ITASCA WATER LEGACY PARTNERSHIP

# 2014 PURPLE LOOSESTRIFE CONTROL PROJECT


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# 64,194 Beetles Collected and Relocated in 2014

## New Beetle Release Sites

**Eagle Lake** (North of Balsam) – A total of 5,095 beetles were released on Eagle Lake this season between the SE corner of the lake, the creek in the SW corner, and along the western shore. The population seems to be thriving and has already decimated a large portion of the loosestrife that it was released on.

**Little Turtle Lake –** 2563 beetles were released in the SW corner of Little Turtle Lake near the highway and also across the highway where we had discovered a new site consisting of 20 or more mature plants. The population seemed to go to work immediately; there were no flowers inside of the biological control site at the time of our survey.

**Bowstring River** (Inger Bridge) – 4560 Beetles were released to the North and South of the Bowstring River Bridge in Inger. There is a lot of Purple Loosestrife between Sand Lake and Bowstring Lake in this section of the river.

**Serpent Lake –** We released 2000 beetles along the Northern shore of Serpent Lake from the Police Station to the east, all the way to the highway.

**Cass Cty. Rd. 135** (9 Miles East of Hwy 6) – 3685 beetles were released throughout a ¼ mile stretch on both sides of the road. This is a pretty continuous stand of Loosestrife right next to the road and could be a great collection site if the insect population takes off.

## Proposed Beetle Release Sites for 2015

**Twin Lakes (Pengilly) -** The entire east half of the lake has a fairly continuous stand of Loosestrife, most of which is fairly accessible for herbicide treatments. The narrow point at the east end will be our focus area for a beetle site in 2015

**Hwy 65 (South of Hwy 2) -** There is a **continuous** dense stand of Purple Loosestrife that stretches over **¼ mile** along both sides of Hwy 65, just south of the junction with Hwy 2. There are areas along this site that are over 100 yards

wide, solid with purple flowers. Any isolated plants that were found away from the dense areas were treated with herbicide this season to try to prevent some seed spread and to narrow down the biological control area. This is one of the largest NEW infestations our crew has ever discovered.

**Hwy 6 (Plum Creek) –** There is a 200 yard portion of plum creek along the east side of Hwy 6 North of Hwy 1, that has continuous Loosestrife on both sides of the creek. Some beetle evidence was found in a couple spots near the road.

# Additions to Established Beetle Colonies

Blind Lake – 790
Bowstring Access Road – 6079
Bowstring Lake (Cow Bay) - 3000
Bowstring Lake (NE Duck Camp) – 680
Creek in Deer River (South of Warrior Shop) – 200
Deer Lake – 2000
Forest Lake (Grand Rapids) – 1100
Hale Lake (Grand Rapids) – 9007
Kelly Creek Rd (Kelly Lake) – 200
Leighton Lake – 5500
Little Long Lake – 4525
Long Lake (Cohasset) – 1500
McKinney Lake – 1325
Snaptail Lake – 750
Sugar Lake Golf Course (Hole 16) – 750
Turtle Lake (Maple Creek) – 2885
Donated to MN DNR - 6000

# New Lake Surveys

## Loosestrife Found

**South Sugar Lake –** There is a 30 yard stretch along the North shore, about 200 yards east of the landing/bridge that had roughly 15 mature flowering plants and countless seedlings. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment. This is the only Loosestrife in the area and appears to follow a deer trail along the shore.

**Trout Lake** (Coleraine) - We had surveyed Trout in 2012 and there was no Loosestrife found. This year our crew discovered 3 plants in the drainage ditch just to the east of the parking lot. There was also a patch of 4 mature flowering plants found in the small wetland in the SE corner of the lake; closer to the highway than to the lakeshore. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Twin Lakes** (Pengilly) – Roughly 80% of the shoreline on the east half of Twin Lakes has continuous Loosestrife. The narrow point on the east end of the lake is the densest stand with well over 150 mature flowering plants and thousands of seedlings. There were 2 smaller patches of Loosestrife on the right side of the channel as you're entering the eastern portion of the lake. The entire western portion of the lake is loosestrife free. All Purple Loosestrife found was very accessible by canoe or on foot and was treated with herbicide. We will revisit this lake in 2015 for a follow up treatment and to evaluate locations for biological control sites.

# New Highway Sites

**Hwy 169** (South of Snowball Lake Rd) **–** There were 250+ plants found throughout the cattails on both sides of 169 stretching about 60 yards. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Hwy 6** (North of Deer River) There were a number of new sites found along Hwy 6 that seemed very isolated. Most sites consisted of just 1 or 2 plants. There locations are: East ditch directly across from the Fur Trading Post, .2 miles south of address 45313 in east ditch, between fire numbers 45570 and 45574 in the east ditch, near the fire number 58998 in the west ditch, near fire number 67074 on both sides of the highway. There was 1 plant found near the south side of the parking lot of the Riverside Chapel. There were also 100+ small flowering plants found from the south side of the Bigfork river for .3 miles south in the west ditch. We have treated this area in past seasons but the Loosestrife population this year has definitely stretched further down the ditch than ever before. We believe the high water this spring has worked to spread and sprout the seed bank that remained in the ground from past seasons. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Hwy 38** (East ditch, across from Mckinney Lake Access) – There were 10 flowering plants throughout the cattails across the road from the Mckinney Lake access road. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Hwy 38** (Marcell) – There were 2 mature flowering plants found in the west ditch, .2 miles north of the tennis courts in marcell. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Laplant Road -** There were approximately 75 mature flowering plants and countless seedlings found in the North ditch of the Laplant Road about 1 mile east of Hwy 169. There was also one lone plant of Loosestrife found just east of the 2nd driveway in the north ditch. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**West Deer Lake Road –** There were 5 plants discovered in the Deer River on the west side of the road. These plants were in the middle of the river on a sand bar and also among the brush on the North side of the river. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Hwy 65** (Pengilly) – In the West ditch in front of the Bait Shop/Liquor Store there were 3 very large flowering plants within a 20 yard area. There were 2 plants found in the brush directly across the street in the east ditch. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Hwy 65** (Swan River) - This site is also described under "Proposed Beetle Release Sites 2015". There is a **continuous** dense stand of Purple Loosestrife that stretches over **¼ mile** along both sides of Hwy 65, just south of the junction with Hwy 2. There are areas along this site that are over 100 yards wide, solid with purple flowers. Any isolated plants that were found away from the dense areas were treated with herbicide this season to try to prevent some seed spread and to narrow down the biological control area. This is one of the largest NEW infestations our crew has ever discovered.

**Hwy 63** - There were 20+ mature flowering plants and a few smaller seedlings throughout a 20 yard stretch in the north ditch approximately .1 mile east of the 3-way stop.

**Hwy 2** (East of Blackberry) – There were approximately 10 scattered plants in the south ditch of Hwy 2 and there were 2 plants found in the north ditch. These

plants happen to be found along the ATV trail about ¾ mile east of Blackberry. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Hwy 1** (.5 miles east of Hwy 27) – There was a patch of Loosestrife about 40 yards long consisting of 150+ mature flowering plants in the south ditch of Hwy 1. There was only 1 plant found in the north ditch. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Hwy 1** (Junction of Hwy 65) There was a patch of over 20 massive plants and countless smaller flowering plants near the grease bins in the back parking lot of The Junction Bar. There were also a couple small plants across the gravel road from the grease bins and in the ditch in the NE corner of the Hwy junction. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

# Lakes Resurveyed in 2014

## Loosestrife Found and Treated 2007-2013

**Bass Lake -** There were 4 locations with Purple Loosestrife on Bass Lake that had not been there in the past. Approximately 300 yards east of the Cohasset landing, there was 1 mature flowering plant all alone. Directly across from the landing there were 2 small patches consisting of 2-3 plants each. There was one patch of 10 smaller plants, only 2 with flowers, found along the south shore near the 2nd dock west of the landing. The site along the south shore which we've been treating with herbicide for 3 seasons has shown much improvement. In 2012 there were over 150 mature flowering plants and this season we found around 30 flowering plants and countless seedlings throughout the mowed grass. There were also 10 large flowering plants on the narrow point along the north shore, west of the creek flowage. There has never been Loosestrife on this Western portion of Bass Lake. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment.

**Blind Lake –** We added 790 Galerucella Beetles to the Federal Campsite point in the NE corner of the lake. The Loosestrife population didn't seem to change much after our introduction of 1500 beetles last season. There were also 2 new sites found along the south shore with only 2 plants each. We will return in 2015 to evaluate and add to the beetle colony.

**Bowstring Lake -** There is still a substantial amount of Loosestrife from the south access stretching along the western shore to a little ways North of Trail's End resort. The Southern shore of Cow Bay, all the way North to Sand Lake has an enormous amount of loosestrife. We have introduced insect colonies at both ends of this flowage. The amount of Loosestrife between the north access and Muskrat Bay has decreased dramatically and all remaining plants show significant beetle damage. We intend to introduce and add to existing beetle populations on the east shore between muskrat bay and the south access in 2015. The Galerucella Beetle population in the SW corner of the lake has increased to the point of becoming a good collection site. The beetles seem to do very well along the shore of the lake but their populations struggle among the floating bog areas up away from the shore. Any Purple Loosestrife found on Bowstring Lake with no beetle damage was treated with herbicide to reduce the seed output.

**Clubhouse Lake -** Although all the usual sites on Clubhouse Lake had Loosestrife present, the populations have decreased dramatically. There were only 5 small plants found at the North end of the lake from the culvert westward. There was 1seedling found in the small boggy bay along the eastern shore. The rest of Clubhouse Lake had no Loosestrife. All Loosestrife was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Crooked Lake –** There was NO LOOSESTRIFE found on Crooked Lake this season. There were approximately 25 mature plants found among three separate sites on the lake last season. We will revisit the lake in 2015 for a follow up evaluation and treatment if necessary.

**Cutfoot Sioux Lake** – The site east of the Hwy 46 Bridge has shown dramatic improvement since discovered in 2012. There were only 4 plants found that were about a foot tall and one small patch of seedlings. All plants found this season were confined completely to the ATV tracks leading to the lake. In 2012 there were about 10-15 large flowering plants and countless seedlings scattered throughout this small wetland. The rest of Cutfoot is Loosestrife free. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Deer Lake -** The South Shore of Deer Lake continues to have large populations of Loosestrife on about 40-50% of it. The Galerucella Beetle populations have spread to practically the entire Loosestrife population with only a few small areas on the

North-Central shore showing no evidence of insect damage. There are about 20 or more flowering plants that had never been found before behind the cattails throughout the riparian woods just to the east of the landing. This area was very deep mud due to high water this season. All plants on Deer Lake that either showed no Beetle damage or were in small isolated areas were treated with herbicide. All large stands of Loosestrife and continuous populations are left for biological control. Although the number of actual infested sites is approximately the same, the plant density is down in most areas where we performed herbicide treatments in past seasons and almost all of these plants are obvious sprouts from the seed bank. We will revisit Deer Lake in 2015 for a biological control evaluation and a follow up herbicide treatment.

**Eagle Lake** (Balsam Area) - We released 5095 beetles among the SE corner of Eagle Lake at the site that was our cover photo for last year's report, and along the creek in the SW corner. The beetle population exploded and there wasn't a single flower in the boggy portion in the SE corner at the time of our survey. This is the most biological control success we've ever witnessed immediately after releasing the beetles. The corner of the lake just east of the access had about 7 mature flowering plants and a couple seedlings, where there had been 50 or more last season. There were 3 random plants along the east shore that were not there last year. One mature plant was found in the Northernmost bay along the Western shore. From the larger bay halfway along the Western shore, down around to the biological control site in the SE corner of the lake, there is a fairly continuous stand of Loosestrife. Some of the plants along the western shore had good evidence of a beetle population. Any Loosestrife found on Eagle Lake with no beetle evidence was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment.

**Forest Lake –** 1100 Beetles were released from the beach area in the SE corner of the lake along the south shore all the way to the boggy area in the NW corner. No Herbicide was used on Forest Lake this season due to the obvious reproduction of the established beetle colony. We will return in 2015 to evaluate the beetle reproduction and make any additions necessary.

**Hale Lake –** 9007 beetles were released from the landing along the south shore to the very western tip of the lake. There was some beetle evidence near the landing

and near the western end but most of the Loosestrife found on Hale showed no damage from the beetle colony. We're hoping that the abnormally large addition to the colony this season will provide a better chance for biological control success. No herbicide was used on Hale Lake this season. We will return in 2015 to evaluate the beetle colony and to make any additions necessary.

**Hatch Lake** - This Lake has not had Loosestrife on its shore since 2009 yet the creek coming from Turtle Lake has always had 1 or 2 seedlings each year. This season there were 2 seedlings on the east bank just a couple feet north of the culvert coming from Turtle. This patch was treated with herbicide and we will resurvey the entire lake in 2015 for an evaluation and follow up treatment if necessary.

**Holman Lake** – There is good evidence of beetle reproduction on Holman Lake. All plants found had beetle damage to some extent; some of the plants were even brown and dead. No herbicide was used on Holman Lake this season. Entire Loosestrife population will be left for biological control. We will return in 2015 for an evaluation of the beetle colony and to make additions necessary.

**Lower Lawrence Lake** – There were 2 flowering plants found in the old site along the residential shore in Lower Lawrence, just SW of the bridge. There has not been any Loosestrife found at this site since 2010!! This is a reminder that the seed of Purple Loosestrife can remain viable in the ground for potentially 7 years or more. These 2 plants were treated with herbicide and will be revisited in 2015 for a follow up treatment if necessary.

**Leighton Lake –** 5500 beetles were released within an 80 yard stretch to the north and south of the landing. It was early in the season when we visited this site and there was only about 40 smaller plants starting to come up. The water level was high and there was only evidence of existing beetles in the higher, drier areas. There was no herbicide used on Leighton Lake this season. We will return in 2015 for a follow up evaluation of the beetle reproduction.

**Little Long Lake** - The floating bog area just to the South of the landing has a stand of Loosestrife approximately 150 yards long consisting of about 30 large flowering plants. The western shore has a consistent population of Loosestrife stretching about 2/3 of the way to the Northern tip of the lake. The island along

the western shore has Loosestrife on the entire circumference. There are 3 smaller boggy areas along the east shore where we had released Galerucella beetles last season but showed minimal evidence of their presence. Any smaller isolated patches were treated with herbicide in attempt to restrict the population to the Biological control sites. We released 4525 Galerucella beetles among the Western shore, the boggy areas on the Eastern shore, and the bay South of the landing. We will return in 2015 for a biological control evaluation and to treat any outlying Loosestrife populations with herbicide.

**Little Turtle Lake** – There was 1 plant found midway along the Southern shore in the small boggy bay where there was about 10 last year. The next bay to the east had no Loosestrife where there were 50 or more plants found last year. The Dense cattails along the SW corner of the lake still had 20 or so mature flowering plants which we treated with herbicide. The beetles that we released along our highway site on the SW side of Little Turtle at the beginning of this season have already begun to establish a good population and there were no flowering plants in this area at the time of our survey. The residential shore spanning about 200 yards to the east of our biological control site had scattered Loosestrife totaling less than 10 plants except one of the resident's yards had about 100 sprouts in the mowed grass. All of the Loosestrife on Little Turtle Lake, outside of the biological control site in the SW corner, was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment if necessary.

**Long Lake** (Cohasset) – 1500 beetles were added between the south shore and NE corner of the eastern portion of the lake. There was good beetle evidence found near the access and throughout the woods to the east. The NE corner showed minimal evidence of biological control. There was no herbicide used on Long Lake this season. We will return in 2015 to evaluate the beetle colony and make any additions necessary.

**Loon Lake** (Cohasset) **–** There were 4 flowering plants and about 15 seedlings found in a 10 yard patch near the culvert to the left of the landing. The plant density at this site is definitely down from last season. There was 1 new plant found at the extreme western tip of the lake and 1 new plant found in the small bay on the north shore. There was no loosestrife found along the eastern shore where it

has been found in the past. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment if necessary.

**Maple Lake** (Marcell) – There was unexpected Loosestrife found on Maple Lake This season. There were 2 seedlings found in the Native Planting Restoration Area to the East of the landing about 5 feet from where Loosestrife has always been found. The boggy point about 2/3 of the way north along the west shore has not had any Purple Loosestrife for the last 2 seasons, however, there were approximately 5 dense patches of seedlings less than a foot tall, found about 15 yards east of the old site. The water level was abnormally high this season on Maple which suggests that the older seed bank at this site may have had perfect conditions to sprout. This is was a good reminder that a Purple Loosestrife seed may stay viable in the ground for up to 7 years. There was also 1 tall flowering plant, found all alone, at the very Northern tip of the lake where there has never been Loosestrife before. All Loosestrife found on Maple Lake was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment.

**McKinney Lake** – 1325 Beetles were dispersed throughout the boggy bays in the NW corner of the lake. There was very good beetle evidence found near the landing where we had not ever released them which shows good reproduction and spread of the colony. We will return to McKinney in 2015 to add to the beetle colony in the NW corner if necessary.

**Mike Lake -** There was one small patch of about 5 seedlings found at the usual site about 15 yards east of the culvert coming from Clubhouse. This patch was treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Mississippi River** – At the time of our beetle season, the water was extremely high on the Mississippi. The sites where we had found continuous stands of loosestrife and had released thousands of beetles last season, was completely under water. The only loosestrife found at the time of our survey this season was completely submerged. We will return in 2015 to see if we have any survivors in the beetle colony and to look for Loosestrife further off of the river bank where a permanent beetle colony may be established.

**Moose Lake -** There were about 20 plants found on the north end of Moose Lake, starting at the west end of the resort, spanning for about 100 yards. There were

only about 5 of these plants that showed no beetle evidence which we had treated with herbicide. Just to the east of the resort, we found 10 plants behind a large berm along a resident's wood line. There is a decent population of Loosestrife in the creek flowing from the NW corner of Moose into Deer Lake. We treated 2 of these plants in the creek with herbicide due to their healthy condition; the rest of the plants showed devastating beetle damage.

**Pokegama Lake –** There were 4 plants on the West side of the harbor area to the west of Troop Town. There were 15 flowering plants and countless seedlings found along the sandy residential beach area west of Troop Town. There was one plant found in the small dock inlet at the Chamber's Residence. We found 6 plants on the East side of the inlet going into Woodtick Bay. There was one plant on the Northern Shore of the Wendigo Arm, just to the North of the islands. There was 1 plant found to the North of the residential docks just as you enter Sherry's Arm. We found 2 flowering plants and countless seedlings near the 2nd to last dock going south along the Eastern shore in Sherry's Arm. The biological control site that we established last season has reproduced very well. There were 2 plants with flowers on the southern edge of the beetle site that we treated with herbicide. The rest of this site shows devastating insect damage and very good plant control. All Loosestrife found on Pokegama Lake, outside of the biological control area, was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment.

**Portage Lake** (Sand Lake Chain) **-** Although approximately 70% of the shoreline contains Loosestrife, The Galerucella Beetle population on portage lake is definitely expanding. Practically 100% of all the Loosestrife found on Portage had obvious insect damage and it is expected that this will be a great beetle collection site in the near future.

**Sand Lake** (Bowstring Flowage) **–** Most of the former Loosestrife infestation sites on Sand Lake had no Loosestrife this season. There was 1 plant found approximately 10 yards to the east of last year's site in the SW corner of the bay, east of the Portage Lake channel. There were 4 single stemmed plants in the flowage between Sand and Portage Lakes. One plant was found (basically a floating root ball) on the south side of the point adjacent to Sand Lake Lodge. There is a substantial stand of Loosestrife making its way through the bowstring

river into Sand Lake from the south. There is little improvement on the site along the western shore, North of Pine Grove Lodge. The Loosestrife population hasn't changed much after 3 seasons of herbicide treatments. We plan to expand the beetle populations from the Bowstring River up into the south end of Sand Lake in the future. All Loosestrife found outside of the proposed biological control sites were treated with herbicide and will be revisited in 2015 for a follow up treatment.

**Sand Lake** (North of Spider Lake Rd) – There was NO LOOSESTRIFE found on Sand Lake this season. The sandy stretch to the west of the landing has had a lot of Loosestrife in the past. We will return in 2015 to ensure eradication.

**Scrapper Lake** – There was NO LOOSESTRIFE found on Scrapper Lake this season. We will return in 2015 to ensure eradication.

**Smith Lake –** There is still a considerable amount of Loosestrife coming from the seed bank along the southern shore although the plant density is down a lot since last year. The island directly in front of the landing had 10 plants and 100+ seedlings; the plant density at this spot is down dramatically since 2007. All other sites on the lake had ALMOST no Loosestrife with just a couple seedlings coming up from the seed bank along the point in the NE corner of the Lake.

**Snaptail Lake** – 750 beetles were released on Snaptail Lake from the landing to the NW corner. The beetle evidence from an existing colony was spotty in this area. All other sites on the lake are showing very good Loosestrife damage from the beetles. There was no herbicide used on Snaptail this season. We will return in 2015 to evaluate the beetle colony and make any population additions necessary.

**Swan Lake –** Last year we found a large stand of about 50 large flowering plants in a resident's yard in the NW corner of the Lake and treated it with herbicide. There was much less Purple Loosestrife this season; 6 flowering plants and 100's of seedlings sprouting from the seed bank. The density of mature plants has decreased by more than 80%. We found 2 new patches along the South shore, east of the bridge, consisting of 2 plants each. There was also1 massive flowering plant standing all alone along the north shore, west of the access, just east of the river. All Loosestrife found on Swan Lake was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment.

**Trout Lake** (Wabana Chain) – There were 5 small plants of Purple Loosestrife on the North end between the resort access and the Fischer residence in the NE Corner. The Creek in the NE corner had only 2 plants where there had been a lot of loosestrife and countless seedlings in past seasons. There was no Loosestrife found at the site on the western shore south of the resort. There are fewer sites with loosestrife on Trout than past seasons and the plant density has decreased considerably.

**Turtle Lake –** Most of the Purple Loosestrife sites on Turtle Lake showed obvious positive results of the last 8 seasons of control efforts. The Loosestrife is now mainly confined to the extremely boggy areas in Maple Creek, Moose Bay, Alex Bay, and Newburg Bay where we have established beetle colonies for biological control. The beetle colony within Moose Bay is still not reproducing as well as we'd like. All of the other beetle sites are showing good reproduction and plant damage. Almost all of the usual sites where loosestrife has been treated with herbicide in past seasons had NO LOOSESTRIFE this season. This might suggest that the majority of the seed bank around the lake has been depleted.

# Existing Highway Sites Revisited

**Cty. Rd 52** (North of Balsam) – There was NO LOOSESTRIFE found at this location. There did happen to be some road construction at this spot since last season. We will revisit this site in 2015 to see if the Loosestrife comes back and make an herbicide treatment if necessary.

**New Housing Edition in Nashwauk on the East Side of Town –** East ditch across from the address 19 6$^{th}$ street. There was NO LOOSESTRIFE found at this site this season where there were 4 plants found last season. We will revisit this site in 2015 for a follow up herbicide treatment if necessary.

**Eagles Nest Rd., North of Cutfoot Sioux Lake** (On Simpson Creek) – There were 2 small flowering plants found just 2 feet of the gravel road on the south side of Simpson Creek, on the West side of the road. There were 3 large, mature plants last year about 10feet from the road. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment.

**Cty Rd. 45 (**North of Balsam near Eagle Lake) – We found about 100 smaller single stemmed flowering plants at this site where, Last Season, there were well over 300 plants throughout the wetlands on both sides of the highway starting from 29500 going approximately 80 yards to the east. The plant density is down well over 50% from last season. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment if necessary.

**Little Sweden Rd.** (North of Nashwauk) – There was NO LOOSESTRIFE found at this site where 1 mature plant was found in 2013. This site will be revisited in 2015 for a follow up evaluation and herbicide treatment if necessary.

**Hwy 2** (Just East of DNR Offices in Grand Rapids) – There were roughly 30 shorter, yet flowering, plants scattered throughout the north ditch from the DNR office for about ¼ mile. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment if necessary.

**Intersection of Hwy 2 and Airport Rd. –** There was again 1 plant found this season in the ditch to the south of Hwy 2 and to the east of the airport road. The plant was found near the culvert where we had found 5 mature flowering plants in the 2012 season. We treated this one plant with herbicide and will return in 2015 for a follow evaluation and treatment if necessary.

**Hwy 6** (South of the Bigfork River) **-** We found over 100 plants this year from the junction of Hwy 6 and Cty Rd 14 to the south. This site had NO LOOSETRIFE last season. We did find around 50 smaller single stemmed Loosestrife plants in the same area as usual in the private drive and residents yard where there had been 100+ plants in previous seasons.

**Hwy 6 (10 Yards South of Mile Marker 107) –** There was No Loosestrife found at this site again this season. We will return in 2015 to ensure eradication.

**Hwy 6 (0.1 Mile North of Mile Marker 103) –** There was 1 flowering plant found at this site where NO LOOSESTRIFE was found last season. This plant was treated with herbicide. We will revisit this site in 2015 for a follow up treatment if necessary.

**Hwy 6** (South of Mile Marker 95) **–** There were 5 smaller single stemmed flowers at this site in a 30 yard patch along the west ditch where we found 20+ plants last

season. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment if necessary.

**Hwy 38** (Across From IRC Civic Center in Grand Rapids) – There was no Loosestrife found at this site this year although there were about 15 plants found about 40 yards to the north throughout the cattails, across the street for the McKinney Lake Access. This site is also described under the "New Highway Sites" category.

**Hwy 38** (Right Next to Road Sign for Cty Rd 325) - There was no Loosestrife found at this site for the second season in a row. We will return in 2015 for a follow up evaluation and treatment if necessary.

**Hwy 38** (East Ditch 0.1 Mile North of Bigfork Bridge**) -** There was no Loosestrife found at this site for the second season in a row. We will return in 2015 for a follow up evaluation and treatment if necessary.

**Hwy 38** (Just North of Hwy 61) **–** There was no Loosestrife found at this site for the second season in a row. We will return in 2015 for a follow up evaluation and treatment if necessary.

**Hwy 50** (West of Snaptail Lake) – There were 5 non-flowering plants found among the willow shrubs in the exact spot as last season. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment if necessary.

**Hwy 35** (Sand Lake Township, 0.9 Miles West of Cty Rd 176 ) – There was 1 flowering plant and 9 seedlings in the north ditch. There were just 3 small seedlings in this spot last year but 15 mature flowers in 2012. We expect the seed bank to be depleting more and more each season. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment if necessary.

**Jess Harry Rd** (Near Fire Number 2000) – We visited this site twice this season. The first survey we found approximately 50 plants in the north ditch and 2 in the south ditch. During our second visit later in the summer, we found another 25 between the same areas. The plant density has decreased approximately 75% since this site was discovered in 2012. All Loosestrife was treated with herbicide and will be revisited in 2015 for a follow up treatment if necessary.

**Cty Rd 8** (North Ditch Next to Balsam Store) **–** There was no Loosestrife found at this site for the second season in a row. We will return in 2015 for a follow up evaluation and treatment if necessary.

**Hwy 65** (From Nashwauk Fire Dept. to Cty Rd 539) – We found 7 plants in the ditch just to the north of the Nashwauk Fire Dept. where there were 15 last season. There are patches of Loosestrife on both sides of Hwy 65 from Rhyti Construction to Guyer's Convenience Store. The plant density has decreased dramatically along this entire stretch of Hwy 65 since discovered in 2012. The patches that were generally 20-30 plants last season were down to around 10 plants per patch. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up treatment if necessary.

**Hwy 169** (East of Calumet) – There was no Loosestrife found at this site for the second season in a row. There were about 10 mature plants here in 2012. We did find Loosestrife not far away at a site just south of Snowball Lake Rd. This site is described under "New Highway Sites".

**Hwy 169** (West of Calumet) – We found about 15 plants near the west end of the train bridge on the north side of 169 where we had found well over 100 plants last season. Although the plant density is dramatically lower than last season throughout the north ditch, we discovered around 50 small seedlings sprouting along the highway in the south ditch in a 60 yard stretch. All Loosestrife found was treated with herbicide and will be revisited in 2015 for a follow up evaluation and treatment if necessary.

**Hwy 19** (Just East of Deer/Moose Creek Flowage) – All plants found near this creek flowage now show devastating damage from the established beetle colony. There were 2 plants, south of the bridge, that were flowering. We removed the flowers and left all Loosestrife for the biological control. We will continue to revisit this site in future seasons to evaluate the insect colony.

**Cty Rd 256** (South of Fire Number 34646 in West Ditch) – We did find 5 mature plants along the wood line about 20 yards from the patch found in 2012. There was no Loosestrife found at this site last season. We will return in 2015 for a follow up treatment if necessary.

# Lakes Surveyed

No Loosestrife Found

## 2014

Carlson *Lake (South of Grand Rapids,169)*
Dinnerpail Lake
Fawn Lake
Hart Lake (Pengilly)
Little Sugar
Long Lake (Off Scenic 7)
Maple *Lake (South of Grand Rapids, 169)*
Nickel Lake
Smith Lake *(South of Grand Rapids)*

## 2013

Bear Lake
Big McCarthy Lake
Blackwater Lake/ Mississippi River *(Boswell Energy Landing to Hwy 6 South Landing)*
Kelly Lake (North of Balsam)
Lily Lake (Airport Float Plane Lake)
Little Bear Lake
Little Moose Lake (Togo)
Little Sand Lake (Calumet)
Lower Pigeon Lake
Middle Pigeon Lake
Mirror Lake
Nashwauk/Moose Lake (Lawrence Lake Area)
Pancake Lake
Raddison Lake
Shallow Lake
Shoal Lake *(North of Hwy 56, Nashwauk Area)*
Snowball Lake
Thistledew Lake
Upper Pigeon Lake
White Swan Lake (Balsam Area)

## 2012

Ball Club Lake
Buck Lake (Nashwauk)
Busties Lake (Effie)
Coon Lake (Scenic State Park)
Deer Lake (Effie)
Haskell Lake (Balsam)
Hay Lake (Wabana)
Splithand Lake
Island Lake (Lawrence Lake)
Island Lake (Wabana)
Island Lake (Northhome)
Jay Gould Lake/Little Jay Gould Lake
Little Ball Club
Little Winnibigoshish
Reiley Lake (Lawrence Lake)
Rice Lake (Cohasset)
Sandwick (Scenic State Park)
Shamrock Lake (Lawrence Lake)
Wilson (Balsam)

## 2011

Antler Lake
Beaver Lake
Dixon Lake
Guile Lake
Lammon Aid Lake
Little Bass Lake
Long Lake (Balsam)
Panacea Upper/Lower
Round Lake (Balsam)
Ruby Lake
Scooty Lake
Siseebakwet (Sugar Lake)
Wasson Lake
Wilson Lake

## 2010

Arrowhead Lake
Bigfork River (Hwy 6 to Hwy 38)
Burnt Shanty Lake
Chase Lake
Clear Lake
Cottonwood Lake
King Lake
Lost Moose Lake
Moonshine Lake
Noma Lake
Owen Lake
Prairie Lake
Peterson Lake
Trestle Lake
Trout Lake (Coleraine)
Whitefish Lake

## 2009

Balsam Lake
Gun Lake Chain
Lawrence Lake (Loosestrife found in Lower Lawrence)

## 2008/2007

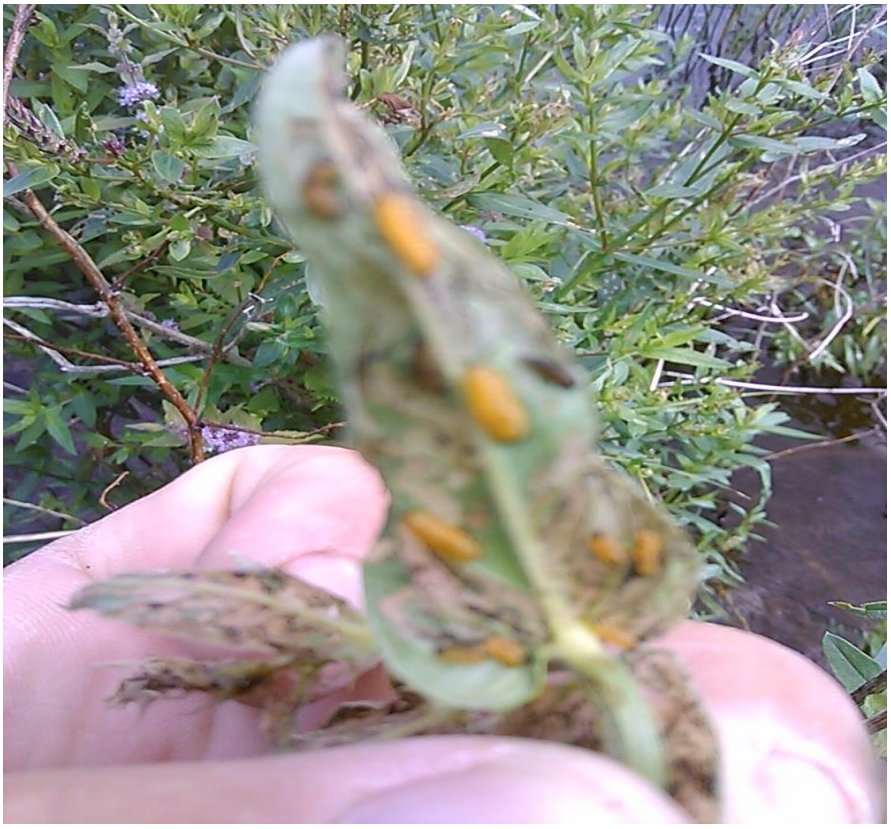
Bellow Lake
Big Dick Lake
Big Too Much Lake
Bluewater Lake
Burns Lake
Caribou Lake
Copenhagen Lake
Day Lake
Dora Lake
East Lake
East Smith Lake
Forest Lake (Marcell)
Grass Lake
Horseshoe Lake
Island Lake (Deer River)
Jack the Horse Lake
Jessie Lake
Johnson Lake (Hwy 38)
Little Bowstring Lake
Little Dick Lake
Little Jessie Lake
Little North Star Lake
Little Sand (Sand Lake)
Little Too Much Lake
Little Trout Lake
North Star Lake
Pughole Lake
Ranier Lake
Rice Lake (North of Sand Lake)
Round Lake (Squaw Lake)
Spider Lake
Three Island Lake
Wabana Lake

1st Galerucella Beetle Season Generally Starts in the Last Week of May.

This was the First Beetle Found of the Season on May 28th 2014.

The 1st Beetle Season Usually Peaks in Mid-June.

This Photo Was Taken on June 13th 2014



The Beginning of the 2nd Galerucella Beetle Season Generally Begins Around Mid-July

This Photo Shows a Single Purple Loosestrife Leaf with10 or more feeding Galerucella Pupa.

This Photo Was Taken July 22nd 2014

Most of the Actual Damage to the Purple Loosestrife is Caused by the Larva and Pupa Throughout the Stages of Development.

This Photo was Taken July 25th 2014

This Photo Displays the Size of the Galerucella Beetle Inside of a Collection Container.

New Site Discovered at Plum Creek East of Hwy 6, North of Hwy1.

The Purple Loosestrife is Continuous For Over 200 Yards on Both Sides of the Creek.

This the SE Corner of Eagle Lake in 2013 Prior to the Introduction of Galerucella Beetles.

We Introduced Galerucella Beetles on June 6th 2014

The Population Seemed to Thrive and They Decimated the Loosestrife Within 2 Months of Bringing Them to the Site.

There Were NO FLOWERS Present at the Time of Our Survey on August 8th 2014

# IWLP 2014 Galerucella Beetle Summary

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | | Site Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **Turtle Lake** | 4800 | 16100 | 12800 | 1700 | 5600 | 3700 | 0 | 2885 | | 47585 |
| **Bowstring** | 5500 | 9500 | 6100 | 7500 | 4600 | 25400 | 8200 | 9759 | | 76559 |
| **Portage** | 0 | 0 | 7300 | 3000 | 9900 | 6600 | 0 | 0 | | 26800 |
| **Snaptail** | 0 | 0 | 0 | 0 | 0 | 3200 | 2400 | 750 | | 6350 |
| **Mississippi/Cass** | 0 | 0 | 0 | 0 | 0 | 11200 | 0 | 0 | | 11200 |
| **Ink Lake** | 0 | 0 | 0 | 0 | 0 | 2300 | 0 | 0 | | 2300 |
| **Long Lake** | 0 | 0 | 0 | 0 | 0 | 500 | 4700 | 1500 | | 6700 |
| **Forest Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 1300 | 1100 | | 2400 |
| **Hale Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 900 | 9007 | | 9907 |
| **McKinney** | 0 | 0 | 0 | 0 | 0 | 0 | 1100 | 1325 | | 2425 |
| **Pokegama** | 0 | 0 | 0 | 0 | 0 | 0 | 6800 | 0 | | 6800 |
| **Deer Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 7700 | 2000 | | 9700 |
| **Little Long Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 2300 | 4525 | | 6825 |
| **Holman** | 0 | 0 | 0 | 0 | 0 | 0 | 5600 | 0 | | 5600 |
| **Leighton Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 2000 | 5500 | | 7500 |
| **Pelican Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 1100 | 0 | | 1100 |
| **Bowstring River** | 0 | 0 | 0 | 0 | 0 | 0 | 1000 | 4560 | | 5560 |
| **Creek/ Deer River** | 0 | 0 | 0 | 0 | 0 | 0 | 800 | 200 | | 1000 |
| **Blind Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 1500 | 790 | | 2290 |
| **Mississippi/ GR** | 0 | 0 | 0 | 0 | 0 | 0 | 14000 | 0 | | 14000 |
| **Donated to DNR** | 0 | 0 | 0 | 0 | 0 | 5500 | 5750 | 6000 | | 17250 |
| **Eagle Lake** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5095 | | 5095 |
| **Little Turtle** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2563 | | 2563 |
| **Serpent** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2000 | | 2000 |
| **Cty RD135 Cass Cty** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3685 | | 3685 |
| **SugarLakeGolfCourse** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 750 | | 750 |
| **Kelly Creek RD** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 200 | | 200 |
| | | | | | | | | | | |
| **Yearly Total** | 10300 | 25600 | 26200 | 12200 | 20100 | 58400 | 67150 | 64194 | | **284144** |