

Nova Notes

The Newsletter of the Halifax Centre of the Royal Astronomical Society of Canada

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Highlights

SEPT / OCT 2022

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& SCO INFORMATION

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PUZZLE CORNER

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Cover Photos:

Main Photo:

Cave Nebula (Sh2-155) in HOO palette, with RGB stars.
Exposure times from 120s to 900s, for a total of 10h 00m.
by **Kathy Walker**

Thumbnails (L-r):

St. Croix Observatory
drawing by
Mary Lou Whitehorne

October 3, 2022
62% waxing gibbous moon
by **Jaime Whynot**

Halifax Centre Logo

Note: All photos and original works in this edition are the copyrighted property of the photographers, writers and artists. Permission to use any of their photos for other purposes must be obtained from the photographer.

From the Editor



An almost Last Quarter Moon framed by fall foliage.
Photo taken on the campus of Princeton University by
Lisa Ann Fanning

As the leaves begin to turn from green to an array of colours, Sirius departs with the “dog days of summer,” “the summer triangle” disappears into the west, replaced by Andromeda and Pegasus giving way to Orion who stands proud in colder skies.

Autumn is a time for giving thanks. Let’s remember and appreciate what we have, and that we are fortunate to be in a hobby that not only gives us an appreciation for the beauty of the night sky, but also a wonderful group of like-minded people.

I hope you will enjoy the album of summer memories in this edition. Folks gathering after a long hiatus from “crowds” to share a love for the sky.

Others celebrated personal achievements as noted in this edition, and we join in that celebration and cheer them on.

Enjoy the photos shared by our Centre’s members, and dig in with a crossword puzzle from the archives (thanks Judy for dusting this gem off for a great addition.)

Bundle up and head out (and don’t forget your thermos of Tim Hortons.) Keep those photos, sketches and stories coming! And most importantly, enjoy the extra darkness and comfortable temperatures!

With continued gratitude,

Lisa

Meeting Dates for 2022

- **November 5, 2022**
 - David Hoskin - A Brief Introduction to Telescope Eyepieces.
 - Dave Lane - Light and Filters.
 - Dave Chapman - What's in a Name? How celestial objects are named.
 - Judy Black - 300 Things to know about the RASC National Council. Well, OK, It's really only 3.
- **December 3, 2022 (Meeting + AGM)**
 - Tiffany Fields - SMU BGO
 - Chris Young - Sky Lore

We are now hosting hybrid live/Zoom Members' Meetings. Halifax Centre meetings are usually held on the first Saturday of the month, except for July and August.

Come join us in-person in Room AT101 at Saint Mary's University or by pre-registering for the meeting on Zoom.

The meeting are recorded and become accessible shortly thereafter on our Halifax RASC YouTube channel. For information about the meeting and how to register for the Zoom session, please visit <https://halifax.rasc.ca/index.php/activities/rasc-events>

St. Croix Observatory

Part of your membership in the Halifax RASC includes access to our observatory, located in the community of St. Croix, NS. The site has expanded over the last few years and includes a roll-off roof observatory with electrical outlets, a warm-room, and washroom facilities. We welcome you to bring your own equipment or to use the Centre's 400-mm Dobsonian telescope, 100-mm binoculars, and the recently acquired SCT and gear for astro-imaging.

Enjoy dark pristine skies far away from city lights and the company of like-minded observers searching out those faint "fuzzies" in the night. Most clear Moon-free nights, you will find our keen observers out there! Announcements of members visiting SCO are made on the Centre's Discussion List. If you are not a key holder and would like to become one or need more information, please contact the SCO Manager, John Liddard at scomanager@halifax.rasc.ca.

SCO is Open!

Go to our website (<https://halifax.rasc.ca>) for the latest SCO usage guidelines.



St. Croix Observatory drawing by Mary Lou Whitehorne

Halifax RASC Board of Directors, 2022

Elected

President (Also Appointed: National Council Representative; Chair, Governance Committee)	Judy Black
Vice-President	Patrick Kelly
Secretary (Also Appointed: Chair, Nominating Committee)	Peter Hurley
Treasurer	Gregg Dill
Director	Tim Doucette
Director	Matthew Dyer
Director (Also Appointed: Observing / EPO Chair)	David Hoskin
Director	Kathy Walker
Director	Jaime Whynt

Appointed

Honorary President	Mary Lou Whitehorne
Auditor (2021-2022)	Dave Lane
Dark-Sky Preserve Committee, Co-Chair	Peter Hurley
Dark-Sky Preserve Committee, Co-Chair	Tony Schellinck
Librarian	Jerry Black
Nova Notes, Editor	Lisa Ann Fanning
Nova Notes, Copy Editor	John McPhee
St. Croix Observatory, Manager	John Liddard

Nova East Star Party

SAVE THE DATE FOR 2023!

August 18-20, 2023

(New Moon August 16)



A Message from the President



At the beginning of October, my husband, mother, and I drove 2,300 km to our hometown, travelling through countryside displaying incredibly beautiful fall colours – bright yellows, vibrant reds, pale and pumpkin oranges and what I refer to as leaves with measles – all contrasted against the evergreens and golden tamarack. With the wind, the leaves were falling like colourful meteors through the blue or concrete grey skies. The difference was the leaves took much longer than a meteor to reach the ground.

Summer has now collapsed into fall and with it we experience not only the changing of the leaves but also a change in our observing. The Sun goes to bed earlier and the night skies are changing overhead, giving us something new to be seen each time we go out with our binoculars, telescopes and cameras. We can begin our vigil of the night skies much earlier and watch in awe much later into the night.

We can now look forward to welcoming some of our familiar friends in the fall and winter skies. Three days before Hurricane Fiona arrived on our shores, we camped one night at Battery Provincial Park, adjacent to the historic St. Peter's Canal. Just before midnight, I turned my back from the view of St. Peter's Bay to discover what seemed to be a bright star above and northerly to a red star, and a cluster of stars above the red star to the NE. Could it be? Yes, binoculars confirmed the cluster was the Pleiades, the red star was Aldebaran with the surrounding Hyades, and the bright star was Capella. The Winter Circle was beginning to rise in the northern night sky as the southern sky dipped below the horizon. This brief peak occurred before the fog closed our view and the observing session but what an "oh wow, Fall is upon us" closing.

The St. Croix Observatory is open for members to enjoy once more. As always, please let us know when you plan on going so that others may join you. We look forward to seeing you at the Annual BBQ where all are invited to stay for the evening observing session (weather permitting).

We hope that members can also join us at what will be our first in-person hybrid meeting at Saint Mary's University on November 5th. For those unable to join us, a Zoom link will be provided on our website.

When looking for a quote to close this message, I came across this piece of humour, author unknown. Hope none of us ever have to say this on the observing field.

I look at the stars and I see you,
I look at the moon and I see you,
I look at the trees and I see you,
Please step aside, you are blocking my view.

Judy

Nova Notes: The Newsletter of the Halifax Centre of the RASC

PO Box 31011, Halifax, Nova Scotia B3K 5T9

Nova Notes is published five times a year, in February, April, June/July, September/October and December.

The opinions expressed herein are not necessarily those of the Halifax Centre.

Articles on any aspect of astronomy and related activities will be considered for publication.

“Together Again Under the Stars”

Summer Events Bring Centre Members Together Again

After what felt like forever, pandemic conditions finally lifted enough for people to begin gathering again... Here are some memories of moments shared under the stars.

Kejimikujik Dark Sky Weekend

David Chapman writes: “Coming home from the event, it struck me that I’m probably the only person who has attended them all; however, this is the first one that I did not plan. It was lovely to sit back, relax, and show up when called upon. I sure needed it, following a week of intense last-minute editing of the Mi’kmaq Moons book.

Myself, Quinn Smith, Karl Penney, and others helped Kejimikujik become an RASC Dark Sky Preserve in 2010; others have joined the team and built on that foundation. I’m confident that the proud partnership of RASC Halifax and Parks Canada-Kejimikujik will endure. Wela’liq / Thank you all.”

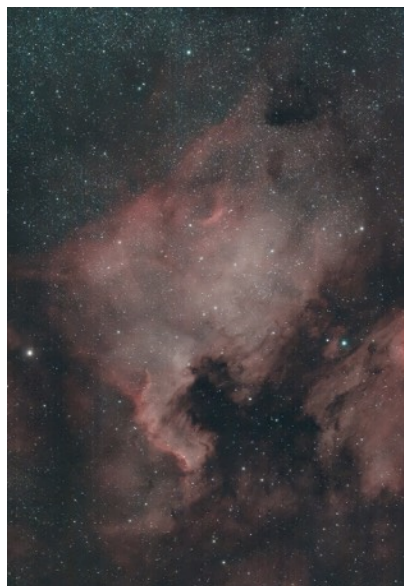


“Thanks to Peter Hurley and Tony Schellinck for their good work with Colleen Anderson of Parks Canada to plan and carry out this year’s DSW. It was a great success!”



“I “found” the “missing” Dark Sky bench in Caledonia!”

John Read's Images From Under Kejimikujik Skies



North America Nebula



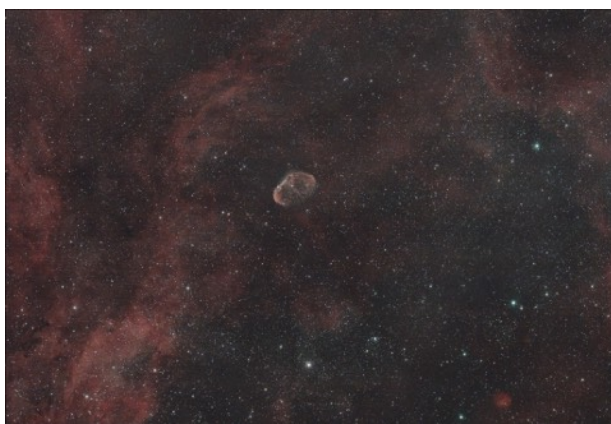
Veil Nebula



Eagle and Swan



M82 and M81



Crescent Nebula



M110, M31 and M32

Nova East

by Judy Black

Another successful year of the Nova East Star Party! Who would have thought it would take 3 years before we could gather once more in the fields of Smileys Provincial Park. As the shirt designed by Lisa Ann Fanning stated, we were "Together Again under the Stars." The number of speakers were reduced from previous but all enjoyed the stellar presentations and workshops:

Melody Hamilton - RASC Double Stars Observing Program PLUS RASC Observing and Astroimaging Certificates
David Hoskin - Workshop: Solar Observing with Binoculars PLUS Family Activity: Walk the Solar System
Dave Chapman - Workshop: How to Clean the Mirrors of your Newtonian Reflector
Chris Young - Sky Tour and Lore PLUS Door Prizes
Tony Schellinck - Binocular Table: Observing the Deep-Sky with Binoculars

I would also like to thank members of the Nova East Planning Committee (NEPC) and other volunteers who made this such a success - Gregg Dill (Treasurer), Lisa Ann Fanning (designer of our wonderful t-shirts), Paul Gray, Melody Hamilton (speaker & Registrar), Patrick Kelly, Tony McGrath (Flea Market Lead, SCO pick-up), Jaime Whynot and Chris Young (prize acquisition & sky lore aficionado). Also thanks to volunteers Peter Hurley, Daphne Themlis, Dave Chapman (audiovisual), Elsie Ferguson, and others who assisted in set-up and takedown of the site and Astronomers Lounge.

This was the inaugural year for the Sherman Williams Walk in memory of long time naturalist and amateur astronomer Sherman Williams. RASC member Jason Dain, and an accomplished astroimager and birder himself, led a group through Smileys' woods identifying the warblers and red-eyed vireos up high in the trees, the Peewee mid canopy, and of course the chickadees in the lower branches. There were other birds identified and I'm sure Jason and others on the walk can recall them better than I. Thank you, Jason, for such a terrific walk along the trails, identifying birds and special trees along the way. You did a fabulous job, providing a walk that we're sure Sherman would have liked to have participated. We look forward to next year with you again when we start at our feet looking at flora and look up for the treetop birds (despite "Warbler Neck").

It was a joy for all to be together with members and non-members alike attending this year's event - from Nova Scotia, Massachusetts and 2 newly immigrated from Lebanon! Where would we be without your expertise and camaraderie in the observing field? Hopefully this will bring many happy memories for years to come for all involved, despite the not-so-stellar skies over the weekend. There was lots of time to catch up and to tell stories of our observing adventures. The group photo can be viewed at <https://novaeast.rasc.ca>.

I have been the Chair of Nova East since 2016 (when Melody and I were co-chairs). Through those years, I had the honour of working with amazing people with a wide variety of expertise but with the common love of observing and learning more about our astronomy hobby in its many facets. Thank you all for being with me on this journey! I know you will also give the incoming NEPC Chair (to be named at the AGM) your continuing support.

**Mark your calendars for 2023 Nova East - nights of August 18-20, 2023 (New Moon on August 16).
See you there in the observing field!**



Memories of Nova East 2022



Judy, President, welcoming everyone back to Nova East. Photo by **Jerry Black**



David explains how Solar scopes work. Photo by **Jerry Black**



Heralding the start of a new session: Liz and Melody ring in the new session. Photo by **Judy Black**

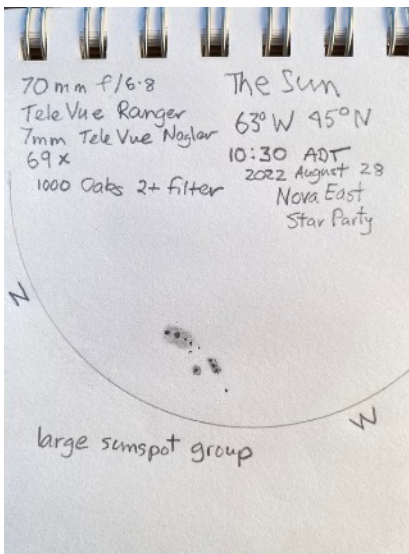


Welcome new member Dave XXXVIII (<http://rasd.ca>) Photo by **Jerry Black**

Memories of Nova East 2022



Jupiter and Saturn by **Tarek El Wazzi**



Solar Observing sketch by **Dave Chapman**



"Before the Clouds" by **Tarek El Wazzi**

Memories of Nova East 2022



Dave show us the mirror cleaning process. Photo by **Jerry Black**



Birding with Jason Dain on the inaugural year for the Sherman Williams Walk. Photo by **Judy Black**



Dave shows off the T-Shirt designed by Lisa Ann Fanning. Photo by **Dave Chapman**



Chris leads a tour of the night sky. Photo by **Jerry Black**

An Introduction to Electronically Assisted Astronomy: Bridging Eyepiece Observing and Astrophotography

by David Hoskin

Health concerns raised by the COVID-19 pandemic have made it difficult, if not impossible, to engage in public education and outreach activities involving traditional eyepiece observing. Enter electronically assisted astronomy (EAA), which is also known as electronically enhanced astronomy (EEA), electronically enhanced visual astronomy (EEVA) or observational astrophotography. EAA replaces the eyepiece with a camera, which captures a sequence of short exposures that are then stacked and processed by software before the resulting image is displayed on the screen of a laptop computer. The use of EAA eliminates the need to sanitize eyepieces between use by each observer, which saves time and protects expensive eyepieces from possible damage.

COVID-19 concerns aside, EAA has several advantages over eyepiece observing for public education and outreach. Stacking multiple short exposures delivers a near-real time image with more detail and colour than would be seen through an eyepiece, as well as diminishing the effects of light pollution when in an urban or suburban environment. The image of the Swan Nebula (Messier 17) was obtained using EAA under dark skies at Kejimikujik National Park while the image of the Hercules Globular Cluster (Messier 13) was captured using EAA from my light-polluted backyard in suburban Halifax. EAA also allows for the use of smaller and more portable telescopes due to the electronic enhancement of views. At least five individuals can view an image on a typical laptop computer screen at the same time, more if the image is displayed on a television monitor. No more lines of people waiting for a turn at the eyepiece, and then having to focus the image according to each observer's eyesight! It is also possible to livestream images obtained by EAA to a wider audience, providing that internet access is available at the observing site.



Swan Nebula



Hercules Globular Cluster

However, EAA also has its drawbacks. EAA requires a tracking mount, camera, and laptop or tablet with appropriate software, which increases cost, complexity, and setup time. A good power source is also needed to run the EAA setup. Light from an electronic screen disrupts night vision, as well as attracting hordes of insects in the summer months!

EAA requires a dedicated astronomy camera, a telescope with a fast focal ratio, a sturdy motorized tracking mount (equatorial or alt-azimuth), and a laptop computer with EAA software installed. A Bahtinov mask helps to achieve the precise focus needed for the best possible image. A light pollution filter can improve the image if performing EAA in an urban or suburban area.

The rig that I currently use for EAA (shown at right) consists of a ZWO ASI183MC colour camera, an Orion ST80 80mm f/5 refractor, an Explore Scientific iEXOS-100 equatorial GoTo mount, an inexpensive Dell laptop computer with SharpCap software, and lithium battery packs to power everything.

A camera with a larger sensor such as the ASI183MC allows for viewing larger targets like emission nebulae and open star clusters in their entirety; however, an inexpensive planetary camera with a smaller sensor such as the ASI224MC is sufficient for viewing galaxies, planetary nebula, and globular clusters, as well as the Moon, planets, and Sun (with an appropriate solar safety filter). A monochrome camera can also be used if increased sensitivity is preferred over colour. It is also possible to use a DSLR or mirrorless camera for EAA, although finding compatible software may be an issue. Since exposures are short there is no need for camera cooling. Depending on the target, I typically use 10 to 30 second exposures. Any telescope can be used for EAA, although a fast focal ratio and aperture of at least 80mm is preferred.



A Typical EAA Setup

A motorized tracking mount is essential to follow the target and capture multiple images for live stacking. An alt-azimuth GoTo mount such as the Celestron NexStar SLT works well for shorter exposures that have minimal star trailing. A motorized equatorial mount allows for longer exposures without any star trailing. SharpCap works well for EAA when using a Windows laptop. Other software options exist such as ZWO's ASIAStudio, which runs on both Windows and Mac devices. The ASIAir-Pro from ZWO allows for wifi control of the mount and ZWO camera from a tablet in place of a laptop computer, which increases portability.

Observing celestial objects at a dark sky site using a telescope eyepiece and the mark 1 eyeball is a captivating experience that propelled many of us into the hobby of amateur astronomy. However, light pollution in an urban or suburban setting has become a major obstacle to traditional eyepiece observing, limiting views of anything other than the Moon and brighter planets. In contrast, even in a light-polluted environment, EAA provides detailed views of many deep sky objects and, as such, is a valuable tool for public education and outreach.

Member News

Fiona Morris runner-up *SkyNews*' runner-up 2022 Photo of the Week contest



North America Nebula by **Fiona Morris**
ZWO ASI183MC Pro
William Optics SpaceCat (f/4.9)
50 minutes

Congratulations to Halifax Centre's own Fiona Morris on winning runner-up in the *SkyNews* 2022 Photo of the Week contest - Youth Category.

Dave Chapman (author) and **Jerry Black** (photographer) were featured in the September/ October edition of *SkyNews*. The "Letter to the Editor" talked about the experience of viewing "Alan Dyer's 15 Top 10 Targets" as referred to by Dave Chapman at Kejimikujik National Park on a recent weekend away.

LETTERS TO THE EDITOR

DURING THE NEW MOON IN JUNE, four of us camped on an island in Kaminikujik, Dark-Sky Preserve, Nova Scotia, and enjoyed one of the darkest nights we have ever experienced there. Not only was the sky cloud-free, the air itself had no haze, and there was no light pollution! We could see stars almost down to the twilight across the lake to the south.

Looking south, I spied a second magnitude star near the horizon that I did not recognize -- it turned out to be Minkat, or Beta Centauri. Whoo! Centaurus! I've never seen stars from that constellation from Nova Scotia.

I persuaded an observing companion to take a binocular tour of the Milky Way with me, following Alan Dyer's recent *SkyNews* top 10 list of summer Milky Way targets (July-August 2022). To make an observing list on the SkySafari app on my phone, I needed to select 13 celestial objects, so my observing list is called "Alan Dyer's 15 Top 10 Targets in the Summer Milky Way."

To cut a long story short, we had fun observing everything, some quite familiar, others quite new, although it took a long time because we kept getting distracted by other celestial delights. The hardest ones were Barnard's (Dark 1), the Veil Nebula and the Fanfare Cloud (Dark) Nebula. We could see the dark, nebular complexes easily, but we had to use our imaginations a bit to see the shapes. I'm calling it a but I'd surely be looking again!

To be fair, we were using undersized binoculars for both Canon image-stabilized apertures 12 x 36 and 10 x 36, where we should have been using the recommended of 18mm or above. We are returning in late July, so I larger binoculars to repeat the list.

It's always fun following a list and it's extra fun having observing buddy. We also have wide-angle astrographs time lapses from that night.

Dave Chapman
RASC, Halifax Centre

Member News

Jason Dain in “Planet-wide Project”

Congratulations to Halifax Centre Member, Jason Dain on his participation in a “planet-wide” project to depict sunrise photographs from the September 2022 equinox which was shared as NASA’s APOD.



NASA APOD Caption:

“Equinox Sunrise Around the World
Collage Image Copyright: Luca Vanzella

Explanation: A planet-wide collaboration resulted in this remarkable array of sunrise photographs taken around the September 2022 equinox. The images were contributed by 24 photographers, one in each of 24 nautical time zones around the world. Unlike more complicated civil time zone boundaries, the 24 nautical time zones are simply 15 degree longitude bands corresponding to 1 hour steps that span the globe. Start at the upper right for the first to experience a sunrise in the nautical time zone corresponding to Coordinated Universal Time (UTC) + 12 hours. In that time zone, the photographer was located in Christchurch, New Zealand. Travel to the west by looking down the column and then moving to the column toward the left for later sunrises as the time zone offset in hours from UTC decreases. Or, you can watch a video of September 2022 equinox sunrises around planet Earth.”

Source: NASA APOD 30 September 2022 <https://apod.nasa.gov/apod/ap220930.html>

Member News

Tim Doucette and Deep Sky Eye Observatory win Tourism Business of the Year Award

Congratulations to **Tim Doucette** and Deep Sky Eye Observatory on winning the Yarmouth and Area Chamber of Commerce Tourism Business of The Year Award on October 20, 2022.



Congratulations

New Observer!

Rob Fanning obtained his Explore the Universe Certificate and Pin Aug, 2022



Member Mentions

Check out the October, 2022 edition of *The Journal of the Royal Astronomical Society of Canada (JRASC)* for **Blair MacDonald's** regular feature "Imager's Corner." This month's article focuses on "Layers and Blends"



Imager's Corner

Layers and Blends

by Blair MacDonald, Halifax, Nova Scotia
blairmacdonald@nova.ca

The idea for this column came from answering some questions about layers. When you use a process that supports layers and blend modes, there are several layer blend approaches that work very well on astrophotos. In some cases, these layer blend approaches are merely alternative implementations of standard techniques, but in others they offer something that you cannot implement, at least in a single step, without them. Over the next several editions we will look at several of the more useful techniques and show how they can save and improve actual processing tasks.

Now for the main part, to use these techniques you need image processing that supports layers and blend modes. With packages such as Photoshop you can implement different blend modes between images using Blend Modes. Please check out <https://www.photoshop.com/en/learn/blendmodes>.

Blending modes themselves are a way to combine the pixels of two images. In this column, we will look at a single but powerful technique that can be used to selectively enhance areas of your images called layers, masked stacks or LMS. This is an adaptation of an HDR process that has been around for years. The original technique was used to combine images of different exposures, but the LMS approach is extended to combine two different statistics of the same data set. The idea is to match the image for all the data and ignore what happens in the brighter areas of the image. Next create another copy of the same data and apply a mask that has above the brighter areas ignoring what happens in the dark end. I usually use this technique after I have done my initial stack, color correction, noise reduction, and sharpening. It greatly improves image contrast in the brighter areas without being all the better detail that we work so hard to get in those initial stacks.

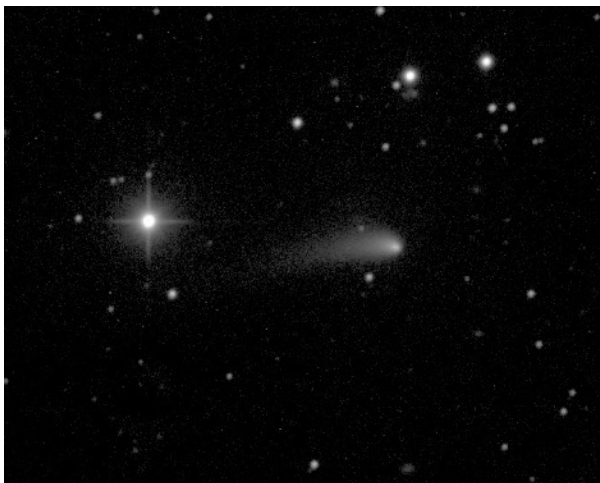
As an example, let's take a look at one of my not-so-great shots of M42 (Figure 1). Even in the unprocessed data the



Figure 1 - Original unprocessed M42 image

October / October 2022

JRASC | Promoting Astronomy in Canada 185



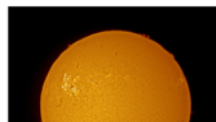
David Chapman's photo taken by the robotic telescope at St Mary's University was shared and highlighted by *EarthSky*. It was featured in their Community Photos, *EarthSky News* and in the feature [article](#) about Comet C/2022 E3.

David wrote: "Comet C/2022 E3. This comet is currently in Corona Borealis and will get brighter into the new year. I enjoy following comets and asteroids using the free public robotic telescope at Saint Mary's University. The photos are exposed under the user's direction, automatically processed and made available for download." Thank you, David!

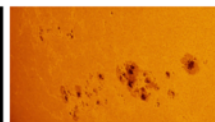
EarthSky Community Photos

Submit your [photo here](#). Comment or upvote on photo pages. Search via photographers' names. More improvements coming! To help, please [donate](#).

David Hoskin's work continues to be featured in *EarthSky* as well on a regular basis. Click [here](#) to view his portfolio of work.



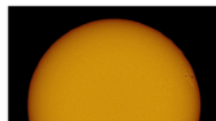
David Hoskin
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Members' Universe

"Bubbles by Blair"

Bubble Nebulae from DEO and Cottage Skies by **Blair MacDonald**.

Bubble Nebulae. Field centre - RA 20:14:16 Dec +38:08:02

3 August, 2022

Exposure 3.75 hours (15 X 15 minutes)

Bortle 4 skies

Gain 100

Camera Zwo ASI2600MC-Pro

Optics Prime focus of a SkyWatcher Esprit 120 f/7 APO refractor with a focal length of 840 mm

Filter - Optolong L-eNhanche

Marion Bridge, Nova Scotia



Compare the image above to this image, below, by Blair MacDonald taken from his urban driveway during the pandemic in 2020. Blair says, "Consider it a COVID bubble."



NGC7635 (Bubble Nebula) RA 23:20.2 Dec +61:11

18 October, 2020

Exposure 3.25 hours (13 X 15 minutes)

Bortle 6 skies, high light pollution levels.

ISO 1600

Camera - Canon 60Da DSLR

Optics - Prime focus of a

SkyWatcher Esprit 120 f/7 APO refractor with a focal length of 840 mm

Filter - Optolong L-enHance

Bedford, Nova Scotia

According to Wikipedia - "NGC 7635, also known as the Bubble Nebula, Sharpless 162, or Caldwell 11, is an H II region emission nebula in the constellation Cassiopeia. It lies close to the direction of the open cluster Messier 52. The "bubble" is created by the stellar wind from a massive hot, 8.7 magnitude young central star, SAO 20575 (BD+60°2522). The nebula is near a giant molecular cloud which contains the expansion of the bubble nebula while itself being excited by the hot central star, causing it to glow. It was discovered in 1787 by William Herschel. The star BD+60°2522 is thought to have a mass of about 44 solar masses."

Members' Universe



Pickering's Triangle in the Veil Nebula - RA 20:48:53 Dec +31:27:38

1 September, 2022

Exposure 2.25 hours (9 X 15 minutes)

Bright urban Bortle 6-7 skies with 0.6 arcsecond guiding so the seeing was good.

Gain 100

Camera Zwo ASI2600MC-Pro

Optics Prime focus (with field flattener) of a

SkyWatcher Esprit 120 f/7 APO refractor with a focal length of 840 mm

Filter Optolong L-eNhanche

Bedford, Nova Scotia

Urban Pickering's Triangle by **Blair MacDonald**

Blair says: "Here is an urban shot taken after doing some software testing on a new plate solving system. The data was acquired by DEO from my urban driveway. Pickering's Triangle is part of the Veil Nebula Complex, a supernova remnant in Cygnus. This target is tricky visually, but stands out well photographically, especially if a narrow band filter is used. I'm not a fan of exposing for longer than the present age of the universe and generally aim for the visual SNR limit of about 46 dB, beyond this there is very little visual change in the image noise with longer exposures. Under urban conditions the sky background approaches this limit fairly quickly due to the bright sky and the Veil Nebula shows up brightly in the L-eNhanche filter making for a relatively short exposure."

Bruce Hamilton, Litchfield, NS writes "downtown Litchfield! Visually, all the light was white, at times blocking out the stars of the Big Dipper....note the red reflection on the Bay."

September 25, 2022

Canon 7D Mark II

14 mm f2.8

25 sec.

ISO 2150



Members' Universe



Jerry Black submitted this wonderful photo of the Andromeda Galaxy

He writes “Interesting to see the Hydrogen Alpha regions showing up, in apparent correlation with bright stars, and the companion nebula NGC 206 and Globular Cluster G76.

Pixel peepers can find Bol D91, a 15th magnitude Globular Cluster showing up ‘clearly’ without features.”

Exposure 380@300 sec Triad Ultra Quad Filter + 195@180 sec Clear
ISO 3200 and 800
Camera Nikon Z7 [8856 x 5504]
Optics Skywatcher Esprit 120mm Refractor, 840 mm focal length
Filter Triad Ultra Quad Band
Guiding Phd2 using a ZWO 224MC on an Orion 60x240mm Guide scope
Controller Images taken using Kstars on an Odroid-N2 (Raspberry Pi clone)
Location Lower Sackville, Nova Scotia.
Date 2021-11-06...2022-09-02
PixInsight Processing
WeightedBatchPreprocessing Script
Dynamic Crop
DynamicBackground Extractor
NoiseXTerminator
HistogramTransform
CurvesTransformation

Members' Universe



M33 Tringulum Galaxy was imaged in RGB, with Ha highlights. Exposure times from 120s to 600s, for a total of 5h 00m.
Photo by **Kathy Walker**



Mare Nubian region with Rupes Recta (lunar straight wall) Oct. 3, 2022 - Photo by **Jaime Whynot**



Farewell, "summer triangle" see you again soon!
Cape May (NJ) Light
Sept. 10, 2022 Photo by **Lisa Ann Fanning**



Full Moon moonbow at Cape May Lighthouse
Sept. 10, 2022 Photo by **Rob Fanning**

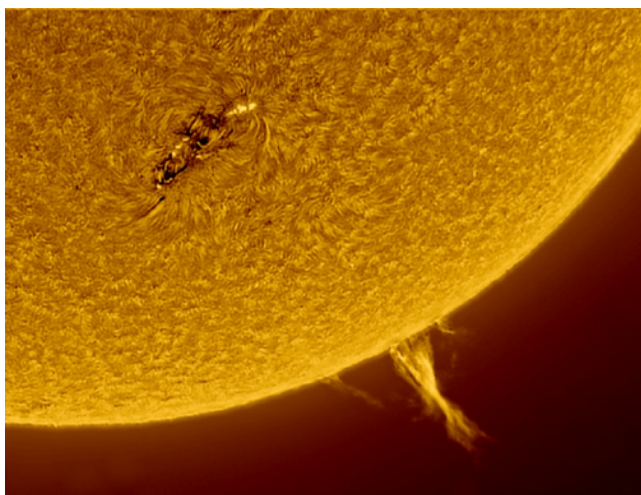
David Hoskin's Universe



Comet C/2017 K2 (PANSTARRS) and M10 from July 5, 2022 Photo by **David Hoskin**



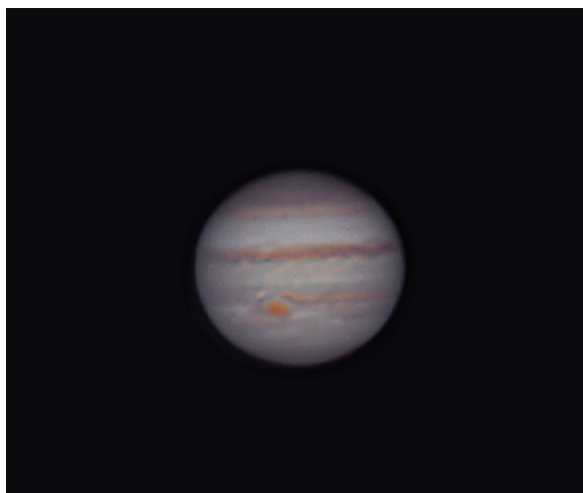
M21, M20 and M8 (left to right) Photo by **David Hoskin**



Sunspot and Prominence taken during Nova East Photo by **David Hoskin**



Waning Gibbous Moon September 16, 2022 Photo by **David Hoskin**



Jupiter Photo by **David Hoskin**



Saturn Photo by **David Hoskin**

Across

- 1) This one from down under is unnaturally drinking the whole outflow from the Urn
- 6) This beautiful flying creature is found only in the Papuan Islands
- 9) This bow-stretcher makes great tea
- 11) A memorial to the reticle lying north of the greater cloud
- 12) A commemoration of a 17th Century astronomer's tool
- 13) Amber tresses lying southeast of the heart of Charles II
- 14) The brightest star in the constellation is a translation of this beautiful bird's name
- 17) Known in China as Seaou Tow, it separates 31 down from the pole
- 18) A pathway to bring Pride to the Giraffe
- 19) Driver of Asterion and Chara in pursuit of the Wain
- 21) A dove flying near the stern of the Ship
- 25) Named for the mountain site of La Caille's Capetown Observatory
- 27) The immortal Firebird
- 29) The leashed hounds of a hunter
- 32) the starry Stream
- 33) This heavenly long-legged bird is after a fishy diet
- 34) Also has been variously called the Seven Shriners, the Seven Sages or Poets, the Seven Wisemen, the Seven Antelope, and even the Great Spotted Bull.
- 37) A vain matriarch
- 38) The apparatus of a person who carves or models figures
- 39) This Wassermann's age is dawning
- 40) A sculptorium or graving-tool
- 41) A little exotic golden cyprinoid
- 43) "Behind him, Sirius ever speeds as in pursuit, and rises after, and eyes him as he sets."
- 47) This king of the air can be bald
- 49) This creeping cousin of Sally Mander holds the radiant of a very minor meteor stream visible through August and September
- 52) Tubus Astronomicus
- 53) This tool of inner discovery comes to the meridian in September
- 54) A sympathetic Wagoneer who likes goats

Down

- 1) The Coat of Arms of the third John Sobieski, King of Poland
- 2) In German, it is called the Luft Pumpe
- 3) The first to discover the Americas
- 5) Missile launched to slay Jove's eagle
- 6) The bearer of fleece holds the first point
- 7) The slayer of the giant being held at bay by the bowman
- 8) This small 33 across currently holds a pivotal position
- 10) A creature named for its nose bone
- 13) This bore hold our core
- 14) This 3-legged painter's stand holds Kapteyn's rapid recede
- 15) The faint fox containing the Double-headed Shot
- 16) Was the Raven in Chaucer's time; 2000 years ago, lay equally on each side of the celestial equator
- 20) Serpentarius, the great healer
- 22) A horseman beast fighting the wolf
- 23) Le Petit Chien
- 24) Constellation to recognize the 1730 invention by John Hadley
- 26) The Carpenter's level
- 27) The great baseball diamond rising in the fall at sunset
- 28) This foal is found playing with the dolphin
- 30) Where heavenly weddings occur
- 31) The Keel of the great Ship
- 35) This Indian Fly arrives with the cross about the middle of May
- 36) Home of Mintaka
- 37) The cup of the mirth maker, Bacchus
- 39) Victim of a feud between her mother and Neptune
- 42) Snake-like creature equipped with wings and claws
- 43) With this, Orpheus charmed wild beasts, stones and trees
- 44) The flying fish
- 45) "Such were the heavenly double-Dicks, the sons of Jove and Tyndar."
- 46) Symbol of Hippocrates
- 48) This king holds a very questionable asterism
- 49) This minor is always underfoot
- 50) The giraffe sounds more like a ship of the desert
- 51) This triangle actually has 4 sides
- 52) Home of the famous face-on spiral of the Local Group

September 10, 2022 RASC Halifax Centre Meeting:

(25 attendees)

To watch a replay of the meeting, please visit:

<https://www.youtube.com/watch?v=DRQtidGtKeY> on the RASC Halifax YouTube Channel.

President's Remarks

Welcome - Judy Black

RASC Halifax President Judy Black welcomed everyone to the monthly meeting, explained the benefits of membership and reviewed the agenda. She acknowledged the Indigenous lands in which the meeting was held and read the Centre's inclusivity and diversity statement.

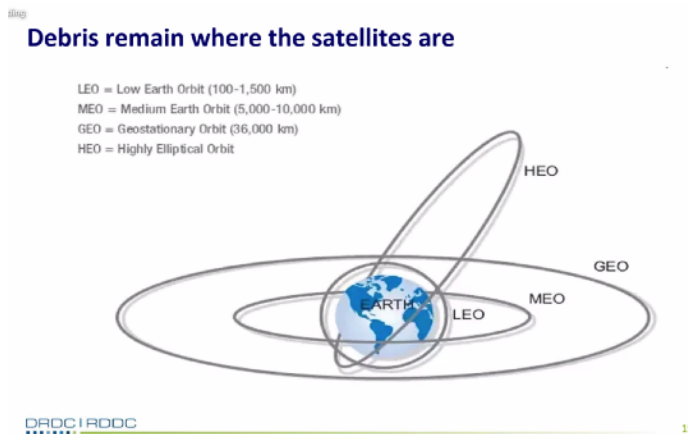
Special Presentations:

Dr. Donald Beddard (Ottawa Research Centre) + Jim Johnston (Volunteer, NL):

Topic - Photometric characterization of satellites and space debris objects.

- Photometric characterization of satellites and space debris objects.

Dr. Beddard reviewed all the aspects of our lives that rely on satellites, and emphasized that "Space is the "invisible utility" and the need for Space Surveillance. The increasing problem of space debris was discussed, and why it could potentially be harmful to the satellites we rely on. The Sapphire Project was launched by Canada to contribute to space surveillance.



David Hoskin - Photo Montage

David presented photographs from Centre members Jerry Black, Michael Boschat, Dave Chapman, Jason Dain, Jeff Donaldson, Lisa Ann Fanning, David Hoskin, Blair MacDonald, Fiona Morris, Gurav Singh, Brian Smith and Kathy Walker.

Dave Chapman (Halifax Centre) - What's in a Name? How celestial objects are named.

This instalment focused on natural satellites of the planets

Johannes Kepler introduced the word "satellite" in 1610. He discussed how the IAU determines names for planets, dwarf planets, minor planets and their satellites.

David Hoskin (EPO/Observing Chair) - What's up in September Skies?

David reviewed highlights of the September sky. He highlighted the sun, solar activity, the Moon, and targets needed to check off for Explore the Universe, and when they can be viewed. He also highlighted planetary positions, constellations, stars (including double and multiple) and Deep Sky Objects. Each month, you can find David's presentations on the homepage at <http://halifax.rasc.ca>

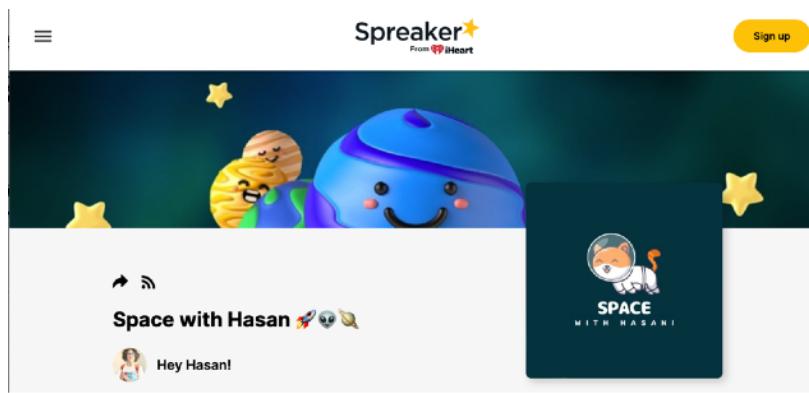
Judy Black (President) - News from the Board

Halifax Centre Stars:

Jason Dain Emission Nebula SH2-63 NASA APOD - August 1, 2022

Silas Eastwood (RASC Intermediate Prize in Astronomy - Canada-Wide Science Fair, June 2022) - Project: SMARTEN: *Simulated Microgravity and Reduced Friction Test Environment for Nanosatellites*

Hasan Ali - host of Space Radio Show <https://www.spreaker.com/show/space-with-hasan-1>



Fiona Morris - SkyNews 2022 Photo of the Week, Runner-Up, Youth Category (North America Nebula)

Dave Chapman (Correspondent) & Jerry Black (Photographer) SkyNews Letter to the Editor Sept/Oct 2022

Nova Notes Deadline Sunday October 2, 2022 for the September / October edition

Nova East - was a success! 47 people total in attendance. The planning committee was thanked for their work. Please pass on any photographs <2MB to Jerry Black for posting to the website. Another highlight was the inaugural Sherman Williams Walk, Birding at Smileys led by Jason Dain. For more highlights and photos, please visit page 7.

Dark Sky Weekend - thank you to Peter Hurley and Tony Schellinck for coordinating a phenomenal three days with 925 contacts made. For more highlights and photos, please visit page 5.

Upcoming Meeting Dates - October 1, November 5 and December 3 (+AGM) For now it will be held via Zoom but a working group is working on logistics for a hybrid style meeting.

Annual SCO BBQ Scheduled for September 23 @5:30 PM ADT, rain date, September 24.

For anyone at SCO, please be sure to put away any paper materials, as squirrels and other rodents have been using paper as nesting material.

Get Involved! The Centre needs volunteers and people to help out!

2023 Nominations are due by Saturday November 12. Email Peter Hurley (secretary@halifax.rasc.ca) President and Treasurer positions are being vacated, but all positions may be nominated.

Let's Talk About... A new segment that opens the floor up to any discussion.

October 1, 2022 RASC Halifax Centre Meeting:

(32 attendees)

To watch a replay of the meeting, please visit:

<https://www.youtube.com/watch?v=KTVf0VXR0sE> on the RASC Halifax YouTube Channel.
(click on noted time to launch specific segments)

President's Remarks

Welcome - Judy Black

RASC Halifax President Judy Black welcomed everyone to the monthly meeting, explained the benefits of membership and reviewed the agenda. She acknowledged the Indigenous lands in which the meeting was held and read the Centre's inclusivity and diversity statement.

Special Presentations:

Dr. Marcin Sawicki (SMU)

Topic - Webb's made-in-Canada Near-InfraRed Imager and Slitless Spectrograph (NIRISS)

Dr. Sawicki opened with a timeline of instruments that have been used to explore the universe prior to the James Webb Space Telescope (JWST.)

On December 25, 2021, the JWST was successfully launched into space.

On July 12, 2022, the first image was released showing a galaxy cluster and gravitational lensing.
(Fig. 1)



Fig. 1

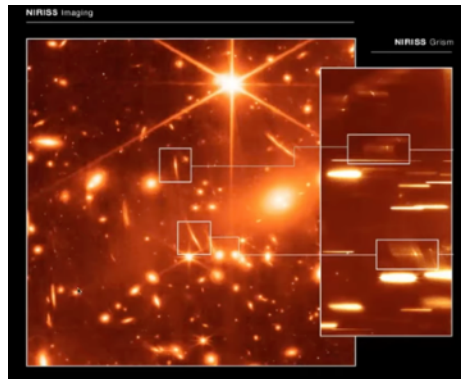


Fig. 2

He explained the NIRISS Near-InfraRed Imager and Slitless Spectrograph, which is on board the telescope, and its function of analyzing the composition of gas clouds. He shared images produced by NIRISS. (Fig. 2)

Looking at the spectrum from NIRISS, the star formation history of the region can be determined. This process can be applied to hundreds of galaxies at a time.

The science team is using a program called "CANUCS" (Canadian NIRISS Unbiased Cluster Survey.) This program can observe five clusters "better and deeper." Its goals are to "search and study the first galaxies that formed after the Big Bang and study how they subsequently grew over time."

One galaxy that was highlighted is the "Sparkler." The team is currently analyzing this particular cluster in an effort to age its stars. The team has found "some of the oldest star clusters in the Universe."

Chris Young (Halifax Centre) - Sky Lore

Chris revisited the “Greek Star Stories” and discussed his project in progress. The Greeks assembled their classical sky map around 500 BC including large constellations likely from the Mediterranean region devised for the navigation of ships. He discussed Mediterranean trade in the late Bronze Age and the role it played in relaying information along trade routes, including information about constellations. He also shared the lores of Aries, the creation of the Milky Way and more.

Jerry Black (Halifax Centre) - Photo Montage

David Hoskin assembled and Jerry Black presented photographs from Centre members Jerry Black, Michael Boschat, Dave Chapman, Jason Dain, Tim Doucette, Lisa Ann Fanning, Paul Gray, Bruce Hamilton, David Hoskin, and Kathy Walker.

Lisa Ann Fanning (Halifax Centre) - What's up in October Skies?

Lisa reviewed David Hoskin’s presentation with highlights of the October sky. The sun, the Moon, and targets needed to check off for Explore the Universe, and when they can be viewed were highlighted, in addition to planetary positions, constellations, stars (including double and multiple) and Deep Sky Objects. Each month, you can find David’s presentations on the homepage at <http://halifax.rasc.ca>.

Judy Black (President, Halifax Centre) - News from the Board

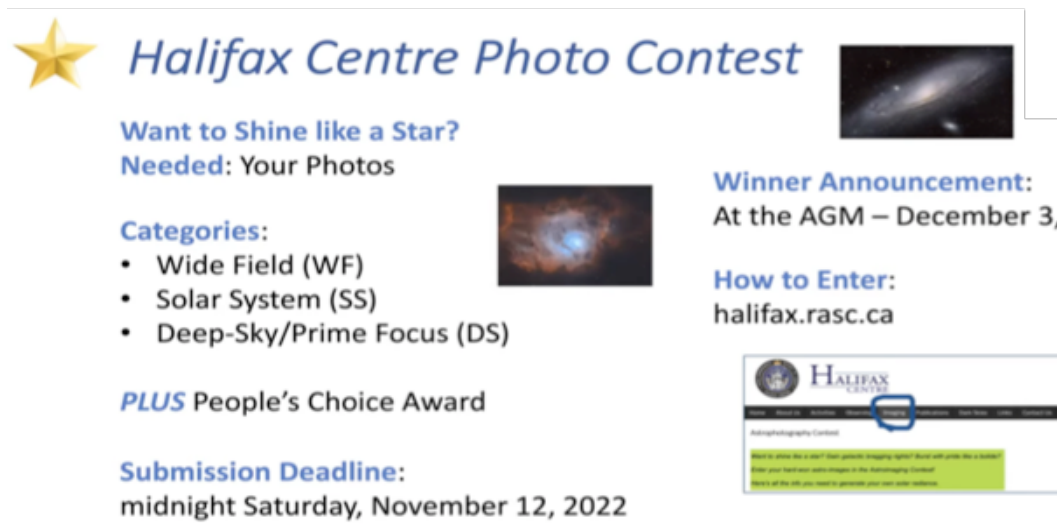
Halifax Centre Stars:

Blair MacDonald has a new instalment of “Imager’s Corner” in the *JRASC* October, 2022.

David Chapman’s photo of Comet C/2022 E3 via BGO was highlighted in *EarthSky*’s top stories for September 17, 2022.

Jason Dain participated in a “planet-wide” project to depict sunrise photographs from the September 2022 equinox which was shared as NASA’s APOD.

Halifax Centre Photo Contest submission deadline is midnight Saturday, November 12, 2022. Categories are Wide Field, Solar System, Deep-Sky/ Prime Focus plus the “People’s Choice Award.” Winners will be announced at the AGM December 3, 2022. To enter, visit halifax.rasc.ca.



The poster for the Halifax Centre Photo Contest features a yellow star icon at the top left. The title "Halifax Centre Photo Contest" is in a blue serif font. Below the title, it asks "Want to Shine like a Star?" and states "Needed: Your Photos". A list of categories includes Wide Field (WF), Solar System (SS), and Deep-Sky/Prime Focus (DS). It also mentions a "PLUS People's Choice Award" and a "Submission Deadline: midnight Saturday, November 12, 2022". On the right side, it says "Winner Announcement: At the AGM – December 3," and "How to Enter: halifax.rasc.ca". There are three small images: a galaxy, a nebula, and a screenshot of the contest website. The website screenshot shows the Halifax Centre logo and a blue ribbon graphic.

Nova Notes submission deadline for the upcoming September / October edition has been extended to Saturday, October 15, 2022 - please send submissions to novanoteseditor@halifax.rasc.ca.

Governance - a minor change was made to Halifax Centre By-Law #1, 7.2.1 with respect to the National Council Rep. qualifications now read "Must be an elected Director on the RASC Halifax Centre Board of Directors..."

RASC Halifax Centre welcomes all and excludes no one. Beginning in 2023, there will be a new Board of Directors who will invite a member of the RASC Inclusivity and Diversity committee to provide insight into how we can acquire a more inclusive and diverse membership. Members are welcome to share their thoughts on how we can meet this goal.

Get Involved! The Centre needs volunteers and people to help out!

We Need You!

Why?

**RASC Halifax Centre is OF, FOR and BY the members.
Our Centre is what WE THE MEMBERS make of it.**



2023 Nominations are due by Saturday November 12. Email Peter Hurley (secretary@halifax.rasc.ca)
President and Treasurer positions are being vacated, but all positions may be nominated.

All are welcome to share topics at an upcoming meeting - perhaps a topic, a book review, equipment review or general stories. People are also needed to "emcee" upcoming meetings. Speakers can participate in person or virtually.

Members are also encouraged to get involved in a committee. It is a great way to meet people and have a voice in the many activities sponsored by the Centre.

Upcoming Meeting Dates - November 5 and December 3 (+AGM) Starting in November, the Centre hopes to conduct meetings in a hybrid format.

Special Events:

- October 1 - International Observe the Moon Night
- October 15 - Discovery Centre "Focus on planets"

Annual SCO BBQ has been re-scheduled for Friday, October 21 @5:30 PM ADT, rain date, October 22.

2023 RASC calendars are available for sale via the website.

Condolences extended on behalf of the Centre to David Levy and other family and friends of Wendee Levy who passed away on September 24, 2022.