



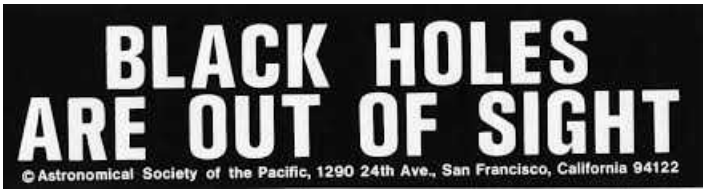
CAPE FEAR Skies

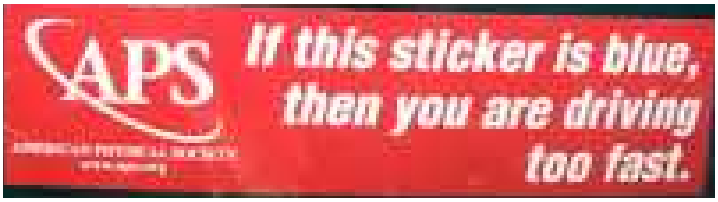
Monthly Newsletter
Cape Fear Astronomical Society
Serving Wilmington, NC and Surrounding Areas

July 2025

Cape Fear Astronomical Society is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.

Messages





Calendar

The full club calendar is available at

https://www.capefearastro.org/calendar.htm

Saturday, July 5

Public Observing at Carolina Beach State Park

Sunday, July 13

★ Gastronomy ★

Watch your email

★ Cape Fear Astro Monthly Meeting ★

7:00pm – 9:00pm - 212 DeLoach Hall; UNCW

Karl Adlon: The Software Side of Karl's Planetary Imaging - Part 1

Also simulcast via Zoom

Events in the Future

7/5 - Public Observing at Carolina Beach State Park

7/13 - CFAS Monthly Meeting. Presentation: Karl: something about Planetary Imaging

8/2 - Public Observing at Carolina Beach State Park

8/10 - CFAS Monthly Meeting. Presentation: Scott Jackson: "Galileo discovers Neptune"

8/30 - Public Observing at Carolina Beach State Prk

9/14 - CFAS Monthly Meeting Presentation: Karl: the rest of something about Planetary Imaging

9/27 - Public Observing at Carolina Beach State Prk

10/4 – Intl Obs the Moon at Cape Fear Museum

10/12 - CFAS Monthly Meeting. Presentation: TBD

10/25 or 11/1 - Public Observing at Carolina Beach State Prk

11/8 - CFAS Monthly Meeting. Presentation: TBD

12/14 - CFAS Holiday Celebration

Presentation Coordinator's Report

by Jon Stewart-Taylor

At the half-way point of the year, here are the remaining presentations planned for the monthly meetings:

- July: Karl Adlon: "Planetary Imaging part one"
- August: Scott Jackson: "Galileo discovers Neptune"
- September: Karl: "Planetary Imaging part two"
- October: Ingram Planetarium
- November: Frank Rich: "Using Setting Circles"
- December: Holiday celebration

So, that's 2025 sorted out. Time to get started on 2026!

If you'd like to do a presentation next year, or have a suggestion for someone who might be willing to do a presentation, please let me know.

The Software Side of Karl's Planetary Imaging - Part 1

by Karl Adlon

A bit about my Presentation. You may have hear this advice to writers: "Write about what you know." When it comes to planetary astrophotography, what I know is FireCapture to record video, AutoStakkert 4 to select and stack best frames, and RegiStax 6 to process stacked image to bring out detail. These 3 software "apps" are what was recommended in 2014 by ZWO what I bought an ASI120MC camera, as did several astronomy club members at that time. Since then, there have been upgrades to them (except for Registax6) and other software developers have come up with their versions of software that performs, in whole or part, the work of these programs.

My Binoculars Plus Mounting Configuration

by Frank Rich

I recently purchased this L Bracket Vixen Rail Bracket from Agena Astro (approx $100).

Perfect to mount my 20 x 80 Binoculars, to my Skywatcher Alt-Az mount.

The added Vixen rail with the phone adapter will be mounted underneath the Binoculars, and extend outward.

This way I can easily mount my phone, to use Astro Hopper to navigate the sky

Visitors Welcome

by George Pappayliou

Attached are a couple pistures of my astronomy shed at the house in Waynesville. The roof rolls off (partially) and the pier rises about 24” to about 6” below the level of the walls. Great views from 340° through about 250°. The remaining 90° is blocked by the house below about 40° elevation. The shed is at 3790 MSL. Visitors welcome.

My Next Observing Program

by Jon Stewart-Taylor

The Astronomical League has a large number of "observing programs", which select a category of objects to observe, define an observing list, and lead you to develop your observing skill and learn more about the objects. If you choose to submit your completed observations to the League, they'll award you a certificate (and sometimes a pin) and publish your accomplishment in the Reflector. During my years as an amateur astronomer, I've completed a number of these, and dipped into others I still have to complete.

The first one I started, and finished, was the Binocular Messier program. I used Kathleen's old Bushnell 10x50s (which her father had given her for birding), and observed mostly from our suburban townhouse neighborhood under 4th magnitude skies. With an occasional trip to better skies to collect fainter objects, I managed to observe and record more than the 50 required clusters, galaxies, and nebulae.

The next one I undertook was the telescopic visual Messier program. This program has two levels: "silver" (70 objects) and "gold (110 objects). I like this program a lot, because it has such a wide variety of objects. It teaches you a lot about how the universe is put together. I submitted for the silver level, and received the certificate. I have since observed the remaining 40 objects, but haven't submitted for the gold level certificate and pin.

The third program was the telescopic Double Star program. This requires one to observe 100 multiple-star systems (it includes not just double stars, but systems with 3, 4, or more members). These were a joy to observe. Many were very beautiful, and some had contrasting colors. Some were easy to split at low powers, some required steady skies and the highest power I could coax out of my scope. Over the course of about a year and a half, I eventually found all 100 targets. I didn't feel the need to submit for a certificate on this one.

After we bought the Seestar S50, the scopes ability to find and image just about anything in the sky quickly and easily inspired me to try the Herschel 400 program (H400). As implied by the name, there are 400 objects on the target list. They include pretty much every kind of object, and as many are faint and in difficult-to-find locations in they sky, doing this program without electronic aid was daunting. The S50 made it, not exactly easy, but certainly attainable. It took me about 18 months to image all 400 objects. I probably could have managed it in only 12 months, but I didn't manage the Virgo and Coma galaxies very well the first time, and had to finish them off on a second pass. I received the certificate and pin while a member of Cape Fear Astro, the first program I completed while here.

After decompressing a bit from the sustained effort to complete the H400 program, I started thinking about what to work on next. I've dabbled at the Lunar program for years. I have completed the unaided-eye and most of the binocular portion, but for some reason tracking down the telescopic lunar features isn't something which holds my attention. I've nibbled at the Constellation program, and really ought to finish it up (it only requires the constellations visible from the northern hemisphere), but somehow I get sidetracked and don't do the sketch required for each target.

But, while doing the H400, I happened to notice that near open cluster NGC 6520 I had captured a dark nebula:

In my notes, it said that the dark nebula was identified in Wikipedia as Barnard 86. These dark nebulae are dust clouds in our galaxy, obscuring the background stars

There is a Dark Nebula observing program. It has a list of 35 required objects which one must observe. There is also another much longer list of optional objects, of which one must observe at least 35. The objects in the lists vary greatly in size, from the Great Rift which spans the sky from Cygnus to Centaurus, to tiny objects requiring an 8" or larger scope to see visually. Because of the variation is size and brightness, the program requires one to observe with eyes, binoculars, and a telescope.

This is the project I plan to tackle for the next year or so. The dust clouds forming the dark nebulae are associated with the arms of our Milky Way, and so the objects are observable largely during the summer and winter, when the arms of our galaxy are near the meridian. I plan to use a cellphone using the NightCap application, mounted on a tripod or on binoculars, to image the very large nebulae. I plan to use the S50 to image the smaller, fainter nebulae. Where I was able to image from my house for most of the H400 objects, for the dimmer dark nebulae I will probably need to image from the club observatory to get darker skies for better contrast, to bring out the dark areas against the background Milky Way.

It seems like it's going to be a challenging project, requiring careful planning (not my strong point) and better-than-average skies to complete. I hope to provide periodic updates here in the newsletter, and maybe a presentation at one of the club meetings when at or near completion.

Betelgeuse Mystery

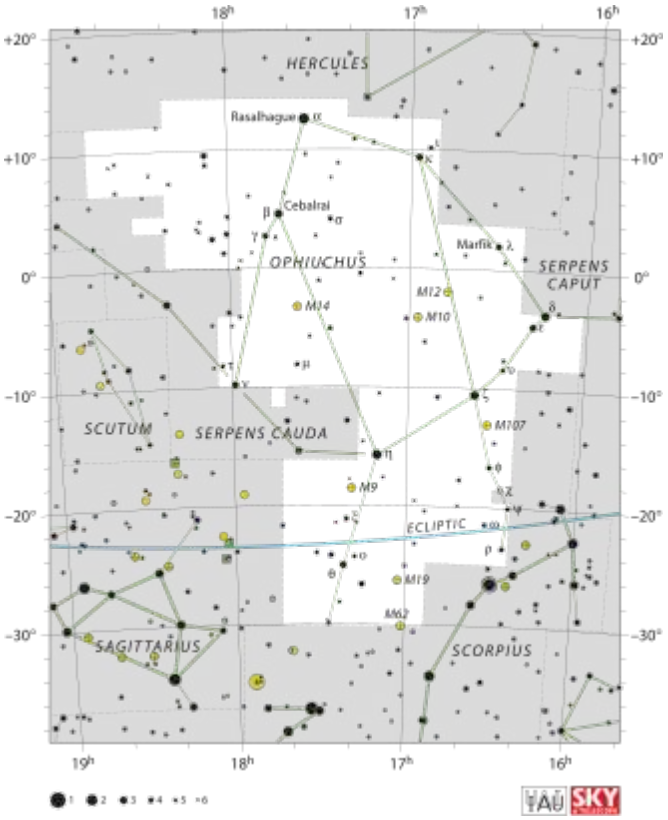
by Roger Blake

It's been in the news recently that Betelgeuse, the orange shoulder star of the Orion constellation, is believed to go supernova anytime within the next few decades. This seemed to contradict what I thought I knew about star classifications. Researching this mystery taught me something I never knew. Astronomers have classified stars as O, B, A ,F ,G, K, M (Oh Be A Fine Girl, Kiss, Me). The table below lists some of the characteristics of these classes. It tells us that if Betelgeuse is expected to go supernova, then it must be one of the massive O, B, A-class stars. But when I Googled "Betelgeuse" I learned it was an M-class star. Huh? The table says M-class stars live for 100's of billions of years. The whole universe is supposed to be only 5 billion years old. How can an M-class star be dying if it's only 5 billion years old? I finally figured it out, explanation below. Stars have life cycles; they're born, they live a long stable life, and then they die in various ways as described in the table below. While they're in their long stable life period, they are said to be on "the main sequence" and they are referred to as main sequence stars. This terminology comes from the Hertzsprung-Russel (H-R) diagrams. The cause of my confusion was that I failed to realize three issues; 1. The stellar classification system is primarily based on stellar surface temperature and spectral characteristics, not mass, 2. I didn't realize that a star classification could change, and 3. The characteristics in the table represent only those of stable main sequence stars. When stars enter their red giant death mode phase, they leave the main sequence. The surface temperature drops and they become red similar to the main sequence M-star characteristics, so their classification changes to M. Since all classes O-K will ultimately become red giants, then I assume all star will become M-stars in their final days.

Class	Maximum Surface Temp	% of All	Life Span (years)	Mass (solar)	Death Mode
M	3,400 °C	77%	100's Billion	0.08 – 0.45	Fade Slowly
K	4,900°C	12%	10's of Billions	0.45 – 0.8	Red Giant to Nova
G	5,700°C	8%	10 Billion	0.8 – 1.04	Red Giant to Nova
F	7,200°C	3%	Few Billion	1.04 – 1.4	Red Giant to Nova
A	9,700 °C	1%	1 Billion	1.4 – 2.1	Red Giant to Supernova
B	30,000 °C	0.1%	10's Millions	2.1 - 16	Red Giant to Supernova
O	210,000 °C	0.0003%	Few Million	16+	Red Giant to Supernova

Serpens Caput

by Jon Stewart-Taylor



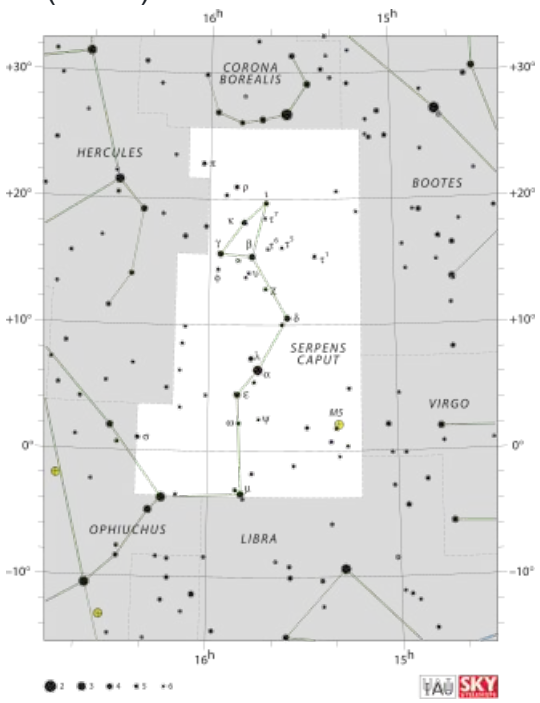
Only one constellation of the 88 officially recognized by the International Astronomical Union comes in two parts.

Serpens is a snake being held by Ophiuchus, and is represented as being held held in the Serpent-Bearer's two hands, one at the head and one near the tail, with the snakes body passing behind the body of the man. So, Serpens come as two haves: Serpens Caput (the head) on the west side of Ophiuchus, and Serpens Cauda (the tail) on the east side.

Since Ophiuchus is a pretty wide constellation, the two halves of Serpens are about 2 hours of Right Ascension apart at their closest. This means the contents of the two are pretty different. I'm going to cover Serpens Caput in this article, and Serpens Cauda (below) in another.

The Caput part of Serpens is bounded by Libra, Virgo, and Corona Borealis. Like those constellations, it covers a part of the sky away from galaxy's spiral arms. Therefore it's not got many bright stars (the brightest is a bit over 2.5 magnitude). The only deep-sky object in the constellation within our own galaxy is the globular cluster M5.

M5 is not near bright guide stars, so it takes some persistence and practical skill to find it. It is spectacular, and definitely worth finding, but largely overshadowed by easy-to-find M13 in Hercules.

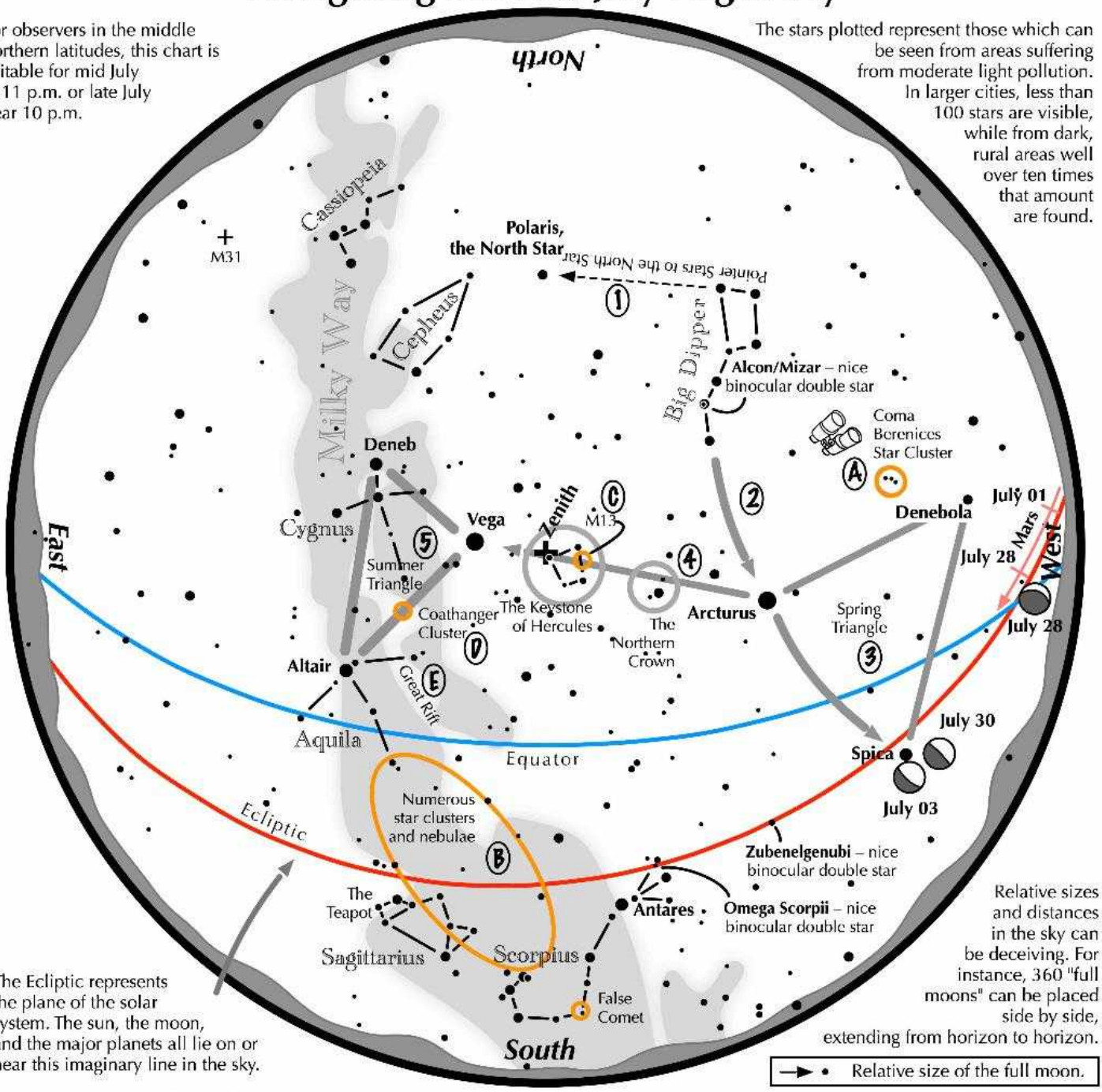


The other notable objects in Caput are galaxies. These include Seyfert's Sextet, Arp 220, and Hoag's Object (a ring galaxy). All of these are small and dim, and some require very large telescopes to detect. So, Caput isn't one of the common destinations for amateurs.

Navigating the mid July Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July near 10 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

Navigating the mid July night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
3. To the northeast of Arcturus shines another star of similar brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The
4. Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
5. High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.

The Astronomical League
OC
Open Cluster Program

M6 & M7

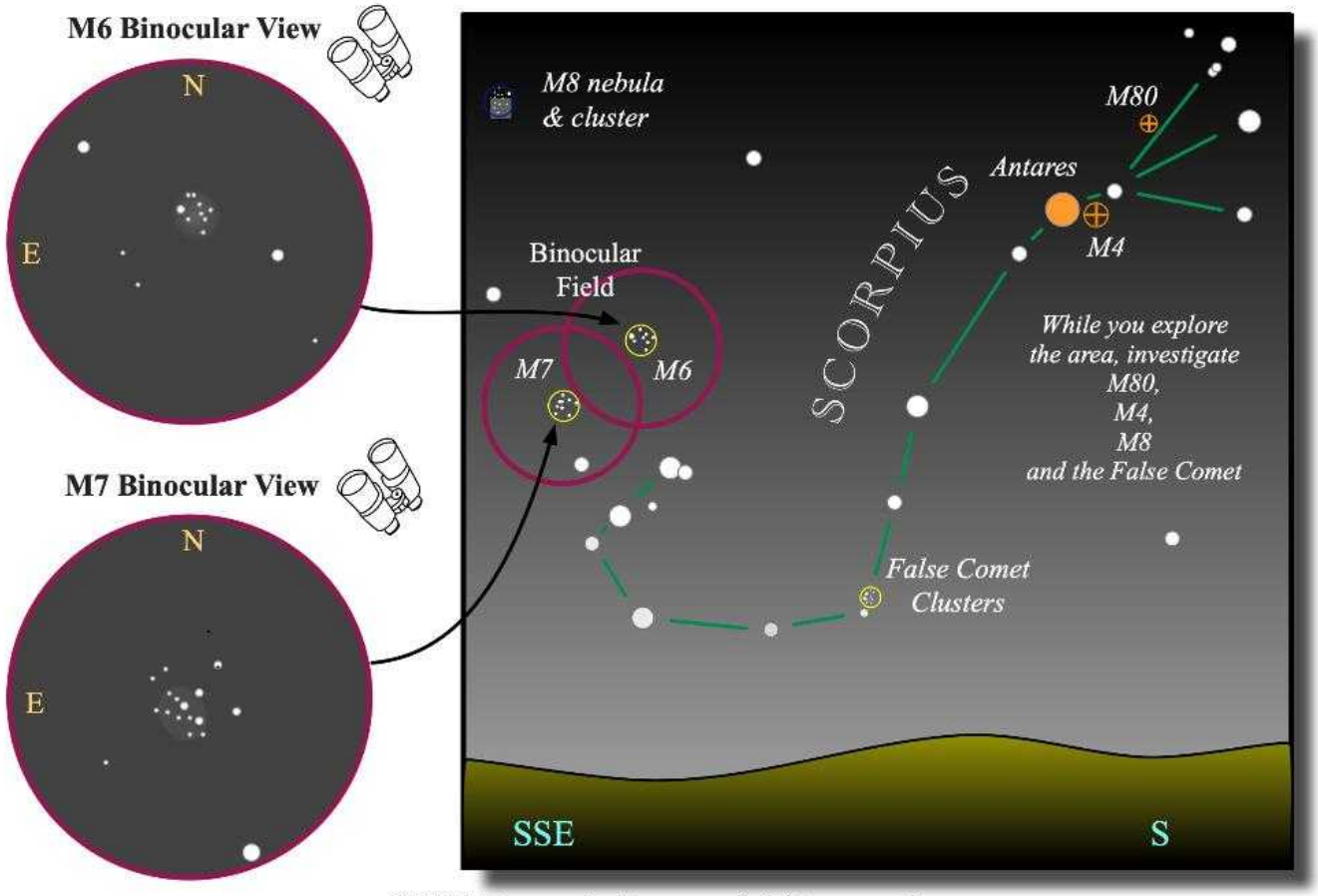
When these two big, bright, and beautiful open star clusters appear in the early evening in mid June, summer is not far behind.

If you have recently begun your journey under the stars, why not whet your appetite by exploring southeastern Scorpius and its two wonderful open star clusters, M6 & M7. You will return to them year after year!

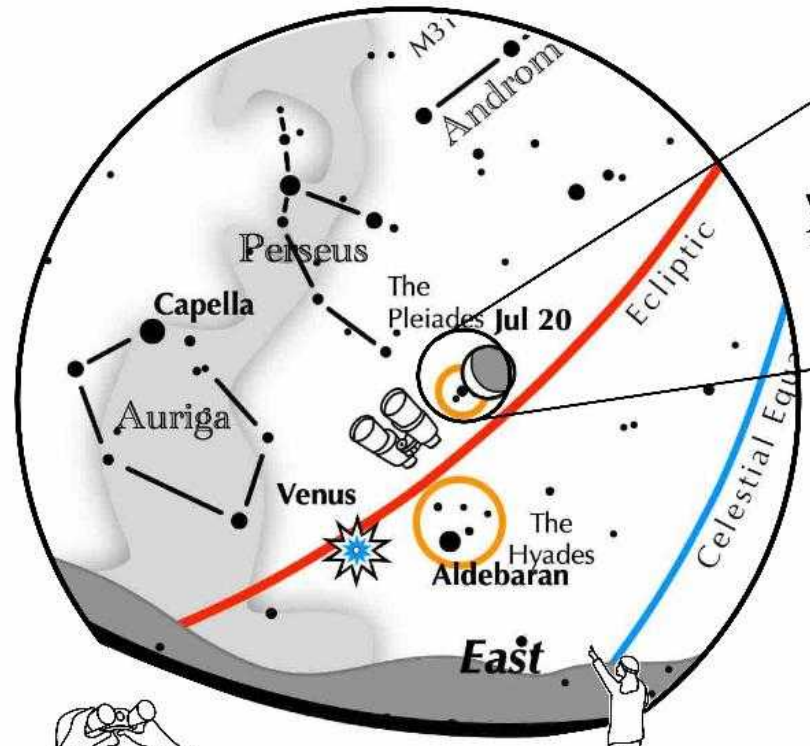
While they are visible to the unaided eye from a dark location, binoculars help greatly.
1. Identify Scorpius standing low in the south-southeast on a late spring or early summer evening. As summer proceeds, it is found low in the south, then low in the southwest in the early fall.
2. From red Antares, direct your gaze southward down the scorpion's back, then turn eastward.
3. When its tail hooks northward, continue the length of that hook.
4. M6 and M7 should be plainly visible in the binocular field.

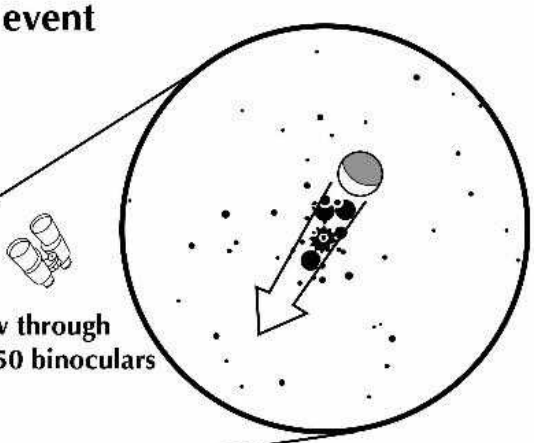
M6:
A faint hazy glow is seen by the unaided eye from a dark, clear site. Two dozen stellar lights can be discerned with 10x50 binoculars.

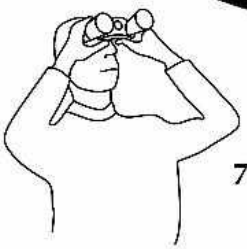
M7:
A glittery glow is easily spotted off the scorpion's tail by the unaided eye. Binoculars reveal many faint stars.



If you can observe only one morning celestial event this month, consider this one:







East-northeast
75 minutes before sunrise
on July 20.

Crescent moon occults the Pleiades

Look to the east-northeast 75–90 minutes before sunrise.

- On July 20 at 4:10 a.m. EDT, look for the crescent moon and the Pleiades low in the east-northeast.
- When the moon rises for West Coast viewers, the event will already be in progress.
- With binoculars, watch Pleiads disappear one-by-one behind the bright leading edge of the moon, and reappear along the moon's dark edge.
- The moon moves eastward about its own diameter every hour.

What a great way to start your day!

Get to Know YOUR Astronomical League

The Astronomical League (Astroleague or AL) is one of the largest amateur astronomical organizations in the world. The organization serves to encourage an interest in astronomy (especially amateur astronomy) and promote the science of astronomy by:

- ✓ fostering astronomical education;
- ✓ providing incentives for astronomical observation and research;
- ✓ assisting communication among amateur astronomical societies.

CFAS is one of over 300 member societies affiliated with the Astroleague. Your membership in CFAS allows you take full advantage of this relationship so periodically review the information below to see how the Astroleague can support your astronomical interests and endeavors.

Astroleague Home Page	www.astroleague.org
Astroleague YouTube Channel	https://www.youtube.com/channel/...
AL Observing Programs *(Alphabetical Listing)*	https://www.astroleague.org/alphabeticobserving/
Night Sky Tools	https://www.astroleague.org/navigating-the-night-sky-guides/
Astroleague Store	https://store.astroleague.org/
Current and Past Issues of *Reflector Magazine*	https://www.astroleague.org/reflector/
AL Related News, Information and Reminders	Information: The AL hopes to resume hard copy issues of Reflector with the June 2025 edition. Click HERE for the Astroleague News Page and be sure to check the Astroleague Home Page weekly for new and important posts. Contact Hank Lyon, hlyon8448@gmail.com, for any changes to your Reflector delivery preferences (US Mail, Email or Both).
Astroleague Home Page	www.astroleague.org

The Astroleague Correspondent (ALCor) is your link between CFAS and the Astroleague. Don't hesitate to contact your ALCor if you need assistance with anything Astroleague related whether its general information or detailed coordination of observing program completions for certification. Check back each month to see anything new.

CFAS Correspondence:

Please contact the society at: CFAS, P.O. Box 7685, Wilmington, NC 28406

Members are welcome and encouraged to submit articles or other input for *"CAPE FEAR SKIES"*. Submit any and all interesting items for publication to Karl Adlon, Editor (email kmja79@yahoo.com).

Cape Fear Astronomical Society is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.

CFAS Officers:

President:	Ben Steelman
Vice-Pres:	Jon Stewart-Taylor
Associate VP	Karl Adlon
Secretary:	George Pappayliou
Treasurer:	Bill Cooper
ALCor	Hank Lyon

Dues: Dues for 2025 are $25 for Individual and $32 for Family Membership. Students dues are $5 per year.

Mail to: CFAS, P.O. Box 7685, Wilmington, NC 28406

Or you can pay electronically by following this link: https://www.capefearastro.org/payment.htm

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