Cape Fear Skies

The Official Newsletter of the
Cape Fear Astronomical Society
Wilmington, North Carolina

A Member Society of the Astronomical League

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www.capefearastro.org

CAPE FEAR ASTRONOMICAL SOCIETY
WILMINGTON, NORTH CAROLINA

This Month's Meeting – Sunday, February 11, 2007

Bryan Auditorium in Morton Hall
on the UNCW Campus

The business meeting of
the Cape Fear Astronomical Society
will begin at 7:00 pm.
The general meeting will begin at 7:45 pm.

Gastronomy!

Please join us for dinner before the meeting
at Szechuan 132 on Collage at 5:15pm!

Editor: Ric Longren
6612 Shire Road
Wilmington, NC 28411

CAPE FEAR ASTRONOMICAL SOCIETY
WILMINGTON, NORTH CAROLINA

Cape Fear Astronomical Society

Meeting minutes by Letisha McLaughlin, CFAS Secretary

Meeting Minutes for January 7th CFAS Meeting

Vice President Terry Herrin commenced the very first Cape Fear Astronomical Society meeting of 2007 at 7:06 PM on January 7th in Morton Hall Auditorium. Twenty-two members attended included the club's youngest member ever- Ms. Annika Grace, daughter of Wayne and Debbie Hayden. No visitors were present.

Officer reports

Vice President

Terry Herrin informed the club that President Ronnie Hawes would be absent due to an illness. He also recognized his duty to take over for the president when he is unavailable and so directed the night's meeting.

Associate Vice President

Alan Hilburn notified members of his efforts to produce a list of guest speakers for the coming months. He continued that February's meeting is still open to program suggestions so if any member has a preference for a guest speaker or program topic to contact him.

Treasurer

Ben Steelman gave the group's annual money report: the CFAS remains in the black with approximately $1,800 in checking, $1,180 in CDs, and $420 in passbook savings. He also noted he would review these figures and give the final report at next month's meeting.

Editor

Ric Longren announced the expense report for the club's newsletter, the *Cape Fear Skies,* totaled $206.91 for the year of 2006. Compensation for these distribution costs are in progress.

Old business

The vice president thanked Billy Kidney and his wife Kristy for having the annual holiday social at their house last December. He also announce Morton Hall auditorium is reserved for 2007.

New business

According to the constitution, member dues are now being collected. In order to have no suspension in membership, all dues must be paid in full by the end of the March meeting.

Member Jonathan Guetta has the figures for club t-shirts and accessories. Estimates are as follows: Silkscreen: setup fee- approximately $80, large logo on front or back- 25 shirts at $5.90 each or 50 shirts at $5.30 each, small logo on front and large logo on back- 25 shirts at $9.20 each or 50 shirts at $8.10 each.

Embroideries: Setup fee- approximately $60, polo shirts with small logo on front- 25 shirts at $10.10 each or 50 shirts at $9.60 each. Embroidered hats are also available for 25 at $5.50 each or 50 at $5.00 each.

Jonathan also inquired as to whether the setup fees would be paid by the members or from the club's fund; Terry answered they would be covered by the club. In addition one member noted it may be a good idea to charge a couple of dollars extra for the merchandise in order to increase club funding. This issue will again be raised at next month's meeting.

Associate VP Alan Hilburn pointed out an opportunity to increase the CFAS' public relations by perhaps aiding the Friends of Felines. Also he commented there are many ways to be involved in the community. On another note he presented two double convex lenses that may be useful, if anyone is interested in making an offer, please contact him.

The February meeting will take place on the second Sunday of the month in Morton Hall Auditorium. The delay is due to the Superbowl falling on the first Sunday in February.

Next month's program is still up in the air. However, Tom Jacobs did comment he was working on something for April's meeting.

Alan Hilburn suggested the idea of using each month's *Sky and Telescope* centerfold as a guide for collectively learning the night sky. Tom then added that he was planning to present an informal "Getting to Know the Night Sky" at the next club viewing session. Plans are not yet complete, so he directed the group to keep an eye on the list server.

Observing Report

Alan Hilburn and Terry Herrin announced the discovery of a new comet which can now be seen in the morning skies. The comet was spotted by Australian astronomer Robert McNaught and as of now is predicted to have a brightness ranging from a +2.1(that of Polaris) to a -8.8 (nearly 8 times as bright as Venus!) Tom Jacobs added the comet may be visible in the morning between the horizon and Venus.

Member Billy Kidney informed the group that a new truck stop had been constructed near the Holly Shelter viewing area. Unfortunately the new edition is casting a considerable amount of light into the horizon and sky of the site.

The business portion of the CFAS January 2007 meeting adjourned at 7:40 PM. The night's program began with two amazing home videos taken by member Thad Coin of the Nov. 23, 2002 and Dec. 9, 2006 Space Shuttle launchs from Carolina Beach. Following was the NOVA video "The Elegant Universe- Strings the Thing." The meeting ended at 8:51 PM.

News Cluster

- The next meeting of the Cape Fear Astronomical Society is February 11 starting at 7:00 pm. No program is scheduled for this month.
- The Charlotte Amateur Astronomers Club (CAAC) will host the 21st annual Southern Star Astronomical Convention in the Blue Ridge Mountains on April 27-29, 2007. This will be an opportunity for southeastern astronomical societies to share their interests and club activities with each other and enjoy a variety of speakers and other events in a secluded mountain setting. A copy of the brochure and registration forms will be available at the February CFAS meeting. For more info visit www.charlotteastronomers.org/southernstar.
- Don't forget your Membership dues for 2007.

Event Calendar for February 2007

February 2	Full Moon, 12:45 am, Moon passes 0.9º north of Saturn, 6:00 pm
February 7	Moon at apogee, 7:38 am, 251,651 miles
February 10	Last quarter Moon, 4:51 am, good opportunity to see 8 of Saturn's moons
Feb 9/10	**CFAS Group Viewing Sessions**
February 11	**CFAS May Meeting 7:00 pm**
February 17	New Moon, 11:14 am
Feb 16/17	**CFAS Group Viewing Sessions**
February 19	Moon at perigee, 4:36 am, 224,586 miles
February 21	Ash Wednesday
February 24	First Quarter Moon, 2:56 am
March 3	Full Moon, 6:17pm, total lunar eclipse

All times are EST unless otherwise noted

News from Our Sister Society Down Under

Astronomical Society of Albury - Wodonga

From Allan Henderson, ASAW Secretary:

Hi ASAW Inc. and CFAS members,

"On behalf of President David Thurley and the Executive Committee members we wish all CFAS and ASAW members a merry Christmas and a happy New Year and hope that you all enjoy good health during 2007 and beyond".

Thanks Allan. On behalf of the Officers and Members of CFAS, we wish all the Members of ASAW Inc. the best for 2007 and beyond.

Astronomical History During the Month of February

Date	Milestone
Feb 3, 1966	Soviet Union's Luna 9 space probe lands on Moon and takes first pictures of Lunar surface
Feb 5, 1963	Caltech astronomer Maarten Schmitt discovers redshift of quasars, which indicate they are billions of light years distant.
Feb 7, 1984	American astronauts Bruce McCandless and Robert Stewart make the first untethered space walk (space shuttle Challenger).
Feb 11, 2003	Nasa's WMAP spacecraft establishes age of the universe as 13.7 billion years and confirms Big Bang theory.
Feb 12, 2001	Near-Shoemaker lands on Eros; first spacecraft to orbit and touch down on asteroid.
Feb 18, 1930	Clyde Tombaugh, at Lowell Observatory, discovers the planet Pluto.
Feb 23, 1987	Brightest supernova seen from Earth in 383 years, in Large Magellanic Cloud
Feb 24, 1968	Cambridge University astronomers announce discovery of pulsars
Feb 25, 1972	Soviet lander Luna 20 returns to Earth with 1 oz (30 gms) of lunar soil, the second sample returned from the Moon.

Winter's Top Star Clusters

Object	R.A.	Dec.	Mag.	Size
M35	6h 09m	24° 21'	5.1	25'
M37	5h 52m	32° 33'	5.6	15'
M38	5h 29m	35° 51'	6.4	15'
NGC 1907	5h 28m	35° 20'	8.2	5'
NGC 2158	6h 07m	24° 06'	8.6	5'
NGC 2355	7h 17m	13° 45'	9.7	8'
NGC 2251	6h 35m	8° 22'	7.3	10'
NGC 2301	6h 52m	0° 28'	6.0	15'
M50	7h 03m	-8° 23'	5.9	15'
M41	6h 46m	20° 45'	4.5	39'
NGC 2362	7h 19m	-24° 57'	3.8	6'
Collinder 140	7h 23m	-32° 02'	5.3	42'

Cassini Images Mammoth Cloud Engulfing Titan's North Pole January 31, 2007 (www.jpl.nasa.gov)

A giant cloud half the size of the United States has been imaged on Saturn's moon Titan by the Cassini spacecraft. The cloud may be responsible for the material that fills the lakes discovered last year by Cassini's radar instrument.

Cloaked by winter's shadow, this cloud has now come into view as winter turns to spring. The cloud extends down to 60 degrees north latitude, is roughly 2,400 kilometers (1,490 miles) in diameter and engulfs almost the entire north pole of Titan.

The new image was acquired on Dec. 29, 2006, by Cassini's visual and infrared mapping spectrometer. Scientific models predicted this cloud system, but it had never been imaged in such detail before.

"We knew this cloud had to be there but were amazed at its size and structure," said Dr. Christophe Sotin of the University of Nantes, France, a member of the visual and infrared mapping spectrometer team and distinguished visiting scientist at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "This cloud system may be a key element in the global formation of organics and their interaction with the surface."

The same cloud system seen on Dec. 29, was still there two weeks later during a Jan. 13, 2007, flyby, even though observing conditions were slightly less favorable than in December.

The Cassini radar team reported last year that the lakes at the north pole are partly filled, and some appear to have evaporated, likely contributing to this cloud formation, which is made up of ethane, methane and other organics. These findings reinforce the idea that methane rains down onto the surface to form lakes and then evaporates to form clouds. Scientists compare this methane cycle to the hydrological cycle on Earth, dubbing it "methane-ologic cycle."

Ground-based observations show this Titan cloud system comes and goes with the seasons. A season on Titan lasts approximately seven Earth years. Based on the global circulation models, it seems that such cloud activity can last about 25 Earth years before almost vanishing for four to five years, and then appearing again for 25 years.

Scientists expect this cloud to be around for several years. As the seasons change, scientists expect a shift of these clouds and lakes from the north pole to the south pole. On Titan's south pole, scientists have seen only one kidney-shaped lake with Cassini's imaging cameras.

"With 16 more flybys to come this year, we should have the opportunity to monitor the evolution of this cloud system over time," said Dr. Stephane Le Mouelic, working with the Cassini visual and infrared mapping spectrometer team, and also at the University of Nantes.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. JPL, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Science Mission Directorate, Washington. The Cassini orbiter was designed, developed and assembled at JPL. The visual and infrared mapping spectrometer team is based at the University of Arizona, Tucson.

Jet Stream of Titan

Jan. 24, 2007 *(www.jpl.nasa.gov - Source: ESA)*

A pair of rare celestial alignments that occurred in November 2003 helped an international team of astronomers investigate the far-off world of Titan. In particular, the alignments helped validate the atmospheric model used to design the entry trajectory for ESA's Huygens probe. Now the unique results are helping to place the descent of Huygens in a global context, and to investigate the upper layers of Titan's atmosphere.

Occasionally Titan passes directly in front of a distant star. When it does so, the light from the star is blocked out. Because Titan has a thick atmosphere, the light does not 'turn off' straight away. Instead, it drops gradually as the blankets of atmosphere slide in front of the star. The way the light drops tells astronomers about the atmosphere of Titan. By pure chance on 14 November 2003, fourteen months before Huygens' historic descent through Titan's atmosphere, Titan passed in front of two stars, just seven and a half hours apart. Bruno Sicardy, Observatoire de Paris, France, organized expeditions to record the occultations, as such events are called. The first occultation was visible just after midnight from the Indian Ocean and the southern half of Africa. The second could be seen from Western Europe, the Atlantic Ocean, Northern and Central Americas. Teams of astronomers set up along the occultation tracks.

Sicardy was looking for one observation in particular. "Titan's atmosphere acts like a lens, so at the very middle of the occultation, a bright flash occurs," explains Sicardy. If Titan's atmosphere were a perfectly uniform layer, the central flash would be a pinprick of light, visible only at the very centre of the planet's shadow. However, comparing the results from many telescopes, Sicardy found that the central flash fell across the Earth in a triangular shape.

"It is like the light falling through a glass of water and making bright patterns on the table. The focused light is not perfectly round because the glass is not a perfect lens," says Sicardy. Analysing the shape of the flash showed that Titan's atmosphere was flattened at the north pole. This was because at the time of the occultation, Titan's south pole was tilted towards the Sun. This warmed the atmosphere there, causing it to rise and move towards the north of the moon, where the atmosphere cooled and sank towards the surface.

There was one other key discovery that the occultation data allowed Sicardy and his team to make. A fast moving, high altitude wind (above 200 kilometres) was blowing around Titan at latitude of 50 degrees north. They estimated that it was moving at 200 metres per second (or 720 kilometres per hour) and would encircle the planet in less than one terrestrial day. "It is like the jet stream on Earth," says Sicardy, "Furthermore, we told the Huygens team to expect some bumps near 510 km altitude, due to a narrow and sudden temperature variation." Indeed, Huygens was jolted by exactly such a layer during its 14 January 2005 entry. "A temperature inversion was indeed detected by the accelerometers during entry at this very altitude" says Jean-Pierre Lebreton, Huygens project scientist.

The work does not stop there. Even though the Huygens descent took place almost two years ago, the understanding of its data continues to provide key insights into Titan.

Sudoku 7, 57, 147, 337, 527, 7

More Sudoku from easy to nearly impossible.

Complete the grid so every row, column and 3 x 3 box contains every digit from 1 to 9 inclusively. Stars indicate level of difficulty. Answers on page 7.

4						5	7	
	7	1	9	6	5	8	4	
			7		2	1	6	
1		4	5				8	
8	3						5	4
	5				6	3		1
	1	5	3		8			
	4	8	1	2	9	7	3	
	2	7						8

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				5	4			
	9					3		
4	7	3		2				1
	1				3			
	8	7				6	3	
			2				1	
7				3		9	5	2
		4					7	
			9	6				

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	2		5				4	7
		7		3		5		
8			4		6			
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	6	4		2		3	9	
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			7		5			3
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7		8	2			1		
1		2			7	6	8	
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	8	9	7			3		6
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			4			8		
5		6		7			1	
3					2			
		5		8	9			
1								7
			3	1		2		
			6					9
	1			4		6		2
		7			3			

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Supper Sudoku. Complete the grid so every row, column and 4 x 4 box contains every digit from 0 to 9 and letters from A to F inclusively. Good luck!

D		A	0	B	5	E			4						
B	8	C			D		F	9		E	6	3	1		
3	E				8	2		0		5		D		B	
6			F		C	4	9			8	1	A			
4	6		9				7				A			3	E
C	B	D		4						0	F	8	5		6
	A		E		6	B		7	5	1				C	
7	1	8	5		E	3	D	2		6	B		0	A	
1	3	5	D	6	9	C					7	E			0
		9		D	A	F				3		7			B
A			B	E	7	8	3		6	F		9	C	4	
		7		1				4				6		5	3
5		4			3	6		F	0	A			B		
2	D	E		8				C	B		9	5			1
9		6					C	5				F	4		A
F			A	5	4	1			7			0	3		2

Solutions:

4	9	6	8	3	1	5	7	2
2	7	1	9	6	5	8	4	3
5	8	3	7	4	2	1	6	9
1	6	4	5	9	3	2	8	7
8	3	9	2	1	7	6	5	4
7	5	2	4	8	6	3	9	1
9	1	5	3	7	8	4	2	6
6	4	8	1	2	9	7	3	5
3	2	7	6	5	4	9	1	8

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6	2	1	3	5	4	8	9	7
8	9	5	7	1	6	3	2	4
4	7	3	8	2	9	5	6	1
5	1	9	6	7	3	2	4	8
2	8	7	1	4	5	6	3	9
3	4	6	2	9	8	7	1	5
7	6	8	4	3	1	9	5	2
9	3	4	5	8	2	1	7	6
1	5	2	9	6	7	4	8	3

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6	2	3	5	8	1	9	4	7
4	1	7	9	3	2	5	6	8
8	5	9	4	7	6	1	3	2
3	7	8	6	1	9	2	5	4
5	6	4	8	2	7	3	9	1
2	9	1	3	5	4	7	8	6
9	8	2	7	4	5	6	1	3
7	3	5	1	6	8	4	2	9
1	4	6	2	9	3	8	7	5

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7	4	8	2	6	9	1	3	5
1	9	2	3	5	7	6	8	4
5	6	3	1	8	4	7	2	9
2	9	1	4	3	8	5	6	7
8	7	6	5	1	2	4	9	3
3	5	4	9	7	6	8	1	2
4	1	5	6	2	3	9	7	8
2	8	9	7	4	1	3	5	6
6	3	7	8	9	5	2	4	1

9	7	1	4	3	6	8	2	5
5	2	6	9	7	8	4	1	3
3	4	8	1	5	2	9	7	6
7	3	5	2	8	9	1	6	4
1	8	2	5	6	4	3	9	7
6	9	4	3	1	7	2	5	8
4	5	3	6	2	1	7	8	9
8	1	9	7	4	5	6	3	2
2	6	7	8	9	3	5	4	1

★★★★★

D	9	A	0	B	5	E	1	3	4	7	2	C	6	F	8
B	8	C	4	0	D	7	F	9	A	E	6	3	1	2	5
3	E	1	7	A	8	2	6	0	F	5	C	D	9	B	4
6	5	2	F	3	C	4	9	B	D	8	1	A	E	0	7
4	6	F	9	2	0	5	7	D	8	C	A	1	B	3	E
C	B	D	2	4	1	9	A	E	3	0	F	8	5	7	6
0	A	3	E	F	6	B	8	7	5	1	4	2	D	C	9
7	1	8	5	C	E	3	D	2	9	6	B	4	0	A	F
1	3	5	D	6	9	C	4	A	2	B	7	E	F	8	0
E	4	9	6	D	A	F	5	8	C	3	0	7	2	1	B
A	2	0	B	E	7	8	3	1	6	F	5	9	C	4	D
8	F	7	C	1	2	0	B	4	E	9	D	6	A	5	3
5	7	4	1	9	3	6	2	F	0	A	E	B	8	D	C
2	D	E	3	8	F	A	0	C	B	4	9	5	7	6	1
9	0	6	8	7	B	D	C	5	1	2	3	F	4	E	A
F	C	B	A	5	4	1	E	6	7	D	8	0	3	9	2

Meetings of the CFAS are held on the first Sunday of The month (if holiday weekend or special event, second Sunday) at

7:00pm – Bryan Auditorium, Morton Hall, UNCW

Group Viewing Sessions 5194

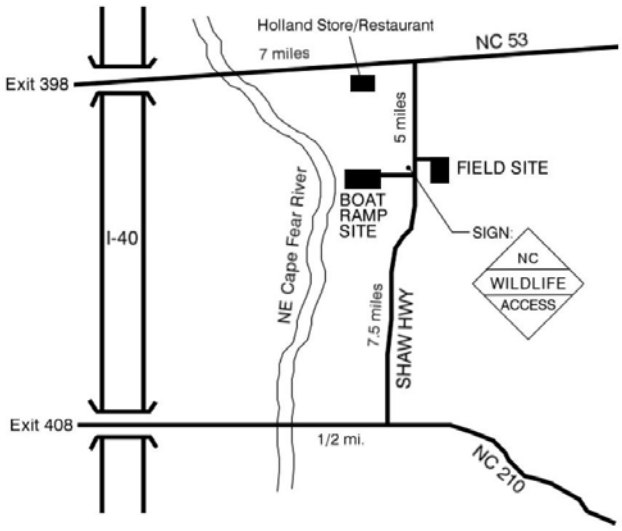
Call Ron Hawes at 762-1033 or check our email list to confirm a formal viewing session. Listed below are moonless nights so you can schedule a good viewing. All group viewing sessions will be at the Holly Shelter boat ramp site, unless otherwise specified. Time: Dusk until ?

Friday, February 9 Saturday, February 10

Friday, February 16 Saturday, February 17

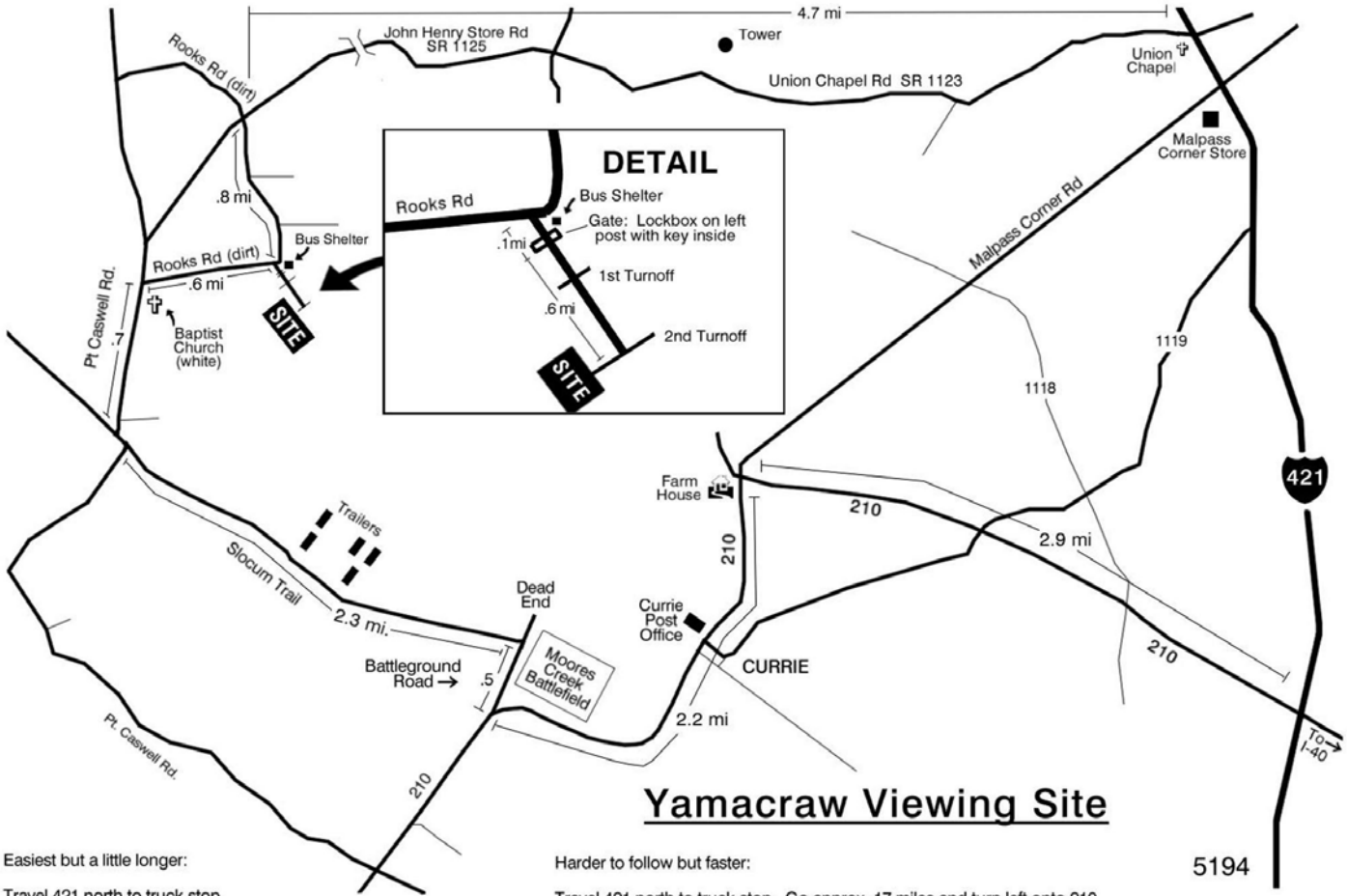
Please be cautious of unusual wildlife behavior while observing. A golf club or stick could be useful to keep nearby.

Holly Shelter Viewing Sites



Field Site Gate Open:
September 1 - February 29 and April 7 - May 14.

Please have your Holly Shelter Permit with you at the site.



Yamacraw Viewing Site

Easiest but a little longer:

Travel 421 north to truck stop.
Go approx. 20.5 miles and turn left onto Union Chapel Road.
Follow for 4.7 miles (becomes John Henry Store Road) and take left onto Rooks Road (dirt).
Follow Rooks Road .8 miles around curve, pass bus shelter and take left onto our site's road.
Travel .1 mile, unlock/relock gate, travel .6 miles, take 2nd right.

Harder to follow but faster:

5194

Travel 421 north to truck stop. Go approx. 17 miles and turn left onto 210.
Follow 210 for 2.9 miles to intersection (stop sign and big white farm house), turn left onto 210 W.
Follow 210 W past Currie Post Office and Battlefield, turn right onto Battleground Rd.
Follow Battleground Rd .5 miles, take sharp left onto Slocum Rd, follow for 2.3 miles.
Take a right onto Pt. Caswell Rd, follow .7 miles past Church, take right onto Rooks Road (dirt).
Follow Rooks Rd .6 miles, turn right onto our site's road. (If you see the bus shelter, you've gone too far.)
Travel .1 miles, unlock/relock gate, travel .6 miles, take the 2nd road on the right to our site.