

Comprehensive report on Eurasian watermilfoil management operations on Lake George in 2015

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Executive Summary

Ideal hand harvesting has two key components. The first is overwhelming force. Enough diver hours need to be spent on an area to pick every last detectable plant to complete a first harvest. The second is frequent re-harvesting. A mere two weeks after an area has been “overwhelmed” divers need to return to pick the tiny plants emerging from the sediment, trying to repopulate the area. The tiny plants were fragments of stems and roots that were buried in the mud or lost in the dust cloud two weeks previous. The area will need to be re-visited several times over the course of the growing season to remove those emerging plants before they can branch out with both roots and stems to spread fragment and new shoots around them. An area that receives this type of management will rapidly decline. Each re-harvest takes less and less time until a mere hour is invested to clear an area that once required several weeks. With 217 sites in the inventory on Lake George the struggle has been to achieve this type of ideal management of so many widespread areas.

2015 saw the highest diver hours worked by AIM on Lake George to date with 4,320 completed. These hours resulted in the removal of 4,459 bags of Eurasian watermilfoil (hereafter “EWM”). This adds up to 111,475 pounds or about 56 tons. This increased effort was thanks to increased investment from the Lake George Park Commission, the Fund for Lake George and the Lake George Association. Across the board the dive crews were successful at reducing problem sites, addressing problem re-growth and holding other areas in check. Unfortunately, not all problem sites received management due to time constraints. Once an area has been heavily harvested it needs re-harvesting. This is a higher priority than picking a new area that has not yet received any management. If AIM dive teams had ignored moderate sites in order to knock back dense sites, those moderate sites would have become dense in the absence of management. An important part of hand-harvesting is retaining the investment of time and money into an area by retaining control of that area. Despite the increased funding available in 2015, there was not enough time to adequately suppress all problem areas.

Another issue in 2015 was lack of frequent re-harvesting where it was needed. A dive crew working the site inventory from one end of the lake to the other could not get back to the sites it started on until months later if at all. AIM has developed a plan to solve this problem in 2016 by breaking the lake into three sections and deploying three crews at the same time to work each section independently. Major progress has been made in 2014 and 2015. With adapted strategy and adequate funding this progress can be expanded to all known EWM areas on Lake George.

This report includes a re-structuring of the Lake George EWM Site Inventory (Appendix C). AIM found that several areas had numerous sites clustered together resulting in unnecessary complexity. The restructuring has sought to eliminate that problem. After 2015 operations a total of 217 sites were recorded. Of those 217 sites 31 were eliminated by restructuring the inventory. Of the remaining 186 sites 42 were removed from “active management” (diver inspection) since they had remained clear for at least three consecutive seasons. The result is a total of 144 active management sites on the lake for 2016. When reading through this report some sections will refer to the original 217 site inventory (maps of which are in Appendix B) and latter sections will refer to the adjusted inventory (Appendix C).

Lake George Park Commission (LGPC) operations 2015

What was new in 2015

2014 was the first season AIM was contracted by the LGPC to manage Eurasian watermilfoil (hereafter “EWM”) in their site inventory on Lake George. The project budget (approximately \$100,000) allowed for 13 weeks of work with a three person crew. In 2015, the budget was doubled allowing for 26 weeks with the same crew size. This meant the dive team would be able to maintain a continuous presence on the lake throughout the growing season. It also meant that larger crew sizes could be used for more problematic sites.

Project objectives

The objectives for 2015 were as follows:

- Aggressively reduce Moderate density sites (14 total at start of 2015 season)
- Work through all Active Management sites (any site that produced EWM growth within the past three seasons, 169 total at the start of 2015 work season). This would involve harvesting all sites categorized as High Priority or Low Priority Sparse, essentially meaning the crew would harvest all sites surveyed so long as they were not Dense or requiring significant time to manage.
- Fully harvest one or more Dense sites (6 total at start of 2015)
- Re-harvest all sites worked (Moderate, Sparse, Dense) two times.

The initial plan

The proposed plan for 2015 consisted of 26 weeks of work and was laid out as follows:

- Early Season Moderate Site Harvest – harvest all 14 identified Moderate sites (4 weeks planned)
- Working Survey – Lake-wide site survey of 169 active management sites. During this phase all sites with relatively Sparse growth would also be harvested. Therefore 134 sites would be harvested and 21 observed. The 21 sites fall under Dense categorization or FUND management. (4 weeks planned)
- Mid-season Moderate site harvest – all 14 Moderate sites would be re-harvested at this time. (4 weeks planned)
- Zone management 1 – each of the three Zones of the lake (North, Mid, South) would be worked by the crew, re-harvesting all Moderate and Sparse sites. (4 weeks planned)
- Dense Sites – based on time availability, one or more Dense sites would receive an initial harvest. (6 weeks planned)
- Zone management 2 – same plan as Zone Management 1 but with the additional re-harvesting of any Dense sites that had been harvested previously.

The actual work

- Early Season Moderate Site harvest (6/1/15 to 6/25/15)
 - This phase was planned to take four weeks with a three person crew. A total of 5.75 weeks were used instead. A double crew for two weeks and a single crew for 1.75 weeks.
 - Of the 14 sites listed as Moderate in the 2014 report, 13 received initial harvests during this phase. Site 8 was not addressed by the LGPC crew but was partially harvested by a FUND crew working on the Lake George Village sites. Sites 1 and 107 were only partially reduced due to time constraints.
- Lake-wide working survey (6/29/15 to 7/21/15)
 - 79 of the 169 sites were completed during this phase over the course of 3.75 weeks.
 - Sites 103, 1, 107 and an area between sites 117 and 118 were identified as areas of thick growth in need of significant harvesting time.
- Priority Site Re-harvest (7/22/15 – 7/28/15)
 - 1 three person crew week used.
 - LGPC surveys had identified aggressive re-growth in several priority sites that had already been harvested either partially or completely earlier in the season. The Working Survey was paused to address as many of these sites as possible.
 - Sites 1, 8, 15, 16, 30, 90 and 107 were harvested. Of these sites, 1 and 107 were incompletely harvested due to time constraints.
- Lake-wide working survey (7/29/15 – 8/13/15)
 - An additional three weeks was used to work further through the lake-wide site survey.
 - 22 more sites were completed primarily in the Bolton Landing area. Site 4 at Chic's Marina had too much boat traffic to be effectively addressed and should be a target for early or late season management.
- Moderate Site re-harvest (8/17/15 – 8/20/15)
 - After receiving only partial harvests, Site 1 "Northwest Bay" was addressed for a full work week with a double crew (2 weeks used). All major growth was harvested but a full coverage clean-up swim could not be completed. It was noted as a priority for future work.
- Lake-wide working survey (8/24/15 – 8/27/15)
 - 7 sites were worked this week. One week with a three person crew was used.
 - Site 165 (Basin Bay) was identified as a priority. Several dense patches exist spread out over the boulder field making up the shoal. Only partial harvest was completed as time was a constraint.
- Priority Site Re-harvest (8/31/15 – 9/3/15)
 - A double crew was used for this harvest for one week which targeted two problem sites. Site 1 in Northwest Bay and Site 107 near Elizabeth Island.
- Lake-wide working survey (9/7/15 – 9/24/15)
 - Three weeks with a three person crew were used. A total of 33 sites were worked.

- Site 27 “Bay NW of Cooper Point” still had a large dense patch and some sporadic growth that needs to be addressed.
- Dense Site Harvest (9/28/15 – 10/8/15)
 - Sites 6 and 26, both Dense, received initial harvests. Site 6 was partially reduced, while 26 received a thorough and complete first harvest. Site 15 was also re-harvested during these weeks based on weather issues.
 - Four crew weeks were used.
- Priority Site Re-harvest (10/12/15 – 10/22/15)
 - Sites 168, 8 and 21 received re-harvests during these weeks.
 - 2 weeks were used.

The initial plan did not account for new sites and for new areas of growth in existing sites. The struggle for the crew in 2015 (for maps showing the crew’s progress bi-weekly see Appendix A) was trying to work all the way through the site inventory of active management sites of which there are 174 and 150 of which were the focus of the LGPC crew (the remaining 24 fell under FUND crew operations in 2015). Early in the season when plant growth is young and smaller, the crew was able to work through the sites quickly, starting in the North end of the lake and working south. However as the growing season ramped up, the growth being addressed at sites receiving their first harvest of the season was more and more established requiring more time. In addition, with enough time gone by previously harvested Moderate sites needed repeat harvests to counter aggressive regrowth. Rather than repeat “laps” of the lake, the crew completed one lap and repeat harvests of key Moderate and High Priority Sparse sites. In addition, one Dense site was thoroughly reduced and two Dense sites were partially reduced.

Several key sites had growth develop in a larger area than previously suspected. LGPC survey crews identified problem growth in larger areas at Site 1 (Northwest Bay) and Site 107 (Elizabeth Island). The AIM crew also encountered aggressive large area growth at Site 8 (West Brook Delta). All of this was addressed with a double crew for several weeks to get the excess growth under control in these two areas. This further slowed progress through the inventory and led to better established milfoil at sites that had still not received management.

Compounding factors slowed the crew’s progress and therefore prevented repeat harvests of sites that should have received them. Future operations will need to be planned in ways to prevent this.

New Sites in 2015

Four new sites were added to the inventory in 2015. Two of these sites (214 and 215) were reported to AIM and LGPC by lake users. Site 214 was harvested by the LGPC crew. Site 215 was harvested by the FUND crew during routine operations in Harris Bay. Site 216 was spotted by the AIM crew while driving through the area and was not harvested in 2015. It was estimated that two full days of harvesting with a small crew would complete a first run through of this site. Site 217 was identified by LGPC staff and was estimated to require roughly ½ of a day with a three person crew.

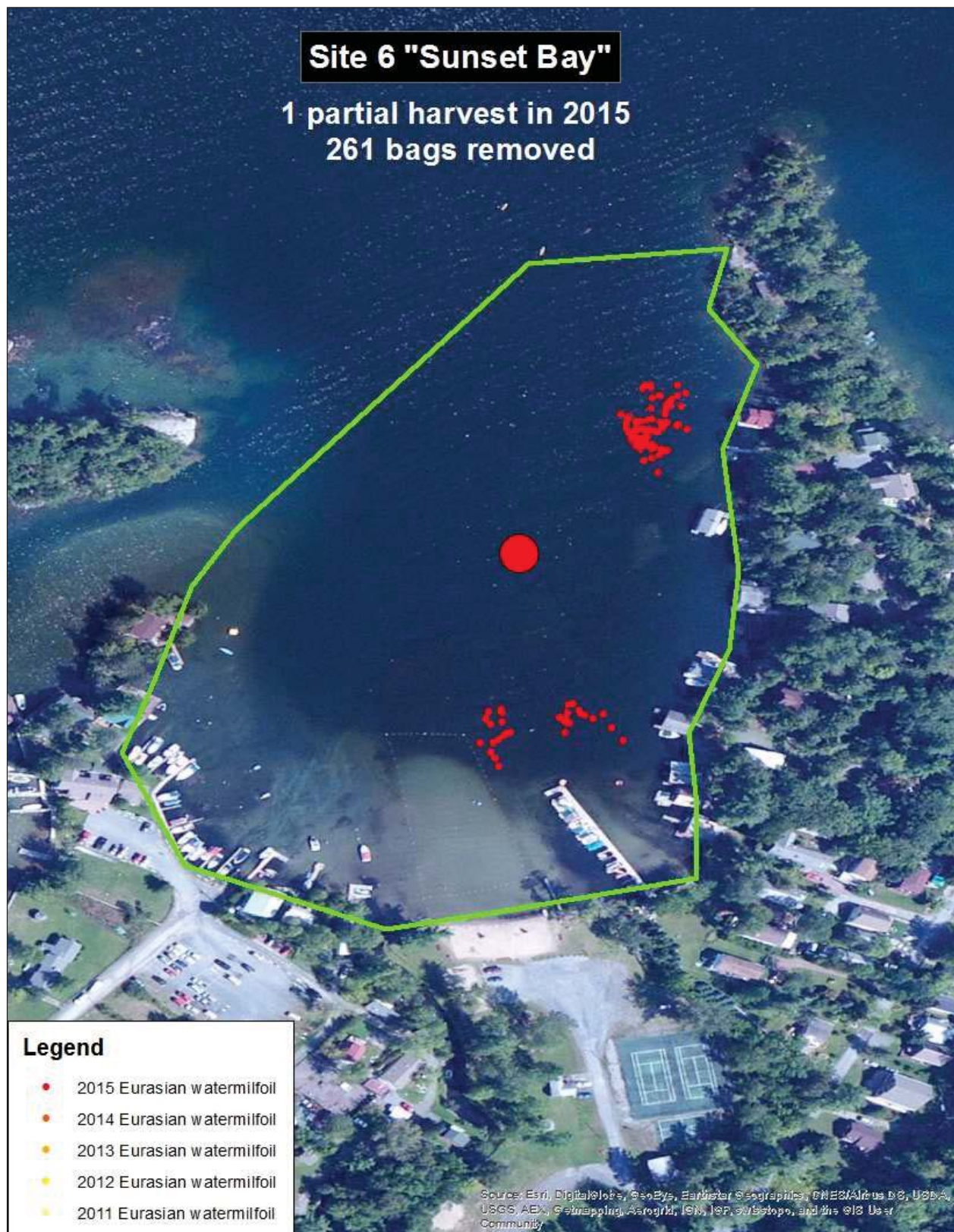
Site Number	Site Name	Site Location				2015 Harvest total (bags)
Site 214	"Gourd Island"	N	43 34.792	W	73 35.870	1.00
Site 215	"Shore N of Harris Bay Yacht Club"	N	43 27.461	W	73 38.452	255.00
Site 216	"Shoal N of Hens and Chickens Islands"	N	43 33.730	W	73 36.894	0.00
Site 217	"Skipper's Jib Island"	N	43 42.38717	W	73 29.805	0.00

Status of sites post 2015 operations

Dense Sites

One site was removed from the Dense site list in 2015. Site 26 received thorough harvesting and is considered Moderate going into 2016. Of the remaining six dense sites, two were partially harvested. In 2016, the priority for management of these six should go to Sunset Bay and Gull Bay as they are most exposed to boat traffic.

Site Number	Site Name	2015	2014
6	"Sunset Bay"	261.00	44.00
24	"NW Bay – Bay between Fan and Bear Point"	18.00	0.00
48	"Gull Bay"	0.00	0.00
158	"South English Brook"	0.00	0.00
202	"Long Island SE"	0.00	0.00
203	"Gull Bay South Cove"	0.00	0.00
# of Sites	Bag totals		
6		279.00	44.00

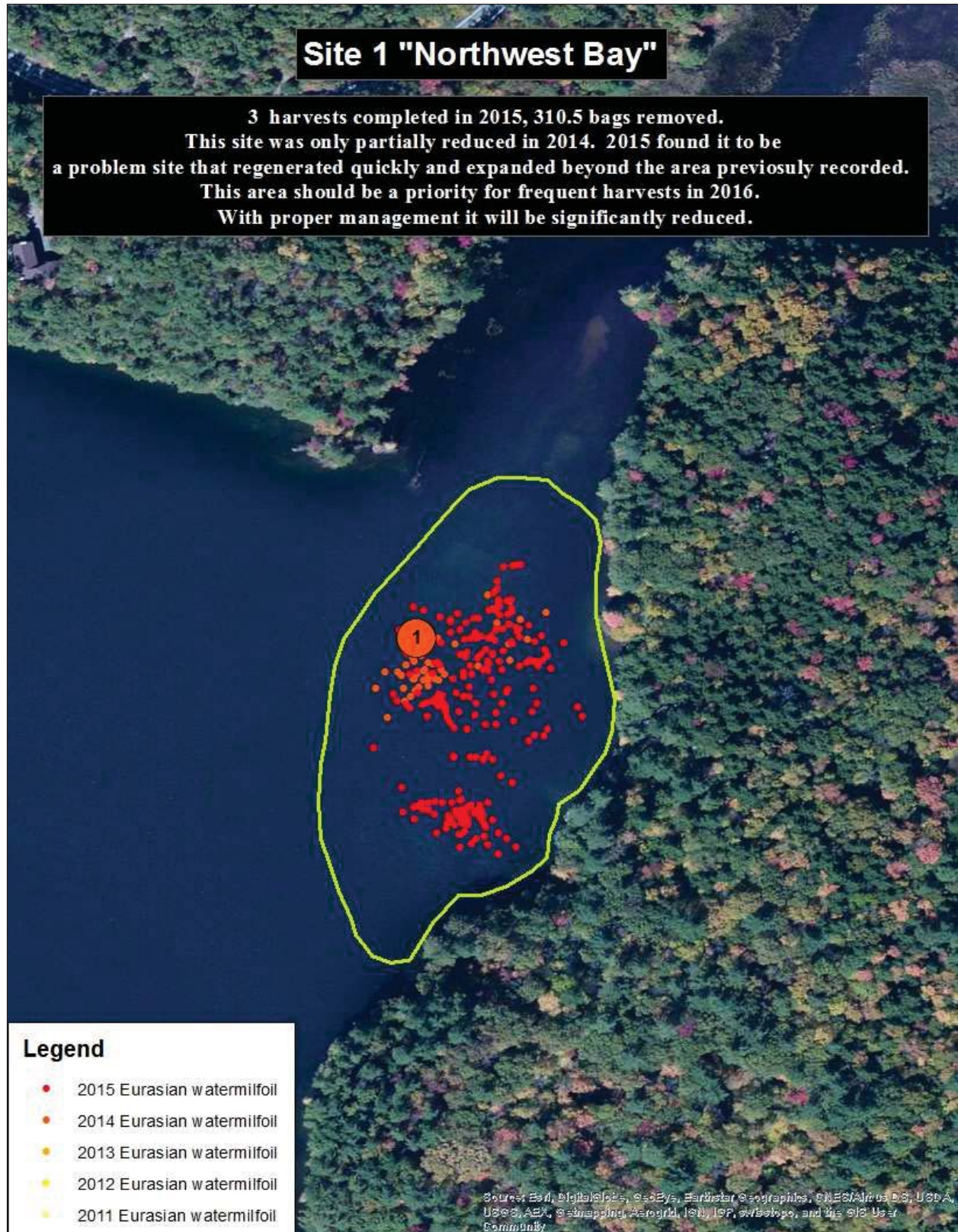


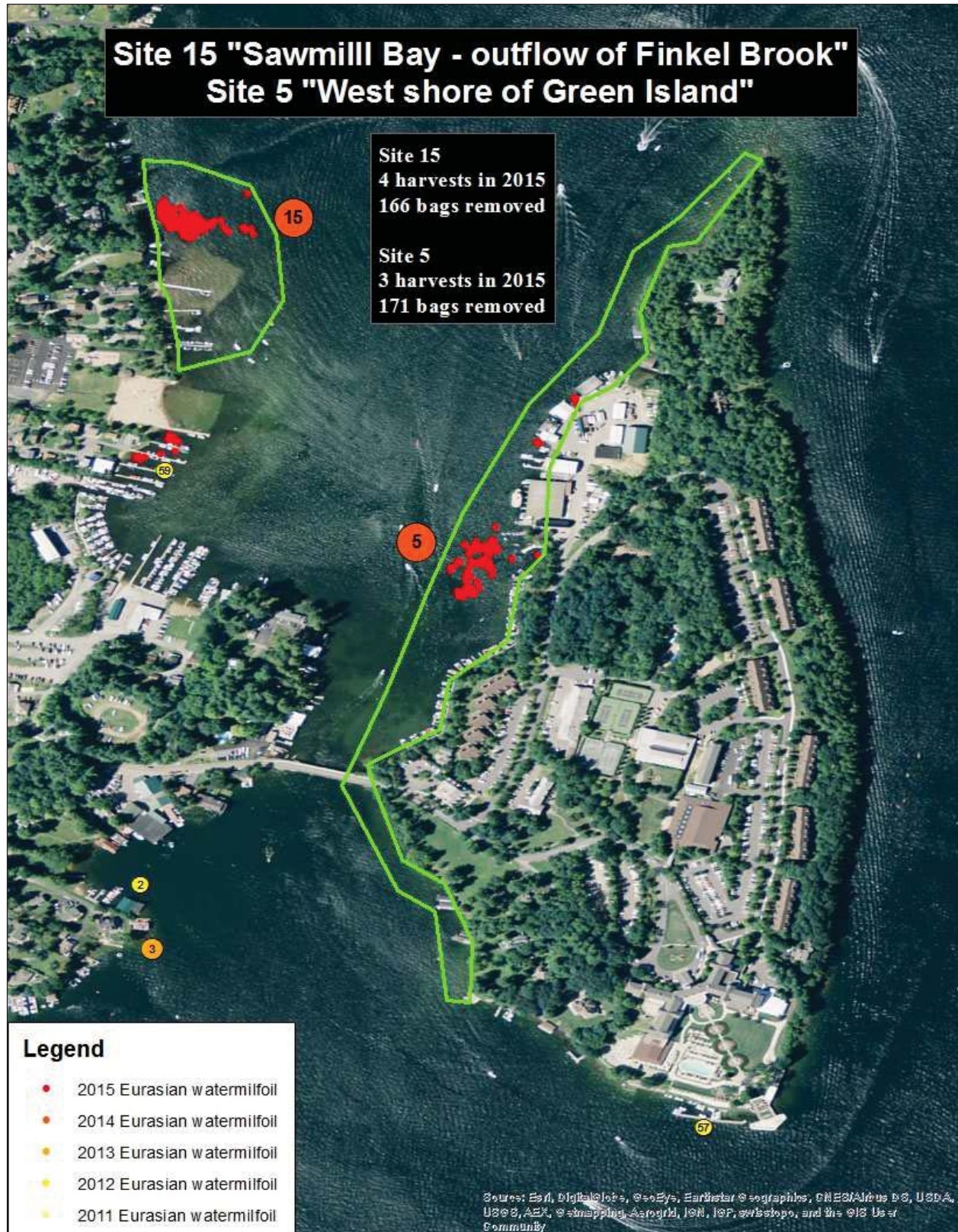
Moderate Sites

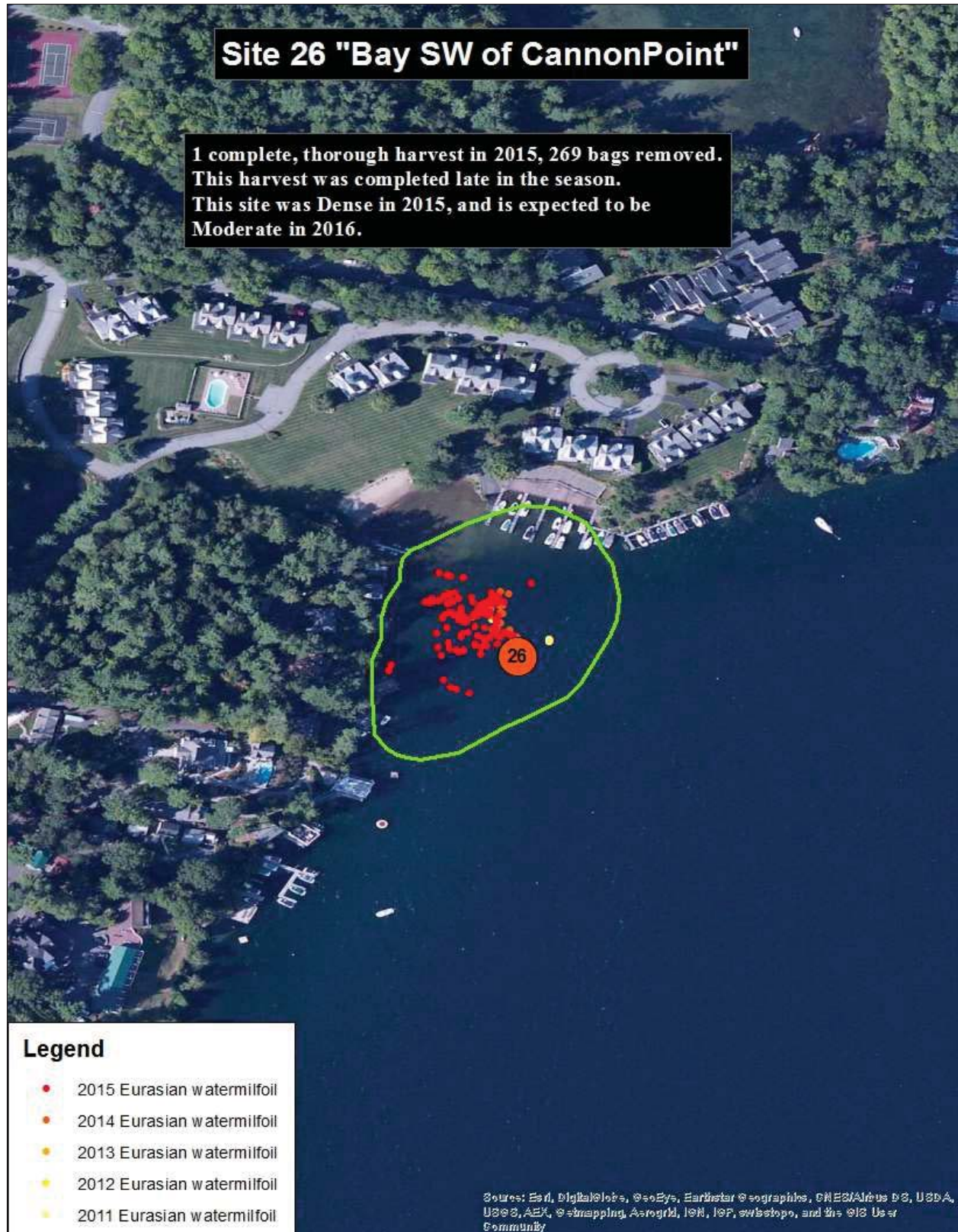
In 2014, a total of 14 sites were classified as Moderate at the end of the season. These sites typically have pockets of dense growth with sporadic growth around them and require a significant time investment to complete a full harvest. These sites are also known for high levels of fragment production leading to rapid regrowth and persistence. AIM sees these locations as critical for management to prevent them from becoming dense beds of growth.

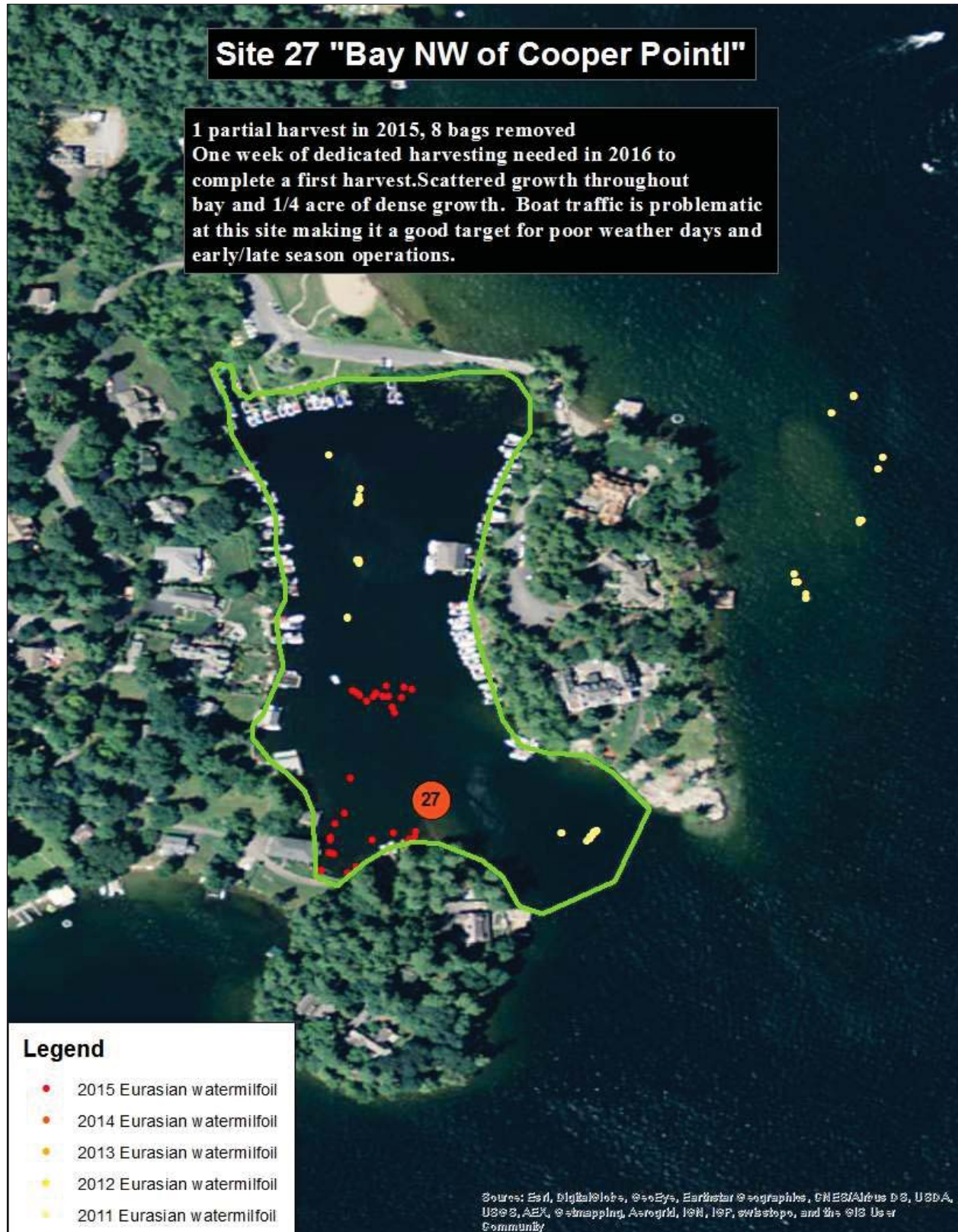
After 2015 operations a total of 16 sites are viewed as Moderate. Of the 2014 list, 6 sites were reduced to High Priority Sparse. Eight sites were added to the Moderate list after 2015 operations. Four of the newly added sites did not receive full management (highlighted in yellow) and will be regarded as high priority in 2016.

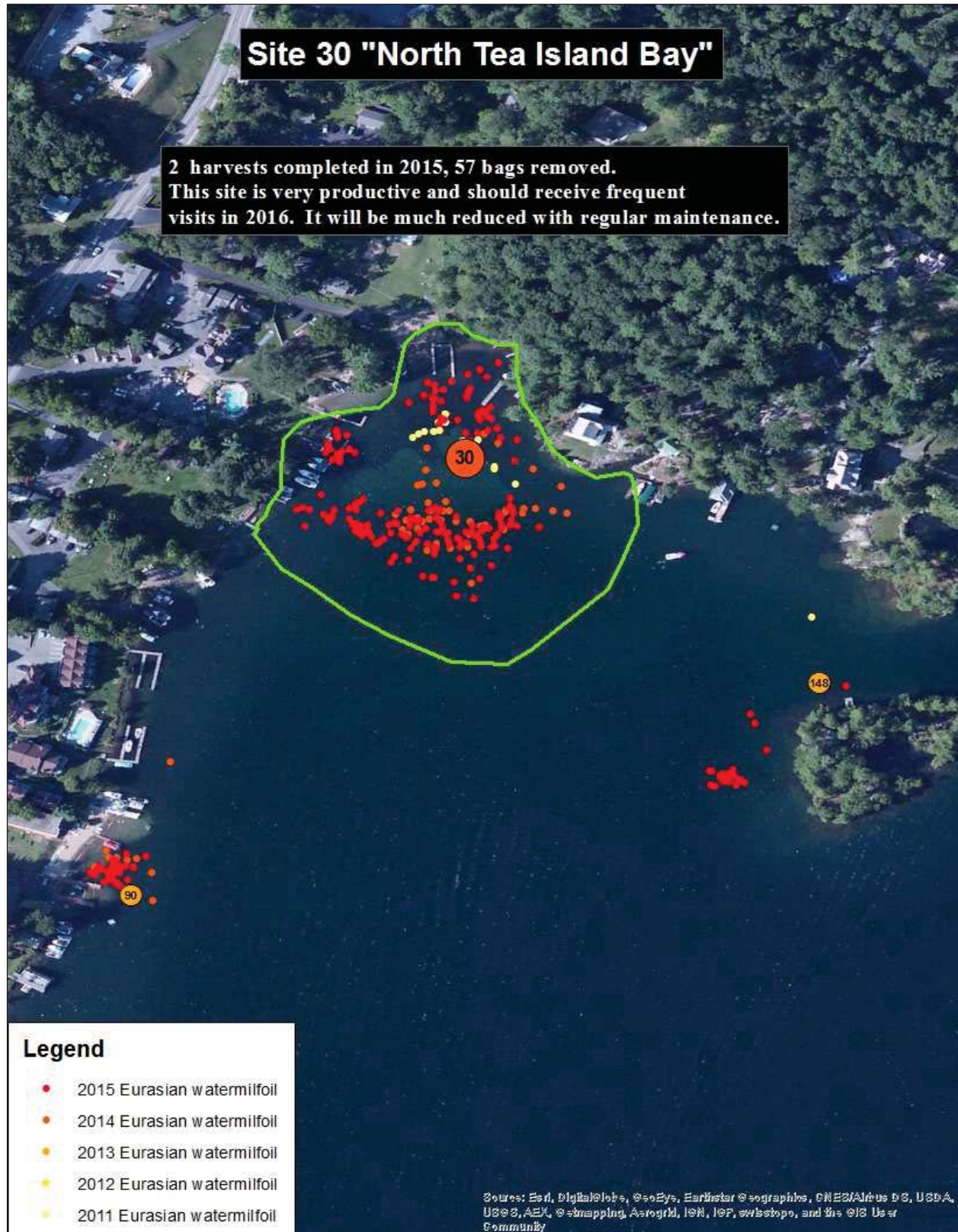
Site Number	Site Name	2015	2014
1	"Northwest Bay"	310.50	44.00
8	"West Brook Delta"	304.00	59.00
15	"Sawmill Bay – outflow of Finkel Brook"	166.00	14.25
26	"Bay SW of Cannon Point"	269.00	7.00
27	"Bay NW of Cooper Point"	8.00	0.00
30	"North Tea Island Bay"	57.00	48.00
46	"Leontine/Clay Shoal"	20.00	6.21
97	"West Side Clay Island"	95.00	0.00
103	"North of North Meadow Point"	0.00	2.13
107	"Elizabeth Island"	123.00	16.16
117	"Glen Bernie – Blairs Bay"	64.00	43.00
165	"Basin Bay Shoal"	5.00	0.13
168	"SW Green Island"	165.00	0.00
169	"Arcady Bay"	30.00	10.25
204	"Rogers Rock Campground"	24.00	63.50
216	"Shoal N of Hens and Chickens Islands"	0.00	0.00
# of Sites		Bag totals	
16		1,640.50	313.63

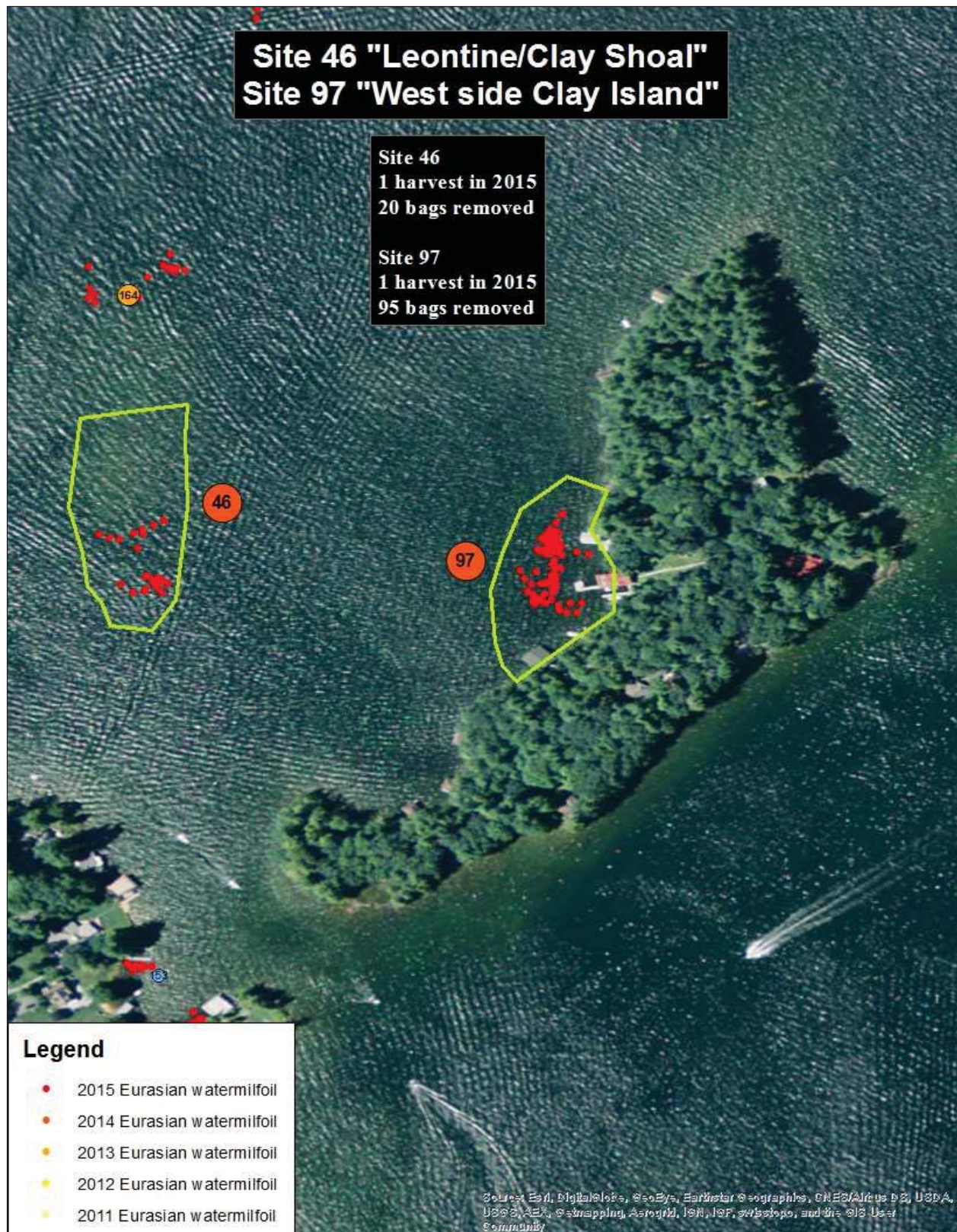


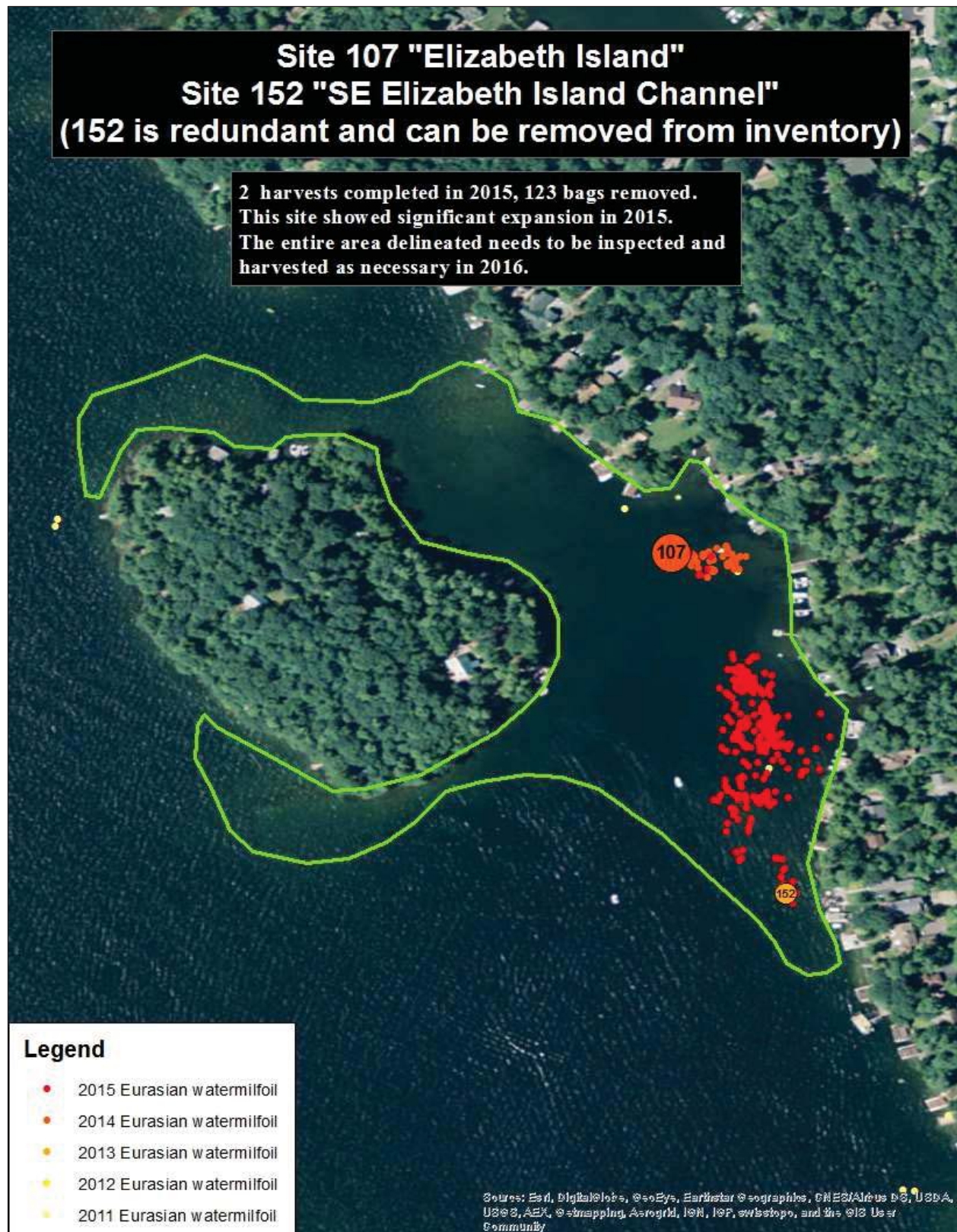


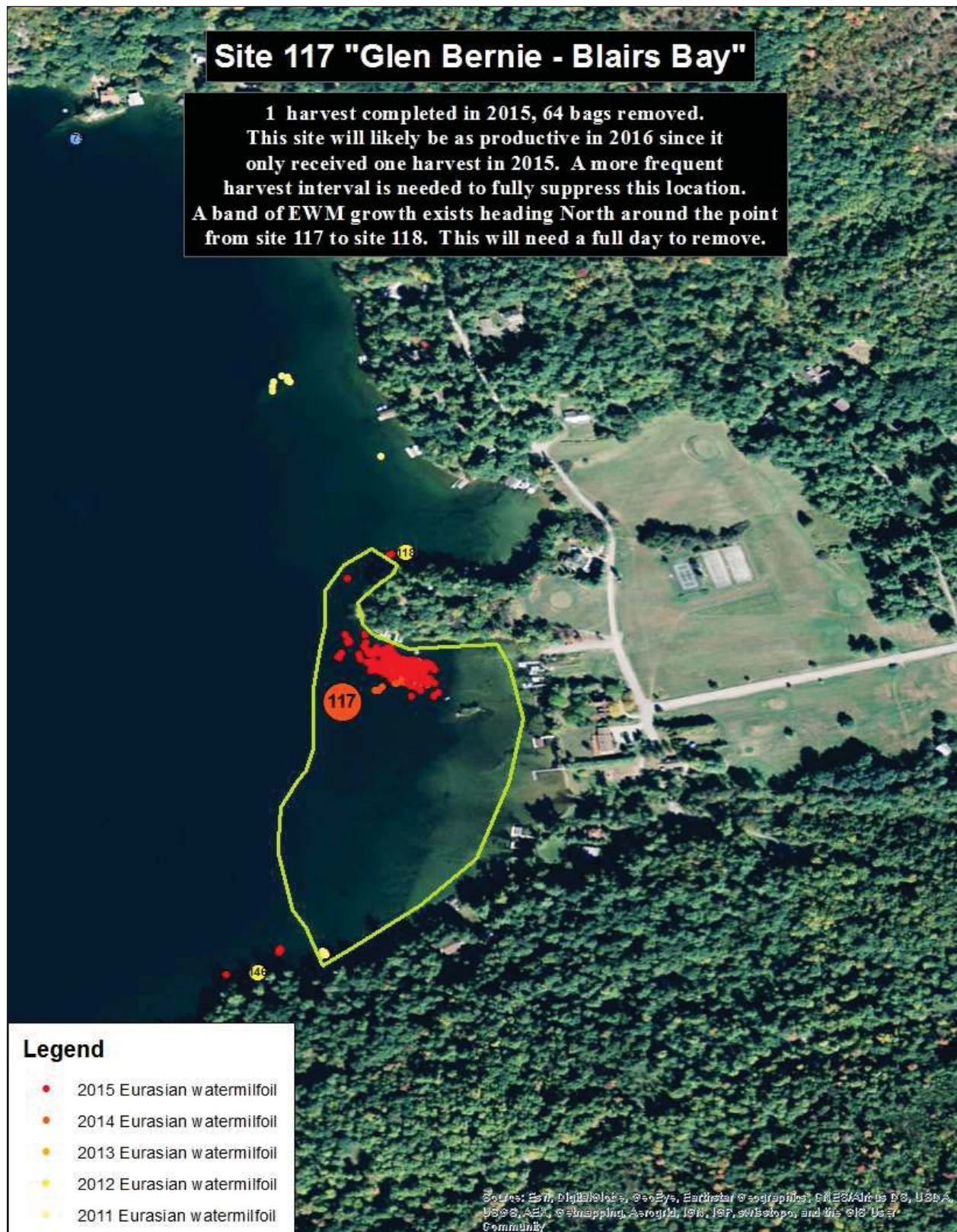


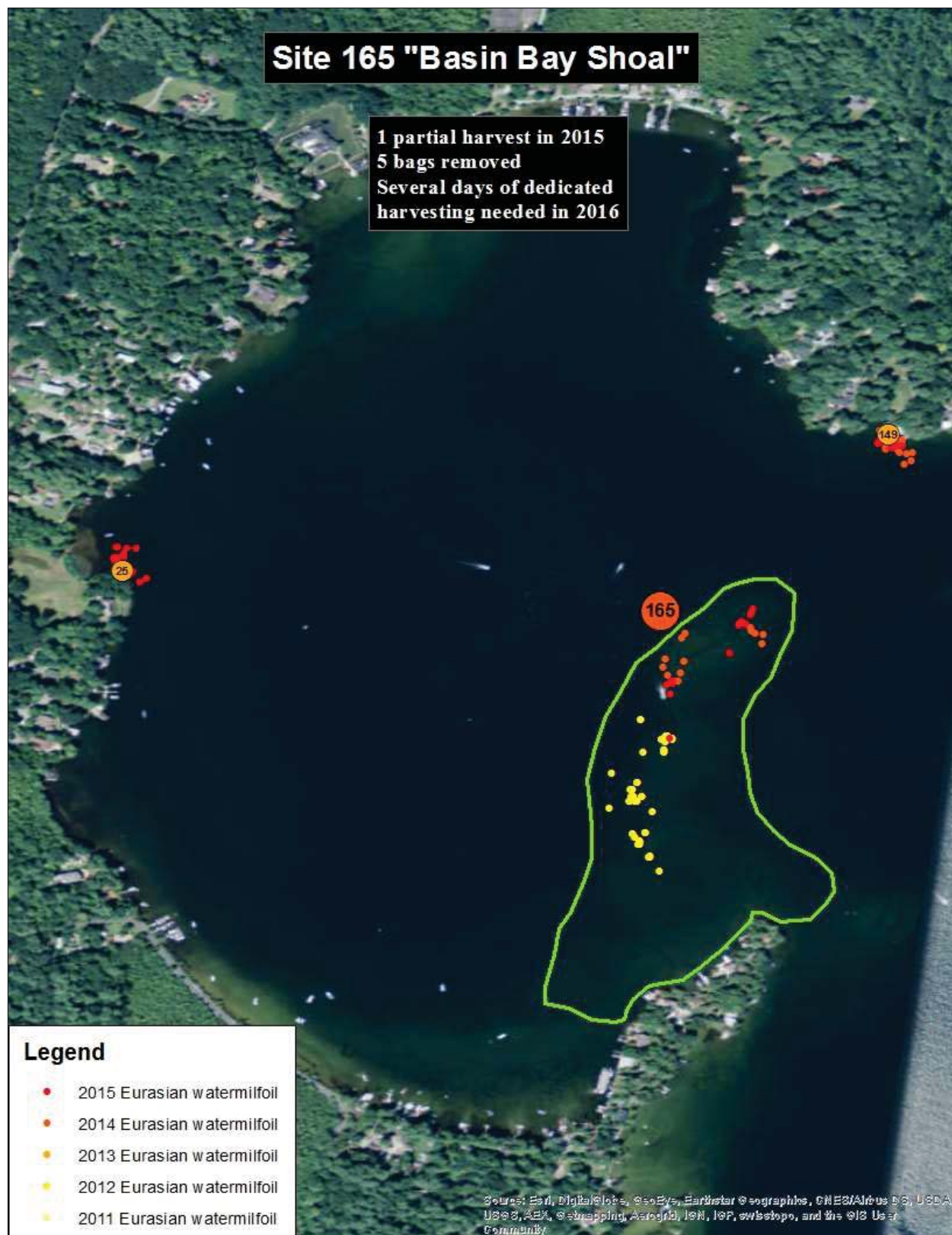




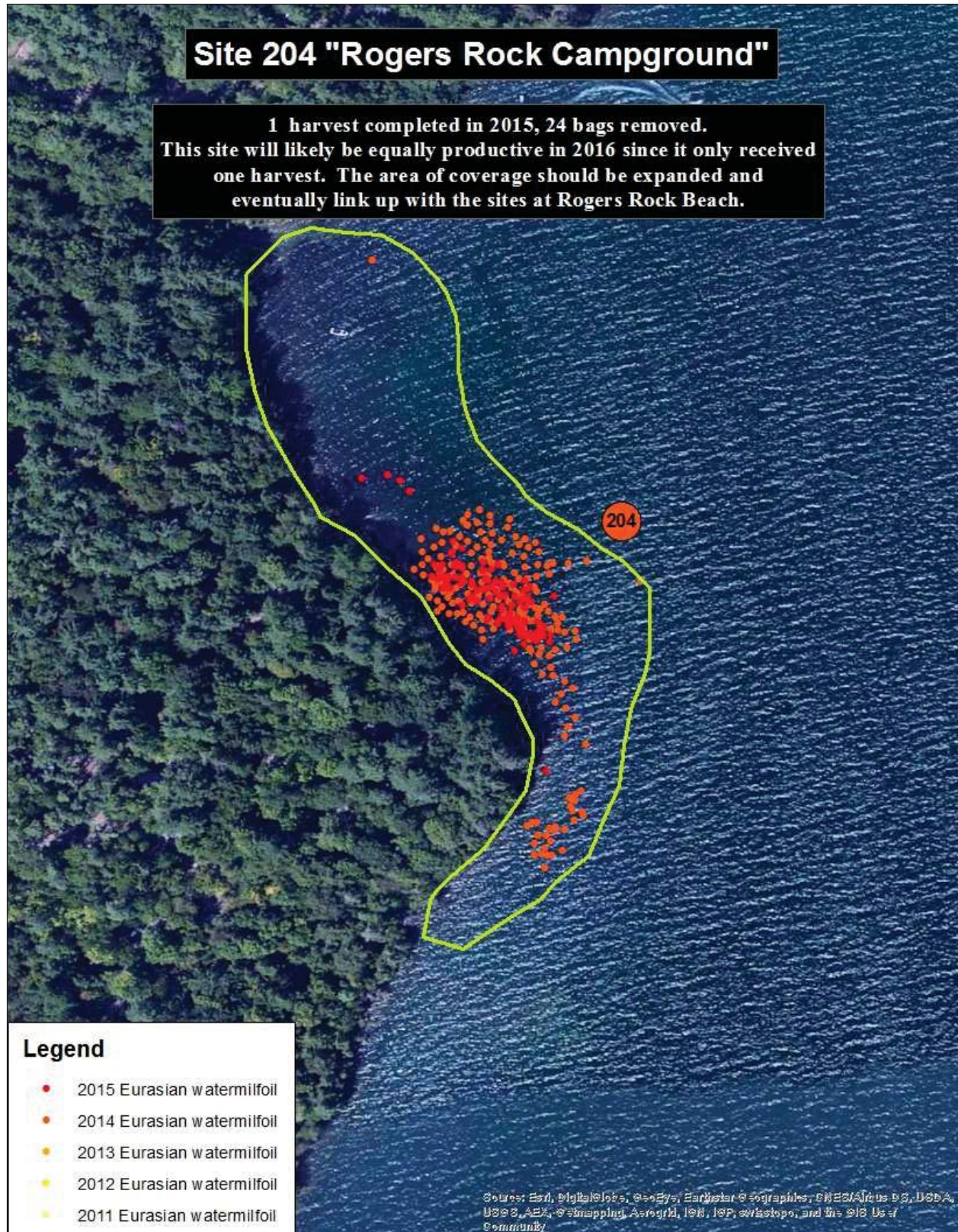












High Priority Sparse Sites

These sites are productive and would be upgraded to Moderate without any management. Six of these sites (underlined) were Moderate in 2014.

Site Number	Site Name	2015	2014
3	"Bolton Bay SW of Conger's Point"	4.00	0.00
13	"Mossy Point Boat Launch"	2.75	1.00
<u>16</u>	<u>"Middleworth Bay"</u>	<u>9.25</u>	<u>26.25</u>
17	"Echo Bay – East End"	2.25	5.50
<u>18</u>	<u>"Hague Boat Launch"</u>	<u>10.00</u>	<u>54.50</u>
25	"Basin Bay – North tributary"	12.50	0.01
41	"Paradise Bay"	2.00	0.16
43	"Bolton Bay"	2.50	0.00
<u>45</u>	<u>"Tiroga Point Channel"</u>	<u>0.00</u>	<u>3.00</u>
<u>50</u>	<u>"Clark Hollow Bay Brook"</u>	<u>8.25</u>	<u>9.50</u>
51	"Eichlerville Bay"	6.00	0.71
52	"Rogers Rock Park Beach"	2.25	0.02
53	"Southwest Tongue Mountain (Clay Bay)"	2.50	0.25
58	"Silver Bay"	3.00	6.39
<u>65</u>	<u>"W of Three Brothers Island"</u>	<u>8.00</u>	<u>28.58</u>
70	"West Halfway Island"	2.00	0.01
71	"Hague Brook"	13.50	0.00
72	"South Cooks Bay"	4.25	4.00
73	"Tributary in Dark Bay"	2.50	0.00
<u>90</u>	<u>"South Tea Island Culvert"</u>	<u>10.00</u>	<u>19.00</u>
99	"Holman Hill Creek"	2.00	0.05
106	"Assembly Point/Southeast Bay"	12.00	0.00
114	"Sandy Bay – West Side"	18.25	0.00
122	"Still Bay"	5.25	0.00
128	"Bay North of Commission Point"	3.00	2.62
139	"NE Little Harbor Island"	2.75	0.00
148	"West of Tea Island"	8.00	0.00
149	"Fish Point"	5.00	4.75
152	"SE Elizabeth Island Channel"	4.50	2.68
164	"North Leontine Shoal"	7.25	1.21
166	"Harris Bay – Shore Acres"	2.25	1.17
167	"Clay Island SW"	14.00	0.00
184	"Bay View Marina"	5.00	1.34
<u>187</u>	<u>"Sagamore Boat Works"</u>	<u>5.00</u>	<u>31.50</u>
197	"SE Fan Point"	4.00	4.99
208	"Bay S of Barber Bay"	4.00	0.34
# of Sites		Bag totals	
36		209.75	209.53

Sites 18 and 45 (highlighted in yellow) have special circumstances associated with them. Site 18 (Hague Boat Launch) has thick Curly leaf Pondweed growth and sporadic Eurasian milfoil growth. The area is ideal for a de-watering/dredging operation as it is enclosed via manmade dock structures and has a narrow opening to the main lake. Site 45 has a similar situation except the EWM growth occurs in roughly one foot of water heavily mixed with native plant growth at the back of a narrow channel cut into the shoreline. Benthic barrier or a similar dredging/de-watering operation would be ideal for this location.

Low Priority Sparse Sites

These sites yield low harvest totals yet continue to produce some regrowth.

Site Number	Site Name	2015	2014
2	"Bolton Bay at Conger's Point"	0.50	0.43
4	"Huddle Bay NW of Sweetbriar Island"	0.00	0.35
5	"Sawmill Bay W shore of Green Island"	0.50	3.00
9	"Million Dollar Beach"	0.00	3.00
12	"Lake George Outlet"	0.24	0.00
22	"Shadow Bay"	0.75	0.27
23	"Lake George Yacht Club"	1.50	0.08
35	"NW Bay – Bay South of Fan Point"	0.17	0.35
36	"Bay E of Dark Bay"	0.50	0.01
42	"Bolton Bay"	1.00	0.00
44	"Bolton Bay – NE of Bridge"	0.26	0.00
47	"Smith Bay"	1.00	0.26
55	"Indian Bay, Hulett's Landing"	1.00	0.31
57	"South end – Green Island"	0.14	1.77
59	"Hondah Cottages"	0.75	0.15
60	"Camp Andrew Bay"	1.00	0.00
61	"Moonlight Bay, Harbor Island"	0.56	1.08
64	"Three Brothers Island"	1.00	2.47
67	"Bluff Head Creek"	0.04	0.00
68	"Rock Dunbar Island"	0.68	0.74
75	"Bell Point"	0.50	0.30
76	"South Shelving Rock Point"	1.25	0.00
79	"Shore South of Bear Point"	0.26	0.00
80	"Bay South of Bear Point"	0.50	0.03
82	"Barber Bay"	1.50	0.00
92	"Bay East of Hens and Chickens"	0.01	0.00
95	"N.W.B. Head of Bay"	0.13	0.00
101	"Brook North of Green Point"	0.02	0.02

104	"Assembly Point/West Bay"	0.17	0.10
105	"Assembly Point/Northwest"	0.08	0.00
112	"Whale Rock, East of Agnes Island"	1.00	0.00
113	"Diamond Island"	0.75	0.00
118	"Blairs Bay, North"	0.03	0.02
123	"West Flirtation Island"	0.12	0.26
124	"North Shelving Rock Pt."	0.50	0.00
127	"SW French Point"	1.00	0.01
130	"South Trib 5 Mile Mountain Brook"	0.03	0.04
138	"Bay NE of Fan Point"	1.25	1.15
141	"Camp Andrew Bay, West"	1.50	0.00
142	"S. of Fox Island"	0.50	0.00
143	"S. of Bluff Head Creek"	0.25	0.15
145	"Juniper Island"	0.50	0.32
146	"Blairs Bay-South"	0.09	0.00
147	"Gull Island"	0.07	0.05
150	"East Rock Bros. Islands"	0.04	0.20
151	"Indian Point"	0.13	0.00
154	"Roger's Slide"	0.15	0.11
156	"NE cove Assembly Point"	1.25	4.18
157	"SE Canoe Island"	0.04	2.84
160	"Van Buren Bay – S"	0.07	0.00
161	"East Speaker Heck Island"	0.25	0.10
162	"North Hazel Island"	0.50	0.00
163	"14 Mile Island"	0.50	0.00
170	"Red Rock Bay"	1.00	0.08
173	"Bolton Bay 2"	1.00	0.28
174	"Bolton Bay 3"	0.17	4.66
175	"Blair's Bay South Shore"	0.03	0.05
177	"Arcady Bay Docks"	0.11	0.13
181	"South Point Diamond Island"	1.00	0.00
182	"40-Acre Island"	0.03	0.06
185	"Oahu Island West"	1.75	0.65
186	"Dark Bay North #2"	0.07	0.03
188	"Braley Point"	0.13	0.00
189	"Shore N. of Dark Bay"	0.01	0.05
191	"Ruah Boathouse"	0.46	0.51
192	"South Temple Knoll Island"	1.00	0.57
193	"Arcady Bay Shoals"	0.49	0.15
194	"Tongue Mountain Point"	0.05	0.25
195	"W. Tongue Mountain 1"	0.06	0.00

196	"W Tongue Mountain 2"	0.07	0.42
198	"Scotch Bonnet Island"	0.07	0.15
199	"Snug Harbor South"	0.17	0.08
200	"South Bell Point"	0.75	1.32
201	"En Con Duel Dock #2"	0.09	2.25
212	"Asas Island"	0.00	1.00
213	"Small Island East of Asas (Name?)"	0.00	1.25
214	"Gourd Island"	1.00	0.00
# of Sites		Bag totals	
77		36.00	38.09

Sites found to be clear in 2015

No EWM was found at these sites in 2015, however due to their bag totals in 2014 the highlighted sites will receive special attention in 2016 inspections.

Site Number	Site Name	2015	2014
10	"East Brook Delta"	0.00	0.00
39	"South Katskill Bay"	0.00	1.00
40	"Bay South of Red Rock Bay"	0.00	0.03
49	"South of Burnt Point"	0.00	0.00
74	"Point North of Agnes Island"	0.00	0.01
88	"Crosbyside"	0.00	0.00
100	"Temple Island"	0.00	0.00
115	"Cape Cod Village Bay"	0.00	0.00
131	"North Steere Island"	0.00	0.01
132	"Lamb Shanty Bay"	0.00	0.00
153	"Eye of the Needle"	0.00	0.21
155	"N. Juniper Island"	0.00	0.01
176	"Sandy Bay"	0.00	0.00
179	"Blair's Bay North Shore 2"	0.00	0.00
190	"Shore W of Temple Knoll Island"	0.00	0.00
# of Sites		Bag totals	
15		0.00	1.27

Clear sites not included in active management in 2015

These sites were removed from Active Management since they were clear of EWM for three seasons consecutively in 2014.

Site Number	Site Name	2015	2014
28	"Bay S of Hearthstone"	0.00	0.00
29	"Bay NE of Tea Island"	0.00	0.00
31	"English Brook"	0.00	0.00
32	"Crosbyside Culvert"	0.00	0.00
33	"South of Plum Point"	0.00	0.00
34	"Bay between Plum Point and Woods Point"	0.00	0.00
54	"Cook's Bay, Hulett's Landing"	0.00	0.00
56	"South Sawmill Bay"	0.00	0.00
62	"Marine Village"	0.00	0.00
63	"South of Agnes Island"	0.00	0.00
66	"North Sawmill Bay"	0.00	0.00
69	"Kitchal Bay"	0.00	0.00
77	"Walker Point"	0.00	0.00
78	"Bay North of West Tongue Mountain"	0.00	0.00
81	"Butternut Brook"	0.00	0.00
83	"Van Warmer Bay"	0.00	0.00
86	"East Shore"	0.00	0.00
87	"Crosbyside"	0.00	0.00
89	"Crosbyside"	0.00	0.00
93	"East of Refuge Island"	0.00	0.00
94	"Northwest of 3 Sirens Islands"	0.00	0.00
98	"South Jenkins Brook"	0.00	0.00
102	"South Tributary at 5-Mile Mountain"	0.00	0.00
110	"Diamond Point"	0.00	0.00
111	"NWB-NE Walker Point"	0.00	0.00
116	"Holman Hill Creek – North"	0.00	0.00
121	"Bay South of Paulist Fathers"	0.00	0.00
125	"East of Sagamore Island"	0.00	0.00
126	"NW of Dollar Islands"	0.00	0.00
129	"Camp Sagamore"	0.00	0.00
133	"Rogers Rock Club"	0.00	0.00
134	"St. Sacramento Island"	0.00	0.00
135	"Northeast Van Warmer Bay"	0.00	0.00
136	"Pocket Bay, Assembly Point"	0.00	0.00
137	"West Dollar Island"	0.00	0.00
140	"SE of three Sirens Island"	0.00	0.00

144	"N. Jenkins Brook"	0.00	0.00
159	"Southeast Rock Bros. Islands"	0.00	0.00
171	"South Delaware Island"	0.00	0.00
172	"North Black Mountain Point"	0.00	0.00
178	"Blair's Bay North Shore 1"	0.00	0.00
183	"SW Walker Point"	0.00	0.00
# of Sites		Bag totals	
42		0.00	0.00

Recap

After management of all known and new sites in 2015 the following has been established.

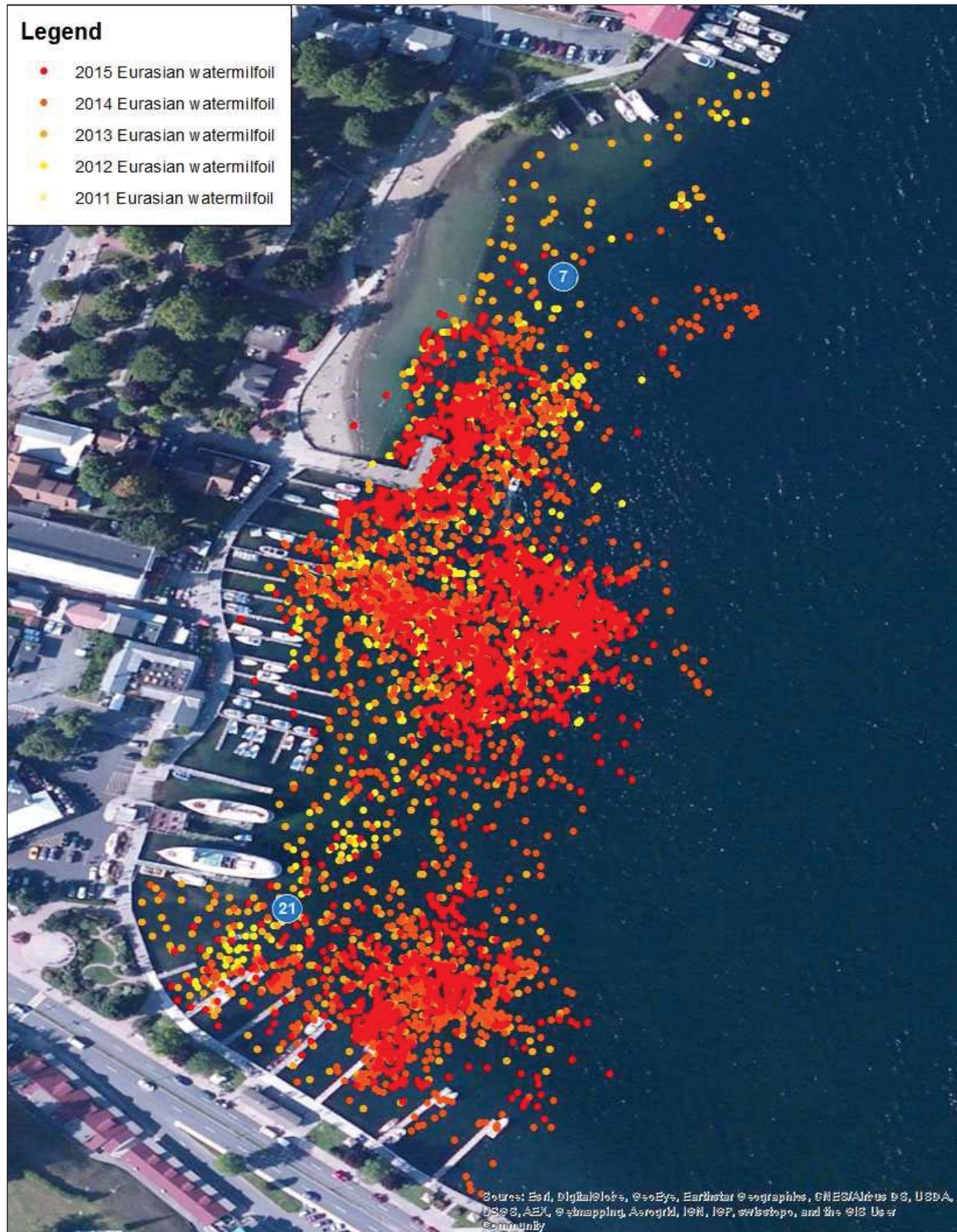
- 217 sites now exist
- Of the 217, 24 fall under FUND management
- Of the 193 remaining sites 42 are Clear and removed from active management.
- Of the 151 remaining active management sites the following sub categories exist:
 - Dense sites – 6
 - Moderate sites – 16
 - High priority Sparse sites – 37
 - Low priority Sparse sites – 77
 - Clear sites that had milfoil within three seasons – 15
- Total bags harvested from all LGPC sites in 2015 – 2,198.25 bags
- Total pounds of milfoil harvested from all LGPC sites in 2015 – 54,956.25 lbs

	2015	2014	Change
Total sites	217	213	+4
Sites under FUND management	24	14	+10
Sites clear and removed from active management	42	44	-2
Active management sites	150	155	-5
Dense Sites	6	7	-1
Moderate Sites	16	14	+2
High Priority Sparse sites	37	34	+3
Low Priority Sparse sites	77	58	+19
Clear less than three seasons	15	42	-27

Fund for Lake George (FLG) and Lake George Association (LGA) operations 2015

Bay Name	Site Number	Site Name	2015	2014	2015 Bay Totals	2014 Bay Totals
Harris Bay	14	"Harris Bay – Happy Family Islands"	0.00	0.34	571.00	856.55
	84	"Harris Bay Inlet"	0.00	0.00		
	91	"Harris Bay – East Side"	37.00	0.00		
	96	"Harris Bay/mid-bay"	209.00	855.00		
	108	"Harris Bay Culvert"	84.00	0.00		
	109	"SW Happy Family Islands"	29.00	1.21		
	119	"East Side, HBYC"	0.00	0.00		
	215	"Shore N of Harris Bay Yacht Club"	212.00	0.00		
Warner Bay	11	"Warner Bay, South End"	0.00	0.00	829.00	626.68
	37	"South Warner Bay culvert"	129.00	310.50		
	38	"North Warner Bay culvert"	104.00	310.50		
	120	"North Warner Bay – Culvert"	0.00	2.43		
	205	"NE Point Warner Bay"	0.00	3.25		
	206	"Warner Bay Northwest"	0.00	0.00		
	207	"Warner Bay Southwest"	596.00	0.00		
Dunhams Bay	19	"Dunham's Bay"	23.00	61.00	50.00	122.51
	85	"Dunham Bay Inlet"	4.00	0.01		
	180	"Dunhams Bay – Midbay"	14.50	61.00		
	211	"Dunhams Bay Sea Ray"	8.50	0.50		
Huddle Bay	20	"Huddle Bay"	108.50	65.33	265.00	195.99
	209	"Huddle Bay – South East"	64.50	65.33		
	210	"Huddle Bay – West"	92.00	65.33		
Lake George Village	7	"Shepard's Park"	250.00	286.50	536.00	573.00
	21	"Sheriff Dock Area"	286.00	286.50		

Lake George Village (LGPC sites 7 and 21)



Lake George Village after site reconfiguration (Site 7)

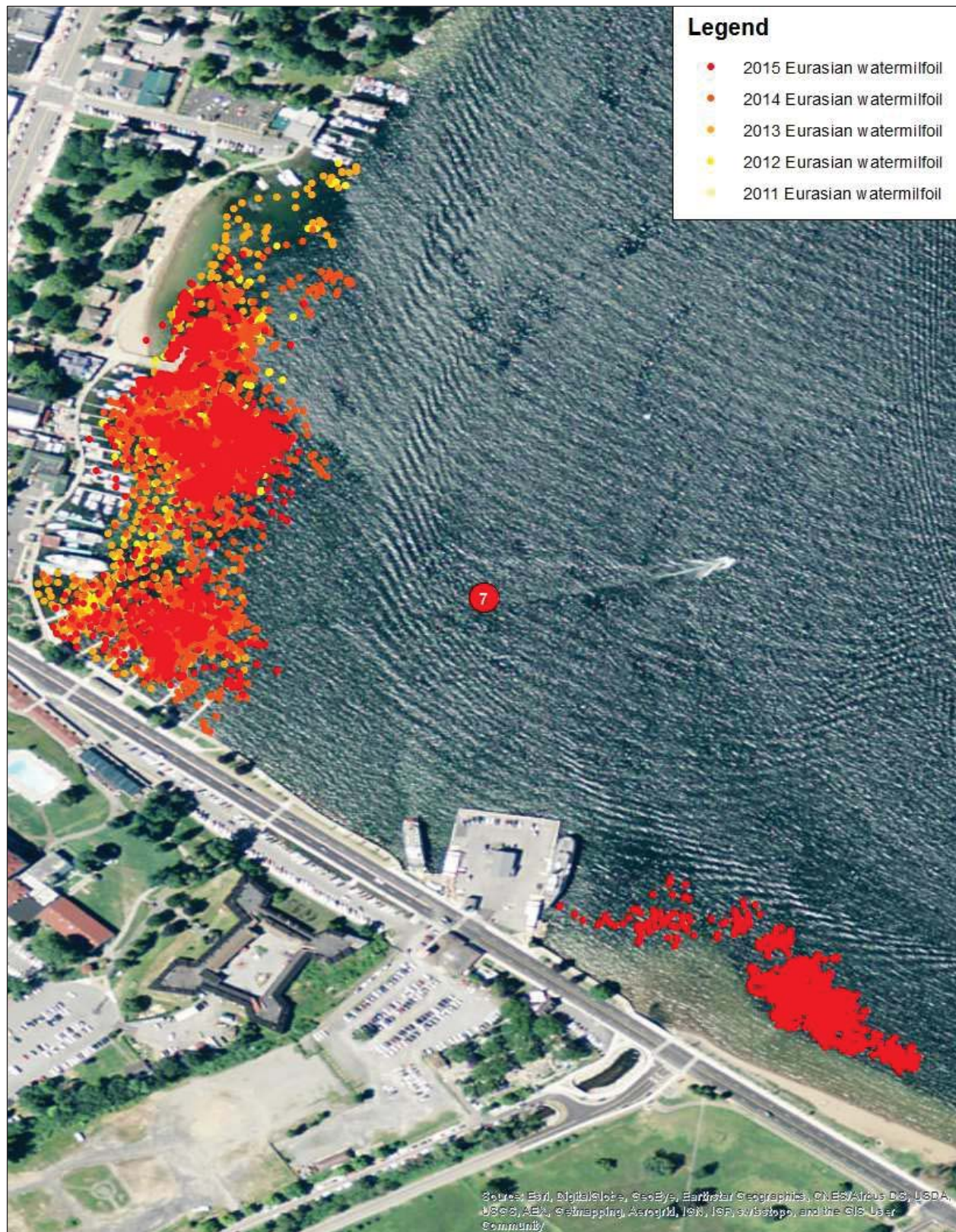
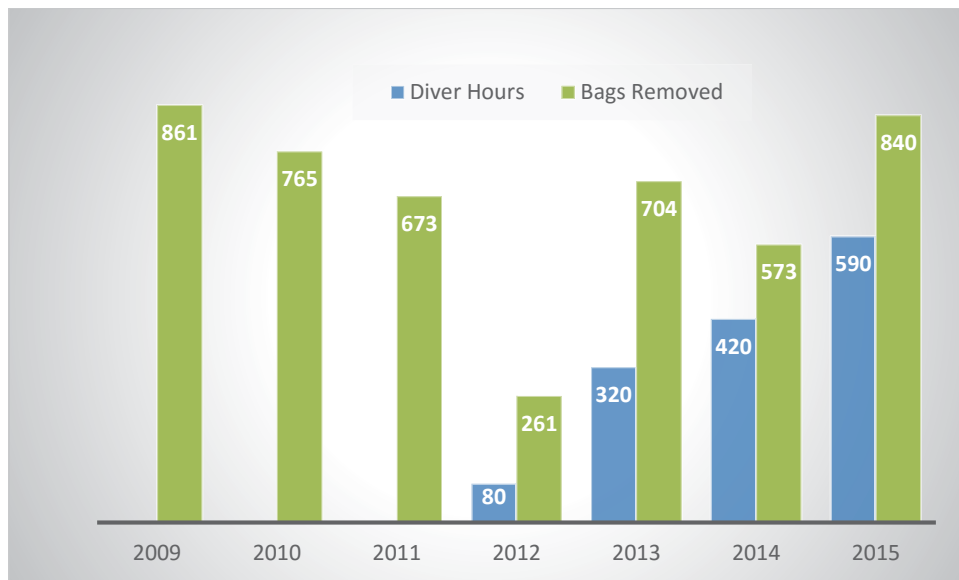


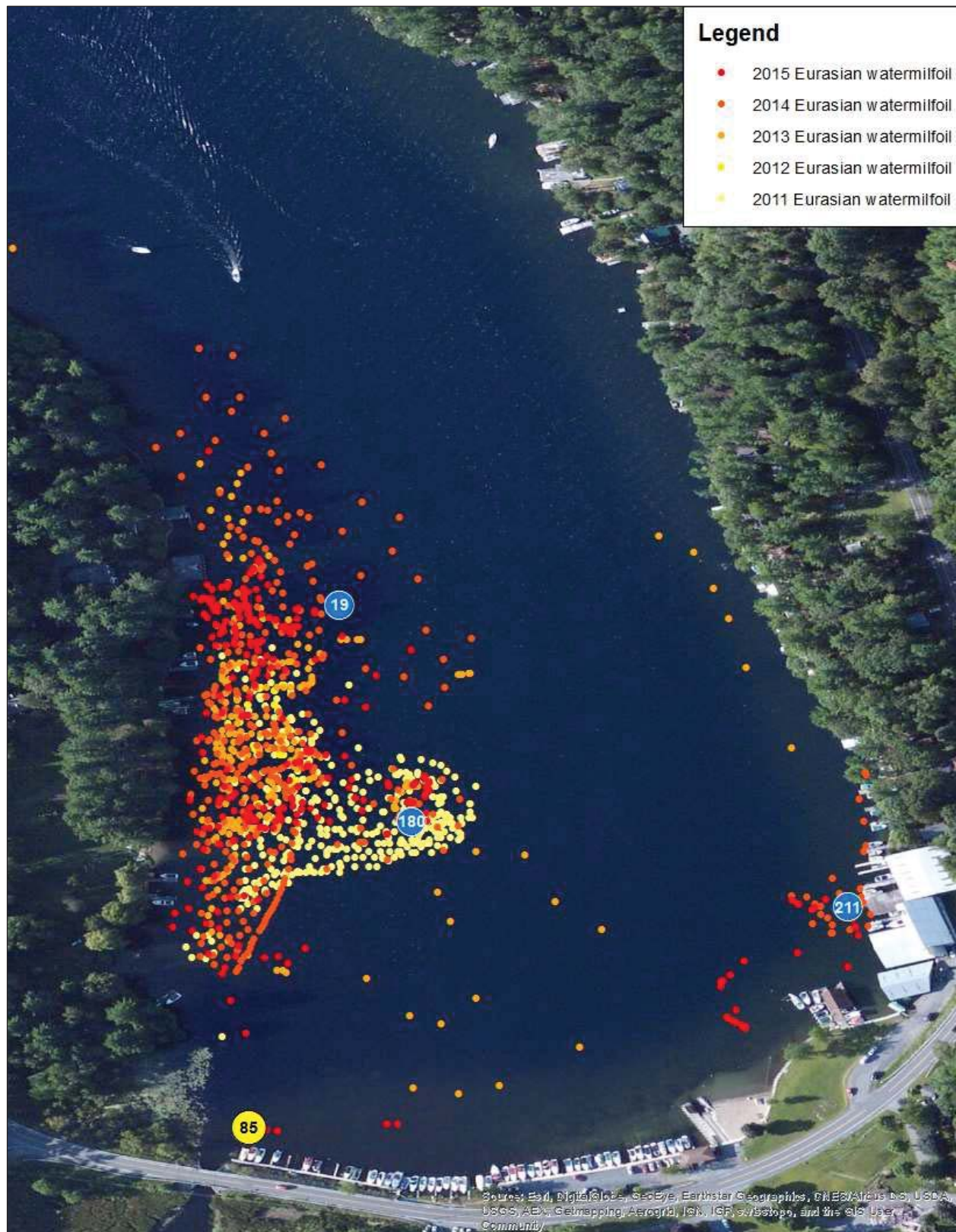
Figure 1: AIM bag totals and diver hours worked (hours data pre-2012 not available) from the Village since 2009 (2012 is representative of only a partial harvest)



Key Points:

- 2015 hours and bag totals are influenced by the increased area of harvest in the Village which now includes Site 8 (east of the Lac Du Saint Sacrament docks). This area accounted for 304 of the 840 bags.
- In 2015 bag totals in the Village (not counting the new area added on) are down to 62% (536 bags) of their 2009 levels (861 bags).
- The mapped growth in this area totals 20.5 acres and resulted in a harvest of 41 bags/acre (see Appendix D)
- As always, a missing component of the Village harvest program is a mid-season harvest. This will be on the list for foul weather days in 2016.
- This area is in steady decline and will continue as such with a comparable hours allotment in 2016 (at least 420)

Dunhams Bay (LGPC sites 19 and 180)



Dunhams Bay after site reconfiguration (Site 19)

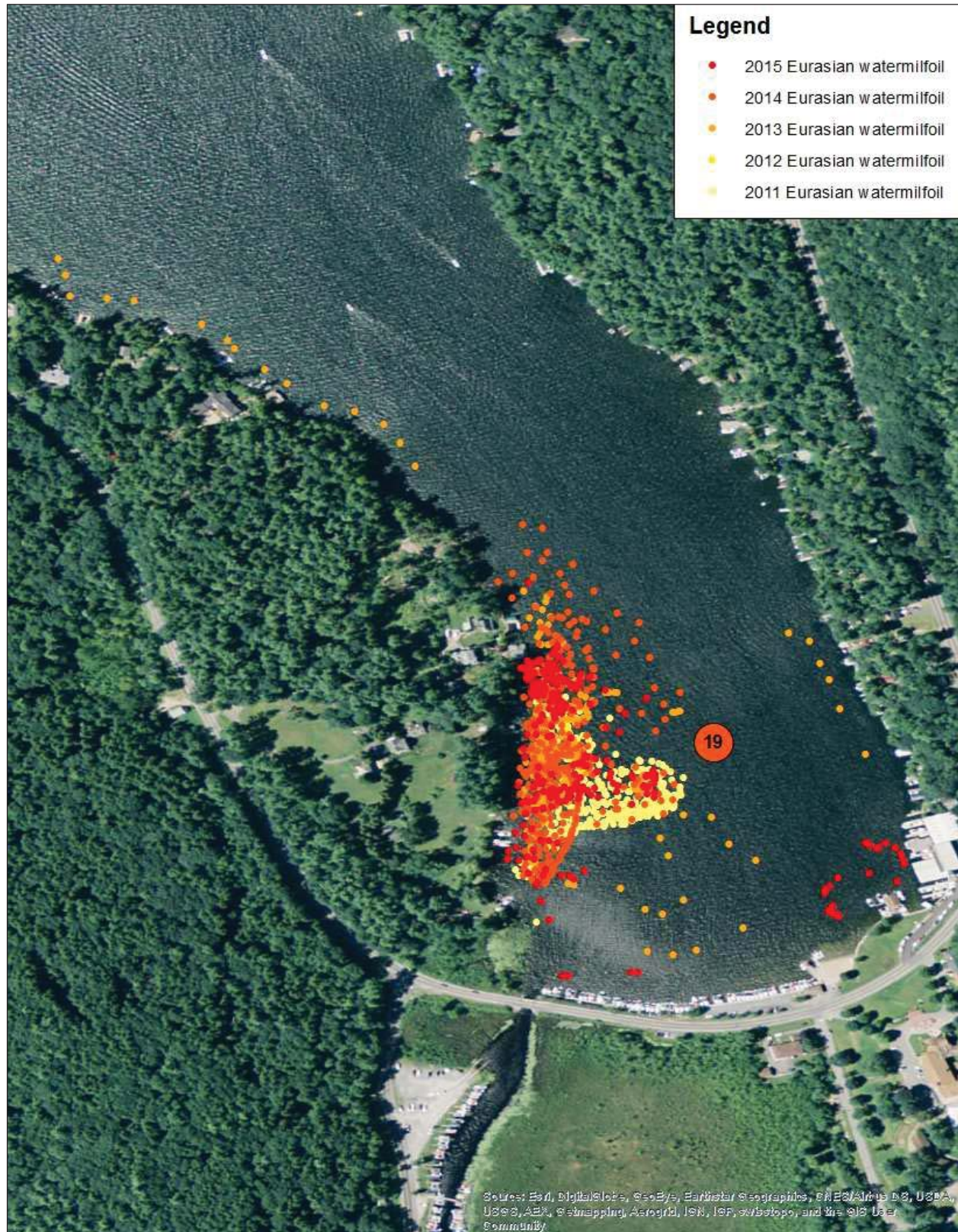
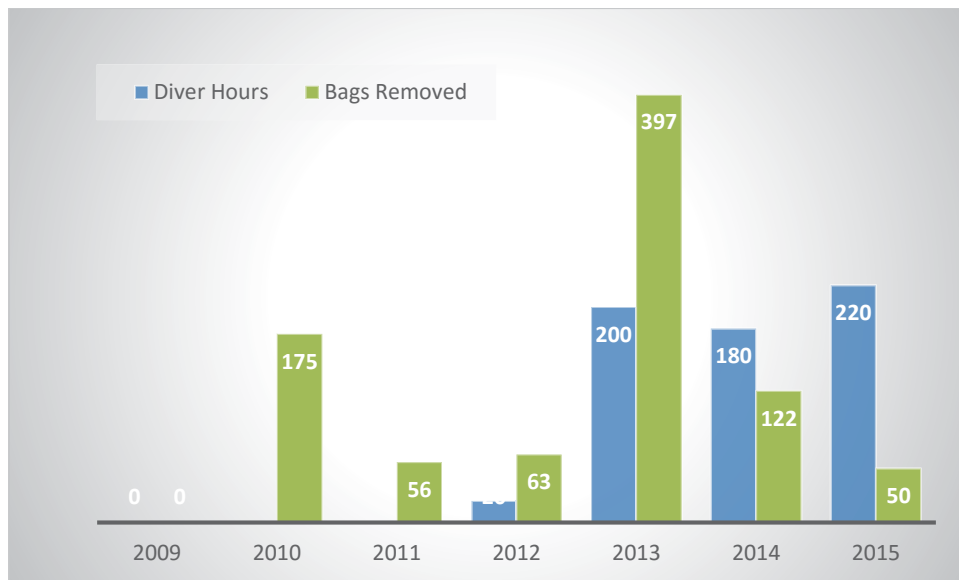


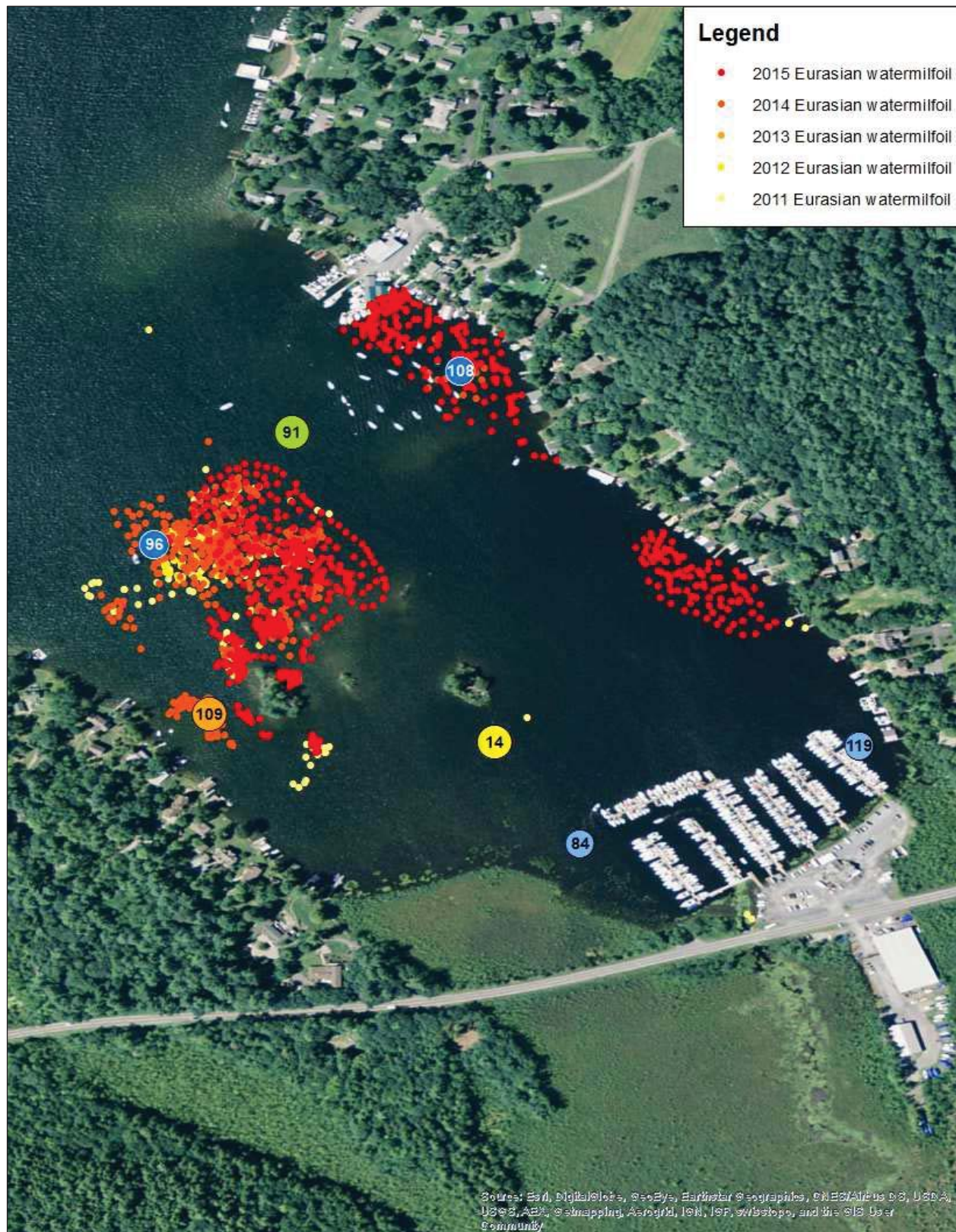
Figure 2: AIM bag total sand diver hours worked from Dunhams Bay since 2009 (2012 is representative of only a partial harvest)



Key Points:

- 2015 yielded the lowest bag total of any recorded year of AIM harvesting in Dunhams Bay.
- Diver hours allotted to Dunhams Bay were higher than previous seasons, however this is reflective of the management of a larger area of the bay (East shore and South shore)
- The mapped growth in this area totals 13.83 acres and yielded 3.62 bags/acre in 2015.
- Future operations here should widen swim coverage to include the shorelines leading into the bay as they likely harbor satellite EWM growth.
- A similar hours allotment would work well in 2016 (roughly 200)

Harris Bay (LGPC sites 91, 96, 108 and 109)



Harris Bay after site reconfiguration (Site 14)

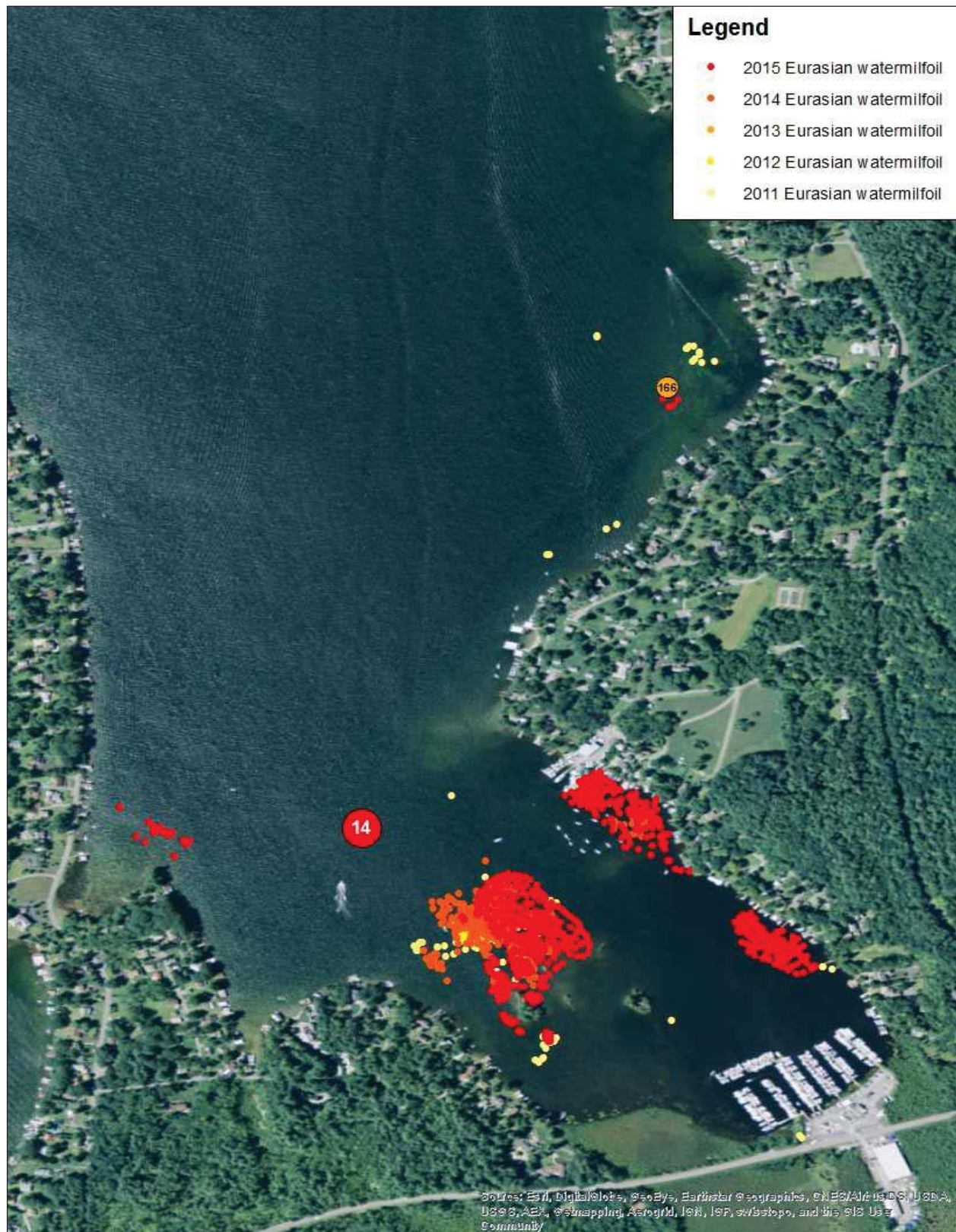
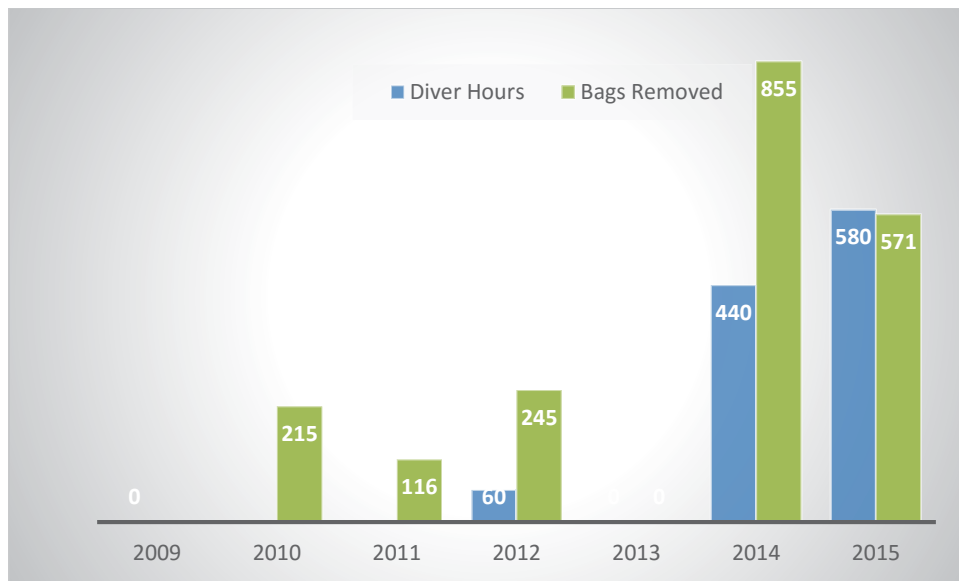


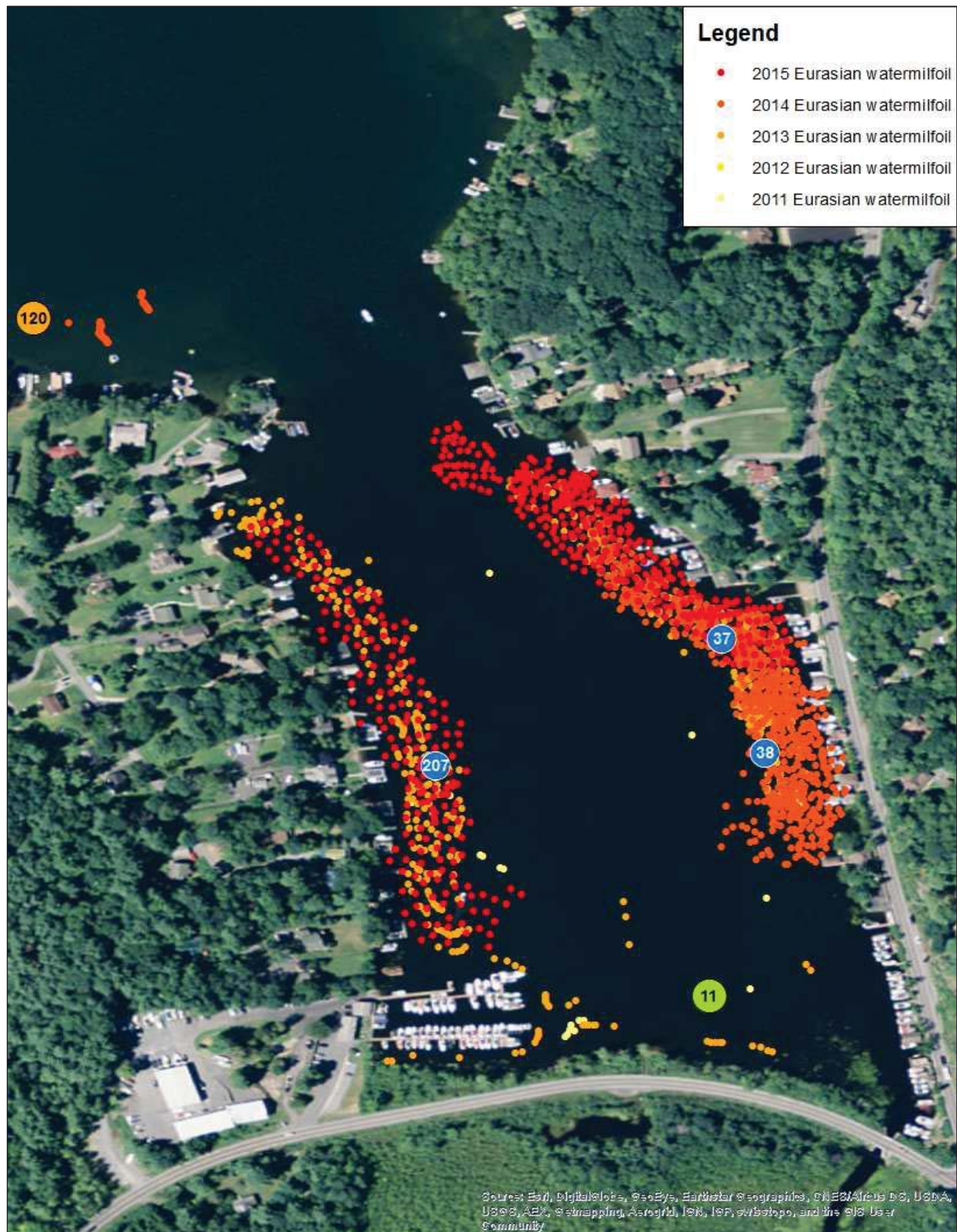
Figure 3: AIM bag totals and diver hours worked from Harris Bay since 2009 (2012 is representative of only a partial harvest)



Key Points:

- Of the 571 bags removed in Harris Bay in 2015, 255 came from a new bed discovered due north of the Harris Bay Yacht Club.
- Without the new bed, bag totals would have been down to 36% of the 2014 totals. With the new bed the total was 66% of 2014 totals, a decrease of 1/3.
- The mapped growth in this bay totals 28.9 acres and yielded 19.76 bags/acre in 2015.
- With the site reconfiguration the work area in Harris Bay has increased. It is likely that with 4-500 hours committed to this bay in 2016, the entire bay can be well managed barring any surprise finds of dense beds.

Warner Bay (LGPC sites 37, 38 and 207)



Warner Bay after site reconfiguration (Site 11)

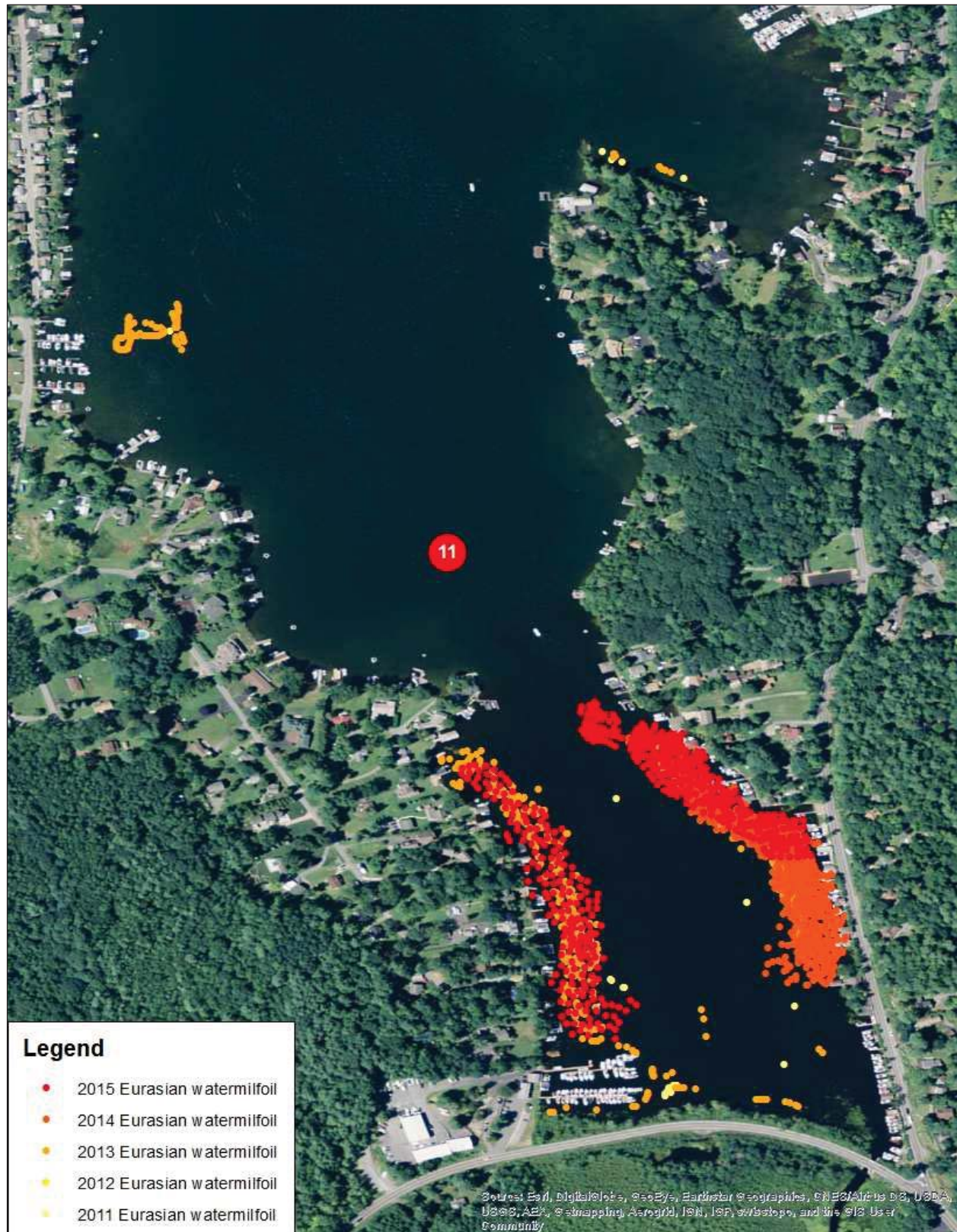
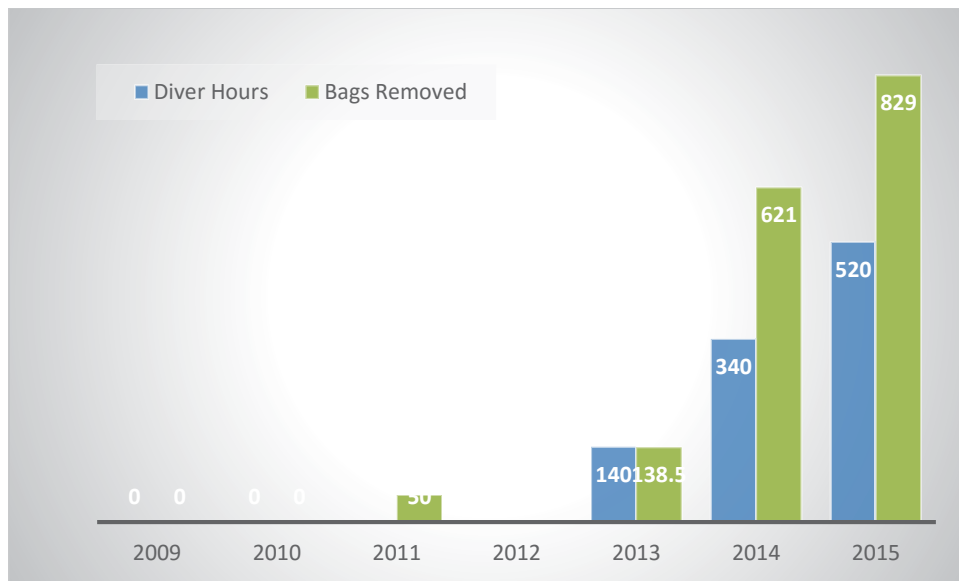
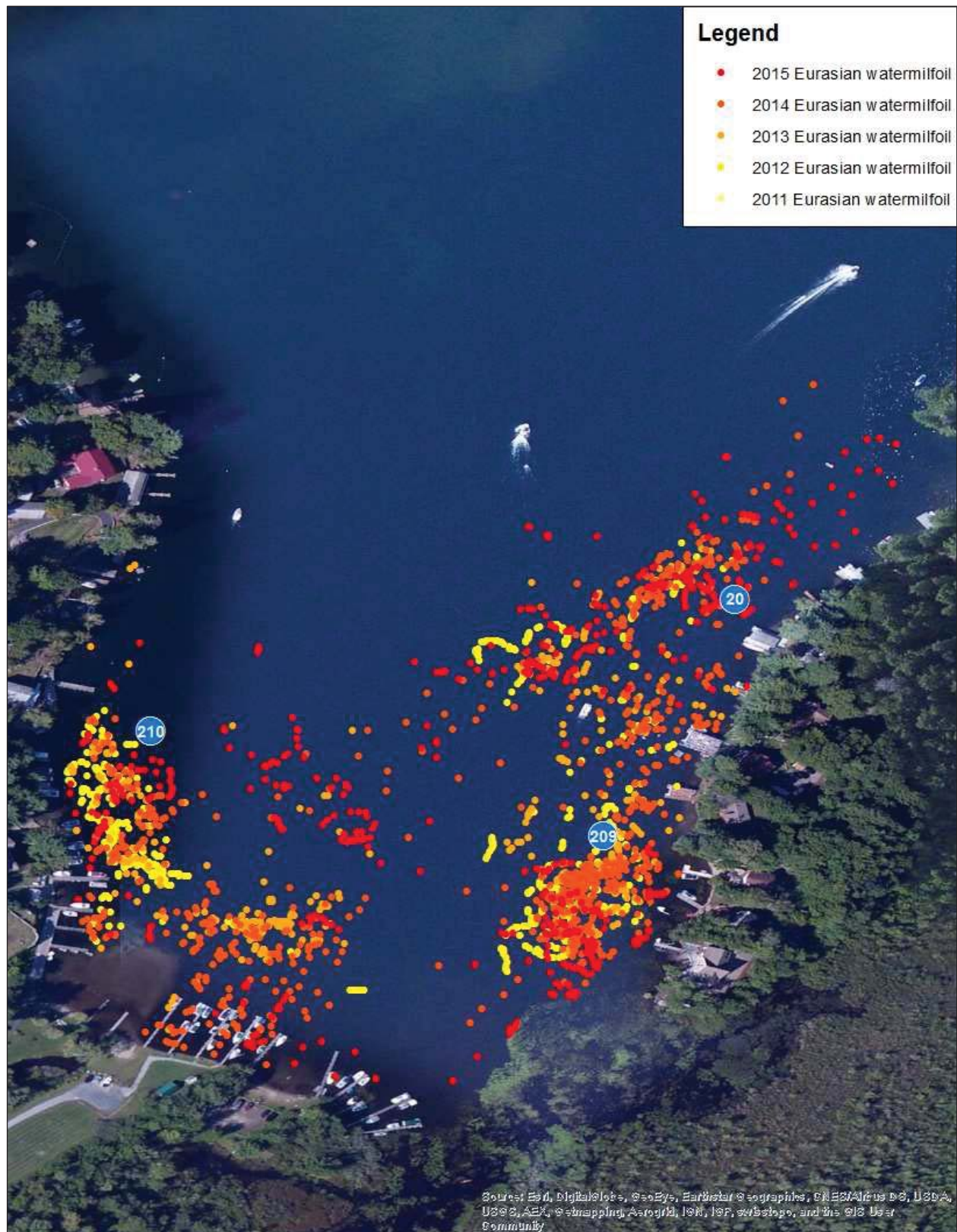


Figure 4: AIM bag totals and diver hours worked from Warner Bay since 2009



Key Points:

- Warner Bay was the most productive bay in terms of bag totals in 2015.
- The mapped growth in this bay totals 23.35 acres and yielded 63.75 bags/acre in 2015.
- This bay will remain the top priority in terms of problematic density in 2016.
- With the progress made in Dunhams and Harris Bays in 2015, more hours can be diverted to Warner Bay in future operations.

Huddle Bay (LGPC sites 20,209,210)

Huddle Bay after site reconfiguration (Site 20)

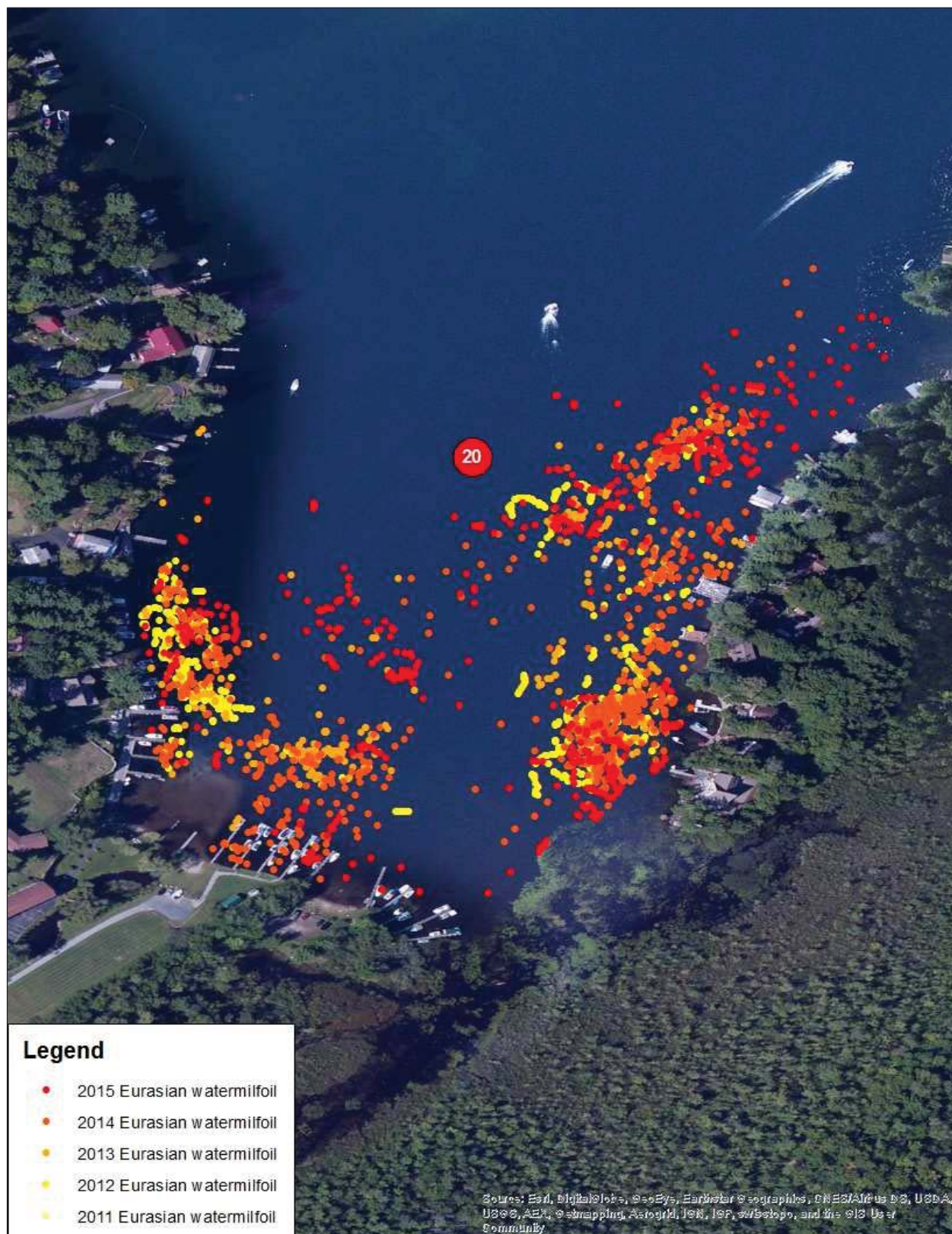
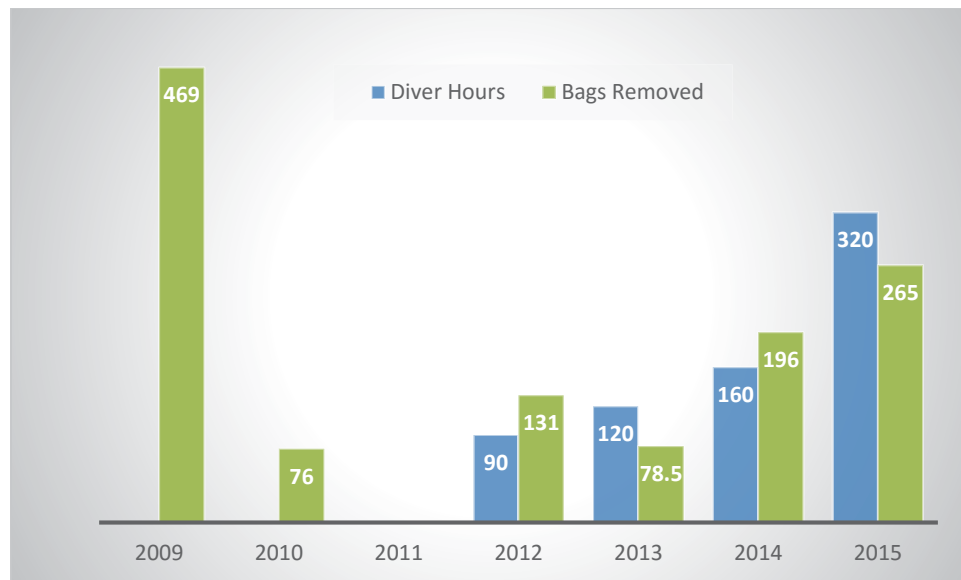


Figure 5: AIM bag totals and diver hours worked (hours pre-2012 unavailable) from Huddle Bay since 2009 (2012 is representative of only a partial harvest)

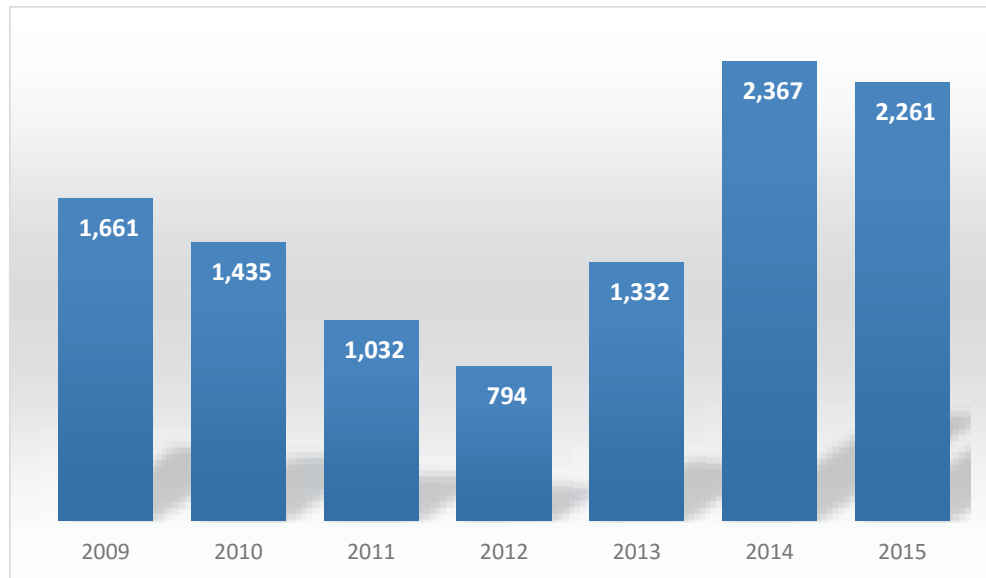


Key Points:

- Huddle saw an increase in harvest total and diver hours worked in 2015.
- The total harvest acreage in this area is 25.6 acres and yielded 10.35 bags per acre.
- While the density of growth in Huddle is minimal it does have a large area in need of swim coverage and harvesting.
- With more frequent harvests in 2016 fewer diver hours will be needed to manage Huddle Bay, likely 240.

Summary

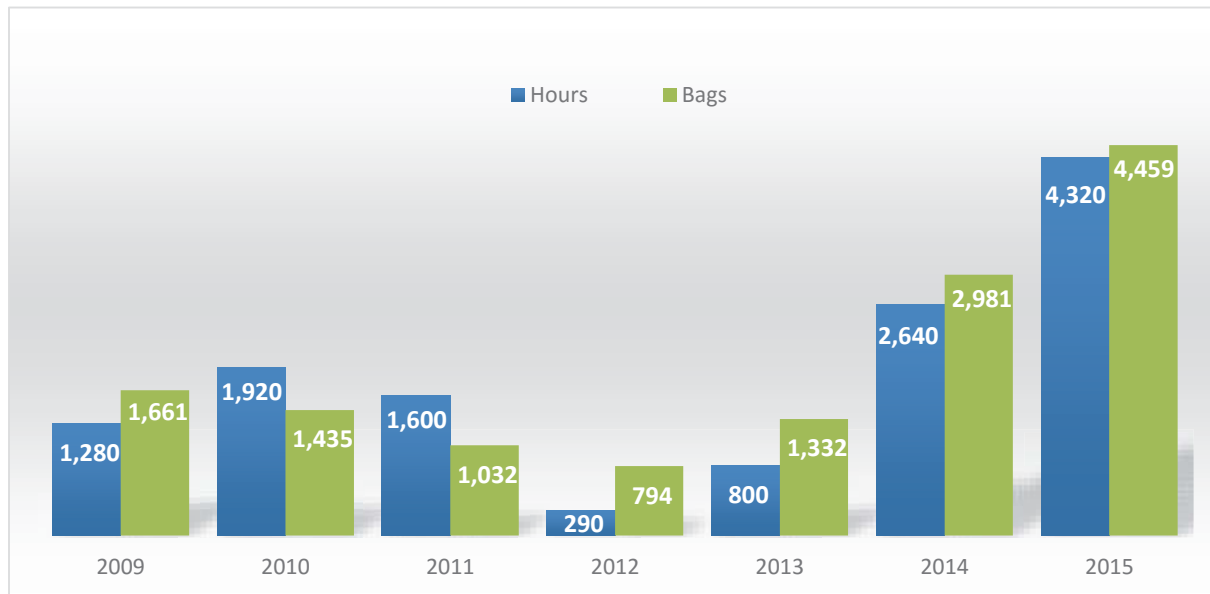
Figure 6: AIM harvest totals (bags removed) under FUND/LGA contracts since 2009 on Lake George



In 2015 the Fund for Lake George hired AIM for a total of 20 work weeks with a three person crew, the same as in 2014. In 2015 these weeks were committed to double crews (six person teams) to more effectively cover large areas in the big bays being harvested. The Lake George Association contracted with AIM for an additional 8 weeks with three person crews. These weeks augmented the existing plan of operations under the FUND project. In the end, a total of 2,261 bags were harvested in 2015 via these contracts. This was a decrease from 2014 bag totals by 106 bags.

Project recap and recommendations

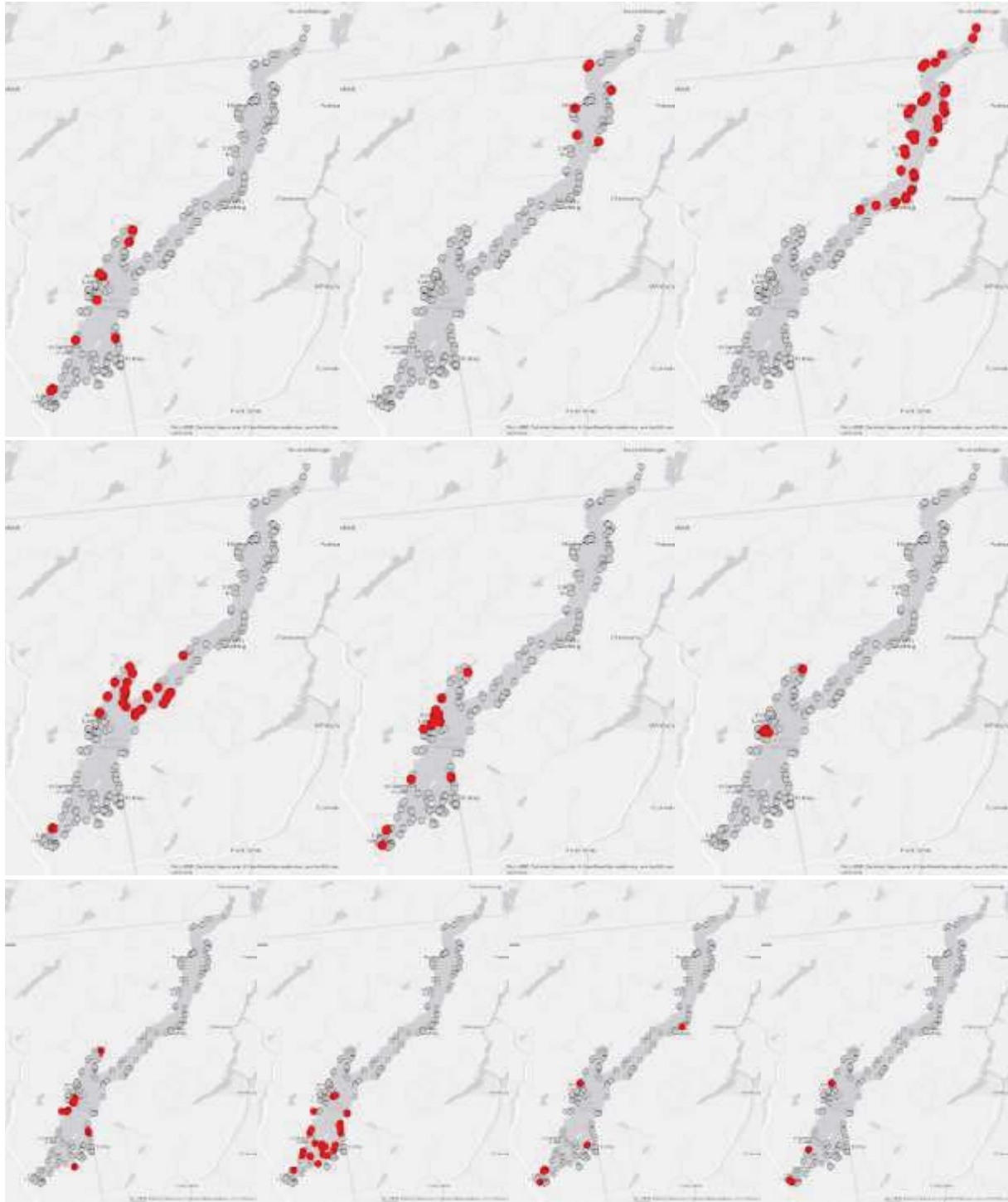
Figure 7: Diver hours worked vs. bags of EWM harvested by year on Lake George from all AIM contracts



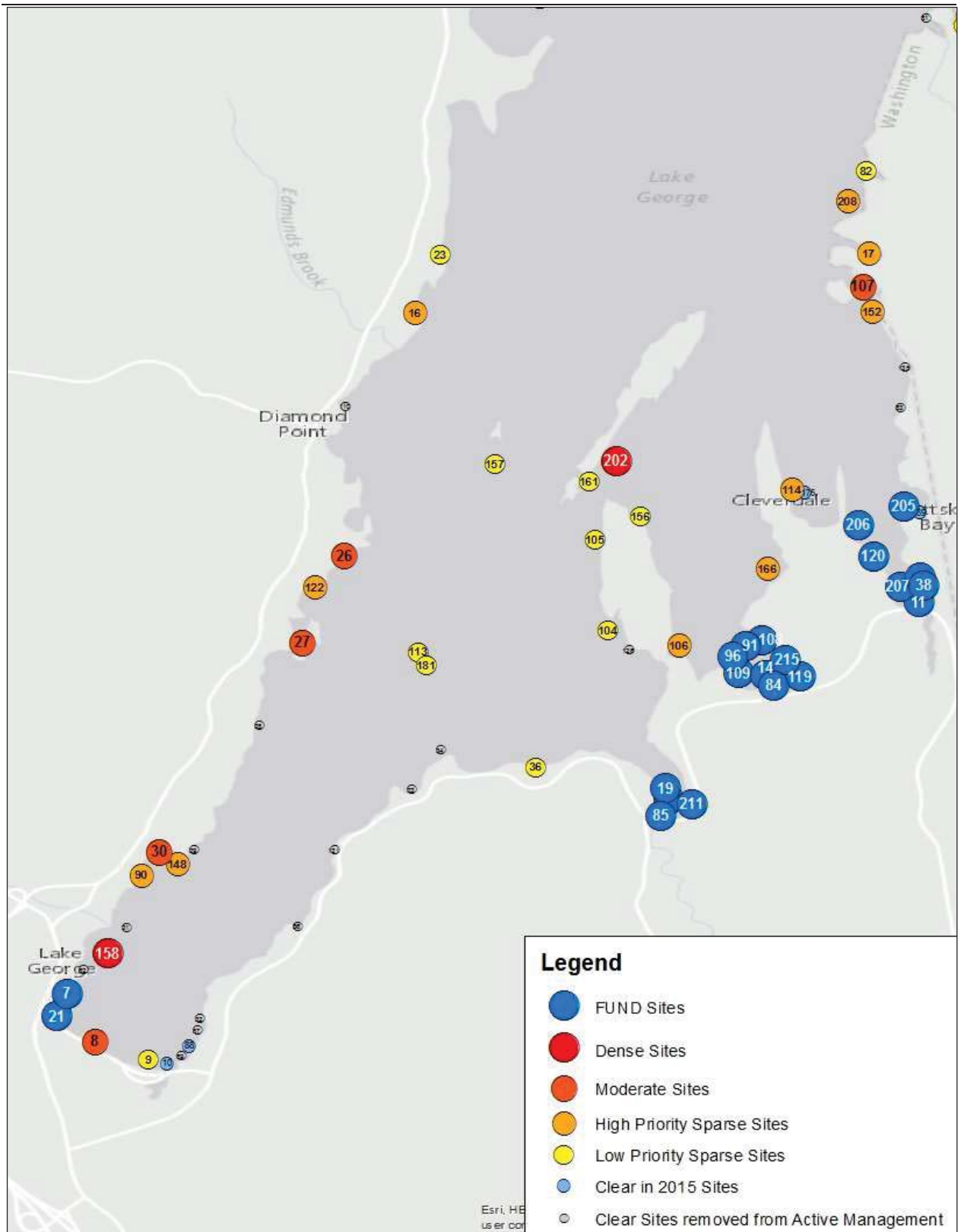
- In future EWM management operations on Lake George, strategies need to promote frequent re-picks of priority areas. A productive site (Dense, Moderate) should not be left un-picked for more than 2-3 weeks after a first full harvest.
- 2015 revealed new sites with significant EWM growth. Some existing sites had expanded areas with EWM growth. The increased man-hours committed in 2015 served to hold things in check lake-wide. Some areas did not receive any harvesting management. Others were dramatically reduced (multiple harvests) and the remainder were held in check (single harvest).
- With the reconfigured site inventory AIM can fully integrate all operations from all contracts into one cohesive strategy. A three crew operation working all known sites in all areas of the lake will be a better allocation of resources for 2016.
 - This would entail three (3 person crews) each assigned to a zone of the lake
 - The lake would be divided into three zones (Northern, Middle and Southern)
 - Each crew would work the sites in its zone ensuring that any area of priority receives a regular re-harvest
 - Crews can team up to tackle large sites to reduce them more rapidly
 - This strategy is a more efficient way to address the rapid re-growth issue.

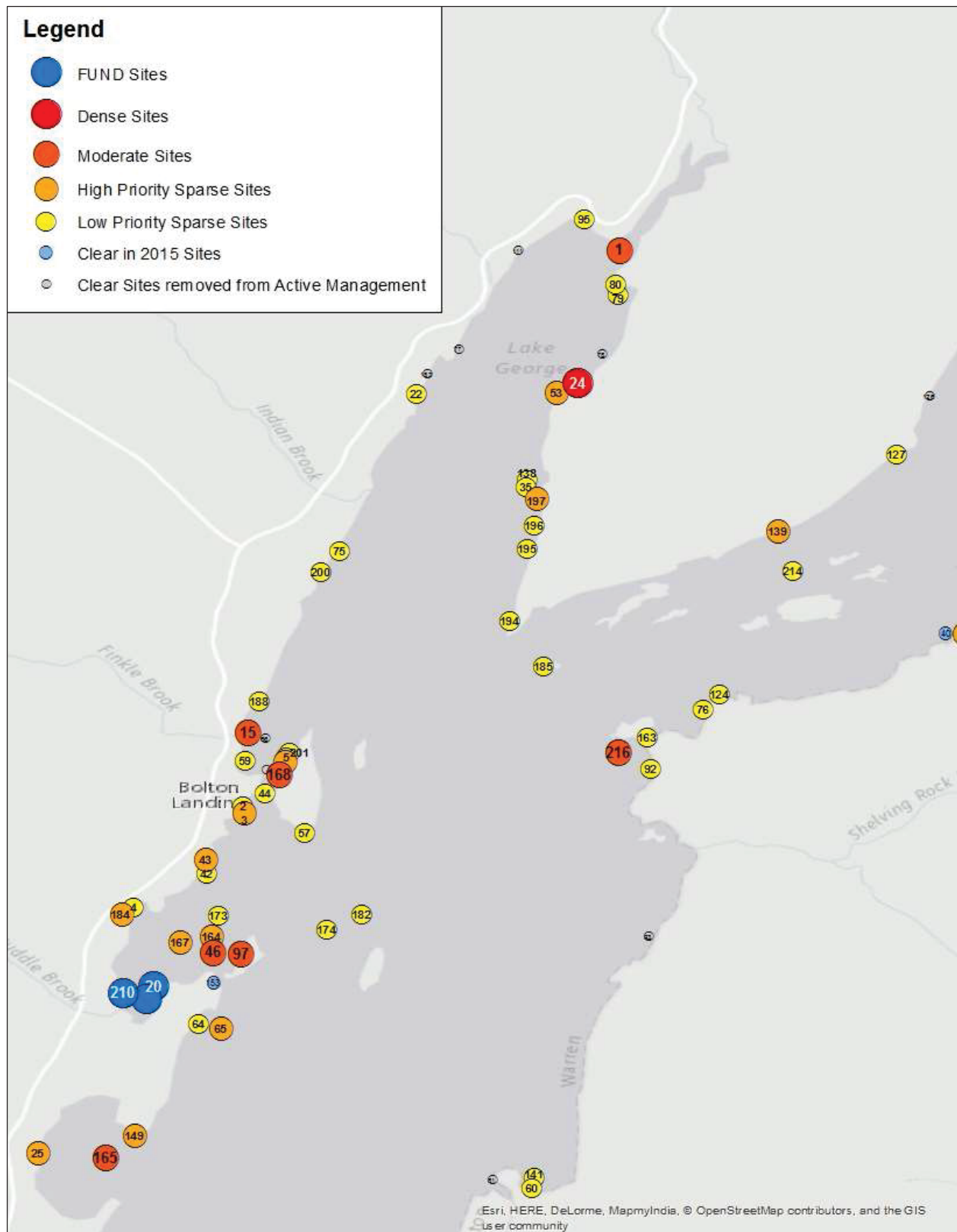
Appendix A: LGPC Sites harvested by 2 week period

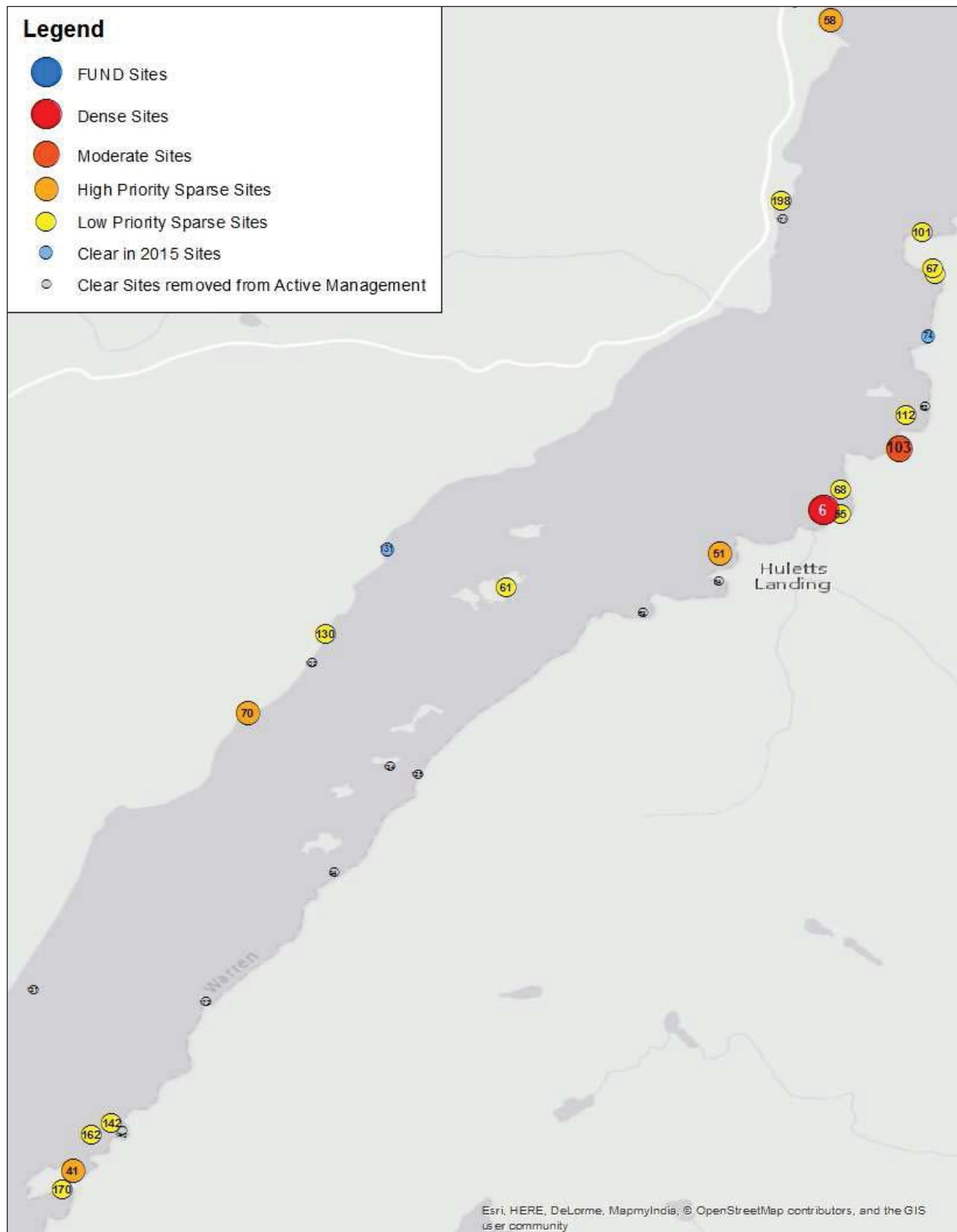
Each map displays which sites had EWM harvested by the LGPC crew every two weeks. The first map displays the weeks of 6/1/15 and 6/8/15 and the remaining maps proceed in order over the course of 2015 operations ending 10/20/15.

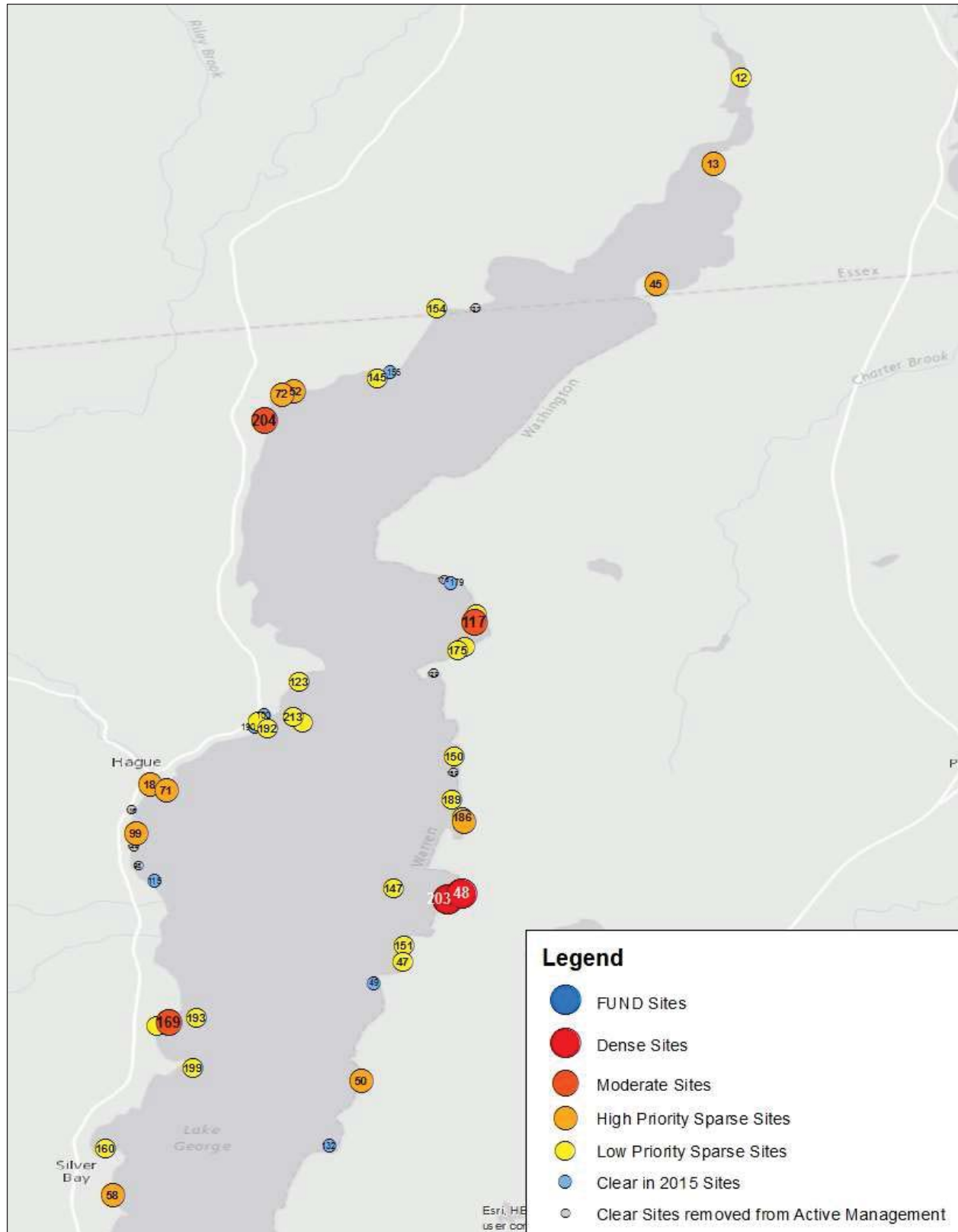


Appendix B: Site maps by zone









Appendix C: Site Inventory Changes

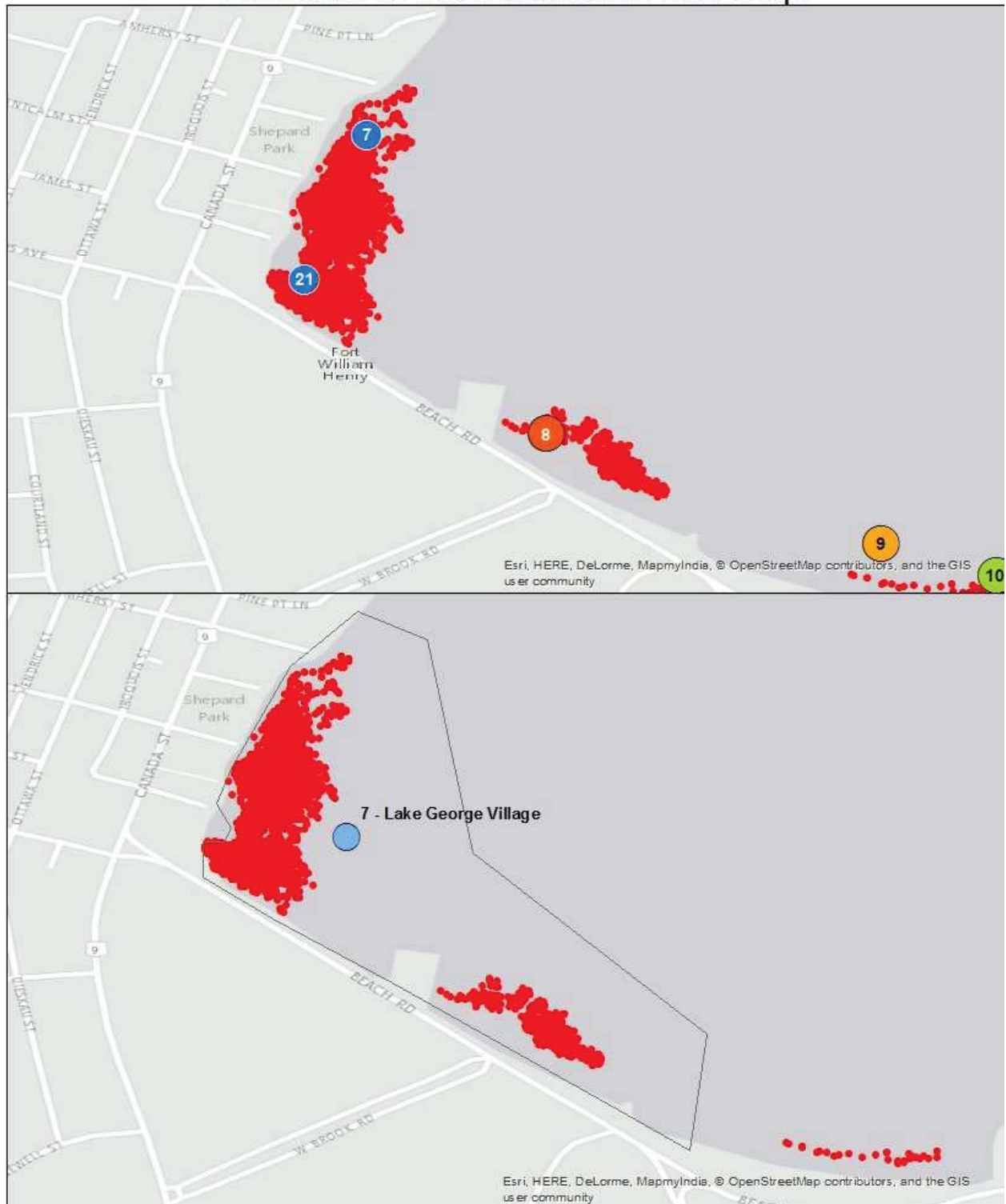
Recommended changes to the site inventory

In several cases AIM has noticed that sites are clustered together in areas where differentiating between specific areas is unnecessary. In order to simplify the site inventory AIM would recommend the following changes. In the maps that follow one map will show a cluster of sites in an area (the current inventory status) and another will show the recommended change. In the changed map, there will be typically one site shown with a boundary indicating the area the dive crew must cover when working that site. This boundary will help crew leaders in the field with determining their work area. Other important sites will also be assigned boundary lines and AIM crew leaders will have these maps to work off of in the field.

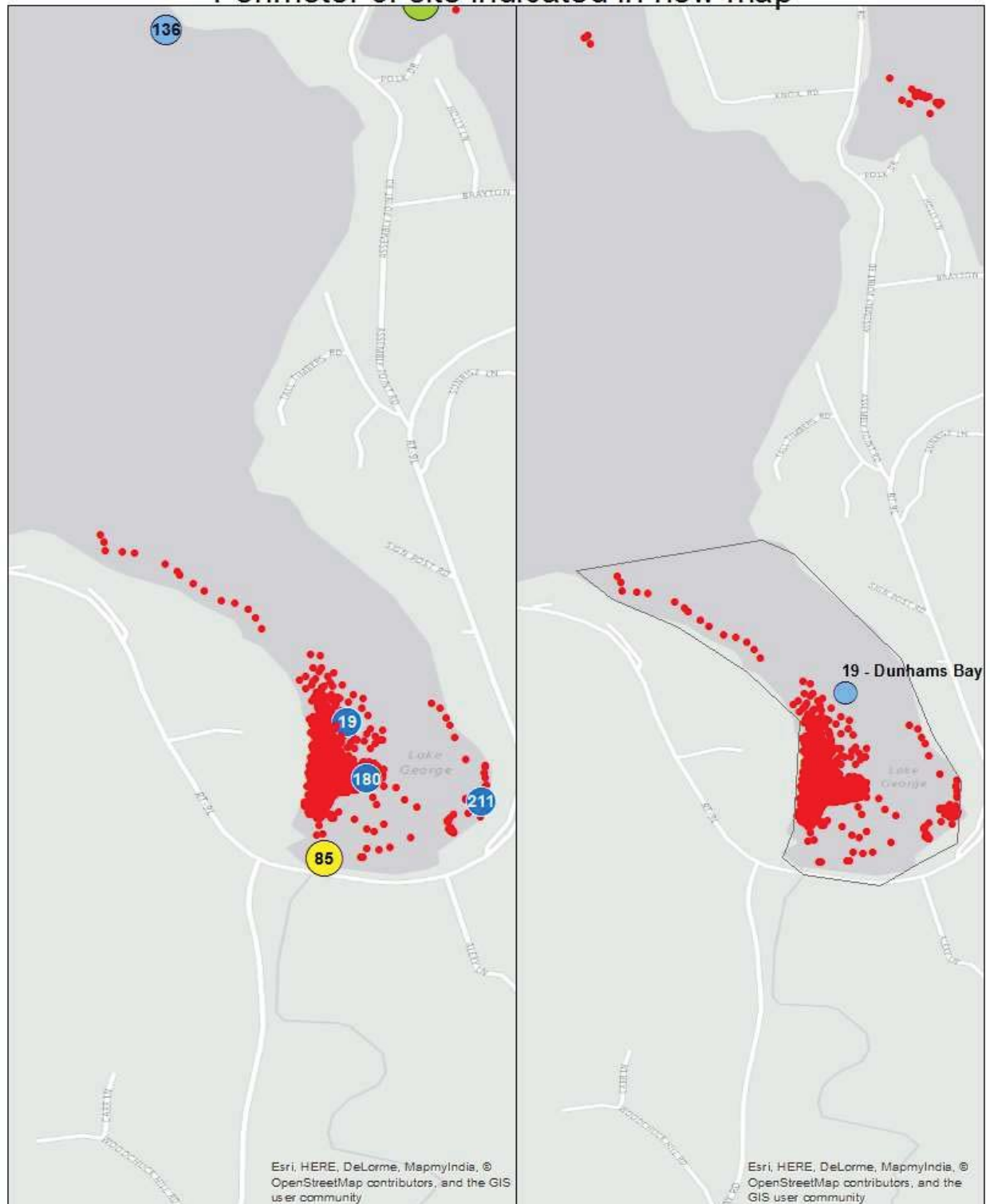
**The red area in each map indicates any EWM harvested by AIM between 2011 and 2015.

Lake George Village site reconfiguration

Perimeter of site indicated in new map

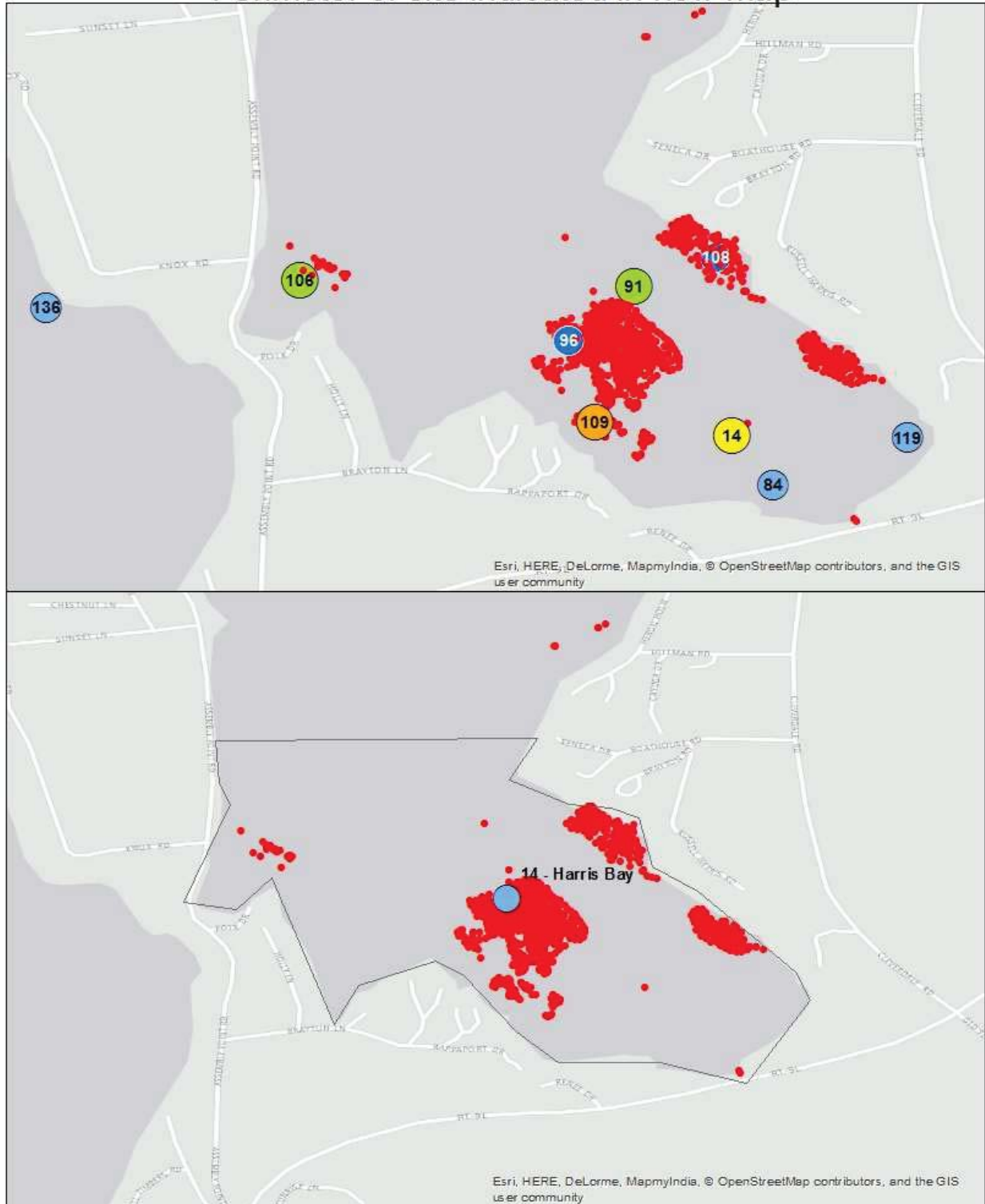


Dunhams Bay site reconfiguration Perimeter of site indicated in new map

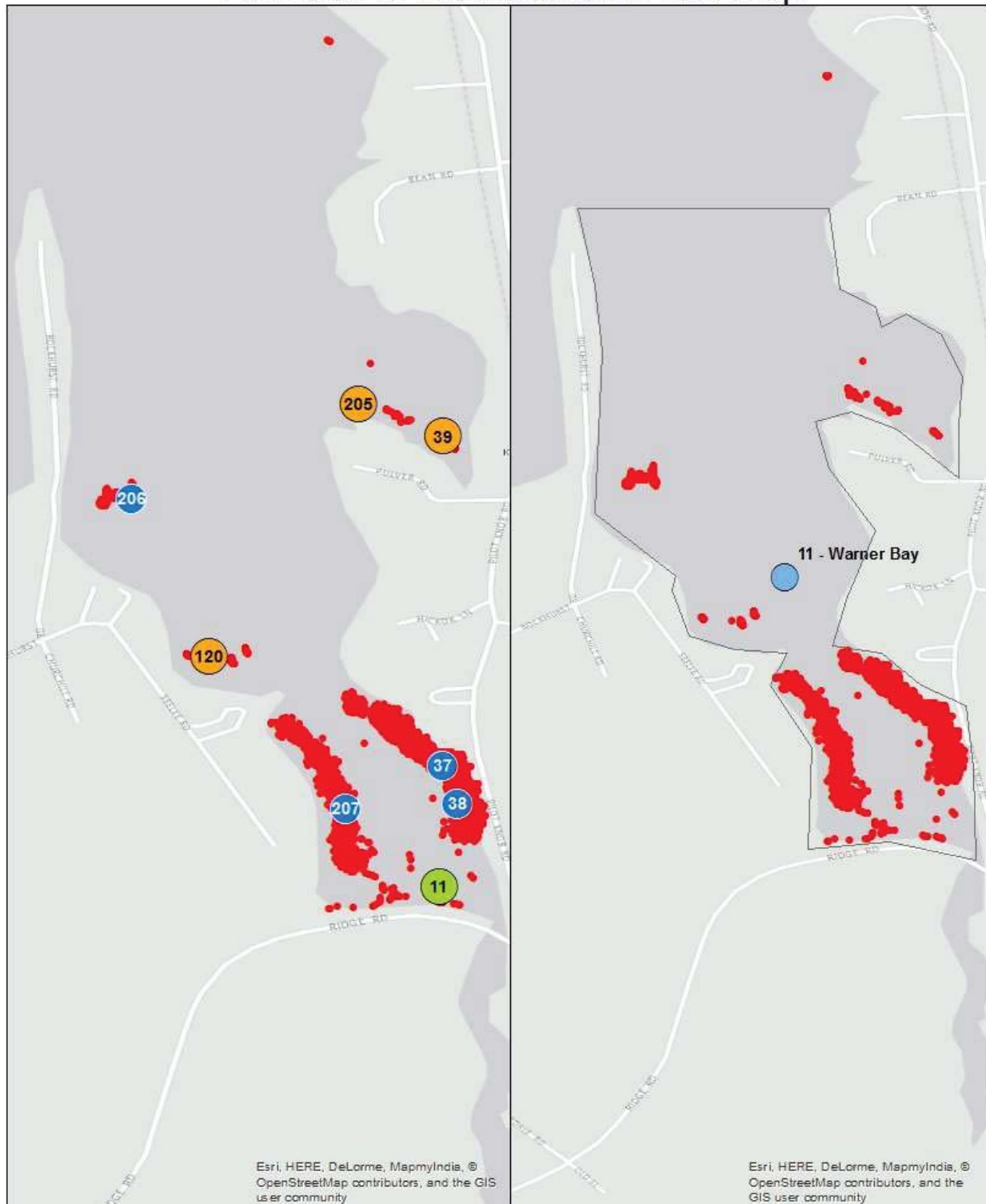


Harris Bay site reconfiguration

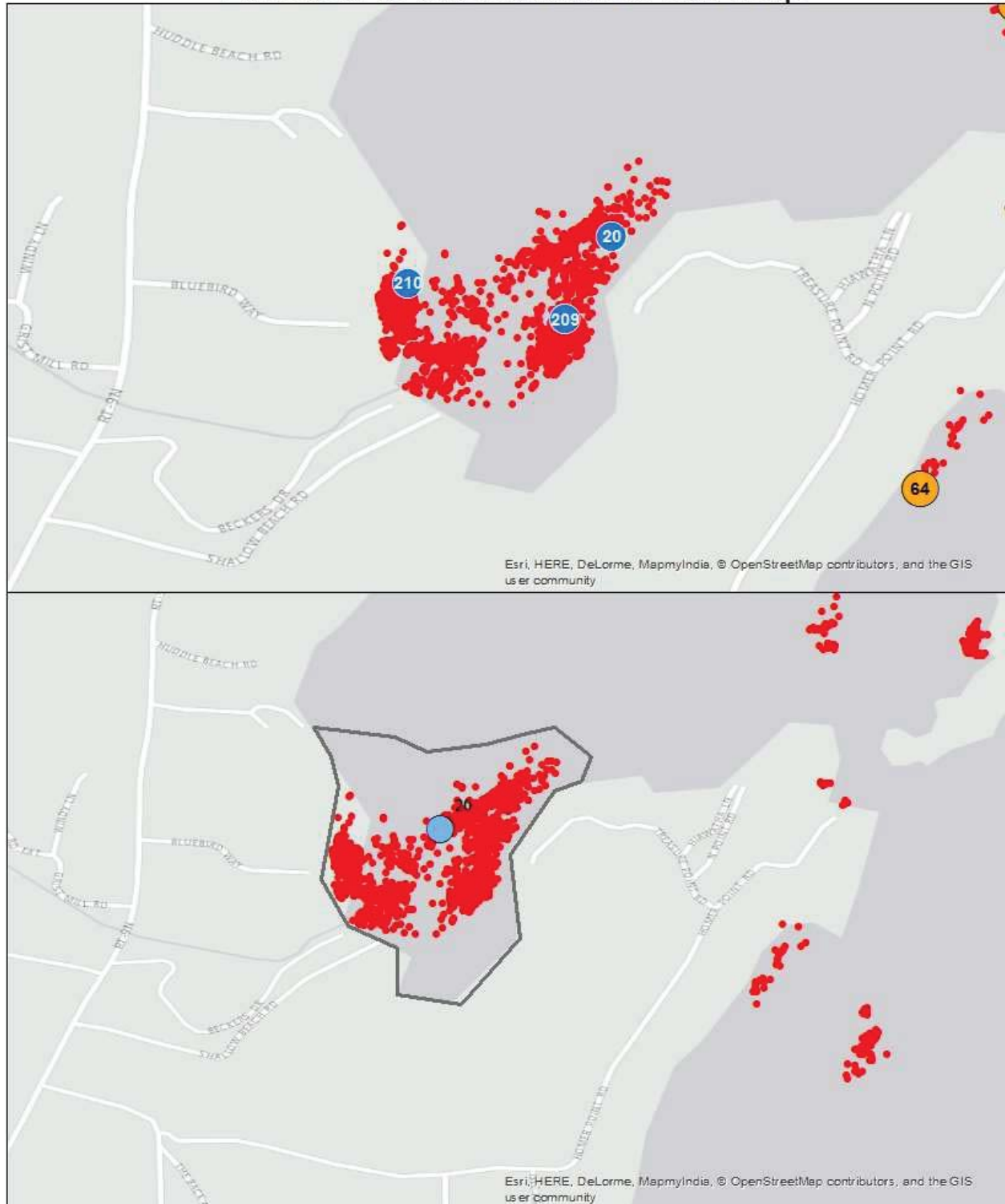
Perimeter of site indicated in new map



Warner Bay site reconfiguration Perimeter of site indicated in new map

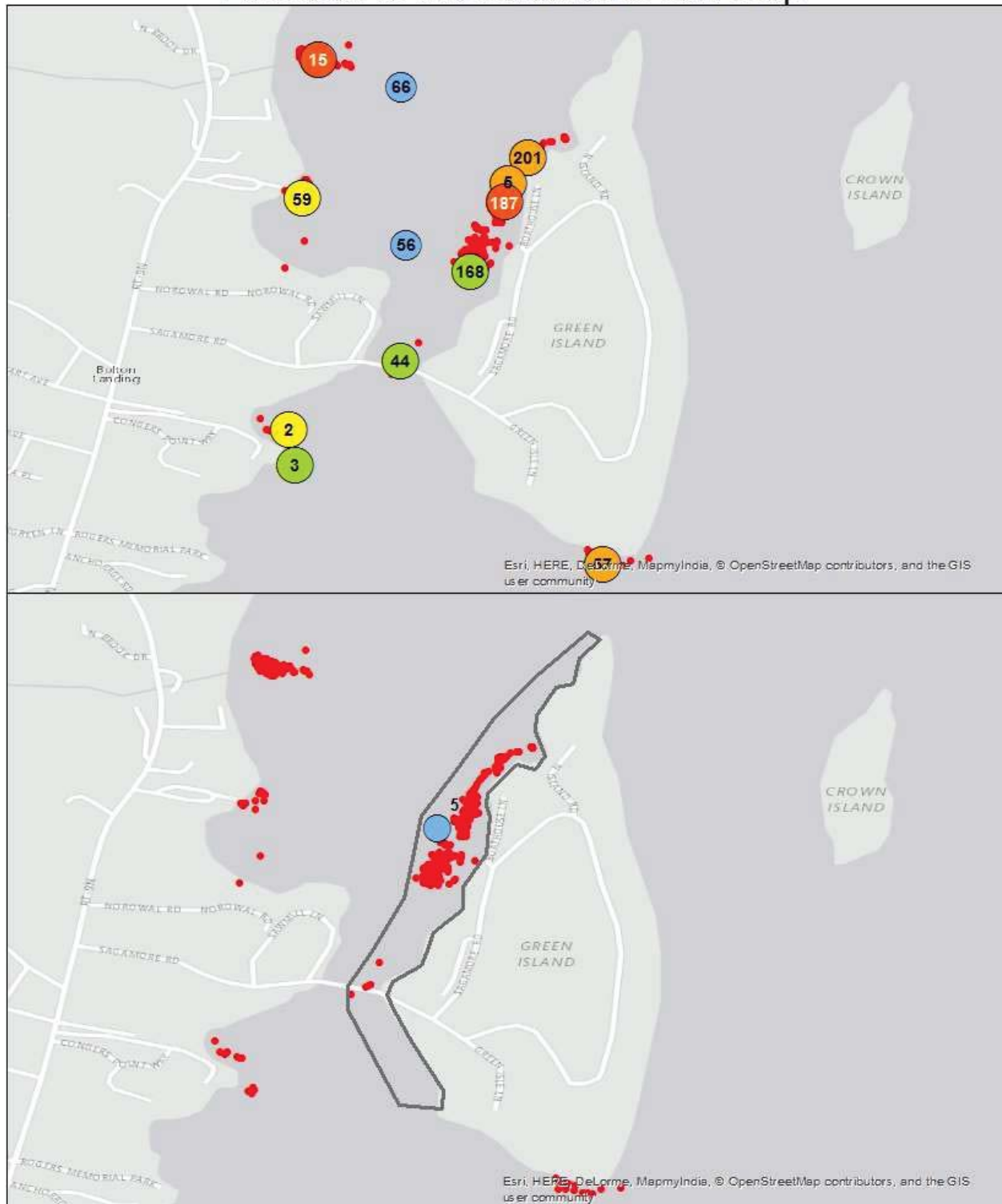


Huddle Bay site reconfiguration Perimeter of site indicated in new map



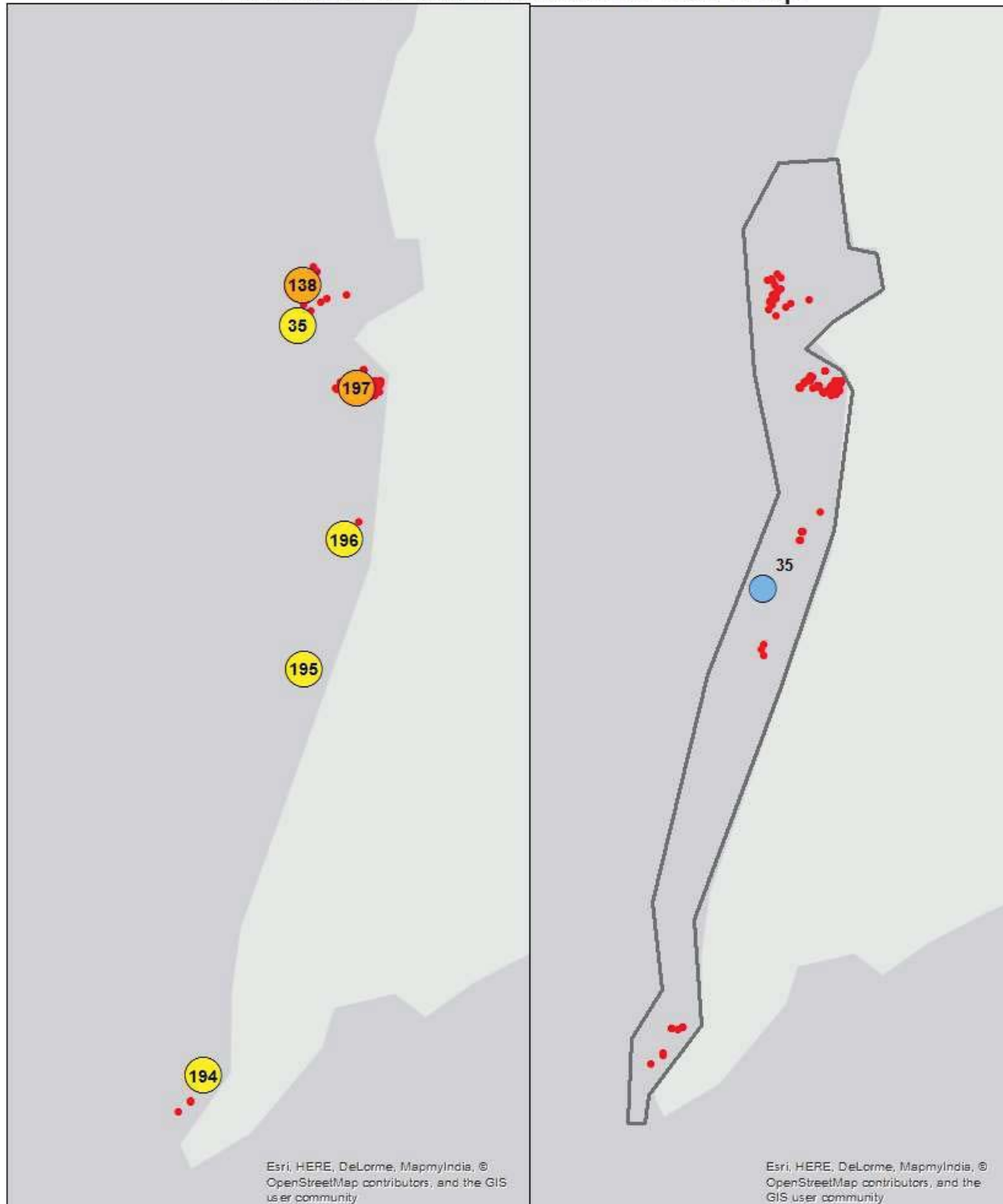
Sawmill Bay W Shore of Green Island site reconfiguration

Perimeter of site indicated in new map



Northwest Bay - Fan Point to Montcalm Point site reconfiguration

Perimeter of site indicated in new map



Adopting the above changes to the site inventory would eliminate 31 redundant sites. These areas would no longer necessitate specific visits from crews but would be enveloped into one large area. AIM crews work more effectively when assigned a large area rather than specific site locations. This change will also simplify data collection. Harris Bay will simply be the entire bay rather than eight specific locations in the bay. The crews will still have access to the GPS data for the site inventory but they will instead rely on the map illustrating the boundary of the area they need to work and the history of milfoil growth there. This will also take into account the likelihood that outlying EWM will be found around existing problem sites. Furthermore, the FUND managed sites will no longer need to be separately categorized so the new site list for Active Management Sites would look as follows:

The new dense and moderate site table

Site Number	Site Name	2015	2014
6	"Sunset Bay"	261.00	44.00
7	"Lake George Village"	840.00	632.00
11	"Warner Bay"	829.00	627.68
14	"Harris Bay"	571.00	856.55
20	"Huddle Bay"	265.00	195.99
24	"NW Bay – Bay between Fan and Bear Point"	18.00	0.00
48	"Gull Bay"	0.00	0.00
158	"South English Brook"	0.00	0.00
202	"Long Island SE"	0.00	0.00
203	"Gull Bay South Cove"	0.00	0.00
1	"Northwest Bay"	310.50	44.00
5	"West shore of Green Island"	170.84	36.75
15	"Sawmill Bay – outflow of Finkel Brook"	166.00	14.25
19	"Dunham's Bay"	50.00	122.51
26	"Bay SW of Cannon Point"	269.00	7.00
27	"Bay NW of Cooper Point"	8.00	0.00
30	"North Tea Island Bay"	57.00	48.00
46	"Leontine/Clay Shoal"	20.00	6.21
97	"West Side Clay Island"	95.00	0.00
103	"North of North Meadow Point"	0.00	2.13
107	"Elizabeth Island"	123.00	16.16
117	"Glen Bernie – Blairs Bay"	64.00	43.00
165	"Basin Bay Shoal"	5.00	0.13
169	"Arcady Bay"	30.00	10.25
204	"Rogers Rock Campground"	24.00	63.50
216	"Shoal N of Hens and Chickens Islands"	0.00	0.00

The new high priority sparse site table

Site Number	Site Name	2015	2014
3	"Bolton Bay SW of Conger's Point"	4.00	0.00
13	"Mossy Point Boat Launch"	2.75	1.00
16	"Middleworth Bay"	9.25	26.25
17	"Echo Bay – East End"	2.25	5.50
18	"Hague Boat Launch"	10.00	54.50
25	"Basin Bay – North tributary"	12.50	0.01
41	"Paradise Bay"	2.00	0.16
43	"Bolton Bay"	2.50	0.00
45	"Tiroga Point Channel"	0.00	3.00
50	"Clark Hollow Bay Brook"	8.25	9.50
51	"Eichlerville Bay"	6.00	0.71
52	"Rogers Rock Park Beach"	2.25	0.02
53	"Southwest Tongue Mountain (Clay Bay)"	2.50	0.25
58	"Silver Bay"	3.00	6.39
65	"W of Three Brothers Island"	8.00	28.58
70	"West Halfway Island"	2.00	0.01
71	"Hague Brook"	13.50	0.00
72	"South Cooks Bay"	4.25	4.00
73	"Tributary in Dark Bay"	2.50	0.00
90	"South Tea Island Culvert"	10.00	19.00
99	"Holman Hill Creek"	2.00	0.05
114	"Sandy Bay – West Side"	18.25	0.00
122	"Still Bay"	5.25	0.00
128	"Bay North of Commission Point"	3.00	2.62
139	"NE Little Harbor Island"	2.75	0.00
148	"West of Tea Island"	8.00	0.00
149	"Fish Point"	5.00	4.75
152	"SE Elizabeth Island Channel"	4.50	2.68
164	"North Leontine Shoal"	7.25	1.21
166	"Harris Bay – Shore Acres"	2.25	1.17
167	"Clay Island SW"	14.00	0.00
184	"Bay View Marina"	5.00	1.34
35	"NW Bay – Bay South of Fan Point to Montcalm Pt"	5.60	7.16
208	"Bay S of Barber Bay"	4.00	0.34
217	"Skippers Jib Island"	0.00	0.00

The new low priority sparse site table

Site Number	Site Name	2015	2014
2	"Bolton Bay at Conger's Point"	0.50	0.43
4	"Huddle Bay NW of Sweetbriar Island"	0.00	0.35
9	"Million Dollar Beach"	0.00	3.00
12	"Lake George Outlet"	0.24	0.00
22	"Shadow Bay"	0.75	0.27
23	"Lake George Yacht Club"	1.50	0.08
36	"Bay E of Dark Bay"	0.50	0.01
42	"Bolton Bay"	1.00	0.00
47	"Smith Bay"	1.00	0.26
55	"Indian Bay, Hulett's Landing"	1.00	0.31
57	"South end – Green Island"	0.14	1.77
59	"Hondah Cottages"	0.75	0.15
60	"Camp Andrew Bay"	1.00	0.00
61	"Moonlight Bay, Harbor Island"	0.56	1.08
64	"Three Brothers Island"	1.00	2.47
67	"Bluff Head Creek"	0.04	0.00
68	"Rock Dunbar Island"	0.68	0.74
75	"Bell Point"	0.50	0.30
76	"South Shelving Rock Point"	1.25	0.00
79	"Shore South of Bear Point"	0.26	0.00
80	"Bay South of Bear Point"	0.50	0.03
82	"Barber Bay"	1.50	0.00
92	"Bay East of Hens and Chickens"	0.01	0.00
95	"N.W.B. Head of Bay"	0.13	0.00
101	"Brook North of Green Point"	0.02	0.02
104	"Assembly Point/West Bay"	0.17	0.10
105	"Assembly Point/Northwest"	0.08	0.00
112	"Whale Rock, East of Agnes Island"	1.00	0.00
113	"Diamond Island"	0.75	0.00
118	"Blairs Bay, North"	0.03	0.02
123	"West Flirtation Island"	0.12	0.26
124	"North Shelving Rock Pt."	0.50	0.00
127	"SW French Point"	1.00	0.01
130	"South Trib 5 Mile Mountain Brook"	0.03	0.04
141	"Camp Andrew Bay, West"	1.50	0.00
142	"S. of Fox Island"	0.50	0.00

143	"S. of Bluff Head Creek"	0.25	0.15
145	"Juniper Island"	0.50	0.32
146	"Blairs Bay-South"	0.09	0.00
147	"Gull Island"	0.07	0.05
150	"East Rock Bros. Islands"	0.04	0.20
151	"Indian Point"	0.13	0.00
154	"Roger's Slide"	0.15	0.11
156	"NE cove Assembly Point"	1.25	4.18
157	"SE Canoe Island"	0.04	2.84
160	"Van Buren Bay – S"	0.07	0.00
161	"East Speaker Heck Island"	0.25	0.10
162	"North Hazel Island"	0.50	0.00
163	"14 Mile Island"	0.50	0.00
170	"Red Rock Bay"	1.00	0.08
173	"Bolton Bay 2"	1.00	0.28
174	"Bolton Bay 3"	0.17	4.66
175	"Blair's Bay South Shore"	0.03	0.05
177	"Arcady Bay Docks"	0.11	0.13
181	"South Point Diamond Island"	1.00	0.00
182	"40-Acre Island"	0.03	0.06
185	"Oahu Island West"	1.75	0.65
186	"Dark Bay North #2"	0.07	0.03
188	"Braley Point"	0.13	0.00
189	"Shore N. of Dark Bay"	0.01	0.05
191	"Ruah Boathouse"	0.46	0.51
192	"South Temple Knoll Island"	1.00	0.57
193	"Arcady Bay Shoals"	0.49	0.15
198	"Scotch Bonnet Island"	0.07	0.15
199	"Snug Harbor South"	0.17	0.08
200	"South Bell Point"	0.75	1.32
212	"Asas Island"	0.00	1.00
213	"Small Island East of Asas (Name?)"	0.00	1.25
214	"Gourd Island"	1.00	0.00

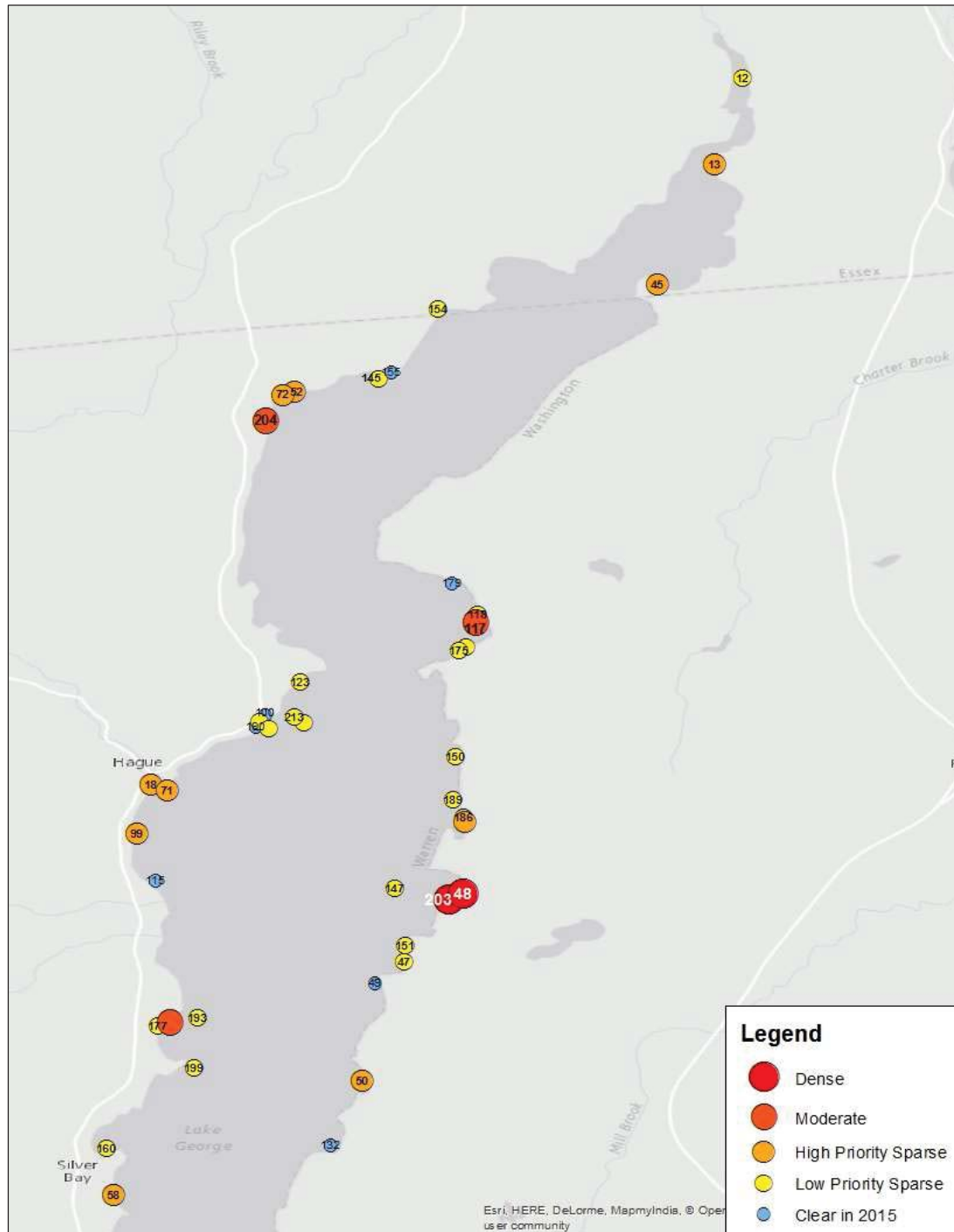
The new clear sites list for sites found to be clear in 2015

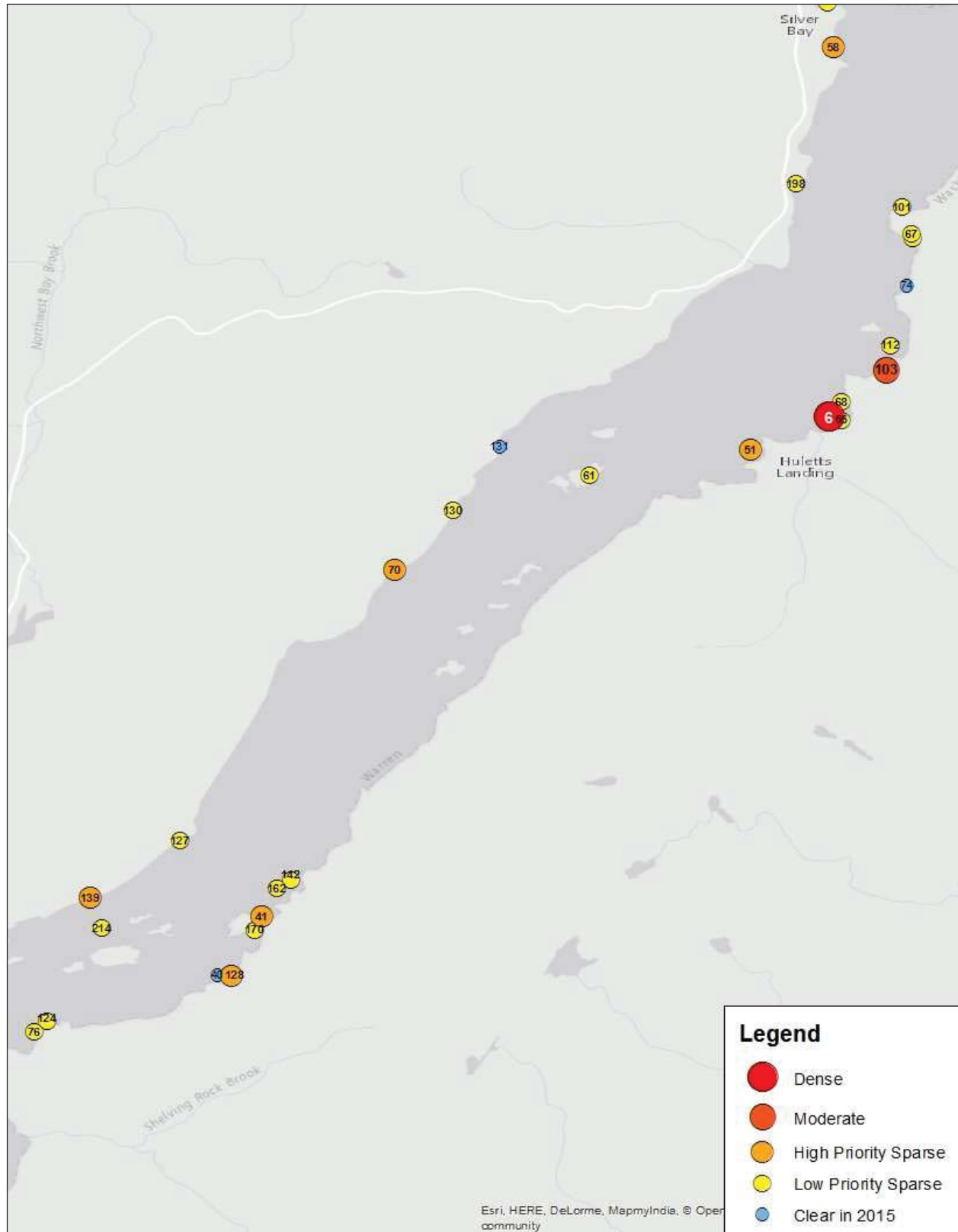
Site Number	Site Name	2015	2014
10	"East Brook Delta"	0.00	0.00
40	"Bay South of Red Rock Bay"	0.00	0.03
49	"South of Burnt Point"	0.00	0.00
74	"Point North of Agnes Island"	0.00	0.01
88	"Crosbyside"	0.00	0.00
100	"Temple Island"	0.00	0.00
115	"Cape Cod Village Bay"	0.00	0.00
131	"North Steere Island"	0.00	0.01
132	"Lamb Shanty Bay"	0.00	0.00
153	"Eye of the Needle"	0.00	0.21
155	"N. Juniper Island"	0.00	0.01
176	"Sandy Bay"	0.00	0.00
179	"Blair's Bay North Shore 2"	0.00	0.00
190	"Shore W of Temple Knoll Island"	0.00	0.00

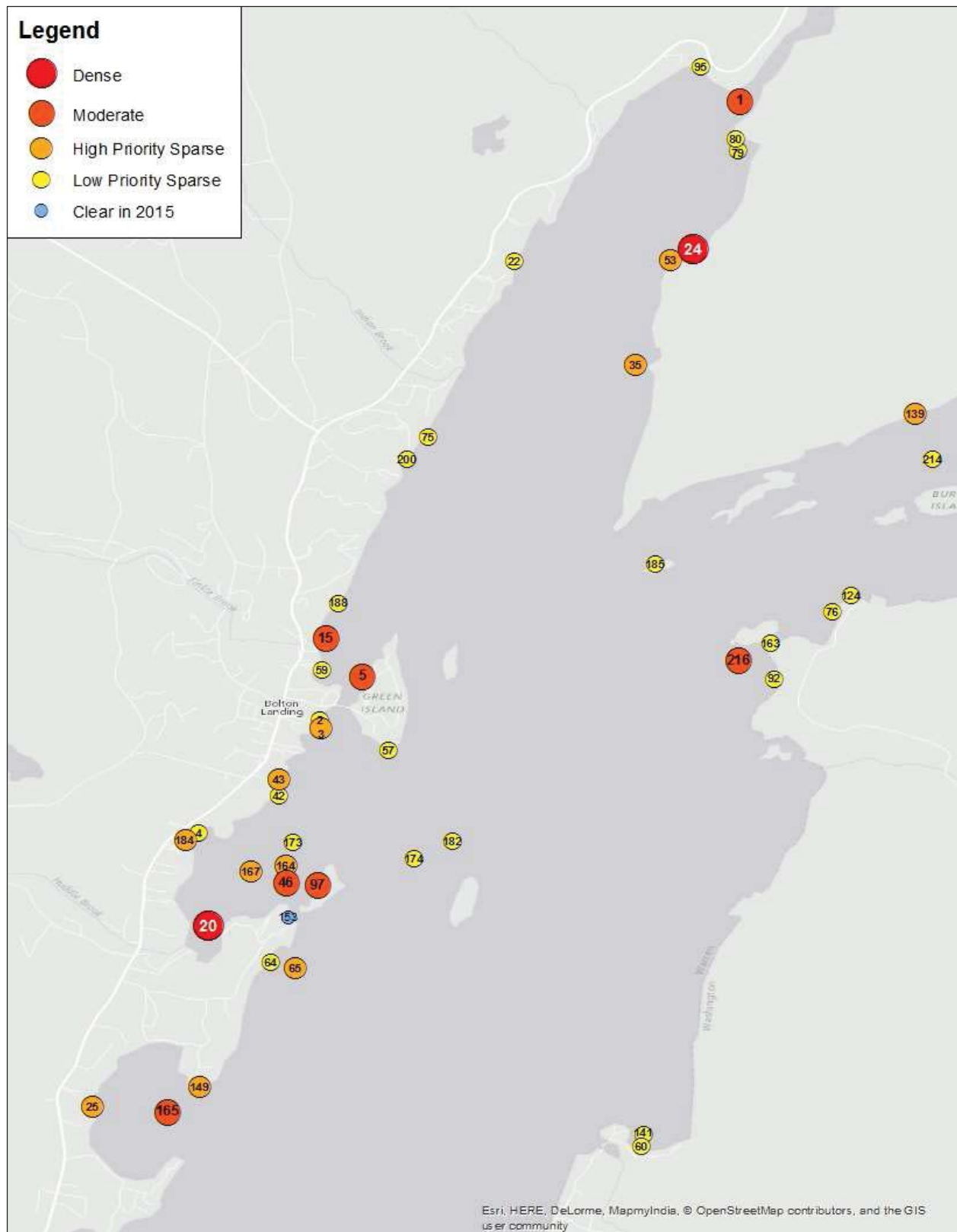
The new site breakdown for active management sites

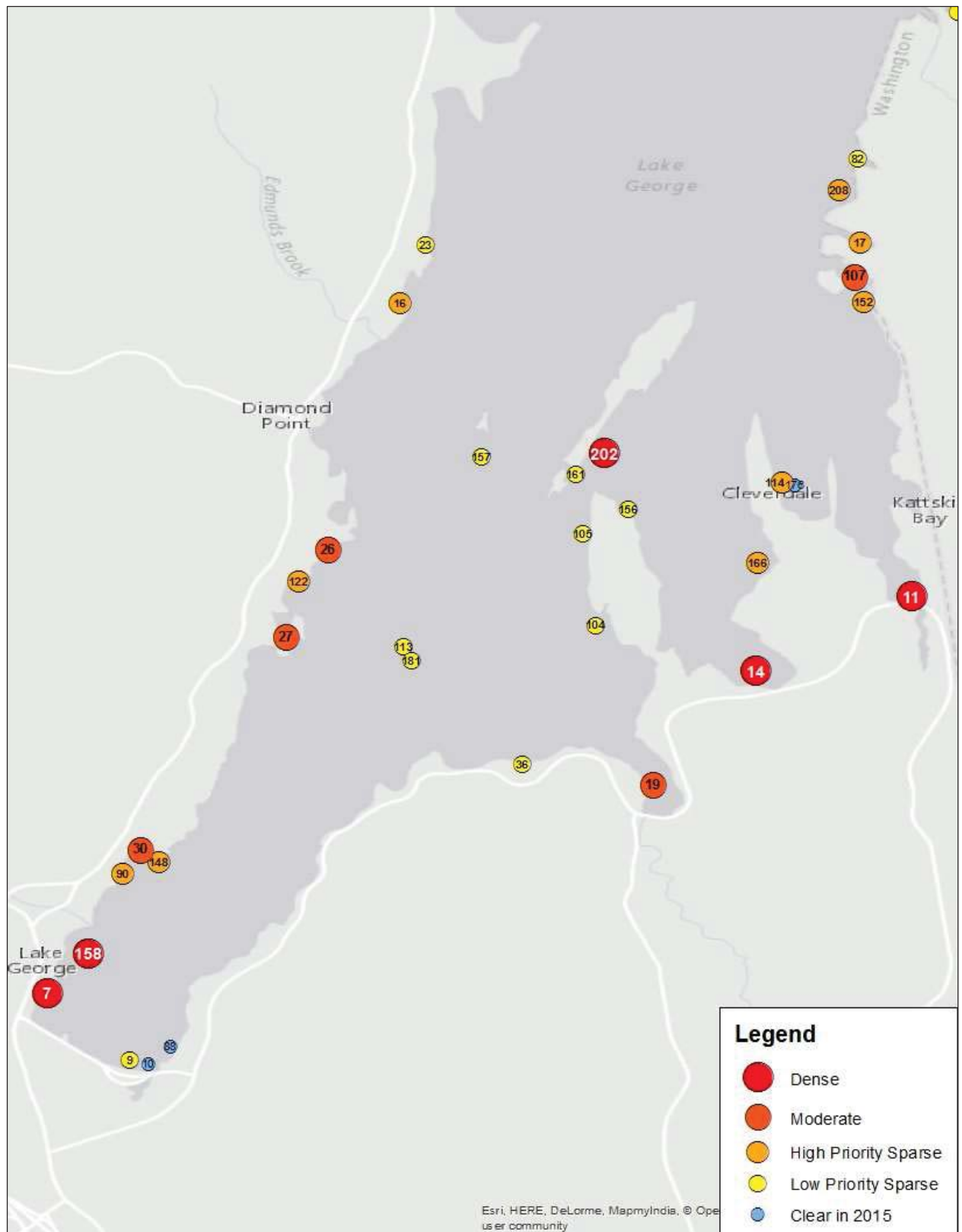
Total Active Management Sites	144
Total Dense Sites	10
Total Moderate Sites	16
Total HPS Sites	35
Total LPS sites	69
Total Clear in need of inspection	14

Therefore, of the 217 sites in the inventory after eliminating sites that had been clear for four seasons and sites that were redundant a total of 144 active management sites remain for the 2016 season. The following maps (ranging North to South) illustrate their location, number and type. To compare these maps to the previous maps see Appendix B.



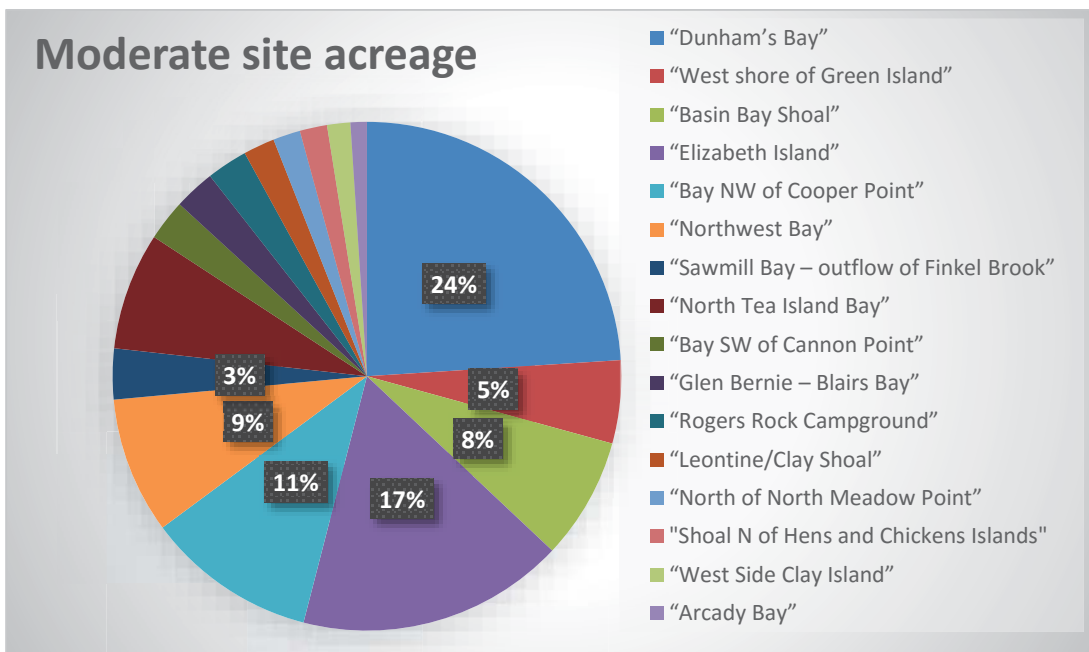
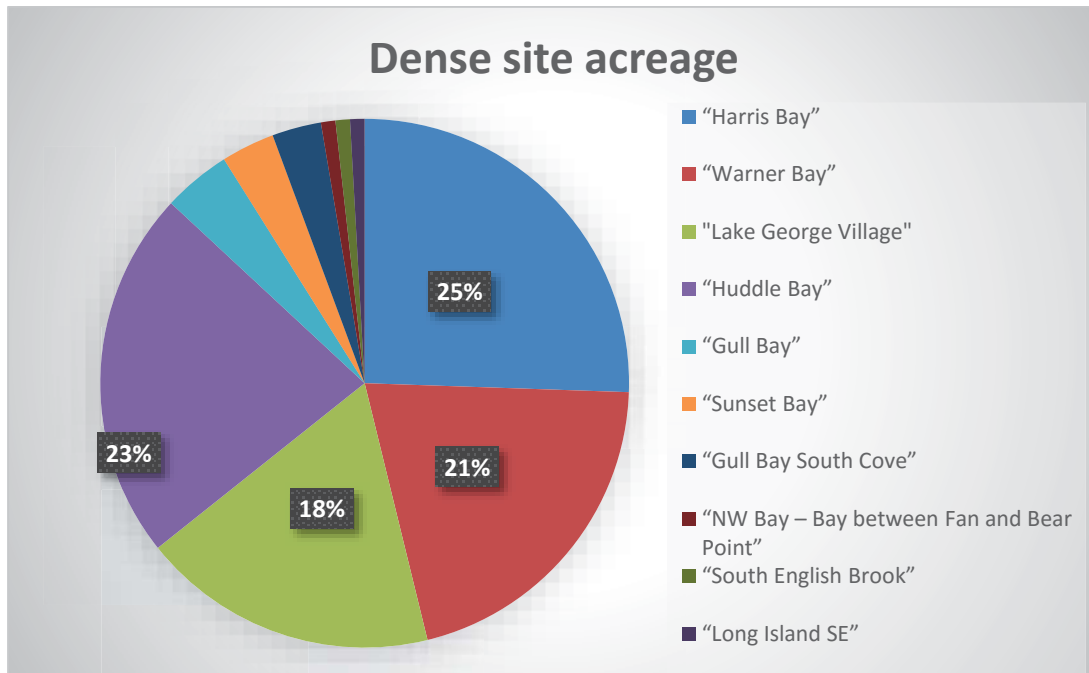






Appendix D: Acreage by Site

One way to look at the concern areas of EWM growth on Lake George is by calculating their area. Each specific site has a defined area that requires inspection during a complete harvest. The actual areas that produce EWM growth are recorded with GPS units during harvests. Using this data we can calculate the specific acreage of affected area in each site. The following charts illustrate the comparison between the acreage of affected area in specific sites.



Area of dense and moderate sites managed and unmanaged

Dense Sites – 113.15 total acres, 26.15 unmanaged in 2015 and 87 managed

Site Number	Site Name	2015 bag total	Acres	Bags/Acre
14	"Harris Bay"	571.00	28.90	19.76
11	"Warner Bay"	829.00	23.35	63.75
7	"Lake George Village"	840.00	20.50	40.98
20	"Huddle Bay"	265.00	25.60	10.35
48	"Gull Bay"	0.00	4.70	0.00
6	"Sunset Bay"	261.00	3.70	70.54
203	"Gull Bay South Cove"	0.00	3.40	0.00
24	"NW Bay – Bay between Fan and Bear Point"	18.00	1.00	18.00
158	"South English Brook"	0.00	1.00	0.00
202	"Long Island SE"	0.00	1.00	0.00

Moderate Sites – 57.65 total acres, 12.72 unmanaged in 2015 and 44.93 managed

Site Number	Site Name	2015 bag total	Acres	Bags/Acre
19	"Dunham's Bay"	50.00	13.83	3.62
5	"West shore of Green Island"	170.84	3.04	56.20
165	"Basin Bay Shoal"	5.00	4.47	1.12
107	"Elizabeth Island"	123.00	9.80	12.55
27	"Bay NW of Cooper Point"	8.00	6.25	1.28
1	"Northwest Bay"	310.50	5.00	62.10
15	"Sawmill Bay – outflow of Finkel Brook"	166.00	1.86	89.25
30	"North Tea Island Bay"	57.00	4.30	13.26
26	"Bay SW of Cannon Point"	269.00	1.50	179.33
117	"Glen Bernie – Blairs Bay"	64.00	1.50	42.67
204	"Rogers Rock Campground"	24.00	1.50	16.00
46	"Leontine/Clay Shoal"	20.00	1.15	17.39
103	"North of North Meadow Point"	0.00	1.00	0.00
216	"Shoal N of Hens and Chickens Islands"	0.00	1.00	0.00
97	"West Side Clay Island"	95.00	0.85	111.76
169	"Arcady Bay"	30.00	0.60	50.00