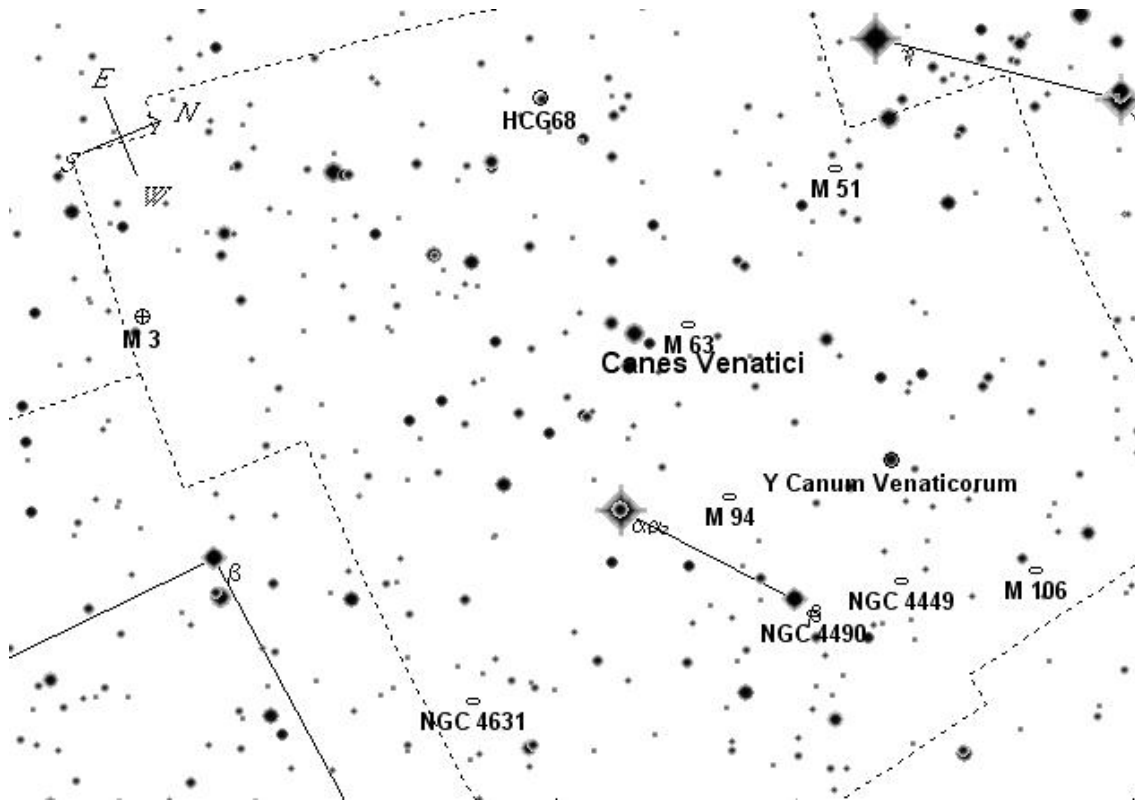


Small Wonders: Canes Venatici

A Monthly Guide to the Night Sky

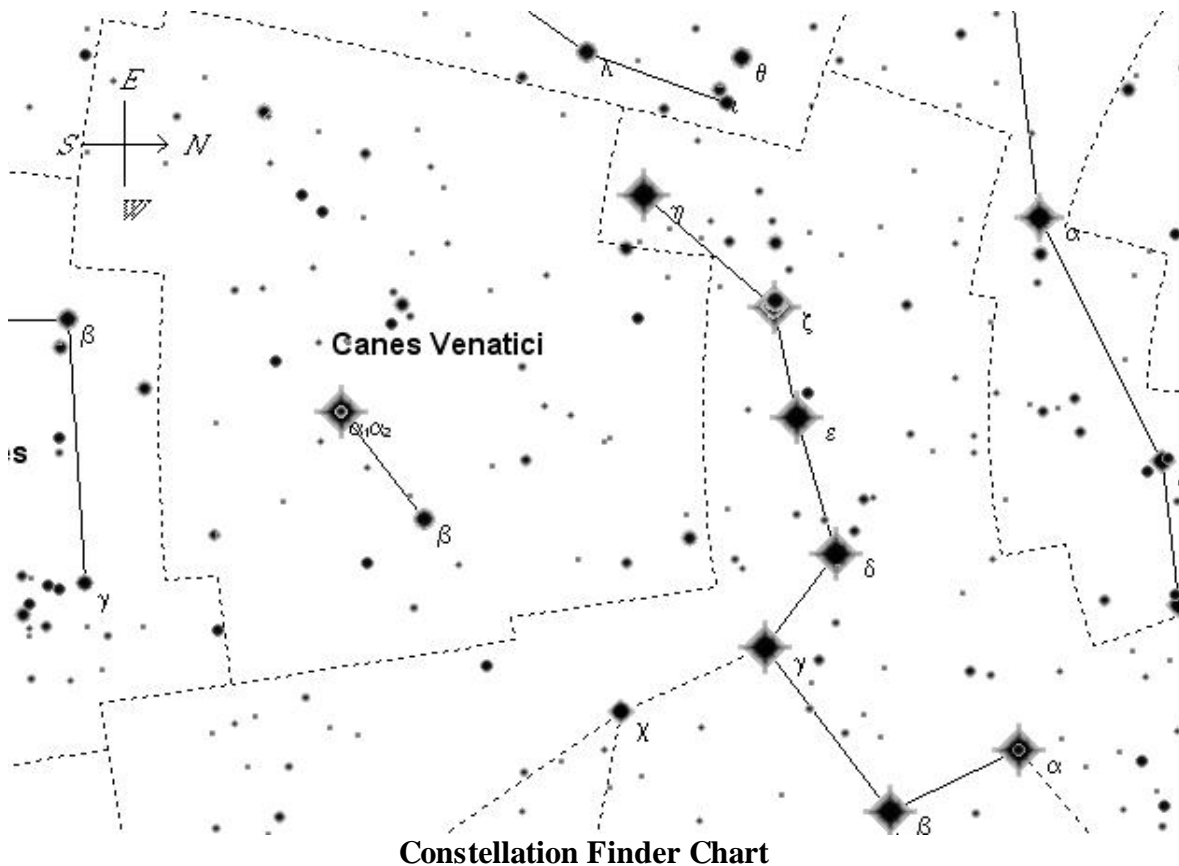
by Tom Trusock

A PDF Will be Available



Wide field Chart

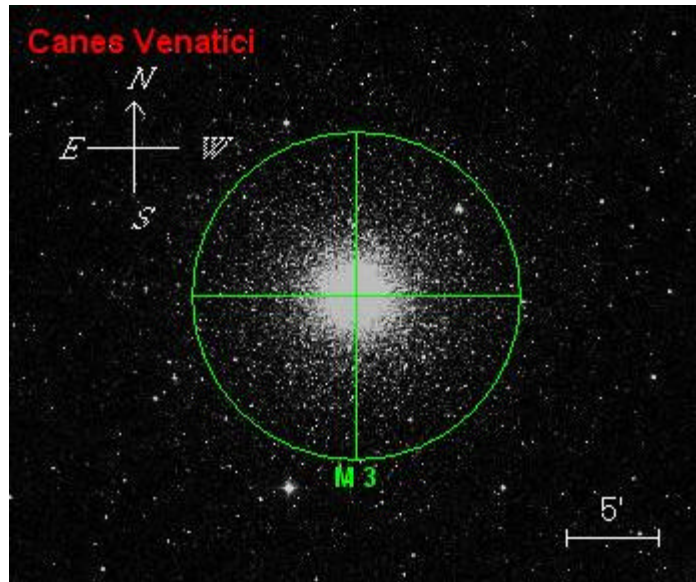
Target List	Name	Type	Size	Mag	RA	DEC
	Y Canum Venaticorum	Star	5.4	12h 45m 24.2s	+45° 24' 49"	
	M 3	Globular	18.0'	6.3	13h 42m 27.2s	+28° 20' 58"
	M 51	Galaxy	11.2'x6.9'	8.1	13h 30m 07.8s	+47° 10' 11"
	M 63	Galaxy	12.6'x7.2'	8.5	13h 16m 04.8s	+42° 00' 24"
	M 94	Galaxy	14.4'x12.1'	8.1	12h 51m 09.4s	+41° 05' 40"
	M 106	Galaxy	18.6'x7.2'	8.3	12h 19m 14.9s	+47° 16' 50"
	NGC 4449	Galaxy	6.2'x4.4'	9.4	12h 28m 28.1s	+44° 04' 06"
	NGC 4490	Galaxy	6.4'x3.2'	9.5	12h 30m 52.8s	+41° 36' 57"
	NGC 4631	Galaxy	15.2'x2.8'	9.0	12h 42m 24.2s	+32° 30' 51"
Challenge Object	Name	Type	Size	Mag	RA	DEC
	HCG68	Galaxy Cluster	11.8	13h 53m 39.1s	+40° 16' 29"	



Canes Venatici is a somewhat small constellation, and may be difficult to find. Flanked on by both Ursa Major and Bootes, Canes is located in a somewhat barren section of the night sky. Canes (whose name means The Hunting Dogs) has been seen as Bootes pets for at least several hundred years, but the constellation may not have been "stand alone" until sometime in the late 17th century when Hevelius named (and perhaps separated from their "parent" constellation) these celestial dogs Asterion and Chara.

Probably the most impressive star in Canes is Y Canum Venaticorum. Also called La Superba, it's a variable which varies from 4.7 to 6.2 over a 158 day period. More to the point for the casual visual observer is it's vivid coloration. Located 700 or so light years away, it's one of the brightest carbon stars in the night sky, and shows a sharp red color to the slightest optical aid.

Although it's quite unusual to find open clusters so far from the plain of the galactic disc, there is one open cluster in Canes - Uppgren 1 (RA 12h 35m, DEC +36 degrees, 17 minutes) . Phil Harrington in *"Touring the Universe Through Binoculars"* directs our attention to a bright grouping of ten or so stars found five degrees southwest of alpha. At a distance of only 380 light years, Uppgren 1 is one of the most ancient clusters known. Over the last 3 billion years, Uppgren 1's retinue of stars has slowly dwindled to its present state - the rest being cast off throughout the years. Uppgren 1 was first identified by Rubin and Uppgren in 1965.



There's also one globular in Canes - the bright Messier M3.

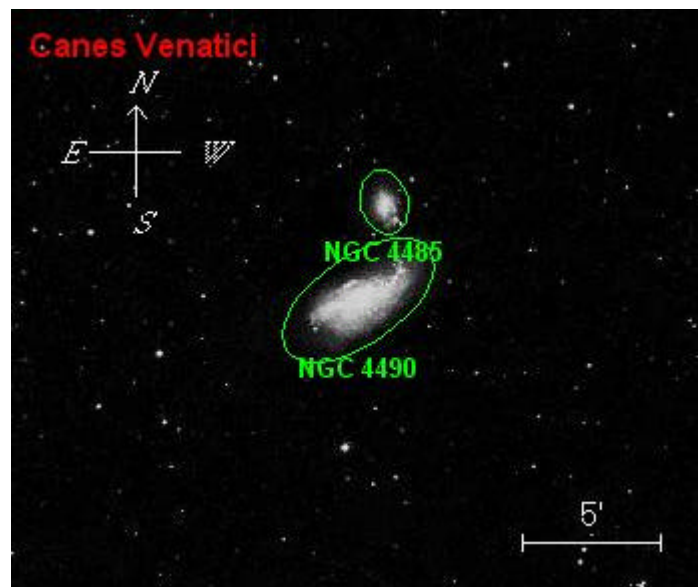
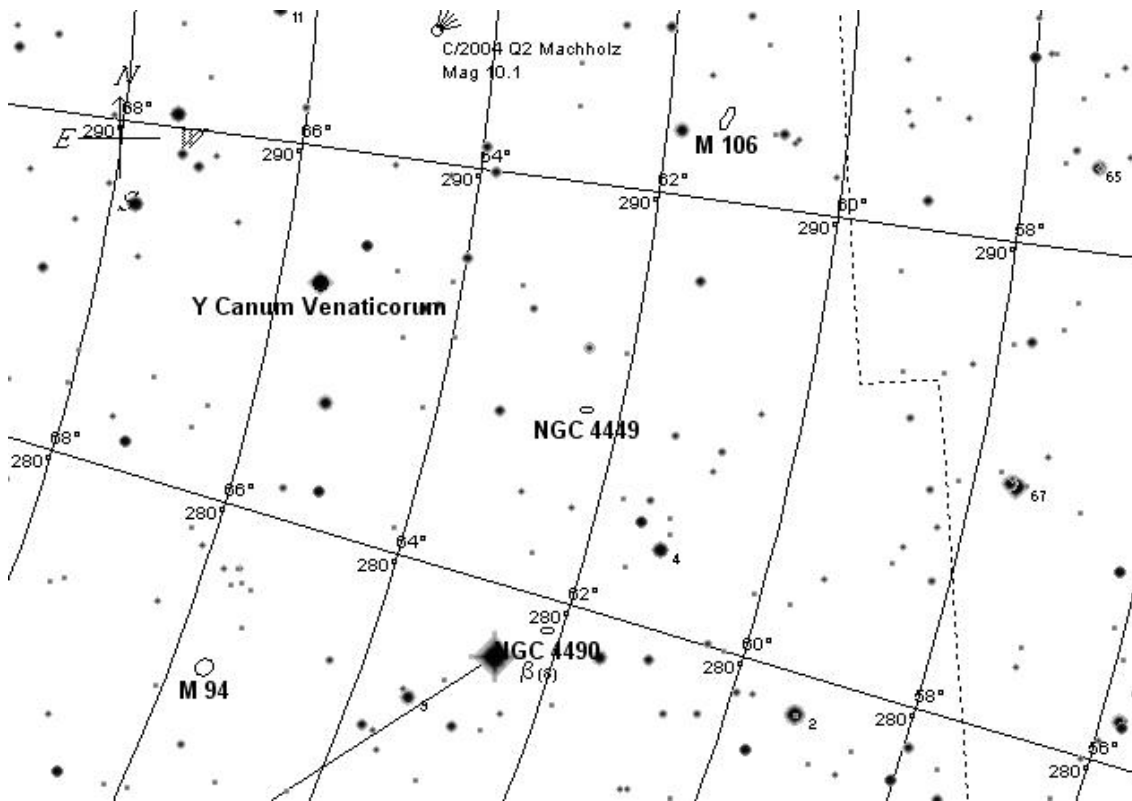
M3 forms one vertex of a right triangle with Alpha Canum Venaticorum, and Beta Coma Berenices, and is easily visible in a moderate finder or binoculars as a 6th magnitude fuzzy star. Small scopes and moderate to high powers are enough to generally resolve some of the stars on the outer edge of the nebula as well as give a grainy texture to the center of this fairly tight globular. Larger apertures will yield better resolution. Curiously, notes with my 4" apo hint at a yellow tint to many of the stars in the globular one evening - but only at low power. Take a look and tell me what you think.



M3 image courtesy of Gary Blevins

This is all well and good (ok, maybe in the case of M3, pretty spectacular), but where Canes really shines is in extra galactic DSO's. There are at least 367 Quasars in Canes, (with the brightest at mag 15.2 though, we don't need to worry about it being a target for our small telescopes) thousands of galaxies (a quick search through known catalogs turns up 21615), and at least 87 Abell galaxy clusters and two Hicksons (68 and 70).

And so, it should come as no surprise that rest of the targets this month are either galaxies or galaxy clusters.



We'll start with one that's fairly easy to locate - NGC 4490.

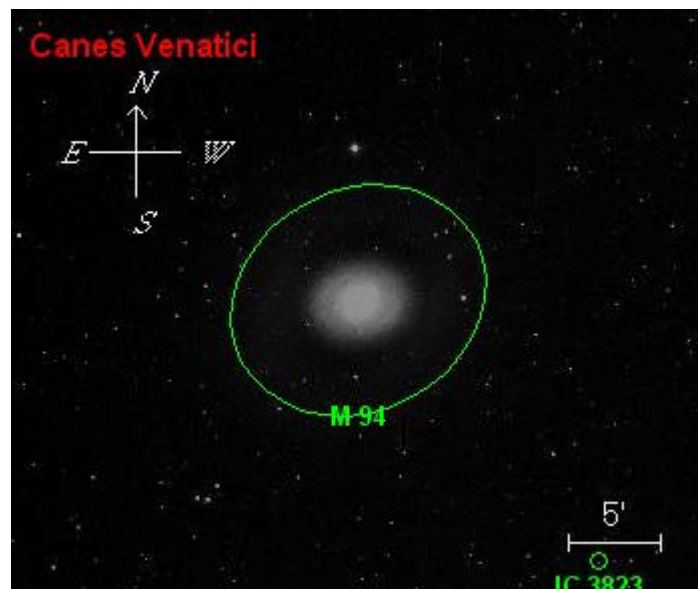
Actually, what you're really looking at here is a pair of interacting galaxies - 4490 AND 4485. Also called the Cocoon, this object is located less than a degree WNW of Beta Canum Venaticorum. The larger galaxy is also the brighter at mag 9.5, while 4485 is at 11.7. Thus it's quite possible, depending on the size of your telescope and your sky

conditions, you may not even pick up 4485.

This one has always seemed like a tortured object to me. Even in smaller scopes there are lots of hints of detail. Spend some time at moderate powers with this pair, and look for structure - particularly in the area between the two galaxies.



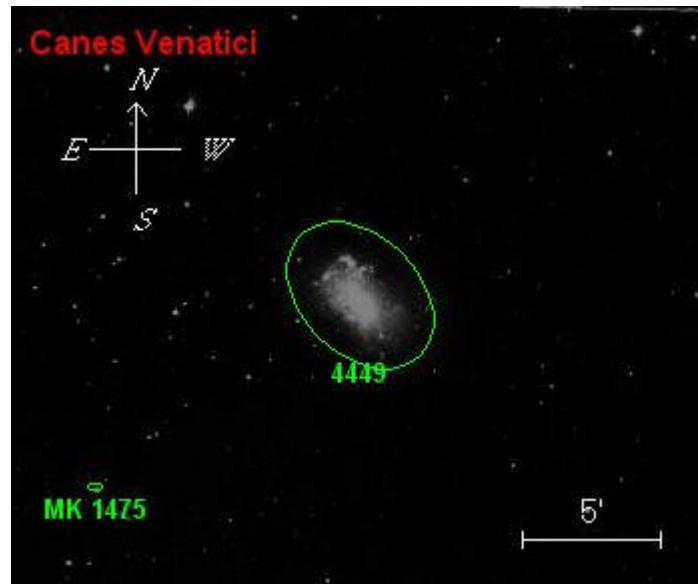
NGC 4490 image courtesy Carl Burton



Up next, we take a look at M94. A bright and interesting face on spiral, there are debates as to just how much detail can be seen in a small telescope.

The 48" Schmidt camera on Mt. Palomar has photographically picked up a faint ring that runs around the galaxy as a whole - seemingly disconnected. I've never seen any hint of this in any size telescope I've inspected the galaxy with, but O'Meara seems to think he might be picking it up with his small scope from his pristine Hawaiian skies. Take a minute sweep across the face of m94, moving the telescope while looking for it at low powers.

Most of us will probably just see a fairly bright, somewhat irregular galaxy that shows a bright star like nucleus - but you'll never know if you don't try.

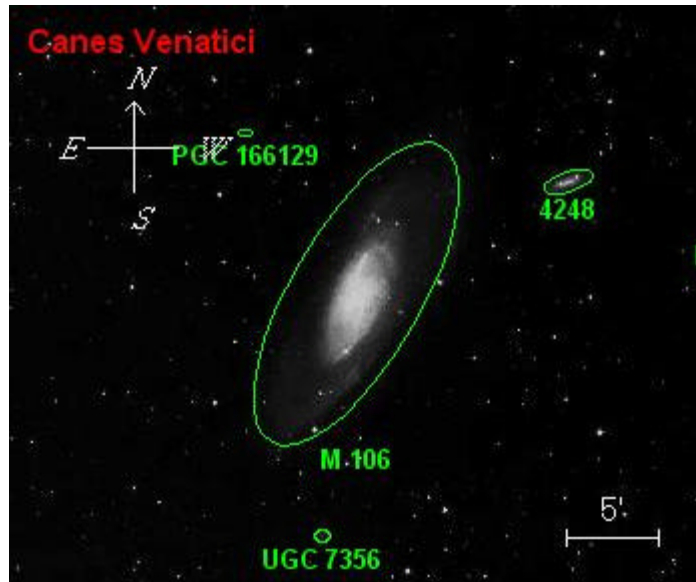


Next we come across NGC 4449.

Discovered by William Herschel in 1788, 4449 is a dwarf galaxy remarkably similar to "our" own Large Magellanic Cloud, and visually presents sort of an irregular rectangle. The population is rather young, as astronomers believe that many of the stars found in the galaxies bar formation are not more than five million years old.

In the DSS image, just off the northern tip of the galaxy, you'll note a well defined hook shape. This is just one of the galaxies HII regions. HII regions are currently active in stellar formation.

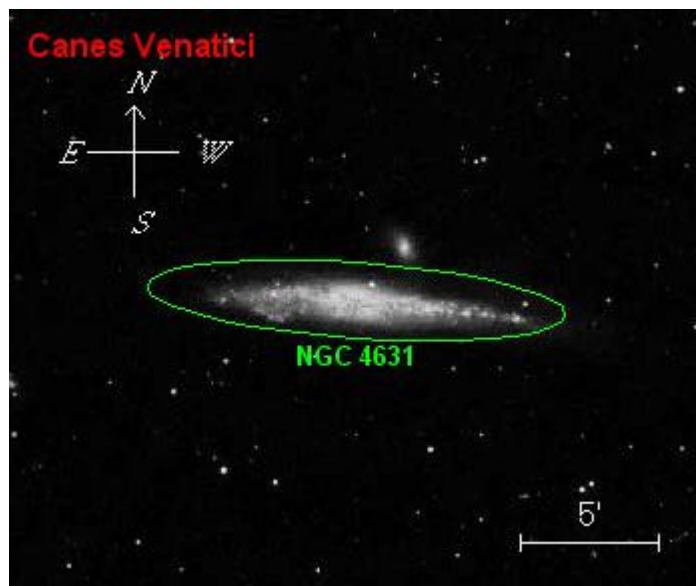
If possible take a few minutes and inspect this one in different apertures and make note of the differences seen when moving between different size scopes. Can you spot the large HII region visually?



Our last galaxy in this particular region is M106. Since the 1950's this galaxy has been known to be a radio emitter, but it wasn't till 1994 a team of radio astronomers confirmed a black hole near the galaxy's nucleus.

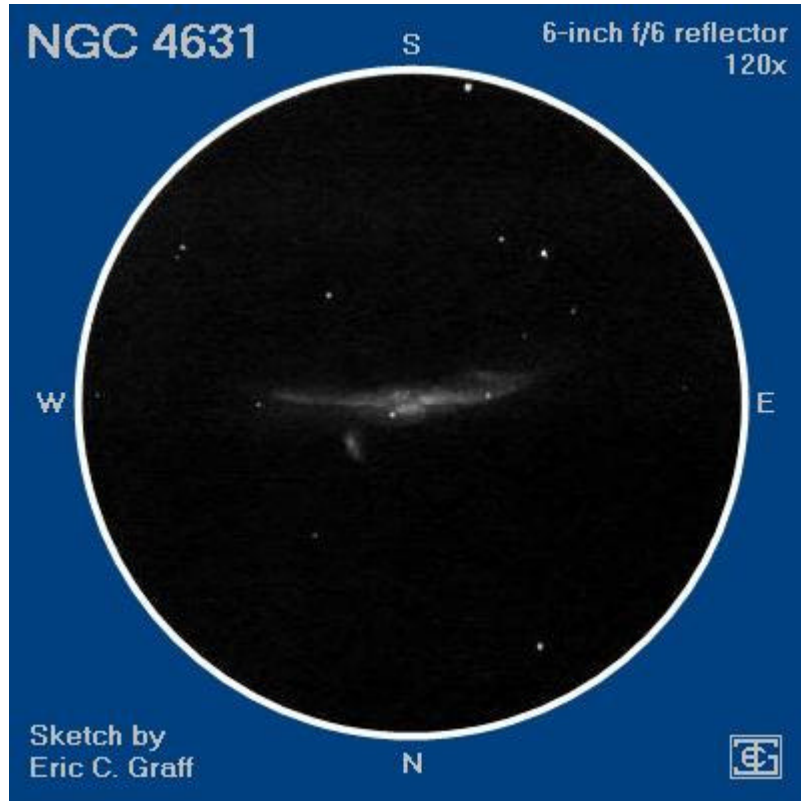
M106 lies some 22 million light years from us, and presents an interesting sight for the patient observer. Even in small telescopes elements of the galaxy's structure are hinted at - see if you can pick out an s-curve (or three) hidden deep in this active galaxy.

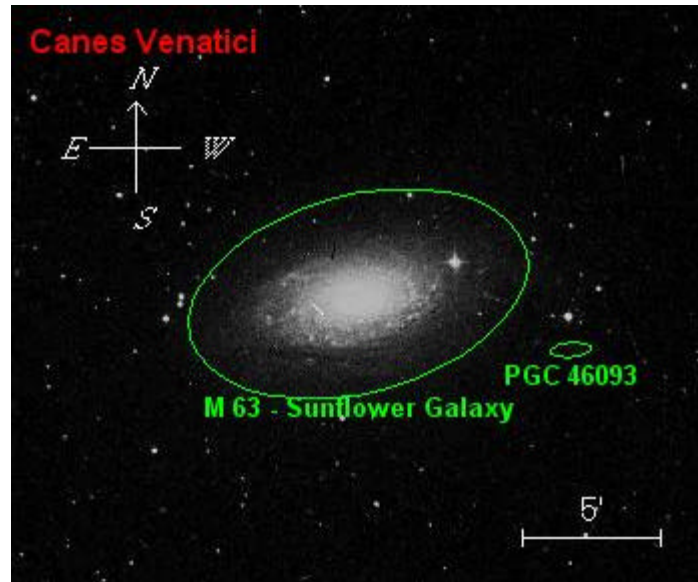
M106 was my personal lesson in comet hunting. Years ago when I was scanning the region I stumbled across the galaxy, while I was disappointed to find there would be no comet Trusock, I must admit my independent discovery of M106 gave me a bit of a thrill for a while.



NGC 4631 - the Herring or Whale galaxy is another favorite target for this time of year. This large, edge on bright galaxy presents a nice target to nearly any size telescope. I called it "Very Nice" in my 4", and like many galaxies it's pretty spectacular in a large telescope.

In larger telescopes look for mottling, a notch on one of the tips, and note the position of the central bulge. With larger scopes, you might even be able to pick up the companion galaxy noted in the picture.

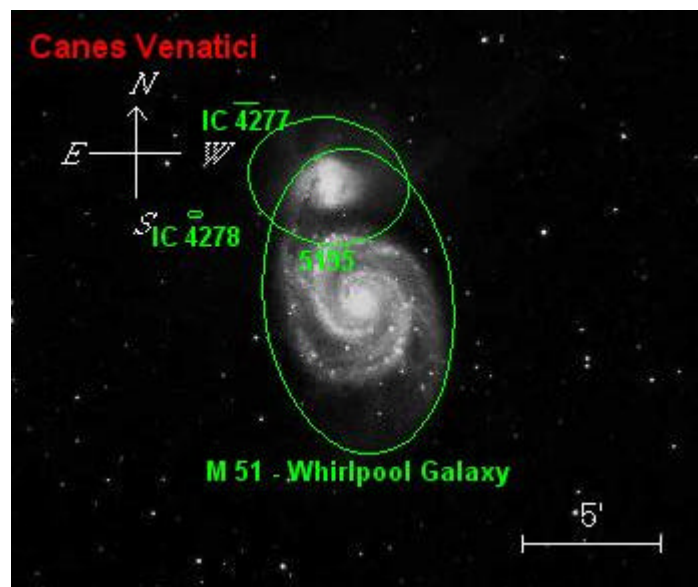




M63 - the Sunflower Galaxy - was discovered by Pierre Mechain - interestingly, it was Mechain's first contribution to Messier's catalog. Mechain swept this galaxy into his FOV on June 14, 1779. In the same physical group with M51, M63 lies about 23 million light years away (depending on your sources). Visually, in a 4" scope, I see it having a somewhat grainy exterior, a brighter nucleus and hints of unresolved arm structure. A foreground star is visible lying just off the edge of the galaxy.



M63 image courtesy Jim Thommes



M51 - the Whirlpool - has to be one of my all time favorite objects. I'm a resident of the 43 parallel, so it's visible for me during a good chunk of the year, but there's no denying

that late spring / early summer puts this galaxy in it's best position for observing. The distance to M51 is somewhere around 15 million light years, and it's magnitude is usually given as somewhere around 8.1 with a surface brightness of around 13th magnitude. M51's spiral structure was probably first seen in 1845 by Lord Rosse while viewing from his castle in Birr, Ireland, with his 72" reflector - the Leviathan of Parsonstown.

M51 is actually an interacting galaxy system - NGC5195 is the other component, and they are connected visually by a stellar bridge. There seems to be some debate on the visibility and actual existence of the bridge. I've heard claims that it's a photographic illusion and does not really exist, and yet it certainly seems compelling to me. I've seen hints of the bridge in scopes as small as 4" in aperture. It takes excellent conditions, but this is one of those objects I look in on nearly every observing session this time of year.



M51 image courtesy Brian Ottum

I've seen hints of the spiral structure in scopes as small as 4", but nothing really spectacular in telescopes smaller than the 8-10" size. I distinctly recall one very transparent night with my old 10" scope where the arms were easily visible. A 15" or 18" scope will show spiral structure under nearly any conditions, and I was recently blessed with a look at it through a 25" at a dark sky site. In the 25" telescope, the arms took on a very well defined look and were easily visible with direct vision. I've noted that for telescopes somewhere around 15"-18", objects actually begin to look like their long exposure photographs. In the case of M51, that's certainly true - however, to me anyway, visually, they are much more striking.

I've found, (like anything else) visual detection of details like the arms depends on observing conditions, and observer experience - don't give up hope if you don't see detail

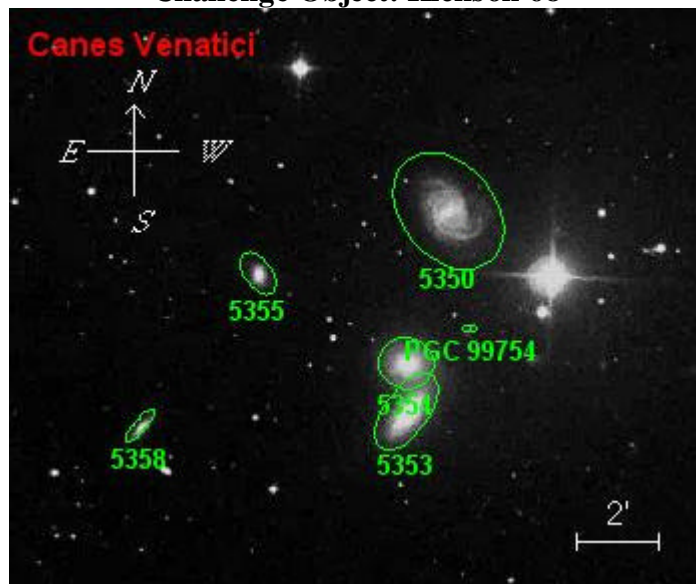
your first, second or even 12th time viewing the whirlpool. Put it on the list of objects to return to over and over - this one's a crowd pleaser - and in a big way.

Don't think that you need a large scope to spot M51 however - by no means. I've seen it through multiple sizes of binoculars and small telescopes (under 4") as well.



M51 image courtesy John Crilly

Challenge Object: Hickson 68



Here's a good challenge object for a moderate sized telescope. This hickson has 5 components; NGC 5353, NGC 5354, NGC 5350, NGC 5355, NGC 5358 three of which are 11th magnitude.

The three brighter, 5350, 5353 and 5354 should all be visible in an 8" telescope from a moderately dark site, and could probably be a fairly easy catch in a 6" scope. My good friend Ron B(ee)'s managed to catch these three in his 4" TV102.

5355 and 5358 however, are both 13th magnitude faint fuzzies and will probably require a significantly larger scope to snare.

There is a plethora of good objects in Canes that we didn't cover this month. To that end, I'll leave you with an extra credit - a few more nice targets to hunt down: NGC 4111, NGC 4143, and NGC 4244.

For full credit, be sure to e-mail me your observations.

Enjoy!

Additional Reading:

Lord Rosse's 72" Telescope

<http://www.space.gc.ca/asc/eng/educators/resources/astronomy/module7/telescope.asp>

*I'd love to hear of your experiences under the night sky - please feel free to e-mail me or send any observing reports to: tomt@cloudynights.com
Please indicate if I can cite your observations in future columns.*

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