

Waste Rice, Moist-soil Seed, and Waterbird Abundances in Rice Production Systems in Louisiana and Texas

Joseph Marty, *Mississippi State University, Department of Wildlife, Fisheries and Aquaculture, Box 9690, Mississippi State, MS 39762*

J. Brian Davis, *Mississippi State University, Department of Wildlife, Fisheries and Aquaculture, Box 9690, Mississippi State, MS 39762*

Richard M. Kaminski, *Mississippi State University, Department of Wildlife, Fisheries and Aquaculture, Box 9690, Mississippi State, MS 39762*

Guiming Wang, *Mississippi State University, Department of Wildlife, Fisheries and Aquaculture, Box 9690, Mississippi State, MS 39762*

Michael G. Brasher, *Ducks Unlimited, Inc., 700 Cajundome Blvd, Lafayette, LA 70506*

James T. Callicut, *Mississippi State University, Department of Wildlife, Fisheries and Aquaculture, Box 9690, Mississippi State, MS 39762*

Abstract: Rice fields are important agricultural habitats for waterbirds (waterfowl, shorebirds, wading birds) worldwide. In the Texas Mid-Coast (TMC) and Louisiana Chenier Plain (LCP), >167,458 ha of rice are cultivated annually. Precise estimates of abundance of waste grain and natural seeds in harvested and idle rice fields are needed to guide conservation of waterbird habitat in this region, which is part of the Gulf Coast Joint Venture (GCJV) of the North American Waterfowl Management Plan. Our objectives were to estimate and compare waste rice and moist-soil seed abundance among rice production systems, geographic regions, and time-periods relevant to waterfowl conservation planning, as well as to estimate waterbird density during autumn-winter on rice fields in the Gulf Coastal Prairies of Louisiana and Texas. We collected 2,000 soil cores from harvested and idle rice fields in the TMC and LCP during summer-fall 2010. Preliminary results suggest a 25% increase in rice and moist-soil seed abundance in rice fields between first harvest in August and second harvest (i.e., ratoon crop) in November. In the LCP, we detected a 58% increase in waste seed abundance between first and ratoon harvests but only a 0.3% decrease between periods in the TMC. In the LCP, greatest abundance (793 kg (dry)/ha; SE = 207.85) of waste seed occurred in standing rice/crayfish fields in November, whereas greatest abundance (545 kg /ha; SE = 93) of waste seed in the TMC occurred in idle fields with standing vegetation during November. In contrast, only 78 kg/ha of waste rice were estimated in harvested rice fields in the Mississippi Alluvial Valley in November. We also surveyed waterbirds in these fields classified among seven different management regimes. We observed 27 and 11 species of waterbirds in Louisiana and Texas ricefields, respectively. In Louisiana, we detected ~190 birds/wetland ha in flooded idled rice fields and ~100 birds/wetland ha in flooded ratoon rice fields. In Texas, greatest densities of waterbirds occurred in harvested, flooded ratoon rice fields and secondarily in idled rice fields with standing or disked vegetation. Less than 1% of all waterbirds in rice fields in both states were observed in dry fields, emphasizing the importance of moist-soil and flooded wetlands to resident and migratory birds. Our pilot study is a precursor to a similar, long-term effort that will be conducted through 2013 in association with the GCJV and the Migratory Bird Habitat Initiative in response to the 2010 Gulf Oil Spill.

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