

Washington State
Aquatic Invasive Species
Prevention and Enforcement Program
For
Recreational and Commercial Watercraft

Report to the 2008 Legislature

TRANSPORTATION OF WATERCRAFT
CARRYING
AQUATIC INVASIVE SPECIES
IS PROHIBITED



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and

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Washington State Patrol



December 2007



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Cover: Image is graphic of new signage to be erected at all road entry points into Washington State. Color added for emphasis in report only. Signs at major entry points will be 10' x 14' and at secondary entry points they will be at least 4' x 6'. The 1-888-933-9247 toll-free number will be activated in January 2008.



State of Washington
Department of Fish and Wildlife

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December 15, 2007

To Members of the House and Senate Natural Resources Committees and Staff:

**SUBJECT: Washington Department of Fish & Wildlife and Washington State
Patrol Cooperative Aquatic Invasive Species Prevention and
Enforcement Program**

The 2007 legislature passed E2SSB 5923 requiring the Washington Department of Fish and Wildlife (WDFW) and the Washington State Patrol (WSP) to continue developing and implementing an Aquatic Invasive Species Prevention and Enforcement Program for recreational and commercial watercraft. This effort began with the passage of ESSB 5699 in 2005. The attached report is submitted to fulfill the requirements of both legislative acts.

Aquatic Invasive Species (AIS) such as zebra and quagga mussels are an economic, environmental, and social threat to our state's aquatic resources. This report describes the increasing risk that Washington faces from new AIS introductions brought in by recreational and commercial watercraft.

Washington and other western states are at a critical juncture with respect to the introduction of zebra and quagga mussels. Since January 6, 2007, Nevada, California, Arizona, and possibly Utah have learned that the Colorado River is infested with quagga mussels. These mussels are now establishing themselves in dam facilities, have been found in the aqueduct system supplying Los Angeles with water, and in adjacent reservoirs. To date, California alone has spent \$7.4 million dollars trying to control the population and spread of these mussels.

Since 2000, WDFW and WSP have been increasing and improving our capacity to prevent, control, contain, or eradicate AIS in Washington State. It is greatly appreciated that the legislature has provided strong leadership in identifying the threat and providing a consistent source of funding to build AIS prevention and enforcement program capacity. This report will highlight how that funding is being used to develop infrastructure and management methods and for providing training and education outreach to other enforcement officers to create an effective watercraft management plan.

December 15 2007

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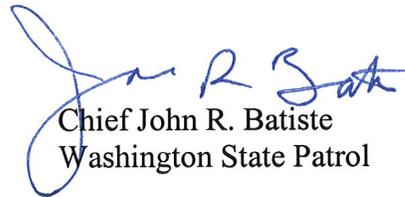
WDFW and WSP agree that the cost-effective prevention and enforcement program outlined in this report should continue to be implemented. Investment in watercraft inspection as part of a comprehensive management plan including prevention, containment, control, eradication, education, monitoring, policy, and enforcement can significantly change boater behavior to prevent and slow the spread of aquatic invasive species. This justifies expending the state's limited resources because of the high return on its investment. The only alternative to prevention is control, which comes at a much higher cost that will be born by our citizens in such forms as higher utility rates, loss of recreational opportunity, and increased boat maintenance costs.

We hope that the information contained in this report will be as instructive and sobering to you as it was to us.

Sincerely,



Jeff Koenings, Ph. D
Director
Washington Department of Fish and Wildlife



Chief John R. Batiste
Washington State Patrol

EXECUTIVE SUMMARY

This biennial report is submitted to the legislature for meeting the requirements of both Chapter 43.43.400(4) and 77.12.879(4) RCW and describing the actions taken to implement the Aquatic Invasive Species (AIS) Prevention and Enforcement Program. The AIS Prevention and Enforcement Program is managed through the WDFW Aquatic Nuisance Species (ANS) Unit and is encompassed in the department's Recreational and Commercial Watercraft Pathway (RCWP) Management Plan.

The ANS Unit coordinates with other state and federal agencies, tribes, NGOs and other public and private stakeholders in the overall management of AIS. Three of the primary entities include the state's recently created Invasive Species Council, the Aquatic Nuisance Species Committee, and the Columbia River Basin Team (CRBT) as part of the national 100th Meridian Initiative. The primary AIS of concern in the RCWP management plan are the zebra mussel (*Dreissena polymorpha*), its relative the quagga mussel (*Dreissena bugensis*), and the *Viral Hemorrhagic Septicemia* (VHS) *IVb* virus. The environmental characteristics of these species make their eradication unlikely if they are not aggressively dealt with at an early stage.

The transportation of recreational and commercial watercraft into and within Washington State represents one of the highest risk pathways for AIS introduction and spread. This risk continues to grow with an increasingly mobile recreational boating public, a growing fish tournament industry, the ability and availability of inexpensive used watercraft being sold from infested states, and the ability of AIS to remain viable for weeks out of their original habitat. Most recently, the discovery of quagga mussels in Southern Nevada and California means that they are now only a day's drive away.

The environmental, economic, and social/human health risks of AIS are significant. For example, the zebra and quagga mussel health risks include interruptions and contamination of water supplies, increased occurrences of blue-green and other toxic algae blooms, ability to concentrate contaminated sediments up to 300,000 times ambient levels and then disperse these into the food chain through direct consumption or through fecal matter, and closure of public beaches or swimming waters due to sharp shells or stench from typical mass die-offs.

2005-2007 biennium accomplishments include:

- ✓ Working closely with the CRBT to develop and implement their Interagency Invasive Species Rapid Response Plan in 2008¹.
- ✓ All 91 WDFW Enforcement field staff (21 Sergeants and 70 Officers) have been trained on state AIS laws, identification, inspection, detection and response.
- ✓ All 66 Washington State Patrol staff (commercial vehicle inspectors) at the five Port of Entry Weigh Stations have been trained in AIS identification.

¹ <http://100thmeridian.org/ColumbiaRT.asp>

- ✓ 39 WDFW non-enforcement field staff were trained in coordination with trainers from the 100th Meridian Initiative-Columbia River Basin Team.
- ✓ 200 commercially hauled watercraft have been inspected at WSP Port of Entry weight stations of which ten watercraft have been intercepted that were contaminated with zebra or quagga mussels. The last three have been cited and fined.
- ✓ An “AIS Check Station” enforcement policy (see Appendix F of the report) has been adopted for watercraft at random check stations. Implementation of the policy begins in early 2008.
- ✓ Portable watercraft inspection and decontamination kits have been developed and deployed for use during free inspections, patrols and AIS check station actions.
- ✓ 11,475 watercraft owners have been directly contacted and 7,088 recreational watercraft have been inspected for AIS in the past two years.
- ✓ WDFW uses the boater surveys, enforcement actions, public education, and a series of 180 monitoring sites across the state to implement an early detection plan.
- ✓ WDFW has developed and has started implementing a Citizen Requested Watercraft Inspections program.
- ✓ WDFW and the Washington State Department of Transportation are in the final stages of developing AIS signs, for posting at highway entry points into Washington.
- ✓ WDFW developed public information signage for boat launches and marinas and 1,500 are ready for distribution and posting.

RECOMMENDATIONS

AIS Prevention and Enforcement Program recommendations for the 2007-2009 biennium include:

1. WDFW recommends that the state legislature and the governor establish reciprocity agreements with other Columbia River Basin states and Canada to provide technical and financial assistance if zebra or quagga mussels invade their waters. It is in our state's best interest to help contain or eradicate an infestation at any upstream point, as it will otherwise quickly spread into Washington waters through our shared waters.
2. WDFW recommends that the state legislature and the governor be prepared to consider declaring a state of emergency if there is an invasion of zebra or quagga mussels into state waters that cannot be quickly contained. Where juvenile or adult mussels are found in state waters, the department will implement a rapid response effort to contain the known or potentially infested area. The next step will be to rapidly evaluate the extent of establishment and population size. Based on this information, the department will determine the extent of further response ranging from a localized effort to implementing a full-scale regional rapid response. This process has recently been tested in a regional tabletop exercise where all relevant state, federal, and tribal partners participated.
3. WDFW is expecting to conduct a review of state AIS laws and regulations around the nation to determine whether and how to best improve and organize our own system for full effectiveness. This will likely result in a proposal to the 2009 legislature for revisions to Chapter 77 RCW that would improve our ability to prevent introductions or spread of AIS, and close possible legal gaps.
4. Washington State needs to build and maintain a greater prevention and enforcement capacity to meet the increased risk of quagga mussels and other AIS that threaten our state's public, environmental and economic health. This will likely result in a funding proposal to the 2009 legislature to add new scientific, enforcement, and outreach staffing, and infrastructure capacity. The recommendations will be based on review of the cost to conduct an agency and public review of the CRBT Interagency Invasive Species Rapid Response plan under Chapter 43.21C RCW, Washington Department of Agriculture's Noxious Weed Control Board management system, other western state budgets with proactive AIS programs, while factoring in Washington State's unique issues such as ESA listed species and extensive hydropower and irrigation systems.

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INTRODUCTION

This biennial report is submitted to the legislature for meeting the requirements of both Chapter 43.43.400(4) and 77.12.879(4) RCW and describing the actions taken to implement the Aquatic Invasive Species (AIS) Prevention and Enforcement Programs. Recommendations are provided in the front of the report on how to better fulfill the intent of this legislation.

The AIS Prevention and Enforcement Program are encompassed in the department's Recreational and Commercial Watercraft Pathway Management Plan. The department's Aquatic Nuisance Species (ANS) Unit, which develops and implements the plan, is in the middle of a rapid growing phase. Two key changes include the hiring of a new Washington Department of Fish and Wildlife (WDFW) Statewide Aquatic Invasive Species (AIS) Officer in September of 2006 and a new WDFW ANS Coordinator filling that position in late October 2006, which had been vacant since July. Another implementation problem was an initial delay in access to the AIS Prevention Account due to a budget bill error. So in many ways, this report will mostly reflect implementation actions over the past year.

The primary species of concern in this management plan are the zebra mussel (*Dreissena polymorpha*), its relative the quagga mussel (*Dreissena bugensis*)(Figure 1), and the *Viral Hemorrhagic Septicemia* (VHS) *IVb* virus. The management actions for preventing the introduction and spread of these highest risk species effectively address all other AIS under this management plan, so this report focuses on those species' risk characteristics.

The report highlights how WDFW and Washington State Patrol (WSP) are evolving to meet this threat with the continued support of

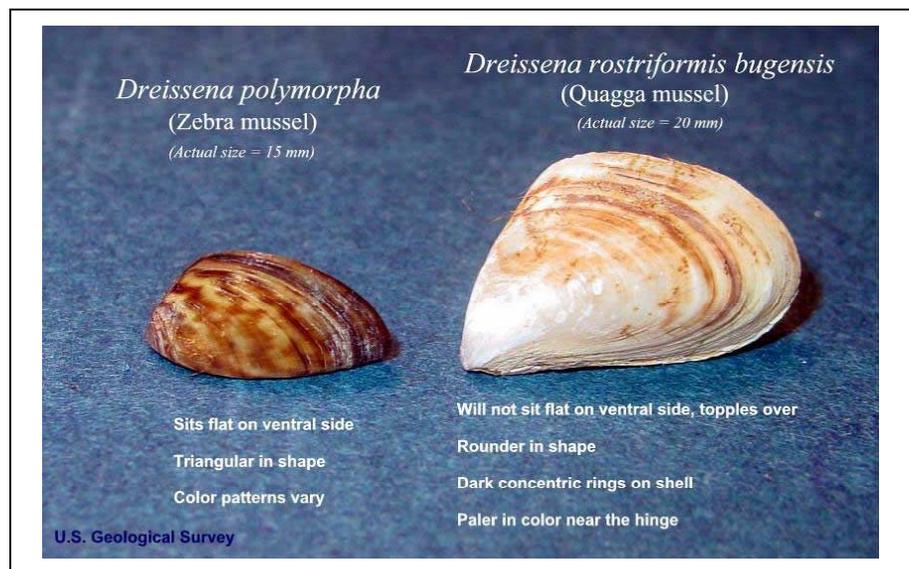


Figure 1. Primary characteristics of zebra mussels (*Dreissena polymorpha*) and quagga mussels (*Dreissena rostriformis bugensis*).

the state legislature. It provides the background and context for this program and where we hope to take it in the next two years. Two case studies are provided that give a detailed example of how transportation of watercraft is a significant pathway for AIS introduction. The report wraps up with accomplishments for each legislative mandate, plus other objectives currently being addressed.

Background

WDFW and WSP Cooperation

The AIS Prevention and Enforcement Program is managed by the WDFW Aquatic Nuisance Species (ANS) Unit in cooperation with the WDFW Enforcement Division and the WSP. In this relationship, WDFW provides the management, training, and enforcement structure of the program, and WSP implements inspection actions on commercially hauled boats at their Port of Entry weight stations.

The WDFW ANS Unit is tasked with preventing the introduction and controlling, containing, or eradicating discovered or established populations of AIS. The AIS Prevention and Enforcement Program is one of three priority management activities within the ANS Unit’s overall strategic plan (Appendix A). The elements of the AIS Prevention and Enforcement Program are incorporated into the comprehensive Recreational and Commercial Watercraft Pathway Management Plan (Appendix B).

Budget

In 2005, the legislature passed ESSB 5699 that provided consistent funding to implement the AIS prevention and enforcement programs. This bill provided WDFW and WSP revenue through a \$2 additional fee (\$1.50 for prevention and \$0.50 for enforcement) on recreational vessel registrations. The tables below provide fiscal year 2005-2007 and 2007-2009 (to date) budget information by appropriation fund account and agency.

WDFW AIS Prevention Account: Fund 09N

The AIS prevention account was established for use by WDFW to accomplish the legislative directives outlined in both ESSB 5699 and E2SSB 5923. Due to an error in the budget bill, access to the account was not available until May of 2006. At this time, the appropriation was set at \$528,000 for the remaining portion of the FY05-07 biennium.

Budget Item	FY06	FY07	FY 05-07 Total	FY08*	FY09	FY07-09 Totals
Spending Authority	264,000	264,000	528,000	421,000	421,000	840,000
Revenue	313,412	399,655	713,067	108,597	0	108,597
Expenditure	48,686	325,058	373,744	94,536	0	94,536
FY Close Balance	264,726	339,323	339,323			

* FY08 revenue and expenditure as of December 1, 2007.

The discrepancy between spending authority, revenue, and expenditures for the biennium is based on a complex mix of the late start in spending authority, concern over revenue not meeting spending allocation (Sept 06 to March 07 accrued in \$25,556; April 07 to June 07 accrued \$273,181 – Appendix C), a positive variance in revenue of \$133,067 over the spending authority, staffing vacancies and changes, and the decision to keep a carry-over balance to guard against a downturn in boater registration revenues due to higher fuel prices. This has resulted in an unanticipated balance of almost \$340,000 at the start of the FY07-09 biennium.

WSP AIS Enforcement Account: Fund 09M (10%)

The AIS Enforcement Account was originally established for use by WSP to accomplish the legislative directives outlined in both ESSB 5699 and E2SSB 5923. In FY07, WSP determined they would not be able to spend their authority amount and contracted with WDFW to assist in meeting legislative tasks.

Budget Item	FY06	FY07	FY 05-07 Total	FY08*	FY09	FY07-09 Totals
Spending Authority	21,000	124,000	145,000	27,000	27,000	54,000
Revenue	104,457	133,227	237,684	38,198	-	38,198
Expenditure	0	112,322	112,322	999	-	999
FY Close Balance	104,457	125,327	125,362			

* FY08 revenue and expenditure as of December 1, 2007.

WSP expenditures in FY07 included \$11,753 for salaries and benefits for Port-of-Entry personnel and \$100,469 in a contract with WDFW. The discrepancy between spending authority, revenue, and expenditures for the biennium is based on concern over revenue not meeting spending allocation and a positive variance in revenue of \$92,684 over the spending authority. This has resulted in an unanticipated balance of \$125,362 at the start of the FY07-09 biennium.

WDFW AIS Enforcement Account: Fund 09M (90%)

In FY07, WDFW established an interagency agreement in April of 2007 with WSP to use up to \$125,000 of their unspent funds. The WDFW total contract expenditure was \$100,469.

Budget Item	FY06	FY07	FY 05-07 Total	FY08**	FY09	FY07-09 Totals
Spending Authority	-	125,000*	-	110,000	94,000	204,000
Revenue	-	-	-	(WSP)	0	
Expenditure	-	100,469	100,469	22,000	0	22,000
FY Close Balance	-	0	0			

*Contract with WSP; ** FY08 revenue and expenditure as of December 1, 2007.

For the FY07-09 biennium, the AIS Enforcement Account was revised in E2SSB 5923 for use by both the WSP and WDFW. The Fiscal Note estimated that WSP would utilize 10% of

the funds. WDFW spending authority for the FY07-09 biennium was based on 90% of the expected revenues.

Legislative History

The first cooperative program between the WDFW and WSP to address overland transportation of infested watercraft began in 2000. This was targeted at commercially hauled boats that could be stopped and inspected under existing laws at WSP port of entry stations. Initial efforts were significantly reduced after the September 2001 terrorist attack in New York changed the priorities of the WSP to Homeland Security.

In 2002, the legislature passed SSB 6553 requiring WDFW and WSP to develop a cooperative plan for inspecting watercraft entering the state to prevent the introduction of invasive aquatic species. This resulted in the WDFW and WSP “Cooperative Boat Inspection Plan” that was provided in a report to the legislature in December of 2003.

In 2007, the legislature passed E2SSB 5923 allowing WDFW access to the AIS Enforcement Account previously managed solely by WSP, clarified responsibilities in the cooperative efforts, filled regulatory gaps in check station authorities, and increased the overall capacity of WDFW officers to inspect watercraft for AIS.

AIS Management and Risk Context

AIS Management and Coordination

WDFW is tasked with targeting primarily AIS animals. All aquatic plants are regulated by WDFW when being transported over land because of their ability to contain AIS animals and to prevent further spread of AIS plants such as hydrilla, milfoil, and elodea. AIS animals with the highest risk, such as zebra and quagga mussels, are classified as “Deleterious Exotic Wildlife.” “Prohibited Aquatic Animal Species” are the next level of classification and there are currently 34 taxonomic family levels and over 280 species on this list within amphibian, reptile, crustacean, fish, mammal, and mollusc classification categories.

The ANS Unit coordinates with other state and federal agencies, tribes, NGOs, and other public and private stakeholders in the overall management of AIS. Three of the primary entities include the state’s Aquatic Nuisance Species Committee², the Invasive Species Council³, and the Columbia River Basin Team as part of the national 100th Meridian Initiative.

Dreissena Risks

The threat of *Dreissena* invasion into Washington State waters has dramatically increased since the January 6, 2007, discovery of quagga mussels in Lake Mead. This marks the first time either the zebra or quagga has crossed the 100th meridian that runs through the Dakotas

² RCW 77.60.130 [2000 c 149]

³ ESSB 5385 [2006 c 152]

to Texas. This is the longitudinal policy boundary for a national campaign to keep these mussels and other AIS out of the western United States. It is a significant jump that puts the mussels within a day's drive of our state.

Dreissena are an extraordinarily resilient, adaptable, and prolific species. First discovered in Lake Saint Clair (smallest "Great Lake" near Detroit) in 1988, they have rapidly spread to 30 states (Figure 2). The basic environmental characteristics of *Dreissena* are provided in Table 1. These include the information on mature size, longevity, density, age of sexual maturity, fecundity, veliger stage, salinity tolerance, temperature tolerance, and depths at which found.

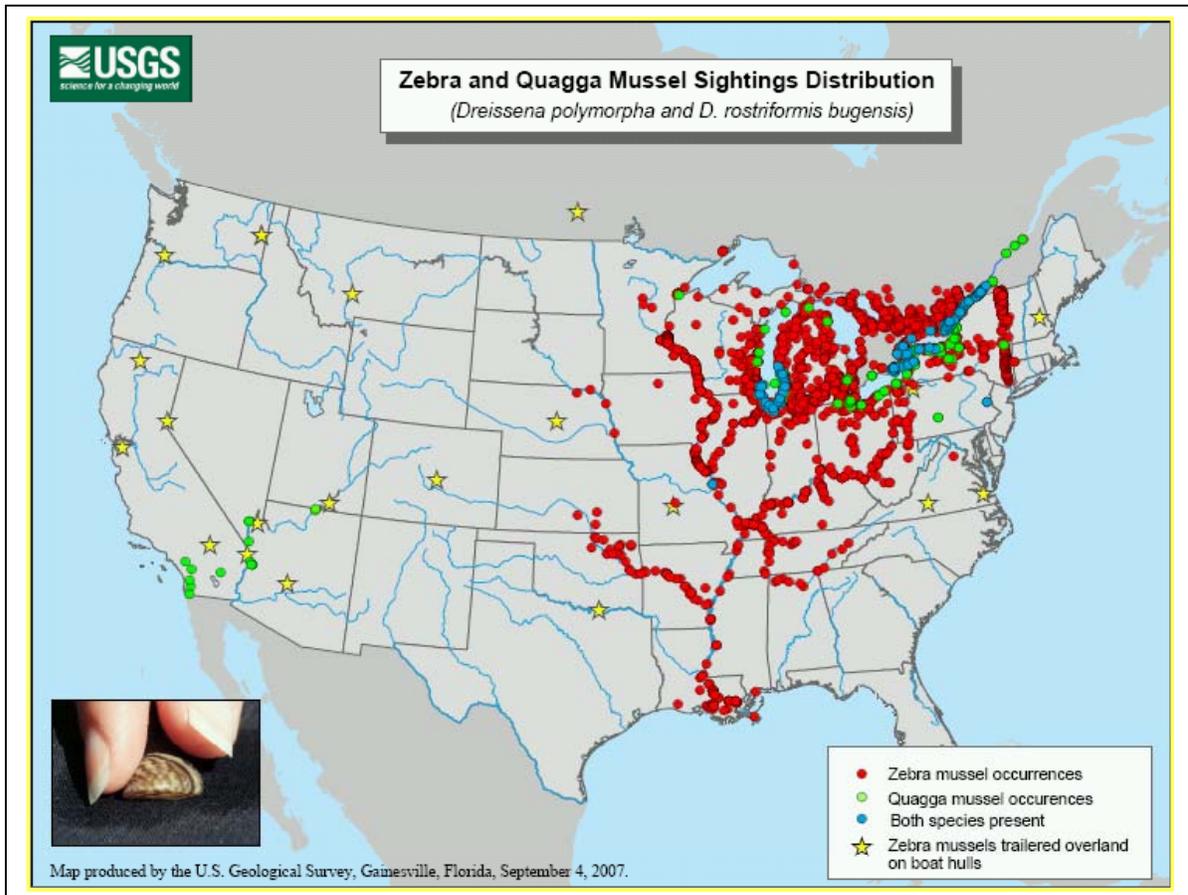


Figure 2. Map of the contiguous United States showing current known distribution of *Dreissena* distribution.

Table 1. General biological factors of *Dreissena* (zebra/quagga mussels) and their optimum/common and range parameters.

Factor ⁴	Optimum/Common	Range
Mature size (cm)	2 - 3	<1 - 5
Longevity (years)	N/a	Up to 5
Density/m ³ surface area	40,000 - 100,000	1 - >750,000
Density/layer depth (cm)	N/a	1 - 30
Pipe dia clogging (m)	N/a	> 0.5
Sexually mature age (yrs)	2	> 0.5
Fecundity/year	N/a	0 - 1 million+ eggs
Reproductive process	-	Planktonic dispersal
Veliger stage (weeks)	2	1 - 5
Salinity tolerance (ppt)	0 - 5	0 - 35
Filter capacity (liters/day)	Varies by size	0 - 1
Temperature range (°C)	8 - 12	1 - 30
Depth (m)	2 - 7 (z)	0 - >70
Live out of water (weeks)	Varies by temp/humidity	2 - 3

A little-known fact to most of the public is that juvenile and adult mussels can detach from one location, move at speeds of several cm/hr (similar to a slug) and reattach in a new location with better habitat.

The track record of *Dreissena* in those infested states would equate it to a slow-motion economic/environmental Category 5 hurricane, with the damage below the water surface. The environmental characteristics of this species make its eradication unlikely if it is not aggressively dealt with at an early stage (Figure 3). Control and containment actions will cost billions over time and are usually not very effective on larger water bodies such as the Columbia River system (Figure 4).



Figure 3. Display showing 3-month growth of quagga mussels from Lake Mead in 2007.

(Display by Wen Baldwin, photo by Allen Pleus)

Ecological Impacts

- As filter feeders, these species remove food and nutrients from the water column very efficiently, leaving less or nothing for native aquatic species – this could be a fatal blow for ESA listed aquatic species such as salmonids.
- They have the potential of collapsing entire food webs – they eat the zooplankton and phytoplankton at the bottom of the food chain.

⁴ O’Neil and MacNeill 1991; Miller et al., 1992; Neumann et al, 1993; O’Neil 1996; Athearn 1999

- They can host pathogens and parasites that affect native species – see VHS virus below and a new fungus *Batrachochytrium dendrobatidis* (“Bd” fungus) that can decimate amphibian populations.
- Shells in fish ladders and juvenile bypass facilities can de-scale or abrade fish that lead to lethal infections or permanent injury.

Economic Impacts

- Management costs are enormous, particularly for industrial raw water users like hydroelectric dams, irrigation districts, and water supply agencies.
- These species clog pipes, ruin boat motors, and damage aquatic recreational equipment.
- Once established in a water body, expensive routine maintenance is necessary and perpetual.

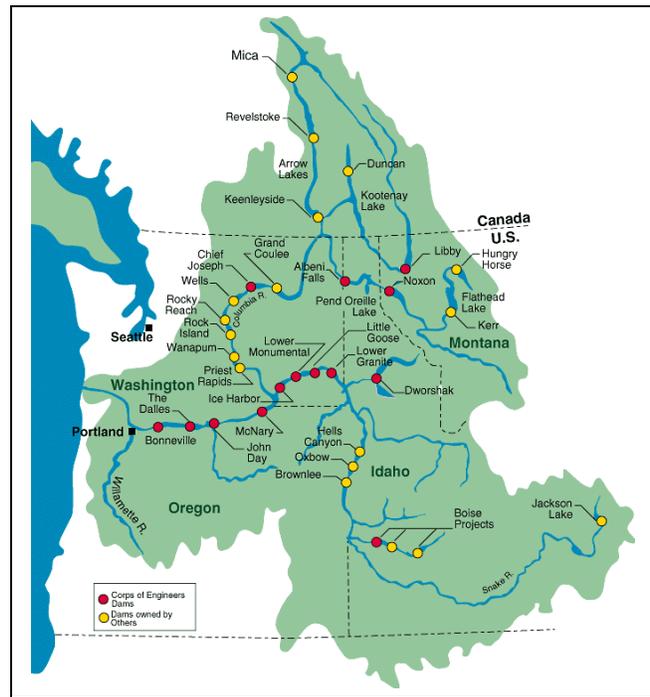


Figure 4. Map of the Columbia River Basin and associated hydro facilities that could be impacted by AIS.

Social/Human Health Impacts

- Increases public costs for electricity, water, food, and recreation.
- Cause interruptions and contamination of water supplies.
- Increase occurrences of blue-green and other toxic algae blooms.
- Concentrate contaminated sediments up to 300,000 times ambient levels and then disperse these into the food chain through direct consumption or through fecal matter.
- Shells in water and on beaches can cut feet and may require closures.
- Die-offs can foul water and smell bad.
- Causes significant changes in recreational activities.

Case in point, the Pacific States Marine Fisheries Commission issued a report in 2005 on the potential economic impacts of zebra mussels on the hydropower facilities in the Columbia River Basin⁵. They found that the one-time cost for installing zebra mussel control systems at hydroelectric projects could range from the hundreds of thousands of dollars to over a million dollars per facility. The estimated cost for a hypothetical zebra mussel mitigation strategy, based upon two response scenarios (a sodium hypochlorite (NaOCl) injection system and anti-fouling paint), at 13 select hydroelectric projects was \$23,621,000. The cost per generator was \$62,599 for the NaOCl system, and \$81,000 for anti-fouling paint (not including labor). Removal, painting, sandblasting, and installation could potentially double

⁵ Phillips et al. 2005)

anti-fouling paint treatment costs. They also estimated that if a NaOCl system were installed at an “average” size Columbia River Basin facility, assuming intermittent use, annual operating costs would likely not exceed \$100,000. Operating costs would vary depending on the facility, degree of infestation, environmental permits, etc.

VHS Virus Risks

The *Viral Hemorrhagic Septicemia-IVb* (VHS) virus is a different strain from the west coast version (VHS-IVa). This strain is more virulent as identified in 2006⁶ when it started to cause widespread fish kills in Lake Erie and Lake Saint Claire of the Great Lakes. It appears to be spreading rapidly through multiple pathways, although it is currently limited to the Great Lakes and a few associated lakes (Figure 5).



Figure 5. Map of current known distribution of VHS IVb virus. (Image courtesy of Winton, USGS.)

VHS is a very potent fish pathogen and is known to affect at least 42 species of freshwater fish, including salmonids, causing massive fish die-offs. This is a new strain and more research is being conducted.

There are no known treatments. It has been reported that *Dreissena* and frozen or live bait may be host pathways for the spread of VHS. It has the ability to survive freezing and can survive up to 49 days in cold (4⁰C) freshwater and 14 days in cold (4⁰C) saltwater. This makes it likely to survive a trip in the undrained bait well or other cavity of a recreational boat coming from that region. Establishment of this new VHS virus strain in Washington waters could devastate recreational and commercial fisheries.

Other AIS Risks from Recreational and Commercial Watercraft

AIS animals: Other potential AIS animals species that may be transported on watercraft include the spiny water flea, fish hook water flea, New Zealand Mudsnail, crayfish, and other crustacean or mollusc at any life stage.

AIS plants: All aquatic plants are prohibited on transported recreational and commercial watercraft. It is difficult to identify AIS animals or plant seeds/spores/rhizomes that may be hitchhiking in native vegetation. We also want to prevent the transportation of native species outside their local Washington State range.

AIS protista: It is suspected that transported watercraft are also pathways for marine and freshwater algae, and diatoms such as *Didymosphenia geminata* (a.k.a., “Rock Snot”). These could be contained in fish wells and other water holding areas on the watercraft or on attached aquatic vegetation.

⁶ Elsayed et al. 2006

AIS pathogens and parasites: These could also be contained in water bodies on the watercraft, in or on AIS or native species, or on attached aquatic vegetation.

Batracholchytrium dendrobatidis is a fungus that is known to cause extermination of amphibian species worldwide and has recently been detected in Trout Lake and Conboy National Wildlife Refuge⁷. The spores on this fungus can swim and live at least 12 weeks in water.

Dreissena and VHS Virus Pathway Risks

Overland transportation of recreational and commercial watercraft: The transportation of recreational and commercial watercraft into and within Washington State poses one of the highest risk pathways for AIS introduction and spread. This risk continues to grow with an increasingly mobile boating public, a growing fish tournament industry, the ability and availability of inexpensive used watercraft being sold from infested states and transported into or through our state, the ability of AIS to remain viable for weeks out of their original habitat, and the discovery of quagga mussels only a day's drive away in Southern Nevada and California. Between October 2nd and November 13th six boats with zebra mussels were stopped at the Spokane Port of Entry. The mussels on three of the boats were still alive, and the transportation companies were cited and fined.

Overland transportation of aquatic equipment and materials: On October 27 this year, a Minnesota weight station inspector stopped a truck transporting a pump covered in zebra mussels from Vermont to North Dakota. The Minnesota DNR estimates that over 10,000 mussels covered the pump⁸. This is a clear example that the sale and movement of infested equipment and materials used for hydropower, farm irrigation, navigation aides, marina, dock supplies, and more are also important pathways for transporting AIS. This is an area that we need to improve on, especially for inspections at WSP port of entry stations and education outreach to those user industries.

Floatplane transportation: There is a significant movement of commercial and private floatplane traffic in the state. These aircraft fly between and within fresh and marine waters on a routine basis. Research is ongoing into this as a potential AIS pathway for animal, plant, and pathogen species. To date, no confirmed infestations have been caused by this pathway.

Waterway transportation of recreational and commercial watercraft: This pathway would become more of an issue if an established population were found in state waters or if an infested boat were launched and traveled along a river system. If a water body did become infested, *Dreissena* can attach to the watercraft in less than a single day, veligers can be taken up into holds, bait buckets, anchors with mud or aquatic vegetation attached, or other wet gear and transported to the next activity point or marina.

Transportation in ballast water or hull fouling of shipping vessels: Transoceanic shipping is not considered a likely source of freshwater AIS such as the *Dreissena*. Vessels departing

⁷ Marc Hayes, WDFW. Personal communication, November 2007.

⁸ <http://kstp.com/article/Pstories/S242714.shtml> posted 10/31/07

infested waters in the Mississippi or even from the original habitat in the Ukraine are required to exchange or treat their ballast water prior to entering Washington State waters. This process would kill any *Dreissena* veligers in the water of those tanks if conducted properly. Any *Dreissena* attached to the hulls of those vessels would also be unlikely to survive the salinity and temperature changes. However, if the California *Dreissena* infestation reaches port waters, we will need to be more vigilant about vessels departing those ports as high-risk ballast water. Ballast water movement on the Columbia River would also become a significant upstream vector if *Dreissena* became established.

Other Pathways: Several other pathways have been identified as capable of transporting AIS into or within state waters. These vary in risk and are generally managed through secondary programs as time, capacity, and priorities allow. Taken as a whole, it identifies a significant gap in AIS management capacity:

- a) *Aquaculture and hatchery stock* – The Lake Mead fish hatchery inadvertently distributed fish and potentially *Dreissena*-infested water to multiple sites in Nevada prior to its discovery. This led to a potential inoculation of Wild Horse Reservoir on the southern edges of the Columbia River basin. Luckily, this has not caused any new reported populations outside the Colorado River system.
- b) *Research* – Most researchers would likely know the threat these species pose and have facilities to contain them, but may inadvertently release larva or veligers through poor quality control. There have been a few cases where *Dreissena* have been brought into the state for research purposes. In general, these are adequately controlled through the WDFW Scientific Collection Permit process.
- c) *Academic* – Similar to the research pathway, but may include less informed educational communities without adequate control facilities. More likely to bring in AIS without permits including species such as crayfish, butterflies, reptiles, etc. Most would not qualify for a scientific collection permit. Enforcement is difficult and education outreach low. The national Habitattitude⁹ campaign is reaching more people as it continues to develop.
- d) *Field Survey Gear* – There are a large number of state and federal agencies, tribal governments, industries, and private contractors that conduct surveys associated with water bodies. These might be for activities such as fish snorkel, stream typing, and geographic surveying.
- e) *Pet/aquarium* – There has been a surge of public acquisition of exotic pets through store and internet sales. This includes most families of the animal kingdom including vertebrates, invertebrates, fish, shellfish, jellyfish, reptiles, amphibians, etc. There have been no known sales of *Dreissena* using this pathway, but all others are fairly common. Enforcement is difficult and education outreach low. The national Habitattitude campaign is reaching more people as it continues to develop.

⁹ www.habitattitude.net

- f) *Garden Ponds* – The garden pond industry has also dramatically increased, and many businesses are carrying aquatic vegetation from multiple local, national, and international suppliers. In one case, two *Dreissena* mussels were found in aquatic iris plants from Holland.
- g) *Hunting/Fishing* – *Dreissena* may be transported into or within the state in water-carrying equipment such as bait buckets and live fish containers, in mud-encrusted boots and wet felts on waders, or on wet snorkel or dive gear. These pathways are generally a higher risk for other AIS such as New Zealand Mudsnails.
- h) *Live or Frozen Bait* – Washington State does not allow the use of live fish as bait for game fish in either fresh or marine waters¹⁰. All other types of live bait are regulated through the wildlife transportation permit process¹¹. The only live bait currently permitted are ribbon leeches. Most other potential live bait such as salamanders, crayfish, and frogs are either specifically listed as prohibited aquatic animal species¹². Frozen bait may come from a large variety of national and international sources. The VHS virus may be transported through either of these pathways.

¹⁰ WAC 232-56-122(6)

¹¹ WAC 220-77-030

¹² WAC 232-12-090

CASE STUDIES

Spokane Port of Entry Incident

Live zebra mussels were found on September 2, 2007, on the rudder assembly of a 44-foot sailboat being transported from Lake Huron by Washington State Patrol Commercial Vehicle Inspector Brenda Davis at the Spokane Port of Entry (Figure 6). The WDFW Enforcement Division was contacted, and Captain Mike Whorton and Sergeant Daniel Rahn inspected the boat, verifying they were live mussels. Photographs were taken and samples collected. The trucking company was cited and fined \$500 for unlawful importation and transportation of a prohibited aquatic animal species within the state of Washington (RCW 77.15.253). The truck was released to continue on to Everett, and Captain Whorton forwarded the information to WDFW ANS Assistant Coordinator Pam Meacham for follow-up.

The owners, the truck driver, and the marina/boatyard operators were notified that the boat was carrying live mussels and would be met at Everett by WDFW ANS staff. Upon inspection, it was determined that the interior water systems of the boat had been winterized prior to leaving Lake Huron. The owners, having visited a museum and learned about zebra mussels, had pressure washed the hull. However, they had missed small mussels that were on and inside the rudder assembly. Everett Boatyard employees furnished chlorine, gloves, and a spray bottle and the owner thoroughly sprayed the rudder area and all of the intakes on the vessel. After a brief drying period the rudder and intakes were sprayed a second time. Areas where the chlorine had run down the hull were misted with water to avoid damage to the aluminum hull.



Figure 6. Photographs from the follow-up decontamination of the sailboat “MOMO” at the Everett Boatyard. Photos courtesy of Bob Meacham.

Lake Mead Quagga Invasion

On January 6, 2007, quagga mussels (*Dreissena rostriformis bugensis*) were discovered by a diver conducting maintenance on a marina structure in Lake Mead. Lake Mead is formed by the Hoover Dam on the Colorado River and is a major destination for Washington State recreational boaters. Further investigations over the next couple months found that the mussels had already become established throughout Lake Mead, Lake Mohave, and Lake Havasu (Figure 7). Since then, it has also been found in the Colorado River Aqueduct to Los Angeles and several reservoirs fed by that system.

This invasion affects four states, the National Park Service, the Bureau of Reclamation, numerous hydroelectric and water conveyance authorities, and potentially Mexico. The greatest surprise of this invasion is how they remained undetected for what appears to be 2-3 years. It appears that the quaggas became established in deeper waters and have just hit a population threshold combined with environmental lake conditions that caused a population explosion (Figure 8).

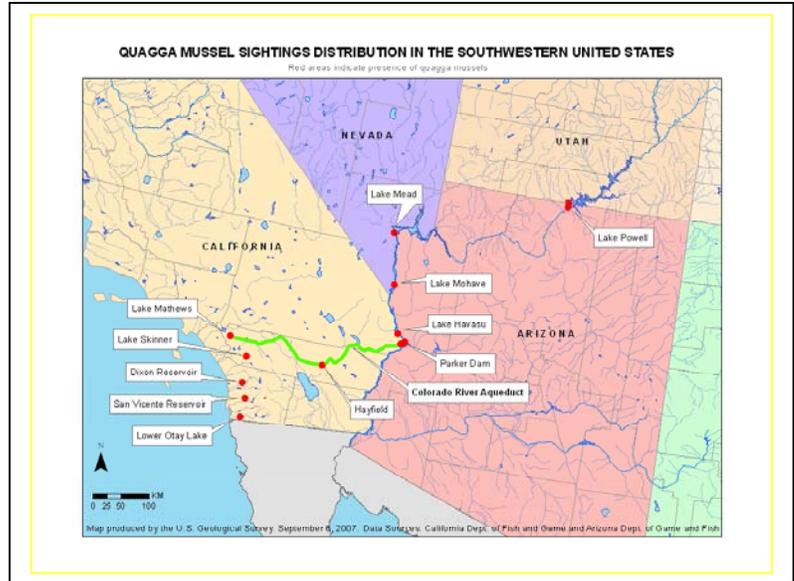


Figure 7. Map showing known populations of quagga mussels since January 6, 2007, discovery in Lake Mead.



Figure 8. Photo on left shows bottom of watercraft trim tab and photo on right of outboard lower unit infested with different ages of quagga mussels from Lake Mead. The black line above the fingertips in the left photo are over 100 juvenile quaggas. (Photos by Allen Pleus, November 2007)

The state of California was the first to implement a rapid response and form an incident command system. Funding for the rapid response came through emergency funding totaling over \$7.4 million covering the last part of FY07 until the end of FY08. One of their major actions was to reopen boarder agricultural check stations and inspect all watercraft coming into their state. To date, they have stopped over 8,000 watercraft of which 120 were infested with some type of AIS.

The National Park Service provided most of the initial investigations into population size and distribution of the mussels in the Lower Colorado River area. They and others have found quaggas in critical areas such as native fish spawning areas, municipal water intakes, fish hatcheries, and on submerged cultural resources. Marina concession operators are now required to have slip rentals agreements that require cleaning prior to entry and upon exit, and NPS has provided both permanent and mobile wash stations (Figure 9). Costs for these and other actions are expected to exceed \$1.8 million this year alone.



Figure 9. National Park Service “Don’t Move a Mussel” signage at Calville Marina on Lake Mead. (Photo by Allen Pleus, Nov. 2007)

The Bureau of Reclamation is reviewing their options on how to best control quagga mussel infestation of the dams along the Lower Colorado River. Many dams are already experiencing problems (Figure 10). One of the most likely options is to install filtration systems on intake lines that will prevent free-floating veligers and shelled adults from entering more sensitive parts of their systems. Depending upon intake pipe number and size, these could cost from \$400,000 to \$1.5 million to install per facility.



Figure 10. Quagga-infested penstock gate at Davis Dam on Lake Mead in October 2007. (Photo by Bureau of Reclamation)

ACCOMPLISHMENTS

The budget and legislative requirements of the aquatic invasive species (AIS) enforcement and prevention program are detailed in Chapters 43.43.400, 77.12.879, and 77.12.882 RCW. For easiest reference, the first part of the accomplishments section is organized by the directive's statute number. Where statutes overlap, accomplishments will be presented in order of their first occurrence with both RCWs identified. The second part of this section describes additional work being accomplished under this program.

Legislative Directives

RCW 43.43.400(3)

Funds in the aquatic invasive species enforcement account may be appropriated to the Washington state patrol and the department of fish and wildlife to develop an aquatic invasive species enforcement program for recreational and commercial watercraft, which includes equipment used to transport the watercraft and auxiliary equipment such as attached or detached outboard motors.

The WDFW Recreational and Commercial Watercraft Pathway Management Plan incorporates both the enforcement and prevention program elements. One of the basic components to any new program is building the infrastructure necessary for the department to fulfill the management plan tasks. Appendix D provides pictures and parts lists of the equipment and materials described below.

Portable Decontamination Equipment- Hot water pressure washer

To respond if an AIS emergency occurred, it was decided that WDFW would research and develop portable decontamination equipment. A portable watercraft decontamination kit has been developed and is controlled and maintained by the AIS Officer for emergency responses. The kit has been developed so it will guard the safety of staff when conducting the decontamination of the watercraft while also ensuring a thorough decontamination process. The kit is made up of two components; a) a kit containing tools, supplies, and personal protective gear for use when conducting decontaminations (same as regional decontamination kit); and b) a trailer mounted hot water/steam pressure washer to be used for watercraft decontamination.

WDFW Regional Watercraft Inspection/Decontamination Equipment

To facilitate the Citizen Requested Watercraft Inspections (CRWI) program (see RCW 77.12.882(1)), it was necessary to research and develop inspection and decontamination equipment. A regional watercraft inspection and decontamination kit has been developed and will be stationed at each of the WDFW regional offices. The kit will be controlled and maintained by the regional Enforcement Captain for use in the CRWI program. The kit has been developed to guard the safety of the WDFW personnel conducting the inspection/decontamination of the watercraft while also ensuring a thorough inspection and decontamination process. The kit is made up of three components: a) a kit containing tools and personal protective gear for conducting the inspections; b) a kit containing tools,

supplies, and personal protective gear for use when conducting decontaminations; and c) a hot water/steam pressure washer for decontamination.

Enforcement Officer Watercraft Field Decontamination Kits

In a preventative effort, and to provide public service during patrols, it was necessary to research, develop and construct field decontamination kits. The kits are to be used by officers during routine patrols, AIS emphasis patrols, and AIS check stations. The kits contains enough equipment to handle low level AIS incidents such as contaminated bilge/live well water, aquatic plants, and other AIS with regard to small watercraft (less than 16 foot). Currently there have been 46 kits constructed and distributed, and it is planned that this will be issued to all WDFW officers statewide.

AIS Enforcement Vehicle

In an effort to support the program goal of promoting public knowledge of AIS issues and laws, it was decided to create a high profile AIS enforcement vehicle. The concept is similar to the DARE vehicles used by law enforcement agencies for awareness of drug interdiction programs. The vehicle is driven full time by the Statewide AIS Officer for patrol purposes, and it will be featured prominently on future AIS emphasis patrols and at AIS check stations. The AIS enforcement vehicle was also filmed for inclusion in the Pacific States Marine Fisheries Commission, 100th Meridian Columbia River Basin Team, Zebra/Quagga Mussel Watercraft Inspection Training Video. The vehicle will also be used for presentations at sport shows, boat shows, etc.

RCW 43.43.400(3)(a)

By the Washington state patrol, to inspect recreational and commercial watercraft that are required to stop at port of entry weigh stations managed by the Washington state patrol. The watercraft must be inspected for the presence of aquatic invasive species.

The WDFW AIS Officer provides training to all Washington State Patrol (WSP) Port of Entry (POE) weight station personnel on watercraft inspections for AIS (see RCW 77.12.879(2)(b)). This has dramatically increased the number of interceptions of commercially hauled watercraft that have had zebra/quagga mussels attached to their hulls. This part of the management plan is still being implemented.

Approximately 200 commercially hauled watercraft have been inspected at WSP POE weight stations. Since the September 2006, there have been ten vessels intercepted in Washington that have been contaminated with zebra/quagga mussels. Eight of the ten contaminated vessels were detected during WSP POE Weigh Station inspections. The other two vessels were detected and intercepted after alerts were sent to WDFW from natural resources staff in Oregon and California. In some cases, an interdiction has resulted in extensive media coverage of the event.

For example, on May 9 of this year, a houseboat traveling from Missouri to Vancouver Island B.C. by way of California and Oregon was stopped. The houseboat was first observed in Oregon by an Oregon Department of Fish & Wildlife (ODFW) employee. However, due to

Oregon law, they lacked authority to conduct a stop. The ODFW employee contacted their state ANS coordinator who then contacted the ANS Unit about the vessel. The AIS Officer was notified and he began working to stop the vessel. Through the partnership with WSP, the commercially hauled vessel was stopped and inspected at the Ridgefield POE. Evidence of zebra mussel contamination was found by the WSP and the boat was detained until WDFW enforcement arrived and decontaminated the vessel. The event was covered by three of the Southwest Washington/Portland Oregon television stations along with two newspapers and a radio station. The event garnered very positive support, and it has helped the state of Oregon enhance its AIS laws.

When identified or suspected, WSP will call WDFW personnel to positively identify and initiate enforcement and/or decontamination proceedings. The three most recent cases resulted in the first criminal citations to be issued in the State of Washington. WDFW issued a press release after the first two citations and this action has been widely applauded by other states (Appendix E).

RCW 43.43.400(3)(b)(i) and 77.12.879(3)

Establish random check stations, to inspect recreational and commercial watercraft as provided for in RCW 77.12.879(3); 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.

WDFW has developed and adopted an “AIS Check Station” enforcement policy for watercraft. The policy establishes check station protocol and requirements, which will be followed when a check station is operated. The policy also establishes when and where check stations can occur. Portable check station signs and traffic cones were purchased and distributed to the WDFW Enforcement regions and must be used when conducting a check station action. The infrastructure to implement a check station is nearly complete and we expect to start setting up random check station actions by January of 2008. Appendix F provides a copy of the policy.

RCW 43.43.400(3)(b)(ii) and 77.12.879(2)(a)

Inspect or delegate inspection of recreational and commercial watercraft. If the department conducts the inspection, there will be no cost to the person requesting the inspection.

During the summer of 2007, WDFW Enforcement conducted its first AIS-specific emphasis patrols. The focus of these patrols was to perform inspections on watercraft for the presence of AIS, enforce Washington State AIS laws, promote public awareness of the threats of AIS, evaluate a draft of the WDFW AIS Inspection Form, and to test the effectiveness of various types of patrols. The results from the patrols were evaluated and are going to be used for guiding future emphasis patrols of this nature. Before the patrols were conducted, Action Plans, which would serve as guidelines were approved to direct the areas, times and actions

undertaken by officers during the patrols. The patrols were conducted at watercraft launch ramps/marinas/parks and operated in a manner attempting to achieve the highest number of inspections possible while minimizing the delay to the watercraft operators. The first patrol was conducted in Eastern Washington, on May 12, 2007, and had 32 Fish and Wildlife Officers participate in the 8-hour patrol. The officers contacted 723 people and inspected 245 watercraft. The second patrol was conducted statewide (both Eastern and Western Washington) on June 30, and had 72 Fish and Wildlife Officers participate in the 8-hour patrol. The officers contacted 3,752 people and inspected 1,152 watercraft. For the two patrols, a total of 4,475 citizens were contacted, and 1,397 watercraft were inspected.

RCW 43.43.400(3)(b)(iii)

Provide training to all department employees that are deployed in the field to inspect recreational and commercial watercraft.

AIS training actions have progressed exceptionally well and are led by the AIS Officer.

WDFW Enforcement Program Personnel Trained

In March of this year, all 91 WDFW Enforcement field staff (21 Sergeants and 70 Officers) were trained by the AIS Officer on state AIS laws/legislation, common AIS identification, common AIS impacts, zebra/ quagga mussel identification, potential impacts of zebra/ quagga mussel, inspection protocol/ techniques, documentation, and detection protocol/ responses. The main focus of the training was directed at AIS prevention and enforcement. Additionally, all WDFW Enforcement personnel are designated as first line AIS responders and are receiving additional watercraft inspection and decontamination training during December 2007.

WDFW Field Staff and Enforcement (combined) Training

In April of this year, 39 WDFW non-enforcement field staff and 23 enforcement officers were trained by the AIS Officer and trainers from the 100th Meridian Initiative-Columbia River Basin Team (Pacific States Marine Fisheries Commission). The training was to designate the attendees as "First Line Responders" for AIS (particularly zebra/ quagga mussels) incidents. The training covered AIS laws/legislation, common AIS identification, AIS impacts, zebra/quagga mussel identification, potential impacts of zebra/quagga mussel, inspection protocol/techniques, documentation, detection protocol/responses, and interim decontamination protocols/ responses. This event was also used to evaluate the training program, which was developed and offered by the Columbia River Basin Team. This training and evaluation has led to the development of a WDFW AIS Watercraft Inspection/ Decontamination program to be used in training all field staff. The trainings will start in December 2007 with the expectation that all current WDFW field staff will be trained by January 31, 2008.

RCW 43.43.400(3)(b)(iv)

Provide an inspection receipt verifying that the watercraft is not contaminated after the watercraft has been inspected at a check station or has been inspected at the request of the owner of the recreational or commercial watercraft. The inspection receipt is valid until the watercraft is used again.

WDFW has created a form, which documents watercraft inspections conducted during: AIS Enforcement emphasis patrols; Citizen Requested Watercraft Inspections; AIS Check Station actions; and general enforcement patrols. The form is also used by WSP to document watercraft inspections conducted by their personnel at POE weigh stations. The form was printed in triplicate with one copy issued as a receipt when the inspection is completed.

RCW 77. 12.879(2)(b)

Educate general law enforcement officers on how to enforce state laws relating to preventing the spread of aquatic invasive species.

WDFW has developed a training program, directed at general law enforcement officers, on the identification and detection of AIS and how to enforce current applicable Washington State AIS laws. Additionally, WDFW is working toward having this training program adopted as a section of the Washington State Criminal Justice Training Commission Basic Law Enforcement Academy.

RCW 77. 12.879(2)(c)

Evaluate and survey the risk posed by recreational and commercial watercraft in spreading aquatic invasive species into Washington state waters.

WDFW hired seasonal staff to inspect recreational watercraft and educate boaters about AIS at freshwater and marine launches statewide. In 2006, 1604 freshwater and 659 marine inspections were done during a 3-month period. In 2007, 2696 freshwater and 732 marine inspections were done during a 6-month period. Combined with WDFW Enforcement Emphasis Patrols, nearly 11,500 watercraft owners were directly surveyed and over 7,000 recreational watercraft were inspected in the last two years. Thousands of anglers from out of state that enter fishing derbies are informed when they register that their boats will be inspected for zebra mussels and must be cleaned. Officers reported that only a small number of boaters left the launch area without removing plant material from their boats.

RCW 77. 12.879(2)(d)

Evaluate the risk posed by float planes in spreading aquatic invasive species into Washington state waters.

Previous research has found the most significant threat from floatplanes is the water they pump out of their floatation areas, which may contain planktonic organisms or pathogens that

could possibly work their way in through leak points. There is a possibility of crabs or mussels attaching themselves to the back of the float-step bulkheads or in the wheel wells of floats with amphibious gear if the aircraft sits dormant in the water for an extended period of time. However, there is little chance of plants or animals attaching to the outer surface of the aircraft or tail assemblies due to the high airspeed (70 to 150 knots). It is likely that the windblast would either blow them off or dry them out. While flight times vary from a few minutes to several hours, the average flight is 1.5 hours.

Floats also have a minimal amount of leakage (from .5 gallons to several gallons a day for moored craft), although most are more apt to take in water during a heavy rain storm than when dormant at a dock. A large number of floatplane operators remove their planes from the water when not flying. All floatplanes have methods of pumping out float or hull compartments or otherwise draining them.

Future research will look into whether the chemical sealers used inside the floats is toxic to planktonic life forms, conduct further investigations of flight patterns to known infested waters, and look at local populations of AIS at floatplane hubs.

RCW 77. 12.879(2)(e)

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.

WDFW uses the boater surveys, enforcement actions, public education, and a series of 180 monitoring sites to implement an early detection plan. Most of the monitoring sites look for the larval stage of the zebra/quagga mussels in high-risk water bodies throughout the state. The ANS Unit will be enhancing this plan in 2008 with more monitoring sites using settling plates and scuba surveys.

WDFW is working closely with the Columbia River Basin Team to finalize a comprehensive Interagency Invasive Species Rapid Response Plan for zebra/quagga mussels¹³. The threat of this species being introduced into the Columbia River system affects five states and two Canadian provinces. A coordinated regional effort is in the best interest of everyone and it will take regional, and probably national, resources to address. The plan has been tested recently in a rapid response exercise. Once finalized, a Memorandum of Agreement will be circulated to the governor's office and all affected state agencies to use this plan. WDFW would take a lead role in any rapid response actions. A SEPA review of the finished plan will then be assessed once all possible control and eradication actions are identified.

¹³ <http://100thmeridian.org/ColumbiaRT.asp>

RCW 77.12.879(3)

The department shall provide training to Washington state patrol employees working at port of entry weigh stations on how to inspect recreational and commercial watercraft for the presence of aquatic invasive species.

One of the first steps by WDFW in the development of the AIS enforcement portion of the program was to develop a partnership with WSP so both agencies could cooperatively work together. This partnership was enhanced with WDFW providing training to all WSP staff at the POE Weigh Stations on how to inspect watercraft for the presence of AIS (primarily focusing on zebra/quagga mussels). In December 2006, all WSP staff (66 commercial vehicle inspectors) at the five POE Weigh Stations (Spokane, Plymouth, Cle Elum, Ridgefield and Bow Hill) had been trained by the WDFW AIS Officer. The training program for the POE consisted of: AIS legislation; AIS laws; common AIS identification; common AIS impacts; zebra/quagga mussel identification; potential impacts of zebra/quagga mussels; inspection protocol/ techniques; documentation; and detection/ response protocols. Currently, all five POE are actively conducting inspections of vessels required to stop at the weigh station (commercially hauled < 10,000 lbs gross weight). The POE inspections are an integral part of an effective AIS prevention and enforcement program and have resulted in a record number of zebra/quagga mussel detections during 2007.

RCW 77.12.882(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.

WDFW has developed and begun implementation of a Citizen Requested Watercraft Inspections (CRWI) program. Beginning in January 2008, this program will be available to owners or persons in possession of the watercraft (such as commercial trucking companies) and allows the person(s) to request an AIS inspection of the watercraft. The inspection will then grant immunity from AIS criminal law prosecution provided they follow WDFW directives should AIS be found at this time. The creation of this program required several protocols and policies to be drafted and adopted by WDFW Enforcement in order to fulfill the intent of the legislation. WDFW Enforcement has created a "Boat Inspection" policy, which has established the inspection program and delegated workload among WDFW regions and personnel. The policy establishes when an inspection is recommended and locations/ times inspecting will be available to the public. The implementation of this program required the creation of a "Boat Inspection" training curriculum for WDFW personnel. The training is similar to that provided to other staff plus includes procedures and protocols to follow upon the detection of AIS, basic decontamination procedures and guidelines, and reporting procedures. The curriculum will also be established with a standardized refresher- training interval for the program. WDFW is currently researching

other inspection programs and will adopt guidelines for the acceptance of inspections from outside sources when they are available.

RCW 77.12.882(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.

WDFW and the Washington State Department of Transportation (DOT) are in the final stages of developing AIS signs, which are to be posted at highway entry points (up to 32 locations depending on final costs) into Washington. The signs warn persons transporting watercraft of the threat of aquatic invasive species, that transportation of AIS is prohibited, and that there are penalties associated with this (see cover). The signs also contain the contact information for obtaining a free inspection. There will be two sizes of signs installed along high-risk highways: at the I-5 and I-90 borders with Oregon and Canada, a ten foot by fourteen (10' x 14') sign will be installed; and on smaller secondary highways a six foot by eight foot (6'x 8') sign will be installed. More signs may be added after assessment of this phase. An Inter-Agency Agreement between WDFW and DOT for the fabrication and installation is currently being finalized and the signs are scheduled for installation during December 2007.

RCW 77. 12.882(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.

WDFW developed public information signage for boat launches and marinas. After the signs were developed and approved, 1,500 were purchased for distribution and posting. The signs contain a warning to vessel owners about the threat of aquatic invasive species, the penalties associated with introduction of a prohibited aquatic animal or plant species, and the proper contact information for obtaining a free inspection. These signs will be posted at all boat launches owned or leased by WDFW. The signs are also being provided to port districts, privately or publicly owned marinas, state parks, and other state agencies or political subdivisions owning or leasing boat launches.

RCW 77. 12.882(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.

WDFW has begun coordination with the Washington State Parks and Recreation Commission (Parks) to include AIS information in all boating publications provided to the public. The 2008 version of "Adventures in Boating" handbook will have a section that contains a warning about the threats associated with AIS, a warning about the penalties associated with introductions or transportation of AIS, proper contact information for obtaining a free WDFW AIS vessel inspection, preventative measures, and how to find additional information about Washington State AIS laws. Additionally, WDFW is working with Parks to have AIS internet links between each agencies websites.

Additional Accomplishments*Inter-Governmental Agency Coordination and Cooperation*

One of the most important weapons in the battle against AIS, is creation of working partnerships among the various state and federal agencies doing work in this field. To foster working relationships, the WDFW AIS Officer acts as the primary liaison in AIS enforcement matters between WDFW and other state and federal agencies. During 2007, the AIS Officer worked with the following state agencies: Washington State Department of Ecology; Washington State Department of Natural Resources; Washington State Department of Parks and Recreation; Washington State Department of Agriculture; Puget Sound Partnership; Washington State Patrol; and the Oregon State Department of Fish & Wildlife.

The AIS Officer has been WDFW's Enforcement representative to the Washington State Aquatic Nuisance Committee. The AIS Officer provided AIS identification and prevention training to 125 Washington State Department of Ecology Environmental Assessment Program employees at their annual in-service training. During 2007, the AIS Officer worked with the following Tribal government consortiums and Federal agencies: the Northwest Indian Fisheries Commission; US Fish & Wildlife Service; National Marine Fisheries Service; and the Pacific States Marine Fisheries Commission's 100th Meridian Initiative Columbia River Basin Team (CRBT). The AIS Officer has created an exceptionally good working relationship with the CRBT and has traveled to other states to conduct joint trainings with their training team. Additionally, the CRBT used the AIS Officer as their featured watercraft inspection instructor in a video they are producing for use throughout the US.

AIS "Toll Free" Information Line

WDFW Enforcement Program has secured a "Toll Free" AIS Information Line number, which will serve as the primary contact system for the public. This line will be available for

the public to access information about the boat inspection program, report AIS sightings, or find out additional information about AIS. The system will have an automated menu and will provide navigation through the information system. The automated menu will also be set-up to convey enough information about the boat inspection program the caller will be able to determine the need for an inspection. This will, hopefully, minimize unnecessary inspections. If the caller is reporting a sighting or trying to find out general AIS information and is calling between 9:00 am - 5:00 pm, Monday thru Friday, the system will route to WDFW ANS Project Staff. The **1-888-WDFW-AIS (933-9247)** number is scheduled to be activated and come on-line January 2008.

WDFW AIS Web Pages

WDFW has been updating the ANS web pages at <http://wdfw.wa.gov/fish-sh.htm> to reflect the development of the program. We anticipate many new changes and additions in the following two years. The page provides AIS information to the general public concerning the threat of AIS, the penalties associated with introduction of AIS, the proper contact information for obtaining vessel inspections, and preventative measures. We are working toward an early 2008 launch of new pages that provide links to the Enforcement Division and AIS laws with regard to requirements for stopping at AIS watercraft check stations.

Public Outreach

Public outreach is considered the number one tool that can be used for AIS prevention, and the WDFW is actively seeking opportunities for this effort. A major component in this effort is presentations to stakeholder (sportsmen, fishing, recreational, etc.) groups. During 2007, the ANS Unit conducted seven outreach presentations to various stakeholder groups to approximately 450 citizens. The largest presentation occurred at the tri-cities during the Wal-Mart sponsored "FLW" Pacific Northwest Bass tournament. The presentation had over 300 tournament participants in attendance. In addition to the stakeholder groups, the AIS Officer and ANS Unit Assistant Coordinator participated in the Quincy, WA water festival by conducting AIS presentations to four middle school classes with 120 students attending.

APPENDIX

Appendix A: ANS Strategic Plan Contents

Appendix B: Recreational & Commercial Watercraft Pathway Management Plan Contents

Appendix C: AIS Prevention and Enforcement Account FY 05-07 Revenue

Appendix D: AIS Inspection and Decontamination Equipment

Appendix E: Citation press release

Appendix F: Enforcement Protocols

APPENDIX A

DRAFT
WDFW ANS Unit
Strategic Plan 2007-2009
For
Washington State

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1. Introduction

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- 2.2. Control, contain, or eradicate introduced and established ANS
- 2.3. Predict new ANS threats and risks
- 2.4. Cooperate in state, regional, national, and international ANS processes
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APPENDIX B

DRAFT
WDFW ANS Unit
Recreational & Commercial Watercraft Pathway Management Plan
For
Washington State

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 - 2.2. Objective: Enforcement of recreational and commercial watercraft laws and rules
 - 2.3. Objective: Training WDFW enforcement officers
 - 2.4. Objective: Training WDFW field staff
 - 2.5. Objective: Training general law enforcement officers
 - 2.6. Objective: Early detection and rapid response plans

- 3. Control, Contain, or Eradicate Established ANS Populations**
 - 3.1. Objective: Statewide control, contain and eradication protocols & standards

- 4. Predict and detect new or recurring ANS threats and risks through research and monitoring**
 - 4.1. Objective: Research on introduction pathway risks
 - 4.2. Objective: Monitoring plans by pathway

- 5. Coordinate/cooperate in state, regional, national, and international ANS processes**
 - 5.1. Objective: Coordination with state ANSC and ISC
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- 6. Promote Public Education and Volunteer Opportunities on ANS Issues**
 - 6.1. Objective: Prevention education and outreach
 - 6.2. Objective: DFW web site as education and resource tool
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- 7. Promote biodiversity and restoration**
 - 7.1. Objective: Research on effects of control, contain, and eradication management approaches on native species biodiversity
 - 7.2. Objective: Coordinate with state Biodiversity Council

8. **Meet specific legislative or funding directives**

- 8.1. Objective: Implement ESSB 5699 (2005) preventing and controlling aquatic invasive species and algae – AIS prevention program
- 8.2. Objective: Implement ESSB 5699 (2005) preventing and controlling aquatic invasive species and algae – AIS enforcement program
- 8.3. Objective: Implement E2SSB 5923 (2007) aquatic invasive species enforcement and control – AIS prevention program (Changes/revisions to 5699)
- 8.4. Objective: Implement ESSB 5923 (2007) aquatic invasive species enforcement and control – AIS enforcement program (Changes/revisions to 5699 – now under RCW 77.12.879)

9. **Authorities**

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APPENDIX C

AIS Prevention Account (09N): FY 05-07 Revenue

DEPARTMENT OF FISH AND WILDLIFE

FUND 09N - Aquatic Invasive Species Prevention Account

Manager: Morris Barker 360.902.2826

Prepared By: Eric Fiedler 360.902.2429

Bal As of 06.30.2007 (FM 26) Phase III

Month-Year	Total Revenue	Exp. Operating	Exp. Capital	Total Exp. O&C	Adjustments	Total Fund Bal
Total FY - 2006	313,412	(48,686)	0	(48,686)	0	264,727
Total FY - 2007	399,655	(325,058)	0	(325,058)	0	339,323
Balance	713,067	(373,744)	0	(373,744)	0	339,323

<u>07.01.2005</u>						0
Jul-05	0	0	0	0		0
Aug-05	2,609	0	0	0		2,609
Sep-05	2,057	0	0	0		4,665
Oct-05	1,103	0	0	0		5,768
Nov-05	788	0	0	0		6,555
Dec-05	721	0	0	0		7,276
Jan-06	926	0	0	0		8,202
Feb-06	1,841	0	0	0		10,042
Mar-06	4,502	0	0	0		14,544
Apr-06	84,516	0	0	0		99,059
May-06	85,251	(10,607)	0	(10,607)		173,704
Jun-06	129,079	(32,234)	0	(32,234)		270,549
FM-99	22	(5,845)	0	(5,845)	0	264,727
Jul-06	61,674	(16,692)	0	(16,692)		309,709
Aug-06	26,636	(13,491)	0	(13,491)		322,853
Sep-06	9,062	(14,338)	0	(14,338)		317,577
Oct-06	3,911	(13,154)	0	(13,154)		308,333
Nov-06	2,138	(17,085)	0	(17,085)		293,386
Dec-06	1,084	(17,360)	0	(17,360)		277,110
Jan-07	1,486	(24,728)	0	(24,728)		253,867
Feb-07	2,572	(51,500)	0	(51,500)		204,939
Mar-07	5,303	(13,434)	0	(13,434)		196,808
Apr-07	75,787	(34,693)	0	(34,693)		237,902
May-07	96,846	(43,094)	0	(43,094)		291,654
Jun-07	100,548	(47,678)	0	(47,678)		344,524
FM-26	12,611	(17,811)	0	(17,811)	0	339,323

APPENDIX D

Regional AIS Inspection Kit

Includes:

- ❑ Yellow Hardhat 1
- ❑ Safety Goggles/glasses 1
- ❑ Hearing protection (disposable ear plugs)
- ❑ Gloves, cotton (pair) 2
- ❑ Knee Pads (pair) 1
- ❑ Plastic Scraper 1
- ❑ Magnifying Glass 1
- ❑ Flashlight 1
- ❑ Inspection Mirror 1
- ❑ Clipboard 1
- ❑ Tools (crescent wrench, adjustable pliers, Channel Lock, interchange screw driver)
- ❑ Tool Box (contains above) 1



Regional AIS Decontamination Kit

Includes:

- ❑ Gloves, cotton (pair) 1
- ❑ Gloves, rubber (pair) 1
- ❑ Rain Gear (set) 1
- ❑ Face shield 1
- ❑ Plastic Scraper 2
- ❑ 20" Gong Brush 1
- ❑ Pump Spray Bottle 1
- ❑ Bleach (1gallon)
- ❑ Insulated Nozzels 2 ("Fireman's" Hose Nozzle, Angled Hose Nozzle)
- ❑ 30 Amp "Heavy Duty" Power Cord 1
- ❑ Tool Box (contains all above) 1
- ❑ 2.5 Gallon Pressurized Sprayer 1
- ❑ 75' Commercial Water Hose 1



Regional AIS Hot Water/Steam Pressure Washer

Specs:

- ❑ Manufacturer: Mi-T-M Corporation
- ❑ Model: HSE-1002-SM10
- ❑ 1000 PSI
- ❑ 2.0 Gallons per minute
- ❑ 210 Degree maximum water temperature (140 degree rise above inlet ambient)
- ❑ 250 Degree maximum steam temperature
- ❑ 1.5 horse power
- ❑ 120 volts
- ❑ Adjustable high pressure direct injection detergent system
- ❑ Dual Lance (adjustable)



Field Decontamination Kit

Includes:

- ❑ Gloves, rubber (pair) 4
- ❑ Goggles shield 1
- ❑ Facemasks 4
- ❑ Scrub Brush 1
- ❑ Pump Spray Bottle 1
- ❑ Plastic Scraper
- ❑ Measuring cup (plastic 1 quart)
- ❑ Bleach (1gallon)
- ❑ Trash Bags (4)
- ❑ Bucket (either 2.5 or 5 gallon)
- ❑ Pamphlets (for public distribution and AIS identification)



APPENDIX E

NEWS RELEASE

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
600 Capitol Way North, Olympia, Washington 98501-1091
Internet Address: <http://wdfw.wa.gov>

October 29, 2007

Contact: Mike Cenci, (360) 902-2936
Mike Whorton, (509) 892-7857

First Washington citations issued for zebra mussel contamination

SPOKANE -- Washington Department of Fish and Wildlife (WDFW) enforcement officers have shifted from warnings to issuing citations in an effort to keep Washington's waters free of an invasive species that threatens native fish and wildlife.

The state's first citations for illegally transporting zebra mussels were issued earlier this month to two out-of-state trucking companies hauling large boats to the Pacific coast. Live zebra mussels were found attached to boats being transported by a hauler from Ontario, Canada, and another from Iowa. The zebra mussels were spotted during Washington State Patrol commercial vehicle inspections at a Washington-Idaho port-of-entry weigh station east of Spokane.

Zebra mussels have been prohibited in Washington since 2002, but officers are taking stronger action against contaminated vessels now that zebra mussels and a subspecies known as Quagga mussels have shown up in other western states.

In the recent detections here, State Patrol officers who had been trained by WDFW on invasive species inspection spotted the tiny mollusks and contacted WDFW. WDFW issued the trucking companies gross misdemeanor citations for unlawful importation and transportation of the prohibited aquatic animals, and arranged for decontamination of the boats at marine facilities on the coast.

"We hope these citations, which can result in fines up to \$5,000, will raise awareness that this state looks at invasive species very seriously," said Mike Cenci, WDFW deputy chief of enforcement. "Once a species like this gets into our waters, it's very unlikely we can contain it," he said.

"When I talked with the truck driver and trucking company manager from Ontario, both said they fully understand because they've seen what zebra mussels have done to the Great Lakes area," said Capt. Mike Whorton, who heads WDFW's enforcement operations in eastern Washington. "One trucking company manager

said he would no longer haul vessels that have not passed an aquatic-invasive-species inspection.”

Zebra mussels (*Dreissena polymorpha*) are native to the Caspian Sea. They entered the Great Lakes in the mid 1980s in ship ballast water, and have since spread to more than 20 states and two Canadian provinces. The mussels are easily transported on boats and trailers because they can live out of water for up to a month. Once zebra mussels are introduced to a water body they multiply quickly and threaten native fish and wildlife by consuming available food and smothering other species. They also clog water-intake systems at power plants and other facilities. In southern California, Nevada and Arizona, Quagga mussels, have spread recently.

“If zebra mussels get started here they could devastate our fish and wildlife resources, as well as hydroelectric facilities and irrigation systems,” Cenci said.

Intercepting mussel-contaminated vessels at commercial vehicle inspection stations is just a small part of the solution, Cenci noted, because many recreational boats are hauled into the state without inspections. Earlier this year the Washington Legislature expanded authority and funding for random inspections and field checks of all watercraft.

“Any real success in controlling the spread of this invasive species will rely heavily on boat owners taking responsibility for their vessels,” Cenci said. “It’s important that they know what to look for and thoroughly clean their boats.”

For more information on zebra mussels and other aquatic invasive species, see http://wdfw.wa.gov/fish/ans/you_can_help.htm

###

APPENDIX F

Regulation 5.81 Aquatic Invasive Species Check Stations

Issued By:	Chief Bruce J. Bjork
Applies To:	All Fish and Wildlife Officers
Effective Date:	10/1/2007
Supersedes:	N/A
References:	RCW 43.43.400, 77.12.879, 77.13.253
Forms and Templates:	Aquatic Invasive Species Inspection Certificate
CALEA Standards:	N/A

POLICY

- 1. Coordination:** Coordination of check station operations shall occur in consultation with the Statewide Aquatic Invasive Species (AIS) Enforcement Unit.
- 2. Prior Approval:** Check Stations shall only be operated with approval from the Regional Captain.
- 3. Operational Plans:** Check stations shall not be conducted without an approved operational plan. Coordinating officers shall file operational plans with Headquarters, Statewide AIS Unit, and Regional Captain. Protocols for processing contaminated watercraft, including decontamination procedures to be followed, shall be outlined in the operational plan. A copy of the operational plan shall be onsite while conducting the check station.
- 4. Jurisdictional Notification:** The coordinating officer shall notify the Washington State Patrol and Local Law Enforcement agencies 48 hours before the operation of the check station.
- 5. Staffing:** At least two uniformed Fish and Wildlife Officers shall operate check stations occurring on or along any public roadway. This will minimize inconvenience to the public and to ensure safe operation of the check station. At least one uniformed Fish and Wildlife Officer shall operate check stations occurring at boat launches/ramps.
- 6. Hours of Operation:** Check stations occurring on or along any public roadway shall only be operated during daylight hours. Check Stations occurring at boat launches/ramps shall not have any restrictions as to hours of operation and may be conducted at any time.
- 7. Signs and Traffic Control:** Check stations shall be plainly marked with approved “Aquatic Invasive Species-Check Station” Signs. Traffic cones, if available, should be used to mark check station entrance and exit lanes.
- 8. Location:** Check station locations shall be selected to meet the following vehicle and watercraft staging requirements:
 - A. Pre-Inspection:** The site must safely accommodate the traffic in-flow.

B. Inspection: The site must have an area to safely conduct inspections.

C. Decontamination: The site must have an area designated for the containment of contaminated watercraft.

D. Post-Inspection: The site must safely accommodate the traffic out-flow.

9. Private Roadways and Launches/Ramps: Check stations will not be conducted on privately controlled roadways or launches without permission given by the owner or managing designee.

10. Inspections: All watercraft stopped at the check station shall be inspected unless a valid AIS inspection certificate from Washington or other State is presented and the watercraft has not been launched or used since the documented inspection.

11. Inspection Documentation: An AIS watercraft Inspection Certificate shall be completed for every inspection. Distribution of copies:

- **Watercraft-** issued to person in control/possession of the watercraft
- **Original - WDFW AIS Enforcement-** forwarded to Enforcement Headquarters
- **ANS Unit-** forwarded to ANS unit in Fish Management. WDFW AIS Enforcement and Aquatic Nuisance Species (ANS) Unit copies of inspection forms shall be forwarded within 24 hours of the end of the check station operation.

12. Enforcement of Other Violations: Officers shall not routinely enforce RCW Chapter 46 traffic infractions during the operation of an AIS Check Station.

Regulation 5.82

Citizen Requested Aquatic Invasive Species Watercraft Inspections

Issued By: Chief Bruce J. Bjork
Applies To: All Fish and Wildlife Officers
Effective Date: 10/1/2007
Supersedes: N/A
References: RCW 43.43.400, 77.12.879, 77.12.253;
Inspection/Decontamination Equipment List; AIS Web Page
Forms and Templates: Aquatic Invasive Species Inspection Certificate
CALEA Standards: N/A

POLICY

- 1. Coordination:** Coordination of the Citizen Requested Watercraft Inspections program operation shall occur in consultation with the Statewide Aquatic Invasive Species (AIS) Enforcement Unit and the Aquatic Nuisance Species Unit in Fish Management.
- 2. Prior Approval:** Watercraft inspections shall only occur with approval from the Regional Captain.
- 3. Inspection Location:** Watercraft inspections will generally be conducted at the regional office. Exceptions to inspection location shall be on a case-by-case basis and only with the approval of the Regional Captain.
- 4. Inspection Scheduling:** Watercraft inspections will generally be by appointment only. Exceptions to appointments shall be on a case-by-case basis and only with the approval of the Regional Captain.
- 5. Days of Operation:** Watercraft inspections will generally be conducted on Tuesdays and Fridays. Exceptions to inspection days shall be on a case-by-case basis and only with the approval of the Regional Captain.
- 6. Hours of Operation:** Watercraft inspections will generally be conducted between 0900 hours (9:00 a.m.) and 1500 hours (3:00 p.m.). Exceptions to hours of operation shall be on a case-by-case basis and only with the approval of the Regional Captain.
- 7. Inspection/Decontamination Equipment:** Inspection/Decontamination equipment shall be maintained on site and available for use when inspections are conducted. The Regional Captain shall be responsible for the inspection/decontamination equipment and its maintenance.
- 8. Criteria for Recommending Inspections:** The following criteria should be used for whether or not an inspection is recommended:
 - A.** *Watercraft that **have not** been used outside of Washington State waters:* Inspection is not recommended.

B. Watercraft that *have* been used outside of Washington State in:

States

Alabama, Arizona, Arkansas, California, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nevada, New York, Ohio, Oklahoma, Pennsylvania, Tennessee, West Virginia, Wisconsin

Or

Provinces

Ontario, Quebec

Inspection is recommended. If the watercraft has not been used in any of the above listed states or provinces, inspection is not recommended.

9. Inspection Documentation: An AIS watercraft Inspection Certificate shall be completed for every inspection. Distribution of copies:

- **Watercraft-** issued to person in control/possession of the watercraft
- **Original - WDFW AIS Enforcement-** forwarded to Enforcement Headquarters
- **ANS Unit-** forwarded to ANS unit in Fish Management. WDFW AIS Enforcement and Aquatic Nuisance Species (ANS) Unit copies of inspection forms shall be forwarded within 24 hours of the inspection.



State of Washington
Department of Fish and Wildlife

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