

Evaluation of invasive aquatic species in Texas

Project Type: Research
Focus Categories: Invasive Species (INV), Management & Planning (M&P), Ecology
Research Category: Biological Sciences
Keywords: Invasive aquatic species, evaluation, ecology
Start Date: March 1, 2013
End Date: February 28, 2014
Principal investigator(s):

Dr. Michael Masser, Department Head & Program Leader Professor & Extension Fisheries Specialist, Department of Wildlife & Fisheries Sciences, Texas A&M University
mmasser@tamu.edu, 979.845.7370

Co-Principal investigator(s):

Elizabeth Edgerton, Graduate Student, Texas A&M University
Elizabeth.Edgerton@ag.tamu.edu

Lucas Gregory, Project Manager, Texas Water Resources Institute
lefgregory@ag.tamu.edu, 979.845.7869

Dr. Allen Knutson, Professor and Extension Entomologist, Department of Entomology, Texas A&M University
a-knutson@tamu.edu, 972.952.9222

Congressional District of the university where the work is to be conducted: 17th, statewide

Abstract

Invasive species have severe consequences to aquatic resources of Texas. In order to better manage existing invasive species and prevent future invasive species from entering the state, a better understanding of these threats is needed. The aforementioned research is the continuation of a multi-year project that is compiling current resources on status and trends of invasive species in Texas; identifying potential invasive species through the development of a risk assessment model; assessing threats/risk for expansion of invasive aquatic species currently present in Texas; and developing priority list of species of concern and needed action. Project funds will support the drafting of a literature review, continued gathering of data for analysis and assessment, and development of the risk assessment model. These funds will help this project to continue with data gathering and project development, however, the overall project and deliverables will be conducted and produced over multiple years as part of the graduate student's research.

Budget Breakdown

<i>Category</i>	<i>Federal</i>	<i>Non-Federal</i>	<i>Total</i>
Salary & Wages			
Grad Student (Edgerton)	\$10,943	\$10,021	\$20,964
ENTO Professor/Ext. Ento.		\$ 9,688	\$ 9,688
WFSC Professor		\$16,192	\$16,192
TOTAL SALARIES	\$10,943	\$35,901	\$46,844
Fringe	\$ 2,261	\$ 8,696	\$ 10,957
Supplies	\$ 800		\$ 800
Travel	\$ 825		\$ 825
Other	\$ 8,994		\$ 8,994
Indirect Costs			
Non-Fed & Unrecovered		\$27,543	\$27,543
Total Estimated Cost	\$23,823	\$72,140	\$95,963

Budget Justification***Salary & Wages:***

Federal: Graduate Student (3.1 months) @ \$41,928 @ 50% = \$10,943.

Non-Federal Match: Graduate Student (2.9 months) @ \$41,928 @ 50% = \$10,021; WFSC Professor (3 months) @ 64,766/yr = \$16,192; ENTO Professor/Ext Entomologist (1.3 months) @ \$90,268/yr = \$9,688; Total = \$35,901.

Fringe:

Federal: Graduate Student, Fringe Benefits (9.9% of salaries + \$376/month medical) = \$2,261.

Non-Federal Match: Fringe Benefits (17.4% of salaries + \$474/month medical; grad students @ 9.9% of salaries + \$376/month medical) = \$8,696.

Supplies:

Federal: General project supplies = \$800

Travel:

Federal: Travel for project-related trips. Locations TBD = \$825

Other:

Federal: Tuition @ \$8,544 and Publications @ \$450 = \$8,994

Indirect Costs:

Texas AgriLife Research indirect cost rate is 46% of Total Direct Costs (\$23,823 Federal, \$44,597 Match). Waived IDC on federal and non-federal funds is \$27,543.

Evaluation of invasive aquatic species in Texas

Statement of regional or State water problem

A large number of aquatic and riparian invasive species have been identified in Texas and surrounding regions. These invasive species have severe consequences to aquatic resources of Texas. More than half of the plant species on the TDA Noxious Weed List (>20 spp.) are riparian or aquatic invasive species. Further, 7 fish species, 1 clam species (Asian clam), 1 mussel species (Zebra Mussel), numerous gastropods and others are known aquatic invaders as well.

Texasinvasives.org has amassed a database on the status of a wide range of non-native invasive plants and pests in Texas; however, this database does not specifically identify those species which are aquatic or riparian invasive species. Also lacking are assessments of the trends of known invasive species in the state, a provision for an early warning system for future invasive species coming across the border from surrounding states, Mexico and other regions, nor does it assess the risk (economic and ecological) associated with each threat. In order to better manage existing invasive species and prevent future invasive species from entering the state, a compilation of current resources, evaluation of highest priority threats and assessment of current data gaps are needed.

Statement of results or benefits

This project will help the state better manage existing invasive species, prevent future invasive species from entering the state and improve our understanding of the threats from invasive species. Deliverables will include data collected on current resources including the status and trends of invasive species in Texas, identification of potential invasive species through a risk assessment model, threats/risks for expansion of invasive aquatic species and identification of data gaps. A literature review will be drafted and materials and methods will be well-defined and outlined for the study and design. Data has been gathered and initial/preliminary analysis and assessment has begun to identify data gaps. This funding will help in continuing to gather data and develop the risk assessment model; however, the overall project and deliverables will be conducted and produced over multiple years.

Nature, scope, and objectives of the project, including a timeline of activities

The goal is to develop a model that will, as accurately as possible, assess and identify highest priority invasive aquatic species, both future and existing, which require action.

Methods, procedures, and facilities

To obtain project goals, the following tasks will be completed:

- 1) Compile current resources on status and trends of aquatic invasive species in Texas
- 2) Develop a weed risk assessment model to identify potential threats and prioritize existing invasive aquatic plants
- 3) Assess threats/risk for expansion of invasive aquatic species currently present in Texas.
- 4) Develop a priority list of species of concern and needed action.

Related research

To date, only two known efforts have attempted to partially quantify the threats of existing and some future aquatic invasive species. Texasinvasives.org has developed the Texas Invasive Plant Inventory as a means to categorize non-native plant threats to the state. Through this effort, an approach to evaluate a plant's propensity to invade Texas' ecosystems was developed based on work conducted by Warner et al. (2003). Additionally, the Texas Parks and Wildlife Department has conducted a similar threats assessment of species currently threatening the state using an undisclosed methodology. Through these efforts, a wide variety of known or potentially invasive species have been assessed; however, many more species remain unevaluated. Through this work, these efforts will be supplemented to provide additional information on aquatic invasive species that are or may threaten Texas ecosystems in the future.

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Masser, M.P. 2002. Using Grass Carp in Aquaculture and Pond Management. Southern Regional Aquaculture Center (SRAC). No. 3600. 4 pp.

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Masser, M.P. 2000 (updated 2004, 06, 08, and 10). Aquaplant: A Pond Management Diagnostic Tool. <http://aquaplant.tamu.edu>

Training potential One M.S. student

Investigator's qualifications Resumes follow.