

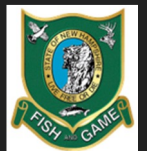
Collaborating across the Gulf of Maine to complete citizen-driven fishery science

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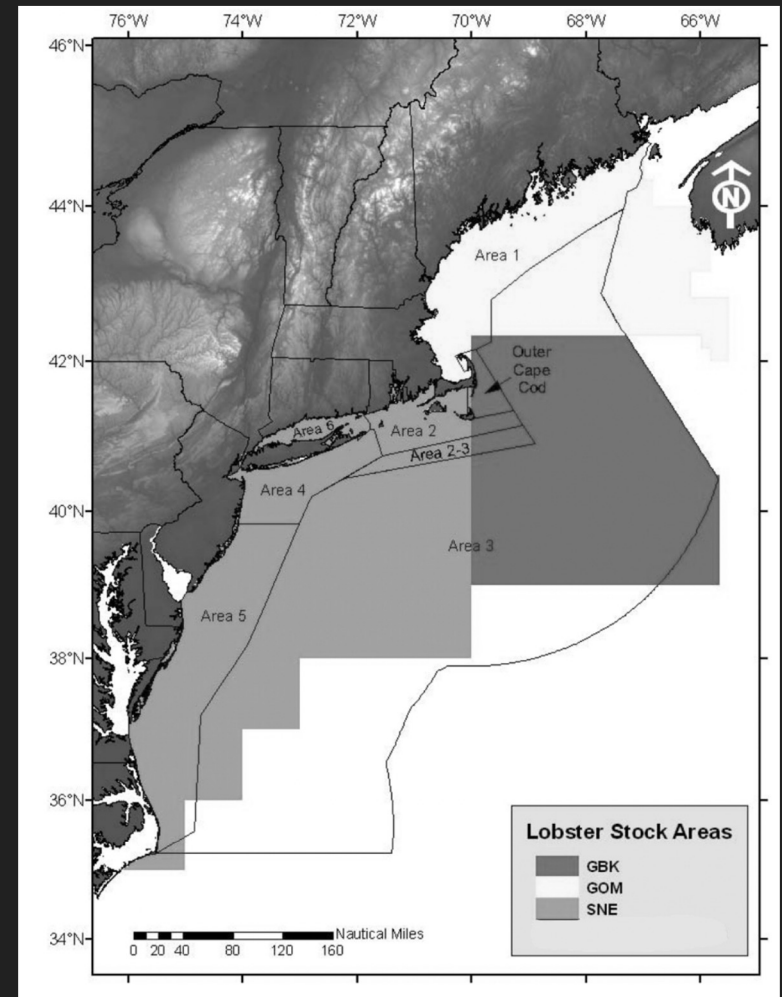
Project Overview

2015-2016 - Georges Bank egger study, funded by ACCSP

2017-2020 - GOM/GB tagging study, funded by NOAA SK

Project Goal: Examine stock connectivity & update growth data, in response to 2015 Lobster Stock Assessment

- Today:
 - Field methods
 - Developing analytical methods
 - Successful collaborations
 - Next steps



Previously defined Stock Units (ASMFC, 2009).

Project Team

- Heidi Henninger (formerly AOLA), Co-PI
- Joshua T. Carloni (NH F&G), Co-PI
- Kathleen M. Reardon (ME DMR), Co-PI
- Everett Rzeszowski (Darling Marine Center), student data analyst completing backend analysis.
- Damian C. Brady (Darling Marine Center), analysis conceptualization.

- The many technicians and fishermen that made the decision to contribute to this data collection effort.



Field Methods

Tagged 18,000+ lobsters with Floy T-Bar tags which lobsters can retain through molt events.

Fishery Dependent:

- Oversized, undersized, and reproductive females
- Tagged during commercial fishing trips
- ME DMR, MRAG Americas and Coonamessett Farm Foundation.

Fishery Independent:

- All lobsters
- Chartered fishing vessel - dedicated research
- ME DMR

Recaptures were reported from 2015 - present. Images included 51 % of the time.



Example tagged lobster (Project image bank).

Industry Outreach



- Methods of outreach
 - Industry meetings
 - Social media outreach
 - Quarterly award raffles
 - Radio chatter
 - Facebook chatter
- Sent out custom tag/recapture charts



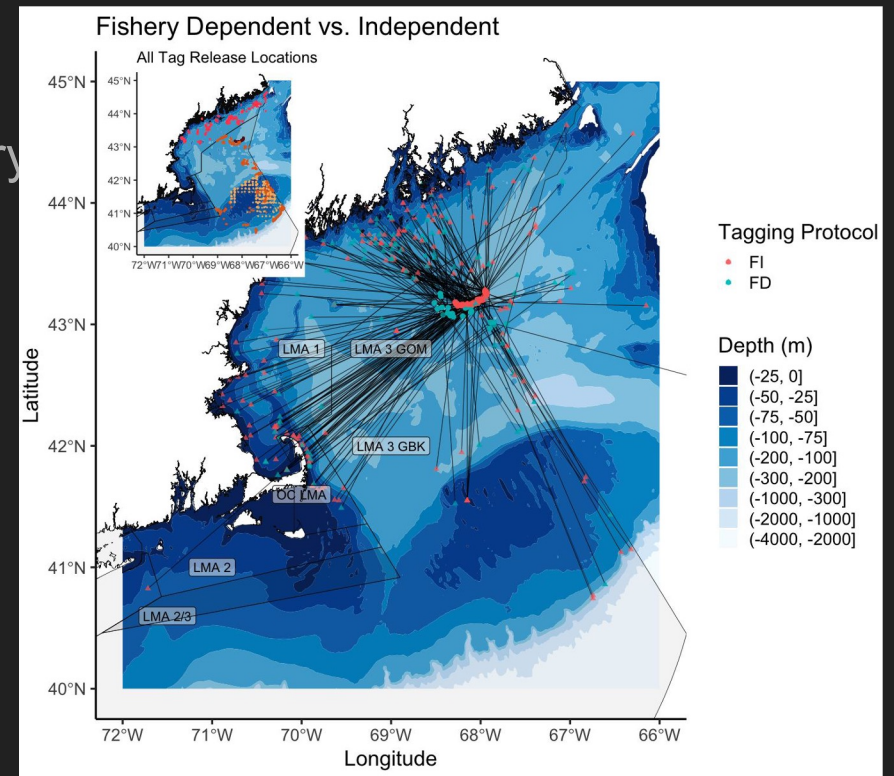
Analytical Methods

Compare movement characteristics of animals tagged via fishery independent vs fishery dependent efforts

Determine if image analysis of submitted photographs is a viable way to capture lobster growth information

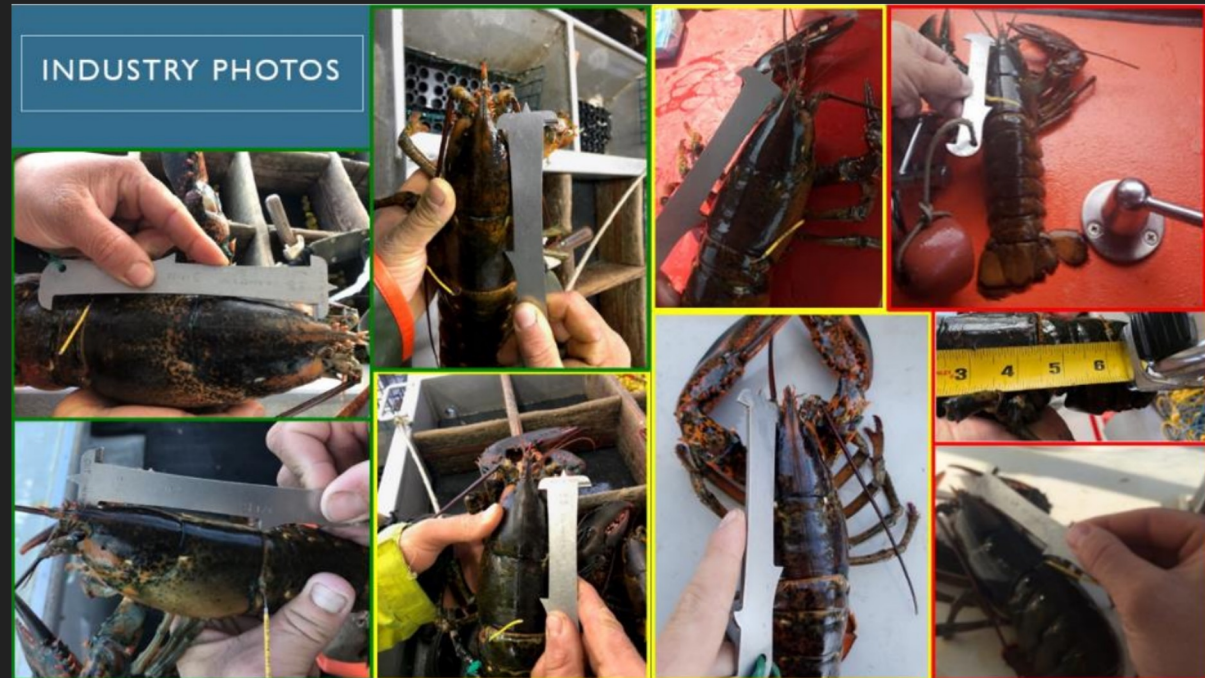
Fishery Dependent vs Independent Collaboration

- Most project tagging was contracted (Area 3) or opportunistic (Area 1) on fishery dependent sampling trips
- Component of expanded tagging was fishery independent
 - to tag both legal and discarded catch
 - in a location where fishing effort was limited to allow more movement/time at large
- Collaboration to determine location
 - LMA 3 captain for information on where and when
 - Also shared info on how to fish the area (bait, anchors, etc)
- Collaboration with LMA 1 captain for day trips to area
 - Maine vessel determined through RFP
 - ME DMR provided traps, he provided rigging



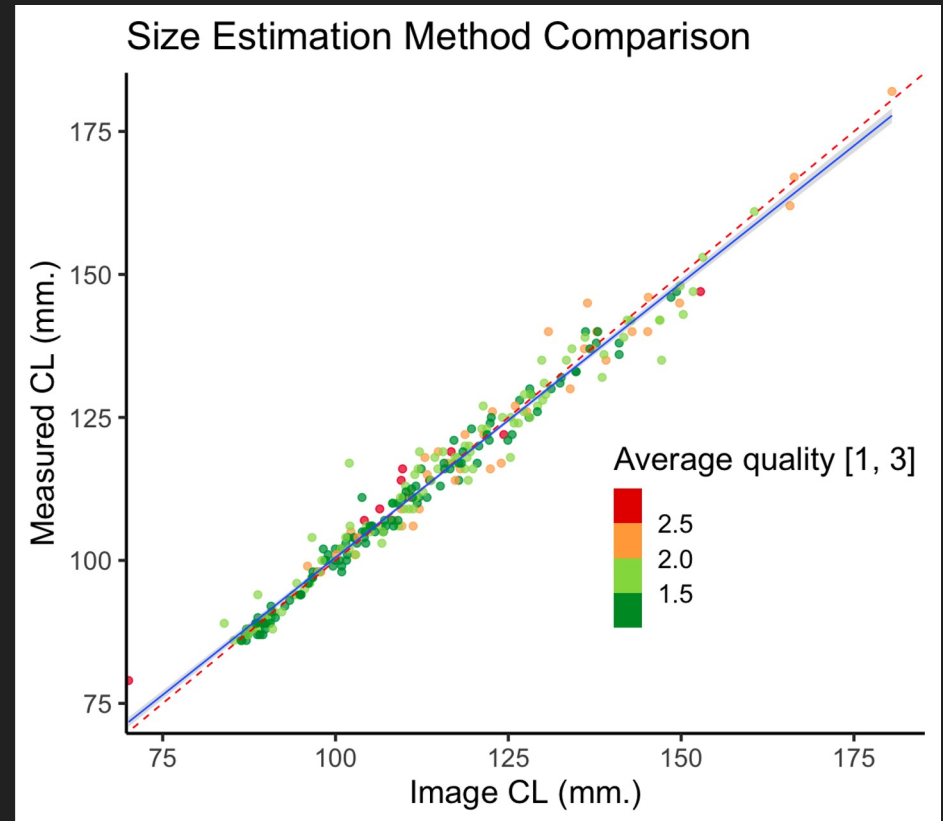
ImageJ

- Images provide simpler method of data collection
- Image J software used to estimate length from images
- Varying quality of pictures
 - Developed protocol for ranking image quality to be considered in analysis
- Some fishermen were able to measure & photograph
 - Provides opportunity to compare methods



ImageJ results

- Comparing direct measures with photographs we found that images can reliably estimate size.
- Historically it is difficult to get growth data from tagging projects.
 - Expanding this type of data collection can give more data on how lobsters grow (a main objective).

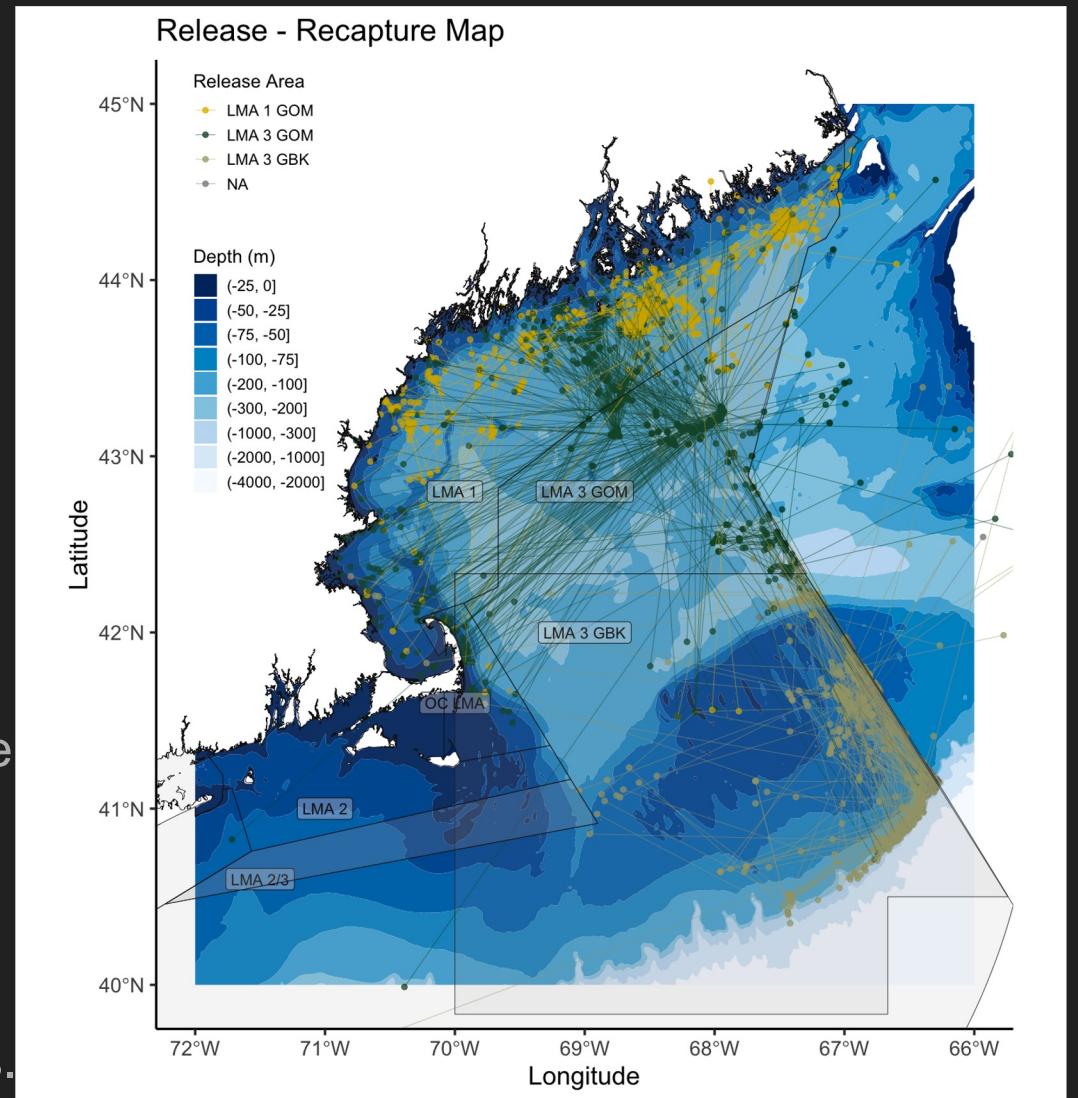


Results from analysis comparing Image estimate length and Measured length.

Stock Connectivity Results

- GOM and GBK lobsters are exchanging but not at the rate expected.
- This information will be communicated to ASMFC Stock Assessment Technical Committee to inform the stock connectivity working group.

Tag movement results.



Working Together

- Field coordination of tagging effort
- Industry tag / image returns
- Initial data analysis
- Secondary data analysis
- Communication



Industry submitted recapture images.

Next Steps

Present work related to connectivity and estimating error on length observations to the Stock Assessment Technical Committee, inform management.

Using this work to inform future work, lobster tagging in RI and MA.

Continued outreach with fishing community with emphasis on results from citizen science data collection.

Thank you!

Discussion and
Questions

