

THE CETUS CONSTELLATION

Its name refers to Cetus, a sea monster in Greek mythology, although it is often called 'the whale' today. Cetus is located in the region of the sky that contains other water-related constellations such as Aquarius, Pisces, and Eridanus.

Although Cetus is not generally considered part of the zodiac, the ecliptic passes less than a quarter of a degree from its constellation boundary, and thus the moon, planets, and even part of the sun may be in Cetus for brief periods of time. This is all the more true of asteroids, since their orbits usually have a greater inclination to the ecliptic than the moon and planets. For example, the asteroid 4 Vesta was discovered in this constellation in 1807.

The most notable star in Cetus is Mira (the Wonderful), designated *Omicron Ceti*, the first variable star to be discovered and the prototype of its class. 420 light-years from Earth, Mira reaches a maximum apparent magnitude of 3 (visible to the naked eye) and over a period of 332 days dips to a minimum magnitude of 10 (invisible to the unaided eye) pulsating between 400 and 500 solar diameters. Discovered by **David Fabricius** (1564 – 1617) in 1596, its common name Mira was given to the star by the Polish astronomer **Johannes Hevelius** in 1662, Fabricius with his son Johannes made two major discoveries in the early days of telescopic astronomy: He discovered the first variable star and he confirmed that the Sun is rotating on its axis by watching sunspots with the Camera Obscura Telescope he invented.

The large (90-kilometer) crater Fabricius in the Moon's southern hemisphere is named after David Fabricius. In 1895 a monument was erected to his memory in the churchyard at Osteel where he was pastor from 1603 until 1617.

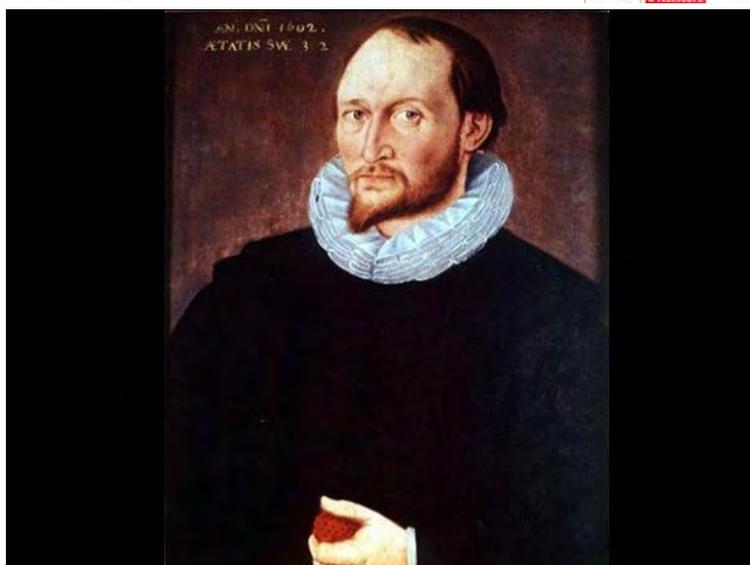
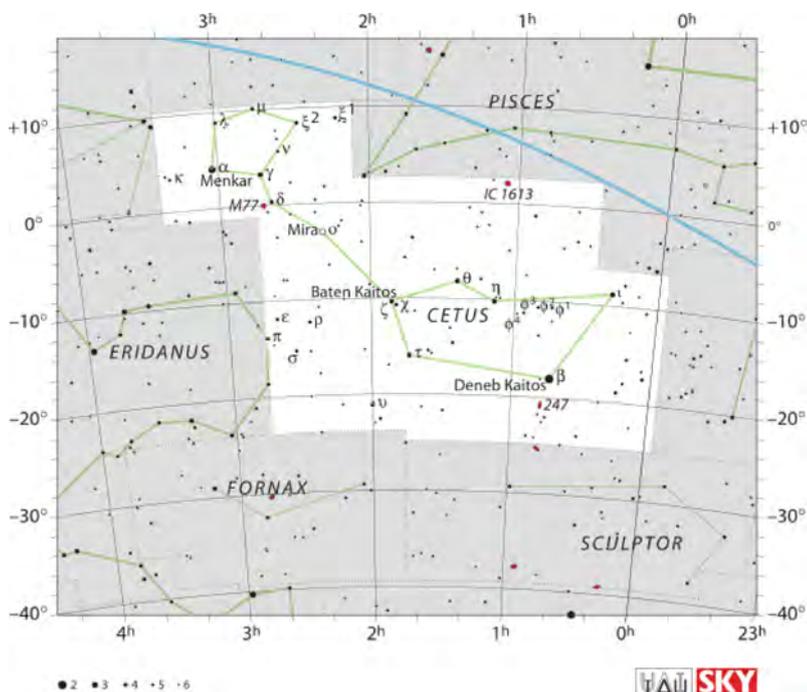
There are several other bright stars in Cetus.

Alpha Ceti, traditionally called Menkar ("the nose"), is a red-hued giant star of magnitude 2.5, 220 light-years from Earth. It is a wide double star; the secondary is *93 Ceti*, a blue-white hued star of magnitude 5.6, 440 light-years away.

Beta Ceti, also called Deneb Kaitos and Diphda, is the brightest star in Cetus. It is an orange-hued giant star of magnitude 2.0, 96 light-years from Earth. The traditional name "Deneb Kaitos" means "the whale's tail".

Gamma Ceti, Kaffaljidhma ("head of the whale") is a very close double star. The primary is a yellow-hued star of magnitude 3.5, 82 light-years from Earth, and the secondary is a blue-hued star of magnitude 6.6.

Tau Ceti, or Durre Menthor, is noted for being the nearest Sun-like star at a distance of 11.9 light-years. It is a yellow-hued main-sequence star of magnitude 3.5.



David Fabricius was born at Esens, studied at the University of Helmstedt starting in 1583 and served as pastor for small towns near his birthplace in Frisia (now northwest Germany).. As was common for Protestant ministers of the day, he dabbled in science: his particular interest was astronomy. Fabricius corresponded with astronomer Johannes Kepler and made two important discoveries: He discovered the first known periodic variable star in August 1596. At first he believed it to be "just" another nova, as the whole concept of a recurring variable did not exist at the time. When he saw the star brighten again in 1609, however, it became clear that a new kind of object had been discovered in the sky.



AA Ceti is a triple star system; the brightest member has a magnitude of 6.2. The primary and secondary are separated by 8.4 arcseconds at an angle of 304 degrees. The tertiary is not visible in telescopes. *AA Ceti* is an eclipsing variable star; the tertiary star passes in front of the primary and causes the system's apparent magnitude to decrease by 0.5 magnitudes.

DEEP-SKY OBJECTS

Cetus lies far from the galactic plane, so that many distant galaxies are visible, un-obscured by dust from the Milky Way. Of these, the brightest is Messier 77 (NGC 1068), a 9th magnitude spiral galaxy near *Delta Ceti*. It appears face-on and has a clearly visible nucleus of magnitude 10. About 50 million light-years from Earth, M77 is also a Seyfert galaxy and thus a bright object in the radio spectrum. Recently, the galactic cluster JKCS 041 was confirmed to be the most distant cluster of galaxies yet discovered.

NGC 246 (Caldwell 56), also called the Cetus Ring, is a planetary nebula with a magnitude of 8.0, 1600 light-years from Earth. Among some amateur astronomers, NGC 246 has garnered the nickname "Pac-Man Nebula" because of the arrangement of its central stars and the surrounding star field.

HISTORY AND MYTHOLOGY

Cetus is the fourth-largest constellation, as befits such a monster, but none of its stars is particularly bright. The brightest of them is second-magnitude *Beta Ceti*, commonly called Deneb Kaitos from the Arabic meaning sea monster's tail. **Ptolemy** in the *Almagest* described this star as lying on the end of the southern tail fin; the northern fin was marked by the star we now know as *Iota Ceti*. Cetus has been depicted many ways throughout its history. In the 17th century, Cetus was depicted as a "dragon fish" by **Johann Bayer**. Both **Willem Blaeu** and **Andreas Cellarius** depicted Cetus as a whale-like creature in the same century. However, Cetus has also been variously depicted with animal heads attached to a piscine body.

When Cassiopeia, wife of King Cepheus of Ethiopia, boasted that she was more beautiful than the sea nymphs called the Nereids, she set in motion one of the most celebrated stories in mythology, whose characters are commemorated in the sky. In retribution for the insult to the Nereids, the sea god Poseidon sent a fearsome monster to ravage the coast of Cepheus's territory. That monster is represented by the constellation Cetus. To rid himself of the monster, Cepheus was instructed by the Oracle of Ammon to offer up his daughter Andromeda as a sacrifice to the monster. Andromeda was chained to the cliffs at Joppa (the modern Tel-Aviv) to await her terrible fate.

As the monster made towards her, the hero Perseus happened by and swooping down like an eagle onto the creature's back, he drove his diamond-hard sword deep into its right shoulder again and again until it collapsed.



Messier 77 spiral galaxy by HST



NGC 246, known as the Skull Nebula, is a planetary nebula in the constellation Cetus. The nebula and the stars associated with it are listed in several catalogs, as summarized by the SIMBAD database. It is roughly 1,600 light-years away. The nebula's central star is the 12th magnitude white dwarf HIP 3678. Among some amateur astronomers, NGC 246 is known as the "Pac-Man Nebula" because of the arrangement of its central stars and the surrounding star field.



The bizarre-looking sea monster Cetus emerging from the ocean of the southern skies, illustrated in the *Atlas Coelestis* of John Flamsteed