City of Bloomington
State of the Water Report
2021

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Introduction

2021 was the year of the raft. Before, water samples were taken from shore using a reach-pole. This was difficult because of the number of scoops required to secure a sample, the difficulty of maneuvering the pole, and the inability to access sample locations further into the water. So, the City bought a raft.

At a whopping 12 pounds, the raft enables staff to quickly get in and get out of the water. It also allowed the sampling methods to stay the same while allowing additional data to be collected in the same amount of time. Additional data includes dissolved oxygen and temperature profiles, submerged vegetation surveys and depth measurements.

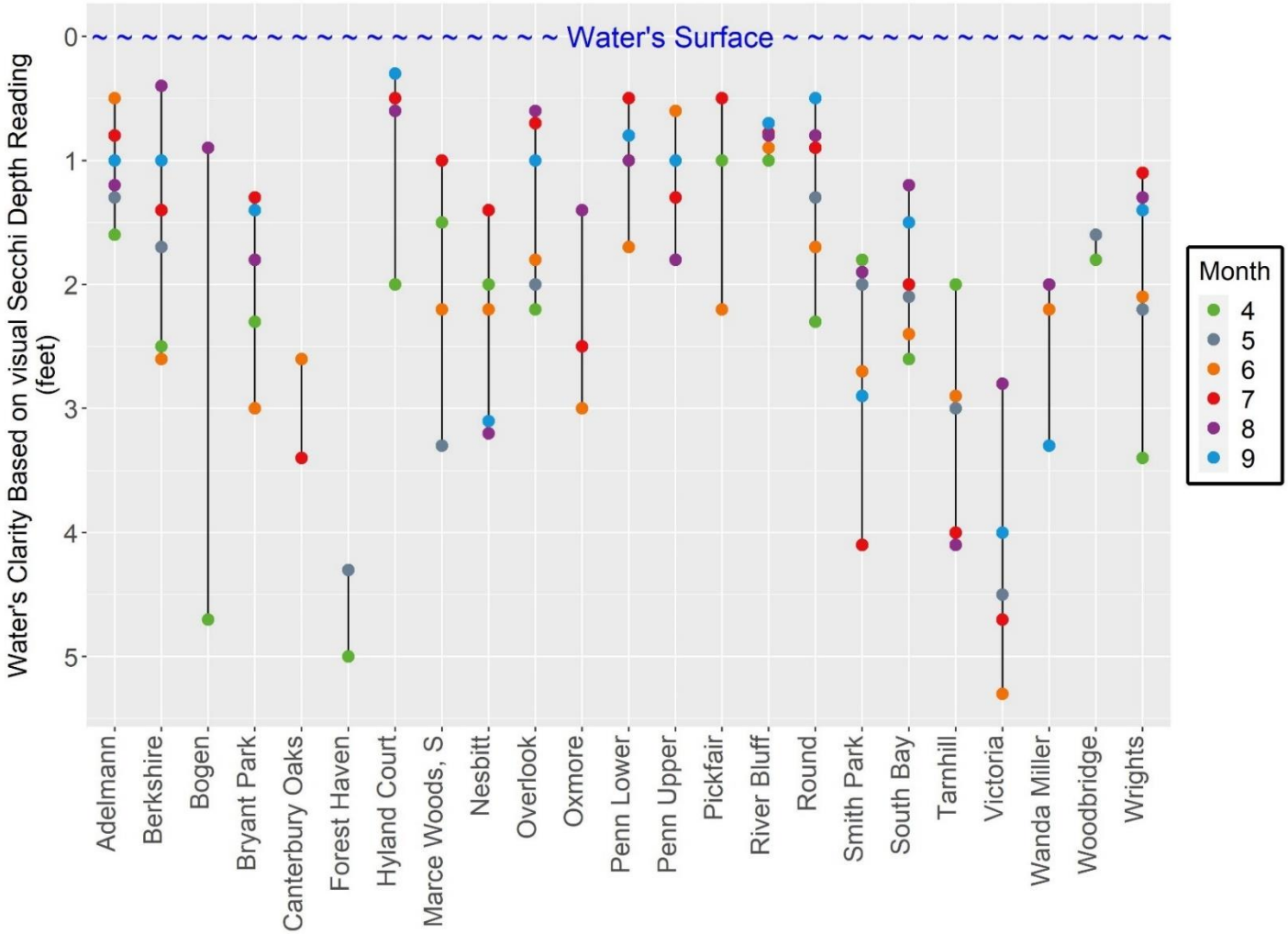
Another improvement provided by the raft is the ability to sample with one person. Historically, help from the Water Resources Intern was needed and sampling was confined to June, July and August. While sampling is still easier with two people, the raft enables the City to sample in April, May, and September. Spring sampling is important because it provides insight into the influence of meltwater.

A total of 33 bodies of water were sampled at least once in 2021. These are:

Adelman	Overlook	South Bay
Berkshire	Oxboro	Sunrise
Bogen	Oxmore	Tarnhill
Brookside	Pauly's	Timberglade
Bryant	Penn Upper	Victoria
Canterbury Oaks	Penn Lower	Wanda Miller
Forest Haven	Pickfair	Woodbridge
Winchester	River Bluff	Wood Cliff
Hyland Court	Round	West Park Hills
Marce Woods South	Skriebakken	Wrights
Nesbitt	Smith	Xylon

Water Clarity

Water clarity is measured using a secchi disk, a circular piece of plastic that is painted black and white. The secchi disk is dropped into the water and lowered until it is no longer visible. This provides a quick estimation on water clarity. It is an important metric because the amount of sunlight that can enter the water is dependent on the water's clarity. Sunlight powers the many plants and phytoplankton that live in the water. Without the plants, the nutrients in the water are free to be used by problematic algae and bacteria.

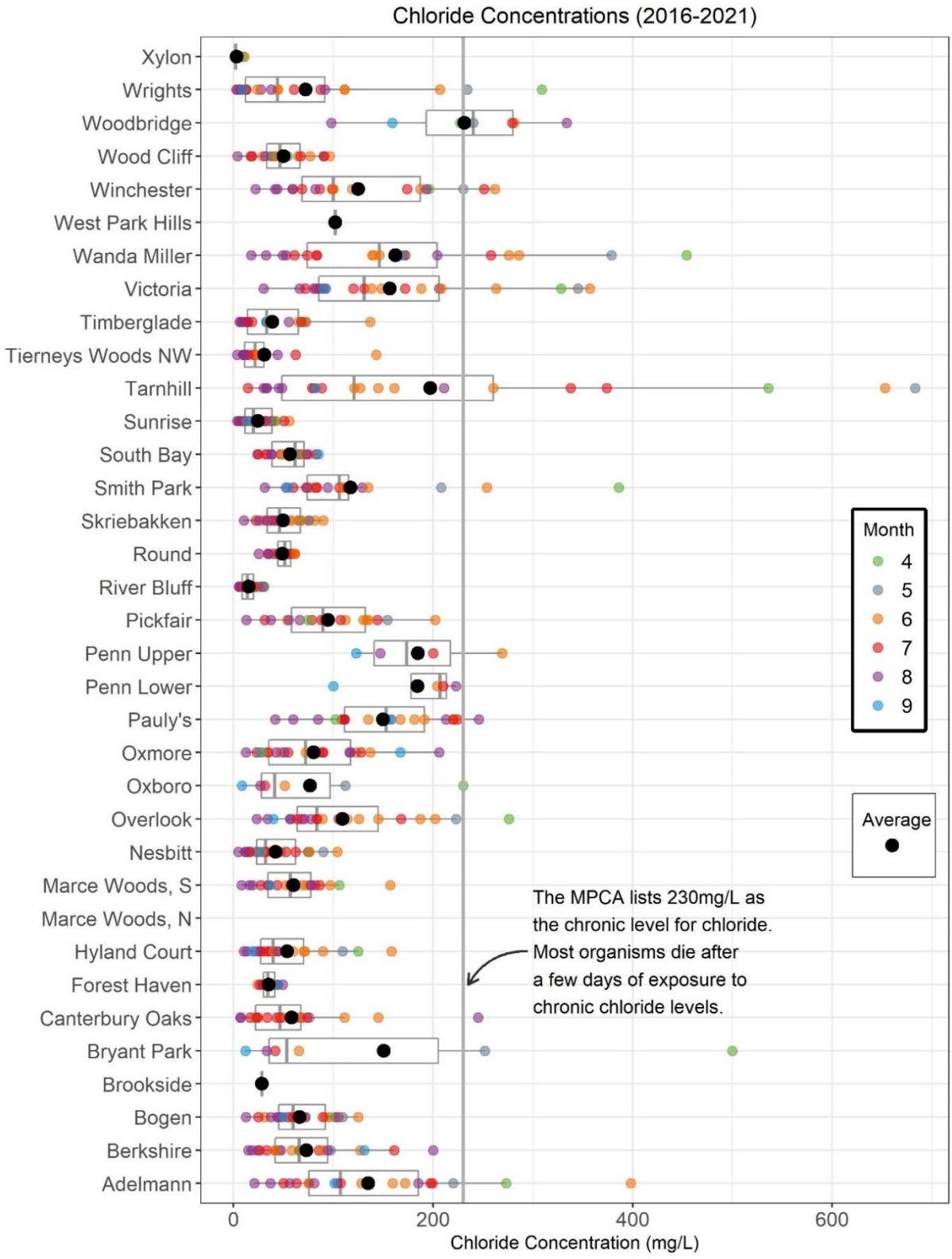


Often times, the secchi depth reading reached all the way to the bottom. This is a good thing because the sunlight can fuel the biological engine all the way to the sediment. Water depth does not define water clarity. Some Ponds, like Sunrise, are only a foot deep at most and yet it tends to have clear water. However, in cases where the bottom is visible, the secchi depth cannot be recorded. The following is a list of water's that tend to have visibility to their bottom:

Bogen	Hyland Court	Oxmore	Sunrise	Woodbridge
Canterbury Oaks	Marce Woods, S	Pauly's	Tarnhill	Wood Cliff
Forest Haven	Nesbitt	Pickfair	Timberglade	Xylon
Winchester	Oxboro	Skriebakken	Wanda Miller	

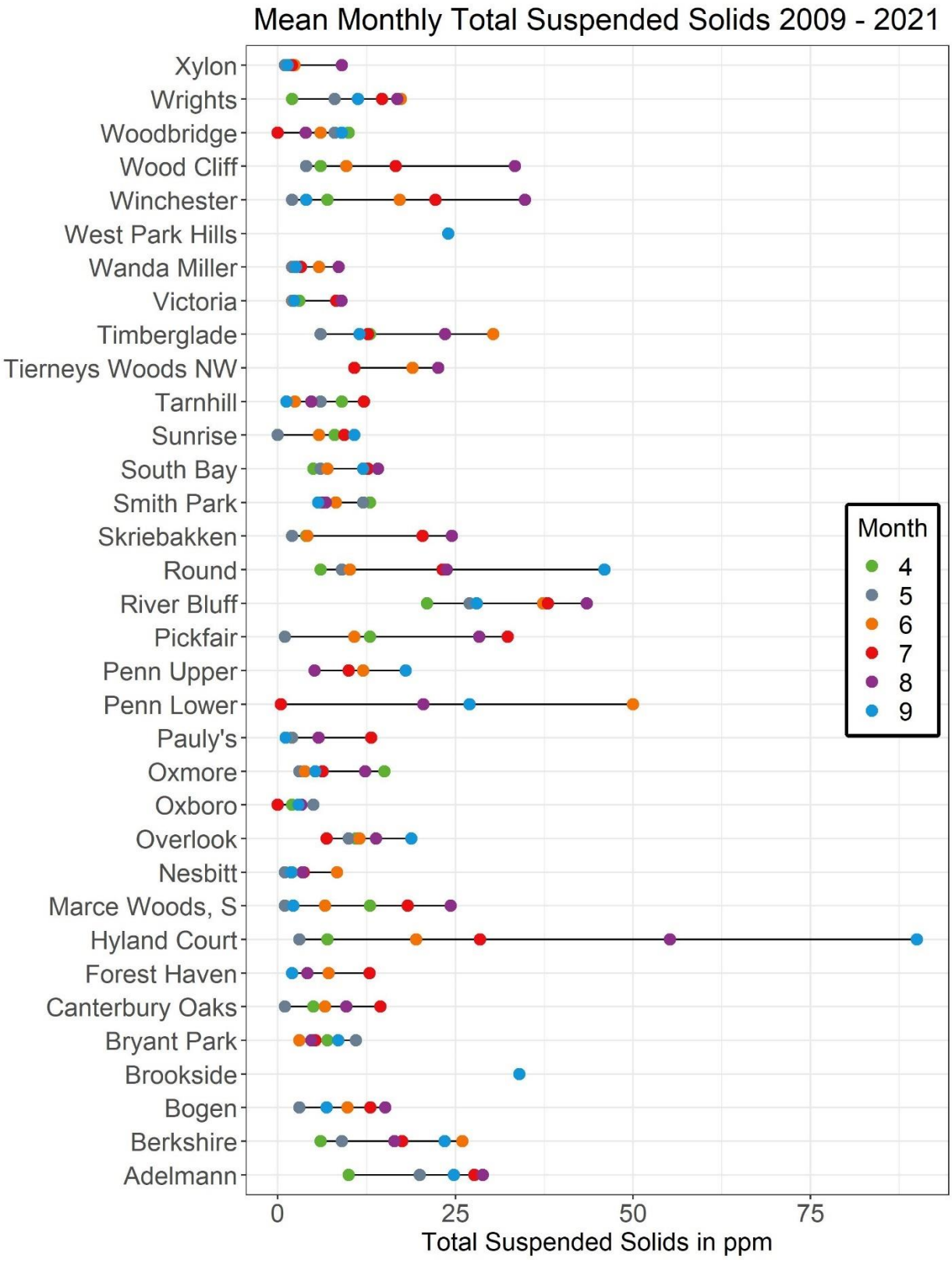
Chlorides

Chlorides come from salt and the majority of salt pollution comes from winter salting to prevent icy pavements. Salt pollution is one of the biggest threats facing Minnesota waters. The location of a pond in the landscape tends to be the main determinant for chloride pollution. Waters that are nearby to commercial areas or have a large drainage basin will usually have more salt washing into them. Concentrations are highest in spring as meltwater flows to the ponds. Concentrations go down as the year progresses because the water is diluted by rainfall.



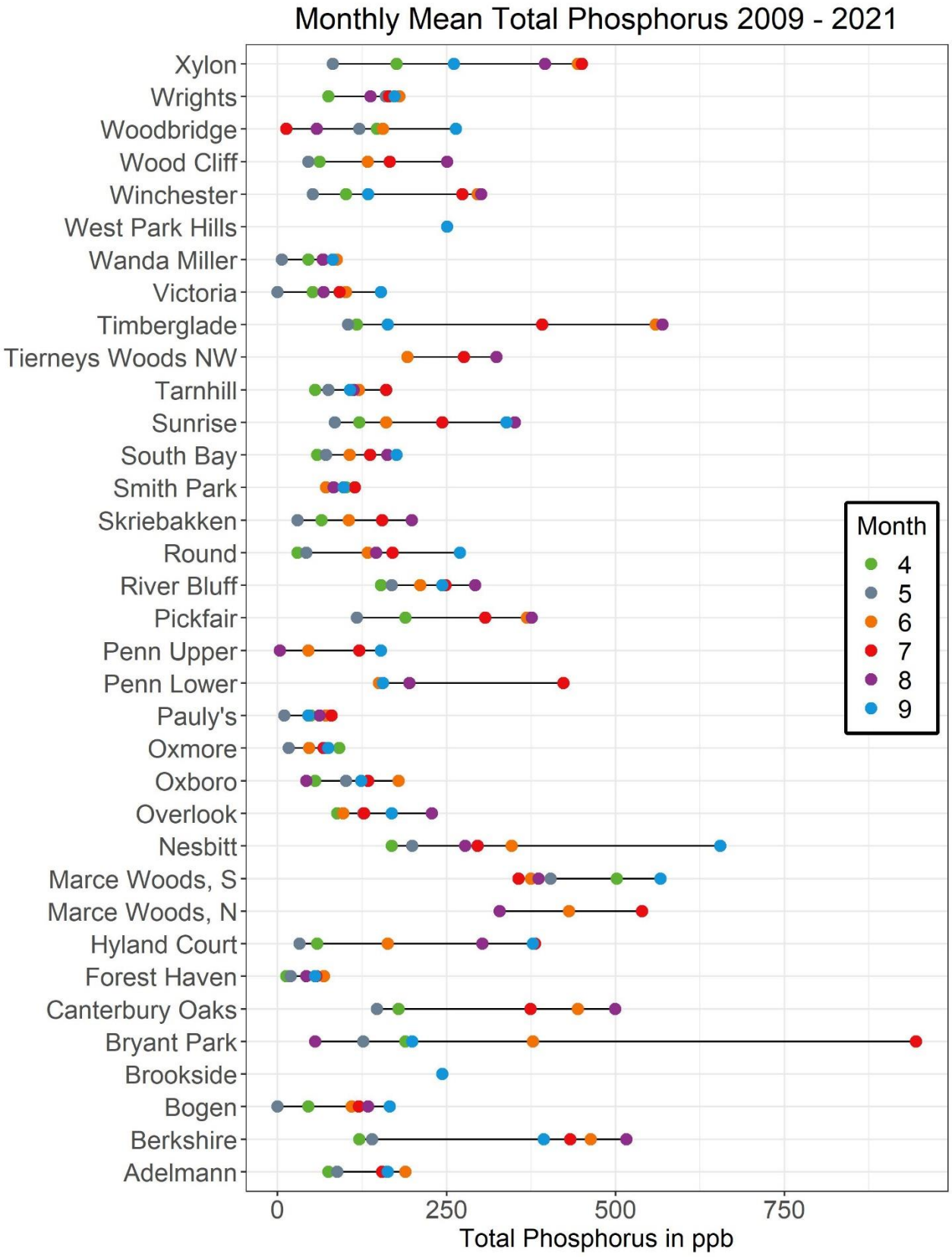
Total Suspended Solids (TSS)

Total suspended solids (TSS) are all the stuff that is floating around in the water, like silts and other small particles. In undisturbed ponds, these sediments will, over time, sink to the bottom. However, they can also be easily kicked back up into the water column. For example, fast moving water from stormwater, invasive fish, like carp, and water circulators, like bubblers and fountains, can stir up the water and increase the TSS. Water with high TSS tends to look brown.



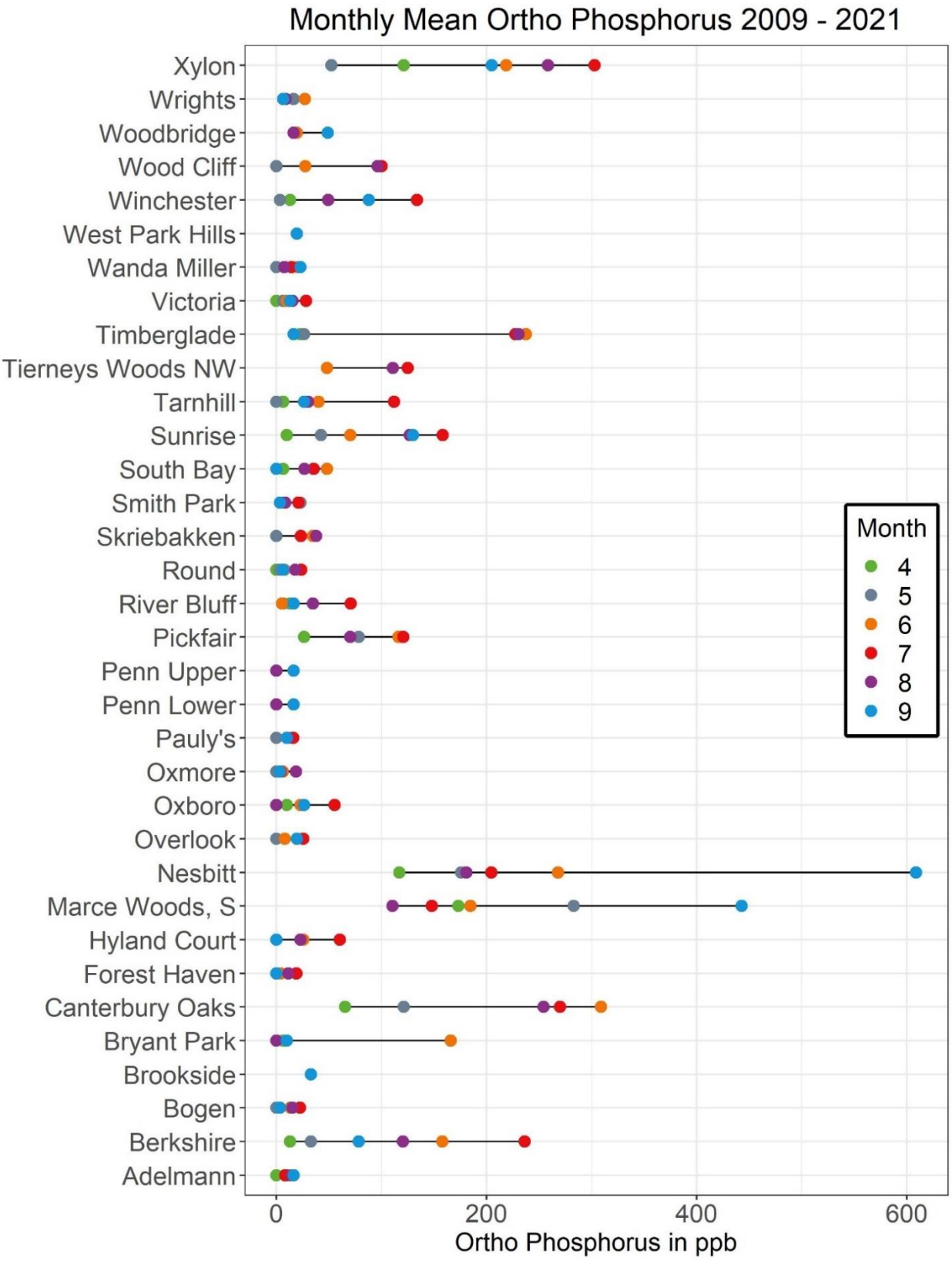
Total Phosphorus

Phosphorus is one of the most influential sources of nutrients in aquatic systems. It comes from leaves, grass-clippings, soil and other sources. Some aquatic systems can function with very high phosphorus levels but in high concentrations, it is generally regarded as a pollutant. Abundant phosphorus can cause algal and bacterial blooms.



Ortho Phosphorus

Ortho Phosphorus (OP) is the portion of phosphorus that is water soluble. OP is more accessible to plants, algae and bacteria and is a leading cause of algae blooms and very nutrient rich water. A lot of soluble phosphorus comes from chemical reactions in water with no oxygen. Beneficial plants growing in the water are very good at sucking up OP. Without the plants, OP is free to float around the water column and be used by algae and bacteria.



Chlorophyll-A

Chlorophyll-A is a proxy for measuring the amount of algae that is floating around in the water. While algae is a natural part of aquatic ecosystems, large algal blooms can be bad for water quality. Furthermore, extensive algal growth can reduce water clarity, reducing the amount of light that can enter the water. The lack of light can reduce the number of beneficial plants that can grow in the water, which are the foundation of the food chain.