

**Alnitak makes a bright beacon for the Flame Nebula (NGC 2024)
and the illusive Horsehead Nebula (IC 434) in Orion.**

Photo by Gary Kronk.

INSIDE THIS ISSUE

- All About RBAC's Monthly Observing Lists
- RBAC's Mark Brown to Host an Astronomy Day Event in Carlisle, Pennsylvania
- Discovering Options Outreach on May 14
- Extra RBAC Meeting this June • GOES-R, Zombie Fighter • RBAC's Observing Lists



River Bend Astronomy club serves astronomy enthusiasts of the American Bottom region, the Mississippi River bluffs and beyond, fostering observation, education, and a spirit of camaraderie.

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Affiliated with the Astronomical League, dedicated to fostering astronomical education, providing incentives for astronomical observation and research, and assisting communication among amateur astronomical societies.
www.astroleague.org



Check out our **online calendar** on the NASA Night Sky Network, a nationwide coalition of amateur astronomy clubs bringing the science, technology and inspiration of NASA's missions to the general public.

Monthly Meetings

Saturday, May 7, 2011 • 7:00 PM

Saturday, June 4, 2011 • 7:00 PM

☀ Saturday, June 25, 2011 • 7:00 PM

Saturday, July 30, 2011 • 7:00 PM

For meeting locations, please see our calendar at

www.riverbendastro.org.

Looked Up Lately?

Join River Bend Astronomy Club

Want to learn more about astronomy? The members of River Bend Astronomy Club invite you to join. You won't need expensive tools or special skills - just a passion for observing the natural world.

- Meetings offer learning, peeks through great telescopes, and fun under the stars.
- You will receive the club newsletter, *Current Astronomy*, packed with news and photos.
- Get connected with our member-only online discussion group.
- Borrow from the club's multimedia library.
- Borrow from the club's selection of solar telescopes.
- And that's not all! Through club membership you also join the Astronomical League, with its special programs and colorful quarterly newsletter *The Reflector* to enrich your hobby.
- We meet monthly, observe regularly, email news and quips constantly, and generally have a good time. Won't you join us?

Name _____
 Address _____
 City _____ State _____ Zip _____
 Phone _____
 Email address _____
 Where did you hear of our club? _____

How long have you been interested in astronomy? _____
 Do you have optical equipment? _____
 Are you afraid of the dark? ___Yes ___No (just kidding)
 I am submitted my application for:
 _____Adult Membership(s) _____Youth Membership(s)
 \$20/year each \$15/year each
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 I enclose a check for \$_____ made out to:
 Mike Veith, Treasurer, RBAC
 Signature _____
 Date _____

Mail to: **River Bend Astronomy Club**
 c/o Mike Veith, 1121 St. Louis St., Edwardsville, IL 62025.

All About RBAC's Monthly Observing Lists

By Bill Breeden

At the end of each issue of *Current Astronomy*, you will find helpful monthly observing lists. These lists have been an important part of the newsletter for a while now, but there are a few facts about these lists that you may not have realized.

So, I want to share some fun facts about these helpful observing lists.

1. These lists are presented in four sets of objects that the majority of observers should find interesting and, most of all, visible in a small telescope. The first list is double stars. They are listed first because they are easiest to observe, and can even be observed before it is completely dark outside. They are also observable from the city and suburbs. These double stars are from the Astronomical League's double star observing club. The next list is Messier Objects, from Charles Messier's 18th century catalog of deep-sky objects. Third are objects from the Caldwell Catalog, which consists primarily of deep-sky objects from the NGC list popularized by Patrick Caldwell-Moore. Last are objects from the Royal Astronomical Society of Canada's list of 110 non-Messier deep-sky objects.

2. The lists are set up in such a way that if you observe all the objects in each list each month, you will have observed all the objects in the four catalogs listed above over the course of one year! Be aware that objects in the Caldwell Catalog numbered above 75 are below our horizon and are not observable from North America.

3. The lists are sorted by object number within each list, so it is easy to keep track of the objects you have observed. It is also

quick and easy to look up an object on the list.

4. These lists provide enough detail to either look them up on a star chart, or punch them in to a Goto telescope. For instance, double stars list their respective constellations so you can find them on a star chart. They also list SAO catalog numbers, which most GOTO telescopes can use for locating them. Deep-sky objects show right ascension (RA) and declination (decl.) of each object as well.

5. These lists are limited to about magnitude 11 (with a few exceptions so that entire catalogs are covered). This ensures that these objects are within reach of reasonably sized telescopes.

6. Each month, these lists contain objects that transit (reach their highest point in the sky) around 10:00 pm. Before that time, the listed objects will be in the eastern part of the sky. After 10:00 pm, they will be setting in the west. If you are observing well before 10:00 pm, you can easily observe objects on the previous month's list. Likewise, if you stay out late, you can begin observing objects on next month's list. On a good night, you could observe objects from 6 months' lists, but the point of these lists is to give you a chance to concentrate on objects that are well-placed in the sky for each month. Don't rush through the lists - take your time and enjoy the view. And certainly, don't hesitate to visit your favorites time and time again.

Happy observing! 

RBAC's Mark Brown to Host an Astronomy Day Event in Carlisle, Pennsylvania

By Mark Brown

Lamberton Middle School Celebrates National Astronomy Day!

PLEASE NOTE: *This event is in addition to our May 7 observing session at Tamalco Boat Ramp at Carlyle Lake, IL, and does not replace that session.*

Carlisle, Pennsylvania - On May 7, Lamberton Middle School will be bustling with visitors interested in science that's out of this world and science that causes us to look up.

Saturday, May 7, in cooperation with Carlisle Area School District (CASD), we will be "Bringing Astronomy to the Public" by celebrating National Astronomy Day. This national celebration gives astronomy-lovers a chance to share their passion with the astronomy-curious. Rain or shine, Carlisle Area School District teachers, students, local astronomers, and parent volunteers will be available to share and demonstrate the wonders of astronomy. This event will consist of two programs. From 2:00 - 5:30pm astronomy-related activities for all ages will take place inside and outside of Lamberton Middle School. Weather permitting, local astronomers will provide safe telescope views of the sun.

Participants will be able step inside a homemade planetarium, stroll along a walking tour of our solar system, see images of our solar system in 3D, learn about constellations, create their own star clocks and constellation finders, learn why the Moon has phases, and even test their knowledge about astronomy and space science, just to name a few. Visitors can also learn about comets and witness the making of a comet's nucleus.

An evening session will occur outside Lamberton Middle School from 8:00-10:30 pm. Weather permitting; telescopes will be set up for viewing the moon, Saturn, and other celestial objects. Visitors will also be able to enjoy an evening night sky tour of the visible constellations. In the event of inclement weather, telescopes will be set up inside the school along with other evening activities.

Participants at Astronomy Day 2011 will have the chance to win a telescope and other door prizes. But you must be physically present on-site at the time of the drawing to win. Drawing to be held at 5:00pm.

Lamberton Middle School is located just off of Interstate 81 (exit 47 - South Hanover Street) in Carlisle, PA.

WHAT: National Astronomy Day
WHEN: Saturday, May 7, 2011
Afternoon Event - 2:00pm-5:30pm
(Weather permitting - Solar Viewing)

Evening Telescope Viewing - 8:00pm to 10:30pm (Weather permitting)
WHERE: Lamberton Middle School
777 S. Hanover Street
Carlisle, PA 17013
717-240-6800 x15805

ADMISSION: THIS EVENT IS FREE AND OPEN TO THE PUBLIC

Put Saturday, May 7th on your calendar for an afternoon and evening of incredible astronomy fun!

For more information, please visit <http://www.carliseschools.org/>. To schedule an interview with one of the coordinators, please contact Ms. Jean Fendrich at 717-385-3802, (email: fendrichj@carliseschools.org) or Mr. Mark Brown at 717-254-6825 (email: loneastronomer@comcast.net). **RBAC**

Discovering Options Outreach on May 14

By Bill Breeden



The St. Louis Astronomical Society (SLAS) received a request for a star party from Discovering Options, a non-profit organization that helps at-risk children avoid drug use and other self-destructive behaviors through mentoring and comprehensive after-school programming that encourages family involvement. SLAS realized that this event would be easier served by us at RBAC, so this event is scheduled for Saturday, May 14 at 8:00 pm. Setup will be at 6:30 pm or so. Charmaine Smith contacted us with this message:

“Would love to have 1-3 telescopes set up for viewing celestial bodies/constellations. Urban, at risk children have no telescope viewing experience and little knowledge of night sky. Information about stars/planets moons desirable in language for elementary aged St. Louis public school students. Topics: whatever planets/stars/moons visible. "what is a shooting star?" Hope to INSPIRE/EXPOSE kids to wonders of space!”

The star party will be held at the private farm of Barb and Tom Wilcher, 26747 Sunderland Road, Jerseyville, IL 62052. Use Google Maps for directions rather than GPS coordinates. If you decide to volunteer, remember to RSVP on Night Sky Network.

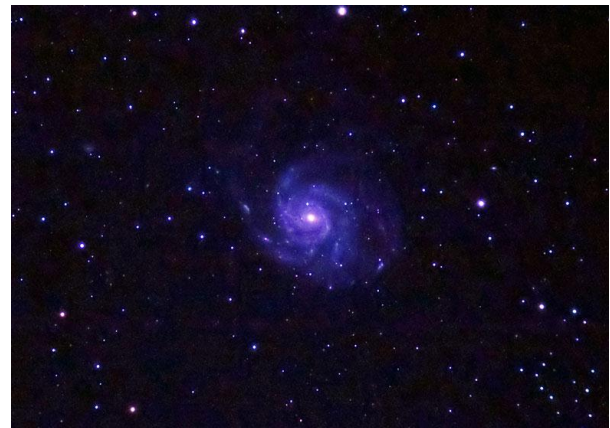
This event will be canceled in case of clouds or rain. We hope to see you there! **RBAC**

Extra RBAC Meeting this June!

By Bill Breeden

Enjoy an extra opportunity to observe the night sky with fellow members of the River Bend Astronomy Club this summer! Due to the way the Moon phases line up this year, it was possible to plan two observing events this June. We will meet on Saturday, June 4, then again on Saturday, June 25. This can happen when the New Moon begins to creep really close to the beginning of the month, and a second dark-of-the-moon weekend happens again at the end of the same month. It's really a treat when this happens in the summer!

At press time, it was uncertain where these meetings would take place. Please see our website at riverbendastro.org for meeting locations. **RBAC**



M101, galaxy in Ursa Major.
Photo © 2011 by Gary Kronk.



GOES-R, Zombie Fighter

by Dr. Tony Phillips

On April 5, 2010, something eerie happened to the Galaxy 15 telecommunications satellite: It turned into a zombie.

The day began as usual, with industry-owned Galaxy 15 relaying TV signals to millions of viewers in North America, when suddenly the geosynchronous satellite stopped taking commands from Earth. It was brain dead! Like any good zombie, however, its body continued to function. Within days, Galaxy 15 began to meander among other satellites in geosynchronous orbit, transmitting its own signal on top of the others'. Satellite operators scrambled to deal with the interference, all the while wondering what happened?

In horror movies, zombies are usually produced by viruses.

"In this case, the culprit was probably the sun," says Bill Denig of the National Geophysical Data Center in Boulder, Colorado. He and colleague Janet Green of NOAA's Space Weather Prediction Center recently led a study of the Galaxy 15 anomaly, and here are their conclusions:

On April 3rd, a relatively minor solar flare launched a cloud of plasma toward Earth. Galaxy 15 had experienced many such events before, but this time there was a difference.

"Galaxy 15 was just emerging from the shadow of Earth when the cloud arrived and triggered a geomagnetic storm," explains Denig. Suddenly exposed to sunlight and the ongoing storm, "the spacecraft began to heat up and charge [up]."

Electrons swirling around Galaxy 15 stuck to and penetrated the spacecraft's surface. As more and more charged particles accumulated, voltages began to rise, and—zap!—an electrostatic discharge occurred. A zombie was born.

"At least, this is what we suspect happened based on data collected by GOES satellites in the vicinity," he says. "We'll be able to diagnose events like this much better, however, after GOES-R is launched by NASA in 2015."

GOES-R is NOAA's next-generation Geostationary Operational Environmental Satellite. One of the instruments it will carry, a low-energy electron counter, is crucial to "zombie fighting." Low energy-electrons are the ones most likely to stick to a spacecraft's surface and cause brain-frying discharges. By monitoring these particles in Earth orbit, GOES-R will provide better post-mortems for future zombie outbreaks. This could help satellite designers figure out how to build spacecraft less susceptible to discharges. Also, GOES-R will be able to issue alerts when dangerous electrons appear. Satellite operators could then take protective action—for example, putting their birds in "safe mode"—to keep the zombie population at bay.

Meanwhile, Galaxy 15 is a zombie no more. In late December 2010, after 9 months of terrorizing nearby spacecraft, the comsat was re-booted, and began responding to commands from Earth again.

All's well that ends well? True zombie fighters know better than to relax. Says Denig, "we're looking forward to GOES-R."

You and the kids in your life can learn about space weather at <http://scijinks.gov/space-weather-and-us>.



Planetary collisions such as shown in this artist's rendering could be quite common in binary star systems where the stars are very close.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

RBAC's Monthly Observing Lists

These lists include brighter deep-sky objects that transit near 10:00 PM each month.



May Observing List

Prepared by Bill Breeden

Double Stars

- _____ 24 Comae Berenices SAO 100160 Const. COM Type DS RA 12 35.1 Decl. +18° 23' Mag. 5.2 6.7
- _____ 32 Camelo- pardalis SAO 2101 Const. CAM Type DS RA 12 49.2 Decl. +83° 25' Mag. 5.3 5.8
- _____ Alpha Canum Venaticorum SAO 63256 Cor Caroli Const. CVN Type DS RA 12 56.0 Decl. +38° 19' Mag. 2.9 5.5
- _____ Delta Corvi SAO 157323 Algorah Const. CRB Type DS RA 12 29.9 Decl. -16° 31' Mag. 3.0 9.2

- _____ Gamma Virginis SAO 138917 Porrima Const. VIR Type DS RA 12 41.7 Decl. -01° 27' Mag. 3.5 3.5
- _____ Zeta Ursae Majoris SAO 28737 Mizar Const. UMA Type DS RA 13 23.9 Decl. +54° 56' Mag. 2.3 4.0 4.0

Messier Objects

- _____ M3 NGC5272 Const. CVN Type GC RA 13 42.2 Decl. +28 23 Mag. 6.3
- _____ M40 WIC4 Const. UMA Type DS RA 12 22.4 Decl. +58 05 Mag. 9.1
- _____ M49 NGC4472 Const. VIR Type GAL RA 12 29.8 Decl. +08 00 Mag. 8.5
- _____ M51 NGC5194 Whirlpool Galaxy Const. CVN Type GAL RA 13 29.9 Decl. +47 12 Mag. 8.1
- _____ M53 NGC5024 Const. COM Type GC RA 13 12.9 Decl. +18 10 Mag. 7.6
- _____ M58 NGC4579 Const. VIR Type GAL RA 12 37.7 Decl. +11 49 Mag. 9.2
- _____ M59 NGC4621 Const. VIR Type GAL RA 12 42.0 Decl. +11 39 Mag. 9.6
- _____ M60 NGC4649 Const. VIR Type GAL RA 12 43.7 Decl. +11 33 Mag. 8.9
- _____ M61 NGC4303 Const. VIR Type GAL RA 12 21.9 Decl. +04 28 Mag. 10.1
- _____ M63 NGC5055 Const. CVN Type GAL RA 13 15.8 Decl. +42 02 Mag. 9.5
- _____ M64 NGC4826 Black Eye Galaxy Const. COM Type GAL RA 12 56.7 Decl. +21 41 Mag. 8.8
- _____ M68 NGC4590 Const. HYA Type GC RA 12 39.5 Decl. -26 45 Mag. 8
- _____ M83 NGC5236 Const. HYA Type GAL RA 13 37.0 Decl. -29 52 Mag. 7.6
- _____ M84 NGC4374 Const. VIR Type GAL RA 12 25.1 Decl. +12 53 Mag. 9.3
- _____ M85 NGC4382 Const. COM Type GAL RA 12 25.4 Decl. +18 11 Mag. 9.3
- _____ M86 NGC4406 Const. VIR Type GAL RA 12 26.2 Decl. +12 57 Mag. 9.7
- _____ M87 NGC4486 Const. VIR Type GAL RA 12 30.8 Decl. +12 24 Mag. 9.2
- _____ M88 NGC4501 Const. COM Type GAL RA 12 32.0 Decl. +14 25 Mag. 10.2
- _____ M89 NGC4552 Const. VIR Type GAL RA 12 35.7 Decl. +12 33 Mag. 9.5
- _____ M90 NGC4569 Const. VIR Type GAL RA 12 36.8 Decl. +13 10 Mag. 10
- _____ M91 NGC4548 Const. COM Type GAL RA 12 35.4 Decl. +14 30 Mag. 9.5
- _____ M94 NGC4736 Const. CVN Type GAL RA 12 50.9 Decl. +41 07 Mag. 7.9
- _____ M98 NGC4192 Const. COM Type GAL RA 12 13.8 Decl. +14 54 Mag. 11.7
- _____ M99 NGC4254 Const. COM Type GAL RA 12 18.8 Decl. +14 25 Mag. 10.1
- _____ M100 NGC4321 Const. COM Type GAL RA 12 22.9 Decl. +15 49 Mag. 10.6
- _____ M104 NGC4594 Sombrero Galaxy Const. VIR Type GAL RA 12 40.0 Decl. -11 37 Mag. 8.7
- _____ M106 NGC4258 Const. CVN Type GAL RA 12 19.0 Decl. +47 18 Mag. 8.6

Caldwell Objects

- _____ C003 NGC4236 Const. DRA Type SG RA 12 16 42.00 Decl. +69 28 00.0 Mag. 9.7
- _____ C021 NGC4449 Const. CVN Type IG RA 12 28 12.00 Decl. +44 06 00.0 Mag. 9.4
- _____ C026 NGC4244 Const. CVN Type SG RA 12 17 30.00 Decl. +37 49 00.0 Mag. 10.6
- _____ C029 NGC5005 Const. CVN Type SG RA 13 10 54.00 Decl. +37 03 00.0 Mag. 9.8
- _____ C032 NGC4631 Const. CVN Type SG RA 12 42 06.00 Decl. +32 32 00.0 Mag. 9.3

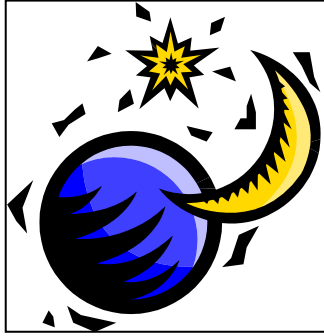
_____ C035 NGC4889 Const. COM Type EG RA 13 00 06.00 Decl. +27 59 00.0 Mag. 11.4
 _____ C036 NGC4559 Const. COM Type SG RA 12 36 00.00 Decl. +27 58 00.0 Mag. 9.8
 _____ C038 NGC4565 Const. COM Type SG RA 12 36 18.00 Decl. +25 59 00.0 Mag. 9.6
 _____ C045 NGC5248 Const. BOO Type SG RA 13 37 30.00 Decl. +08 53 00.0 Mag. 10.2
 _____ C052 NGC4697 Const. VIR Type EG RA 12 48 36.00 Decl. -05 48 00.0 Mag. 9.3
 _____ C060 NGC4038 The Antennae Const. CRV Type SG RA 12 01 54.00 Decl. -18 52 00.0 Mag. 11.3
 _____ C061 NGC4039 The Antennae Const. CRV Type SG RA 12 01 54.00 Decl. -18 53 00.0 Mag. 13
 _____ C077 NGC5128 Cen A Radio Source Const. CEN Type EG RA 13 25 30.00 Decl. -43 01 00.0 Mag. 7
 _____ C080 NGC5139 Omega Centauri Const. CEN Type GC RA 13 26 48.00 Decl. -47 29 00.0 Mag. 3.6
 _____ C083 NGC4945 Const. CEN Type SG RA 13 05 24.00 Decl. -49 28 00.0 Mag. 9.5
 _____ C084 NGC5286 Const. CEN Type GC RA 13 46 24.00 Decl. -51 22 00.0 Mag. 7.6
 _____ C094 NGC4755 Jewel Box Cluster Const. CRU Type OC RA 12 53 36.00 Decl. -60 20 00.0 Mag. 4.2
 _____ C098 NGC4609 Const. CRU Type OC RA 12 42 18.00 Decl. -62 58 00.0 Mag. 6.9
 _____ C099 Coal Sack Const. CRU Type DN RA 12 53 00.00 Decl. -63 00 00.0 Mag.
 _____ C105 NGC4833 Const. MUS Type GC RA 12 59 36.00 Decl. -70 53 00.0 Mag. 7.3
 _____ C108 NGC4372 Const. MUS Type GC RA 12 25 48.00 Decl. -72 40 00.0 Mag. 7.8

Royal Astronomical Society of Canada Objects

_____ RASC46 NGC4088 Const. UMA Type G-Sc RA 12 05.6 Decl. +50 33 Mag. 10.5
 _____ RASC47 NGC4157 Const. UMA Type G-Sb RA 12 11.1 Decl. +50 29 Mag. 11.9
 _____ RASC48 NGC4605 Const. UMA Type G-SBcp RA 12 40.0 Decl. +61 37 Mag. 9.6
 _____ RASC59 NGC4111 Const. CVN Type G-S0 RA 12 07.1 Decl. +43 04 Mag. 10.8
 _____ RASC60 NGC4214 Const. CVN Type G-Irr RA 12 15.6 Decl. +36 20 Mag. 9.7
 _____ RASC61 NGC4244 Const. CVN Type G-S RA 12 17.5 Decl. +37 49 Mag. 10.2
 _____ RASC62 NGC4449 Const. CVN Type G-Irr RA 12 28.2 Decl. +44 06 Mag. 9.4
 _____ RASC63 NGC4490 Const. CVN Type G-Sc RA 12 30.6 Decl. +41 38 Mag. 9.8
 _____ RASC64 NGC4631 Const. CVN Type G-Sc RA 12 42.1 Decl. +32 32 Mag. 9.3
 _____ RASC65 NGC4656/7 Const. CVN Type G-Sc RA 12 44.0 Decl. +32 10 Mag. 10.4
 _____ RASC66 NGC5005 Const. CVN Type G-Sb RA 13 10.9 Decl. +37 03 Mag. 9.8
 _____ RASC67 NGC5033 Const. CVN Type G-Sb RA 13 13.4 Decl. +36 36 Mag. 10.1
 _____ RASC68 NGC4274 Const. COM Type G-Sb RA 12 19.8 Decl. +29 37 Mag. 10.4
 _____ RASC69 NGC4414 Const. COM Type G-Sc RA 12 26.4 Decl. +31 13 Mag. 10.2
 _____ RASC70 NGC4494 Const. COM Type G-E1 RA 12 31.4 Decl. +25 47 Mag. 9.8
 _____ RASC71 NGC4559 Const. COM Type G-Sc RA 12 36.0 Decl. +27 58 Mag. 9.8
 _____ RASC72 NGC4565 Const. COM Type G-Sb RA 12 36.3 Decl. +25 59 Mag. 9.6
 _____ RASC73 NGC4725 Const. COM Type G-Sb RA 12 50.4 Decl. +25 30 Mag. 9.2
 _____ RASC74 NGC4038/9 Antennae Galaxies Const. CRV Type G-Sc RA 12 01.9 Decl. -18 52 Mag. 10.7
 _____ RASC75 NGC4361 Const. CRV Type PN RA 12 24.5 Decl. -18 48 Mag. 10.3
 _____ RASC76 NGC4216 Const. VIR Type G-Sb RA 12 15.9 Decl. +13 09 Mag. 9.9
 _____ RASC77 NGC4388 Const. VIR Type G-Sb RA 12 25.8 Decl. +12 40 Mag. 11
 _____ RASC78 NGC4438 Const. VIR Type G-Sap RA 12 27.8 Decl. +13 01 Mag. 10.1
 _____ RASC79 NGC4517 Const. VIR Type G-Sc RA 12 32.8 Decl. +00 07 Mag. 10.5
 _____ RASC80 NGC4526 Const. VIR Type G-E7 RA 12 34.0 Decl. +07 42 Mag. 9.6
 _____ RASC81 NGC4535 Const. VIR Type G-Sc RA 12 34.3 Decl. +08 12 Mag. 9.8
 _____ RASC82 NGC4567/8 Const. VIR Type G-Sc RA 12 36.5 Decl. +11 15 Mag. ~11
 _____ RASC83 NGC4699 Const. VIR Type G-Sa RA 12 49.0 Decl. -08 40 Mag. 9.6
 _____ RASC84 NGC4762 Const. VIR Type G-SB0 RA 12 52.9 Decl. +11 14 Mag. 10.2



Tip: The list for May is exceptionally long because it covers the Virgo-Coma clusters of galaxies. Don't hesitate to start this list in April, or continue it into June or July.



June Observing List

Prepared by Bill Breeden

Double Stars

_____ Alpha Librae SAO 158836 Zuben El Genubi Const. LIB Type DS RA 14 50.9 Decl. -16° 02' Mag. 2.8 5.2

_____ Delta Bootis SAO 64589 Alrakis Const. BOO Type DS RA 15 15.5 Decl. +33° 19' Mag. 3.5 8.7

_____ Delta Serpentis SAO 101623 Const. SER Type DS RA 15 34.5 Decl. +10° 32' Mag. 4.2 5.2

_____ Epsilon Bootis SAO 83500 Izar Const. BOO Type DS RA 14 45.0 Decl. +27° 04' Mag. 2.5 4.9

_____ Iota Bootis SAO 29071 Const. BOO Type DS RA 14 16.2 Decl. +51° 22' Mag. 4.9 7.5

_____ Kappa Bootis SAO 29045 Const. BOO Type DS RA 14 13.5 Decl. +51° 47' Mag. 4.6 6.6

_____ Mu Bootis SAO 64686 Const. BOO Type DS RA 15 24.5 Decl. +37° 23' Mag. 4.3 7.0

_____ Pi Bootis SAO 101138 Const. BOO Type DS RA 14 40.7 Decl. +16° 25' Mag. 4.9 5.8

_____ Xi Bootis SAO 101250 Const. BOO Type DS RA 14 51.4 Decl. +19° 06' Mag. 4.7 7.0

_____ Zeta Coronae Borealis SAO 64833 Const. CRB Type DS RA 15 39.4 Decl. +36° 38' Mag. 5.1 6.0

Messier Objects

_____ M5 NGC5904 Const. SER Type GC RA 15 18.6 Decl. +02 05 Mag. 6.2

_____ M101 NGC5457 Pinwheel Galaxy Const. UMA Type GAL RA 14 03.2 Decl. +54 21 Mag. 9.6

_____ M102 NGC? 5866 Const. DRA Type GAL RA 15 06.5 Decl. +55 46 Mag. 10

Caldwell Objects

_____ C066 NGC5694 Const. HYA Type GC RA 14 39 36.00 Decl. -26 32 00.0 Mag. 10.2

_____ C088 NGC5823 Const. CIR Type OC RA 15 05 42.00 Decl. -55 36 00.0 Mag. 7.9

Royal Astronomical Society of Canada Objects

_____ RASC85 NGC5746 Const. VIR Type G-Sb RA 14 44.9 Decl. +01 57 Mag. 10.6

_____ RASC86 NGC5466 Const. BOO Type GC RA 14 05.5 Decl. +28 32 Mag. 9.1

_____ RASC87 NGC5907 Const. DRA Type G-Sb RA 15 15.9 Decl. +56 19 Mag. 10.4



Tip: If you follow these observing lists for one full year, you will have observed every object in the Astronomical League's Double Star Club, the Messier Objects catalog, the Caldwell Objects* catalog, and the Royal Astronomical Society of Canada deep-sky list!

**Caldwell Objects numbered above 75 are not observable from North America. They are included for those observers lucky enough to travel to the far south for some astronomy!*