ProcellaCOR® FX

A new selective control technology for management of invasive aquatic plants in Canada

Jon Gosselin
Technical Development Biologist
SePRO, Carmel, Indiana USA

IVMA of British Columbia
Biennial Forum
November 2025

ProcellaCOR® (a.i., florpyrauxifen-benzyl)

- **6 years of successful use as USEPA reduced-risk aquatic herbicide and now registered in Canada**
- **Health Canada PMRA:**
  'ProcellaCOR FX herbicide will provide provincial authorities and partners a valuable tool and long-term solution to manage invasive aquatic species.'
- **High selective, short-exposure (hrs to days) systemic activity** on multiple major North American invasive aquatic weeds
- **Herbicide classification**
  - Mode of action: HRAC Group 4 (Auxin Mimic)
  - Chemical family: Arylpicolinate

ProcellaCOR® Physical Chemistry and Environmental Profile

Fate

- Strong and rapid uptake by target aquatic weeds
  - 23X more in plant versus water at 30 min and 75X at 6 hours (Haug et al. 2021)
- Primary mechanism for degradation: Rapid dissipation via photolysis
  - Also secondary breakdown via hydrolysis and microbial action

Toxicology

- No mammalian toxicity noted (no label limits on swimming, fishing, or water consumption)
- Favorable profile for fish, waterfowl, and other aquatic fauna
- Activity on some non-target plants → label irrigation guidance

SePRO

Physical Chemistry and Environmental Profile

Health Canada PMRA Conclusions

"*When used according to label directions, florpyrauxifen-benzyl and its transformation products do not pose a risk to wild mammals, birds, beneficial invertebrates, earthworms, bees, aquatic invertebrates, fish, amphibians, or algae*."

Physical Chemistry and Environmental Profile

Health Canada PMRA Conclusions

"*While florpyrauxifen-benzyl and florpyrauxifen acid may pose risks to sensitive non-target terrestrial plants and aquatic vascular plants, the PMRA recognizes that control of invasive species is necessary to help protect habitats for native species.*"

"*When used according to label directions…**will have the desired effect of controlling invasive aquatic plant species that pose a risk to sensitive habitats,** which will benefit the aquatic plant community.*"

Past published science

- **Past collaborative development at all scales**
  - **Screening of target and non-target aquatic plants** (Netherland and Richardson 2016, Richardson et al. 2016, Haug 2018)
  - **Aquarium / small tank systems** (Richardson et al. 2016, Mudge et al. 2021, Corps Aquatic Plant Control Research Program tech reports)
  - **Large mesocosm systems** (Beets and Netherland 2018, Beets et al. 2019)
  - **Initial field demonstrations** (Sperry et al. 2020, Catoor et al. 2022)
  - **Specialized aquatic ecotoxicology** (Buzcek et al. 2020 - mussels, Bisesi et al. (in review) - salmon)





Selective Milfoil Control @ 2 MAT

Untreated

9 PDU FX per
ha-metre
24 hr turnover

Beets, Heilman, and Netherland 2019

SePRO

Representative Management Outcomes

Tens of thousands of US sites have been successfully managed with ProcellaCOR since 2018.

Field research in 2021-2022 and early operational projects confirm use patterns and target species for ProcellaCOR FX in Canada.

Highlight species

Parrotfeather

Yellow Floating Heart

Eurasian Watermilfoil

- multiple scales of selective control

SePRO

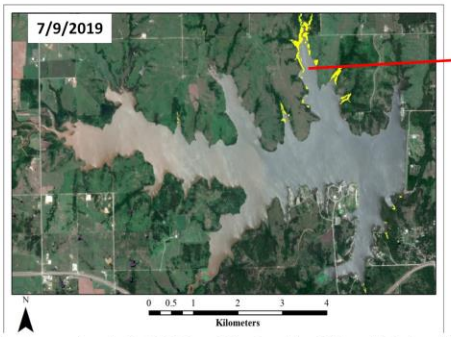
2 Days after ProcellaCOR the Parrotfeather on the edge is beginning to lie down.

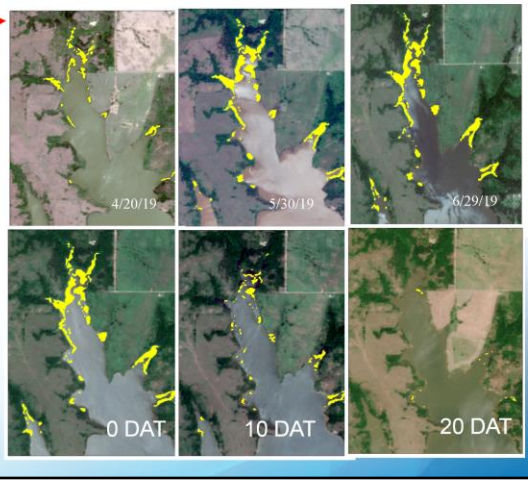
You can see the continued movement of the ProcellaCOR 11 days later.

43 day after ProcellaCOR and we have some American pondweed coming in where the parrotsfeather was.

10 months after ProcellaCOR the pond remains parrotsfeather free.

Yellow Floating Heart Control example
Lake Carl Blackwell, Oklahoma





Full published paper: Lamb, B.T., McCrea, A.A., Stoodley, S.H. and Dzialowski, A.R., 2021. Monitoring and water quality impacts of an herbicide treatment on an aquatic invasive plant in a drinking water reservoir. Journal of Environmental Management, 288, p.112444.


2 DAT


9 DAT

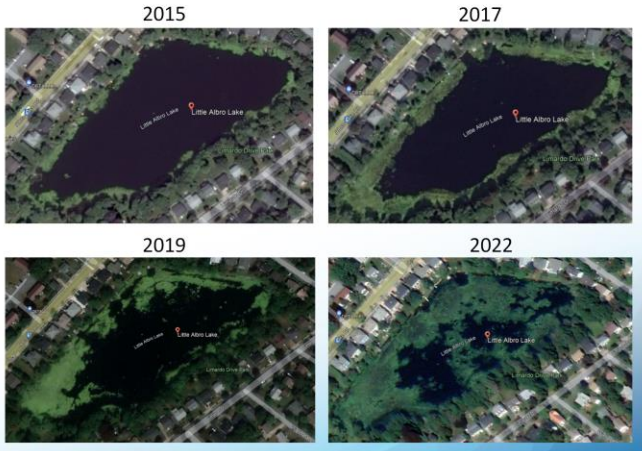

16 DAT

Rapid death and decay of YFH throughout the reservoirs

55 acres to less than 5 acres within less than 2 weeks.

Little Albro Lake, Halifax - Yellow Floating Heart Control

- Provincial permit
- Fisheries & Oceans permit
- 1st application in Nova Scotia
- Treatment in 2024
  - full littoral zone
  - Late-season application
  - Minimal re-growth in 2025 w/ no flowering



Little Albro Lake, Halifax - Yellow Floating Heart Control

- Treatment in Summer 2024
- Drone photo Sept 2025

Examples of different scales of EWM management with ProcellaCOR

Large-partial up to lake-wide

- Minerva Lake, New York

Small-partial

- Silvermere Lake, British Columbia

Spot

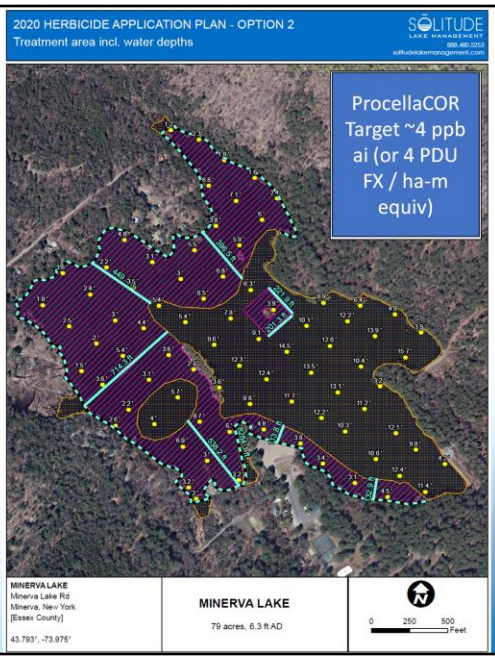
- Farlain Lake, Ontario

Minerva Lake NY

- Located in Adirondacks
  - sensitive sites with oversight by the Adirondack Park Agency (APA)
- EWM found in 2007 and managed with aggressive hand harvesting and DASH
  - 400-500 hours of DASH annually in recent years before treatment
- ProcellaCOR used in 2020 to selectively control EWM at scale and allow more efficient diver removal in future integrated efforts.

Minerva Lake NY

- 17 ha out of 32-ha lake treated June 5, 2020 with ProcellaCOR
  - equivalent of just 3 liters FX formulation
- Lake with 66% littoral FOO of EWM in late summer 2019 survey.
- ProcellaCOR dissipated (<1 ppb ai) by 24 hours post treatment



Frequency of Occurrence

Summer Prior to Treatment
August 30, 2019

	Total	
	Sites	%
Total Sites	82	
Overall Abundance	81	99%
Eurasian Watermilfoil	54	66%
Common Waterweed	49	60%
Flatstem Pondweed	41	50%
Berchtold's Pondweed	36	44%
Southern Naiad	34	41%
Macroalgae	31	38%
Watershield	30	37%
Large-leaf Pondweed	25	30%
Ribbon-leaf Pondweed	15	18%
Northern Naiad	14	17%
Slender Naiad	13	16%
Yellow Waterlily	13	16%
White Waterlily	10	12%
Small Pondweed	7	9%
Alpine Pondweed	4	5%
Sago Pondweed	3	4%
Water Stargrass	3	4%
Creeping Bladderwort	2	2%
Robbin's Pondweed	2	2%
Small Duckweed	2	2%
Greater Duckweed	2	2%
Common Bladderwort	2	2%
Benthic Filamentous Algae	2	2%
Floating-leaf Pondweed	1	1%
Flat-leaf Bladderwort	1	1%
Quillwort	1	1%
Spikerush	1	1%

2 months after ProcellaCOR
August 6, 2020

	Total	
	Sites	%
Total Sites	82	
Overall Abundance	82	100%
Common waterweed	52	63%
Southern Naiad	49	60%
Flatstem Pondweed	44	54%
Macroalgae	39	48%
Large-leaf Pondweed	30	37%
Northern Naiad	29	35%
Ribbon-leaf Pondweed	28	34%
Watershield	21	26%
White Waterlily	15	18%
Yellow Waterlily	12	15%
Small Pondweed	10	12%
Slender Naiad	7	9%
Floating-leaf Pondweed	6	7%
Variable Pondweed	3	4%
Sago Pondweed	2	2%
Brittle Naiad	2	2%
Benthic Filamentous Alga	2	2%
Alpine Pondweed	1	1%
Greater Duckweed	1	1%
Quillwort	1	1%
Eurasian Watermilfoil	0	0%
Humped Bladderwort	0	0%
Robbin's Pondweed	0	0%
Greater Duckweed	0	0%
Common Bladderwort	0	0%
Spikerush	0	0%
Water Stargrass	0	0%

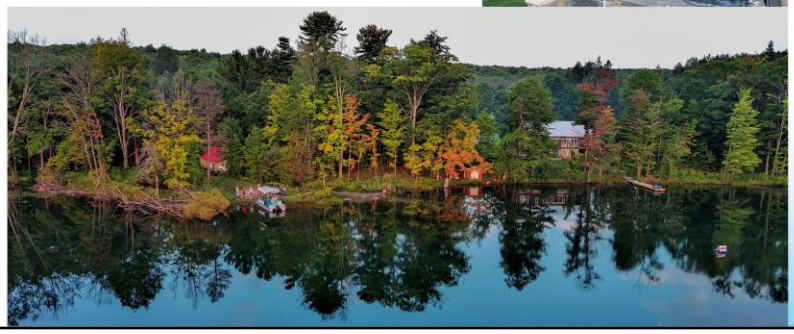
14 months after ProcellaCOR
August 11, 2021

	Total	
	Sites	%
Total Sites	82	
Overall Abundance	82	100%
Northern naiad	66	80%
Common waterweed	61	74%
Flatstem pondweed	47	57%
Large-leaf pondweed	43	52%
Berchtold's pondweed	26	32%
Ribbon-leaf pondweed	23	28%
Small pondweed	23	28%
Macroalgae	19	23%
White waterlily	17	21%
Watershield	16	20%
Yellow waterlily	13	16%
Southern naiad	8	10%
Sago pondweed	6	7%
Floating-leaf pondweed	5	6%
Brittle naiad	5	6%
Variable-leaf pondweed	3	4%
Sparganium sp.	3	4%
Slender naiad	2	2%
Alpine pondweed	2	2%
Robbins pondweed	1	1%
Giant duckweed	1	1%
Bladderwort sp?	1	1%
Blunt-leaved pondweed?	1	1%
Eurasian watermilfoil	0	0%

Canada

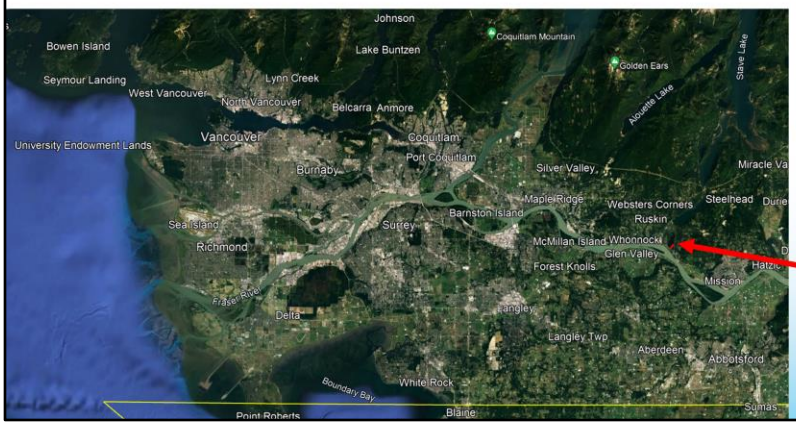
ProcellaCOR® FX

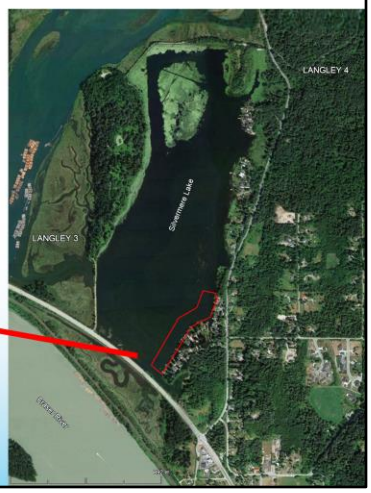
- Research Authorization 2021-2022
- Registration in May 2023
- September 2023: First applications of registered ProcellaCOR FX in Ontario



Silvermere Lake BC
ProcellaCOR research demonstration

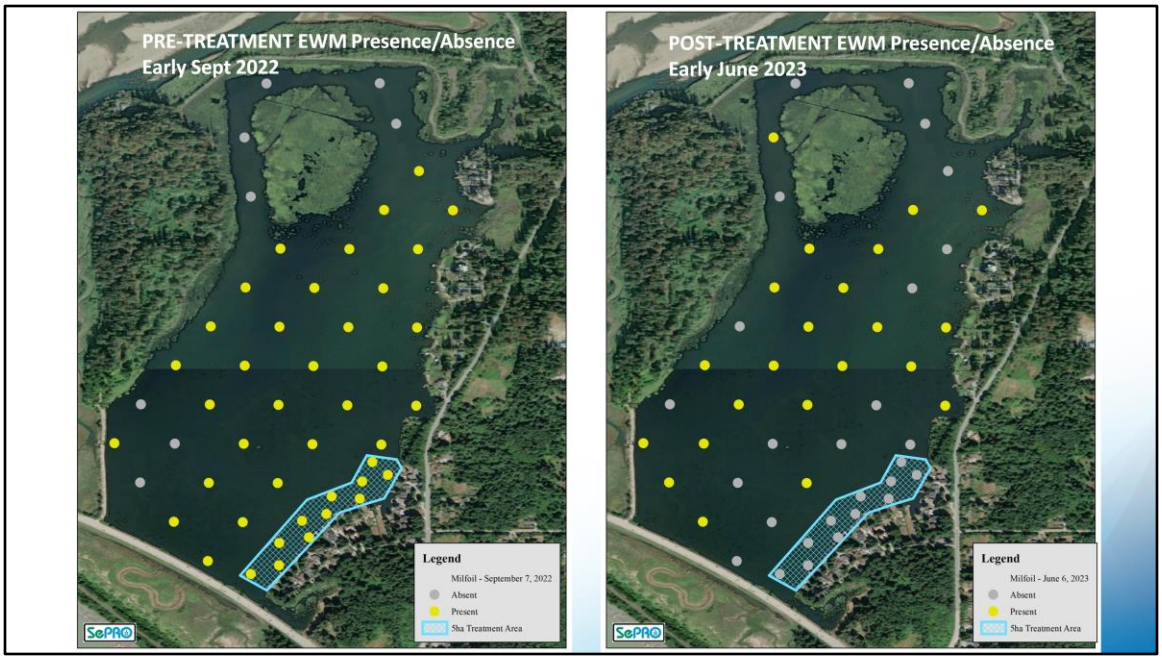
- 5-hectare spot application in late September 2022





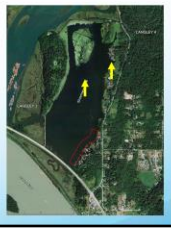
- Project on waters not requiring provincial permit along with federal RA, but significant consultation with provincial agencies and Kwantlen First Nations to move forward.
- Application on September 29, 2022
- 5 PDU FX / ha-metre
  - 5 X 15 ha-m water volume = 75 PDU FX
  - 2.5 liters FX utilized to treat 150,000,000 liters of water

Application photos courtesy of Silvermere Lake Association and Aquatechnex (Terry McNabb)



Full control in treated area with some reductions just outside.

Untreated areas of Silvermere Lake
UAS imagery early June 2023



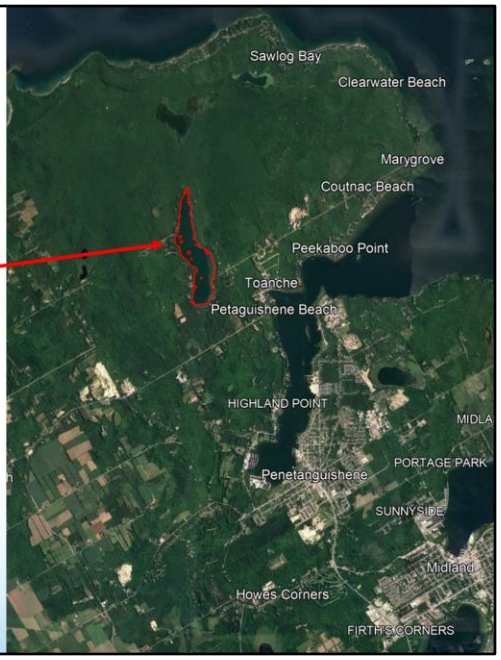

ProcellaCOR 5-ha area
UAS imagery early June 2023

Silvermere Western Painted Turtle Assessments

No observed impacts on provincially-listed WPT

Farlain Lake, Ontario

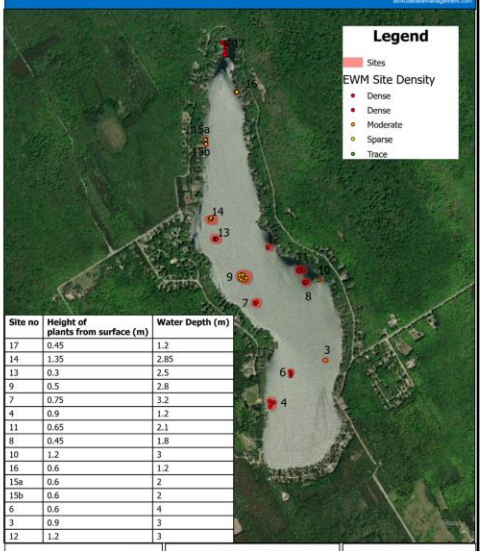
- 110-hectare lake north of Toronto
- EWM detected in 2012.



Farlain Lake, Ontario

- Past EWM control
  - Extensive use of Bottom barriers, Diver-Assisted Suction Harvesting, and spot contact herbicide (diquat – Reward)
  - EWM still remained and gradually spread to multiple small infestations.
- September 6, 2023 treatment
  - 15 individual spot applications as small as 500 m^2
  - 2.5 hectares total treated at rates of 10 – 20 PDU FX / ha-metre on September 6, 2023
- Early EWM collapse reported on September 14.

Figure 1: 2023 Eurasian watermilfoil Distribution and Density



Site no	Height of plants from surface (m)	Water Depth (m)
17	0.45	1.2
14	1.35	2.85
13	0.3	2.5
9	0.5	2.8
7	0.75	3.2
4	0.9	1.2
11	0.65	2.1
8	0.45	1.8
10	1.2	3
16	0.6	1.2
15a	0.6	2
15b	0.6	2
6	0.6	4
3	0.9	3
12	1.2	3

Lake Farlain
Ontario, Canada

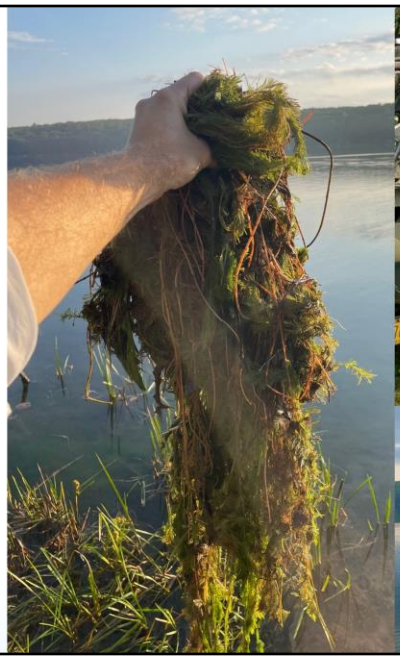
N

Lake Farlain
0 0.13 0.25 0.5 Miles

Map Date: Revised 08/22/2023
Prepared by: EV
Office: SHREWSBURY, MA

Farlain Lake
September 6, 2023

First application as fully-registered aquatic herbicide in Canada

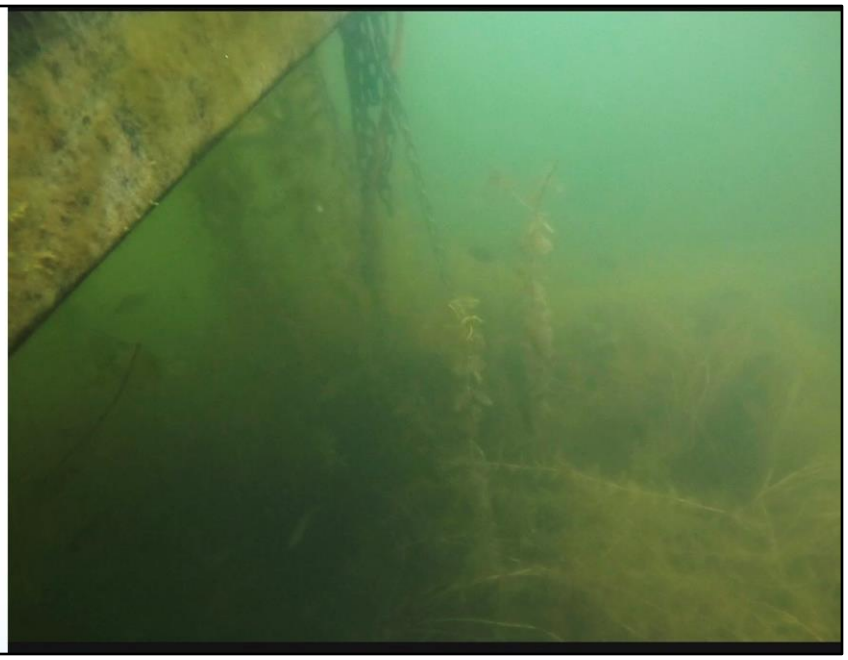


Farlain Lake
Eurasian watermilfoil

Week 1 after
ProcellaCOR

Farlain Lake
Eurasian watermilfoil

Week 2 after
ProcellaCOR



Farlain Lake
Eurasian watermilfoil

Week 3 after
ProcellaCOR

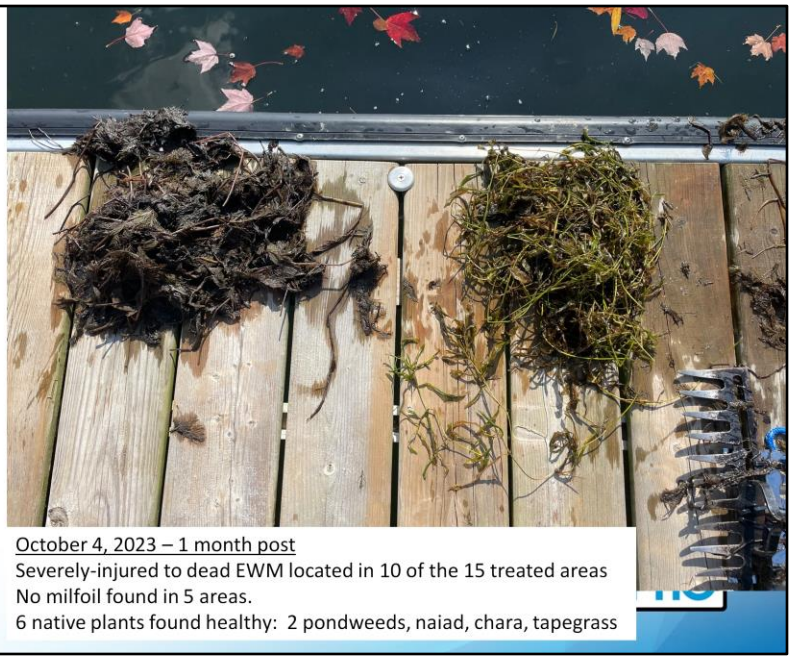
Site inspection with Farlain Lake Community Association
October 4, 2023

Favorable observations of selective Eurasian watermilfoil control

Decaying EWM
1 month post
treatment

Healthy EWM
day of treatment

SePRO



October 4, 2023 – 1 month post
Severely-injured to dead EWM located in 10 of the 15 treated areas
No milfoil found in 5 areas.
6 native plants found healthy: 2 pondweeds, naiad, chara, tapegrass

ProcellaCOR® FX
A new tool for Canada

- Highly selective management of Eurasian watermilfoil and several other BC invasive aquatic plants to restore infested aquatic ecosystems

- Watch Lake and Pond Heroes case studies
  - https://www.sepro.com/aquatics/lake-pond-heroes
  - Farlain Lake, ON
    https://www.sepro.com/aquatics/lake-pond-heroes/lake-pond-heroes-farlain-lake

SePRO

Please come visit with us before you leave the Forum.


ProcellaCOR FX
Jon Gosselin
Technical Development Biologist
JonG@SePRO.com
Ph: 1-603-494-5966
Travis Fuller
Aquatic Technical Specialist - PNW
TravisF@SePRO.com
Ph: 1-509-385-3549
Farlain video
SePRO