

Objects of the Month—Boötes



TARGETS FOR EVERY LEVEL OF OBSERVER

July—2012

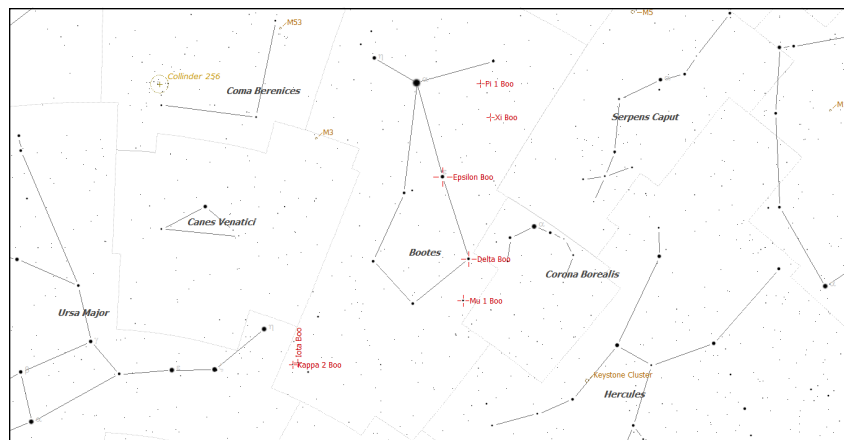
Finder chart

The object of our attention this month is the Greek herdsman, Boötes. The easiest way to find this constellation is by tracing the arc of the Big Dipper's handle to the bright orange star Alpha Boötes, or Arcturus. Arcturus is extremely easy to spot as it is the brightest star north of the celestial equator.

Boötes is home to several multiple star systems and this is where we will focus our attention this month. We are doing this as the summer months on the Texas Gulf coast can be pretty humid making skies less than ideal for observing those faint fuzzies that we so love. Multiple stars are a good alternative to these deep sky objects.

So what do we see when observing these double stars? First thing to determine is if we can actually see more than one star. High magnification may be required for some of these doubles to be able to "split" the pair. I classify the degree of separation as follows:

- Elongated pair—looks like a rod
- Figure 8—no separation
- Split by a hair—just what is says
- Close pair
- Wide pair, and



- Very wide pair

The second thing to notice is the relative brightness difference between the two stars. Some will be remarkably similar while other will be very different. As the difference in magnitude increases, the ability to split close pairs diminishes. This is a result of the brighter member making our eyes less sensitive to light in the immediate area. Don't give up too easily as you can train your eyes to see these subtle guys.

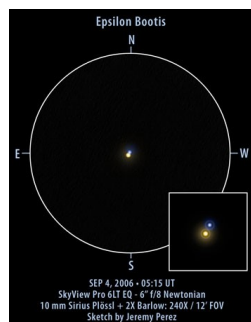
The next thing to observe are the colors of the pair. I find this the most enjoyable part of observing doubles. It is one of the few situations that our eyes are able to

see color when looking through our scopes, other than when we are looking at planets within our own solar system.

The color of stars can vary from blue to green, white, yellow, orange and red and all shades in between.

It is a fantastic sight when you get a close pair of drastically different colors, like the blue-orange pair, Alberio in Cygnus or the gold and red pair, eta Cassiopeia.

A really good reference for double stars is Sissy Haas' book, Double Stars for Small Scopes.



Epsilon—Boötes

We are starting off this month with a rather difficult binary, Epsilon Boötis. Epsilon is a rather easy star to identify, the challenge comes from its partner. The primary is a 2.4 magnitude K type star. Haas describes it as amber-yellow. I

thought it to be more white than anything else. 2.9 arc seconds away is the 4.8 magnitude A type star. Haas describes this as a "blue spur" on the edge of the primary. I was able to detect just a hint of a line separating the pair at

127X.

For fun, Google "Epsilon Boötes and Dark Knight."

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Xi—Boötes

Xi Bootes is the closest binary to us at a mere 22 light years. The primary is a G-type variable star with a magnitude between 4.52 and 4.67.

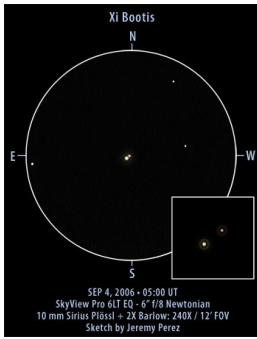
The B star is 5.8 arc seconds

away and is a 7.1 magnitude star.

I found this an easy split with the A star appearing white and the B star appearing amber.

Haas describes them as white and grey.

Infrared studies have shown the A star to have a Kuiper-like belt similar to our own Sun's.



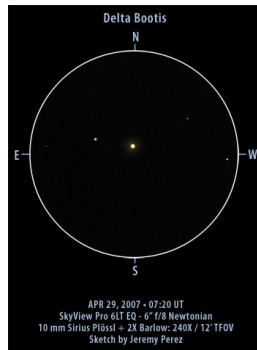
Delta—Boötes

Delta Bootes is a fine wide double at 127X. The primary is a giant G8 type star with a magnitude of 3.5.

Situated 104 arc seconds away is the B star. It is a G0 type star but considerably

fainter at 8.7 mag. These stars form a gravitationally bound system and as such they are relatively the same distance from us. So we know that the B star is much less luminous than the A star.

I described the A star as a golden yellow and the B star as white. Haas describes them as "citrus orange and greenish-grey."

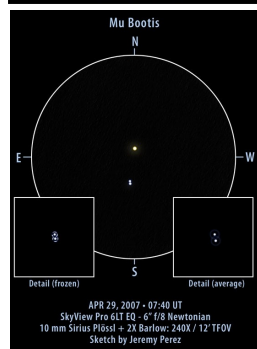


Mu—Boötes

Mu Bootes is a triple star system. The 4.3 magnitude A star is an F-type super giant. 107 arc seconds away is the yellow 7.2 magnitude G type, B star.

The challenge now comes in

trying to split the B-C pair. The 7.7 magnitude C star is 2 arc seconds away from the B star. I could just make out a tiny hairline separation between these two yellow stars at 127X.



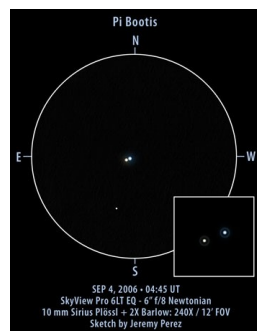
Pi—Boötes

Pi-Bootes is another triple system. The primary star is a 4.5 magnitude A-type star. The 5.9 magnitude B star is 5 arc seconds away and is also an A-Type star. The C star is relatively fainter at 10th

magnitude and is 128 arc seconds away. The whole system is about 320 light years away.

star appeared a golden yellow.

I was able to split the A-B pair. The A star appeared bluish white to me while the B



Kappa —Boötes

Our last star system this month is the double, Kappa Bootes. This system consists of two A-type stars which are 4.4 and 6.8 in magnitude. The separation is 13 arc seconds.

I saw the A star as white and the B star as yellow.

