



# The Prairie Astronomer

August, 2011

Volume 52, Issue #8

The Official Newsletter of the Prairie Astronomy Club

## August Program

### In This Issue:

- Upcoming Events
- Area Star Parties
- A message from the President
- What to View in September
- Focus on Observing Club
- Program Chair Minute
- September Challenge Objects
- A Mystery of Titan Explained
- Discovery of the First Earth Trojan Asteroid

## Featured Photo

## Comet Hunting

by Cal Beard

Comet hunting is a discipline, a way of observing like no other as the sky is in charge of what you might find during a session compared to the conventional method of observing. This is what makes it an exciting past time. It will teach you the sky in a way you will never forget. Come to learn how to find comets in the night sky!

A portion of the west rim of Endeavour crater sweeps southward in this color view from NASA's Mars Exploration Rover Opportunity. This crater -- with a diameter of about 14 miles (22 kilometers) -- is more than 25 times wider than any that Opportunity has previously approached during 90 months on Mars. Endeavour crater has been the rover team's destination for Opportunity since the rover finished exploring Victoria crater in August 2008. Endeavour offers access to older geological deposits than any Opportunity has seen before. The closest of the distant ridges visible along the Endeavour rim is informally named Solander Point, an area that Opportunity may investigate in the future. The rover's first destination on the rim, called Spirit Point in tribute to Opportunity's now-inactive twin, is to the left (north) of this scene. This natural color is the rover team's best estimate of what the scene would look like if humans were there and able to see it. Seams have been eliminated from the sky portion of the mosaic to better simulate the vista a person standing on Mars would see. *Image Credit: NASA/JPL-Caltech/Cornell/ASU*



## A Message from PAC President Dan Delzell

It has become apparent that we're in dire need of new volunteers for Hyde. We've recently lost 3, and soon Emily Moravec will be returning to school. Emily is a physics student from St Olaf's College who has been volunteering at Hyde this summer. We greatly appreciate her help and the enthusiasm she's brought to the deck the past few months.

We have a great and very dedicated core group of volunteers, but I'm concerned that with the few that have dropped out of the schedule, we'll soon burn them out if we don't have new volunteers help pick up the slack. My goal as volunteer coordinator has been to make sure this doesn't happen.

This summer we've seen an increase in turn out at Hyde with 150 to 250 showing up on clear nights. The public appreciates the work we're doing. You may feel that you don't know enough to answer their questions, but remember that you never work the deck alone, there are always others there helping. The public understands that we're volunteers and they're okay answering that you don't know everything. Volunteering at Hyde is a great way for you to learn and it is fun to work with the public.

You may also worry that you'll be scheduled too often or that it's difficult to find a substitute. That isn't the case at all. I try to make the schedule three months in advance so we have plenty of time to make changes. If you let me know nights you can't work I work around them and the group has always been flexible, helping each other out when something comes up at the last minute. My whole purpose of reaching out to you is to make sure we're not scheduling people too often.

My fear is that if we don't have new volunteers we'll have to consider not opening some Saturdays. This would be better than over working our volunteers, but would be a disappointment to the community, and I'd hate to see that happen.

If you have ever considered volunteering at Hyde, now is the time. We really need you. Please let me know if you can help.

Thanks,

Dan

## Internet Links of Interest

<http://www.zooniverse.org/>

The Zooniverse is home to the internet's largest, most popular and most successful citizen science projects. The currently live projects are here and plenty more are on the way. Some of the projects that you can help out with are The Milky Way Project, Moon Zoo, Planet Hunters, Galaxy Zoo, and Solar Storm Watch. Galaxy Zoo was important because not only was it incredibly popular, but it produced many unique scientific results, ranging from individual discoveries to those using classifications that depend on the input of everyone who's visited the site.

### Solar System Creator

The forces of cosmic creation are at your command! Build the perfect star and fling planets into orbit around it. Will life evolve or will planets collide in fiery destruction? Construct the perfect solar system in the Known Universe Solar System Builder interactive.

### Space X

The future of manned space flight lies with Space X. Check out their website and see the future!

### Space Shuttle - The Complete Missions

ASA's 30-year Space Transportation System (STS) program came to an end on 21st July 2011. The Space Shuttle fleet delivered the Hubble Space Telescope, the International Space Station, and dozens of satellites, space probes, crew and supplies. Two Shuttles were lost: Challenger in 1986 and Columbia in 2003. The touchdown of Atlantis at Kennedy Space Center marked the end of an era, after 135 missions. This video shows all of them in chronological order.

### STS-135 Tribute

Varying and spectacular camera views of space shuttle Atlantis as it lifts off from the Kennedy Space Center on its final mission to the International Space Station.

## Club Events

## ON THE NET

Newsletter submission deadline, September 15, 2011

PAC Club Meeting:

Tuesday August 30, 2011 7:30pm @ Hyde Observatory

Program: Comet Hunting by Cal Beard

PAC Club Meeting:

Tuesday September 27, 2011 7:30pm @ Hyde Observatory

Program: Making Telescopes by Brian Sivill.

PAC Club Meeting

Tuesday October 25, 2011 7:30pm @ Hyde Observatory

Program: Astronomy/Space Update by Jack Dunn

PAC Club Meeting

Tuesday November 29th 2011 7:30pm @ Hyde Observatory

How to Buy a Telescope

### 2011 PAC Star Party Dates

August	<b>Aug 26th</b>	Sep 2nd
September	Sep 23rd	<b>Sep 30th</b>
October	Oct 21st	<b>Oct 28th</b>
November	Nov 18th	<b>Nov 25th</b>
December	Dec 16th	<b>Dec 23rd</b>

### Lunar Party Dates:

Oct 7th  
Nov 4th

Dates in **BOLD** are closest to the New Moon. Lunar Party dates are possible dates and not official.

### Area Star Parties

South Dakota Star Party

August 26 - 28, 2011

Hodgson Observatory

Beresford, SD

Heart Of America Star Party

August 25 - 31, 2011

75 miles south of Kansas City

Near Butler, MO

Iowa Star Party

September 1 - 5, 2011

Whiterock Conservancy

Coon Rapids, IA,

Mahoney State Park Star Party

Friday September 26, 2011

**PAC:**

[www.prairieastronomyclub.org](http://www.prairieastronomyclub.org)

**PAC E-Mail:**

[info@prairieastronomyclub.org](mailto:info@prairieastronomyclub.org)

**NSP:**

[www.nebraskastarparty.org](http://www.nebraskastarparty.org)

**NSP E-Mail:**

[info@nebraskastarparty.org](mailto:info@nebraskastarparty.org)

**OAS**

[www.OmahaAstro.com](http://www.OmahaAstro.com)

**Hyde Observatory**

[www.hydeobservatory.info](http://www.hydeobservatory.info)

**Panhandle Astronomy Club**

[Panhandleastronomyclub.com](http://Panhandleastronomyclub.com)

**PAC-LIST:** You may subscribe to the PAC listserv by sending an e-mail message to: [mailsrv@prairieastronomyclub.org](mailto:mailsrv@prairieastronomyclub.org). In the body of the message, write "Subscribe PAC-List your-email-address@your-domain.com"

For example:

Subscribe pac-list me@myISP.com

To post messages to the list, send to the address

[pac-list@prairieastronomyclub.org](mailto:pac-list@prairieastronomyclub.org)

PAC can also be found on Twitter and Facebook.

Buy club apparel through the club website. Shirts, hats, mugs, mouse pads and more.



# September Observing: What to View--Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

## Planets

Saturn: Low in the west during twilight, not visible around mid-month.

Jupiter: Rises around 10 p.m. in Aries to start September and by twilight to end the month. It will increase in magnitude from -2.7 to -2.8 and in size from 45" to 48".

Uranus/Neptune: In Pisces and Aquarius. Both rise before midnight. For finder charts see page 53 in the September Sky & Telescope.

Mars: Rises in Gemini around 2 a.m. at magnitude 1.4.

Mercury: Look for it low in the east in the dawn sky.

Venus: Venus is too close to the Sun to be visible until late September.

## September Messier List

M13: The Great Hercules Cluster. Class V globular cluster.

M14: Class VIII globular cluster in Ophiuchus.

M22: Class VII globular cluster in Sagittarius.

M28: Class IV globular cluster in Sagittarius.

M54/M69/M70: Class III, V, and V globular clusters along the bottom of Sagittarius.

M92: Class IV globular cluster in Hercules.

Last Month: M6, M7, M8, M9, M10, M12, M19, M20, M21, M23, M62, M107

Next Month: M11, M16, M17, M18, M24, M25, M26, M55, M75

## NGC and Other Deep Sky Objects

NGC 6960/6992/6995: The Veil Nebula in Cygnus, use an OIII filter.

NGC 6826: The Blinking Planetary in Cygnus.

NGC 6905: The Blue Flash Nebula in Delphinus.

NGC 6934: Globular cluster in Delphinus.

NGC 7026: Bluish-green planetary nebula in Cygnus.

## Double Star Club List

Otto Struve 525: Yellow and blue pair in Lyra.

Gamma Delphinus: Yellow primary with a yellow-green secondary.

Zeta Aquarii: Yellow and white stars.

94 Aquarii: Yellow primary with a pale blue secondary.

Alpha Capricornus: Wide pair of yellow stars.

Beta Capricornus: Yellow and blue pair.

36 Ophiuchi: Equal yellow-orange stars.

Omicron Ophiuchi: Yellow primary and light yellow secondary.

70 Ophiuchi: Yellow and orange pair.

## Focus On Observing Clubs - Jim Kvasnicka

### Lunar Club

Most of us plan our observing around dark skies when the moon is not up. The Lunar Club gives amateur astronomers something to do when the moon is up and we don't have the dark skies we long for.

The Lunar Club allows observers in heavily light polluted areas to participate in an observing club. Since no special observing skills are required the Lunar Club is well suited for the observer just getting into the hobby of astronomy. The Lunar Club is well balanced because it develops naked eye, binocular, and telescopic observing skills. The Lunar Club was created as a project that can easily be done by schools and school children, especially those in the inner city.

To qualify for the Astronomical League Lunar Club you need to be a member of the Astronomical League which all PAC members are. The Lunar Club includes 100 features on the moon to observe. These 100 features are divided into three groups: 18 naked eye features, 46 binocular features, and 36 telescopic features. Any binoculars and telescope will do. All features can easily be seen with a pair of 7x35 binoculars and a 60mm refractor. If you are having trouble with the naked eye features you can use the binoculars, and if you are having problems with the binocular features you can use the telescope.

Go to the Astronomical League web site and go to Observing Clubs, once you are there find the Lunar Club and you can print the observing log that has all 100 features for you to observe. The observing log is easy to use, just check off when you observe a feature and list the date and time.

It's a good idea to have a good lunar map to use when doing the Lunar Club. I can provide you with a map if you need one.

When you complete the Lunar Club you will need to submit a copy of your observing logs to me for review. If the logs are accurate and complete I will submit your name to the Lunar Club chair for approval. The chair will forward to me your certificate and pin that I will present to you at our monthly PAC meeting.

If you have any questions regarding the Lunar Club or need help getting started please ask me and I would be glad to help.

Lunar Club Awardees from PAC

Ron Veys, David Brokofsky, Jim Kvasnicka, and Bob Kacvinsky.

## ANNUAL MEMBERSHIP

**REGULAR MEMBER - \$30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.**

**FAMILY MEMBER - \$35.00 per year. Same as regular member except gets 2 votes at club meetings.**

**If you renew your membership prior to your annual renewal date, you will receive a 10% discount.**

**Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.**

## Club Telescopes

To check out one of the club telescope contact **Jason Noelle**. If you keep a scope for more than a week, please check in with Jason once a week, to verify the location of the telescope and how long you plan to use it. The checkout time limit will be two weeks, but can be extended if no one else has requested use of a club scope.

100mm Orion refractor:  
**Available**

10 inch Meade Dobsonian:  
**Available**

13 inch Truss Dobsonian:  
**Available**

## Program Chair Minute - Dave Churilla

The board is in the process of planning the programs for 2012 – assuming the planetary alignment and end of the Mayan calendar hasn't blown up the earth of course. If you have any ideas or would like to give a presentation please let me know. Your presentation does not have to be greatly detailed or very formal. It's great to have club members share information with the rest of the club and everyone benefits. Some ideas might include a "Pictorial Presentation of the 2011 NSP", "How to Star Hop", "Observing Etiquette", "Computer Astronomy", "The Ins and Outs of the Finderscope" and I'm sure many of you can think of other ideas as well. We'll certainly have a go at another Swap Meet sometime and if I'm still kicking probably another evening of solar observing and perhaps a night of Lunar Madness. So put your thinking caps on (I really didn't just say that did I?) and let us know your ideas.

This month's PAC Meeting will be on August 30th. Those of you who went to the Nebraska Star Party should be well rested from your trip and all night observing stints. As usual we'll have a short business meeting at 7:30 PM that will include our nearly world renowned Observing Chair, Jim Kvasnicka, and his Observing Report followed by the evening's program, "Comet Hunting", by Cal Beard.

I asked Cal to give me an idea of his program as well as to tell something of himself and this is what he sent me.

Comet hunting is an adventure. Every comet's apparition is different. They are mobile, variable, and elusive. Sighting one is sometimes easy, often challenging.

Comet hunting can be discovery. Sure there are dozens of automated telescopes scanning the sky, but they can't look in all directions every night. Amateur astronomers continue to discover comets.

Come hear Cal's stories of comet hunting and grab some tips for your next comet hunt.

Cal Beard is a local scientist. When he is not shipping pharmaceuticals out of Novartis, he likes to stare off into space; he is an avid astronomer. He has been a science teacher, worked in several planetariums, is a digital graphic artist and musician. His family is famous for story telling and mixing science with entertainment. His wife says that over half of the things that he says are true.

I'm disappointed that I'll be out of town that week on vacation and won't be able to see Cal's presentation, but you'll want to be sure to attend.

Following are upcoming programs you won't want to miss.

**Sep 2011:** *Making Telescopes* by Brian Sivill. Building your own scope isn't as difficult as many think it is. Brian will help with some basics. More to come.

**Oct 2011:** *Astronomy Update* by Jack Dunn. Jack will fill us in on things space and astronomy as well as multimedia. More to come.

**Nov 2011:** *How to Buy a Telescope* This will be our now annual public seminar on how to buy a telescope. We'll need your help assisting guests. More to come.

I'll try to keep you apprised of upcoming programs so you can plan to attend.

The members of the PAC Executive Committee work together to plan the monthly PAC Programs. Our goal for the programs is to provide a good mix of information, entertainment (including time to visit with one another), and to make them relevant for all experience levels as well as to hit all interests in astronomy. In addition we want to get club members involved with giving presentations as there is a lot of expertise in different areas that we all could benefit from. So we would love to have your comments and suggestions concerning what you would like see in our programs. Call me at 402-467-1514 or email me at [weber2@inebraska.com](mailto:weber2@inebraska.com).

## Challenge Observing Objects for July/August

Each month I will have two objects, one for the more seasoned observer and one for the beginning observer. Each object I hope will challenge you just a little bit. I will provide you with a little bit of information about the object. It is your job to find it and if you would write a little report or draw what you see. The first person to report back on each object will have their report published in the next issue of the newsletter. Happy Hunting!

### Advanced Object

#### NGC 7448

Discovered by William Herschel. This is a small and faint galaxy in Pegasus. It measures 2.7 arc minutes by 1.2 arc minutes and has an apparent magnitude of 11.5.

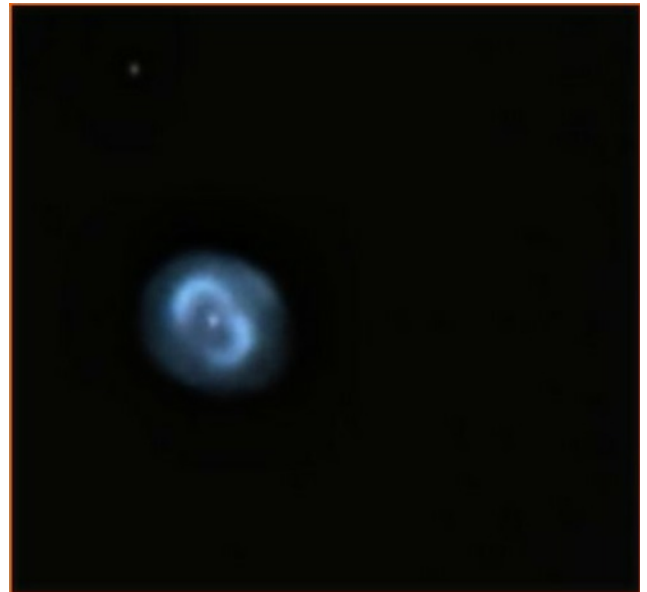


*Image Credit: SLOAN Digital Sky Survey*

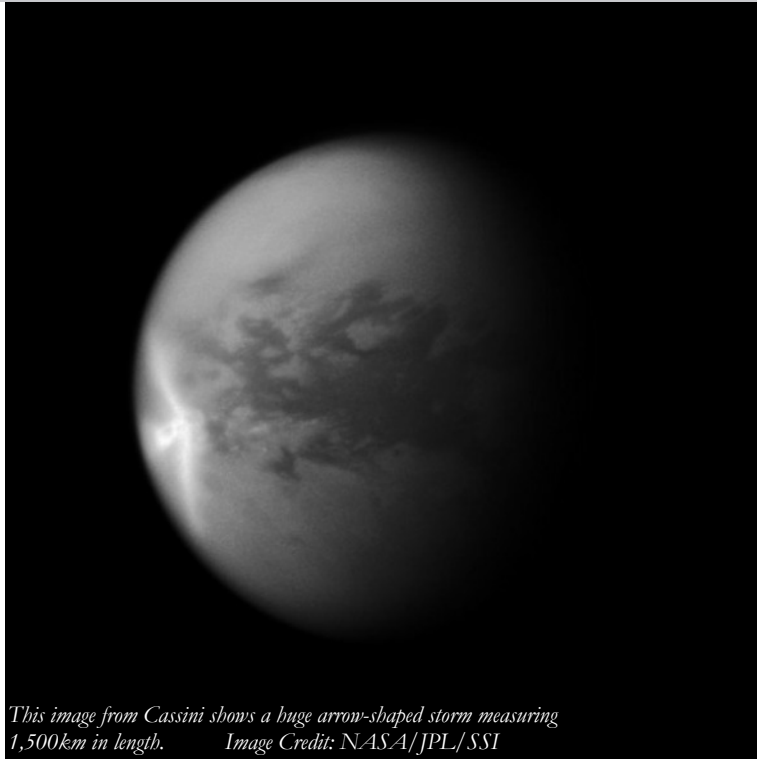
### Beginner Object

#### NGC 7662

Also known as the Blue Snowball Nebula. It lies about 5,600 light years from earth and has an estimated diameter of 50,000 AU. Its dimensions are 37 arc seconds and has an apparent magnitude of 8.6. A 6" telescope with a magnification around 100x will reveal a slightly bluish disk, while telescopes with a primary mirror at least 16" in diameter may reveal slight color and brightness variations in the interior.



## Titan's Giant Cloud Explained by Ray Sanders of Universe Today



*This image from Cassini shows a huge arrow-shaped storm measuring 1,500km in length. Image Credit: NASA/JPL/SSI*

Titan is making news again, this time with Cassini images from 2010 showing a storm nearly as big as Texas. Jonathan Mitchell from UCLA and his research team have published their findings which help answer the question:

What could cause such large storms to develop on a freezing cold world?

For starters, the huge arrow isn't a cosmic detour sign reminding us to "Attempt No Landings" on Jupiter's moon Europa.

In the study by Mitchell and his team, a model of Titan's global weather was created to understand how atmospheric waves affect weather patterns on Titan. During their research, the team discovered a "stenciling" effect that creates distinct cloud shapes, such as the arrow-shaped cloud shown in the Cassini image above.

"These atmospheric waves are somewhat like the natural, resonant vibration of a wine glass," Mitchell said. "Individual clouds might 'ring the bell,' so to speak, and once the ringing starts, the clouds have to respond to that vibration."

Titan is the only other body in the solar system (aside from Earth) known to have an active "liquid cycle". Much like Titan's warmer cousin Earth, the small moon has an atmosphere primarily composed of Nitrogen. Interestingly enough Titan's atmosphere is roughly the same mass as Earth's and has about 1.5 times the surface pressure. At the extremely low temperatures on Titan, hydrocarbons such as methane appear in liquid form, rather than the gaseous form found on Earth.

With an active liquid both on the surface and in the atmosphere of Titan, clouds form and create rain. In the case of Titan, the rain on the plain is mainly methane. Water on Titan is rock-hard, due to temperatures hovering around -200 c.

Studies of Titan show evidence of liquid runoff, rivers and lakes, further emphasizing Titan's parallels to Earth. Researchers believe better understanding of Titan may offer clues to understanding Earth's early atmosphere. In another parallel to earth, the weather patterns on Titan created by the atmospheric waves can create intense rainstorms, sometimes with more than 20 times Titan's average seasonal rainfall. These intense storms may cause erosion patterns that help form the rivers seen on Titan's surface. Mitchell described Titan's climate as "all-tropics", basically comparing the weather to what is usually found near Earth's equator. Could these storms be Titan's equivalent of monsoon season?

Mitchell stated "Titan is like Earth's strange sibling — the only other rocky body in the solar system that currently experiences rain". Mitchell also added, "In future work, we plan to extend our analysis to other Titan observations and make predictions of what clouds might be observed during the upcoming season".

The research was published Aug. 14 in the online edition of the journal Nature Geoscience .



## NASA's WISE Mission Finds First Trojan Asteroid Sharing Earth's Orbit

Astronomers studying observations taken by NASA's Wide-field Infrared Survey Explorer (WISE) mission have discovered the first known "Trojan" asteroid orbiting the sun along with Earth. Trojans are asteroids that share an orbit with a planet near stable points in front of or behind the planet. Because they constantly lead or follow in the same orbit as the planet, they never can collide with it. In our solar system, Trojans also share orbits with Neptune, Mars and Jupiter. Two of Saturn's moons share orbits with Trojans. Scientists had predicted Earth should have Trojans, but they have been difficult to find because they are relatively small and appear near the sun from Earth's point of view.

"These asteroids dwell mostly in the daylight, making them very hard to see," said Martin Connors of Athabasca University in Canada, lead author of a new paper on the discovery in the July 28 issue of the journal *Nature*. "But we finally found one, because the object has an unusual orbit that takes it farther away from the sun than what is typical for Trojans. WISE was a game-changer, giving us a point of view difficult to have at Earth's surface." The WISE telescope scanned the entire sky in infrared light from January 2010 to February 2011. Connors and his team began their search for an Earth Trojan using data from NEOWISE, an addition to the WISE mission that focused in part on near-Earth objects, or NEOs, such as asteroids and comets. NEOs are bodies that pass within 28 million miles (45 million kilometers) of Earth's path around the sun. The NEOWISE project observed more than 155,000 asteroids in the main belt between Mars and Jupiter, and more than 500 NEOs, discovering 132 that were previously unknown. The team's hunt resulted in two Trojan candidates. One called 2010 TK7 was confirmed as an Earth Trojan after follow-up observations with the Canada-France-Hawaii Telescope on Mauna Kea in Hawaii.

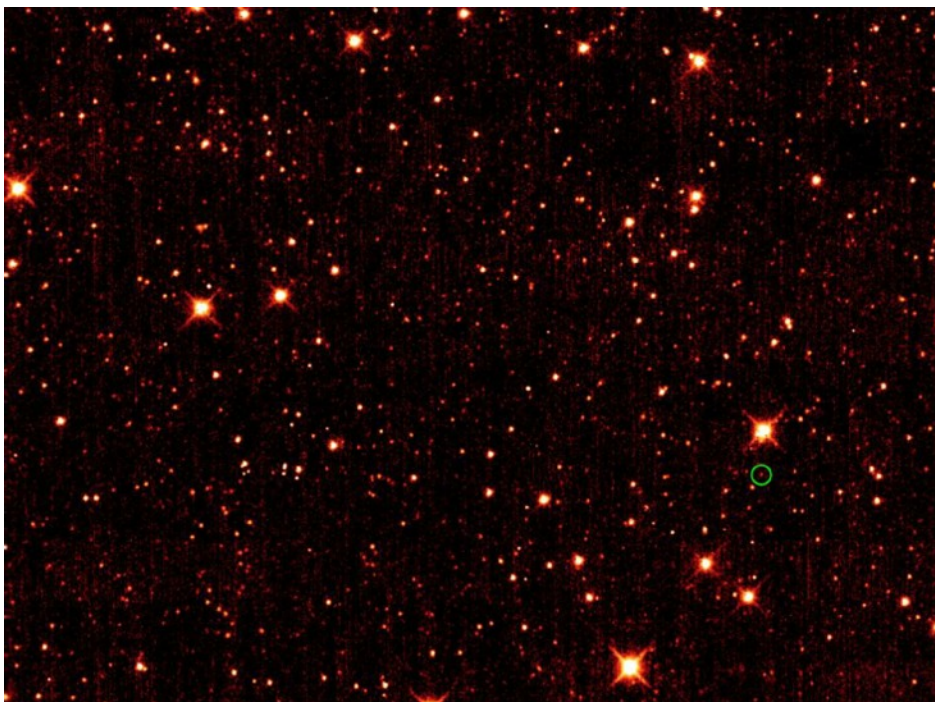
The asteroid is roughly 1,000 feet (300 meters) in diameter. It has an unusual orbit that traces a complex motion near a stable point in the plane of Earth's orbit, although the asteroid also moves above and below the plane. The object is about 50 million miles (80 million kilometers) from Earth. The asteroid's orbit is well-defined and for at least the next 100 years, it will not come closer to Earth than 15 million miles (24 million kilometers). "It's as though Earth is playing follow the leader," said Amy Mainzer, the principal investigator of NEOWISE at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "Earth always is chasing this asteroid around." A handful of other asteroids also have orbits similar to Earth. Such objects could make excellent candidates for future robotic or human exploration. Asteroid 2010 TK7 is not a good target because it travels too far above and below the plane of Earth's orbit, which would require large amounts of fuel to reach it. "This observation illustrates why NASA's NEO Observation program funded the mission enhancement to process data collected by WISE," said Lindley

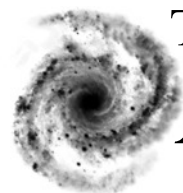
Johnson, NEOWISE program executive at NASA Headquarters in Washington. "We believed there was great potential to find objects in near-Earth space that had not been seen before."

NEOWISE data on orbits from the hundreds of thousands of asteroids and comets it observed are available through the NASA-funded International Astronomical Union's Minor Planet Center at the Smithsonian Astrophysical Observatory in Cambridge, Mass.

Asteroid 2010 TK7 is circled in green, in this single frame taken by NASA's Wide-field Infrared Survey Explorer, or WISE. The majority of the other dots are stars or galaxies far beyond our solar system. Astronomers discovered this object -- the first known Earth Trojan asteroid -- after sifting through asteroid candidates identified by WISE.

*Image credit: NASA/JPL-Caltech/UCLA*





# THE *Prairie* *Astronomy* *Club*

Amateur Astronomy --  
A Hobby as Big as the Universe

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular \$30/yr, Family \$35/yr.** Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585.** For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Jason Noelle at [oegrad2002@yahoo.com](mailto:oegrad2002@yahoo.com)**, no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.

<b>PRESIDENT</b>	<b>Dan Delzell</b> 402-432-6283 <a href="mailto:dan@delzell.net">dan@delzell.net</a>
<b>VICE PRESIDENT</b>	<b>Jason Noelle</b> <a href="mailto:oegrad2002@yahoo.com">oegrad2002@yahoo.com</a> 402-730-8317
<b>2nd VP (Program Chair)</b>	<b>Dave Churilla,</b> 402-467-1514 <a href="mailto:weber2@inebraska.com">weber2@inebraska.com</a>
<b>SECRETARY</b>	<b>Brett Boller</b> <a href="mailto:proboller86@yahoo.com">proboller86@yahoo.com</a>
<b>TREASURER</b>	<b>Bob Kacvinsky</b> <a href="mailto:bob.kacvinsky@syngenta.com">bob.kacvinsky@syngenta.com</a> 402-423-4967
Club Observing Chair:	<b>Jim Kvasnicka</b> <a href="mailto:jim.kvasnicka@yahoo.com">jim.kvasnicka@yahoo.com</a>
Outreach Coordinator:	<b>Kris Gainsforth</b> <a href="mailto:krisguy@krisguy.com">krisguy@krisguy.com</a>
Website Editor:	<b>Mark Dahmke</b> (402) 475-3150
Publicity:	<b>Jack Dunn</b> <a href="mailto:jdunn@spacelaser.com">jdunn@spacelaser.com</a>

The Prairie Astronomer  
c/o The Prairie Astronomy Club, Inc.  
P.O. Box 5585  
Lincoln, NE 68505-0585

FIRST CLASS MAIL

**Next PAC Meeting**  
**Tuesday**  
**August 30, 2011**  
**7:30 PM**  
**Hyde Observatory**