Body composition of herring undergoes dramatic seasonal cycles as shown for Lynn Canal herring below. Throughout the summer, herring amass large energy depots to sustain them through the winter, during which energy depots are depleted.

Hypothesis
Herring from depressed stocks may not obtain sufficient early winter energy stores for either:
1. Overwinter survival of juveniles, or
2. Reproductive investment of adults

Methods
Study Sites:
1. Prince William Sound (PWS)
2. Lynn Canal (LC)
Healthy with commercial harvest
3. Sitka Sound (SS)
Depressed with no commercial harvest

Collected herring in early and later winter to measure energy stores and calculate overwinter energy depletion in three stocks of herring.

Preliminary Results
Foraging Success
In Sitka Sound (SS) fish that were found to be eating had more food in their stomachs than either Lynn Canal (LC) or Prince William Sound (PWS). This figure shows the average weight of the stomach contents expressed as a percentage of body mass for herring sampled in late March and early April. The number of fish found to be eating increased at all sites between January and March.

Weight at Length
There are significant differences in the allometry of wet mass and length. Fish from PWS are consistently heaviest at length and Sitka Sound herring are the lightest. This suggests density dependent effects on weight.

Ovary Weights in Mature Fish
Allometries relating ovary mass to fish length are identical among the stocks as shown in this figure that relates the total mass of mature ovaries to the female length.

Project is Underway
These data are part of an ongoing study funded by the EVOS Trustees. Chemical Analysis of the fish is underway, studies occurring this winter include repeating these analyses and development of a bioenergetic model.

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