Atlantic States Marine Fisheries Commission

Horseshoe Crab Adaptive Resource Management Subcommittee

ARM Review Planning Call

January 20, 2016
1:00 p.m.-3:00pm

Attendees

Kirby Rootes-Murdy, ASMFC Staff
Kristen Anstead, ASMFC Staff
Mike Millard, US Fish and Wildlife Service
John Sweka, US Fish and Wildlife Service
Jeff Brust, New Jersey Division of Fish and Wildlife
Steve Doctor, Maryland Department of Natural Resources
Jim Nichols, US Geological Survey
Ed Hale, Delaware Division of Fish and Wildlife
Conor McGowan, Auburn University / US Geological Survey

Summary

1) **Review discussions from Fall 2015**

- Kirby Rootes-Murdy walked the group through the ARM Subcommittee discussions through email exchange during Fall 2015 and the Horseshoe Crab Management Board Meeting discussion at the Annual Meeting in November 2015.

2) **Discuss Double-loop review**
    - **Items to be considered in the review**
    - **Potential workload**
    - **Potential timetable(s) moving forward**
    - **Recommendations**

- Both Jim Nichols and Conor McGowan pointed out that there weren't many examples to pull from on how a double loop review or learning process should be conducted. While the Fish and Wildlife Service have considered the double loop learning process for other adaptive management topics, there are few to none that have fully initiated or completed the process. In looking for guidance on what to address through the review, staff reiterated that the Management Board (Board) raised concern about male only harvest in the Delaware Bay Region and some states wished to re-evaluate at the 2015 ASMFC Annual Meeting.

- To help in organizing items that could be addressed through a review, the group revisited the short list of items Conor circulated in the fall 2015 ahead of the Board Meeting. There were the following general areas:

1) Model set assessment
- *evaluate the model set*
    - *are the hypotheses still relevant? Do the models adequately address those hypotheses? Do we need new models? If so what are they?*
    - *update model parameters to incorporate new analyses as needed*
    - *execute any analyses to update parameters where possible and as needed.*

2) Optimization algorithm update
- *transition from ASPD to MDPSolve*
- *improve incorporation of stochasticity into the optimization model if possible/necessary*

3) Evaluate monitoring program
- *update and improve monitoring protocols as needed*
- *use available data to assess estimate quality and precision if possible and as needed*

4) Harvest rates-action

5) Revisit objective function
- *assess the structure of the objective function*
    - *are the thresholds set at the correct level? Is a threshold approach still the most appropriate approach?*
        - *Revise as needed*

- The listed items all had areas where there was new research and tools available that could change the underlying process of the ARM as well as open the discussions about whether model is capturing everything properly.

- Two significant work items in terms of time were:

    - **Item #1.** Reviewing the ARM model setup - the hypotheses used in the set up phase, and evaluating whether the population models needed to be changed.
    - **Item #2.** Changing the model software platform from current ASPD to MDPSolve. Conor pointed out that MDPSPolve may be a more flexible way for doing optimization work as well as accounting for stochasticity in the model.
    - The group was in agreement that these two items could not realistically be completed within the next 6-8 months.

- In looking at items 3-5 listed, the group felt these could potentially be completed in the short-term (6-8 months)
    - **Item #3.** Evaluate the monitoring program- update and improve monitoring protocols as needed, use available data to assess estimate quality and precision if possible and as needed. The group pointed out that is work is already begun through analysis Jim Lyons is doing on the mark-recapture component of the red knot stopover population estimate.

    - **Item #4**. Harvest Rates and Specifications- evaluate the harvest of the Delaware Bay states relative to the quotas, as well as the harvest packages- e.g. 500 individuals, 400 males, 100 females etc. The group was in agreement that harvest and harvest rates should be reconsidered relative to the harvest packages outlined

in Addendum VII. Based on research and evaluating the sex ratio composition, its possible 2 out of the 5 packages aren't realistic and should be reconsidered.

- **Item #5.** Revisit objective function - assess the structure of the objective function, with questions as: Are the thresholds set at the correct level? Is a threshold approach still the most appropriate? Conor pointed out to the group that this item is the most uncertain of the items in terms of being addressed in the short term as members of the public as well as Technical Committee members may feel that a revising these objective statement from maximizing horseshoe crab harvest and conserving red knots should put more emphasis on conserving red knots in light of the red knots having been listed as Threatened under the Endangered Species Act (ESA) in 2013. The group was in agreement that if this was opened up again to the general public, it could be contentious topic that would possibly take longer than 6-8 months to address.

- In considering the change to the red knot status under ESA and how that should be considered in a review or update of the ARM Framework, John Sweka and Mike Millard were not aware of any specific items that needed to be re-considered or required special consideration. A research priority list for 2016-2017 has been developed, but a species recovery team has yet to be formed and subsequent meetings and/or recommendations have not been developed yet.
- With the tentative two groups of review work set through the list, the ARM Subcommittee members were in agreement that these group items could be viewed as two different time horizons for completing the ARM review: a short (items 3-5 over the course of 6-8 months) and long (items 1-2 over 18-24 months) term reviews of the ARM Model
- For completing items 3-5 over the next 6-8 months, the group members noted that bi-monthly calls and two in-person meetings would likely be needed to facilitate the process of completing the work.
- To help in trying to address each of the work items 3-5, the following subcommittee members volunteered or were volunteered to be leads in completing the work items:
  - Item #3. Evaluate the monitoring program: John Sweka and Jim Lyons
  - Item #4. Harvest Rates and Specifications: Steve Doctor and Ed Hale
  - Item #5. Revisit objective function: Conor McGowan
  - ***There was an additional item of updating the model parameters based on new research that possibly could be done by the ARM Subcommittee collectively or by one person- Conor indicated it would not be time intensive work item. The subcommittee members were in agreement it should be completed with the 3 short term work items.

3) Next Steps

- Kirby will present the outcome of the call to the Board at the ASMFC Winter Meeting in February 2015.
- Kirby will set up bi-monthly calls for the ARM Subcommittee to facilitate the review of the ARM and associated work by the subcommittee members.