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Current reproductive work in the EBS: Focus on snow crab biennial reproduction



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Why interested?

- Biennial cycles not accounted in the EBS
- Implications for reproductive potential
- Need empirical data

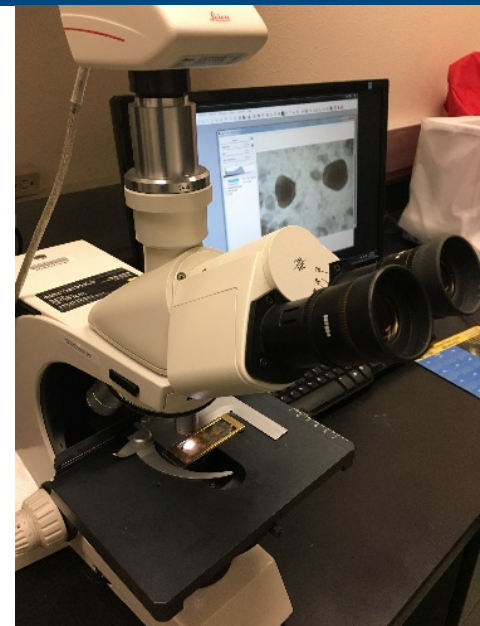


Objectives

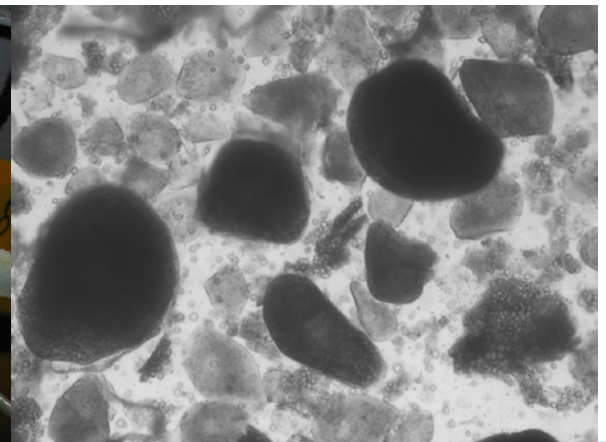
- Develop a method for distinguishing between annual and biennial cycles on the NMFS trawl survey
- Determine the proportion of female *C. opilio* that exhibit biennial spawning
- Investigate the influence of environmental and biological variables on reproductive cycle

Study highlights

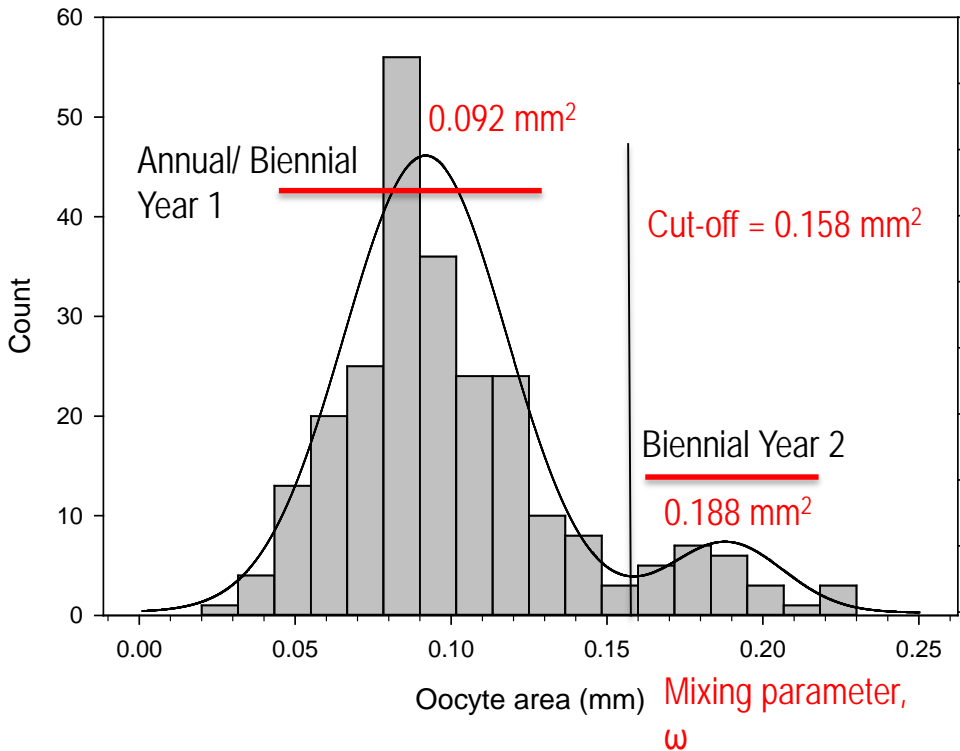
- 2014 – 2018
 - Pilot study 2014, index sites vs. random
- Ovigerous crab collections
- Lab processing



A priori hypothesis: Oocytes from biennial year-two crab will be larger than oocytes in either annual or biennial year-one crab



Results

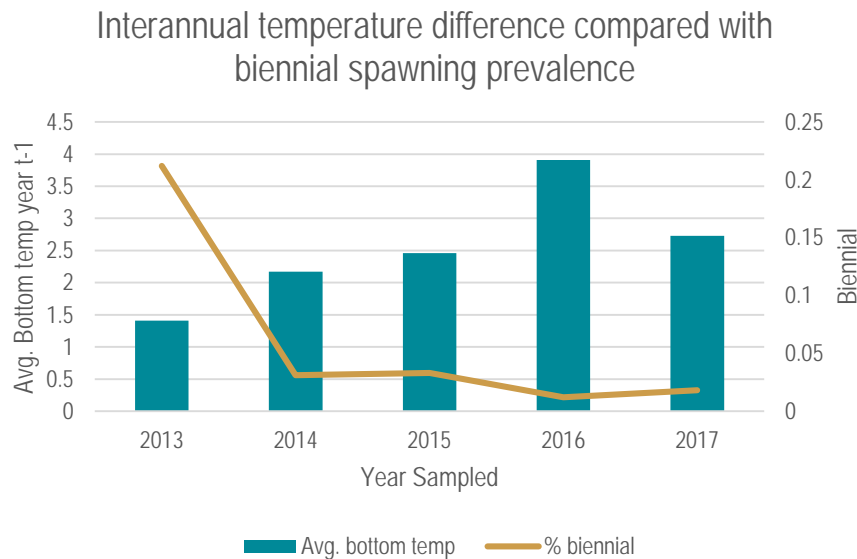


- **Bimodality** in oocyte area frequency distribution
- **Calculated 50% cut-off** for biennial spawners to apply across time series

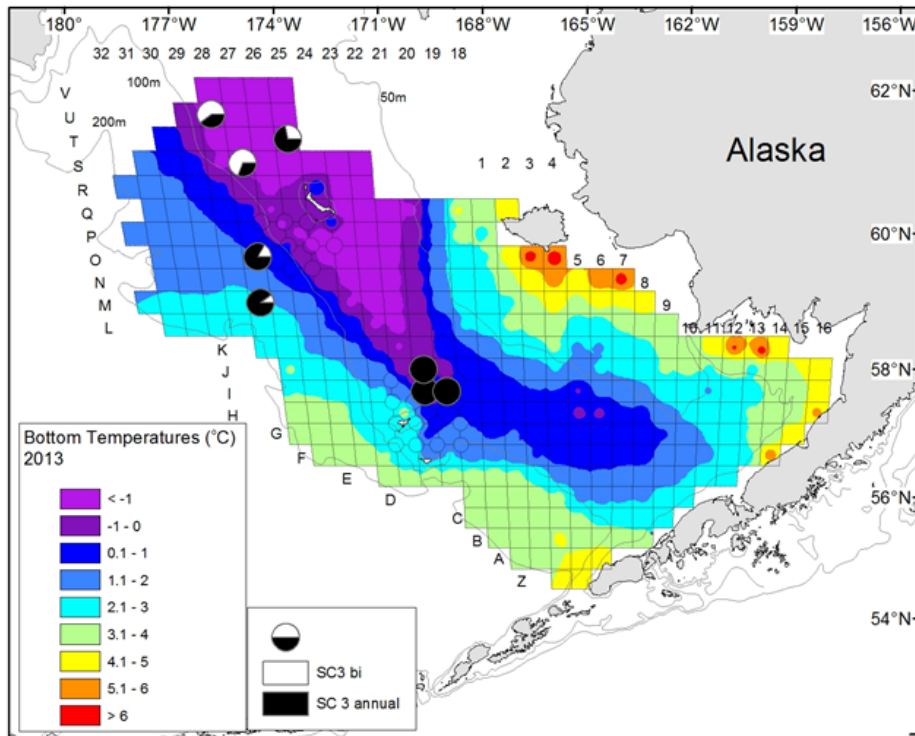
Across all years

- Bimodal normal distribution was a better fit across all years
- Different proportions of biennial crab estimated annually

	2014	2015	2016	2017	2018
Mixing parameter, ω	9.5%	1.9%	1.5%	3.8%	1.1%



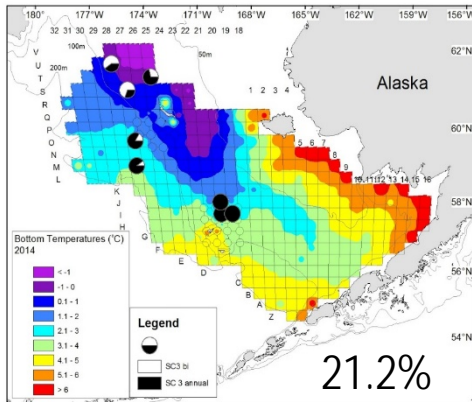
Factors influencing prevalence of biennial crab



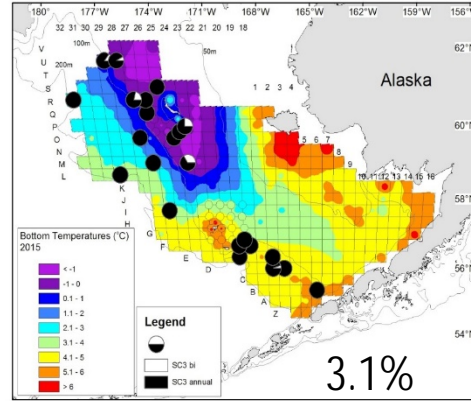
- Shell condition (SC)
 - 100% biennial year-2 = SC3
 - Classification of SC
- Location
- Near bottom temperature **X**
- Prior-year NBT **X**
- Carapace width **X**



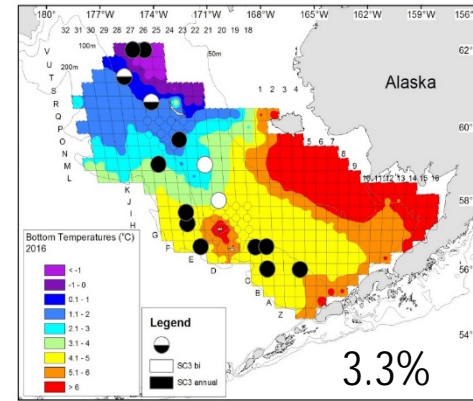
Warm years across the EBS



2014

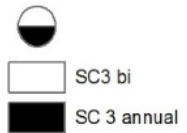


2015

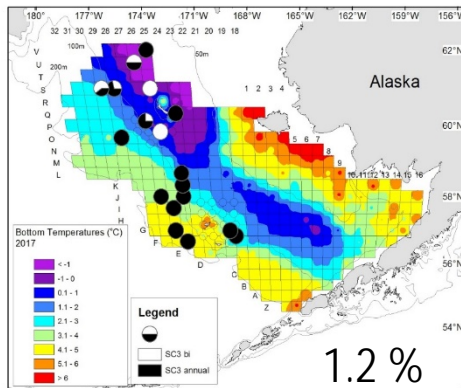


2016

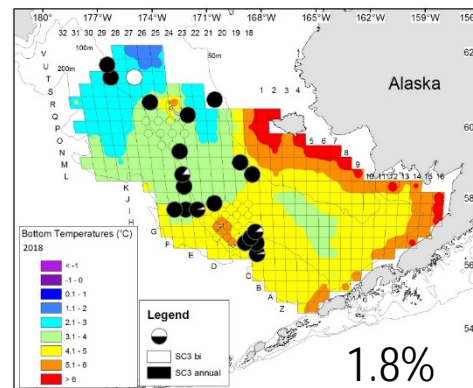
Legend



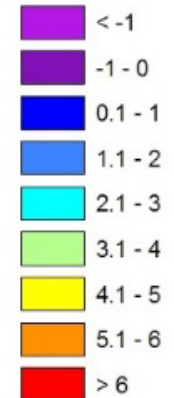
Bottom Temperatures (°C)



2017



2018



Direction

Future work-

- Focus on shell condition 3 crab collections (2019)
 - Increase power for future analyses
- Lab study to look at thermal cut-off for these crab
- Need data from cold years



Bristol Bay Red King Crab Fecundity

- Cold vs warm years update



Questions?



Acknowledgements-

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