

STAR GAZERS  
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### **Circumpolar Constellations and Seasonal Stars**

JAMES: Welcome to Star Gazers. I'm James Albury, director of the Kika Silva Pla Planetarium in Gainesville, Florida.

DEAN: And I'm Dean Regas, astronomer for the Cincinnati Observatory. We're here to help you find your way around the sky. You know, we can see some stars and constellations all year round – like the Big Dipper and Cassiopeia.

JAMES: While others are only visible during certain seasons – like Scorpius and the summer triangle. Why is this?

DEAN: Let's show you the difference between circumpolar and seasonal stars.

(STOP DROP)

DEAN: Okay we have our skies set up to any night this week, facing north at 11pm. First, find the Big Dipper standing on its spoon high in the northwestern sky. These seven stars also mark the rear end and tail of Ursa Major, the Big Bear.

JAMES: We can use the two stars on the end of the spoon to point us to Polaris, aka the North Star. Polaris marks the tip of the tail of the Little Bear, Ursa Minor...

DEAN: Or the end of the handle of the Little Dipper.

JAMES: Now if you continue that line from the Big Dipper's handle through Polaris, you reach a constellation that looks like the letter, "w". This is the beautiful Cassiopeia the queen sitting on her throne.

DEAN: These three constellations, Ursa Major, Ursa Minor, and Cassiopeia are visible in the sky nearly every night of the year. The reason why, is that, as the night rolls on, the stars will appear to rotate around a pivot point – near Polaris.

JAMES: This motion in the heavens is really caused by the rotation of the earth. Our daily spin causes stars to rise in the east and set in the west. But in the north we can watch the stars spin a full 360 degrees without going below the horizon. That makes them circum- polar stars.

DEAN: When you look at stars farther from Polaris, they seem to make a bigger circle in the sky. So the farther south you look, the less amount of time each constellation is above the horizon.

(STOP) (In Space)

JAMES: As the earth orbits the sun, our perspective on the distant stars changes. When we're on one side of the sun, like in winter, we can more easily see constellations like Orion and Gemini at night.

DEAN: But when we're on the other side of the sun, like in summer, we can't see Orion and Gemini as well because the glare of the sun is in the way. Those constellations are only above the horizon during the day time. In summer when the nighttime part of the earth is pointed that way then we can better see the constellations like Scorpius and the summer triangle. So these are seasonal constellations.

JAMES: But no matter what season it is, we always have a good view to the northern sky. So we, in the northern hemisphere, can view Ursa Major, Ursa Minor, and Cassiopeia all year long. That makes them circumpolar constellations.

(STOP) (On Horizon)

JAMES: So now that we're in summer, let's check out the summer triangle. Look high in the east and you'll find its three bright stars. We can see the brightest star, Vega, is at the top, bright white Altair is to the right, and dimmer Deneb is to the left.

DEAN: Vega is the brightest star in the constellation Lyra the Harp, Altair is the eagle eye of Aquila the Eagle, and Deneb is the tail of Cygnus the swan: three great summer constellations in one big triangle.

JAMES: Another easy-to-find summer constellation is low in the southern sky. There's Scorpius the Scorpion. You won't need to strain your imagination to see a scorpion in the long fishhook of stars that make his tail and stinger.

DEAN: The brightest star in Scorpius is a beautiful, red star Antares. Antares means "rival of Mars" because its color is similar to that of the red planet. And this summer, Mars is nearby so you can compare the two more closely. Antares, the star, will twinkle a lot, while Mars, the planet will not. And for an extra bonus, look for the planet Saturn directly above Antares.

JAMES: So get outside tonight and see how the stars move over the night. It might take a few hours (or days) but you'll notice the difference between the circumpolar and seasonal constellations. Say hi to our old friends, Ursa Major, Ursa Minor, and Cassiopeia. And ring in the summer with the summer triangle and the Scorpion.

BOTH: Keep looking up!