

WHIRLING DISEASE 101

Presented By:

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Whirling Disease Program

**CLEAN + DRAIN + DRY
YOUR GEAR**



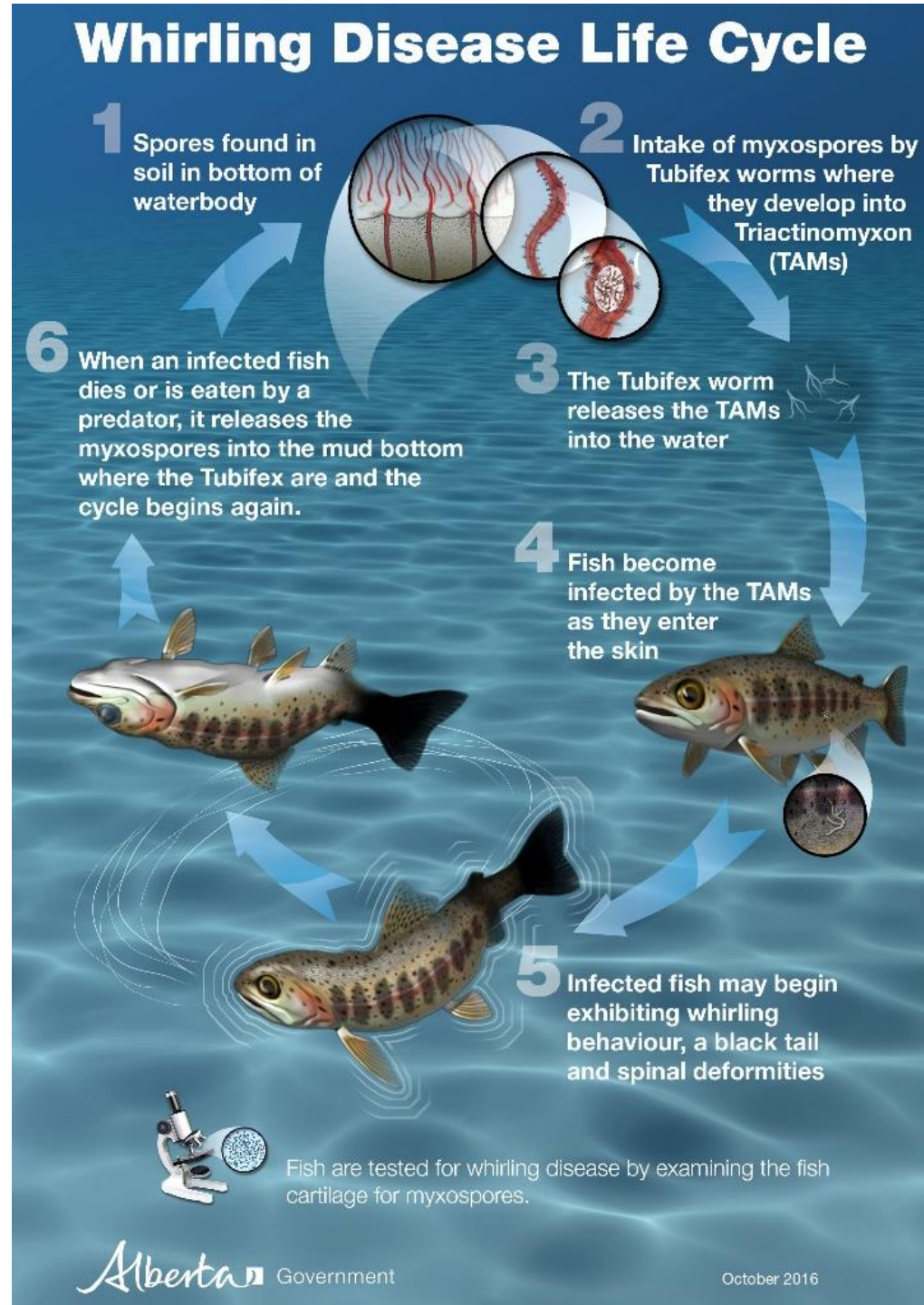
OVERVIEW

- Whirling Disease 101
- What is the Government Doing
 - Distribution
 - Education
 - Mitigation
- What Can You Do

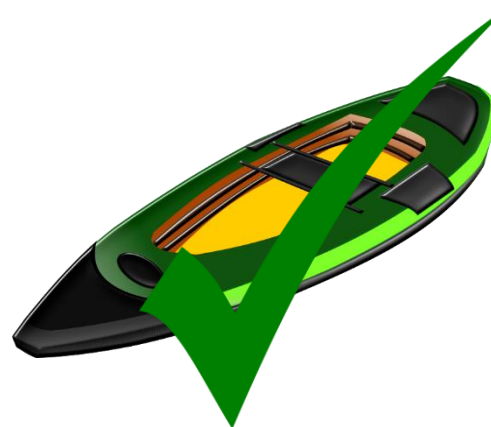
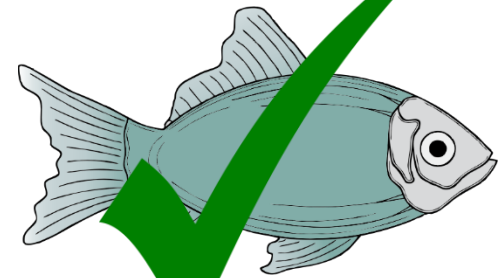
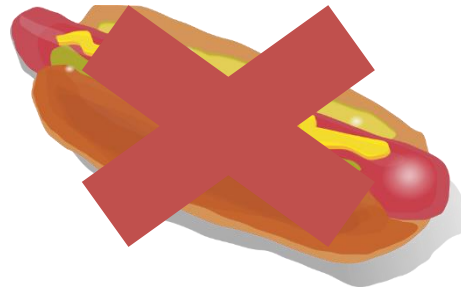
Whirling Disease 101

What is Whirling Disease

- **Whirling Disease** is caused by the fish parasite *Myxobolus cerebralis*
- This parasite only affects **salmonid fish** like salmon, trout, and whitefish
- **Whirling disease** does not pose a risk to human health or other wildlife.
 - *Even if you eat infected fish*
- *M. cerebralis* parasite has a complex two-host life cycle



How Can Whirling Disease Spread?



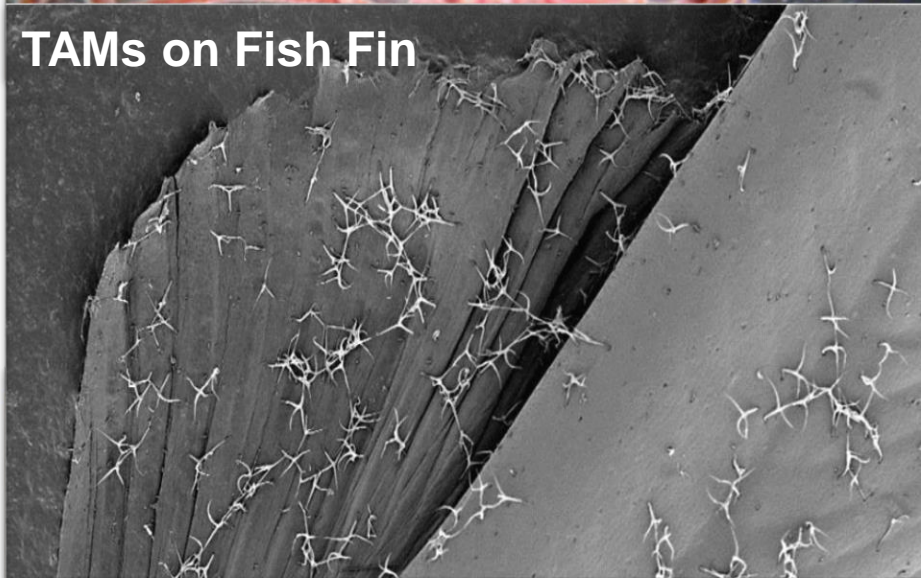
Implications of Two-host Lifecycle

- Whirling Disease can be spread by
 - Spores & Infected Worms - Sediment
 - TAM's & Infected Fish - Water
- No treatment available for infected waterbodies
- Only mitigation and management

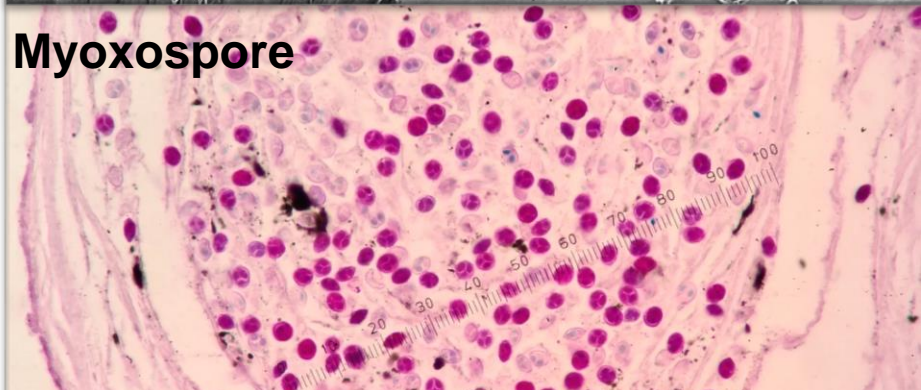
Tubifex Worms



TAMs on Fish Fin



Myxospore



If Whirling Disease Spreads Naturally Why Should I Do Anything About it?

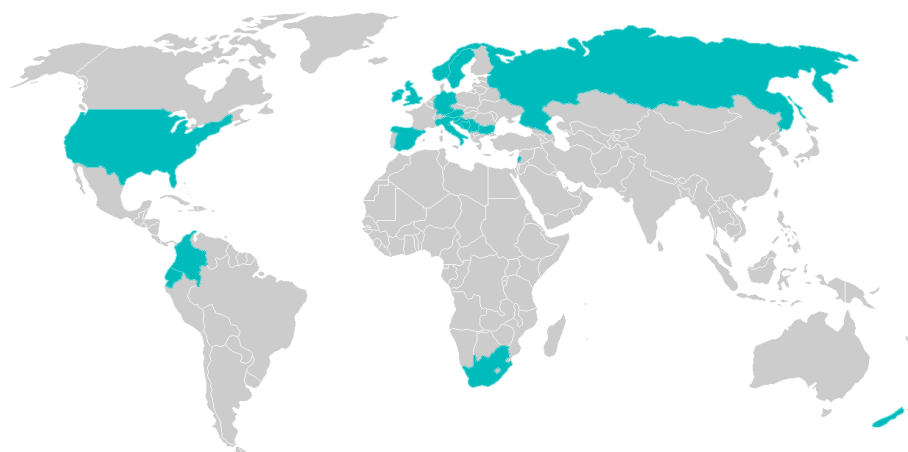
- Whirling disease can spread naturally via fish movement, birds and overland flooding
- Humans are the main vector of spread between waterbodies
 - AB has ~800 natural fish-bearing lakes & 300 trout stocked which is ~375 fishers/lake
 - SK has 10,000 + lakes and ~1.9 fishers/lake



Where Did It Come From?

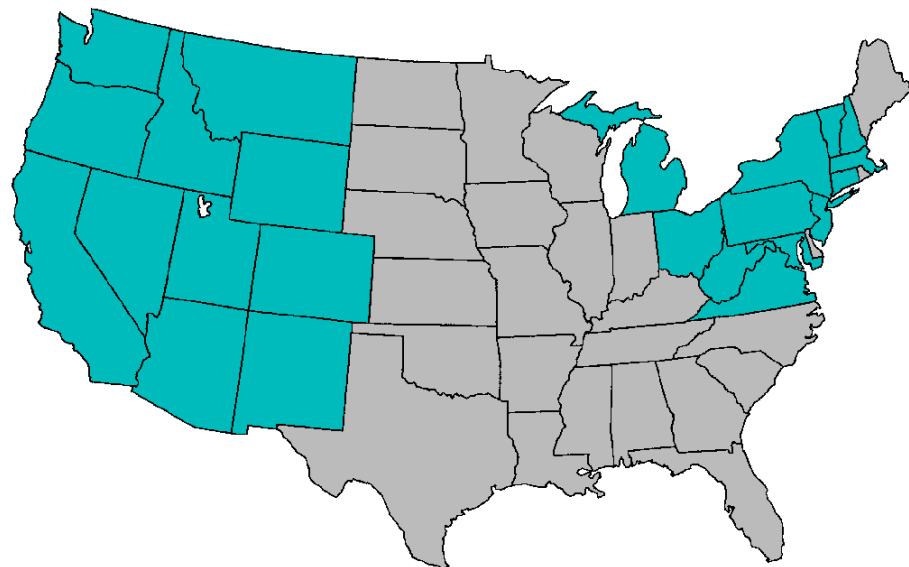
- WD Global Distribution
 - Native to Europe
 - Introduced to US in 1950's
 - Spread across 25 states
 - Western US 1990's
- Whirling Disease monitoring in AB **1997-2000**
- First detection in Canada in Johnson Lake, Banff **2016**
- Research suggests it is most commonly introduced by the movement of infected fish, via fish culture practices or anglers

Global Distribution of *M. cerebralis*



By Map made by en:User:Vardion and modified by en:user:Petaholmes and en:user:Anilocra. PNG-optimized by John Owens (talk). - Hoffman, G. L. 1990. "Myxobolus cerebralis, a worldwide cause of salmonid whirling disease." Journal of Aquatic Animal Health 2: 30-37., Public Domain, <https://commons.wikimedia.org/w/index.php?curid=211975>

Distribution of *M. cerebralis* in the United States



Public Domain, <https://commons.wikimedia.org/w/index.php?curid=211979>

How Does it Impact Fish?

- Fish may be asymptomatic, clinical signs rare in AB
- Whirling disease clinical signs
 - **Physical Changes**
 - Blackened Tail
 - Crooked Tail
 - Sloped Head
 - **Behavior Change**
 - Whirling
- Clinical signs shared with other fish diseases
 - The common cold of fish clinical symptoms
 - Improper electrofishing
 - Aquaculture conditions

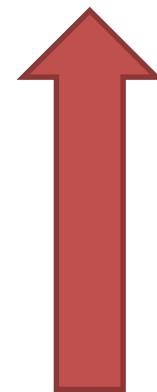


What Influences Infection Rates?

- Infection rates depend on:
 - **Fish** - Size, age, spawning trends, species, and genetic resistance
 - Not all fish that are infected may be experiencing symptoms i.e. Brown Trout
 - **Worms** - Presence or absence in a waterbody, lineage of worm
 - **Waterbody** - Water temperature, sediment and potentially flow rates
- Impacts in other jurisdictions (MT, WY, CO, up to 90% of juveniles of some species were impacted)
 - Literature and research lacking in Canada



Fish Susceptibility

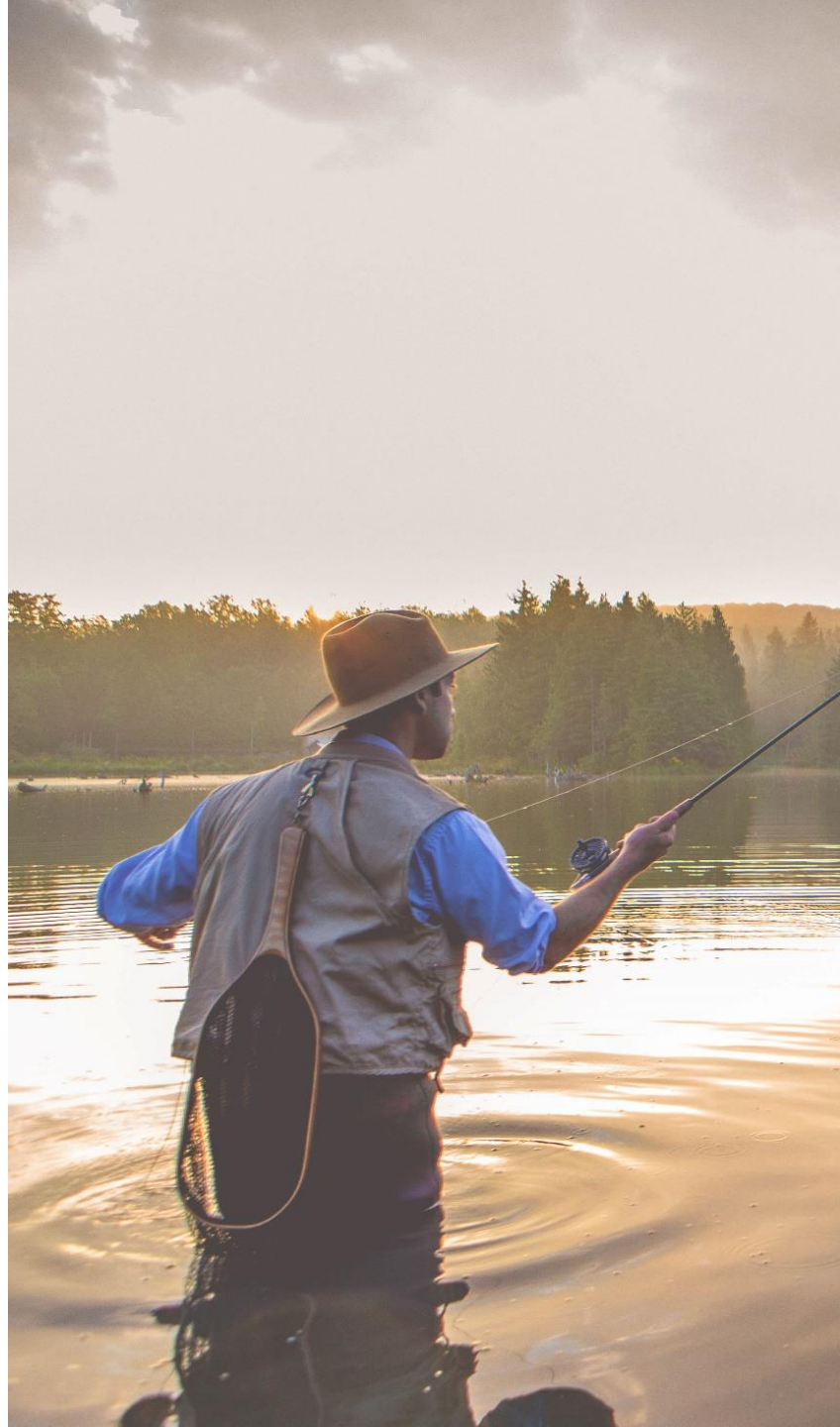


Rainbow trout
Cutthroat trout
Brook trout
Mountain whitefish
Bull trout
Brown trout
Lake whitefish
Arctic grayling



Why Does Whirling Disease Matter?

- AB Fisheries Managed for
 - Productive and sustainable fish populations
 - Fish provide economic, social and environmental benefits
- Whirling Disease
 - Potential impacts on salmonid fish populations
 - No treatment options for whirling disease affected waterbodies
 - Mitigation and management could reduce the spread



What is the Government Doing

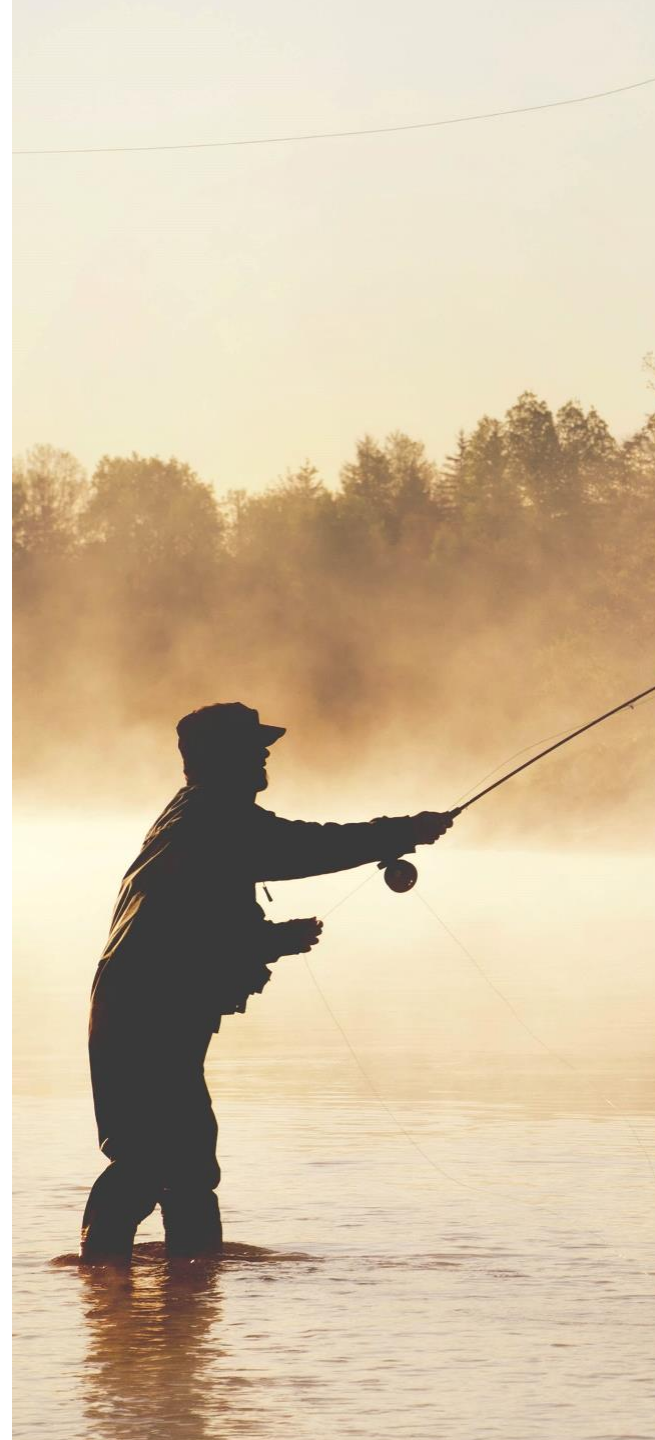
Distribution

Education

Mitigation

Whirling Disease Program

- **Three point plan**
 - **Distribution** – where is Whirling Disease
 - **Education** – public messaging and direction to prevent spread
 - **Mitigation** – actions to reduce risk of whirling disease spreading to wild populations
- **Informed By:**
 - Experts
 - Jurisdictional Scan
 - Consulted Stakeholders

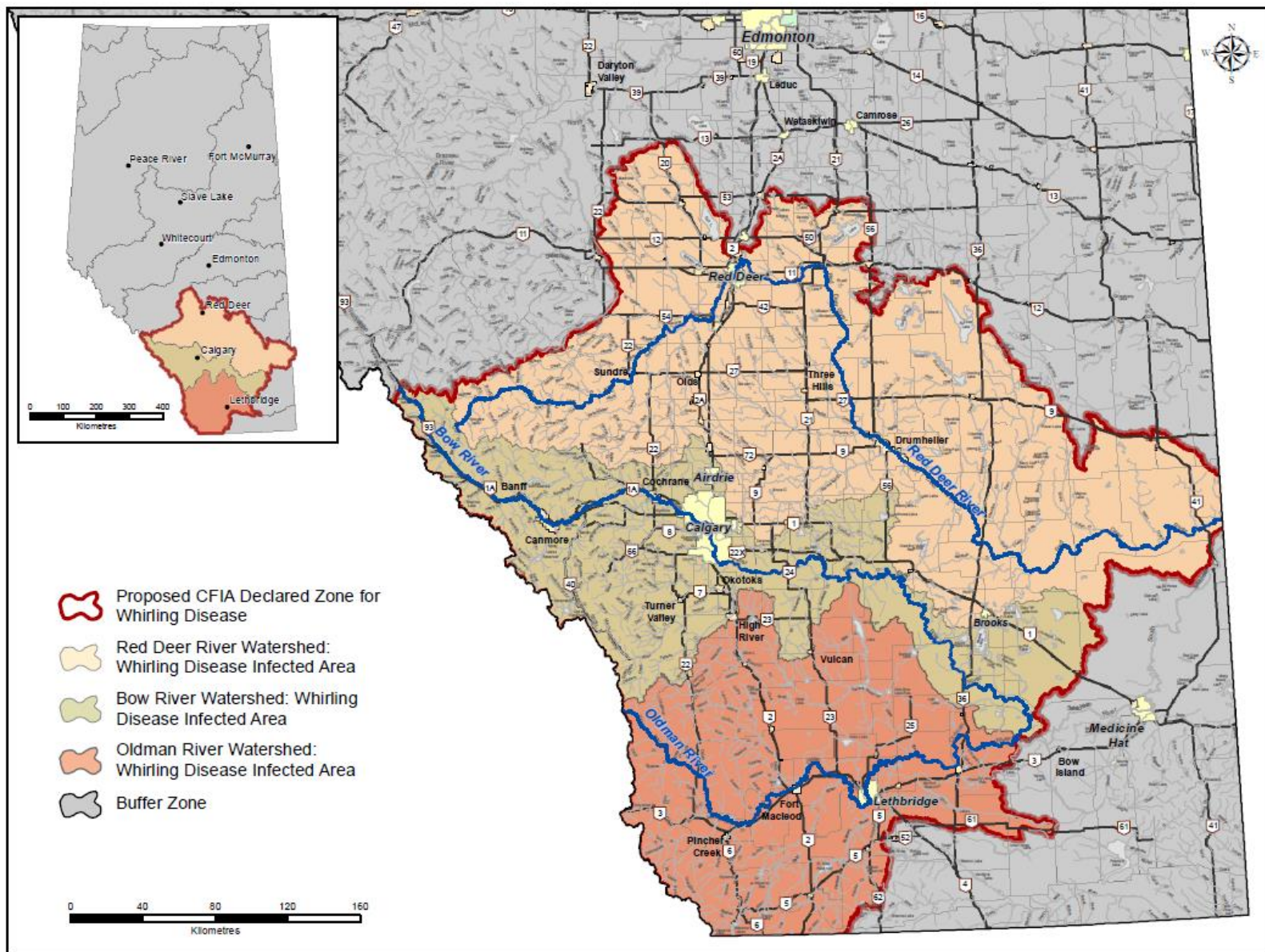


Distribution

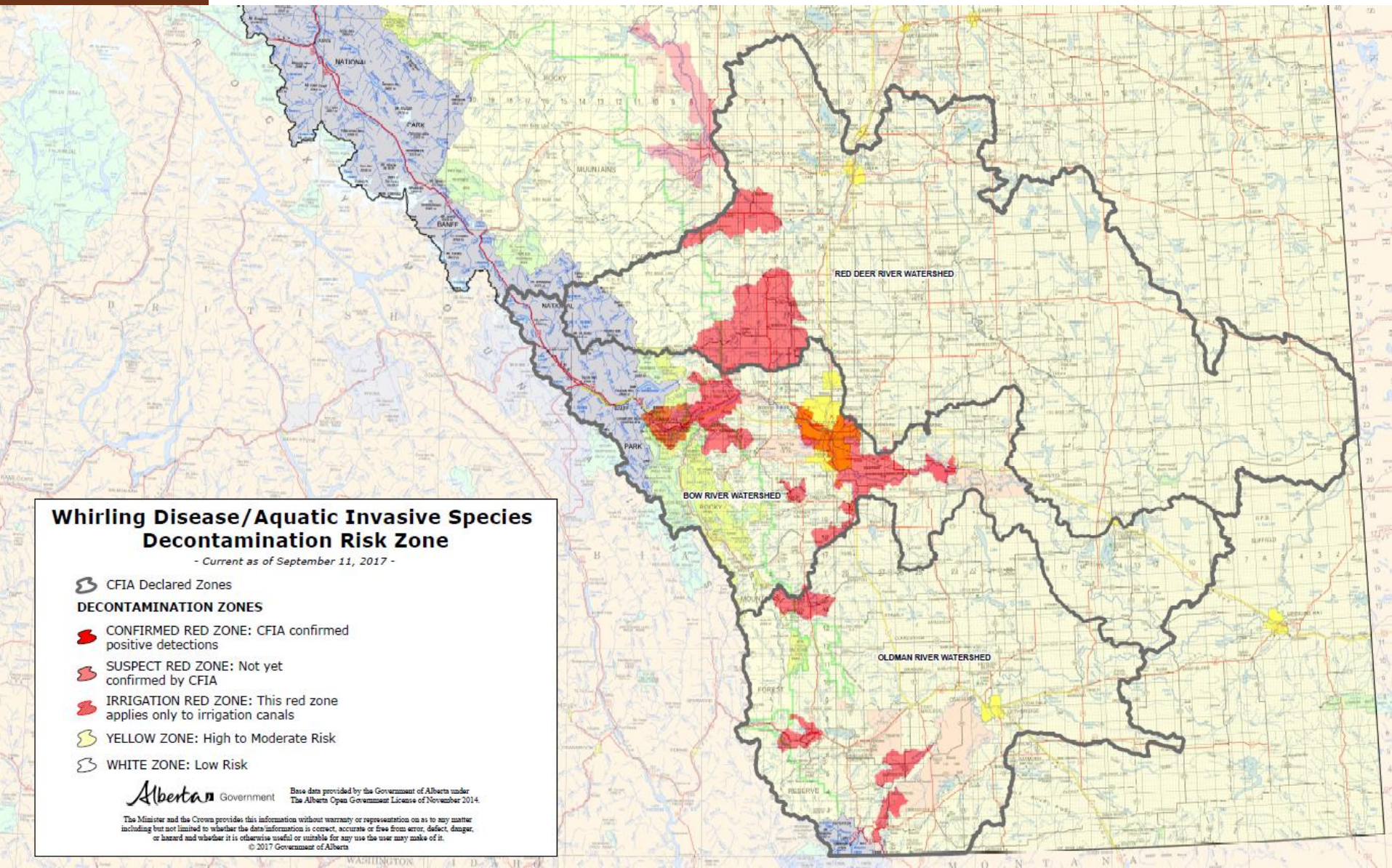
- First detection in Canada, Johnson Lake, Banff 2016
- **Sampling 2016**
 - 200 sites
 - 6 watersheds
 - 6,320 wild fish samples collected
 - 4,000 fish from aquaculture
- **Sampling 2017**
 - Disease Freedom Testing
 - Stocked pond surveillance
- If we can measure it we can manage it



Current Distribution - CFIA



Current Distribution – GoA Risk Zone



Distribution

- **Whirling Disease laboratory established in Vegreville AB**
 - Expedite testing to determine Whirling Disease distribution
 - Canada's first laboratory exclusively dedicated to testing for and preventing the spread of whirling disease.
 - obtaining accreditation as an external laboratory for the National Aquatic Animal Health Program (NAAHP) in conjunction with CFIA



Mitigation

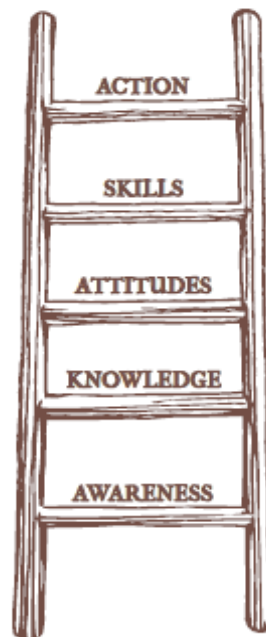
- **Aquaculture**
 - Provincial Hatcheries
 - Enhanced biosecurity protocols
 - Private Class A
 - Under quarantine until they test negative
 - Private Class C & Rec
 - Potential changes to licenses for stocked pond holders
- **Decontamination Policy**
 - Mitigate spread of aquatic invasive species and fish diseases from working in or near water, applies to Government staff and contractors
- **Risk Assessment**
 - Ongoing based on sampling



Education

Education and Outreach Strategy

- Awareness to action model
- Identify target audiences and appropriate actions to prevent the spread of whirling disease



EDUCATIONAL OBJECTIVE GOAL			TARGET AUDIENCE	LEVEL OF IMPACT & INTEREST
AWARENESS	KNOWLEDGE	ATTITUDE	Anglers	High
			Recreationalists	High
			Local Residents	High
			Fish Culture Operations	High
			First Nations	High
		SKILLS	Schools	Medium
			Internal Government	High
			Municipalities	Low-Med
			External Governments	Low
			Industry	Low-Med
		ACTION	Public	Low

QUICK FACTS WHIRLING DISEASE

WHAT CAN YOU DO TO PREVENT THE SPREAD OF WHIRLING DISEASE?

Whirling disease affects salmonid fishes including trout, salmon and whitefish and is caused by a parasite, *Myxobolus cerebralis*. It can be transmitted through spores that attach to equipment used for swimming, paddling, boating, water pumping, fishing, or through infected fish (alive or dead) and fish parts.

- Never move live or dead fish, or fish parts from one waterbody

Warning: Whirling Disease

Whirling disease is caused by a microscopic parasite that infects trout and mountain whitefish.

Prevent the spread! The disease can be spread through the movement of fish, water, sediments or equipment such as felt-soled waders or watercraft.

CLEAN: Rinse all mud and debris from equipment and aquatic gear with clean water.

DRAIN: Drain water before leaving the river or lake.

DRY: Dry boats and gear between trips.

CLEAN • DRAIN • DRY
YOUR BOAT



Education

- Print Materials
 - QF cards, posters, signage
- Displays at Tradeshows & Events
 - Taxidermy fish mount
- Presentations
- Educational Videos
- Reminder Tools
 - Boot cleaning brushes
 - Clean Drain Dry lures
- Social Media Campaign
- Engaged over 311,000 Albertans since Jan 2017.



What Can You Do?

What Can You Do?

Best Human Practices (BHP)

- Never move fish between waterbodies, (illegal in AB)
- Use fish cleaning stations or put fish parts in the garbage not garburator
- It is illegal to use live fish as bait

Clean

- Remove all mud, sand and plants
- Wash away from storm drains, if possible with hot water (90°C) or with dilute Quaternary Ammonia

**CLEAN + DRAIN + DRY
YOUR GEAR**



- **Drain**

- On land before leaving the waterbody drain all water

- **Dry**

- Allow for a minimum of 24 hours of drying time before entering new waters.

If You Find a Suspect Fish

- Clinical signs are not always due to whirling disease, please follow the fishing regulations in your area
- **Call the Aquatic Invasive Species Hotline 1-855 336-BOAT (2628)**
 - Date and time
 - River, stream, or lake name
 - GPS coordinates if possible
 - Description including:
 - Approx. numbers of fish
 - Fish species
 - How did they look or act?
 - Photographs if possible



What Else Can You Do?

- **Extra Best Human Practices (EBHP)**
 - For more information on where Whirling Disease has been found check **aep.alberta.ca**
 - For more detailed decontamination protocols and risk map visit **aep.alberta.ca**
 - Tell others about Whirling Disease in Alberta!



PREVENT THE SPREAD OF WHIRLING DISEASE

CLEAN + DRAIN + DRY YOUR GEAR

Whirling disease causes mortality in salmonid fish including trout and whitefish. The movement of fish, mud, and water can spread this deadly disease.

To help protect our fisheries, take these easy steps:

- ✓ Never move live or dead fish, or fish parts from one waterbody to another.
- ✓ Use fish-cleaning stations where available or put fish parts in the trash.
- ✓ Dry all gear thoroughly prior to next use.
- ✓ Avoid using felt-soled waders.

CLEAN, DRAIN, DRY all equipment that has been in contact with the water.

FOR MORE INFORMATION OR TO REPORT INVASIVE SPECIES, CALL:

1-855-336-BOAT (2628)

Clean, Drain, Dry Quiz!

CLEAN + DRAIN + DRY
YOUR GEAR



Fishing on the **Peace River** and the **Bow River**

Swimming in the **Oldman River**

Fishing on the **Oldman River** and the **Bow River**

Kayaking on the **Red Deer River**

PREVENT THE SPREAD
OF WHIRLING DISEASE

Floating down the **Bow River** in an innertube

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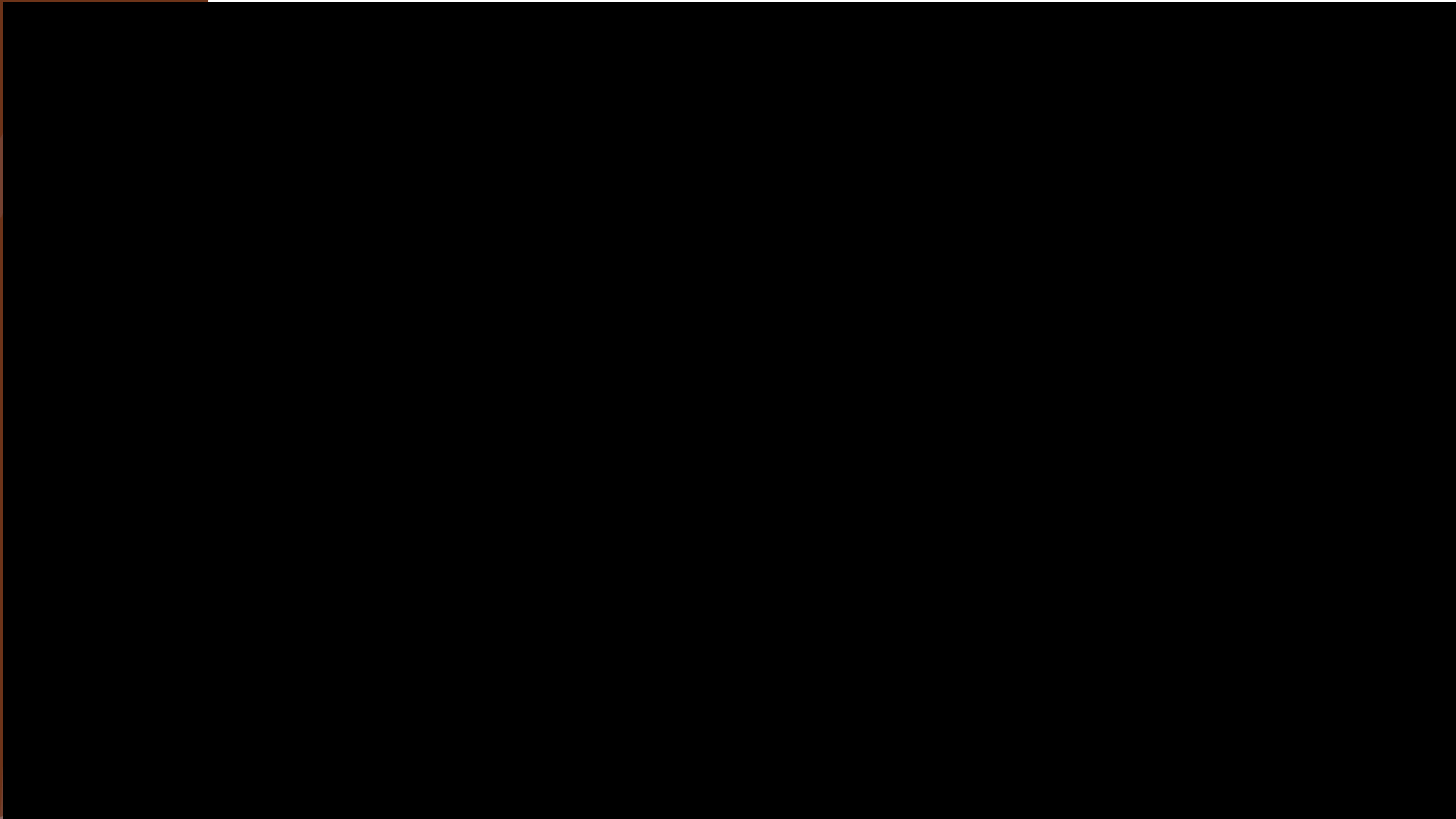
DRY: Dry boats and gear between trips.

For additional information visit aep.alberta.ca

Any Questions?

Videos

How to Clean Gear



<https://youtu.be/K2A2ZUQzjho>

Prevent the Spread of Whirling Disease

<https://youtu.be/lfaXgbTy3hQ>

Alberta's Whirling Disease Program

<https://youtu.be/t-1UFcQu20Y>