Lake Windermere
Aquatic Invasive Plant Species Inventory
2022

Prepared for the Lake Windermere Ambassadors
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goldeneye
ECOLOGICAL SERVICES

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Cover Photo: Unofficial boat launch near Bayshore Condos, Invermere.

1. Introduction/Background

Much of Lake Windermere is classified as shallow open-water wetland habitat; an area of land that is saturated with water. Wetlands are among the most productive ecosystems in the world with an immense variety and abundance of species (e.g., birds, fish, mammals, insects, microbes, plants) forming ecologically significant parts of a wetland ecosystem. Freshwater plants are an under-valued part of lakes and rivers and their presence is often considered a nuisance within some recreational pursuits (e.g., swimmers getting feet tangled in plants, plants clogging motors), yet freshwater plants provide a variety of ecological benefits to many lakes, including Lake Windermere.

Macrophytes are aquatic plants growing in or near water. They can be emergent (upright portions above the water surface), floating or submerged. They are primary producers meaning that they are the foundation of an ecosystem, the first links in the food chain and vital to the survival of a healthy ecosystem (Sciencing, 2022). They provide habitat, food, and structure for other organisms. They are a key component of aquatic ecosystems with at least 26 different types of ecosystem services provided by freshwater plants, including nutrient cycling, shoreline stabilization, habitat provisioning, water purification, disease control and aesthetic values (Thomaz, 2021).

Invasive species are the second largest threat to biodiversity decline and extinctions worldwide, and they contribute to huge losses of habitat, both terrestrial and aquatic. An invasive species is considered to be a plant, animal, or fungus species that is deliberately or unintentionally introduced into an area that is outside of their natural habitat (ISCBC, 2017). Numerous accounts link invasive species to severe economic losses (Pimentel, Zuniga, & Morrison, 2005; Xu et al., 2006). They can negatively impact recreational pursuits and infrastructure such as hydroelectric power facilities (Province of British Columbia (BC), 2015). Due to their severe impacts to the economy and environment in other regions of the world, there is mounting concern about the introduction of invasive mussels [i.e., Zebra Mussel (*Dreissena polymorph*) and Quagga Mussel (*Dreissena bugensis*)] in the province of BC. Throughout BC, the provincial government is working to prevent new aquatic invasive species (AIS) from entering freshwater ecosystems. In BC, provincial government staff operates watercraft inspection stations that work to decontaminate infected boats at mobile stations spread across the province. Sampling for Zebra/Quagga Mussel in Lake Windermere takes is done annually by the Province of BC and/or the East Kootenay Invasive Species Council (EKISC).

There are specific aquatic invasive plants that have been identified with potential to be introduced into Lake Windermere: Eurasian Watermilfoil (*Myriophyllum spicatum*), Curlyleaf Pondweed (*Potomogeton crispus*), and Brazilian Elodea (*Egeria densa*). There are numerous different 'pathways of invasion' used by invasive species use to enter new habitats. For instance, aquatic invasive plants are transported into waterbodies though motorized and non-motorized boat ballast and by boat trailers carrying plant fragments. In the absence of any indigenous predators to keep control an invasive species, the alien invader takes over previously unoccupied habitat and displaces indigenous species.

The Lake Windermere aquatic invasive plant inventory has operated annually since 2009, with the exception of the year of 2013. The primary goal of the project is to determine if any aquatic invasive plant species are present in the Lake Windermere ecosystem. This project remains diligent in its efforts of early detection so that a rapid management response can be implemented if an unwanted invader is located.

2. Study Area

Lake Windermere (UTM: 571182; 5590080) is located near the headwaters of the Columbia River. It is within a river system that starts at Canal Flats, located about 30kms south of the most southerly end of Lake Windermere. Lake Windermere is located within the Regional District of East Kootenay (RDEK), found in the Rocky Mountain Trench of southeastern British Columbia. The largest community sits at the northern end of the Lake (Invermere) with a population of nearly 4000 permanent residents; the number swells during summer months (Wikipedia, 2022). Lake Windermere is important to humans for a variety of purposes including freshwater provisioning and its significant cultural ecosystem services such as aesthetic views, fishing, birding, recreational boating, and cross-country skiing.

Lake Windermere extends for approximately 17.7 kilometers and is 0.7 to 2 kilometers wide. Much of Lake Windermere is classified as a shallow open water wetland, a transition zone between lakes and marshes where the depth of water is often less than 2 meters (Alberta Wetland Policy, 2017). There are some deeper sections, with the greatest depth being approximately 5.5 meters and located near the northwest end. There is a high diversity and abundance of biodiversity found at Lake Windermere and in the Columbia Wetlands, including a number at species at risk. There have been 165 bird species recorded at Lake Windermere, including 17 listed as species-at-risk, including the red-listed Western Grebe (*Aechmophorus occidentalis*), red-listed American White Pelican (*Pelecanus erythrorhynchos*), and blue-listed California Gull (*Larus californicus*) (Darvill, 2020; Darvill, 2019). Lake Windermere was recently designated as proposed Critical Habitat under the proposed Recovery Strategy for the Bank

Swallow (*Riparia riparia*) (Environment and Climate Change Canada, 2021). Wildsight Golden's Upper Columbia Swallow Habitat Enhancement Project has documented 28 Bank Swallow colonies along the foreshore of Lake Windermere. Lake Windermere has been documented as important stopover habitat for large congregations of waterbirds during both spring and fall bird migration (Darvill, 2019).

The first 180 kilometers of the Columbia River are known as the Columbia Wetlands, a Ramsar site recognized for its international significance. Lake Windermere is considered to be a part of the contiguous Columbia Wetlands ecosystem, but the Ramsar designation excludes both Lake Windermere and Columbia Lake from Ramsar status. The 'Key Biodiversity Area' designation is currently being pursued for the Columbia Wetlands, including both Lake Windermere and Columbia Lake, largely owing to data showing the significance of the area as Bank Swallow habitat.

3. Methods

3.1. Shoreline surveys

Survey methodology adhered to the protocol outlined in the 'Canadian Columbia Basin Regional Framework for an Aquatic Invasive Species Program: 2015 to 2020 [Inter-Ministry Invasive Species Working Group (IMISWG), 2015]. Shoreline surveys for aquatic invasive plant species were conducted over a seven-hour period on September 16, 2022. Shoreline sampling occurred at five pre-established survey stations (Figure 1). The pre-established surveys stations were chosen (pre-selected in 2015) because those sites pose a higher risk of invasion compared to other shoreline locations. High-risk sites include locations that are known to have higher amounts of trailered boat traffic (boats coming in from other areas that could be affected by aquatic invasive species), public boat launches, or boat marinas with multiple boat docking slips. The same stations were also surveyed in previous years of survey effort, with the exception of one station (Rushmere) was not visited in 2022 due to private property concerns.

A field crew of two people (R. Darvill, volunteer) conducted the aquatic invasive plant sampling at each station. A thatched rake with a 9.7-meter-long rope was use for sampling aquatic plants in the water. The rake was tossed into the water as far as possible and pulled back to the shoreline. This enabled the rake to collect freshwater plants below the surface of the water at the specific location where it was thrown. Specific locations were recorded. All aquatic plants collected on the rake were recorded to the family level; where possible the species level was identified and recorded. Rake pulls occurred at the initial feature (e.g., public boat launch) as well as at three sites (when possible) located 25, 50 and 75 meters both upstream and

downstream of the initial feature. Two rake throws were conducted at each of the seven sites at each station. However, at two of the survey stations (i.e., Fairmont Side Channel, End of Ruault Road), it was not possible to sample at seven sites per survey station due to obstructions such as private property (i.e., Fairmont Side Channel, extensive vegetation, bushy riparian vegetation). The five shoreline survey stations were as follows: Baltac Beach, Fairmont Side Channel, end of Ruault Road, Unofficial boat launch near Bayshore Condos and Althalmer/Pete's Marina.

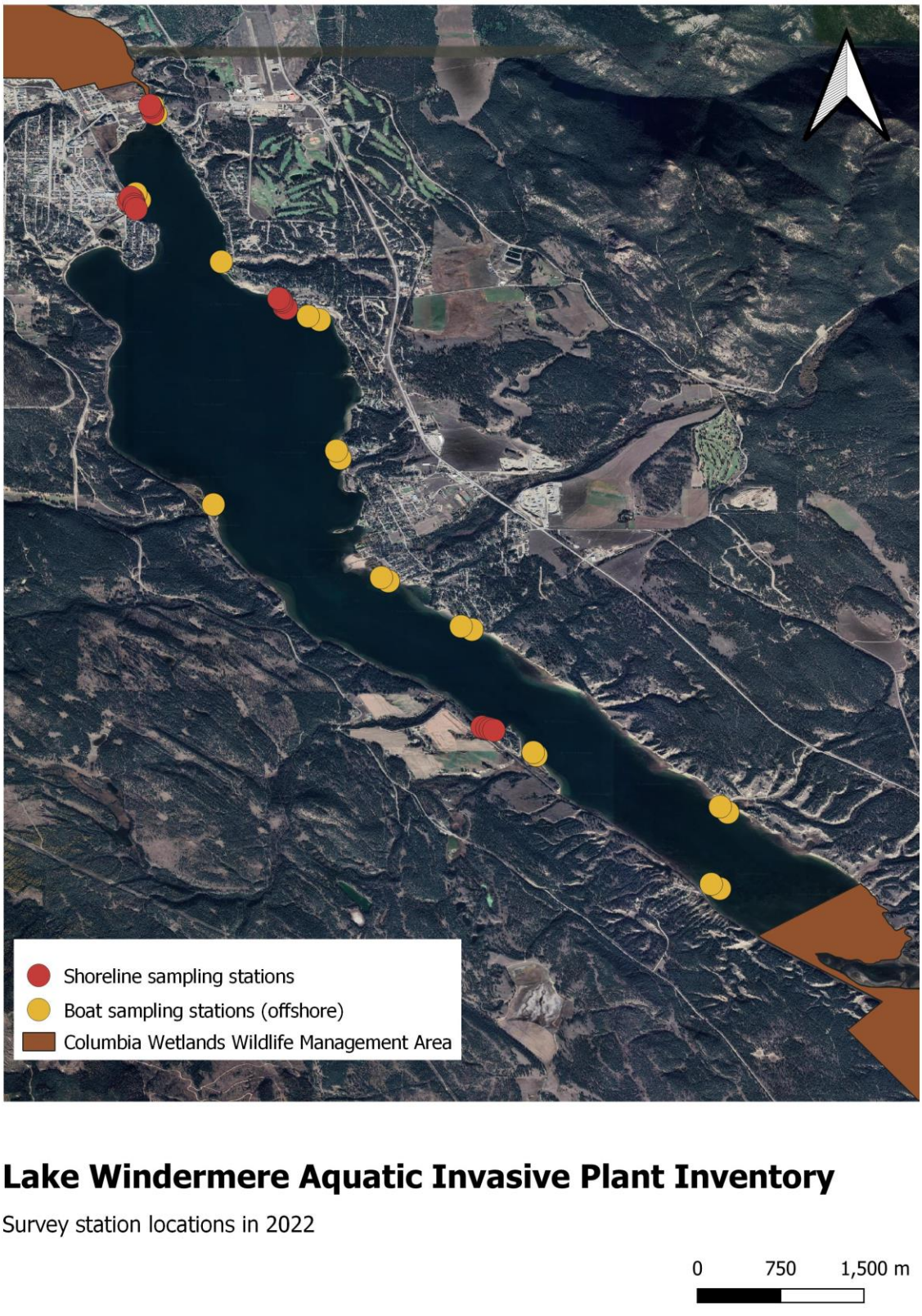

Figure 1. Map showing Lake Windermere aquatic invasive plant survey station locations in 2022.

3.2. Offshore surveys with boat

Offshore sampling for aquatic invasive plants was completed with the use of an aluminum boat and outboard motor (provided by the District of Invermere), and a crew of two people (R. Darvill, A. Baxter). All offshore sampling occurred on September 15, 2022 at 11 locations/stations considered to be at high-risk for introduction of aquatic invasive plant species (Figure 1). As with shoreline surveys, high-risk locations were considered to be those areas with an increased incidence of trailered boat traffic (boats coming from other waterbodies), public boat launches, and boat marinas. The locations sampled were: Rushmere, Lakeshore Resort, Ruault Road, Indigenous Beach, Tretheway Docks, Akiskinook Resort, end of Coy Road, Baltac Beach, Lakeview Meadows, Althalmer/Pete's Marina, and the 'unofficial boat launch near the Bayshore Condos'.

The 2022 offshore surveys utilized the IMISWG (2015) methods for AIS sampling on a lake with a boat. This ensured that surveys can be repeatable over time to maintain consistency with previous years of survey effort. However, given the relatively large spatial scale of Lake Windermere and given limited resources, as in previous years of survey effort, a modification was made to the IMISWG protocol. The IMISWG protocol recommends that continuous surveys be conducted every 100 meters. However, this project's scaled-down survey effort focused on 11 high-risk locations. The scaled-down effort was also done during all years of and between 2015 and 2021.

At each survey location, two rake pulls were conducted (one off the right side and one off of the left side of boat). The rake was tossed into the water as far as possible and pulled back to the boat, enabling the rake to collect plants present on the lake bottom. All aquatic plants collected on the rake were recorded to the family level; where possible the species level was identified and recorded. When possible, a 100 meter transect was conducted between the two rake toss sites at each station. If the water was calm and shallow enough to see the benthic surface, a single observer would observe all of the additional plant species seen on the lake bottom within this 100 meter transect, with the naked eye from the boat. For all transects, the boat travelled 100 meters northward of the initial site, parallel to the shoreline. An additional two rake toss/pulls were conducted at the end of a 100 meter transect, one off the right and one off the left-hand side of boat. All observations were recorded in the field and later transcribed into an excel file.

4. Results

4.1. Shoreline surveys

No aquatic invasive plant species were detected during shoreline surveys. A list of Indigenous aquatic plant species that were observed at each station are listed in Appendix 1. All watermilfoil species (*Myriophyllum sp.)* detected during surveys had nine (or less) leaflet pairs per leaf. Indigenous watermilfoil species have 5-10 leaflet pairs, whereas invasive Eurasian Watermilfoil (*Myriophyllum spicatum*) has leaves with 12-21 leaflet pairs (Minnesota Sea Grant, 2016). All watermilfoil species detected in 2022 had less than 10 leaflet pairs and were assumed to be Indigenous aquatic plant species.

The Potamogeton species identified in the excel table (Appendix 1 and 2) with parenthesis stating 'short/narrow leaves', could be either *P. gramineus* or *P. obtusifolious,* or possibly another species or hybrid Potamogeton species. Potamogeton species can be hard to identify, depending on condition/stage of the plant and they hybridize fairly frequently to produce plants with hybrid characteristics (Thomas Wolf, personal communication, 2017). Since the purpose of these surveys is to detect invasive plants, species level determination for Indigenous aquatic plants is not required.

There was a lack of freshwater macrophytes noted at all of the more heavily used boat launch locations: Athamler, Baltac Beach, 'unofficial boat launch near Bayshore Condos.'

4.2. Offshore surveys

No aquatic invasive plant species were detected during offshore surveys. As with previous years of survey effort, dense areas or beds of Indigenous aquatic plants were observed in specific locations such as Ruault Road and Pete's Marina. There were some survey stations that had a lack of abundant and diverse aquatic plant communities, such as Lakeshore Resort, Baltac Beach, 'unofficial boat launch near Bayshore Condos' and Tretheway Docks. While not a part of this study, during an aerial survey conducted on April 8, 2019 (during an annual bird survey by the principal consultant). Photographs of Lake Windermere were taken indicating that motor boats could be having an influence on the Indigenous plant communities of Lake Windermere. These were also included in the 2021 freshwater inventory report (Darvill, 2021) and are included here again as Figures 2 and 3.

Figure 2. Aerial photograph taken on April 8, 2019 showing effects of motorized boating activities on aquatic vegetation at Lake Windermere.

Figure 3. Second aerial photograph taken on April 8, 2019 showing effects of motorboats on aquatic vegetation on benthic surface at Lake Windermere.

5. Discussion/Recommendations

To date, no aquatic invasive plants have been found in Lake Windermere. While not the invention of this inventory, the distribution and abundance of indigenous freshwater plants may be changing over time in Lake Windermere. This information was also presented in the 2021 report from the Lake Windermere aquatic invasive plant species inventory (Darvill, 2021). There may be cases of increase plant growth in some area, but a lack of freshwater plants is evident at boat launch areas that were essentially void of aquatic vegetation, i.e., Athalmer boat launch, Baltac Beach, Unofficial boat launch near Bayshore Condos.

Several factors can affect the growth of aquatic plants, including temperature, substrate, and the availability of inorganic carbon (Bornette & Puijalon, 2011). The different availability of nutrients in Lake Windermere may also have an effect on the growth and species type of aquatic plants present (Tootoonchi & Gettys, 2019). The physical forces from boats (i.e., propeller action with cutting effects, turbulence) negatively affect lake ecosystems including a negative impact on the health of indigenous aquatic plants in a freshwater ecosystem (Liddle & Scorgie, 1980). Motorboats and the wake they create cause considerable erosion of plant roots (Liddle & Scorgie, 1980). Motorboats have dramatically reduced plant biomass in other lake systems, primarily through direct cutting with the propellor and substrate scouring (Asplund, 2000). Mooring can also have a significant impact on the abundance of freshwater aquatic vegetation (Sagerman et al., 2020).

A decline in the amount of aquatic vegetation can lead to a cascade of negative environmental impacts, since plant decreases affect ecological functions that aquatic plants provide (Sagerman et al., 2020). It was beyond the scope of this study to determine how the distribution or abundance of freshwater aquatic vegetation may have changed in Lake Windermere. Determining aquatic plant species abundance and diversity in Lake Windermere could allow managers to assess how freshwater plants are changing over time in Lake Windermere. This type of study could use aerial photography, spatial and remote sensing technologies as well as powerful geostatics tools (Santos, Anderson & Ustin, 2011), creating a focus for a potential graduate student. If changes in aquatic plant abundance and distribution can be determined, it would be useful to have additional information that may be contributing to these changes (e.g., continue annual counts on the number of boats, number of anchoring buoys and moorage slips on Lake Windermere). Aquatic plants are also being increasingly used as ecological indicators of ecological heath (Clayton et al., 2006) and for toxicity assessments (Mohan & Hosetti, 1999). Since the Lake Windermere Ambassadors are interested in the aquatic health of the lake, it may

be of interest to pursue the potential of using aquatic plants as ecological or bioindicators (Ferrat, Pergent-Martini & Romeo, 2003).

It is also recommended more public education occur regarding the importance of indigenous aquatic plants to the health of Lake Windermere. This could be in the form of social media posts, developing a brochure to hand out at events, metal signage at public boat launch areas – all highlighting the important of indigenous freshwater plants to Lake Windermere's ecological health. Additional recommendations were made in the 2021 Lake Windermere aquatic invasive plant species inventory report, including a freshwater mussel inventory, freshwater sponge inventory and locating/reporting hard-stemmed bulrush Deep Marsh communities (at-risk ecological community) – see Darvill, 2021 for additional information on all those recommendations.

It is important to educate communities adjacent to Lake Windermere (e.g., Invermere, Windermere, Fairmont) and also tourists about the ecological benefits provided by Lake Windemere's Indigenous aquatic plants. It's imperative to maintain ecological values of aquatic plant communities in Lake Windermere, while at the same time find a way to balance the economic and societal needs of the community. "Because macrophyte communities provide important benefits for humans, their conservation and restoration, where necessary, are important for human well-being" (Thomaz, 2021).

6. Acknowledgements

I would like to thank the Lake Windermere Ambassadors (LWA) Program Coordinator Amy Baxter for participating on the aquatic invasive plant surveys and for working to secure funding for the work to get done. Goldeneye Ecological Services and the Lake Windermere Ambassadors acknowledges the financial contributions of the Regional District of East Kootenay's Columbia Valley Local Conservation Fund, Columbia Basin Trust, as well as the in-kind support of the District of Invermere for the use of their small motorized boat in order to conduct offshore surveys.

Prepared by: This document is intended to provide adequate information to describe the aquatic invasive plant inventory that was completed on Lake Windermere in 2022. Please do not hesitate to contact the consulting biologist with any inquiries about this inventory and document.

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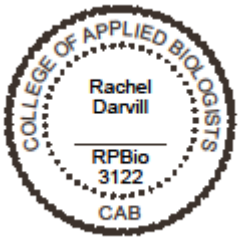

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8. Appendices

Appendix 1. Results from the Lake Windermere shoreline surveys for aquatic invasive plants on September 16, 2022.

Site	AIS sampling location	Aquatic Plants Identified (ranked in order of % in the pull)	Observations/Notes
1. Baltac Beach	Launch (Public Boat Launch) UTM: 0570748; 5593608	**Pull 1:** No plants. **Pull 2:** No plants.	Bare ground, gravel substrate. Layer of periphyton noted on rocks.
	South 1 (25m) UTM: 0570758; 5593566	**Pull 1**: No plants. **Pull 2:** No plants.	Bare ground, gravel substrate.
	South 2 (50m) UTM: 0570760; 5593559	**Pull 1**: No plants. **Pull 2:** No plants	Bare ground, gravel substrate.
	South 3 (75m) UTM: 0570779; 5593544	**Pull 1:** No plants **Pull 2**: No plants	Bare ground, gravel substrate.
	North 1 (25m) UTM: 0570739; 5593631	**Pull 1**: *Chara sp.*, *Myriophyllum sp.* **Pull 2:** No plants.	Small fragment of plants on first pull. Primarily bare ground.
	North 2 (50m) UTM: 0570728; 5593656	**Pull 1:** *Chara sp.* **Pull 2**: *Chara sp., Najas sp., Potamogeton richardsonii.*	Small fragment of plants on both pulls. Primarily bare ground.
	North 3 (75m) UTM: 0570709; 5593679	**Pull 1:** *Chara sp.* **Pull 2:** *Myriophyllum sp., Chara sp.*	1 fragment of each on rake.
	Boat launch UTM: 0580441; 5577289	**Pull 1:** *Potamogeton sp.*(likely *P. vaginatus), Chara sp.* **Pull 2:** *Potamogeton sp.*(likely *P. vaginatus), Chara sp.*	Outhouse, picnic tables, garbage cans. Plant diversity and abundance looks the same as previous years.
2. Fairmont Side Channel	South 1 (25m) UTM: 0580421; 5577269	**Pull 1:** *Potamogeton sp.(likely P. vaginatus), Chara sp., Potamogeton richardsonii.* **Pull 2:** *Potamogeton sp.(likely P. vaginatus).*	Could not go further south to sample; private property. Did not sample here 2015-2021.
	North 1 (25m) UTM: 0580450; 5577309	**Pull 1:** *Potamogeton sp. (likely P. vaginatus), Chara sp., Potamogeton richardsonii.* **Pull 2:** *Potamogeton sp. (likely P. vaginatus).*	
	North 2 (50m) UTM: 0580451; 5577332	**Pull 1:** *Potamogeton sp.*(likely *P. vaginatus), Chara sp.* **Pull 2:** *Chara sp., Potamogeton sp.(likely P. vaginatus).*	Columbia Spotted Frog on shore.
	Additional Notes: It was not possible to sample at more than four locations at Fairmont Side Channel due to private property (same as in previous years of sampling effort).		
3. End of Ruault Road	Landing site: UTM: 0572637; 5587661	**Pull 1:** *Chara sp., Myriophyllum sp., Elodea candensis.* **Pull 2:** *Chara sp., Najas sp., Elodea candensis, Potamogeton praelongus.*	
	North 1 (25m) UTM: 0572618; 5587672	**Pull 1:** *Chara sp., Myriophyllum sp., Najas sp.* **Pull 2:** *Chara sp., Myriophyllum sp., Utricularia sp.*	
	South 1 (25m) UTM: 0572664; 5587654	**Pull 1**: *Chara sp., Myriophyllum sp.* **Pull 2:** *Chara sp., Najas., Utricularia sp., Elodea candensis, Megalodonta beckii.*	

	South 2 (50m) UTM: 0572694; 5587643	**Pull 1**: No plants. **Pull 2:** *Chara sp.*	One fragment of Chara.
	South 3 (75m) UTM: 0572726; 5587627	**Pull 1**: Utricularia sp., Myriophyllum sp., Elodea candensis, *Chara sp.* **Pull 2**: *Chara sp., Najas sp., Elodea canadensis, Myriophyllum sp.,*	
	Additional Notes: Could not sample northwards beyond the 25m north survey station due to extensive bulrush vegetation.		
4. Unofficial boat launch near Bayshore Condos	Launch UTM: 0569390; 5595012	**Pull 1:** No plants. **Pull 2:** No plants.	Gravel/rocky substrate. Several boats moored in area with many bouys.
	North 1 (25m) UTM: 0569338; 5595036	**Pull 1**: No plants. **Pull 2:** No plants.	Gravel/rocky substrate. Several boats moored in area with many bouys.
	North 2 (50m) UTM: 0569379; 5595060	**Pull 1**: No plants. **Pull 2:** No plants.	Gravel/rocky substrate. Several boats moored in area with many bouys.
	North 3 (75m) UTM: 0569356; 5595086	**Pull 1:** *Chara sp., Najas sp., Potamogeton sp. (short/narrow leaves).* **Pull 2***: Chara sp., Myriophyllum sp., Utricularia sp.*	
	South 1 (25m) UTM: 0569389; 5594987	**Pull 1:** No plants. **Pull 2:** No plants.	
	South 2 (50m) UTM: 0569392; 5594959	**Pull 1:** *Chara sp., Potamogeton sp.* (short/narrow leaves), Najas sp. **Pull 2:** *Chara sp., Najas sp., Elodea canadensis*, *Myriophyllum sp.*	Very few fragments on rake.
	South 3 (75m) UTM: 0569409; 5594925	**Pull 1:** *Chara sp., Najas sp., Potamogeton sp.* (short/narrow leaves. **Pull 2:** *Chara sp., Najas sp., Myriophyllum sp., Potomogeton richardsonii.*	Fish line pulled up on rake.
5. Althalmer/ Pete's Marina	Boat Launch UTM: 0569527; 5596336	**Pull 1:** No plants. **Pull 2***:* No plants.	Most heavily used public boat launch access point on Lake Windermere. Void of aquatic vegetation. Gravel substrate.
	South 1 (25m) UTM: 0569543; 5596298	**Pull 1:** *Chara sp., Myriophyllum sp., Potomogeton richardsonii, Ranunculus aquatilis, Potomogeton pectinatus.* **Pull 2:** *Chara sp, Najas sp., Myriophyllum sp*.	
	South 2 (50m) UTM: 0569541; 5596281	**Pull 1:** *Chara sp., Najas sp., Myriophyllum sp., P. richardsonii, Hippuris vulgaris.* **Pull 2:** *Chara sp., Myriophyllum sp., Najas sp., Hippuris vulgaris, P. richardsonii.*	
	North 1 (25m) UTM: 0569523; 5596361	**Pull 1***: Chara sp, Potamogeton richardsonii, Najas sp.* **Pull 2:** *Chara sp., Najas sp., Potamogeton richardsonii.*	
	North 2 (50m) UTM: 0569515; 5596383	**Pull 1:** *Chara sp., Najas sp., Potamogeton richardsonii, Elodea canadensis, Potomogeton pectinatus.* (short/narrow leaves)*, Ranunculus aquatilis.* **Pull 2***: Chara sp., Potomogeton pectinatus, Najas sp., Potamogeton richardsonii, Elodea canadensis, Potamogeton spp.*	Empty mussle shells found on ground.

	UTM: 056502; 5596422	*Chara sp., Najas sp., Ranunculus aquatilis, Elodea canadensis, Potomogeton pectinatus.* **Pull 2***: Chara sp., Elodea canadensis, Potamogeton richardsonii, Myriophyllum sp., Najas sp., Potamogeton sp.* (short/narrow leaves).	

Appendix 2. Results from the rake pulls conducted during offshore aquatic invasive plant inventories at 11 survey stations on Lake Windermere, on September 15, 2022**.**

Site Name	GPS coordinates (UTM)	Rake Pull # or transect survey	Aquatic Plant Species	Notes/Observations
Rushmere	0574789; 558426	1	*Chara sp., Potamogeton natans*	
Rushmere	0574789; 558426	2	*Chara sp., Potamogeton natans, Myriophyllum sp.*	
Rushmere	N/A	100 m transect	*n/a*	
Rushmere	0574712; 5585489	1	*Chara sp., Utricularia sp., Potamogeton natans, Najas sp.*	freshwater sponge
Rushmere	0574712; 5585489	2	*Potamogeton natans, Utricularia sp., Chara sp., Myriophyllum sp.*	freshwater sponge
Lakeshore Resort	0574847; 5586500	1	*Chara sp., Potamogeton natans, Potamogeton sp.* (short/narrow leaves).	freshwater sponge
Lakeshore Resort	0574847; 5586500	2	*Chara sp., Potamogeton sp.* (short/narrow leaves).	freshwater sponge
Lakeshore Resort	N/A	100m transect	No additional plant species seen; turbid water.	
Lakeshore Resort	0574777; 5586580	1	*Chara sp.*, Najas sp., *Potamogeton sp.* (short/narrow leaves).	
Lakeshore Resort	0574777; 5586580	2	*Chara sp., Potamogeton sp.* (short/narrow leaves).	
Ruault Road	0573111; 5587279	1	*Myriophyllum sp., Ceratophyllum demersum, Megalodonta beckii, Potamogeton natans, Chara sp., Elodea canadensis, Potamogeton praelongus.*	Abundant and dense aquatic plant beds, especially indigenous milfoil
Ruault Road	0573111; 5587279	2	*Myriophyllum sp., Potamogeton natans.*	
Ruault Road	N/A	100m transect	n/a	
Ruault Road	0573084; 5587321	1	*Myriophyllum sp., Potamogeton praelongus, Potamogeton natans, Potamogeton richardsonii, Potamogeton robbinsii, Megalodonta beckii.*	
Ruault Road	0573084; 5587321	2	*Myriophyllum sp., Chara sp., Potamogeton richardsonii.*	
Indigenous Beach	0572509; 5589042	1	Chara sp., Myriophyllum sp., Potamogeton sp. (short/narrow leaves), Potamogeton richardsonii, Potamogeton natans, sago.	sandy bottom
Indigenous Beach	0572509; 5589042	2	*Chara sp., Elodea canadensis, Potamogeton sp. (short/narrow leaves).*	freshwater mussel
Indigenous Beach	N/A	100m transect	*Potamogeton natans, Potamogeton richardsonii, Potamogeton pectinatus.*	Primarily bare ground. Sparse *Chara sp*. (muskgrass).
Indigenous Beach	0572410; 5589087	1	*Chara sp.*	freshwater mussel, freshwater sponge
Indigenous Beach	0572410; 5589087	2	*Chara sp., Myriophyllum sp., Potamogeton richardsonii.*	Freshwater sponge, freshwater mussel (shells only).
Tretheway Docks	0571747; 5589714	1	*Chara sp.*	Primarily bare ground. Sparse *Chara sp*. (muskgrass). Sandy bottom.
Tretheway Docks	0571747; 5589714	2	*Chara sp., Elodea canadensis, Utricularia sp.*	One strand *Utricularia*
Tretheway Docks	N/A	100m transect	No additional plant species seen. Sandy substrate; mainly bare ground.	
Tretheway Docks	N/A	1	*Chara sp.*	Small amount of *Chara sp.*
Tretheway Docks	N/A	2	*Chara sp.*	Small amount of *Chara sp.*
Akisknook Docks	0571290; 5591437	1	*Myriophyllum sp.*	freshwater sponge
Akisknook Docks	0571290; 5591437	2	*Myriophyllum sp.*	
Akisknook Docks	N/A	100m transect	Deep water, could not see lake bottom during most of transect. Did see *Potamogeton praelongus.*	

Akisknook Docks	0571256; 5591543	1	*Elodea canadensis, Potamogeton natans, Myriophyllum sp.*	
Akisknook Docks	0571256; 5591543	2	*Myriophyllum sp., Potamogeton natans, Patamogeton robbinsii.*	
End of Coy Road	0570160; 5590770	1	*Chara sp. (small amount).*	Less diverse and abundant aquatic plants pulled than in previous years at this location.
End of Coy Road	0570160; 5590770	2	*Chara sp., Utricularia sp.*	Less diverse and abundant aquatic plants pulled than in previous years at this location. Much rotting vegetation (leaves, cones) brought into lake by the nearby creek.
End of Coy Road	N/A	100m transect	*Myriophyllum sp., Potamogeton pectinatus.*	
End of Coy Road	0570115; 5990869	1	*Potamogeton richardsonii, Potamogeton sp. (short/narrow leaves), Ranunculus aquatilis.*	
End of Coy Road	0570115; 5990869	2	*Chara sp., Potamogeton praelongus, Elodea canadensis, Potamogeton pectinatus.*	
Baltac Beach	0571079; 5593384	1	*Chara sp.*	Small amount of *Chara sp.*
Baltac Beach	0571079; 5593384	2	*Chara sp.*	Small amount of *Chara sp.*
Baltac Beach	N/A	100m transect	No additional plant species seen. Too deep to see lake bottom.	
Baltac Beach	0570976; 5593434	1	*Chara sp.*	Small amount of *Chara sp.*
Baltac Beach	N/A	2	No plants.	
Lakeview Meadows	0570176; 5554085	1	*Elodea canadensis, Chara sp., Potamogeton robbinsii, Potamogeton richardsonii, Potamogeton pectinatus, Potamogeton vaginatus.*	
Lakeview Meadows	0570176; 5554085	2	*Elodea canadensis, Myriophyllum sp., Potamogeton robbinsii.*	
Lakeview Meadows		100m transect	No additional plant species seen. Too deep to see lake bottom.	
Lakeview Meadows	0570185; 5594190	1	No plants.	
Lakeview Meadows	0570185; 5594190	2	*Chara sp.*	
Unofficial boat launch near Bayshore Condos	0569440; 5595051	1	*Myriophyllum sp.*	Small amount of Milfoil.
Unofficial boat launch near Bayshore Condos	0569440; 5595051	2	*No plants.*	
Unofficial boat launch near Bayshore Condos	N/A	100m transect	Deep water, could not see lake bottom during transect.	
Unofficial boat launch near Bayshore Condos	0569404; 5595138	1	No plants.	
Unofficial boat launch near Bayshore Condos	0569404; 5595138	2	No plants.	
Althalmer/Pete's Marina	0569570; 5596263	1	*Potamogeton vaginatus, Myriophyllum sp., Hippuris vulgaris, Chara sp.*	

Althalmer/Pete's Marina	0569570; 5596263	2	No Plants.	
Althalmer/Pete's Marina	N/A	100m transect	No additional plants seen.	
Althalmer/Pete's Marina	05696541; 5596372	1	*Chara sp., Potamogeton vaginatus, Elodea canadensis.*	
Althalmer/Pete's Marina	05696541; 5596372	2	*Chara sp., Elodea canadensis, Potamogeton richardsonii, Myriophyllum sp.*	