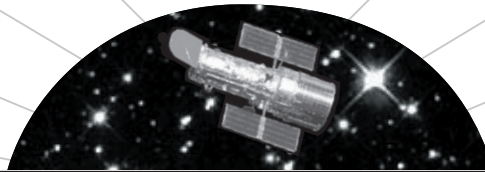




THE STAR WITNESS



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Special Feature

Returning Comet Holmes Dazzles Sky Watchers

By NASA's Amazing Space reporters
Nov. 2007

A LITTLE-KNOWN COMET IS CAUSING quite a stir during its visit to the inner solar system. The dim comet, called Comet Holmes, brightened unexpectedly over just a few hours in mid-October 2007, catching astronomers by surprise. The comet's sudden burst of light was almost as if someone had turned on a light switch. Comet Holmes is now visible in the night sky to the unaided eye. The comet, discovered in 1892, resembles a fuzzy tennis ball cruising in the constellation Perseus.

A comet is a ball of rock and ice, often referred to as a "dirty snowball." It orbits the Sun and sometimes exhibits a coma, a cloud of gas and dust that forms around the comet's nucleus (see illustration, page 4).

Astronomers do not know why the comet has brightened so dramatically. One possible answer is that a crack the size of the Grand Canyon opened up, exposing chunks of ice beneath the comet's surface. Sunlight heated the ice, causing pieces to break off and form a large cloud of gas and dust around the comet. This cloud helps make the comet appear brighter.

The Hubble Space Telescope snapped an image of the comet's bright core (see page 3). Although the nucleus is too small to

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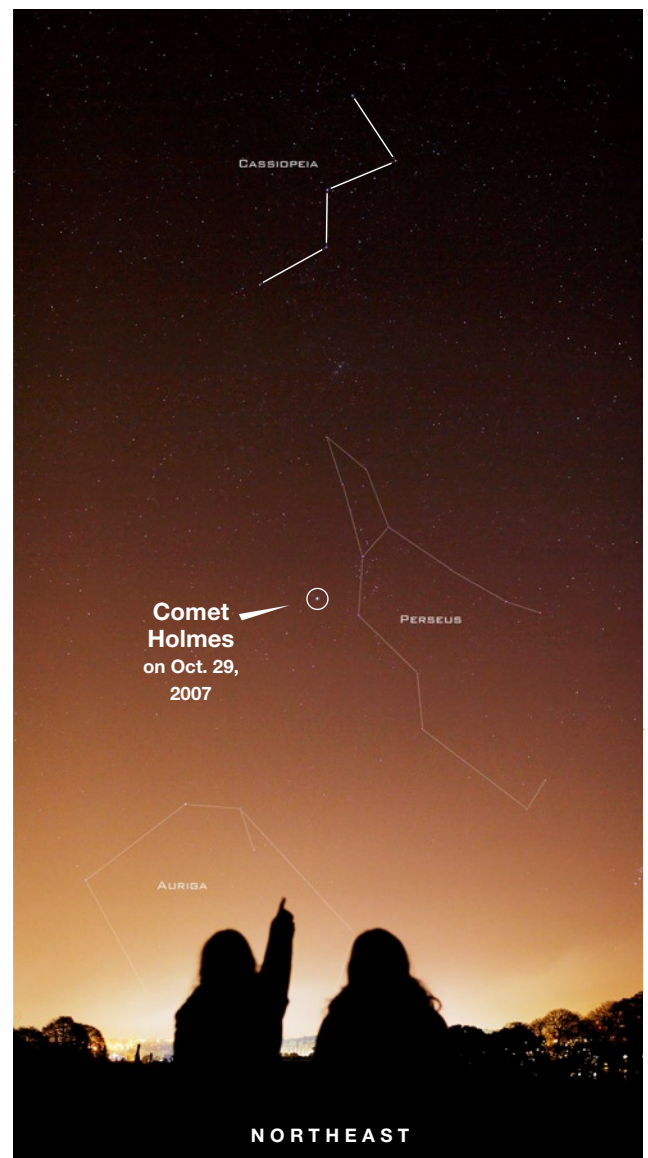


Photo illustration courtesy Laurent Laveder

Locating Comet Holmes: Find the sideways "W" of Cassiopeia, then look below to find Comet Holmes.

see, the central portion of the image reveals the dust near the nucleus. Scientists hope to use this and other Hubble images to determine how big the nucleus is and how much of it was blasted away during the recent outburst.

Many comets lose ice particles when they travel close to the Sun. Comet Holmes, however, appears to have ejected its material when it was moving away from the Sun. The frozen wanderer made its closest approach to the Sun last spring, and even then, it did not travel that close to our star.

Comet Holmes is called a short-period comet. These comets orbit mainly in the inner solar system and travel around the Sun in less than 200 years. Comet Holmes swings by the Sun every seven years. It is a member of the Jupiter family of comets, which orbits between Jupiter and the Sun. Asteroids also follow a similar orbit.

Although this dramatic flare-up is surprising, it is not the first time Comet Holmes has had an explosive outburst. The comet had a flare-up in November 1892, when British amateur astronomer Edwin Holmes discovered it. Stargazers continued watching the comet's return visits. They lost the icy object, however, after the 1906 visit.

For decades, Comet Holmes was out of the limelight. Then, in 1964, astronomers found it again with the help of computer predictions by astronomer Brian Marsden. Amateur and professional astronomers have been monitoring Comet Holmes every seven years during its return. Since its discovery, Comet Holmes has made 16 trips around the Sun.

The comet will remain bright for at least a few more weeks. ★

Locating Comet Holmes

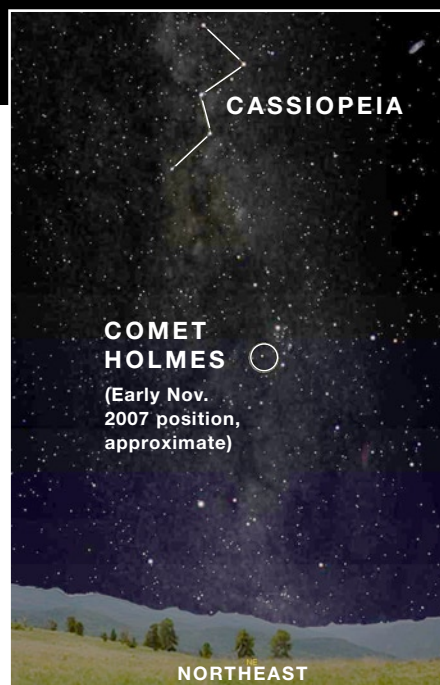
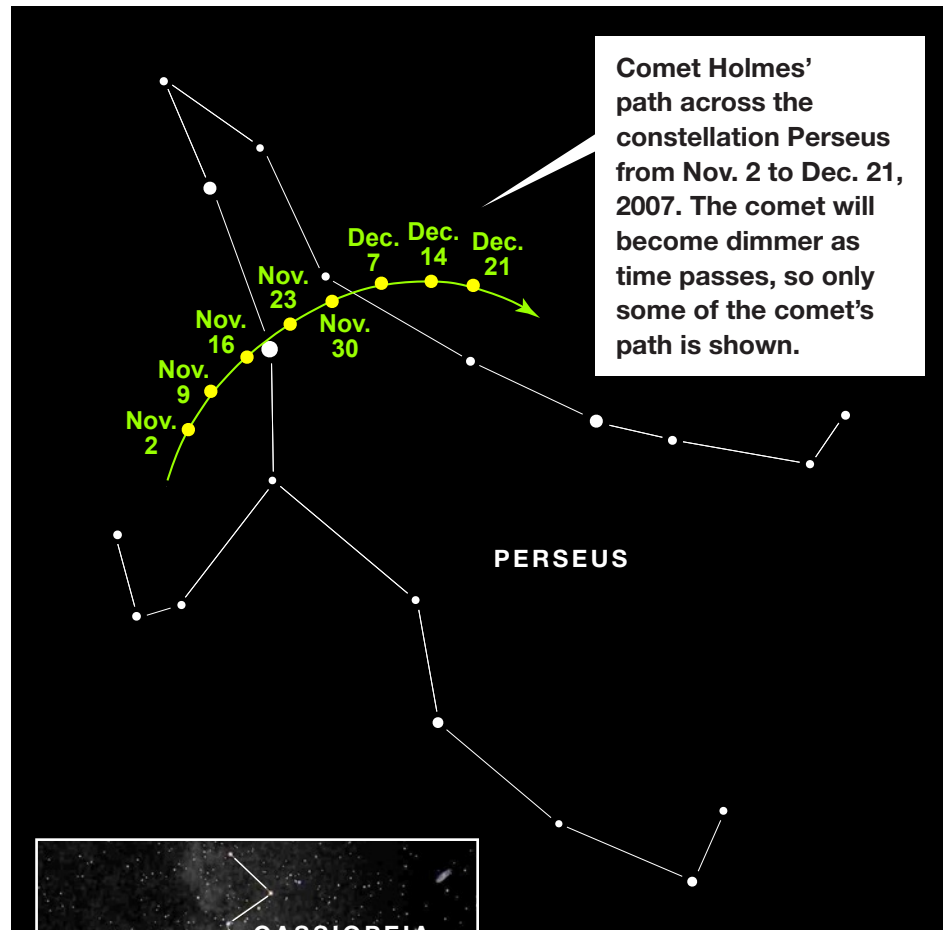


Image generated by Lucy Albert, STScl, using "Starry Night" software

Space Telescope Science Institute, Graphics Dept.

How to find Comet Holmes

After it gets dark (about 8 p.m. to 9 p.m.), go outside and face north. You may need a compass to help you.

Make a quarter turn to your right. You will be facing northeast.

Look for a grouping of stars that traces a sideways "W" (that points to the left) high in the sky. This is the constellation Cassiopeia.

Now look to the right and slightly below Cassiopeia. You will see a triangle of stars. Comet Holmes is the "star" on the lower left corner of that triangle. The comet is located in the constellation Perseus.

Comet Holmes stands out because it is not just a pinpoint of light like a star. It is a fuzz ball.

Comet Holmes gallery

Comet Holmes as seen through a backyard telescope

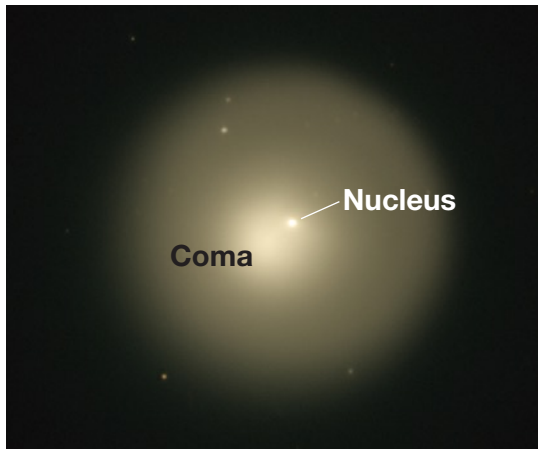


Image courtesy Philip Good

This close-up view of Comet Holmes shows an unusually large coma of gas and dust around the bright nucleus [the white dot in the center]. Amateur astronomer Philip Good of Denver, Colo., snapped this image Oct. 29, 2007 with his backyard telescope. A similar view can be seen with a pair of binoculars.

Comet Holmes as seen through a ground-based telescope and the Hubble Space Telescope

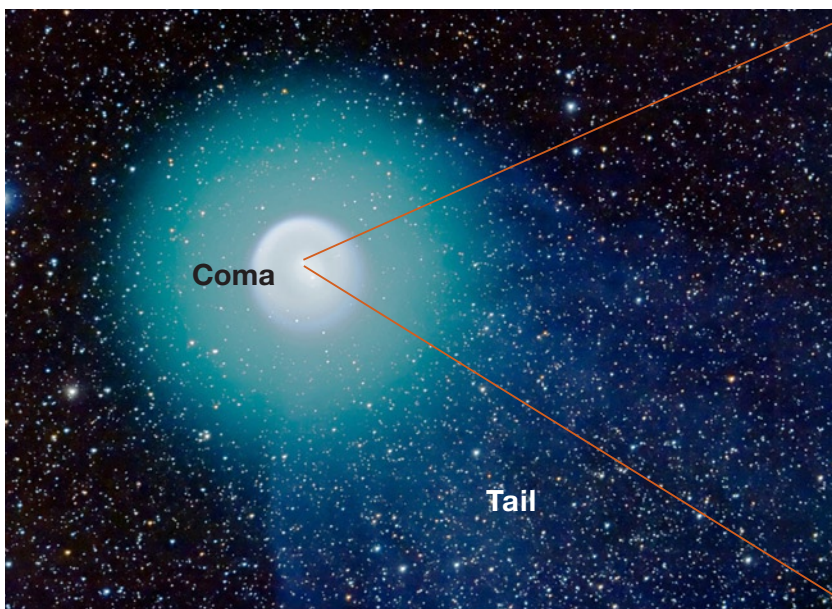
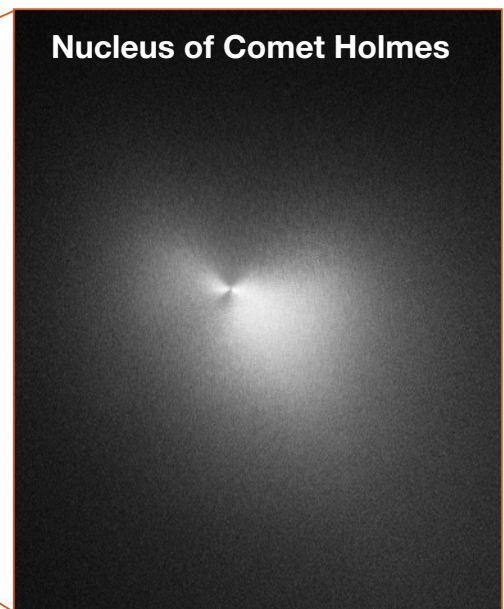


Image courtesy Alan Dyer

Ground-based image (above): This image was taken Nov. 1 by an amateur astronomer with a ground-based telescope. It reveals an unusually large coma of gas and dust [the white and blue-green rings]. The photo also reveals a faint tail flowing from the comet's right side.



HST image: NASA

Hubble image (above): Taken Nov. 4, this image shows the heart of the comet. Although the nucleus is too small to see, the central portion of the image reveals the dust near the nucleus. Scientists hope to use this and other Hubble images to determine how big the nucleus is and how much of it was blasted away during the recent outburst.

Anatomy of a comet

Comet Hale-Bopp (image, below left) is used as an example of a typical comet. Image below, right, is an artist's conception of a comet's nucleus.

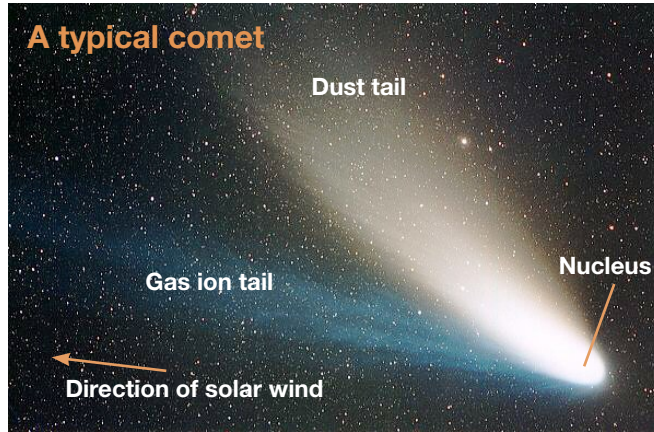
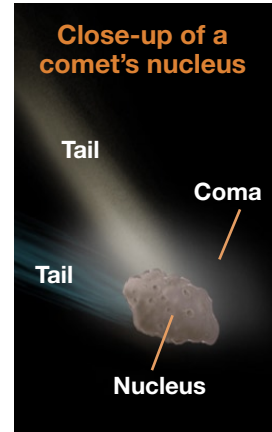


IMAGE: Alessandro Dimai



Artist's conception
(STScI Graphics Dept.)

SEE MORE Hubble images and read more
Star Witness news stories at Amazing Space,
NASA's award-winning educational Web site for
K-12 students and teachers.

