Overview: Northeast Trawl Advisory Panel

High level: broad topic treatment

- Brief historical context
- Charter
- Recent research activities and foci
- Current and near-future plans
- Potential longer term plans

Broad topical treatments

- Context: charter
- Recent research activity, foci: gear efficiency
- Current and near future plans: wingspread
- Longer term plans: to be dermined

Charter: Purpose

- Bring commercial fishing, fisheries science, and fishery management professionals together

Charter: Purpose

- To identify concerns about regional research survey performance and data,
- To identify methods to address or mitigate these concerns and
- To promote mutual understanding and acceptance of the results of this work among their peers and in the broader community.

Charter: Objectives

1. Understand existing NOAA/NEFSC trawl survey gear performance and methodology
2. Evaluate the potential to complement or supplement this and other regional trawl surveys
3. Improve understanding and acceptance of trawl survey data quality and results.

Recent Research Foci: trawl efficiency

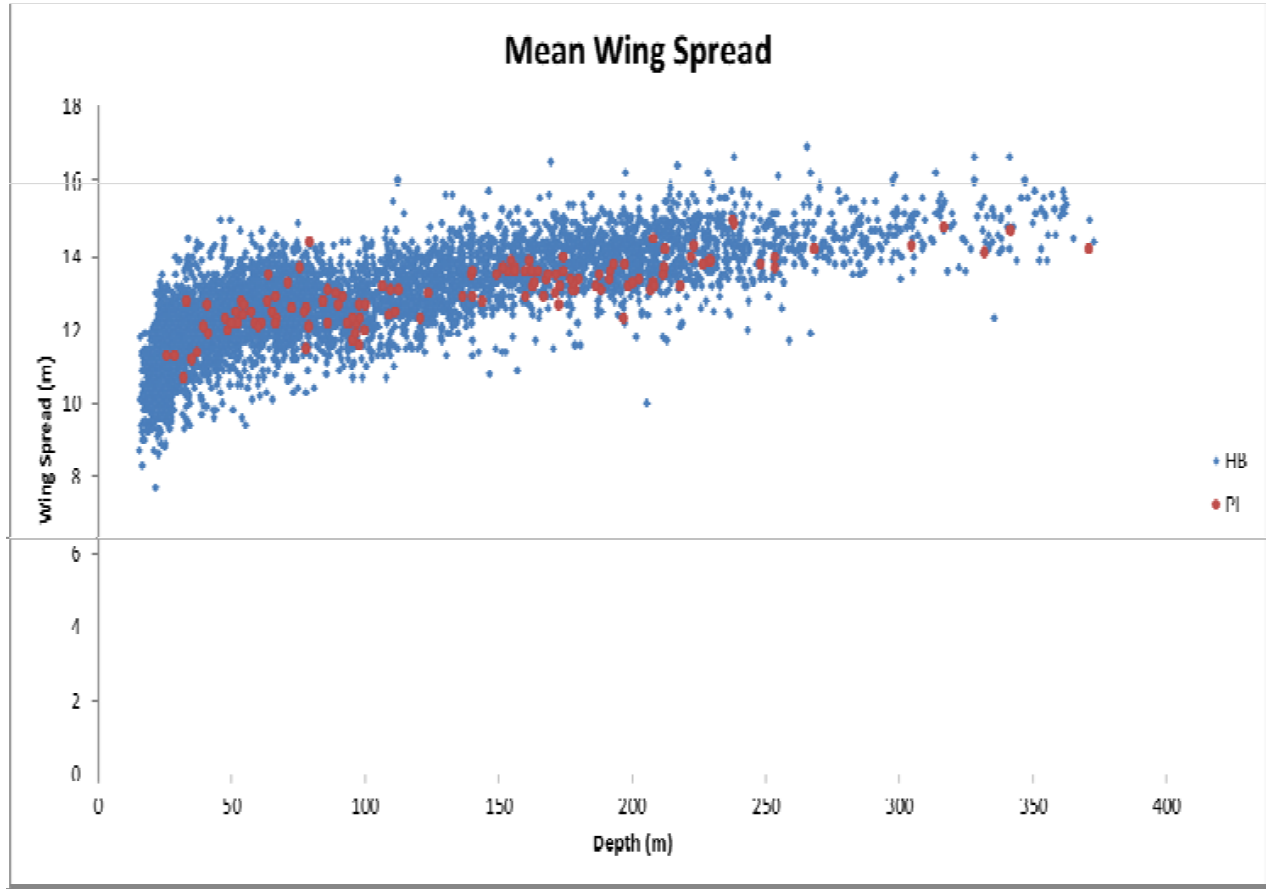
- Comparison of rockhopper and cookie sweep relative efficiency (2009-2010)
- Estimates of Bigelow trawl efficiency (chain sweep studies)
  - 2015-2017
  - Witch benchmark: advice based on empirical q
  - TRAC yellowtail: applied q studies, revised exploitation rate winter flounder, summer flounder assessments
  - Constraints in groundfish operation assessments, but used in GOM winter flounder, witch and GB yellowtail

Recent Research Foci: trawl efficiency

- Estimates of Bigelow trawl efficiency (chain sweep studies)
  - Summer flounder benchmark: swept-area number estimates from efficiency studies included in model
  - Standard treatment in future assessments: evaluation, appropriate inclusion (why or why not)

2019 Research Focus: wingspread consistency

2009-2017 Autumn and Spring Survey Valid Tows
Trawl Geometry

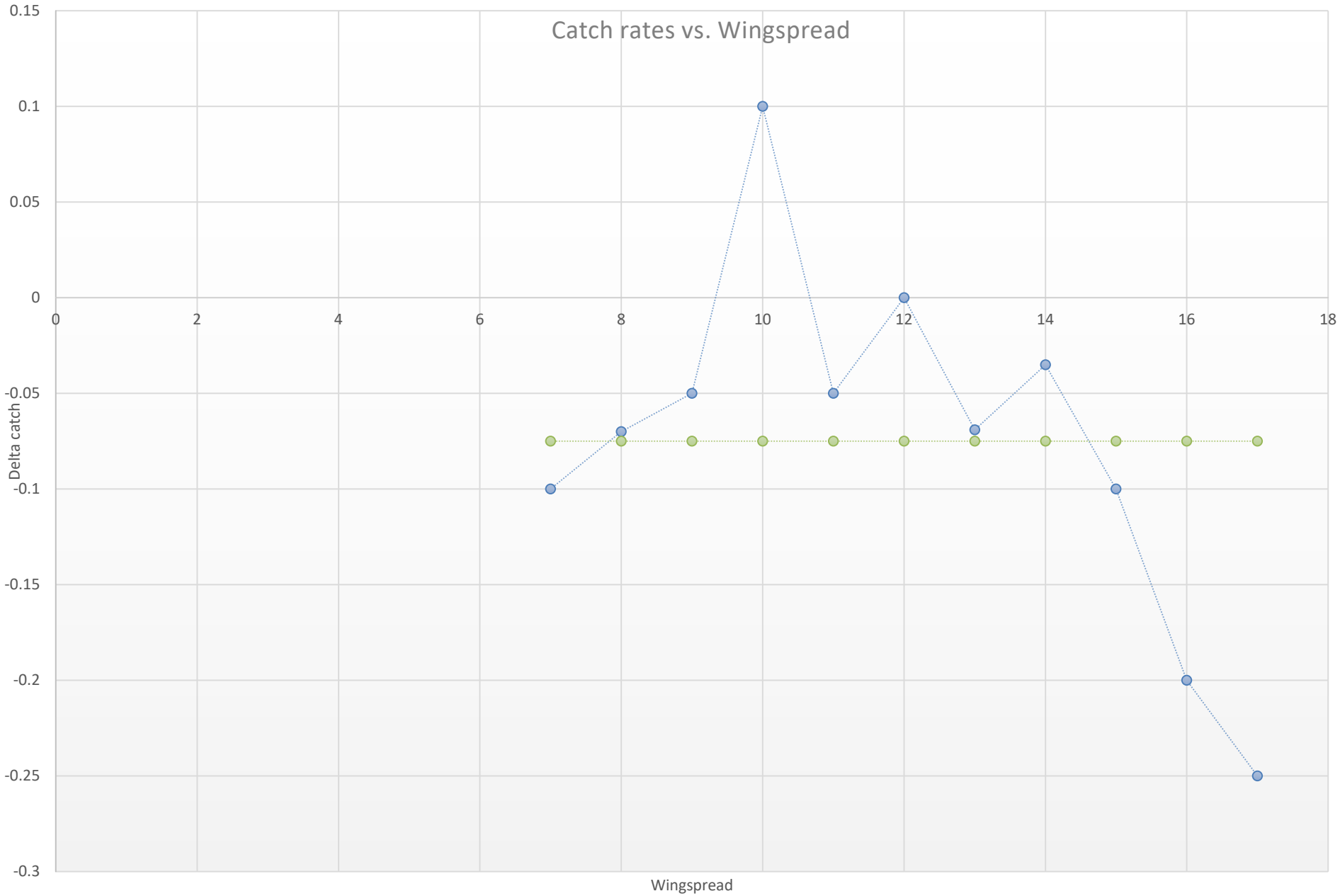


2019 Research Focus: wingspread consistency

- Analyses of effect of variable area swept on survey index trends, assessment impacts (nearing completion)
- Identify criteria for acceptable wingspread ranges (gear performance characteristics)

Analytic	Experimental: Wingspread-catch relationship	Experimental: Door change
What is the effect of wingspread (actual observed, and tow duration) on assessment results?	How does wingspread affect catch rates, once adjustments for observed area swept are included? What is optimal wingspread range?	Can we get to optimal wingspread or improve performance using different doors?
1. Peer-reviewed paper on wingspread evaluation methodology (TRAC, summer flounder): Blaylock, Legault, Brooks, Richardson 2. Systematic evaluation of effect on index series for all 40 species - Blaylock	Flume tank testing in summer 2019: Politis	Door testing in summer 2019: Politis

Analytic	Experimental: Wingspread-catch relationship	Experimental: Door change
H_0: Adjusting indices for observed area swept has no effect on assessment results	H_0: There is no difference in catch rates from nets with different wingspreads	(What calibrations would be required if the doors were changed for all or part of the survey range?)
H_0: Adjusting indices for changing efficiency with wingspread has no effect on assessment results (once adjustments for observed area swept are included)	H_0: There is no difference in catch rates from nets with different wingspreads once adjustments for observed area swept are included	(What if there are no door configurations that will achieve optimum wingspread at e.g., extreme depths?)
	H_0: There is a range of wingspreads over which catch rates are equal (once adjustments for observed area swept are made)	What door configurations will achieve optimum wingspread range?


Catch rates vs. Wingspread
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
-0.25
-0.3
Delta catch
0
2
4
6
8
10
12
14
16
18
Wingspread

2019 Research Focus: wingspread consistency

- Observe trawl behavior as a function of wingspread via flume tank experiments (July, 2019)
- Pilot field study to identify functional relationship between catch rates and wingspread (Fall, 2019)
  - Identify scope of problem for target species
  - Focus on changes in efficiency due to wingspread, not area swept
- Test doors to identify potential operational solutions (Spring, summer 2019)

2019 Research Focus: potential implications and contexts

- What is effect of calculating survey indices based on tow-by-tow area swept, to take into account the historically observed variability in wingspread? (nearing completion)
  - No significant change in trend? No need to apply adjustment if it has no effect (?)
  - Significant change in trend? Use tow-by-tow estimates – does this reduce variance?

2019 Research Focus: potential implications and contexts

- What is effect of different wingspreads on catch rates, beyond area swept? (twin trawl experiment this summer/fall)
  - No significant difference in catch rates over a range of wingspreads from x meters to y meters, which includes optimal wingspread?
    - Use that range as the range of acceptable gear performance?
    - Focus future work on wingspreads outside of that range?

2019 Research Focus: potential implications and contexts

- Significant difference in catch rates outside the range of x meters to y meters?
  - How to address that difference?
    - Door change?
      - What is an effective gear configuration?
      - Full or partial range of survey?
      - What is potential impact of change?
        - Expensive calibration?
        - 5-10 year gap in time series (new series)?
    - Develop wingspread – catch rate relationship?
    - Reject tows outside range?

2019 Research Focus: potential longer term actions

- Develop a shared pool of information for decision making
- Information is developed based on approaches/designs that are seen as legitimate and agreed by all interests
  - We are assuming that “all interests” are represented through the NTAP, its working group, and our internal working group.
- Peer review of results, potential future designs (SSCs or other independent panel)
- Agency will make decision based on scientific research results, input from NTAP and input from SSCs
- Decision making may be based on a form of cost/benefit or risk analysis
  - Cost/benefit dimensions yet to be identified but could include
    - Impact on scientific data quality
    - Impact on assessment outcomes
    - Budget or operational constraints
  - Risks may not be quantifiable beyond positive or negative
  - May be hybrid rather than either/or

2019 Research Focus: changing availability

- Evaluate potential changes in Gulf of Maine flatfish distributions, and possible impacts to availability to fishery independent surveys

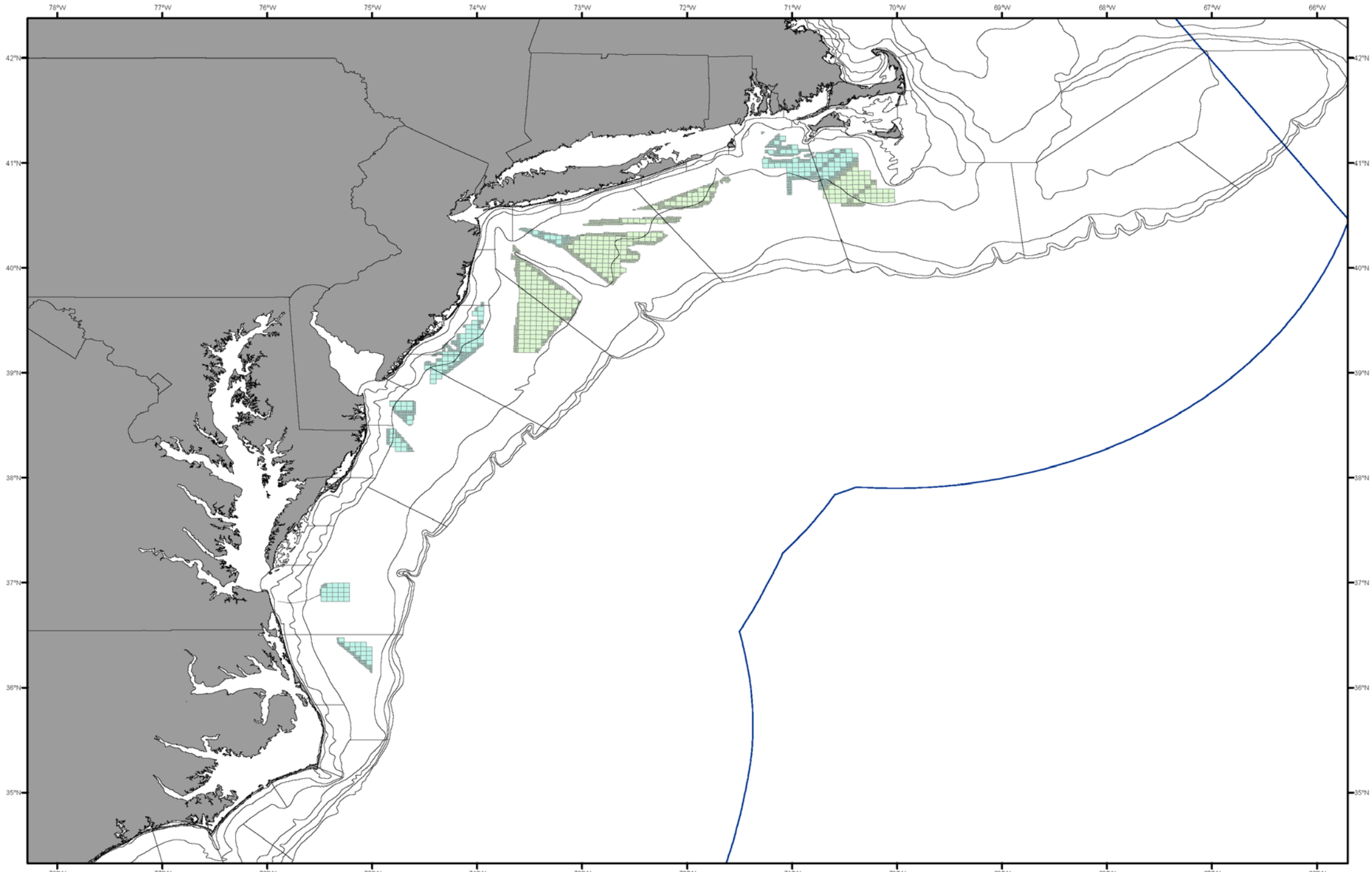
2019 Workplan Candidates

- Process to determine performance criteria for door/wingspread
  - Objectives
  - Operational metrics
- Roadmap re: improving performance for stock assessment data reliability

- Flume tank experiments (Summer)
- Paired trawl experiments (August-September): refine experimental design
- Door testing (Summer)

Emerging Research Focus: effects of wind farms on survey design and execution

- Evaluate effects of wind energy areas on current bottom trawl survey design and execution; accuracy and precision
- Develop complementary sampling designs and protocols to monitor wind energy areas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42°N
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39°N
38°N
37°N
36°N
35°N

Out-year Research Focus: changing availability, expanded efficiency studies, other topics?

- Evaluate potential changes in other species distributions, and possible impacts to availability to fishery independent surveys?
- Expand the number of species for which efficiency estimates are available?
- Start to consider target species in context of new NRCC model
- Alternate but complementary sampling protocols and survey designs for wind farm areas