

# Star Times

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## What's the Real Story on Ursa Major?

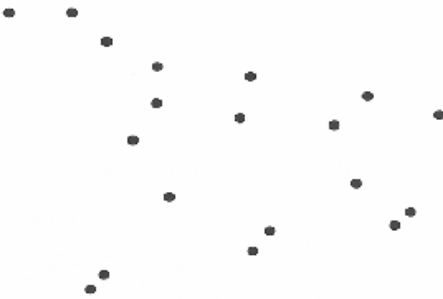
The Big Dipper is the most recognizable star pattern in the sky. Did you know it sits inside the Great Bear constellation? Nearly every culture has seen a pattern in this star cluster (called Ursa Major by the Greeks), but each culture interpreted the star pattern differently. Here are some stories from different times and different cultures.



The Big Bear

### English

King Arthur is said to live in the portion of the sky marked by the Big Bear. This idea became transferred in later times to "King Arthur's Chariot," which slowly circled the pole. The Irish refer to this group of stars as "King David's Chariot."



Ursa Major

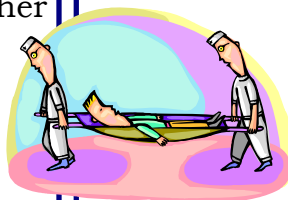
### History vs. Modern Times

It seems like people have always believed that the stars were important to us. Long ago, the stars were used to tell time. People made up stories about important people and animals that were then put up into the sky as constellations. They used to believe that the Earth was the center. Modern astronomers still use the old star and constellation names. We still enjoy the old stories, but we now know that the Earth is a planet and the Sun is a star. We no longer believe that we are the center.

### Arabian

The Arabians saw a coffin and mourners in this constellation. The coffin is formed by the four stars of the dipper's cup; the mourners, sons of the deceased, are the three stars in the handle. The three stars are following the North Star, seeking vengeance, for it is that star that killed their father.

**Pawnee**—The Pawnee saw a stretcher on which a sick man was being carried.



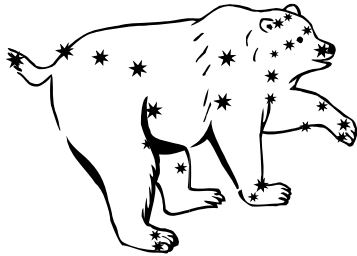
**Mayan**—The Mayans saw a parrot named the macaw.

**Hindus**—The Hindus called it the seven rishis, or wise men.

**Egyptians**—The Egyptians saw the thigh and leg of a bull.

**Chinese**—The Chinese saw a special chariot for the Emperor of Heaven.

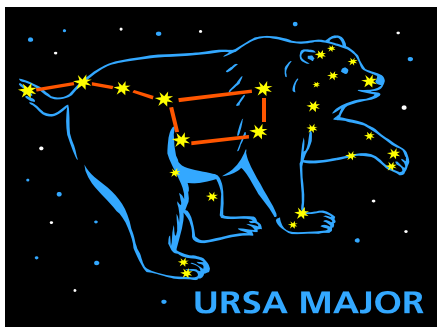
# The Stars of Ursa Major



These are the main stars of Ursa Major:

DUBHE (Alpha UMa)	TANIA BOREALIS (Lambda UMa)
MERAK (Beta UMa)	TANIA AUSTRALIS (Mu UMa)
PHAD (Gamma UMa)	ALULA BOREALIS (Nu UMa)
MEGREZ (Delta UMa)	ALULA AUSTRALIS (Xi UMa)
ALIOTH (Epsilon UMa)	MUSCIDA (Omicron UMa)
MIZAR (Zeta UMa)	MUSCIDA (Pi 1 UMa)
ALKAID (Eta UMa)	MUSCIDA (Pi 2 UMa)
TALITHA (Iota UMa)	ALCOR (80 UMa)

## The Story of Dubhe One Star of Ursa Major (and the Big Dipper)



### DUBHE

*Dubhe* is the star that makes the outer top rim of the dipper and is the shoulder of the bear.

### Luminosity

*Luminosity* refers to how well a celestial body can be seen in the sky. This is based on size, color, and brightness. Dubhe is among the most *luminous* stars.

### All About Dubhe

**Name:** Dubhe, “The Back of the Great Bear.” Comes from the Arabian word for *bear*. Modern astronomers usually call it Alpha

Ursae Majoris, abbreviated Alpha UMa. Alpha is like a person’s first name, and it is usually a Greek letter or number. Ursae Majoris is like a person’s last name, and it tells us that this star is part of the Ursa Major family. Dubhe is like the star’s nickname. Stars are like people; they can have many names.

**RA:** 11 hours 03 min. 43.84 sec.

RA = right ascension. It is similar to longitude.

**Dec:** +61 deg. 45 min. 04.0 sec.

Dec = declination. It is similar to latitude. The closer it is to 90 degrees, the larger the fraction of the year it is visible in the Northern hemisphere.

The Polar Star’s declination is 89.26 degrees.

**Magnitude:** 1.81. Magnitude tells how bright a star is. The lower the magnitude, the brighter the star. The brightest star in the night sky is Sirius with a magnitude of  $-1.42$ . The faintest stars visible without binoculars or a telescope are about 6th magnitude depending on how dark the sky is and how good your eyesight is.

**Spectral Type:** K0 IIIa. This refers to the kind of light (related to surface temperature) coming off Dubhe. The spectral types from hottest to coolest are O, B, A, F, G, K, and M. People use the sentence *Oh Be A Fine Girl/Guy, Kiss Me!* to remember the order. The IIIa part refers to size.

**Dubhe and Our Star:** Dubhe’s mass is four times greater than the sun, and its diameter is 16 times greater. Our sun’s temperature is 6,000 degrees Kelvin, and Dubhe’s is 4,500 degrees Kelvin. (Kelvin is like Celsius, sort of). It’s 300 times more luminous than the sun.

### Cool, Far Away, and LUMINOUS!

Dubhe must be REALLY big because it is cooler and farther away than the other Dipper stars but at the same time is one of the most luminous.

Dubhe is 124 light years away, and the other five stars of the dipper are 80 light years away.

**FYI: Dubhe is now my favorite star because I know so much about it.**

### Interesting Fact!

For ages, Dubhe has been used as a pointer to find Polaris, the pole star. The other pointer is Merak, the star just beneath Dubhe in the bowl of the Big Dipper. An imaginary line beginning at Merak and passing through Dubhe points directly at Polaris. When you face Polaris, you are facing north, and east is to your right.