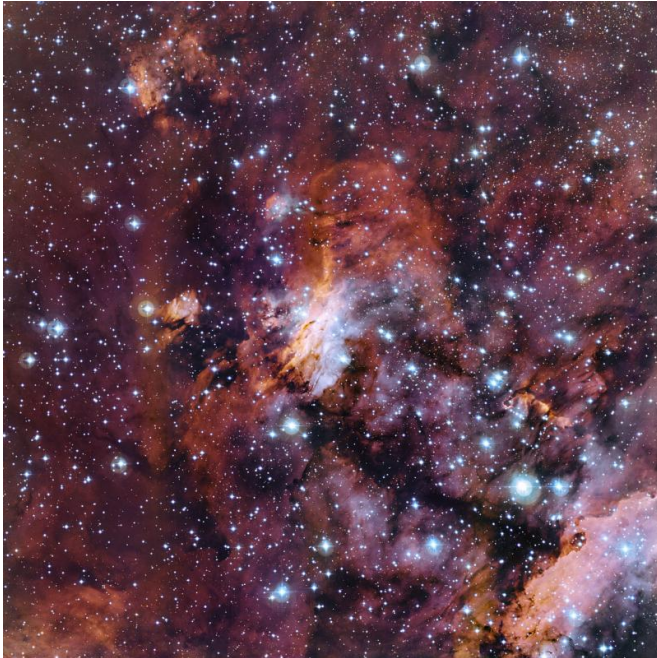


Prawn Nebula: Cosmic recycling

2 September 2015



The rich patchwork of gas clouds in this new image make up part of a huge stellar nursery nicknamed the Prawn Nebula (also known as Gum 56 and IC 4628). Taken using the MPG/ESO 2.2-metre telescope at the La Silla Observatory in Chile, this may well be one of the best pictures ever taken of this object. It shows clumps of hot new-born stars nestled in among the clouds that make up the nebula. Credit: ESO

Dominating this image is part of the nebula Gum 56, illuminated by the hot bright young stars that were born within it. For millions of years stars have been created out of the gas in this nebula, material which is later returned to the stellar nursery when the aging stars either expel their material into space or eject it as supernova explosions. This image was taken with the MPG/ESO 2.2-meter telescope in Chile.

Deeply immersed in this huge [stellar nursery](#) are three clusters of hot young stars—only a few million years old—which glow brightly in ultraviolet light. It is the light from these stars that causes the

nebula's gas clouds to glow. The radiation strips electrons from atoms—a process known as ionisation—and when they recombine they release energy in the form of light. Each chemical element emits light in characteristic colours and the large clouds of hydrogen in the nebula are the cause of its rich red glow.

Gum 56—also known as IC 4628 or by its nickname, the Prawn Nebula—is named after the Australian astronomer Colin Stanley Gum, who, in 1955, published a catalogue of H II regions. H II regions such as Gum 56 are huge, low density clouds containing a large amount of ionised hydrogen.

A large portion of the ionisation in Gum 56 is done by two O-type stars, which are hot blue-white stars, also known as blue giants because of their colour. This type of star is rare in the Universe as the very large mass of blue giants means that they do not live for long. After only roughly a million years these stars will collapse in on themselves and end their lives as supernovae, as will many of the other [massive stars](#) within the nebula.

Besides the many newborn stars nestled in the nebula, this large region is still filled with enough dust and gas to create an even newer generation of stars. The regions of the nebula giving birth to new stars are visible in the image as dense clouds. The material forming these new stars includes the remains of the most massive [stars](#) from an older generation that have already ended their lives and ejected their material in violent supernova explosions. Thus the cycle of stellar life and death continues.

Given the two very unusual blue giants in this area and the prominence of the nebula at infrared and radio wavelengths, it is perhaps surprising that this region has been comparatively little studied as yet by professional astronomers. Gum 56 has a diameter of around 250 light-years, but despite its huge size it has also often been overlooked by visual observers due to its faintness, and because most of the light it emits is at wavelengths not

visible to the human eye.

The [nebula](#) is at a distance of about 6000 light-years from Earth. In the sky it can be found in the constellation Scorpius (The Scorpion) where it has a projected size which is four times the size of the full Moon.

Provided by ESO

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