Grus

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Grus, the crane, is a constellation in the southern celestial hemisphere. Named after the crane bird in Greek mythology, it is one of twelve constellations conceived by the Dutch astronomer Petrus Plancius.

astronomy constellation IAU star

1. Introduction

Grus, derived from the Latin word for "crane," is a constellation located in the southern celestial hemisphere. It is one of the 88 modern constellations recognized by the International Astronomical Union. Grus occupies an area of approximately 366 square degrees in the night sky and is bordered by several other prominent constellations, including Piscis Austrinus, Phoenix, Tucana, and Sculptor. Its celestial coordinates lie between approximately 21h 0m and 23h 30m of right ascension and -45° to -57° of declination (**Figure 1**). This places Grus in a favorable position for observation from the southern hemisphere, although portions of it can be seen from northern latitudes as well. The constellation is characterized by its distinctive shape, which features several bright stars that form the outline of a crane in flight. The brightest star in Grus is Alpha Gruis, also known as Alnair, which serves as the crane's head. Other notable stars in the constellation include Beta Gruis, Gamma Gruis, Delta Gruis, and Epsilon Gruis.

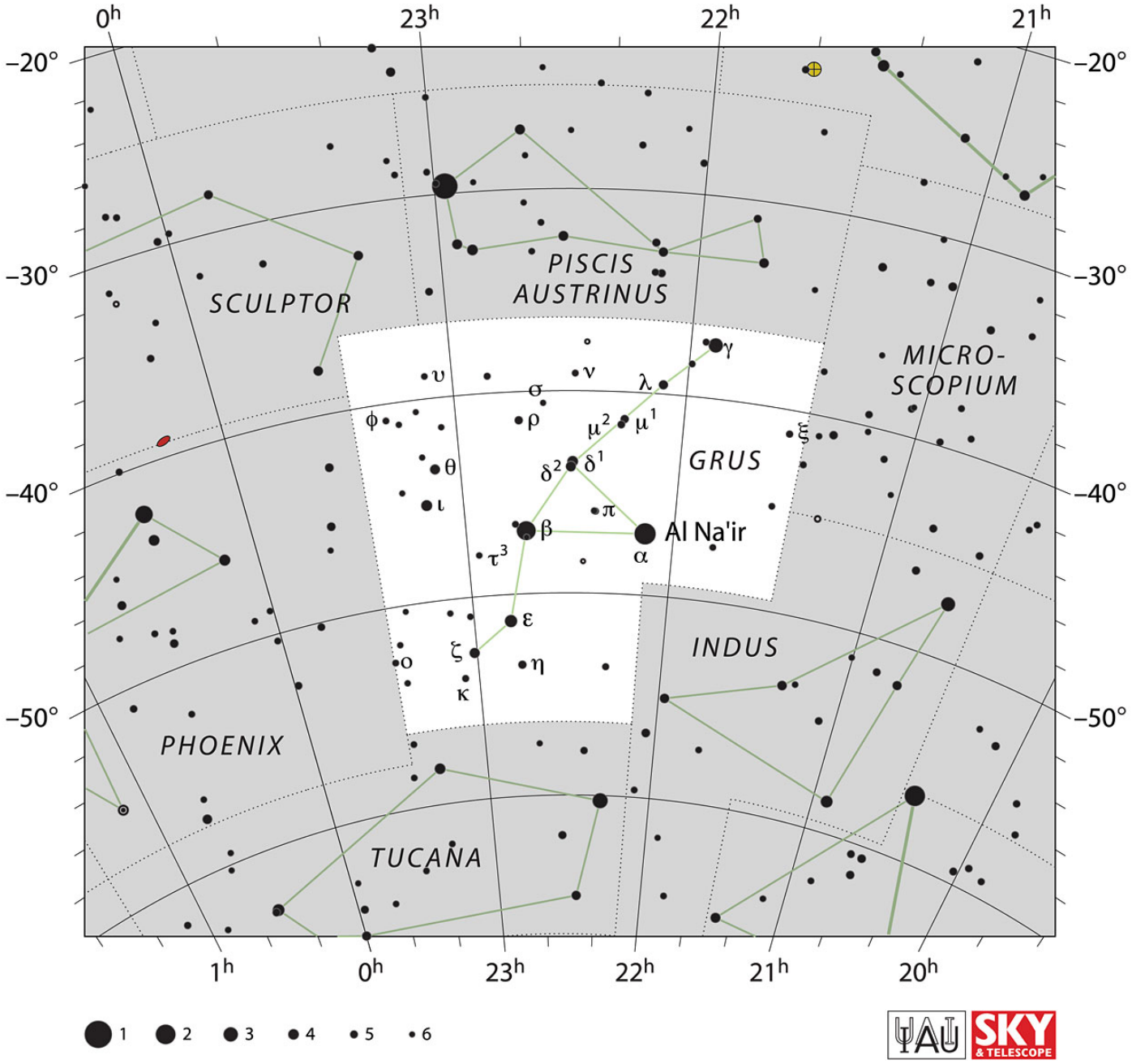

Figure 1. IAU chart of Grus. Source: https://www.iau.org/static/archives/images/screen/gru.jpg. Credit: IAU and Sky & Telescope. Reproduced under CC BY 4.0 license.

2. Historical Background and Mythology

The constellation Grus was first introduced by the Dutch navigator and astronomer Petrus Plancius in the late 16th century. It was later included in Johann Bayer's Uranometria atlas in 1603, solidifying its place among the modern constellations. Grus is located in the southern celestial hemisphere, making it visible primarily from southern latitudes. Its position in the night sky varies depending on the observer's location and the time of year. Grus is often

depicted as a crane in flight, with its distinctive shape formed by several bright stars that outline the bird's wings and body. The brightest star in Grus is Alpha Gruis, also known as Alnair, which serves as the crane's head. Other notable stars in the constellation include Beta Gruis, Gamma Gruis, Delta Gruis, and Epsilon Gruis.

In Greek mythology, the crane is associated with the story of the famous hero Heracles, also known as Hercules in Roman mythology. According to legend, during one of his twelve labors, Heracles encountered a giant named Porphyrion who attacked him with a massive bronze club. In his defense, Heracles grabbed a nearby crane and hurled it at the giant, killing him instantly. As a reward for its sacrifice, Zeus placed the crane among the stars, immortalizing it as the constellation Grus. In Chinese mythology, the crane is revered as a symbol of longevity and prosperity. It is often depicted alongside other celestial symbols such as the dragon and the phoenix, representing the harmony of the universe. In Chinese folklore, cranes are believed to possess mystical powers and are associated with immortality and wisdom. The appearance of cranes in the sky was seen as an auspicious sign, bringing blessings and good fortune to those who witnessed it. In Aboriginal Australian culture, the crane is known as the "bunjil," a sacred bird revered for its wisdom and spiritual significance. The bunjil is believed to have created the earth and sky and is often depicted in rock art and ceremonial objects. In Aboriginal mythology, the appearance of the bunjil in the night sky is seen as a reminder of the ancestral spirits watching over the land and its people.

3. Notable Stars

Alpha Gruis (Alnair): Alpha Gruis, also known by its traditional name Alnair, is the brightest star in the Grus constellation. It is a blue-white main-sequence star located approximately 101 light-years away from Earth. Alnair has a visual magnitude of about 1.74, making it easily visible to the naked eye. Its name, Alnair, is derived from the Arabic phrase for "the bright one," reflecting its luminosity and prominence in the night sky.

Beta Gruis, also known as Tiaki, is a red giant star. Tiaki is located approximately 180 light-years away from Earth and shines with a visual magnitude of about 2.12, making it easily visible to the naked eye. Its reddish hue, typical of red giant stars, is a result of its cooler surface temperature and the presence of certain chemical elements in its outer layers.

Gamma Gruis (Al Dhanab): Gamma Gruis, also known by its traditional name Al Dhanab, is a binary star system located in the Grus constellation. It consists of a blue-white subgiant star and a fainter companion star. Al Dhanab is approximately 110 light-years away from Earth and shines with a visual magnitude of about 3.00. Its name, Al Dhanab, is derived from the Arabic word for "the tail," referring to its position in the constellation.

Delta Gruis: Delta Gruis is a binary star system located approximately 105 light-years away from Earth. It consists of two main-sequence stars orbiting each other in a close binary system. Delta Gruis A is the primary component, while Delta Gruis B is a fainter companion star. Delta Gruis A shines with a visual magnitude of about 3.98 and serves as a notable stellar feature in the Grus constellation.

4. Deep-Sky Objects

NGC 7213: NGC 7213 is a spiral galaxy located approximately 53 million light-years away from Earth. It is classified as a Seyfert galaxy, characterized by its bright, active nucleus powered by a supermassive black hole. NGC 7213 exhibits prominent spiral arms and is a popular target for astronomers studying the dynamics of active galactic nuclei and black hole accretion processes.

NGC 7424: NGC 7424 is another spiral galaxy situated approximately 37 million light-years away from Earth. It is known for its irregular shape and prominent spiral arms, which are indicative of ongoing star formation activity. NGC 7424 also contains several bright star-forming regions and young, massive stars, making it an intriguing target for studies of galactic evolution and star formation processes.

NGC 7552: NGC 7552 is a barred spiral galaxy located approximately 60 million light-years away from Earth. It is characterized by its prominent central bar structure and spiral arms, which are adorned with dust lanes and star-forming regions. NGC 7552 is also known for its active galactic nucleus, which exhibits strong emission lines indicative of ongoing accretion onto a central supermassive black hole.

IC 1459: IC 1459 is an elliptical galaxy located approximately 108 million light-years away from Earth. It is one of the largest and brightest galaxies in the Grus constellation, with a prominent bulge and relatively smooth, featureless appearance. IC 1459 is believed to have undergone significant mergers and interactions with other galaxies throughout its history, leading to its current elliptical shape.
