

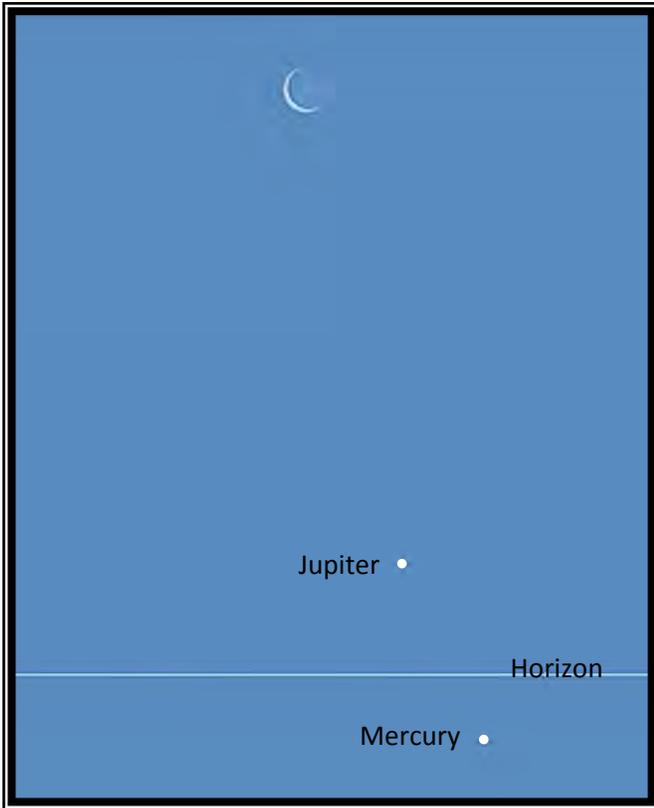


Desert Skies

Tucson Amateur Astronomy Association

Volume LVIII, Number 5

May 2012



May 20th Partial Solar Eclipse at 6:40pm Tucson time
Sun/Moon ~7-degrees above the horizon
near maximum coverage



Saturn returns to the early evening sky

May 12th Kitt Peak Star-B-Que
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OSIRIS REx Target Asteroids!
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Grand Canyon Events
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General Meeting May 4th

Steward Observatory Lecture Hall, Room N210

6:30pm

Astronomy Fundamentals Special Interest Group — Ben Bailey

7:30pm

Member's Night—TAAA Members

Affiliates



TAAA Meeting Friday, May 4

Steward Observatory Lecture Hall, Room N210, U of A campus



6:30pm Astronomy Essentials Lecture

Title: Astronomy Fundamentals

Speaker: Ben Bailey and other AFSIG leaders

Our Astronomy Fundamentals Special Interest Group (AFSIG) offers a wealth of information and training to TAAA members new to astronomy. Come hear our AFSIG head coordinator, Ben Bailey, describe what the AFSIG can offer you. Perhaps you're an old pro at this astronomy stuff so come learn how you might help the AFSIG in their efforts.

7:30pm Members Night

Title: Members Presentations

Speaker: Several presenters

You never know what's in store for Member's Night. This is particularly true this time because members are keeping all of us in suspense until just days before the meeting before telling us they will be presenting. So far Erich Karkoschka and Terri Lappin will be presenting. The scheduled is sure to fill up—it always does! So, here's your chance to tell us what you've been up to—astronomically speaking. It doesn't need to be a polished PowerPoint presentation! Just tell us what you're doing. To get on the presenters list, contact our president, Keith Schlottman (see page 15)

We will be electing the 2012–2013 board of directors at this meeting. The slate of nominees can be found on page 5.

President's Message

There are some very exciting astronomical events coming up in the very near future. TAAA members already know about the annular solar eclipse in May, and the Venus transit in June. Many of you have already made plans to take advantage of these observing opportunities.

Solar eclipses are not frequent, and Venus transits are quite rare (if you miss the June transit, you won't get another chance to see one again in your lifetime). There are many other astronomical events that do not occur very often, and it's interesting to watch how the various forms of communication between amateur astronomers take on a "buzz" as details are discussed, plans are made, and observing reports are posted. I'm hoping we'll see an increase of interaction on the TAAA Forum as the eclipse and transit draw closer, and I can hardly wait to read the reports.

Humans tend to take special notice of things that change, which is why events like eclipses, transits, heavy meteor showers, closer-than-normal planetary oppositions, comet apparitions, and so many other events garner so much attention. These events play an important role in our outreach activities, too, in part because they heighten our own enthusiasm, and in part because the public may be more receptive to observing things that they have heard are unusual. The media even jumps on board, sometimes over-hyping but generally in a positive way.

So I hope you'll all enjoy some observing during these upcoming events. However, I'd also like to encourage you to enjoy the "routine" observing opportunities that the night sky presents us. We're currently in the heart of "Galaxy Season" – have you checked out some of the old

familiar galaxies? How about some new ones? If you don't have a big scope capable of resolving some of the faint fuzzies, perhaps you can join us at a star party at the Chiricahua Astronomy Complex and take advantage of the club's 18" Dobsonian, or at TIMPA and put the 14" SCT into service. Who knows, you might even get a chance to combine some galaxy observing with a view of a supernova, or see some meteors streaking through the sky.

In fact, if you really think about it, there's no such thing as a routine observing opportunity – there is always something new for you to discover!

Keith Schlottman



Cover

A partial solar eclipse will be visible from Tucson on May 20th. Gary Rosenbaum provided the graphic using Starry Nights Pro. Sizes of planets enlarged for visibility.

Jim Militello provided an image of Saturn he took on 2 Jan 2011 from his home in Tucson. He used an Imaging Source DBK 21AU04.AS video camera with a 14.5" Starmaster. Image is a stack of 600 frames.

Unless otherwise noted, contact information for individuals mentioned throughout this newsletter can be found on page 15—"How to Contact Us".

<i>This Month in Brief</i>			
<i>Event</i>	<i>Date</i>	<i>Time</i>	<i>See</i>
<i>Contact Person</i>	<i>Location</i>		<i>Page</i>
Monthly Meeting Keith Schlottman	May 04 (Fri) Steward Observatory Rm N210 933 N Cherry Ave	6:30 PM	2
Community Event (Daytime) SE Tucson Bill Lofquist	May 04 (Fri) Pima Air and Space Museum 6000 E Valencia Rd	10:00 AM	7
Astro Imaging SIG Meeting Larry Phillips	May 07 (Mon) Coco's Restaurant 6095 E Broadway	6:00 PM (for dinner)	4
Board Meeting Keith Schlottman	May 09 (Wed) Steward Observatory N305 933 N Cherry Ave	6:30 PM	13
AFSIG Meeting Benjamin Bailey	May 10 (Thu) USGS Building Room 253 520 N Park Ave	6:30 PM	5
Star Party at TIMPA Ben Bailey	May 12 (Sat) TIMPA 3250 N. Reservation Rd		6
Kitt Peak Star-B-Cue Dean Ketelsen	May 12 (Sat) Kitt Peak Picnic Area	4:00 PM	4
Community Event SW Tucson Teresa Lappin	May 12 (Sat) Mission Branch Library 3770 S Mission Road	1:00 PM	7
Community Star Party NE Tucson Bill Lofquist	May 15 (Tue) Emily Gray Jr High 4201 N Melpomene	7:00 PM	7
Community Star Party East Tucson Bill Lofquist	May 17 (Thu) Desert Christian High School 7525 E Speedway Ave	7:00 PM	7
Friday Nite @ TIMPA Ben Bailey	May 18 (Fri) TIMPA 3250 N Reservation Rd		6
CAC Star Party John Kalas	May 19 (Sat) Chiricahua Astronomy Complex		6
Annular/Partial Solar Eclipse	May 20 (Sun) Grand Canyon (Annular) AND Flandrau Science Center (Partial)		3, 8

<i>Future Dates</i>	
June 1	TAAA General Meeting
June 4	Astro-Imaging SIG Mtg
June 5	Venus Transit
June 9	TIMPA/AFSIG Star Party
June 13	Board of Directors Meeting
June 14	Astronomy Fundamentals SIG Meeting
June 15	Friday Nite @ TIMPA Star Party
June 16–23	Grand Canyon Star Party
June 16	Chiricahua Astronomy Complex Star Party

<i>Upcoming Lectures</i>		
Jun 1	<i>Astronomy Essentials</i>	Al Anzaldúa Near Earth Asteroids
	<i>Invited</i>	Carl Hergenrother OSIRIS-REx
Jul 6	<i>Astronomy Essentials</i>	Mary Turner Seasonal Objects
	<i>Invited</i>	OPEN
Aug 3	<i>Astronomy Essentials</i>	OPEN
	<i>Invited</i>	Veronica Bray Impact Craters

Lectures are arranged by Terri Lappin. She's always open to suggestions. See page 15 for contact information.

May 20th Partial Solar Eclipse

TAAA will participate in public viewing of the May 20th partial solar eclipse. The event will take place at Flandrau Science Center beginning around 4pm. Solar telescopes are needed. Watch for email announcements with details. Maximum coverage will be about 86%. The event will end when the sun and moon set shortly after maximum coverage. Remember, solar observing protection is required to view this event.

Solar Observing Group

The Solar Observing group will not be meeting for group solar observing until further notice. Please ignore the May 19th Solar Observing date that appears on the 2012 TAAA wall calendar. Solar observers are encouraged to use the TAAA Forum to post their solar observations.

Newsletter Deadline

The deadline for the June issue is Wed, May 16. Desert Skies is published one week before the General Meeting. See the publishing guidelines on page 15 for details.

*Astro-Imaging Special Interest Group (AISIG)***Meeting: May 7 (Mon)****7:00 PM**

Coco's Restaurant (Broadway between Wilmot & Craycroft)
 Contact: Larry Phillips

The Astro-Imaging SIG meets at 7pm usually on the first Monday of the month. Come early, anytime after 6 PM and enjoy dinner before the meeting. We will meet in the banquet room which is to the far left after you enter the restaurant proper. Our program consists of members sharing their images, setups, problems, or suggestions. Meetings end no later than 9 PM.

*Space Exploration Special Interest Group (SESIG)***Planning Meeting: May 17 (Thu)****6:45 PM**

Woods Memorial Branch Library
 Contact: Al Anzaldua

On May 17 the SESIG will be holding a planning meeting at 6:45 pm at the Woods Memorial Branch Library, 3455 N 1st Ave, just south of Prince Road on the west side of the street. All TAAA members interested in space exploration and development are welcome! (This is a change in date from what appeared in last month's newsletter.)

Sign-up sheets for SESIG talks will be provided at the General Membership Meetings, or RSVP to Al Anzaldua.

Starry Messengers Special Interest Group (SMSIG)

Starry Messengers SIG ~
 Opening Minds to the Universe

Contact: Terri Lappin

Starry Messengers are TAAA members who are interested in astronomy outreach. With our collective knowledge and experience, we share ideas for explaining some rather confusing and down right mind boggling astronomical concepts to the public. The "public" in this case can be a classroom of 4th graders, or a group of adults. What they have in common is humanities quest to understand what is seen and our natural curiosity about what's beyond the horizon. They want an answer to the most basic question, "What's out there?" We depend on our telescopes and the Night Sky Network toolkits to answer that question in meaningful terms.

Our meetings are used to plan activities for TAAA's major outreach events. We've held Saturday morning workshops that have allowed us to become familiar with the Night Sky Network toolkits. We are going to meet more often with the goal of completing back burner projects and starting new ones. TAAA members should start seeing more of what we are doing. Our next meeting will be in July.

The Starry Messengers SIG is open to any TAAA member who has an interest in outreach and informal education. As I've said in the past, if family members or co-workers come to you asking about astronomy topics, then you're doing outreach. There are no fees involved to participate - unless you want to eat dinner during our meetings. Your input at our meetings will always be welcomed.

TAAA Apparel

Looking for a special gift or a way to make that fashion statement? Try on something from our fine line of club apparel. We have hats, T-shirts, denim shirts, and patches. We take cash and checks. Available at most monthly meetings. Coordinated by Mae Smith.

*Kitt Peak Star-B-Que***May 12 (Sat)****after 4pm****Kitt Peak Picnic Area**

Contact: Dean Ketelsen

The TAAA is again throwing our twice-a-year star-B-que event at the Kitt Peak Picnic area. This is also a TIMPA night, but for those of you who want to drive a little further for some spectacular skies and a bit of socializing in a cookout format, it is a great time.

Rules are pretty straightforward, designed for minimal impact on the professionals observing nearby. You must arrive before dark. If you arrive after 4pm when the mountaintop closes, proceed directly to the picnic area at about milepost 10.5. The grill, provided by the Kitt Peak Employees Association, will be lit by 5pm and will go out before sunset at 7pm. The picnic area is a great place to observe, though there are some trees that block parts of the horizon. But a pavilion, some observing pads, and flush toilets are available for our use. Moonrise is about 1:15am, which is just as well, as we are not allowed to camp out or stay overnight - you must depart the mountain at the conclusion of your observing, and moonrise is a good time to close down.

There will be a sign up sheet at the May meeting - if you cannot attend, please e-mail Dean Ketelsen at ketelsen[at]email.arizona.edu to be added to the list if there is space. For those who attend and are available to arrive at the Observatory a little early at 2:30, Dean will TRY to arrange a tour of the normally-closed to the public WIYN telescope. Dean will announce this opportunity on the TAAA forum if he's successful in setting it up.

Unless otherwise noted, all contact information can be found in the section called "How to Contact Us", found on page 15 of this issue of *Desert Skies*.

Astronomy Fundamentals SIG (AFSIG)

AFSIG Monthly Meeting

May 10 (Thu)

6:30 PM

U.S.G.S. Building, Room 253 (520 North Park Avenue)

Contact: Ben Bailey

On Thursday, May 10 we will hold our regular monthly meeting. Tom Watson will present the AFSig Double Star Observing Club program. AFSIG is dedicated to building astronomy knowledge and practical skills among our members. Please come out and help us succeed.

The USGS Building is on the northeast corner of Park and 6th Street. Free parking after 5pm behind the building in a paved lot. Please join us.

AFSIG Observing Clubs

AFSIG Observing Clubs are open to all members of TAAA at no charge. They are guided programs which means that at the scheduled observing sessions, there is someone there to guide you in finding the objects or features needed for successful completion of the program. You can join the programs at any time and can either attend the guided sessions or work on your own. A certificate is awarded at the completion of all the requirements. All observing programs are patterned after those of the Astronomical League, so you can continue on to complete the additional requirements and get your AL certificate.

Solar Observing Club helps those interested in observing solar activity — like sunspots, solar flares and other interesting features — and recording those observations. The beauty of this observing program is that our Sun offers great flexibility in observing and recording the different features — you don't have to be concerned about light pollution, night vision, or traveling great distances to find dark skies. The Solar Observing Club is taking a temporary hiatus from their regular observing schedule. Watch the newsletter for future observing dates. If you are interested in solar observing, please email Ben Bailey to be added to the solar observing email list.

Lunar Observing Club meets sporadically depending on schedule compatibility and the moon cycle. The purpose of

this club is to identify and log 30 specified lunar features — some of which are easy while others are more difficult. This is a great club in which to participate as it is ideal for observing from your back yard or patio. Dark skies are not really necessary and some features are even visible through light clouds. If you are interested in participating in the Lunar Observing Club or if you just want to be added to our email list to keep posted about our activities, email Robert Gilroy at bobgilroy[at]tucsonastronomy.org.



Constellation Observing Club meets monthly on our regularly scheduled TIMPA night. The purpose of this club is to identify and log 20 constellations, their brightest stars and deep sky objects. This is a great way to learn your way around the night sky. If you are interested in participating in the Constellation Observing Club or if you just want to be added to our email list to keep posted about our activities, email Paul and Cathy Anderson at paulanderson[at]tucsonastronomy.org.

Solar System Observing Club meets monthly on our regularly scheduled TIMPA night. The purpose of this club is to observe and log the different features and actions of the planets and their moons and other interesting solar system objects. If you are interested in participating in the Solar System Observing Club or if you just want to be added to our email list to keep posted about our activities, talk to Brian O'Connell at either the General or AFSIG meeting.

Double Star Observing Club meets monthly on our regularly scheduled TIMPA night. The dark night sky is filled with millions and millions of stars. Some are close by (relatively speaking) but most are far away. Some are single stars (like our sun) but others are multiple star systems. Of these multiple star systems, we can detect and split many double stars with our equipment. The purpose of this club is to observe and log the different types and colors of double stars. If you are interested in participating in the Double Star Observing Club or if you just want to be added to our email list to keep posted about our activities, email Tom Watson at watson1987[at]cox.net.

Club Election of Officers at May Meeting

Every year the TAAA conducts elections to establish officers for the coming year. The following candidates are running for office this year:

President: Keith Schlottman

Vice President: Robert Gilroy

Treasurer: John Croft

Secretary: Al Anzaldúa

Members at Large: Vern Dunlap, Chuck Hendricks,
Bill Lofquist

Any member in good standing for at least a year is eligible to run for an office. If interested in running for any of these positions, please contact one of the Nominating Committee members below.

Mary Turner — mrmgturner[at]earthlink.net

Ken Shaver — eyesoar[at]vailaz.com

Carter Smith — ssmith[at]email.arizona.edu

Write in candidates can be nominated at the election meeting as long as he or she is present to accept the floor nomination or has confirmed their acceptance of the nomination in writing via e-mail or letter prior to the election. Please consider supporting our organization in these important roles.



Find us on Facebook
Search for "Tucson Amateur
Astronomy Association"

Members' Star Parties

TAAA Star Party at TIMPA

May 12 (Sat)

Gate opens at 6:30pm

May 18 (Fri)

Gate opens at 6:40pm

Contact Person: Ben Bailey



The AFSIG is hosting two star parties this month at TIMPA. On both Friday, April 13th and Saturday, April 21st, an AFSIG representative will open the gates for an evening of viewing. The Gila Monster Observatory will be open for your viewing pleasure. The TIMPA site features a large parking area, and full restroom facilities. Be prepared for cool temperatures after sunset. Guests are welcome, accompanied by a TAAA member. We hope to see you there!

The Gila Monster Observatory houses a Meade 14" telescope donated to the TAAA by David Levy's Sharing the Sky Foundation. All members are encouraged to complete the training program to learn to operate this telescope.

TIMPA Site Notice

A gate card is required for TIMPA access. Please *DO NOT* ask the caretakers for entry to the TIMPA SITE. On scheduled TIMPA star party nights, a designated TAAA representative will provide access to the site. At other times, a gate card is available from the TIMPA Gate Card Controller.

Directions to TIMPA Site

GPS coordinates: 32 deg 15.868' N, 111 deg 16.390' W

The TIMPA site is about 25 minutes from Speedway & I-10, about 7 miles west of the Arizona-Sonora Desert Museum.

From the North:

1. Take Ina Road west about three miles past I-10.
2. Turn south (left) onto Wade Rd. Wade Rd becomes Picture Rocks Rd as the road turns to the west (right).
3. Take Picture Rocks Rd west to Sandario Rd.
4. Turn south (left) onto Sandario Rd. Go to Manville Rd.
5. Turn west (right) onto Manville Rd. Go to Reservation Rd.
6. Turn south (left) onto Reservation Rd (a dirt road) and go about two miles. The TIMPA entrance is on the left.

From the East:

1. Take Speedway Blvd west. It turns into Gates Pass Rd.
2. Go over Gates Pass and continue west to Kinney Rd.
3. Turn north (right) onto Kinney Rd and continue past the Arizona-Sonora Desert Museum.
4. At the entrance to Saguaro National Park West, go towards the left onto Mile Wide Rd. (This is easy to miss so watch for the park entrance sign.)
5. Take Mile Wide Rd west about five miles to Reservation Rd. Mile Wide Rd ends at Reservation Rd and you must turn north (right) onto Reservation Rd.
6. Take Reservation Rd (a dirt road) north about one mile. The entrance to TIMPA will be on the right.

Star Party at Chiricahua Astronomy Complex

May 19 (Sat)

Contact Person/RSVP to: John Kalas



The Chiricahua Astronomy Complex (CAC) is the club's dark observing site. Located in Cochise County approximately 100 miles from the center of Tucson, the site includes a full bathroom facility. At an elevation of 4800 feet, be prepared for cooler temperatures. Try to arrive before sunset. Unlike the TIMPA site, members are required to make reservations for both monthly club star parties and private member use. We are restricted to 60 persons and 30 vehicles maximum at any time. If you would like to attend, you must contact CAC Director John Kalas. Reservations will be on a first come - first serve basis. Depending on the number of members interested in attending, guests may not be allowed.

CAC Site Notice

Reservations are required at all times including scheduled star parties. On scheduled CAC star party nights, a TAAA designated representative will unlock the gate. At other times, access can be granted by the CAC Director.

Directions to Chiricahua Astronomy Complex Site

GPS coordinates: 31 deg 52.07' N, 109 deg 30.9' W

The Chiricahua Astronomy Complex is about 90 miles and a 1½ hour drive from the TTT Truck stop at Craycroft Road and Interstate 10.

1. Take I-10 east from Tucson past Benson.
2. Exit I-10 at Dragoon Road (Exit #318) . Turn right onto Dragoon Road at bottom of exit ramp.
3. Travel 13.5 miles southeast to the intersection with Route 191. Turn south (right) onto Route 191.
4. Travel 17.9 miles south (past Sunsites and Margie's Corner Café at High St on the right, and the Border Patrol checkpoint) to the intersection with Route 181 at Sunizona.
5. Turn east (left) onto Route 181 and travel 10.9 miles east to the intersection with South Price Ranch Road. Turn south (right) onto South Price Ranch Rd. This is a dirt road just before you reach mile post 49 (cluster of mailboxes on right side of Route 181).
6. Travel ½ mile south on South Price Ranch Rd to the intersection with East Perseus Way. This is a wide dirt road marked with a street sign on left. Turn east (left) onto East Perseus Way.
7. Travel east on East Perseus Way slightly more than ¼ mile to the entrance of the Chiricahua Astronomy Complex on the right. The address is 9315 E Perseus Way. It is marked with a TAAA sign and twin brown gates flanked by white rail fences set back 50 feet from road.

Community and Educational Events

Members are asked to support our outreach events. TAAA either sponsors or co-sponsors these events. This is a great opportunity for beginners as you can remain on a single object if you like. You can even contribute without a telescope. Sign up sheets will be at the meeting. You can also contact the star party leader or the volunteer coordinator, see the section "How to Contact Us" on page 15 of this issue. Details and maps can be obtained from the TAAA website calendar.

Pima Air and Space Museum Public Event

May 4 **Set-up: 9:30 AM**
SE Tucson Volunteers Needed: 2
Leader: Bill Lofquist

Pima Air and Space Museum is having a star party for 132 students and family members. This is located at 6000 E. Valencia Road. Viewing will be outside the Space Gallery Observing is from 10:00 AM to 1 noon.

Saturday Science at Mission Library

May 12 **Set-up: 12:30 PM**
SW Tucson Volunteers Needed: 1
Leader: Teresa Lappin

Mission Branch Library is having a star party for 20 students and family members. This is located at 3770 S Mission Road. Observing is from 1:00 to 2:00PM.

Emily Gray Jr High Star Party

May 15 **Set-up: 6:30 PM**
NE Tucson Volunteers Needed: 4
Leader: Bill Lofquist

Emily Gray Jr High is having a star party for 50 students and family members. This is located at 4201 N Melpomene. Observing is from 7:00 to 9:30 PM.

Desert Christian HighStar Party

May 17 **Set-up: 6:30 PM**
East Tucson Volunteers Needed: 2
Leader: Bill Lofquist

Desert Christian High School is having a star party for 300 students and family members. This is located at 7525 E Speedway Ave. Viewing will be on a grassy area at the center of the campus. Observing is from 7:00 to 9:00 PM.

Sharing the Sky Star Night 2012

Each year as I speak to people after our big night, the first question is, how did it go? Immediately following, is How much did we raise?

Let me begin with the first question: How did it go?

I don't think the club could have done a better job if it tried. I barely had time to look through the solar telescopes and suddenly it was dark. I scanned down the UA Mall and could not believe how many telescopes I saw. I also must apologize, because one of my favorite things to do on that night is to go to each telescope and enjoy whatever object is in there, and I didn't get to do that this year.

This event could not have worked as well as it did without the help of so many people in so many ways:

- *Michael Magee got permission to use the mall and the parking passes.
- *Liz Kalas and Michael Magee got the advertising information out to the media
- *John Kalas kept the club in the loop for the event
- *Terri Lappin with hands on activities and special Night Sky Network door prizes

- *Al Anzaldia for bringing the 175 pound meteorite
- *Ellen Finney - our renaming the star calligrapher
- *Mae Smith, Mary Lofquist & Liz Kalas working the information table
- *Dave Anklam - our event photographer and also more special door prizes
- *Last but not least, the astronomers, who made the event so special

How much did we raise? At first, I was a bit disappointed that the cash received that night was way down from previous years, but when I added in the pre and post donations, we actually did very well. We raised \$1954.

Thanks for making the night as successful as it was.

Wendee & David Levy

PS The thank-you party is Friday May 25th. Some of you got the wrong invitation. The time and place is the same.



Save this Date

June 5th Venus Transit

Public Observing Event - multiple venues citywide



Visit the TAAA Website

www.tucsonastronomy.org

View all events on our online calendar

RSVP to those you will attend

Get directions from any starting point

Join the TAAA Forum

General astronomy discussions

~75 messages/month posted by TAAA members

Hosted by Yahoo Groups

Go to <http://tinyurl.com/hwoau>

Click on "Join this Group"

NASA Mission Wants Amateur Astronomers to Target Asteroids

This NASA press release was contributed by Carl Hergenrother and Dolores Hill, co-leads for Target Asteroids! and Target NEOs!
 Email: [Target_Asteroids\[at\]lpl.arizona.edu](mailto:Target_Asteroids[at]lpl.arizona.edu)

For more information about Target Asteroids! see:

<http://osiris-rex.lpl.arizona.edu/targetasteroids.html>

WASHINGTON -- A new NASA outreach project will enlist the help of amateur astronomers to discover near-Earth objects (NEOs) and study their characteristics. NEOs are asteroids with orbits that occasionally bring them close to the Earth.

Starting today, a new citizen science project called "Target Asteroids!" will support NASA's Origins Spectral Interpretation Resource Identification Security - Regolith Explorer (OSIRIS-REx) mission objectives to improve basic scientific understanding of NEOs. OSIRIS-REx is scheduled for launch in 2016 and will study material from an asteroid.

Amateur astronomers will help better characterize the population of NEOs, including their position, motion, rotation and changes in the intensity of light they emit. Professional astronomers will use this information to refine theoretical models of asteroids, improving their understanding about asteroids similar to the one OSIRIS-REx will encounter in 2019, designated 1999 RQ36.

OSIRIS-REx will map the asteroid's global properties, measure non-gravitational forces and provide observations that can be compared with data obtained by telescope observations from Earth. In 2023, OSIRIS-REx will return back to Earth at least 2.11 ounces (60 grams) of surface material from the asteroid.

Target Asteroids! data will be useful for comparisons with actual mission data. The project team plans to expand participants in 2014 to students and teachers.

"Although few amateur astronomers have the capability to observe 1999 RQ36 itself, they do have the capability to observe other targets," said Jason Dworkin, OSIRIS-REx

project scientist at NASA's Goddard Space Flight Center in Greenbelt, Md.

Previous observations indicate 1999 RQ36 is made of primitive materials. OSIRIS-REx will supply a wealth of information about the asteroid's composition and structure. Data also will provide new insights into the nature of the early solar system and its evolution, orbits of NEOs and their impact risks, and the building blocks that led to life on Earth.

Amateur astronomers long have provided NEO tracking observations in support of NASA's NEO Observation Program. A better understanding of NEOs is a critically important precursor in the selection and targeting of future asteroid missions.

"For well over 10 years, amateurs have been important contributors in the refinement of orbits for newly discovered near-Earth objects," said Edward Beshore, deputy principal investigator for the OSIRIS-REx mission at the University of Arizona in Tucson.

NASA's Goddard Space Flight Center in Greenbelt, Md., will provide overall mission management, systems engineering and safety and mission assurance for OSIRIS-REx. Dante Lauretta is the mission's principal investigator at the University of Arizona. Lockheed Martin Space Systems in Denver will build the spacecraft. OSIRIS-REx is the third mission in NASA's New Frontiers Program. NASA's Marshall Space Flight Center in Huntsville, Ala., manages New Frontiers for the agency's Science Mission Directorate in Washington.

For more information about NASA, visit:

<http://www.nasa.gov>

For more information on Target Asteroids! and OSIRIS-REx, visit:

<http://osiris-rex.lpl.arizona.edu>

Bring Astronomy To The Public At The Grand Canyon

Two opportunities for supporting Grand Canyon National Park with public outreach have arrived. The first is a rare annular eclipse on Sunday, May 20. At this time we have over 24 astronomers and 30 telescopes ready to bring the eclipse experience to the public as the path of the eclipse crosses northern Arizona including GCNP. In addition to our volunteers, five NASA astronomers will join us for presentations during the day in the theater, and remote setups with the visitors. There will be a semi-private star party the night of May 19 for the astronomers and the Grand Canyon Association, and for the public and astronomers following the sunset eclipse.

This will be followed June 16-23 by the annual Grand Canyon Star Party. Not only is this a superb opportunity to reach many visitors and enjoy the company of some of the friendliest and most capable amateur astronomers you'll ever find, it is also the opportunity for nights of observing at 7000 feet; the visitor flow tends to disappear around 10:30, so the night is yours to explore the sky with rare clarity and darkness.

To participate in either of these events, contact Jim O'Connor, Grand Canyon Star Party Coordinator (see page 15).



Night Sky Network Outreach Toolkits

Night Sky Network Toolkits, which are developed by the Astronomical Society of the Pacific, can augment telescope viewing at outreach star parties. Each themed toolkit contains several projects. Nearly everything needed for the projects are provided.

We have seen a recent increase in the number of requests for Night Sky Network Toolkits at our outreach events. More members trained in using the toolkits means we can accommodate more requests. Attend a training workshop or ask for individual training. If you already have experience with these toolkits, consider checking one out and bringing it to one or more star parties during the month. Toolkits have saved some events from failure when we have a cloudy night.



Materials from several toolkits including a poster called "The Lives of Stars", models of Saturn and Earth, Styrofoam balls for explaining moon phases, postcards explaining resolution, magnification and field of view, a lens to describe how telescopes work, and a yellow 'star' with a small 'planet' that can show the "wobble" effect used to detect extra-solar planets.

Contact Terri Lappin, our Night Sky Network toolkit coordinator, to borrow a toolkit or to receive training on their use. Each kit includes a Resource CD and Training DVD which you can keep. All other materials need to be returned. Our Outreach Toolkits are listed below.

Outreach Toolkits and Resources Available for Borrowing

Life in the Universe—Are We Alone?: origin of and search for life

Space Rocks - Asteroids, Comets, and Meteorites: meteorite samples, asteroid detection

Exploring the Solar System: scale model of solar system

Our Galaxy, Our Universe: scale model of the Milky Way galaxy and the Universe

Shadows and Silhouettes: lunar phases, eclipses, and transits

Black Hole Survival Kit: gravity concepts

Supernova!: life cycle of massive stars, earth's protective atmosphere

Mirrors and Glass: how telescopes work

Telescopes - Eyes on the Universe: basic principles of optics, the human eye, and observing

PlanetQuest: demonstrate planet detection techniques

Other Outreach Resources

SolarScope: provides a white light image of the sun suitable for small group viewing.

Dark Skies Education Kit: light pollution principles, includes a Sky Quality Meter

Comet Chef: an apron (with a comet on it) and chef's hat to wear when mixing up comets

Moon Globe: 12" diameter with stand

DVDs: *A Private Universe*, *Cosmic Collisions*

Dark Skies for May 2012

Data provided by Erich Karkoschka

No twilight, No moonlight for Tucson in 24-hour MST
18hrs=6pm, 20hrs=8pm
22hrs=10pm, 0hrs=midnight

Day	Date	Dark Time		
Mo/Tu	30/1	2:19	-	4:08
Tu/We	1/2	2:55	-	4:06
We/Th	2/3	3:32	-	4:05
Th/Fr	3/4	-	-	-
Fr/Sa	4/5	-	-	-
Sa/Su	5/6	FULL MOON		
Su/Mo	6/7	-	-	-
Mo/Tu	7/8	20:42	-	21:20
Tu/We	8/9	20:43	-	22:20
We/Th	9/10	20:44	-	23:12
Th/Fr	10/11	20:45	-	23:57
Fr/Sa	11/12	20:46	-	0:36
Sa/Su	12/13	20:47	-	1:11
Su/Mo	13/14	20:48	-	1:43
Mo/Tu	14/15	20:49	-	2:14
Tu/We	15/16	20:50	-	2:45
We/Th	16/17	20:51	-	3:16
Th/Fr	17/18	20:52	-	3:49
Fr/Sa	18/19	20:53	-	3:48
Sa/Su	19/20	20:54	-	3:48
Su/Mo	20/21	20:54	-	3:47
Mo/Tu	21/22	20:55	-	3:46
Tu/We	22/23	21:00	-	3:45
We/Th	23/24	21:45	-	3:44
Th/Fr	24/25	22:27	-	3:44
Fr/Sa	25/26	23:06	-	3:43
Sa/Su	26/27	23:43	-	3:42
Su/Mo	27/28	0:18	-	3:42
Mo/Tu	28/29	0:52	-	3:41
Tu/We	29/30	1:28	-	3:41
We/Th	30/31	2:05	-	3:40
Th/Fr	31/1	2:47	-	3:40

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Chris Lancaster's Constellation of the Month

Canes Venatici (kay' neez ve nat' eh see)

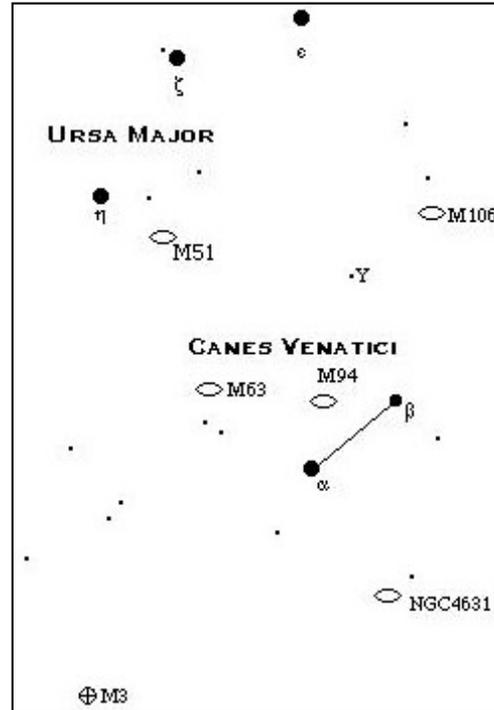
Small and marked by only two noticeable stars, this constellation is a fairly modern one created by Johannes Hevelius, a German-Polish astronomer, in the late 17th century from some stars that lie between the handle of the Big Dipper and the constellation of Bootes, the herdsman. In fact, Canes Venatici are Bootes's hunting dogs, often considered to be a pair of greyhounds that has joined Bootes in chasing the two bears, Ursa Major and Ursa Minor, around the celestial pole.

Alpha Canum Venaticorum is the brightest star of the constellation and has the interesting name of Cor Caroli, or "Charles's heart". This name was suggested to Edmond Halley by court physician Sir Charles Scarborough as a tribute to King Charles II. Looking at it with a telescope will reveal that it is a double star, one component of spectral type A0 V and magnitude 2.9, and the other, 20 arc seconds away, of spectral type F0 V and magnitude 5.6. The color contrast of the two is very small, but descriptions of the dimmer star range from white, to lilac, to coppery. You may want to decide for yourself what color the two stars exhibit.

A very well known Messier object is located in the northeast corner of the constellation. You can find it by using Eta Ursae Majoris, which marks the tip of the handle of the Big Dipper, as your guide. Move slightly more than 2 degrees south and 17 minutes in RA west of this star and you will see an 8th magnitude glow 10 arc minutes in diameter known as M51, the Whirlpool Galaxy. Its coordinates are RA 13h 29.9', Dec +47d 12'. This was the first galaxy to be noticed as showing a spiral structure. Previous accounts describe the galaxy as having a bright central region surrounded by a "ring." A 60mm refractor will see the unmistakable nucleus surrounded by a faint glow, and instruments 8" and larger will begin to show the photogenic spiral structure and perhaps some detail in the satellite galaxy NGC5195.

Moving to the southeastern edge of the constellation will bring us to M3, one of the brightest (mag. 6) globular clusters in the sky. Although it is located in a rather empty part of the sky, it is easy to find since it lies exactly on a straight line between Arcturus and Alpha Canum, not quite half way from Arcturus. The coordinates are RA 13h 42.2', Dec +28d 23'. This cluster rivals the great Hercules cluster M13 in size and brightness and medium sized scopes will bring out many hundreds of stars of magnitude 11 and fainter.

Returning to the wealth of galaxies in Canes Venatici, our next visit is to M94, a tightly wound bright spiral of magnitude 8.9 which can be found at RA 12h 50.9, Dec +41d 07'. M94 forms a triangle with Alpha and Beta Canum directly between and 1.6 degrees above a line connecting the two. Its bright nucleus fades to a soft glow about 4' x 5' in size. M63 is another spiral at RA 13h 15.8', Dec +42d 02', or again using Alpha Canum and Eta Ursae Majoris as markers, move about one-third of the way between the two from Alpha Canum and about 1/2 degree to the east. This 9.8 magnitude galaxy measures 9' x 4' and shows a nucleus surrounded by bright and tightly



wound arms which drop in brightness quickly to the outer edges of the galaxy. Our final Messier galaxy here is M106, yet another spiral glowing at magnitude 9 and turned slightly from an edge-on orientation. To find M106, look at RA 12h 19.0', Dec +47d 18', or along another line running between Beta Canum and Gamma Ursae Majoris, look about half way between the two.

If you can tolerate one more galaxy, find NGC4631, interesting due to its edge-on appearance. It measures 12.5' x 1.2', glows at magnitude 9.7, and may show a mottled appearance in larger scopes due to clumps of stars and dust. (RA 12h 42.4', Dec +32d 35', or 5.8 degrees south and 15' in RA west of Alpha Canum.)

For a colorful treat, look at Y Canum, one of the reddest stars in the sky. It is 4 degrees north and about 10 minutes in RA east of Beta Canum.

All the Constellation of the Month articles in one book!

Under Dark Skies

A Guide to the Constellations

By Chris Lancaster

Online for \$14.99 or get it directly from Chris for \$10

ctlancaster[at]msn.com

(while supplies last)

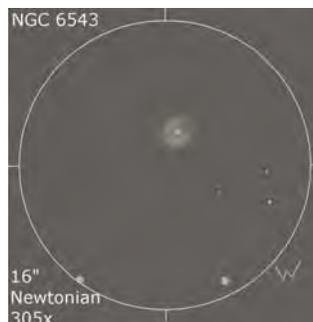
Editor's Note: Rik Hill's *Website Trips on the Internet Super Skyway* returns next month.

Christian Weis' Planetary Nebulae of the Month

NGC6543 and PK 49+88.1 (Haro 4-1)

Planetary nebulae (PN) are fascinating objects that come in numerous forms of appearances. Besides the well known grand four Messiers (M27, M57, M76 and M97), there are hundreds more to explore. This article suggests two PNs, a pretty bright and easy-to-observe one and a harder one for the more ambitious observer who is equipped with a bigger scope.

NGC 6543, the well-known Cat's Eye Nebula really is a spectacular object. It is brighter than Messier's PNs M57, M76 and M97. The only reason why Charles Messier has not seen it probably is due to its small extension of only a third of an arcminute while all Messier PNs are bigger than one arcminute. The object with the easy-to-remember catalog number was discovered by William Herschel in 1786. It is circumpolar but can best be seen in spring when it stands high in the sky. The first thing most observers will recognize is the color. I only remember a hand full of deep sky objects that I can see colorized - NGC 6543 is one of them. When observing the Cat's Eye in June 2010 from Geology Vista I noted: Green! Central star is conspicuous at 153x; uniform in brightness, northern part is cornered, rest is circular, well defined, central star seems to be surrounded by a darker area at high magnification (unsure), pretty small after all; fst 6m3 (UMa), 305x



NGC 6543
 RA: 17h 58.5min
 Dec: 66° 38'
 Constellation: Draco
 Brightness: 8m1
 Central star: 10m9
 Size: 20 arcsec
 Distance: 3600 ly



PK 49+88.1 = Haro 4-1
 RA: 12h 59.4min Dec: 27° 38'
 Constellation: Coma Berenices
 Brightness: 14m Central star: 19m5
 Size: 3 arcsec Distance: no data

When different kinds of object are meeting for a rendezvous, the result is a stunning view of our magnificent universe. Our eyes are not able to detect information about the depth of the objects, but achievements in science teaches us which object is far away and which one is not. PK 49+88.1 (or Haro 4-1) is a nice example. It is located in Coma Berenices close to the gigantic Coma Cluster which itself is well worth a visit (have a look for NGC 4889 and the crowded space around). PK 49+88.1 is a stellar PN with a magnitude of around 14mag (literature values again vary much, some give 16mag, which is too faint in my point of view). In order to find it, you will definitely need a filter for the identification and a detailed finder chart. With a big aperture, you will not only see the PN but also at least two faint galaxies that lie in the same field of view. These are CGCG 160-73 (15.2 mag) and MCG+5-31-74 (15.5 mag). I observed Haro 4-1 in March 2012 from southern Germany having favourable sky conditions and noted: Directly visible at 226x, best view at 161x, reacts to UHC and [OIII] but [OIII] darkens the field considerably, PN is stellar, two field galaxies can be seen with direct vision

The Visible Planets this Month

Data provided by Erich Karkoschka

Weekend Sa/Su	Sun		Mercury		Venus		Mars		Jupiter		Saturn		Visibility (Vi)	
	Set	Rise	Rise	Vi	Set	Vi	Set	Vi	Set	Vi	Set	Vi	Code	
5/6	19:06	5:31	4:39	6	22:10	-4	2:30	0	19:30	-	4:44	0	-3	brilliant
12/13	19:11	5:25	4:44	7	21:48	-3	2:06	0	19:10	-	4:15	0	0	conspicuous
19/20	19:16	5:21	4:56	-	21:16	-2	1:44	0	Rise	-	3:46	1	3	moderate
26/27	19:20	5:17	5:17	-	20:34	1	1:22	1	4:46	8	3:17	1	6	naked eye limit
2/3	19:24	5:15	5:50	-	19:45	9	1:02	1	4:42	5	2:49	1	9	binoculars limit



Desert Dwellers

Be alert for rattlesnakes, especially at night! Rattlesnakes are generally aggressive only if disturbed. If you see one, keep a safe distance and DO NOT try to interact with it in any way. Snakes are much faster than our reflexes, and should be handled only by professionals. Wear boots and long jeans. For more information, go to <http://www.friendsofsaguaro.org/rattlesnakes.html>.

Along with rattlesnakes, other desert critters, such as gophers and ground squirrels, make their home wherever they want. These residents can leave holes and other potential tripping hazards. Be careful when walking, especially at night.

TAAA Board of Directors Meeting—19 March 2012

Attending Board members present (6): Keith Schlottman, Bill Lofquist, John Croft, Al Anzaldua, John Kalas, Vern Dunlap.

Members present (4): Tim Van Devender, Ben Bailey, Bob Gilroy, Terri Lappin.

Call to Order: The President called the meeting to order at 6:32 pm.

Minutes: Board unanimously approved the minutes from the February 2012 Board meeting.

Upcoming Meetings: The Board discussed ways to make September's "State of the Club" meeting more interactive, including by having the special interest groups (SIGs) set up information tables.

Consent Agenda: The Consent Agendas for January, February, and March will be ready for Board consideration at next month's Board meeting. Treasurer John Croft did give the Board a verbal overview of the club's financial picture, however.

SIG Status Reports

Astronomy Fundamentals SIG (AFSIG) Report: Ben Bailey reported that the astronomy classes were well attended, and Don Cain volunteered to help run post-class star party obligations.

Starry Messenger SIG (SMSIG) Report: Terri Lappin reported that SMSIG had a planning meeting last month about the upcoming "Life in the Universe" workshop on March 31. Terri reported that we need another stand for the several Night Sky Network hang-posters. The Board requested that she investigate the cost and request the exact amount at the next Board meeting. In April Terri will be out of town for a while receiving Night Sky Network (NSN) training.

Space Exploration SIG (SESIG) Report: Al Anzaldua reported that only five people attended the March lecture on the potential of stratospheric platforms for astronomy, solar energy, and space launch. Despite the small turnout, however, an animated discussion ensued during and after the talk. SESIG will have a planning meeting at 6:45 pm on May 17 at the Woods Memorial Branch Library on 1st Ave., just south of Prince Road. Al will encourage those interested in planetary science or space exploration to come and express their views with regard to the kind of activities they would like the SESIG to engage in.

Star Party Coordinator Report: Bill Lofquist reported that he has 8 or 9 star parties scheduled in April and that the response from members to volunteer for these events continues to be excellent.

Chiricahua Astronomy Complex: John Kalas reported that the club is ready to proceed with the installation of the electrical service from a meter pedestal to the four RV spaces, which will cost about \$4400. SSVEC needs also to run a secondary power cable from the transformer to the meter pedestal, and John will get an estimate from SSVEC for that work.

Bill Lofquist reported that Wally's 11-inch Celestron go-to scope is still for sale in order to increase funds for CAC construction. It will be advertised in the newsletter and through the announcement list.

TIMPA: Bob Gilroy reported that he recently organized a weed cleanup party and spruced up the TIMPA site. TIMPA wants help to clean up its barn, where TAAA has been using a 10 x 18 ft portion. Ben Bailey and Bob Gilroy will organize a work party to look over the materials in the barn.

Speakers: Terri Lappin reported that speakers for Members Night in May are still needed, as well as speakers the July and August general meetings. Ben Bailey of the AFSIG agreed to provide a speaker for the August Astronomy Essentials lecture.

Web Director/E-Services Report: Bill reviewed the history of the website work going back 16 months. Tim Van Devender reported that the Web committee has had two productive meetings. The Board decided that Tim will actively direct the website work and carry out the website upgrades on a volunteer basis to lower costs. Keith Schlottman agreed to write Lew Lepley a letter asking him to suspend his engagement with the website to allow volunteer work by members to proceed.

Siberian Astronomy Club Visit: The Board passed a motion to issue a letter of invitation to the Siberian Astronomy Club to facilitate that group's visit to the United States. Dean Ketelsen will coordinate that task.

Star Party Policies: Bob Gilroy reported that he and Bill Lofquist met with Harry Kressler, Director of the Pima Prevention Partnership, who offered to provide training on security and appropriate methods for working with children. The Board was supportive of such training. Bob Gilroy reported that he will continue to consult with Board members on guidelines for working with children, as well as meet with TIMPA members on the subject.

Club Participation in Events: Terri Lappin offered to ask Starry Messenger SIG members if they want to organize a public event for the Venus transit in June.

Board members agreed that club participation in a variety of other events (i.e. the May 20 annular solar eclipse and the June 5-6 Venus transit) will continue on an ad-hoc basis.

Morning Blend TV Show: Al Anzaldua reported that Ken Carr, Executive Producer of the KGUN 9 Morning Blend TV show, has invited us to provide a TAAA member to be a guest on the show. Al will respond positively to Mr. Carr. The board discussed several members who might be willing to do this. Al will follow up with those members.

Respectfully submitted,

Al Anzaldua, TAAA Secretary

Next Board of Director's Meeting

May 9 (Wed)

6:30 PM

Steward Observatory Conference, Room N305



Contact the president to have your topic added to the agenda. There may not be time for topics that are not on the agenda. The front doors at Steward Observatory will be locked. Be there by 6:30pm or call the cell phone number of someone you know is attending the meeting and they can let you in.

TAAA Board of Directors Meeting—11 April 2012

Attending Board members present (5): Bill Lofquist, John Croft, Al Anzaldua, Vern Dunlap, Michael Turner.

Members present (5): Tim Van Devender, Bob Gilroy, Joe Catalano, Chuck Hendricks, Jim O'Connor.

Call to Order: The Vice-President called the meeting to order at 6:34 pm.

Minutes: Board unanimously approved the minutes of the March meeting from the Consent Agenda.

Treasurer's Reports: John Croft reported that \$32,456 is in the bank, and that \$15,919 of it is non-restricted. He also reported that in the first quarter the TAAA gained 25 new members. The Board approved Treasurer's report.

SIG Status Reports

Astronomy Fundamentals SIG (AFSIG) Report: Bob Gilroy reported that the Astronomy Fundamentals SIG (AFSIG) meeting on April 12 will be on the celestial sphere, and that the Astronomy Fundamentals class will take place in the Fall.

Space Exploration SIG (SESIG) Report: Al Anzaldua reported that the Space Exploration SIG (SESIG) will have a planning meeting on May 17 at 6:45 pm at the Woods Memorial Branch Library.

Star Party Coordinator Report: Bill Lofquist reported that there have been plenty of volunteers for TAAA star parties since January 1. Bill and Tim Van Devender will be working on a way for members to sign up for star parties through the TAAA website.

Grand Canyon Star Parties:

Jim O'Connor reported that 48 volunteers have signed up for the annual Grand Canyon Star Party (GCSP). For the May 20 annular solar eclipse event, 24 members have also signed up so far. NASA will provide indoor programs and six astronomers for the eclipse as well.

Jim also reported that the Grand Canyon Association (GCA) is organizing a project to darken the Grand Canyon area. GCA would like get TAAA's support for this effort, which would include help with publicity about the project. (GCA is trying to raise \$108,000 to carry out a study and pilot light-reduction effort.) Jim plans to write a paragraph about the GCA project for the TAAA newsletter and also arrange for Helen Ranney, GCA's Associate Director of

Philanthropy, to give presentation about the project at a TAAA general membership meeting. The Board appointed Jim as liaison with GCA.

Chiricahua Astronomy Complex: Bill Lofquist reported that plans are ongoing to complete Phase 2b of the electrical work and grading for the RV spaces. He also reported that John Kalas has organized an "Evening Under the Stars" event for Saturday, April 28 for the folks living in Sunsites, Arizona.

TIMPA: Robert Gilroy reported that he attended the second TIMPA board meeting of the year last week, in which he was reelected as the TAAA representative. Bob also reported that six TAAA members will, on April 15, inventory TAAA items in the TIMPA storage "barn" and clean up as needed.

Web Director/E-Services Report: Tim reported that work on the TAAA website is in progress.

Review of Insurance Policy: The Board voted to continue paying the insurance policy, which covers general liability and personal injury, for TAAA sponsored events.

Star Party Policies vis-à-vis Youths: Bob Gilroy reported that Harry Kressler of Pima Prevention Partnership has offered to do a free-of-charge training for members working in TAAA youth programs. Bob already has identified five or six people who would like to work in youth-oriented star parties and will therefore attend the training.

Fingerprint clearance and background checks will be needed for the people working with youth, and Bob will report on details about procedures and costs for such checks on a future date.

Bob passed out draft copies of the rules and registration forms for youth star parties. After discussion of the drafts, Bob agreed he would incorporate suggested edits in a clean copy for adoption at the next Board meeting.

Respectfully submitted,

Al Anzaldua, TAAA Secretary



Free service



Only for Members

Don't own a telescope?

Our Telescope Loaner Program is your answer!

Beginners, here's your chance to learn and observe the sky before buying any equipment. The Loaner Program is available to any current member after meeting requirements detailed in the TAAA Loan Policy. These telescopes are in the program:

Sears 60mm f/15 on equatorial mount

Unitron 62mm f/14.5 on equatorial mount

Meade 90mm ETX

Coulter Odyssey8 8" f/4.5 Dobson

Meade 10" f/4.5 on equatorial mount

Meade 10" LX200 GPS (requires training session)

Contact the Equipment Loan Coordinator (see page 15) or any club officer for details about these telescopes.

Invitation from a Parallel Universe

Contributed by Rich Watson, Astronomy Coordinator (volunteer)

Most of you have visited the public telescope at Flandrau and the reason I refer to it as a "parallel universe". Our 16" public telescope (across the street from Steward) is staffed by volunteers who are almost exclusively members of TAAA. Thus, the parallel.

Our dome is open to the public Wednesday – Saturday, 7–10 PM. This article is an invitation for you to join us. On a typical night, we engage between 30 and 80 visitors and our operators share the night sky through the telescope, our CCD camera and/or demonstrations on a computer.

Operators complete a three day "basic" training session covering details relating to the scope and presentations. They then shadow other experienced operators until they are fully oriented and comfortable. Our scheduling is unique because we use a virtual "sign up" sheet where operators choose nights that are convenient for service.

Some of our steadfast volunteers (like George Barber) have found other work, retired, or moved to other cities recently. Our group consists of students, amateurs, professionals and retirees. Your assistance in filling the gap would be greatly appreciated. Please call me if you are interested in becoming an operator and would like more information.

Thanks!

Contact Rich at aztucwatson@gmail.com; 520-981-1480

International Dark Sky Association

Southern Arizona section

Want better observing?

Join the group that's keeping the sky dark

Monthly meetings

2nd Wednesday, 5:30 – 7 pm.

3225 N. First Ave

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- Demonstrations at Desert Museum
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Contact: Joe Frannea: [sky\[at\]sa-ida.org](mailto:sky[at]sa-ida.org)

www.sa-ida.org

To preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting.

TAAA Classifieds

For Sale Price Reduced!	Observatory with Home for sale – 3 BR 3 Ba Ranch home on 3.2 acres with horse facilities, huge garage/workshop, in-law or guest room with separate entrance/bath and Home Observatory! Observe steps from your back door, yet easy commute to downtown Tucson. See 5150sBryce.com for details. \$200K. Thanks for looking! Claude & Teresa Plymate. 520-444-5979 Expires May 2012
For Trade	12.5" full thickness mirror blanks (two of them) to trade for a PST Solar telescope, or an older Ha filter capable of adapting to a high F/ratio Newtonian. Also lots of books and other stuff to horse trade with. This is needed for the annular eclipse and the Venus transit. Already have white light filters but I need a bit more "wow factor" for either my 8 or 10 inch F/8 Newts. James Lehr Miller starman1000[at]msn.com 520 751-4961 Expires July 2012
For Sale	10' x 12' motorized roll-off roof observatory in a great rural neighborhood. Situated on a 1-acre lot with southwestern style home. About 35 miles southwest of Tucson, close to Kitt Peak. Excellent night skies with desert climate giving many clear evenings. Home is 1900-square foot sturdy slot-block with tiled and newly carpeted floors, carport, new paint, and desert landscaping. 15940 Ridgemoor, Tucson, listed with Long Realty (http://www.longrealty.com), MLS#21123526. Current price is \$74995! Expires July 2012
For Sale Prices Reduced!	①Classic C11 OTA. In storage for nearly 10 years but worked great back in the day. Should still be fine. Been tested on the sky and achieved resolution limit for an 11" aperture on double stars. Some minor scuffs and scratches. Asking \$700 OBO ②C11 fork and base was purchased separately from the OTA and while the drive works it has never carried the OTA. No photos available. Asking \$400 OBO ③Classic Star Liner German Equatorial Mount that carried the C11 OTA for many years. It has homemade tangent arm Dec. drive and tracks very well. This thing is massive. Asking \$500 OBO. All items are Tucson pick up only. Photos at: http://www.lpl.arizona.edu/~rhill/instr.html Email Rik Hill at rhill[at]lpl.arizona.edu Expires August 2012
For Sale	StarBound Observing Chair. White, in very good condition. \$100. Email jmetzger46@gmail.com . Expires August 2012
For Sale	1989 10in. Meade Schmidt-Cassegrain telescope. Includes tripod, 12 eyepieces, dual axis controller, 2 spotting scopes and original manuals. Asking \$800 OBO. Call Robert at 520-266-9940. Expires September 2012

Ads run for 4 months unless specified. Month and year of last appearance is last item of ad. For additions or changes to this list, call or e-mail the newsletter editor.

Membership in the TAAA

Annual Fees

Individual membership \$25.00
 Family (includes two adults plus minor children)..... \$30.00
 Youth under 18 years must join as a family upon parental or guardian
 acknowledgement of participation in TAAA events. Ask the Treasurer for
 the required form.

Discounts (one qualified discount allowed, subtract from above rates)

Seniors (over 60 years) \$2.00
 College Students, Teachers (K - 12) \$8.00
 Youth under 18 yrs. (form required, contact the treasurer) \$13.00

Options (add to above membership rates)

Astronomical League (AL) fee..... \$7.50
 Sky & Telescope Magazine 1 year (12 issues, group rate)..... \$32.95
 Astronomy Magazine 1 year (12 issues, group rate)..... \$34.00
 2 years (24 issues, group rate)
 \$60.00
 Postage for New Member Pack \$4.95

Donations are accepted for the following funds: SA-IDA/Light Pollution,
 TIMPA, Education, Chiricahua Astronomy Complex, and General/
 Undesignated.

Renewal Information

You'll get an email reminder when it's time to renew.
 TAAA members may join the Astronomical League (AL) at the time they
 join or renew.
 Discounted Sky & Telescope or Astronomy magazine subscriptions are
 available to members and can be started or renewed at any time. Allow 3

months for processing. New subscriptions must be sent through the
 TAAA treasurer. Renewals can be paid online through magazine websites.
 To change an individual subscription to the group rate, pay the group rate
 to the TAAA treasurer. Include your magazine renewal notice.
 Include a note about what you're paying for. Credit cards are not
 accepted. Write one check or money order for dues plus any options or
 donations. Make it payable to TAAA and send to: Tucson Amateur
 Astronomy Association; PO BOX 41254; Tucson, AZ 85717

Mailing Address or Email Changes

Mail changes to address above, email them to the treasurer, or make
 them yourself online through Night Sky Network login account at <http://nightsky.jpl.nasa.gov/login.cfm>.

TAAA Mission Statement

The mission of the Tucson Amateur Astronomy Association is to provide
 opportunities for members and the public to share the joy and excitement
 of astronomy through observing, education and fun.

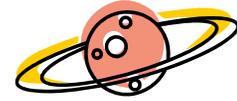
Desert Skies Publishing Guidelines

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 newsletter deadline. Materials received after that date will appear in the
 next issue. The editor retains all submissions unless prior arrangements
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How to Contact Us

TAAA Web Page: www.tucsonastronomy.org Mailing Address: PO Box 41254 Tucson 85717 TAAA Phone Number: 520-792-6414

Office/Position	Name	Phone	E-mail Address
President (elected board member)	Keith Schlottman	520-250-1560	president@tucsonastronomy.org
Vice President(elected board member)	Bill Lofquist	520-297-6653	vice-president@tucsonastronomy.org
Secretary (elected board member)	Al Anzaldua	520-409-5797	secretary@tucsonastronomy.org
Treasurer (elected board member)	John Croft	520-260-4687	treasurer@tucsonastronomy.org
Member-at-Large (elected board member)	Vern Dunlap	520-326-1964	mal1@tucsonastronomy.org
Member-at-Large (elected board member)	John Kalas	520-620-6502	mal2@tucsonastronomy.org
Member-at-Large (elected board member)	Michael Turner	520-743-3437	mal3@tucsonastronomy.org
Chief Observer	Dr. Mary Turner	520-743-3437	chief-observer@tucsonastronomy.org
AL Correspondent (ALCOR)	Paul Anderson	520-625-5035	alcor@tucsonastronomy.org
Community Event Scheduler	Bill Lofquist	520-297-6653	school-star-party@tucsonastronomy.org
Volunteer Coordinator	Bill Lofquist	520-297-6653	school-sp-volunteers@tucsonastronomy.org
TIMPA Gate Card Controller	John Kalas	520-620-6502	timpa@tucsonastronomy.org
Chiricahua Astronomy Complex Director	John Kalas	520-620-6502	cac-director@tucsonastronomy.org
Newsletter Editor	Terri Lappin	520-977-1290	taaa-newsletter@tucsonastronomy.org
Web Director	Tim VanDevender	520-495-0694	webmaster@tucsonastronomy.org
Publicist	Liz Kalas	520-620-6502	publicist@tucsonastronomy.org
Astro-Imaging Special Interest Group (SIG)	Larry Phillips	520-777-8027	astro-photo@tucsonastronomy.org
Astronomy Fundamentals SIG	Ben Bailey	520-903-7925	fundamentals@tucsonastronomy.org
Family Astronomy Program	Jim Miller		family@tucsonastronomy.org
Starry Messenger SIG	Terri Lappin	520-977-1290	smsig@tucsonastronomy.org
Space Exploration SIG	Al Anzaldua	520-409-5797	sesig@tucsonastronomy.org
Club Apparel Sales	Mae Smith	520-850-7137	taaa-sales@tucsonastronomy.org
Equipment Loan Coordinator	Al Dohner	520-297-7118	elc@tucsonastronomy.org
Librarians	Hunter Bailey Irene Kitzman		librarian@tucsonastronomy.org
Grand Canyon Star Party Coordinator	Jim O'Connor	520-546-2961	gensp@tucsonastronomy.org
General Information	Keith Schlottman	520-250-1560	taaa-info@tucsonastronomy.org



NASA's Space Place

A fun website with games and resources for kids to learn about astronomy and space sciences.

<http://spaceplace.nasa.gov>

Star Child

Information about all things spacey. A service of NASA/Goddard Space Flight Center. Has links to other websites.

<http://starchild.gsfc.nasa.gov>



Imagine the Universe

For older kids, age 14 and up.

<http://imagine.gsfc.nasa.gov/>

Space Place Partners' Column

April 2012

NASA Helps Europe Study a Comet—Up Close and Personal

By Dr Tony Phillips

Europe's Rosetta spacecraft is on its way to intercept comet 67P/Churyumov-Gerasimenko. Comets have been intercepted before, but this mission is different. Rosetta aims to make history by landing a probe on the comet's surface while the mother ship orbits overhead.

"Rosetta is the European equivalent of a NASA flagship mission," explains Claudia Alexander, project scientist for the U.S. Rosetta Project at NASA's Jet Propulsion Laboratory. "It will conduct the most comprehensive study of a comet ever performed."

Rosetta's payload contains 21 instruments (11 on the orbiter, 10 on the lander) designed to study almost every aspect of the comet's chemistry, structure, and dynamics. Three of the sensors were contributed by the U.S.: Alice (an ultraviolet spectrometer), IES (an ion and electron sensor), and MIRO (a microwave sounder).

The main event of the mission will likely be the landing. The 100-kg lander, which looks a bit like a cross between NASA's old Viking Mars landers and a modern microsatellite, will spend two weeks fastened to the comet's icy surface. The European-built probe will collect samples for analysis by onboard microscopes and take stunning panoramic images from ground level.

"First the lander will study the surface from close range to establish a baseline before the comet becomes active," explains Alexander. "Then the orbiter will investigate the flow of gas and dust around the comet's active, venting nucleus."

Rosetta's sensors will perform the experiments that reveal how the chemicals present interact with one another and with the solar wind. Alice and MIRO detect uncharged atoms and molecules, while IES detects the ions and electrons as the solar wind buffets the nucleus.

One problem that often vexes astronomers when they try to study comets is visibility. It's hard to see through the dusty veil of gas billowing away from the heated nucleus.



Rosetta's lander Philae will eject from the spacecraft, touch down on the comet's nucleus, and immediately fire a harpoon into the surface to anchor itself so it won't drift off in the weak gravity.

The microwaves MIRO detects can penetrate the dust, so MIRO can see and measure its target molecules even when other instruments can't.

MIRO is one of several experiments focused on the comet's structural properties. It will determine the comet's dielectric constant, emissivity, and thermal conductivity to determine whether it is made of a powdery loose material, has a detectable layer of loose material, or is hard as rock.

"We want to find out whether comets have retained material from when the solar system formed," says Alexander. "If the ancient materials are still there, we can get an idea of what conditions were like at the dawn of the solar system."

Rosetta enters orbit in 2014. Stay tuned for updates!

Check out "Comet Quest," the new, free iPhone/iPad game that has you operating the Rosetta spacecraft yourself. Get the link at spaceplace.nasa.gov/comet-quest.

Restoring The Dark Skies Of The Grand Canyon

Contributed by Jim O'Connor, South Rim Coordinator, Grand Canyon Star Party

The Grand Canyon Association (GCA) is the National Park Service's official nonprofit partner, raising private funds to benefit Grand Canyon National Park and taking on many special projects that can't be funded through direct taxpayer support. A major GCA 2012 Special Project is to understand the impact of the current lighting configuration within GCNP, with remedies leading to International Dark Sky Association certification.

GCA is conducting a fundraising effort to support an initial study and pilot light reduction effort. There are known power plant and other locations with unnecessary light trespass without benefit; the study is needed to identify the level of effort needed to eliminate, to the maximum extent possible, the excessive light spillage into the night environment. A collateral goal: sustain GCNP's role as a keystone of the Climate Friendly Parks Program, a teaming of over 1000 National Park staff members and stakeholders to seriously attack the generation of greenhouse gasses and other environmental impacts due to the existence of the Parks. The initial cost estimate of this project is in the neighborhood of \$108,000; a single benefactor has already provided a \$10,000 donation toward the study and follow-on lighting improvements



Image courtesy of Tyler Nordgren, Provided by the GCA

The request of TAAA is to be associated with the attempt by GCA to "go dark" with the Park. This is not a direct request for funding support; rather, a request that TAAA members help spread the word about the need for the study and light impingement reduction, and the need for donations to GCA toward the study and initial light alterations to fit the IDA Certification requirements. Both the IDA Certification and the Climate Friendly Parks Program are in line with TAAA support of the AZ

State Parks' dark sky awareness through the Catalina State Park star parties.

I have agreed with our Board to coordinate any specific ideas or actions that might assist GCA in reaching their goal of a dark Grand Canyon National Park. I would ask the members that when we have the opportunity to talk about light pollution and environmental awareness, including during our public outreach service, we mention the ongoing effort at the Grand Canyon. I'm absolutely certain that individual contributions would not be turned down, but the primary request is to help raise the awareness of the need, and the solution in work.

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