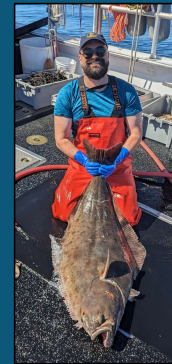


DMR Lobster Science Updates



DMR Lobster Science Updates 2024



Kathleen Reardon
Fishermen's Forum
3/1/25

Lobster Team Panel

Heather Glon	Robyn Linner
Robert Russell	Kristyn Kleman
Nathan Willse	Anna Dorrance



DMR Lobster Science Updates 2024

- 2024 Overview
- Landings
- Value
- Survey indices
 - Larval Survey
 - YOY/Settlement
 - Ventless Trap Survey
 - Inshore Trawl Survey
 - Sea Sampling
- What does it mean?

Kathleen Reardon

Fishermen's Forum

3/1/25

Lobster Team Panel

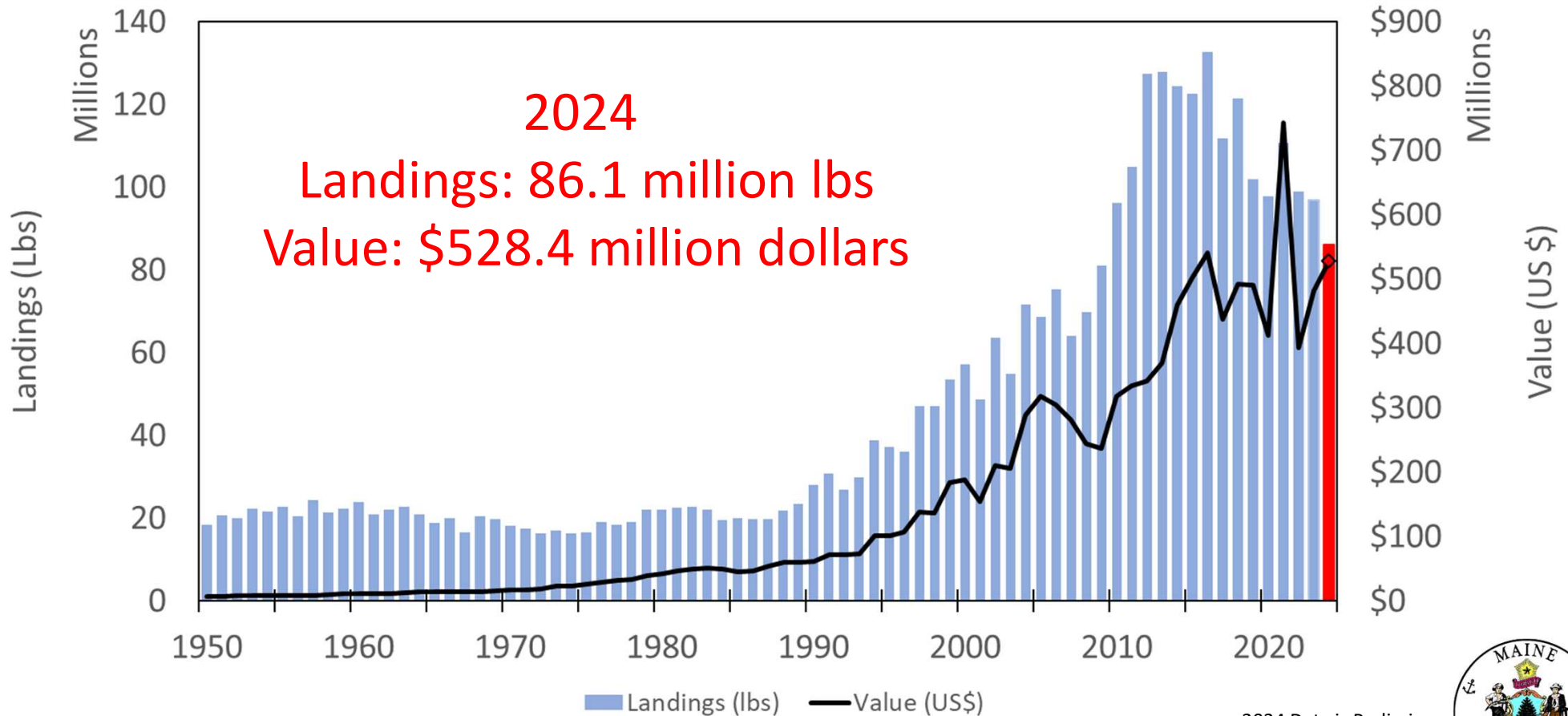
Heather Glon	Robyn Linner
Robert Russell	Kristyn Kleman
Nathan Willse	Anna Dorrance

2024 Lobster Season

- Operating costs continued to be high (bait, fuel, & crew)
- Bottom water cooler than recent years
- Lobsters were “later”
 - Hard lobsters hung around til mid fall
 - Price was “good”
- Catch was patchy, unpredictable
- Lots of Jonah crabs
- Continued changing fishery dynamics



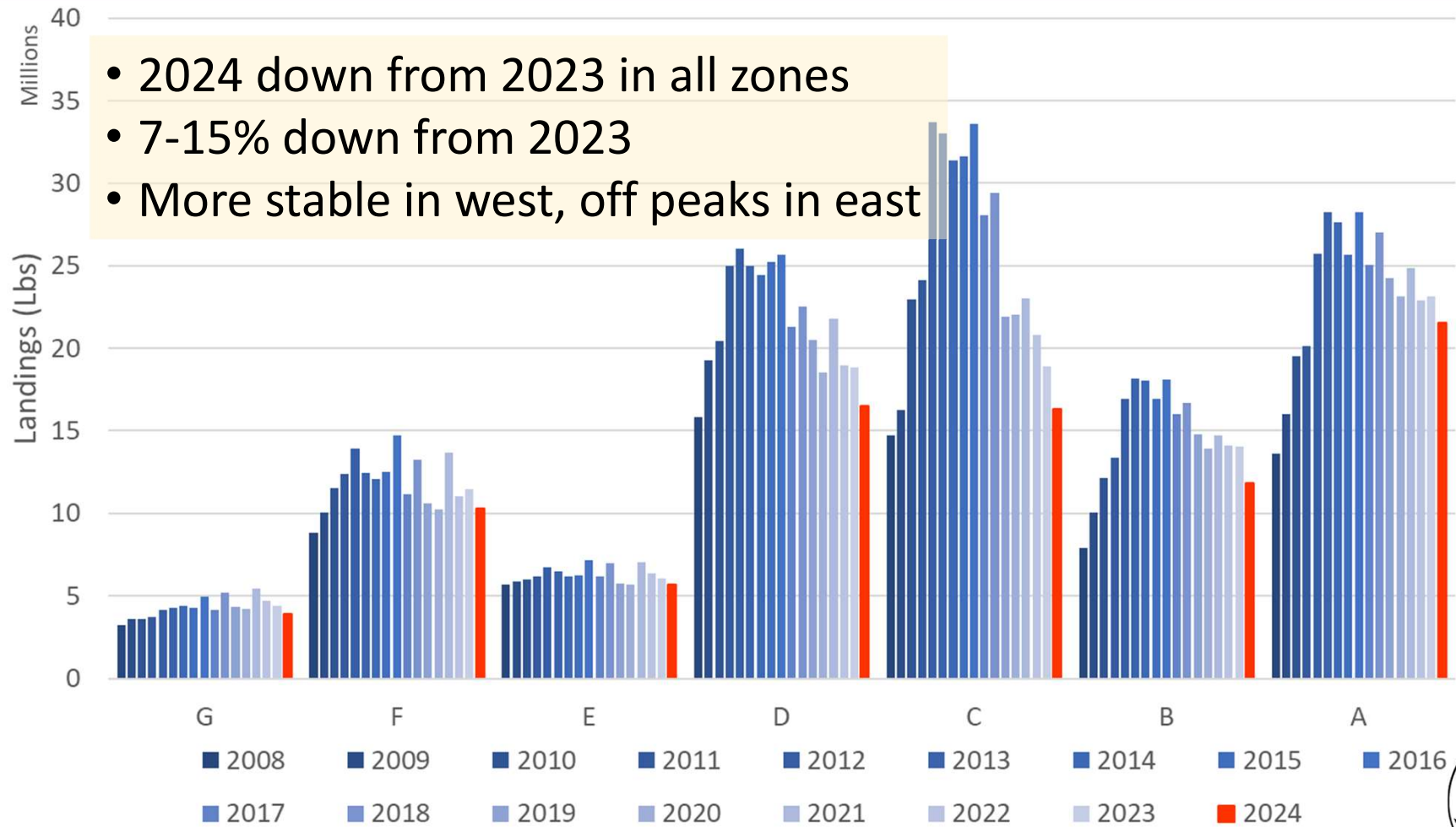
Maine Landings and Value



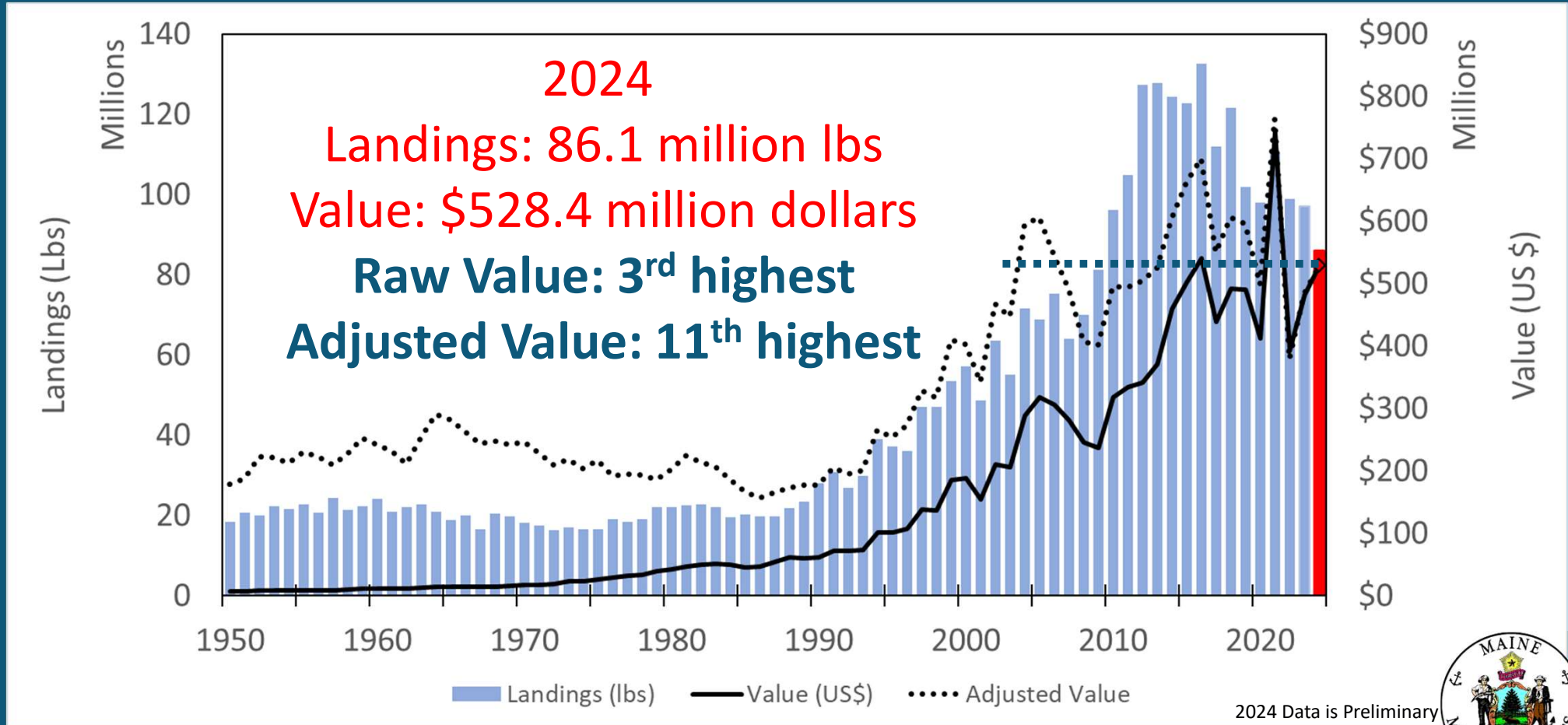
2024 Data is Preliminary



Landings by Zone



Maine Landings and Adjusted for Inflation Value



PPI Index: <https://fred.stlouisfed.org/series/WPU0223>, unprocessed and prepared seafood

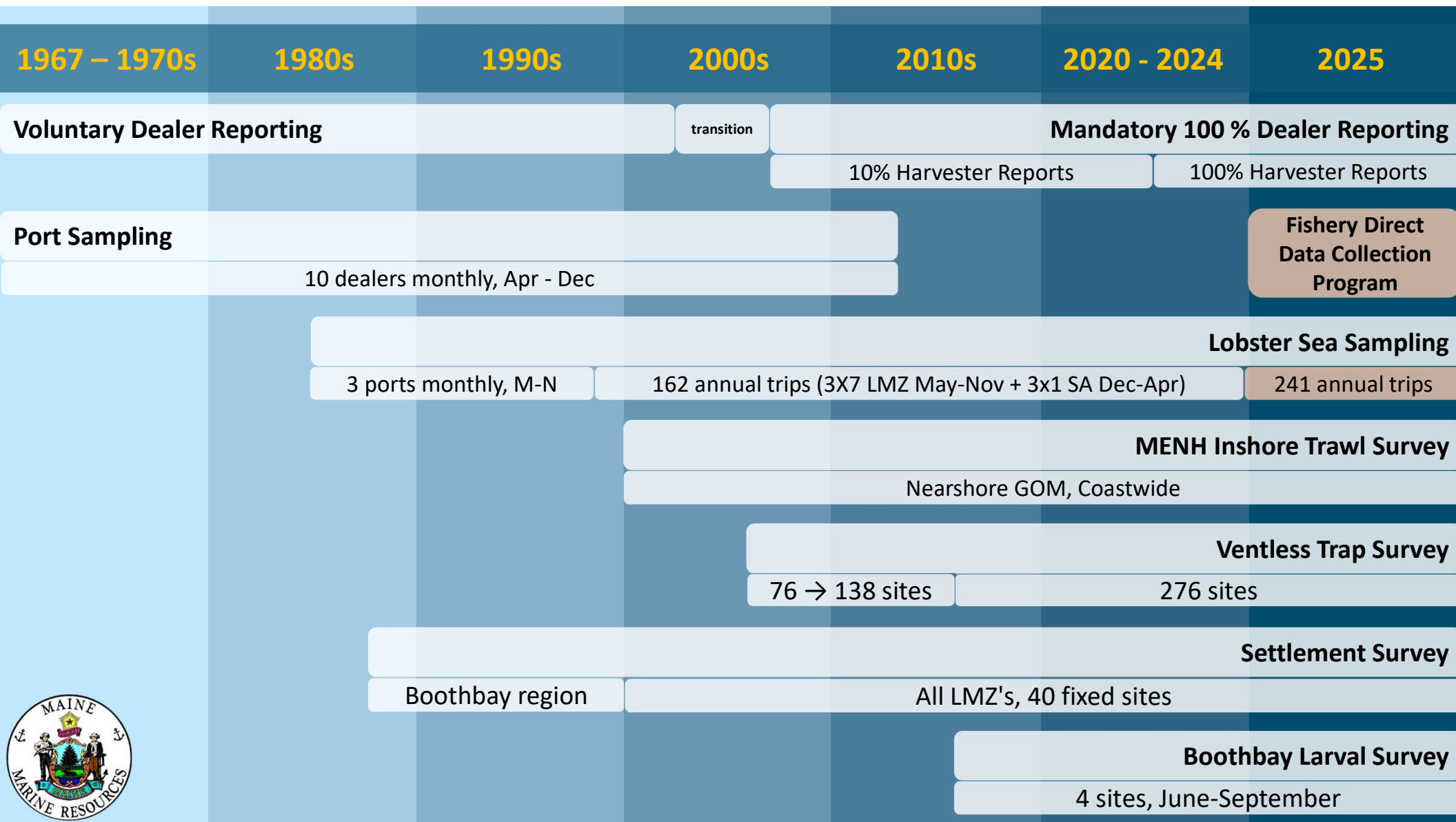




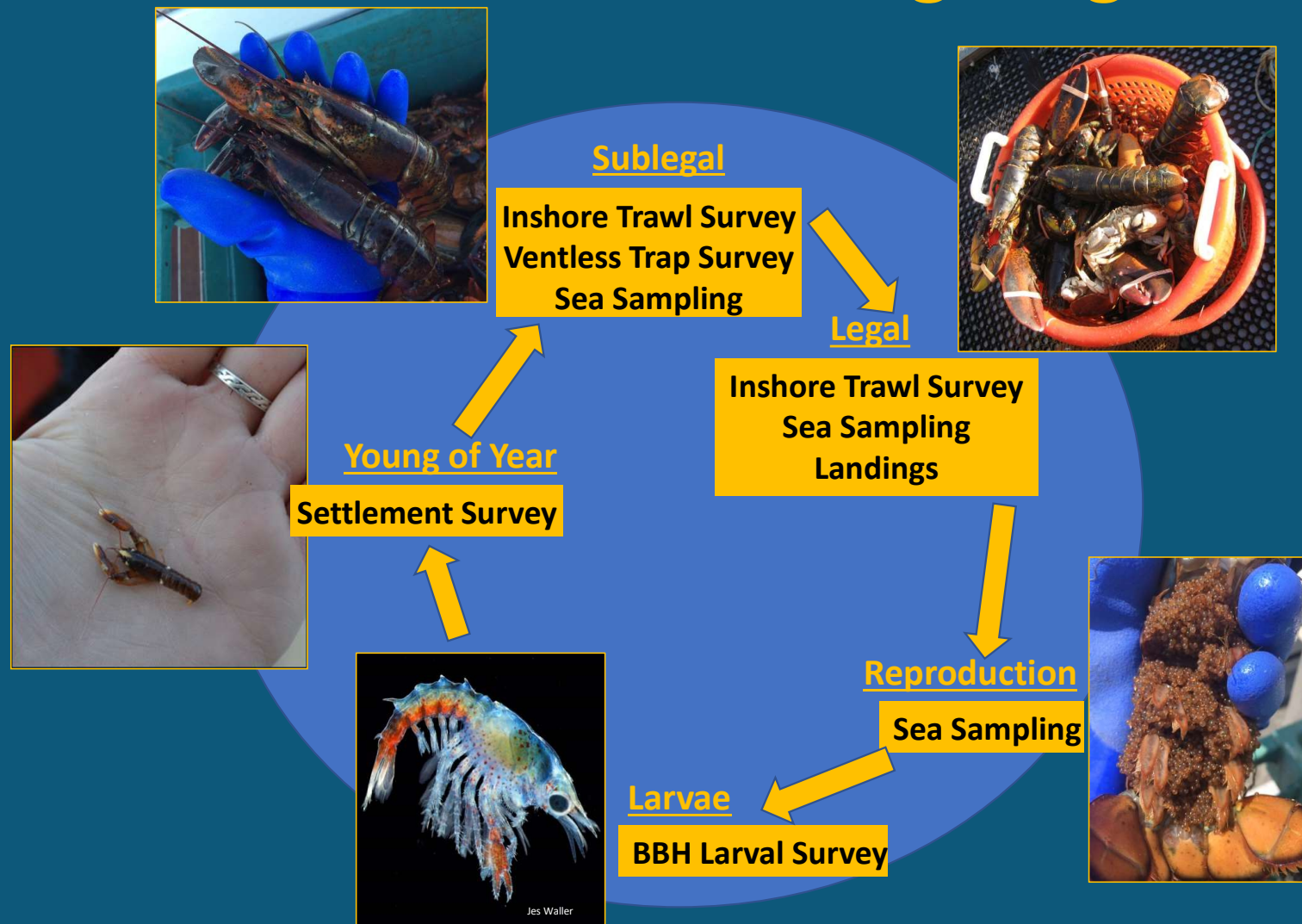
2024 landings with 2022 Prices?

- The fishery made \$528.4 million in 2024
 - Recent low prices: 2022
- Apply 2022 monthly adjusted prices to 2024 monthly landings
- The fishery would have made ~\$181 million LESS



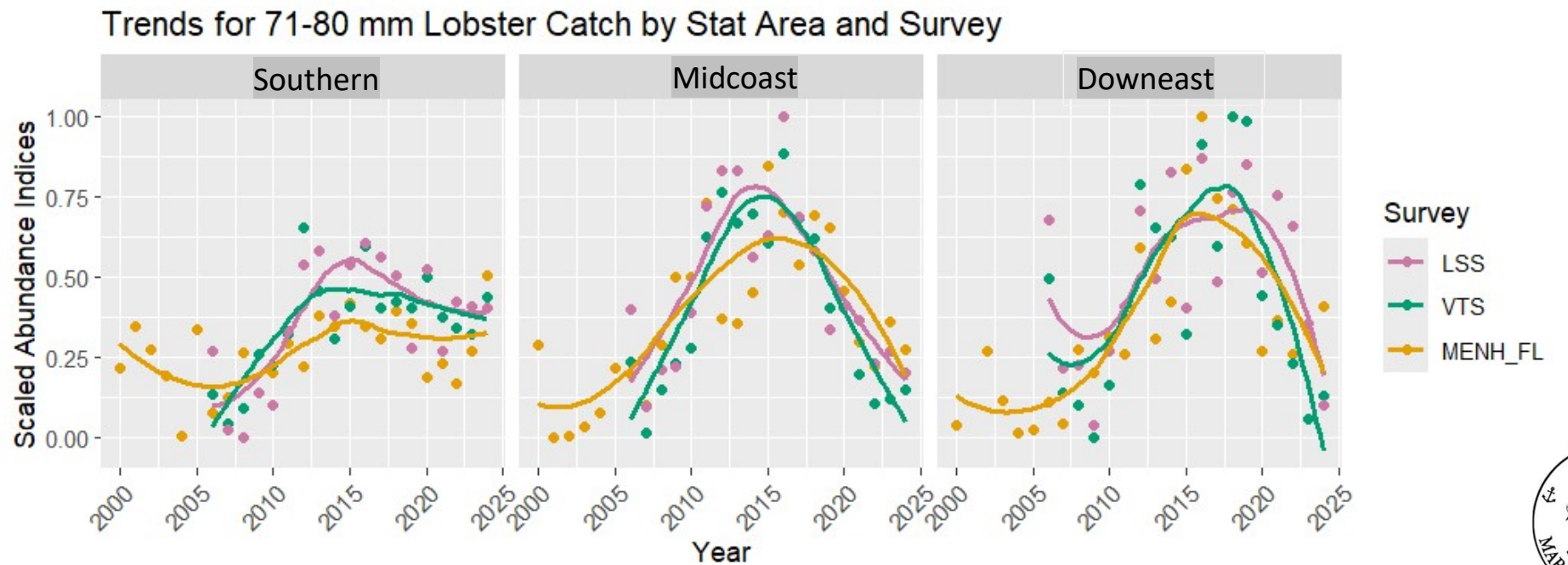


DMR Lobster Monitoring Programs



Take home message

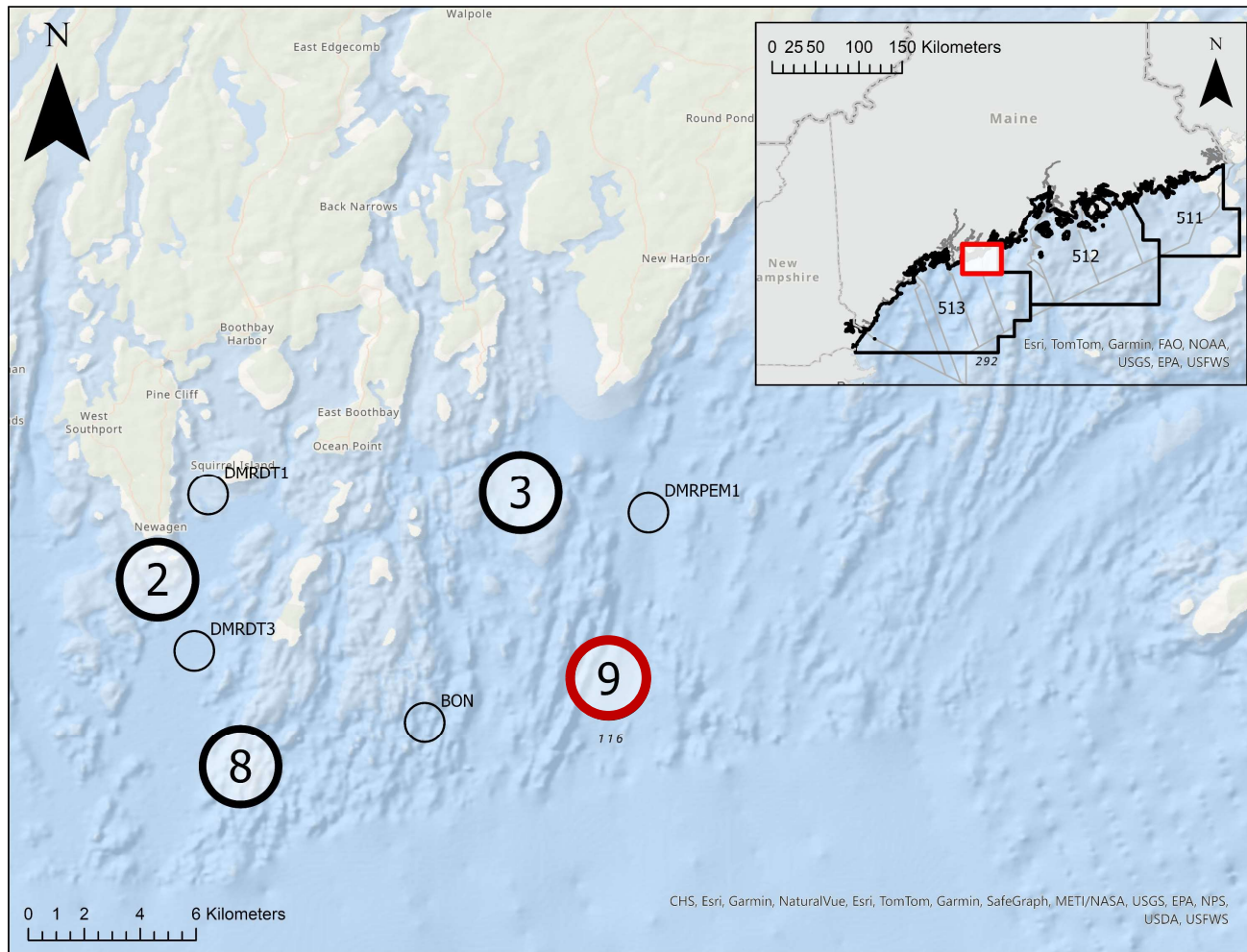
- ❖ Sea sampling, Ventless Trap, and Trawl Survey AGREE!
- ❖ Increased in mid 2010's then decline, esp Midcoast and Downeast
- ❖ Eastern areas are back to ~2009 levels while west is higher than before



Survey Updates



BBH Larval Survey: Heather Glon



Goal

- Document density and seasonal timing of lobster larvae (all stages)

Timing

- 2018 - Present
- June - September

Data collected

- All sites:
 - Larval counts & sizes
 - Temperature, salinity, pH, dissolved oxygen (2024 on)
- Red site only:
 - Zooplankton species & counts



Stage 4



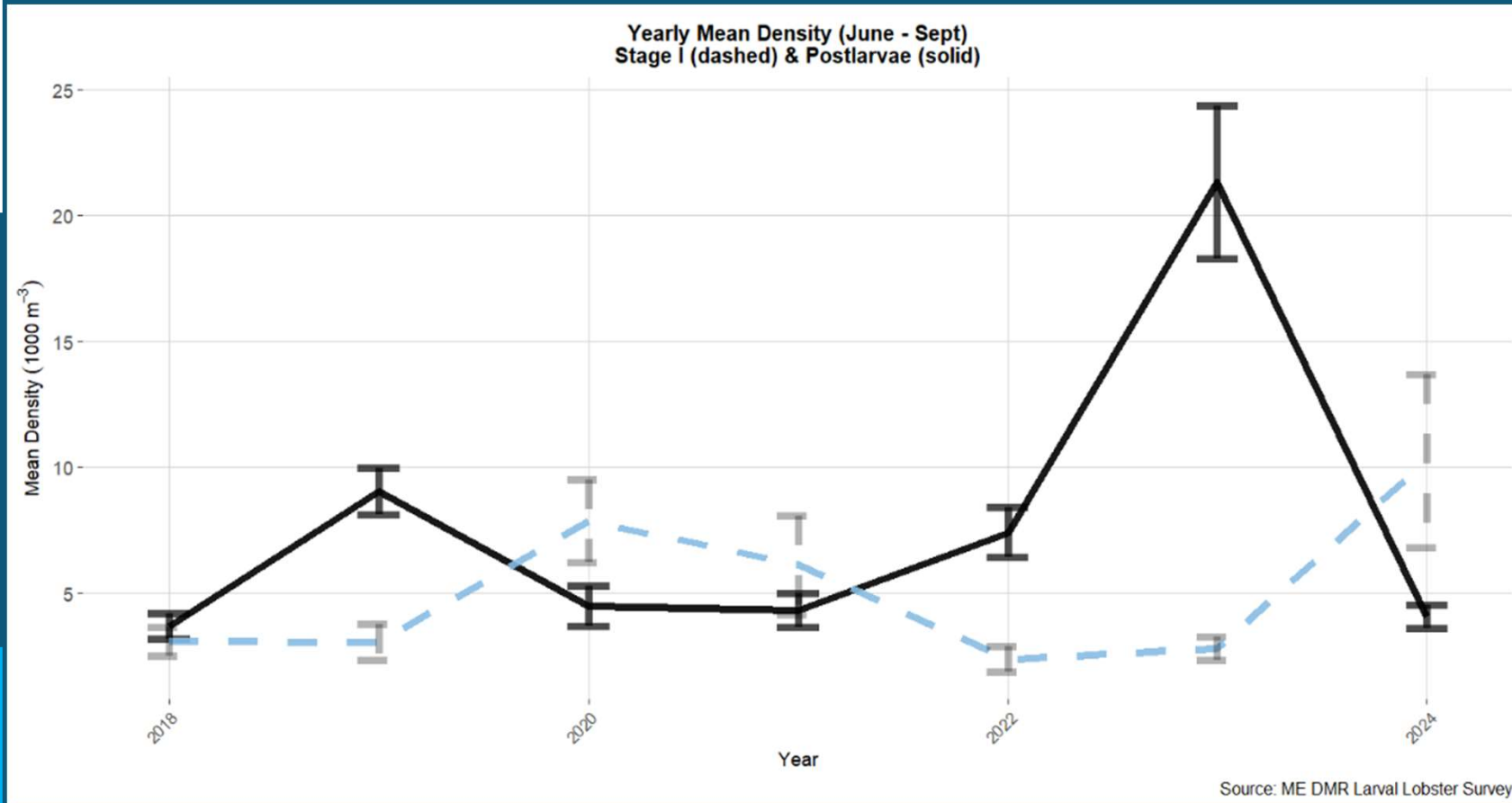
Stage 3



Stage 2



Stage 1

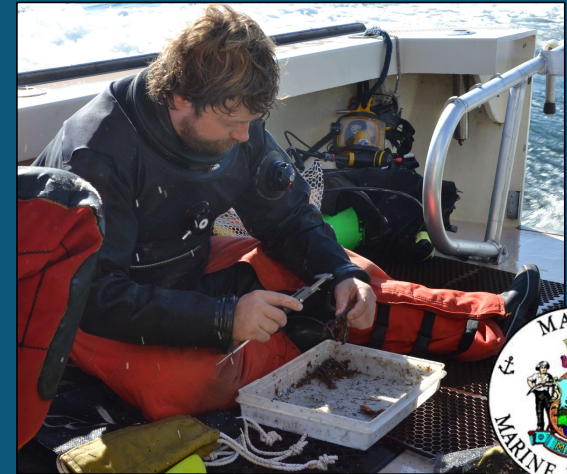
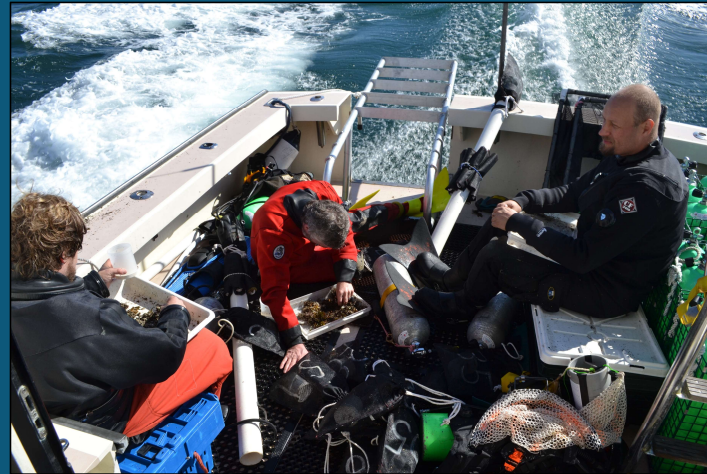


❖ Stage 4: back to previous levels

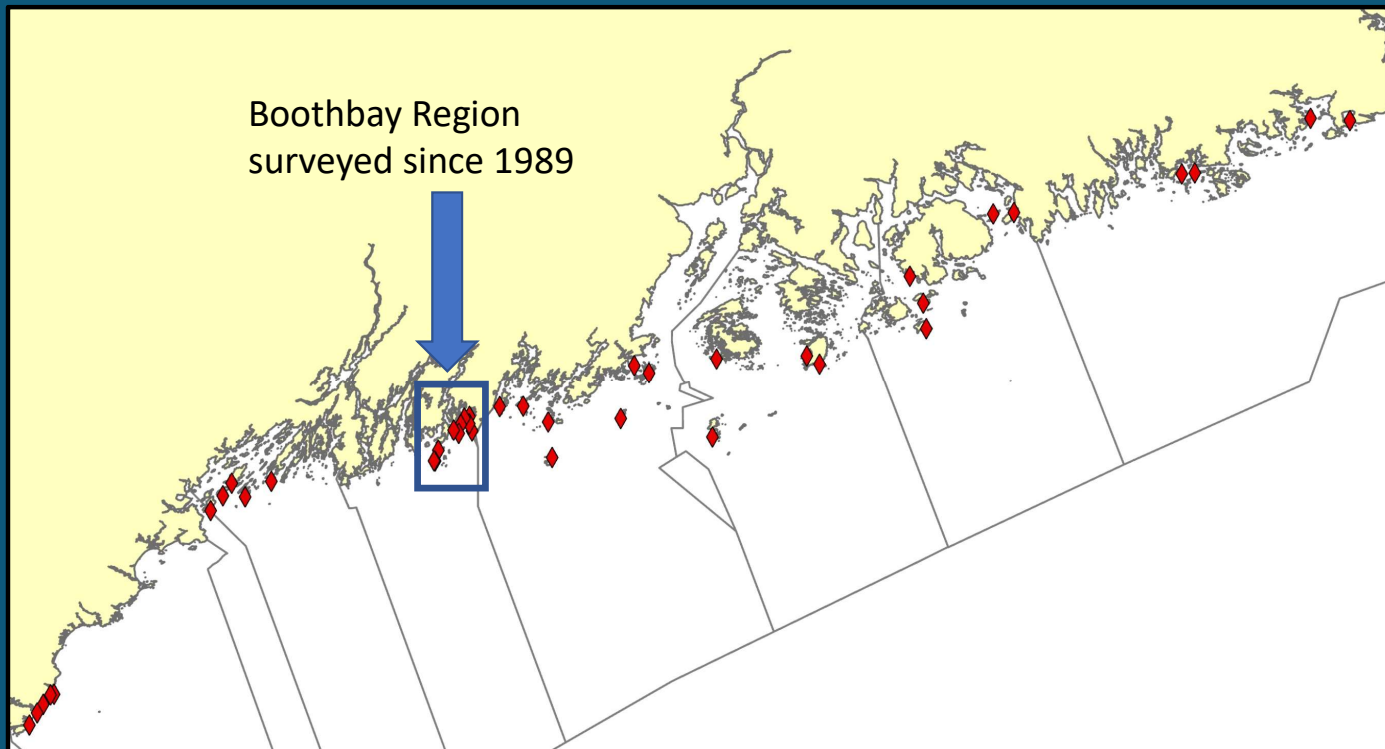


Lobster Settlement Survey: Robert Russell

- Fishery independent survey, 1-5 fathom
- Started in 1989 in Boothbay Region
 - DMR expanded to all zones in 2000
- Tracking young of year – newly settled lobsters
- Dive survey - Suction sampling methods
- Produces index of settlement



Lobster Settlement Survey: 1-5 fathom



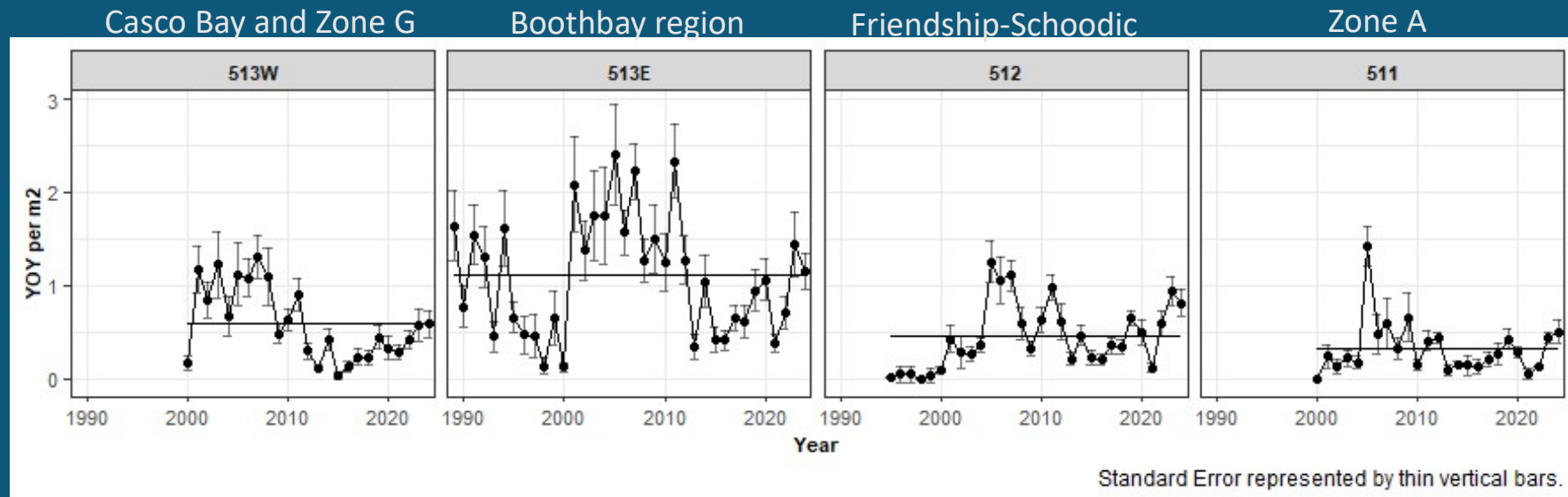
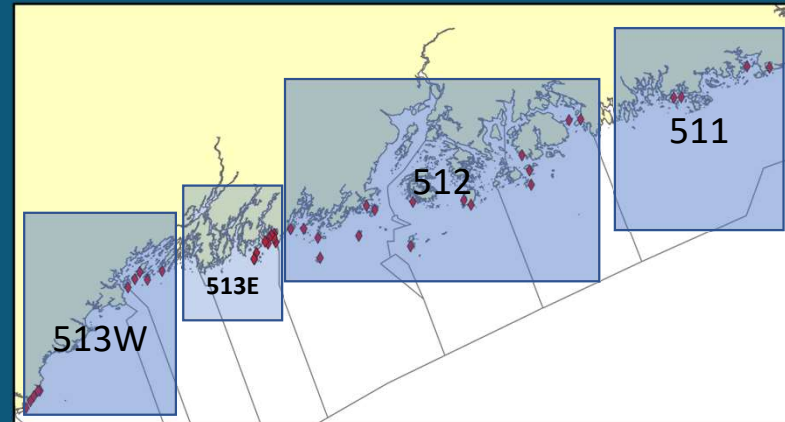
Since 2000,
minimum of 4 sites
in each lobster
management zone

Total of 40 sites
sampled by divers
annually



YOY Settlement

- ❖ Preliminary data for 2024!
- ❖ Lower levels ~2012-2022
- ❖ 2023 first year above time series averages coastwide since 2011
- ❖ 2024 point similar to 2023



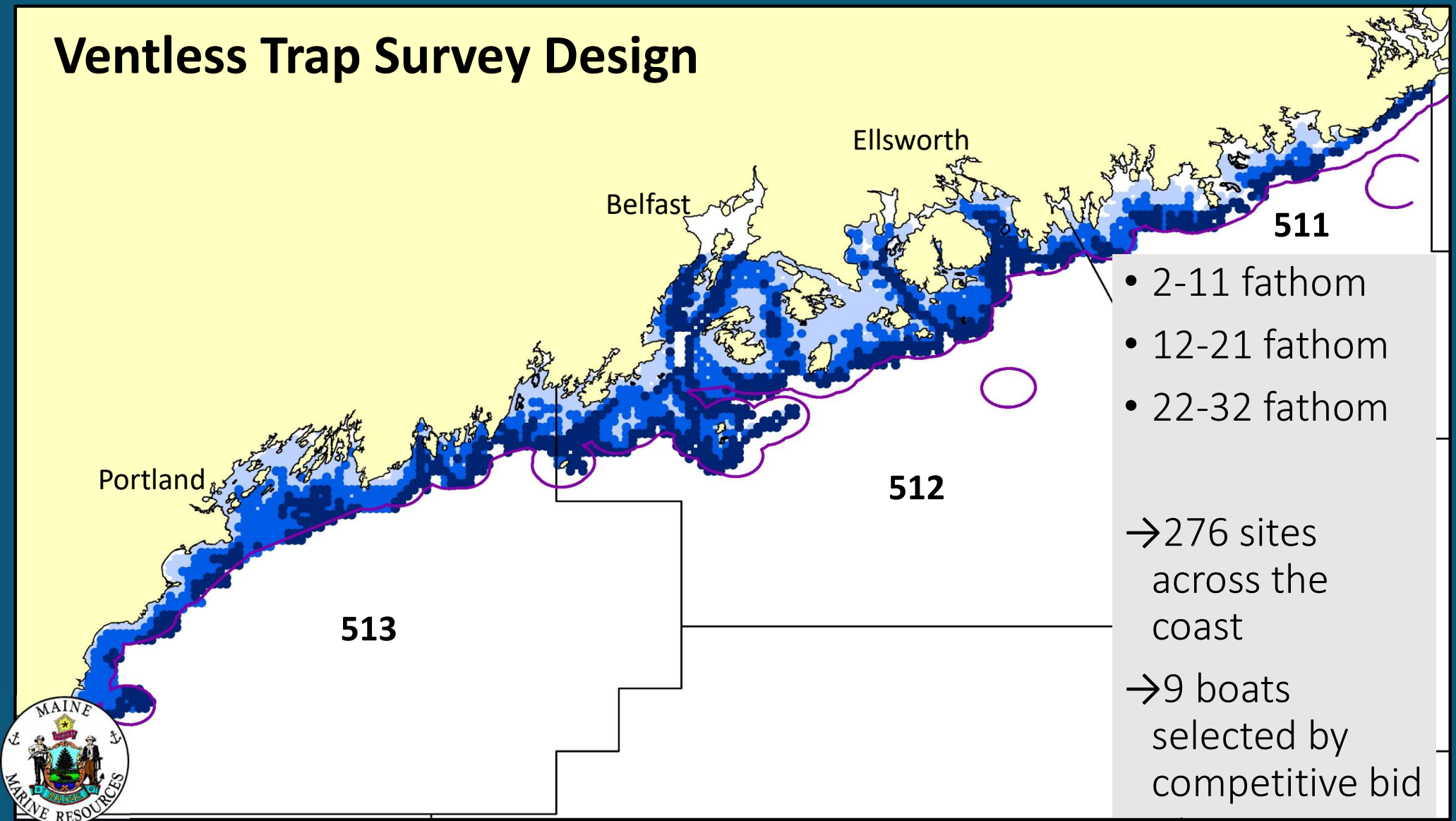


Ventless Trap Survey: Kristyn Kleman

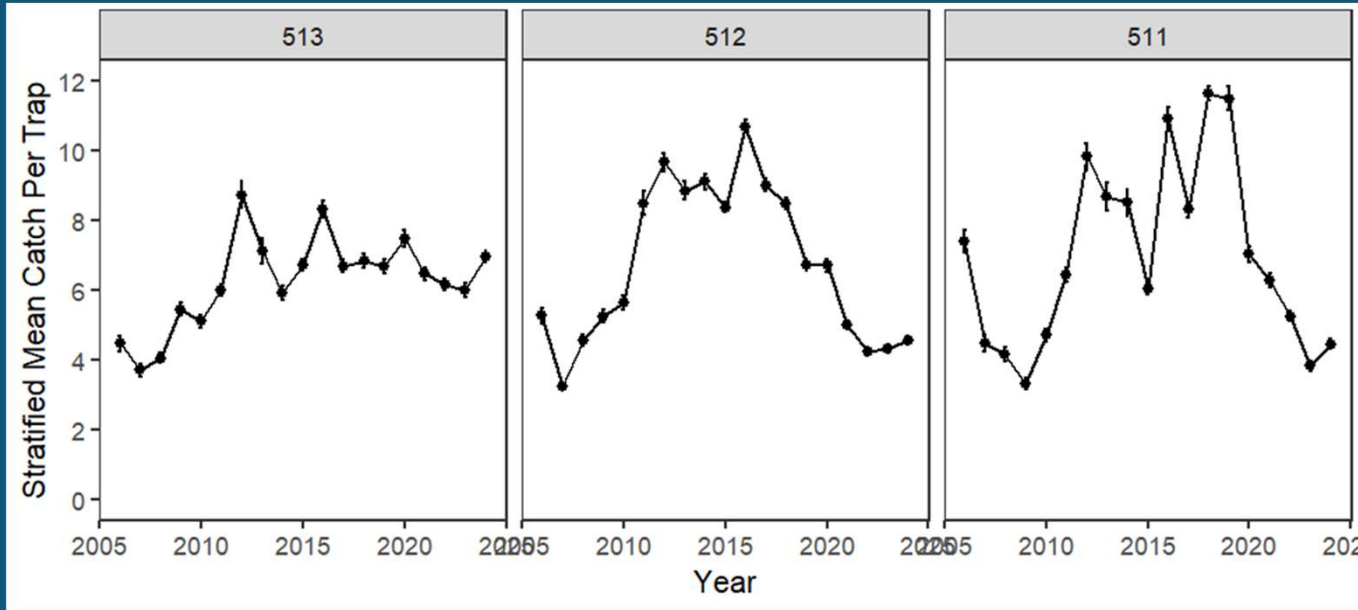
- Fishery independent survey, 2-32 fathom
- Started in 2006 – regional program RI-ME
- Targets juvenile lobsters (90% sublegal lobsters)
- June, July, & August
- Random stratified sites by depth and statistical area



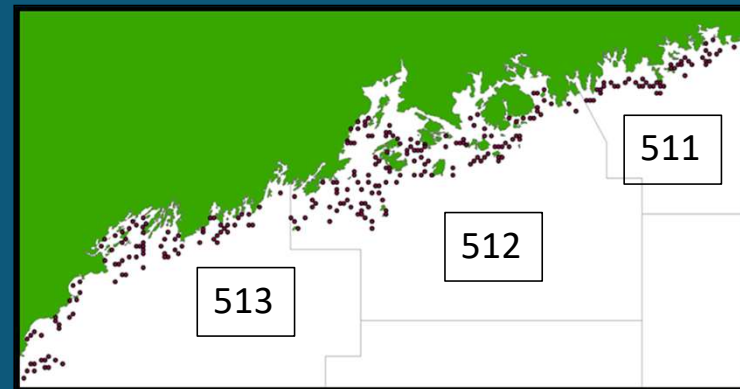
Ventless Trap Survey Design



Ventless Trap Survey: recruit (71-80mm) lobsters



- ❖ All areas ↑ in 2024
- ❖ Stable levels in west, higher than earliest years
- ❖ Back to early year's levels in 512 and 511

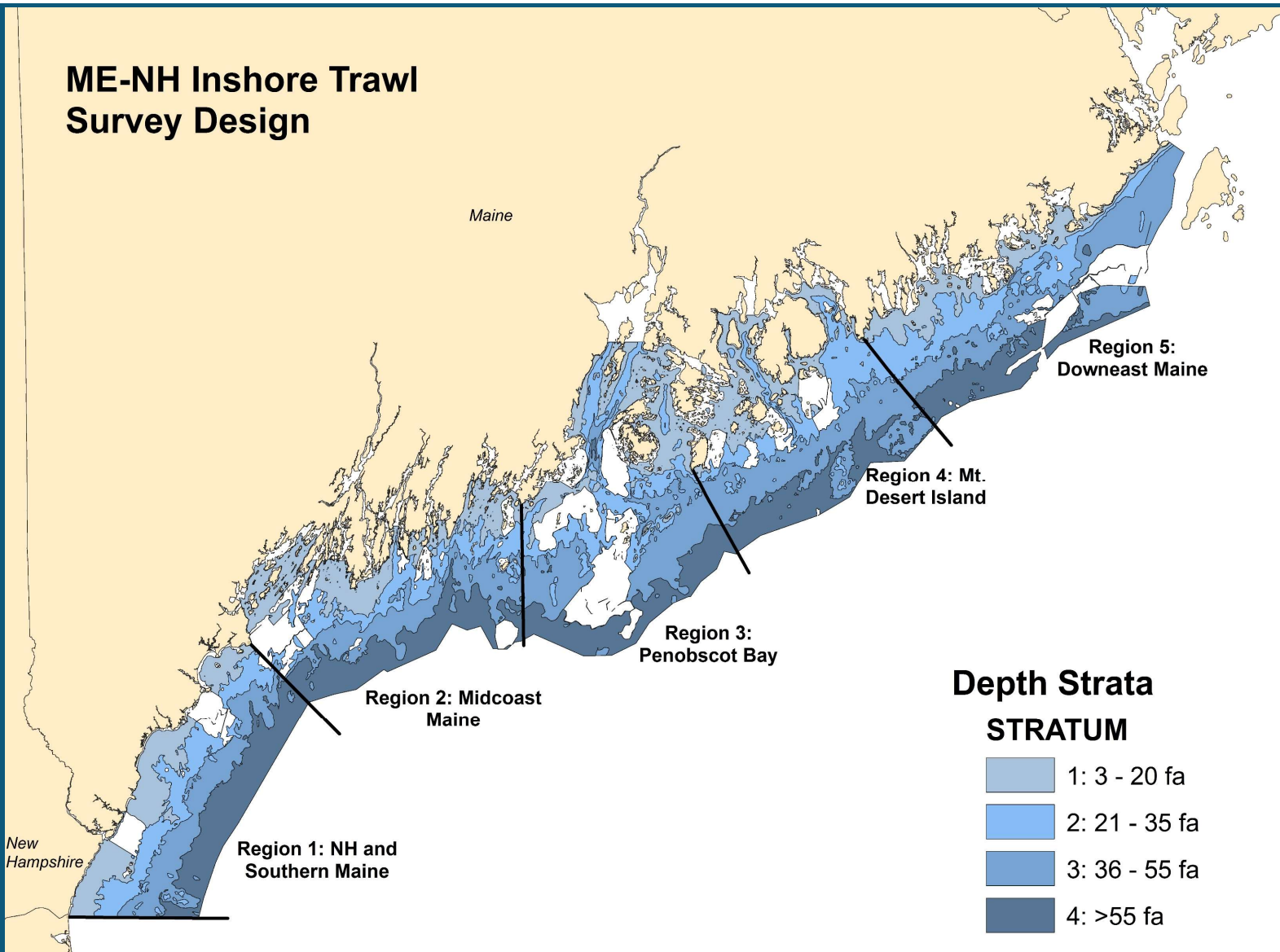


Maine-NH Inshore Trawl Survey: Robyn Linner

- Fishery independent survey
- 2000-current: Fall and Spring
- Multi-species survey with random stratified design with modified shrimp net to provide indices of abundance
- 120 tows per season, standard tow is 20 minutes at 2.5 knots



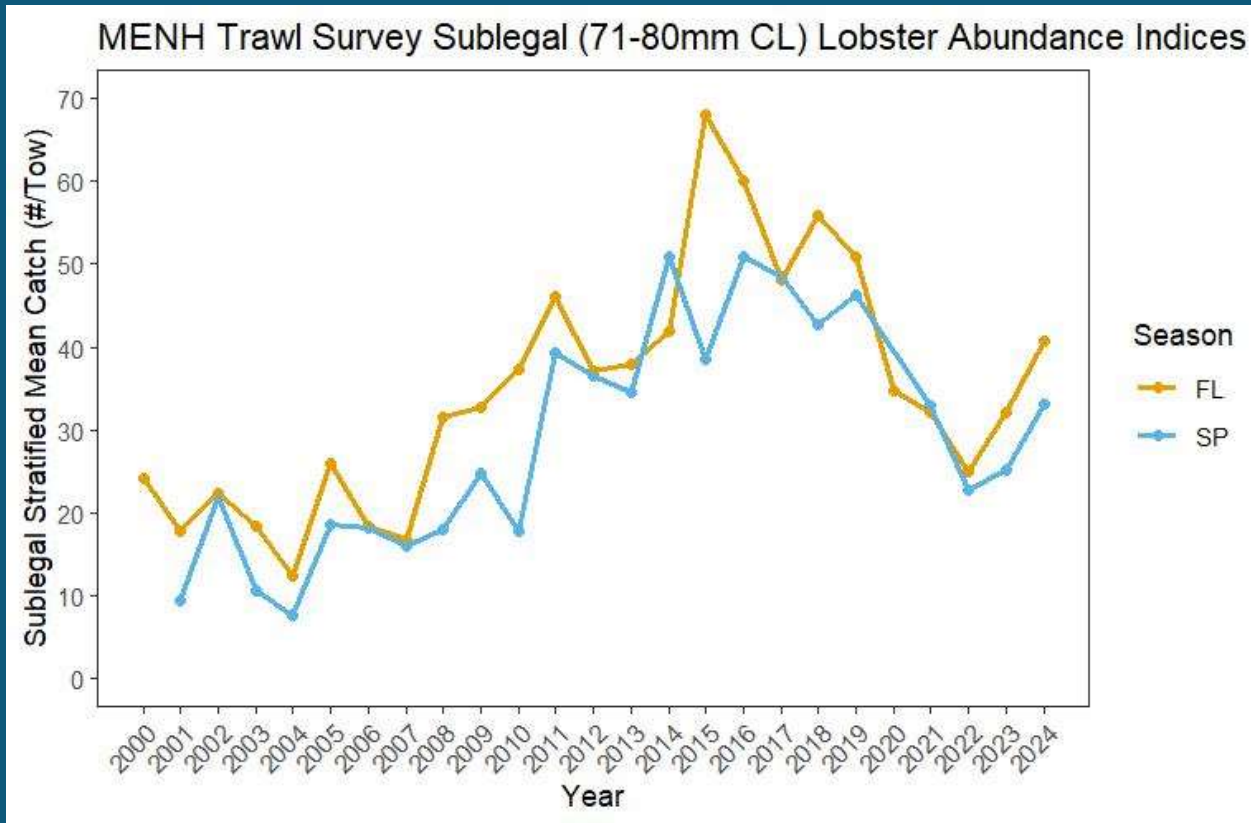
ME-NH Inshore Trawl Survey Design



- Up to 75 fathom
- Out to 12nm



Trawl Survey: Recruit (71-80mm) lobsters

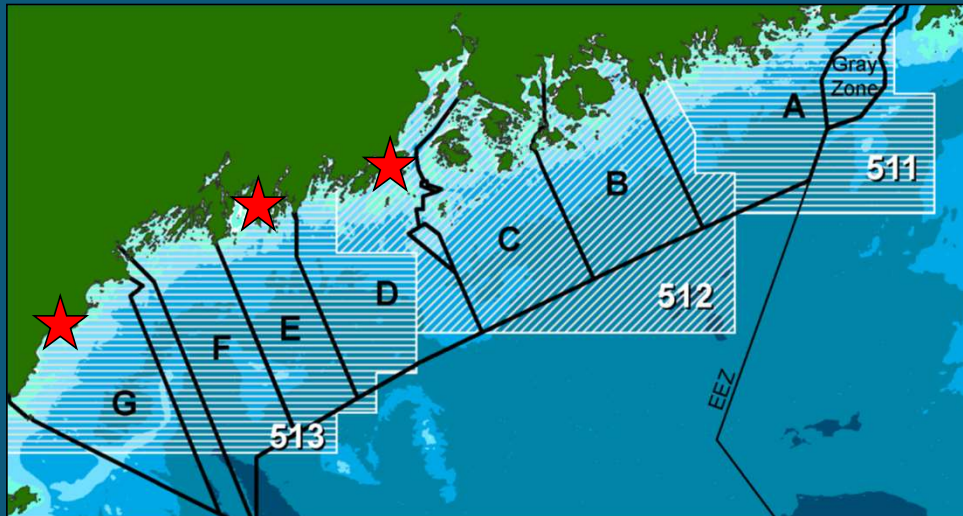


- ❖ Recruits ↑ until peaks in 2014/15
- ❖ ↓ since peak until 2022
- ❖ ↑ since 2022



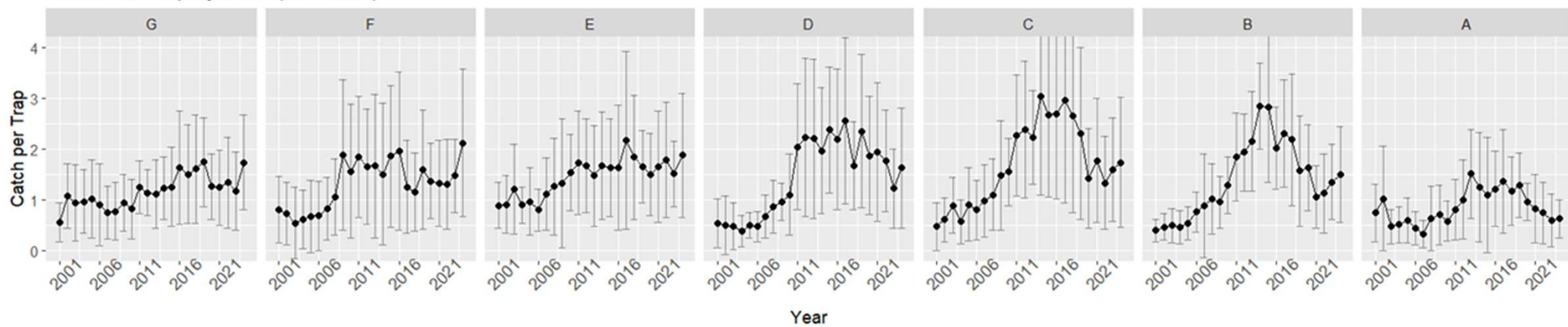
Commercial Sea Sampling: Kristyn Kleman

- Fishery Dependent Survey: commercial trips
- Objective: characterize commercial fishery and discarded catch
- Number of trips changed over time - stay tuned!
- Biological, effort, and trip information collected



Commercial Sea Sampling: Recruits

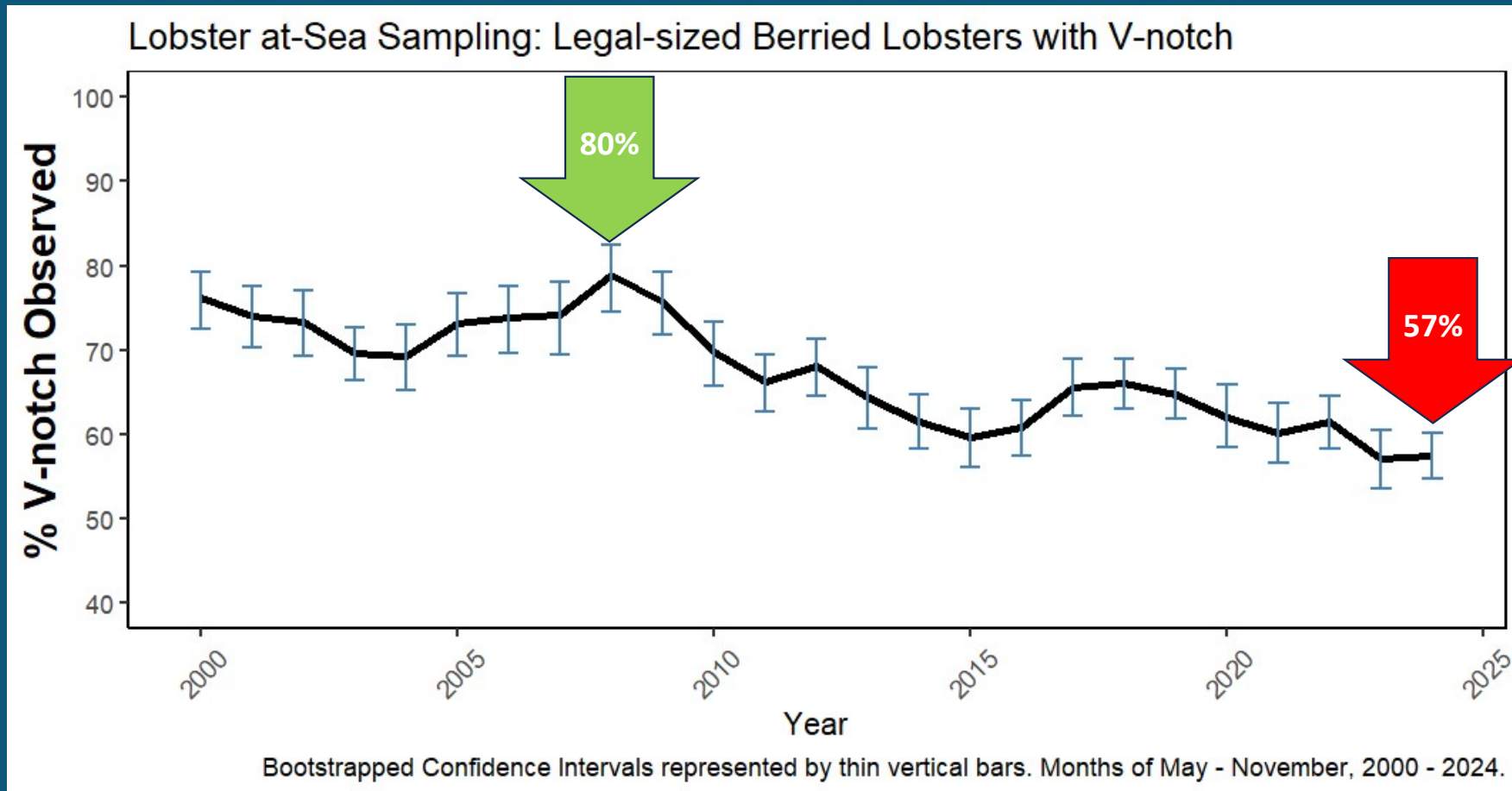
Catch Per Trap by Zone (71-80mm)



- ❖ Recruit catch increase in all areas in 2024
- ❖ Since peaks, declines in east to lower levels
- ❖ In west, more stability and 2024 levels similar to peaks



V-notch rates for legal sized eggers has ↓



Additional Analyses from LSS Data

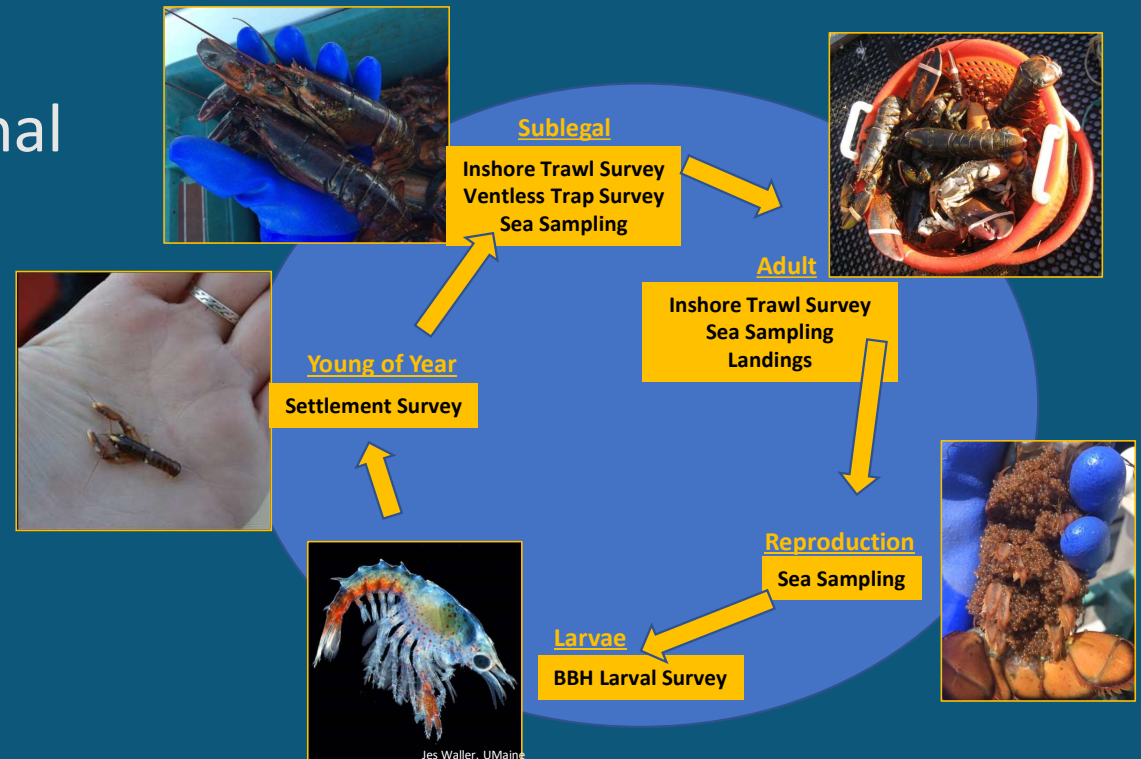
- ❖ Shell disease
- ❖ Egger catch per trap
- ❖ Egger size
- ❖ Vnotching rates by zone
- ❖ Other questions??



2024 Survey Summary

Surveys:

- ❖ Positive 2023 and 2024 signal in settlement surveys
- ❖ Agreement among recruit surveys
- ❖ Recruit surveys slightly improved from 2023
- ❖ More stability in west
- ❖ Back to 2010 levels in east
- ❖ Lower V-notch Rates





July 14, 2009

So, what does it all mean?

Thinking back 15 years...

Metrics

Landings

Trips

Active Licenses

Economics

Settlement Survey

Recruit Surveys

Fleet Composition

Location

2009

Positive

Stable

Stable

Recovering

Positive

Positive

Small/Mid/Large

70% state waters

Metrics

Landings

Trips

Active Licenses

Economics

Settlement Survey

Recruit Surveys

Fleet Composition

Location

2009

Positive

Stable

Stable

Recovering

Positive

Positive

Small/Mid/Large

70% state waters

2016

Peak

Peak

Peak

Positive

Low

Positive

Stable

Stable

Metrics

Landings

Trips

Active Licenses

Economics

Settlement Survey

Recruit Surveys

Fleet Composition

Location

2009

Positive

Stable

Stable

Recovering

Positive

Positive

Small/Mid/Large

70% state waters

2016

Peak

Peak

Peak

Positive

Low

Positive

Stable

Stable

2024

-35%

-25%

-20%

Concerning

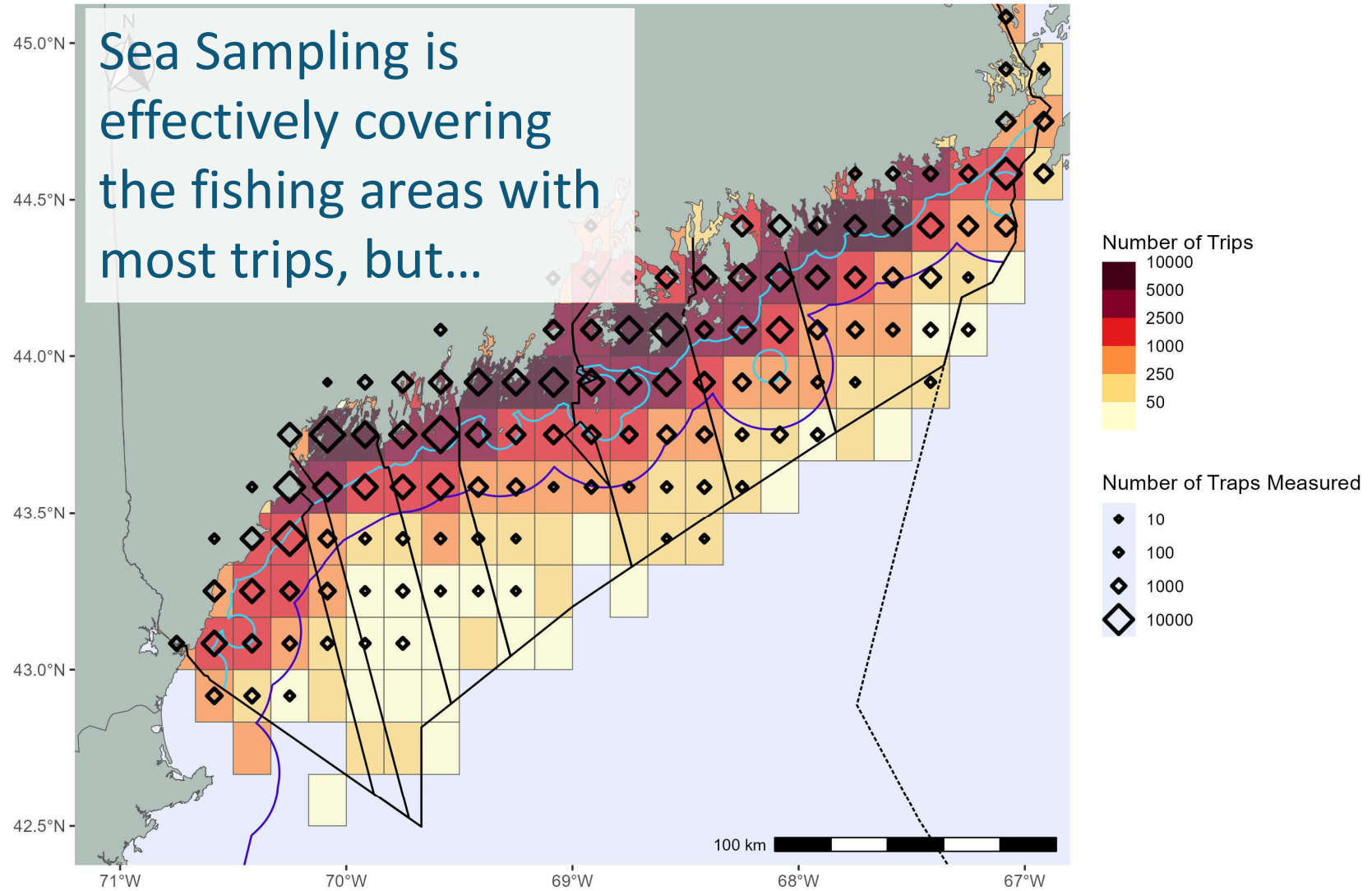
Recent positive

Decline/Mixed

Fewer small boats

Shifting deeper

2023 Trips Reporting and 2014-2023 Lobster Sea Sampling per 10 Minute Square



Number of trips per 10 arc-minute square only including squares with 3 or more unique harvesters reporting.

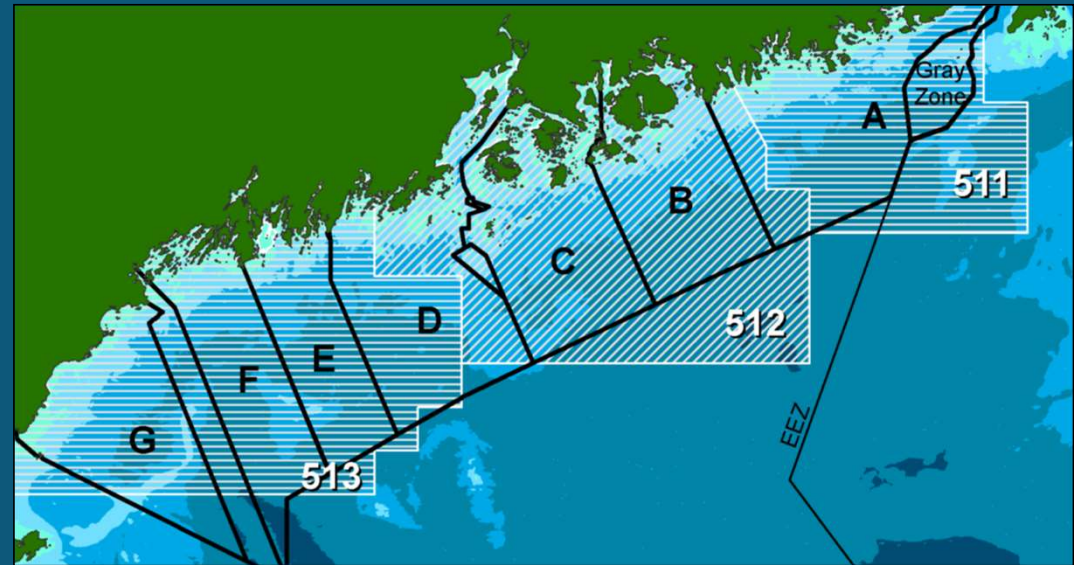




DMR Lobster Sea Sampling Expansion

- 1998-2024: 3 trips per month per zone, May – Nov
- 2006 – 2024: 1 trip per month per stat area, Dec – April

- 2025: 4 trips per month per zone 50/50 in state/federal waters, May –Nov
- 2025: 3 trips per month per stat area, Dec – Apr

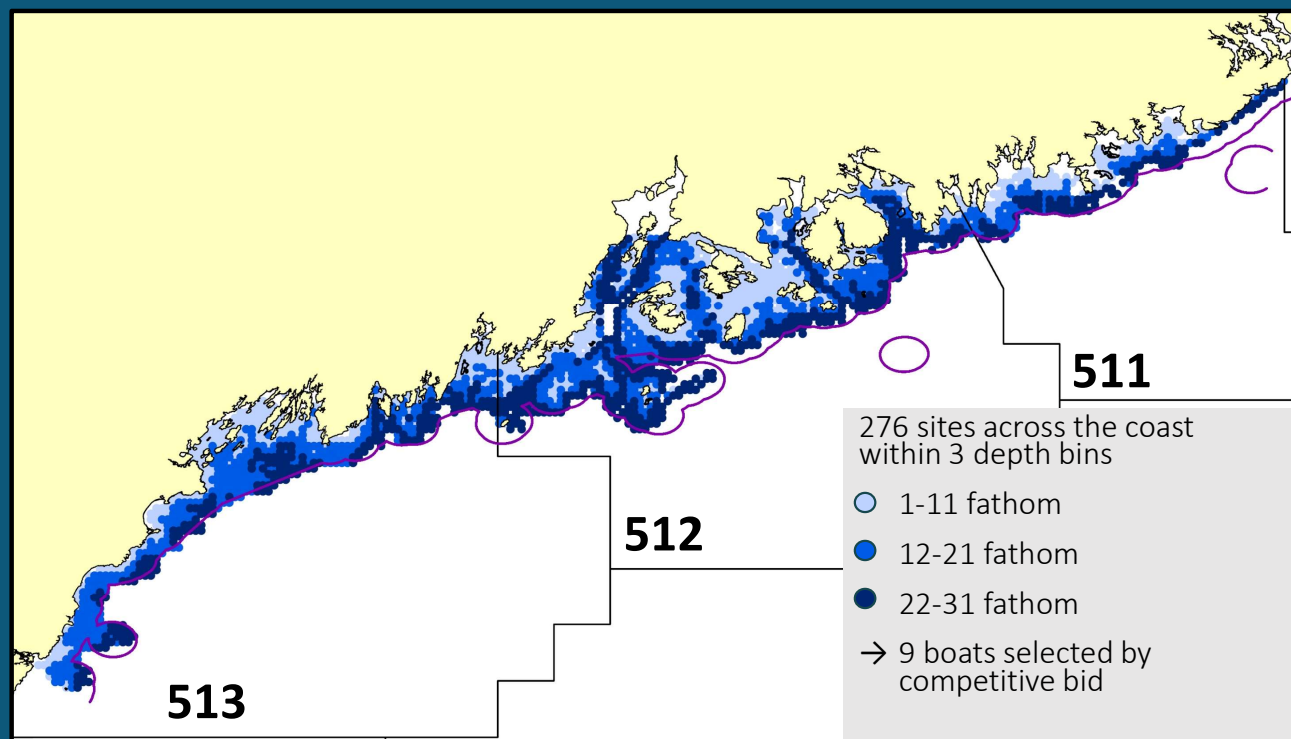


→162 to 241 trips a year



How to collect ventless trap data offshore?

- VTS is limited to state waters and <30fa
- Huge challenge to expand into federal waters due to:
 - Permitting
 - Cost
 - Logistics
- On to Plan B...

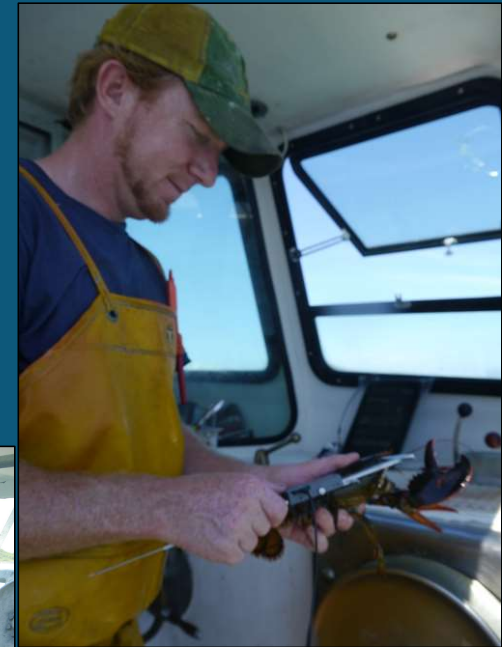


Expanding the survey to 70 fathom would be an increase in area from 1672 nm to 4635 nm. Estimated cost would be over \$4 million not including staff time.

CFRF Lobster and Jonah Crab Research Fleet

Data collected directly by fishermen
Primarily in Area 2 and Area 3

Sampled since 2013
Lobsters 246,387
Jonah Crab: 140,768



Maine's New Fishery Direct Data Project: Anna Dorrance and Peter Jordan

GOALS

- Collect data on lobsters in areas less sampled
- Get more lobster size data from deeper water
- Focus on federal waters

PLAN

- 10 vessels for Year 1 (2025)
- Both commercial and ventless traps
- Dedicated new DMR employee

Thank you to the Maine Research, Education, and Development Board for funding this project!



Current lobster research projects

- Postlarval tagging and growth through the 1st year
- Large lobster molting & growth
- Population genomics of lobsters in U.S.
- Impacts to patterns of shell disease
- Ecosystem regime shifts influencing lobster
- Social Indicators of the lobster fishery



GLOUCESTER MARINE
GENOMICS INSTITUTE

Bigelow | Laboratory for
Ocean Sciences



Gulf of Maine
Research Institute





ASMFC Lobster Stock Assessment is Ongoing

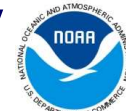
- ❖ Peer Review planned for August 2025
- ❖ Presented to ASMFC Board planned for October 2025
- ❖ Reference Points
 - 2020 assessment limit: early 2000's abundance, ~55 million lbs





DMR Ventless Lobster Trap Study

Collaborative Fisheries Research



Study Goal

The Ventless Lobster Trap Study, conducted by the Maine Department of Marine Resources (DMR) every year from June to August since 2006, is a collaborative research effort between industry and scientists in which juvenile lobster data are collected to be used in the stock assessment.

Project Objectives

- 1) Characterize juvenile lobster relative abundance & size-distribution.
- 2) Determine which environmental factors may influence lobster distribution.
- 3) Promote collaboration between fishermen and DMR scientists.
- 4) Encourage industry participation in the lobster stock assessment process.

Study Design

The Gulf of Maine is divided into three federal statistical areas. Sites are randomly selected in each area and 3 ventless traps will be deployed at each of the 276 total sites. Survey gear is tended by contracted lobstermen who are selected by competitive bid. All survey gear will have bright orange poly buoys marked with DMR contact information. This is a fishery independent study and DMR staff will be onboard each trip to measure lobsters. All lobsters will be discarded.

For more info: <http://www.maine.gov/dmr/about/rfps.html>

Questions? Contact:

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Survey Coordinator
Kristyn.Kleman@Maine.gov
Cell: (207) 350-7350

Kathleen Reardon
Senior Lobster Biologist
Kathleen.Reardon@Maine.gov
Cell: (207) 350-7440



A research collaboration between DMR and GOMLF

Contracted Boats



**Canadian Border
– Addison**
Capt Jordan Drouin
F/V Devocean



N. Penobscot Bay
Capt Travis Otis
F/V First Team



Addison – MDI



S. Penobscot Bay
Capt Brandon Bezio
F/V Chum Again



**MDI – Isle au
Haut**
Capt Nate Snow
F/V More Miss
Chif



Muscongus Bay
Capt Mike Dawson
F/V Lisabeth Ann



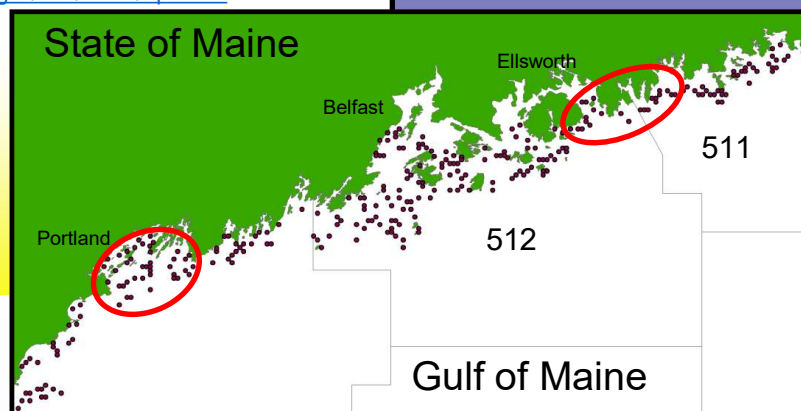
**Pemaquid –
Casco Bay**
Capt Jim Barclay
F/V Lina Rose



Casco Bay



**Cape Elizabeth –
NH Border**
Capt Sam Sewall
F/V Renegade



Session Panel

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robyn.linner@maine.gov

anna.n.dorrance@maine.gov

nathan.willse@maine.gov



**Thank you to all participating fishermen:
we could not collect these data without you!**