




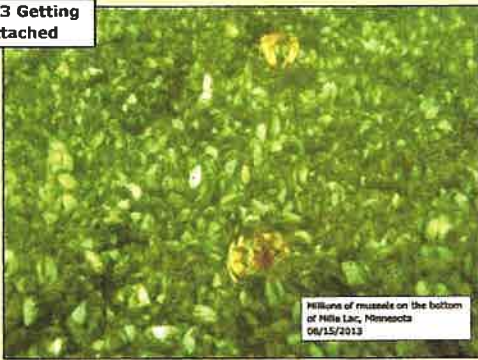
**PART ONE – INTRODUCING ZEBRA MUSSELS**

**PART 1 – INTRODUCING ZEBRA MUSSELS**  
WHAT ARE THEY AND HOW DID THEY GET HERE ?



**Adult Zebra Mussel – a small shellfish (but much smaller than our clams)**

**1.3 Getting attached**




**Millions of mussels on the bottom of Mille Lac, Minnesota 06/15/2013**

**1.1 Adult mussels**




**1.1 Adult mussels**

**1.4 Going with the flow . . .**



**In 2013, adult mussels were carried downstream on the Red River through North Dakota to Lake Winnipeg.**

**1.2 Veligers**



**Zebra Mussel veligers**

**1.5 Hitchhiking a ride**



## PART TWO – MUSSELS in our NEIGHBORHOOD - Manitoba

### PART 2 – MUSSELS in our NEIGHBORHOOD



#### CONTINUING OUR STORY 2014 to Today

- By 2014, our world looked like this map, with mussels to the east (in Manitoba) and on part of our southern border (in North Dakota).
- Let's examine what has happened since in:

- 1 - Manitoba (east)
- 2 - Alberta & BC (west)
- 3 - Montana (south)

#### 1.3 – Mobile inspection stations



All along, Manitoba scientist, Dr. Eva Pip had been warning of the impossibility of stopping mussels with chemicals.

- In December of 2014, Manitoba announced a new strategy – legislation, fines, and mobile inspection stations (but didn't impose fines until 2017)
- Fears were expressed about Manitoba's \$500 million commercial and recreational fishery.
- Manitoba has 100,000 lakes and more than 80,000 boats.

### 1. Manitoba (2014 to today)

#### 1.1 – Lake Winnipeg



- In 2013, zebra mussels were found in Lake Winnipeg in Winnipeg Beach and in Gimli Harbour.
- Photo of the underside of the boat (on right) was taken after the boat had been in Gimli Harbour for 4 months.

#### 1.4 – More infestations



##### In Sept. 2015:

- Zebra mussels were confirmed in the Red River just south of the Manitoba border.
- Gimli Harbour boat hauler reported thousands of velgers on boats. ("Next year we'll need scrapers to remove the adult mussels.")

##### In Oct. 2015:

- One velger was found in Cedar Lake, directly east from Tobin Lake Saskatchewan (confirmation being sought through EDNA).
- Mussels were found further north in Lake Winnipeg.

#### 1.2 – Potash Treatment



- In the spring of 2014, the Manitoba government closed 4 harbours, sealing them off from the rest of the lake with huge silt curtains.
- Liquid potash was injected into these harbours.
- The treatment cost \$500,000 and was initially deemed a success (June, 2014)
- By August it was announced that the mussels were still present in the lake.

#### 1.5 – Manitobans living with mussels

##### THE DAILY NEWS

July 2017

##### Manitoba community takes zebra mussel fight into their own hands


People near Gull Lake (10 km from Lake Winnipeg) are doing everything they can to ensure that their lake does not become infested like nearby Lake Winnipeg. "We wash every boat that comes into the lake from . . . ."

- The citizens of Gull Lake are pressure-washing every boat that comes to their lake and is not local. They stop everyone at the boat launch and ask them where the boat has been – If it's a zebra infested lake, the citizens offer to wash the boat.
- They employ a student in the mornings and evenings. They have volunteers for rest of the time.
- In 2016, a Gimli resident said, "The shells are everywhere and they are incredibly sharp. Our friend was actually picking pieces out of his foot with tweezers."
- Dr. Pip stated, in 2017, that "Lake Winnipeg is a lost cause. The only way to deal with this is to not let the problem start in the first place and we certainly missed the boat on that."

## PART TWO – MUSSELS in our NEIGHBORHOOD - Montana

### 3. Montana, USA (2016 to today)


**3.1 – Our neighborhood has changed**



Note that Saskatchewan's status has now been changed from mussel-free to status unknown!


- In **December of 2016**, the State's Mussel Incident Response Team announced Emergency Restrictions due to the presence of veligers in the Tiber and Canyon Ferry Reservoirs (near **Shelby and Helena, Montana**).

**3.4 – Testing for adult mussels on a substrate**




- The announcement in late 2016 of zebra mussels in the Tiber River in Montana was based on the detection of larvae mussels (veligers).
- Follow-up tests for veligers, in May 2017, confirmed 5 positive samples in the Tiber reservoir. Canyon Ferry reservoir, so far, has had only 2 positives.
- Meanwhile, the state continues to test for adult mussels. The Alberta sniffer dogs were taken to Lake Powell (a reservoir on the Colorado River) for training in confirming adult mussel after veligers have been detected and then used to assist in the Montana testing.

**3.2 – Montana springs into action with a containment plan**



- 2 mandatory decontamination stations for **boats leaving** each of the Tiber and Canyon Ferry infested waters to protect the Columbia River Basin west of the continental divide (X).
- Mandatory inspections of **out-of-state visitors** on perimeter (Δ) and in the interior (α) of the state, plus roving stations (•).
- 35 inspection stations; \$5.8 million** over 2 years.

**3.5 – Meanwhile back in Alberta**



Alberta releases a 55-page manual for conducting decontaminations

- In 2016, the executive-director of the Alberta Irrigation Projects Association stated that 'the discovery of mussels in Montana means that Western Canada has lots its buffer zone.' (The Irrigation system in Albert has 4,000 km of pipelines, so blockage by mussels is a major concern." The Tiber reservoir east of Shelby is very close to the St. Mary's and Milk Rivers which feed the irrigation system.)
- Alberta announces that the Coutts inspection station will be open 24/7 starting March 2/17.

**3.3 – A plan put into action**



- Montana's Department of Resources moved quickly in 2017, as per the plan from the Montana Mussel Response Team, they:
  - Recruited Kate Wilson from Alberta to lead their efforts, and
  - Moved inspection teams out across the state.
- At year end, they announced that they had **inspected 23,000 watercraft** and **intercepted 10 mussel infected boats** as they entered Montana or tried cross the Continental Divide into the Columbia Water Basin.

### REFLECTION ACTIVITY

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# PART THREE – AFTER THE INFESTATION

### After the infestation


#### The communities who drink the water

City of Moose Jaw	Village of Riverhurst
City of North Battleford	Village of Elbow
City of Prince Albert	Village of St. Louis
City of Regina	Village of Beechy
City of Saskatoon	Village of Stewart Valley
Town of Nipawin	Village of Lucky Lake
Town of Leader	Village of Buena Vista
Town of Cabri	Village of Lebret
Town of Outlook	Village of Craven
Town of Dundurn	Village of Tantallon
Town of Fort Qu'Appelle	RM of Dundurn
Town of Hanley	RM of Corman Park
Town of Lumsden	RM of Blucher
Town of Regina Beach	RM of Rosedale


*"Almost 50% of the province's population rely on the Saskatchewan Rivers for their daily needs".*  
[www.southsaskrecreation.ca](http://www.southsaskrecreation.ca)

### After the infestation

#### The other major water users



*Agricultural irrigation is the single largest consumer of water from the South Saskatchewan*



#### Lake Diefenbaker Area Irrigators

- Brownlee: 5
- Herbert: 7
- Lucky Lake: 16
- Macrorie: 26
- Riverhurst: 25
- Thunder Creek: 5
- South Sask: 125


**Total: 209 irrigators**

#### Other industrial users of water:

- Potash Plants
- Fertilizer plants
- Petroleum related operations

### After the infestation


#### The users and suppliers of recreation



### After the infestation

#### The decision-makers

**What Manitoba's opposition had to say:**  
 "The government has been criticized by [both opposition parties] for not acting fast enough to stop the spread... asking why the government did not move more quickly in August when it failed to protect the other 100,000 lakes from infestation this fall, as people were moving their boats around."



**What Manitoba's government had to say:**  
 Premier Selinger said that preventing the spread of mussels is a 'very important issue' and the province has taken action. Canine units are being trained to detect mollusks ... and the province has purchased more decontamination units. We took direct action every time there was a risk of mussels showing up in our lakes."

*"Manitoba adopts new online mussel strategy", Canadian Press, December 2014.*

### After the infestation

#### \$ Costs

For Ontario (2006 approx.)		For Alberta (2013)	
Impact category	Annual cost	Impact category	Annual cost
Residential water	\$12.12 million	Power generation	\$5,958,087
Industrial water	\$12.11 million	Drinking water systems	\$30,809,921
Recreation	\$11,050,104.00	Food production	\$390,000
Recreation/fishing	\$12,100,000	Recreational fishing	\$11,300,552
Commercial fishing & livestock	\$10,700,000.00	Water management structures	\$9,541,325
Recreation/boating	\$12,100,000	Water diversion intakes	\$1,810,000
Recreation/boating	\$12,100,000.00	Property value	\$12,759,500
Power generation	\$7,100,000.00	Non-use	Not quantified
<b>Total annual cost estimated</b>	<b>\$76.5 \$ million</b>	<b>Total annual cost estimated</b>	<b>\$76,500,773</b>

• "The price tag for Canada Is about \$7 billion annually", says the executive director for Manitoba's Lake Friendly Project, Oct., 2015

### REFLECTION ACTIVITY

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## PART FOUR - SASKATCHEWAN (2014 – 2017)

### Task Force Workshop: Coping with Mussels (June, 2017)



Engineer Renata Claudi was hired by Ontario Hydro, 2 weeks before the mussels hit Ontario lakes. She pioneered the methods for industry to deal with mussels. She has been on the road since 2006 training industry in these techniques.

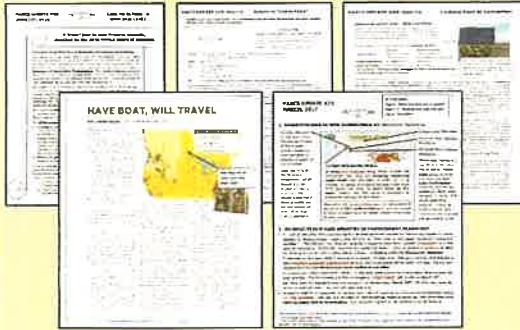
#### Highlights for the non-engineers:

- These are the only freshwater mussels that attach to a substrate.
- To survive they must be in water that is:
  - Warm in summer (not our northern lakes)
  - Has calcium at least 10mg/L – common
  - Low potassium (6.9 – 9.5 mg/L)
 (Some of our lakes are protected by high potassium: Lake Diefenbaker levels are ideal; she referred to Diefenbaker as **ground zero!**)
- Mussels make the water clear by removing the murky stuff to the bottom.
- Drinking water will be clearer but may have taste and odor problems.
- Industrial pipes suffer decreased flow, then clog.
- Pipes are treated with chemicals, copper-ion generators, low doses of copper, fine filters, UV treatments.
- Small bodies of water can be treated with low doses of phosphorus or chlorine.

### CORRESPONDENCE UPDATE: 2016 - 2017

- 2016 - **Sask Green Party** issues press release that "it would be best to stop these mussels from ever entering Saskatchewan".
- May 2016 - **Parcs press release** announced that "allies join us in our fight to keep mussels out of the province". (SAW, SARM, SAMA)
- 2016 - **Alberta, BC, Manitoba, Saskatchewan agree** to "coordinate efforts to stop invasive mussels from taking hold".
- January 10, 2017 - **Environment Minister Moe**, in letter to SUMA, says that its up to Saskatchewan people have to learn how to 'clean, drain, dry' their boats.
- January 28, 2017 - Thank you from the **Saskatchewan Chamber of Commerce** for PARCS work on this file.
- February 2017 - Environment **Minister Moe** promises "a draft of our new strategy", refers us to Ron Hlasny.
- May 2017 - **Ralph Goodale**, Federal Minister of Public Safety reports that the Province cannot restrict the border crossings of recreational watercraft to specific ports of entry. Aquatic Invasive mussels are controlled under the authority of the provincial *Fisheries Act*.

### 4.5 Sharing information (2016/2017)



### CORRESPONDENCE UPDATE: 2017 - 2018

- December, 2017 - **Dustin Duncan**, new Minister of Environment, replies to Randy Fernets (member of PARKS regional AIM committee) saying that "we appreciate your suggestions about the benefits of inspection stations" and that the government "hopes to look at multiple inspection stations" in 2018.
- January 9, 2018 - **Press Release from Ministry of Environment** titled "Saskatchewan's Mussel Monitoring Detects No Mussels" which although technically true, is **MISLEADING TO THE CASUAL READER**.
- March 13, 2018 - Letter from **Dustin Duncan** to Lynne Saas, thanks her for sending a copy of PARCS UPDATE #83 and states that "we are looking to expand our inspection program to include road side inspections. This change was driven by feedback from stakeholder groups such as PARCS, as well as from positive outcomes from roadside inspections run in neighbouring provinces". The letter concludes that they "truly appreciate the dedication that PARCS has to the prevention of AIS introductions into Saskatchewan and for your willingness to actively participate in prevention efforts across the province".

### 4.6 Old fashioned lobbying (2016/17)



During 2016 spring elections, PARCS wrote:

- To all parties,
  - To all candidates from 33 communities,
  - To 29 communities whose drinking water came from Sask river system asking them to contact candidates.
- Plus, 33 PARCS communities wrote to Premier.

- Feb./2017 - Copies of letter to auditor sent to Premier; Minister Moe replies to Parcs President, Garry Dixon.
- March/2017 - Postcard lobby. President Dixon delivers postcards to Premier's office the day before the budget.



### SO WHERE ARE WE AT, TODAY, IN SASK IN 2018?

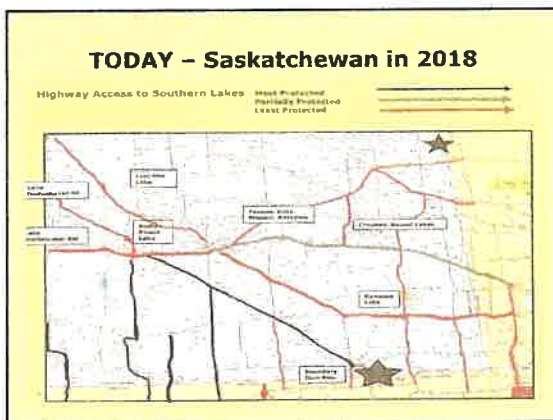
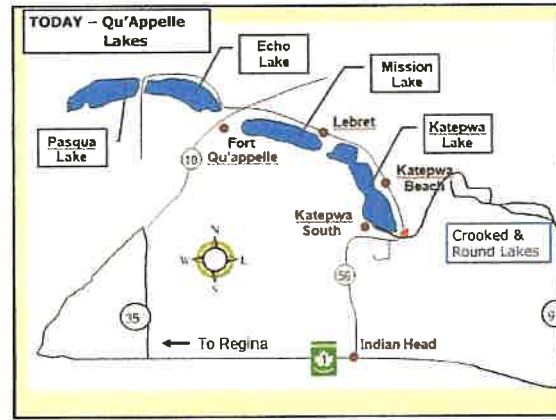
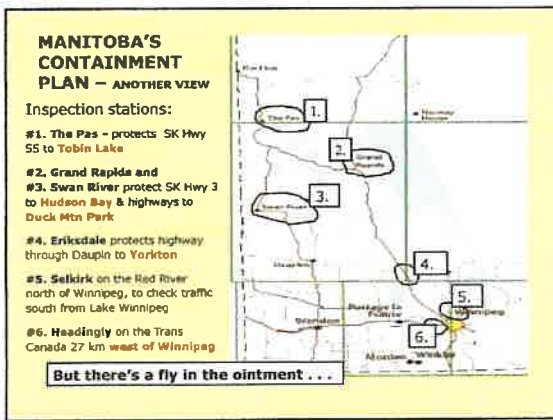
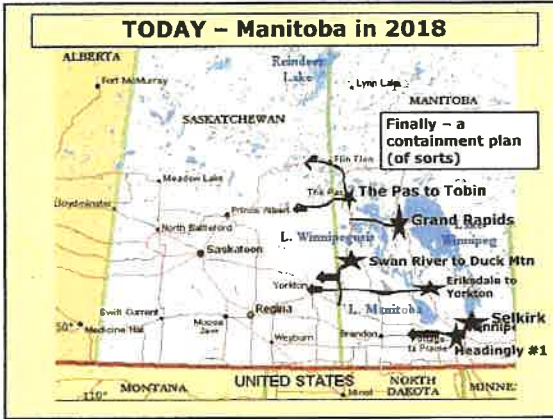
Canada Border Services is now checking for mussels at US border

There are 11 US border crossings: 9 operate from on different schedules during tourist season than winter (Willow Creek, Oungre, Torquay, Northgate, Carievale, Climax, Monchy, West Poplar, Coronach), 2 operate 24/7 year round (**Regway** and **North Portal**)



The protocol: CBS officers have been trained by Conservation Officers from Estevan, Yorkton and Moose Jaw. All were trained with the same materials and forms. The **screening questions** ask when and where these boats were last in the water and whether the boat has been out of the water for 30 or more days. If there is a problem, a seal is affixed to the hitch of the boat trailer and the boat ID is phoned in to the **TIPS line** for decontamination. The owner is expected to self-report on the understanding that a broken seal will result in a full investigation.

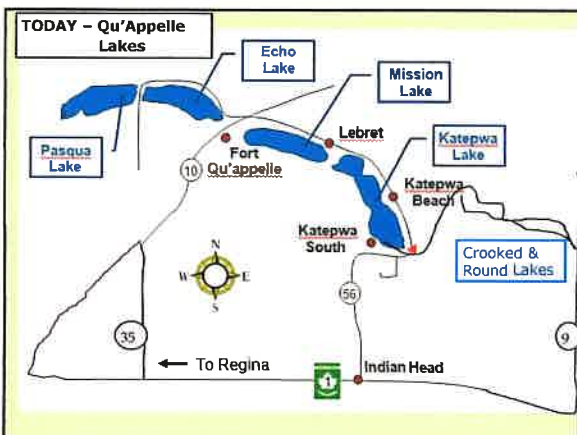
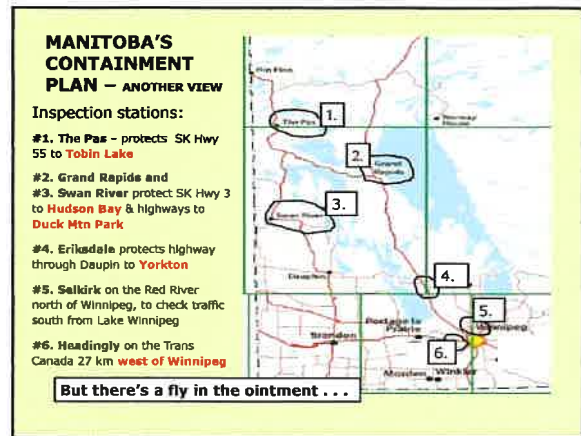
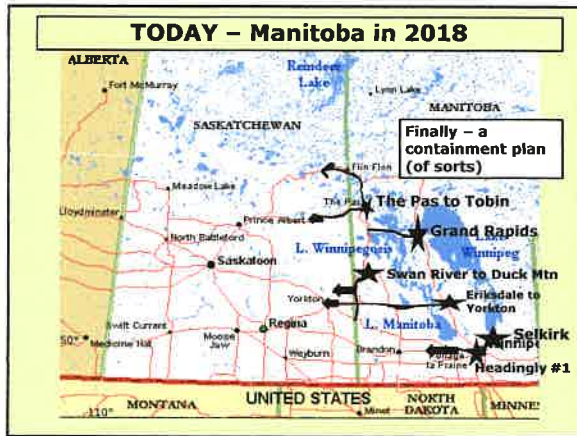
# PART FIVE – TODAY



**PARCS**

**PROVINCIAL ASSOCIATION OF RESORT COMMUNITIES OF SASKATCHEWAN**

"THANK YOU FOR COMING"



**PROVINCIAL ASSOCIATION OF RESORT COMMUNITIES OF SASKATCHEWAN**

*"THANK YOU FOR COMING"*

# IS THE GOVERNMENT OF SASKATCHEWAN SERIOUS ABOUT STOPPING ZEBRA MUSSELS?

## YES

- Task Force established.
- 1<sup>ST</sup> permanent staff hired in 2018.
- 2 inspection stations open in 2018.
- Minister thanks PARCS for offer to raise funds for inspection stations.
- Tyree and Geiger state their support for local initiatives.

## NO

- Task Force chair angry when PARCS suggests consultation.
- But no mention of these initiatives in Sask Environment Budget Plan for 2018/18 (**NO LINE ITEMS IN BUDGET**)
- But still no announcement of any new sponsorships solicited by the province for inspection stations.
- But they still cannot commit to training local inspectors
- Jan. 9/18 – **Misleading press release** implies no mussels in Sask (FROM INSPECTIONS OF ONLY 90 lakes?).
- May 2018 – **Misleading statements from the Premier** about the province’s 6 decontamination units (THESE ARE NOT INSPECTION STATIONS).

	MONTANA	BC	ALBERTA	MANITOBA	SASKATCHEWAN
<b>INFESTATIONS</b>	2 infestations contained in the Tiber and Canyon Ferry Reservoirs	None reported	None reported	Lake Winnipeg, Red River, Cedar Lake, Sanguish Lake suspected	None reported
<b>INSPECTION STATIONS</b>	6 perimeter 6 interior 5 fixed 9 with partners 8 new in 2018 (+ roving)  <b>= 34 inspection stations</b>	5 on Sask border 3 on US border (+ 4 roving) <b>All new in 2018</b>  <b>= 8 inspection stations</b>	3 on BC border 3 on Montana border 5 near Sask. border - near Meadow Lake - near Lloydminster - near N. Battleford - near Kindersley - near Maple Creek <b>Since 2014</b> (2 roving)  <b>= 11 inspection stations</b>	- 1 Across from Tobin Lake at the Pas - 2 across from Hudson Bay and Duck Mtn. at Grand Rapids, S. River - 1 across from Yorkton at Eriksdale - 1 at southern tip of Lake Winnipeg - 1 on Trans Canada at Headingly (+roving) <b>All new in 2018</b>  <b>= 6 inspection stations</b>	1 near Duck Mtn. 1 near Estevan <b>Both new in 2018</b> (1 roving)  <b>= 2 inspection stations</b>
<b>STAFF</b>	<b>60 for summer</b>	(unknown)	<b>60 for summer</b>	(unknown)	<b>6 for summer</b>
<b>ANNUAL BUDGET</b>	<b>5.1 MILLION PER YEAR (2017, 2018)</b>	<b>2.45 MILLION PER YEAR, INCLUDES 1 million from partners</b>	<b>2.5 MILLION PER YEAR, PLUS cost of 3 permanent staff</b>	<b>1 MILLION PER YEAR – no permanent staff</b>	<b>\$ 450,000<sup>1</sup> PER YEAR INCLUDES 1 permanent staff</b>
<b>OTHER</b>	Free training and resources for AIM educators	First dedicated annual funding, May 2018	<b>7 Decontamination units Inspection stations on east run 16 hour daily from March to October</b>	<b>6 Decontamination units Inspection stations run only 5-6 hours - The Pas not yet running</b>	<b>6 Decontamination units but not purchased from government funds (from Fish and Wildlife Fund)</b>
<b>AGENCY</b>	Montana Fish, Wildlife & Parks plus Department of Natural Resources/Cons.	BC Inter-Ministry Invasive Species Working Group	Alberta Ministry of Wildlife and Environment	Government of Manitoba	Saskatchewan Ministry of Environment

<sup>1</sup> As stated by Matt Tyree at meeting with PARCS chair and staff.