= Plutoid =

A plutoid or ice dwarf is a trans @-@ Neptunian dwarf planet , i.e. a body orbiting beyond Neptune that is massive enough to be rounded in shape . The term plutoid was adopted by the International Astronomical Union (IAU) working group Committee on Small Bodies Nomenclature , but was rejected by the IAU working group Planetary System Nomenclature . The term plutoid is not widely used by astronomers , though ice dwarf is not uncommon .

There are thought to be thousands of plutoids in the Solar System , although only four have been formally designated as such by the IAU .

The IAU developed this category of astronomical objects as a consequence of its 2006 resolution defining the word " planet " . The IAU 's formal definition of " plutoid " , announced 11 June 2008 , is :

Plutoids are celestial bodies in orbit around the Sun at a semi @-@ major axis greater than that of Neptune that have sufficient mass for their self @-@ gravity to overcome rigid body forces so that they assume a hydrostatic equilibrium (near @-@ spherical) shape , and that have not cleared the neighbourhood around their orbit . Satellites of plutoids are not plutoids themselves .

In light of the difficulty of remotely ascertaining hydrostasis , the IAU only formally confers " dwarf planet " (and by extension , " plutoid ") status to those bodies whose minimum estimated size is substantially greater than what is generally thought necessary to guarantee hydrostatic equilibrium . As of 2009 , Pluto , Eris , Haumea , and Makemake are the only objects officially recognized as plutoids , while upwards of seventy more bodies that currently lack formal recognition are thought likely to meet the definition , and can expect formal recognition at some time in the future .

Alan Stern of the Southwest Research Institute believes the outer planets show signs of collisions with plutoids 1 @,@ 000 to 2 @,@ 000 kilometers in diameter : Uranus could have been tipped off its axis by a plutoid , and Triton , the largest moon of Neptune , is probably a captured plutoid from the Kuiper belt .

= = History of the term = =

On 24 August 2006 , the IAU decided to reclassify Pluto as a dwarf planet , requiring that a planet must " clear the neighbourhood around its orbit " .

The General Assembly of the IAU further resolved :

Pluto is [?] recognized as the prototype of a new category of Trans @-@ Neptunian Objects .

This new category had been proposed under the name " pluton " or a " plutonian object " earlier in the General Assembly . The former was rejected , in part because " pluton " is a geological term , and many geological experts sent in complaints pointing this out . " Pluton " was dropped midway through the Assembly and was abandoned in the final draft resolution (6b) ; " Plutonian object " failed to win majority approval on a 183 ? 186 vote in the IAU General Assembly on August 24 , 2006 .

The definition of the category also fluctuated during its early stages . When first proposed , the category , then named " pluton " , defined members as planets whose orbital period around the Sun was more than 200 Julian years , and whose orbit was more highly inclined and more elliptical than a traditional planetary orbit . Once it had been counter @-@ proposed to strip Pluto of planet status , this category of Pluto @-@ like objects was then applied to dwarf planets that met the conditions of being trans @-@ Neptunian and " like Pluto " in terms of period , inclination , and eccentricity . Ultimately , the final resolution left the formal definition , like the name , to be established at a later date .

Following the IAU General Assembly , the name " plutoid " was proposed by the members of the IAU Committee on Small Body Nomenclature (CSBN) , accepted by the Board of Division III , and approved by the IAU Executive Committee at its meeting in Oslo , Norway , on 11 June 2008 . The term was announced after the Executive Committee meeting , along with a greatly simplified definition : all trans @-@ Neptunian dwarf planets are plutoids . However , due to a communication error , the IAU Working Group for Planetary System Nomenclature (WG @-@ PSN) was not

consulted , and they subsequently rejected the term .
As of 2009 , the term had not been widely accepted by the scientific community , with the term ice dwarf (planet) sometimes used instead .

= = Analogous terminology = =

Prior to the emergence of the term " plutoid " as an IAU @-@ sanctioned categorization , there had been some attempts at applying a title for this class of object .
The term " ice dwarf " saw some adoption as a near @-@ synonym to the eventual term " plutoid " . " Ice dwarf " , however , also saw some use as an umbrella term for all so @-@ called " distant minor planets " (trans @-@ Neptunian objects plus centaurs) or other , broad applications ; one attempted definition was that an ice dwarf " is larger than the nucleus of a normal comet and icier than a typical asteroid " . There are large numbers of such objects in the Oort cloud and the Kuiper belt . However , it is not clear whether all so @-@ categorized ice dwarfs are actually icier than icy asteroids such as Ceres (now considered a dwarf planet) . Nonetheless , Ceres is sometimes called a terrestrial dwarf to distinguish it from Pluto and Eris .
" Ice dwarf " as a term for an icy planetary body that generally orbits beyond Neptune was coined as part of a conception of a threefold division of the Solar System into inner terrestrial planets , central gas giants , and outer ice dwarfs , of which Pluto was the principal member . This conception foreshadowed the reclassification of Pluto to dwarf planet and plutoid after the discovery of Eris .

= = Naming process for plutoids = =

With the creation of the term " dwarf planet " , some ambiguity was created as to which of two IAU bodies would be responsible for naming dwarf planets . Eris had been named through the IAU Committee on Small Body Nomenclature and the IAU Working Group for Planetary System Nomenclature working in cooperation with one another . Along with announcing the name " plutoid " , the IAU decision of 11 June 2008 institutionalized this cooperative process involving the two bodies in the naming of new plutoids . In keeping with minor planet naming guidelines , priority will be given to names proposed by the discovery teams , and plutoids may not share a name with a small Solar System body .

= = = Complications related to " dwarf planet " definition = = =

When the definition of " dwarf planet " was instated at the IAU General Assembly of 2006 , Ceres , Pluto and Eris were identified by name as the initial members of the dwarf planet class . However , precise regulations as to how hydrostatic equilibrium would be measured were left undefined for the time being . Without an official procedure for calculating the lower bound of size to be a " dwarf planet " , no further bodies could be formally recognized as either dwarf planets or plutoids .
It was noted that the naming process would remain stalled without such rules , and that even with them , few of these bodies can be imaged with sufficient resolution to determine their shapes . Therefore , the IAU announced that for naming purposes , a trans @-@ Neptunian object will be assumed to be a plutoid if it has an absolute magnitude brighter than H = + 1 magnitude .
Mathematically , the smallest possible object that could possess an absolute magnitude of + 1 (a perfectly reflective one with an albedo of 1) would be 838 km in diameter . It is highly unlikely that any body of this size or larger , regardless of composition , would not also surpass whatever threshold is ultimately adopted as proof of hydrostatic equilibrium . However , if it turns out upon further investigation that an object named as if it were a plutoid has not achieved hydrostatic equilibrium , the IAU has stated it will be reclassified , but keep its name .
This decision allowed for the naming of Makemake and Haumea , and their formal recognition as plutoids and dwarf planets , bringing the number of IAU @-@ accepted plutoids to four . However , the (co) discoverer of Eris , Makemake , and Haumea , Mike Brown , estimates that between 100 and 400 known bodies are plutoids , and that there are many more that have yet to be discovered .

See list of possible dwarf planets .