The CFRF Lobster and Jonah Crab Research Fleet: Filling Data Gaps Since 2013
A non-profit, private foundation established by commercial fishermen that is dedicated to conducting collaborative fisheries research and education projects that inform and promote sustainable fisheries.
RESEARCH AND EDUCATION TO SUPPORT SUSTAINABLE FISHERIES AND RESILIENT FISHING COMMUNITIES

$1.5 million DISTRIBUTED TO FISHING INDUSTRY PARTNERS

310 SCIENTIFIC, MANAGEMENT, FOOD SYSTEM COLLABORATORS

145 FISHERMEN COLLABORATORS

48 RESEARCH PROJECTS
Fishing Industry Priorities

1) Improve stock assessments and management plans to better reflect the abundance and distribution of resource species

2) Expand biological and fishery data sources beyond state and federal surveys and landings

3) Contribute standardized, verified biological and fishery data from unsampled and data-poor areas

4) Improve credibility and trust in industry collected data and demonstrate value of fishermen as research partners

5) Improve consensus between what scientists/government say versus what fishermen see on the water
American Lobster

• Most valuable fishery in the USA (>666 million in 2016)
• Two stock areas: Gulf of Maine and George’s Bank, Southern New England
• In Southern New England, the lobster fishery has shifted offshore as inshore habitats have become less productive
• Existing lobster surveys largely neglect offshore waters, leaving a large portion of the fishery poorly characterized in the stock assessment
Jonah Crab

- Fishery of emerging volume and value; becoming increasingly important to traditional lobster fishing businesses, especially in Southern New England
  - 7th most valuable fishery in RI
- Jonah crab fishery unmanaged until 2015
- Jonah crab fishery and population largely uncharacterized due to lack of regulation, reporting, and research
CFRF Research Fleet Approach

1. Steering committee comprised of scientists, managers, and members of the fishing industry guide sampling protocols.

2. Fishermen collect biological and/or environmental data from select gear hauls or areas using apps on tablets.

3. Upon return to port, fishermen communicate data to a central database at CFRF via WIFI.

4. CFRF manages project database, communicates data to ACCSP, NEFSC, state agencies, participant fishermen, and works with science partners to explore/analyze data.
Lobster & Jonah Crab Research Fleet (2013-present)

Components:

- Fishermen collect biological lobster data from commercial gear and ventless traps (On Deck Data app)
- Fishermen collect biological Jonah crab data from commercial gear and ventless traps (On Deck Data app)
- Fishermen collect bottom water temperature data (Ocean Temps app)
- Fishermen collect Jonah crabs for sexual maturity analysis (MA DMF)
Lobster Sampling

• **Randomization:** Fishermen use On Deck Data app to randomly select which trawl to sample

• **Session Data:** Date & Time, Location (Latitude/Longitude), Statistical Area, Depth, Soak Time, Number of Traps Sampled

• **Lobster Sample Data:** Carapace Length (mm), Sex, Shell Disease Severity, Shell Hardness, Disposition (kept/discarded), Egg, V-notch

• **Near Real Time:** Fishermen upload data via WIFI upon return to port
Lobster Data Collection

F/Vs Involved: 17
Commercial Sessions: >1,900
Ventless Sessions: >2,080
Lobsters Sampled: >114,400

Inshore

Offshore
Over 3 million pounds of lobster landings would be uncharacterized in the absence of the Research Fleet.
Distribution of Juvenile Lobsters
Jonah Crab Sampling

- CFRF’s Research Fleet is the *only* dedicated Jonah crab survey in the Northeast
- Sampling protocols similar to lobster component
- **Jonah Crab Biological Data:** Carapace Width (mm), Sex, Shell Hardness, Eggs, Disposition (Kept/Discarded)
Jonah Crab Data

F/Vs Involved: 17
Commercial Sessions: >870
Ventless Sessions: >375
Jonah Crabs Sampled: >54,800

The Jonah FMP relies heavily on data from the Research Fleet
Bottom Water Temperature Monitoring

Sampling Protocol:
• Select a fixed site within normal fishing area
• Deploy temperature logger in ventless trap
• Use Ocean Temps app to view data and upload to the CFRF database
Bottom Water Temperature Monitoring

F/Vs Involved: 17

Geographic Range:
Gulf of Maine to Hudson Canyon

Temporal Range:
Year Round

Temperature Records: >2 million
Bottom Water Temperature Monitoring

Average Daily Temperature (F)

Month (Jan - Dec)

- 2014
- 2015
- 2016
- 2017
- 2018
Piloting Bluetooth Calipers
Bluetooth Caliper Components

- Scielex Bluetooth Caliper Adapter
- Mitutoyo Digimatic Calipers IP-67
Before & After Sending Length/Sex Measurements to On Deck Data app via Bluetooth Calipers:

Size measured by calipers (73.39 mm) is automatically rounded (73mm) and sent to the app.

Green Button = Male
Pressing the green button sends size/sex records to app.

Defaults to discarded because 73mm is < legal size.
Fishers fill data gaps for American lobster (*Homarus americanus*) and Jonah crab (*Cancer borealis*) in the Northeast USA

Anna Malek Mercer

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Annual Review of Marine Science

Partnering with Fishing Fleets to Monitor Ocean Conditions

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Next Steps

• Expand F/V participation and spatial coverage of Research Fleet
  • Northeast Canyons and Seamounts National Marine Monument
  • Gulf of Maine
• Extend Research Fleet to sustain biological time series
• Explore additional lobster parameters
  • Shell hardness stages, egg stages, etc.
• Expand Jonah crab data parameters
  • Disease, shell hardness stages, egg stages, etc.
• Explore ways to incorporate fishery independent sampling offshore
• Evolve On Deck Data and Ocean Temps apps to improve efficiency
• Pilot Bluetooth calipers for both inshore and offshore FVs
Fleet Testimonials:

“I think the Lobster Fleet approach is a very good approach, because it’s a big ocean, and we are out there every day, and we are seeing what is happening every day. So, with our gear all over the place, we are able to cover a lot of that ocean that scientists just aren't able to.”

– Greg Mataronas, F/V Cailyn Grace, Sakonnet Point, RI

“I've always thought there should be more research in offshore areas, anywhere outside state waters. A lot of the places I fish, I've always been pestering people to do that, and this is a chance to get involved in it. Almost everyone I know that is in the fishery, cares about it. Even guys like me, who are almost getting out. It's providing livelihood, it's putting my kids through college, and we want to see it healthy. So the more research the better. And who better to do it, than fishermen. We are already out there.”

– Mark Sweitzer, F/V Erika Knight, Point Judith, RI

“The CFRF gives us the ability to get this information to management. Through the Foundation we have a voice. Our data is backed up by scientists and managers. It gives us credibility. We have a mechanism and the tools to collect real time data and create change. That is the key to fisheries management.”

– Norbert Stamps, F/V Debbie Ann, Point Judith, RI
Thank you! Questions?

For more information please visit: www.cfrfoundation.org
Acknowledgements

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F/V Blue Moon - Newport, RI
F/V Catherine Ann - Newport, RI
F/V Cailyn Grace - Sakonnet Point, RI
F/V Direction - Fairhaven, MA
F/V Erica Knight - Point Judith, RI
F/V Excalibur - Newport, RI
F/V Freedom – Newport, RI
F/V Gladys Elaine - Newington, NH
F/V Karen Ann - Point Judith, RI
F/V Lady Clare - Point Judith, RI
F/V Miss Julie – Sandwich, MA
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