



The Astronomical League's Urban Club



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by **John Wagoner**

American Association of Amateur Astronomers

Assisted by

John A. Barra - Peoria Astronomical Society

Ken Boquist - Quad-Cities Astronomical Society

Bill Geertsen - Hartford County Astronomical Society

David Hasenauer - Texas Astronomical Society of Dallas

Lee Maisler - Member-at-Large

Chris Randall - Fort Bend Astronomy Club

Becky Schultz - Fort Bend Astronomy Club

Jim Tomney - Baltimore Astronomical Society

Roberto Torres - Southern Cross Astronomical Society

Introduction

Welcome to the Astronomical League's new Urban Club. The purpose of the Urban Club is to bring amateur astronomy back to the cities, back to those areas that are affected by heavy light pollution. Amateur astronomy used to be called "backyard astronomy." This was in the days when light pollution was not a problem, and you could pursue your hobby from the comfort of your own backyard. But as cities grew, so did light pollution, and the amateur astronomer was forced to drive farther and farther out into the country to escape that light pollution. It is not uncommon today for a city dweller to drive more than 100 miles to enjoy his hobby. But many people do not have the time or the resources to drive great distances to find dark skies. That is the reason for the creation of this observing club: to allow those who want to enjoy the wonders of the heavens in the comfort of their own neighborhoods to do so, and to maximize their observing experiences, despite the presence of heavy light pollution.

Our crack team of observers observed the objects on this list from the East Coast, through Middle America, to the West Coast, and from major metropolitan areas like Miami, Baltimore, Dallas, Houston, and Los Angeles. Limiting magnitudes ranged from a high of "4" down to a "2", and even as bad as a "GEEZ," as Becky Schultz commented on one particularly bad evening. Instruments used ranged from a six-inch reflector to a ten-inch SCT. So, as you can see, there is a world of objects out there than can be found and enjoyed under even poor skies. It only takes a small to medium sized telescope to enjoy them. We sincerely hope that this club encourages you to continue your enjoyment of the wonderful hobby of amateur astronomy.

Rules and Regulations

To qualify for the AL's Urban Club Certificate and pin, you need to observe all 100 objects on the Urban Club list under light polluted skies, and be a member of the Astronomical League, either through an affiliated club or as a Member-at-Large. Light polluted skies are defined as any area where you cannot see the Milky Way with the unaided eye. You may observe the objects with the naked eye, binoculars, or a telescope, and any size telescope may be used. However, telescopes from six- to ten-inches in aperture are recommended, since a larger aperture helps pull out fainter objects in a non-contrasty sky. Previous observations of these objects may be used toward this club, as long as they were done in light polluted skies. Previous observations from dark sky sites cannot be used. All observations made in achieving the

certificate for the Urban Club may be used toward the certification of any of the other AL Observing Programs.

To record your observations, you may use the log sheets found in the back of the Astronomical League's manual **Observe: A Guide to the Messier Objects**, or any similar log sheet. Your own log sheets should include: object, date, time, power, seeing, type of binocular, and observing notes. Order the *Observe* manual through *Astronomical League Sales*, PO Box 572, West Burlington, IA 52655-9998. The price is \$10.00, including postage. Or you can order on-line at www.astronomicalleguesales.com.

To receive your Urban Club Certificate and pin, simply send your observations along with your name, address, phone number, and club affiliation either to your club's Awards Coordinator for verification, or to: *Mike Benson, AL Binocular Coordinator, 2116 Crystal Dr., Nashville, TN 37210-3333. Phone (615) 883-6571. E-mail: ocentaurus@aol.com*. Upon verification of your observations, your certificate will be forwarded either to you or your club's Awards Coordinator, whomever you choose.

If you need to become a member of the Astronomical League as a Member-at-Large, contact *Jackie Beucher, AL Executive Secretary, 11305 King Street, Overland Park, KS 66210-3421. (913) 469-0135. E-Mail: M31@sky.net*.

You may also join **The American Association of Amateur Astronomers, The Internet Astronomy Club**, which is a member society of the Astronomical League. Join on-line at our web page: **www.AstroMax.com**. Or send a check for \$20 (\$25 family) for each membership to: **AAAA, P.O. Box 7981, Dallas, TX 75209-0981. E-Mail: aaaa@AstroMax.com**.

AAAA Members: If you have completed an AL observing project, submit your observations directly to the AAAA for certification. Be sure to send COPIES only. Do NOT send original photographs or observing logs.

The List

There are actually two lists for the Urban Club, one for deep sky objects and another for double and variable stars. All objects are listed in Right Ascension order so that you can view them as they rise in the East and set in the West. Information provided on each deep sky object includes: Catalog Number, Right Ascension, Declination, Magnitude, Messier Designation (if any), Type of Object, Size, Constellation, and what chart they can be found on in both the *Uranometria* and Wil Tirion's *Sky Atlas 2000*. Information provided on the double and variable star list includes: Object, Right Ascension, Declination, and Magnitude and Separation of the components.

I hope you enjoy this list of objects to observe, and that it helps increase your satisfaction in observing from a light polluted area.

Good luck, clear skies, and good observing.

Acknowledgment

The Astronomical League and I wish gratefully to acknowledge Philip S. Harrington of the Westport Astronomical Society for his suggestions and support in creating this program.

John Wagoner, Plano, TX, November 9, 1997

The List (Deep Sky Objects)

[x]	Object	R.A.	Dec.	Mag	Mes	Type	Size	Con	Urn	SA
[]	NGC 129	00 29.9	+60 14	6.5		OpCl	21.0'	Cas	15	1
[]	NGC 221	00 42.7	+40 52	9.0	M32	Glxy	7.6'x5.8'	And	60	4
[]	NGC 224	00 42.7	+41 16	4.4	M31	Glxy	180'x63'	And	60	4
[]	NGC 457	01 19.1	+58 20	6.4		OpCl	13.0'	Cas	36	1
[]	NGC 663	01 46.0	+61 15	7.1		OpCl	16.0'	Cas	16	1
[]	Cr 463	01 48.4	+71 57	5.7		OpCl	36.0'	Cas	17	1
[]	NGC 752	01 57.8	+37 41	5.7		OpCl	50.0'	And	92	4
[]	Stock 2	02 15.0	+59 16	4.4		OpCl	60.0'	Cas	37	1
[]	NGC 869	02 19.0	+57 09	5.3		OpCl	29.0'	Per	37	1
[]	NGC 884	02 22.4	+57 07	6.1		OpCl	29.0'	Per	37	1
[]	Tr 2	02 37.3	+55 59	5.9		OpCl	20.0'	Per	38	1
[]	NGC 1068	02 42.7	-00 01	8.8	M77	Glxy	6.9'x5.9'	Cet	220	10
[]	Tr 3	03 11.8	+63 15	7.0		OpCl	23.0'	Cas	18	1
[]	Stock 23	03 16.0	+60 02	6.2		OpCl	15.0-	Cam	38	1
[]	Mel 20	03 22.0	+49 00	1.2		OpCl	185'	Per	38	4
[]	NGC 1342	03 31.6	+37 20	6.7		OpCl	14.0'	Per	94	4
[]	M45	03 46.9	+24 07	1.2	M45	OpCl	110'	Tau	132	4
[]	Hyades	04 27.0	+16 00	0.5		OpCl	330'	Tau	133	11
[]	NGC 1647	04 46.0	+19 04	6.4		OpCl	45.0'	Tau	134	11
[]	NGC 1807	05 10.7	+16 32	7.0		OpCl	17.0'	Tau	135	11
[]	NGC 1817	05 12.1	+16 42	7.7		OpCl	15.0'	Tau	135	11
[]	NGC 1912	05 28.7	+35 50	6.4	M38	OpCl	21.0'	Aur	97	5
[]	NGC 1960	05 36.1	+34 08	6.0	M36	OpCl	12.0'	Aur	97	5
[]	NGC 1976	05 35.4	-05 27	3.7	M42	BNeb	90'x60'	Ori	225	11
[]	NGC 1981	05 35.2	-04 26	4.2		OpCl	25.0'	Ori	225	11
[]	NGC 2099	05 52.4	+32 33	5.6	M37	OpCl	23.0'	Aur	98	5
[]	NGC 2168	06 08.9	+24 20	5.1	M35	OpCl	28.0'	Gem	137	5
[]	NGC 2169	06 08.4	+13 57	5.9		OpCl	6.0'	Ori	182	11
[]	NGC 2232	06 26.6	-04 45	3.9		OpCl	29.0'	Mon	227	11
[]	NGC 2244	06 32.4	+04 52	4.8		OpCl	23.0'	Mon	227	11
[]	NGC 2264	06 41.1	+09 53	3.9		OpCl	20.0'	Mon	183	11
[]	NGC 2281	06 49.3	+41 04	5.4		OpCl	14.0'	Aur	68	5
[]	NGC 2287	06 46.1	-20 46	4.5	M41	OpCl	38.0'	CMa	318	11
[]	NGC 2301	06 51.8	+00 28	6.0		OpCl	12.0'	Mon	228	11
[]	NGC 2323	07 03.2	-08 20	5.9	M50	OpCl	16.0'	Mon	273	12
[]	NGC 2392	07 29.2	+20 55	9.2		PNeb	47"X43"	Gem	139	5
[]	NGC 2539	08 10.7	-12 50	6.5		OpCl	21.0'	Pup	275	12
[]	NGC 2548	08 13.8	-05 48	5.8	M48	OpCl	54.0'	Hya	230	12
[]	NGC 2632	08 40.1	+19 59	3.1	M44	OpCl	95.0'	Cnc	141	12
[]	NGC 2682	08 50.4	+11 49	6.9	M67	OpCl	29.0'	Cnc	187	12
[]	NGC 3031	09 55.6	+69 04	6.8	M81	Glxy	26'x14'	UMa	23	2
[]	NGC 3034	09 55.8	+69 41	8.4	M82	Glxy	11'x4.6'	UMa	23	2
[]	NGC 3242	10 24.8	-18 38	7.8		PNeb	45"X36"	Hya	325	13
[]	Mel 111	12 25.0	+26 00	1.8		OpCl	275'	Com	148	7
[]	NGC 4374	12 25.1	+12 53	10.1	M84	Glxy	6.5'x5.6'	Vir	193	13
[]	NGC 4406	12 26.2	+12 57	9.8	M86	Glxy	8.9'x5.8'	Vir	193	13
[]	NGC 4486	12 30.8	+12 24	8.6	M87	Glxy	7.2'x6.8'	Vir	193	13
[]	NGC 4594	12 40.0	-11 37	8.3	M104	Glxy	8.9'x4.1'	Vir	284	13
[]	NGC 4736	12 50.9	+41 07	8.1	M94	Glxy	11'x9.1'	CVn	75	7
[]	NGC 4826	12 56.7	+21 41	8.5	M64	Glxy	9.3'x5.4'	Com	149	7
[]	NGC 5272	13 42.2	+28 23	5.9	M3	GbCl	16.0'	CVn	110	7
[]	NGC 5904	15 18.6	+02 05	5.7	M5	GbCl	17.4'	Ser	244	14
[]	NGC 6121	16 23.6	-26 32	5.8	M4	GbCl	26.0'	Sco	336	22
[]	NGC 6205	16 41.7	+36 28	5.7	M13	GbCl	17.0'	Her	114	8
[]	NGC 6210	16 44.5	+23 49	8.8		PNeb	48"	Her	156	8
[]	NGC 6218	16 47.2	-01 57	6.8	M12	GbCl	15.0'	Oph	246	15
[]	NGC 6254	16 57.1	-04 06	6.6	M10	GbCl	15.0'	Oph	247	15
[]	NGC 6266	17 01.2	-30 07	6.7	M62	GbCl	14.0'	Oph	376	22
[]	NGC 6341	17 17.1	+43 08	6.4	M92	GbCl	11.0'	Her	81	8
[]	NGC 6405	17 40.1	-32 13	4.2	M6	OpCl	33.0'	Sco	377	22

The List (Deep Sky Objects)

[x]	Object	R.A.	Dec.	Mag	Mes	Type	Size	Con	Urn	SA
[]	IC 4665	17 46.3	+05 43	4.2		OpCl	70.0'	Oph	203	15
[]	NGC 6475	17 53.9	-34 49	3.3	M7	OpCl	80.0'	Sco	377	22
[]	NGC 6520	18 03.4	-27 54	7.6		OpCl	6.0'	Sgr	339	22
[]	NGC 6523	18 03.8	-24 23	5.0	M8	BNeB	90'x40'	Sgr	339	22
[]	NGC 6618	18 20.8	-16 11	6.0	M17	OpCl	11.0'	Sgr	294	15
[]	NGC 6633	18 27.7	+06 34	4.6		OpCl	20.0'	Oph	205	15
[]	NGC 6656	18 36.4	-23 54	5.1	M22	GbCl	24.0'	Sgr	340	22
[]	IC 4756	18 39.0	+05 27	4.6		OpCl	40.0'	Ser	205	15
[]	NGC 6705	18 51.1	-06 16	5.8	M11	OpCl	13.0'	Sct	295	15
[]	NGC 6709	18 51.5	+10 21	6.7		OpCl	13.0'	Aql	205	15
[]	NGC 6720	18 53.6	+33 02	8.8	M57	PNeB	86"x62"	Lyr	117	8
[]	Cr 399	19 25.4	+20 11	3.6		OpCl	60.0'	Vul	161	8
[]	NGC 6818	19 44.0	-14 09	9.3		PNeB	22"x15"	Sgr	297	16
[]	NGC 6826	19 44.8	+50 31	8.8		PNeB	27"x24"	Cyg	55	3
[]	NGC 6853	19 59.6	+22 43	7.3	M27	PNeB	8'x5.7'	Vul	162	8
[]	NGC 6910	20 23.1	+40 47	7.4		OpCl	7.0'	Cyg	84	9
[]	NGC 6934	20 34.2	+07 24	8.7		GbCl	5.9'	Del	209	16
[]	NGC 6940	20 34.6	+28 18	6.3		OpCl	31.0'	Vul	120	9
[]	NGC 7009	21 04.2	-11 22	8.0		PNeB	44"x23"	Aqr	300	16
[]	NGC 7078	21 30.0	+12 10	6.0	M15	GbCl	12.0'	Peg	210	16
[]	NGC 7089	21 33.5	-00 49	6.4	M2	GbCl	13.0'	Aqr	255	16
[]	NGC 7092	21 32.2	+48 26	4.6	M39	OpCl	31.0'	Cyg	86	9
[]	NGC 7160	21 53.7	+62 36	6.1		OpCl	7.0'	Cep	33	3
[]	NGC 7209	22 05.2	+46 30	7.7		OpCl	25.0'	Lac	87	9
[]	NGC 7243	22 15.3	+49 53	6.4		OpCl	21.0'	Lac	57	9
[]	NGC 7662	23 25.9	+42 33	8.3		PNeB	32"x28"	And	88	9
[]	NGC 7789	23 57.0	+56 44	6.7		OpCl	15.0'	Cas	59	3

The List (Double and Variable Stars)

[x]	Object	R.A.	Dec.	Mag.	Separation
[]	Eta Cassiopeia	00 49.1	+57 49	3.4,7.5	12"
[]	Gamma Aries	01 53.5	+19 18	4.8,4.8	7.8"
[]	Gamma Andromeda	02 03.9	+42 20	2.3,5.5	9.8"
[]	Beta Perseus(Algol)	03 08.2	+40 57	2.1-3.4	Variable (2.9 days)
[]	Trapezium	05 35.3	-05 23	6.7,7.9,5.1,6.7	8.8",13",21.5"
[]	Beta Monoceros	06 28.8	-07 02	4.7,5.2	7.3"
[]	Gamma Leo	10 20.0	+19 51	2.2,3.5	4.4"
[]	Zeta Ursa Major	13 23.9	+54 56	2.3,4.0,4.0	14.4",709"
[]	Beta Scorpius	16 05.4	-19 48	2.6,4.9	13.6"
[]	Epsilon Lyra	18 44.3	+39 40	5.0,6.1,5.2,5.5	208",2.6",2.3"
[]	Beta Cygnus	19 30.7	+27 58	3.1,5.1	34.4"
[]	Gamma Delphinus	20 46.7	+16 07	4.5,5.5	9.6"
[]	Delta Cepheus	22 29.2	+58 25	3.9,6.3	41"



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Tips for Observing in Light Polluted Areas

By

**Ken Boquist
Bill Geertsen
David Hasenauer
Lee Maisler
Chris Randall
Roberto Torres
John Wagoner**

Sometimes it can be difficult observing in heavily light polluted skies. But by following a few procedures, your observing session can be more enjoyable and more rewarding. The following are tips that our crack team of observers offered to help increase your satisfaction when observing in light polluted areas.

When to Observe

- Observe during new moon. Just like observing in dark skies, the moon adds light to the night sky and reduces contrast.
- Observe after 10:00PM. This gives the dust and water in the air a chance to settle. Dust and water reflect light which can turn a good night into a bad one.
- Observe after 11:00PM. Many stores have closed by this time, and because they turn off their lights, a city's light glow is reduced considerably.
- Observe after 1:00AM. After the stores have closed, most shoppers and workers have gone home which means that there is a lot less traffic on the streets and freeways, and light pollution is reduced.
- Ask your neighbors over for an observing session. After seeing the effect of light pollution on observing, they will be more cooperative in turning off their lights for you.

Observing Hints

- Try to catch your target objects straight overhead. This is always the darkest part of the sky.
- Select the right objects to observe. Magnitude is not everything. A bright galaxy may be invisible, whereas a dim planetary may be easily seen. Small, high surface brightness and stellar objects are easier to observe than large, diffuse objects.
- If you have an alt-azimuth mount (Dobsonian), try to observe near the meridian. Up-down, left-right motions translate into north-south, east-west motions and makes following a path on a star chart easier.

Watch Sky Conditions

- Pay close attention to the weather. Cool, dry nights are best at any location, but are more pronounced in the city.
- Learn to read the quality of the sky by the observing of stars with the naked eye. A clear night might seem perfect for observing, but may in fact be bad for viewing if the seeing is not good.
- Observe after a rain storm. The skies appear darker as light is no longer reflected off of dust particles in the air.
- Observe after a cold front has come through. The air is more stable and the air pollution has been blown out.

Observing Techniques

- Use a dark cloth to cover your head and eyepiece to shield them from stray light.
- Use a dew shield on your telescope to shade it from stray light.

- Clean and collimate all optics. Dirty optics scatter light.
- Light pollution and O-III filters are good for planetary and emission nebulae.
- Use a pirate's eyepatch to keep out stray light.
- A right-angle finder with amici prism under a dark cloth is helpful for finding objects.
- Setting circles are a great aid for finding difficult objects, especially when those objects are quite some distance from a naked eye star.
- A good star atlas, a pair of binoculars, and a one power finder (e.g. Telrad) with a template for that finder, are important for finding objects in bright, non-contrasty skies. Telrad-hopping can sometimes be easier and just as useful as star-hopping with a finder. Viewing the sky through your Telrad with binoculars is also a nice trick.

Observing Location

- Pick the darkest section of your site and make an extra effort to block out stray light. Using a light baffle made of a tarp and tent pegs helps as well as a three-sided wall made out of cardboard. Try to make the immediate area around your site as darkened and non-reflective as possible. Use existing structures and foliage to block the direct view of lights.
- Use earphones or a radio to mask neighborhood noise. Noise can be very distracting.
- Finally, attitude is very important. Any observing is better than no observing or TV.



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The American Association of Amateur Astronomers Observing Log

Observer: _____ Location: _____ Page: _____

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Object	Date	Time	
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