

AQUATIC INVASIVE SPECIES

The Alberta Approach & Program Highlights



Alberta

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What are Aquatic Invasive Species (AIS)?

- Non-native; expanding in native range
- Little or no natural predators
- Pose significant risk to economy, environment, or human health



Where do they come from?

THE GLOBAL TRANSPORTATION SYSTEM



-  No Hunting. No Fishing.
Prohibido Cazar. Sin La Pesca.
-  No Swimming
Se Prohibe Nadar
-  No Boating
No Canataje
-  No Trespassing
No Traspasar





Trailer Watercraft

Aquarium & pet trade



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Other potential sources of AIS introduction

- Live fish markets
- Garden centres
- Aquaculture/stocking
- Private ponds
- Monitoring equipment
- Docks, buoys
- Construction equip
- Pump trucks
- Float planes
- Cultural release



Invasive Mussels

- Can live up to 30 days out of water
- Filter feeders
- Few feasible control options
- Any attached mussel is an invasive mussel (freshwater)



Estimated annual costs of an Alberta invasive mussel infestation

<i>Impact category</i>	<i>Annual cost</i>
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	\$13,789,500
Non-use	No quantified at this time
Total annual cost estimated	\$75,540,773



ACTUAL annual costs of an Ontario invasive mussel infestation

<i>Impact category</i>	<i>Annual cost</i>
Residential water	\$21 - \$27 million
Industrial water	\$1.5 - \$3 million
Golf courses	\$11,000 – \$16,000
Recreational fishing	\$2.3 – \$3.3 million
Commercial fishing & aquaculture	\$500,000 - \$700,000
Recreational boating	\$37 - \$51 million
Navigational boating	\$870,000 - \$1.2 million
Power generation	\$7 million – 8.3 million
Total annual cost estimated	\$75 - \$ 91 million

El Dorado, KS, Zebra Mussels 2003



El Dorado, KS, Zebra Mussels 2006



Zebra and Quagga Mussels....



- **Impairment to industrial, municipal, hydro electric, and nuclear power plant water intakes - clogging pipes and causing decreased water flow and reduced plant efficiency**
- **Taste and odor problems in drinking water supplies**
- **Blocked water-intake pipes during storm events**
- Impacts on food webs and fish populations
- Increased algae growth – blue green blooms
- Impairment to recreational boating and swimming beaches
- Farm irrigation and golf courses



Zebra and Quagga Mussel Sightings Distribution

Dreissena polymorpha and *D. rostriformis bugensis*

Lake Winnipeg a lost cause thanks to zebra mussels, expert warns

Zebra mussels detected in Manitoba's Cedar Lake

Zebra mussels cover boats in Gimli Harbour



- Zebra mussel occurrences
- Quagga mussel occurrences
- Both species occurrences
- Zebra/Quagga mussels eradicated/extirpated



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The Alberta Approach





**DON'T
LET IT
LOOSE**

Education
& Outreach



CLEAN + DRAIN + DRY YOUR BOAT



Props, boats and natural ecosystems can be ruined by zebra mussels and other aquatic invasive species. Take a few simple steps to preserve our lakes and fisheries: **CLEAN** off the plants and debris, **DRAIN** bilges and ballast, and **DRY** any wet areas of your boat.



ZEBRA MUSSELS



QUAGGA MUSSELS



EURASIAN
WATERMILFOIL



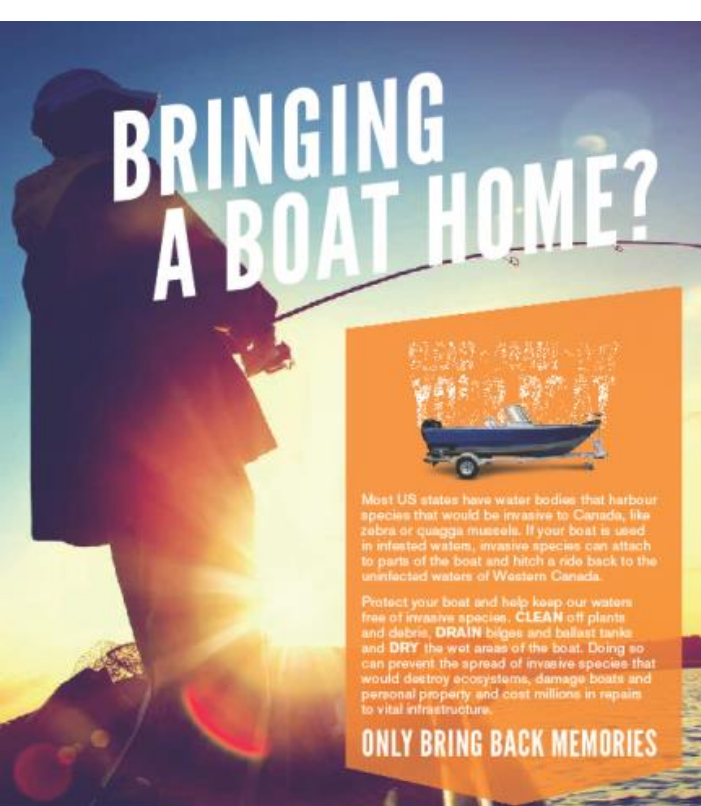

DON'T LET THEM CATCH A RIDE
STOP AQUATIC HITCHHIKERS

TO REPORT INVASIVE SPECIES:
1-855-336-BOAT (2628)
esrd.alberta.ca



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BRINGING A BOAT HOME?


Most US states have water bodies that harbour species that would be invasive to Canada, like zebra or quagga mussels. If your boat is used in infested waters, invasive species can attach to parts of the boat and hitch a ride back to the uninfested waters of Western Canada.

Protect your boat and help keep our waters free of invasive species. **CLEAN** off plants and debris, **DRAIN** bilges and ballast tanks and **DRY** the wet areas of the boat. Doing so can prevent the spread of invasive species that would destroy ecosystems, damage boats and personal property and cost millions in repairs to vital infrastructure.

ONLY BRING BACK MEMORIES

FOR MORE INFORMATION ON INVASIVE SPECIES, CALL:

ALBERTA: 1-855-336-BOAT (2628)	BRITISH COLUMBIA: 1-877-952-7277	MANITOBA: 1-877-STOP-AIS-8 (1-877-867-3470)	SASKATCHEWAN: 1-800-867-7561
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KEEPING LAKES HEALTHY



Keeping lakes clean and healthy is a shared responsibility for everyone who lives at or uses a lake. Your part can be as simple as leaving your shoreline in its natural state or cleaning, draining and drying your boat after use. Let's help each other to keep Alberta's lakes healthy.

For more information call: 310-ESRD or visit esrd.alberta.ca

Aquatic Invasive Species Hotline:
1-855-336-BOAT (2628)

NEARLY DRY YOUR BOAT
Aquatic invasive species can hitch a ride on your boat — take these simple steps each time you remove your boat from the water to protect Alberta waters!

KEEP WHEELS OUT OF WATER
Wash your machine in town. Residue from machines and traveling in water impacts water quality and fish habitat.

LEAVE THE SHORELINE IN ITS NATURAL CONDITION:
Shoreline vegetation protects properties from erosion and helps reduce nutrients from entering the water. You must have government approval before making any shoreline modification.



AIS TV ads

AIS Vignettes



STOP AQUATIC HITCHHIKERS



CLEAN • DRAIN • DRY YOUR BOAT



WATERCRAFT INSPECTIONS ARE MANDATORY

All watercraft, including non-motorized, must stop.



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QUICK FACTS

AQUATIC INVASIVE SPECIES

WHAT CAN YOU DO TO PROTECT ALBERTA'S WATERS FROM AQUATIC INVASIVE SPECIES?

Aquatic invasive species (AIS) are non-native animals or plants that have been brought from other places into Alberta's waterways. If you are transferring a boat or equipment used in water (i.e. hip waders, life jackets, kayaks, construction equipment, etc.) between waterbodies, make sure to:

CLEAN

- Clean and inspect watercraft, trailer and gear.
- Remove all plants, animals and mud at the access area or dock.
- Mix 20 millilitres of bleach with one litre of water and soak your gear for at least one minute.
- Rinse, scrub or pressure wash your boat away from storm drains, ditches or waterways. Use hot water if possible (60°C or hotter).

DRAIN

- On land before leaving the waterbody, drain all water from bait buckets, ballasts, bilges, coolers, internal compartments, livewells, etc.
- For paddle boats, drain by inverting or tilting the watercraft, opening compartments and removing seats if necessary.

DRY

- Dry the watercraft and gear completely between trips and allow the wet areas of your boat to air dry.
- Leave compartments open and sponge out standing water.



QUICK FACTS

PRUSSIAN CARP

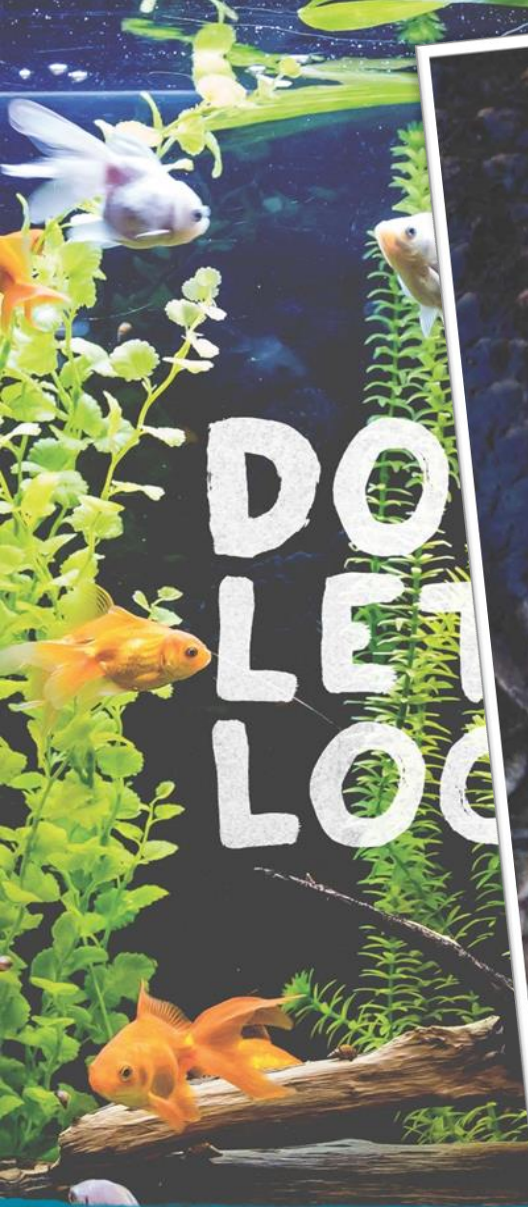


Aquatic invasive species are non-native animals or plants that can cause economic or environmental harm in waterways where they are introduced. Prussian Carp, a type of wild goldfish, is a harmful aquatic invasive species and has recently been found in Alberta. The species invades aquatic ecosystems and poses severe threats to aquatic habitats and native fish populations.

DON'T LET IT LOOSE!

Here's how you can help prevent the spread of Prussian Carp, and other harmful aquatic invasive species:

1. Never release aquarium or domestic pond water, plants, dead or live animals into water bodies. Common aquarium and pond plants and animals can become invasive when released into the wild, potentially also spreading diseases to native species.
2. If you catch a Prussian Carp while angling, please kill it and either take it home to eat or properly dispose of the carcass.
3. Know the law! It is illegal to use live bait fish in Alberta. It is also illegal to move live fish from one water body to another. Penalties for illegally transferring fish can be up to \$100,000 and/or a year in prison.



DO
LET
LOOSE

Never release aquarium or domestic pond water, plants, dead or live animals into water bodies. Common aquarium and pond plants and animals can become invasive when released into the wild, potentially causing both ecologic and economic harm.



DON'T
LET IT
LOOSE

It is illegal to release fish into waterbodies! Species that are not native to Alberta can become invasive when released into the wild, increasing competition for resources and spreading diseases to native species. Don't Let It Loose!

FOR MORE INFORMATION ON INVASIVE SPECIES, CALL:
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Monitoring

Monitoring

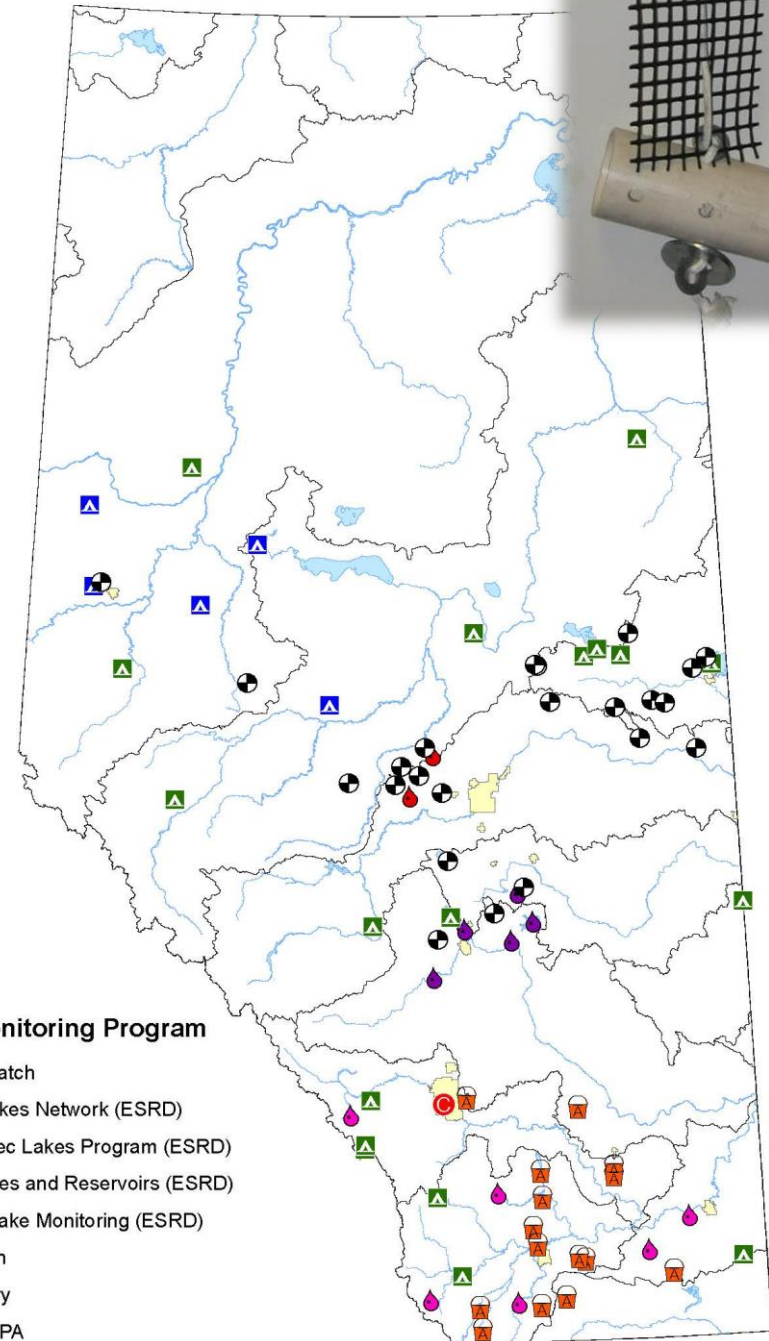


2013: 55 waterbodies

2014: 73 waterbodies; 3 aq. plants

2015: 66 waterbodies; 3 aq. plants

Future: MULTI-TAXA!?!



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Decontamination/Hot wash for High Risk & Fouled Boats

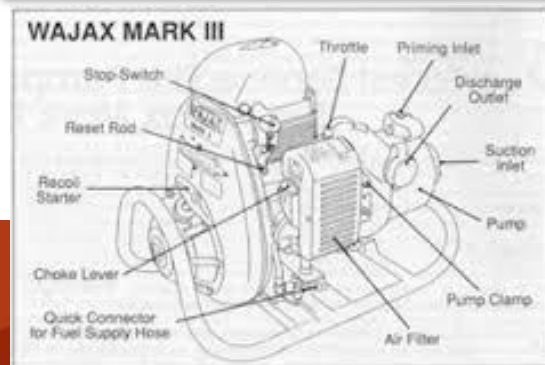


Response



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Partnership with Fire Management



Response



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Response – Reports & Existing Species



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HAVE YOU SEEN THIS FISH? CATCH IT. KILL IT.



PRUSSIAN CARP A.K.A WILD GOLDFISH

Prussian Carp is a harmful invasive species that are known to devastate aquatic ecosystems and pose severe threats to native fish.

If you catch a Prussian Carp, DON'T LET IT LOOSE. Please kill it and take it home to eat or properly dispose of the carcass (away from any water bodies).

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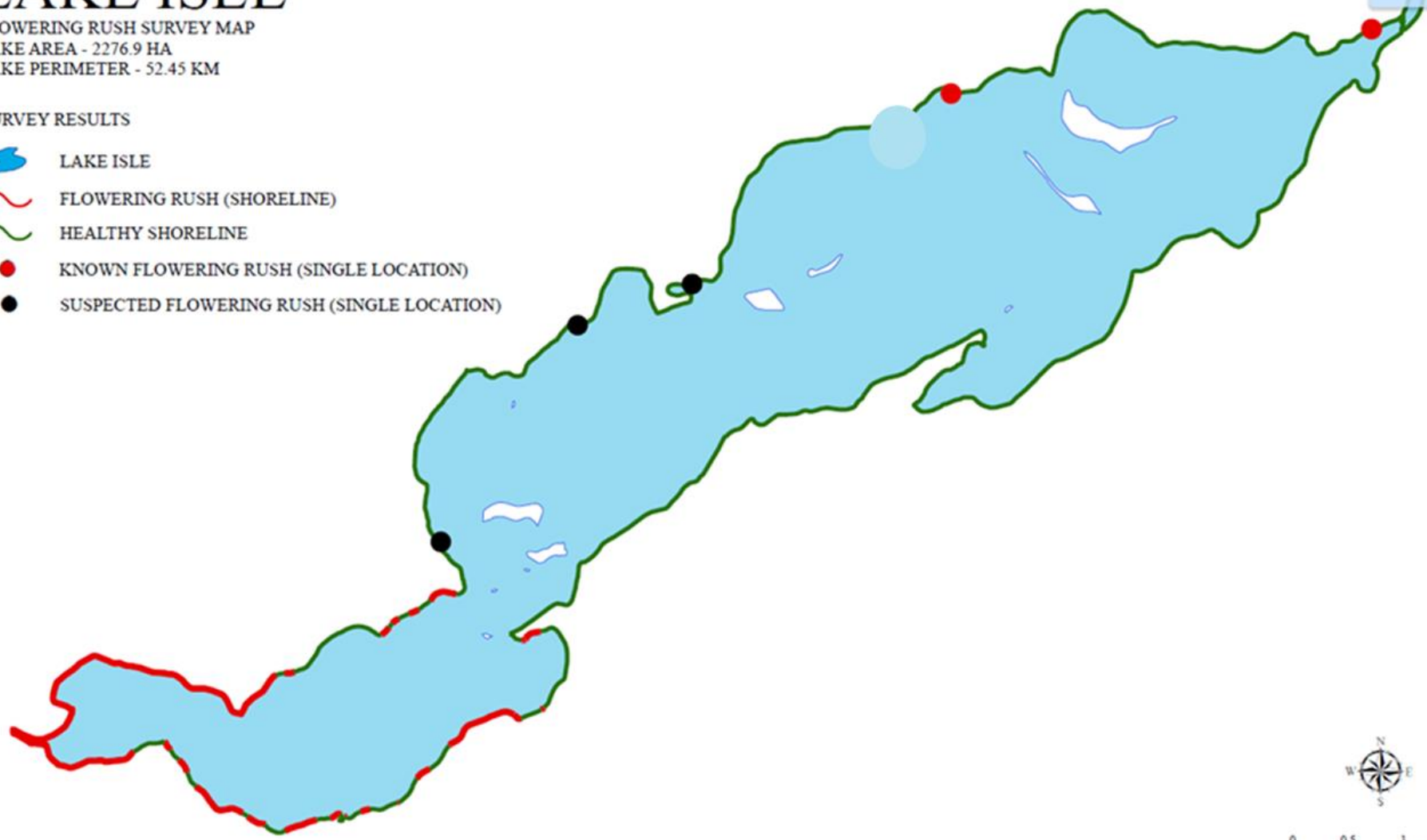
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LAKE ISLE

FLOWERING RUSH SURVEY MAP
LAKE AREA - 2276.9 HA
LAKE PERIMETER - 52.45 KM

SURVEY RESULTS

-  LAKE ISLE
-  FLOWERING RUSH (SHORELINE)
-  HEALTHY SHORELINE
-  KNOWN FLOWERING RUSH (SINGLE LOCATION)
-  SUSPECTED FLOWERING RUSH (SINGLE LOCATION)



Click on Tool PDF.



0 0.5 1 Kilometers

Response



Watercraft Inspections

Inspections

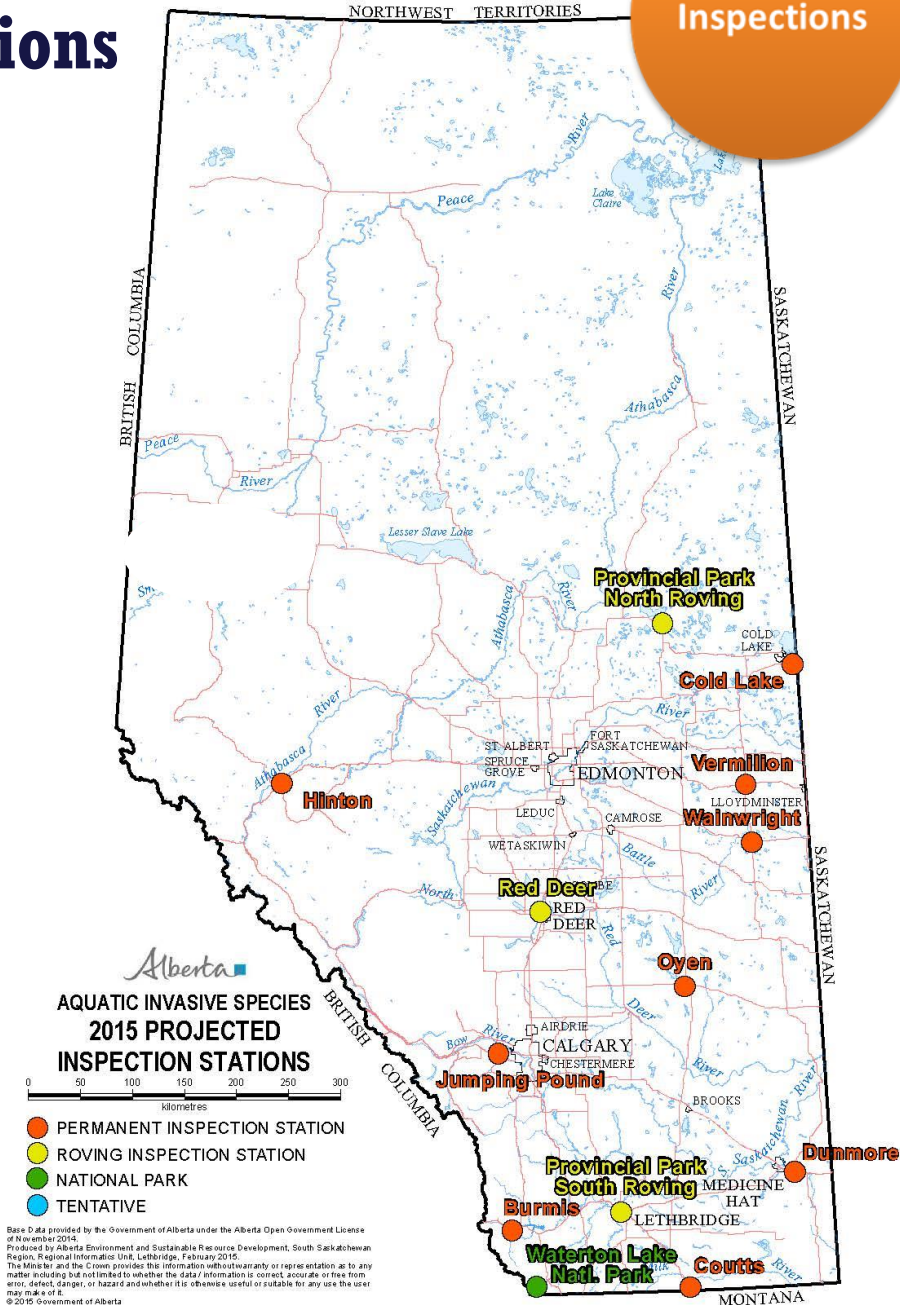


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2015 Watercraft Inspection Stations

1. Coutts
2. Burmis
3. Dunmore
4. Wainwright
5. Oyen
6. Vermillion
7. Cold Lake
8. Hinton
9. Jumping Pound
10. Red Deer x 2
11. Parks – north
12. Parks – South

Inspections



The Goal for Every Boat

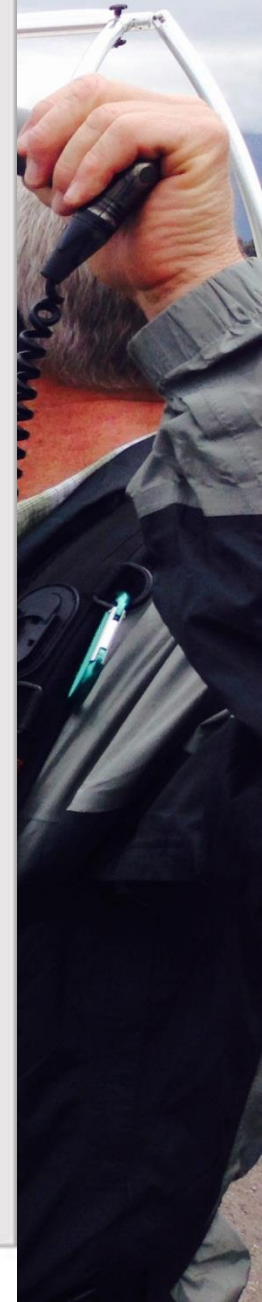
Inspections

**NO WATER
NO MUD
NO MUSSELS
NO PLANTS**

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Inspections



Fisheries (Alberta) Act Amendments

- **Creation of prohibited species list**
 - Aquatic invasive plants, inverts and fish (52!)
 - Prohibition on possession & importation
- **Mandatory stopping at designated inspection stations**
- **Fishery Officers/Guardians, Watercraft Inspector authority**
- **Enhanced authority (re: vectors & conveyances, regulations)**
 - Aquarium/pet industry
 - Addressing other vectors
- **Quarantine provisions**



Federal Fisheries Act AIS Regulations

Policy &
Legislation

- **Prohibition on importation, transportation and possession: Quagga & zebra mussels, Asian carp**
 - **PASSED in June**
 - **Assistance at US/CA border?**
- **Control of AIS: ESRD Minister listed as a delegated authority**
 - **Deposit of deleterious substances for control**
 - **Angling as control**



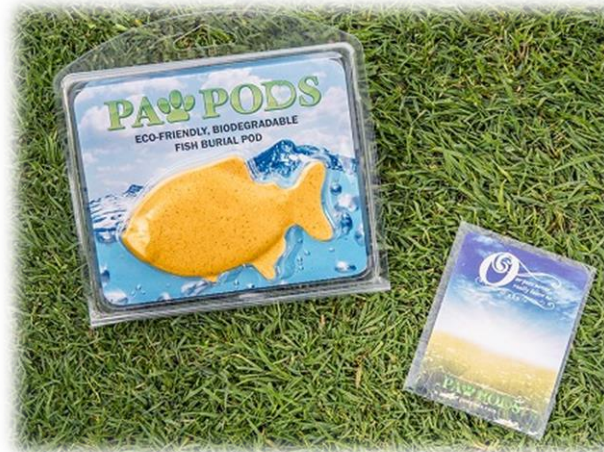
So Far...

- 21,000 inspections; 11 mussel-fouled boats
- Lots of Fishery Officer engagement
 - Fish & Wildlife Officers, COs, Transport Officers
 - Traffic Sheriffs, RCMP!
- Offenses under new legislation!
 - Failing to assist
 - Aquarium dump/release
- Great partnerships with enforcement agencies
- Compliance is rising
- AIS Program – leader in Canada



Municipal considerations...

- Potential impacts
 - Mussels, other AIS (e.g. goldfish, etc.)
- Prevention measures
 - Education & outreach – utility bills, ratepayer outreach
 - Don't Let it Loose!
- Stormwater ponds
 - Aquarium dumping
 - Intentional release
- Flushing discussion



1-855-336-BOAT



Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only that ever has.
-Margaret Mead