

OBSERVING BASICS by GUY MACKIE

Observing Reports

The colorful and detailed photographs we see of celestial objects are not at all like the ubiquitous "fuzzy blobs" we see at the eyepiece. Nevertheless, you are freezing your buns off and losing much needed sleep for work, the next day so why not make a description of your observations that will make the hunt worthwhile. Here are some suggestions to fill the empty spaces in your logbook and to imprint the observing experience more deeply in your memory.

The Basics

Your website www.m51.ca has a downloadable log sheet template that is just super, but you can also make up one for yourself or customize the website version to your own needs. The main things to start your report should be the circumstances under which you observed:

Observing Location

Time (of observing session and of the observation of each object) Optics (type of instrument, eyepiece, filters, power of magnification) Transparency (page 56 of the Observers Handbook) Seeing (for me this is a subjective rating of the atmospheric stability based on Planet features and double star observations)

It is good to know the field of view (FOV) of each of your eyepieces in minutes of degree, then you can estimate the approximate size of the object. The sketchpad I use has the FOV for every eyepiece I use taped to the back, a handy reference. To calculate your field of view there are websites that will punch out the both the magnification and the FOV for most eyepieces. You can do it yourself:

With any motor drives turned off, place a star near the celestial equator just outside the field of view in the eyepiece so that it will drift across the middle of the field of view. By timing the star's passage, you can get a very accurate measurement of the actual field of view.

The earth turns 360° in 24 hours, so in one hour, the earth turns 15 degrees, that works out to 15' (minutes of degree) per minute. Now lets say that a star takes 2 minutes (120 seconds) from the time it enters the eyepiece field of view, passing through the center, until it disappears on the other side (t). We figure the field of view, (F) with the formula:

$F = t \times 15$ This gives us 1800", or if we divide this by 60, (60 seconds in a minute) we get 30', or $1/2^\circ$. Lets try another example. If a star's passage takes 200 seconds, then we get: $200 \times 15 = 3000" = 50' = .83^\circ$

It is also valuable to know the N-S-E-W directions of your FOV. For an undriven reflecting telescope West is the direction that objects drift towards and North is in a counter clockwise direction from West. A description can begin by describing how you found the object, if you star hopped what pointer stars did you use? Did you see

greater detail with averted vision, or tube movement?

When describing the magnitude of any object I usually use a scale of: Very Dim, Dim, Slightly bright, Moderately bright, Bright, Very bright

Open Star Clusters

Some things to look for and make note of in your observing report:

- What is the size of the cluster? (using the FOV measurements you have created)
- Can you estimate the number of stars?
- Are the stars of equal brightness? Or are most of them dim with a sprinkle of brighter stars etc.
- Is there a pattern?
- Are there many doubles or triples?
- Is it loosely scattered or densely packed?
- Are there any colourful stars?

Globular Clusters

- Size?
- Bright or dim?
- Symmetrical (round) other features?
- How close to the core can stars be resolved?
- Dense core?
- Gradual brightening to core or a distinct core with halo of faint stars?

Planetary Nebula

- Size?
- Shape?
- Colour?
- Features? (ringed, bi-polar, central star)

Galaxies

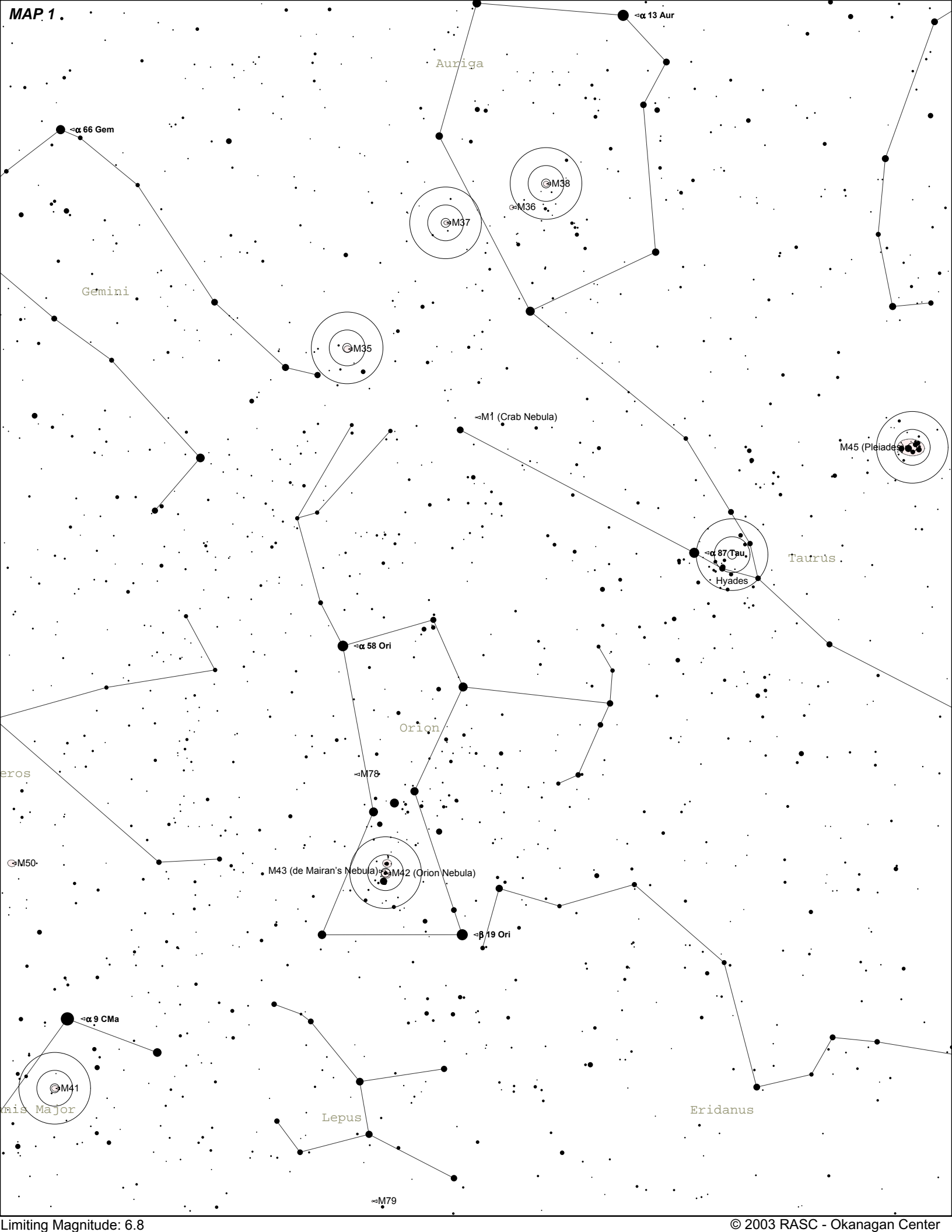
- Size
- Shape, N-S-E-W orientation if elongated?
- The three main features of a galaxy are generally referred to as nucleus, a core and a disk,
- How do they relate to each other?
- Magnitude, is it bright or dim?

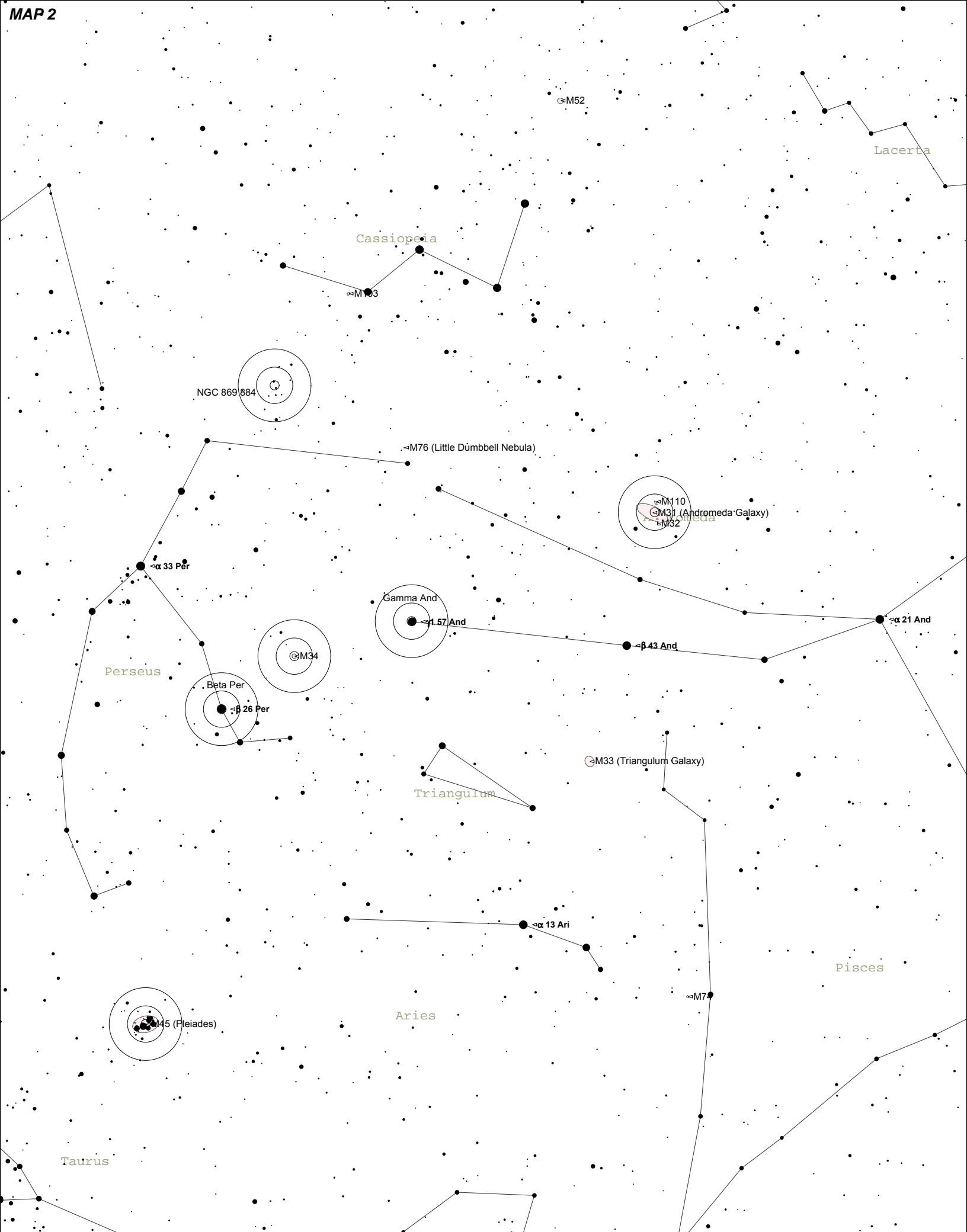
Adjectives

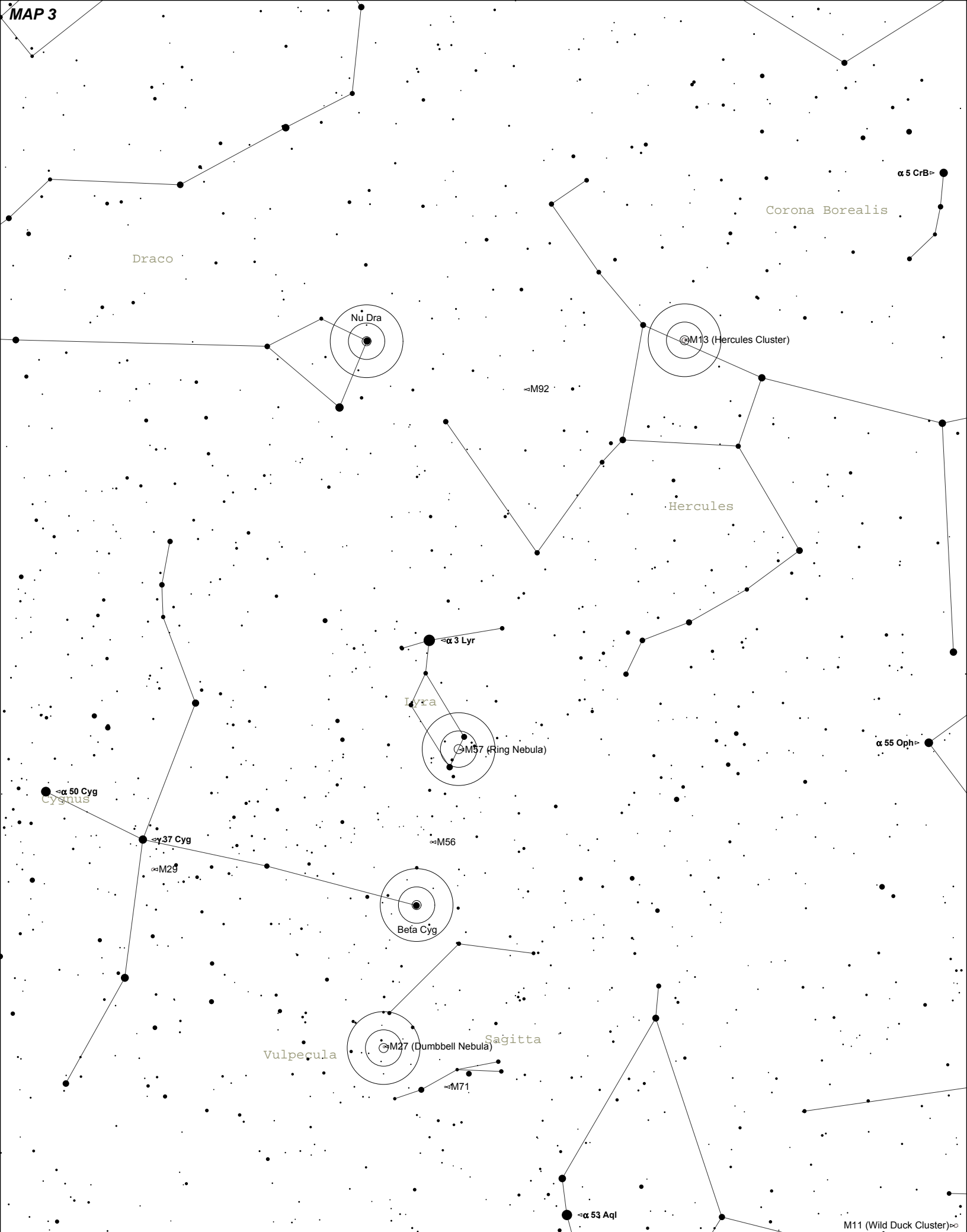
In addition to the size, shape, brightness and colour descriptions you can spice it up a bit with some of these: dense, loosely scattered, gradual or quickly or suddenly brightening, chains, arcs, packed, amorphous, dusty, milky, wispy, twinkle, elongated, extended, muted, subtle, hinted at, suspected, smudge, streak, compressed, concentrated, tendrils, gauzy, blob, clump, mottled, spikes, irregular, structure, rich (lots of stars), sparse (not many stars) condensed, **tired, cold, hungry and satisfied.**

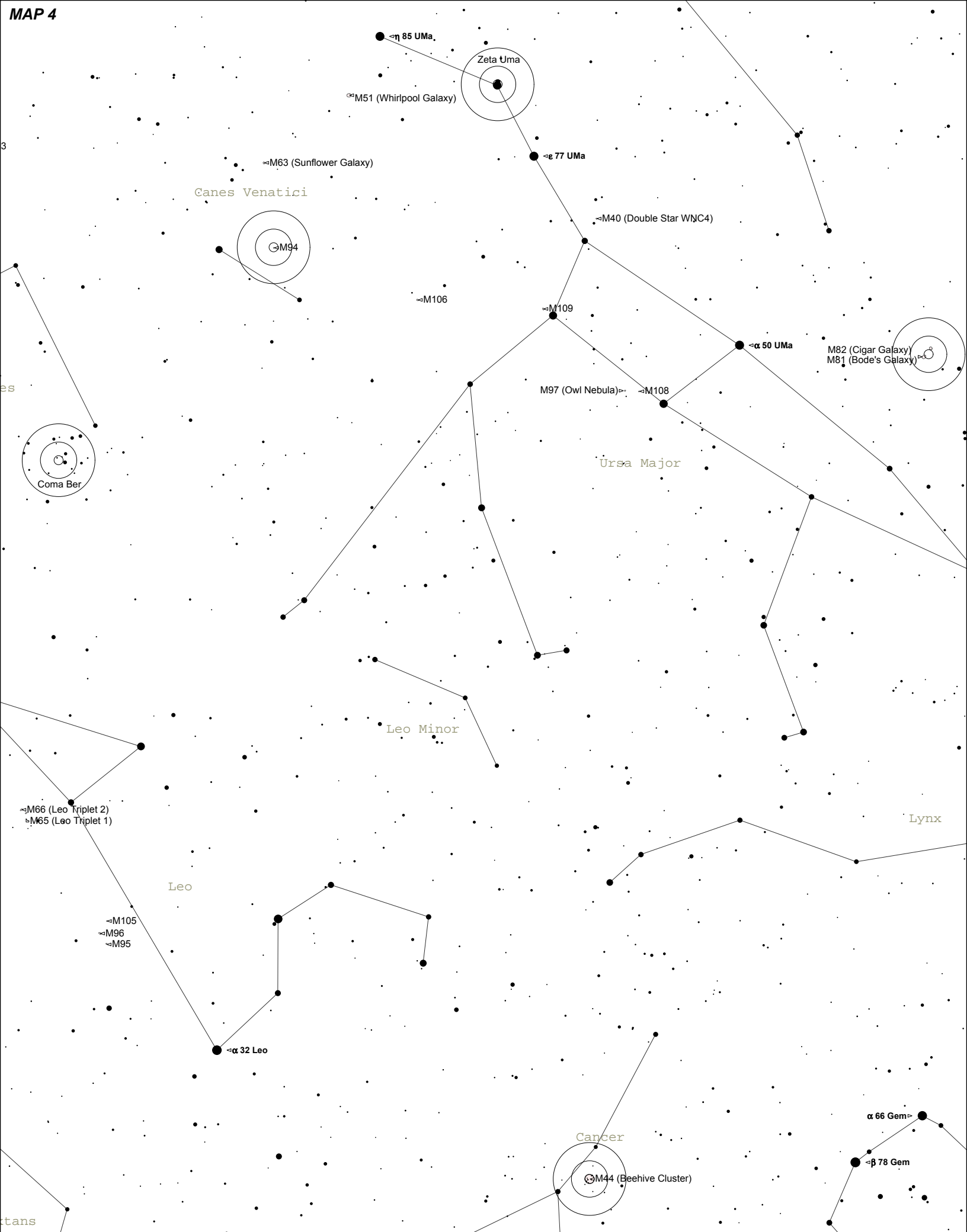
RASC-OC Introductory Observing List

Name	Constellation	Type	Other name / notes	Magnitude	RA	Dec	Size	Seen	Date
Fall									
Messier 31	Andromeda	Spiral galaxy	Andromeda Galaxy	4.5	00h 42.8m	+41d 16'	189'x62'		
Messier 34	Perseus	Open cluster		5.2	02h 42.0m	+42d 47'	35'		
gamma And	Andromeda	Double star	Gold and blue	2.3 / 5.5	02h 03.9m	+42d 20'	10"		
NGC 859/884	Perseus	Open cluster	Double Cluster	4.4	02h 20.0m	+57d 08'	18' / 18'		
beta Per	Perseus	Double star	Algol, a variable star	2.1-3.4	03h 08.2m	+40d 57'	N/A		
Winter									
Messier 37	Auriga	Open cluster		5.6	05h 52.4m	+32d 33'	24'		
Messier 38	Auriga	Open cluster		6.4	05h 28.7m	+35d 50'	21'		
Messier 41	Canis Major	Open cluster		4.5	06h 47.0m	-20d 44'	38'		
Messier 42	Orion	Diffuse nebula	Great Orion Nebula	3.7	05h 35.3m	-05d 23'	85'x60'		
Messier 43	Orion	Diffuse nebula	de Mairan's Nebula	7.0	05h 35.5m	-05d 16'	20'x15'		
Messier 44	Cancer	Open cluster	Beehive Cluster (Praesepe)	3.4	08h 40.1m	+19d 44'	95'		
Messier 45	Taurus	Open cluster	Pleiades, Subaru, Seven Sister	1.3	03h 47.0m	+24d 07'	110'		
Hyades	Taurus	Open cluster	Large and V shaped	0.5	04h 27.0m	+16d 00'	330'		
Spring									
Messier 81	Ursa Major	Spiral galaxy	Bode's Galaxy, near Messier 82	7.2	09h 55.6m	+69d 04'	21'x10'		
Messier 82	Ursa Major	Irregular galaxy	Cigar Galaxy, near Messier 81	8.4	09h 55.9m	+69d 41'	9'x4'		
Messier 94	Canes Venatici	Spiral galaxy		8.5	12h 50.9m	+41d 08'	11'x9'		
Melotte 111	Coma Berenices	Open cluster	Berenice's Hair, large	2.9	12h 25.1m	+26d 06'	275'		
zeta Uma	Ursa Major	Double star	Mizar & Alcor	2.3 / 3.9	13h 23.9m	+54d 58'	14"		
Summer									
Messier 4	Scorpius	Globular cluster		5.8	16h 23.6m	-26d 32'	26'		
Messier 6	Scorpius	Open cluster	Butterfly Cluster	4.2	17h 40.3m	-32d 15'	15'		
Messier 7	Scorpius	Open cluster	Ptolemy's Cluster	2.8	17h 53.7m	-34d 46'	80'		
Messier 8	Sagittarius	Diffuse nebula	Lagoon Nebula	5.0	18h 03.9m	-24d 21'	40'x35'		
Messier 13	Hercules	Globular cluster		5.8	16h 41.7m	+36d 28'	17'		
Messier 22	Sagittarius	Globular cluster		5.9	18h 36.4m	-29d 54'	24'		
Messier 27	Vulpecula	Planetary nebula	Dumbbell Nebula	7.2	19h 59.6m	+22d 43'	8'x6'		
Messier 35	Gemini	Open cluster		5.1	06h 09.0m	+24d 20'	28'		
Messier 57	Lyra	Planetary nebula	Ring Nebula	8.7	18h 53.6m	+33d 02'	1.7'x1.3'		
beta Sco	Scorpius	Double star		2.8 / 4.9	16h 05.4m	-19d 48'	16"		
nu Dra	Draco	Double star		4.9 / 4.9	17h 32.2m	+55d 10'	62"		
beta Cyg	Cygnus	Double star	Albireo	3.1 / 5.1	19h 30.7m	+27d 58'	34"		









ζ 85 UMa

Zeta Uma

M51 (Whirlpool Galaxy)

M63 (Sunflower Galaxy)

ϵ 77 UMa

Canes Venatici

M40 (Double Star WNC4)

M94

M106

M109

α 50 UMa

M82 (Cigar Galaxy)
M81 (Bode's Galaxy)

Coma Ber

M97 (Owl Nebula)

M108

Ursa Major

Leo Minor

M66 (Leo Triplet 2)
M65 (Leo Triplet 1)

Lynx

Leo

M105
M96
M95

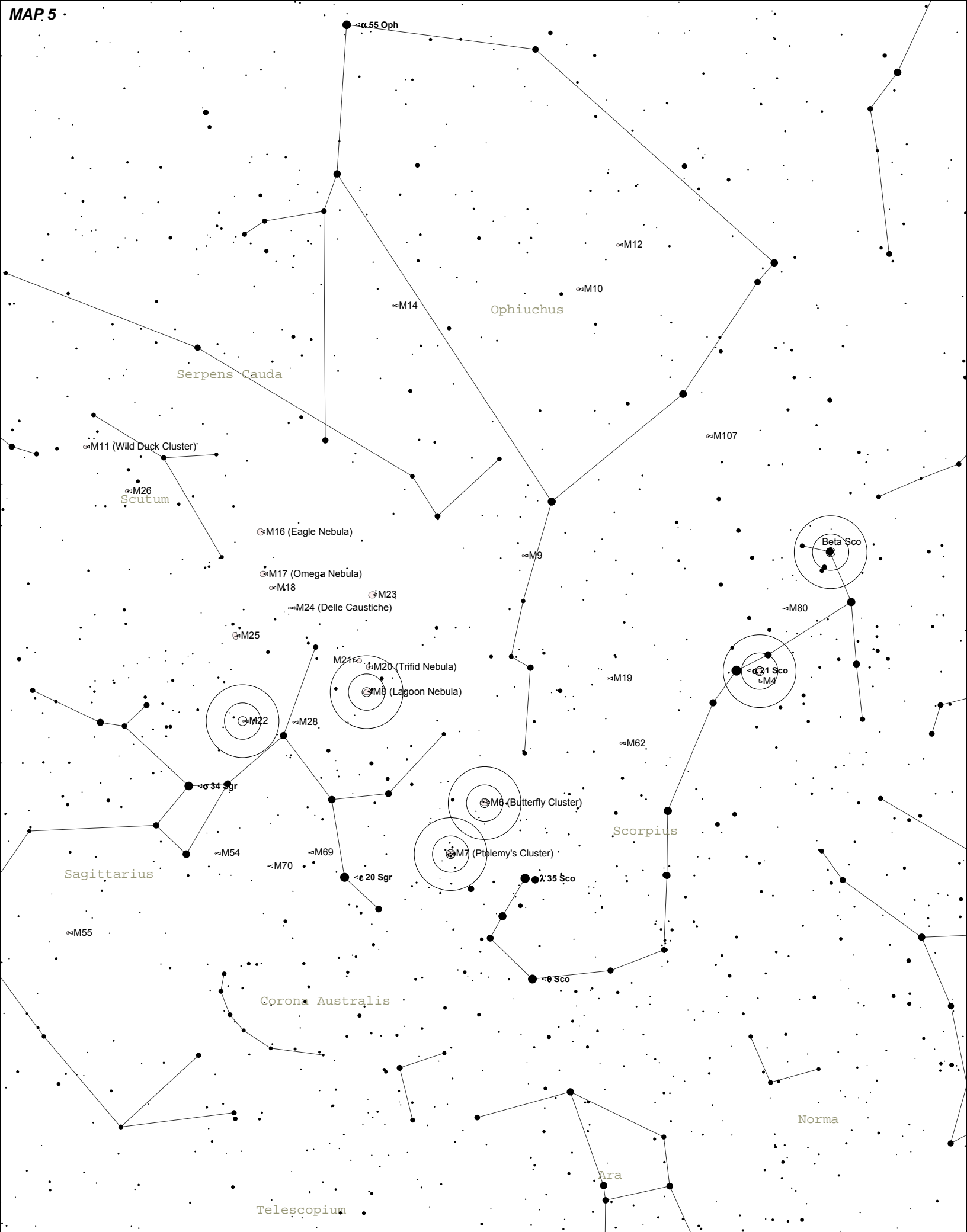
α 32 Leo

Cancer

M44 (Beehive Cluster)

α 66 Gem

β 78 Gem



Serpens Cauda

Ophiuchus

M12

M10

M14

M107

M11 (Wild Duck Cluster)

M26 Scutum

M16 (Eagle Nebula)

M17 (Omega Nebula)

M18

M23

M24 (Delle Caustiche)

M25

M20 (Trifid Nebula)

M8 (Lagoon Nebula)

M22

M28

M6 (Butterfly Cluster)

M7 (Ptolemy's Cluster)

Beta Sco

M80

M4

M19

M62

Scorpius

Sagittarius

alpha 34 Sgr

M54

M70

M69

alpha 20 Sgr

alpha 35 Sco

M55

Corona Australis

theta Sco

Norma

Ara

Telescopium

