Assessing the Recreational Blue Crab Fishery with Mark-Recapture Methods

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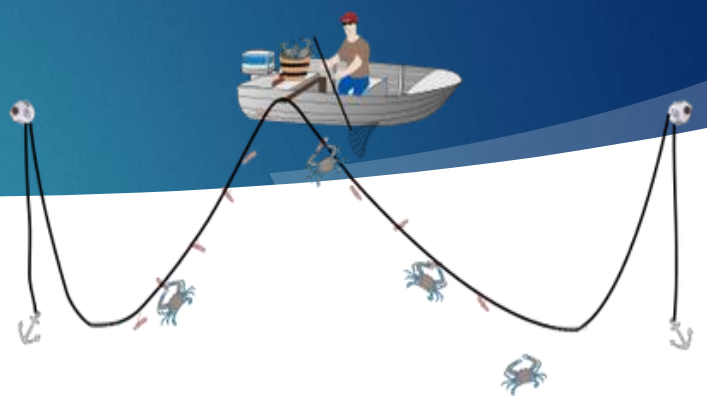
Objectives

- Quantify seasonal and spatial variation in exploitation rate by fishery sector
- Estimate the annual exploitation rate of the recreational sector for males and females to update stock assessment models
- Examine connectivity among harvest reporting areas

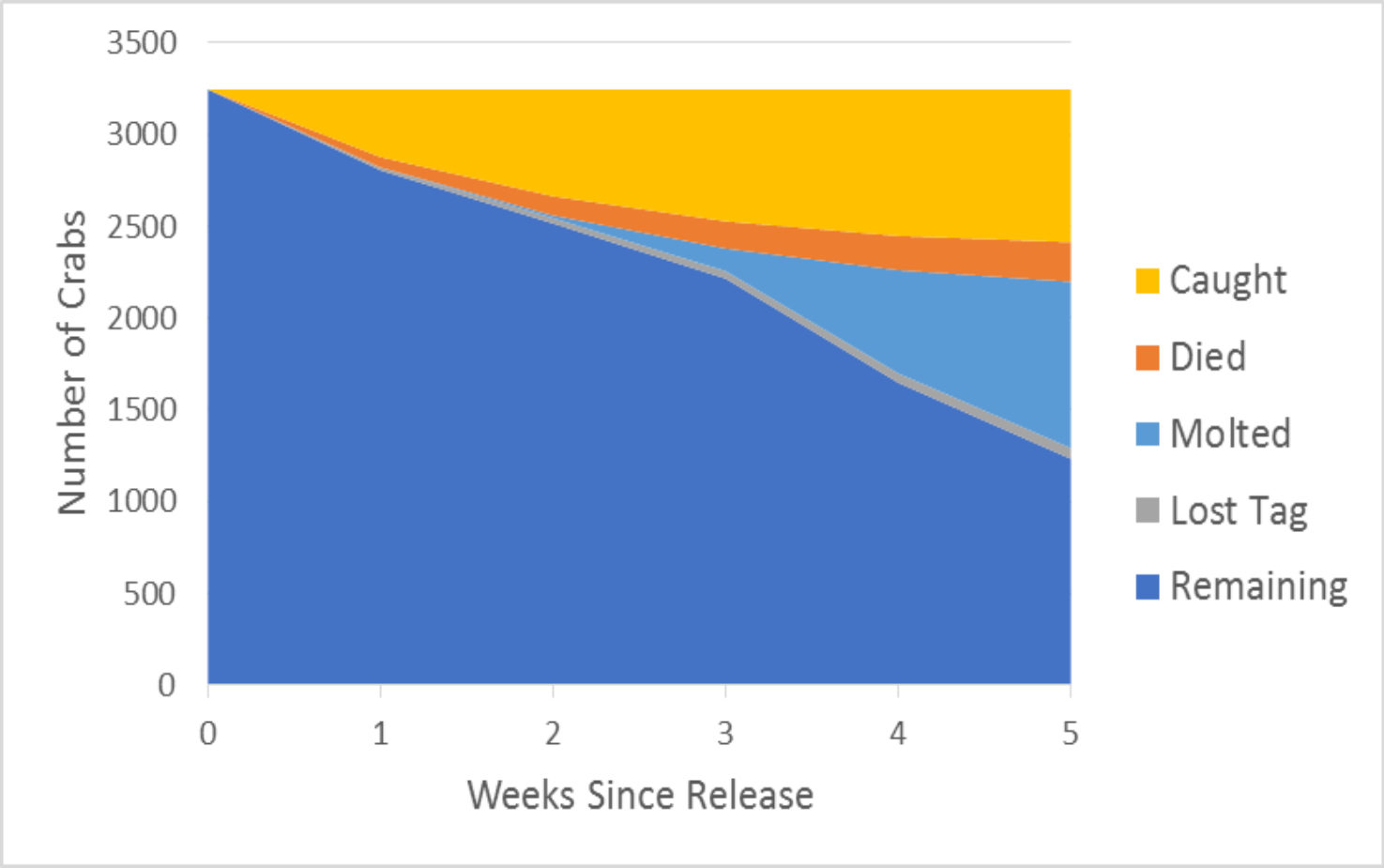
Sea Grant
Maryland

Methods: Mark-recapture

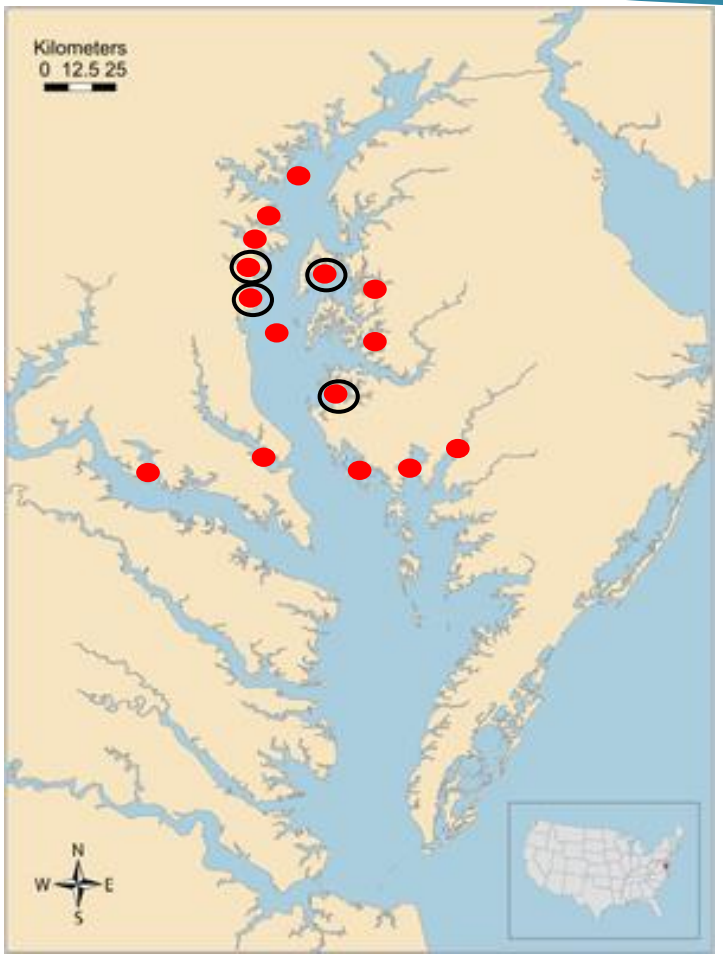


- ~400 crabs are caught by local trotliners at each site and tagged
- Size, sex, and limb loss are recorded prior to release
- Recaptures reported by the fishery via phone or website (serctag.si.edu)
- Rewards are $5 or $50 to estimate reporting rate

Fate of tagged crabs: Male crab example

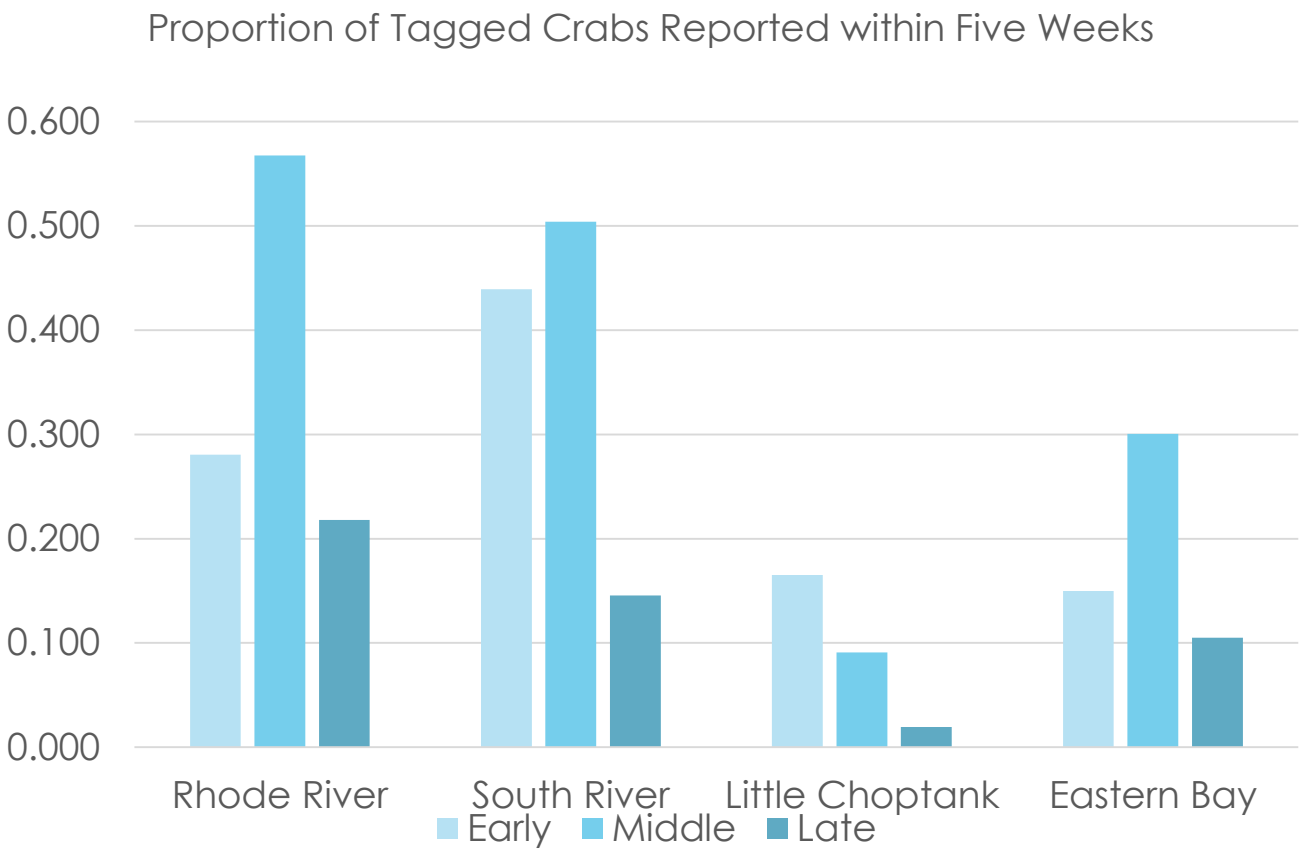


Methods: Experimental design



- 2014: seasonal variability in four locations
- 2015: spatial variability in 15 locations

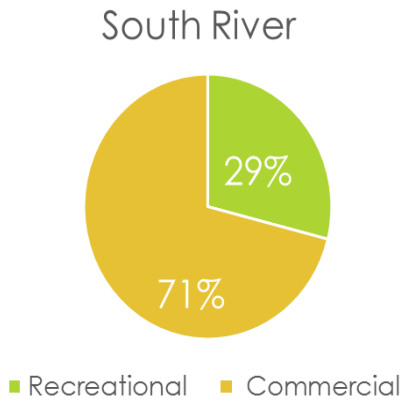
2014 preliminary results: Spatial and temporal variability

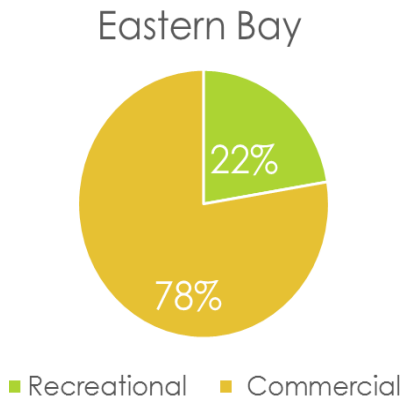


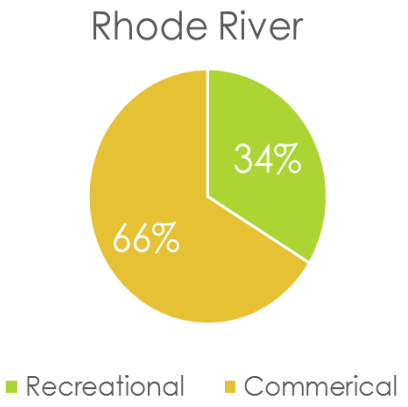
- Catch of tagged crabs varies by location and season
- In some areas, >50% of tagged crabs are reported to be caught within 5 weeks in summer

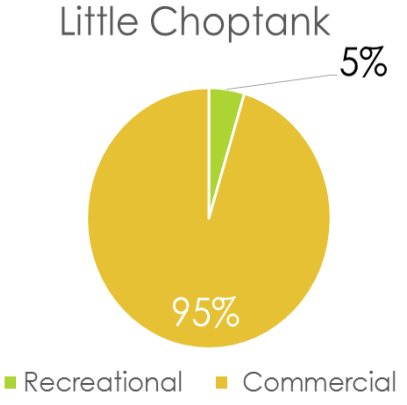
2014 preliminary results: Fishery sector

- Proportion of recreational fishing varies by location
- Recreational fishing higher near more developed areas
- Spatial resolution will be improved with 2015 data









Next steps

- Complete recapture data set by December 2015
- Estimate annual exploitation rate for males and females in Maryland based on spatial and seasonal variability
- Incorporate data from NOAA Saltonstall-Kennedy project to develop baywide estimate of recreational exploitation of females

Nursery habitat contributions to the female spawning stock

- Develop method to identify nursery habitat origin of mature female blue crabs using trace metal and stable isotope chemistry of carapace
- Mark-recapture study to validate stability of shell chemistry markers and estimate exploitation rate(baywide tagging)
- Sampled summer 2015 spawning stock and will determine composition by nursery habitat of origin
- Quantify spatial variation in sperm stores and long-term rate of sperm degradation from recaptured crabs to better understand potential for sperm limitation

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