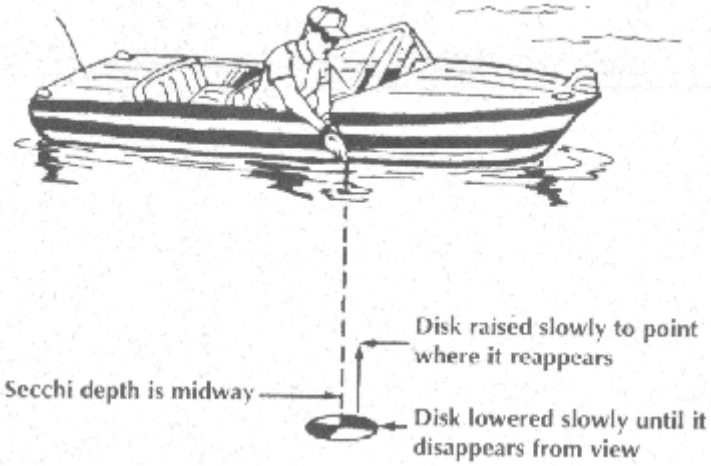

THE SECCHI DISK

The Secchi disk originated with Fr. Pietro Angelo Secchi, an astrophysicist, who was requested to measure transparency in the Mediterranean Sea by Commander Cialdi, head of the Papal Navy. Secchi was the scientific advisor to the Pope. Secchi used some white disks to measure the clarity of water in the Mediterranean in April of l865. Various sizes of disks have been used since that time, but the most frequently used disk is an 8 inch diameter metal disk painted in alternate black and white quadrants.

The Secchi disk is used to measure how deep a person can see into the water. It is lowered into the lake by unwinding the waterproof tape to which it is attached and until the observer loses sight of it. The disk is then raised until it reappears. The depth of the water where the disk vanishes and reappears is the Secchi disk reading. The depth level reading on the tape at the surface level of the lake is recorded to the nearest foot.

Even though the Secchi disc measurement of water clarity is an approximate evaluation of the transparency of water, it is used primarily for its simplicity. A more accurate measurement of underwater irradiance can be made by the use of photometer.

SECCHI DISK READINGS -- HOW VALUABLE ARE THEY ?

The greatest value of the Secchi disc measurements occurs when each lake compares its own readings from week to week, month to month and season to season. No comparisons between lakes should be made unless similarities in measurements are followed vigorously. Several factors are involved, such as the eyesight of the viewer, the time of day the readings are taken (midday- between 10 and 2 is preferred), the reflectance of the disc, the color of the water, clay particles or other materials suspended in the water, etc.

Some of the reports for any one season may show an increased water transparency depth after the first week of spring. This may be due to:

1. **Reduced nutrient input from the watershed.**
2. **Increased grazing of algae by zooplankton.**
3. **Reduced soil erosion into the lake.**
4. **Seasonal algae succession.**

If the Secchi Disk transparency depths are getting shallower during the summer season, it may be due to one or more of the following:

1. **Increased abundance of free floating algae.**
2. **Erosion of the shoreline or erosion from site development near the lake.**
3. **Recirculation of bottom sediment from motorboat activity.**
4. **Discoloration of the water from wetland runoff and/or plant decomposition.**
5. **Increased turbidity.**
6. **Reduced zooplankton populations.**

Most Michigan lakes will experience increased boat activity on week ends and holidays. Taking Secchi readings on Mondays and the day following a holiday, and comparing these readings with other readings at other times may reveal the affect of boating activity on transparency depths.

Significant storm events within the watershed with the resultant stormwater runoff could cause lower Secchi disk readings. Comparing Secchi disc readings immediately after a storm with readings between storms may suggest that runoff is increasing turbidity and, therefore, shallower transparency readings.

If the zooplankton populations have dropped off reducing the grazing of algae, the increase of algae will result in reduced Secchi disk readings. Dr. Robert Carlson, writing in News CLIPs, published by The Citizen Lake Improvement Program of Ohio, "If you find a sharp increase in transparency in May or June, it might be that tiny grazing animals, called zooplankton ('animal drifters') are eating the algae. When zooplankton are abundant, they can actually be seen as tiny black dots swimming over the Secchi disk.