Bulrush Density Survey: 2019 Report

Introduction:

The 2006 comprehensive Clark Lake study identified a persistent decline in the bulrush population. In addition to mapping the area of bulrush stands across the entire lake, a procedure to quantify bulrush density at 5 sentinel sites was introduced.

Recommendations were to repeat the mapping every 10 years and the density more frequently.

In 2017 CLAA performed the first follow up density study and has done subsequent studies in 2018 and 2019. The all lake mapping was performed in 2018.

This report summarizes our experience with the density procedure. Recommendations about its utility, frequency and additional attention to bulrush health are included.

Methods

5 sites around the lake were identified in 2006. Each site has three transects designated; every ten feet along each transect, a 3X3 foot grid is placed; the number of bulrush that emerge within the grid are recorded. See the original 2006 article and the 20017 report for specifics.

Bulrush density equals the average number of bulrush per quadrat .

The first 9 quadrats of every transect have been counted every year so that figure is used for comparison among years.

Because of some variability noted from year to year, this report includes a comparison of 2006 to an average of the last three years results.

Measurements were performed by the teams between August 17th and Sep 11th.

A total of 17 volunteers collected data this year. All volunteers this year had prior training and experience with this method.

Survey times including transport and set up were between 1 and 2 hours.

Survey sites description and map are available in the prior reports.

Results:

Bulrush Data, which includes all measures from 2006,2017,2018 and 2019 is posted on the WQVC website. Below are graphs illustrating the density for each site and each transect.
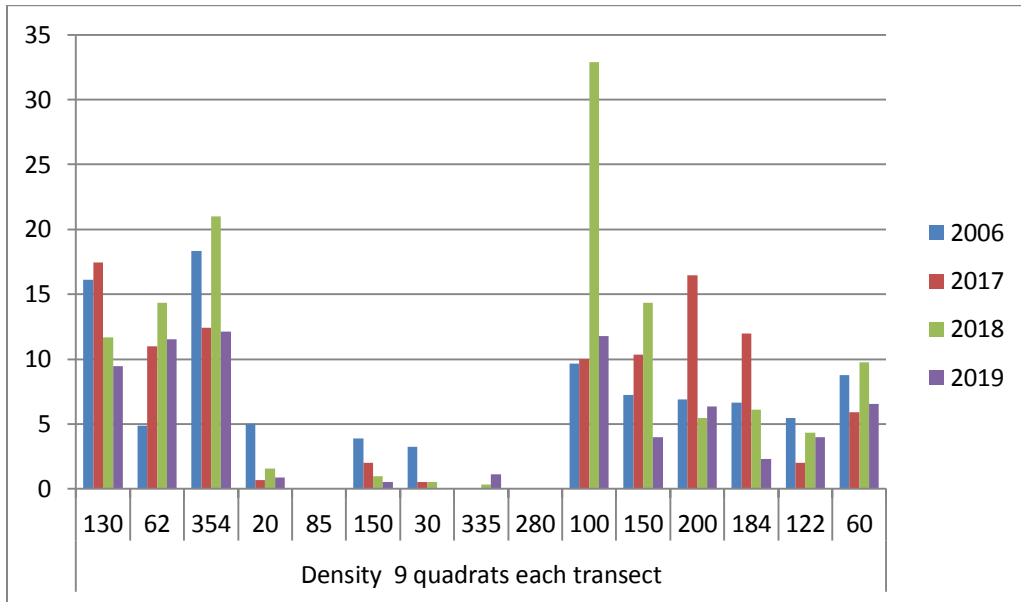
Chart 1: Bulrush Density of each site, 1st nine quadrats.
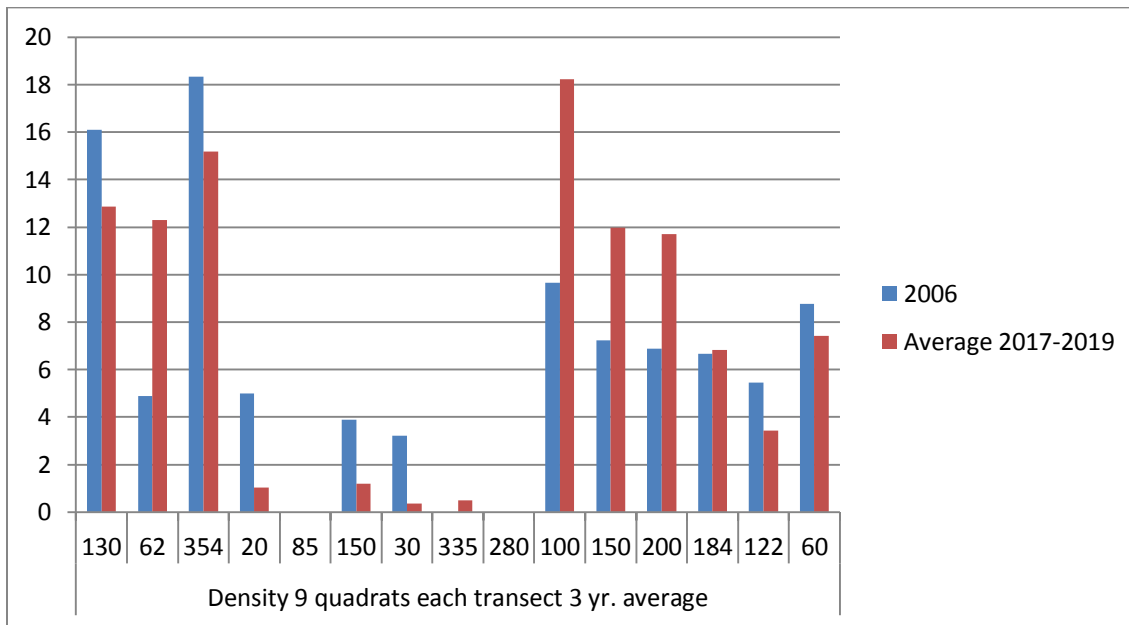2006 compared to each of last three years
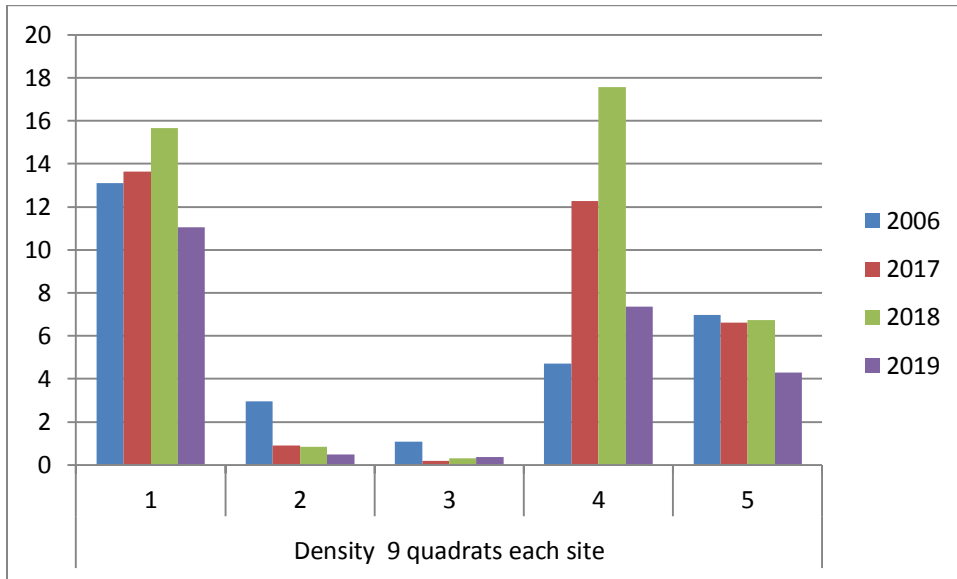
Chart 1a: Bulrush Density of each site, 1st nine quadrats.
2006 compared to three year average
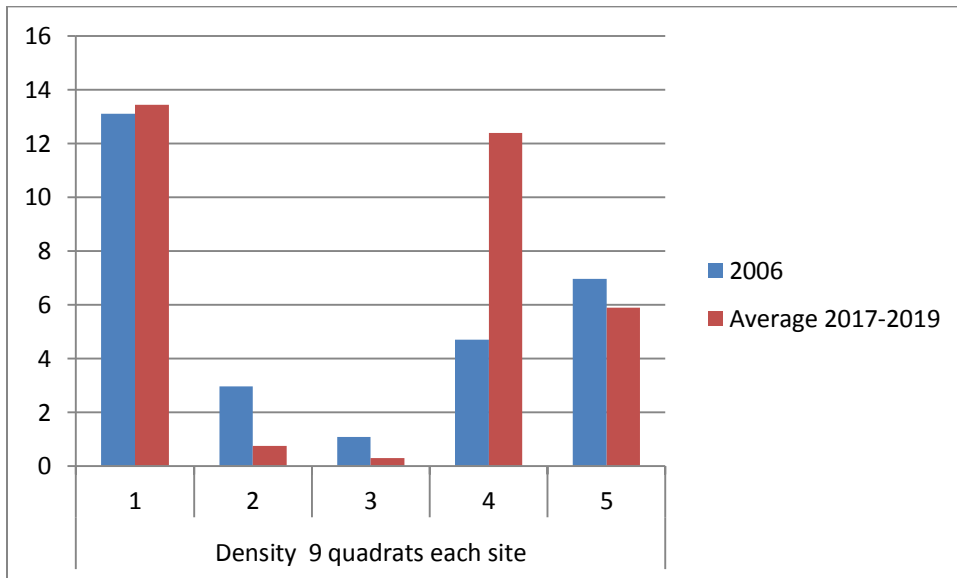
Chart 2: Bulrush Density for each transect, 1st nine quadrats.
2006 compared to each of last three years.

Chart 2a: Bulrush Density for each transect, 1st nine quadrats.
2006 compared to three year average.

Discussion:

The intent of the density measure was to provide a quantitative estimate of bed health in addition to the area measure provided by mapping.

The purpose of this measurement is to document trends of bulrush health. A corollary should be that declining measures trigger an action plan to improve the readings. Similarly, action plan success should be reflected by improving trends.

The most difficult part of the density method is to consistently reproduce the transect line. The low resolution of the compass and factors such as wind and visual or physical obstructions that affect the tape marking the transit line mean that there will be imprecision among years.

This is confirmed by the variability noted at each site and transect during the recent three year study. The comparison of any of the three years to the 2006 results, although variable by absolute values, was consistent with overall stability, gain or loss.

We have not assigned specific density value ranges to define qualitative observations such as monoculture, dense, patchy and sparse. In 2018, we compared observational category assignment to the density measure and the progression form the observations did match the density trends.

We do not have any specific action alerts based upon the most recent density results.

Our 5 sentinel sites and benchmarks are all beds that abut the shore. The large offshore beds do not have a method of representing their density other than observation.

Newer technology may offer another method of bulrush bed evaluation. As an example high resolution, low altitude photography could be adapted to our needs.

Conclusion:

Bulrush density is stable or improved in three of the 5 sites.

Bulrush density is reduced in about half of the transects.

There is imprecision among the density values and observation may be as helpful as this method.

The 5 sites provide a good historical perspective but don't necessarily reflect the entire lake.

The three year results, even though variable, do show consistent trends. Since we do not have any urgent or rapid response action plan concerning bulrush less frequent study is justified.

The density testing may be more useful when evaluating the effects of localized rehabilitation or preservation.

WQVC should explore options for bulrush rehabilitation and preservation. Bulrush density could be one of the measures to assess the progress of those interventions.

Alternative methods for monitoring bulrush extent and health should be explored.

WQVC should explore defining density ranges to guide with the qualitative descriptors.

WQVC should explore defining triggers for action for both local, regional and all lake areas.