



# Event Horizon

Volume 33, Number 8  
June 2026



## From The Editor

After nearly 13 years of being your H.A.A. Event Horizon editor, this is my last issue. I've thoroughly enjoyed being your editor for all these years, with all the awesome articles and images contributed by you, the club members.

But it's time for me to move on. To be honest, I need a break, and, soon begins the process of handing this newsletter off to my successor, in time for the September edition. I'm sure it will be in good hands!

Thanks to all of you, and Clear Skies!

*Bob Christmas,*

*Editor*  
*editor 'AT' [amateurastronomy.org](http://amateurastronomy.org)*



## Chair's Report by Kevin Salwach

Happy summer everyone! June brings us to the end of our monthly meetings, and Event Horizon publications, for our first membership year as an incorporation. It's been an eventful seven months, and I could go on and on about everything that's happened since incorporation back in November, but for this month's Chair Report, I'll keep it very brief. The new membership year ends August 31st, meaning we now renew memberships a couple months earlier than we are used to - so hit up Marcus and Ed at the June meeting to renew for 2026-2027, or renew via PayPal on the website before you forget! As is HAA custom, there are no monthly meetings in July or August. Our upcoming June meeting will be our first AGM as a not-for-profit, and following the business portion of the meeting, we will enjoy a great talk from Dr. Phil McCausland of Western University on Historic Fireballs and Meteorites in Canada - you won't want to miss it! Over the summer, we have our annual Perseids Night scheduled for Saturday, August 8th at Binbrook. Otherwise, most of our upcoming scheduled events resume in  
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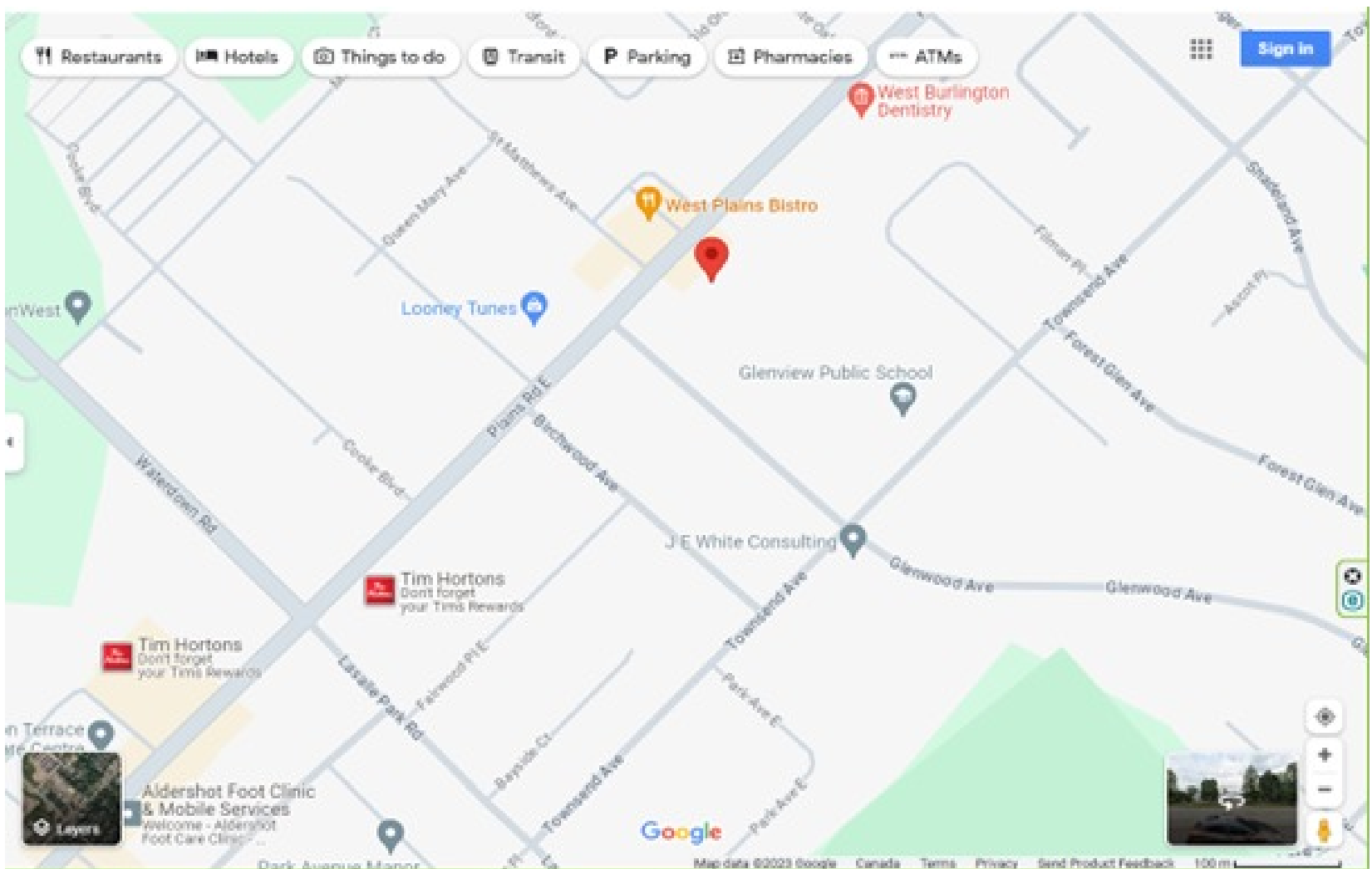
## Chair's Report (continued)

September. That being said it doesn't mean the Club isn't active - keep an eye out in your emails for frequent park openings from the Binbrook Team, as well as public observing nights at Bayfront (if we finally miss the rain!) each month. My September Chair's Report will cover a lot more coming up, but in the meantime, I hope you all have a great summer with lots of observing, lots of fun, and lots of great times. Stay safe, clear skies, and happy observing!

– Kevin Salwach

## Meeting Location

Our upcoming meeting is scheduled for *June 12th, 2026*, at St. Matthew on-the-Plains Anglican Church. St. Matthew's is located at 126 Plains Road East, Burlington, Ontario. Doors open at 7:00 and the meeting begins at 7:30.

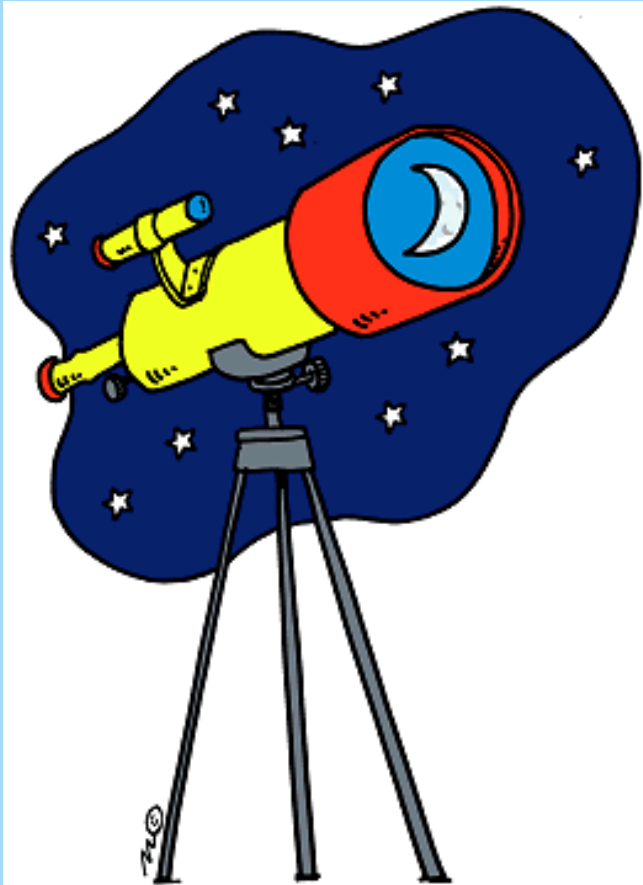


*St Matthew on-the-Plains Anglican Church (indicated with red locator)  
Image generated using Google Maps*

**Masthead Photo:** *The Lagoon Nebula (M8) in Sagittarius*, by Jeff Parsons.

Taken from the Atacama Desert with his Dwarf 3 smartscope, during his September 2025 trip to Chile.

## HAA's Loaner Scope Program



The HAA Loaner Scope Program is back!

It allows members who don't own a telescope to get more up close with the night sky, and it allows members to explore different types of telescopes! Paid members are welcome to borrow a telescope for one month.

We have telescopes of varying expertise levels, as well as various accessories, including various eyepieces.

Please visit the HAA website for more information:  
<https://amateurastronomy.org/telescope-loaner-program/>

If you are interested in borrowing a scope, please contact Jeff Parsons at

[loanerscope@amateurastronomy.org](mailto:loanerscope@amateurastronomy.org).

Telescopes are loaned out on a first come basis.

## HAA Helps Hamilton

The H.A.A. is accepting and collecting donations from our members and guests for local food banks at our general meetings. The H.A.A. has always valued its relationships with food banks in the community, particularly [Hamilton Food Share](#).

If you can't make an in-person meeting, you can make a donation directly to your local food bank.





# HAA Dark Sky Star Party

## Fifth Anniversary

September 11 - September 13, 2026  
Andromeda Meadow  
Warton, Ontario

*Come and celebrate our fifth anniversary of star gazing on the Bruce Peninsula.*

Cost: \$25 per person, \$50 Family  
\$37.50 1 Parent/Guardian & 1 child under 18

### Weekend Events

- Visual observing and astrophotography opportunities
- E.S. Fox Observatory visit
- Dinner onsite Saturday (optional extra cost)
- There are no lectures

More information will be available on the HAA website.

Ground camping and trailer sites onsite  
Motels, Cottages rentals etc. nearby

### ONSITE AMMENITIES

- Portable Washrooms
- Gas generator for charging astronomy equipment only
- Gathering tent

CONTACT INFORMATION  
Sue at  
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Matt at  
[mattmannastro@outlook.com](mailto:mattmannastro@outlook.com)



This is a remote site with no:  
water,  
electricity,  
flush toilets,  
showers,  
electical or water  
hookup for trailers.

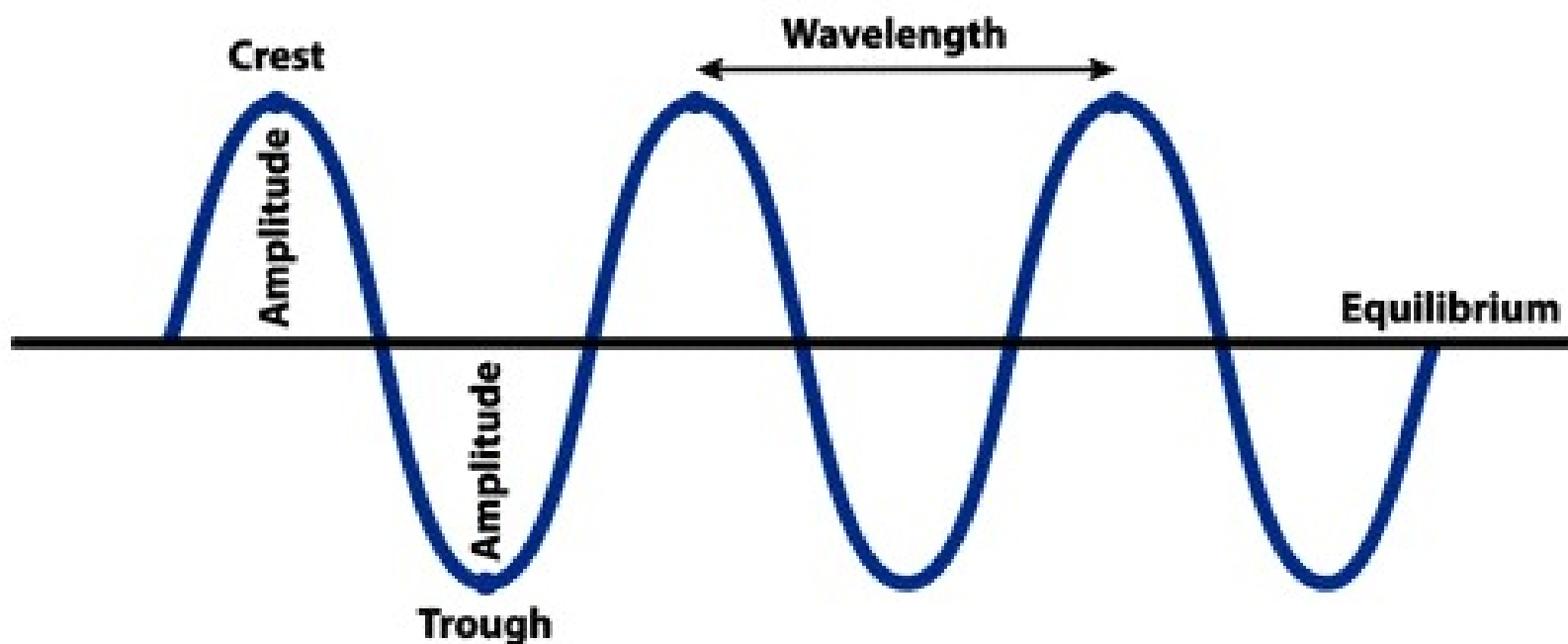
**REGISTRATION OPENS Friday April 17, 2026**



Welcome back, amateur astronomers! In this article, I hope to educate you on a more scientific topic which we haven't covered yet. When a car races past you, you'll hear the familiar sound: "VRRrrrrrrrooom". Scientifically, we can explain this sound using the Doppler Effect! But, before we dive into the Doppler Effect, we first need to understand what a wave is.

Waves are all around us—from the light we see, to the sound we hear, to earthquakes that shake the ground. Waves transport energy from one place to another through something without transporting the thing it's passing through (which is called a medium!) Often, such as with sound waves, the medium is air, because sound travels through air. There are three types of mechanical waves, which are waves that physically vibrate or move the medium without transporting it. To determine each type of wave, we need to examine how and in which direction the medium moves.

## 1. Transverse Wave



<https://lms.edugode.com/courses/science-grade-vi/lesson/transverse-and-longitudinal-waves-2/>

Transverse waves transfer energy by moving the medium's particles back and forth at a 90 degree angle (perpendicular) to the energy movement. As seen in the diagram above, transverse waves have crests and troughs. Crests are the highest point of a wave, where the medium's particles are moved the farthest upward from their rest position. Troughs are the lowest point of a wave, where the medium's particles are moved the farthest downward from their rest position.

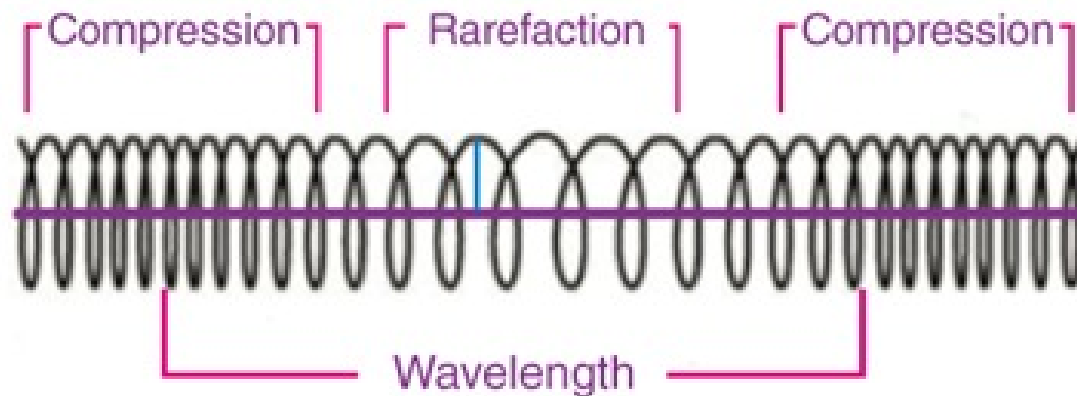
### **HOW TO CREATE YOUR OWN TRANSVERSE WAVE**

**Materials needed: a slinky and a friend**

Grab one end of a slinky while your friend grabs the other end. Ask your friend to hold their end still while you move your end up and down. You should see a transverse wave similar to the diagram above. Although energy moves from you to your friend, the medium (slinky) moves up and down, which is at a 90 degree angle to energy's movement!

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## 2. Longitudinal Wave



<https://byjus.com/physics/longitudinal-waves/>

Longitudinal waves transfer energy by compressing and expanding the medium to move energy forward. In a longitudinal wave, the particles of the medium vibrate parallel to the direction the wave is traveling.

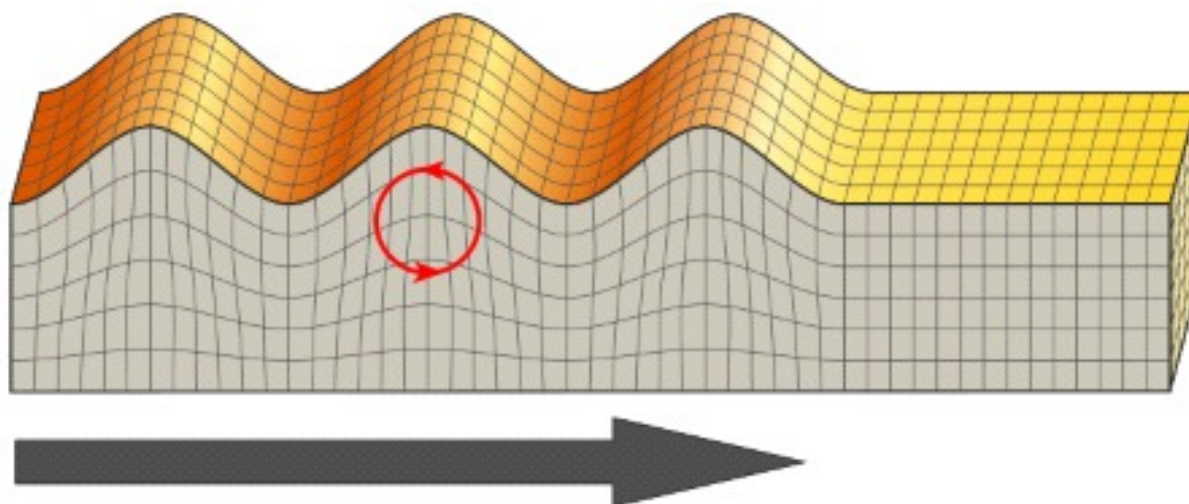
As seen in the diagram above, longitudinal waves have compressions and rarefactions. Compression is a region where particles are pushed closer together. Rarefaction is the opposite: a region where particles are spread farther apart. This happens where the wave "pulls" the medium back. As the wave travels, it creates a repeating pattern of high-pressure compressions and low-pressure rarefactions moving through the medium.

### **HOW TO CREATE YOUR OWN LONGITUDINAL WAVE**

**Materials needed: a slinky and a friend**

Grab one end of a slinky while your friend grabs the other end. Ask your friend to hold their end still while you push and pull it toward and away from you. You'll see bunched up coils (compressions) and stretched out coils (rarefactions) travelling along the slinky!

## 3. Surface Wave



<https://study.com/academy/lesson/what-are-surface-waves-definition-types-examples.html>

Surface waves transfer energy by moving the medium's particles in a circular motion. Surface waves travel along the boundary between two different things, like water and air. The particles in a surface wave move in circles. This is why a rubber duck bobs in a circular motion rather than being pushed forward when a wave goes by. Surface waves are a combination of transverse and longitudinal waves happening at the same time.

*(Continued on [page 7](#))*

## HAA Explorers 2.0 --- Waves and the Doppler Effect (continued)

### **HOW TO CREATE YOUR OWN SURFACE WAVE**

**Materials:** *water, a bowl, and a small stone*

Fill a bowl with water and drop a stone in the middle. Watch the ripples spread outward in circles from the centre. Those are surface waves! The stone hitting the water disturbs the surface, which is the boundary between water and air. The energy spreads outward along that boundary as ripples right along the surface where the two meet.

Now that we understand what a wave is, let's talk about the ***Doppler Effect!***

When a car moves towards you and is making a noise, it continuously emits compressions (sound is a longitudinal wave!) As the source moves closer to you, each compression is emitted from a position slightly closer to you than the last. This causes the compressions to “bunch up” and arrive more frequently. This increases the frequency of sound that you hear, which increases the pitch of the car's sound. As a result, when a car moves towards you, you hear a higher pitched sound.

Then, when the car moves away from you, each compression is emitted from a position slightly further away from you. The compressions then spread out and arrive less frequently, which decreases the sound's frequency. As a result, when the car moves away from you, you hear a lower pitched sound.

The Doppler effect applies to both transverse and longitudinal waves. The example above describes a longitudinal wave, but an example of a transverse wave is light.

***FUN FACT:*** When light waves are impacted by the Doppler effect, instead of their pitch changing, their colour changes. When a light source moves towards you, its waves compress and become more blue (blueshift). When a light source moves away from you, its waves stretch and it becomes more red (redshift). The Doppler effect on light is incredibly tiny at everyday speeds, so we don't see it much on Earth. However, this is actually how astronomers know the universe is expanding. Distant galaxies are all redshifted, meaning they're moving away from us!

### **FINAL DOPPLER EFFECT EXPERIMENT**

**Materials:** *buzzer, a string, and a friend*

Tie a buzzing alarm or battery-powered buzzer to a string. Ask a friend to hold one end of the string high up while the buzzer hangs from it. While the buzzer is making noise, have your friend move the string so the buzzer moves away from you and then towards you again. You'll be able to hear a lower pitch as it moves away and a higher pitch as it moves towards you. This is the Doppler effect in action!

If you want an easier way to hear the Doppler effect, stand on a safe pavement near a road. Listen carefully as a car passes. You'll naturally hear the pitch of the engine drop the moment it passes you. In this experiment, no equipment is needed, just careful listening!

Thanks for reading! We hope you learned something new.

### ***Note from Education Director:***

*Thank you Fiza for an amazing column this past year! We have ALL learned so much! And, interesting factoid, I saw the home where Christian Doppler was born in Salzburg, Austria! Science is everywhere! Have a great summer, everyone! — Jo Ann Salci*



# The Sky for Summer 2026 by Kevin Salwach

Summertime, summertime. As with the dead of winter - there is a trade-off for us amateur astronomers. Warm and enjoyable weather and plenty of objects to look at, but with almost twice the daylight than darkness. June in particular here in Hamilton has the twilight finally fade away completely late in the night around 10PM, only for it return a few short hours later around 4AM. But those precious few hours of dark skies yield a lot for us amateur astronomers. And as summer progresses past the end of June, we swing around yet again as stargazers have since time immemorial, and the nights start getting longer and longer. So, lets dive into the sky for this summer, covering June, July and August.

As always, we'll start off with the naked eye sky, and like I did last year we'll take a fish eye view of the sky in the middle of each month.

June has our spring constellations giving way to summer. Directly overhead in the middle of the month Hercules, Draco and Lyra dominate the zenith. To the west, the late spring constellations of Bootes and Virgo are starting to sink lower, but are still well placed to take in their plethora of galaxies and star clusters. Around them Coma Berenices, Canes Venatici and Ursa Major still linger decently high above the horizon. Over to the south and to the east, the summer constellations of Sagittarius, Scorpius and Cygnus are starting to take their places for the season, with the core of our galaxy and the summer Milky Way slowly swinging its way higher and higher each night.

*(Continued on [page 9](#))*



*The night sky looking towards zenith at midnight on June 15th. Image generated using Stellarium*

## The Sky for Summer 2026 (continued)

One month later, the skies have noticeably shifted, with Cygnus moving overhead, with Aquila close behind it. The summer Milky Way now arches from the southwest to the northeast, and the galactic core is best placed to view the almost unbelievable amount of deep sky objects packed into Sagittarius, Scutum and Serpens, with Ophiuchus well placed nearby. In the west, Virgo is now set with Bootes close behind, and the Keystone in Hercules starts sinking lower and lower as well. Ursa Major's Big Dipper starts swinging low to the northern horizon, while opposite it due south, Scorpius begins to set, soon to be replaced by the fall constellations of Capricornus and Aquarius. Rising in the east we can now see all of Pegasus and Andromeda, surrounded by Triangulum, Delphinus and Lacerta.

(Continued on [page 10](#))



The night sky looking towards zenith at midnight on July 15th. Image generated using Stellarium

## The Sky for Summer 2026 (continued)

Fast forward now to August, and the sky now looks completely different than the start of the summer. While Cygnus is still at zenith, it is now closely joined by Pegasus and Cepheus. In the west, spring is fully behind us - Serpens and Ophiuchus are setting, and bringing the summer Milky Way with them. To the north, the Big Dipper hits its lowest position of the year, while due south the fall water constellations are starting to take their spots. Over in the east, more of the same following them - Pisces and Cetus are starting to come up, and right behind them the first traces of winter as the Pleiades begin to peek out after midnight.

(Continued on [page 11](#))



The night sky looking towards zenith at midnight on August 15th. Image generated using Stellarium

# The Sky for Summer 2026 (continued)

## The Moon

Close to home, the Moon has a good showing this summer. Below are the phases of the Moon for each month this summer.

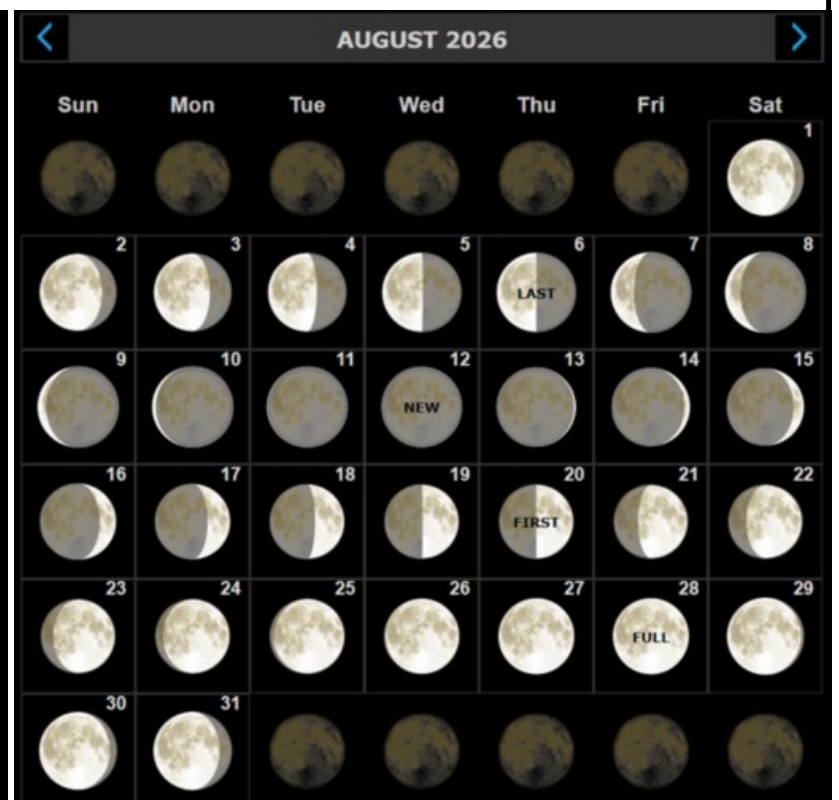
The best weekends for moonless skies this summer are June 13/14, July 11/12 and August 8/9. Of note is that new Moon falls on the peak of the Perseids this year on August 12th - this will hopefully make for a great showing. Some lunar events of note for the summer:

- A few degrees away from Saturn in the early morning sky on June 10th also joined by asteroids 2 Pallas, 4 Vesta and Neptune all within 10 degrees of each other
- A slim crescent Moon two degrees away from the Pleiades in the early morning twilight on June 13th
- The Moon forms a line with Mercury, Jupiter and Venus very low in the west immediately after sunset on June 16th
- The next night (June 17th) it moves within 2 degrees of Venus in the evening sky

(Continued on [page 12](#))



*Moon Phases for June, July and August 2026*



## The Sky for Summer 2026 (continued)

- A slim crescent Moon forms a 5-degree triangle with Mars and Pleaides in the early morning sky on July 11th
- Next to Venus in the evening sky on July 17th
- On August 6th at 11:20PM, the Moon rises in an occultation of the Pleaides - by 1AM it rises well above the horizon but will still be directly in front of the cluster (!!)
- Another very slim crescent Moon forms a tight triangle with Jupiter and Mercury in the morning twilight on August 11th
- As well as being New Moon, August 12th also features a partial solar eclipse visible from Hamilton - the eclipse begins at 12:57PM, with a maximum obscuration of 7% at 1:40PM, and ending at 2:21PM (!!!)

### The Perseid Meteor Shower

August 12th as mentioned is also the peak of the Perseid meteor shower - which (obviously!) occurs this year as the Moon is right on top of the Sun, meaning we're in for a good show. Under dark skies like this year, you can expect upwards of 100 meteors per hour on the peak, with strong showings for a few nights on either side of it.

*(Continued on [page 13](#))*



*Maximum eclipse at 1:40PM on August 12th. Image generated using Stellarium*

## The Sky for Summer 2026 (continued)

### The Planets

Now moving a bit further out to the planets.

**Mercury** begins June rising higher from the 1st onwards until its greatest elongation on the 22nd in the western sky after sunset. However, after about the 14th it becomes too washed out in the solstice twilight, and will only be a viable target for about 30 minutes after sunset. It swings around the Sun in July, beginning to rise around 4AM in the eastern sky in the last week of the month - it lingers low in the eastern twilight until the second week of August as it swings back again. On August 11th at 6AM, it joins Jupiter for an extremely close conjunction - less than half a degree apart. Definitely one to mark down in the calendars. Following this, it moves back to the Sun for the rest of the month, until it effectively disappears for us here in Hamilton until November.



*Jupiter and Mercury at 6AM on August 11th. Image generated using Stellarium*

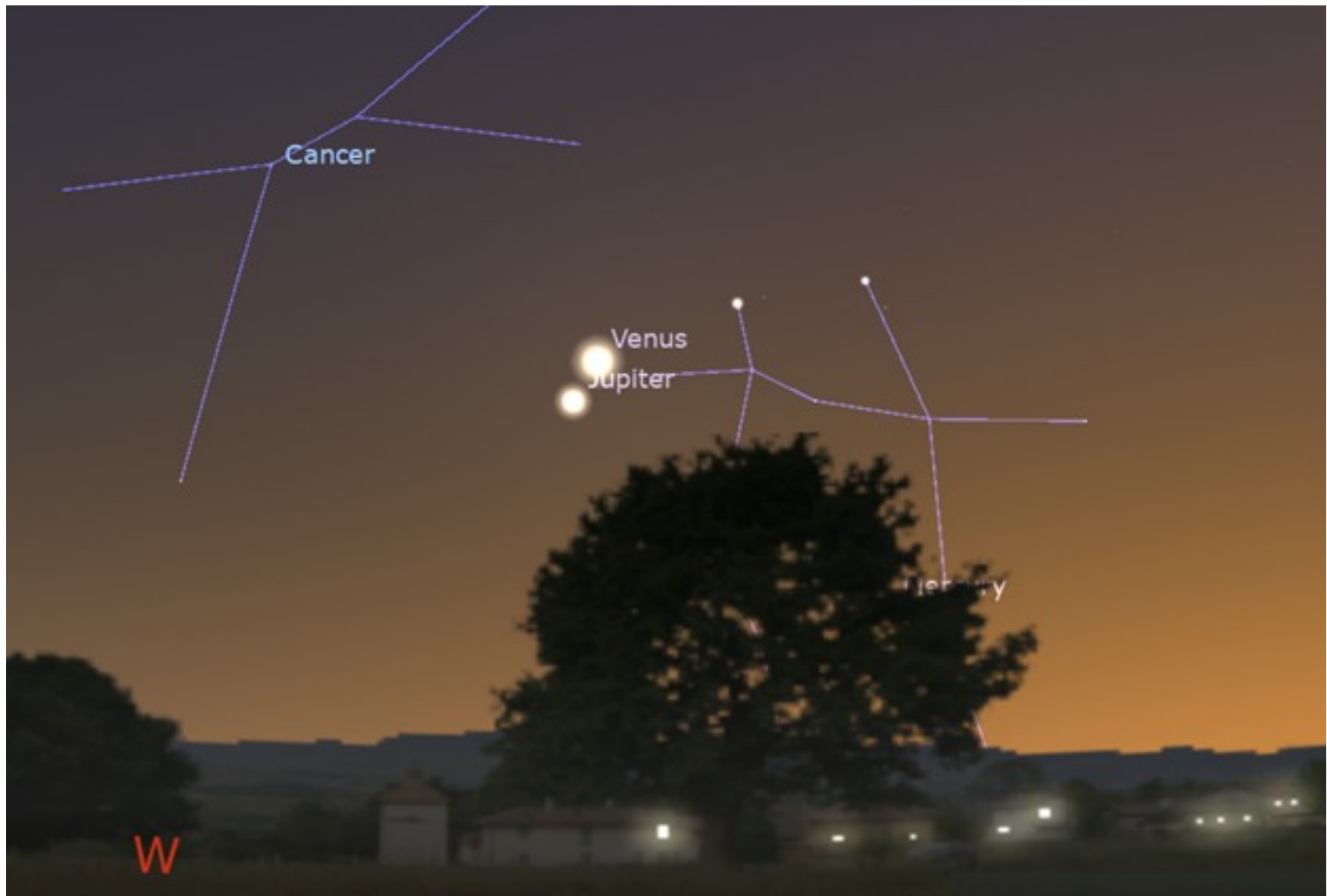
**Venus** starts off the summer strong in the western sky, hanging very high and very late in the first two weeks of June. On the evening of the 9th, it joins Jupiter less than a degree apart in conjunction in the west - a great opportunity for a small scope or astrophotography you won't want to miss.

Venus remains decently high in the west after sunset until the first week of July, when it begins turning back towards the Sun. However it is still visible, albeit far lower, towards the horizon in the twilight glow all the way into September, meaning the brightest planet will be there for viewing all summer long.

**Mars** this summer is a morning object - in early June it rises in the east just after 4AM, rising earlier and earlier as the summer progresses. By the end of August at 5AM it is at 30 degrees altitude in Gemini almost due east. Unfortunately the orbital dynamics make for a less than spectacular viewing window this year, with an apparent size of only 4 arc seconds but nonetheless it is still there in the early morning if you want to try and crank up the magnification.

*(Continued on [page 14](#))*

## The Sky for Summer 2026 (continued)



*Jupiter and Venus near Castor and Pollux at 9:45PM on June 9th. Image generated using Stellarium*

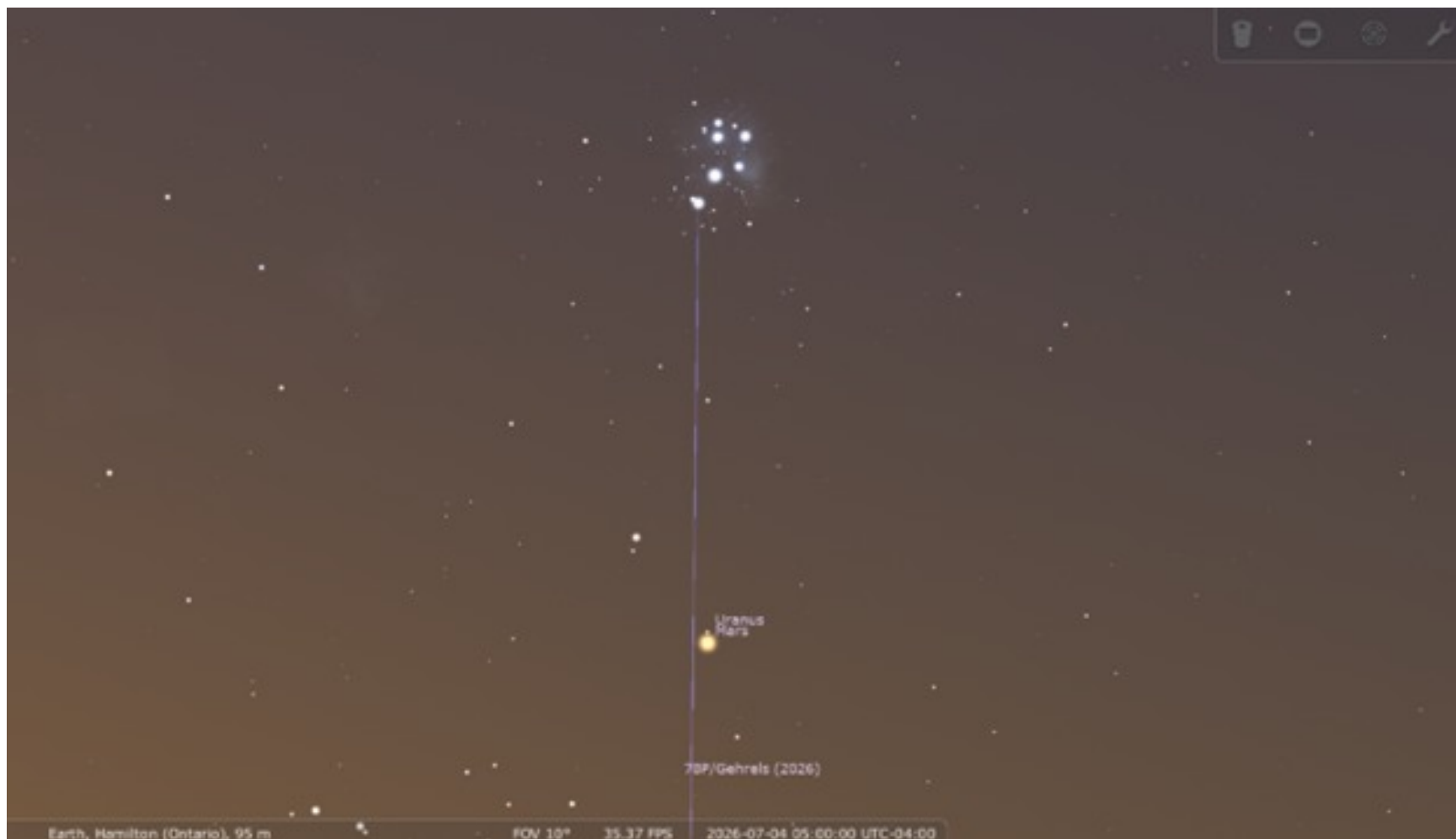
**Jupiter** starts off the summer still hanging low in the west after sunset at the start of June. By July, it dips below the horizon just as the Sun is setting. The first glimpses of the King of Planets on the other side of the Sun can be had very, very low in the east immediately before sunrise in the second week of August, and from there it begins its march higher into the sky as we move into the fall.

**Saturn** begins the summer as an early morning object rising just after 3AM. By the middle of July, it peeks above the horizon around 1AM, and by 11PM in the middle of August. For our early risers (or vampires who never sleep), in the early morning sky of August around 4AM, Saturn is sitting at 50 degrees above the horizon in the southeast, as it moves into a strong showing for the fall. Its rings have opened up and though not at their widest, are offering a good showing of around 6 degrees which coupled with its many visible moons makes for a great view in amateur scopes.

Yet another early morning object, **Uranus** starts off June rising just before the Sun around 5AM in Taurus, and doesn't become meaningfully observable until July. In July however is a rare and rather unusual pairing which will make for a very striking and interesting view. At 5AM on July 4th, almost due east and directly below the Pleiades, Uranus comes within 8 arc seconds of Mars - a ridiculously close conjunction of two planets which don't often meet. Although neither is particularly bright in magnitude or large in apparent size - in any telescope this conjunction will make for a beautiful sight, as Uranus' greenish blue contrasts wonderfully with Mars' orangey red. Uranus slowly moves through Taurus the rest of the summer, rising earlier and earlier into the fall.

*(Continued on [page 15](#))*

## The Sky for Summer 2026 (continued)



*Uranus, Mars and the Pleiades at 5AM on July 4th. Image generated using Stellarium*

Finally, **Neptune** makes yet another morning object, trailing close behind Saturn still in the morning twilight in June in Pisces. By the end of the summer, the most distant planet rises around 10PM and remains visible all night.

### Deep Sky Objects

Moving on to our deep sky - I got about halfway through writing up a list of summer deep sky objects for beginners and advanced observers, when I stumbled upon this absolutely fantastic article from Agena Astro which matched my list almost object for object. And so, below is a link for 25 Summer Deep Sky Objects from beginner through intermediate to advanced with all the information you need to see them!

<https://agenaastro.com/articles/general-astronomy-info/best-25-deep-sky-objects-summer?srsId=AfmBOoq4BF-547a5HqLsoclI7VDOP4wDGr7dzhtsz481NnXPtk2JkrnM>

Any one of those listed advanced objects is a very good challenge for our advanced observers, and requires dark, clear skies, big apertures, highly specific filters and a lot of patience.

All in all, it looks like its going to be a great summer for us stargazers. There is plenty to see, lots going on and quite a few events to keep our hands full until we reconvene in the fall. So as always, clear skies, happy observing, and I'll see you all in September!



**The Splinter Galaxy (NGC 5907) in Draco, with Supernova SN 2026kid, from Burlington ON  
by Bob Christmas**

Taken May 11, 2026 with Seestar S50 in EQ and 4K mode. 360 × 10 seconds; 1 hour total integration time.



**Breaking Dawn at Torrance Barrens Dark Sky Preserve, by Chris Szaban  
The Milky Way, along with satellite tracks and a meteor.**



**Bode's Galaxy (M81) below, and the Cigar Galaxy (M82) above, in Ursa Major, from Binbrook ON  
by Bob Christmas**

Taken May 15, 2026 with Seestar S50 in EQ and 4K mode. 360 × 10 seconds; 1 hour total integration time.



**The Milky Way from Port Rowan ON**

**by Mitchell Brown**



# William J. McCallion Planetarium

McMASTER UNIVERSITY, HAMILTON, ONTARIO

- **Public transit available directly to McMaster campus**
- **Tickets \$10 per person; private group shows \$226**
- **Upcoming shows:**
  - **Jun 3: Introductory Astronomy for Kids — Galaxies**
  - **Jun 10: Any ETs Phoning Home? The Search for Alien Life**
  - **Jun 17: Astronomy in the Middle East**
  - **Jun 20: Introductory Astronomy for Kids — Constellations**
  - **Jun 24: Highlights of the James Webb Space Telescope**
  - **Jul 8: A Solar System Symphony**
  - **Jul 15: That's Where It Happens**
  - **Jul 18: Introductory Astronomy for Kids — Galaxies**
  - **Jul 22: Discovering Mars: A Journey of Robotic Exploration**
  - **Jul 29: Through the Eyes of Cosmic Explorers**
  - **Aug 5: Introductory Astronomy for Kids — Constellations**
  - **Aug 12: Revolutions in Western Astronomy**
  - **Aug 19: The Celestial Bear: The Six Nations' Night Sky**
  - **Aug 22: Introductory Astronomy for Kids — Solar System**
  - **Aug 26: Worshipped, Feared, Understood: The Sun**
- **For show times and further details, visit**  
**<https://planetarium.physics.mcmaster.ca>**

## UPCOMING EVENTS

**June 12, 2026 - 7:30 pm** – H.A.A. Meeting at St. Matthew’s Anglican Church. Our main speaker will be the *Dr. Phil McCausland* of Western University, who will talk about Historic Fireballs and Meteorite Falls in Canada. This is also our Annual General Meeting. Past meetings can be viewed on our [YouTube](#) channel.

**August 8, 2026 - 8:30 pm to 11:30 pm** – H.A.A. Perseids Public Night at Binbrook Conservation Area.

**September 18, 2026 - 7:30 pm** – H.A.A. Meeting at St. Matthew’s Anglican Church.

### 2025-2026 Council

Chair Kevin Salwach

Secretary John Gauvreau

Treasurer Marcus Freeman

Second Chair Chris Szaban

Membership Director Ed Smith

Communications Team Director vacant

Members Service Director vacant

Education Team Director Jo Ann Salci

Observing Team Director Kevin Salwach

Check out the H.A.A. Website  
[www.amateurastronomy.org](http://www.amateurastronomy.org)

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**Digital Platforms Director:**  
[webmaster@amateurastronomy.org](mailto:webmaster@amateurastronomy.org)

All active HAA members have the privilege of access to an exclusive HAA members only dark sky location.

Be on the lookout for e-mails with dark sky observing details. Space is limited.

### The Harvey Garden HAA Portable Library



Contact Information

E-mail: [library@amateurastronomy.org](mailto:library@amateurastronomy.org)