

The OAOG Challenge

The OAOG Challenge is a catalog of the best 600 deep sky objects that can be observed from the Ottawa area.

The purpose of the OAOG Challenge is to provide amateur astronomers with the easiest deep sky objects to observe from the large NGC and IC catalogs. The NGC and IC catalogs combined have over 10,000 objects. Which objects should be attempted first? When are these objects visible? The OAOG Challenge simplifies the task of choosing which objects to observe from these lists. The first 5 levels of the OAOG Challenge have all been observed using an 8 inches telescope. Future level 6 and level 7 will add an extra 400 objects to this list and bring the total to 1000.

The OAOG Challenge is divided into 5 difficulty levels. It can be used by beginner observers and experienced observers. Levels 1 and 2 are recommended as a starting point for beginners. A lot of these objects are visible using binoculars. A good small telescope (3 to 5 inches) should be enough to see both of these levels. By the time the level 3 objects are done, all of the Messier objects will have been observed. Level 4 and 5 are for more experienced observers and require a medium size (6 to 8 inches) telescope.

Most of the objects in the OAOG Challenge are from the Messier, NGC or IC catalogs. Almost all objects listed have a visual magnitude brighter than 11. There are just a few exceptions. Level 1 contains 40 objects, Level 2 has 80, Level 3 has 140, Level 4 has 160 and Level 5 has 180 objects.

There is a lot of information listed with the objects. They are identified by their NGC/IC number and their Messier number. The catalog lists the constellation, the type of object, the right ascension and the declination for each object. Also listed is the visual magnitude, the object size in arc minutes, the number of stars in open clusters and the galaxy type. Three columns of dates help the observer plan observing sessions by providing the date range to observe the objects, the date range the objects pass the south meridian (highest point in the sky) and the date range best to photograph the objects. The common name of the object and the difficulty level number complete the information provided for each object.

The catalog is presented in different sections. These sections are work sheets in the main Excel file. They have also been saved as different files for quick downloads from the web. The different files are: complete object list of all levels, level 1 object list, level 2 object list, level 3 object list, level 4 object list, level 5 object list, list of open clusters, list of globular clusters, list of nebulae, list of galaxies, list of Messier objects, complete object list in order by levels.

An observation guideline is provided which suggests which month the objects should be observed. This is divided into 6 sets of 2 months each. The section is called 'Proposed Months to Observe Objects'. When a constellation is listed under November-December for example, it does not imply that those months are the only months it can be observed. For example, Orion is listed under November-December. In fact Orion can be observed in the mornings of August through the evenings of April. The constellations have been divided between months to spread them throughout the year. The months from November to February have been assigned a shorter list on purpose. During these months the average amateur astronomer tends to observe less frequently due to bad weather or due to extreme cold conditions.

A good atlas is recommended to accompany this catalog. It will simplify finding the objects in the sky.

The following describes the information columns in more details.

- **NGC/IC:** Numbers in this column represent the NGC number of the object. If the object is not an NGC object, the prefix of the catalog is used. For example: IC418, H15, and Mel25.
- **Messier:** If the object part of the Messier catalog, its Messier number will be listed in this column.
- **Const.:** This column contains the abbreviation of the constellation where the object is located.

- **Type:** The type of object can be one of the following: OC – Open Cluster, GC – Globular Cluster, GX – Galaxy, NB – Nebula, PN – Planetary Nebula, CN – Star Cluster with Nebulosity, ST – Start Asterism or Double Star.
- **R.A.:** This is the right ascension coordinate of the object.
- **Dec.:** This is the declination coordinate of the object.
- **Mv:** This column is the visual magnitude of the object.
- **Size:** This is the size of the object measured at its widest. The size measure is in arc minutes.
- **No *:** This column represents the number of stars found in open clusters.
- **GX Type:** This is the galaxy type. The possible values are: E – Elliptical, S – Spiral, Irr – Irregular, SB - Barred Spiral, dE - Dwarf Elliptical, S0 and SB0 - Lenticular. The numbers or the lower case letters following the main classification are secondary classification types.
- **Level:** This column contains a number from 1 to 5. It represents the difficulty level number. The level 1 objects are the easiest objects and level 5 are the hardest.
- **Observe:** This column represents the date range to observe the object. For an object to have dates in this column, it has to be at least 5 degrees above the horizon at some point in time during astronomical night. If an object has value ‘All Year’, it means that the object is at least 5 degrees above the horizon at some point in time during astronomical night every day of the year. If the object has a date range such as ‘May12-Nov18’, it means that May 12 is the first day the object is 5 degrees above the horizon in the morning when the astronomical night ends. November 18 is the last day in the evening that the object will be 5 degrees above the horizon when the astronomical night starts. If an object has this value ‘-’ in the Observe column, it means there are no days during the year that the object is at least 5 degrees above the horizon during astronomical night.
- **Meridian:** This column list the best time to observe an object. It lists the date range the object passes the south meridian during astronomical night. It consists of three dates. The first indicates the day the object is straight South or straight North higher than Polaris (in other words when the object is at its highest in the sky) at the end of astronomical night. The middle date is when the object is at its highest in the sky at midnight EST or 1am EDT in Ottawa. The third date is when the object is at its highest in the sky when the astronomical night starts.
- **Photo:** This column represents the date range to photograph the object. It is very similar to the Observe column. The date range in Photo means the object is at least 10 degrees above the horizon at some time during the night from 15 minutes after the astronomical night starts until 15 minutes before the end of astronomical night. The 15 minutes offset was chosen for this column to allow for a 15 minutes exposure.
- **Name:** This is the common name of the object.

The OAOG Challenge has been researched, designed and observed in one year by local amateur astronomer Denis Legault.