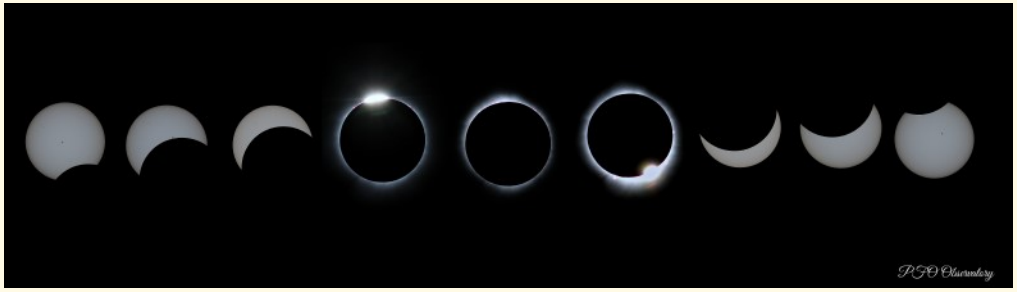
Vol. 25 Issue 2

Spring 2024

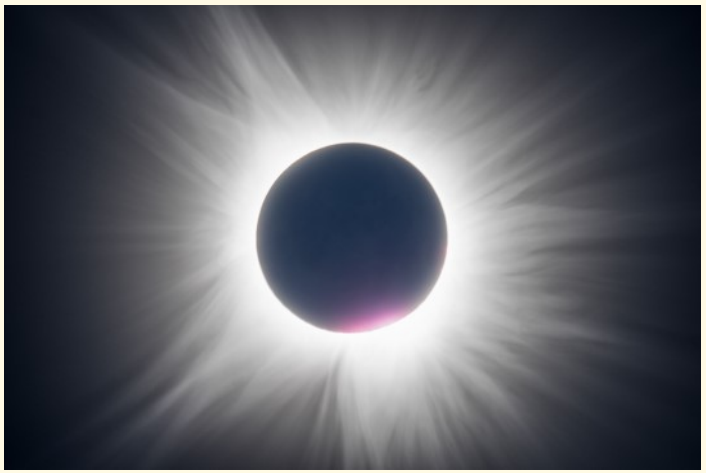
HORIZON

LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
New Brunswick Centre du Nouveau-Brunswick
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

New Brunswick Total Solar Eclipse 2024-04-08



Above: Eclipse Collage by Mike Powell
Right: Eclipse Time Lapse by Brad Perry
Below: Solar Corona by Brad Perry



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Centre News

Business Meetings
June 15, September 21 and
October 19 (Annual Meeting)

Centre Meetings TBD

Star Parties
Kouchibouguac: June 7-8
Mount Carleton: August 9-10
Fundy: August 30-31
Kouchibouguac: September 6-7

Irving Nature Park
August 23 (24)
September 6 (7)
October 11 (12)
November 8 (9)

June MacDonald Receives RASC Service Award

June was honoured with a Service Award at the RASC GA on May 4. Congratulations June! Following is the nominating letter from RASC NB Centre members Emma and Curt.

June MacDonald joined the RASC New Brunswick Centre in October 2002 and she is in her tenth year as Centre President. She has been the heart of RASC NB during this period and the crazy glue that held us together during the pandemic years, taming her contrary computer long enough to conduct meetings via Zoom and to keep members informed of Centre and Society business. Of particular note, June was the driving force behind the dedicated committee that resulted in the Centre becoming incorporated and obtaining charitable status. During many of these years she was also the Centre Representative on the RASC National Council.

Prior to her consecutive years of presidency June was Centre Secretary for six years, 2VP for two years, and a prominent member of the Organizing Committee for the 2010 RASC General Assembly in Fredericton. She chaired the 2024 Eclipse Committee for the Centre, which included communicating with communities within the zone of totality, working with libraries to schedule information sessions, obtaining eclipse glasses, and organizing the purchase and distribution of eclipse apparel highlighted with a unique New Brunswick design by member Ted Dunphy. In addition, she was a member of the RASC 2024 Eclipse Committee.

Throughout the years June has been a frequent and jovial speaker at meetings, a contributor to the Centre newsletter, and a supporter of outreach events either through observing or working in the background to ensure they run smoothly. It is with great pride that we nominate June MacDonald as a recipient of the RASC Service Award.

Solar Eclipse Smiles
by Alan Hindle

My wife, Peggy Findley, and I hosted my sister Mary Hindle, from Ottawa and my daughter, Samantha Hindle, from Banff to see the April 08, 2024 Total Solar Eclipse at our home in Perth-Andover. We had great weather with clear skies and we had a grand time. It was a wish come true!

We viewed the eclipse in a number of ways: eclipse viewing glasses, shade 14 welders' lens mounted in a pair of cutting goggles, shade 14 welders' lens mounted in front of 8x21 binoculars, pinhole projection viewing with a colander, projection viewing through tripod-mounted 10x42 binoculars, through our refractor equipped with an APM Herschel prism for white light viewing, and the refractor equipped with a Lunt Solar Systems single stack hydrogen-alpha etalon and 12mm blocking filter. All of that made for interesting views and lots of smiles!

We tried pinhole indirect viewing of the partial phases with a colander. It was more of a novelty than anything. It did work but wasn't as good as the eclipse glasses. We also noticed the same effect inside the house where the partially eclipsed Sun shone through the string holes of the closed mini blinds.

The 8x21 Pentax binoculars that we used are great for passing around and they provided an enhanced view of the partial phases of the eclipse. And they made seeing sunspots easy! I fixed a shade 14 welders' lens to the binoculars in front of the objective lenses with black electrical tape. Being a compact porro prism design the small objective lenses are moved inwards, closer together than the spacing between your eyes. This is advantageous as both objectives can be covered with a single 2"x4-1/4" lens. The double wrap of tape does not obstruct the view at all. This is safe with this particular model of binoculars when done properly and inspected before use. I have done this many times. In fact, it was with this setup, with these very binoculars, that I

first viewed sunspots over thirty years ago. And these little binoculars were what first revealed the Galilean moons of Jupiter to me, also more than thirty years ago. I've been hooked ever since. Your equipment doesn't have to be the biggest and most expensive to be valuable to you!

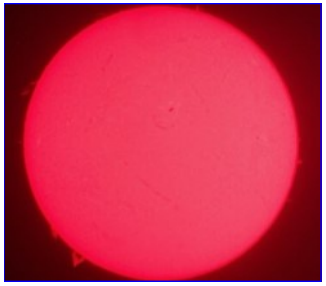
We set up our TeleVue TV-85 refractor and we have equipment to view the Sun in white light and in the hydrogen-alpha wavelength. The plan for the day was simplicity that would yield good views without too much set-up time and complexity. The plan was for visual use and photography. We also wanted to share the views of the eclipse with other friends and family with minimal difficulty. But really, it was more about the seeing than the photography.

With this in mind we opted for a classic and effective alt-az mount, the TeleVue Panoramic mount with Tele-Pod head. We do have a Sky-Watcher HEQ5 Pro equatorial mount but the set up and resetting if it got bumped around, which was quite possible, was more time consuming than was desirable or necessary. For the eclipse photography this was a similar consideration. We opted for afocal photography using an iPhone 11 Pro shooting through the eyepiece, held in place with a TeleVue FoneMate fixture. With this arrangement the mount and telescope could be easily moved if necessary, or accidentally, and quickly aligned to the Sun again utilizing the TeleVue Sol-Searcher finder. This simplicity and ease of use reduced obstacles, and there were no wires to trip over or snag on! This all mattered with four of us moving around and taking turns looking through the telescope.

I took some full disc photos in white light and Hα before the eclipse began to locate sunspots and prominences for reference. These photos and the ones of the partial phases were taken through a 1-1/4" 17.3 mm TeleVue Delos eyepiece, yielding about 35x magnification. I quickly realized that swapping between visual and photo with the same eyepiece was not the way to go.

Greater magnification was also not desirable as that would mean constantly chasing the Sun with the manual mount. I replaced the receiver on the diagonal blocking filter with a 2" and added the TeleVue heavy brass equalizer adapter to the 17.3mm eyepiece for photo use. The entire assembly could then be easily removed with the phone attached. We used the massive Tele-Vue 31mm Nagler type 5 eyepiece for visual use. The lower magnification (20x) and wide field of view was ideal and the weight of the two units were pretty well matched so the balancing of the scope wasn't an issue.

I won't argue with anybody who says that these photos aren't the best, but under the circumstances I think they're okay to relate what we saw that day. The view with your own eye of the brilliant crimson prominences, darker filaments and sunspots was fantastic. It is fair to relate it to seeing the eclipse with your own eyes compared to seeing a picture or video of it. Images can't relate the same thing as being there. Seeing is believing!



Here's a short lesson about observing the Sun. When you view the Sun in white light with a Herschel prism or with a Baader Astro-Solar Safety Film filter in front of the objective lens of your telescope you are seeing the photosphere, which is generally considered to be the surface of the Sun. This can show darker, cooler active regions called sunspots, and brighter, hotter active regions called faculae. Faculae are typically blotchy white in appearance and usually visible around the limb of the Sun more than in the centre of the disc. This is simply due to the angle of observation. Viewing the Sun in the hydrogen-alpha wavelength shows the chromosphere, above the photosphere. This reveals solar prominences and filaments, which are actually the same thing. Prominences are structures of solar material lifted away from the body of the Sun by strong electromagnetic fields. Filaments are prominences viewed from 'above', seen against the disc of the Sun. Filaments appear as darker lines of various shapes and sizes, as can be seen near the big sunspot in the centre of the photo on the right. Solar flares can sometimes (rarely) be seen as bright flashes when an electromagnetic field snaps. A CME, or coronal mass ejection, is a large flare that snaps and hurls some of this solar material out into space away from the Sun.

You may think that the images above are poor because of the blotchy appearance of the surface of the solar disc. That's not really correct. When looking at the photosphere of the Sun in white light the surface looks smooth. The chromosphere of the Sun has texture, known as granulation. This can be seen, to some extent, in the Hα photo. The Hα etalon (the big red filter in front) can be tuned to show greater detail on the surface, or to show prominences more vividly. I tuned for prominences for this event. Double stacking, adding a second etalon in tandem with the first generally produces better detail on the surface, but results in a slightly darker image. The bright fringe is also typical of a single stack but is diminished with double stacking. So really, the photos aren't bad considering they were taken with my phone! And, none of these photos have had post-processing other than cropping and sizing, not even a tap of the Apple magic wand.

If you were fortunate enough to see totality during the solar eclipse on April 8th you may have glimpsed prominences peaking out around the edge of the Moon. They were visible during totality, especially if you were bold enough to look at the corona through binoculars, as I did.

Totality showed us a beautiful corona, the outer atmosphere of the Sun! As you probably already know, the corona is normally invisible from the surface of the earth, except during a total solar eclipse. The corona is typically only able to be seen and studied with space based observatories like the Solar and Heliospheric Observatory (SOHO). To see the photosphere, the chromosphere and the corona of the Sun in the same day was truly magnificent for us, and I hope you saw it all too!

Seeing our Sun, a yellow dwarf star, in these ways really makes me wonder what it would be like to see a blue giant like Bellatrix, or an unstable red supergiant star like Betelgeuse in the this or other ways! That's something that I like about astronomy, seeing and thinking about wonderful things, knowing you can never go there.

We set up 10x42 Nikon Monarch 5 binoculars on a sturdy Celestron Regal tripod for indirect projection viewing of the eclipse. I rigged up a fixture to position a target card for easy observation. I used a 12" steel rule, a wooden paint stir stick from the hardware store, some masking tape and a manila file folder. Nothing fancy, but effective.

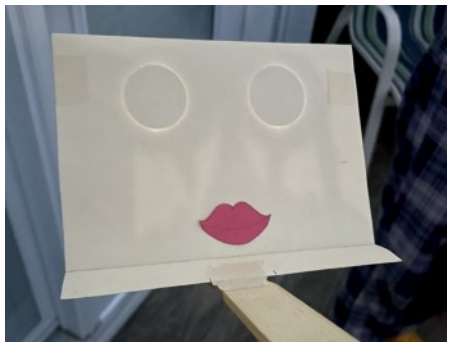
I had done this before using a book or card just hand held. That works too but doesn't show as well. Using this setup the target card remains at a fixed distance from the optics. Because of this you can actually focus the binoculars to show sunspots if any are present, no filters required! This works with a refractor telescope, too. Viewing sunspots like this is how it was done back in the day, before proper filters and cameras were readily available.

Here's a couple of warnings to go with this. Consider the colour of the target card. White reflects a lot of light and can leave you seeing spots if you stare at it for too long. Black absorbs a lot of light and heat and may be at risk of igniting under the wrong circumstances. You should use a colour in between made of a material that won't easily catch fire. The manila folder is a fair choice and is a Sun-like colour. This method of observing the Sun requires diligence and attention. The same is true of any set-up that does not have a front energy rejection filter (ERF), such as using a Herschel prism without a tracking mount. If the optics are left stationary while the Sun moves across the sky you can damage your binoculars or telescope. What happens is that the cone of magnified light will drift off the centreline of the optical assembly and may impinge on the inside wall or parts of the optics. This may cause overheating and damage to the instrument. The inside of most telescopes and binoculars are coated with black flocking to reduce internal reflection. This coating can flake off or be otherwise damaged if overheated. Good glass can pass sunlight without damage but you need to keep the optics aimed at the Sun. Cover the objective lenses or move the instrument to a shaded spot if you need to walk away from it.

With all of that explained and understood it fell to Samantha to attend the binocular set-up, and for Mary to photograph the progression of the eclipse with her camera. Peggy supervised us all and kept us in line!

Samantha looked at the silhouette of the binoculars and the bright circles within and said it reminded her of WALL-E, from the Disney film of the same name. She said it needed something. It needed character, it needed personality! She made an addition and the resulting image really did have personality! The rig was affectionately dubbed Eva. Now the eclipse, through Eva, seemed to watch us as we watched it!

I may be biased, but this is my favourite image of totality! This was a truly memorable event.

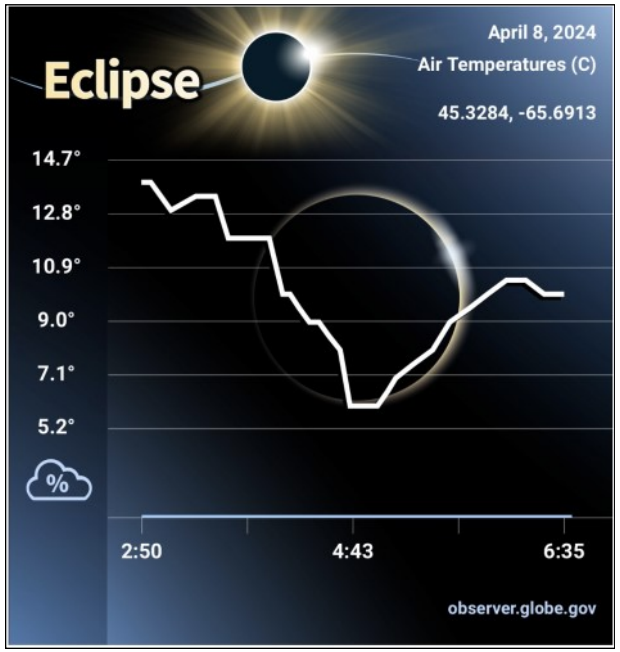


My adventures with the Total Solar Eclipse April 8, 2024

by Trudy Almon

Against the advice of all my astro buddies I did not travel to totality, did not leave my telescope and camera inside, did not seek a crowd of people to observe with. I stayed home where there was coverage of 98.4%. I had my 8" Dob set up, my Canon T4i tripod mounted and my daughter's Canon T5 on my EQ Mount. And all together we were a crowd of seven. My reasons were simple, I live in a very rural location and love the nature that surrounds me. I wanted to know how my natural world reacted to the eclipse. I wanted to see it, feel it and even at only 98.4%, I did.

I also wanted to do a citizen science project and found the perfect one through The Globe Program, sponsored by NASA. I found this a week before the eclipse so had little time to learn the Globe Observer App and how to record my findings. There are short training tutorials to do once signed up and basically I had to start recording temperatures two hours before and after the eclipse. I had to do this every ten minutes until a half hour before and after the peak, when I had to move to temperature checks every five minutes. I was recording my findings on paper, but I was also using the app. It prompts when to do them once you start. It also asks you to do a cloud observation with photos about every 30 minutes. This part was really cool because a few days after the eclipse I got an auto-generated email letting me know which of my cloud observations matched up with a satellite doing weather observation photos over me at the same time. It shows my observations and theirs, my photos and theirs.

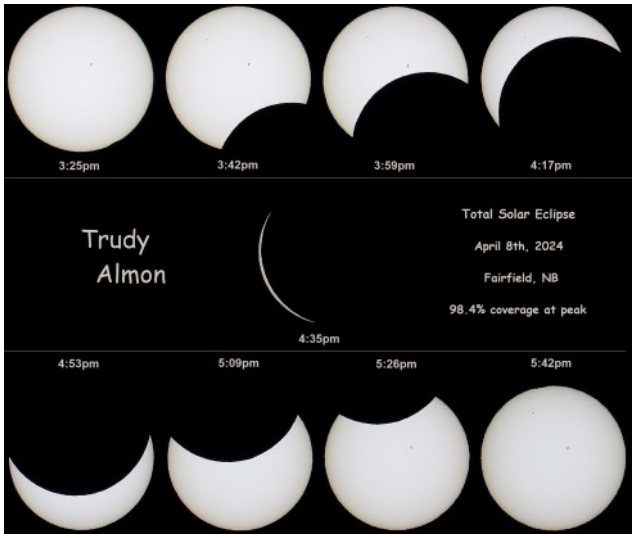


My 8" Dob was used by family for observing and taking photos. The two-camera set-up didn't quite go as planned. Forgot my super zoom wasn't a size 58 mm and had no solar protection to fit it. This was the camera I had nine photos planned with; alarms set on my phone to remind me. I ended up moving the zoom lens from the EQ mount and using an ND100,000 filter on this camera. My nine planned photos turned into 132 due to some happy clicking but I was wearing my solar eclipse glasses, watching the eclipse with remote in hand, just clicking away, so I didn't miss anything. The EQ mounted camera ended up with the kit lens on it with a home-made solar filter. Amazingly enough, the EQ mount tracked for the whole eclipse. I polar aligned this mount about six days before the eclipse, the last clear night we had and right before a snowstorm. I spray painted where the tripod legs were on the lawn, carried it all back inside and it sat for six days untouched so it could be carried back out on eclipse day and put back in it's spot. And it worked! I had an intervalometer on this camera set to do photos every two minutes and it took 79. Those I'm still editing, hoping to make a time lapse. Since it was the kit lens there are a few rounds of cropping to do to make them usable.

Observations: The temperature started at 14 C, humidity at 41%, birds singing all around, Pileated Woodpecker heard across the valley. About 20 minutes before the peak, we noticed how strange the colour was around us, reminded us of when a thunderstorm is coming in. About six minutes before the peak we observed our shadow on the ground was sharp on the right side and fuzzy on the left.

At the same time, we noticed the lights on a nearby cellphone tower had switched to the red nighttime lights. At peak the birds went quiet and settled into the trees, the woodpecker went silent. By this time the temperature had dropped to 8 C, humidity was 50.5%. The sky to the north went an amazing deep blue, wind eased a bit. It only took about five minutes after peak for the birds and woodpecker to start making noise again. We noticed that it got bright fast. The temperature was still falling making it down to 6 C, humidity 53% before it started to climb again about 20 minutes after peak and the humidity started to go down. The lights on the tower went back to the daytime white about six minutes after peak. We had virtually clear skies for the entire eclipse, maybe one tiny puff of cloud a couple of times.

So, after it was over and all the photos and videos started hitting social media, did I regret not travelling to totality? Not at all. I knew I would still see it through the "eyes" of others and hear their experiences. I wouldn't change watching and feeling my natural world experience of the eclipse with us.



Total Solar Eclipse - April 8th, 2024 - Fairfield, NB

	Temp	Humidity	Clouds	Winds	Observations
2:35pm	14° C	41%	Clear	Med	Birds chirping/woodpecker pecking
2:45	14° C	41%	Clear	Med	
2:55	14° C	41%	Clear	Med	
3:05	13.5° C	42%	Clear	Med	
3:15	13.5° C	43.50%	Clear	Med	
3:25	----	----	Clear	Med	
3:35	12° C	44%	Clear	Med	
3:45	12° C	44%	Clear	Med	
3:55	----	----	Clear	Med	
4:05	10° C	45%	Clear	Light-Med	
4:10	10° C	45%	Clear	Light-Med	
4:15	9.5° C	46%	Clear	Light-Med	Noticed getting darker/odd color
4:20	9° C	47%	Clear	Light-Med	
4:25	9° C	47%	Clear	Light-Med	4:29 - Tower lights changed to red
4:30	8.5° C	49%	Clear	Light-Med	Shadows were sharp on right side
4:35:51	8° C	50.50%	Clear	Light	Birds/woodpecker stopped
4:40	6° C	52%	Clear	Light	- North sky very deep blue
4:45	6° C	52.50%	Clear	Light	
4:50	6° C	53%	Clear	Light	4:40 - birds/woodpecker started
4:55	6° C	53%	Clear	Light	- got bright fast
5:00	6.5° C	53%	Clear	Light	
5:05	7° C	53%	Clear	Light-Med	4:41 - Tower lights back to white
5:15	7.5° C	51%	Clear	Light-Med	
5:25	8° C	51%	Clear	Light-Med	
5:35	9° C	50%	Clear	Light-Med	
5:45	9.5° C	50%	Clear	Light-Med	
5:55	10° C	49%	Clear	Light-Med	
6:05	10.5° C	47%	Clear	Light-Med	
6:15	10.5° C	47%	Clear	Light-Med	
6:25	10° C	46%	Clear	Light	
6:35	10° C	47%	Clear	Light	

Shout-Out to Collette

by Gerry Allain

My friend (and former RASC NB member) Colette LeBlanc-Fortier called me to see if I knew anyone who could use a telescope. She wanted to give/donate her 8-inch Dob.

I right away thought of Chris Curwin with his Sunday Night Astronomy Show. I contacted him and asked if he was interested. He said he sure was, so I made arrangements to pick up the telescope and take it to Chris. My wife and I delivered it to Chris's house and Chris will decide what to do with it.

RASC NB would like to say thanks to Colette for donating the telescope. It is much appreciated.

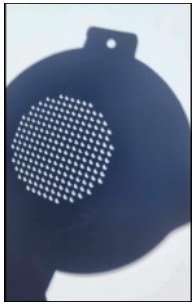
Nasons partially eclipsed in Nackawic

↑ April, Derek, Curt, Richard Roscoe, Wade

→

Eclipse in the colander trick

Sharon Nason photos



A Perfect Score
by Yolanda Kippers

From start to finish, everything was perfect. Let's check the boxes. Our planet orbits our Sun and our Moon orbits our planet in a pattern determined by a set of physical laws. Because of these orbits, as well as sizes, distances and tilts of these three objects, we are able to observe certain phenomena. The daily, monthly, seasonal and yearly patterns that we may observe with interest rarely create much of a fuss. But sometimes, something unusual happens and we would really like to see it. And sometimes, a once-in-a-lifetime event happens and we really, really don't want to miss it.

On April 8, 2024 something spectacular happened. The orbit of the Moon crossed the ecliptic at the right spot. The Moon was close enough to Earth that day so that its apparent size was able to totally cover the Sun. And the tilt of the Earth that day determined the path of the Moon's shadow. We happen to live on a planet with a moon with a perfect size and a perfect distance from us. Perfect alignment? Check! But it gets better.

Since 1715 astronomers and physicists have been able to predict solar eclipses with stunning accuracy, although the ancients had already been able to predict them for thousands of years. The April 8, 2024 total solar eclipse had been predicted to pass through the middle of New Brunswick for a very long time. NB RASCals have been anticipating this event for decades. It would be in our own back yard if you were very lucky. Or, a short drive south for those living in northern NB, a short drive north for those living in southern NB. New Brunswick is not exactly a tourist destination so let Niagara Falls have their million tourists. We like things cozy. Perfect location? Check!

Early April is a nice time of year: probably too late in the season to expect a blizzard, too early for pesky insects. Late-middle afternoon is a convenient time of day. The Sun would be low enough in the sky for comfortable observing. The weather would likely be not too warm or too cold. Perfect timing? Check!

Everything was lined up to be perfect. However, there was a wild card: the weather. New Brunswick is not generally known for its clear, sunny skies, especially in April. Rain is more the norm and snow, well, that is not out of the question. Of course, a clear, sunny sky in April is possible but, unfortunately, there is no way of knowing in advance. Years of planning hung in the balance. As the anticipated date approached, by the year, by the month, and then by the week, the certainty of the weather remained unknown.

In the final days, meteorologists were hopefully predicting a clearing in the seemingly endless wet and dreary weather. Every RASCal was holding their breath. The weather on the 3rd was overcast, on the 4th it snowed; there was light rain and drizzle on Friday and Saturday. On Sunday, the 7th, there was a mix of sun and cloud. RASCals started to relax (a bit!). The miracle everyone was hoping for happened: Sunday evening was clear and cold and on Monday morning, April 8, 2024, there was not a cloud in the sky. Perfect weather? Check! It was a perfect day for a total solar eclipse of the Sun whose path crossed central New Brunswick, on an afternoon in early spring. PERFECT? CHECK!!!

REMARKABLE CELESTIAL EVENT ✓

PERFECT ALIGNMENT ✓

PERFECT LOCATION ✓

PERFECT TIMING ✓

PERFECT WEATHER ✓

Thanks given to the Theoi Meteoroi! ✓

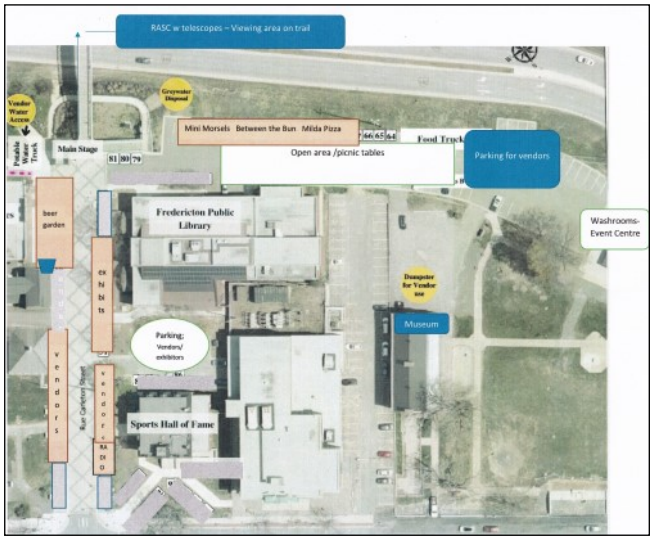
Ted's Toon
by Ted Dunphy

EclipseFest Fredericton
by Chris Weadick

Although the planning for the eclipse started for most of us around four years ago, the inspiration for the City of Fredericton to partner on this once-in-a-lifetime (for many) event was one of our outreach Owl Walks, where 20-30 people typically join a few RASC NB / Fredericton Astronomy (WBJ) members to walk through the woods for a night sky talk and constellation tour. These typically finish with views of our celestial neighbours and deep sky objects.

The fall 2023 Owl Walk with Chris LeMesurier (RASC NB / WBJ) was just the beginning of eight months of weekly planning with Chris Weadick (RASC NB / WBJ / GNB) and Mary Ellen Hudson from the City of Fredericton Tourism, who has significant experience with planning events and has contacts with every business owner within the Fredericton Region. The initial eclipse meeting also included the participation of Science East, NB Museum, NB Sports Hall of Fame, Fredericton York Regional Library, UNB Physics and DND Military Museum.

As a larger group we met every couple of weeks to determine what we would do for the event, where we could host various events, who would play what roles during the planning and execution of the events, and any support the committee could offer in talking with hundreds of interested vendors. Chris and Mary Ellen would meet weekly via Teams, and in the last couple of weeks there were many emails regarding last minute situations to resolve. Coming into mid-February we had our plan and commitments regarding who would participate and the events for the day. Around mid-March the amount of planning and organizing was starting to weigh heavily as everyone in the planning committee and in the safety planning (at work) were asking how many people will be here, what is the impact of Chris Hadfield and the balloon events in Florenceville-Bristol, and what happens if it rains.



EclipseFest Street Plan

I remember thinking that the 2017 partial eclipse event was fun with maybe 300 people. The total solar eclipse would be interesting but I would not be travelling to chase sucker holes. I had completed a number of media interviews and knew it was going to increase as the hour came closer. I started wondering if maybe it would be better if we were clouded or rained out then I could just relax and enjoy the event with family. But, seeing the clouds pending for the event and the historic reality of 75% chance of clouds in Fredericton, I made requests of James Ayles and Ted Dunphy that if it is sucker holes I will probably be required to be in Fredericton and would they please take my girls with them. If it rained and travel was outside of NB, then we would watch it streaming in the NB Sports Hall of Fame auditorium.

If it was sunny I would make one last plea for help at the event as my effort for the planning was significant, and I was mentally exhausted from all the planning and pressures of "what if." I chose to push the negativity away and I refocussed on the event. Then the phone call came for an urgent meeting.

On the Tuesday before the eclipse we could see the fire of a building in the historic Garrison district from our office window. Mary Ellen called on Wednesday morning in need of help to prepare a back-up plan if the military or the fire department do not let us set up on Carleton Street. The fire was deemed suspicious and they might cancel our permit for the area. A week before was an email from Science East noting they are closing their doors due to lack of funding. We had the planetarium planned for the full weekend and Monday plus hands-on activities on Monday of the eclipse. The library then informed us that due to staff safety they are closing the library at 4 pm (the eclipse was from 3:30 to 5:30) and they were our main event location including, part of the back-up plan to stream the eclipse in three of their rooms as well as in the NB Sports Hall of Fame. Then the big risk… a storm was coming through NB and it was appearing to be okay on Sunday/Monday but rain the days before… but based on the weather it looked

like the storm was going to be delayed more and perhaps impact us on Monday.

The weekend arrived and I could not find folks to help out with talks as all the astronomy people were looking for places without clouds and with maximum duration. Then Stephan Hamel reached out to do a talk on Sunday but he wanted to do his own talk instead of one I had on the EventBrite tickets. Thank you Stephan, one item off my plate so I can focus on the events overall. We had talks planned for Saturday and Sunday and then safety talks Monday and telescopes Monday. Night time observing in a new location (thanks Ted and Jeff Leger) was planned for Friday to Sunday. James and Chris LeM offered to help with the event on Monday, putting their observing at risk.

As Tasha was helping me set up for our talks on Saturday at the library, one last-minute issue cropped up. I had confirmed they had a HDMI cable for the laptop connection and I saw Tasha searching all over the projector. There was no HDMI connection to the projector. Choosing to ignore the issue I continued to wipe six years of dust off my scope and I asked Tasha to find one of the volunteers in the library as they probably have a connector. If not then I needed to find one; glad I arrived an hour early.

Then around the corner I see someone from the WBJ meeting with astronomy bags. It was one of our newest and very dynamic presenters Jeff Leger, but he had not seen the slides for the three different talks: Intro to Astronomy, Solar System, and Astronomy Gear. Each had an eclipse component as well as an eclipse slide deck if time permitted. I did not expect Jeff to present but I saw he had a number of Astro gadgets to help with the talks.

We had limited the talks to 40 people and provided an hour between events. Brad Perry was presenting at the same time at the NB Sports Hall of Fame regarding nighttime and eclipse photography. He had never photographed the eclipse before but had very nice nighttime photos. All the talks were booked full. While Jeff was getting set up I kept seeing more and more people show up. We had planned for 50 as per the library capacity for the space, but people ended up standing in the aisles of books, and at the back of the presentation space was a common reading area and it was standing room only. The talks for day were great; always over capacity and Jeff and Tasha assisted all day with presenting the various objects we were talking about and adding tidbits of helpful information. It was the boost I needed for Monday. This is going to work out, we will have decent participation and now we just need to hope for clear skies. Everything was lining up that it HAD to work out for the best.

Sunday's initial talk had only about 30% attendance but I anticipated that as it was at the end of church services around town and people often go to lunch afterwards. Stephan arrived to set up for his talk and saw the bright sky was making the slides harder to see as we could not cover any of the windows. Stephan had a packed room and was very dynamic with the crowd as he always is, and then the last talk was mine and it was a full audience again.

Mary Ellen then texted: "Are you doing the observing event? It is overcast and we need a go / no-go." I could see the Sun trying unsuccessfully to burst through the clouds. I reached out to Jeff and we decided it was supposed to clear up at 5 pm (it was now 3 pm). "Okay, we are good to go and tell anyone who missed their opportunity on Friday or Saturday to come on out Sunday regardless of their ticket date,"

A new person approached me after our last talk and asked if I would take him and his wife to the observing event. I had debated going to the First Nations Thankfulness Fire event at 7pm and then head home to prepare and rest for the eclipse, as my health had taken a significant impact over the weekend of presentations. But I agreed to take them and now I was committed to the location without preparation and not physically able to do the event.

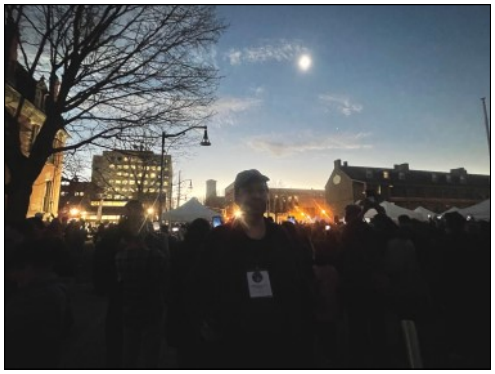
We arrived at Angelview Park with concerns of being in a residential area and sitting along the old Trans Canada (traffic lights and cars?). James was setting up along with Ted, Jeff was there with two scopes and I dragged along my daughter Tasha and my first scope, the Celestron short tube Newtonian that had been with us all weekend during the talks. I figured I might as well bring it as people would have heard me reference the scope and it would be a nice comparison versus James's 8" Dob, Ted's 12" Dob, and Jeff's motorized 6" Newtonian and refractor.

This was more in my element, outside, with the (pending) stars and people. I could hear Paul Gray talking somewhere in the group of people, he was staying with Ted for the eclipse. By 7 pm the clouds had moved off and it was horizon to horizon sky as we waited for the first stars to peak through so Jeff could align his mount and so we could start planning our observing. It was an awesome night under the stars and we ended up having around 40 people. Our only issue was one yard light on a garage next to our location but we spent most of the night looking the other direction. It was not a huge concern but a reminder to stop by and ask them about shielding the light as this may end up being our 'local' observing location.

Monday morning. I had already booked the day off as soon as the vacation schedule came out at work. I think my body also put in for a vacation day as I was in significant pain but I looked outside and saw the Sun, and the weather forecast looked sunny with the temperature trending to 10 C. I had not unpacked the truck so I just added the solar scope and mount into the truck and off Tasha and I went to set up.

The event location was going to be the full block from the Garrison buildings over to Officers' Square (including their new stage), and from Queen Street (we had Carleton Street blocked off) to the other side of the Sainte Anne's Point Drive (over the walkway and onto the Green by the river). I remember looking up at 10 a.m. and seeing organized chaos as the City did an excellent job in gathering resource people to help set up tables and tents for the 25 vendors (including last minute additions). I looked up again from setting up the scope and now half the street was full of observers, with people stopping by telling us they were here from the UK, BC, Ukraine, and Texas (bad weather hit the prime location so they came up to see us in Fredericton).

By 11 the street was packed. James was swamped with people as he had set up in the middle of the street, then Chris LeM arrived with his camera and external LCD screen for easy viewing as well as his solar adapted scope. The rest of the seven hours would be spent nudging the solar scope after every few people and repeating my story line thousands of times. Then someone asked, "Is that the Moon in the scope?" What?!?! Assuming the Sun just drifted out of view I said I would have a look (and fix it)… umm, no. When they announced it should happen at any time now, it was actually happening RIGHT NOW! A new excitement cascaded over the crowd as I announced that we have first contact. The eclipse had officially started! A sea of people raised their glasses in unison to look up and gasp at seeing the Moon taking a bite out of the Sun.



Chris in the Crowd
Tasha Weadick photo

Line-ups at the scopes were already nonstop but with increased excitement people seemed to understand that it is a one-time event and they were taking shorter times at the scope so everyone could see. The previous four hours of telling people not to touch the mount, eyepiece, or scope helped as everyone knew what to do. I was still able to see the eclipse as it happened. The good part about a manual mount is that you need to nudge it so I was able to see the progress about every 45-60 seconds. Additionally, an advantage of the solar scope was that the more the Sun was eclipsed, the less you could see.

The Master of Ceremonies for the event announced they were going to do a countdown when there are 10 seconds left to totality. Everyone stopped at the scopes and looked to the eclipse and I took the opportunity to see the diamond ring and Bailey's beads, and I heard "4…3….2….1…THERE IT IS!!!!." More than 6000 people expressed excitement of the event; some with tears, some screaming and cheering, and one couple off to my side kissed as she said "I do!" It was amazing to hear that many people gasp and cheer at once, and then I realized again: This is why I do what I do for RASC NB / WBJ, to share with others.

I was able to see the beads and ring as the Moon moved off of the Sun at the end of the event and people started to leave the location. I kept seeing people walking by me and I could only think of how I see the same crowds at the Canada Day fireworks.

We stayed for the remainder of the eclipse as people would ask what we were doing. They had been in the back of the group and never knew the scopes were available, so during the next 45 minutes people were still

going by and getting a new view of the eclipse to add to their recollection. The last 15 minutes many of the helping staff and planners came by to talk about the event and look through the scope, including Michael from Science East and Anne from Earth Science (Quartermain). The last person to have a look was Mary Ellen, the person who helped make everything possible.

Mary Ellen later told me that they estimated over 6000 people in the city block space and that did not include the people on the pedway and the other side of the Green. I am certain it was more like 10,000 people based on the crowds at the fireworks. James and I both forgot our counter-clickers. Picaroons confirmed people were waiting 45 minutes for a beverage because they were overwhelmed with participants. I heard similar stories from the various locations (46 locations around Fredericton) so we will likely never know how many people were in the Fredericton area for the event. It was a huge success and thanks to the many members of RASC NB and WBJ helping with slides (Emma, Curt), words of support, participating in the event, sharing the information with friends and family, and assisting with events (Jeff, James, Ted, Stephan, Tasha, Chris LeM, Paul, etc.).

Many people who saw totality said the same thing: Now I know why people chase the totality. The bug has bit!

Notes of the Eclipse
by Emma MacPhee

Left Miramichi after three days of stormy weather, no power at our hotel and driving through a whiteout on the bridge late one evening, could not see the side of the bridge in the storm. Not my best moments.

By Sunday morning, weather was clearing up and left for Boiestown where the weather was very nice, no snow ! Settled in at the Ledges Inn where a few RASC NB members were staying, along with other guests from NS.

Eclipse day: Awoke at 4:30 and got ready ,a whole 12 hours of waiting. we had great food at the Ledges Inn, and drove a few miles to Storey Town where the main event was taking place. It was fun to see Tim Doucette and his family there, Dave Chapman, Jason Dain with his photography equipment, Charlie Gaudreau from Fireball Meteorites, John Reid and his group, Trevor Jones and Ashley Norcotte among others.

Equipment was ready for professional filming,and astrophotography, and a lot of expectations .Skies were perfect and once in a while someone would verify the weather in other places, always confirming that we were in the best area. Over an hour of cool breeze Jason Dain announced first contact in one minute. It seemed that everyone stood up and put their solar glasses on to watch this spectacular event.

WOW. One hour later, total darkness; could not see the person next to me. Bailey's Beads, Diamond Ring, and a huge prominence on the lowest part of the Sun/Moon looking like a small tail. Photos showed a V formation. That 3 minutes,20 seconds was eerie, looked like dawn surrounding us. The birds went crazy, it was even creepy and strange. I was happy there were no cows around, ha ha.

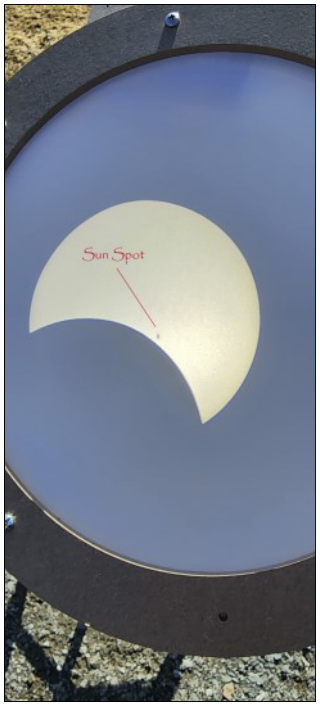
Stéphane proposed to his girlfriend—she said Yes !— once the second diamond ring appeared on the other side. It was full daylight in no time. Hard to believe that the Sun is so powerful, that even when the Moon is almost covering it completely it is still daylight. Many oohs and ahhs! All at once everyone started chatting and watching the Moon pass on. It was amazing.

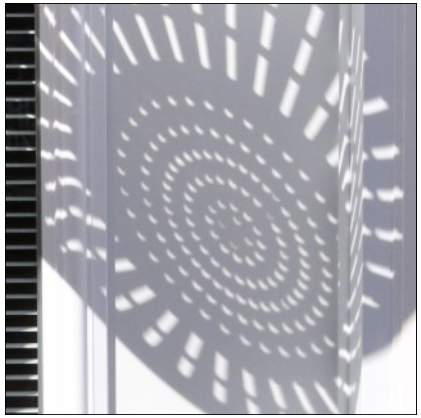
Looking forward to the partial solar eclipse on March 28, 2025. Thanks to Stéphane for including me in this event.

Cliff Valley Crew
Adrien, Stéphane, Emma, Tim

More Eclipse Photos

François Thériault's "Gizzy"





Partial Eclipses through Colander & Blinds

Submitted by Alan Hindle

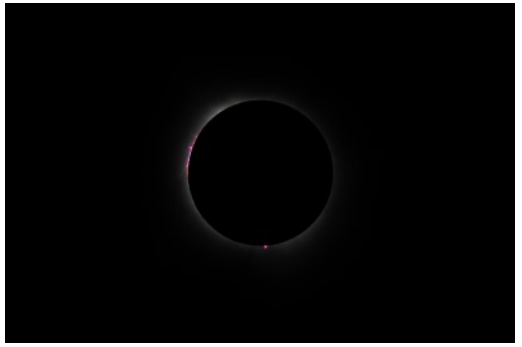
Rosanna's Eclipsed Eye

T. Armstrong Photo

Encroaching Moon

Colleen Logan Photo

Stephan Hamel's Diamond Ring



Brad Perry's Prominences

There is nothing like a solar eclipse, and especially a rare total eclipse, to provide opportunities for outreach. About 60% of the 81 events recorded this year have been eclipse-related, and some reports are still outstanding.

The most significant event has been solar observing for an estimated 2500 during the eclipse in downtown Fredericton, and with a crowd of 6000+ that could be an underestimate. EclipseFest Fredericton activities also included six presentations that weekend and an evening observing session.

The 6135 attendees under Live Feed are from 19 episodes of the Sunday Night Astronomy Show. A total of 3500 attendees, mostly students, were from three online talks during Science Week in early April. Online talks with a known audience are recorded as presentations or school visits.

Well done everyone, we are off to another good year of astronomy outreach!

Emma and Mary at Astronomy East

RASC NB Outreach Events and Handouts

Year	# of Events	People At Events	Live Feed	Youth	Star Finders English	Star Finders French	Moon Guides English	Moon Guides French	Volunteer Hours
2015	114	7262			2106	244	2568	156	
2016	219	9498			1984	115	2290	87	988
2017	248	9951	8441		2276	162	2262	131	1937
2018	187	7289	37,922	>1300	1788	170	1635	79	1355
2019	240	7036	46,675	2997	1320	216	1520	213	1950
2020	171	1859	161,688	954	817	22	636	125	1079
2021	131	731	60,240	565	108	0	46	0	1160
2022	173	12,952	63,122	10,192	586	60	472	106	1809
2023	168	23,419	9787	20,612	556	223	452	110	1789
2024	81	8525	6135	4713	206	0	354	0	797

Types of Outreach Events

Year	Presentation	Night Observing	Day Observing	Youth Group	School Talks	Exhibition	Observ./ Planet'm
2015	22	33	23	7	15	13	1
2016	31	55	39	19	54	11	10
2017	61	89	22	19	50	6	1
2018	50	80	13	18	20	5	1
2019	73	94	10	22	36	5	0
2020	86	43	5	8	29	0	0
2021	65	48	6	1	11	0	0
2022	72	52	6	4	34	4	0
2023	60	13	8	14	69	4	0
2024	55	3	3	2	14	4	0