

# SPECTRUM

Northern Cross Science Foundation Newsletter

March 2015

## Looking Up

March 5, Thursday

### "NCSF Annual Banquet"

(In lieu of the March Meeting)

Social hour 6 p.m.

Dinner at 7 p.m.

Fox and Hounds Restaurant

1298 Friess Lake Rd.

Hubertus, WI

March 19, Thursday

### Board Meeting

7:30 p.m.

Home of Jeff Setzer

March 20, 21 22, Fri. Sat. & Sun.

### Messier Marathon

Begins at Dusk

Harrington Beach

(Members Night)

April 2, Thursday

### General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

April 16, Thursday

### Board Meeting

7:30 p.m.

Home of Jeff Setzer

April 18, Saturday

### Movie Night

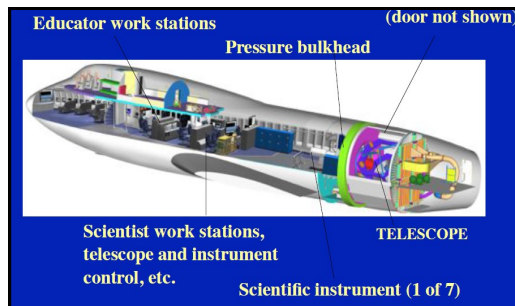
Public Viewing

7:00p.m. - 10:00 p.m.

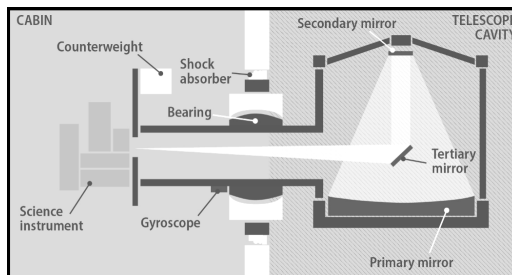
Horicon Marsh Visitor Center

## SOFIA, just a little bit more... Information gathered from NASA, DLR, USRA, SETI

At last month's General Meeting we were fortunate to have someone who has flown on SOFIA, come and share her experience. Jean is now officially part of SOFIA's Airborne Astronomy Ambassadors effort, a professional development program aspiring to improve teaching, inspire students, and inform the community. Jean's talk left me wanting to know more about SOFIA's Telescope and "how she ticks". So...here's a little bit more...



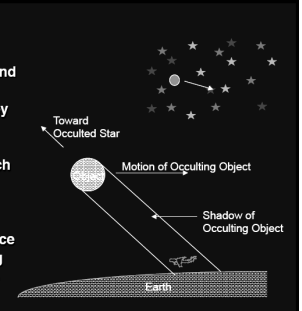
**SOFIA Airborne Telescope Stabilization** - How do you keep a 19 ton, 100" diameter telescope, which is mounted in the rear fuselage of a modified Boeing 747SP aircraft stable while flying at 40,000 feet? First, isolate the telescope from the airplane by mounting it on a spherical pressurized oil bearing. Second, direct the wind away from the telescope by shaping the side of the airplane so as to deflect it. Third, stabilize the telescope against sudden motion by spinning three gyroscopes.



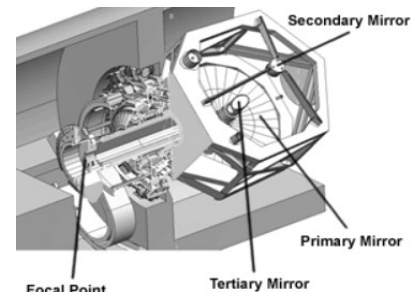
**SOFIA Airborne Telescope Diameter** - Like most modern research telescopes, the SOFIA telescope uses a mirror to concentrate and focus the incoming light. SOFIA's telescope is usually referred to as a 2.5-meter telescope, rather than 2.7 meters, because the optical design requires that only about 90% of the mirror's reflecting surface (called the "effective diameter") can be used at any one time.

## SOFIA is able to:

- ◆ Probe the sizes, structures (rings & moons), and atmospheres of solar system bodies by measuring how they occult background stars.
- ◆ Go anywhere on Earth to reach the occultation shadow of a solar system object.
- ◆ This will be the primary science for HIPO (High-speed Imaging Photometer for Occultations)



The telescope is designed to be very lightweight, with a honeycomb shape milled into the back of the mirror and polymer composite material used for the telescope assembly. The mount includes a system of bearings in pressurized oil to isolate the instrument from vibration. Tracking is achieved through a system of gyroscopes, high-speed cameras, and magnetic torque motors to compensate for motion, including vibrations from airflow and the aircraft engines. The telescope cabin is cooled prior to aircraft take-off to ensure the telescope matches the external temperature to prevent thermally induced shape changes. Prior to landing, the compartment is flooded with nitrogen gas to prevent condensation of moisture on the chilled optics and instruments.



**Technology Department** - SOFIA is also a cutting-edge laboratory for the development and testing of astronomical instrumentation and detector technology by scientists at NASA Centers, universities, and colleges across the country. Its seven first-generation instruments, including cameras, spectrographs and a high-speed photometer, together with its future-generation instruments, will enable a wide variety of astronomical science observations. Once validated, the technologies developed will also be useful in future space missions. Applications in ground-based astronomy are also expected. SOFIA's ability to return to Earth after each flight enables frequent opportunities for upgrading and installing

*Continued on Pg. 2*

## February Meeting Minutes

By Secretary Kevin Bert

The February Business meeting of the Northern Cross Science Foundation was held at Unitarian Church North. Vice President Joyce Jentges opened the meeting at 8:40pm and welcomed 23 members and guests. She then asked for standard reports.

Treasurer Gene DuPree tells us that a total of \$10,626.50 is in the general fund and an observatory balance of \$1,055.06. He encouraged members to get in their 2015 membership dues.

Secretary Kevin Bert reports that there was no change in the membership roster and it stands at 67 members. The Astronomical League has some new observing programs. "Two in The View" promotes the opportunities to catch the moon, planets, comets and deep sky objects in your telescope when they align close to each other. The "Advanced Binocular Program" provides the next level in popular binocular

astronomy. A new area of focus is radio astronomy and a program devoted to that arena is available too.

Joyce noted that the NCSF banquet is coming in March. It will take the place of the March 5<sup>th</sup> meeting and be held at the Fox & Hounds restaurant in Hubertus starting at 6:00 pm. The deadline for a dinner selection is the 19<sup>th</sup> of February.

Observatory Director Dan Bert reports that all things are quiet at the Jim and Gwen Plunkett Observatory at Harrington Beach State Park. Things should pick up as the colder than usual winter makes its way into spring.

Under New Business, Joyce reports that the Sheboygan Astronomical Society will once again host a popular "Swap and Sell" at the Sheboygan Airport. It runs from 9:00 am to 2:00 pm on Saturday March 28th.

Joyce covered upcoming events for February. The 7<sup>th</sup> offers a Candlelight Ski and Hike at Harrington Beach State Park starting at 6:00 pm. The following day is an

event at West Bend High School called "Celebrate Families" starting at 11:00 am. An "Evening with Nature" and telescopes is held on the 12<sup>th</sup> at the Reuss Ice Age Center. The night of the 14th is a Candlelight Ski and Hike at Pike Lake State Forest. Set up on the north side of the beach house. With no further business Joyce closed the meeting at 8:55 pm.

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*Continued from Pg. 1 (SOFIA)*

new science instruments, permitting ongoing development of new astronomical technology throughout its lifetime.

Check out this website, published results, presentations, photo's, optical particulars...and a little bit more.

<https://sofia.usra.edu/Science/publications/index.html>



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## Things to See in the March 2015 Night Sky By Don Miles

**Mars, Uranus, & Venus:** All three planets are up at sunset, and all are setting right after the Sun. This month Mars sets first, and will be by about 9pm. It's at (1.3 mag), and is in the constellation Pisces, but will drift eastward into the constellation Aries. Uranus is the next to set, and will be by about (9:30pm/sunset). It's at (5.9 mag) and also follows the path of Mars by being in the constellation Pisces and also drifting into Aries. Venus is the last to set, and will be by about (9:15/10:30pm). It's at a brilliant (-4.0 mag), and will be the brightest "star" in the western sky. Jupiter is bright, but nothing like this planet. Watch for a close pairing of Venus and Uranus the early evening of the 4th. Venus will pass above and to the left of much fainter Uranus by less than 1/3 of a degree right after sunset.

**Jupiter:** Is still the Crown Jewel again this month as it is already up at sunset, and stays up almost all night, and transits about (11:30am/9:30pm), and sets around sunrise. It's now at (-2.5 mag), and the views will keep getting better as it keeps rising earlier and earlier throughout spring. There are numerous occasions of moon/shadow transits across its face, so there is always something to see here. Check the web for a current schedule for your favorite type of event. It remains in the constellation Cancer.

**Saturn:** Rises around (1:30am/midnight) and is at (0.5 mag). This month, Saturn remains almost stationary in the constella-

tion Scorpius. The views will continue to get better as the season progresses as it rises earlier and will remain viewable as an evening object right into late fall.

**Pluto, Neptune, & Mercury:** By mid-month, Pluto will again be viewable (not easy, but viewable). It's still in the constellation Sagittarius, still low in the sky, and still faint (14.2 mag). It's in the morning sky rising about (5:30/3:30am). Mercury (mag 0.0) is technically a morning object, but after about the first week, will slip dangerously close to the rising Sun to be viewed safely. After mid-April, Mercury will have passed around the back side of the Sun and then become an evening object as it trails the Sun.

### **Moon:**

March 5th: Full Moon

March 13th: Last Quarter

March 20th: New Moon

March 27th: First Quarter

### Special Events/Objects:

**Reminder: Daylight Savings Time begins in the wee hours of the 8th**, so keep in mind that you may need to add an hour to times listed on printed calendars & charts, along with setting your clocks ahead by one hour. The times mentioned in the events above have taken DST into effect, so

for the first week of this month, please subtract an hour.

**Comet c2014 Q2 Lovejoy:** It should be fairly high overhead this month just entering the edge of the constellation Cassiopeia, and even though it's moving; will spend the month there. Brightness predictions range from (7.0 to 9.0 mag), so should still be an easy binocular object once you're in the right area of the sky and have a nice dark night. Do a Google search for its nightly location and current brightness reports. (S&T has a free printable map showing its location thru March if you go to their site). There are no large meteor showers to speak of, but maybe you've got a touch of cabin fever, and are itching to start off your observing year trying something a little bit different...Maybe try the **Messier Marathon**? The best weekend for it will be the 20/21st as it's New Moon weekend, so the Moon won't be an issue. One week either way is still possible, but you'll compromise your chances of finding either the early evening objects, or the late evening objects by having the Moon to deal with. A quick Google search will give you a wealth of info about it, or you could look at the Spectrum archives of the February/March newsletters for club articles written about it. Good Luck if you give it a try.



## March General Meeting

### **“NCSF Annual Banquet”**

(In lieu of the March Meeting)

**Thursday - March 5, 2015**

**Social hr 6 p.m. Dinner at 7 p.m.**

**Fox and Hounds Restaurant**

**1298 Friess Lake Rd.**

**Hubertus, WI**

## 2015 Membership Dues

The Final Dues Notice accompanies this Newsletter. If you have not paid yours 2015 dues, simply follow the instructions on the notice and return to treasurer, Gene DuPree. (If your dues are current, you won't receive a Notice.)

## 2015 Public Viewing Schedule

The Public Viewing schedule for 2015 is enclosed in this month's Spectrum. Many opportunities exist for public outreach, both at Harrington Beach and in the community. *Get involved!*

## RELATED INFO

### WELCOME

### NEW MEMBERS

[Tod and Marsi Ullman](#)

[Sheboygan, WI](#)



### Leaders for Public Viewing

April 18

Horicon Marsh Visitor Center

Gene & Charlotte DuPree

## **February Public Events**

### **Harrington Beach, February 7th**

*Harrington Beach...By Charlotte DuPree*

February 7th., Harrington Beach, Ski and Hike. Cloudy and cold. We had three visitors, which included our newest member David and his friends. We closed up around 8, and went down to the welcome center to warm up.

### **Celebrate Families 2015, February 8th**

*West Bend High School...by Mickey Kaz*

First time NCSF has been represented., Rick Dusenbery, Gene DuPree and Rick Kazmierski brought along telescopes for viewing high placed photo's and basketball hoops. We went through all 100 rocket-ship kits, galaxy mobile instructions and astronomy-related magazines. We had major interest in our Club. Our NCSF Public Outreach dates were not yet available. However, the DuPree's, representing the NCSF made handouts of Public Viewing dates they organized for Washington County Parks. As our cards were handed out, we advised people to check out the website for 2015 public viewing dates. Many, many thanks to Charlotte (got us signed up, hooray!), Gene DuPree, Carol Nelson, Rick Dusenbery, and Rick Kazmierski for making this a great event. We're looking forward to 2016!

### **Reuss Ice Age Center, February 12th**

*An Evening with Nature.by Charlotte DuPree*

We were asked to do stargazing after the indoor program about constellations. We started with a partly/mostly cloudy sky. It cleared enough to show the few visitors about a dozen deep sky objects. Of course it was clear when comet Lovejoy was found and everyone, except two, had left. We each received a thank you gift, a jar of homemade jelly for helping Jackie out with her program. Thanks to Rick Dusenbery and Don Miles for helping out.

### **Pike Lake, February 14th**

*Ski and Hike...by Charlotte DuPree*

A very cold, brutal wind chill, was the highlight of the day. We had a very clear sky. We put our

display in the cold, supposed to be heated, shelter. The crowd, of course, was not large this year, about 100 people. Rick Dusenbery set-up in the space plowed for us, near the lake. A special thanks to Rick for being a brave soul!!!

*Rick Dusenbery reports:* Number of people that braved the cold to look through the telescope: approx. 50.

Objects observed: Jupiter, M-42, Pleiades, M-31 with M-32, Double Star Cluster, and Comet Lovejoy.



### **Annual Swap and Sell**

**Sheboygan Astronomical Society**

**Saturday, March 28, 2015**

**Aviation Heritage Center**

**N6191 Resource Drive**

**Sheboygan Falls, WI 53085**

**9:00 am to 2:00 pm**

### **STAR PARTIES**

**NCRAL 2015 Convention**

June 5 & 6th in Fargo, ND

Fargo-Moorhead Astronomy Club

No details at this time

**Wisconsin Observer Weekend**

WOW

June 11 - 14th

Hartman Creek State Park,

Waupaca, WI

Register Form at

[www.new-star.org/](http://www.new-star.org/)

**Northwoods Starfest**

August 14 - 16

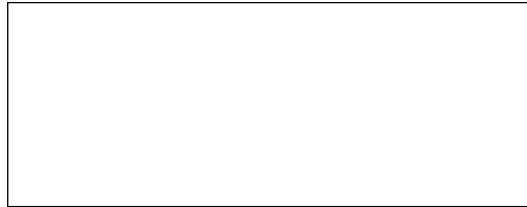
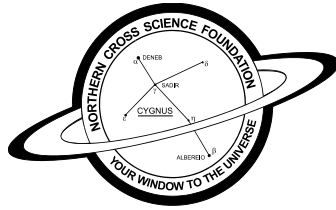
Hobbs Observatory

Fall Creek, WI

[cvastro.org@gmail.com](mailto:cvastro.org@gmail.com)



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## 2015 BOARD OF DIRECTORS

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## Book Review - The Martian ...by Andy Weir

As we all know, Wisconsin winters can be cloudy and cold. Here's a book of science-fiction with a twist, it's been written by a physicist. Entertaining, riveting, humorous, and technologically accurate, the story is a great way to escape.

### About the Author:

Andy Weir, the son of a particle physicist, has a background in computer science. He began writing the book in 2009, researching the book to be as realistic as possible based on existing technology.<sup>[9]</sup> Weir studied orbital mechanics, astronomy, and the history of manned space-flight.

### Synopsis:

*"Astronaut Mark Watney became one of the first people to walk on Mars. Now he's sure he'll be the first person to die there. After a dust storm forces his crew to evacuate the planet while thinking him dead, Mark finds himself stranded on Mars's surface, with no way to signal Earth that he's alive. Armed with nothing but his ingenuity, engineering skills - and a gallows sense of humor that proves to be his greatest source of strength - Mark embarks on a quest to stay alive."*

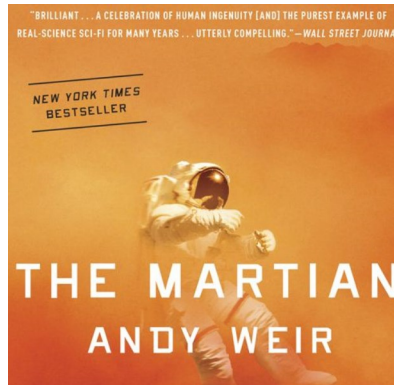
(Back Cover)

### Publications:

Hardcover Book, Amazon Kindle version, Audiobook - by Podium Publishing

### Film:

A film adaptation is to be released this year, November 2015, starring Matt Damon.

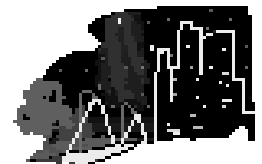


## SPECTRUM

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The NCSF supports the International Dark sky association.



### Send inquiries to:

SPECTRUM  
5327 Cascade Drive  
West Bend, WI 53095

This Issue, along with back Issues of SPECTRUM, can be found on the NCSF Web Site.

<http://www.ncsf.info>

### Monthly Meeting Information

7:00 p.m. Astronomy 101  
7:30 Main Program  
Unitarian Church North  
13800 N. Port Wash. Rd.  
Mequon, WI 53097