# JANUARY 2022

8:00 pm on January 1
7:00 pm on January 15
6:00 pm on February 1

**To use this chart**: hold the chart in front of you and turn it so the direction you are facing is at the bottom of the chart.

- **Bright Stars**
- **Medium Bright Stars**
- **Faint Stars**

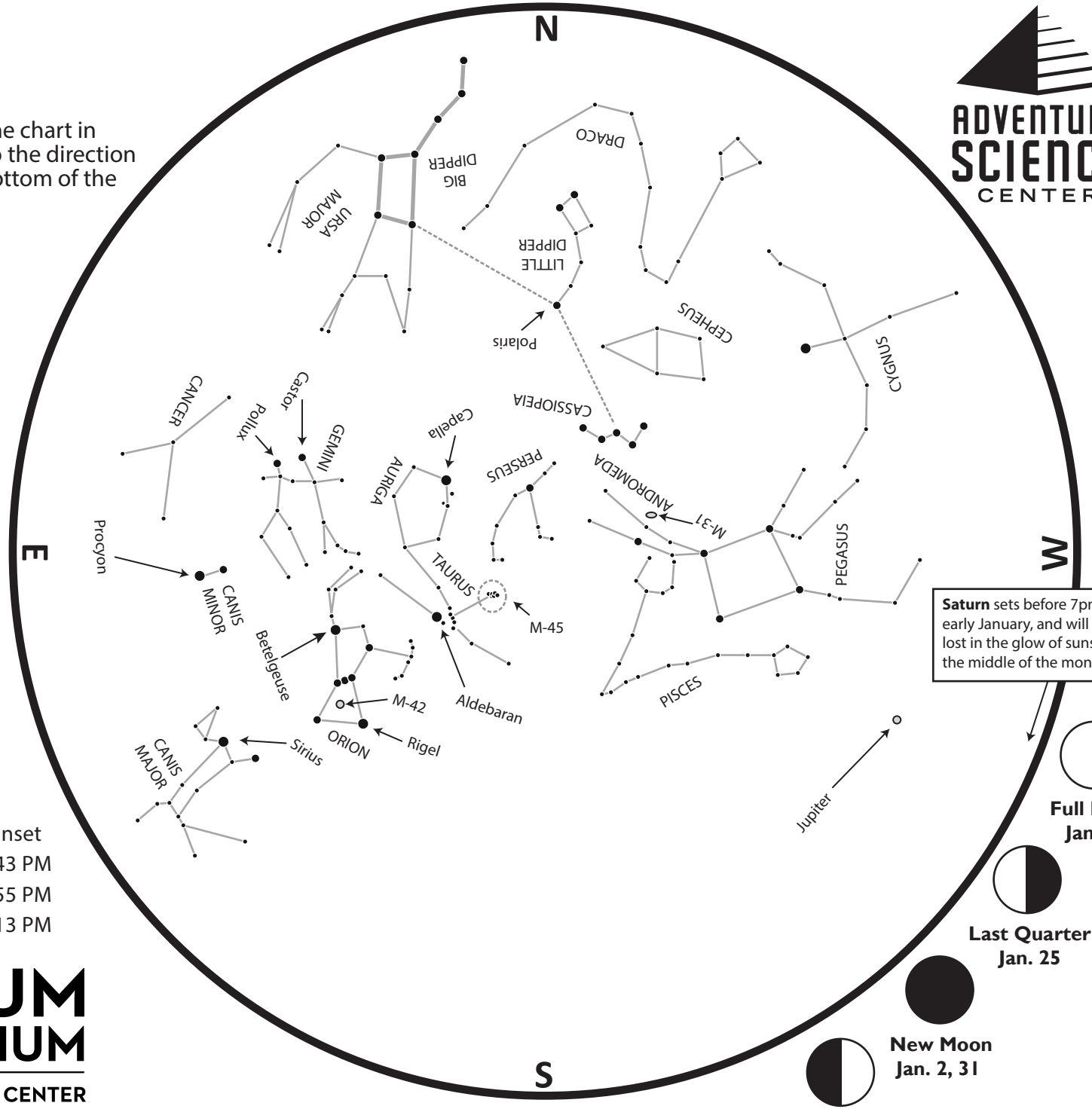
**Scan dark skies with binoculars:**

M-31: The Andromeda Galaxy

M-42: The Orion Nebula

M-45: Pleiades open star cluster

Winter is here! It may not feel like it yet, but the days are now getting longer and the nights shorter. This will continue until the first day of summer on June 20.




From Nashville:

| | Sunrise | Sunset |
|---|---|---|
| Jan 1 | 6:58 AM | 4:43 PM |
| Jan 15 | 6:58 AM | 4:55 PM |
| Feb 1 | 6:48 AM | 5:13 PM |

**Saturn** sets before 7pm in early January, and will be lost in the glow of sunset by the middle of the month.

**Full Moon**
**Jan. 17**

**Last Quarter**
**Jan. 25**

**New Moon**
**Jan. 2, 31**

**First Quarter**
**Jan. 9**

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# January 2022

## *After Sunset*

For much of the year, we use the stars of the **Big Dipper** to help us find **Polaris**, the **North Star**. However, the Big Dipper is harder to find in the early evening hours of winter. It appears very low to the northern horizon after sunset. Some of its stars even set below the horizon from our latitude in Tennessee. You'll have to wait until 10 or 11 at night to see it all.

Fortunately, another group of stars can help us find our way. Look for a group of five stars known as **Cassiopeia the Queen**. When the Big Dipper is low to the horizon, Cassiopeia is high in the north. The central peak of this constellation's W-shape points you in the direction of Polaris.

Polaris is not a particularly bright star, but it does remain fixed in the sky throughout the night and throughout the year. When you face the North Star, you're facing due north. Polaris is at the end of the handle of the **Little Dipper**. This group of stars is officially known as **Ursa Minor the Little Bear**.

Look to the southwest for brilliant **Jupiter**. Use a small telescope or a steady pair of binoculars and you might just see Jupiters's four largest moons. Lower to the horizon is **Saturn**. Saturn is fainter and may be a challenge to see unless you have a horizon free of trees, buildings, or other obstructions. Look for a thin crescent Moon near Saturn on January 4, and near Jupiter on January 5.

High in the west is the asterism called the **Great Square of Pegasus**. Three of these four stars are part of autumn constellation **Pegasus the Flying Horse**. The remaining star marks the head of **Andromeda the Princess**.

To the east, you can find the bright stars of the winter evening sky. The most famous and easily found constellation is **Orion the Hunter**. Look for the three stars in a straight line that mark his belt, the two stars that mark his shoulders, and the two stars of his feet. **Betelgeuse**, one of this shoulder stars, is distinctly red in color.

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Learn to find Orion and he can direct you to many other sights of the winter sky. This part of the sky contains some of the brightest stars throughout the year.

Follow Orion's belt down and to the left for the brightest star in the night sky, **Sirius**, in **Canis Major the Big Dog**. Follow the belt stars up and to the right to find orange star **Aldebaran**, the eye of **Taurus the Bull**. Look just past Aldebaran and you may see a grouping of stars called **M-45**, or the **Pleiades Star Cluster**.

Other bright stars to look for are **Capella** in **Auriga the Charioteer**, **Procyon** in **Canis Minor the Small Dog**, and **Castor** and **Pollux** which mark the heads of **Gemini the Twins**. All of these stars can be found using Orion as a guide.

## *From Dark Skies*

Bright outdoor lighting can make it hard to see all but the brightest stars. On a clear night, find a dark spot far away from city lights, give your eyes time to adjust to the dark, and look for even more celestial sights. You can begin by looking for the fainter stars of the season's constellations. Pegasus, Andromeda, and the stars of the Little Dipper all become easier to explore.

Winter evenings are great for spotting the **Milky Way** coursing from the southeast, through Canis Major, Orion and Auriga, on past Cassiopeia in the northwest. This hazy band of light is the bulk of our disc-shaped galaxy, as we see it from within.

Look below Orion's belt to find **M-42**, the **Great Orion Nebula**. This faint patch of light is a massive star-forming cloud of gas and dust over one thousand light years away. Take a look through steady binoculars to see a little more detail. A small telescope can reveal the overall shape of the nebula. A quartet of young stars near the center are called the **Trapezium**. These stars formed out of the gas and dust of the nebula.

To many people, the Pleiades star cluster looks like the **L**ittle Dipper, except it's much smaller. If you have dark skies and good eyesight, you will see at least six, maybe even seven stars in this cluster. With binoculars, you'll see dozens of stars!

Near Andromeda, look for **M-31**, the **Andromeda Galaxy.** This massive spiral galaxy is the most distant object visible to the unaided eye, but to find it requires crisp, dark skies and a little patience. Binoculars or a small telescope can improve the view, but don't expect to see more than a faint, fuzzy, oval-shaped blob. If you don't feel impressed, just remind yourself you're looking at the collected light of possibly one trillion stars, all at a distance of two million light years away. Now that's impressive!

Our star chart looks a little empty to the soutwest - there just aren't many bright stars in that region of the sky. From very dark skies and with a more detailed chart you may be able to find **Cetus the Sea Monster** and **Eridanus the River** - but those can be real challenges to spot!

## *Early Morning*

Throughout the year, the constellations rise and set just a little bit earlier every day. You won't see much difference from night to night, but you will over the course of weeks or months. What we see in today's pre-dawn sky is a preview of the early evening sky in later months. Go out before dawn this month for a look ahead at the spring night sky.

Just before dawn, our winter constellations have set in the west. Compare the locations of the Big Dipper and Cassiopeia from where you saw them in the early evening. These two star pictures stay on nearly opposite sides of Polaris. The Big Dipper is now nearly straight overhead and Cassiopeia is hidden near the northern horizon.

Imagine poking a hole in the bottom of the bowl of the Big Dipper - the water drips out onto the back of **Leo the Lion**.

**Mars** has been hiding near the Sun since July last year. Finally it's beginning to emerge in the wee hours of the morning, but it may still be a challenge to find. Look low in the southeast right at dawn early in the month. If you see a red point of light near the horizon... be careful! You might have just spotted **Antares**, the red colored star with a name that literally means 'not Mars'. Mars itself will be fainter and to the left of Antares.

Before dawn on January 26, look for bright **Venus** rising in the southeast. Mars will be just to the right of Venus. We won't see Mars back in the evening sky until this autumn.

Desktop planetarium software like the free, open-source Stellarium (stellarium.org) can show you more precisely where night sky objects will be on any date and time, and help you plan your observing.

***This Month in the Sudekum Planetarium***

Natural Selection

POLARIS

THE SPACE SUBMARINE AND THE MYSTERY OF THE POLAR NIGHT