

Aqua

U.S. Department of Agriculture Accomplishments Report AD-421 U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions			Date (Month, Day, Year) 03/22/2012
1. Accession 0213341	Agency Identification No. 2. CSREES 3. LA.B	5. Work Unit/Project No. LAB93891	6. Status Annual Report
7. Title Improving Production Efficiency in Procamburid Crawfish Aquaculture			
12. Investigator Name(s) (Last Name and Initials) Romaine, R. P.			
20. Termination Date 12/31/2012		40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011	
Outputs: <p>Findings from crawfish aquaculture research were disseminated to over 100 commercial crawfish farmers at six Louisiana production workshops. Updates on environmental best management practices and crawfish grading and harvesting research were provided to LSU AgCenter extension personnel to use in aquaculture extension programming efforts. Findings from this project were disseminated in five crawfish newsletters mailed to over 1,200 stakeholders. LSU AgCenter crawfish aquaculture research updates were presented to the Louisiana Crawfish Promotion and Research Board. A proposal was submitted to the National Science Foundation, in cooperation with other AgCenter researchers, to study nanomaterial toxicity, transport and fate in crawfish aquaculture environments. A proposal was submitted to the Louisiana Board of Regents Industrial Ties Program, in cooperation with a Louisiana crawfish processor, to investigate the feasibility for extending the marketing opportunities for Louisiana crawfish through cleaning and processing fouled (dirty) crawfish. A project to develop a crawfish habitat suitability index model for wild populations of procamburid crawfishes was funded by the Louisiana Office of Coastal Protection and Restoration. A final report for the project "Management of Aquacultural Effluents for Ponds" was written and submitted for publication by the Southern Regional Aquaculture Center. An LSU AgCenter environmental best management practices manual was published on crawfish aquaculture and an article published in Louisiana Agriculture on water resource use in Louisiana aquaculture. Two abstracts from presentations at the World Aquaculture Society were published. Articles on the LSU AgCenter's crawfish web page were updated and additional publications were added.</p>			
Outcomes/Impacts: <p>In 2011, crawfish were cultivated in nearly 180,000 acres of managed impoundments by 1,200 producers in south-central and southwest Louisiana. Farm-gate impact was estimated to exceed \$150 million. Significant harvest of white river crawfish (WRC) from ponds can reduce sales because red swamp crawfish (RSC) are preferred by consumers. Elimination of WRC from production ponds is desirable, but little information is available on the interaction of these two sympatric species that communally occupy shallow water habitats. Outdoor aquatic mesocosms (tanks), planted with rice to simulate commercial crawfish operations, were stocked with RSC and WRC juveniles alone and in-combination (100%RSC, 75%RSC:25%WRC, 50% RSC:50WRC; 25%RSC:75%WRC, 100%WRC) at an optimal total density of 10/m². After six months, survival of both species was comparable and neither species displaced the other. In experimental treatments where the two species were co-stocked, WRC harvest size (g/individual) was 35 to 65% larger than RCS and yield of WRC (g/m²) was correspondingly higher. No difference in survival, harvest size or yield was observed in treatments stocked with 100% RSC and 100% WRC. Neither species gains a significant competitive advantage over the other when juveniles are recruited simultaneously into a population. A crawfish habitat suitability index (HSI) was developed to evaluate the potential effects of coastal protection and wetland restoration projects on crawfish habitat quality. The crawfish HSI model had three component equations that impact habitat quality. Input functions included modeled data on salinity, water temperature, water depth, water level fluctuation and vegetative habitat class. Crawfish HSI output was modeled over a 50-year planning horizon, and the output will be used by coastal planners in wetland restoration projects. The cumulative catch of crawfish with three-funnel pyramid traps, made from 0.75-inch and 0.88-inch square-mesh plastic-coated welded wire, were compared to each other and to a treatment consisting of both trap types in equal number in six large demonstration ponds (two ponds per trap type or trap combination). Crawfish were harvested from January through May (total trap density, 60/hectare; 41 trapping days; 48-h trap-soak). Mean total yield with 0.75-inch square mesh traps (893 kg/ha) was 23% higher than with 0.88-inch square mesh traps (727 kg/ha) or a combination of 0.75-inch+0.88-inch mesh traps (758 kg/ha). The findings of this study were comparable to the findings of an earlier, smaller-scale, research study that showed 0.75-inch traps should catch about 1/3 more crawfish (by weight) than 0.88-inch mesh traps. Mixing the two trap-mesh sizes in equal density did not increase the yield compared to the</p>			

larger mesh-size. Crawfish yield is increased by using 0.75-mesh traps; but much of the additional harvest is comprised of smaller, less valuable animals.

Publications:

Lutz, G., Romaine, R., LeBlanc, B.D., Sheffield, R.E., and Nix, K. 2011. Crawfish Environmental Best Management Practices (BMPs). Louisiana State University Agricultural Center, Publication No. 3186, Baton Rouge, LA. 28 p.

Romaine, R. and R.W. McClain. 2011. Procambriid crawfish aquaculture: a look back at the last 40 years of research [abstract]. In: Aquaculture American 2011, Meeting of the USA Aquaculture Society, 2011 February 28-March 3; New Orleans, LA, USA, p 395.

McClain, W.R. and R.P. Romaine. 2011. Procambriid crawfish aquaculture: A look ahead at the next 40 years of research needs. In: Aquaculture American 2011, Meeting of the USA Aquaculture Society, 2011 February 28-March 3; New Orleans, LA, USA, p 299.

Romaine, R.P., W.R. McClain, and C.G. Lutz. 2011. Water resource use in Louisiana aquaculture. Louisiana Agriculture 54 (4):32-33.

Romaine, R.P., M. G. Shirley, W.R. McClain, C.G. Lutz, and R.D. Johnson. 2011. Crawfish News. Volume 4, No 1, January. LSU Agricultural Center, Baton Rouge, Louisiana, 4 p.

Romaine, R.P., M. G. Shirley, W.R. McClain, C.G. Lutz, , and R.D. Johnson. 2011. Crawfish News. Volume 4, No 2, March. LSU Agricultural Center, Baton Rouge, Louisiana, 4 p.

Romaine, R.P., M. G. Shirley, W.R. McClain, C.G. Lutz, , and R.D. Johnson. 2011. Crawfish News. Volume 4, No 3, May. LSU Agricultural Center, Baton Rouge, Louisiana, 4 p.

Romaine, R.P., M. G. Shirley, W.R. McClain, C.G. Lutz, , and R.D. Johnson. 2011. Crawfish News. Volume 4, No 4, June. LSU Agricultural Center, Baton Rouge, Louisiana, 4 p.

Participants:

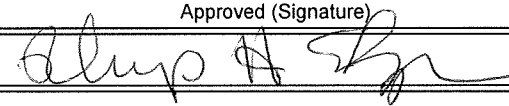
R. Romaine (PI), W. McClain, and V. Pfister, LSU AgCenter.

Target Audiences:

The target audiences for this research project are aquaculture researchers and extension specialists in the southern USA, where crawfish are farmed and marketed. Other target audiences include crawfish industry stakeholders (producers and buyers), print-radio-TV media, Louisiana Crawfish Promotion and Research Board, the Louisiana Crawfish Farmers Association, the crawfish advisory committee of the Louisiana Farm Bureau, the Louisiana Wild Crawfish Taskforce and the Louisiana Office of Coastal Protection and Resources.

Project Modifications:

Nothing significant to report during this reporting period.

Approved (Signature)	Title	Date
		3-23-12