

# TECHNICAL SESSIONS

TUESDAY, OCTOBER 7 ♦ 8:00 AM - 12:00 PM

SHARP / Tidal Marsh Birds

MEETING ROOM: CAPE CHARLES A

## OVERVIEW:

### The Saltmarsh Habitat and Avian Research Program (SHARP): Progress to Date and Future Expansion South

*Chris S Elphick, University of Connecticut; Thomas P Hodgman, Maine Department of Inland Fish and Wildlife; Brian J Olsen, University of Maine; W Gregory Shriver, University of Delaware*

The Saltmarsh Habitat and Avian Research Program (SHARP) formed in 2010 with the goal of conducting coordinated research on tidal marsh birds throughout the mid-Atlantic and New England states. Specific goals included a systematic region-wide survey to quantify distribution and abundance of coastal marsh-dependent species, the compilation of historic data sets to quantify population changes, and the coordinated collection of demographic data for tidal marsh nesting species. The program has grown to include five universities, 14 graduate students, and collaboration with many states, federal agencies, and non-profit organizations. In this session, we will provide an overview of the work that has been conducted to date and the work that is planned for the near future. We will also include presentations on work that is being conducted along the southern Atlantic and Gulf coasts and have an open discussion about ways of expanding the program to encompass coordinated work throughout the eastern flyway.

8:00 AM	<p><b>SHARP: The Saltmarsh Habitat &amp; Avian Research Program</b></p> <p><i>Thomas Hodgman, Jonathan Cohen, Chris Elphick, Adrienne Kovach, Brian Olsen, Greg Shriver, Bri Benvenuti, Alyssa Borowske, Meaghan Conway, Mo Correll, Chris Field, Laura Garey, Becky Kern, Alison Kocek, Kate Ruskin, Samuel Roberts, Emma Shelly, Jen Walsh, Whitney Wiest</i></p> <p>The Atlantic Coast of North America possesses the largest expanse of tidal saltmarsh and the highest concentration of endemic marshbirds in the world. This ecosystem, however, presents unique conservation challenges requiring a regional and collaborative approach. In 2010, Maine partnered with three other states to examine the conservation of birds using tidal marshlands in the northeast U.S. The states of Maine, Connecticut, Delaware, and Maryland working in cooperation with the University of Maine, University of Delaware, and the University of Connecticut, began field work on this multi-faceted study in May 2011.</p> <p>Our project includes two major components: a survey of the birds nesting in coastal marshlands from Virginia to Maine as well as a series of in-depth nesting studies. In October 2012, Hurricane Sandy made landfall along our coastal study area providing a unique opportunity to study the before/after effects of a “superstorm” on obligate saltmarsh birds and their habitat. SHARP will provide information for the New England and Mid-Atlantic Coast States to protect regionally important habitats for tidal marsh birds of conservation concern, such as American black ducks, willets, and saltmarsh sparrows, and provide a platform for monitoring tidal marshbird populations that is consistent across the region in anticipation of sea-level rise and upland/watershed development.</p> <p>Our work, following Hurricane Sandy, will inform coastal management planning by identifying marsh characteristics that indicate an ability to withstand future disturbances, such as increasing storm frequency, thereby informing decisions about where and how protection and mitigation efforts should be allocated.</p>
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8:20 AM	<p><b>The SHARP Sampling Framework: Inventory and Monitoring of Tidal Marsh Birds in the Northeast</b></p> <p><i>Greg Shriver, University of Delaware; Whitney Wiest, University of Delaware; Maureen Correll, University of Maine; Brian Olsen, University of Maine; Chris Elphick, University of Connecticut; Tom Hodgman, Maine Department of Inland Fisheries and Wildlife; Jonathan Cohen, State University of New York –College of Environmental Science and Forestry</i></p> <p>The Saltmarsh Habitat &amp; Avian Research Program (SHARP; <a href="http://www.tidalmarshbirds.org">www.tidalmarshbirds.org</a>) designed and initiated the implementation of a regional tidal marsh bird and vegetation monitoring program based on a probabilistic sampling design. A primary goal of this effort is to provide a framework for assessing tidal marsh resilience, identify conservation priorities, and determine the efficacy of restoration actions. We used a two-stage generalized random tessellation stratified (GRTS) sampling design to randomly select 280 primary sampling units (40 km<sup>2</sup> hexagons) and approx. 1,500 secondary sampling units (sampling locations within hexagons) within tidal marshes of the Northeast. We stratified our sampling into 9 sub-regions, 10 states, and by land ownership (private vs. public). We also incorporated 466 points that included historical information about the tidal marsh bird and vegetation communities to provide an assessment of the change in these attributes over time.</p> <p>We have conducted our surveys annually since 2011 and visit each location 2–3 times per season (April–July) to conduct call broadcast bird surveys and estimate vegetation community composition. We used the “unmarked” package in R to estimate abundance for tidal marsh obligate species (clapper rail, Nelson’s sparrow, seaside sparrow, saltmarsh sparrow, and willet) and identify focal breeding areas for these species within the Northeast. Detections for each tidal marsh obligate species varied among our regions. Clapper rails and willets were detected most frequently in the Coastal Delmarva region, saltmarsh sparrows were detected most frequently in southern New England, Nelson’s sparrows were detected most frequently in Coastal Maine, and Seaside Sparrows were detected most frequently in the Eastern Chesapeake Bay region.</p> <p>These data will be used to identify population focal areas within the Northeast to provide specific information about the regional and local responsibilities for conservation.</p>
8:40 AM	<p><b>The Demography of Tidal Marsh Birds: Regional Patterns and the Implications for Conservation</b></p> <p><i>Brian J. Olsen, Katharine J. Ruskin — University of Maine; Chris R. Field, Alyssa Borowske — University of Connecticut; Jonathan B. Cohen, SUNY College of Environmental Science and Forestry; Chris S. Elphick, University of Connecticut; Thomas P. Hodgman, Maine Department of Inland Fisheries and Wildlife; Rebecca A. Kern, University of Delaware; Erin King, U.S. Fish &amp; Wildlife Service; Alison Kocek, SUNY College of Environmental Science and Forestry; Adrienne I. Kovach, University of New Hampshire; W. Gregory Shriver, University of Delaware; Jennifer Walsh, University of New Hampshire</i></p> <p>The northeast U.S. coast bears a disproportional responsibility for the conservation of the world’s endemic tidal marsh fauna. Prioritizing local and regional responsibilities, however, requires a clear understanding of the demographic processes determined by local versus regional drivers. Here we present the preliminary results of a regional scale investigation of tidal marsh bird demography in 15 intensively studied plots across seven states using the standardized protocols of the Saltmarsh Habitat and Avian Research Program (SHARP). We calculate demographic rates for Nelson’s (57 nests), Saltmarsh (899 nests), and Seaside (269 nests) sparrows, Clapper rail (39 nests), and Willet (140 nests). Nest success, brood size, and reneating rate all varied geographically and by species. Clear geographic trends in fecundity demonstrate that the most productive regions also vary by species.</p> <p>In general, fecundity declines toward range edges, although the exceptions are illustrative. We discuss the geographic patterns for adult survival in sparrows and the importance of different locales within the northeast for the conservation of tidal marsh endemics.</p> <p>Overall it is clear that the success of local management is partially limited by these larger scale demographic patterns, and local or state conservation goals should account for position within each species’ range.</p>

9:00 AM	<p><b>Using the SHARP Sampling Framework to Quantify the Effects of Hurricane Sandy on Coastal Marshes and the Efficacy of Post-Sandy Restoration Actions</b></p> <p><i>Chris Elphick, Christopher Field — University of Connecticut; Maureen Correll, University of Maine; Whitney Wiest, University of Delaware; Jonathan Cohen, State University of New York; Thomas Hodgman, Maine Department of Inland Fisheries and Wildlife; Adrienne Kovach, University of New Hampshire; Brian Olsen, University of Maine; W Gregory Shriver, University of Delaware</i></p> <p>Following the landfall of Hurricane Sandy in October 2012, the Saltmarsh Habitat and Avian Research Program's (SHARP) initial tidal marsh survey, conducted in the summers of 2011 and 2012, has provided an unprecedented opportunity to investigate the impact of a major storm on coastal marshes.</p> <p>In 2013 and 2014, we revisited ~1500 sites surveyed prior to Hurricane Sandy to resample vegetation and tidal marsh bird populations. By sampling across the entire SHARP survey region our study mirrors a before-after control-impact study, allowing us to assess habitat and bird population changes at sites that experienced very different storm conditions and that have been subject to diverse combinations of anthropogenic conditions (e.g., upland urbanization, introduced species, historic management, contemporary protection, etc.). In addition to quantifying the effect of Hurricane Sandy on coastal marshes, we are using the SHARP sampling platform as a basis for evaluating post-Sandy restoration efforts. Millions of dollars are being spent on coastal resilience and recovery following the storm.</p> <p>We are using pre-storm data to describe reference conditions and – where necessary – extending our sampling scheme to quantify baseline conditions in areas where restoration work is going to occur. Before- and after-restoration sampling is planned for multiple sites throughout the mid-Atlantic and New England states in order to investigate the efficacy of different recovery actions (e.g., altered hydrology, thin-layer sediment deposition, living shorelines, assisted migration, etc.). By pooling information from multiple restoration activities using a single, standardized, set of survey protocols, our sampling will allow rigorous quantification of whether different methods work, how they compare, and what they contribute to coastal resilience.</p>
9:30 AM – 10:00 AM	<p><b>BREAK</b></p>
10:00 AM	<p><b>Tidal Marsh Bird Monitoring, Research, and Conservation Along the Gulf of Mexico</b></p> <p><i>Mark Woodrey, Mississippi State University &amp; Grand Bay National Estuarine Research Reserve; Scott Rush, Mississippi State University; Bob Cooper, University of Georgia; Eric Soehren, Alabama Department of Conservation and Natural Resources; Ali Leggett, Mississippi Department of Marine Resources &amp; University of Georgia; Anna Joy Lehmicke, University of Georgia</i></p> <p>More than 50% of North American tidal marshes are found along the Gulf of Mexico making them critical resources for marsh birds inhabiting this area. Unfortunately, marsh birds found along the Gulf of Mexico have received little attention until recently. Due to the Deepwater Horizon Oil Spill, the Gulf of Mexico is currently the focus of a broad-range of conservation and recovery activities. Marsh birds figure prominently in many of these activities, serving as indicators of tidal marsh condition as well as surrogate species for local, regional, and Gulf-wide efforts. Thus, the goal of this presentation will be to provide an overview of contemporary and anticipated marsh bird-focused activities in this region of the Southeast.</p> <p>This presentation will focus on monitoring activities including a review of past monitoring efforts as well as proposed expansion of a standardized sampling framework unifying data collection efforts across the Gulf region. Presenters will conclude their presentation by highlighting areas for future monitoring and targeted research aimed at delivering species-specific and ecological community-based conservation to this dynamic ecoregion.</p>

10:20 –  
10:40 AM

**Information Supporting Conservation of Yellow Rail (*Coturnicops noveboracensis*) in Northern Gulf of Mexico Coastal Grassland Ecosystems**

*Kelly Morris, Department of Wildlife Fisheries and Aquaculture, Mississippi State University; Mark Woodrey, Mississippi State University, Coastal Research and Extension Center, Grand Bay National Estuarine Research Reserve; Scott G. Hereford, U.S. Fish & Wildlife Service, Mississippi Sandhill Crane National Wildlife Refuge; Eric Soehren, Alabama Department of Conservation and Natural Resources, State Lands Division; John Rodgers, Department of Geosciences, Mississippi State University; Jake Walker, Environmental and Life Sciences Graduate Program, Trent University, Peterborough, ON Canada; Scott Rush, Mississippi State University*

Yellow Rail (*Coturnicops noveboracensis*), a migratory nongame bird of high conservation priority throughout the northern Gulf of Mexico, is also considered an ecological indicator, based on coastal states' Comprehensive Wildlife Conservation Strategies and East Gulf Coastal Plain Joint Venture decision documents. Despite priority designation and employment as an indicator species, many aspects of this species' ecology remain poorly understood.

The objectives of this research are to: (1) provide site occupancy estimates for Yellow Rail overwintering in coastal pine savanna of the northern Gulf of Mexico and (2) synthesize existing information on Yellow Rail distribution and habitat use into a temporally dynamic, habitat-suitability map for the three coastal counties of Mississippi. We applied a Bayesian approach to obtain estimates of occupancy and detection relative to a suite of habitat variables, measured in situ and through GIS. To develop a habitat-suitability map we used Ecological-Niche Factor Analysis (ENFA), incorporating presence-only data, comparing ecogeographical variables measured at locations where Yellow Rail are known to occur to a reference set of values collected from elsewhere within our study area. Likelihood of Yellow Rail presence, as estimated across study sites, was  $0.72 \pm 0.25$  SE with detection probability  $0.72 \pm 0.27$  SE. Models predicted higher Yellow Rail occupancy with decreasing time since fire and increasing grassland patch size. Results indicate occupancy significantly decreases > 2 years after a prescribed burn. ENFA predicted likelihood of encountering Yellow Rail was higher than expected within, or in close proximity to grasslands, emergent wetlands and scrub-shrub habitats. Results also show habitat complimentary with Yellow Rail presence differs considerably from the mean environmental conditions across the study area; indicating limited availability of suitable habitat. Yellow Rail's use of wetland and fire-maintained habitats within coastal Mississippi during winter, coupled with continued loss of open grassland throughout the southeastern United States highlights the continued need to prioritize conservation and management of open grasslands and pine savanna habitats.