

## COOPERATIVE RECOVERY INITIATIVE PROPOSAL – FY 2013 DUSKY GOPHER FROG

### Project Narrative

- 1. Title/Project Contact Information:** Dusky gopher frog breeding pond restoration and population establishment on the Mississippi Sandhill Crane National Wildlife Refuge
- 2. Statement of Need:** The endangered dusky gopher frog (DGF) has a very limited historical range within the longleaf pine ecosystem of Alabama, Louisiana, and Mississippi. Currently, it is known only from Harrison and Jackson counties in southern Mississippi. Natural longleaf pine communities in these counties continue to be altered for agricultural, residential, and commercial purposes, most of which result in habitat fragmentation and/or habitat that is no longer suitable for DGF. The DGF is limited by the reduced availability of breeding ponds within remaining longleaf pine habitat. Most existing ponds in the landscape have been degraded, primarily from lack of fire. As a result of fire suppression, existing ponds have developed a closed canopy, dominated by trees and brushy vegetation, rather than having an open canopy and grassy understory as required by DGF for breeding. Naturally-occurring DGFs remain in only two extremely small and isolated populations, each supported by a single breeding pond. Based on current monitoring efforts, it is estimated that approximately 100 wild adult DGFs remain, most at the primary breeding site on the DeSoto National Forest, Harrison County, Mississippi. The DGF has been identified as a Spotlight Species by the U.S. Fish and Wildlife Service (USFWS) and is a priority for the Southeast Region due to its rarity and the on-going threats to its habitat. Due to its limited habitat and population numbers, the DGF has been named by the International Union for Conservation of Nature (IUCN) as one of the world's 100 most endangered species (Baillie and Butcher 2012). This distinction is shared by only one other species in the United States, a plant in Hawaii.
- 3. Project Goals and Objectives:** The long-term goal of the project is to create a DGF metapopulation within the Mississippi Sandhill Crane National Wildlife Refuge (MSCNWR). Completing this project will contribute to the completion of a high priority recovery task needed to prevent the extinction of the DGF. This project has high potential to prevent extinction by expanding the available habitat for the species and increasing the limited number of breeding sites for this endangered frog. The use of a landscape-scale approach for the conservation of pond-breeding amphibians is critical due to the susceptibility of small isolated populations to extinction (Marsh 2008, Heard *et al.* 2012). As part of our recovery efforts for the DGF, and in partnership with The Nature Conservancy (TNC) and Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP), the USFWS has translocated DGFs to a pond at a TNC site previously unoccupied by the species and within the approved acquisition boundary of the MSCNWR. Subsequently, several DGF breeding events have been documented there. The objective of the proposed project is to expand DGF breeding habitat beyond the pond at TNC to include a suite of ponds that occur on MSCNWR and then translocate frogs to these additional ponds. Accomplishing this objective will require restoring three ponds on MSCNWR, which are in close proximity to the TNC pond, and improving the upland habitat surrounding them. We will restore the

ponds by removing hardwoods and using equipment to reshape them in order to attain the proper depth and contour to support the appropriate hydrology. We will improve the adjacent uplands by reducing the density of pines to create more open habitat and conducting prescribed burns. After the habitat work has been successfully completed, DGF tadpoles will be head-started at the site and the resulting metamorphic frogs will be released at the three ponds. The ponds will be monitored for calling male frogs by the use of automated recorders. A drift fence will be constructed around one of the three restored ponds to initiate monitoring of the newly translocated population; monitoring will continue beyond the period of performance of this project.

**4. Project Activities, Methods and Timetable:**

Project Activities/Methods: Activities (a) through (e) relate to the objectives of expanding suitable breeding habitat for DGF. Activities (f) through (i) relate to the objective of translocating DGF to the site and attaining the goal of establishing a metapopulation.

- a) Identify ponds which can be restored as DGF breeding sites on MSCNWR. Three ponds have already been identified (see #12).
- b) Restore the three ponds by removing overstory and brushy vegetation; smooth pond basin contours with earth-moving equipment, as necessary.
- c) Conduct prescribed burning.
- d) Monitor the ponds during one rainy season to determine if hydrology is appropriate.
- e) Adjust the physical contours (adjusting pond depth, construct earthen berms) of the ponds as necessary to improve the hydrology.
- f) Head-start DGF tadpoles for release.
- g) Introduce metamorphic DGF into restored ponds.
- h) Monitor the ponds for calling DGF males using automated recorders.
- i) Monitor the translocated DGF population using a drift fence

TIMETABLE (Project initiation will occur in the dry season)	
MONTH	PROJECT MILESTONES
0	Identify ponds to be restored as DGF breeding sites
3	Remove hardwoods and brush from ponds; smooth pond basin contours
6	Conduct prescribed burning of pond basins and surrounding uplands
6-18	Monitor pond hydrology and adjust pond contours to improve hydrology
18-24	Head-start DGF tadpoles for release
24	Introduce metamorphic DGF into restored ponds
29-36	Monitor ponds for calling males using automated recorders
36+	Continue monitoring the translocated DGF population using a drift fence

**5. Anticipated Outcomes:** The expected outcome of the project is the establishment of a DGF metapopulation within MSCNWR. This landscape-scale goal benefits the DGF by restoring habitat where multiple breeding sites will be available under differing climatic regimes (levels of rainfall). This situation does not currently exist. The completion of this project will greatly improve the outlook for the DGF and reduce the likelihood of its extinction.

- 6. Strategic Habitat Conservation (SHC):** The proposed project fits well within the SHC framework (USFWS 2008) and the longleaf pine focus of the Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative (GCPOLCC). It represents a cross-programmatic partnership between the National Wildlife Refuge System and the Endangered Species Program which will allow planning, restoration, and management actions on the MSCNWR that promote the recovery of the endangered DGF. Additional partners on the project will include the MDWFP, DeSoto National Forest/U.S. Forest Service, TNC, and researchers from Western Carolina University. Since most of the DGF population breeds at a single breeding pond, recovery actions that expand the breeding opportunities for the frog are immediate actions needed for this critically endangered species.
- 7. Relationship to Planning Documents:** The proposed project will accomplish goals and objectives (Objective A-3-1) included within the Comprehensive Conservation Plan for the MSCNWR (CCP) (USFWS 2007). The CCP includes objectives to create two shallow ponds as release sites for DGF and to work with the Mississippi Ecological Services Field Office to monitor the use of the ponds by gopher frogs. Although a recovery plan for DGF has not been completed, a recovery action plan has been developed as a result of the DGF being designated a Spotlight Species. The goal of identifying and restoring appropriate breeding sites, and translocating tadpoles to them to establish new DGF populations, is included within the Dusky Gopher Frog Recovery Action Plan as one of the actions necessary to achieve the plan's target of preventing extinction (USFWS 2009).
- 8. Project Basis / Likelihood of Success:** The level of funding that has been requested is likely to be successful at achieving the stated goals and objectives of the proposed project. The knowledge and experience gained from working with our partners to establish a new population at the TNC site provides a template for this project. Substantive progress can be achieved within 1 year of project initiation towards the objective of restoring breeding habitat and within 2 years of project initiation towards the objective of translocating frogs to MSCNWR. Rainfall will be necessary within the localized area of the pond basins to fill the restored ponds and to stimulate DGF breeding at the primary breeding site on the DeSoto National Forest (source of DGF for head-starting).
- 9. Project Implementation, Monitoring, and Evaluation:** Project implementation and completion will take approximately two years. Project monitoring and evaluation will likely take another year. We anticipate the ability to report back strong results from use of this funding in FY 2013 and possibly extending into the first quarter of FY 2014 (depending on drought, frog's biology, etc.) in relation to the pond and upland restoration and monitoring of pond hydrology. An additional 1 to 2 years of efforts to stabilize these ponds, transition DGF to the site, and monitor DGF survival would be most effective towards accomplishing these critical tasks and preventing the extinction of DGFs. A breakdown of the activities representing steps in progressing towards the project's objectives follows in the next paragraph (also see Table provided under #4). The project biologists with Refuges and Ecological Services (ES) will work closely together to complete the recovery activities (see also Table provided under #10).

Implementation of the habitat restoration and improvements will likely take 6 months of appropriate weather conditions (dry conditions to clear/cut vegetation and appropriate weather parameters to conduct prescribed burns). Monitoring of the hydrology of the three ponds, and conducting improvements (if necessary), may take up to a year. Monitoring pond hydrology and determining if it is consistent with functioning temporary pond breeding habitat, as needed by the DGF, is probably the limiting step based on our previous experience at the TNC site. Implementation of the head-starting and release of DGF on MSCNWR will take approximately 6 months after the DGF breed at their primary breeding site (breeding conditions require a rain event and the filling of the primary breeding pond). Monitoring of the ponds to determine the success of the frog translocation may take up to a year depending on weather events needed to stimulate breeding. Success will be determined by verifying the presence of calling male DGF in the ponds at the next potential breeding event (as documented by automated recorders).

**10. Landscape Approach and Cross-programmatic Coordination, Partnership, and**

**Benefits:** This project is linked to landscape-scale conservation goals as identified in the CCP for the MSCNWR (USFWS 2007) (Objective A-3-1) and the draft Upland Longleaf Desired Forest Conditions for Wildlife being developed through GCPOLCC (GCPOLCC 2012). Both Refuge and ES programs are involved in this project. The staff project biologists within Refuges and ES will be coordinating extensively throughout implementation and monitoring of this project.

COOPERATING PROGRAM	POINT-OF-CONTACT	ROLE
Refuges	Scott Hereford	Oversee habitat restoration and improvement work on MSCNWR
Ecological Services	Linda LaClaire	Assess habitat conditions, including pond hydrology, to verify completion of restoration/improvement work Oversee the translocation of dusky gopher frogs at the site Evaluate success through verification of calling male frogs at ponds

**11. Literature Cited**

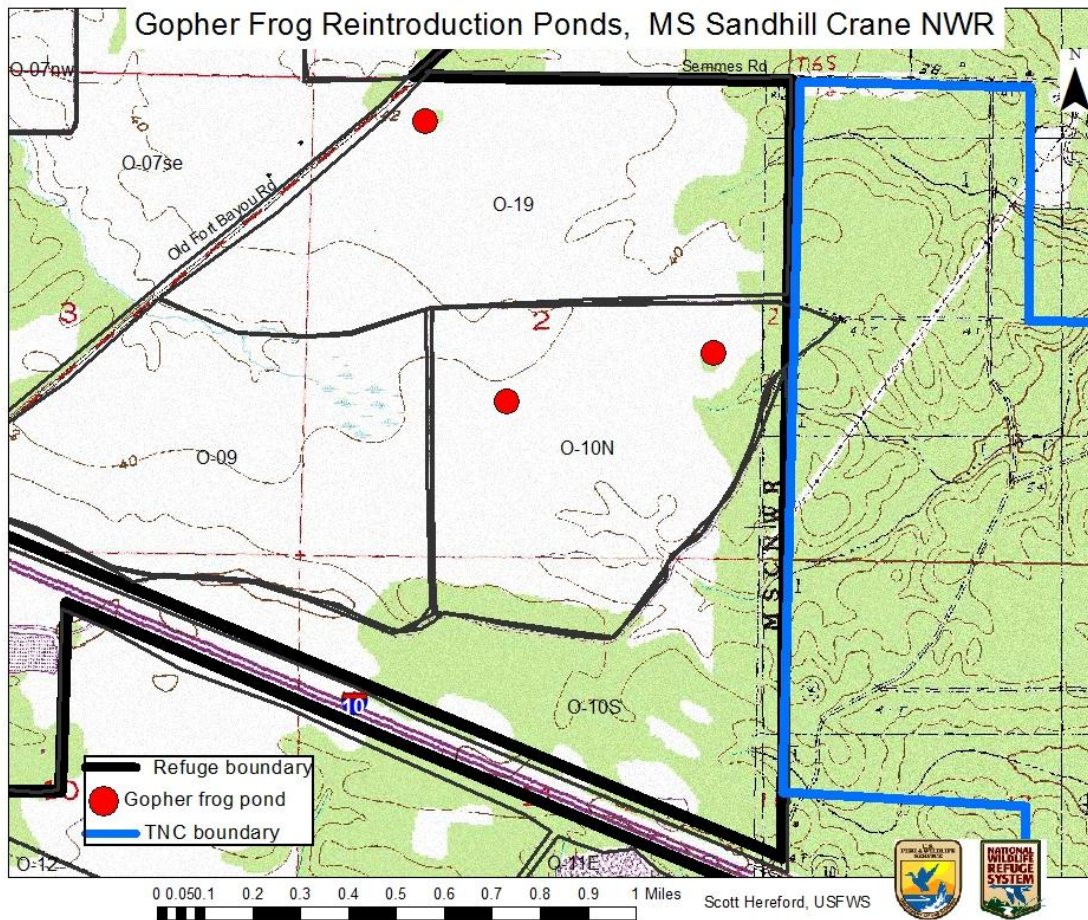
Baillie, J.E.M. and E.R. Butcher. 2012. Priceless or worthless? The world’s most threatened species. Zoological Society of London, London, United Kingdom. 248 pp.

Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative. 2012. Upland Longleaf Desired Forest Conditions for Wildlife *Version 1.3*. Viewed online: <http://gcpolcc.org/group/pine-dfcs/forum/topics/draft-dfcs-for-upland-longleaf-for-review-and-comment>. October 31, 2012.

Heard, G.W., M.P. Scroggie, and B.S. Malone. 2012. Classical metapopulation theory as a useful paradigm for the conservation of an endangered amphibian. *Biological Conservation* 148:156-166.

- Marsh, D. 2008. Metapopulation viability analysis for amphibians. *Animal Conservation* 11:463-465.
- U.S. Fish and Wildlife Service. 2007. Mississippi Sandhill Crane National Wildlife Refuge Comprehensive Conservation Plan. Southeast Regional Office, Atlanta, Georgia. 151 pp.
- U.S. Fish and Wildlife Service. 2008. Strategic Habitat Conservation Handbook. Unpublished report from the National Technical Assistance Team, February 11, 2008. 22 pp.
- U.S. Fish and Wildlife Service. 2009. Dusky Gopher Frog Recovery Action Plan. Submitted to Southeast Regional Office on May 6, 2009 by Mississippi Ecological Services Field Office, Jackson, Mississippi. 3 pp.

**12. Map of Project Area:** Mississippi Sandhill Crane National Wildlife Refuge, Jackson County, Mississippi



**2013 Cooperative Recovery Initiative:  
Showing Success or Preventing Extinction on or Near National Wildlife Refuges  
Funding Request Form**

**Project Title:** Dusky gopher frog breeding pond restoration on the Mississippi Sandhill Crane National Wildlife Refuge

**Showing Success (likely to delist or reclassify)** \_\_\_\_\_ **Preventing Extinction (work for a species in great peril)** XX

**Lead Region Priority:** \_\_\_\_\_

**Lead Region**

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 XX 5 \_\_\_\_\_ 6 \_\_\_\_\_ 7 \_\_\_\_\_ 8 \_\_\_\_\_

**Other, Participating Regions:**

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_ 7 \_\_\_\_\_ 8 \_\_\_\_\_

**National Wildlife Refuge/s Involved:** Mississippi Sandhill Crane National Wildlife Refuge

**Please list the Threatened or Endangered species that would benefit from this project (if there are multiple species, please add additional rows)**

Species Common	Species Latin	*Recovery Priority #	Species Range (by state)
Dusky gopher frog	<i>Rana sevosa</i>	5	Mississippi
Mississippi sandhill crane	<i>Grus canadensis pulla</i>	6C	Mississippi

\*See Endangered Species Recovery Handbook for description of Recovery Priority #

**Project Lead Contact:** Linda LaClaire/Mississippi Ecological Services Field Office 601/321-1126  
Name/Office Phone Number

**Budget Request Table: Total Project Cost = \$250,000**

**FWS Program**

<b>Item Description</b>	<b>Program</b>	<b>Sub-Item Description</b>	<b>Funding Requested</b>
<u>Personnel:</u> --Biological Intern --Heavy equipment labor and machinery to contour three pond basins and/or put berms around ponds	MSCNWR MSCNWR	2 years	$\$4,500 \times 2 = \$ 9,000$ $\$10,000 \times 3 \text{ ponds} =$ $\$30,000$
<u>Supplies:</u> --Drift fence for 1 pond (materials and installation)	MSCNWR/ES		\$12,000
--Cattle tanks	MSCNWR/ES	50 tanks	$\$825 \times 50 \text{ tanks} = \$41,250$
<u>Equipment:</u> --Automated recorders for three ponds	ES	3 recorders	$\$700 \times 3 \text{ recorders} = \$2,100$
--Pump and solar panels for wells at two ponds	MSCNWR	2 sets: solar water pump, panels, controller, and pipe for water line	$\$6,000 \times 2 \text{ wells} = \$12,000$
<u>Travel:</u> Vehicle and gas	MSCNWR/ES		\$6,000
<u>Other:</u> --Prescribed burning	MSCNWR		$\$120/\text{acre} \times 615 \text{ acres} =$ $\$73,800$
--Indirect costs	MSCNWR/ES		\$14,850
<u>Contracts*</u>			\$49,000
<b>TOTAL</b>			\$250,000

\*Itemize contract costs in Table below

**NON FWS PROGRAM OR ITEMIZED CONTRACT\***

Item Description	Sub-Item Description	Funding Requested
Personnel: --Contract forestry mulching to reduce shrubs and small trees --Drilling two wells (for water to fill head-start tanks at two restored ponds) --Part-time researcher (likely through university already working on DGF recovery)	MSCNWR to facilitate contract  MSCNWR to facilitate contract  ES to facilitate grant	$\$100/\text{ac} \times 300 \text{ acres} = \$30,000$ $\$2,000 \times 2 \text{ wells} = \$4,000$ $\$15,000$
Supplies:		
Equipment:		
Travel:		
Other:		
<b>TOTAL</b>		<b>\$49,000</b>



**Approval of Program Leaders**

\_\_\_\_\_  
Project Biologist, Endangered Species

\_\_\_\_\_  
Date

\_\_\_\_\_  
Ecological Services Field Supervisor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Project Biologist, NWRS

\_\_\_\_\_  
Date

\_\_\_\_\_  
Refuge Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Project Biologist, \_\_\_\_\_ Program (if applicable)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Project Leader, \_\_\_\_\_ Program (if applicable)

\_\_\_\_\_  
Date

**Approval of Assistant Regional Directors**

*Include only for the lead region and only for appropriate ARDs (e.g. projects that do not impact migratory birds would not require the signature of the ARD for Migratory Birds)*

\_\_\_\_\_  
Assistant Regional Director, Endangered Species

\_\_\_\_\_  
Date

\_\_\_\_\_  
Regional Chief, Refuges

\_\_\_\_\_  
Date

\_\_\_\_\_  
Assistant Regional Director, \_\_\_\_\_ (where applicable)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Assistant Regional Director, \_\_\_\_\_ (where applicable)

\_\_\_\_\_  
Date

**Approval of Program Leaders**

Linda V. Laddain

Project Biologist, Endangered Species

11/2/2012

Date

Stephen Reis

Ecological Services Field Supervisor

11/2/2012

Date

Jeff McHenry

Project Biologist, NWRS

11/1/2012

Date

Q.P.

Refuge Manager

11/1/2012

Date

\_\_\_\_\_  
Project Biologist, \_\_\_\_\_ Program (if applicable)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Project Leader, \_\_\_\_\_ Program (if applicable)

\_\_\_\_\_  
Date