

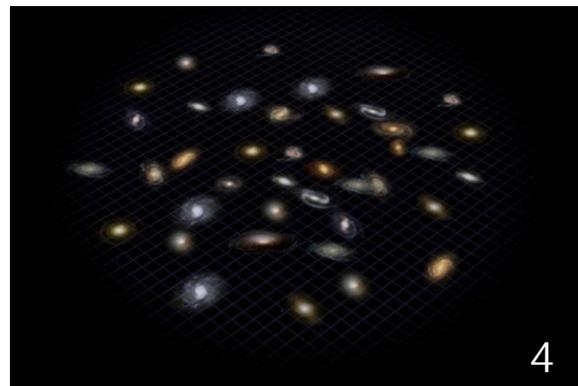
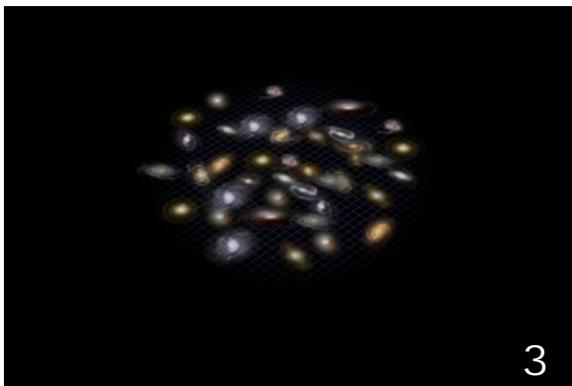


Desert Skies

Tucson Amateur Astronomy Association

Volume LIII, Number 1

January, 2007



**The Effects of
Dark Energy on the
Expansion of the
Universe**

Inside this issue

- ◆ School star parties
- ◆ Constellation of the month
- ◆ Opportunities to volunteer
- ◆ Just a Moon Lit Night ...

Cover Photo: Five frames from an animation showing the effect of dark energy on the expansion of the universe. Frame 1 is the Big Bang. The universe expands rapidly at first but slows as gravity's affect lessens. In the last frames, the expansion speeds up again due to the repulsive effect of dark energy. Watch the animation at http://chandra.harvard.edu/resources/animations/galaxy_clusters.html

TAAA Web Page: <http://www.tucsonastronomy.org>

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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 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)

Tucson society of the Astronomical League (TAL) fees\$ 5.00
 Sky & Telescope Magazine 1 year (12 issues)..... \$32.95
 Astronomy Magazine 1 year (12 issues)..... \$34.00
 2 years (24 issues)..... \$60.00
 Postage for New Member Pack \$ 4.05

Donations are accepted for the following funds: SA-IDA/Light Pollution, TIMPA, Education, 30" Telescope & Land, and General/Undesignated.

Renewal Information

- Your membership expires as indicated on your mailing label.
- TAAA members may join the Tucson society of the Astronomical League (TAL) 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 anytime. Rates are given above. Allow 3 months for processing. Subscriptions must be sent through the TAAA. *Do not send money directly to the magazines.* To change an individual subscription to the group rate, pay the

subscription amount to the TAAA treasurer. Include your magazine renewal notice.

- Please include a note explaining what you are paying for. Credit cards are not accepted. Write one check or money order for fees 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 - Send to address above or email the treasurer.

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 - All articles, announcements, news, etc. must be submitted by the newsletter deadline. Materials received after that date will appear in the next issue. The editor retains all submissions unless prior arrangements are made. Submissions should be submitted in Word compatible files via e-mail or on a recordable media.. All material copyright Tucson Amateur Astronomy Association or specific author. No reproduction without permission, all rights reserved. We will not publish slanderous or libelous material! Send submissions to:

George Barber
 TAAA/Desert Skies Editor
 15940 W Ridgemoor Ave
 Tucson AZ 85736

President's Message

Best wishes for a meaningful holiday season and a happy and healthy New Year!

About sixty TAAA members and guests gathered on December 16 for a holiday party that was different from those in the past. The weather was warm enough not to be uncomfortable and the visiting together was low-keyed; the food for the potluck dinner was varied and delicious. So an outdoor gathering seemed to be to the liking of all who attended. A nice feature was that there were not any excessive demands on a few members to make all of the arrangements needed for a restaurant-based celebration. The only club expenses were for the ice and the rental fee for two patio heaters. The primary downside seemed to be that it was scheduled on the night of the monthly star party at Las Cienegas, but that may have been negated after all by a light cloud covering that allowed only a few sucker holes. The board was pushed to find a weekend that might work, and hence the scheduling conflict. If we want to plan a similar holiday party for next year, we will need to get it on the schedule early and thus avoid any conflict with observing times. We would like to hear from our members about what you would like to do in the future. Our patio is always available!

A couple nice features of the holiday party were an enjoyable raffle with the usual nice contributions from our good friends at Starizona and some interesting items from Andrew and Debbie Cooper's closet, and good music provided by George Barber and his great sound system.

Speaking of Andrew and Debbie's closet, if you have not already heard, they are cleaning it out in preparation for their move to Hawaii early next year. Andrew has ac-

cepted a job offer to work at the Keck Observatory on the Big Island. They have made many outstanding contributions to our club, and they will be sorely missed. But what an opportunity for them! It is sad to see good friends leave who have made our enjoyment of astronomy so much greater, but we can only wish them the very best in their new adventure. I am sure we can keep in touch by going to Andrew's web site.

The end of the year is always a good time to reflect on what is just past and think about what we want to do for the next one. Two matters which have seen only slow or little progress that are still on our top priority list are creating a home for the club's 14" telescope and the redesign of the club's web site. We had to vacate plans for the 16' dome at TIMPA, but plans for a more modest approach to an observatory are under way and, we believe, can be completed at much less cost and without the many roadblocks and restrictions we ran into this past year. You should be hearing about this in the next couple of months. And the web site is moving along very well and will probably be up and running soon, thanks to Loretta McKibbens' good work.

We look to the membership for your observations, suggestions and ideas about how the club is working for you. The board appreciates your input and takes it seriously. We look forward to the months ahead as we continue to pursue our passions for this most interesting and engaging hobby.

Bill Lofquist

Meeting Information and Calendar of Events

TAAA MEETING DATE: Friday, Jan. 5, at the Steward Observatory Auditorium - Room N210

ASTRONOMY ESSENTIALS: 6:30 pm

Title: Objects of the Season

Speaker: Dr. Mary Turner

It is time again for our quarterly look at some of the celestial objects that are good candidates for viewing over the next few months. Pictures and data will be presented on objects which may include constellations, globular and open clusters, nebulae, planets, galaxies or any other the many wonders to be found in our night skies.

GENERAL MEETING: 7:30 pm

Title: Measuring Dark Energy with Quasar Pairs

Speaker: Dr. Chris Impey

Dark energy is the largest and most mysterious component of the universe, driving the accelerating expansion but representing new and unknown microscopic physics.

A new approach to measuring dark energy will be presented based on observations of quasar pairs. The test is purely geometric and unlike the case of supernovae, does not require any assumptions about standard candles or evolution. Early results indicate consistency with the expectations of the "concordance" cosmology.

Chris Impey is a University Distinguished Professor at the University of Arizona, and Deputy Department Head of Astronomy. He has authored over 160 research papers on extragalactic astronomy and cosmology and has had 21 projects approved with the Hubble Space Telescope. He is the author of two introductory textbooks with Bill Hartmann, and is the creator of a web site that serves more than a thousand students each year with astronomy content and interactive teaching tools. Dr. Impey has won ten University of Arizona teaching grants and awards. For five years, he was the Associate Director of the NASA Arizona Space Grant, ranked by NASA as the best among 50 in the country. He was the co-Director of a M.Sc. program for high school teachers, funded by the NSF. Dr. Impey is a founder member of the editorial board of the Astronomy Education Review, a peer-reviewed education journal

Meeting Information and Calendar of Events (cont.)

sponsored by the American Astronomical Society. He is currently Vice President of the American Astronomical Society. In 2002, he was one of six people nationwide chosen as an NSF Distinguished Teaching Scholar, and he was selected as Arizona Professor of the Year by the Carnegie Foundation for the Advancement of Teaching.

BOARD OF DIRECTORS MEETING: Wednesday, Jan. 10, 6:30 pm. The meeting is held at Steward Observatory Conference Room N305.

STAR PARTIES AND EVENTS:

08 Jan - Astro-imaging SIG at China Rose
 13 Jan - TAAA Star Party and Beginner's SIG at TIMPA
 19 Jan - Saguaro Girl Scout Council Star Party
 20 Jan - TAAA Star Party at Las Cienegas
 23 Jan - Lyons Elementary Star Party
 24 Jan - Beginner's SIG at China Rose

NEWSLETTER SCHEDULE: Deadline for articles: Sat, Jan. 20. Printing: Mon, Jan. 22. Folding Party: Tues, Jan. 23. Mailing: Wed, Jan. 24. The newsletter is mailed at least one week prior to the following month's General Meeting.

Club News

Member News

No new members joined in the last month. Our current membership stands at 376. Updated membership lists are available online at either YahooGroups email list website under Files, or at most meetings.

We have learned that Andrew and Debbie Cooper will be leaving us soon for a distant and higher ground. Andrew has taken a position at the Keck Observatory in Hawaii. He'll be working on the summit of Mauna Kea at over 13,000 feet in elevation. We hate to see them go, but we also wish them the best in Hawaii. We'll miss them as they've been an important part of the TAAA for the last 10 years.

Astro-Imaging SIG Meeting

Monday, Jan. 8, 7pm
 China Rose, NE corner Speedway/Rosemont

Our presentations feature CCD images, planetary webcams, and film. Come see some of the state of the imaging art over some Chinese food. Just show up and enjoy the show! For more information, contact Steve Peterson.

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've got hats, T-shirts, denim shirts, and patches. We take cash and checks.

Volunteer Needed for Basha's Thanks A Million Program

The TAAA is participating in Basha's Thanks a Million for Friends and Neighbors program. In addition to our members' participation in the program, we have recently learned we can set up a booth at Basha's stores to solicit

shoppers to link their Thank You card to the TAAA. At the end of the program, we will receive 1% of all linked sales so more linked cards means a larger donation will be made to the TAAA.

We are looking for a person to contact local Basha's store managers about setting up a booth at their store location. It will entail a few phone calls, and then once a date is scheduled this person would make sure there's someone to man the booth. Perhaps a telescope could be set up as part of the booth. Details need to be worked out with the store managers.

If you can take on this job, please contact either Bill Lofquist or Terri Lappin (see page 2 for contacts).



If you shop Basha's, you can link your Thank You card to TAAA. At your next run visit to Basha's, give the cashier our ID #23178. It's that easy! Just do it once.

Beginner's Special Interest Group

The BSIG dates for January will be 1/24 for dinner at the China Rose Restaurant (6pm, the northeast corner of Speedway and Rosemont) and 1/27 (the following Saturday) for observing out at TIMPA. In addition to our usual conversations and discussions of our own observing

Club News (cont.)

activities, JD Metzger will give a special talk focusing on objects to be viewed in the constellation Orion.

Assuming the December TIMPA observing night worked out, we will also discuss the object location "workshop" held on that night. (Please note that as this is being written the December TIMPA night has not yet taken place.) Another such "workshop" will be held at TIMPA in January, and if the response to this activity turns out to be positive, we will make it a regular feature of the TIMPA observing sessions. As before, an object list will be announced at the dinner meeting, and via the club's online forum and announcement system. The idea is to have all participants track down these objects one at a time as a group. Those who find an object first will be encouraged to help those who are having less success. If you are keeping a log and want to add these observations to it, we will pace the workshop so that you

will have a reasonable amount of time in which to do so. You are also encouraged to share the view through your telescope when you have the object in sight. This will help others confirm that they have the right object, and also will give us all a better idea of how different telescope types and sizes perform relative to each other. To facilitate this activity, it would be helpful to set up as a group. Watch for a grey '07 Subaru Forester and park as near to it as you can. We want to be within easy reach of each other, which is another good reason to arrive before sunset. Experienced observers willing to join in and serve as mentors are most welcome.

For more information about the Beginners' Special Interest Group, send an email to: novice@tucsonastronomy.org.

Hope to see some of you in January!

Member's Events

TAAA and BSIG Star Party at TIMPA

Saturday, Jan. 13

Come on out and enjoy the winter skies! TIMPA star parties are great for both beginners and experienced observers. Our novice members can get help with observing issues or equipment problems, as there are many experienced members there who would be happy to help. If you don't own a telescope, come anyway, because there are lots of telescopes set up and everyone is invited to look through them. This is a great way to check out different telescope designs before you make that all-important decision to buy. We'll do our best to get you the answers you need. If you have friends or relatives who are curious about amateur astronomy, feel free to bring them along. The TIMPA site features a large parking area, and full restroom facilities. Be prepared for cold temperatures. Directions to the TIMPA site are located on the outside flap of this newsletter.

TAAA Star Party at Las Cienegas (Empire Ranch)

Saturday, Jan. 20

Las Cienegas (formerly Empire Ranch) has been our normal dark-sky observing site for quite a number of years. Please try to arrive before sunset. Stay as long as you like, but let everyone know when you are ready to leave; someone may be taking astro-images. Bring a telescope if you have one, but you don't need one to attend. Any member would be glad to let you look through their telescope. And, there are now restroom facilities at the site. Las Cienegas is at 4000 feet so be prepared for cold temperatures. Attendees should park their vehicles either perpendicular to the airstrip facing toward the center of the strip, or parallel to the airstrip along either side facing west. That way, when you are ready to leave, you will not have to back up and turn on your bright white backup lights. See the directions to Las Cienegas on the outside flap of this newsletter.



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Dark Skies for January 2007

DARK SKIES (no twilight, no moonlight) for Tucson in 24-hour MST: 18=6pm, 20=8pm, 22=10pm, 0=12am
RISE, SET, VISIBILITY for sun and bright planets: rise for morning object, set for evening object

Su/Mo 31/ 1	5:48 - 5:58	Th/Fr 11/12	19:05 - 1:26	Su/Mo 21/22	20:51 - 5:58
Mo/Tu 1/ 2	- - -	Fr/Sa 12/13	19:06 - 2:24	Mo/Tu 22/23	21:59 - 5:58
Tu/We 2/ 3	Full Moon	Sa/Su 13/14	19:06 - 3:25	Tu/We 23/24	23:06 - 5:58
We/Th 3/ 4	- - -	Su/Mo 14/15	19:07 - 4:27	We/Th 24/25	0:13 - 5:57
Th/Fr 4/ 5	- - -	Mo/Tu 15/16	19:08 - 5:28	Th/Fr 25/26	1:22 - 5:57
Fr/Sa 5/ 6	19:00 - 19:50	Tu/We 16/17	19:09 - 5:59	Fr/Sa 26/27	2:31 - 5:57
Sa/Su 6/ 7	19:01 - 20:50	We/Th 17/18	19:10 - 5:59	Sa/Su 27/28	3:39 - 5:56
Su/Mo 7/ 8	19:02 - 21:47	Th/Fr 18/19	19:10 - 5:59	Su/Mo 28/29	4:43 - 5:56
Mo/Tu 8/ 9	19:03 - 22:42	Fr/Sa 19/20	19:11 - 5:59	Mo/Tu 29/30	5:40 - 5:55
Tu/We 9/10	19:03 - 23:36	Sa/Su 20/21	19:42 - 5:58	Tu/We 30/31	- - -
We/Th 10/11	19:04 - 0:31			We/Th 31/1	- - -

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn
Sa/Su	Set	Rise	Rise Vi	Set Vi	Rise Vi	Rise Vi	Rise Vi Vi=Visibility
30/31	17:27	7:23	7:13 -	18:36 1	5:51 5	5:02 0	20:53 0 -3 brilliant
6/ 7	17:32	7:24	Set -	18:50 1	5:46 5	4:41 -1	20:24 0 0 conspicuous
13/14	17:38	7:23	17:53 -	19:05 0	5:42 4	4:20 -1	19:54 0 3 moderate
20/21	17:44	7:22	18:23 8	19:20 -1	5:37 4	3:58 -1	19:24 0 6 naked eye limit
27/28	17:51	7:18	18:54 5	19:34 -1	5:31 4	3:36 -1	18:54 0 9 binoculars limit

By Erich Karkoschka

Member's Forum (cont.)

shade of the basin floor is characteristic of the iron silicate lava the welled up from below the crust to fill the crater after the impact. It's one of the smaller "Seas" but still a respectable 385 miles in diameter. That's large enough that if you stood in the center of the basin you wouldn't be able to see the perimeter walls as they would be below the horizon. With the right Sun angle (lunar days 2 or 16) four networks of wrinkled ridges are visible around the perimeter of the basin. Each is about 90 miles long and 7 miles wide. Called "Dorsas", they were each named after Russian, French, English and German geologists of the 18th and 19th centuries. The height of the ridges is still unknown (a good amateur project).

Several much younger and smaller craters add features to the otherwise smooth basin floor. The crater named Picard is the most conspicuous being 14 miles in diameter with a steep outer rim wall that is 6700 feet high and brilliant in a low Sun angle. A short distance to the north is the crater Pierce that is 11 miles in diameter with a 5500 foot high rim wall. In the far Northeast sector is a partially submerged "Ghost Crater" named Eimmart that is 28 miles in diameter. Its rim is punctured by an even younger and smaller craterlet.

Heading south is the irregularly shaped Mare Fecunditatis; a basin 363 by 393 miles across. On its east shore is the unusual crater Langrenus, 80 miles in diameter with a 7900 foot high rim wall. What makes it a visual treat is that the inner walls have collapsed to form three distinct terraces and the central mound has two distinct peaks. In

the northwest, the terraces looks like a giant stair way out of the deep hole.

Still further south is another novel crater called Petavius, named after a 16th century French Theologian and Historian. A hundred seven miles in diameter, it also has collapsed and terraced side walls. The central mound is really a cluster of closely spaced peaks - I could count seven. A deep, narrow and dark rill (trench) runs westward from the central complex to the lower edge of the terraces. Its origin is unexplained.

Between those two large craters is a smaller but conspicuous crater named Holden. Twenty nine miles in diameter and a clean rim, with a low western Sun angle it looks like a very dark spherical cereal bowl rather than a flat pie pan. A small but sharp craterlet punctures the northwest rim.

So when the night sky is bright with Moon light, take the opportunity to examine the myriad of details our planet partner has to offer. To paraphrase an old quip, "Tis better to see one crater than to curse the Moon light".

TAAA Board of Directors Meeting - December 13, 2006
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TAAA Board of Directors Meeting Minutes

Attending: TAAA Board Members present: Bill Lofquist, presiding, Ken Shaver, Steve Marten, Terri Lappin, George Barber, Teresa Plymate and JD Metzger. Members present: Loretta McKibben, Claude Plymate and Brian O'Connell. President's Call to Order: 6:35PM

November Minutes. Accepted. Unanimous.

Member Feedback

Some members are disappointed in a Saturday evening TAAA Holiday Star Party, however, others were happy that it would not interfere with Sunday family or religious activities.

Star Party feedback has been positive from volunteers and schools. There have been a larger number of November and December star parties than average.

Announcements

TIMPA has asked that TAAA fill in trench that had been prepared for observatory at original location (within the flood plain); arrangements are underway.

TAAA Board is looking for lighting experts to assist in evaluating glaring lights in vicinity of observing locations that may be out of code.

Website Redesign - Loretta McKibben

Loretta reviewed new website functionality and design features and Board provided guidance on additional features and data. Home page style and design was impressive and practical. Site will include numerous non-commercial and some commercial links. A link will also be installed to a TAAA Astronomy Services web page.

TIMPA Observatory - George Barber and Brian O'Connell

George reviewed three designs for a roll-on roll-off observatory. All three structures would be approximately 4' x 4' covering pier and scope when closed. Board discussed environmental conditions and accessibility. Brian O'Connell shared pictures of a notable roll-on roll-off observatory for a hotel in Hawaii with orientation tuned to wind and best observing views. Drawings and photos will be announced on Forum and Announcement (Tucson Astronomy group) sites and posted on TAAA website.

Loaner Equipment - Ken Shaver

Ken reported all scopes have been returned for evaluation and maintenance except one which will be returned after Christmas. All scopes have been removed from Shurgard Storage [rental contract has been terminated] to Richard Dougall's residence.

Master Schedule - Steve Marten

Steve reported that all but one 2007 event (possible Desert Sunset Star Party) has been confirmed and TAAA TIMPA use dates have been forwarded to TIMPA Board. George suggested a joint TAAA/TIMPA event April 10 (regular TAAA TIMPA use night); Terri will follow-up with TIMPA President Mike Cummings. Steve has written procedures for the Master Schedule. The master will be posted on the website.

Dark Site Search - Ken Shaver

Ken and Terri attended Pima County Real Property and Parks Dept. meeting and found few true dark sites were available. Discussion followed to put a request in *Desert Skies* regarding available land search to attract membership ideas and known sites that may be suitable for TAAA use. Bill suggested developing site requirements to qualify site suggestions then publish a list of sites evaluated thus far for Board and membership review. A committee was formed and Ken will provide inputs at next Board meeting.

TAAA Holiday Party - Bill Lofquist

Board approved \$50 apparel gift certificate(s), \$100 for heaters and \$100 for miscellaneous expenses for TAAA holiday party.

Adjourned at 9:17p.m.
Respectfully Submitted,
Steve Marten, Secretary

Desert Skies Classified

For Sale	CELESTRON NEXTAR 8i, 2002, Mint condition, 25 mm Plossl 1.25 inch eyepiece. Computerized hand control gives GOTO slewing to over 40,000 objects. \$975. I also have Tele Vue® Nagler 4.8 mm 1.25 inch eyepiece \$90; as well as University Optics 9 mm, and Meade 12 mm, 1.25 inch eyepieces with illuminated reticules \$40 ea. and Celestron Star Diagonal, 1.25 inch \$35. Jim Jondrow, 529-0933 or jjondrow@dakotacom.net [03/07]
For Sale	Meade ETX-70AT w/883 heavy duty tripod, 495 Autostar handbox; PL4, PL6, MA9, MA25, 124-2X Barlow lenses, LPR filter, 670 dewshield, 827-8 x 25mm right angle view finder, 07379-T mount for Olympus OM 35mm camera, 2 flexible shutter release cables, extra battery pack. OM Olympus camera, 9 vdc adapter mounted on 883 tripod frame w/ 100 ft 3-wire outdoor power cord (to substitute for use of a battery pack, where 110 V power is available), (used 3 evenings) - valued over \$1500, asking \$750. Harland Beckman, 520-722-5070. [02/07]

Your ad will 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.

Constellation Report by Chris Lancaster

Fornax
The furnace

Many of the faint constellations were created by the German astronomer Johannes Hevelius, but the credit for this particular group of stars goes to the Frenchman Nicolas-Louis de Lacaille, who studied astronomy in the 18th century. Originally he named it Fornax Chemica, or the chemical furnace. The neighboring constellation Eridanus winds its way around Fornax, which is composed of 4th and 5th magnitude stars which find themselves between 2 hours and 4 hours of RA and -40 and -25 degrees declination. Maybe the best way to find Fornax is to orient your view with respect to the constellations Orion and Cetus. Make a line from Alnitak, or the easternmost star of Orion's belt, follow it through Rigel, Orion's western foot, and continue to a point directly below the head of Cetus. The scattered stars of Fornax trace out no particular shape.

Near Fornax's border with Eridanus is this constellation's main draw. Here is a cluster of 23 galaxies, ten of which are visible in the same eyepiece if your scope is capable of a very wide field of view (1.5 degrees). The ones which stand out in this compact group are as follows:

NGC1399--Magnitude: 9.8. Size: 6.9'x 6.4'. Position: RA 3h 38m 28s Dec -35d 26' 58". Here is a bright elliptical galaxy with a bright core and diminishing haze surrounding it.

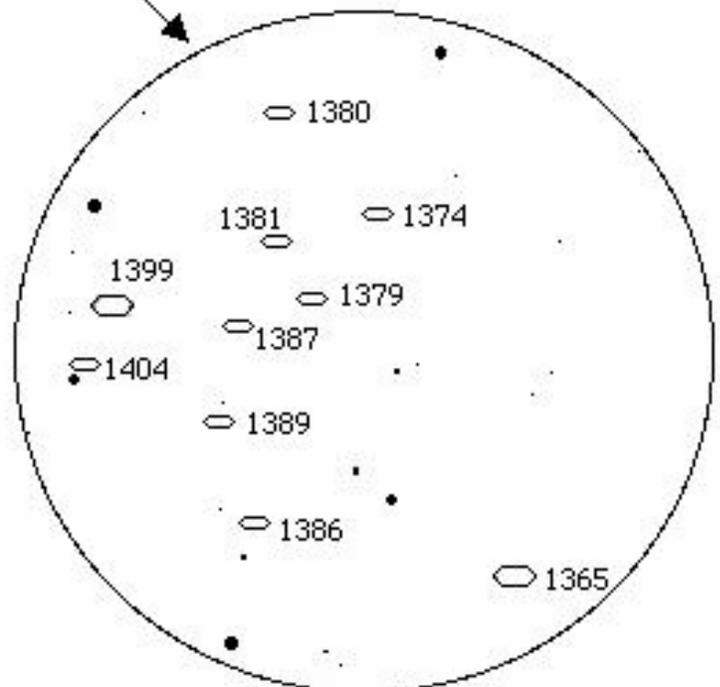
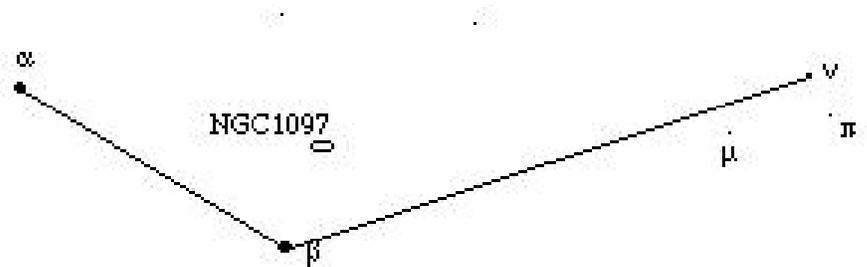
NGC1365--Magnitude: 10.1. Size: 11.2'x 6.2'. Position: RA 3h 33m 36s Dec -36d 08' 17". A remarkable double armed barred spiral.

NGC1380--Magnitude: 11.0. Size: 4.7'x 2.3'. Position: RA 3h 36m 27s Dec -34d 58' 33". A lenticular galaxy with a bright center.

Outside of this group are two other bright galaxies of note. Two and a third degrees southwest of NGC1365 is NGC1316 (magnitude 9.2, 11.9'x 8.5', RA 3h 22m 42s Dec -37d 12' 28"). This is another lenticular galaxy with a bright core surrounded by a haze of innumerable stars.

Farther north in the center of the constellation is NGC1097. Shining comparatively brightly at magnitude 9.9, this galaxy is found 2.2 degrees north-northwest of Beta Fornacis (RA 2h 46m 19s Dec -30d 16' 21"). If the sky is dark and your aperture generous, look for the bar spanning the galaxy's center.

Tucked away in the northeast corner of Fornax is a planetary nebula, offering us a welcome change of pace from the wealth of galaxies. This oval shaped nebula measures 6.5' in its long axis with an easy to spot 8th magnitude central star. Find it at RA 3h 33m 18s Dec -25d 51' 00", or center your scope on a spot which makes a straight line and equal distance with Alpha and Beta Fornacis.



Fornax galaxy cluster. Field of view is 1.5 degrees.

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PERMIT NO 1488

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Please consider renewing your membership on time. Renewal month and dollar amount appears on your address label. Magazine subscriptions are not included. TAL fee is included if participating in TAL. See details on page 2.

Directions to TIMPA and Empire Ranch

Directions to TIMPA Site

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

From the North:

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

From the East:

1. Take Speedway Blvd. west and it turns into Gates Pass Rd..
2. Go over Gates Pass and continue west to Kinney Rd..
3. Turn right (north) on Kinney Rd. and continue past the Desert Museum.
4. Kinney Rd. bends left at the entrance to Saguaro National Park West and becomes Mile Wide Rd..
5. Take Mile Wide Rd. west about five miles to Reservation Rd.. Mile Wide Rd. ends at Reservation Rd. and you must turn right (north) onto Reservation Rd..
6. Take Reservation Rd. north about one mile. The entrance to TIMPA will be on the right.
- 7.

NOTE

A gate card is required for TIMPA access. Please **DO NOT** ask the caretakers for entry to the TIMPA SITE. Contact a board member or the TIMPA Gate Card Controller to arrange access to TIMPA. For scheduled TIMPA star parties, a designated TAAA representative will provide access to the site.

Directions to Las Cienegas (Empire Ranch)

GPS coordinates: 31 deg 47.356' N, 110 deg 37.913' W

Take I-10 East from Tucson. Take Exit 281 (Route 83 Sonoita-Patagonia Highway South). Travel south on Route 83 for about 19 miles, watch for green and white milepost 40 sign on the right side of the road. Approximately ¼ mile past milepost 40, turn left into Las Cienegas. The road is dirt and is "washboarded" so go carefully. At about 2.9 miles, there is a fork in the road. Stay to the right. When the road ends in a "T", take a left. Cross over a concrete section of the road down in a wash. Just up the hill from the wash (about .2 mile), turn left. 0.1 mile ahead will be the end of an abandoned airstrip with a covered ramada. The club members have been setting up several tenths of a mile down the runway. If you arrive after dark, as a courtesy to other members, use only your parking lights to approach the set-up location.