

REQUEST FOR PROPOSALS: Evaluation of the Effectiveness of Western States' Aquatic Invasive Species Public Awareness Campaigns for Eliciting Desired Prevention Behaviors

The Invasive Species Action Network (ISAN) announces a Request for Proposals for conducting an evaluation of the effectiveness of western states' aquatic invasive species (AIS) public awareness campaigns for eliciting desired AIS prevention behaviors. This project is led by the Western Regional Panel (WRP) on Aquatic Nuisance Species' Education and Outreach Committee (EOC). Contracts awarded will be issued to the selected investigator by ISAN but significant coordination with the EOC will be required during project development and implementation as described in the Project Overview. Maximum funding available under this grant offering is in the amount of \$80,000.

For information on the Western Regional Panel on ANS and Invasive Species Action Network, please visit www.westernregionalpanel.org and www.stopais.org.

Deadline for Receipt of Proposals

No later than March 31, 2021

Project Description

The goal of this study is to take a west-wide approach to evaluating the effectiveness of AIS public awareness campaign messaging and delivery methods used at state and local agency levels and the study will complement a similar assessment of federal campaigns planned by the ANS Task Force. This study will specifically evaluate the effectiveness of WRP states' campaign messaging and delivery methods used, in eliciting the desired ANS prevention behavior among boaters for specific boating and boater demographics. A detailed overview of the project need, goals and objectives, geographic area, expected methodology guidelines, coordination requirements, deliverables, and key timeline information is included in the project overview below. The Project Overview below should be reviewed carefully prior to proposal preparation.

Project Timeline

Project(s) will begin upon contract initiation and must be completed by June 30, 2022.

Funding

Maximum funding under this grant offering is in the amount of \$80,000 and cost-effectiveness will be considered in proposal review to ensure best use of available funding. Funds for this grant were awarded to ISAN by the U.S. Fish and Wildlife Service Quagga Zebra Mussel Action Plan grant program.

Indirect Costs

Maximum allowable indirect costs for grants issued under this funding source are 5% of total direct costs. Total direct and indirect costs (i.e., reimbursable request) may not exceed \$80,000.

Match requirements

Match is not required under this grant offering but, if offered, will be considered in proposal review.

Eligibility of Prospective Applicants

Applicant eligibility is not limited to academic researchers. However, Principal Investigators (PI) must demonstrate a proven track record of publications or previous applicable work, communicating and

coordinating with project leads (including attending project meetings), and integrating diversity, equity, and inclusion in the workplace. Documentation of skills and experience is required in the proposal submission (see proposal guidelines below). Non-United States companies, institutions or individuals are not eligible.

Proposal Submission

Proposal packages should be emailed to Monica McGarrity, WRP Education and Outreach Committee Chair (monica.mcgarrity@tpwd.texas.gov) in Microsoft Word or PDF (preferable) format. When preparing the proposal package, please adhere to the project proposal guidelines below. Failure to follow format instructions will result in the application package being returned and could preclude consideration of the proposal for funding.

Project Selection

Proposal evaluation will be based upon: (1) scientific rigor (sampling effort, methodology, proposed analyses, etc.); (2) how well it addresses the project objectives; (3) PI qualifications; and (4) whether the timeline is realistic and adequate and identifies key reporting and coordination points as described in the Milestone Schedule and Project Overview (page 3). The PI will be notified of proposal review outcome or award within approximately 45-60 days following the proposal submission deadline.

Proposal Development Guidelines

Proposals for consideration under this grant program should follow the guidelines below. All sections must be included and address all key requirements. Failure to do so could preclude consideration of the proposal for funding.

Project Title: Evaluating the Effectiveness of Western States' Outreach Campaigns to Elicit Desired Aquatic Nuisance Species Prevention Behaviors

Project Personnel: For each PI, include title, name, contact information and a description of qualifications and their role in and time devoted to the project. Description of qualifications for each PI should provide a descriptive overview of their education and work experience, experience with conducting similar/relevant projects (include descriptive examples of past work), experience with statistical analysis and writing analytical reports, description of experience with development of projects in coordination with and communication with the funding entity, experience communicating with the public, and other skills that make them qualified to carry out the proposed project. Provide a brief overview of the PIs institution/company and their commitment to diversity and inclusion. (Note that a separate *curriculum vitae* or resume is also required for each PI as part of the overall proposal package but may not adequately capture the desired qualifications and should not be referenced in lieu of providing this information.)

References: Provide professional references, with contact information (email required unless not available), that can, separately or together, attest to the PIs track record both for communication and coordination on research projects and satisfactory project delivery. References for past projects of high relevance to this proposal are preferred.

Executive Summary: Provide an overview of the researcher qualifications and the proposed project approach and scope and how it will meet the objectives outlined in the project overview below.

Objectives: Include, verbatim, the objectives provided in the project overview below and reference these objectives in subsequent sections.

Methods: Include and describe methods for specific procedures or tasks for accomplishing each of the objectives described in the project overview below (page 3), including proposed data analyses to be conducted. Methods should be science-based and include any relevant citations of scientific literature. Methods should describe the target populations and proposed geographic scope for each study component (e.g., surveys, focus groups). Methods should address EOC coordination as described in the Project Overview (e.g., EOC review of survey instruments).

Milestone Schedule: Timetable for initiation and completion of procedures outlined in the methods section. Timeline should include delivery of quarterly reports as well as the final report described in Objective 3 in the project overview below and should establish a clear timeframe for delivery of interim products (e.g., draft surveys or questionnaires) for review. Draft final project report must be submitted one month prior to the end of the project. Project(s) will begin upon contract initiation and must be completed by June 30, 2022. Researchers can anticipate a minimum of approximately one year for project completion following contract execution after allowing time from the date of proposal submission for the proposal review and selection and contracting processes; timelines should be prepared accordingly.

Collaborators: Identify any additional collaborators (name and affiliation) other than the PIs who will be involved in the project.

Budget: The PIs should use the provided budget table spreadsheet with instructions to prepare a budget narrative and table to include in the proposal. Total direct and indirect costs (i.e., reimbursable request) may not exceed \$80,000. Maximum allowable indirect costs for grants issued under this funding source are 5% of direct costs for which indirect costs are allowable. Match is not required under this grant offering but should be noted if applicable and will be considered in proposal review. The budget must consist of two sections--a budget narrative and budget table. The budget narrative should provide a description of how the budget was calculated (i.e., PI and/or graduate salary for X months, fringe rates, purpose/description and number of trips with lodging/per diem estimated at GSA or university rates, description of costs for other categories, etc.). The budget table should provide total direct and indirect costs as well as a breakdown of direct costs into the following categories, which should be described in the narrative: salaries, fringe benefits, travel, equipment, supplies, contractual, miscellaneous. Indirect costs shall be in accordance with NICRA, if applicable, and shall not be applied to equipment and tuition costs. The budget spreadsheet can be found at: www.westernregionalpanel.org/education-and-outreach-committee/

Literature Cited: Provide a comprehensive list of references cited. Proposals should demonstrate an understanding of the existing research in this area.

Supporting Documentation: Attach copies of the full *curriculum vitae* or resume for each PI and copies of publications or project reports or other forms of project communication for any highly relevant studies conducted by the PIs. Include descriptions of relevant past projects in the supporting documentation.

PROJECT OVERVIEW

Project Summary

The project ‘Evaluating the Effectiveness of Western States’ Outreach Campaigns to Elicit Desired Aquatic Nuisance Species Prevention Behaviors’ will be coordinated by the Invasive Species Action Network (ISAN) and led by the Education and Outreach Committee (EOC) of the Western Regional Panel (WRP) on Aquatic Nuisance Species (ANS). This project contributes to the fulfillment of two top priorities in the Quagga/Zebra Mussel Action Plan for Western U.S. Waters (QZAP). The principal areas to be addressed are increasing the effectiveness of outreach and education efforts to help advance prevention efforts (priority 1) and applying social science to evaluate the effectiveness of invasive species prevention messaging (priority 6). This project intends to address QZAP action item F.2 and F.3 and the Updated Recommendations for the Quagga Zebra Action Plan for Western Waters (QZAP 2.0) action item E.2, which is necessary to implement action items F.1 and F.2.

Prevention, including public awareness outreach efforts, is widely recognized as one of the most effective means of managing ANS. Once a species is introduced, the introduction follows an “invasion curve,” with rapid population growth and only a brief window when eradication may be possible for only some species, and rapidly progresses into requiring more costly, long-term management—if such efforts are even possible. As a result, there is a strong incentive for prevention methods to be highly effective at preventing the spread of ANS through effecting positive behavior change in individuals positioned to take direct action. Numerous outreach campaigns at federal, state, and local levels have been used to target specific boater demographics to elicit increased clean, drain, and dry and other ANS prevention behaviors. However, there have been few evaluations of these campaigns and their success/failure to change boater behaviors, generally only for specific (e.g., single state) campaigns, and such an assessment is needed at a broader scale.

This study proposes to take a west-wide approach to evaluating the effectiveness of campaign messaging and delivery methods used at state and local agency levels and will complement a similar assessment of federal campaigns planned by the ANS Task Force. This study will specifically evaluate the effectiveness of WRP states’ campaign messaging and delivery methods used, in eliciting the desired ANS prevention behavior among boaters for specific boating and boater demographics. Results will be rigorously analyzed and a summary report produced on the effectiveness of current and past WRP states’ public outreach campaigns and delivery methods with recommendations on how to most effectively tailor campaigns to enhance effectiveness.

The primary goal of this project is to enhance the long-term success of ANS prevention outreach campaigns by analyzing the effectiveness of campaign messaging and delivery methods. However, the applicability of the results of this effort will not be limited to the project’s geographical area, and results will be broadly disseminated to aid in informing decision-making regarding campaign development and refinement to most effectively attain prevention goals.

Statement of Need

The foundation for ANS prevention programs is education and outreach to raise awareness of the issue and encourage a variety of voluntary, and in some cases required, actions to prevent the spread of invasive species. Numerous outreach campaigns have been used across the West to raise awareness among specific boater demographics to elicit increased clean, drain, and dry and other ANS prevention behaviors. Federal, state, and local agencies implement a patchwork of campaigns to further this strategy. Performing education and outreach activities is a commonality among almost all organizations working on ANS prevention including those western agencies concerned with zebra and quagga mussels.

Data from watercraft inspection and decontamination stations and boater surveys across the west illustrate that boaters are moving across the landscape great distances to recreate. It is likely that they are often exposed to various campaigns and potentially different messaging across the west when engaging in

boating activities, which could be undermining the efforts of prevention programs across jurisdictions. Given the vast distances that boaters are traveling, a broad west-wide analysis is needed to inform and refine prevention programs to direct and make the best use of available resources to increase the overall number of boaters that are actively and voluntarily engaging in clean, drain, dry and other prevention behaviors that will ultimately lead to fewer new infestations of zebra and quagga mussels and other ANS across the west and nation.

Research has identified awareness gaps which play a key role in low compliance with ANS prevention behaviors (Gates et al. 2009; Rothlisberger et al. 2010; Lindgren 2006). Yet, despite significant effort by numerous organizations to increase awareness, very little has been done to evaluate these campaigns to determine their effectiveness in actually changing boater behaviors. Intention setting, attitudes, and reasons for moral obligations are key to taking action (Bamberg and Moser 2007) and additional research on how different campaign messaging affects these precursors to action is needed to provide insights on messaging refinement. Furthermore, value orientations (e.g., anthropocentric vs. biocentric) influence attitudes and intentions in terms of likelihood of taking action (Pradhananga et al. 2015) and research on the effectiveness of different messaging for these groups and determination of whether messaging should target motivation subgroups separately is also needed. In addition to intentions, which may only have an indirect effect on behavior, behavioral control and habits are predictors of action and messaging that targets these factors could have the greatest effects on behavior and warrants investigation (Klößner 2013). Assessment of the effectiveness of different delivery methods on behavior change is also needed (Lauber et al. 2014); in some cases, surveyed individuals' delivery method preferences have been assessed but not whether preferred methods are most effective (Sherry Matthews Group 2019a). Some studies have evaluated awareness of campaign messaging but have not been able to identify a cause and effect relationship between messaging and action (e.g., Cimino and Strecker 2018; SMAM 2019b). This project seeks to address these needs and fill knowledge gaps by implementing a social science approach to evaluating the effectiveness of western states' current and potential campaign messaging and delivery methods for eliciting desired behavior change by specific boating and boater demographics. This study will complement a similar, planned ANS Task Force evaluation of the effectiveness of national campaigns.

This project will contribute to the fulfillment of two top priorities in the Quagga-Zebra Mussel Action Plan for Western U.S. Waters (QZAP). The principal areas to be addressed are increasing the effectiveness of outreach and education efforts to help advance prevention efforts (priority 1) and conducting social science research to evaluate the effectiveness of invasive species prevention messaging (priority 6). The QZAP specifically called for social science research in action item F.2 (conduct social science research) and also to increase audience effectiveness evaluations in action item F.3. These action items are important to western managers and therefore they were included in the Updated Recommendations for the Quagga Zebra Mussel Action Plan for Western Waters (QZAP 2.0) action item E.2 (Conduct and support social science research to evaluate existing ANS educational campaigns and informational messaging currently in use across the West that target boaters and clearly identify which campaigns, messages, and delivery methods are most effective in both raising initial awareness and achieving subsequent behavior change). This study is paramount to accomplish first in order to effectively complete QZAP high priority action item F.1 (Adopt Consistent Outreach Messaging and Enhance Coordination of Efforts) and QZAP 2.0 action item F.1 (promote the use of consistent, effective messaging and enhance coordination of efforts to support the achievement of desired behavior change across the western region) and F.2 (develop (if necessary) or update outreach materials and delivery

methods (e.g. print, social media, etc.) and make them available in digital formats that can be tailored to specific jurisdictions) within Education and Outreach.

Given that this important work was not accomplished under the first QZAP and remains of high importance in the QZAP 2.0, the WRP EOC has elected to oversee this project in coordination with the WRP Executive Committee (ExComm) and membership for the benefit of all western organizations with interests in prevention the spread of zebra and quagga mussels and other ANS by recreational watercraft. However, the potential benefits of this project extend beyond the WRP region and the results of this study will contribute to the overall body of knowledge regarding the effectiveness of ANS outreach campaigns that will be beneficial to any entities engaging in these efforts.

Project Goals & Objectives

The overarching goal of this project is to enhance the long-term success of ANS prevention outreach campaigns across WRP states and member organizations by analyzing the effectiveness of current and potential messaging and delivery methods to elicit desired behavior change from specific demographics. However, the applicability of the results of this effort will not be limited to the project's geographical area.

Objective 1: Evaluate and quantify the effectiveness of WRP states' campaign messaging, current and potential, alone or in combination, in eliciting the desired ANS prevention behavior among boaters (e.g., pull drain plugs, do not launch for a specific period of time, remove vegetation, don't dump bait, etc.) for specific boating and boater demographics (i.e. recreational user groups, demographics such as age groups, motivation subgroups, etc.). The focus will be placed on high-risk recreational user groups, in accordance with guidance from the WRP EOC. Past, current, and future behaviors will be evaluated.

Objective 2: Evaluate and quantify the effectiveness of delivery methods currently used –or that could potentially be used–by WRP states to elicit desired ANS prevention behaviors (as listed above) for specific boating and boater demographics (as listed above).

Objective 3: Provide a summary report/publication on the effectiveness of current and past WRP states' public outreach campaigns' messaging and delivery methods and recommendations on how to most effectively tailor campaigns to elicit specific ANS prevention behaviors overall and for specific recreational user groups and demographics which includes:

- analysis of the effectiveness of WRP states' messaging
- analysis of the effectiveness of implemented delivery methods
- recommendations on specific messaging that may be most effective
- recommendations on delivery methods that may be most effective for different demographics
- recommendations on other important considerations on how to effectively elicit specific ANS prevention behaviors

Objective 4: Disseminate project results to the WRP membership, Regional Panels of the ANS Task Force, and interested partners to aid in informing the long-term success of ANS prevention outreach campaigns. *(This objective will be completed by the EOC and ExComm and does not need to be included in the grant proposal.)*

Project Activities, Methods, and Timetable:

- As the WRP's fiscal agent, ISAN will coordinate all financial aspects of the project (i.e., research grant issuance and management, billing, payments, etc.). Contracts to selected investigators will be issued by ISAN.
- The EOC will review proposals, select awardee in coordination with the ExComm, guide and oversee research progress, review progress reports, and—in coordination with the ExComm and WRP membership—provide feedback on the draft report prior to finalization.
- The contractor will conduct the behavior change analysis (objectives 1-2) utilizing at minimum the following methodologies, based on the expertise of the selected contractor:
 - Summary narrative of current outreach efforts and investments
 - Targeted, potentially incentivized online surveys of subsets of registered boaters from as many WRP states as possible regarding behaviors and preferred/most effective delivery methods
 - Focus group surveys of specific boating and boater demographics will be considered and may also be conducted
 - Boat ramp interviews and direct observations will be considered and may be conducted
 - Testing of responses to various current and potential campaign messages via surveys and/or focus groups
 - Analytics for campaign messaging and delivery methods' effectiveness gathered from western states
 - Collection of detailed demographic information to inform analyses
 - Comprehensive, detailed analysis of study results by specific boating and boater demographics
 - Minimum sample size should be based on power analysis with consideration of the number of registered boaters by state.
- This project will utilize western states' campaign messaging and modalities information gathered by a 2020 EOC survey and will consider reports and summaries from past boater surveys, focus groups, information on boat user groups, and past campaign assessments obtained/conducted by WRP states and potentially also by the US Fish and Wildlife Service, the 100th Meridian Initiative, and the National Marine Manufacturers Association. The project report will also incorporate information from a planned EOC survey of campaign economics and message development.
- The selected contractor will analyze data and complete a summary report on the current and past WRP states' public outreach campaigns and their effectiveness and recommendations on how to most effectively tailor campaigns to elicit specific ANS prevention behaviors overall and for specific recreational user groups and boating and boater demographics (objective 3). The report will summarize the top perceived problems (i.e., agency perspective), current outreach approaches and messaging types, effectiveness and ineffectiveness of those approaches and indicators used to make those determinations during past/current studies, and how campaigns have been assessed in the past. The report will take an in-depth look at understanding messaging types, consistency/universality, and approaches as well as boater intentions, motivations and values

related to action, and make recommendations on messaging improvements to elicit as well as sustain desired behaviors based on study results and social science. The report will assess whether there are demographics with which messaging is not connecting well and make recommendations for increasing effectiveness. The report will also summarize metrics available for evaluating behavior change and recommendations on how best to conduct future assessments at a more local scale.

- The EOC, in coordination with the WRP Executive Committee, will disseminate project results to the ANS Task Force and their regional panels to inform the long-term success of ANS prevention outreach campaigns (objective 4).

Project Monitoring and Evaluation:

The members of the EOC, all of which are beneficiaries of the project, will participate in monitoring and evaluation activities by monitoring progress, reviewing project reports, and providing feedback to guide the project with the EOC chair playing a lead role in coordination between the EOC and contractor. Findings from selected components of the project will be fed back into decision making and project activities throughout the project period—for example, agency surveys will inform boater surveys/focus groups and boater surveys may inform focus groups. Brief monthly updates from the contractor via email will be required along with quarterly written reports. The contractor will be required to periodically participate in meetings of the EOC to discuss the project directions and respond to questions. Drafts of any surveys or questionnaires must be submitted to the EOC for review and comment prior to implementation. A draft final report must be submitted to the EOC a minimum of one month prior to the grant end date and will be reviewed by the WRP membership. The EOC will communicate any questions or needed revisions to the contractor for completion. Submission of an approved final report will be required prior to final invoice payment.

Qualifications of Contractor Undertaking the Project:

Contractors selected to conduct the study must have experience with evaluating human behavior change, including the following: extensive experience with statistical analysis and writing analytical reports; experience with relevant survey types (e.g., online and focus group); experience with the collection of detailed demographic information to inform analyses; knowledge of testing methods of responses to various messages; a proven track record for communicating status updates and attendance at meeting with project leads; experience meeting deadlines and obtaining needed information and resources on their own; and integration of diversity, equity and inclusion in the workplace. The following qualifications are preferred: experience with analytics for outreach campaign modalities and delivery methods' effectiveness in causing desired behavior change and familiarity with aquatic invasive species.

Sustainability:

Dissemination of project results to the ANS Task Force and Regional Panels will aid in informing the long-term success of ANS prevention outreach campaigns (Objective 4)—will continue beyond the proposed project period. Members of the ANS Task Force and the Regional Panels receiving the project report from the WRP will be asked to disseminate the study results to other agencies that seek to increase public awareness and thereby elicit behavior change. These entities may then use the results of this project to inform future decisions on campaign directions and refinement to enhance success in eliciting behavior change. Although there may be a need to conduct a similar study at some time in the future should

western states' implement new messaging not considered in the study or to explore recommendations of new research on the topic, at this time future funding requests are not anticipated.

Literature Cited:

- Bamberg S, Möser G (2007) Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology* 27:14-25.
- Cimino SA, Strecker AL (2018). Boater knowledge and behavior regarding aquatic invasive species at a boat wash station. *Northwest Science* 92:224-233.
- Gates KK, Guy CS, Zale AV, Horton TB (2009) Angler awareness of aquatic nuisance species and potential transport mechanisms. *Fisheries Management and Ecology* 16:448-456.
- Klößner CA. 2013. A comprehensive model of the psychology of environmental behavior –A meta-analysis. *Global Environmental Change* 23:1028-1038.
- Lauber TB, Connelly NA, Stedman RC (2014) Aquatic invasive species outreach to boaters and anglers in the Lake Ontario basin. HDRU Publ. No. 14-5. Dept. of Nat. Resour., Coll. Agric. and Life Sci., Cornell Univ., Ithaca, N.Y. 59 pp.
- Lindgren CJ (2006) Angler awareness of aquatic invasive species in Manitoba. *Journal of Environmental Management* 44: 103-108.
- Pradhananga A, Davenport MA, Seekamp E, Bundy D. 2015. Preventing the spread of aquatic invasive species: boater concerns, habits, and future behaviors. *Human Dimensions of Wildlife* 20: 381-393.
- Rothlisberger JD, Chadderton WL, McNulty J, Lodge DM (2010) Aquatic invasive species transport via trailered boats: what is being moved, who is moving it, and what can be done. *Fisheries* 35: 121-132.
- Sherry Matthews Group (2019a). TPWD Boat Owner Interview and Survey Report. Report to Texas Parks and Wildlife Department.
- Sherry Matthews Group (2019b). 2019 Boater Survey. Report to Texas Parks and Wildlife Department.

Map of Project Area:

