WASHINGTON INVASIVE SPECIES COUNCIL

2014

Annual Report to the Legislature

WASHINGTON STATE RECREATION AND CONSERVATION OFFICE
Washington Invasive Species Council
CELEBRATING 50 Years 1964 2014

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Introduction

THE WASHINGTON INVASIVE SPECIES COUNCIL

In 2006, the state Legislature created the Washington Invasive Species Council with a call to action – to better protect Washington from the devastating impacts of invasive species and to do so among multiple levels of government. In 2011, the Washington State Legislature voted unanimously to continue the council for 6 more years (Revised Code of Washington 79A.25.310). This report summarizes the work of the council in 2014.

IN HARM'S WAY: WASHINGTON'S ENVIRONMENT AND ECONOMY

Expansion of global trade and increases in human mobility have resulted in unprecedented invasions by nonnative, invasive species. Whether on land or in water, invasive species can produce severe, often irreversible, impacts on industries, infrastructure, agriculture, recreation, salmon habitat, native people's cultural resources, and other natural resources. These species don't have native predators and are often more aggressive and more prolific reproducers, so they can out-compete local plants and animals for food.

In the United States, the economic cost of invasions by non-native species reaches billions of dollars each year, as illustrated in Table 1. Invasive species also can undo the millions of dollars invested in restoring critical salmon habitat. Washington's economy also is threatened because invasive species can damage many key industries and public utilities. For example:

- The Northwest Power and Conservation Council has calculated that a zebra or quagga mussel invasion in the Snake or Columbia Rivers would cost upwards of $300 million in annual maintenance and lost opportunities to the hydropower industry, hatcheries, public utility districts, and farmers.
- The cost of keeping western forests free of gypsy moth is $20 million annually.
- Invasive species, such as feral pigs, can harbor and spread disease, such as swine brucellosis, pseudorabies, and foot-and-mouth disease, directly to domesticated livestock and humans.
- Recreational boating, fishing, and seaplane opportunities are cut off when invasive species, such as the New Zealand mud snail and viral hemorrhagic septicemia (a fish disease) become established in lakes and streams. To halt the spread of these species, the infested water bodies often are closed to the public.

Table 1: Estimated Economic Costs of Selected Invasive Species
(Congressional Research Service, 2013)

	Zebra mussel (Dreissena polymorpha): Costs an estimated $1 billion annually in recreational fishery losses and controls in the Great Lakes and lower Colorado River, as well as cleaning of water intake pipes, filtration equipment, power generating equipment, and damage to docks and recreational or commercial boats. Includes the cost of boat inspection programs and other prevention efforts in the Pacific Northwest states.
	Formosan termites (Coptotermes formosanus): Costs an estimated $1 billion annually including several hundred million dollars in New Orleans alone.
	Imported fire ants (*Solenopsis invicta* and *S. ricteria*): Costs an estimated **$1 billion** annually including $300 million in Texas alone.
	Hydrilla (*Hydrilla verticillata*): Costs an estimated **$860 million** in Florida in damages to agriculture, flood control, and residential property values.
	Sea lamprey (*Petromyzon marinus*): Costs an estimated **$680 million** annually from recreational fishery losses and control costs in the northern United States and Canada.
	Leafy spurge (*Euphorbia esula*): Costs an estimated **$100 million** annually in cattle forage losses in North Dakota and still is spreading throughout the northern Great Plains and Rocky Mountain areas.
	Purple loosestrife (*Lythrum salicaria*): Costs an estimated **$45 million** annually across nearly all the United States, attributable to forage losses and to control costs.
	Brown tree snakes (*Boiga irregularis*): Costs an estimated **$12 million** annually. In Guam alone, management and controls cost $4 million a year. Other unaccounted for damages include power outages, slowed transportation and shipping, lost agricultural productivity, lost recreation and tourism, healthcare costs from snake bites, and loss of bird species attributable to the snake.
	Weeds, pests, and plant and animal diseases affecting U.S. agricultural crop and livestock production total nearly **$65 billion** annually.

Work of the Council

MAKING PROGRESS

The Invasive Species Council is a partnership of local, tribal, state, and federal governments, as well as the private sector and nongovernmental interests. It provides policy direction, planning, and coordination on invasive species prevention and response. The council established a strategic and unified approach to stopping invaders at the gate, identified 50 priority species, and continues to provide the leadership and coordination on invasive species prevention and response for which the agencies do not have the resources. The council also tracks progress made in implementing the strategic plan and determining whether or not those efforts are reducing the presence and harm caused by invasive species. To protect Washington's natural resources and economic interests from invasive species, the council determined that five critical elements need to be accomplished:

1. Determine the breadth and depth of the invasive species threat and use that information **strategically to target resources** where they are most needed and effective.

2. Improve the capability to **prevent** new infestations and **act quickly and decisively** upon **discovering new threats**.

3. Establish clear, statewide **priorities** for action (accomplished in 2009).

4. Strengthen **control** efforts for established infestations.

5. **Communicate** the gravity of invasive species and, in doing so, change opinions and behaviors.

During this past year, the council has focused on Critical Elements 1, 2 and 3—creating an assessment to target resources strategically where they are most needed; improving the capacity to prevent new invasions and take quick action when they are found; and establishing clear priorities. Education and outreach also continues to be an important part of the council's work, with staff participating in numerous outreach events and speaking engagements in 2014. The council continues to take steps towards implementing our strategy and creating better protections against invasive species.

2014 COUNCIL ACCOMPLISHMENTS

A major accomplishment of the council this year, and one that helps us address all five of the critical elements listed above, is the formation of an Industry Advisory Panel. The council has long recognized both the existence of a wide range of business interests that are affected by invasive species and the need to partner with these groups to better inform and strengthen our efforts. The industry panel is comprised of representatives from the aquaculture industry, boating industry, irrigation interests, forestry and nursery interests, and an eastern Washington public utility district. We have created a seat on the Invasive Species Council for a panel member. So far, it has been an excellent partnership.

Critical Element 1: Strategically Targeting Resources

Assessing Invasive Species in the Puget Sound, Phase 2

When the council began its strategic planning process in 2008, many big picture questions were asked, such as "What invasive species are in Washington? Where are they? What impacts are they having? How are they moving around? Who is managing them and how effective is that management?" At that time, the answers to all of the questions were not known. Existing data and information about invasive species in the Puget Sound basin and beyond were not centralized, which made it difficult to evaluate the status and future impacts of invasive species and to coordinate management programs.

Bringing these pieces together and making sense of them became the first recommended action in the council's strategic plan, *Invaders at the Gate*. It also was identified in the *2012/2013 Action Agenda for Puget Sound* as one of the top strategies for protecting Puget Sound ecosystems and habitat. The Puget Sound Partnership recognized that this project will contribute significantly to the larger Puget Sound Partnership effort of evaluating ecosystem status and trends in Puget Sound and identifying key indicator invasive species to monitor long-term. Lacking this information, the state's ability to identify gaps in prevention and control and take steps to plug those gaps is limited severely.

To begin implementing this recommendation and getting a handle on where species were located, who was managing them, and what sensitive resources were at risk, in 2009-2010, the council created the first invasive species baseline assessment. Compiling existing information from disjointed sources, the assessment identified the extent and impacts of 15 of the council's 50 priority invasive species and identified gaps in protection and control. The assessment was provided to local governments and other organizations that conduct invasive species work to enhance their efforts and also was used to create an invasive marine algae control program within the Washington Department of Ecology. As a direct result of the assessment, Ecology identified a gap in control measures for water-borne algae and created a program to tackle this invasive plant. For more information on the council's priority species, visit the council's Web site.

In early 2012, the council received a $225,000 grant from the U.S. Environmental Protection Agency to expand the baseline assessment to 21 priority invasive species. Work began in late 2012 and concluded in early 2014. The Phase 2 assessment builds on the first phase, incorporating similar methodology and deliverables for 21 priority species or species groups (see Table 2).

The Phase 2 baseline assessment serves as an initial step toward coordinating a statewide, strategic response to the threat of invasive species. It is intended to ensure that available resources are used effectively, focused on the greatest ecological needs, and designed to create the highest benefit to native ecosystems and the human systems that depend on them.

Findings from the Phase 2 assessment show that:

- Of the council's 21 priority species in Phase 2 of the baseline assessment, 15 species have been documented in the Puget Sound basin including 10 plant and 5 animal species (see Table 2). The remaining 6 priority species are not yet known to be established in the basin but are considered to pose a threat of invading the region.

- Numerous organizations are involved in preventing and managing the spread of invasive species in the Puget Sound basin. However, there are opportunities to improve coordination of these efforts across jurisdictional and geographic boundaries. For example, a standardized data collection and reporting method for use by the various organizations involved with each species would encourage better data sharing across the region.

- A number of organizations are doing education or outreach, and many are doing detection and control. Pooling data on productive programs could be cost-effective. Organizations also would benefit from having better information on pathways of introduction and spread to prevent invasive species from becoming established in the first place.

- Most invasive species programs are not evaluated for effectiveness and, as a result, there is a corresponding lack of understanding about which programs are or are not working and why. Better data sharing among organizations would make better use of the limited funds and resources available for invasive species management across the region.

Table 2: 21 Priority Invasive Species in Phase 2 Baseline Assessment for Puget Sound

Plants	Animals	Insects and Diseases
Butterfly bush*	Chinese mitten crab	Bark-boring moths*
Eurasian watermilfoil*	Crayfish – Red swamp* and rusty	European apple clearwing moth*
Giant hogweed*	European green crab	Eastern dogwood borer
Garlic mustard*	Marine clam	Infectious salmon anemia
Knotweeds – Bohemian*, giant*, Japanese*	Mediterranean snail*	
Loosestrifes – Purple* and garden*	New Zealand mud snail*	
Parrotfeather*		
*Documented in the Puget Sound basin		

Critical Element 2: Preventing and Responding Rapidly

Once the council has an idea of where species are distributed and how they move around—their 'pathways'—the next step is to prevent them from being introduced or spreading in the first place. The council refers to this as prevention, which is the least costly and most environmentally-safe approach to invasive species management because no chemical or mechanical control is needed. Prevention efforts focus not on the individual species but on the way it arrives here, with the intent to close down that particular pathway.

With invasive species, unfortunately, the pathways are numerous. Some of the more common pathways include ballast water in ships, boat hulls, boat trailers, fishing bait and aquarium releases, live food industry, illegal stocking of fish in ponds and lakes, firewood and wood-packing materials, school science kit specimens (live plants and animals) that are released, and field work such as habitat

restoration. In northern California, for example, it was the salmon recovery work in streams that spread New Zealand mud snails throughout several watersheds.

While council member agencies have made progress addressing pathways under their authorities, the council's focus is on the unaddressed or under-addressed pathways. This year, the council made considerable progress in addressing school science kit pathways, field work involving recreation and conservation projects, updating the State Environmental Policy Act's environmental checklist related to invasive species, preparing for emergency response, and getting federal funding for continued prevention of zebra and quagga mussels.

Changing the Way Invasive Species are Used and Disposed of in School Science Kits

Using federal funds, the council provided a grant to the Pacific Education Institute (PEI), to continue work to eliminate the release of invasive species from school science kits and to keep invasive species an important topic in Washington classrooms. The council's work with PEI also led to the creation of a new partnership among the council, the Northwest Leadership and Assistance for Science Education Reform (LASER), and the Office of the Superintendent of Public Instruction.

In 2014, PEI worked with two education service districts to bring science, technology, engineering and math (STEM) education focused on invasive species to teachers for use in their classrooms. LASER was responsible for developing the kits and training teachers in workshops. LASER's Washington Kit Center staff plan to share the kits and train at a statewide level. They have recruited a kit liaison to represent the center's needs and to monitor progress. The liaison also will support an invasive species education campaign that focuses on proper handling and disposal of invasive species, including professional development for teachers and information posted online for public access. The campaign includes workshops with an invasive species focus to be held in Aberdeen, Coulee Dam, Everett, Pasco, Puyallup, Shelton, Spokane, and Stanwood.

In 2014, the State Professional Educator Standards Board unanimously approved the science competencies for Washington State's early childhood and elementary education endorsements. The newly revised standard—Science 1.E.7—requires that teachers "develop knowledge of and apply safety precautions and procedures relative to science investigations e.g., student eye protection, safe storage of chemicals, and equipment care and maintenance," and most notably, "demonstrate responsible use and disposal of live organisms according to Washington State law."

The council plans to continue its important work with PEI in 2015. Recommendations for 2015 Invasive Species Education Plan include:

1. Defining responsible use and disposal of organisms according to state law.

2. Designing and disseminating invasive species performance tasks (e.g., Invasive Plants task with video, fact sheets, and research questions that support STEM learning with research projects), which guide students toward the Washington State Invasive Species Council Web site.

3. A citizen science field study using the WA Invasives reporting app together with Next Generation Science Standards in order to inform the design and use of the ISC app.

4. Continue to provide school district kit centers with tools, procedures, and training to properly dispose of invasive species used in science kits.

Preventing the Spread of Invasive Species in Recreation and Conservation Projects

The council helped ensure that invasive species was added to the sustainability criteria used for evaluating grant awards. This includes the state's two largest grant programs for state and local parks, as well as in grant programs for trails, and outdoor athletic fields. The criteria will help ensure that projects result in quality, sustainable, recreational opportunities while protecting the integrity of the environment.

Questions related to acquisition include: Are there invasive species on site? If there are, what is your response plan? Questions related to development and maintenance include: Are you replacing invasive plant species with native vegetation?

SEPA Environmental Checklist Updates

As part of 2014 rulemaking, the Washington Department of Ecology successfully updated the SEPA environmental checklist and added questions about invasive species. The checklist requires applicants to list any invasive plant species, noxious weeds, and invasive animal species known to be on or near the site. This is a significant change because information provided during the SEPA review helps agency decision-makers, applicants, and the public understand how a proposal will affect the environment. More importantly, the information can be used to change a proposal in order to reduce likely impacts, or to condition or deny a proposal when adverse environmental impacts are identified. The addition of specific invasive species questions improves general awareness and cross-agency coordination and helps prevent and manage the further spread of invasive species.

Washington Dreissenid Mussel Rapid Response Plan

Once established, dreissenid mussels—also known as zebra or quagga mussels—can dramatically alter the ecology of a water body and associated fish and wildlife populations. As filter feeders, they remove phytoplankton and other particles from the water column, reducing the availability of important food resources to other species.[1] Native mussels are significantly threatened by the presence of invasive mussels. By attaching themselves to the surfaces of other bivalves, dreissenid mussels can starve freshwater mussels and drive indigenous populations to local extinction. Dreissenid mussels can also reduce dissolved oxygen through respiration[2]—which affects the ability of other species to survive in those water bodies.

For the first time, Washington has a state-specific plan on responding to an infestation of zebra or quagga mussels. The council released the *Washington Dreissenid Mussel Rapid Response Plan* in April 2014. The plan identifies prevention and contingency efforts to protect Washington's waters, aquatic resources, and facilities from the deleterious effects of dreissenid mussel establishment. It serves as a

[1] Sousa, R., J.L. Gutiérrez, and D.C. Aldridge, 2009. Non-indigenous invasive bivalves as ecosystem engineers. Biological Invasions 11(10):2367–2385.
[2] Strayer, D.L., 2009. Twenty years of zebra mussels: lessons from the mollusk that made headlines. Front Ecol. Environ. 7(3): 135–141.

guidance document for natural resource managers and is designed to align with a comprehensive regional effort to protect aquatic resources in the Pacific Northwest by preventing the introduction of aquatic invasive species, including dreissenid mussels, and employing detection strategies to discover incipient infestations early enough to facilitate successful eradication or control efforts. Specific guidance includes pre-planning, initial response, extended response, and long-term monitoring.

Strengthening State Policy on Invasive Species Prevention

The council worked closely with the Department of Fish and Wildlife to support a comprehensive aquatic invasive species bill proposal, Engrossed Substitute Senate Bill 6040. The bill, which passed by a wide margin in the 2014 Washington State legislative session, establishes stronger authority to prevent and respond to an aquatic invasive species invasion and provides new roles for the Invasive Species Council. This bill:

- Revises the aquatic invasive species classification system and enables increased rapid response planning.
- Provides enhanced aquatic invasive species-related rapid response, infested site management, and quarantine authorities.
- Authorizes inspection, decontamination, and mandatory check stations.
- Establishes enforcement authorities, infractions, and crimes.

New roles for the council include consultation on classifying, reclassifying, adopting rules, and offering advice related to emergency response to invasive species. The increased coordination resulting from these new roles will provide a great benefit to how we address invasive species in Washington.

Working to Strengthen Federal Policy on Invasive Species

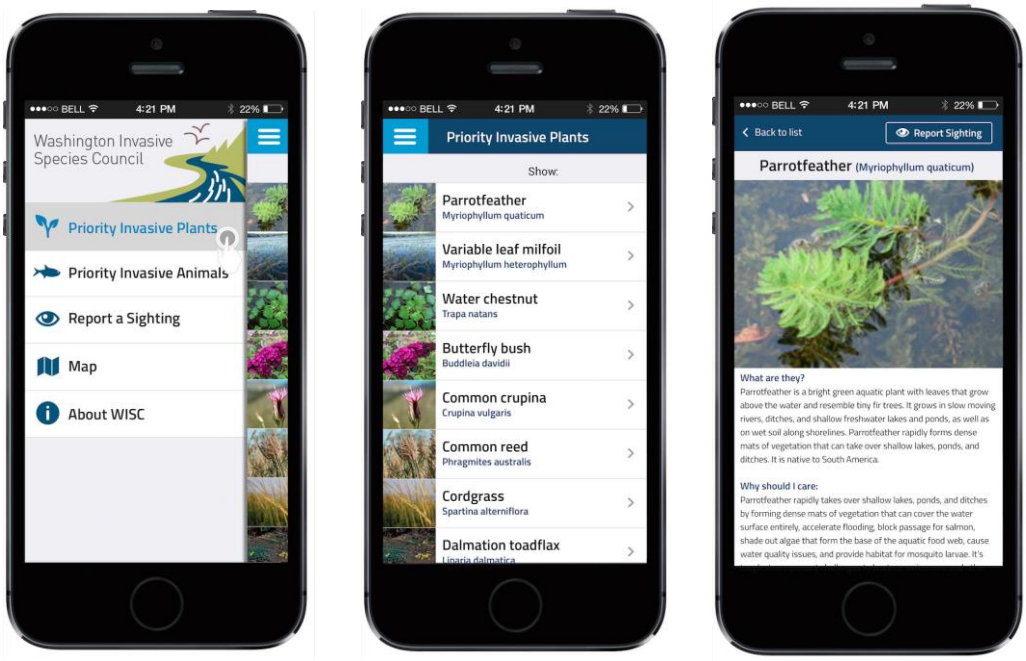
The council continued to work closely this year with other western states and regional organizations to highlight the need for source control of invasive species at federally-managed and infested waters. Boats are being allowed to leave these infested water bodies—Lake Mead and Lake Havasu, for example, without being inspected or decontaminated. The invasive species are then spread to other water bodies on contaminated boats.

In particular, the council has asked the National Park Service and U.S. Department of Interior to implement a mandatory inspection and decontamination program for moored watercraft at infested lakes that are federally managed. The reason this is so important to Oregon, Washington, and Idaho is because most of boats infested with quagga mussels coming into the northwest states have originated in Lake Mead and infested waters on the lower Colorado River. Without control at the source of the infestation, as is done with chemical pollution, each state has to spend millions of dollars to intercept these contaminated boats. As a result of the advocacy from the West, a $1 million, one-time appropriation was provided for inspecting and decontaminating moored boats on Lake Mead and other infested waters on the lower Colorado River. It was a good start.

This year, the council's federal work showed results with the inclusion of invasive species provisions in the 2014 Water Resources Reform and Development Act. Section 1039 (Invasive Species) authorizes federal agencies to review existing authorities related to the prevention of invasive species and make recommendations to Congress on how to respond more effectively to threats and requires the Comptroller General to review federal costs of operation and maintenance related to mitigating the impacts of aquatic invasive species on federally owned and operated facilities.

The section also requires the U.S. Fish and Wildlife Service, along with the U.S. Army Corps of Engineers, National Park Service, and U.S. Geological Survey, to work to slow the spread of Asian carp by providing technical assistance, coordination, and support to state and local governments. Additionally, this section authorizes the Corps of Engineers to make modifications and enhancements to existing projects to prevent the spread of invasive species in the Great Lakes, increases the authorization of a small program of the Corps of Engineers to prevent the spread of invasive species, and authorizes the Secretary of the U.S. Fish and Wildlife Service, in coordination with the states of Idaho, Montana, Oregon, and Washington, to establish watercraft inspection stations near reservoirs operated by the Corps of Engineers.

Critical Element 2: Discovering New Threats



Refining the 'WA Invasives' App

The council took action last year to reach a broader audience and improve the quality of the information provided in the 1-877-9-INFEST hotline reports by creating a smartphone reporting app. The app, called 'WA Invasives,' enhances the data reported on invasive species by automatically taking a Global Positioning System location and allowing for easy uploading of photographs. Reports verified by state and federal agency experts are placed on a map and made available to all, so that we can better map the location of invasive species before they get established. The app is free and available for iPhones and Android phones.

In 2014, the council used federal funding to upgrade the app. These upgrades include:

1. Adding all of the baseline assessment data—species locations and spread—into the app to make the baseline data more available.

2. Incorporating data from the City of Bellevue's New Zealand mud snail reporting app so that there is only one app to use for accessing species data.

3. Improving the interface for users by creating a more searchable database of all noxious weeds and allowing users to select lists and add new species.

4. Including 40 more noxious weed species to the app information pages.

5. Incorporating additional links to other agency Web sites.

Critical Element 3: Establishing Clear Statewide Priorities

Strengthening State Policy on Invasive Species Prevention

In 2013, the council proposed to the Washington State Noxious Weed Control Board to list giant reed as a noxious weed, and in 2014 it was added to Washington State Department of Agriculture's plant quarantine list, which prohibits its transport and restricts its use.

Giant reed is a highly invasive plant in the southwestern United States and is being promoted as a bio-fuel in Washington and Oregon. It is among the fastest growing land plants in the world, and replacement of native plant communities by giant reed results in low quality habitat and altered ecosystem functioning. This species becomes invasive when grown near water, such as in rivers, but is controllable on farms where water inputs are limited.

Since 2011, the council has made presentations on this species and the benefits and risks of growing it for biofuel. With the background information already heard and vetted through the council, the Department of Agriculture was quick to add giant reed to the quarantine list, as well as require a special permit or compliance agreement to grow it under very restricted conditions. This allows for its commercial growth on a small scale and outside of riparian, wetland, special flood zone, and open irrigation areas.

THE COUNCIL IS MAKING A DIFFERENCE

In addition to the ongoing policy and project work, the coordinating role of the council led to some significant accomplishments.

- **Building new partnerships with industry groups:** The council's newly formed Industry Advisory Panel acknowledges the wide range of business interests affected by invasive species and the need to partner in order to strengthen our efforts to prevent and eliminate invasive species in Washington State. Panel members represent the aquaculture industry, boating industry, irrigation interests, forestry and nursery interests, and an eastern Washington public utility district. We look forward to broadening the impact of this panel.

- **Leveraging change at the programmatic level:** The Phase 2 baseline assessment serves as an initial step toward coordinating a statewide, strategic response to the threat of invasive species. It is intended to ensure that available resources are used effectively, focused on the greatest ecological needs, and designed to create the highest benefit to native ecosystems and the human systems that depend on them.

- **Strengthening state and federal policy:** This year, the council made considerable progress in shutting down the pathways of school science kits and field work involving recreation and conservation projects, including information on invasive species in the State Environmental Policy Act environmental checklist, creating the first Washington-specific emergency response plan for zebra and quagga mussels, assisting with and vetting comprehensive statewide legislation on aquatic invasive species, and working with our Congressional delegates to include measures for Pacific Northwest invasive species prevention in the 2014 Water Resources Reform and Development Act.

As a whole, the council continues to make progress towards its primary purpose—to foster strategic, unified, and coordinated approaches to minimize the harmful effects of invasive species. The best way to do that is to continue making investments in prevention, however small and incremental they seem, so that Washington is not faced with expensive, and possibly ineffective, control efforts. Small investments made today have the power to give huge returns in the future that result in healthy citizens, economy, and environment. The council is working hard to ensure that the investments it makes today will prevent Washington from paying a steep price in the future.