This atlas is aimed to illustrate the appearance of various planetary nebulae visible in small telescopes (between 8 and 12 cm of aperture) from suburban locations, providing a description and the related observational, physical and location data. Both the considered range of aperture and quality of the sky are common to many amateur observers, who are forced to deal with a gradual increase in light pollution. However, the surface brightness of several of these objects is so high that they can be easily observed from suburb locations, and in some cases even from city centers. In more isolated areas, with a limit visual magnitude of at least +5, small telescopes are able to show relatively weak planetary nebulae.

Most of the observations have been performed with a good achromatic refractor of 120 mm of aperture and 1000 mm of focal length, which in the case of nebulae of small angular extent can be used profitably at magnifications in the order of 250x. Occasionally, or in the case of older observations, a 127/1250 Schmidt-Cassegrain telescope, a 114/1000 Newtonian, a 102/500 refractor and a 20x80 binoculars have been used.

The sketches were executed with pencil on white paper, and then scanned and reversed with an image editor program, with which a slight blur to the nebula has been usually applied in order to make the look even more realistic.

Objects data, including right ascension, declination, constellation and common name, were taken from ‘The NGC/IC Project’ (http://www.ngcicproject.org/) and ‘PNebulae’ (http://www.pnebulae.altervista.org/index.html), while the used star maps are from ‘Taki’s 8.5 Magnitude Star Atlas’ (http://www.geocities.jp/toshimi_taki/index.htm). The adopted seeing scale is that of Antoniadi modified (1-excellent, 6-very poor). The objects are sorted according to their right ascension. The coordinates are referred to 2000.

In the present edition of the atlas, data of visual magnitude (Mag), central star and size were taken from the Strasbourg-ESO Catalogue of Galactic Planetary Nebulae (SEC), available at the Planetary Nebulae Observer’s site (http://www.blackskies.org/SEC_data00.htm). The magnitudes of the central star followed by a “p” are photographic magnitudes. In two cases the object size was taken from the Saguaro Astronomy Club Database version 8.1 (SAC) (http://www.saguarastro.org/content/downloads.htm) and followed by *.

These data are the basis for the calculation of the surface brightness of the planetary nebula, that is given by:

\[
Sfc\ Brt = m + 2.5\log A
\]

where Sfc Brt is the surface brightness (in magnitude per square arcsecond), \(m\) is the visual magnitude and \(A\) is the area of the object (in square arcseconds) approximated to that of an ellipse. The surface brightness is a very good indicator to evaluate the visibility of a planetary nebula, and this has been added to each sheet.

Six objects (IC 3568, NGC 1501, NGC 6058, NGC 6309, NGC 6751, NGC 6778), six tables reporting the objects sorted by magnitude, surface brightness, size, central star, constellation and declination, and a general position map, were added in the present edition of the atlas.

I hope that this collection may be useful for your observations.

Good vision and clear skies,

Massimo Zecchin
Cittadella
(Italy)

ACKNOWLEDGMENTS

I would like to convey my thanks to the Webb Deep-Sky Society (http://www.webbdeepsky.com/index.html) and PNebulae (http://www.pnebulae.altervista.org/) for hosting this atlas. I thank Diego Barucco and Silvia Elena for their precious suggestions.

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List of the objects

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<tr>
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<tr>
<td>NGC 6572</td>
<td>16&quot;x13&quot;</td>
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<td>NGC 7027</td>
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<td>IC 2165</td>
<td>15.1</td>
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<td>19&quot;x10&quot;</td>
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<tr>
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<td>15&quot;x10&quot;</td>
<td>NGC 650-1 (M76)</td>
<td>16.3</td>
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<tr>
<td>IC 4593</td>
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<td>NGC 6781</td>
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<td>IC 2165</td>
<td>9&quot;x7&quot;</td>
<td>NGC 6818</td>
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<tr>
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<td>8&quot;x6&quot;</td>
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<td>18.6?</td>
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### Table 5: Objects sorted by Constellation

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<th>NGC/IC</th>
<th>Const.</th>
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<th>Dec</th>
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<tr>
<td>NGC 7662</td>
<td>Andromeda</td>
<td>IC 3568</td>
<td>+82° 33' 49&quot;</td>
</tr>
<tr>
<td>NGC 7009</td>
<td>Aquarius</td>
<td>NGC 40</td>
<td>+72° 31' 20&quot;</td>
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<tr>
<td>NGC 7293</td>
<td>Aquarius</td>
<td>NGC 6543</td>
<td>+66° 37' 59.1&quot;</td>
</tr>
<tr>
<td>NGC 6751</td>
<td>Aquila</td>
<td>NGC 1501</td>
<td>+60° 55' 14.5&quot;</td>
</tr>
<tr>
<td>NGC 6778</td>
<td>Aquila</td>
<td>NGC 3587 (M97)</td>
<td>+55° 01' 07.7&quot;</td>
</tr>
<tr>
<td>NGC 6781</td>
<td>Aquila</td>
<td>NGC 7008</td>
<td>+54° 32' 35&quot;</td>
</tr>
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<td>NGC 6804</td>
<td>Aquila</td>
<td>NGC 850-1 (M76)</td>
<td>+51° 34' 16&quot;</td>
</tr>
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<td>IC 2149</td>
<td>Auriga</td>
<td>NGC 6826</td>
<td>+50° 31' 30.4&quot;</td>
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<td>IC 3568</td>
<td>Camelopardalis</td>
<td>NGC 7026</td>
<td>+47° 51' 08.0&quot;</td>
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<td>NGC 1501</td>
<td>Camelopardalis</td>
<td>NGC 6884</td>
<td>+46° 27' 39.6&quot;</td>
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<td>Canis Major</td>
<td>NGC 7048</td>
<td>+46° 17' 28&quot;</td>
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<td>NGC 40</td>
<td>Cepheus</td>
<td>IC 2149</td>
<td>+46° 06' 17.2&quot;</td>
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<td>NGC 246</td>
<td>Cetus</td>
<td>NGC 7662</td>
<td>+42° 32' 06.1&quot;</td>
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<td>Cygnus</td>
<td>NGC 7027</td>
<td>+42° 14' 10.1&quot;</td>
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<td>Cygnus</td>
<td>NGC 6058</td>
<td>+40° 40' 59.3&quot;</td>
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<td>NGC 7008</td>
<td>Cygnus</td>
<td>IC 351</td>
<td>+35° 02' 48.3&quot;</td>
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<td>NGC 7026</td>
<td>Cygnus</td>
<td>IC 2003</td>
<td>+33° 52' 30.4&quot;</td>
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<td>NGC 7027</td>
<td>Cygnus</td>
<td>NGC 6720 (M57)</td>
<td>+33° 01' 44.5&quot;</td>
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<td>NGC 7048</td>
<td>Cygnus</td>
<td>NGC 1514</td>
<td>+30° 46' 33.3&quot;</td>
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<tr>
<td>NGC 6891</td>
<td>Delphinus</td>
<td>NGC 6210</td>
<td>+23° 48' 00&quot;</td>
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<td>NGC 6905</td>
<td>Delphinus</td>
<td>NGC 6853 (M27)</td>
<td>+22° 43' 16.0&quot;</td>
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<td>NGC 6543</td>
<td>Draco</td>
<td>NGC 2392</td>
<td>+20° 54' 42&quot;</td>
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<td>NGC 1535</td>
<td>Eridanus</td>
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<td>+20° 06' 16.4&quot;</td>
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<td>NGC 2392</td>
<td>Gemini</td>
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<td>+12° 42' 15.2&quot;</td>
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<td>Hercules</td>
<td>IC 4593</td>
<td>+12° 04' 17.2&quot;</td>
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<td>Hercules</td>
<td>NGC 6804</td>
<td>+09° 13' 30.6&quot;</td>
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<td>NGC 6210</td>
<td>Hercules</td>
<td>NGC 2022</td>
<td>+09° 05' 10&quot;</td>
</tr>
<tr>
<td>NGC 3242</td>
<td>Hydra</td>
<td>NGC 6572</td>
<td>+06° 51' 13&quot;</td>
</tr>
<tr>
<td>IC 418</td>
<td>Lepus</td>
<td>NGC 6781</td>
<td>+06° 32' 23&quot;</td>
</tr>
<tr>
<td>NGC 6720 (M57)</td>
<td>Lyra</td>
<td>NGC 6778</td>
<td>-01° 35' 46.6&quot;</td>
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<td>NGC 6309</td>
<td>Ophiuchus</td>
<td>NGC 6751</td>
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<td>Ophiuchus</td>
<td>NGC 7009</td>
<td>-11° 21' 49&quot;</td>
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<td>NGC 2022</td>
<td>Orion</td>
<td>NGC 246</td>
<td>-11° 52' 20&quot;</td>
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<td>NGC 650-1 (M76)</td>
<td>Perseus</td>
<td>IC 418</td>
<td>-12° 41' 50.4&quot;</td>
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<td>Perseus</td>
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<td>-12° 44' 21.6&quot;</td>
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<td>Perseus</td>
<td>NGC 6309</td>
<td>-12° 54' 38.5&quot;</td>
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<td>NGC 2438</td>
<td>Puppis</td>
<td>IC 2165</td>
<td>-12° 59' 14.0&quot;</td>
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<td>NGC 6818</td>
<td>Sagittarius</td>
<td>NGC 81818</td>
<td>-14° 09' 11.4&quot;</td>
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<td>NGC 1514</td>
<td>Taurus</td>
<td>NGC 2438</td>
<td>-14° 44' 09&quot;</td>
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<td>NGC 3587 (M97)</td>
<td>Ursa Major</td>
<td>NGC 3242</td>
<td>-18° 38' 34&quot;</td>
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<tr>
<td>NGC 6853 (M27)</td>
<td>Vulpecula</td>
<td>NGC 7293</td>
<td>-20° 50' 13.2&quot;</td>
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</tbody>
</table>
Distribution of the planetary nebulae considered in this atlas

Adapted from Cartes du Ciel vers. 3.62150
The brightest planetary nebulae sorted by right ascension
NGC 40 - Bow Tie Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 5-6/6
Visual magnitude: ca. 4.5
Location: Cittadella (PD) - Italy
Date: December 10, 2010

Object data
RA: 00h 13m 00.9s
Dec: +72° 31' 20"
Const.: Cepheus
Mag: 10.6
Sfc Brt: 18.15
Size: 38"x35"
Central star: 11.5

Notes: Rounded shape and undefined border. The brightness is slightly higher in the central area. The central star is well visible, although it is a little disturbed by the nebulosity.
NGC 650-1 (M 76) - Little Dumbbell Nebula

Notes: Rectangular shape elongated NE-SW, and relatively low brightness. It is present a brighter condensation near the SW border. The nebula is more evident with the O-III filter, which shows also a slight decrease in brightness between the two lobes.

Object data
RA: 01h 42m 18.1s
Dec: +51° 34' 16"
Const.: Perseus
Mag: 10.1
Sfc Brt: 20.44
Size: 163"x107"
Central star: 16.3

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Flat Field 8 mm
Magnification: 125x
Filter: O-III
Seeing: 3/6
Visual magnitude: 4 - 4.5
Location: Cittadella (PD) - Italy
Date: December 30, 2010
**IC 351**

From Taki's 8.5 Magnitude Star Atlas - Map 58

**Instrument type:** Refractor  
**Aperture:** 120 mm  
**Focal length:** 1000 mm  
**Eyepiece:** Planetary HR 4 mm  
**Magnification:** 250x  
**Filter:** no  
**Seeing:** 3-4/6  
**Visual magnitude:** 4.5  
**Location:** Cittadella (PD) - Italy  
**Date:** January 3, 2011

Notes: The nebula appears as a fuzzy star and may be easily confused with the stars in the field. Details are not recognizable.

**Object data**  
**RA:** 03h 47m 32.95s  
**Dec:** +35° 02' 48.3"  
**Const.:** Perseus  
**Mag:** 11.9  
**Sfc Brt:** 15.84  
**Size:** 8"x6"  
**Central star:** 15.0
Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3/6
Visual magnitude: 4 - 4.5
Location: Cittadella (PD) - Italy
Date: December 30, 2010

Object data
RA: 03h 56m 22.01s
Dec: +33° 52' 30.4"
Const.: Perseus
Mag: 11.6
Sfc Brt: 15.40
Size: 7"x6"
Central star: 15.4

Notes: The nebula appears as a tiny round spot slightly condensed in the center. It looks almost stellar.
NGC 1501 - Oyster Nebula

Object data
RA: 04h 06m 59.41s
Dec: +60° 55' 14.5"
Const.: Camelopardalis
Mag: 11.9
Sfc Brt: 20.21
Size: 56"x48"
Central star: 14.2

Notes: Relatively faint but well visible with averted vision. The nebula is rounded, has uniform brightness and a slightly undefined border.

Instrument type: Schmidt-Cassegrain
Aperture: 127 mm
Focal length: 1250 mm
Eyepiece: SWA 10 mm
Magnification: 125x
Filter: no
Seeing: 3/6
Visual magnitude: ca. 5
Location: Cittadella (PD) - Italy
Date: December 12, 2012
NGC 1514 - Crystal Ball Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Flat Field 16 mm
Magnification: 62.5x
Filter: O-III
Seeing: 3-4/6
Visual magnitude: 4.5
Location: Cittadella (PD) - Italy
Date: January 3, 2011

Object data
RA: 04h 09m 17.00s
Dec: +30° 46' 33.3''
Const.: Taurus
Mag: 10.9
Sfc Brt: 21.18
Size: 136"x121"
Central star: 9.4

Notes: The nebula is visible with the O-III filter only, and its shape is rounded. The brightness of the central star overlooks that of the nebulosity. It is barely recognizable a decrease in brightness of the NE zone.
NGC 1535 - Cleopatra's Eye

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 2/6
Visual magnitude: ca. 4.5
Location: Cittadella (PD) - Italy
Date: December 23, 2011

Object data
RA: 04h 14m 15.78s
Dec: -12° 44' 21.6"
Const.: Eridanus
Mag: 9.4
Sfc Brt: 17.40
Size: 48"x42"
Central star: 11.6

Notes: Round and relatively bright. The brightness increases toward the center, without a marked central peak. The border is a little fuzzy.
IC 418 - Spirograph Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3-4/6
Visual magnitude: ca. 4
Location: Cittadella (PD) - Italy
Date: March 5, 2011

Object data
RA: 05h 27m 28.19s
Dec: -12° 41' 50.4"
Const.: Lepus
Mag: 9.3
Sfc Brt: 14.51
Size: 14"x11"
Central star: 10.7

Notes: The nebula is well visible and bright despite the light pollution of this area of the sky. The shape is rounded, with uncertain WNW-ESE gentle elongation. Undefined border. The centre is brighter and condensed probably due to the central star.
**NGC 2022**

**Object data**
- RA: 05h 42m 06.1s
- Dec: +09° 05' 10"
- Const.: Orion
- Mag: 11.7
- Sfc Brt: 18.71
- Size: 29''x28''
- Central star: 14.98

**Notes:** The nebula is relatively faint but visible without filters. It appears as a little disc with uniform brightness. Nice image.

---

**Instrument type:** Refractor
- Aperture: 120 mm
- Focal length: 1000 mm
- Eyepiece: Planetary HR 4 mm
- Magnification: 250x
- Filter: no
- Seeing: 3-4/6
- Visual magnitude: 4.5
- Location: Cittadella (PD) - Italy
- Date: January 3, 2011
IC 2149 - Red Sword Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 4-5/6
Visual magnitude: ca. 4
Location: Cittadella (PD) - Italy
Date: February 5, 2011

Object data
RA: 05h 56m 23.85s
Dec: +46° 06' 17.2"
Const.: Auriga
Mag: 10.6
Sfc Brt: 15.78
Size: 15"x10"
Central star: 10.5p

Notes: Relatively bright nebula with an undefined border and a marked central condensation, which probably corresponds to the central star. A vague E-W elongation is recognizable.
IC 2165

Object data
RA: 06h 21m 42.67s
Dec: -12° 59' 14.0"
Const.: Canis Major
Mag: 10.6
Sfc Brt: 14.84
Size: 9"x7"
Central star: 15.1

Notes: The nebula has the appearance of a fuzzy star. It reveals its non-stellar nature only at high magnifications.

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3-4/6
Visual magnitude: ca. 4
Location: Cittadella (PD) - Italy
Date: March 5, 2011
NGC 2392 - Eskimo Nebula

Object data
RA: 07h 29m 10.8s
Dec: +20° 54' 42"
Const.: Gemini
Mag: 9.2
Sfc Brt: 17.20
Size: 47''x43''
Central star: 10.4

Notes: Bright and rounded nebula. The central area is brighter but does not show an abrupt border. The central star is well visible and a little disturbed by the nebulosity.

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3-4/6
Visual magnitude: 4.5
Location: Cittadella (PD) - Italy
Date: January 3, 2011
NGC 2438

Instrument type: Newtonian (Tanzutsu)
Aperture: 114 mm
Focal length: 1000 mm
Eyepiece: Ortho 12.5 mm
Magnification: 80x
Filter: no
Seeing: 3/6
Visual magnitude: ca. 5.5
Location: Cittadella (PD) - Italy
Date: February 13, 1988

Object data
RA: 07h 41m 50.4s
Dec: -14° 44' 09"
Const.: Puppis
Mag: 11.5
Sfc Brt: 20.48
Size: 73''x68''
Central star: 17.7

Notes: Relatively faint nebula, which is visible without problem with averted vision. Rounded shape and uniform brightness. The image is nice because of the numerous stars of the M 46 cluster.

From Taki's 8.5 Magnitude Star Atlas - Map 102
NGC 3242 - Ghost of Jupiter

Object data
RA: 10h 24m 46.2s
Dec: -18° 38' 34"
Const.: Hydra
Mag: 7.3
Sfc Brt: 14.90
Size: 40''x35''
Central star: 13.3

Notes: The nebula is bright despite its low elevation and the light pollution of this area of the sky. It shows a relatively uniform oval area elongated NW-SE, surrounded by a less defined and fainter halo.

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Or. 12.5 + barlow 3x
Magnification: 240x
Filter: no
Seeing: 2/6
Visual magnitude: ca. 4
Location: Cittadella (PD) - Italy
Date: May 6, 2011

Notes:
The nebula is bright despite its low elevation and the light pollution of this area of the sky. It shows a relatively uniform oval area elongated NW-SE, surrounded by a less defined and fainter halo.
NGC 3587 (M 97) - Owl Nebula

Object data
RA: 11h 14m 47.71s
Dec: +55° 01' 07.7''
Const.: Ursa Major
Mag: 9.8
Sfc Brt: 21.03
Size: 202''x196''
Central star: 16.0

Notes: The nebula is well visible with averted vision and O-III filter. It shows a rounded shape and uniform brightness. The border is undefined.

Instrument type: Refractor
Aperture: 102 mm
Focal length: 500 mm
Eyepiece: Flat Field 8 mm
Magnification: 62.5x
Filter: O-III
Seeing: 3-4/6
Visual magnitude: ca. 4.0
Location: Cittadella (PD) - Italy
Date: March 10, 2012

From Taki's 8.5 Magnitude Star Atlas - Map 42

Notes:
The nebula is well visible with averted vision and O-III filter. It shows a rounded shape and uniform brightness. The border is undefined.
IC 3568 - Lemon Slice Nebula

Instrument type: Schmidt-Cassegrain
Aperture: 127 mm
Focal length: 1250 mm
Eyepiece: Edge On Planetary 5 mm
Magnification: 250x
Filter: no
Seeing: 3/6
Visual magnitude: ca. 5
Location: Cittadella (PD) - Italy
Date: December 12, 2012

Notes: Relatively bright, round shape and indefinable border. The brightness increases gradually toward the center. A central condensation of stellar appearance is recognizable.

Object data
RA: 12h 33m 06.87s
Dec: +82° 33' 49"
Const.: Camelopardalis
Mag: 10.6
Sfc Brt: 16.61
Size: 18"x18"
Central star: 12.4

From Taki's 8.5 Magnitude Star Atlas - Map 1
Object data
RA: 16h 04m 26.55s
Dec: +40° 40' 59.3''
Const.: Hercules
Mag: 12.9
Sfc Brt: 19.39
Size: 24''x21''
Central star: 13.7

Notes: The nebula is faint but well visible with averted vision. Round shape with undefined border. The brightness is uniform. A central condensation of stellar appearance is recognizable.
IC 4593 - White Eyed Pea

Object data
RA: 16h 11m 44.53s
Dec: +12° 04' 17.2"
Const.: Hercules
Mag: 10.8
Sfc Brt: 15.82
Size: 13"x10"
Central star: 11.2

Notes: The nebula has the appearance of a faint rounded halo surrounding the central star, which disturbs the observation. The border is undefined.
Object data
RA: 16h 44m 29.4s
Dec: +23° 48' 00"
Const.: Hercules
Mag: 8.8
Sfc Brt: 14.58
Size: 20"x13"
Central star: 12.3

Notes: Bright nebula showing a slightly oval shape elongated E-W and a fuzzy border. The brightness increases slightly at the center.
NGC 6309 - Box Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3/6
Visual magnitude: 4.5 - 5
Location: Cittadella (PD) - Italy
Date: June 16, 2012

Notes:
The nebula is well visible and elongated NNW-SSE. The border is undefined and the brightness is uniform.

Object data
RA: 17h 14m 04.33s
Dec: -12° 54' 38.5"
Const.: Ophiuchus
Mag: 11.5
Sfc Brt: 16.93
Size: 19"x10"
Central star: 14.4

From Taki's
8.5 Magnitude
Star Atlas -
Map 68
NGC 6543 - Cat's Eye Nebula

Object data
RA: 17h 58m 33.37s
Dec: +66° 37' 59.1"
Const.: Draco
Mag: 8.1
Sfc Brt: 14.39
Size: 22''x19''
Central star: 10.9

Notes: Oval shape elongated NE-SW and high brightness. The border is sharp and shows an undefined irregularity with the O-III filter. A decrease in brightness is barely visible in the central area.

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: O-III
Seeing: 4-5/6
Visual magnitude: ca. 4
Location: Cittadella (PD) - Italy
Date: August 28, 2010
NGC 6572 - Blue Racquetball

Object data
RA: 18h 12m 06.37s
Dec: +06° 51' 13"
Const.: Ophiuchus
Mag: 8.0
Sfc Brt: 13.53
Size: 16"x13"
Central star: 13.6

Notes: The nebula shows a very high surface brightness and a pale blue colour. The shape is slightly oval, elongated N-S. The center is slightly condensed.
NGC 6720 (M 57) - Ring Nebula

Object data
RA: 18h 53m 35.09s
Dec: +33° 01' 44.5"
Const.: Lyra
Mag: 8.8
Sfc Brt: 17.87
Size: 86"x63"
Central star: 15.0

Notes: Evident oval shape elongated NE-SW, and sharp border. The central area is distinguishable from the ring, which is slightly brighter along the long axis.

From Taki’s
8.5 Magnitude
Star Atlas -
Map 43

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Edge On Planet. 5 mm
Magnification: 200x
Filter: no
Seeing: 3-4/6
Visual magnitude: ca. 4.5
Location: Cittadella (PD) - Italy
Date: July 15, 2010
### Instrument type: Refractor
- Aperture: 120 mm
- Focal length: 1000 mm
- Eyepiece: Planetary HR 4 mm
- Magnification: 250x
- Filter: no
- Seeing: 3/6
- Visual magnitude: ca. 5
- Location: Cittadella (PD) - Italy
- Date: July 17, 2012

### Object data
- RA: 19h 05m 55.53s
- Dec: -05° 59' 31.9''
- Const.: Aquila
- Mag: 11.5
- Sfc Brt: 17.85
- Size: 21"x21"
- Central star: 13.0p

### Notes:
The nebula is clearly visible. It is round and shows uniform brightness and a fairly defined border.
NGC 6778 - Mini Dumbbell Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3/6
Visual magnitude: ca. 5
Location: Cittadella (PD) - Italy
Date: July 16, 2012

Notes: Easy to recognize. The nebula shows a uniform brightness and a fairly defined border, and is slightly elongated E-W. The dumbbell shape is not appreciable.

Object data
RA: 19h 18m 24.93s
Dec: -01° 35' 46.6"
Const.: Aquila
Mag: 12.1
Sfc Brt: 18.53
Size: 25''x19''
Central star: 15.0p

From Taki's 8.5 Magnitude Star Atlas - Map 66
NGC 6781 - Snowglobe Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Flat Field 16 mm
Magnification: 62.5x
Filter: O-III
Seeing: 3/6
Visual magnitude: ca. 4.3
Location: Cittadella (PD) - Italy
Date: August 17, 2011

Object data
RA: 19h 18m 28.3s
Dec: +06° 32' 23"
Const.: Aquila
Mag: 11.6
Sfc Brt: 21.54
Size: 111"x109"
Central star: 16.3p

Notes: The nebula is faint and well visible with the O-III filter only. It is rounded and devoid of details. The border is relatively definite.
Object data
RA: 19h 31m 35.43s
Dec: +09° 13' 30.6"
Const.: Aquila
Mag: 12.2
Sfc Brt: 20.64
Size: 62''x49''
Central star: 13.0p

Notes: The nebula is distinguishable with the O-III filter but is visible with uncertainty without filter. It has a rounded shape with an indistinct border. It is uncertain an increase of brightness toward the center.
From Taki's 8.5 Magnitude Star Atlas - Map 90

Object data
RA: 19h 43m 57.76s
Dec: -14° 09' 11.4"
Const.: Sagittarius
Mag: 9.4
Sfc B rt: 15.43
Size: 22"x15"
Central star: 16.9?

Notes: The nebula is bright and rounded, resembling a small planet like Uranus. The border is well defined. Details are not recognizable with certainty.
NGC 6826 - Blinking Planetary

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3-4/6
Visual magnitude: ca. 5
Location: Cittadella (PD) - Italy
Date: August 7, 2010

Object data
RA: 19h 44m 48.17s
Dec: +50° 31' 30.4"
Const.: Cygnus
Mag: 8.9
SFC Brt: 15.67
Size: 27"x24"
Central star: 10.6

Notes: Oval shape elongated E-W, and very high brightness, which increases in the central part. The central star is well visible. The blinking effect is visible at low magnifications only.
**NGC 6853 (M 27) - Dumbbell Nebula**

**Object data**
- RA: 19h 59m 36.33s
- Dec: +22° 43' 16.0''
- Const.: Vulpecula
- Mag: 7.1
- Sfc Brt: 19.87
- Size: 480''x340''
- Central star: 12.0

**Notes:** Impressive image. General hourglass shape. The brighter area is placed near the SW corner. The two lateral handles, elongated NW-SE, are faint and visible with the O-III filter and averted vision only.

**Instrument type:** Refractor
- **Aperture:** 120 mm
- **Focal length:** 1000 mm
- **Eyepiece:** Flat Field 16 mm
- **Magnification:** 62.5x
- **Filter:** O-III
- **Seeing:** 2-3/6
- **Visual magnitude:** ca. 5.5
- **Location:** Cittadella (PD) - Italy
- **Date:** September 10, 2010

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**Image Description:**

- **Image:** An astronomical image showing the Dumbbell Nebula with labeled coordinates and magnitudes.
- **Map:** A star map from Taki's 8.5 Magnitude Star Atlas - Map 42, indicating the position of the nebula in the constellation Vulpecula.
Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3/6
Visual magnitude: ca. 5
Location: Cittadella (PD) - Italy
Date: July 4, 2011

Object data
RA: 20h 10m 23.65s
Dec: +46° 27' 39.6''
Const.: Cygnus
Mag: 11.0
Sfc Brt: 14.43
Size: 6''x5''
Central star: 18.6?

Notes: Small but well distinguishable nebula that shows a rounded shape and is slightly condensed. The border is fuzzy.
**NGC 6891**

**Object data**
- RA: 20h 15m 08.85s
- Dec: +12° 42' 15.2"
- Const.: Delphinus
- Mag: 10.4
- Sfc Brt: 16.02
- Size: 15"x15"
- Central star: 11.1

**Notes:** Bright and rounded nebula showing a fuzzy border. It shows a central condensation of stellar appearance.

**Instrument type:** Refractor  
**Aperture:** 120 mm  
**Focal length:** 1000 mm  
**Eyepiece:** Planetary HR 4 mm  
**Magnification:** 250x  
**Filter:** no  
**Seeing:** 3/6  
**Visual magnitude:** ca. 4.3  
**Location:** Cittadella (PD) - Italy  
**Date:** August 17, 2011
NGC 6905 - Blue Flash Nebula

Object data
RA: 20h 22m 23.02s  
Dec: +20° 06' 16.4''  
Const.: Delphinus  
Mag: 10.9  
Sfc Brt: 18.74  
Size: 47''x37''  
Central star: 14.2p

Notes: The nebula is well visible without filters, and shows uniform brightness and a relatively distinct border. It is barely recognizable an overall oval shape elongated N-S.
NGC 7008 - Fetus Nebula

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Flat Field 8 mm
Magnification: 125x
Filter: O-III
Seeing: 2-3/6
Visual magnitude: ca. 5
Location: Cittadella (PD) - Italy
Date: June 27, 2011

Object data
RA: 21h 00m 32.8s
Dec: +54° 32' 35"
Const.: Cygnus
Mag: 11.0
Sfc Brt: 20.40
Size: 98"x75"
Central star: 13.3

Notes: Interesting nebula showing an asymmetrical curved shape. The northern part is brighter, sharper and bends toward the east. The southern border is more undefined.

From Taki's 8.5 Magnitude Star Atlas - Map 17
**Object data**
- RA: 21h 04m 10.7s
- Dec: -11° 21' 49"
- Const.: Aquarius
- Mag: 7.8
- Sfc Brt: 14.77
- Size: 30"x26"
- Central star: 11.9p

**Notes:** It is easily visible the elongation of the nebula and an angularity at the two extremes. The brightness is high and uniform, and the border is a little fuzzy.

**Instrument type:** Schmidt-Cassegrain
- Aperture: 127 mm
- Focal length: 1250 mm
- Eyepiece: Edge On Planetary 5 mm
- Magnification: 250x
- Filter: no
- Seeing: 3/6

**Visual magnitude:** ca. 4.5
**Location:** Cittadella (PD) - Italy
**Date:** August 19, 2011
**NGC 7026 - Cheeseburger Nebula**

**Object data**
- RA: 21h 06m 18.55s
- Dec: +47° 51' 08.0"
- Const.: Cygnus
- Mag: 10.9
- Sfc Brt: 17.08
- Size: 29"x13"
- Central star: 14.2

**Notes:** The nebula is well visible. A vague rectangular shape slightly elongated E-W is recognizable. The N-S extensions of the nebula are not clearly visible.

**Instrument type:** Refractor
- Aperture: 120 mm
- Focal length: 1000 mm
- Eyepiece: Planetary HR 4 mm
- Magnification: 250x
- Filter: no
- Seeing: 5-6/6
- Visual magnitude: ca. 4.5
- Location: Cittadella (PD) - Italy
- Date: December 10, 2010

**From Taki's 8.5 Magnitude Star Atlas - Map 17**
Instrument type: Refractor  
Aperture: 120 mm  
Focal length: 1000 mm  
Eyepiece: Planetary HR 4 mm  
Magnification: 250x  
Filter: no  
Seeing: 3-4/6  
Visual magnitude: ca. 5  
Location: Cittadella (PD) - Italy  
Date: August 7, 2010

Object data  
RA: 21h 07m 01.69s  
Dec: +42° 14' 10.1"  
Const.: Cygnus  
Mag: 8.5  
Sfc Brt: 13.98  
Size: 18"x11"  
Central star: 11.3?

Notes: The nebula shows a parallelogram shape, with very sharp northern and western borders, whereas the other two are undefined. The area close to the western apex is very bright and shows an almost stellar appearance.
NGC 7048 - Disk Ghost

Object data
RA: 21h 14m 14.1s
Dec: +46° 17' 28"
Const.: Cygnus
Mag: 12.1
Sfc Brt: 20.76
Size: 62"x60"
Central star: 18.0p

Notes: Faint nebula, visible with the O-III filter only. It shows a rounded shape and uniform brightness.

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Flat Field 8 mm
Magnification: 125x
Filter: O-III
Seeing: 3/6
Visual magnitude: ca. 5
Location: Cittadella (PD) - Italy
Date: July 4, 2011

From Taki's 8.5 Magnitude Star Atlas - Map 17
NGC 7293 - Helix Nebula

Object data
RA: 22h 29m 38.35s
Dec: -20° 50' 13.2"
Const.: Aquarius
Mag: 7.6
Sfc Brt: 21.84
Size: 880"x720"
Central star: 13.4

Notes: Large but very faint due to significant light pollution in this part of the sky. Rounded shape and very confused border. A darker central area is not clearly recognizable. The O-III filter highlights an arc to the NE, which is part of the ring structure.
NGC 7662 - Blue Snowball

Instrument type: Refractor
Aperture: 120 mm
Focal length: 1000 mm
Eyepiece: Planetary HR 4 mm
Magnification: 250x
Filter: no
Seeing: 3/6
Visual magnitude: ca. 4.5
Location: Cittadella (PD) - Italy
Date: November 25, 2011

Object data
RA: 23h 25m 53.93s
Dec: +42° 32' 06.1"
Const.: Andromeda
Mag: 8.3
Sfc Brt: 15.42
Size: 32"x28"
Central star: 12.7p

Notes: Very bright and barely elongated NE-SW. The border is relatively defined. A decrease in brightness in the center gives a ring appearance to the nebula. It is recognizable a vague increase in brightness on the eastern side.