Seymour Lake Excerpts from Targeted BC Aquatic Invasive Plant Inventories
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INTRODUCTION:

The presence of aquatic invasive plants in waterbodies throughout British Columbia have caused significant ecological and economic damage. British Columbia's Early Detection Rapid Response program aims to eradicate infestations of species not known to occur or with limited distribution in the province. Locating introductions of aquatic invasive plants (or other species) before they become established in a waterbody greatly increases the chances of containment or even eradication. These same principles also apply to species known to occur in BC into waterways that were previously free of invasive species. Targeted aquatic invasive plant inventories and treatments were carried out in priority waterbodies throughout the province. Priority waterbodies were identified by The Ministry of Forests, Lands and Natural Resource Operations and a work plan was developed.

METHODS:

Aquatic surveys were carried out in accordance with BC's Aquatic Invasive Species Survey Methods (https://www.for.gov.bc.ca/hra/invasive-species/Publications/BC_Aquatic_Sampling_March2015.pdf) using a motorized watercraft where possible between August 15th and October 1at, 2019. In lakes with motor restrictions or accessibility issues, an open top kayak was used. Survey methods were slightly modified based on the target species. For example, mats of floating native lilies (*Nuphar polysepalum)* were also closely inspected for the presence of yellow floating heart in the Smithers region. Data was recorded and entered in IAPP following provincial protocols.

Known infestations of yellow floating heart (*Nymphoides peltata)* were manually and mechanically treated on Seymour Lake in Smithers using a combination of mechanized boat cutters, throw scythes and hand-pulling. A detailed survey of Seymour Lake was conducted prior to treatments in order to delineate the extent of the infestations. Yellow floating heart occurrences were summarized in mapped polygons (kmz file) created on Google Earth indicating total presence. A floating boom with a suspended mesh curtain extending 40 cm below the surface of the water was deployed around all sites prior to treatment in order to contain any plant material. All plant material was collected and disposed of on shore well above the high water mark.

RESULTS:

Seymour Lake (Northwest Region had aquatic and riparian invasive plants present. Thirty-one sites of yellow floating heart were observed and recorded at Seymour Lake and polygons were created in a kmz file (attached). These sites varied in area from a single clump (0.0001 ha) to a large patch (0.61 ha) spanning several properties. They were located throughout the periphery of the lake with the exception of the far south-eastern portion of the lake. A few clumps of yellow flag iris were also observed on private property on the eastern shore and a clump in the south-west corner of the lake (two IAPP entries).

On Seymour Lake, yellow floating heart sites were prioritized for treatment, with high use areas being treated first followed by satellite populations and finally the remainder of the infestation. A total of 31 sites were treated, however the large patch on the eastern shore was only partially treated. Due to time

constraints each site was only treated once. At this site pathways were cleared from the shoreline access point to open water approximately 8-10 m wide. Due to time constraints sites were only treated once. Where the water depth was less than a meter hand pulling was employed using care to remove the stolon and minimize fragmentation of the roots. A combination of mechanized boat cutters and a throw scythe was used in areas where the water depth exceeded 1m. In all cases a containment boom was deployed and all material was collected and disposed of on shore. Initially a forty foot long oil containment boom that was purchased was used. This boom proved to be insufficient for a number of reasons. It was difficult to manoeuver the boat within the confines of this boom. It became evident that a great deal of time was used in moving the boom to a new section within the treatment site. After a day of use the areas where section of the boom were attached began to sag, compromising the effectiveness of its containment. For these reasons four 50 – 70 foot booms were constructed using pool noodles, rope, zip ties and window screen as the suspended curtain (see figure 1.). This allowed for

Figure 1. Containment boom and boat with mechanized cutter

a much larger area to be contained, with much greater manoeuverability of the watercraft. Depending on the size of the treatment site any number of sections of boom could be deployed with a total length

of over 200 feet. In treatment sites where a vehicle could access the shoreline, the boom was positioned with a small path to shore and plant material was hauled directly into a truck and tarped for disposal. This greatly reduced the time for plant material removal and disposal. Where accessibility was an issue, plant material was placed in a canoe and towed to a private homeowner's property. Material was then wheelbarrowed up to a disposal site.

DISCUSSION:

The situation at Seymour Lake illustrates the difficulty that aquatic invasive species can present once established in a waterway. In the course of a 2015 inventory, yellow floating heart was present in one large patch on the eastern shore spanning several properties. Only two satellite populations were discovered at this time and were quite small in area. The area impacted by this species has expand considerably even with a concerted effort to control its spread by the Seymour Lake Stewardship Society. Although no new introductions of aquatic invasive species were discovered in the course of this study, monitoring waterbodies for new infestations of aquatic invasive plants is paramount to preventing infestations from progressing to an uncontrollable level. If treated promptly, many instances of aquatic invasive plants discovered as a result of surveys and inventories may be eradicated or controlled in a cost and time efficient manner.