



NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

PRESIDENT'S NOTES

Happy September HACers.



HAC Headquarters (behind the cones) at the Casper Ramkota Hotel by David Roemer

Well, from sea to shining sea the great American solar eclipse of 2017 has passed. The first reports seem to confirm the eclipse was seen relatively clearly in the western states. Most of our adventurous club members have returned from viewing fields across the west to begin churning out visions of Baily's beads and diamond rings to review and refine.

I hope that the greatly outnumbered HAC outreach group (five volunteers met by around 600 spectators) that bravely manned the solar eclipse watch at the Sierra Vista Public Library has finally gotten some well-deserved rest. What is certain, everyone has a tale to tell, and so our September meeting will be a celebration and cathartic get together to discuss and dissect this great eclipse.

Personally, I could not have imagined a better situation in which to view the eclipse. We picked Casper Wyoming, for the simplicity of logistics and knowledge of the area. Two years ago, Nancy ran a marathon there, while I scouted out hotels. How fortuitous that the Astronomical League also planned their 2017 annual meeting in a nearby hotel.

We arrived a day before the conference, giving us time to settle in and prepare for the event. Old friends and

members of the club filtered in through the week. Our club, by the way, was well represented at about twenty strong, with ages from seven to seventy (and beyond!). By the morning of the eclipse, I think everyone was ready for the show. Surrounded by family and friends in a safe and secure location we were in turn surrounded by a sea of strangers from all over the country and the world, all connected by this cosmic event. In little more than three hours, we all spent one night and two days together without a single regret beyond a few miss-timed eye blinks.

Oh sure, the weather wasn't perfect, but if it had been there would be no need to view another eclipse. Some of us early risers awoke to a cobalt blue sky and the highest of hopes, but by the end of fourth contact, the clouds gathered to claim the rest of the day. Length of the streamers in the corona was abbreviated, and the sun's disk after totality was a bit obscured. But even though the cloud cover may have been tough on experiments, it didn't dampen the visual experience. We got pictures, felt the air cool, heard the ohhs and ahhs of the throng, and many of us actually remembered to look up from our cameras and solar scopes to see the sight with our own eyes. I'm pretty sure that the totality only lasted about twenty seconds instead of the predicted two and a half minutes; but I could be wrong. However, I'm sure I'm right when I say everyone, in Casper as least, came away from the eclipse with amazing memories and a longing for more time under the centerline.

Hmmmm. What have you planned for 2024?

WELCOME OUR NEW MEMBERS

We have three new members: Galen Gloetzel, Paula Lucier, and Todd Lucier, all from Sierra Vista, joined the club in August. Welcome, we are glad you joined.

AT THE SEPTEMBER MEETING

The September meeting will be held in the community room of the Student Union Building at Cochise College on Friday September 8, 2017 at 7 pm. The September program will

be a recap of the total solar eclipse with images, reports, and impressions by our members.

SIGN UP FOR CALENDARS AND HANDBOOKS

The Treasurer will take orders for The Deep Space Mysteries Calendar for 2017 from Astronomy Magazine and for the Royal Astronomical Society of Canada (RASC) Observer's Handbook 2017 at the September and October meetings. The publications will be ordered after the October 13 meeting.

The club price for calendars is \$6.50 each (regular price is \$12.57)

The bulk discount price for the RASC Handbooks purchased through the club (assuming purchase of 15 or more) will be \$21. The Regular Price is \$27.95

Please pay when signing up. (Cash or check made out to HAC).

If you cannot make either meeting and would like to order calendars or books, please contact the treasurer, Ted Forte to arrange payment.

You may pay via Pay Pal (or with your credit card) by using the donate button at www.hacastronomy.org but please add 3% to the purchase price (\$6.70 for calendars, \$21.63 for handbooks). Please notify Ted of your intention to pay for your handbooks or calendars by the Pay Pal donate button. Contact him by email at tedforte511 at gmail dot com.

DINE UNDER THE STARS TICKETS

Dine Under the Stars is September 30. Ted Forte will have tickets for sale at the September meeting. The purchase price of your DUTS ticket goes to fund the scholarships that the University South Foundation provides to UA South students. (100% of the money collected at DUTS goes toward the foundation's charitable purpose). The University South Foundation is the owner of the Patterson Observatory. [As a member of the foundation's board of directors your purchase of a DUTS ticket from Ted helps him fulfill his obligation to sell tickets and preserves his good standing on the board. His status as a board member enables him to represent the club's interest in the management and operation of the observatory.] Adult tickets for Dine Under the Stars are \$45. Tickets for children 12 and under are \$15. Students \$25

Tickets include a dinner catered by Texas Roadhouse with hor d'oeuvres by Café Roka and desert by La Casita, live music by Desert Fever, dance entertainment by Alma Dolores Dance Center, a 50/50 raffle and a silent auction. Dinner includes two adult beverages (beer or wine). Please support DUTS by purchasing a ticket. You may pay cash or check. Make checks for DUTS tickets payable to University South Foundation.

SEPTEMBER MEMBER STAR PARTY

The September member star party will be held at the RepoGazer Observatory (RGO) on Saturday September 16 and all HAC members are invited to attend. RGO is at the home of Keith and Teresa Mullen, 9911 E. Pleiades Place in Hereford. Keith invites members to arrive as early as 5:30 to set up their telescopes. Sunset is around 6:30 and twilight ends about 7:45. Please bring a snack. Keith and Teresa will have beverages available. You can contact Keith at 520- 266 4230.

KARTCHNER CAVERNS STATE PARK IS IDA'S NEWEST DARK SKY PARK

(Adapted from the IDA press release of 8/31/2017)

The International Dark-Sky Association (IDA) announced on August 31 that it has designated Kartchner Caverns State Park as an International Dark Sky Park. The prestigious designation is the result of exceptional efforts to protect the area's dark night skies and raise public awareness about the issue. Designated at the "Silver" tier level, the park is the second in the Arizona State Parks system to receive IDA recognition.

"We are pleased to recognize Arizona's Kartchner Caverns State Park as the world's newest International Dark Sky Park," said IDA Executive Director J. Scott Feierabend. "Efforts to protect natural darkness at Kartchner, both above and below ground, are welcomed and hopeful news for the future of this magnificent park."

Bob Gent worked with park management, IDA, and other members of HAC to achieve the International Dark Sky Park designation. Bob is HAC Past President and a past president of the IDA.

"Kartchner Caverns is proud to receive this important designation to help preserve Arizona's natural resources," Gent said. "Our dark sky team worked hard to complete the necessary tasks and documentation."

"The International Dark Sky Park 'Silver' designation fits extremely well with the mission and goals of Kartchner Caverns State Park as a Center for Environmental Education," explained Kartchner Discovery Center Supervisor Jennifer Van Horn.

Kartchner Caverns State Park has attracted increasing interest from professional astronomers, the area amateur astronomy community, and the general public. In support of the park's application for IDA recognition, HAC held a number of events at the park to bring visitors together with telescopes to experience firsthand the wonders of the night sky. The first event, held seven years ago, attracted more than 300 visitors, some of whom traveled from as far away as Phoenix.

HOW TO SIZE AN IMAGE FOR PRINTING IN PIXINSIGHT

Alex Woronow

Arizona State Parks plans to give high priority to dark skies at its 30 state parks and natural areas. IDA's application process for International Dark Sky Park certification includes elements such as adoption of park policies that control the amount and type of outdoor lighting allowed on the property.

The agency finds that the outcomes of IDA certification line up well with its priorities. "We are honored to have Kartchner Caverns State Park designated as a dark sky park," said Arizona State Parks and Trails Executive Director Sue Black. "Arizona State Parks' conservation efforts are included in the agency's mission, and preserving the beauty of Arizona's night skies is an important part of that."

To celebrate this award, Kartchner Caverns State Park will hold a ceremony on Saturday, September 9 at 2:00 pm Arizona Time (MST) at the park. HAC will set up solar telescopes for public viewing if weather allows.

SPOT THE SPACECRAFT!

We invite HAC members to catch the historic flyby of the OSIRIS-REx spacecraft from Sept. 10-22 during its Earth Gravity Assist (EGA) maneuver inbound path. Your experience imaging asteroids with the OSIRIS-REx mission's Target Asteroids! and asteroid flybys gives you perfect skills for this very special target of opportunity. *Note that spacecraft flybys of Earth occur less often than NEO flybys!*

We are looking for both short FIT exposures and longer exposures that show the spacecraft streaking across the field of view. Images taken with BVRI filters would be very much appreciated, too. Our team will conduct data reduction on the FIT(S) images. Selected images will be shared on mission social media and, while we aren't looking for science value per se, your images may help us determine spacecraft light curves. So, the more images the better.

The OSIRIS-REx spacecraft is expected to be first visible at 23rd magnitude without much lateral motion and brighten to about 11th magnitude as it slingshots past Earth on Sept. 22. The best information for viewing is located on the JPL Horizons website: <https://ssd.jpl.nasa.gov/horizons.cgi#top> Use "ORX" for the target body, enter your observing location, desired observing dates and time intervals to retrieve Right Ascension and Declination.

Watch the mission website (<http://www.asteroidmission.org/>) Sept. 6 for the official EGA press release and EGA image submission page. For questions, contact Dolores Hill at dhill@orex.lpl.arizona.edu

Assume we have an image that we want to have commercially printed. Quality printing usually requires over 200 ppi (pixels per inch), with 300 ppi often being the largest allowed (and the optimal pixel density) for many commercial print shops. To obtain a final print with the given ppi, and a final specified size of HxW, we need two steps. The first step identifies the region of the image we want to print and then crops the initial image to the desired H/W ratio. We will use PixInsight's DynmicCrop to do this job. The second step uses PixInsight's "Resample" to set the cropped image's ppi. The following discourse demonstrates one approach to a successful outcome. Undoubtedly, other approaches exist. But this one is relatively intuitive and quite straightforward, not to mention documented (by the following instructions).

The Initial Crop

The first goal involves cropping our initial image to the region of interest while honoring our desired H/W ratio for the final print. For this example, assume we want a 10" high by 8" wide area of an image with a final 300 ppi to upload to the commercial print shop. Fig 1 shows our starting image for this example.

FIG 1: THIS INITIAL IMAGE WILL BE REFORMATTED FOR PRINTING AT H=10" X W=8" AND 300 PPI. THIS SCREEN-CAPTURE VIEW ALSO INCLUDES THE PIXINSIGHT INFORMATION FROM THE BOTTOM OF THE SCREEN, SHOWING THAT THE CURRENT IMAGE HAS A WIDTH OF 3626 AND HEIGHT OF 4076 PIXELS. THUS THE INITIAL IMAGE IS 3626/72 X 4076/72 (50.35" X 56.61") AS 72 PPI IS THE DEFAULT PIXEL PITCH.

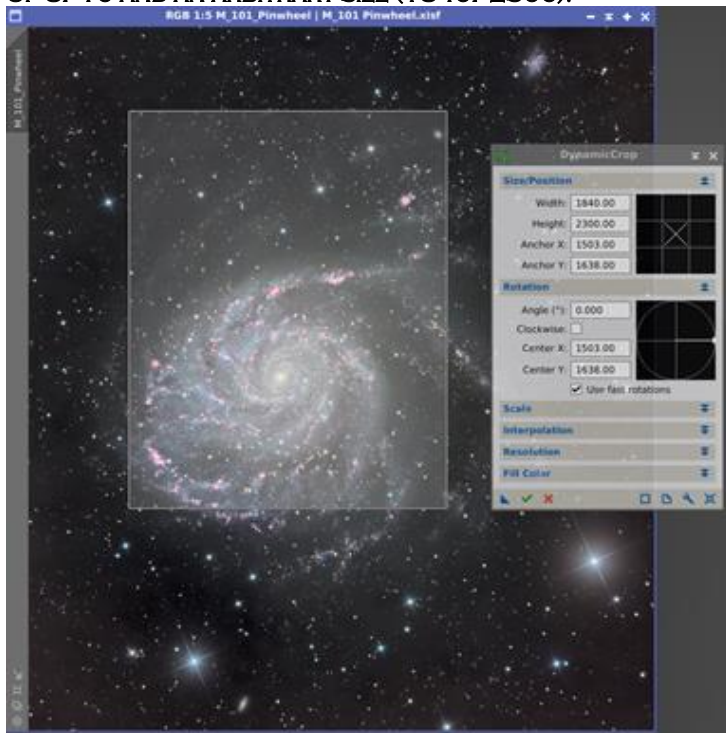


The image shows M101, taken at DSW.

First, we invoke DynamicCrop (Process>Geometry>DynamicCrop), and draw an arbitrary size cropping frame on the image at an arbitrary location, making it large enough to manipulate. Next, we set the cropping frame to the H/W ratio for an 8 x 10 image. For this example, perhaps we select to use and set the dialog parameters as shown in Fig 2: Width = 1840, Height = 2300 in units of pixels. This is not our final size nor final location of the crop—just an H/W-appropriate cropping area that we will manipulate further. No other parameters need to be set in the dialog box. Now we select the area of our final cropped image. The size of the cropping region is adjusted by dragging the corner tabs of the cropping region. By using only the corner tabs, the aspect ratio of the cropping area remains at the initialized H/W value. The cropping region's location is set by dragging the entire cropping box, of course. The aspect ratio of the cropping region may drift somewhat from the initial setting as reported by PixInsight. I suspect this is an artifact of integer-counting of pixels. In any case, Fig 3 shows the region I selected by the corner-tab and box dragging method. (You could enter new values in the Height and Width for the cropping area to more closely abide by the desired aspect ratio, but this might reveal an OCD personality, so I will not do that!)

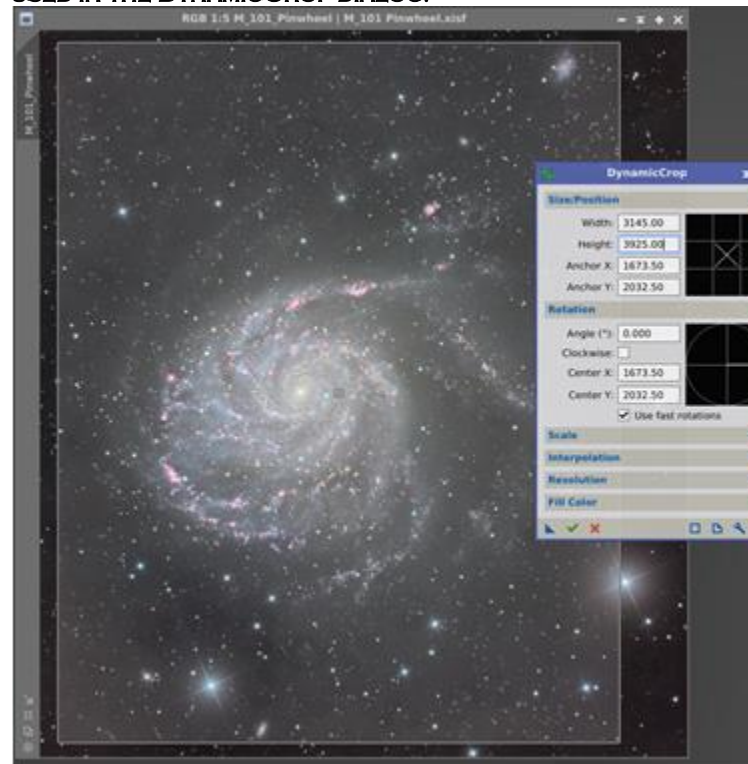
When satisfied with our selection, we click the green check mark to apply the crop, then dismiss the DynamicCrop tool.

FIG 2. THE INITIAL PHASE OF CROPPING FOR AN 8X10 IMAGE. WE SET THE DYNAMICCROP HEIGHT AND WIDTH TO THE RATIO OF 8/10 AND AN ARBITRARY SIZE (1840/2300).



The image shows M101, taken at DSW.

FIG 3. AFTER THE INITIAL SETTING OF THE CROPPING REGION (FIG 2) WE ADJUST ITS SIZE BY DRAGGING ITS CORNER TABS AND ADJUST ITS LOCATION BY DRAGGING THE CROPPING BOX, UNTIL WE HAVE DELINEATED THE SUBJECT AREA WE WANT IN OUR PRINT. AFTER EXECUTING THE CROP, THE BOTTOM PANEL OF PIXINSIGHT WILL SHOW THE H AND W THAT WE HAVE JUST USED IN THE DYNAMICCROP DIALOG.



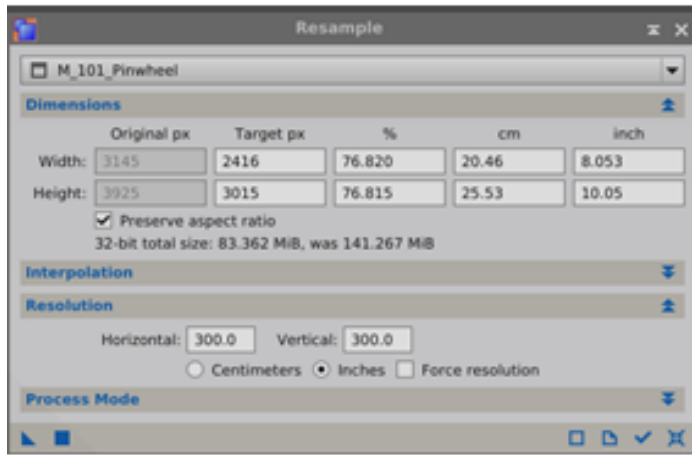
The image shows M101, taken at DSW.

Setting the Pixels Per Inch

To set the resolution in pixels per inch, we summon the Rescale tool (Process>Geometry>Rescale). In the dialog box we enter several values (Fig 4):

1. Select the target image. (Do this first.)
2. Make sure "Preserve aspect ratio" is checked.
3. Set one of the parameters, either height or width in inches. (The other will set automatically.)
4. Set both the horizontal and vertical resolutions to 300 ppi.
5. To execute, click the blue square. (Dropping the triangle on the image does nothing.)

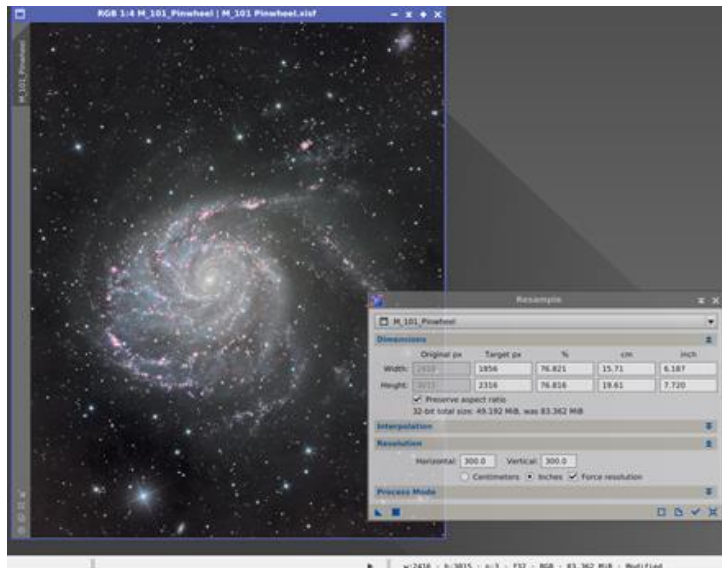
FIG 4. THE DIALOG SETUP TO INTERPOLATE THE 8X10 IMAGE TO 300 PPI.



Step 3 above is modified in our example as shown in Fig 4: The Height was set to 10.05" so that the full 10" sheet of output media would be covered with image. This may not be necessary for the print shop you use. But do make certain that the Height and Width equal or exceed the print size. This can be accomplished by calculating the minimum pixel H and W required for the specified ppi. (See below.)

Fig 5 shows the screen shot after clicking the blue square, along with the final image size at the bottom part of the PixInsight window. Do not panic that the Resize tool now shows some irrelevant size in its dialog box. Refer to the bottom of the PixInsight window and note that the W:2416 and H:3015; when divided by 300 ppi these yield Width=8.053" and Height=10.05", covering the 8x10 print we intend to produce.

FIG 5. THE FINAL PRODUCT OF CROPPING AND RESIZING. NOTE THAT THE DIMENSIONS IN THE DIALOG NO LONGER HAVE RELEVANCE TO THE NEWLY RESCALED IMAGE AT ITS NEW, TRUE SIZE AND RESOLUTION. SEE TEXT.



Now that the image has both the correct size and aspect ratio save it! Printing services vary in the formats that they will upload and process, but aim for an image type that

supports at least 16 bits / pixel. A *tif* file probably best fits the bill.

FYI: Common print sizes (rectangles) include the following (with the aspect ratios in parentheses):

- 5 x 7(1.4)
- 8 x 10(1.25), 12(1.5)
- 10 x 20(2.0)
- 11 x 14(1.273), 17(1.545)
- 16 x 20(1.25), 24(1.5)
- 20 x 24(1.2), 30(1.5), 40(2.0)
- 30 x 40(1.333)
- 40 x 60(1.5)
- Squares of various sizes

PICTURES FROM HAC MEMBERS

2017 ECLIPSE NEAR TOTALITY BY RIGEL ANDERSON AND DAVID ROEMER



2017 ECLIPSE DIAMOND RING BY RIGEL ANDERSON AND DAVID ROEMER



2017 ECLIPSE TOTALITY BY RIGEL ANDERSON AND DAVID ROEMER



SOLAR ECLIPSE MAYHEM AT THE SIERRA VISTA PUBLIC LIBRARY



EARTHSHINE BY MAX MIROT



OUTER CORONA WITH BAILY BEADS BY MAX MIROT



PROJECTION OF SOLAR ECLIPSE AS SEEN AT SIERRA VISTA PUBLIC LIBRARY



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Asking \$200.00 B/O

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In very good condition, with tripod, 120v AC and 12v DC power converters with 25' power cords, dew shield, 8x50 finder scope, electric focuser, piggy back bracket, and soft sided carrying case. Also includes a set of Meade

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Asking \$ 1,800.

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FOR SALE: MEADE STARFINDER 8" REFLECTOR TELESCOPE

Will Sell at a very reasonable price. Included are a Telrad Finder, Filters, and additional Lenses.

Contact Mr. Jim Moses at (520) 803-0913 or by email jjmoses2@gmail.com

FOR SALE: PLANEWAVE CDK14 CORRECTED DALL-KIRKHAM TELESCOPE.

OTA, new November 2014, optional truss rod, shroud and, optional upper dovetail and the accessories that were included with the telescope (primary to secondary spacing tool). There is NO FOCUSER (they do not come with one, you need to add one) but the adapter for an Optec TCFS3i (which is the focuser I used) is included. I also have the factory wooden shipping crate. The telescope has been in use every clear night in the observatory in Sonoita. This is an outstanding instrument and a great imaging scope.

FOR SALE: Celestron Celestar 8 inch S/C Deluxe - \$1200.

Will also sell pieces individually

Contact Rhonda and Terry Taylor at (520) 366-2378 or by email at twrl2@yahoo.com. Or See Craigslist at <http://sierravista.craigslist.org/bar/4523742100.html>

FOR SALE: Older Optical Guidance Systems 12.5" f/9 Ritchey-Chretien telescope.

Very good Paul Jones ceramic optics, Robofocus secondary focuser, will include Takahashi collimating telescope. Some of the images through the scope are at Mshadephotography.com.

Contact Mike J. Shade at mshade@q.com

FOR SALE: 8" Celestron Nex Star

Good condition with all original accessories.

Contact Mae Childs at maechilds2014@aol.com

CLUB OFFICERS AND CONTACTS

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For more information on products and contact information, their websites are:


Farpoint Astronomy

<http://www.farpointastro.com/>

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<http://starizona.com/>

HAC Sept/Oct Calendar of Events

SU	MO	TU	WE	TH	FR	SA
3 SEP	4 	5 Neptune at Opposition	6  3:03am	7 Patterson Public Night 7pm	8 HAC Meeting Student Union	9 Kartchner Dark Sky Park Dedication 2pm
10	11	12	13  2:25 am	14	15	16 Member Star party at RGO
17 Venus .5° N of moon	18 Mars .1° S of Moon Mercury .03° N of Moon	19	20  1:30 am	21	22 Jupiter 4° S of Moon	23
24	25	26 Cub Scouts at Patterson 6 pm Saturn 3° S of Moon	27  10:54 pm	28	29	30 <i>Dine Under the Stars Patterson Observatory</i>
1 OCT	2	3	4	5  2:40 pm Venus/Mars 0.2°	6	7 Sister Cities Patterson Open House 3 pm
8 Draconid Meteors	9  Columbus Day Draconid meteors	10	11	12  8:25 am	13 HAC Meeting Libray Commons	14 Kartchner Caverns Star Party Noon to 11 pm
15	16	17 Venus/Moon 2°	18	19  3:12 pm Uranus at opposition	20 Orionid Meteors	21 Member Star party Orionid Meteors
22 Orionid Meteors	23	24 Saturn/Moon 3°	25 Gather Home School Grp at Patterson	26 Patterson Public Night 6 pm	27  6:22 pm	28 Pallas at Opposition
29	30	31	1 NOV	2	3	

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoo.com