

# NISC

NATIONAL INVASIVE SPECIES COUNCIL



Management Plan · 2016–2018

# NISC

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## Management Plan 2016–2018

*Protecting What Matters*

NATIONAL INVASIVE SPECIES COUNCIL · WASHINGTON, DC

Approved on July 11, 2016

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Burmese python  
*Python bivittatus*



# Preface

Common dandelion  
*Taraxacum officinale*

**I**NVASIVE SPECIES REPRESENT one of the most significant threats to ecosystems, human and animal health, infrastructure, the economy, and cultural resources. Alarmingly, the threat is growing. Climate change and the globalization of trade, travel, and transport are greatly increasing the number and type of species moved around the world, as well as the rate of movement. Simultaneously, changes in land use and climate are rendering some habitats more susceptible to the establishment of non-native species and may amplify the adverse impacts of biological invasion.

Although the challenge is substantial, it is not insurmountable. We can act now – decisively and strategically – to prevent and mitigate the adverse impacts of invasive species on our ecosystems, health, economies, and infrastructure. Our charge is to join together, and take action.

The United States (u.s.) should sustain and expand its efforts to address the threats that invasive species pose to biosecurity, including threats to food, water, human and animal health, the environment, infrastructure, cultures, the economy, energy, military readiness, international relations, and other national concerns. Past efforts at preventing, eradicating, and controlling invasive species demonstrate that collaboration across all levels of government and with the private sector is critical to minimizing the spread and impact of invasive species on the u.s.

Executive Order (E.O.) 13112 established the National Invasive Species Council (NISC or Council) to “provide national leadership regarding invasive species.” The *NISC Management Plan 2016–2018* identifies high priority, inter-departmental actions for the Federal government and its partners to take to prevent, eradicate, and control invasive

species, as well as restore ecosystems and other assets adversely impacted by invasive species.

Over the next two years, the *NISC Management Plan* will help guide the actions that the Council and NISC Member Departments/Agencies collectively take to prevent and mitigate the impact of invasive species. The staff working for the Council (NISC Secretariat) will work with NISC and its member Departments/Agencies to coordinate Federal interagency efforts in the following areas identified by E.O. 13112:

- Provide Federal leadership on invasive species issues by establishing the structures, policy, and planning priorities necessary to enable Federal agencies to effectively prevent, eradicate, and/or control invasive species, as well as restore impacted ecosystems and other assets.
- Limit the spread and impact of invasive species through high-level policy and planning by strengthening coordination between the u.s. and other governments, across the Federal government, and between the Federal government and non-governmental stakeholders.
- Raise awareness of the invasive species issue and mobilize the policies, programs, and financial resources necessary to minimize the spread and impact of invasive species.
- Remove institutional and policy barriers to the Federal actions needed to prevent, eradicate, and control invasive species, as well as restore ecosystems and other assets.
- Conduct assessments of Federal capacities to meet

the duties set forth in E.O. 13112, as well as other high-level policy priorities, and build Federal capacities, as needed.

- Foster the scientific, technical, and programmatic innovation necessary to enable Federal agencies and their partners to prevent and mitigate the impacts of invasive species in a timely and cost-effective manner with negligible impacts to human and environmental health.

In February 2016, the Federal government released *Safeguarding America's Lands and Waters from Invasive Species: A National Framework for Early Detection and Rapid Response* (hereafter *EDRR Framework*).<sup>1</sup> The *EDRR Framework* serves as the first step in the development and implementation of a national program for the early detection of and rapid response to potentially invasive species that affect priority landscapes and waters. This two-year *NISC Management Plan* places an emphasis on early detection and rapid response work to advance the *EDRR Framework*.

It is an honor to chair NISC. The *NISC Management Plan* is a call to collective action. The actions provide us with a guide on where to place our priorities, and where to invest in the future. They warrant an urgent response backed by the full commitment of NISC and its partners.

We would like to thank all of the individuals – Federal employees and non-Federal advisors – who contributed to this document and the vision that it holds.

*Sincerely,*



Kristen J. Sarri  
Principal Deputy Assistant Secretary  
Policy, Management and Budget  
U.S. Department of the Interior



Robert Bonnie  
Undersecretary for Natural Resources and the Environment  
U.S. Department of Agriculture



Christine Blackburn  
Performing the Duties of Assistant Secretary for Conservation and Management  
National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

<sup>1</sup> [Department of the Interior \(2016\)](#)

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*“Whether or not a non-native species is or will become harmful is context dependent; the risks change among localities and through time.”*



# Introduction

**I**NVASIVE SPECIES ARE alien (non-native) species whose introduction does or is likely to cause economic or environmental harm or harm to human health.<sup>1</sup> They can also adversely impact plant and animal health, undermine food and water security, jeopardize the integrity of critical infrastructure, threaten the livelihoods and cultures of people who are largely dependent upon local resources, compromise resistance to and recovery from ecological disturbances, and infest military equipment and training facilities, thus compromising military readiness. Every year, harm caused by invasive species costs governments, industries, and private citizens substantial economic losses – losses potentially reaching into the billions of dollars.

The diversity and severity of the impacts of invasive species are often the result of the effects that invasive species have on a wide range of ecosystem services that underpin human well-being and economic growth. By driving the endangerment and extinction of a wide range of plants and animals; degrading freshwater, marine, and terrestrial ecosystems; and altering ecological cycles, invasive species adversely influence a wide range of human necessities. Ultimately, invasive species undermine security – the security of individuals, communities, and nations.

Not all non-native species are harmful, however; many are beneficial and play substantial roles in our economy (e.g., in agriculture and fisheries). Whether or not a non-native species is or will become harmful is context dependent; the risks change among localities and through

time. It is possible for a species that is invasive in a novel ecosystem to be rare or endangered in its native range.

Unfortunately, the risk and impacts of biological invasion are growing. The globalization of trade, travel, and transport is greatly increasing the number and type of non-native species moved around the world, as well as the rate of movement. Emerging pathways and changing trade patterns result in the translocation of organisms among ecosystems, often with unpredictable consequences. At the same time, changes in land use and climate are rendering some habitats – even the best protected and most remote natural areas – more susceptible to invasive species.

Non-native species do not respect jurisdictional boundaries. Effective communication and collaboration with neighboring jurisdictions, as well as with trading partners, is thus of paramount importance in the prevention, eradication, and control of invasive species. Governments and their partners need to work together to reduce the risks of biological invasion by managing the means by which organisms are intentionally and unintentionally moved among ecosystems, cooperate in on-the-ground management efforts across shared ecosystems, and address the various factors that make ecosystems particularly vulnerable to the adverse impacts of invasive species.

Because biological invasion is a context-specific phenomenon that changes through time and across landscapes, measures to address invasive species need to be timely and fit to purpose. Four general approaches are used to minimize the impact of invasive species, each associated with a different stage in the invasion process:

<sup>1</sup> Executive Order 13112 (Invasive Species), February 3, 1999.



1. Prevention (keep invasive species from entering a new ecosystem);
2. Eradication (remove the entire population of a non-native species);
3. Control (contain or otherwise manage the population of an invasive species so as to minimize spread and impacts); and
4. Ecosystem restoration (recovering ecosystems post-removal of invasive species in order to build resistance and resilience to future introductions of non-native species).

Preventing the introduction of potentially harmful organisms is not only the first line of defense for minimizing the spread and impact of invasive species, it is also the most cost-effective strategy. Prevention includes border surveillance and controls, as well as the management of invasion pathways (means of intentional or unintentional transport) through regulatory and non-regulatory measures. Science-based risk analyses and horizon scanning tools are used to inform regulations that either permit or prohibit the entry of certain non-native species at jurisdictional borders.

When harmful non-native species breach prevention systems, it is important to quickly detect, contain (if necessary), and eradicate these organisms (if feasible) before they have the opportunity to establish in a new location and cause harm. This process is generally referred to as “early detection and rapid response” or “EDRR.” In February 2016, the Federal government released *Safeguarding America’s Lands and Waters from Invasive Species: A National Framework for Early Detection and Rapid Response* (hereafter *EDRR Framework*),<sup>2</sup> as a response to the *Priority Agenda: Enhancing Climate Resilience of America’s Natural Resources* published by the Council on Climate Preparedness and Resilience in October 2014.<sup>3</sup> The *EDRR Framework* serves as the first step in the development and implementation of a national program for the early detection of and rapid response to non-native species that have the potential to adversely impact priority landscapes and waters.

Control programs are necessary when populations of invasive species become so well-established that eradica-

tion is no longer logistically or economically feasible. They are, however, costly in terms of time, money, and, often, socio-political will. Integrated approaches to invasive species control have proven particularly effective when invasive species have infested large areas. In such cases, mechanical control (e.g., pulling plants or trapping animals), chemical control (biocides or toxicants), biological control (use of other living organisms to suppress invasive species),<sup>4</sup> or other approaches (e.g., wildlife management and medicine) are used in combination.

Ecosystem restoration is the fourth aspect of a comprehensive strategy to minimize the spread and impact of invasive species. Invasive species may thrive in disturbed and otherwise degraded landscapes, and the act of removing invasive species can, in and of itself, be an

*Preventing the introduction of potentially harmful organisms is not only the first line of defense for minimizing the spread and impact of invasive alien species, it is also the most cost-effective strategy.*

ecological disturbance. It is imperative, therefore, that the factors leading to habitat degradation are addressed and habitats are restored in order to build resistance to further invasion. The Presidential Memorandum on Incorporating Natural Infrastructure and Ecosystem Services into Federal Decision-Making<sup>5</sup> directs Federal

agencies to incorporate ecosystem services into decision-making and assess the impact of their actions on ecosystem services. It provides a new framework for building ecological resistance to biological invasion.

Awareness raising, education, human and institutional capacity building, regulatory and legal frameworks, information management, scientific research, economic assessment, technological innovation, and multi-stakeholder cooperation need to be integrated into every aspect of a comprehensive strategy to address invasive species.

The U.S. should sustain and expand efforts to address the threats that invasive species pose to national security, including threats to food, water, human and animal health, the environment, infrastructure, cultures, the economy, energy, military readiness, and other national assets. Past efforts at preventing, eradicating, and controlling invasive species have demonstrated that collaboration across all levels of government and with the private sector is critical to minimizing the spread and impact of invasive species on the United States and its citizenry.

<sup>2</sup> [Department of the Interior \(2016\)](#)

<sup>3</sup> [White House \(2014\)](#)

<sup>4</sup> The use of mechanical, chemical, and biological control in combination is often referred to as “integrated pest management (IPM).”

<sup>5</sup> [White House \(2015\)](#)



## THE NATIONAL INVASIVE SPECIES COUNCIL

Executive Order (E.O.) 13112 established the National Invasive Species Council (NISC or Council) on February 3, 1999. The eight original NISC members included the Secretaries of State, the Treasury, Defense, the Interior, Agriculture, Commerce, and Transportation, and the Administrator of the Environmental Protection Agency (EPA). Since that time, the Secretaries of Homeland Security and Health and Human Services (HHS), the U.S. Trade Representative (USTR), and the Administrators of the U.S. Agency for International Development (USAID) and the National Aeronautics and Space Administration (NASA) joined the Council. The Secretaries of the Interior, Agriculture, and Commerce chair NISC.

E.O. 13112 directs NISC to “provide national leadership regarding invasive species” and identifies seven primary duties for the Council: (1) oversee the implementation of this order and see that the Federal agency activities concerning invasive species are coordinated, complementary, cost-efficient, and effective; (2) encourage planning and action at local, tribal, state, regional, and ecosystem-based levels to achieve the goals and objectives of the *NISC Management Plan*; (3) develop recommendations for international cooperation in addressing invasive species; (4) develop, in consultation with the Council on Environmental Quality (CEQ), guidance to Federal agencies pursuant to the National Environmental Policy Act (NEPA) on prevention and control of invasive species; (5) facilitate development of a coordinated network among Federal agencies to document, evaluate, and monitor impacts from invasive species on the economy, the environment, and human health; (6) facilitate establishment of a coordinated, up-to-date information-sharing system to facilitate access to and exchange of information concerning invasive species; and (7) prepare and issue a national Invasive Species Management Plan.<sup>6</sup> The E.O. also requires NISC to develop and recommend to the President legislative proposals for necessary changes in authority.

NISC’s high-level policy and planning activities benefit from the technical input provided by Federal agency staff and Federal inter-agency bodies working on invasive species issues, as well as non-Federal stakeholders. E.O. 13112 charged the Secretary of the Interior with establishing an advisory committee under the Federal Advisory Commit-

tee Act (FACA), 5 U.S.C. § App. 2, to provide information and advice for consideration by the Council. Among other things, the Invasive Species Advisory Committee (ISAC) is to “recommend plans and actions at local, tribal, state, regional, and ecosystem-based levels to achieve the goals and objectives of the Management Plan.” ISAC members include representatives of state, territorial, tribal, and local governments, as well as academic institutions, non-governmental organizations, and the private sector.

The Department of the Interior (DOI) hosts the NISC Secretariat, a staff that provides the guidance and support necessary for the Council to undertake its duties. The NISC Secretariat serves as the primary point of contact for NISC; provides scientific and technical advice to NISC members; works to ensure effective communication and collaboration across Federal Departments/Agencies and among Federal inter-agency bodies; on behalf of NISC, coordinates interdepartmental planning processes and project implementation; manages ISAC and its subcommittees; develops and coordinates implementation of the *NISC Management Plan*; oversees the NISC website; and reports on NISC accomplishments.



## THE NISC MANAGEMENT PLAN

The *NISC Management Plan* identifies the high priority, interdepartmental actions that the Federal government and its partners can take to prevent, eradicate, and control invasive species, as well as recover species and restore habitats and other assets adversely impacted by invasive species. It aligns with NISC’s unique roles and responsibilities as identified in E.O. 13112: institutional leadership and priority setting; facilitating coordination and cost-efficiency; raising awareness and motivating high-impact action; removing barriers to the ability of Federal agencies to prevent, eradicate, and control invasive species; assessing and strengthening Federal capacities; and fostering innovative problem solving through cutting-edge advances in science, technology, and programmatic management.

The NISC Secretariat coordinated development of the *NISC Management Plan* with input from NISC member Departments/Agencies, Federal inter-agency bodies, and non-Federal stakeholders. The *NISC Management Plan* complies with E.O. 13112’s requirement to update an invasive species management plan biennially. It is intended to be “bold yet practical,” taking time and resource limitations into consideration. The NISC Secretariat, working with NISC member Departments/Agencies, will coordi-

<sup>6</sup> See Annex II for a complete text of Executive Order 13112.



nate implementation of the *NISC Management Plan*. The NISC Secretariat secured the minimum funding necessary for this coordination. If additional funding becomes available, priority actions can be scaled up, as appropriate.

Many of the action items in this version of the *NISC Management Plan* operationalize recommendations contained in the recently released *EDRR Framework*; however, NISC fully recognizes the importance of investing in the wide range of approaches and tools necessary to prevent, eradicate, and control invasive species, as well as restore ecosystems. These approaches were addressed in the 2001 and 2008 *National Invasive Species Management Plans*,<sup>7</sup> and NISC plans to continue the work to fully implement these and additional actions.

It is not feasible for the *NISC Management Plan* to address all of the actions necessary for the Federal government to effectively prevent, eradicate, and control invasive species, or restore habitats. Invasive species issues are inherently context-specific; they change through time and across ecosystems. On-the-ground measures to address invasive species need to be tailored to particular pathways, populations of non-native species, localities, type and scale of impact, and the available resources (e.g., scientific and technical information, personnel, time, and budgets). Federal land and water management agencies and their partners are best poised to identify and carry out the most effective and cost-efficient actions to limit the spread and impact of invasive species on-the-ground. Federal agencies have developed, and will continue to develop, species-specific technical guidance that support and inform the *NISC Management Plan* from the ground up. Examples include the *Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States*,<sup>8</sup> and the *Emerald Ash Borer Program Manual*.<sup>9</sup>

<sup>7</sup> [National Invasive Species Council \(2001 & 2008\)](#)

<sup>8</sup> [Aquatic Nuisance Species Task Force \(2007\)](#)

<sup>9</sup> [u.s. Department of Agriculture \(revised 2015\)](#)

The implementation process for the *NISC Management Plan* will fall into four categories:<sup>10</sup>

1. NISC Secretariat implementation (to be undertaken by Secretariat staff, detailees, or contractors);
2. Inter-agency task teams (small groups composed of experts working for the Federal government);
3. ISAC task teams (small groups composed of non-Federal experts collaborating under the auspices of ISAC); and
4. Planning processes and project implementation at the local, tribal, and u.s. state and territory levels.

The work necessary to implement a single action item might require processes that fall into multiple categories. For example, a White Paper produced by ISAC might be used by an inter-agency task team to make recommendations for new legal authorities or institutionalize a new program, such as an early detection and rapid response program for invasive species. The NISC Secretariat will work with NISC member Departments/Agencies to determine their capacity to support the implementation of specific action items.<sup>11</sup>

In order to address emerging priorities, NISC may take up additional action items as resources permit. It is hoped that each NISC member Department/Agency will develop and implement a complementary plan that identifies needs and sets priorities for actions relevant to its unique mission.

<sup>10</sup> Nothing in this Plan is intended to alter, or should be interpreted as altering, the existing authorities of any agency.

<sup>11</sup> In the implementation of action items related to foreign affairs, including policy and trade negotiations, international planning processes, and project implementation related to invasive species, relevant NISC member agencies such as the Department of State, the u.s. Trade Representative's office, the u.s. Agency for International Development, and the Department of Defense have lead authority consistent with E.O. 13112 Sec. 2 (b).



Cheatgrass  
*Bromus tectorum*





# Priority Actions

Chinese praying mantis  
*Tenodera sinensis*

# I.

## *Provide Institutional Leadership and Set Priorities*

### GOAL

PROVIDE FEDERAL LEADERSHIP on invasive species issues by establishing the structures, as well as policy and planning priorities, necessary to enable Federal agencies to effectively prevent, eradicate, and/or control invasive species.

### NEED

The two previous National Invasive Species Management Plans recommended actions to improve Federal capacity to prevent, eradicate, and control invasive species, as well as restore affected ecosystems. A comprehensive review of the National Invasive Species Management Plans will document the achievements made through Federal cooperation and identify future priorities for NISC, NISC member Departments/Agencies, and their partners.

#### *Action 1.1*

Review the 2001 and 2008 National Invasive Species Management Plans and report on the outputs, highlighting major accomplishments, identifying gaps in implementation, and making recommendations for completing the remaining tasks, as appropriate.

### NEED

Executive Order 13112 ('E.O. 13112' or 'order') calls on NISC to "assess the effectiveness of this order no less than once each 5 years after the order is issued and . . . report to the Office of Management and Budget (OMB) on whether the order should be revised."<sup>1</sup> The most recent review of the E.O. was conducted in 2005.

#### *Action 1.2*

Review the effectiveness of E.O. 13112 and make recommendations, as appropriate, to OMB for improving the order.

### NEED

In the 17 years since the signing of E.O. 13112, awareness of the threat that invasive species pose to various aspects of national security has been well-established. Membership of NISC grew from 8 to 13 member Departments/Agencies, a Secretariat has been put in place to provide leadership and coordination on invasive species issues throughout the Federal government, and two *National Invasive Species Management Plans* have been implemented through interdepartmental cooperation. Growing interest and attention to the invasive species issue creates new opportunities for collaboration and innovative problem-solving. It also creates a need for the Federal government to re-evaluate priorities for policy guidance and program management. The following actions are intended to enable NISC to take a strategic, cost-efficient approach to implementing its duties.

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<sup>1</sup> Section 5(c).

***Action 1.3***

Develop and implement guidance for strengthening institutional leadership, coordination, and programmatic effectiveness on the invasive species issue throughout the Federal government. The guidance should include:

***Action 1.3.1***

Terms of Reference for NISC operations, including the administration and function of the NISC Secretariat;

***Action 1.3.2***

Mechanism(s) for promoting coordination between the NISC Secretariat and inter-agency bodies working on specific aspects of the invasive species issue, including the reporting of inter-agency bodies to NISC; and

***Action 1.3.3***

A process for assessing and coordinating Federal priorities for investing in invasive species prevention, eradication, and/or control, as well as the recovery of affected species, ecosystems, and other assets. The outputs of this process will be used to develop future *NISC Management Plans*.

## NEED

Accurate information, timely communication, and rapid resource mobilization are the ‘three pillars’ of an effective program to detect and respond to new incursions of non-native organisms before they have the opportunity to establish, spread, and cause harm. The report, *Safeguarding America’s Lands and Waters from Invasive Species: A National Framework for Early Detection and Rapid Response* (hereafter *EDRR Framework*),<sup>2</sup> released in February 2016, calls for the establishment of a ‘National EDRR Task Force’ under the auspices of NISC.<sup>3</sup>

***Action 1.4***

Establish Terms of Reference for and institute a National EDRR Task Force within the NISC structure that will guide implementation of the *EDRR Framework*. Although an interim structure may be warranted until the EDRR Implementation Plan is completed (Action 1.5), National EDRR Task Force membership is ultimately envisioned to include senior-level representatives of Federal Departments/Agencies, states, territories, tribes, and other governmental bodies who have the capacity to set national priorities and mobilize resources for the early detection of and rapid response to invasive species that affect priority landscapes and waters throughout the United States.<sup>4</sup> The National EDRR Task Force will report to NISC.

<sup>2</sup> [Department of the Interior \(2016\)](#)

<sup>3</sup> Recommendation 1.

<sup>4</sup> This is to include the process of identifying “Federal agency EDRR leads at national, regional, and state levels to facilitate and help coordinate EDRR efforts with states, tribes, and other partners” as called for in the EDRR Framework (2016).

## NEED

*The EDRR Framework* sets forth five general recommendations for the establishment of a national program for the early detection of and rapid response to invasive species. An implementation plan is necessary to: 1) define a clear vision, as well as goals and objectives, for the national program; 2) set priorities and mechanisms in place for well-coordinated action; 3) identify the roles and responsibilities of the Federal agencies and non-Federal partners expected to implement the program; 4) evaluate the current resources dedicated to EDRR and identify opportunities for garnering additional resources to better support implementation of a national program; and 5) determine how, when, and where the priority actions will be achieved.

### *Action 1.5*

Taking into consideration the outputs of Action 5.1 (below), its components, and advice from the National EDRR Task Force, produce an implementation plan for a nation-wide program for the early detection of and rapid response to invasive species. The implementation plan will provide specific guidance for: (a) instituting early detection and rapid response programs for Federal lands and waters; (b) proposing financial and institutional mechanisms to support the efforts of states, territories, and tribes to enact early detection and rapid response programs for invasive species (see also Action 2.5 and its components); (c) building the capacity of the Federal government to share the scientific and technical information necessary to inform rapid decision making when new incursions of non-native species are detected; (d) improving tools and technologies for the early detection of and response to invasive species; and (e) designing and implementing a National Alert System to enable rapid reporting (warning) on the detection of non-native species of substantial national concern.





## II.

### *Facilitate Effective Coordination and Cost-Efficiency*

#### GOAL

LIMIT THE SPREAD and impact of invasive species through high-level policy and planning by strengthening coordination between the U.S. and other governments; across the Federal government; among Federal, state, territorial, tribal, and local agencies; and between the Federal government and non-governmental stakeholders.

#### NEED

E.O. 13112 directs NISC to “see that the Federal agency activities concerning invasive species are coordinated, complementary, cost-efficient, and effective...”<sup>1</sup> Due to varying levels of expertise on the invasive species issue, ongoing capacity building is necessary to ensure effective coordination of Federal actions to address invasive species.

##### *Action 2.1*

As a contribution to Action 1.3, identify and take the steps to strengthen the ability of NISC member Departments/Agencies to effectively motivate, coordinate, and report on inter-agency actions to implement NISC priorities.

#### NEED

Starting in 2004, NISC member Departments/Agencies began collaborating on a ‘crosscut budget’ to inform a coordinated multi-departmental approach to meeting high-priority prevention, eradication, and/or control activities that are beyond the capacity of a single Department/Agency to achieve. The crosscut budget is developed on an annual basis. Additional planning is needed to assess the capacity of NISC member Departments/Agencies to identify and mobilize the resources necessary to implement emerging priorities and future *NISC Management Plans*.

##### *Action 2.2.1*

Develop annual, comprehensive invasive species crosscut budgets and report findings to NISC, ISAC, states/territories, tribes, and Congress.

##### *Action 2.2.2*

Assess investments, resource needs, and opportunities to leverage the additional resources that NISC needs to implement emerging priorities and *NISC Management Plans*.

#### NEED

The Federal government currently lacks cost-benefit analyses of Federal investments in the early detection of and rapid response to new incursions of non-native species. These analyses are needed to guide implementation of the *EDRR Framework*, as well as help prioritize and ensure greater efficiencies in Federal spending in fiscal year (FY) 2018 and beyond.

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<sup>1</sup> Section 4.

### *Action 2.3*

Conduct cost-benefit analyses of EDRR programs for potential invasive species to: (a) project the return on investment in these programs, (b) project the cost of “no action” had these programs not been in place, and (c) provide guidance for future spending on EDRR programs.

## NEED

The capacity of the Federal government to prevent and respond to biological invasions depends on ready access to the best available scientific and socio-economic information. Recognizing this, E.O. 13112 called for “the establishment of a coordinated, up-to-date information sharing system that utilizes, to the greatest extent practicable, the Internet.”<sup>2</sup> At this time, numerous information systems exist within the U.S. and other countries that provide data and other information resources relevant to addressing the invasive species issue. Each of these information systems was developed to meet different goals, objectives, and standards. Rather than creating a single information-sharing system, there is a need to create an interface among existing information systems that will enable them to become inter-operable, to foster simultaneous access, and to deliver information as if they were a single information system. Numerous data providers and data users are calling for the development of the standards, formats, and protocols needed to facilitate the inter-operability of information systems. In October 2015, ISAC called for the establishment of a task team to fulfill this need.<sup>3</sup>

### *Action 2.4*

In order to facilitate inter-operability of data and other information resources relevant to addressing the invasive species issue, establish guidance for data management standards, formats, and protocols. The guidance should target the most relevant (high priority) information systems, capitalize existing standards,<sup>4</sup> and take into consideration the work that the Global Invasive Alien Species Information Partnership already initiated to explore options for information system inter-operability.

## NEED

E.O. 13112 calls on NISC to “encourage planning and action at local, tribal, state, regional, and ecosystem-based levels to achieve the goals and objectives of the *NISC Management Plan*.”<sup>5</sup> Although representatives of states, territories, and tribes serve on ISAC, the need remains for a strategic approach to Federal coordination with states (including local authorities and territories), tribes, North American frameworks,<sup>6</sup> and ecosystem-scale initiatives.<sup>7</sup>

<sup>2</sup> Section 4 (f).

<sup>3</sup> “NISC staff should establish a task team to inventory and develop, as needed, data management standards, formats and protocols to ensure inter-operability to support information transfer, national distribution mapping, and awareness of species occurrences and spread...” Action item recommended, October 30, 2015.

<sup>4</sup> For example, the [North American Invasive Species Management Association mapping standards](#).

<sup>5</sup> Section 4(b).

<sup>6</sup> Examples of relevant regional coordinating bodies include: North American Plant Protection Organization (NAPPO), Commission for Environmental Cooperation (CEC), and Trilateral Committee for Wildlife and Ecosystem Conservation and Management (The TriLateral Committee).

<sup>7</sup> Section 4(b).

**Action 2.5.1**

Develop recommendations for coordinating Federal agency activities to implement E.O. 13112 with U.S. states and territories. Implement recommendations as time and resources permit.

**Action 2.5.2**

Develop recommendations for coordinating Federal agency activities to implement E.O. 13112 with Federally-recognized tribes, as well as Native Alaskan and Native Hawaiian communities. Implement recommendations as time and resources permit. Prior to implementing the recommendations, consult with Federally-recognized tribes pursuant to Executive Order 13175 of November 6, 2000 (Consultation and Coordination With Indian Tribal Governments).

**Action 2.5.3**

Further collaborate on addressing invasive species in North America. Establish a trilateral working group to explore the development of a joint Strategy and Action Plan identifying key areas for collaboration, including under the Commission for Environmental Cooperation (CEC), and to initiate a survey of existing transboundary invasive species projects and initiatives.<sup>8</sup>

**Action 2.5.4**

As called for in the *EDRR Framework*,<sup>9</sup> promote pilot projects across a variety of U.S. ecosystems that explore innovative, multi-stakeholder approaches to the early detection of and rapid response to invasive species.

**NEED**

E.O. 13112 calls for both ecosystem-level coordination<sup>10</sup> and international cooperation.<sup>11</sup> The *Implementation Plan for The National Strategy for the Arctic Region*<sup>12</sup> directs

<sup>8</sup> Action item adopted as an aspect of the North American Leadership Summit (NALS) Action Plan on June 29, 2016.

<sup>9</sup> Recommendation 4.

<sup>10</sup> Section 4(b).

<sup>11</sup> Section 4(c).

<sup>12</sup> [White House \(2014\)](#); Action Item 3.5.1 to be completed by the end of 2017.





the Federal government to “develop, implement, and maintain an international invasive species prevention and management plan.”

***Action 2.6***

Under the auspices of the Arctic Council’s Conservation of Arctic Flora and Fauna (CAFF) Invasive Species Working Group, work with international partners to develop a strategy and action plan for the prevention and management of invasive species across the Arctic region.

**NEED**

Experience around the world has shown that one of the most substantial barriers to effectively implementing invasive species strategies and action plans is poor governmental institutionalization of the invasive species issue. Governmental capacity to address the invasive species issue is highly variable. There is a need to build the institutional capacity necessary for effective implementation of national and regional invasive species strategies and action plans over the long-term. The following action will provide an initial step in assisting U.S. territories, states, tribes, and other governments in their efforts to institutionalize the invasive species issue.

***Action 2.7***

Collaborate in the development and delivery of training courses and guidance on institutionalizing invasive species programs for government representatives charged with developing and/or implementing invasive species strategies and action plans. Provide examples of the mechanisms used by NISC to institutionalize invasive species initiatives within the Federal government.

## NEED

Free trade agreements (FTAs) can serve as a tool to help trading partners prevent and mitigate the adverse impacts of invasive species through inter-governmental cooperation and information exchange. The recently-signed Trans Pacific Partnership (TPP) Agreement between the United States and eleven other countries includes a commitment for parties to coordinate among relevant FTA committees to identify opportunities to share information and management experiences on the movement, prevention, detection, control, and eradication of invasive species, with a view to enhancing efforts to assess and address the risks and adverse impacts of invasive species. The negotiations building towards a Transatlantic Trade and Investment Partnership (TTIP) with the European Union (E.U.) may provide another opportunity to explore cooperation on invasive species.

### *Action 2.8.1*

Explore opportunities in TTIP to cooperate in the area of invasive species.

### *Action 2.8.2*

Explore opportunities with the European Commission, Council of Europe, and/or other appropriate organizations to share experiences, scientific and technical information, and best practices. This could include, for example, video conferences for information exchanges between technical experts and/or regulators.





R. SIGMUNDSSON

NEPTUNE  
AKUREYRI

PA  
42



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### III.

#### *Raise Awareness and Motivate High-Impact Actions*

#### GOAL

RAISE AWARENESS OF the invasive species issue and mobilize the policies, programs, and financial resources necessary to minimize the spread and impact of invasive species.

#### NEED

Although invasive species are among the greatest threats to biodiversity, the economy, and human well-being worldwide, the invasive species issue has not yet achieved a level of recognition that is consistent with the substantial scale of the ecological and socio-economic impacts resulting from biological invasion. NISC recognizes the fundamental need to: (a) raise greater awareness of the threats posed by invasive species and (b) inspire concerted action to prevent, eradicate, and/or control potentially harmful non-native organisms.

##### *Action 3.1.1*

Create a conceptual framework for developing the messages and delivery mechanisms that will substantially increase awareness of and responsibility for the invasive species issue among key policy makers,<sup>1</sup> nonprofit and industry leaders, philanthropic foundations, and development assistance organizations.<sup>2</sup> The conceptual framework will take into consideration and, as appropriate, leverage existing awareness-raising programs and events (e.g., National Invasive Species Awareness Week). Implement the conceptual framework as time and resources permit.

##### *Action 3.1.2*

Produce a documentary on invasive species for the general public that draws linkages between invasive species and people's everyday lives (e.g., the morning cup of coffee, the family dog, baseball as the all-American pastime, gardening and other popular hobbies, and summer vacation at the beach or in the mountains).

#### NEED

There is a need to better utilize the NISC website<sup>3</sup> and other reporting mechanisms for effective, consistent information sharing, as well as to raise public awareness of the invasive species issue.

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<sup>1</sup> Includes local, state, territorial, tribal governments, as well as bi- and multi-lateral frameworks.

<sup>2</sup> Includes major national and/or international development banks.

<sup>3</sup> <http://www.doi.gov/invasivespecies>

### ***Action 3.2***

Taking into consideration Section 4(f) of E.O. 13112,<sup>4</sup> develop and initiate implementation of a communications plan for the NISC website and associated communications platforms to include:

#### ***Action 3.2.1***

A comprehensive strategy for website function and design (including Actions 3.2.2, 3.2.3 below);

#### ***Action 3.2.2***

Ongoing publication of blogs that feature stories highlighting the impacts of invasive species ('Impacts' blog), provide alerts on new introductions or potential introductions ('Alerts' blog), and promote Federal actions taken to effectively address invasive species ('Success Stories' blog);

#### ***Action 3.2.3***

An electronic toolkit that provides communications guidance and resources for the NISC member Departments/Agencies. This is to include, at minimum: talking points and briefing papers on the invasive species issue, fact sheets on invasive species issues as they relate to each of the member Departments/Agencies, and best practices for developing and implementing highly impactful communications initiatives (e.g., undertaking stakeholder analyses, social marketing, and impact assessments);

#### ***Action 3.2.4***

Webinars and/or podcasts that provide Federal agencies and their partners with the information necessary to effectively implement E.O. 13112 and related directives by: (a) raising awareness of emerging threats, research, and technologies; (b) providing a forum for dialogue on complex and/or controversial aspects of the invasive species issue; and (c) promoting innovative work by Federal agencies and their partners to prevent, eradicate, and/or control invasive species;

#### ***Action 3.2.5***

Annual reports on implementation of the *NISC Management Plan* and other high-priority initiatives; and

#### ***Action 3.2.6***

Establishment of a stakeholder database to enable the Council to more effectively inform and engage a wide-range of individuals and organizations interested in supporting its work.

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<sup>4</sup> Section 4(f) provides, "Facilitate establishment of a coordinated, up-to-date information-sharing system that utilizes, to the greatest extent practicable, the Internet; this system shall facilitate access to and exchange of information concerning invasive species, including, but not limited to, information on distribution and abundance of invasive species; life histories of such species and invasive characteristics; economic, environmental, and human health impacts; management techniques; and laws and programs for management, research, and public education."



## IV. *Remove Barriers*

### GOAL

REMOVE INSTITUTIONAL AND policy barriers to the Federal actions needed to prevent, eradicate, and control invasive species, as well as recover species and restore habitats and other assets.

### NEED

Section 4(d) of E.O. 13112 calls for NISC to “develop, in consultation with the Council on Environmental Quality (CEQ), guidance to Federal agencies pursuant to the National Environmental Policy Act (NEPA) on prevention and control of invasive species, including the procurement, use, and maintenance of native species as they affect invasive species.”

#### *Action 4.1*

In keeping with NEPA requirements, develop a general introductory document and associated annexes that provide effective guidance for the prevention, eradication, and control of invasive species, as well as the restoration of impacted habitats. Each annex will provide guidance on a specific aspect of the invasive species issue. The first annexes are to be developed within the scope of this *NISC Management Plan*, but annexes may be added as needs dictate and resources permit. The initial annexes include:

#### *Action 4.1.1*

Use of native seed/plants in habitat restoration;<sup>1</sup>

#### *Action 4.1.2*

Movement of watercraft among water bodies;<sup>2</sup> and

#### *Action 4.1.3*

Reducing the risk of biological invasion via managed relocation.<sup>3</sup>

### NEED

Because non-native species typically enter the U.S. through ports of entry in urban environments, some of the first observable impacts may be to infrastructure. In many cases, species that initially impacted infrastructure have had devastating impacts on ecological systems, agriculture, and/or fisheries when they spread into

<sup>1</sup> This is to align with the [National Seed Strategy for Rehabilitation and Restoration](#) (Plant Conservation Alliance, 2015).

<sup>2</sup> This annex is to be developed in partnership with the Aquatic Nuisance Species Task Force (ANSTF) and take into consideration the information contained in the [Federal Lands Policy Options Paper for Addressing the Movement of Aquatic Invasive Species onto and off of Federal Lands](#) (Aquatic Nuisance Species Task Force (ANSTF) and NISC-Secretariat, 2015).

<sup>3</sup> Also referred to as ‘assisted migration.’ This annex was requested as a priority of the National Park Service and is also consistent with work being initiated by the U.S. Fish and Wildlife Service.

less modified landscapes and waterways. The United States currently lacks the comprehensive authority, or clarity of authority, necessary to effectively prevent, eradicate, and control invasive species that impact the human-built environment (“infrastructure”). This prevents rapid response to some of the most damaging invasive species. It also limits the ability of agencies to prioritize and allocate the resources necessary to control invasive species that threaten public security (e.g., zebra mussels [*Dreissena polymorpha*] incapacitating power plants and irrigation systems), undermine costly Federal programs (e.g., the Raspberry/tawny crazy ant [*Nylanderia fulva*], which has impacted electrical systems at the Port of Houston and NASA Johnson Space Center in Houston), and cause homeowners to incur substantial repair and maintenance costs (e.g., Formosan termite [*Coptotermes formosanus*]).

#### **Action 4.2.1**

Compile case studies of the invasive species impacts on infrastructure in the United States and make them available through the NISC website or other public domain. The case studies should address: (a) biology of the organism in native and introduced ranges; (b) locality, date, and pathway of introduction; (c) documented impacts to infrastructure (including a timeline and economic costs); (d) documented non-infrastructure impacts (including a timeline and economic costs); (e) measures taken to eradicate/control the species and associated Federal costs; and (f) projected needs (including technologies and funding) to eradicate the species.

#### **Action 4.2.2**

Taking into consideration the output of Action 4.2.1, develop guidance that enables Federal agencies to take the necessary action to prevent, eradicate, and control non-native species that harm or have the potential to harm infrastructure within the United States and its overseas territories.

## NEED

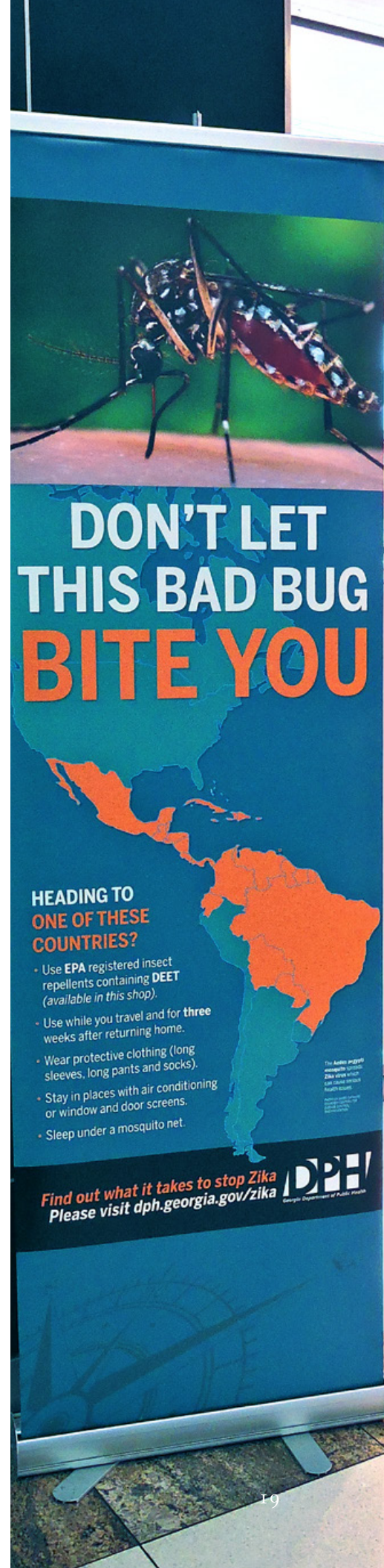
In recent decades, non-native pathogens, parasites, and disease vectors have had devastating impacts on native wildlife (e.g., white-nose syndrome has contributed to the decline of hibernating species of native bats). The United States currently lacks a comprehensive authority to effectively prevent, eradicate, and control invasive species that cause or transmit wildlife disease. This has resulted in substantial impacts at species- and ecosystem-levels. In response, the U.S. Government Accountability Office (GAO) outlined recommendations to improve inter-agency collaboration to reduce the risk of animal-related diseases.<sup>4</sup>

#### **Action 4.3.1**

Compile case studies of invasive species impacts on wildlife health in the U.S. and make them available through the NISC website or other public domain.<sup>5</sup> Address (as feasible): (a) the biology of the organism in native and introduced ranges; (b) locality, date, and pathway of introduction into the United States; (c) documented impacts to wildlife health (including a timeline and economic costs); (d) measures taken to eradicate/control the species and associated Federal

<sup>4</sup> U.S. Government Accountability Office, 2010. GAO-11-9. [Live animal imports: Agencies need better collaboration to reduce the risk of animal-related diseases.](#)

<sup>5</sup> To include pathogens, parasites, and their vectors.

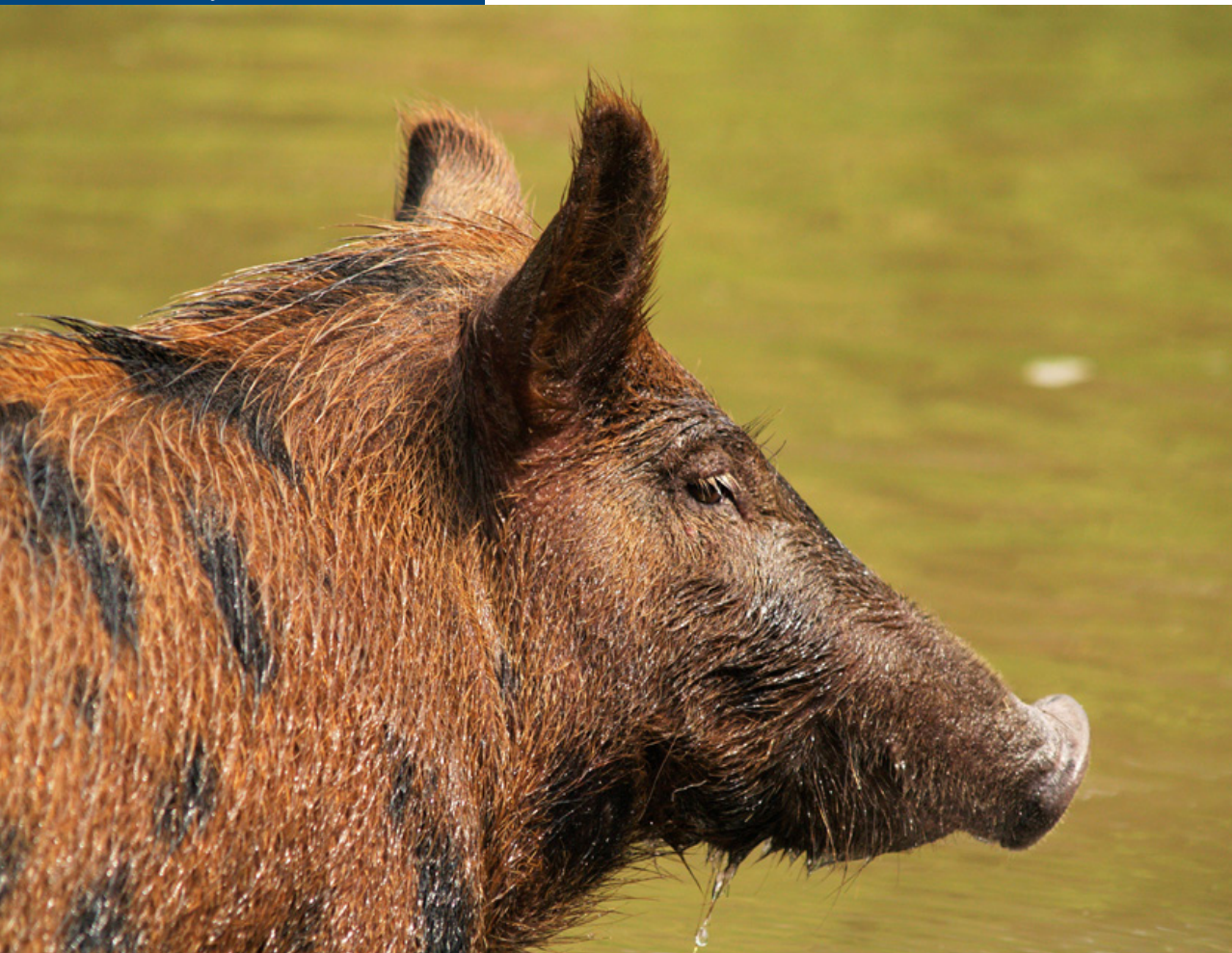


costs; and (e) projected needs (including technologies and funding) to eradicate the species from the United States.<sup>6</sup>

***Action 4.3.2***

Taking into consideration the output of Action 4.3.1, develop guidance that enables Federal agencies to take the necessary action to prevent, eradicate, and control non-native species that harm or have the potential to harm wildlife health within the United States, including its overseas territories. The recommendation will need to carefully consider the differing, yet complementary, roles of Federal, state, territorial, and tribal agencies in managing non-native species that could impact wildlife health.

Feral pig  
*Sus scrofa*



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<sup>6</sup> All costs may be generalized by thousands/millions of dollars, unless actual costs are known.



## V. *Assess and Strengthen Federal Capacities*

### GOAL

CONDUCT ASSESSMENTS OF Federal capacities to meet the duties set forth in E.O. 13112, as well as other high-level policy priorities, and build Federal capacities, as needed.<sup>1</sup>

### NEED

The *EDRR Framework* calls for a series of assessments to inform the development of an implementation plan for a national early detection and rapid response program for invasive species.<sup>2</sup> Although these assessments are largely focused on U.S. government capacities, the international aspects of securing scientific and technical information and building institutional capacity should be taken into consideration, as appropriate.

#### *Action 5.1*

Undertake scientific, technical, and institutional assessments in order to determine the capacities and resources necessary to establish a national early detection and rapid response program for invasive species that affect priority landscapes and waters. Each assessment is to: (a) provide an overview of existing institutional capacities, (b) identify gaps in capacities, and (c) recommend measures to build the necessary institutional capacities.<sup>3</sup> Prioritize assessments of:

#### *Action 5.1.1*

Federal agency capacity for the early detection of and/or rapid response to potentially harmful non-native species, as well as the costs of administering these programs.<sup>4</sup>

#### *Action 5.1.2*

Federal legal authorities, regulations, and policies' ability to enable or limit the early detection of and/or rapid response to potentially harmful non-native species.

#### *Action 5.1.3*

The capacity of the Federal government to conduct the risk analyses and horizon scanning necessary to produce timely and well-informed watch lists of potentially harmful non-native species.

<sup>1</sup> Although there are a wide range of needs for Federal assessments and capacity building, due to limited staffing and financial resources, this version of the *NISC Management Plan* focuses on the assessments recommended in the *EDRR Framework*. It is expected that future versions of the *NISC Management Plan* will prioritize additional aspects of invasive species prevention and management, from both the assessment and capacity-building perspective.

<sup>2</sup> Recommendation 5.

<sup>3</sup> See the *EDRR Framework* for further details on each assessment.

<sup>4</sup> The *EDRR Framework* calls for "a similar effort should be undertaken to understand non-Federal spending and anticipated needs." Recommendation 2.

**Action 5.1.4**

The capacity of the Federal government and its partners to rapidly and accurately report the identity (taxonomy) of non-native organisms intercepted in early detection programs.

**Action 5.1.5**

Relevant information systems to provide the data and other information necessary for risk analyses/horizon scanning (Action 5.1.3), rapid specimen identification (Action 5.1.4), and rapid response planning.

**Action 5.1.6**

Current tools and technologies to enable the early detection of and rapid response to potentially harmful non-native species. Electronically catalog the tools and technologies currently available to support a national EDRR program for potentially harmful non-native species.

**Action 5.1.7**

Relevant inventory and monitoring programs to detect new incursions of potentially harmful non-native organisms in the United States.<sup>5</sup>



<sup>5</sup> This is to include a wide range of Federal and non-Federal biodiversity inventory and monitoring initiatives. It is likely that the majority of these initiatives were established to assess native biodiversity. However, the data and infrastructure that they provide may serve as the foundation for building a highly effective EDRR program.



Musk thistle  
*Carduus nutans*

## VI.

### *Foster Innovation*

#### GOAL

FOSTER THE SCIENTIFIC, technical, and programmatic innovation necessary to enable Federal agencies and their partners to prevent, eradicate, and/or control invasive species, as well as recover species and restore habitats and other assets, in a timely and cost-effective manner with negligible impacts to human and environmental health.

#### NEED

Decision support tools constitute a wide range of approaches (models, techniques, and methods) used to foster decision making and participatory processes. These decision support tools can be applied to a wide range of needs, such as: information categorization and ranking, simulation and prediction, effective communication (especially with non-experts), programmatic and institutional capacity building, experimentation, and the exploration of policy and management options. Due to the informational, financial, and time constraints common to invasive species programs, Federal agencies need decision support tools to maximize programmatic effectiveness and cost-efficiencies.

##### *Action 6.1*

Create a mechanism for fostering the development, adoption, and sharing of the decision support tools that will enable NISC member Departments/Agencies to more effectively implement the duties set forth in E.O. 13112, *NISC Management Plans*, and other guidance documents.

#### NEED

The large scale and complexity of the invasive species issue frequently results in inaction; there is a common belief that, once established, it is no longer logistically or financially feasible to eradicate or control populations of invasive species. This belief limits innovative thinking as well as funding for the scientific and technological advancements that could turn a seemingly intractable situation into a resolvable problem. There is a need to: (a) overcome limiting beliefs about scientific and technical capacities for invasive species prevention and management, and (b) foster innovative problem solving.

##### *Action 6.2*

Working with scientific and technical institutions, organize and co-host an Innovation Summit that: (a) promotes scientific, technical, and technological advances that can facilitate invasive species prevention, eradication, and control, and (b) identifies priority needs for further advances in science and technology that can provide solutions to some of the worst invasive species challenges in the U.S. and elsewhere.



## NEED

Increasingly, genetic tools are being used to detect and solve pressing environmental, social, and health-related challenges. For example, environmental DNA (eDNA) is being employed to detect and monitor the presence of potentially invasive species in water bodies or other moist environments. Advances in gene editing technology are currently being explored as a means to eradicate and control invasive species. By altering the genomes of entire populations of wild organisms, genetic editing may improve capacities to prevent, eradicate, and/or control populations of invasive species currently thought to be an indefinite problem. Interest in and support for gene drive technology is growing rapidly. However, there is a need to carefully explore the potential ecological, socio-cultural, and political ramifications of using gene editing technology to address invasive species, including the possibility that gene-edited organisms may spread across ecological and jurisdictional borders.

### *Action 6.3.1*

Conduct an assessment of the potential ecological, socio-economic, and political benefits and costs of gene editing technology in the context of invasive species prevention, eradication, and control.

### *Action 6.3.2*

Taking into consideration the output of action 6.3.1., develop guidance for the potential ecological, socio-economic, and political benefits and costs of gene editing technology in the context of invasive species prevention, eradication, and control.

## NEED

There is increasing interest in the harvest and use of invasive species as a means of eradicating or controlling invasive populations. If undertaken in a well-informed manner, incentivizing and encouraging public or commercial harvest represents a significant opportunity to support ecosystem restoration and natural resource management while simultaneously boosting economic development and environmental awareness. However, if implemented without sufficient risk and cost-benefit analyses, negative consequences can occur (e.g., intentional introduction and further spread of potentially invasive species). The success of harvest programs depends on the biology of the particular species, specific biophysical and socio-economic aspects of the locality (including interactions among the native and other non-native species), the range and scale of biological invasion, and a variety of socio-economic factors. Little guidance is available on: (a) when and how to use incentivized harvest as an effective management tool for invasive species and (b) strategies for overcoming the logistical barriers to establishing harvest programs in the market place (e.g., availability of startup funding for companies that intend to deplete the commodity on which revenues are based).

### *Action 6.4*

Building on the previous work on harvest mechanisms by ISAC and the Aquatic Nuisance Species Task Force (ANSTF), work with relevant stakeholders to develop best practice guidance for utilizing commercial harvest programs as an effective management tool for invasive species already established within Federal lands and waters.



Silver carp  
*Hypophthalmichthys molitrix*



# Annexes

Common salvinia  
*Salvinia minima*  
Center: water lettuce  
*Pistia stratiotes*

## ANNEX I

### *2016–2018 Management Plan Implementation Strategy*

THE NISC SECRETARIAT, working with NISC members, will coordinate implementation of the *NISC Management Plan*. The implementation process will fall into four categories:<sup>1</sup> (1) NISC Secretariat implementation (to be undertaken by Secretariat staff, detailees, or contractors); (2) inter-agency task teams (small groups composed of experts working for the Federal government); (3) ISAC task teams (small groups composed of non-Federal experts collaborating under the auspices of ISAC); and (4) planning and project implementation at the local, tribal, and U.S. state and territory levels. The work necessary to implement a single action item might require processes that fall into multiple categories. Additional action items may be taken up by NISC in order to address emerging priorities.<sup>2</sup>

Action	Output(s)	Timeline
1.1	Review of the 2001 and 2008 <i>National Invasive Species Management Plans</i>	2016
1.2	Review of E.O. 13112	2016
1.3	Guidance for strengthening NISC institutionalization	2016
1.3.1	Terms of reference for NISC operations	2016
1.3.2	Mechanism for promoting inter-agency coordination/reporting	2016
1.3.3	Process for assessing and coordinating NISC prioritization	2016
1.4	National EDRR Task Force	2017
1.5	Implementation Plan for National EDRR Program	2017
2.1	Tools and training for NISC member Departments/Agencies	Ongoing
2.2.1	NISC Crosscut budget	2016 & 2017
2.2.2	Assessment of Federal investments, resource needs, and resource opportunities for implementing emerging priorities and <i>NISC Management Plans</i>	Ongoing
2.3	Cost-benefit analyses of EDRR programs	2017
2.4	Guidelines for data standards	2016
2.5.1	Recommendations for improving coordination with the states/territories	2016–2017

<sup>1</sup> Nothing in this Plan is intended to alter, or should be interpreted as altering, the existing authorities of any agency.

<sup>2</sup> In the implementation of action items related to foreign affairs, including policy and trade negotiations, international planning processes, and project implementation related to invasive species, relevant NISC member agencies such as the Department of State, the U.S. Trade Representative's office, the U.S. Agency for International Development, and the Department of Defense have lead authority consistent with E.O. 13112 Sec. 2 (b).

Action	Output(s)	Timeline
2.5.2	Recommendations for improving coordination with the Federally-recognized tribes, such as native Alaskan and Hawaiian communities	2016–2017
2.5.3	North American Invasive Alien Species Strategy and Action Plan	2016–2017
2.5.4	EDRR pilot projects	2016–2017
2.6	Arctic Invasive Alien Species Strategy and Action Plan	2016
2.7	Training courses on institutionalizing invasive species programs	Ongoing
2.8.1	Invasive species specifically addressed in TTIP	2017
2.8.2	Information sharing with E.U. relevant to invasive species and trade	2016–2017
3.1.1	Conceptual framework for awareness raising initiatives	2017
3.1.2	Documentary film	2017
3.2	Plan for NISC communications platforms	2016
3.2.1	Highly impactful NISC website	2016
3.2.2	Invasive species blogs	Ongoing
3.2.3	Electronic communications toolkit	Ongoing
3.2.4	Invasive species webinars	Ongoing
3.2.5	NISC annual report	Ongoing
3.2.6	Stakeholder database	Ongoing
4.1	Invasive species NEPA guidance	2016
4.1.1	NEPA annex use of native seed/plants in restoration	2017
4.1.2	NEPA annex on movement of water craft among water bodies	2016–2017
4.1.3	NEPA annex on reducing risk of biological invasion through managed relocation	2016–2017
4.2.1	Case studies of invasive species impacts on infrastructure	2016
4.2.1	Recommendations for addressing invasive species that impact infrastructure	2017

Action	Output(s)	Timeline
4.3.1	Case studies of invasive species impacts on wildlife health	2017
4.3.2	Recommendations for addressing invasive species that impact wildlife health	2017
5.1	Published assessments of EDRR capacities in the U.S.	2016–2017
5.1.1	Assessment of Federal EDRR programs capacities	2016
5.1.2	Assessment of U.S. legal authority capacities for EDRR	2016
5.1.3	Assessment of U.S. risk analysis and horizon scanning capacities	2016
5.1.4	Assessment of U.S. capacity to rapidly report the identity (taxonomy) of potential invasive species	2016
5.1.5	Assessment of relevant information systems to provide data for risk analyses	2016
5.1.6	Assessment of the capacity of tools and technology for invasive species EDRR	2016
5.1.6	Electronic catalog of EDRR tools and technologies for invasive species	2017
5.1.7	Assessment of U.S. inventory and monitoring capacities for application to the EDRR of invasive species	2016
6.1	Mechanism(s) for fostering development, adoption, and sharing of decision support tools	2017
6.2	Annual Innovation Summit	Ongoing
6.3.1	Assessment of cost-benefits of gene editing technologies for addressing invasive species	2016
6.3.2	Guidance for the use of gene editing technologies for addressing invasive species	2017
6.4	Guidance for utilizing commercial harvest programs for managing invasive species	2017

## ANNEX II

### *Executive Order 13112 of February 3, 1999*

#### INVASIVE SPECIES

BY THE AUTHORITY VESTED in me as President by the Constitution and the laws of the United States of America, including the National Environmental Policy Act of 1969, as amended (42 U.S.C. § 4321 et seq.), Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended (16 U.S.C. § 4701 et seq.), Lacey Act, as amended (18 U.S.C. § 42), Federal Plant Pest Act (7 U.S.C. § 150aa et seq.), Federal Noxious Weed Act of 1974, as amended (7 U.S.C. § 2801 et seq.), Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.), and other pertinent statutes, to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause, it is ordered as follows:

**Section 1.** Definitions. (a) “Alien species” means, 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. (b) “Control” means, as appropriate, eradicating, suppressing, reducing, or managing invasive species populations, preventing spread of invasive species from areas where they are present, and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasions. (c) “Ecosystem” means the complex of a community of organisms and its environment. (d) “Federal agency” means an executive department or agency, but does not include independent establishments as defined by 5 U.S.C. § 104. (e) “Introduction” means the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity. (f) “Invasive species” means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. (g) “Native species” means, with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem. (h) “Species” means a group of organisms all of which have a high degree of physical and genetic similarity, generally interbreed only among themselves, and show persistent differences from members of allied groups of organisms. (i) “Stakeholders” means, but is not limited to, State, tribal, and local government agencies, academic institutions, the scientific community, nongovernmental entities including environmental, agricultural, and conservation organizations, trade groups, commercial interests, and private landowners. (j) “United States” means the 50 States, the District of Columbia, Puerto Rico, Guam, and all possessions, territories, and the territorial sea of the United States.

**Sec. 2.** Federal Agency Duties. (a) Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, (1) identify such actions; (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that

have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions. (b) Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

**Sec. 3. Invasive Species Council.** (a) An Invasive Species Council (Council) is hereby established whose members shall include the Secretary of State, the Secretary of the Treasury, the Secretary of Defense, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Transportation, and the Administrator of the Environmental Protection Agency. The Council shall be Co-Chaired by the Secretary of the Interior, the Secretary of Agriculture, and the Secretary of Commerce. The Council may invite additional Federal agency representatives to be members, including representatives from subcabinet bureaus or offices with significant responsibilities concerning invasive species, and may prescribe special procedures for their participation. The Secretary of the Interior shall, with concurrence of the Co-Chairs, appoint an Executive Director of the Council and shall provide the staff and administrative support for the Council. (b) The Secretary of the Interior shall establish an advisory committee under the Federal Advisory Committee Act, 5 U.S.C. § App., to provide information and advice for consideration by the Council, and shall, after consultation with other members of the Council, appoint members of the advisory committee representing stakeholders. Among other things, the advisory committee shall recommend plans and actions at local, tribal, State, regional, and ecosystem-based levels to achieve the goals and objectives of the Management Plan in section 5 of this order. The advisory committee shall act in cooperation with stakeholders and existing organizations addressing invasive species. The Department of the Interior shall provide the administrative and financial support for the advisory committee.

**Sec. 4. Duties of the Invasive Species Council.** The Invasive Species Council shall provide national leadership regarding invasive species, and shall: (a) oversee the implementation of this order and see that the Federal agency activities concerning invasive species are coordinated, complementary, cost-efficient, and effective, relying to the extent feasible and appropriate on existing organizations addressing invasive species, such as the Aquatic Nuisance Species Task Force, the Federal Interagency Committee for the Management of Noxious and Exotic Weeds, and the Committee on Environment and Natural Resources; (b) encourage planning and action at local, tribal, State, regional, and ecosystem-based levels to achieve the goals and objectives of the Management Plan in section 5 of this order, in cooperation with stakeholders and existing organizations addressing invasive species; (c) develop recommendations for international cooperation in addressing invasive species; (d)



develop, in consultation with the Council on Environmental Quality, guidance to Federal agencies pursuant to the National Environmental Policy Act on prevention and control of invasive species, including the procurement, use, and maintenance of native species as they affect invasive species; (e) facilitate development of a coordinated network among Federal agencies to document, evaluate, and monitor impacts from invasive species on the economy, the environment, and human health; (f) facilitate establishment of a coordinated, up-to-date information-sharing system that utilizes, to the greatest extent practicable, the Internet; this system shall facilitate access to and exchange of information concerning invasive species, including, but not limited to, information on distribution and abundance of invasive species; life histories of such species and invasive characteristics; economic, environmental, and human health impacts; management techniques, and laws and programs for management, research, and public education; and (g) prepare and issue a national Invasive Species Management Plan as set forth in section 5 of this order.

**Sec. 5. Invasive Species Management Plan.** (a) Within 18 months after issuance of this order, the Council shall prepare and issue the first edition of a National Invasive Species Management Plan (Management Plan), which shall detail and recommend performance-oriented goals and objectives and specific measures of success for Federal agency efforts concerning invasive species. The Management Plan shall recommend specific objectives and measures for carrying out each of the Federal agency duties established in section 2(a) of this order and shall set forth steps to be taken by the Council to carry out the duties assigned to it under section 4 of this order. The Management Plan shall be developed through a public process and in consultation with Federal agencies and stakeholders. (b) The first edition of the Management Plan shall include a review of existing and prospective approaches and authorities for preventing the introduction and spread of invasive species, including those for identifying pathways by which invasive species are introduced and for minimizing the risk of introductions via those pathways, and shall identify research needs and recommend measures to minimize the risk that introductions will occur. Such recommended measures shall provide for a science-based process to evaluate risks associated with introduction and spread of invasive species and a coordinated and systematic risk-based process to identify, monitor, and interdict pathways that may be involved in the introduction of invasive species. If recommended measures are not authorized by current law, the Council shall develop and recommend to the President through its Co-Chairs legislative proposals for necessary changes in authority. (c) The Council shall update the Management Plan biennially and shall concurrently evaluate and report on success in achieving the goals and objectives set forth in the Management Plan. The Management Plan shall identify the personnel, other resources, and additional levels of coordination needed to achieve the Management Plan's identified goals and objectives, and the Council shall provide each edition of the Management Plan and each report on it to the Office of Management and Budget. Within 18 months after measures have been recommended by the Council in any edition of the Management Plan, each Federal agency whose action is required to implement such measures shall either take the action recommended or shall provide the Council with an explanation of why the action is not feasible. The Council shall assess the effectiveness of this order no less than once each 5 years after the order is issued and shall report to the Office of Management and Budget on whether the order should be revised.

**Sec. 6. Judicial Review and Administration.** (a) This order is intended only to improve the internal management of the executive branch and is not intended to create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any other person. (b) Executive Order 11987 of May 24, 1977, is hereby revoked. (c) The requirements of this order do not affect the obligations of Federal agencies under 16 U.S.C. § 4713 with respect to ballast water programs. (d) The requirements of section 2(a)(3) of this order shall not apply to any action of the Department of State or Department of Defense if the Secretary of State or the Secretary of Defense finds that exemption from such requirements is necessary for foreign policy or national security reasons.





ANNEX III  
*NISC Members*

THE HONORABLE TOM J. VILSACK  
Secretary of Agriculture

THE HONORABLE PENNY PRITZKER  
Secretary of Commerce

THE HONORABLE SALLY JEWELL  
Secretary of the Interior

THE HONORABLE ASH CARTER  
Secretary of Defense

THE HONORABLE SYLVIA M. BURWELL  
Secretary of Health and Human Services

THE HONORABLE JOHN F. KERRY  
Secretary of State

THE HONORABLE ANTHONY FOXX  
Secretary of Transportation

THE HONORABLE JACOB J. LEW  
Secretary of the Treasury

THE HONORABLE JEH JOHNSON  
Secretary of Homeland Security

THE HONORABLE GINA MCCARTHY  
Administrator of the u.s. Environmental Protection Agency

THE HONORABLE MICHAEL FROMAN  
US Trade Representative

THE HONORABLE CHARLES F. BOLDEN, JR.  
Administrator of the National Aeronautics and Space Administration

THE HONORABLE GAYLE E. SMITH  
Administrator of the u.s. Agency for International Development

27 JUNE 2016

Common mullein  
*Verbascum thapsus*



Rock dove  
*Columba livia*

ANNEX III  
*NISC Principals*

ROBERT BONNIE

*Undersecretary for Natural Resources and Environment*  
Department of Agriculture

MICHAEL WEISS

*Senior Policy Advisor*  
Department of Commerce

KRISTEN SARRI

*Principal Deputy Assistant Secretary for Policy, Management and Budget*  
Department of the Interior

MAUREEN SULLIVAN

Deputy Assistant Secretary  
Department of Defense

THOMAS NOVOTNY

*Deputy Assistant Secretary for Health (Science and Medicine)*  
Department of Health and Human Services

ANNE HALL

*Principal Deputy Assistant Secretary*  
*Bureau of Oceans, Environmental and Scientific Affairs*  
Department of State

Cycad scale  
*Aulacaspis yasumatsui*



CARLOS MONJE, JR.  
*Assistant Secretary for Transportation Policy*  
Department of Transportation

VACANT  
Department of the Treasury

BRODI KOTILA  
*Principal Deputy Assistant Secretary for Policy*  
Department of Homeland Security

STAN MEIBURG  
*Acting Deputy Administrator*  
u.s. Environmental Protection Agency

SHARON BOMER LAURITSEN  
*Assistant U.S. Trade Representative for Agriculture Affairs and Commodity Policy*  
Office of the u.s. Trade Representative

GEOFFREY YODER  
*Acting Associate Administrator, Science Mission Directorate*  
National Aeronautics and Space Administration

CHARLES NORTH  
*Senior Deputy Assistant Administrator*  
u.s. Agency for International Development

*27 June 2016*



## ANNEX IV

### *Acronyms*

ANSTF	Aquatic Nuisance Species Task Force
CEQ	Council for Environmental Quality
DOI	Department of the Interior
EDRR	Early Detection and Rapid Response
EPA	Environmental Protection Agency
EU	European Union
FACA	Federal Advisory Committee Act
GAO	Government Accountability Office
HHS	Health and Human Services
ISAC	Invasive Species Advisory Committee
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NISC	National Invasive Species Council
OMB	Office of Management and Budget
TTP	Transpacific Trade Partnership
TTIP	Transatlantic Trade and Investment Partnership
U.S.	United States of America
USAID	u.s. Agency for International Development
USTR	u.s. Trade Representative



Asian snakehead  
*Channa argus*

## ANNEX V

### *Glossary of Terms*

**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 (synonymous with *non-native species*).

**Biological Invasion** the process by which non-native species breach biogeographical barriers and extend their range.

**Control** as appropriate, eradicating, suppressing, reducing, or managing invasive species populations, preventing the spread of invasive species from areas where they are present, and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasions.

**Early Detection** a process of surveying for, reporting, and verifying the presence of a non-native species before the founding population becomes established or spreads so widely that eradication is no longer feasible.

**Ecosystem** the complex of a community of organisms and its environment.

**Federal agency** an executive department or agency, but does not include independent establishments as defined by 5 U.S.C. § 104.

**Horizon scanning** the systematic examination of future potential threats and opportunities that can contribute to the prioritization of invasive species of concern and the means to address their introduction and spread.

**Introduction** the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.

**Invasive species** an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health (synonymous with *invasive alien species*).

**National Invasive Species Council (NISC or Council)** the thirteen Secretaries and Administrators who have agreed to work together in accordance with E.O. 13112.

**National Invasive Species Council (NISC) member Departments/Agencies** the thirteen Federal Departments and Agencies associated with the Secretaries and Administrators who have agreed to work together in accordance with E.O. 13112.

**National Invasive Species Council (NISC) Principals** senior Federal officials assuming NISC duties on behalf of members of the Council.

**National Invasive Species Council (NISC) Secretariat** the team of Federal employees whose sole function is to support and guide the work of the Council.



**Native species** with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

**Non-native species** see *Alien species*.

**Pathway** the means by which invasive species are moved, intentionally or unintentionally, into new areas.

**Rapid Response** a process that is employed to eradicate the founding population of a non-native species from a specific location.

**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.

**Species** a group of organisms all of which have a high degree of physical and genetic similarity, generally interbreed only among themselves, and show persistent differences from members of allied groups of organisms.

**Stakeholders** includes, but is not limited to, state, tribal, and local government agencies, academic institutions, the scientific community, nongovernmental entities including environmental, agricultural, and conservation organizations, trade groups, commercial interests, and private landowners.

**United States** the 50 states, the District of Columbia, Puerto Rico, Guam, and all possessions, territories, and the territorial sea of the United States.



European starling  
*Sturnus vulgaris*

National Invasive Species Council (NISC) Secretariat  
u.s. Department of the Interior  
Office of the Secretary  
1849 C Street NW  
Washington, DC 20540

Email: [invasive\\_species@ios.doi.gov](mailto:invasive_species@ios.doi.gov)  
Website: [www.doi.gov/invasivespecies](http://www.doi.gov/invasivespecies)

