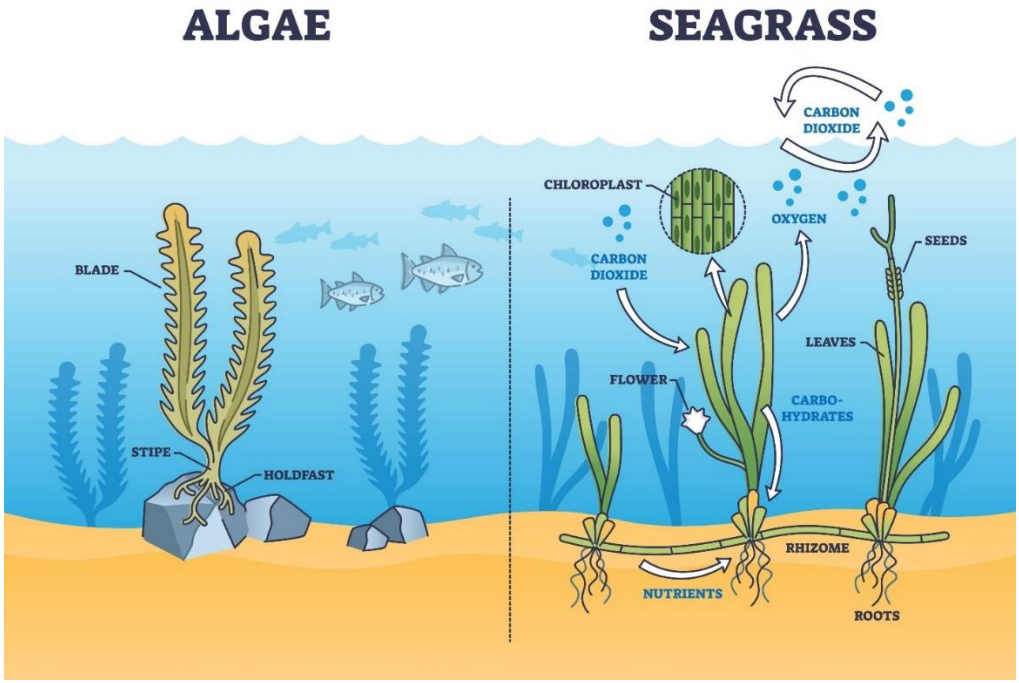
The Green Battle Beneath: A History of Eurasian Watermilfoil at Cultus Lake

As we look out over the pristine waters of Cultus Lake, it is easy to be mesmerized by the reflection of the mountains and the clarity of the water. However, as stewards of the lake we often find ourselves looking not just *at* the water, but *into* it. For decades, a silent battle has been waged beneath the surface against an unwelcome visitor: Eurasian Watermilfoil.

To understand where we are going in our stewardship efforts, we must understand where we have been. This is a brief history of our fight against this invasive species.

The Arrival (1977)

Eurasian Watermilfoil is not native to our ecosystem. Eurasian watermilfoil is a non-native aquatic plant introduced to eastern North America in the late 1800s. It spreads widely and rapidly and now covers most of the shallow area of Cultus Lake, approximately 12 hectares. It was first noticed in Cultus Lake in **1977**. It didn't swim here on its own; it was brought here by us—people and boats. Whether hitchhiking on a propeller or stuck to a trailer, once introduced, it made itself at home.



While the plant is present throughout the lake, it is significantly more colonized at the **north west end (near Sweltzer Creek)**. The shallow, nutrient-rich waters there provide the perfect nursery for this

invader. While Milfoil is our historic enemy, today we remain vigilant, as we now have to worry about the introduction of other invasive species that could follow the same path.

The Threat to Our Salmon: Spawning and Oxygen

Why does a weed matter? The answer lies in our gravel beds and the very chemistry of the water. The primary concern for CLASS and the Department of Fisheries and Oceans (DFO) has always been that Milfoil would encroach upon and physically suffocate the sockeye salmon spawning beds.

However, the threat goes deeper than just physical space. **Milfoil creates a suffocation hazard and overlaps with the habitat of Pikeminnow, Stickleback, Shiners, and Sculpins.** When these dense mats of vegetation inevitably die back and sink to the bottom to decompose, the bacterial process consumes vast amounts of dissolved oxygen. This can lead to hypoxic (low oxygen) zones near the lake bottom—exactly where our fish live and spawn. Effectively, the weed can choke the fish by stealing the oxygen they need to survive.

To understand the scope of this, CLASS funded specialized software for the DFO (specifically working with Poon) to monitor Milfoil colonization. We needed to see the battlefield to understand it. The mapping confirmed our fears: the plant competes directly for the space and resources our iconic salmon need.

Lessons Learned: What Not To Do

Over the years, we looked to our neighbors—Christina Lake, Nicola Lake, and Okanagan Lake—to see how they managed the infestation. We learned as much from their challenges as their successes.

1. **Mechanical Harvesters:** Initially, giant "underwater lawnmowers" seemed like a good idea. However, we learned that mechanical harvests are devastating to the ecosystem. They have a high rate of bycatch, meaning they kill fish while cutting the weeds.
2. **Biological Controls:** We investigated nature's solutions, specifically the Milfoil weevil, a beetle that eats the plant. Unfortunately, research showed that while weevils exist, they wouldn't survive or be effective in the specific conditions of Cultus Lake.
3. **The Fragmentation Problem:** Perhaps the most terrifying aspect of Milfoil is its biology. **Every teeny, broken piece can become a new plant.** This is why mechanical chopping is so dangerous—it effectively plants thousands of new weeds.

We have seen the devastating potential of surface "mats" at Hatzic Lake, where the invasive growth is so thick it looks like solid ground because fluctuating water levels prevent the plants from rooting, causing them to form floating colonies. While Cultus has mats, specifically in the south, we are fighting to prevent that level of takeover.

The Turning Point: 2013

In 2013, our approach became more scientific and strategic. CLASS hosted a vital **Cultus Lake Technical Workshop**. We invited **Dr. John Madsen**, a leading expert from Mississippi, to evaluate our situation.

Dr. Madsen provided a reality check. He explained that there is no "silver bullet." Effective management requires a **multi-year plan** that utilizes a combination of the five available methods:

1. Mechanical (with caution)
2. Chemical (herbicides)
3. Biological (insects/fish)
4. Physical (barriers)
5. Cultural (prevention)

The Solution: "Weeding the Garden" : The History of Milfoil Mats at Cultus Lake

The **Cultus Lake Park Board** has installed benthic barrier mats for more than a decade as a targeted method to suppress milfoil around heavily used swimming and boating areas. These mats:

- Are large, weighted PVC vinyl sheets placed directly on the lake bottom with a 10-year lifespan.
- **Starve the milfoil of sunlight**, preventing growth.
- Reduce fragmentation by preventing the plant from reaching the surface.
- Require seasonal installation, inspection, and repositioning as sediments shift. 11 weeks of coverage results in 100% plant mortality, but recolonization occurs within 2 years, requiring a biennial treatment cycle.

The earliest mat installations at Cultus occurred in the **early 2000s**, beginning in priority recreation zones such as Main Beach. Since then, the Park Board has continued to expand and refine their use, working in coordination with CLASS and DFO to ensure they do not disrupt fish habitat. Mats are now an established, though labour-intensive, part of the lake's annual management cycle.

Compounding Issues

The Milfoil problem does not exist in a vacuum. It is compounded by the health of the lake itself. Increased **nutrient loads** (from septic, runoff, and fertilizers) and **fine silts** entering the lake act as a super-food for Milfoil. As we fight the plant, we must also fight to keep the water clean and clear of these pollutants.

Moving Forward

The history of Milfoil at Cultus Lake is a lesson in unintended consequences. It arrived by boat, fed on our nutrients, and threatened our salmon. But it also rallied a community. Through CLASS, DFO partnerships, and scientific workshops, we have moved from reactive panic to strategic stewardship.

The battle isn't over, but armed with history and science, we are better equipped to protect the lake we love.

- Ernie Vance, Director, CLASS - 2025