



# Georgia CRD's Red Drum Escapement and Tagging Projects



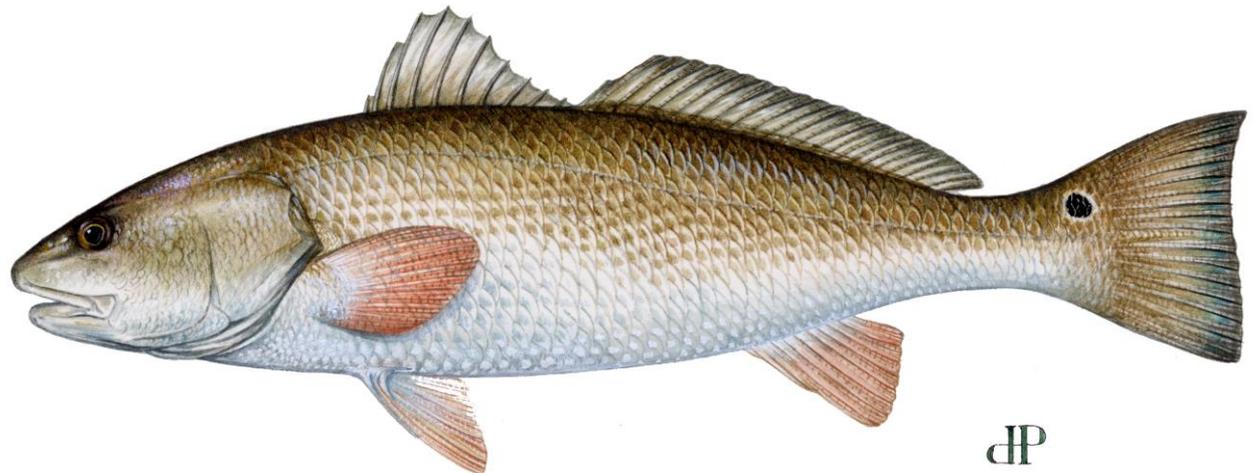
**Jared Flowers**

*Mission Statement:*

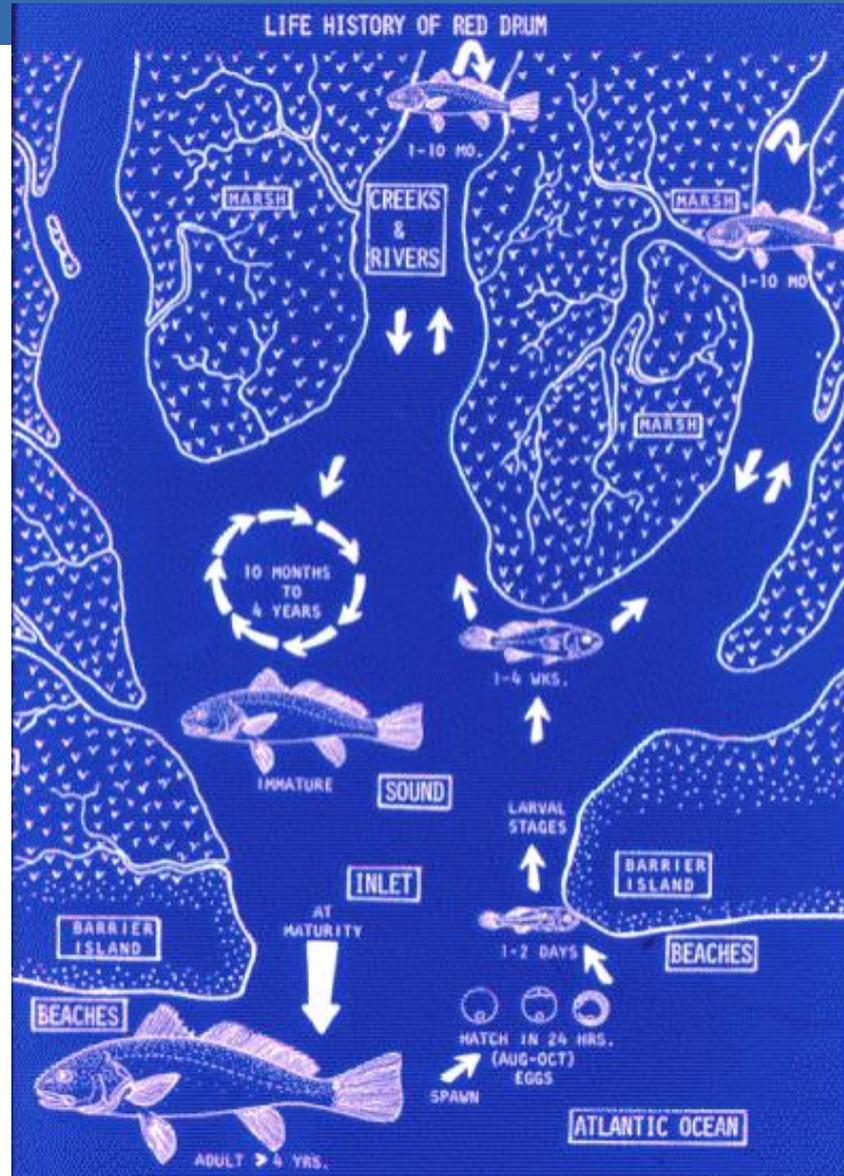
*To balance coastal development and protection of the coast's natural assets, socio-cultural heritage and recreational resources for the benefit of present and future generations.*

# Introduction

- Red Drum are the state saltwater fish of Georgia
- The most popular saltwater gamefish
- Can grow up to 40+ inches, 40+ lbs. (state record 47 lbs. 7 ozs.)
- Limit 5 fish per day, slot between 14-23 inches
- Complex life history
  - Young fish live in marshes
  - Immature fish move offshore
  - Adults return to marshes to spawn



# Background



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- We can sample some life stages of Red Drum:
  - Marine Sportfish Population Health Survey (MSPHS) samples smaller Red Drum in estuaries
  - Longline survey encounters large adult Red Drum offshore
- There is uncertainty in other life stages
  - Recruitment/YOY
  - Early adult stage when fish leave estuaries and move offshore



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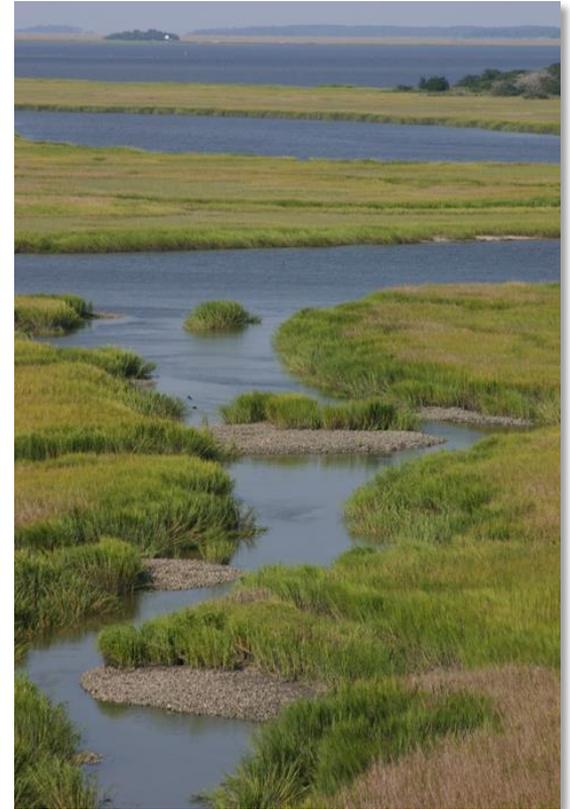
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# Escapement Project - Questions

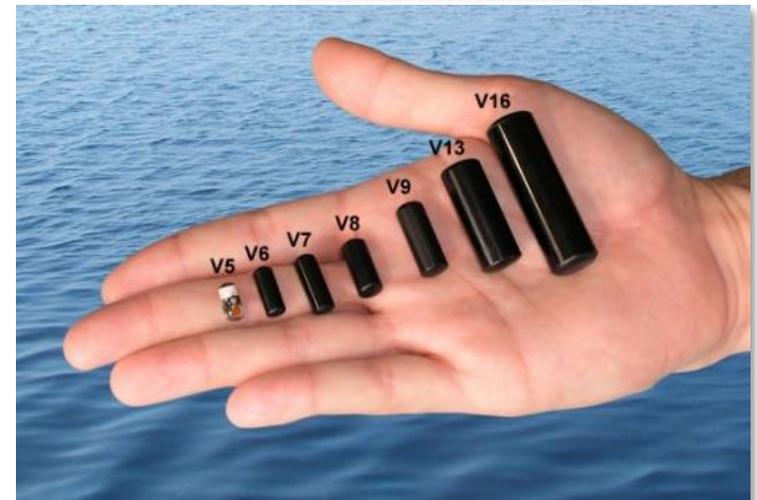
Red Drum spend the early part of their lives in estuaries, then leave

- How long do juveniles stay in sounds?
- How many make it out?
- What areas do juvenile Red Drum use in sounds?
- What factors influence movements in sounds?
- What connections are there between movements and fishing activity?
- Reports of smaller fish at offshore reefs



# Escapement Project

- Use acoustic telemetry tags
- Detectable by a passive receiver array
  - Arrays in place 24/7
  - Act as “gates” at inlets in sound
  - Wassaw Sound array
  - Georgia Coastal Array and arrays in other states
- Tags are surgically implanted into Red Drum
  - 60 tags in year 1
  - Focus effort on fish approaching and in slot
  - Lifespan of 5-6 years
  - Tagged fish will also get an external tag
  - Better retention



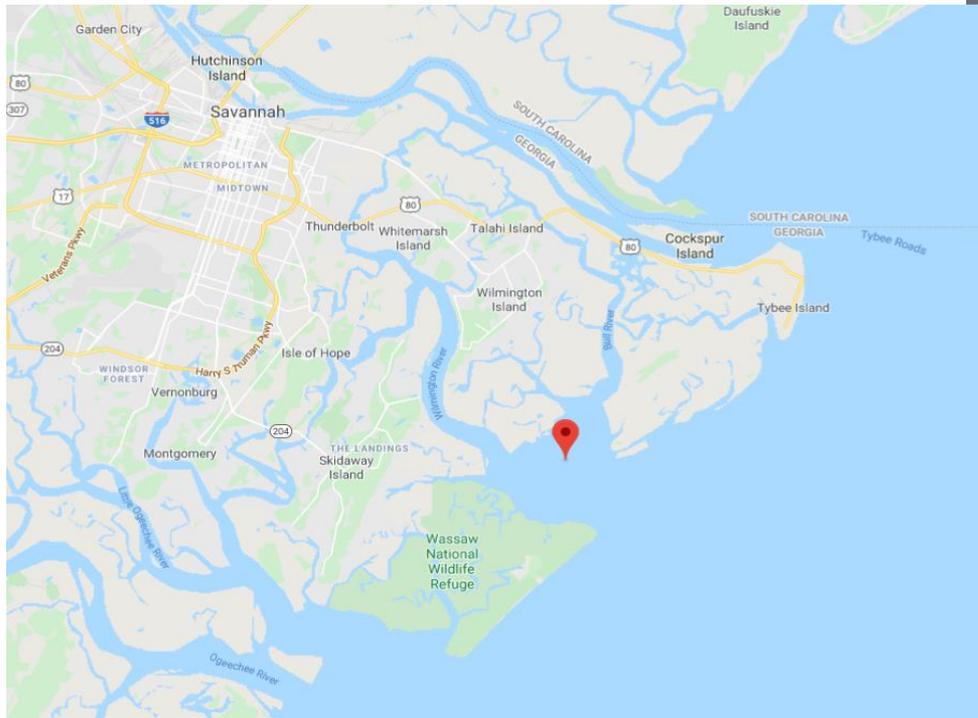
# Escapement Project

- Acoustic tagging data can provide:
  - Estimate residence time in sounds
  - Direct mortality estimates
  - Red Drum movement and timing patterns
  - Greater probability for regional movement information
  - Information about conventional tag retention
  - Identify mortality sources and estimate mortality rate
  - Learn about angler behavior
  - Identify “hot spots” for activity
  - Independent from angler information



# Escapement Project - Goals

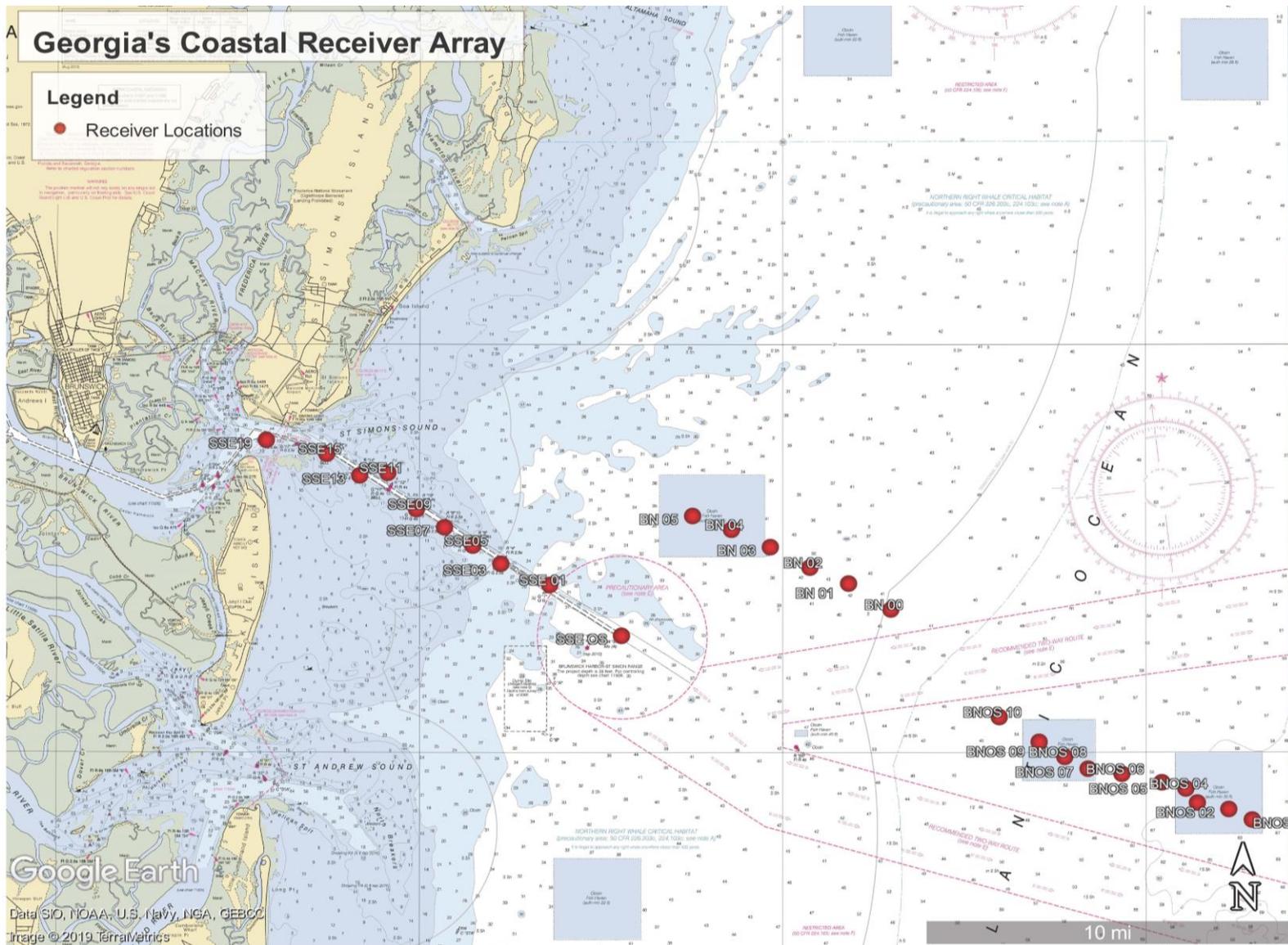
- Why Wassaw Sound?
  - High fishing pressure
  - Specific angler concerns
  - Existing sampling program (MSPHS)
  - Smaller system with discrete outlets



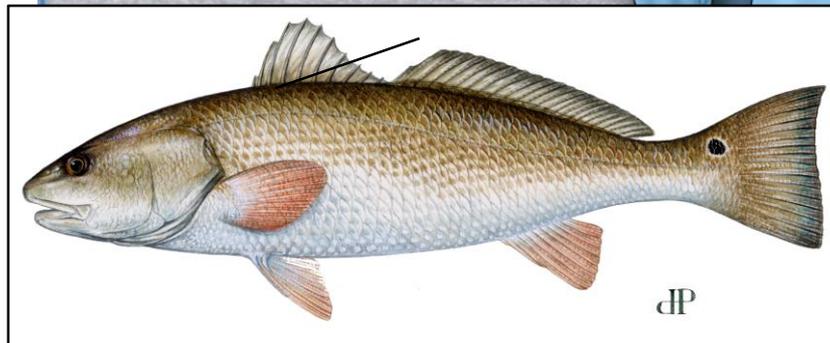
# Escapement Project - Goals



# Escapement Project – Coastal Array



# Cooperative Angler Tagging



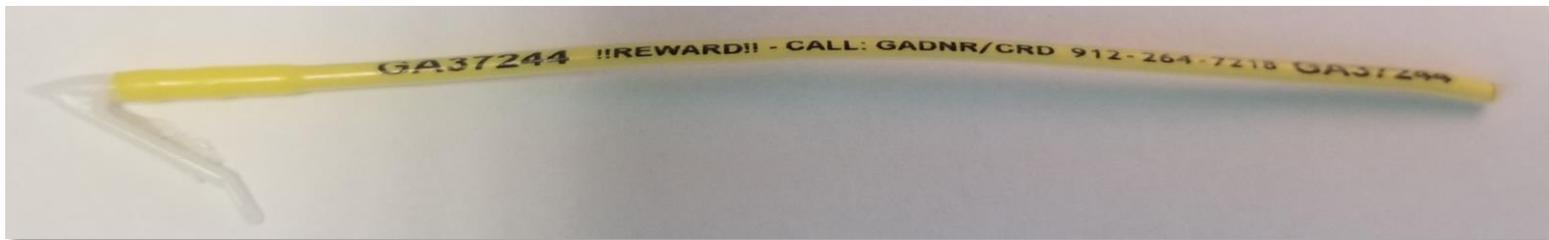
# Cooperative Angler Tagging Program - Present

- Program has been ongoing since 1988
- Number of tags released over time has varied
- In recent years large numbers of Red Drum have been tagged
  - 847 in 2017, 1018 in 2018
  - By Sept. 2019: 678 tagged, 111 returns
- Anglers receive tags and place them in Red Drum
- Fish are caught, then anglers report tags for rewards (hats, shirts, stickers, etc.)



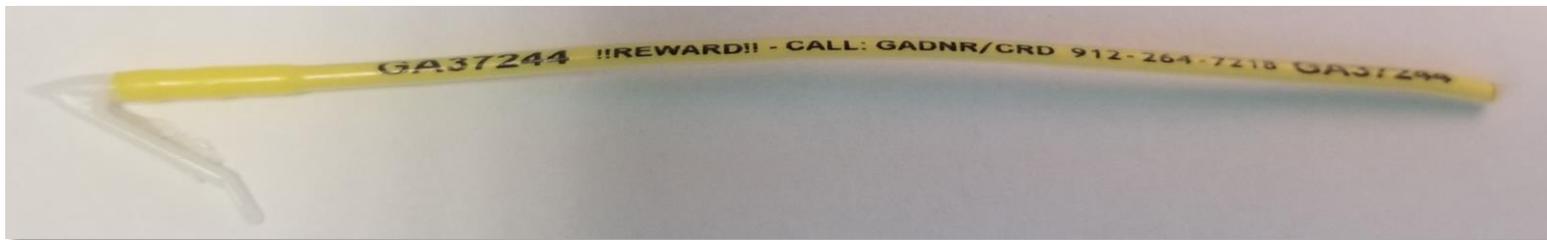
# Cooperative Angler Tagging Program - Enhancements

- Conventional tags provide similar information as acoustic tags
  - Mortality estimates
  - Growth estimates
  - Movement
  - Angler behavior
  - Much cheaper than acoustic tags (\$0.50 vs. \$350)
- But conventional tags rely on public cooperation
  - Anglers must catch and return tags
  - Cooperative taggers must successfully attach tags



# Cooperative Angler Tagging Program - Enhancements

- Current program provides information, but can be improved
  - Lack information about return rates
  - Lack information about retention
- Add high reward tags to learn about return rates
  - \$100 reward
  - Subset of tags deployed by CRD personnel – pink tags
- Add double tags to learn about retention
- Make a greater outreach effort to alert the public about tags and the tagging program as a whole
- Similar expanded study conducted in the early 1990's



# Combined Tagging Efforts

- Conventional tags provide:
  - A large number of tags available throughout the state
  - Direct fishery information
- Acoustic tags provide:
  - High resolution movement data
  - Fishery independent data
  - Detail information about behavior in Wassaw Sound
  - Longer potential tag life-span
- Data can be combined and analyzed to help improve estimates of fishing mortality
- Can compare results with previous Georgia and Southeast studies

# Conclusion

Overall, the escapement program can:

- Provide information to answer state management questions
- Fill in some of the data gap between juvenile, estuarine and adult, offshore life stages
- Address several research and monitoring needs listed in the state Red Drum FMP
- Provide estimates of fishing mortality
- Potentially provide information about offshore and interstate movement



# Questions?

