Draft Meeting Summary
Northeast Trawl Advisory Panel Meeting
21 June 2019
9:00 am - 4:30 pm

Northeast Fisheries Science Center
Narragansett Laboratory
28 Tarzwell Drive
Narragansett, RI

This document summarizes the discussions of the Northeast Trawl Advisory Panel (NTAP) that convened on June 21, 2019 at NOAA's Northeast Fisheries Science Center. A summary of key discussion points, recommendations, and action items is included. This summary does not capture every comment or discussion point, and included comments may not represent consensus.

I. Participants:

A. NTAP Members

Name	Affiliation to NTAP
Terry Alexander	NEFMC Member
Tony DiLernia	MAFMC Member
Wendy Gabriel	NEFSC
James Gartland	MAFMC Scientist
William Gerencer	MAFMC Stakeholder
Vito Giacalone	NEFMC Stakeholder
David Goethel	NEFMC Stakeholder
Dustin Gregg	MAFMC Scientist
Pingguo He	NEFMC Scientist
Michael Luisi	MAFMC Member
Anna Mercer	NEFSC
Timothy Miller	NEFSC
Frank Mirarchi	NEFMS Stakeholder
Christopher Parkins	ASMFC Representative
Michael Pol	NEFMC Scientist
Philip Politis	NEFSC
Christopher Roebuck	MAFMC stakeholder
Robert Ruhle	ASMFC Representative
Michael Sissenwine	NEFMC Scientist

B. Other Participants:

Name	Affiliation
Paul Rago	MAFMC SSC
Matt Seeley	MAFMC Staff
Andrew Lipsky	NEFSC
Meghan Lapp	Sea Freeze Ltd.
Tyler Pavlowich	NEFSC
Katie Burchard	NEFSC

II. Summary Discussion Points by Agenda Topic:

A. F/V Karen Elizabeth Gear Performance Study Plan Review

NEFSC will charter F/V Karen Elizabeth for 14 days in mid-September 2019 to evaluate the catch efficiency differences of the standard NEFSC survey trawl at various net spreads. The experiment will be modelled after the chain sweep catchability study conducted in 2015. The objectives are to quantify species and length and compare catch at various spreads. Towing protocol will be to use NEFSC standard speed and duration (20 min, 3.0 kts). It will be a 24 hour operation with a day and night treatments. Performance will be tested in shallow and deep water. The initial proposal was to target windowpane and winter flounder at shallower depths in southern New England, with wing spreads of 9 – 14m; and American plaice and witch flounder at deeper sites in the Gulf of Maine, with wing spreads of 11 – 16m. Guidance was sought as to whether to collect data on all species, or whether sampling should be concentrated in replicates at specific wing spreads or continuously over a range of wing spreads.

With the expected sample size of ~10 tows for each species at each wing spread, a precise estimate of catchability is not expected, but trends should be apparent. Factors affecting the catch rates include day/night differences, depth effects, and varying impacts by species. The impact of the data depends on whether the work will be used to adjust past survey data and/or develop a new survey, although it may be possible to use this data to inform both objectives.

Adjusting the spread by 1 meter intervals (9-16) would work both statistically and logistically. Some variability in spread would be expected even with restrictor cables, perhaps ½ - 1m within a tow. Given the uncertainty in the shape of the catchability curve, it is likely that more tows/observation will be required to produce a statistically significant result. Covariates can be evaluated later, but would reduce precision. Using gear (chain sweep) that is harder to the bottom than Bigelow gear (rock hopper) would be informative but rockhopper gear will be used here because we are interested in the effect of wing spread only on Bigelow catch rates.

In general, a continuous model of catchability of each species over different wing spreads would be more precise, assuming only a limited number of curves would be fit. This could allow calibration for wing spread effects, followed by calibration to chain sweep gear. (Effect of spread on chainsweep catch would be much larger.) In earlier experiments, a rockhopper sweep over flat bottom lead to a build up of harmonics, which in turn lead the net coming off the bottom. Flume tank work may be useful for visualization of this scenario, but the focus of the flume tank in July will be on the impacts of wing spread on gear performance. The effect of wing spread on angle of repose is expected to be about 9-10 degrees at 9 m spread and 18-20 degrees at 16 m spread. This will be monitored during the flume tank experiment.

Although there is concern that the clump on the paired trawl could be artificially holding the net down, the only way to validate that behavior would be to place cameras on the sweep when it was overspread. There may be a harmonic observed in the flume tank that may not be present with a clump. The net in the flume tank may also be inspected for being light on the bottom or flying in the tank.

Herding effect will not be explored in this study but can be addressed in the door testing study.

Group concluded:

1. Spreads will be evaluated in 1 m intervals using restrictor cables.
2. Species workup will follow the same protocols as chain sweep experiment, excluding gulfstream and fourspot flounder. Priority will be:
    a. Target species
    b. Managed species
    c. Others (separation of little and winter skates would be low priority)
3. Range would be 9 – 14 m wing spread for shallower target species (windowpane, winter flounder) and 11-16 for deeper target species (American plaice, witch flounder), with approximately 60 pairs each in shallow and deep locations/species targets.
4. Sampling should be even over the range of wing spreads, rather than weighted toward the most commonly observed spreads. While it may be desirable to find the inflection point of the curve, and then target samples in that region to refine estimates, at this point we would be trying to get a baseline. Therefore, we need similar numbers of tows over the full range of wing spreads.
5. Wing spread treatments will be randomized with respect to day and night.
6. Baseline variability in catch rates will be characterized by by towing both nets at optimum spread.

Action: *Circulate wing spread study plan (slides) to NTAP, make available on MAFMC website (Matt Seeley).*

B. Flume Tank Experiment

We are coordinating with the Marine Institute at the Memorial University of Newfoundland to deploy a model of the R/V Bigelow bottom trawl survey net in their flume tank to understand how wing spread affects gear performance. Experiments will be conducted at Memorial University in Newfoundland, 29 July. A video feed will be set up at SMAST East Room 102. Tank rental is from 8 a.m. to 5 p.m. Newfoundland time, which is 1.5 hours ahead of local time. Experiments will be started at 8:00 a.m. EDT and finish at 3:30p.m. EDT.

The proposed agenda is:

1. Introduce tank staff and facility, with opportunity for questions and answers.
2. Provide overview of model in tank (1:8 scale).
3. Move from optimal spread to spreads 8 meters or less.
4. Move from optimal spread to spreads as wide as possible (up to 17, which may require altering the bridle).
5. Other trawl model flume tank experiments to be determined

The wing spread, headrope height, and water flow will be measured and recorded for each experimental treatment (wing spread). Height off the bottom may also be measured. While it may be of interest to also look at the behavior of a twin trawl, scale models would have to be smaller in order to fit in the tank.

The views include a side view, vertical view down, (pan/zoom/move), head-on, and fisheye. It is probably not possible to get all views simultaneously, but participants will be able to request any view at any time. Still pictures will be important to capture in order to get paired measurements and visualizations. Current velocity can be changed to test the effects of tow speed on gear performance as well, e.g., how does net change when set at optimum width but speed varies from 2-4 knots. We can also look at the effects of higher speeds at wider spreads. Members should provide Phil with descriptions of additional experiments they would like to see, after all wing spread experiments are conducted satisfactorily.

The dry run at SMAST will be coordinated with a dry run at VIMS so there will be two locations to watch the experiment.

Testing other trawl net types in flume tank, and making a chain sweep model were discussed.

Action: *Send Phil recommendations for additional flume tank experiments to be conducted if the wing spread experiments are completed early.*

***Action**: Test remote connections for flume tank testing (Phil Politis, Pingguo He, Jim Gartland)*

C. Door Testing on NOAA ship Henry B. Bigelow

We plan to test the performance of different types of doors on NOAA Ship Henry B. Bigelow, August 21-28th (8 days), first leg (21-24th), second leg (25th-28th). The following NTAP members volunteered to go to sea: Ruhle, Alexander, and Gregg). Guidance was sought on a preference for testing in shallow or deeper water if weather was an issue. The panel agreed to prioritize deeper strata. The goal is to find a door that achieves an optimal net spread without needing extreme amounts of wire, and which provides consistent wing spread performance over the range of depths. We will not be looking at catchability during door testing. Door types to be tested are Thyboron Type 21 (flipper) doors; NEAMAP Type IVs, Bisons (Terry Alexander's), and perhaps Patriot doors.

***Action1:** Paperwork for NTAP membership participation in door testing (Phil Politis)*

***Action2**: Send an email update after experiment to all NTAP members (Phil Politis)*

D. Catchability in Groundfish Stock Assessments

Tim Miller presented results from the chainsweep efficiency research conducted on the F/V Karen Elizabeth in 2015-2017, including differences in catch efficiency of flatfish, red hake, and skates between chain sweep and rock hopper gear. Results are expected to be used in all applicable stock assessments, including most of the 2019 groundfish updates. There will be explicit text in the assessment documents explaining use or non-use of the study results. This work demonstrates the direct applicability of NTAP-led catchability research to stock assessments and should be considered a success.

Uses in assessment:

1. Index based stocked assessment methods use the biomass estimates based on chainsweep efficiency
    i. Witch flounder, GOM winter, northern and southern windowpane, northern and southern goosefish
2. Abundance at length is converted to abundance at age and used directly in stock assessments
3. Comparison of biomass or catchability estimates in stock assessments
    i. Biomass estimation uses estimated length to weight relationships-
        1. Numbers at length estimates can be used with age-length keys for catchability at age
    ii. Plaice, SNE, CCGOM yellowtail, summer flounder

The updated stock assessment schedule is available here: https://www.nefmc.org/library/2020-2024-stock-assessment-schedule

Action: *Circulate language in groundfish assessments associated with using chainsweep research/efficiency (Tim Miller)*

E. Additional Gear Performance Funds

Wendy Gabriel summarized available funding ($140,000) for gear performance research related to New England ground fish or climate. Money needs to be obligated in near future.

There was extensive discussion about the research priorities for NTAP going forward, from alternative survey techniques (acoustics, fixed gear) to additional trawl gear performance studies (tow time and twin trawl effects) to addressing the potential impacts of offshore wind on the NEFSC trawl survey (see full list in section F, below). Ultimately, the group felt most comfortable waiting to make a decision on the specific research topic for the $140,000 until after the 2019 field season, as the results of the net spread study, flume tank experiments, and door study will provide critical information on next steps.

Action 1: *Explore MAFMC as "account" to hold $140k until after summer 2019 field season. Is there a fair process for contracting a vessel for work if this is done? (Matt Seeley)*

Update: There is potential to BOP funds to a MAFMC account

Action2: *Define SOW for $140k (Phil Politis)*

F. Longterm NTAP Plans

Potential topics of future NTAP research included:

1. Create new digital time series
    - Acoustics from multiple angles
2. Explore/calibrate additional sweep types/efficiencies
    - Street sweep
3. Scope/explore alternative survey approaches for use in windfarms
    - Gear types and configurations
        - Fixed gear
        - Stereo video
        - Beam trawl
        - Bottom trawl – commercial F/V, smaller scale
4. Evaluate 20/30 minute tow impacts (predatory species)
5. Pursue next steps with wing spread research

    - Dependent on outcome of fall 2019 Karen Elizabeth study
6. Evaluate Impact of small mesh liners
7. Conduct supplemental surveys
8. Calibrate surveys (NEAMAP, Bigelow, states)
9. Evaluate effect of twin trawl approach (net geometry, flume tank?)
10. Evaluate mpact of restrictor cable on roundfish (and other spp.) catchability (twin trawl experiment)
11. Expand inshore survey (pilot?) to Nantucket Shoals

We discussed the necessity of having a subgroup of NTAP members for long-term planning. This group would prioritize projects and determine questions to be answered by NTAP members.

Action: *Draft formalized, prioritized fleshed out list of future NTAP research (NTAP center members)*

G. Scheduling of Future Meetings

Frequency and timing of future meetings was discussed. The panel agreed the next meeting should occur in November or early December when results from trawl performance work would be ready to be discussed. Several NTAP members expressed an interest in having the next meeting be in a mid-Atlantic location. The group discussed alternating between Mid-Atlantic and New England for biannual meetings. Full NTAP meetings would be held twice a year, one in May/June and another in November/December. The group agreed it may be beneficial to have NTAP meetings preceding or following council meetings. The next MAFMC meeting will be in Annapolis, MD December 9th.

Action: *Matt and Katie coordinate sending out a doodle poll for scheduling the next meetings.*

Update: *Matt sent out a doodle poll for scheduling the next two meetings.*

Date Poll: https://doodle.com/poll/qhhsbizzfe2w6itk.

Location Poll: https://www.surveymonkey.com/r/VSXXQXT.

H. Dave Goethel letter "How to Improve Groundfish Assessments in New England"

Dave Goethel submitted a letter to the NEFMC for consideration at its April meeting. He also shared it with NTAP members in early April. He asked for some time on the agenda to discuss and get any feedback from NTAP members. The letter outlines six suggestions for improving groundfish stock assessments in New England, including: 1. Split the Albatross and Bigelow times series and no longer use the calibration coefficient, 2. Improve area swept estimates using GPS and net mensuration data, 3. Account for the time varying catchability in the trawl

survey, 4. Improve assessment and accounting of spatial variability, 5. Use fishery dependent data to understand how/when fish change habitat/distribution, and 6. Consider using habitat correlations to extrapolate areas not surveyed. The letter highlights different stock assessment techniques that are currently being used in the west coast and Europe. NTAP supported Dave Goethel's letter and comments and agreed to develop another letter from the group regarding long-term planning for fisheries surveys.

Action: *Draft letter to Council/Center leadership regarding long-term plan for fishy independent surveys (Mike Sissenwine, Wendy Gabriel, Dave Goethel, Terry Alexander). Full NTAP review prior to delivery.*