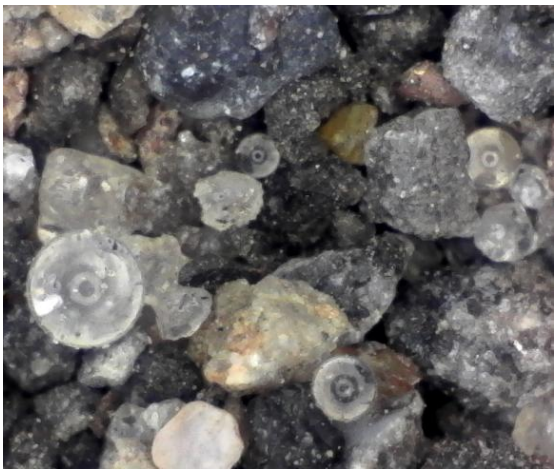
Wayne County Gem and Mineral Club News

July, 2020

Always Looking for Places to Dig!



What are the concentric grains in my new sand? Can you see all 4? The large one is only 0.7mm in diameter (see page 4)

http://www.wcgmc.org

FACEBOOK link

How much water? See page 6

WCGMC PICNIC CANCELLED

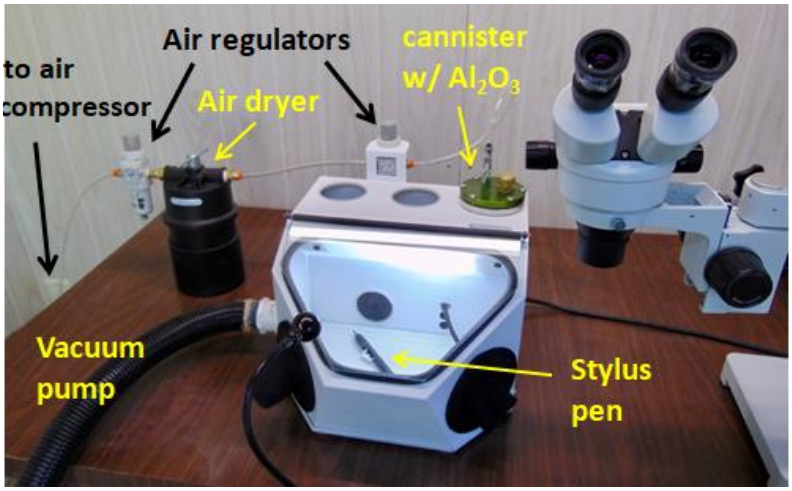
It is with much sadness that we must announce that the annual August picnic has been cancelled this year. We are a large crowd (almost 100 last year) and we just do not see how proper social distancing could be maintained in that environment. Factor in consideration about potluck food service, renting a large tent, keeping a porta-potty safe, and opening a busy workshop and we believe cancelling the event is the only prudent action we can take. Let's be safe, limit our possible exposure and risk, and get through this.

WCGMC has also not planned any field trips for the July-August time frame. However, the Rochester Academy of Science Fossil Section is planning a Saturday trip to multiple road cuts in the Syracuse area for July 18th, and we are invited to attend. *For details on that day trip, see page 7.*

For now, we expect to resume meetings and hopefully workshop Saturdays in September.

PREPPING FOSSILS WITH AN AIR ABRASIVE BY STEPHEN MAYER

Most of my articles for the WCGMC Newsletter over the past seven years have dealt with fossilized groups of animals, their biostratigraphy and paleoecology. This article focuses on the preparation of fossils which are found in the Finger Lakes Region of New York. I will describe some of the equipment as well as some basic techniques I have learned during our isolation for the COVID pandemic.



My fossil preparation "lab": The air abrasive unit in front center holds the sample. The black ports on either side permit arm entry to hold the abrasion pen and the sample.

continued on page 3 (see Prepping Fossils)

My 2020 Vision - Revisited

Fred Haynes

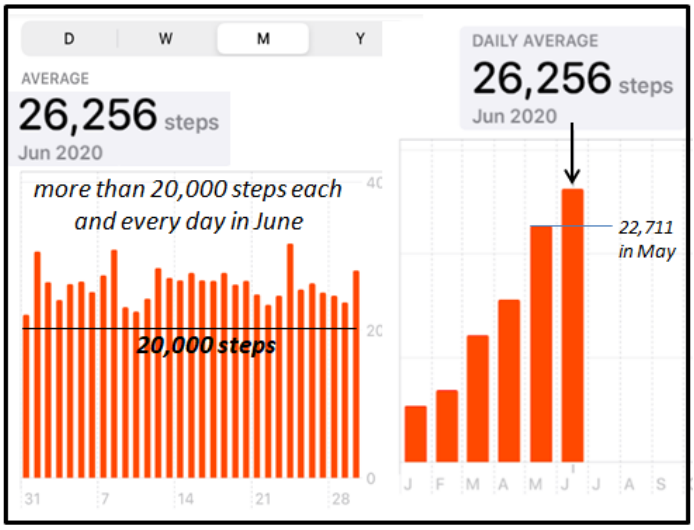
Those of you who are studious readers of this esteemed newsletter may recall I wrote an article for the January, 2020 issue entitled "My 2020 Vision". The theme revolved around the word "more". I planned to do more collecting, more giving, more writing, more research, and to have more fun with club activities. It appears I overlooked something when I scripted my vision. I did not foresee a global pandemic and all its ramifications. As a result I have only achieved 40% efficiency. Yes, to more research (I think) and certainly yes to more writing, but the opportunities to collect and give rocks away and to have fun during club events sort of evaporated. The entire season of spring passed us by without a single club event.

OK, so the pandemic and the rules of social distancing closed some doors (slammed them you might say), but we can always find other doors to open. I was taught, at home, at school, and at work, to work on things within my control and not to worry about those I could not control. I cannot control a pandemic or the guidelines and rules set or recommended by those with such authority. But I could and can control my own health to an extent and perhaps prepare myself should the darn virus somehow find me. I decided to walk.

I've walked in all directions from my home and learned of some very nice trails that I did not know existed. Until the end of May, Oak Hill Country Club's East Course was closed for golfing and they graciously allowed trespass for non-members seeking exercise. I watched all the oak trees bud and the azaleas blossom. I walked both ways on the Erie Canal from Pittsford and saw its water level climb in April.

Azaleas at Oak Hill Country Club on May 24th.

As encouragement, I tracked my steps and miles on the Health App of my phone. April went well (15,607 steps/day); May went even better (22,711 steps/day or almost 9 miles per day). And then came June. I was not sure I could keep the trend going, but I did (26,256 steps/day, or over 370 total miles). That's more than walking to Ace of Diamonds and back.



This did not all come without some discomfort. After all, I did become Medicare eligible this spring and the body wasn't always aligned with my new Vision. There was a shin splint in early May, an off and on sore lower back, and a sore right knee for a week in in June. But I persisted. On the plus side, there are 25 pounds less of me now than there was in March when it all started. That cannot be bad.

It is not my Vision to increase the step totals again in July. It will be hotter and it is time for my body to recover. It is also time to collect again, but that is another story, perhaps for next month?

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Just wait until this pandemic is over and you can come see the new WCGMC saw Glenn found and put together. You need to collect big rocks this summer.

Prepping Fossils (continued from page 1)

Three aspects of fossil preparation immediately apparent are: the equipment is expensive, the process is time consuming, and patience is absolutely required, which may be the most difficult part. Fossils collected in the field are typically covered with some degree of surrounding rock, after all the best preservation occurs during rapid burial.

Several manufacturers sell equipment to remove this matrix. Comco and S.S. White air abrasives are commonly used, but cost from $4000 - $9000. Integral Systems makes an air abrasive unit called Xblast which sells for about $1000. This unit is primarily used in the dental industry, but has the right components for fossil preparation (Figure on page 1)

The three most common abrasive materials are Aluminum Oxide (Al_2O_3), Dolomite Powder ($CaMg(CO_3)_2$), and Sodium Bicarbonate (baking soda, $NaHCO_3$). Each has a different hardness on the Moh's Scale at 9, 3.5-4 and 2.5 respectively. These powders range in price from $185 for 50 lbs of Al_2O_3 , $16 for 50 lbs of dolomite, and $1 per 1 lb box of baking soda with multiple boxes required per fossil. The hardness of the encasing rock determines which powder should be selected.

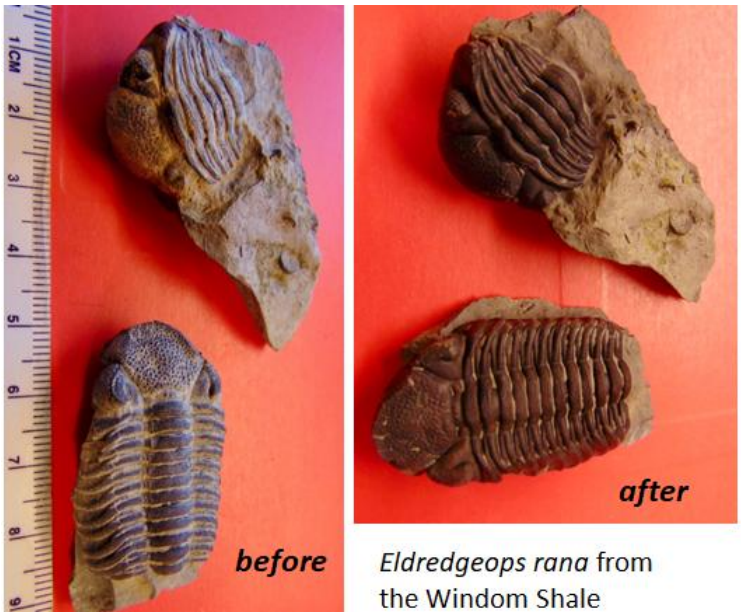
The principle is that air under high pressure from a compressor passes through an air dryer to remove moisture, then through a container holding the abrasive. The pressurized air picks up the powder and forces it through a stylus pen, smashing the particles against the rock to remove the matrix surrounding the fossil. Both powder and rock debris can be removed from the chamber by a shop vacuum to an elaborate dust collection system. The fossil is viewed under a microscope during this process to ensure detailed precision and not to damage the specimen.

If the specimen is heavily covered by rock matrix a Dremel or air scribe is used to first remove some matrix to speed up the process but even so preparation can take hours, days and even months depending on the intricacies of the fossil: for example, preparing a basic bivalve versus an extremely spinose trilobite.

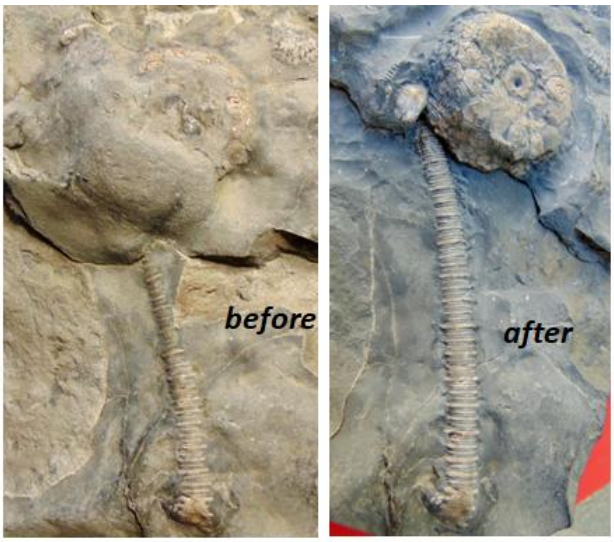
At the bottom of this page are before and after photographs from two trilobites and a crinoid collected and cleaned this spring. Since the fossils were found in local shale units, we are removing mudstone or very hard clay from the calcified fossil.

I spent two hours prepping each of the trilobite samples and used about 3 pounds of the aluminum oxide. The abrasive is held in a container behind the unit which holds about one pound. I purchased a 50 micron sieve to separate, recover, and hopefully reuse the extremely fine oxide abrasive. Prepping the crinoid took even longer. I spent ten hours cleaning that one, starting with the Dremel tool to expose the calyx.

Air abrasion is an excellent technique for cleaning fossils, albeit time consuming, but the results can reward the patience. But, it is expensive! The items are purchased separately. The air dryer and air abrasion unit cost $930, the compressor was $260, shop vac $60, misc hardware for air lines about $100 , microscope $400, powder so far $260. All told, about $2000 just to get started! If anyone has a fossil that needs prepping, let me know. I'd be happy to work on your fossil for a nominal fee.



Eldredgeops rana from the Windom Shale



Megistrocrinus depressus from the Kipp Rd bed of the Deep Run Member along Seneca Lake

The WCGMC Sand Page

Urban Sand

by Fred Haynes

While I was piling up steps on my Health App (see page 2), I was also thinking about all those good sands I was missing by not traveling about the northeast (or even beyond). And one fine day, I decided to drop into a small creek that crosses East Ave just north of Pittsford and sample sand that was visible through all the new growth. I knew it would not be spectacular, but it did look like a nice sand bar had developed just off the road where the creek made a sharp jog. And heck, why not?

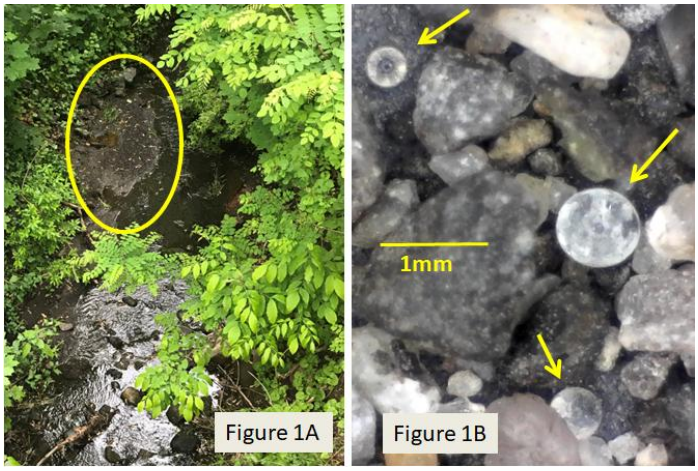


Figure 1A: A tributary to Allen Creek in Pittsford seemed to have developed a nice sand bar on its bank (circled in yellow). **Figure 1B:** But what were the strange concentric grains?

I immediately realized this was not glacially-derived sand nor was it the bits of Silurian dolostone or shale that underlie the glacial cover. I was resigned to it being manmade, likely bits of macadam from the road. But I washed it, dried it, and I prepared it for viewing. Why not, I'd collected it and I had the time. I found it full of tiny little round, apparently transparent grains. At first I thought they were disks with hollow centers as my digital microscope did not have the depth of focus to observe their third dimension well. I also thought they were likely plastic. I was wrong on both counts.

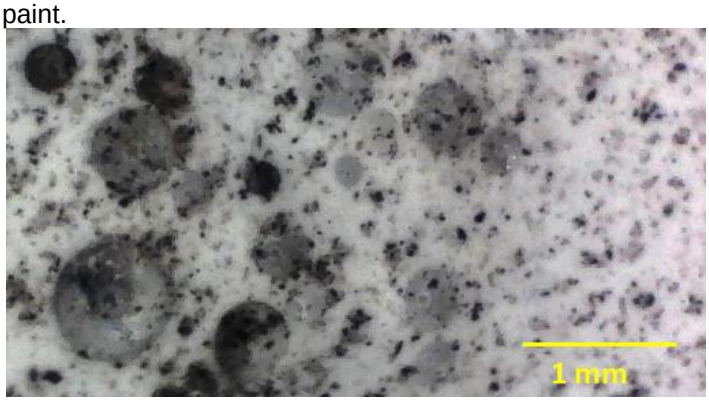
One of the beauties of the internet is that experts can be sought for just about anything, including identifying strange grains in urban sand. I posted my pictures to two Facebook Groups for sand collectors and let others speculate. And speculate they did. Maybe they are those dreaded microbeads that were used in toothpaste and cosmetics and since banned in most locations? Others wondered if they could be carriers for slow release fertilizer or insecticide used in the neighborhood. I wondered if they might be an ingredient in roof shingles, but I canvassed my gutters and could find none amongst the weathered gutter aggregate accumulating there.

And then Leo Kinney, a sand collector from Massachusetts, chimed in with the answer. They are reflective glass beads used in road signs and in the line painting on roads. He further suggested that the dark center was likely an artifact of the lighting for my little digital microscope which basically floods the scene with very bright LED light. A little research indicated that the beads used for highway paint are typically about 0.5mm in diameter.

I tried to isolate a few for a joint photograph, but once the tiny things were no longer lying next to other grains, they rolled everywhere. OK, so they are not disks. They are spherical and most are darn near perfect spheres. I decided they looked better in place amongst other sand grains.

But, I was not done. I returned to the scene and peeled off a small quarter inch of painted tar from a crosswalk. Shhh, don't tell anyone. Bingo. It is a perfect match.

Above: a macroscopic view of white painted pavement and the spherical reflective glass beads.
Below: a close-up of the beads embedded in the white paint.



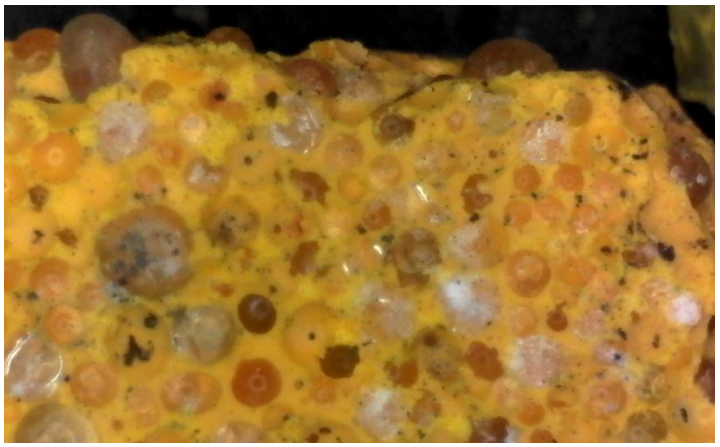
continued on next page (see Urban Sand)

Urban Sand (continued from previous page)

Back to the internet: Based on their size and usage, these are Type 1 Reflective Paint Glass Beads. The idea is to spread the paint so that the reflective beads are about 50% exposed above the paint level. If the beads are too deeply buried, the paint will cover them and reduce reflectivity. If they are too exposed they will weather out prematurely. They make dispersive units designed to accomplish this.

It is recommended that you mix 5-6 pounds of these beads for each gallon of paint. That is a heck of a lot of 0.5mm glass beads in each gallon. I'll let you calculate how many!

Just in case you wondered: you can buy these beads online. One site I found sells them in 50 pound bags. Right now you can get a bag for a discounted price of $89. Or even less expensive if you buy a full pallet (40 bags).



Yes, they are used with yellow paint as well.

Now I wonder how many such glass beads I have overlooked in other sands I have collected in proximity to marked roads or painted signs? Yes, they are manmade. However, they are inert and I presume they have no more adverse effect on the environment than grains of well-rounded quartz.

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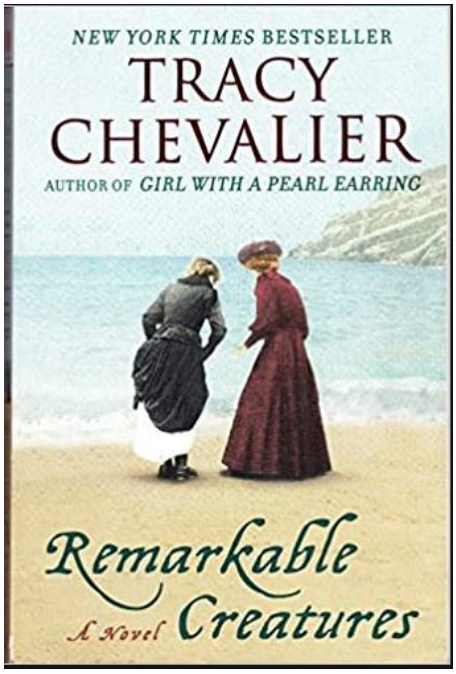


By Fred Haynes

In the June WCGMC newsletter I featured an article about paleontologist Mary Anning and the postage stamps that honor her amazing discovery of mariine reptiles in the seaside cliffs of southern England. After reading the story, Donna Smith informed me of a historical novel she had enjoyed about Mary's discoveries and her life in early 19th century England. I am not an avid reader of historical fiction, but I decided to give this book a try, ordering a copy online and putting it on the top of my June reading list.

"Remarkable Creatures" was written by Tracy Chevalier and published in 2009. It was listed on the New York Times Bestseller list. I found the narrative very easy to read as the author mixed actual geologic and historic events into the lifestyles and culture of the time. Women were not expected to hunt fossils, much less study them, and Mary Anning was not of the "proper class" to be taken seriously or given credit for her accomplishments regardless of her gender.

Mary discovered the first complete *Ichthyosaurus* in 1811 when she was 12 years old. Her second major discovery of a complete *Plesiosaurus* in the same Jurassic cliffs in Lyme Regis came in 1823. Both discoveries were extremely provocative at that time because they suggested that some animals had gone extinct. This violated mainstream religious beliefs of the early 19th century. Remember, Charles Darwin would not make his famous worldwide trip until the 1830's, publishing his evolution theories for the first time in 1839. All of this is interwoven into the novel including Mary's interactions with famous geologists, naturalists, and fossil collectors of the time such as William Buckland and Charles Lyell.

The book is available in many Wayne County and Monroe County Public Libraries. I acquired my personal copy from Amazon for only a few dollars. Folks with an interest in historical fiction or famous women might like this book. Folks interested in the development of paleontologic thinking should enjoy this book. If you fall into either category, I suggest this is might be a great summer read, some two centuries after Mary's discovery of such "Remarkable Creatures".

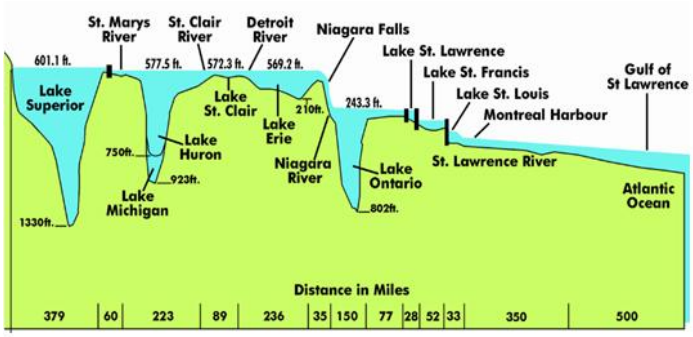
That's a Lotta Water

by Fred Haynes

Wayne County has over 35 miles of shoreline on Lake Ontario, the easternmost of the five North American Great Lakes. Most of us have favorite beaches along the lake for hiking and for rock collecting. Others seek the solitude of a kayak trip on a warm summer day. From a safe distance, we watch Mother Nature beat up the coastline each winter and patiently wait for spring and new adventures. Of course, we've also been known to trek west and visit some of those other large lakes.

Sure we all know the Great Lakes are large and very deep and we know they were carved out by glacial action just a bit more than 10,000 years ago. But I wonder if we truly appreciate just how large and how big these lakes are?. And just how much water they contain. With a bit of time on my hands when I was not travelling as I would have liked, I thought I'd try to compile some of the numbers and put our little backyard pond into proper perspective.

For starters, did you know that 21% of all the fresh water on the planet resides in the Great Lakes? If that does not impress you, how about this? In 2009, the Great Lakes contained 84% of the surface freshwater in North America.



Great Lakes System Profile
from Vividmaps.com/great-lakes-profile

In terms of surface area, Lake Superior is the largest freshwater lake in the world occupying 31,700 square miles But, because they are deeper, Lake Baikal in Siberia and Lake Tanganyika in Central Africa contain greater volumes of water. Interestingly, those two large deep lakes have a very different geologic origin than our Great Lakes. Both occupy rift valleys where tensional forces are actively attempting to split continental plates apart, leading to deep rift valleys that are presently filled with freshwater.

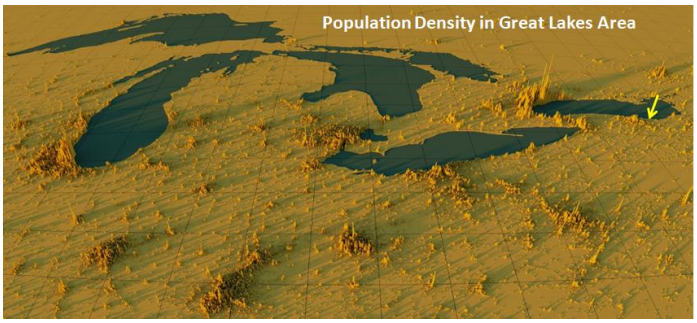
If you desired to drive around all of the Great Lakes, you would need to know that the cumulative shoreline for the five lakes is almost 10,000 miles. It would take awhile. You could make two round trips from western New York to the Tucson Gem and Mineral Show and still not drive that far.

Our backyard lake, Ontario, is the smallest of the Great Lakes in surface area, but its depth of over 800' means it has more water than Lake Erie. Lake Ontario is notably closer to sea level than all the other four "Upper Lakes", some 320' below Lake Erie. This, of course, is due to the Niagara Escarpment and that little waterfall along the Niagara River.

There are 383 cubic miles of water in Lake Ontario when it is at its average level at 243' ASL. Perhaps those units don't register easily: well, 383 cubic miles is 430 trillion gallons. Yes, that is trillion with 12 zeroes. That is a lot of water, but even more amazing is that the retention time for water in Lake Ontario is just 6 years. All of the water present in Lake Ontario today will be replaced by new water in the next six years! For comparison, the retention time in Lake Superior is 191 years.

Remember the high water levels in the spring of 2017? It is estimated that over 4 trillion gallons of extra rainwater entered Lake Ontario during April of 2017. That is extra water, above and beyond what was coming over Niagara Falls. It's like having a large bathtub in your backyard without a control to turn off the tap.

The Great Lakes are an amazing product of geology and climate. The water and the waterways that connect the lakes are resources that have played important roles in human history and the civilization of North America Oh, and they also move rocks around, bringing us new ones to collect each and every time we visit. Enjoy them!



Here is an interesting anthropogenic view of the Great Lakes through population density. Chicago, Detroit, and Toronto are evident, Wayne County (yellow arrow) not so much so. (from reddit.com)

Wayne County Gem and Mineral Club Schedule

last update June 30

This is the page where we list all the upcoming WCGMC events and those of other organizations in our area. It is usually full of field trips, mineral shows, and, of course, by July, there are details of our upcoming picnic. Unfortunately this year's list is very short. This month, we could fill this page with just cancellations, but do not plan to do that. To my knowledge there are two scheduled activities this month in our region, and both come with restrictions and caveats. On the positive side, we note that, as of June 26th, Ace of Diamonds is now open for Day Collecting: visit their website for details.

Saturday July 18th: The Rochester Academy of Science is planning a field trip to two or three road cut locations in central New York. They have provided the following information to their members and have also indicated that WCGMC members would be welcome. In place of the typical car-pooling, all attendees will meet up on-site at 10:00 AM.

> *The first stop will be the Pompey Center Road cut southeast of Syracuse that exposes the Delphi Station and Mottsville Members of the Skaneateles Formation. After a couple of hours, we will then move to the Swamp Road site that exposes the Solsville and Bridgewater Members of the Skanteales Formation. If time and interest permits we will stop at Lord's Corner west of Lafayette to check out the horn corals from the Otisco Member of the Ludlowville Formation. These sites were selected because each offers large scale exposures that allow considerable room for social distancing. Each participant is also required to bring a face mask for any instance when 6' social distancing cannot be maintained.*

Any WCGMC members interested in attending should contact Fred Haynes [fredmhaynes(at)gmail.com] for additional logistics and to be on the list to be informed should any changes in the plan be needed.

Saturday July 25 and Sunday July 26: The Finger Lakes Gem, Mineral and Fossil Club is hosting its rescheduled Quartz Fest at the Greater Canandaigua Civic Center, 250 W. Bloomfield Rd. The Gem, Mineral, and Fossil show will be open from 10:00 AM until -6:00 PM on Saturday and from 10:00 AM until 4:00 PM on Sunday. Admission is $5 for adults, children under 12 and Scouts in uniform are admitted free with adult. The Finger Lake Club amends the announcement with following:

> *Quartz Fest will be an old fashioned Gem Show with no frills. We are working with the Civic Center to make this a safe and successful show for everyone, one door to come in and another to exit with arrows and signs to direct attendees. We will not have food, displays or demonstrations. As mandated by the NYS Department of Health, a face covering or face mask is required while inside the Greater Canandaigua Civic Center. In addition, the dealers will be spread apart for better distancing.*

Jim Rienhardt has had a visitor to his feeders in Lyons this month. Last week Jim was successful capturing the pileated woodpecker in flight. If you have ever watched one in flight you know how difficult this is.

Teresa Ferris and James Keeler spent a weekend digging in central and eastern Pennsylvania: some milky quartz here, a bit of azurite there.

Wayne County Gem & Mineral Contacts

ELECTED OFFICERS

President - Linda Schmidtgall
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Vice-President - Fred Haynes
fredmhaynes55(at)gmail.com 585-203-1733
Secretary - Debbie Breeze
Treasurer - Bill Lesniak

Board of Directors
Gary Thomas
Bob Linderbery
Heidi Morgenstern
James Keeler

Past President - Glenn Weiler

Visit us on Facebook:
https://www.facebook.com/groups/1675855046010058/

APPOINTED POSITIONS

Bill Chapman – Field Trip Chair

Fred Haynes – Newsletter Editor
fredmhaynes55(at)gmail.com

Bill Lesniak – Website Coordinator
Glenn Weiler – Workshop Coordinator

Linda Schmidtgall – Collection Curator
Eric Elias: GEMFEST Show Chair

Fred Haynes – Facebook Administrator
Jim Rienhardt – Sand Chapter

Club meets 2nd Friday of each month starting in Sept.
Social meeting at 6:30 PM Regular meeting at 7:00 PM
Park Presbyterian Church, Maple Court, Newark, NY
Website – http://www.wcgmc.org/

Dues are only $15 individual or $20 family for a full season of fun. Renewal is in October. Send to:
WCGMC, P.O. Box 4, Newark, NY 14513