Fishery and biological characteristics of Jonah crab in Rhode Island

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Rhode Island Marine Fisheries Institute

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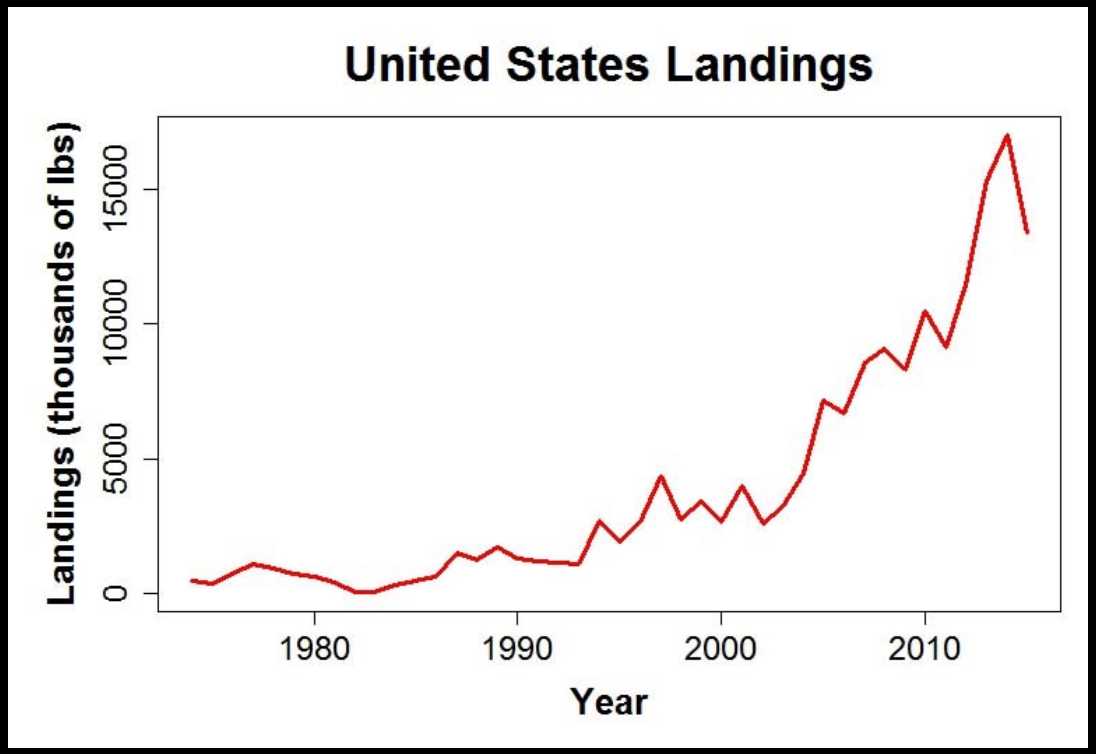
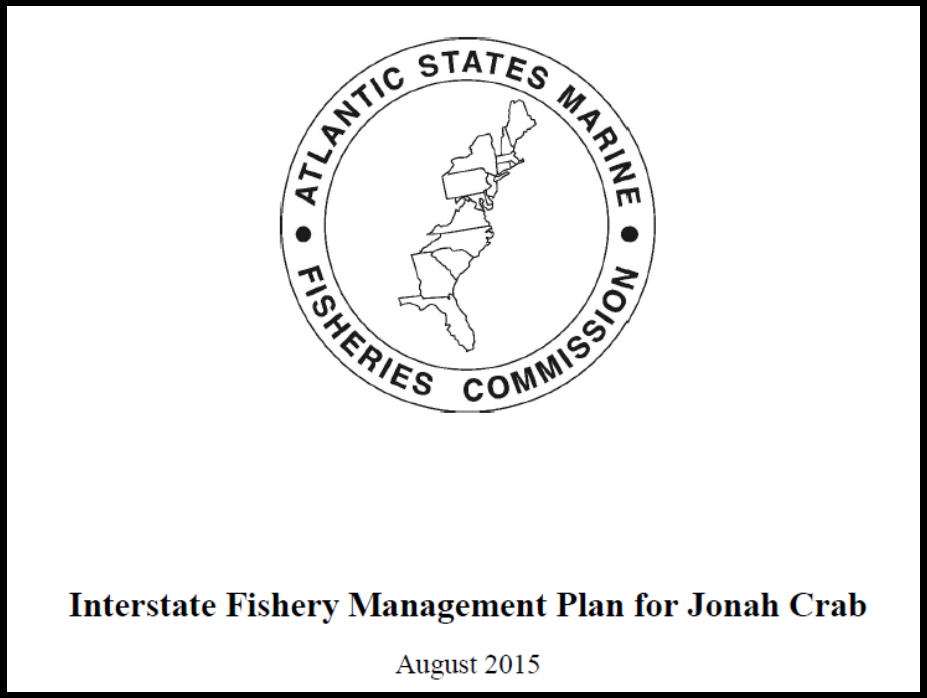
Introduction



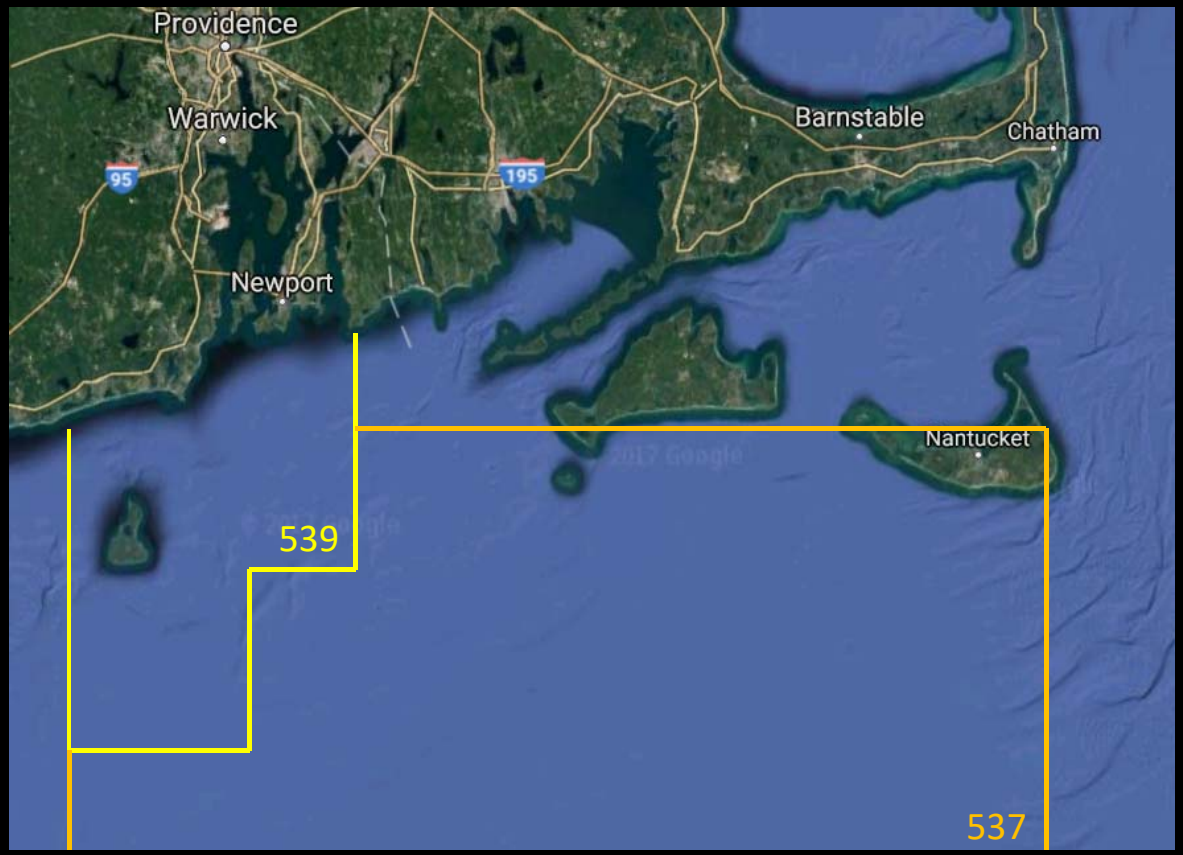
- Emerging fishery
- Until 2015, no FMP
- No range-wide stock assessment, due in part to data needs, including:
  - Maturity
  - Seasonality of growth and reproduction
  - Growth rates

Project Objectives

- Fishery description
  - Catch composition
  - CPUE
- Biological characteristics
  - Growth rates
  - Molting seasonality
  - Morphometric relationships
  - Shell disease occurrence



Progress to Date: Fishery characteristics



- 6 sampling days: NMFS stat area 539
  Aug 2016-Aug 2017

- 4 sampling days: NMFS stat area 537
  June 2016-Nov 2016

Sea sampling: Data collected

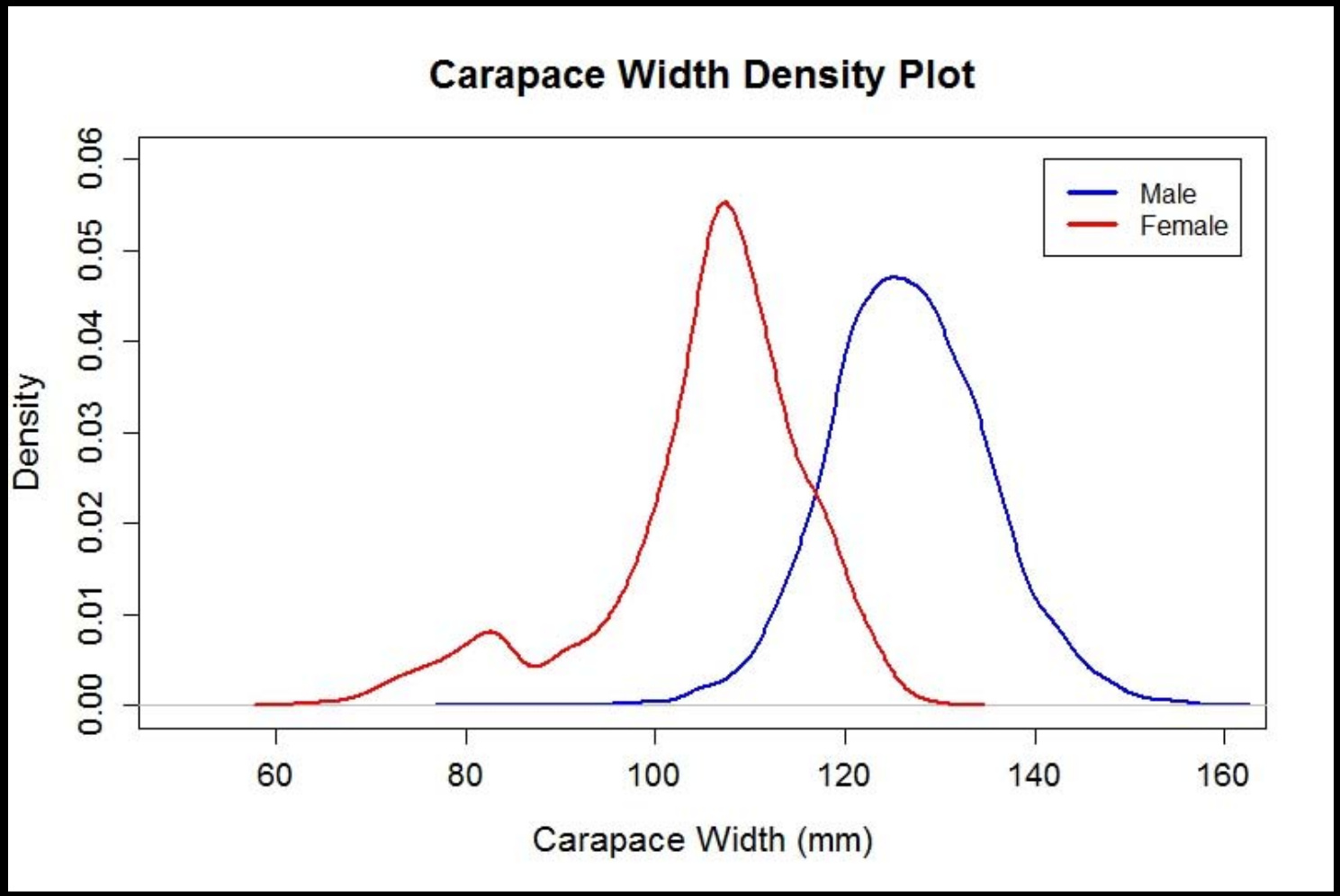
Fishing effort information:

- Trap configuration, depth, temperature, bait type, soak time, and catch per trap

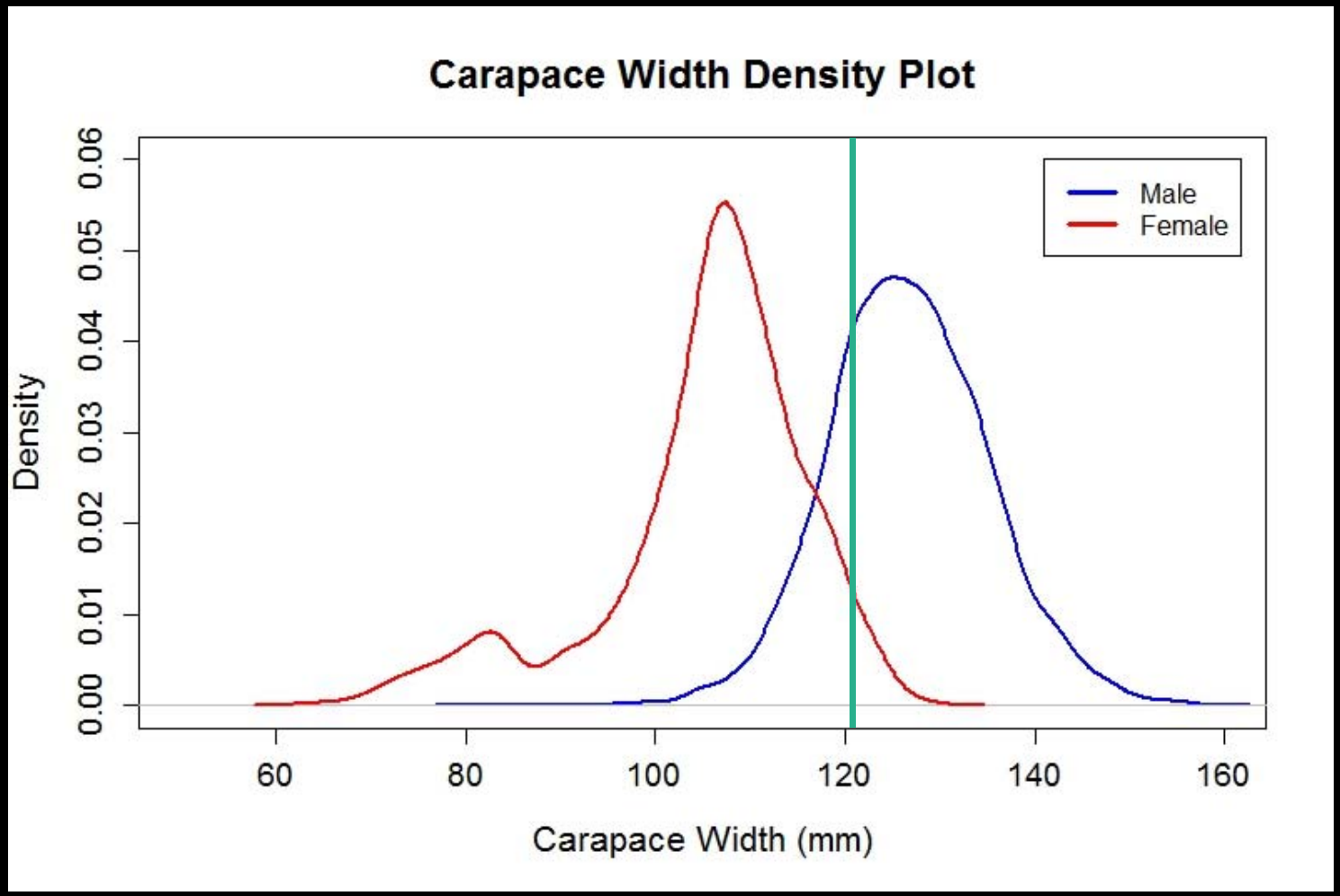
Biological data:

- Carapace width, sex, molt condition, shell disease condition, missing appendages

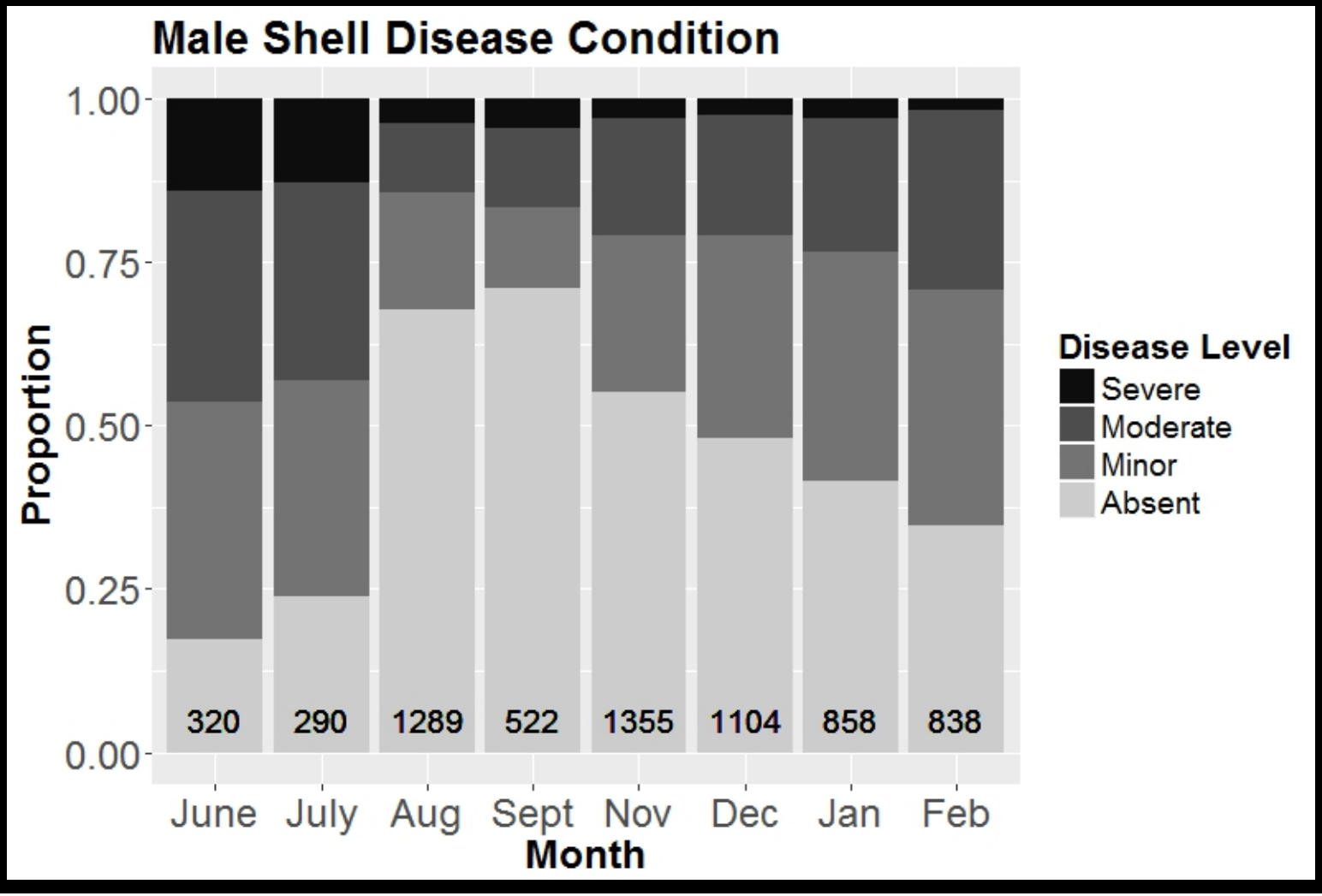
Catch composition



Catch composition



Shell disease in males exhibits seasonal trend



Major data need for stock assessment: growth rates and seasonality

Estimating crustacean growth is particularly challenging

- No hard structures to age
- Tagging is not feasible in long term
- Incremental growth: need molt increment and intermolt period

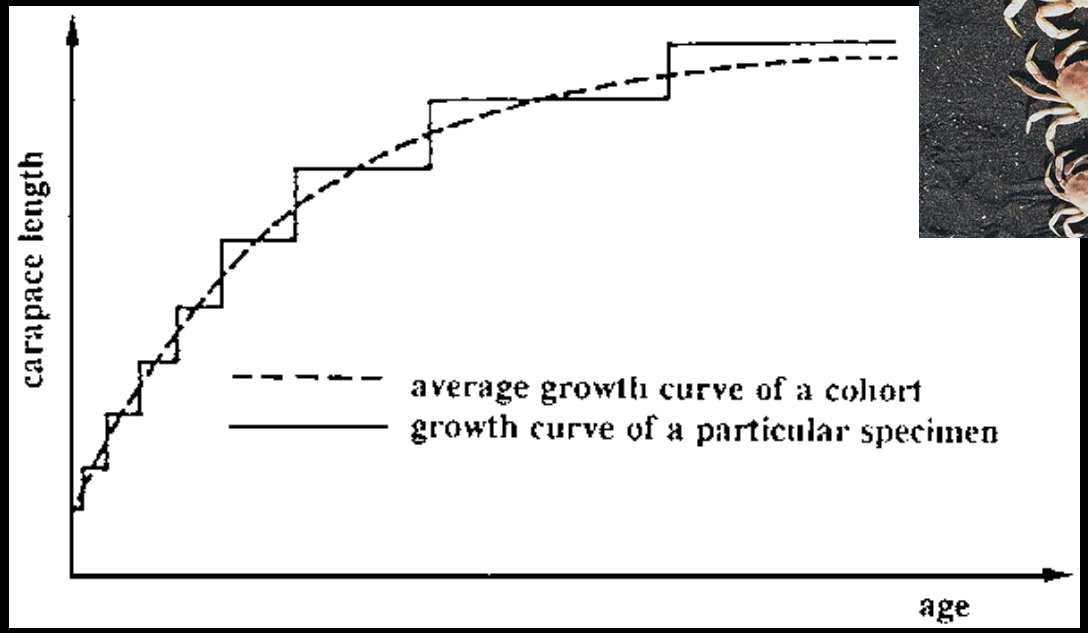
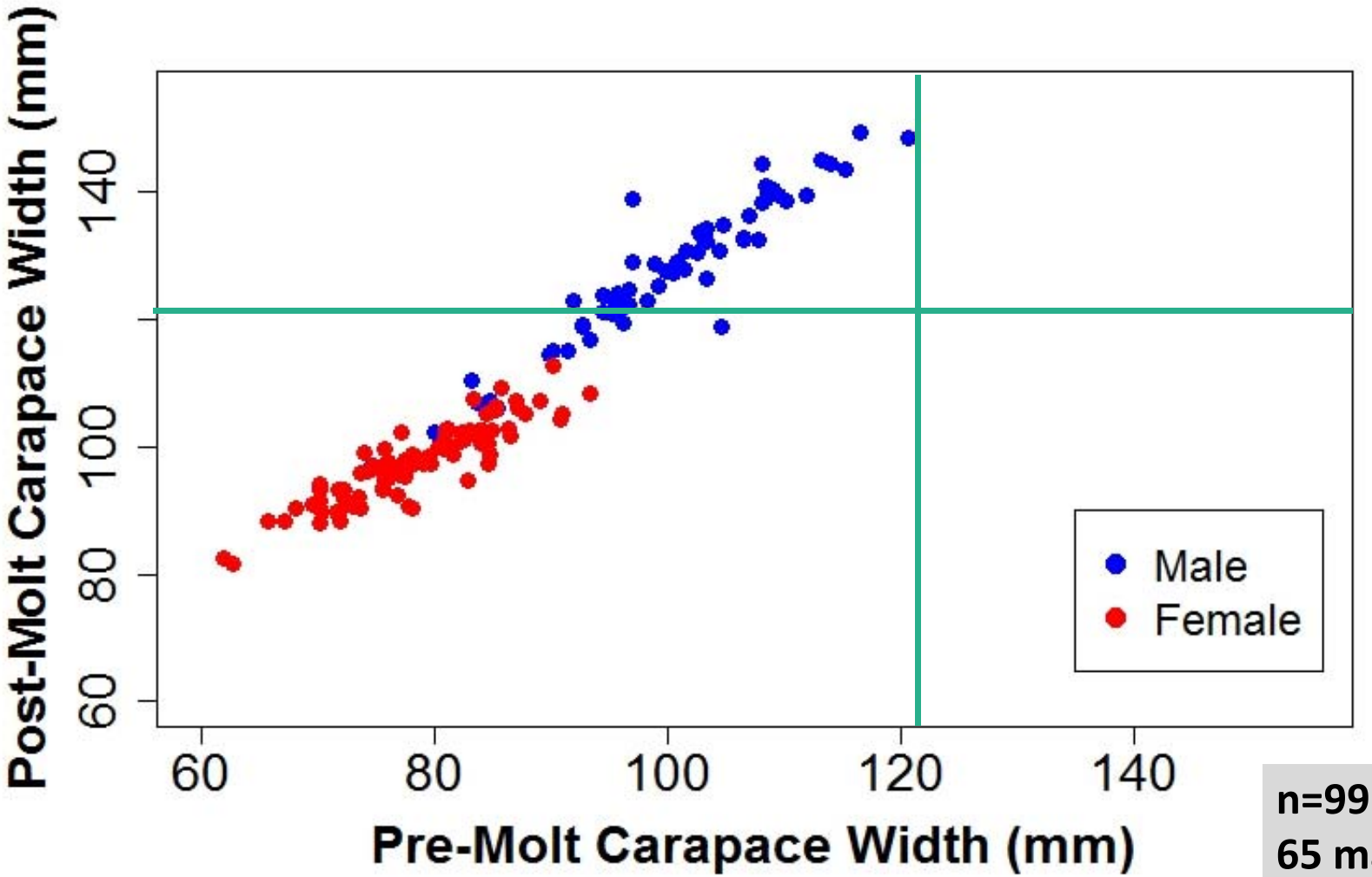


Figure sourcex: fao.org, bml.ucdavis.edu

Laboratory Growth Study

- Collected specimens from at-sea sampling
- Observation of molt events
- Measurement of carapace before and after molt
- Monthly collection to examine seasonal trends

CT2



n=99 females, 65 males

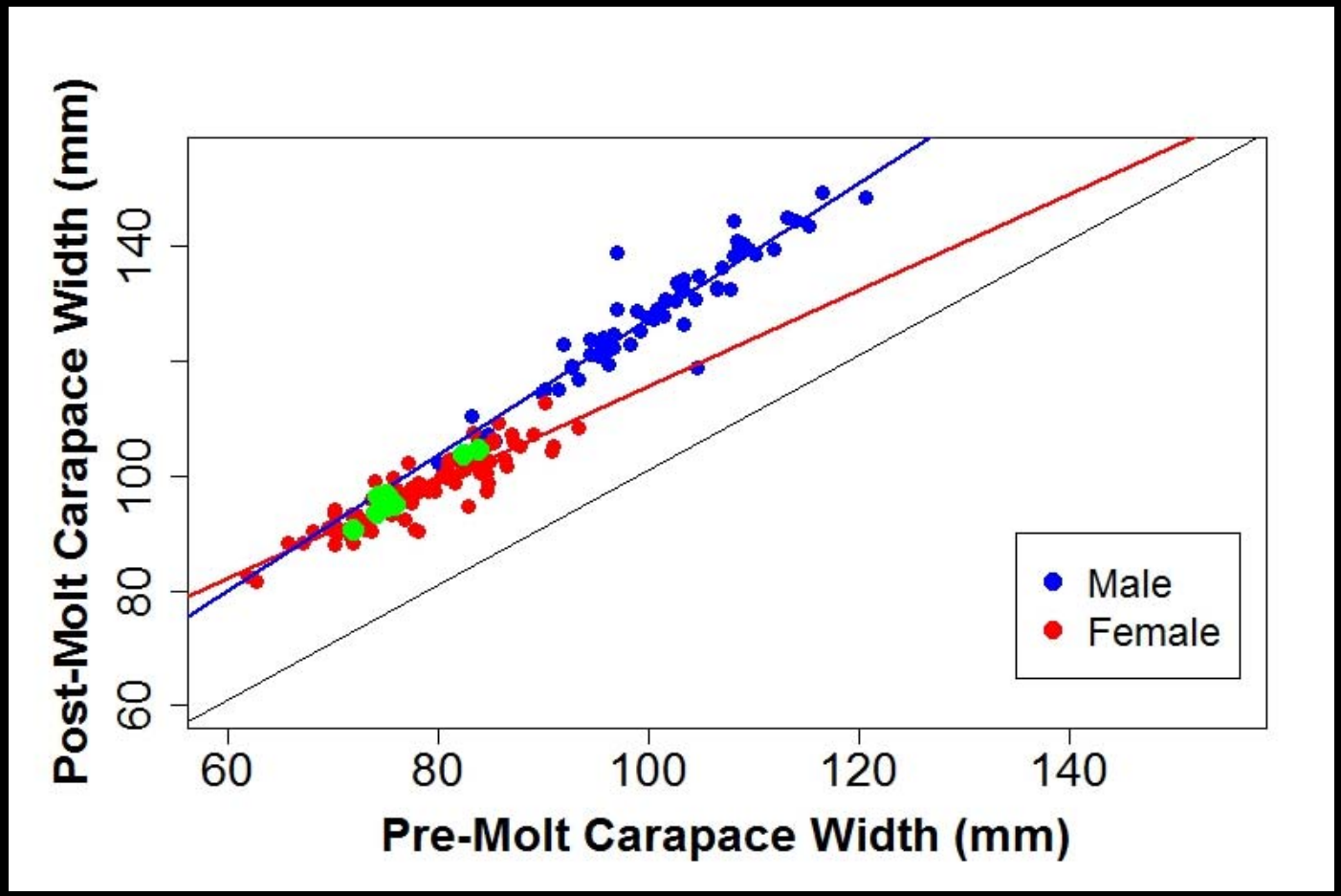
Slide 11

CT2 Need to replace these graphs with new ones
Corinne Truesdale, 5/14/2017

CT3

Female: Post-molt width= 32.037+0.836(Pre-molt width), R^2=0.8241

Male: Post-molt width= 9.139+1.183(Pre-molt width), R^2=0.8964

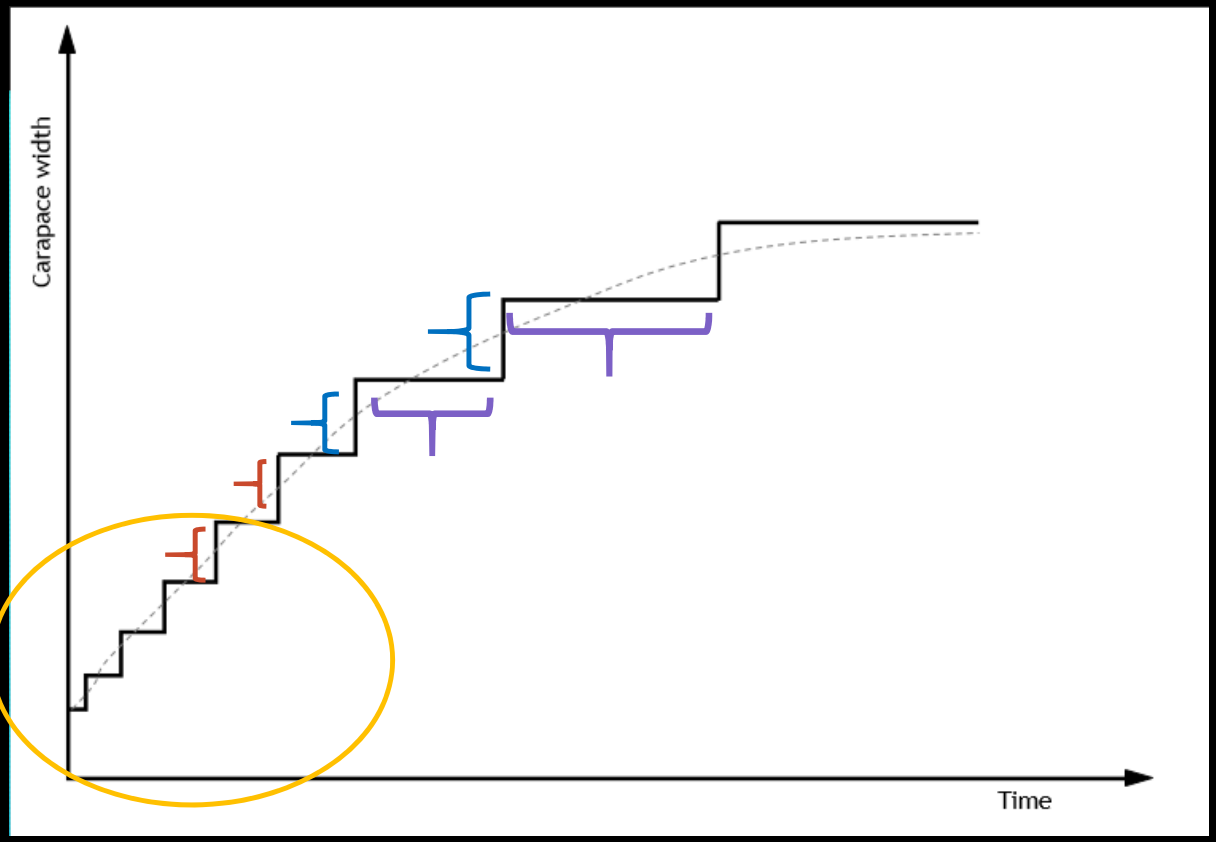


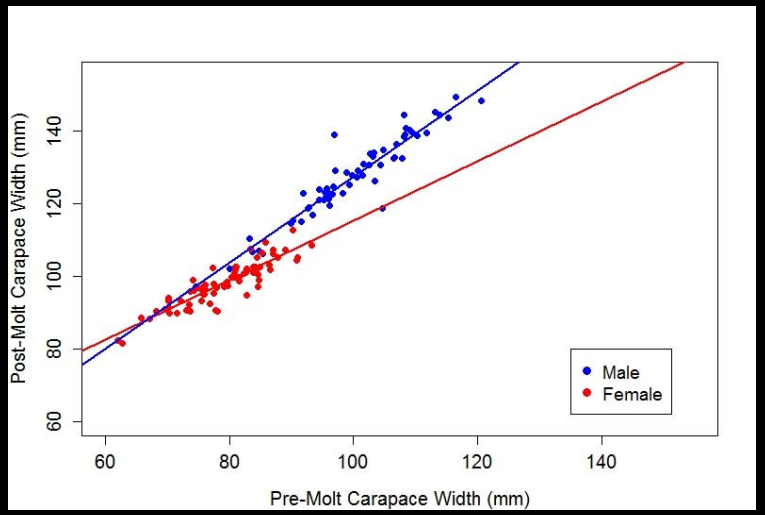
Slide 12

CT3 Fly in new lines to show legal minimum size and explain the significance

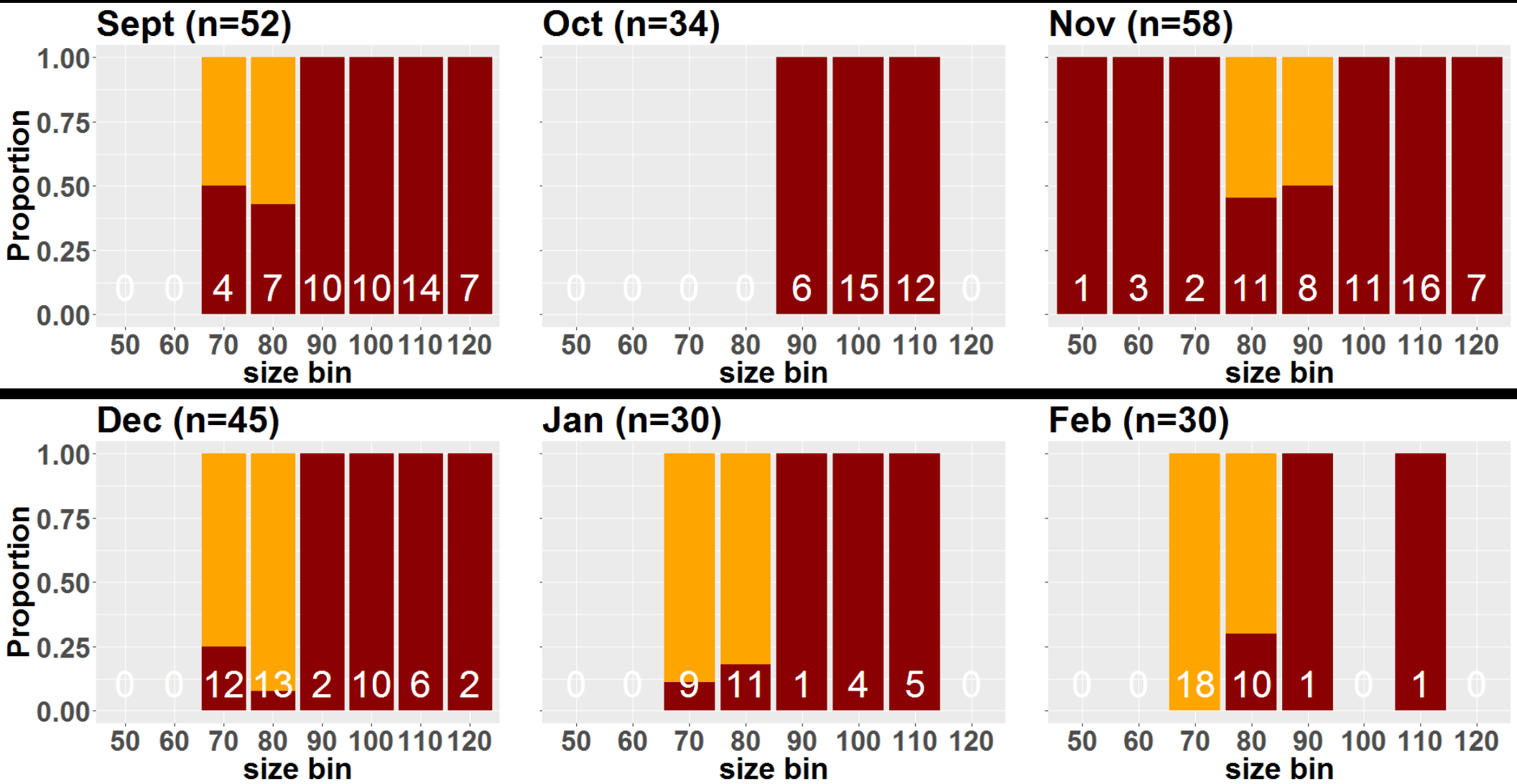
Corinne Truesdale, 5/14/2017

Molt increments=vertical component of growth
“stair-steps”

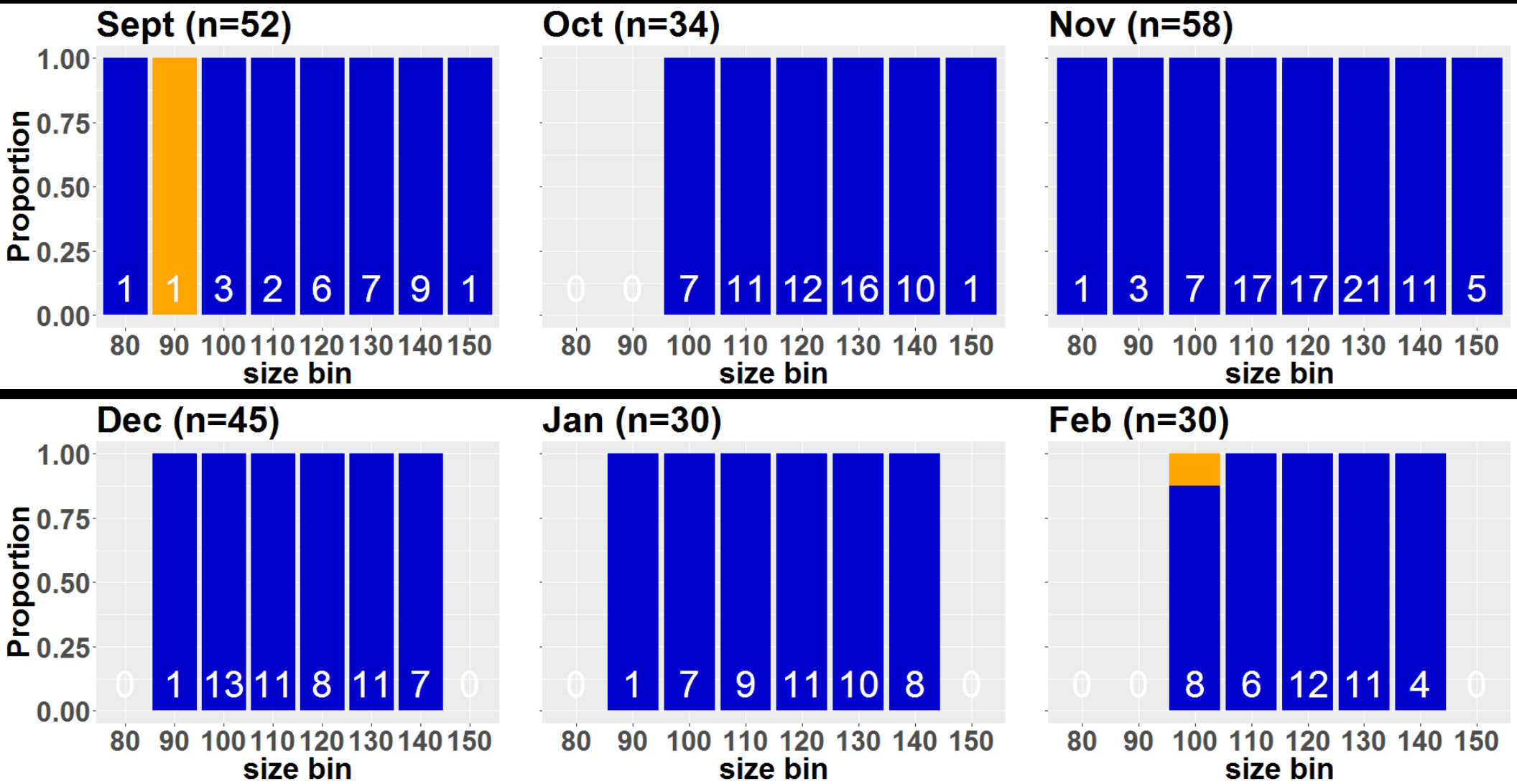




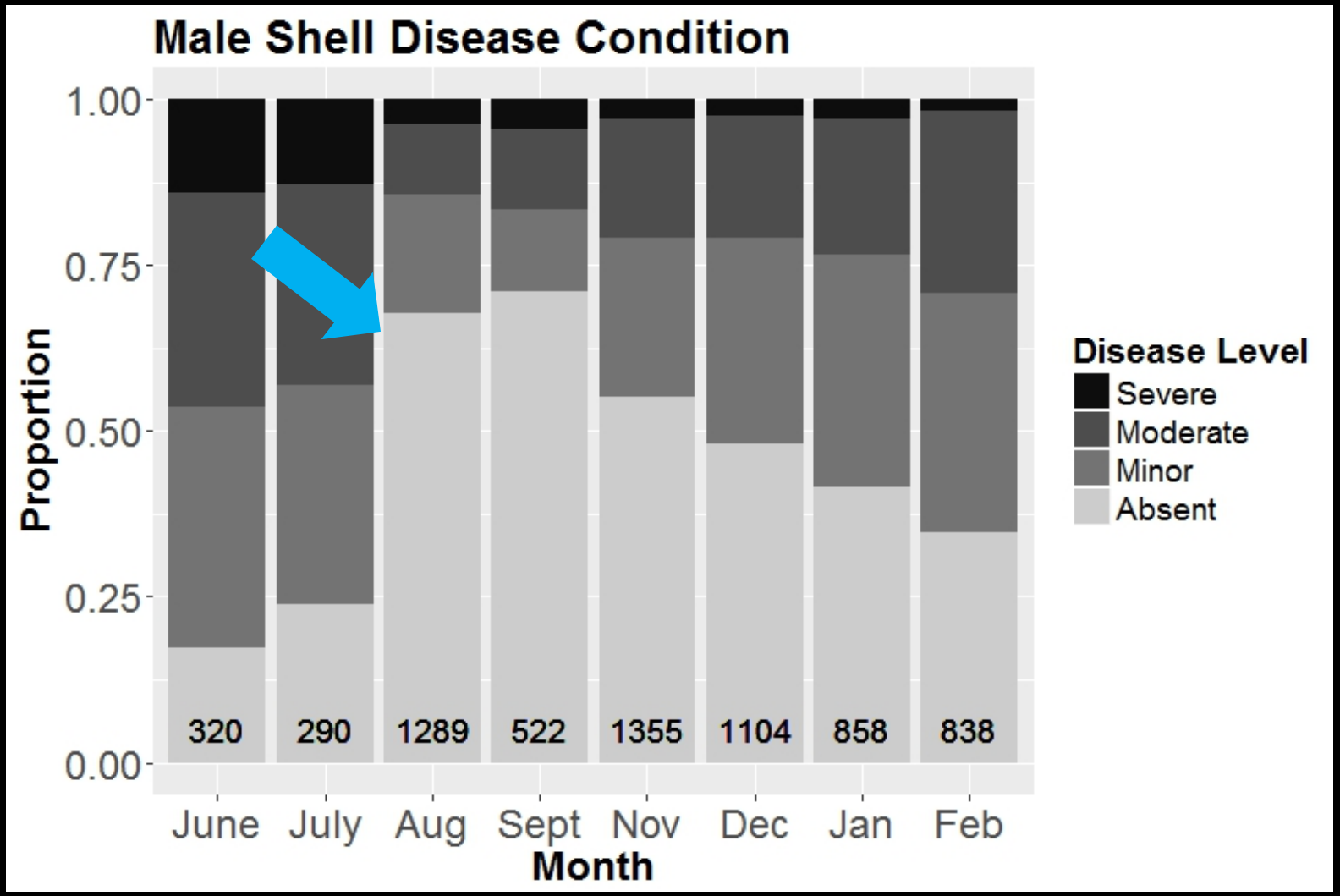
Certain female size classes are molting throughout the year



Males have not had large molting event since September

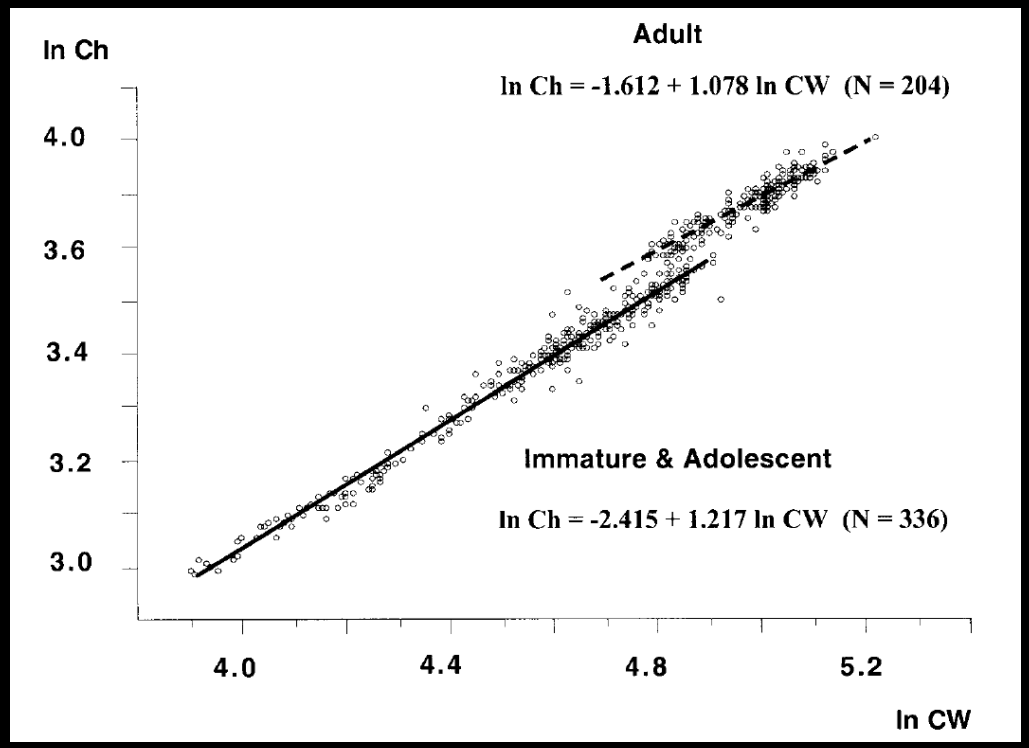


Male molt study results corroborated by pattern in shell disease occurrence?



Data has potential to address other management needs

- Claw weight to body weight/carapace size
- Morphometric maturity: claw height to carapace width
- Reproductive seasonality



Moriyasu et al, 2002 (graph); Andrew Martinez

Summary

- Characterization of the Rhode Island Jonah crab fishery and description of catch composition
- Growth rates and molting seasonality
- Shell disease occurrence in RI
- Ability to address forthcoming management needs

Acknowledgements

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