Deerskin Lake
Aquatic Plant Community Assessment

Vilas County, Wisconsin

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INTRODUCTION

Deerskin Lake is a 301 acre spring lake located in eastern Vilas County (Photo 1). The lake has a maximum depth of 18 feet, and is not known to hold any aquatic invasive species (AIS). Additionally, the Beaver Creek State Natural Area borders the lake's northern shoreline. A 2007 Aquatic Plant Management (APM) Plan found the lake to hold 15 aquatic plant species. Little Deerskin River is a Class I Trout Water with an Outstanding/Exceptional resource designation (NR 102), while Deerskin Lake itself is classified as an Area of Special Natural Resource Interest (ASNRI).

Photo 1. Deerskin Lake, Vilas County.

Knowing the threat AIS have imposed on numerous other area lakes, the Deerskin Lake Association (DSLA) was proactive in protecting Deerskin Lake's aquatic plant community. This project aimed to assess and refresh the Deerskin Lake Aquatic Plant Management Plan while simultaneously having the lake examined by professionals for AIS.

The DSLA has also participated in a grant funded Clean Boats Clean Waters (CBCW) project in both 2013 and 2014.

AQUATIC PLANTS

Aquatic Plant Sampling Methodology and Data Analysis

Native aquatic plants are an important element in every healthy aquatic ecosystem, providing food and habitat to wildlife, improving water quality, and stabilizing bottom sediments (Photo 2). Because most aquatic plants are rooted in place and are unable to relocate in wake of environmental alterations, they are often the first community to indicate that changes may be occurring within the system. Aquatic plant communities can respond in variety of ways; there may be increases or declines in the occurrences of some species, or a complete loss. Or, certain growth forms, such as emergent and floating-leaf communities may disappear from certain areas of the waterbody. With periodic monitoring and proper analysis, these changes are relatively easy to detect and provide relevant information for making management decisions.

Photo 2. Native aquatic plants are an important component in maintaining a healthy aquatic ecosystem.

The point-intercept method as described Wisconsin Department of Natural Resources Bureau of Science Services, PUB-SS-1068 2010 (Hauxwell et al. 2010) was conducted in Deerskin Lake in 2007 by Northern Environmental Technologies Inc. and in 2015 by Onterra ecologists. Based upon guidance from the WDNR, a point spacing (resolution) of 60 meters was used resulting in 337 sampling points being evenly distributed across the lake (Map 1). At each point-intercept location within the *littoral zone*, information regarding the depth, substrate type (muck, sand, or rock), and the plant species sampled along with their relative abundance (Figure 1) on the sampling rake was recorded.

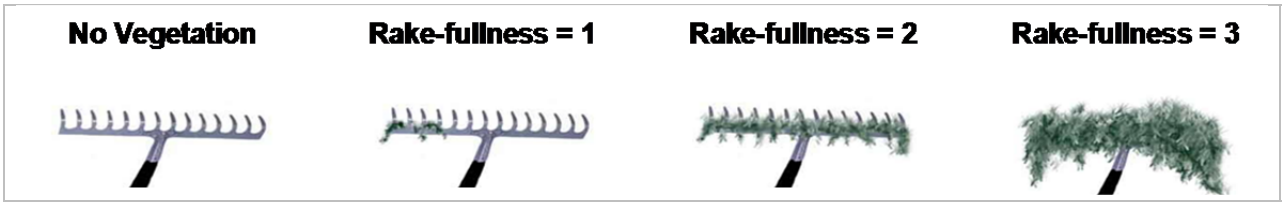

Figure 1. Aquatic plant rake fullness ratings. Adapted from Hauxwell et al (2010).

A pole-mounted rake was used to collect the plant samples, depth, and sediment information at point locations of 15 feet or less. A rake head tied to a rope (rope rake) was used at sites greater than 15 feet. Depth information was collected using graduated marks on the pole of the rake or using an onboard sonar unit at depths greater than 15 feet. Also, when a rope rake was used, information regarding substrate type was not collected due to the inability of the sampler to accurately feel the bottom with this sampling device. The point-intercept survey produces a great deal of information about a lake's aquatic vegetation and overall health. The 2007 and 2015 data are analyzed and compared and are presented in numerous ways; each is discussed in more detail the following section.

Primer on Data Analysis & Data Interpretation

Species List

The species list is simply a list of all of the species that were located during the 2007 and 2015 surveys on Deerskin Lake. The list also contains the growth-form of each plant found (e.g. submergent, emergent, etc.), its scientific name, common name, and its coefficient of conservatism. The latter is discussed in more detail below. Changes in this list over time, whether it is differences in total species present, gains and losses of individual species, or changes in growth forms that are present, can be an early indicator of changes in the ecosystem.

Frequency of Occurrence

Frequency of occurrence describes how often a certain species is found within a lake. Obviously, all of the plants cannot be counted in a lake, so samples are collected from pre-determined areas. In the case of the whole-lake point-intercept surveys conducted on Deerskin Lake in 2007 and 2015, plant samples were collected from plots laid out on a grid that covered the lake. Using the data collected from these plots, an estimate of occurrence of each plant species can be determined. In this section, the occurrences of aquatic plant species are displayed as their *littoral frequency of occurrence*. Littoral frequency of occurrence is used to describe how often each species occurred in the plots that are equal to or less than the maximum depth of plant growth (littoral zone), and is displayed as a percentage.

The **Littoral Zone (Photic Zone)** is the area of the lake where sunlight is able to penetrate and provide aquatic plants with sufficient light to carry out photosynthesis.

Floristic Quality Assessment

The floristic quality of a lake is calculated using its native aquatic plant *species richness* and the average of their *conservatism values*. Species richness is simply the number of aquatic plant species that occur in the lake, and for this analysis, only native species are utilized. The average species conservatism utilizes the coefficient of conservatism values (C-value) for each of those species in its calculation. A species coefficient of conservatism value indicates that species' likelihood of being found in an undisturbed system. The values range from 1 to 10. Species that can tolerate environmental disturbance and are often found in disturbed systems have lower coefficients, while species that are less tolerant to environmental disturbance and are restricted to high quality systems have higher values. For example, coontail (*Ceratophyllum demersum*), a submergent native aquatic plant species with a C-value of 3, has a higher tolerance to disturbed conditions and is often found thriving in lakes with higher nutrient levels and low water clarity. Other species, like algal-leaf pondweed (*Potamogeton confervoides*) with a C-value of 10, are intolerant of environmental disturbance and require minimally disturbed, high quality environments to survive.

On their own, the species richness and average conservatism values for a lake are useful in assessing a lake's plant community; however, the best assessment of the lake's plant community health is determined when the two values are used to calculate the lake's floristic quality. The floristic quality is calculated using the species richness and average conservatism value of the aquatic plant species that were solely encountered on the rake during the point-intercept survey. Deerskin Lake falls within the Northern Lakes and Forests (NLFL) *ecoregion* (Figure 2), and the floristic quality of its aquatic plant community will be compared to other lakes within this ecoregion as well as the entire State of Wisconsin. Ecoregions are areas related by similar climate, physiography, hydrology, vegetation and wildlife potential. Comparing ecosystems within the same ecoregion is sounder than comparing systems within manmade boundaries such as counties, towns, or states. Ecoregional and state-wide medians were calculated from whole-lake point-intercept surveys conducted on 392 lakes throughout Wisconsin by Onterra and WDNR ecologists.

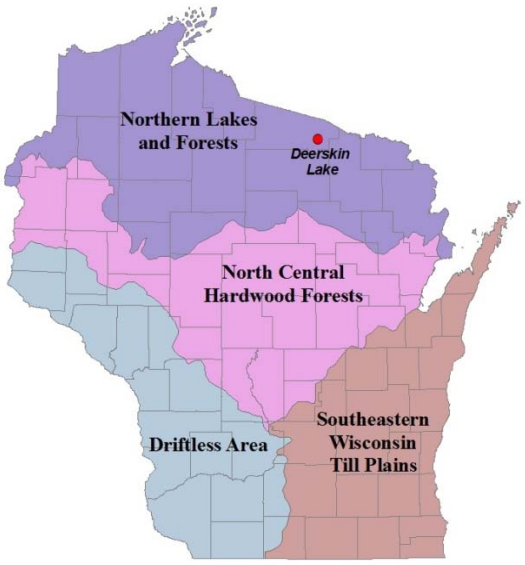

Figure 2. Location of Deerskin Lake within the ecoregions of Wisconsin. After Nichols (1999).

Species Diversity

Species diversity is probably the most misused term in ecology because it is often confused with species richness. As defined previously, species richness is simply the number of species found within a system or community. Although these values are related, they are far from the same because species diversity also takes into account how evenly the species are distributed within the system. For example, Lake A with 25 species may be no more diverse than Lake B with 10 species if the community of Lake A is highly dominated by one or two species and the community of Lake B has a more even distribution of species abundance.

An aquatic system with high species diversity is much more stable than a system with a low diversity. This is analogous to a diverse financial portfolio in that a diverse aquatic plant community can withstand environmental fluctuations much like a diverse portfolio can handle economic fluctuations. For example, a lake with a diverse plant community is much better suited to compete against exotic infestation than a lake with a lower diversity. Simpson's diversity index is used to determine this diversity in a lake ecosystem.

Simpson's diversity (1-D) is calculated as:

$$D = \sum (n/N)^2$$

where:
n = the total number of instances of a particular species
N = the total number of instances of all species and
D is a value between 0 and 1

If a lake has a diversity index value of 0.90, it means that if two plants were randomly sampled from the lake there is a 90% probability that the two individuals would be of a different species. Between 2005 and 2014, WDNR Science Services and Onterra conducted point-intercept surveys on 392 lakes within the state. The Simpson's Diversity Index values of the lakes within this dataset will be compared to Deerskin Lake.

Aquatic Plant Survey Results

On July 28, 2015, Onterra ecologists conducted the whole-lake point-intercept survey on Deerskin Lake. During these surveys, a total of 22 aquatic plant species were physically encountered on the rake (Table 1).

During the 2015 whole-lake point-intercept survey, information regarding substrate type was collected at locations sampled with a pole-mounted rake (less than 15 feet). These data indicate that 91% of the point-intercept locations less than 15 feet deep contained soft sediments, 9% contained sand, and none were found to contain rock (Figure 3). Like terrestrial plants, different aquatic plant species are adapted to grow in certain substrate types; some species are only found growing in soft substrates, others only in sandy areas, and some can be found growing in either. The combination of both soft sediments and areas of sand creates different habitat types for aquatic plants, and generally leads to a higher number of aquatic plant species within the lake.

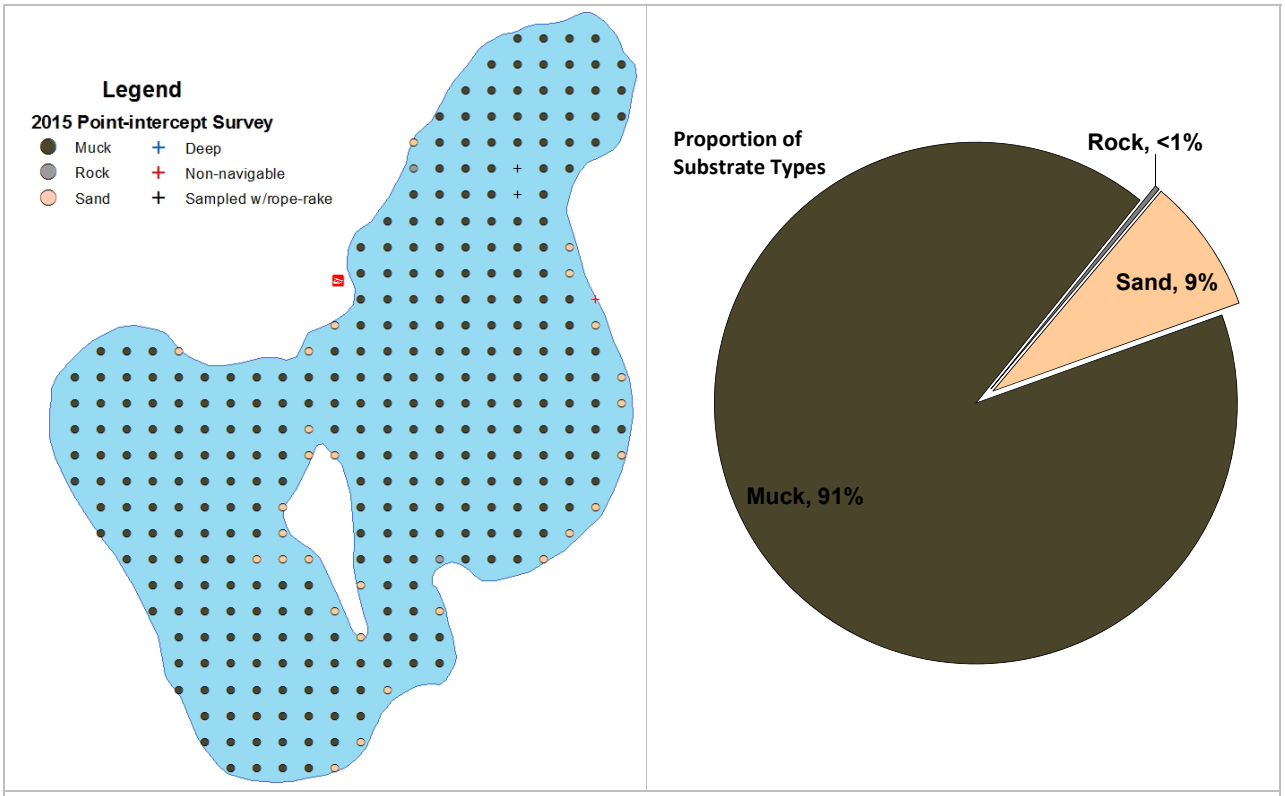

Figure 3. Distribution and proportion of substrate types in Deerskin Lake. Created using data from 2015 point-intercept survey.

Table 1. Aquatic plant species located in Deerskin Lake during 2007 and 2015 surveys.

Growth Form	Scientific Name	Common Name	Coefficient of Conservatism (C)	2007 NET	2015 Onterra
E	Eleocharis erythropoda	Bald spikerush	3		I
	Eleocharis palustris	Creeping spikerush	6		I
	Pontederia cordata	Pickerelweed	9		I
	Sagittaria latifolia	Common arrowehead	3		I
	Scirpus cyperinus	Wool grass	4		I
	Schoenoplectus acutus	Hardstem bulrush	5		X
FL	*Brasenia schreberi*	Watershield	7	X	X
	Nuphar variegata	Spatterdock	6		I
	Nymphaea odorata	White water lily	6	X	X
	Persicaria amphibia	Water smartweed	5		I
	Sparganium angustifolium	Narrow-leaf bur-reed	9		I
Submergent	*Chara spp.*	Muskgrasses	7	X	X
	Elatine minima	Waterwort	9		I
	Elodea canadensis	Common waterweed	3	X	
	Eriocaulon aquaticum	Pipewort	9		X
	Gratiola aurea	Golden pert	10		I
	Isoetes spp.	Quillwort spp.	8		X
	Lobelia dortmanna	Water lobelia	10		I
	Myriophyllum alterniflorum	Alternate-flowered water milfoil	10		X
	Myriophyllum sibiricum	Northern water milfoil	7		X
	Myriophyllum tenellum	Dwarf water milfoil	10	X	X
	Najas flexilis	Slender naiad	6	X	X
	Najas guadalupensis	Southern naiad	7		X
	Potamogeton amplifolius	Large-leaf pondweed	7	X	X
	Potamogeton gramineus	Variable-leaf pondweed	7	X	X
	Potamogeton praelongus	White-stem pondweed	8	X	X
	Potamogeton pusillus	Small pondweed	7		X
	Potamogeton richardsonii	Clasping-leaf pondweed	5	X	X
	Potamogeton robbinsii	Fern-leaf pondweed	8	X	X
	Ranunculus flammula	Creeping spearwort	9		I
	Utricularia resupinata	Northeastern bladderwort	9	X	X
	Vallisneria americana	Wild celery	6	X	X
S/E	*Eleocharis acicularis*	Needle spikerush	5		X
	Juncus pelocarpus	Brown-fruited rush	8	X	X
	Sagitarria cristata & S. graminea	Crested & grass-leaved arrowhead	9	X	X

FL = Floating-leaf; FL/E = Floating-leaf and Emergent; S/E = Submergent and Emergent; FF = Free-floating
X = Located on rake during point-intercept survey, I = Incidental species (Data not collected in 2007)

During the 2015 point-intercept survey, aquatic plants were found growing to a maximum depth of 15 feet, similar to the maximum depth of 14 feet recorded in 2007. Of the 333 point-intercept locations that fell within the maximum depth of plant growth, or within the littoral zone in 2015, approximately 58% contained aquatic vegetation. The frequency of vegetation was somewhat less than in 2007, which saw a littoral frequency of occurrence of 72%. Figure 4 displays the distribution of aquatic vegetation in Deerskin Lake as determined from the 2015 point-intercept survey. In 2015, of the 194 points with vegetation, approximately 68% of point-intercept locations contained aquatic vegetation with a rake fullness rating of 1, 20% contained a rake fullness rating of 2, and 12% contained a rake fullness rating of 3 (Figure 4). Total rake fullness data were not recorded during the 2007 point-intercept survey.

Of the 34 aquatic plant species encountered during 2015, 22 were physically encountered on the rake during the whole-lake point-intercept survey; the remaining 12 species were located incidentally. A species found incidentally in the lake, meaning they were present but not physically encountered on the rake are listed on Table 1 with an "I". Of the 22 species encountered on the rake, southern naiad, fern-leaf pondweed, grass-leaved arrowhead and large-leaf pondweed were the four-most frequently encountered (Figure 5).

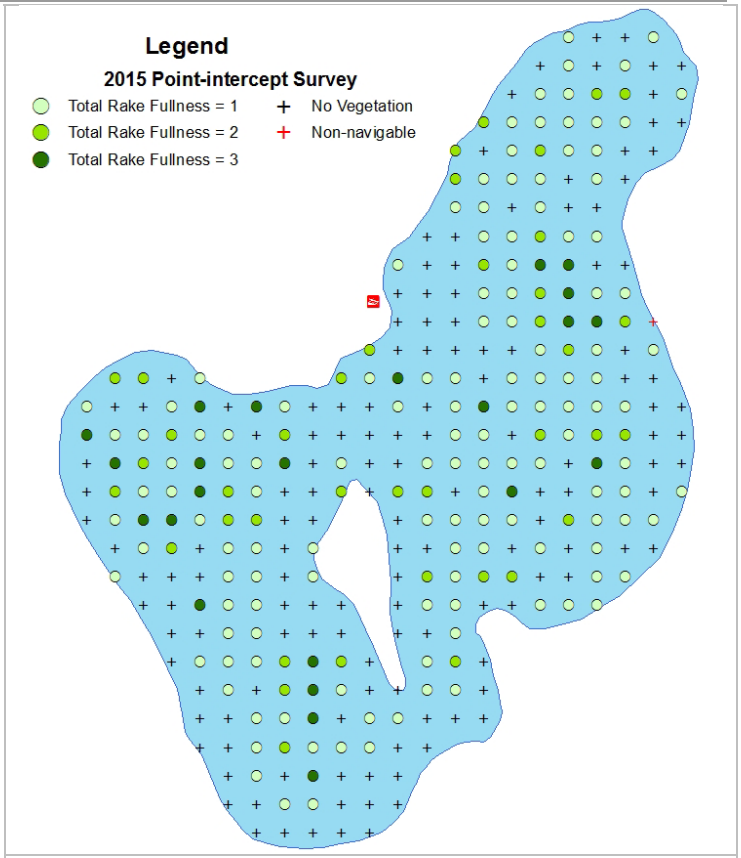

Figure 4. Distribution of aquatic vegetation in Deerskin Lake in 2015. Created using data from Onterra 2015 point-intercept surveys. Please note total rake fullness ratings were not recorded in 2007.

Southern naiad, the most frequently encountered aquatic plant in 2015, had a littoral frequency of occurrence of approximately 26% and was most abundant between eight and 12 feet of water in the lake. While closely related to slender naiad, southern naiad is often perennial and lacking fruit (Les et al. 2010).

Slender naiad is one of three native naiad species that can be found in Wisconsin. It is often found growing over areas of sand, and being an annual, it produces large numbers of seeds that are a valuable food source for wildlife. Southern naiad was not recorded in Deerskin Lake during the 2007 surveys, importantly it is believed that it was likely misidentified as slender naiad. These two species are morphologically similar, and distinguishing between them is often difficult in the field.

Emerging research is indicating that hybrids between southern naiad subspecies exist and are often observed growing aggressively and growing to nuisance levels in certain lakes. A genetic analysis is required to determine if the southern naiad in Deerskin Lake is the more aggressive subspecies hybrid. However, because this species was not observed creating nuisance conditions anywhere within Deerskin Lake, it is not a concern at this time. Southern naiad provides aquatic organisms with valuable structural habitat and sources of food. Additionally, it aids in maintaining the water quality of Deerskin Lake by stabilizing bottom sediments and utilizing nutrients that would otherwise be available to free-floating algae.

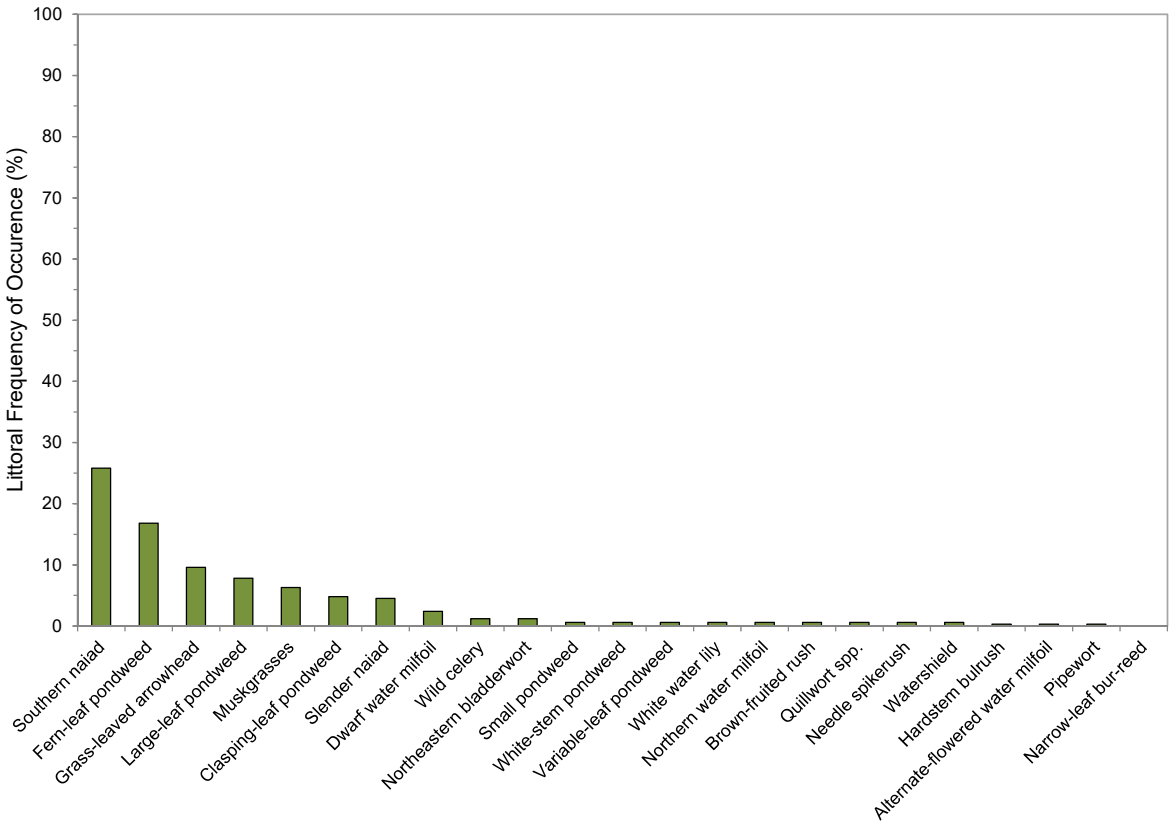

Figure 5. Littoral frequency of occurrence of aquatic plant species in Deerskin Lake in 2015. Created using data from Onterra 2015 point-intercept survey.

As its name indicates, fern pondweed resembles a terrestrial fern frond in appearance (Photo 3), and is often a dominant species in plant communities of northern Wisconsin lakes. Fern pondweed is generally found growing in thick beds over soft substrates, where it stabilizes bottom sediments and provides a dense network of structural habitat for aquatic wildlife. In 2015, fern pondweed was most abundant in some of the deeper sites in which plants were located between 11-15 feet of water.

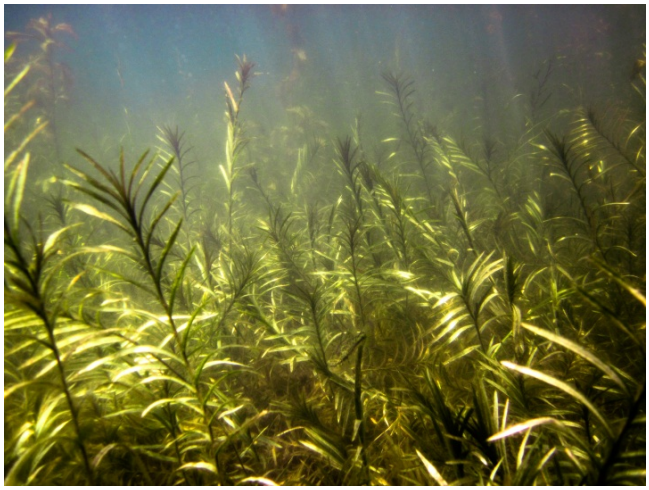

Photo 3. Fern pondweed.

Grass-leaved arrowhead (Sagitaria graminea) was the third most encountered species during the 2015 survey. Usually thought of a an emergent species, in most occurrences during the 2015 survey, this species was instead found as a basal rosette lacking flowering stalks or floating leaves and fully submerged on the lake-bed often in four to eight feet of water. It is believed that the crested arrowhead (Sagitaria cristata) identified in the 2007 survey was likely the morphologically similar grass-leaved arrowhead. These two species are combined for analysis purposes in this report.

Large-leaf pondweed, the fourth most encountered species during the 2015 point-intercept survey, is also known as musky cabbage. This species has the largest leaves of any pondweed species in Wisconsin and provides excellent cover for both small and large fish alike.

During the 2007 and 2015 surveys on Deerskin Lake, one native aquatic plant species was located that is currently listed as *special concern* on the WDNR's endangered and threatened species list (WDNR 2011). Northeastern bladderwort (*Utricularia resupinata*) is listed as special concern due to its rarity in Wisconsin and uncertainty regarding its population within the state. Northeastern bladderwort has a high coefficient of conservatism, indicating that these plants are sensitive to environmental disturbance and require high-quality environmental conditions to survive.

Photo 4. Flower of Northeastern bladderwort, a species listed as special concern in Wisconsin.

Northeastern bladderwort is found in the sandy, shallow areas (1-4 feet) of Deerskin Lake. Hard to locate unless in flower, this species possesses small, fine stems that spread via rhizomes within the sediment; only a small portion of the stem is visible above the sediment. Flowers of northeastern bladderwort extend above the water's surface when in bloom (Photo 4). Northeastern bladderwort is one of several bladderwort species that can be found in Wisconsin and was the only species that was located in Deerskin Lake in either 2007 or 2015 (Table 1). These plants are carnivorous, possessing small sac-like bladders which they use to trap and digest small aquatic invertebrates.

As discussed previously, a point-intercept survey was conducted in 2007 as part of the development of a lake management plan for Deerskin Lake. Since the sampling methodology and sampling locations were the same as the survey conducted in 2015, the data that were collected during these surveys can be compared to determine if any changes in the occurrences of aquatic plant species occurred over this eight-year period. Figure 6 displays the 2007 and 2015 littoral frequencies of occurrence of aquatic plant species in Deerskin Lake.

Five native aquatic plant species exhibited statistically valid reductions in their littoral frequencies of occurrence from 2007 to 2015 (Chi-square $\alpha = 0.05$), and include both naiads, fern-leaf pondweed, large-leaf pondweed, watershield, and white-water lily (Figure 6). Due to the belief that southern naiad was likely mis-identified as slender naiad during the 2007 survey, the combined occurrences of southern and slender naiads are used for comparison between the two surveys. One native species that is not a true vascular plant but belongs to a genus of macroalgae collectively called muskgrasses, exhibited a statistically valid increase in population between 2007 and 2015. Often growing in dense beds, muskgrasses stabilize bottom sediments, provide excellent structural habitat for aquatic organisms, and are sources of food for fish, waterfowl, and other wildlife (Borman et al. 2007). The occurrences of grass-leaved/crested arrowhead, clasping-leaf pondweed, dwarf-water milfoil, wild celery, and northeastern bladderwort were not statistically different from 2007 to 2015 (Figure 6).

Aquatic plant communities are dynamic, and the abundance of certain species can fluctuate from year-to-year depending on climatic conditions, water levels, herbivory, competition, and disease among other factors, and slight fluctuations are to be expected. Eight years is a significant period of time between surveys, and it is not believed that there is any one reason for the observed declines in the aforementioned five species, but likely a combination of natural environmental variations. Similar levels of change would likely be found among the species located in Deerskin Lake if the point-intercept survey is completed in another 8 years.

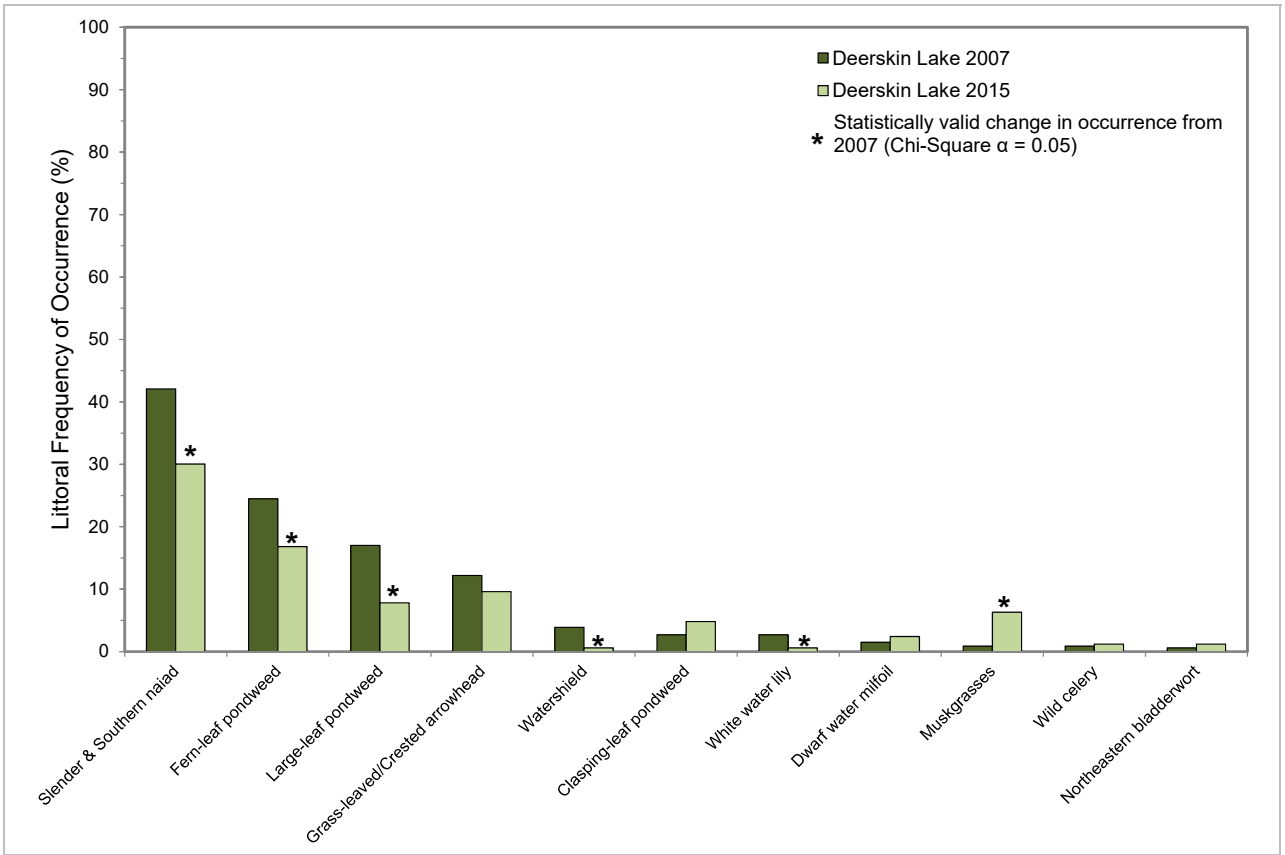

Figure 6. Littoral frequency of occurrence of aquatic plant species in Deerskin Lake in 2007 and 2015. Created using data from Northern Environmental Technologies Inc. 2007 and Onterra 2015 point-intercept surveys.

Environmental conditions that have occurred between these two surveys have favored the increase of certain species and the declines of others. This fluctuation in species' abundance plays into the theory of the importance of having a diverse aquatic plant community. In diverse communities, when the growth of certain species is not favorable in some years, there are other species there to compensate or fulfill the ecosystem services lost or reduced.

As discussed in the primer section, the calculations used for the Floristic Quality Index (FQI) for a lake's aquatic plant community are based on the aquatic plant species that were encountered on the rake during the point-intercept survey and does not include incidental species. For example, while a total 34 native aquatic plant species were located in Deerskin Lake during the 2015 surveys, 22 were encountered on the rake during the point-intercept survey. These 22 native species and their conservatism values were used to calculate the FQI of Deerskin Lake's aquatic plant community in 2015 (equation shown below).

$$FQI = \text{Average Coefficient of Conservatism} * \sqrt{\text{Number of Native Species}}$$

Figure 7 compares the FQI components of Deerskin Lake from the 2007 and 2015 point-intercept surveys to median values of lakes within the Northern Lakes and Forests-Lakes (NLFL) ecoregion as well as the entire State of Wisconsin. Twenty-two native aquatic plant species were located on the rake in 2015 compared to 15 in 2007. Two species identified in 2007 were not located in the 2015 survey (common waterweed and crested arrowhead). As stated previously, it is believed that the grass-leaved arrowhead was mid-identified during the 2007 survey as the morphologically similar crested arrowhead and the two species are lumped for analysis purposes. Eight species were encountered on the point-intercept survey in 2015 that were not encountered during the 2007 survey. These species include hardstem bulrush, pipewort, quillwort, alternate-flowered water milfoil, northern water milfoil, southern naiad, small pondweed, and needle spikerush. The species richness value from 2007 falls below the median value for lakes within the NLFL ecoregion, whereas the 2015 value falls above the median ecoregion and state values (Figure 7).

The average conservatism values for native aquatic plant species in Deerskin Lake were slightly different between the 2007 and 2015 surveys, with values of 6.9 and 7.3, respectively (Figure 7). These values fall above the median value for lakes within the NLFL ecoregion and slightly below the median for lakes throughout Wisconsin. This indicates that Deerskin Lake contains more species with higher conservatism values than the majority of lakes within the ecoregion, but slightly less when compared to lakes state-wide.

Combining the lake's species richness and average conservatism values to calculate the FQI values results in values of 26.8 for 2007 and 34.3 for 2015 (Figure 7). The 2007 value falls below the NLFL ecoregion and state median values, whereas the 2015 value exceeds both state and ecoregion mean values, indicating the floristic quality of Deerskin Lake's aquatic plant community in 2015 was of higher quality than the majority of lakes in Wisconsin. This analysis also indicates that the quality of Deerskin Lake's aquatic plant community has improved significantly from 2007 to 2015. The increase in FQI between the two surveys can be attributed to both greater species richness in 2015 and the fact that several of the additional species located in 2015 had high conservatism values which brought the average higher.

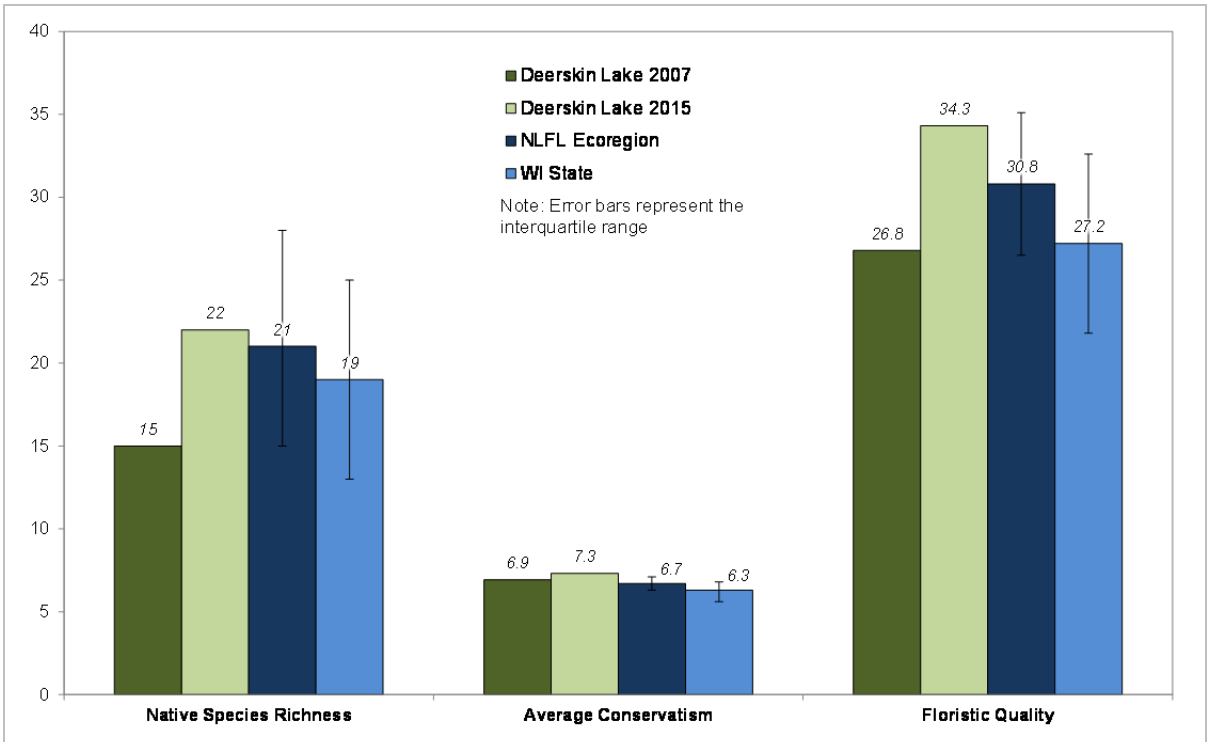

Figure 7. Deerskin Lake Floristic Quality Analysis. Created using data from Northern Environmental Technologies inc. 2007 and Onterra 2015 point-intercept surveys. Regional and state medians created with Onterra and WDNR data. NLFL = Northern Lakes and Forests - Lakes.

As explained earlier, lakes with diverse aquatic plant communities have higher resilience to environmental disturbances and greater resistance to invasion by non-native plants. In addition, a plant community with a mosaic of species with differing morphological attributes provides zooplankton, macroinvertebrates, fish, and other wildlife with diverse structural habitat and various sources of food. Because Deerskin Lake contains a fairly high number of native aquatic plant species, one may assume the aquatic plant community has high species diversity. However, species diversity is also influenced by how evenly the plant species are distributed within the community.

While a method for characterizing diversity values of fair, poor, etc. does not exist, lakes within the same ecoregion may be compared to provide an idea of how Deerskin Lake's diversity value ranks. Using data WDNR Science Services and Onterra, quartiles were calculated for 85 lakes within the NCHF Ecoregion (Figure 8). Comparisons to Deerskin Lake's species diversity are displayed using *boxplots* that showing median values and upper/lower quartiles of lakes in the same ecoregion and in the state. Box plots, or box-and-whisker diagrams, show data through five-number summaries: minimum, lower quartile, median, upper quartile, and maximum. Just as the median divides the data into upper and lower halves, quartiles further divide the data by calculating the median of each half of the dataset.

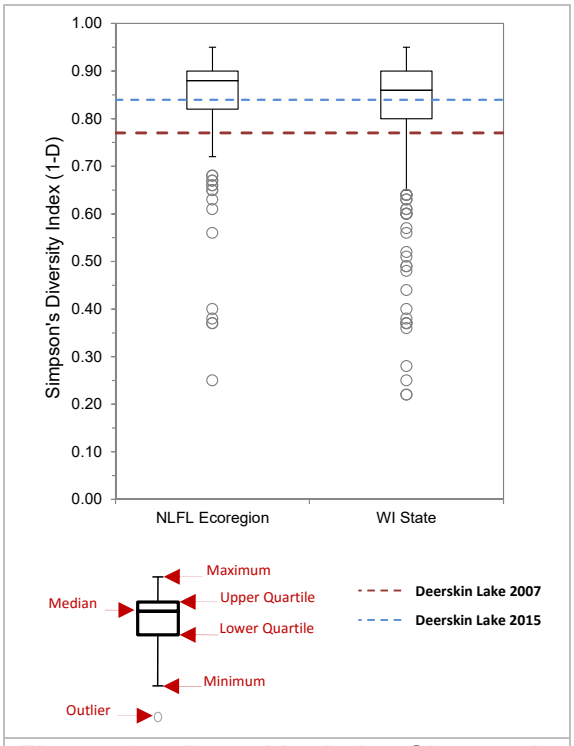

Figure 8. Deerskin Lake Simpson's Diversity Index. Created using data from Northern Environmental 2007 and Onterra 2015 point-intercept surveys. Ecoregion and state data created using WDNR and Onterra data.

Using the data collected from the 2007 and 2015 point-intercept surveys, Deerskin Lake's aquatic plant community was shown to have Simpson's Diversity Index values of 0.77 in 2007 and 0.84 in 2015 (Figure 8). These values fall below the median values for lakes within the NLFL ecoregion and lakes throughout Wisconsin, indicating Deerskin Lake has below average species diversity. In other words, if two individual aquatic plants were randomly sampled from Deerskin Lake in 2015, there would be an 84% probability that they would be different species.

As previously discussed, the littoral frequency of occurrence analysis allows for an understanding of how often each plant species is located during the point-intercept survey. Because each sampling location may contain numerous plant species, relative frequency of occurrence is one tool to evaluate how often each plant species is found in relation to all other species found (composition of population). For instance, while fern-leaf pondweed was found at approximately 16.8 % of the littoral sampling locations in Deerskin Lake in 2015, the relative frequency of occurrence was 19%. Explained another way, if 100 plants were randomly sampled from Deerskin Lake, 19 of them would be fern-leaf pondweed. Figure 9 displays the relative occurrence of aquatic plant species from Deerskin Lake in 2015, and illustrates that nearly half of the plant population in the lake is dominated by southern naiad (30%) and fern-leaf pondweed (19%).

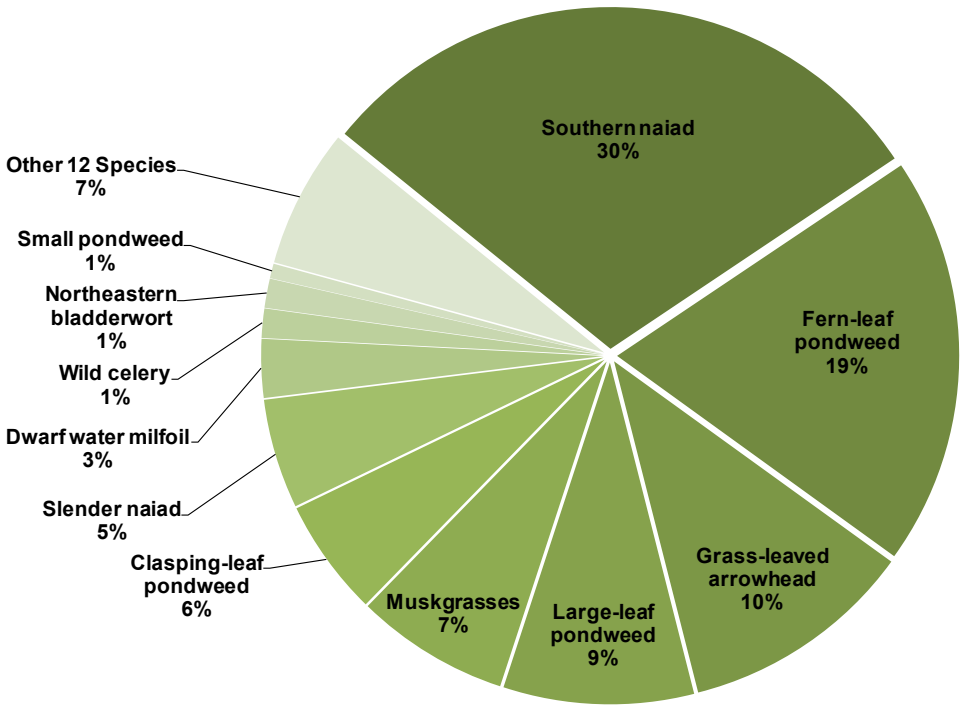

Figure 9. Relative frequency of occurrence of aquatic plant species in Deerskin Lake in 2015. Created using data from Onterra 2015 point-intercept survey.

Non-native Plants in Deerskin Lake

Eurasian water milfoil

Eurasian-water milfoil (EWM) was not known to be present in Deerskin Lake prior to 2015 and the point-intercept survey conducted in 2015 is one method used to search for the species. At the start of the point-intercept survey conducted by Onterra on July 28, 2015, one survey crew identified a floating fragment suspected to be EWM near the northern shore of the lake. The suspected EWM fragment was vouchered and sent to the UW-Stevens Point Herbarium where it was confirmed as being the non-native exotic species EWM. Onterra staff continued to search for more occurrences of EWM during the remainder of the point-intercept survey and no additional EWM plants were found.

A survey crew from the WDNR visited Deerskin Lake on August 7, 2015 to search for EWM. During their survey, two species of native milfoils were identified in the lake (northern water milfoil and alternate-flowered water milfoil) and no rooted or floating EWM plants were found.

During the week of August 16th, 2015, volunteer members of the lake association located an additional floating fragment of suspected EWM in the lake. The fragment was confirmed as EWM by the WDNR and was sent to the UWSP herbarium for further documentation.

Actively growing, rooted EWM plants were not located in Deerskin Lake in 2015.

SUMMARY & CONCLUSIONS

The comprehensive aquatic plant studies conducted on Deerskin Lake in 2015 indicate that the lake's aquatic plant community is of high quality, containing high species richness as well as supporting relatively rare and environmentally sensitive species. While comparisons with the data gathered in 2007 indicated that some species declined and others increased in their occurrence, there were no changes that signify environmental degradation. Overall, Deerskin Lake's aquatic plant community is healthy, and at present, EWM is the primary threat to its integrity. The point-intercept data collected in 2015 has been provided to the WDNR and are included with this report as Appendix A.

The discovery of floating fragments of EWM in 2015 is troubling, but no actively growing EWM plants have been confirmed in the lake suggesting that any possible infestation appears to be in its early stages, if it actually exists at all. Surveys aimed at locating occurrences of EWM are scheduled for early-summer of 2016. The results of these surveys will determine the extent of the possible EWM population in the lake and how the DSLA moves forward with EWM management in Deerskin Lake.

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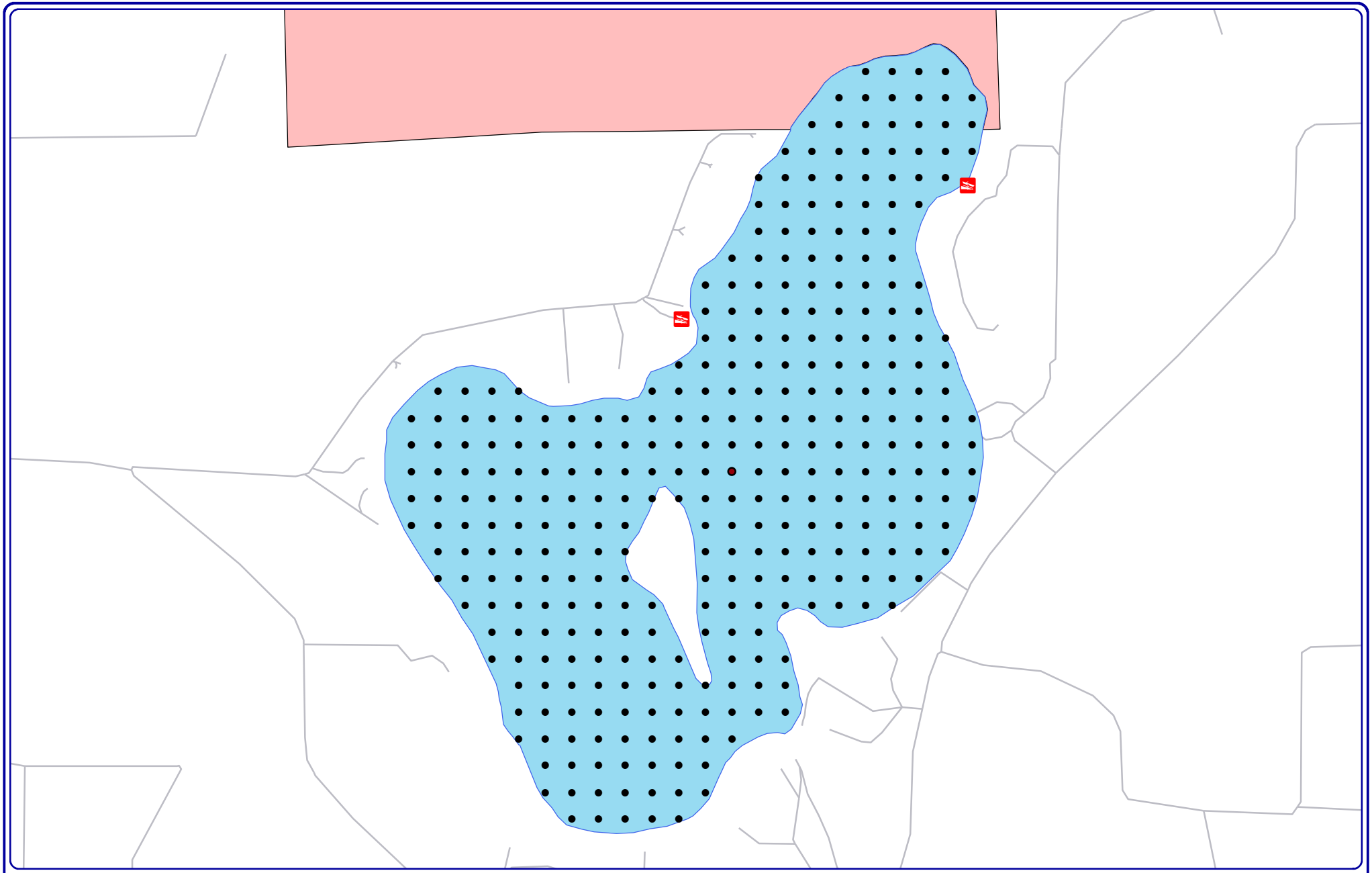

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Feet

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Sources:
Roads and Hydro: WDNR
Map Date: October 22, 2014
Filename: *Map1_Deerskin_Grant_Proposal.mxd*

Project Location in Wisconsin

Legend

- Deerskin Lake ~ 301 acres
  WDNR Definition
- Public Owned Lands
- Public Access
- Point-Intercept Survey Location
  60 meter spacing, 337 total points

Map 1

Deerskin Lake
Vilas County, Wisconsin

Project Location & Lake Boundaries

A

APPENDIX A

Aquatic Plant Survey Data

Point Number	Latitude	Longitude	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Brasenia schreberi	Chara spp.	Eleocharis acicularis	Eriocaulon aquaticum	Isoetes spp.	Juncus pelocarpus	Myriophyllum alterniflorum	Myriophyllum sibiricum	Myriophyllum tenellum	Najas flexilis	Najas guadalupensis	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Sagittaria graminea	Schoenoplectus acutus	Utricularia resupinata	Vallisneria americana	Freshwater sponge
1	583675.000000	611782.000000	196	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	1	5	Muck	Pole	SAMPLED			1	1										1							0					
2	583675.000000	611722.000000	195	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	2	7	Muck	Pole	SAMPLED			3		3																0					
3	583675.000000	611662.000000	177	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	3	7	Muck	Pole	SAMPLED			0																		0					
4	583675.000000	611602.000000	176	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	4	5	Muck	Pole	SAMPLED			0																		0					
5	583675.000000	611542.000000	160	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	5	5	Muck	Pole	SAMPLED			0																		0					
6	583735.000000	611842.000000	198	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	6	4	Muck	Pole	SAMPLED			2		2																0					
7	583735.000000	611782.000000	197	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	7	5	Muck	Pole	SAMPLED			0																		0					
8	583735.000000	611722.000000	194	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	8	7	Muck	Pole	SAMPLED			1											1							0					
9	583735.000000	611662.000000	178	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	9	8	Muck	Pole	SAMPLED			3											3						1	0					
10	583735.000000	611602.000000	175	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	10	7	Muck	Pole	SAMPLED			2											2							0					
11	583735.000000	611542.000000	161	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	11	6	Muck	Pole	SAMPLED			1										1								1					
12	583735.000000	611482.000000	159	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	12	5	Muck	Pole	SAMPLED			0																		0					
13	583735.000000	611422.000000	146	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	13	5	Muck	Pole	SAMPLED			1										1								0					
14	583795.000000	611842.000000	199	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	14	5	Muck	Pole	SAMPLED			2							2											0					
15	583795.000000	611782.000000	200	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	15	6	Muck	Pole	SAMPLED			0																		0					
16	583795.000000	611722.000000	193	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	16	7	Muck	Pole	SAMPLED			1											1							0					
17	583795.000000	611662.000000	179	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	17	11	Muck	Pole	SAMPLED			2											1						1	0					
18	583795.000000	611602.000000	174	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	18	9	Muck	Pole	SAMPLED			1											1							1	0					
19	583795.000000	611542.000000	162	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	19	8	Muck	Pole	SAMPLED			3											3							0					
20	583795.000000	611482.000000	158	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	20	7	Muck	Pole	SAMPLED			1														1			1	0					
21	583795.000000	611422.000000	147	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	21	6	Muck	Pole	SAMPLED			0																		0					
22	583795.000000	611362.000000	145	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	22	6	Muck	Pole	SAMPLED			0																		0					
23	583855.000000	611842.000000	202	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	23	5	Muck	Pole	SAMPLED			0																		0					
24	583855.000000	611782.000000	201	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	24	6	Muck	Pole	SAMPLED			1											1							0					
25	583855.000000	611722.000000	192	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	25	8	Muck	Pole	SAMPLED			2											2		1					0					
26	583855.000000	611662.000000	180	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	26	9	Muck	Pole	SAMPLED			1											1							0					
27	583855.000000	611602.000000	173	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	27	12	Muck	Pole	SAMPLED			1								1										1	0					
28	583855.000000	611542.000000	163	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	28	12	Muck	Pole	SAMPLED			3											3							0					
29	583855.000000	611482.000000	157	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	29	7	Muck	Pole	SAMPLED			2											2							0					
30	583855.000000	611422.000000	148	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	30	7	Muck	Pole	SAMPLED			0																		0					
31	583855.000000	611362.000000	144	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	31	6	Muck	Pole	SAMPLED			0																		0					
32	583855.000000	611302.000000	133	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	32	7	Muck	Pole	SAMPLED			0																		0					
33	583855.000000	611242.000000	132	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	33	6	Muck	Pole	SAMPLED			0																		0					
34	583915.000000	611842.000000	203	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	34	2	Sand	Pole	SAMPLED			1																		0		1			
35	583915.000000	611782.000000	204	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	35	5	Muck	Pole	SAMPLED			3											1					3	1	0					
36	583915.000000	611722.000000	191	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	36	7	Muck	Pole	SAMPLED			1											1							0					
37	583915.000000	611662.000000	181	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	37	9	Muck	Pole	SAMPLED			3											3							0					
38	583915.000000	611602.000000	172	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	38	12	Muck	Pole	SAMPLED			3		3																0					
39	583915.000000	611542.000000	164	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	39	12	Muck	Pole	SAMPLED			1																	1	0					
40	583915.000000	611482.000000	156	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	40	13	Muck	Pole	SAMPLED			0																		0					
41	583915.000000	611422.000000	149	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	41	12	Muck	Pole	SAMPLED			0																		0					
42	583915.000000	611362.000000	143	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	42	8	Muck	Pole	SAMPLED			3											3							0					
43	583915.000000	611302.000000	134	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	43	8	Muck	Pole	SAMPLED			0																		0					
44	583915.000000	611242.000000	131	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	44	7	Muck	Pole	SAMPLED			1		1												1				0					
45	583915.000000	611182.000000	40	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	45	7	Muck	Pole	SAMPLED			0																		0					
46	583915.000000	611122.000000	39	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	46	6	Muck	Pole	SAMPLED			0																		0					
47	583915.000000	611062.000000	20	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	47	5	Muck	Pole	SAMPLED			0																		0					
48	583975.000000	611782.000000	205	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	48	7	Muck	Pole	SAMPLED			0																		0					
49	583975.000000	611722.000000	190	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	49	8	Muck	Pole	SAMPLED			1											1							1					
50	583975.000000	611662.000000	182	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	50	10	Muck	Pole	SAMPLED			1																	1	0					
51	583975.000000	611602.000000	171	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	51	12	Muck	Pole	SAMPLED			2											1					2		0					
52	583975.000000	611542.000000	165	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	52	11	Muck	Pole	SAMPLED			2											2							0					
53	583975.000000	611482.000000	155	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	53	13	Muck	Pole	SAMPLED			1																		1	0					
54	583975.000000	611422.000000	150	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	54	14	Muck	Pole	SAMPLED			1		1																0					
55	583975.000000	611362.000000	142	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	55	15	Muck	Pole	SAMPLED			1																	1	0					
56	583975.000000	611302.000000	135	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	56	14	Muck	Pole	SAMPLED			1																	1	0					
57	583975.000000	611242.000000	130	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	57	9	Muck	Pole	SAMPLED			1		1																0					
58	583975.000000	611182.000000	41	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	58	8	Muck	Pole	SAMPLED			1											1		1					1	0					
59	583975.000000	611122.000000	38	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	59	7	Muck	Pole	SAMPLED			0																		0					
60	583975.000000	611062.000000	21	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	60	6	Muck	Pole	SAMPLED			0																		0					
61	583975.000000	611002.000000	19	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	61	6	Muck	Pole	SAMPLED			0																		0					
62	583975.000000	610942.000000	6	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	62	4	Muck	Pole	SAMPLED			0																		0					
63	584035.000000	611782.000000	206	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	63	7	Muck	Pole	SAMPLED			3		3																0					
64	584035.000000	611722.000000	189	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	64	8	Muck	Pole	SAMPLED			0																		0					
65	584035.000000	611662.000000	183	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	65	8	Muck	Pole	SAMPLED			1																	1	0					
66	584035.000000	611602.000000	170	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	66	8	Muck	Pole	SAMPLED			1		1															1	0					
67	584035.000000	611542.000000	166	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	67	8	Muck	Pole	SAMPLED			2											2							0					
68	584035.000000	611482.000000	154	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	68	8	Muck	Pole	SAMPLED			1											1						1	1	0					
69	584035.000000	611422.000000	151	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	69	9	Muck	Pole	SAMPLED			1										1								0					
70	584035.000000	611362.000000	141	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	70	11	Muck	Pole	SAMPLED			1											1							1	0					

Point Number	Latitude	Longitude	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Brasenia schreberi	Chara spp.	Eleocharis acicularis	Eriocaulon aquaticum	Isoetes spp.	Juncus pelocarpus	Myriophyllum alterniflorum	Myriophyllum sibiricum	Myriophyllum tenellum	Najas flexilis	Najas guadalupensis	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Sagittaria graminea	Schoenoplectus acutus	Utricularia resupinata	Vallisneria americana	Freshwater sponge
71	584035.000000	611302.000000	136	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	71	13	Muck	Pole	SAMPLED			1																	1	0					
72	584035.000000	611242.000000	129	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	72	15	Muck	Pole	SAMPLED			1																	1	0					
73	584035.000000	611182.000000	42	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	73	9	Muck	Pole	SAMPLED			0																		0					
74	584035.000000	611122.000000	37	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	74	7	Muck	Pole	SAMPLED			1											1							0					
75	584035.000000	611062.000000	22	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	75	6	Muck	Pole	SAMPLED			1													1				1	0					
76	584035.000000	611002.000000	18	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	76	6	Muck	Pole	SAMPLED			1										1								0					
77	584035.000000	610942.000000	7	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	77	6	Muck	Pole	SAMPLED			0																		0					
78	584035.000000	610882.000000	5	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	78	5	Muck	Pole	SAMPLED			0																		0					
79	584095.000000	611782.000000	207	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	79	7	Muck	Pole	SAMPLED			1													1					0					
80	584095.000000	611722.000000	188	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	80	8	Muck	Pole	SAMPLED			2																		2					
81	584095.000000	611662.000000	184	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	81	7	Muck	Pole	SAMPLED			3												3						0					
82	584095.000000	611602.000000	169	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	82	7	Muck	Pole	SAMPLED			0																		0					
83	584095.000000	611542.000000	167	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	83	8	Muck	Pole	SAMPLED			0																		0					
84	584095.000000	611482.000000	153	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	84	8	Muck	Pole	SAMPLED			0																		0					
85	584095.000000	611422.000000	152	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	85	8	Muck	Pole	SAMPLED			0																		0					
86	584095.000000	611362.000000	140	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	86	7	Sand	Pole	SAMPLED			0																		0					
87	584095.000000	611302.000000	137	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	87	9	Muck	Pole	SAMPLED			0																		0					
88	584095.000000	611242.000000	128	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	88	11	Muck	Pole	SAMPLED			2		2																0					
89	584095.000000	611182.000000	43	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	89	10	Muck	Pole	SAMPLED			2												2						0					
90	584095.000000	611122.000000	36	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	90	9	Muck	Pole	SAMPLED			1												1					1	1	0					
91	584095.000000	611062.000000	23	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	91	9	Muck	Pole	SAMPLED			2												2						0					
92	584095.000000	611002.000000	17	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	92	8	Muck	Pole	SAMPLED			0																		0					
93	584095.000000	610942.000000	8	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	93	6	Muck	Pole	SAMPLED			1											1							1					
94	584095.000000	610882.000000	4	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	94	7	Muck	Pole	SAMPLED			0																		0					
95	584155.000000	611782.000000	208	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	95	8	Muck	Pole	SAMPLED			0																		0					
96	584155.000000	611722.000000	187	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	96	8	Muck	Pole	SAMPLED			0																		0					
97	584155.000000	611662.000000	185	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	97	7	Muck	Pole	SAMPLED			0																		0					
98	584155.000000	611602.000000	168	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	98	7	Muck	Pole	SAMPLED			0																		0					
99	584155.000000	611542.000000	120	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	99	6	Muck	Pole	SAMPLED			0																		0					
100	584155.000000	611482.000000	121	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	100	2	Sand	Pole	SAMPLED			1						1				1								0					
101	584155.000000	611422.000000	122	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	101	2	Sand	Pole	SAMPLED			1										1								0		1			
102	584155.000000	611362.000000	139	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	102	7	Sand	Pole	SAMPLED			0																		0					
103	584155.000000	611302.000000	138	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	103	7	Muck	Pole	SAMPLED			0																		0					
104	584155.000000	611242.000000	127	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	104	8	Muck	Pole	SAMPLED			3												2		1			1		0				1	
105	584155.000000	611182.000000	44	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	105	9	Muck	Pole	SAMPLED			3		3																0					
106	584155.000000	611122.000000	35	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	106	10	Muck	Pole	SAMPLED			3		3																0					
107	584155.000000	611062.000000	24	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	107	11	Muck	Pole	SAMPLED			1																	1	0					
108	584155.000000	611002.000000	16	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	108	10	Muck	Pole	SAMPLED			3																	3	0					
109	584155.000000	610942.000000	9	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	109	7	Muck	Pole	SAMPLED			1								1										0					
110	584155.000000	610882.000000	3	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	110	6	Muck	Pole	SAMPLED			0																		0					
111	584215.000000	611842.000000	104	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	111	5	Sand	Pole				2			1		2	1			2								0					
112	584215.000000	611782.000000	105	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	112	8	Muck	Pole				0																		0					
113	584215.000000	611722.000000	130	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	113	7	Muck	Pole	SAMPLED			0																		0					
114	584215.000000	611662.000000	118	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	114	5	Sand	Pole	SAMPLED			1										1								0					
115	584215.000000	611602.000000	119	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	115	2	Sand	Pole	SAMPLED			2				1														0					
116	584215.000000	611362.000000	123	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	116	5	Sand	Pole	SAMPLED			0																		0					
117	584215.000000	611302.000000	124	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	117	7	Muck	Pole	SAMPLED			0																		0					
118	584215.000000	611242.000000	126	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	118	7	Muck	Pole	SAMPLED			2												2		1				0					
119	584215.000000	611182.000000	45	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	119	8	Muck	Pole	SAMPLED			1																1		0					
120	584215.000000	611122.000000	34	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	120	10	Muck	Pole	SAMPLED			0																		0					
121	584215.000000	611062.000000	25	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	121	11	Muck	Pole	SAMPLED			1																	1	0					
122	584215.000000	611002.000000	15	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	122	14	Muck	Pole	SAMPLED			0																		0					
123	584215.000000	610942.000000	10	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	123	6	Muck	Pole	SAMPLED			0																		0					
124	584215.000000	610882.000000	2	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	124	6	Muck	Pole	SAMPLED			0																		0					
125	584275.000000	611902.000000	82	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	125	3	Sand	Pole				2						1				2							0					
126	584275.000000	611842.000000	103	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	126	8	Muck	Pole				1																		1					
127	584275.000000	611782.000000	106	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	127	8	Muck	Pole				0																		0					
128	584275.000000	611722.000000	129	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	128	8	Muck	Pole	SAMPLED			0																		0					
129	584275.000000	611662.000000	117	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	129	8	Muck	Pole	SAMPLED			0																		0					
130	584275.000000	611602.000000	94	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	130	4	Sand	Pole	SAMPLED			0																		0					
131	584275.000000	611242.000000	125	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	131	6	Sand	Pole	SAMPLED			0																		0					
132	584275.000000	611182.000000	46	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	132	7	Muck	Pole	SAMPLED			0																		0					
133	584275.000000	611122.000000	33	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	133	7	Muck	Pole	SAMPLED			1		1																1					
134	584275.000000	611062.000000	26	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	134	10	Muck	Pole	SAMPLED			1												1						0					
135	584275.000000	611002.000000	14	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	135	12	Muck	Pole	SAMPLED			0																		0					
136	584275.000000	610942.000000	11	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	136	6	Muck	Pole	SAMPLED			0																		0					
137	584275.000000	610882.000000	1	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	137	4	Sand	Pole	SAMPLED			0																		0					
138	584335.000000	612082.000000	62	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	138	4	Muck	Pole				1													1					0					
139	584335.000000	612022.000000	63	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	139	4	Muck	Pole				0																		0					
140	584335.000000	611962.000000	81	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	140	6	Muck	Pole				0																		0					

Point Number	Latitude	Longitude	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Brasenia schreberi	Chara spp.	Eleocharis acicularis	Eriocaulon aquaticum	Isoetes spp.	Juncus pelocarpus	Myriophyllum alterniflorum	Myriophyllum sibiricum	Myriophyllum tenellum	Najas flexilis	Najas guadalupensis	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Sagittaria graminea	Schoenoplectus acutus	Utricularia resupinata	Vallisneria americana	Freshwater sponge
141	584335.000000	611902.000000	83	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	141	8	Muck	Rope				0																		0				
142	584335.000000	611842.000000	102	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	142	6	Muck	Pole				3													1				1	2	0				
143	584335.000000	611782.000000	107	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	143	8	Muck	Pole				1											1							1				
144	584335.000000	611722.000000	128	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	144	9	Muck	Pole	SAMPLED			0																		0				
145	584335.000000	611662.000000	116	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	145	8	Muck	Pole	SAMPLED			0																		0				
146	584335.000000	611602.000000	95	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	146	7	Muck	Pole	SAMPLED			2											1		1					0			1	
147	584335.000000	611542.000000	76	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	147	8	Muck	Pole	SAMPLED			0																		0				
148	584335.000000	611482.000000	74	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	148	7	Muck	Pole	SAMPLED			0																		0				
149	584335.000000	611422.000000	73	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	149	7	Muck	Pole	SAMPLED			0																		0				
150	584335.000000	611362.000000	57	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	150	7	Muck	Pole	SAMPLED			0																		0				
151	584335.000000	611302.000000	54	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	151	8	Sand	Pole	SAMPLED			0																		0				
152	584335.000000	611182.000000	47	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	152	4	Sand	Pole	SAMPLED			0																		0				
153	584335.000000	611122.000000	32	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	153	9	Muck	Pole	SAMPLED			1											1							0				
154	584335.000000	611062.000000	27	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	154	14	Muck	Pole	SAMPLED			0																		0				
155	584335.000000	611002.000000	13	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	155	7	Muck	Pole	SAMPLED			0																		0				
156	584335.000000	610942.000000	12	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	156	4	Sand	Pole	SAMPLED			0																		0				
157	584395.000000	612142.000000	47	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	157	5	Muck	Pole	SAMPLED			0																		0				
158	584395.000000	612082.000000	61	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	158	6	Muck	Pole				0																		0				
159	584395.000000	612022.000000	64	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	159	6	Muck	Pole				0																		0				
160	584395.000000	611962.000000	80	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	160	7	Muck	Pole				0																		0				
161	584395.000000	611902.000000	84	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	161	8	Muck	Pole				0																		0				
162	584395.000000	611842.000000	101	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	162	9	Muck	Pole				1																		1				
163	584395.000000	611782.000000	108	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	163	10	Muck	Pole				0																		0				
164	584395.000000	611722.000000	127	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	164	10	Muck	Pole	SAMPLED			0																		0				
165	584395.000000	611662.000000	115	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	165	8	Muck	Pole	SAMPLED			1											1							0				
166	584395.000000	611602.000000	96	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	166	9	Muck	Pole	SAMPLED			2		1									2						1		0				
167	584395.000000	611542.000000	77	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	167	11	Muck	Pole	SAMPLED			1																	1	0				
168	584395.000000	611482.000000	75	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	168	11	Muck	Pole	SAMPLED			0																		0				
169	584395.000000	611422.000000	72	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	169	14	Muck	Pole	SAMPLED			2																	2	0				
170	584395.000000	611362.000000	58	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	170	10	Muck	Pole	SAMPLED			1																	1	0				
171	584395.000000	611302.000000	55	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	171	10	Muck	Pole	SAMPLED			0																		0				
172	584395.000000	611242.000000	53	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	172	11	Muck	Pole	SAMPLED			1																	1	0				
173	584395.000000	611182.000000	48	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	173	12	Muck	Pole	SAMPLED			1																	1	0				
174	584395.000000	611122.000000	31	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	174	13	Muck	Pole	SAMPLED			0																		0				
175	584395.000000	611062.000000	28	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	175	9	Sand	Pole	SAMPLED			0																		0				
176	584455.000000	612322.000000	34	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	176	3	Sand	Pole	SAMPLED			2			2														0		1		
177	584455.000000	612262.000000	35	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	177	4	Rock	Pole	SAMPLED			2									2									0				
178	584455.000000	612202.000000	46	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	178	6	Muck	Pole	SAMPLED			1											1							0				
179	584455.000000	612142.000000	48	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	179	6	Muck	Pole	SAMPLED			0																		0				
180	584455.000000	612082.000000	60	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	180	7	Muck	Pole				0																		0				
181	584455.000000	612022.000000	65	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	181	7	Muck	Pole				0																V			0				
182	584455.000000	611962.000000	79	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	182	8	Muck	Pole				0																		0				
183	584455.000000	611902.000000	85	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	183	8	Muck	Pole				0																		0				
184	584455.000000	611842.000000	100	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	184	9	Muck	Pole				1											1							0				
185	584455.000000	611782.000000	109	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	185	11	Muck	Pole				1											1						1	0				
186	584455.000000	611722.000000	126	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	186	11	Muck	Pole	SAMPLED			1											1						1	0				
187	584455.000000	611662.000000	114	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	187	9	Muck	Pole	SAMPLED			1											1						1	1	0				
188	584455.000000	611602.000000	97	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	188	9	Muck	Pole	SAMPLED			0																		0				
189	584455.000000	611542.000000	78	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	189	12	Muck	Pole	SAMPLED			1																	1	0				
190	584455.000000	611482.000000	79	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	190	12	Muck	Pole	SAMPLED			1																	1	0				
191	584455.000000	611422.000000	71	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	191	10	Muck	Pole	SAMPLED			1																	1	0				
192	584455.000000	611362.000000	59	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	192	7	Muck	Pole	SAMPLED			1																	1	1	0				
193	584455.000000	611302.000000	56	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	193	8	Muck	Pole	SAMPLED			1											1							0				
194	584455.000000	611242.000000	52	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	194	11	Muck	Pole	SAMPLED			2											2						1	0				
195	584455.000000	611182.000000	49	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	195	10	Muck	Pole	SAMPLED			1											1							0				
196	584455.000000	611122.000000	30	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	196	8	Muck	Pole	SAMPLED			0																		0				
197	584515.000000	612382.000000	18	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	197	4	Muck	Pole	SAMPLED			2		1									1							0				
198	584515.000000	612322.000000	33	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	198	6	Muck	Pole	SAMPLED			0																		0				
199	584515.000000	612262.000000	36	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	199	6	Muck	Pole	SAMPLED			1																		1				
200	584515.000000	612202.000000	45	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	200	6	Muck	Pole	SAMPLED			1											1							0				
201	584515.000000	612142.000000	49	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	201	6	Muck	Pole	SAMPLED			1													1				1	0				
202	584515.000000	612082.000000	59	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	202	7	Muck	Pole				2											1		2					1				
203	584515.000000	612022.000000	66	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	203	6	Muck	Pole				1										1								1				
204	584515.000000	611962.000000	78	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	204	8	Muck	Pole				1															1			0				
205	584515.000000	611902.000000	86	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	205	8	Muck	Pole				0																		0				
206	584515.000000	611842.000000	99	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	206	8	Muck	Pole				0																		0				
207	584515.000000	611782.000000	110	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	207	11	Muck	Pole				3		3																0				
208	584515.000000	611722.000000	125	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	208	13	Muck	Pole	SAMPLED			1											1						1	0				
209	584515.000000	611662.000000	113	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	209	12	Muck	Pole	SAMPLED			1											1						1	0				
210	584515.000000	611602.000000	98	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	210	13	Muck	Pole	SAMPLED			1											1						1	0				

Point Number	Latitude	Longitude	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Brasenia schreberi	Chara spp.	Eleocharis acicularis	Eriocaulon aquaticum	Isoetes spp.	Juncus pelocarpus	Myriophyllum alterniflorum	Myriophyllum sibiricum	Myriophyllum tenellum	Najas flexilis	Najas guadalupensis	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Sagittaria graminea	Schoenoplectus acutus	Utricularia resupinata	Vallisneria americana	Freshwater sponge
211	584515.000000	611542.000000	93	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	211	12	Muck	Pole	SAMPLED			1										1							1	0					
212	584515.000000	611482.000000	80	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	212	10	Muck	Pole	SAMPLED			1										1								0					
213	584515	611422	70	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	213	7	Muck	Pole	SAMPLED			2										1						1	1	0					
214	584515	611362	60	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	214	0			ROCKS																					0					
215	584515	611242	51	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	215	6	Sand	Pole	SAMPLED			0																		0					
216	584515	611182	50	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	216	7	Muck	Pole	SAMPLED			0																		0					
217	584515	611122	29	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	217	6	Muck	Pole	SAMPLED			0																		0					
218	584575	612442	17	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	218	4	Muck	Pole	SAMPLED			0																		0					
219	584575	612382	19	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	219	5	Muck	Pole	SAMPLED			1																		1					
220	584575	612322	32	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	220	6	Muck	Pole	SAMPLED			1													1					0					
221	584575	612262	37	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	221	6	Muck	Pole	SAMPLED			1													1					1	0					
222	584575	612202	44	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	222	7	Muck	Pole	SAMPLED			0																		0					
223	584575	612142	50	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	223	7	Muck	Pole	SAMPLED			1													1					1					
224	584575	612082	58	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	224	8	Muck	Pole				1																		1					
225	584575	612022	67	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	225	6	Muck	Pole				1										1								1					
226	584575	611962	77	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	226	8	Muck	Pole				1										1			1					1					
227	584575	611902	87	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	227	8	Muck	Pole				0																		0					
228	584575	611842	98	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	228	7	Muck	Pole				1		1									1							1	1					
229	584575	611782	111	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	229	13	Muck	Pole				1																	1	0					
230	584575	611722	124	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	230	14	Muck	Pole	SAMPLED			0																		0					
231	584575	611662	112	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	231	14	Muck	Pole	SAMPLED			1											1							1	0					
232	584575	611602	99	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	232	13	Muck	Pole	SAMPLED			3		2															2	0					
233	584575	611542	92	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	233	12	Muck	Pole	SAMPLED			1																	1	0					
234	584575	611482	81	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	234	11	Muck	Pole	SAMPLED			0																		0					
235	584575	611422	69	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	235	7	Muck	Pole	SAMPLED			2											2							0			1		
236	584575	611362	61	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	236	7	Muck	Pole	SAMPLED			0																		0					
237	584635	612502	5	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	237	4	Muck	Pole	SAMPLED			0																		0					
238	584635	612442	16	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	238	4	Muck	Pole	SAMPLED			1																	1	0					
239	584635	612382	20	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	239	5	Muck	Pole	SAMPLED			1																		1					
240	584635	612322	31	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	240	7	Muck	Pole	SAMPLED			2										1	1						1	1					
241	584635	612262	38	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	241	7	Muck	Pole	SAMPLED			1													1					0					
242	584635	612202	43	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	242	8	Muck	Pole	SAMPLED			1																		1					
243	584635	612142	51	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	243	9	Muck	Pole				2											1							2	0					
244	584635	612082	57	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	244	9	Muck	Pole				3											3								0					
245	584635	612022	68	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	245	6	Muck	Pole				2											2								0					
246	584635	611962	76	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	246	6	Muck	Pole				2														2					0					
247	584635	611902	88	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	247	6	Muck	Pole				1																			1					
248	584635	611842	97	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	248	8	Muck	Pole				1																			1					
249	584635	611782	112	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	249	13	Muck	Pole				1																		1	0					
250	584635	611722	123	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	250	13	Muck	Pole				2		2																1	0					
251	584635	611662	111	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	251	15	Muck	Pole	SAMPLED			1											1								0					
252	584635	611602	100	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	252	15	Muck	Pole	SAMPLED			0																		0					
253	584635	611542	91	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	253	12	Muck	Pole	SAMPLED			0																		0					
254	584635	611482	82	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	254	11	Muck	Pole	SAMPLED			1											1								0					
255	584635	611422	68	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	255	10	Muck	Pole	SAMPLED			0																		0					
256	584635	611362	62	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	256	7	Muck	Pole	SAMPLED			1														1					0					
257	584695	612562	4	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	257	3	Muck	Pole	SAMPLED			1		1										1						0					
258	584695	612502	6	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	258	4	Muck	Pole	SAMPLED			1											1								0					1
259	584695	612442	15	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	259	4	Muck	Pole	SAMPLED			1																		1					
260	584695	612382	21	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	260	6	Muck	Pole	SAMPLED			1										1								1	1			1		
261	584695	612322	30	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	261	9	Muck	Pole	SAMPLED			1											1								0					
262	584695	612262	39	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	262	18		Rope	SAMPLED			0																			0					
263	584695	612202	42	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	263	17		Rope	SAMPLED			0																			0					
264	584695	612142	52	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	264	10	Muck	Pole				1																		1	0					
265	584695	612082	56	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	265	7	Muck	Pole				3											3								0					
266	584695	612022	69	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	266	8	Muck	Pole				3											3								0					
267	584695	611962	75	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	267	8	Muck	Pole				3											3								0					
268	584695	611902	89	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	268	7	Muck	Pole				2											2								0					
269	584695	611842	96	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	269	9	Muck	Pole				1		1									1								0					
270	584695	611782	113	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	270	9	Muck	Pole				1											1								0					
271	584695	611722	122	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	271	15	Muck	Pole				1											1								0					
272	584695	611662	110	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	272	13	Muck	Pole	SAMPLED			0																		0					
273	584695	611602	101	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	273	11	Muck	Pole	SAMPLED			0																		0					
274	584695	611542	90	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	274	10	Muck	Pole	SAMPLED			2											2								0					
275	584695	611482	83	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	275	10	Muck	Pole	SAMPLED			0																		0					
276	584695	611422	67	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	276	8	Muck	Pole	SAMPLED			0																		0					
277	584695	611362	63	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	277	7	Muck	Pole	SAMPLED			1																		1	0					
278	584755	612562	3	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	278	3	Muck	Pole	SAMPLED			0																		0					
279	584755	612502	7	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	279	4	Muck	Pole	SAMPLED			0																		0					
280	584755	612442	14	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	280	5	Muck	Pole	SAMPLED			2										1								2					

Point Number	Latitude	Longitude	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Brasenia schreberi	Chara spp.	Eleocharis acicularis	Eriocaulon aquaticum	Isoetes spp.	Juncus pelocarpus	Myriophyllum alterniflorum	Myriophyllum sibiricum	Myriophyllum tenellum	Najas flexilis	Najas guadalupensis	Nymphaea odorata	Potamogeton amplifolius	Potamogeton gramineus	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Sagittaria graminea	Schoenoplectus acutus	Utricularia resupinata	Vallisneria americana	Freshwater sponge
281	584755	612382	22	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	281	6	Muck	Pole	SAMPLED			1																		1					
282	584755	612322	29	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	282	6	Muck	Pole	SAMPLED			1										1			1						0					
283	584755	612262	40	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	283	7	Muck	Pole	SAMPLED			1										1									1					
284	584755	612202	41	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	284	7	Muck	Pole	SAMPLED			0																			0					
285	584755	612142	53	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	285	7	Muck	Pole				1															1				0					
286	584755	612082	55	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	286	7	Muck	Pole				0																			0					
287	584755	612022	70	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	287	7	Muck	Pole				1																			1					
288	584755	611962	74	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	288	8	Muck	Pole				3											3								0					
289	584755	611902	90	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	289	7	Muck	Pole				1											1								0					
290	584755	611842	95	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	290	8	Muck	Pole				1											1			1					0					
291	584755	611782	114	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	291	9	Muck	Pole				1											1								0					
292	584755	611722	121	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	292	10	Muck	Pole				2											2								0					
293	584755	611662	109	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	293	10	Muck	Pole	SAMPLED			3											3							1	0					
294	584755	611602	102	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	294	9	Muck	Pole	SAMPLED			1		1																	0					
295	584755	611542	89	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	295	9	Muck	Pole	SAMPLED			1											1								0					
296	584755	611482	84	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	296	8	Muck	Pole	SAMPLED			1										1									0					
297	584755	611422	66	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	297	6	Muck	Pole	SAMPLED			1											1							1	0					
298	584755	611362	64	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	298	5	Sand	Pole	SAMPLED			1													1						0					
299	584815	612562	2	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	299	4	Muck	Pole	SAMPLED			0																			0					
300	584815	612502	8	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	300	5	Muck	Pole	SAMPLED			1																			1					
301	584815	612442	13	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	301	5	Muck	Pole	SAMPLED			2											1								2					
302	584815	612382	23	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	302	5	Muck	Pole	SAMPLED			1													1						1					
303	584815	612322	28	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	303	6	Muck	Pole	SAMPLED			0																			0					
304	584815	612262	27	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	304	5	Muck	Pole	SAMPLED			0																			0					
305	584815	612082	54	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	305	2	Sand	Pole				0																			0					
306	584815	612022	71	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	306	4	Sand	Pole				1										1									0	1	1			
307	584815	611962	73	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	307	7	Muck	Pole				2																		2	0					
308	584815	611902	91	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	308	7	Muck	Pole				0																			0					
309	584815	611842	94	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	309	8	Muck	Pole				0																			0					
310	584815	611782	115	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	310	8	Muck	Pole				1											1							1	0					
311	584815	611722	120	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	311	8	Muck	Pole				2											1		2						0					
312	584815	611662	108	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	312	8	Muck	Pole	SAMPLED			1																	1	0					
313	584815	611602	103	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	313	8	Muck	Pole	SAMPLED			1											1								0					
314	584815	611542	88	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	314	6	Muck	Pole	SAMPLED			1											1		1				1		0					
315	584815	611482	85	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	315	11	Muck	Pole	SAMPLED			0																			0					
316	584815	611422	65	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	316	6	Sand	Pole	SAMPLED			1															1				0					
317	584875	612562	1	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	317	4	Muck	Pole	SAMPLED			1										1									1					
318	584875	612502	9	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	318	4	Muck	Pole	SAMPLED			0																			0					
319	584875	612442	12	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	319	4	Muck	Pole	SAMPLED			0																			0					
320	584875	612382	24	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	320	4	Muck	Pole	SAMPLED			0																			0					
321	584875	612322	26	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	321	4	Muck	Pole	SAMPLED			0																			0					
322	584875	611962	72	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	322	0			TERRESTRIAL																					0					
323	584875	611902	92	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	323	3	Sand	Pole				1										1									0					
324	584875	611842	93	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	324	7	Muck	Pole				0																			0					
325	584875	611782	116	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	325	7	Muck	Pole				0																			0					
326	584875	611722	119	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	326	8	Muck	Pole				0																			0					
327	584875	611662	107	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	327	7	Muck	Pole	SAMPLED			0																			0					
328	584875	611602	104	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	328	7	Muck	Pole	SAMPLED			0																			0					
329	584875	611542	87	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	329	7	Muck	Pole	SAMPLED			1														1					0					
330	584875	611482	86	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	330	4	Sand	Pole	SAMPLED			0																			0					
331	584935	612502	10	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	331	3	Muck	Pole	SAMPLED			0																			0					
332	584935	612442	11	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	332	3	Muck	Pole	SAMPLED			1	1																		0					
333	584935	612382	25	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	333	3	Muck	Pole	SAMPLED			0																			0					
334	584935	611782	117	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	334	4	Sand	Pole				0																			0					
335	584935	611722	118	Deerskin Lake	Vilas	7/28/2015	DAC & SDF	335	5	Sand	Pole				0																			0					
336	584935	611662	106	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	336	7	Muck	Pole	SAMPLED			0																			0					
337	584935	611602	105	Deerskin Lake	Vilas	7/28/2015	EEH & JLW	337	4	Sand	Pole	SAMPLED			1														1					0					