

# THE NIGHT SKY

JUNE 2011

**E**arth's night sky is dotted with the glow of thousands of stars. But most of these pinpoints of light are faint, because the stars are all so far away. The closest star to us after the Sun, Alpha Centauri, the brighter of the two Pointers, lies more than four light-years away. During June, you can find it high in the southern sky. It's labelled with the Greek letter,  $\alpha$ , on the star chart.

Alpha Centauri consists of three stars. One is almost identical to the Sun. Another is a bit cooler and less massive than the Sun. The third star is a red dwarf - a small, cool, faint star. Because it's closer to us than the other two, it's known as Proxima Centauri. All three stars are about four light-years from Earth.

As we gaze skyward during these chilly winter nights, we see the Milky Way stretch from east to west. High in the east, the brightest bulge of the Milky Way points to a region of the sky that's home to the very centre of our galaxy. There lies the galactic centre, the lair of a supermassive black hole around which our entire pinwheel galaxy spins. A spacecraft from Earth travelling at light speed would reach the inner regions of our galaxy in about 30,000 years!

Over in the northwest, an orange-red star shines. This is Arcturus, the fifth brightest star in the sky. The star became a famous object in 1933, when its starlight was used to trigger a switch that turned on the floodlights at the World Expo in Chicago. It is a large star, roughly 25 times the diameter of our Sun.

Just below and to the right of Arcturus, look for the delicate curving line of faint stars that make up Corona Borealis, the Northern Crown. Elsewhere in the sky, we find the stars of Leo, the lion and Hydra, the water snake setting in the west, whilst Aquila, the eagle and Capricornus, the goat rise in the east.

June brings with it the cold chills of winter. If you develop a cold this winter, someone probably will recommend zinc tablets to boost your immune system. And when you swallow that tablet, just remember that you're using an element created by the stars. Every atom of zinc on Earth, and throughout the universe, was forged inside stars that were nearing the end of life. When the stars died, they scattered the zinc and other elements into space, where they could be

incorporated into new stars and planets.

Today, astronomers learn about a star's history by measuring how much zinc and other metals it contains. The first stars were made only of the elements created in the Big Bang; mainly hydrogen and helium. But each new generation of stars contains more and more zinc and other heavy elements. Astronomers have found that there are a lot more old, metal-rich stars in our region of the galaxy than they had expected. Some of the stars may be more than 10 billion years old, making them some of the oldest in the Milky Way. It's a finding made possible by measuring the heavy elements inside the stars, including zinc.

The planet Saturn is beautifully placed for evening observation in the constellation Virgo, and very easy to find, high in the north-western sky. The rings continue to open, and make an impressive sight in a telescope. When observing with the naked eye, you'll notice a fainter star very near Saturn. This is Virgo's second brightest star, Porrima. It's actually a stunning pair of equally bright yellow suns; but are currently very close to each other in their elongated 169 year orbit, so are difficult to split with a small telescope. They are 39 light years from Earth.

June 22<sup>nd</sup> gives us our Winter solstice; when our dark hours are at our longest. The solstice marks the Sun's northernmost point in the sky for the entire year. After the 22<sup>nd</sup>, it'll start to head south; a motion that will continue until the summer solstice in December. Our planet is tilted on its axis, so as we orbit the Sun, the axis tilts in different directions relative to the Sun. Right now, the south pole is tilted away from the Sun, so it's in total darkness, whereas the north pole is dipping toward the Sun, so it's bathed in constant sunlight.

Do make plans to head outside before sunrise on the morning of June 16<sup>th</sup>. The Full Moon will pass through the Earth's shadow; and we will experience a Total Eclipse of the Moon. As it will pass almost through the centre of the shadow, this eclipse is expected to be particularly dark red. The partial eclipse begins at 3.53am, totality begins at 4.52am and ends 6.32am. The darkest part of the eclipse occurs at 5.43am.

The Moon is New on the 2<sup>nd</sup> of June, at First Quarter on the 9<sup>th</sup>, Full on the 16<sup>th</sup>, and at Last Quarter on the 23<sup>rd</sup>.



Produced monthly for guests of the Arkaroola Wilderness Sanctuary.

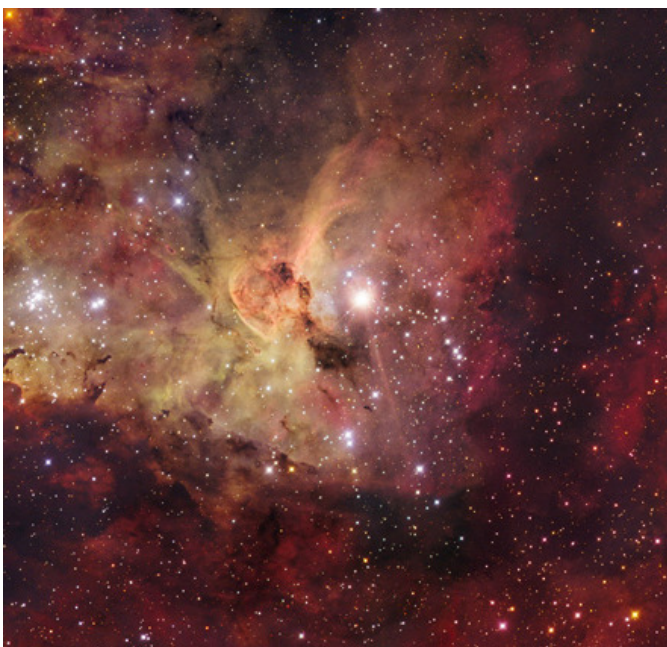
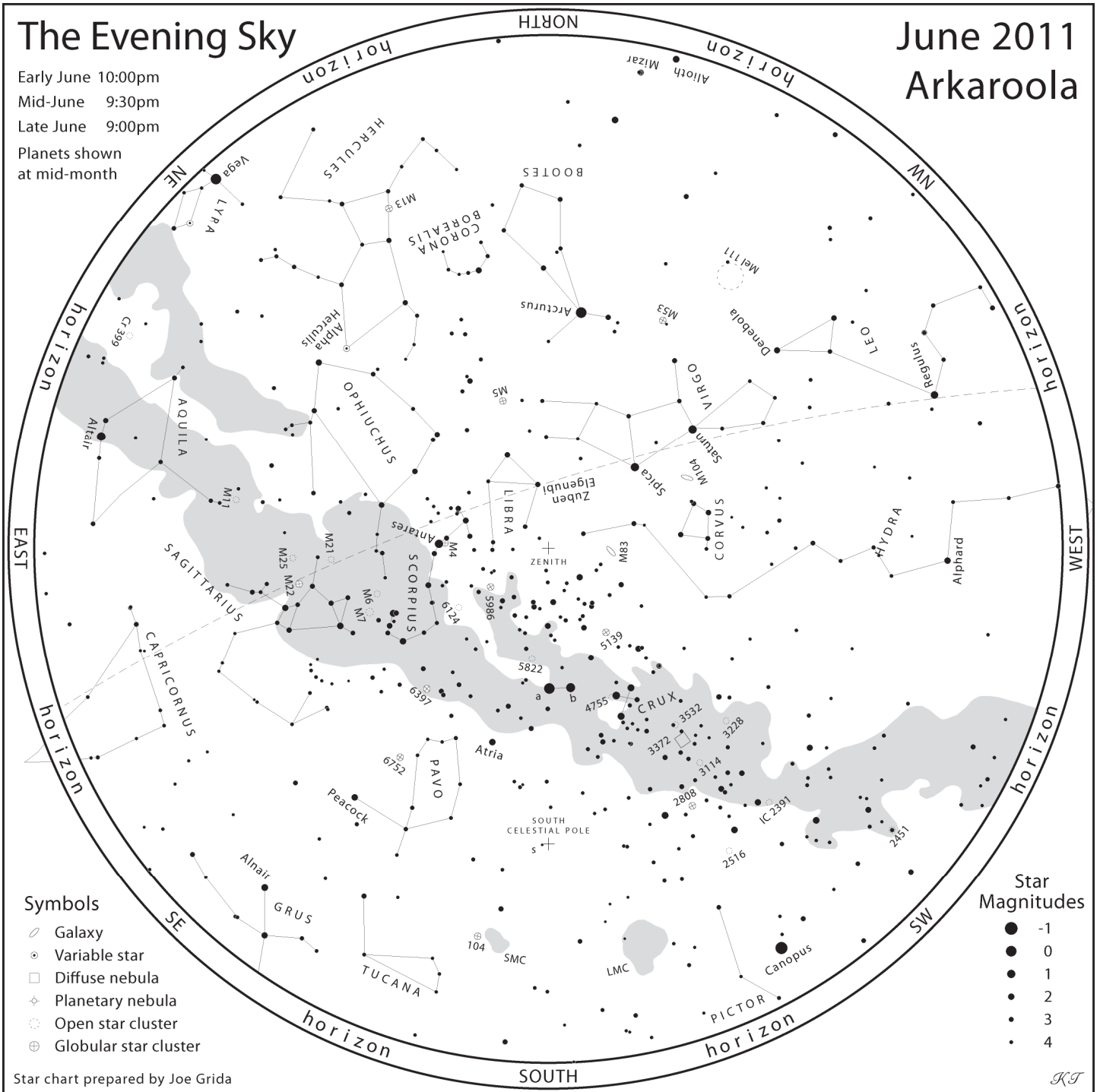
Why not learn more about our magnificent night skies by attending one of our nightly astronomy sessions at the observatory.

Please see reception for tour times and costs.

# The Evening Sky

June 2011  
Arkaroola

Early June 10:00pm  
Mid-June 9:30pm  
Late June 9:00pm  
Planets shown  
at mid-month



## Eta Carinae Nebula (NGC 3372)

Distance: 7500 Light Years

A bright photogenic patch of the southern Milky Way holds one of the most enigmatic and exotic stars known. Eta Carinae is the centerpiece and ionizing star of the great HII region, the Eta Carinae Nebula. The nebula itself spans some 260 light years across. Massive is an understatement as the great star weighs in at some 100 to 150 solar masses and shines with the light output of 5 million suns. It pumps out as much energy in 6 seconds as our sun does in an entire year.

Astronomers observed a dramatic 10 fold increase in the stars brightness in a 5 year period during the 1840's (when it brightened to mag -0.7, also known as Nova Carinae 1843). Because of its extraordinary mass the star is certainly expected to end as a great supernova in the near future. An energy outburst of this order could possibly devastate starfields and planets within a few thousand light years radius.

*JK*