New England Fishery Management Council
Scallop Survey Advisory Panel Meeting
Holiday Inn – Mansfield, MA

DRAFT Meeting Summary
September 3, 2009

Purpose of meeting: The SSAP reviewed the status of scallop survey research and plans for future survey research. The SSAP also discussed plans for peer review of RV Albatross/Sharp dredge calibration as well as incorporation of new technologies into the annual resource survey.

Attendance: Jim Fair (chair, NEFMC), Rodney Avila (NEFMC), Drs. Dvora Hart (NEFSC), Dr. Kevin Stokesbury (SMAST), Dr. William DuPaul (VIMS), Dr. Scott Gallager (WHOI), Richard Taylor, Ron Smolowitz, and Kevin Kelly (ME DMR). Also attending were Andrew Applegate and Jessica Melgay (NEFMC staff), David Rudders (VIMS), Harriet Didriksen (FV Settler), Cate O'Keefe (SMAST), Dr. Russ Brown (NEFSC), and Amber York (WHOI).

Motions: The SSAP made no motions but decided on the following issues by consensus.

1. To develop and provide recommendations on a benchmark (SAW) assessment term of reference to evaluate scallop survey methodology to the NRCC through the Council process. This task would be accomplished through email follow up during fall 2009.

2. To develop a comparative data products and processing flow chart for 2009 Nantucket Lightship Area surveys to be used during the dredge calibration peer review and survey evaluation during the benchmark assessment.

3. To develop a final or interim SSAP report which would summarize progress made by the SSAP to improve survey design and implementation, and to describe the outlook of the SSAP toward implementation of future scallop survey technologies.

4. To develop recommendations on future scallop survey platforms, possibly including a designed scallop survey vessel to conduct scallop research, either by charter or consortium ownership.

5. Develop advice and recommendations on future scallop research needs and priorities, including an expansion to include supplemental surveys, bycatch, invasive species monitoring, and scallop predation and mortality effects.

Summary: Mr. Fair opened the meeting with an introduction and a review of the SSAP's terms of reference, adding that his role would be that of a neutral facilitator. During the initial part of the meeting, various SSAP members gave brief presentations summarizing the scallop survey research conducted during the spring and summer of 2009.

The first presentation was given by Scott Gallager and Amber York, which conducted experimental surveys in Closed Area I, Closed Area II, and the Nantucket Lightship Area, many of them in conducted in coordination with the RV Sharp dredge tows. The research objectives in the Nantucket Lightship Area were to 1) compare survey designs, 2) estimate scallop abundance and biomass as a function of observed shell size, 3) estimate total abundance and biomass, 4) estimate exploitable biomass, and 5) assess patchiness as a function of scallop size.

In the Nantucket Lightship Area, they sampled a total trackline length of 348 nm, or 0.44% of the area and collected 1.5 million images in 2.9 days. It took 14 man days to process the images (at a 10% sampling rate) and yielded a survey efficiency of 17 nm2/day. These data indicated that there were between 7,418 and 8,257 mt of exploitable scallops in the Nantucket Lightship Area access area. Analysis of the data indicated that a decimation level of 10 ($1/10^{th}$ of the collected images processed to count and measure scallops) was not significantly different than if every image had been processed.

In Closed Area I, about 260 nm2 were surveyed and over 1 million Habcam images were collected. Some additional comparative surveys with the RV Sharp were also conducted in the Mid-Atlantic area. The dredge tow tracks were duplicated as much as possible by the Habcam survey, making direct one to one comparisons possible. The comparisons indicated that dredge efficiency in the Mid-Atlantic was 48% for re-sampled dredge tows and 20% for re-sampled Georges Bank tows. These values would vary with the amount of small scallops and seed due to the size selectivity of the lined dredge.

Dr. Stokesbury summarized the 2009 SMAST survey program activities and results. A resource wide survey was conducted using seven industry vessels, with industry donated funds for expenses. Over 2600 stations were sampled over 57 vessel days and 60 man days were required to process the data.

The SMAST program estimated about 300 million pounds (136,000 mt) of exploitable biomass , with 5,902-5,991 mt in the Nantucket Lightship Area and 16,037-18,091 mt in the Elephant Trunk Area. The results and data were supplied to the PDT for TAC estimation and are used in the CASA/SAMS model to estimate exploitable biomass. Data are also collected to characterize sediment and habitat during the same survey.

The SSAP discussed the differences in the SMAST and other survey exploitable biomass estimates. The SMAST estimate used the currently accepted length-weight relationships to estimate biomass. There was some discussion about assumptions about commercial size selectivity as the source of the differences.

David Rudders gave a presentation on the 2009 VIMS-Industry Cooperative Survey which intensively sampled the Nantucket Lightship Area access area with paired commercial and NMFS survey dredges at gridded stations (systematic). Both dredges observe similar size frequencies with a peak in abundance at 120 mm shell height, but the lined survey dredge also observed an incoming year class around 60 mm which was barely observable in the commercial dredge. Data were also collected on scallop health and meat quality. The survey estimated an total biomass of 12,343 mt (10,329-14,357 mt 95% CI; 36% dredge efficiency assumed).

Differences in meat weight between the VIMS survey and the NMFS survey were most likely a result of differences in survey time. The VIMS survey estimated that there were about 240 million exploitable scallops in the Nantucket Lightship Area access area with an exploitable biomass of 9,608 to 9,704 mt.

Dvora Hart gave a summary of the NMFS survey research conducted during 2009. The survey is a primary source of data to evaluate biomass trends by region and management area. These dredge survey data are used in the CASA and SAMS model to estimate fishing mortality and biomass, and estimate TACs. The data were being explored and analyzed to calibrate survey dredge efficiency for yellowtail flounder, which would potentially allow for total biomass estimates using the dredge survey data. Issues such as the impact of camouflage in Habcam still images were being investigated.

Dvora Hart indicated that a benchmark scallop assessment was being planned for June 2009 and terms of reference were being developed, including an evaluation of survey approaches. These survey approaches include design vs. model based surveys and the terms of reference would include sources of bias (such as edge effects) and sampling efficiency.

The SSAP discussed its role in the process and relationship to the planned review as part of the benchmark assessment. **It was decided that the SSAP could help draft a survey design term of reference to be presented to the NRCC through the Council process.** The SSAP could also help by compiling and circulating standard information about the various surveys, including information on data processing flow charts, data products, selectivity assumptions, meat weight conversions, and sample size and frequency.

Members of the SSAP outlined their plans for 2010 surveys and survey research, many of the survey research proposed for research set aside (RSA) funding. Richard Taylor indicated plans to conduct Habcam surveys in the Closed Area II access area and the western side of the Great South Channel, to estimate scallop and yellowtail flounder abundance and distribution. The plans included conducting a concurrent acoustic survey of substrate characteristics using multi-beam sonar.

VIMS (Bill DuPaul and David Rudders) submitted two RSA proposals to survey areas in anticipation of commercial fishery access during 2011. These areas included the Hudson Canyon Area access area in 2010 and Closed Area I.

Kevin Stokesbury indicated that SMAST had plans of conduct photographic based surveys in the Delmarva Area, the Hudson Canyon Area, and the Gulf of Maine. An additional 3 nm2 grid survey would be conducted with industry support.

Dvora Hart reported that the 2010 dredge survey would be conducted on the RV Sharp, for the third year. No more shadow tows (tows duplicated with other surveys) were planned because over 200 had already been collected and what is needed is a good rigorous statistical analysis for the benchmark assessment. Some tows may be coordinated with the Habcam survey and there would be efforts to incorporate survey data from sources outside of the normally sampled survey strata to estimate total biomass.

Since the RV Sharp is a contracted vessel, there had been some discussion of future alternatives for scallop survey sampling platforms. Dvora Hart outlined the advantages and disadvantages of three potential choices to get SSAP discussion and feedback. The three options were 1) convert an existing scallop vessels to do surveys and research, 2) build a custom survey vessel, and 3) consortium ownership of a scallop survey vessel. A vessel converted or designed for scallop surveys is needed to use a dredge to collect biological samples and use along-track, high resolution still imaging (for example) to count scallops and other observable biota – tasks which other research vessels are not well suited to do.

Many felt that there would be sufficient demand for a designed consortium-owned scallop survey vessel, to be used as a single purpose vessel for scallop research which could be crewed by a commercial captain and fishing crew.

Amber York and Scott Gallager gave a presentation to the SSAP on HABCAM observations of Didemnum sp. distribution on Georges Bank. Didemnum is an invasive tunicate that has established itself on parts of Georges Bank and propagates through sexual and asexual reproduction. Dense concentrations or mats often exclude other species, including scallops. Percent didemnum coverage was negatively correlated with abundance of live scallops, scallop shell (dead scallops), and tubeworms. Habcam observations from August 2007, May 2008, August 2008, November 2008, and April 2009 showed considerable variation in percent cover. Didemnum were observed in Closed Area I, Closed Area II, and the Nantucket Lightship Area, with percent cover in the North Edge higher in the closed area (Closed Area II) than in the adjacent open area. Didemnum presence was strongly associated with gravel substrate on Georges Bank, and not present on sand substrate.

Following the presentation, the SSAP discussed the expanded role that scallop survey research could play. The SSAP agreed that an expansion of scallop survey research priorities was warranted, beyond priorities to only estimate scallop abundance and exploitable biomass. These priorities could include estimating abundance and biomass of species routinely caught at bycatch; monitoring the prevalence and distribution of invasive species; monitoring scallop health, meat quality, and predation; and characterizing and monitoring habitat quality in scallop fishing areas. The SSAP agreed to develop via email recommendations on changes in survey based research priorities.