Rochester Academy of Science

BULLETIN

"An organization of people in the Natural Sciences"

July 2020 - Vol. 74, #7

President's Message

τίποτα δεν αντέχει, αλλά η αλλαγή (Nothing endures but change) – *Heraclitus of Ephesus.* This is attributed to Heraclitus (my favorite Greek philosopher) on several websites, but I don't find it in my comprehensive *Ancilla to the Pre-Socratic Philosophers* (Katherine Freeman, 1966). Oh, well.

I have more changes for you this month. With the cancellation of the **Roche*STAR* Fest** for 2020, your Board of Directors voted to hold our Annual Meeting as a virtual session on July 17th (change of date). Our By-Laws say nothing about being able to do this, but we are allowed to declare an emergency by NY State law during the COVID-19 pandemic and call a virtual RAS meeting. The Astronomy Section will still have their speaker, Dr. Nick Warner, and our meeting will precede that talk. More detail on this within.

A second change is that the Board has cancelled the Fall Scientific Paper Session. Most faculty and students will have many challenges in the Fall semester and would not benefit from such a session. We are monitoring the situation and may choose to conduct a Spring session.

You should plan on receiving this Bulletin electronically for the foreseeable future. If you must have a mailed copy, please contact me.

Yours in Science,

Michael Grenier, RAS President

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Notice: Joint RAS Annual Meeting and ASRAS Meeting and Presentation Friday July 17th at 7:30 p.m.

RAS Fellow induction of Bob McGovern
RAS Recognition
RAS Elections (Welcome New Board member)
ASRAS Meeting and Dr. Nick Warner talk on the Mars Insight Rover

Dr. Nick Warner
Photo: SUNY Geneseo

Nicholas H. Warner, Ph.D. is Assistant Professor of Geological Sciences at SUNY Geneseo. He is a planetary geologist who was instrumental in determining where NASA's InSight Lander landed on Mars. He spent six years working on the project with Mars Exploration Rover Project Scientist Matthew Golombek at NASA's Jet Propulsion Laboratory (JPL) to determine the best landing site for the spacecraft.

"As one of only a handful of geologists who work on this mission, my role was to evaluate satellite imagery of the surface of Mars to identify a safe region for landing," said Warner. "This involved measuring surface characteristics like terrain slope, elevation, rock abundance, and soil thickness." For more information see http://nhwarner.com.

This meeting will be conducted using the Bigbluebutton web conferencing system. Connection details will be sent to all members before the meeting. You will also be invited to attend a RAS training session in which you can practice connecting to a meeting hosted by one of our Board members. Bigbluebutton is familiar to most ASRAS members as this is the tool with which their virtual meetings have been held. We encourage you to take the tutorial at www.youtube.com/watch?v=uYYnryIM0Uw.

The Bigbluebutton client runs within your web browser. Unlike other conferencing tools, you do not need to install software on your computer. They recommend using the latest version of Chrome or Firefox on your desktop or laptop computers. If you are using a Chromebook, use the built-in Chrome browser. The Bigbluebutton client also runs on mobile devices (no app to install); iPad, iPhone, and Android are all supported.

Spring Wildflowers Along Honeoye Creek

By Timothy A. Tatakis , Ph.D., Biology Department, Monroe Community College.

In April and May of this year, 2020, I spent some time exploring the floodplain along the bank of a small stretch of Honeoye Creek in southern Monroe County, New York. This article will briefly describe some of the wildflowers I found in bloom during my visits to this relatively small area of floodplain habitat, approximately fifty meters in length, within fifteen meters of the creek bank.

There is a mixture of vegetation that grows in this area during the course of a year, including some trees, shrubs, herbaceous species, and many plants often associated with swamps and marshes, e.g. sedges and cattails. An interesting characteristic of this area is that it floods periodically. In some years, overflow from the creek covers the habitat with several inches of water. When it is flooded, it is difficult to imagine any small plants growing there. However, it does not stay flooded for long (perhaps a few days), and these spring wildflower species have managed to grow and survive in this type of habitat over time.

Fig. 1: Spring Beauty (*Claytonia virginica*).
Tim Tatakis

The first species in bloom noticed this year was Spring Beauty (*Claytonia virginica*), a delicate little plant with white/pink flowers. If one looks closely, the generally white flowers contain lines of pink in them, giving them a pinkish hue (see Fig. 1). I first noticed a patch of these in bloom on April 11th, less than five meters from the edge of the creek. Interestingly, the day before, a couple of inches of snow fell. It had melted by the 11th and these plants were able to survive.

Fig. 2: Yellow Trout Lily (*Erythronium americanum*
Erin Strobl

Another plant species I observed on April 11th were several Yellow Trout Lily (*Erythronium americanum*) individuals. The emerging mottled leaves were growing, but they were not yet in bloom. However, on April 20th, four Yellow Trout Lily plants were found in bloom. Please see Fig. 2, a magnificent illustration of the Yellow Trout Lily completed by Erin Strobl, Biology Dept., Monroe Community College, especially for this issue of the Bulletin. Thank you to Erin!

There were at least one hundred Trout Lily plants growing in this area in April-May, but only a few were in bloom. This is typical for a population of Trout Lily, as it takes several years for a plant to produce a flower and reproduce with seeds. During the first few years of growth, one leaf is produced during the spring growth season, but the plants do not bloom. Following senescence in late spring, underground structures are dormant in summer, but begin to grow and may produce new underground growth through the fall and winter (Muller, R.N. 1978). The new shoot system develops as spring approaches and may penetrate the soil surface under snowpack.

About a week after spotting the first Yellow Trout Lily in bloom, a plant closely related to it was found. Four individuals of the White Trout Lily (*Erythronium albidum)* were discovered in bloom (see Fig. 3). This species is much less common than the Yellow Trout Lily in New York State. It also appears to be less common in this habitat along Honeoye Creek. The largest number of White Trout Lily I saw in bloom on one day was four, while the maximum number of Yellow Trout Lily in bloom on any day was twenty.

Fig. 3: White Trout Lily (*Erythronium albidum*).
Tim Tatakis.

In late April, I noticed a group of small plants with whitish blooms near where I had previously found some Spring Beauty, and immediately thought they were more Spring Beauty. However, I looked at the leaves and noticed they were very different from the Spring Beauty leaf. After some work with a field guide

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Spring Wildflowers Along Honeoye Creek

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(Newcomb, L. 1977), they were identified as Spring Cress (*Cardamine bulbosa*).

Upon closer examination, the flowers are quite different than Spring Beauty (e.g. four petals instead of five). This reminded me of the importance of paying close attention to detail when observing nature!

The Spring Cress plants persisted into May and were joined by a group of violets. There are several species of native violets in our area that can be difficult to distinguish from each other.

One species that is not difficult is a species of violet with a yellow flower (not all species of violets have a blue-purple flower color). A small population of the Downy Yellow Violet (*Viola pubescens)* was found within three meters of the bank of the creek on May 2nd. Along with the yellow flowers, the stems and leaves which are downy or hairy (botanists use the term pubescent) make this plant easy to identify.

Another plant with yellow flowers that was found in this habitat was Marsh-Marigold (*Caltha palustris*).

Fig. 4: Marsh Marigold (*Caltha palustris*).
Tim Tatakis.

It is a member of the buttercup family (Ranunculaceae). It is really the sepals (not petals) that are the bright yellow structures of the flower in this species (see Fig. 4) (Peterson, R. T. and M. McKenny. 1968). This plant typically grows in wet, marshy areas and it was found along a shallow seep running from a nearby cattail marsh into Honeoye Creek. Several individuals were found in late April and early May, but something (probably a white-tailed deer) browsed a few of the individuals during this time. They did regrow to a certain extent. As this is being written in June, there is hardly a trace of many of these plants now visible in this habitat.

Figure 5 shows two photos taken of the same habitat in different months. In the May 1st photo, a dense population of Spring Beauty in bloom is visible among some other vegetation. On June 22nd, the area looks vastly different, with vegetation growing that will be blooming into summer and fall (e.g., grasses, goldenrod). The spring wildflowers described in this article will not be found in New York habitats for almost an entire year, but one can look forward to soon finding plenty of other plants that will be blooming in the summer or fall (e.g., milkweed, asters and goldenrod).

Fig. 5a: Photos of habitat along Honeoye Creek taken on May 1, 2020.
Tim Tatakis.

Fig. 5b: Photos of same habitat along Honeoye Creek taken on June 22, 2020.
Tim Tatakis.

References:

Muller, R.N. 1978. The Phenology, Growth and Ecosystem Dynamics of *Erythronium americanum* in the Northern Hardwood Forest. Ecol. Monogr. 48: pp. 1-20.

Newcomb, L. 1977. Newcomb's Wildflower Guide. Little, Brown, and Co. publ. 490 pp.

Peterson, R. T. and M. McKenny. 1968. A Field Guide to Wildflowers. Houghton Mifflin Co. publ. 420 pp.

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2019-2020 Undergraduate Student Research Grant Awardee:

Alexandra Haley, Canisius College.
Comparative Primate Microbiome.
Sponsors: Susan Margulis, Ph.D. and David Haeusser, Ph.D.

Alexandra Haley
Canisius College

With increased appreciation of the varied and significant ways an organism's microbial community can impact their development and health, microbiology has become an increasingly important field. We now know that microbial communities present within and on a human host roughly equal the number of our own cells. Together, these microbes make up the human microbiome, a term describing those microorganisms (and their genes) living inside and on a human. Researchers have concluded that the microbiome is a key driver of the host's biology and overall health and that it plays an enormous role in the development and function of every system in the body including, but not limited to, the immune, digestive, and nervous systems. It has been established that these microorganisms have a direct effect on mood and behavior due to microbial secretions that affect the chemistry of the brain.

Microbiomes can be altered by different environmental factors and this is cause for concern if they lead to a decreased diversity in these microbiomes. While comparing captive, wild, and semi-wild populations of the same species has been done several times, very few studies have compared the microbiomes of different species housed in the same environment. In this study, I explore the impact of the zoo environment on different primates and their respective microbiomes. My study examined the microbiomes of different primate species living together in the zoo to determine if they are more similar than would be expected if living separately. Microbiomes were compared at a species level only, not an individual level. Fecal samples were collected from five different species housed together at the Buffalo Zoo. The species studied are black-capped squirrel monkey (*Saimiri boliviensis*), common squirrel monkey (*Saimiri sciureus*), black howler monkey (*Alouatta caraya*), white-faced saki monkey (*Pithecia pithecia*), and brown capuchin monkey (*Cebus apella*). Keepers at the Buffalo Zoo collected five "group" fecal samples for me along with control samples taken using sterile swabs to wipe the area immediately adjacent to a fecal sample. This permitted me to rule out the bacterial species that overlap with the general environment.

Unexpectedly, we were also able to get fecal samples from a black howler monkey that was transferred to the Buffalo Zoo from the Cheyenne Mountain Zoo in Colorado before it was introduced into the multi-species exhibit (see photo below). This allowed us to not only compare the microbiomes of different primate species housed in the same environment but also that of the same species in different environments (i.e., different zoos). The microbiome composition of each sample was assessed using single colony isolation on a variety of growth conditions at 37°C, followed by genomic DNA isolation, amplification of 16s rDNA and its subsequent sequencing.

The grant paid for petri dishes, agar, and a kit for isolation of bacterial DNA for sequencing. Alexandra notes that, "I send my thanks to the RAS for the grant I received. It was invaluable to the start of this research and will be essential in the continuation of the project as it is finished by a rising senior at Canisius College."

Alexandra graduated with a BS dual major in Animal Behavior and Biology. She is heading to Ontario Veterinary College, University of Guelph to pursue a Doctorate of Veterinary Medicine.

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Buffalo Zoo M&T Bank Rainforest Falls exhibit. Upper right, common squirrel monkey, center left, black howler monkey.
Buffalo Zoo

Events for July 2020

For updates to events, check the Academy website http://www.rasny.org and Section websites.

Due to COVID-19 government-advised social distancing precautions, RAS public meetings are being replaced by Zoom and other virtual meetings. On June 26th, phase 4 of a four phase "return to normalcy" plan was initiated, and the possibility of public meetings is expected to increase towards the end of the summer. So, stay tuned to RAS and sectional emails and websites for updates.

NOT MEETING IN JULY:

Anthropology Field Trips
Life Sciences Field Trips
Herbarium Group
Fossil Section
Mineral Section
Strasenburgh Observatory
Astronomy Star Parties
RocheStarFest
RAS Board
Summer Friday Science Club

15 Wed: Astronomy Board Meeting

7:00 p.m. Meeting to be held remotely via ZOOM. Meeting details will be shared via email. Contact: Mark Minarich at mminaric@rochester.rr.com.

17 Fri: Joint RAS/ASRAS Remote Meeting

7:30 p.m. Main Speaker: Dr. Nicholas Warner will speak on the Mars InSight Mission. RAS will have board elections, honor a new RAS Fellow, recognize a RAS member, and welcome Dr. Richmond as a new director. See page 1 for more information.
Contact: Mark Minarich at mminaric@rochester.rr.com.

18 Sat: Fossil Field Trip

Collecting field trip to Pompey Center Road cut southeast of Syracuse and to the Swamp Roadcut near Morrisville. 10:00 a.m. all attendees to meetup at Pompey Center site. For precautions and further information contact Dan Krisher at DLKFossil@gmail.com .

18 Sat: Observing at the Farash Center Observatory

Dusk till ? Outdoors only. Observing social distancing and masks as appropriate. Specific rules for bathroom use to be published.
Contact: Mark Minarich at mminaric@rochester.rr.com.

The Biologist 62(4) p28-30

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Red Dust Sunset

By Rick Albrecht,
Life Member ASRAS

Red Sky Over Northern Georgia.
Rick Albrecht

As many of you know there are trade winds that move weather systems (low pressure zones) across the Atlantic. Weather forecasters will track these low-pressure systems westward across the Atlantic to see if any will turn into hurricanes or other storms (see satellite photo next page). In addition to hurricanes the western hemisphere gets millions of tons of Saharan dust from Africa. This accounts for about 70% of all the global dust. This dust can bring important minerals that fertilize soils in the Caribbean Basin, the Amazon and even parts of Central and North America. There is even evidence that this dust helps to build sand on our beaches. These dust plumes tend to dry out the air and reduce the probability of storms like hurricanes forming. The sunset on Father's Day was a vibrant red due to one of the Saharan dust plumes. See photo above taken in Northern Georgia. A huge dust plume is on the way this week. See satellite image below. This dust plume is measuring to be one of the largest in 20 years and should reach the US this weekend. You may see more vibrant red sunsets in the weeks to come.

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Red Dust Sunset

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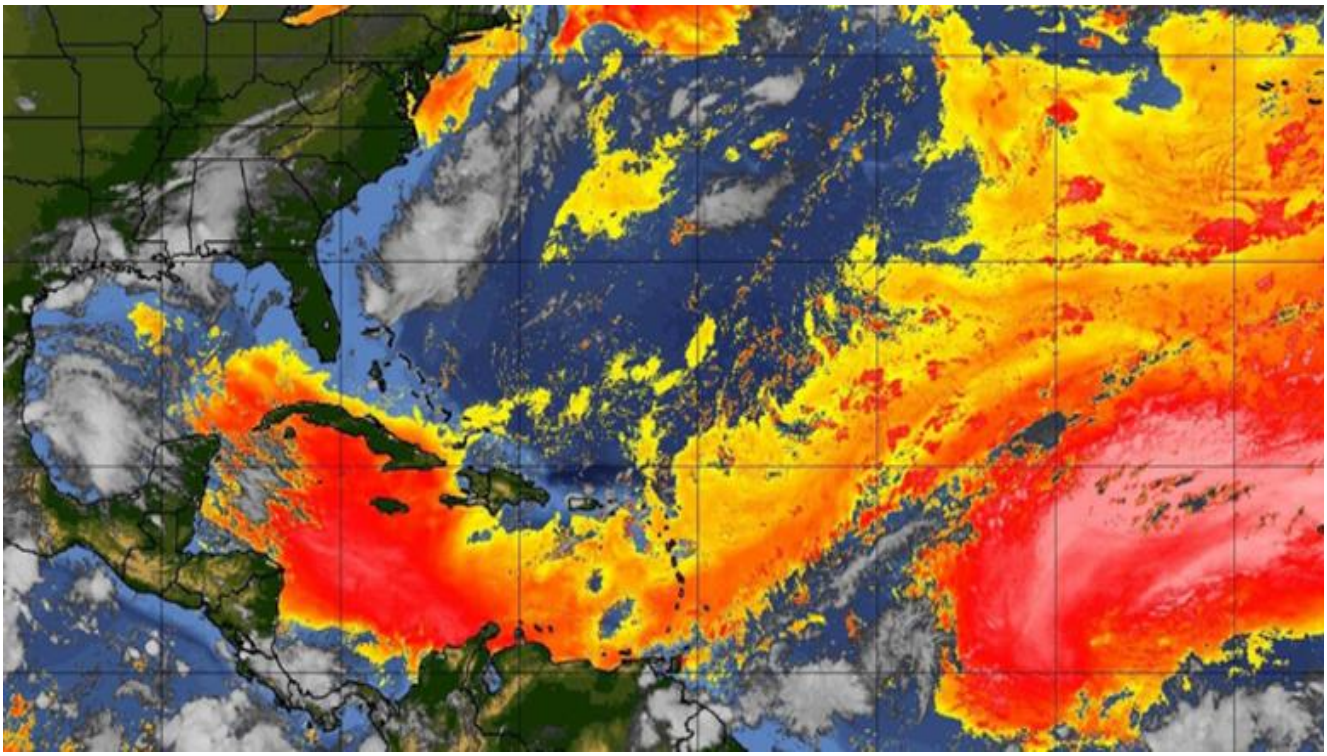
Editor's Note: Rick Albrecht was active in both the ASRAS and RAS from 1969 to 1995 when he moved south to be closer to his family. He currently lives in Cumming, GA and is still active in astronomy and stays in touch with members of ASRAS. Visit him at https://www.rickalbrechtphoto.com/.



Saharan Dust Cloud Heading Towards the Southern United States.
GOES-16: Saharan Air Layer Tracking Product, June 21, 2020.

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ABOUT THE ACADEMY

The Rochester Academy of Science, Inc. is an organization that has been promoting interest in the natural sciences since 1881, with special focus on the western New York state region. Membership is open to anyone with an interest in science. Dues are minimal for the Academy and are listed in the membership application online. Each Section also sets dues to cover Section-related publications and mailings. We are recognized as a 501(c) 3 organization.

For information, contact President Michael Grenier at (585) 671-8738 or by e-mail paleo@frontier.com.

The Academy Internet website is http://www.rasny.org or see us on Facebook at https://www.facebook.com/Rochester-Academy-of-Science-792700687474549.

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The Academy postal address is P.O. Box 92642, Rochester NY 14692-0642.

ROCHESTER ACADEMY OF SCIENCE CONTACTS

		(585) home // work
Michael Grenier	President	671-8738
Dan Krisher	VP & Fossil	698-3147 (c)
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