Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

Horseshoe Crab Adaptive Resource Management Subcommittee Meeting Summary

Laurel, MD
May 7, 2013

Committee Members: Dave Smith (Chair, USGS), Conor McGowan (Auburn), Emily Merritt (Auburn), Shelby Flemming (MSU), Jim Lyons (USFWS), John Sweka (USFWS), Mike Millard (USFWS), Kevin Kalasz (DE FW), Rich Wong (DE FW), Larry Niles (NJ), Mandy Dey (NJ DEP), Jeff Brust (NJDEP), Steve Doctor (MD DNR), and Michelle Klopfer (Virginia Tech)

ASMFC Staff: Marin Hawk

The Adaptive Resource Management Subcomittee (ARM WG) held a meeting to discuss red knot stopover population estimates and red knot threshold calibration for the 2014 ARM model. In addition, the ARM WG discussed horseshoe crab abundance data issues which included lack of data for 2012, lack of funding for the 2013 survey and possible solutions to these issues. The meeting concluded by outlining the schedule for the 2014 ARM optimized harvest output and briefly discussing other issues. Below is a summary of the discussions.

Stopover Population Estimates and Threshold Calibration

The ARM WG reviewed the mark-resight population model and its parameters, since the ARM WG is moving from aerial and ground counts of red knots to these model estimates. The aerial/ground counts from 2011 and 2012 were compared to mark-resight estimates for the same years in order to determine the correct ratio to adjust the red knot threshold in the ARM model. Previously, the threshold was 45,000 red knots. After comparing the data for the two years, the ARM WG agreed that 1.42 is the correct ratio to adjust the red knot threshold. This was calculated using a ratio of the sums from both years of data (2011 and 2012). Therefore, the new red knot threshold for the 2014 ARM model is 63,900 red knots. Included in this discussion were the follow points:

- For 2011, the aerial counts were approximately 12,000 birds lower than the mark-resight estimates. Method reports on both the mark-resight approach and the aerial/ground count approach to estimating abundance will be written by Jim Lyons and Mandy Dey, respectively. The reports will outline underlying assumptions and will be used in future ARM WG meetings to explore possible reasons for differences in estimates between methods.
- The goal is to calibrate the red knot threshold in the ARM decision model that was based on a proportion of historic peak coun, to account for the shift from aerial count to mark-resight methodology. The historic peak count was during a time when Mispillion Harbor was not a focal area, which it is currently. This might be due to changes in spatial distribution of the shorebirds from relatively

dispersed to relatively clustered. Kevin will explore data archives for historic counts in Mispillion Harbor.

- An additional year's data might improve this threshold calibration. The ARM WG agreed that if it was available before the ARM model is run, the 2013 data will be included.

Despite these issues, the ARM WG agreed that the mark-resight estimation represents significant progress and that the ratio based approach to calibrating the red knot threshold in the ARM model is reasonable and the best approach available.

Horseshoe Crab Abundance Data

Horseshoe crab abundance data from the Virginia Tech Trawl Survey is used as the state variable in the ARM model. Due to a lack of funding for the 2012 survey, only a portion of the Delaware Bay area (the Core area) was sampled. Since estimates for the entire Delaware Bay area are needed for the model, the 2012 estimate for the Core area was expanded to the Delaware Bay area based on estimates from 2002 to 2011 when Core area and Delaware Bay area estimates were available. The ARM WG agreed that expanding from the Core area to the Delaware Bay area for 2012 was reasonable and the best option available. However, there was some concern with the variability of the estimates due to the large confidence intervals of the trawl survey estimates. There was agreement that because of the wide confidence intervals the significant variation in horseshoe crab abundance over the years cannot be inferred. Since the data is not used to analyze trends, this issue was put to rest.

The ARM WG also discussed the lack of funding for the Virginia Tech horseshoe crab trawl survey. It is unclear whether the survey will continue in 2013. Since horseshoe crab abundance data is necessary to run the ARM model, this is an urgent matter to the ARM WG. Possible solutions were discussed and will be investigated at length in July 2013.

Schedule

- July 2013: Webinar/conf call
  - discuss alternative for estimation of horseshoe crab abundance
  - determine availability of 2013 shorebird data for ARM recommendations
- Aug – mid Sept: meeting to present ARM harvest recommendations
- Aug – mid Sept: DBETC meeting to review ARM recommendations

Other Issues

The ARM WG discussed how unreported landings of horseshoe crabs could influence the ARM model. An important point is that the adult horseshoe crab survival estimate in the ARM model and recently updated through tagging analyses includes all sources of mortality (natural and fishing – legal, illegal, and bycatch). Although unreported landings are not currently included in the ARM as an explicit model parameter, it is included implicitly through the empirical adult survival rate.

The ARM WG discussed beach replenishment and how that could influence the population of horseshoe crabs. Larry Niles and Mandy Dey will be leading studies this field season to determine abundance of horseshoe crabs on replenished beaches in NJ. This information could be used to inform and promote future beach restoration efforts.

Finally, the ARM WG expressed concern over the importation of Asian horseshoe crabs. The ARM WG agreed that federal laws would be preferable to state laws, since some states lack the authority to address this issue. In the meantime, it is imperative that states act to prevent importation of Asian horseshoe crabs and their use as bait because of the risks associated with introduced disease, in particular.

Task List

1. Mark-resight methods paper – *Jim Lyons*
2. Aerial/ground counts methods paper – *Mandy Dey*
3. Historic counts in Mispillion Bay – *Kevin Kalasz*
4. Review horseshoe crab abundance data expansion with E. Hallerman and D. Hata – *Dave Smith*
5. Compile list of alternatives for Virginia Tech Trawl Survey – *Dave Smith*