Initial Summary:
A National Framework for Early Detection and Rapid Response

DRAFT FOR TRIBAL &

STAKEHOLDER COMMENT

7/31/2015

July 31, 2015

Dear Reader:

The Department of the Interior (Department) is working with other members of the National Invasive Species Council (NISC) and states and tribes to prepare a report of our recommendations for developing a framework for a national Early Detection and Rapid Response (EDRR) program for invasive plants, animals, and other organisms.

The October 2014 White House *Priority Agenda on Climate Resilience and Natural Resources* called upon the Department and NISC to develop an EDRR framework by September 30, 2015. The Department and NISC convened a group of experts from federal agencies to identify the central elements, parameters, and critical stakeholders. Then a broader group was formed under the umbrella of NISC's Invasive Species Advisory Committee to serve as a forum to engage states, tribes, and other stakeholders in assessing the national needs and strategic considerations for the design, coordination, and implementation of the initiative's outputs. Finally, in August the Department and NISC are engaging in a tribal consultation process to solicit further input.

This document is a draft summary of components that will inform the report and is intended for review and comment by tribes, partners, and interested stakeholders. This document does not represent the full final report, and we ask that it not be distributed. The final report will be prepared after careful consideration of all comments and recommendations received during the comment period.

We request that comments and recommendations for improving the report be submitted to invasivespecies@ios.doi.gov (please include "Tribal Comment: EDRR" in the subject line of the email) or fax to (202) 208-4867 until August 25, 2015, as we prepare the final report for delivery to the White House Council on Climate Preparedness and Resilience.

Co-Chairs of the Federal Early Detection and Rapid Response Work Group
U.S. Department of the Interior and National Invasive Species Council

Summary Contents

The Charge

In October 2014, the Council on Climate Preparedness and Resilience and Natural Resources Working Group released *Priority Agenda: Enhancing the Climate Resilience of America's Natural Resources*. One of its four priority strategies is to foster climate-resilient lands and waters, calling upon federal agencies to "Identify Landscape Conservation Priorities to Build Resilience." More specifically, the following charge was given to the U.S. Department of the Interior and the National Invasive Species Council (NISC):

> Within twelve months, "the Secretary of the Interior, working with other members of the National Invasive Species Council, including Department of Commerce (National Oceanic and Atmospheric Administration [NOAA]), the Environmental Protection Agency (EPA), and the U.S. Department of Agriculture (USDA), will work with states and tribes to develop a framework for a national Early Detection and Rapid Response (EDRR) program that will build on existing programs to assist states and tribes in forestalling the stress caused by the establishment and spread of additional invasive species populations, thereby improving the resilience of priority landscapes and aquatic areas. This will include the development of a plan for creating an emergency response fund to increase the capacity of interagency and inter-jurisdictional teams to tackle emerging invasive species issues across landscapes and jurisdictions."

The Challenge

Invasive species and climate change are two of the most significant threats to natural areas, plant and animal communities, and the ecological services that they provide. Invasive species have long been one of the most significant drivers of environmental degradation in natural areas with wide-ranging impacts on all types of ecosystems and the services that they provide (ISAC 2006). Natural areas are sites whose ecological systems and their components have largely evolved through natural processes, including sites managed specifically to protect biodiversity, maintain ecosystem services, or promote other ecological values.

The complex interaction of invasive species and climate change requires an integrated approach to support the resilience of our natural areas to adverse impacts. The specific contribution of EDRR to enhancing the climate resilience of natural areas largely rests on the ability of response efforts to mitigate or eliminate the potential impacts of a new environmental stressor. Overall ecosystem health is a primary determinant of a natural area's ability to withstand impacts associated with climate change. Thus, removing one additional stressor – invasive species – improves that system's chance to withstand or appropriately adapt to climate change and its effects.

Guiding Principles

The geographic focus of the EDRR framework and funding plan will be on invasive species that affect natural areas, including both aquatic and terrestrial ecosystems in the United States.[1] A wide range of EDRR models and efforts exist that vary across species of concern, geographies, legal jurisdictions, and agency authorities. This national EDRR framework for natural areas will build on this existing work based on the following precepts:

[1] This approach is not intended to include invasive species that solely impact agriculture, livestock, aquaculture, or other commercial production systems. However, the framework may include species that adversely impact these sectors as well as natural areas.

Complementarity: Conceptually the framework will draw from existing programs and, from the perspective of implementation, will seek to enhance and not duplicate existing efforts.

Cooperation: Given the focus on working across land-management agencies and stakeholders as partners, this framework will embody a cooperative approach towards EDRR. The framework will recognize the relevance of regulatory authorities in this arena and allow for interface with other regulatory agencies as appropriate.

Partnership: The involvement of and support for states, tribes, non-governmental organizations, corporations, and others working on invasive species in natural areas will be a key aspect of the initiative's cooperative intent. Given the myriad of players and different legal jurisdictions associated with connecting lands and their ownership, the development of effective partnerships is critical for managing threats to the entire landscape.

Scale: This EDRR framework will be scale independent and it should be considered a template that could be used as a model for the country, a region, state, tribe, or locality. Responsible participants will vary according to the chosen response and its scale.

Implementability: The added value of this initiative is to make the jump from the numerous conceptual models that exist to an operational framework to conduct EDRR on natural areas that includes the funding, identification of the responsible institutions and other participants, and necessary actions for EDRR events.

Resource availability: The immediate and sustained availability of resources determines the range of actions that can be successfully implemented at a particular scale in a particular EDRR event. This project will start from the perspective of broad eligibility for the receipt and use of funds in support of cooperative EDRR efforts for natural areas, and identification of different resource streams will be important for underpinning a sustainable funding mechanism.

Metrics: EDRR activities associated with this initiative will require a set of performance measures to evaluate their efficiency and effectiveness and to improve the design and implementation of the EDRR framework.

Statement of Need

Despite a number and diversity of EDRR efforts, a nationally coordinated EDRR program that includes the necessary management and assessment tools, communication and organizational mechanisms, and adequate, sustainable funding does not exist. The purpose of this present effort is not to develop a new and independent EDRR program. Instead the objective is to design a framework that:

1. builds upon and ties together existing initiatives focused on natural areas and networks;
2. identifies key gaps in coverage, tools, and human and fiscal resources that need to be filled; and,
3. coordinates efforts and resources in a manner that contributes to effective and efficient EDRR actions to protect natural areas.

The national scope and focus on natural areas requires the involvement, coordination, and cooperation of federal agencies, particularly those with land management responsibilities, scientific expertise, information management, and emergency response capacity. The capacities and capabilities that these agencies leverage at the national level are necessary to link and support regional, state, tribal, and local EDRR efforts.

Approach and Structure

To develop the EDRR framework and funding plan, the Department of the Interior and NISC convened a group of experts from federal agencies to identify the central elements, parameters, and critical stakeholders. Then a broader group was formed under the umbrella of NISC's Invasive Species Advisory Committee to serve as a forum to engage states, tribes, and other stakeholders in assessing the national needs and strategic considerations for the design, coordination, and implementation of the initiative's outputs. Finally, in August the Department and NISC are engaging in a tribal consultation process to solicit further input.

The following sections are in development and will eventually address the need for EDRR for invasive species in natural areas and how establishing an EDRR framework would augment those efforts. Specific attention will be given to establishing an emergency response fund, given its critical role in supporting the overall function of EDRR activities. Models for obtaining resources and initial recommendations for the implementation of aspects of the framework will also be discussed. The EDRR framework itself is divided into components focused on preparedness, early detection, rapid assessment, and rapid response. Coordination and the identification of responsible institutions and cooperative partnerships are critical elements for outlining the framework's implementation. Supporting appendices will be added as the final report is prepared.

Elements of an EDRR System

Preventing the introduction of invasive species is the first line of defense against invasions; however, even the best prevention efforts will not stop all invasions. The second line of defense is detecting an incipient infestation, optimally soon enough to respond to contain its spread and achieve eradication. Detecting and responding to invasions requires a series of sustained and coordinated actions that can be grouped into four categories:

- Preparedness: Preparedness establishes the planning frameworks, coordination networks, technical tools, and necessary resources for deployment of detection, rapid assessment, and rapid response measures.
- Early detection: Early detection provides initial evidence on the occurrence of a potentially invasive species and highlights where existing prevention measures have failed.
- Rapid assessment: Rapid assessment determines the specific distribution of the species as well as its potential risks and impacts. The assessment also evaluates the availability and efficacy of management responses to address the invasion.
- Rapid response: Rapid response is the set of coordinated actions to eradicate that invasive species occurrence. Monitoring after response actions is critical and restoration plans should be implemented when needed (NISC 2010).

These efforts, collectively referred to as Early Detection and Rapid Response – if timely – increase the likelihood that invasions will be addressed successfully while populations are still localized and small enough to be eradicated, or at a minimum contained (NISC 2010).

Early detection and rapid response actions may eradicate invasive species populations that are new to the United States and its states and territories and/or halt the spread of invasive species by eradicating satellite populations that could result in significant range expansions of invasive species. EDRR can also target non-native species when assessment shows them to be a high-risk for becoming invasive in the future.

Coordination, Roles, and Responsibilities

Coordination of EDRR efforts across a range of federal and non-federal partners at scales that range from local to landscape levels requires an effective EDRR framework that is national in scope. To begin to develop an EDRR framework and identify possible organizational structures, the potential roles and responsibilities of the federal agencies and their partners must be considered.

Active partners in EDRR activities include federal, state, and tribal governments, as well as regional bodies and a range of site-based partners and issue experts. An effective EDRR network should build upon and integrate the services and capabilities offered by this range of entities, while also helping to identify key geographic, taxonomic, and skill-based gaps. Using the EDRR components of preparedness, early detection, rapid assessment, and rapid response, Table 1 describes the potential roles and responsibilities that federal and non-federal (state/tribal/partner) entities could assume across the EDRR action steps of preparedness, early detection, rapid assessment, and rapid response. The listed activities are neither exhaustive nor mutually exclusive and therefore are intended to show the relative division of responsibility between the two categories.

Table 1: Federal, State, and Tribal Roles in Early Detection and Rapid Response

EDRR Federal, State, and Tribal Roles	
Preparedness	
Federal	**State, Tribal, Partners**[2]
Lead agencies: identify lead federal agencies for different taxa of species in natural areas[3]	Lead agencies: identify lead state, tribal, and/or regional/partner entities for different taxa within their respective geographical jurisdiction
Planning: prepare and obtain permits; develop rapid response protocols for priority species; provide templates and standards for data sharing, planning, coordination, and communication efforts	Planning: prepare and obtain permits; fine-tune and adopt protocols, MOUs, and other relevant standards
Horizon scanning: identify invasive species and pathways of national importance	Horizon scanning: identify invasive species and pathways of geographic importance
Risk analysis: develop and apply risk assessment tools to prioritize invasive species and pathways of national importance; develop risk management protocols for priority invasive species/species types	Risk analysis: fine-tune and apply assessment tools to prioritize invasive species and pathways of geographic importance
Funding: develop eligibility criteria; identify and secure sources of funding, disburse funds, and conduct regular audits	Funding: establish process for rapid receipt and disbursement of funds, determine source of funds for cost sharing
Training: provide ICS and rapid assessment training and resources	Training: conduct regular exercises for ICS, rapid assessment, identification and monitoring
Research: develop detection and risk analysis tools; develop control techniques	

[2] The Priority Agenda specifically identified state and tribal entities but this category may also include federal land management units at the site level and other regional bodies and partners. Reference to "geographic importance" refers to the specific jurisdiction (regional, state, tribal, or federal-land management unit) under consideration.
[3] This may include lead agencies to address pathways of national or international concern.

Early Detection	
Federal	**State, Tribal, Partners**
Monitoring: identify and link federal and non-federal programs; maintain national monitoring systems	Monitoring: identify and support local programs and citizen science efforts
Mapping networks: identify and support mapping networks and tools	Mapping networks: identify mapping networks and provide available data
Identification: support, enhance, and use taxonomic/systematics expertise for verification and vouchering of detected species	Identification: establish procedure for sampling, verification and vouchering of detected species; record and include samples in biological collections
Information management: develop data protocols that support interoperability and data aggregation	Information management: provide and share data
Reporting: develop protocols	Reporting: establish reporting procedure
Rapid Assessment	
Federal	**State, Tribal, Partners**
Rapid assessment networks: identify taxa-specific experts for assessment teams	
Delineation and initial containment of invasive species of potential national importance, if possible/ appropriate	Delineation and isolation of invasive species of geographic importance, if possible/appropriate
Preliminary evaluation: assess newly detected species of potential national importance to determine feasibility of rapid response	Preliminary evaluation: assess species of geographic significance drawing from federally identified rapid assessment networks as necessary
Rapid Response	
Federal	**State, Tribal, Partners**
Incident Command System (ICS): identify federal, state, and other roles for specific scenarios	ICS/rapid response operational structure
Treatment: select, design, and implement rapid response plan for invasive species of national importance	Treatment: select, design, and implement rapid response plan for invasive species of geographic importance
Monitoring and evaluation: monitor, assess, and report on effectiveness of rapid response actions	Monitoring and evaluation: monitor, assess, and report on effectiveness of rapid response actions
Restoration: implement restoration activities	Restoration: implement restoration activities

Funding Plan

A fully operational EDRR program requires that resources are available and easily accessible when a detection of an invasive species affecting natural areas is made and rapid response action is deemed necessary. Local resources for responding even to the initial stage of invasions can be quickly overwhelmed. This reinforces the need for supplemental support to enable federal, state, tribal, and other stakeholders to act in a timely manner to stop invasions.

Successful rapid response is also contingent on preparedness: having the planning, tools, training, and human resources in place to mount eradication efforts. A plan for emergency response funding intended to "increase the capacity of interagency and inter-jurisdictional teams to tackle emerging invasive species issues" thereby needs to consider means to support the continuum of preparedness, early detection, and rapid assessment to ensure that rapid response activities are viable and effective.

This section will outline the major elements of a potential emergency response funding plan, including its capabilities, structure, and sourcing.

Emerging Themes of Potential Recommendations

Invasive species can quickly cross both geographic and jurisdictional boundaries and cause irreparable harm to natural resources making them less resilient to climate change. Early detection and rapid response activities can halt their establishment and range expansion. Natural areas are particularly susceptible to invasions. Currently, there is no national-scale framework that supports coordinated EDRR for invasive species that impact natural areas. Specific actions that focus on four emerging themes—Coordination, Authorities and Policies, Funding, and Capabilities and Capacity—may be needed to establish an EDRR framework and operationalize a program to fill critical gaps and augment existing efforts and networks.

Glossary

Alien species: with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem. (EO 13312)

Climate resilience: the capacity for a socio-ecological system to: (1) absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and (2) adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the system, leaving it better prepared for future climate change impacts. (Wikipedia, Nelson et al. 2007, Folke 2006)

Early Detection: activities to conduct surveillance for, and verify, the presence of a nonnative species in an ecosystem, before the species spreads so widely that eradication cannot be implemented.

Established Species: a species with a permanent, reproducing population that is unlikely to be easily eliminated through human action or natural cause. Established species may or may not be invasive. (Mississippi State Management Plan for Aquatic Invasive Species)

Introduced Species: an organism that is not native to a designated ecosystem or geographic area. (Mississippi State Management Plan for Aquatic Invasive Species)

Invasive Species: an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Natural Area: a geographical site whose ecological systems and their components have largely evolved through natural processes. This also includes sites managed specifically to protect biodiversity, maintain ecosystem services or promote other ecological values. While there are already systems in place to address agricultural and livestock pests, this effort further recognizes the importance of non-agricultural areas for EDRR activities (e.g., urban settings may serve as the point of introduction for invasive species that impact natural areas).

Preparedness: having the knowledge, financial resources, tools, trained personnel, and coordination structures in place to streamline activities at each of stage in the EDRR process.

Rapid Assessment: determination of the species' abundance and distribution, the risks and impacts associated with its occurrence, as well as the potential management responses to address the invasion. (NISC)

Rapid Response: Activities intended to eradicate a species from a location, before it spreads so widely and becomes so abundant that eradication cannot be implemented. Response activities may be conducted over a period of years. For example, a species that has not spread widely for several years, and may still be practically, effectively, and efficiently eradicated, can be the target of a rapid response action.

Risk Analysis: the set of tools or processes incorporating risk assessment, risk management, and risk communication, which are used to evaluate the potential risks associated with a species or pathway, possible mitigation measures to address that risk, and the information to be shared with decision-makers and other stakeholders.

References

Invasive Species Advisory Committee (ISAC) to the National Invasive Species Council (NISC). 2006. Invasive species definition clarification and guidance white paper.

National Invasive Species Council (NISC). *2010* EDRR Criteria. Washington, D.C.