

# Pisces

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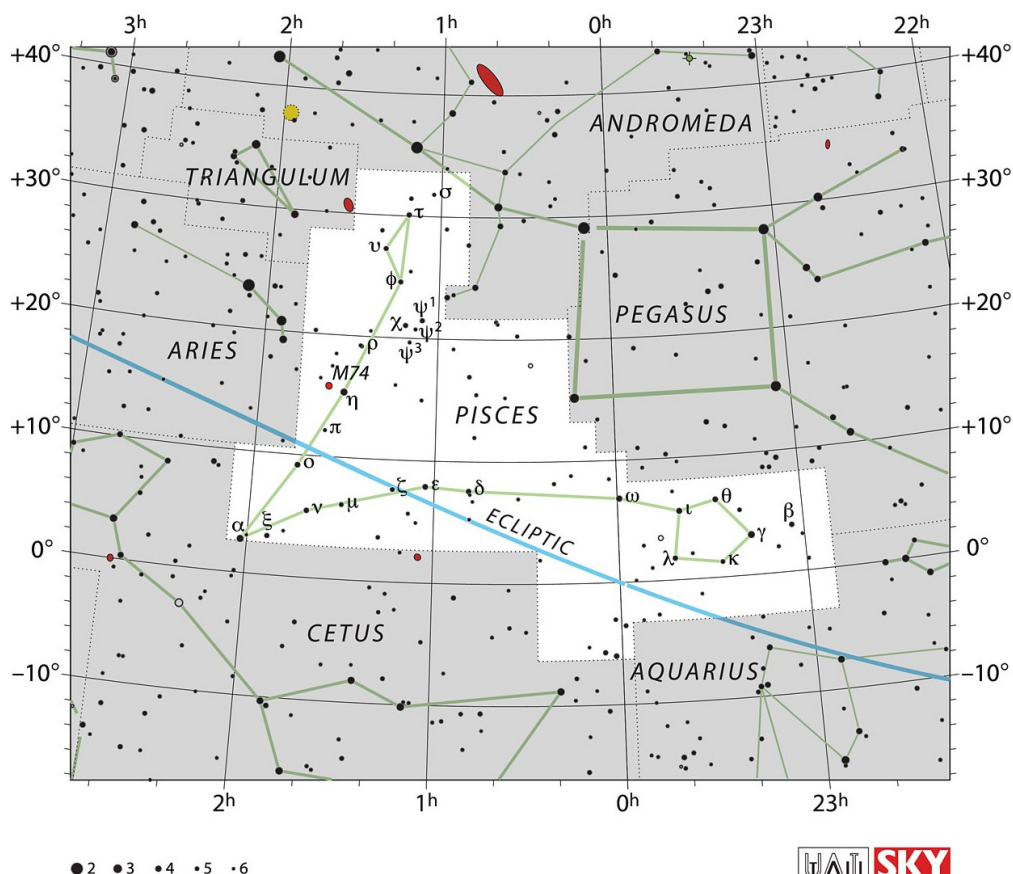
Pisces, the Latin term for "fishes," is a sprawling constellation in the northern celestial hemisphere, representing two fish tied together by a cord. Positioned between Aquarius and Aries along the ecliptic, Pisces is rich in mythology and serves as a prominent fixture in both ancient and modern astronomy.

Keywords: astronomy ; constellation ; IAU ; galaxy

## 1. Introduction

Pisces, derived from the Latin term for "fishes," is a notable constellation in the northern celestial hemisphere, encompassing a region rich in both astronomical significance and cultural lore. Situated between the constellations of Aquarius and Aries along the ecliptic, Pisces is one of the 88 recognized constellations in modern astronomy, known for its distinctive shape and mythical associations. Pisces is traditionally depicted as two fish swimming in opposite directions, connected by a cord or ribbon. This iconic imagery stems from ancient Greek mythology, where Pisces represents the fish associated with Aphrodite and her son Eros, who transformed into fish to escape the monster Typhon. In Chinese astronomy, Pisces is associated with the Water Barrier, a concept akin to a celestial river or barrier.

Pisces occupies a significant portion of the celestial sphere, spanning approximately 889 square degrees of the sky. Its celestial coordinates lie between approximately 0 and 2 hours of right ascension and 0 to 30 degrees of declination (**Figure 1**), making it visible from most locations in the northern hemisphere during the autumn and winter months. Within Pisces, there are several notable stars and deep-sky objects that contribute to its celestial allure. From binary star systems to distant galaxies, Pisces offers astronomers a diverse array of targets for exploration and study. Notable objects within the constellation include the galaxy cluster Abell 2634, the star Eta Piscium, and the planetary nebula NGC 7662.



## 2. Historical Background and Mythology

In ancient Mesopotamia, the region often regarded as the cradle of civilization, Pisces was associated with the god Ea, who ruled over the waters and was considered the keeper of knowledge and wisdom. The constellation represented the primordial waters from which life emerged, symbolizing fertility, abundance, and the cyclical nature of existence. Pisces was also linked to the annual flooding of the Tigris and Euphrates rivers, which brought vital nutrients to the surrounding land and sustained agricultural prosperity.

In Greek mythology, Pisces is linked to the story of Aphrodite and her son Eros, who transformed into fish to escape the monster Typhon. According to legend, Typhon, a fearsome creature with serpents for legs, sought to overthrow the gods of Mount Olympus. In their flight from Typhon, Aphrodite and Eros plunged into the Euphrates River, where they transformed into fish and were subsequently rescued by the god Pan. In gratitude, Aphrodite placed the fish in the night sky as the constellation Pisces.

In Chinese astronomy, Pisces is associated with the Water Barrier, a concept similar to a celestial river or boundary. According to Chinese mythology, the Water Barrier separates the mortal world from the realm of the immortals and serves as a boundary between the heavens and the earthly domain. Pisces is represented as two fish swimming in opposite directions, symbolizing the duality of yin and yang and the balance between opposing forces.

## 3. Notable Stars

### Alpha Piscium (Alrescha)

Alpha Piscium, also known as Alrescha, is the brightest star in the constellation Pisces. It is a binary star system located approximately 139 light-years away from Earth. Alrescha consists of two main components, each with its own spectral classification. The primary star is a yellow-white main-sequence star, while the secondary star is a smaller, fainter companion. Alrescha's name is derived from the Arabic phrase meaning "the cord" or "the well rope," reflecting its position as the knot tying together the two fish of Pisces in traditional depictions.

**Eta Piscium** ( $\eta$  Piscium, abbreviated Eta Psc,  $\eta$  Psc) is a binary star and the brightest star in the constellation of Pisces, with an apparent visual magnitude of +3.6. Based upon a measured annual parallax shift of 9.33 mas as seen from Earth, it is located roughly 350 light-years distant from the Sun in the thin disk population of the Milky Way.

## 4. Deep-Sky Objects

### Messier 74 (M74) - The Phantom Galaxy

Messier 74, also known as the Phantom Galaxy, is a spiral galaxy located approximately 32 million light-years away from Earth. M74 was discovered by Pierre Méchain in 1780. It is renowned for its intricate spiral arms and bright star-forming regions, making it a popular target for amateur astronomers and astrophotographers. M74 is classified as a grand design spiral galaxy, with well-defined spiral arms that wrap tightly around its central bulge. Its distance and orientation make detailed observations challenging, earning it the nickname "the Phantom Galaxy."

### NGC 488 (The Box Galaxy)

NGC 488, also known as the Box Galaxy, is an edge-on spiral galaxy located approximately 90 million light-years away from Earth. It is characterized by its boxy appearance and prominent dust lanes, which obscure the light from stars within the galaxy's disk. NGC 488 is a member of the Pisces-Perseus Supercluster, a vast structure of galaxies that includes the Pisces and Perseus constellations. Its distinctive morphology and proximity make it a valuable target for astronomers studying the formation and evolution of galaxies.

### NGC 474 (The Giant Squid Galaxy)

NGC 474, also known as the Giant Squid Galaxy, is an elliptical galaxy located approximately 100 million light-years away from Earth. It is named for its peculiar shape, which resembles a giant squid with extended tentacles. NGC 474 is part of the Pisces-Perseus Supercluster and exhibits signs of ongoing interactions with neighboring galaxies. These interactions have triggered the formation of new stars and shaped the galaxy's appearance, creating intricate structures and tidal tails.

## **NGC 520 (The Mice Galaxies)**

NGC 520, also known as the Mice Galaxies, is a pair of interacting galaxies located approximately 100 million light-years away from Earth. It consists of two spiral galaxies that are in the process of merging, creating a chaotic and turbulent environment of gas and dust. The gravitational interaction between the galaxies has triggered intense star formation and produced tidal tails of stars and gas. NGC 520 provides astronomers with a unique opportunity to study the effects of galaxy mergers and the formation of new stars.

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