This document summarizes the discussions of the Northeast Trawl Advisory Panel Working Group that was convened on November 19, 2018 at NOAA’s Northeast Fisheries Science Center- Narragansett Laboratory, Narragansett, RI from 10 am to 4 pm. A summary of key discussion and recommendations of the full day, and meeting agenda are presented below. This summary does not capture every individual comment or discussion point.

Meeting participants:

Chris Roebuck  
James Ruhle  
Robert Ruhle  
Terry Alexander  
David Goethel  
James Gartland (Phone)  
Wendy Gabriel  
Phil Politis  
David Richardson  
John Manderson  
Chris Batsavage (Phone)  
Mike Pol  
John Hoey  
Jessica Blaylock (Phone)  
Matt Seeley (Phone)  
Tyler Pavlowich  
Michael Sissenwine  
Mark Terceiro (Phone, first half)  
Tim Miller (Phone)  
Andy Lipsky

1. **Overview and objectives for meeting: review research plan on wingspread (Gabriel)**

**Presentation: [Link to Gabriel Presentation]**

The Working Group reviewed and adopted the agenda.

One potential NEFSC approach to addressing proposed changes would be to develop recommendations and results of our joint research efforts and then present and vet them
through a third-party review process such as the Councils’ Science and Statistical Committees or other body. The results of this process would then be considered for decision-making by agency leadership.

Industry members offered a number of comments and questions related to better understanding the scope of this effort and keeping the possible changes open for consideration, e.g., gear changes only, gear changes and operational protocols. Industry members indicated that a solution to achieve consistent survey gear operations is likely to include a wide range of solutions that may include door changes as well as various changes in protocols for gear handling, e.g., scope ratios from current protocols.

NEFSC members indicated we are open to evaluating potential changes to gear and operational protocols as a package, their impacts on survey and assessments, and options for addressing these impacts. NEFSC staff also indicated that previous decisions to apply Bigelow scope ratios to industry vessels (with different gear) conducting twin-trawl experiments may not have been appropriate.

The group discussed the purpose of the future twin trawl study: are we trying to lock in the optimal range of the survey wingspreads or better understand the basis for tolerances while targeting a 13m wingspread? This topic came up in further discussions described below.

Industry members wanted to better understand how the information coming out of the future experiments would be used by NEFSC: who would bring new information/results forward and how would new information get applied during assessments? The opinion by industry is that there is a track record of not utilizing research results to their fullest extent, and members offered examples of how previous efficiency experiments that had not been able to be fully applied in the assessment processes, depending on specific judgement by the individual stock assessment scientist to bring new information forward or not, and to incorporate/apply results.

NEFSC staff understood the concerns expressed by industry members and also indicated that recent changes in the stock assessment process will now be implemented. Under a new assessment process, there will be much more flexibility to bring new information forward. It will still be the responsibility of stock leads to bring information into the assessment in conjunction with external assessment working group members. This was not a satisfying response to some participants.

2. **Review status of wingspread performance analyses (Blaylock)**

**Presentation: [Link to Blaylock Presentation]**

Blaylock presented a brief review of analyses done to date to evaluate how applying (a) tow-specific area swept adjustments and (b) hypothesized relative efficiency adjustments to
survey data based on wing spread affects survey index estimates. Hypothesized relative efficiency relationships (i.e., changing efficiency at different wingspreads) were proposed for select species at previous NTAP meetings. Working papers for the wing spread analyses were developed for the Summer Flounder and TRAC assessment meetings, and NEFSC staff are currently working on follow-up analyses (focused only on the area swept adjustment) for all NEFSC assessment stocks.

There were various discussions and questions among members concerning the application of the adjustments to the data and the various impacts on the index estimates, including why applying the adjustments made little differences in various stocks.

The analyses demonstrated the area swept adjustment did not alter the index estimates significantly (based on 90% confidence intervals) for any stock, while the impact of the relative efficiency adjustment differed among stocks and seasons, and depended on which relationship was used (i.e., yellowtail or summer flounder hypothesized relative efficiency). The efficiency adjustment had very little impact on index estimates for TRAC stocks, such as Eastern Georges Bank haddock, presumably due to the fact that average tow depths for these stocks largely fall in the depth range that results in optimal wing spread. However, for summer flounder there were some notable significant differences when applying the summer flounder hypothesized efficiency, resulting in major differences in estimated abundance and biomass, especially in fall 2012.

Industry members had a number of questions related to the impacts of applying actual tow area swept calculations and wanted to clarify that it would be inappropriate to assume the catch per tow under overspread conditions is simply scaled up from what it would have been under optimal spread conditions. This is because overspread conditions are likely more inefficient in capturing flatfish species since the middle of the sweep reacts to overspreading by lifting off the bottom and the head rope height drops. NEFSC scientists recognized this issue and agreed that the application of simple scaling based on area swept would be inappropriate if gear efficiency was reduced at wide wing spreads. However it was agreed that if the relative efficiency at different wing spreads was known, a combination of scaling approaches would provide more appropriate results.

Industry members, in reviewing data presented by Blaylock, remarked on the potential impacts caused in 2017 when there was no fall survey. The loss of the 2017 survey has the potential to impact assessments, particularly those using index-based methods.

Based on a lengthy discussion by members in understanding the results of this hypothetical relative efficiency analyses, members concurred on the importance of pursuing experiments to better understand impacts on survey index estimates and assessments and move from applying best professional judgment on gear efficiency to actual empirical data resulting from future testing.
3. **Review gear performance (door) evaluations (Politis)**

Politis and Alexander summarized door testing work conducted during the Fall survey. This was a limited trial of 66” Thyboron Type IV doors with various scope ratios conducted over the course of 24 hours. The work was conducted in shallow strata and optimal spread of 13m was realized at a warp to depth ratio of 10:1 at shallowest sites.

Future gear trials may include testing 1.5m² Thyboron Type 21 flipper doors and Bison doors. NEFSC has requested 8 additional sea days in 2019 and will work with NTAP to design and prioritize gear testing with a target for the spring survey.

Jimmy Ruhle expressed frustration that NTAP had not been consulted prior to the fall door testing as the Ruhles could have provided useful information on gear handling that may have helped the fall gear trial; and would like to improve our process for communications and coordinating our joint research.

Politis indicated there was no intention to bypass input from NTAP members for this trial. The trial was extremely limited due to the small sampling/time window and NEFSC had reached out to VIMS to obtain initial gear settings. NEFSC acknowledged that we can and will improve communications with NTAP and NTAP working group members to ensure we are leveraging the significant expertise of this group. Politis also invited any NTAP members to join in future gear trials on the Bigelow.

There was various discussions on gear set procedures and variability in sea conditions/currents that can impact effective tow sets, including speed set and slow down procedures that are employed on the Darana R with similar gear to optimize gear performance.

4. **Design twin trawl survey design:**

**Materials:** Link to Dave Richardson Presentation; Link to Blaylock Analysis; Link to Gabriel Analysis

Group had a far ranging discussion about the objectives of this experiment (from research plan), species of interest, wingspreads of interest, timing and logistical considerations, experimental design procedures, and application of the results. Key highlights, questions, and answers are summarized below.

**Should we focus on shallow or deep strata?** Group concurred on splitting experiment to focus on shallow and deep strata.
Timing of experiment? Based on availability of F/V Karen Elizabeth, August/September is best timing for this experiment. There should not be problem finding target species for both overspread treatments in deeper strata and underspread treatments in shallow strata.

Do we need to consider habitat and geographical differences in order for the study results to pass peer review? Group discussed this at length. We will apply similar assumptions from previous catchability experiments for practical purposes, and expertise of the panel is that behavior effects due to geography/habitat (vs diel differences) are likely very limited and will not be a factor considered in the experimental design. Experiment would be designed to consider day and night effects.

Do we design the treatments categorically or as a continuous function? There was lengthy discussion and alternatives discussed to answer this question. The group evaluated the analyses conducted by Blaylock and Richardson of various wingspreads in relationship to actual catch data over the 8 year time series to help understand frequency of spread conditions by species. The group also concurred that spread effects are likely not going to be linear relationship, especially for the deeper overspread strata.

The group considered categorical treatments, and agreed on treatments that hit extremes in performance: 9m v 12.9m; 11 m v. 12.9 m for shallow/underspread conditions; and 12.9m v. 14.2 m; and 12.9m v. 15.5 m for deep/overspread conditions.

Miller and others indicated it would be most useful to test efficiencies across a continuum of spreads outside the optimum if the goal is to better understand the problem and where major inflection points in performance occur. We would be able to apply results more effectively (statistically efficient) if we develop a smooth relationship between points vs a separate factor approach, recognizing the further you get from optimum the more likely you can detect a difference. Industry expressed some concern on acquiring enough paired data following this approach. Roebuck indicated that operationalizing this approach should not be a problem as he can have various restrictor cable/chain lengths fashioned to achieve necessary wing spreads. The group described flexible sampling schemes that allowed dynamic sampling to address the issue of obtaining enough sample power, e.g. begin sampling in the extremes and working towards the optimum wing spread, using an approach similar to that of Leg 3 of previous efficiency experiments, which allowed real time analysis of data, species-size data gaps, and on-the-fly targeting of samples.

What species should be focus of study? Various options were discussed, including whether the focus should just be on what is on the assessment schedule, and focus on index-based assessments where the data applications could have largest impacts. The group indicated that while assessments were one avenue to deliver the results, the objectives of this work were to better understand the scale and scope of the problem to further hone additional
studies and work necessary to develop options for addressing any potential impacts. The group indicated the focus should not be on semi-pelagic/pelagics but on demersal species. There was discussion that for Commission species (spot, croaker, and weakfish) this experiment could be important for shallow strata.

In summary, the group agreed on conducting a similar experiment as Leg 3 Efficiency Study conducted in 2017, to focus on southern-New England/Mid-Atlantic Bight and Northern/Gulf of Maine and to split 14 days as appropriate. Species targets were agreed upon by the working group: In the northern sampling area, target species would include American plaice, monkfish, Gulf of Maine winter flounder, red hake, witch flounder and possibly thorny skate and halibut. [Windowpane flounder may be added.] In the southern sampling area, target species would include monkfish, red hake, summer flounder, windowpane, winter flounder, yellowtail flounder, and possibly skates and silver hake.

Chris Roebuck affirmed the process with the working group for calculating wingspread conditions during the experiment. Chris indicated that calculations would be derived from the restrictor cable lengths that are positioned from the doors; and that he would confirm spread conditions by measuring distances with acoustic sensors.

The group agreed to refine sampling priorities within this initial list over future meetings and refine target sampling areas with NTAP expertise input. There was also agreement that the NEFSC would develop an analytical tool for real-time sampling decision-making to address species priorities and to optimize data collection to characterize adequate spread/performance relationships.

5. **Identify candidate doors for testing**

The group had a short discussion for refining candidate doors for future gear trials. Industry members expressed significant concern about the Thyberon 21 flipper door, which is a high aspect door designed for more pelagic species. Alternative doors should be considered for gear trials, including various other Bisons, Thyberons, Polyice, and others.

6. **Wrap-up, action items, next step**

Group agreed on actions to follow up on described above:

1. Refine priority species list, including species for length-based analyses (NEFSC)
2. Develop draft experimental design based on agreement reached at this meeting and share with NTAP WG for further concurrence in addition to additional stock assessment expertise (NEFSC)
3. Develop at-sea real-time analytic tool (NEFSC)
4. NTAP members consider availability to join future gear trial experiments set for Spring.
5. Door experts develop recommendations for gear configurations (Bison: Alexander, Goethel; Thyboron 4: B. Ruhle, J. Ruhle; Others: TBD).
6. Summarize meeting and present to next full NTAP meeting