THE 2015 SECCHI DIP-IN REPORT

Prepared by Lauren Salvato

North American Lake Management Society

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Photo by Bob Kirschner

Thank you to the North American Lake Management Society for supporting the Secchi Dip-In.

Thank you to the 2015 and 2016 Secchi Dip-In committee members:

Melissa Clark, Sarah Powers, Sara Peel, Ann St. Amand, Reed Green, Elizabeth Herron, Bob Carlson, Lisa Borre, Steve Lundt, Nicki Bellezza, Chris Holdren, Mark Hoyer, Linda Green, Terry McNabb, Julie Chambers, Frank Wilhelm, Greg Arenz, and Philip Forsberg

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SECCHI DIP-IN PROGRAM DESCRIPTION

The Secchi Dip-In is a program of the North American Lake Management Society (NALMS). The purpose of the Society is to foster the management and protection of lakes and reservoirs for today and tomorrow.

The Secchi Dip-In began in 1994 to demonstrate that volunteers can provide accurate, consistent information on the waters of North America. What began as a pilot study with six Midwest states (Indiana, Illinois, Wisconsin, Michigan, Ohio, and Minnesota) expanded to 37 states and 2 provinces of Canada by 1995. In 2015, Dr. Bob Carlson transferred the operation of the Secchi Dip-In to NALMS. In the 21 years Dr. Bob Carlson led the Secchi Dip-In, the database accumulated more than 41,000 records on more than 7,000 individual waterbodies.

The Dip-In is an ongoing program using trained volunteers to gather long-term water clarity data in the summer of every year. Secchi Dip-In participants include trained monitoring volunteers and individuals who are interested in citizen science and enthusiastic about lakes. We encourage anyone interested in understanding the ecology of their lake or watershed to get involved with the Secchi Dip-In.

Mission statement

To involve citizen scientists in monitoring the water quality of North America's lakes and their watersheds

What we do

- Organize an annual data-gathering event during Lakes Appreciation month for North American lakes, reservoirs, and other waterbodies
- Provide educational materials and training for anyone engaged in managing lakes and their watersheds
- Maintain long-term transparency monitoring data for use in research on aquatic systems and the discovery of trends
- Prepare annual reports analyzing Secchi Dip-In data and make data available for all interested stakeholders
- Promote public awareness and stewardship of lakes and watersheds
- Recognize the importance of volunteers in the gathering of environmental data

THE SECCHI DISK

The Secchi disk is utilized by volunteers to take transparency measurements on their waterbodies. The Secchi disk is named after Father Pietro Angel Secchi (1818-1878) who was the scientific adviser to the Pope. The most common Secchi disk is a 20 cm with alternating black and white quadrants. The disk is lowered into a waterbody until it can no longer be seen (Figure 1**)**. The depth of disappearance is a Secchi depth, a measure of the transparency of the water. This basic tool is one of the oldest and most robust used by limnologists.

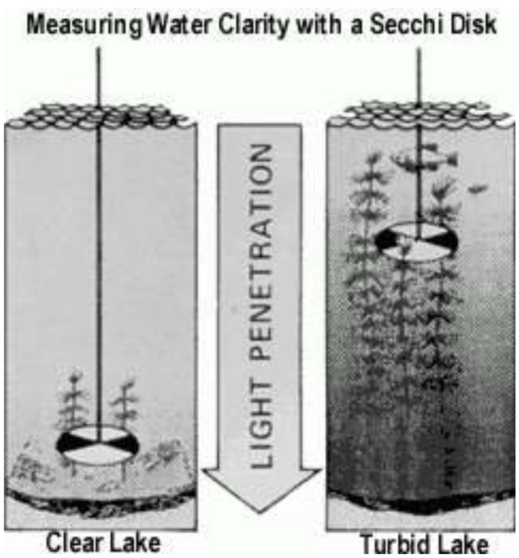

Figure 1: Secchi disk measurements range in depth depending on how turbid or clear a lake is. Image from https://www.pca.state.mn.us/water/citizen-lake-monitoring-program.

MATERIALS AND METHODS

Measuring water clarity

Volunteers take water transparency measurements using their own materials, often supplied by an affiliated volunteer monitoring program. The Secchi disk is the most frequently used took to measure water clarity. Secchi disks may vary in size and color (white, black, black and white), so volunteers are asked to designate the type of Secchi disk used to measure transparency. Those that monitor streams or estuaries generally use a turbidity tube, turbidity meter or a black disk.

A typical turbidity tube is made of plastic measuring 2 feet in length and 1 ½ inches in diameter. To measure the water clarity, the tube is filled with water then water is released by the stopper. Looking into the tube, the depth is measured (in centimeters) at the point in which the Secchi symbol, located at the bottom of the tube, becomes visible (Figure 2; Sovell, 2015).

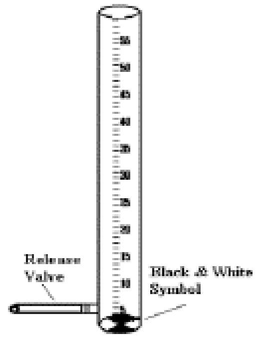

Figure 2: A typical turbidity tube. Image from: http://www.secchidipin.org/wordpress/wp-content/uploads/2015/04/tube004.gif

The turbidity meter is an electronic device that measures turbidity, which is the amount of cloudiness in water caused by particles recorded in Nephelometric Turbidity Units (NTU). A LaMotte turbidity column also measures turbidity recorded in Jackson Turbidity Units (JTU). With either NTU or JTU measurements, a 1 is clear water and a 100 is extremely cloudy water. A sample of water is collected and turbidity is measured by the respective device and unit of measure (Figure 3; Carlson, 2015).

Figure 3: The LaMotte turbidity column (left) and Hach Portable turbidity meter (right). Images from: http://www.secchidipin.org/wordpress/wp-content/uploads/2015/04/LaMotte_Tube.gif and http://www.secchidipin.org/wordpress/wp-content/uploads/2015/04/Hach2100P.jpg.

The black disk is generally used to obtain a transparency measurement horizontally. The advantages of the black disk are that it can be used in shallow waters, lighting conditions are independent of measurement, and it can be used in moving water (Carlson, 2015).The measurement process is similar to using a Secchi disk vertically. The device consists of a sealed viewing tube and stick with a black disk. The black disk is pulled away horizontally from the tube until it is no longer visible (Figure 4; Steel and Neuhasuer, 2015).

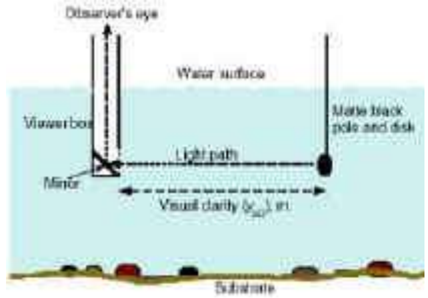

Figure 4: The horizontal black disk. Image from: http://www.secchidipin.org/wordpress/wp-content/uploads/2015/04/black2.jpg

Additional water parameters- temperature, dissolved oxygen and pH

Volunteers most frequently submit Secchi measurements but have the option to submit additional information. Those details include temperature of the surface and bottom of the waterbody, dissolved oxygen (DO) and pH.

The temperature of water impacts many of the biologic and physical properties of aquatic systems. Understanding the temperature of a waterbody at different depths indicates how well mixed the water column is. In fact, temperature is the basis of the thermal classification system described by Carlson and Simpson (1996). If a lake is stratified or layered, then warmer, less dense waters lie at the surface and colder, denser waters at the bottom of the lake. Temperature also impacts where aquatic organisms live in a lake.

Dissolved oxygen (DO) is an important factor impacting aquatic organisms and nutrient recycling within aquatic systems (Holdren et al., 2001). These concentrations define where aquatic life can survive within a lake ecosystem. Conditions at the bottom of the lake generally have lower DO concentrations and may not support aquatic life. Towards the surface there are typically higher DO concentrations, which better support a habitat for fish and plant communities.

The pH is a measure of hydrogen ion concentration in water with low values describing acid conditions and high alkaline conditions. The pH in lakes generally ranges from 5.5-9.0 and there are plant and animals adapted to these levels. Changes in pH, particularly in early life stages, can rapidly change fish and plant communities (Holdren et al., 2001).

Data entry

The Secchi Dip-In website is where volunteers can learn about lakes and submit their water data. The process involves creating an account, adding background information about the waterbody (e.g. lake name, latitude and longitude, etc.) to the database, and entering the water quality parameters obtained. Volunteers also have the option to submit a physical copy by mail (Appendix A).

Through a collaboration with the US Environmental Protection Agency, the North American Lake Management Society invited members to test the Global Lake Ecological Observatory Network (GLEON) Lake Observer mobile app during the 2015 Secchi Dip-in. The app enables citizen scientists to submit water quality data using their smart devices and was successfully tested by volunteer monitoring programs in Indiana and Rhode Island.

Lake classification

Trophic state is a classification system defining the level of productivity in a lake. Lakes are classified into four main types based on TSI calculations (Figure 5). Oligotrophic lakes are associated with high transparency and low plant productivity (Holdren et al., 2001). Mesotrophic lakes indicate a medium range of productivity. Eutrophic lakes are associated with low transparency and high productivity. Finally, hypereutrophic lakes are associated with low transparency and extremely high productivity.

Carlson's trophic state index (TSI)

Carlson's TSI is a numeric method of classifying the trophic state of lakes using Secchi depth, chlorophyll-a, total phosphorous and total nitrogen. Individually or together the factors indicate whether a lake is oligotrophic, mesotrophic, eutrophic, or hypereutrophic (Carlson, 1977). For our purposes, we focused on Secchi disk measurements and utilized the TSI Secchi depth equation (Figure 6). In the long-term, the trophic state index can be used to determine how a lake's trophic status is changing over time.

Classification	Oligotrophic	Mesotrophic	Eutrophic	Hypereutrophic
Transparency	Clear	Less clear	Transparency <2 meters	Transparency <1 meter
Nutrients	Low TP < 6 µg/L	Moderate TP 10-30 µg/L	High TP > 35 µg/L	Extremely high TP > 80 µg/L
Algae	Few algae	Healthy populations of algae	Abundant algae and weeds	Thick algal scum Dense weeds
D.O.	Hypo has D.O.	Less D.O. in hypo	No D.O. in the hypo during the summer	No D.O. in the hypo during the summer
Fish	Can support salmonids (trout and salmon)	Lack of salmonids, Walleye may predominate	Warm-water fisheries only. Bass may dominate	Rough fish dominate, summer fish kills possible May discourage swimming and boating
TSI(Chl) = TSI(TP) = TSI(SD)				

Figure 5: The relationship between trophic state and lake classification (Clark, 2015).

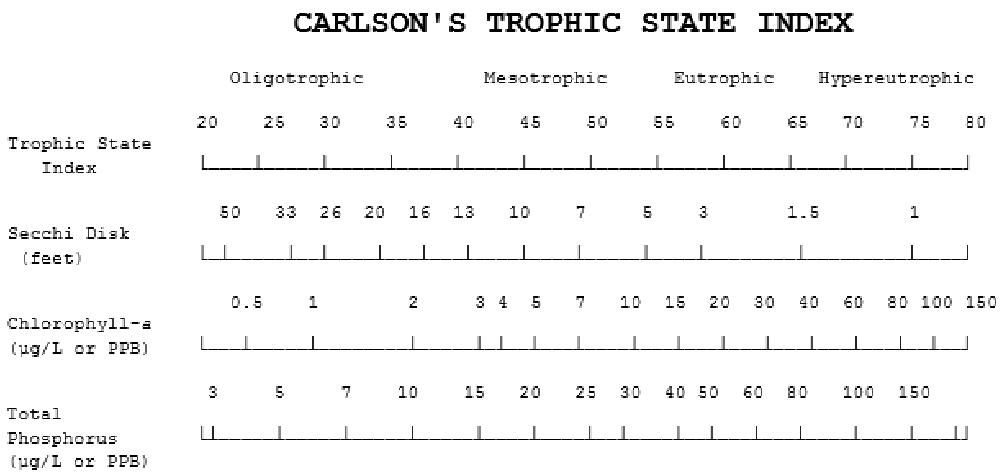

Figure 6: Carlson's Trophic State Index, the most widely used index (Carlson, 1977)

Factors affecting lake transparency

Transparency is affected by the water color, algal abundance, and non-algal suspended sediments (Holdren et al., 2001). As suspended sediments or algal abundance increases, transparency decreases. Decaying plant matter can stain the color of the water. Algae, small green aquatic plants, are abundant depending on plant nutrients, especially phosphorus and nitrogen. Transparency can be affected by the amount of plant nutrients coming into the lake from sources such as sewage treatment plants, septic tanks, and lawn and agricultural fertilizer. Suspended sediments often come from sources such as resuspension from the lake bottom, construction sites, agricultural fields and urban runoff.

VOLUNTEER RECRUITMENT

Volunteers are an essential component of the Secchi Dip-In program. They have been the sole contributors to the Secchi Dip-In database since 1994. Volunteers were recruited in the past by mail solicitation with contact information provided by volunteer monitoring programs. Volunteers were asked to fill out a questionnaire and return postage was provided. Other publicity for the Dip-In was provided by Kent State University through new press releases.

Outreach eventually became solely electronic (Carlson and Lee, 1994). For the 2015 Dip-In volunteers were notified by email and advertisements on the NALMS and Secchi Dip-In website leading up until July, the month selected for the Secchi Dip-In's data collections. In addition, the volunteer monitoring listserve has served as a resource to communicate with the volunteer monitoring community.

Program Participation

The Secchi Dip-In received funding from various partner organizations when it began in 1994. After funding ceased in 2001, the Secchi Dip-In experienced a decreasing trend in volunteer participation (Figure 7). As a program of NALMS, the Secchi Dip-In hopes to reverse this trend and thus far between 2014 and 2015, this has been the case.

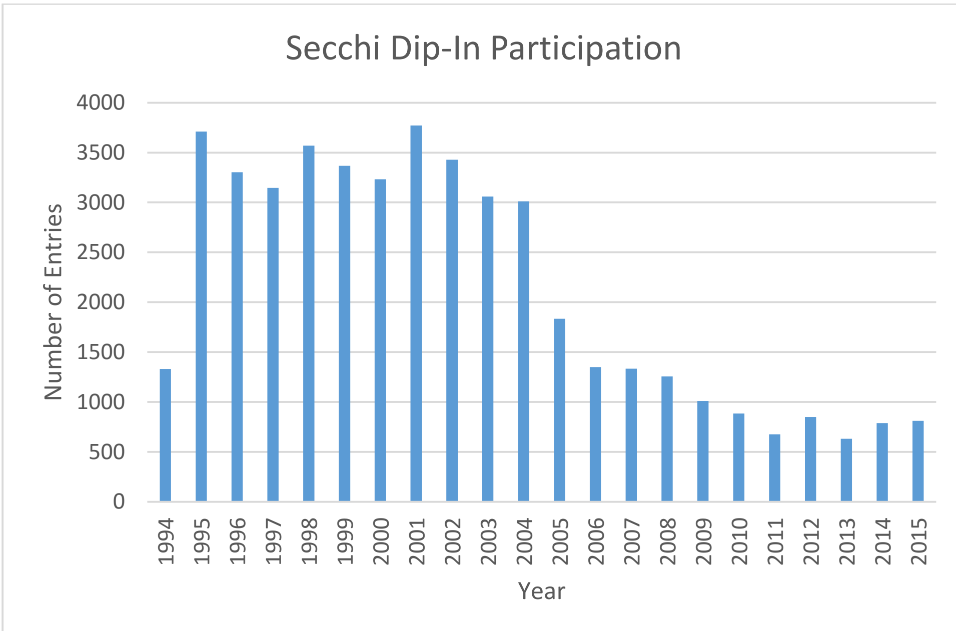

Figure 7: The number of annual data entries to the Secchi Dip-In database (1994 - 2015)

TRANSPARENCY RESULTS AND DISCUSSION

Spatial distribution of Secchi Dip-In participation

The 2015 Dip-In attracted a range of participants across the US and Canada (Figure 8). However, the sample size for each state or province varies from 2 to as many as 171. This was considered during the data analysis process (Table 1).

Figure 8: Participation in the 2015 Secchi Dip-In, North America

Table 1: Descriptive statistics of 2015 Secchi measurements by state. British Columbia (BC) and Ontario (ON) represent provinces in Canada.

State	Observations	Mean (meters)	Minimum	Maximum	Variance
AL	3	1.47	0.60	3.01	1.79
AR	38	2.69	0.50	5.00	1.26
BC	48	6.85	1.24	22.00	26.94
CA	16	6.85	0.62	2.50	0.24
CO	10	1.34	0.76	6.30	3.21
FL	33	1.95	0.20	5.33	0.89
GA	9	0.78	0.28	1.08	0.07
IA	5	0.82	0.20	1.24	0.23
IL	21	1.35	0.43	3.81	0.81
IN	70	2.11	0.43	6.46	1.81
MA	13	2.16	0.40	4.50	1.46
ME	5	4.67	2.50	7.70	5.98
MI	25	4.24	1.68	7.93	3.66
MN	171	3.59	0.22	19.36	5.43
MO	2	1.30	1.09	1.50	0.08
MT	3	6.59	5.64	8.38	2.40
NC	2	2.68	2.00	3.35	0.92
NH	23	6.38	2.30	12.00	7.86
NJ	31	3.82	2.13	5.94	1.51
NY	32	4.42	0.40	11.00	5.74
OH	13	1.14	0.84	1.60	0.07
OK	71	0.74	0.08	1.90	0.14
ON	12	4.74	2.50	6.00	1.29
PA	36	1.55	0.40	4.30	0.54
RI	7	1.97	0.40	6.45	4.58
TX	5	1.09	1.04	1.15	0.001
UT	14	4.39	0.27	8.25	10.55
VA	21	1.14	0.30	2.42	0.32
VT	67	4.41	1.40	12.00	4.80
WA	10	4.15	1.00	7.60	8.33
WI	31	3.18	0.69	8.75	4.08

Average Secchi measurements were highest in Canada, the Northeast, and a few of the upper Midwest states. The lowest values were consistently in the Southeast and West/Southwest area. The Midwest states displayed a mixture of lower to middle range Secchi measurements (Figure 9).

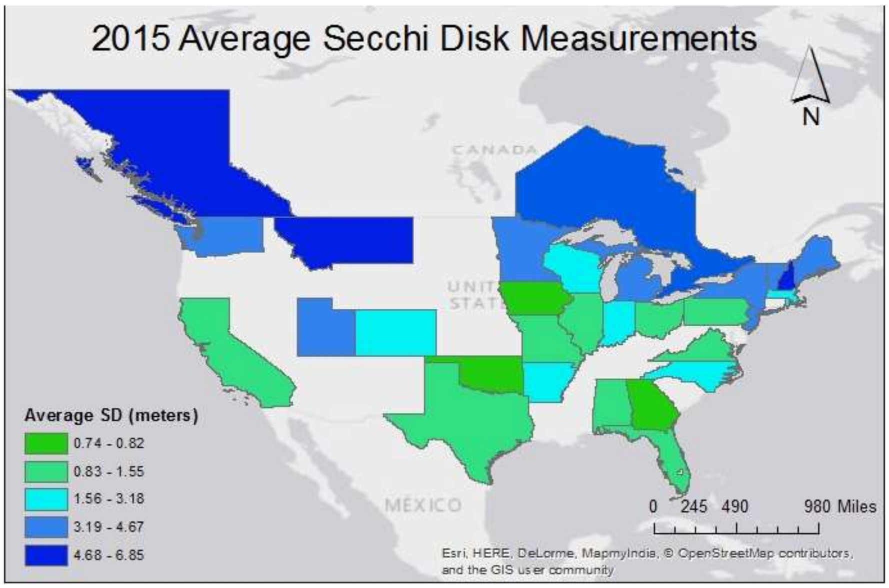

Figure 9: Average Secchi measurements displayed by state

Comparing TSI results

The National Lakes Assessment (NLA) was completed in 2007 by the USEPA in order to provide a comprehensive survey of the nation's lakes. Figure 10 provides a basis for comparison with 2015 Secchi Dip-In results. As indicated by the Carlson TSI lower transparency measurements reveal more eutrophic conditions and higher transparency measurements indicate more oligotrophic conditions (Figure 11; Carlson, 1977). Comparing the NLA data to the Dip-in's state trophic conditions, the results were consistent with the nine ecoregions. The Pacific Northwest and Northeast regions had predominately oligotrophic conditions and the Southwestern and Southeast regions had more eutrophic lake conditions. A closer geographic equivalent is to compare the National Lakes Assessment results with lake classifications by US region (Figure 12). However, regional TSI conditions do not match as closely as they do with state lake classifications. This is likely because not all states are represented in regional values and regions varied in sample size.

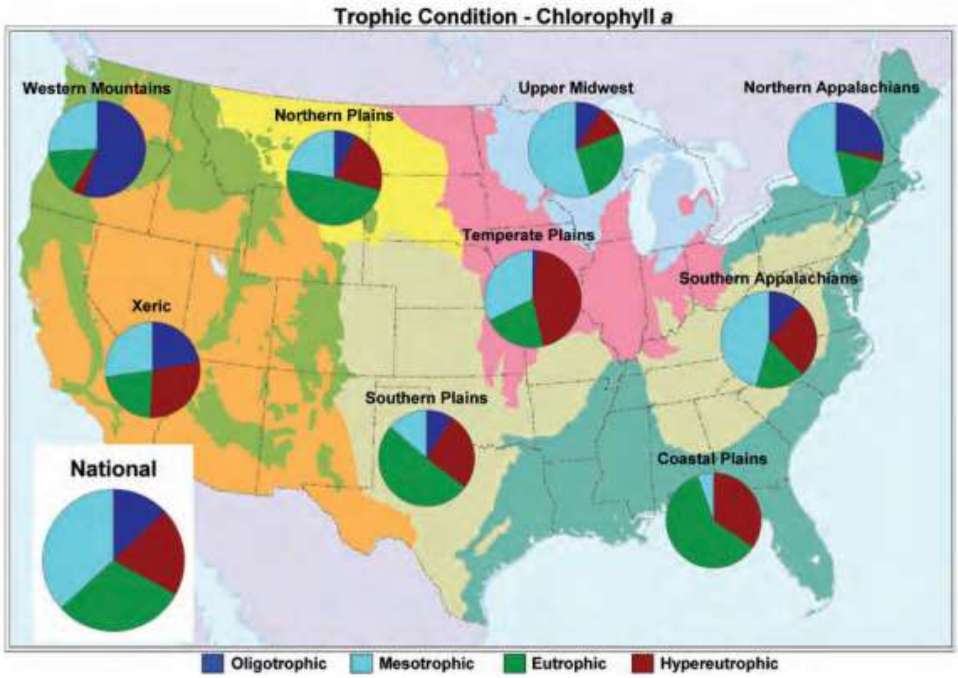

Figure 10: Chlorophyll-a trophic state conditions across nine ecoregions (Level III). The pie chart represent the percentage of lakes types found in each ecoregion. From the 2007 National Lakes Assessment http://www.epa.gov/sites/production/files/2013-11/documents/nla_newlowres_fullrpt.pdf

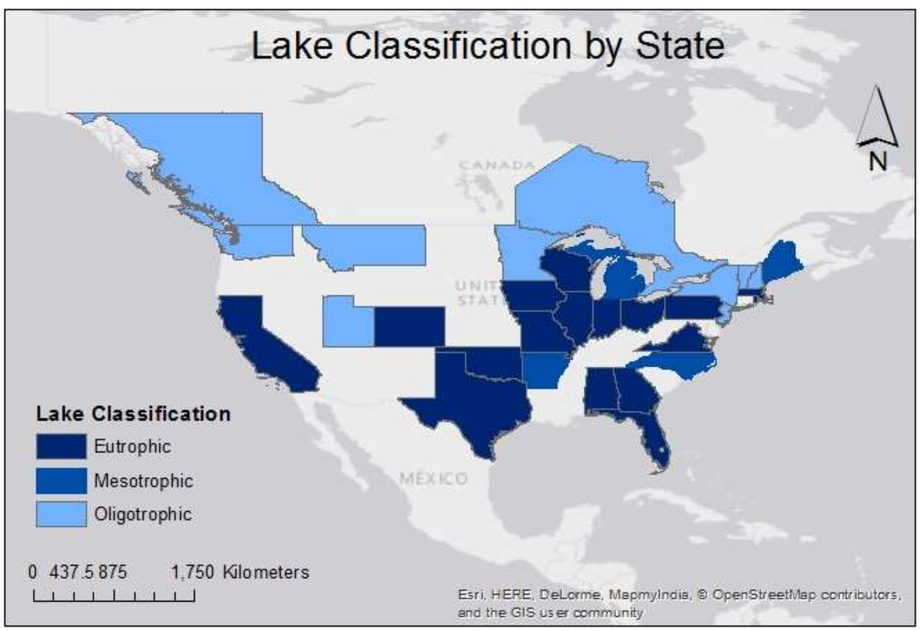

Figure 11: Lake classifications by state. Mean values were used to calculate the TSI for Secchi depth.

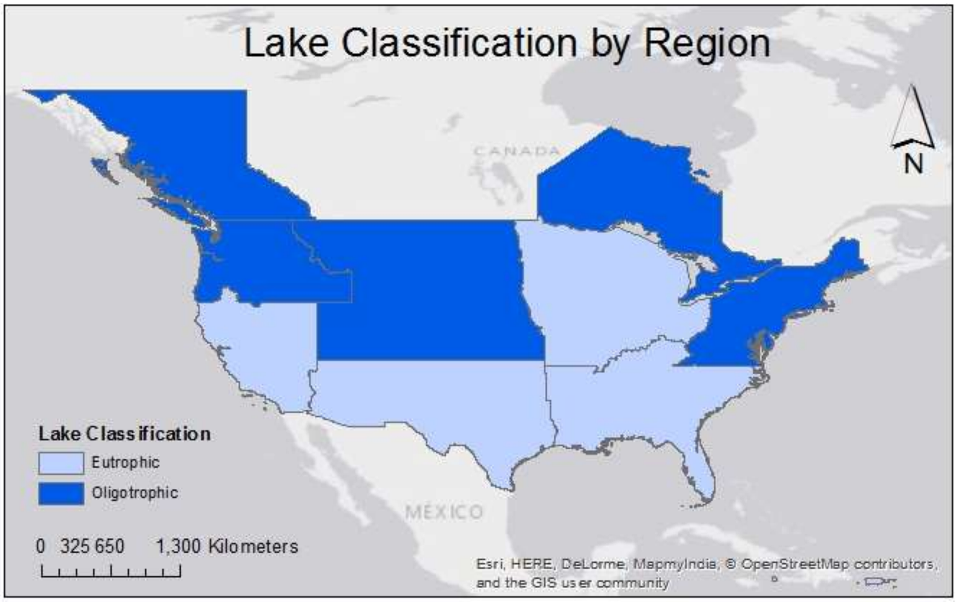

Figure 12: Lake classifications by region. Mean values were used to calculate the TSI for Secchi depth.

SURVEY RESULTS

A survey was conducted at the end of August 2015 to gather feedback from both Secchi Dip-In volunteers and NALMS affiliates. The survey was created on SurveyMonkey and consisted of 14 questions with a combination of multiple choice and questions requesting feedback (Appendix B). Over 200 individuals participated in the survey. Volunteers were asked whether they had participated in the 2015 Dip-In, their reasons for participating or not participating, and what changes they would like to see for future Dip-Ins.

Volunteers were asked which volunteer monitoring program they affiliate themselves. This gave us an idea of the types of programs submitting to the Secchi Dip-In, which are primarily volunteer monitoring programs (69%). When asked if future Dip-Ins should incorporate individual monitors, 75% voted in favor of including both individuals and volunteer monitoring programs. Finally, volunteers were asked the likelihood of using a mobile smart phone app for data entry. The majority of respondents were not interested, however 34% said they would be likely to use the app and can be recruited for the 2016 Dip-In.

LESSONS LEARNED AND FUTURE GOALS

Outreach campaign

NALMS took over the Secchi Dip-In officially in March 2015 and a Secchi Dip-In intern was not hired until June 2015. These circumstances did not allow enough time to adequately advertise the 2015 Dip-In.

For the 2016 Dip-In, we intend to diversify our outreach campaign. That is, to focus additional recruitment efforts on monitoring programs not currently affiliated with the Secchi Dip-In. The Secchi Dip-In is also eager to expand citizen science across the United States and increase monitoring in waterbodies not currently being monitored. Individual outreach will focus on lake and homeowner associations, water focused environmental groups, and outdoor groups through email and social media outlets. Outreach will occur in higher frequency during the spring season.

Database Upgrade

A general consensus from the survey was that volunteers found the website data entry to be difficult. We are aware of the status of the data entry process and are making plans to address these issues. In the short term NALMS will make basic updates to the data entry process to make it more streamlined. In the long term, NALMS is working to forge partnerships to make a database upgrade. This would involve geographic functionality and easier access to datasets.

Lake Observer App

The Lake Observer app was successfully tested by two volunteer monitoring programs: URI Watershed Watch in Rhode Island and the Clean Lakes Program (CLP) in Indiana. The lessons learned include launching and advertising the app further in advance of the summer sampling season. Successes in Indiana were in part from the Secchi Dip-In intern who promoted the app during side-by-side trainings with the CLP. The 2015 Lake Observer app beta test received 127 Secchi depth observations from 11 users, comprising of 14% of all 2015 Secchi observations (Borre, 2015). For the 2016 Dip-In, the app will be updated and available for a wider audience. Outreach efforts for the 2016 Dip-In will encourage the usage of the app.

Citizen Science Day

In the last few years, the White House has recognized the need for citizen science to '…address societal and scientific challenges' (Kahlil and Wilkinson, 2015). The White House has deemed April 16, 2016 as Citizen Science day, and the Secchi Dip-In will host an event in celebration. Getting involved with the White House has helped forge new relationships with citizen science programs and we will continue to utilize this outlet in the future.

Future Annual Reports

Future Dip-In reports will include long-term trends and any significant changes over time. The Secchi Dip-In database was prepared to be migrated to the STOrage and RETrieval and Water Quality eXchange (STORET and WQX), a database operated by the US Environmental Protection Agency that allows for the submission and sharing of water quality monitoring data. Due to time constraints, only 2015 data was analyzed for the 2015 Dip-In report.

CONCLUSIONS

The data analyzed provided a snapshot of lake conditions using only 2015 data. Due to the range of entries submitted across North America, average Secchi disk measurements were better represented at the state level rather than regional level. This was confirmed by comparing the chlorophyll-a trophic index in the 2007 National Lakes Assessment report.

The Secchi Dip-In has water quality parameters dating back to the early 1980's. Therein lies a resource for interested stakeholders and many possibilities for data analysis. The 2011 report 'Assessing the Needs of Volunteer Water Monitoring Programs' highlighted that funding stability and quantity are the top two program concerns (Green et al., 2011). In the midst of underfunded state volunteer monitoring programs, the Secchi Dip-In has served as a place for volunteers to continue submitting their data. With the support of NALMS, the Secchi Dip-In expects to continue as a long-standing citizen science monitoring program.

The volunteers contributing data to the Secchi Dip-In program provide valuable information about waterbodies nation-wide. The consistency of volunteers allows for long-term data and the ability to see trends. Presently, the Secchi Dip-In has seen a decreasing trend in volunteer participation. Recently absorbed by the North American Lake Management Society, we hope to reverse the trend, grow and revitalize the program, and contribute to the expansion and recognition of citizen science.

Thank you to all the volunteers who have participated in the Secchi Dip-In. You all are the key to the success of this program.

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Appendix A:

Secchi Dip-In mail in forms

The Secchi Dip-In Entry Form

Please submit the data at our website (http://www.secchidipin.org) and keep this form as a record. If you have no computer access, mail this form to the Secchi Dip-in address given at the end of this form.

Person Taking Reading:

Last Name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐ **First Name:** ☐☐☐☐☐☐☐☐☐☐☐☐

Telephone Number (___) ________________ **E-mail Address:**________________________

Your Monitoring Program Name (if applicable):____________________________

Please enter the following information on your waterbody

Waterbody Name:____________________ **State/Province**______________ **Country**_____________

County/Region ___________________ **Zip/Postal Code of waterbody nearest town to site**___________

Longitude of Site: _______________ Degrees _______Minutes _____Sec_______

Latitude of Site: _______________ Degrees _______Minutes _____Sec_______

Please include map locating the waterbody and site if you don't know the map coordinates.

Waterbody Type: ○ Natural Lake/Pond (No Dam) ○ Reservoir (Dam) ○Stream/River ○Estuary ○Marine
○ Other waterbody type _________________

Size (Lake or Reservoir Only) ○ Less than 5 Acres ○ 5-10 Acres ○ 10-100 Acres ○ 100-500 Acres ○> 500 Acres
Actual Size (If known):__________ ○ Acres ○ Hectares **Depth at Site** (If known):__________ ○ Ft ○ Meters

Please enter the transparency measurement below.

Date of Reading: Month: ○June ○July Enter Date: ______ Year: 20___

Time of Observation: ______ ○AM ○PM (To the nearest 15 minutes)

Site Name or Site Number (As Used in Your Normal Program Monitoring): _______________

Weather: ○ Sunny ○ Partly Cloudy ○ Overcast ○ Rain

The reading was taken from a ○ Boat/canoe ○ Dock ○ Bridge ○ Wading ○ Other_____________

	Secchi Disk	Turbidity Tube	LaMotte Turbidity	Vertical Black Disk	Turbidity Meter
Reading:					

My Reading is measured in ○ **Feet** ○**Inches** ○ **Meters** ○ **Centimeters** ○ **NTU** ○ **JTU** ○ **FTU**

__It is very important that you add the Units of Measure__ (Feet, Inches, Meters, etc) so that we can accurately estimate transparency.

Please answer the following if you used a Secchi Disk

Was the disk resting on the bottom? ○Yes ○ No

Is the disk ○All White ○Black and White

Did you use a viewscope? ○Yes ○No
If Yes, is it an ○Open tube or has
○Clear glass or plastic on bottom?

Please answer the following if you used a Turbidity tube

Length of tube:_____ ○Inches or ○Centimeters

Was the bottom of the tube visible when full? ○Yes ○ No

Did you view the disk on the ○Sunny or ○Shady side of boat

Did you wear sunglasses? ○Yes ○No

Please enter other variables you measured here			What is the general water quality of your waterbody?	Has the quality changed in the past 5 years?
Temp Surface _____ Bottom _____ ☐ Degrees F ☐ Degrees C	**Oxygen** (ppm or mg/L) Surface______ Bottom ______ Bottom depth____	**pH**______ ○ Meter ○ pH paper ○ Comparator ○ ________	○ Beautiful, No Problems ○ Minor Problems ○ Slight Use Impairment ○ Substantial Impairment ○ Use Totally Impaired	○ Better ○ Worse ○ No change ○ Don't know

What factors (if any) **negatively** affect the general water quality at your site?

Problem	I Don't Know	Beautiful, Causes No Problems	Causes Minor Problems	Causes Slight Use Impairment	Causes Substantial Use Impairment	Causes Use To Be Totally Impaired
Algal Scums						
Aquatic Weeds (Seaweed)						
Turbidity (from sediments and erosion)						
Boats/Boating (Congestion, Safety, Noise)						
Poor Fishing						
Personal Watercraft (Jet Skis)						
Bacteria						
Dense Housing						
Filling-In						
Trash and Litter						
Pest Wildlife (Raccoons, Geese, Ducks, etc.)						
Noise (Non-Boating: neighbors, traffic, etc.)						
Swimmers Itch						
Too Many Rules and Regulations						
Other ______________						

Dip-In Instructions

- Measure transparency on **any day during the Dip-In period. Please do not go out if it is raining, if there is abnormally high boat traffic, or if your safety would be at risk.** A clear, calm day is best.
- Go to the site or sites where you normally measure transparency. Follow your normal monitoring procedures.
- Enter the data at our web site (**http://www.secchidipin.org**) or, *Carefully and completely* **record your findings on this form.** We may not be able to use your information unless the blanks are filled in correctly.
- Please be sure to add your telephone number and e-mail address in case we have questions about your answers.
- It is very important to know where your sampling site is. If you supplied this information in the past, you do not have to add it again.
- Be sure to **mark the type of transparency device** you use, whether it is a Secchi disk, a turbidity tube, a LaMotte® turbidity column, a turbidimeter, or a vertical black disk. It is especially important that you enter the units (feet, inches, meters, centimeters, etc.) in which the transparency reading was measured.
- **If you have participated in the past**, please participate again so that we can examine trends in transparency.
- **Do you have any questions?** Look at our website (**http://www.secchidipin.org**), e-mail us at **secchidipin@nalms.org** or write us at:

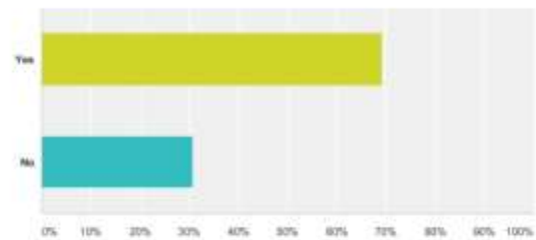
The Secchi Dip-In
PO Box 5443
Madison, WI 53705

Appendix B:

Secchi Dip-In Survey Responses

Q5 Do you currently participate in a volunteer monitoring program besides the Secchi Dip-In?

Answered: 205 Skipped: 2

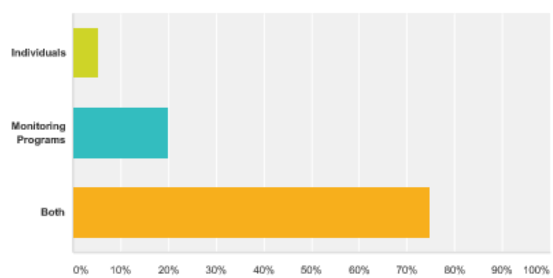


Answer Choices	Responses	
Yes	69.27%	142
No	30.73%	63
Total		205

Secchi Dip-In Volunteer Questionnaire SurveyMonkey

Q7 Do you think the Secchi Dip-In should focus its efforts on individuals for monitoring or continue to work through existing volunteer monitoring programs?

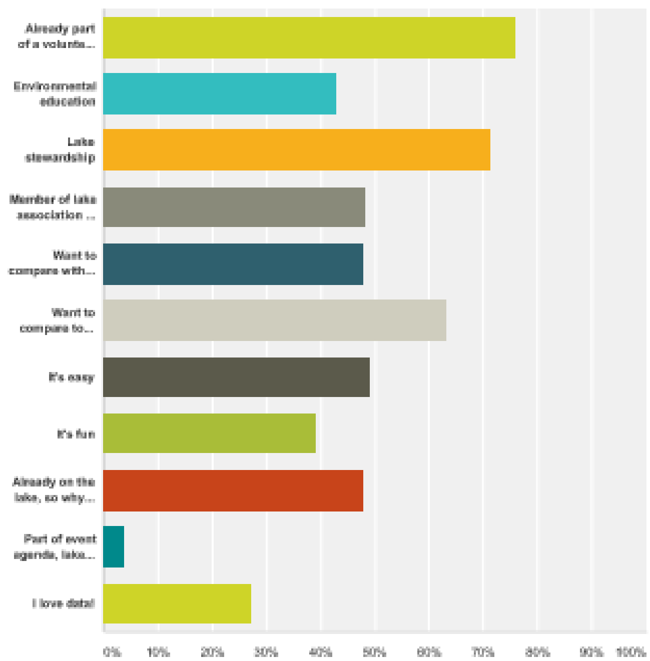
Answered: 194 Skipped: 13



Answer Choices	Responses	
Individuals	5.15%	10
Monitoring Programs	20.10%	39
Both	74.74%	145
Total		194

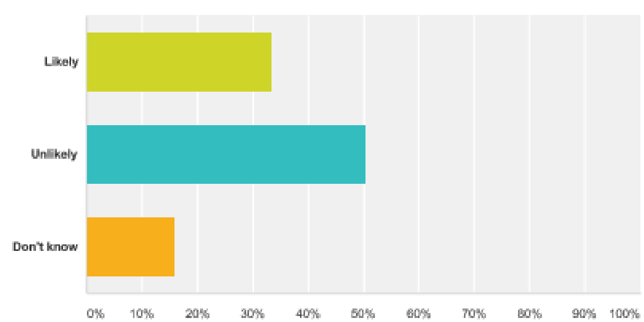
Q9 Why do you participate in the Secchi Dip-In? (Check all that apply)

Answered: 161 Skipped: 46



Q13 How likely would you be to use a smart phone app to enter Secchi readings and other water quality parameters?

Answered: 199 Skipped: 8



Answer Choices	Responses	
Likely	33.67%	67
Unlikely	50.25%	100
Don't know	16.08%	32
Total		199