

Bulrush Density Survey: 2017 Report

Introduction:

In 2006 five areas were identified for bulrush density measurement. The recommendation was to repeat the study every few years as a monitor of bulrush health in the representative areas. No follow up survey had been done since 2006.

The current survey was undertaken to not only compare to the 2006 result but to also see if the method could be taught to a wide variety of volunteers for use in future monitoring efforts.

Volunteers were recruited by an all member e-mail which included a description of the tasks and appropriate footwear and clothing. There were 16 volunteers, ranging from 8 or 9 years old up to their grandparents. Volunteers organized themselves into teams of between three and six people.

Summary:

Within the five study areas the overall bulrush density has been maintained or improved where there is adequate natural shoreline and controlled use of the near shore and shallows.

The density measures were easily learned by our volunteers. The method can be easily adapted to other beds for quantitatively monitoring the effects of development and rehabilitation efforts.

Training:

A single member of each team could be trained and tasked with providing training for the rest of the team. All but one team member took part in one of the three training sessions.

The training session included an onshore introduction concerning the importance of the bulrush, a review of the purpose and method of the survey, the use of a variety of compasses to establish a bearing, a demonstration of the poles and tape measures to be used, and an explaining the site specific recording sheets.

The training then proceeded to one of the area sites that is easily accessible where trainees took turns performing each of the different tasks. Some trainees deferred completing tasks that did not match their physical skills or preferences. The trainer double checked the bearing readings and only had to mentor the use of the quadrats and counting of emergent shafts.

Each team leader was then provided a written check off list, extra recording sheets and access to all materials required to complete the survey.

Each area benchmark was identified using the GPS readings and photos taken in 2006. The study coordinator had marked all of the benchmarks with pink surveyors tape.

The benchmark description, GPS coordinates and photos were printed on the reverse of an area specific recording sheet provided to the team leader.

Actual training was completed within 30 minutes but volunteers chose to complete the site survey for each training site which lasted up to 1.5 hours.

Methods:

Three transects for each area were determined with handheld compass using the same bearings as 2006. A measuring tape was stretched between the benchmark and a pole driven into the lake bed 100ft along the transect bearing. If 9 quadrats over water were not achieved by 100 feet then the tape measure was secured to another pole at an additional distance on the same bearing.

A 3ftx3ft quadrat was floated and centered with the benchmark side on each 10 foot mark. The first quadrat over water was labeled quadrat 1. Emergent stems vertically traced to be within the quadrat were counted and recorded. A total of 9 quadrats over water for each area were used in the analysis.

All measures were taken while standing in the water with instructions to stop if the water was over four feet, no further bulrush were visible or if the bottom was too mucky for safety.

Survey

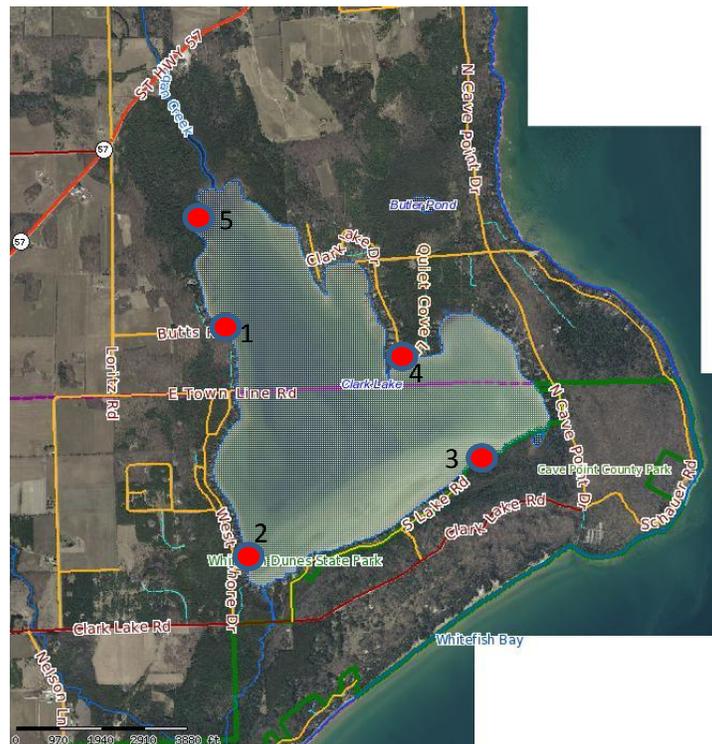
Two sites were surveyed completely during training. Teams chose specific sites and coordinated sharing the required materials amongst themselves.

Measurements were performed by the teams between 8/8/2017 and 8/15/2017.

Two sites are far from parking and one team approached from the water for ease of transport of equipment.

Survey times including transport and set up were between 45 minutes and three hours.

Map indicating the 5 Survey Sites



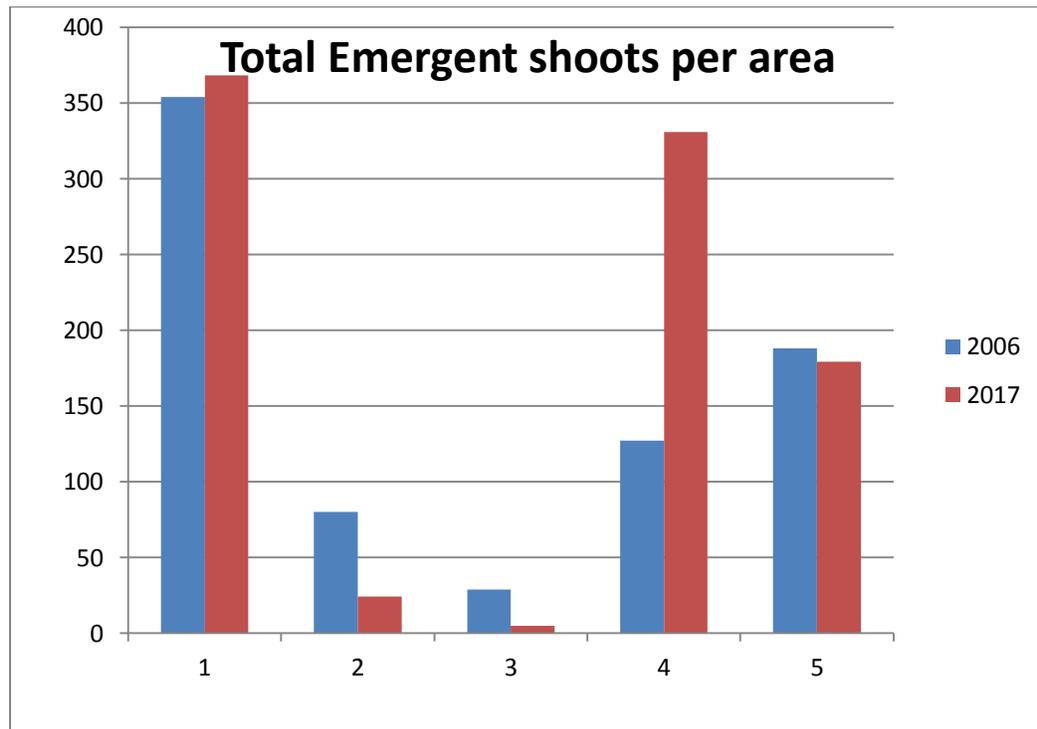
Results:

Feedback from the volunteers concerning the training and actual site survey was positive.

Raw data from 2006 was retrieved and compared to the current readings. The following table and chart show the comparison between 2006 and 2017 for the total number of emergent shafts for each area.

Table 1: Total number of emergent shafts in three transects recorded for 9 quadrats over water.

Area	1	2	3	4	5
2006	354	80	29	127	188
2017	368	24	5	331	179



Discussion:

The bulrush beds in area 1 and 5 are stable. The beds in area 2 and 3 have decreased. Area 4 has shown a marked increase.

Area 1 is on private property but the shore itself has minimal development and little evidence of boating beyond a narrow access corridor. Area 5 is in the Ridges sanctuary.

Area 2 is the most developed of this study. The bulrush lie along some remaining natural shoreline that buffer between the adjacent properties. This area is definitely reduced form the 2006.

Area 3 is in the state park with a shallow slope of the bottom and is populated mostly by thick sedge for the first 50-60 feet over water. The sedge “chokes out” the bulrushes in this area. There are many more bulrush noted well beyond the limits of our study measurements. The number of bulrush near shore was low in 2006 and the current numbers, although lower, probably do not reflect a significant loss.

Area 4 is in a sheltered cove with development along transect one about 130 feet away and only a small pier on natural shoreline over 130 feet away along transect three. The benchmark tree has fallen into the water and providing some additional protected area and bank disruption allowing a thick bulrush growth that accounts for 37% of the total gain. However, there is definite increase in the bed, especially toward the east which is the 130 ft buffer from the developed property.

Conclusion:

Within the five study areas the overall bulrush density has been maintained or improved where there is adequate natural shoreline and controlled use of the near shore and shallows.

The density measures were easily learned by our volunteers. The method can be easily adapted to other beds for quantitatively monitoring the effects of development and rehabilitation efforts.

The current method of using the first 9 quadrats over water is not as useful when the slope of the bottom is so shallow and most of the bulrush is beyond 100 feet from shore. This is especially the case along the south shore. Another method for identifying a benchmark for defining the transect bearings will be needed in this area.

We will perform the density survey annually for 3-5 years to determine natural variation enabling both an estimate of values indicating real change and the optimal interval for measurement.

Next year we will perform an entire lake bulrush survey and compare to the 2006 study.

We will also identify areas of recent development and, if the owners agree, begin additional density monitoring if there are existing beds.

When we begin the planned natural shore line and bulrush rehabilitation projects this will be a useful tool for monitoring success.