American Lobster
Stock Assessment Progress Update

American Lobster Management Board

August 6, 2024

Assessment Timeline

- Data Workshop: February 15, 26-27 (virtual)
- Assessment Workshop 1: July 22-24 in New Bedford, MA

  *Periodic webinars and bi-weekly modeler calls between workshops

- Assessment Workshop 2: October 2024
- Peer Review Workshop: May 2025
- Present Assessment and Peer Review Reports to the Board: August 2025

Assessment Workshop 1

- Development of continuity models
- Growth modeling
- Environmental driver data and analyses
- Advancements to continuity models
- Alternative index of abundance development
- Reviewed remaining timeline
  - Slow access to confidential data for external collaborators
  - 2023 data not complete until around time of final workshop
  - SAS recommends extending timeline one Commission meeting cycle
  - Syncs timeline of completion with 2020 benchmark assessment

Remaining Assessment Timeline

- Data Workshop: February 15, 26-27 (virtual)
- Assessment Workshop 1: July 22-24 in New Bedford, MA
- Assessment Workshop 2: ~~October 2024~~ February 2025
- Peer Review Workshop: ~~May 2025~~ August 2025
- Present Assessment and Peer Review Reports to the Board: ~~August 2025~~ October 2025

Questions?

American Lobster
Plan Development Team Report

August 2024

Background

- 2023 NOAA interim final rule to implement measures from Addenda XXI and XXII (2013)
  - Aggregate ownership caps in Lobster Conservation Management Areas (LCMAs) 2 and 3
  - Maximum trap cap reduction in LCMA 3
- Measures intended to scale the Southern New England (SNE) fishery to the diminished size of the stock
  - Reduce trap allocation by at least 25% over 5-10 years
- Concerns that delay in implementation allowed for significant changes in the fishery

Background

- Board Task:
  - *Move to have the Plan Development Team review the conservation measures originally set in Addenda XXI and XXII and make recommendations for alternate measures to achieve those reductions inclusive of the Lobster Conservation Management Team (LCMT) recommendations by the ASMFC Spring Meeting.*

PDT Report

- Analysis of Changes in Lobster Fishery
  - Lobster permits issued and location
  - Trap allocations
  - Maximum traps fished
  - Latent traps
  - Trips and landings
  - Jonah crab fishery
- LCMT Input
- Conclusions / Management Measures

LOBSTER CONSERVATION MANAGEMENT TEAM 3 MEETING REPORT

PDT ANALYSIS

Permits Issued and Location

- Federal LCMA 2 Permits by State

Year	ME	NH	MA	RI	CT	NY	NJ	VA	NC	Total
2014	7	7	130	130	19	20	27	1	2	343
2015	2	0	60	93	7	2	2	0	0	166
2016	3	0	63	89	7	2	1	0	0	165
2017	0	0	59	83	5	2	1	0	0	150
2017	0	0	58	81	6	2	1	0	0	148
2019	0	0	58	76	5	2	1	0	0	142
2020	1	0	60	78	3	2	1	0	0	145
2021	1	0	61	73	4	3	1	0	0	143
2022	2	0	61	69	4	5	1	0	0	142
2023	4	0	50	67	4	7	1	0	0	133
% Change	-43%	-100%	-62%	-48%	-79%	-65%	-96%	-100%	-100%	-61%

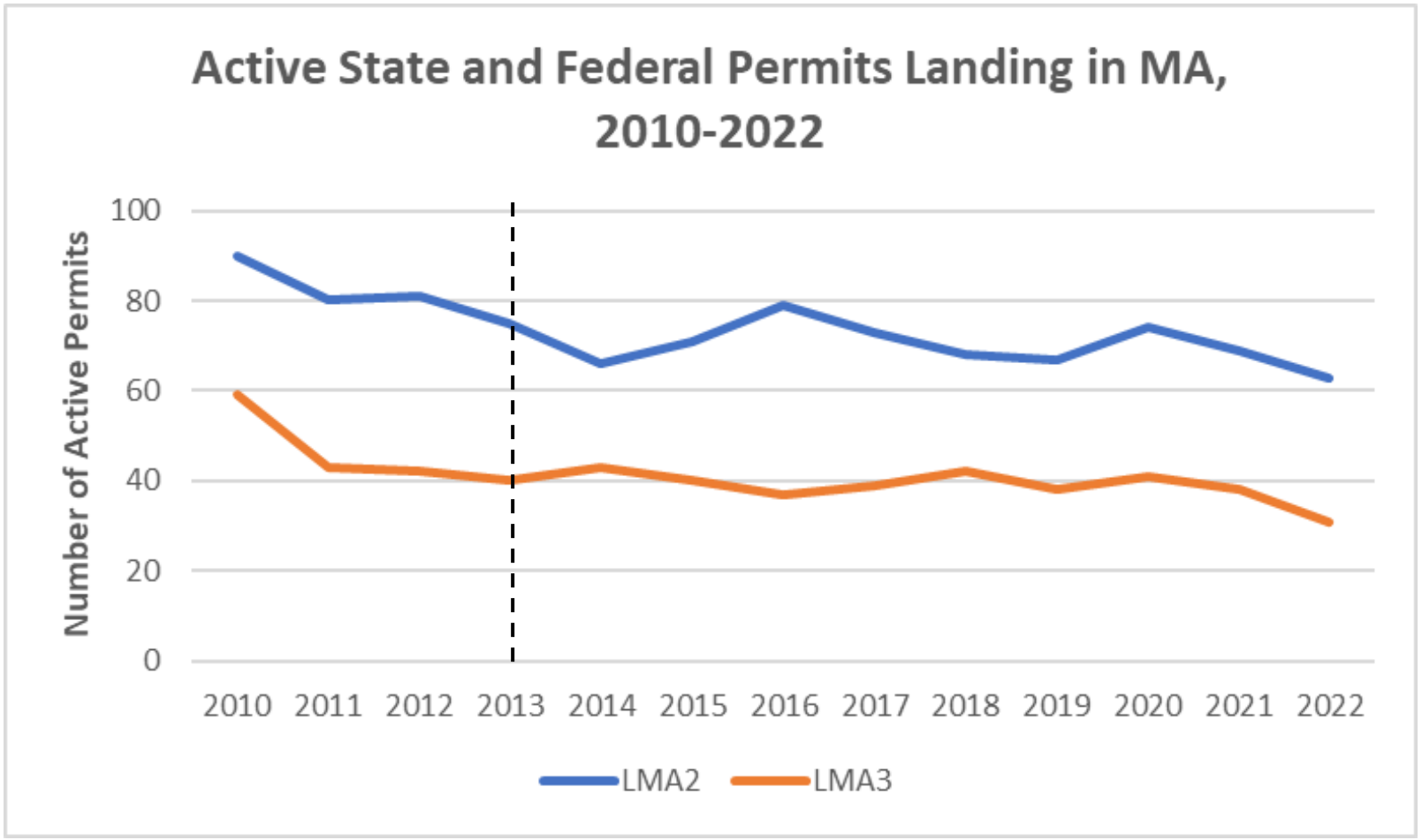
Permits Issued and Location

- Federal LCMA 3 Permits by State

Year	ME	NH	MA	RI	NY	NJ	DE	MD	VA	Total
2014	4	16	37	33	6	6	1	1	1	105
2015	3	18	39	29	5	4	1	0	1	100
2016	2	20	37	28	5	5	0	0	1	98
2017	2	18	37	26	4	6	0	0	1	94
2018	3	19	36	25	3	4	0	0	1	91
2019	2	21	32	25	3	4	0	0	1	88
2020	1	22	34	21	3	4	0	0	2	87
2021	0	17	33	17	3	5	0	0	2	77
2022	2	16	33	18	2	5	0	0	0	76
2023	1	17	34	17	2	5	0	0	0	76
% Change	-75%	6%	-8%	-48%	-67%	-17%	-100%	-100%	-100%	-28%

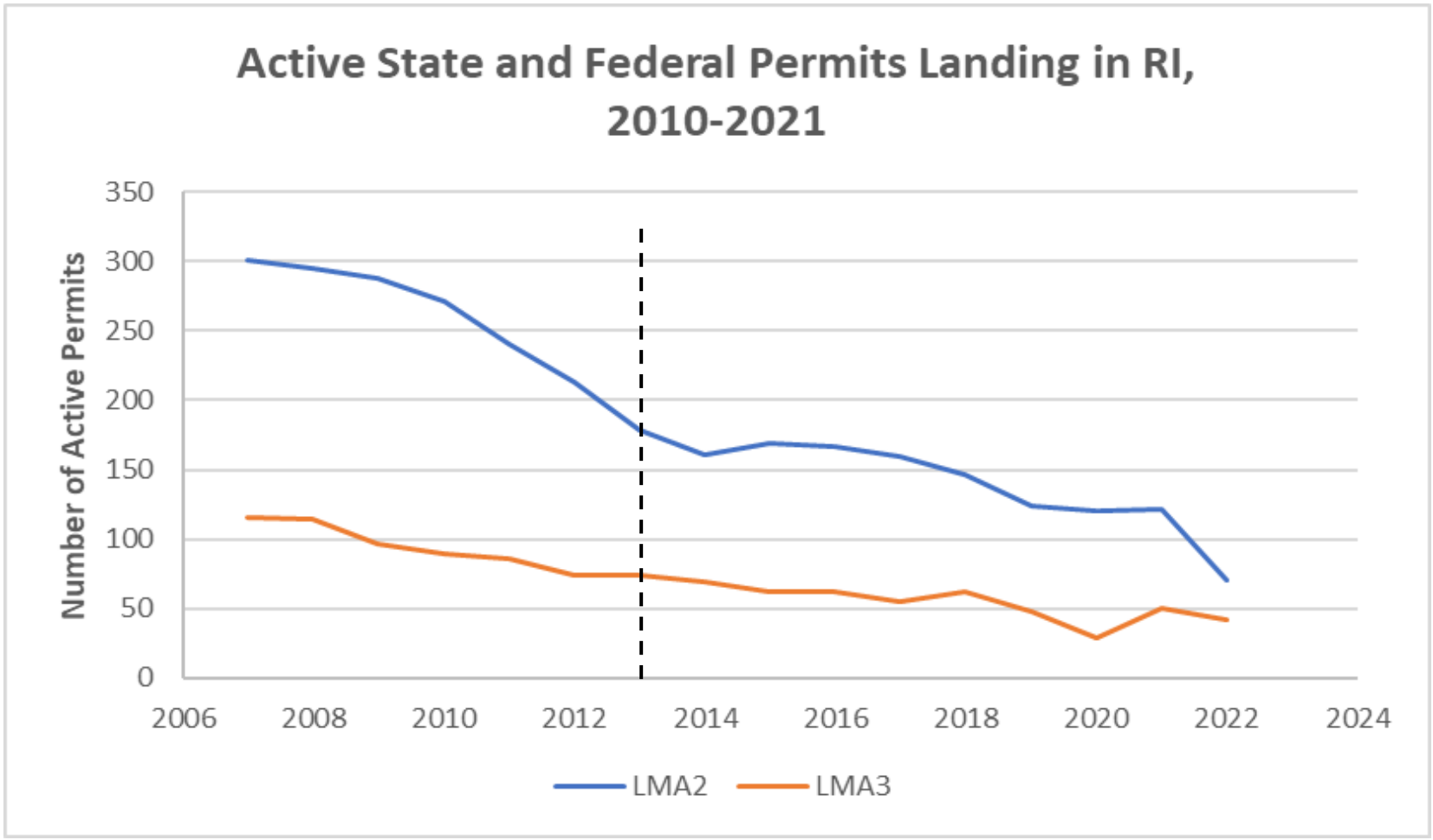
Permits Issued and Location

- State and Federal permits landing in MA



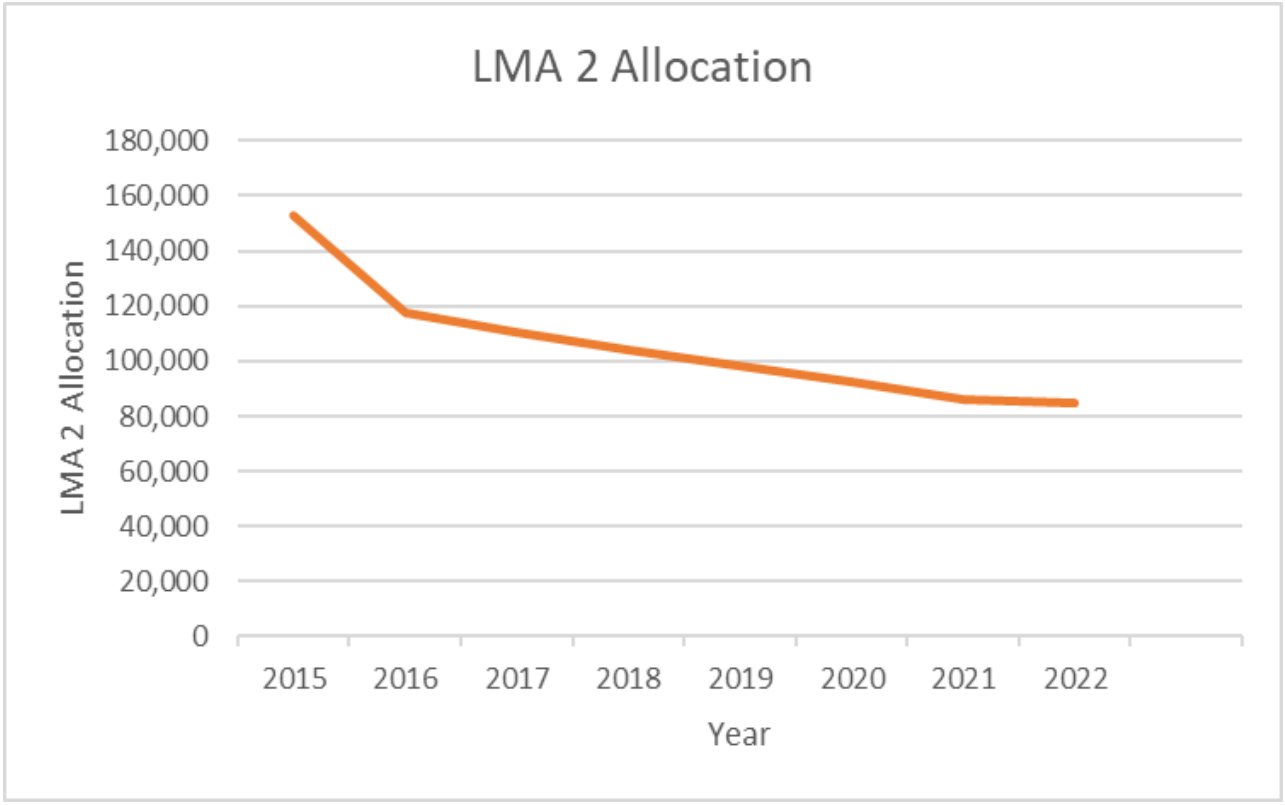
Permits Issued and Location

- State and Federal permits landing in RI



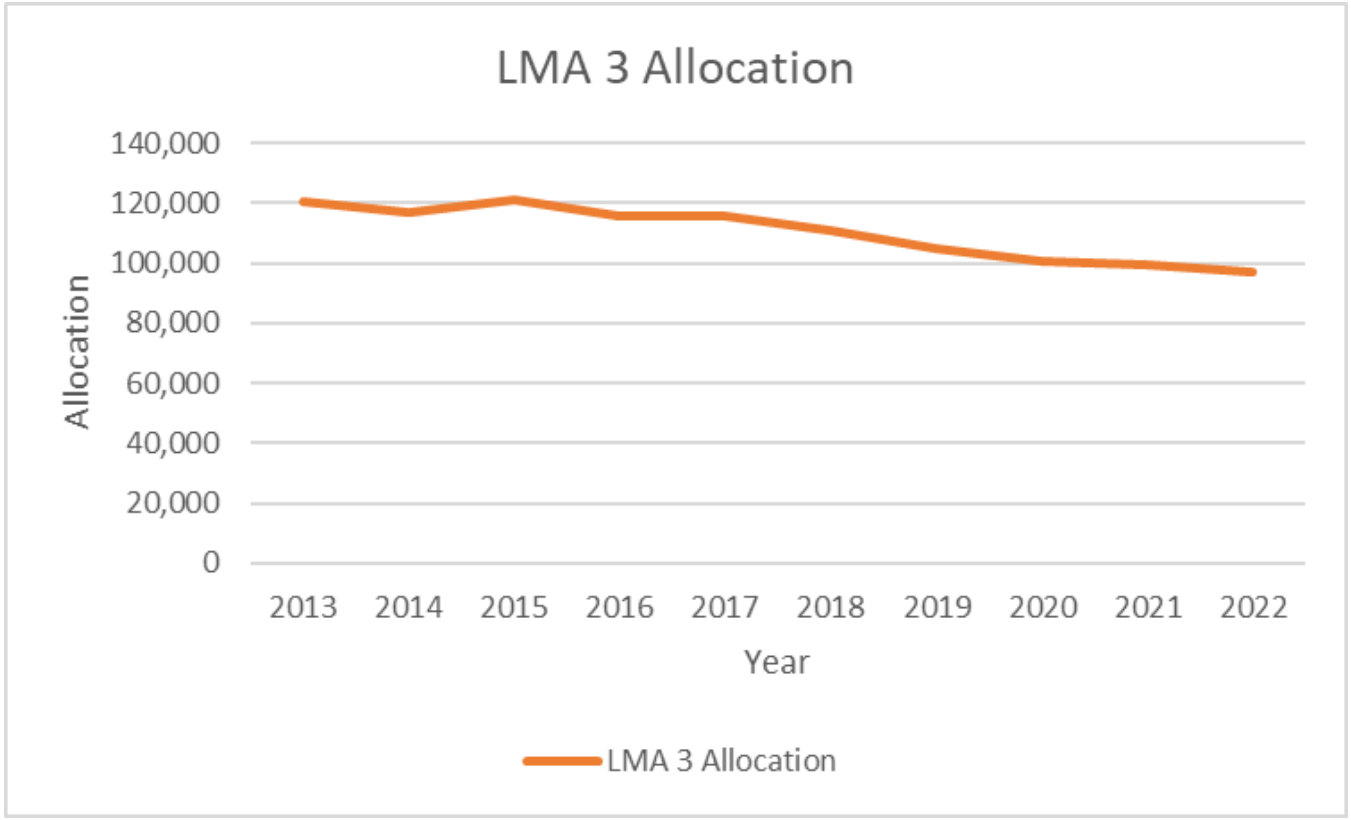
Trap Allocations

- Combined state and federal LCMA 2 allocation
  - 45.4% reduction from 2015-2023
  - 153,029 traps to 83,535 traps



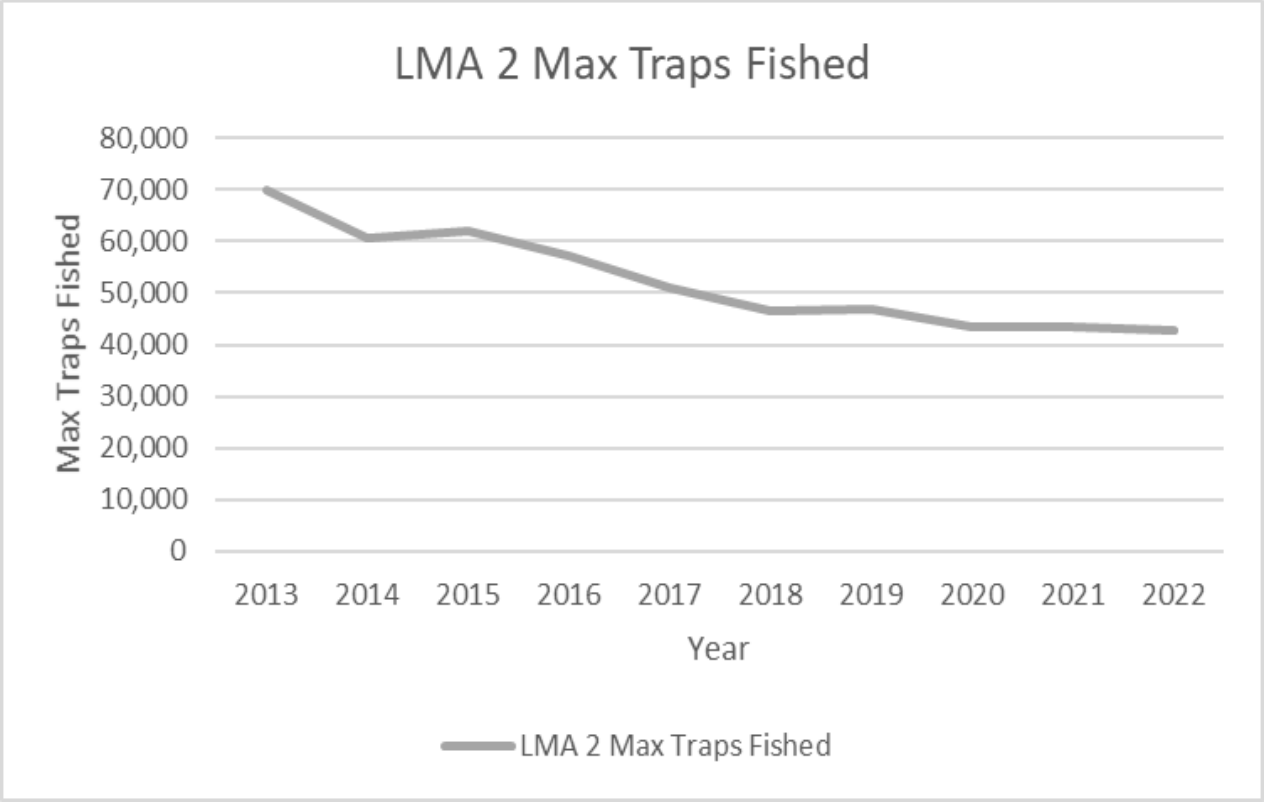
Trap Allocations

- Federal LCMA 3 allocation
  - 20.2% reduction from 2013-2023
  - 120,466 traps fished to 96,087 traps fished



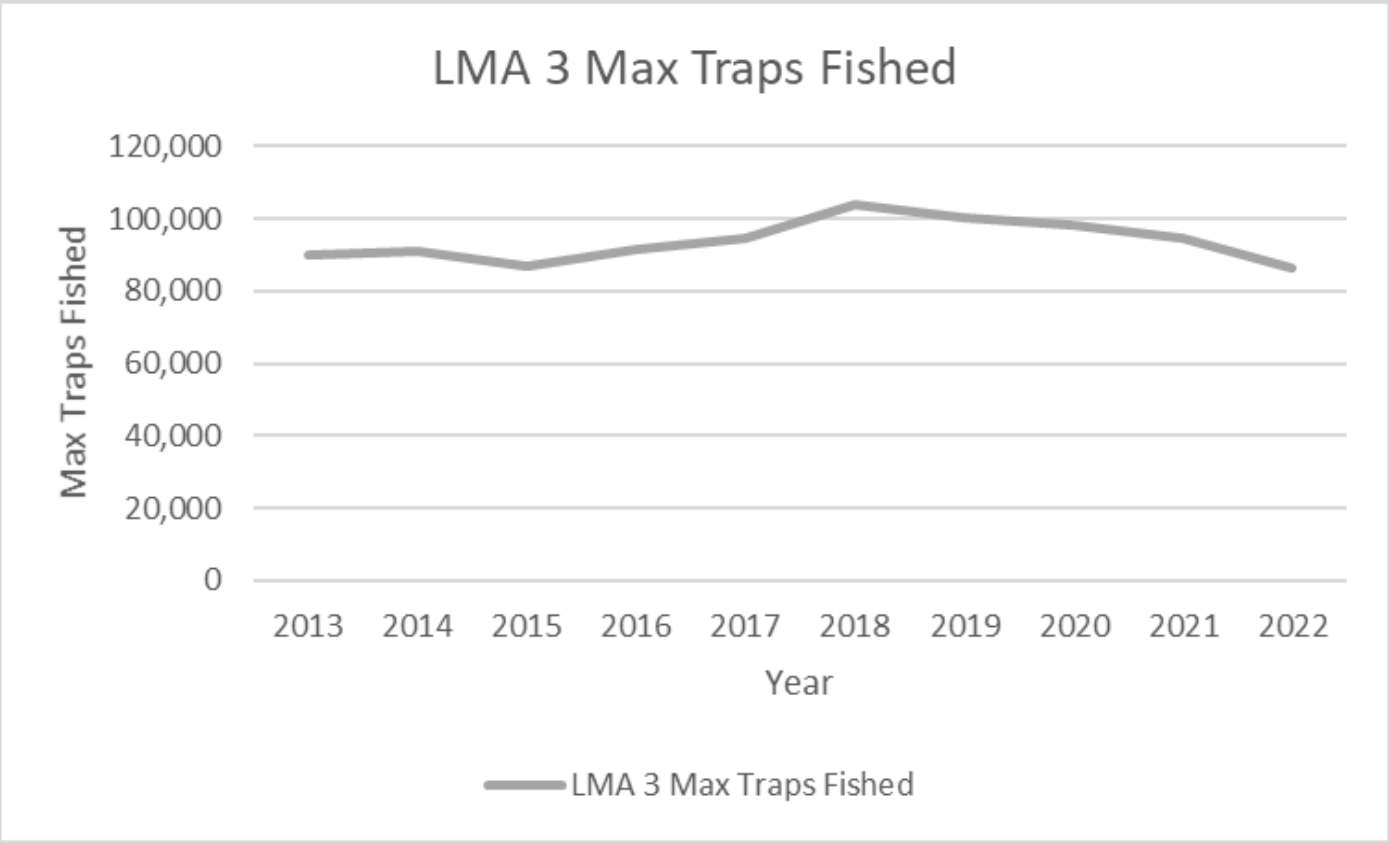
Maximum Traps Fished

- LCMA 2 traps reported fished
  - 39% reduction from 2013 to 2022
  - 69,875 traps fished to 42,846 traps fished



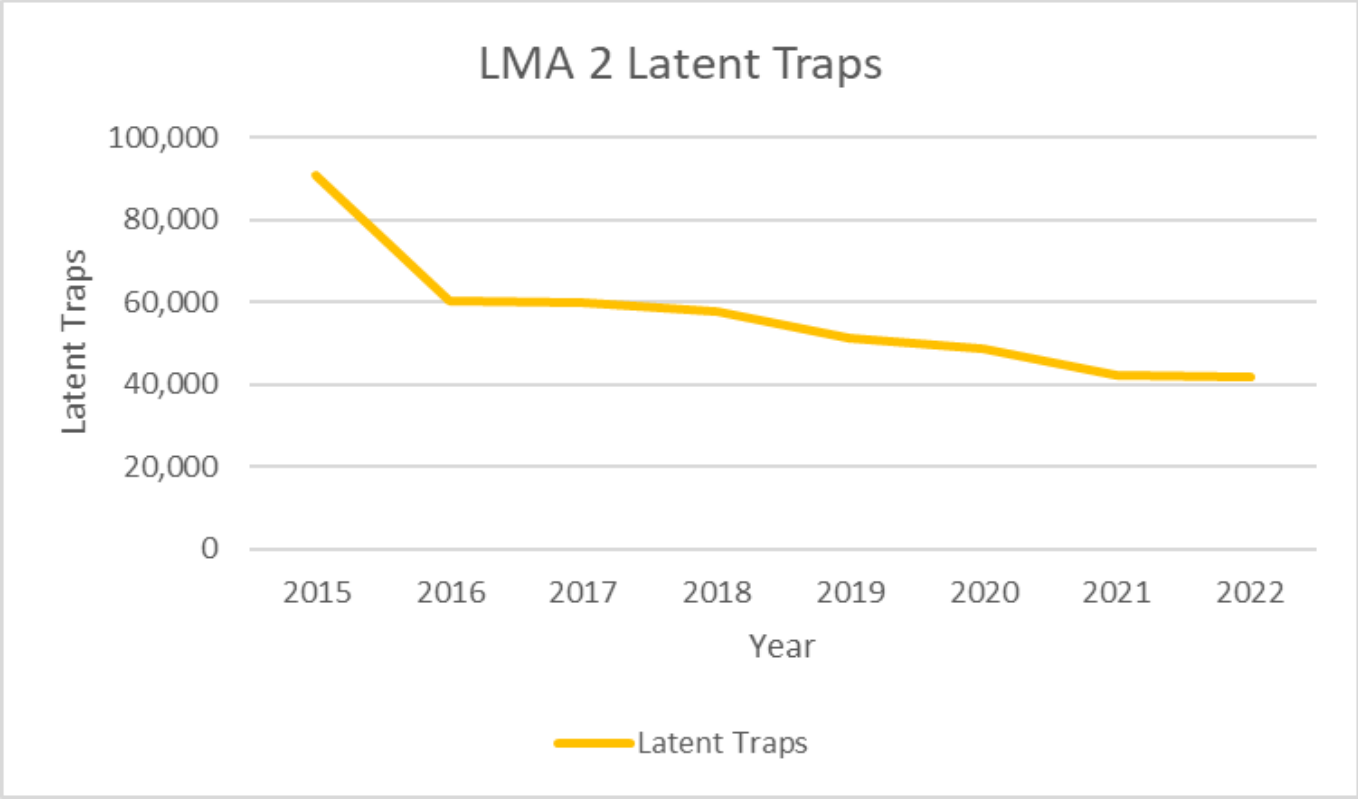
Maximum Traps Fished

- LCMA 3 traps reported fished
  - 4.3% reduction from 2013 to 2022



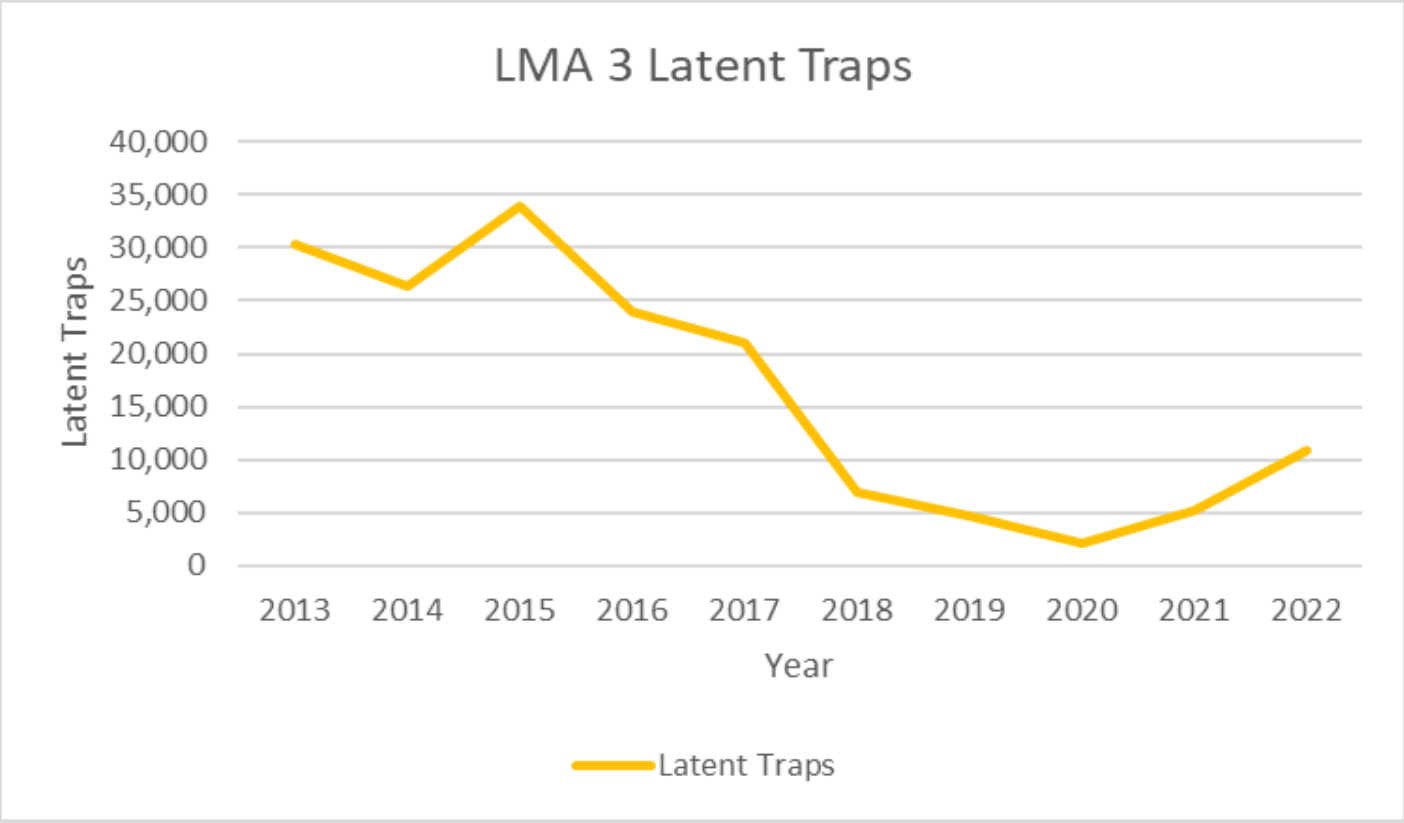
Latent Traps

- LCMA 2 Latent traps (allocation - max traps fished)
  - 54% reduction from 2015 to 2022
  - 91,001 to 41,802 latent traps



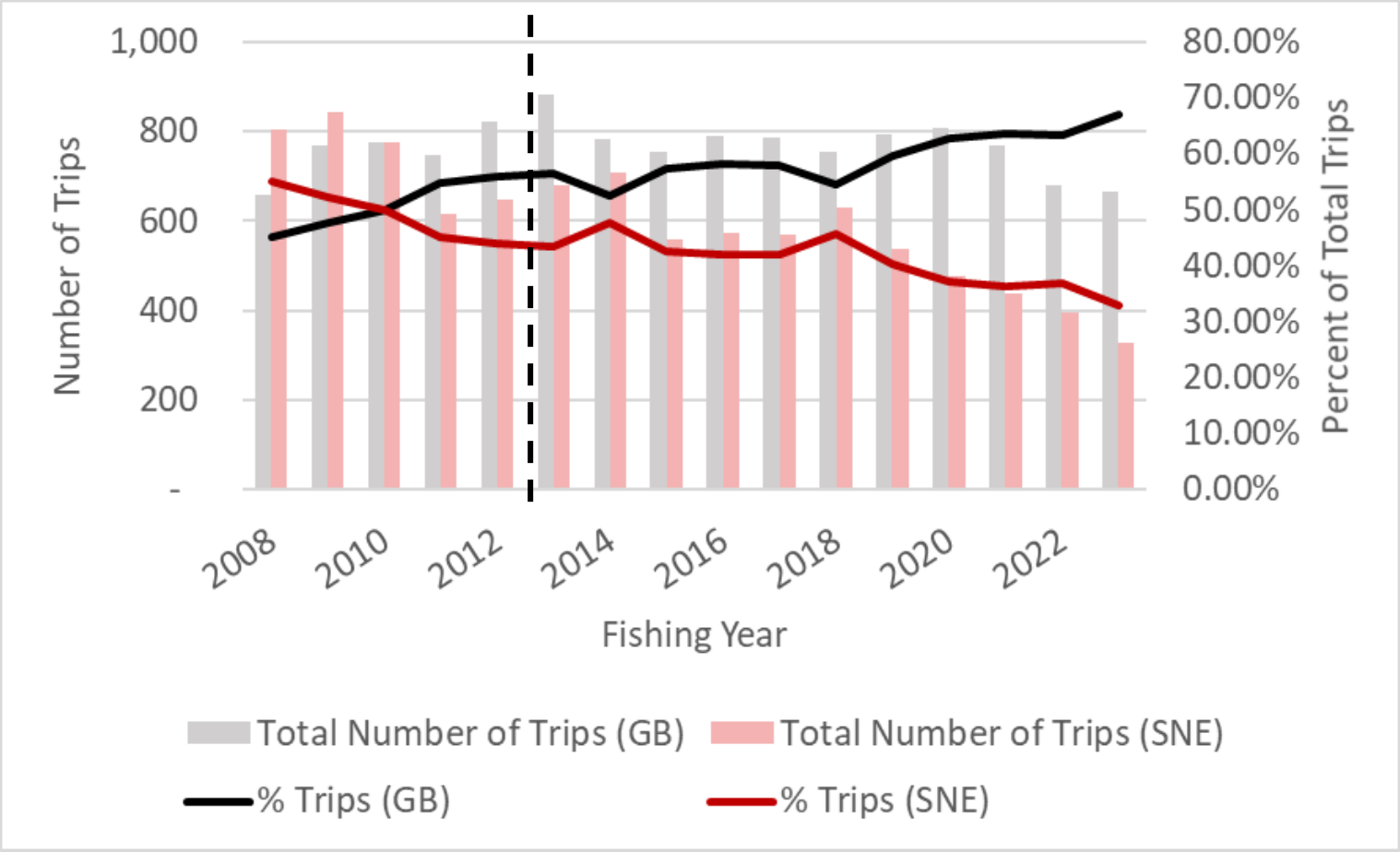
Latent Traps

- LCMA 3 Latent traps (allocation - max traps fished)
  - 64% reduction from 2013 to 2022
  - 30,301 to 10,931 latent traps



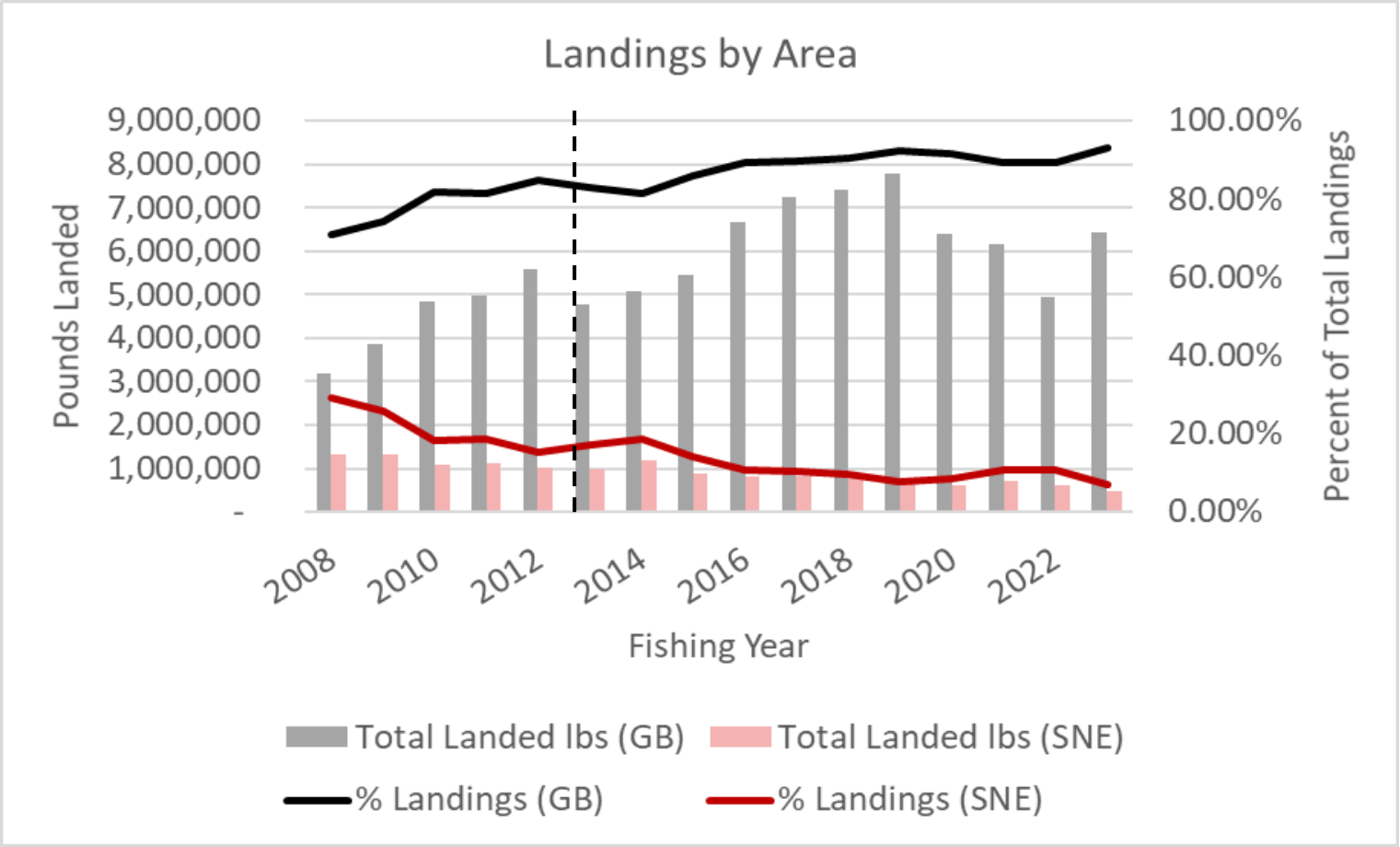
Trips by Area

- Trips in SNE have declined, while trips in GOM/GBK have been more stable



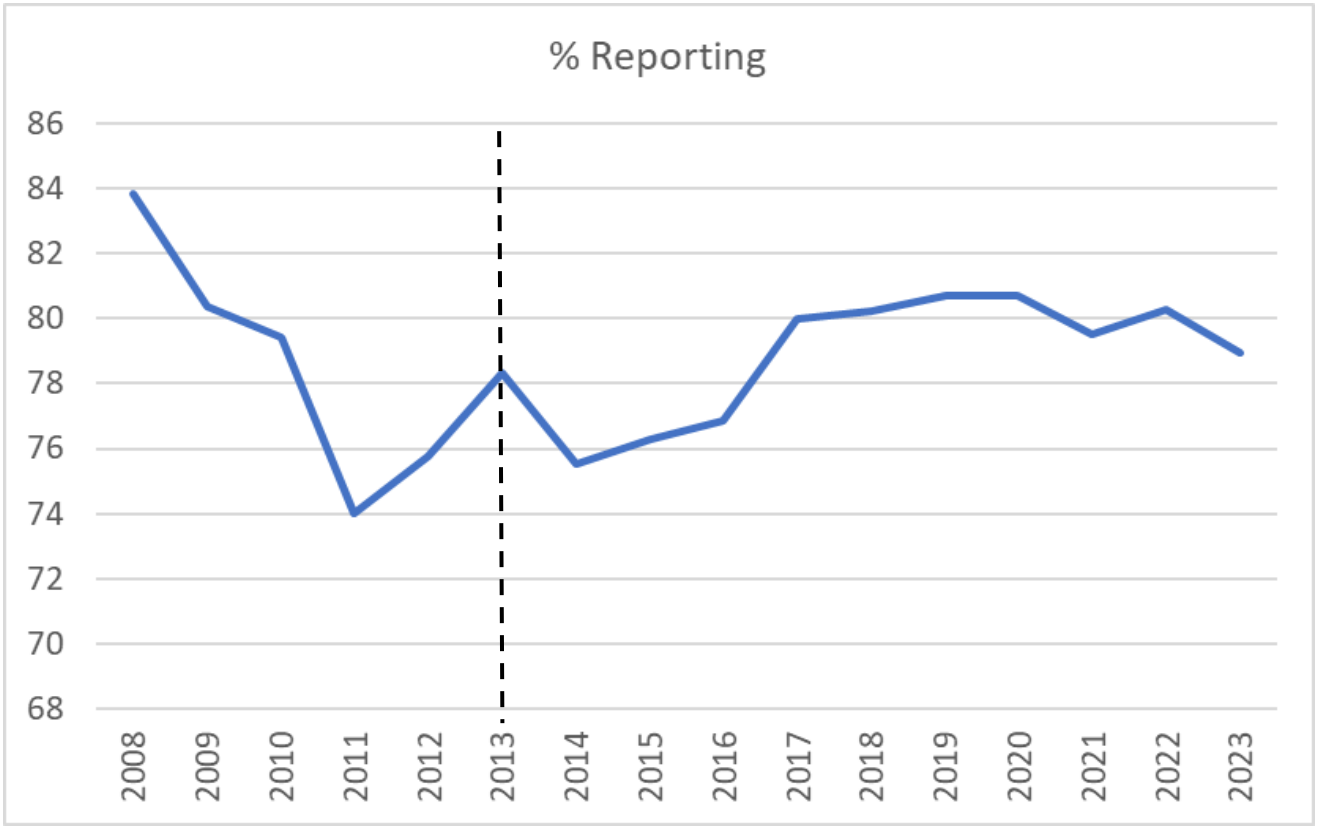
Landings by Area

- Landings in SNE have continued to decline, GOM/GBK landings increased then decreased



Federal Vessels Reporting

- Federal-only permit holders were not all required to submit VTRs until 2024.
  - ~ 80% have had reporting requirement during the time series

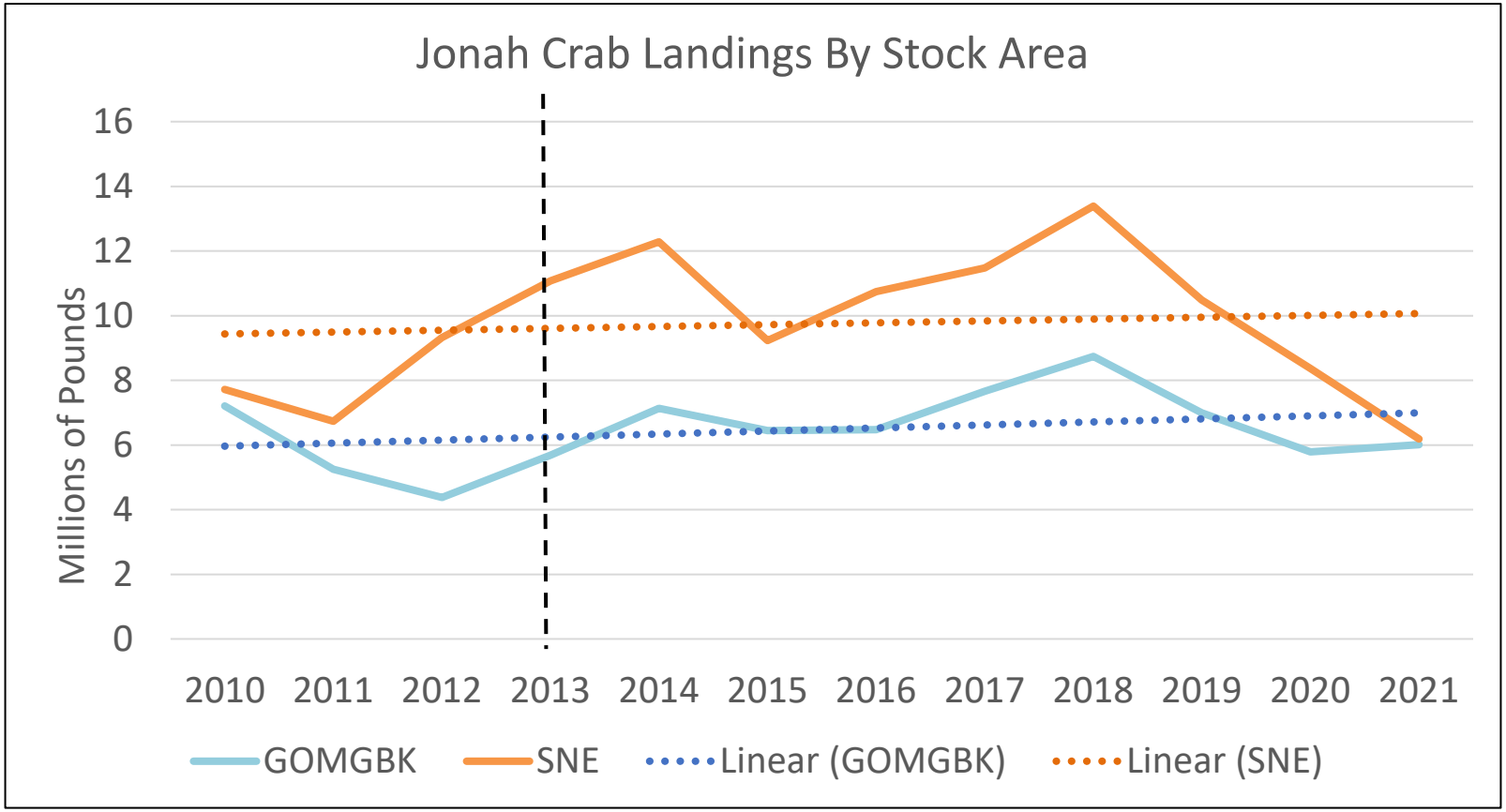


Jonah Crab Fishery

- PDT looked at changed in landings and effort
- Analysis caveats:
  - Difficult to identify directed Jonah crab trips
  - PDT defined Jonah crab directed trips as those with Jonah crab landings being at least 80% of total landings
  - Jonah crab fishery heavily influenced by market, which has been variable

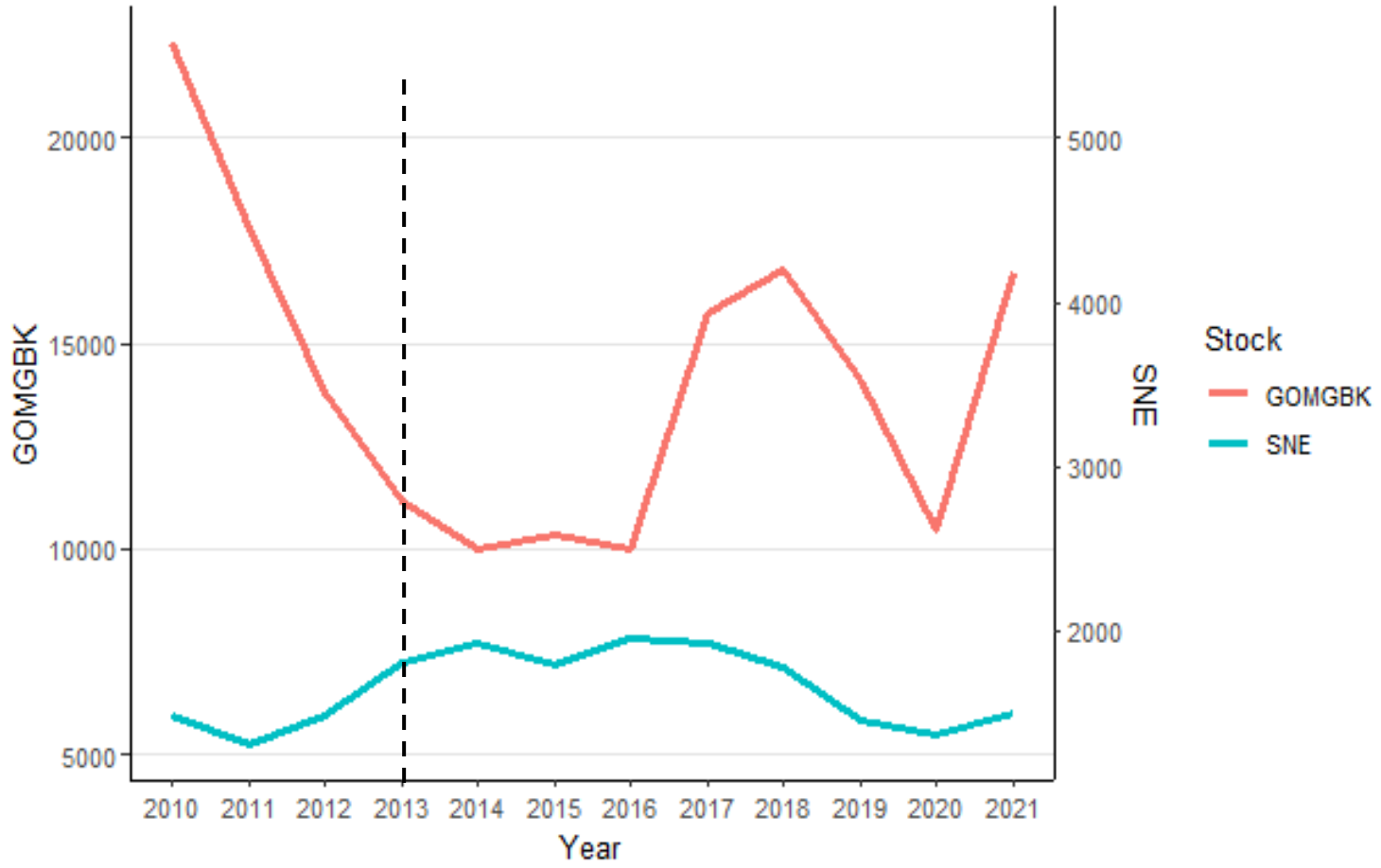
Jonah Crab Landings

- Majority of Jonah crab landings in SNE, fairly stable proportions



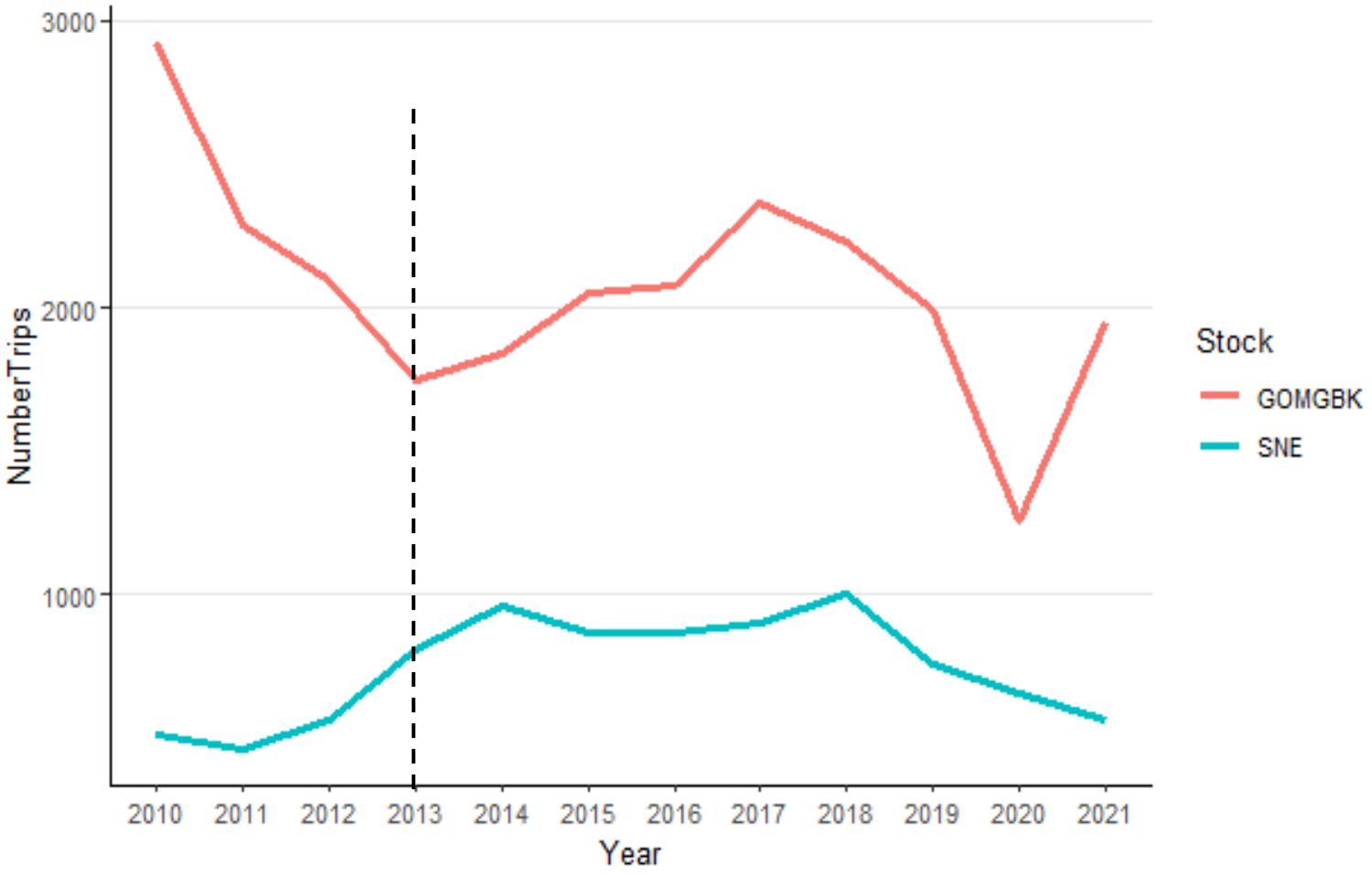
Jonah Crab Trips

- Trips per year landing any Jonah crab



Directed Jonah Crab Trips

- Directed Jonah crab trips per year



LCMT Considerations

- Federal permit sales have resulted in permits leaving LCMA 2 fishery
  - Reflected in PDT analysis
- LCMTs recommended different or no control date
  - PDT noted that future control date could cause speculation and an increase in effort
  - If not pursuing ownership caps, do not need control date
- LCMT 3 commented that SNE fishery has scaled back on its own since 2013
  - Look into logbook data
  - Recommend looking at trap hauls over time
- Data indicate shift in effort and landings to GOM/GBK portion of LCMA 3

Possible Management Measures

- Other than proposed Addendum XXI and XXII measures, PDT was not sure what could be done to directly affect the size of the SNE fishery
  - Data indicate the size of the fishery has decreased
- Options to reduce effort/exploitation
  - Seasonal and spatial closures
  - V-notching
  - Output Controls (trip limits, quotas)
  - Reduce latent effort

Possible Management Measures

- **Seasonal and spatial closures**
  - Summer closures could reduce landings during high exploitation period
  - Spatial closures could result in gear relocation
- **V-notching**
  - Concerns about skewing sex ratio, disease, increased regulatory discards
- **Output controls (trip limits, quotas)**
  - Trip limits could nullify trap allocation system
  - Could result in increased trips
  - Logistical challenges with quota management, would impact GOM/GBK fishery as well
- **Reduce latent effort**
  - Remove permits/traps based on documented recent effort
  - Not likely to improve SNE stock condition

Questions?

Economic considerations of Addendum XXVII

August 6, 2024

Amanda Lindsay

Assistant Professor of Economics, Bates College

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My Credentials

- PhD in Agricultural and Resource Economics
  - Research focus: Bioeconomic modeling and fisheries management
  - Past year: Interviewing lobstermen and co-op management, attending Maine State level zone council meetings

Goals for the Presentation

- Summarize & contextualize existing policy analysis of addendum XXVII
- Provide suggestions for further consideration

Addendum XXVII

Increase of minimum carapace gauge length for Maine lobsters

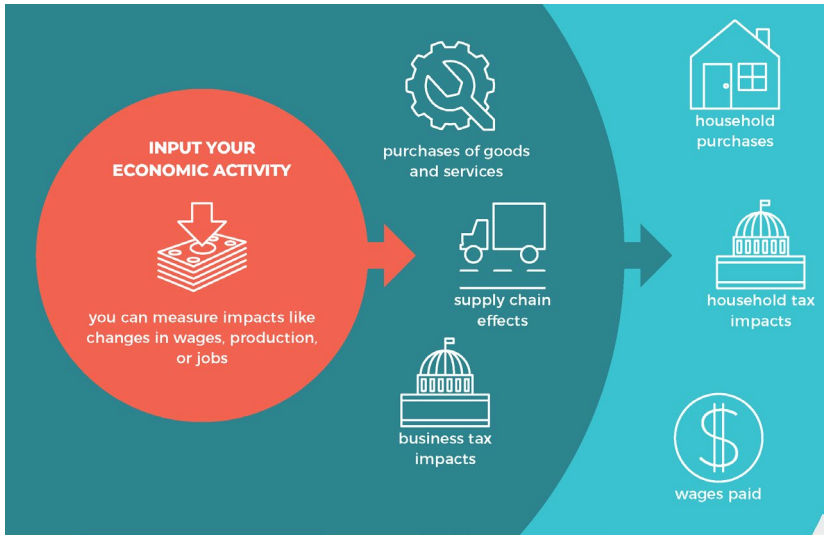
(from 83mm to 86 mm, over two stages)

Concerning implications for Maine harvests:

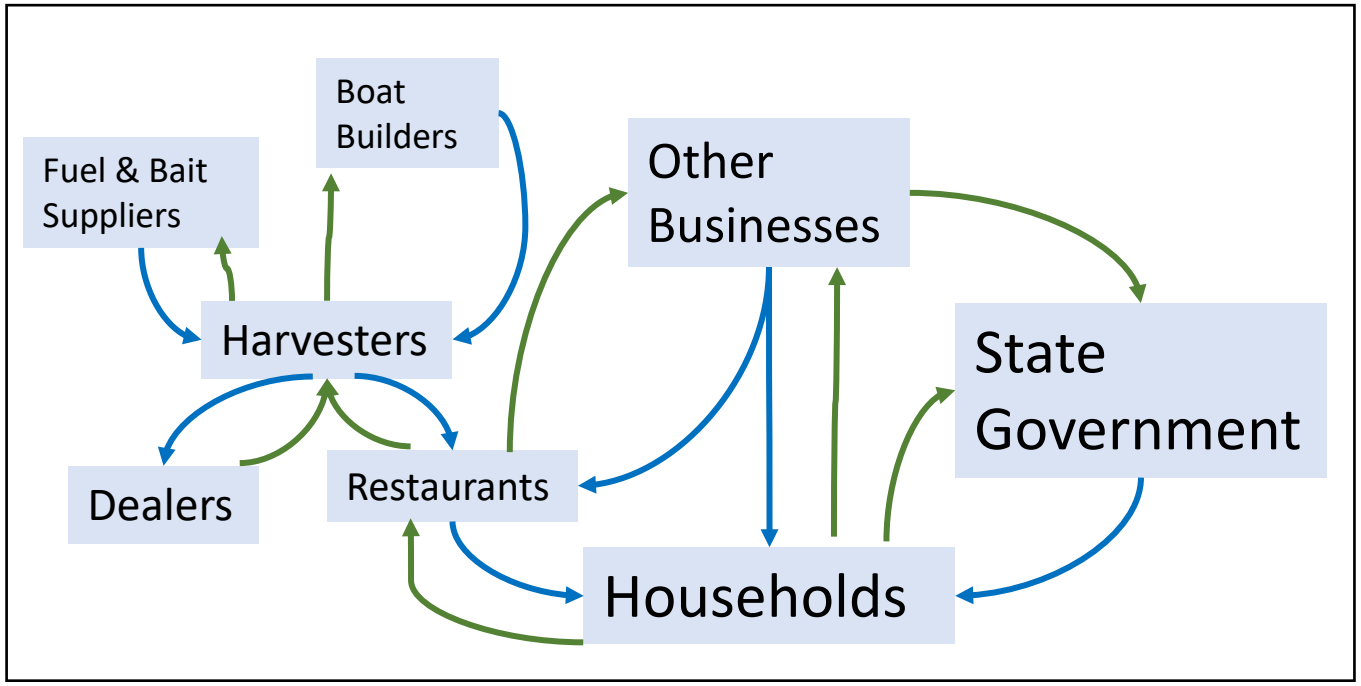
- Maine DMR data suggests over 10% of harvest measured just over 83mm, and over 33% measured between 83 mm and 86 mm
- Maine lobster fishery is referred to as “recruitment-dependent” fishery

Review of the Brief Economic Impact Analysis in April 2024 – Performed by Professor Michael Donihue, Colby College

- Related to previous “Dollars to Lobsters” research (2016)
- Uses IMPLAN Modeling Software
  - This software contains data from federal data sets
  - Additional data can by entered user, as needed
- Focuses on harvesters & upstream enterprises

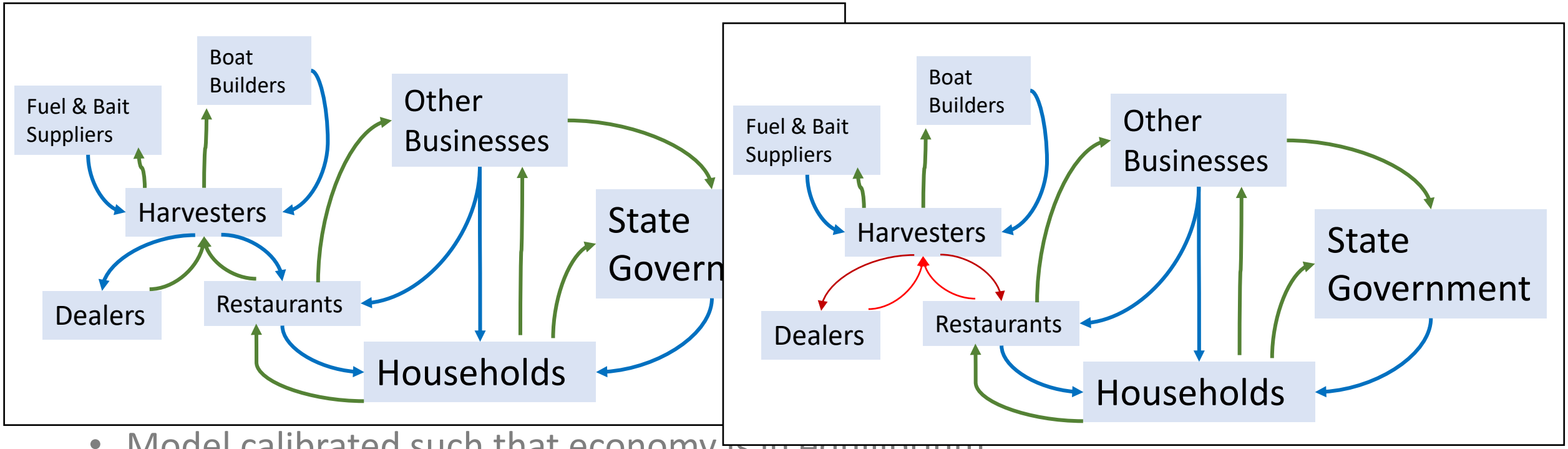


Model of Maine Economy



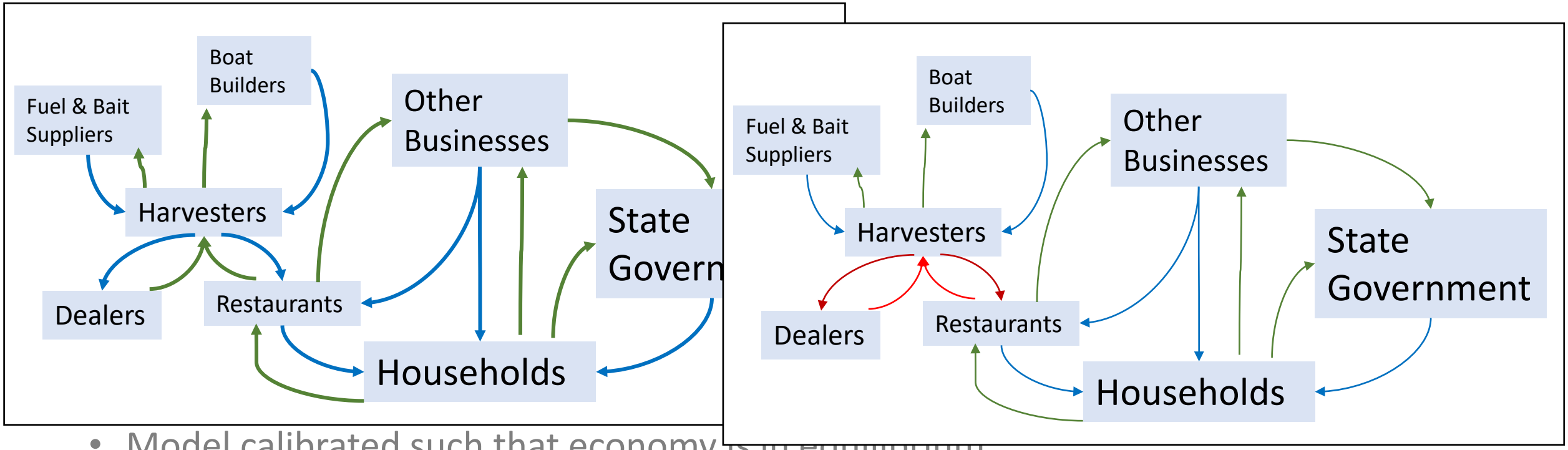
- Model calibrated such that economy is in equilibrium

Model of Maine Economy



- Model calibrated such that economy is in equilibrium
- A "policy shock" is introduced, and model finds a new equilibrium
  - Assume Addendum 27 leads to 10% reduction in landings value

Model of Maine Economy



- Model calibrated such that economy is in equilibrium
- A "policy shock" is introduced, and model finds a new equilibrium
  - Assume Addendum 27 leads to 10% reduction in landings value
- Policy impacts estimated by comparing equilibria
  - He predicts a reduction of approximately $60 million

Limitations and Considerations

- The shock: Is a 10% reduction in landings value a reasonable assumption?

- The Model:
  - Could be more precisely updated to current market conditions.
  - Does not model fish stock nor behavior of fishermen (e.g. location or intensity).
  - Does not include Canadian harvesters who draw from the same stock, compete in the same market, but are subject to different regulations.

- The Methods:
  - Relies on a static model of the economy and cannot estimate the dynamic recovery of the economy.

Connections to Analysis contained in Appendix of Draft Addendum XXVII to Amendment 3 to the American Lobster Fishery Management Plan

- Predict decline in harvested individuals but increase in harvested weight – not clear how that would affect landings value.

- The Model:
  - Does not model behavior of fishermen (neither Maine nor Canada).
  - Does not model economic linkages between harvesters and other parts of supply chain

- The Methods:
  - Predict long term gains in spawning stock will compensate initial losses – but cannot predict the dynamic recovery of the stock.

Connections to Analysis contained in Appendix of Draft Addendum XXVII to Amendment 3 to the American Lobster Fishery Management Plan

- Predict decline in harvested individuals but increase in harvested weight – not clear how that would affect landings value.

- The M
  - Do
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    chain

Analyses share similar limitations, and are not mutually exclusive

- The Methods:
  - Predict long term gains in spawning stock will compensate initial losses – but cannot predict the dynamic recovery of the stock.

My Final Thoughts on the Economic Analysis

- I am confident that Addendum XXVII would have a big economic impact to Maine fishermen and the Maine economy in the short run.

- More importantly, we do not know what the **recovery** of the fishery and/or economy would look like?
  - Large rapid gains in biomass could mean net economic gain
  - Smaller gains, or large gains that accrue slowly, could mean net economic loss

Other important unanswered questions:

- What will be the initial impact to Maine's lobster harvest?
  - Acheson and Reidman (1982) predict large losses when min legal size increases 81 to 88.9 mm
    - Predict eventual decrease in harvest by individual (-12%) but increase in harvest by weight (7.9%)
    - A lot of questions about methodology – economic analysis does not meet best practice standards
  - Atlantic Coast Recreational Fishing – inc. minimum size more effectively reduces harvest than baglimits (Van Poorten, Cox and Cooper 2013)

- What is the relationship between size-price?
  - Highly variable depending on species (Mullon Et al 2012, Zimmermann, Heino, Steinshamm 2011, Zimmermann and Heino 2013, Ashe, Chen, Smith 2015)

  - More academic focus on a positive relationship (and protecting large females)
  - Reports suggest Maine lobster fishery is characterized by negative relationship

Thank you for the opportunity to speak.

Comments, questions or feedback welcomed!

Amanda Lindsay
Assistant Professor of Economics, Bates College
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More about the “Dollars to Lobsters” Report

- Economic data was collected from a representative sample of lobster dealers across the state.
- Those data were used to estimate the economic impact and multipliers (standard macroeconomic indicators) associated with lobster distributors.
- The software used in this analysis (IMPLAN) is a widely used platform to carry out this type of analysis. It allows users to create customizable models of economies using an Input-Output framework.
  - This same software was used in the 2023 Seafood Economic Accelerator for Maine report (of which he was not a contributor). Unlike Donihue’s work, this newer study focused on the economic impact of harvesters.

Acheson and Reidman (1982) American Fisheries Society

- Ex ante analysis of increasing minimum legal size from 81 to 88.9 mm
  - Agent based model of 9,000 fishermen – loses each year of increase
  - After gauge increase – estimate fewer lobsters but 7.9% increase in landed weight
  - They estimate inc. in rev 5.5%, but given 13% ROI, that's not sufficient

  - Their biological model assumes fishing effort will not change
  - Each year, their most likely results, estimate -11.7% - -20.9% in individuals, after -12%, and -4.7 - -9.2% by weight, after 7.9%

  - Economic model – no price/size effects
  - Estimation techniques are suspicious and would not be considered robust todays standards

American Lobster
Vessel Tracking Work Group Report

August 2024

Background

- Board task to address privacy concerns with Addendum XXIX:
  - *Move to task the Addendum XXIX vessel tracking implementation workgroup, with input from the LEC, to investigate modifications to the 24/7 vessel tracking requirement which still ensure monitoring of fishing activity while acknowledging that fishermen also use boats for personal/non-fishing reasons. This should include a review of existing processes for when VMS devices can be turned off.*

VMS Rules

- For Atlantic Fisheries VMS devices must be on and collecting data 24 hrs/day, unless authorized to power down
- Exemptions to power down only:
  1. when vessel will be out of the water for >72 hours
  2. when vessel signs out of VMS program for 30+ consecutive days and does not move from mooring until VMS is turned back on
  3. if vessel is issued a Limited Access General Category scallop permit, is not in possession of scallops, is tied to permanent mooring, and has notified NMFS of power down
- LOA must be issued to the vessel owner

VMS Information

- "Declaring out of the fishery" does not mean VMS device stops collecting data
- VMS devices are capable of geofencing and it is used to change the ping rate when a vessel enters/leaves specific areas
  - Geofencing is not used to automatically turn off a VMS device in certain areas
- Fastest ping rate in VMS regulations is 5 pings/min

Possible Modifications

- Geofencing
  - Defining an area or boundary within or beyond which the device ping rate changes
- "Snooze" function
  - Process for setting a device to not collect spatial data for a pre-determined period of time

Geofencing

- Establish a boundary or distance from shore beyond which the ping rate is 1/min
  - Boundary needs to be defined (e.g., 3 mi from shore)
  - Rate inside boundary would be defined (e.g., 1/day)
- Not all approved devices are capable
- Cell service is needed to register when vessel crosses boundary and adjust ping rate
  - Satellite needed to work everywhere. High cost.

Snooze Function

- Establish a process where a form is submitted to state agency or vendor to temporarily “snooze” the device for periods of non-fishing activity
  - Device would automatically resume data collection at the end of the pre-determined time period
- Viatrax and Particle are capable
  - Costs would increase (development, annual fees)
- Requires state/vendor administration to process/approve requests and disable devices
- Pro: would create a record of snooze requests

Data Concerns

- Geofencing option would result in data loss inside the defined boundary
  - Significant number of inshore fishing trips
  - Incomplete data for trips covering both federal and state waters

- Snooze function should not result in data loss if used correctly (i.e., only when not fishing)

Enforcement Concerns

- Tracking helps reduce misuse of trap tags
- Geofencing would make it easier to cheat inside defined boundary, and slow down law enforcement's ability to investigate suspected vessels
- Permit holders should not have the ability to turn devices on/off themselves
  - Difficult to prove if a device failed or was turned off
- Need to establish rules for non-fishing trips
  - Vessels with any gear, bait, or lobster on board should be considered "fishing"

Additional Considerations

- Tracking appears to have improved trip reporting compliance
  - Fewer reporting errors
- If Board pursues changing the requirements, could provide an option for a device that not track 24/7 but not require it
- Some companies would have to make significant investments to make these modifications
  - May be low financial incentive

Questions?