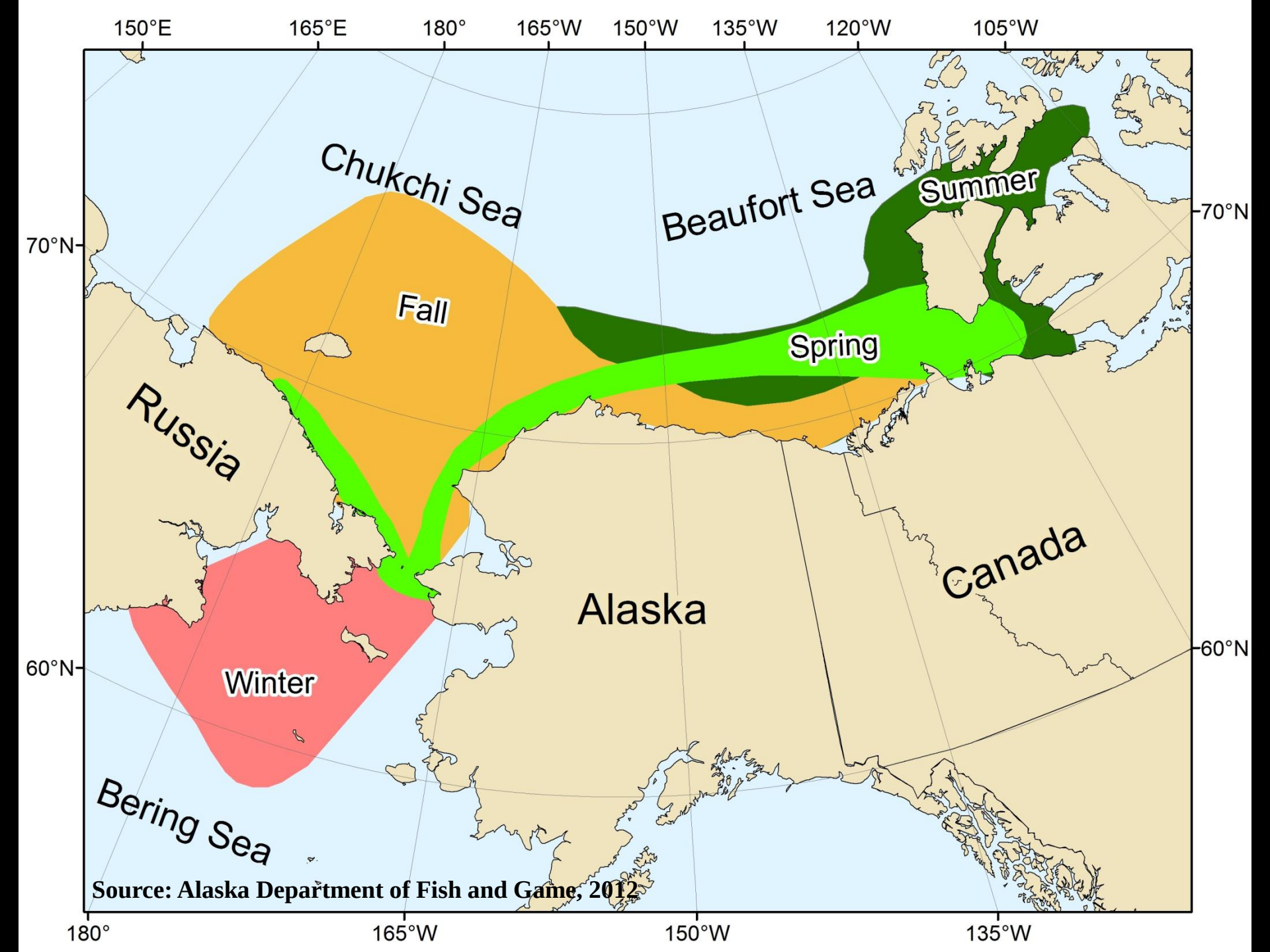
Nomadic migration

Removal migration

Complete migration
Virtually all members of the species leave their breeding range

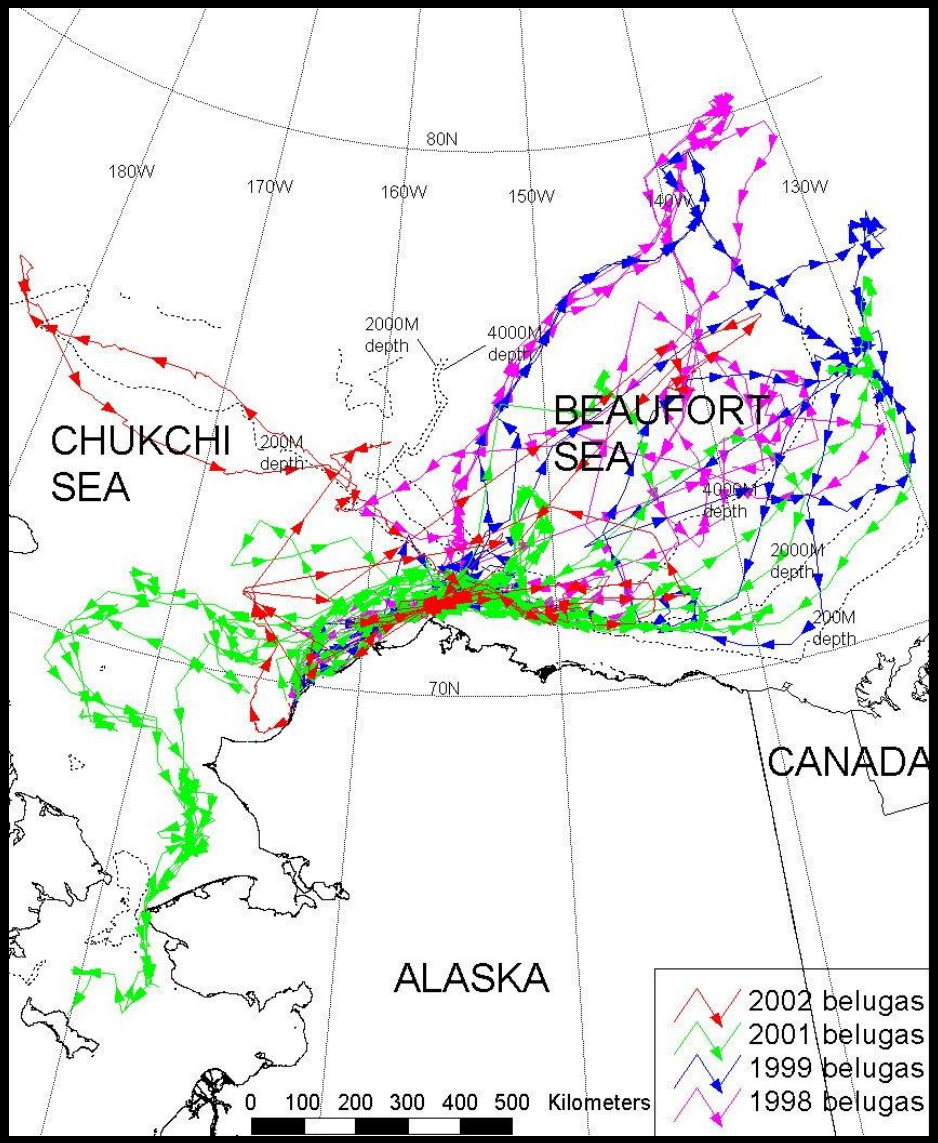
Partial migration
Some but not all migrate; Ravens, Herring gulls
Irruptive migration

Bowhead movie



Source: Alaska Department of Fish and Game, 2012

Beluga

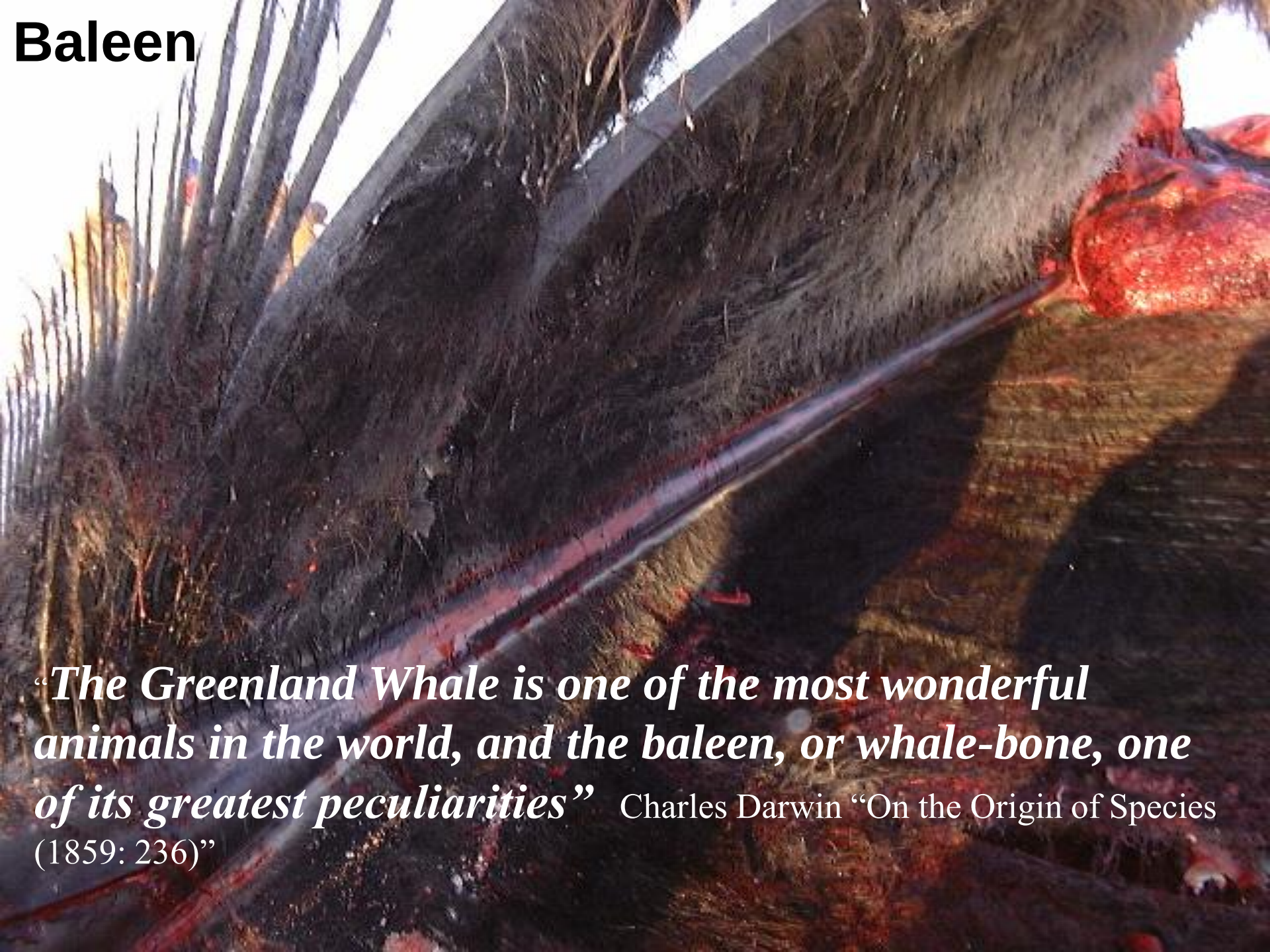

80N
180W
170W
160W
150W
140W
130W
2000M depth
4000M depth
CHUKCHI SEA
200M depth
BEAUFORT SEA
4000M depth
2000M depth
200M depth
70N
CANADA
ALASKA
0 100 200 300 400 500 Kilometers
2002 belugas
2001 belugas
1999 belugas
1998 belugas

What if you don't migrate out of the Arctic?

Adapt!:
Raised rostrum or "bowed-head"
Blubber thickness
Low body temperatures
Calving
Long Baleen
Low Metabolic Rates?
Live forever…

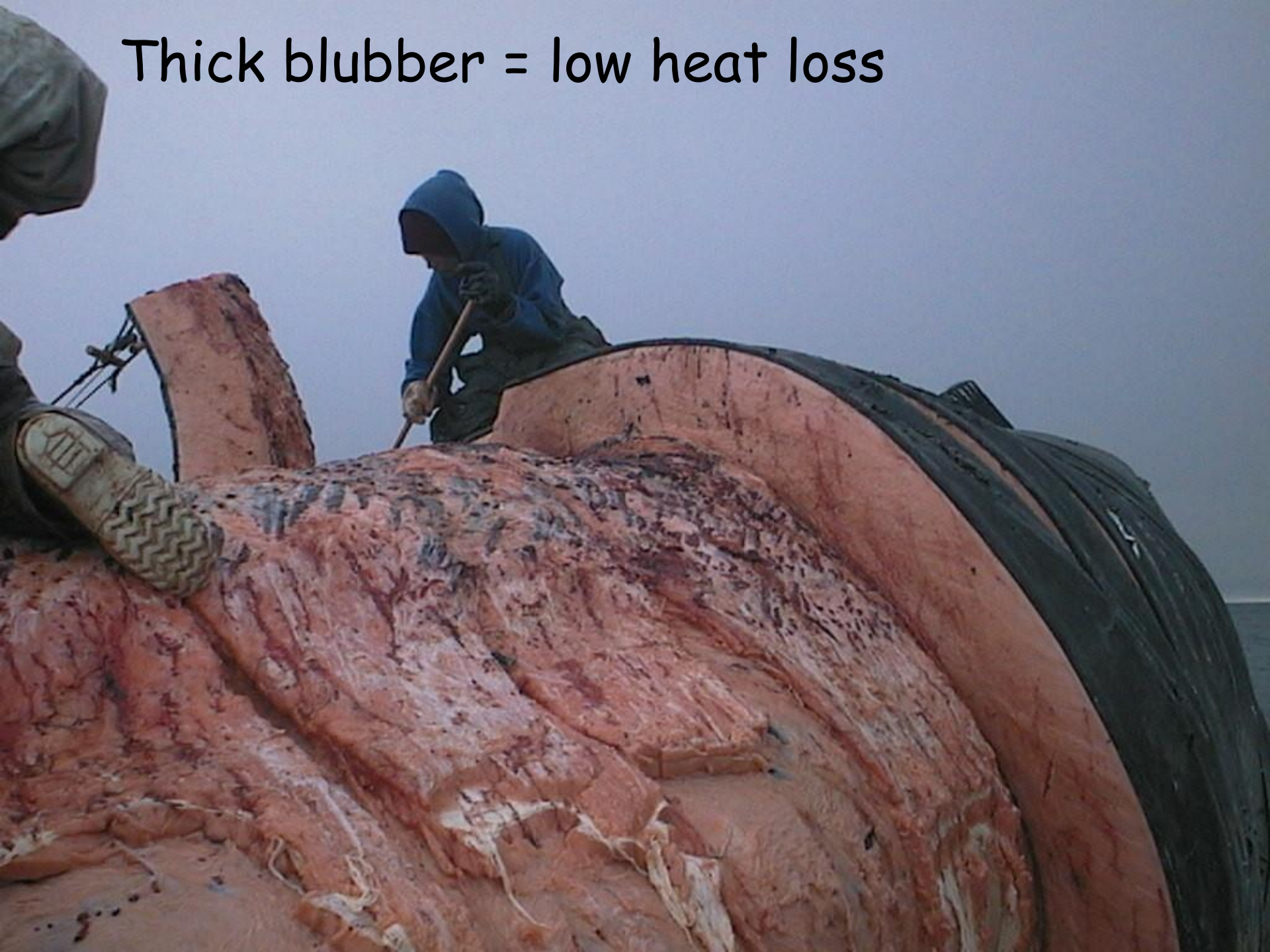
ROSTRUM

Baleen

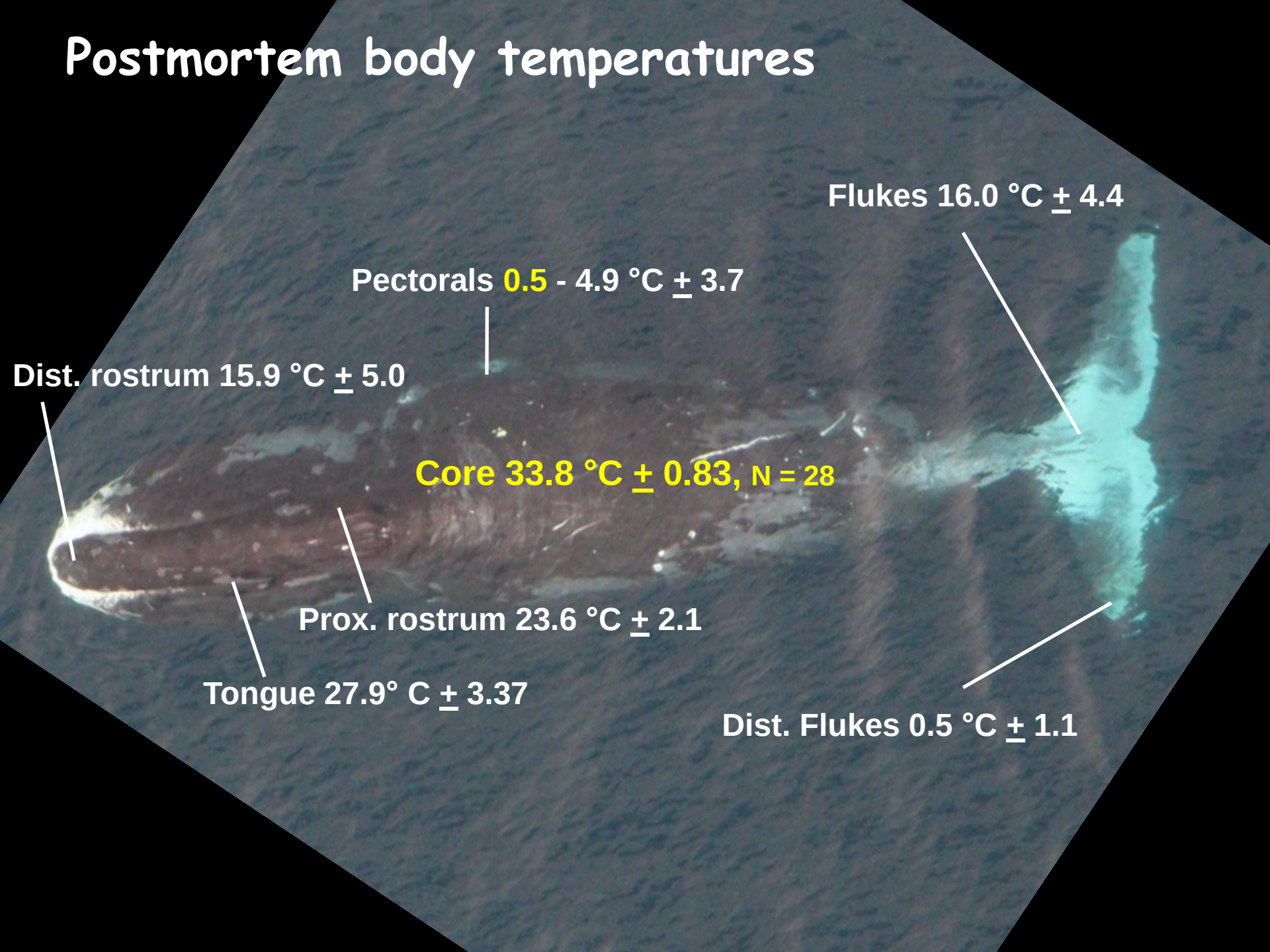


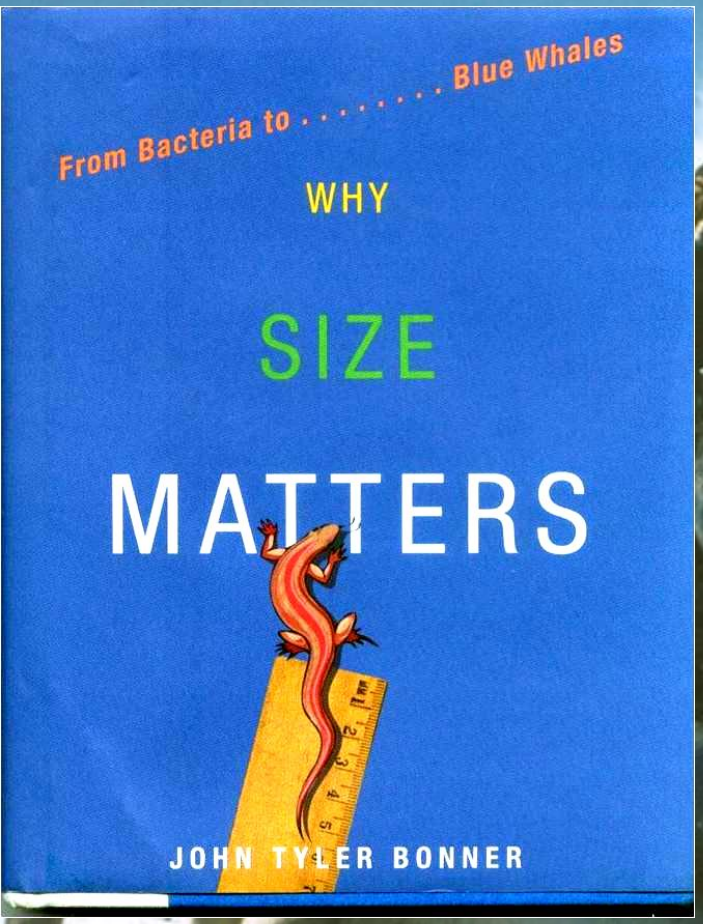
"***The Greenland Whale is one of the most wonderful animals in the world, and the baleen, or whale-bone, one of its greatest peculiarities"*** Charles Darwin "On the Origin of Species (1859: 236)"

Thick blubber = low heat loss



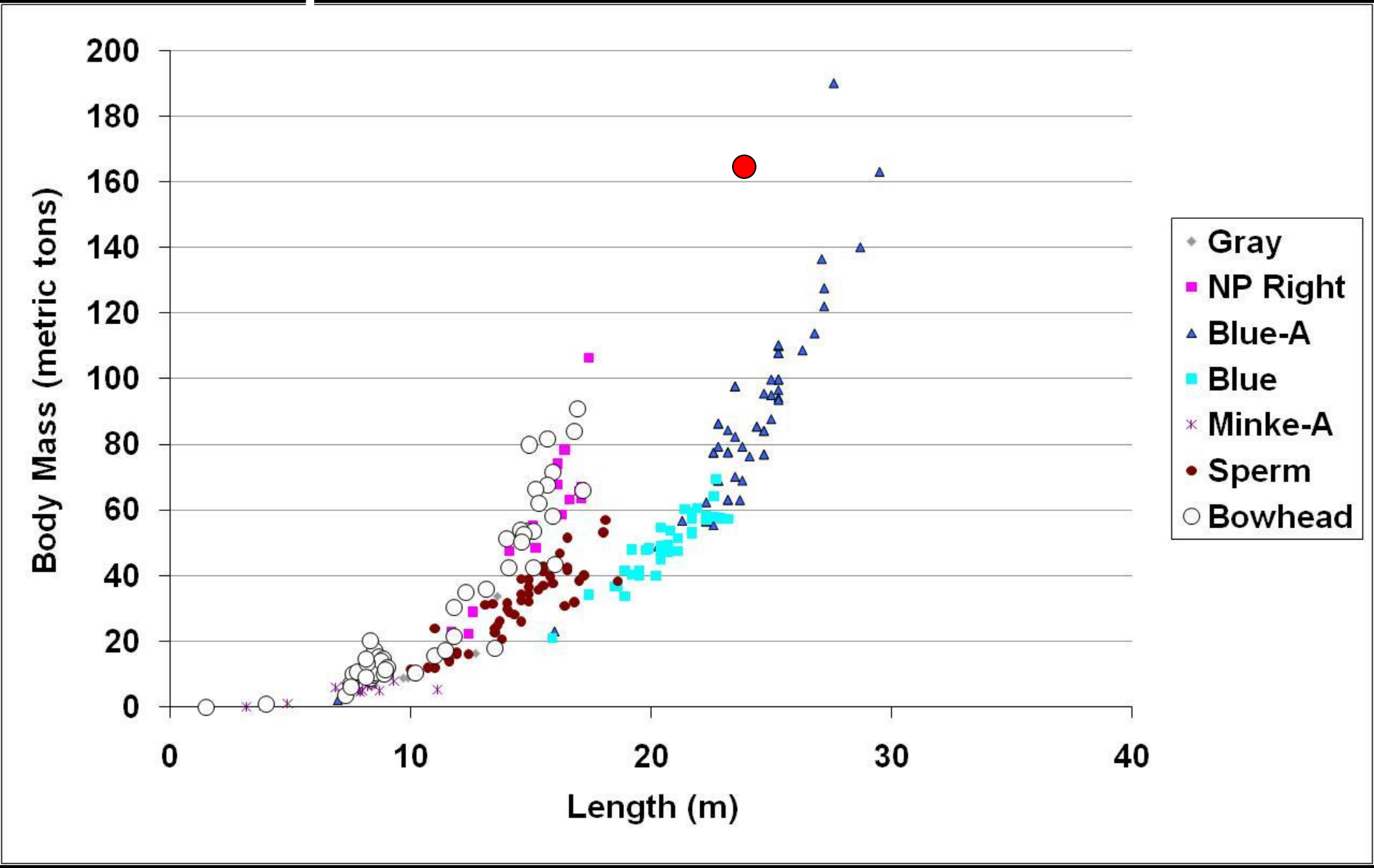
Postmortem body temperatures




From Bacteria to . . . . . Blue Whales
WHY
SIZE
MATTERS
JOHN TYLER BONNER


•Largest bowheads taken ~1850s
•rendered 375 bbl (11,812 gal.) of oil
•Estimated: 164 tons
"blue whale size"

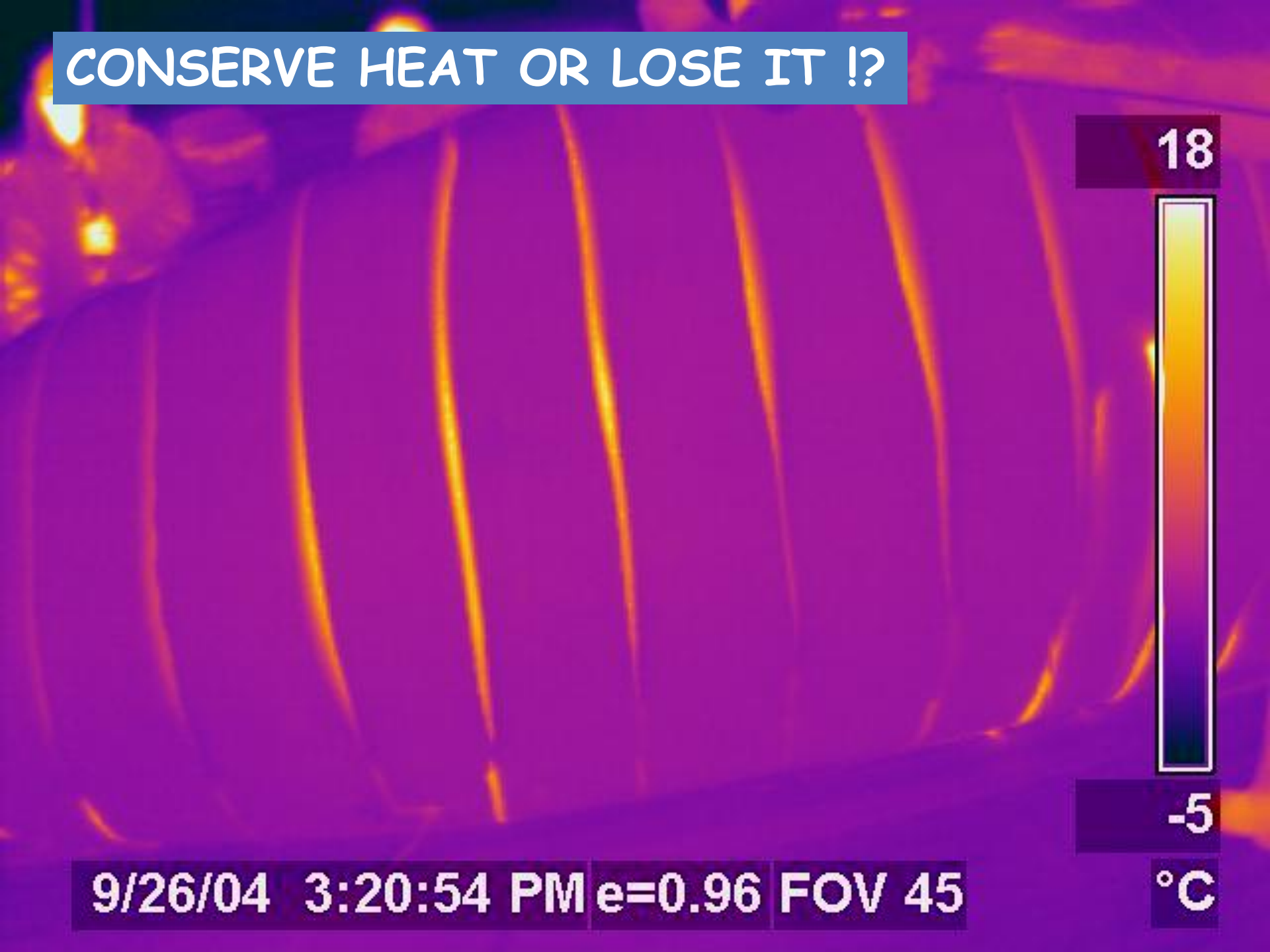
Comparison with other cetaceans



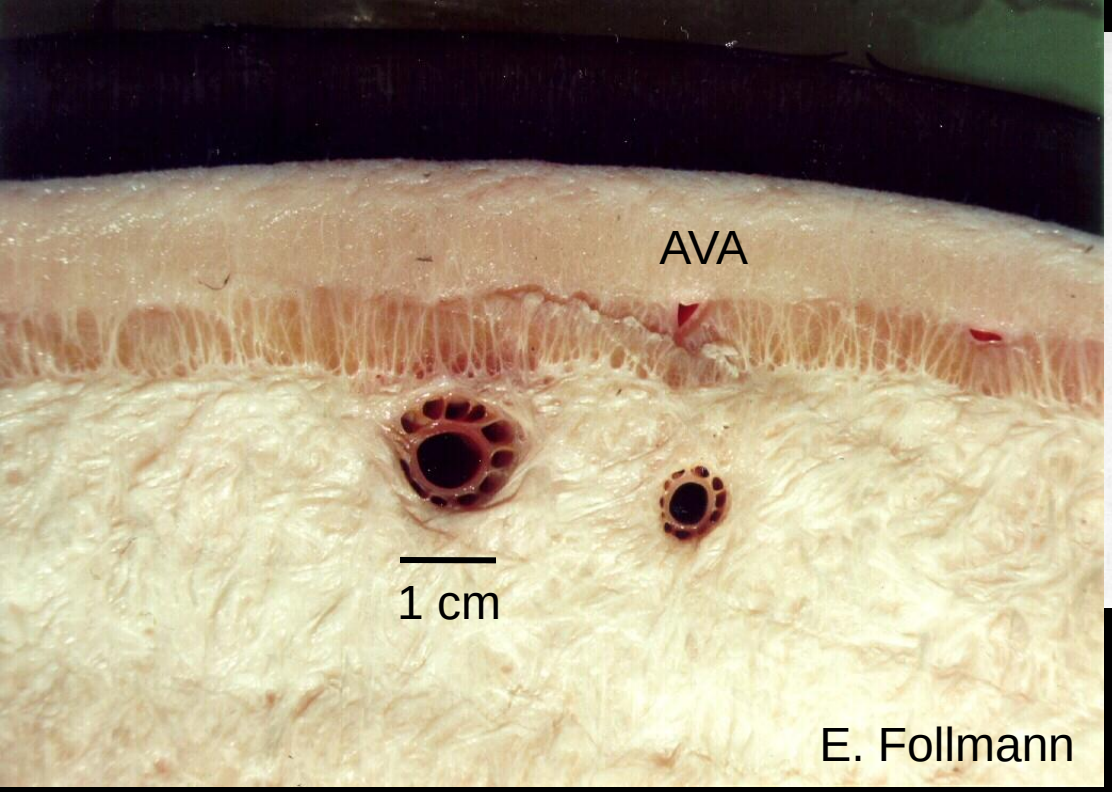
Food, let's Eat!

FEEDING

CONSERVE HEAT OR LOSE IT !?




Large Flukes



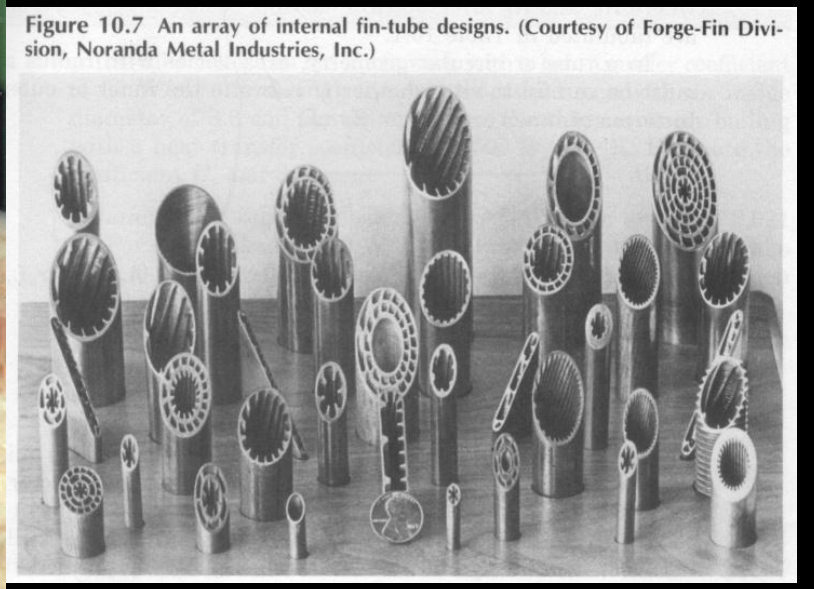
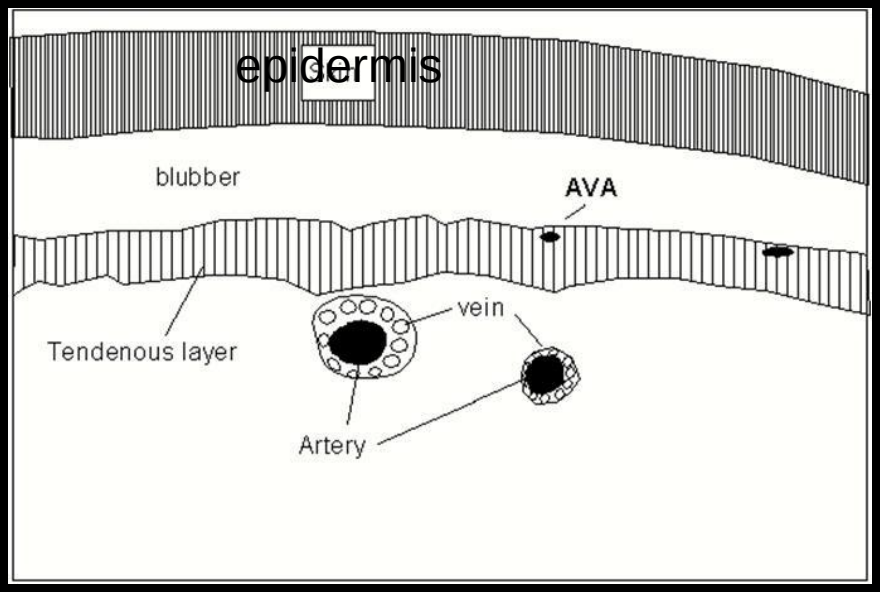
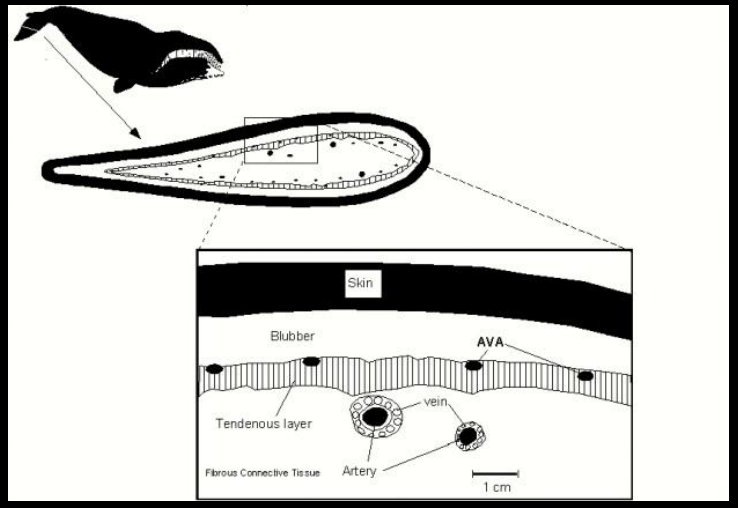
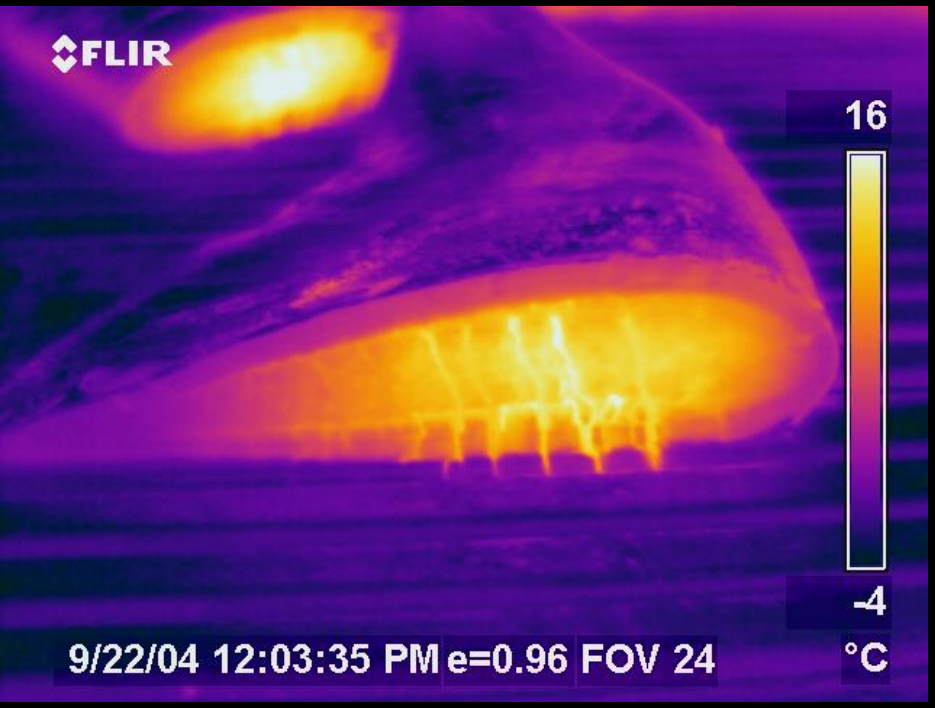


Figure 10.7 An array of internal fin-tube designs. (Courtesy of Forge-Fin Division, Noranda Metal Industries, Inc.)

source: F. White. 1991. Heat and Mass Transfer







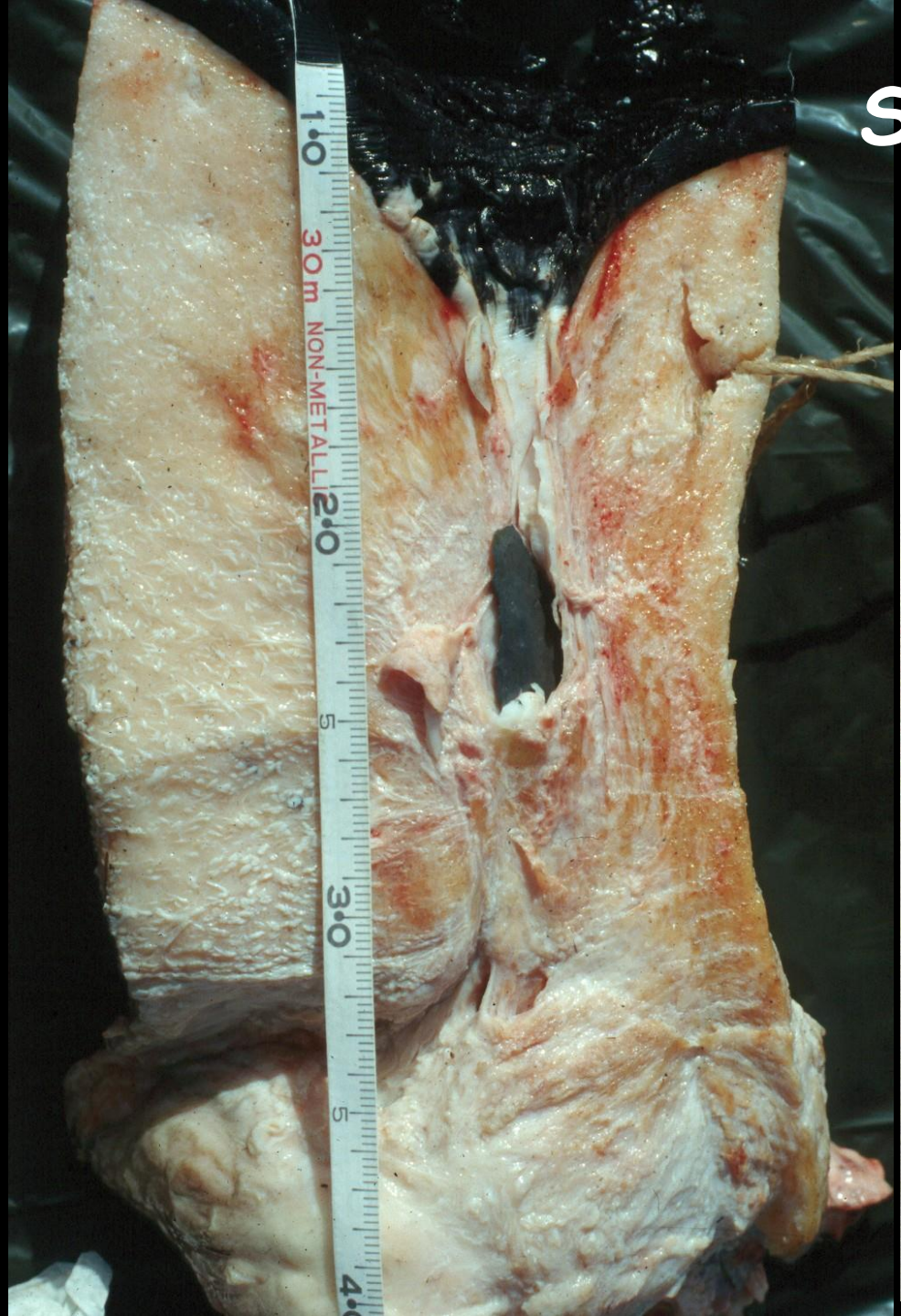
Cross section of flukes.

Tongue

Tongue fr

Or just live forever…

Stone Weapons



Ben Ahmaogak, Sr.

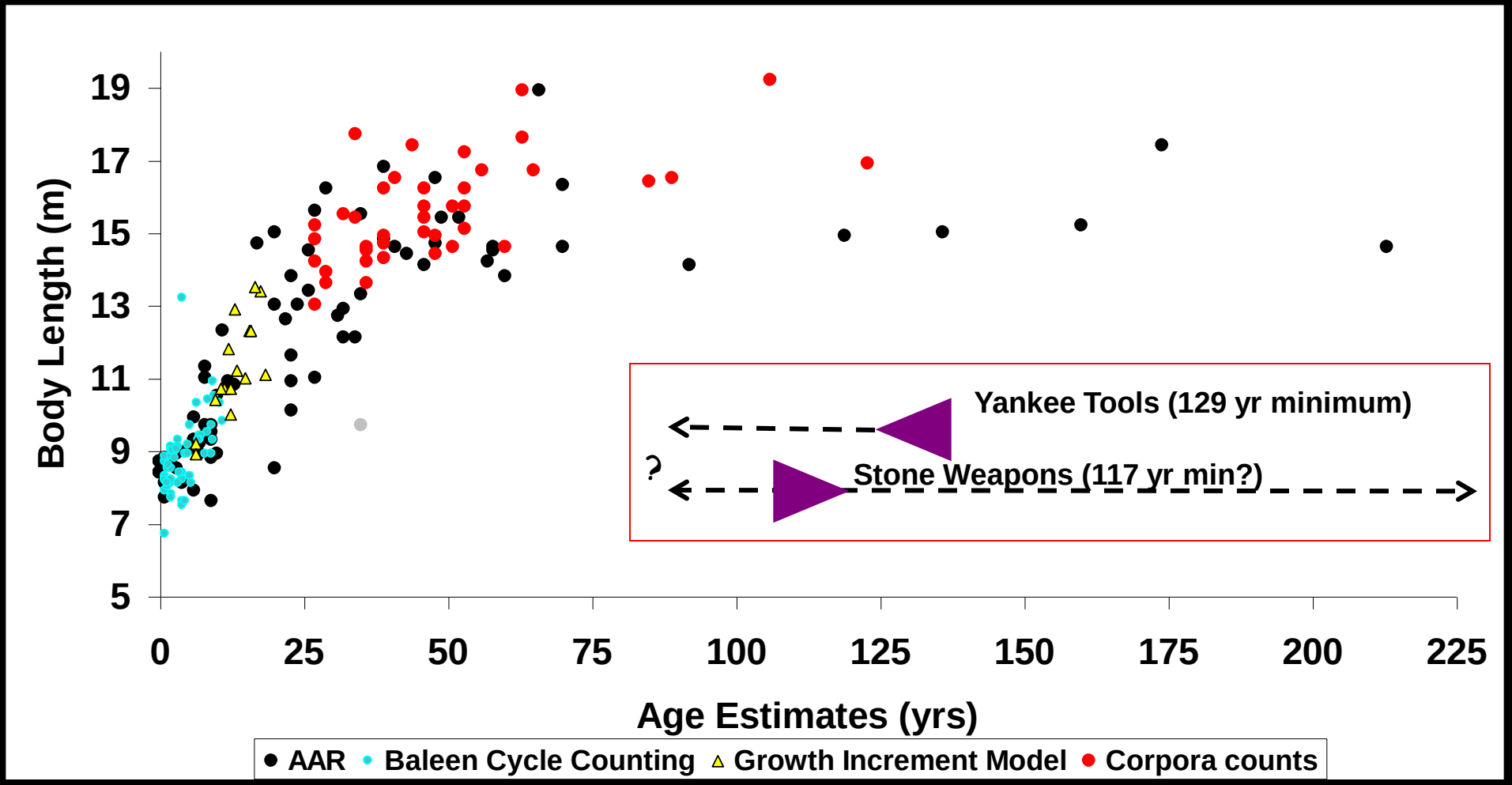
Photo:
Bill Hess

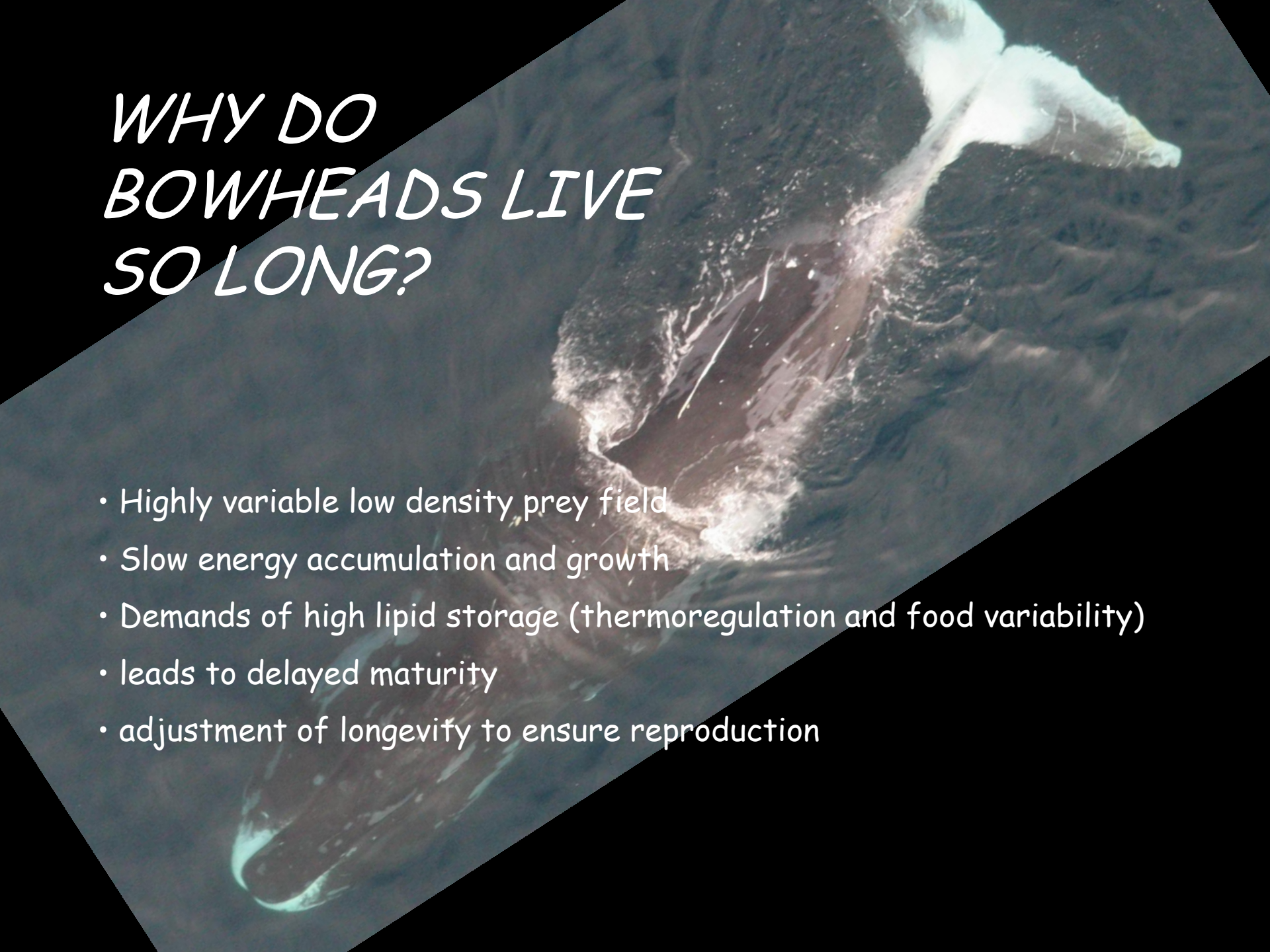

Complete Ebenezer Pierce 1885 patent bomb lance (New Bedford Whaling Museum accession number 1988.10).
Unassembled 1879 "bomb lance" fragment (from whale 07B8 captured at Barrow, Alaska, in May, 2007)

Pierce 1879 bomb-lance fragment from Spring 2007

Close up of *owner's marks*

Age Estimates

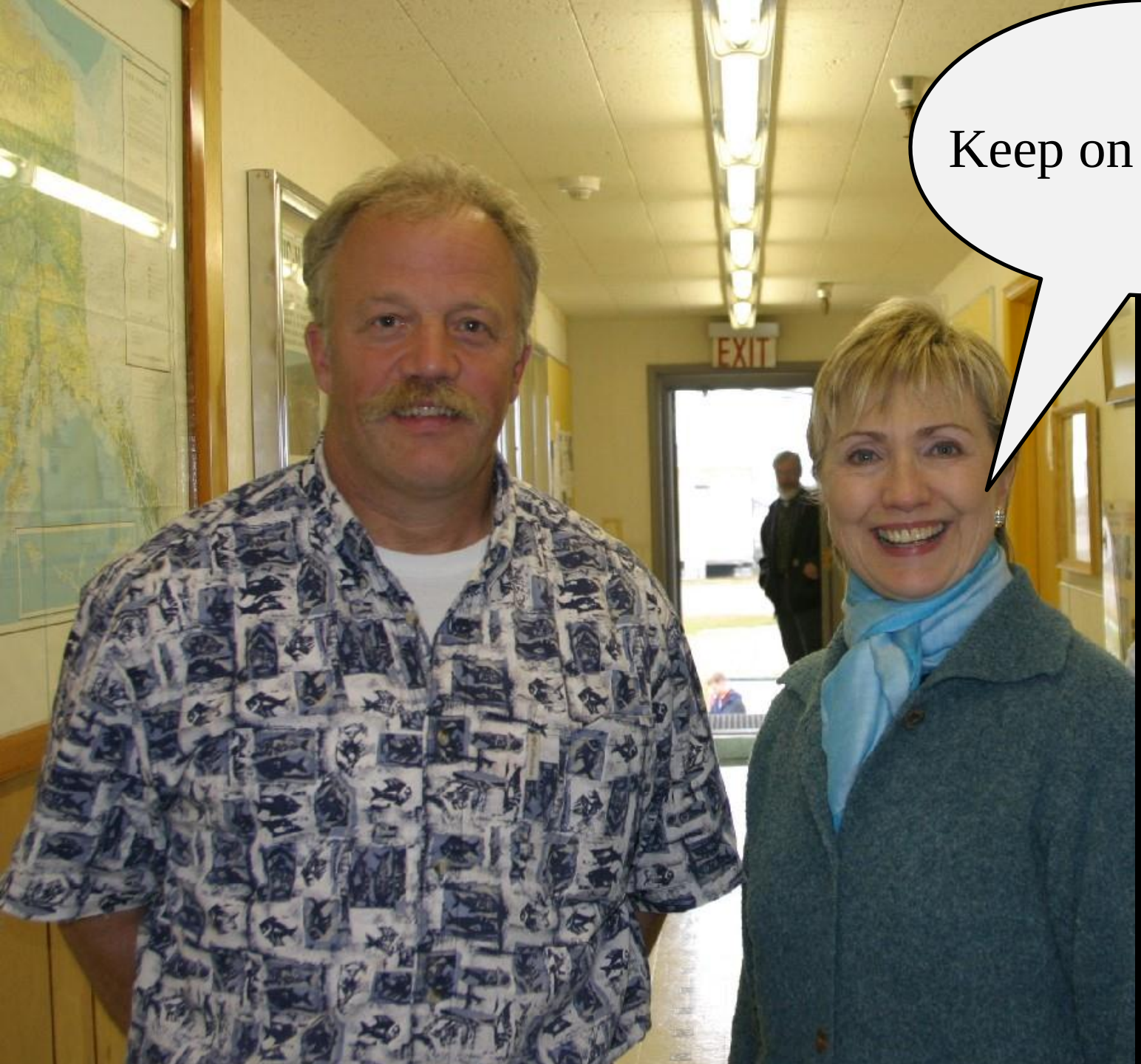




WHY DO BOWHEADS LIVE SO LONG?

- Highly variable low density prey field
- Slow energy accumulation and growth
- Demands of high lipid storage (thermoregulation and food variability)
- leads to delayed maturity
- adjustment of longevity to ensure reproduction


So, forget the trip to Hawaii, and just stay at home and enjoy yourself!


Keep on Whaling!
EXIT