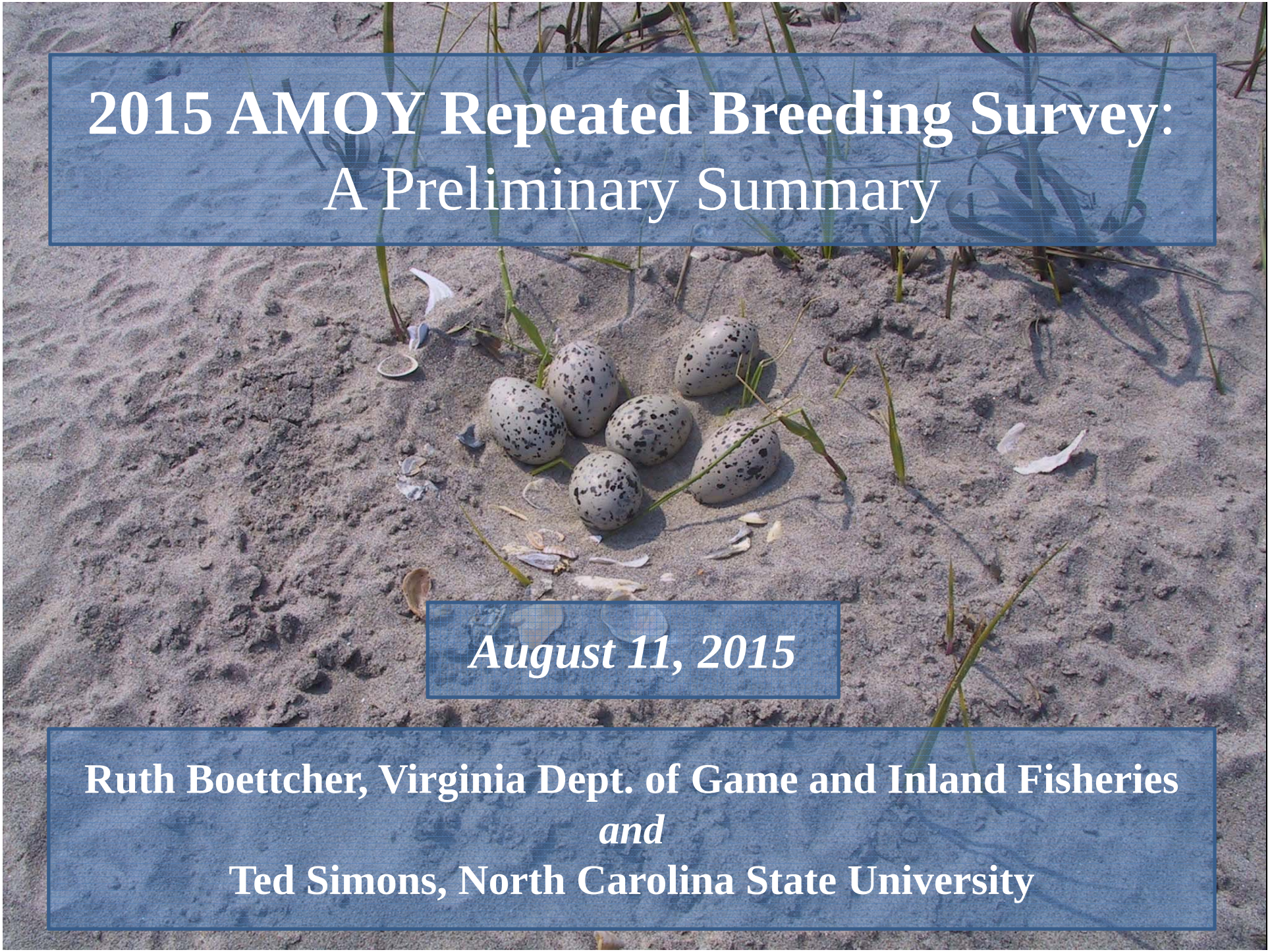

2015 AMOY Repeated Breeding Survey:
A Preliminary Summary

August 11, 2015

Ruth Boettcher, Virginia Dept. of Game and Inland Fisheries
and
Ted Simons, North Carolina State University

Overarching Objectives of a Rangewide AMOY Breeding Survey

1. Determine the number and distribution of oystercatcher breeding pairs by surveying all suitable breeding habitats.
2. Document the number, spatial distribution, age and breeding status of banded individuals during the nesting season by incorporating a resighting component in the rangewide breeding survey.

2013 Repeated Survey Pilot Study Objectives

1. Develop a standardized multi-partner survey to estimate AMOY breeding season abundance that accounts for imperfect detection.

2. Validate use of approximate pair count metrics that do not require nest searching.

Hostetter, N. J., B. Gardner, S. H. Schweitzer, R. Boettcher, A. L. Wilke, L. Addison, W. R. Swilling, K. H. Pollock, and T. R. Simons. 2015. Repeated count surveys help standardize multi-agency estimates of American Oystercatcher (*Haematopus palliatus*) abundance. The Condor 117: 354-363.

2013 Pilot Study: Field Surveys

- Eight agencies surveyed 96 plots; 93 in NC and 3 in VA
- Counted AMOY “pairs” and “territories” as proxies for nests
- Surveys were repeated on multiple occasions to allow estimation of detection probability
  - May-July, 2013
  - 219 total surveys (~2.3 surveys per plot)
- Abundance estimates only reflect the areas surveyed.

2013 Pilot Study: Analysis

- *N*-mixture models (Royle 2004; Lyons et al. 2012)

  1. Covariates on ABUNDANCE:
     - Log of the plot area (Ha)
     - State (NC vs. VA)

  2. Covariates on DETECTION:
     - Day-of-year (quadratic)
     - Tide stage
     - Plot location (barrier island vs. coastal bay)

- Validation of survey counts: intensive weekly nest searches at 13 plots (14% of the 96 survey plots) to approximate the actual number of "breeding pairs".

2013 Pilot Study: Summary of Results

Abundance estimates

- Estimated # of pairs > estimated # of territories.
- The maximum count of pairs and territories < estimated abundance.
- Detection probability < 1.0.

Detection probabilities

- Detection probabilities for territories and pairs were highest during the middle of the season (late-May to early-June).
- Detection probabilities for territories and pairs were highest during high tide.

Validation

- Proxy metrics (pairs and territories) are adequate approximations of actual pair counts.
- Repeated count surveys estimated 66 territories and 77 pairs across the 13 validation plots; intensive nest searches yielded 78 breeding pairs.

Sit Back and Re-evaluate

Conduct another expanded pilot study over the next 2 – 3 years that will allow us to continue to chip away at sampling and detection issues that inherently dog large-scale survey efforts.

Post-2013 Pilot Study Next Steps

1. Determine which metric(s) serves as the most accurate measure of breeding pairs.
2. Develop a standardized methodology to obtain breeding pair estimates that will work across all habitat types within the range.
3. Account for spatial bias by surveying in areas with low, medium and high probability of detecting AMOYs.
4. Account for potential differences in detectability rates among habitat types (*e.g.* beaches, marshes, shell rakes, spits, human-created habitats).
5. Obtain representation from other parts of the breeding range to determine the feasibility, costs and logistical constraints of conducting repeated surveys in these areas.

2014 Working Group Meeting Attendees

Project Collaborators

Todd Pover – NJ
Ruth Boettcher - VA
Pam Denmon – VA
Alex Wilke - VA
Matt Abrahams - NC
Shilo Felton - NC
Tim Keyes - GA
Margo Zdravkovic – AL and MS
Sarah Pacyna - MS
Allison Anholt - MS

Six states from New Jersey to Mississippi

Project Advisors

Ted Simons – NC State University
Nathan Hostetter – NC State University
Sara Schweitzer – NC Wildlife Resources Commission
Shiloh Schulte - Manomet

2015 Repeated Survey Refinements

1. Developed survey plot criteria.

2. Improved survey methods.

3. Developed a comprehensive list of “breeding pair” metrics.
   - Metrics that define a *confirmed* breeding pair.
   - Proxy metrics for *presumed* breeding pairs.

4. Refined criteria for validation trials.

5. Developed a comprehensive list of nesting habitat types.

Number of Survey and Validation Plots, by State in 2015

State	No. of survey plots	No. of validation plots
New Jersey	3	2
Virginia	7	7
North Carolina	3	3
Georgia	9	1
Alabama	5	0
Mississippi	1	0
TOTAL	**28**	**13 (46%)**

Total Number of Repeated Surveys, by State in 2015

State	# of survey plots	Total # of repeated surveys	# or range of repeated surveys/plot
New Jersey	3	9	3
Virginia	7	21	3
North Carolina	3	17	5 - 6
Georgia	9	38	3 - 10
Alabama	5	20	3 - 6
Mississippi	1	4	4
TOTAL	**28**	**109**	**--**

Number of High[1], Medium[2] and Low[3] Density Survey Plots, by State in 2015

State	High	Medium	Low
New Jersey	1	1	1
Virginia	3	4	0
North Carolina	2	1	0
Georgia	3	3	3
Alabama	1	4	0
Mississippi	**1**	**0**	**0**
TOTAL	**11**	**13**	**4**

[1]*High*, where AMOYs are highly likely to occur.
[2]*Medium*, AMOYs use these sites but density can vary noticeably among years.
[3]*Low*, but > 0.

Habitat Types Surveyed Across all Six States in 2015

Habitat type	**No. of plots**
Barrier island	15
Saltmarsh	7
Bay island	3
Extending sandspit	2
Isolated sandbar	1
TOTAL	**28**

Next Steps for 2016

Key issues that still need to be resolved.

Approach and timeline for planning a 2016 repeated survey effort.