

Hello ISAC Members:

NISC Staff and NISC members' representatives are working on the drafting and review of the 2015 Five-Year NISC Invasive Species Management Plan (Plan). It is the responsibility of NISC members and the agencies that they oversee to write, complete, and implement this Plan. At this point in the process, ISAC's input on the outline of Plan is highly valuable. We are requesting a "high-level scan" of this review-draft outline. Please note that the attached is an abbreviated outline of the Plan and not "The Plan." Your input will be taken into consideration as NISC members' agencies continue to develop the Plan itself.

Please send your comments to me (Chris Dionigi Chris\_Dionigi@ios.doi.gov) on or before May 12, 2015.

### **Plan Description Brief:**

This outline of the draft Plan was written by a team of federal agency staff. The Plan when it is completed will form a broad "blue-print" for the coordination work among all the NISC agencies for the next five years (2015-2020). The Plan when it is completed will contain a set of coordinated actions and supporting introductory and explanatory information. Plan Actions should meet each of these criteria:

- Are identified as top priorities for federal agencies;
- Will prevent and/or reduce the harm caused invasive species;
- Can be accomplished within current federal legal authorities and resources; and
- Require inter-departmental or inter-agency cooperation and coordination to accomplish.

The Plan when it is completed will NOT be a comprehensive inventory of all federal actions that address invasive species. Although partnerships are an important aspects of the work that will be conducted under the Plan, the Plan when it is completed is not intended to capture work that is being done by international, state, tribal, and local governments, or the private sector or to direct the work of non-federal entities.

**1. Accuracy, Gaps, and Scope:** Based upon the above criteria and looking at the following outline:

**Are there any items and or terms that are incorrect and/or confusing technically?** Highly detailed edits (i.e., wordsmithing) are not needed at this point, because we are continuing to work with the wording and structure of the Plan. However, please identify anything that is incorrect or confusing.

**Based on the four criteria above and that the Plan when it is completed will be a broad "blue-print," are there any items that are missing? If so, please describe why and how the proposed items meet each of the criteria described above.**

**Based on the criteria above is there any item(s) that has been included that is outside the scope or otherwise should not be in the Plan? If so, please describe.**

**2. Identify Key Non-Federal Experts and Stakeholders:** ISAC members have extensive expertise with non-federal programs, capacities and capabilities.

**For those items that you have expertise, please list the key stakeholders, partners, and non-federal technical experts that should be engaged.**

**Comment [KAB1]:** ISAC Comments received as of Tuesday, 5/19/2015

**COMMENT KEY:**

CB – Bargerion (5/19/2015)

PC – Cowan (5/7/2015)

OD – Doering (5/12/2015)

BW – Wiltshire (4/30/2015)

KW – Zimmerman (5/6/2015)

## FIVE YEAR NATIONAL INVASIVE SPECIES MANAGEMENT PLAN OUTLINE

### Executive Summary

**Invasive species** are species that are not native to the ecosystem under consideration and that harm the environment, economy and in some case **human health** directly. They are among the most significant threats to natural resources. Their prevention and control is an important part of the work of more than twenty federal agencies that are overseen by the members of the National Invasive Species Council (NISC). Invasive species can be **plants, animals, or disease-causing microorganisms**. They can be found in any habitat type ranging from backyards to back-country wilderness areas. They can be in oceans, estuaries, lakes, and rivers. Some reduce crop yields. Others sicken livestock, wildlife, and in some cases harm human health directly. All invasive species spread. They can quickly cross both geographic and jurisdictional boundaries. Our efforts must also span those boundaries. To meet the challenge of invasive species, federal managers must reconcile complex sets of intersecting mandates, work with budgets, and deal with varying habitat conditions, and complex land ownership patterns.

**Invasive species span geographic and jurisdictional boundaries. Therefore, so must our efforts to protect our natural resources.**

In 1999, Executive Order 13112 created the NISC to help meet the challenge of invasive species. It called upon the Secretaries of Interior, Agriculture, and Commerce who co-chair NISC to work with all NISC members to prepare and periodically revise a National Invasive Species Management Plan. This is the third National Invasive Species Management Plan (Plan). It was drafted with extensive input from federal program experts, natural resource managers, subject matter experts, stakeholders, and the public. It is meant to continue NISC's primary emphasis on preventing the introduction, establishment, and spread of invasive species (a concept collectively known as biosecurity), because this is the most effective invasive species strategy. As with previous NISC Plans, the largest goal area concerns actions that are collectively called Coordination and Collaboration. These actions aim to resolve the complex of set of coordination challenges that face NISC members' agencies.

New to this Plan is the inclusion of regional strategies. Experience has shown that the most effective and efficient way to protect a particular place within a region is to protect the entire region. In some cases the full eradication of invasive species populations is in sight, the Plan calls on NISC members' agencies to where possible complete the job and eradicate invasive species populations.

The Plan forms the core "blue-print" for the coordination work of bureaus and agencies that are overseen by the members of NISC for the next five years. Although the Plan is extensive, it is not intended to be a comprehensive catalog of federal actions on invasive species. Also, the Plan does not capture all the work that is being done by international, state, tribal, and local governments, or the private sector. However, the Plan recognizes that partnerships with those entities are essential to the work of NISC. Each action in the Plan meets the following criteria. They:

- are top priorities for federal agencies;
- will prevent and/or reduce the harm caused invasive species;
- can be done within current federal legal authorities and resources; and they
- require inter-departmental or inter-agency cooperation and coordination to accomplish.

**Comment [PC2]:** I assume this and other terms will be defined somewhere

**Comment [PC3]:** Its more than human health - it involves cultural impacts too

**Comment [PC4]:** That doesnt cover everythin - eg. fungi. Also not invasive micro-organism can have impacts other than disease.

**Comment [KW5]:** Reference the Definitions White Paper

**Comment [PC6]:** I think the plan needs to do more than just recognize their importance

## Introduction

There are a wide range of invasive species. They can be plants, animals, or disease causing microorganisms. They can be found in any habitat type ranging from backyards to back-country wilderness areas. They can be in oceans, estuaries, coastal areas, lakes, and rivers. Some reduce crop yields. Others destroy forests. Some invasive disease species sicken livestock and wildlife, and in some cases they can harm human health directly. However, a feature of all invasive species is that they spread, and their spread is often a result of human activities, such as trade, travel, and the transportation of goods and other materials. They can cross both geographic and jurisdictional boundaries quickly. Cross-boundary coordination is critical to protecting natural resources from invasive species. In 1999, The President signed Executive Order 13112 (EO 13112) calling on federal agencies to take coordinated action on invasive species.

A great deal has been accomplished since EO 13112 was signed. There is growing public awareness of invasive species. NISC members' agencies and their partners are increasingly taking action and working together. Their success can be found in natural areas that are protected from invasive species and those recovering from infestations; in successful crop and livestock operations; in healthy wildlife populations, in the better protection of endangered species; and by the large numbers of invasive species that are stopped at our borders.

However, invasive species remain a significant and growing threat.

- Once found in only seven states, it is estimated that now there are five million feral swine in 35 States. They cause more than \$1.5 billion in crop and natural resource damages each year.
- The Asian longhorned beetle is a wood-boring insect that kills maple and other trees. First discovered in 1996, populations now exist in Massachusetts, New Jersey, New York, and Ohio. This insect could decimate forests and built landscapes.
- In less than a decade, the Indo-Pacific lionfish has spread to the Southeast U.S., the Caribbean and the Gulf of Mexico. They can outnumber native fish and reach populations of over 1,000 lionfish per acre, permanently impacting native reef fish communities, competing with economically important fish, hampering fish stocking efforts, and coral reef conservation.
- Cheatgrass and the wildfires it fuels can convert vital native sagebrush habitat into invasive species dominated landscapes. This depresses native plants and the wildlife that depend upon them. Of specific concern are sage grouse populations.

The challenges are increasingly complex and "emerging" invasive species-issues continue to arise. The challenges are both in our capacity (i.e., the amount, duration and geographic coverage of the work that can be done) and the capability (i.e., available tools, information, and infrastructure) needed to address invasive species.

### Plan Mission:

**Over the next five years, to the extent possible encourage federal agencies to work together and with their partners to enhance their capabilities and capacities to protect natural resources from invasive species.**

**Comment [PC7]:** The big thing that is missing is how progress with the plan will be measured - none of the objectives as the are currently written has an associated indicator of progress.

## Goal 1: Prevention

The goal of prevention is to halt the introduction and establishment of invasive species. Prevention is the first line of defense against invasive species.

### Objective 1 - Pathways

Pathways are the means by which human activity moves invasive species into new areas either intentionally as the intentional introductions of non-native species that have the unintended consequence of becoming an additional invasive species or unintentionally as hitch-hikers on vehicles, plants and animals, or on other commercial goods, packaging materials, and by other means.

**Pathway Management Plans:** Provide guidance and training to federal agencies, states, and stakeholders on tools they need to develop and implement pathway management plans.

Processes to identify and rank pathways by invasive species risk.

Guidance on identification of pathways and development of pathway management plans.

Identification, development, and implementation of pathway management plans.

**Pathways of Concern:** Identify priority pathways and develop management plans.

**Trade:** Reduce invasive species risks associated with trade including the introduction of forest insects and diseases, invasive aquatic plants, and injurious wildlife.

**Injurious Wildlife:** Improved processes and actions to prevent the introduction of invasive animals.

Proposed amendments to implementation of the injurious wildlife provisions of the Lacey Act (18 U.S.C. § 42).

Improved implementation and enforcement of Lacey Act provisions on injurious wildlife and other regulations.

**Forest insects and diseases:** Reduced risks associated with the introduction of forest insects and diseases through information exchanges, policy formulation, and management measures with trade partners including:

Ties established with Asian countries to ascertain offshore pest conditions in real time. Criteria defined for efficient US/Canada communication of ships found with Asian gypsy moth.

US/Canada in-transit protocol developed to ensure that non-compliant shipments are not cleared for import.

Implementation of relevant recommendations from the North American Plant Protection Organization (NAPPO)/Asia and Pacific Plant Protection Commission.

**Aquatic Plants:** Policy recommendations to prevent the movement and introduction of invasive aquatic plants through trade.

**Voluntary Efforts:** Development and implementation of voluntary partnerships and other initiatives with relevant stakeholders to minimize risks associated with priority pathways

**Transport:** Reduce invasive species risks associated with transportation and movement of vehicles, vessels, and structures.

**Ballast water:** Reports on progress regarding the implementation of ballast water regulations.

**Roadways and Rights of Way:** Input into the revision of DOT/FHWA guidance on managing the risks of invasive species.

**Trailer Boats:** Identification and implementation of measures to reduce invasive species risks associated with the movement of trailer boats on and off federal lands.

**Comment [PC8]:** I would suggest that is role of EDRR

**Comment [PC9]:** Perhaps need to treat US border separately from internal US borders (ie, between states)

**Comment [PC10]:** Not only human activity - eg, migratory birds spread invasive diseases

**Comment [PC11]:** What about links to customs and US postal and courier service, ordering via web, etc. also what about the pet trade and smuggling re: invasive species

**Comment [PC12]:** There is an element of prioritization needed here and in Forest insects and diseases

**Comment [PC13]:** Why only forest insects and diseases...why not those affecting the other types of agriculture as well.

**Comment [KW14]:** The term "ensure" has legal implications-suggest finding another term

**Emerging Pathways:** Reduce invasive species risks associated with specific and “emerging pathways,” such as pathways that can spread animal pathogens and parasites, energy development, and all-hazard emergency response actions.

**Bioenergy:** Report on biofuel sites for the production fuels registered as renewable under EPA’s Renewable Fuel Standard regulations.

**Energy Exploration and Development:** Guidance to address the risks associated with energy exploration and development activities such as hydraulic fracturing and the use of movable drilling platforms in marine environments.

**All Hazard Emergency Response:** Guidance on how to address invasive species risks in all hazard emergency responses and contingency plans.

**Pathogens and Parasites that Impact Animals:** Identification of pathways that pose a specific risk for the introduction of invasive pathogens and parasites that impact wildlife, pets, and/or livestock populations.

**Foreign animal diseases:** surveillance systems for foreign animal diseases and significant endemic and emerging diseases.

**Enhanced Passive Surveillance:** Extend the DHS Enhanced Passive Surveillance pilot project to commercial livestock and poultry industries to detect significant emerging diseases.

## Objective 2 – Risk Analysis

Risk analysis is the set of tools used to evaluate the potential risk of invasive species and/or their pathways of introduction and spread.

**Pathway Risk Analysis:** Support continued development and application of pathway risk analysis.

Enhanced federal agency coordination on risk management efforts.

Distribute available guidance on pathway risk analysis, including their identification, risk assessment and risk management.

Guidance and training opportunities to tribal, state, and local government personnel and other stakeholders on the application of pathway risk analysis tools.

Development and application of methodologies to prioritize pathways according to their risk.  
Develop, implement and evaluate the efficacy of risk management measures for priority pathways, including both regulatory and voluntary approaches.

**Species Risk Analysis:** Improve and expand the use of risk analysis.

Improved identification and prioritization of invasive species and their associated pathways.

Management of identified risks, including improved regulatory action and voluntary collaborative activities.

Risk analysis information to guide surveillance and EDRR efforts for invasive species and their pathways.

Risk analysis guided activities at the national, regional and/or state level, particularly for injurious wildlife and animal disease.

**HACCP:** Expand training and application of the Hazard Analysis and Critical Control Point (HACCP).

HACCP training for federal, state, tribal, and local natural resource managers and decision-makers.

Development of HACCP plans to protect specific sites and reduced the risk associated with federal activities.

HACCP requirements incorporated into federal natural resource grant programs.

**Comment [PC15]:** Is this not a part of EDRR?

**Comment [PC16]:** Need to include cost/benefit analyses

**Comment [OD17]:** Might risk analysis also be integrated as an important task within many of the specific objectives (like control or restoration or pathways) where the activities direction might be guided by some risk analysis?

### Objective 3 – Preventing Spread of Invasive Populations

However, prevention efforts can both prevent the introduction of additional invasive species to more areas and prevent the spread of invasive species populations.

**Cleaning Treatments and Clean Materials:** Support the use of cleaning treatments and invasive species-free materials.

Expand the application of cleaning treatments that can spread invasive species.

Expand the use of signage, public outreach efforts, and other methods to help ensure that members of the public take steps to reduce the spread of invasive species.

Support the use of weed-free forage, clean firewood, mulch, seed, soil, gravel and other “clean materials.”

### Strategic Goal 2: Early Detection and Rapid Response

The goal of the series of the coordinated efforts collectively known as Early Detection and Rapid Response (EDRR) is to halt the establishment and significant range expansion of invasive species populations.

**Objective 1 – Early Detection** Early detection of an organism can come from monitoring programs and from the public. Often, these detections are made by individuals within “citizen scientists” networks. These networks provide a vital on-the-ground “eye and ears” for NISC members’ agencies.

**Systematics:** Support systematics science needed for EDRR.

Analysis of gaps in coverage of systematics expertise and biological collections.

Gaps in systematics capabilities to support EDRR efforts by NISC agencies and their partners addressed.

**Datasets:** Support the enhancement of monitoring datasets and analytical capabilities needed for EDRR.

Identify points of contact for monitoring information and capabilities within NISC members’ agencies.

Develop a registry of available monitoring information.

Identify gaps in NISC agencies EDRR monitoring and analytical capabilities.

Support national efforts to aggregate invasive species distribution datasets

Support multi-agency, all taxa reporting efforts such as I'veGot1 (smartphone app, hotline and website in Florida)

Engage cooperators in Mexico, Canada, Caribbean Islands and Latin America to share datasets

**Advanced Detection Technologies:** Support the development of technologies that can detect invasive species in environmental samples.

Develop additional detection tools, such as those that use eDNA technology.

Develop advance modeling and analytical tools such as Ecological Risk Screening and apply them to the risk analysis process.

Identify signature compounds and markers in addition to those that use eDNA that can signal the presence of target invasive species.

**Comment [BW18]:** Containment - enhance the effort to contain invasives that are currently leaving infested federal lands and waters.

**Comment [PC19]:** As well as all that is listed there is a need for rapid response capability - get ID done quickly

**Comment [PC20]:** Change title to "Monitoring"

**Comment [PC21]:** And then what will happen?

**Comment [CB22]:** Suggested Additions

**Comment [PC23]:** What is missing here is research on optimising strategies for using detection devices.

The transfer of emerging laboratory and analytical methodologies to field practitioners for “ground-truth testing” and refinement under practical use conditions.

**Animal Parasites and Pathogens:** Support the early detection of animal pathogens and parasites in wildlife and livestock populations.

Identify sources of information and points of contacts for expertise in detecting and responding to animal diseases and parasites.

Support cooperation with international, state, tribal, and private sector partners to coordinate responses to animal disease and parasite outbreaks.

**Comment [PC24]:** This seems to be just a part of Advanced detection technologies

PLAN OUTLINE ONLY

Survey of existing tools and models for the surveillance and detection of animal pathogens and parasites.

Develop tools to address pathways that spread pathogens and parasites.

Identify gaps in understanding of the detection and spread of animal disease.

Share information among NISC members' agencies and the public.

Increase participation in collaborative strategies such as One Health.

**Alert Systems:** Support the development and application of "Invasive Species Alert Systems" and other public EDRR communications.

Identify existing invasive species alerts systems and methods such as those used by international, federal, tribal, and state governments, and volunteer networks.

Identify gaps in coverage in federal alert systems.

Develop and enhance alert systems used by the federal agencies.

Identify and database federal and state contacts (regulatory and non-regulatory) to receive immediate alerts when new species are reported in new area (state, county, park, forest, wildlife refuge or other federal lands) – this could be a web service available to any reporting program, website or app

**Objective 2 – Advance Planning** Conducting planning before an invasion occurs is an important aspect of overall preparedness.

**Advanced Planning:** Support advanced planning based upon invasive species risk analysis.

Review and augment contingency plans for high risk invasive species, such as those prepared by APHIS and ANSTF, and develop additional plans.

Integrate forecasts of the spread and relative risks posed by populations of invasive species into contingency plans.

Support effort to identify EDRR resource needs and gaps in available resources prior to invasions.

**Objective 3 – Rapid Response to Invasions** Timely and well-coordinated response actions can halt invasions and eradicate populations of invasive species.

**Financial and Technical Resources.** Support ready access to financial, technical and human resources that are needed to implement rapid response efforts.

Identify obstacles and opportunities to share existing technical and financial emergency response resources that can contribute to invasive species rapid response.

Establish emergency invasive species rapid response funding mechanisms to complement existing mechanisms where they exist.

Develop a national EDRR framework to protect and enhance the resiliency of plant and animal communities and ecosystems from invasive species.

Test a range of EDRR strategies and approaches for ecosystem protection.

Training in the National Incident Management System strategies for EDRR practitioners.

Train and build a cadre of EDRR personnel in federal, state, tribal and local governments.

Support federal agency cooperation with State, Tribal, and Local governments on targeted EDRR actions by sharing information and lessons learned.

**Comment [CB25]:** Suggested Additions

**Comment [PC26]:** Advance planning also needs to cover decision making mechanisms and criteria. Also needs to include consideration of how success will be measured - how will eradication be declared?

**Comment [KW27]:** No mention of Regulatory challenges - NEPA Regulatory fast tracking!

### Strategic Goal 3: Control, Eradication and Restoration

The goal of invasive species control and restoration efforts is to promote the recovery of plant and animal communities. Control methods are used when invasive species are so widely-established that prevention and EDRR are no longer feasible.

Left untreated, wide-spread invasive species populations can become denser and spread even further.

In cases where the damage is so severe that control efforts alone will not allow plant and animal communities to recover, restoration efforts are used to prevent soil erosion and invasive species re-infestation, and to re-establish ecosystem processes. Earth moving and other work with the physical environment, and replanting and restocking may also be required.

**Objective 1 – Prioritization, Planning, and Cooperation** Resource managers must carefully target their limited resources.

**Risk Analysis to Prepare Plans and Guide the Implementation of Control Efforts** Risk analysis and comprehensive resource planning when implementing control efforts.

Analyze risks and other scientific information to identify priority invasive species actions both at specific locations and across larger geographic ranges.

Integrate invasive species control considerations into NISC members' agency initiatives and resource protection priorities, such as those involving climate change, wildfire, water management, outdoor recreation, enhancing the economic value added by public lands, and oil and gas development.

Develop and use of evidence-based decision and planning tools to assist federal agencies.

Invasive species control efforts that protect endangered, threatened, and candidate species proposed for listing under the Endangered Species Act and their habitats.

**Evaluation.** Evaluate NISC members' agencies invasive species control programs.  
Track the progress of NISC members' agencies current control programs.

Assess the on-the-ground results of control efforts, their geographic coverage, and effectiveness.

**Opportunities for Eradication.** Identify invasive species populations within geographically restricted locations and determine if eradication is feasible.

Identify invasive species control programs that have achieved high levels of success and where eradication is potentially within reach.

Assess locations such as islands, individual water bodies, and other geographically restricted areas where invasive species control programs could potentially result in the eradication of invasive species populations from the entire area.

**Comment [PC28]:** Eradication is often considered as a separate activity. If EDRR fails, the first question to be asked is - is eradication feasible and practicable?

**Comment [OD29]:** There is no separate objective on eradication. Should there be?

**Comment [PC30]:** Control and Restoration are both parts of "asset management"

**Comment [PC31]:** This is not always the case.

**Comment [KW32]:** Post fire control and restoration?

**Comment [OD33]:** There are some risk related tasks here - what about some analysis of cost effectiveness?

**Comment [KW34]:** Who will do this?

**Comment [BW35]:** Somewhere in here I think we should add support for research. We need new technologies for control and eradication. If we want to deal with all research issues under objective 3 in Coordination and Collaboration below we should add a category there for control and eradication research

**Comment [PC36]:** Sorry to be pedantic but eradication means total removal...so if you are only doing it in part of the organisms range then it is better to talk about local elimination or local extirpation.

**Comment [KW37]:** The Plan is meant to be a guiding document. The above section for opportunities is more of implementation and action item

**Partnerships.** Support the work of states, tribes, and private sector NISC members' partners to cooperatively protect ecosystems and control invasive species.

Support existing public messaging programs such as Play, Clean, Go; Don't Move Firewood, Stop Aquatic Hitchhikers  
Identify funding mechanisms for new and existing Cooperative Invasive Species Management Areas, Cooperative Weed Management Area and Partnerships for Regional Invasive Species Management.  
Support the development and dissemination of consistent and effective public messaging.

Support cooperative working relationships with wide range of public sector resource managers and private land owners.

**Objective 2 – Control** NISC agencies use the Integrated Pest Management (IPM) approach to control invasive species. An array of complementary methods may be used within the overall IPM approach. They include biological controls, mechanical removal, prescribed fire, pesticides, and other methods. Only pesticides that have been approved by the U.S. Environmental Protection Agency are used in strict accordance with their label instructions and additional federal agency policies. With great care treatments are applied and their effectiveness is carefully monitored. Based upon the information obtained, methods and approaches may be halted or adjusted within an overall adaptive management framework.

**Integrated Pest Management.** Support the use of IPM Strategies.

Expanded IPM-based protection of federal lands and partnerships to protect non-federal and private lands.  
Increase experience-based information sharing among IPM practitioners.

Increase the control of invasive species on high-priority sites.

Increase the control of invasive species that threaten vulnerable plant and animal communities particularly on islands.

**Control Certain Invasive Species Across Their Introduced Range.** Support national-scale invasive species, e.g., feral swine, Asian carp, lionfish, Asian longhorned beetle, zebra/quagga mussels, brown tree snake etc control efforts.

Protect livestock and crops from feral swine.

Protect native plant and animal communities and ecosystem services from feral swine.

Develop additional tools to locate and reduce swine populations.

Engage tribal, state, and local governments as well as stakeholder and private land owners in the National Feral Swine Damage Management Program.

**IPM Tools.** Support the development and enhancement of IPM tools.

Support research and development of additional decision tools, biological, chemical, and physical control methods and other IPM tools to address invasive species that currently have few or no control options.

**Pathogens and Parasites of Animals.** Support animal pathogen and parasite control.

Support the development of epidemiological models and decision for parasites and pathogens of animals.

Support the use of best management practices for animal disease and parasite control.

Support coordination among NISC agencies involved in One Health initiative and other comprehensive animal and human health protection efforts.

**Objective 3 – Restoration.** Restoration may be required after control efforts. Agencies may have to first address physical environmental factors such as the condition of soils and water courses, water quality, past land use impacts and other factors before they can reestablish plant and animal communities. Restoration can speed species and habitat recovery, reverse past damage, greatly increase habitat quality, and make areas more resilient to environmental stressors. NISC agencies may use some native and nonnative plants to temporarily stabilize soils and serve as "ecological bridges" while native plant and native animal communities recover. Following stabilization, native plants may have to be replanted and fish and wildlife populations restocked.

**Comment [CB38]:** Suggested additions

**Comment [BW39]:** I think there should be some discussion of prioritizing control efforts. For example, recent research suggests that the most effective terrestrial weed control efforts may be to focus on small populations that can easily be eliminated rather than focus on trying to reduce the size of a very large infestation. Reference: *Evaluating the Costs and Benefits of Alternative Weed Management. 2012 Fall issue of TechLine Invasive Plant News*

**Comment [PC40]:** Need to make cost-benefit analysis a clear part of this

**Comment [OD41]:** Add something about the assessment of the eradication/control trade off that should involve both risk analysis and cost effectiveness analysis.

**Comment [KW42]:** remove

**Comment [KW43]:** A definition of IPM would be useful here

**Comment [PC44]:** Priority?

**Comment [PC45]:** Why do these keep being singled out - why not just include them in "Control Certain Invasive Species..." above?

**Restoration.** Support the restoration efforts where they are need to enhance the resilience of areas.

Improve the quality of habitats that have been impacted by invasive species.

Enhance the resilience against re-invasion, climate *change*, and other environmental stressors of habitats.

**Restoration Case Studies.** Support the development and dissemination of case studies and other information concerning potential restoration strategies such as, Succession Management and Restoration Outcome-Based Management.

Develop experience-based information and Restoration Best Management Practices.

Integrate Succession management and Restoration Outcome Based Management into federal projects.

Identify "lessons learned" from restoration successes and failures.

Provide technical assistance to federal agencies and their partners concerning restoration best management practices.

**Native Restoration Materials.** Support the use of native plant restoration materials and certified weed-free soil stabilization materials.

*Use native plant restoration materials in federal projects.*

Support the research, development, and production of additional native plant restoration materials.

**Objective 4 – Invasive Species Biomass Harvesting** Harvesting and use of invasive species biomass can expand control efforts, and this approach is often suggested as a way to obtain both economic and environmental benefits. However, this approach has limitations. A range of factors must be considered to ensure that overall control objectives will be reached and that unintended negative consequences will be avoided.

**Harvest Incentive Guidelines.** Use and continue to develop invasive species harvest guidelines.

Provide technical assistance to states, tribes and local governments to help them determine what harvest incentives may be beneficial for control of invasive populations.

## Strategic Goal 4: Coordination and Collaboration

The primary function of NISC is to promote and facilitate interdepartmental coordination and *collaboration* on invasive species. Within the 13 NISC members' departments and agencies there are over 30 sub-agencies that have a role in the prevention and control of invasive species. They spend approximately two billion dollars on invasive species each year. Their actions are guided by over 40 federal laws as well as regulations and directives. Actions may be implemented on scales that range from single sites to entire landscapes. Federal agencies also partner with a wide range of international, tribal, state, territorial and local governments and cooperate with private sector land owners. Coordination and collaboration amongst these varied partners is essential. To meet the challenge of invasive species, Federal managers must reconcile complex sets of intersecting mandates, habitat conditions, and land ownership patterns.

**Objective 1 – Reconciling Intersecting Mandates.** The prevention and control of invasive species is a responsibility for a wide range of federal agencies that are guided by a complex set of laws, regulations, policy and experience-based practice that often intersect with one another.

**Federal Invasive Species Authorities:** Evaluate and seek ways to improve federal invasive species authorities, regulations, and policies.

Survey and conduct analysis of federal authorities and regulations to identify possible *improvements*.

Analysis of the on-the-ground implementation of federal invasive species authorities and policies to identify possible improvements.

Federal guidance and/or regulatory changes needed to prohibit the introduction of invasive species onto and spread from federal lands.

**Comment [KW46]:** Add "abbreviated fire cycles"

**Comment [KW47]:** Suggest rethinking this limitation

**Comment [PC48]:** Should this really be part of the Invasive Species Plan?

**Comment [PC49]:** I don't think this should be a separate section - harvesting is just a management tool.

**Comment [PC50]:** Aspects of this belong in Strategic Goal 1

**Comment [KW51]:** replace with "communication and consultation" These are legal references in the CFRs Collaboration is silent, but has been substituted without the support of statute.

**Comment [KW52]:** replace with "resolutions"

Support the exchange of information among NISC members' program experts through groups such as ANSTF, FICMNEW, and ITAP.

**Tribal governments and Indigenous Peoples:** Better integrate tribal governments' and indigenous peoples' interests, concerns, efforts, and needs into invasive species efforts.

Tribal governments and indigenous peoples' engagement in the development and implementation of federal invasive species management plans.

**Budget Analysis:** Analyze budget data from NISC agencies concerning their invasive species work and integrate that information into interagency crosscut budgets.

Up-to-date invasive species interagency invasive species crosscut budgets.

Analysis of budget data among federal departments and over time.

Information to guide interdepartmental coordination on budgetary issues.

Greater ability to respond to requests from the Office of Management and Budget, Congress, Stakeholders, and the public.

**Reporting:** Report on federal invasive species activities and work under the Plan.

Periodic reports summarizing federal invasive species activities and implementation of this Plan.

**Invasive Species Considerations in Other Initiatives:** Integrate invasive species knowledge, guidance, and risk assessments into broad administrative priorities and new initiatives such as those called for in the National Climate Plan, the National Ocean Plan, and the Arctic Plan).

Greater protection of natural resources from invasive species and more comprehensive planning.

Greater engagement on invasive species issues with regional and multi-lateral organizations and work groups.

**Stakeholder Advice:** Focus the Invasive Species Advisory Committee's (ISAC) efforts on areas that are a high priority to NISC members and obtain information from ISAC members and the constituencies that they represent.

Greater coordination among federal programs and between federal agencies and their partners.

Closer communication among NISC members' agencies, members of ISAC and other non-federal stakeholders and interest groups.

**Objective 2 – Tribal, State, Territorial, and Local Partnerships.** Much of the on-the-ground work with invasive species is led by state and local governments.

**Coordination Program Assistance:** Provide technical and other forms of assistance to State, Territorial, Tribal, and Local invasive species coordination programs and encourage additional efforts and partnerships.

Model legislation and other technical assistance for Tribes, States and Territories consider when developing their coordination mechanisms and programs.

Additional opportunities to partner with Tribal, State, Territorial invasive species councils.  
Increased capacities and critical abilities to address invasive species.

Enhanced Cooperative Weed Management Areas and Cooperative Invasive Species Management Areas.

**Objective 3 – Scientific Research** Scientific research provides a critical underpinning of all of NISC members' invasive species efforts.

**Comment [KW53]:** Define timeline and accountability

**Comment [KW54]:** insert "from invasions"

**Comment [OD55]:** I think this is incredibly important in order to increase effort on the ground. I don't have any good specific ideas, some of our state people should (our former state people from NY and Texas for example). Given resource paucity, this has to be done better than we are doing it now. Some states are in a much better position and more willing to do so (Colorado?) than others, so the path may have to be picking the geographical areas and institutions where this is likely to yield the most benefit - as a strategic approach - not a nationwide effort.

**Comment [KW56]:** replace with "regulations"

**Research Priorities:** Identify national and regional research priorities and opportunities for scientific collaboration. Critical gaps in scientific information addressed.

Improved tools and strategies to prevent and control invasive species.

Enhanced technical support.

**Systematics Research:** Enhance the federal capacity to collect, study, maintain and identify biological specimens and to form partnerships with non-federal scientists to conduct systematics research.

Advanced classical taxonomy research and additional molecular tools to identify biological specimens and record information.

Greater collaboration with non-federal scientists and scientific professional societies.

Faster authoritative identifications of biological specimens.

Improved curation and security of biological collections.

Additional training opportunities for systematists.

Sustained support for systematics researchers and their work.

**Socio-economic Research:** Increase the understanding of the socio-economic aspects of invasive species. ||

Additional economic studies and analyses to guide decisions concerning the best use of human and financial resources to address invasive species.

Additional information provided to stakeholders and to the public concerning the socio-economic impacts of invasive species.

**Access to Information:** Enhance access to available invasive species information.

Improved information in sources such as, the National Park Service's Invasive Plant Atlas of the United States, USDA NRCS's PLANTS Database, inter-governmental, not-for-profit organization CABI's Global Invasive Species Compendium, and the USGS's Nonindigenous Aquatic Species Information Resource.

More complete, up-to-date, and rapid access to scientific information.

Uniform electronic access to available information to enable the analysis of multiple datasets and the development of additional applications.

More opportunities for public involvement (citizen science) with invasive species science and data collection.

Support existing network of state and regional University and non-profit organizations (NAISN) as an outlet for distribution of timely science-based invasive species information

Support USDA National Agricultural Library's National Invasive Species Information Center website and/or identify non-federal partners to assist in development of U.S. based portal(s) to invasive species information

**Objective 4 – International, Regional and Bilateral Agreements** Invasive species can be transported by human activities, such as trade, travel and transport, across very large distances. Participating in negotiations concerning bilateral and multilateral agreements is a very effective way to prevent the introduction of additional invasive species in the US.

**International Agreements:** Integrate and support implementation of invasive species policy priorities in relevant

**Comment [PC57]:** Should these be addressed in the same way as the sections below?

**Comment [OD58]:** Might be better operationalized if specific actions or tasks like economic analysis of cost effectiveness or benefit cost or damage risk/reward trade-offs are part of some of the tasks under other goals/objectives - as I suggest in the sentence above

**Comment [PC59]:** More is needed here than just socio-economic research - research is needed on how motivations and beliefs influence people's opinions and action as they apply to invasive species and their eradication and control...and even how they are viewed.

**Comment [CPD60]:** From CB - The Invasive Plant Atlas is a partnership of a lot of groups hosted by UGA Bugwood based on an idea by myself, Jill Swearingen and the late Les Mehrhoff

**Comment [PC61]:** I know this says "such as...", but if you name some you give them additional importance by association.

**Comment [CB62]:** Suggested additions

**Comment [PC63]:** Perhaps identify the key ones that are relevant to invasive species, e.g., CBD, IBPEC CMS, etc...

international, regional and bilateral agreements and processes.

Engagement with international partners on developing and implementing an Arctic regional invasive species strategy under the auspices of the Arctic Council and other appropriate international organizations.

Participation in the binational, four-agency Ballast Water Working Group, which inspects the ballast tank of every international vessel entering the St. Lawrence Seaway.

Leadership and guidance provided to the Pacific Invasive Species Advisory Group and the Pacific Invasive Species Partnership.

International policy agenda on islands and invasive species advanced through work with the Global Island Partnership (GLISPA).

Incorporation of invasive species priorities into regional free trade agreements and their environmental work programs.

Incorporation of invasive species priorities into bilateral agreements, such as the U.S. Joint Commissions on Science and Technology.

Incorporation of invasive species priorities into the policies and programming of relevant international financial institutions, intergovernmental negotiating processes and other relevant international and regional institutions.

**International Scientific Collaboration:** Collaborate with international partners on scientific communications, research, training and other activities to enhance domestic and international biosecurity and invasive species efforts.

Support trilateral North American Invasive Species Network between U.S., Mexico and Canada focused on enhancing communication, outreach and research initiatives between countries

Comment [CB64]: Suggested additions

Increased cooperation and input into bilateral and multilateral scientific, research and information partnerships and initiatives.

Improved availability, coordination and training for tools that can be used for international pathway identification, risk analysis and information sharing.

Enhanced international coordination and collaboration to address thematic and taxa-specific issues.

Enhanced international coordination and collaboration to develop additional biological control agents and strategies.

Increase risk analysis training opportunities to augment the work of standard-setting organizations, such as IPPC/NAPPO.

Enhanced US-Canada coordination to share information and broaden understanding of the science, technology, and regulation of ballast-water discharges in the Great Lakes Seaway System.

Enhanced information exchange including continued support for and coordination across databases and other information resources at the international level, such as through the Great Lakes Ballast Water Collaborative.

### Objective 5 – **Communication and Public Outreach**

Many NISC members' agencies conduct public outreach efforts. When well-informed, the public can make important contributions to efforts to prevent and control invasive species.

**Outreach Messages:** Develop, support and enhance public outreach messages and efforts.

Development of clear authoritative information for NISC members' public outreach efforts.

Comment [BW65]: We are really missing evaluation of outreach programs. I would like to see support for evaluation added.

Joint NISC members' communications and outreach planning.

Greater engagement of communication specialists with NISC members' agencies.

Development of coordinated NISC members' mechanisms to disseminate outreach materials.

**Objective 6 – Regional Efforts** Invasive species occur within multiple land-use areas, such as croplands, rangelands, forests, parks, refuges, and built landscapes, and in multiple jurisdictions such as federal lands, state land, tribal lands, counties, territories and private lands. Multiple areas and jurisdictions may have the same invasive species issues and concerns. When they combine their efforts on a regional scale, great progress can be made. In some cases, the only viable strategy is to work regionally.

**Strengthen International Regional Efforts:** Strengthen invasive species efforts in regions that have existing regional coordination efforts.

Implementation of the Regional Biosecurity Plan for Micronesia and Hawaii.

Enhanced Pacific regional capacity to implement invasive species eradication efforts.

Collaboration between Federal agencies and Pacific partners on invasive species research.

Strengthened Pacific multilateral coordination mechanisms, such as the Micronesia Regional Invasive Species Council and the Micronesian Challenge.

Enhanced collaboration among Federal, State, local and tribal entities to implement the South Florida Ecosystem Restoration Task Force Invasive Exotic Species Strategic Action Framework.

Advanced collaborative efforts to prevent, control and eradicate invasive species in the Arctic Region

Implementation of the Invasive Species actions in the U.S. National Strategy for the Arctic Region Implementation Plan.

Analysis of invasive species pathways, risks and ecosystem and economic impacts to the Arctic region.

Early detection and rapid response planning to reduce the threat of invasive species, and gather information regarding effective management options.

**Strengthen Regional Projects within the US:** Strengthen invasive species efforts in regions that have or are interested in developing regional coordination efforts, such as in the Great Basin.

Models for regional climate adaptation coordination using ecological data to map and inventory invasive plants and other species.

Enhanced collaboration among Federal, State, local and tribal entities to prevent and control invasive species in the Great Basin and other areas.

**Create Regional Panels for Terrestrial Invasive Species** to support better communication between federal and state partners

Identify funding to support regional University-based invasive species centers similar to NIFA funded regional integrated pest management centers (<http://www.ipmcenters.org>)

**Strengthen Regional Projects Focused on Terrestrial and Coastal Invasive Species:** Implement programs targeting high-priority terrestrial and coastal invasive species.

Coordination within and among invasive species efforts.

Increased sharing of information among program participants and partners.

**Comment [PC66]:** Given the importance of this, it seems a little under-developed in the plan.

**Comment [OD67]:** Northwest Passage concerns as the ice melts.

**Comment [BW68]:** In recent years the Northwestern states have joined with Canadian Provinces to envision "regional defense" for preventing the introduction of mussels into the area. We should support these collaborative efforts. This could be included here as International or put in the "Strengthen Regional Projects Focused on Aquatic and Marine Invasive Species" section below.

**Comment [CB69]:** Suggested additions

**Comment [PC70]:** This would seem to be covered by the next one.

Updated best practices.

Identification of additional opportunities and to develop effective control and prevention programs.

More consistent regulations and policies on invasive species across regions.

**Strengthen Regional Projects Focused on Aquatic and Marine Invasive Species:** Implement programs targeting high-priority aquatic and marine invasive species.

Hold the first joint NISC/ANSTF/US Coral Reef Task Force meeting.

Identification of joint priority objectives for the ANSTF and International Coral Reef Initiative (ICRI).

Increased recognition of Caribbean lionfish strategy and the Caribbean Invasive Alien Species Network.

Implementation of the Asian Carp Control Strategy Framework and National Asian Carp Management plan.

Continued support for the Great Lakes Restoration Initiative.

Regional coordination of aquatic invasive species monitoring.

More consistent regulations and policies on prohibited aquatic species across regions.

**Objective 7 – Sustained Support and Incentives** Invasive species strategies and methods may be adjusted and optimized over time. However, they must be sustained.

**Sustained Support:** Explore options to provide sustained support for invasive species control efforts and foster partnerships.

Identification of possible tax and other forms of incentives to encourage private sector actions.

Identification of partnership opportunities with non-federal and non-governmental entities to help encourage and sustain invasive species efforts.

Identification of possible ways to obtain sustained funding for invasive species actions, such as voluntary check off programs, user fees, and other approaches.

Identification of possible ways to reward and/or recognize significant contributions by individuals, groups, and organizations to invasive species prevention and control efforts.

Examine the structure of soil and water conservation programs, and other ways to encourage invasive species control efforts on private sector lands and waters.

Conducting an analysis of mechanisms that have been used by state, tribal, and local governments to support conservation programs and identify possible strategies that could be used to provide sustained support for invasive species efforts.

**Objective 8 – Emerging Issues** Invasive species affect numerous environmental, economic, social and in some cases human health issues. They are or could be a component of wide a range of current, emerging, and future initiatives or issues. Success of these initiatives will depend in part on determining what, if any, role invasive species play in the envisioned work, and if found to be needed, the successful incorporation of invasive species strategies into larger planning efforts.

**Invasive Species Considerations:** Identify opportunities to enhance work on current, emerging, and future initiatives and issues by providing invasive species strategies.

Invasive species considered in emerging programs, such as those addressing adaptation and ecosystem resilience to climate change.

**Comment [PC71]:** Would there be value in separating freshwater and marine?

**Comment [OD72]:** Our group needs to think and come up with where there are people on the ground in other areas of work that could be eyes and ears for invasives. NRCS with the conservation work in a natural and this is on the NRCS radar, but there must be others out there we have not thought of.

**Comment [PC73]:** This seems to be part of Goal 3 (Control)

**Comment [KW74]:** remove

**Comment [KW75]:** remove

**Comment [KW76]:** remove

**Comment [PC77]:** Need some sort of future scanning as part of this

**Comment [PC78]:** A key issue is interactions between invasive species and the need for multi-species control, as well as dealing with issues like IAS and resilience to climate change, IAS, DRR, etc...

Invasive species considered early in planning processes and as new efforts arise over the next five years.

Closer integration of NISC members' leadership teams with federal technical and program experts and with stakeholders and subject matter experts.

PLAN OUTLINE ONLY