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December 2005

47 Tucanae

With the December Full Moon something of the past, you can once again look forward to hunt down a special deep sky object. This month I suggest you try to find 47 Tucanae.

47 Tucanae is regarded as the second best example of a globular cluster, i.e a group consisting of hundreds of thousands of stars packed into a tight ball (globe). Omega Centaurii is said to be the finest globular cluster, but is currently below the horizon during the early evening.

47 Tuc can be viewed, even under light polluted conditions, without any optical aid as a 4th magnitude hazy 'star'. Binoculars reveal a brightening towards the centre and telescopes (>100mm aperture) may resolve stars.

47 Tucanae consists of about 200 000 stars and is about 17 000 light years away with a diameter of around 150 l.y. Its diameter is thus comparable to the moon's (i.e. $1/2^\circ$). It lies about 18° from the South Celestial Pole and never sets in South Africa. It is rarely seen from the Northern Hemisphere.

The easiest way is to locate the Small Magellanic Cloud (SMC). The hazy patch just to the west of the SMC is 47 Tuc. Under light polluted skies however, the SMC is not visible. The following directions should be helpful (applicable for mid to late December around 21:00):

Method one (see file 47Tuc.jpg):

- Locate Canopus. This is the brightest star towards the South. (Canopus is the second brightest star in the sky, second only to Sirius).
- Then locate Achernar. This is the bright star high up due south. Achernar is the 9th brightest star in the sky and you should spot it easily.
- With binoculars locate Beta Tucanae, nearly perpendicular to the line connecting Canopus with Achernar. Beta Tuc clearly shows two stars.
- About halfway (15°) from Beta Tuc towards the South Celestial Pole is Beta Hydri. 47 Tuc will be found about 2/3 from Beta Tuc on the line connecting Beta Tuc with Beta Hydri.

Method two (see file 47TucZoom.jpg):

- Follow the first three instructions to locate Beta Tucanae
- From there it should be easy to locate Zeta Tucanae as well as Epsilon Tucanae.
- Eta Tucanae should be visible within the same (binocular) field of view as Epsilon Tucanae. You should find 47 Tucanae if you extend the line connecting Eta Tuc to Epsilon Tuc towards the South-East. 47 Tuc forms an asterism in the form of a kite with three other stars which should all fit in the field of view of binoculars.

Once you have spotted 47 Tuc with binoculars, try to find it without optical aid. Early evening should be a good time to try, since 47 Tuc will be high up in the sky.

Have fun.



