Southern Skies Eye candy

Highlights of the Southern sky

2024 OzSky "Classic" Star safari

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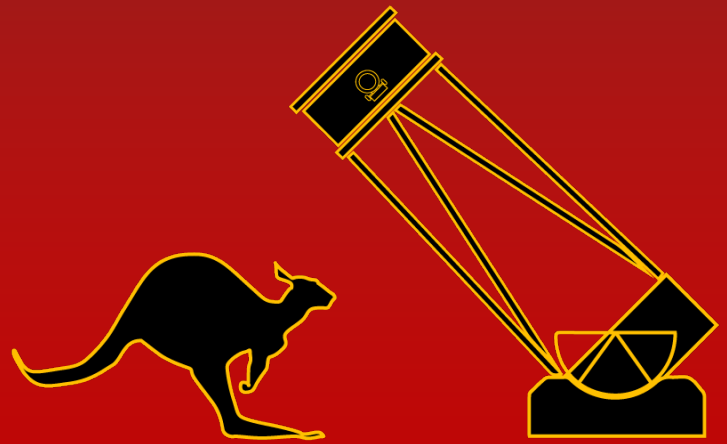

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NGC 2070 – The Tarantula Nebula

Image Credit: R Jay GaBany.

Constellation:	**Dorado**
RA:	**5h 38.6m**
Dec:	**-69°05′**
TYPE:	**Emission Neb + Cluster**
Visual Magnitude	**~4.0-5.3**
Size:	**30'x20'**
Distance:	**~170,000 ly**

NGC 2070 is known as the Tarantula Nebula. It is also catalogued as Caldwell 103. Also sometimes known as 30 Doradus. It was discovered in ~1751 by Lacaille. It is a massive and luminous HII region, located within the Large Magellanic Cloud. It is the largest known HII region within the local group of Galaxies. The entire nebula spans 3,000 ly, which compares to the Orion Nebula spanning 40 ly. The Star Cluster at the Centre of the Nebula (also NGC 2070), spans 250 light years. If the nebula were contained within our own Galaxy it would fill the entire constellation of Orion (30 degrees of sky) and darkness as we know it, would not exist..

The cluster contains a very large number of type O3 blue supergiants. These are generally smaller than their red counterparts, but are amongst the hottest and most luminous stars known. The Clusters' mass is over 200,000 suns, with the stars gravitationally bound. It is believed with this much mass NGC 2070 could harbour a globular cluster in the making.

Telescopically the Tarantula Nebula is one of the night Sky's stunning targets. Any telescope over 3" aperture will reveal its swarms of knots and loops together with the central star cluster. The telescopic view of the nebulosity itself is enhanced with a UHC or OIII filter, but these filters dampen the starlight from the central cluster.

This is an easy naked eye target under dark skies.

NGC 3372 - Eta Carina Nebula Complex

Image Credit: Andrew Murrell, OzSky 2023

Constellation:	**Carina**
RA:	**10h 45.1m**
Dec:	**-59°52′**
TYPE:	**Emission Neb + Other**
Visual Magnitude	**~4.5**
Size:	**120'x120'**
Distance:	**~7,500 ly**

NGC 3372 is also known as Caldwell 92. The Eta Carina nebula is the largest known HII region in our galaxy. It measures 260 ly in diameter, 7 times the size of the Orion nebula. The Eta Carina nebula contains one of the highest concentrations of early O-type stars known in the galaxy.

The Eta Carina complex is one of the most interesting regions in the entire sky because of the number of interesting and diverse targets it contains.

One of the most interesting targets within the complex is the star Eta Carina itself. Eta Carina has 100 times the Sun's mass and 4 million times its luminosity. The brightness of Eta Carina has varied remarkably over time. It has ranged from magnitude -0.7 in 1943 to a low of 7.6 in 1968. Since 1968 Eta Carina has continued to brighten to its present day magnitude of ~4.0.

Eta Carina is surrounded by a bipolar gaseous shell. This is called the Homunculus Nebula. We now know this shell to be caused by the 1843 explosion of Eta Carina, when its brightness peaked.

Quite close to Eta Carina itself and within the nebula complex lies a beautiful dark nebula called "The Keyhole".

There are also several "Wolf-Rayet" stars and associated "bubbles" contained within the nebula complex. Possibly my favourite target in the entire sky.

NGC 104 - 47 Tucanae

Image Credit: Emmanuel BEAUDOIN

Const:	Tucana
Type:	Globular Cluster
Visual Mag:	3.9
RA:	0h 24' 5.2"
DEC:	-72° 4' 51"
Diameter:	50'
Distance:	~14,700 ly

NGC 104 is known as 47 Tucanae. It is also catalogued as Caldwell 106. It was discovered in 1751 by Lacaille. It is located 2.5° off the Western edge of the Small Magellanic Cloud. It is the second brightest globular in the sky (.2 mag behind Omega Centauri) and 3 times brighter (1.25 mags) than the brightest Messier Globular (M22). The Cluster spans 214 light years.

47 Tuc contains a large number of blue stragglers. One of these, BSS-19, is the first blue straggler whose mass has been recorded. Recent data from the Hubble Faint Object Spectrograph in respect of BSS-19 indicates a slow merger of a binary pair has occurred, as opposed to a collision resulting from a core collapse.

47 Tuc is one of the night Sky's stunning targets. In my opinion it is the finest globular cluster in the entire sky. Any telescope over 4" aperture will resolve it to the core. It contains a very bright blazing condensed core, with a soft radiating glow as you move away from the core. Many people see colour in 47 Tuc. Some see it having a soft yellow appearance. Others see it with a pinkish hue. I have seen both in varying apertures.

An interesting additional target for larger scopes is NGC 121. This is an 11.2 magnitude globular cluster located 30' north northeast of the central core. It is small at 1.5' x 1.5' but should be visible in medium apertures under good skies.

This is an easy naked eye target under regional skies.

NGC 5139 - Omega Centauri

Image Credit: Dr. Stefan Binnewies and Josef Pöpsel

Const:	Centaurus
Type:	Globular Cluster
Visual Mag:	3.7
RA:	13h 26’ 46”
DEC:	-47° 28’ 37”
Diameter:	50’
Distance:	~17,300 ly

NGC 5139 is known as Omega Centauri. It is also catalogued as Caldwell 80.

It has been known since early times.

At magnitude 3.7 it is the brightest globular in the sky and is an easy naked eye target under regional skies.

The cluster spans 280 light years and has a mass of about 5 million suns, making it 10 times more massive than other big globulars and a near match for some dwarf galaxies. The individual stars shine at about mag 11.5 ranking it 5th in terms of globulars containing the brightest individual members.

Omega Centauri has been the subject of prolonged starburst activity which has led scientists to speculate that it may be the remnant nucleus of a small galaxy.

It makes an outstanding target in any sized telescope being easily resolved to the core with moderate aperture and magnification.

X Velorum

Image Credit: Centre for Astrophysics and Space Astronomy – University of Colorado

Const:	Vela
Type:	Double Star
Visual Mag:	4.3
Separation:	51.8”
PA:	106°
RA:	10h 39’ 18”
DEC:	- 55° 36’ 12”
Distance:	~900 ly

X Velorum is catalogued as HR 4180, HIP 52154 and SAO 238309. X Velorum has been nicknamed *Albireo Australis* after its visual resemblance to the famous northern hemisphere double, Albireo (B Cygni).

x Velorum is in fact a triple star, the brighter AB components (mag 4.4/6.0, sep 51.7”, pa 105 deg), are also known as Dunlop 95. The third member of the trio is found 20.1” from the B component at pa 174 deg and is mag 12.1. This system is known as HJ 4341 BC (Herschel). The C component is more difficult to spot in smaller scopes than the two main components, which can be separated in larger binoculars.

x Velorum presents a wonderful target in any sized telescope at low to medium powers. The two main components provide a brilliant colour contrast double of electric blue and a deep gold, with the colour contrast enhanced by the brightness of both stars.

The proper motion of the trio indicates them to be a long period related system. A wonderful target to be returned to time and again!

NGC 1365 – Fornax Barred Spiral

Image Credit: ESO/VLT

Const:	**Fornax**
Type:	**Barred Spiral Galaxy**
Visual Mag:	**9.5**
RA:	**3h 33' 36.7'**
DEC:	**- 36° 8' 27**
Diameter:	**11' x 6.2'**
Distance:	**~56.2 million ly**

NGC 1365 is one of the finest barred spiral galaxies in the southern skies. There is currently conjecture about its involvement with the Fornax Galaxy Cluster. It is thought to be closer to us than the cluster, however it shares red shift values with the cluster members.

This galaxy is a well known Seyfert Galaxy and has an intricate structure with a massive straight bar and two pronounced spiral arms.

In bigger apertures these arms take on a very "sharp" appearance, producing a resemblance to some sort of Ninja star weapon (well that's what I see it as). I have seen the spiral arms of this galaxy through an 8" newt. In scopes of 18" aperture and larger the arms are clearly visible with direct vision.

While in the area, be sure to check out the nearby Fornax Galaxy cluster where you can see many galaxies in the one eyepiece view. Wander around with your lowest power eyepiece and see how many little galaxies you can fit into the view.

NGC 2997 – Antlia Spiral

Image Credit: ESO/VLT

Const:	**Antlia**
Type:	**Spiral Galaxy**
Visual Mag:	**9.6**
RA:	**9h 45' 38"**
DEC:	**- 31°11' 25"**
Diameter:	**8.9' x 6.8'**
Distance:	**~24.8 million ly**

NGC 2997 is also known as ESO 434 - G 35). It is a spiral galaxy about 24.8 million light-years away in the constellation Antlia. From our perspective its plane is inclined about 45 degrees, giving it an elliptical appearance. It is the brightest galaxy of the NGC 2997 group of galaxies.

NGC 2997 is slightly less massive than our own Milky way with a mass of 100 billion suns.

NGC 2997 is particularly notable for a nucleus surrounded by a chain of hot giant clouds of ionized hydrogen.

NGC 2997 is easily observed in small telescopes. In large telescopes it is an excellent target with the spiral structure of the arms clearly visible

NGC 5128 - Centaurus A

Image Credit: AAT

Const:	**Centaurus**
Type:	**Peculiar Galaxy**
Visual Mag:	**6.7**
RA:	**13h 25' 29"**
DEC:	**- 43°01'**
Diameter:	**25.7' x 20'**
Distance:	**~12.4 million ly**

NGC5128 is also known as Caldwell 77 and "The Hamburger Galaxy". It is a type E0 peculiar elliptical galaxy. It is one of the most luminous and massive galaxies known and is a strong source of both radio and X-ray radiation.

Centaurus A has a distinctive dark belt cutting through it, which is approximately 15,000 light years wide. Some theories suggest that the nucleus is experiencing giant explosions involving millions of stars and that the dark band across the galactic disk is material being ejected outward: others suggest the band is debris from a smaller dusty galaxy that is being absorbed by Centaurus A.

Under good, dark skies with reasonable aperture and good dark adaptation, the visual appearance starts to resemble what can be seen in long exposure images. It can be seen as roughly elliptical in shape with 2 bright bulges separated by the dark lane. Larger apertures even begin to reveal detail in the dark lane. Small aperture telescopes and binoculars under dark skies will also be able to make out the shape.

A tip whilst observing this target is to push the central region out of the field of view and observe how far the "halo" extends when the nucleus is not "hogging the view".

NGC 6397 – Ara Glob

Image Credit: Mike Sidonio

Constellation:	Ara
RA:	17h 40’ 41.6”
Dec:	-53° 40′ 25”
TYPE:	Globular Cluster
Visual Magnitude	5.3
Size:	25.7’
Distance:	~6,500 ly

NGC 6397 is also known as Caldwell 86. It is colloquially known as the “Ara Glob”. NGC6397 is the 2nd closest globular cluster to earth, the closest being M4 in Scorpius.

NGC 6397 is not only an interesting target visually, it is a very interesting scientific target. NGC 6397 is one of over 20 Milky Way Globular Clusters which have undergone a “core collapse”. Normally globular clusters contain only, older low mass stars which have evolved off the main sequence. Hubble and spectroscopic results indicate the presence of a large number of massive and luminous blue main sequence stars which basically, “should not be there”. Astronomers have concluded that these stars have formed long after the original formation of the cluster as a result of “stellar collisions”. Astronomers believe “several” collisions have occurred within NGC 6397. Consequently NGC 6397 contains some of the most luminous stars of any globular cluster, due to its close proximity to us; these stars appear as the brightest individual stars of any globular cluster.

As a visual target, NGC 6397 is a wonderful target in any sized telescope, the bigger the better however, as with any globular. It has a very bright condensed core as a result of its collapse but outliers stretch out over almost ½ a degree and appear to trace wispy arms as they extend from the core. NGC 6397 is visible naked eye by keen eyed observers under clear dark skies and makes a nice binocular target in medium to larger binoculars.

NGC 3532 - The Football Cluster

Image Credit: Mischa Schirmer

Constellation:	**Carina**
RA:	**11h 5' 47.5"**
Dec:	**-58° 46' 13"**
TYPE:	**Open Cluster**
Visual Magnitude	**3.0**
Size:	**55' x 50'**
Distance:	**~1,600 ly**

NGC 3532 is also known as Caldwell 91 and the "Football Cluster". It's visual appearance to the casual observer, is that of a large oval shaped football. It is a large cluster covering an area twice the size of the full moon.

NGC 3532 is visible to the naked eye from urban skies and is a magnificent sight in binoculars and any telescope at low to medium power. X Carinae appears at the edge of the cluster and could easily be mistaken as being a member, however the Mag 3.9 Orange Supergiant is 5 times farther off at a distance of almost 7,000 ly. The cluster contains 150 members of magnitude 7 to 12 and has almost 400 members in total. The cluster contains a large number of orange and yellow stars.

Observers can see the cluster and interpret its shape and structure in many different ways. Some see it as having an oval shape with a "star free lane" down the centre, while others see it as being made up of dense straight and curved arms of stars. NGC 3532 is one of the finest visual or photographic targets in the entire sky regardless of the size of your telescope.

NGC 4755 - The Jewel Box

Image Credit: Michael Bessel ANU/MSO

Constellation:	Crux
RA:	12h 53’ 37”
Dec:	-60° 21′ 22”
TYPE:	Open Cluster
Visual Magnitude	4.2
Size:	10’
Distance:	~4,900 ly

NGC 4755 is also known as Caldwell 94 and the Kappa Crucis Cluster.

The Cluster contains 5 stars of <7th magnitude forming a conspicuous triangle. At lower powers in the telescope this triangle of stars looks reminiscent of the capital letter “A”, sometimes oriented sideways or upside down.

There are several stars within the cluster which have very conspicuous colour, hence the name given by Herschel. The most notable of these is the mag 5.9 Ruby Red supergiant, Kappa Crucis. There is also a high number of blue and white stars.

The cluster contains ~281 members packed into an area 14 ly across.

This cluster is visible naked eye under dark skies and makes a fine sight in larger binoculars. It makes a majestic sight in any sized telescope but is better viewed at low power as the conspicuous shape fragments and loses definition at higher powers.

NGC 3132 - Eight Burst Nebula

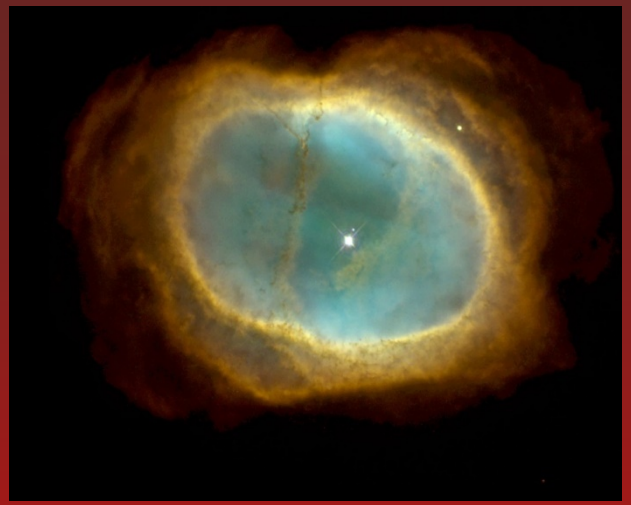

Image Credit:

Const:	**Vela**
Type:	**Planetary Nebula**
Visual Mag:	**9.2**
RA:	**10h 7' 1.8"**
DEC:	**-40° 26' 12"**
Diameter:	**1.4' x .9'**
Distance:	**~3,600 ly**

NGC 3132 is also known as Caldwell 74. It also goes by the name of the Southern Ring Nebula and the Eight Burst Nebula. The later name comes from the concentric ring effect visible in photos and to some extent through the eyepiece.

When viewing the nebula the Mag 10 central star is quite prominent. However, it has been discovered that it is this star's companion – a mag 16 bluish star that is unusually hot and is powering the nebula. It is 1.65" away from its brighter partner and is more closely aligned to the nebula's symmetrical axis. The Hubble Space Telescope photo of this nebula shows the small companion easily, however it would be impossible in most amateur equipment.

Larger apertures will show the inner nebula to be unevenly illuminated, much the same as is displayed in the HST photo. The outer ring is also unevenly illuminated, though brighter than the inner nebula. With smaller aperture and with low power in larger apertures the nebula can appear to blink on and off between direct and averted vision - due mostly to the bright central star. A narrowband filter (OIII, UHC, etc) will help, and don't be scared of a bit of power as the nebula can take it.

Abell 3526 - Centaurus Cluster

Image Credit: NASA

Abell 3526 is known as the Centaurus Cluster. The brightest member is NGC 4696 which is a Mag 10.5 galaxy. There are several hundred known cluster members. The Cluster is approximately 155 million light years away.

The cluster contains two different galaxy subgroups. The main subgroup (Cen 30) has a recession velocity of 3,000 km /sec and the secondary subgroup (Cen 45) has a recession velocity of 4,500 km/sec. The two subgroups are believed to be merging.

In telescopes of around 18" aperture, at least 15 member galaxies are visible within a 1 deg field of view under dark skies. In the 25" 3RF telescopes well over 20 cluster members should be visible in the same field of view.

Despite the outstanding clear dark skies at Coonabarabran, this is NOT a naked eye target ☺

Const:	Centaurus
Type:	Galaxy Cluster
Visual Mag:	10.5
RA:	12h 48' 49"
DEC:	- 41° 18' 41"

ADDITIONAL EYE CANDY

Target Name	Common Name	Type	Const	Mag	RA	Dec
Coal Sack		DN	CRU	Nil	12h 31'	63° 44'
EsB 365	**Ruby Crucis**	Star	CRU	9.1	12h 47'	59° 42'
HR 4730	**Acrux (Alpha Crucis)**	MS	CRU	1.4	12h 26'	63° 6'
HR 5459	**Alpha Centauri (Rigel Kentaurus)**	MS	CEN	0.0	14h 39'	60° 50'
IC 2602	**Southern Pleiades**	OC	CAR	1.6	10h 42'	64° 23'
IC 2944	**Lambda Centauri Cluster**	OC	CEN	2.9	11h 36'	63° 1'
IC 2948	**Lambda Centauri Nebula (Running Chicken)**	BN	CEN	4.5	11h 39'	63° 27'
LMC	**Large Magellanic Cloud (LMC)**	GAL	DOR	0.8	5h 24'	69° 45'
M 6	**Butterfly Cluster**	OC	SCO	4.2	17h 40'	32° 15'
M 83	**Southern Pinwheel**	Gal	HYA	7.8	13h 37'	29° 52'
NGC 1261		GC	HOR	8.3	3h 12'	55° 13'
NGC 1566	**The Great Seyfert Galaxy**	Gal	DOR	9.4	4h 20'	54° 56'
NGC 1851		GC	COL	7.1	5h 14'	40° 3'
NGC 2264	**Christmas Tree Cluster + Cone Nebula**	OC	MON	4.1	6h 41'	9° 54'
NGC 2442	**The Meathook**	Gal	VOL	10.5	7h 36'	69° 33'
NGC 2516	**Southern Beehive**	OC	CAR	3.8	7h 58'	60° 45'
NGC 2547		OC	VEL	4.7	8h 10'	49° 13'
NGC 2736	**The Pencil. Part of Vela Supernova Remnant**	SR	VEL	10.0	9h 0'	45° 57'
NGC 2808	**The Spare Globular**	GC	CAR	6.2	9h 12'	64° 52'
NGC 292	**Small Magellanic Cloud (SMC)**	Gal	TUC	2.2	0h 38'	72° 48'
NGC 3242	**Ghost of Jupiter**	PN	HYA	7.7	10h 25'	18° 39'
NGC 3293	**The Gem Cluster**	OC	CAR	4.7	10h 36'	58° 14'
NGC 4038	**The Antennae**	Gal	CRV	10.5	12h 2'	18° 52'
NGC 5286		GC	CEN	7.4	13h 46'	51° 22'
Shapley 1		PN	NOR	13.6	15h 51'	51° 31'
NGC 6025		OC	TRA	5.1	16h 3'	60° 26'
NGC 6067		OC	NOR	5.6	16h 13'	54° 13'
NGC 6231	**Northern Jewel Box (False Comet Cluster)**	OC	SCO	2.6	16h 54'	41° 49'
NGC 6541		GC	CRA	6.3	18h 8'	43° 43'

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