Title: King Rail Breeding and Fall Ecology

Project Summary: King rails (Rallus elegans) north of the Gulf Coast are endangered, threatened or a species of concern. In Arkansas, king rails are a species of concern with a priority score of 33. The precipitous decline in king rail numbers over the past 50 years is thought a result from a loss and/or alteration of wetland habitats. At a recent national workshop on king rail population declines, Karen Rowe, David Krementz and other recognized king rail experts determined that the recruitment rate and habitat use of king rails were considered major unknowns. We intend to use surveys and telemetry to investigate both recruitment and fall migration ecology of king rails in the southern delta region of Arkansas. The importance of the southern delta to king rails in Arkansas is based on survey data collected from an on-going SWG marshbird monitoring project. Too, the southern delta of Arkansas is considered by the king rail Conservation Plan Committee of the U.S. Fish & Wildlife Service to be one of the largest remaining breeding populations of king rails in the Mississippi Flyway north of the Gulf Coast. We anticipate that these results will allow AGFC land managers to better manage habitats in the Mississippi Plain to stabilize local king rail populations and thereby assist in the stabilization of all migratory king rails in the Mississippi Flyway.

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Project Partners: Lake Lewis, U.S. Fish and Wildlife Service, Overflow National Wildlife Refuge, Lake_Lewis @fws.gov, 870.473.2869

Total Funding Requested: $21,600.00 from SWG

Amount and Source of Matching Funds or Inkind Services: $15,600.00 tuition UA; $14,000.00 vehicle gas/maintenance & transmitters Arkansas Coop Unit; free housing Overflow National Wildlife Refuge; $21,600.00 matching AGFC
Funding priorities addressed:

- Projects that address the needs of species of greatest conservation need while also benefiting other fish and wildlife.
- Projects that address an emerging priority which is based on new data gathered by previous SWG monitoring and research projects.
- On-the-ground stewardship or restoration projects that both implement the priorities of the Arkansas Wildlife Action Plan and can serve as demonstration projects that may be replicated in other places.
- Research projects that lead to on-the-ground conservation.

Ecoregion targeted: Mississippi Alluvial Plain

Conservation priority addressed: The king rail has an Arkansas priority score of 33. Once considered a common nesting bird in the Arkansas Delta, this bird is now quite rare there and is considered a “focal species” by the U.S. Fish and Wildlife Service (USFWS) and is endangered in Canada. The USFWS king rail Conservation Plan Committee targets stabilizing and improving breeding performance of king rails north of the Gulf Coast. The breeding population of king rails in Arkansas is thought to be the largest breeding population remaining north of the Gulf Coast. Again, based on data gained from an on-going SWG marshbird monitoring project, the king rail is considered a highly imperiled species in Arkansas.

Goals of project: The primary goal of this king rail study will be to: 1) estimate breeding success (nest success, fledgling success), 2) document nesting habitat use, 3) document fledgling habitat use, 4) document early fall (September, October) habitat use, 5) document migration phenology, and 6) investigate response to moist-soil vegetation management.

Methods: The recruitment estimation and habitat use portion of the study will be approached using occupancy rate survey methods and a telemetry study. The telemetry study will allow an in-depth examination of a limited sample of king rails for both recruitment and habitat use while the occupancy rate survey will allow a broader scale examination of habitats used. We are using occupancy rate estimation in the Arkansas Delta to successfully survey for king rails there on our current SWG marshbird project. We will also implement several habitat manipulation experiments using soil disturbance and water control to better understand how these methods affect tall robust emergent wetlands. These wetland communities are recognized as the preferred habitat of king rails. The response to moist-soil vegetation management will be monitored through occupancy rate surveys and telemetry.

Products anticipated: Estimates of recruitment will allow land managers to focus on those habitat deficiencies and/or sources of mortality that are recognized as bottlenecks for king rail recruitment. We anticipate that early fall habitats for king rails are severely restricted in size and juxtaposition in the Arkansas landscape, thus knowing this will allow future wetland management and development schemes by AGFC and USFWS to rectify this situation. Knowledge of fall migration chronology by land managers will
allow them to time availability of water to coincide with king rail migration movements. A series of moist-soil vegetation management experiments will aid land managers in selecting appropriate management methods to better manipulate AGFC and USFWS lands for king rails.

**Existing resources used:** Based on current SWG marshbird surveys in the Mississippi Alluvial Plain, we will conduct our study in those areas known to be used by king rails. The Overflow and Oakwood National Wildlife Refuges are “hot” spots for king rails and with cooperation from the U.S. Fish and Wildlife Service, we will conduct surveys, telemetry and vegetation management experiments there. We will work on NRCS wetland reserve program lands in that same area where king rails have been documented. Although we did not detect king rails at nearby AGFC properties, we will increase our survey efforts there to more thoroughly search for king rails.

**Total budget requested:** $72,800.00

- Salary/benefits - $43,200.00
- Operating expenses – $14,000.00
- Capital expenses – none
- Tuition - $15,600.00

As per cooperative agreement between UA, USGS Arkansas Coop Unit and AGFC, AGFC will pay no overhead on this project.

**State Wildlife Grant Input:** $21,600.00