

## Crayfish-Harvest Potential in Natural Wetlands Managed for Waterfowl in Mississippi

**Amy B. Spencer**, Department of Wildlife and Fisheries, Mississippi State University, Mississippi State, Mississippi, 39762, USA *E-mail*: abs86@msstate.edu

**Heath M. Hagy**, Department of Wildlife and Fisheries, Mississippi State University, Mississippi State, Mississippi, 39762, USA *E-mail*: hmh100@msstate.edu

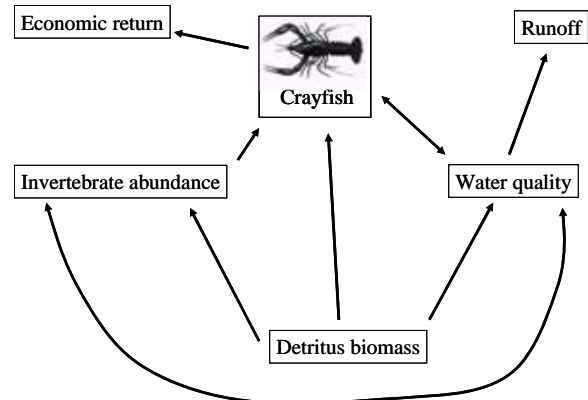
**Richard M. Kaminski**, Department of Wildlife and Fisheries, Mississippi State University, Mississippi State, Mississippi, 39762, USA *E-mail*: rkaminski@cfr.msstate.edu

*Extended Abstract:* Management of moist-soil wetlands is intended to promote seed and tuber producing annual vegetation and production of aquatic invertebrates, both of which provide important food for waterfowl and other wetland wildlife. Within agricultural landscapes, such as in the Mississippi Alluvial Valley (MAV), strategic location of moist-soil wetlands amid croplands can reduce erosion of sediments and other nutrients into surrounding watersheds and thus enhance water and environmental qualities. Additionally, seasonal decay of wetland vegetation sustains nutrient cycling and is the foundation of detrital based food webs in these systems.

During our investigations related to fall disking and mowing of vegetation in winter flooded moist-soil wetlands, macroinvertebrate abundance was greatest in control plots followed by mowed plots in early winter and disked plots in late winter ( $P < 0.01$ ). We captured numerous juvenile crayfish (*Procambarus* spp.) and observed crayfish burrowing activity in these wetlands. We realized the potential of these wetlands to support crayfish populations and provide ancillary economic benefit to landowners. For example, the crayfish industry in Louisiana generates approximately 50 million pounds of crayfish and \$25-50 million annually; however, potential harvest of crayfish from moist-soil wetlands is unknown.

We initiated a pilot study in spring 2009 to evaluate total invertebrate abundance and diversity in moist-soil wetlands before early summer drawdown to stimulate emergent vegetation. Specifically, we endeavour to (1) model factors contributing to formation of a

detrital based food web within managed moist-soil wetlands (Fig. 1), and (2) estimate size of crayfish populations to assess potential for sustainable harvest of this resource for human and wildlife use.



**Figure 1.** Conceptual representation of the detrital-based food web in moist-soil wetlands important for the formation of harvestable stocks of crayfish and improving run-off water quality.

We will evaluate relationships among crayfish and other invertebrate abundances and diversity, detrital load, and water quality metrics in public and privately managed moist-soil wetlands in Mississippi. We will estimate stock sizes, and harvest potential during March-June 2009. Finally, we will estimate potential economic returns and management strategies for this crustacean fishery. Demonstrating multiple ecological and economical benefits of moist-soil wetlands may encourage landowners to develop and manage natural wetlands within guidelines of conservation programs such as the Farm Bill's Wetland and Conservation Reserve Programs.