

Impacts of oyster culture on the ecosystem services of estuarine habitats

UNC-IMS

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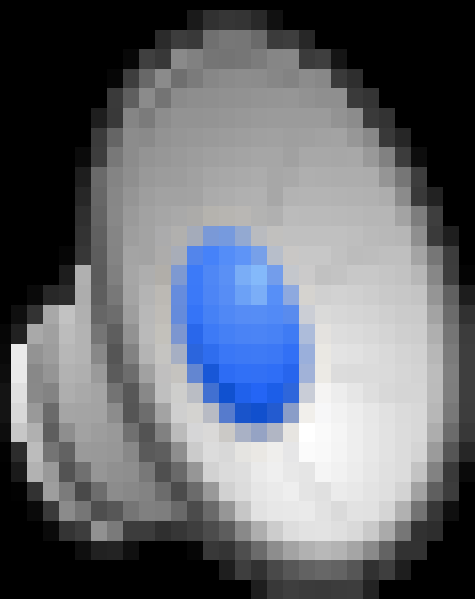
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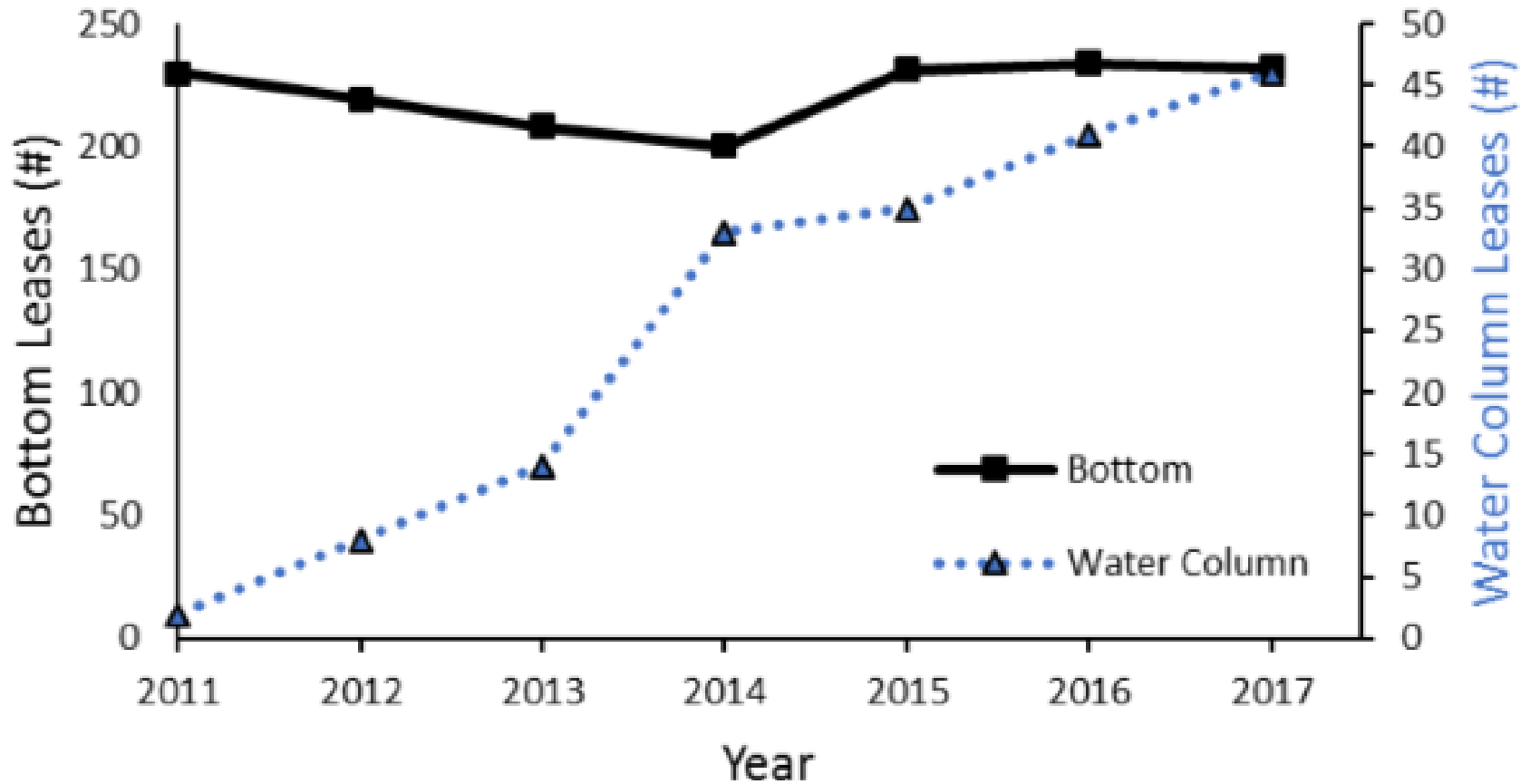
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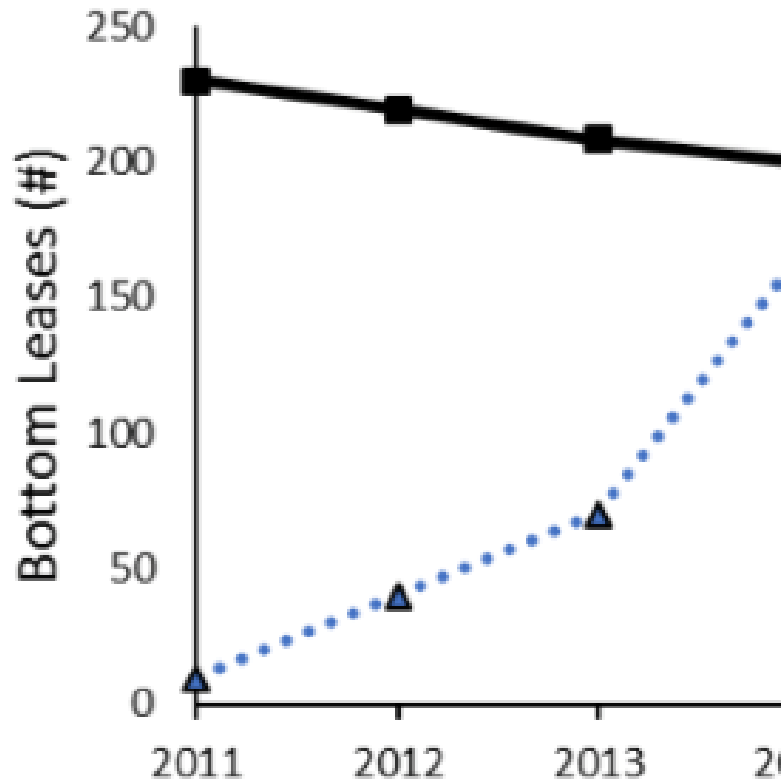


Oyster farming on the rise



Fodrie et al. 2019

Oyster farming on the rise



Measuring ecosystem tradeoffs

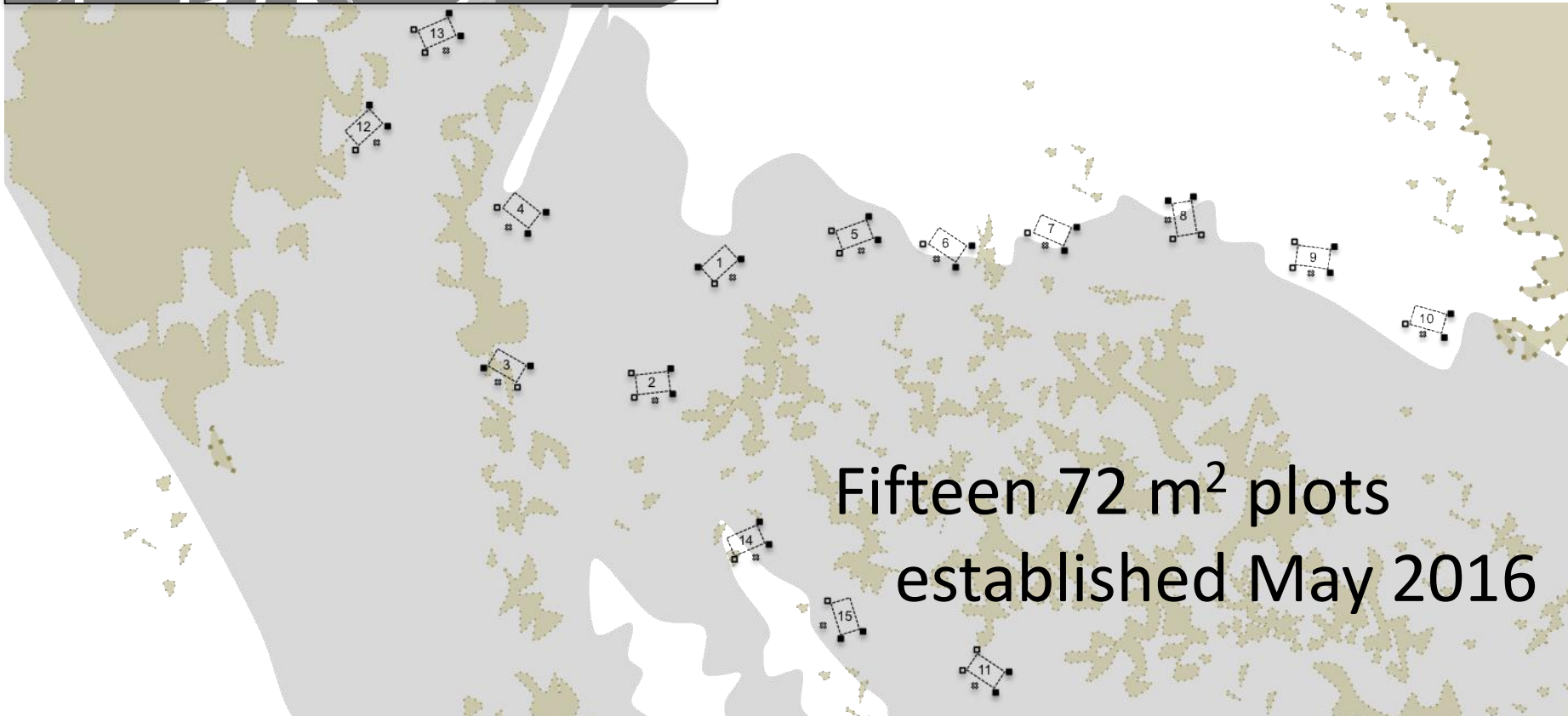
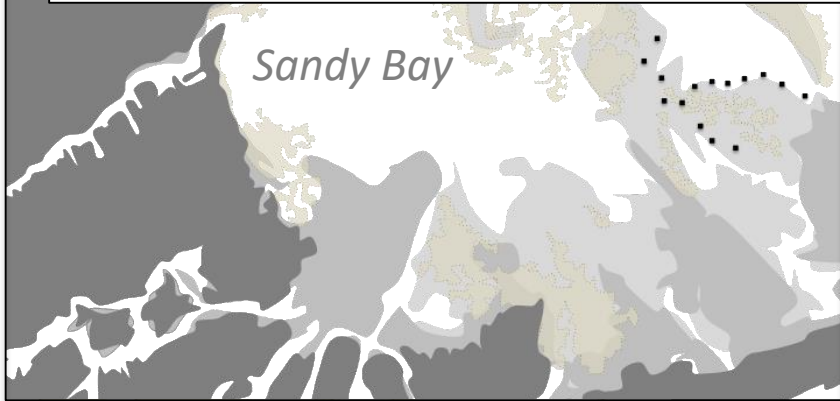
1. Does culture gear have habitat value?
2. How does oyster culture impact SAV?

Part 1: Manipulative experiment in Pamlico sound

Part 2: Field survey of commercial oyster leases

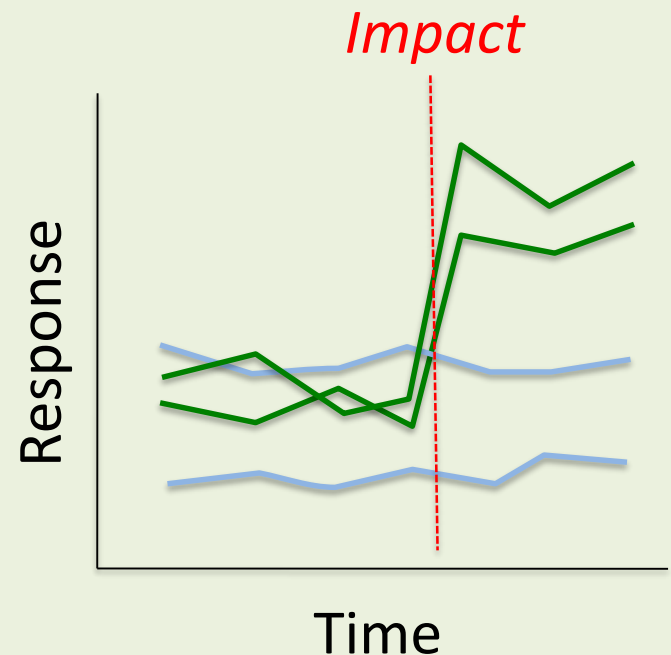


Part 1: Manipulative field experiment



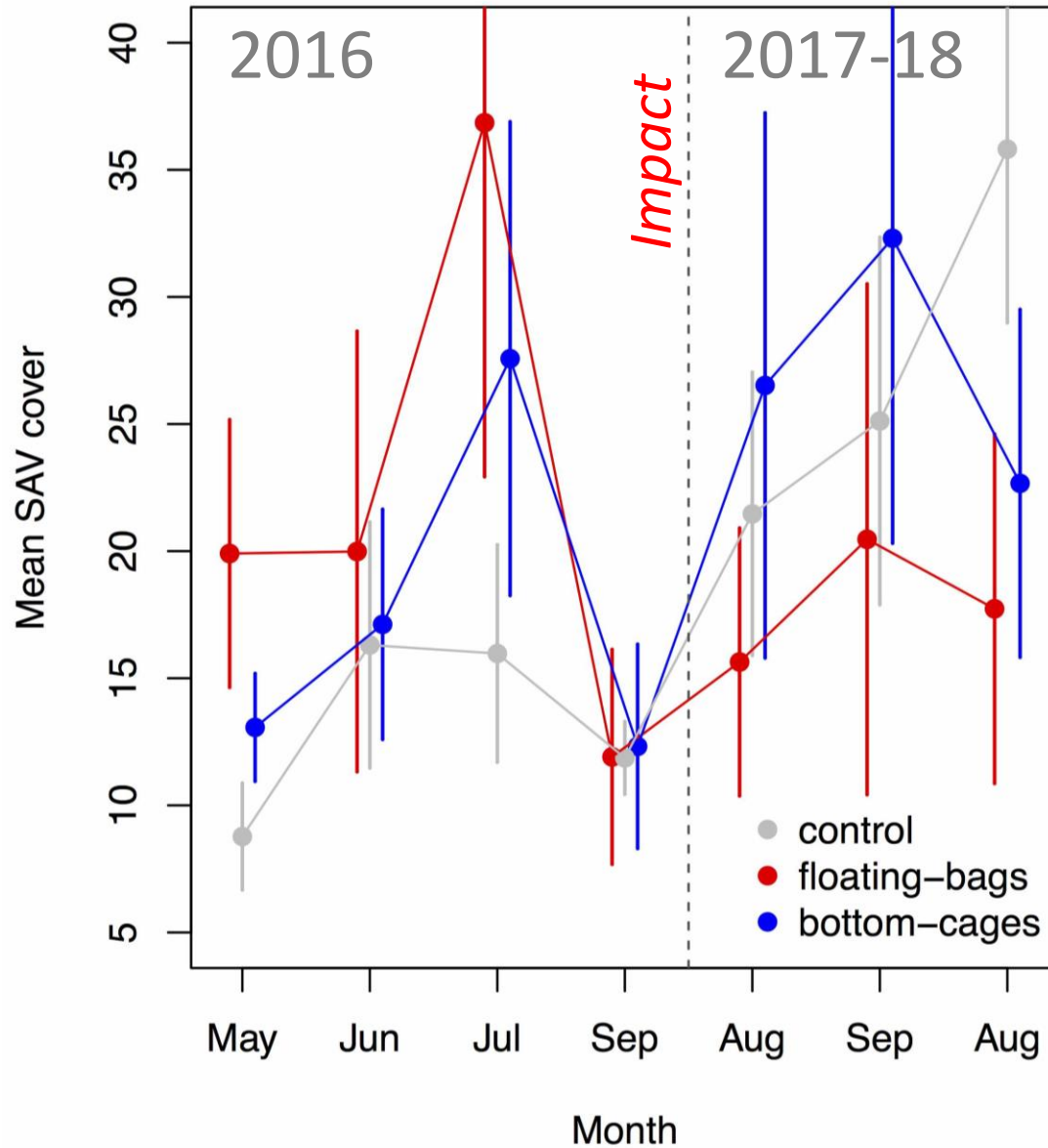
How is seagrass habitat impacted by an oyster lease?

- BACI design—Repeated sampling before (2016) and after impact (2017- 2019)
- $N = 5$ each of control, floating bags, bottom cages
- DIDSON acoustic imagery
 - SAV quadrats
 - 10m gill net
 - Crab pots
 - Minnow Traps

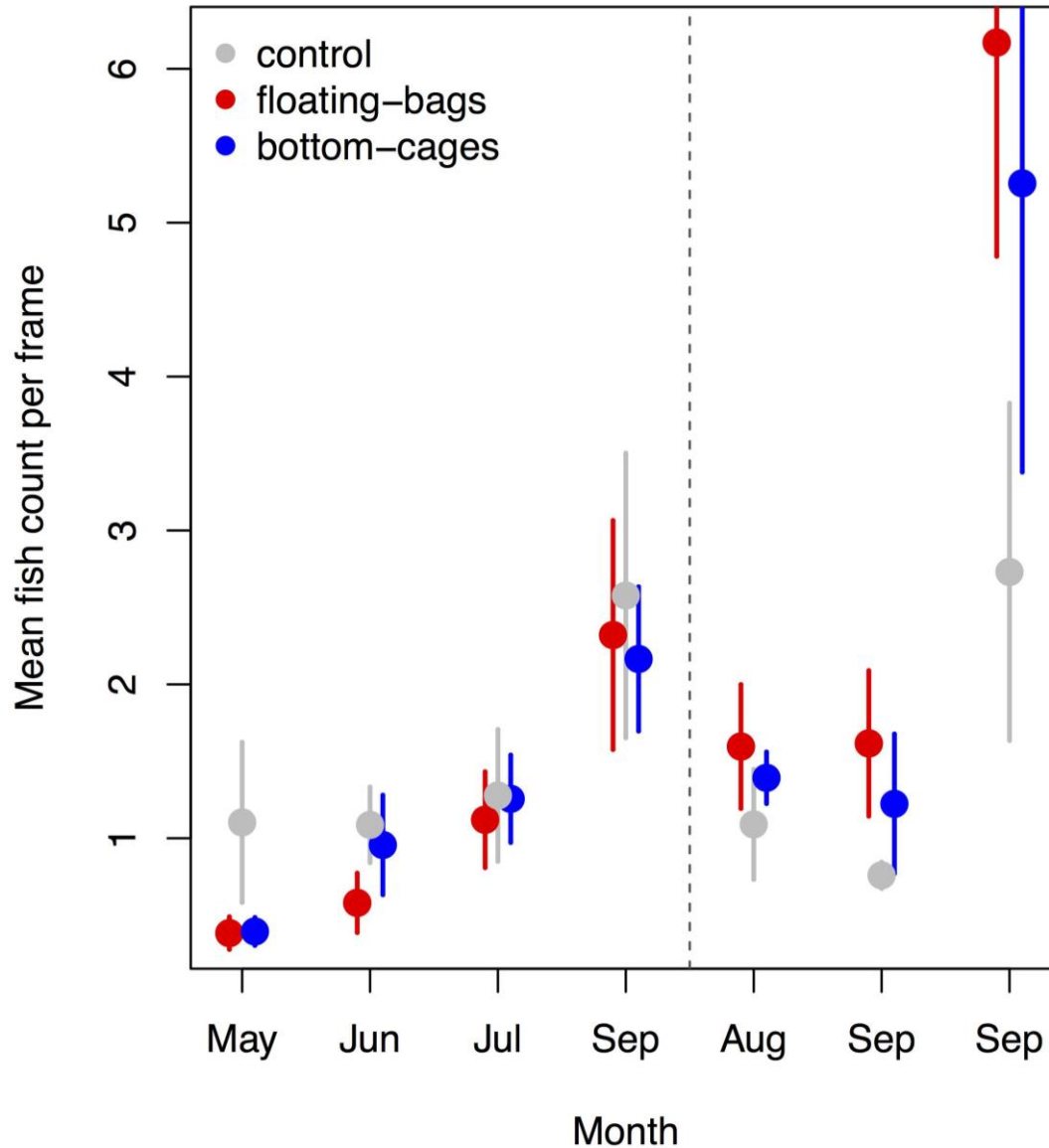




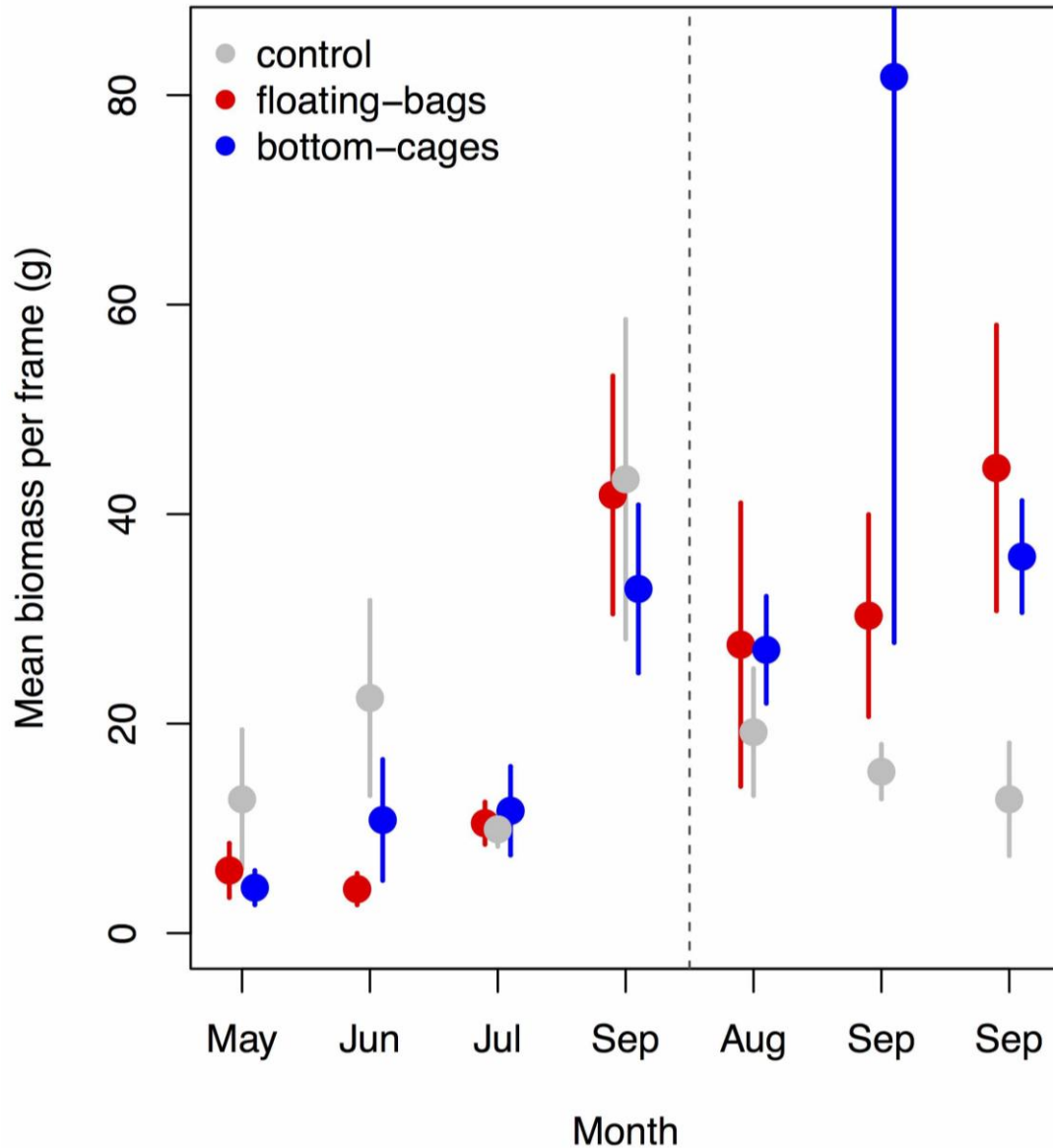
Seagrass cover is variable



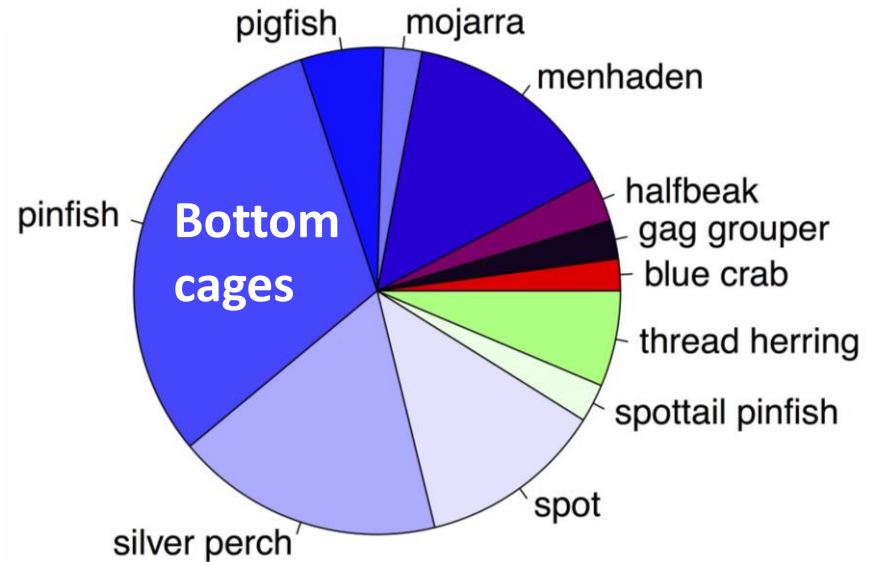
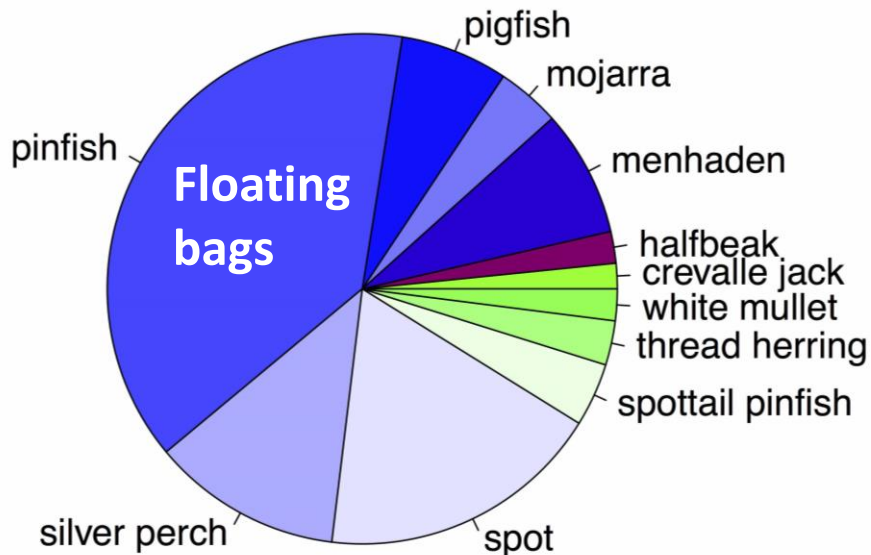
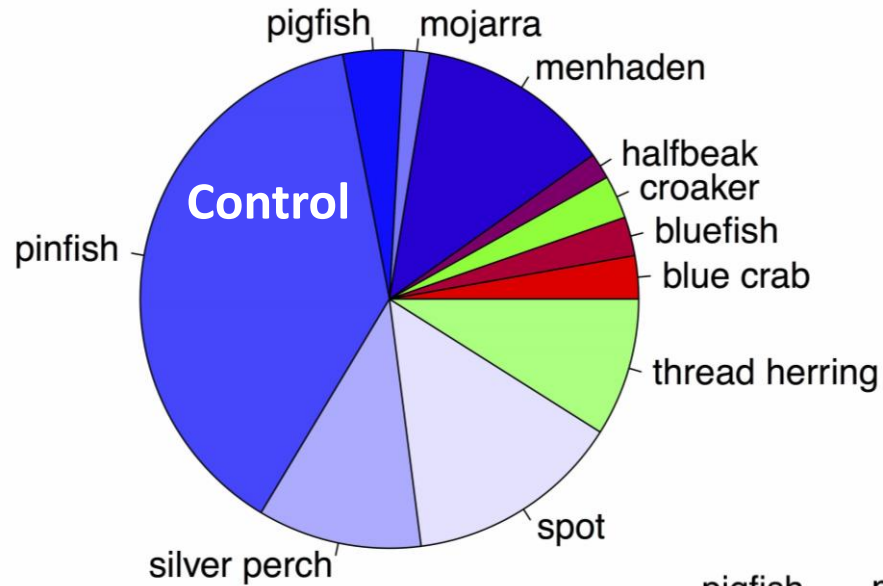
Higher fish density around oyster gear



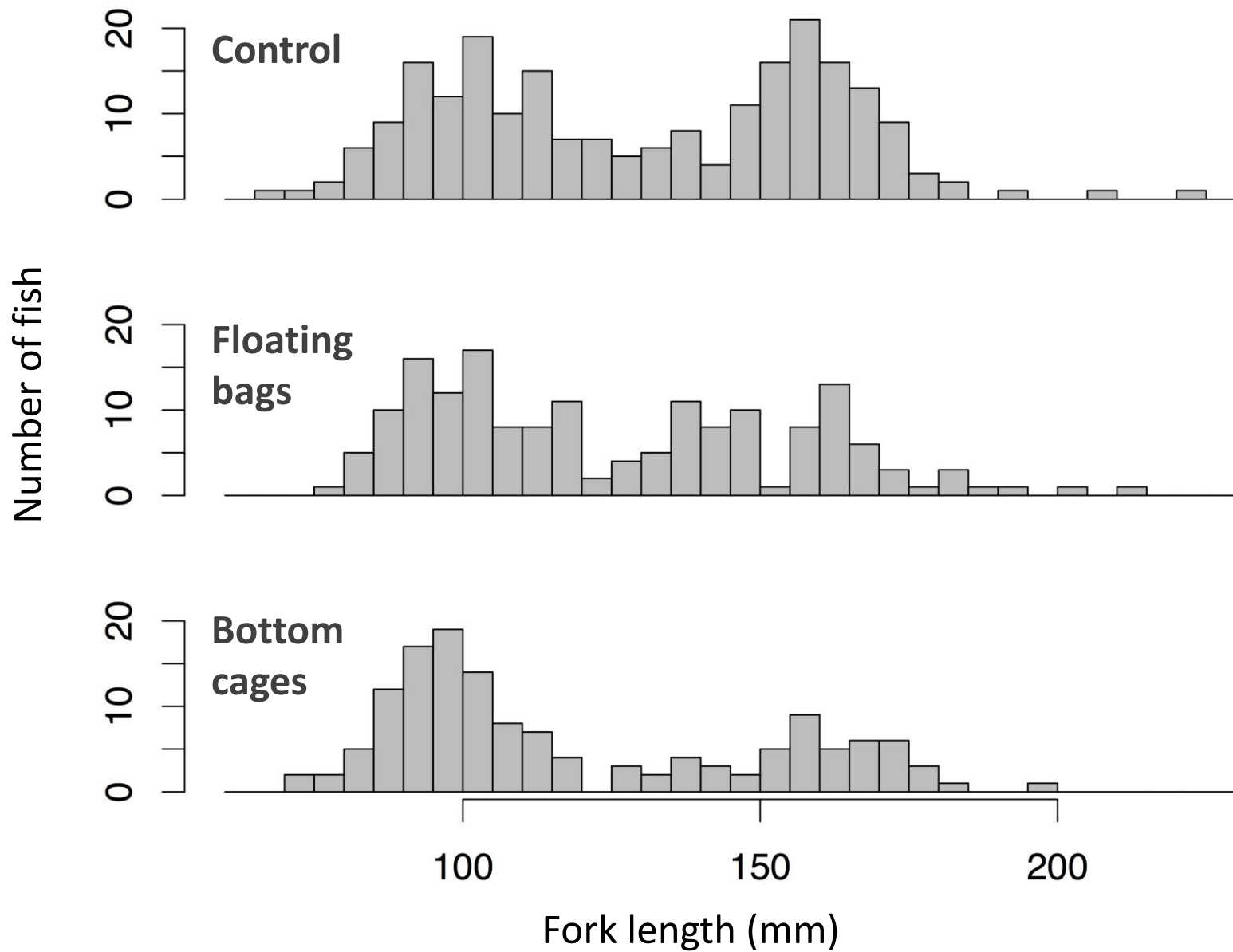
Higher fish biomass around oyster gear



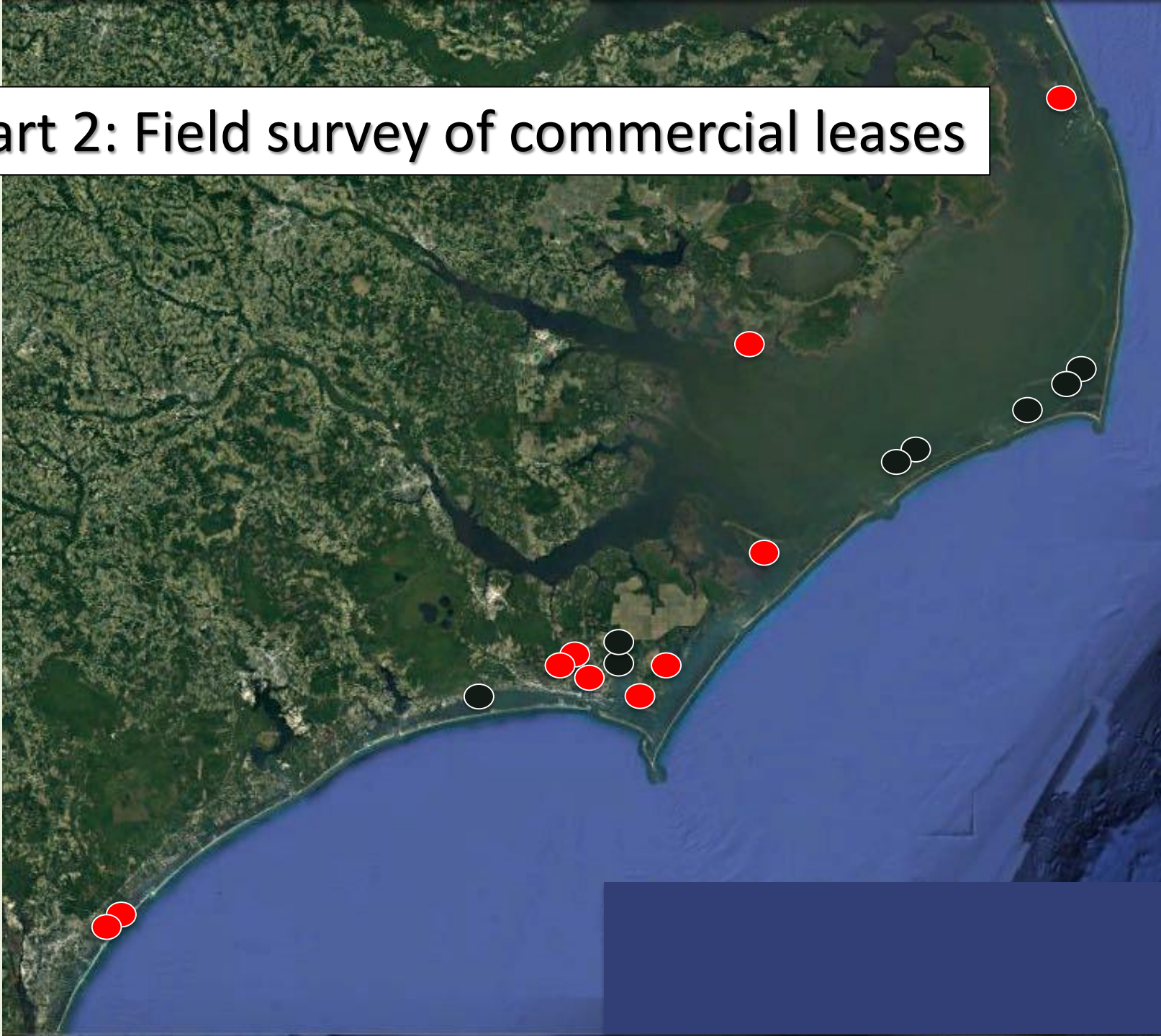
Lease impacts on SAV community

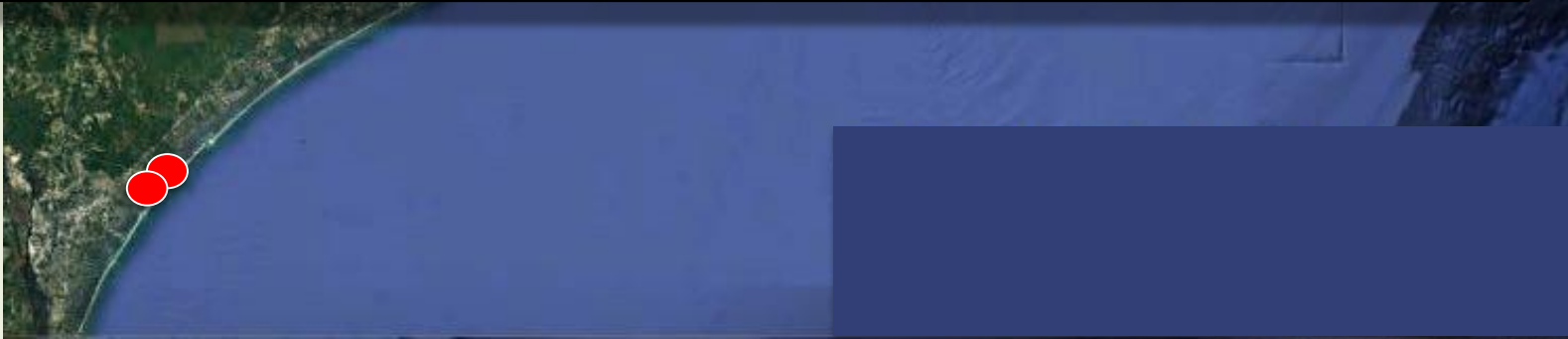


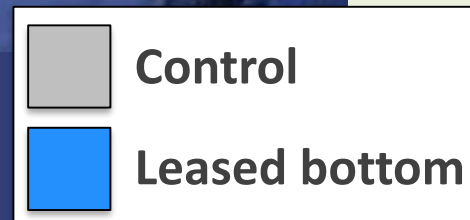
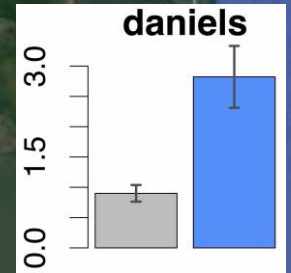
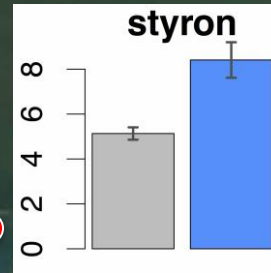
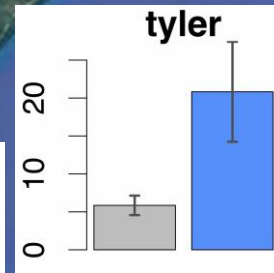
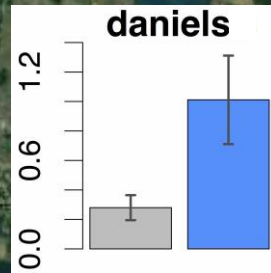
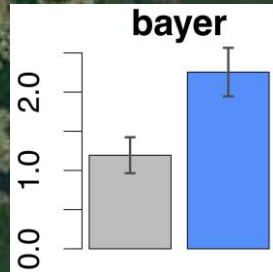
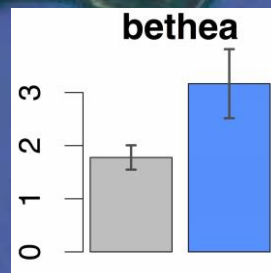
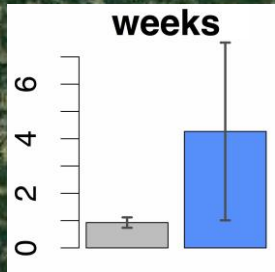
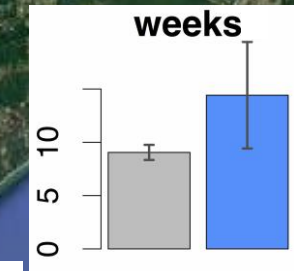
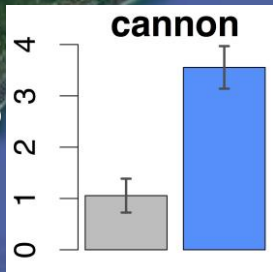
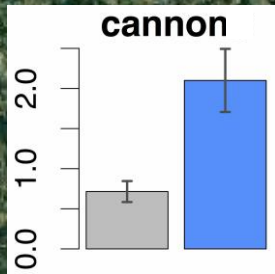
Changes in size structure

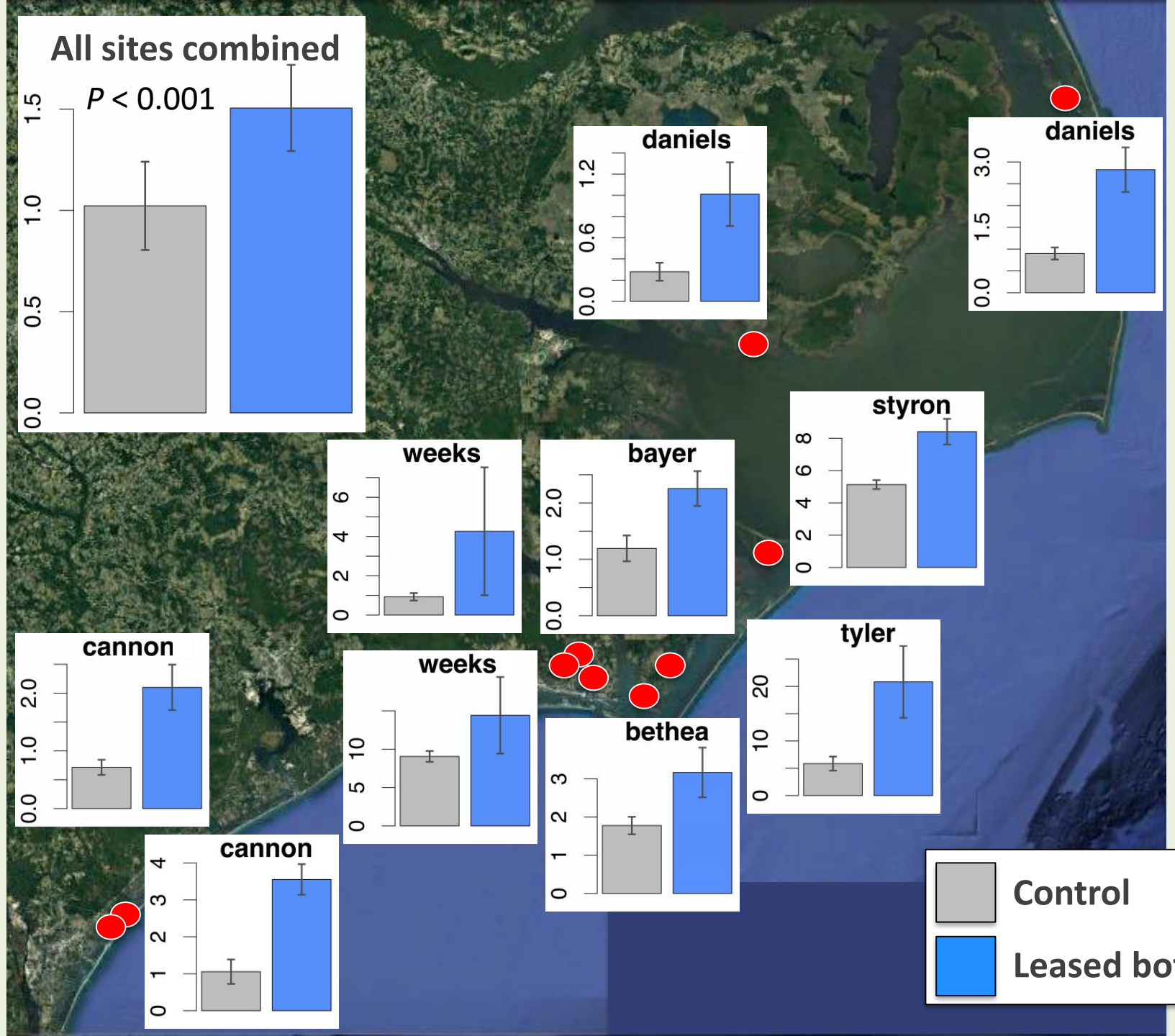
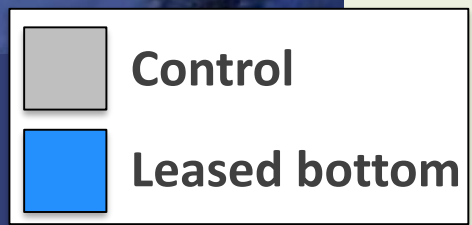
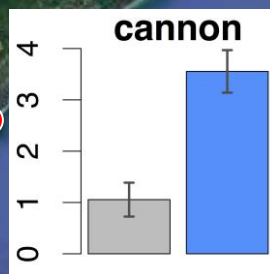
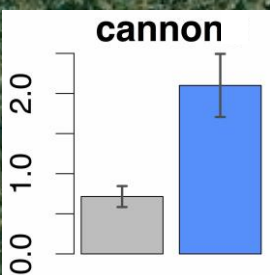
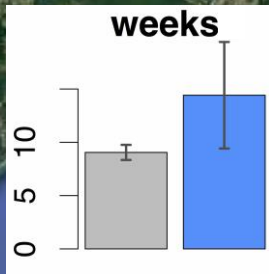
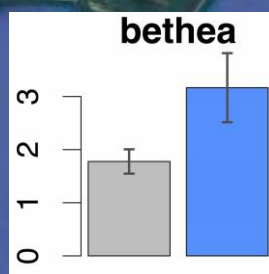
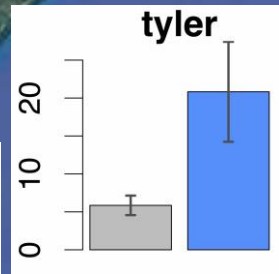
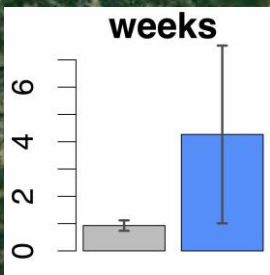
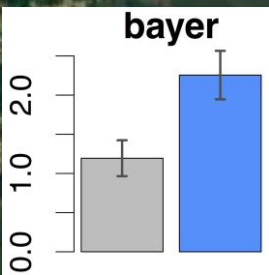
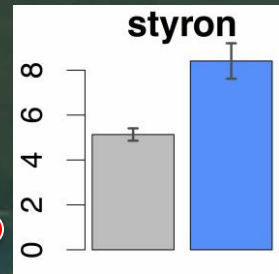
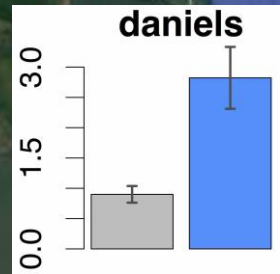
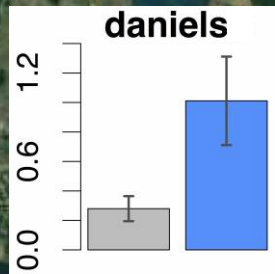
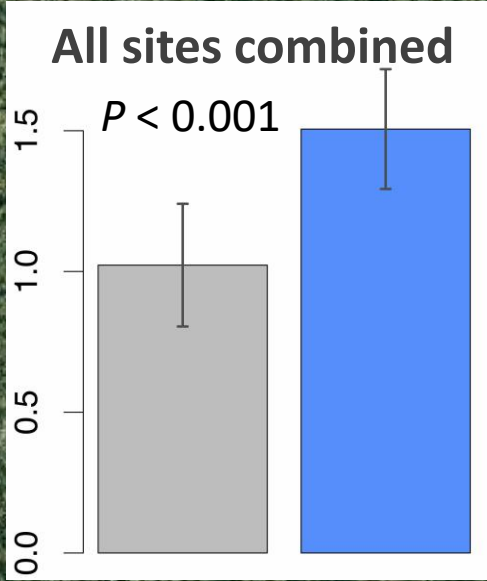


Part 2: Field survey of commercial leases

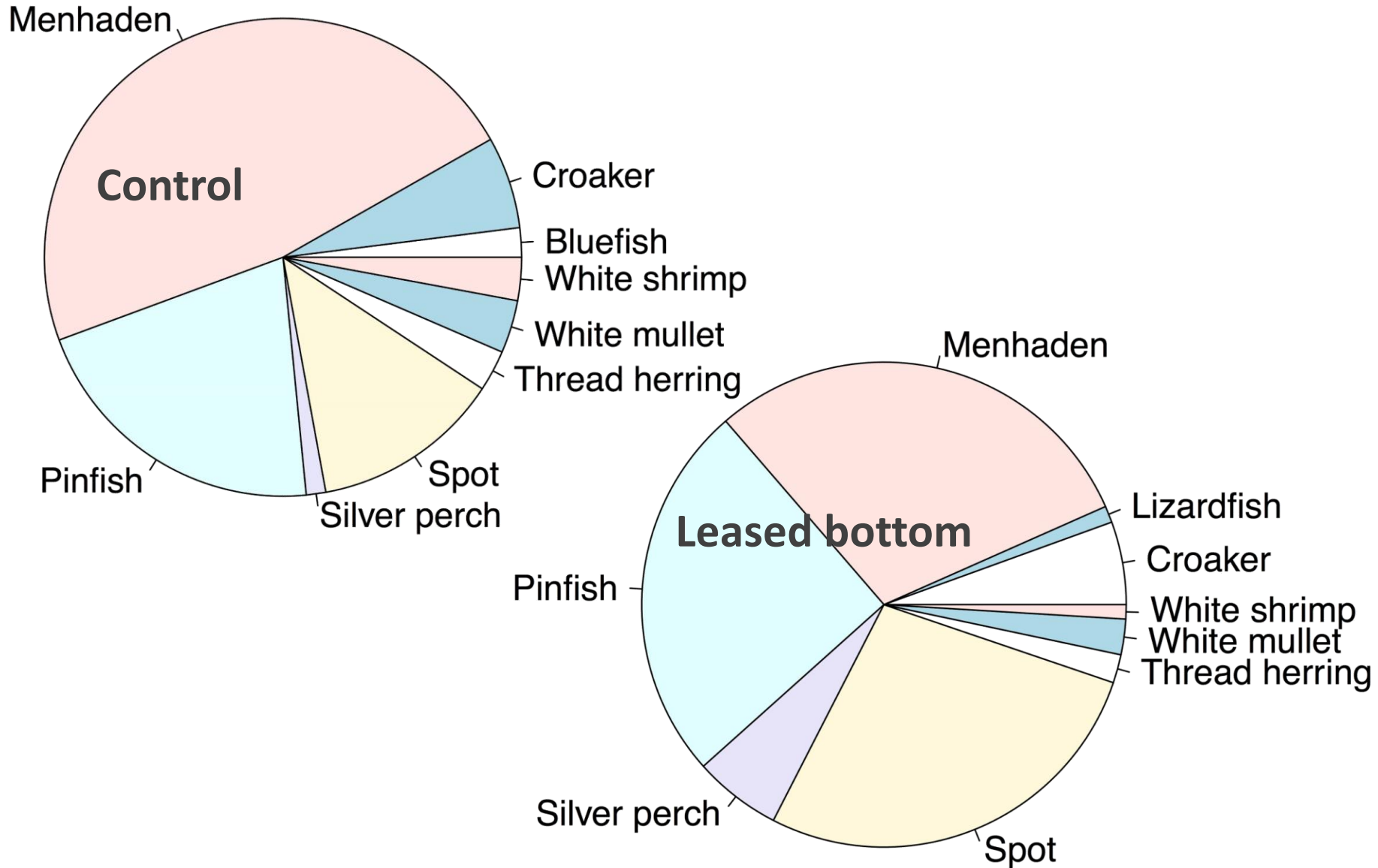




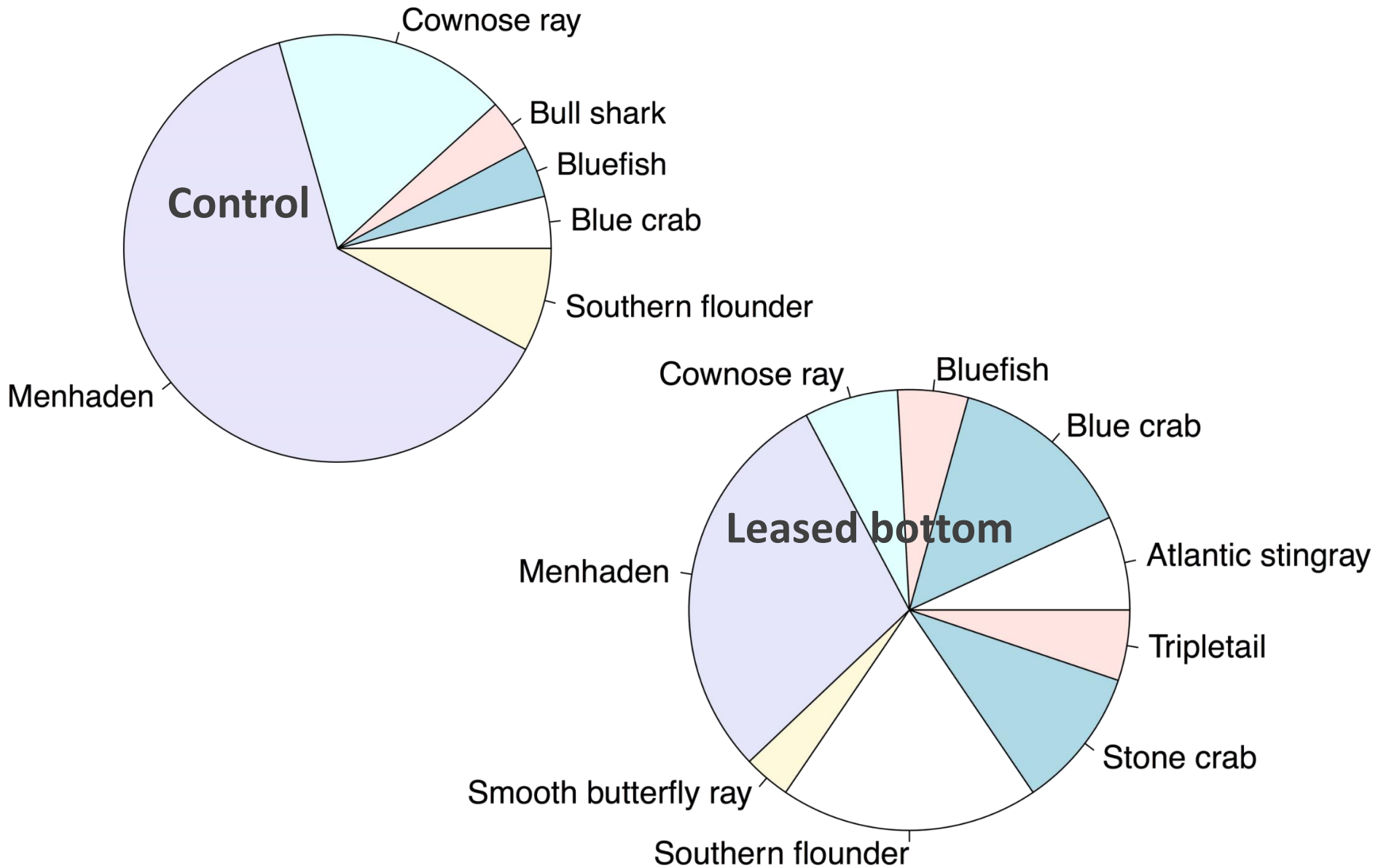




Species composition—*Floating gear*



Species composition—*Large mesh*



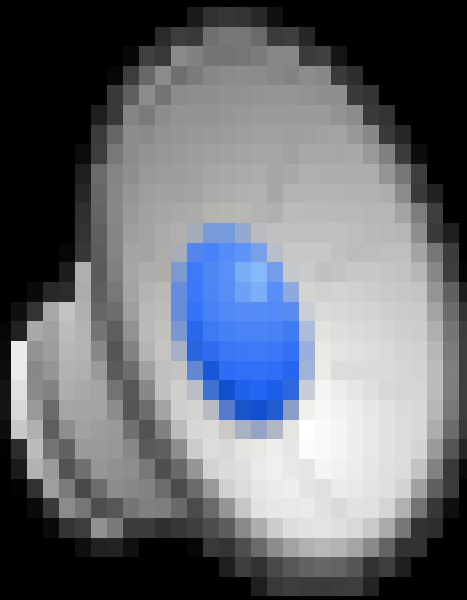
Preliminary conclusions

- SAV reduced under culture gear
- Fish densities higher on leased bottom
- Communities on leased bottom differ from controls
- Evidence of greater piscivore densities
 - Trophic impacts



Acknowledgments

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