

Binocular Universe: The Night of the Dolphin

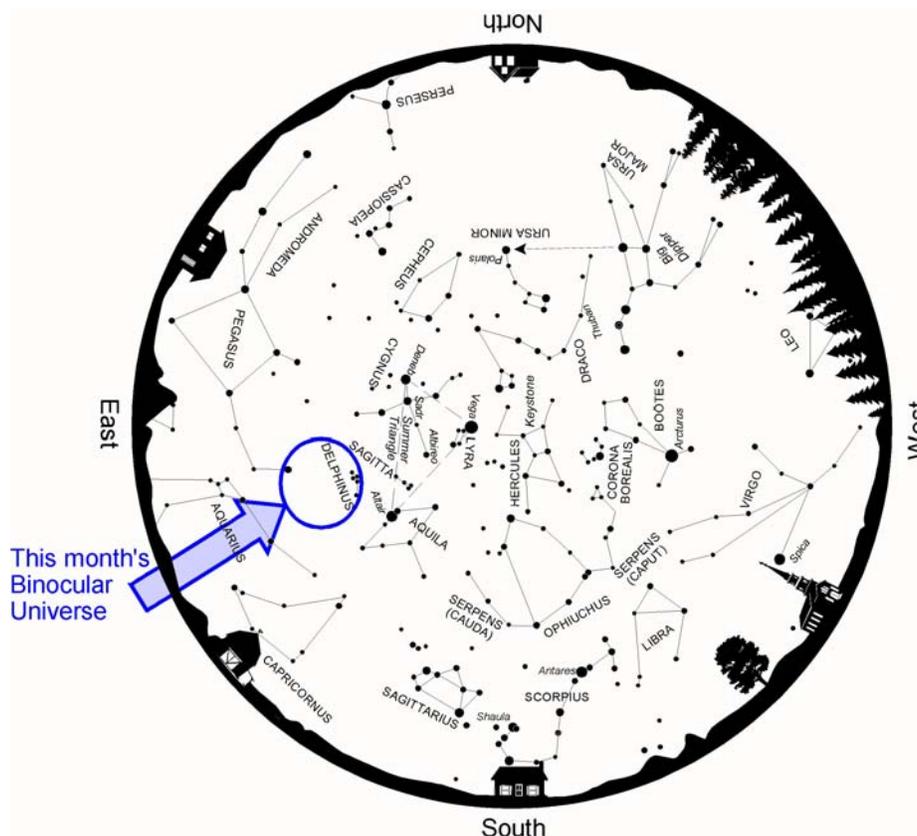


September 2013

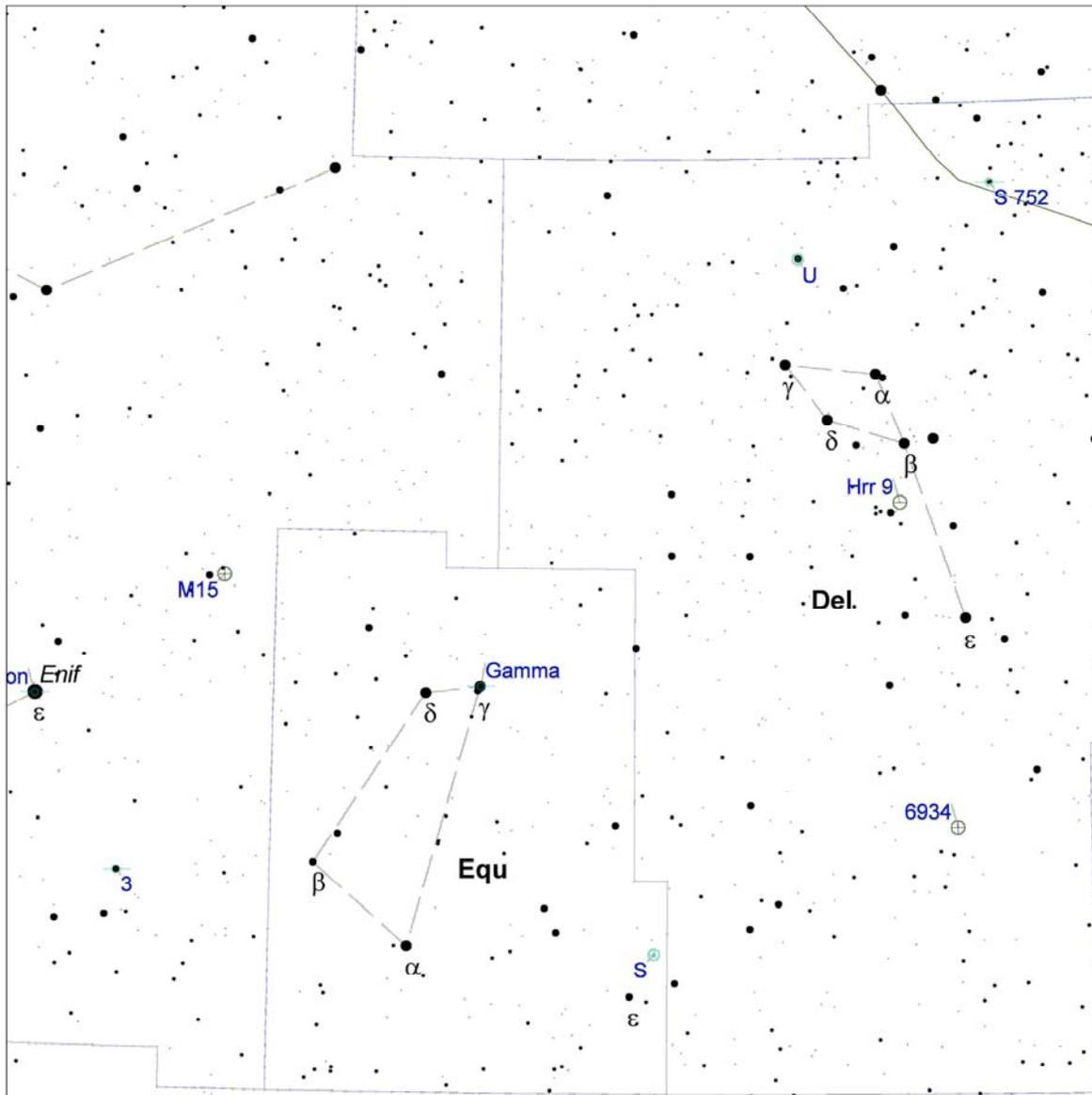
Phil Harrington

Even though the late summer sky is bespangled with bright fiery stellar jewels, a tiny pattern of five modest stars always seems to draw people's attention. Perhaps because of its unique shape, the constellation of Delphinus, the Dolphin, stands out nicely even under moderate light pollution.

The sky's dolphin dates to the Greeks, who referred to it $\delta\epsilon\lambda\phi\iota\varsigma$ (*delphis*). Interestingly, a related Greek word, $\delta\epsilon\lambda\phi\upsilon\varsigma$ (*delphus*), translates as "womb." Combining the two, the animal's name, and our constellation, can therefore be interpreted "a 'fish' with a womb." Of course, today we recognize dolphins as mammals, not fish. Unlike their underwater companions, female dolphins give birth to live young from their wombs rather than lay eggs like fish. Very insightful, those ancient Greeks!



Above: Summer star map from [Star Watch](#) by Phil Harrington.



Touring the Universe Through Binoculars Atlas
RA: 21h 4m, Dec: 12d 39m, FOV: 19d, Mag: 7.5

- ≤ 1.2
- 1.2 - 2.4
- 2.4 - 3.6
- 3.6 - 4.9
- 4.9 - 6.1
- 6.1 - 7.3
- > 7.3

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- ⊙ Double Star

- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☉ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- ⊙ Unknown

Above: Finder chart for this month's Binocular Universe.

Chart adapted from Touring the Universe through Binoculars Atlas (TUBA),
www.philharrington.net/tuba.htm

Delphinus is small enough that even if light pollution extinguishes the gentle light coming from its five main stars, they can be squeezed into the field of most common 10x binoculars. From tip to tip, our dolphin spans a little less than 6°.

The four stars that form the Dolphin's diamond-shaped body are also collectively referred to as Job's Coffin. They create a fun asterism to study through binoculars for subtle differences in color. Clockwise from the upper right (that is, the northwest), we find Alpha (α), Beta (β), Delta (δ), and Gamma (γ) Delphini. First, some stellar trivia.

Alpha has the unusual proper name **Sualocin**, while Beta is known as **Rotanev**. Not exactly names that roll off your tongue! Turns out that both appellations were first bestowed on the stars in 1814. That year, the [Palermo Star Catalog](#) was published by the observatory's director, Italian astronomer Giuseppe Piazzi. Piazzi was assisted by Niccolò Cacciatore, or Nicholas Hunter when translated into English. Okay, stay with me here. If the name "Nicholas Hunter" is re-translated into Latin, it becomes "Nicolaus Venator." Finally, if we reverse the letters in both Latinized names, we get Sualocin and Rotanev. In the end, it turns out that Cacciatore (a.k.a. Hunter, a.k.a. Venator) named the stars after himself, apparently as a joke. Seems to me that's a long way to go for a laugh! Sualocin is a blue Main Sequence star, while Rotanev is a yellow-white subgiant. Try defocusing your binoculars ever-so-slightly and see if you can distinguish the colors.

Next around Job's Coffin, we have **Delta (δ) Delphini**, classified as a spectral type A white giant star. But as Professor Jim Kaler from the University of Illinois points out on his [web site](#), the star has a surface temperature of 7,000 Kelvin (6,700° C, 12,000° F). That puts it in the range of spectral type F stars. He suggests that the "...the difference [is] the result of an odd metal abundance." It turns out that Delta is not one star, but rather two similar suns that complete an orbit every 40.58 days. No way to see them directly with binoculars, or for that matter, even through the largest telescopes. The pair is only resolvable spectroscopically. Given that the Delta system lies 203 light years away, the two stars must be only 0.37 Astronomical Units apart, or about the same as Mercury's distance from our Sun. Kaler goes on to say that "luminosity and temperature in turn lead to...a confirmation that the stars are really class F subgiants that have just ended core hydrogen fusion (or at least will shortly)."

Finally, zero in on 4th-magnitude **Gamma (γ) Delphini**, the Dolphin's nose. Some 102 light years away, Gamma is a stand-out binary star system through telescopes. There, we find an orange 4th-magnitude star teamed with a yellow-white 5th-magnitude partner. Interestingly, many people describe the pair as golden and green when viewed through telescopes. How about through binoculars? Unfortunately, both are separated by only 10 arc-seconds. That's awfully tight by binocular standards, but within reach of 20x and higher-powered models. Give them a try if you own a pair of giants and post your observations in this column's discussion forum.

For readers with truly giant-giant binoculars, you might also try for the **Ghost Double**, as it was nicknamed by veteran observer Jim Mullaney. Known more formally as Struve 2725, the Ghost Double lies just a quarter of a degree to the southwest of Gamma. The components of this system shine at magnitudes 7.6 and 8.4, and are separated by a scant 6 arc-seconds. The "Ghost" moniker refers to the pair's similar coloration to Gamma. Even though they are too tight to be resolvable through most binoculars, it is interesting to compare the collective colors of Struve 2725 to Gamma. Their similarity is evident through even small pocket glasses.

Just to the south of Rotanev (Beta), we find a small spray of stars surrounding 6th-magnitude Theta (θ) Delphini. This pleasant little asterism was first recorded by Reverend Thomas Webb in his [Celestial Objects for Common Telescopes](#) back in 1859 and subsequently listed in my book [Touring the Universe Through Binoculars](#) as "**Harrington 9**" (plotted as *Hrr 9* on the chart above) for its inclusion in that tome's list of asterisms. Theta, an orange sun, lies at the end of a curve of five stars that bends toward the northwest. Adding to the scene is a tight equilateral triangle of 7th-magnitude stars just to the east of Theta. In all, two dozen apparently unrelated stars down to about 9th magnitude are found here.

Globular cluster **NGC 6934** is found some 4° south of Epsilon (ϵ) Delphini, the tip of the Dolphin's tail. Shining at only 9th magnitude, it's just within reach of 50-mm binoculars on dark, clear late summer nights. Even through 11x80 binoculars, it appears as little more than a small, faint smudge of grayish light. Still, that was enough to earn it a spot in the Astronomical League's "Binocular Deep Sky Club."

If NGC 6934 was too faint for you, but it left you hankering for a globular cluster, take stock. We have 6th-magnitude **M15** coming along to the east of Delphinus. M15 is easily located by sliding 3.5° to the northwest of Enif [Epsilon (ϵ) Pegasi], the Flying Horse's nose. You'll find it a 6th-magnitude star just to the cluster's west. Together, they create an unusual "double star." It's easy to tell the globular from the star, however, since M15 will look decidedly fuzzy.



Left: M15, as sketched through the author's 10x50 binoculars.

Wedged in between Delphinus and Pegasus, we find the small, faint constellation of Equuleus, the Colt. With its brightest stars only of 4th magnitude, it's no wonder why most observers don't even know this constellation exists. But surprise. Inside, the Colt holds a nice binocular double star that Webb first made mention of in [Celestial Objects for Common Telescopes](#) more than 150 years ago.

Fifth-magnitude **Gamma (γ) Equulei** marks the northwestern corner of the Colt's trapezoidal body on our chart above. Staring its way through binoculars, you'll find two easily resolvable stars spaced nearly 6' of arc apart. The companion star, identified separately as 6 Equulei in John Flamsteed's star catalog published in 1725, shines a magnitude fainter than Gamma. Both stars look white to most people, although Gamma, a type-F star, may show the faintest hint of yellow when you slightly defocus the view. Neither star is physically associated with the other, however. Their association in our sky is just a chance line-of-sight alliance.

Our final target is back inside Delphinus and just popped into view last month. While photographing the sky on August 14, Japanese amateur astronomer Koichi Itagaki chanced upon a "new star" in the northwest corner of the constellation, not far to the east of the Coathanger asterism in neighboring Vulpecula. Later observations show that **Nova Delphini 2013**, as Itagaki's discovery is now known, peaked at about magnitude 4.4 on August 16th, making it the brightest nova in years. It continues to fade. As this article is published, its magnitude is still in the 6's, keeping it within range of binoculars. Of course, just how long that statement holds true remains to be seen, but it does go to show that something is always popping in our universe! [Sky & Telescope](#) magazine has a [useful finder chart](#) on their web site that you can use to find and follow the nova. The American Association of Variable Star Observers (AAVSO) also maintains a ["real-time" light curve](#) on their web site, so you can keep track the nova's descent back into obscurity

The list below offers some additional facts and figures about these and other targets within this month's Binocular Universe.

Object	Con	Type	R.A.	Dec	Mag	Size/Sep/ Period	Notes
			(2000)				
S 752	Del	**	20 30.2	+19 25	6.6,7.0	106"	288° (1915);13921
6934	Del	GC	20 34.2	+7 24	8.9	6'	*TUB page 144-145*
Hrr 9	Del	OC	20 38	+13 30			*TUB page 145* Asterism (Theta Delphini)
U	Del	Vr	20 45.5	+18 5	7.6-8.9p	110 days	*TUB page 145* Semi-Regular
S	Equ	Vr	20 57.2	+5 5	8.0-10.8	3.436 days	Eclipsing Binary
Gamma	Equ	**	21 10.3	+10 8	4.7,5.9	353"	*TUB page 150* 153° (1922);14702
M15	Peg	GC	21 30	+12 10	6.4	12'	*TUB page 197-198* NGC 7078
3	Peg	**	21 37.7	+6 37	6.0,8.3	39"	349° (1934);15147
Epsilon	Peg	**	21 44.2	+9 52	2.4,8.4	143"	320° (1913);15268;Enif

Next month, autumn is in full swing and with the change of season comes a change of constellations and other deep-sky delights. Till then, remember that two eyes are better than one!



About the Author:

Phil Harrington's latest book is called [Cosmic Challenge](#). Visit his web site www.philharrington.net for more information.

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