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What Is Pluto?

Pluto was discovered in 1930 by an astronomer from the United States. An astronomer is a person who studies stars and other objects in space.

Pluto was known as the smallest planet in the solar system and the ninth planet from the sun.

Today, Pluto is called a "dwarf planet." A dwarf planet orbits the sun just like other planets, but it is smaller. A dwarf planet is so small it cannot clear other objects out of its path.

On average, Pluto is more than 3.6 billion miles (5.8 billion kilometers) away from the sun. That is about 40 times as far from the sun as Earth. Pluto orbits the sun in an oval like a racetrack. Because of its oval orbit, Pluto is sometimes closer to the sun than at other times. At its closest point to the sun Pluto is still billions of miles away.

Pluto is in a region called the Kuiper (KY-per) Belt. Thousands of small, icy objects like Pluto are in the Kuiper Belt.

Pluto is only 1,400 miles (2,300 kilometers) wide. That's about half the width of the United States. Pluto is slightly smaller than Earth's moon. It takes Pluto 248 years to go around the sun. One day on Pluto is about 6 1/2 days on Earth.

Pluto was named by an 11-year-old girl from England. The dwarf planet has five moons. Its largest moon is named Charon (KER-ən). Charon is about half the size of Pluto. Pluto's four other moons are named Kerberos, Styx, Nix and Hydra.

Why Is Pluto Not Called a Planet Anymore?

In 2003, an astronomer saw a new object beyond Pluto. The astronomer thought he had found a new planet. The object he saw was larger than Pluto. He named the object Eris (EER-is).

Finding Eris caused other astronomers to talk about what makes a planet a "planet." There is a group of astronomers that names objects in space. This group decided that Pluto was not really a planet because of its size and location in space. So Pluto and objects like it are now called dwarf planets.

Pluto is also called a plutoid. A plutoid is a dwarf planet that is farther out in space than the planet Neptune. The three known plutoids are Pluto, Eris and Makemake (MAH-kee-MAH-kee). Astronomers use telescopes to discover new objects like plutoids.

Scientists are learning more about the universe and Earth's place in it. What they learn may cause them to think about how objects like planets are grouped. Scientists group objects that are like each other to better understand them. Learning more about faraway objects in the solar system is helping astronomers learn more about what it means to be a planet.

What Is Pluto Like?

Pluto is very, very cold. The temperature on Pluto is 375 to 400 degrees below zero. Pluto is so far away from Earth that scientists know very little about what it is like. Pluto is probably covered with ice.

Pluto has about one-fifteenth the gravity of Earth. A person who weighs 100 pounds on Earth would weigh only 7 pounds on Pluto.



Most planets orbit the sun in a near-circle. The sun is in the center of the circle. But Pluto does not orbit in a circle! The orbit of Pluto is shaped like an oval. And the sun is not in the center. Pluto's orbit is also tilted.

How Is NASA Exploring Pluto Today?

NASA learns about Pluto from pictures taken with telescopes. Pictures from the Hubble Space Telescope helped scientists find the four smaller moons.. Hubble has also taken pictures of Pluto's surface. The pictures show dark and light areas on Pluto. Pluto is so far away that even pictures taken by telescopes in space are a little fuzzy.

In 2006, NASA launched the first mission to Pluto. It is called New Horizons. New Horizons is a spacecraft that is going to the edge of the solar system. The spacecraft is about the size of a piano. It was a nine-year trip to reach Pluto. In 2015, New Horizons arrived at Pluto. The mission will spend more than five months studying Pluto and its moons. New Horizons will then study other objects in the Kuiper Belt.

New Horizons has cameras that will take pictures of Pluto. The spacecraft also has science tools to gather information about Pluto. These pictures and information will help scientists learn more about the dwarf planet.

Why Is NASA Exploring Pluto?

NASA sends spacecraft to other planets because exploring space is exciting. It helps people learn new things. Spacecraft have visited every major planet in the solar system. Studying places like Pluto may help scientists learn how planets form.

Should Pluto Be a Planet After All? Experts Weigh In

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by [Mike Wall](#), SPACE.com Senior Writer | November 19, 2010 07:19am ET

Now that Pluto may have regained its status as the largest object in the outer solar system, should astronomers consider giving it back another former title — that of full-fledged planet?

Pluto was demoted to a newly created category, "dwarf planet," in 2006, partly because of the discovery a year earlier of Eris, another icy body from Pluto's neighborhood. Eris was thought to be bigger than Pluto until Nov. 6, when astronomers got a chance to recalculate Eris' size.

Now it appears that Pluto reigns — though only by the slimmest of margins (the numbers are so close as to be nearly indistinguishable, when uncertainties are taken into account).

The new finding brings renewed attention to Pluto, and to the controversial decision to strip the frigid world of its planet status. Should Pluto be a planet? Should Eris, and many other objects circling the sun beyond Neptune's orbit? Or is the current system, which recognizes just eight relatively large planets, the way to go?

The background: Pluto's demotion

Eris is about 9 billion miles (15 billion kilometers) from the sun at its farthest orbital point, making it about twice as distant as Pluto. Its discovery in 2005 ultimately led astronomers — uncomfortable with the prospect of finding many more planets in the frigid outer reaches of the solar system — to reconsider Pluto's status.

In 2006, the International Astronomical Union came up with the following official definition of "planet:" A body that circles the sun without being some other object's satellite, is large enough to be rounded by its own gravity (but not so big that it begins to undergo nuclear fusion, like a star) and has "cleared its neighborhood" of most other orbiting bodies.

Since Pluto shares orbital space with lots of other objects out in the Kuiper Belt — the ring of icy bodies beyond Neptune — it didn't make the cut. Instead, the IAU rebranded Pluto, and Eris, as "dwarf planets."

Dwarf planets are not officially full-fledged planets, so Pluto was stripped of the status it had held since its discovery in 1930. Eight planets officially remain: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

The case against Pluto

The scientist who discovered Eris, Caltech astronomer Mike Brown, thinks Pluto's demotion was the right move. Pluto, Eris and the many other Kuiper Belt objects are far too different to be lumped in with the eight official planets, he said. [\[Mike Brown: Q & A With the Man Who Killed Pluto\]](#)

For one thing, they're much smaller. Pluto is about 1,455 miles (2,342 km) wide. The smallest official planet, Mercury, is more than twice as big at 3,032 miles (4,880 km) across.

The dwarfs' orbits tend to be very different, too — much more elliptical and more inclined, relative to the plane of the solar system. And they're made of different stuff, with ices comprising more of their mass.

"It just makes no sense from a classification standpoint to take these objects that clearly belong together and pick one — or two, or a dozen — and say, 'Oh, these belong with the very different, large, planet-like things,'" Brown said.

The only reason Pluto was ever deemed a planet, Brown added, is because it was first detected so long ago, before people realized that it was just one of a vast flotilla of objects beyond Neptune's orbit.

The Kuiper Belt — which is now known to host more than 1,000 icy bodies, with many more likely to be discovered — wasn't even discovered until 1992.

"It's just a funny historical accident that we found Pluto so early, and that it was the only thing known out there for so long," Brown told SPACE.com. "No one in their right mind would not have called it a planet back then, because we did know any better."

Astronomers have a much better sense of what Pluto is now, according to Brown.

"We have progressed so much further in our understanding of what the solar system is that it's pretty obvious," he said. "We can go back and reassess the mistakes of our ancestors."

So Pluto should take its rightful place alongside other Kuiper Belt objects rather than consort with the "real" planets, some astronomers say.

"I group Pluto with the other icy bodies in the Kuiper Belt," said Neil deGrasse Tyson, director of New York City's Hayden Planetarium. "I think it's happier there, actually. Pluto has family in the outer solar system."

Tyson was one of the first to push for Pluto's demotion. A decade ago, when he and the Hayden staff redesigned the planetarium's exhibits, they lumped Pluto with the Kuiper Belt objects rather than with the eight official planets.

The case for Pluto

Yet some astronomers still bristle at the reorganization of the solar system, and not because Pluto's demotion spoiled the popular "My Very Energetic Mother Just Served Us Nine Pizzas" planet-memorizing aid.

Rather, the IAU's planet definition is fundamentally flawed, some astronomers say.

They take particular issue with the "clearing your neighborhood" requirement, for several reasons.

"If you take the IAU's definition strictly, no object in the solar system is a planet," said Alan Stern, a planetary scientist at the Southwest Research Institute in Boulder, Colo. "No object in the solar system has entirely cleared its zone."

The definition also sets different standards for planethood at different distances from the sun, according to Stern, who is principal investigator of NASA's New Horizons mission, which is sending a spacecraft to Pluto.

The farther away a planet is from the sun, the bigger it needs to be in order to clear its zone. If Earth circled the sun in Uranus' orbit, it wouldn't be able to clean out its neighborhood and would thus not qualify as a planet, Stern said.

"It's literally laughable," he told SPACE.com.

In Stern's view, a planet is anything that meets the IAU definition's first two criteria — the bits about orbiting the sun and having enough mass to be roughly spherical, without the "clearing your neighborhood" requirement.

So Pluto should be a planet, as should Eris and the dwarf planet Ceres (the largest body in the asteroid belt between Mars and Jupiter), as well as many other objects.

Such a definition would greatly expand the list of planets in the solar system.

Many astronomers were uncomfortable with this prospect, according to Stern, and that discomfort was a big factor in the decision to demote Pluto. It stemmed from an unscientific desire to keep the numbers low.

"Many people think it's special to be a planet," Stern said.

But adding a bunch of names to the list wouldn't cheapen the ones that had been there forever, he added. It would simply reflect astronomers' increasing understanding of the solar system. In that understanding, small, icy planets far outnumber big gassy or rocky ones.

"There are a large number of planets, and most of them are small," Stern said. "It's the Earth-like planets and the giant planets that are freakish."

For what it's worth, Stern doesn't object to branding Pluto a "dwarf planet" — he said he coined the term — as long as dwarfs are still considered planets.

What's in a name?

The battle over Pluto's planethood may be more semantic than anything else. But words do matter, because they shape how people classify and understand reality.

"You have to be able to sort," Stern said.

Tyson said he tries not to use the word "planet" in its traditional, generic sense too much, because it doesn't convey very much meaningful information. It's more revealing to group objects that are similar in size, composition and other properties.

"The word 'planet' has far outlived its usefulness," Tyson told SPACE.com. "It doesn't celebrate the scientific richness of the solar system."

So Tyson thinks in categories such as gas giants (Jupiter, Saturn, Uranus and Neptune) and terrestrial planets (Mercury, Venus, Earth and Mars) as well as asteroids and Kuiper Belt objects (Pluto, Eris and many others).

For his part, Brown thinks stripping Pluto of its planethood doesn't make the icy body any less interesting or important.

"I think that Pluto as an example of a large Kuiper Belt object is so much more interesting than Pluto as this very weird planet at the outer edge of the solar system unlike anything else," Brown said. "We are going to learn so much more about the solar system with our new understanding of what Pluto is."

Maybe Stern and other scientists fighting for Pluto's planethood would agree. Or maybe not

