SESSION I: July 19, 2013

Phenology, Habitat Use and Co-Occurrence of Fall Migrating Yellow Rails on Intensively-Managed Wetland Complexes in Missouri - Research In Progress

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Yellow Rails migrate through the Mississippi Flyway but little is known about their habitat use and ecology during fall migration. We initiated a 3-year study using nocturnal spotlight surveys of Yellow Rails during August-October across twelve publicly owned wetlands in four geographic regions of Missouri. In 2012, the study area experienced during the preceding summer and fall either extreme or exceptional drought. Under these conditions, we detected 33 Yellow Rails at 10 of 12 sites. We detected the earliest record of a Yellow Rail for Missouri and the largest number ever recorded in a single day during the fall as well. Yellow Rails were first detected in mid-September, peaked in early October and were last detected 16 October. Small sample sizes precluded analyzing these data with occupancy methods. We qualitatively compared Yellow Rail habitat used sites with available sites and observed that water depths, upland and woody vegetation cover types were used as available but short-emergent vegetation (millet, smartweeds) was used more often than available. In wetland impoundments where we observed Yellow Rails, we always observed Soras, and where we observed multiple Yellow Rails, we almost always observed Virginia Rails. We will continue this work in 2013 and 2014 with more intensive surveying and randomized management experiments. We will be: 1) capturing Yellow Rails to collect morphometric data in an attempt to predict the sex of an individual, 2) collecting feather samples for stable isotope analysis and 3) collecting blood for genetic analysis. The latter two metrics will be used to better determine the origin of these migrating Yellow Rails.

Ecology of Yellow Rail (*Coturnicops noveboracensis*) Overwintering in Coastal Pine Savannas of the Northern Gulf of Mexico

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Abstract

Little is known about the winter ecology of the Yellow Rail (*Coturnicops noveboracensis)* in pine savanna habitats along the coast of Mississippi and Alabama. Ongoing research is being conducted to determine their relative abundance, home range size, habitat use, and response to prescribed burn

regimes. Between December 2012 and April 2013, 38 Yellow Rails were captured and banded. Of those 38, 20 individuals were radio-tagged to assess with home range and habitat use. Individuals were found in 9 of 13 study sites, representing 4 of 6 different burn regimes. The probability of detecting a Yellow Rail decreased in correlation with time since fire and woody intrusion ($P< 0.01$). We detected an average of 1.0 birds per survey. Mean home range size was 1.24 ha (SE= 0.21, n=13). Although these metrics reflect an observed suite of conditions that support overwintering Yellow Rails, there is also limited understanding of the scope of coastal habitats occupied by this species Future research will assess the distribution of Yellow Rails in the Gulf Coast Region as well as the development of practical habitat management models supporting this and other species of conservation concern. Ultimately, we hope to better understand Yellow Rail winter ecology and how various management techniques are beneficial to the conservation of the Yellow Rail and other species of rail that utilize pine savanna habitats along the Northern Gulf of Mexico.

Wintering Yellow Rails in Oklahoma and Texas

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Yellow Rails winter in the southern US from Texas to Florida and north to North Carolina. Beginning in 2008, we began banding Yellow Rails that overwintered in southeastern Oklahoma with the dual goals of using a mark-recapture technique to estimate the number of birds overwintering as well as using multiple stable isotopes on rectrices to determine where these birds bred. We also collaborated with Jennifer Wilson and Charles Brower at the Texas mid-Coast NWR Complex to estimate the number of birds overwintering in that location and to compare stable isotope results. To date, more than 100 Yellow Rails have been banded in Oklahoma and several hundred have been banded in Texas. Populations in Oklahoma and Texas appear to be wintering at approximately the same density. The results of the stable isotope analysis so far suggest that he vast majority of the birds overwintering in Oklahoma and Texas breed in the Canadian prairies. We have begun collecting rectrix samples from Yellow Rails wintering in Louisiana, Mississippi, Alabama, and Florida with the goal of examining the extent of migratory connectivity in this species.

Filling Critical Knowledge Gaps to Evaluate Vulnerability of The Western Yellow Rail

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Little is known about the small, disjunct population of Yellow Rails (*Coturnicops noveboracensis*) that was rediscovered in Oregon in 1982. Today, it is thought that nearly half of these birds breed in the Klamath Marsh National Wildlife Refuge (KMR), while the rest occur in the surrounding areas. Recent

studies have yielded essential information on the habitat requirements of breeding western Yellow Rails and population structure. Genetic analyses suggest a reduced genetic diversity in the western population. We do not know where this loss of diversity originates as there are important gaps in our understanding of local and postbreeding movements, effects of various management actions, and winter distribution for Yellow Rails. In 2012, we began a study to track rails after the breeding season to better understand the postbreeding movements, migration, and ultimately, winter locations of Yellow Rails in the western United States. We captured 35 Yellow Rails and attached modified VHF transmitters to 28 of those rails during the 2012 and 2013 breeding seasons in KMR. Our objectives were to design and test radio attachment methods and track the postbreeding movements of individual rails. Based on our work, we determined a suitable radio attachment technique and followed radio-marked rails until fall migration. We also established partnerships with stakeholders across the range of the western Yellow Rail to improve future efforts at the range-wide level. Identification of western Yellow Rail space use throughout the annual cycle will allow natural resource managers to evaluate current practices and their adequacy to maintain or improve important Yellow Rail habitat in Oregon and California.