Is there individual variation in the prey provisioning of Black Oystercatcher chicks?

Findings from three years of nearshore monitoring within the Southwest Alaska Network of National Parks

Heather A. Coletti, NPS
James L. Bodkin, USGS
Thomas A. Dean, CRA Inc.

What are the SWAN NPS Vital Signs?

- Marine Water Chemistry
- Kelps and Seagrasses
- Intertidal Invertebrates
- Marine Birds
- *Black Oystercatcher*
- Sea Otter

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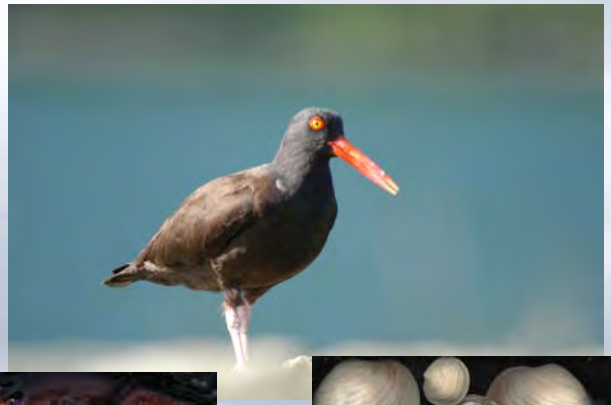
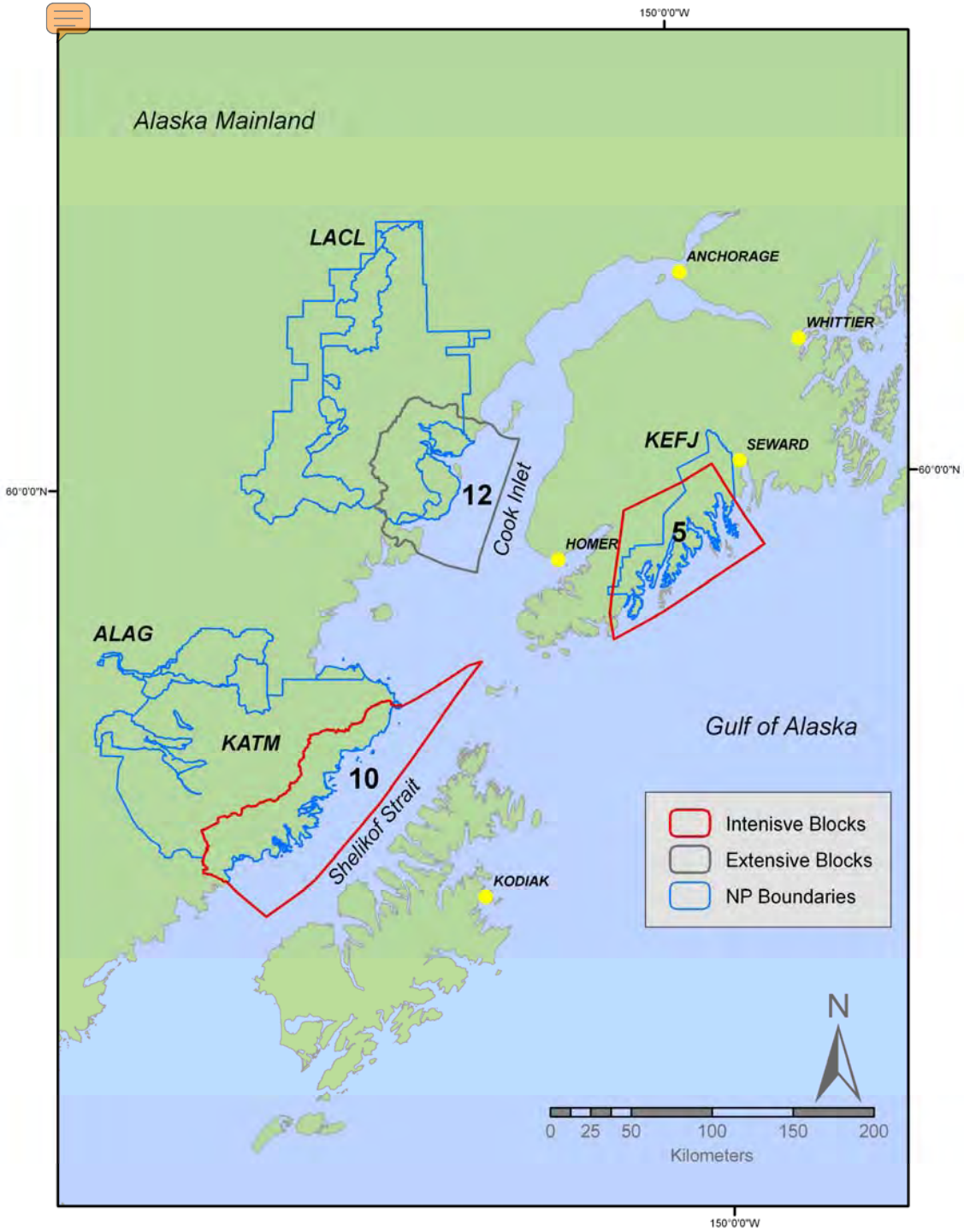
Nearshore Vital Signs





Where?

- KATM & KEFJ
  - Sampling all VS
- LACL
  - Only sampling soft sediment for intertidal invertebrates

Black Oystercatchers

- Density
- Nest occupancy and productivity
- Diet (chick provisioning)

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Black Oystercatcher

- Estimation of breeding pair density and nest occupancy
  - Boat based surveys of breeding pairs detected along a 20km transect centered on each established rocky site

- *Estimation of species composition and size distributions of prey returned to provision chicks
  - Prey collected at the nest site, identified and measured
  - Return to each nest on a yearly basis as well as look for new nest territories
  - Conduct field work at each park during the same time of year

- Estimation of density of breeding and non-breeding black oystercatchers observed during the marine bird and mammal surveys
  - See marine bird and mammal survey methods

Chick Provisioning

After three years of data collection… some possible questions are…

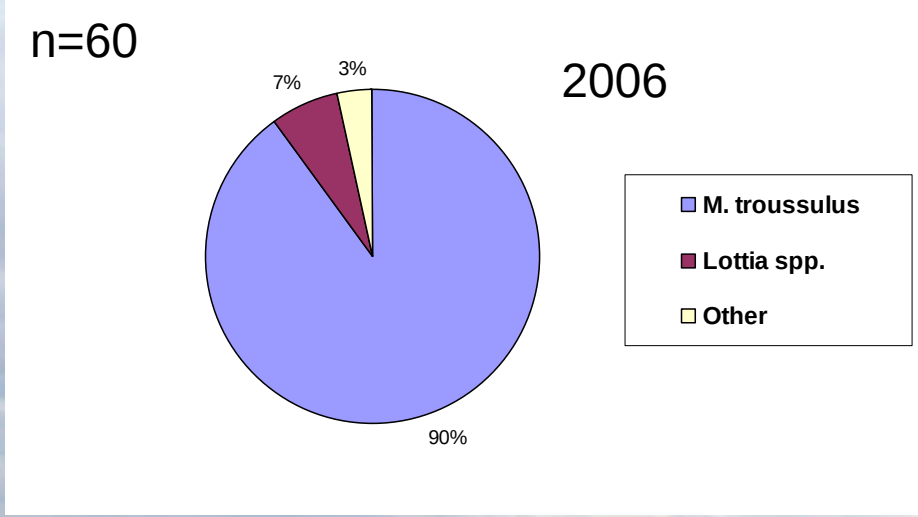
1. Does diet remain the same over the years at the same nest?
2. Does a change in diet indicate a new breeding pair occupying the nest territory?
3. Do nests in close proximity vary in diet, supporting the notion of individual variation by breeding pair?
4. Do bloy adults select larger prey?

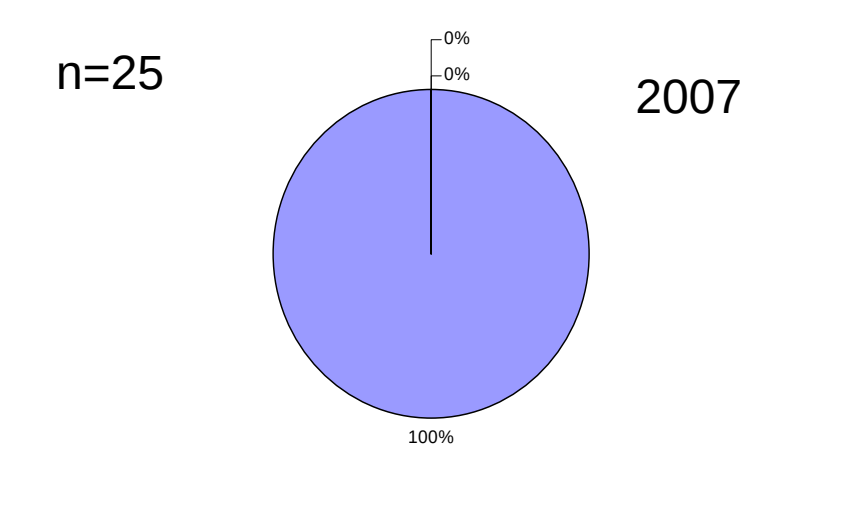
Question #1

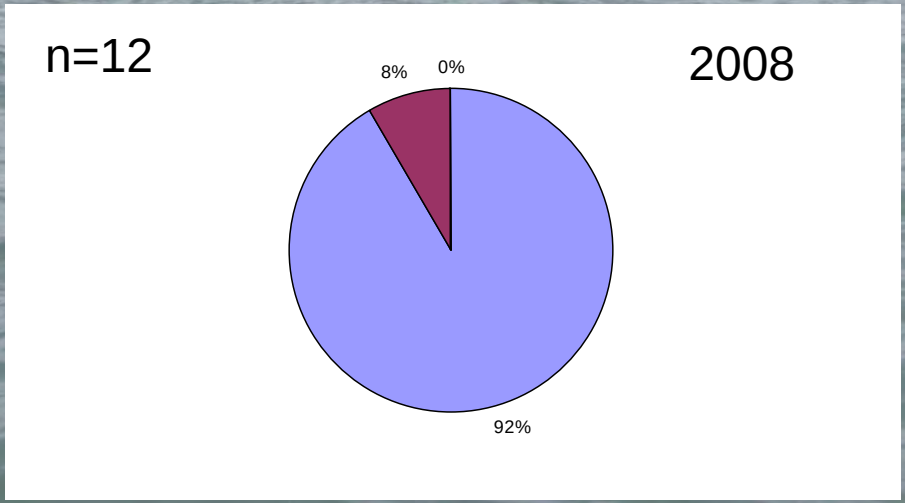
1. Does diet remain the same over the years at the same nest?

- Available data:
  - 2 nests with 3 years of prey data
    - RI4_1-06
    - RI1_2-06, but in 2008 n=8, so only used ’06 and ’08 data for comparison
  - 2 nests with 2 years of prey data
    - RI1_3-06
    - Nina_4-06

Nest RI4_1-06





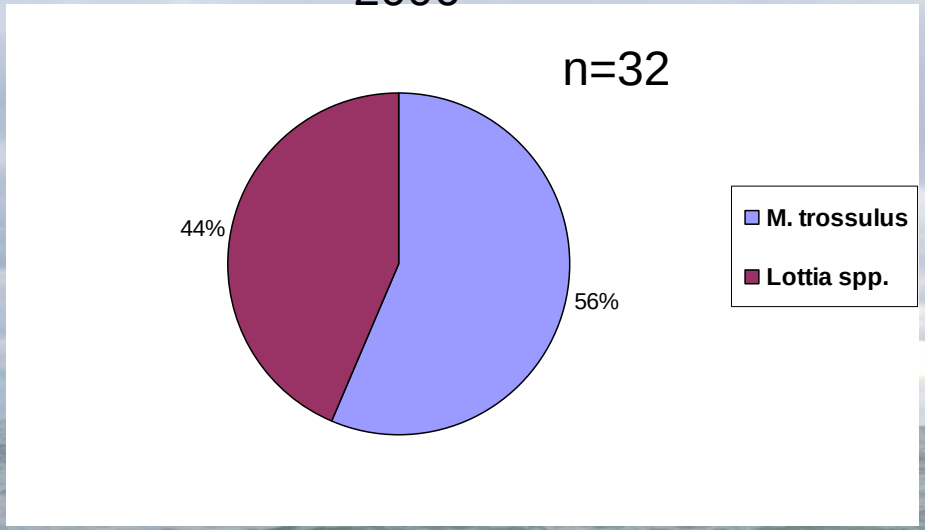


2006 and 2008 Lottia spp. are sig. different from 2007, but not from each other

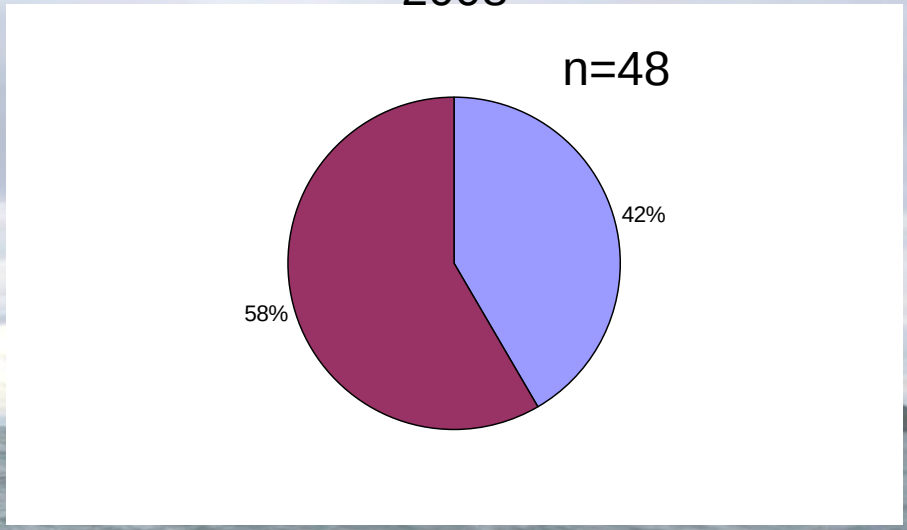
Only M. tross proportions between 2006 and 2007 are sig. differnt

Nest RI1_2-06

2006

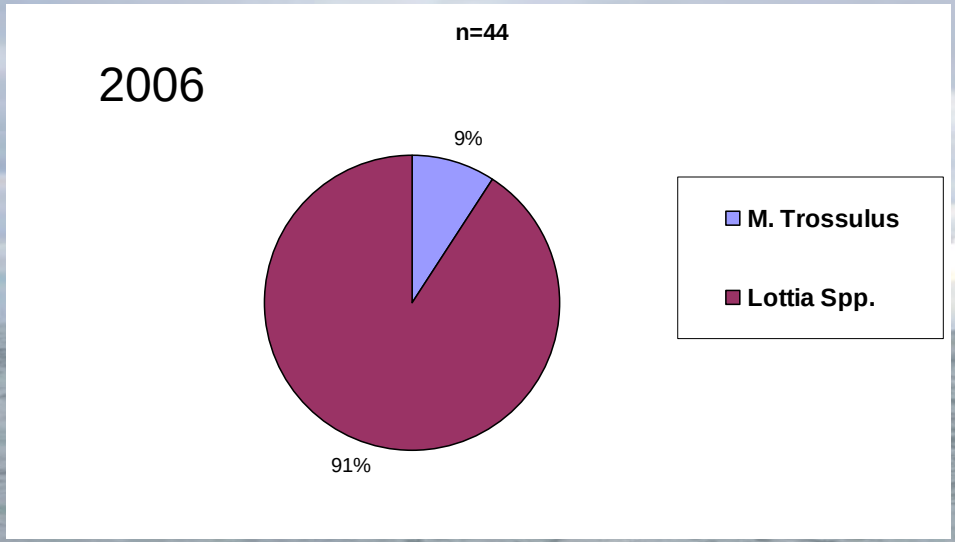


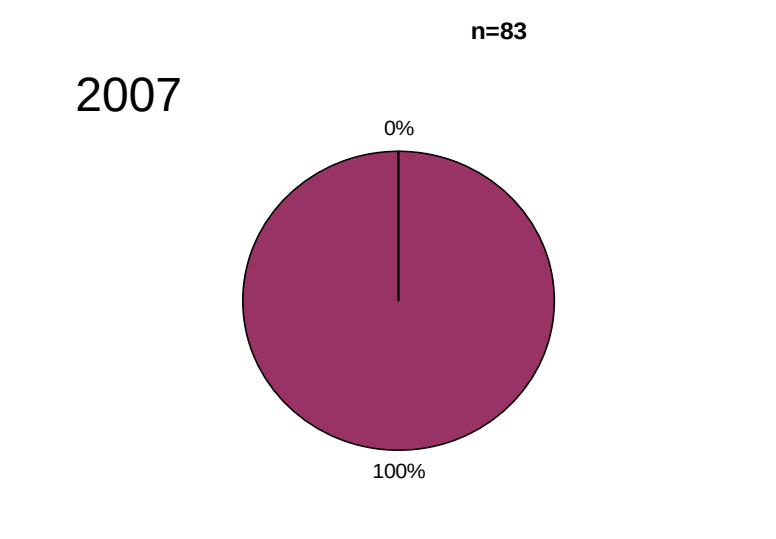
2008



Neither species proportions are significantly different

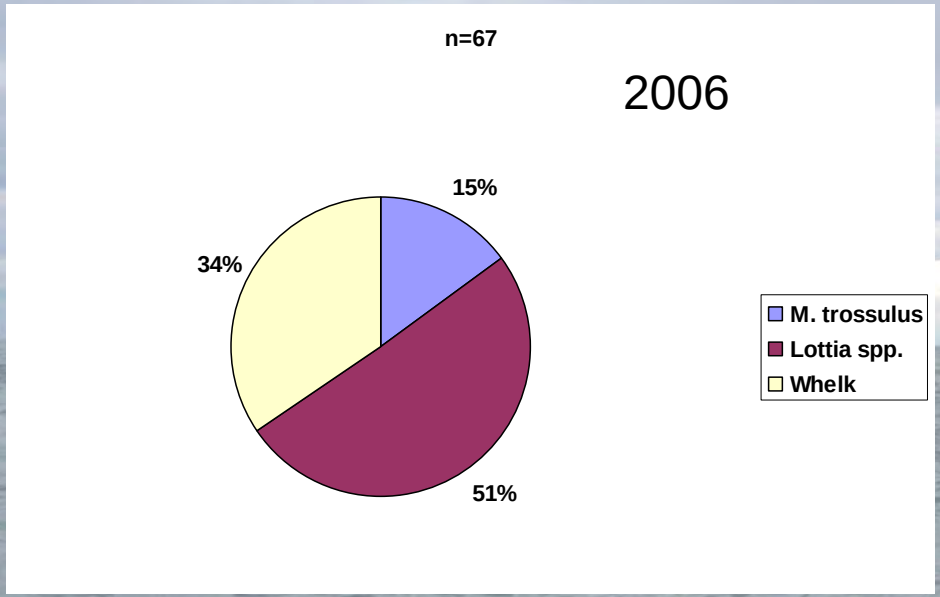
Nest RI3_1-06

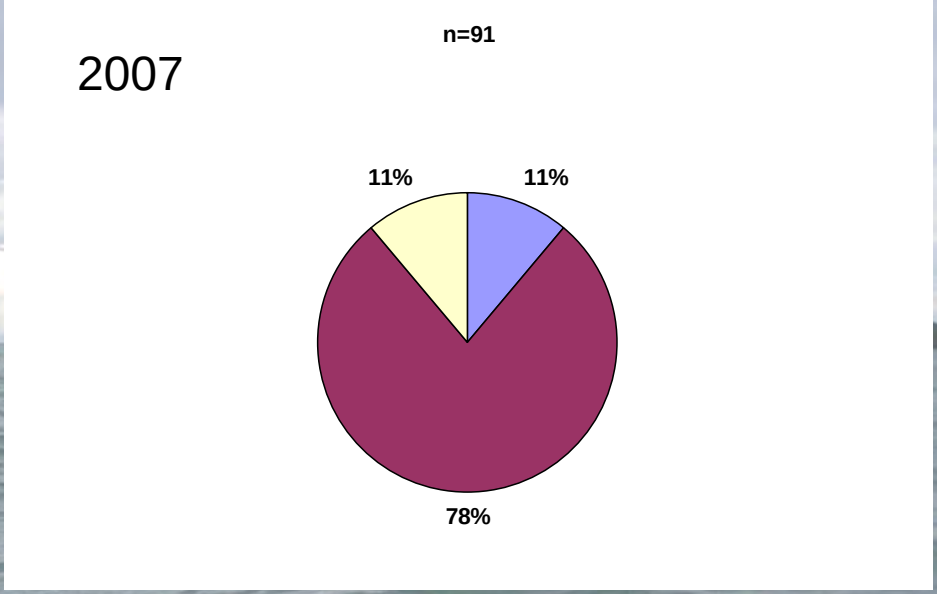




M. Trossulus proportions are significantly different

Nest Nina_4-06





Lottia spp. and whelk proportions are significantly different, but not M. trossulus

Question #2

Does a change in diet indicate a new breeding pair occupying the nest territory?

Answer:

Possibly, but we must look at all the prey data combined from one year to the next and see if the proportion of prey changes within species correspond to prey proportion changes at the nest.

For example:

Nest 1 MTR in 2006 is 30% and drops to 15% in 2007

Overall MTR in 2006 (excluding Nest 1) is 50%, and 40% in 2007

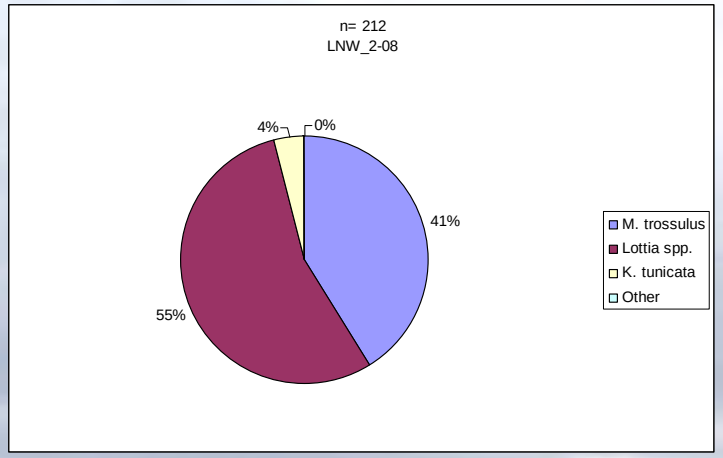
The question could be:

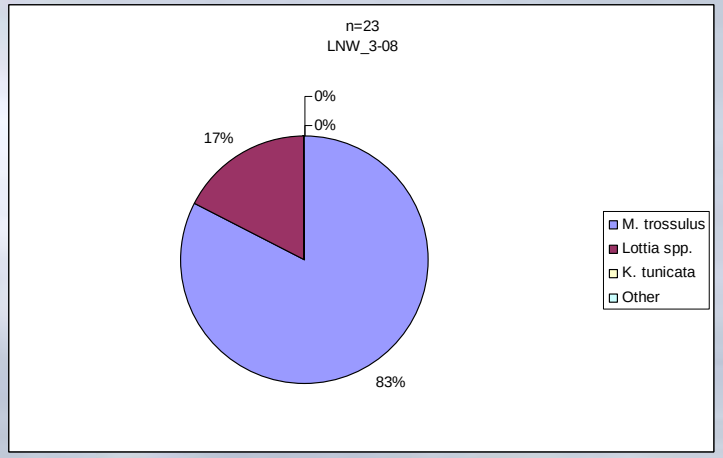
Is this drop in MTR % in Nest 1 reflective of a new breeding pair or a change in overall prey availability?

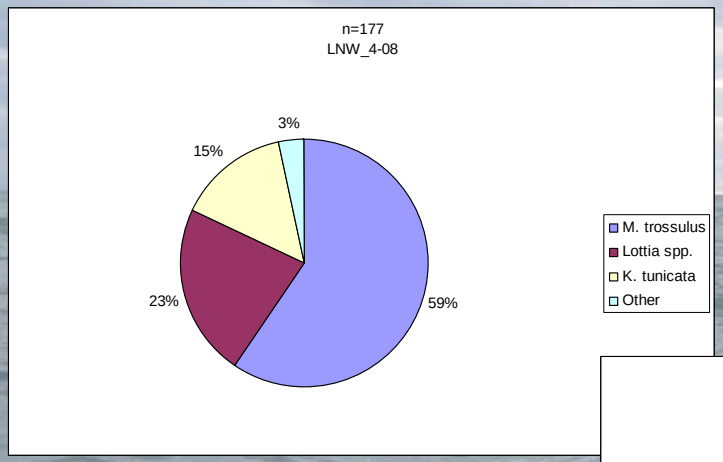
Question #3

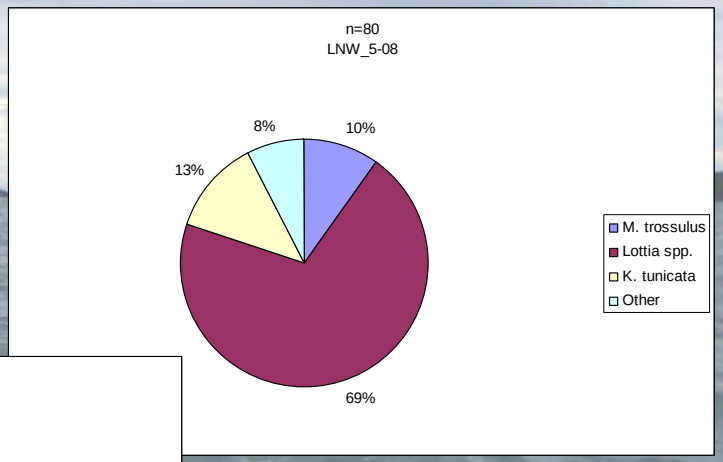
- Do nests in close proximity vary in diet, supporting the notion of individual variation by breeding pair?
- Assumption:
  - That each breeding pair has access to similar prey

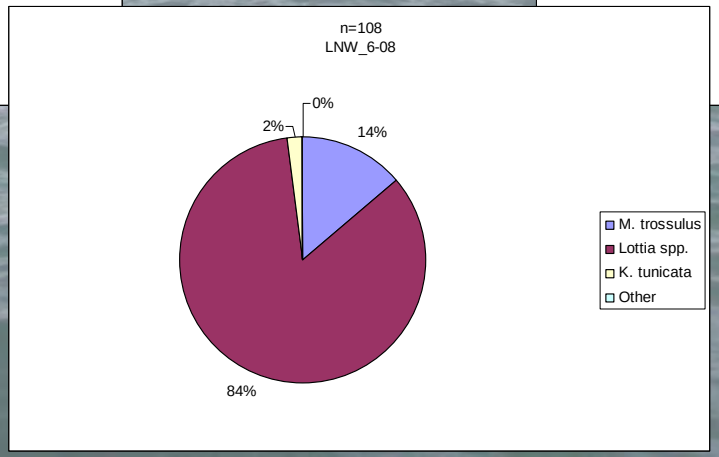
Nest cluster at Little Ninagiak Isl







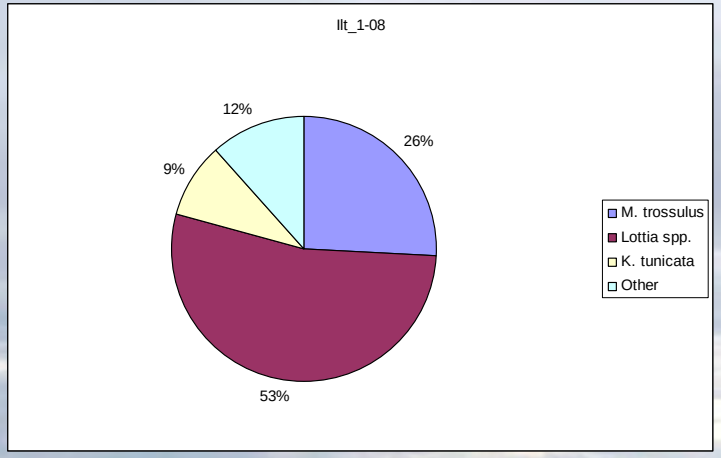


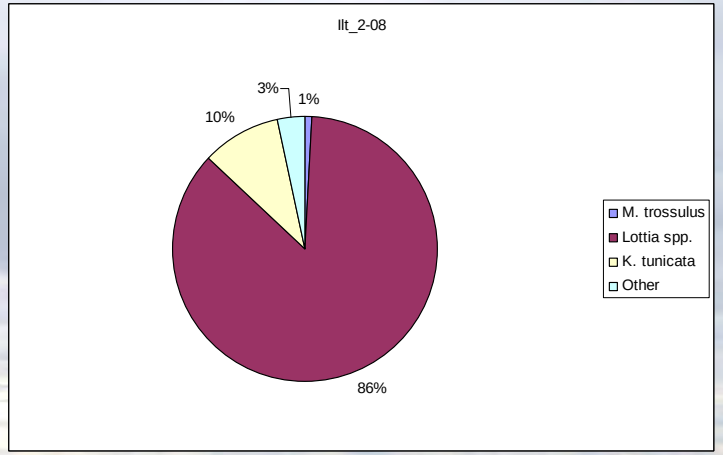


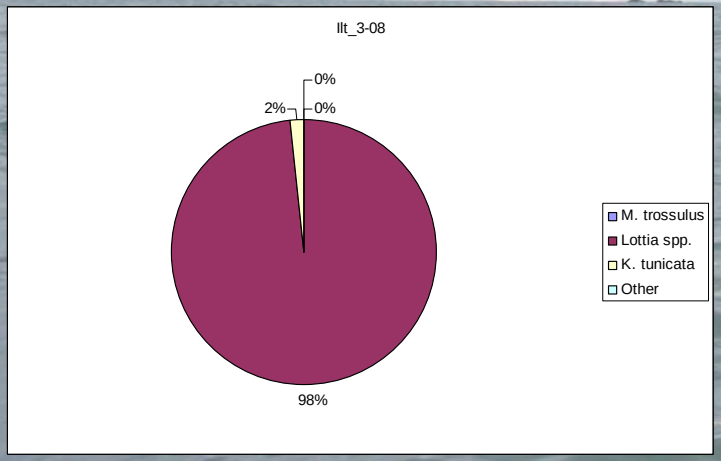
Nest cluster at Little Ninagiak Isl

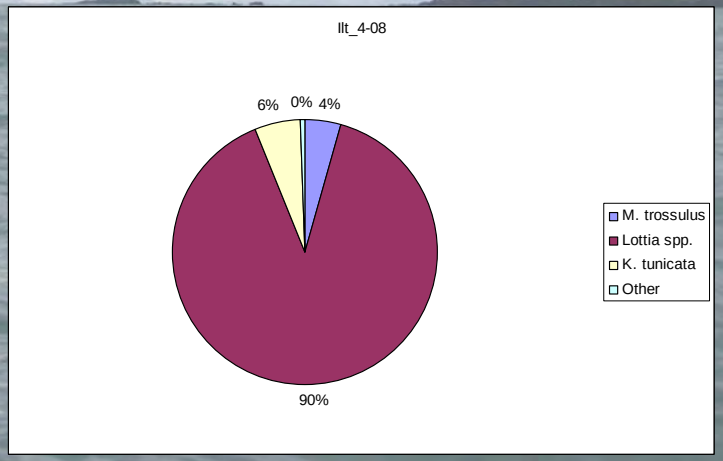
- M. trossulus
  - All nests had significantly different proportions of M. trossulus from each other except between nest LNW_5-08 vs. LNW_6-08
- Lottia spp.
  - All nests had significantly different proportions of Lottia spp. from each other except between nest LNW_3-08 vs. LNW_4-08

Nest cluster at Ilktugidak Isl









Nest cluster at Ilktugidak Isl

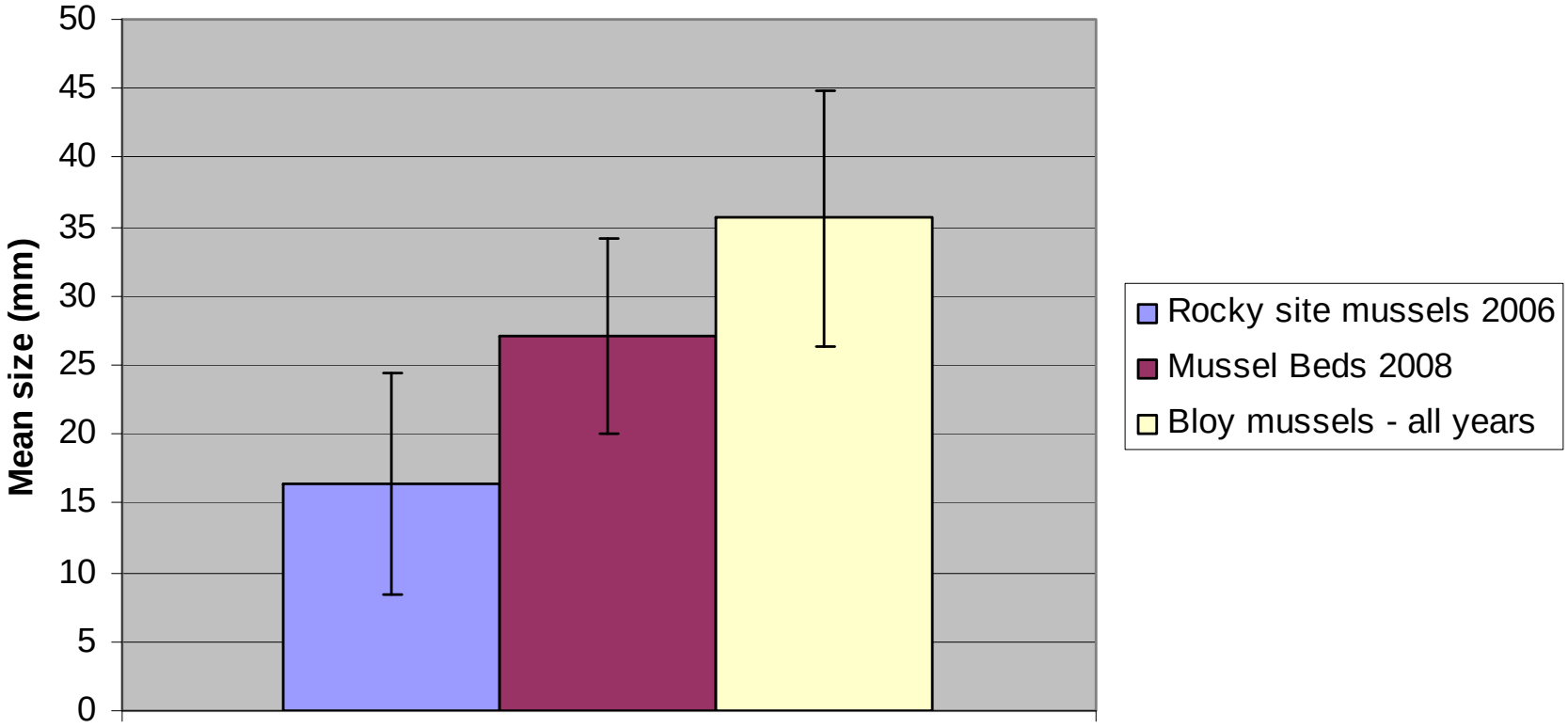
- M. trossulus
  - All nests had significantly different proportions of M. trossulus from each other except between nests Ilt_2-08 vs. Ilt_3-08 and Ilt_3-08 vs. Ilt_4-08
- Lottia spp.
  - All nests had significantly different proportions of Lottia spp. from each other except between nest Ilt_2-08 vs. Ilt_4-08

Question #4

- Do bloy adults select larger prey sizes?

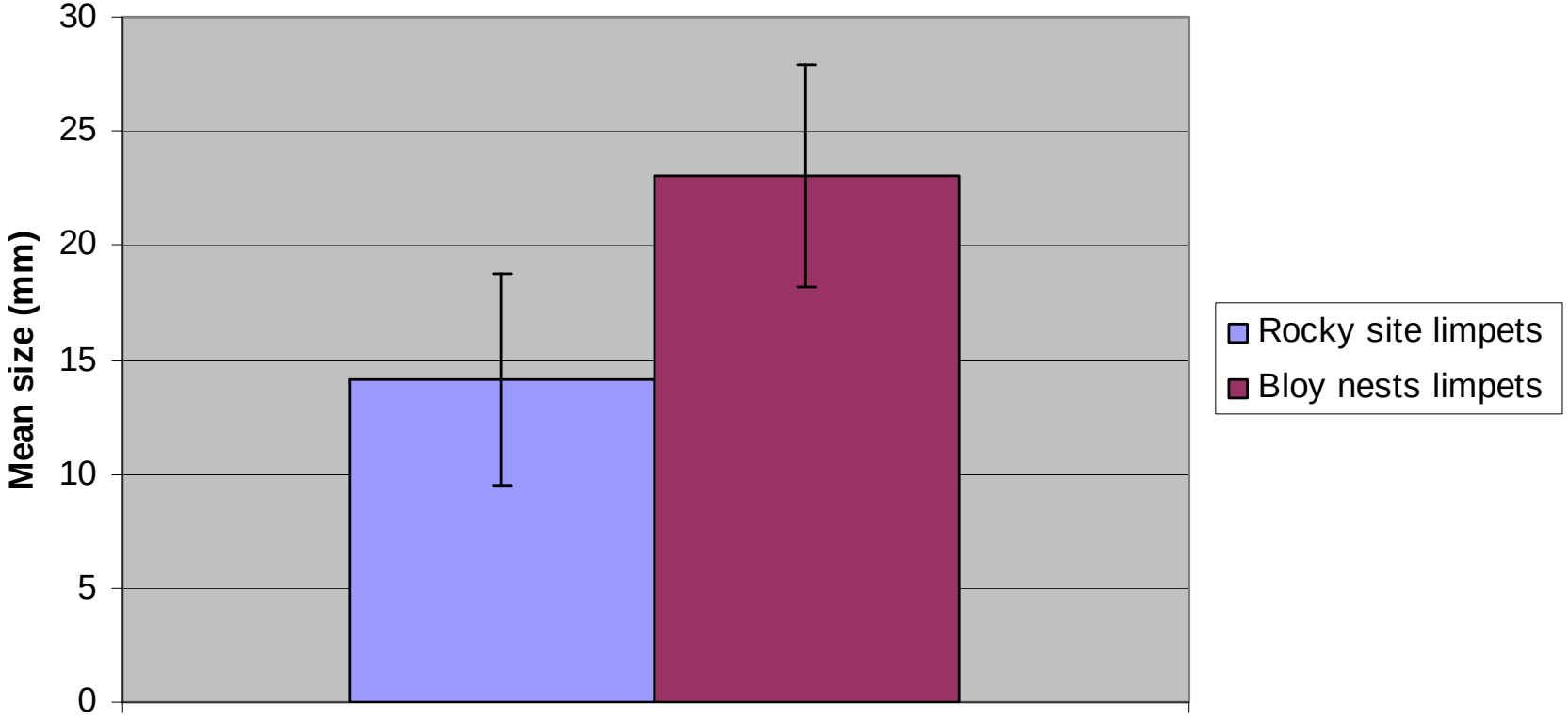
Mean size comparison of mussels collected at mussel beds, rocky intertidal sites and black oystercatcher nests in KATM (2006-2008)

Bars indicate standard deviation



Mean size comparison of limpets (T. persona) collected at rocky intertidal sites and black oysterctacher nests, KATM 2006-2008

bars indicated standard deviation



Food for thought…

- Could this type of data collection allow us to monitor some aspects of breeding pairs without the expense and time necessary for tagging studies?
- Will a change in diet, if not related to change in the breeding pair, indicate a large prey base change?
- Does the age of the chick effect prey composition?
- Suggestions for appropriate analysis….
- Other possible ideas???

Special Thanks to SWAN and Park staff: M. Shephard, B. Thompson, D. Mortenson, Shelly Hall, Meg Hahr, Ralph Moore and Claudette Moore and our USGS volunteer, Ashley Coletti