

# SUMMER FORAGING OF MALE PACIFIC WALRUSES IN BRISTOL BAY, ALASKA

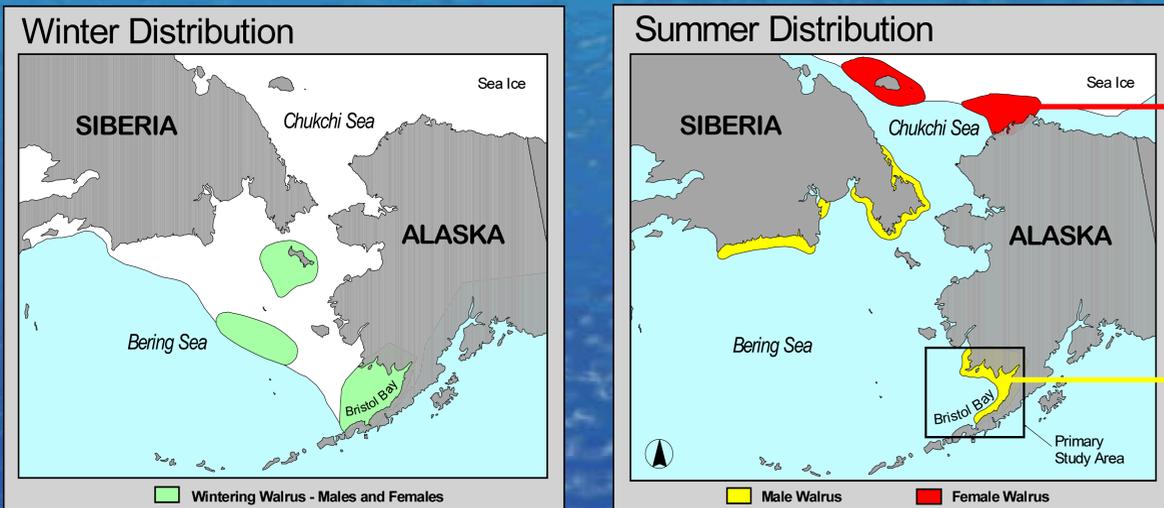
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## INTRODUCTION



Little is known of the foraging behaviors of free-ranging Pacific walrus (*Odobenus rosmarus divergens*). Females haul out onto ice year-round, whereas males haul out onto ice only during winter. Males use coastal haul-out sites in Russia and U.S. during the remainder of the year. Male and female walrus probably exhibit very different foraging patterns because they haul out onto different substrates during much of the year, and nursing females presumably have behavioral constraints imposed on them by their dependent young. Walrus make trips out to sea from their haul-out sites to feed on benthic prey, mainly bivalves. In this study, time-depth recorders (TDRs) were used to examine the summertime dive behavior of male walrus in Bristol Bay, Alaska.

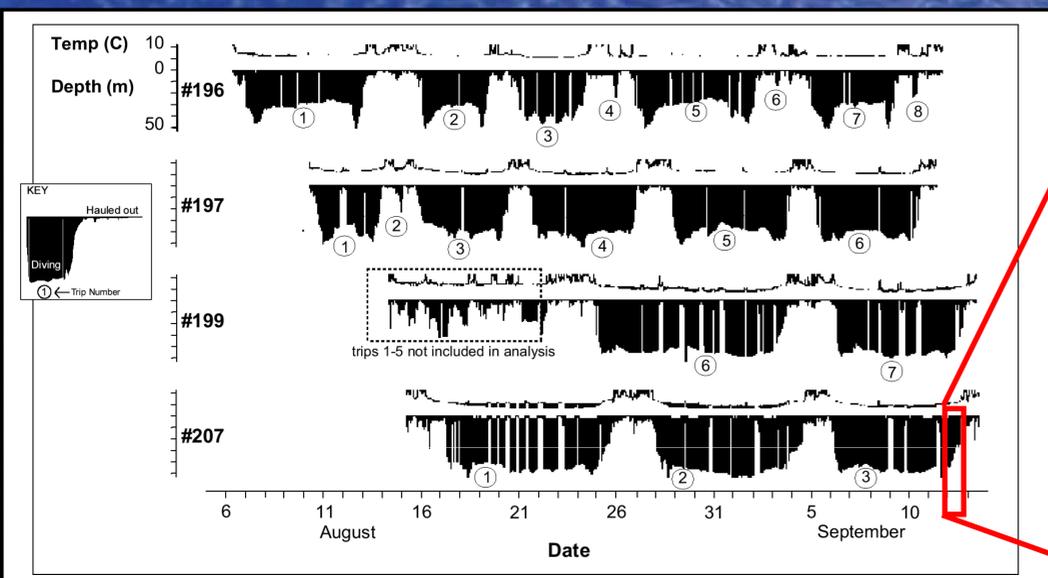
## METHODS



- TDRs were attached to the tusk of four male walrus and retrieved one month later.

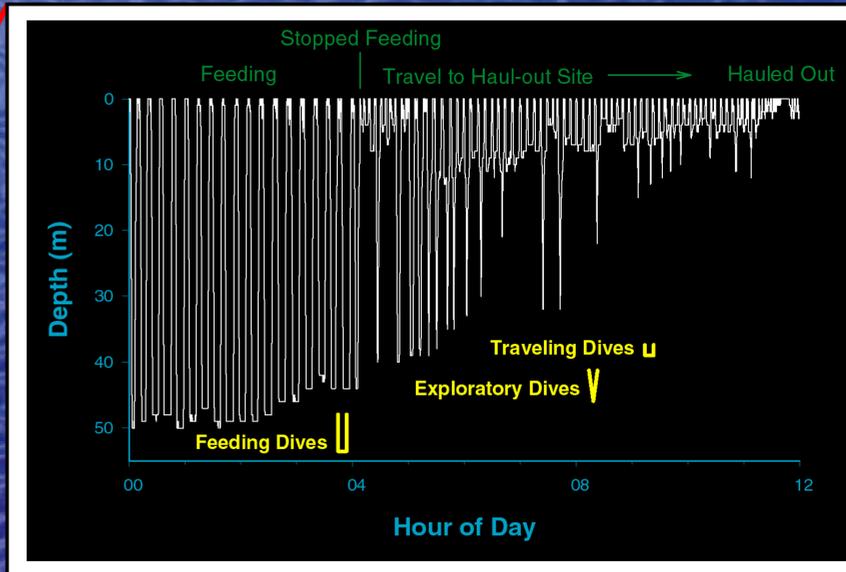
## RESULTS

### Trips off haul-out site



- Most trips were of long duration (4-10 days) and associated with intensive feeding (50% of trip time spent in feeding dives).
- Some trips were of short duration (6-14 hours) and associated with little to no feeding. The function of these trips is unknown.
- Walrus spent 78% of their time in water, of which 60% was spent diving.
- Foraging trip duration differed substantially among walrus.
- Trips were composed of many feeding bouts lasting up to 45 hours and containing as many as 290 dives, however, most bouts lasted less than eight hours and contained less than fifty dives.

### Diving



- FEEDING DIVES** - deep and square-shaped: 15-54 m dive depth; 95% of all dives less than 9 min in duration (mean and max dive duration 7 and 17 min, respectively); 2 min surface interval between dives; most common at one-half day travel distance from haul-out site; no correlation between dive duration and post-dive surface interval.
- EXPLORATORY OR NAVIGATIONAL DIVES** - V-shaped: variable dive depth; 5 min dive duration; 2 min surface interval between dives; most common during beginning and end of foraging trips.
- TRAVEL DIVES** - shallow: 5 m dive depth; 3 min dive duration; 1 min surface interval between dives; most common during beginning and end of foraging trips.
- The time of feeding cessation near the end of each trip was easily identified by an abrupt transition from feeding dives to a mix of exploratory and traveling dives.

## CONCLUSIONS

- The lack of correlation between dive duration and post-dive surface interval indicates that male walrus dive within their aerobic dive limits during summer foraging. This was further evidenced by the fact that most dives did not exceed the theoretical aerobic dive limit reported for other walrus of similar size.
- The V-shaped dive profile evident in this study has been observed in other pinnipeds. It has been suggested that these dives might be used to avoid surface noise from ice or to detect prey in the water column. However, because walrus are bottom feeders, and the habitat was ice-free at the time of this investigation, it is more likely that the V-shaped dives serve some other navigational or exploratory function.
- Male walrus using land haul-outs may eventually deplete their local prey. Depletion of local prey would necessitate traveling greater distances to more distant foraging grounds and result in long trip times such as those observed in this study. Since females use drifting ice floes for hauling out, they may be less likely to deplete local prey and might be expected to make shorter feeding trips than those made by males on land haul-outs.