

Bays Mountain Astronomy Club

☞ *Next Meeting: Aug. 5* ☞

SKYWARD

Believe it or not, one year has gone by since I was elected chairman of the club. At my inauguration (the club picnic), I promised there would be no clouds on any of the observing nights (it was cloudy every meeting except three). I promised not to raise the membership fee's (they will eventually go up). And I promised a new dome observatory. (Obviously didn't happen) Wow! I turned out to be a better politician than I thought. And just like in Washington D.C., somehow I managed to get re-elected! (Don't ever miss the June meeting.) All jokes aside, I have really enjoyed the last year, and I look forward to the upcoming year. I will think of some more promises and have them at the picnic.

Speaking of picnic, it's that time again. This year the picnic will be on July 30th, at Natural Tunnel State Park. See the maps on page 7 for directions. We have been given the Gazebo and will host a star party for the campers and other locals that night. The meeting/cookout will start at 5:30 p.m. Thanks to the Bays Mountain Park Association for providing hot dogs to grill along with buns, condiments, plates, cups, bowls, plastic wear, napkins, 2 liter



sodas, and water. All club members are asked to bring a dish to share.

This can be a side dish, snack, a dessert, a main dish, etc.

You can post on BMAstro what you will be bringing, so we don't bring the same things. Also, bring your own chair.

After years of blood, sweat, and tears, the 17.5" Dob is ready for first light! If Mother Nature

cooperates, we should all get a chance to see the heavens once again through the newly designed Dob. Everyone needs to think of a good name for it so we can stop calling it the 17.5" Dob.

We will be meeting in the planetarium for our August meeting for a live, group activity tour of the night sky. We will then meet in the Discovery Theater for a short business meeting, snacks, and possibly some observing if we have time and the weather is good. Until then, clear skies.

BY BRAD DUNN

Calendar

Special Events

July 30 BMAC annual picnic, 5:30 p.m. Natural Tunnel, VA at the gazebo. Bring a dish/snack to share and a chair.

SunWatch

Every Sat. & Sun., 3 - 3:30 p.m.,

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

BMAC Meetings

7 p.m., Discovery Theater

Aug. 5 Meet in the planetarium for a group activity star ID.

Sept. 2 Topic TBA.

EYE TO THE SKY

BY BOB SMITH

We have most of the major planets available for observation this month. Along with the premier meteor shower of the year and warm nights. August is one of the most favorable months of the year for observing the heavens.

The biggest news of the month should be the arrival of the Dawn spacecraft at asteroid 4 Vesta on July 16th. I don't usually include spacecraft stories with my observing blog, but I feel this one is different. Dawn was launched on September 27, 2007 on one of the largest Delta II rockets ever assembled. It has circled the Solar System several times, had a gravity assist by flying past Mars in 2009 and is just now reaching asteroid Vesta about 110 million miles from Earth. Once in orbit around the space rock, Dawn will spend the next year studying the 359 X 285 mile body with four instruments—a camera for visual studies, a visible and infrared spectrometer for mineral study, a gamma ray spectrometer for elemental study and a gravity field measuring device to determine rotation and density. After orbiting Vesta for a year, the spacecraft will slip out of orbit and travel to the largest asteroid, 1 Ceres, for the remainder of its mission. The reason for visiting the two asteroids is that they are so different and scientists will get a better idea of the beginning and evolution of the early Solar System. Vesta has a basaltic, dry surface similar to the inner Solar System planets while Ceres (606 X 565 miles) appears to have a varied clay-like surface that has been transformed by water at some point. It is thought that a large percentage of this surface material may be water

ice. Ceres also appears to be differentiated—it has a heavier core and lighter materials on the surface. The neat part about all this attention to Vesta is that it is easily observed from your backyard. The magnitude 5.6 space rock will make a path through southern Capricornis this month, traveling on a sweeping arc just north of 24 Capricorni and Omega (ω) Cap. On August 5th, Vesta is very close to two 6th magnitude stars and then on the 31st it is just a little south of Psi (ψ) Capricorni. Vesta can actually be seen through a pair of binoculars, although you must observe over a few days to determine its movement and pinpoint its location.

Our first target in the evening sky this month will be Saturn. The “Ringed World” is slowly moving toward its meeting with the Sun but is still visible about 20° above the southwestern horizon at the start of the month. By the end of August, Saturn is effectively gone from the scene (although still 5° high) so observe as often as you can the first few weeks of the month. When will you last pick out Saturn this year? The fainter 10th magnitude moons will likely not be visible due to atmospheric turbulence, but 8th magnitude Titan is an easy target. It is south of the planet on Aug 7th and the 23rd and north on August 15th. The crescent Moon is 8° south of Saturn on August 4th.

Neptune and Uranus are both visible this month, but I will spend more time with them next month when they appear a little earlier in our sky. Both of these outer ice-giants are challenging targets through a telescope because of their tiny appearances and their current

positions among the dim stars of Pisces and Aquarius.

Although Jupiter rises around midnight, it is still best positioned for telescopic study in the early pre-dawn hours. At magnitude -2.5 Old Jove is easy to locate even if it's just peeked over the eastern horizon. Keep an eye on the belt and zone system for any unexpected changes and appearance of the Great Red Spot. During times of steady seeing a whole host of tiny dots and waves can be observed on the cloud tops. My favorite thing to observe at Jupiter isn't the cloud tops however, but the four bright Galilean moons. Io, Europa, Ganymede and Callisto provide a never ending show of celestial mechanics. If you're up in the early morning hours of August 28th, be sure to observe Callisto's shadow transit of Jupiter beginning around 1:40 a.m. EDT. It takes about 2 hours for the inky shadow of the moon to completely transit the southern part of Jupiter's face so you have plenty of time. On the 20th, a thick gibbous Moon passes just 5° north of the planet.

If you're up observing Jupiter this month be sure to look up the other bright morning planet—mighty Mars. Although still far from Earth—200 million miles or so—Mars is fairly bright at magnitude 1.4. This might be a small problem if it were in a sparse star field but the “Red Planet” spends the month passing through the feet of Gemini one of the most striking of the winter constellations. Since the planet is so far away, its face is only around 5" across. So its doubtful than any surface features can be observed.

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STAR STUFF

BY TERRY ALFORD

During the early planning stages of the Big Dob Project (the club's vintage 17.5-in Coulter Dobsonian) it was suggested that an additional optical finder be installed. This second finder would be located on a truss pole on the opposite side of the scope from the focuser. That way folks could look through the eyepiece of the main scope while a club member could stand on the opposite side and manually move the scope to keep the object centered in the field of

view. Most of us have had the experience many times where you ask the person observing to step back so you can center the object. Sometimes the object had drifted completely out of the fov and nothing was there except for a few scattered stars.

to require some thinking. The bracket would have to be made so it could be quickly loosened and moved around the truss tube or even removed from the scope completely. And there should not be a need for tools to do so. This ruled out hose clamps or U-bolts. Finally there was the desire to make the finder appear to fit into the scope's total design...lotsa red oak!

One other thing to factor in the mounting

of aluminum channel was cut to mount the rings on. Some flat black paint and six nylon thumbscrews and the top half of the finder was complete.

I cut a couple of pieces of red oak to a 2 1/2-inch by 3 1/2-inch size. Then a 1-inch hole was drilled in each one. Next, two 1/4-in holes were drilled deep into the bottom of each piece. After sawing a



view. Most of us have had the experience many times where you ask the person observing to step back so you can center the object. Sometimes the object had drifted completely out of the fov and nothing was there except for a few scattered stars.

Having constructed several finder brackets in the past I volunteered to make this one. Last month (June) it came time to actually make it. It dawned on me rather quickly that this would have to be made a little differently. Mounting a finder bracket on a round telescope tube is one thing. Mounting one on a 1-inch diameter truss tube was going

to require some thinking. The bracket's design was that the truss tubes are angled to the optical path, not parallel. This was something I never had to consider before. Todd and I calculated that the angle was very close to 12°. I made several sketches and did some serious thinking before I came up with what seemed to be a doable plan.

The first step was to cut a couple of rings out of some thick walled aluminum pipe. I dressed these up with my small metal lathe. The adjustment screw holes were drilled and tapped to 1/4x20. A short piece

straight cut through the center of each hole I took the upper pieces and enlarged the holes to take 1/4x20 brass threaded inserts. Four socket head cap screws and some nylon press-on cap screw knobs finished up the clamping part of the mount. A little sanding and some stain and polyurethane and the finder scope's base was done.

As you can see, the two metal rings actually holding the finder scope are offset to make a 12° angle. It looks a little different but it should work fine. Hopefully we will find out at the picnic.

BOOK REVIEW: "DRAGONFLY: NASA AND THE CRISIS ABOARD MIR

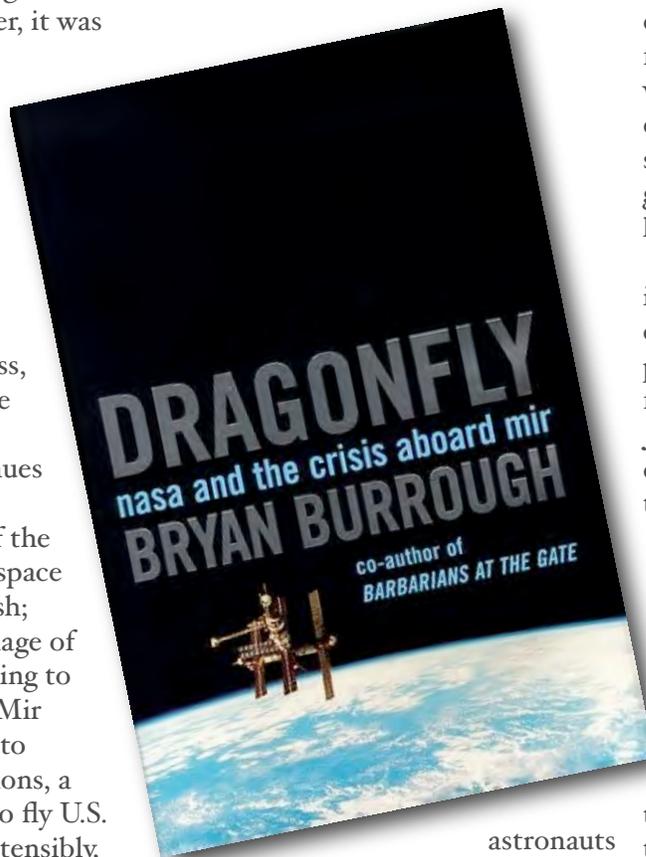
BY ROBIN BYRNE

It's time once again to venture over to the ol' bookcase and find an astronomy/space book to review. This time, the book is "Dragonfly: NASA and the Crisis Aboard Mir" written by Bryan Burrough. This book is a little dated, having been published in 1998. However, it was written shortly after the events discussed in the book, so the information gleaned from interviews was fresh on the minds of all involved.

The time frame is 1992 to 1997. The Shuttle program seems directionless, there's vague talk of a space station sometime in the future, but congress continues to cut NASA's budget. Meanwhile, with the fall of the Soviet Union, the Russian space program is strapped for cash; trying to maintain their image of excellence in space, they cling to their one big success: the Mir space station. In an effort to bolster U.S. - Russian relations, a political decision is made to fly U.S. astronauts aboard Mir. Ostensibly, the reasoning is that we will learn about long duration space flight prior to building our own space station. Meanwhile, we will pay for the opportunity for our astronauts to make the flight, thus helping Russia financially. It was later in the process, as more cuts were made in NASA's budget, that the idea of an International Space Station was also incorporated into the deal. If we were to build a space station along with Russia, the Shuttle-Mir

missions will, presumably, help with the logistics of such an undertaking.

The agreement was simple: we pay \$400 million for the opportunity of having seven astronauts live on Mir for approximately four months each. The first



astronauts and support personnel were sent to Russia for training in 1994. All of the astronauts were required to learn to speak Russian, as well as learn some of the basic principles of Mir operations. They also underwent physical training with their future cosmonaut crew mates.

However, what we see, as the story unfolds, is that the differences between the two cultures will create difficulties every step of the way. The Russians were confident of their superiority, and didn't fully trust the

Americans. Meanwhile, the attitude of the people at NASA about the program was unenthusiastic. They felt that Washington was going too far in dictating space program missions, and very few people wanted to be a part of it. And, despite lessons, presumably, learned from the Challenger explosion, there was still an environment in which dissenting voices and concerns were stifled if they conflicted with larger goals. It was a disaster waiting to happen.

My one complaint with the book is that it was not presented in chronological order. For dramatic purposes, the story begins with the fourth Shuttle-Mir mission with Jerry Linenger aboard Mir. It was during this flight that the crew had to contend with a fire on board, in addition to a near miss with a Progress supply ship. It is only after the telling of this harrowing tale, that Burrough goes back to 1992 and discusses the development of the program and the early stages leading up to the actual flights. After the backstory, the tale is told of Mike Foale's flight, including the collision with a Progress supply ship and decompression of one Mir module.

The saga of the Shuttle-Mir missions is a cautionary tale on so many levels. On the American side: so much emphasis was placed on the political goals, that no one paid attention to the practical situation. We went in, blindly believing that the Russian program was organized the same as NASA, that we could send our people over there, and they

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NASA SPACE PLACE

New GOES-R to Give More Tornado Warning Time

by **Dauna Coulter**
and **Dr. Tony Phillips**

So far this spring, more than 1,400 tornadoes have struck the U.S. Some of them have cut jaw-dropping trails of destruction across the countryside and, tragically, across inhabited communities, too. Hundreds of lives have been lost in the onslaught.

Throughout the season, the National Weather Service has routinely issued tornado alerts. In the case of the Alabama tornadoes of April 27th, forecasters warned of severe weather five full days before the twisters struck. Because they couldn't say precisely where the twisters would strike, however, many of their warnings went unheeded.

"If people get a hurricane warning, they often evacuate the area," notes NOAA's Steve Goodman. "But we react differently to tornado warnings."

Perhaps it's because tornadoes are smaller than hurricanes, and the odds of a direct hit seem so remote.

Recent pictures from Tuscaloosa, Alabama, and Joplin, Missouri, however, show the perils of playing those odds. Goodman believes that more precise warnings could save lives.

To fine-tune tornado warnings, NOAA will soon launch the first in a series of next-generation weather satellites –



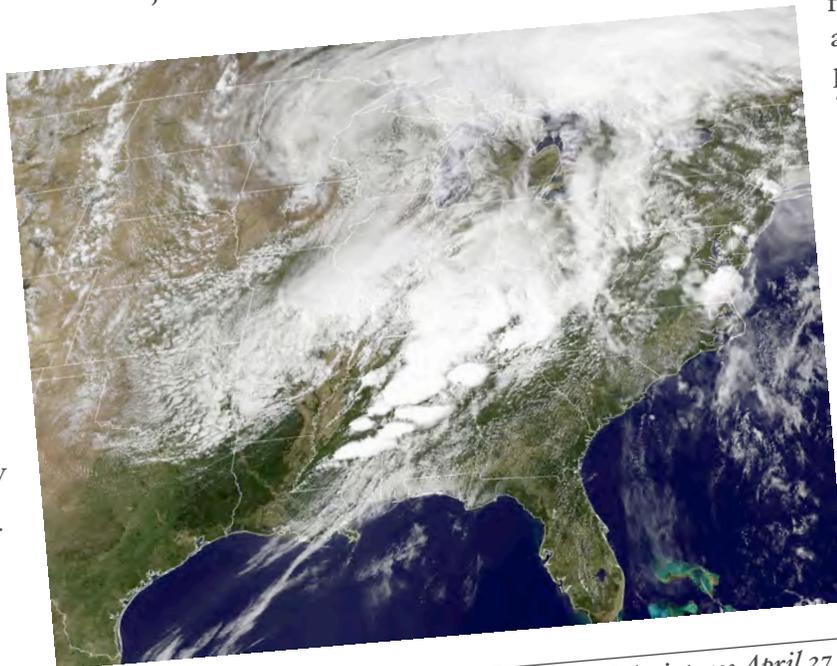
GOES-R Program Senior Scientist. "Studies show that sudden changes in the total lightning activity correlate with storm intensity—and with tornadoes."

The lightning mapper will detect and map not only cloud-to-ground lightning, but also bolts within and between clouds. The kind of cloud-to-ground lightning we see from our front yards accounts for only 15-20 percent of total lightning. To get a clear idea of a storm's intensity, meteorologists need to know about all the lightning—a view GOES-R can provide.

All by itself, the lightning mapper will provide 7 minutes more lead time in tornado warnings, according to Goodman. GOES-R's state-of-the-art instruments will also improve long-range forecasts.

"The satellite's Advanced Baseline Imager (ABI), for instance, will provide a much clearer picture of clouds," says NOAA research meteorologist Tim Schmit.

Compared to lesser instruments already in orbit, ABI can better detect super-cold "overshooting tops," evidence of enormous energy and upward velocity that correlate with subsequent severe weather.



This GOES image shows the storms that spurred the intense April 27 tornado outbreak in the southern U.S. Animation showing the development of weather can be seen at:
<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50347>.

GOES-R (Geostationary Operational Environmental Satellites-R series). The spacecraft is brimming with advanced sensors for measuring key ingredients of severe weather including winds, cloud growth, and lightning.

"GOES-R will be the first geostationary spacecraft to carry a lightning sensor," says Goodman, the

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MISCELLANEOUS

Eye to the Sky**by Bob Smith***(continued from page 2)*

If you have your telescope out, be sure and look at Mars for a few minutes. It is one of only two planets where we can actually see the visible surface.

With the warm August nights and a few hundred meteors shooting through the sky, no wonder the Perseid meteor shower is the best known of the year's major showers. This year, however, the Full Moon will wash out all but the brightest of the Perseids. You might still spend a pleasurable hour or so watching the streaks of light out of the northeast.

Comet Garradd is sailing ever closer to its December 2011 perihelion and continues to slowly brighten. Heavens-above.com shows it as magnitude 9.4 in mid-July and about 1.8 AU from Earth. On August 1st and 2nd, it is very close to M15 in Pegasus and should be a nice contrast with the globular cluster in a dark sky. The comet is being reported as having a short tail at this time although I'm a little skeptical. Garradd sails right past the nose of Delphenius the Dolphin the nights of the 12th and 13th (with the full Moon in the sky) then almost appears to run over the tiny globular M71 in Sagitta on August 26th. Although it is still dim, a fairly moderate-sized telescope should be enough to capture Garradd. A new comet C/2010 Elenin is looking promising and may reach 6th magnitude in a couple months. It is currently 10th magnitude and low in the west but will be overhead before dawn when it peaks in October.

Happy Birthday**by Robin Byrne***(continued from page 4)*

would be just fine. So few people were involved, that the majority of people at NASA had no idea what was going on. Those who were involved were inexperienced, and ill-equipped to deal with the Russians, let alone the very serious problems that arose. Meanwhile, the cavalier Russian attitude toward astronaut and cosmonaut safety was that they are expendable. The spaceship was more important, and should they die trying to save it, well... they died heroes. The cosmonauts were also willing to take risks, since they would get paid extra for each daring feat they accomplished. Add into the mix the financial incentive to keep the Americans happy, so that serious situations were being covered up or downplayed.

"Dragonfly" turned out to be not only an interesting history of some of the most serious accidents in space, but also an intriguing look at how much more dangerous space can be when politics and money become the prime goals. A lesson that has not yet been truly learned.

"Dragonfly: NASA and the Crisis Aboard Mir" by Bryan Burrough, Harper Collins Publishers, 1998

Regular Contributors**BRAD DUNN**

Brad is the current chair of the club and a member since 2007. During the day, he runs Dunn Professional Billing and Dunn Construction.

BOB SMITH

Bob is a founding member of BMAC, since 1980. He has also served as chair many times over the years. He currently works at Pioneer Industrial Sales.

TERRY ALFORD

Terry is also a founding member since 1980 and has been chair many times, as well. He has worked as an astronomy lab instructor at ETSU since 2001 and is also the sole proprietor of Celestial Woodworks.

ROBIN BYRNE

Robin has been writing the science history column since 1992 and was chair in 1997. She is an Associate Professor of Astronomy & Physics at Northeast State Community College (NSCC).

ADAM THANZ

Adam has been the Editor for almost all of the years since 1992. He is the Planetarium Director at Bays Mountain Park as well as an astronomy adjunct for NSCC.

NASA Space Place

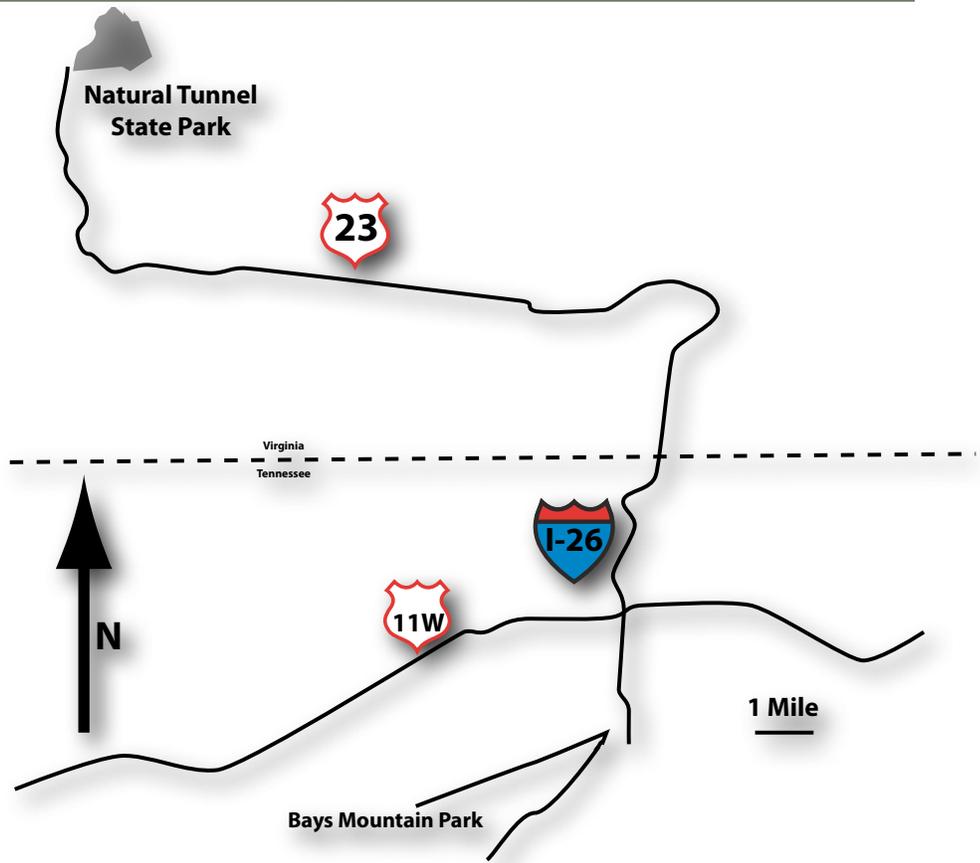
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“Accurate advanced notice of high-risk tornadic conditions can cue officials to close schools and businesses even before tornadoes are actually detected,” says Schmit.

Forecasters doubt tornadoes can ever be predicted with 100% accuracy. The twisters are just too capricious. GOES-R, however, is a step in the right direction.

Find out more about GOES-R’s unprecedented capabilities at <http://www.goes-r.gov>. Young people can learn more about tornadoes and all kinds of other weather at <http://scijinks.gov>.

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



Amenity	Latitude	Longitude
Amphitheater	36° 42.5400	-82° 44.4016
Blockhouse	36° 42.7200	-82° 44.2533
Entrance To Camping Area	36° 42.6461	-82° 44.4822
Chair Lift	36° 42.1033	-82° 44.7466
Cove Ridge Center	36° 42.5893	-82° 44.5570
Pool Complex	36° 42.6433	-82° 44.4983
Rim Rock Railroad	36° 42.1033	-82° 44.7466
Engine	36° 42.1033	-82° 44.7466
Visitor Center	36° 42.1033	-82° 44.7466

Trail	Blaze	Mileage	Usage	Difficulty	Access
Cabin Trail	White	0.5	H, B	●	
Carter Log Cabin	Green	0.13	H	●	PA
Gorge Ridge	Yellow	0.27	H, B	●	
Lover's Leap	Blue	0.4	H	●	
Purchase Ridge	Brown	2.07	H, B	■	
Spring Hollow	Gold	0.28	H	●	
Tunnel Hill	Orange	0.54	H, B	■	
Tunnel	Green	0.27	H	●	
Virginia Birding And Wildlife	Red	0.7	H	◆	

Trail	Latitude	Longitude
Cabin Trail Trailhead	36°41.678	-82°44.302
Carter Log Cabin Trailhead	36°42.092	-82°44.655
Gorge Ridge Trailhead	36°42.151	-82°44.785
Lover's Leap Trailhead	36°42.24	-82°44.326
Purchase Ridge Trailhead	36°42.139	-82°44.745
Spring Hollow Trailhead	36°42.182	-82°44.46
Tunnel Hill Trailhead	36°42.167	-82°44.265
Tunnel Trailhead	36°42.168	-82°44.816
Tunnel Trailhead	36°42.141	-82°44.699
Virginia Birding and Wildlife Trailhead	36°42.43	-82°44.425
Virginia Birding And Wildlife Trailhead	36°42.672	-82°44.488

Natural Tunnel State Park
 (276) 940-2674
 natural.tunnel@dcr.virginia.gov
 1420 Natural Tunnel Parkway
 Duffield, VA 24244

Legend:
 H = Hiking B = Biking A = Handicapped Accessible PA = Partially Accessible
 ● = Easy ■ = Moderate ◆ = Difficult

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The Bays Mountain Astronomy Club



Find out more at our website:

www.baysmountain.com

Edited by Adam Thanz:

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Dues:

The Bays Mountain Astronomy Club requires annual dues for membership. It covers 12 months and is renewable at any time.

Rates:

\$12 /person/year

\$4 /additional family member

If you are a Park Association member, a 50% reduction in fees is applied.

Calendar

Special Events

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Apple logo Made on a Mac!

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Kingsport, TN 37660