

Eurasian Milfoil Management Report Lake George 2017



Submitted to:



The Lake George Park Commission (LGPC)
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THE FUND *for* LAKE GEORGE



The Fund for Lake George (FUND)
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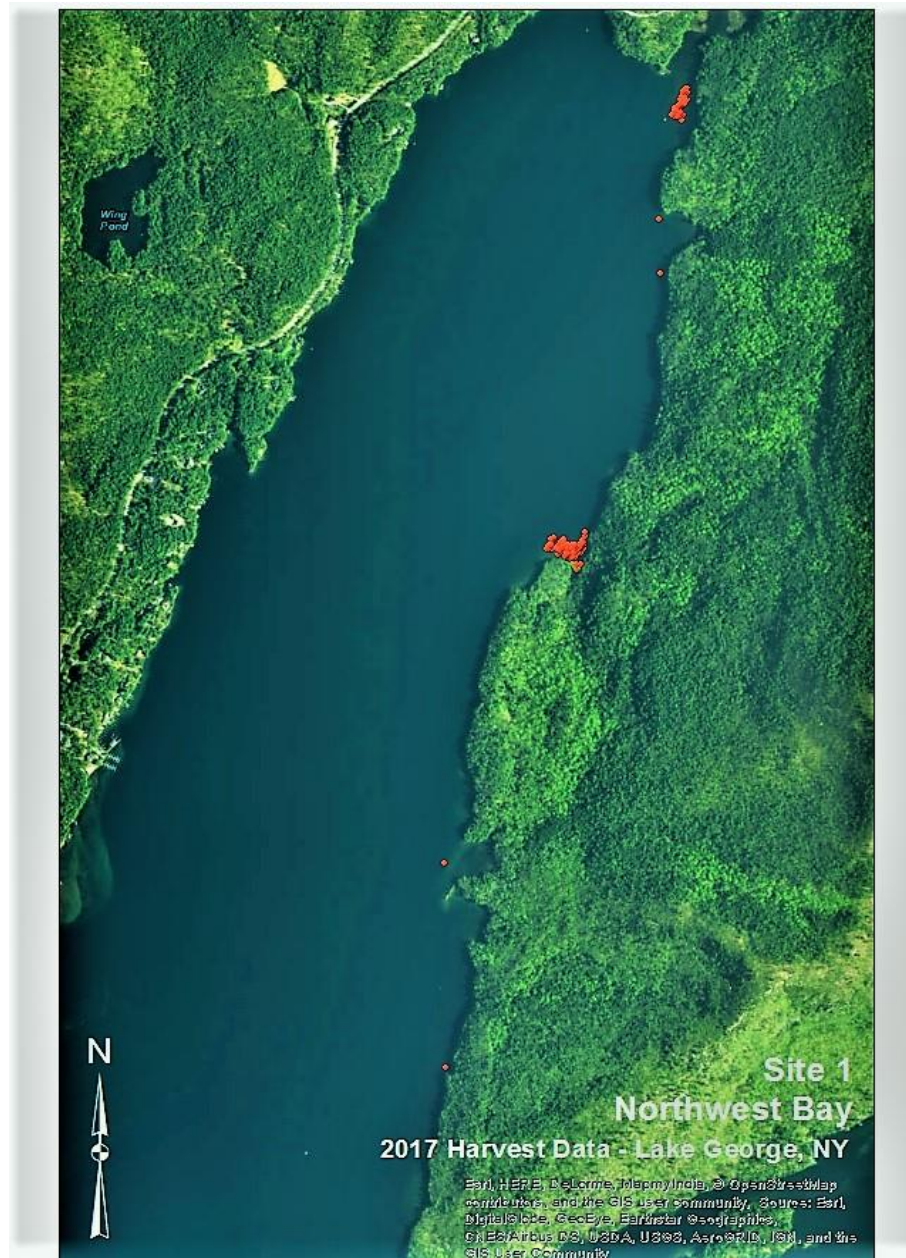


The Lake George Association (LGA)
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Site #	Site Name	2017	2016	2015	2014	Site Totals
1	NW Bay	224	1005	310.5	44	1583.5
4	Huddle Bay	2	-	265	196	463
5	W. Green Island	4	-	170.84	36.75	211.59
6	Sunset Bay	100	428	261	44	833
7	LG Village	-	21	840	632	1493
11	Warner Bay	152	212	829	627.68	1,820.68
14	Harris Bay	606.75	385	571	856.55	2,419.3
15	Finkle Brook	12.5	-	166	14.25	192.75
19	Dunham's Bay	8	34	50	122.51	214.51
25	Basin Bay	99	-	12.5	0.01	111.51
26	Bay SW of Cannon Pt	87	69	269	7	432
30	North Tea Island Bay	3	13	57	48	121
43	Bolton Bay	0.5	-	2.5	0	3
46	Leontine/Clay Shoal	14.5	-	20	6.21	40.71
48	Gull Bay	110	424	-	-	534
56	S. Sawmill Bay	0.5	-	-	-	0.5
107	Elizabeth Island	10	54	123	16.16	203.16
117	Glenbernie - Blair's Bay	286	575	64	43	968
145	Juniper Island	0.5	-	0.5	0.32	1.32
161	E. of Speaker Heck Island	84	-	0.25	0.1	84.35
164	N. Leontine Shoal	4	-	7.25	1.21	12.46
165	Basin Bay Shoal	16	-	5	0.13	21.13
185	Oahu Island	20	-	1.75	0.65	22.4
202	Long Island SE	118	-	-	-	118
204	Roger's Rock Campground	26	-	24	63.5	113.5
Year Totals		1,988.25	3,220	4,050.09	2,760.03	12,018.37

Totals represent bags harvested. Each bag is estimated at 25 lbs.
 Site #'s in green represent new sites harvested in 2017



Site 1 Northwest Bay – Extensive harvesting in 2016 reduced total bags harvested in 2017 by 77.7%. Due to the large area and relative fertility of the bay multiple swims are in order each year. The one positive in swiftly moving through this area is EWM seems to only be found in 2 main spots, the mouth of NW Bay Brook and along the east shore roughly halfway from the entrance of the bay to NW Bay Brook. Although EWM seems to be contained here it is to note that these two beds may act as feeder systems for other parts. Very few scattered plants have been harvested throughout the bay, however, it is recommended that multiple swims including full shoreline swims be implemented to keep EWM levels manageable.

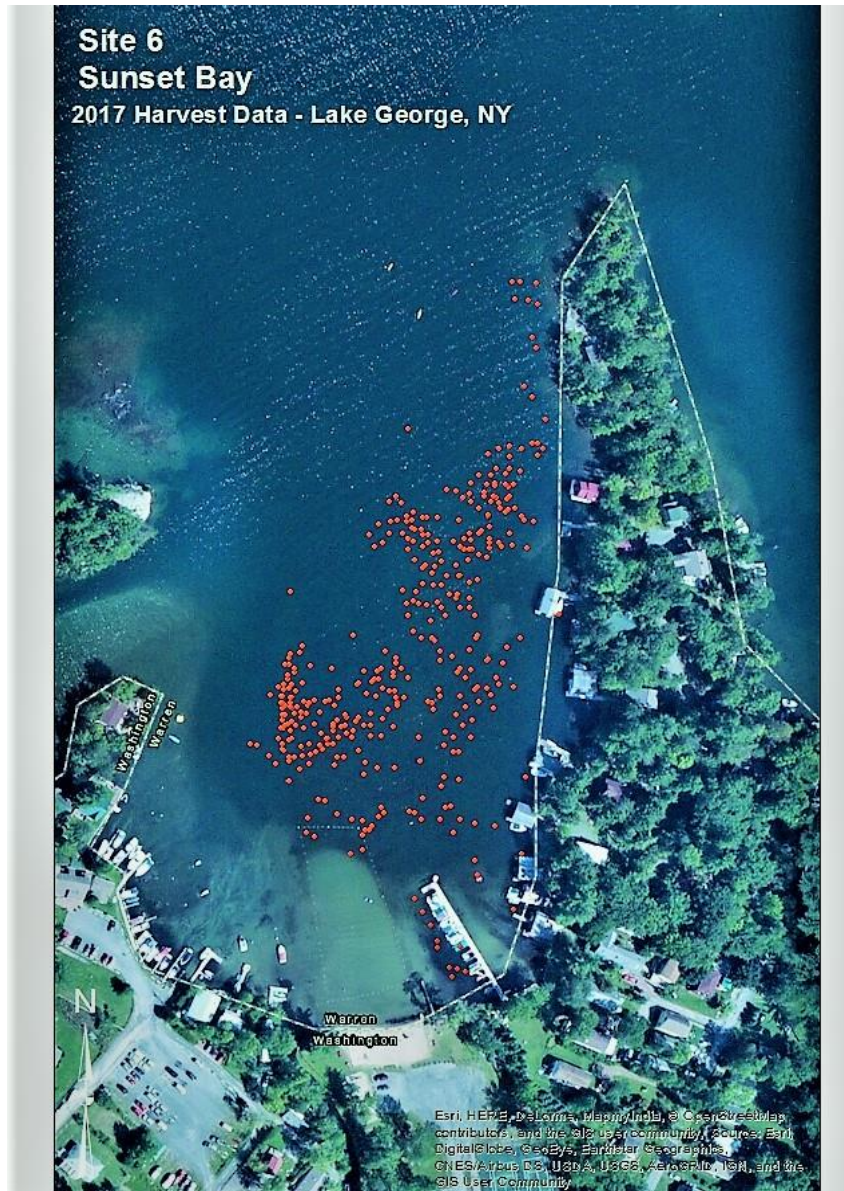


Site 4 Huddle Bay – No data collected in 2016. Huddle Bay has seen a steady decline in EWM levels from year to year. It was surprising to see such little growth when, in 2015, 265 bags were harvested and after a year of no harvesting there were only 2 bags collected. Huddle Bay is very fertile and covers a great deal of area due to the bay being so shallow. Combine that with heavy boat traffic and it becomes ideal for EWM growth and dispersal. It is worth noting that crews conducted an initial survey and harvested hot spots. Much of the bay was determined to be clear but given Huddle’s history of growth it is recommended a full survey and swim be done preferably before boat traffic becomes heavy.



Site 5 West Shore of Green Island – Also referred to as the EnCon Docks this site holds EWM tight to shore and sometimes in thick concentrations. Another site that was not included in 2016, Green Island was last visited in 2015 when just under 171 bags were harvested. Returning in 2017, crews harvested 4 bags with the heaviest concentrations among the fuel dock area. Throughout the years there have consistently been scattered plants and a few dense areas heading south from the fuel docks but crews surveyed these areas and found it to be relatively clear except for a few plants. This site is ideal when the wind makes traveling the main lake treacherous.

Site 15 Outlet of Finkel Brook (above) – The outlet of Finkel Brook includes the delta for which all sediments entering from there are deposited. Highly fertile, this site consistently produces a dense, healthy EWM bed just north of the delta. Constant harvesting throughout the years have not made major headway and it is quite possible another method, such as benthic barriers, may assist to suppress heavy growth rapidly then hand-harvesting can maintain the area and keep EWM manageable. One of the variables that may hinder this plan are the fact that mats may become disturbed or dislodged in times of heavy inflow from the brook. The last complete harvest was in 2015 where 166 bags were taken. 12.5 bags were taken in 2017 and it was determined efforts should be shifted to other areas until an alternative plan can be implemented.



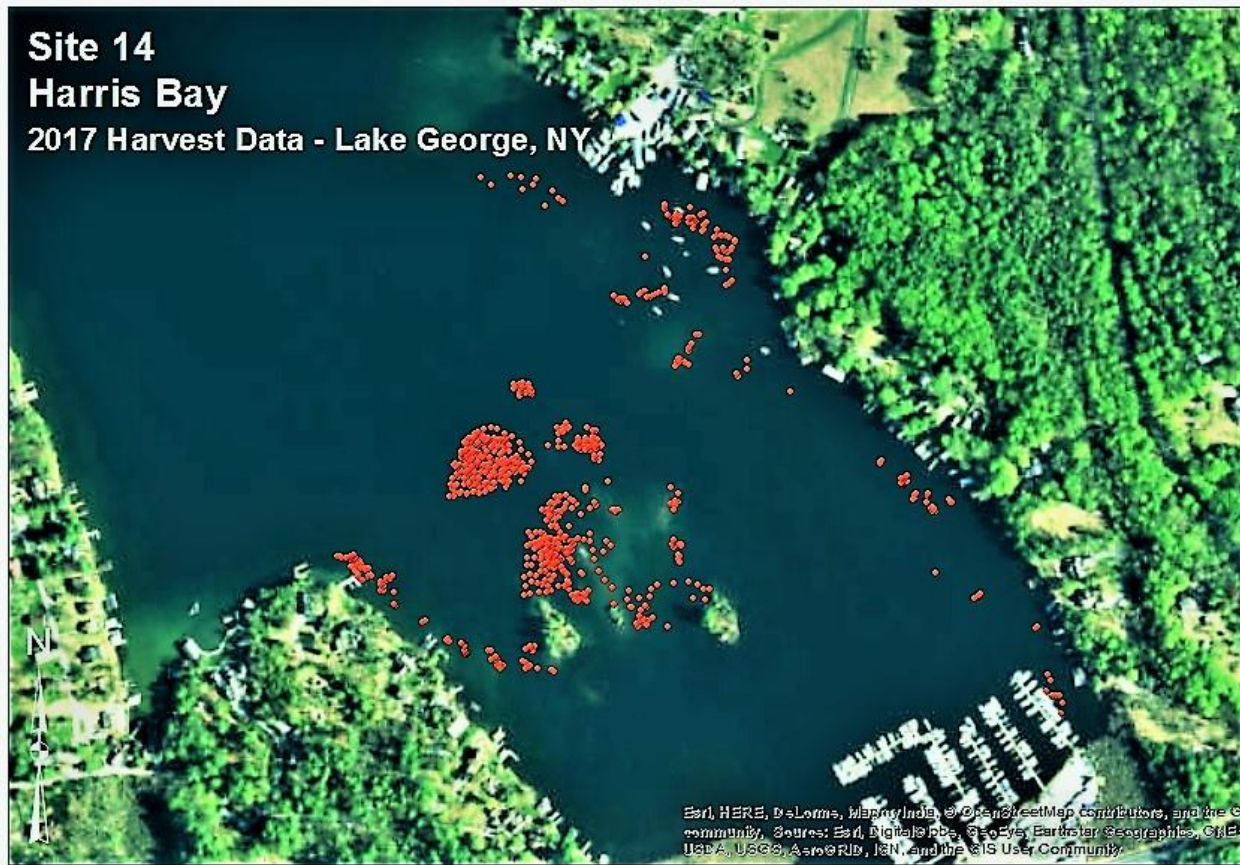
Site 6 Sunset Bay – Considered the “model” for proper EWM management, Sunset has seen multiple techniques through the years resulting in an area that can be considered maintenance phase. After a complete harvest in 2016 and multiple harvests in 2017 the mats were removed at

the end of the season. Crews spent time to remove all mat material and rebar, collect loose fragments and any remaining plants that happened to still be present. Harvest comparisons from 2016 to 2017 saw a 76.6% reduction in bags. Since decomposing material left under mats are now exposed it is imperative that monitoring begin as soon as possible to reduce EWM reestablishing itself in this newly cleared area.

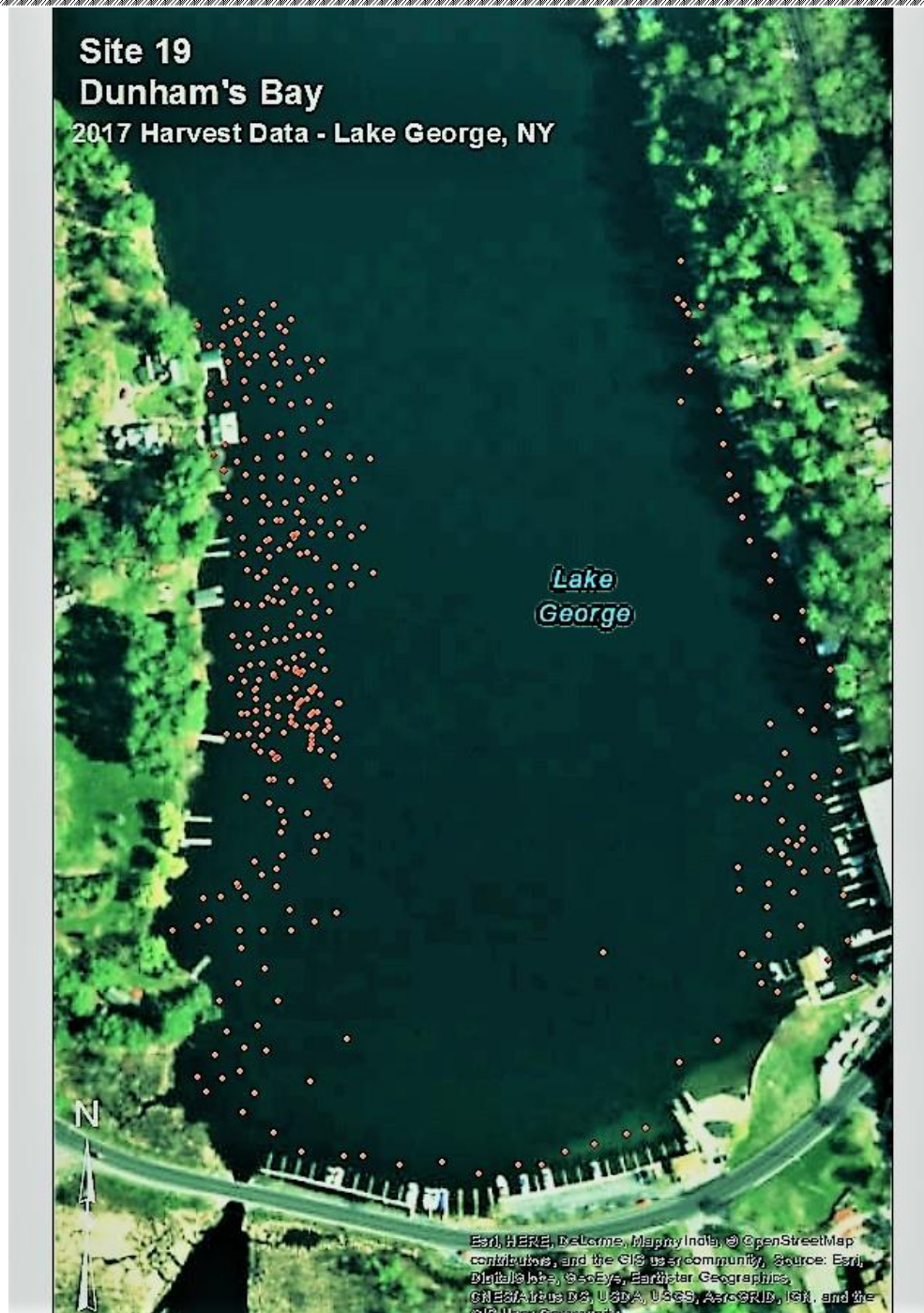


Site 11 Warner Bay – Continuing on a downward harvest trend, the 2016 Warner Bay harvest yielded a 74.4% decrease of 2015 totals and saw a percent decline of 28.3% from 2016 to 2017.

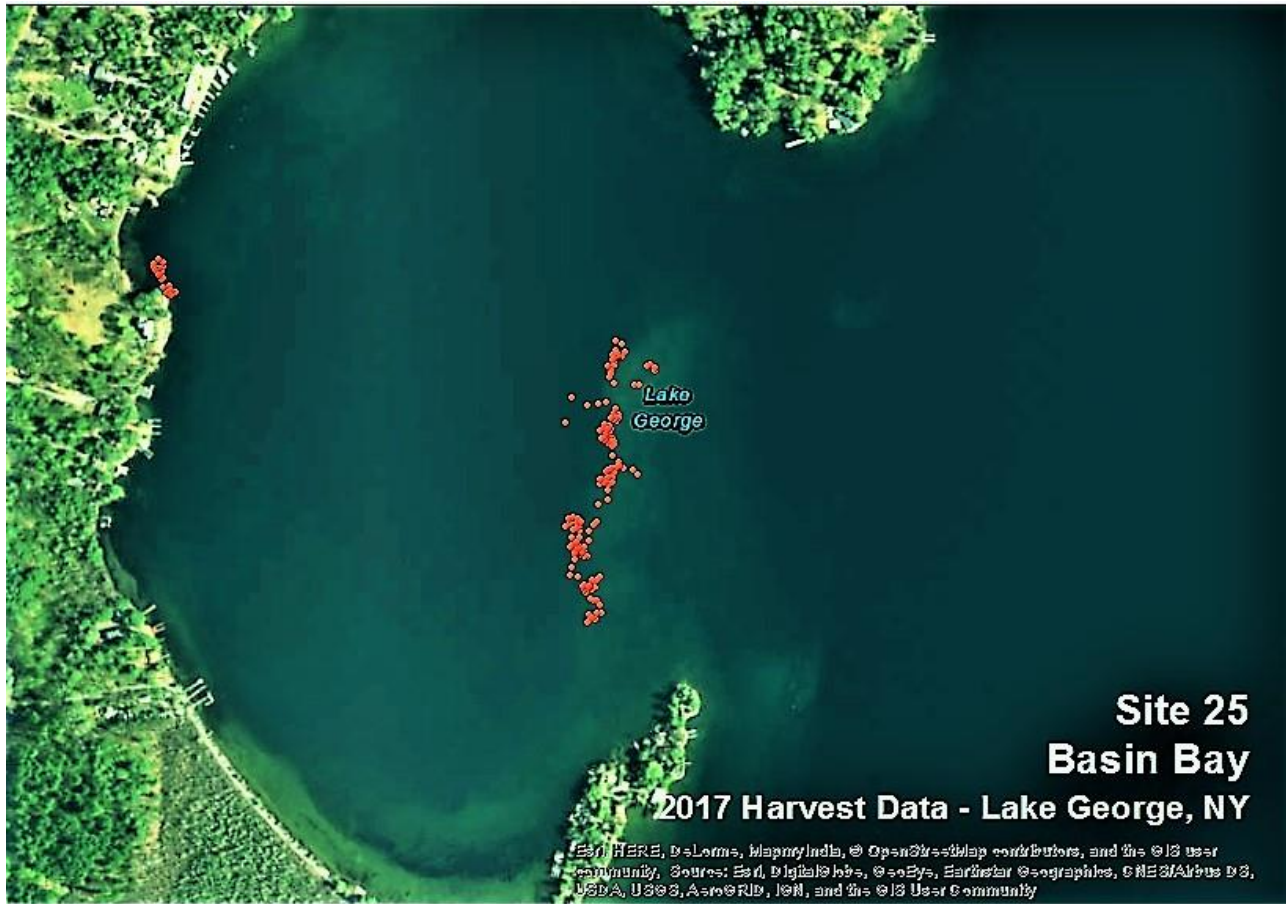
Warner Bay received extensive efforts throughout the past 4 years and has dramatically improved considering its large area and heavy boat traffic. Crews repeatedly hit problem areas and discovered a few satellite beds previously unidentified. Since the entire littoral zone is inundated with EWM sufficient time should be spent here in order to keep pace with EWM dispersal throughout the bay. Multiple harvests and additional spot checks, possibly early mornings on calm, sunny days when the water is glass, will help keeping EWM levels at close to maintenance levels. There is considerable work to be done in Warner Bay but constant harvesting will reduce EWM levels further.



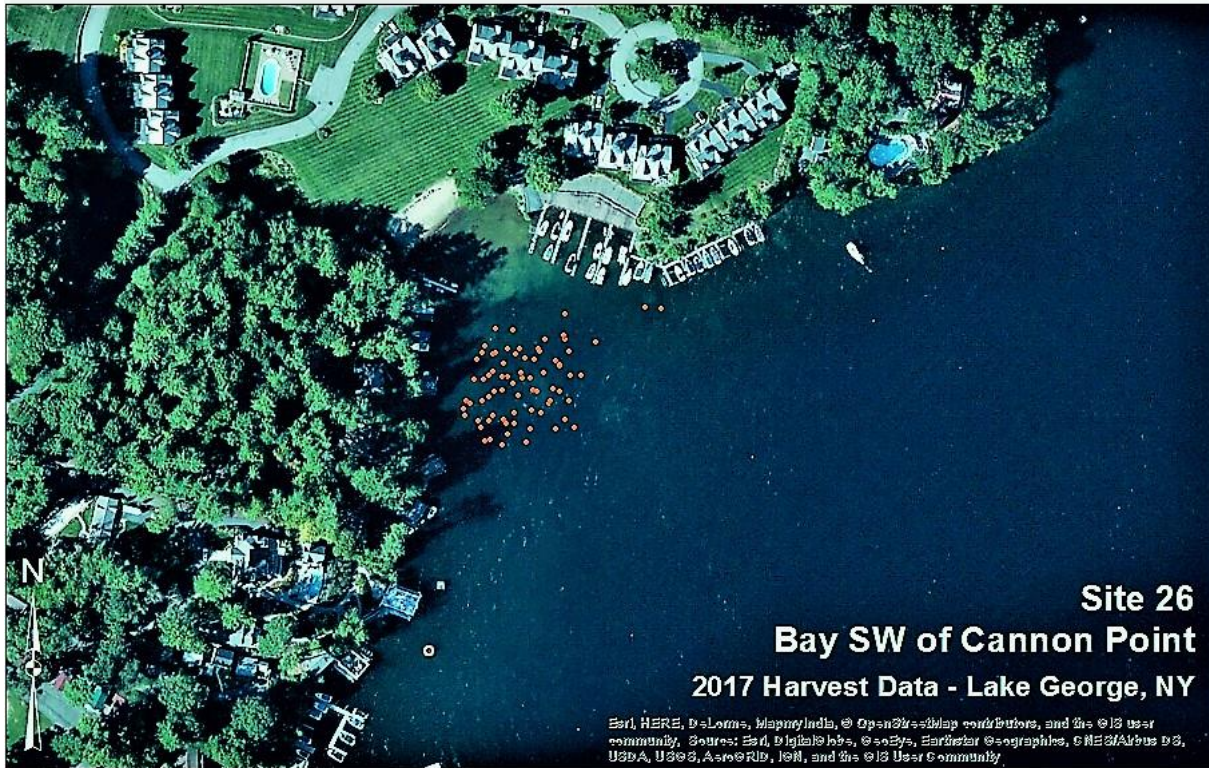
Site 14 Harris Bay – EWM here is primarily concentrated near the islands with scattered plants observed NE near the Lake George Boat Co. mooring buoys. Dense beds have been repeatedly harvested and Harris Bay has been in a steady decline from year to year. Due to more time spent and additional satellite beds being discovered Harris Bay recorded an uptick in bags harvested by 57.6%. The optimism here is that crews were able to harvest more EWM in 2017 and the hope is that 2018 efforts will see a decrease in overall EWM harvested. It is recommended harvests continue at short intervals near the islands while expanding outward towards lesser EWM areas.



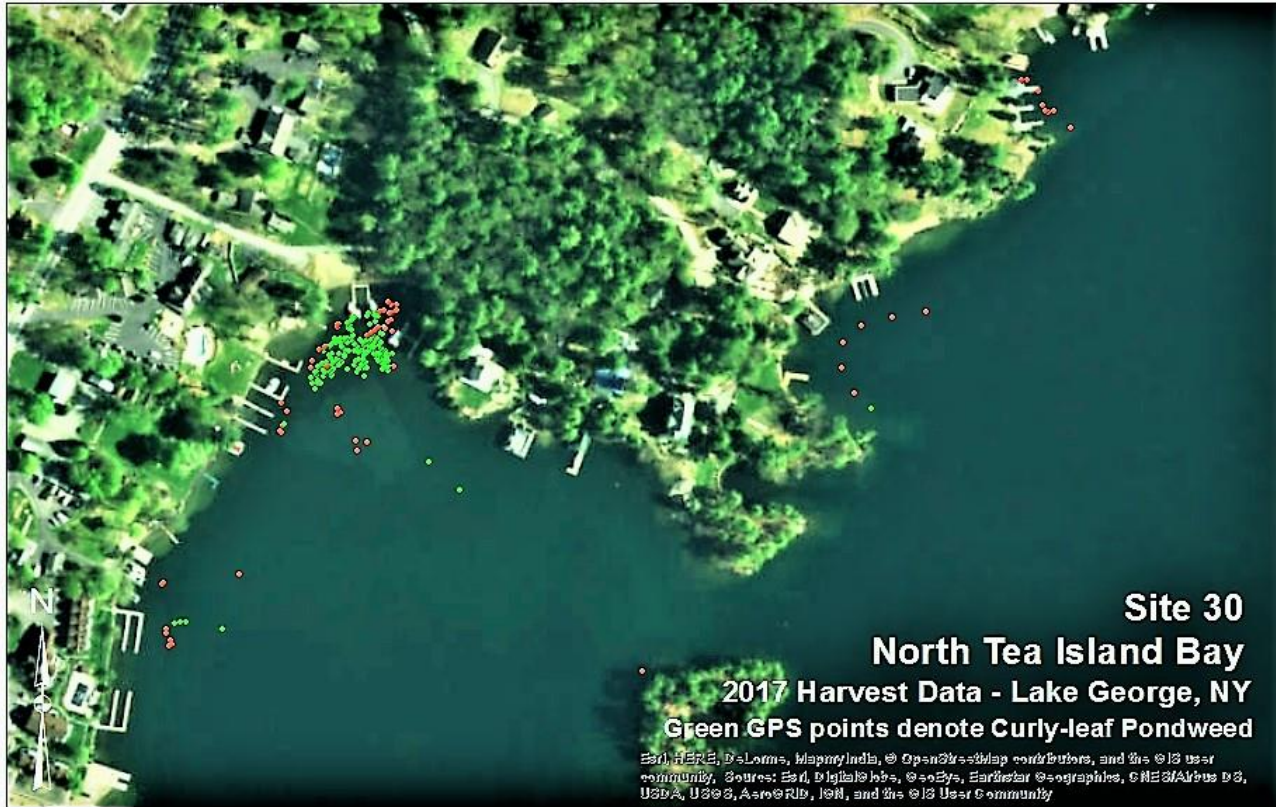
Site 19 Dunham's Bay – Of the three major bays, Dunham's Bay is by far the best managed. 2017 registered the lowest bag total in all the years with 8. This is a 76.5% decrease from 2016 where only 34 bags were taken. A combination benthic barrier/hand-harvest approach has led to Dunham's Bay being in a sustained maintenance phase. Constant diligence and presence here will help continue this trend of extremely scattered plants. The fact that Dunham's is in such good shape allows crews to spend very little time covering this area and lets them move to other areas of greater attention. It would be easy to let Dunham's Bay out of grasp which is why it is recommended that when crews are working near this area to visit occasionally and quickly survey to spot potential increases in EWM growth.



Site 25 Basin Bay & Site 165 Basin Bay Shoal – The last harvest in 2015 yielded 12.5 bags. 99 bags were taken in 2017 marking a percent increase of 692%. This percentage would be concerning but thanks to limited growing areas it remains at a manageable level. The hot spots in Basin Bay are the mid-bay shoal (Site 165), west shore divot, and northern corner (cut off on map). With distinctly delineated boundaries and quick drop-offs Basin Bay can take less than a day to complete. Recommend starting at the rockpile and moving south along the connector to shore and follow in a clockwise direction to ensure full coverage.



Site 26 Bay SW of Cannon Point – A very dense and contained bed of EWM has established itself here. Over the years crews have knocked this bed down to easier levels although much work is needed to truly manage this site. From 2015 to 2016, a 74.4% decrease was observed in bags harvested. 2017 saw a 26.1% increase in bags harvested. An assumption could be made that since this bed is directly below a condominium complex with an expanse of lush lawn that if chemical fertilizers are being used they are subsequently washing into the lake creating this highly fertile area for EWM to grow. If this deems to be true, it is recommended that less chemicals be applied and buffer zones, such as hedges or shrubs, be planted down slope in order to catch fertilizer that may leach into the lake.



Site 30 North Tea Island Bay – EWM totals reflect an area in good management condition. However, it is not EWM that is dominating this site but rather Curly-leaf Pondweed (CLP). Crews were able to harvest scattered EWM throughout this small area and then shifted focus to harvesting CLP. A total of 3 bags of EWM were harvested and 97 bags of CLP taken. This area was heavily matted, however, EWM & CLP have established outside of this area primarily between the mats and shore. Even though curly-leaf pondweed is not as aggressive as Eurasian milfoil it still has the ability to overwhelm and dominate native species as evident here. Future consideration to harvesting both species should be accounted for when harvesting this site.

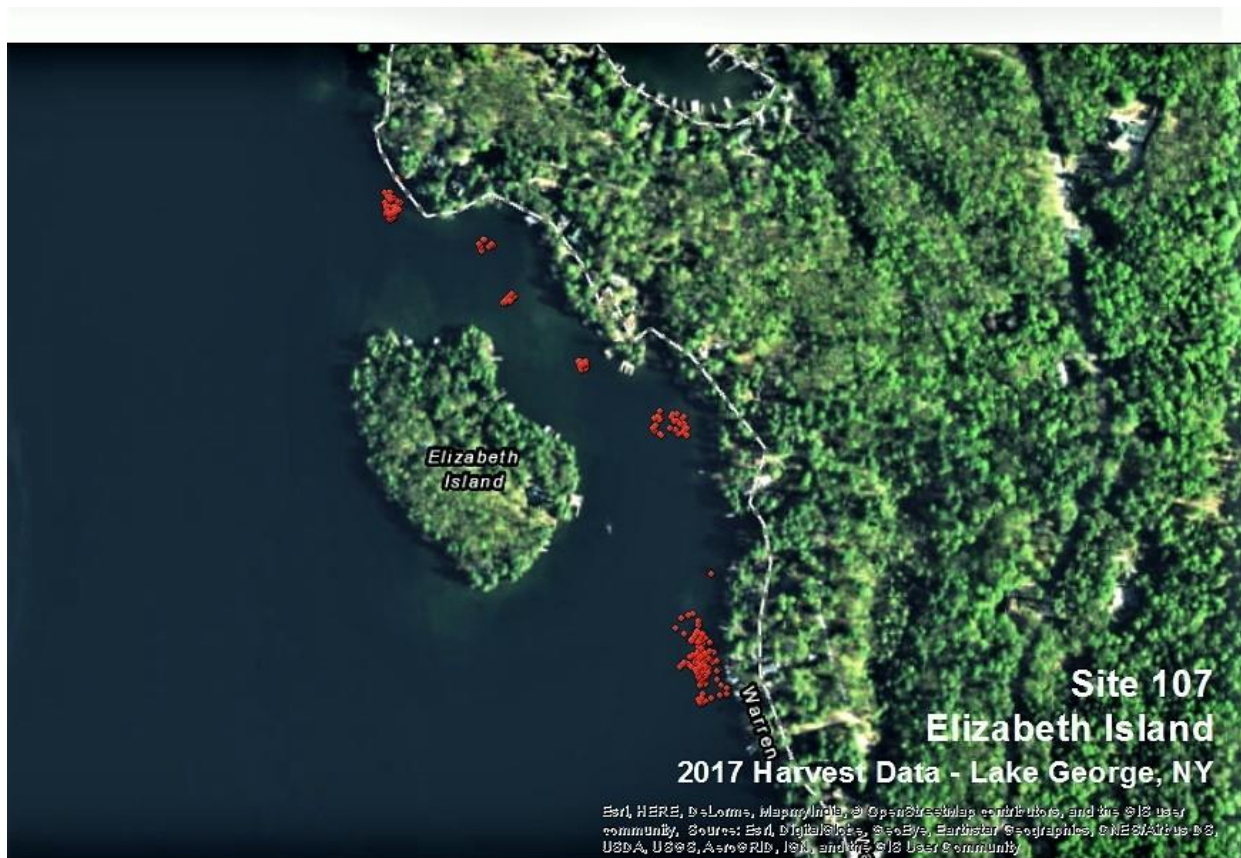
Site 43 Bolton Bay & Site 56 S. Sawmill Bay – Encompassing the marinas, Bolton Bay and counterpart S. Sawmill Bay are shallow and sandy with only a few areas conducive for EWM growth. Only 0.5 bags were removed from both areas and should be harvested when accompanied by Finkel Brook and West Shore of Green Island or when conditions favor crews working closer to Norowal docks.



Site 46 Leontine/Clay Shoal - This rock out crop runs north to south directly between Leontine and Clay Islands and is in 12ft-15ft of water. This scattered to moderate site held a large dense bed until crews began harvesting here. Large rocks and lack of sediment make management efforts time consuming in that EWM grows from within the rocks and anywhere it can take root. No data was collected in 2016 and 2017 saw 14.5 bags harvested. This is roughly on par with 2015 totals of 20 bags. EWM runs the full length of the shoal and, if not for the rocky substrate, would be a quick swim. The main focus in an area such as this is to properly harvest the complete root system and collect any fragments that may fall into the rocks, thus, taking care with proper handling techniques is a must.



Site 48 Gull Bay – After the first full harvest in 2016, Gull Bay EWM levels were reduced 74.1% in 2017. Gull Bay has largely been unmanaged since benthic barriers were placed some years back. Crews began hand-harvesting in 2016 and removed 424 bags. The following year a total of 110 bags were removed marking a dramatic decrease from a relatively unmanaged site in the first year. Gull Bay is set to follow that of Sunset Bay meaning crews should complete multiple harvests throughout the growing season and assess the possibility of pulling the barriers at the end of the 2018 season. Gull Bay could still be considered a moderate to dense site and may not be fully ready for mat removal. It is recommended all EWM be harvested from around the mats and once that is accomplished proceed with fragment collection until deemed clear. Only until that assessment has been established could removing the mats be considered.



Site 107 Elizabeth Island – This site proved to be problematic in years past being small but fertile and the existence of “satellite” patches in and around this site. Numerous diver hours were spent on clean-up swims. Since 2015, EWM levels at this site have been reduced by 91.9%. 2017 saw the lowest bag totals (10) since 2014 when just over 16 bags were harvested. Multiple swims throughout the season reduced a possible moderate/dense site to scattered. Management here should be relatively easy and quick. It should be noted that EWM has slowly crept north and south to where it is no longer in the channel. Crews should express diligence and survey farther when EWM begins to thin in case a bed has established itself beyond its northern and southern boundaries.



Site 117 Glenburnie/Blair's Bay – With an extremely fertile and expansive growing area EWM grows fast and dense here. Each year crews spend an increasing amount of time harvesting and consistently remove bag totals in the hundreds yet the percentage decrease from 2016 to 2017 was 50.1%. EWM has expanded south along the fertile drop off since harvesting began before 2014. Couple the fertility and expansion of the growing area the EWM here is noticeably fragile and fragments easily exacerbating the problem. Crews wind up chasing their tails and can easily spend enormous amounts of time here. It is recommended an all-out assault approach by keeping a crew harvesting for as much time as needed or supplementing with another technique.



Site 145 Juniper Island – A small rocky island and surrounding area that holds very few scattered EWM. A total of 0.5 bags were harvested in 2017 which would place this site as one to survey as crews migrate from sites. Any site that has a history of EWM growth should be checked regularly with swim-overs and quickly harvested when this small of an area.



Site 161 East of Speaker Heck Island – No data for 2016 and last harvested in 2015, East of Speaker Heck produced 84 bags of EWM in one predominantly large dense bed. EWM plants were found to be in deeper water and were tough to locate unless clear and calm weather was at hand. Since 2017 was the first full harvest there isn't much in the way of past data to compare.

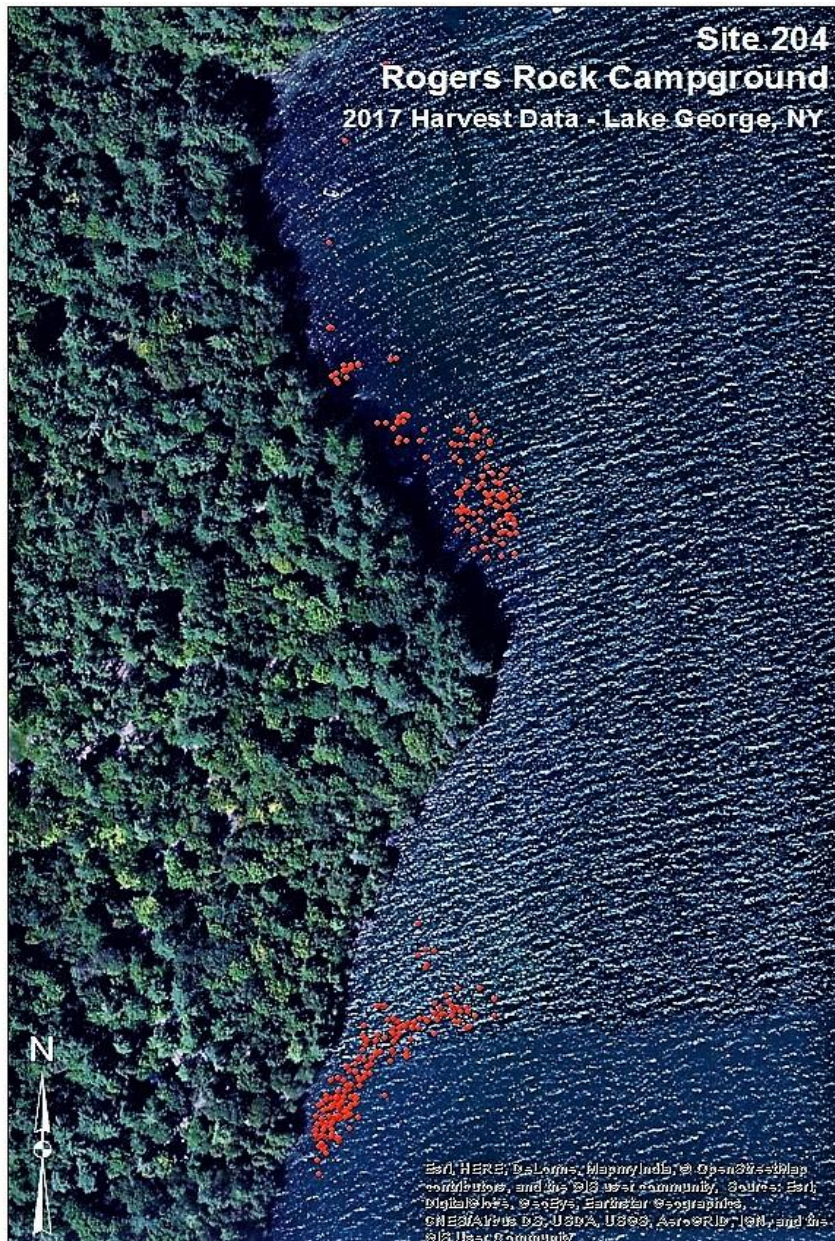
Therefore, it is recommended this site be harvested completely and revisited within a couple weeks for any missed plants and fragment collection. Combine with a multiple full swims of the east shore of Long Island and EWM levels here should decline and remain manageable.

Site 202 Long Island SE – Much like the bed East of Speaker Heck, the EWM at Long Island grows in deeper water along the drop-off. No data has been recorded for Long Island SE before 2017. Crews were able to harvest 118 bags in the areas between the northern and southern end of Long Island. As mentioned above, this area is considered a moderate to dense site and multiple swims to reduce densities and follow-up fragment collection are recommended. Crews should work perpendicular to shore as to properly delineate deep water boundaries.

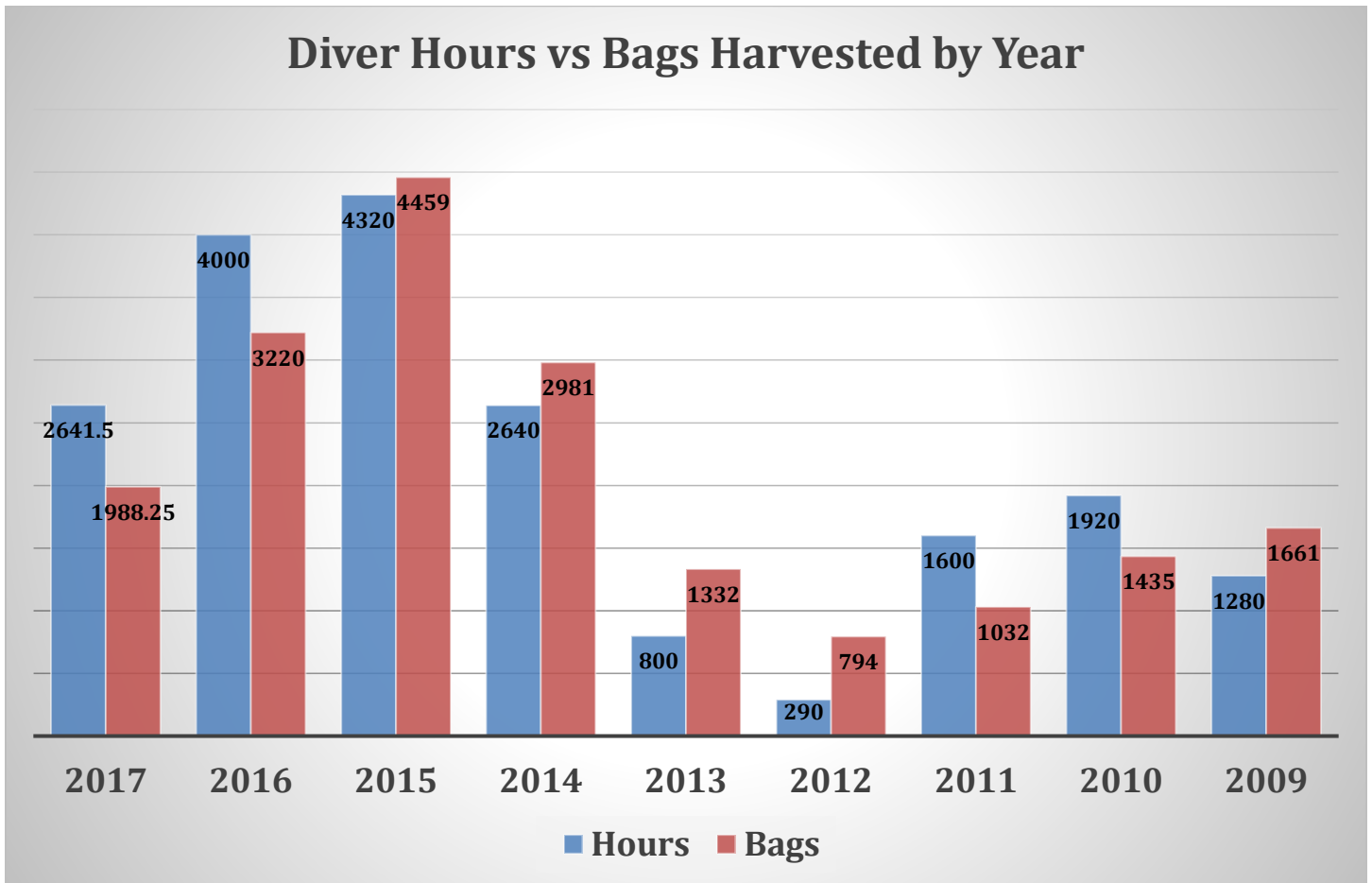
Site 164 N. Leontine Shoal – An open water rock outcrop discovered just north of Leontine Island that consistently held scattered plants and due to its small area is easily harvested. 4 bags were removed in 2017.



Site 185 Oahu Island – Also known as Bellingers Island apparently, Oahu Island was last harvested in 2015 when 1.75 bags were removed. 20 bags were harvested in 2017 along the northern shore. This site is fertile and exhibits an extreme drop-off on the north side. EWM clusters close to shore in a tight band making harvesting and fragment collection easy which reduces time spent here. Recommend swimming the whole island as to not miss plants that have migrated to other sides of the island and revisit the fertile north side periodically.



Site 204 Rogers Rock Campground – This site originated around the campsite’s mooring buoys along the west shore but has now encompassed an area south around the point. Heavy concentrations along the mooring buoys has since been knocked down to manageable levels and bags counts have stayed relatively equal since the last harvest in 2015. It should be noted that in order to properly harvest this site it must be started near the public boat launch further north and worked along the west shore in a southerly direction to the area of the large bed or vice versa. There is a lot of area to cover and when harvesting in the heavy boating season crews must stay vigilant to all traffic on the lake.



Yearly diver hours compared to bags harvested. In 2017, crews harvested 14 new sites including the 11 in 2016. This table shows that EWM levels have reduced and more time was spent in other areas. Diver hours spent harvesting are usually higher when EWM levels are trending down.

