

THE CONSTELLATION DRACO, THE DRAGON

Draco is a constellation in the far northern sky. It is the eighth largest constellation in the night sky, occupying an area of 1083 square degrees. Its name is Latin for dragon. Draco is circumpolar (that is, never setting) for many observers in the northern hemisphere. It was one of the 48 constellations listed by the 2nd century astronomer **Ptolemy**, and still is one of the 88 modern constellations today. The north pole of the ecliptic is in Draco. The neighbouring constellations are Boötes, Camelopardalis, Cepheus, Cygnus, Hercules, Lyra, Ursa Major, and Ursa Minor. Draco belongs to the Ursa Major family of constellations. It has nine stars with known planets.

LIST OF STARS IN DRACO

Thuban (*alpha Draconis*) was the northern pole star from 3942 BC until 1793 BC. The Egyptian Pyramids were designed to have one side facing north, with an entrance passage designed so that Thuban would be visible at night. Due to the effects of precession, it will once again be the pole star around the year 21000 AD. It is a blue-white giant star of magnitude 3.7, 309 light-years from Earth. The traditional name Thuban, means "head of the serpent".

There are two other stars above magnitude 3 in Draco. The brighter of the two—and the brightest star in Draco—is *Gamma Draconis*, traditionally called Eltanin, an orange giant star of magnitude 2.2, 148 light-years from Earth.

James Bradley used *Gamma Draconis* in his discovery of the aberration of starlight in 1728.

Beta Draconis, traditionally called Rastaban, is a yellow giant star of magnitude 2.8, 362 light-years from Earth. Its name shares a meaning with Thuban, "head of the serpent". Draco is home to several double stars and binary stars.

Mu Draconis, traditionally called Alракis, is a binary star with two white components. Magnitude 5.6 and 5.7, the two components orbit each other every 670 years. It was made popular by **Frank Herbert** in his *Dune* series.

Nu Draconis is a similar binary star with two white components of magnitude 4.9, 100 light-years from Earth.

Omicron Draconis is a double star divisible in small telescopes. The primary is an orange giant of magnitude 4.6, 322 light-years from Earth.

Psi Draconis is a binary star divisible in binoculars and small amateur telescopes, 72 light-years from Earth.

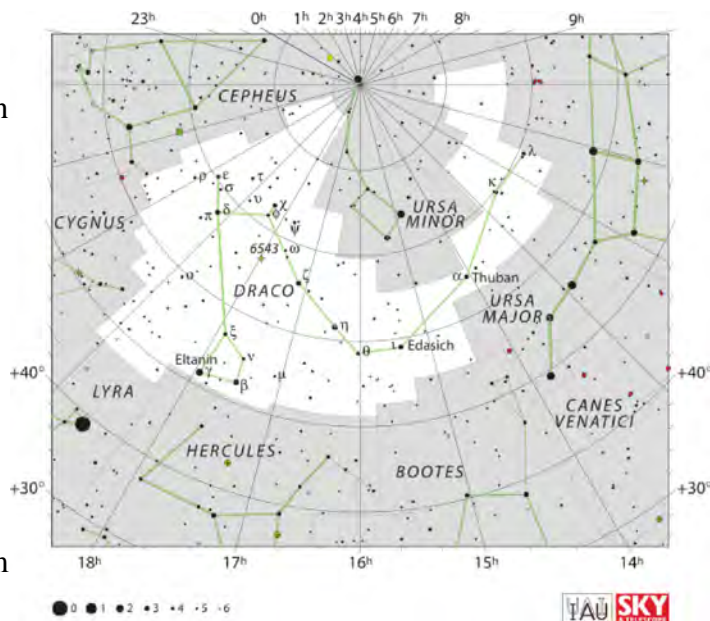
The primary is a yellow-white star of magnitude 4.6 and the secondary is a yellow star of magnitude 5.8. *R Draconis* is a red Mira-type variable star with a period of about 8 months. Its average minimum magnitude is approximately 12.4, and its average maximum magnitude is approximately 7.6. It was discovered to be a variable star by **Hans Geelmuyden** in 1876.

The constellation contains the star recently named Kepler-10 which has been confirmed to be orbited by Kepler-10b, the smallest ever rocky Earth-sized planet detected outside of our solar system.

DEEP-SKY OBJECTS

One of the deep-sky objects in Draco is the Cat's Eye Nebula (NGC 6543), a planetary nebula approximately 3,000 light-years away.

Discovered by **William Herschel** in 1786 it is 9th magnitude and was named for its appearance in the Hubble Space Telescope, though it appears as a fuzzy blue-green disk in amateur telescopes.



The constellation, Draco the Dragon, plotted over a dragon. The dragon's long tail is labelled Cauda Draconis.



There are several faint galaxies in Draco, one of which is the lenticular galaxy NGC 5866, sometimes considered to be Messier Object 102. Another is the Draco Dwarf Galaxy, one of the least luminous galaxies with an absolute magnitude of -8.6 and a diameter of only about 3,500 light years, discovered by **Albert G. Wilson** of Lowell Observatory in 1954.

Draco also features several interacting galaxies and galaxy clusters. One such massive cluster is Abell 2218, located at a distance of 3 billion light-years (redshift 0.171). It acts as a gravitational lens for even more distant background galaxies, allowing astronomers to study those galaxies as well as Abell 2218 itself; more specifically, the lensing effect allows astronomers to confirm the cluster's mass as determined by x-ray emissions. One of the most well-known interacting galaxies is Arp 188, also called the "Tadpole Galaxy". Named for its appearance, which features a "tail" of stars 280,000 light-years long, the Tadpole Galaxy is at a distance of 420 million light-years (redshift 0.0314). The tail of stars drawn off the Tadpole Galaxy appears blue because the gravitational interaction disturbed clouds of gas and sparked star formation.

Q1634+706 is a quasar that holds the distinction of being the most distant object usually visible in an amateur telescope. At magnitude 14.4, it appears star-like, though it is at a distance of 12.9 billion light-years. The light of Q1634+706 has taken 8.6 billion years to reach Earth, the discrepancy attributable to the expansion of the universe.

Spindle Galaxy – Messier 102 – This is a unique view of the disk galaxy NGC 5866 tilted nearly edge-on to our line-of-sight.

Hubble's sharp vision reveals a crisp dust lane dividing the galaxy into two halves. The image highlights the galaxy's structure: a subtle, reddish bulge surrounding a bright nucleus, a blue disk of stars running parallel to the dust lane, and a transparent outer halo. The Great Wall, possibly the largest known structure in the universe, covers a part of the southern region of Draco.

MYTHOLOGY

Dragons in Greek mythology that may have inspired the constellation's name include Ladon, the dragon who guarded the golden apples of the Hesperides and who was killed by Hercules as part of his 12 labours (he constellation of Hercules is depicted with his foot on the head of Draco). The goddess Hera had been given the golden apple tree as a wedding present when she married Zeus. She was so delighted with it that she planted it in her garden on the slopes of Mount Atlas and set the Hesperides, daughters of Atlas, to guard it. They proved untrustworthy guards and sterner measures were required, so Hera placed the dragon Ladon around the tree to ward off pilferers.

Draco is also the name of the first legislator of Athens in Ancient Greece (7th century BC). He replaced the prevailing system of oral law and blood feud by a written code to be enforced only by a court. Draco's written law became known for its harshness, with the adjective "draconian" referring to similarly unforgiving rules or laws. Draco introduced the lot-chosen Council of Four Hundred, which evolved in later constitutions to play a large role in Athenian democracy. **Aristotle** notes that Draco merely legislated an existing unwritten Athenian constitution, such as setting exact qualifications for eligibility for office. Draco extended the franchise to all free men who could furnish themselves with a set of military equipment and had children born in lawful wedlock over ten years of age.

AK from Notes on Wikipedia



Spindle Galaxy – Messier 102 – NGC 5866

