2018 Flathead Lake Secchi Dip-in and Water Quality Results

In 2018, Flathead Lake participated in the Secchi Dip-in, a nationwide program that has collected water clarity data from lakes all around the United States since 1994. Started by the North American Lakes Management Society, this database is extensive and helps scientists learn about trends in water clarity and what those trends mean. This program is a great example of the potential of volunteer citizen scientists to gather useful data for understanding lakes.

Flathead Lake's incredible water clarity is world renowned and unique, especially as lakes across the world become more polluted and less clear. It is important that Flathead Lake participates in this annual Secchi Dip-in, to include our data in nationwide trends but also for us to keep an eye on our lake and watershed.

During the 2018 Flathead Lake Secchi Dip-in, 22 Secchi disks were 'adopted' and engaged over 60 individuals, including kids and grandkids, high school and university students, retirees, and summer and local residents. During July, 44 Secchi measurements were taken all around Flathead Lake by our Citizen Scientists, which is the most ever in a single week on Flathead Lake. Secchi measurements ranged from 3.8 m to 13.5 m. This range in Secchi disk depth spans from moderate to exceptional water clarity.

Our Flathead Lake Citizen Scientists observed an equal amount of variability in water clarity (Secchi Depth) around the lake during a single week in July 2018 than has been observed at a single site (mid lake deep) over the last 40 years by the Flathead Lake Monitoring Program (FMP). Thanks to their work, this program has revealed that water clarity around Flathead Lake is considerably more dynamic than researchers predicted. These results will help shape future monitoring efforts.

The Flathead Lake Secchi Dip-in also included water quality sampling. Since the Bio Station's long-term monitoring program has been collecting water samples at only a couple sites around Flathead Lake, analysis of samples from many locations provided great insights into water quality around the lake. Nutrient concentrations varied across the lake, but was within the range previously observed by FMP. The most striking results from the water quality data were how similar calcium concentrations were around the lake. This means that there are likely no areas in Flathead Lake that offer protection from invasion by nonnative mussels due to a lack of calcium, which they need to produce their shells.

The most significant result from our inaugural citizen science event, the 2018 Flathead Lake Secchi Dip-In, was providing the Flathead Monitoring Program with compelling spatial water quality and clarity data, gathered by our citizen scientists. In response to the data, researchers at FLBS felt it was time to add another sampling site to the FLBS water quality monitoring program.

"Adding the Polson Bay site to the Flathead Monitoring Program (FMP) will help us understand Flathead Lake's ecology and dynamism like never before, as well as strengthen our ability to fulfill our role as stewards of the lake," said Assistant Research Professor, Shawn Devlin, who oversees FLBS watershed monitoring. "The fact that the Flathead Citizen Science program and its enthusiastic participants' hard work helped to facilitate the FMP expansion is inspiring. The Flathead Lake community is dedicated and passionate and, above all, very much appreciated by FLBS."

We are grateful to our Flathead Lake Citizen Scientists for their support and time in this effort. We are also thankful to the Greater Polson Community Foundation's generous support to help launch our Citizen Science program, along with the support of our participants and our Flathead Lakers members.

2018 Flathead Lake Citizen Science sample sites.
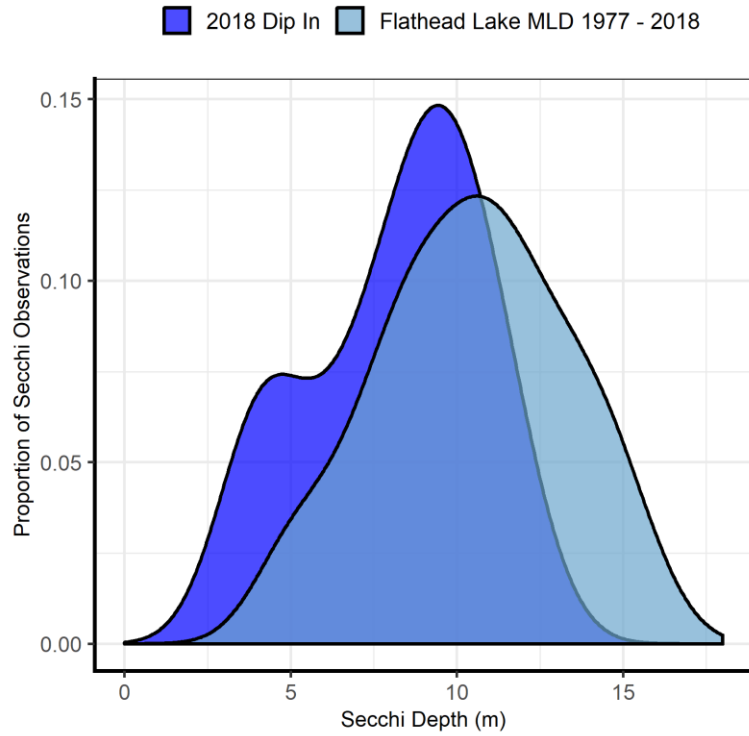
These data show a similar amount of variability in water clarity around Flathead Lake in a two-week period, compared to water clarity found in a single spot at mid lake deep over 40 years (MLD).
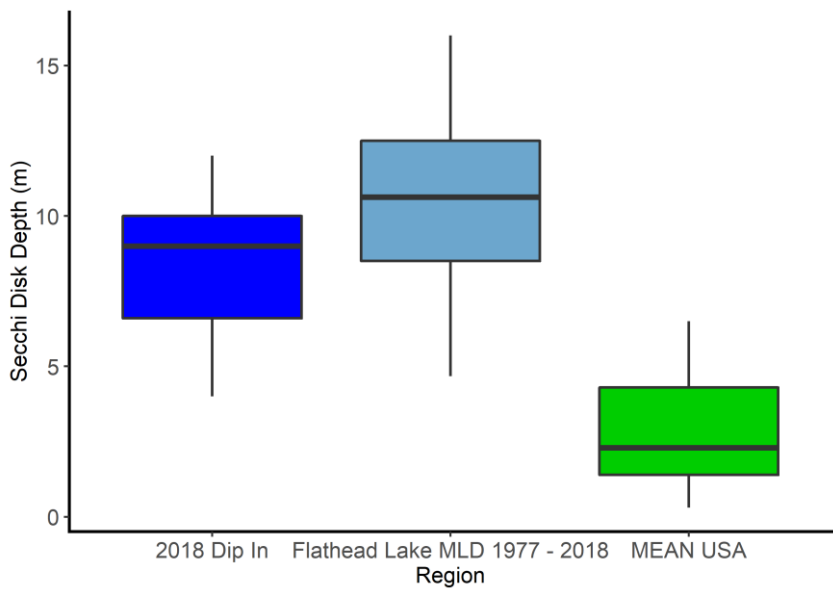
This graph compares the 2018 Dip-in data with 40 years of observations at Mid-lake and mean Secchi Disk Depth from lakes across the United States.