GULF of ALASKA

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Energy allocation of young of the year Arrowtooth Flounder in the Gulf of Alaska
A different strategy?

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Background

The overall goal of The Gulf of Alaska Project (GOAIERP) is to identify and quantify the major ecosystem processes that regulate recruitment of key groundfish species in the Gulf of Alaska (GOA).

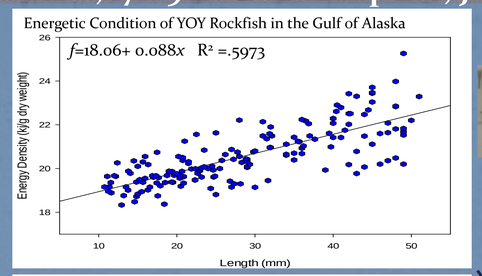
A critical environmental window for these five focal species begins with an offshore pelagic phase followed by a near shore settlement phase.

Methods

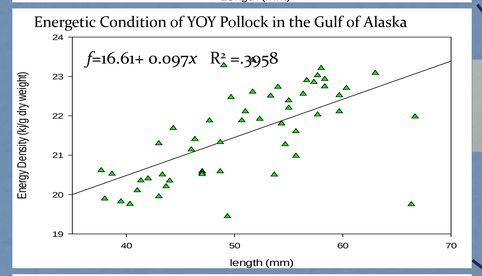
During the summer months (July-Aug), using a surface trawl, the GOAIERP survey intercepted fish in the top 30 meters of the water column.

Analyzed and compared energetic conditions for 2012 of age-0 Arrowtooth Founder (ATF) to that of the three other focal juvenile species encountered in the pelagic zone during the survey

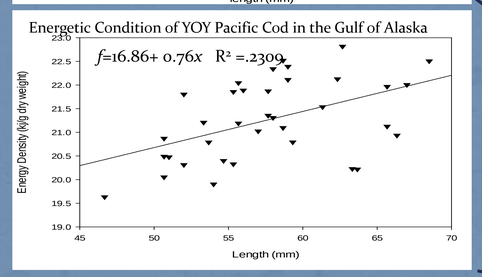
Results



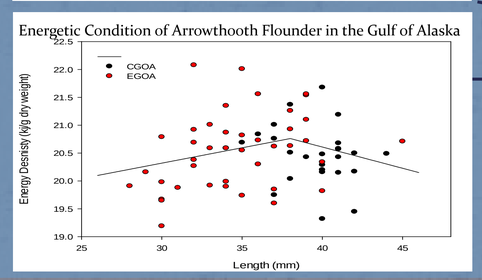
Arrowtooth Flounder showed significantly different trends in energy density to length relationships compared to the other focal species (P<.001).

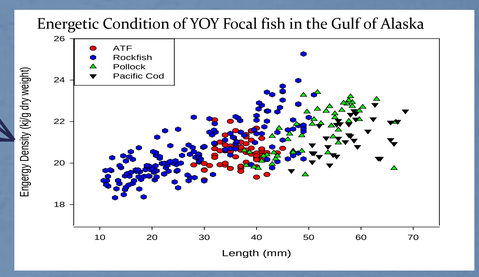


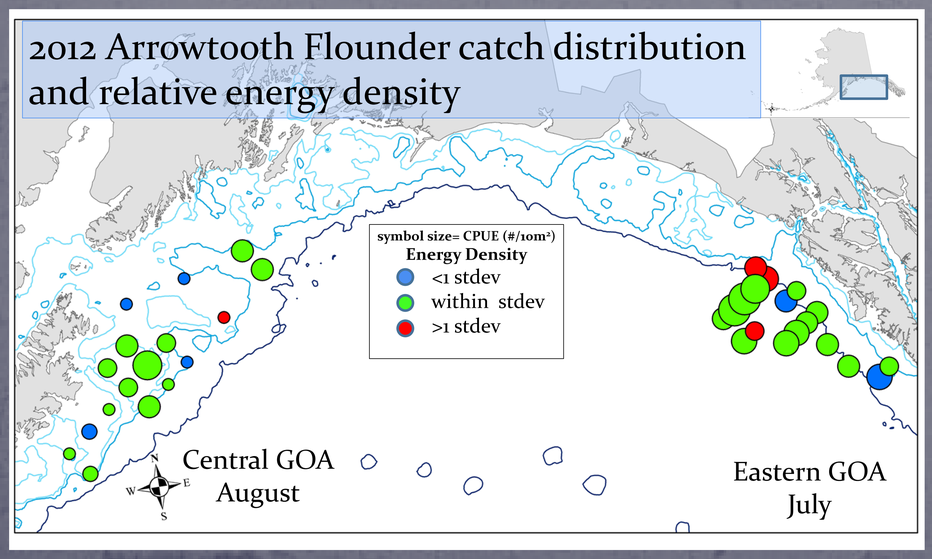
Although not significant, ATF show an increase in energy density with lengths up to 38mm and then do not increase energy density with length (r^2 =.0753).

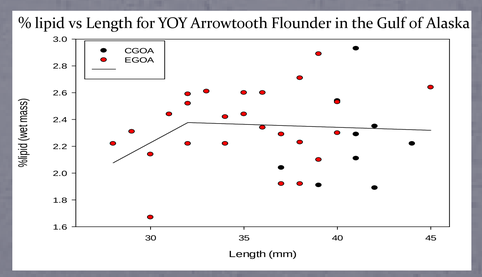


A similar trend is observed for ATF when looking at % lipid vs length. With the inflection point occurring at 32mm.
*These differences appear to be correlated regionally









Discussion

Why is the energy density of ATF different than the other age-0 fish?

Possible energy allocation associated with settling out/metamorphisms? Differences in diet?

Are ATF changing energy allocation or life history strategies between 32-38mm in length?

Regional differences?

Caused by prey availability , environmental conditions, or survey timing (July vs August)

Annual trends?

Samples from 2011, 2013 and 2014 will be analyzed for energy content

A special thanks to a Marilyn Zaleski for providing Pollock and P. Cod Energy Data