**The July Night Sky**

Takurua Sirius,the brightest star, sets in the southwest as twilight ends, twinkling like a diamond. Atutahi Canopus, the second brightest star, is also in the southwest at dusk. It swings down to the southern skyline before midnight then moves into the southeast sky in the morning hours. It is a 'circumpolar star' (seen from Aotearoa NZ it never sets).

South of the zenith are 'The Pointers', Hakihea Beta and Ranginui Alpha Centauri. They point to Māhutonga Crux,the Southern Cross, on their right. All 3 of these are circumpolar. Ranginui Alpha Centauri is the third brightest star in the sky. It is also the closest of the naked eye stars, 4.3 light years away. Hakihea Beta Centauri, like most of the stars in Māhutonga Crux, is a hot blue-giant star hundreds of light years away.

Midway down the north sky is orange Ruawāhia Arcturus. It sets in the northwest around midnight, twinkling red and green. It is the fourth brightest star and the brightest in the northern hemisphere sky. It has an orange colour because it is cooler than Rā our sun; around 4000°C. Whānui Vega rises in the northeast around 9 pm. It is on the opposite side of the sky to Atutahi Canopus: low in the north when Atutahi Canopus is low in the south.

Te Māngōroa The Milky Way is brightest and broadest in the east toward Te Matau a Māui ScorpiusandKaikōpere Sagittarius. In a dark sky it can be traced up past **Te Taura o te Waka o Tamarēreti** the Pointers and Māhutonga Crux, fading toward Takurua Sirius. Te Māngōroa The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. A scan along the Te Māngōroa the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds.

Earth reaches aphelion, its farthest point from the Sun on the 5th. As aphelion occurs in July our winter will last a little bit longer than last year.

The Visible Planets (like Rā the sun the planets rise in the east & set in the west)

WHIRO MERCURY: Whiro **Mercury** is seen at dusk, fainter than Venus but higher in the sky through July. It looks like a tiny first-quarter moon in a telescope. Around the 25th Whiro Mercury will be alongside and brighter than Regulus in Leo. Marama the Moon will be near Whiro Mercury on the 8th.

KŌPŪ VENUS: Kōpū **Venus** begins an evening sky appearance in July, setting just after Rā the sun. Kōpū Venus will be the brilliant ‘evening star’ for the rest of the year. Kōpū Venus is on the far side of Rā the Sun from us so looks like a tiny, featureless full moon in a telescope. It swings out from Rā the Sun as it catches us up, so will set later. Marama the Moon will be to the right of Kōpū Venus on the 7th.

MATAWHERO MARS: Matawhero **Mars** rises before 3 a.m. all month, looking like a reddish star. Marama the Moon is near Matawhero Mars on the morning of the 2nd. Around the 28th Matawhero Mars will be between Taumatakuku Aldebaran and the Matariki Pleiades star cluster. Taumatakuku Aldebaran and Matawhero Mars will be the same brightness and both orange.

KŌPŪNUI JUPITER: **Kōpūnui Jupiter** is the brightest ‘star’ in the dawn sky. It rises after 5 a.m. at the beginning of the month and will be near orange Taumatakuku Aldebaran, the brightest star in Taurus. It rises around 4 a.m. at the end of July. Marama the Moon will be left of Kōpūnui Jupiter, and just below Matariki, on the morning of the 3rd , and again on the 31st.

RONGO SATURN: Rongo **Saturn** is up in the late evening, rising before 11pm at the beginning of the month; before 9 at the end. It looks like a medium-bright cream-coloured star, all on its own. By dawn Rongo Saturn is midway down the northwest sky. Marama the Moon will be above Rongo Saturn on the night of the 24th. By dawn on the 25th Marama the Moon and Rongo Saturn will be close together. Rongo Saturn is worth a look in any telescope but might be fuzzy when low in the sky. The ring can be seen at 20x magnification. Saturn's largest moon, Titan, appears as a star four ring-diameters from the planet.

Red is for individual stars, blue is for groups of stars

\*A **light year** is the distance that light travels in one year: nearly 10 million million km. Sunlight takes eight minutes to get here (moonlight about one second), 4h to get to Tangaroa Neptune & 4 years to Hakihea Alpha Centauri.

Adapted from Alan Gilmore, University of Canterbury's Mt John Observatory www.canterbury.ac.nz