Washington State

Aquatic Invasive Species Prevention and Enforcement Programs

Report to the Legislature

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Cover: Clockwise from upper left – Environmental Specialist Susan Reszczynski collecting substrate samples to look for zebra/quagga mussels as part of early detection management (Photo by Jesse Schultz); AIS Biologist Jesse Schultz conducting a watercraft inspection for aquatic invasive species (Photo by Allen Pleus); AIS Biologist Larry LeClair examines a dock at Banks Lake for the presence of zebra/quagga mussels (Photo Jesse Schultz); WDFW Enforcement officers conducting a mandatory roadside aquatic invasive species check station (Photo by Carl Klein).

EXECUTIVE SUMMARY

In 2005, the legislation established the Aquatic Invasive Species (AIS) Prevention and Enforcement Programs (program). The program is co-managed by the Fish and Enforcement Divisions of the Washington Department of Fish and Wildlife (department), and in collaboration with the Washington State Patrol's (WSP) enforcement liaison in the Commercial Vehicles Division. This report is submitted to the legislature for meeting the requirements of both Chapter 43.43.400(4) and 77.12.879(4) RCW and describes the challenges faced and actions taken to implement the program. The program is primarily funded through dedicated fees on resident recreational watercraft as provided through ESSB 5699 (2005 c 464). Although the program addresses a wide variety of priority aquatic invasive species, the greatest focus has been on zebra (*Dreissena polymorpha*) and quagga (*D. bugensis*) mussels.

As evidenced elsewhere, the environmental, economic, and social/human health impacts of zebra and quagga (zebra/quagga) mussel infestations can be catastrophic. Zebra/quagga mussels are nonnative ecosystem changers that are drastically altering aquatic communities in the Great Lakes and other watersheds. Potential human health risks include the contamination of municipal water supplies, increased occurrences of blue-green and other toxic algae blooms, and the concentration of contaminated sediments (up to 300,000 times ambient levels) which can then be dispersed into the food chain. They are freshwater bio-foulers that can quickly reduce or stop flows in hydroelectric and water supply systems, plug water cooling systems in watercraft motors, and create physical hazards to fish and humans.

A 2010 report by the Independent Economic Advisory Board prepared at the request of the Northwest Power and Conservation Council concluded that a zebra/quagga mussel infestation will eventually occur somewhere in the Columbia River drainage system, and; that there is a substantial economic risk (hundreds of millions of dollars annually) if the mussels become established. For instance, costs to mitigate for zebra/quagga mussels at hydropower facilities within the river basin would be substantially greater than those incurred at other infested sites around the country due to their comprehensive fish passage facilities. They further concluded that it would be a good economic investment to improve prevention programs to delay infestations for as long as possible.

Notably, the Columbia River basin and the Pacific Northwest in general, comprise the last large river or regional drainage basin in the continental United States that remains free of zebra/quagga mussels. This is due in large part to a combination of effective prevention measures and luck. Within the Pacific Northwest, the highest risk for introductions of zebra/quagga mussels and other AIS is through hitchhiking on recreational and commercial watercraft transported from other parts of the United States and Canada that are infested. There is also a growing threat of interstate transportation through ballast water discharge if freshwater ports in California become infested.

Unfortunately, while the threat of zebra/quagga mussels and other AIS increases, the resources available to prevent infestations have decreased over the past four years due to budget cuts and reductions in revenue sources used to support preventive measures. In

addition, it has been recognized that limited regulatory authorities would not be sufficient to contain or eradicate a zebra/quagga mussel infestation if it happened today. Recommendations are provided for establishing the resources needed to address this critical threat.

The following is an overview of some of the program's key accomplishments and challenges.

Accomplishments:

- Since 2008, early detection monitoring for zebra/quagga mussels has been conducted at a total of 229 unique sites (142 in eastern Washington and 87 in western Washington) representing 91 different water bodies statewide with thus far no positive detections.
- Since 2006, the department has responded to 37 incidents of watercraft entering Washington that were contaminated with zebra/quagga mussels. Many of these were found during routine inspections by the WSP at one of their five Port of Entry weigh stations.
- Since 2008, a total of 2,955 watercraft inspections at mandatory AIS Check Stations have been conducted at 53 unique sites of which 97 (3.5%) watercraft were infested with AIS.
- Since 2009, a multi-stakeholder work group has been formed to replace prohibited crayfish with native crayfish species for use in statewide grade and middle school science curriculums with expected full implementation for use in statewide K-12 science curriculum.
- Since 2005, the program has participated in many outreach and education events that are geared toward engaging and informing the public on AIS issues.
- The program has worked cooperatively with the shellfish aquaculture industry by providing guidance on how to best minimize the risk of infestations in culture facilities and to prevent the spread of AIS through shellfish transportation.

Challenges:

- State laws guiding control of invasive animal species are scattered throughout Title 77 RCW, creating jurisdictional uncertainty for the department and other agencies that regulate invasive species.
- Approximately 40% in budget reductions between FY07 and FY12 through loss of:
    - Tunicate funding (~$160,000/yr);
    - Federal funding (ballast water, Atlantic salmon, and general AIS management (from ~$150,000/yr to a projected $26,000/yr);
    - General state funds ($32,000/yr green crab monitoring); and
    - AIS Prevention and Enforcement Program direct funding (~$89,000/yr) in implementation of 15.9% indirect costs.
- AIS Prevention account allocation for FY13 was cut $133,000 due to concerns over maintaining an adequate reserve to cover low revenue months and reduction in annual watercraft registrations.

RECOMMENDATIONS

Recommendations on how to better fulfill the intent of chapter 464, Laws of 2005 are provided herein as requested under RCW 77.12.879(4). These recommendations have been developed by the department and the Washington State Patrol (WSP) in response to the information provided in this report and in consultation with the Washington Invasive Species Council and the Aquatic Nuisance Species Committee. Specific recommendations include:

1. Provide A dditional A IS E nforcement A ccount Sup plemental Spe nding A uthority for 2013-15 Biennium.

New AIS inspection and decontamination stations around the state are needed to fill a critical gap for centralized and convenient locations where the public can bring their watercraft to be inspected and decontaminated before launching into a Washington water body, or certification of being AIS-free before travelling to another state. The funds are from positive closing reserves since fiscal year 2006 in both AIS Enforcement Account Funds 09M and AQU8, which have been maintained up until now to determine the appropriate fund balance to cover expenditures during low revenue months (see Section 2.1.3 and 2.1.4). Department analysis of monthly revenues and expenditures shows that a base fiscal year closing fund reserve of $55,000 for Fund 09M and $15,000 for Fund AQU8 would be sufficient. This results in the remaining reserve balance of ~$255,000 which the department and WSP will be requesting for supplemental spending authority during the 2013 legislature. Staffing of the stations could be funded through concepts such as those in recommendations 3 and 4, or through a fee for use system.

2. Revise and Enhance the Department's AIS Statutes on Policy and Authority Levels.

A unified statutory chapter for aquatic invasive species under Title 77 RCW would greatly benefit the department's ability to prevent, contain, control, and eradicate nonnative organisms from causing harm to state waters. A single AIS chapter would be part of a strategic plan to help organize existing and proposed new legislative directives for regulatory consistency and accountability, and to provide the tools necessary for effective rapid response. This is needed because current state laws guiding control of invasive animal species are scattered throughout Title 77 RCW, creating jurisdictional uncertainty for the department and other agencies that regulate invasive species. Since 1998, statutes have been added or modified under multiple chapters without a clear program nexus. The department requests would be similar to authorities currently used by the Department of Agriculture for addressing noxious weeds and pests. Revising and enhancing the department's AIS statutes is supported by the Attorney General's Office, the Washington Invasive Species Council and the Puget Sound Partnership.

3. Increase t he AIS P revention a nd E nforcement A ccount F ees for R esident Watercraft Registration.

Enhancement of the department's early detection, inspection, decontamination, rapid response, and education/outreach capacity is critical to filling prevention and enforcement

gaps. The need to improve the program is supported by the Northwest Power and Conservation Council's Independent Economic Advisory Board July 2010 findings that current efforts to prevent the threat of a zebra/quagga mussel infestation are underfunded. Recreational watercraft are one of the primary known pathways for the introduction and spread of AIS nationally. A moderate increase in resident watercraft registration fees to at least $5 (consistent with Oregon and Idaho fees) is recommended to substantively improve the level of protection necessary to prevent introductions, conduct early detection monitoring, or rapidly respond to a zebra/quagga mussel or other AIS infestation.

4. Address Need for New AIS Prevention and Enforcement Program Revenue Sources Based on Invasive Species Pathways.

Spreading the funding share to include non-resident, non-motorized, and commercial boaters among others broadens and diversifies an invasive species user-pay funding base. This will help to ensure consistency and effectiveness in AIS prevention and enforcement and will help the program reach full AIS rapid response and management capabilities. For example, current AIS program actions are funded only by revenues from resident recreational watercraft owners (AIS Prevention and Enforcement Accounts) even though the statutes regulate all watercraft including commercial, nonresident, and non-motorized watercraft such as canoes and kayaks designed for navigation on waters of the state. The AIS Prevention and Enforcement Program should be based on a fee system where all user/pathways are paying a fair share of their invasive risks.

5. Address Increasing AIS Risks from the Recreational and Commercial Watercraft Hull Fouling Pathway.

Addressing hull fouling is timely to fill management and regulatory gaps and to also ensure that the state's transition from the use of copper-based anti-fouling paints (2011 c 248) is accomplished without increased risk of AIS invasion. This is important as most scientific studies place hull fouling as having a higher AIS introduction and spread risk than any other pathway in both fresh and marine waters. In addition, new regional and international laws are being adopted for larger commercial vessels that will eventually eliminate toxic paints that are currently used to manage hull fouling growth and replace them with less- or non-toxic paints that will result in more hull fouling. Non-toxic hull paints will increase hull fouling prompt watercraft owners to clean their hulls more frequently, thus increasing the risk of introducing AIS or other contaminants into the environment if hull cleaning stations aren't regulated to contain and treat hull cleaning debris. Further, more frequent hull cleaning is being pushed by rising fuel prices and concerns about harmful atmospheric emissions contributing to climate change due to inefficient fuel use. The department and the Department of Ecology have already been approached by both vessel paint manufacturers and local hull cleaning operators for regulatory guidance on in-water cleaning. Long-term funding for addressing hull fouling could be added through recommendations 4 and 5 above. In the short-term, the department is working to collect baseline risk and management information through development of an RFP under the Environmental Protection Agency's marine and nearshore protection and restoration grant program.

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1.0 Introduction

This report is submitted to the legislature for meeting the requirements of Chapters 43.43.400(4) and 77.12.879(4) RCW, and describes the challenges faced and actions taken to implement the Aquatic Invasive Species Prevention and Enforcement Programs, henceforth referred to as the program. The program is administered through a cooperative agreement between the Fish and Enforcement Divisions of the Washington Department of Fish and Wildlife (henceforth referred to as the department) in collaboration with the Washington State Patrol's (WSP) enforcement liaison in that agency's Commercial Vehicles Division.

The department and WSP serve Washington's citizens by protecting, restoring and enhancing fish and wildlife and their habitats, while providing sustainable wildlife-related recreational and commercial opportunities. The program helps to meet this mission through the strategic goals of preventing the introduction of new aquatic invasive species (AIS) and controlling or eradicating established AIS populations. The primary focus of this program has been the management of zebra and quagga (zebra/quagga[1]) mussels, with an emphasis on controlling the risks posed by introduction and spread through recreational watercraft.

The report highlights how the department and WSP are working to eliminate the threat of AIS with the continued support of the Washington State Legislature. It provides the background, context, and accomplishments of the program. Recommendations are provided in the front of the report on how to better fulfill the intent of this legislation.

2.0 Program Overview

The legislature created the nationally-leading program in 2005 with funding provided by a two dollar fee on annual resident watercraft registrations that is allocated to the department and WSP. The primary purpose of the program is to address the threat of invasive zebra/ quagga mussels transported overland by recreational watercraft. The program also strives to cover all of the Washington Invasive Species Council's (WISC) 14 priority management AIS that can be introduced or spread by numerous pathways.

The program was the first among western states to integrate management and enforcement. Having dedicated and cross-trained department AIS enforcement staff and coordination with the WSP has been critical to the program's success. The key statute directing the program is found in RCW 77.12.879 (Appendix A). The program is also taking a lead role in developing and implementing the department's recently adopted Invasive Species Management policy

[1] Simplified as such in remainder of document as species risks and management are essentially the same.

(Appendix B). The policy requires the implementation of steps that department field staff must take in order to minimize the chances of spreading AIS during resource management field work. It is hoped that this policy will serve as an example for other local, state, and federal agencies, and tribal governments.

The department is tasked with targeting primarily AIS animals; however, aquatic plants are regulated by the department when being transported overland due to their ability to contain AIS animals, and to prevent the further spread of high risk AIS plants such as hydrilla (*Hydrilla verticillata*), milfoil (*Myriophyllum heterophyllum*), Brazilian elodea (*Egeria densa*), common reed (*Phragmites australis*), spartina (*Spartina sp.*) and caulerpa (*Caulerpa taxifolia*). Aquatic invasive species posing the highest risks, such as zebra/quagga mussels, are currently classified by the department as "Deleterious Exotic Wildlife." "Prohibited Aquatic Animal Species" comprises the next level of regulatory classification. There are currently 34 taxonomic families and over 280 species on the prohibited list which includes amphibians, reptiles, crustaceans, fish, mammals, and molluscs.

The program coordinates with other state and federal agencies, tribes, NGOs, and public and private stakeholders in the overall management of AIS. Three of the primary coordination forums include the state's Aquatic Nuisance Species Committee (ANSC), the Invasive Species Council, and the Columbia River Basin Team, which is part of the national-level 100th Meridian Initiative.

2.1 Budget

The program's operating budget currently comes from a $2.00 fee on resident recreational watercraft registrations and federal contracts. This budget reflects a very small percentage of the costs the state would incur if zebra/quagga mussels were to become established in Washington. Cost estimates for mitigating against zebra/quagga mussel infestations alone are in the hundreds of millions of dollars annually. After reaching a high point in 2007 (Figure 1), budget reductions have resulted in reduced AIS management capacity and the loss of three full-time and four seasonal positions. A brief summary of program budget challenges include:

- Approximately 40% in budget reductions between fiscal year (FY) 07 and FY12 through the loss of:
    - Tunicate response funding (~$160,000/yr);
    - Federal funding (ballast water, Atlantic salmon, and general AIS management (from ~$150,000/yr to a projected $26,000/yr);
    - General state funds ($32,000/yr green crab monitoring); and
    - AIS Prevention and Enforcement Program direct funding (~$89,000/yr in implementation of 15.9% indirect costs).
- AIS Prevention account allocation for FY13 was cut $133,000 due to concern of adequate balance reserve to cover low revenue months and reduction in annual watercraft registrations.

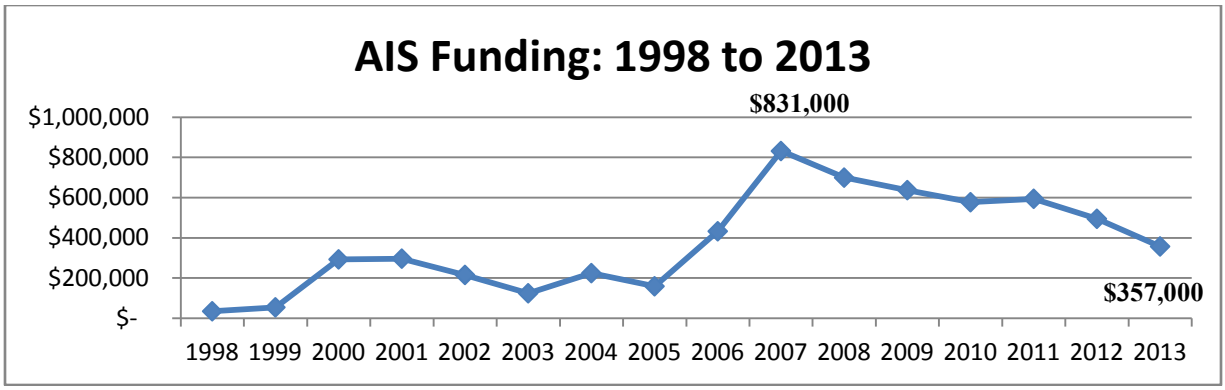


Figure 1. Graph of WDFW Aquatic Invasive Species funding levels from all sources between 1998 and 2011 with projected levels for 2012 and 2013 based on estimated contracts and AIS Prevention Account allocations.

2.1.1 Watercraft Registration Fee

In 2005, the legislature passed ESSB 5699 which provided consistent funding for the implementation of the program. The bill provided the department and WSP revenue through a $2.00 fee ($1.50 for the AIS Prevention Account and $0.50 for the AIS Enforcement Account) on recreational watercraft registrations (no fee on commercial watercraft. The fees are assessed and collected by the Department of Licensing (DOL). Biennial allocations were nominally based on an expected 281,000 recreational watercraft registrations per year. Table 1 provides a breakdown by month and fiscal year (FY) for the number of actual Washington resident watercraft registrations since the program started based on back-calculation of the total revenues of the AIS Prevention account divided by the $1.50 fee.

Table 1. Washington resident boater registration counts by month and fiscal year (FY) based on actual reported revenues from FY06 through the most recently updated records ending October 2012.

Month	Number of WA Resident Boat Registrations							
	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
JUL	0	41,116	48,137	45,826	46,581	71,055	57,844	
AUG	1,739	17,757	18,175	14,523	14,809	23,692	28,704	
SEP	1,371	6,041	6,074	5,565	5,888	7,240	9,215	
OCT	735	2,607	2,532	2,381	2,232	2,853	2,525	
NOV	525	1,425	1,303	977	975	1,300	1,210	
DEC	481	723	748	826	761	887		
JAN	619	991	939	770	931	1,000		
FEB	1,225	1,715	1,643	1,469	1,680	1,786		
MAR	3,001	3,535	3,199	2,779	3,762	3,629		
APR	56,344	50,525	64,934	77,369	10,995	16,541		
MAY	56,834	64,564	56,899	44,214	27,850	33,605		
JUN	86,067	75,436	71,927	77,186	91,054	83,075		
Total	**208,942**	**266,435**	**276,513**	**273,884**	**207,517**	**246,661**	246,243*	246,534*

*FY12 and FY13 totals as projected by DOL planned revenues.

The implementation of revenue collection started slowly with no registrations charged in July of 2005 and full registration counts starting in March of 2006. The number of watercraft registrations peaked in FY08 at just over 276,000 registrations. Registrations do not appear to have been significantly affected by the economic recession or high fuel prices (as high as $4.50/gallon) that occurred during that time. However, FY10 saw a significant drop in watercraft registrations due to DOL's cancellation of direct mail notifications and the implementation of a new web-based registration system that reduced the number of early registrations by nearly 83,000 boaters in April and May (Table 1 - red cells) as compared to the same months during the previous FY. A subsequent influx of later registrations in June, July, and August (green cells) recovered approximately 35,500 of that gap. The loss in those registrations previously prompted by direct mail notifications continued in April and May of FY11, although to a lesser extent. DOL is projecting that the number of watercraft registrations will remain steady through FY12 and FY13 at approximately 246,000.

2.1.2 Department AIS Prevention Account: Fund 09N

The AIS Prevention Account was established for use by the department to accomplish the legislative directives outlined in both ESSB 5699 and E2SSB 5923, with a spending allotment of $528,000 for the 2005-07 biennium and $842,000 for the 2007-2009 and 2009-2011 biennium. Table 2 shows actual program revenues and expenditures since FY06 and the projected revenues and allotted expenditure amounts for FY12 and FY13.

Table 2. AIS Prevention Account (Fund 09N) by fiscal year, revenue, expenditure, variance between revenue and expenditures, and fiscal year closing reserve.

Fiscal Year	Revenue	Expenditure	Variance	Reserve
	2005-2007 Biennium			
FY06	$313,413	$48,684	$264,729	$264,729
FY07	$399,652	$325,057	$74,595	$339,324
Total Actual	$713,065	$373,741	$339,324	
	2007-2009 Biennium			
FY08	$414,769	$380,188	$34,581	$373,905
FY09	$410,826	$461,768	($50,942)	$322,963
Total Actual	$825,595	$841,956	($16,361)	
	2009-2011 Biennium			
FY10	$311,276	$404,634	($93,358)	$229,605
FY11	$369,992	$376,748	($6,756)	$222,849
Total Actual	$681,268	$781,382	($100,114)	
	2011-2013 Biennium (Projected/Allotted)			
FY12	$381,027*	$426,555	($57,190)	$161,824
FY13	$381,463*	$292,445	$77,356	$250,842
Total	$762,490	$719,000	$20,166	

*Includes $11,662 per year from internal proportional administrative funding source.

Positive closing reserve balances across the six-year period are based on the late start in spending authority, normal start-up lag for a new program, and the need to keep a minimum reserve to cover lowest revenue months - usually February or March. The large reserve balances have helped the program meet expenditures and spend down the surplus balances

(bracketed red numbers) in FY09 through FY12 within biennial legislative allocations. A detailed breakdown of monthly revenues, expenditures, cover changes in DOL's revenue collection system, and balances since the program's inception is presented in Appendix C. The yellow-highlighted FY13 expenditure in Table 2 marks a reduced Office of Financial Management allocation of $133,000 for that year which would result in a return to a very high closing reserve.

2.1.3 WDFW AIS Enforcement Account: Fund 09M

The department contract with WSP in FY06 was $100,469 and this is captured in the WSP AIS Enforcement Account fund (see section 2.1.4). In FY07, the legislature divided the AIS Enforcement Accounts between the department and WSP with the department receiving approximately 80 percent of the total revenue ($.40 per registration). This resulted in a department spending allotment of $204,000 for the 2007-09 and 2009-11 biennium (Table 3).

Table 3. AIS Enforcement Account (Fund 09M) by fiscal year, revenue, expenditure, variance between revenue and expenditures, and fiscal year closing reserve.

Fiscal Year	Revenue	Expenditure	Variance	Reserve
	2005-2007 Biennium			
FY06	N/A	N/A	-	$0
FY07	N/A	WSP Contract	-	$0
Total Actual	-	-	-	
	2007-2009 Biennium			
FY08	$ 110,608	$ 32,216	$ 78,392	$ 78,392
FY09	$ 109,651	$ 81,466	$ 28,185	$ 106,577
Total Actual	$ 220,259	$ 113,682	$ 106,577	
	2009-2011 Biennium			
FY10	$ 83,008	$ 77,664	$ 5,344	$ 111,921
FY11	$ 98,664	$ 84,812	$ 13,852	$ 125,773
Total Actual	$ 181,672	$ 162,476	$ 19,196	
	2011-2013 Biennium (Projected/Allotted)			
FY12	$ 87,200	$ 87,200	$ 0	$ 125,773
FY13	$ 101,600	$ 101,600	$ 0	$ 125,773
Total	$ 188,800	$ 188,800	$ 0	

The positive closing reserve balances since FY08 have been maintained to determine the appropriate account reserve to cover expenditures during the low revenue months. The department's analysis of monthly revenues and expenditures shows that a base FY closing reserve balance of $55,000 would be sufficient. The department and WSP are coordinating on a strategy for use of account reserve balances above base level amounts as noted in the recommendations section of this report.

2.1.4 WSP AIS enforcement account: Fund AQU8

The AIS Enforcement Account was originally established solely under WSP to accomplish the legislative directives outlined in RCW 43.43.400. In FY07, the legislature divided the

AIS Enforcement Accounts between WSP and the department with WSP receiving approximately 20 percent of the total revenue ($.10 per registration). This resulted in a WSP spending allotment of $27,000 for the 2007-09 and 2009-2011 biennium (Table 4).

Table 4. Washington State Patrol AIS Enforcement Account (Fund AQU8) by fiscal year, revenue, expenditure, variance between revenue and expenditures, and fiscal year closing reserve.

Fiscal Year	Revenue	Expenditure	Variance	Reserve
	2005-2007 Biennium			
FY06	$104,470	$0	$104,470	$104,470
FY07	$133,218	$112,322	$20,896	$125,366
Total Actual	$237,688	$112,322	$125,366	
	2007-2009 Biennium			
FY08	$27,651	$0	$27,651	$153,017
FY09	$27,388	$3,186	$24,202	$177,219
Total Actual	$55,039	$3,186	$51,853	
	2009-2011 Biennium			
FY10	$20,752	$2,640	$18,112	$195,331
FY11	$24,666	$16,414	$8,252	$203,583
Total Actual	$45,418	$19,054	$26,364	
	2011-2013 Biennium (Projected/Allotted)			
FY12	$21,800	$21,800	$0	$203,583
FY13	$25,400	$25,400	$0	$203,583
Total	$47,200	$47,200	$0	

The positive closing reserve balances since FY06 have been maintained in order to determine the appropriate account reserve to cover expenditures during the low revenue months. In reviewing annual expenditures, it was also determined that officers miscoded activity reports and Port of Entry (POE) staffing was below normal operating levels due to transfers and attrition. Combined, these two factors resulted in lower than anticipated expenses for the past two biennium and will be remedied in the 2011-2013 biennium. The department's analysis of monthly revenues and expenditures shows that a base FY closing reserve balance of $15,000 would be sufficient. The department and WSP are coordinating on a strategy for use of account reserve balances above base level amounts as noted in the recommendations section of this report.

2.2 Priority Species

In 2007-2008, the program cooperated with the WISC to develop a list of 50 invasive plants and animals that pose the greatest risk to Washington State (species belonging to the same genus were considered as one). The list was generated by conducting a risk-assessment of all invasive species that are known to occur in the state, or that are considered to be at risk of occurring due to their presence in nearby regions or known transport vectors from regions afar (Appendix D). Fourteen of the 50 identified species are aquatic animal species regulated by the department as AIS. The list was then prioritized using an invasive species impact and prevention/early management action tool predicated on best professional judgment and science. Zebra/quagga mussels were identified as the state's number one AIS risk based on invasive- and management potential with the New Zealand mudsnail (NZMS) and marine tunicates also ranking very high.

2.2.1 Zebra/Quagga Mussel Invasive Risks

Zebra (*Dreissena polymorpha)* and quagga (*D. bugensis)* mussels are small bivalve shellfish (mollusks). Zebra/quagga[2] mussels are named for the striped pattern of their shells (Figure 2). Color patterns for zebra/quagga mussels can be highly variable and may range from very light to very dark, and the stripes are not always easily discernible. They are typically found attached to firm substrates, including the shells of other mussels, by byssal threads. Although similar in appearance, the two species can usually be easily distinguished. When placed on a surface zebra mussels are stable on their flattened underside while quagga mussels, lacking a flat underside, will fall over.

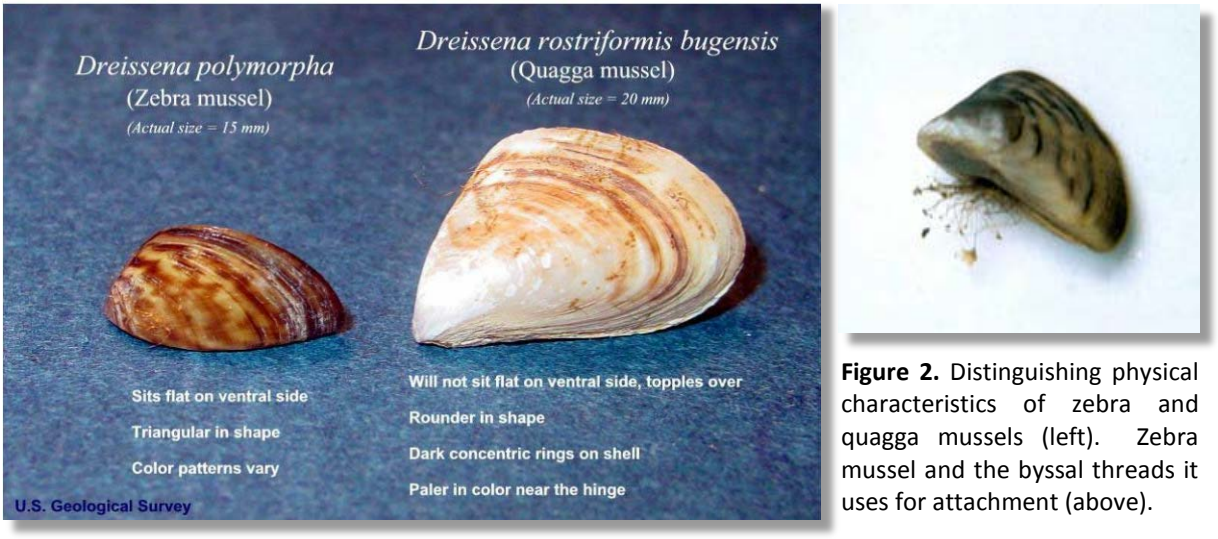


Figure 2. Distinguishing physical characteristics of zebra and quagga mussels (left). Zebra mussel and the byssal threads it uses for attachment (above).

Zebra/quagga mussels are native to the Black, Caspian, and Azov Seas of Eurasia and records of this species date back to 1769. Since that time, zebra/quagga mussels have spread prolifically throughout Europe and Great Britain. In 1988, they were first discovered in the Great Lakes and have quickly spread to most states in the eastern U.S. Since 2007, the

[2] Simplified as such in document as species risks and management are essentially the same.

western U.S. has witnessed an incursion that now includes infestations in five states west of the continental divide. Although Washington thus far remains free of zebra/quagga mussels, the incursion into other western states substantially increases the risk of the mussels being introduced into Washington waters (Figure 3). Conceptually, the economic and environmental damage from zebra/quagga mussel infestations in the Great Lakes and Mississippi Drainage may be thought of as a slow moving Category 5 hurricane, with most of the damage occurring beneath the water's surface. Their ability to rapidly gain a stronghold once introduced makes eradication impossible if the infestation is not dealt with rapidly and aggressively; and if left unchecked, infestations would likely cost billions of dollars over less than a decade in control and containment actions alone.

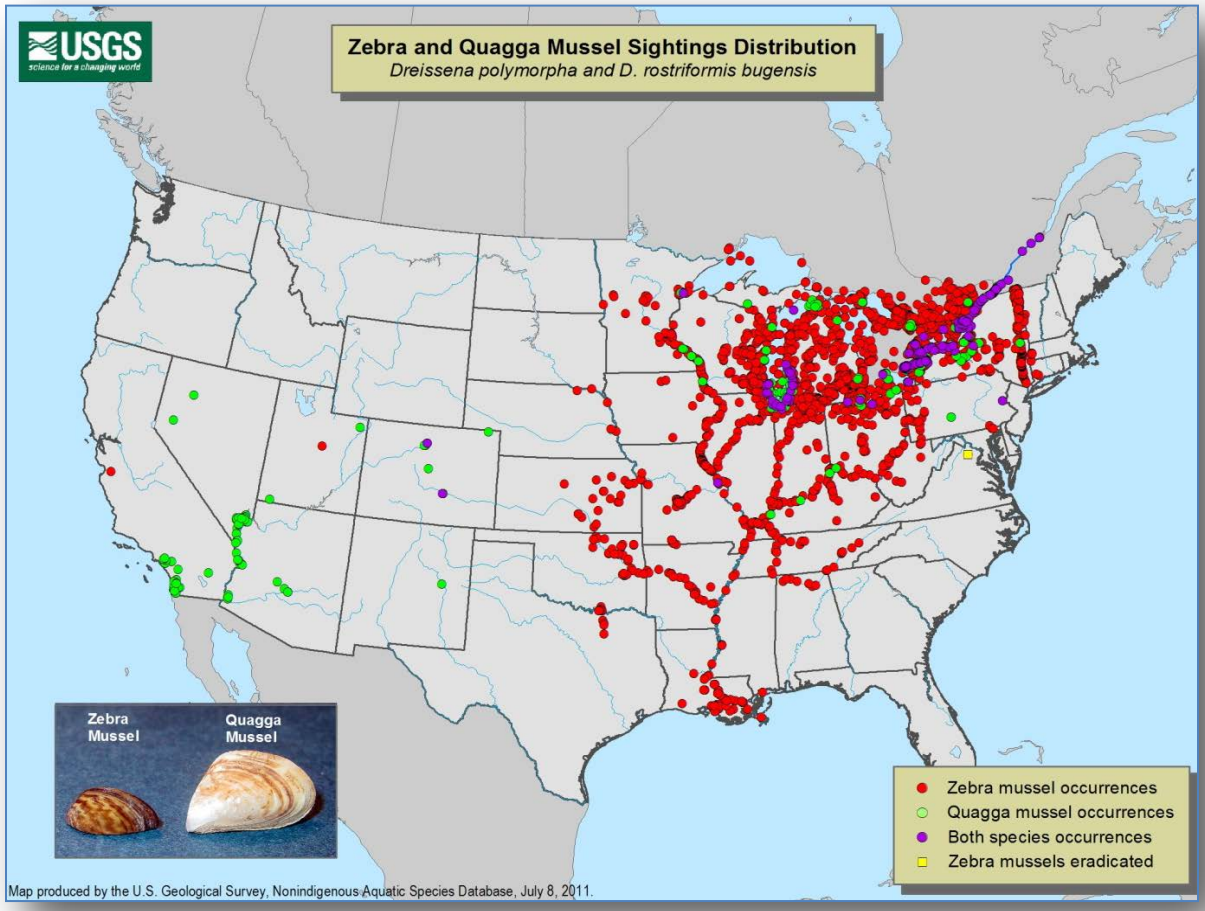


Figure 3. Current distribution of known established zebra/quagga mussel infestations in the U.S. and Canada (Map provided courtesy of the U.S. Geological Services nonindigenous aquatic species database).

The WISC and the department's ANSC consider zebra/quagga mussels to be the highest risk aquatic invasive species threatening Washington State, both environmentally and economically. Notably, the Columbia River Basin remains one of the last major watersheds in the continental U.S. that does not harbor known populations of either mussel species (see *Case Study: Banks Lake*). Given the number of hydroelectric facilities within the basin, and the dependence of several western states on these facilities for their power supply, managers are particularly concerned with the potential effects that a zebra/quagga mussel infestation

would have on their ability to continue to supply relatively low-cost energy to the region (Figure 4). The concern is exacerbated at hydroelectric facilities by the additional risks to valued fisheries and endangered species by zebra/quagga mussels infesting integrated fish passage facilities present at most of the basin's dams.

Figure 4. Map of the Columbia River Basin and associated hydro-electric facilities that could be impacted by zebra/quagga mussels or other AIS. The Columbia River and its tributaries form the dominant water system in the Pacific Northwest Region. The main stem of the Columbia begins in Columbia Lake on the west slope of the Rocky Mountain Range in Canada. After following a circuitous path for about 1200 miles, 415 miles of which are in Canada, it joins the Pacific Ocean near Astoria, OR and Ilwaco, WA. The river drains an area of approximately 219,000 square miles of WA, OR, ID, MT, WY, NV, and UT. An additional 39,500 square mile portion of the basin, or about 15%, lies within Canada. Its largest tributary, the Snake, travels 1,038 miles from its source in Yellowstone National Park in WY before joining the Columbia River main-stem in eastern WA.

Zebra/quagga mussels are extraordinarily resilient, adaptable, and prolific colonizers (Figure 5). A little-known but alarming fact is that juvenile and adult zebra/quagga mussels can detach from one location, move at speeds of several inches per hour, and reattach in new locations with more suitable habitat. Their environmental tolerances, basic biology, and life history characteristics are detailed in the October 2010 Report to the Legislature. Some of the known and potential impacts can be summarized as follows:

Ecological impacts

- As filter feeders, mussels remove food and nutrients from the water column, and zebra/quagga mussels do this very efficiently, leaving little or no food sources for native aquatic species. Their ability to rapidly over-dominate substrates and out-compete native aquatic plants and animals for space reduces species diversity and overall ecosystem health. Their presence in the Great Lakes has lead to dramatic shifts in water quality, trophic dynamics, and food web structure that has resulted in fishery collapses and the near elimination of some native species. Their presence in the Pacific Northwest could have profound deleterious impacts on ESA listed and other sensitive aquatic species such as Salmonids.
- They may host pathogens and parasites that are known to harm native species. For instance, *Viral hemorrhagic septicemia*-IVb (VHS) virus is a virulent pathogen known to affect at least 42 species of freshwater fish, including Salmonids, and the virus has caused massive fish die-offs in the mid-west. Zebra/quagga mussels are believed to be capable of hosting the VHS virus and may contribute to its spread into otherwise uninfected populations.
- The shells of zebra/quagga mussels are sharp and their presence in fish ladders and juvenile fish bypass facilities would likely lead to the de-scaling and abrasion of large numbers of migratory fish including Salmonids, resulting in lethal infections, increased spread of harmful contagions, and non-lethal injuries that would affect long-term survival and reproductive potential.

Economic impacts

- Once zebra/quagga mussels become established, management costs are known to be enormous, particularly for industrial and municipal raw-water users. In addition to their clogging effect on intakes and outfalls, filtering by mussels increases water clarity which often leads to significantly increased aquatic weed loads. Both clogging and filtering have significant negative impacts on water diversion, distribution, and hydropower operations. In Washington State, hydroelectric dams and irrigation infrastructure would be particularly vulnerable to the effects of a zebra/quagga mussel infestation.
- Depending on the location and severity of the infestation, Washington State recreationists and the industries that depend on them, could be severely impacted. Zebra/quagga mussels have over-dominated substrates elsewhere to the point where beaches become unsuitable for many popular water-related recreational activities. The mussels also damage or impede the performance of recreational watercraft and add to the maintenance costs for marinas, parks, and aids to navigation.

Social/human health impacts

- In large numbers, zebra/quagga mussels can cause interruptions to the flow of municipal water supplies.
- Major infestations in Washington State would likely lead to increased costs to its citizens for electricity, water, food, and recreational activities.
- Zebra/quagga mussels can contribute to increased occurrences of toxic algae blooms.
- Mussels can concentrate toxic contaminants up to 300,000 over ambient levels, and then disperse them into the environment at elevated levels through their waste.
- The shells of mussels, both living and dead, pose a significant health risk to the public when they occur in large numbers. They are very sharp and can easily cause severe lacerations.
- Die-offs of other species caused by zebra/quagga mussel infestations pose significant health risks by fouling the water and causing noxious odors.

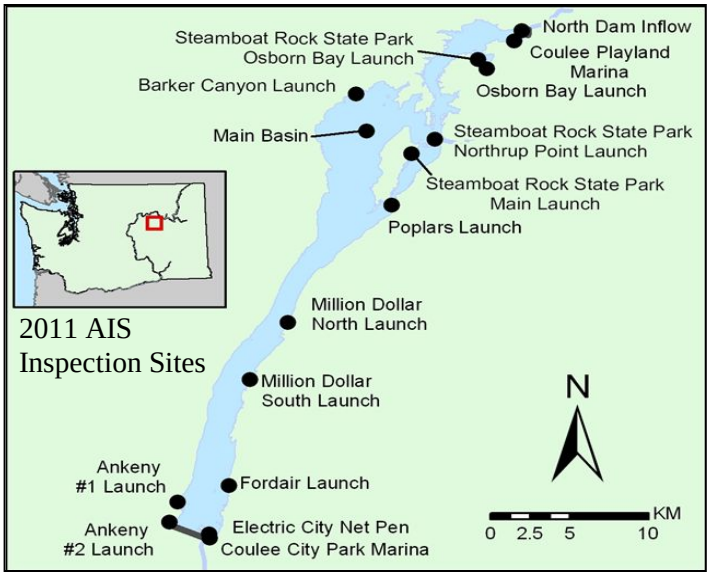
Figure 5. Clockwise from top: Shoreline of infested lake in Kansas; display showing 3-months growth of quagga mussels from Lake Mead in 2007. (*Display by Wen Baldwin*); USGS benthic survey in the Great Lakes; Davis Dam (Colorado River) water intake screen; and pressure wash removal after drawdown to remove mussels.

Case Study: Banks Lake

Banks Lake is a 27 mile long impoundment formed by the Grand Coulee Dam on the Columbia River. It covers an area of approximately 26,886 acres and has an average depth of 46 feet. The water stored in Banks Lake is part of the Columbia Basin Project's irrigation network. The Columbia Basin Project is the largest water reclamation project in the U.S and supplies water to over 670,000 acres of irrigable land in eastern WA.

Gradually, beginning in the summer of 2011, the federal Bureau of Reclamation lowered the lake until, in November it reached a level over 30 feet below normal. The draw-down was performed in order to facilitate improvements to irrigation canals, shorelines, boat launches, and swimming areas. The draw-down exposed vast areas of otherwise inundated shoreline, and drained marina and boat launch facilities, enabling unprecedented access for AIS inspectors.

In November, when the lake level was at its lowest, biologists from the department's AIS Unit conducted a lake-wide survey for the presence of zebra/quagga mussels. They surveyed miles of shoreline adjacent to all of the lake's active boat launches and inspected the infrastructure (docks, pilings, cables, etc.) at each public and private launch facility. Fortunately, they did not find any evidence for the presence of zebra/quagga mussels. The survey also afforded many opportunities to inform the public about AIS issues, including prevention.



2.2.2 New Zealand Mudsnail (NZMS)

The NZMS (*Potamopyrgus antipodarum*) is a freshwater mollusk that is native to New Zealand. They are tiny aquatic snails that reach a maximum size not much larger than a coarse grain of sand, though they may become twice as large in their native New Zealand habitats (Figure 6). They have an annual life cycle and can become reproductive in just a few months. In New Zealand, females may reproduce either sexually or parthenogenically (asexual cloning); however, in North America, known populations of NZMSs are composed almost entirely of parthenogenic females, therefore, colonization may occur from the introduction of a single female. Females brood embryos in a specialized pouch and release from 20 to 120 free crawling juveniles and may produce up to 230 offspring per year. They tolerate a broad range of temperatures above freezing but are not capable of surviving in temperatures at or below freezing. Although they are resistant to desiccation and can survive up to 24 hours without water, and for weeks on damp surfaces, they are not tolerant of prolonged high temperatures.

Figure 6. New Zealand mud snail shells. Tick marks are 1 mm apart (left; USGS photo). Laboratory examination under a dissecting microscope of live New Zealand mudsnails from Olympia, Washington's Capitol Lake (right; A. Pleus photo).

The first recorded discovery of the species in North America occurred in 1987 in Idaho's Snake River. Subsequently, five species of mollusks native to the Snake River drainage were listed under the U.S. Endangered Species Act as either "threatened" or "endangered", in part due to the proliferation of NZMSs. Since then, the NZMS has been found in nine additional western states and in British Columbia, and five Great Lakes states and one eastern Canadian province (Ontario). In the absence of co-evolved predators and parasites, NZMSs can multiply to astounding numbers under favorable conditions. For instance, in less than a decade, snail densities have gone from undetectable levels to 229,000 snails per square meter of streambed in some rivers of Yellowstone National Park.

In nonnative habitats, the NZMS competes with native invertebrates, including native mollusks, for space and food resources. Because of their high reproductive potential, NZMSs can constitute up to 80% of the invertebrate biomass and consume more than 75% of the gross primary production. Thus, they have the potential to control the

energy dynamics and nutrient cycling in an aquatic ecosystem. Adverse impacts to lower levels of the food web may have implications for organisms at higher trophic levels, such as fish, which rely on lower-level organisms as a food source. The presence of NZMSs may reduce the availability of native invertebrate prey for fish such as Salmonids and at the same time, do not constitute a viable food source themselves. Their hard shell and resistance to digestion allow them to pass through fish without lending any nutritional value or caloric input to the consumer.

Developing strategies and methods to control and manage NZMS populations in the U.S. is listed as one of the objectives of the National Management and Control Plan for the New Zealand mudsnail that was developed under the auspices of the intergovernmental national Aquatic Nuisance Species Task Force to address these and other AIS concerns. Thus far, NZMS management efforts in their nonnative range have focused primarily on controlling their spread by limiting public access to infested water bodies, educating citizens through public awareness campaigns, and developing decontamination methods and protocols for recreationists and natural resource field workers

Established populations of NZMSs have been known since 2002 to occur in the lower Columbia River and several waterways on the Longbeach Peninsula in southwest Washington. More recently, however, the NZMS has been detected in Olympia's Capitol Lake and Seattle's Thornton Creek near its entrance to Lake Washington. The NZMS was first reported from Washington's Capitol Lake in October, 2009. Shortly afterward, program biologists conducted a synoptic survey of the lake's nearshore environment and adjoining streams. The survey indicated a patchy distribution of snails throughout the lake with some areas of very high density - up to 20,000 per square meter, but that the adjoining waterways remained un-infested.

Capitol Lake is managed by the Washington State Department of Enterprise Services (DES), which controls the water level by opening or closing spillways at the foot of the lake. On recommendation from the department, and as a first measure to stem the threat of transfer of the NZMS to other nearby water bodies, DES closed the lake to public access in November, 2009 and it has remained closed since. With cooperation from DES and funding from the Puget Sound Partnership (PSP), program biologists conducted experiments in 2009 and 2010 to help guide management actions that may be taken to control the proliferation of NZMSs (see *Case Study: Capitol Lake*). Lowering the lake level during freezing temperatures has thus far proven to be the most effective and least expensive way to control the abundance of snails in the lake and thus limit their potential for spread to other areas.

The appearance of NZMS in Thornton Creek in 2011 prompted a workshop held at King County in July, 2011 to train workers and volunteer groups entering Thornton Creek in proper decontamination procedures. The workshop was conducted by the program, the Department of Ecology (DOE), King County, and Seattle Public Utilities. More information on the NZMS and the program's efforts to monitor and control them can be found at http://wdfw.wa.gov/ais/potamopyrgus_antipodarum/.

Case Study: Capitol Lake

The New Zealand mudsnail (NZMS) was first detected in Olympia, Washington's Capitol Lake in October, 2009. Subsequent surveys of the lake indicated a patchy distribution of snails throughout the lake with highest densities occurring in the lake's northern-most basin. Snails were not found in any of the adjoining waterways. Experiments have since been conducted to test the effects of two potential management actions.

Over a seven- day period beginning on December 7, 2009, local daily low temperatures ranged from 7^{o}-18^{o} degrees. A partial draw-down of the lake's level enabled AIS biologists to test the effect of exposure to freezing temperatures on NZMS survival. They determined that exposure to sub-freezing conditions can kill as many 98% of the snails. The lake is now periodically lowered during freezing weather and the draw-downs have substantially reduced the likelihood that snails will be spread to nearby waters.

Capitol Lake's spillway connection to Puget Sound afforded AIS biologists a unique opportunity to test the effects of elevated salinity on NZMS survival. The effect was tested both with saltwater introduced through the 5^{th} Ave. dam, and with salt applied directly to the shore. Results indicated that elevated salinity does impact the survival of NZMSs; however, the salinities needed to effect broad-scale mortalities among the Lake's NZMS population may not be practical or cost effective to achieve.

2.2.3 Marine Tunicates

Tunicates, including those not native to Washington, are evolutionarily advanced invertebrates. Many are prolific spawners capable of rapid territorial expansions when introduced to regions outside their native range. Nonnative tunicates can out-compete native organisms for food and space and have substantially impacted shellfish aquaculture industries in the U.S. and elsewhere. There is widespread agreement among Washington State's government and tribal resource agencies, conservation groups, and the aquaculture industry that nonnative tunicates pose a substantial threat to Washington's marine environment, local aquaculture interests, and the wildstock shellfish harvest industry.

Marine tunicates are among the invasive animals that were ranked high by the WISC (see Section 2.2) as posing a significant invasive risk to Washington State. There are currently seven species of nonnative tunicates known to be present or once present (*Ciona intestinalis*) in Puget Sound, three of which (*Didemnum vexillum, Styela clava*, and *Ciona intestinalis*) were identified as very high risk by a panel of worldwide tunicate experts that were convened at the 2009 Bioinvasions Conference. The primary pathway for introduction of nonnative tunicates into the state is believed to be hull fouling on coastal and trans-oceanic vessels, while the primary pathways for intrastate spread are believed to be fouling on recreational and commercial watercraft hulls, aquaculture products, and aquaculture growing equipment. Beginning in 2007, the PSP contracted with the department to provide a continued response to the threat of nonnative tunicates in Puget Sound. Activities conducted under the contract included drafting a finalized tunicate management plan, conducting tunicate distribution surveys, testing eradication methods, and launching public awareness campaigns. In 2011, due to budget reductions, funding from the PSP was cut and all but rapid response activities on highly sensitive areas have ceased. This has left Puget Sound at high risk of tunicate and other AIS introduction and spread by hull fouling. More information on the tunicate management part of the program can be found at http://wdfw.wa.gov/ais/tunicates.html.

2.3 AIS Pathway Management

Invasive species are opportunistic and may be introduced by just one pathway, and then continue to be spread by other pathways. For instance, zebra/quagga mussels were first introduced into the Great Lakes from ballast water that was released from trans-oceanic vessels conducting trade with ports in the Black Sea. Within the Great Lakes region, ballast water continues to pose a significant threat for the spread of zebra/quagga mussels, as well as other AIS; however, zebra/quagga mussel range expansion in the U.S and Canada beyond the Great Lakes region is believed to have occurred primarily through the movement, both overland and in-water, of contaminated recreational and commercial watercraft.

2.3.1 In-water transportation of recreational and commercial watercraft

The in-water, or hull fouling, pathway is of concern for three main reasons:

a) New state, regional, national, and international laws are being adopted that will eventually eliminate toxic paints used to currently manage hull fouling growth and replace them with less- or non-toxic paints that will promote more hull fouling;

b) Rising fuel prices are pushing the need for cleaner hulls as even low amounts of hull fouling can result in significantly greater fuel consumption, and;
c) Increasing concerns about harmful atmospheric emissions contributing to climate change due to inefficient fuel use.

Most scientific studies place hull fouling as having a higher AIS introduction and spread risk than any other pathway in marine waters and larger freshwater bodies such as interconnected lakes and large commercially-navigated rivers like the Columbia River. Unfortunately, state budget problems resulted in the recent loss of the invasive tunicate response funding, which eliminated most of the department's capacity to manage AIS introduced or spread through the recreational and commercial watercraft hull fouling pathways. The department and DOE are seeing increased industry concerns and interest and have already been approached by both vessel paint manufacturers and local hull cleaning operators for regulatory guidance on in-water cleaning.

2.3.2 Overland transportation of recreational and commercial watercraft

The overland transportation of recreational and commercial watercraft into and within Washington State is believed to pose the greatest risk for freshwater AIS introduction and remains the program's primary management focus (see *Case Study: Rapid Response Incident*). Other states that are actively engaged in AIS prevention management are also focusing on watercraft transportation interdiction (Appendix E). This risk continues to grow along with an increasingly mobile boating public, a burgeoning fish tournament industry, and increased interstate trade in inexpensive used watercraft that often originate from AIS infested areas. The risk is compounded by the ability of many AIS to remain viable for weeks once removed from their original habitat, and by new discoveries of AIS in other western states. Some of the types of AIS that are capable of hitching a ride on overland-transported watercraft include:

- AIS - animals: In addition to zebra/quagga mussels, other animal AIS that may be transported on watercraft include other mollusks, spiny water fleas, fish hook water fleas, New Zealand mudsnails, tunicates, and crustaceans including crayfish.
- AIS – macroscopic aquatic plants: All macroscopic aquatic plants are prohibited on overland transported recreational and commercial watercraft. It is difficult to discern animal AIS or AIS plant seeds/spores/rhizomes that may be hidden in native vegetation.
- AIS - protista: It is believed that watercraft are pathways for marine and freshwater algae and diatoms such as *Didymosphenia geminata* (a.k.a., "Rock Snot"). These could be present in live-fish wells and other water holding areas on watercraft, or on attached macroscopic aquatic vegetation.
- AIS – pathogens/parasites: Pathogens/parasites may be present in any damp space on watercraft, in or on AIS or native species, or on attached macroscopic aquatic vegetation. *Batracholchytrium dendrobatidis* ("Chytrid") is a fungus that is known to cause local exterminations of some amphibian species throughout the world and it has recently been detected in Conboy Lake National Wildlife Refuge and nearby Trout

Lake in eastern Washington. The spores on this fungus can swim and live for at least 12 weeks in water.

Case Study: Rapid Response Incident

In March, 2011 the state of Idaho notified the department that a 35' vessel contaminated with zebra mussels was being moved from Michigan to Washington by an overland commercial transporter. Idaho does not presently have the statutory authority to detain AIS contaminated watercraft that are being transited through their state.

The department contacted the vessel owner and the transporter to inform them of the consequences of transporting prohibited AIS in Washington. Both parties were very cooperative and arranged for the vessel to be decontaminated in Washington by program staff. The vessel was lifted from the transport trailer in order to gain access to all infested areas and to ensure that all zebra mussels were removed. The decontamination was conducted at a Department of Ecology approved hull fouling debris containment facility.

After hand-removing all mussels from the vessel and trailer, both were further treated with high-pressure hot water in order to dislodge mussels from difficult to access spaces and to ensure that tiny juvenile mussels that may have gone undetected were removed. Once decontaminated, the vessel was allowed to proceed, and no citations were issued owing to the high level of cooperation exhibited by both the vessel owner and the transport company operator.

3.0 Program Accomplishments

Key accomplishments from fiscal years 2008 and 2009 are highlighted in the program's 2010 report to the Legislature. 2010 and 2011 witnessed similar achievements with increased levels of cooperation and coordination with other government agencies and jurisdictions that are grappling with AIS prevention and eradication issues. The program has continued its focus on AIS transportation pathway interdiction, early detection, statutory enforcement, rapid response actions, and education and outreach. During this biennium, the AIS Enforcement Program has issued a total of 13 citations and 144 warnings. Guided by results from the WISC priority species analysis (see Section 2.2), special emphasis has been placed on the prevention of zebra/quagga mussel introductions.

3.1 Boater Surveys, Integrated Inspections, and Mandatory AIS Check Stations

The department uses three types of watercraft management actions for the prevention of AIS introductions, including zebra/quagga mussels. These include boater surveys, integrated watercraft safety/AIS inspections, and mandatory watercraft check stations. The purposes of these actions include: interception and prevention of AIS introductions and spread; education and outreach to the boating public on the threats of AIS and how they can help prevent their introduction and spread; analysis of watercraft movement pathways to determine the highest risk transportation corridors between in-state water bodies and out-of-state high-risk water bodies; and assessing the risk of nonresident boaters for introducing AIS from out of state. Nonresident boaters are those using watercraft registered in another state, whether or not the owner or operator is a Washington resident. The total number of boater contacts including both resident and nonresident boaters by year was: 4,107 in 2007; 6,091 in 2008; 1,534 in 2009; 1,494 in 2010; and 1,428 in 2011. Declining numbers in boater contacts after 2008 are the direct result of budget reductions that resulted in fewer seasonal staff that were available to conduct watercraft management actions, and of refocusing the program's limited resources on early detection monitoring for zebra/quagga mussels.

3.1.1 Boater surveys

Boater surveys were conducted by three AIS non-enforcement staff during the high use season between April 1 and September 30 in 2007 and 2008. In 2007, field efforts aimed at preventing AIS introductions were focused entirely on boater surveys. In 2008, resources were divided among all three types of watercraft management actions, but remained focused primarily on boater surveys while AIS enforcement inspection protocols were being developed and enforcement officer training requirements were being met. Directed boater surveys were not conducted in 2009 as management actions were being shifted toward early detection monitoring and AIS check station inspections; however, in 2010 and 2011, boater surveys were reintroduced between May 1 and June 30 in Whatcom, Skagit, and Snohomish Counties with staffing reduced from three to one in order to support the City of Bellingham's efforts to establish an AIS prevention program for their municipal water supply (Lake Whatcom). Boater surveys were not conducted elsewhere after 2008.

The boater survey protocol consisted of one or more staff attending to pre-assigned recreational boat launch sites and interviewing boaters while they were launching or retrieving their watercraft. In 2007 and 2008, surveyors used a questionnaire designed by the 100th Meridian Initiative that is used to assess boater movements, maintenance habits, and public knowledge of AIS. The form was subsequently modified by the department in 2010 (Appendix F) in order to shorten the in-field interview process and restrict the acquired information to the specific needs of the program. In addition, boaters were asked to participate in a voluntary inspection of their watercraft and trailer for the presence of AIS. Boaters were provided with program contact information and offered educational material highlighting the importance of AIS prevention including field identification keys for select AIS. Each surveyor was given an annual statewide quota of 1,500 boater surveys each in 2007 and 2008. In 2010 and 2011 surveys were conducted opportunistically in Whatcom, Skagit, and Snohomish Counties.

Lacking *a priori* knowledge of boater habits, survey sites were selected statewide based on one or more of the following AIS risk criteria: a) frequency of use; b) occurrence of periodic events such as fishing tournaments, local festivals, and holidays; c) proximity to industrial, agricultural, and municipal water intake facilities, and; d) watercourse connections with adjacent water bodies. More emphasis was placed on surveying boaters in western Washington, as anecdotal information suggested that record high fuel prices, particularly in 2007, were forcing resident boaters to remain closer to home, and the likelihood of AIS distribution was judged to be greatest in that region of the state with the most registered watercraft (recall from Section 2.1.1 that the number of boater registrations did not appear to be impacted by the high fuel prices). Concentrating on western Washington also enabled surveyors to maximize the number of contacts per unit time as the spatial distribution of launches is denser in the western part of the state, and there were two designated surveyors stationed in western- and only one in eastern Washington during 2007 and 2008. Additionally, the lower Columbia River is considered to be at particularly high risk to AIS because of the high volume of commercial and recreational watercraft transiting the area that arrives from outside the Pacific Northwest, and because any AIS infestations up river are more likely to be transferred downstream. For this reason, particular emphasis was placed on surveying more sites along the lower Columbia River, thus adding to the number of western Washington sites.

In eastern Washington, surveys were focused primarily on water bodies used by tournament fishers with special emphasis on those water bodies that are included in interstate tournament circuits. The tournaments are typically held on larger inland water bodies such as the upper Columbia River, Snake River, Potholes Reservoir, Banks Lake, and Moses Lake.

In 2007, a total of 4,107 boater surveys were conducted; 393 short of the 4,500 annual survey quota goal for all three surveyors combined. In 2008, 4,970 boater surveys were conducted, surpassing the annual quota by 470. Survey effort, measured in total days during which one or more surveyors were in the field, was nearly the same in 2007 (110 days) as in 2008 (108 days) (Table 5); however, survey effort measured in the number of contacts per surveyor averaged over the total number of surveyor days was slightly lower in 2007 (12 per surveyor) than in 2008 (15 per surveyor). From 2007 to 2011, a total of 9,308 boater surveys were

conducted at 124 unique sites. In 2007 and 2008, 30 of the sites were located in eastern Washington and 91 were located in western Washington. In 2010 and 2011, all sites were located in Whatcom, Skagit, and Snohomish Counties (Figure 7). Only one percent of the inspections resulted in the detection of AIS in 2007 and 2008. In 2010 and 2011, the percent of vessels infested was less than one percent. Those watercraft were decontaminated on-site by department staff and the AIS was contained and transferred to a suitable disposal site.

Table 5. Boater Surveys conducted by the department since 2007 by year and analysis element.

Year	Total # of Surveys Conducted	# of Unique Sites[1]	# of Survey Days	% of Boaters Surveyed Operating a non-Washington Registered Boat	% of Boaters Surveyed That Clean Their Boats Between Uses	% of Boaters Surveyed That Were Aware of AIS
2007	4,107	79	110	5%	79%	74%
2008	4,970	42	108	5%	82%	70%
2010	152	3	14	5%	83%	82%
2011	79	0[2]	9	3%	99%	No Data
Total	9,308	124	241	5%	86%	75%

[1] # of unique sites refers to the number of sites at which surveys were not conducted during any of the previous years.

[2] All of the sites visited in 2011 had been surveyed at least once during previous years, thus were not unique.

Summed over the four years in which boater surveys were conducted during 2007 through 2011, eighty-six percent of survey respondents indicated that they cleaned their boat and trailer after each use. Summed over the three years in which survey data were collected for the number of boaters that were aware of AIS, 75 percent responded that they had.

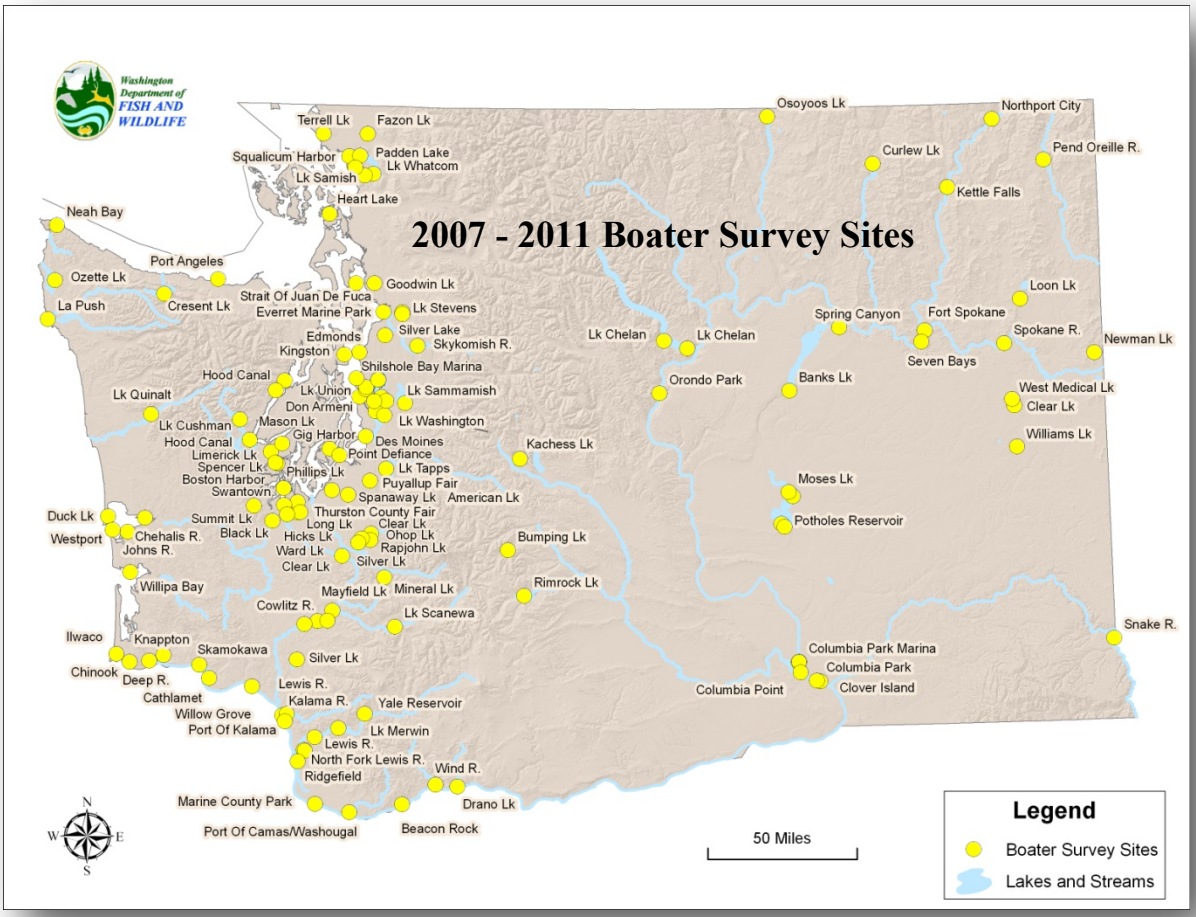


Figure 7. Statewide map of sites where boater surveys were conducted in 2007 through 2011. Note: No boater surveys were conducted in 2009.

Overall, the recreational boating community appears to be well informed on AIS issues. The surveys indicate that the majority of boat owners clean their boats and trailers between use; however, since respondents were not asked why, it is unclear whether or not outreach and education (e.g. Clean Boat Clean Water campaign) impacted their decision to do so. Feedback from the surveyors suggested that boater surveys were an effective method of providing AIS outreach and education to a large targeted audience of recreational boaters. However, up to five percent of the respondents in any of the years in which surveys were conducted were launching or retrieving boats that were registered in other states. Although nonresident boaters comprise a small percentage of the overall boating community in Washington State, interstate watercraft movement is considered to be among the highest risk vectors for AIS introductions. It is not clear to what extent statewide efforts to inform the public on AIS issues is affecting the knowledge of nonresident boaters. While the voluntary approach was generally met by a willing and cooperative public, there were several instances where boaters refused to complete the survey, or permit their watercraft to be inspected.

3.1.2 Integrated watercraft safety/AIS inspections

In 2007, the department's enforcement officers completed the training required to conduct watercraft safety inspections and have since conducted them routinely. Beginning in 2008, mandatory AIS inspections were integrated with watercraft safety inspections. This was facilitated by designing and implementing a combined boating safety and AIS watercraft inspection form that enabled officers to conduct both types of inpsections simultaneously. The new integrated form collects data similar to those of the 100th Meridian Initiative boater survey form and the department's modified non-integrated boater survey form, but only prompts the officer to note the presence or absence of AIS and does not prompt for species or type (e.g. plant, animal) of any AIS encountered (Appendix G). However, officers have been thoroughly trained and briefed on the identification of zebra/quagga mussels and a reporting and rapid response protocol has been established. The form is available for other law enforcement agencies to use and is currently in routine use by the Clark County Sherriff's Department.

Integrated inspections were conducted both opportunistically in conjunction with routine enforcement patrols and during targeted integrated inspection emphasis patrols. The inaugural implementation of integrated inspections was conducted during an emphasis patrol, dubbed "Operation Basis," which took place over the 2008, 4th of July weekend. The patrol was conducted statewide with teams from each of the six department regions participating. The teams conducted inspections at launch ramps, marinas, and parks, both on and off the water. Each team was tasked with conducting as many surveys as was practical. The primary objective of Operation Basis was to improve public awareness of AIS issues and to inform the public about AIS laws, thus no citations were issued. Subsequent to the inaugural implementation of the integrated inspections, AIS infractions were subject to citation at the discretion of the officer. Since 2008, officers have conducted a total of 2,391 integrated inspections.

The numbers of integrated inspections by year from 2008-2011 are reported in Table 6. Inspections were conducted at 260 unique sites. Because the officers are regionally distributed, the number of inspection sites was nearly uniformly distributed between western and eastern Washington (127 and 133 sites, respectively) (Figure 8). When summed over all four years (2008-2011), two percent (58 watercraft) of the integrated inspections resulted in the detection of AIS. In 2008, the AIS detection rate was five percent; however, during subsequent years, detection rates dropped to two percent or less. All AIS contaminated watercraft were decontaminated either on-site or were directed to a nearby decontamination facility. Summed over all four years, 61 percent of survey respondents indicated that they cleaned their boat and trailer between launches– this is notably less than the 86 percent recorded from boater surveys. Summed over all four years, 55 percent of the survey respondents indicated that they know what AIS are and nearly as many indicated that they know of at least one Washington State AIS law.

Table 6. Integrated Watercraft Safety/AIS Inspections since 2008 by year, analysis element, and totals.

Year	Total # of Surveys Conducted	# of Unique Sites[1]	# of Survey Days	% of Boaters Surveyed Operating a non-Washington Registered Boat	% of Boaters Surveyed That Clean Their Boats Between Uses	% of Boaters Surveyed That Were Aware of AIS
2008	710	64	38	10%	61%	49%
2009	821	71	63	12%	57%	55%
2010	551	76	113	9%	70%	62%
2011	309	49	78	10%	56%	54%
Total	2,391	260	292	10%	61%	55%

[1] # of unique sites refers to the number of sites at which Inspections were not conducted during any of the previous years.

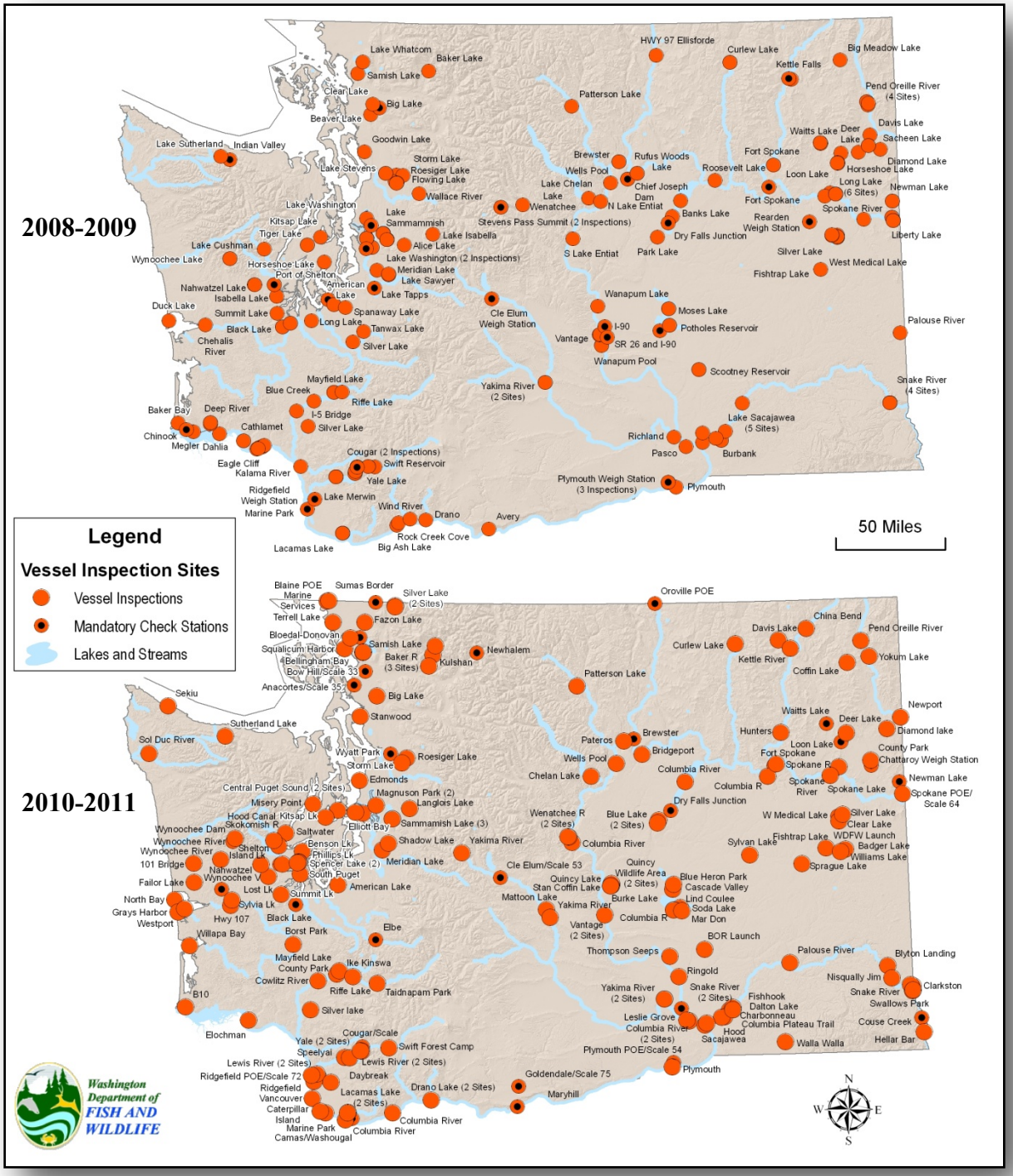


Figure 8. Sites where integrated watercraft safety/AIS inspections, and mandatory AIS watercraft check stations (see section 3.2.3), were conducted from 2008 through 2011. Sites for 2008-2009, and 2010-2011 are displayed separately to improve clarity.

3.1.3 Mandatory AIS watercraft check stations

In August 2008, the department implemented mandatory AIS watercraft check stations, which are considered the cornerstone of the comprehensive program. In addition to interdicting potential inter- and intra-state AIS transport, check stations provide an important avenue for public outreach and education. The interaction between department staff and citizens when exchanging information about AIS and Washington AIS laws while conducting mandatory check stations is a powerful tool in AIS prevention, and reaches many of those who might otherwise have not been informed. Prior to July 2007, AIS enforcement officers did not have the statutory authority to conduct mandatory check stations. Once this authority was granted, program staff spent the remainder of 2007 procuring signs and equipment, and developing the policies and protocols needed to implement the check stations. Thus, no mandatory check stations were conducted in 2007.

The new law (RCW 77.15.293) requires that anyone transporting watercraft must stop and allow the watercraft to be inspected by the department's enforcement- or WSP officers for the presence of AIS wherever check stations are present and posted as active. The mandatory check station protocol requires the presence of just one law enforcement officer, but normally, one or more AIS non-enforcement program staff are also present during the inspections. A survey form similar to that used for the boater surveys and the integrated watercraft safety/AIS inspections was used for the mandatory check stations to assess boater movements and maintenance habits (Appendix H).

A test of the mandatory check station protocol was conducted on August 16, 2008 at a boat launch in Kettle Falls on the Columbia River. Forty-four inspections were conducted and no AIS were detected. The first mandatory check station along a major interstate highway was conducted in Plymouth at the POE weigh station on U.S. 395 during August 22 and 23, 2008, and was dubbed operation "Plymouth Rock". Over the course of the operation, AIS were found on seven watercraft. As with the integrated watercraft safety/AIS inspections, the primary course of AIS law enforcement was to provide AIS awareness through education, thus offenders were issued verbal or written warnings at the check station and the watercraft were decontaminated on site.

The objective established prior to implementation was to conduct six check stations annually during the peak boater season in each of the department's six management regions - three along major roadways and three at high-traffic water bodies, for a statewide total of 36 per year. In spite of the limited resources available, AIS enforcement staff increased, annually, the number of check stations conducted from 11 in 2008 to 47 in 2011, though the regional distribution and division between major roadways and high-traffic water bodies fell short of the prescribed annual goal (Appendix I). Mandatory check stations were, however, approximately equally distributed between western and eastern Washington (Figure 7).

During the four-year period (2008-2011) a total of 2,955 mandatory AIS watercraft inspections were conducted at 53 unique sites (check stations were conducted at some sites on multiple occasions). Aquatic invasive species were detected on 3.5 percent (97) of the watercraft inspected. There are no data on the frequency of AIS occurrences by species prior

to 2010 as the field form used at mandatory check stations did not prompt inspectors to note the type of AIS encountered. A prompt was added to the form in 2010. Of the 97 watercraft that were contaminated with AIS, 63 were encountered in 2010-2011, after the revision to the form, and nearly all of the encounters were with aquatic weeds. All AIS contaminated watercraft were decontaminated on-site by department staff, or were directed to a nearby decontamination facility. Citations for AIS infractions were only issued to boaters who by-passed the mandatory check stations in violation of RCW 77.15.293, and were found to be transporting AIS. Such citations were issued on just two occasions and involved the transport of milfoil.

The numbers of mandatory check station inspections by year from 2008-2011 are reported in Table 7. Inspections were conducted at 53 unique sites over a four year period, some of which were conducted on multiple days for a total of 93 survey days. The overall AIS detection rate was low and ranged from two to five percent. Summed over all four years, 75 percent of survey respondents indicated that they cleaned their boat and trailer between launches– this is slightly less than the 86 percent recorded from boater surveys, but more than recorded from the integrated watercraft safety/AIS inspection surveys.

Table 7. Mandatory AIS check station inspections since 2008 by year, analysis element, and totals.

Year	Total # of Surveys Conducted	# of Unique Sites[1]	Total # of Survey Days	% of Boaters Surveyed Operating a non-Washington Registered Boat	% of Boaters Surveyed That Clean Their Boats Between Uses	% of Boaters Surveyed That Were Aware of AIS[2]
2008	411	10	11	13%	80%	No Data
2009	713	12	15	7%	61%	No Data
2010	791	9	20	18%	84%	No Data
2011	1,040	22	47	22%	76%	No Data
Total	2,955	53	93	15%	75%	No Data

[1] # of unique sites refers to the number of sites at which Inspections were not conducted during any of the previous years.

[2] The data form used for mandatory AIS check stations does not include an entry for public knowledge of AIS.

3.1.4 Nonresident watercraft analysis

Data from the three recreational watercraft management actions described above were combined and analyzed to more effectively determine the origin of nonresident boaters. Prior to 2010, the highest AIS priority was placed on managing for invasive risks posed by freshwater zebra/quagga mussels. Thus data acquired from inspections that were conducted at saltwater sites were not included; however, when respondents indicated on the survey that the last water body visited was saltwater; the data were included in the summary of last water bodies visited. While zebra/quagga mussel invasive risk management and prevention remain the top priorities for the program, in an effort to broaden the scope of the nonresident watercraft analysis to include pathway risks for other potential AIS, data from saltwater inspection sites was included in all data summaries after 2009.

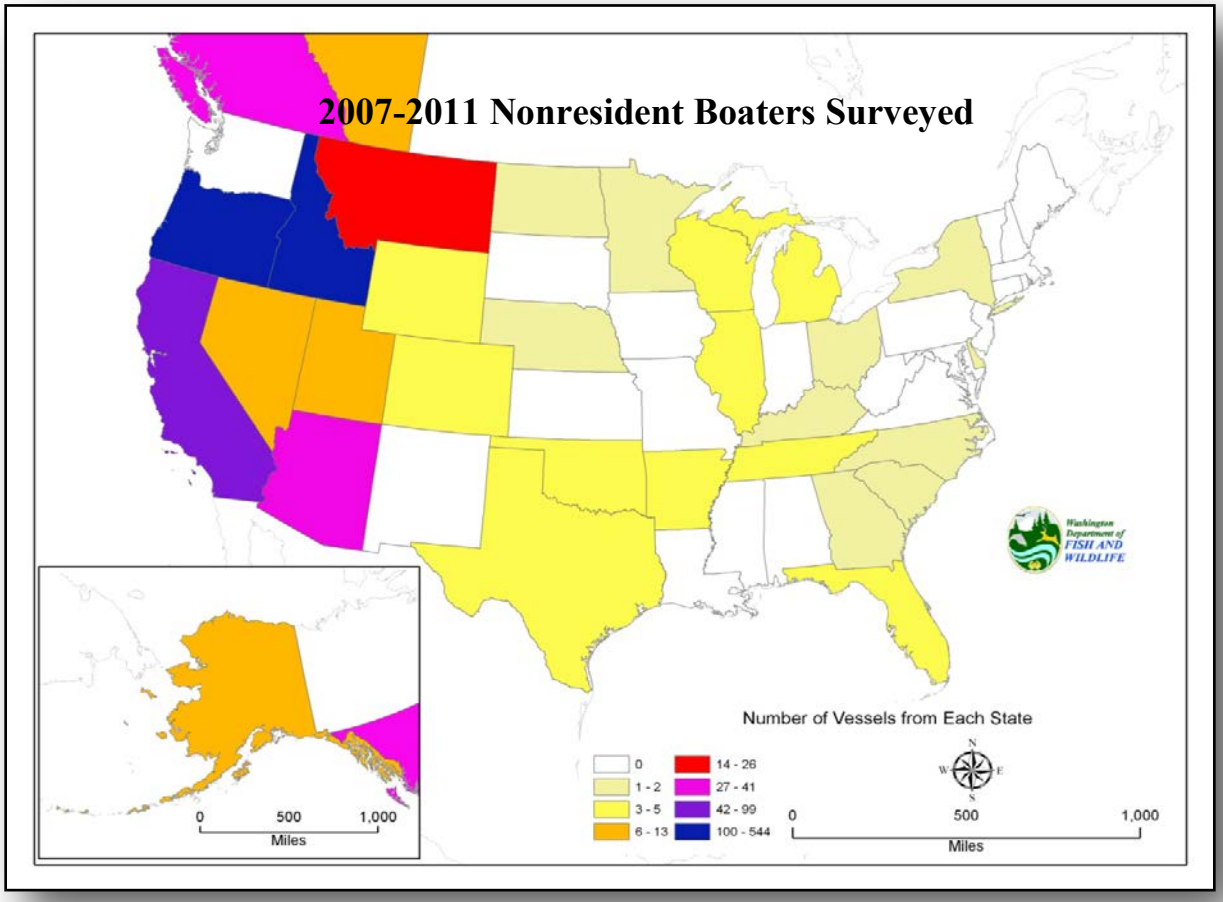


Figure 9. Map of the U.S. and southern Canada showing the origin of nonresident registered boats surveyed from each state or province. Data was acquired from freshwater inspection sites in 2007-2009, and from both freshwater and saltwater inspection sites in 2010-2011.

From a total of 268 unique sites (combined over all three watercraft management actions, i.e. boater surveys, integrated watercraft safety/AIS inspections, and mandatory AIS watercraft check stations), 14,654 watercraft were inspected (freshwater only 2007-2009, both freshwater and saltwater 2010-2011). Of those, 1,278 watercraft (9%) were registered outside the state of Washington (Figure 9). Nonresident watercraft were registered in 28 states, 18 of which are known to be contaminated with zebra/quagga mussels. Thirty seven watercraft were from two western provinces of Canada. Of those 28 states and two provinces, 12 include areas west of the continental divide. Although more than half of the states and provinces from which nonresident watercraft were registered are located east of the continental divide, they comprised only four percent of the total number of nonresident watercraft inspected. Overall, ID contributed by far the largest proportion of nonresident registered watercraft (544), followed by OR (450), CA (99), AZ (41), B.C. (30), MT (26), and UT (13). The remaining states and province contributed fewer than eight watercraft each (75 total). Although just 13 percent of the total number of watercraft inspected was registered in AZ, CA, UT, CO, NV, and ND, these states are considered to be particularly high risk sources due to known infestations of water bodies and their close proximity to Washington.

The data were also analyzed to determine the last water body visited by nonresident watercraft before entering Washington State (Figure 10). Of the 1,278 nonresident watercraft inspected, 403 provided information on the last water body visited before entering the state. Nonresident watercraft that had most previously been launched elsewhere in Washington prior to inspection were not included. Out of 118 different water bodies distributed over 17 states and 2 Canadian provinces, the ten most frequently visited just prior to Washington were, in descending order: Coeur d'Alene Lake, ID (57); Willamette River, OR (34); Dworshak Reservoir, ID (23); Lake Mead, AZ/NV (17); Pend Oreille Lake, ID (15); Clearwater River, ID (15); Clear Lake, CA (15); Shasta Lake, CA (12); California Delta, CA (12); Lake Havasu, AZ/CA (9). Of those ten, lakes Mead and Havasu are the only ones known to be contaminated with zebra/quagga mussels.

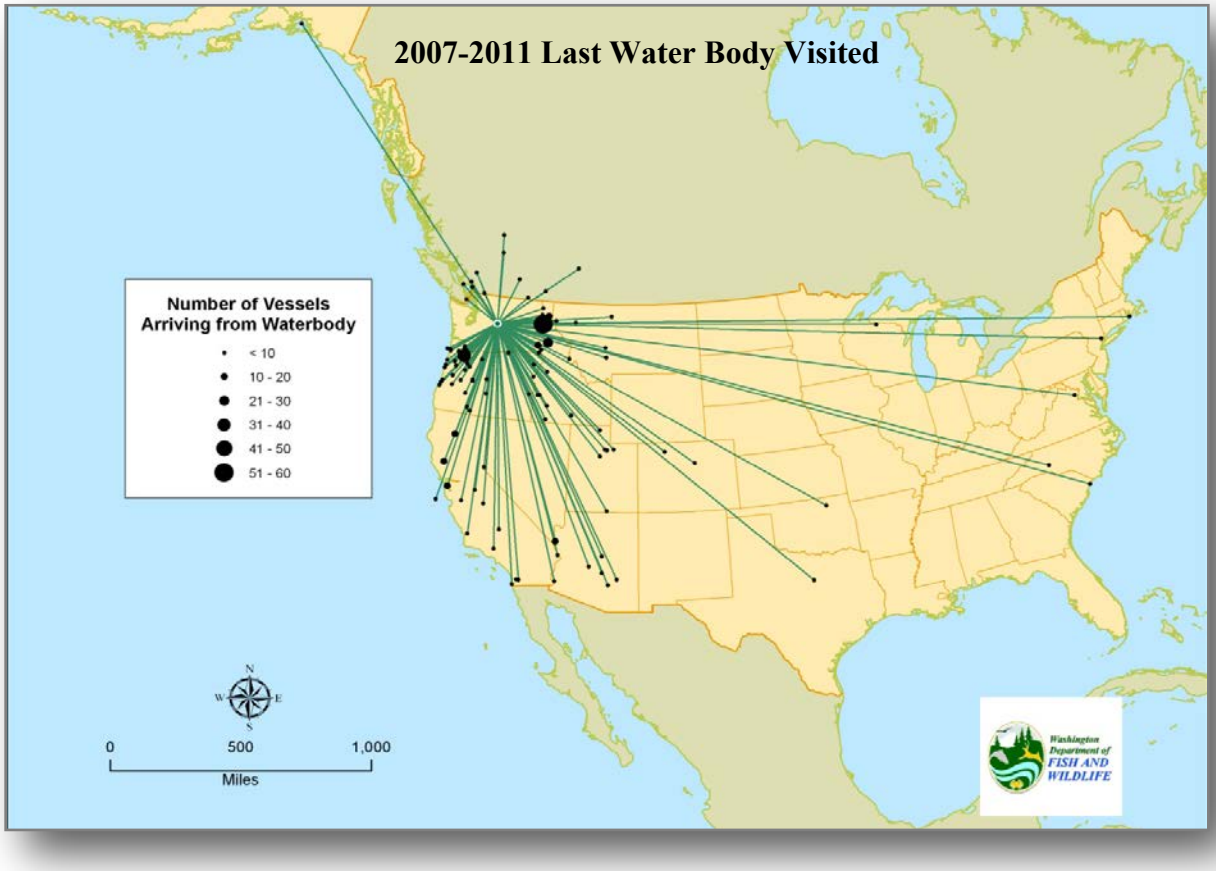


Figure 10. Map of the United States and Canada showing the location of the last water body visited by nonresident registered watercraft before entering the state.

In summary, the number of watercraft registered outside Washington State that arrived from east of the Continental Divide was greater than the number of eastern states water bodies that were last visited. This suggests that watercraft registered in eastern states visited water bodies west of the Continental Divide prior to entering Washington State. The vast majority (78 %) of nonresident watercraft inspected were registered in the neighboring states of ID and OR and these states are not known to be infested with zebra/quagga mussels. Of the ten non-Washington water bodies most frequently visited just prior to launching in Washington State, only two are known to be infested with zebra/quagga mussels. The combined boater origin

and movement data will be used to assist the department in identifying the highest risk travel vectors into Washington State, and enable future interdiction and enforcement efforts to be focused on those vectors. It will also assist with determining the optimum placement of *in situ* zebra/quagga mussel monitoring sites.

3.2 Zebra/Quagga Mussel Early Detection Monitoring

As a first level rapid response trigger, *in situ* early detection monitoring for zebra/quagga mussels has been conducted statewide on high-risk lakes and rivers since 2001. From 2001-2007, this monitoring consisted of plankton samples acquired from a network of citizen volunteers working from the shore. Citizen-supplied samples proved inconsistent in quality and did not provide sufficient geographic state-wide coverage of known high-risk water bodies. Beginning in 2008, the program was provided with dedicated funding to hire staff to collect samples from more sites, including sites in remote regions that were previously inaccessible to volunteer samplers; and to increase sample frequency. In 2009, they began collecting data on relevant water quality parameters (Figure 11) in order to identify the highest risk water bodies and the times of year that water bodies are at greatest risk of a viable introduction. In addition, the program has since received periodic assistance from various Tribes, public utilities, state and federal agencies, universities, and local municipalities.

Plankton sampling is intended to capture zebra/quagga mussels during their earliest life history stage (free-swimming veliger). The plankton sampling is conducted by towing or hand-pulling a funnel shaped net (64 micron mesh) (Figure 11) through the water either horizontally for a distance of approximately 100 feet, vertically as determined by depth, or both. The captured material is then preserved in sealed containers and shipped to a consultant for analysis. Initial volunteer monitoring efforts consisted only of near-shore vertical plankton tows. Subsequent to 2007, program staff began conducting both types of tow at both near-shore and offshore sites. The vertical and horizontal tows were combined into one sample at each site.

Beginning in the spring of 2009, some monitoring sites were supplemented with the placement of artificial substrates similar to those used by the California Fish and Game Department. The substrates provide an additional means by which to detect the presence of zebra/quagga mussels before they reached adulthood. The substrates are constructed of four six-inch PVC squares affixed to a ¾ inch line through a hole in the center of each square and spaced one inch apart (Figure 11). Each substrate is hung vertically to a depth of approximately 1 meter from the lake or river bottom. The substrates are inspected visually and by touch for the presence of recently settled juvenile mussels. Deployment sites were chosen based on one or more of the following criteria: a) water quality conducive to mussel settlement and survival; b) accessibility; c) proximity to industrial, agricultural, and municipal water intake facilities; e) watercourse connections with adjacent water bodies, and; d) occurrence of periodic events such as fishing tournaments, local festivals, and holidays. The substrates are inspected opportunistically, but at least once annually, usually during non-winter months. Where field inspection is not sufficient to determine species, substrates are

removed and transported to the laboratory for microscopic examination and replaced with a new artificial substrate.

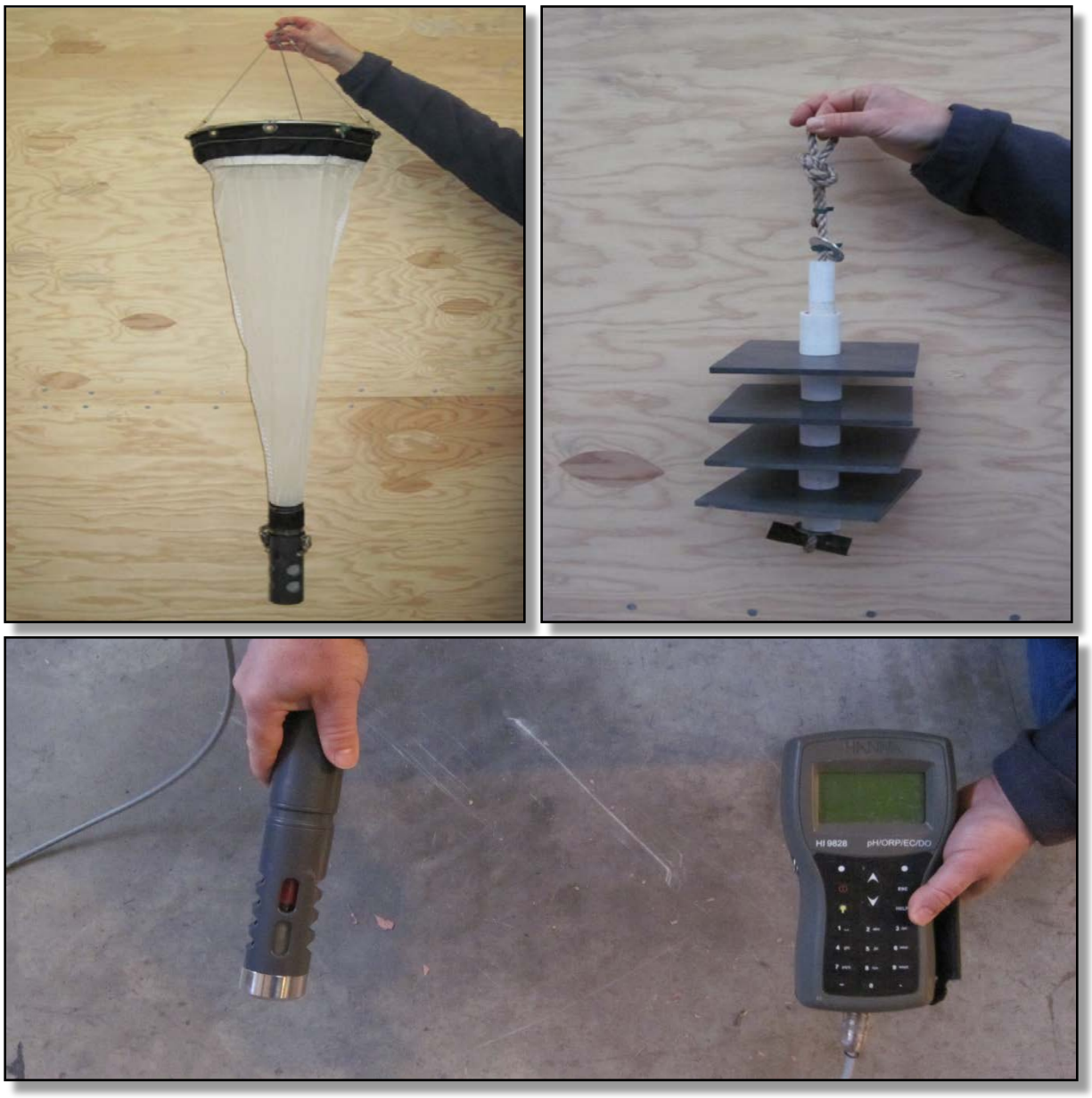


Figure 11. Zebra/quagga early detection monitoring equipment. Clockwise from top: 64- micron mesh plankton net; artificial substrate; and instrument used to record water quality parameters.

From 2008-2011, a total of 1,141 plankton tows were conducted (757 in eastern- and 384 in western Washington). From 2010-2011, artificial substrates were deployed at 172 unique sites (106 in eastern- and 66 in western Washington). At least one combined vertical and horizontal plankton tow was taken at all but three of the sites. Fifty-seven additional sites, most of which were not conducive to substrate deployment, were sampled for plankton only. Thus, a total of 229 unique sites (142 in eastern Washington and 87 in western Washington) representing 91 different water bodies equally distributed between eastern and western

Washington were monitored by either plankton tow, artificial substrate, or both (Table 8). The Columbia River drainage system was intensively sampled as it is considered to be at greatest risk of infestation. (Figure 12).

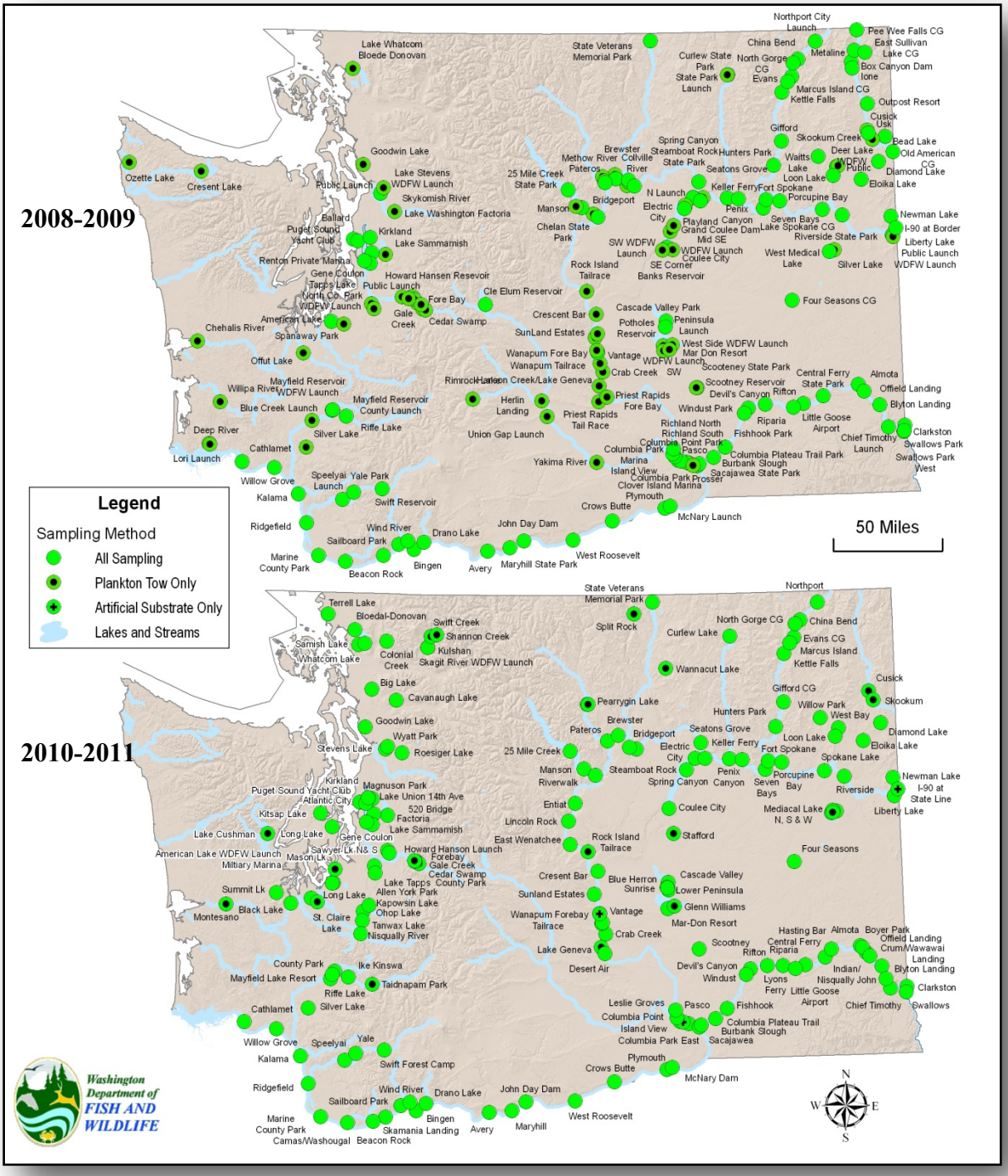


Figure 12. Zebra/quagga mussel early detection monitoring sites. Sites for 2008-2009, and 2010-2011 are displayed separately to improve clarity.

Table 8. Summary of zebra/quagga mussel early detection monitoring efforts.

Year	# of Occasions on Which Only Plankton Tows Were Conducted	# of Occasions on Which Only Substrate Monitoring Occurred	# of Occasions on Which Both Plankton Tows & Substrate Monitoring Occurred Simultaneously	# of Occasions on Which Water Quality Parameters Were Measured	# of Unique Sites at Which One or More of the Preceding Was Conducted[1]	Total # of Sites at Which One or More of the Preceding Was Conducted
2008	131	0	0	0	75	75
2009	397	9	83	223	106	136
2010	63	87	164	244	18	137
2011	70	34	233	296	30	157
Total	661	130	480	763	229	505

[1] # of unique sites refers to the number of sites that were not visited during any of the previous years.

To date, none of the monitoring site samples have tested positive for the presence of zebra/quagga mussels in any of the water bodies thus far sampled. In the event that a positive sample is found, early detection will enable the implementation of a localized rapid response, thus increasing the likelihood of controlling or eradicating the infestation. Further, results from early detection monitoring will help facilitate mitigation should harm occur to the environment, local economic interests, or human health, as a result of an infestation. Decreased funding since 2009 has hampered the program's ability to comprehensively conduct statewide monitoring by reducing the frequency at which sites can be visited, and reducing the number of plankton samples that can be analyzed for the presence of zebra/quagga mussels.

3.3 Rapid Response Capability, Coordination, and Actions

The purpose of rapid response is to hit a newly discovered infested site hard and fast in order to quickly eliminate or minimize any potential damage from AIS and to halt their spread. Washington State is at the forefront in developing and promoting the active implementation of this prevention strategy in the West. Rapid response actions can range from decontamination of transported watercraft incident responses to full scale multi-agency containment and eradication using an incident command management structure. For instance, for the last several years, the department has been a member of the Pacific States Marine Fisheries Commission (PSMFC) 100th Meridian Initiative Columbia River Basin Team. The team's primary objective is to keep the Columbia River free of zebra/quagga mussels and to maintain rapid response preparedness in the event that they are detected in the watershed. The department has maintained an active role in working with the team, including participating in annual table top scenarios designed to test and refine rapid response capabilities.

The department has developed basic rapid response capabilities for trailerable AIS contaminated watercraft (see *Case Study: Rapid Response Incident* on page 18). Since 2006, the department has responded to 37 incidents of watercraft entering Washington that were contaminated with zebra/quagga mussels (Appendix J). Out of the 37 incidents, Enforcement officers have issued one felony, 14 gross misdemeanor citations (two pending), and 16 warnings. Many of these were found during routine inspections by the WSP at one of their five POE weigh stations (Figure 13).

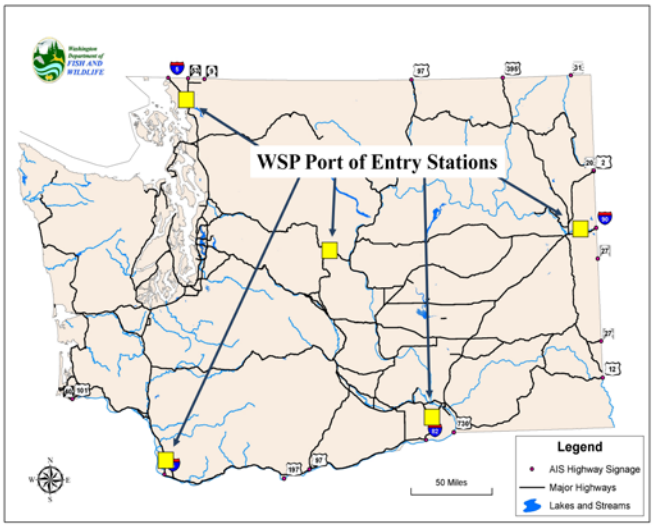


Figure 13. Map showing locations of the five Washington State Patrol POE weigh stations.

Where possible, owners of infested watercraft were directed to a secure commercial boatyard for decontamination at their expense. In situations where the watercraft required on site decontamination, program staff used our trailered hot water pressure system. In 2011, the department started charging staff time costs to owners of infested watercraft for onsite decontamination services. This occurred seven times with a range of charges from $53 to $824 depending upon watercraft location, size, and degree of infestation. In total, the program has collected $2,645 for these services to date.

In most cases, commercial boat haulers and watercraft owners have been very cooperative, but there have been a few difficult, and even dangerous incidents that underscore the importance of having well-trained enforcement staff. For example, in June, 2011, the program was notified by Idaho State officials that a vessel inspected by the ISDA was contaminated with zebra/quagga mussels and was apparently heading for Washington. The owner of the vessel had recently purchased it in Ohio and was bringing it to Washington's Roosevelt Lake. The vessel was voluntarily detained in Idaho pending notification of the program's enforcement officer, and to allow the department's Enforcement Division sufficient time to organize an interception of the vessel upon arrival in Washington. A second call from Idaho a short while later informed the program's enforcement officer that the vessel owner had turned uncooperative and had left the Idaho check station. The officer provided a description of the vessel obtained from Idaho to other department Enforcement Division staff in the area, along with the WSP and the Spokane County Sherriff's Office. Strategically positioned law enforcement officers waited several hours for the vessel's arrival in Washington, but it was not seen and officers concluded that the owner had left the highway in order to avoid contact with Washington's law enforcement officers. Local law enforcement agencies along the vessel's anticipated route were notified and asked to stay on the alert. The following morning, a Lincoln County Sherriff's deputy spotted and seized the vessel at a Davenport residence. The vessel owner is believed to have been deliberately avoiding law enforcement officers due to non-AIS related legal issues. The vessel was decontaminated by program staff and criminal charges against its owner are pending.

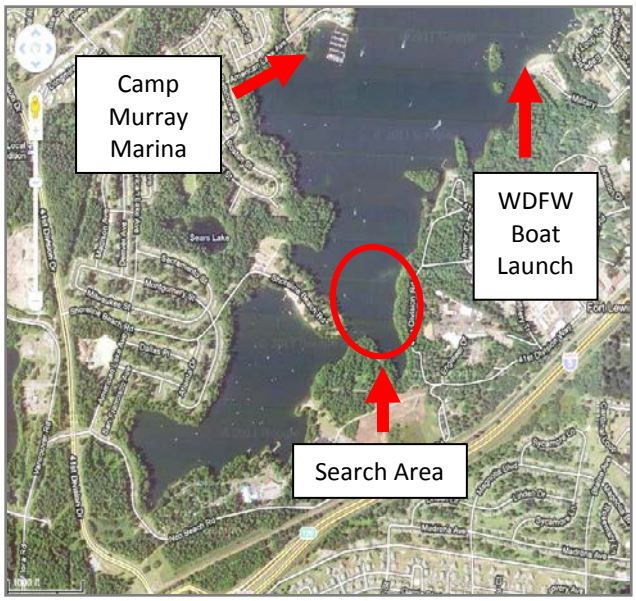
The department is also working with regional partners to develop and test a comprehensive regional rapid response plan. In October of 2008, Governor Gregoire signed a non-binding agreement to implement the regional Columbia River Basin Interagency Invasive Species Rapid Response Plan (CRB plan). Additional signatories to the plan include governors from the states of ID, OR, and MT, the United States Department of the Interior, the Columbia River Inter-Tribal Fish Commission, and the Premier of British Columbia, Canada. The purpose of the CRB plan is to coordinate a rapid, effective, and efficient interagency response in order to delineate, contain, and when feasible, eradicate zebra/quagga mussels or other high-risk AIS infestations. The CRB plan is based on an incident command management structure and is heavily dependent on the preparedness and resources available within each state. It is anticipated that the Washington Invasive Species Council would provide the key interagency coordination forum if an infestation occurred in Washington State. Annual training exercises have been held around the region to test the plan using varying hypothetical scenarios such as: an infested barge found in Portland, Oregon; a positive detection of a veliger on the Snake River in Idaho; finding mussels in Lake Roosevelt, and most recently the detection of adult quagga mussels at the headwaters of the Columbia River in Montana.

Finally, the program responds to public reports of AIS through both the WISC and program reporting hotlines. These include sightings of suspected AIS such as New Zealand mudsnails, zebra/quagga mussels, turtles, and nutria (see *Case Study: American Lake* and *Case Study: Turtle on The Loose*). Sometimes people suspect AIS for sale at pet shops or on the internet, and sometimes the find something while fishing or boating. These reports are important opportunities to support public stewardship and provide AIS education and outreach.

3.4 Enforcement Emphasis Patrols

In addition to routine patrols that include enforcing AIS laws, emphasis patrols are also conducted. Emphasis patrols are geared toward a combination of maximizing the prevention of AIS introductions and raising public awareness. They may include operating mandatory or voluntary watercraft inspections at strategically selected sites (see Section 3.1), targeted officer patrols, or conducting marketplace inspections for prohibited AIS (see Section 3.5). Because outreach and education are considered important elements of the emphasis patrols, individuals found in violation of AIS laws are often exempt from criminal prosecution provided they are cooperative and follow the department's directives to eliminate the threat.

Case Study: American Lake

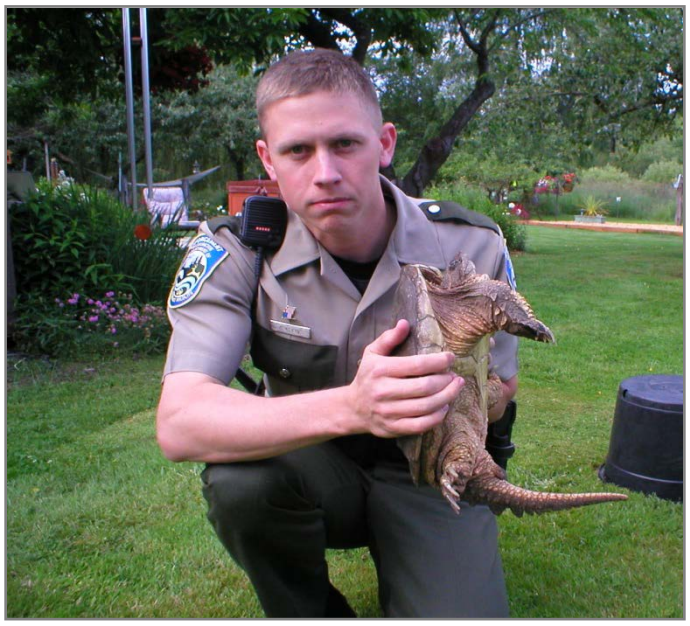


A citizen reported to the department in June of 2011, the possible detection of zebra/quagga mussels in Tacoma's American Lake. A woman was fishing when she snagged what appeared to be a small cluster of mussels firmly attached to a branch. At the time, she did not think they were zebra/quagga mussels and returned them to the water. Upon reflection and an internet search when she reached home, she concluded that they could be zebra/quagga mussels after all and she contacted the program.

American Lake is considered a high risk water body due to its heavy year-round recreational use. Joint military Base Lewis-McChord maintains a marina on the west side of the lake for military personnel boats which receives frequent arrivals from other military installations across the country. There are two long-term early detection monitoring stations on American Lake. The one nearest to the reported detection is at the department's public boat launch. All plankton tows from the station have been negative for the presence of zebra/quagga veligers.

Based on this information, the detection site was surveyed by program staff over the following two days. Staff conducted a comprehensive survey of the area using a grapple hook deployed to various depths. They pulled up numerous branches from throughout the area. Some small aquatic snails were found attached to branches (see picture), but no mussels were detected. Staff also used an underwater video camera to survey deeper water, a face mask to scan shallow areas, and walked the water's edge along the shoreline. Since the water temperature was high enough for zebra/quagga mussel reproduction, plankton tows were also conducted and the substrate monitoring site was inspected. The substrate material was clean and the plankton tows came back negative. Based on the results of the area-wide survey, the program concluded that the report was a case of mistaken identity and that no zebra/quagga mussels are present in American Lake.

Case Study: Turtle on the Loose



In June of 2011, a citizen reported that a turtle was blocking traffic on a roadway near downtown Olympia, Washington. An enforcement officer was dispatched to the scene; however, there was no evidence of a turtle, and the traffic appeared to be moving unimpeded. The program was later notified by Thurston County Animal Services that they had captured the turtle and they requested assistance. An enforcement officer from the program responded and confirmed the turtle's identity as a common snapping turtle, which in Washington, is a prohibited aquatic animal species. The turtle was large and appeared to be healthy. It is likely that the turtle was purchased illegally as a pet and released when it became too much of a burden on its owner. Facilities that could legally possess the turtle were contacted but none were able to provide proper care for the turtle. Consequently, and unfortunately, the turtle was later euthanized.

Case Study: Bags of Bullfrogs

In 2011, department enforcement officers conducted a routine inspection at a market in Seattle. The officers observed two bags that appeared to be moving and upon inspection, discovered that the bags were full of live common bullfrogs. The officers informed the store manager that bullfrogs are a prohibited aquatic animal species in Washington. The bullfrogs were shipped from Vietnam and were intended to be sold for human consumption. The bullfrogs were ordered to be euthanized and the owner was issued a written warning.

3.5 AIS Marketplace Enforcement/Investigations

The program remains vigilant to other AIS that may be introduced via other pathways. Other ways that AIS can find their way into the state include the pet trade, commercial aquaculture, and the transport and sale of live seafood and ornamental plants (see *Case Study: Bags of Bullfrogs*). The department's enforcement officers are trained to actively look for AIS in the course of conducting routine marketplace inspections, and to enforce relevant AIS laws when necessary (Figure 14). In addition to routine marketplace inspections, officers also conduct investigations that focus on pet shops, commercial freight haulers, and marketplaces.

Figure 14. Washington Department of Fish and Wildlife enforcement officer conducts a routine inspection of recently arrived live aquarium-trade fish at Sea-Tac International Airport (left). Live blue crab (not a prohibited AIS in Washington) recently shipped from the east coast (right).

3.6 Prevention and Enforcement Training

Washington State has many stakeholders that could potentially be affected by AIS. They are considered valuable allies in the fight against AIS and the department has made it a priority to identify potentially impacted stakeholder groups and provide them with AIS prevention and enforcement training. The training provides valuable opportunities to interact with the public and other government agencies on AIS issues and increases the program's ability to bring outside resources to bear on enforcement and prevention activities when necessary.

3.6.1 Internal agency training

During 2008 and 2009, the program conducted four training sessions for department field staff. The sessions were conducted during the Spring prior the beginning of the peak boater season. Approximately 150 department employees attended the four-hour training sessions. Training topics included introductory overviews of AIS, AIS Legislation, basic AIS identification, identification and life history of zebra/quagga mussels, potential harmful effects of AIS, watercraft inspection techniques, documenting inspections, and procedural protocols when AIS are detected. In 2011, the department hired 13 new officers to fill vacancies from recent retirements. These new officers received similar training and were given field experience with AIS prior to beginning their field training program. They were also briefed on the implementation of a new department policy on managing invasive species (see Section 2.0 & Appendix B).

3.6.2 Washington State Patrol Commercial Vehicle Enforcement Officers Training and Port of Entry inspections

The WSP is a key player in Washington's zebra/quagga mussel interdiction efforts and actively inspects commercially hauled watercraft that are required to stop at one of their five POE weigh stations. The department's Enforcement Division is specifically directed by RCW 77.12.879, to provide training to WSP employees working at POE weigh stations on how to inspect watercraft for the presence of AIS. Since 2008, the department has conducted four training sessions for Commercial Vehicle Enforcement Officers (CVEOs) at the Shelton WSP academy. Approximately 65 CVEOs attended the four-hour training sessions. The training covered Washington State AIS legislation, introduction to AIS, identification and life history of zebra/quagga mussels, AIS impacts to the Pacific Northwest, inspection techniques, documentation of inspections on certification forms, and procedural protocols if AIS are detected.

3.6.3 County and municipality law enforcement agency training

In 2009, the program conducted two well attended AIS training sessions for county and municipal law enforcement agencies as described in the 2010 AIS Prevention and Enforcement program Report to the Legislature. In 2011, the department's enforcement staff continued to offer training to all county and municipal law enforcement agencies that have marine enforcement divisions, and that wished to participate in the training. Three training sessions were held, the first of which was held in Pierce County and was attended by the entire Pierce County Sherriff's Department Marine Unit. The second training session was offered exclusively to enforcement officers working in Chelan County and was attended by WSP Troopers, Chelan County Deputies, and Chelan County Marine Patrol Volunteers. The third and final session was held at the Washington State Marine Law Enforcement Conference in Thurston County and was offered to all of the agencies in attendance which included deputies and officers from: Lewis County Sheriff's Office (SO); Thurston County SO; Mercer Island Police Department (PD); Snohomish County SO; Spokane County SO; Ferry County SO; Grays Harbor County SO; Kent PD; Ocean Shores PD; Walla Walla County SO; Asotin County SO; Cowlitz County SO; Yakima County SO; Olympia Harbor

Patrol; Port Orchard PD; Mason County SO; Whatcom County SO; Everett PD; Tacoma PD; Black Diamond PD; Benton County SO; Kitsap County SO; Skagit County SO; Pend Oreille County SO; and Okanogan County SO.

3.6.4 Federal agency training

The department has continued its efforts in 2011 to ensure that federal agencies operating within Washington State are aware of what steps the department is taking to minimize and prevent the threats posed by AIS. In 2011 training was offered to the US Army Corp of Engineers at their regional meeting in the Tri-Cities. This meeting was attended by representatives from several of their facilities including: McNary Lock and Dam (OR); Ice Harbor Lock and Dam (WA); Lower Granite Lock and Dam (WA); Dworshak Dam and Reservoir (ID); Lucky Peak Dam and Lake (ID); Mill Creek Project (WA); and the Walla Walla District Office (WA). A training session was also delivered later in the year for a representative from the U.S. National Park Service.

3.7 State and Regional Coordination

Washington is a water-rich state with both extensive marine and freshwater resources which are actively used by recreational and commercial communities. Protection of these water resources is shared by numerous local, state, federal, and tribal authorities. As AIS do not recognize boundaries between property owners and authority boundaries, coordination and collaboration is critical to successful management. Within the state, the program serves as the lead for coordination, collaboration, and management of AIS animals. The program supports statewide coordination through the WISC, the ANSC, and other stakeholder forums. Examples include:

- Assisting the various county and municipal agencies that have jurisdiction over Lake Whatcom in Whatcom County. These agencies approached the department seeking assistance in developing their own local AIS prevention management strategies and response plans. The program responded by providing training for conducting AIS check stations and has increased its monitoring efforts in the region.
- Collaborating with the DES, the City of Olympia, and other stakeholders on addressing the NZMS infestation in Capitol Lake (see Section 2.2.2).
- Coordinating with the PSP, the Skokomish Tribe, Taylor Shellfish, and other members of the Tunicate Response Advisory Committee on prioritizing management efforts in the Puget Sound region (see Section 2.2.3).
- Collaborating with other divisions within the department, the Kalispel Tribe of Indians, and Eastern Washington University in an effort to identify where Northern Pike are present and what actions should be taken to eradicate them.

Regionally, the Pacific Northwest is woven together by a shared system of complex freshwater lakes and rivers. The Columbia River basin (see Figure 4) is the dominant system that links together five states (WA, OR, ID, MT, and NV) and two Canadian provinces (British Columbia and Alberta). Coordination with those and other western states is critical to successful prevention by keeping as large a buffer as possible from the nearest infested waters, by successfully catching and decontaminating infested watercraft that make it into the region, and by developing and implementing consistent inspection, decontamination, early

detection, and rapid response plans. The program supports regional coordination and focuses on strong working relationships with local, state, federal, tribal and stakeholder partners through collaborative forums such as the 100th Meridian Initiative's Columbia River Basin Team and the ANS Task Force Western Regional Panel of the. Members in these forums then reach out to other entities such as the Northwest Power Planning Council, the Pacific Northwest Economic Region partnership, and the Western Association of Fish and Wildlife Agencies. Examples include:

- Participation on annual Columbia River Rapid Response Plan tabletop exercises (see Section 3.3).
- Helping the ANS Task Force Western Regional Panel develop and implement the Quagga/Zebra Action Plan which brought in an additional $51,000 in federal funding to the program last year.
- Assisting the Idaho State Department of Agriculture (ISDA) during the design and implementation phase of its AIS program. This assistance included several trips to Idaho, where department staff have provided hands on training and input at planning meetings. The experience gained in forming the working relationship with Idaho provided a launch-pad toward further cooperative arrangements with other jurisdictions. In return, ISDA check stations are providing Washington with a very effective first line of defense in stopping most infested watercraft and alerting us if their destination is our state.
- Contributing to the creation of the "Don't Move a Mussel" videos produced by the PSMFC. The video series targets both recreational boaters and seaplane pilots and provides information on how to properly inspect and decontaminate their watercraft and equipment.

3.8 Education and Outreach

Public education and outreach plays a vital role in the program's campaign to keep the public informed on AIS issues and providing instruction on how to prevent the introduction and spread of AIS in Washington.

3.8.1 AIS educational outreach presentations and display booths

Figure 15. Aquatic invasive species information booth at the 2009 "Go Play Outside" youth exposition.

The program conducted several AIS education and outreach presentations to various stakeholder groups in 2008 and 2009. Some of the groups included: Yakima Fly Fisher club; Puget Sound Anglers; Evergreen Bass club; Moses Lake Bass & Walleye club; the "Atomic Ducks" recreational scuba diver club; Quincy School District "Water Festival"; and the Tri-Cities Irrigators Water Conservation District. The program also operated an AIS display booth at the 2008 and 2009 "Go Play Outside" youth expositions (Figure 15). The booth included the AIS enforcement vehicle as part of the display. It was estimated that over 6,000 youths attended the two expositions. More recently, in 2010 and 2011, program staff conducted presentations to the North American Lakes Management Society, Sunnyside Valley Irrigation District, Kelp Krawlers recreational scuba diver club, Cabelas Appreciation Days event, the Big Horn Show in Spokane, and Komachin Middle School in Lacey. With reductions in staff due to budget cuts, the program's ability to continue to provide education and outreach to clubs, schools, and public events will likely be minimal.

3.8.2 AIS "Toll-Free" information line

The department implemented a toll-free AIS informational hotline, which serves as the primary contact system for the public. The line provides a recorded message and a touch-tone menu that includes information about the Boat Inspection Program, how to report AIS sightings, and how to find out more about AIS. The caller receives in-depth information about the Boat Inspection Program that enables them to determine whether there is a need for an inspection. If the caller is reporting an AIS sighting or wishes to learn more about AIS, they are routed directly to program staff.

1–888-WDFW-AIS (933-9247)

3.8.3 Department AIS web pages

The department periodically updates its AIS web pages to reflect the overall development and scope of the program. The pages provide both general and specific AIS information to the general public that relate to the threat of AIS, AIS laws, contact information for obtaining vessel inspections, AIS identification, and preventative measures that may be taken to reduce AIS spread. The home page address is: http://wdfw.wa.gov/ais/.

3.8.4 Fishing pamphlet

Over 600,000 people purchase a department recreational fishing license each year. Most of these recreational fishing license holders receive a copy of the department's Sport Fishing Rules pamphlet when they purchase their licenses. The pamphlet provides a convenient and low-cost outlet for conveying information about AIS to a large segment of the recreational fishing population. The program displays full page AIS informational ads in the pamphlets that include the toll free hotline access number and web site address (Figure 16). Both the hotline and the website receive regular traffic from concerned citizens wishing to report AIS sightings or attain information on AIS including watercraft inspections.

Figure 16. Examples of full page aquatic invasive species informational ads in the Department's Sport Fishing Rules pamphlet.

3.8.5 Highway signage

In 2008, the department contracted with the Washington State Department of Transportation to fabricate and install 20 mandated AIS highway signs. The requirements for the signs are outlined in RCW 77.12.882. These signs inform and warn watercraft owners about AIS, the penalties associated with the transportation of AIS, and contact information for obtaining a free inspection. The signs come in two sizes, 12' x 8' for multi-lane highways and 8' x 6' for two lane highways, and they are positioned at strategic border crossings around the state (Figure 17).

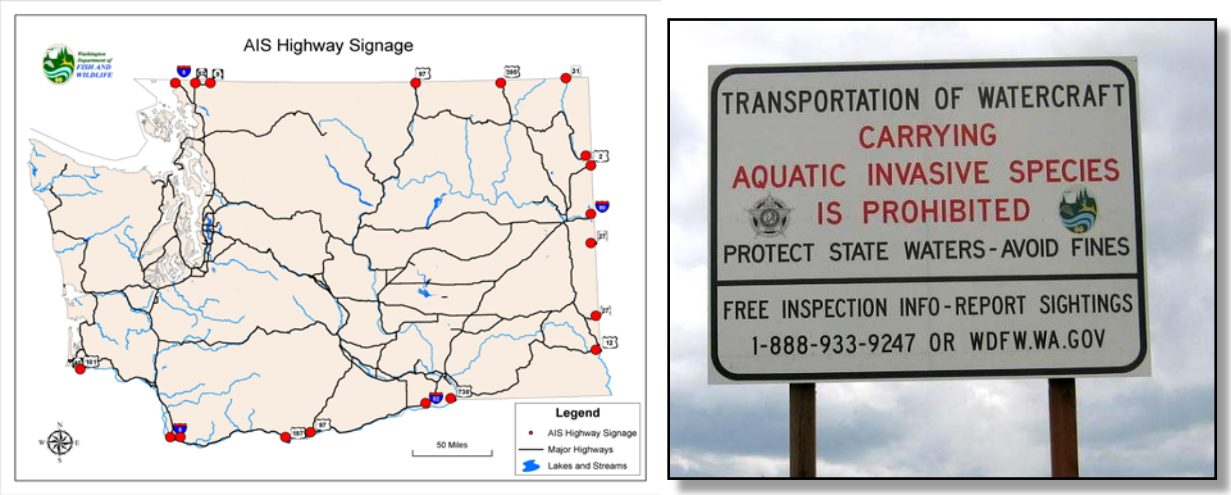


Figure 17. Map of the 20 large highway sign locations along the Washington State border and a picture of the sign.

4.0 Appendices

Appendix A WDFW AIS Prevention and Enforcement Legislative Mandates
Appendix B WDFW Policy 5310 – Managing Invasive Species
Appendix C AIS Prevention Account revenues, expenditures, variances, and balances.
Appendix D Washington Invasive Species Council Management Priority Species
Appendix E Western States with Watercraft Pathway Prevention Plans
Appendix F Washington State Volunteer Vessel Survey Form
Appendix G Integrated AIS/Boater Safety Inspection Form
Appendix H Mandatory AIS Check Station Inspection Form
Appendix I List of 2008-2011 AIS Check Station Locations
Appendix J Rapid Response Incident Summary

Appendix A

WDFW AIS Prevention and Enforcement Legislative Mandates

RCW 77.12.879
Aquatic invasive species prevention account — Aquatic invasive species prevention program for recreational and commercial watercraft — Enforcement program — Check stations — Training — Report to the legislature.

(1) The aquatic invasive species prevention account is created in the state treasury. Moneys directed to the account from RCW 88.02.640(3)(a)(i) must be deposited in the account. Expenditures from the account may only be used as provided in this section. Moneys in the account may be spent only after appropriation.

(2) Funds in the aquatic invasive species prevention account may be appropriated to the department to develop an aquatic invasive species prevention program for recreational and commercial watercraft. Funds must be expended as follows:

(a) To inspect recreational and commercial watercraft;

(b) To educate general law enforcement officers on how to enforce state laws relating to preventing the spread of aquatic invasive species;

(c) To evaluate and survey the risk posed by recreational and commercial watercraft in spreading aquatic invasive species into Washington state waters;

(d) To evaluate the risk posed by float planes in spreading aquatic invasive species into Washington state waters; and

(e) To implement an aquatic invasive species early detection and rapid response plan. The plan must address the treatment and immediate response to the introduction to Washington waters of aquatic invasive species. Agency and public review of the plan must be conducted under chapter 43.21C RCW, the state environmental policy act. If the implementation measures or actions would have a probable significant adverse environmental impact, a detailed statement under chapter 43.21C RCW must be prepared on the plan.

(3) Funds in the aquatic invasive species enforcement account created in RCW 43.43.400 may be appropriated to the department and Washington state patrol to develop an aquatic invasive species enforcement program for recreational and commercial watercraft. The department shall provide training to Washington state patrol employees working at port of entry weigh stations, and other local law enforcement employees, on how to inspect recreational and commercial watercraft for the presence of aquatic invasive species. A person who enters Washington by road transporting any commercial or recreational watercraft that has been used in any designated aquatic invasive species state or foreign country as defined by rule of the department must have in his or her possession valid documentation that the watercraft has been inspected and found free of aquatic invasive species. The department is authorized to require persons transporting recreational and commercial watercraft to stop at check stations. Check stations must be plainly marked by signs, operated by at least one uniformed fish and wildlife officer, and operated in a safe manner. Any person stopped at a check station who possesses a recreational or commercial watercraft that has been used in any designated aquatic invasive species state or foreign country as defined by rule of the department, or that is contaminated with aquatic invasive species, must bear the expense for any necessary impoundment, transportation, cleaning, and decontamination of the watercraft. Any person stopped at a check station who possesses a recreational or commercial watercraft that has been used in any designated aquatic invasive species state or foreign country as defined by rule of the department, or that is contaminated with aquatic invasive species, is exempt from the criminal penalties found in RCW 77.15.253 and 77.15.290, and forfeiture under RCW 77.15.070, if that person complies with all department directives for the proper decontamination of the watercraft and equipment.

(4) The department shall submit a biennial report to the appropriate legislative committees describing the actions taken to implement this section along with suggestions on how to better fulfill the intent of chapter 464, Laws of 2005.

Appendix A: Continued

RCW 77.12.882
Aquatic invasive species — Inspection of recreational and commercial watercraft — Rules — Signage.

(1) The department shall adopt rules governing how and when the owners of recreational and commercial watercraft may request an inspection of the watercraft for the presence of aquatic invasive species. The department may coordinate with other states on inspection requirements and may determine when other state inspections meet Washington standards.

(2) The department shall develop and post signs warning vessel owners of the threat of aquatic invasive species, the penalties associated with introduction of an aquatic invasive species, and the contact information for obtaining a free inspection. The signs should provide enough information for the public to discern whether the vessel has been operated in an area that would warrant the need for an inspection. The department shall consult with the state patrol and the department of transportation regarding proper placement and authorization for sign posting.

(3) All port districts, privately or publicly owned marinas, state parks, and all state agencies or political subdivisions that own or lease a boat launch must display a sign provided by the department as described under subsection (2) of this section. Signs must be posted in a location near the boat launch to provide maximum visibility to the public.

(4) The department must coordinate with the Washington state parks and recreation commission to include such information in all boating publications provided to the public. The department shall also include the information on the department's internet site.

Appendix B

POL – 5310 MANAGING INVASIVE SPECIES

This policy provides direction for Washington Department of Fish and Wildlife (Department) practices with regard to preventing the spread of nonnative invasive species, to address the risks that invasive species pose to the ecosystems and economy of Washington State. It does not provide guidance for determination of what species are categorized as nonnative or invasive species. This policy applies to all Department employees and volunteers. However, if policies or procedures are in conflict with or are modified by a bargaining unit agreement, the agreement language shall prevail. Fiscal impacts may be phased in based upon available revenue.

DEFINITIONS:

Invasive Species - Invasive species are nonnative species classified by the Fish and Wildlife Commission (Commission) as prohibited invasive or regulated aquatic invasive. For purposes of this policy, plants on the State Noxious Weed List (RCW 17.10.010) are also defined as Invasive Species.

Manage – to prevent, contain, control, and/or eradicate the introduction or spread of invasive species.

Nonnative species – any species or other viable biological organism occurring within a defined and documented geographic range or ecosystem limit of Washington State, where its presence in that region is the result of human intervention. Nonnative species may include genetically modified and cryptogenic species.

Noxious weeds – are designated by the Department of Agriculture as a plant that when established is highly destructive, competitive, or difficult to control by cultural or chemical processes as defined under RCW 17.10.010. 1. **1. Invasive Species Pose a Very Serious Risk to Washington's Ecosystems and Native Species.**

Nonnative invasive species significantly threaten the ecological integrity of our natural systems. Nationwide, invasive species are one of the primary risk factors facing threatened and endangered species.

2. Department Activities Shall Prevent the Introduction and Spread of Invasive Species.

Prevention is the "gold standard" when dealing with invasive species. Prevention of new species from establishing and existing infestations from spreading results in the least amount of environmental and economic harm, as well as being the least costly management option. The Department's activities must protect the integrity of the ecosystems that we manage. In areas where we work we must protect fish and wildlife that are vulnerable to invasive species and set a good example for others who work or recreate in Washington's outdoors.

3. Department Activities Shall Not Contribute to the Introduction or Spread of Unclassified Nonnative Species.

Many nonnative species have not been classified by the Commission or the Department of Agriculture as invasive: either because they are already well established and little can be done to address their impacts, or because there is uncertainty about whether they pose comparable levels of risk as species that are categorized as invasive, or because they are not expected to occur in Washington state now or in the near future. Regardless of classification status, Department activities should be conducted with reasonable precaution to avoid contributing to their introduction and spread. Even though they are unclassified, the Department should be mindful of their potential adverse impacts. In most cases, procedures adopted by the Department for minimizing the introduction and spread of Invasive Species should also address the potential risks of introducing or spreading Unclassified Nonnatives as well.

4. The Department Will Comply With All Laws and Executive Policies Pertaining to the Control of Invasive Species and Noxious Weeds.

The Department shall not only meet legal obligations to control listed weed species, prohibited animal species, and deleterious exotic species; by its actions the Department shall set a high standard for others with regard to controlling the spread of invasive species. The Department will adopt and actively maintain WA Department of Fish and Wildlife POL 5310 science-based protocols for minimizing the risk that field and property management activities will contribute to the spread of invasive species.

5. The Department Will Comply With All Water Quality Standards When Handling Decontamination Materials.

Disposal of decontamination materials will be accomplished consistent with federal and state regulations protecting water quality.

6. The Department Will Implement and Maintain Protocols for Controlling the Spread of Invasive Species.

Appendix B: Continued

The Department will adopt precaution-based protocols for conduct of field activities to minimize the risk of introducing or spreading invasive species, and will update them to incorporate advances in invasive species management technologies. The Department will implement procedures to ensure that the protocols are being followed, and that Department staff have safe access to decontamination equipment, supplies and facilities. The Department shall base protocols on the Hazard Analysis Critical Control Point format, providing specific guidance on who the protocols apply to, when and where the protocols are effective, what the protocols entail, how to employ them, and why they are necessary.

7. The Department Will Actively Encourage Natural Resource Managers and the Public to Adopt and Maintain Similar Precautions.

Effective prevention measures require similar levels of precaution by others working within Washington and in neighboring states and provinces. Because regional coordination efforts are essential for managing invasive species, the Department will be an active participant in regional forums such as:

☐Washington Invasive Species Council

☐ Columbia River Basin Team

☐ Pacific Ballast Water Group

☐ Aquatic Nuisance Species Committee

☐ Ballast Water Working Group

Cooperative prevention and response efforts are also a key element of invasive species control. In order to develop regional efficiencies, the Department will develop and support formal agreements with other entities to efficiently share resources for response and control.

8. Department Activities Should Safeguard State or Federal Listed Species and Their Critical Habitats.

The Department shall prioritize protection for habitats that are critical to the existence and recovery of listed species, treat those habitats with extreme concern, and ensure that the control measures themselves (such as the use of disinfectant chemicals) do not harm listed species. Ecological integrity will be maintained or enhanced for all aquatic and terrestrial locations, to avoid net loss of integrity resulting from establishment or spread of invasive species.

9. The Department Shall Adopt and Maintain Proactive Weed Management Plans and Protocols For Agency-Owned and Controlled Lands.

Permits and contracts issued by the Department shall require permitees and contractors to follow Department protocols for controlling the spread of invasive species. While working on Department lands and access points, employees, contractors, and volunteers shall follow the Weed Management Plans and Department protocols.

10. The Department Shall Adopt a Rapid Response Approach to Eradicate or Control Invasive Species on State-Owned or Controlled Lands.

After prevention, rapid response has been shown to be the most cost-effective means to control invasive species. Eradication of invasive species is simplest before they become well established, and when control or eradication activities are less likely to disrupt the ecosystem. The basic steps in rapid response are: initial assessment of the extent of the infestation, containment of the infested area to prevent additional inadvertent spreading, and effective eradication. Rapid response capability is facilitated by proactive planning; the Department will develop strategic plans to support a rapid response capability.

11. The Department Shall Encourage Citizen Science In Detecting, Assessing, and Reporting Invasive Species Occurrences.

Informed stakeholders can assist with early detection as well as increased detection effort, increasing the probability that invasive species will be detected before they become solidly entrenched in an area and more difficult to eradicate or control. Informed stakeholders are also more likely to adopt precautions against inadvertent transportation of invasive species.

APPENDIX C

AIS Prevention Account actual revenues, expenditures, variance, and balance since establishment in Fiscal Year (FY) 06 with planned budget for the FY11-13 biennium. Variances are generally positive when boater registrations are high (April through August) and negative when expenditures are greater than revenues (September through March). Yellow highlighted cells show lowest carry-over balance months for each fiscal year. The FY06 delay in spending authority and gradual start up in expenditures provided the initial budget buffer to cover the lowest carry-over balance months.

2005-2007 Biennium

FY06	Revenue	Expend	Variance	Balance
Jul	0	0	0	0
Aug	2,609	0	2,609	2,609
Sep	2,057	0	2,057	4,666
Oct	1,103	0	1,103	5,769
Nov	788	0	788	6,557
Dec	721	0	721	7,278
Jan	928	0	928	8,206
Feb	1,838	0	1,838	10,044
Mar	4,502	0	4,502	14,546
Apr	84,516	0	84,516	99,062
May	85,251	10,607	74,644	173,706
Jun	129,100	38,077	91,023	264,729

FY07	Revenue	Expend	Variance	Balance
	61,674	16,692	44,982	309,711
	26,636	13,491	13,145	322,856
	9,062	14,338	(5,276)	317,580
	3,911	13,154	(9,243)	308,337
	2,138	17,085	(14,947)	293,390
	1,084	17,360	(16,276)	277,114
	1,486	24,728	(23,242)	253,872
	2,572	20,626	(18,054)	235,818
	5,303	13,434	(8,131)	227,687
	75,787	43,892	31,895	259,582
	96,846	38,908	57,938	317,520
	113,153	91,349	21,804	339,324

2007-2009 Biennium

FY08	Revenue	Expend	Variance	Balance
Jul	72,206	5,845	66,361	405,685
Aug	27,263	66,079	(38,816)	366,869
Sep	9,111	22,612	(13,501)	353,368
Oct	3,798	31,506	(27,708)	325,660
Nov	1,955	23,513	(21,558)	304,102
Dec	1,122	22,559	(21,437)	282,665
Jan	1,409	27,171	(25,762)	256,903
Feb	2,465	35,049	(32,584)	224,319
Mar	4,799	60,538	(55,739)	168,580
Apr	97,401	29,496	67,905	236,485
May	85,349	41,218	44,131	280,616
Jun	107,891	14,602	93,289	373,905

FY09	Revenue	Expend	Variance	Balance
	68,739	25,575	43,164	417,069
	21,785	37,044	(15,259)	401,810
	8,347	38,151	(29,804)	372,006
	3,571	25,958	(22,387)	349,619
	1,465	20,744	(19,279)	330,340
	1,239	13,133	(11,894)	318,446
	1,155	25,115	(23,960)	294,486
	2,203	26,027	(23,824)	270,662
	4,169	33,833	(29,664)	240,998
	116,054	43,337	72,717	313,715
	66,321	56,795	9,525	323,240
	115,779	116,056	(276)	322,963

Appendix C: Continued

2009-2011 Biennium

FY10	Revenue	Expend	Variance	Balance	FY11	Revenue	Expend	Variance	Balance
Jul	69,871	43,986	25,885	348,848		106,582	24,510	82,072	311,678
Aug	22,213	45,991	(23,778)	325,070		35,538	18,376	17,161	328,839
Sep	8,832	65,900	(57,068)	268,002		10,860	23,069	(12,209)	316,630
Oct	3,348	39,274	(35,927)	232,075		4,280	34,226	(29,945)	286,685
Nov	1,462	18,042	(16,580)	215,495		1,950	24,496	(22,546)	264,139
Dec	1,142	30,480	(29,339)	186,156		1,330	28,076	(26,746)	237,393
Jan	1,396	21,848	(20,452)	165,704		1,500	28,517	(27,017)	210,377
Feb	2,521	39,899	(37,379)	128,326		2,679	34,660	(31,981)	178,396
Mar	5,643	32,626	(26,983)	101,343		5,443	34,367	(28,924)	149,472
Apr	16,493	28,500	(12,007)	89,336		24,811	29,257	(4,447)	145,026
May	41,774	11,924	29,850	119,186		50,407	38,397	12,009	157,035
Jun	136,582	26,162	110,419	229,605		124,613	58,798	65,814	222,849

2011-2013 Biennium (Allocated)

FY12	Revenue*	Expend	Variance	Balance	FY13	Revenue*	Expend	Variance	Balance
Jul	87,738	26,563	61,175	284,024		112,799	22,373	90,426	255,038
Aug	44,095	32,090	12,005	296,029		30,026	22,374	7,652	262,690
Sep	14,795	37,477	(22,682)	273,347		10,193	22,373	(12,180)	250,510
Oct	4,760	60,958	(56,198)	217,149		4,847	32,374	(27,527)	222,983
Nov	2,787	29,221	(26,434)	190,715		2,757	17,947	(15,190)	207,793
Dec	2,279	20,478	(18,199)	172,516		2,280	17,947	(15,667)	192,126
Jan	2,648	41,026	(38,378)	134,138		2,651	27,387	(24,736)	167,390
Feb	3,810	31,912	(28,102)	106,036		3,813	17,948	(14,135)	153,255
Mar	6,897	31,912	(25,015)	81,021		6,905	17,916	(11,011)	142,244
Apr	37,295	44,134	(6,839)	74,182		35,777	34,357	1,420	143,664
May	56,681	37,028	19,653	93,835		53,624	22,244	31,380	175,044
Jun	117,345	46,568	70,777	164,612		115,793	37,207	78,586	253,630

*Includes $11,662/yr (added at $972/mo) from internal proportional administrative funding source.

FY13 revenues are based on Department of Licensing projections and FY13 expenditures are at FY12 allocation levels. This shows that there is sufficient balance in the AIS Prevention Account to cover the lowest revenue month (yellow highlighted cell) if the $100,000 of the $133,000 in allocation cuts were replaced through a supplemental appropriation. At this level, there would still be a $42,244 positive balance buffer during the lowest point in March to cover potential variances.

APPENDIX D

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 fish
6. Nutria*	43. Mitten crab	
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.

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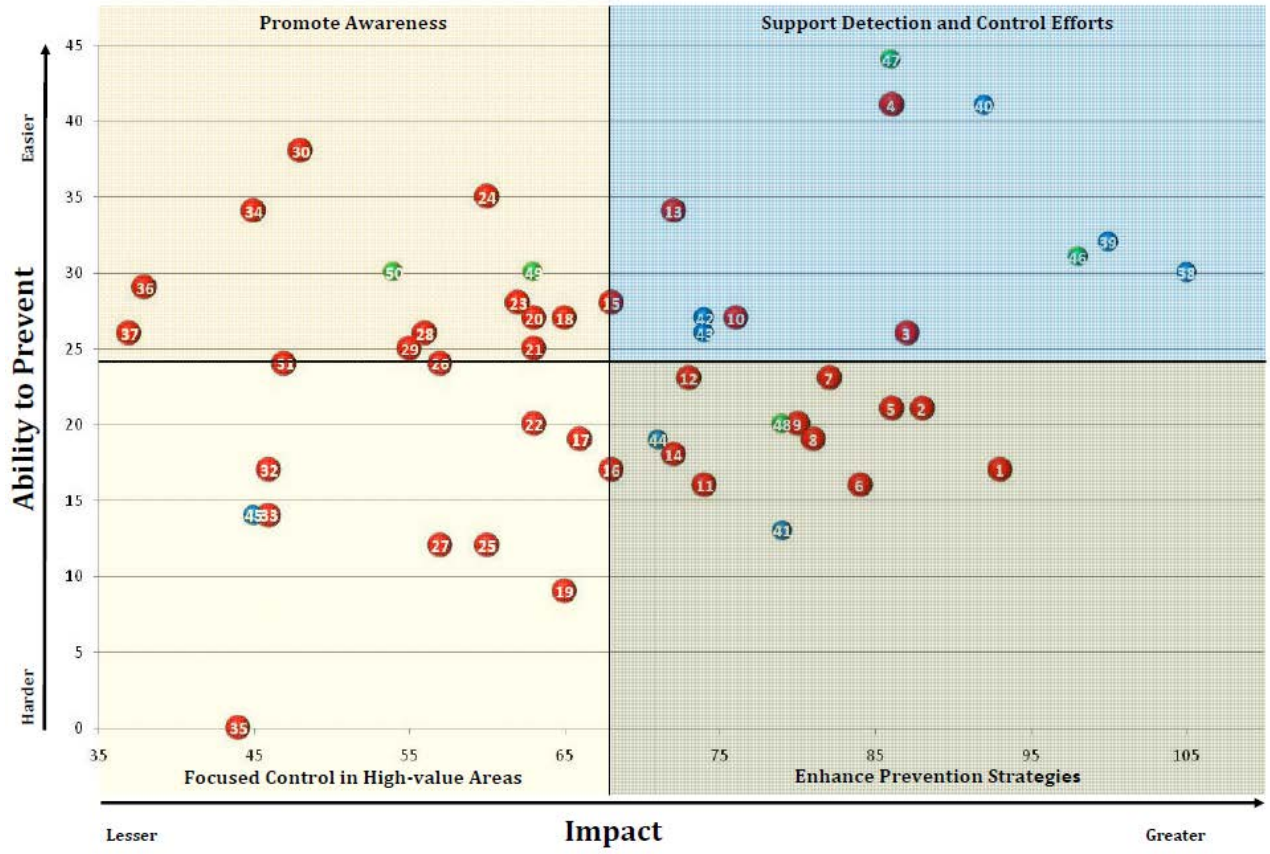
Invasive Species Management Priorities



Appendix E

Western States with Watercraft Pathway Prevention Plans

(With some Great Lakes states included)

Arizona	http://www.azgfd.gov/h_f/zebra_mussels.shtml
California	http://www.dfg.ca.gov/invasives/quaggamussel/
Colorado	http://www.wildlife.state.co.us/WildlifeSpecies/Profiles/InvasiveSpecies/ZebraandQuaggaMussels.htm
Idaho	http://www.youtube.com/watch?v=J4EVAy8adMk
Iowa	http://www.iowadnr.gov/fish/news/exotics/exotics.html
Kansas	http://kdwp.state.ks.us/Fishing/Aquatic-Nuisance-Species
Maine	http://www.state.me.us/dep/blwq/topic/invasives/
Michigan	http://www.michigan.gov/deq/0,1607,7-135-3313_3677_8314---,00.html
Minnesota	http://www.dnr.state.mn.us/eco/invasives/index.html
Missouri	http://mdc.mo.gov/landwater-care/animal-management/invasive-animal-management/zebra-mussels-missouris-most-unwanted
Montana	http://fwp.mt.gov/fishing/guide/ANS/default.html
Nevada	http://www.ndow.org/fish/exotic/
New Mexico	http://www.wildlife.state.nm.us/publications/press_releases/documents/2009/040609ais.html
New York	http://www.dec.ny.gov/animals/50121.html
N. Dakota	http://gf.nd.gov/fishing/ans-equipcleaning.html
Ohio	http://www.dnr.state.oh.us/Home/wild_resourcessubhomepage/dealing_with_wildlifeplaceholder/InvasiveNuisanceSpecieslandingpage/terrestrialnuisancewildlife/fishingnuisancenuisance/tabid/5827/Default.aspx
Oklahoma	http://www.wildlifedepartment.com/nuisancespecies.htm
Oregon	http://www.boatoregon.com/OSMB/Clean/ANS.shtml
S. Dakota	http://www.boat-ed.com/sd/handbook/nuisancespecies.htm
Texas	http://www.texasinvasives.org/
Utah	http://wildlife.utah.gov/habitat/ans/
Wisconsin	http://dnr.wi.gov/invasives/aquatic/laws/
Wyoming	http://gf.state.wy.us/fish/AIS/

Appendix F

Washington Department of FISH and WILDLIFE

Washington State Volunteer Vessel Survey Form

Washington Dept. of Fish & Wildlife
Aquatic Invasive Species Unit
600 Capitol Way N, Olympia WA, 98501
(360) 902-2700

SITE DATA

Date (M/D/Y):_____ **Time:**_____ **Surveyor:**_____

Water Body: _____ **Site:**_____

VESSEL DATA

Registered owner's zip code:_____ **Registered owner's state:**_____

Vessel make: _____ **Length (ft):** _____ **Color(s):**_____

State vessel is registered in?_____ **State registration #:** _____

1) **Inspection conducted on vessel going into the water or out? IN** ☐ **OUT**☐

2) **What was the last water body vessel was in?**_____
The date of last water body vessel was in (M/D/Y)?_____
The county of the last water body vessel was in?_____
The state of the last water body vessel was in?_____

3) **Do you clean the vessel and trailer between uses? YES** ☐ **NO**☐

4) **Do you know what "Aquatic Invasive Species" are? YES** ☐ **NO**☐

5) **Entire vessel and trailer inspected? YES** ☐ **NO**☐ *If no continue below*

Parts of Vessel Inspected: (*check all that apply only if entire vessel and trailer were not inspected*)

Trim Tabs ☐ Outdrive/Outboard ☐ Exhaust Ports☐ # of: _____ Thru Hulls☐ # of: _____

Live/Fish well(s)☐ # of:_____ Hold(s)☐ # of:_____ Transducer(s)☐ # of:_____

Swim Step(s)☐ Propeller(s)☐ Drive Shaft(s)☐ Rudder(s)☐ Keel☐ Hull☐ Bilge☐

Other Equipment/Areas Inspected ☐(describe):

_____

Parts of Trailer Inspected: (*check all that apply only if entire vessel and trailer were not inspected***)**

Cross members (& tube openings)☐ Wheels & backing plates☐ Bunks/Rollers☐
Light(s)/License Brackets☐

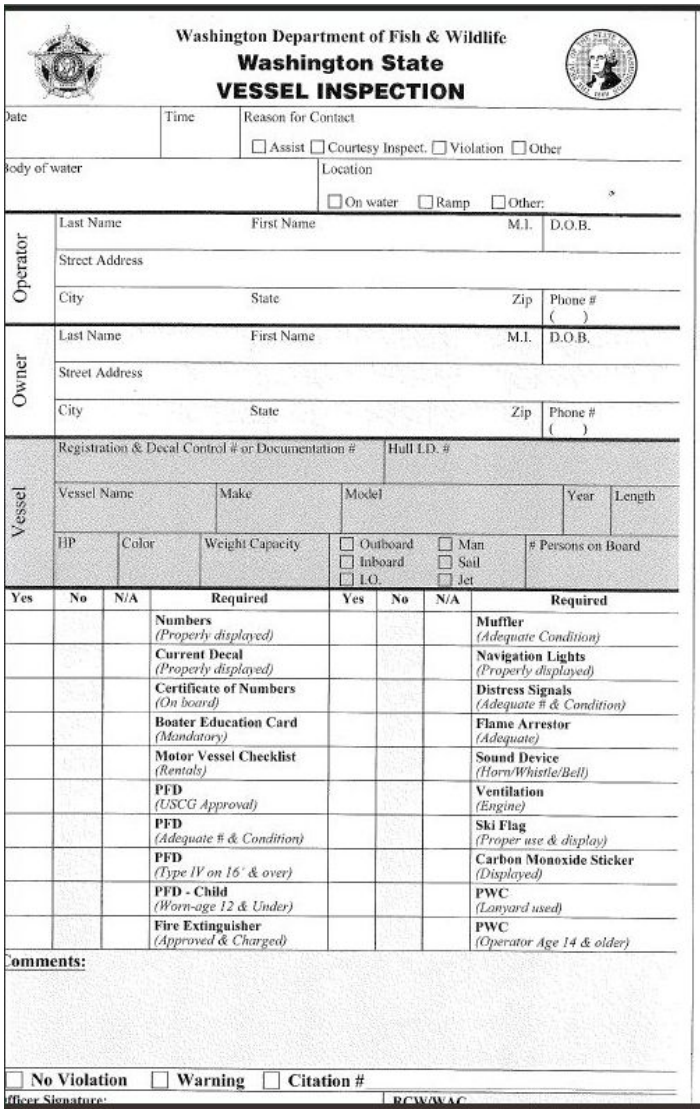
Contamination: NO☐ **YES**☐ **If yes what species?**_____

Action Taken:

_____

_____

Appendix G



Washington Department of Fish & Wildlife

Washington State

VESSEL INSPECTION

Date | Time | Reason for Contact

☐ Assist ☐ Courtesy Inspect. ☐ Violation ☐ Other

Body of water | Location

☐ On water ☐ Ramp ☐ Other:

Operator

Last Name | First Name | M.I. | D.O.B.

Street Address

City | State | Zip | Phone # ( )

Owner

Last Name | First Name | M.I. | D.O.B.

Street Address

City | State | Zip | Phone # ( )

Vessel

Registration & Decal Control # or Documentation # | Hull I.D. #

Vessel Name | Make | Model | Year | Length

HP | Color | Weight Capacity | ☐ Outboard ☐ Inboard ☐ I.O. ☐ Man ☐ Sail ☐ Jet | # Persons on Board

Yes	No	N/A	Required	Yes	No	N/A	Required
			Numbers *(Properly displayed)*				**Muffler** *(Adequate Condition)*
			Current Decal *(Properly displayed)*				**Navigation Lights** *(Properly displayed)*
			Certificate of Numbers *(On board)*				**Distress Signals** *(Adequate # & Condition)*
			Boater Education Card *(Mandatory)*				**Flame Arrestor** *(Adequate)*
			Motor Vessel Checklist *(Rentals)*				**Sound Device** *(Horn/Whistle/Bell)*
			PFD *(USCG Approval)*				**Ventilation** *(Engine)*
			PFD *(Adequate # & Condition)*				**Ski Flag** *(Proper use & display)*
			PFD *(Type IV on 16' & over)*				**Carbon Monoxide Sticker** *(Displayed)*
			PFD - Child *(Worn-age 12 & Under)*				**PWC** *(Lanyard used)*
			Fire Extinguisher *(Approved & Charged)*				**PWC** *(Operator Age 14 & older)*

Comments:

☐ **No Violation** ☐ **Warning** ☐ **Citation #**

Officer Signature: RCW/WAC

Washington Department of Fish & Wildlife

Aquatic Invasive Species

VESSEL INSPECTION

State / County / City (Agency)

Date | Time | Reason for Contact

☐ Assist ☐ Courtesy Inspect. ☐ Violation ☐ Other

Body of water | Location

☐ On water ☐ Ramp ☐ Other:

Operator

Last Name | First Name | M.I. | D.O.B.

Street Address

City | State | Zip | Phone # ( )

Owner

Last Name | First Name | M.I. | D.O.B.

Street Address

City | State | Zip | Phone # ( )

Vessel

Registration & Decal Control # or Documentation # | Hull I.D. #

Vessel Name | Make | Model | Year | Length

HP | Color | Weight Capacity | ☐ Outboard ☐ Inboard ☐ I.O. ☐ Man ☐ Sail ☐ Jet | # Persons on Board

1) Vessel type: ☐ Fishing ☐ Pleasure ☐ PWC ☐ Other

2) Do you always launch on the same body of water? ☐ Yes ☐ No

3) Has the vessel been used within the last 30 days? ☐ Yes ☐ No ☐ Unknown

4) Last two places you have launched the vessel:

State	County	Body of Water	Date

5) Is the vessel "Moored" or "Trailered" between uses? ☐ Moored ☐ Trailered

6) Do you clean your vessel and trailer between launchings? ☐ Yes ☐ No

7) Do you know what "Aquatic Invasive Species" (AIS) are? ☐ Yes ☐ No

8) Do you know any Washington State AIS Laws? ☐ Yes ☐ No

Yes	No	N/A	Inspected	Yes	No	N/A	Inspected
			Hull				Speed Indicator(s)
			Outboard/Outdrive				Zinc(s)
			Propellers				Swim Step(s)
			Drive Saft(s)				Thru Hulls
			Exaust Port(s)				Bilge(s)
			Rudder(s)				Fish Well(s)
			Trim Tabs				Other:
			Transducer(s)				Trailer

Contamination? ☐ **No** ☐ **Yes** AIS educational materials given? ☐ Yes ☐ No

Action taken:

Officer: **Badge Number:**

Appendix H

Washington Department of FISH and WILDLIFE

Washington State AIS Inspection Form

Washington Dept. of Fish & Wildlife
Aquatic Invasive Species Unit
600 Capitol Way N, Olympia WA, 98501
(360) 902-2700

To be filled out by the inspecting Officer (Check or fill out all that apply)

Inspection Type: CHECK STATION ☐ CITIZEN REQUEST ☐ OTHER ☐
Date (MM/DD/YYYY):_____ **Time:**_____ **Officer and Badge #**_____

Site: (highway/location, or water body/launch): _____
Inspection conducted on vessel going into the water or out? IN ☐ OUT ☐

Registered Owner: _____ **Phone:**_____
Address: _____ **State:** _____ **Zip:**_____
Vessel Make: _____ **Length:** _____ **Color(s):**_____
HIN #: _____ **State Registration #:** _____

This section to be filled out ONLY when check station or commercial haul

Type of Haul: Private ☐ Commercial ☐
Driver: _____ **Address:** _____ **State:** _____
Zip:_____ **Phone:**_____
Company: _____ **Phone:** _____
Address: _____ **State:** _____ **Zip:** _____

Marina/Destination vessel is from: Name_____ State_____ City _____
(Attach copy of Bill of Lading) Address_____ Phone_____

Marina/Destination vessel is going to: Name_____ State _____City _____
(Attach copy of Bill of Lading) Address_____ Phone_____

1) What was the last water body vessel was in and date (MM/DD/YYYY)?_____
What county and state was the last water body vessel was in?_____
2) Do you clean the vessel and trailer between uses? Yes ☐ No ☐
3) Is watercraft on a launching type trailer? Yes ☐ No ☐
Entire Vessel and Trailer Inspected? Yes ☐ No ☐ **If no continue below**

Parts of Vessel Inspected: (*check all that apply only if entire vessel and trailer were not inspected*)

Trim Tabs ☐ Outdrive/Outboard ☐ Exhaust Ports ☐ # of: _____ Thru Hulls ☐ # of: _____
Live/Fish well(s) ☐ # of: _____ Hold(s) ☐ # of: _____ Transducer(s) ☐ # of:_____
Swim Step(s) ☐ Propeller(s) ☐ Drive Shaft(s) ☐ Rudder(s) ☐ Keel ☐ Hull ☐ Bilge ☐
Other Equipment/Areas Inspected ☐ (describe): _____

Parts of Trailer Inspected: (*check all that apply only if entire vessel and trailer were not inspected)*

Cross members (& tube openings) ☐ Wheels & backing plates ☐ Bunks/Rollers ☐ Light(s)/License Brackets ☐

Inspection Findings: Contamination: No ☐ **Yes** ☐ **If yes what species?**_____
Action Taken: **Nothing** ☐ **Verbal Warning** ☐ **Written Warning** ☐ **Citation** ☐ **Decontamination** ☐

_____
_____
_____
_____
_____

Owner/Driver Signature: _____ Date:_____

If applicable - Attach a copy of the Bill Of Lading to Inspection form and forward both to WDFW (address at top of form)

RCW 77.15.253: Unlawful use of prohibited aquatic animal species — Penalty.

(1)A person is guilty of unlawful use of a prohibited aquatic animal species if he or she possesses, imports, purchases, sells, propagates, transports, or releases a prohibited aquatic animal species within the state, except as provided in this section.

(2) Unless otherwise prohibited by law, a person may:

(a) Transport prohibited aquatic animal species to the department, or to another destination designated by the director, in a manner designated by the director, for purposes of identifying a species or reporting the presence of a species;

(b) Possess a prohibited aquatic animal species if he or she is in the process of removing it from watercraft or equipment in a manner specified by the department;

(c) Release a prohibited aquatic animal species if the species was caught while fishing and it is being immediately returned to the water from which it came; or

(d) Possess, transport, or release a prohibited aquatic animal species as the commission may otherwise prescribe.

(3) Unlawful use of a prohibited aquatic animal species is a gross misdemeanor. A subsequent violation of subsection (1) of this section within five years is a class C felony.

(4) A person is guilty of unlawful release of a regulated aquatic animal species if he or she releases a regulated aquatic animal species into state waters, unless allowed by the commission.

(5) Unlawful release of a regulated aquatic animal species is a gross misdemeanor.

(6) A person is guilty of unlawful release of an unlisted aquatic animal species if he or she releases an unlisted aquatic animal species into state waters without requesting a commission designation under RCW 77.12.020.

(7) Unlawful release of an unlisted aquatic animal species is a gross misdemeanor.

(8) This section does not apply to:

(a) The transportation or release of organisms in ballast water;

(b) A person stopped at an aquatic invasive species check station who possesses a recreational or commercial watercraft that is contaminated with an aquatic invasive species, if that person complies with all department directives for the proper decontamination of the watercraft and equipment; or

(c) A person who has voluntarily submitted a recreational or commercial watercraft for inspection by the department and has received a receipt verifying that the watercraft has not been contaminated since its last use.

[2002 c 281 § 4.] Notes: Purpose -- 2002 c 281: See note following RCW 77.08.010.

RCW 77.15.290: Unlawful transportation of aquatic plants. (*Edited version, sections 1-3 not included)*

(4) A person is guilty of unlawful transport of aquatic plants if the person transports aquatic plants on any state or public road, including forest roads, except as provided in this section.

(5) Unless otherwise prohibited by law, a person may transport aquatic plants:

(a) To the department, or to another destination designated by the director, in a manner designated by the department, for purposes of identifying a species or reporting the presence of a species;

(b) When legally obtained for aquarium use, wetland or lakeshore restoration, or ornamental purposes;

(c) When transporting a commercial aquatic plant harvester to a suitable location for purposes of removing aquatic plants;

(d) In a manner that prevents their unintentional dispersal, to a suitable location for disposal, research, or educational purposes; or

(e) As the commission may otherwise prescribe

(6) Unlawful transport of aquatic plants is a misdemeanor.

(7) This section does not apply to:

(a) Any person stopped at an aquatic invasive species check station who possesses a recreational or commercial watercraft that is contaminated with an aquatic invasive species if that person complies with all department directives for the proper decontamination of the watercraft and equipment; or

(b) Any person who has voluntarily submitted a recreational or commercial watercraft for inspection by the department and has received a receipt verifying that the watercraft has not been contaminated since its last use.

[2002 c 281 § 7; 2001 c 253 § 35; 1998 c 190 § 48.] Notes: Purpose -- 2002 c 281: See note following RCW 77.08.010.

RCW 77.15.250: Unlawful release of fish, shellfish, or wildlife — Penalty — Unlawful release of deleterious exotic wildlife — Penalty.

(1) (a) A person is guilty of unlawfully releasing, planting, or placing fish, shellfish, or wildlife if the person knowingly releases, plants, or places live fish, shellfish, wildlife, or aquatic plants within the state, and the fish, shellfish, or wildlife have not been classified as deleterious wildlife. This subsection does not apply to a release of game fish into private waters for which a game fish stocking permit has been obtained, or the planting of fish or shellfish by permit of the commission.

(b) A violation of this subsection is a gross misdemeanor. In addition, the department shall order the person to pay all costs the department incurred in capturing, killing, or controlling the fish, shellfish, aquatic plants, or wildlife released or its progeny. This does not affect the existing authority of the department to bring a separate civil action to recover costs of capturing, killing, controlling the fish, shellfish, aquatic plants, or wildlife released or their progeny, or restoration of habitat necessitated by the unlawful release.

(2) (a) A person is guilty of unlawful release of deleterious exotic wildlife if the person knowingly releases, plants, or places live fish, shellfish, or wildlife within the state and such fish, shellfish, or wildlife has been classified as deleterious exotic wildlife by rule of the commission.

(b) A violation of this subsection is a class C felony. In addition, the department shall also order the person to pay all costs the department incurred in capturing, killing, or controlling the fish, shellfish, or wildlife released or its progeny. This does not affect the existing authority of the department to bring a separate civil action to recover costs of capturing, killing, controlling the fish, shellfish, or wildlife released or their progeny, or restoration of habitat necessitated by the unlawful release.

[2001 c 253 § 32; 1998 c 190 § 31.]

RCW 77.15 293. Unlawfully avoiding aquatic invasive species check station — Penalty.

(1) A person is guilty of unlawfully avoiding aquatic invasive species check stations if the person fails to:

(a) Obey check station signs; or

(b) Stop and report at a check station if directed to do so by a uniformed fish and wildlife officer.

(2) Unlawfully avoiding aquatic invasive species check stations is a gross misdemeanor.

Appendix I

List of Mandatory AIS Watercraft Check Stations

Date	Type of Check Station	Location	Management Region	Number of Watercraft Inspections
8/16/08	Water Body	Roosevelt Reservoir/Kettle Falls	1	44
8/22/08	Roadway	Plymouth POE/US 395	3	30
8/23/08	Roadway	Plymouth POE/US 395	3	55
8/23/08	Water Body	Washington Lake/Gene Coulon Park	4	84
8/23/08	Water Body	Columbia River/Marine County Park	5	27
8/31/08	Water Body	Roosevelt Reservoir/Fort Spokane	1	54
9/1/08	Roadway	Indian Valley Weigh Station/US 101	6	78
9/1/08	Roadway	Cougar Weigh Station/SR 503	5	16
9/7/08	Roadway	Rufus Woods Reservoir/Chief Joseph Dam	2	5
9/10/08	Water Body	Columbia River/Chinook	6	5
9/14/08	Water Body	Big Lake/WDFW Launch	4	13
Total Number of Watercraft Inspections for 2008				**411**
5/9/09	Water Body	Washington Lake /Magnuson Park	4	49
5/10/09	Roadway	Stevens Pass Summit/US 2	2	35
6/20/09	Roadway	Plymouth POE/US 395	3	66
7/11/09	Water Body	Potholes Reservoir/Blythe Launch	2	55
7/17/09	Roadway	Port of Shelton/US 101	6	13
7/18/09	Water Body	Tapps Lake /County Park	6	34
7/24/09	Roadway	Cle Elum POE/I-90	3	52
7/25/09	Roadway	Reardan/US 2	1	144
8/7/09	Water Body	American Lake/WDFW Launch	6	15
8/21/09	Roadway	I-90/SR 26	2	19
8/22/09	Water Body	Wanapum Reservoir/Vantage Launch	3	49
8/23/09	Roadway	Stevens Pass Summit/US 2	2	67
9/7/09	Roadway	Cougar Weigh Station/SR 503	5	12
9/11/09	Roadway	Dry Falls Junction/SR 17 and US 2	2	48
9/25/09	Roadway	Ridgefield POE/I-5	5	55
Total Number of Watercraft Inspections for 2009				**713**
5/22/10	Water Body	Washington Lake /Magnuson Park	4	10
5/22/10	Water Body	Celilo Reservoir/Maryhill State Park	5	3
5/31/10	Roadway	Wynoochee Valley Road	6	0
5/31/10	Roadway	Cougar Weigh Station/SR 503	5	31
6/5/10	Roadway	Dry Falls Junction/SR 17 and US 2	2	27
6/12/10	Roadway	Chattaroy Weigh Station/US 2	1	38
6/19/10	Water Body	Wanapum Reservoir/Vantage Launch	3	10
6/19/10	Water Body	Big Lake/WDFW Launch	4	9
6/26/10	Water Body	Stevens Lake/Wyatt Park	4	25
7/2/10	Roadway	Port of Shelton/US 101	6	38
7/10/10	Water Body	Roosevelt Reservoir /Fort Spokane	1	107
7/17/10	Water Body	Sammamish Lake/State Park	4	112
7/18/10	Roadway	Newhalem/SR 20	4	24
8/13/10	Water Body	Port of Camas-Washougal/Port Launch	5	71

Appendix I: Continued

8/14/10	Roadway	Brewster/SR 17 and US 97	2	31
8/15/10	Roadway	Plymouth POE/US 395	3	70
8/22/10	Roadway	Newhalem/SR 20	4	0
8/24/10	Roadway	Cle Elum POE/I-90	3	56
9/2/10	Roadway	Ridgefield POE/I-5	5	105
9/3/10	Water Body	Bonneville Reservoir/Drano Lake	5	24
Total Number of Watercraft Inspections for 2010				**791**
5/11/11	Roadway	Plymouth POE/US 395	3	14
5/14/11	Water Body	Merwin Reservoir/Speelyai Park	5	11
5/14/11	Water Body	Yale Reservoir/Yale Park	5	4
5/21/11	Water Body	Stevens Lake/Wyatt Park	4	13
5/27/11	Roadway	Ridgefield POE/I-5	5	41
5/28/11	Roadway	Plymouth POE/US 395	3	16
5/28/11	Water Body	Diamond Lake/WDFW Launch	1	5
5/28/11	Water Body	Loon Lake/WDFW Launch	1	6
5/28/11	Water Body	Waitts Lake/WDFW Launch	1	6
5/28/11	Water Body	Silver Lake/WDFW Launch	1	9
5/28/11	Water Body	West Medical Lake/WDFW Launch	1	12
5/28/11	Water Body	Newman Lake/WDFW Launch	1	15
5/29/11	Water Body	Fishtrap Lake/WDFW Launch	1	6
5/30/11	Roadway	Sumas Border/SR 9	4	8
5/30/11	Water Body	Diamond Lake/WDFW Launch	1	17
6/16/11	Roadway	Ridgefield POE/I-5	5	18
6/17/11	Roadway	Ridgefield POE/I-5	5	66
6/18/11	Roadway	Cougar Weigh Station/SR 503	5	7
6/18/11	Water Body	Washington Lake /Magnuson Park	4	1
6/21/11	Water Body	Newman Lake/WDFW Launch	1	10
6/23/11	Roadway	Ridgefield POE/I-5	5	48
6/24/11	Roadway	Bow Hill Weigh Station/I-5	4	17
6/24/11	Roadway	Anacortes Weigh Station/SR 20	4	29
6/24/11	Roadway	Ridgefield POE/I-5	5	59
6/25/11	Roadway	Chattaroy Weigh Station/US 2	1	65
6/25/11	Roadway	Bow Hill Weigh Station/I-5	4	18
6/25/11	Roadway	Anacortes Weigh Station/SR 20	4	31
6/25/11	Roadway	Goldendale Weigh Station/US 97	5	7
6/25/11	Roadway	Plymouth POE/US 395	3	58
6/25/11	Water Body	Roosevelt Reservoir /Hunters	1	50
6/26/11	Water Body	Lower Granite Reservoir/Swallows Park	1	15
7/15/11	Roadway	Port of Shelton/US 101	6	13
7/16/11	Water Body	Roosevelt Reservoir /Fort Spokane	1	65
7/16/11	Water Body	Sammamish Lake/State Park	4	1
7/17/11	Water Body	Sammamish Lake/State Park	4	17
7/30/11	Roadway	Dry Falls Junction/SR 17 and US 2	2	81
7/30/11	Water Body	Baker Reservoir/Launch	4	45
8/6/11	Water Body	Celilo Reservoir/Maryhill State Park	5	6
8/12/11	Water Body	Black Lake/WDFW Launch	6	21
8/14/11	Roadway	Oroville POE/US 97	2	14

Appendix I: Continued

8/21/11	Water Body	Lower Granite Reservoir/Swallows Park	1	7
8/21/11	Water Body	Lower Granite Reservoir/Couse Creek Launch	1	20
8/26/11	Roadway	Elbe/SR 7	6	4
8/26/11	Roadway	Chattaroy Weigh Station/US 2	1	47
9/3/11	Roadway	Wynoochee Valley Road	6	3
9/9/11	Water Body	Wallula Reservoir/Leslie Grove Park	3	9
9/17/11	Water Body	Whatcom Lake/Bloedal-Donovan Park	4	5
Total Number of Watercraft Inspections for 2011				**1040**

Appendix J

Rapid Response Incidents Involving Watercraft with nonnative mussels

Incident Report Date	Species Live/Dead	Location	Source	Destination	Watercraft Length	Private/ Commercial	Citation
Dec. 10, 2006	Zebra/Live	Marysville, WA	Ohio	BC	24 ft pleasure	Private	Warning
Jan. 19, 2007	Zebra/Unk	Cle Elum POE	Wisconsin	La Conner, WA	39 ft pleasure	Commercial	Warning
May 7, 2007	Zebra/Unk	Ridgefield POE	Missouri	Victoria, BC	59 ft Houseboat	Commercial	Warning
May 9, 2007	Zebra/Dead	Cle Elum POE	Ohio	La Conner, WA	40 ft pleasure	Commercial	Warning
July 25, 2007	Quagga/Unk	Kennewick, WA	N/A	N/A	N/A	N/A	N/A
Sept. 2, 2007	Zebra/Live	Spokane POE	Lake Huron, Canada	Everett, WA	44 ft Sailboat	Commercial	Gross Misdemeanor
Sept. 10, 2007	Zebra/Dead	Cle Elum POE	Wisconsin	Alaska	N/A	N/A	N/A
Sept. 14, 2007	Zebra/Dead	Cle Elum POE	Michigan	WA	N/A	N/A	N/A
Sept. 28, 2007	Zebra/Unk	N/A	Michigan	WA	N/A	N/A	N/A
Oct. 11, 2007	Zebra/Unk	Spokane POE	Lake Michigan	Anacortes, WA	38 ft Sailboat	Commercial	Gross Misdemeanor
Oct. 15, 2007	Zebra/Live	Spokane POE	Minnesota	La Conner, WA	40 ft pleasure	Commercial	Gross Misdemeanor
Oct. 23, 2007	Zebra/Live	Spokane POE	Great Lakes	Seattle, WA	Unk ft. pleasure	Commercial	Gross Misdemeanor
Nov. 13, 2007	Zebra/Live	Spokane POE	"Midwest"	BC	31 ft pleasure	Commercial	Gross Misdemeanor
Feb. 5, 2008	Quagga/Live	Ridgefield POE	Lake Mead, NV	BC	24 ft pleasure	Private	Warning
Apr. 3, 2008	Conrads/Live	La Conner, WA	Louisiana	Puget Sound, WA	54 ft pleasure	Commercial	Warning
Aug. 29, 2008	Zebra/Unk	"Scale #64"	Cleveland, OH	Goldstream, BC	32 ft pleasure	Private	Warning
May 20, 2009	Quagga/Live	Spokane, WA	Lake Mead, NV	Spokane, WA	26 ft pleasure	Private	Gross Misdemeanor
June 29, 2010	Conrads/Unk	Cle Elum POE	Rockhall, MA	Whiterock, BC	Unk ft. pleasure	Commercial	Warning
Nov. 13, 2009	Zebra/Live	Cle Elum POE	Lake St. Clair, MI	BC	38ft pleasure	Commercial	Felony
May 6, 2010	Quagga/Unk	Plymouth POE	Lake Mead, NV	Oroville, WA	26 ft pleasure	Private	Warning
Sept. 22, 2010	Zebra/Live	Cle Elum POE	Michigan	Bellingham	50 ft pleasure	Commercial	Pending
Sept. 28, 2010	Zebra/Unk	Cle Elum POE	Lake Texoma, Texas	Anacortes	48 ft pleasure	Commercial	Pending
March 11, 2011	Zebra/Unk	Blaine, WA	Michigan	Puget Sound	35 ft Pleasure	Commercial	Written Warning
April 13, 2011	Unk/Unk	Blaine, WA	Michigan	Puget Sound	Unk ft Pleasure	Commercial	N/A
April 18, 2011	Conrads/Unk	Colony Warf Marina	Florida	Puget Sound	54 ft Sailboat	Commercial	Written Warning
May 5, 2011	Zebra/Unk	Gig Harbor Marina	Michigan	Puget Sound	31 ft Sailboat	Commercial	Written Warning
May 20, 2011	Quagga/Unk	Bayside Marine, Everett	Lake Mead	Various, WA	15 ft Pleasure	Private	Written Warning
May 21, 2011	Zebra/Unk	Spokane POE	Michigan	British Columbia	42 ft Sailboat	Commercial	Gross Misdemeanor
June 6, 2011	Zebra/Unk	Spokane POE	Michigan	British Columbia	41 ft Sailboat	Commercial	Gross Misdemeanor

Appendix J: Continued

June 17, 2011	Zebra/Unk	Davenport, WA	Ohio	Roosevelt Lake	28 ft Pleasure	Private	N/A
June 17, 2011	Zebra/Unk	Cathlamet Marina	Illinois	Columbia River	28 ft Pleasure	Private	Written Warning
June 22, 2011	Zebra/Unk	Spokane POE	Ohio	Seattle	21 ft Sailboat	Commercial	Gross Misdemeanor
June 22, 2011	Zebra/Unk	Spokane POE	Ohio	British Columbia	41 ft Sailboat	Commercial	Gross Misdemeanor
June 23, 2011	Quagga/Unk	Lake Washington, WA	Lake Mead	Lake Washington	31 ft Pleasure	Commercial	Written Warning
June 24, 2011	Quagga/Unk	Tri-Cities, WA	Lake Mead	Columbia River	19 ft Pleasure	Private	Written Warning
July 13, 2011	Zebra/Unk	Spokane POE	Wisconsin	Lake Union	25 ft Pleasure	Commercial	Gross Misdemeanor
July 17, 2011	Conrads/Unk	Spokane POE	North Carolina	British Columbia	24 ft Pleasure	Commercial	Gross Misdemeanor

Acronyms and Key Words

AIS	Aquatic Invasive Species
ANSC	Aquatic Nuisance Species Committee
CRB	Columbia River Basin
Department	Washington Department of Fish and Wildlife
DES	Washington Department of Enterprise Services
DOE	Washington Department of Ecology
DOL	Washington Department of Licensing
NZMS	New Zealand Mudsnail
POE	Port of Entry
Program	WDFW AIS Prevention and Enforcement Program
PSMFC	Pacific States Marine Fisheries Commission
PSP	Puget Sound Partnership
USFWS	United States Fish and Wildlife Service
WISC	Washington Invasive Species Council
WSP	Washington State Patrol

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