

Undoubtedly, most beginning amateur astronomers have observed the double star cluster (NGC869/884) in Perseus, or spied galaxy pairs such as M81/M82, M65/M66 or M95/M96 in the same field of view. While it's always exciting to find a faint galaxy or star cluster in a telescope's eyepiece, it's even more exciting to view a grouping of deep space objects in the same field of view.

A very rare treat is to view both a galaxy and a star cluster in the same telescopic field. One of the best examples of this pairing type is found in the constellation Cepheus. The galaxy is item number 6946 in the New General Catalog, while the star cluster is NGC6939.

In October, this deep-space pair is found 30 degrees above Polaris between 8:00 and 9:00 p.m. local time. The pair is separated by 40 arcminutes, making them both simultaneously visible at low magnification in most amateur

telescopes larger than six inches. Their separation is similar to M81/82 and M95/96.

Specifically, NGC6939 and NGC6946 are located

## DEEP SKY OBJECTS FIRST OF A SERIES A RARE CELESTIAL PAIR

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For over two years, the magazine has been publishing the series, **The Fine Art of Observing**, aimed at beginning amateur astronomers. This issue inaugurates a new series, **Deep Sky Objects**, for amateurs at the intermediate level.

two degrees southwest of the magnitude 3.4 star Eta Cephei. The two are oriented along a northwest to southeast line, with the star cluster lying at the more northerly declination. The galaxy lies right on the border between Cygnus and Cepheus and may itself be catalogued in the former constellation.

So what can you expect to see in the eyepiece? To

three of these are face-on spiral galaxies. One might expect that if M51 and M95 are easily visible, then NGC6946, whose magnitude lies in between, would be just as easy to spy. But that is not the case. You must also consider the angular size of the galaxies to determine how they will appear in the eyepiece.

M51, NGC6946, and M95 are approximately 40, 99 and 24 square arcminutes in size, respectively. So although M95 is the faintest, it is the most compact of the three. So it is easier to see than NGC6946. M51 is more spread out than M95, but nearly two magnitudes

brighter; it is slightly easier to see. NGC6946 will take a little more patience (and glass) than these other two galaxies to make out any detail. Although

NGC6949 is faint, it notably brightens from its edge to its center.

The renowned astronomer William Herschel discovered NGC6946 on September 9, 1798. The galaxy is also known as the Fireworks Galaxy, since nine supernovae have been observed in the galaxy between 1917 and 2009. The



Finderscope field of 6.5°. The galaxy NGC 6946 lies forty minutes to the southeast of the open cluster NGC 6939. Third magnitude Eta Cephei lies near the northeast edge of the field while fourth magnitude Theta Cephei is at the north edge.

galaxy is located 10 million light years away, one of the closest galaxies not a member of the Local Group.

NGC6939 is a bright, magnitude 7.8, compact open-star cluster approximately the same angular size as NGC6946. The cluster is irregular, not circular, in shape and contains approximately 70 resolvable stars, the brightest around 12<sup>th</sup> magnitude. The cluster resides 5900 light years away. ✧



Open cluster NGC6939 (upper right) and spiral galaxy NGC6946 (lower left) was taken by the author at the Wildwood Pine Observatory, Earl, NC, on September 8, 2008, using a Stellarvue SV102 102mm f17.9 apochromatic refractor with a SBIG ST-2000XCM CCD Camera. The exposure was 60 minutes.

answer that question, I will compare three galaxies, M51, NGC6946, and M95, which are approximately 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> magnitude galaxies, respectively. All