

AIM to STAB

Aquatic Invasive Mussels - Stop Them at the Borders

BACKGROUND

1. What is STAB?

STAB is a group of individuals, communities and organizations sharing a belief that the only way to save our Saskatchewan lakes and rivers from aquatic invasive mussels is to stop those mussels at the border before they enter the province. Although initiated by PARCS, STAB includes membership from many other groups and organizations across the province.

2. What is PARCS?

PARCS is the Provincial Association of Resort Communities of Saskatchewan. ⁱ

3. What are aquatic invasive mussels?

These tiny Zebra and Quagga mussels (as small as a grain of rice, as large as a fingernail) are much smaller than our Saskatchewan mussels (or clams as they are often called)ⁱⁱ. Also, unlike native mussels which bury into the bottoms of lakes and rivers, these foreign mussels attach themselves to hard surfaces like the hulls of boats, docks, motors, anchors, and most dangerous of all, to the insides of the intake pipes leading to water treatment plants, to hydroelectric generators and to irrigation systems. Any mussel seen attached to a hard surface is a foreign mussel.

4. How did these mussels get into Canada?

It is believed that they arrived in the USA in 1986 via the ballast water of cargo vessels. The species spread from the eastern USA into Canada's eastern waterways. In 2009 zebra mussels were found in Saskatoon on a recreational vehicle from the USA. The boat was decontaminated. In 2011 these mussels were detected in the Red River, in North Dakota. In 2012 officials in the State of Utah intercepted a contaminated boat returning from Lake Mead, Nevada, and heading for Saskatchewan. It was quarantined and decontaminated. By 2013 Lake Winnipeg, Cedar Lake and the Red River in Manitoba were infected.

5. Why are these mussels so dangerous?

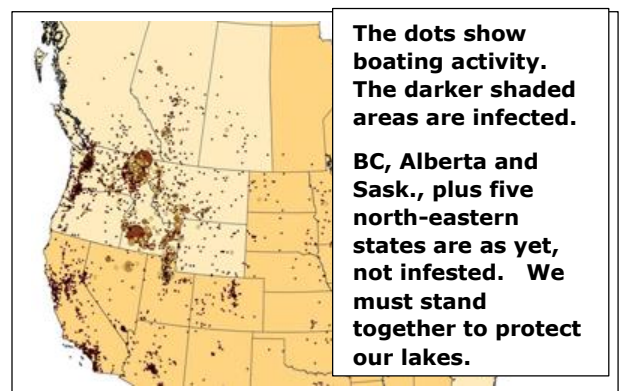
"Once introduced it is virtually impossible to eradicate them making prevention key to stopping their spread to the west". ⁱⁱⁱ The north western states (shown on the right) have implemented aggressive prevention programs that have been successful to date.

6. How do these mussels reproduce?

An adult mussel will spawn up to a million eggs which thrive in temperatures of 10 to 17 degrees C in depths of 4 to 7 metres. They can live up to 30 days out of water, which enables them to hitchhike from other provinces and states, attached to infested boats.

7. How far west have these mussels travelled to date?

The mussels have spread from the east toward the west. BC, Alberta, Saskatchewan and the five north-western states have been called upon to adopt aggressive practices to prevent the spread of these destructive mussels into the north-west part of the continent. In 2015, 11 mussel boats were stopped on the Alberta border and decontaminated. ALL OF THESE BOATS HAD TRAVELLED FROM EASTERN CANADA THROUGH SASKATCHEWAN.^{iv} ***Saskatchewan is very vulnerable.***



IMPACTS

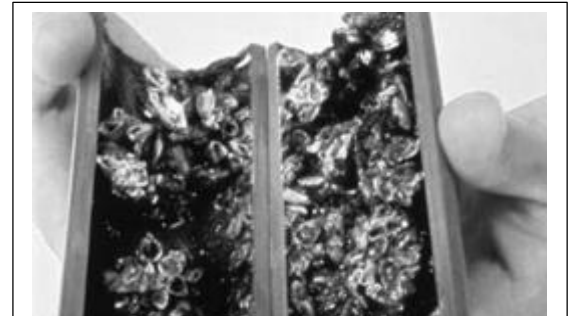
8. What are the major economic impacts of an invasive mussel infestation?

In 2013, the **Alberta** Department of Environment and Renewable Resources estimated that the **ANNUAL COST** of an invasive mussel infestation would be **\$75 million:** ^v

Power generation	\$ 5,938,487
Drinking water systems	\$ 20,839,921
Boat maintenance	\$ 390,600
Recreational fishing	\$ 21,830,892
Water management structures	\$ 8,841,373
Water diversion intakes	\$ 3,910,000
Property value	<u>\$ 13,789,500</u>
Total annual cost estimated at	\$ 75,540,773 ^{vi}

The largest part of these costs would come from an infestation on Alberta's water-operated infrastructure due to:

- Filling intake pipes, irrigation lines, dam operations,
- Clogging screens,
- Requiring new capital and maintenance costs,
- Increased costs to users,
- Costs of crop & food production; drinking water and waste water.



Clogged intake pipes for drinking water, irrigation and hydroelectric power will cost millions for Saskatchewan tax payers every year.

An impact study in Ontario shows that they are spending \$75 to \$91 million annually as a result of the mussel invasion. ^{vii} A study conducted by the Okanagan Basin Water Board estimated a cost of at least \$43 million each year in lost revenue and added maintenance of aquatic infrastructures." ^{viii}

9. What is the impact of these mussels on fish populations?

An infestation causes an increase in fish species such as yellow perch that feed on shallow-bottom organism and a decrease in fish that feed on deep water organisms, such as northern Pike and native trout. Mussels eat plankton, causing rapid changes to the food web and physical environment of fish.

10. Will these mussels like it in Saskatchewan?

Biologists feel that the ecological risk is high. We have the correct water quality for mussels to survive and a growing number of boats both leaving and coming into our province. Most of Saskatchewan is classified as having "a very high probability of invasion".^{ix}

11. Which Saskatchewan lakes are most at-risk?

While all lakes are at risk, the Fisheries Branch^x have stated that the Boundary Dam Reservoir, the South Saskatchewan (Lake Diefenbaker) system, the Qu'Appelle Lakes and Tobin Lake are most likely to be visited by out-of-province boats. Saskatchewan boats leaving our province also pose a risk.

12. How many Saskatchewan people would be affected by an infestation of foreign mussels?

We know that about half of Saskatchewan's drinking water comes from the fresh waters flowing into our province through the South Saskatchewan River, flowing north out of Gardiner Dam, through Saskatoon and on to Tobin lake, and flowing south through Buffalo Pound which provides water to Moose Jaw and Regina, into Last Mountain Lake and into the Qu'Appelle Chain of lakes. All of these people could face higher utility bills for drinking water. The effect on the hydroelectric power could have a similar effect on electrical bills. Consider the impact on the irrigation industry, the decrease in property values for cottage owners, and the loss of tourism and fisheries. A mussel infestation would be devastating on any lake and mean significant costs for all the tax payers of Saskatchewan.^{xi}

PREVENTION

13. What have the Prairie Provinces been doing to prevent the infection of their lakes?

This chart summarizes the initiatives undertaken taken by the Prairie Provinces to date. ^{xii}

Program	Description	Effect	Alberta	Manitoba	Sask.
CLEAN / DRAIN / DRY EDUCATIONAL PROGRAM	<ul style="list-style-type: none"> An informational program to train boaters to act responsibly. Posters at boat launches, marinas Aimed at effecting behavior change 	<ul style="list-style-type: none"> Most useful in areas that are already infected, to prevent spread of infection Not really applicable to stay-at-home boaters in Sask 	✓	✓	✓
MONITORING	<ul style="list-style-type: none"> Volunteers taking samples from lakes to check for adults (substrates) and/or juveniles (veliger) 	<ul style="list-style-type: none"> BUT - If the samples come back positive – it's TOO LATE TO DO ANYTHING BY THAT TIME 	✓ 73 lakes in 2015	✓ 30 lakes in 2015	✓ 5 lakes in 2015
HOTLINE	<ul style="list-style-type: none"> 24/7 response to send out decontamination unit 	<ul style="list-style-type: none"> Works best in combination with an inspection program 	✓ 1-855 336-BOAT	✓ 1-877- 667-2470	✓ 1-800 667-7561
LEGISLATION	<ul style="list-style-type: none"> Recent Alberta Ministerial Order gives authority to fishery officers 	<ul style="list-style-type: none"> Necessary in order to implement border inspections 	✓	✓ New regulations recently announced	✗
DECONTAMINATION UNITS	<ul style="list-style-type: none"> Portable hot-water sprayers used to clean contaminated boats 	<ul style="list-style-type: none"> A necessary part of border of border inspections 	✓ BC has units at its highway & entrances to parks	✓ Alberta has 1 at each of 9 highway stations plus 4 roving units	? Sask has only 2 units in the province
BORDER INSPECTIONS	<ul style="list-style-type: none"> Based on the model used in the western states Focus is on major highways Seasonal wage staff Focus on adult mussels 	<ul style="list-style-type: none"> The only way to keep infected boats out of the province! 	4000 inspections in 2014 2 fouled boats 20+ washes	\$1 million pledged ^{xiii}	✗

THE SASKATCHEWAN GOVERNMENT HAS BEEN THE ONLY WESTERN PROVINCE TO REFUSE TO PASS THE NECESSARY LEGISLATION AND REGULATIONS OR TO ALLOCATE THE FUNDS FOR IMPLEMENTING BORDER INSPECTIONS.

14. If many of these boats are coming in from the US and Manitoba for our fishing derbies, could the province not enact mandatory inspections of boats at these derbies?

Organizers of major fishing derbies are quick to explain that many of the out-of-province competitors arrive several days or even a week prior to the tournament and 'practice fish', checking out the best spots on the lake prior to the tournament. Inspections on the day of the tournament are, for a large part, too little too late.

MAKING IT HAPPEN

15. Has there been recent correspondence with the government on this matter?

Letters to Premier & Minister of Environment

March 9, 2015 – “PARCS asked Minister to allocate a trained staff person to assume leadership for preventing contamination of our lakes.”

October 27, 2015 – Sask Association of Watersheds asked Minister why there was no information about invasive mussels at border crossings.

Sept. 22, 2014 – PARCS applauded the the Ministry’s educational efforts and warned that more was needed..

Nov. 17, 2015 – PARCS President Jimmy reviewed previous correspondence & insisted that “education alone will not prevent the spread of these mussels into our lakes. ... ***It is time for our government to consider an ounce of prevention in the form of border inspections.***”

Replies

May 6, 2015 – Minister’s letter announced of a new watercraft decontamination unit and Aquatic Invasive Species Awareness Week in Saskatchewan

October 28, 2015 Minister to PARCS member stated that it was up to Manitoba to prevent contaminated boats from leaving that province & claimed to be monitoring of high-risk lakes.

No reply received

December 2, 2015 – Minister spoke of 2 new decontamination units, plans to “explore options for boat inspection training for border officers”, plus continued focus on education.

16. What might it cost to implement a border inspection program?

The following projection has been based on the same variables as the model used in Alberta and the states immediately to the south.

WHERE	HIGHWAYS	SITES	WEEKS	DAYS	HOURS	WAGES
On the Manitoba Border	#106 from Flin Flon #9 from The Pas #10 from Roblin #16 Yellow Head #! Trans Canada #18 To Estevan	10 sites	Mid-May, to Mid-Sept = 19 weeks	X7 days = 1330 days	X 24 hours per day (2 staff x 12 hours per day) = 31,920 hours	X \$20 per hour = \$636,400 per year (includes benefits & training) Plus equipment and coordination
On the US Border	#47 to Estevan #6 to Regina #4 to Swift Current 1 roving		X19 weeks for 10 sites = 190 weeks			

NOTE: The Manitoba Government has **pledged to spend one million dollars in 2016:**

- \$ 800,00 for inspection and decontamination at more key locations
- \$ 170,00 for public awareness, additional signs and advertising
- \$50,000 for enforcement and \$25,000 for a new research and development fund.
- Fines will be imposed for carrying zebra and quagga mussels.

WHAT WE NEED FROM OUR GOVERNMENT

The members of STAB urge that the government of Saskatchewan¹:

1. Continue and expand the building of **AWARENESS** via the Clean/Drain/Dry program and the **MONITORING** of our lakes, **plus**
2. Adopt new legislation, new regulations and new funding to implement **border checks**, along with **PENALTIES** to ensure **ENFORCEMENT**.

*Stop them at
the borders.*

*Can we afford
not to?*



*Keep Saskatchewan
lakes free from these
dangerous mussels.*

*Can we afford not
to?*



“In the summer of 2015, Alberta inspected 21,000 boats at their border with Sask and found 11 mussel boats which were then decontaminate.

All of those boats travelled from Ontario across Saskatchewan.”²

*How long can we
dodge the bullet?*

*Can we afford not
to act?*

² *Kate Wilson*

¹ Kate Wilson, Alberta Department of Environmental and Sustainable Resources, states that a typical AIS program has four components: 1) education and outreach, 2) monitoring, 3) enforcement response, 4) policy and legislation

REFERENCES

- ⁱ PARCS members include resort villages, hamlet cottage communities, rural municipalities with cottage communities and cottage owner associations.
- ⁱⁱ Adults are 1 to 3 cm in size. Young zebra and quagga mussels (called veligers) are so tiny that they can look and feel like sandpaper.
- ⁱⁱⁱ After the infection of Lake Winnipeg, Manitoba officials claimed that infusions of potash would kill the mussels. However subsequent reports from scientists state that "the problem is irreversible".
<http://globalnews.ca/news/2266803/lake-winnipeg-is-a-lost-cause-due-to-zebra-mussels-expert/>
- ^{iv} Kate Wilson, Alberta Department of Environmental and Sustainable Resources, "Provincial Aquatic Invasive Species Prevention Program".
- ^v Neupane, A. "An Estimate of Annual Economic Cost of Invasive Dreissenid Mussels to Alberta", Alberta ESRD, Nov. 2013
- ^{vi} It should be noted that a predicted annual cost of \$75 million is for approximately 100 lakes in Alberta. There are 100,000 lakes in Saskatchewan!
- ^{vii} See number IV above.
- ^{viii} Okanagan Basin Water Board, pamphlet "Spread the Message, Not the Mussel", 2012.
- ^{ix} Just google Department of Fisheries and Oceans and Dreissenid mussel risk to read about it.
- ^x Fisheries Branch of Saskatchewan Environment.
- ^{xi} <http://www.southsaskriverstewards.ca/water-quality-assessment.html>
- ^{xii} Early in 2016, the Manitoba Minister of Conservation and Water Stewardship, Tom Nevakshonoff announced that the Manitoba Government will dedicated \$1 million toward the fight against invasive mussels in 2016.