Large-scale movements, spawning locations, and structure of the Gulf of Mexico blue crab spawning stock

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Goals

1. To examine large-scale movements of spawning female blue crabs within and among estuaries and offshore waters of the Gulf of Mexico using a large-scale, Gulf-wide mark-recapture study.

2. To assess condition, reproductive potential, and reproductive output of spawning blue crabs in the Gulf of Mexico.

3. Use existing datasets from both state and regional management agencies to examine the temporal and spatial dynamics of the Gulf of Mexico spawning stock.
Tagging progress to date

• 12,538 crabs tagged

• Tagging has involved:
  • 4 graduate students
  • 6 undergraduate students
  • 1 high school student
  • 1 technician
  • 20 commercial crabbers
  • Countless personnel from TPWD, LDWF, MDMR, AMRD, FWC, NMFS, and GCRL.
Tagging progress to date
12,403 crabs tagged since March 2016
Recaptures

• 2495 recaptures reported, ~20.1% recapture rate
  • Commercial crabbers: 85%
  • Recreational: 7%
  • Commercial shrimpers: 3%
  • Other: 5%

• Appx. 500 individuals have reported recaptures.

• Over $16,000 has been paid in recapture rewards.
Time at liberty (tagging to recapture)

Range: 1 – 477 d
Mean: 19.39 d
Median: 40 d
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Number of crabs

Time at liberty (d)
Straight-line distance (displacement)

Range: 0 – 446.23 km
Mean: 20.07 km
Median: 5.61 km
Net movement rate

Range: 0 – 18.51 km d\(^{-1}\)
Mean: 0.70 km d\(^{-1}\)
Median: 5.61 km d\(^{-1}\)
2593 recaptures reported

<table>
<thead>
<tr>
<th>State where tagged</th>
<th>TX</th>
<th>LA</th>
<th>MS</th>
<th>AL</th>
<th>FL</th>
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<td>1</td>
<td>0</td>
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</tr>
</tbody>
</table>
Texas
986 crabs tagged
27 recaptured
Louisiana
5397 crabs tagged
1180 recaptured
Louisiana
5397 crabs tagged
1180 recaptured
Mississippi
1885 crabs tagged
465 recaptured
Mississippi
1885 crabs tagged
465 recaptured
Alabama
290 crabs tagged
76 recaptured
Florida
3845 crabs tagged
747 recaptured
Florida
3845 crabs tagged
747 recaptured
Outreach efforts

• Project website
  • [www.crabtags.org](http://www.crabtags.org)
  • [bluecrab.usm.edu](http://bluecrab.usm.edu)

• Exhibits constructed at Lake Pontchartrain Basin Maritime Museum (Madisonville, LA), UT Marine Science Institute (Port Aransas, TX)

• Displays in progress at LUMCON.
REWARD

TAGGED BLUE CRABS

If caught, please report the following information to 1-800-624-2857 or www.crabtags.org:

• Tag number
• Capture date
• Capture location (GPS if possible)
• Egg mass/sponge color (if present)

Researchers at the Gulf Coast Research Laboratory (GCRL) are tagging mature female blue crabs to better their migrations for the continued sustainability of blue crab fishery. Crabs are being tagged both inshore (bays and estuaries) and offshore in all five Gulf states. If you catch a tagged crab, please report it. There is a $5-50 reward for every reported tag, and a possible extra reward if the crab is frozen with the tag still attached. Crabs can be returned to GCRL or if needed, picked up by a staff member. Extra rewards are available only for the first 500 crabs returned to GCRL.
Going forward…

- Continued tagging in all 5 states
  - Through ongoing fishery-independent surveys
  - In collaboration with commercial crabbers (LA, MS, AL, and FL)
  - Tagging through summer, 2018

- Continued data analyses

- Directed tagging efforts to address specific questions
What happens once offshore?
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- **2017 surveys:**
  - Overall condition
  - Reproductive status
  - Fecundity
  - Egg quality
  - Parasite/disease prevalence

- **Historical data:**
  - Peak spawning times, areas
  - Environmental drivers
  - Interannual variability
Reproductive status
Fecundity

\[ y = 361290e^{0.0137x} \]

\[ R^2 = 0.47501 \]
Parasite presence/absence

- *Octolasmis* muelleri gooseneck barnacles on gills:
  - Present in 64% of crabs

- *Carcinonemertes carcinophila* egg predator:
  - Present in 12% of crabs
What happens once offshore?

• 2017 surveys:
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