

## Observing the Virgo Cluster of Galaxies

### Locating the Virgo Cluster

Find Denebola (Beta Leonis), the tail star of Leo the Lion, Arcturus (Alpha Bootis), and (if possible, e.g. from horizon view) Spica (Alpha Virginis); use e.g. [this chart](#) for finding Leo and Arcturus from Ursa Major. Between Denebola and Arcturus, shifted southward toward Spica, there is 2.8-magnitude Vindemiatrix (Epsilon Virginis). The Virgo Cluster is situated almost exactly between Vindemiatrix and Denebola, little more than 10 degrees south of the beautiful naked-eye [Coma \(open\) Star Cluster](#). If you point your scope with a large field/low magnification/long focal length eyepiece exactly between these two stars, [M84](#) and [M86](#), together with several NGC galaxies, should be readily visible. [M87](#) is a little south and 2 or 3 fields (about 2 degrees) east.

### Finding and Identifying Messier's Virgo Cluster galaxies

There are, of course, a lot of ways to work through, starhop, identify and observe the Messier galaxies in the Virgo cluster.

Tony Cecce, in the [June](#) issue of his [12 Month Tour of the Messier Catalog](#), suggests to do almost everything right off the [M84-M86 pair](#), in three paths:

- M84,M86 -> M87 -> M89,M90 -> M91 -> M88
- M84,M86 -> M87 -> M89 -> M58 -> M59,M60
- M84,M86 -> M99 -> M98 -> M100 [-> M85] (last added by hf)

Then you only have M49 and M61 left.

Robert Garfinkle, in his book [Star Hopping](#), suggests the following star hops:

- From Denebola, move about 6 deg eastward to locate whitish mag 5.10 star 6 Comae, a main sequence star of spectral type A2V. Edge-on spiral galaxy [M98](#) should be visible in the same low-power field to the north-west. Face-on [M99](#), the Coma Pinwheel, is located about 1 degree east-southeast of 6 Comae. Two 5th to 6th mag stars east-northeast of 6 Comae point the way to the magnificent spiral [M100](#) - of which the amateur with a small scope will see the bright central region and fainter surroundings, perhaps with suggestions or hints of the spiral arms. About 1.75 deg north of M100 is the double star 11 Comae (ADS 8521) of yellow spectral type G8 III and mag 4.78, which leads to S0 galaxy [M85](#) 1 deg north-east of it. [M88](#) and [M91](#) are found the easiest way from M99, as they have about the same declination; they are about 4 deg east of M99 in the same low-power field, together with NGC 4571 in the wide-field instrument.
- From Vindemiatrix, hop 1 deg north and 3.5 deg west to double star 34 Vir (mag 6.1 and 9.3, separated 139.4 arc sec). About 1 deg southwest of it is [M60](#) with NGC 4647. [M59](#) is in the same wide-field eyepiece roughly 20' to the WNW, and [M58](#) is just 1 deg from this one to the NW. [M89](#) is roughly 1 deg to the NNW, and from this one it is about 0.75 deg north to [M90](#). 1 deg SW from M90 and 0.75 deg WNW of M89 is the famous bright [M87](#), and another 1 deg NW is the [M84/M86](#) pair. 5 deg south and slightly west of M87 is [M49](#). About 3 deg SSW is double star 17 Vir (mag 6.6 yellow primary and mag 9.3 orange secondary at 20 arcsec to the NE), and a half deg south of this one is, finally, the nice face-on spiral [M61](#). This one, on the other hand, is almost exactly 5 deg north and slightly east of Eta Virginis, Zaniah.

A third route is given by the sequence in Don Machholz' Messier Marathon Observer's Guide, also proposed in our Messier Marathon pages:

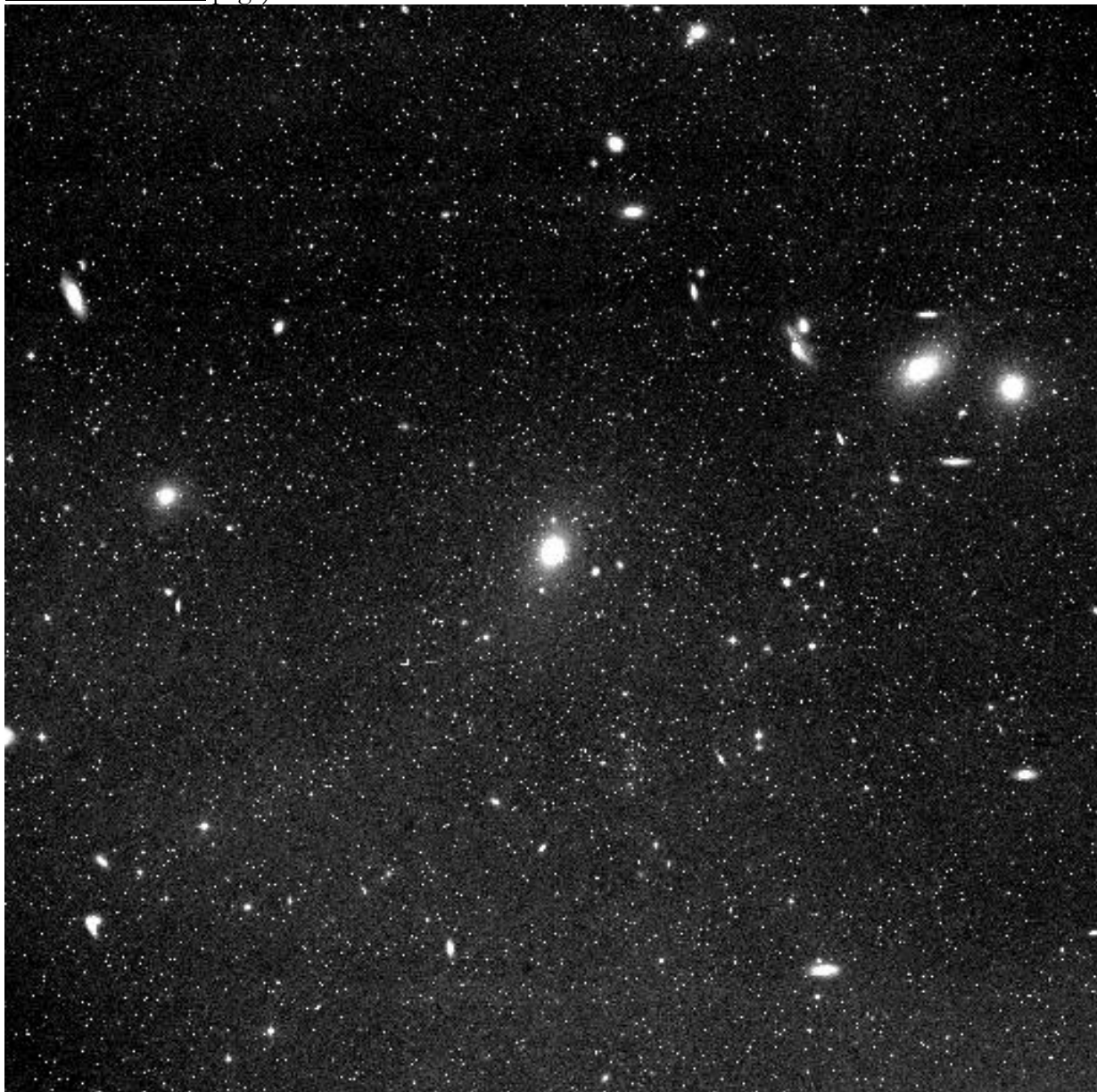
- From Denebola (Beta Leonis), go 0.3 deg N and 6.8 deg following (E) to star 6 Comae. From here go 0.5 deg preceding (W) to find M98.
- From M98 go 0.5 deg S, 1.2 deg following (E) to M99. [It is near a mag 6 star]
- From M99 travel 1.0 deg following (E), 1.4 deg N to M100. [2 mag-6 stars point to it from 6 Com]
- From M100 go 0.6 deg following (E), 2.4 deg N to M85 and faint NGC 4394 (10' E)
- From M85 sweep 5.3 deg S to find M84 and M86 in one field, together with a number of fainter NGC galaxies including NGC 4388; 15' NE of M86 is the interacting pair NGC 4435/4438.
- From M86 go 0.6 deg S, 1.1 deg following (E) to M87.
- From M87 go 0.2 deg N, 1.2 deg following (E) to M89.
- M90 is 0.3 deg following (E), 0.7 deg N of M89.
- From M90 travel 1.2 deg preceding (W), 1.2 deg N to M88.
- M91 is situated 0.1 deg N, 0.8 deg following (E) of M88 - same low-power rich-field.
- From M91 sweep 0.6 deg following (E), 2.7 deg S to M58 [situated east of and near a mag 6 star]
- From M58 go 0.2 deg S, 1.1 deg following (E) to M59. In the same field should be M60 (0.1 deg S, 0.4 deg E) with its fainter companion NGC 4647.
- From M60 travel 3.4 deg preceding (W), 3.5 deg S to find M49; from M49 go 2.0 deg preceding (W), 3.5 deg S to M61.

A fourth route is given by Kenneth Glyn Jones in his book, Messier's Nebulae and Star Clusters, Appendix 2:

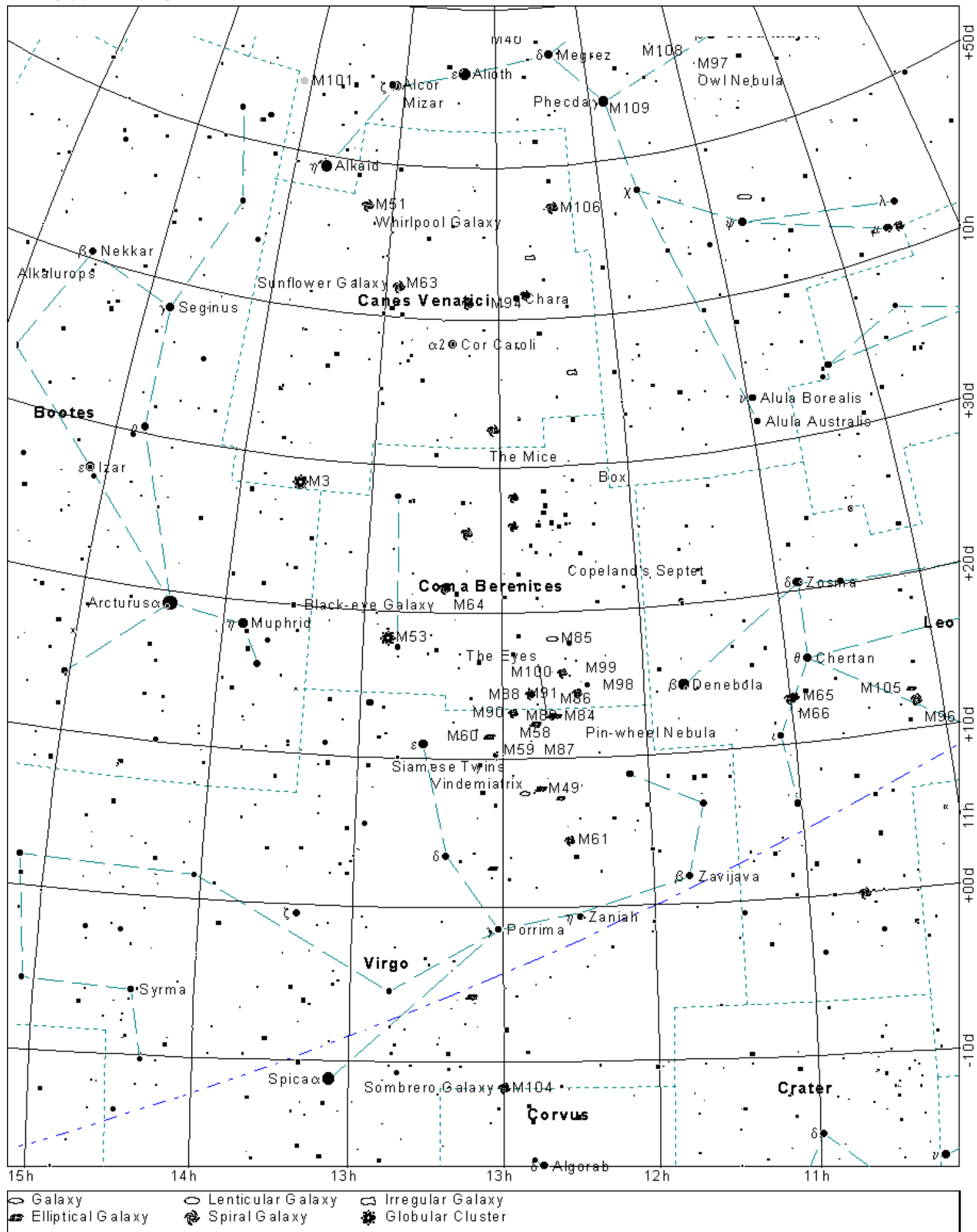
- Start at 3rd mag Epsilon Virginis (Vindemiatrix). From this star, move 5 deg W to pick up 5th mag Rho Virginis, with 6th mag 27 Virginis close to the NW.
- From Rho Virginis, move 1.5 deg N to pick M59 and M60 which should appear in the same L.P. [low-power] field, lying nearly E-W.
- From M59 move 1 deg W to M58.  
If any of these three galaxies is too difficult to find, conditions are very probably not good enough for finding any of the fainter objects.
- From M58, move slightly W and then 1 deg N to pick up M89 and M90, lying almost N-S and visible in the same L.P. field.
- From the spindle-shaped M90 now move 1 deg W and 1.5 deg N to M88 which has two small [faint] stars close to the south and quite distinctive. The once 'missing' M91 can now be found by moving 1 deg E and slightly N from M88. This object is rather faint and its location should be checked by depressing the telescope a little more than 1 deg S to reveal M90 again. Return to M88.
- From M88 move back to M89 and M90 and from the more southerly M89 move slightly S and 1.25 deg W to M87 which is round and bright.
- From M87 move another 1.25 deg W and 0.5 deg N to M84 and M86 which appear in the same L.P. field oriented approximately E-W.
- The next step is a longer one. From M84 move 20' W and 3 deg N to M100.
- From M100, move 0.5 deg W and 2 deg N to pick up the 5th mag star 11 Comae Berenices. From this star move 0.5 deg N and just over 1 deg E to M85 which, being small, may require higher magnification to see well.
- M85 is the most northerly Virgo Cluster Messier Object. Return to 11 Com, and then move 3 deg S and 1.25 deg W to the 5th mag star, 6 Comae Berenices.

- From 6 Comae Berenices, M98 is little less than 1 deg due W and M99 a little less than 1 deg SE. The former is very pale and may need averted vision to see at all; M99 is a little brighter but also pale.
- Return to our starting point, Rho and 27 Virgines.
- From Rho Virgines, move 2.25 deg S and 3 deg W to M49 which is bright and "pearly" and very easy to see.
- From M49, move 3.5 deg S and 2 deg W to M61. It is a little faint and pale and if the objects proves elusive it may be located by examining the area midway between the two stars 16 Virginis (5th mag) and 17 Virginis (6th mag).  
Alternatively, M61 may be found from the starting point at Vindemiatrix (Epsilon Virginis), by locating 3.5 mag Delta Virginis which is 7.5 deg S and 1.5 deg W. From this star, 5th mag 16 Virginis is about 9 deg W, and M61 is about 1 deg N and 0.5 deg E.

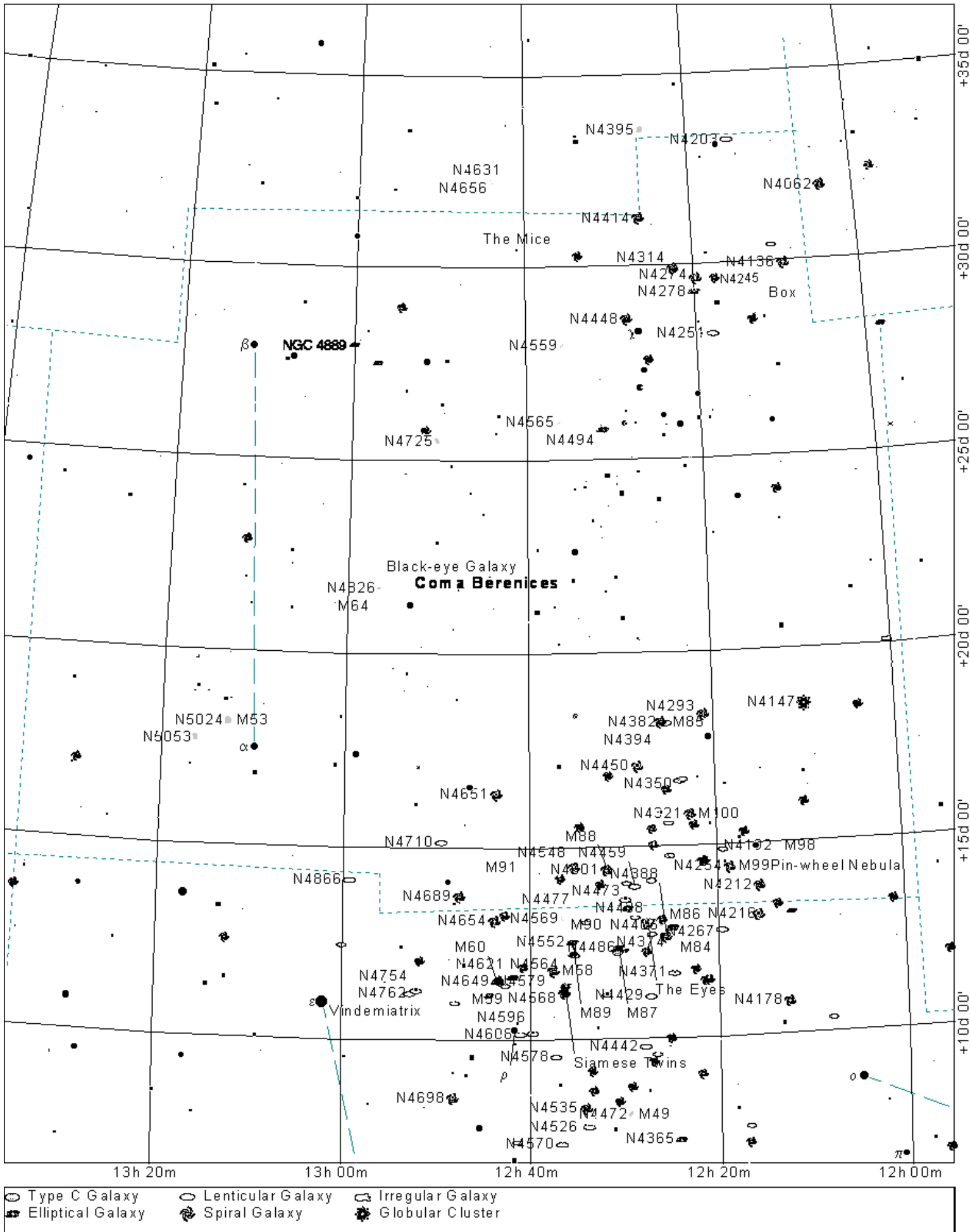
□ *Steve Gottlieb* has featured "The Virgo Mainline" - Markarian's Chain (also see our M87 and Markarian's Chain page)



TheSky (c) Astronomy Software

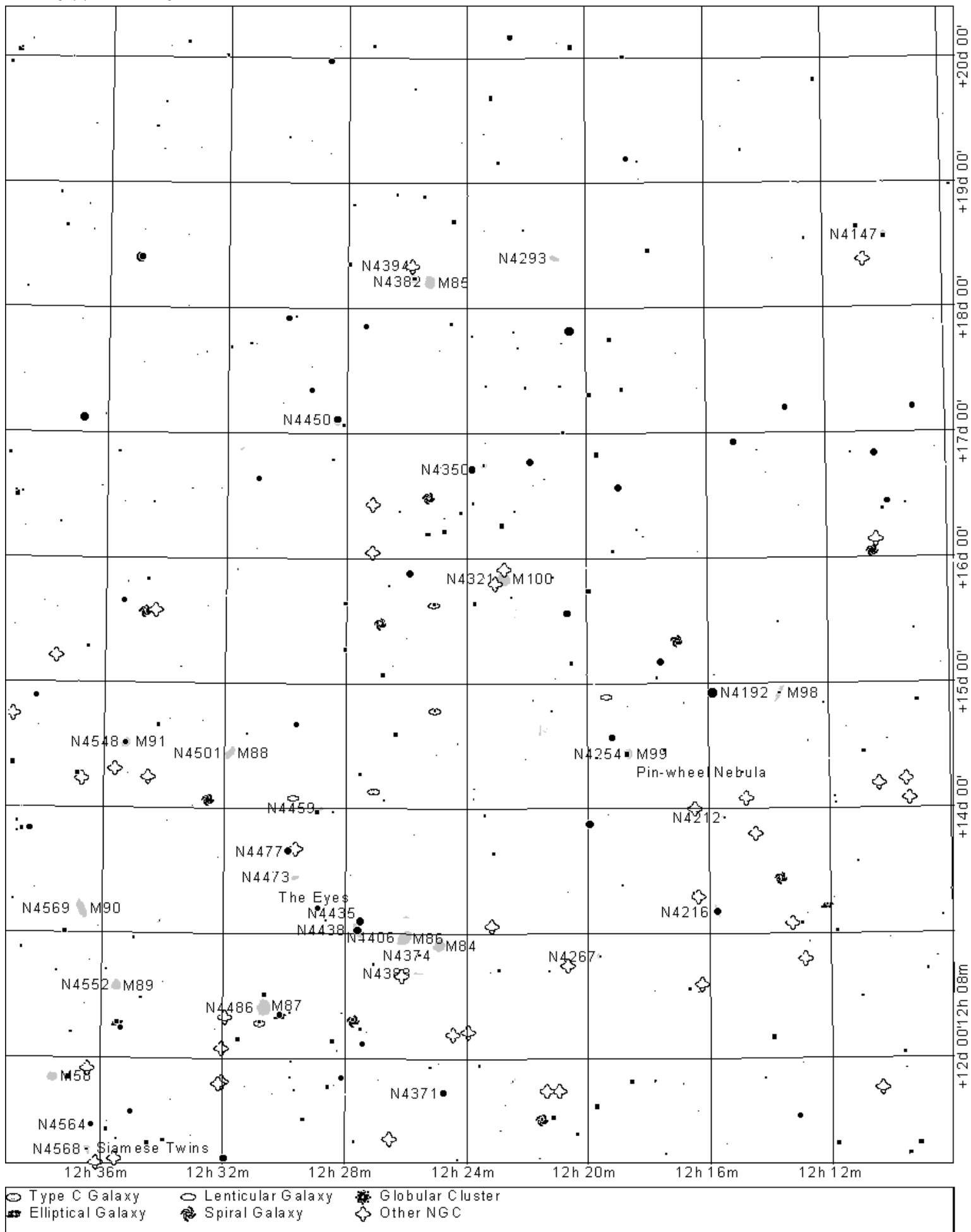


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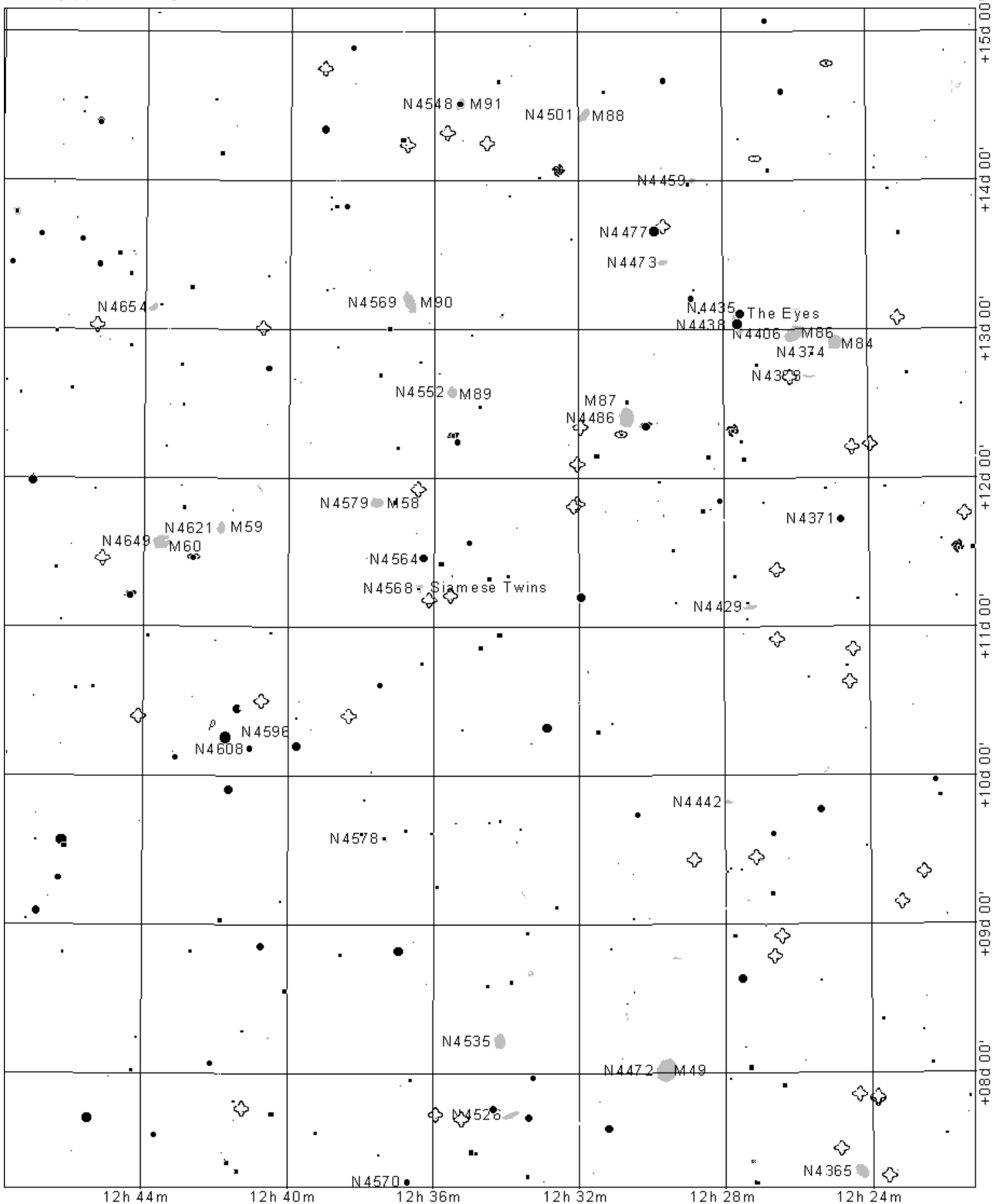


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TheSky (c) Astronomy Software



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☉ Type C Galaxy   
 ⊖ Lenticular Galaxy   
 ✦ Other NGC  
⊙ Elliptical Galaxy   
 ☉ Spiral Galaxy

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