Shallow Water Fish Community Investigations Associated with the Poplar Island Restoration Project

NOAA FISHERIES

NOAA Chesapeake Bay Office

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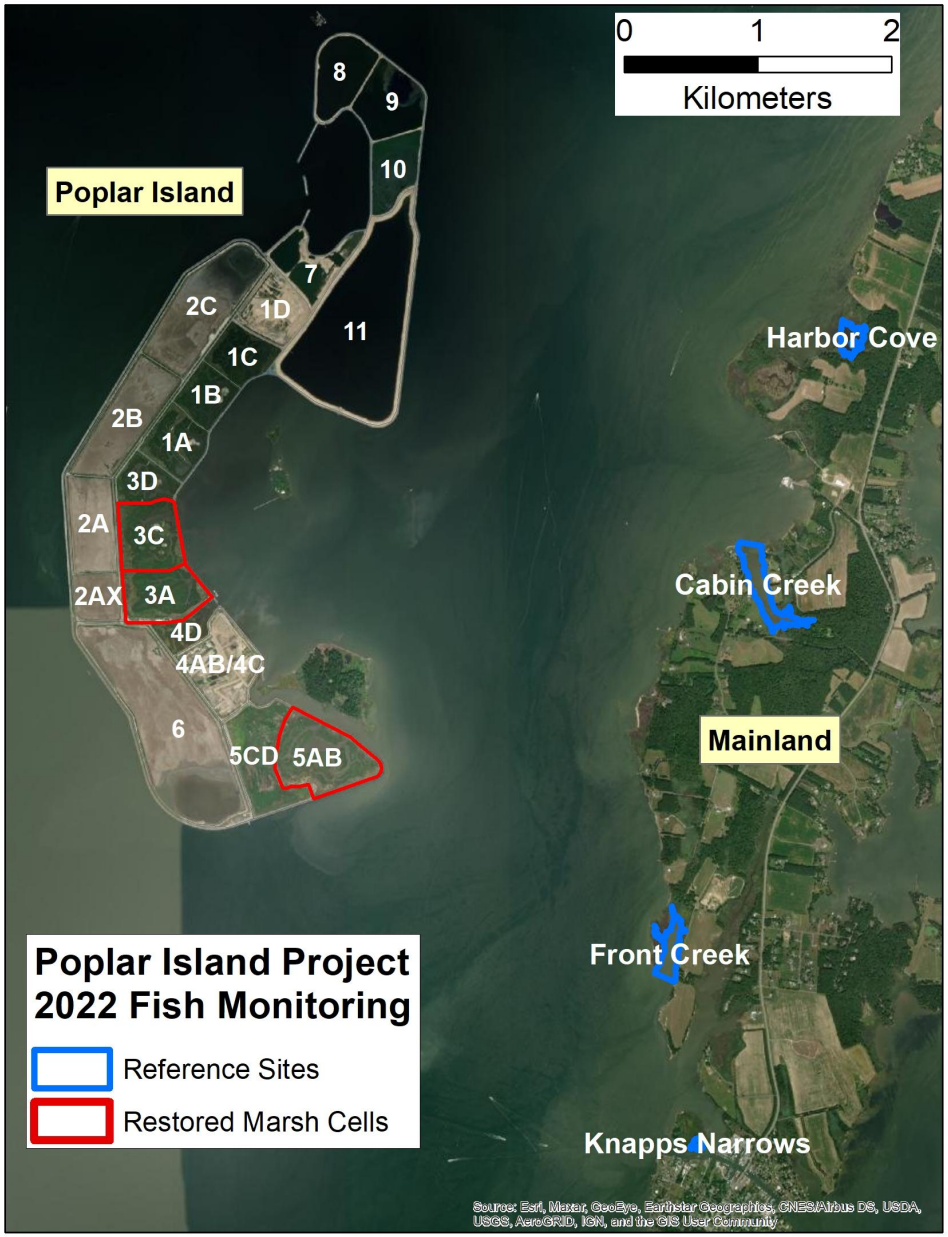
Poplar Island Sampling Summary

- Fyke nets sample marsh resident species
- Gill nets sample transient species
- Reference Creeks sampled 1996-2022
- Restored Marsh Cells sampled 2006-2022
- April, July, & October Sampling
- NCBO began sampling in 2022, Spring and Fall only

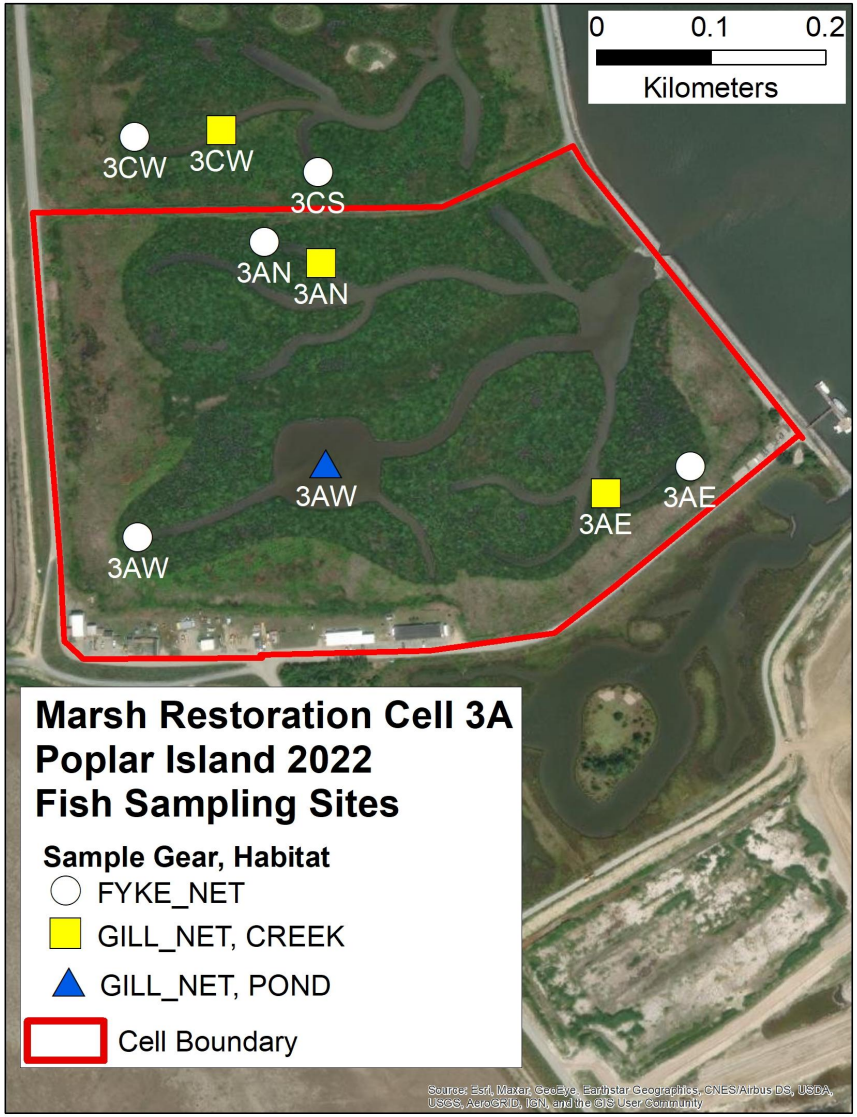


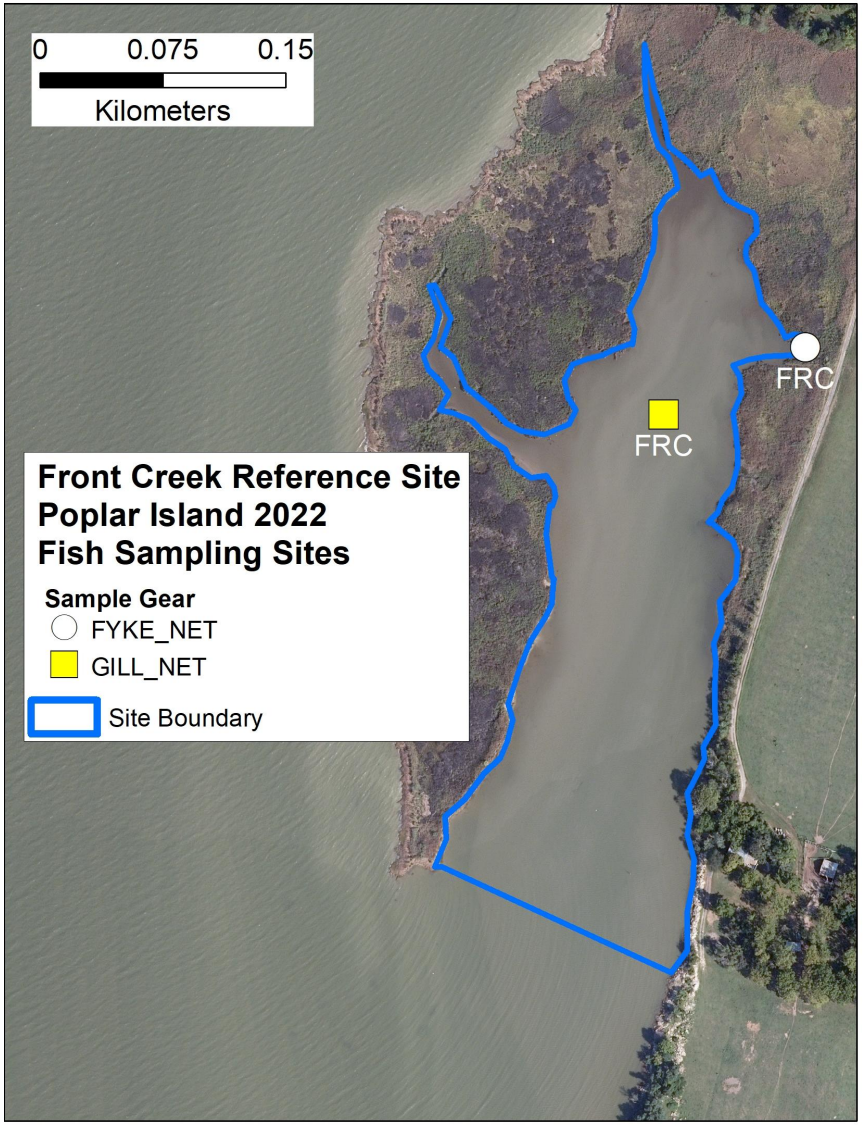
2022 Sampling Sites

- Restored Marsh Cells (red) sampled annually 2016-2022
- Reference Creeks (blue) sampled annually since 1996

Treatment	Total Outlet Width
Cell 3A	15 m
Cell 3C	15 m
Cell 5AB	23 m
Reference Creeks	49-164 m

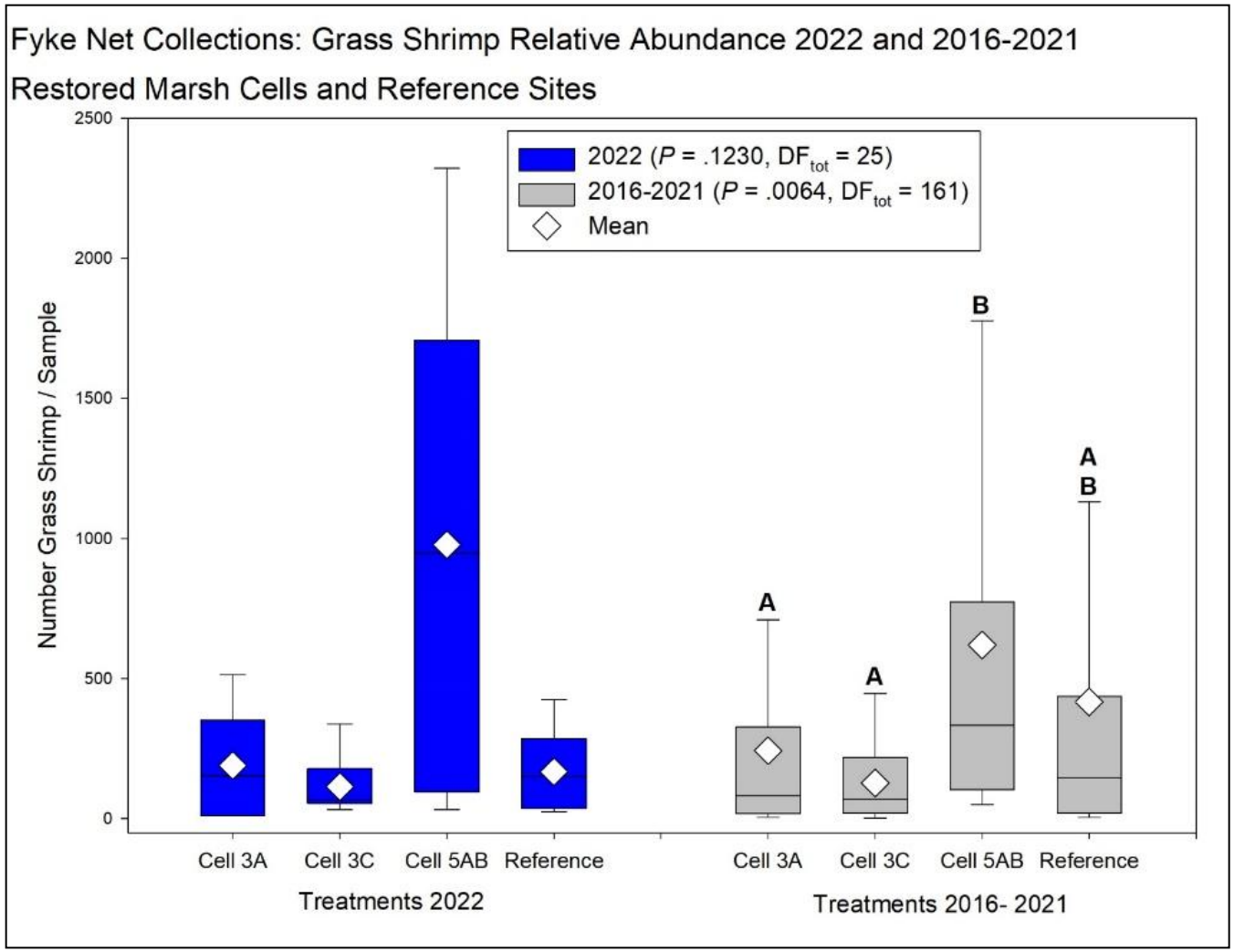
Representative Sampling Locations: Restoration and Reference Treatments





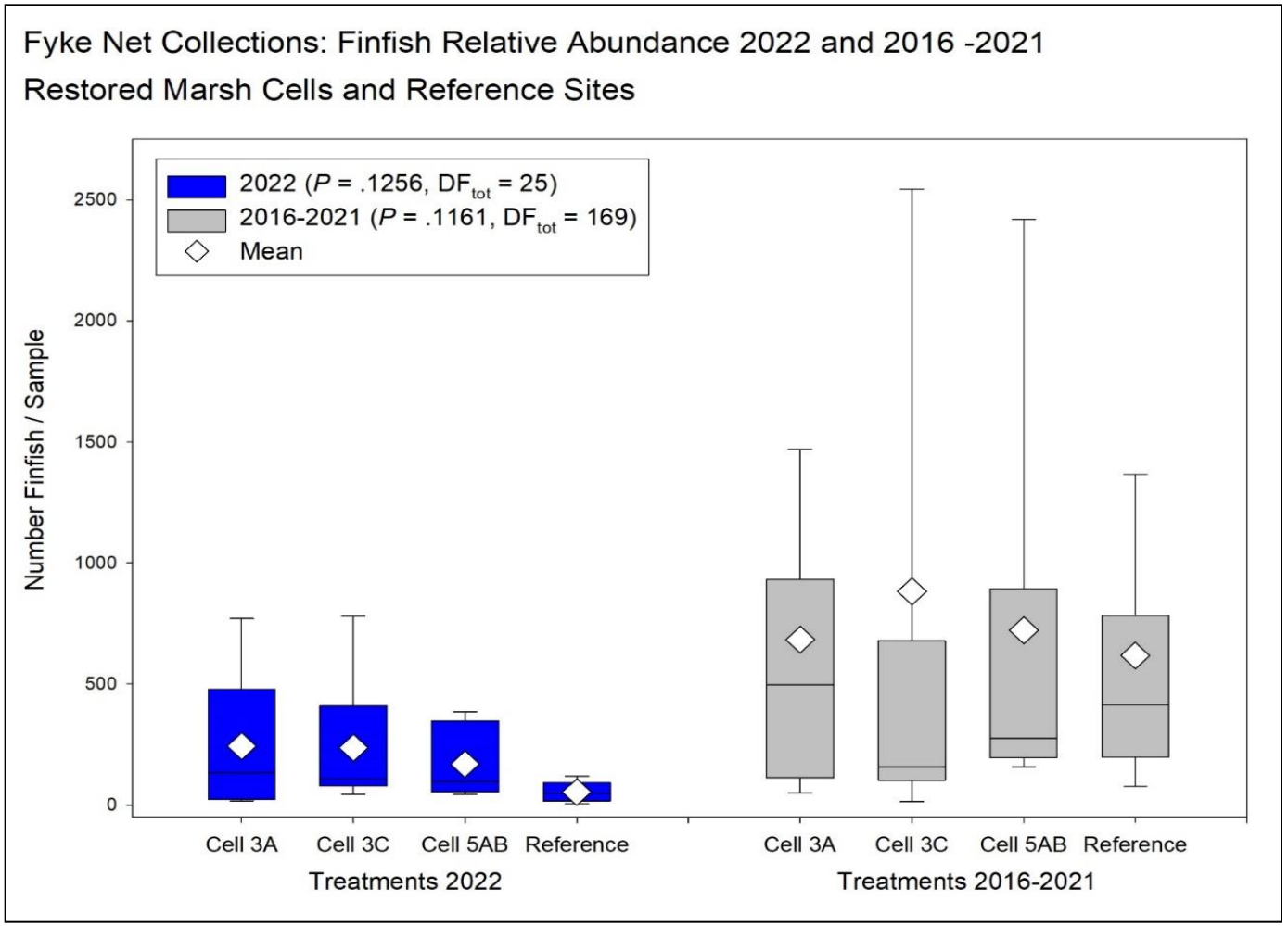
Fyke Net: Grass Shrimp Relative Abundance

- CPUE of grass shrimp associated with saltmarsh habitat
- 2022 collections (Spring & Fall)
- 2016-2021 collections (Spring, Summer & Fall)
- Restored Marsh Cell and Reference treatments

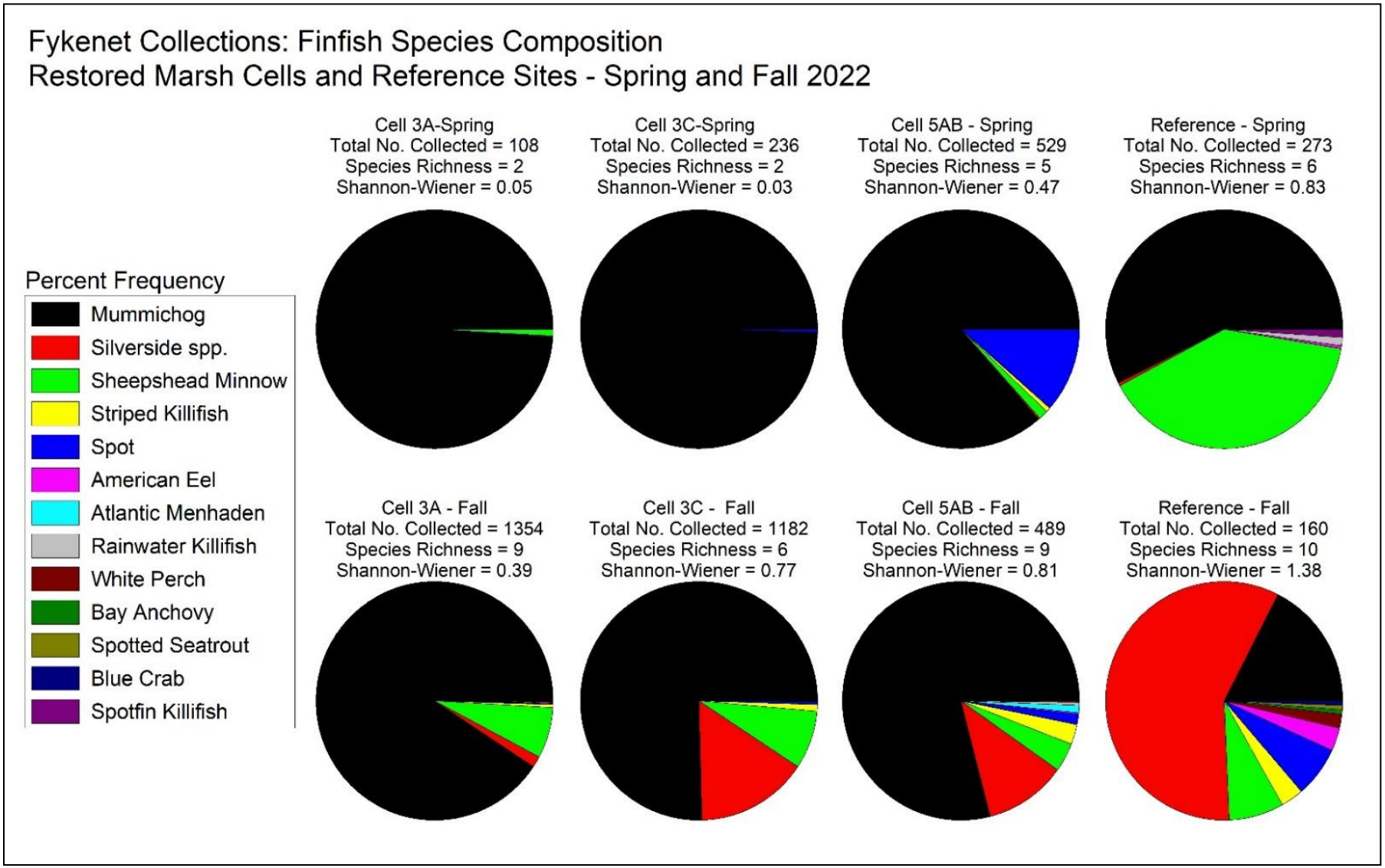


Fyke Net: Finfish Relative Abundance

- CPUE of finfish associated with saltmarsh habitat
- Pooled species
- 2022 collections (Spring & Fall)
- 2016-2021 collections (Spring, Summer & Fall)
- Restored Marsh Cell and Reference treatments

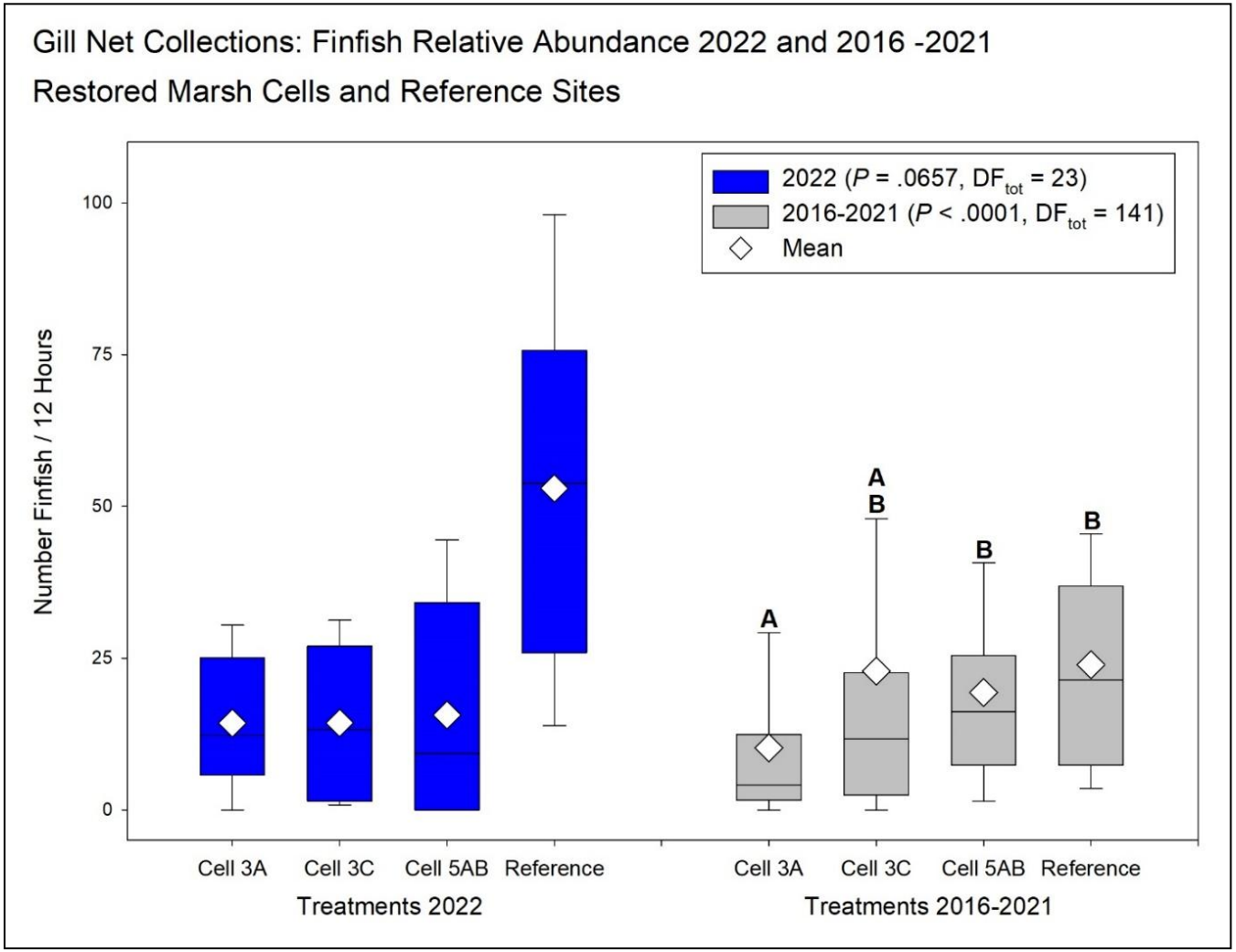


Fyke Net: Finfish Species Composition

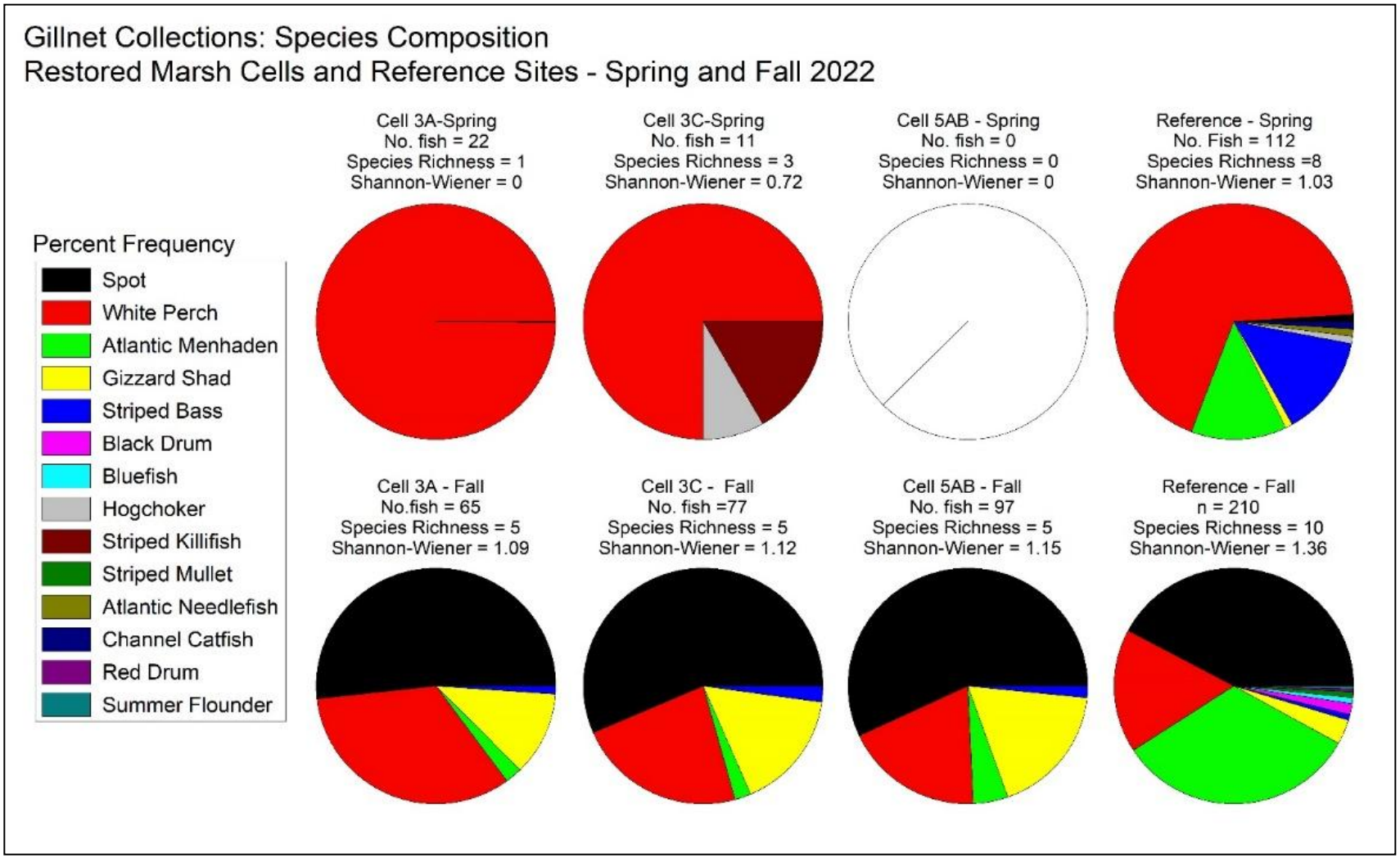


Gill Net: Finfish Relative Abundance

- CPUE of transient finfish in marsh creeks
- Pooled species
- 2022 collections (Spring & Fall)
- 2016-2021 collections (Spring, Summer & Fall)
- Restored Marsh Cell and Reference treatments

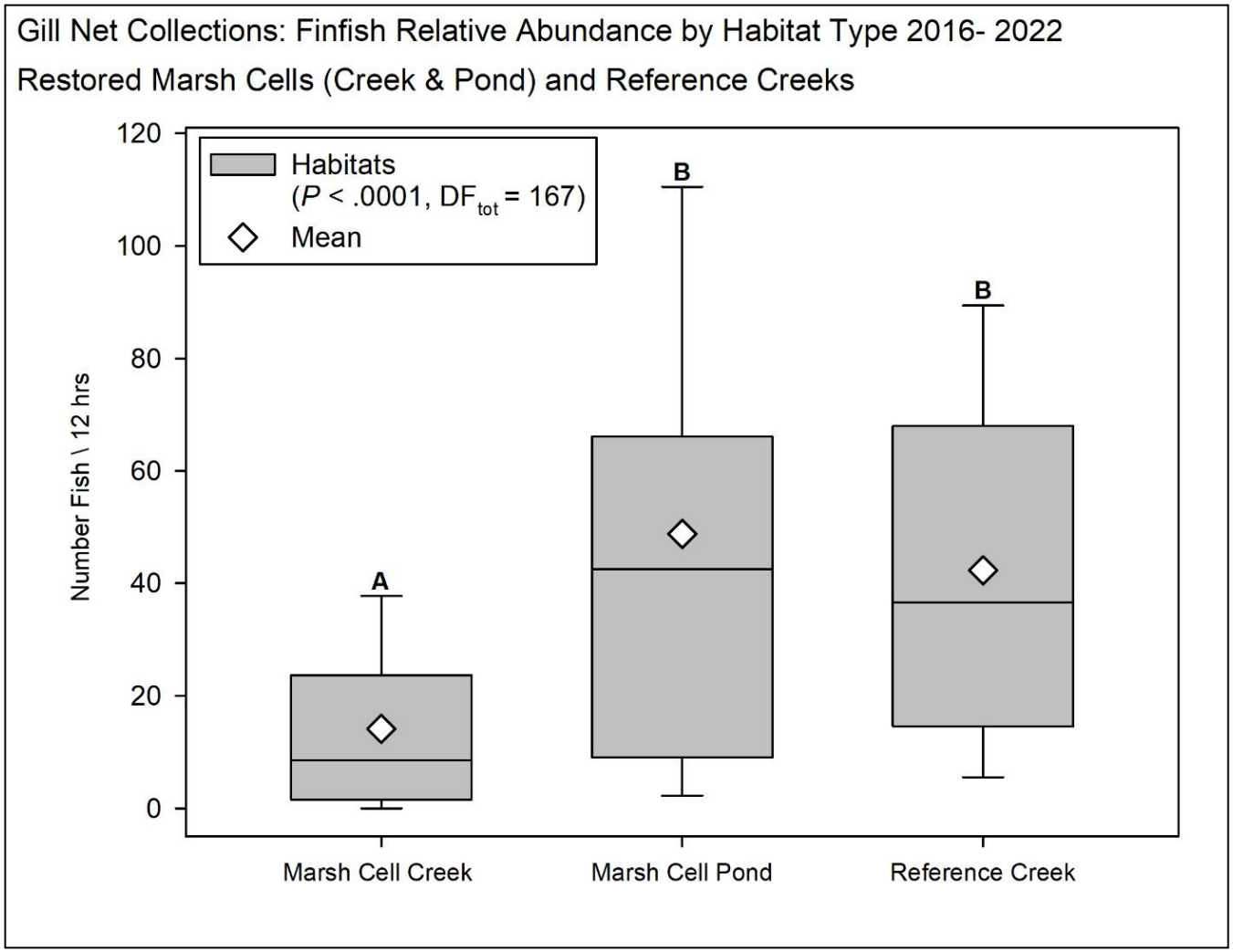


Gill Net: Species Composition



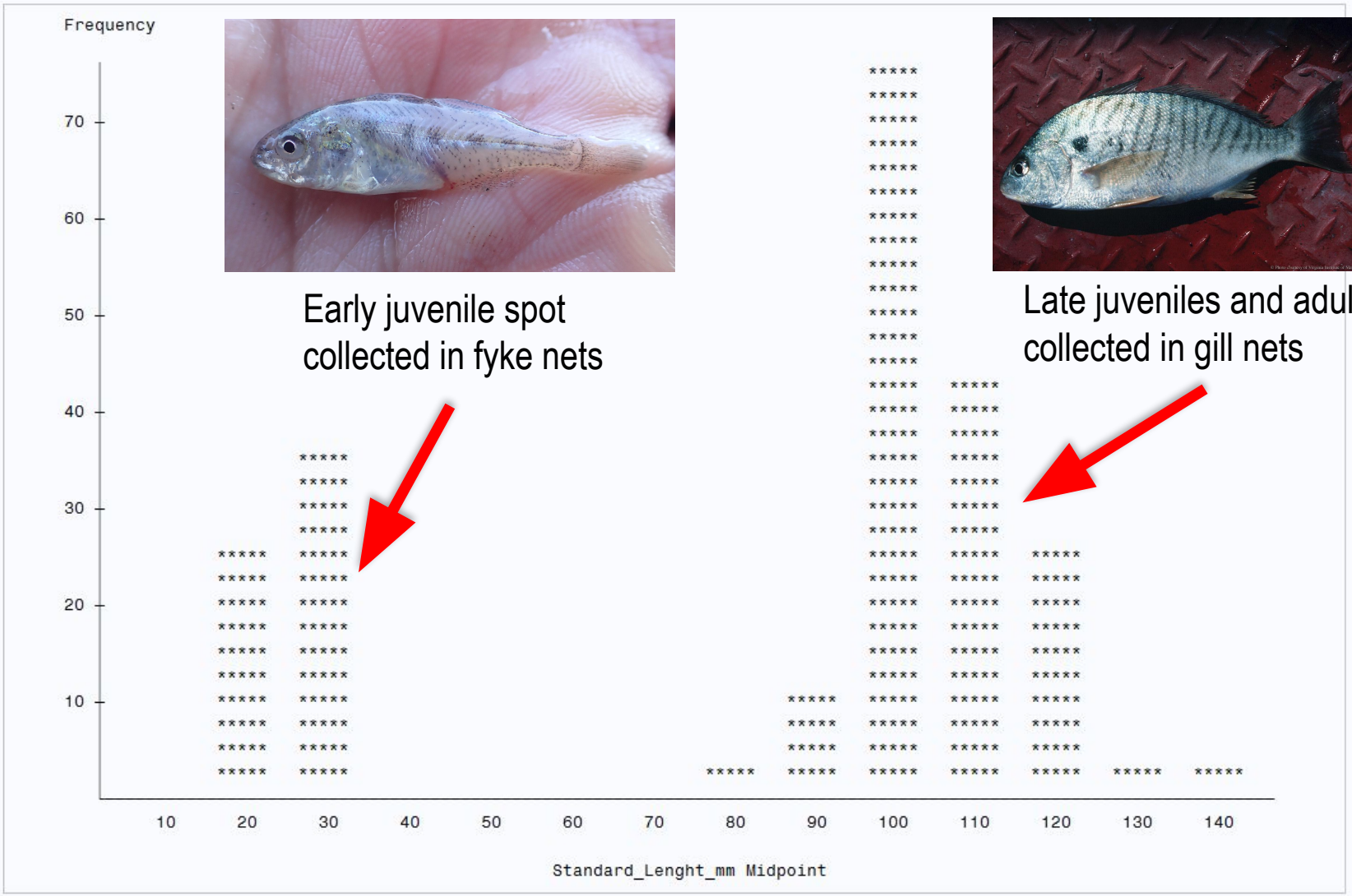
Gill Net: Finfish in Marsh Cell Habitats

- CPUE of transient finfish in marsh cell creek and pond habitats
- Pooled species
- Depth appears to drive CPUE
- Depths in marsh cell ponds and reference creeks > marsh cell creeks



Poplar Island Marsh Cells: Spot Nursery Habitat

2022 Length Frequency Distribution for Spot



Moving Forward

- In 2023 NOAA will begin a two year acoustic telemetry study of fish movement at Poplar Island marsh cells and at a reference marsh creek
- In 2024 all marsh cells will meet the 5 year monitoring target, so routine monitoring will cease until 2029 when new marsh cells come on line
- During 2024-2029 NOAA will continue monitoring reference creeks and is proposing to conduct trophic studies to link diets of transient fish species to prey associated with the marsh platform such as grass shrimp and killifishes

Opportunities/Challenges

- Poplar work may provide information on expected performance of Barren and James Island Restoration Projects
- Recent move to increase proportions of high marsh in these projects, to maximize avian habitat and mitigate for SLR, and this could potentially impact amount of low marsh fish habitat.