Designing a Long-Term Ventless Fish Pot Monitoring and Assessment Program for RI Finfish

RIMFI December 2019

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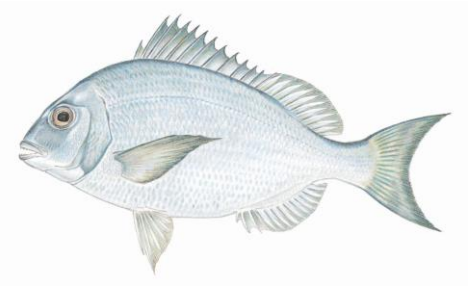
RI DMF

Background

MD DNR

- Finfish species that associate with bottom structure while inshore may be relatively unavailable to traditional bottom trawl gear

- 2018 Rhode Island Commercial Landings
  - Scup – $2.7 million
  - Black Sea Bass - $1.4 million
  - Tautog - $200k
- 2018 Rhode Island Recreation Catch (MRIP)
  - Scup – 4.2 million fish caught (2 million pounds harvested)
  - Black Sea Bass – 3.4 million fish caught (1.6 million pounds harvested)
  - Tautog – 2.3 million fish caught (1 million pounds harvested)



Massachusetts

Background

- Reliable survey data informs stock assessments and management

- NEFSC 2002 – Scup stock assessment
  - Recommend alternatives to trawl for better analytical assessment
- NEFSC 2011 – Black Sea Bass stock assessment
  - To derive an index of relative abundance for black sea bass a fish pot survey should be considered
- Research Set Aside Work
  - Black Sea Bass – 2011-2014
  - Scup – 2004-2012

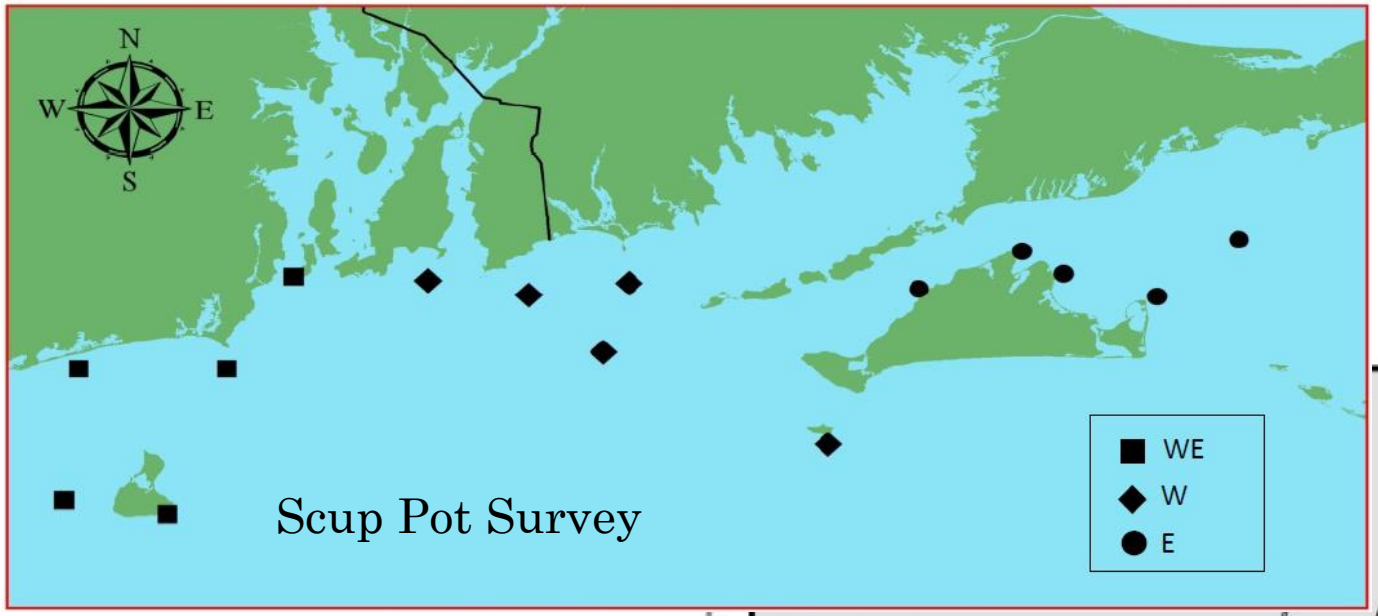
Maine Guides

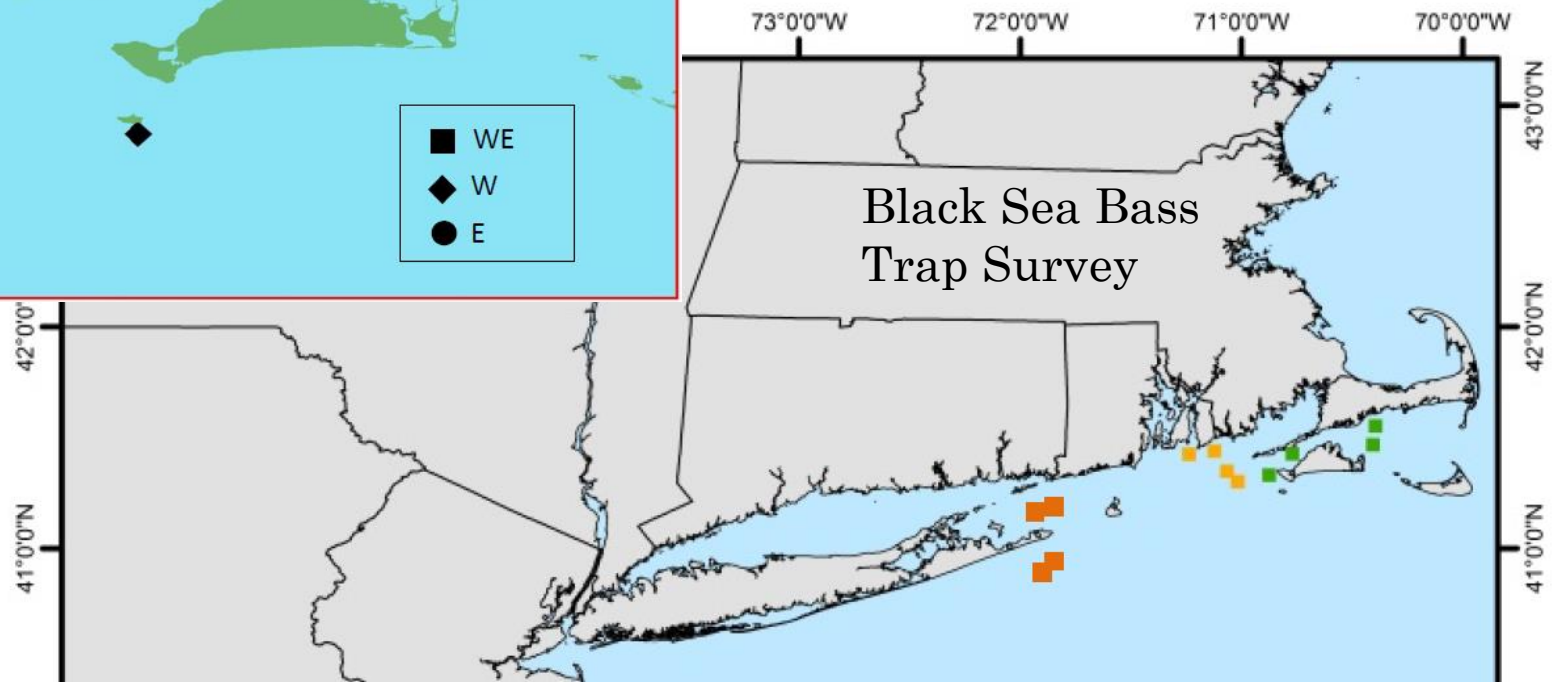
RSA Gear Types

Ventless Fish Pot

Scup Pot

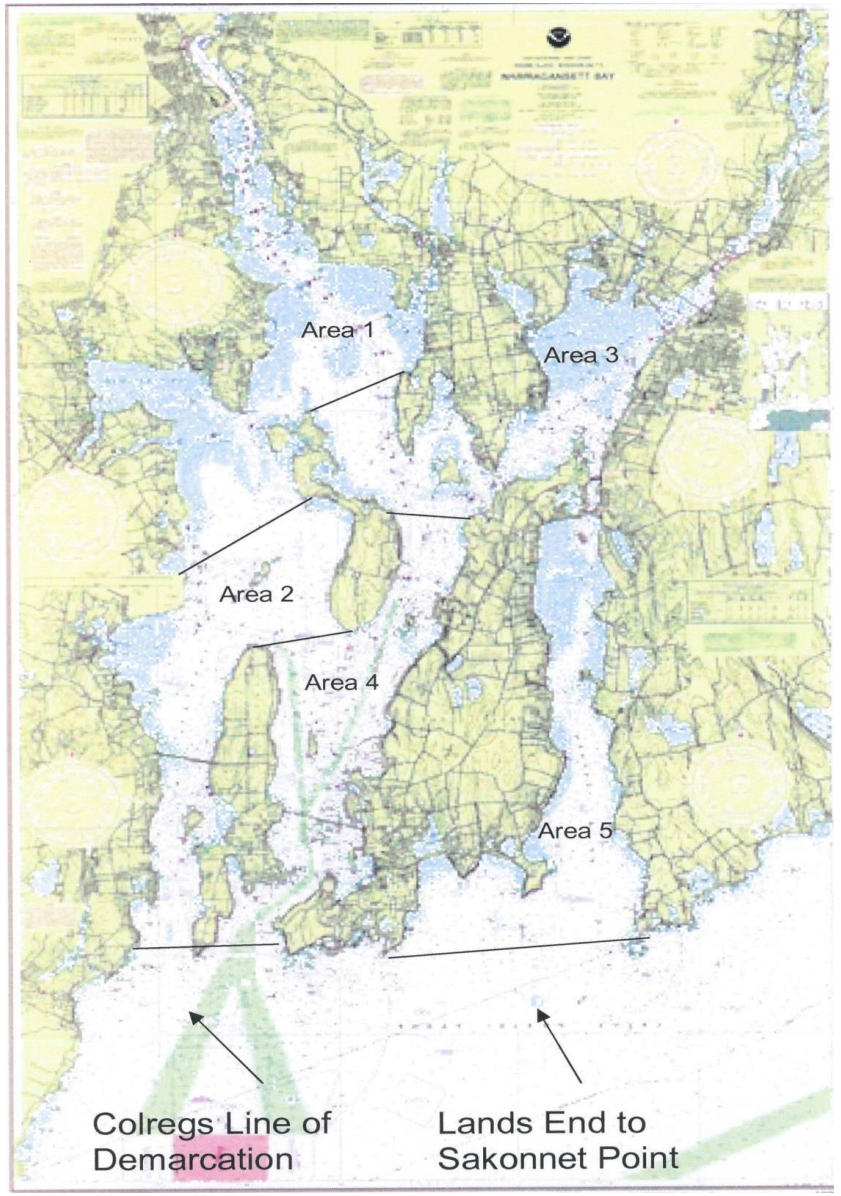
Research Set Aside Surveys





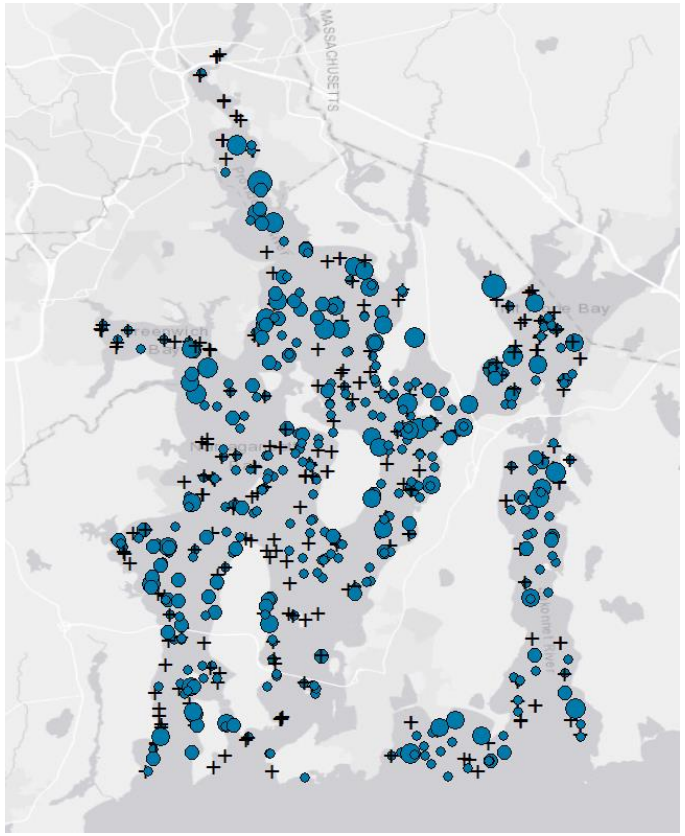
Background

- Rhode Island DMF Fish Pot Survey 2013-2017
- Bay stratified into 5 subareas
- ½ second grid cells throughout Bay
- Every grid cell tagged as a structured cell or an unstructured cell
- Random draw - One structured and one unstructured grid cell sampled from each subarea each month
  - Ventless Fish "Sea Bass" Pots – unbaited, 3 night soak, 5 pot trawls
  - Scup Pots – baited, 1 night soak, 10 single pots

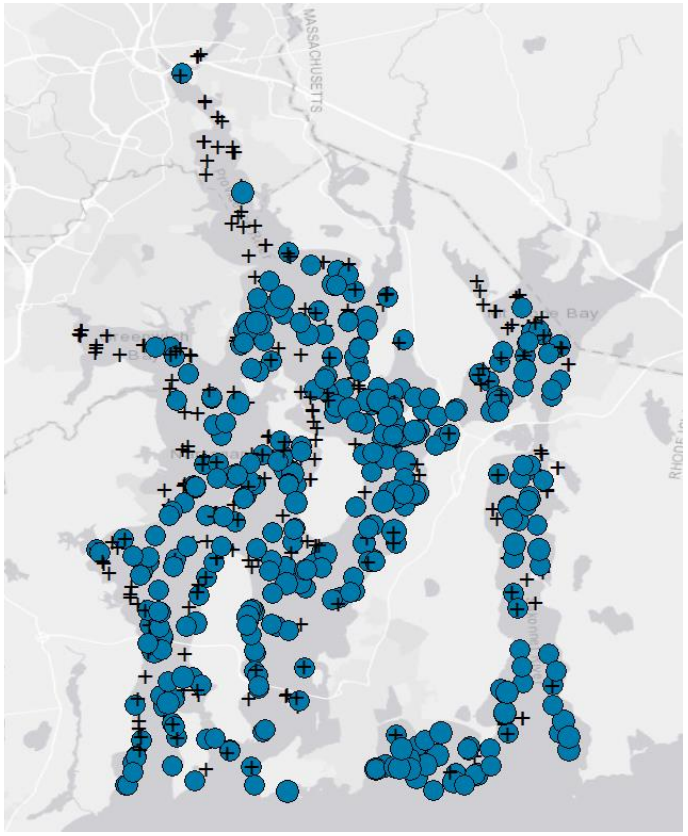


Background

- Rhode Island DMF Fish Pot Survey 2013-2016



Scup



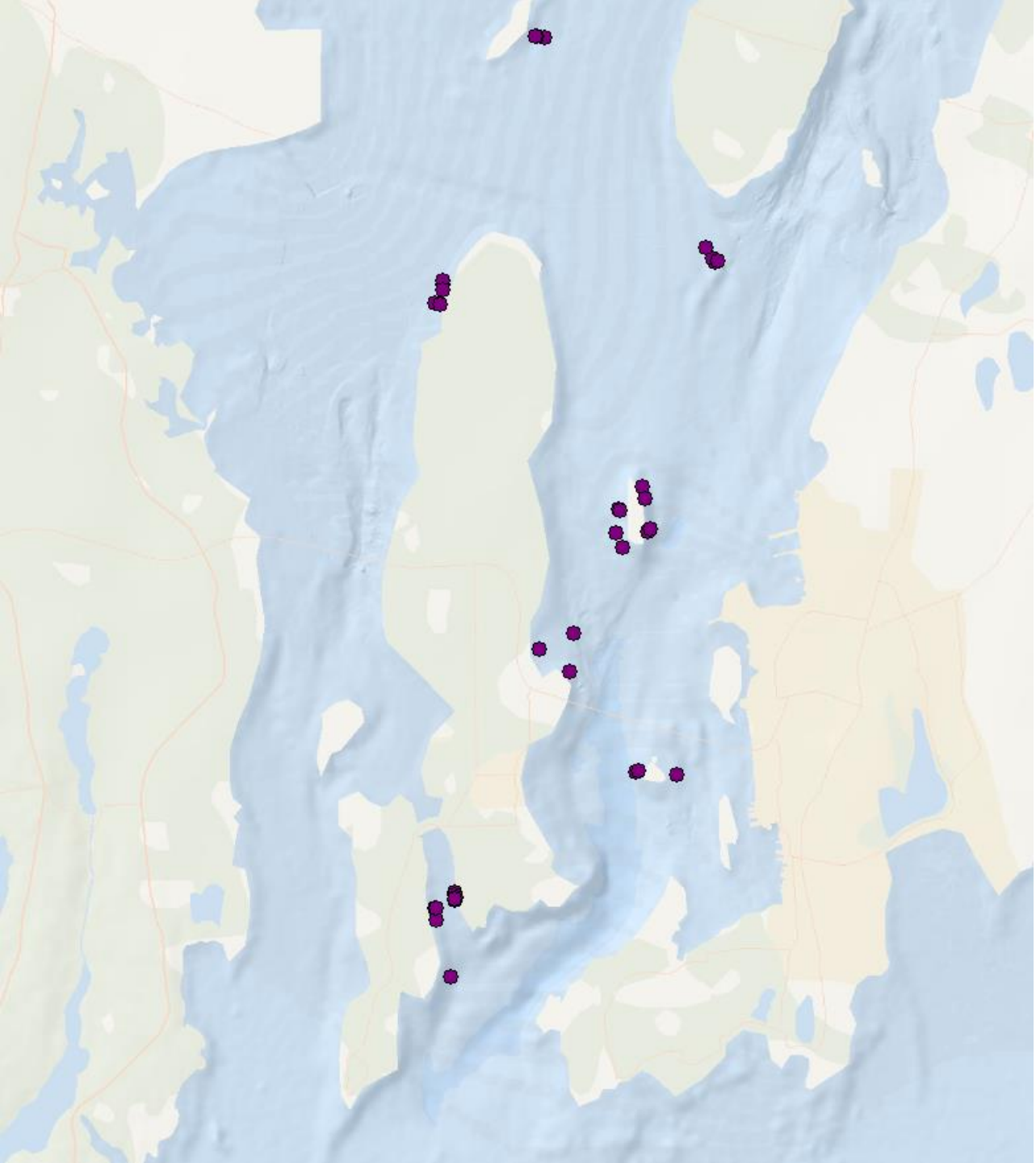
Black Sea Bass

Rhode Island Survey Goals

- Fishery independent data to provide a relative index of abundance for species that may not be fully sampled by RI DEM bottom trawl
  - For use in state and federal stock assessments and management
- Provide (*relatively*) high density spatiotemporal coverage of gear selected black sea bass, scup, and tautog cohorts within Narragansett Bay
  - Identify spatiotemporal trends of migration and abundance within Bay
  - Track annual cohorts
  - Track abundance consistency with other surveys (RI trawl, NMFS trawl)
  - Determine age structure of fish sampled
  - Derive mortality estimates
- Collect additional information on species biological characteristics
- Track the prevalence of trap prone mid-Atlantic/southern species
  - Grey triggerfish, Blue runner, Snappers, Pinfish, Atlantic croaker, etc.

2019 Gear Study

- To achieve survey goals, are both gear types needed?
- Is there a gear/soak time combination that maximizes catch
  - Species targeted
  - Trap saturation
  - Bait consideration
- Do external pressures play a role
  - Gear conflicts
  - Weather limitations

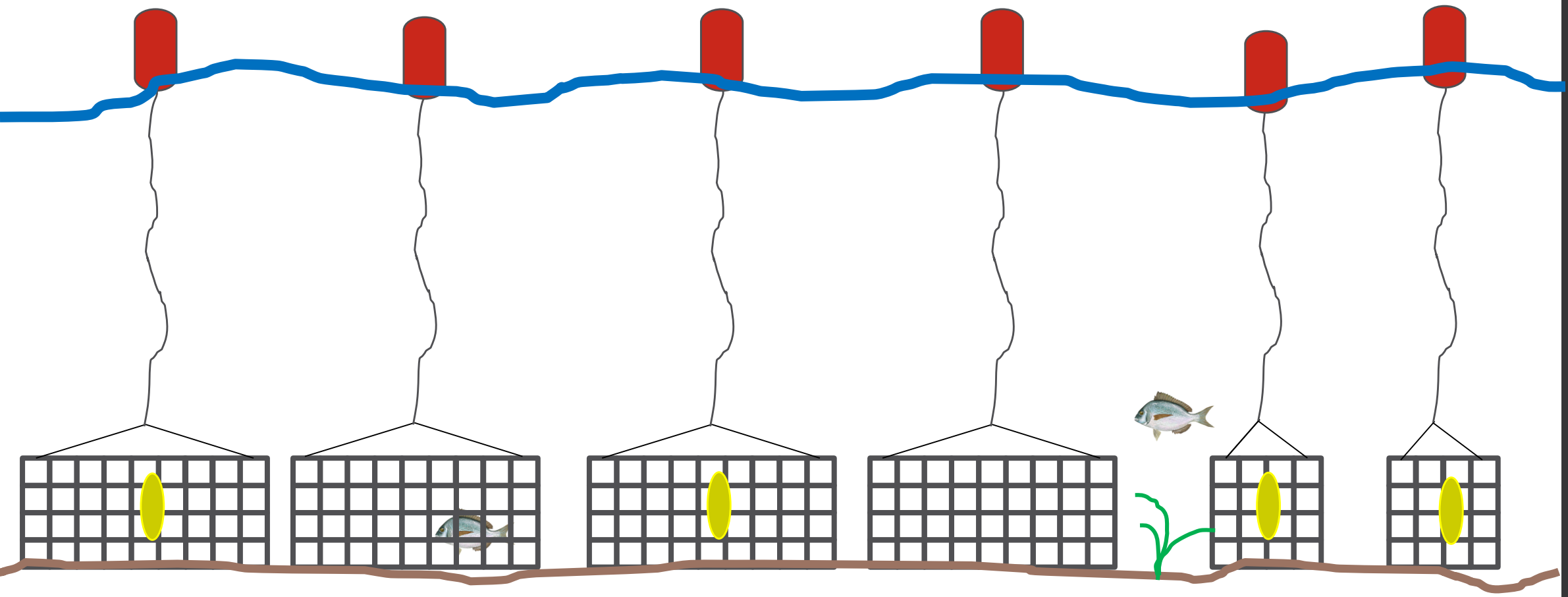


2019 Gear Study

- 6 traps per sampling event
- 3 Trap Setups Deployed
  - Ventless Fish Pot Unbaited
  - Ventless Fish Pot Baited
  - Scup Pot Baited
- 5 Soak Times
  - 1.5 hours
  - 4 hours
  - 24 hours
  - 48 hours
  - 72 hours
- July-November 2019
- Depths from 18-75 feet

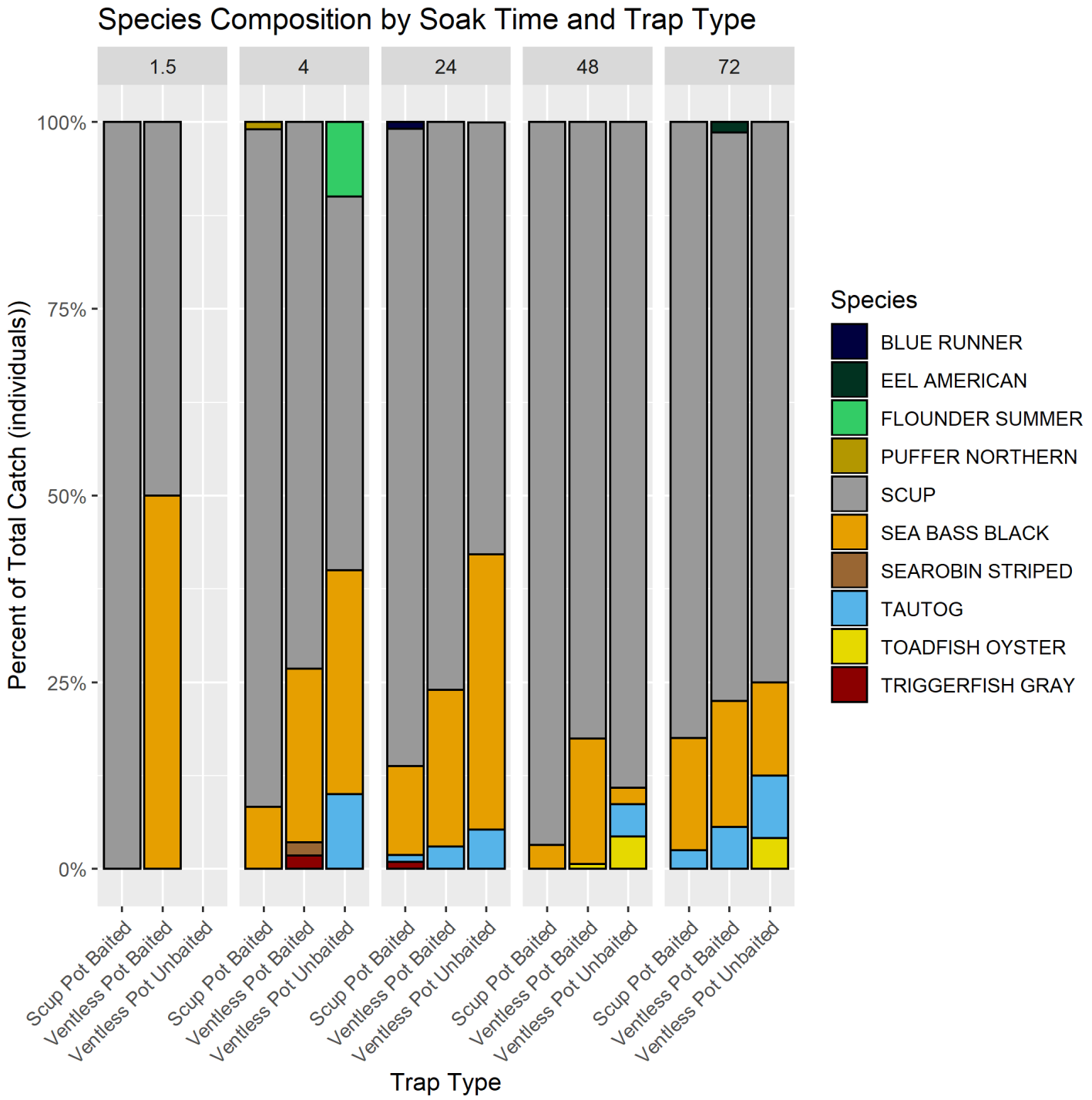
2019 Gear Study

= bait



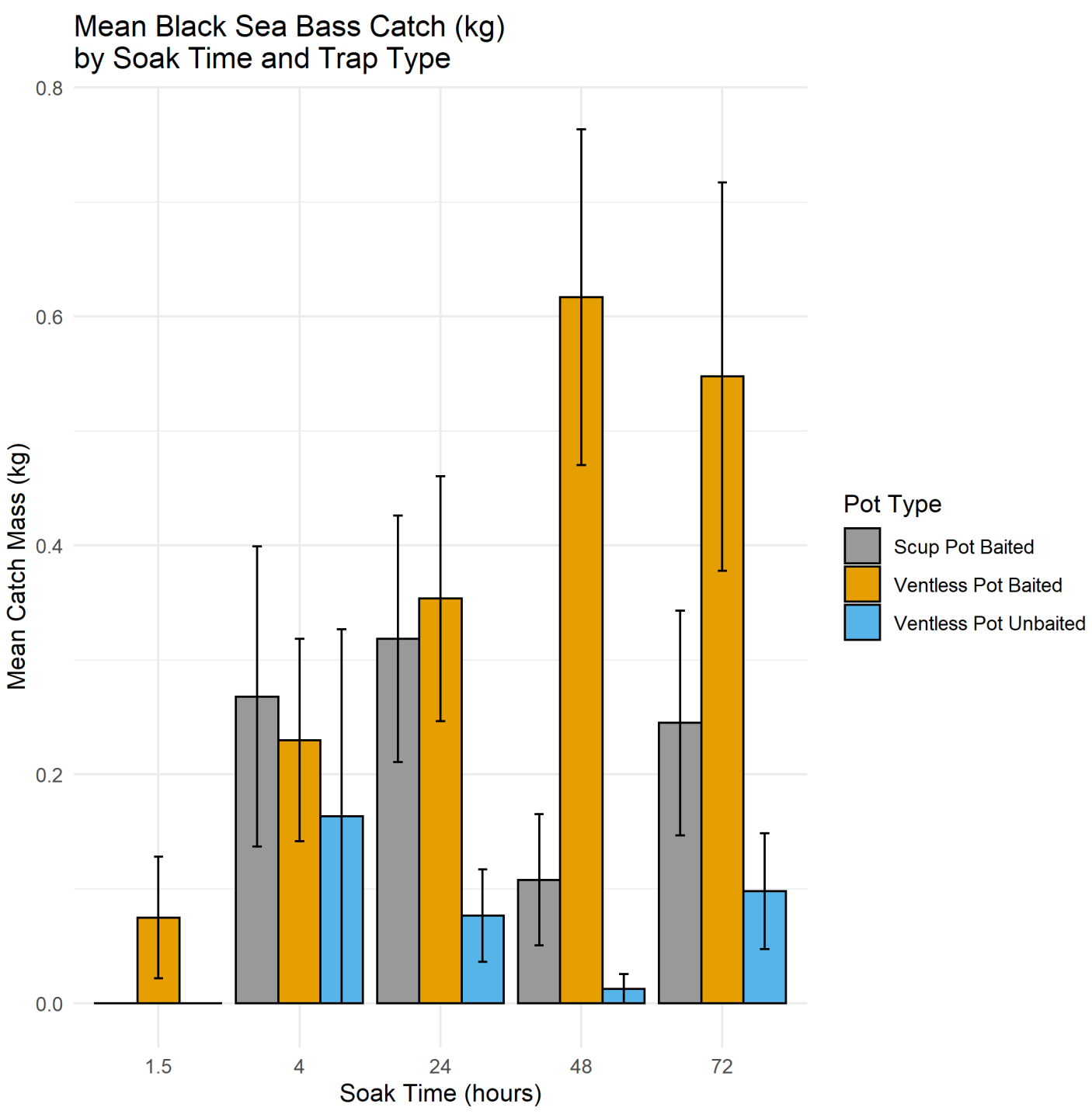
Results

- Scup and Black Sea Bass dominated catch composition
- Few tautog caught
- Spider crabs dominant invertebrate
- Occasional lobsters, Cancer crabs, warm water finfish



Results

MAFMC



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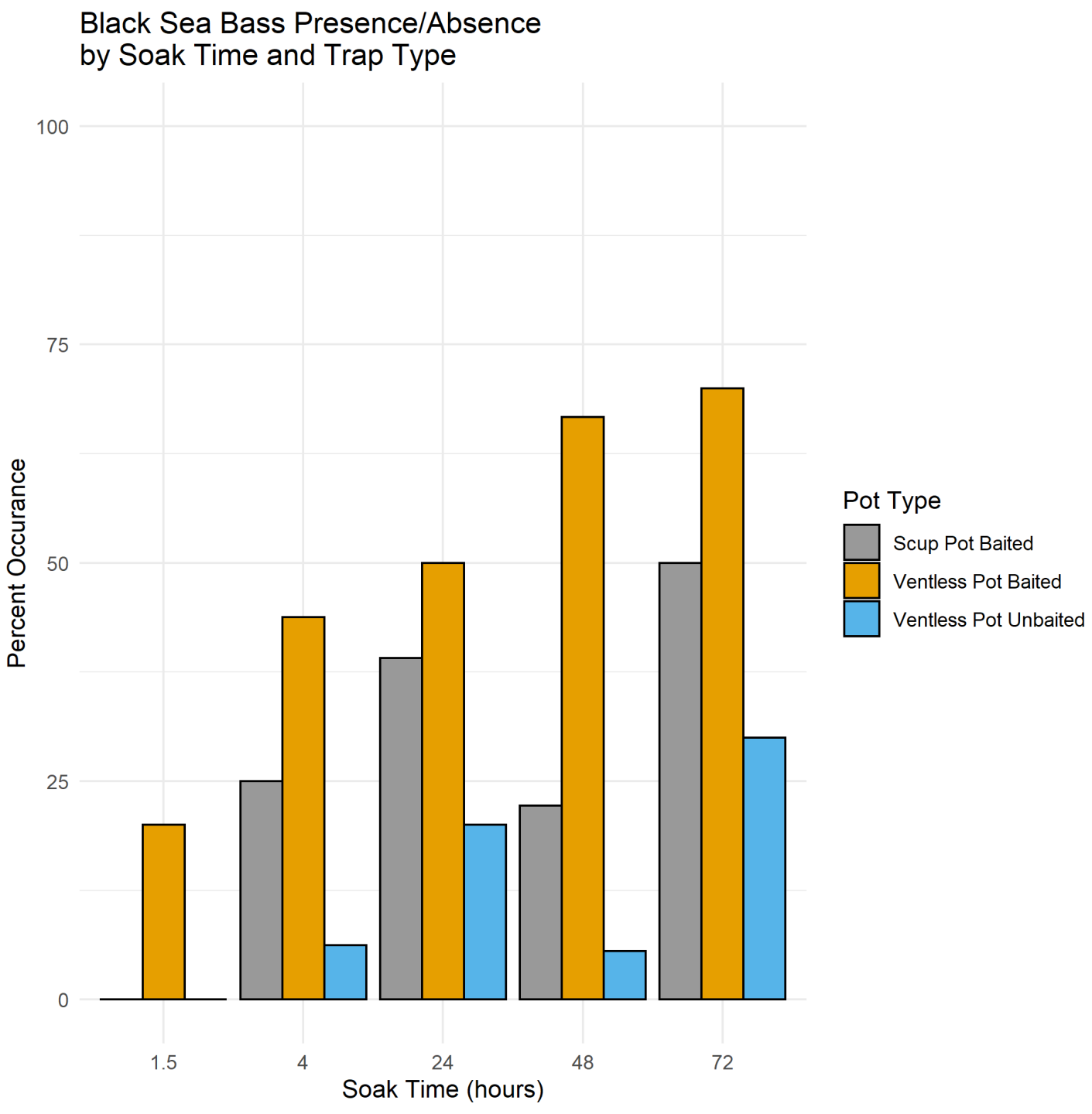

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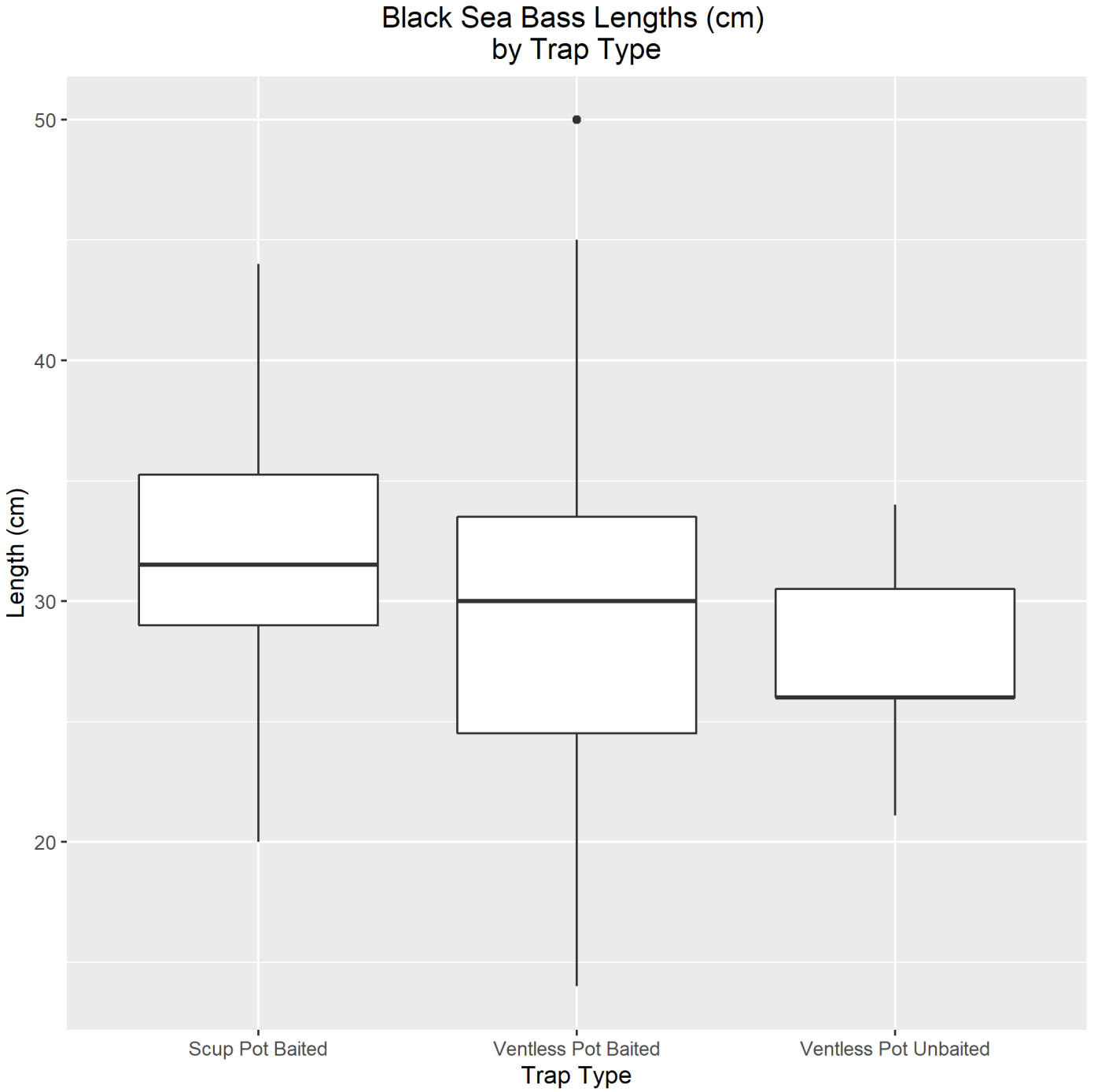

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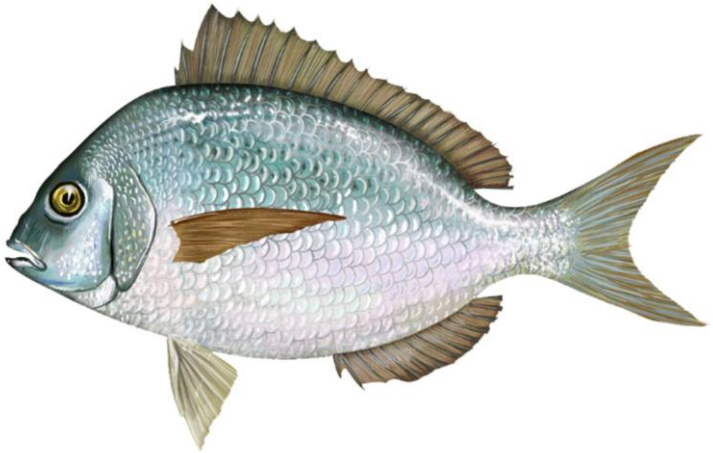

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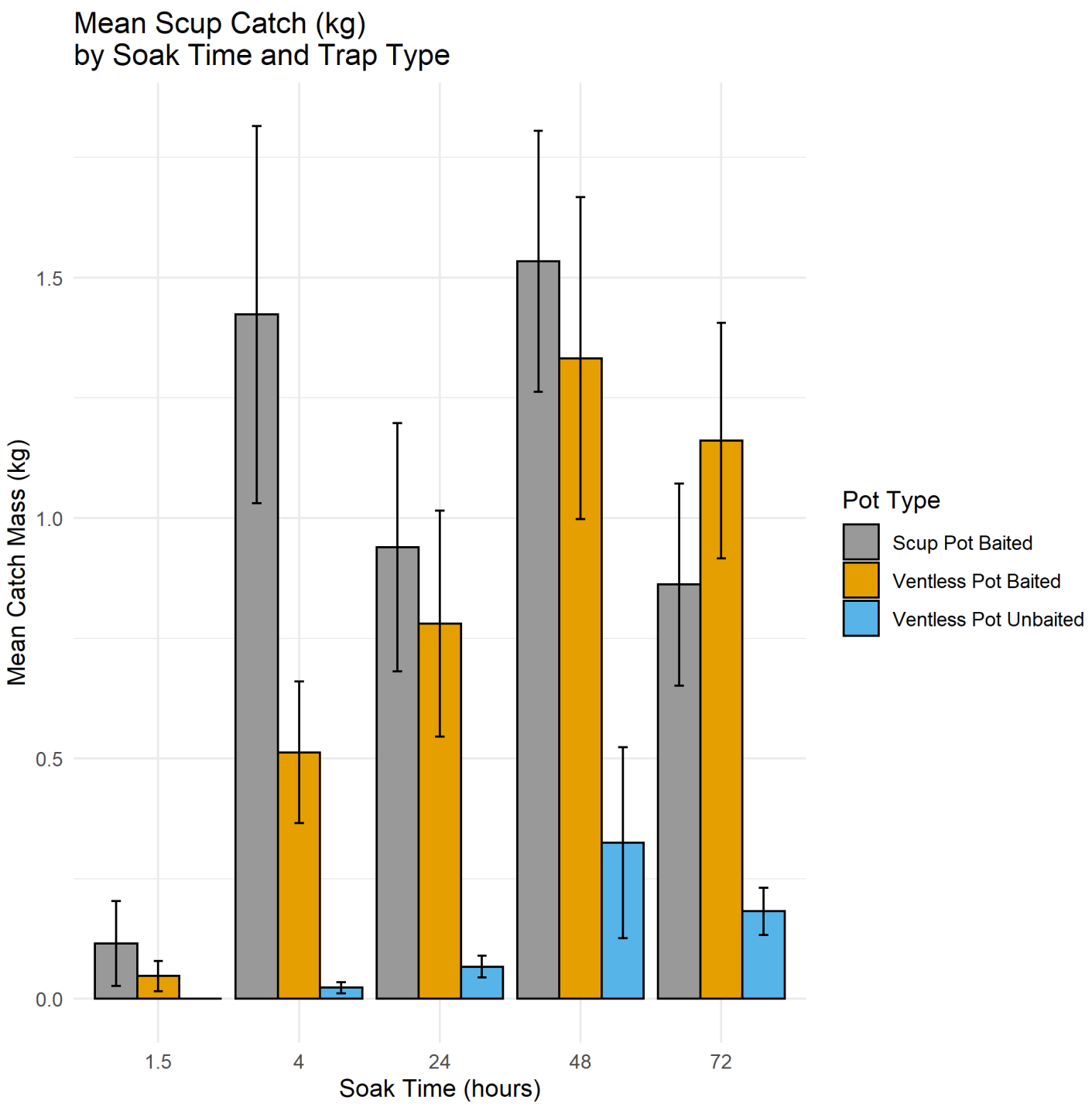

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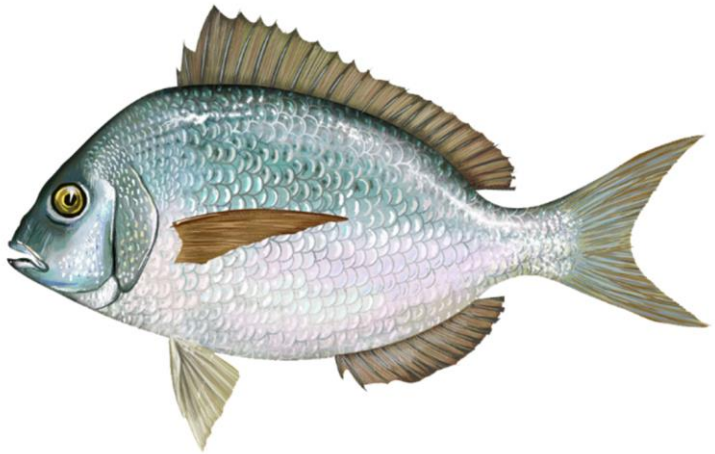

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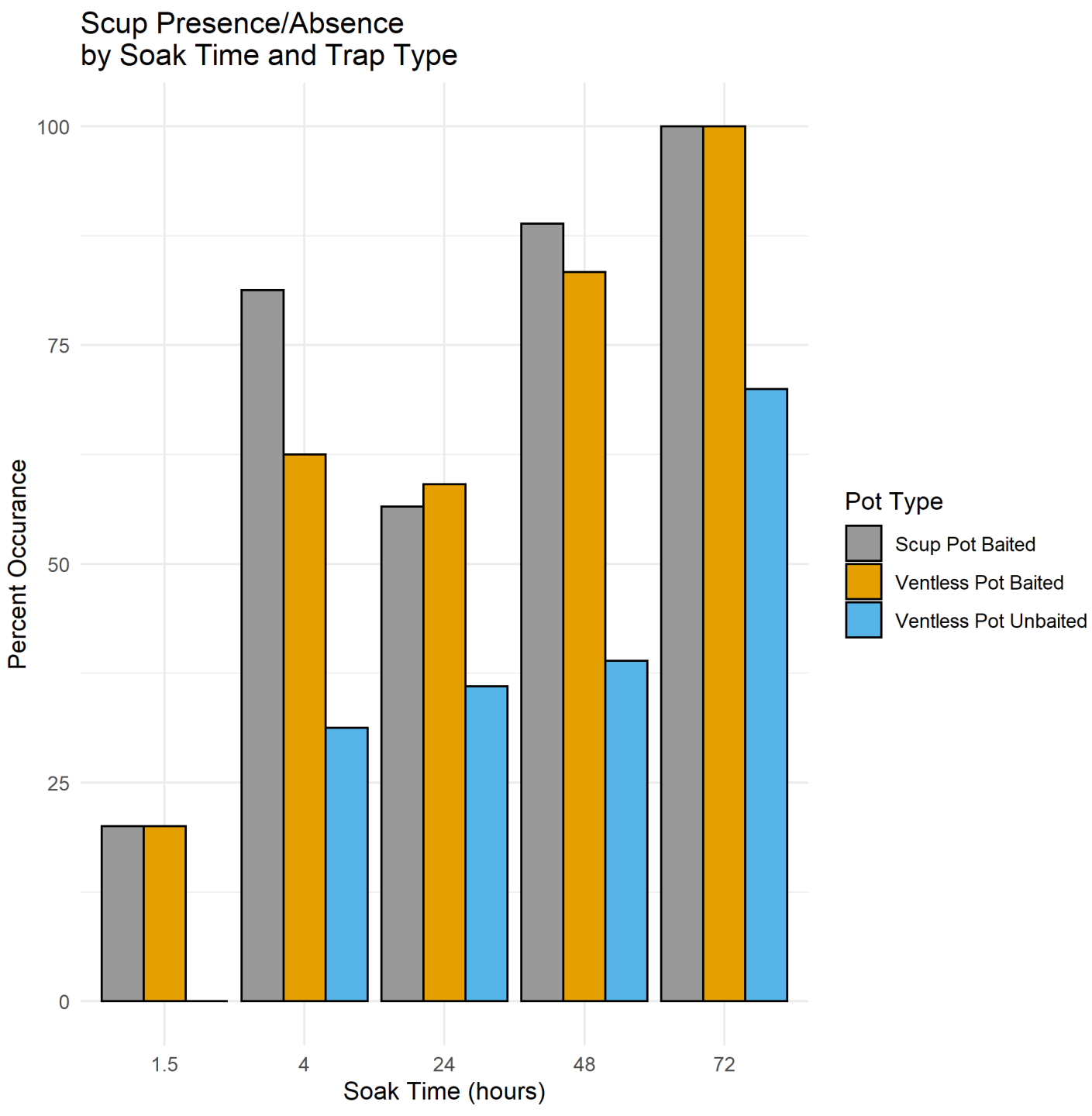
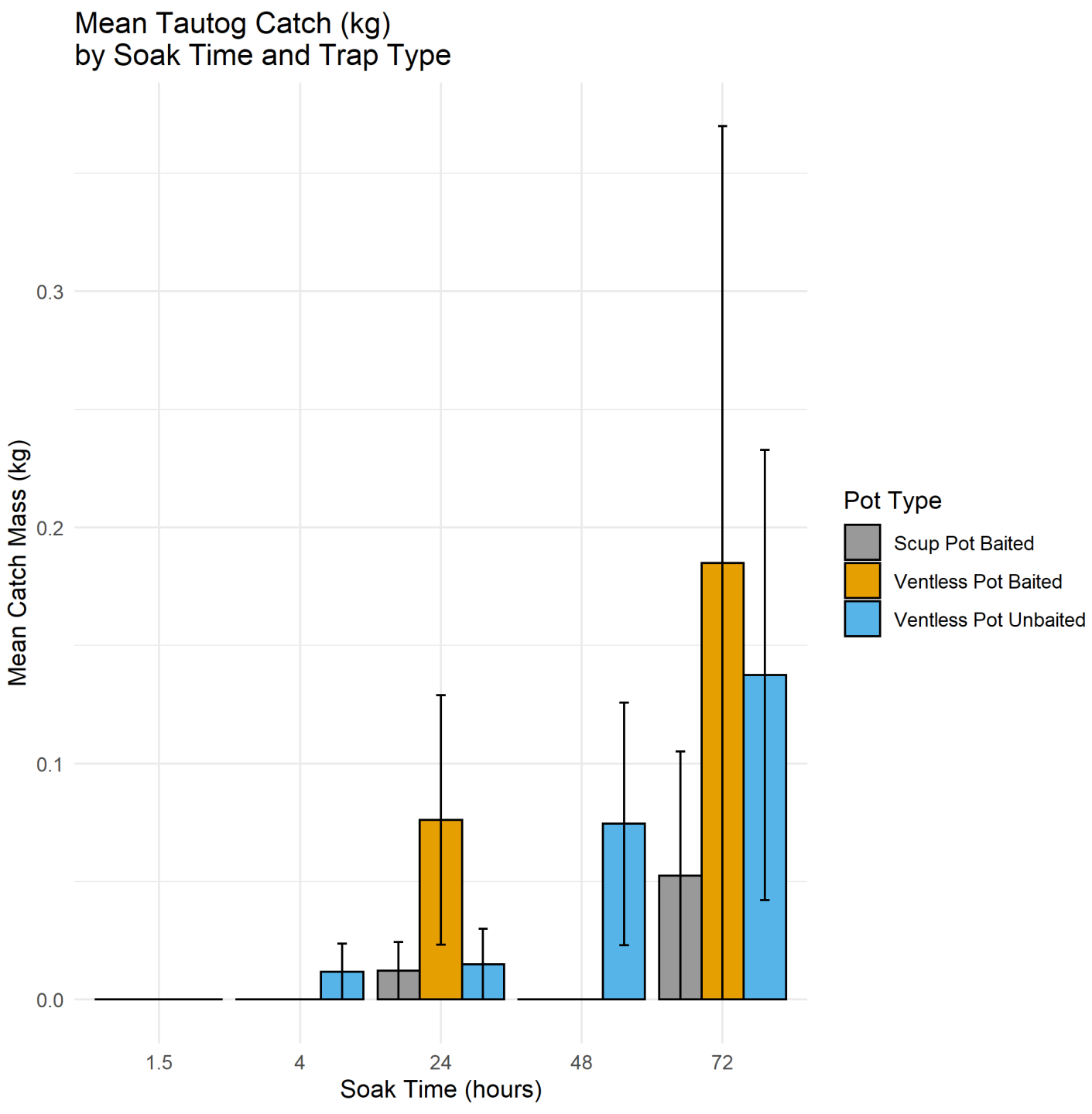


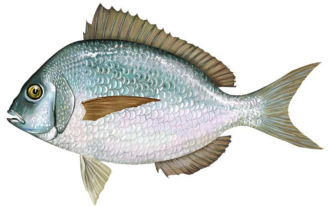
Results


MD DNR


Mean Tautog Catch (kg)
by Soak Time and Trap Type
Mean Catch Mass (kg)
0.0
0.1
0.2
0.3
1.5
4
24
48
72
Soak Time (hours)
Pot Type
Scup Pot Baited
Ventless Pot Baited
Ventless Pot Unbaited

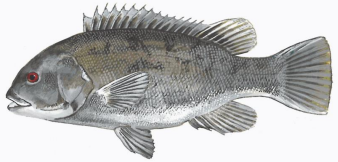
2013-2016 Data

- CPUE
  - # fish/pot/soak day



- Ventless Fish Pots
  - 5 pots
  - 96 hour soak
  - **unbaited**

- Scup Pots
  - 10 Pots
  - 24 hour soak
  - **baited**



Metric	Ventless Pots	Scup Pots
Scup Catch Mean	1.3 ± 0.2	1.1 ± 0.1
Scup % Occurrence	83	76
BSB Catch Mean	0.5 ± 0.1	0.3 ± <0.1
BSB % Occurrence	72	62
Tautog Catch Mean	0.2 ± <0.1	<0.01
Tautog % Occurrence	62	3
Total Species Richness	24	19
Mean Species Richness	3.4	2.1
n Sets	133	488

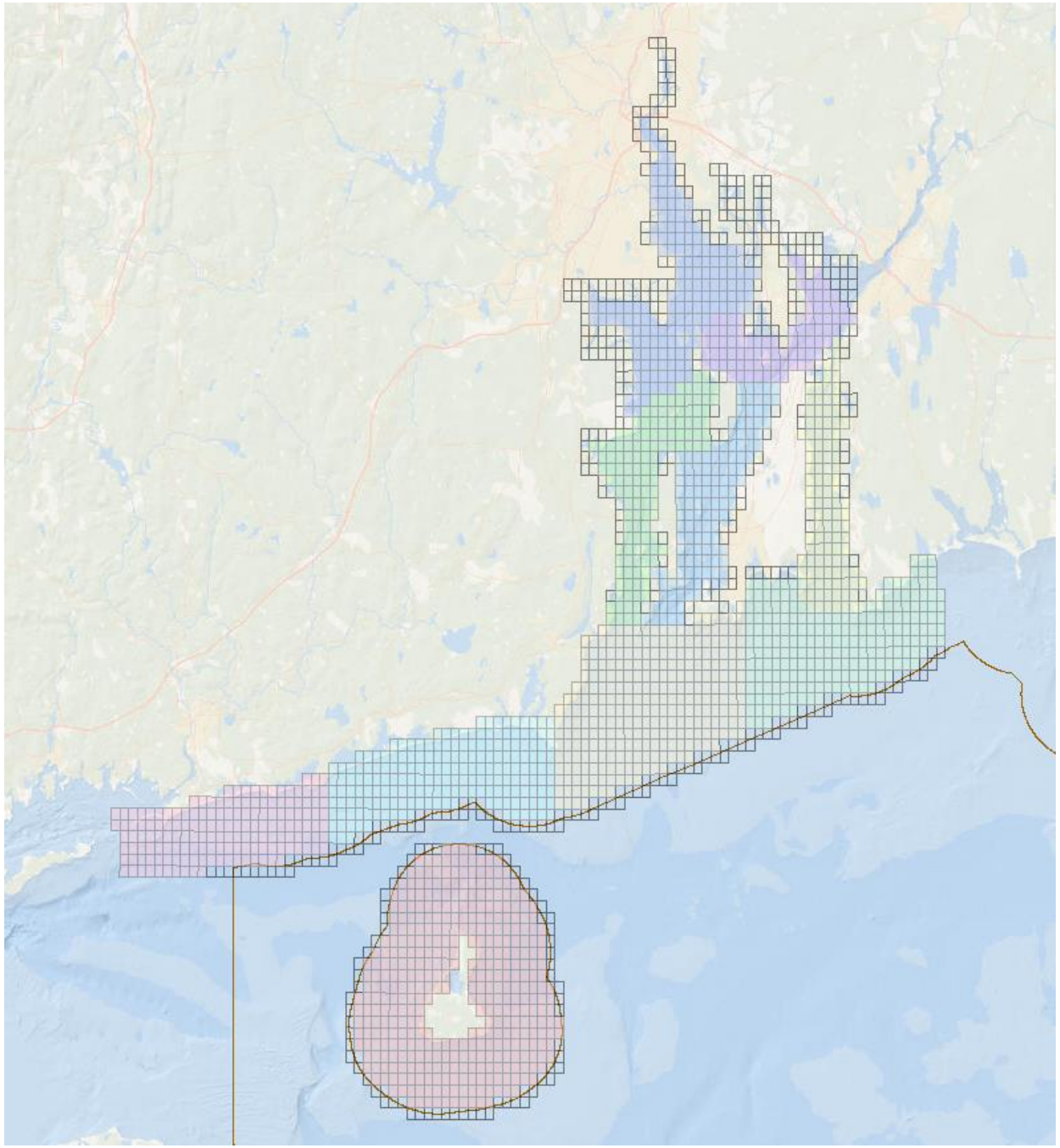
Results

- Overall
  - Greatest catch in baited ventless fish pots
  - Greatest likelihood of fish presence at greater soak times
  - Depth and water temperature important drivers of catch

- Black sea bass
  - Greatest catches in baited ventless fish pots
  - Greater likelihood of catch at 24+ hour soak times
  - Minimal difference in sizes among gears
- Scup
  - Similar catch between baited scup pot and baited fish pot
- Tautog
  - Caught at 24+ hour soaks

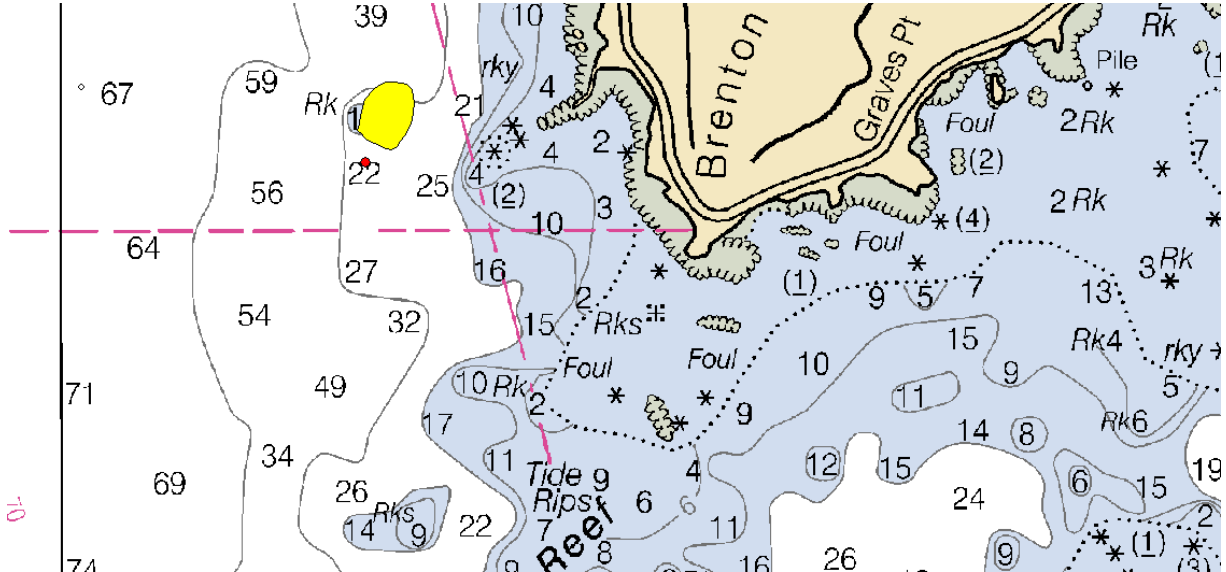
Next Steps

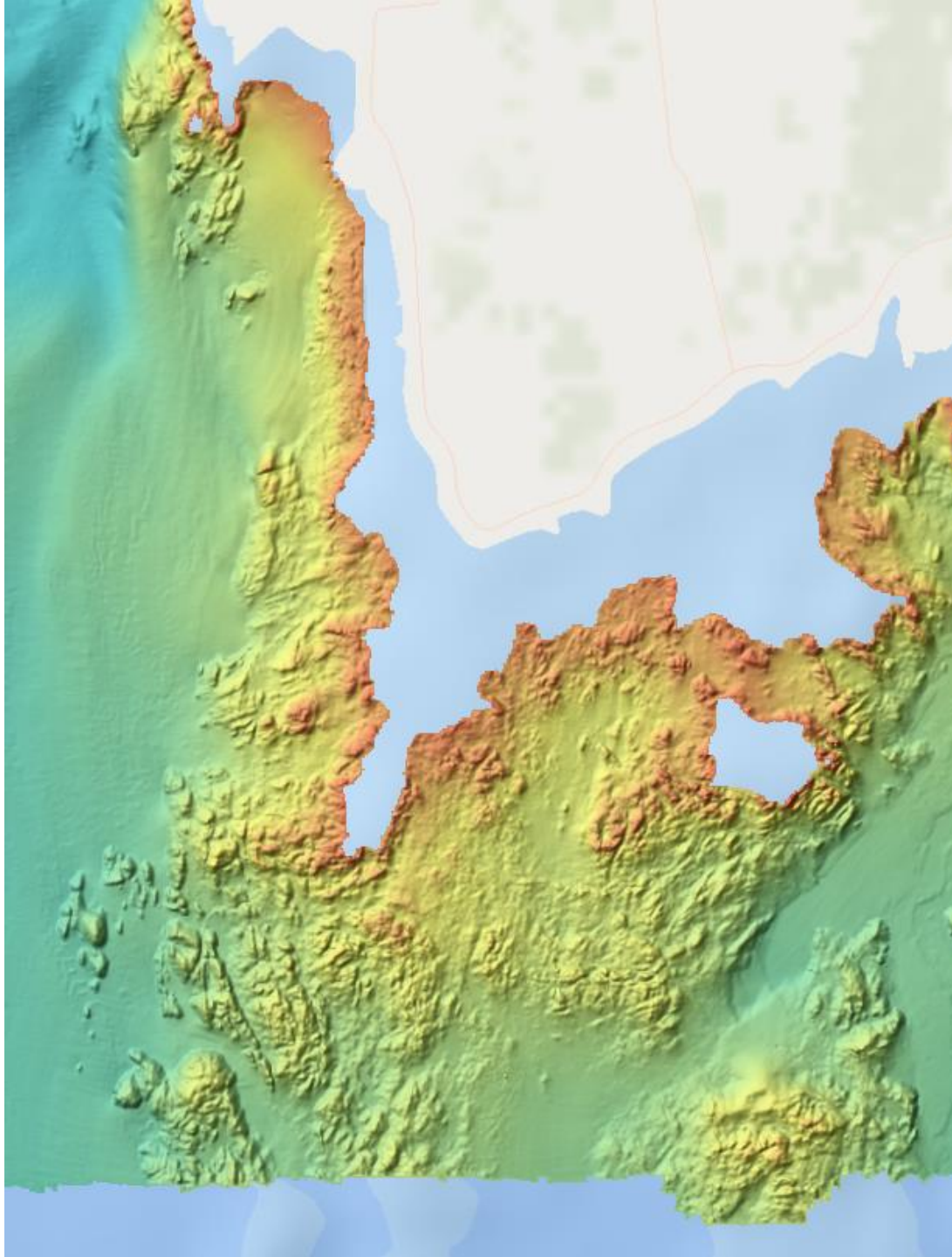
- Survey design considerations:
  - Gear type
  - Soak time
  - Spatial coverage
  - Stratification
    - Area
    - Depth
    - Structure
  - Fixed vs Random Sites



Bottom Type Data

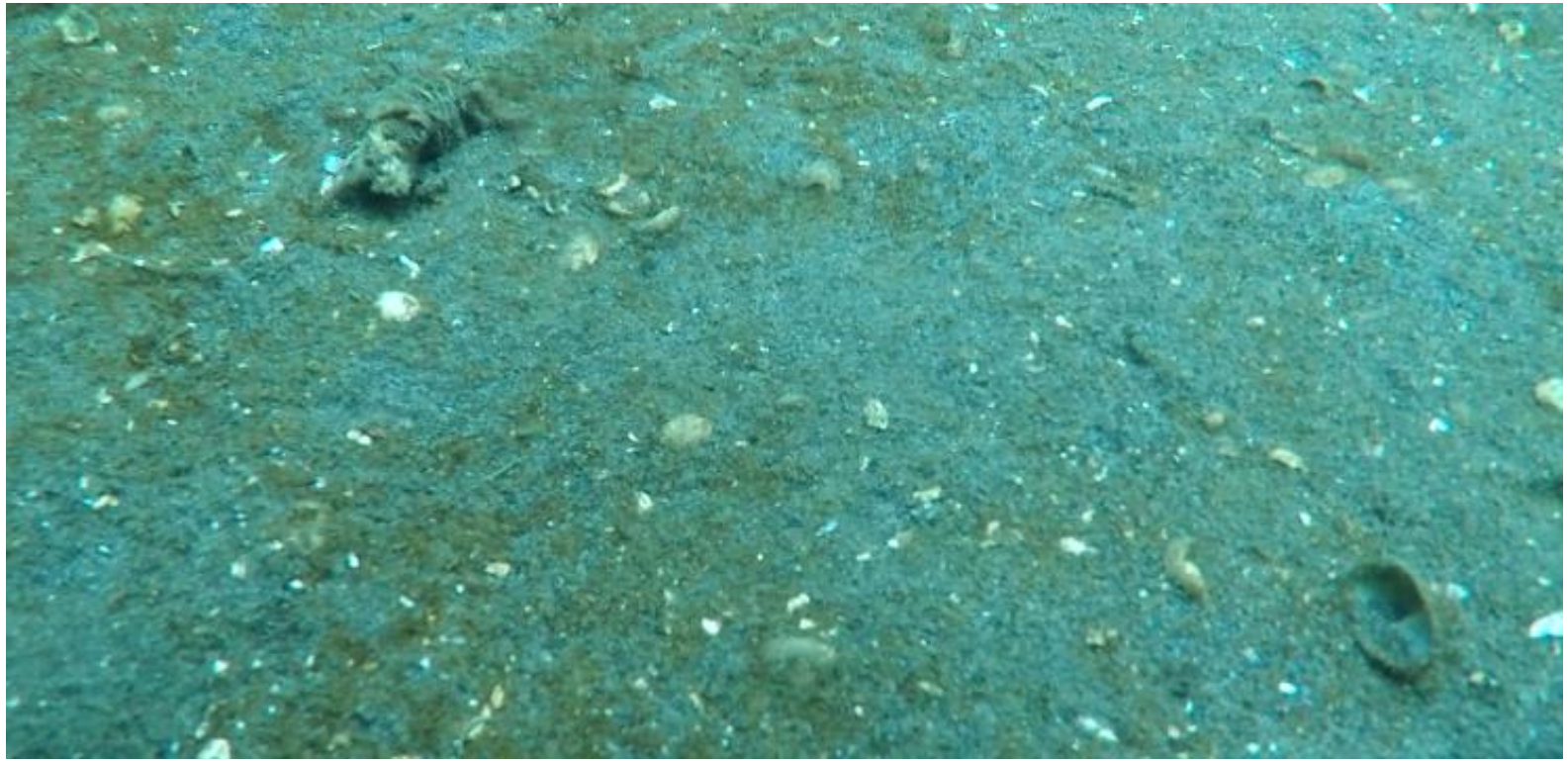
- URI/King Lab Side Scan
- NOAA NOS Hydrographic Bathymetry Data
- NOAA Charts
- McMaster Grain Size Survey
- USSeabed grain size database

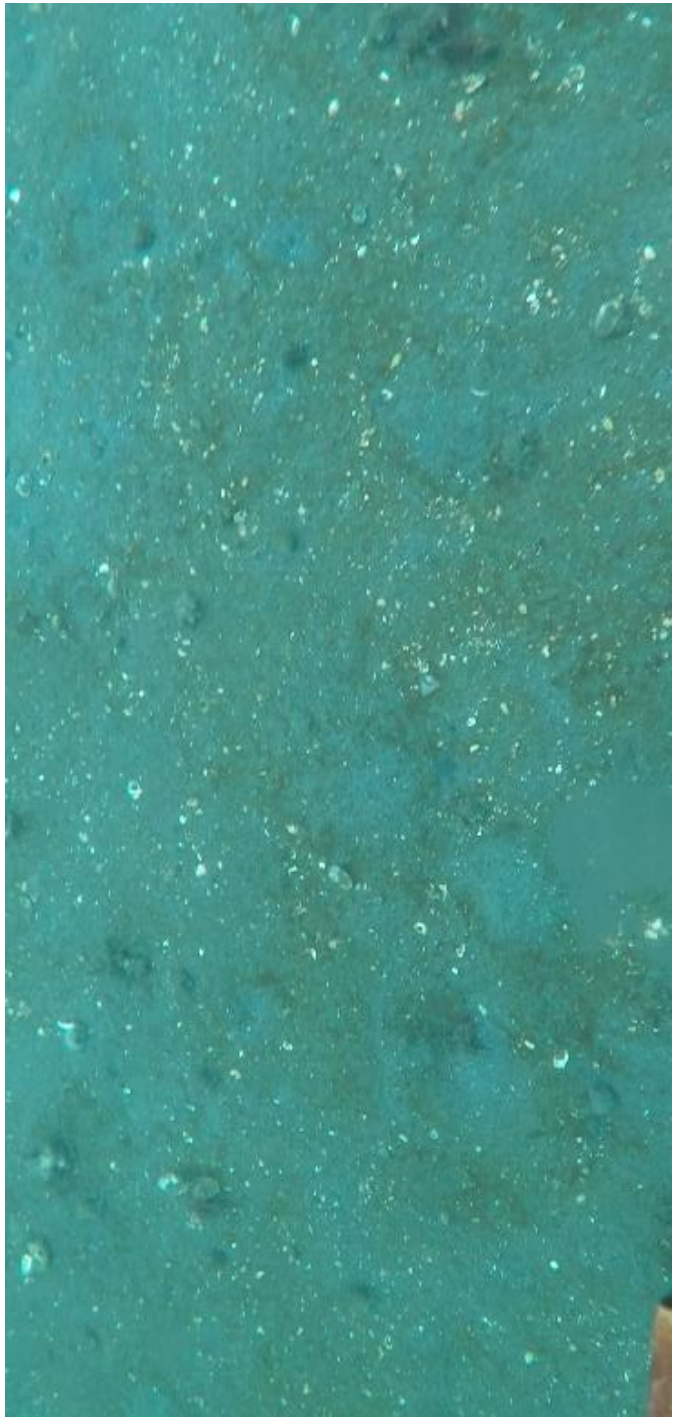




Bottom Camera

- Video of bottom type at each set to classify bottom type

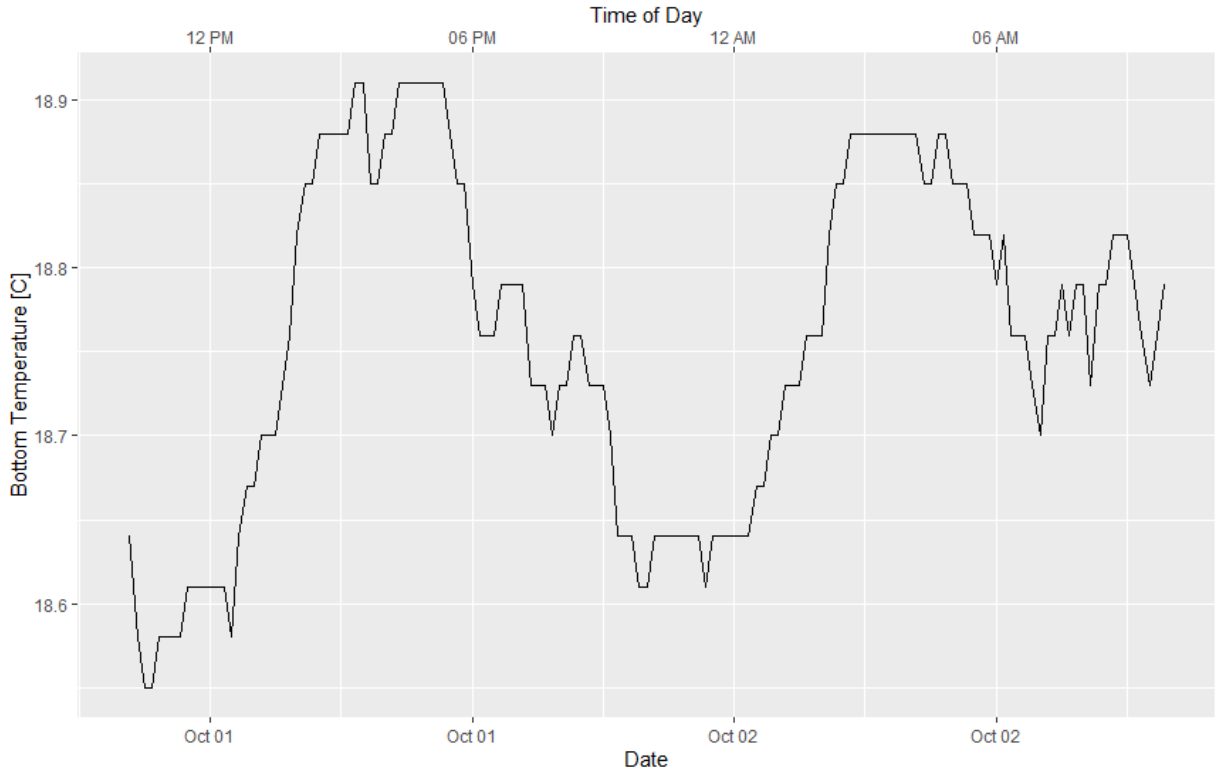




Environmental Data Collection

- Logged every 10 minutes
- One sensor per string of traps

- Temperature
- Salinity
- Depth



Commercial Fleet Input

- Goal is to best assess current stock of these abundant species
- Gear conflict avoidance
- Fixed station locations
- Soak time

Black Sea Bass

Soak (Hours)	**% of Landings**
<=4	4.2
4-24	79.7
25-48	5.5
49+	10.6

Scup

Soak (Hours)	**% of Landings**
<=4	3.0
4-24	82.2
25-48	5.8
49+	9.0

Questions