

Washington State
Aquatic Nuisance Species Committee
Report to the 2011 Legislature



Prepared by
Pam Meacham and Allen Pleus
Washington Department of Fish and Wildlife

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Contributing Members of Report Sections:

- Kathy Hamel, Washington Department of Ecology
- Alison Halpern, Washington Noxious Weed Control Board
- Tom Wessels, Washington Department of Agriculture
- Kevin Anderson, Puget Sound Partnership
- Todd Palzer and Todd Brownlee, Washington Department of Natural Resources
- Tim Determan and Jerry Borchert, Washington Department of Health
- Jeff Adams, Washington Sea Grant
- Grant Kirby, Northwest Indian Fisheries Commission
- Randy Lumper, Skokomish Tribe
- Kevin Aitkin, US Fish and Wildlife Service
- Scott Smith, US Geological Survey
- Stephen Phillips, Pacific States Marine Fisheries Commission

EXECUTIVE SUMMARY

This report is submitted to the 2011 Legislature to meet the biennial reporting directive of Chapter 77.60.130 RCW. This is the Aquatic Nuisance Species Committee's (ANSC) fifth biennial report to the Legislature since its establishment under SSB 6294 (2000 c 149).

The ANSC was formed primarily to foster state, federal, tribal, and private cooperation on Aquatic Nuisance Species issues (hereafter termed Aquatic Invasive Species or AIS), and implement the Washington State AIS Management Plan. Members cooperatively identify and implement tools and management practices that minimize the unauthorized or accidental introduction and spread of nonnative aquatic species such as *Spartina*, milfoil, elodea, invasive tunicates, crayfish, nutria, and zebra and quagga mussels. This report summarizes the ANSC's accomplishments and provides recommendations to the Legislature for accomplishing the purposes of statute directives.

Primary accomplishments for the 2008 and 2009 are summarized below for the ANSC as a whole and by state and federal agency, tribal government, and NGO participants.

Aquatic Nuisance Species Committee

The Aquatic Nuisance Species Committee (ANSC) works on multiple levels to foster cooperation including facilitation, providing substantive reviews and recommendations, creating species or issue-specific subgroups, and developing consensus products. Specific accomplishments include:

- Developed and adopted the ANSC Watch List.
- Worked with the Puget Sound Partnership to:
 - Include invasive species in their Action Agenda (Priority action A.5);
 - Design and implement a “Clean Your Hull” outreach campaign;
 - Develop conservation measures for invasive species
- Played an important role in the development of the Washington Invasive Species Council (WISC) Priority Species List and continues working closely with the WISC on AIS issues.
- Facilitated the creation of the Crayfish in the Schools ad hoc group that is working to replace currently used prohibited crayfish species with native species.
- Facilitated the creation of the Capitol Lake Response Group to address the New Zealand Mudsnail infestation.
- Facilitated the creation of an invasive Japanese Eelgrass scientific workshop to help identify cost/benefit/management issues/options.
- Created an email listserve for members and interested public.
- Worked with the US Geological Survey to design and implement their national aquatic invasive species database with Washington-specific tools.
- Facilitated discussions with the Department of Transportation on aquatic invasive species issues regarding the transportation of new highway 520 bridge pontoons.
- Worked with the Department of Ecology to develop a NPDES permit for the Department of Fish and Wildlife for the use of physical and chemical treatments in managing aquatic invasive species.

Washington Department of Fish and Wildlife

The Washington Department of Fish and Wildlife (WDFW) manages priority AIS at various levels depending upon legislative directive and available resources. There are three primary aquatic invasive species management programs including for zebra and quagga mussels, invasive tunicates, and ballast water. Other species and pathways are captured under the departments general AIS Prevention and Enforcement Program. Specific accomplishments include:

- Continued development and implementation of the State AIS Prevention and Enforcement Program (covered in detail in a separate report to the Legislature).
 - Contacted 4,970 fresh water and 759 marine boaters/anglers.
 - Inspected 1,509 boats and educated boaters at check stations.
 - Collected 438 samples from 49 different water bodies to check for the presence of zebra or quagga mussels.
 - Set out more than 100 substrate samplers in 47 different water bodies.
- Continued implementation of a state tunicate management program.
 - Completed containment efforts at 6 marinas each year.
 - Conducted experiments (with appropriate permits and waivers) to evaluate efficacy of 5 eradication methods.
 - Implemented baseline monitoring with full scientific assessments of tunicate densities at 3 sites to date.
 - Developed a GIS based mapping system for cataloging and tracking nonnative tunicate sightings.
- Continued development and implementation of a state ballast water management program.
 - Established comprehensive permanent rule to implement E2SSB 5923 (2007 c 350 § 8 through 15).
 - Working with the department's Ballast Water Work Group to develop state standards for treated ballast water that will correlate with other coastal states and the U.S. Coast Guard.
- WDFW Lands Management treated approximately 2,189 total acres of aquatic weeds statewide coordinating with federal, state, and county governments, Tribes, landowners, and local restoration groups.

Washington Department of Ecology

The Washington Department of Ecology (ECY) Aquatic Weeds Program provides financial assistance and grants to state and local governments and technical support to deal with fresh water invasive plants statewide. Specific accomplishments include:

- During 2008 and 2009, conducted aquatic plant inventories at 127 lakes and rivers, discovered 2 new invasive species to add to the class-A noxious weed list.
- Conducted research to evaluate various control methods for fresh water weeds.
- Set aside funds for rapid response to new infestations.
- Collaborated with other agencies and local governments on special eradication projects.
- Manages permits for aquatic plant and algae management.
- Is developing a general permit for the control of nonnative invasive aquatic animals and nonnative marine algae.

Washington Noxious Weed Control Board

- Added 6 new invasive plant species to the noxious weed list. Three of which were aquatic or wetland species during the 2009-2011 biennium.

- Redesigned and reprinted the publication “Garden Wise: Non-Invasive Plants for Your Garden.”
- Continued to provide funding assistance to county weed boards for control of Class-A noxious weeds.

Washington State Department of Agriculture

- In conjunction with state, federal and local government, tribal entities and land owners treated over 100 solid acres of *Spartina* in Puget Sound, Grays Harbor and Willapa Bay, and an additional 80 Solid acres of *Spartina* scattered throughout Willapa Bay.
- Reduced *Spartina* in marine waters of the state by 98% over the past 7 years.
- Is implementing a labor intensive survey and eradication program focused on finding and treating remaining individual plants.
- Revised WAC 16-752 to add four additional plants to the Wetland and Aquatic Weed Quarantine.

The Puget Sound Partnership

- Finalized their Action Agenda to recover and restore Puget Sound by 2020.
- Obtained U.S. Environmental Protection Agency Estuary Management Funds to implement relevant priorities of the WISC’s strategic plan.
- Completed a successful interagency agreement with WDFW to survey for, control the spread of and, if possible, eradicate invasive tunicates.
- Developed the budget to protect and restore Puget Sound, providing funding to other state agencies to implement invasive species actions.
- Hosted a workshop of international tunicate experts to re-evaluate the risks and identify management strategies.
- Printed and distributed educational materials, posters, and handouts.

Washington Department of Natural Resources

- Conducted surveys and herbicide applications over 5063 total acres of mud flat, shoreline and salt marsh to treat a total of 24.1 solid acres of *Spartina* in 2008.
- Collaborated with WDFW on a Washington Wildlife and Recreation Program grant for a restoration project.
- Provided funding to counties for eradication of aquatic weeds.
- Co-sponsored scientific workshop on the benefits and harm of nonnative Japanese Eelgrass.

Washington Department of Health

- Continues to act in an advisory role and provide assistance as necessary regarding AIS with the potential to pose serious human health risks.

Washington State Patrol

- Commercial Vehicle Enforcement Officers inspect commercially-hauled watercraft at state Port of Entry weigh stations.

Washington Sea Grant

- Funded a research project on the impacts of an invasive predator on a threatened native oyster.
- Collaborated with University of Washington researchers to publish the first records of the invasive crayfish *Orconectes rusticus* west of the Rocky Mountains in the Middle Fork of the John Day River Basin, Oregon: Olden et al. 2009.
- Participating in a study of biological supply houses and schools and their role as a pathway for introduction of AIS.
- Provided AIS presentations and field trips to approximately 1,000 students, volunteers, stakeholder groups.
- Co-sponsored scientific workshop on the benefits and harm of nonnative Japanese Eelgrass.

Lower Elwha Klallam Tribe

- Elwha Watershed Restoration Project.

Jamestown S’Klallam Tribe

- Dungeness River Restoration Project.

Lummi Nation

- Habitat Restoration along Bells Creek and the Nooksack River.
- Intertidal Baseline Inventory of more than 7,000 acres of tidelands on the reservation.

Tulalip Tribe

- Invasive Species Control Programs for *Spartina* at Big Flats in 2008 and Tulalip Bay in 2009.
- Knotweed surveys.
- Obtained a grant to support Pepperweed control in the Quilceda estuary.

Skokomish Tribe

- Completed their Aquatic Nuisance Species Management Plan. The plan focuses on the identification of effective management practices to prevent and control AIS in the Tribe’s usual and accustomed area.

U.S. Fish and Wildlife Service

- Partners with state and local entities by providing funding and technical assistance for management, monitoring and control efforts for AIS.
- In Cooperation with the Pacific States Marine Fisheries Commission (PSMFC) completed the “Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussel and Other *Dreissend* Mussels” and organized three table-top response exercises.
- Completed an Asian carp risk evaluation for the Columbia Basin.
- Surveyed all of their hatcheries for the presence of New Zealand mudsnails.
- Provided funding and technical support to multiple partners for surveying and controlling invasive species.
- Participated in a number of committees and advisory groups.

- Made educational presentations to a broad range of audiences, and distributed educational materials and signage.

Pacific States Marine Fisheries Commission

- Held a table top exercise in Boise, Idaho to evaluate the “Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussel and Other Dreissenid Mussels.” Recommendations from the exercise were presented to policy makers for discussion and approval.
- More than 70 State, Federal, and Local Government agencies and organizations have implemented watercraft interception programs. To assist in implementation of region-wide uniform standards PSMFC developed recommended minimum protocols and standards for watercraft interception programs for *Dreissenid* mussels in the Western U.S.
- PSMFC has been providing training for boating law enforcement personnel and others to successfully intercept, inspect, identify, contain and decontaminate trailered watercraft. Nearly 2,000 individuals from 90 agencies in 12 western states have completed the training.
- PSMFC continued to provide administrative support and staffing for numerous AIS interjurisdictional efforts.

RECOMMENDATIONS

Recommendations on how to better accomplish the purposes of chapter 341, Laws of 2007 are provided herein as requested under RCW 77.60.130(3)(f). These recommendations have been developed by the Aquatic Nuisance Species Council in consultation with the Washington Invasive Species Council. Specific recommendations include:

1. Extend and fund the Invasive Species Council for at least an additional five years.

The Washington State Invasive Species Council provides a critical policy forum for multi-agency coordination, strategic planning, and development of comprehensive actions to bring the full power of all agencies to bear on the challenge of invasive species. This work is not completed yet and needs more time. One of the key roles the council is already positioned to accomplish is for ensuring cohesive and integrated policy actions during a rapid response emergency.

2. Repeal the expiration date for the AIS Prevention and Enforcement resident watercraft registration fees.

On June 30, 2012, the fee will expire and with it the prevention and enforcement actions to keep zebra and quagga mussels out of the state. Continuation of the AIS Prevention and Enforcement Programs are essential for the prevention, early detection, and rapid response to the threats of zebra and quagga mussels and other AIS. The management of invasive species requires permanent funding sources or it will leave the state highly vulnerable to invasion. Therefore we recommend that the June 30, 2012 expiration date (2005 c 464 § 7) for the AIS Prevention and Enforcement accounts be removed from RCW 88.05.050 “Notes: Expiration date -- 2005 c 464 § 2.”

3. Enhance the Aquatic Invasive Species (AIS) Prevention and Enforcement Program role and authorities to meet the needs of the next 15 years.

Almost fifteen years ago, the legislature passed the “Prevention and Control of Spread of Zebra Mussels and European Green Crab” ACT (1998 c 153). Since then, important new AIS legislation has been added, but in a piecemeal fashion that has been difficult to effectively implement. These statutes need to be consolidated into a comprehensive single chapter under Title 77 RCW and expanded to include invasive terrestrial animal species, anticipate new invasive species risks, and strengthened with authorities similar to those provided to other state natural resource agencies to combat invasive pests and noxious weeds.

4. Increase the AIS Prevention and Enforcement Account fees for resident watercraft registration.

An increase in vessel registration fees is necessary to improve the level of protection necessary to prevent or rapidly respond to a zebra/quagga mussel or other AIS invasion such as the invasive tunicates found in the Puget Sound. As estimated by the Northwest Power and Conservation Council’s Independent Economic Advisory Board in July of this year, a zebra or

quagga mussel invasion could cost hundreds of millions annually to manage and mitigate and that current efforts to prevent this threat are underfunded (see page 12 in the report). The current AIS fee of \$2 provides \$560,000 in annual funding (\$461,600 direct), whereas the total annual budget for an adequate prevention and enforcement program would require a substantial increase. Watercraft are one of the primary known pathways for the introduction and spread of aquatic invasive species and should bear a commensurate proportion of the funding. Cooperative funding agreements with the Washington State Patrol would be maintained.

5. Add new AIS Prevention and Enforcement Program revenue sources based on other invasive species pathways.

Additional new revenue sources are being investigated to help fund the department's invasive species programs to reach full rapid response and management capabilities. Review of options includes ensuring that fees reflect a fair share based on invasive risks and that fees are integrated into comprehensive one-stop or single-pay user fee groupings where possible.

6. Establish a rapid response emergency fund.

New revenue sources need to be identified to create a rapid response fund. Prevention can never be absolute and new species will become established or spread to new sites over time. Rapid response is the next most cost-effective management tool after prevention, is often talked about, but rarely funded and usually not very "rapid." As noted in this report, rapid response actions for addressing zebra or quagga mussels at an infested site would quickly require hundreds of thousands of dollars and could easily reach into the millions of dollars. Providing a ready reserve ensures that actions on the ground hit new infestations hard and fast, giving the best opportunity for containment and eradication.

**Aquatic Nuisance Species Committee
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1.0 INTRODUCTION

The primary mission of the Aquatic Nuisance Species Committee (ANSC) is to minimize the unauthorized or accidental introduction of nonnative aquatic species with special emphasis on prevention. To accomplish this mission, the ANSC was established by the legislature in 2000 to foster state, federal, tribal, and private cooperation on aquatic nuisance species (hereafter termed aquatic invasive species or AIS) (Appendix A). Since the establishment of the Washington Invasive Species Council (WISC) by the legislature in 2006, the ANSC has been working closely to integrate our information, reports, and recommendations into the WISC statewide strategic planning process.

The ANSC consists of representatives from most state and federal natural resource agencies, local governments, Tribes, and a variety of stakeholders including conservation and environmental interests as well as industries that may be affected by, or serve as pathways for AIS (Appendix B). The main goal is to improve coordination, collaboration, and communication within its membership and between other groups working on AIS issues. To this end, most members also participate in other associated state, regional and national groups, including: the Washington Invasive Species Council, WDFW's Ballast Water Work Group and Tunicate Response Advisory Committee, Pacific Ballast Water Group, National Aquatic Nuisance Species Task Force's Western Regional Panel, Puget Sound/Georgia Basin International task Force, Lower Columbia River Estuary Partnership, and the Columbia River Basin 100th Meridian Team.

1.1 Current ANS Status

The ability to track AIS introductions and spread within waters of the state and their overall trend is slowly being realized. The development of the ANSC Watch List in 2008 (Appendix C) played an important role in the development of the WISC Priority Species list in 2009 (Appendix D). Both are key accomplishments made in the past two years and are helping to focus limited state management resources. WISC identified 50 "worst of the worst" species, of which 25 were AIS. Not surprisingly, zebra and quagga mussels were found to be the number one priority when prioritized using a science-based process that looked at both invasive risk and management potential. In fact, 10 of the top 15 WISC highest risk/priority invasive species are AIS. To date, the ANSC is pleased to report that no established populations of zebra or quagga mussels have been found in the entire Columbia River basin. However, seven of those top 10 (70%) and 17 (68%) of the 25 priority AIS do have established populations at some level in the state.

1.2 Summary of ANSC Actions and Accomplishments

The ANSC has been very successful in fostering state, federal, tribal, and private cooperation on aquatic invasive species issues. Most of these actions and accomplishments are provided in sections 2 and 3 of this report. In general, the ANSC meets every other month and works on tasks identified in annual work plans (Appendix E). At each committee meeting, actions identified and assigned to members (Appendix F). Results from selected specific actions and accomplishments requiring committee coordination are noted below.

ANS Watch List

The “Watch List” was approved by the committee in December of 2008. The Watch List includes all known aquatic invasive species that the committee believes have the potential to pose a threat to aquatic ecosystems in Washington. The document includes a preface that provides the purpose, context, and format for the list and also the protocol for revising the list over time as new information is developed. The list is divided into categories of freshwater plants, marine plants, freshwater animals, and marine animals. Within each category, species are listed according to “priority” and “secondary” species of concern based on the potential environmental or economic risk a species presents. Since approval, only one change has been made and that was to add a couple recently classified Class A noxious aquatic weeds. The list has been used to coordinate and focus monitoring and control efforts among member agencies, assist in development of the WISC priority species list, as well as general education and public awareness.

Puget Sound Action Agenda

The ANSC provided input throughout 2008 on development of the Puget Sound Partnership’s Puget Sound Action Agenda in respect to the importance of including aquatic invasive species. ANSC member support was critical in identifying invasive species as a threat to Puget Sound Health and establishing Priority Action A.5 to “Prevent and rapidly respond to the introduction of invasive species.” Concern over invasive species were also placed high as their four near-term actions were ranked 9th, 10th, 13th, and 17th out of 32 total actions for Priority A “Protect intact ecosystem processes, structures, and functions.”

Washington Invasive Species Council Coordination

ANSC members continue to work with the Washington Invasive Species Council on AIS issues. Members have participated on sub-groups of the council and helped to develop the top 50 “worst of the worst” priority species list (see Appendix D), provide case studies and data for their strategic plan, and development of species-specific rapid response plans. The relationship between the ANSC and council has been good, but not clearly defined. In most cases, the same state ANSC members support, or have become agency representatives on the council.

Capitol Lake New Zealand Mudsnaills

November of 2009 saw the discovery of New Zealand Mudsnaills (NZMS) in Capitol Lake within the heart of the state capitol in Olympia. In response, ANSC and WISC members came together to make collective decisions and take immediate action. The Office of General Administration (GA) acted quickly to close access to Capitol Lake and post signs provided by WDFW. WDFW took the lead on public outreach and education with the assistance of GA and the U.S. Fish and Wildlife Service. Surveys to determine the full extent of the infestation strongly indicate that this is an isolated infestation. In December, a cold snap provided an opportunity to try freezing the NZMS. Limited results show that this could be a highly effective control tool if the lake can be drawn down prior to ice forming on the lake. Additional research into management, control, and extermination options is ongoing, but slowly due to scarce resources in all agencies.

Nonnative Crayfish Harvest

Multiple public reports regarding the capture of nonnative crayfish (classified as prohibited aquatic animal species) during the native crayfish sport fishing season required the formation of a sub-group to discuss options. Prohibited aquatic animal species may not be possessed, transported, or released in a new water body. The main objective was to find a way to allow harvest without encouraging it as a new fishery. The group was successful in allowing harvest if done during regular crayfish season, using same type fishing gear, but requiring all nonnative species to be killed prior to transport away from the water body where caught.

Japanese Eelgrass Workshop

Japanese eelgrass was first found in Washington State in the 1950s and has spread to many areas throughout Puget Sound and coastal estuaries. Questions regarding the risks and benefits, whether it is continuing to spread, and whether the species should be actively managed for control or eradication have been increasing recently. Based on a presentation, the committee recommended that a workshop be organized to bring in experts from around the region and country to help answer these questions. A September of 2010 workshop was co-sponsored by the Department of Natural Resources and Washington SeaGrant. Proceedings of the workshop are available at - <http://www.wsg.washington.edu/mas/ecohealth/eelgrass-workshop.html>.

1.3 ANSC Expectations for the 2011-2013 Biennium

The next biennium will likely be the most challenging the ANSC has faced since its establishment due to the continuing national and state budget crisis, the increased threat of new invasions due to the presence of the quagga mussel in the Colorado River basin, and the need to control or eradicate established high risk AIS that are already here as priorities and resources allow. The ANSC has already started integrating some of its work with the Washington Invasive Species Council (WISC) and plans to continue close collaboration to prevent duplication of efforts. Whether conducted through the ANSC or WISC, some of the key expectations for the next biennium include:

- a) The priority species list must continue to be refined. Ranking criteria must evolve with our rapidly expanding knowledge of AIS and experience gained through new introductions/spread over time and across the landscape.
- b) New state funding sources must be identified and the state must make a concerted effort to push for increased federal AIS funding, especially through the existing Nonindigenous Aquatic Nuisance Prevention and Control Act's (NANPCA) Section 1204(b) authorization as recommended through coordination with the national Aquatic Nuisance Species Task Force's (ANSTF) Western Regional Panel¹.
- c) Rapid response development, training, and implementation must continue to address the high likelihood of detecting zebra or quagga mussels, or other high priority AIS in state waters. Coordination with state and regional committees and governments will be critical to pooling and staging scarce resources for maximum effectiveness.
- d) Coordination with industries and activities that may be affected by, or serve as introduction/spread pathways for AIS must continue to effectively develop and implement AIS best management plans.
- e) Volunteer public stewardship programs must be developed to provide broad-scale prevention, education, and early detection monitoring capacity.
- f) AIS laws and regulations regarding aquatic animal species must be revised and updated to the same regulatory level as those provided to aquatic and terrestrial plant species for effective management capacity.

¹ Quagga-Zebra Mussel Action Plan for Western U.S. Waters

2.0 ACCOMPLISHMENTS BY STATE AGENCY

The ANSC is established by statute under the Washington Department of Fish & Wildlife in RCW 77.60.130. The duties of the ANSC are expected to be accomplished through the authorities and cooperation of its member state agencies. This section provides what each of the state agencies accomplished during the 2007-2009 biennium.

2.1 Washington State Department of Fish and Wildlife

The Washington State Department of Fish and Wildlife (WDFW) has statewide regulatory authority over animal AIS and regulatory authority for all invasive species on their department-owned lands. Table 1 below identifies the four highest priority and 10 other priority animal AIS of statewide concern as defined by WISC and whether they have established populations to some level in the state (Here), have established populations West of the Rocky Mountains (Near), or have established populations elsewhere in the country (Far).

Table 1. WISC priority animal AIS by common name, scientific name, and location of the closest known established populations (not in order of priority). Near species are in neighboring states. Far species are in the Midwest and Eastern part of the United States.

Common Name	Scientific Name	Here/Near/Far
Zebra and Quagga mussels	<i>Dreissena polymorpha and bugensis</i>	Near
Tunicates (3 species)	<i>Didemnum vexillum, Styella clava, and Ciona Savignyi</i>	Here
VHS Type IVb	<i>Viral hemorrhagic septicemia</i>	Far
Nutria	<i>Mycastor coypus</i>	Here
Mitten crab	<i>Eriocheir sinensis</i>	Near
Marine clam	<i>Potamocorbula amurensis</i>	Near
New Zealand mudsnail	<i>Potamopyrgus antipodarum</i>	Here
European green crab	<i>Carcinus maenus</i>	Here
Asian bighead, silver, largescale and black carp	<i>Hypthalmichthys nobilis, harmandi, and molitrix, and Mylopharyngodon piceus,</i>	Far
Red swamp, northern, and rusty crayfish	<i>Procambarus clarkia, Orconectes virilis, and Orconectes rusticus</i>	Here/Here/Near
Bullfrog	<i>Rana Catesbeiana</i>	Here
VHS Type IVa	<i>Viral hemorrhagic septicemia</i>	Here
Snakehead fish (several species)	<i>Channa sp.</i>	Far
Atlantic Salmon	<i>Salmo salar</i>	Here ²

WDFW manages these priority AIS at various levels depending upon legislative directive and available resources. The three primary management programs focus on zebra and quagga mussel species, invasive tunicate species, and the ballast water pathway. The other species and pathways are captured under the department's general AIS Prevention and Enforcement Program.

² Only in regulated hatcheries or net pens - no established wild populations found to date.

Zebra and Quagga Mussel Management

WDFW AIS staff and Enforcement officers are inspecting boats and educating boaters and anglers about AIS and AIS laws at launch sites throughout the state. In the summer of 2008 4,970 freshwater and 759 marine boaters were contacted, and the first citations were issued to boaters leaving launch sites without removing aquatic vegetation from their boat, motor and trailer. In 2009 launch site inspections were reduced and the department conducted roving check-point inspections of privately hauled recreational watercraft (Figure 1); however 93 informal launch site surveys were conducted. As of the end of October, 1,509 recreational boats have been inspected at check stations. WDFW also worked with the Washington State Patrol Commercial Vehicle Division to inspect commercially hauled watercraft at ports of entry into the state.

WDFW staff and volunteers (including Public Utility Districts, Tribes, and private citizens) conduct both substrate and plankton surveys throughout the spring and summer for the presence of zebra mussels and quagga mussels. This year, because of introduction and rapid spread of quagga mussels into the Colorado River Basin, WDFW increased monitoring considerably. Over 100 substrate samplers have been set out in 47 different bodies of water throughout the state, and are checked frequently for the presence of mussels.



Figure 1. Aquatic Invasive Species Check Station at Plymouth Port of Entry Weigh Station. WDFW photo

Plankton tows are also taken throughout the state, primarily in the warmer waters of Eastern Washington. As of October 31st, 438 samples have been taken in 49 different water bodies, more than half of the veliger tows were taken in the Columbia River and Snake River systems. Samples analyzed to date have been negative for the presence of juvenile zebra or quagga mussels. WDFW is coordinating sampling efforts with Portland State University. They are sampling at 18 sites, between the two agencies a total of 55 sites are monitored. In addition to monitoring and sampling, a survey of all accessible shoreline was conducted at Lake Chelan when the water level was down. The survey was conducted on foot over a 6 day period, inspecting all of the pilings at both public and private boat docks.

A separate comprehensive report to the Legislature is being prepared that describes these efforts in detail.

Invasive Tunicate Management Program

There are seven species of nonnative tunicates present in Washington, three of which have the potential to be highly invasive. WDFW has completed a working draft of a statewide management plan and is implementing a research and monitoring program for nonnative

tunicates. Surveys conducted by WDFW since 2006 show that the extent of invasive tunicate population is significant.

Containment actions have been completed each year at six marinas: Blaine, Semiahmoo, Elliott Bay, Des Moines, Pleasant Harbor and Homeport. All boats moored at the marinas are inspected for the presence of invasive tunicates and infested boats identified by agency divers. Agency and commercial divers remove all visible tunicates from the boats, which are then re-inspected. Tunicates are removed from docks as time and funding permits. WDFW continues to work closely with Puget Sound Partnership in their development of a campaign to encourage recreational boaters to clean their hulls.

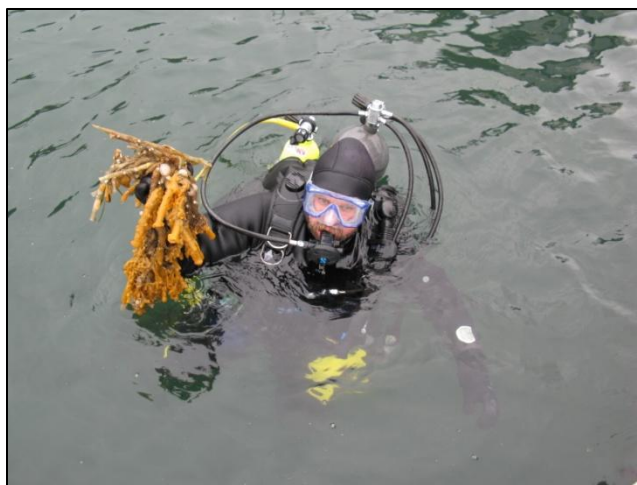


Figure 2. WDFW diver with Didemnum-encrusted tube worms taken from under Dockton Park dock. WDFW photo

Early in 2009 WDFW, after obtaining necessary permits and waivers, experiments to evaluate the efficacy of five different eradication methods were tested at Dockton Park on Maury Island (Figure 2). Two of the methods (prolonged wrapping and wrapping with acetic acid infusion) proved to be highly effective.

Baseline monitoring is being implemented with full scientific assessments of tunicate densities and community structure at three sites to date, and a GIS based mapping system for cataloging and tracking nonnative tunicate sightings is being developed.

Ballast Water Management Program

Washington State ballast water law (Chapter 77.120 RCW) is implemented and enforced by WDFW AIS staff. The purpose is to assure that ballast water taken up in ports where AIS are present is not discharged into state waters unless it has been exchanged for open ocean water, or treated. All vessels of three hundred gross tons or more are required to file a ballast water reporting form at least 24 hours prior to arrival into waters of the state. Nearly 4,000 vessels arrive at Washington ports each year. Approximately one third of them discharge ballast water. About 71 percent of the discharged water by volume is from bulk vessels coming in for grain, wood products, and occasionally equipment or parts. Another 15 percent of the discharged ballast is from petroleum or chemical tankers, and about 8 percent is from barges, 3 percent from general, and 2 percent from container vessels. Less than 1 percent comes from vehicle carriers, fish processors, passenger vessels, or other type vessels.

Although “high risk” vessels that have not properly exchanged their ballast or are coming from ports that are highly infested are targeted, random inspections are also made to insure that a broad spectrum of vessels are inspected and sampled.

WDFW staff monitor vessel arrivals to insure that vessels scheduled to arrive report in a timely manner, review ballast water reports for compliance with state law, and maintain a database of all arrivals and vessel compliance and ballast water discharged. Two commercial vessel inspectors board vessels to verify record keeping and ballast water management practices, and obtain samples of ballast water (Figure 3). The samples are analyzed for the presence of coastal versus deep ocean organisms.

Open ocean exchange is the current method used by vessels to reduce the number of potentially invasive coastal organisms in a ballast water tank. This requires emptying and refilling ballast tanks or pumping three times the capacity of the tank through the tank to exchange coastal water for deep sea water. The intent is to exchange 100% of potentially invasive coastal species for deep ocean species that would have less chance of survival in our waters. The configuration of ballast water tanks tends to create “dead” spots where water does not get flushed out when the flow through method is used, and there is always some water remaining in a ballast tank when as much water as possible has been pumped out.



Figure 3. WDFW ballast water inspector (right) showing vessel crew how to measure salinity levels in ballast tank. WDFW photo

The results of ballast water analyses indicate that few vessels are able to conduct an exchange that meets the international standards set by the International Maritime Organization. The U.S. Coast Guard and the Congress are both working on setting national standards for treated ballast water that are more stringent. The State of California’s ballast water standards are 100 times more stringent for organisms over 10 microns.

WDFW worked closely with a ballast water advisory group in the development of rules for implementing recent changes to the state law. The group has been considering new State standards for the discharge of treated or exchanged ballast water discharge of treated ballast water, and will make recommendations after national standards have been decided upon. Staff has been working in conjunction with other West Coast States to work with Congressional representatives to insure state rights are protected under new federal ballast water legislation. For more information on ballast water management program regulations and rules go to - <http://wdfw.wa.gov/ais/ballast>.

General AIS Prevention and Enforcement

Nutria

Reports of nutria sightings and property damage are on the increase throughout Western Washington urban areas, and in the tri-cities area of central Washington. Nutria girdle trees and shrubs, dig up lawns and golf courses, and cause erosion along streams by destroying vegetation that holds soils together (Figure 4). They do not have a fear of humans, and a 2007 report developed by Portland State University cited isolated cases of nutria attacks.



Figure 4. Nutria damage on lake bank.
- WDFW photo

In 2005 local farmers and dike managers in Skagit County worked consulted with WDFW and hired federal trappers to eradicate a small nutria population. The Ridgefield National Wildlife Refuge exterminated over two hundred nutria, only to find the population nearly the same the following spring. A state licensed trapper reports that in recent months he has removed two hundred nutria from properties in the University District. These small scale efforts have little or no impact on the regional nutria populations, and changing climate patterns are resulting in higher winter survival rates in nutria. There is a need for a more permanent large scale approach to nutria control. Currently no funds are available for an effective management program.

Viruses and Pathogens

Viral Hemorrhagic Septicemia virus (VHSV) is a highly contagious disease that causes anemia and hemorrhaging in fish (Figure 5). VHSV caused several large fish kills in the Great Lakes and has been found in twenty eight different host species. The VHSV in Washington is a different strain of the same virus. It occurs primarily in marine waters, Puget Sound herring populations routinely have the virus. Although sporadic isolated freshwater outbreaks have been found in anadromous hatchery broodstock during routine monitoring, there has not been a large scale outbreak.

The parasite that causes whirling disease (*Myxobolus cerebralis*) has been found in isolated areas throughout the Columbia River Basin from upstream British Columbia as far down as the Willamette River. Whirling disease affects fish in the trout and salmon family by damaging cartilage. It may kill young fish directly, or cause infected fish to swim in an uncontrolled whirling motion that makes it impossible to effectively seek food or evade predators. WDFW samples the hatcheries on a three year rotating basis, and has had only one sample that tested positive.

Infectious Haematopoietic Necrosis (IHN) virus is ubiquitous throughout the Columbia River drainage and in Puget Sound and coastal waters from California to Alaska. The department has seen epidemics of the virus in hatcheries where fish are reared on surface water supplies. Most if not all salmonid species are susceptible to the virus, particularly fry and fingerlings. The infection is lethal, with nearly one hundred percent mortality in fry. Infected fish shed IHN virus particles in the feces, urine and external mucus. Fish that survive can become carriers of the virus. The virus can be transmitted through water, movement of fish, and contact with contaminated untreated waste material and equipment.



Figure 5. VHS pathogen causing hemorrhaging on fish skin in Great Lakes region. – Jim Winston, USGS photo

WDFW AIS Prevention and Enforcement boater education and inspection program plays an important role in stopping the spread of pathogens as well as AIS by educating boaters to drain all water from their boats, clean them thoroughly with hot water, and allow them to dry thoroughly between trips. All gear used in water should always be cleaned with hot soapy water and disinfected before being used in another body of water.

New Zealand Mudsnail

The New Zealand mud snail (*Potamopyrgus antipodarum*) is an aquatic invasive species that first appeared in the Snake River in Idaho in the late 1980's. It has since spread throughout the Western States. In Washington the New Zealand Mudsnail (NZMS) is present in the Snake River, the lower Columbia River and throughout the Long Beach peninsula. The NZMS was discovered in early November 2009 in Capitol Lake (Figure 6). An effort was made to kill the snails in the shallow waters during a cold spell in December of 2009. However, the ice on the lake became thick enough that it kept the substrate from freezing as deeply as necessary.

The snail is small, usually less than five millimeters, and varies in color from brown to black (Figure 7). Because the snail has a rounded plate that seals the shell when the animal is inside, it can survive out of the water for several weeks in cool damp conditions. The snails reproduce by parthenogenesis, cloning themselves and releasing the embryos when they are large enough to survive. It only takes one NZMS to rapidly colonize a new location because of their rapid reproductive rate and high tolerance to adverse conditions. The snails compete with native invertebrates for food and habitat, and have the potential to negatively impact native and regulated fish populations.



Figure 6. New Zealand mudsnails at Capitol Lake
- WDFW photo



Figure 7. New Zealand Mudsnail ID card –
U.S. Fish & Wildlife Service

Because of their small size and coloration, NZMS are easily transported from one place to another attached to, or wedged into, the cracks and crevices of waders, nets, boats and other gear. To prevent the survival of NZMS on clothing and equipment, WDFW recommends scrubbing all gear with hot soapy water using a stiff-bristled scrub brush or high-pressure water and drying the gear at least forty-eight hours to remove all pockets of dampness. The NZMS is classified as a prohibited aquatic animal species in Washington. Educational materials are provided to anglers and recreational water users on NZMS identification and methods of cleaning and disinfecting gear. For more information go to - <http://wdfw.wa.gov/ais>.

Asian Carp

Five species of Asian carp occur in the United States. Common carp (*Cyprinus carpio*) are ubiquitous throughout the country and, although not desirable, are considered part of the native fish community. Grass Carp (*Ctenopharyngodon idella* or white amur) were imported from Asia to control aquatic vegetation in aquaculture ponds. In the Mississippi river area they have escaped and become a major problem. In Washington diploid grass carp are allowed to be introduced for vegetation control under permit from WDFW.



Figure 8. Silver carp jumping out of water due to disturbance of boat going past. USFWS photo

The other three species of Asian carp are invasive species classified by WDFW as “Prohibited” which means it is illegal to possess, import, purchase, sell, propagate, transport or release them into state waters. The bighead carp (*Hypophthalmichthys nobilis*) and silver carp (*Hypophthalmichthys molitrix*) were brought into the U.S. in the late 1970’s by private fish farmers in Arkansas to control phytoplankton in culture ponds. They are now actively reproducing all along the Mississippi, Arkansas and Red Rivers and have been recorded in at

least 18 states. They have been reported piling up in large numbers below dams and creating problems for commercial fishermen.

The carp respond to the sound of outboard motors by jumping out of the water (Figure 8). Boaters and water skiers have been injured. The black carp (*Mylopharyngodon piceus*) was a “contaminant” in imported grass carp stocks in the 1970’s and was later imported as a food fish and a biological control agent for a trematode parasite in cultured catfish. It is the only Asian carp that has not established itself in the wild. The black carp’s primary food source is mollusks and crustaceans, even small carp eat three to four pounds of mollusks a day.

European Green crab and Mitten Crab

The European green crab was introduced into San Francisco Bay in 1989-1990 and soon became established (Figure 9). To insure that the crab would not be spread to other state waters via aquaculture transfer WDFW required chlorine treatments of imported shellfish seed and broodstock (WAC 220-77-040) and declared it a deleterious species (WAC 232-12-01701).

When the crab was discovered in Willapa Bay in 1998 the Governor and the Legislature provided emergency funds to WDFW for a monitoring and control program. A task force was formed and charged with making recommendations to the Legislature to prevent and control the spread. Two monitoring programs were developed. The coastal program focused on monitoring the abundance and distribution and developing control techniques,



and the Puget Sound program was focused on monitoring for presence and absence.

Figure 9. European green crab – Photo by B.C. Shellfish Growers Association.

The Coastal Program involved WDFW monitoring three sites in Willapa Bay and two in Gray’s Harbor monthly. Annual surveys were conducted at more than 20 sites each fall. Over 1000 crab were collected in Willapa Bay, and 150 in Grays Harbor between 1998 and 20002. The majority were from a single year class, most likely recruited in 1997 or 1998. One female crab carrying eggs was captured in the spring of 1999 and another 2000. Trapping numbers fell off and the WDFW trapping program was discontinued in early 2003. Dr. Sylvia Yamada, Oregon State University, has continued monitoring in Grays Harbor and she reports that as the 1998 cohort dropped out of the population it was replaced by a good recruitment in 2003. The 2003 cohort was not as abundant as the 1998 one, but it did produce sufficient recruits to maintain a small population and a fairly strong recruitment in 2005. Researchers have not found any young green crab in surveys in recent years.

The Puget Sound program relied heavily on help from established volunteer organizations to monitor over 100 locations for green crab. In 1999-2000, the agency worked primarily with “Adopt A Beach.” The department contracted with Nahkeeta Northwest to coordinate volunteers from various groups to continue monitoring in May of 2001. Nahkeeta contacted volunteers from, constructed a complete volunteer/site database and created new site codes to facilitate volunteer coordination. To date, no green crabs have been captured in Puget Sound. Nahkeeta

provides reports. The data in Table 2 is compiled from those reports. Multiple traps are deployed at each site.

Table 2. European green crab monitoring reported by Nahkeeta Northwest

NAHKEETA NORTHWEST EUROPEAN GREEN CRAB MONITORING IN PUGET SOUND									
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Sites Monitored*	34	93	73	73	65	67	39	21	18
Trapping nights	50	843	549	610	524	484	132	450	81
Active Volunteers	24	57	122	103	62	89	21	49	17
* Two to five traps are deployed at each site.									

In 2007 the department worked with Nahkeeta to expand the green crab monitoring program to a multi-species monitoring for the presence of 22 nonnative invasive marine species known to be present in Puget Sound. Nahkeeta developed a colored identification guide that the Puget Sound Partnership paid to have printed, and an online volunteer training manual and database. The program, called “Marine Invasive Species Monitoring” or “MISM,” is an online Volunteer monitoring program. Volunteers submit their reports online, and the data goes directly into the online database. Data is shared with the National Invasive Species website maintained by the U.S. Geological Service (USGS). Most of Nahkeeta’s efforts in 2007 were directed at the development of the new program, although volunteer monitoring for green crab was ongoing and is one of the species monitored for in MISM. In 2008 and 2009 trapping efforts were concentrated in North Puget Sound because British Columbia has large established populations of green crab in all of the bays on the Western Shores of Vancouver Island. However, to date despite public education and active monitoring the crab have not been found in other coastal waters of B.C. Funding for the Nahkeeta volunteer monitoring program has been cut due to budget reductions.

The mitten crab is a catadromous burrowing crab native to Korea and China. The crab is established in the San Francisco Bay area. Scientists predict that the mitten crab, like the European green crab, will eventually arrive in the Pacific Northwest via larval dispersal or intentional release. It is illegal to import eggs or live specimens of any species of mitten crab into the United States under the Federal Lacey Act, and is illegal to import, transport, or possess live mitten crab in Washington, Oregon, and California. WDFW has coordinated with Oregon to post signage in Puget Sound and along the Columbia River, and distributes educational material to boaters and anglers about both the mitten crab and the European green crab.

Crayfish

There are four known species of nonnative invasive crayfish in Washington: *Procambarus clarkia*, *Procambarus acutus*, *Orconectes virilis*, and *Orconectes sanbornii*. The red swamp crayfish *Procambarus clarkii* was first found in Pine Lake north of Issaquah in 2000 (Figure 10). It has since been introduced into at least 11 lakes in King, Snohomish and Pierce Counties. The

crayfish burrow as deep as 36” into the bank along the waterline to lay their eggs, sometimes causing banks to collapse and erode. They compete with native species for food sources such as snails, small plants, tadpoles and bottom-feeding insects, threatening biodiversity. The crayfish may have been originally introduced into Pine Lake by anglers using it as bait, or by an elementary school student who was given the crayfish by their teacher after using it for education in the classroom (Julian Olden and Eric Larson, personal communication). This species



continues to be in the biological supply trade for use in school science classes.

Figure 10. Left: *Procambarus clarkii* purchased by WDFW staff at a pet store in Yelm. Right: *Orconectes virilis* Patterson Lake, Methow Drainage, Guy Wiest.

For a period of time juvenile crayfish were sold in pet stores as a “freshwater lobster.” Further introduction into other water bodies may possibly be due to deliberate illegal introductions. It is difficult to eradicate the populations that have already become established unless the water body they are in is relatively small and not connected to other water bodies. Infested lakes have been posted with signs with photographs of the crayfish warning that it is illegal to possess or transport nonnative crayfish in Washington.

Eastern Washington is under siege by burgeoning populations of nonnative *Orconectes* crayfish. The “Rusty” crayfish *Orconectes rusticus* has been sold to schools by biological supply houses and in pet stores for many years. A region wide effort was made to distribute educational materials to schools throughout the Columbia River Basin, and most nonnative species of crayfish were listed as prohibited species. Even though a warning not to release the crayfish into the wild accompanied many of the shipments, some of the crayfish may have been released. Others may have been introduced via illegal live bait releases (Olden et al. 2009).

The Northern crayfish *Orconectes virilis* was first observed in Lake Rufus Woods and Patterson Lake in 2007. The crayfish have flourished in the warm waters of Eastern Washington. They are aggressive and, like the red crayfish, cause a variety of negative environmental and economic impacts. WDFW began trapping them in Northeast Washington in 2007 in an attempt to control the population. However, those efforts had no measurable impact on the rapidly reproducing crayfish. At this time the department intends to allow recreational harvest of the species in an effort to protect native species and habitat, although based on similar efforts in other states this is very unlikely to have a measurable impact on *O. virilis* populations.

Atlantic Salmon

In the summer of 2008 WDFW snorkel teams completed the 5th and final year of surveying Western Washington streams and rivers for the presence of Atlantic salmon (Figure 11). Although occasional escapees from hatcheries and net pens have been captured, there is no indication that Atlantic salmon can survive and become established in state waters. The surveys, which were funded by the Pacific States Marine Fisheries Commission and NOAA Fisheries, began in 2003.

Initially snorkel surveys were conducted during the summer months. The program was later expanded to include foot and float-boat surveys during the winter months. In the initial year 35 rivers and streams were surveyed and several hundred juvenile Atlantic salmon were discovered in Scatter Creek below a commercial hatchery outflow. Initial scale and otolith analyses of the 109 juveniles captured indicated the fish were probably hatchery escapees. To date, the Atlantic salmon crews have captured 154 juvenile Atlantic salmon; all but three were from Scatter Creek. The other three were from Cinnebar Creek and Bingham Creek. Analyses of scales and otoliths indicated these fish were of hatchery origin.

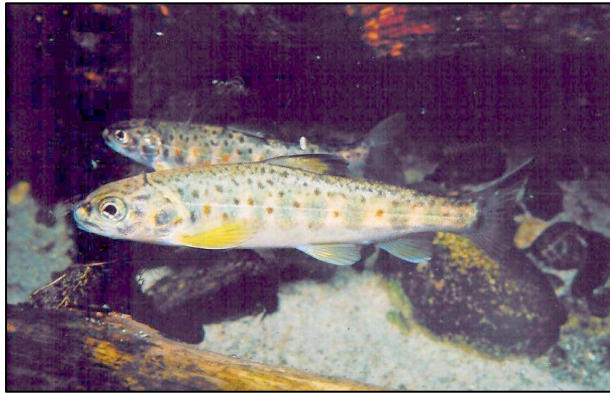


Figure 11. Juvenile Atlantic salmon escapees from a hatchery. USFWS photo.

Between July 10 2003 and December 12, 2008 a total of 876 snorkel surveys were completed in 174 bodies of waters. An additional 93 foot, backpack electrofishing, hook and line, or float boat surveys were completed in 46 streams and rivers. No Atlantic salmon were captured during 2007 or 2008 by survey teams. However, three adult Atlantic salmon captured by commercial and recreational fishermen were turned over to WDFW.

AIS Education and Outreach

Public education is the most valuable tool available to prevent the introduction of AIS into state waters. WDFW AIS staff make presentations at a wide variety of venues including schools, sport fishing clubs, conservation groups, boating associations, and other stakeholders. Staff also man booths at fairs and sportsmen shows to distribute AIS information and educate the public about AIS. WDFW coordinates with other state, federal and local agencies in the development and distribution of educational materials. This increases the availability of a wide assortment of general and species specific educational materials at a reduced price due to the volumes printed. WDFW currently distributes wallet size ID cards for six species: zebra mussels, New Zealand mud snails, mitten crab, European green crab, Eurasian water milfoil and a card with both Brazilian elodea and hydrilla. We also distribute a full size color pamphlet “Threats to the West” that explains the AIS issue, the pathways by which they are introduced and spread, and what the role of the public is in prevention. It also contains photos and descriptions of the species of most concern. In addition to the zebra mussel cards we distribute a full color tri-fold on zebra and

quagga mussels. We recently received 5,000 twelve-page pamphlets specific to nonnative aquatic species in the Columbia River Basin.

In 2007 and 2008 WDFW staff contacted nearly 10,000 recreational boaters and anglers. Staff conducted interviews to determine the extent of public awareness of AIS, and provided them with educational materials. Signage was posted at all trailer accessible WDFW boat launches in 2004, and many of those signs were replaced with new signs in 2007 and 2008. State Parks, the National Parks Service and the U.S. Forest Service requested signs to post at their launch sites, in addition to a number of marinas and camp grounds. The Enforcement division worked with The Department of Transportation to develop and post signage at all entry points into Washington State.

WDFW Lands Management

The Washington Department of Fish and Wildlife is a major land managing agency. The agency has management responsibility for nearly 900,000 acres, a portion of which are aquatic lands. In order to preserve, protect, perpetuate, and manage the wildlife and fish in waters of the state, WDFW strives to maintain, enhance and restore habitat that these species depend on by controlling riparian and aquatic weeds. WDFW controls aquatic weeds using integrated pest management (IPM) when they interfere with management goals and as required by RCW 17.10 and 17.26.

During the 2007-09 biennium, WDFW treated approximately 2,189 acres of aquatic weeds statewide. This weed management was conducted by Wildlife Area Managers, Upland Wildlife Restoration Staff, Access Site Managers, and Spartina Crews. The records for the final few weeks of FY2009 are incomplete at this time, so the acreage figures in Table 3 are conservative.

In addition to our own staff, WDFW works with federal, state, and county governments; Tribes; non-profits; and private landowners to implement aquatic weed projects across jurisdictional boundaries. Examples of these working groups include: Willapa Bay, Grays Harbor and North Puget Sound Spartina Advisory Group; Yakima River Aquatic Weed Working Group; Salt Cedar Task Force; Skagit and Stillaguamish Knotweed Working Groups; Chehalis River Basin Aquatic Weed Working Group; and the Tri-State Working Group.

Table 3. Aquatic weeds controlled by WDFW during the 2007-09 biennium.

Common Name	Scientific Name	Location in WA	Acres Treated	State Listed
Cordgrass	<i>Spartina</i> (<i>S. alterniflora</i> , <i>S. anglica</i> , <i>S. densiflora</i>)	Marine bays and estuaries	78.8	Class A
Knotweeds (Japanese, giant, Bohemian, Himalayan)	<i>Polygonum</i> (<i>P. cuspidatum</i> , <i>P. sachalinense</i> , <i>P. bohemianum</i> , <i>P. polystachum</i>)	Western WA riparian areas, primarily	5.2	Class B
Common reed (invasive biotype)	<i>Phragmites australis</i>	Potholes; some coastal estuaries	1,605.1	Class B
Purple loosestrife	<i>Lythrum salicaria</i>	Wetlands throughout WA	391.3	Class B
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	Lakes & rivers through WA	89.9	Class B
Saltcedar	<i>Tamarix ramosissima</i>	Eastern WA riparian areas	0.1	Class B
Yellow flag iris	<i>Iris pseudacorus</i>	Western & eastern WA wetlands	3.8	Class C
Reed canarygrass	<i>Phalaris arundinacea</i>	Western & eastern WA wetlands	14.6	Class C

2.2 Washington Department of Ecology

Aquatic Weeds Program

Invasive nonnative freshwater plants are a serious threat to the health of lakes, rivers, and streams throughout Washington State. Excessive weed growth impairs fish and wildlife habitat and restricts recreational activities. In 1991, the Washington State Legislature established the Aquatic Weeds Program to provide financial and technical support to deal with freshwater invasive plants on a statewide basis. This program provides funding for monitoring, technical assistance and education, research, and grants to help control state and local governments control aquatic weeds. Revenue for the Aquatic Weeds Program comes from annual license fees for boat trailers. Approximately \$620,000 per year goes towards these activities.

Monitoring

Every year Ecology surveys water bodies in the state for freshwater aquatic plants, assesses aquatic plant communities, develops a species list for each water body, and documents the presence of invasive nonnative freshwater aquatic and riparian plants. This information is used to make decisions on where aquatic weed management fund money should be spent to control invasive plants.

During the 2007-2009 biennium aquatic plant inventories were conducted at 127 lakes and rivers throughout the state. Inventory results include the discovery of new sites with invasive aquatic plants and naturalized populations of two species new to the state. The presence of the two relatively new invasive aquatic plants was verified through sample collection and, in one case, submitting samples for genetic analysis. The two species, flowering rush (*Butomus umbellatus*) and variable-leaf milfoil (*Myriophyllum heterophyllum*) were then added to the class A noxious weed list.

Plant and macroinvertebrate communities were monitored in a lake where the department had stocked the milfoil weevil, a potential biological control agent for Eurasian milfoil (*Myriophyllum spicatum*). Ecology coordinated with and assisted WDFW with a fish inventory of the lake to assess impacts of fish predation on the weevils. Staff also assisted WDFW with zebra mussel monitoring by conducting plankton tows at recreational lakes they surveyed and submitting the samples to WDFW for analysis.

Information about plant species, their statewide distribution, and plants found in individual water bodies is available on-line in a searchable database at -

<http://www.ecy.wa.gov/programs/eap/lakes/aquaticplants/index.html#annualsurvey>

Research

Ecology has conducted and is continuing to conduct projects to evaluate various control methods for freshwater weeds, their effectiveness against target invasive plants, and their impact on native plant communities. A study of the impacts of grass carp on a lake that has been treated with herbicides for Brazilian elodea (*Egeria densa*) control was conducted. The results of a project using herbicides to control a population of Brazilian elodea and Eurasian milfoil in a lake were published. The paper was written with WDFW biologists who also monitored the impacts of the change in plant community on the fish. The citation is: Parsons, J. K., A. Couto, K. S. Hamel and G. E. Marx. 2009. Effect of fluridone on macrophytes and fish in a coastal Washington lake. *Journal of Aquatic Plant Management* 47: 31-39.

Ecology staff also served on a committee to develop field gear decontamination protocols to reduce the risk of spreading invasive species when conducting fieldwork.

Details about research projects can be seen on Ecology's website at the following link -

<http://www.ecy.wa.gov/programs/eap/lakes/aquaticplants/index.html>.

Education and Technical Assistance

Ecology has produced many educational materials dealing with freshwater nonnative plants and/or the management of these plants, but now relies more on a comprehensive website about aquatic weeds and their management to disseminate this information. The site may be viewed at - <http://www.ecy.wa.gov/programs/wq/links/plants.html>.

Downloadable PDF files of most publications are available on Ecology's publication website. Some publications are available on request from the Water Quality Program. Ecology also provides freshwater plant identification, conducts workshops and field tours, presents at conferences, and provides technical assistance to lake groups, nursery groups, pesticide applicators and the public about nonnative freshwater plants.

Financial Assistance

Ecology provides grants to state agencies and local governments to help manage nonnative aquatic weeds. Grant projects must address education, monitoring, or prevention and/or control of freshwater, invasive, nonnative aquatic plants. Ecology offers competitive grants annually. Generally, about \$300,000 is available during each funding cycle.

An additional \$100,000 per year is available on a year-round basis for rapid response to invasions of invasive weeds. The purpose of these "early infestation" grants is to provide immediate financial assistance to local or state governments to eradicate or contain a pioneering invasion of a nonnative freshwater aquatic plant.

In water bodies with well-established populations of nonnative, freshwater invasive aquatic plants, the development of an integrated aquatic plant management plan is required before Ecology will consider funding control or eradication projects on that water body. Under the grant program, a number of eradication/ management projects for freshwater nonnative species have been funded. Since its inception, Ecology has awarded about 170 individual grants for invasive aquatic plant management activities. Annual funding lists and grant guidelines are available at the following web link - <http://www.ecy.wa.gov/programs/wq/plants/grants/index.html>.

Special Projects

During 2009, Ecology targeted some of the grant funding to local governments to help them deal with high priority noxious weeds. Ecology contracted with Pierce County Noxious Weed Control Board to eradicate a new Class A noxious weed – variable-leaf milfoil from five lakes. Three lakes are in Pierce County and two in Thurston. This is a collaborative effort between Ecology, Pierce County and the Thurston County Noxious Weed Control Board.

Ecology also directed money towards Brazilian elodea eradication efforts in the Chehalis River system. The source of Brazilian elodea is Plummer Lake, a small lake with an outflow to the river. Brazilian elodea is only found downstream of this outlet. Funds will enable the Lewis County Noxious Weed Control Board to focus on eradicating the Brazilian elodea source in Plummer Lake.

Ecology also set aside \$10,000 for use for its own staff to take immediate action should they discover early infestations of invasive nonnative plants. This enables Ecology to quickly hand pull plants, install a bottom barrier, or provide a small contract to another state or local government to use herbicides to treat a small infestation. Often immediate action is the most effective action that can occur with newly invading species.

Hydrilla Eradication

Many consider hydrilla to be one of the worst aquatic weeds in the world. In 1995, King County staff discovered hydrilla in Pipe and Lucerne Lakes near Seattle. This is the only known infestation of hydrilla in the Pacific Northwest. Ecology funds a hydrilla eradication project in partnership with King County and the cities of Covington and Maple Valley. Management includes extensive survey and monitoring, hand removal, and herbicide treatment with fluridone. King County has not discovered any hydrilla plants in Lucerne Lake since 2004 and in Pipe Lake since 2007. Starting in 2010, King County will discontinue herbicide treatment, but continue surveying for three years. At the end of the growing season in 2012, if their surveyors detect no hydrilla in either lake, Ecology and King County will declare hydrilla eradicated from Washington.

Eurasian Watermilfoil Eradication

Helped by state funding, many local governments and lake groups now manage Eurasian watermilfoil populations in their water bodies to such low levels that milfoil is no longer interfering with recreation and safety. There are a number of lakes around the state that have eradicated Eurasian watermilfoil. An example is Goss Lake in Island County.

Permitting

Ecology regulates the use of aquatic pesticides through a state general National Pollutant Discharge Elimination System (NPDES) permitting program. Ecology is currently developing a general permit for the control of nonnative invasive aquatic animals and nonnative invasive marine algae. The permit will be available in 2010. As part of permit development, Ecology is also writing an Aquatic Invasive Species Environmental Impact Statement.

Ecology currently has two NPDES general permits that cover herbicide application to manage noxious weeds. The Noxious Weed Permit covers management of shoreline and wetland weeds such as purple loosestrife. The Aquatic Plant and Algae Management Permit covers the in-lake management of noxious weeds like Eurasian watermilfoil and Brazilian elodea. For further information about aquatic pesticide permitting see - <http://www.ecy.wa.gov/programs/wq/pesticides/index.html>.

2.3 Washington State Noxious Weed Control Board

During the 2007-2009 biennium, WSNWCB added six new invasive plant species to the noxious weed list. Three of these new additions are aquatic and/or wetland species: variable-leaf milfoil (*Myriophyllum heterophyllum*), ricefield bulrush (*Scheonoplectus mucronatus*), and flowering rush (*Butomus umbellatus*). All three species were listed as Class A noxious weeds, meaning that their distribution in Washington is limited and eradication is required by all landowners.

The WSNWCB serves as a central hub of information, education, and outreach for county and district noxious weed control boards and provides many of the materials needed to education

citizens and landowners about noxious weeds. During this biennium, the popular publication *GardenWise: Non-Invasive Plants for Your Garden* was reprinted and redesigned with larger text and pictures. *GardenWise* provides gardeners and landscapers with the information they need to choose non-invasive ornamentals and encourages nurseries to replace invasive plants with a more diverse inventory of more suitable alternatives. Several aquatic and wetland invasive plants are covered in both the eastern and western Washington versions. NWCB also replaced its standard, pocket-sized noxious weed identification booklet with two versions – one for eastern and one for western Washington – both of which have been in high demand.

The WSNWCB continued to provide funding assistance to county weed boards towards eradication of Class A noxious weeds. This funding is modest, typically \$15K annually, but every little bit counts in invasive species control. In 2008, approximately \$6K was used towards eradication of variable-leaf milfoil in Pierce County and \$2K was used to eradicate the one known population of reed sweetgrass (*Glyceria maximum*) in Snohomish County.

2.4 Washington State Department of Agriculture

Spartina Control

In 2009 WSDA along with state and federal partner agencies, tribal entities, local governments and landowners treated approximately 100 solid acres of *Spartina* in Puget Sound, Grays Harbor and Willapa Bay (Figure 12).

During the summer of 2009 this coalition and the aquaculture industry cooperatively treated approximately 80 solid acres of *Spartina* scattered throughout Willapa Bay. The combined statewide effort to eradicate *Spartina* in the marine waters of the state over the past seven years has reduced the overall infestation by over 98%.

With the largest of the state's infestations now controlled, the effort has evolved into a 'survey and eradicate' model focused on finding and treating the remaining individual plants and scattered infestations that exist throughout the previously infested area. This requires significant personnel on the ground to give individual attention to the same areas that helicopters or large machines were previously able to cover in a relatively short amount of time. The amount of herbicide needed to



Figure 12. Two *Spartina* crew members searching for scattered plants intermixed with native vegetation.

treat the infestations has declined, bringing herbicide costs down.

However, the number of personnel needed has increased labor costs. As a result, to meet the program's goal of eradicating *Spartina*, continued funding is imperative over the next three years. For more information see WSDA's annual Reports at - <http://www.agr.wa.gov/PlantsInsects/Weeds/Spartina/default.htm>.

Revision of WAC 16-752

WSDA revised WAC 16-752 by adding four additional species added to the Wetland and aquatic weed quarantine. The aquatic/wetland species are:

1. Floating primrose willow- *Lugwigia peploides*
2. Variable-leaf milfoil l- *Myriophyllum heterophyllum*
3. Ricefield bulrush - *Schoenplectus mucronatus*
4. Water soldier - *Stratiodes aloides*

It is prohibited to transport, buy, sell, offer for sale, or to distribute plants or plant parts of these species, into or within the state of Washington. It is further prohibited to intentionally transplant wild plants and/or plant parts of these species within the state of Washington.

The revision also requires educators to get a permit from the department before using prohibited species for educational purposes and addresses botanical synonyms.

2.5 The Puget Sound Partnership

Management and Planning

The Puget Sound Partnership (hereafter referred to as the Partnership) has finalized their agenda to recover and restore Puget Sound by 2020. The Action Agenda has been adopted by the EPA as the comprehensive management plan to restore the estuary under the National Estuary Program. Protecting and restoring ecosystem functions is a top priority of the plan. The key to accomplishing this priority is preventing the introduction of invasive species and respond quickly to contain, control and/or eradicate them. To attain this priority targeted and strategic efforts currently underway to contain, control, and eradicate existing infestations of invasive species that impair the ecosystem process need to be continued. These include implementing relevant portions of the Washington Invasive Species Council's strategy *Invaders at the Gate*, reducing the risks from ballast water discharges , and developing and implementing a Sound-wide early detection and rapid response system to address invasive species risks.

Funding

The Partnership has secured \$220,000 in EPA Estuary Management funds to implement relevant priorities of the Washington Invasive Species Council's (WISC) strategic plan: *Invaders at the gate*. The ISC will determine the extent and impact of invasive species in Puget Sound and identify gaps in protection. Public access to the information for prevention, control, and

response actions will be available through a web-based information exchange intended to educate the public on the damage caused by invasive species and the role individuals play in prevention.

The Partnership just wrapped up a successful \$300,000 interagency agreement with the Washington Department of Fish and Wildlife to survey for, control the spread of, and where possible, eradicate invasive tunicates. An additional \$330,000 has been secured by the Partnership to continue the invasive tunicate response work done by the Washington Department of Fish and Wildlife into the 2009-2011 biennium.

Biennial Budget Requests

The Partnership develops the budget to protect and restore Puget Sound. Chapter 90.71.320 RCW - Puget Sound Water Quality Protection Act - states:

- (1) State agencies responsible for implementing elements of the action agenda shall:
 - a) Provide to the partnership by June 1st of each even-numbered year their estimates of the actions and the budget resources needed for the forthcoming biennium to implement their portion of the action agenda; and
 - b) Work with the partnership in the development of biennial budget requests to achieve consistency with the action agenda to be submitted to the governor for consideration in the governor's biennial budget request. The agencies shall seek the concurrence of the partnership in the proposed funding levels and sources included in this proposed budget.

- (2) If a state agency submits an amount different from that developed in subsection (1)(a) of this section as part of its biennial budget request, the partnership and state agency shall jointly identify the differences and the reasons for these differences and present this information to the office of financial management by October 1st of each even-numbered year.”

Based on these directions, Table 4 is the 2009-2011 budget to implement invasive species actions noted in the Puget Sound Action Agenda. Budget information is based on input from agencies.

Table 4. 2009-2011 Budget to implement invasive species actions Puget Sound Action Team Agenda

Activity	Status	09-11 Budget	Source
WDFW - Ballast Water Program	Ongoing	\$220,000	State GF
WISC - Baseline and database of invasive species, web-based clearinghouse and targeted education/outreach.	New	\$221,000	EPA 2009
PSP - Tunicate Control	Ongoing	\$500,000	ALEA
WSDA - Spartina Control	Ongoing	\$700,000	State GF
TOTAL		\$1,645,000	

Stakeholder Involvement

In conjunction with the 6th International Conference on marine Bioinvasions the Partnership and Washington Department of Fish and Wildlife convened a workshop of international experts to re-evaluate the risks posed by invasive tunicates and to identify management strategies.

Early Detection and Educational Materials

The Partnership printed identification guides for volunteers doing early detection monitoring for nonnative marine organisms in Puget Sound through the Marine Invasive Species Monitoring Program. They also developed and printed informational posters and handouts for boatyard workers to help them identify and report nonnative species they find on boat hulls. In coordination with other agencies the Partnership supported the placement of fifty *Restore Puget Sound* display panels throughout the region, identifying invasive species as a threat to the Sound and displaying the national *Stop Aquatic Hitchhikers* logo.

2.6 Department of Natural Resources

The DNR Invasive Species Program hires 4-6 Natural Resource Workers from mid May to late October. The primary responsibility of these employees is to carry out herbicide application while permitted from June 1st through October 31st. These employees also survey and physically remove *Spartina* when appropriate. During the 2008 spray season DNR treated 24.1 solid acres of *Spartina* spread over 5063 total acres of mud flat, shoreline and salt marsh. In 2009 DNR treated 6.1675 solid acres of *Spartina* spread over 8641 acres of mud flat, shoreline and salt marsh. During this time frame DNR has worked cooperatively with the Shoalwater Tribe, Pacific County, TNC, WSDA, WDFW and the USFWS to dramatically reduce the *Spartina* infestation.

The main focus of the DNR program during the winter months of 2008 and 2009 has been a collaborative restoration effort with WDFW on a WWRP grant. This effort will continue through December of 2009.

The *Spartina* Programs has also provided \$10,000.00 to Thurston County of which \$5,000.00 went for the eradication of Brazilian elodea in the Chehalis River and \$5,000.00 went for Eurasian watermilfoil treatment in Long Lake. DNR provided an additional \$2,000.00 to WDFW to treat *Phragmites* on DNR property in Grant County on the Winchester Wasteway.

DNR was instrumental in coordinating and funding, in cooperation with Washington SeaGrant, a scientific workshop on Japanese Eelgrass. The purpose of the workshop was to answer continuing questions regarding what is known and not known about this nonnative species. For more information, please see -

http://www.dnr.wa.gov/ResearchScience/Topics/AquaticHabitats/Pages/aqr_nrsh_special_projects.aspx, and <http://www.wsg.washington.edu/mas/ecohealth/eelgrass-workshop.html>.

During the last 2 yrs Wendy Brown has participated as DNR's representative to the invasive species council. Ms. Brown initiated the effort to develop an invasive species response plan.

2.7 Department of Health

Aquatic invasive species (AIS) invasions can pose serious public health risks (via harmful algal blooms, parasites and disease). The Washington Department of Health (WDOH) continues to act in an advisory role, and provides technical assistance when necessary regarding AIS. DOH also actively participates in WDFW's Ballast Water Work Group.

2.8 Washington State Patrol

WSP Commercial Vehicle Officers have been inspecting commercially hauled vessels at the ports of entry since 2008.

2.9 Washington Sea Grant

Research

One Washington Sea Grant funded project was reported upon in 2008 titled: "*Context-Dependent Impacts of an Invasive Predator on a Threatened Native Oyster*" by Jennifer Ruesink, Department of Biology, University of Washington.

Abstract

This project quantified key components of the predator-prey interaction between invasive Japanese drills and native Olympia oysters. Using a combination of comparative field observations and manipulative experiments, researchers found that drill impacts are most severe at sites where oysters are rare. Drill predation may thus contribute to keeping oyster populations depressed. The results also identified barnacles as an important and strongly preferred alternative prey item for drills. In the short term, high barnacle density can shelter native oysters from predation by swamping the feeding rate of drills. Data from experimental removal of drills at an active oyster restoration site suggest that mitigation of drill impacts may be a more successful management strategy than eradication.

Washington Sea Grant staff collaborated with University of Washington researchers to publish the first records of the high priority crayfish species, *Orconectes rusticus*, west of the Rocky Mountains.

Staff members are also taking part in an international study (United States and Canada) to define the invasive species pathway that includes biological supply houses and ultimately schools, and identify the pathway elements where prevention resources can be applied most effectively.

Education and Outreach

In 2008 and 2009, Washington Sea Grant staff provided aquatic invasive species presentations and field trips to approximately 1000 students, volunteers, and stakeholder groups, presented a poster at the 2009 Puget Sound Georgia Basin Research Conference and participated on the Washington Invasive Species Council's education committee.

Washington Sea Grant staff has also been active analyzing ballast water samples collected by the WDFW and testing ballast water treatment tools.

3. ACCOMPLISHMENTS BY TRIBES AND FEDERAL AGENCIES

3.1 Lower Elwha Klallam Tribe – Elwha Watershed Restoration

The Lower Elwha Klallam Tribe is working with several other groups and agencies on planning the restoration of nearly 500 of the 800 acres of land that will be exposed and available for re-vegetation after the removal of the Elwha and Glines Canyon Dams. Areas to be re-vegetated with native plants include riparian areas, terraces, mid-slope sediment deposits, and steep upland slopes. Plant selection will be based on the composition of plants found similar areas in the Elwha watershed. All of the plants will be native plants collected in the lower Elwha watershed to preserve genetic integrity. The new vegetation will not only restore native vegetation and minimize the introduction of nonnative plants, it will play a vital role in stabilizing sediments that will wash out from behind the dams.

More information on the project may be found at: <http://www.elwhainfo.org/elwha-river-watershed/river-restoration/revegetation>

3.2 Jamestown S'Klallam Tribe - Dungeness River Restoration

The Jamestown S'Klallam Tribe is partnering with the North Olympia Land Trust & Clallam Conservation District as well as local landowners in an effort to restore nearly 50 acres of riparian habitat in the lower reaches of the Dungeness River. The project addresses many issues, both ecological and social through conservation easements and habitat restoration and enhancement projects. Recently tribal members realized that their long-term restoration goals are being threatened by an invasive plant. The butterfly bush (*Buddleia*) has been spreading rapidly the past few years, and the Tribe is concerned that it may be threatening salmon habitat (Figure 13).

The plant quickly grows into a tall, dense thicket and is outcompeting native trees that provide shade keep the river cool, and provide habit when they fall



Figure 13. *Buddleia* Thicket
N.W. Indian Fisheries Commission

into the river. The Tribe has been working on eradicating the plant along ten miles of the Dungeness River. So far the tribe has treated eighty-three acres of stream-side habitat and replanted native species in place of the *Buddleia* thickets. The Tribe is working with other groups and agencies to educate riverfront property owners about the issue. More information about the Dungeness River Restoration Project and the Jamestown S'Klallam Tribe may be found at - <http://www.sustainablenorthwest.org/stories/dungeness-river-watershed-restoration/>

3.3 Lummi Nation

Habitat Restoration

The Lummi Tribe has been doing habitat restoration along Bells Creek and the Nooksack River. They have planted streamside buffers of coniferous trees and placed large woody debris in Bells Creek to create pools for spawning coho, steelhead and bull trout. An additional seventeen acres belonging to the Whatcom Land Trust has also been planted with trees. To discourage elk from browsing on the young cedar trees, the tribe planted Sitka spruce alongside the cedars. The plan is to cut back the spruce once the cedars get larger. However, nature seems to be fighting them every inch of the way. Invasive Japanese Knotweed is rapidly taking over the planted areas and impeding the growth of the native plants. Cutting the plants can encourage spreading if cuttings manage to take root, and herbicide treatments may require multiple applications and are expensive. To keep the knotweed from blocking the sun and crowding out the young trees, Lummi crews are stomping the stalks to bend them back. The volunteer coordinator for the Nooksack Salmon Enhancement Association is encouraging volunteers, especially younger student groups, to come and help stomp knotweed.

Intertidal Baseline Inventory

The tribe is also conducting an Intertidal Baseline Inventory of more than 7,000 acres of tidelands on the reservation. The British Petroleum Company is funding the survey, which could be crucial in the event of a catastrophic oil spill from one of the four nearby oil refineries in Anacortes and Ferndale. The tribe is doing monthly shorebird surveys and finfish sampling as well as visual surveys of geoduck and horse clams and dig surveys of other species such as hard shell clams, crabs, and worms. Four two man teams consisting of a scientist and an experienced clam digger with traditional ecological knowledge of the area dug sample areas at three hundred and sixty-six (366) sites. The samples were taken back to the lab, identified, and counted. At least 150 different species were counted, including native littlenecks, manila clams, and nonnative mahogany of varnish clams. Samples are being preserved and will be used in the native environmental science curriculum at Northwest Indian College on the Lummi Indian Reservation. In addition to the four types of surveys they have contracted with a company to do tideland elevation surveys from the air using light detection and ranging equipment (LIDAR). The tribe expects to have a final report by the end of the year, and would like to eventually expand the baseline inventory to encompass all of their usual and accustomed fishing areas.

3.4 Tulalip Tribes Invasive Species Control Program

Spartina

The Tulalip Tribes are winning the battle with *Spartina*. In 2005 they mapped ninety-five patches within Tulalip Bay. Working with Crews from the Washington Department of Agriculture (WSDA), Department of Fish and Wildlife (WDFW), Snohomish County and the Nature Conservancy forty patches were dug up and removed, and six larger patches were mowed and rototilled. In 2006 the co-op crews began working in the Big Flats area, where there were more than sixty-five patches ranging in size from two feet to ten feet, many of them integrated into the native marsh, making control a challenge. Eradication and control efforts at Big Flats continued through 2008, using herbicide controls applied using backpack sprayers. In 2009 the Tribes work with the Heritage High School to dig and remove twenty patches of *Spartina* from Tulalip Bay. Time and funding constraints limited control efforts on Big Flats, although field surveys indicate that the herbicide treated patches appear to be controlled. Untreated patches may remain in the estuary. The Tulalip Tribes will conduct a complete inventory on the reservation beaches in 2010 and develop a new five-year control strategy with their partners.

Knotweed

The Tulalip Tribes completed an inventory of knotweed infestations on the Tulalip Reservation in 2005. The survey was limited to wetland, shoreline, and riparian areas near roads. Approximately one hundred and ten patches were identified at that time. Funding constraints limit the Tribes ability to control knotweed, and partner organizations and agencies have focused knotweed control efforts in other watersheds.

Pepperweed

In 2006, perennial pepperweed was first identified on the Tulalip Reservation in the Quilceda Estuary. It appears that since 2006 the pepperweed infestation may be growing and may be encroaching on the relatively intact marsh system with plant species of high ecological and cultural importance. In 2009, US Fish and Wildlife Service awarded a grant to the Tulalip Tribes to provide support for invasive species control in the Quilceda estuary. This will allow for pepperweed control actions to begin in 2010.

3.5 Skokomish Tribe Aquatic Nuisance Species Management Plan

The Skokomish Tribe's Natural Resources Department completed their *Aquatic Nuisance Species Management Plan* in August of 2008 in response to the threat posed to the Tribe's water resources by invasive nonnative species. The Tribe's management plan focuses on the identification of effective management practices to prevent and control aquatic invasive species in the Tribe's usual and accustomed areas. The plan outlines five objectives structured to achieve their primary goals. The first of which is to identify the primary species of concern and develop best management practices for monitoring, controlling, and eradicating them. The second is to implement monitoring, control and eradication efforts based on the best available science.

3.6 United States Fish and Wildlife Service

The United States Fish and Wildlife Service (USFWS) is actively involved with addressing invasive species issues in Washington. They work with federal, state, tribal, NGOs, and local partners by providing funding and technical assistance for management, monitoring, and control efforts for species such as zebra mussels, New Zealand mud snails, and nutria throughout the Pacific Northwest. The USFWS has provided funding to the WDFW Aquatic Nuisance Species (ANS) Program for implementation of the Washington State ANS Management Plan for the past twelve years.

In cooperation with the Pacific States Marine Fisheries Commission, the USFWS has completed the “Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussel and Other Dreissenid Mussels,” and organized three table-top response exercises in the Columbia Basin. The response plan can be found at the 100th Meridian Initiative website - (<http://www.100thmeridian.org/ColumbiaRT.asp>).

The USFWS has also completed an Asian carp risk evaluation for the Columbia Basin titled *Columbia River Basin Asian Carps Risk Evaluation*. The document can be found at the Asian Carp Management website (<http://asiancarp.org/>). They also continue to coordinate efforts to monitor populations of the recently introduced Amur goby in western Washington and the lower Columbia River. The USFWS recently completed their annual New Zealand mudsnail surveys of National Fish Hatcheries located in western Washington; no New Zealand mudsnails were found. The USFWS also provides training and technical assistance on the Hazard Analysis and Critical Control Point (HACCP) process to staff at Washington agencies.

The USFWS works with and provides funding to a variety of partners for the survey and control of invasive species. Current efforts include *Spartina* control in Port Susan Bay in North Puget Sound and monitoring of *Spartina* in Willapa Bay; knotweed control in Grays Harbor, King, Skagit, and Snohomish counties; and control of Brazilian elodea in Thurston County. In addition to their participation in the Washington ANS Committee, they participate in the Olympic Knotweed Working Group, Chehalis River Aquatic Weed Management Group, Tunicate Response Advisory Committee, Columbia River Basin 100th Meridian Group, (Washington) Ballast Water Work Group, Western Regional Panel, and the Washington Invasive Species Council.

Invasive species managers for the USFWS's Pacific Region also make educational presentations at many events that address Washington audiences, such as the Pacific Marine Expo (Seattle, WA), Pacific Northwest Sportsman's Show (Portland, OR), and the Washington Sportsman's Show (Puyallup, WA), as well as the Northwest Youth Conservation and Fly Fishing Academy (Lacey, WA), public outreach events at Cabela's (Lacey, WA), and the 2009 Washington Youth Outdoor Adventure Expo – Connecting Youth to the Outdoors (Lacey, WA). They also distribute many types of ANS outreach materials to Washington groups (such as a new Columbia River Basin ANS brochure and poster in 2009), and continue to support “Stop Aquatic Hitchhiker” boater displays through a commercial marina signage project in Lake Washington, Puget Sound, and the lower Columbia River.

3.7 Pacific States Marine Fisheries Commission

In April 2009, the Pacific States Marine Fisheries Commission (PSMFC) and U.S. Fish and Wildlife Service, in collaboration with the Idaho Department of Agriculture held a third “table-top” exercise in Boise, Idaho to evaluate the *Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussels and other Dreissenid Species*. The exercise scenario included a confirmed finding of dreissenid veligers in Lucky Peak reservoir near Boise, Idaho. WDFW staff participated in the exercise. The exercise was conducted over two days. The April 29 portion of the exercise consisted of field training for divers deployed to detect the presence of adult mussels following the find of veligers. On April 30, a two-part table-top exercise was conducted. In the morning session, state subject matter experts assessed the dreissenid find and developed treatment strategies. The recommendations developed from this session were presented to policy makers for discussion and approval during the afternoon session.

More than 70 State, Federal and Local government agencies and organizations in the western US have implemented watercraft interception programs designed to prevent contaminated watercraft from being launched in unaffected waterways since 2007. Most of these programs employ similar methods for screening, inspecting and decontaminating suspect watercraft, but there has been very limited coordination between these diverse efforts. The implementation of region-wide uniform minimum protocols and standards for watercraft interception programs is considered essential by nearly all state, federal, tribal and local agencies and organizations involved in this effort because they will increase effectiveness, understanding, cooperation and public support. To address this issue, the Pacific States Marine Fisheries Commission, at the request of the Western Regional Panel (WRP) on Aquatic Nuisance Species, developed the document *Recommended Uniform Minimum Protocols and Standards (UMPS) for Watercraft Interception Programs for Dreissenid Mussels in the Western United States*. For further information go to - <http://www.aquaticnuisance.org/wit>.

Zebra and quagga mussels are spread on trailered watercraft moving from an infested to uninfested waterways. For the past three years, the PSMFC has been providing training for boating law enforcement personnel and others so that they can successfully intercept, inspect, identify, contain and decontaminate trailered watercraft suspected of carrying zebra mussels. In 2009 PSMFC continued trainings that were conducted throughout the Western United States. The program has now trained nearly 2000 individuals from 90 agencies in 12 western states. Go to <http://www.aquaticnuisance.org/wit> for further information on this program.

PSMFC continued to provide administrative support and staffing for numerous ANS interjurisdictional efforts, including the Columbia and Missouri River Basin 100th Meridian Initiative Groups; the Pacific Ballast Water Group; and the Green Crab Technical Group.

4.0 APPENDIXES

- A. Legislative Intent
- B. ANSC Membership
- C. ANS Watch List
- D. ISC Priority Species List
- E. ANSC 2008-2009 Work Plans
- F. Summary of ANSC Meeting Actions for 2008-2009

APPENDIX A

LEGISLATIVE INTENT

RCW 77.60.130

Aquatic Nuisance Species Committee

Purpose

The aquatic nuisance species committee is created for the purpose of fostering state, federal, tribal, and private cooperation on aquatic nuisance species issues. The mission of the committee is to minimize the unauthorized or accidental introduction of nonnative aquatic species and give special emphasis to preventing the introduction and spread of aquatic nuisance species.

The term "aquatic nuisance species" means a nonnative aquatic plant or animal species that threatens the diversity or abundance of native species, the ecological stability of infested waters, or commercial, agricultural, or recreational activities dependent on such waters.

The committee shall accomplish its duties through the authority and cooperation of its member agencies. Implementation of all plans and programs developed by the committee shall be through the member agencies and other cooperating organizations.

ANS Committee Members

The committee consists of representatives from each of the following state agencies:

Department of fish and wildlife

Department of Ecology

Department of Agriculture

Department of Health

Department of Natural Resources

Puget Sound Partnership

State Patrol

State Noxious Weed Control Board

Washington Sea Grant Program

The committee shall encourage and solicit participation by:

Federally recognized Tribes of Washington

Federal agencies

Conservation organizations

Environmental groups

Representatives from industries that may either be affected by the introduction of an aquatic nuisance species or that may serve as a pathway for their introduction.

Report

Prepare a biennial report to the legislature with the first report due by December 1, 2001, making recommendations for better accomplishing the purposes of this chapter, and listing the accomplishments of this chapter to date. [RCW 77.60.130 (4)]

APPENDIX B

Washington State Aquatic Nuisance Species (ANS) Watch List April 21, 2009

Non-native aquatic nuisance species (ANS) are introduced to the state primarily through human activity. ANS can be highly destructive, competitive, and difficult to control, due to aggressive growth, rapid reproduction, and/or lack of natural predators. Their presence can be costly, and also leads to decreased biodiversity through displacement of native species. Species on this list were chosen by general agreement of the legislatively established Washington State Aquatic Nuisance Species Committee (hereafter called "committee") as established under RCW 77.60.130 and based on professional judgment.

Purpose

The ANS Watch List provides a non-regulatory reference tool to assist agency and public prevention, monitoring, and management decision-making. The list will be used to help manage ANS in conjunction with the committee's Early Detection and Rapid Response, and ANS Management Plans. The list will also help to promote general education, focus monitoring efforts, and increase awareness of various ANS and their impacts. The intent is to have the distribution of all listed species tracked in an ANS database.

What is Included

The list is a continuously evolving document consisting of species the committee considers as posing, or potentially posing, a threat to Washington aquatic ecosystems. It includes species which have been previously established and (for now) eradicated; species not yet here that we want to prevent from entering or establishing in Washington; and species already observed here that we would like to eradicate or otherwise manage. It is not meant to be a complete list of non-native species in Washington and it does not include plant pathogens or detrimental microorganisms. Some species may never have management plans developed at the state level because they are already too widespread, although control at the local level may be of value. These are listed to promote general awareness that they are non-native and are considered detrimental or potentially detrimental to the environment.

Species of Concern

All of the organisms on this list are known to have some level of environmental, economic and/or human health risk, whether in Washington or in other similar parts of the nation or world. However, it is not economically feasible to comprehensively monitor or manage all of them. Therefore, the list categorizes species as either primary or secondary based on the committee's assessment of their risks.

Primary Species of Concern are those species considered have the highest environmental, economic and/or human health risk. Some of these species are already here and some are not. Funding will be prioritized to develop monitoring and management plans for these species, and eradication and/or control measures will be instituted if or when they are found.

Secondary Species of Concern are those species considered to be of lower environmental, economic and/or human health risk. Management of secondary species is expected to vary depending on the organism, its distribution and numbers, feasibility of management success, and other factors. A risk evaluation panel will review and recommend next steps as appropriate for those already established in Washington. Those not yet established in Washington will be included in existing monitoring programs where possible.

Watch List Format

The list is divided into four ANS parts including freshwater plants, freshwater animals, marine/ estuarine plants, and marine/ estuarine animals. Each part is further divided into primary and secondary species of concern tables. Tables are composed of columns identifying each species' common name, scientific name, current status, regulatory classification, existing management plans, and the probable pathways suspected of originally introducing or contributing to the continued spread of each species.

Process for List Revisions (Additions or Deletions)

The committee welcomes requests for additions, deletions, or priority changes to the list annually or as needed. Written requests must be made to the Chair or Vice-Chair and include information as noted in the list below. Any proposed committee actions must be noted in the next meeting's agenda and sent out to the committee at least two weeks prior to the meeting at which an action is expected. Written comments from members addressing the action will be incorporated into the meeting discussion if they are unable to attend.

Using scientific facts, and technical information, and best professional judgment, the committee will strive for consensus on whether the request is reasonable for consideration. Where there is consensus, the committee may approve the request or establish a technical subcommittee and/or expert(s) to make a recommendation to the committee on whether the species should be added or deleted. The committee will then follow the standard action agenda and consensus protocols to finalize the Watch List request.

A written request for addition or deletion, or change in concern level for a specific or several species must include the following information, at a minimum and to the known extent available:

1. Contact information;
2. Scientific and common name(s) of the species in question;
3. Specific change requested;
4. Reason for request;
5. Whether the species is regulated/classified by state regulation;
6. Whether the species considered beneficial at some level;
7. The known or potential pathways for introduction;
8. Introduction history and current distribution information –when, where, and how much;
9. Background on the biology and properties of the species – reproduction, distribution, tolerance to various environmental conditions;
10. Evidence of invasive behavior in other locations;
11. Risk factors to Washington State (environmental, economic, human); and
12. Known containment, control, or eradication methods.

The committee will automatically list all Class A aquatic or wetland-area state-listed noxious weeds as Priority Species of Concern. The Committee will update the ANS Watch List each February to reflect any Class A additions or deletions to the Noxious Weed List (WAC-16-750).

CODES FOR THE TABLES

Status in Washington

P	Known to be present in Washington State
E	Previously established but now believed eradicated in WA
M	Currently managed at various state and/or local locations
X	No verified presence in Washington State

Regulatory Classification

D	WDFW Deleterious exotic wildlife (WAC 220-12-01701) [Non native species considered dangerous to the environment or wildlife of the state]
P	WDFW Prohibited aquatic animal species (WAC 220-12-090) [May not be possessed, purchased, sold, propagated, transported, or released into state waters]
U	WDFW Unlisted aquatic animal species (RCW 77.12.020) [May not be released into state waters]
NWA	Class A noxious weeds (WAC 16-750-005) [Limited distribution- eradication required by law]
NWB	Class B noxious weeds (WAC 16-750-011) [Limited distribution- designated for control in various regions where not yet widespread]
NWC	Class C noxious weeds (WAC 16-750-015) [Widespread distribution- local control can be enforced if desired]
NWQ	WA State Wetland & Aquatic or Noxious Weed quarantine listing (WAC 16-752-505 or 16-752-610)
LA	Lacey Act listing (50 CFR 16 or 18 U.S.C. 42) [Listed as Injurious Wildlife Species]

Management Plan

N	National management plan is available for this species
S	Washington State management plan is available for this species
R	Pacific Northwest regional management plan is available for this species
X	There is no known plan at this time

Suspected / Probable Pathway

Aq	Aquaculture (escaped, or brought in as accidental “hitchhiker” on other fish & shellfish imports)
Bd	Birds
Bw	Ballast water
Er	Imported for Educational / Research Institutions (escaped or discarded)
Fc	Imported food for consumption / live seafood (discarded imports or hitchhikers on seafood packaging)
Fp	Introduced for fur production
Hn	Horticulture / nursery trade
In	Internet sales
Lb	Live bait
Pa	Pet / aquarium trade
Rw	Recreational or commercial watercraft - hitchhikers in/on boat hulls, bilge water or field gear/clothing
Sp	Intentionally stocked or planted
X	Unknown

FRESHWATER PLANTS

Priority Species of Concern

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
African waterweed	<i>Lagarosiphon major</i>	X	NWQ	X	Pa, Hn, In
Brazilian elodea	<i>Egeria densa</i>	P/M	NWQ, NWB	X	Pa, Rw, In
Cordgrass (smooth)**	<i>Spartina alterniflora</i>	P/M	NWQ, NWA	S	Aq
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	P/M	NWQ, NWB	S	Rw
European water chestnut	<i>Trapa natans</i>	X	NWQ	S	Hn
Flowering Rush**	<i>Butomus umbellatus</i>	P/M	NWQ, NWA	X	Hn
Golden algae (microscopic)	<i>Prymnesium parvum</i>	X	-	X	X
Hairy willow herb	<i>Epilobium hirsutum</i>	P	NWQ, NWC	X	Hn
Hydrilla	<i>Hydrilla verticillata</i>	P/M	NWQ, NWA	S	Rw, Hn, In
Knotweed, Japanese*	<i>Polygonum cuspidatum</i>	P/M	NWQ, NWB	S	Hn
Knotweed, Bohemian*	<i>Polygonum bohemicum</i>	P/M	NWQ, NWB	S	Hn?
Knotweed, giant *	<i>Polygonum sachalinense</i>	P/M	NWQ, NWB	S	Hn
Knotweed, Himalayan *	<i>Polygonum polystachyum</i>	P/M?	NWQ, NWB	S	Hn
Parrot feather	<i>Myriophyllum aquaticum</i>	P/M	NWQ, NWB	X	Rw, Pa, Hn, In
Reed, sweetgrass	<i>Glyceria maxima</i>	P/M	NWQ, NWA	X	Hn
Ricefield bulrush	<i>Schoenoplectus / Scirpus mucronatus</i>	P	NWQ, NWA	X	?
Water primrose, creeping	<i>Ludwigia peploides</i>	P/M	NWQ, NWA	X	Hn?

*Although more terrestrial than aquatic, included here because they significantly impact aquatic resources in riparian areas

** New additions as of 4/21/09

Secondary Species of Concern (Freshwater Plants)

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Arrowhead, grass leaved	<i>Sagittaria graminea</i>	P/ M	NWQ, NWB	X	Hn
Arrowhead, delta	<i>Sagittaria platyphylla</i>	P	NWQ	X	Hn
Bladderwort, swollen	<i>Utricularia inflata</i>	P	NWQ	X	Rw, In, Bd
Curly leaf pondweed	<i>Potamogeton crispus</i>	P	NWC	X	Aq, Rw
Didymo “rock snot” algae *	<i>Didymosphenia geminata</i>	P	-	X	Rw?
Eelgrass, freshwater	<i>Vallisneria gigantea sp.</i>	P	-	X	Pa
European frogbit	<i>Hydrocharis morsus-ranae</i>	P	NWQ	X	Hn, Rw, In
Fanwort	<i>Cabomba carolinana</i>	P	NWQ, NWB	X	Hn, Pa, In
Hyacinth, water	<i>Eichornia crassipes</i>	X	-	X	Hn, In
Iris, yellow flag	<i>Iris pseudacorus</i>	P/M	NWC	X	Hn, In
Loosestrife, garden	<i>Lysimachia vulgaris</i>	P/M	NWB	X	Hn, In
Loosestrife, purple	<i>Lythrum salicaria</i>	P/M	NWB	S	Hn, In
Lovegrass sedge	<i>Cyperus eragrostis</i>	P	-	X	Hn
Reed, common	<i>Phragmites australis</i> (exotic genotype)	P	NWC	X	?
Reed, giant	<i>Arundo donax</i>	X	-	X	Hn
Salvinia, giant	<i>Salvinia molesta</i>	X	-	X	Hn, In
Senegal tea	<i>Gymnocoronis spilanthoides</i>	X	-	X	Pa
Toxic cyanobacteria (blue-greens)	<i>Cylindrospermopsis raciborskii</i>	X	-	X	X
Flowering rush	<i>Botomus umbelatus</i>	X	NWQ	X	Hn
Yellow floating heart	<i>Nymphoides peltata</i>	P/M	NWQ, NWB	X	Hn
Salt cedar **	<i>Tamarix ramosissima</i>	P/M	NWQ, NWB	X	Hn, Rw

* Included here because it exhibits undesirable growth in some conditions, possibly the result of a genetic mutation.

** Considered a riparian, rather than aquatic, species, but included here because it has such an impact on aquatic habitats

FRESHWATER ANIMALS

Priority Species of Concern

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Carp, Asian bighead	<i>Aristhythes / Hypthalmichthys nobilis</i>	X	P, LA	N	Aq, Fc
Carp, Asian silver	<i>Hypthalmichthys molitrix</i>	X	P, LA	N	Aq, Fc
Carp, black	<i>Mylopharyngodon piceus</i>	X	P, LA?	N	Aq
Carp, grass (diploid)	<i>Ctenopharyngodon idella</i>	X	P	X	Sp
Carp, largescale silver	<i>Hypthalmichthys harmandi</i>	X	U, LA	N?	Aq
Crab, mitten	<i>Eriocheir sinensis</i>	X	D, P	N	Bw
Crayfish, northern	<i>Orconectes virilis</i>	X	P	X	Lb
Crayfish, red swamp	<i>Procambarus clarkii</i>	P	P	X	Er, Lb, Pa
Crayfish, rusty	<i>Orconectes rusticus</i>	X	P	X	Lb, Pa, Fc, Er
Mussel, quagga	<i>Dreissena bugensis</i>	X	D, P, LA?	R	Rw
Mussel, zebra	<i>Dreissena polymorpha</i>	X	D, P, LA	R	Rw
New Zealand mudsnail	<i>Potamopyrgus antipodarum</i>	P	P	N	Rw
Nutria	<i>Myocastor coypus</i>	P/M	P	X	Fc
Snakehead fish	<i>Channa spp.</i>	X	P, LA?	X	Pa, Fc, Rw

Secondary Species of Concern

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Bass, white	<i>Morone chrysops</i>	P	U	X	Sp
Bass, striped	<i>Morone saxatilis</i>	P	U	X	Sp

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Bowfin/grinnel/ mudfish	<i>Amia calva</i>	X	P	X	Sp
Bullfrog	<i>Rana catesbeiana</i>	P	P	X	Pa, In
Catfish	<i>All of family Ictaluridae</i>	X	U	X	Aq, Fc
Catfish, walking	<i>Clarias batrachus</i>	X	P	X	Aq, Fc
Clam, Asian	<i>Corbicula fluminea</i>	P	U	X	Fc
Crayfish, ringed	<i>Orconectes neglectus</i>	X	U	X	Er, Lb, Pa
Crayfish, blue	<i>Procambarus alleni</i>	X	P?	X	Er, Lb, Pa
Frog, spadefoot	<i>Pelobates sp.</i>	X	P	X	In, Pa
Frog, brown & green	<i>Palaearctic Rana sp.</i>	X	P	X	In, Pa
Goby, amur	<i>Rhinogobius brunneus</i>	P	U	X	Bw
Goby, round	<i>Neogobius melanostomus</i>	X	P	X	Bw
Ide/silver orfe/ golden orfe	<i>Leuciscus idus</i>	X	P	X	Pa
Killifish, banded	<i>Fundulus diphanus</i>	P	U	X	Pa, Lb?
Minnow, fathead	<i>Pimephales promelas</i>	P	P	X	Pa
Mudpuppies, nonnative	<i>Necturus and Proteus spp</i>	X	P	X	In, Pa
Mudsnail, eastern	<i>Ilyanassa 41bsolete</i>	X	U	X	Aq
Mudsnail, Asian	<i>Batillaria attramentaria</i>	P	U	X	Aq
Mute swan	<i>Cygnus olor</i>	X	S	X	Pa
Newts, non-native	<i>(see WAC 220-12-090 (1)(a)(xiii))</i>	X	P	X	In, Pa
Pike, gar	<i>Lepisosteidae</i>	X	P	X	Sp
Pike, northern	<i>Esox lucius</i>	P	P	X	Sp
Piranha, caribe	<i>Pygocentrus, Rooseveltia & Serrasalmus spp.</i>	X	P	X	Pa
Rudd, silver or golden	<i>Scardinius erythrophthalmu</i>	X	P	X	Sp

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Ruffe, Eurasian	<i>Gymnocephalus cernuus</i>	X	U	N	Bw
Salamander, non-native	(see WAC 220-12-090 (1)(a)(v-xi))	X	P	X	In, Pa
Snail, Chinese mystery	<i>Cipangopaludina chinensis</i>	P	U	X	Hn?
Sunfish, red-ear	<i>Lepomis microlophus</i>	X	U	X	Sp
Tapeworm, Asian (fish parasite)	<i>Bothriocephalus acheilognathi</i>	X	U	X	Aq
Terrapin, diamond back	<i>Malaclemys terrapin</i>	P	U	X	In, Pa
Turtle, red-eared slider	<i>Trachemys scripta elegans</i>	P	U	X	In, Pa
Turtle, Asian pond	<i>Mauremys spp.</i>	X	P	X	In, Pa
Turtle, Chinese pond	<i>Chinemys spp.</i>	X	P	X	In, Pa
Turtle, European pond	<i>Emys orbicularis</i>	X	P	X	In, Pa
Turtle, snapping	<i>Chelydra serpentine</i>	X	P	X	In, Pa
Turtle, soft shell	<i>Apalone sp.</i>	X	P	X	In, Pa
Waterflea, fishhook*	<i>Cercopagis pengoi</i>	X	P	X	Rw
Waterflea, spiny *	<i>Bythotrephes cederstroemi</i>	X	P	X	Rw

* Also found in brackish water

MARINE / ESTUARINE PLANTS

Priority Species of Concern

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Caulerpa seaweed	<i>Caulerpa taxifolia</i>	X	-	N	Pa
Cordgrass, smooth	<i>Spartina alterniflora</i>	P/M	NWQ, NWB	S	Aq
Cordgrass, dense flower	<i>Spartina densiflora</i>	P/M	NWQ, NWA	S	Aq
Cordgrass, common	<i>Spartina anglica</i>	P/M	NWQ, NWB	S	Aq
Cordgrass, salt meadow	<i>Spartina patens</i>	P/M	NWQ, NWA	S	Aq

Secondary Species of Concern

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Dead man's fingers	<i>Codium fragile tomentosoides</i>	X	-	X	Rw
Japanese kelp	<i>Undaria pinnatifida</i>	P?	-	X	Rw
Sargassum weed	<i>Sargassum muticum</i>	P	-	X	Rw

MARINE / ESTUARINE ANIMALS

Priority Species of Concern

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Bamboo worm	<i>Clymenella torquata</i>	P	U	X	Aq
Crab, European green	<i>Carcinus maenus</i>	P/M	D, P	N	Bw
Crab, mitten	<i>Eriocheir sinensis</i>	X	D, P	N	Bw
Tunicate, club (solitary)	<i>Styela clava</i>	P/M	U	X	Bw, Aq, Rw
Tunicate, transparent (solitary)	<i>Ciona savigny</i>	P	U	X	Bw, Aq
Tunicate (solitary)	<i>Molgula manhattensis</i>	P	U	X	Bq, Rw
Tunicate, chain (colonial)	<i>Botrylloides violaceus</i>	P	U	X	Bw, Aq, Rw
Tunicate, golden star (colonial)	<i>Botryllus schlosseri</i>	P	U	X	Bw, Aq, Rw
Tunicate (colonial)	<i>Didemnum</i> sp.	P/M	U	X	Bw, Aq, Rw

Secondary Species of Concern

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Amphipod	<i>Ampelisca abdita</i>	X	U	X	Bw
Anemone, orange-stripe	<i>Diadumene lineate</i>	P	U	X	Bw
Angelwing, false	<i>Petricolaria pholadiformis</i>	P	U	X	Bw
Bryozoan, spaghetti	<i>Zoobotryon verticillatum</i>	P?	U	X	Bw
Clam, Japanese	<i>Neotrapezium liratum</i>	P	U	X	Bw
Clam, Asian	<i>Potamocorbula amurensis</i>	P?	U	X	Bw
Clam, Atlantic gem	<i>Gemma gemma</i>	X	U	X	Bw

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Clam, Northern quahog	<i>Mercenaria mercenaria</i>	P?	U	X	Bw
Comb jelly, Leidy's	<i>Mnemiopsis leidyi</i>	X	U	X	Bw
Copepod	<i>Pseudodiaptomus inopinus</i>	X	U	X	Bw
Crab, Harris mud	<i>Rhithropanopeus harrisi</i>	P?	U	X	Bw
Crab, Japanese shore	<i>Hemigrapsus sanguineus</i>	X	U	X	Bw
Fan worm, Mediterranean	<i>Sabella spallanzanii</i>	P?	U	X	Bw
Goby, chameleon goby	<i>Tridentiger trigonocephalus</i>	P	U	X	Bw
Goby, Shimofuri	<i>Tridentiger bifasciatus</i>	X	U	X	Bw
Isopod, Griffen's (parasitic)	<i>Orthione griffensis</i>	P	U	X	Bw
Isopod, New Zealand burrowing	<i>Sphaeroma quoianum</i>	X	P	X	Bw
Jellyfish, Black Sea	<i>Maeotias inexpectata</i>	P	U	X	Bw
Jellyfish, spotted	<i>Phyllorhiza punctata</i>	P?	U	X	Bw
Lionfish	<i>Pterois volitans</i>	X	U	X	Bw
Mudsnail, Asian	<i>Batallaria attramentaria</i>	P	U	X	Aq
Mussel, Atlantic ribbed	<i>Geukensia demissa</i> (<i>Ischadium demissum</i>)	P	U	X	Bw
Mussel, New Zealand green	<i>Perna spp.</i>	P	U	X	Bw
Mussel, Japanese	<i>Musculista senhousia</i>	P	U	X	Bw
Oyster drill, Atlantic/Eastern	<i>Urosalpinx cinerea</i>	P	U	X	Aq
Oyster drill, Japanese	<i>Ceratostoma inornatum</i> (<i>Ocinebrellus inornatus</i>)	P	U	X	Aq
Prawn, Siberian	<i>Exopalaemon modestus</i>	P	U	X	Bw
Sea slug, New Zealand	<i>Philine auriformis</i>	X	U	X	Bw
Shipworm	<i>Teredo navalis</i>	X	U	X	Bw

Common Name	Scientific Name	Status in WA	Regulatory Classification	Management Plan	Probable Pathway
Snail, Atlantic slipper	<i>Crepidula fornicata</i>	P	U	X	Bw
Sponge, red beard	<i>Clathria prolifera</i>	P	U	X	Bw
Starfish, N Pacific sea	<i>Asterias amurensis</i>	X	U	X	Bw
Whelk, channeled	<i>Busycotypus canaliculatus</i>	P	U	X	Bw
Whelk, veined rapa	<i>Rapana venosa</i>	X	U	X	Bw

#

APPENDIX C

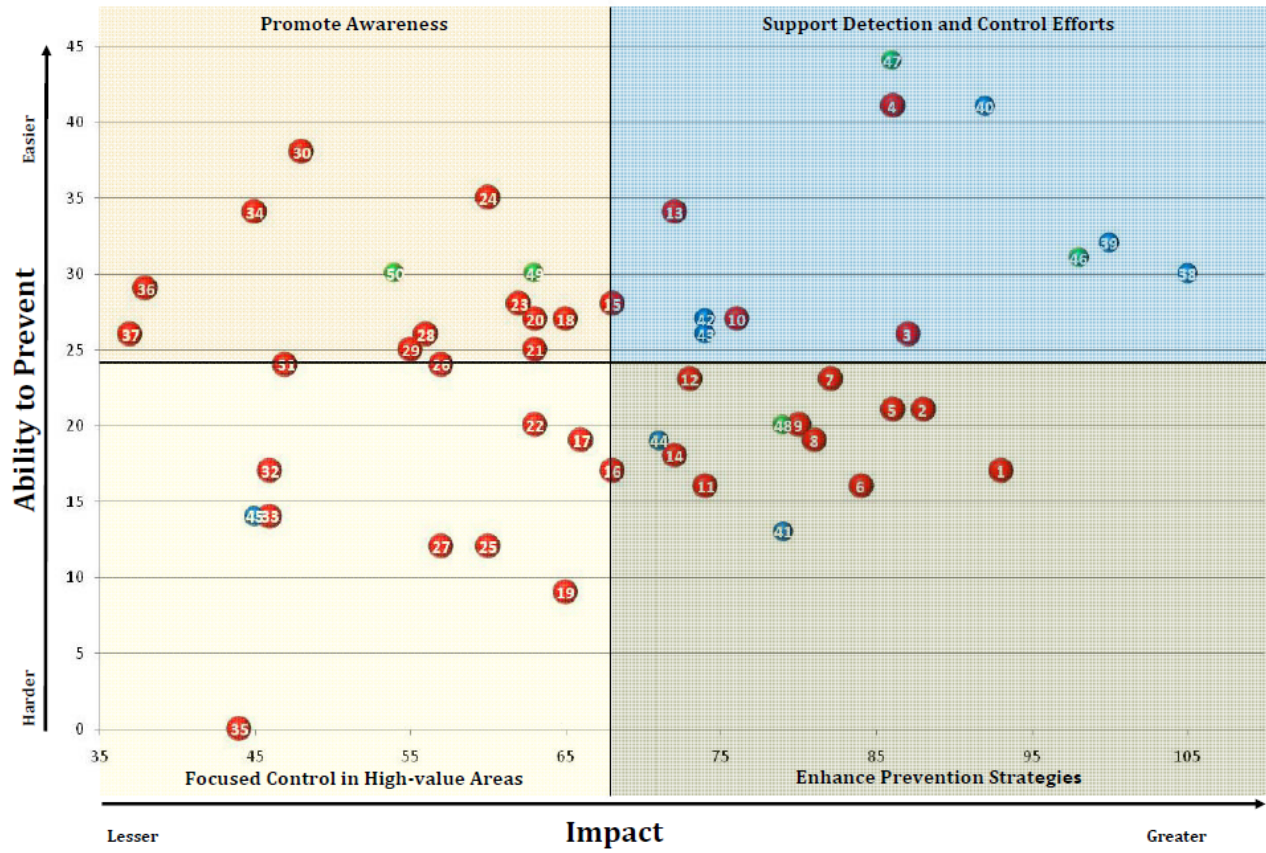
Washington Invasive Species Council Management Priority Species

<http://www.invasivespecies.wa.gov/>

Here	Near	Far
1. Feral swine	38. Zebra/quagga mussel	46. Wood-boring beetles
2. Variable leaf milfoil	39. Lymantriids	47. VHS type IVb
3. Brazilian elodea	40. Kudzu	48. Water chestnut
4. Hydrilla	41. Caulerpa	49. Asian carp
5. Knapweeds	42. SVCV/IHNV	50. Northern snakehead
6. Nutria*	43. Mitten crab	fish
7. Yellow starthistle	44. Marine clams	
8. Common reed – non native genotypes	45. Bark-boring moths	
9. Leafy spurge		
10. Eurasian watermilfoil		
11. Tunicates		
12. Parrotfeather		
13. Spartina		
14. Tamarix		
15. Purple loosestrife		
16. Dalmation toadflax		
17. New Zealand mud snail		
18. Himalayan blackberry		
19. Knotweeds		
20. Green crab		
21. Rush skeletonweed		
22. Scotch thistle		
23. Red swamp/rusty crayfish		
24. Bullfrog		
25. Garlic mustard		
26. Kochia		
27. VHS type IVa		
28. Exotic apple fruit pests		
29. Mediterranean snail		
30. Common crupina		
31. Hawkweeds		
32. Butterfly bush		
33. Scotch broom		
34. Tansy ragwort		
35. Exotic leafrollers		
36. Giant hogweed		
37. Atlantic salmon		

*Yellow highlighted species are regulated by WDFW as aquatic animal invasive species.

Invasive Species Management Priorities



APPENDIX D

Aquatic Nuisance Species (ANS) Committee Membership List

RCW 77.60.130 requires that the ANS Committee consist of representatives from eight state agencies and shall encourage and solicit participation by tribes, federal agencies conservation and environmental groups, and affected industry representatives. The committee may invite other entities to participate such as those with scientific and technical interests. Non-members may participate through official member groups, may request membership status if they qualify under one of the designated categories, or may request being a formal point of contact. ANS Committee meetings are open to the public. The general public and other interested parties are invited to attend any ANS Committee meeting and receive any materials produced by the committee by requesting to be included on the general email distribution list or by request of specific information.

Active Members

Active members are those that have expressed a commitment to regularly participate in meetings or comment on committee activities.

State Agency	Lead
Dept of Fish and Wildlife	Allen Pleus
Dept of Ecology	Kathy Hamel
Dept of Natural Resources	Blaine Reeves
Dept of Agriculture	Tom Wessels
Noxious Weed Control Board	Alison Halpern
Dept of Health	Jerry Borchert
Puget Sound Partnership	Kevin Anderson
State Patrol	Bill Balcom
Dept of Parks and Recreation	Lisa Lance
Invasive Species Council - RCO	Wendy Brown

Tribes	Lead
Northwest Indian Fisheries Commission	Grant Kirby
Skokomish Tribe	Randy Lumper

Federal Agency	Lead
US Fish & Wildlife Service	Kevin Aitkin, Paul Heimowitz
US Geologic Survey	Scott Smith
Pacific States Marine Fisheries Commission	Steve Phillips

Conservation & Environmental Groups	Lead
Washington Sea Grant	Jeff Adams
Washington Invasive Species Coalition	Herb Curl

Science & Technical Interests	Lead
University of Washington	Julian Olden
Species expert	Gretchen Lambert
Oregon State University	Sam Chan

Affected Industry or Pathway	Lead
Recreational watercraft	Steve Grieves
Shellfish industry	Diane Cooper, Brett Bishop
Bonneville Power Association	Jim Irish
Washington Public Ports Association	Eric Johnson

Non-Members: Points of Contact

To fulfill the requirements of RCW 77.60.130(3)(d), the ANS Committee encourages non-member formal points of contact to facilitate coordination with key local, regional, national, and international entities. Points of contact are not expected to participate regularly, but serve as an entity's liaison to disseminate information as necessary.

Entity	Point of Contact
Governor's Office	Kathleen Drew
NOAA/NMFS	Blake Feist
National Parks Service	John Wullschleger
US Coast Guard	Lt. Lee Bacon
West Coast Governor's Agreement	Jennifer Hennessey
State of Oregon	Rick Boatner
State of Idaho	Amy Ferriter
State of California	Susan Ellis
State of Alaska	Tammy Davis
State of Hawaii	Sara Pelleteri
British Columbia, Canada	Matthias Herborg
ANS Western Regional Panel	Erin Williams

APPENDIX E

Washington State Aquatic Nuisance Species Committee

2008-2009 WORK PLAN

1. Revise the State ANS Management Plan

The ANSC is required, under RCW 77.60.130(3)(a), to periodically update the state Aquatic Nuisance Species Management Plan. The last ANS Management Plan revision was in 2001 with many tasks having been completed and many new activities implemented that need to be documented. Report will be reformatted/ restructured and will link with the Invasive Species Council and Puget Sound Partnership's Action Agenda as necessary.

- **Action Item:** Re-establish a work group to develop a realistic management plan development strategy to provide a final plan by April 1, 2009
Responsible lead: Allen Pleus (WDFW)

2. 2009-11 Legislative Biennial Report

The ANSC is required under RCW 77.60.130(3)(f) to provide a biennial report to the legislature on odd years that lists its accomplishments to date and recommendations for the next biennium.

- **Action Item:** Develop and implement a report drafting strategy to provide a final report by December 1, 2009. Link with ANS MP group as part of drafting.
Responsible lead: Allen Pleus

3. Rapid Response Plan

The ANSC has been tasked, under RCW 77.12.878(1), to work with WDFW to create a rapid response plan for aquatic invasive species that describes actions to be taken when a prohibited aquatic animal species is found to be infesting a water body. These actions include eradication or control programs where feasible and containment of infestation where practical through notification, public education, and the enforcement of regulatory programs. Rules may be adopted to implement under RCW 77.12.878(2).

- **Action Item A:** Develop statewide AIS-specific plan (can be part of ISC plan).
Responsible lead: _____
- **Action Item B:** Coordinate with Invasive Species Council (statewide) and support Columbia River Basin Team's rapid response plan.
Responsible lead: Group.
- **Action Item C:** Assess the need for rule making to effectively implement the rapid response plan and if necessary, draft permanent rules for consideration of adoption by the Fish & Wildlife Commission.
Responsible lead: Allen Pleus

4. Coordination/Cooperation with Invasive Species Council

The ANSC must maintain and enhance relationships with the Invasive Species Council and strive for consistency in meeting the applicable goals, objectives, and tasks listed in their 2008 Strategic Plan.

- **Action Item A:** Assign liaison to attend quarterly meetings and report on ISC interactions.
Responsible leads: Allen Pleus (WDFW); Wendy Brown (DNR); and Kathy Hamel (ECY)
- **Action Item B:** Work on ISC subgroups as necessary.
Responsible leads: Group.

5. Aquatic Invasive Species Classification and Infested Waters Recommendations

The ANSC is required, under RCW 77.60.130(3)(b) and (c), to make recommendations for classifying aquatic nuisance species.

- **Action Item A:** Update ANSC Watch List as necessary.
Responsible lead: Allen Pleus (WDFW)
- **Action Item B:** Assess nonnative aquatic animal species classifications for removal or addition to WAC 220-77-090 as required under WAC 232-12-016(3).
Responsible lead: Allen Pleus (WDFW)
- **Action Item C:** Assess nonnative aquatic plant species classifications for removal or addition to WAC 16-750.
Responsible lead: Kathy Hamel (Ecology)
- **Action Item D:** Assess the WDFW list of AIS-infested waters for removal or addition of water bodies to the infested waters list published in WAC 232-12-016.
Responsible lead: Allen Pleus (WDFW)

6. Aquatic Invasive Species Regulatory Recommendations

The ANSC is required, under RCW 77.60.130(3)(b), to make recommendations to the legislature on statutory provisions for regulating aquatic nuisance species.

- **Action Item A:** Conduct assessment of state AIS laws and provide report on recommended changes, if any, to WDFW statutes by December 1, 2009.
Responsible lead: Allen Pleus

7. Ecology NPDES Chemical Control Permit

The Washington Department of Ecology needs to develop and recommend a permit for WDFW to apply chemicals for the containment, control, or eradication of aquatic invasive species.

- **Action item:** Complete risk assessments on priority chemicals and other active agents that may affect state water quality regulations and complete the draft permit.
Responsible lead: Kathy Hamel (ECY)

8. Education/Outreach

The ANSC is required, under RCW 77.12.875(3), to work with WDFW to create educational materials informing the public of state waters that are infested with invasive species, and advise them of applicable rules and practices designed to reduce the spread of the invasive species infesting the waters. This includes the need, under RCW 77.60.130(3)(e), to consult with industry representatives of potential pathways to develop practical strategies to minimize the risk of new introductions.

- **Action Item A:** Develop issue paper and present the need to the Invasive Species Council. Follow-up with Kevin Anderson project?
Responsible lead: _____
- **Action Item B:** Develop industry outreach strategy to improve relationships and increase their participation in ANSC meetings.
Responsible lead: _____

9. Nonindigenous Aquatic Species Integrated Monitoring & Information System

Build a web-based monitoring network for Washington State and maintain it with the most up to date information possible. Design the system to answer important questions and provide useful information to researchers, policy makers and the public; and determine how it can best complement existing volunteer/agency monitoring efforts. Link to PSP action agenda recommendation.

- **Action Item A:** Set up subcommittee to develop strategy for Washington State
Responsible lead: Scott Smith
- **Action Item B:** Develop integrated monitoring system (Nancy Elder)
Responsible lead: Nancy Elder

APPENDIX F

Summary of ANSC Meeting Actions for 2008-2009

2008

January 10, 2008

Agenda Item	Action
Watch List	• Schedule whole future meeting to discuss
	• Allen send out revisions made to date
Early Detection & Rapid Response Plan	• Schedule whole future meeting to discuss
VHS and WDFW actions update	• Information update only – no actions
PSP letter on AIS importance and relationship with WISC	• Draft letter for ANSC review and approval
UW ANSC ListServe	• Send instructions out on how to register

February 7, 2008

Agenda Item	Action
Watch List	• Continue discussion
	• Randy draft discussion option
Charter & Membership List	• Allen send out revised versions

March 6, 2008

Agenda Item	Action
Watch List	• Continue discussion
Charter & Membership List	• Send out revised version based on today's meeting for review
	• Send out revised version based on review comments

April 9, 2008

Agenda Item	Action
Puget Sound Partnership Action Agenda	• Randy/Allen draft ANSC letter in response to April 14 paper by 4/19; comments back by 4/25
	• Members requested to send separate letters to emphasize broad support and perspectives
Charter Discussion	• Present new version to ISC at May 7 meeting for consideration
	• Clean version will be sent out to committee and noted on next agenda as an action item for approval
Membership	• Add NMTA as member with Marina Hench and Steve Grieves
Watch List	• Clean version will be sent out to committee and noted on next agenda as an action item for approval
	• Tables in 2/7/08 version will be used in proposed final version
	• Future: Need to review how to improve the watch list for performance measures
	• Future: Discussion on having list similar to Oregon ISC list as a benchmark/ baseline list

May 23, 2008

Agenda Item	Action
PSP “Clean Your Hull” Boater Education Program	<ul style="list-style-type: none"> • Work to incorporate Tribes as field monitors/early detection – Fishermen, natural resource staff
	<ul style="list-style-type: none"> • Add questions to boater survey regarding owner willingness to clean boat more often
	<ul style="list-style-type: none"> • Emphasize proactive message that we need to protect against unknown problems that are not here yet
	<ul style="list-style-type: none"> • Comments due to Kevin on both overviews by June 6
PSP Process to Develop Action Plan	<ul style="list-style-type: none"> • Action plan needs to include freshwater AIS – includes, but not clear
	<ul style="list-style-type: none"> • Identify Phragmites as expanding big problem – salinity tolerant
	<ul style="list-style-type: none"> • Concern about recommendation to support Int. Invasive Sea Squirt Conference as too narrow
Washington ISC Relationship w/Other State Programs	<ul style="list-style-type: none"> • Need to identify coordination and policy pathways
	<ul style="list-style-type: none"> • Request WISC Chair and coordinator discuss questions at a future ANSC meeting
ANSC Charter Approval	<ul style="list-style-type: none"> • Charter Approved by attending members with modification proposed by Randy and Conditional Approval by WDFW pending legal review to verify concern
	<ul style="list-style-type: none"> • Send out revised charter for two weeks review specific to new revised language
ANSC Watch List	<ul style="list-style-type: none"> • Drop Kathy’s recommendation to address after approved within revision process
	<ul style="list-style-type: none"> • Word “non-native” must be consistent with RCW
	<ul style="list-style-type: none"> • Add non-consensus language
	<ul style="list-style-type: none"> • Clarify language
	<ul style="list-style-type: none"> • Approved with edits as noted • Will be sent out for comments on only changes made during meeting

June 11, 2008

Agenda Item	Action
Chair/Vice-Chair Transition	<ul style="list-style-type: none"> • Request nominations for new Vice-Chair by 6/18
	<ul style="list-style-type: none"> • Announce new Vice-Chair 6/30
USGS NAIS Database	<ul style="list-style-type: none"> • Looking for new/existing data to enter
	<ul style="list-style-type: none"> • Need data from WDFW
Tunicate Management	<ul style="list-style-type: none"> • Need to move forward as team on elevating issue – too complex and work intensive for single entity
	<ul style="list-style-type: none"> • ANSC letter to state agencies in support of WDFW efforts
	<ul style="list-style-type: none"> • Kevin Anderson will assist Allen in putting budget proposal together
Charter & Watch List	<ul style="list-style-type: none"> • Participants at today’s meeting agree to approve as final pending any concerns by June 16
	<ul style="list-style-type: none"> • Kathy will propose new language in <u>Process for List Revisions (Additions or Deletions)</u> regarding automatic additions of NWA species to priority level for July meeting

July 9, 2008

Agenda Item	Action
Vice Chair Nomination	<ul style="list-style-type: none"> • Recommend Jeff Adams - contact
2008 ANSC Meeting Actions Summary	<ul style="list-style-type: none"> • Send out document for people to complete results/date sections • Review next meeting
EPA NPDES Vessel/Rec General Permit	<ul style="list-style-type: none"> • Encourage members to review and comment on permit (w/links)
Tunicate Management Recommendations	<ul style="list-style-type: none"> • Allen will modify budget proposal to adjust basic goods and services for inflation
	<ul style="list-style-type: none"> • Need to make clear connection between TRAC recommendations and contract
	<ul style="list-style-type: none"> • Kevin coordinating meeting with PSP/WDFW policy people
Watch List Process for List Revisions	<ul style="list-style-type: none"> • Send out for 2 week review – respond to Kathy
	<ul style="list-style-type: none"> • Place on August 13 meeting agenda for approval
FYI - Lake WA/ Gray Hbr Floating Bridge Const/ transport	<ul style="list-style-type: none"> • USFWS will provide updates as necessary
Next meeting – August 13	<ul style="list-style-type: none"> • Rotate meeting locations
	<ul style="list-style-type: none"> • Review work plan on agenda – send out prior to meeting (Allen)
	<ul style="list-style-type: none"> • Update on Tunicate budget proposal (Allen and Kevin)
	<ul style="list-style-type: none"> • Resurrect member roundtable discussion – 5 minute timeline

August 13, 2008

Agenda Item	Action
Meeting Location Rotation	<ul style="list-style-type: none"> • No September meeting
	<ul style="list-style-type: none"> • Diane Cooper (Taylor Shellfish) will set up October ANSC meeting/field trip
	<ul style="list-style-type: none"> • Possible future meeting at NW Marine Trade Assoc in Seattle
Meeting Actions Summary Review	<ul style="list-style-type: none"> • Ongoing agenda item process
2008 Work Plan Review	<ul style="list-style-type: none"> • Send out 2007 version with new recommendations
	<ul style="list-style-type: none"> • Solicit other recommendations
	<ul style="list-style-type: none"> • Add to October agenda for consideration
Tunicate Update	<ul style="list-style-type: none"> • None

Roundtable Discussion Forum	<ul style="list-style-type: none"> • Add to October agenda
Watch List Approval	<ul style="list-style-type: none"> • If Kathy received no comments, approved • If Kathy received comments, reassess in October
Activity Updates	<ul style="list-style-type: none"> • None

October 8, 2008

Agenda Item	Action
Taylor Shellfish Field Trip	<ul style="list-style-type: none"> • None

November 10, 2008

Agenda Item	Action
Japanese Eelgrass Presentation	<ul style="list-style-type: none"> • Plan workshop – Lead by Patton w/support by shellfish growers and aquatic land agencies in summer or fall 2009 • Updates provided by Jeff Adams and Kevin Anderson as needed • Recommend Class B status with NWCB
Biological Supply House Presentation	<ul style="list-style-type: none"> • Coordinate with UW study
Crayfish Study Presentation	<ul style="list-style-type: none"> • Distribute paper • Recommend Rusty crayfish as priority species to target • Coordinate with Sea Grant study • WDFW look into legal issues (harvest) • Plan 2009 workshop – Olden, Pleus, Adams, E. Anderson leads
PSP Draft Action Agenda	<ul style="list-style-type: none"> • Provide comments online by Nov 20

December 10, 2008

Agenda Item	Action
2008 ANSC Meeting Actions Summary	<ul style="list-style-type: none"> • Send out draft with meeting edits (Allen) • Adopt at January meeting
Draft ANSC 2009 Work Plan	<ul style="list-style-type: none"> • Send out draft with meeting edits (Allen) • Adopt at January meeting (Allen)
Watch List Update	<ul style="list-style-type: none"> • Confirmed no comments to Kathy Hamel -
PSP Action Agenda	<ul style="list-style-type: none"> • Update in January on numbers in table on page 99

Invasive Species Council	<ul style="list-style-type: none"> • Priority species/pathway list
	<ul style="list-style-type: none"> • Rapid Response
	<ul style="list-style-type: none"> • US Park Service “Weed Warrior” program (Kevin Aitkin will get name of person to contact)
Next Meeting Requests	<ul style="list-style-type: none"> • Update on Tunicate management program (Allen Pleus)

2009

March 11, 2009

Agenda Item	Action
Finalize 2008 ANSC Meeting Actions	<ul style="list-style-type: none"> • Allen send out by email for two week review for finalization at next meeting.
Crayfish Management Discussion	<ul style="list-style-type: none"> • Allen and Jon draft proposed reclassification language in context of concerns for review at next meeting
2009 ANSC Work Plan Review	<ul style="list-style-type: none"> • Next meetings: May 13; July 8; September 9; November 10 • Ability to call special meetings as needed; • Allen will add new #9 to address WA/NAS item on agenda below; will send out for two week review.
Watch List New NWCB Class A Species	<ul style="list-style-type: none"> • Allen put on list and redistribute. No other changes proposed according to protocols.
WA/NAS Database System Update	<ul style="list-style-type: none"> • Pam Meacham and Gen D-K will assess how to integrate state needs • Nancy E. develop formal structure for continued data collection/quality control and input • Allen send out continued call for sending Nancy data • Scott & Pam F. assess ability to add monitoring/management information – may require additional funding to accomplish • Pam E. continue to assess ability to link/coordinate with other systems
Marine Invasive Species Monitoring Program	<ul style="list-style-type: none"> • Scott S. and Nancy E work with Ann E. to assess opportunities for NAS integration; create list of needs to improve program • All – work to promote program into own outreach/ education strategies • Pam M and Kevin Anderson, Jeff A work with Ann on training video
Nutria Management Discussion	<ul style="list-style-type: none"> • Update changes in invasive status as necessary
2009 Meeting Schedule Discussion	<ul style="list-style-type: none"> • Every other month: May 13, July 8, Sept. 9, and Nov. 10

May 13, 2009

Agenda Item	Action
ANSC Listserve - options	<ul style="list-style-type: none"> • Allen will send out email to identify those on listserv that would prefer to only receive ANSC meeting information; Allen will coordinate this list. • Jeff will send out reminder on how to get off-list
Potential economic impacts	<ul style="list-style-type: none"> • Cancelled due to poor phone reception - try for later in year

from a theoretical invasion of green crab in Puget Sound	
ECY EIS on AIS Management Permit Update	<ul style="list-style-type: none"> Public comments on scoping document open
ISC Update	<ul style="list-style-type: none"> Update only – No actions recommended
AIS Legislative Budget Review	<ul style="list-style-type: none"> Allen needs to work on AIS Prevention & Enforcement fund base strategy to show value and extend sunset timeline
ANSC Work Plan Timeline	<ul style="list-style-type: none"> Allen will put together strategy for completion of biennial report Allen will compile timeline for discussion at next meeting
Discussion on AIS rule making for 2009	<ul style="list-style-type: none"> Start w/in DFW; go to other state agencies; then to ANSC
Discussion on AIS legislation for 2010	<ul style="list-style-type: none"> Start w/in DFW; go to other state agencies; then to ANSC
520 bridge pontoons	<ul style="list-style-type: none"> Allen will set up Special meeting (June?) with DOT and consultants to discuss issues and options

July 29, 2009

Agenda Item	Action
Conservation measures for invasive species management	<ul style="list-style-type: none"> Develop small work group with Stiles and Knauer in next couple weeks to work on today's overview and selected sub-chains – Lead Kevin Anderson, PSP.
Selection of new ANSC Vice Chair	<ul style="list-style-type: none"> Allen Pleus, WDFW, is elected as Vice Chair until next June/July. Jeff Adams automatically becomes new Chair until next June/July.
Proposed 2010 Legislation – Non-Resident Watercraft AIS Permit	<ul style="list-style-type: none"> Place on October ANSC meeting agenda for recommendations/approval of concept – Lead Allen Pleus Work with ISC executive/legislative committee – on Dec agenda? – Lead Wendy Brown, RCO/ISC
ECY EIS on AIS Management Permit Update	<ul style="list-style-type: none"> Need up to \$10,000 funding for outside environmental health/toxicologist review of EIS – Lead Kathy w/assistance by Wendy and Allen Additional ANSC section reviewers needed – contact Kathy
ISC, BWWG, & TRAC Updates	<ul style="list-style-type: none"> Promote participation for next Spring Columbia River Basin Team rapid response table-top exercise

September 23, 2009

Agenda Item	Action
Update on the 9/17 ballast water work group meeting	<ul style="list-style-type: none"> Allen Pleus will send out information on USCG rule making comment period
WDFW sportfish/crayfish proposed rules	<ul style="list-style-type: none"> Jeff Adams will draft ANSC position letter Allen will edit rule change to differentiate East/ Western Washington issues
WA version of CA boater workshop	<ul style="list-style-type: none"> Jeff Adams will follow-up with coordinators of California event to gauge success/lessons learned
Undaria pocket ID card	<ul style="list-style-type: none"> Kevin Anderson will keep us posted
Discussion of how to improve WA ANSC meetings and the role of the committee	<ul style="list-style-type: none"> ANSC must continue to evolve

Crayfish and <i>Zostera japonica</i> symposia	<ul style="list-style-type: none"> • Jeff Adams will take lead on Japanese eelgrass • Julian Olden lead on crayfish
Soliciting updates to Watch List	<ul style="list-style-type: none"> • Jeff Adams will send out reminder
Quick review of ANSC 2009 work plan	<ul style="list-style-type: none"> • Grant funding for consultant needed to complete

November 17, 2009

Agenda Item	Action
ISC/ANSC Prioritization	<ul style="list-style-type: none"> • Allen Pleus and Wendy Brown will send out update/ next steps to group
MISM – Funding Problem	<ul style="list-style-type: none"> • Jeff Adams will send out funding request
Update on Crayfish Rule Making	<ul style="list-style-type: none"> • Allen Pleus continue to work within department on proposed rule language – should make sure okay/ encourage to kill female nonnative crayfish with eggs • WDFW will send letter to Mountain Home Biological Supply regarding compliance with regulations on sale of nonnative/prohibited species
USFWS Budget News	<ul style="list-style-type: none"> • Kevin Aitkin will keep WDFW updated as to funding availability
New Zealand Mudsnail Detection in Olympia	<ul style="list-style-type: none"> • Need to define extent of infestation • Need to define management actions • Form sub-committee

