

ASSA DEEP SKY BULLETIN:
OBSERVING THE SCULPTOR GROUP OF GALAXIES

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The Sculptor Group of Galaxies includes NGC 55, NGC 253 and NGC 300 in Sculptor, as well as NGC 247 in Cetus.



1. NGC 253 (The Sculptor/Silver Dollar Galaxy)



- Type: Spiral Galaxy (Barred Spiral)
- Right ascension: 00h 47m 33.1s
- Declination: $-25^{\circ}17'17''$
- Distance: 11 million light-years
- Size: 70,000 light years in diameter
- Magnitude: 8.1 (visible in small telescopes under dark skies)
- Other names: Caldwell 65
- Description: NGC 253 is the showpiece galaxy of the Sculptor Group, by far the largest most massive and brightest member of the group. Probably the easiest Spiral Galaxy to observe after the great Spiral Galaxy M31 in Andromeda. It is often referred to as the 'Silver Dollar Galaxy' due to its bright, face-on appearance. Although NGC 253 ranks as one of the great showpieces of the entire sky, it is rarely recognized as such.

NGC 253 is one of the best examples of an Sc-type Galaxy. To locate NGC 253, first locate the bright star Alpha Sculptoris. Then move 4.5° northwest, passing the fuzzy glow of Globular Cluster NGC 288, and you will find NGC 253. In an 8- to 10 inch telescope, the view is an impressive

sight, second only to that of M31. NGC 253 appears as a bright, elongated 'Silver Dollar', rich in detail. The galaxy brightens gradually from the edges toward the central region.

This Barred Spiral Galaxy is notable for its high star formation rate, especially in its bright central region. It contains large amounts of interstellar gas and dust, which contribute to its vigorous star-forming activity. NGC 253 is also an infrared bright Galaxy, revealing a significant amount of dust that is obscured in optical wavelengths.

Regardless of the aperture used, NGC 253 is a beautiful sight that leaves a lasting impression on the observer.

2. **NGC 55 (String of Pearls Galaxy)**



- Type: Irregular Galaxy
- Right ascension: 00h 14m 53.7s
- Declination: -39°11'24"
- Distance: 7 million light-years
- Size: 40000 light-years in diameter
- Magnitude: 9.5 (visible with binoculars or a small telescope)
- Other names: Sculptor, but not to be confused with NGC 253
- Description: NGC 55 is the next brightest galaxy in the Sculptor Cloud. It is seen edge-on from our vantage point in the Milky Way. NGC 55 is an irregular galaxy but also often classified as a Barred Irregular Galaxy. It exhibits a somewhat chaotic and asymmetric structure, likely due to gravitational interactions with nearby galaxies.

The galaxy exhibits neither a prominent central bulge nor an equatorial dust lane. It has large, irregular dust clouds and emission nebulae scattered across the galaxy and a bright central mass displaced toward one end of the galaxy. The system is thought to resemble the large Magellanic Cloud in its structure and may be a distorted, old, Barred Spiral Galaxy with S-shaped spiral arms that are viewed nearly edge-on. The galaxy has a mass of about 46 billion solar masses and a luminosity of about 6 billion suns.

In an 8-inch telescope, NGC 55 appears large and elongated. There is a bright nucleus which is clearly off-centre, being displaced toward the northeast end of the Galaxy. Mottling is evident in the central area. Although it lacks the spiral structure of galaxies like NGC 253 and 300, NGC 55 is a

member of the Local Group of Galaxies, making it an interesting object for astronomers studying galaxy evolution and star formation in irregular galaxies. To locate NGC 55, first locate the star Anraa, move your scope 3° north to an east-west row of three evenly spaced 7th magnitude stars. This row points directly west to NGC 55.

3. **NGC 300 (Southern Pinwheel Galaxy)**



- Type: Spiral Galaxy
- Right ascension: 00h 55m 9.6s
- Declination: -37°41'3"
- Distance: 6 million light-years
- Size: 60 000 light-years in diameter
- Magnitude: 8.0 (visible through binoculars or small telescope)
- Other names: Sculptor Pinwheel Galaxy
- Description: NGC 300 is a relatively nearby, face-on Spiral Galaxy and one of the more prominent members of the Sculptor Group. It has a structure similar to the Milky Way, with well-defined spiral arms and a central bulge. It is a challenging galaxy to locate because of its low surface brightness. It is faint in optical wavelengths, but it is a very good target for amateur astronomers with telescopes. The galaxy has been extensively studied for its star formation rate, and it hosts many regions of active star formation, particularly in its outer arms. The galaxy bears a striking resemblance to M33 in Triangulum. NGC 300 has a mass of about 25 billion solar masses. To locate NGC 300, start again with Ankaa, move your scope 5° northwest to a wide double star Lambda 1 and Lambda 2 Sculptoris. A chain of 5th- to 8th magnitude stars will lead you directly from Ankaa to Lambda 1 and 2. From Lambda 1 the telescope ¾ of a degree north, wait 11 minutes without moving the scope and the earth's rotation will carry NGC 300 into view (star drift method).

4. **NGC 247 (Claw Galaxy)**



- Type: Intermediate Spiral Galaxy
- Right ascension: 0h 47.1m
- Declination: -20°46'
- Distance: 11.1 million light-years
- Size: 70 000 light years in diameter
- Magnitude: 9.9
- Other names: Caldwell 62 or Needle Eye Galaxy
- Description: NGC lies in the constellation Cetus, yet belongs to the Sculptor Group of galaxies. It shares many characteristics with NGC 300 and 55. Visually, it is like NGC 300 in that it is a large galaxy with low surface brightness. Structurally, it is like NGC 55 in that it is ill-defined. Areas of light and dark, similar to those of NGC 55, are seen but no definite spiral arms can be traced. The galaxy has an unusually large void on one side of its spiral disk. This void contains some older, redder stars but no younger, bluer stars. This void may have been caused by gravitational interactions with a part of another galaxy. To locate NGC 247 begin with the star Diphda. Draw a line to a Sculptoris star. NGC lies $\frac{3}{4}$ on the way from Diphda to a Sculptoris.

SUMMARY OF KEY DIFFERENCES

NGC 253: A large, bright Barred Spiral Galaxy with high star formation activity.

NGC 55: An irregular galaxy with a somewhat chaotic structure and active star formation, different in morphology from the Spiral Galaxies in the group.

NGC 300: A nearby Spiral Galaxy often compared to the Milky Way, with well-defined spiral arms and lower surface brightness.

NGC 247: A large galaxy in Cetus with low surface brightness. Structurally ill-defined with no definite spiral arms.

These four galaxies, while all part of the Sculptor Group of galaxies, each have distinct characteristics that make them fascinating subjects for study in terms of galaxy formation, star formation and intergalactic interactions. These galaxies are a mere sampling of what the Sculptor Region has to offer. To explore some of the many fainter galaxies surrounding these objects, sweep the region with a low-powered eyepiece and you'll surely come upon many faint smudges of light. As you log the details of each galaxy, remind yourself that each is an island universe consisting of billions of stars.

Wish you all a merry Christmas and clear skies for the New Year.

Colin Steyn