Washington Invasive Species Council Meeting Agenda

March 12, 2015
Natural Resources Building, Room 175, 1111 Washington St SE, Olympia, WA 98504

Time: Opening session will begin as shown; all other times are approximate.

Public Comment:
If you wish to comment at a meeting, please fill out a comment card and provide it to staff. Please be sure to note on the card if you are speaking about a particular agenda topic. The chair will call you to the front at the appropriate time.

You also may submit written comments to the Council by mailing them to the RCO, Attn: Cindy Gower at the address above or at cindy.gower@rco.wa.gov.

Special Accommodations:
If you need special accommodations to participate in this meeting, please notify us at 360/902-3013.

OPENING AND WELCOME

9:00 a.m.	**Welcome and Call to Order** • Facilities and Safety Information • Review Agenda • Recording System	*Chair*

HOT TOPIC REPORTS

9:10 a.m.	**1. Boat Ramp Stencil**	*Lizbeth Seebacher*
9:20 a.m.	**2. New Zealand Mud Snail Conference**	*Lizbeth Seebacher*
9:30 a.m.	**3. Milfoil in the Columbia River**	*Stacy Horton*
9:40 a.m.	**4. Boat Show Outreach**	*Curtis Tanner*
9:50 a.m.	**5. DNR Trail Policy**	*Pene Speaks*

DISCUSSIONS AND DECISIONS

10:00 a.m.	**6. Legislative Updates** • Round table discussion of invasive-species legislation • Discussion of WISC coordination on legislative issues	*Raquel Crosier, Bill Tweit, Pene Speaks, Lisa Younger*
10:30 a.m.	**7. WISC Reauthorization**	*Wendy Brown, Raquel Crosier*
11:00 p.m.	**8. NISAW Outreach**	*Raquel Crosier*

11:30 p.m.	**9. Strategic Plan update**	*Wendy Brown, Raquel Crosier*
12:00 p.m.	**10. Monitoring Project 5.3.2**	*Wendy Brown, Raquel Crosier*
12:30 p.m.	**11. City of Bellingham/ Whatcom County Boat Inspection Program**	*Teagan Ward, City of Bellingham*
1:00 p.m.	**12. Council Business** Approval of December Minutes	*Raquel Crosier*
1:10 p.m.	**13. Public Comments**	
1:30 p.m.	**14. Next Steps** • Assignments from Meeting • Next Council Meeting = June 18, NRB 172	*Bill Tweit*
2:00 p.m.	**ADJOURN**	

CERTIFICATION OF ENROLLMENT

ENGROSSED SUBSTITUTE SENATE BILL 5385

Chapter 152, Laws of 2006

59th Legislature
2006 Regular Session

INVASIVE SPECIES COUNCIL

EFFECTIVE DATE: 6/7/06

Passed by the Senate March 4, 2006
YEAS 37 NAYS 5

BRAD OWEN

President of the Senate

Passed by the House March 2, 2006
YEAS 90 NAYS 7

FRANK CHOPP

Speaker of the House of Representatives

CERTIFICATE

I, Thomas Hoemann, Secretary of the Senate of the State of Washington, do hereby certify that the attached is **ENGROSSED SUBSTITUTE SENATE BILL 5385** as passed by the Senate and the House of Representatives on the dates hereon set forth.

THOMAS HOEMANN

Secretary

Approved March 20, 2006.

FILED

March 20, 2006 - 3:09 p.m.

CHRISTINE GREGOIRE

Governor of the State of Washington

Secretary of State
State of Washington

ENGROSSED SUBSTITUTE SENATE BILL 5385

AS AMENDED BY THE HOUSE

Passed Legislature - 2006 Regular Session

State of Washington 59th Legislature 2006 Regular Session

By Senate Committee on Natural Resources, Ocean & Recreation (originally sponsored by Senators Jacobsen, Oke, Fraser, Swecker and Kline)

READ FIRST TIME 02/25/05.

AN ACT Relating to creating an invasive species council; amending RCW 79A.25.010; adding new sections to chapter 79A.25 RCW; and providing an expiration date.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

NEW SECTION. **Sec. 1.** The legislature finds that:

(1) The land, water, and other resources of Washington are being severely impacted by the invasion of an increasing number of harmful invasive plant and animal species.

(2) These impacts are resulting in damage to Washington's environment and causing economic hardships.

(3) The multitude of public and private organizations with an interest in controlling and preventing the spread of harmful invasive species in Washington need a mechanism for cooperation, communication, collaboration, and developing a statewide plan of action to meet these threats.

NEW SECTION. **Sec. 2.** (1) There is created the Washington invasive species council to exist until December 31, 2011. Staff support to the

council shall be provided by the committee and from the agencies represented on the council. For administrative purposes, the council shall be located within the committee.

(2) The purpose of the council is to provide policy level direction, planning, and coordination for combating harmful invasive species throughout the state and preventing the introduction of others that may be potentially harmful.

(3) The council is a joint effort between local, tribal, state, and federal governments, as well as the private sector and nongovernmental interests. The purpose of the council is to foster cooperation, communication, and coordinated approaches that support local, state, and regional initiatives for the prevention and control of invasive species.

(4) For the purposes of this chapter, "invasive species" include nonnative organisms that cause economic or environmental harm and are capable of spreading to new areas of the state. "Invasive species" does not include domestic livestock, intentionally planted agronomic crops, or nonharmful exotic organisms.

NEW SECTION. **Sec. 3.** (1) Membership in the council includes a representative from the following entities:

(a) The department of agriculture, represented by the director or the director's designee;

(b) The department of fish and wildlife, represented by the director or the director's designee;

(c) The department of ecology, represented by the director or the director's designee;

(d) The department of natural resources, represented by the commissioner or the commissioner's designee;

(e) The department of transportation, represented by the secretary or the secretary's designee;

(f) The Washington state noxious weed control board, appointed by the board;

(g) A county located east of the crest of the Cascade mountains, appointed by the other members of the council; and

(h) A county located west of the crest of the Cascade mountains, appointed by the other members of the council.

(2) The councilmembers may add members to the council as the councilmembers deem appropriate to accomplish its goals.

(3) The council must invite one representative each from the United States department of agriculture, the United States fish and wildlife service, the United States environmental protection agency, and the United States coast guard to participate on the council in a nonvoting, ex officio capacity.

(4) A representative of the office of the governor must convene the first meeting of the council and serve as chair until the council selects a chair. At the first meeting of the council, the council shall address issues including, but not limited to, voting methods, meeting schedules, and the need for and use of advisory and technical committees.

NEW SECTION. **Sec. 4.** The council's goals are to:

(1) Minimize the effects of harmful invasive species on Washington's citizens and ensure the economic and environmental well-being of the state;

(2) Serve as a forum for identifying and understanding invasive species issues from all perspectives;

(3) Serve as a forum to facilitate the communication, cooperation, and coordination of local, tribal, state, federal, private, and nongovernmental entities for the prevention, control, and management of nonnative invasive species;

(4) Serve as an avenue for public outreach and for raising public awareness of invasive species issues;

(5) Develop and implement a statewide invasive species strategic plan as described in this chapter;

(6) Review the current funding mechanisms and levels for state agencies to manage noxious weeds on the lands under their authority;

(7) Make recommendations for legislation necessary to carry out the purposes of this chapter;

(8) Establish criteria for the prioritization of invasive species response actions and projects; and

(9) Utilizing the process described in subsection (8) of this section, select at least one project per year from the strategic plan for coordinated action by the Washington invasive species councilmember entities.

NEW SECTION. **Sec. 5.** (1) The council shall develop and periodically update a statewide strategic plan for addressing invasive species. The strategic plan should incorporate the reports and activities of the aquatic nuisance species committee, the state noxious weed control board, and other appropriate reports and activities. In addition, the council must coordinate with the biodiversity council created in Executive Order 04-02 to ensure that a statewide strategy for the control of invasive species is integrated into the thirty-year strategy for biodiversity conservation that the biodiversity council must submit to the legislature in 2007.

(2) The strategic plan must, at a minimum, address:

(a) Statewide coordination and intergovernmental cooperation;

(b) Prevention of new biological invasions through deliberate or unintentional introduction;

(c) Inventory and monitoring of invasive species;

(d) Early detection of and rapid response to new invasions;

(e) Control, management, and eradication of established populations of invasive species;

(f) Projects that can be implemented during the period covered by the strategic plan for the control, management, and eradication of new or established populations of invasive species;

(g) Revegetation, reclamation, or restoration of native species following control or eradication of invasive species;

(h) Tools that can be made available to assist state agencies that are responsible for managing public land to control invasive noxious weeds and recommendations as to how the agencies should be held responsible for the failure to control invasive noxious weeds;

(i) Research and public education;

(j) Funding and resources available for invasive species prevention, control, and management; and

(k) Recommendations for legislation necessary to carry out the purposes of this chapter.

(3) The strategic plan must be updated at least once every three years following its initial development. The strategic plan must be submitted to the governor and appropriate committees of the legislature by September 15th of each applicable year. The council shall complete the initial strategic plan within two years of the effective date of this section.

(4) Each state department and agency named to the council shall, consistent with state law, make best efforts to implement elements of the completed plan that are applicable to the department or agency.

NEW SECTION. **Sec. 6.** (1) The council shall submit an annual report of its activities to the governor and the relevant policy committees of the senate and house of representatives by December 15th of each year. The annual report must include an evaluation of progress made in the preceding year to implement or carry out the strategic plan and an identification of projects from the strategic plan that will be a focus for the following year.

(2) Prior to the start of the 2011 legislative session, the council must prepare a report to the appropriate committees of the legislature that makes recommendations as to the extension or modification of the council.

NEW SECTION. **Sec. 7.** The council may establish advisory and technical committees that it considers necessary to aid and advise the council in the performance of its functions. The committees may be continuing or temporary committees. The council shall determine the representation, membership, terms, and organization of the committees and appoint their members.

NEW SECTION. **Sec. 8.** The invasive species council account is created in the custody of the state treasurer. All receipts from appropriations, gifts, grants, and donations must be deposited into the account. Expenditures from the account may be used only to carry out the purposes of the council. The account is subject to allotment procedures under chapter 43.88 RCW and the approval of the director of the committee is required for expenditures. All expenditures must be directed by the council.

Sec. 9. RCW 79A.25.010 and 1989 c 237 s 2 are each amended to read as follows:

Definitions: As used in this chapter:

(1) "Marine recreation land" means any land with or without improvements which (a) provides access to, or in whole or in part borders on, fresh or salt water suitable for recreational use by

watercraft, or (b) may be used to create, add to, or make more usable, bodies of water, waterways, or land, for recreational use by watercraft.

(2) "Public body" means any county, city, town, port district, park and recreation district, metropolitan park district, or other municipal corporation which is authorized to acquire or improve public outdoor recreation land, and shall also mean Indian tribes now or hereafter recognized as such by the federal government for participation in the land and water conservation program.

(3) "Tax on marine fuel" means motor vehicle fuel tax which is (a) tax on fuel used in, or sold or distributed for use in, any watercraft, (b) refundable pursuant to chapter 82.36 RCW, and (c) paid to the director of licensing with respect to taxable sales, distributions, or uses occurring on or after December 3, 1964.

(4) "Watercraft" means any boat, vessel, or other craft used for navigation on or through water.

(5) "Committee" means the interagency committee for outdoor recreation.

(6) "Director" means the director of the interagency committee for outdoor recreation.

(7) "Council" means the Washington invasive species council created in section 2 of this act.

NEW SECTION. **Sec. 10.** Section 8 of this act expires December 31, 2011.

NEW SECTION. **Sec. 11.** Sections 1 through 8 of this act are each added to chapter 79A.25 RCW.

Passed by the Senate March 4, 2006.
Passed by the House March 2, 2006.
Approved by the Governor March 20, 2006.
Filed in Office of Secretary of State March 20, 2006.

DRAFT WISC Strategic Plan Updates

I. Leadership and Coordination

Support targeted outreach to educate both the public and private sectors on the damage caused by invasive species and what citizens and lawmakers can do to make a difference.

Coordinate with state, federal, local and sovereign government partners as well as other and regional partners who have invasive species responsibilities and expertise in order to advance agency and organization invasive species objectives and implement the WISC statewide strategic plan.

Build a strong coalition of stakeholders from various sectors which have interest and expertise in invasive species; business, academia, non-profit and citizen science groups, as well as state, federal, local and sovereign government agencies.

Increase and enhance communication across all entities to ensure coordinated approaches are supported and communication tools are accessible to address invasive species issues (WISC web site, Facebook, app, other communication tools).

Promote and support requests for adequate, stable funding and enhanced statutory authority to sustain effective invasive species programs.

Provide current invasive species information and data to the Washington State Legislature, Governor's office, and Washington Congressional delegates, including climate change impacts on invasive species.

Improve efficiencies in spending and operations across state, federal, and local agencies.

II. Prevention

Prevent the entry and movement of invasive species by identifying and addressing new and existing pathways.

Work with state, federal, local and sovereign government agencies as well as regional partners to identify opportunities for enhanced, coordinated and complimentary prevention approaches.

Engage stakeholders, partners and the public in managing invasive species pathways and preventing the introduction and spread of invasive species into terrestrial, riparian, and aquatic ecosystems.

Encourage the development and use of best management practices to prevent invasive species spread.

III. Early Detection and Rapid Response

Continue to compile existing information and conduct a baseline assessment of invasive species information and programs in Washington. This baseline would serve as an initial step towards coordinating a statewide, strategic response to the threat of invasive species.

Promote a dedicated fund for emergency response to new invasive species in Washington.

Improve detection of invasive species by training field biologists, foresters, highway maintenance crews, citizen scientists, and other land and water stewards to identify and report priority invasive species and supporting the use of information technology.

Align state and federal regulatory processes to facilitate rapid response to newly discovered invasive species.

Strategically focus rapid responses on species that are more likely to cause harm.

IV. Containment, Control and Eradication

Promote the restoration of functioning ecosystems as the endpoint of construction, clean up, habitat enhancement and other ground-disturbing ecological projects and include prevention protocols in restoration plans and contracts.

Support the development of education and outreach materials that encourage the use of native and non-invasive species in restoration, gardening, landscaping and science kits.

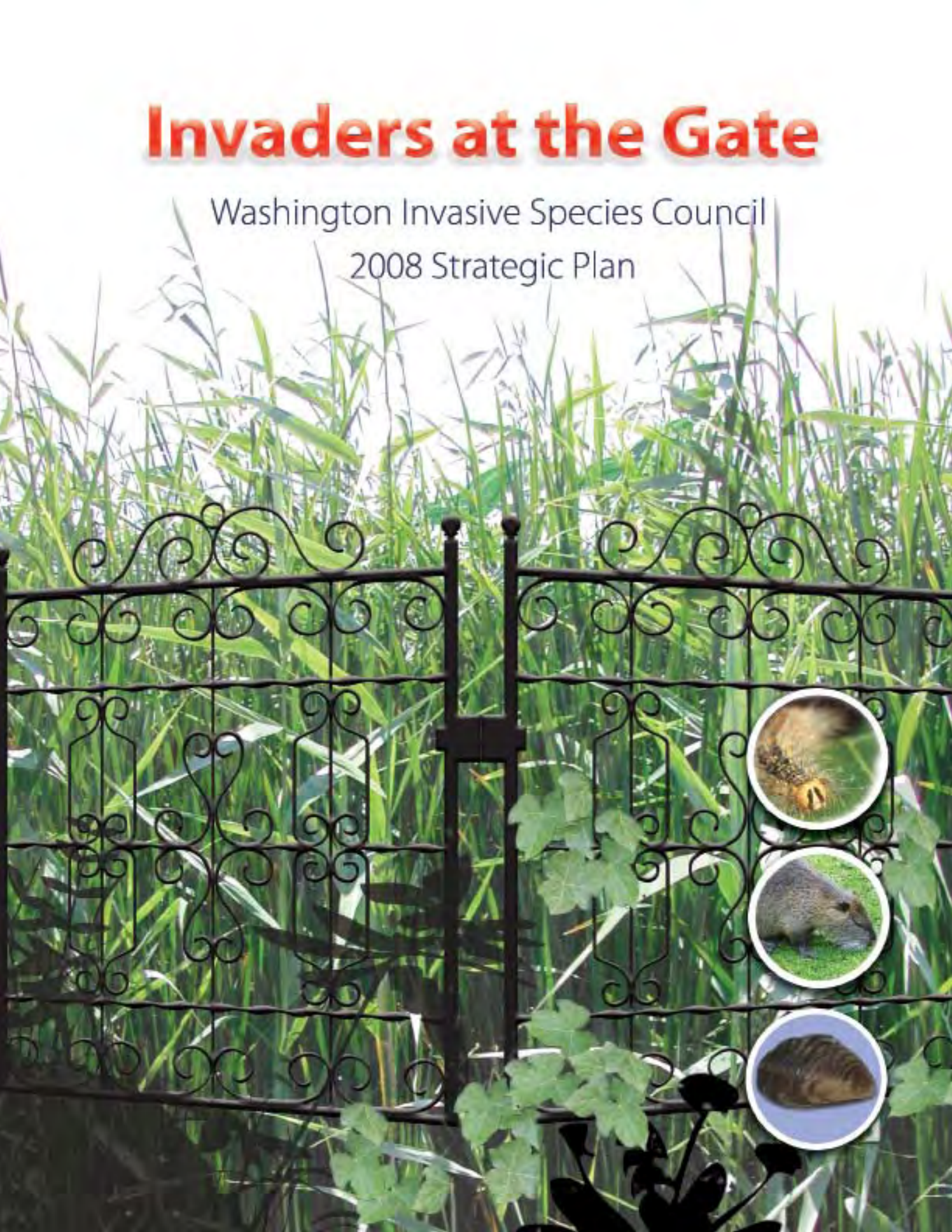
Support the containment of invasive species that are already established in Washington to prevent greater spread and support the control and eradication of smaller or newly-discovered infestations.

Support research to make new control tools available and improve the efficacy and specificity of existing tools.

Invaders at the Gate

Washington Invasive Species Council

2008 Strategic Plan



Washington pays a substantial price for co-existing with invasive species. We live, work, and recreate among marauding plants, animals ,and organisms that damage our waters, farms, forests, natural areas and fisheries.

PHOTOS ON COVER

Grass behind gate - *Phragmites australis* (Source: Washington Noxious Weed Control Board)

English Ivy - *Hedera helix L.*

Caterpillar - Asian Gypsy Moth, *Lymantria dispar* (Source: Washington Department of Agriculture, see sidebar on p. 23)

Nutria - (Source: Washington Department of Fish and Wildlife)

Zebra Mussel - (Source: Washington Department of Fish and Wildlife, see sidebar on p. 48)

Washington Invasive Species Council Members

Kate Benkert
U.S. Fish and Wildlife Service

Wendy Brown
Washington Department of Natural Resources

Joan Cabreza
U.S. Environmental Protection Agency

Barbara Chambers
U.S. Department of Agriculture

Chris Christopher
Washington Department of Transportation

Dana Coggon
Kitsap County

Bob Koch
Franklin County

Gene Little, Vice Chair
Washington Noxious
Weed Control Board

Bridget Moran, Chair
Washington Department of Fish and Wildlife

Bríd Nowlan
Washington Invasive Species Coalition

Melodie Selby
Washington Department of Ecology

Pat Stevenson
Stillaguamish Tribe

Mary Toohey
Washington Department of Agriculture

Niles Seifert
U.S. Coast Guard, Liaison to the Council

INVASIVE SPECIES COUNCIL STAFF

Clover Lockard
Executive Coordinator

Gen Keesecker
Project Associate

CONTACT US

PO Box 40917
Olympia, WA 98504-0917
360-902-3000
TDD 360-902-1996
Web site: www.rco.wa.gov/invasive_species
E-mail: Invasivespecies@rco.wa.gov

Administrative services provided by the
Recreation and Conservation Office

People who need this information in an alternative format, please call 360-902-3000 or TDD 360-902-1996

Acknowlegements

The council wishes to express its appreciation to the many individuals who contributed time and expertise to the development of this strategy. Please note that while the council has endeavored to be thorough and complete in this list, we apologize in advance for any unintended omissions.

Washington Invasive Species Council Work Groups

Coordination Work Group

Gene Little, Washington Noxious Weed Control Board – Lead; Allen Pleus, Washington Department of Fish and Wildlife; Joan Cabreza, U.S. Environmental Protection Agency; Pat Stevenson, Stillaguamish Tribe; Nancy Phelps, U.S. Forest Service.

Technical Work Group

Mary Toohey, Washington Department of Agriculture – Lead; Barbara Chambers, U.S. Department of Agriculture; Brid Nowlan, Washington Invasive Species Coalition; Jennifer Vanderhoof, King County Department of Natural Resources and Parks; Dr. Brad White, Washington Department of Agriculture; Herb Curl, Seattle Audubon Society; Kathy Hamel, Washington Department of Ecology; Wendy Brown, Washington Department of Natural Resources; Randy Marshall, Washington Department of Ecology.

Regulation Work Group

Melodie Selby, Washington Department of Ecology – Lead; the Honorable Robert Koch, Franklin County Commissioner; Jeanne McNeil, Washington Nursery and Landscape Association; Bridget Moran, Washington Department of Fish and Wildlife; Diane Cooper, Taylor Shellfish Farms; Eric Anderson, Washington Department of Fish and Wildlife; Kathy Hamel, Washington Department of Ecology.

Education Work Group

Dana Coggon, Kitsap County Noxious Weed Control Program – Lead; Jeff Adams, Washington Sea Grant; Kate Benkert, U.S. Fish and Wildlife Service; Laurel Baldwin, Whatcom County Noxious Weed Control Program; Jennifer Andreas, Washington State University; Ray Willard, Washington Department of Transportation; Todd Murray, Washington State University; Richard Zack, Washington State University; Alison Halpern, Washington Noxious Weed Control Board.

Funding Work Group

Wendy Brown, Washington Department of Natural Resources – Lead; Bill Brookreson, Washington Native Plant Society; William Robinson, The Nature Conservancy; Dana Coggon, Kitsap County Noxious Weed Control Program; Dave Baumgartner, Washington State University Extension.

Reviewers of the Draft Strategy

Robert Fimbel, Washington State Parks and Recreation Commission; Sarah Gage, Washington Biodiversity Council; Kitsap County Noxious Weed Control Board; Krystal Kyer, Tahoma Audubon; Rod Crawford, University of Washington; Randy Lumper, Skokomish Tribe; Herb Curl, Washington Invasive Species Coalition and Audubon Society; Blake Feist, National Oceanic and Atmospheric Administration; Richard Lee, San Juan County Noxious Weed Control Program; Diane Cooper, Taylor Shellfish Farms; Judy Jackson, San Juan County Noxious Weed Control Program; Dan D. Wrye, Pierce County Public Works and Utilities, Water Programs; Jo Roberts, Washington Invasive Species Coalition; Jennifer Vanderhoof, King County Department of Natural Resources and Parks; Mark Sytsma, Oregon Invasive Species Council; Patrick Ryan, Washington Department of Natural Resources, Agriculture Program; Jeff Madsen, Port Blakely Tree Farms; Cathy Lucero, Clallam County Noxious Weed

Weed Control Board; Tom McDowell, Western Washington Fish and Wildlife Office; Lisa Younger, The Nature Conservancy; Cullen Stevenson, Puget Sound Partnership; Kim Patten, Washington State University; Jeanne McNeil, Washington Nursery and Landscape Association; Ella Elman, Seattle Urban Nature; Chuck Perry, Rangelands Northwest; Deborah Rudnick, Integral Corporation; Fritzi Cohen, Moby Dick Hotel and Oyster Farm; Governor's Policy Office; Washington Department of Fish and Wildlife; Washington Department of Natural Resources; Washington Department of Ecology, U.S. Fish and Wildlife Service; Washington Recreation and Conservation Office; Alison Halpern, Washington Noxious Weed Control Board; Karen Ripley, Washington Department of Natural Resources; Jeff Hogle, U.S. Fish and Wildlife Service; King County; Jim Eychaner, Washington Recreation and Conservation Office; Tanya DeMarsh-Dodson, Washington Nursery and Landscape Association; Paul Heimowitz, U.S. Fish and Wildlife Service; John Stuhlmiller, Washington Farm Bureau; Jennifer Parsons, Washington Department of Ecology; Dean Mansur, Independent Shellfish Grower's of Washington State; Molly Ingraham, The Nature Conservancy; Bonnie Bunning, Washington Department of Natural Resources; David Robinson, Kettle Range Conservation Group & Inland Empire Public Lands Council, Concerned Friends of Ferry County; Ken Bajema; Kevin Reynolds, The Glosten Associates; Douglas Peters, Washington Department of Community, Trade and Economic Development; William Brookreson, Washington Native Plant Society Conservation Committee.

"Critical Connection" Presentations at Council Meetings

Tom Fitzsimmons, Office of the Governor; Doug Sutherland, Commissioner of Public Lands; Washington Senator Ken Jacobsen; Joan Cabreza, Aquatic Nuisance Species Committee; Ron Shultz, Ballast Water Work Group; Dr. Brad White, Western Regional Plant Council; Lori Williams, National Invasive Species Council; Sara Crumb, representing Congressman Norm Dicks; Lynn Helbrecht, Biodiversity Council; Steve McGonigal, Washington Noxious Weed Control Board; John Mankowski, Office of the Governor; Kristin Rowe-Finkbeiner, Washington Invasive Species Coalition; Laura Johnson, Recreation and Conservation Office; Dr. Ron Sequeira, U.S. Department of Agriculture's Animal and Plant Health Inspection Service; Steven Phillips, 100th Meridian Initiative; Allen Pleus, Washington Department of Fish and Wildlife - Ballast Water Work Group and Columbia River Basin Zebra/Quagga Mussel Response Plan; William Brookreson, Washington Noxious Weed Funding Report; Amy Ferriter, Idaho Invasive Species Council; Mark Sytsma, Oregon Invasive Species Council.

Other Important Contributors

Eric LaGasa, Washington Department of Agriculture Entomologist
Chris Dionigi, National Invasive Species Council
Pam Meacham, Washington Department of Fish and Wildlife
Seth Cool, Conservation Northwest

Consulting Staff

Filiz Satir, consulting writer and editor
Kathy Skye, SkyeDesign, graphic design

Special Thanks

Kaleen Cottingham, Director
Recreation and Conservation Office

Susan Zemek, Communications Director
Recreation and Conservation Office.

Table of Contents

Executive Summary: Invaders at the Gate 1

Section I Invaders at the Gate:
Understanding Washington State's Invasive Species Problem 5
Case Study: Viral Hemorrhagic Septicemia Virus 12

Section II Bolstering Washington's Defenses Against Invaders 15
Short-term Recommendations 17
Long-term Recommendations 23
Case Study: Cordgrass (*Spartina*) 24

Section III Assets to Build Upon 39
Case Study: The Tunicate, Didemnum sp. (A colonial sea squirt) 44
Case Study: The Zebra Mussel. 48
Case Study: Citrus long-horned beetle 52
Case Study: *Phragmites* 60

Appendix
Regulatory Table 63

Executive Summary

Invaders at the Gate

Washington, the Evergreen State, is known for its lush, environmentally diverse landscapes. From the state's ocean beaches, to its forests, to its grassy prairies, Washington is home to thousands of different plant and animal species. Among the 50 states it ranks in the top 15 for diversity of native species plants, animals, and birds.[1]

Be it an orange-toothed rodent, a long-horned beetle, or a purple-flowered plant, invading species of all kinds cross state borders or expand their presence into Washington every day. They come as the result of migration, deliberate introduction, and, very often, by chance. When invaders do make it past the front gate, they can bring unintended consequences. They can decimate native species and quickly degrade ecosystems. Animal and plant invaders – those already past the front gate and others trying to get through – have the potential to change the face of Washington, forever.

Invasive species are a threat to Washington's environment and economy, exacting a high price for their presence. These biological invasions can produce serious, often irreversible effects on agriculture, recreation, and natural resources. While not all non-native species have aggressive traits, the sheer number of these species coming through our gates is increasing at an alarming rate. There are more than 650 non-native plant species documented in Washington.[2] This figure represents only a fraction of the total number of non-native species present in the state. Because of the devastating effect on Washington's plant, animal, and economy by some of these invaders, Washington citizens pay millions of dollars each year to prevent, control, and eradicate invasive species.

Washington has several programs that have received national recognition for combating the negative effects of invasive species. However, the state lacks fundamental information such as: important resources at risk, invasive species distribution, the extent of infestations, and the amount spent by agencies and programs. Furthermore, no comprehensive data have ever been compiled to present a broad picture of the invasive species problem or the degree to which the

[1] Bruce A. Stein. 2002. States of the Union: Ranking America's Biodiversity. Arlington, Virginia: NatureServe.
[2] Rice, P.M. INVADERS Database System (http://invader.dbs.umt.edu). Division of Biological Sciences, University of Montana, Missoula, MT 59812-4824.

state's current programs are managing the problem. To strengthen the state's invasive species efforts and make sound future decisions, we need this kind of fundamental information.

Call to Action

The Washington Invasive Species Council's mission is to provide policy direction, planning, and coordination to empower those entities engaged in the prevention, detection, and eradication of invasive species. The council developed the plan through a collaborative process involving five work groups composed of experts from around the state, an informal survey of organizations involved with invasive species programs, individual interviews, and comments from the public.

The plan presents 22 recommendations with specific action items covering the next 20 years. The five, short-term (3 years) priority recommendations for implementation are:

1. Compile existing information and conduct a baseline assessment of invasive species information and programs in Washington.
2. Develop a Web-based clearinghouse as the interchange for all existing invasive species information statewide.
3. Support targeted outreach campaigns to raise awareness of the potential damage caused by invasive species.
4. Facilitate and improve communication, accessibility of tools, and coordinated approaches across all organizations.
5. Improve agencies' access to emergency funding and develop an early detection and rapid response network.

The council recognizes that building and enhancing systems for interagency and partner coordination require time and money. Accordingly, the council crafted long-term recommendations for implementation during the next 20 years. Included among those recommendations are:

- Determine invasive species pathways (means of entry) that lack defenses and address the gaps.
- Assess current laws regarding invasive species and make recommendations for progressive legislation.
- Use risk analysis and economic models to prioritize the activities used for invasive species management.
- Improve efficiencies in spending on the control and eradication of invasive species across state, federal, and local agencies.

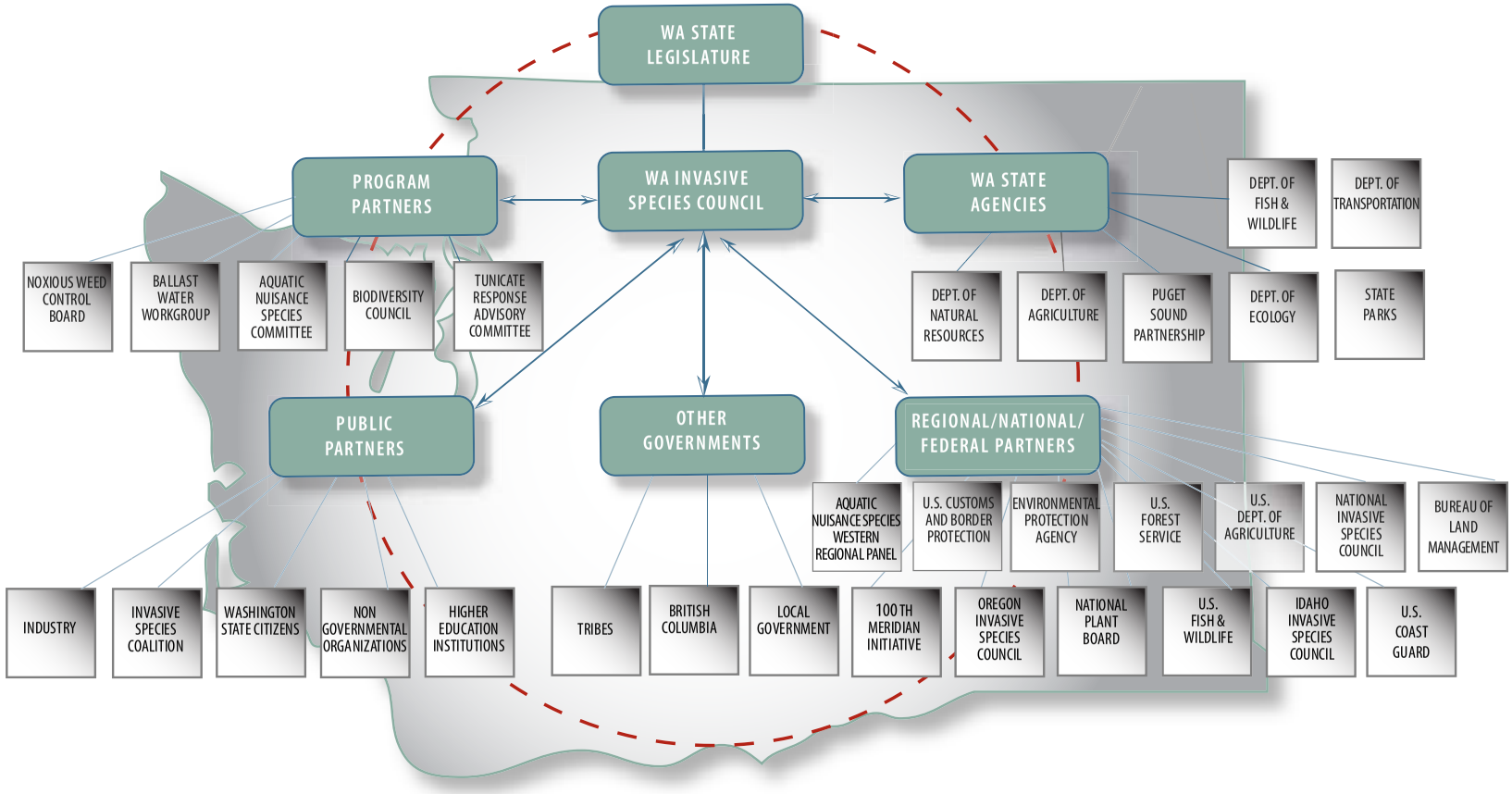
Future efforts related to quantifying and managing Washington's invasive species problem will be demanding. The council is developing a three-year work schedule that will focus on how it and its critical partners can implement the recommendations and actions.

It will not be possible to prevent all invasive species from entering Washington, nor to completely eradicate those already here. However, Washington can and must significantly decrease the myriad of economic, environmental, and human health impacts posed by invasive species.

The responsibility to prevent new introductions and control the spread of existing invaders does not belong to any one industry, organization, or person but rather to all residents of Washington. This statewide plan is just the beginning; the road to a strategic and unified approach to stopping these invaders at the gate lies ahead. The council's bold, yet achievable plan contains specific actions that will minimize the adverse effects of invasive species as they will help sustain Washington's human, plant, and animal communities as well as its thriving economy.

This statewide plan is just the beginning; the road to a strategic and unified approach to stopping these invaders at the gate lies ahead.

Fostering Cooperation



This is not a comprehensive list of entities for coordination, but lists examples of coordination opportunities and current efforts.

Invaders at the Gate: Understanding Washington State's Invasive Species Problem

In Washington, most people are completely unaware of the threat of invasive species. What they see are lush landscapes and abundant wildlife. They might not recognize as dangerous, the invading prolific plants, adaptable animals, and microscopic organisms that can transform the physical world, and put Washington's biological richness and diversity at risk.

Roughly 50,000 non-indigenous species in the United States cause major environmental damage and losses totaling about $137 billion each year.[3] Battling these invaders, Washington State spends, by conservative estimates, nearly $30 million every biennium to prevent or eliminate invading species.[4]

Jurisdictional boundaries do not stop invasive species from crossing the state's border or migrating from other countries. It's critical that the state's natural resources agencies and their partners act deliberately and cohesively to stem the threat of existing invaders, prevent the introduction of new invasive species, and ensure the viability of native species.

Purple Loosestrife

PHOTO COURTESY OF NOXIOUS WEED CONTROL BOARD

Invasive Species Defined

The legislation establishing the Washington Invasive Species Council defines invasive species as "non-native organisms that cause economic or environmental harm and are capable of spreading to new areas of the state. Invasive species do not include domestic livestock, intentionally planted agronomic crops, or harmless exotic organisms."

Invaders at the gate

Purple loosestrife *(Lythrum salicaria)*, is a plant species that was deliberately introduced to the United States for its purported medicinal and ornamental value. Recognized today as a noxious weed, purple loosestrife invades Washington wetlands and quickly overtakes other species, such as cattail, that provide better food and nesting habitat for birds, bog turtles, mink, and muskrat.

A plant with purplish blossoms, this species probably was introduced to Grant County's Winchester Wasteway in the early 1960s. By 1989, it was estimated that purple loosestrife infested as much as 25,000 acres of the Winchester Wasteway. A coalition of agencies, including the U.S. Bureau of Reclamation, Washington Department of Fish and Wildlife, Washington Department of Agriculture, Washington State University, Grant County Noxious Weed Control Board, and others released three insect species on the Winchester Wasteway to biologically suppress purple loosestrife. Leaf-feeding beetles (*Galerucella calmariensis* and *G. pusilla*) decimated the population. Unfortunately, the eradication of one noxious weed left a void. A small population of an invasive strain of grass, known as *Phragmites australis*, spread rapidly. Today, several thousand acres of the Winchester Wasteway are infested by *Phragmites*.

(See page 60 for a case study on *Phragmites*.)

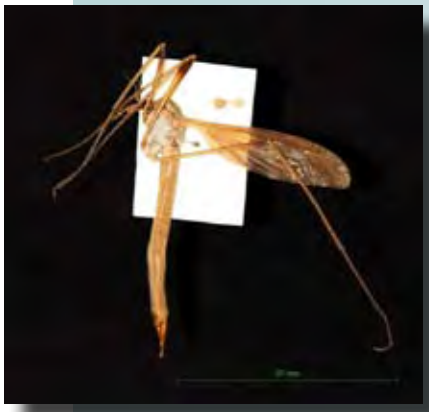
[3] David Pimentel, Lori Lach, Rodolfo Zuniga, and Doug Morrison BioScience, Vol. 50, No. 1 (Jan., 2000), pp. 53-65

[4] Washington Noxious Weed Funding Report, Washington Invasive Species Council, December 2007. Washington Invasive Species Council, Questionnaire Results, August, 2007.

Invaders come in all taxonomic kingdoms and include animals (mammals, reptiles, insects, and fish), plants, fungi, protista (molds, algae), and monera (bacteria and viruses). Upon its introduction to a new area, an invasive species may spread readily and rapidly if it lacks natural predators or grazers (in the case of plants) and if there are no competitive species or diseases to keep them in check.

In Harm's Way: The Economy, Environment, and Human Health

As several cases studies in this report show, established invasive species can and do harm the economy, environment, natural resources, and the health of humans and livestock. Across private and public sectors, scientists, government officials, industry leaders, and land managers now recognize the serious threat to the environment from invasive species. In the United States, about 400 of the 958 species listed under the Endangered Species Act as threatened or endangered are considered at risk primarily because of competition with and predation by non-indigenous species.[6]



European crane fly

PHOTO COURTESY OF ERIC LAGASA, WASHINGTON DEPARTMENT OF AGRICULTURE, BUGWOOD.ORG

Invaders at the gate

European crane fly or *Tipula paludosa* is a turf and pasture pest that as an adult looks much like an oversized mosquito. The larvae of this fly causes damage to native plants by feeding on roots of turf grass, seedlings, vegetables, and small fruit crops. The damage larvae does to grass, vegetables, and crops becomes apparent in the spring when larvae – 1.5 to 2 inch, worm-like creatures – feed on the host material. After the adults emerge, mate and lay eggs, the new larvae remains in a non-feeding pupae stage between June and August. Then, in the fall, eggs hatch and the larvae begin feeding, again.

In western Washington, the economic costs associated with controlling the crane fly by private homeowner-applied pesticides reached more than $12.8 million, according to a 1999 survey estimate; the cost to control the fly by commercial property landscape managers, golf courses, and others may be several times more.[1] In addition, the environmental effects from controlling crane fly using diazinon-based pesticide products contributed to urban stream contamination in the 1990s, making the chemical no longer usable. As private homeowners and lawns are concerned, spring is the best time for controlling the crane fly. Power raking or aerating the lawn has been shown to cut and destroy quite a few of these insects, and often eliminates the need for spraying.

[1] *Economic and Environmental Costs of Invasive Species in Washington State.* Washigton State Department of Agriculture, p. 24.

[6] David Pimentel, Lori Lach, Rodolfo Zuniga and Doug Morrison BioScience, Vol. 50, No. 1 (Jan., 2000), pp. 53-65.

For centuries, species too numerous to quantify have traveled with us to all parts of the globe. As our population has grown, become more mobile, and developed ever more sophisticated and rapid means of transportation, the rate of invasion by harmful species also has grown. Unwanted species enter the state in any number of ways, along what are known as pathways, including:

- Importation of seeds, plants, fruits, and vegetables.
- Ballast water discharged from ships.
- Soil brought in with nursery stock.
- Hulls of boats, which often are encrusted with aquatic species.
- Traveler's clothes or shoes.
- Cars and airplanes.
- Solid waste and soil dumped as fill into wetlands.
- People who abandon unwanted pets and ornamental plants. Owners of non-native species, such as exotic fish and snakes have been known to release them "into the wild."
- Internet sales of plants and animals.

Washington pays a substantial price for co-existing with invasive species. We live, work, and recreate among marauding plants, animals, and organisms that damage our waters, farms, forests, natural areas, and fisheries. Invasive species are found in every type of ecosystem. The damage they inflict can be measured in lost revenue to the state's economy, especially when a particular species problem is not immediately addressed. The costs also appear as degraded landscapes, less viable habitat for native plants and animals, and lost biological diversity as native species are pushed to the brink of extinction. Other costs include reduced accessibility to recreation

Brazilian elodea

PHOTO COURTESY OF THE DEPARTMENT OF ECOLOGY

Invaders at the gate

Brazilian elodea, *Egeria densa*, is a freshwater perennial plant that looks like a larger, more robust version of its native relative, *Elodea canadensis* (waterweed). Brazilian elodea has green serrated leaves that grow in whorls with tiny white flowers that float on the water's surface. The plant, once commonly found in pet stores and nurseries, is no longer sold in Washington. The Department of Ecology suspects that most invasions have occurred after people dumped aquarium contents into lakes. Listed as a state noxious weed, the invasive characteristics of this plant allow it to rapidly overtake freshwater lakes and streams. Its dense growth interferes with recreation, navigation, fishing, and wildlife habitat.

Brazilian elodea has infested 27 western Washington lakes. It was introduced into the Duck Lake Waterways System in Ocean Shores sometime in the early 1990s. At that time, lake residents and the City of Ocean Shores adopted a non-chemical approach to weed management. The city focused its efforts on stocking infested waters with sterile (triploid) grass carp – a plant-eating fish. Over time, lake residents also pulled weeds by hand and even invested in building their own mechanical harvesting machine to reduce the noxious weed problem. Still, Brazilian elodea continued to thrive and colonize much of the shallow waterway system, making it less usable. In 2005, residents and city staff began to explore the idea of using aquatic herbicides to manage the rampant growth. While Brazilian elodea is notoriously difficult to eradicate, aquatic herbicides can effectively control this species (a removal rate of up to 99 percent). In early 2007, city officials treated Duck Lake using two herbicides and by summer, the lake and its waterways were relatively free of Brazilian elodea. With the infestation under control, lakeside residents and the public were able to enjoy the lake for boating, swimming, and other recreation. In the future, the grass carp present in the lake may be able to stem new growth of Brazilian elodea. If not, judicious herbicide treatments should keep Brazilian elodea populations under control.

activities such as boating and hiking, adversely affected water power production, lower property values, and more. Additionally, some of the smallest, often microscopic invaders jeopardize the health of plants, animals, and people.

The following is not a complete list of harmful outcomes due to invasive species but rather a summary of the most serious threats they pose to the state, namely the economy, the environment, and human health.

Economic Damage

Invasive species threaten Washington's economy because they can damage and hinder many of the state's key exports and local industries. Seafood, agriculture, timber, hydro-electricity, water supply, and recreational industries are highly susceptible to the effects of invasive species. Washington is the top producer in the nation of 11 crops, including apples, cherries, pears, red raspberries, and hops. The health of these and other agricultural products are especially important to the economic well-being of the state.

Invasive species also have the potential to undermine Washington's ranking as a top seafood producer.[7] Washington seafood farms produce about 12 million pounds of fresh finfish annually. The state's oyster harvest alone produces about 8 million pounds each year and routinely ranks first or second by volume in the nation. Washington is the leading producer of farmed bivalve shellfish in the United States, generating an estimated $77 million in sales and accounting for 86 percent of the West Coast's production in 2000.[8] Such species as tunicates, the European green crab, the Japanese oyster drill, and various pathogens and parasites represent an ongoing threat to the state's aquaculture industry.

Disease spread by non-native vectors also threatens the state's wild fisheries. Washington's commercial fishing industry harvests nearly 3 billion pounds of fish and shellfish annually, worth more than $1.6 billion wholesale. This sector provides for roughly 10,000 jobs in greater Seattle and accounts for gross annual sales of more than $3.5 billion.[9]

If that were not enough, invasive species can contribute to the decline in property values. For example, lakeside properties have been known to command a lesser price if the lake is infested with plants that interfere with boating and swimming.

Washington's timber industry also is vulnerable to invaders. For example, white pine blister rust, introduced in Washington around 1910, killed off most of the state's western white pine trees. Today the western white pine is not used in commercial forestry, in spite of its excellent qualities.[10]

[7] Washington Sea Grant Web site: http://wsg.washington.edu/mas/resources/shellfish.html
[8] Washington Center for Trade and Economic Development Web site: http://www.choosewashington.com/industries/detail.asp?i=3
[9] Washington Center for Trade and Economic Development Web site: http://www.choosewashington.com/industries/detail.asp?i=3
[10] Karen Ripley, Forest Health Department, Washington Department of Natural Resources, personal communication, April 1, 2008.

Environmental Harm

Washington is one of the most biologically diverse states in the nation. Its lands are home to many species that engender the vitality of several ecosystems, from estuaries to conifer forests to interior sand dunes and deep marine waters. Washington boasts 341 birds species, 140 mammals species, more than 3,300 plant species, and 470 fish species. Fifty-three of these species are found nowhere else on earth.[11]

Exacerbating the Problem: Climate Change

Climate change worldwide is affecting habitats and the movements of plants and animals, including Washington's native habitats and biological diversity. In the coming century scientists project average annual temperatures in Washington will rise at a rate of .01 to 0.6 degrees Celsius (0.2 and 1.0 degrees Fahrenheit) every decade. Researchers also project that Pacific Northwest winters will be wetter and summers drier.[1]

Globally, spring events such as flowering, mating, and migration are occurring earlier than in years past and at an average rate of 2.3 days earlier every decade. These changes have profound effects on ecological systems and the potential to alter habitats. For example, many species will be forced to move in response to climate change; many already have moved to higher elevations or pole-ward in latitude at rates that correspond to warming trends. As climate changes, species will move in response to temperature constraints and changes in habitat, food availability, movements of predators or competitors, and new diseases and parasites.[2] This movement likely will exacerbate the problems caused by invasive species here and worldwide.

In addition, the expected change in sea levels will alter Washington's coast. For example, by 2050, Tacoma's sea level is projected to rise by about 15 inches, flooding existing habitat. Warmer water will allow warm-water fish species to expand their range and force cool- and cold-water fish species to contract theirs. Such events, potentially, would increase competition between non-native fish, such as smallmouth bass, and native salmon and trout species. Warmer temperatures also can result in insect outbreaks, damaging timber, crops, and garden plants. Already, some insect pests are expanding their ranges and others have increased from a two- to a one-year life cycle, resulting in more pest populations.[3]

In response, Washington recently completed the Interim Climate Change Adaptation Strategy,[4] which recognizes the likely increase in invasive species problems with changing climatic regimes and recommended the following actions to address them:

- The efforts of the Invasive Species Council to establish a statewide strategic plan and invasive species baseline should be supported and used as a foundation for future efforts to monitor and control pests detrimental to public health, the environment, and the agricultural sector of the state. (*Recommendation 2.1*)

- Develop strategies to respond to potential increases in undesirable exotic and invasive species, including triage strategies and rapid response to emerging circumstances. (*Recommendation 5.5*)

[1] Lawler J.J. and M. Mathias. 2007. *Climate Change and the Future of Biodiversity in Washington*. Report prepared for the Washington Biodiversity Council.
[2] Lawler J.J. and M. Mathias. 2007. *Climate Change and the Future of Biodiversity in Washington*. Report prepared for the Washington Biodiversity Council.
[3] Lawler J.J. and M. Mathias. 2007. *Climate Change and the Future of Biodiversity in Washington*. Report prepared for the Washington Biodiversity Council.
[4] http://www.ecy.wa.gov/climatechange/InterimReport/climate_08-C-PAWG.pdf

[11] *Washington Biodiversity Conservation Strategy: Sustaining Our Natural Heritage for Future Generations*, Washington Biodiversity Council, December, 2007, p. 19.

Invaders at the gate

Giant hogweed, *Heracleum mantegazzianum*, is a biennial plant that grows up to 20 feet tall and invades disturbed areas across the Pacific Northwest and northeast United States. Giant hogweed, native to Europe and Asia, arrived in the U.S. in the early 1900s as an ornamental plant. The plant is designated as a federal and state noxious weed because it produces sap that causes skin sensitivity to ultraviolet radiation and leads to blistering and severe burns. The weed's large stem is hollow with purple blotches and the pointed leaves grow up to 5 feet in width. The umbrella-shaped, white flowers can grow up to 2.5 feet in diameter.

Giant Hogweed

PHOTO COURTESY OF
THE NOXIOUS WEED CONTROL BOARD

Giant hogweed invades a variety of habitats but prefers moist, disturbed soils such as riverbanks, ditches, and railroad right-of-ways. It is found in many western Washington counties and is listed as a Class A noxious weed, meaning the law mandates its control and removal. Eliminating young plants and seedlings is a matter of pulling weeds out from moist soils. Mature plants can be dug out, but great care must be taken to avoid getting sap on the skin. Mowing is not effective for controlling mature plants. Herbicides are an option, but consult with the local weed control board for specific recommendations. The public can help stamp out giant hogweed by reporting the new local infestations to county noxious weed control boards.

Invasive species often have a detrimental impact on native species. In the past 100 years, Washington has witnessed a dramatic loss of its native species.[12] Non-native species have been identified as a principal risk to seven of Washington's nine eco-regions.[13] The rapid spread of invasive species poses a threat to an estimated 25 percent of Washington's plant species.[14] Some 40 animal species, including 15 fish species and 10 plant species in Washington, are in danger of extinction and listed under the federal Endangered Species Act.[15]

Whether introduced deliberately or inadvertently, the invaders may out-compete native species for resources, prey upon them, reduce the resiliency of ecosystems, and change the local habitat. When established, a new species can alter fundamentally the ecology of an area. For example, dense stands of highly flammable cheat grass mature in late spring and summer, usually before native species enter summer and fall dormancy. Cheat grass, then, alters the time and occurrence of large fires; this consequence can negatively effect other plant and animal species.[16]

In water ecosystems, invasive species crowd out native species, reduce open water habitat and oxygen levels, and impact flood patterns. Invasive aquatic species also alter fish habitat, disturb sediment levels from increased erosion, alter stream temperatures, and change nutrient levels.

Sometimes the control measure applied to an invasive species can adversely affect the state's natural resources. Thus, it is not just the invading animals, plants, and pathogens that degrade the environment, but also the control or eradication methods (pesticides and mechanical removal) used to stem an infestation.

[12] Biodiversity and Invasive Species in Washington State, Washington Biodiversity Council, 2007.
[13] *State of Washington Natural Heritage Plan*, Washington State Department of Natural Resources, 2003.
[14] *Washington Biodiversity Conservation Strategy: Sustaining Our Natural Heritage for Future Generations*, Washington Biodiversity Council, December, 2007, p. 29.
[15] *Washington Biodiversity Status and Threats*, Washington Biodiversity Council, January 2007, p. 16.
[16] U.S. Department of Agriculture. Plant Fact Sheet/Guide Coordination: http://plant-materials.nrcsusda.gov/intranet/pfs.html.

Public Health Endangered

Not only do invasive species pose a risk to the state's environment and economy, they also directly and indirectly endanger the health of Washington residents. Throughout history, animal-borne diseases have afflicted people. We've seen the incidence of diseases caused by pathogens such as: Severe Acute Respiratory Syndrome (SARS), "Bird Flu" and West Nile Virus - occuring in the United States, and even Washington. In recent years, concentrated agricultural production, and shrinking borders between houses and wildlife habitat have increased the likelihood of transmission. Rapid global transportation also increases the risk of transmitting such diseases around the world and compounds the effects of public health crises.

People experience other impacts, such as allergies and infections, from invasive species such as foxglove, giant hogweed, fire ants, and tansy ragwort, which are toxic.

While the Invasive Species Council recognizes the serious threat to public health, the council is not mandated to directly monitor invasive organisms that infect and affect humans. The Washington Department of Health is the lead agency, providing technical assistance to local health departments, veterinarians, and the public about diseases transmitted to humans from animals.

Control and Eradication Is Costly

It takes years of diligent efforts to eliminate harmful, aggressive non-native species. Additionally, invasive species management on private and public lands – detection, control, eradication, monitoring, and rehabilitation strategies – is expensive. Control and eradication costs are rarely a one-time expense. Management costs alone sometimes exceed the total budgets of managing agencies. Hence, affected land can and does go untreated or inadequately restored. In some cases, the high cost of managing infested public lands may be passed on to the public through higher fees and taxes.

A report and survey of state agencies and universities conducted by the Washington Invasive Species Council yielded preliminary data that begins to illuminate the financial burden caused by invasive species:

- Washington state government agencies and academic institutions spend an estimated $28 million every biennium to control and prevent the spread of invasive species.[17]
- Between 1998 and 2007, state and federal agencies provided more than $14 million in funding for cordgrass *(Spartina)* eradication programs in Washington.[18]
- Private and government sources spend about $1 million annually to control Washington's Eurasian watermilfoil (*Myriophyllum spicatum*).[1]

[17] Washington Noxious Weed Funding Report, Washington Invasive Species Council, December 2007. Washington Invasive Species Council Questionnaire Results, August, 2007.
[18] *Economic and Environmental Costs of Invasive Species in Washington State*, Washington Department of Agriculture, p.18.
[19] *Economic and Environmental Costs of Invasive Species in Washington State*, Washington Department of Agriculture, p.16.

CASE STUDY IN PREVENTION

Viral Hemorrhagic Septicemia Virus

Background: *Viral Hemorrhagic Septicemia* (VHS) is a deadly fish virus and aquatic invasive species that can enter Washington State through multiple pathways. The virus attacks and weakens the blood vessels of fish; vessel breakage and severe blood loss ultimately cause death. Worldwide, VHS is considered one of the worst and deadliest diseases for finfish. In 1988, scientists first reported the North American genotype of the VHS virus (IVa strain) in spawning salmon in the Pacific Northwest. The virus is pervasive in Pacific herring and cod populations off the coast of Alaska, Canada, and Washington. The World Organization for Animal Health lists VHS virus as a reportable disease in that it causes significant fish kills.

Situation: A new and particularly deadly strain of VHS IVb, was identified from an isolate obtained in 2003 from Lake Saint Clair, one of the smallest of the Great Lakes in the upper Midwest. In 2005, the virus was identified as the cause for a large die-off of freshwater drum and other species in Lake Ontario. Since then, the new strain has been killing off freshwater fish in other parts of the Great Lakes region. This highly contagious fish pathogen is expanding its range and the number of species it can infect. The Washington Department of Fish and Wildlife estimates 42 species, including salmonids and all major sport fish in the state, are susceptible to VHS IVb. Presently, this strain is found only in freshwater, but it may well be viable in saltwater. (Other VHS strains survive and spread in marine waters.)

The VHS IVb virus is treated as an aquatic invasive species primarily because of the many possible pathways of introduction. One pathway is infected live bait, such as leeches harvested in the Great Lakes region. The virus, could be contained in the standing raw water of transported watercraft – bait and fish wells and ballast tanks of wakeboard boats and could easily cross the Washington border. In Wisconsin, officials approached the problem (a likely introduction by watercraft) by making it illegal to transfer lake or river water, contained in various craft and vessels, from one water body to another. They also prohibited the transfer of live bait used in one lake for use in another lake.

Conclusion: The new strain of VHS IVb is a resilient aquatic invasive species that causes disease in multiple species of fish, along with those fish from public and private aquaculture and hatcheries. Thwarting the pathogenic strain of this viral species – preventing its introduction to Washington – will require coordination across multiple disciplines. The Department of Fish and Wildlife has one of the best fish health systems in the nation. The agency already has instituted rigorous controls to keep the virus out of the state and private sector hatcheries. Additionally, the agency's recreational watercraft management plan monitors for the virus as part of the aquatic nuisance unit's prevention efforts against zebra and quagga mussel introductions. To get a better handle on the new strain of the virus, key regulatory agencies and partners need to further investigate bait pathway and other avenues of introduction. A coordination meeting (Fall 2008) is being planned between the state's Aquatic Nuisance Species Committee and the Pacific Northwest Fish Health Protection Committee.

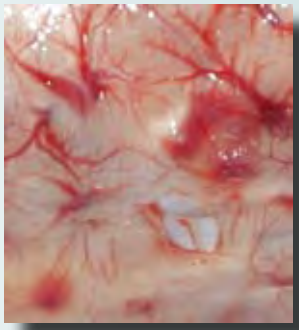
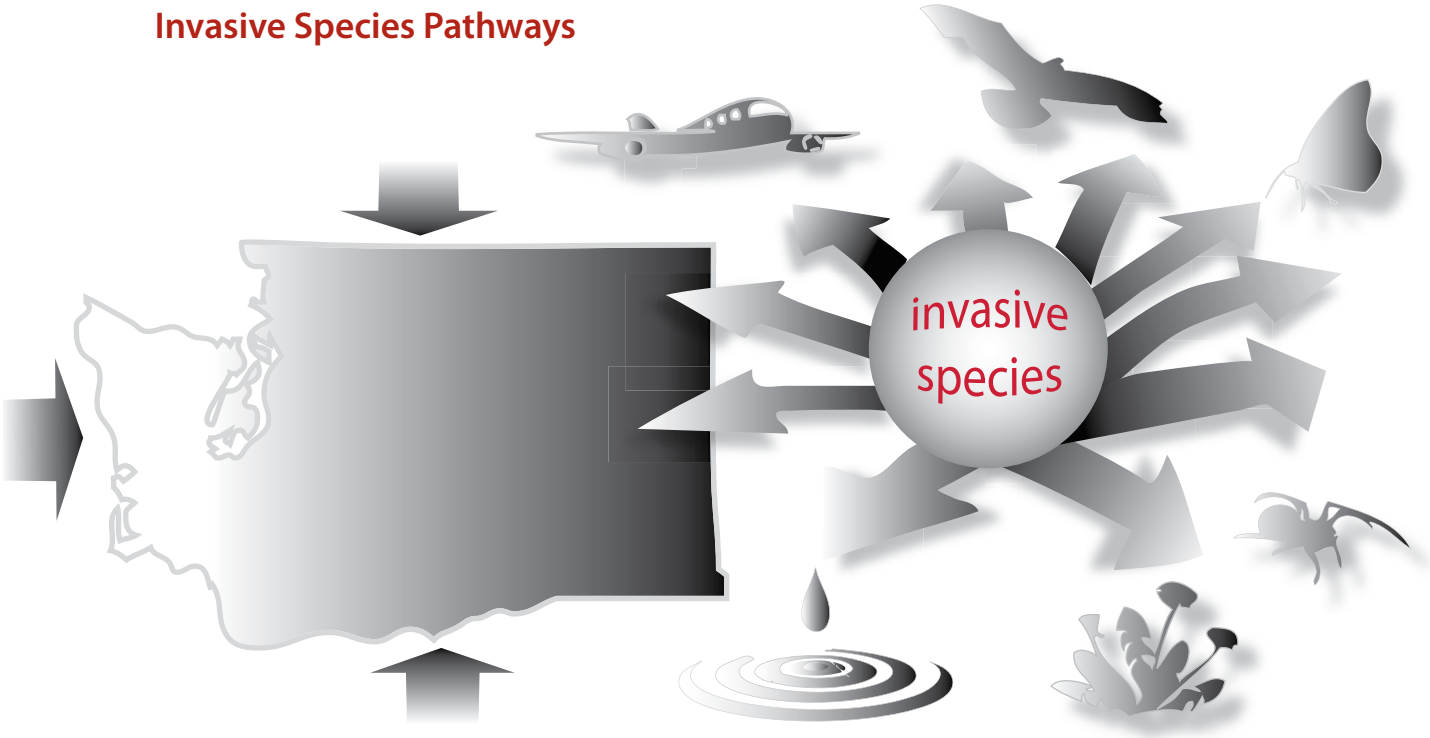


PHOTO COURTESY OF JIM WINTON.

VHS virus attack on fish

PHOTO COURTESY OF GARTH TRAXLER.

Invasive Species Pathways



Transportation:

Air (planes, seaplanes, helicopters)
Water/aquatic (boat hulls, ballast water)
Land/terrestrial (cars, buses, ATVs, trains, subways, metros, monorails, construction and firefighting vehicles, hikers, horses, pets
Shipping (packing materials such as pallets and crates, containers interiors and exteriors, mail and internet)
Travel/Tourism/Recreation (humans, baggage/gear, pets, plants, food)

Living Industry Pathways:

Plants aquatic and terrestrial (importation of plants for research, includes seeds, bulbs, and roots, potting soils, plant trade such as agriculture, nursery and landscape)
Food (live seafood, plant and plant parts as food)
Non Food Animal Pathways (aquarium trade, animals for research, bait)
Nonliving animal and plant related pathways (frozen seafood, firewood, mulch, straw)

Miscellaneous Pathways:

Biocontrol (release of species to control another which then becomes invasive itself)
Interconnected waterways (freshwater canals, estuaries, domestic waste streams)
Natural Migration (ocean currents, wind patterns, migratory birds)
Ecosystem disturbance (logging, prescribed burning)
Garbage (landfill and transport of garbage)

Bolstering Washington's Defenses Against Invaders

The Washington Invasive Species Council's strategic plan is a vital first step towards a cohesive approach to managing the state's problem of invasive species. In 2006, the Legislature created the council through Engrossed Senate Substitute Bill 5385 and tasked it with improving statewide coordination to combat invasive species and the threat they represent to Washington's economy, environment, and natural resources.

The council's primary focus, and the purpose of this plan, is to foster strategic, unified, and coordinated approaches to minimize the detrimental effects of invasive species.

For resource agencies and their partners that already address the problem, the plan establishes clear priorities in coordination and information sharing; prevention, management, and eradication efforts; and education to increase awareness of the problem and its solutions. The plan defines actions intended to mend gaps in the state's defenses against invasive species. Interagency coordination, new partnerships, and opportunities to leverage existing revenue and secure new funds will help the council realize its overarching vision as stated in the following strategic goals:

1. **To foster cooperation, coordination, and communication among government agencies, stakeholders, land-managing agencies, private landowners, and tribes.**
2. **To prevent the introduction and establishment of invasive species and reduce their adverse impacts on Washington's environment, economy, and human health.**
3. **To refine and coordinate statewide capacity to identify, report, and respond to both newly discovered and existing invasive infestations.**
4. **To assist those who manage invasive species through containment, control, and eradication efforts.**
5. **To support the restoration and rehabilitation of key ecosystems adversely affected by invasive species.**

While the five goals embody the council's vision, the plan's recommendations and related actions describe the tools needed to bolster the state's current capabilities to control and manage invasive species. (Please note: Each goal is assigned a color and number. Each recommendation supports one or more goals, as indicated in the following pages.)

The recommendations represent short- and long-term initiatives and are a direct response to existing technical, funding, education, and regulatory obstacles that inhibit Washington's resource agencies from effectively battling a host of plant and animal invaders. The recommendations were developed in conjunction with a variety of organizations and industry sectors to address information voids, coordination gaps, funding issues, and technical constraints in this field of work. Feedback from stakeholder groups, a public comment process, and analyses by inter-agency work groups, enabled the council to craft nearly two dozen recommendations that will advance a cohesive, statewide strategy for managing invasive species.

Everyone living in Washington has a stake in reducing the harmful effects of invading plants and animals. Ultimately, the success of Washington's strategic plan to address this growing problem will hinge on the collaborative efforts of public agencies – and active participation by the public. The landowner, boater, gardener, consumer, traveler, and others all need to grasp the problem and support the necessary solutions to protect the state's valuable resources. The council realizes that education and outreach programs will become an important line of defense for invasive species prevention and control. Empowering individuals to assist resource agencies and conservationists may be the essential element in securing the passage of legislation and fighting invasive species on the ground.

Washington isn't starting from scratch. The council recognizes the significant work accomplished by both public and private agencies and organizations to minimize the effects of invasive species. For example, noxious weed control boards at the state and county level carry out programs that establish Washington as a national leader in the battle against invasive plants. Inter-agency committees and task forces routinely meet to address impending statewide threats as well as infestations of aquatic species, insects, and plants. By building on existing and successful models, the council and its partners hope to bolster the state's effectiveness in coping with invasive species.

To achieve the overarching goals, the council and its partners – by way of recommendations and related action items - have a clear road map to:

- Determine the breadth and depth of the invasive species threat in Washington.
- Establish clear, statewide priorities for the short- and long-term.
- Improve the state's capability to prevent new infestations and act quickly and decisively upon discovering new threats.
- Strengthen the state's overall control efforts for established species infestations.
- Communicate the gravity of invasive species and, in so doing change public opinion and behaviors, and alter the views of decision makers.

Recommendations

In the following section, 22 recommendations appear as short-and long-term initiatives. The short-term recommendations represent immediate priorities highlighted by council members and public participants. As budgets allow, the short-term recommendations will occur concurrently. The long-term recommendations and related actions cannot be accomplished in the next three years; however, the council expects progress will occur on several long-term measures.

Bullfrog *Rana catesbeiana* is native to central and eastern United States. This non-native frog was introduced to the western United States during trout stockings and also through the aquarium trade. Bullfrogs compete with and prey on native species.

PHOTO COURTESY OF THE NOXIOUS WEED CONTROL BOARD

Short-term Recommendations (0-3 years)

The council ranked the five short-term recommendations as its highest priorities. These recommendations, if implemented, would provide the foundation necessary for the council to meet its legislative mandate of facilitating more effective and efficient invasive species management in the state. Some short-term recommendations fit neatly with the council's legislative mandate. Other recommendations likely will be facilitated by the council with specific tasks (actions) accomplished by multiple partners. When the time comes to execute specific actions, the council and its partners will work closely to identify roles and responsibilities.

GOAL 3

To refine and coordinate statewide capacity to identify, report, and respond to both newly discovered and existing invasive infestations.

Problem Statement: Washington is fortunate to have programs in place to monitor and respond to many invasive species. However, there are many others for which there is little understanding of the nature and extent of the infestations and the necessary tools to address them. Without such knowledge it is difficult for the council, or others, to fully define the scope of the invasive species problem, as well as the state's capacity to measure its progress (through specifically implemented actions) to combat them. The council recommends compiling existing data on invasive species and programs into a geospatial data system. This kind of data system would pinpoint the location and spread of invasive species statewide, indicate those programs in place to address them, and inform decisions concerning new programs needed to combat problems. This information will provide the council, and others, with a statewide perspective on the nature and extent of the problem as well as a mechanism to measure progress in controlling them.

RECOMMENDATION NO. 1

Compile existing information and conduct a baseline assessment of invasive species information and programs in Washington. This baseline would serve as an initial step towards coordinating a statewide, strategic response to the threat of invasive species. The baseline will:

- ***Provide analysis of the worst invasive species in the state, the locations of the areas most affected, pathways, and resources most at risk.***
- ***Identify public and private efforts to prevent, control, or eradicate invasive species.***
- ***Inform public and private entities as it improves the state's ability to coordinate resources.***

Action 1.1 Develop council budget package, in coordination with partners, to compile existing information on species locations and programs in place.

Action 1.2 Work with partners to compile existing data.

Action 1.3 Perform functional gap analysis on state's capacity to address problem.

Action 1.4 Report back to council on necessary steps to address gaps.

Action 1.5 Develop a system and process to measure results of initial baseline assessment and update data to ensure invasive species programs and progress related to infestations can be analyzed.

GOAL 3

To refine and coordinate statewide capacity to identify, report, and respond to both newly discovered and existing invasive infestations.

Problem Statement: All too often, state agencies lack information to identify, respond to, or control invasive species infestations. While data and information exists on many Web sites and in agencies and universities, it is scattered as well as difficult to access or understand. The council recommends creating a Web-based clearinghouse to disseminate information on all aspects of invasive species management. As identified by many who commented during the council's public comment period, the clearinghouse would be an extremely useful tool for those involved in invasive species issues. The online clearinghouse would become a central hub of information including listings of known invasive species, potential funding sources, Web sites, risk assessments, control methods, and so forth all relating to invasive species work.

RECOMMENDATION NO. 2

Develop a Web-based information clearinghouse as the interchange for all existing invasive species information statewide.

Action 2.1 Develop a council budget package to support the development of the Web-based infrastructure necessary to house the clearinghouse.

Action 2.2 Form a team to implement consistent, basic reporting format and standards for data input and review all information for technical accuracy before launching the Web site.

Action 2.3 Working with partners, identify information and links to populate the clearinghouse.

Action 2.4 Create the framework for the Web site, including existing resource lists.

Action 2.5 Publicize clearinghouse and adaptively manage content.

GOAL 1

To foster cooperation, coordination, and communication among government agencies, stakeholders, land-managing agencies, private landowners, and tribes.

Problem Statement: Those on the front lines of invasive species battles realize bolstering public awareness of the problem and providing education will be the key in overcoming serious threats. Most people remain unaware of the effects of the state's invasive species. They do not realize that ordinary individuals play a role in the introduction and establishment of plant and animal invaders. But widespread knowledge and simple changes in behavior can prevent the spread of invasive species.

RECOMMENDATION NO. 3

Support targeted outreach campaigns to educate both public and private sectors on the damage caused by invasive species.

Action 3.1 Develop common message and speaking points for council members to use when discussing invasive species.

Action 3.2 Inventory and identify partners' most effective educational tools and dissemination tactics. Coordinate educational programs that are successful in the state and region.

Action 3.3 Encourage and leverage the participation of those in the private sector, academia, and the public to help with education.

Action 3.4 Coordinate with Oregon in interpreting results of Oregon Public Opinion Surveys and invasive species focus group work*.

* In a joint effort, Oregon Sea Grant, the Oregon Invasive Species Council, and Oregon Public Broadcasting conducted a statewide public opinion survey about invasive species and focus group interviews with boaters, hunters, gardeners, and others whose activities may put them in contact with plant or animal invaders.

GOAL 4

To assist those who manage invasive species through containment, control, and eradication efforts, and provide the necessary tools to respond.

Problem Statement: Managers need to respond quickly and efficiently to prevent the introduction and spread of invasive species. Precious time can be lost during the process of determining authority or funding, obtaining permits, and coordinating responses. In addition, managers may not have access to the tools needed to respond with the utmost effectiveness and least amount of environmental disturbance and cost. The council recommends enhancing communication channels to facilitate rapid responses, when needed, and better coordination.

RECOMMENDATION NO. 4

Increase and enhance communication across all entities to ensure coordinated approaches are supported and tools are accessible to address invasive species issues.

Action 4.1 Build capacity to address the threat of invasive species in the Puget Sound ecosystem by ensuring that the council's key strategies are integrated with the Puget Sound Partnership's 2020 Action Agenda[20] and into the science strategy that the Puget Sound Science Panel is developing.

Action 4.2 Ensure that new permits are available and processes expedited to enable quick responses for all likely control actions.

Action 4.3 Clarify jurisdiction and authority between federal, county, and state agencies to support coordination across boundaries.

Action 4.4 Bring together tribal and environmental protection entities, and state and local coordinators to develop a process for coordination.

[20] The Puget Sound Partnership is a community effort, engaging elected and public officials, tribal and business leaders, scientists, environmentalists, and, most importantly - citizens. The Action Agenda will be the roadmap to health for the Puget Sound. It will prioritize cleanup and improvement projects, coordinate federal, state, local, tribal, and private resources, and ensure that all entities are working cooperatively.

GOAL 2

To prevent the introduction and establishment of invasive species and reduce their adverse impacts on Washington's environment, economy, and human health through enhanced early detection and rapid response capabilities.

Problem Statement: Early action is critical to stop the introduction and spread of invasive species. Agency funds often are tied in statute to specific species and discretionary funds may be inadequate or limited in their use for early response. Limited communication also inhibits agencies from responding quickly.

RECOMMENDATION NO. 5

Enhance capacity to respond to invasive species by improving agencies' access to emergency funding and building on existing efforts to develop an interagency early detection and rapid response network.

Action 5.1 Establish a protocol and flowchart to support an early detection and rapid response network. Conduct tabletop exercises to enhance communications of the most efficient processes.

Action 5.2 Establish a state fund for emergency, rapid response.

Action 5.3 Identify existing emergency funds and enhance access to them.

Action 5.4 Use existing early detection and rapid response network models to build a functioning, statewide system with enhanced capacity for detection, verification, assessment, planning, and response.

Long-term Recommendations (0-20 years)

The council intends to work concurrently on both short- and long-term recommendations in order to maximize the state's efforts to prevent, manage, and control invasive species. The council also recognizes that the complexity of the recommendations that follow will require more time to initiate and, ultimately, to accomplish. (Please note: The following recommendations are not listed in order of priority. Each goal is assigned a color and number. Each recommendation supports one or more goals as indicated in the following pages.)

The **Asian gypsy moth**, a relative of the European gypsy moth, entered the United States in 1992 in a shipment of grain. A massive effort by federal and state agencies apparently wiped most of them out. It is one of the most notorious pests of hardwood trees. Unlike its European cousin, the Asian gypsy moth (*Lymantria dispar*), defoliates conifers in addition to hardwoods, and spreads rapidly because the females can fly. The gypsy moth has established itself throughout the northeastern U.S. Small infestations occur sporadically in Utah, Oregon, Washington, California, and British Columbia. But when an infestation erupts, state and local agencies act and successfully eradicate the problem.

In the early 1990s, the United States Department of Agriculture estimated that if no suppression actions were taken, potential losses to recreation, tourism, and commercial forestry in western states could reach $3.5 billion dollars by 2040. The Washington Department of Agriculture spends between $900,000 and 1.2 million to survey and eradicate gypsy moth in Washington.

Gypsy Moth

PHOTOS COURTESY OF THE WASHINGTON DEPARTMENT OF AGRICULTURE

CASE STUDY

THE CASE FOR EARLY DETECTION AND RAPID RESPONSE

Cordgrass (*Spartina*)

Background: *Spartina alterniflora* is a fast-growing, rapidly-spreading perennial grass found in estuaries. Native to North America's Atlantic and Gulf coasts, the grass probably came to the West Coast in the late 19th century in shipments of oyster transplants that may have been packed in *Spartina*. Once established, *Spartina* or cordgrass is a strong competitor. The plants grow in tight clusters, or clones, that trap sediment and raise the elevation of the substrate. Left alone, *Spartina* clones eventually coalesce and grow together, forming a meadow of high marsh grass where once there were mud flats. The worst *Spartina* infestation is in Willapa Bay, arguably the most productive commercial oyster-producing area in Washington. Invasive cordgrass also has made inroads into Puget Sound, Grays Harbor, and rivers on the Olympic Peninsula. Uncontrolled, *Spartina* will crowd out native species, reduce biodiversity and alter wetland ecosystems. As a direct result of these events, invertebrates that live in mud flats disappear as their habitat is overgrown. In turn, food sources shrink for the birds that feed on invertebrates.

Situation: For decades, *Spartina* has threatened to overtake the inter-tidal mud flats and natural salt marshes of Willapa Bay. The bay provides habitat for thousands of shorebirds, waterfowl, and other animals. During spring and fall migrations, more than 100,000 shorebirds feed at Willapa, making the bay one of the top ten coastal habitats for shorebirds between Alaska and Mexico, according to The Nature Conservancy. In 1970, *Spartina* clearly had established itself in the bay and covered about 75 acres. By 1988, *Spartina* infested roughly 1,200 acres. In 2003, the peak of the infestation, more than 8,500 solid acres of *Spartina* covered 20,000-plus acres of the bay's intertidal zone.

The state and federal response to managing *Spartina* came slowly. Starting in the early 1990s – long after *Spartina* had been established – agencies began efforts to manage the noxious weed. Agencies (the state Departments of Natural Resources, Fish and Wildlife, Agriculture and the U.S. Fish and Wildlife Service) used mechanical, chemical, and biological techniques to control *Spartina*. Resource managers went forward without the certain knowledge of just how to kill the weed, let alone decimate more than 8,500 acres of cordgrass. In the early days, the control effort amounted to trial and error. In fact, techniques used to stem the

the invasion were inefficient and met with varying degrees of success. Some 15 years ago, field workers were applying herbicide (glyphosate) using small-scale tools, such as backpack sprayers; small crews of three to four people were using brush cutters to treat massive *Spartina* meadows. Boats were unable to travel across the mud flats so workers often were forced to walk great distances, in soupy mud, just to reach and treat *Spartina*.

Little by little, agencies developed more efficient and effective tools. They turned to airboats to traverse mud flats; high-pressure spray systems treated greater areas of infestation in a shorter amount of time; and a new herbicide, imazapyr, yielded better and more consistent results. With the new herbicide also came aerial (helicopter) treatment of huge *Spartina* meadows. For the first time, and in just one or two days, crews treated massive *Spartina* meadows in their entirety. After years of little progress, the control effort had begun to reduce the size of the infestation. Today the infestation totals about 1,000 acres of the 80,000-acre bay.

Conclusion: If state and federal agencies had begun treating *Spartina* in the 1970s when the grass covered a mere 75 acres of Willapa Bay, the cost of eradication would have been significantly less. And, if land managers had known then what they know today, field crews battling the infestation likely could have destroyed the noxious weed in a matter of weeks. Instead, stemming the *Spartina* problem took a full 10 years and a significant financial investment. To date, the price tag associated with eradicating *Spartina* from Willapa Bay is about $14 million. The lesson is clear: Despite agencies' lack of knowledge in how to best treat *Spartina* and inadequate early tools for stopping the infestation, a faster interagency response would have resulted in greater progress in less time and for less expense.

Cordgrass (*Spartina*)

PHOTO COURTESY OF WASHINGTON DEPARTMENT OF NATURAL RESOURCES

GOAL 2

To foster cooperation, coordination, and communication among government agencies, stakeholders, land-managing agencies, private land owners, and tribes.

Problem Statement: The council has observed a great willingness among agencies, stakeholders, and tribes to cooperate on invasive species management. Washington must take significant steps now to build upon this goodwill and ensure coordination occurs across larger biological, geographic, and political boundaries. The management of invasive species will be as effective as the combined and coordinated efforts of all responsible parties. Whether an invasive species has crossed a neighbor's fence, spread into the next watershed, or migrated to another county, solving the problem likely will involve coordination between land managers at the state, county, federal, and tribal government levels as well as private landowners.

RECOMMENDATION NO. 6

Coordinate with state and regional partners.

Action 6.1 Partner with Canada, Western Weed Coordinating Committee, [21] 100th Meridian Initiative, [22] vand the Western Regional Panel on Aquatic Nuisance Species. [23]

Action 6.2 Partner with Oregon and Idaho invasive species councils to share research results and leverage financial and staff resources.

Action 6.3 Work with state and regional partners, including the invasive species councils of Idaho and Oregon, to develop regional policy recommendations.

RECOMMENDATION NO. 7

Encourage and leverage the participation of those in business, academia, non-profit groups, and agencies who have invasive species expertise.

Action 7.1 Develop a structure for cooperative, shared resources, and joint responsibilities to initiate rapid response activities for specific invasive species and issues.

Action 7.2 Include and maintain stakeholder involvement when coordinating and prioritizing management efforts.

[21] The Western Weed Coordinating Committee is a voluntary organization designed to help coordinate noxious weed management programs and efforts among state and federal agencies.

[22] The 100th Meridian Initiative is a cooperative effort between state, provincial, and federal agencies to prevent the westward spread of zebra mussels and other aquatic nuisance species in North America.

[23] The Western Regional Panel on Aquatic Nuisance Species was formed in 1997 to help limit the introduction, spread and impacts of aquatic nuisance species into the western region of North America. This panel of public and private entities was formed by a provision in the National Invasive Species Act of 1996 (P.L. 101-636), the amendment to the 1990 Act.

Action 7.3 Encourage businesses to actively participate in invasive species prevention and detection.

Action 7.4 Support communications and coordination among land managers, researchers, and the Washington State University Cooperative Extension community; encourage a multi-disciplinary group to convene and discuss research needs and the development of new tools.

Action 7.5 Coordinate with the Washington Biodiversity Council, [24] Washington Aquatic Nuisance Species Committee, [25] and Washington Noxious Weed Control Board, [26] to ensure an efficient and effective approach to invasive species.

Action 7.6 Coordinate with the Puget Sound Partnership science panel [27] to help develop the capacity for invasive species monitoring and research in the Puget Sound region.

Action 7.7 Encourage strong working relationships with private landowners and organizations to form a voluntary program that leverages resources through grants as well as volunteer labor and expertise.

Action 7.8 Support research related to invasive species and climate change to better anticipate threats and strategically prevent their negative consequences.

RECOMMENDATION NO. 8

Build on existing efforts to develop, support, and implement an interagency, early detection and rapid response network that has the capacity to detect new infestations of invasive species, and rapidly contain or eradicate the infestations.

Action 8.1 Create a toll-free number and an electronic reporting system for people to report potential invasive species to the network.

Action 8.2 Establish an interagency task force to consolidate and coordinate resources to staff the network. Develop a memorandum of understanding that defines partners' roles and responsibilities and, in so doing, ensures successful responses to reported invasive species. Launch and publicize the network and conduct response test drills.

[24] Governor Chris Gregoire extended the Washington Biodiversity council until June 30, 2010 through Executive Order 08-02. The council is charged with coordinating implementation of early action items from the newly produced *Washington Biodiversity Conservation Strategy: Sustaining our Natural Heritage for Future Generations.*

[25] Created through Revised Code of Washington 77.60.130 the Aquatic Nuisance Species Committee fosters state, federal, tribal, and private cooperation on aquatic nuisance species issues.

[26] The Washington Noxious Weed Control Board advises the Washington Department of Agriculture about noxious weed control in Washington and serves as the state's noxious weed coordination center. Through its actions and policy decisions, it coordinates and supports the activities of the county noxious weed control boards and weed districts of Washington.

[27] The science panel's expertise and advice are critical to the Puget Sound Partnerships efforts to develop a comprehensive plan to restore Puget Sound.

Action 8.3 Increase the speed of notification to key resource agencies when a new invasive species is found. Create e-mail distribution lists to send notification of discoveries.

Action 8.4 Establish a group to develop rapid response authority for new threats from invasive species.

RECOMMENDATION NO. 9

Increase and enhance communication across all entities to ensure coordinated approaches are supported and tools are accessible to address invasive species issues.

Action 9.1 Support the development of new tools to manage invasive species, such as biological, cultural, chemical, and physical controls, through research and other means. Experiment with tools such as the Washington Biodiversity Council's Conservation Opportunity Framework[28] to determine their effectiveness.

Action 9.2 Have the Washington Invasive Species Council serve as the coordinating body on federal initiatives.

Action 9.3 Clarify tribal authority related to fee lands within reservations and boundary areas.

Action 9.4 Identify the council as the forum for voicing state preemption issues related to invasive species.

[28] The Washington Biodiversity Council invested in the development of a comprehensive set of maps, which assess the distribution of species, plant communities, ecological systems, and human population trends across the state, to identify regional opportunities for biodiversity conservation.

GOAL 2

To prevent new introductions, refine and coordinate statewide capacity to identify, report, and respond to both newly discovered and existing invasive species.

GOAL 5

To support the restoration and rehabilitation of key ecosystems adversely affected by invasive species.

Problem Statement: The state needs reliable information on emerging threats and new species arriving here, gathered through risk analyses. Without it, no intervention is likely to be either timely or successful. Early detection of new infestations requires vigilance and regular monitoring of managed areas and surrounding ecosystems. A prompt and coordinated response to a new species can reduce environmental and economic impacts at a lower financial cost, and result in less damage to the state's resources. Government agencies charged with protecting Washington's borders do an admirable job with the available resources. However, the state remains vulnerable to new threats. New invaders arrive and will continue to arrive in times of stagnating and fluctuating budgets. A cohesive, statewide strategy to identify new species and prevent their establishment will enhance the efforts of all groups and agencies working to maintain the biological health and richness of Washington. Stopping an invasive species – either before it reaches the state, or shortly after it arrives – is far less expensive than trying to remove the invader once it becomes established.

RECOMMENDATION NO. 10

Evaluate and recognize current methods for preventing the introduction and spread of invasive species.

Action 10.1 Encourage the use of invasive species management in habitat restoration projects.

Action 10.2 With partners, conduct analyses of current methods and practices for efficacy and cost-effectiveness. As necessary, strongly encourage the development and incorporation of new methods and practices to prevent the introduction of invasive species.

Action 10.3 Promote best management practices regarding the use of equipment and proper methods of decontamination when moving between sites.

RECOMMENDATION NO. 11

Compile and assess existing approaches to risk analysis and suggest a standard approach for use by state agencies. Expand the use of risk analyses to prepare for future threats.

Action 11.1 Convene scientific advisory panels to develop risk analyses for unexpected arrivals; expand the state risk analyses to include probable and potential changes in species and categories of organisms that enter the state, in part the result of global climate change.

Action 11.2 Recommend guidelines for state risk analysis documents.

Action 11.3 Make risk analyses from county, state, and regional partners available online (clearinghouse Web site, Recommendation No. 2).

RECOMMENDATION NO. 12

Conduct a gap analysis of entry pathways to identify those in need of greater protection.

Note: Invasive species arrive along pathways as diverse as ship ballast water, boat hulls, truck wheels and chassis, imported products, airplane holds, and recreational gear such as fishing waders.

Action 12.1 Work with partners to identify gaps in protection; close gaps in regulatory authority, funding, and other areas.

Action 12.2 Support the work of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, which conducts vital work related to importation pathways.

RECOMMENDATION NO. 13

Encourage the expansion of and emphasis on invasive species surveillance efforts.

Action 13.1 Conduct a gap analysis of existing surveillance efforts. Use the results from the pathway gap analysis (Recommendation No. 12) and the state risk analyses to focus surveillance efforts. Link results from all analyses to the clearinghouse Web site.

Action 13.2 Work with outdoor recreation groups to engage volunteers to detect invasive species. (The groups might include the Mountaineers, Audubon Society, and other associations.)

Action 13.3 Review successful models for ongoing surveillance, such as a natural history survey.

RECOMMENDATION NO. 14

Improve and expand diagnostic capabilities for specialists in the field including equipment.

Note: This is a universal issue for all specialties and levels of invasive species work.

Action 14.1 Build a database of taxonomic experts and make it available online. (Web clearinghouse, Recommendation No. 2).

Action 14.2 Train agency staff, volunteers, and private sector individuals associated with invasive species management programs to identify key species.

Action 14.3 Highlight the need for basic and applied research and support ongoing efforts through education and outreach.

RECOMMENDATION NO. 15

Use the concept of a scorecard to continue ongoing evaluations of management efforts. Such a scorecard would inform land and public resource managers and indicate the need for project enhancements to protect Washington from invasive species.

Action 15.1 In partnership with the Washington Biodiversity Council, develop a scorecard, start a peer review process to analyze the scorecard, and develop comprehensive biennial reports on the state's efforts to control, contain, and eradicate harmful invasive species.

Action 15.2 Monitor selected invasive species management projects to determine their effectiveness at reducing the size of infestations and the rate of spread.

Action 15.3 Assess all agency invasive species programs for effectiveness.

Action 15.4 Engage the research community to ensure ongoing research to support invasive species management efforts, based on gaps identified by the scorecard.

RECOMMENDATION NO. 16

Use risk analysis and economic models to prioritize the activities used for invasive species management.

Action 16.1 Conduct a comprehensive risk analysis for all invaders, based on existing information, and for the purpose of identifying priority species and focus areas.

Action 16.2 Research and develop appropriate economic models to inform prioritization actions.

RECOMMENDATION NO. 17

Consider the need for restoration in all invasive species management plans; take actions during project implementation to protect intact ecosystems and restore degraded ones.

Action 17.1 Build restoration funding into agency management plans and include long-term maintenance and monitoring activities, as appropriate.

Action 17.2 Compile information on restoration and rehabilitation efforts and build a history of successful restoration practices for placement on the council's clearinghouse Web site. (Recommendation No. 2)

Action 17.3 Partner with scientific organizations and academia to support and strengthen policies that incorporate the best available science for using native species in restoration. Topics for new and existing policies include establishment methods, species community relationships, genetic suitability, and site-specific information for proposed restoration plans.

Action 17.4 Encourage the development of state, county, or other municipality nurseries that specialize in wetland and native plants nurseries.

Yellow Starthistle

Centaurea solstitialis is a winter annual that can form dense impenetrable stands that displace desirable vegetation in natural areas, rangelands, and other places. Yellow starthistle interferes with livestock grazing and foraging in rangeland, pastures and grasslands. Dense infestations can displace native plants and animals, and threaten natural ecosystems.

PHOTO COURTESY OF THE NOXIOUS WEED CONTROL BOARD

GOAL 1

To foster cooperation, coordination, and communication among government agencies, stakeholders, land-managing agencies, private landowners, and tribes.

GOAL 5

To support the restoration and rehabilitation of key ecosystems adversely affected by invasive species.

Problem Statement: Public awareness and education is a large piece of the invasive species puzzle. As stated in the short-term recommendations, widespread public knowledge and simple changes in public behavior will help resource agencies and their partners control existing problems as well as prevent and stem new threats by invading plants and animals.

RECOMMENDATION NO. 18

Support educational and outreach materials that encourage the use of native species in restoration.

Action 18.1 Increase outreach to wholesale and retail nurseries on the need to promote desired native species and discourage the sale of non-native, invasive plants.

Action 18.2 Collaborate with groups such as native plant societies, master gardeners, state agencies, and universities to develop and distribute educational materials.

Action 18.3 Partner with state Department of Transportation and others to identify areas for viewing where landscape design and management techniques use native plants.

Action 18.4 Support research on native species suitable for restoration including plant species resistance to disease and insects, restoration and disturbance ecology, and behavior of intact and disturbed ecosystems.

RECOMMENDATION NO. 19

Support targeted outreach campaigns to educate both public and private sectors on the damage and potential harm caused by invasive species.

Action 19.1 Define user groups and enlist their help to identify specific targeted audiences for each user group (Examples of user groups include: pet and aquarium trade, plant importers, boaters, personal watercraft users, backcountry equestrians, all-terrain vehicle owners, etc.) Increase effectiveness by identifing potential educational overlaps between audiences and duplicative educational efforts.

Action 19.2 Coordinate a statewide, education outreach campaign with tools aimed at specified audiences. This will be a multifaceted education campaign that broadcasts clear and consistent messages related to invasive species work.

Action 19.3 Support the creation of a quarterly newsletter to provide managers and field staff with information on local and regional invasive species issues.

Butterfly Bush

Buddleia, a popular ornamental shrub with showy flowers, has more than 100 species and cultivars. It is widely established along roadsides (prolific along Interstate 5), natural areas and gardens throughout western Washington. The bush forms dense thickets, especially along river banks and river gravel bars, which then crowd out native vegetation.

PHOTO COURTESY OF TIM MILLER

GOAL 1

To foster cooperation, coordination, and communication among government agencies, stakeholders, land-managing agencies, private landowners, and tribes.

GOAL 4

To assist those who manage invasive species through containment, control, and eradication efforts.

Problem Statement: The state lacks adequate, stable funding on many invasive species fronts. More funding is needed for (1) early detection and rapid response; (2) programs to control and eradicate invasive plants and animals already in Washington; (3) monitoring, managing, and researching the problem at large; and (4) education and outreach efforts. The state also lacks dedicated, stable funding to enhance long-term invasive species programs.

RECOMMENDATION NO. 20

Develop consistent criteria to track invasive species funding and spending among state and local agencies and universities. Work with the Office of Financial Management and state agencies to track spending data to fully understand the amount of state revenue being spent to manage species threats; determine how the state and others spend existing invasive species funds; and inform future budget, planning, and implementation needs.

Action 20.1 Develop accurate and consistent language to define the project type (survey versus prevention or containment versus eradication) and clear, categorical definitions of invasive species work (such as vegetation management or invasive species control).

Action 20.2 Recommend an "invasive species control" budget line item for all land and resource management agencies. Encourage agency reporting on the use of this funding.

Action 20.3 Expand information on the state's spending related to invasive species and include federal, tribal, county, and non-governmental organizations. Use data from existing sources to track spending of non-state resources, such as federal and private grants.

RECOMMENDATION NO. 21

Improve efficiencies in spending across state, federal, and local agencies.

Action 21.1 Expand partnerships to control or manage invasive species across jurisdictional boundaries.

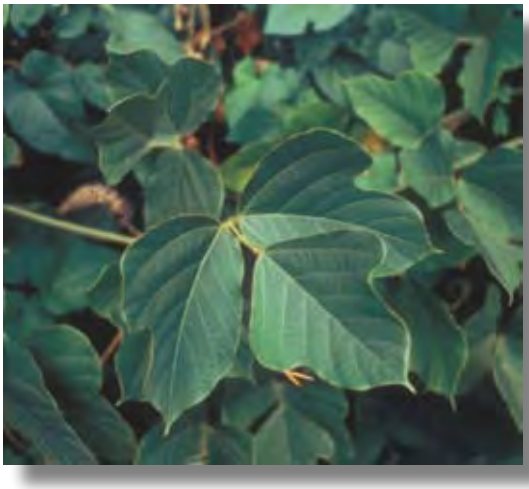
Action 21.2 Support the use of coordination success models such as coordinated weed management areas and regional coordination entities (For example, Western Regional Panel on Aquatic Nuisance Species, Western Weed Coordinating Committee, and the 100th Meridian Initiative.)

Action 21.3 Promote funding and legislative authority of the Washington Noxious Weed Control Board to help promote and enforce its programs.

Action 21.4 Encourage the development of an integrated, fiscal approach to invasive species management, one that seeks to link budgets across agencies responsible for managing invasive species.

Action 21.5 Encourage regional funding that targets specific invasive species.

Action 21.6 Increase funding and protect existing funding sources to state agencies for the prevention and control of invasive species.



Kudzu

Pueraria is the genus of more than 20 species of this high climbing, deciduous woody vine. In the southeastern United States, kudzu blankets forests, abandoned houses, and anything that might be in its path. Kudzu covers some 2 million acres across the southern United States alone. Kudzu was found in Washington's Clark County a few years ago; the county successfully eradicated the species, but it remains an impending threat to the state.

PHOTO COURTESY OF THE NOXIOUS WEED CONTROL BOARD

GOAL 1 To foster cooperation, coordination, and communication among government agencies, stakeholders, land-managing agencies, private landowners, and tribes.

GOAL 2 To prevent new introductions and establishment of invasive species and reduce their adverse impacts on Washington's environment, economy, and human health.

GOAL 3 To refine and coordinate statement capacity to identify, report, and respond to both newly discovered and existing invasive infestations.

GOAL 4 To assist those who manage invasive species through containment, control, and eradication efforts.

Problem Statement: Washington's invasive species regulations and management evolved during the past 125 years. Regulatory responsibility for invasive species management is assigned to agencies based on their legislative mandates. This fragmented approach to designating authority and assigning duties, ultimately, gave rise to a somewhat disjointed system for managing and funding invasive species. When a new invasive species arrives, it is sometimes unclear where the primary responsibility for response rests. Even when regulatory authority is clear, an agency poised to take action may lack flexible funding with which to tackle the problem.

In the past decade, the Legislature passed several bills to help agencies tackle invasive animals. However, funding occurs in a piecemeal fashion, and often is tied to commodity and pathway-based needs.[29] The state's management efforts, funding levels, and regulations for invasive animals still lag behind those for invasive plants. (The Washington Noxious Weed Board and numerous county weed boards and districts have long-time programs and regulations for managing invasive plants.)

The council has identified the following barriers to effectively manage invasive species:

- **Competing Priorities.** Agencies with legal authority to manage invasive species often have other funding mandates that hinder their ability to regulate or manage an infestation as needed.

- **After-the-fact regulations.** Regulations and specific control mechanisms tend to be introduced well after a species is established. Regulations are not being developed with the next crisis in mind.

[29] Pathway: The means by which species are transported from one location to another, National Invasive Species Council definition.

- **Regulatory obstacles.** Regulations pertaining to valuable natural resources encourage thoughtful and methodical planning before actions are taken. In the case of a new species threat, planning, and acting usually occur together. Environmental regulations tend to lack emergency clauses that would enable resource managers to swiftly address a new threat.

- **Species control versus pathway restrictions.** Usually, resource managers aim prevention and management efforts at controlling unwanted species rather than closing off particular pathways. Preventing the introduction of any number of species by managing the avenues by which they enter the state is far more desirable.

RECOMMENDATION NO. 22

Assess current invasive species laws and authorities. Recommend legislation to address gaps and overlaps, especially for non-plant species.

Action 22.1 Support and strengthen enforcement of state laws and quarantine lists.

Action 22.2 Strengthen current state regulations that safeguard against invasive species introductions and spread.

Hydrilla

Hydrilla verticillata is an aquatic plant found in freshwater habitats such as canals, springs, streams, ponds, lakes, and rivers. This underwater perennial spreads rapidly, displacing native species and interrupting patterns of natural water movement. A hydrilla infestation is an impending threat to Washington.

PHOTO COURTESY OF THE NOXIOUS WEED CONTROL BOARD

Assets to Build Upon

Washington has many organizations, both public and private, which are actively working to minimize the effects of invasive species. What follows is not a comprehensive analysis of current programs but highlights some of the activities occurring within the state.

Regulatory Efforts

State and federal agencies administer and enforce a growing body of laws to address the problem of invasive species. These laws primarily allow for management of existing populations of invasive species or seek to prevent species introduction through known pathways. The laws also establish regulatory structures and grant programs.

Regulatory agencies that manage invasive species have identification lists. For example, the Noxious Weed Control Board, the Department of Agriculture, and the Department of Fish and Wildlife have compiled lists of invasive weeds and animals that are regulated. The Aquatic Nuisance Species Committee has a list of invasive aquatic species that could pose problems in the state.[30] In addition, numerous statutes govern the management activities for controlling and eradicating invasive species. (The table in the appendix lists laws, statutes, agencies, and their roles, affected industry sectors, and species under each agency's jurisdiction.)

Local Weed Control

Washington is fortunate that its Legislature established model invasive species regulations decades ago for management of agricultural weeds. These laws set up a state noxious weed board, county noxious weed control boards, and local weed districts to deal with weeds. These laws also established a system for prioritizing resources by classifying weeds for management based on their distribution within the state. As a result, today's state and county weed jurisdictions have the regulations, infrastructure, and funding to deal with invasive plants.

Not all county weed boards are equal in terms of funding – some counties devote more resources to their local weed programs than others. Not surprisingly, well-funded local programs are more effective in ensuring landowner compliance with weed laws.

Many states consider Washington's weed laws as a model for the rest of the nation. During the past 25 years, the Noxious Weed Control Board has expanded its weed list to include not just weeds threatening agriculture, but weeds that affect all lands including, natural areas such as wetlands, lakes, stream banks, and forests. The Washington 2008 noxious weed list includes 135 weeds.

[30] Noxious Weed Lists are available at; http://www.nwcb.wa.gov/weed_list/weed_list.htm , Washington Department of Agriculture Plant Quarantine list: http://agr.wa.gov/PlantsInsects/PlantQuarantines/PlantQuarantines.htm, Washington Department of Fish and Wildlife prohibited species lists: http://wdfw.wa.gov/fish/ans/identify/index.htm, Washington Aquatic Nuisance Species Watch List: http://www.weedcenter.org/inv_plant_info/wa_aquatic_watch.pdf.

About the State Noxious Weed Control Board

Decades ago, Washington established invasive species regulations for the management of agricultural weeds. As a result, Washington has well designed and long-standing noxious weed control laws that are considered a very progressive approach to invasive plant control by others in the nation. During the past 25 years, the Noxious Weed Control Board (Weed Board) has expanded its weed list to include 135 weeds that primarily affect natural areas as well as those that harm agriculture. The Weed Board is responsible for overseeing Washington's noxious weed list (Revised Code of Washington 17.10) and also advises the Department of Agriculture regarding the state noxious weed program. It also coordinates and supports the 38 county weed boards and 11 weed districts that, in turn, enforce on-the-ground weed control. Additionally, the Weed Board promotes public awareness of noxious weeds and related laws through educational efforts

By definition, noxious weeds are invasive, non-native Washington species that are destructive to the state's agricultural and natural resources and difficult to control. The noxious weed list sets priorities for statewide weed management efforts by classifying weeds. Several western states have adopted Washington's weed classification system. There are three classes of noxious weeds:

Class A: Weeds of limited distribution in the state that are mandated for eradication (e.g. kudzu).

Class B: Weeds of limited distribution in some areas but of more widespread dispersal elsewhere in the state (e.g. Scotch broom). County boards or weed districts enforce landowners' weed management efforts. By law, landowners are required to prevent all seed set.

Class C: Weeds widespread throughout the state (e.g. English ivy). Although Class C weeds are too widespread to control at the state level, county boards have flexibility to select species for control. Many counties do not mandate control but do provide education on this class of noxious weeds and recommendations for control.

Each year, the weed board requests recommendations for additions and deletions to the weed list as well as classification or designation changes. Any Washington resident can suggest changes. A noxious weed committee is responsible for evaluating proposals. The committee researches and prepares written findings for each proposed addition. Each document detailing the findings includes standard information: plant description, economic importance, geographic distribution, habitat, response to various control methods, and the rationale for its listing. The Noxious Weed committee currently is doing a risk assessment to complement the written findings and better standardize the listing process.

Scotch Broom

PHOTO COURTESY OF THE NOXIOUS WEED CONTROL BOARD

Each year in the fall, the weed listing committee makes its new recommendations to the weed list. The weed board accepts or denies these recommendations following a public hearing. The proposed changes then move through the rule making process (Washington Administrative Code-16-750), resulting in a revised weed list. Once the weed board has adopted the revised weed list, each county board has 90 days (from that date) to adopt a county weed list. In other words, a county noxious weed board uses the revised weed list to develop its county weed list. It is up to landowners to control the listed weeds on their property; the local weed board is responsible for enforcing landowner compliance with the law.

County noxious weed control programs are variable in budget and staffing. Budgets are set by county authority. Unfortunately, that reality also leads to disparity between county program budgets. Many are well funded and have strong enforcement and educational programs. In counties that have fewer financial resources, other programs can take priority over weed control. The result can be a barebones weed control program, one capable of allocating more resources to educate than to enforcing the weed laws.

Coordination Efforts

Washington boasts many examples of successful, collaborative partnerships and projects. That said, opportunities exist for increased cooperation between state agencies, local governments, and stakeholder groups. Interviews, conducted by the council, with county coordinators and agency staff revealed that additional opportunities exist for cooperation in inspecting industrial plants, surveying nurseries, auditing big box stores, and investigating invasive species pathways. The remainder of this section provides a summary of existing coordination efforts across all jurisdictions.

Coordination Success Models

Cooperative Weed Management Areas are inter-agency agreements that cover properties owned or managed by multiple jurisdictions. Parties in an agreement combine resources to tackle a common invasive species, particularly when it crosses political boundaries. These management areas have proven to be effective mechanisms for engaging county, state, and federal agencies, tribes, and other organizations in collaborative efforts.

State noxious weed law (Revised Code of Washington, chapter 17.10) promotes coordination across the state through partnerships that occur between county weed boards, the Washington Noxious Weed Control Board, and the Washington Department of Agriculture. For example, *Spartina* and knotweed control and eradication projects demonstrate how cooperation between state, tribal, local, federal, and private entities has led to significant progress in managing invasive weeds.

Local and State Coordination

Stakeholder groups play an important and successful role in coordinating and prioritizing efforts for many invasive species management programs. The Washington Invasive Species Coalition, the nursery industry, and the Washington Noxious Weed Control Board cooperated to create Garden Wise, a public campaign aimed at promoting non-invasive ornamental alternatives to gardeners.

Invaders at the gate

European green crab or *Carcinus maenas* is a species that originated on the North and Baltic seacoasts. But over several decades, the green crab has invaded many coastal shores including both coasts of North America, South Africa, and Australia. Adult crabs measure about three inches across and have shells ranging from dark green with yellow markings to orange or red. This highly adaptable and resilient crab is able to survive in a wide range of temperatures and salinities. Biologists theorize that one major way the species spreads is as crab larvae that can travel up to five miles a day with the current. Other pathways of introduction include ballast water from incoming ships, bait buckets or boat wells from recreational boaters, and even seaweed packed lobsters. (Live lobsters are shipped to commercial markets in seaweed that may contain green crabs.)

Green crabs were sighted in Willapa Bay and Grays Harbor, Washington as well as the west coast of Vancouver Island in 1998 and 1999. This invasive species competes strongly with Dungeness crab for food and habitat. As small as the green crab is, the species is an efficient forager. It preys on numerous aquatic species, such as clams, oysters, mussels, and small crustaceans. Losses to Washington's crab, clam, and oyster fisheries have the potential to be vast. (The commercial Dungeness crab fishery has an annual average value of almost $20 million, according to data collected between 1990 and 2002. [1]) Since 1991, funding from the governor's office and the state Legislature has supported efforts to control and monitor the green crab. More than 100 monitoring sites and various control methods have kept down green crab populations in Washington. [2]

The Department of Fish and Wildlife has set trap lines for the green crabs in the northern most Washington estuaries. The trap lines will serve as an early detection device and enable the agency to respond rapidly to an invasion.

European green crab

PHOTO COURTESY OF WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

[1 & 2] *Economic and Environmental Costs of Invasive Species in Washington State,* Washington State Department of Agriculture, p. 27.

Garden Wise has proven to be very popular with the nursery industry and the public, with a total of 45,000 brochures distributed.

The Puget Sound Partnership is an important initiative focused on protecting and restoring the Puget Sound ecosystem. The partnership's 2020 Action Agenda is scheduled to be released in December 2008 and will address "marine and estuarine invaders that can upset the marine ecosystem, its biological health, and the region's economy." The partnership has indicated it also is concerned with terrestrial non-native species that can upset the region's ecosystem and can change critical habitat for salmon and other species in our rivers and streams. Coordinating with the partnership to achieve mutual goals and eliminate duplication of effort is a critical component of the council's strategic plan.

Another example of coordination involves public utility districts. For example, staff at the Priest Rapids dam, on the Columbia River are implementing a prevention plan for aquatic invasive species in coordination with the Department of Ecology's freshwater aquatic weed control program and the Department of Fish and Wildlife's aquatic nuisance species program. The prevention plan will focus on education by identifying boat access points and distributing materials during the peak boating season. It also will include plans for implementation, prevention, rapid response, and monitoring.

Within agency programs, coordination also is occurring. Housed within the Department of Fish and Wildlife, staff from the Washington Aquatic Invasive Species Program chair the Ballast Water Work Group and co-chair the Aquatic Nuisance Species Committee. This joint venture allows for inter-agency communication and coordination. Through this collaborative approach, the groups have developed a "Watch List" to help with the prevention and control of aquatic invasive species. The groups also assisted in the development of the Columbia River Basin Interagency Invasive Species Rapid Response Plan for zebra and quagga mussels, and are critical partners with the council.

University and College Coordination

Washington State University, University of Washington, and other state universities and colleges through their academic, research, and extension programs are essential to winning the battle against harmful invasive species. In coordination with the federal government, they operate federally-sponsored programs to provide specialized training, scientific research and on-the-ground assistance and technical expertise. Their work is beneficial to a broad spectrum of environments - agriculture, urban, estuarine and marine.

Tribal Coordination

Tribes have a historical and cultural tie to the land. As sovereign nations, they play an important role in managing invasive species and restoring natural ecosystem processes. Washington tribes contribute to invasive species management by controlling *Spartina*, knotweed, and purple loosestrife, as well as managing many other noxious weeds on their lands. The Jamestown S'klallam Tribe, for example, has used an Environmental Protection Agency grant to remove knotweed and butterfly bush infestations along the lower 8.5 miles of the Dungeness River. The Hoh River, Stillaguamish, and Tulalip Tribes, and others are involved in knotweed control through Coordinated Weed Management Area programs. The Chehalis Confederated Tribes have an active management program for Brazilian elodea and the Yakama Nation is working cooperatively with the Yakima Weed Control Board to eradicate parrotfeather milfoil from ponds associated with the Yakima River.

Coordination occurs between tribes, as well as among such groups as the Columbia River Inter-Tribal Fish Commission and the Northwest Indian Fisheries Commission. Tribal governments independently regulate their members' exercise of treaty rights within their usual and accustomed treaty areas, and co-manage treaties with the state resources in those areas. However, small tribes have few staff and little money to devote to the problem. The federal government has certain tribal trust responsibilities, so agencies such as the Bureau of Indian Affairs, Department of the Interior, and Department of Commerce can help tribes in managing invasive species.

Federal Government Coordination

A full 35 percent of Washington lands are managed by federal entities including the Forest Service, Fish and Wildlife Service, Bureau of Land Management, National Park Service, and the Bureau of Indian Affairs.[31] Coordination among federal agencies is important, and coordination between federal agencies and state and local governments is essential. This is particularly true in areas where state or private landowners share boundaries.

The Aquatic Nuisance Species Task Force coordinates between federal agencies, states, and stakeholders through regional panels and issue specific work groups. It implements the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, including the national ballast water management program. Its mission is to protect limited western aquatic resources by preventing the introduction and spread of exotic nuisance species; coordination of the management and research activities of state, tribal, federal, commercial, environmental, and research entities and other regional panels is the key to protecting western marine and freshwater systems.

[31] *Washington State Major Public Lands Map*, Washington State Department of Natural Resources, 2000.

CASE STUDY IN REGULATORY CONTROL

The Tunicate, *Didemnum sp.* (A colonial sea squirt)

Background. The tunicate, *Didemnum sp.*, is a sponge-like, invertebrate marine organism and prolific spawner. It lives in large, mat-like colonies and can rapidly invade new marine territories. Invasive tunicate colonies – comprising thousands of organisms – affix to underwater rock outcroppings, ship hulls and docks. Once established, invasive tunicates can displace most native organisms by out-competing them for food and space. Presently, seven non-native tunicate species, including *Didemnum sp.*, have been identified and are established in Puget Sound. The Washington Department of Fish and Wildlife (WDFW) has identified three of the species as invasive. The remaining four non-native tunicates represent a lesser threat of becoming invasive.

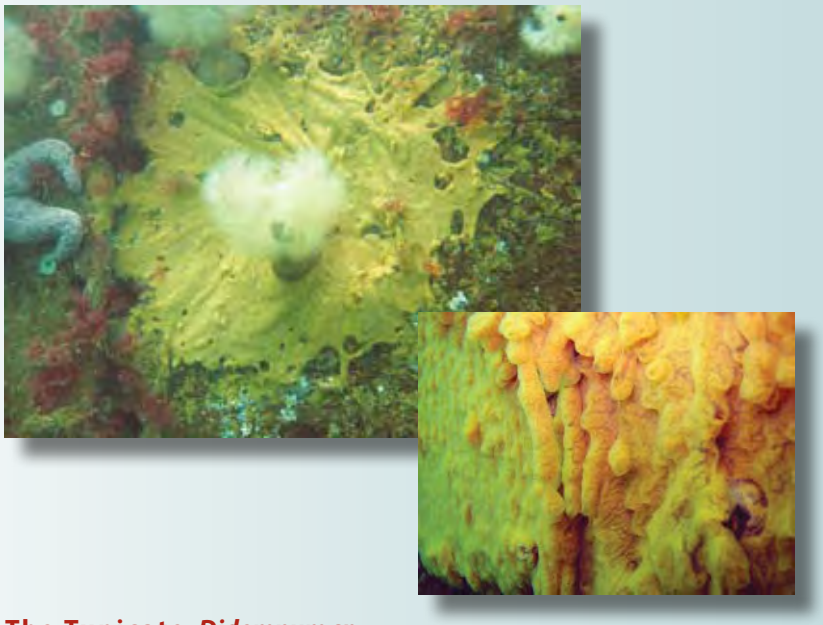
Situation. Currents spread tunicate larvae to different marine locations, including onto established mussel farms. While mussel growers do not contribute to the spread of tunicates through their seeding and planting processes, tunicate larvae can settle onto established mussel farms and proliferate; yet growers can do little to stop infestations.

This example demonstrates where control of an invasive species collides with existing (legal) activities in a manner that may have unintended consequences. WDFW has the authority to use its classification system to list the seven species of nonnative tunicates as "prohibited" and make their possession a crime.

However, for the shellfish industry, the legal issues related to tunicate possession by mussel growers are perplexing. If no adequate methods of tunicate eradication exist and there is no known method for preventing their free-swimming larvae from settling on the mussel farms, what can shellfish growers do to prevent being penalized for simple possession? The law does not allow discretion for situations such as this or for the designation of different classifications by water body. That means once a species is classified as prohibited in one water body, it's prohibited in all state water bodies. Many shellfish growers believe if and when tunicates are designated a prohibited species in Washington, quitting mussel farming will be the only way shellfish growers would be able to avoid possession of invasive tunicates.

Yet, the need to control this invasive species remains. Further, a "prohibited" classification would give WDFW more options to manage tunicates through broader enforcement actions, the designation of water bodies as infested, and rapid response actions.

Conclusion. WDFW has postponed classifying this species as "prohibited" pending further study. The agency is conducting baseline surveys to determine the extent of the current infestation as it carries out management actions to curb the spread of smaller populations. Later this year, the agency plans to review its laws pertaining to aquatic invasive species. In reviewing the laws, WDFW managers will determine how best to address regulatory issues and prepare a comprehensive plan for tunicate management. The agency plans to explore the classification model used by the Washington Noxious Weed Control Board.



The Tunicate, *Didemnum sp.*

PHOTOS COURTESY OF JANNA NICHOLS

Industry Coordination

Because the increased introduction of new invasive species is mainly a human-made problem, a variety of industry sectors play an important role in preventing invasive species from entering Washington's ecosystems. The significance of industry lies in its role as a pathway for invading species to enter the state and to spread to new locations. Invasive species hitch a ride on the hulls of ships coming into Puget Sound and in their ballast water. They may hide in a beautiful ornamental bush purchased for a home garden or the bush itself may be invasive. Fortunately, many industries are working with state and federal agencies and non-governmental organizations to develop regulations, practices, and incentives that reduce their potential to be an invasive species carrier.

Interstate and International Coordination

Because many harmful species hitchhike in packing materials and shipping containers, international coordination is essential. The issue of invasive species is global in nature and efforts to manage our borders likely will depend on more effective global strategies to manage pathways. Eleven major points of entry occur at Canadian border crossings. Also two of the nation's top ten ports of trade – the ports of Seattle and Tacoma – are points of entry for invasive species.

Federal agencies contributing greatly to inspections and risk assessment at border entries include Department of Homeland Security's Customs and Border Protection, Department of Agriculture's Animal Plant and Health Inspection Service, Fish and Wildlife Service, Coast Guard, and Puget Sound/Georgia Basin Taskforce. The U.S. Department of Agriculture works with our trading partners through the international Plant Protection Convention to prevent the introduction of invasive species along with agricultural commodities.

There are many important groups working on regional invasive species goals including the Western Regional Panel on Aquatic Nuisance Species, Pacific Northwest Invasive Plant Council, the Western Weed Coordinating Committee, Pacific Ballast Water Group, Aquatic Nuisance Species Task Force, and the 100th Meridian Initiative Columbia River Basin Team. A cross-section of agency representatives, many of whom are members of the Washington Invasive Species Council, serve on these groups. The council routinely discusses invasive species coordination efforts with the directors of the National Invasive Species Council, Idaho Invasive Species Council, and the Oregon Invasive Species Council.

The Oregon Invasive Species Council is leading a statewide public awareness, prevention and action campaign focused on invasive species, both aquatic and terrestrial. The one-year campaign was launched on Earth Day 2008. The Oregon council has agreed to share with

the Washington Invasive Species Council information from a survey that would help establish baseline knowledge as well as interests and behaviors of resource users and stakeholders related to invasive species.

A number of groups coordinate efforts at the national level. For example, the National Plant Board is comprised of the plant pest regulatory agencies of each state and Puerto Rico. Its mission is to foster effective, efficient, and harmonized state programs; to act as an information clearinghouse for pest prevention and regulatory measures; and to encourage coordination and collaboration with federal and international agencies. The Washington Department of Agriculture Pest Program represents Washington on the National Plant Board.

The plant board system is composed of four regional plant boards as well as the National Plant Board. In addition, the directors of the state departments of agriculture also comprise the National Association of State Departments of Agriculture, which is a major vehicle for conveying state concerns about invasive species to federal agencies.

Economic Status and Analysis

In Washington, a picture of the total economic costs and budgets associated with managing invasive species is becoming clearer. By pulling together estimates of funds spent by state agencies and universities to manage invasive species, the council has attempted to quantify the scale of the economic effects of invasive species. Unfortunately, the spending data is incomplete and data collection methods are not consistent, making direct comparisons difficult. As a result, the state lacks a comprehensive perspective on the adequacy of existing agency funding to manage invasive species.

With a few exceptions, individual agencies develop their budgets to manage invasive species in isolation from each other, and miss opportunities to improve efficiency by working together. Part of this isolation results from differing roles – some state agencies serve as a landowner when dealing with invasive species and others regulate or have scientific research or public outreach roles. Varying roles can affect the source and amount of funding they receive and in which ways they administer it. Important research related to invasive species management receives funding through both agency and university budget appropriations, with little or no overall direction. While state spending on invasive species is significant, invading plants and animals continue to spread and new infestations continue to occur. How much spending is needed to fully address the problem is unclear at this point.

Zebra Mussel

CASE STUDY IN PREVENTION

The Zebra Mussel

Background: The zebra mussel, a thumbnail-sized mollusk, is a nuisance aquatic species found widely in the United States. Once introduced into lakes, rivers and saltwaters, it kills off native mollusks and competes with zooplankton for food, in turn, affecting natural food webs. Neither the zebra mussel, nor its close relative the quagga, have been found in Washington waters – yet. The species are widespread in 19 states including the Great Lakes area. Native to the Caspian and Black Seas, zebra mussels came to the U.S. in the mid-1980s through ballast water released from foreign ships. Along with the potential to do serious ecological damage, the mussel species have the ability to clog piping and mechanical systems of industrial plants, utilities, locks and dams. These mussels are hitchhikers, and easily transported on boats, trailers, and other recreational watercraft.

Zebra Mussel

Incident: This incident highlights the regional and international nature of invasive species and Washington's heightened concern for zebra and quagga mussels. On February 4, 2008, the Washington Department of Fish and Wildlife learned of a pleasure boat making its way overland from Lake Mead, Nevada to British Columbia, Canada. An employee with the U.S. Fish and Wildlife Service alerted Washington Fish and Wildlife to the fact that boat contaminated with quagga mussels had left Nevada.

One day earlier, a Canadian resident had flown to Nevada and purchased a boat moored in Lake Mead. The man rented a truck and U-haul to cart his 24-foot watercraft home. He left Lake Mead for British Columbia with a boat and an attached village of mussels in tow. While Nevada state regulations require boats to be decontaminated before leaving a marina, budget constraints and personnel shortages have hindered the enforcement of such laws.

PHOTOS COURTESY OF WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

At 9 p.m. February 3, a California Fish and Game inspector stationed at mandatory checkpoint, stopped the boat owner and his pack of quagga hitchhikers. The boat would have been hosed down here, but problems with the station's decontamination equipment prevented the inspector from cleaning the boat. Instead, the inspector allowed the Canadian resident to continue on his journey after securing his assurances that boat would be professionally decontaminated once he reached his destination. California made contact with the United States Fish and Wildlife Service, and employees there alerted Oregon and Washington.

Early February 4, employees of the Department of Fish and Wildlife learned the boat and its owner were headed north on Interstate-5 to the Washington border. After discussions with counterparts in British Columbia and Oregon, Washington Fish and Wildlife staff stepped into action. The Oregon State Patrol escorted the Canadian resident and boat from Oregon to the Port of Entry weigh station in Ridgefield, Washington.

Conclusion: Washington Fish and Wildlife employees inspected and decontaminated the boat at 4 p.m. February 4. As many as 10,000 juvenile quagga mussels were attached to the boat's trim tabs and lower unit. Most were less than one-eighth of an inch long and appeared alive. Crews hosed down the watercraft with a 140-degree hot water pressure washer and then cleaned with bleach. The owner received a certificate of inspection and decontamination before being allowed to proceed. Fish and Wildlife staff informed their British Columbia counterparts that the decontamination was completed. A British Columbia biologist performed a follow-up inspection at the owner's residence.

The quagga mussel incident demonstrates that an interagency and interstate coordination network is working to prevent the introduction of harmful invasive species. However, communication glitches need to be fixed and non-uniform regulatory and decontamination capacities must be resolved.

Agency and Academia Budgets

To determine how much money Washington state agencies and universities spend on invasive species management, the council drew from two sources. First, the council sent a questionnaire to key organizations and agencies working on invasive species projects. The survey included questions related to current projects conducted in the state, project budgets, and project purpose (See Table A). Second, the council used the State Noxious Weed Funding Report (commissioned by the council) [32] to learn about agencies' noxious weed management activities.

Eight state agencies and two universities provided information, which was used to arrive at the cost figures below. In many cases, the information was complete and in some cases respondents were unable to separate out direct and administrative costs. Nevertheless, the spending figures below offer the best information the council has on the statewide budget for invasive species management. In the future, the council hopes to improve the accuracy of the statewide spending figures by conducting additional surveys with refined definitions and collecting information from federal, tribal, and local governments.

It is important to realize that these are preliminary figures. A future baseline assessment of state spending will provide more thorough figures (See Recommendation No.1).

According to the questionnaire and State Noxious Weed Funding Report, Washington spends an estimated $28.4 million per biennium on invasive species prevention and control measures.

Washington Invasive Species Management, 05-07 Biennium Spending	Total: **$28,443,962**
State Agency Biennial Spending on Invasive Species [33]	**$21,294,455**
Academic Institution Biennial Invasive Species Spending [34]	**$7,149,507**

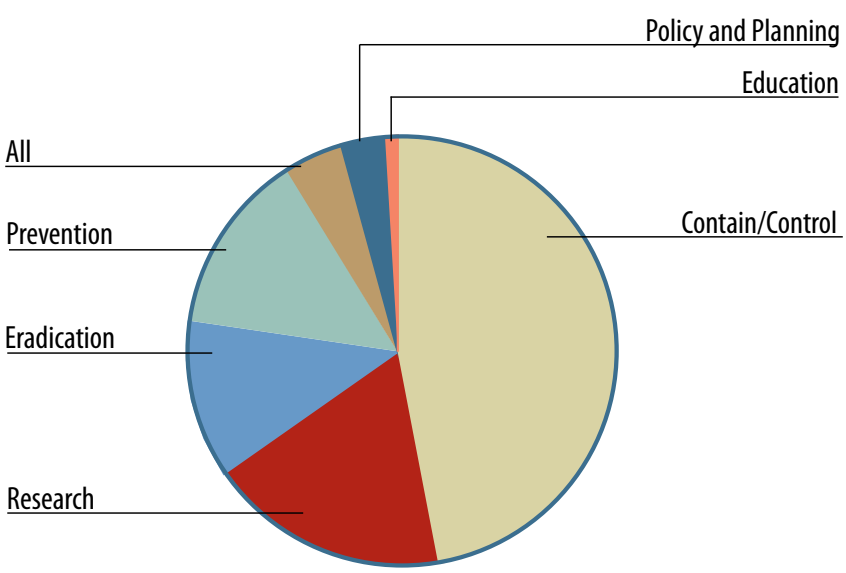
The council next looked at how the agencies spent their funds.[35] The breakdown of state spending by project purpose is shown in Table A and Figure 1. The data indicate that 47 percent of state spending on invasive species is for containment or control efforts, with much less spent on eradication or prevention.

[32] Washington State Noxious Weed Funding Report, Washington Invasive Species Council, December 2007.
[33] Washington State Department of Natural Resources, Washington Department of Fish and Wildlife, Washington Department of Transportation, Washington State Parks and Recreation Commission, Washington Department of Agriculture, Washington State Noxious Weed Control Board, Puget Sound Action Team, Washington Department of Ecology, Washington State Conservation Commission, Recreation and Conservation Office.
[34] Washington State University and Cooperative Extensions, University of Washington.
[35] Washington Noxious Weed Funding Report, Washington Invasive Species council, December 2007. Washington Invasive Species Council, Questionnaire Results, August, 2007. Using data from these sources, the Council grouped project costs into the seven categories listed in Table A.

Table A

PROJECT PURPOSE	BUDGET (Biennium)	PERCENT OF TOTAL
Contain/Control	$13,456,174	47.31
Research	$5,483,912	19.28
Eradication	$3,685,500	12.96
Prevention	$3,336,500	11.73
All [36]	$1,260,000	4.43
Policy and Planning	$1,060,764	3.73
Education	$161,112	0.57
TOTAL:	$28,443,962	100.00

Figure 1



Note: This is preliminary data

[36] "All" describes entities that associated contain, research, eradication, prevention, policy and planning, and education project purposes with their budget figures and could not be broken into individual categories.

CASE STUDY

AN INVASIVE SPECIES SUCCESS STORY IN EARLY DETECTION AND RAPID RESPONSE

Citrus Long-horned Beetle

Background: *Anoplophora chinensis* or the Citrus long-horned beetle is a serious tree pest native to Korea and China. The beetle, with its shiny, jet-black body and long blue-black antennae, is a lesser known but close relative of the tree-killing Asian long-horned beetle. Since the mid-1990s, Chicago and New York have battled urban infestations of Asian long-horned beetle for years, and spent millions of dollars to destroy infested trees.

Until the summer of 2001, the beetle genus had never been seen on the West Coast. As compared to its cousin, the Citrus long-horned beetle is able to endure a range of climates and produce a greater number of eggs. Females lay 200 eggs, each. Each egg is separately deposited into the bark of a tree. Beetle larvae hatch, tunnel into the heartwood and feed on the tree until they kill it. Both Asian and Citrus long-horned beetles can kill a variety of hardwood trees such as maples, oaks, willows, and poplars.

Incident: In early August 2001, a nursery discovered an unusual beetle in a shipment of bonsai trees imported from Korea. The owner took a captured beetle to the U.S. Department of Agriculture Plant Inspection Station at SeaTac Airport. A federal inspector recognized the beetle as a potential threat and alerted the Washington Department of Agriculture. State biologists, who responded within hours, discovered more beetles and isolated the source of the infestation. However, several beetles escaped into a neighboring greenbelt before all could be contained. A scientific advisory panel determined the Citrus long-horned beetle to be a great, if not greater risk than Asian long-horned beetle. If it became established in Tukwila, the insect could profoundly damage the environment and economy of not only the Pacific Northwest but also the whole of North America.

Citrus Long-horned beetle

PHOTO COURTESY OF ART WAGNER, USDA APHIS PPQ, BUGWOOD.ORG

Because of the beetle's year-long lifecycle, state and federal officials knew they had less than 12 months to plan and carry out an eradication project. It all had to be done before the next generation of beetles emerged and reproduced more widely in the greenbelt and residential area. Eradicating the potential invasive species amounted to cutting down several thousand susceptible trees into which the escaped beetles may have flown and laid eggs. Next, the immediate band of trees surrounding the cut zone received injections of a systemic pesticide to kill any beetles that escaped (however unlikely) during the tree-cutting phase. State agriculture officials also worried about the artificial spread of the beetle in firewood, tree prunings, and other wood debris. Officials placed a quarantine one-half mile outside the beetle introduction site prohibiting Tukwila residents from moving beetle host material (wood, prunings).

The Department of Agriculture launched an education campaign to explain the necessity of the eradication project. Outreach activities included open house meetings, newsletter mailings, and a monthly yard waste disposal day so that residents living in the quarantine area could bring their tree prunings to a chipping site for removal. In addition, residents whose trees had to be cut received financial aid to purchase replacement plants. The U.S. Forest Service funded the restoration of the greenbelt. The funding allowed the Department of Agriculture, in partnership with the State Nursery and Landscape Association, to offer residents coupons to offset their costs and purchase replacement trees and plants. For the next five growing seasons, the Department maintained the firewood quarantine in Tukwila and surveyed the area extensively for any signs of the beetle.

Conclusion: A rapid response to a potential invasive species threat and adequate funding to stem the problem, allowed state and federal agencies to carry out the tree removal and tree injection program in Tukwila. In December 2006, after several years of collecting negative survey data, the Department of Agriculture removed the quarantine on Tukwila and officially declared Citrus long-horned beetle eradicated from Washington. The program's success is attributed to the decisive and immediate action taken. The program went forward because the agencies involved were able to impress upon the public and elected officials the serious nature of the threat and the necessity for action.

Techniques to Manage Invasive Species

Agencies and other groups working on invasive species issues have developed a systematic approach to address the problem. This can be described in a linear fashion. Emergencies and regulatory mandates also impact how invasive species work is performed.

Assessing the Risk

Invasive species are a recognized threat to natural lands and industries. Land managers and others have developed risk analyses to define the threat and manage the risks associated with particular species. A risk analysis is a systematic way of gathering, evaluating, and recording information to prepare for a response to an identified hazard.

A formal risk analysis usually is conducted in response to a specific need, such as a request for an import license for an agricultural commodity. The resulting documentation includes a description of any invasive species that might enter the state with that commodity; detailed information related to the named invasive species and their likelihood of gaining entry; and information as to whether and how the invaders can be kept out, such as by cleaning containers. The risk analysis allows resource agencies to evaluate threats, affords a basis for decision-making, and provides for future adjustment. Risk analyses also can be used to develop lists of invasive or harmful plants, animals, and other organisms that should be prevented from becoming established in Washington.

Quarantines

Once a risk has been described and assessed, managers look for options to respond to that risk. These options usually are defined in regulations, and, in the case of agricultural commodities in international treaties. One such option is a plant quarantine. Under international convention, a plant quarantine is a legal instrument created by a government agency as a means of reducing the risk of pest invasions. It can mandate a range of activities such as direct prohibition of movement of the plant (e.g. homegrown fruit); restrictions on the handling or movement of host or infected materials (e.g. forbidding movement of firewood from the infested area); treatment of a commodity (e.g. subjecting it to heating, fumigation, or soil removal); and inspection to certify the shipment as pest-free. Federal agencies implement international quarantines, which are important to Washington because of the volume of international trade that passes through the state. Plant quarantines also may apply to interstate commerce, in which case federal and state agencies share authority.

Quarantine rules are most effective against known risks, such as the importation of nursery plants, pets, or edible seeds and fruits distributed in the marketplace, and against easily spotted contaminants, the so-called "hitchhiker species." However, quarantines can slow the movement of goods through ports and affect the pace of international trade. A quarantine's effectiveness is limited by the availability of inspection and enforcement resources and diagnostic capabilities.

Most importantly, quarantines are only as effective as the rate of voluntary compliance and the availability of visible enforcement mechanisms.

As no policy or procedure can enjoy a 100 percent success, other methods are needed to address the threat of invasive species.

Early Detection and Rapid Response

Early detection and rapid response clearly is the preferred response model once an invasive species has entered the state, become established, or expanded its range. It is much more effective to remove a small, relatively new population of an invader than it is to wait until the same population is well established and thriving. Early detection requires knowledgeable people actively conducting surveillance to find new species and determine whether or not they likely are to become a threat.

State and federal governments use a response process called Incident Command System [37] to respond rapidly to emergencies. Control plans, such as joint plans to stem zebra or quagga mussels that involve federal and state agencies as well as other nations, also use the incident command process. Once an invasive species has become established, there are multiple management options:

- Eradicate small, newly introduced, or isolated populations of the species.
- Stop its movement or reduce its spread to protect surrounding areas.
- Reduce the population of an established invasive species to minimize harmful effects.
- Implement proper restoration techniques to maintain a sustainable system.
- Take no action, when control options are not feasible.

Eradication

Eradication, or the verified removal of all potentially reproductive units of the invasive species, is the highest level of control. It can be successful only when the species' distribution is known, pathways of introduction are closed, and there is enough information about the species' biology to develop successful eradication methods. Eradication projects often extend over several years with a multi-year follow-up component to verify the outcome. For example, in 1995 the hydrilla eradication program in Pipe and Lucerne Lakes, in King County began. Since 2007 there have been no hydrilla plants in either lake. However, it cannot be called eradicated until no hydrilla sightings have occured over three consecutive years. Follow-up treatment will continue in 2008 and 2009 and surveying will continue until 2012. This is the only infestation of hydrilla in the state. The outlook is promising that the goal of eradication will be met.

[37] The Incident Command System is a management strategy for emergency incidents and rapid response.

Stop the Spread

Containment can be as simple as creating a management buffer around an infestation to stop or slow the spread of the invading species, especially if natural barriers exist. This is the principle behind many quarantines, regulatory barriers to the movement of goods, requirements to sanitize soil-moving machinery, and distribution restrictions on gravel from contaminated sites. Containment strategies require constant monitoring to verify compliance and success.

Reduce the Population

Controlling or reducing invasive species populations, usually to an economic or environmentally significant threshold value, is a strategy often used when eradication is unlikely because the species already is well established, there are no ways to eradicate it, or eradication methods are unacceptable. Long-term monitoring of the species population density is necessary for successful control.

Restoration

The goal behind invasive species control is to recreate a sustainable system once the invasive species has been removed. From the outset, restoration should always be considered a component of eradication or control projects as tenacious, unwanted species tend to flourish on cleared lands. Restoring lands with native plants, whether through natural regeneration or replanting, will help prevent invading plants from re-establishing themselves. Restoration also reduces long-term control costs. Land managers must continue control measures, plant native species, and tend new plantings long enough to give them a competitive advantage.

No Action

No action may be the only choice when the environmental, economic, or social costs of control are simply unacceptable. That may be caused by an invasive species, such as Himalayan blackberry, that has become so ubiquitous that systematic control or even suppression, except on some piecemeal sites, is not feasible. Taking no action may be the only response if we lack an effective tool either to detect an invasive species (insect pest or plant pathogen) at low levels or to control it. The keys to avoiding this unfortunate choice lie in close coordination with the research community; the development of detection and control tools; and a rapid response when highly invasive species are first detected.

Preserving response flexibility, fulfilling minimum procedural requirements, and reacting rapidly to invaders while they remain vulnerable can lead to conflicting goals. To resolve these tensions and pursue an effective eradication campaign, there needs to be a societal consensus, business cooperation, and political will that acknowledges the potential economic and ecological damage likely to result from not responding to threats.

Research, Education, and Outreach

SCIENTIFIC RESEARCH: DATA WILL GUIDE FUTURE SUCCESS

Reliable information provided by scientific research is an essential component of any effective plan to address invasive species. In Washington, scientists at a number of universities, other institutions, and state agencies research aspects of the biology, ecology, control, and management of invasive species. Much of the applied research in Washington focuses on pests that affect the economic value of forestry, agricultural, and horticultural products. Other scientists conduct research related to effective prevention and management models and mapping.

Research challenges are expanding as new invasive species issues come to light, especially in the context of ecological degradation caused by climate change. Among other needs, there is a growing demand for taxonomists to identify new invading species and for trained staff to develop risk assessments to assess which species likely will become invasive. There is a growing demand for research on environmentally safe eradication methods and natural defense mechanisms.

EDUCATION AND OUTREACH EFFORTS

Almost every group engaged in the invasive species arena has an education component in their programs. An estimated 48 government and non-government programs provide information and education related to invasive species in Washington. Secondary schools are becoming leaders in this area. Many classroom curricula encourage students to think about invasive species and the overall well-being of the environment. The following is not a complete list of education efforts, but recognizes some examples of programs at state agencies, non-governmental organizations, and other partners.

- The Washington Department of Ecology has produced many educational materials about freshwater invasive plants and the management of these plants, now available on a comprehensive Web site about aquatic weeds and their management.[38] Ecology staff also identifies freshwater plants for the public and others. They conduct workshops and field tours, present at conferences, and provide technical assistance to lake groups, nursery groups, pesticide applicators, and the public about non-native, freshwater plants.

- To improve public knowledge of aquatic invasive species issues and laws, the Department of Fish and Wildlife created a high-profile, enforcement and emergency response vehicle. The concept is similar to the anti-drug use, D.A.R.E. vehicles used by law enforcement. A full-time officer patrols and makes presentations at sport shows, boat shows, and schools.

PHOTO COURTESY OF ERIC ANDERSON, WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

[38] Washington State Department of Ecology Web site: http://www.ecy.wa.gov/programs/wq/links/plants.html.

- The University of Washington Botanic Gardens conducts a wide variety of education programs, including lectures, courses, demonstrations, and tours.
- Washington State University Cooperative Extension, the Washington Noxious Weed Control Board, county weed boards, and garden clubs offer programs and classes that provide information on invasive species, individual assistance to landowners, programs for schools and service clubs, and information brochures. Members also attend county fairs and other events to get the word out.

Education materials developed by agencies, weed boards, and parks departments target people who engage in outdoor sports, such as hiking and biking, because they are able to get to remote places and can help detect and survey invasive species. These same people also may be responsible for transporting invasive species on their shoes, tires, and gear. For example, it is thought that the New Zealand mud snail is spread on the waders of fly fishers.

VOLUNTEER EFFORTS

Several volunteer monitoring groups, such as those monitoring for green crab and zebra mussel can play an important role in early detection. Other beneficial activities could include public education to demonstrate techniques to prevent invasions.

Many volunteer groups and neighborhood association members remove invasive plants and restore city parks. Volunteers are conducting important invasive species prevention, detection, and control efforts both in the water and on the trail. Groups such as the Backcountry Horsemen of Washington and Pacific Northwest Scuba are active in the community promoting such efforts. There are also many partnerships between city parks, state government, local residents, and non-governmental organizations. The Green Seattle Partnership is an example of public-private coordination. It is a partnership between Seattle and the Cascade Land Conservancy to restore urban forests and city parks.

Non-governmental organizations play an active and important role in engaging residents in restoration and education campaigns. For example, the Mountains to Sound Greenway coordinates volunteers to plant trees and remove invasive weeds from public open spaces. Other organizations conduct programs, such as the Adopt-a-Stream, which educates people about the importance of native plants for stream health. Other examples include the Native Plant Stewardship Program and Wetland Stewards. Many of these programs also focus on training students, teachers, natural resource managers, and the public.

Informed and involved members of the public and stakeholder groups are the 'eyes and ears' of resource management agencies. Outreach and education of those groups will play a crucial role in helping resource managers control the spread of invasive species. Without their help, managers would not recognize many infestations until the species had become well established and the ability to eradicate them diminished.

Sudden Oak Death on tree bark

Phytophthora ramorum causes Sudden Oak Death, a forest disease that has resulted in widespread dieback of several tree species in California and Oregon forests. The first P. ramorum-infested California nursery stock was identified in 2001 (Santa Cruz County). By 2003, the nursery industry was broadly affected by the disease when the pathogen was detected in California, Oregon, Washington, and British Columbia nurseries.

PHOTO COURTESY OF BRUCE MOLTZAN, MISSOURI DEPARTMENT OF CONSERVATION, BUGWOOD.ORG

CASE STUDY IN RESTORATION

Phragmites

Background: *Phragmites australis* is a native grass that grows in wetlands and wet areas. Also known as common reed, the grass is topped with creamy-brown feathery plumes and can grow up to 15 feet tall. It occurs in every continent except Antarctica and may have the widest distribution of any flowering plant. In Washington, the earliest record of *Phragmites* is from Klickitat County in 1882. Studies of peat samples show *Phragmites* has grown in New England tidal wetlands for at least the last 3,000 years; the remains of the grass have been found preserved in the dung of the Shasta ground sloth, dating back 40,000 years.

In the 1990s, some land resource managers proposed listing *Phragmites* as a noxious weed because the species appeared to be aggressively invading wetland areas. At that time, the Washington Noxious Weed Control Board opted against listing *Phragmites* as a noxious weed because it was a native species. The board speculated that *Phragmites*' invasive behavior reflected its ability to take advantage of altered environmental conditions and disturbed landscapes.

Phragmites

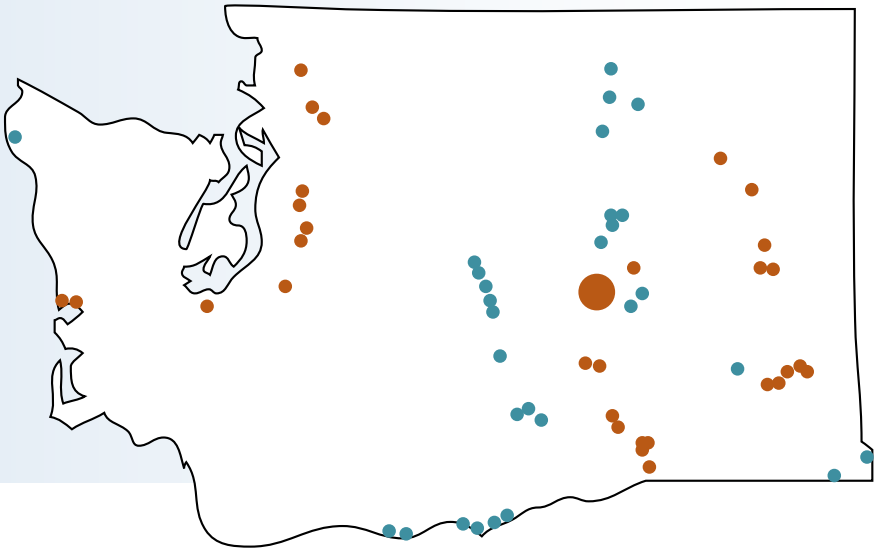
Situation: By 2000, *Phragmites*' rapid colonization of wetland mitigation sites along the Snake River, and the displacement of native wetland vegetation prompted increased concern about this species. On the East Coast, some scientists began to speculate that the aggressive nature of *Phragmites* might be due to an introduction of non-native genotypes. This theory spurred research to determine whether differences in genotypes existed among North American *Phragmites* stands. A Yale University study concluded that aggressive non-native genotypes of *Phragmites* (perhaps introduced in the late 19th century) could overtake and displace native genotypes of *Phragmites* and other native wetland species.

PHOTOS COURTESY OF NOXIOUS WEED CONTROL BOARD

The Yale study and confirmation of the presence of non-native *Phragmites* in Washington – and the fact that invasive species had encroached on wetlands – called for prompt action. In 2003, the Noxious Weed Control Board listed the non-native genotype of *Phragmites* as a noxious weed. At that time, the board listed the non-native genotype of *Phragmites* as a Class C weed because its distribution in the state was unknown.

In 2003, the Washington Department of Agriculture received an Aquatic Weeds Program grant (courtesy of the Washington Department of Ecology) and began surveying *Phragmites* populations to determine the distribution of both native and non-native genotypes of *Phragmites* in the state. Agriculture staff relied on morphologic differences between the genotypes and DNA analysis to confirm Washington populations as native or non-native genotypes (see distribution map below).

Conclusion: Native populations of *Phragmites* on the East Coast have nearly vanished as the result of competition from non-native genotypes and land development. In Washington, as more has become known about the distribution of *Phragmites* genotypes, the Noxious Weed Control Board has taken steps to manage the non-native genotype. The board has done so by upgrading the classification of the non-native genotype of *Phragmites* from a Class C noxious weed (no mandate for control) to a Class B noxious weed (a weed designated for control). In other states the non-native genotype has displaced the native genotype. In Washington, an increased mandate for management of the non-native genotype of *Phragmites* will help protect stands of the native genotype and other native wetland species.



The map shows the known Phragmites distribution in Washington as of December 2004. Blue dots indicate native genotypes and red dots indicate non-native genotypes. The large red dot represents an extensive Phragmites population in the Winchester Wasteway area of Grant County.

Appendix

Washington State and Federal Invasive Species Laws and Regulation

Species	Statute	Agency	Role	Industry Sectors
Animal Kingdom (Diseases Pests)	Animal Quarantine Laws - Animal Damage Control Act, 21, U.S.C. 101 through 135b & 19 U.S.C. 1306	USDA	Regulate, Quarantine	Farming
Aquactic Invasive Species	Clean Water Act	EPA	Permitting, Creates Standards	Commercial Boating, Shipping
Aquactic Invasive Species	Puget Sound Water Quality Protection RCW 90.71	Puget Sound Partnership	Coordination	Multiple
Aquatic Invasive Species	Anadromous Fish Conservation Act, 16 USC 757a-757g; 79 Stat. 1125	USDA, DOI, USFWS	May Conduct Studies and Make Recommendations to EPA About Reducing or Eliminating Substances Detrimental to Fish and Wildlife in Interstate or Navigable Waters or Tributaries	Aquaculture
Aquatic Invasive Species	Aquatic Invasive Species Enforcement Account - Aquatic Invasive Species Enforcement Program for Rereational and Commercial Watercraft, RCW 43.43.400	WSP	Regulate at Port of Entry Weight Stations; Ex Officio Enforcement Of Aquatic Nuisance Species Laws, Educate	Recreational and Commercial Boaters
Aquatic Nuisance Species	Zebra Mussel and European Green Crab Infested Waters, RCW 77.60.120	WDFW	Publish List of Infested Waters, Participate in Regional or National Groups	Aquaculture, Recreational and Commercial Watercraft Shipping, Waterfront Home Owners
Aquatic Animal and Plant Species	Prohibited Aquatic Animal Species - Infested Waters, RCW 77.12.875, WAC 23-212-016	WDFW	Designate Infested Waters, Educate	Recreational Boaters, Waterfront Home Owners, Marinas

See legend on page 69 for complete agency information.

Washington State and Federal Invasive Species Laws and Regulations *continued*

Species	Statute	Agency	Role	Industry Sectors
Aquatic Animal and Plant Species	Unlawful Avoidance of Aquatic Invasive Species, Invasive Species Check Station, RCW 77.15.293	WDFW	Regulate, Penalty	Recreational and Commercial Boaters
Aquatic Animal or Plant Species	Inspection Authority, RCW 77.15.080(2)	WDFW	Inspection of Transported Watercraft	Recreational and Commercial Boaters
Aquatic Animal Species	Rapid Response Plan, RCW 77.12.878	WDFW	Develop, Implement, Enforce, Rule Making, Signs	Recreational and Commercial Boaters, Marinas, Boat Launches
Aquatic Animal Species, Bullfrogs	Non-Native Aquatic Animal Species Classification, RCW 77.12.020, WAC 220-12-090, WAC 232-12-609	WDFW	Classify as either Prohibited, Regulated or Unregulated Harvest (Bullfrogs)	Multiple
Aquatic Diseases	Aquaculture Disease Control, RCW 77.115	WDFW	Regulate, Inspection	Aquaculture
Aquatic Diseases	Disease Inspection and Control for Aquatic Farmers, RCW 77.115.010, RCW 77.115.020, RCW 77.115.030	WDFW, WSDA	Inspection, Control, Fees, Consultation	Aquaculture
Aquatic Invasive Species	Registration of Aquatic Farmers, RCW 77.15.040	WDFW, DOH	Registration	Aquaculture
Aquatic Invasive Species	Aquatic Invasive Species Prevention Account, RCW 77.12.879	WDFW	Educate, Inspect, Check Stations Research, Monitoring, Prevent, Manage, Develop Early Detection-Rapid Response Plan	Recreational and Commercial Boaters, Marinas, Boat Launches
Aquatic Invasive Species	Aquatic Invasive Species - Inspection, RCW 77.12.882	WDFW	Inspection, Rule Making, Signs	Recreational and Commercial Boaters, Marinas, Boat Launches
Aquatic Noxious Weeds other than purple loosestrife or *Spartina*. Except if not Covered in 77.55.051 (2)	Removal or Control of Aquatic Noxious Weeds, RCW 77.55.081	WDFW	Rule Making for Removal Project Methods, Pamphlet	Restoration Projects

See legend on page 69 for complete agency information.

Washington State and Federal Invasive Species Laws and Regulations ***continued***

Species	Statute	Agency	Role	Industry Sectors
Aquatic Plants, Fish, or Wildlife	Unlawful Transport of Fish and Wildlife or Aquatic Plants, RCW 77.15.290, WAC 232-12-016	WDFW	Inspections, Regulate, Enforce Penalty	Multiple
Aquatic Species	Coastal Zone Management Act of 1972	NOAA	Monitoring, Research	Commercial Shipping
Atlantic Salmon	Marine Fin Fish Aquaculture Programs, RCW 77.125	WDFW	Monitor	Net Pens, Aquaculture
Aquatic Invasive Species	Water Pollution Control, RCW 90.48, WAC 173-201A, WAC 173-270	Ecology	Regulate, Control, Prevent	All
Brown Tree Snake and Other Wildlife	Animal Damage Control Act	USDA - APHIS	Research, Control	Multiple
Endangered Species	Endangered Species Act, 16 U.S.C. 1531	DOI, NOAA	Regulate	Multiple
Fish and Wildlife	Forest and Rangeland Renewable Resources Research Act of 1978	USDA	Authorizes Research	Forestry, Agriculture
Forest Insects and Tree Diseases	Forest Insect and Disease Control, RCW 76.06	DNR	Educate, Survey, Regulate	Forestry
Forest Pests and Invasive Species	Multiple-Use Sustained Yield Act of 1960, 16 U.S.C. 528-531	USFS	Regulate	Forestry
Forest Pests, Diseases	Cooperative Forestry Assistance Act, 16 U.S.C. 2104	USDA	Survey, Prevention, Financial Assistance	Forestry
Freshwater Aquatic Weeds and Algae	Freshwater Aquatic Algae Control Account-Freshwater Aquatic Algae Control Program, RCW 43.21A.667	Ecology	Educate, Financial Assistance, Survey	Recreation
Fruit Pests	Inspections and Certifications, RCW 15.17.140	WSDA	Inspection, Certification	Fruit Growers
Fruit Pests	Fruits or Vegetable, RCW 15.17.210	WSDA	Inspection, Regulation	Fruit Growers

See legend on page 69 for complete agency information.

Washington State and Federal Invasive Species Laws and Regulations *continued*

Species	Statute	Agency	Role	Industry Sectors
Invasive Plant and Animal Species	Aquatic Nuisance Species Committee, RCW 77.60.130	WSDA, WDFW, DNR, Ecology, PSAT, DOH, WSP, PSP, NWCB, and WSG Core Members, Tribes, Federal Agencies, Affected Industry Invited	Plan, Coordinate, Report, Recommend Potential Regulations	Aquaculture, Commercial Shipping
Insects, Disease, and Other Damaging Agents	International Forestry Cooperation Act, Section 602b of 16 U.S.C. 4501b	USFS	Provide Assistance, and Deliver Research and Development Products	Multiple
Integrated Pest Management	Integrated Pest Management, RCW 17.15	State Agencies	Management	State Agencies
Invasive Plants	Soil Conservation and Domestic Allotment Act, 16 U.S.C. 590a-590f	USDA, NRCS	Provide Technology, Operates Plant Materials Centers, Technical Assistance, Control, Management, Restoration	Public and Private Landowners
Invasive Plants	Organic Administration Act, 16 U.S.C. 551	USDA	Regulate	Public Landowners
Invasive Plants	Forest Planning Statutes, 16 U.S.C. 1604	USDA	Develop and Maintain Forest Plans	Multiple
Invasive Plants	Public Rangelands Improvement Act of 1978; Federal Land Policy and Management Act of 1976, 43 U.S.C. 1904	USFS	Provides Funding	Public Rangelands
Invasive Species	Washington Invasive Species Council Created, RCW 79A.25.310	Invasive Species Council	Provide Policy Level Direction, Planning, and Coordination	Mutiple
Listed Noxious Weeds	Noxious Weed Control Boards, RCW 17.10, WAC 16-750, 2 WAC 16-75	WSDA, Noxious Weed Control Board, Local Weed Boards	Survey, Educate, Report, Regulate	Agriculture, Forestry, Land Based
Mosquitoes	Mosquito Control Districts, RCW 17.28	Mosquito Control	Taxing and Funding of Eradication	Landowners
Multiple	Food Security Act of 1985, 16 U.S.C. Sections 1240-1240H of 3839aa-3839aa-8	NRCS, EQIP	Technical, Educational, Financial Assistance	Agriculture
Multiple	Federal Agriculture Improvement and Reform Act of 1996,	NRCS, WHIP	Provides Technical, Financial, and Educational Assistance	Landowners

See legend on page 69 for complete agency information.

Washington State and Federal Invasive Species Laws and Regulations *continued*

Species	Statute	Agency	Role	Industry Sectors
Multiple	Fish and Wildlife Coordination Act	NMFS, USFWS	Reviews Development Projects, Issues Grants	Multiple
Multiple	National Environmental Policy Act	All Federal Agencies	Environmental Impact Assessment	Multiple
Multiple	National Forest Management Act of 1976, 16 U.S.C.	USFS	Develop Resource 1600 Management Plans	Forestry
Multiple	Sikes Act, 16 U.S.C. 670o, 74 Stat. 1052	DOI	Requires Planning, Development, Maintenance of Fish and Wildlife Resources on Military Reservations	Military Installations
Non-Indigenous Aquatic Species	Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990, 16 U.S.C. 4701-4751	NOAA - NSGO	Research , Prevention, Control, Management, Restoration	Shipping, Aquaculture
Non-indigenous Marine Species and Organisms, mostly Planktonic	Ballast Water Management, RCW 77.120, WAC 220-77-090, WAC 220-77-095	WDFW	Regulate, Plan, Coordinate Research, Inspect, Monitor, Pilot Program, Rule Making	Shipping
Noxious Weeds	Seeds Screening, RCW 15.49.330, WAC 16-301, WAC 16-302	WSDA	Screening	Agriculture, Horticulture
Noxious, Harmful, Injurious, or Poisonous Plants on Federal Land	Federal Noxious Weed Act, 7 U.S.C. 2814	Federal Land Management Agencies	Requires Cooperative Agreements	Multiple
Oysters - Diseases and Pests	Imported Oyster Seed Permit, RCW 77.60.080	WDFW	Regulate, Permitting	Aquaculture
Oysters - Diseases and Pests	Imported Oyster Seed Inspection, RCW 77.60.090	WDFW	Regulate, Inspection	Aquaculture
Pest - any Invertebrate Animal, Pathogen, Parasitic Plant, or Similar or Allied Organism that can Cause Disease or Damage in any Crops, Trees, Shrubs, Grasses, or Other Plants of Substantial Value	Pest Control Compact, RCW 17.34	Pest Control Insurance Fund	State Funding in an Insurance Pool for Multi- State Pest Impacts	Agriculture

See legend on page 69 for complete agency information.

Washington State and Federal Invasive Species Laws and Regulations *continued*

Species	Statute	Agency	Role	Industry Sectors
Plant and Bee Pests and Diseases, Insect Pests, Plant Pathogens, and Noxious Weeds	Insect Pests and Plant Diseases, RCW 17.24, WAC 16-470, WAC 16-752-600	WSDA	Survey, Inspect, Regulate	Forest, Agriculture, Horticulture Floriculture, Apiary
Plant Pests	Horticultural Plants, Christmas Trees and Facilities, RCW 15.13	WSDA	Inspection, Licensing, Certification	Horticulture
Plant Pests	Planting Stock, RCW 15.14, WAC 16-322, WAC 16-328	WSDA	Inspect, Regulate	Agriculture, Horticulture
Plants or Plant Products	Plant Protection Act, 7 U.S.C 7701	USDA	Regulate, Quarantine	Nursery
Predatory Animals	Dangerous Wild Animals, RCW 16.30	State Agencies, Local Governments	Regulate, Enforce	Mutiple
Predatory Animals, Rodents, Things, or Pests	Agricultural Pest Districts, RCW 17.12	Pest Districts	Taxing and Funding of Eradication Projects	Agriculture
Prohibited, Regulated, and Unlisted Aquatic Animal Species	Unlawful Use of Prohibited Aquatic Animal Species, RCW 77.15.253, WAC 232-12-016	WDFW	Check Station Inspections, Regulate Transport, Possession or Release, Enforce Penalty	Multiple
Seeds	Federal Seed Act, 7 U.S.C. 1581	USDA	Regulate, Quarantine	Nursery
Shellfish	Restricted Shellfish Areas, RCW 77.60.060	WDFW	Regulate, Permitting	Aquaculture
Spartina and Purple Loosestrife	Control of *Spartina* and Purple Loosestrife, RCW 17.26	WSDA, Ecology, DNR WDFW, and St. Parks	Control, Survey, Eradicate, and Restore on Agency Owned Lands	Shellfish, Recreation
Spartina and Purple Loosestrife	Control of *Spartina* and Purple loosestrife, RCW 77.55.051	WDFW	Control, Survey, Eradicate, and Restore on Agency Owned Lands	Shellfish, Recreation
Weeds	Area of District, RCW 17.04	Weed Boards	Survey, Educate, Regulate, Tax, Fund	Agriculture, Forestry Land-Based
Weeds	Inter-County Weed Districts, RCW 17.06	Weed Districts	Survey, Educate, Regulate, Tax, Fund	Agriculture, Forestry Land-Based
Wild Animal Species, Aquatic and Land Vegetation	Lacey Act, 18 U.S.C. 42	USFWS	Regulate	Trade

Washington State and Federal Invasive Species Laws and Regulations *continued*

Species	Statute	Agency	Role	Industry Sectors
Zebra Mussel, European Green Crab, and Chinese Mitten Crab	Unlawful Release of Deleterious Exotic Wildlife, RCW 77.15.250	WDFW	Regulate, Enforce	Multiple
Zebra Mussels and European Green Crabs	Imported Oyster Seed – Inspection, RCW 77.60.090	WDFW	Regulate, Inspection	Aquaculture
Zebra Mussels and European Green Crabs	Zebra Mussels and European Green Crabs, RCW 77.60.110, WAC 232-12-01701	WDFW	Educate; Prepare Draft Rules for Legislature, Establish Aquatic Nuisance Species Phone Number Monitoring and Control Programs, Abatement	Recreational and Commercial Watercraft, Shipping, Aquaculture

Legend

APHIS – U.S. Department of Agriculture, Animal and Plant Health Inspection Service
DOD – U.S. Department of Defense
DOH – Washington Department of Health
DOI – U.S. Department of the Interior
DNR – Washington Department of Natural Resources
Ecology – Washington Department of Ecology
EPA- U.S. Environmental Protection Agency
EQIP – U.S. Department of Agriculture, Environmental Quality Incentives Program
USFWS – U.S. Fish and Wildlife Service
NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
NSGO – National Sea Grant Office
NRCS – U.S. Department of Agriculture, Natural Resources Conservation Service
NWCB – Washington State Noxious Weed Control Board
PSAT – Puget Sound Action Team
PSP – Puget Sound Partnership
RCW – Revised Code of Washington
St. Parks – Washington Parks and Recreation Commission
USDA – U.S. Department of Agriculture
USFS – U.S. Forest Service
WAC – Washington Administrative Code
WDFW – Washington Department of Fish and Wildlife
WHIP – U.S. Department of Agriculture, Wildlife Habitat Incentives Program
WSDA – Washington State Department of Agriculture
WSG – Washington Sea Grant
WSP – Washington State Patrol

INVADERS AT THE GATE

WASHINGTON STATE INVASIVE SPECIES COUNCIL 2008 STRATEGIC PLAN

WASHINGTON STATE
RECREATION AND CONSERVATION OFFICE
Washington Invasive
Species Council

WASHINGTON INVASIVE SPECIES COUNCIL

End of Project Report

Invasive Species Detection Network

Prepared by Molly T. Sullivan

6/27/2013

This project was designed to begin addressing the gap in invasive species data from on-going, environmental monitoring efforts in Puget Sound. Coupled with a launch into social media, this detection network reflects the beginning stages of utilizing existing organizations and efforts as a tool to supplement the Council Members' Agency's many efforts. Though times are difficult financially for many organizations, invasive species issues cannot wait. Therefore, this list should be used as a baseline assessment, to be further added to and expanded upon. As a baseline, it served as a unique outreach tool to make members of the community more aware of the efforts of the Washington Invasive Species Council and how everyone has a role to play in stopping these invaders at the gate.

Table of Contents

Project Report……2-3

Summary of Organizations……4-7

Flow Charts……9-13

European Green Crab……9

Knotweed……10

New Zealand Mud Snail……11

Club Tunicate……12

Undaria……13

Example Letter……14

Next Steps……..15-16

Purpose: Enhance prevention and rapid response to the introduction and spread of terrestrial and aquatic invasive species. Implement elements of B5.3 NTA 2: Invasive Species Early Detection and Monitoring in the 2012 Action Agenda.

Objective: Develop an effective early warning system to detect a minimum of five priority, high-risk invasive species in Puget Sound and its tributaries so that agencies with responsibility can quickly respond before the invasive species causes substantial environmental and economic damage.

Methods: Overall, there were many different components to this project including: research, communication, outreach, planning, problem solving, creativity and a great deal of collaboration. I began by doing research on the invasive species that posed the greatest threats to ecosystems in the Puget Sound area. Using existing materials such as species field guides, scientific journals, data specific to Puget Sound work, as well as input from various members of the Washington Invasive Species Council, a list of high priority species was created. Outreach was then performed, and partnerships and relationships were created centered around data sharing and invasive species messaging.

The List of Invasive Species:

This list was compiled in consideration of several different factors. The species were chosen specifically for their: taxonomic diversity, especially deleterious nature, distinguishing characteristics, and popularity to some degree. Since this was a pilot project, we felt that it was important to use these characteristics in the beginning stages, and to expand our criteria to the rest of WISC's top 50 species as success warrants. Having a diverse array of species allowed many different user groups or stakeholders to be reached. Had we used similar species, only a subset of the groups would have been appropriate to reach out to. We also chose high-risk invasive species because we thought that the messaging would be easier to use. Since high risk invasives are usually better known, and materials are already available on them, we decided to cut down our costs and time by not having to create materials from scratch. Additionally, having invasive species that are easily recognizable helped with our efforts when asking people to identify these species quickly, whilst doing their own work. Lastly, with the recent influx of tsunami debris, we chose some species related to those organisms to tie in with recent events, in the hopes of expanding our audience even further.

It is important to note that all invasive species are detrimental to the ecosystem, and pose significant threats. With the state of the economy, and the wide gap in any cohesive monitoring efforts, choosing certain species over others is necessary. It is important to evaluate which ones we can wait on, and which have to be acted upon immediately before it is too late. This is often a fine line that is not well understood. Therefore, future efforts should include more species than just the five we have initially decided upon for this pilot study.

Key Species Chosen: European Green Crab, Undaria, Knotweed, Club Tunicate, New Zealand Mud Snail

Beginning Research:

After much research about Puget Sound, and each of the chosen species, I further researched each species' range of habitats. This is what was primarily used when researching projects/companies/research efforts occurring in Puget Sound.

I began by utilizing information given to me from Puget Sound Assessment and Monitoring Program, including a list of monitoring programs and contact information. Beginning with this list, I expanded my efforts using extensive internet searches, council contacts, and networking. From that I was able to compile a list of about 75 different programs and entities to reach out to.

Based upon location and corresponding invasive species habitats, I broke up each of the organizations into different categories. If one organization was suitable for more than one species, I specifically did not assign it more than 2 species since previous studies warned against overwhelming volunteers. After each organization was assigned to a species, I further categorized each type of organization or project. These included: the organizations from the PSEMP list, organizations affiliated with a specific invasive species, organizations with possible vested interests, organizations with overlapping habitats, and organizations with short term collection. I created flow charts for each species for both organizational purposes and to be able to identify any gaps in information.

Outreach:

Afterwards I researched each of these entities further to get myself better acquainted so that I would be comfortable doing outreach. This step was vital for outreach; it revealed to each organization that I was interested in their work and familiar with it and allowed me to get a better idea of how to work with them to try and develop a partnership. Then I sent out initial emails introducing the Washington Invasive Species Council, what we were hoping to achieve with a detection network, and how that organization might be able to participate in some way.

Much follow up correspondence took place after the initial emails were sent out. Since the organizations that were reached out to were so different in scope, scale, and purpose, I had to really tailor each conversation to that organization. By doing that I was able to identify what they had to offer, and what I could glean from them in terms of data gathering, or inserting the invasive species messaging into their current projects. Thus, the amount of data I received was very different and non-cohesive.

Summary of Correspondences:

Since each organization was so different, the follow up with each was diverse as well. All of the correspondence and contact information from January to June 2013 is documented in the Master Information Chart. The following represents a summary list of the organizations who are participating, or who we are contact with. A full list with non-participants has been included for future efforts. *Please note that additional information is included in the Master Information Chart and should be consulted before further contact is made.

Organization	Species	Correspondence	Follow Up
BEACH program	EGC, Undaria	Chris is interested in the program, and commends our efforts for inter-agency cooperation. He thinks that there may be some hurdles with participating organizations, but is willing to work with us.	Chris was involved with training, so correspondence was limited. Follow up in terms of asking BEACH members to be on the lookout and to include WISC information in their newsletter is pertinent.
Padilla Bay (National Estuarine Research Reserve System)	EGC, Spartina	Sharon Riggs is willing to share their data from their current EGC and Spartina monitoring efforts.	Reports are done at the end of the year. Request the report from Sharon at the end of each year.
Derelict Gear Removal	EGC	Joan Drinkwin has been sent several invasive species booklets, identification guides, and reporting information cards. She has put these on two of their boats and informed their on-board biologist about the WISC program. They will be on the lookout for invasive species in any of the gear they pull up.	Get new species ID guides from SeaGrant and laminate them for the boat and send to Joan.
Beach Watchers & Shore Stewards	EGC	This group was involved with Nakeeta's EGC monitoring before it was disbanded, and now do spartina monitoring.	Chrys only works on Tuesdays and Thursdays, but is interested in the program since they've already been involved in similar efforts. Emailing Chrys follow up info about WISC is necessary
Taylor Shellfish (and other Shellfish Industries/Companies)	EGC	Bill gave contact information to Diane Cooper (with PCSGA) who discussed her concerns about sharing information because of previous	They already monitor for EGC, but the information will not be provided willingly without consent that their industry will not be penalized.

		measures taken, time, $ and efforts seemingly wasted to monitor invasives that they never found.	
Marine Resources Committee	EGC	Kathleen said that they don't have any current methods, but gave Caroline Gibson's information.	The Snohomish MRC had indicated interest in collaborating with the Northwest Straits Commission and other MRCs on a European Green Crab invasive species monitoring project, but it was put on hold prior to them getting started. Caroline Gibson was working with some state folks and the project was put on hold. If the project begins, contact further.
Jamestown S'Klallum Tribe	Knotweed, Butterfly Bush	Hilton Turnbull discussed their monitoring efforts with knotweed from 2004-2008. They still do spot control. Their efforts are now directed towards Butterfly Bush. Might be conducting an aerial plant survey.	Data from 2004-2008 is available, ask for further information about Butterfly Bush and aerial survey once it's done.
Washington Scuba Alliance	Club Tunicate, Undaria	Jim Trask has sent WISC information out in the WA Scuba Alliance Newsletter, and posted it on his website.	Follow up with Jim periodically
REEF	Club Tunicate, Undaria	Janna Nichols said that Club Tunicate and Undaria are documented in their database online if found. Database is frequently updated	Check out database periodically to see if more sightings have been documented
King County's Intertidal Maritime Water Quality in Central Sound	Undaria	Kim originally said that they used to do more monitoring, but haven't been able to lately. Jim gave me	Email Sally Abella abellasally@comcast.net to get the information on which programs might be able to serve as "double duty"

		Sally's information.	
Skagit Fisheries Enhancement Group (CWMA)	Knotweed	Michelle Murphy is their knotweed coordinator and provided their final report for the Upper Skagit Knotweed Program for 2012	Will meet with the Skagit CWMA group in December, so give her any updates to share if you have some. Also request their end of season report for 2013.
Stream Teams	Knotweed, NZMS	Michelle Stevie has info on county utility services that deal with invasives	Has been on vacation, but had a conference call tentatively planned
Weed Watchers in King County			http://www5.kingcounty.gov/iMAP/viewer.htm?mapset=weeds have GIS layers of biggest noxious weeds
PNW Invasive Plant Council (IPC)→EDRR Citizen Science Volunteers	Knotweed	Went to workshop with Julie and Lizbeth and they are willing to share data	Follow up with Lizbeth after citizen science season is over for data
SeaDoc Society	Inclusive	Talked with Joe Gaydos about sharing information about projects concerning invasive species. Also discussed putting the language from the Salmon Recovery document into SeaDoc's grant writing proposal process.	Follow up with Joe about adding invasive species language into their grant proposal process
Puget Soundkeepers Alliance	Tunicates & Undaria	Andy Gregory (Boating Programs Coordinator) will be doing some outreach about these invasives on behalf of WISC. He has access to over 65 different marinas, and will be informing people about the reporting information	Wendy and Molly talked with Andy via conference call and decided to repurpose some materials for Andy to hand out at marinas. Materials need to be given to Andy.
Salish Sea Expeditions	Inclusive	Eric Strickler and Molly discussed how to get invasive species into his student's curricula. They have many restoration	Eric wanted a guest speaker for the camp this summer, but Wendy and Molly were unable to attend. Tentative plans will be made for next year, since Eric emphasized that the kids

		projects coming up, and Eric will be trying to incorporate more into this effort. Eric was informed of and provided with the PEI information for classrooms	enjoy seeing "real scientists."
PNW Salmon Center	Knotweed	They do knotweed control and give their data to the Olympic Knotweed Group. Willing to share their data too	Follow up with Olympic Knotweed Group for all inclusive data
NW Marine Trade Association (Clean Boating Foundation)	Undaria & Club Tunicate	Peter has organized several invasive species detection workshops and has worked with Carl Klein. Their last newsletter "Water Life" was all about invasive species. Peter blogs for Three Sheets Northwest about invasives too	Peter is more than willing to partner with us on invasive species outreach. Molly talked about collaborating about invasives such as tunicates and undaria, since he does not know as much about them. Additionally, Peter and Molly talked about sharing each other's media information (especially the video that he is working on right now). Also, Peter wants to talk to Wendy about being on the Council.
US Forest Service	NZMS, Knotweed	They have a list of invasives that they are keeping an eye out while they do their normal work and will report back to us	Follow up with Shawna Bautista periodically
PNW Shell Club	NZMS	They always look out for non-natives on the beaches, and catalogue them on their website (working on a database). Have given the reporting information out to their members	Look at database peridocially
Puget Sound Stream Benthos	NZMS	Got information regarding Puget Sound Stream Benthos and EPA	Have an extensive database; look at periodically

		grants and such	

Blue=in contact with

Green=current participants

Conclusion:

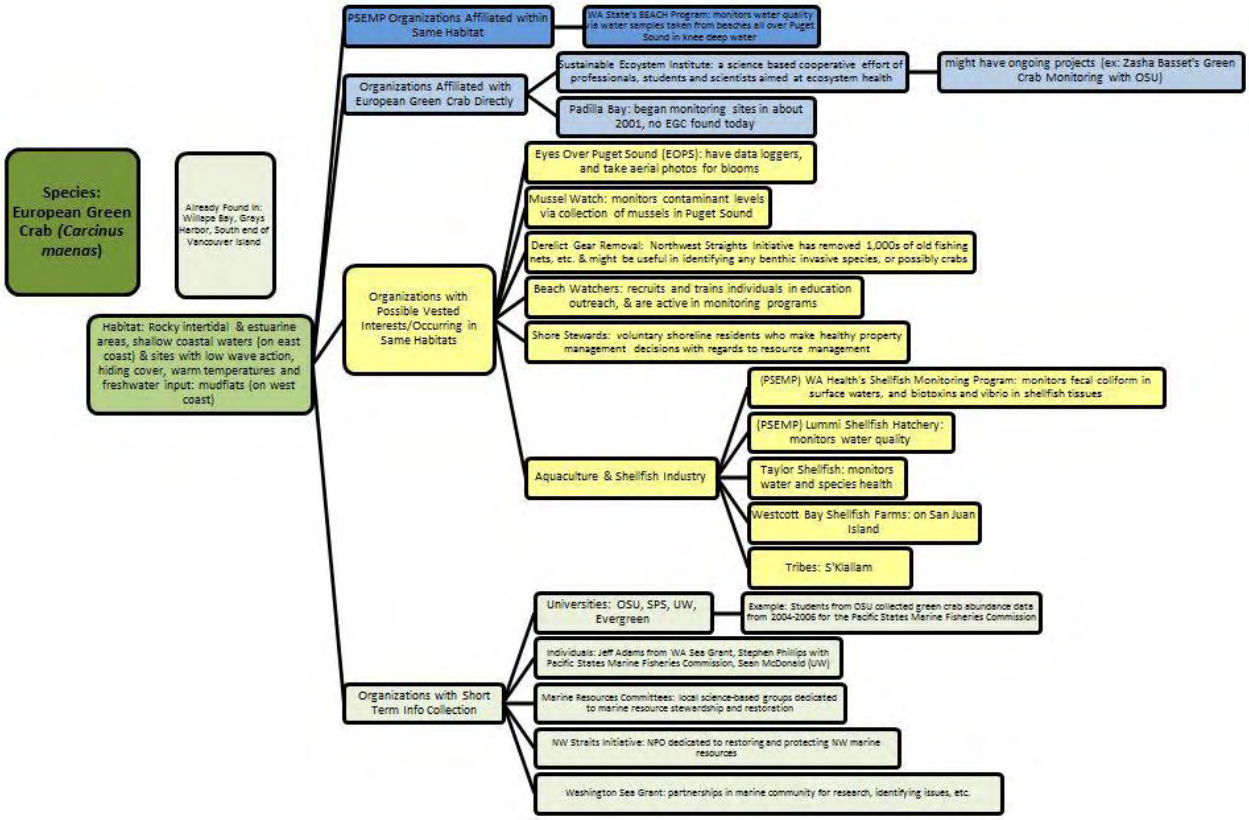
Overall, the start of a detection network should be deemed a success. We were able to develop an effective early warning system to detect a minimum of five priority, high-risk invasive species in Puget Sound, thus meeting the original objectives. The participating organizations are diverse and represent a good portion of the ecological mindfulness of Puget Sound.

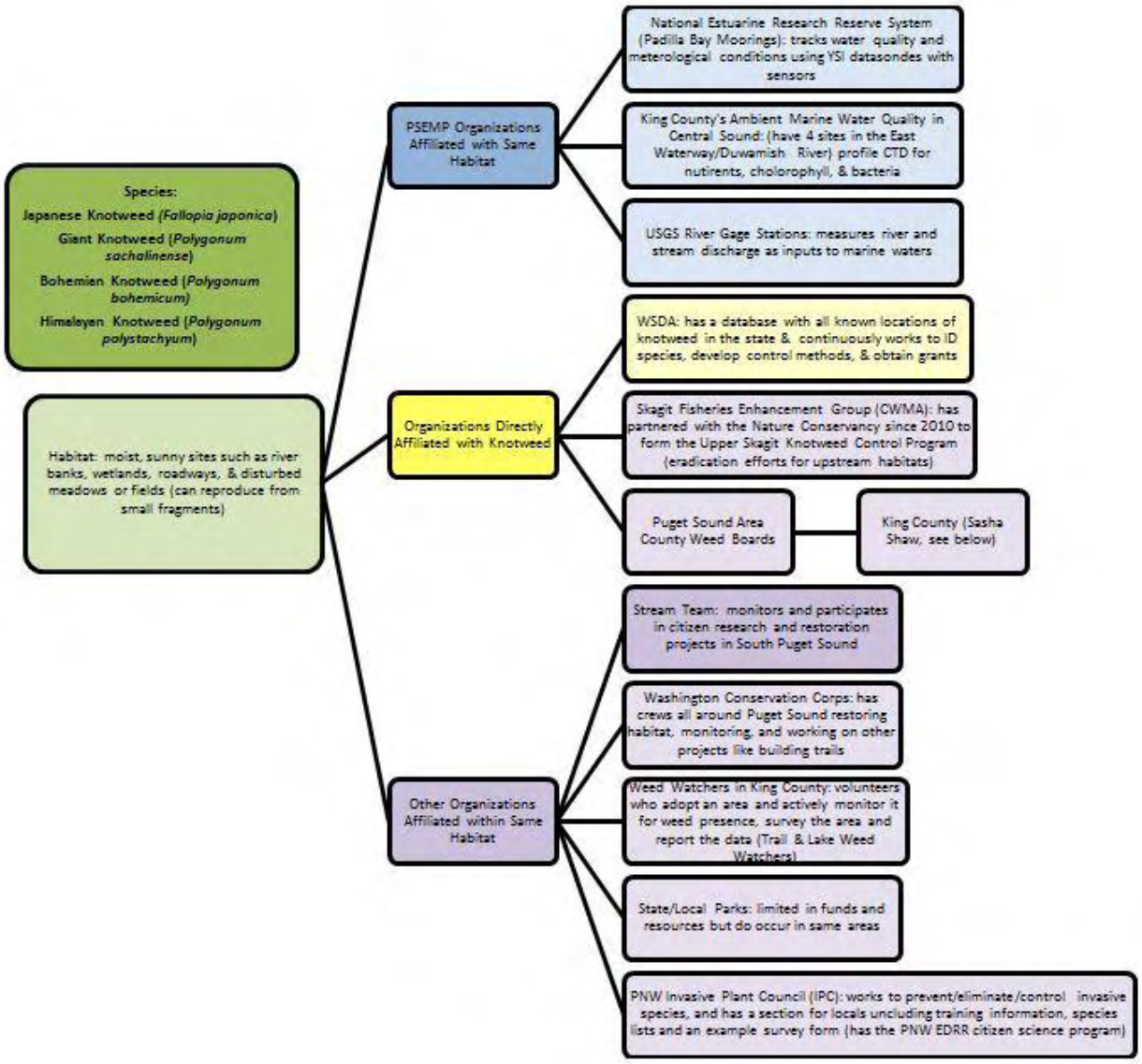
In addition to the benefits of having started a detection network, an added benefit of this project has been the amount of outreach involved and the positive response of organizations to invasive species efforts. Having contacted over 70 different organizations and people, the Washington Invasive Species Council has had the chance to further solidify its presence in Puget Sound, and insert its message into many different efforts. Coupled with social media, many partnerships and relationships to the community have been created.

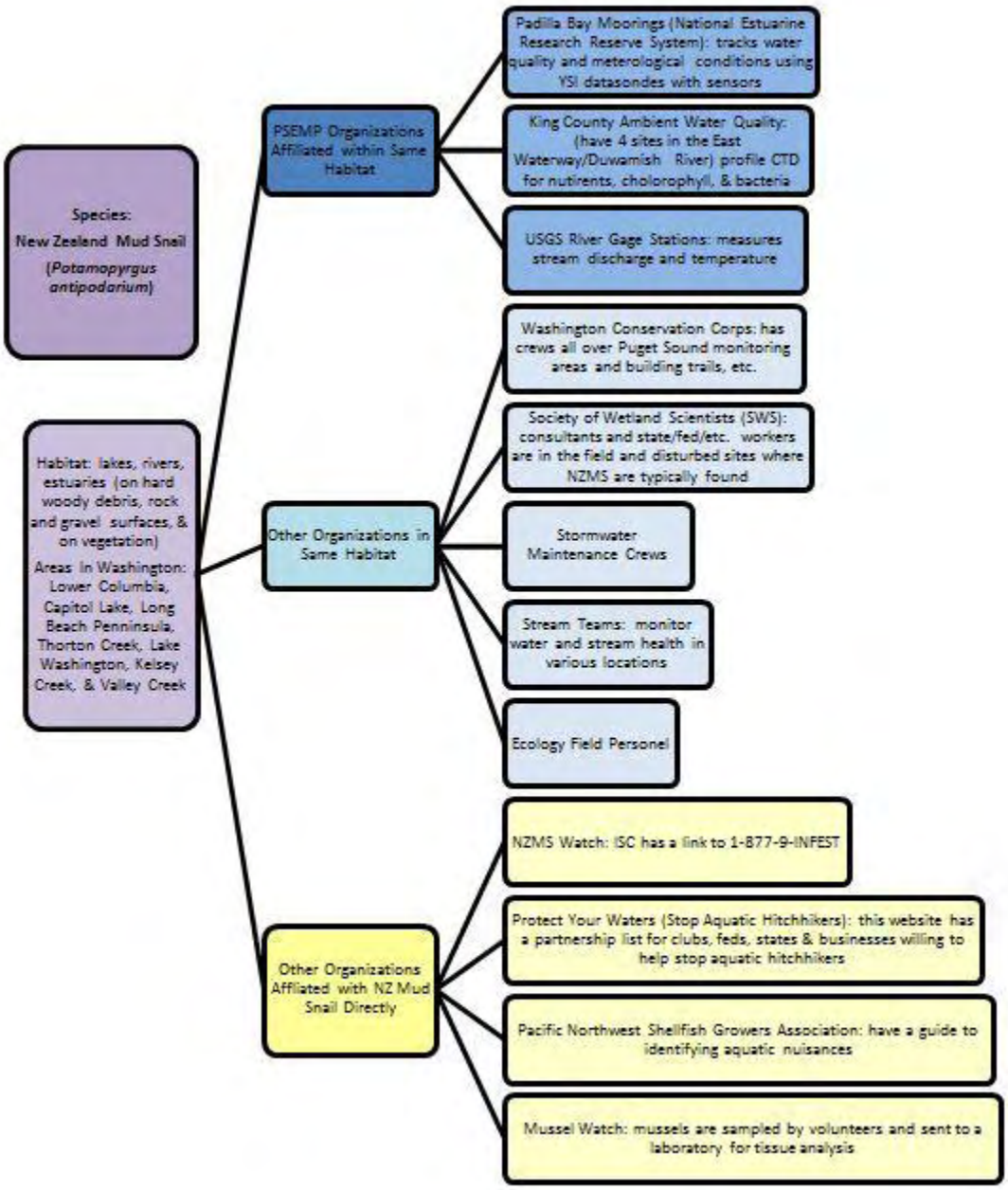
Though the initial outreach has been successful, continued success will be contingent upon adding to and expanding this program. As budget crises wane, and the economy hopefully picks back up, more efforts will be available for allocation to invasive species. With the introduction of boat check stations and a new invasive species bill, invasive species will be a hot topic for Washington residents. This is the time to make our presence and prevention methods known. These are the beginning stage efforts, and hopefully they are able to be expanded upon to stop the influx of invaders at the gate.

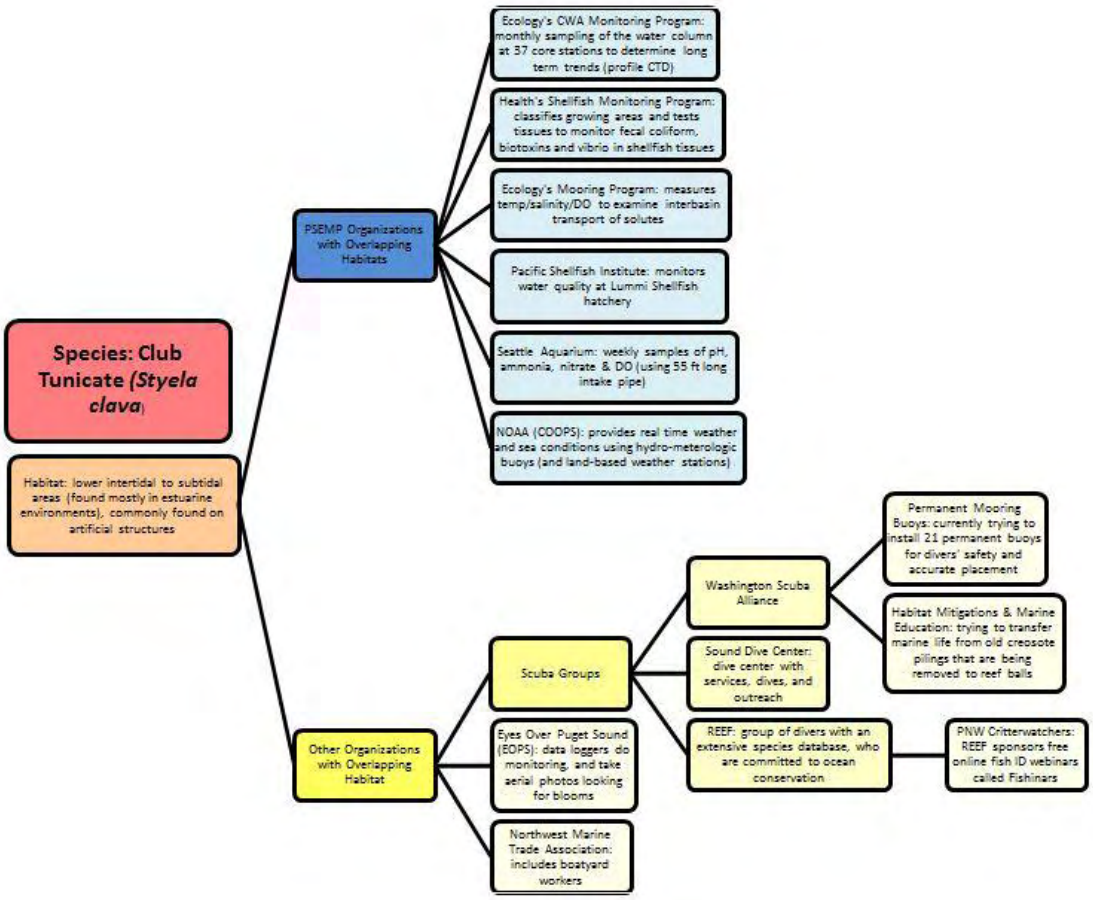
Additional Materials

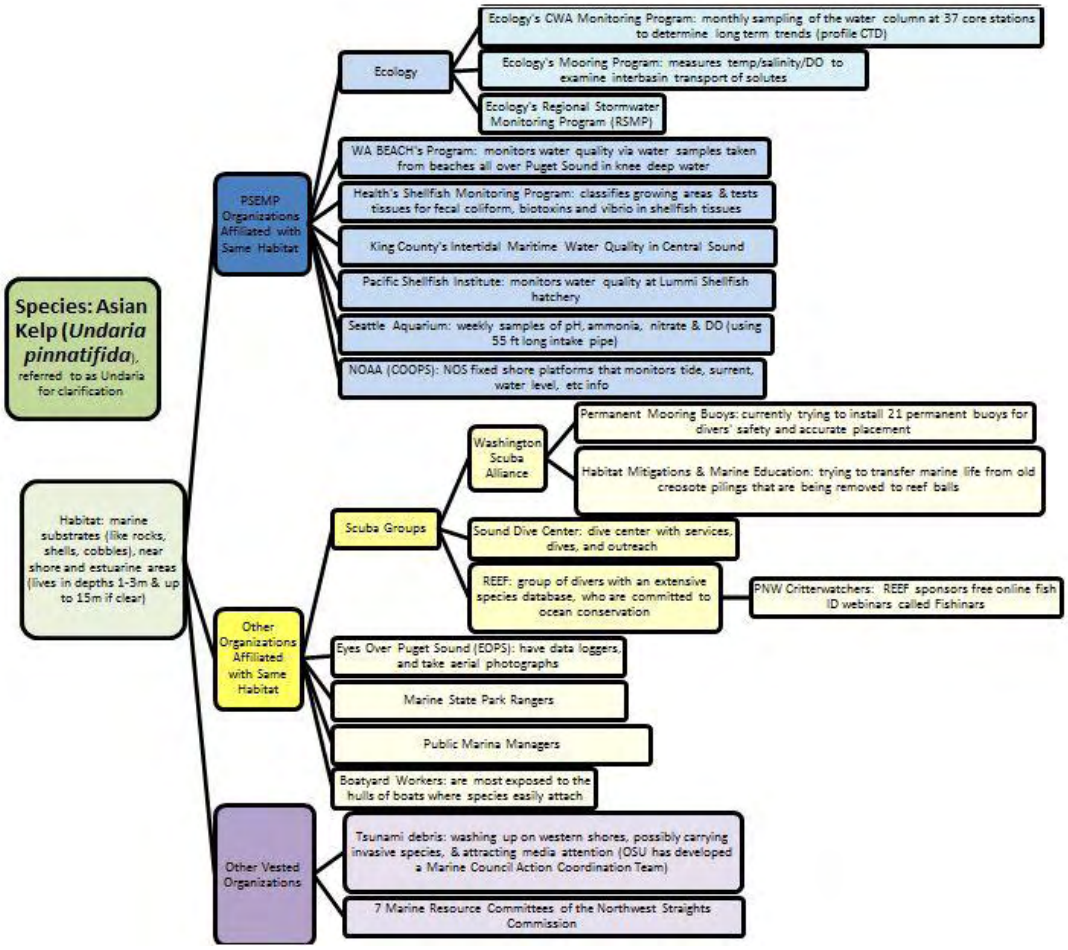
Flow Charts




Species:
Japanese Knotweed (Fallopia japonica)
Giant Knotweed (Polygonum sachalinense)
Bohemian Knotweed (Polygonum bohemicum)
Himalayan Knotweed (Polygonum polystachyum)
Habitat: moist, sunny sites such as river banks, wetlands, roadways, & disturbed meadows or fields (can reproduce from small fragments)
PSEMP Organizations Affiliated with Same Habitat
National Estuarine Research Reserve System (Padilla Bay Moorings): tracks water quality and meterological conditions using YSI datasondes with sensors
King County's Ambient Marine Water Quality in Central Sound: (have 4 sites in the East Waterway/Duwamish River) profile CTD for nutrients, cholorophyll, & bacteria
USGS River Gage Stations: measures river and stream discharge as inputs to marine waters
Organizations Directly Affiliated with Knotweed
WSDA: has a database with all known locations of knotweed in the state & continuously works to ID species, develop control methods, & obtain grants
Skagit Fisheries Enhancement Group (CWMA): has partnered with the Nature Conservancy since 2010 to form the Upper Skagit Knotweed Control Program (eradication efforts for upstream habitats)
Puget Sound Area County Weed Boards
King County (Sasha Shaw, see below)
Other Organizations Affiliated within Same Habitat
Stream Team: monitors and participates in citizen research and restoration projects in South Puget Sound
Washington Conservation Corps: has crews all around Puget Sound restoring habitat, monitoring, and working on other projects like building trails
Weed Watchers in King County: volunteers who adopt an area and actively monitor it for weed presence, survey the area and report the data (Trail & Lake Weed Watchers)
State/Local Parks: limited in funds and resources but do occur in same areas
PNW Invasive Plant Council (IPC): works to prevent/eliminate/control invasive species, and has a section for locals uncluding training information, species lists and an example survey form (has the PNW EDRR citizen science program)


Species:
New Zealand Mud Snail
(Potamopyrgus antipodarium)
Habitat: lakes, rivers, estuaries (on hard woody debris, rock and gravel surfaces, & on vegetation)
Areas in Washington: Lower Columbia, Capitol Lake, Long Beach Penninsula, Thorton Creek, Lake Washington, Kelsey Creek, & Valley Creek
PSEMP Organizations Affiliated within Same Habitat
Padilla Bay Moorings (National Estuarine Research Reserve System): tracks water quality and meterological conditions using YSI datasondes with sensors
King County Ambient Water Quality: (have 4 sites in the East Waterway/Duwamish River) profile CTD for nutirents, cholorophyll, & bacteria
USGS River Gage Stations: measures stream discharge and temperature
Other Organizations in Same Habitat
Washington Conservation Corps: has crews all over Puget Sound monitoring areas and building trails, etc.
Society of Wetland Scientists (SWS): consultants and state/fed/etc. workers are in the field and disturbed sites where NZMS are typically found
Stormwater Maintenance Crews
Stream Teams: monitor water and stream health in various locations
Ecology Field Personel
Other Organizations Affiliated with NZ Mud Snail Directly
NZMS Watch: ISC has a link to 1-877-9-INFEST
Protect Your Waters (Stop Aquatic Hitchhikers): this website has a partnership list for clubs, feds, states & businesses willing to help stop aquatic hitchhikers
Pacific Northwest Shellfish Growers Association: have a guide to identifying aquatic nuisances
Mussel Watch: mussels are sampled by volunteers and sent to a laboratory for tissue analysis


Species: Club Tunicate (Styela clava)
Habitat: lower intertidal to subtidal areas (found mostly in estuarine environments), commonly found on artificial structures
PSEMP Organizations with Overlapping Habitats
Ecology's CWA Monitoring Program: monthly sampling of the water column at 37 core stations to determine long term trends (profile CTD)
Health's Shellfish Monitoring Program: classifies growing areas and tests tissues to monitor fecal coliform, biotoxins and vibrio in shellfish tissues
Ecology's Mooring Program: measures temp/salinity/DO to examine interbasin transport of solutes
Pacific Shellfish Institute: monitors water quality at Lummi Shellfish hatchery
Seattle Aquarium: weekly samples of pH, ammonia, nitrate & DO (using 55 ft long intake pipe)
NOAA (CDOPS): provides real time weather and sea conditions using hydro-meterologic buoys (and land-based weather stations)
Other Organizations with Overlapping Habitat
Scuba Groups
Washington Scuba Alliance
Permanent Mooring Buoys: currently trying to install 21 permanent buoys for divers' safety and accurate placement
Habitat Mitigations & Marine Education: trying to transfer marine life from old creosote pilings that are being removed to reef balls
Sound Dive Center: dive center with services, dives, and outreach
REEF: group of divers with an extensive species database, who are committed to ocean conservation
PNW Critterwatchers: REEF sponsors free online fish ID webinars called Fishinars
Eyes Over Puget Sound (EOPS): data loggers do monitoring, and take aerial photos looking for blooms
Northwest Marine Trade Association: includes boatyard workers


Species: Asian Kelp (*Undaria pinnatifida*), referred to as Undaria for clarification
Habitat: marine substrates (like rocks, shells, cobbles), near shore and estuarine areas (lives in depths 1-3m & up to 15m if clear)
PSEMP Organizations Affiliated with Same Habitat
Ecology
Ecology's CWA Monitoring Program: monthly sampling of the water column at 37 core stations to determine long term trends (profile CTD)
Ecology's Mooring Program: measures temp/salinity/DO to examine interbasin transport of solutes
Ecology's Regional Stormwater Monitoring Program (RSMP)
WA BEACH's Program: monitors water quality via water samples taken from beaches all over Puget Sound in knee deep water
Health's Shellfish Monitoring Program: classifies growing areas & tests tissues for fecal coliform, biotoxins and vibrio in shellfish tissues
King County's Intertidal Maritime Water Quality in Central Sound
Pacific Shellfish Institute: monitors water quality at Lummi Shellfish hatchery
Seattle Aquarium: weekly samples of pH, ammonia, nitrate & DO (using 55 ft long intake pipe)
NOAA (CDOPS): NOS fixed shore platforms that monitors tide, current, water level, etc info
Other Organizations Affiliated with Same Habitat
Scuba Groups
Washington Scuba Alliance
Permanent Mooring Buoys: currently trying to install 21 permanent buoys for divers' safety and accurate placement
Habitat Mitigations & Marine Education: trying to transfer marine life from old creosote pilings that are being removed to reef balls
Sound Dive Center: dive center with services, dives, and outreach
REEF: group of divers with an extensive species database, who are committed to ocean conservation
PNW Critterwatchers: REEF sponsors free online fish ID webinars called Fishinars
Eyes Over Puget Sound (EOPS): have data loggers, and take aerial photographs
Marine State Park Rangers
Public Marina Managers
Boatyard Workers: are most exposed to the hulls of boats where species easily attach
Other Vested Organizations
Tsunami debris: washing up on western shores, possibly carrying invasive species, & attracting media attention (OSU has developed a Marine Council Action Coordination Team)
7 Marine Resource Committees of the Northwest Straights Commission

Initial (Example) Email Sent Out:

Hi Joan,

I am working with the Washington Invasive Species Council to develop an early detection program for invasive species. Currently, there is little in the way of a structured monitoring effort for invasive species in Washington, and the council is working to take some steps forward in that regard. With limited budgets all around, our hope is to join forces in a small way with other groups that already have established monitoring programs.

As such, I am trying to identify ongoing projects or programs that occur within the same habitats, focus on the same species, or might just have a vested interest in protecting our natural resources from invasive species. I understand that the Derelict Gear Removal Program has been successful at improving underwater marine habitat, and might overlap areas where European Green Crab could be present, which is an invasive species we very interested in. Would it be possible for me to inquire further about your program and methods?

Thank you so much for any information that you may be able to provide. I look forward to hearing from you.

Molly T. Sullivan
Washington Invasive Species Council
Recreation and Conservation Office
360.902.3083
Molly.sullivan@rco.wa.gov

Wendy Brown
Washington Invasive Species Council
Recreation and Conservation Office
360.902.3088
Wendy.brown@invasivespecies.wa.gov

Next Steps

July & August

- Follow up with Chrys (beach watchers and shore stewards) about educating their citizen scientists about invasive species reporting (Chrys only works Tuesday and Thursday so getting in touch is hard)

- Laminate NEW species ID guides from SeaGrant and mail to Joan Drinkwin (Derelict Gear Removal)
    - Joan Drinkwin, Interim Director
      1155 N State Street Suite 402
      Bellingham, WA 98225
      360-733-1725

- Follow up with Chris (BEACH program) who is interested in the project, but has been at training

- Email Sally Abella abellasally@comcast.net to get info on what programs in King County can serve as "double duty" for WISC

- Michelle Stevie (stream teams) has been on vacation, but a conference call was discussed

- PNW IPC follow up with Lizbeth

- Get materials to Andy Gregory (Puget Soundkeepers Alliance) for outreach that Wendy and Molly discussed during conference call (sturdy materials for marina usage)

- Follow up with Peter Schrappen (NW Marine Trade Association) about his involvement with WISC and information on tunicates and Undaria so he can blog about it (also want to be in contact for media materials with him)

- SeaDoc Society: talk to Joe Gaydos about including invasive species into their grant proposal process

- Follow up with Olympic Knotweed Group

In the Fall

- Jamestown S'Klallum Tribe: see if they've done their aerial survey for plant growth yet

- WA Scuba Alliance: see if their members have been documenting invasives
- USFS: check in to see what invasives they've reported while out in the field

Before December

- Check REEF database
- Check Puget Sound Stream Benthos database
- Check PNWSC database
- Email Michelle Murphy with any updates before their December Meeting with the Skagit CWMA group

Yearly

- Request final knotweed report from Michelle Murphy (Skagit Fisheries Enhancement Group)
- Request European Green Crab Data from Padilla Bay (Sharon Riggs)
- Request knotweed data from the Olympic Knotweed group
- Check in with SeaDoc society about what people are writing about in their grant proposals regarding invasives
- Talk to Eric Strickler about being a guest speaker at a summer science camp
- Follow up to see if Caroline Gibson (MRC) has any invasive species projects
- Check out King County weed GIS map
- Talk to Diane Cooper if you'd like to broach the subject again

WASHINGTON INVASIVE SPECIES COUNCIL MEETING SUMMARY
December 4, 2014

Natural Resources Building, Room 172
Olympia, Washington

Washington Invasive Species Council Members Present:

Bill Tweit, Chair	Washington State Department of Fish and Wildlife
Pene Speaks, Vice Chair	Washington State Department of Natural Resources
Ray Willard	Washington State Department of Transportation
Lizbeth Seebacher	Washington State Department of Ecology
Alison Halpern	Washington State Noxious Weed Control Board
Kevin Anderson	Puget Sound Partnership
Rob Fimbel	Washington State Parks and Recreation Commission
Pat Stevenson	Stillaguamish Tribe
Lisa Younger	The Nature Conservancy
Diane Cooper	Taylor Shellfish, Pacific Shellfish Growers Association
Curtis Tanner	U.S. Fish and Wildlife Service
Doug Daoust	U.S. Forest Service
Vicki Yund	U.S. Customs and Border Protection
LT Eric Young	U.S. Coast Guard
Clinton Campbell	U.S. Department of Agriculture
Rob Pedersen	U.S. Environmental Protection Agency

Guests and Presenters:

Allen Pleus	Washington Department of Fish and Wildlife, Aquatic Invasive Species Unit
Mike Leech	Spatial Development International, LLC

Recreation and Conservation Office Staff:

Wendy Brown	Policy Director
Wendy Loosle	Board Liaison

Opening and Welcome

Bill Tweit, Chair, opened the meeting at 9:08 a.m. with welcome, announcements, facility logistics, safety information, introductions, and a review of the agenda.

Kaleen Cottingham, Director of the Recreation and Conservation Office, provided information about upcoming staff transitions. Raquel Crosier has been hired as the new Executive Coordinator, beginning in

DRAFT

January. Director Cottingham thanked Wendy Brown, acknowledging her years of service and leadership on the council.

Chair Tweit also informed the council that this will be Doug Daoust's last meeting, as he is retiring this December after 42 years of service with the U.S. Forest Service. Mr. Daoust spoke to his positive experiences with the council, noting his esteem for the council's collaborative efforts and expressed his gratitude for the opportunity to be a member. He reminded the council of his recommendation that Shawna Bautista assume his position on the council. Ms. Bautista serves the U.S. Forest Service in the Invasive Species Unit, and sits on the Oregon State invasive species council as well.

Hot Topic Reports

Item 1: Ringold New Zealand Mud Snail Update / Allen Pleus

Mr. Pleus of the Washington Department of Fish and Wildlife (WDFW) updated the council on the recent discovery of New Zealand Mud Snail (NZMS) on the banks of the Columbia River near the Ringold Hatchery. Tests indicate a presence of Mud Snail, although no adults were found during a site inspection. WDFW believes the Mud Snails may have been introduced through cross-contamination. WDFW has protocols to limit the spread of NZMS during hatchery fish transport which are followed by staff at Ringold Hatchery. Thorough tests revealed that the hatchery fish were not contaminated, and WDFW proceeded with stocking lakes. To limit potential contamination, WDFW is strategizing ways to test these fish and establish protocols for testing and release, e.g. filtered transport water to minimize sediment debris that may harbor juvenile NZMS. WDFW continues to strategize ways to decontaminate the hatchery facility.

Ms. Cooper noted that other fisheries in the country are managing similar issues, and contacts at these sites could be valuable informational resources for problem solving. Mr. Pleus agreed, sharing that WDFW collaborates with Idaho (Christina Moffet), observing operational models to ensure facility protection.

Mr. Anderson asked about procedures for other hatcheries. Mr. Pleus explained that the facilities have been notified, but education could be enhanced and protocols could be more consistent.

Jack Havens, citizen, expressed his concern for Capital Lake. Noticed on Blue Slough, near Chehalis, a sign that shared infestation of NZMS but no restriction for access. Mr. Pleus explained that Capital Lake is containable, despite open access surrounding the lake, it is easy to monitor. DES manages the lake, and controls the access points. At other locations, multiple access points are difficult to monitor. WDFW continues to work with DNR to strategize ways to minimize cross-contamination. Chair Tweit added the complications of funding and resources to manage issues; Ms. Speaks also spoke to the enforcement issues that DNR faces.

Item 2: Aquatic Invasive Species (AIS) State Watercraft Passport / Allen Pleus

Mr. Pleus shared a prototype of the Aquatic Invasive Species (AIS) passport booklet. Regional discussions were held to discuss the concept, however due to funding limitations other states declined to develop a regional pass. For Washington, the passport also serves as a communication and outreach tool. The passport includes policies, tips, state contact information, and resources for users to easily maintain compliance with state regulations and requirements as they pertain to invasive species. The passport also contains state contact information for easy reference. The initial printing is limited to 20,000, and Mr. Pleus expects them to be ready for distribution by tomorrow. WDFW will begin outreach in boater-heavy locations, focusing on registered boaters.

Chair Tweit noted that the passport is a collaborative effort supported by the Legislature, and serves as a key tool for invasive species prevention.

DRAFT

Item 3: Rulemaking to Implement ESSB 6040 (Regional Passport) / Allen Pleus

During the last Legislative session, ESSB 6040 was passed. The bill including mandatory rule-making, and WDFW has been working to complete this process. They are using a phased approach, beginning with Clean/Drain/Dry provisions. During the rule-making process, they are addressing implementation issues and respective policy decisions that can be consistently applied. WDFW is planning discussions with stakeholders, agency representatives, industry leaders and others in January.

Item 4: Zebra/Quagga Mussel Perimeter Defense Initiative / Allen Pleus

A handout with information about this WDFW initiative is included in the council materials. The focus is on keeping the Columbia Basin mussel-free and limiting potential contamination risks. Cross-state contamination is a recognized threat, so policies that resolve inter-state coordination issues are at the fore-front of the discussion.

Mr. Pedersen suggested adding a reference to the WA Invasives app within the Washington Watercraft Passport prior to the next print run.

Item 7: 2014 Pacific NorthWest Economic Region (PNWER) Winter Meeting / Bill Tweit

***presented out of turn.*

Chair Tweit shared that the Pacific Northwest Economic Region's (PNWER) meetings continue to be a good forum for regional coordination. PNWER is an intergovernmental and international collaborative effort to address economic well-being and quality of life while maintaining and enhancing the natural environment. The organization also maintains focus on perimeter and border issues as they relate to invasive species. Goals include coordinating actions and advocacy across various entities and promoting better communication between state, federal, local and sovereign governments as well as stakeholder groups and lawmakers. PNWER will be devoting more staff to support this work, recognizing the need for an investment in prevention.

The next PNWER webinar is open to the public and will be held January 21, 2015. A registration link is available on the Invasive Species Council website.

PNWER will continue to hold a sessions with an invasive species focus at annual/winter meetings, providing opportunities connect with others and engage legislators.

Ms. Cooper shared questions from WISC industry panel. There are several coordinating bodies with individual action plans contributing to overlapping efforts. Where should the implementation occur, and what does coordination of these plans look like? How does the council coordinate with other entities on various issues, i.e. NZMS, dreissenids, etc.?

Shaun Seaman, Chelan County Public Utilities District and industry panel member, inquired about the role and responsibilities of the industry panel, specifically with regards to implementing work plans, engaging legislators, coordinating with other states, and addressing federal guidance measures. Should efforts have a broader reach beyond the industry panel, or be focused on their respective industries?

Chair Tweit responded, stating that this was a topic of discussion at PNWER and shared their suggestion that they coordinate a regional coalition. Also, PNWER suggested convening annually with those that hold enforcement authority over inspection protocols and hold multi-state discussions in order to strategically share resources. Moderate coordination occurs at the regional level, although international participation is lacking.

DRAFT

Chair Tweit sees it as the role of the council to continue to seek collaborative solutions, and looks to PNWER to support this goal. Ms. Cooper asked about the potential leading role of PNWER, noting the importance of clear leadership to the work. Ms. Brown noted that at the federal level, the council has been engaging legislators as an ad-hoc western states group. A single leadership role still needs to be formalized, and PNWER is well-positioned to assume this responsibility. Mr. Pleus agreed that PNWER is better positioned to address multiple levels of policy coordination. There is an emergency notification and response process, which could be coordinated at other levels.

A handout was provided that describes PNWER activities and recent meeting. More information about PNWER is available at http://www.pnwer.org/.

Item 5: Ballast Water Program Enforcement Actions / Allen Pleus

WDFW has had the authority to issue civil penalties through the ballast water program since 2009. Staff continue to assess current rules and implementation processes, including penalty issuance and appeals. This is not a common issue, and noncompliance is rare.

Item 6: Tsunami Debris Update / Allen Pleus

Winter season typically brings instances of larger debris to coastline areas. At the June meeting, Mr. Pleus shared information about forty cases of tsunami debris and large skiffs discovered along the shorelines in Washington and Oregon. Mr. Pleus anticipates similar trends this coming winter season, and intends to hire a full-time employee beginning in January. The new staff member will be responsible for responding to debris sightings, identifying potential invasive species, assessing the situation, and cleaning up the site.

Item 8: Changes to the 2015 Weed List and New Outreach Materials / Alison Halpern

Alison Halpern, Washington State Noxious Weed Control Board, provided updates on the board's activities. Effective January 2, 2015, new additions to the 2015 Weed List include Ravenna grass (*Saccharum ravennae*), pampas grass (*Cortaderia selloana*), jubata grass (*Cortaderia jubata*), and Italian arum (*Arum italicum*).

The board received funding to prepare and distribute non-invasive pollinator-friendly seed packets which will be available to the public within the next few months. The board is excited to provide seed packets during education and outreach with the general public and relevant industries.

Chair Tweit noted that the seed packets would be useful for burned areas, even at a small scale. The Washington Department of Agriculture is coordinating with other agencies to determine restoration efforts in the recent Carlton complex of fires, as well as in Okanogan County. To support this work, the agency requested funding approval from the Office of Financial Management for recession on private lands.

Item 9: State Environmental Policy Act (SEPA) Checklist / Lizbeth Seebacher

Lizbeth Seebacher, Washington State Department of Ecology, shared information about recent updates to the State Environmental Policy Act (SEPA) checklist (a copy was included in the council materials). A new addition and rule change was added to checklist for invasive species (Item 4-E).

While it is the responsibility of the affected agency to address reported issues, recent experiences have demonstrated the need for coordinated efforts and broader awareness of the checklist. Pat Stevenson added that there is a public appeal process for those that would like to address a project or issue.

DRAFT

Chair Tweit explained that the checklist is shared in programmatic areas across agencies, demonstrated to be effective in distributing information. He proposed that the checklist addition of invasive species be included in the council's annual report.

Item 10: Western Regional Panel (WRP) Meeting / Kevin Anderson

Kevin Anderson, Puget Sound Partnership, provided an update from the U.S. Fish and Wildlife Service's Western Regional Panel on Aquatic Nuisance Species, sharing a map of the regional panels of the U.S. Federal Aquatic Nuisance Species (ANS) Task Force. The regional panels coordinate among states and advise the ANS Task Force, which is comprised of federal natural resources agencies and tribal representatives. Washington State is part of the Western Regional Panel (WRP), along with 19 other states and industry representatives. In some cases, states may overlap and participate in multiple panels.

In September, the WRP joined the Gulf and South Atlantic Panel (GSAP) in Texas. The two-day meeting provided an opportunity for state caucus and agency members to participate in program coordination. The first day focused largely on state and federal issues. The second day focused on the business aspects of the ANS Task Force and WRP.

The WRP's main issues dealt with funding shortfalls that affect travel and meeting participation, and they submitted a request to the ANS Task Force for financial support.

The WRP quagga/zebra mussel action plan (QZAP) also lacks sufficient funding. WRP recommended that federal partners of ANSTF support the following high priority actions to prevent and control the spread of quagga and zebra mussels: 1) increasing state and interstate capacity to address invasive mussels; 2) prevention such as mandatory inspection and decontamination, effective protocols for these, establish strong, consistent law enforcement programs in each western state; 3) early-detection monitoring programs for all western water jurisdictions and creating a rapid response fund; 4) focus on containing and controlling existing populations; and 5) adopting consistent outreach messaging and enhance coordination of education and outreach efforts.

The WRP and GSAP also requested that the ANS Task Force update the economic impact study of aquatic invasive species by 2020, as it was last updated in 2000. They proposed seeking out alternative funding strategies to provide additional support for state ANS plans. Ultimately, Congress will need to reauthorize funding for these efforts.

The final request came from both Mississippi and the WRP, proposing that the U.S. Geological Survey (USGS) continue to fund and maintain a database for ANS.

Mr. Anderson also shared that the WRP recognized the need for clear leadership to coordinate the work, and are interested in assuming this role. However, they acknowledged the capabilities of PNWER and agreed that their inclusion of Canadian provinces is important. Although they are part of the WRP as well, it is often difficult for the international representatives to join meetings in the U.S.

Item 11: National Invasive Species Council (NISC) Climate Change Report / Kevin Anderson

Mr. Anderson provided an update on the December 2014 report prepared by an ad-hoc working group for invasive species and climate change for the National Invasive Species Council (NISC) and the ANS Task Force: *Bioinvasions in a Changing World: A Resource on Invasive Species-Climate Change Interactions for Conservation and Natural Resource Management*.

The report assesses integration of climate change, invasive species, and natural resource management, identifying available models for general use and database/information sources with great emphasis on realistic goals.

Mr. Anderson shared that advocates are hoping to align the report's goals with White House priorities on climate change as the intended audience is national, state, and local natural resource and AIS managers.

Break 10:32 a.m. – 10:43 a.m.

Item 12: U.S. Customs and Border Protection (CBP) Update / Vicki Yund

Vicki Yund reported that cases of H5N2 (highly pathogenic avian flu) virus were confirmed in southern British Columbia. Although the authorities are unsure of virus sub-type, it has already led to poultry death. The CBP remains vigilant while awaiting guidance from the U.S. Department of Agriculture.

Ms. Yund shared news that Governor Bullock of Montana signed an executive order to establish the Montana Invasive Species Council. Chair Tweit responded positively, noting that he would ask the new council's executive coordinator, Raquel Crosier, to lead outreach and engagement efforts.

Through a formal request from the Seattle Field Office, CBP headquarters has added wood packing materials used in international trade to a checklist for the Customs-Trade Partnership Against Terrorism (C-TPAT), a program that grants certain privileges to trusted importers. Wood packing material such as pallets and crates, commonly used in international trade, is supposed to be fumigated or heat-treated to eliminate pests, but often is found to be infested by wood-boring pests and the cargo must be returned to the country of origin. The added checklist measures call attention to this issue for some of the largest importers to the United States.

Ms. Yund provided information about a recently published article that is available on the CBP website: CBP vs. Forest Prime Evil. The article addresses invasive insects often found in wood packaging material that are detrimental to timber and forests,

Previously, shipments from Canada were considered low risk for invasive species, but recently high volumes of Asian cargo have been coming to British Columbia by vessel, then entering the U.S. by rail at inland locations such as International Falls, Minnesota. Targeting rail shipments to find invasive species is tricky for CBP, because the information about products and time to inspect them are limited. The Prince Rupert Port Authority of British Columbia and CRB resolved this issued by agreeing to share the ocean manifest information, which includes greater detail than the rail manifest and is available well before the cargo arrives at the border. The success of this effort at International Falls has been shared with other northern border rail ports, resulting in increased interceptions of noxious weeds and invasive insects.

Item 13: Final AIS Decontamination Protocol, WSDOT / Ray Willard

Ray Willard provided an update on the Washington State Department of Transportation (WSDOT) maintenance operations as they related to AIS prevention (a handout was included with the council materials). The prevention guidelines mainly serve as a strategy for highway projects, focusing on New Zealand Mud Snail, and educating staff on potential AIS threats. The guidelines include a checklist and lay out protocols for addressing issues as they arise in the field or when preparing for projects.

Business practices are changing at WSDOT due to ongoing challenges. WSDOT is facing an upcoming loss in staff due to retirement in the next 3-5 years. Unfortunately most are positions of leadership in maintenance ranks. With regards to vegetation management and noxious weeds, WSDOT updated mowing policies which reduce and redirect energy to long-term integration of plants that control growth

DRAFT

of weeds. The new goal is weed-free maintenance, and not necessary clean cut roadside. This may require letting some roadsides grow while the paradigm shift takes place, including some public outreach and education. Lastly, field staff will receive iPads with enhanced tracking apps for real-time reference data.

Mr. Pleus commended Mr. Willard and WSDOT for the work accomplished.

Briefings

Item 14: WDFW 2015 Proposed Legislation / Allen Pleus

Mr. Pleus provided a history of the proposed legislation, originally intended to include a number of user fees with the implementation of ESSB 6040. After discussing alternate funding sources and conducting stakeholder visits to assess feasibility, the request was submitted to the Governor's Office and ultimately withdrawn.

WDFW need funds to maintain its services in the 2015-2016 biennium. WDFW has received opposition to proposals that include user fees and needs support to move forward on their recommendations. WDFW is considering the establishment of a funding task force to be operated under the Recreation and Conservation Office (RCO) and through the council. WDFW is seeking assistance developing a "fair" budget proviso that will help bridge funding and maintain state rights while aligning with other state, regional and federal initiatives.

Pat Stevenson suggested modeling the funding strategy after Idaho. Chair Tweit added that Washington states marine invasive species issues make it unique and not comparable to Idaho. Mr. Pleus replied that in previous sessions there were funding options through AIS non –motorized vehicles and watercraft, but there were issues with a three-year implementation plan and general fund gaps. WDFW continues to hear opposition from boating industry which feels that alternate funding options should not disproportionately target boaters. To resolve these challenges, WDFW would like to establish a forum where various options can be considered by the appropriate state, federal, local and sovereign government agencies as well as non-profit and industry representatives.

Chair Tweit informed the council that RCO is open to suggestions, but any solution will be dependent upon resources available. The proposal to support WDFW is open to council consideration. Chair Tweit agreed to send periodic updates to the council regarding funding challenges.

Item 15: WA Invasives 2.0 App Upgrades / Mike Leech

Mike Leech provided an update on the upgrade to the WA Invasives app, and the companion web app. Some updates to the web app were demonstrated, including feature and functionality updates.

The greatest challenge was integrating the baseline assessment data. The solution will include two phases that involve collection, identification, and tabulation of the data to prepare a report and express the information accurately in the web app. The web app will include a user authentication module, and include crowd-sourced and baseline assessment data. Some data points are missing, and optimization testing is underway to ensure browser compatibility. The app will allow Washington counties to self-assess the data reported in various timeframes. The goal is to create publically accessible data that users can tailor to their individual needs.

Further enhancements of information and tracking features include the ability to change to different base maps, allow import to GIS programs, turn on/off baseline assessment data versus new site observations,

and sort the newest reports to the top of the list. By the end of December, the filter and reporting tools will be enhanced by adding "Select All" and "Remove All" buttons (which will reduce time in filtering). Enhanced features will allow ease of import into GIS programs.

LT Eric Young noted that adding decontamination stations would be helpful. Mr. Leech acknowledged this, stating that contextual data is easy to add.

Updates to iOS app include a new design format for iOS 8, incorporating the priority invasive species, larger images and texts, enhanced photo selection feature to access phone photos or take new photos, and the ability to select "Unknown" from the report siting selection lists. The GPS pin placement in the app was also updated, and users can even move the pin to be more accurate. The data is supported offline, so users can wait to submit reports.

Mr. Leech shared that the team is targeting the iOS first, and the Android release for v2 by the end of December. Both apps will be available in the Apple store and Google Playstore, respectively.

Chair Tweit inquired about the necessary resources that the council should be prepared for to maintain app. Mr. Leech recommended a balance between his team and RCO IT staff during the transition, and when RCO IT can assume the full responsibility then they could continue to manage the app. On-call support and maintenance would be a good idea for administrative users to address issues.

Chair Tweit asked about long-term utility of the app. Mr. Leech suggested that user analytics be available through the app to provide information about the number of users, visits, etc. The success of the app may need to be supported by public outreach and awareness.

Chair Tweit suggested a work session to discuss outreach and dissemination strategies. Ms. Brown agreed, noting this as a future agenda item for the March 2015 meeting. Information about the app may also be a resource for Margaret Tudor of the Pacific Education Institute, as her presentation at September's meeting included a request to remain apprised of updates. For text/feature updates, scheduled maintenance is recommended.

Discussions and Decisions

Item 16: Council Business / Bill Tweit

No additions or corrections were requested for the previous meetings minutes from the September 11, 2014 meeting.

Action Item: Approval of September Minutes
Pene Speaks moved to APPROVE the September 2014 minutes. Vicki Yund SECONDED. The Council unanimously APPROVED the September 2014 minutes.

Chair Tweit provided an update on the new executive coordinator, Raquel Crosier, who will begin on January 2, 2015. The council website and contact information will be updated at that time.

Public Comments

Mark Taylor, Trout Unlimited, shared his gratitude for the work of council and expressed interest in holding a seat. Chair Tweit agreed to consider his proposal with the executive committee during their next meeting and bring their recommendations to the council.

Next Steps

The council discussed potential dates for meetings in 2015. Proposed dates included the following:

- March 12
- June 18
- September 24
- December 3

RCO will send Outlook reminders to council members.

Adjourn

The meeting adjourned at 12:05 p.m.

Next meeting

March 12, 2015
Natural Resources Building, Room 172
Olympia, WA

Minutes approved by:

_____ _____

Bill Tweit, Chair Date

DRAFT