

## **Request for Information (RFI): Marine and Coastal Biosecurity**

The Intelligence Advanced Research Projects Activity (IARPA) is seeking information on detection approaches related to marine and coastal biosecurity. This request for information (RFI) is issued solely for information gathering and planning purposes; this RFI does not constitute a formal solicitation for proposals. The following sections of this announcement contain details of the scope of technical efforts of interest, along with instructions for the submission of responses.

### **Background and Scope:**

The biosecurity of U.S. marine and coastal areas is a key aspect of the United States National Security Strategy with potential impacts to critical infrastructure, commerce, health, and maritime resources. Increasing global commerce, changing climate conditions, and emerging biological technologies create vulnerabilities that the U.S. needs to be prepared to defend against. New capabilities are necessary to ensure that the U.S. can effectively protect critical economic and national resources.

One key aspect of biosecurity is the purposeful or unintentional introduction of aquatic organisms to non-native areas. Aquatic invasive species (AIS) can be transported by a variety of mechanisms, including ship hulls and ballast water, which provide pathways for microbes, eggs, and small invertebrates to travel and disperse. Control measures and monitoring approaches such as offshore ballast water exchange and ballast water management systems have been developed to reduce the risk of AIS introduction, but significant risk remains.

Methods of monitoring for AIS in coastal waterways and ballast water as well as on ship hulls exist, but current approaches are limited and time consuming. In addition, interpretation of complex biological data in ways that provide actionable information to federal, state, and local agencies can be difficult. Challenges with monitoring are compounded by geographic scale, the diversity of life found within these systems, the limited extent of marine reference data, and changes resulting from environmental conditions such as storms, microclimates, and seasonal changes. Development and advancement of capabilities for the detection of aquatic invasive species is needed to enable early detection of risks to food, water, and economic resources.

IARPA is seeking information regarding robust, cost-effective, and standardizable tools for early detection of AIS in both marine and fresh-water environments, ports and marinas, ballast water, and on ship hulls. Challenges that can be addressed in response to this RFI include the ability to detect/identify a broad number of biological taxa, sample collection and extraction, throughput, and data interpretation.

Responses to this RFI may address any or all of the following questions.

1. What cost-effective approaches could be used to screen and/or identify AIS at low population density levels?
2. What fieldable, cost-effective approaches could be used to rapidly screen and/or identify AIS at low population density levels?
3. What cost-effective approaches could identify known AIS as well as detect and/or identify atypical organisms within an aquatic environment?
4. What approaches could be used to increase AIS detection sensitivity and throughput?
5. What indirect methods could be used to detect changes indicative of AIS incursion?

6. What approaches or technologies could enable rapid screening of vessel ballast water and/or hulls for AIS without unduly disrupting the normal operation of those vessels or the ports/marinas where they operate?
7. What methods could be utilized to ruggedize screening tools for field and/or shipboard use?
8. What approaches could be used to distinguish live from dead AIS within a sample? Viable from non-viable organisms (e.g. UV-damaged organisms that are not yet dead but unable to thrive or replicate)?
9. What approaches could significantly improve data capture and interpretation to provide actionable output following AIS identification?

**Preparation Instructions to Respondents:**

IARPA requests that respondents submit ideas related to this topic for use by the Government in formulating a potential program. IARPA requests that submittals briefly and clearly describe the potential approach or concept, outline critical technical issues/obstacles, describe how the approach may address those issues/obstacles and comment on the expected performance and robustness of the proposed approach. If appropriate, respondents may also choose to provide a non-proprietary rough order of magnitude (ROM) estimate regarding what such approaches might require in terms of funding and other resources for one or more years. This announcement contains all of the information required to submit a response. No additional forms, kits, or other materials are needed.

IARPA appreciates responses from all capable and qualified sources from within and outside of the US. Because IARPA is interested in an integrated approach, responses from teams with complementary areas of expertise are encouraged.

Responses have the following formatting requirements:

1. A one page cover sheet that identifies the title, organization(s), respondent's technical and administrative points of contact - including names, addresses, phone and fax numbers, and email addresses of all co-authors, and clearly indicating its association with RFI-18-03;
2. A substantive, focused, one-half page executive summary;
3. A description (limited to 5 pages in minimum 12 point Times New Roman font, appropriate for single sided, single-spaced 8.5 by 11 inch paper, with 1-inch margins) of the technical challenges and suggested approach(es);
4. A list of citations (any significant claims or reports of success must be accompanied by citations);
5. Optionally, a single overview briefing chart graphically depicting the key ideas.

**Submission Instructions to Respondents:**

Responses to this RFI are due no later than 5:00 p.m., Eastern Time, on 8 June 2018. All submissions must be electronically submitted to [dni-iarpa-rfi-18-03@iarpa.gov](mailto:dni-iarpa-rfi-18-03@iarpa.gov) as a PDF document. Inquiries to this RFI must be submitted to [dni-iarpa-rfi-18-03@iarpa.gov](mailto:dni-iarpa-rfi-18-03@iarpa.gov). Do not send questions with proprietary content. No telephone inquiries will be accepted.

**Disclaimers and Important Notes:**

This is an RFI issued solely for information and planning purposes and does not constitute a solicitation. Respondents are advised that IARPA is under no obligation to acknowledge receipt of the information received, or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. Respondents are solely responsible for all expenses associated with responding to this RFI. IARPA will not provide reimbursement for costs incurred in responding to this RFI. It is the respondent's responsibility to ensure that the submitted material has been approved for public release by the information owner.

The Government does not intend to award a contract on the basis of this RFI or to otherwise pay for the information solicited, nor is the Government obligated to issue a solicitation based on responses received. Neither proprietary nor classified concepts or information should be included in the submittal. Input on technical aspects of the responses may be solicited by IARPA from non-Government consultants/experts who are bound by appropriate non-disclosure requirements.

**Contracting Office Address:**

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