Evaluation of invasive aquatic species in Texas

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Project Type: Research
Focus Categories: Invasive Species (INV), Management & Planning (M&P), Ecology
Research Category: Biological Sciences
Keywords: Invasive aquatic species, evaluation, ecology
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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 proposed research is the start to a multi-year project that will begin compiling current resources on status and trends of invasive species in Texas; identifying potential invasive species; 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, gathering of data and initial/preliminary analysis and assessment. These funds will help this project to get started with the initial gathering and assessment, however, the overall project and deliverables will be conducted and produced over multiple years as part of a graduate student's research.

Budget Breakdown

Category	*Federal*	*Non-Federal*	*Total*
Salary & Wages			
Principal Investigator	$17,924	$21,955	$42,919
Matching person/title			
Fringe	$ 3,693	$ 5,080	$ 9,399
Indirect Costs			
Non-Fed & Unrecovered		$22,623	$24,328
Total Estimated Cost	$21,617	$49,658	$71,275

Budget Justification

Salary & Wages:
Federal: Graduate Student (10.26 months) @ $41,928 @ 50% = $17,924. Non-Federal Match: WFSC Chair/Associate Head/Professor (1.5 months) @ 102,037/yr = $12,755; ENTO Professor/Ext Entomologist (1.25 months) @ $88,320/yr = $9,201; Total = $21,955.

Fringe:
Federal: Graduate Student, Fringe Benefits (9.9% of salaries + $374/month medical) = $3,693.
Non-Federal Match: Fringe Benefits (17.2% of salaries + $474/month medical) = $5,080.

Indirect Costs:
Texas AgriLife Research indirect cost rate is 46.5% of Total Direct Costs ($21,617 Federal, $49,657 Match). Waived IDC on federal and non-federal funds is $22,623.

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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, 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 will be gathered and initial/preliminary analysis and assessment will begin also identifying data gaps. It is expected that this funding will help this project to get started with the initial gathering and assessment, 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 begin assessing and identifying highest priority invasive aquatic species, both existing and future, requiring 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) Begin identifying potential aquatic invasive species
3) Begin assessing threats/risk for expansion of invasive aquatic species currently present in Texas.
4) Begin developing 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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Training potential One M.S. student

Investigator's qualifications Resumes follow.