

**Title:** Integrated Marsh Bird Management in Arkansas River and Arkansas Delta Public Wetlands

**Project Summary:** In Arkansas, marsh birds are well represented and include both species of concern like the king rail (*Rallus elegans*, priority score 33) as well as the more abundant pied-billed grebe (*Podilymbus podiceps*, priority score 14). Management of wetlands for marsh birds is not well understood because of the secretive nature of most of these birds. Recent work funded by the State Wildlife Grant (SWG) Program in the Arkansas Delta indicated that wetlands with tall emergent plant communities are selected by marsh birds. We propose to investigate methods of better managing emergent plant communities along the Arkansas River and Arkansas Delta public wetlands so as to attract and recruit marsh birds there.

**Project Leaders:** David G. Krementz<sup>1</sup>, Unit Leader;  
Karen L. Rowe<sup>2</sup>, Nongame Migratory Bird Program Coordinator

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**Project Partners:** Richard Johnson, Wetlands Program Coordinator, AGFC, [rwjohnson@agfc.state.ar.us](mailto:rwjohnson@agfc.state.ar.us), 501.223.6471; Brian Infield, Private Lands Biologist, AGFC, [binfield@agfc.state.ar.us](mailto:binfield@agfc.state.ar.us), 877.478.1043; Richard Crossett, U.S. Fish & Wildlife Service, Central Arkansas Refuge Complex, [Richard\\_Crossett@fws.gov](mailto:Richard_Crossett@fws.gov), 870.347 2614; Lake Lewis, U.S. Fish and Wildlife Service, Overflow National Wildlife Refuge, [Lake\\_Lewis@fws.gov](mailto:Lake_Lewis@fws.gov), 870.473.2869

**Total Amount of Project Cost:** \$82,400

**Total Amount of SWG Requested:** \$39,700.00

**Amount and Source of Matching Funds or In-kind Services:** \$38,700.00 tuition and stipend UA, \$4,000.00 AGFC personnel time, free housing Bayou Meto WMA and Overflow National Wildlife Refuge, vehicle and monitoring equipment Arkansas Coop

**Funding priorities addressed:**

- Project that addresses the need to protect, re-establish, and restore emergent wetlands
- Project that addresses the needs of species of greatest conservation need including the king rail, American bittern, common moorhen, least bittern, pied-billed grebe, and purple gallinule
- 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:** Arkansas River Valley and Mississippi Alluvial Plain

**Goals of project:** The primary goal of this study will be to: 1) monitor marsh bird use of wetlands managed for emergent plant communities, 2) monitor marsh bird use of wetlands with late growing season water made available.

**Methods:** Monitoring marsh bird use of the study sites will be conducted using occupancy rate survey methods (McKenzie et al. 2005). Such surveys involve play-back recordings and repeated visits (~3 visits) to each site. Previous SWG surveys for marsh birds in the Mississippi Alluvial Valley have reported good results using this approach (Budd 2007). Management for emergent wetlands can involve chemical, biological and/or physical disturbance. Our wetland management experiments will focus on two management aspects: 1) age of the wetland in combination with water level control, and 2) the availability of water during the latter growing season (post-July). Because we are dealing with 2 physiographic regions, we recognize that a single approach to managing for emergent wetlands is not possible. With this in mind, we will include 2 variables into our design: 1) age – younger (<3-year-old) wetlands and older ( $\geq$  3-year-old) wetlands, and 2) water level stability - wetlands managed with variable water levels (less stable) and wetlands managed with constant water levels (more stable) through the growing season. We will attempt to have representative wetlands in each of the 4 possible management combinations. The second management question that we will investigate will be availability of water during the latter growing season. Typically, water is drained from moist-soil managed wetlands early in the growing season to promote seed production by annuals (Frederickson and Taylor 1982). The adverse effect of this management action is to force emigration of fledgling marsh birds to permanent water bodies which is suspected to reduce survival rates. We propose to survey marsh birds on a series of wetlands managed either by draining wetlands mid-summer or by retaining water levels through late-summer. We recognize that play-back survey methods are not effective later in the breeding season so we will augment our play-back surveys with systematic searches of wetlands by both systematically searching the wetlands with multiple observers and by observing foraging areas within the wetlands (Darrah 2008).

**Products anticipated:** Estimates of occupancy and recruitment will allow land managers to focus on those habitat deficiencies and/or sources of mortality that are recognized as bottlenecks for marsh bird recruitment. We suspect that late summer - early fall habitats for marsh birds are severely restricted in size and juxtaposition in the Arkansas landscape, thus documenting 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 marsh bird 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 marsh birds. A graduate student will be mentored and trained as part of this study. Peer-reviewed scientific journal articles are anticipated to result from this study

**Existing resources used:** Funding for normal wetland management practices on federal and state lands will be taken advantage of. Such funding will include manpower, equipment expenses, chemical purchase, and water pumping. Refuges to be used will include both federal (Cache River and Oakwood) and state (Frog Bayou, Ed Gordon, Bayou Meto, and Wallace Trust) areas. Some NRCS wetland reserve program lands may be used to augment available lands. Partnerships will include personnel from Cache River and Oakwood National Wildlife Refuges, AGFC Wildlife Management Areas, and USGS Arkansas Cooperative Fish & Wildlife Research Unit. Citizen scientists through Arkansas Audubon, National Audubon Society and The Nature Conservancy will be solicited for survey help. The Arkansas Coop Unit will provide a vehicle and equipment for surveying marsh birds.

<b>Total amount of project cost:</b>	\$82,400
	Salary/benefits - \$10,400
	Operating expenses – \$72,000
	Capital expenses - \$0
	UA Overhead <sup>a</sup> \$0

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

<b>Amount and source of matching funds:</b>	UA tuition and stipend - \$38,700
	AGFC personnel time <u>\$4,000</u>
	Total Match \$42,700

**Total amount of SWG money requested: \$39,700**

## **Principle Investigators**

### **David G. Kremetz, Unit Leader USGS Cooperative Wildlife Research Unit**

Dr. Kremetz has worked on migratory bird population biology and habitat use for 20 years. Over the past 5 years he has focused on marsh bird survey methodology, population biology and habitat management in the Mississippi Flyway. These efforts included a survey of marsh birds in the Arkansas Delta under the SWG program as well as 2 projects on distribution and habitat use of king rails in the Midwest. This recent focus on marsh birds was in part a consequence of his being the Chairman of the Webless Bird Committee of the Mississippi Flyway Technical Section. That committee is charged with approving state webless game bird harvest regulations which are in part based on research findings and population monitoring.

### **Previous SWG Grant**

Arkansas Game and Fish Commission. Kremetz, D. G. 2005-07, Survey of Secretive Marsh Birds in the Delta Region of Arkansas. \$91,000.

### **Karen Rowe, Nongame Migratory Bird Program Coordinator**

For the past two decades, Ms. Rowe has been responsible for developing and implementing conservation programs for priority non-game birds in Arkansas. These programs range from monitoring and research projects to implementing on-the-ground management actions. Ms. Rowe also serves as the agency representative on the Mississippi Flyway Nongame Bird Technical Section.

## **Project Partners**

**Richard Johnson**, Wetlands Program Coordinator, AGFC, wetland management expertise;

**Brian Infield**, Private Lands Biologist, AGFC, wetland management expertise;

**Richard Crossett**, U.S. Fish & Wildlife Service, Central Arkansas Refuge Complex, wetland management and marsh bird expertise;

**Lake Lewis**, U.S. Fish and Wildlife Service, Overflow National Wildlife Refuge, wetland management and marsh bird expertise