

Observing Extragalactic Objects Within Host Galaxies



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Created: August 2024

Observing Books by Alvin Huey

Hickson Group Observer's Guide, Second edition
The Abell Planetary Observer's Guide, Second edition
Observing the Arp Peculiar Galaxies, Revised edition
Extragalactic Objects Within Host Galaxies

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Planetary Nebulae and Supernovae Remnants
The Local Group
Flat Galaxies
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Rose Catalogue of Compact Galaxies
Extragalactic Objects Within Host Galaxies
Variable Galaxies
Selected Shakhbazian Groups
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Palomar Compact Galaxy Catalogue
Object of the Week 2012 and 2013 – Deep Sky Forum

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Front Cover: NGC 2207 PanSTARRS. See acknowledgements on page 355.



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Thanks

I want to express my appreciation to several individuals for their support in this observing project.

First and foremost, I am very thankful to my wife, Julie, for encouraging me to return to the hobby of deep sky observing after an 8-year hiatus. Her support has been invaluable as I compiled, researched, and wrote this observing guide for advanced deep-sky observers.

I am also immensely grateful to Steve Gottlieb for his leadership in deep sky observing and for sharing his observing notes on his website. His detailed notes have been instrumental in helping me identify observable extragalactic objects.

I thank Scott Harrington for his honesty in determining what is observable, as well as for his valuable contributions to the observing of extragalactic objects of galaxies within and outside the Local Group. His insights and additions to the list of host galaxies have been invaluable.

I also want to thank Uwe Glahn for his incredible ability to pick up details with smaller telescopes than most observers. You can see his sketches linked throughout this guide to see what is possible in telescopes from 14" to 28".

I also want to express my gratitude to Howard Banich for his exceptional articles and encouragement. His sketching articles are phenomenal and strongly suggest that you read them.

Additionally, I thank Uwe Glahn, Steve Gottlieb, Scott Harrington, Akarsh Simha (in no particular order), who offered suggestions that contributed to the improvement of this project. No book is perfect or even close to perfect. Any errors left in there are entirely mine. If you see any, please contact me by email, which is on my website.

Lastly, I would like to acknowledge the founders and contributors of the Deep Sky Forum for promoting challenging observing projects. Their encouragement has been inspiring. I am full of gratitude for the contributions of these individuals, as well as those unnamed, to the field of visual deep-sky astronomy, which I could never have achieved on my own.

Introduction

This observing project was inspired by observing “bright” galaxies and seeing the little knots here and there in many of them. Normally, I concentrate on observing very faint galaxy groups and interacting galaxies, so I often miss out on examining the details in brighter objects. These knots could be various things such as an OB association, an H II region similar to the Orion Nebula in other galaxies, or a super star cluster among other extragalactic objects within the galaxy system. I thought it would be enjoyable to create an observing guide to aid others in searching for these features. It's fascinating to understand the nature of these little knots in distant galaxies that are much farther away than objects within our galaxy.

What are the Extragalactic Objects within Host Galaxies?

This section is intentionally brief as most of the readers are advanced observers and familiar with the nature of H II regions, OB associations, and other such extragalactic objects. I'll keep the comments focused on this observing project and give a few ponderings as my mind wanders with imagination as an observer out there somewhere, such as observing from a planet in one of those giant OB associations.

H II regions, also known as stellar nurseries, are where young stars of varying sizes are born. They are also sometimes referred to as **Star Forming Regions (SFR)**. Some of these regions are easier to see in nearby galaxies due to the presence of numerous very hot, bright blue stars, which light up the surrounding gaseous area and make it appear very bright. For instance, the well-known Orion Nebula, the closest major H II region to Earth, is relatively small at about 20 light-years across. On the other hand, the Tarantula Nebula in the Large Magellanic Cloud is a giant H II region at about 1900 light-years across. Despite being much farther away at a distance of about 160,000 light years, it appears just a couple of magnitudes fainter than the smaller Orion Nebula. In comparison, the Tarantula Nebula is almost 100 times larger and 1,000 times brighter than the Orion Nebula. If the Tarantula Nebula were located at the distance of the Orion Nebula, it would appear much brighter than the Milky Way.

OB associations are mainly concentrations of very hot blue stars with spectral classifications of O and B, typically ranging between 10 and 50 solar masses, each with a luminosity 10,000 to 100,000 times that of the Sun. They may appear as relatively bright knots in distant galaxies, often found in young early-type spiral galaxies, irregular galaxies, or young dwarf galaxies.

One thing to imagine is if you were on a planet orbiting a sun-like star in an OB association, the sky would likely be filled with stars as bright as magnitude -5 due to the abundance of supergiant stars. In fact, the sky may never be totally dark due to the number of very bright stars. Think of hundreds of stars as bright or brighter than Venus all over the sky.

Super Star Clusters (SSCs) are dense star clusters containing thousands of bright stars in a small area, appearing as diffuse knots in distant galaxies. It is suggested that SSCs are precursors to globular clusters, as bright young stars coalesce into a small area, exciting nearby H II gas and generating massive star formation. Their formation and evolution are not fully understood, and current research is ongoing to uncover more about them.¹ If we lived on a planet orbiting around a star within an SSC, the “night” sky probably be never dark and no deep sky observing could be had.

Supernova remnants and Planetary Nebulae are relatively rare, as most are too small and faint to be observed at a distance beyond the Local Group. The Veil Nebula or the Crab Nebula, for example, would be too faint to observe if they were in the Andromeda Galaxy or the Triangulum Galaxy. The brightest supernova

¹ One such current work is Consiglio's dissertation, see Consiglio, S. M. (2018). Super Star Cluster Formation, Effects, and Evolution in CO with ALMA. *UCLA*. ProQuest ID: Consiglio_ucla_0031D_17331. Merritt ID: ark:/13030/m54r2rx5. Retrieved from <https://escholarship.org/uc/item/65x3355n>

remnant in the Large Magellanic Cloud, N49, is mag 12.7 and lies just 160,000 light years distant. Even N49 would probably be too faint if it is located just beyond the Local Group or more than 4 million light years distant. However, there are a few optically visible supernova remnants in galaxies outside the Local Group that are observable in amateur telescopes. At least I won't have to ponder what observing would be like next to a supernova remnant as I'm pretty sure that the planet would be destroyed if a supernova occurred anywhere near it!

Globular Clusters are present around almost every galaxy, but they are not easily visible at distances *outside* the Local Group. I have only found one galaxy beyond the Local Group with observable globular clusters using large amateur telescopes, which is a huge radio galaxy called Centaurus A. However, I am certain that there are more galaxies with observable globular clusters, and I have overlooked them.

Observing **Individual member stars** of other galaxies *outside* the Local Group are extremely rare. The best chance is probably Wolf-Rayet stars, which are super luminous stars. Dave Tosteson has managed to see such stars shining at 18th magnitude in NGC 300.² They should be visible with an 18 or 20-inch scope under dark steady skies.

I have also included a few other types of objects from within or nearby host galaxies, such as a jet and an ionized gas-ejected material, among others.

Building the Observing Guide

To kick off this project, I set out to compile a comprehensive list of galaxies with observable extragalactic objects. My fondness for working with lists, as evidenced in my other observing guides, led me to embark on this task. Surprisingly, I discovered there wasn't an all-encompassing list available, so I resolved to create one³

I began by delving into Hodge and Kennicutt's journal article on H II regions in 125 galaxies⁴ as well as Hodge's article on H II regions in twenty nearby galaxies⁵ to establish a preliminary working list. Subsequently, I assessed the observability of the identified knots with a large amateur telescope. This initial effort yielded over 240 host galaxies. Thereafter, I expanded my search by consulting amateur observing books, observing notes, and various other resources, resulting in the discovery of additional candidates.

To refine the list, I meticulously scrutinized images one by one and evaluated their potential for observability. I sought guidance from several professional websites and utilized images from PanSTARRS⁶, Sloan Digital Sky Survey⁷, and Palomar Digital Sky Survey⁸ to aid in identifying knots observable with large telescopes. Drawing from my experience and understanding of what is feasible, I established a soft threshold of a 36-inch telescope as the observable limit, given that telescopes with such an aperture size are commonly available at major star parties. Following a comprehensive review of images from the aforementioned sources, I reduced the list to approximately 150 galaxies with observable extragalactic objects.

When performing a detailed analysis of each host galaxy, I utilized various tools available to researchers to locate journal articles and researched galaxies to identify H II regions, OB associations, and super star clusters,

² Dave Tosteson, "The Farthest Star" *Sky & Telescope* (Nov 2019), 57-59

³ I should note that others also did a lot of work on researching objects with extragalactic lists, Scott Harrington comes to mind. He has been doing it for more than 5 years at the time of writing. And many thanks to Scott to look through my list and made some suggestions.

⁴ Hodge, Paul W. and Robert C Kennicutt, Jr., "An Atlas of H II Regions in 125 galaxies", *The Astronomical Journal*, Volume 88, no 3 (March 1983): 296-328

⁵ Hodge, Paul W. "H II Regions in Twenty Nearby Galaxies", *The Astrophysical Journal Supplement Series*, Volume 18, no 157 (1969): 73-124

⁶ <https://outerspace.stsci.edu/display/PANSTARRS/>

⁷ <https://sloan.org/programs/research/sloan-digital-sky-survey#resources>

⁸ https://archive.stsci.edu/cgi-bin/dss_form

among other phenomena. NED proved to be an invaluable online resource for object identification, while journal articles that explicitly labeled extragalactic objects were also leveraged and cited within the guide. Furthermore, I employed the CDS tool in conjunction with Aladin to examine data and found the image features of PanSTARRS, SDSS, and DSS within CDS/Aladin Lite to be particularly useful for validating whether observed features were stars, background galaxies, or actual extragalactic phenomena within host galaxies. Additionally, I utilized CDS and/or Sloan Digital Sky Survey (SDSS) to verify the observability of "knots" in DSS images. It is important to note that this analysis was conducted using NED, CDS, SDSS, and DSS, to make informed judgments on observability with large amateur telescopes up to 36 inches. Drawing from over two decades of experience and substantial observing time, I possess a respectable understanding of what is observable. While acknowledging a possible tendency toward overenthusiasm for certain objects, it is reasonable to expect that a significant number of features should be observable in telescopes ranging from 20 to 36 inches in size, with even the brighter knots being observable in telescopes smaller than 20 inches.

In addition to scholarly journal articles authored by professional astronomers, this field guide also encompasses discussions on observable extragalactic objects within host galaxies composed by accomplished deep-sky observers. For a more comprehensive exploration of the host galaxy, I would suggest perusing these articles, as this guide intends to confine each host galaxy to a two-page spread to maintain a reasonable length. In instances where an amateur deep-sky observer has penned a detailed observing article of a host galaxy, I have deliberately abstained from marking every feature discussed in the article, instead providing references to encourage the reader to access the article. Of the more than 150 host galaxies within this field guide, there are approximately 15 host galaxies with an amateur-authored article.

Additionally, the guide explicitly *excludes* coverage of Local Group galaxies, most of which contain extragalactic objects. Instead, a separate guide titled "Observing Local Group Members" is available on the author's website. The author also intends to enhance the Local Group guide to match the level of detail found in the current guide at some point in the future.

Furthermore, the observing guide is not exhaustive, yet it serves as a robust starting point for advanced deep sky observers seeking to explore extragalactic objects within host galaxies. It is suggested that further resources, such as professional websites like NED, CDS, Simbad, and DeepSkyForum.com, can be utilized by advanced observers to access additional findings and insights.

Bonus objects

In recent astronomical observations, a couple of bonus objects have been of particular interest. Notably, M87's jet and Hanny's Voorwerp are among the intriguing subjects that have garnered attention. M87's jet, for instance, has been observed as a faint light blue ray shooting out from the center, particularly with a 30" or larger telescope. It is imperative to positively identify the two very small galaxies that are also linear to the center of M87, as they can be mistaken for the jet.

Hanny's Voorwerp, on the other hand, represents an injected ionized gas from the host galaxy, IC 2497, which is situated over 600 million light-years away. Observers should be mindful that given the considerable distance, using a narrowband filter, such as Omega Optical NPB or Lumicon UHC, may not yield the expected results due to the redshift, calculated to be about 24nm, which falls outside the narrowband filter bandpass range⁹ Considering the substantial redshift, the primary O III lines at 500.7nm are shifted to 524.3nm, thus necessitating the use of a very wide broadband filter to successfully observe Hanny's Voorwerp. For instance,

⁹ For the O-III line, the wavelength redshifted from 5007 to 5243 angstroms, see Lintott, Chris J., et al, "Galaxy Zoo: 'Hanny's Voorwerp', a quasar light echo?" *Monthly Notices of the Royal Astronomical Society* (Oct 2009), 133

the Astronomik CLS broadband filter, passing up to 535nm, was found to be effective in observing this phenomenon. Additionally, the Sloan G filter has been employed by several observers with great success.

Encouragement

In this field guide, a curated selection of 158 host galaxies with extragalactic objects is presented, aimed at providing a comprehensive overview of observable extragalactic objects for enthusiasts with access to large amateur telescopes. It is important to note that this list presents an ambitious challenge, challenging even those with access to a 36 inch telescope, or electronically assisted astronomy instruments.

Observing Tips

Observing extragalactic and other notable features within host galaxies constitutes a particularly challenging visual observing program. The following observing tips aim to enhance the likelihood of perceiving these features:

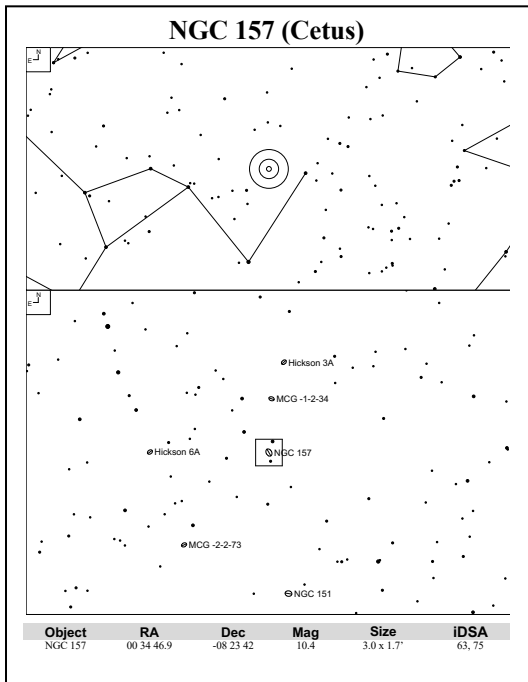
- A steady dark sky is key for resolving individual knots. Both steady AND dark skies.
- Maintaining fully dark-adapted eyes is essential. Even minimal sky glow, especially when the Milky Way is visible above the horizon, can impact night vision. It is recommended to look at the dark ground when not observing through the eyepiece, preferably with a hood over the head. Some individuals find it beneficial to look downward for a few minutes before observing through the eyepiece.
- To further minimize ambient light, the use of a hooded vest is recommended. The hood should effectively block all extraneous light, including sky glow and even the Milky Way at exceptionally dark sites.
- Employing eyepiece guards can serve as an additional barrier against light entering the eyepiece. If an eyepiece does not include a guard, it is possible to install one. More ideas can be found at faintfuzzies.com/ObservingAids.html.
- Fatigue can hamper observation capabilities. Adequate rest, including napping, if necessary, is recommended. Observing in a comfortable position, without straining one's neck or body, can also aid in maintaining focus. Some fleeting objects would disappear when fatigued.
- Use high magnification, such as 300x or higher, is advised when observing knots.
- Low-glass count and high-transmission eyepieces are recommended. Despite advancements in glass polishing and coating technologies, observable disparities persist between high glass count eyepieces—such as premium wide-field eyepieces—and simpler premium Orthoscopic or Plossl eyepieces. Comparative analyses have consistently shown that low-glass count eyepieces exhibit superior performance. Additional information can be found under "Observing Tips" on the website, titled "Going DEEP with simple eyepieces."
- Caution must be exercised when observing. Stars may appear brighter through the eyepiece than in DSS and SDSS images, potentially leading to false positives. It is advisable to refer to annotated images and take note of the positions of foreground stars.

Please post your observations of these extragalactic objects within host galaxies at deepskyforum.com. I'm sure that other "extreme" deep sky observers would like to read them.

Any feedback or suggestions would be greatly appreciated. I strive to be as accurate as possible. Let me know if there are any other host galaxies with extragalactic knots that you feel should be included.

I aim to keep this resource updated and made available to you, the deep sky observer.

How to use the Field Observer's Guide



Introduction

This list was inspired by observing bright galaxies with a large telescope and seeing all kinds of little knots here and there. This guide was built to be opened flat with coil binding or something similar, so the left page contains the finder charts, and the right page contains the labeled DSS image with labeled knots. And the coil-bound guide could be folded on itself with finder charts on one side and details on the other side so it is easier to carry it up and down the ladder if you are using a large reflector.

Left Page

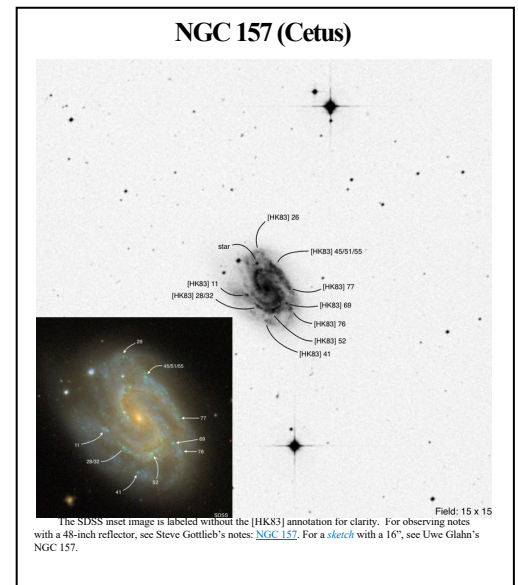
The top panel is the naked eye field with the TelRad™ superimposed on the center of the Galaxy Group. The bottom panel is a finder field of 4.5° across and 3.0° high. The finder field is wide enough for the finder scope and detailed enough for those who choose to use a low-power eyepiece as a “finder”. The limiting magnitude of the field stars is typically set to 11.0. The field of the DSS image is superimposed on the finder chart.

A table at the bottom contains the following:

- **Object** – The catalogue designation of the host galaxy
- **RA** and **Dec** coordinates in Epoch 2000.0 of the host galaxy
- **Mag** – the listed magnitude of the host galaxy
- **Size** – the listed size of the host galaxy
- **iDSA** – page number of the *interstellarum Deep Sky Atlas* (if the page number is italicized, then the object is not plotted but on the page.)¹⁰

Right page

The field of a DSS image, or on occasion an SDSS image, is noted at the bottom corner. It ranges from 15' to 45' square. The individual extragalactic objects within each host galaxy are labeled in most cases, otherwise just marked. Most host galaxies have an inset image from either SDSS or PanSTARRS showing greater detail. More often than not, only the numbers of the annotations are included in the inset to reduce clutter. Since PanSTARRS and SDSS do not cover the entire sky, in some regions neither is available. Most objects have footnotes containing reference information, interesting articles in popular periodicals, and observing notes and sketches by well-respected deep sky observers. The galaxy morphology type provided follows the De Vaucouleurs system.¹¹



Catalogues

Two lists are provided. The main list is the catalogue sorted and grouped by Constellation starting with Pegasus and in the same order as this guide. It starts on the next page. The second list is sorted by Host Galaxy Name is provided starting on page 340.

¹⁰ Ronald Stoyan and Stephan Schurig. *interstellarum Deep Sky Atlas*. (Cambridge, MA: Cambridge University Press, 2015)

¹¹ G. De Vaucouleurs. "Classification and Morphology of External Galaxies". *Astrophysik IV: Sternsysteme / Astrophysics IV: Stellar Systems*. Handbuch der Physik / Encyclopedia of Physics. Vol. 53. pp. 275–310.

Extragalactic Objects Within Host Galaxies Catalogue

This Catalogue was arranged by Constellation starting with Pegasus working eastwards. All of my guides were arranged in a similar fashion.

Page	Object	RA	Dec	Mag	Size	iSDA	Const
22	NGC 7331	22 37 05.1	+34 24 50	9.5	10.5 x 3.7'	28, D13	Peg
24	NGC 7448	23 00 03.6	+15 58 49	11.6v	2.5 x 1.2'	40	Peg
26	NGC 7479	23 04 57.3	+12 19 21	10.9	4.1 x 3.1'	40	Peg
28	NGC 7678	23 28 27.9	+22 25 17	11.8	2.2 x 1.7'	28, 40	Peg
30	NGC 7741	23 43 54.9	+26 04 26	11.3	2.3 x 1.0'	28	Peg
32	UGC 12856	23 56 45.3	+16 48 50	13.9	1.8 x 0.7'	40,51	Peg
34	NGC 470	01 19 44.7	+03 24 37	11.8	2.0 x 1.3'	63	Psc
36	NGC 628 (M 74)	01 36 41.6	+15 46 57	9.4	10.5 x 9.5'	51	Psc
38	NGC 45	00 14 03.9	-23 10 52	10.7	8.5 x 5.9'	87	Cet
40	NGC 157	00 34 46.9	-08 23 42	10.4	3.0 x 1.7'	63, 75	Cet
42	NGC 210	00 40 34.8	-13 52 28	10.9	5.0 x 3.3'	75	Cet
44	NGC 247	00 47 08.5	-20 45 37	9.9v	21.4 x 6.9'	75, 87	Cet
46	NGC 337	00 59 50.3	-07 34 43	11.6	2.9 x 1.8'	75	Cet
48	NGC 428	01 12 55.7	+00 58 56	12.1	2.3 x 2.0'	63	Cet
50	NGC 450	01 15 30.5	-00 51 39	11.5	3.1 x 2.3'	63	Cet
52	NGC 864	02 15 27.8	+06 00 09	10.9	4.7 x 3.5'	62	Cet
54	NGC 1068 (M 77)	02 42 40.8	-00 00 48	8.9v	7.1 x 6.0'	62	Cet
56	NGC 1073	02 43 40.3	+01 22 33	11.0v	4.9 x 4.5'	62	Cet
58	NGC 7793	23 57 50.3	-32 35 15	9.1	8.4 x 6.9'	76, 87	Scl
60	NGC 55	00 14 54.0	-39 11 34	7.9	32.4 x 5.6'	88, 99	Scl
62	NGC 253	00 47 33.2	-25 17 18	8.0v	27.5 x 6.8'	87	Scl
64	NGC 300	00 54 53.5	-37 41 03	9.0	21.9 x 15.5'	87, 99	Scl
66	NGC 625	01 35 04.6	-41 26 12	11.1	5.8 x 1.9'	98, 99	Phe
68	NGC 672	01 47 54.2	+27 25 51	11.4	6.5 x 1.8'	38, 39	Tri
70	NGC 925	02 27 16.3	+33 34 36	10.1	7.3 x 3.2'	38	Tri
72	NGC 278	00 52 04.3	+47 33 02	10.8	2.1 x 2.0'	27	Cas
74	NGC 772	01 59 19.2	+19 00 23	10.3	4.7 x 3.8'	50, 51	Ari
76	NGC 972	02 34 12.8	+29 18 34	12.1	2.4 x 1.0'	38	Ari
78	NGC 1012	02 39 14.9	+30 09 05	12.0	2.5 x 1.1'	38	Ari
80	NGC 1156	02 59 42.3	+25 14 16	11.7	2.6 x 1.7'	38	Ari
82	NGC 1084	02 45 59.3	-07 34 38	10.7	2.6 x 1.6'	62, 74	Eri
84	NGC 1140	02 54 32.9	-10 01 37	12.5	0.9 x 0.5'	74	Eri
86	NGC 1232	03 09 44.8	-20 34 37	9.9	5.4 x 4.5'	74, 86	Eri
88	NGC 1253	03 14 09.1	-02 49 22	11.7	5.2 x 2.3'	62	Eri
90	NGC 1300	03 19 40.3	-19 24 33	10.4	7.1 x 3.4'	74	Eri
92	NGC 1359	03 33 46.8	-19 29 24	12.6	1.7 x 0.5'	74	Eri

Page	Object	RA	Dec	Mag	Size	iSDA	Const
94	NGC 1421	03 42 29.4	-13 29 20	11.4	3.5 x 0.9'	74	Eri
96	NGC 1507	04 04 27.2	-02 11 19	12.3	3.6 x 0.9'	61	Eri
98	NGC 1532	04 12 02.5	-32 51 01	9.8	12.6 x 3.0	85, 86	Eri
100	NGC 922	02 25 04.4	-24 47 18	12.2	1.9 x 1.8'	86	For
102	NGC 1097	02 46 18.4	-30 16 19	9.5	6.0 x 3.3'	86	For
104	NGC 1365	03 33 35.4	-36 08 15	9.6	5.4 x 4.1'	86, 98, D10	For
106	NGC 1385	03 27 28.7	-24 30 08	10.9	3.4 x 2.0'	86	For
108	IC 342	03 46 46.2	+68 05 32	9.1	21.4 x 20.9'	6, 7, 14	Cam
110	NGC 1569	04 30 46.7	+64 50 42	11.0	3.4 x 1.5	6, 7, 14	Cam
112	NGC 1961	05 42 04.8	+69 22 42	11.0	4.6 x 3.0'	6	Cam
114	NGC 2146	06 18 37.7	+78 21 25	10.6	5.4 x 2.9'	5, 6	Cam
116	NGC 2366	07 28 51.9	+69 12 31	11.4v	8.2 x 3.3'	5, 6, 13	Cam
118	NGC 2403	07 36 48.2	+65 36 13	8.9v	21.9 x 12.3'	5, 6, 13	Cam
120	NGC 2633	08 48 00.3	+74 06 05	12.4	1.8 x 0.9'	5, 6	Cam
122	NGC 2276	07 26 56.6	+85 45 19	12.3	2.4 x 1.7'	1	Cep
124	NGC 2535	08 11 13.5	+25 12 23	12.8	2.5 x 1.2'	35	Cnc
126	NGC 1832	05 12 02.1	-15 41 11	12.2	2.0 x 1.7'	73	Lep
128	NGC 2207	06 16 22.1	-21 22 22	10.9	3.9 x 2.2'	72, 84	CMa
130	NGC 2188	06 10 09.5	-34 06 22	11.7	4.3 x 1.1'	84, 85, 97	Col
132	Henize 2-10 (ESO 495-21)	08 36 15.1	-26 24 34	11.1	1.8'	83	Pix
134	NGC 2997	09 45 38.8	-31 11 27	9.4v	9.2 x 7.4'	82, 83	Ant
136	NGC 3125	10 06 33.1	-29 56 08	13.0	1.1 x 0.7'	82, 83	Ant
138	Holmberg II (UGC 4305)	08 19 01.2	+70 43 19	11.4	7.9 x 6.3'	5, 6	UMa
140	NGC 2805	09 20 17.9	+64 06 21	11.9	1.8 x 1.5'	12, 13	UMa
142	NGC 2820A	09 21 30.1	+64 14 20	15.0v	0.8 x 0.4'	12, 13	UMa
144	NGC 2976	09 47 12.8	+67 55 12	10.2	6.0 x 2.2'	5, 12	UMa
146	NGC 3031 (M 81)	09 55 30.5	+69 04 09	6.9	26.9 x 14.1'	5, 12	UMa
148	NGC 3034 (M 82)	09 55 52.4	+69 40 47	8.4v	11.3 x 4.2'	5	UMa
150	NGC 3184	10 18 17.0	+41 25 28	12.7	6.7 x 5.8'	22, 23	UMa
152	IC 2574	10 28 21.2	+68 24 59	10.4	13.2 x 5.4'	5, 12	UMa
154	NGC 3319	10 39 09.5	+41 41 13	11.1	6.2 x 3.4'	22	UMa
156	NGC 3359	10 46 35.2	+63 13 41	10.6	4.7 x 1.9'	12	UMa
158	NGC 3448	10 54 39.2	+54 18 19	12.2b	4.8 x 1.4'	12, 22	UMa
160	NGC 3556 (M 108)	11 11 29.9	+55 40 43	10.0	8.7 x 2.2'	12	UMa
162	NGC 3631	11 21 02.9	+53 10 10	11.0b	5.0 x 4.7'	12, 22	UMa
164	NGC 3690	11 28 32.3	+58 33 43	11.5	2.9 x 2.1'	11, 12	UMa
166	Kiso 5639 (PGC 36252)	11 41 07.5	+32 25 37	15.5	0.4 x 0.2'	34	UMa
168	NGC 3893	11 48 38.2	+48 42 39	10.7v	4.5 x 2.7'	21, 22	UMa

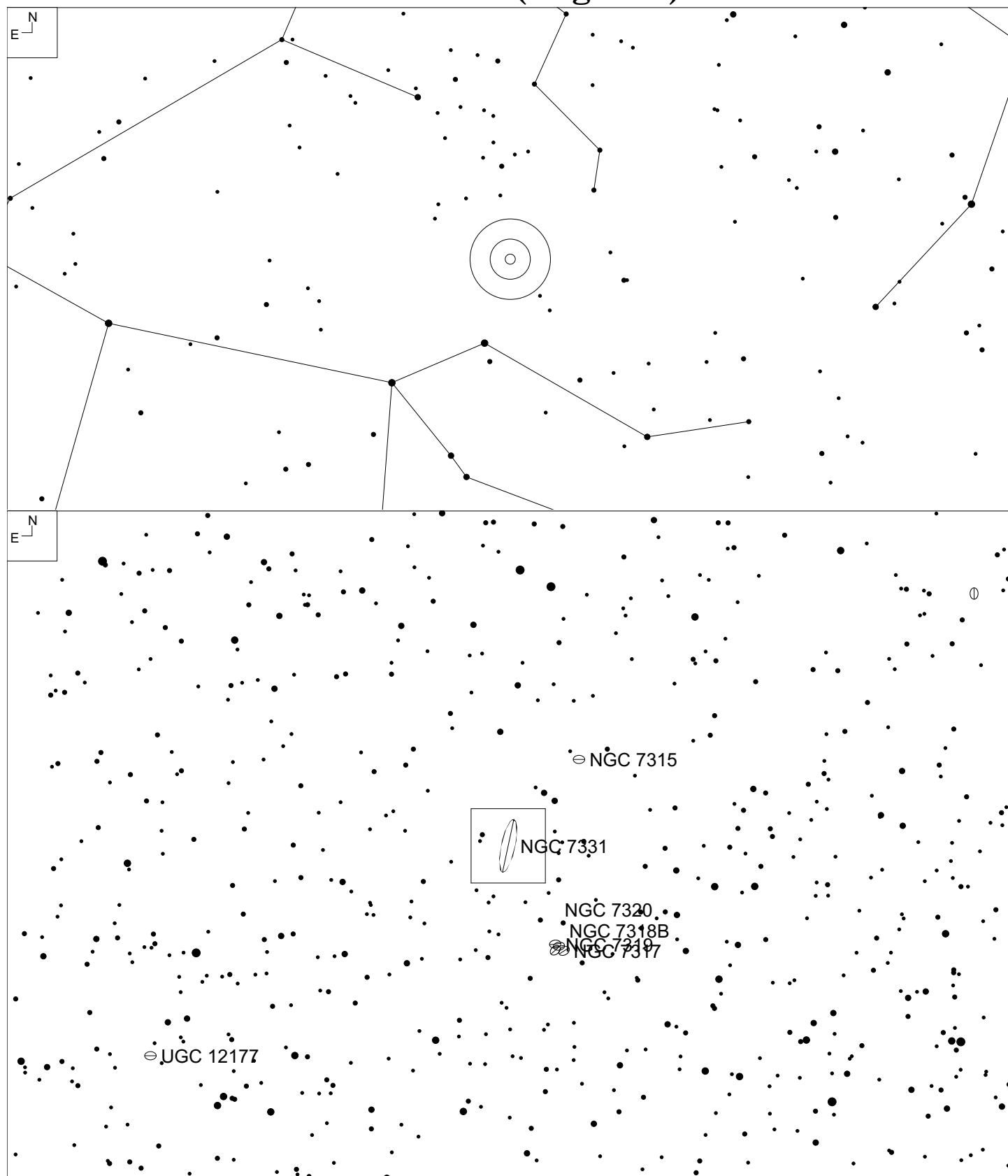
Page	Object	RA	Dec	Mag	Size	iSDA	Const
170	NGC 3938	11 52 48.9	+44 07 30	10.4	4.0 x 3.8'	21, 22	UMa
172	NGC 3991	11 57 30.5	+32 20 03	13.1	1.4 x 0.4'	33, 34	UMa
174	NGC 4051	12 03 09.6	+44 31 53	12.9v	5.2 x 4.6'	21, 22	UMa
176	NGC 4102	12 06 23.0	+52 42 40	11.2	3.0 x 1.7'	11, 12, 21, 22	UMa
178	NGC 4605	12 39 59.4	+61 36 33	10.3	5.8 x 2.2'	11, 12	UMa
180	NGC 5204	13 29 36.8	+58 25 26	11.7	2.7 x 1.9'	11	UMa
182	Holmberg IV (UGC 8837)	13 54 46.3	+53 54 20	14.2	2.1 x 0.7'	11	UMa
184	NGC 5430	14 00 45.8	+59 19 43	11.9	2.2 x 1.1'	11	UMa
186	NGC 5457 (M 101)	14 03 12.6	+54 20 56	7.9v	28.9 x 26.9'	11	UMa
188	NGC 5474	14 05 02.2	+53 40 01	10.8	2.6 x 2.3'	11, 20	UMa
190	NGC 4236	12 16 41.4	+69 28 05	10.5	21.9 x 7.2'	4, 5	Dra
192	NGC 5678	14 32 06.6	+57 55 34	11.8	2.4 x 1.4'	10, 11	Dra
194	NGC 6015	15 51 27.2	+62 18 50	11.1	3.7 x 1.8'	3, 10, 11	Dra
196	UGC 10214	16 06 03.9	+55 25 32	13.7	1.5 x 0.7'	10	Dra
198	IC 1291	18 33 52.6	+49 16 43	13.0	1.8 x 1.5'	18, 19	Dra
200	NGC 2445	07 46 55.1	+39 00 55	13.0	1.4 x 1.1'	23, 24, 36	Lyn
202	NGC 2500	08 01 51.2	+50 44 19	11.6	2.3 x 1.5'	13, 23, 24	Lyn
204	NGC 2537	08 13 12.8	+45 59 29	11.7	2.2 x 1.9'	23, 24	Lyn
206	NGC 2541	08 14 40.2	+49 03 43	11.8	6.3 x 3.2'	23, 24	Lyn
208	NGC 2782	09 14 03.7	+40 06 59	11.6	1.7 x 1.3'	23	Lyn
210	NGC 4214	12 15 39.2	+36 19 37	9.9v	7.4 x 6.5'	21,22,33,34	CVn
212	NGC 4258 (M 106)	12 18 58.1	+47 18 13	8.4	18.6 X 7.2'	21, 22	CVn
214	NGC 4395	12 25 48.7	+33 33 01	10.2	13.2 x 11.0'	33	CVn
216	NGC 4449	12 28 11.1	+44 05 37	9.6v	6.1 x 4.3'	21, 22	CVn
218	NGC 4485	12 30 31.1	+41 42 04	11.9v	2.6 x 1.9'	57, 69	CVn
	NGC 4490	12 30 36.4	+41 38 37	9.8v	6.3 x 2.7'		
220	NGC 4618	12 41 32.9	+41 09 03	10.8	4.2 x 3.4'	21	CVn
222	NGC 4631	12 42 08.0	+32 32 29	9.2v	15.4 x 2.6'	33	CVn
224	NGC 4656	12 43 57.6	+32 10 13	10.5v	9.1 x 1.7'	33	CVn
226	NGC 4861	12 59 02.3	+34 51 34	12.3v	4.2 x 1.5'	33	CVn
228	NGC 5033	13 13 27.8	+36 35 40	10.2	10.7 x 5.0'	21, 33	CVn
230	NGC 5055 (M 63)	13 15 49.4	+42 02 01	8.6	13.2 x 7.9'	21	CVn
232	NGC 5194 (M 51)	13.29 52.7	+47 11 43	8.4v	10.3 x 8.1'	45,D2	CVn
234	IC 2497	09 41 04.1	+34 43 59	15.5	0.4 x 0.3'	35	LMi
236	NGC 3395	10 49 49.3	+32 59 09	12.1	1.7 x 0.8'	34	LMi
	NGC 3396	10 49 55.1	+32 59 38	12.5	1.1 x 0.9'		
238	NGC 3432	10 52 31.1	+36 37 08	11.7v	6.8 x 1.4'	22,34	LMi
240	NGC 2903	09 32 10.1	+21 30 03	9.1v	12.6 x 6.0'	35,47	Leo
242	NGC 3239	10 20 05.5	+17 09 35	12.9	1.4 x 1.3'	46	Leo

Page	Object	RA	Dec	Mag	Size	iSDA	Const
244	NGC 3389	10 48 27.2	+12 32 05	12.8	2.8 x 1.3'	46	Leo
246	NGC 3447	10 53 23.4	+16 46 26	14.7	4.2 x 2.4	46	Leo
248	NGC 3627 (M 66)	11 20 15.0	+12 59 29	8.9v	9.1 x 4.1'	46	Leo
250	NGC 4189	12 13 47.0	+13 25 36	11.7	2.6 x 1.5'	D2	Com
252	NGC 4204	12 15 14.4	+20 39 33	12.4	3.6 x 2.9'	45	Com
254	NGC 4254 (M 99)	12 18 49.6	+14 24 59	9.87v	5.4' x 4.7'	45, D2	Com
256	NGC 4321 (M 100)	12 22 54.7	+15 49 28	9.4	7.4 x 6.3'	45, D2	Com
258	NGC 4559	12 35 57.6	+27 57 36	10.0v	10.8 x 4.3'	33	Com
260	NGC 4725	12 50 26.3	+25 30 03	9.4	10.7 x 7.6'	33	Com
262	NGC 4178	12 12 46.4	+10 51 58	12.9b	5.1 x 1.8'	D2	Vir
264	NGC 4294	12 21 17.6	+11 30 46	12.1	2.3 x 0.9'	D2	Vir
	NGC 4299	12 21 40.0	+11 30 16	12.5	1.6 x 1.5'		
266	NGC 4303 (M 61)	12 21 54.7	+04 28 29	9.7	9.7 x 5.8'	57, D3	Vir
268	NGC 4438	12 27 45.7	+13 00 32	10.17v	8.6' x 3.1'	45, D2	Vir
270	NGC 4486 (M 87)	12 30 49.7	+12 23 24	8.3	7.2 x 6.8'	45, D2	Vir
272	NGC 4532	12 34 19.3	+06 28 04	11.9	2.8 x 1.1'	D3	Vir
274	NGC 4535	12 34 20.2	+08 11 57	9.7	5.9 x 2.9'	45, 57, D3	Vir
276	NGC 4536	12 34 27.0	+02 11 19	10.6	4.6 x 2.4'	57, D3	Vir
278	NGC 4654	12 43 56.5	+13 07 42	11.9	4.5 x 2.0	45	Vir
280	NGC 4731	12 51 01.0	-06 23 35	12.0	4.0 x 1.1'	57, 69	Vir
282	UGC 8091 (GR 8)	12 58 40.2	+14 13 08	15.0	0.8'	45	Vir
284	NGC 4939	13 04 14.4	-10 20 24	13.8	3.0 x 2.0'	69	Vir
286	NGC 5068	13 18 54.9	-21 02 26	9.9	6.4 x 4.4'	69, 81	Vir
288	NGC 5147	13 26 19.7	+02 06 03	11.8	1.9 x 1.5'	57	Vir
290	NGC 5247	13 38 02.5	-17 53 01	10.0	5.6 x 4.9'	69	Vir
292	NGC 5468	14 06 34.9	-05 27 11	12.5	2.6 x 2.4'	56, 68	Vir
294	NGC 5584	14 22 23.8	-00 23 15	11.4	3.4 x 2.5'	56	Vir
296	NGC 3023	09 49 52.6	+00 37 04	13.0	2.9 x 1.4'	59	Sex
298	NGC 3423	10 51 14.3	+05 50 24	12.1b	3.8 x 3.2'	58	Sex
300	NGC 2835	09 17 52.8	-22 21 17	10.5	6.6 x 4.4'	71	Hya
302	NGC 3621	11 18 16.5	-32 48 51	9.6v	11.0 x 4.8'	82	Hyd
304	NGC 5236 (M 83)	13.37 00.9	-29 51 57	7.5v	12.8 x 11.4'	81	Hyd
306	NGC 3109	10 03 05.8	-26 09 39	10.7	19.1 x 3.7'	82, 83	Hyd
308	NGC 4027	11 59 30.2	-19 15 15	11.1v	2.8 x 2.5'	69, 70	Crv
310	NGC 4038	12 01 53.0	-18 52 03	10.9p	3.7 x 1.7'	69, 70	Crv
	NGC 4039	12 01 53.8	-18 53 05	11.1p	4.0 x 2.2'		
312	NGC 5128	13 25 27.8	-43 01 21	6.8	25.6 x 20.0'	93	Cen
314	NGC 5253	13 39 56.0	-31 38 24	10.9	5.0 x 1.9'	81	Cen
316	NGC 5398	14 01 21.6	-33 03 50	12.4v	2.8 x 1.6'	80,81	Cen
318	NGC 5408	14 03 20.9	-41 22 40	11.6	2.0 x 1.2'	92, 93	Cen

Page	Object	RA	Dec	Mag	Size	iSDA	Const
320	NGC 5248	13 37 32.3	+08 52 12	11.0	6.2 x 4.5'	45, 57	Boo
322	NGC 6070	16 09 58.6	+00 42 32	11.8	3.5 x 1.9'	55	Ser
324	NGC 6207	16 43 03.9	+36 49 57	11.6	3.0 x 1.3'	31	Her
326	NGC 6239	16 50 05.6	+42 44 22	12.4	2.6 x 1.1'	19	Her
328	NGC 6764	19 08 16.4	+50 56 00	11.8	2.3 x 1.3'	9, 18	Cyg
330	NGC 6946	20 34 54.8	+60 09 08	9.6	11.6 x 9.8'	8, 9	Cep
332	NGC 7250	22 18 17.8	+40 33 45	12.6v	1.7 x 0.8'	16, 17	Lac
334	NGC 7218	22 10 11.7	-16 39 40	12.0	2.5 x 1.1'	64	Aqr
336	NGC 7496	23 09 47.3	-43 25 40	11.1	3.3 x 3.0'	88	Gru

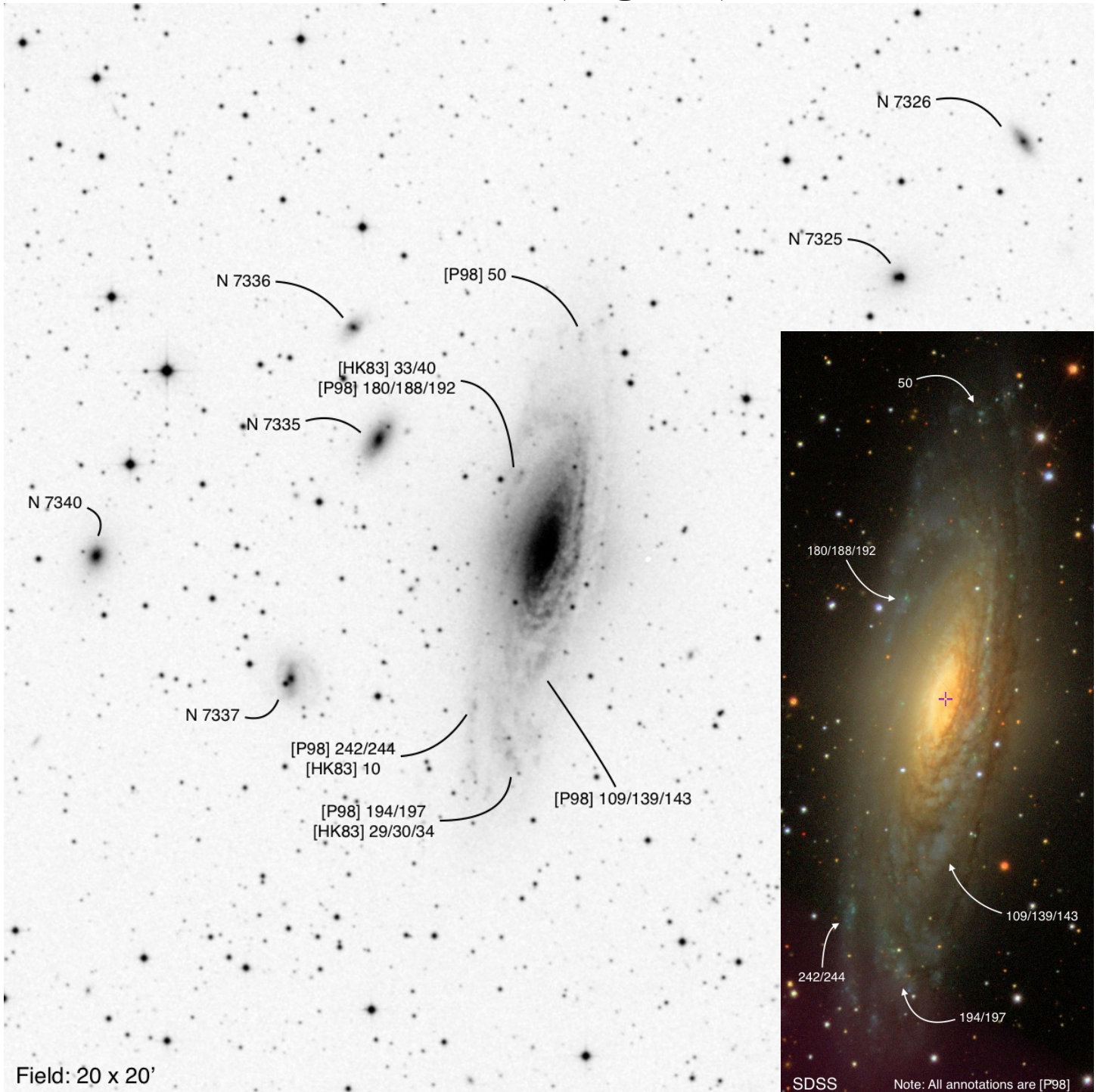
Extragalactic Objects Within Host Galaxies Observer's Guide

NGC 7331 (Pegasus)



Object	RA	Dec	Mag	Size	iSDA
NGC 7331	22 37 05.1	+34 24 50	9.5	10.5 x 3.7'	28, D13

NGC 7331 (Pegasus)



NGC 7331 is a type SA(s)b galaxy lies about 40 million light years (40 mly) distant and 140,000 light years (140 kly) across. It is substantially larger than the Milky Way.

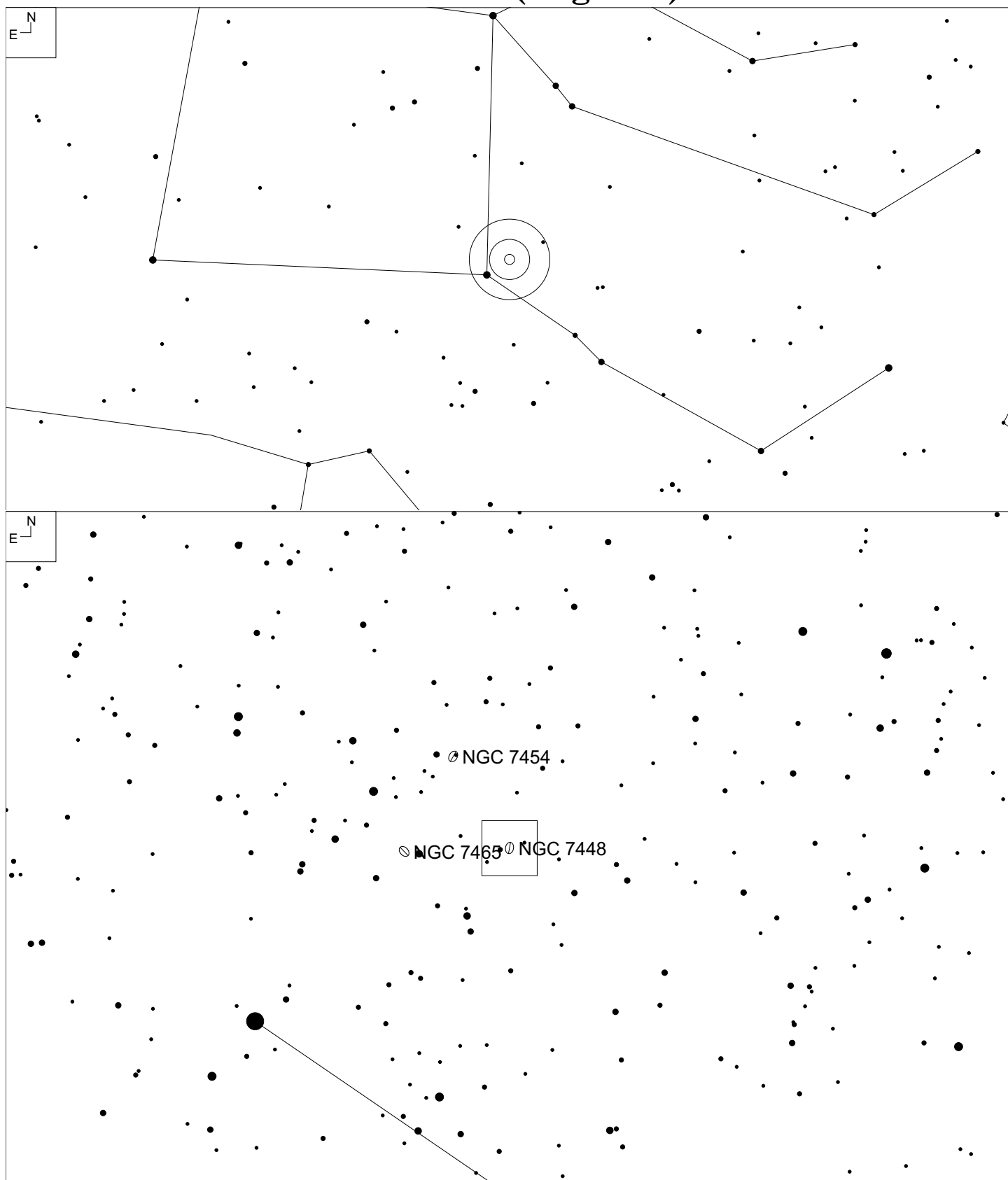
H II region **[P98]** annotations from H. Petit, “Catalogue of HII regions in NGC 7331 at the 6 meter telescope,” *Astronomy and Astrophysics Supplement*, Volume 131 (Aug 1998): 317-318

H II region **[HK83]** annotations from Paul W. Hodge and Robert C Kennicutt, Jr., “An Atlas of H II Regions in 125 galaxies,” *The Astronomical Journal*, Volume 88, Number 3 (March 1983): 296–328. As Hodge and Kennicutt (1983) is the most common H II identification, so all **[HK83]** annotations throughout this guide and will not be repeating this footnote.

For a sketch with a 14.5” by Uwe Glahn, see [NGC 7331](#).

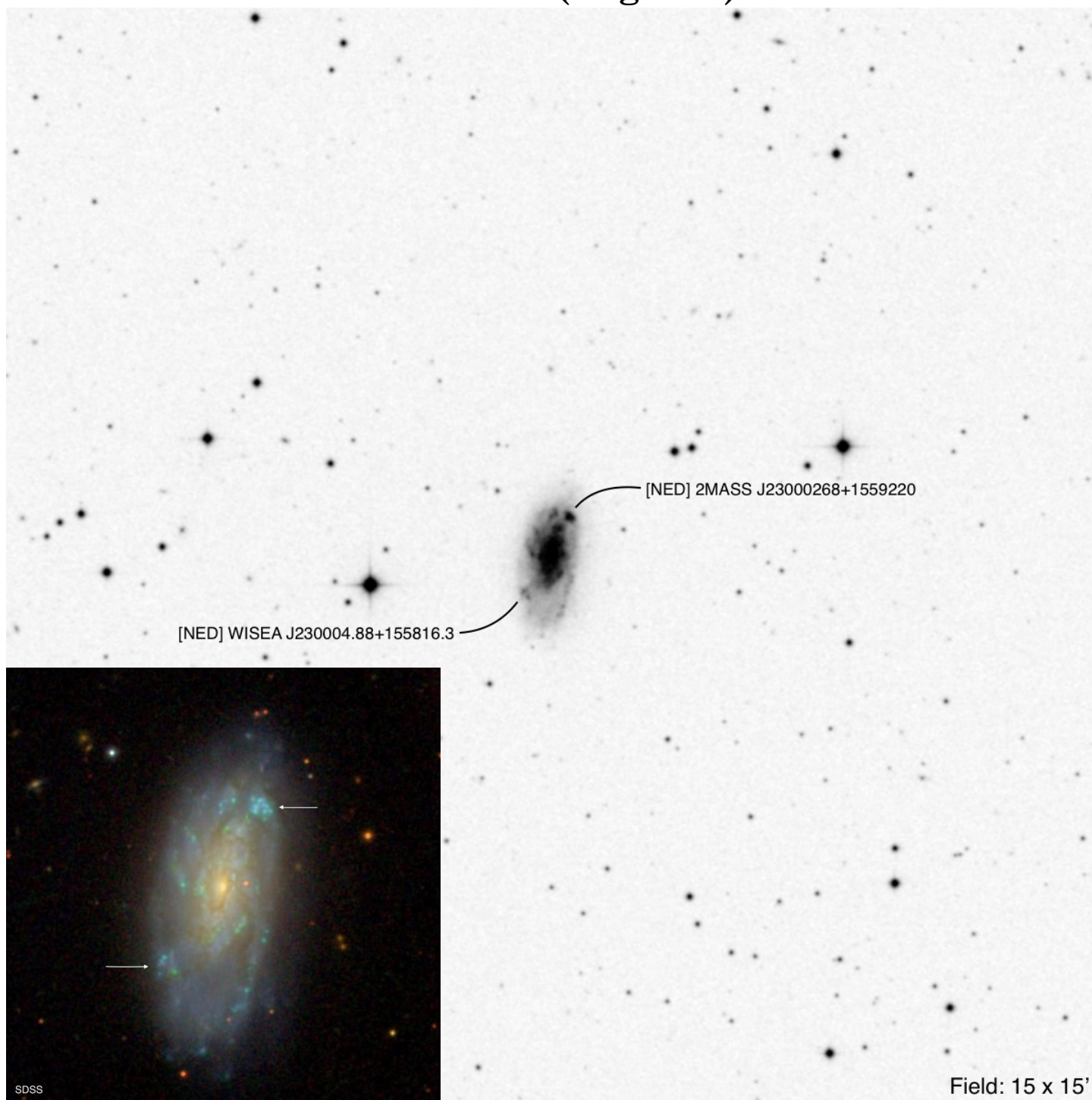
The Hubble Space Telescope snapped a [photo](#).

NGC 7448 (Pegasus)



Object	RA	Dec	Mag	Size	iSDA
NGC 7448	23 00 03.6	+15 58 49	11.6v	2.5 x 1.2'	40

NGC 7448 (Pegasus)

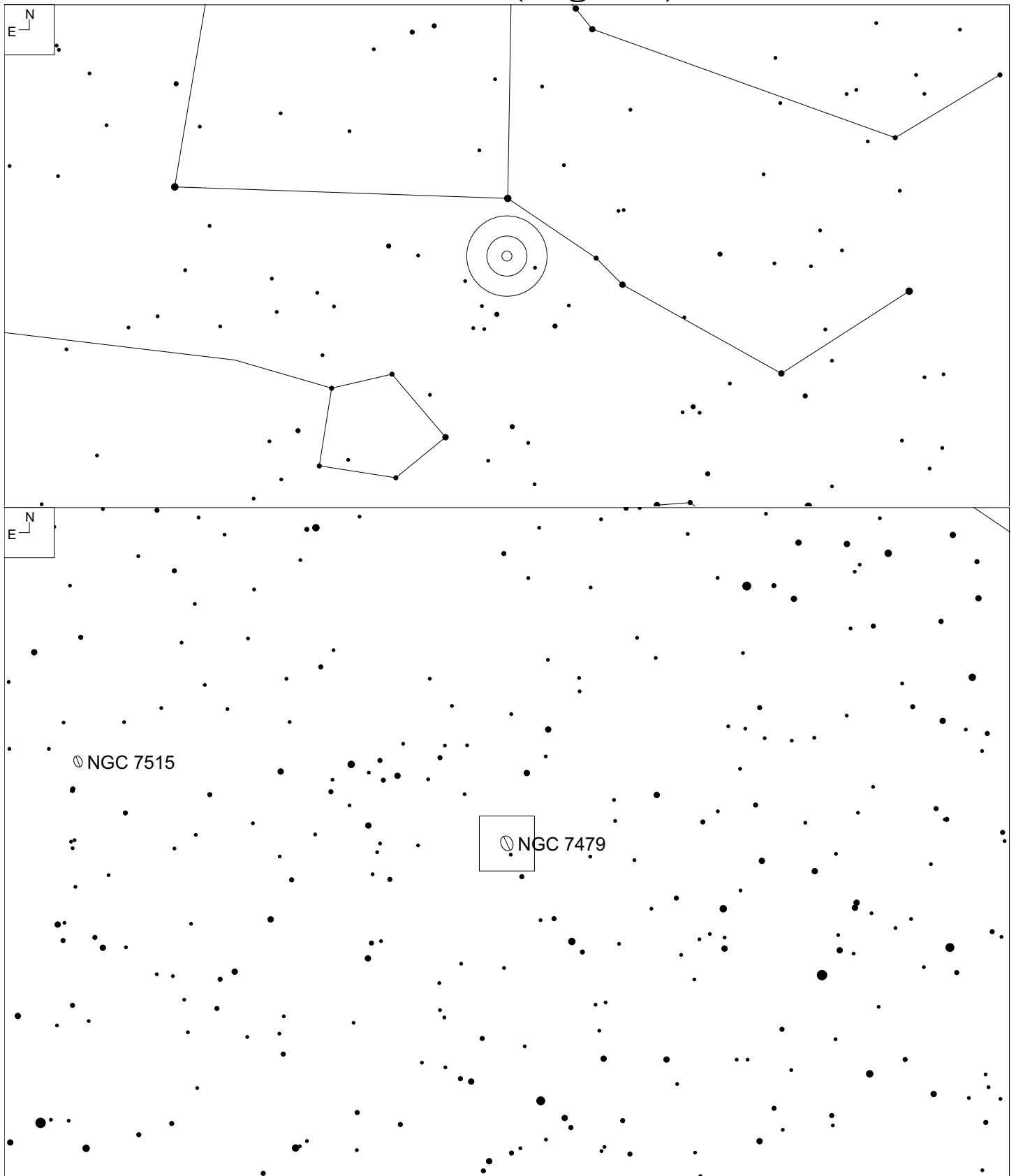


NGC 7448 is a type SA(rs)bc galaxy at about 80 mly distant and 60 kly across.

Two supernovae were reported. First in 1980 reported by F.P. Aksenov, et al, "Supernova in NGC 7448," *International Astronomical Union Circular*, No. 3547, #1 (1980). Second in 1997 reported by Q.Y. Qiao, et al "Supernova 1997dt in NGC 7448," *International Astronomical Union Circular*, No. 6775, #1 (1997).

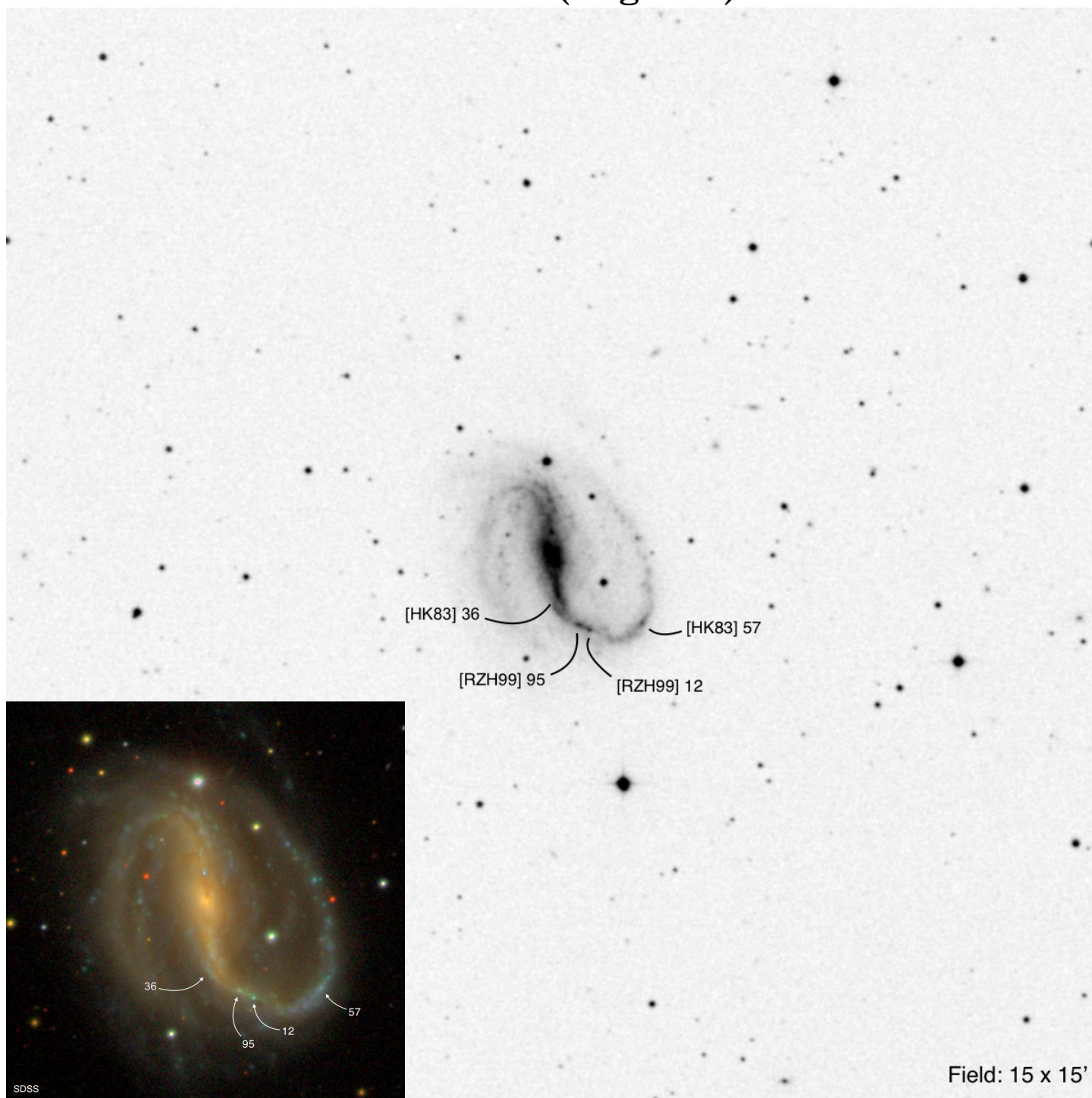
For observing notes with a 48-inch reflector, see Steve Gottlieb's notes: [NGC 7448](#). For a [sketch](#) in a 16" by Uwe Glahn, where he picked up a number of knots beyond what is labeled.

NGC 7479 (Pegasus)



Object	RA	Dec	Mag	Size	iSDA
NGC 7479	23 04 57.3	+12 19 21	10.9	4.1 x 3.1'	40

NGC 7479 (Pegasus)

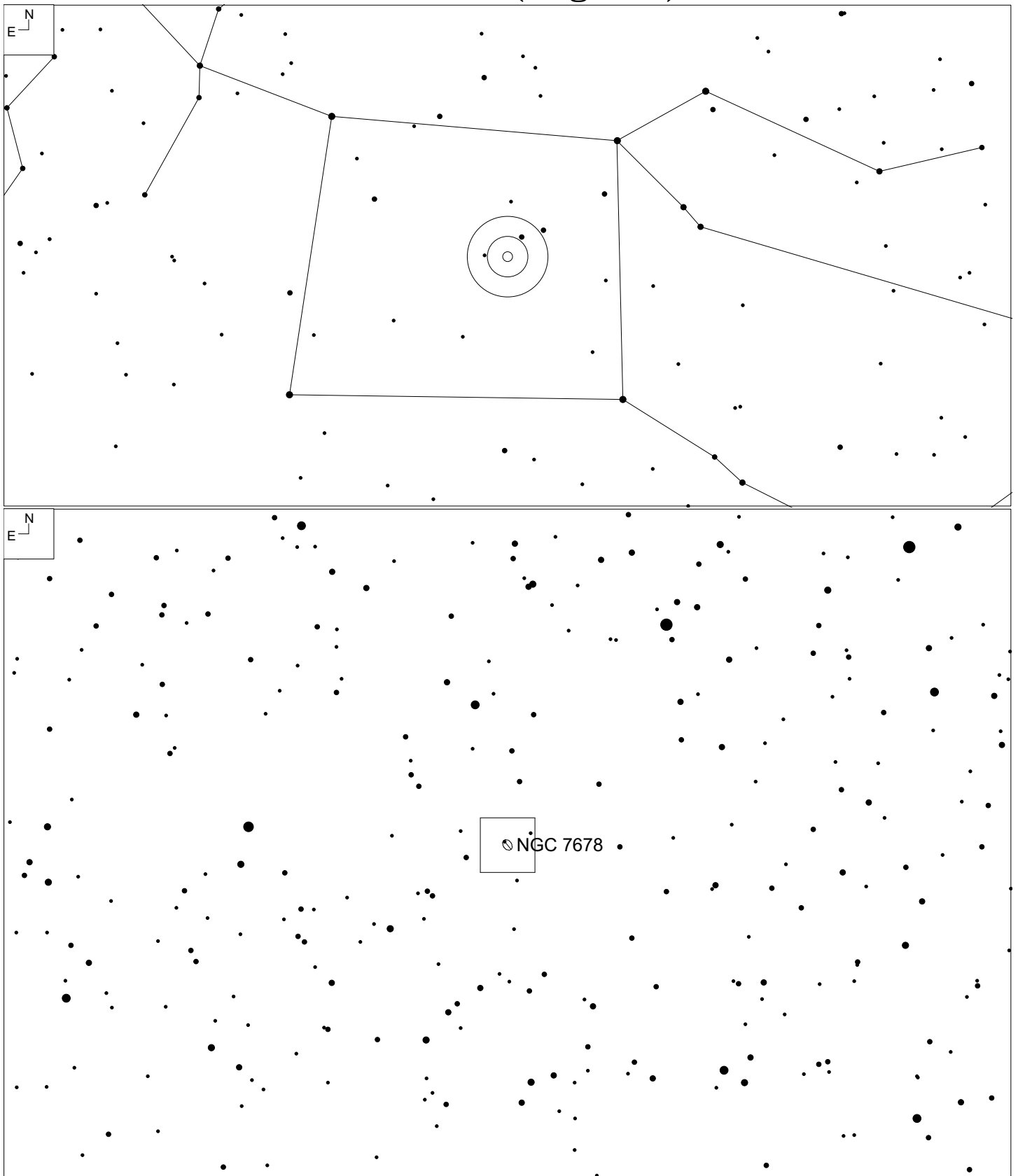


NGC 7479 is a type SB(s)c barred spiral galaxy sometimes called the "Superman Galaxy". It lies about 115 mly distant and 137 kly across.

H II region **[RZH99]** annotations from M. Rozas, et al, "Global properties of the population of HII regions in NGC 7479 from photometric H α imaging," *Astronomy and Astrophysics Supplement Series*, Volume 135 (Feb 1999): 145-158

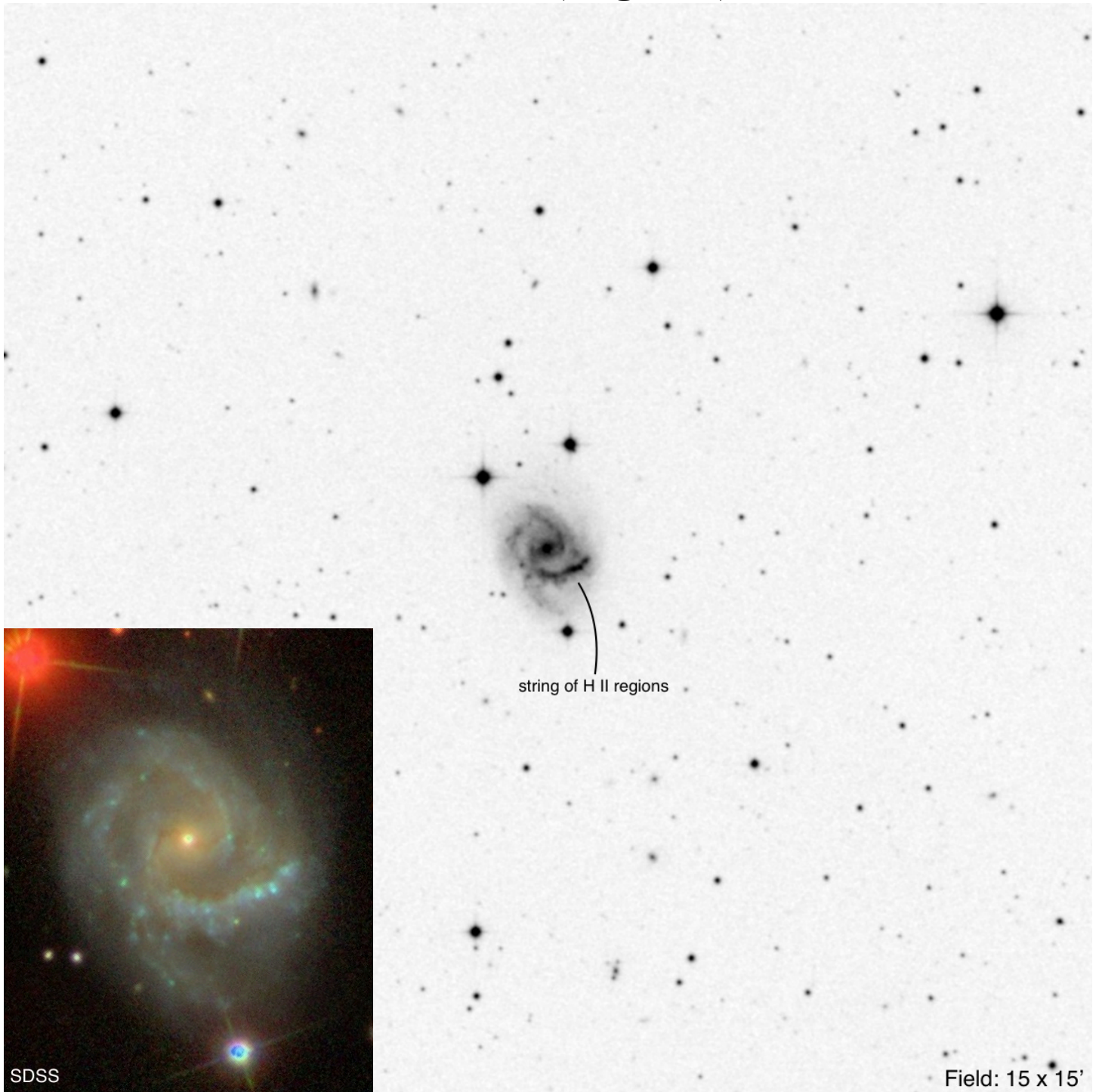
For observing notes with a 48-inch reflector, see Steve Gottlieb's notes: [NGC 7479](#). [RZH99] 12 and 95 was noted as [HK83] 45 in Gottlieb's notes. Glahn picked up the string of H II knots, [HK83] 57 with a 16" as shown in his [sketch](#).

NGC 7678 (Pegasus)



Object	RA	Dec	Mag	Size	iSDA
NGC 7678	23 28 27.9	+22 25 17	11.8	2.2 x 1.7'	28, 40

NGC 7678 (Pegasus)

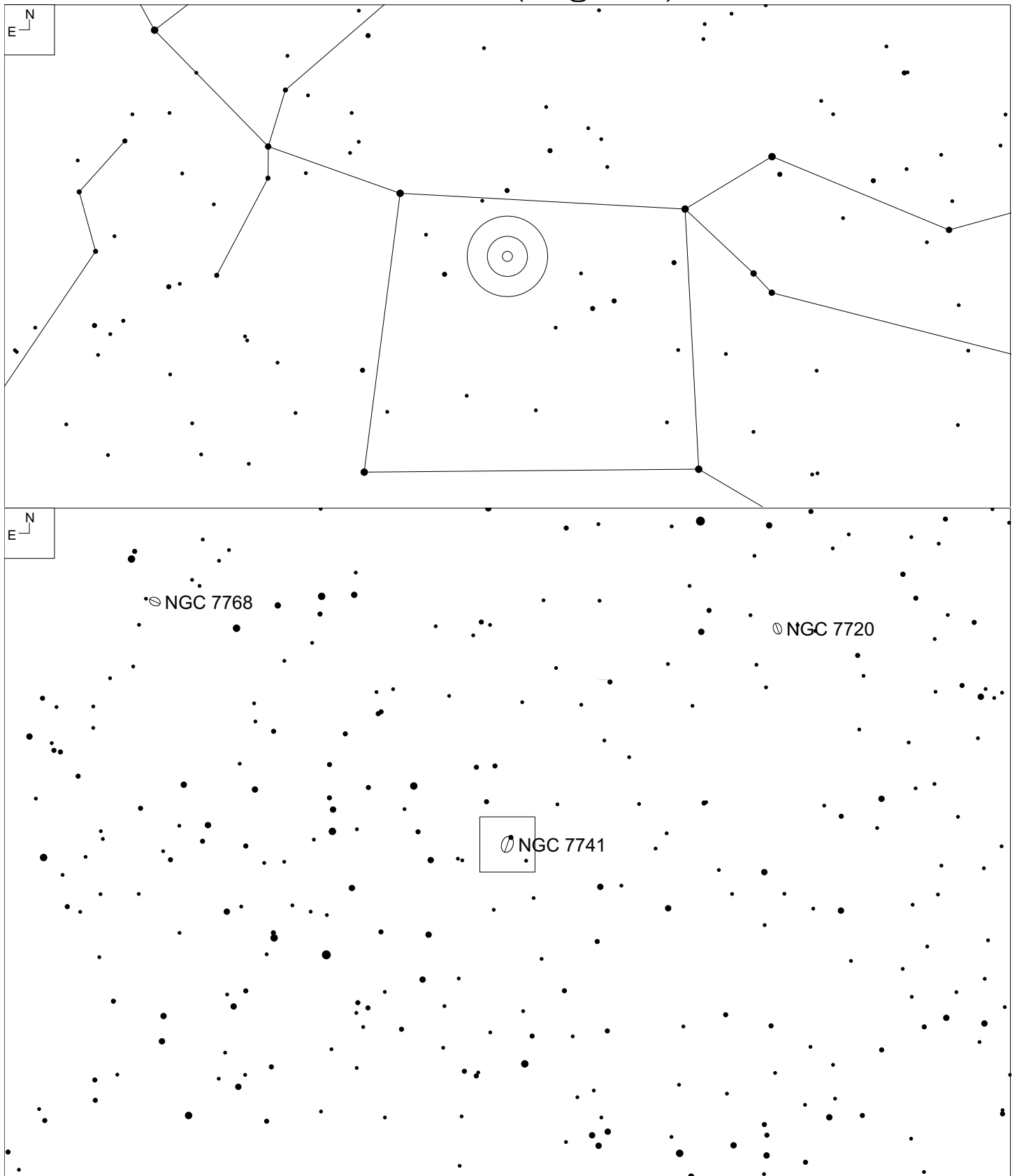


NGC 7678 is a type SAB(rs)c grand design spiral galaxy sitting about 130 mly distant. It was calculated to be about 95 kly across.

For observing notes with a 24" and a 48" telescope, see Gottlieb's notes: [NGC 7678](#). Also see Glahn's [sketch](#) with his 16" reflector.

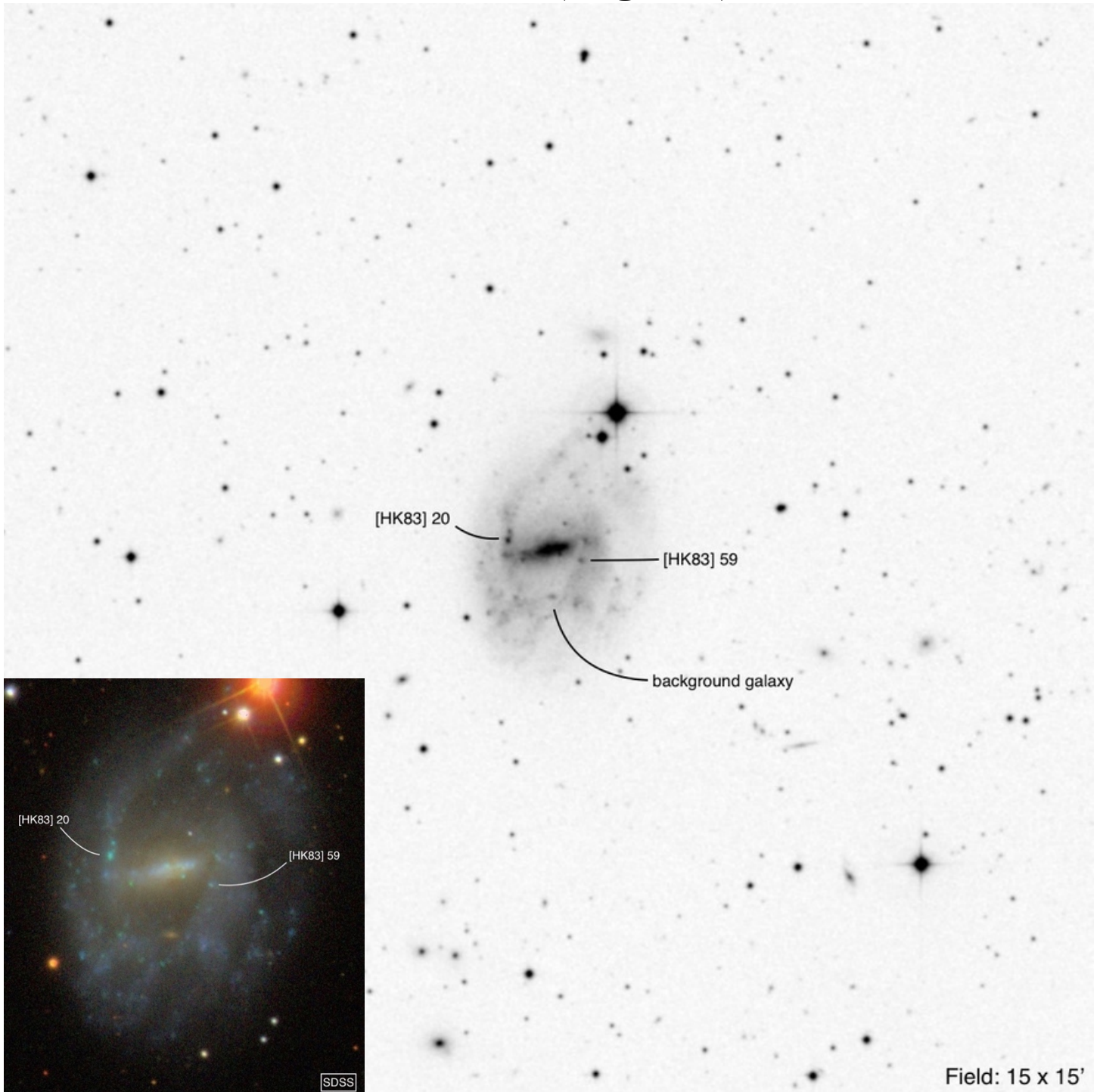
Hubble Space Telescope [image](#).

NGC 7741 (Pegasus)



Object	RA	Dec	Mag	Size	iSDA
NGC 7741	23 43 54.9	+26 04 26	11.3	2.3 x 1.0'	28

NGC 7741 (Pegasus)

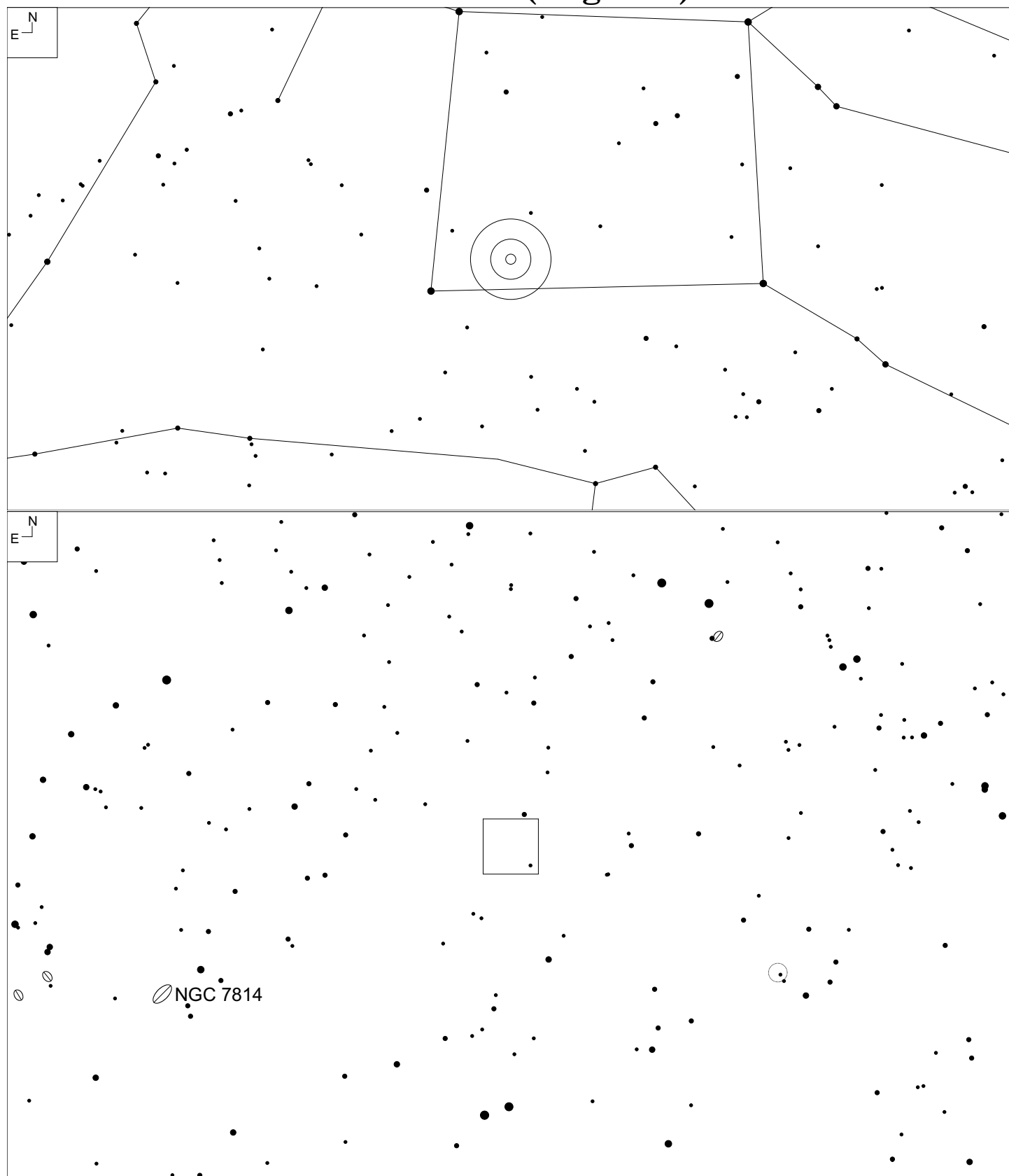


NGC 7741 is a type SB(s)c barred spiral galaxy. It sits 47 mly distant and about 60 kly across.

M.F. Duval, et al. "A Detailed Study of the Ionized Hydrogen Distribution and of the Velocity Field of the Barred Galaxy NGC 7741," *Astronomy & Astrophysics*, Volume 241 (Jan 1991): 375-388.

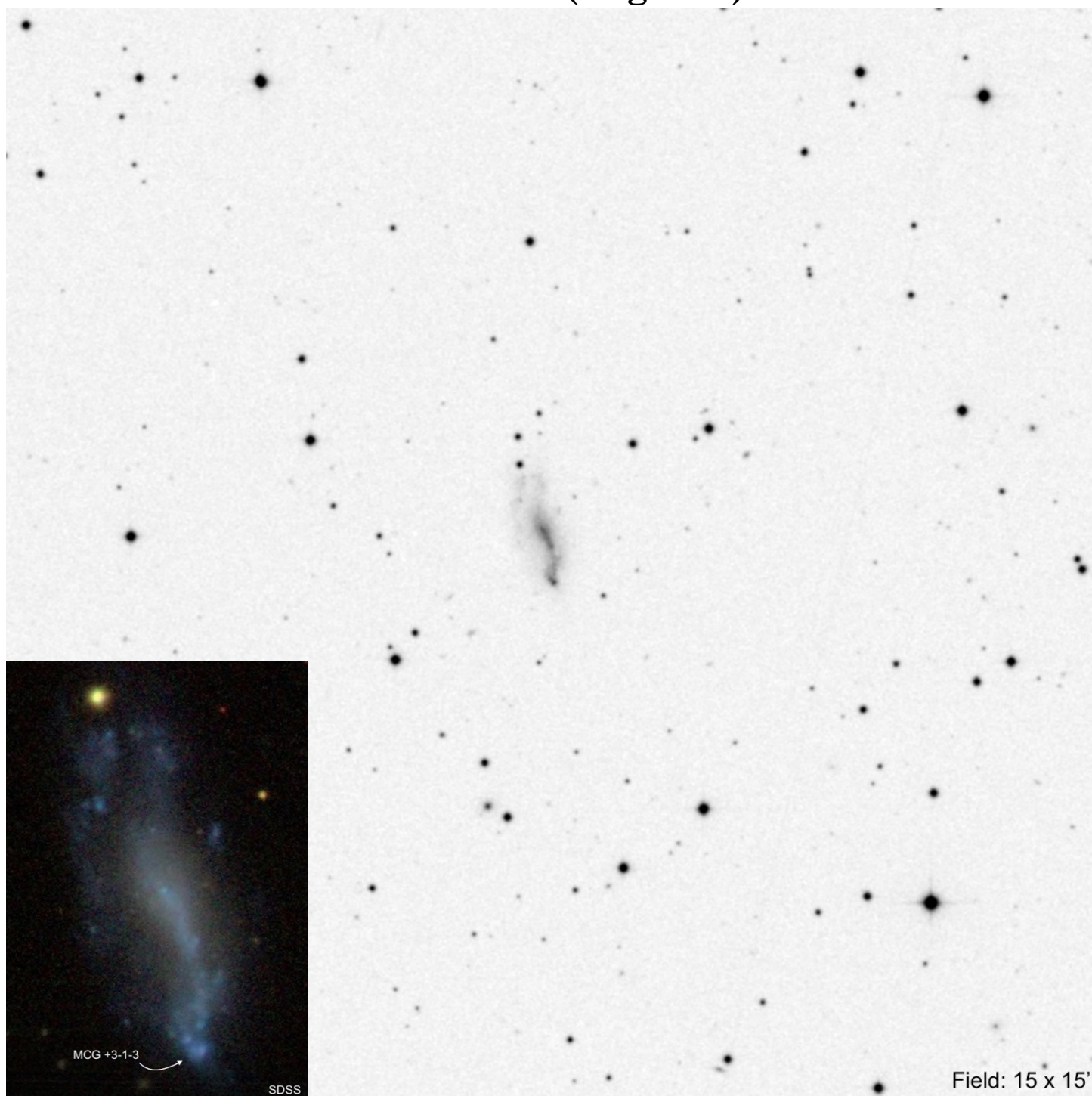
Glahn picked up [HK83] 20 with a 16" reflector as seen in his [sketch](#).

UGC 12856 (Pegasus)



Object	RA	Dec	Mag	Size	iSDA
UGC 12856	23 56 45.3	+16 48 50	13.9	1.8 x 0.7'	40,51

UGC 12856 (Pegasus)

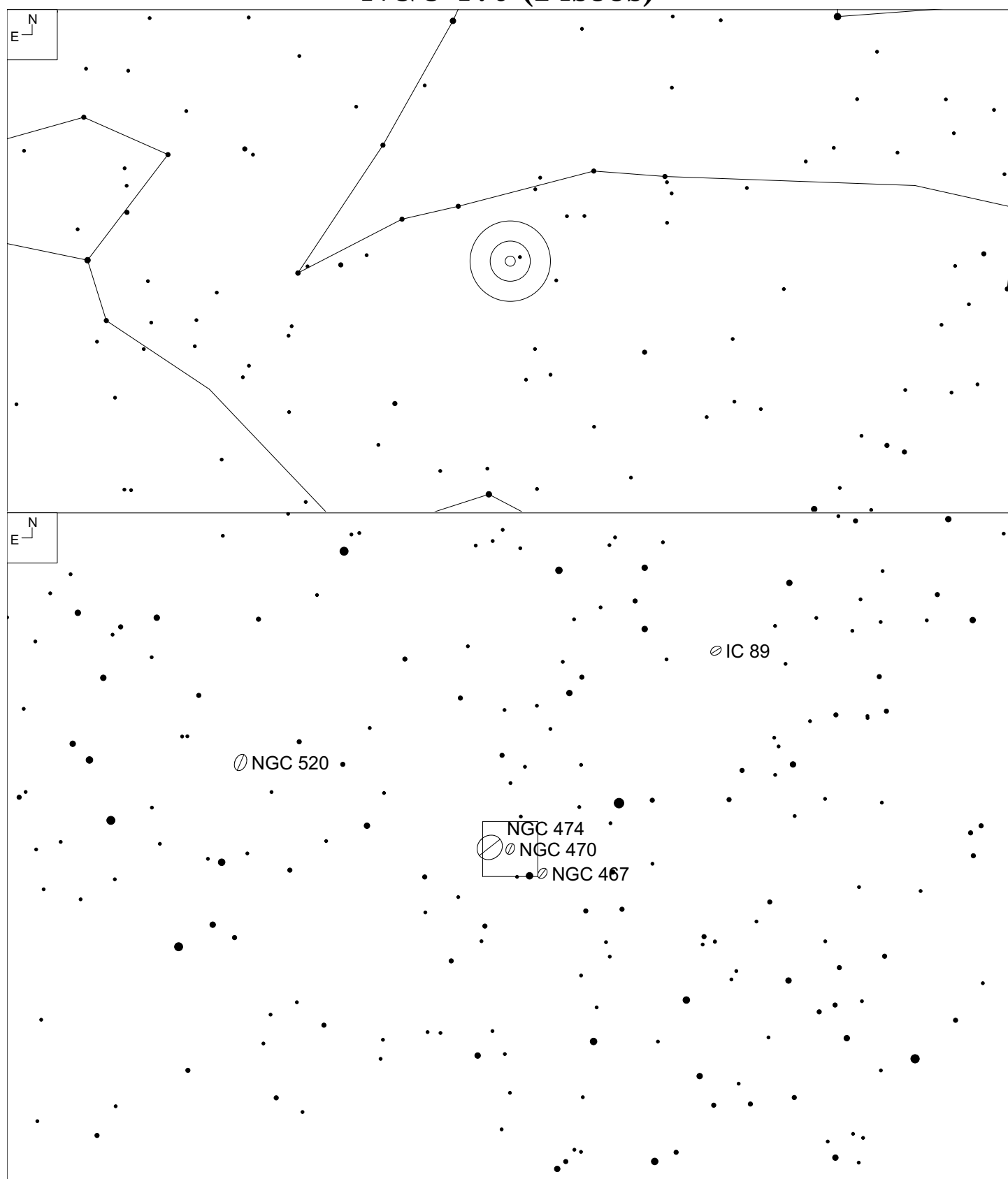


UGC 12856 is about 65 mly away.

The lone observable star forming region is labeled as MCG +3-1-3. Glahn detected the one lone labeled H II region in his 27" as seen in this [sketch](#).

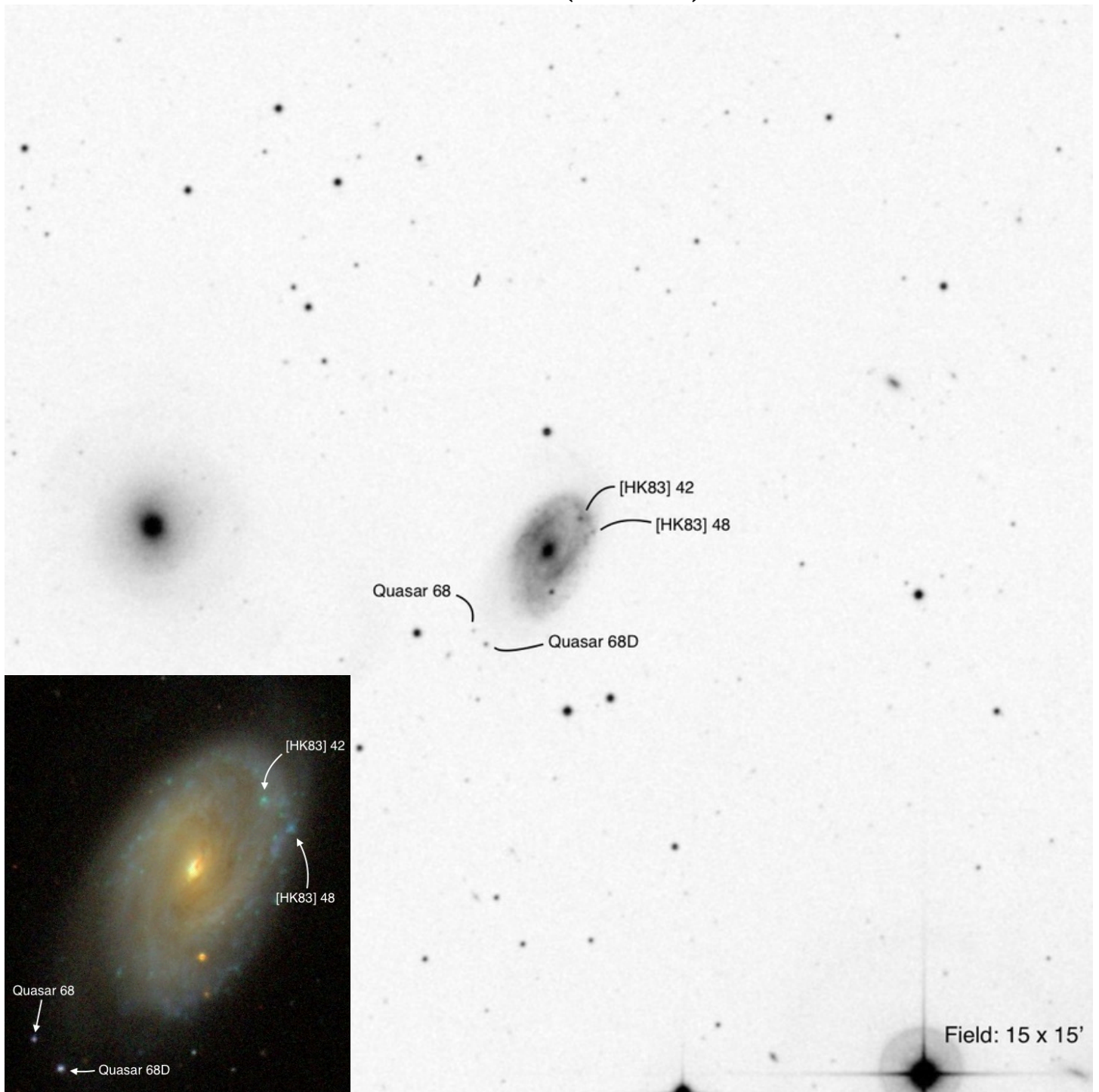
Gottlieb picked up the knot in his 18" reflector, see his [notes](#) (scroll to UGC 12856)

NGC 470 (Pisces)



Object	RA	Dec	Mag	Size	iSDA
NGC 470	01 19 44.7	+03 24 37	11.8	2.0 x 1.3'	63

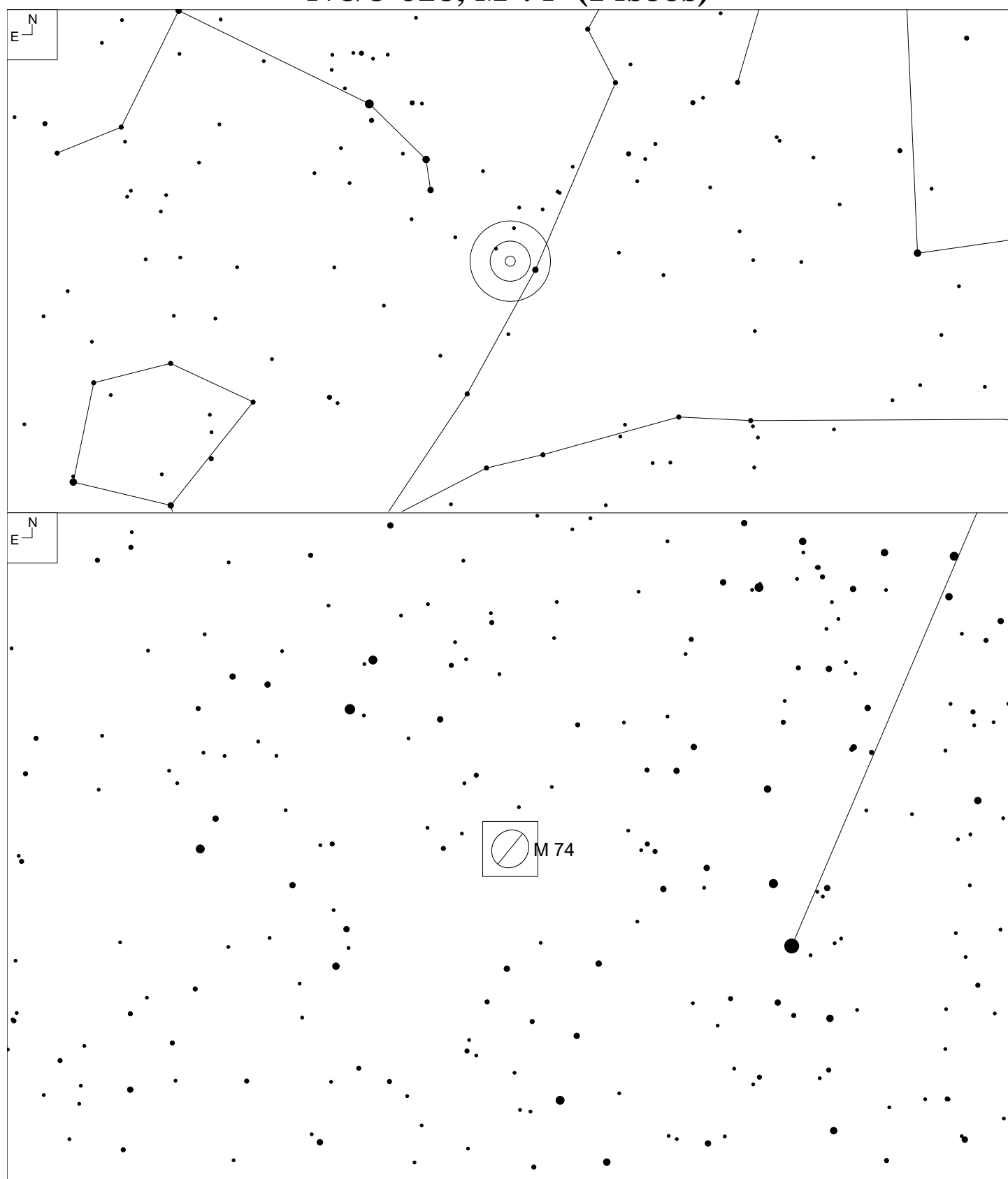
NGC 470 (Pisces)



NGC 470 is a type SA(rs)b spiral sitting about 91 mly distant.

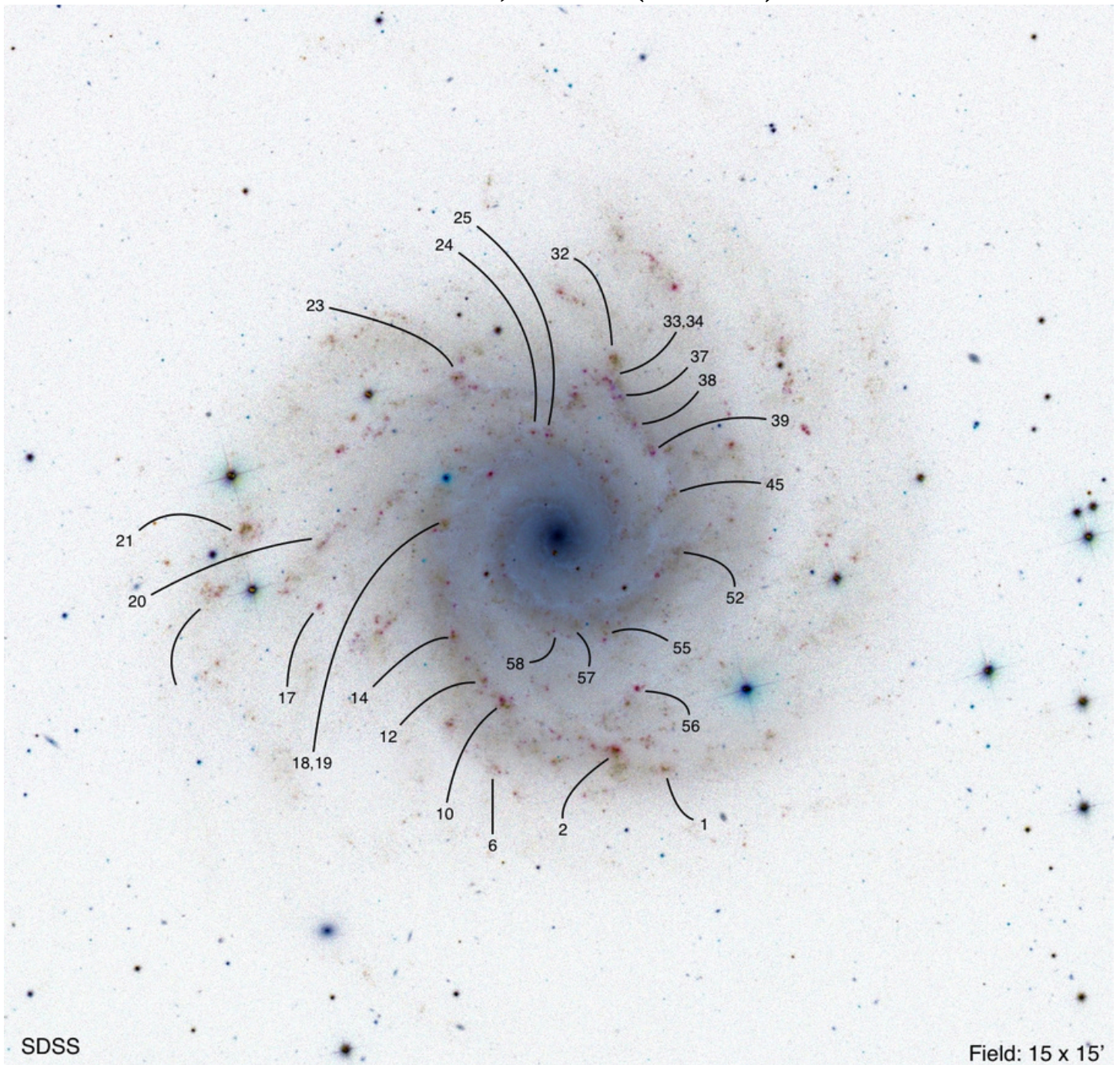
Halton Arp, et al, "Two Quasars Seen Near the Spiral Galaxy NGC 470," *Astronomy & Astrophysics*, Volume 138 (Sept 1984): 179-182. Dr. Arp has this thing about associating quasars with his Arp peculiar galaxies. It has been shown that the quasars are background objects and in no way associated with the peculiarity of galaxies.

NGC 628, M 74 (Pisces)



Object	RA	Dec	Mag	Size	iSDA
NGC 628 (M 74)	01 36 41.6	+15 46 57	9.4	10.5 x 9.5'	51

NGC 628, M 74 (Pisces)



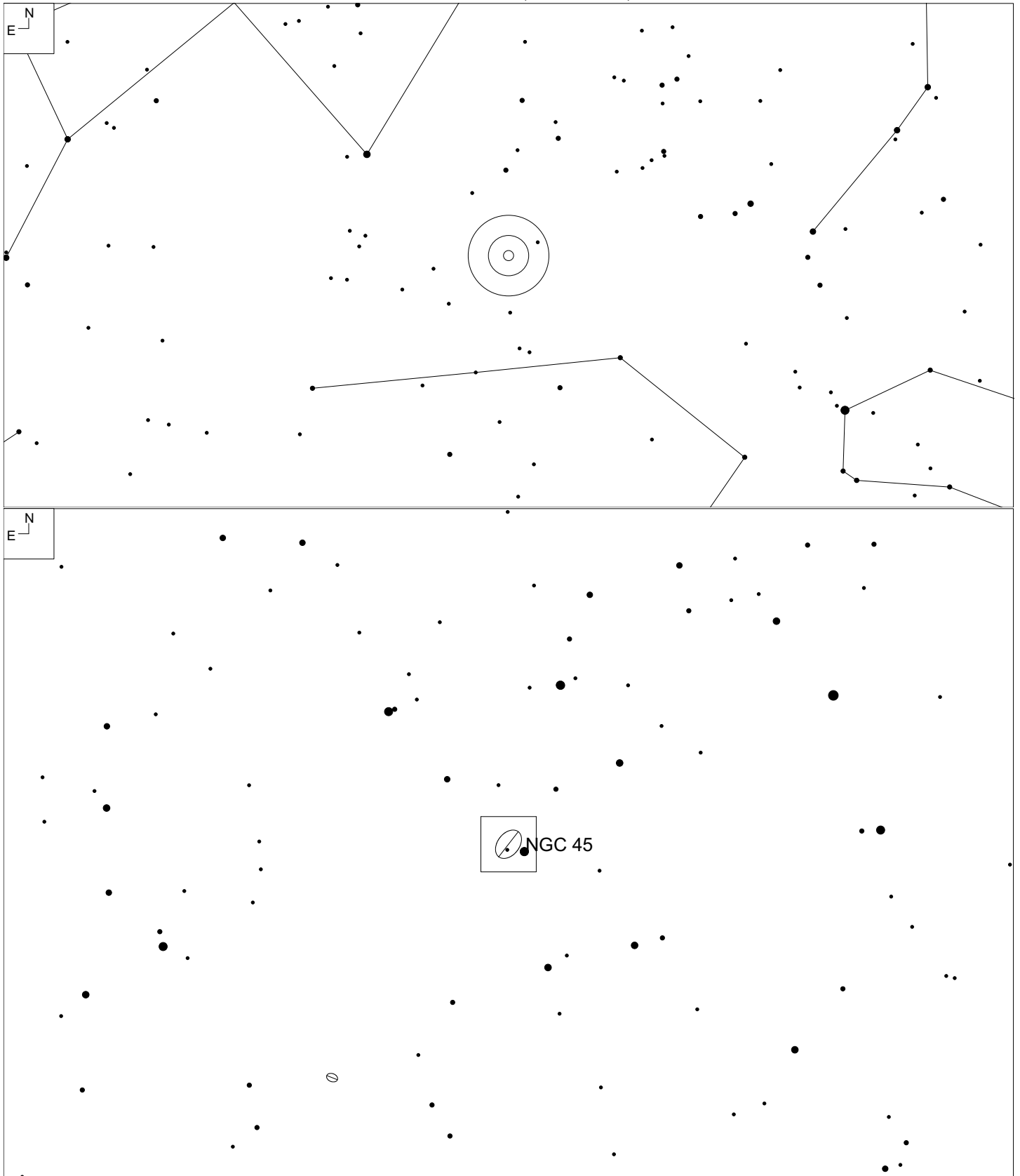
M 74 is a beautiful grand design spiral galaxy. Type SA(s)c. It is relatively close at 30 mly and about 92 kly across.

H II Annotations from K. Chuvaev and I Pronik, “H II Regions in NGC 628, NGC 4254, and 5194,” *The Spiral Structure of our Galaxy, Proceedings from 38th International Astronomical Union Symposium* Edited by Wilhelm Becker and Georgios Ioannou Kontopoulos. *International Astronomical Union Symposium*, no. 38, Dordrecht, Reidel, (1970): 83

Hodge has a more comprehensive mapping of H II regions, but I used a much simpler labeling from Chuvaev. For a more detailed mapping, see Paul W. Hodge. “H II Regions in NGC 628. I. Positions and Sizes,” *Astrophysical Journal*, Volume 205 (May 1976): 728-744.

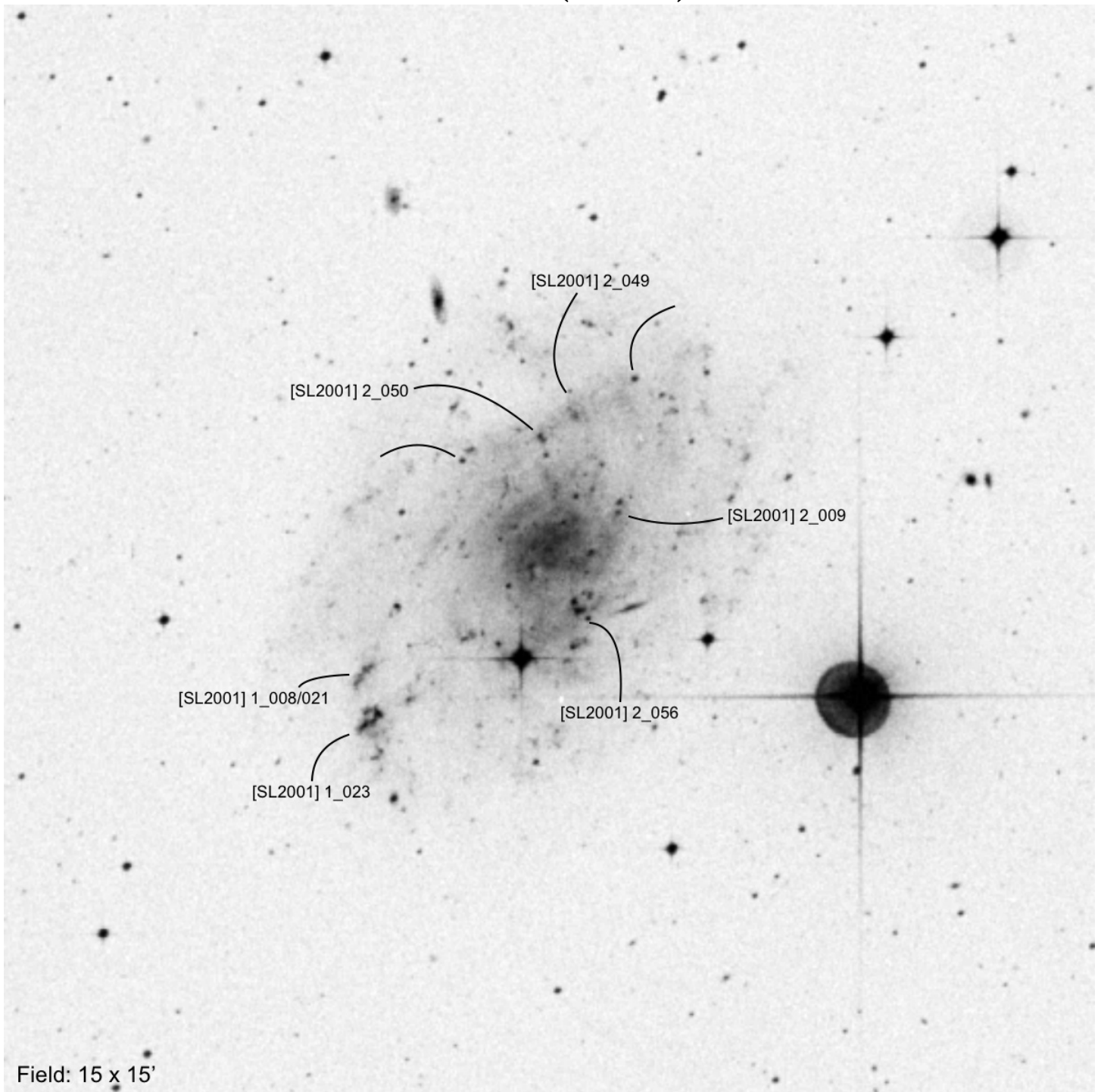
For observing notes with a 48-inch reflector, see Steve Gottlieb’s notes: [NGC 628](#). For a [sketch](#) in a 27” by Uwe Glahn showing detail.

NGC 45 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 45	00 14 03.9	-23 10 52	10.7	8.5 x 5.9'	87

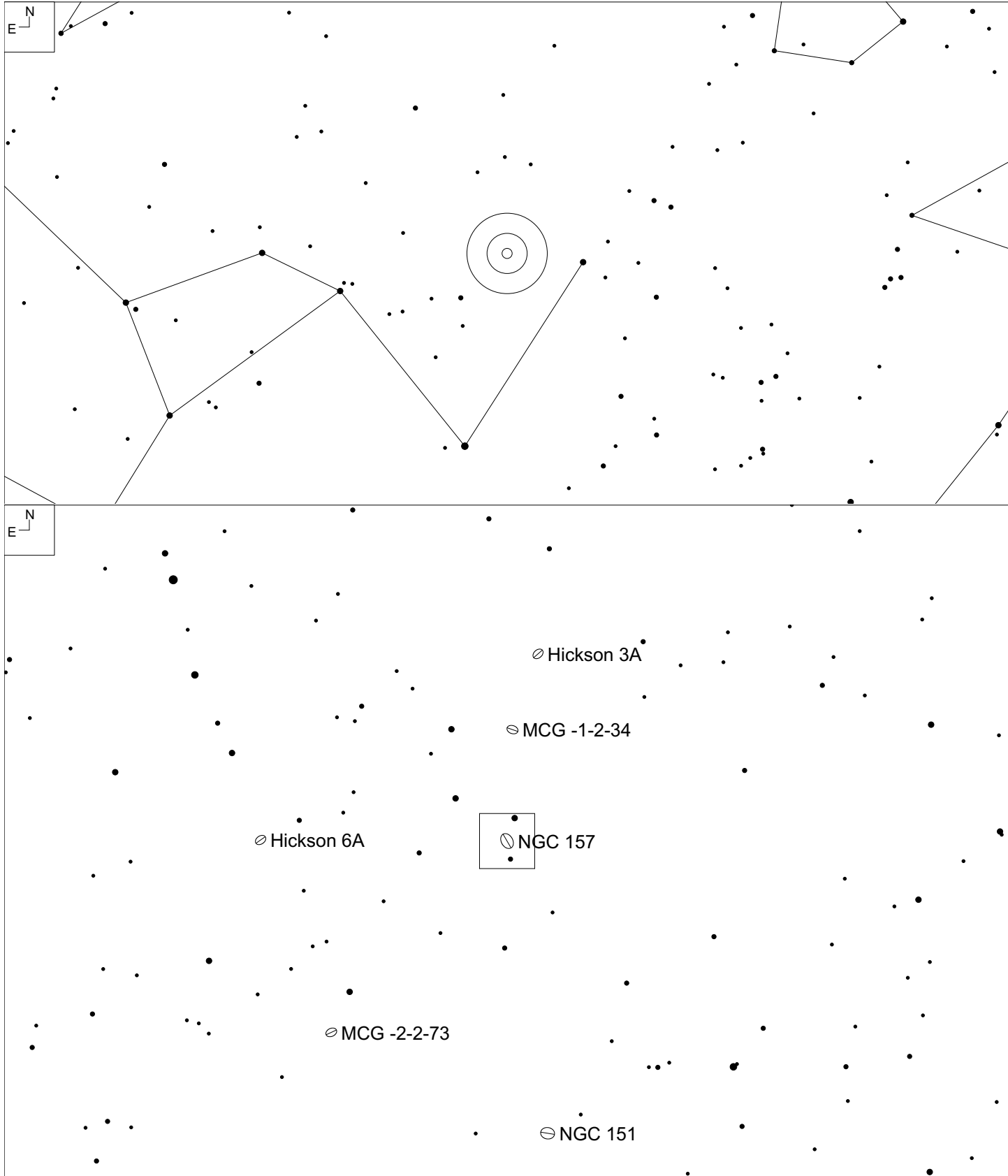
NGC 45 (Cetus)



NGC 45 is a type SA(s)dm small spiral galaxy with a few interfering foreground stars. It sits only 22 mly distant and located in the area of the Sculptor galaxy group, but likely behind it.

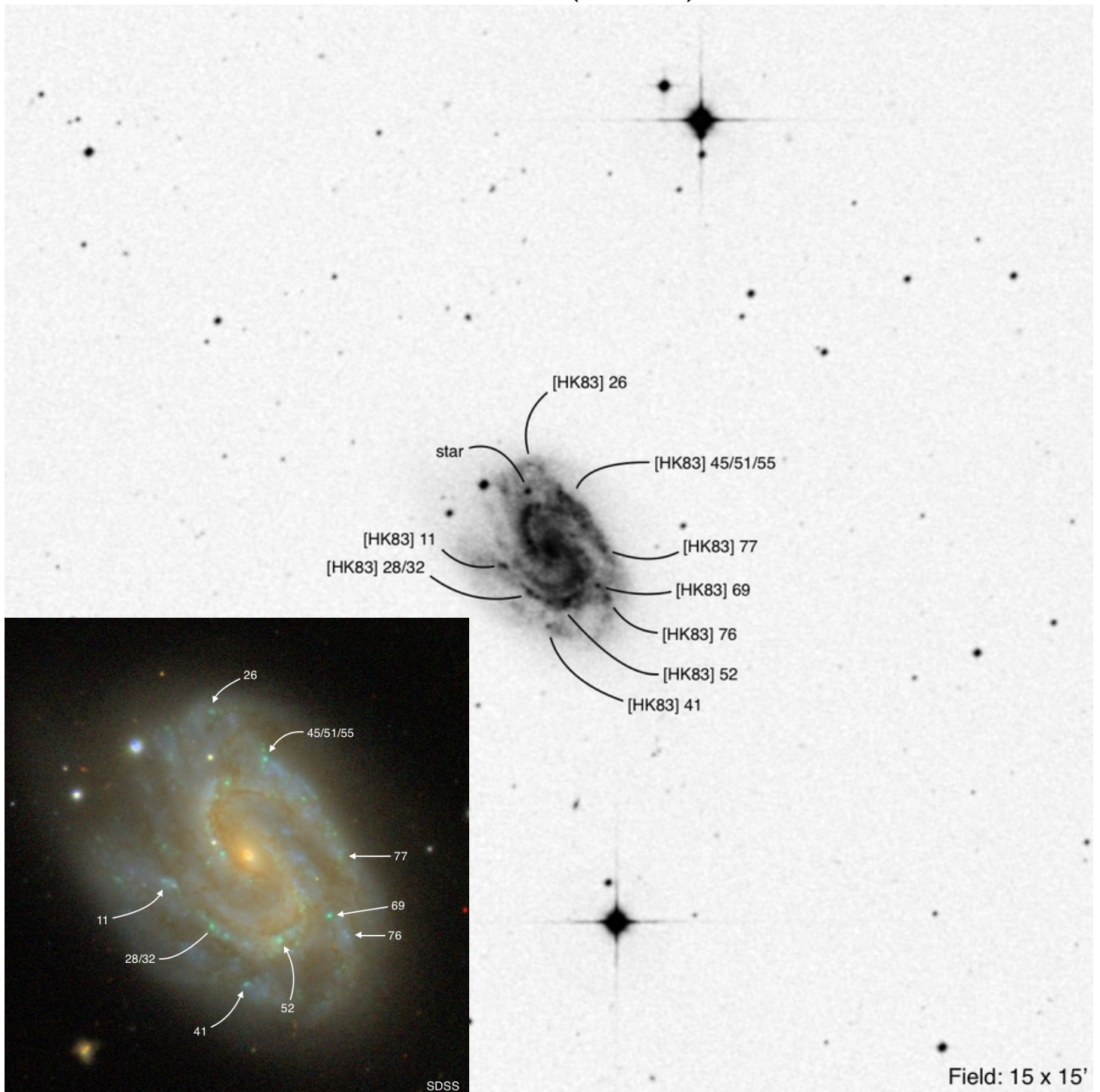
For star forming region **[SL2001]** annotations, see E. Silva-Villa, and S.S. Larsen. "The star cluster - field star connection in nearby spiral galaxies. II. Field star and cluster formation histories and their relation" *Astronomy & Astrophysics*, Volume 529, Article ID A25 (May 2011): 17pp.

NGC 157 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 157	00 34 46.9	-08 23 42	10.4	3.0 x 1.7'	63, 75

NGC 157 (Cetus)



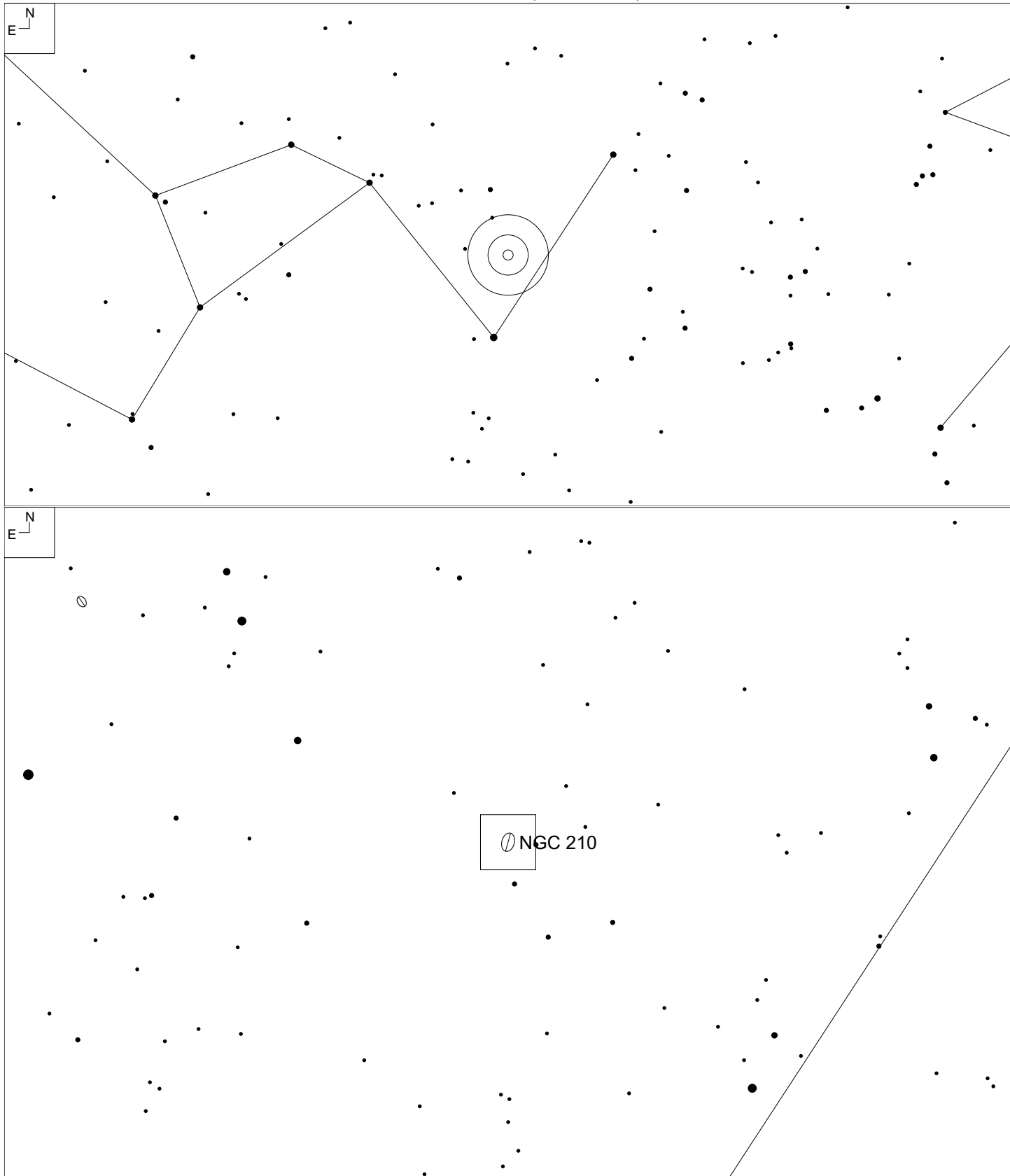
NGC 157 is a type SAB(rs)bc galaxy sitting about 39 mly away and about 90 kly across.

The SDSS inset image is labeled without the [HK83] annotation for clarity.

For observing notes with a 48-inch reflector, see Steve Gottlieb's notes: [NGC 157](#).

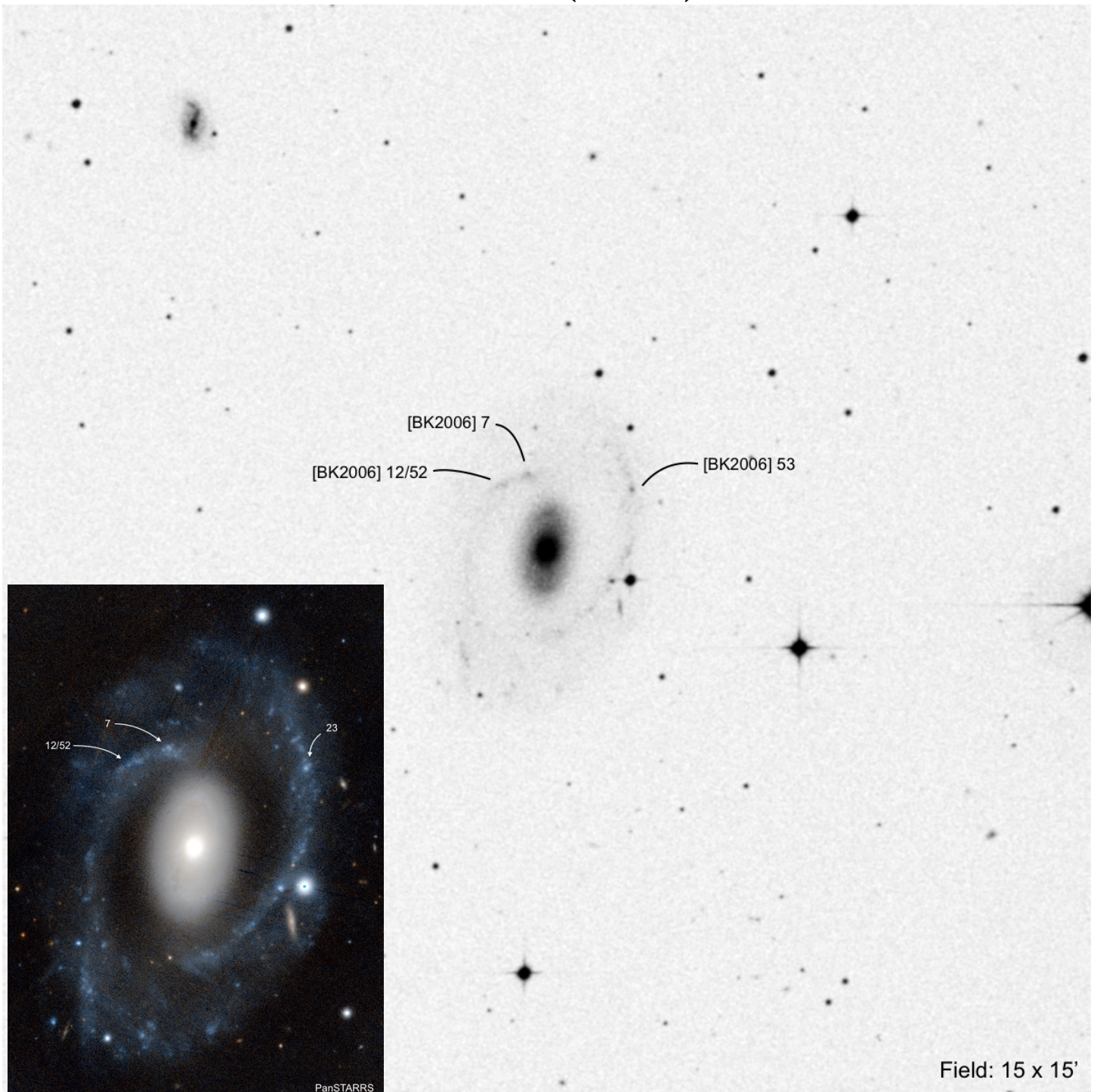
Glahn observed with his 16" reflector under NELM 6+ skies were able to pick up #11 and #76 as shown in his [sketch](#).

NGC 210 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 210	00 40 34.8	-13 52 28	10.9	5.0 x 3.3'	75

NGC 210 (Cetus)

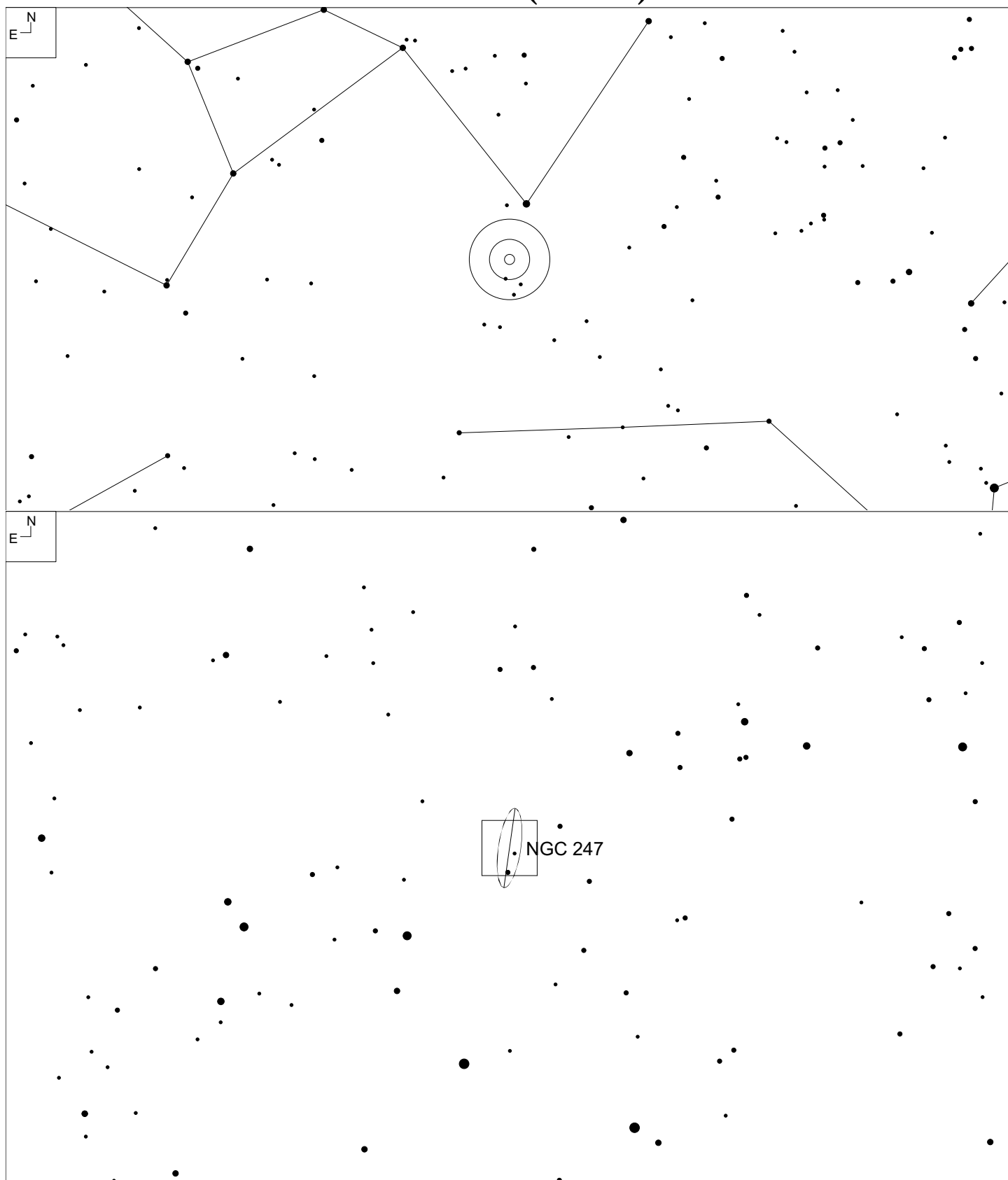


NGC 210 is a type SAB(s)b galaxy at a distance of 75 mly away and about 110 kly in diameter.

H II region [BLB2006] annotations from Bradley, T. R., J. H. Knapen, J. E. Beckman, S. L. Folkes, "A composite H ii region luminosity function in H α of unprecedented statistical weight," *Astronomy and Astrophysics*, Volume 459, Issue 1 (Nov 2006): L13-L16.

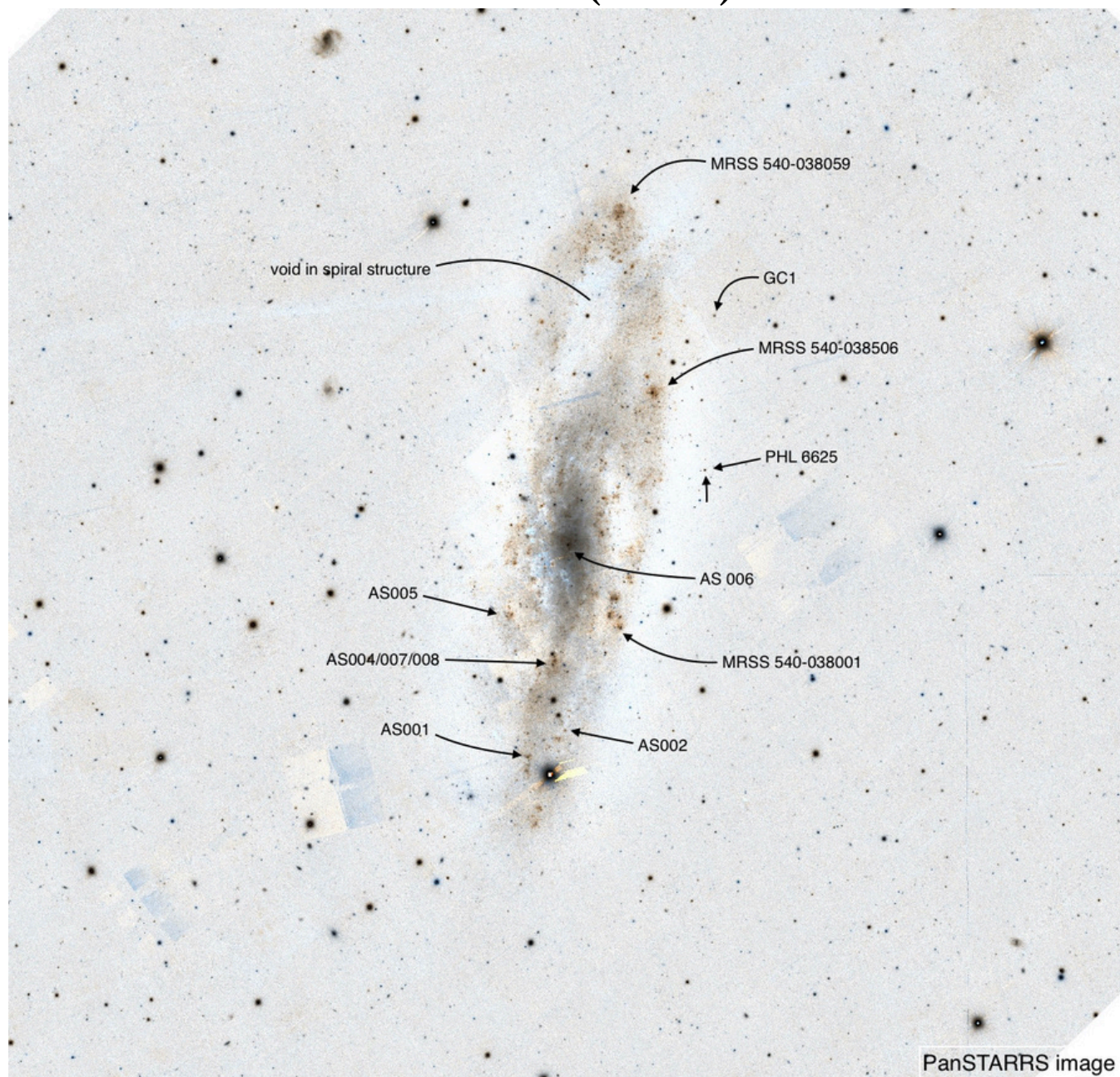
Glahn has detected both knots, one as a single knot on the northwestern part and a combined knot on the northeastern edge with a 27" reflector. See his [sketch](#).

NGC 247 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 247	00 47 08.5	-20 45 37	9.9v	21.4 x 6.9'	75, 87

NGC 247 (Cetus)



NGC 247 is a type SAB(s)d nearly edge on spiral galaxy sitting pretty close at 12 mly away and the diameter is 75 kly. It is a member of the Sculptor group which is near the Local Group.

PanSTARRS image used here as it offers better clarity for the variety of extragalactic objects in NGC 247. There are some overlapping and other artifacts from the image.

For star cluster annotations starting with **AS**, see M. J. Rodríguez, et al, “The young stellar population in NGC 247,” *Astronomy & Astrophysics*, Volume 626, article A35 (June 2019): 5

The **MRSS** annotations is from the Muenster Red Sky Survey.

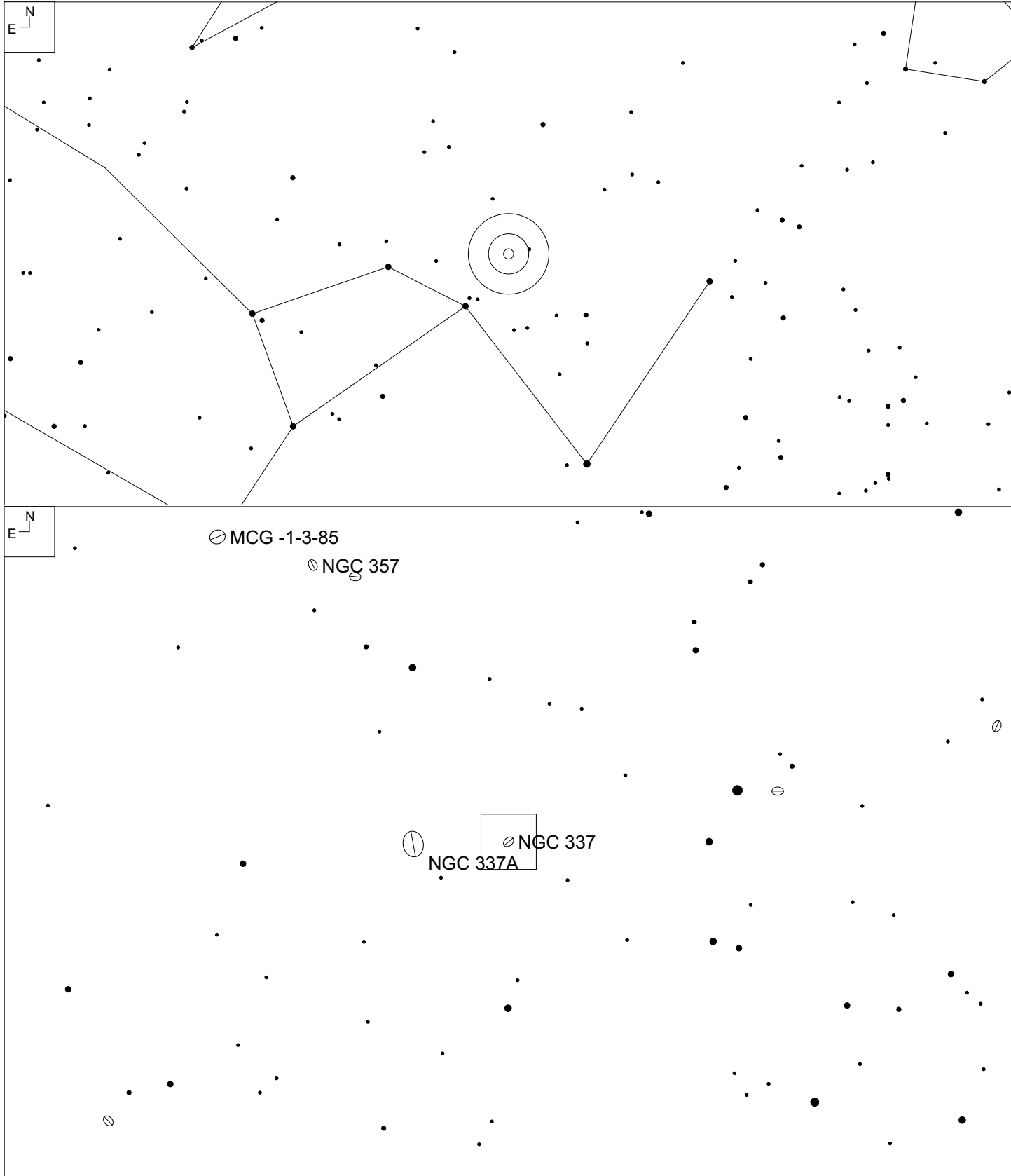
For the recently discovered globular cluster (**GC1**), see Aaron J. Romanowsky, et al, “Low-density star cluster formation: discovery of a young faint fuzzy on the outskirts of the low-mass spiral galaxy NGC 247,” *Monthly Notices of the Royal Astronomical Society*, Volume 518, Issue 2, (Jan 2023): 3164-3182

For discussion on the background quasar (**PHL 6625**), see Lian Tao, et al, “PHL 6625: A Minor Merger-associated QSO Behind NGC 247,” *The Astrophysical Journal*, Volume 841, Issue 2, article 118, (June 2017) and Martin Elvis, et al, “X-raying a galaxy: PHL 6625 behind NGC 247,” *Monthly Notices of the Royal Astronomical Society*, Volume 291, Issue 3 (Nov 1997): L49-L52

For the “**void in spiral structure**”, see R. Wagner-Kaiser, et al, “The void in the Sculptor group spiral galaxy NGC 247,” *Monthly Notices of the Royal Astronomical Society*, Volume 443, Issue 4, (Oct 2014): 3260-3269

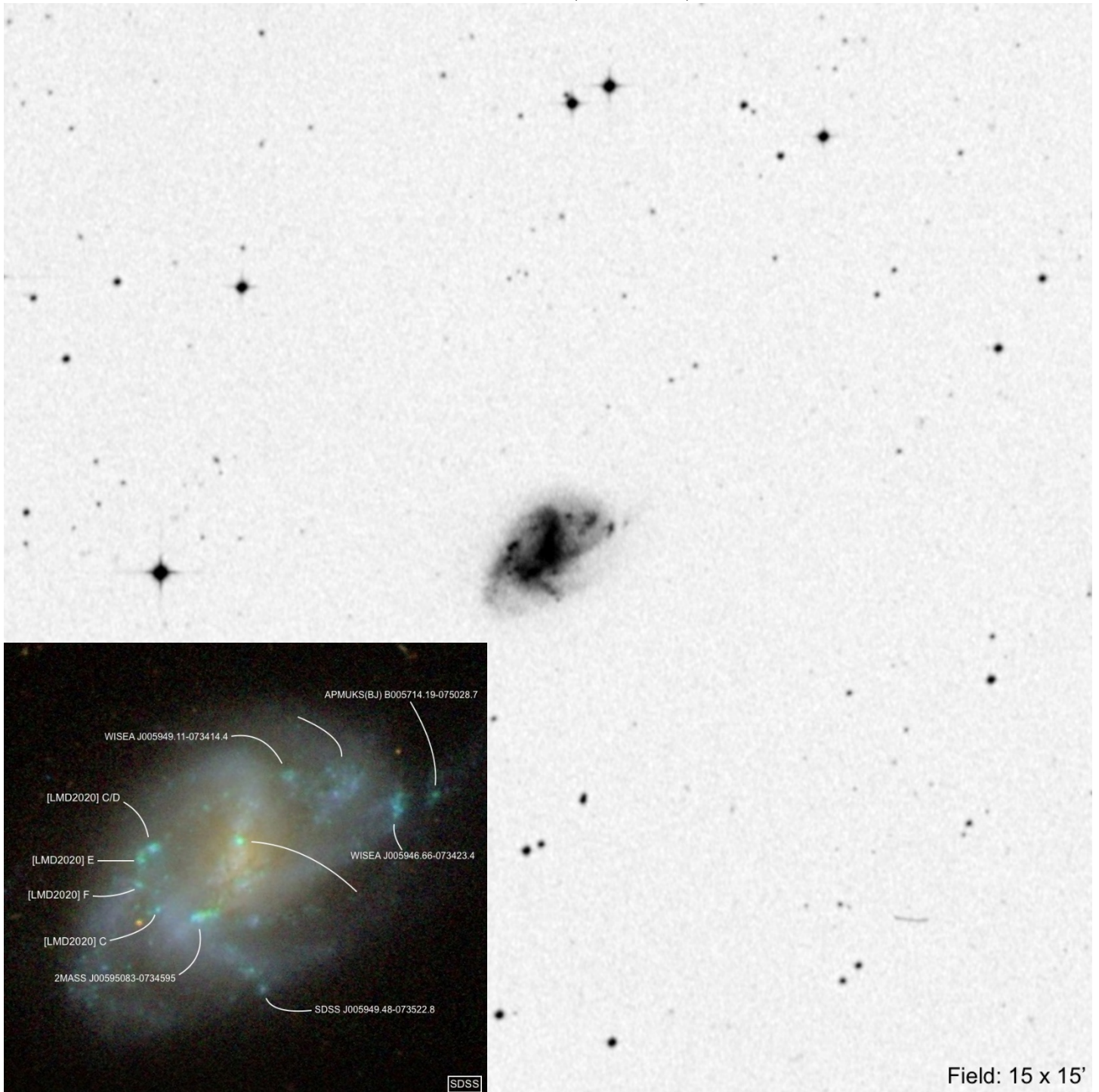
For observing notes with a 48-inch telescope, see Steve Gottlieb’s notes: [NGC 247](#). Also see Glahn’s [sketch](#) with his 16” where he picked up at least 4 knots on the western edge.

NGC 337 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 337	00 59 50.3	-07 34 43	11.6	2.9 x 1.8'	75

NGC 337 (Cetus)

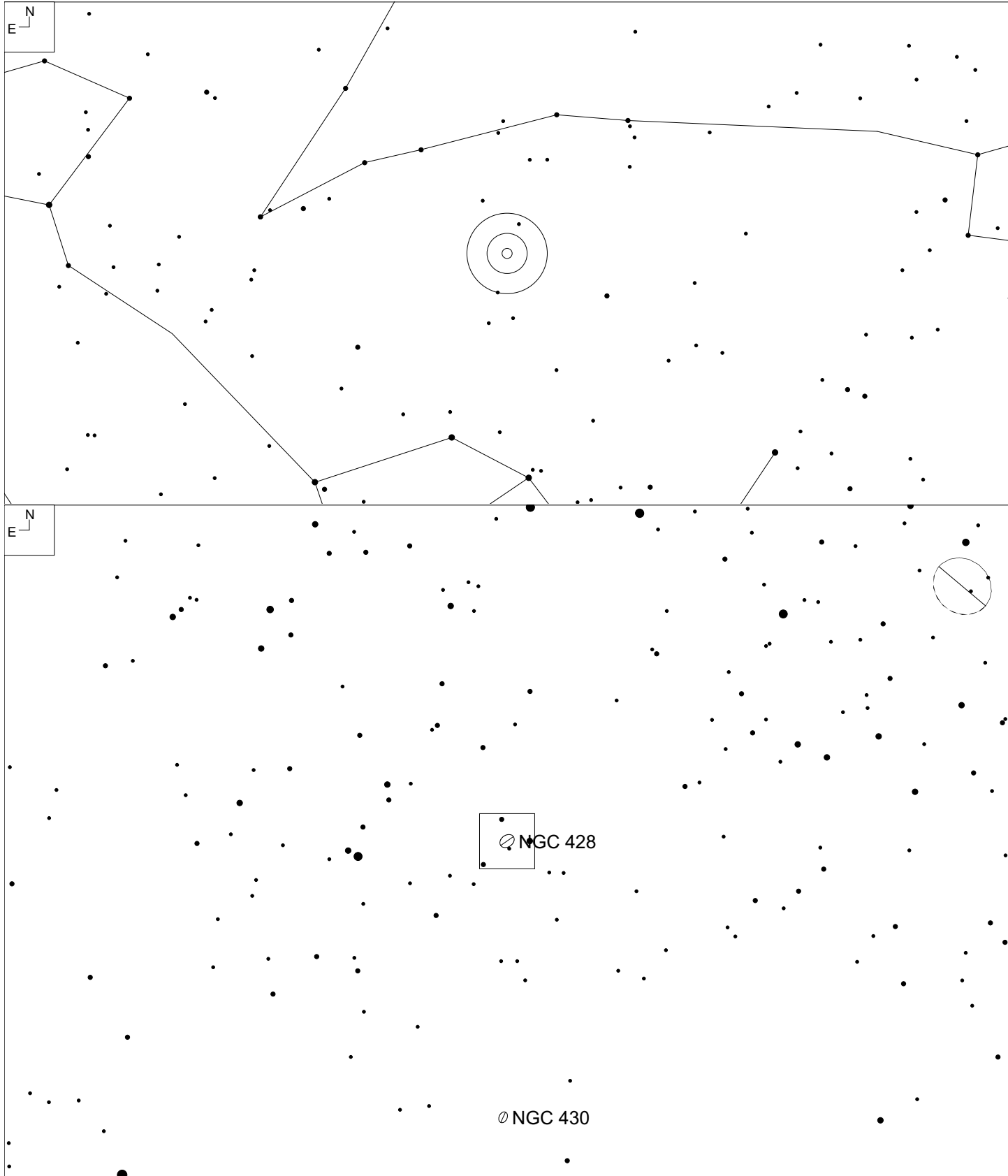


NGC 337 is a type SB(s)d galaxy sitting about 63 mly distant.

For star formation region [LMD2020] annotations, see S. T. Linden, et al. "The Star Formation in Radio Survey: 3-33 GHz Imaging of Nearby Galaxy Nuclei and Extranuclear Star-forming Regions," *The Astrophysical Journal Supplement Series*, Volume 248, Issue 2, Article ID 25 (June 2020).

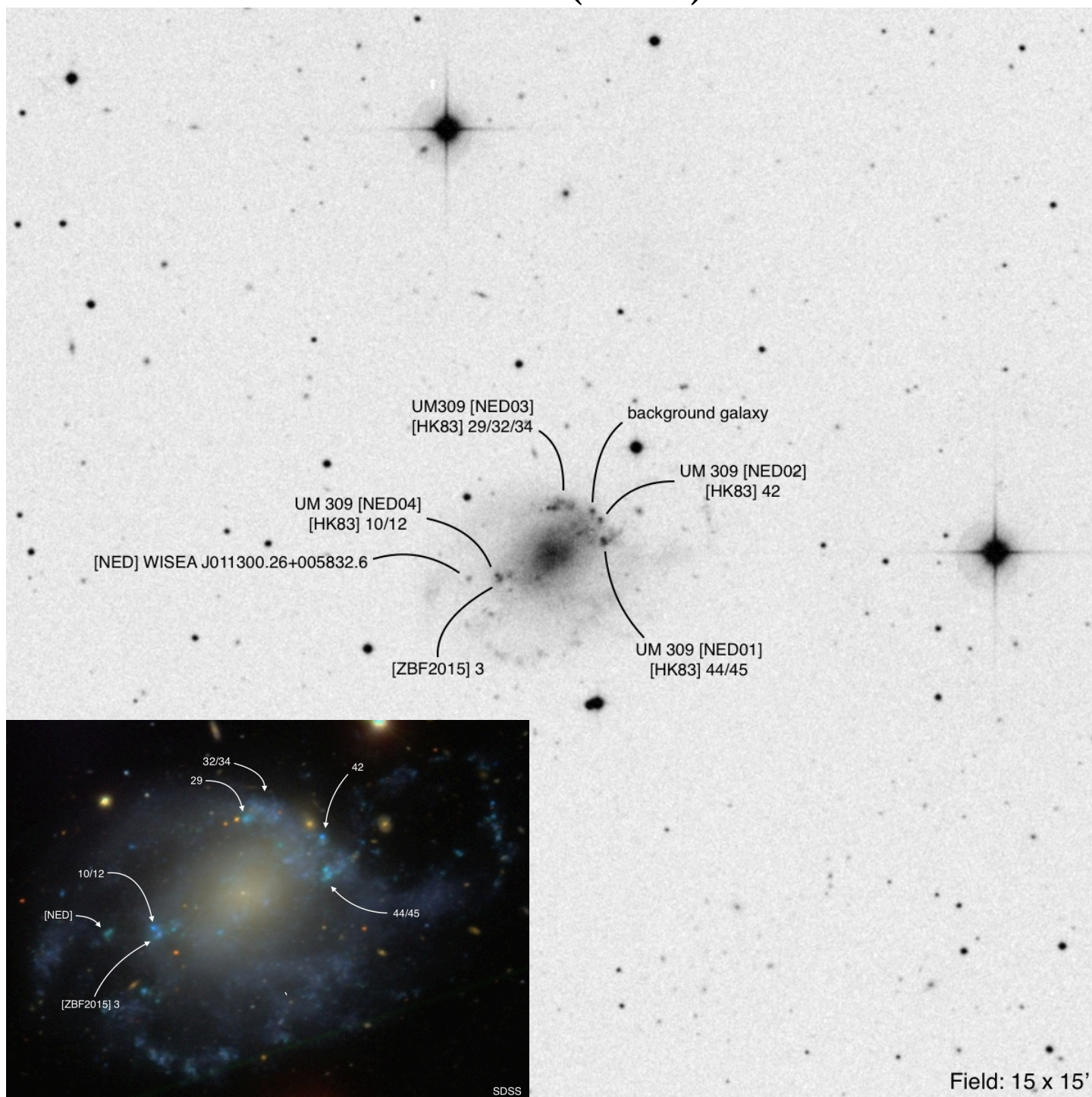
See Glahn's [sketch](#) with a 16" reflector showing at least 5 extragalactic knots.

NGC 428 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 428	01 12 55.7	+00 58 56	12.1	2.3 x 2.0'	63

NGC 428 (Cetus)



NGC 428 is a type SAB(s)m galaxy sitting about 48 mly distant.

UM 309 annotations from Gabriel Kojoian, et al, "Accurate Optical Position of Extragalactic Emission -Line Objects: University of Michigan Lists I-IV," *The Astrophysical Journal Supplement Series*, Volume 50 (Oct 1982): 161-168

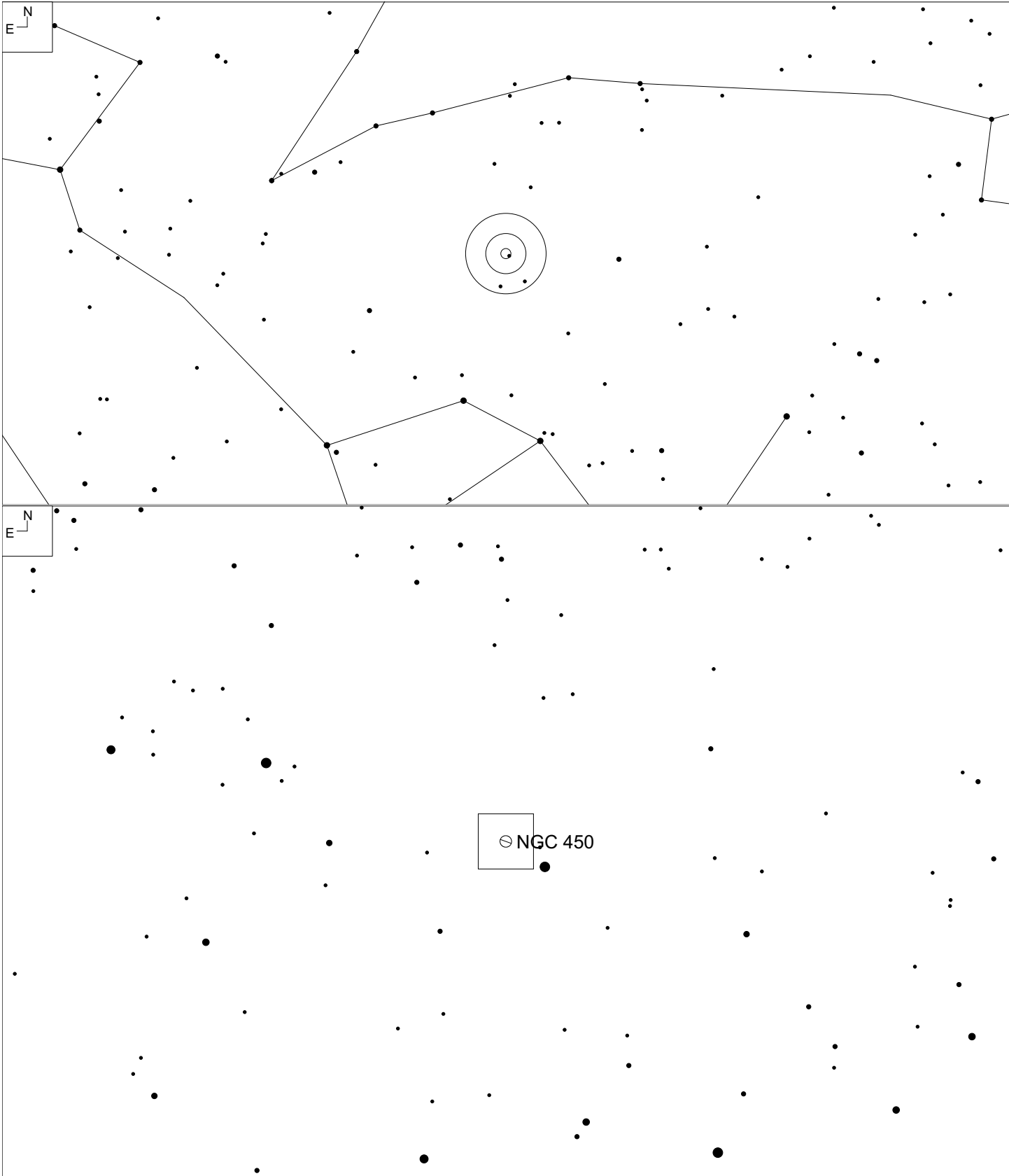
HII region **[ZBF2015]** annotation from Javier Zaragoza-Cardiel, et al, "Comparative internal kinematics of the H II regions in interacting and isolated galaxies: implications for massive star formation modes," *Monthly Notices of the Royal Astronomical Society*, Volume 451, Issue 2 (Aug 2015): 1307 – 1330

J.V. Smoker, et al, "H I and optical observations of the NGC 428 field," *Monthly Notices of the Royal Astronomical Society*, Volume 281, Number 2, (July 1996): 393 – 405

For observing notes with a 48-inch telescope, see Steve Gottlieb's notes: [NGC 428](#). For a [sketch](#) in a 27" telescope showing the knots that he picked up, which is all the labeled ones.

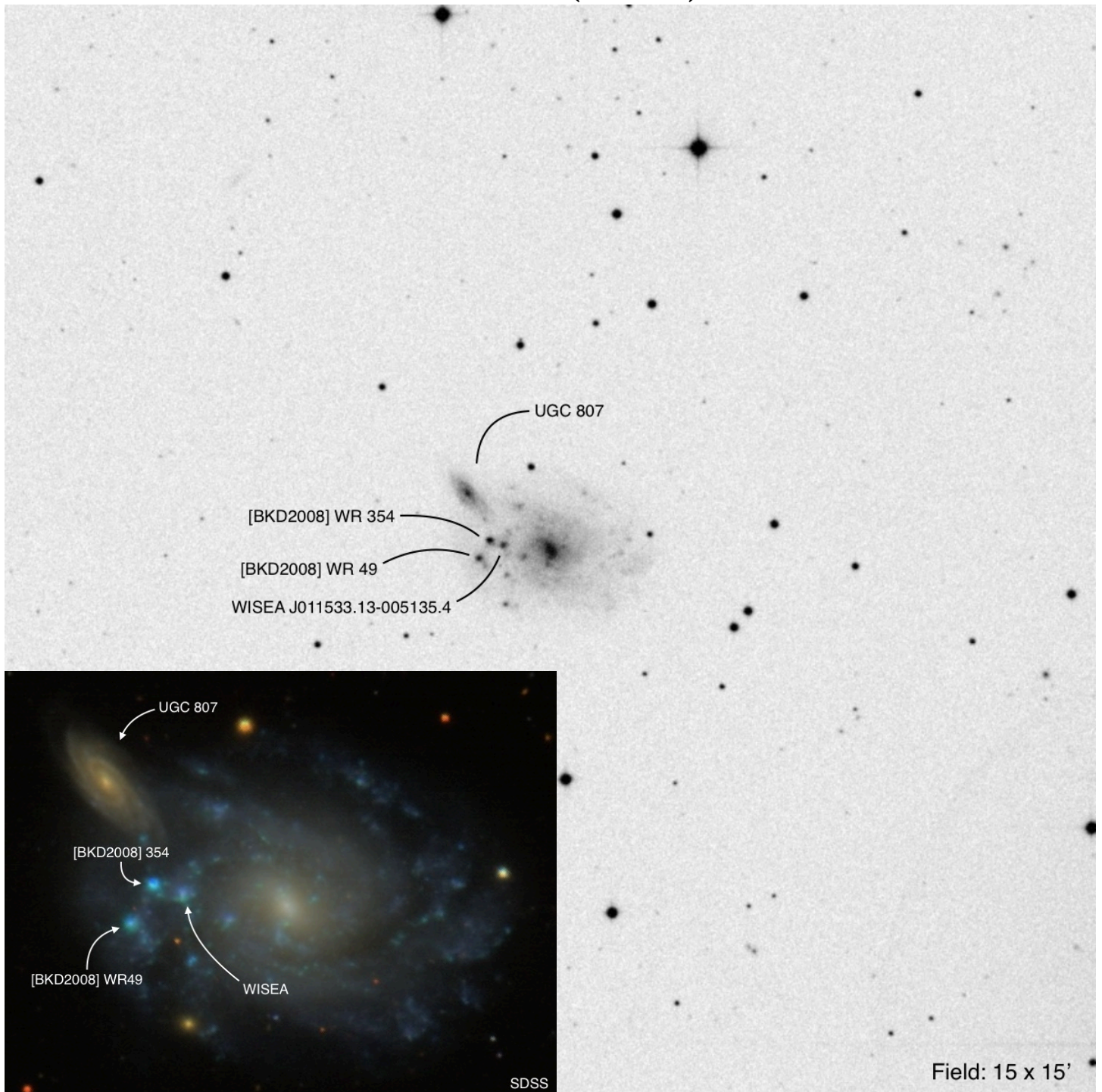
Hubble Space Telescope [image](#).

NGC 450 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 450	01 15 30.5	-00 51 39	11.5	3.1 x 2.3'	63

NGC 450 (Cetus)

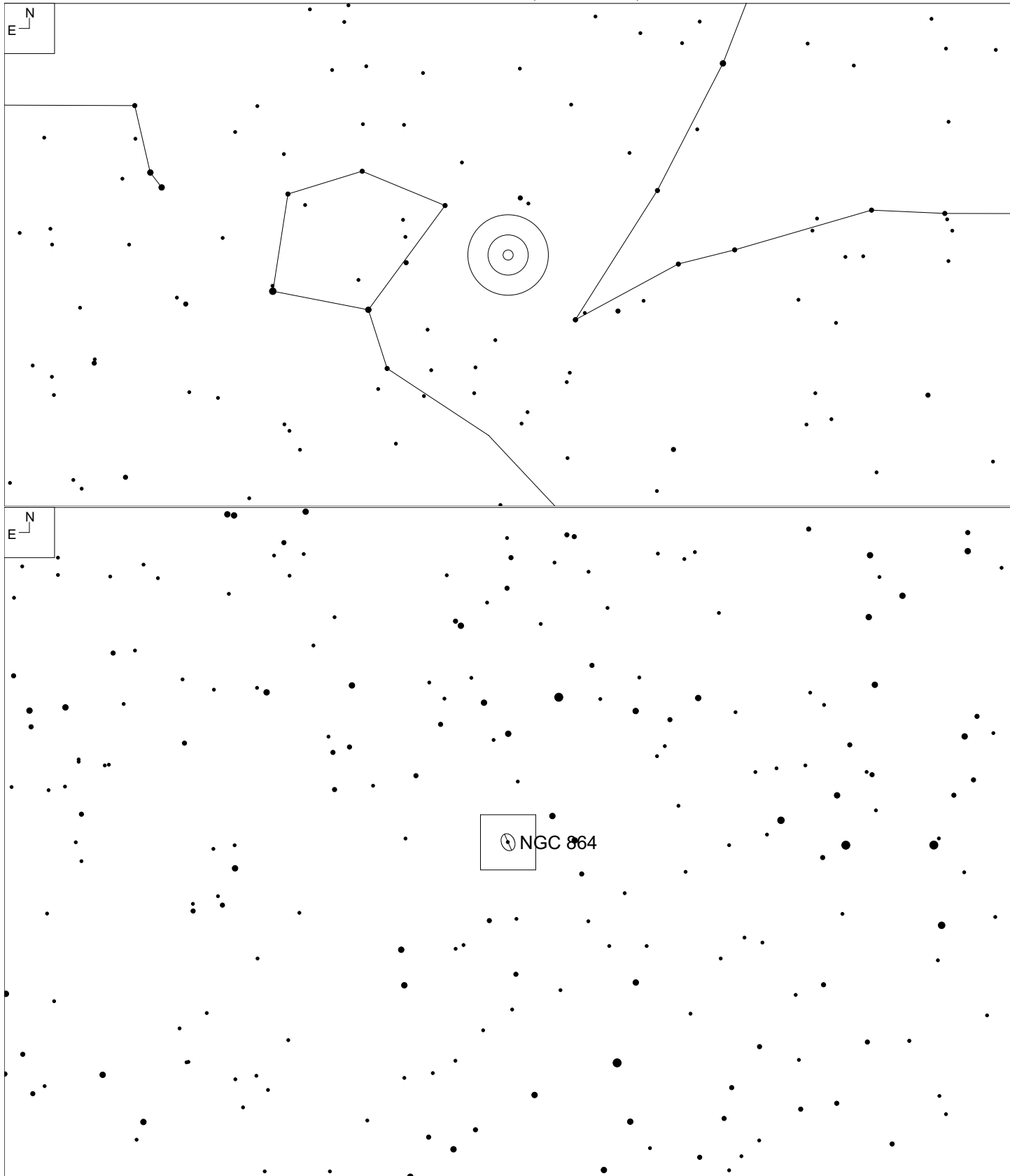


NGC 450 is a type SAB(s)c galaxy sitting about 80 mly distant. UGC 807 is not a companion as the red shift is six times higher thus making it far in the background.

Possible Wolf Rayet star (super luminous star or stars) **[BKD2008]** annotations from J. Brinchmann, D. Kunth, F. Durret. "Galaxies with Wolf-Rayet signatures in the low-redshift Universe. A survey using the Sloan Digital Sky Survey," *Astronomy and Astrophysics*, Volume 485, Issue 3 (July 2008): 657-677.

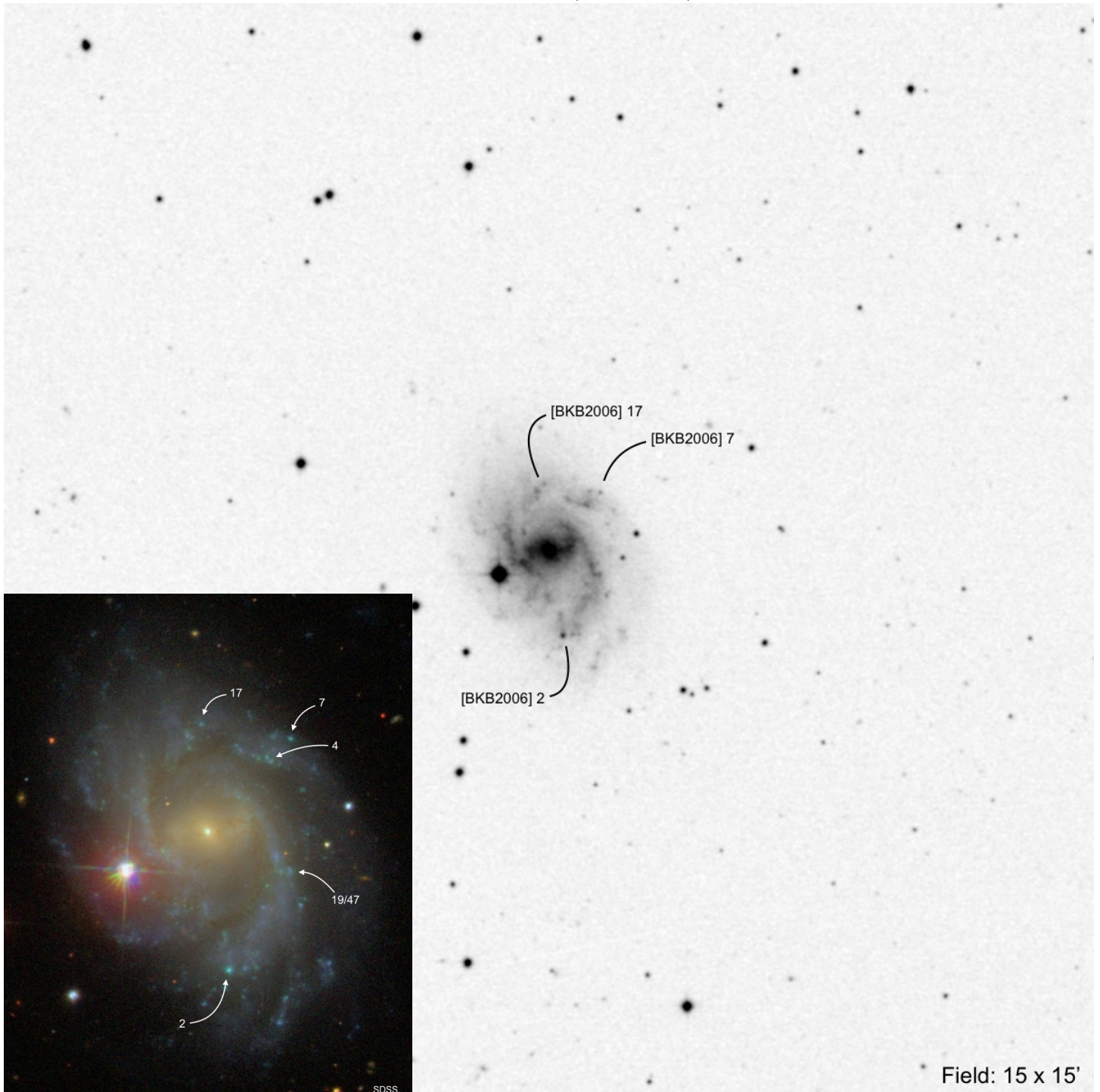
For a [sketch](#) with a 27" telescope, showing that he picked up all three labeled extragalactic objects.

NGC 864 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 864	02 15 27.8	+06 00 09	10.9	4.7 x 3.5'	62

NGC 864 (Cetus)



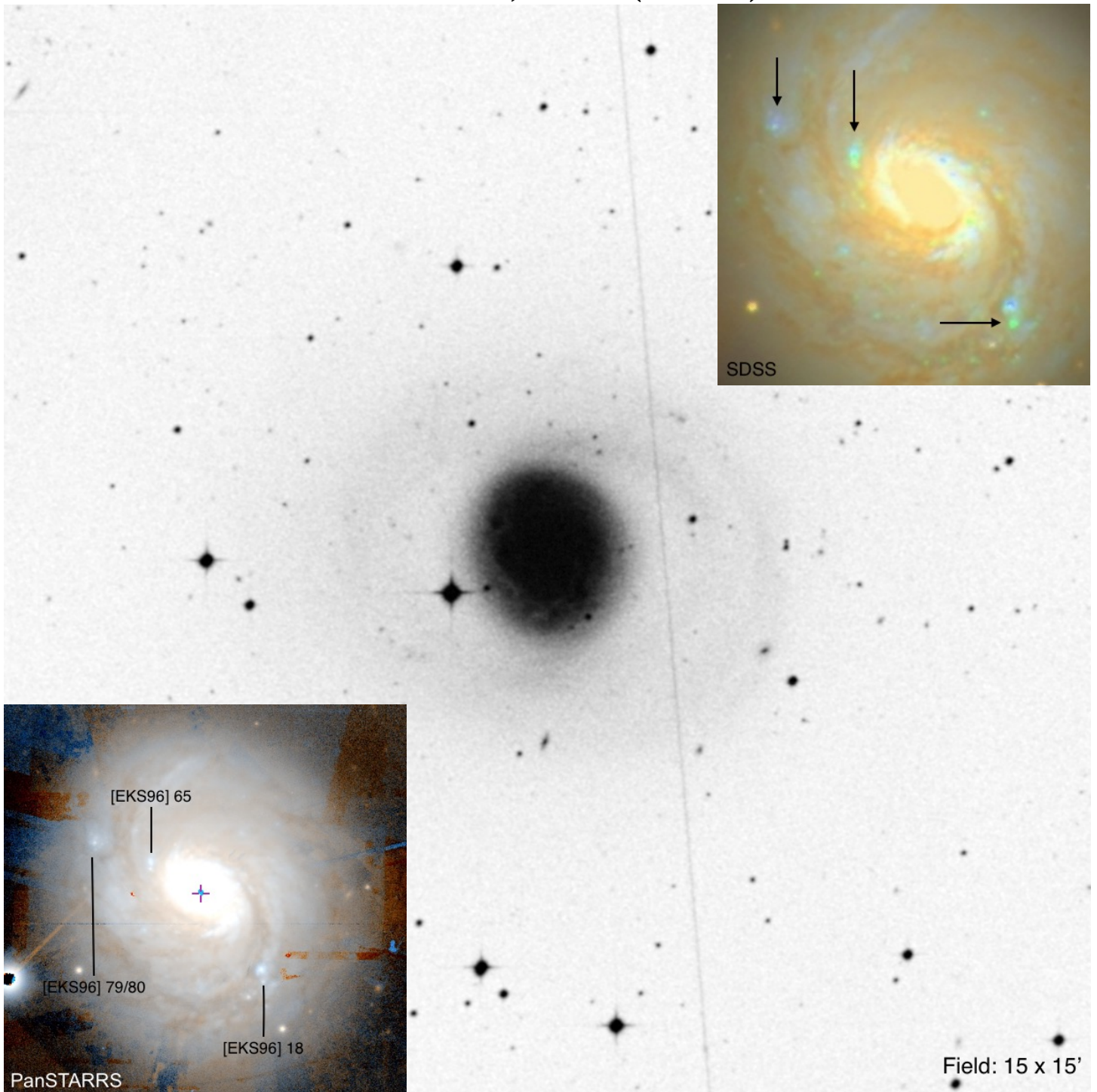
NGC 864 is a type SAB(rs)c galaxy and about 72 mly distant.

H II region **[BLB2006]** annotations from Bradley, T. R., J. H. Knapen, J. E. Beckman, S. L. Folkes, "A composite H ii region luminosity function in H α of unprecedented statistical weight," *Astronomy and Astrophysics*, Volume 459, Issue 1 (Nov 2006): L13-L16.

Glahn observed this object and deleted two knots on the northern edge and one at the southern tip with his 27" reflector. See his [sketch](#).

www.FaintFuzzies.com

NGC 1068, M 77 (Cetus)

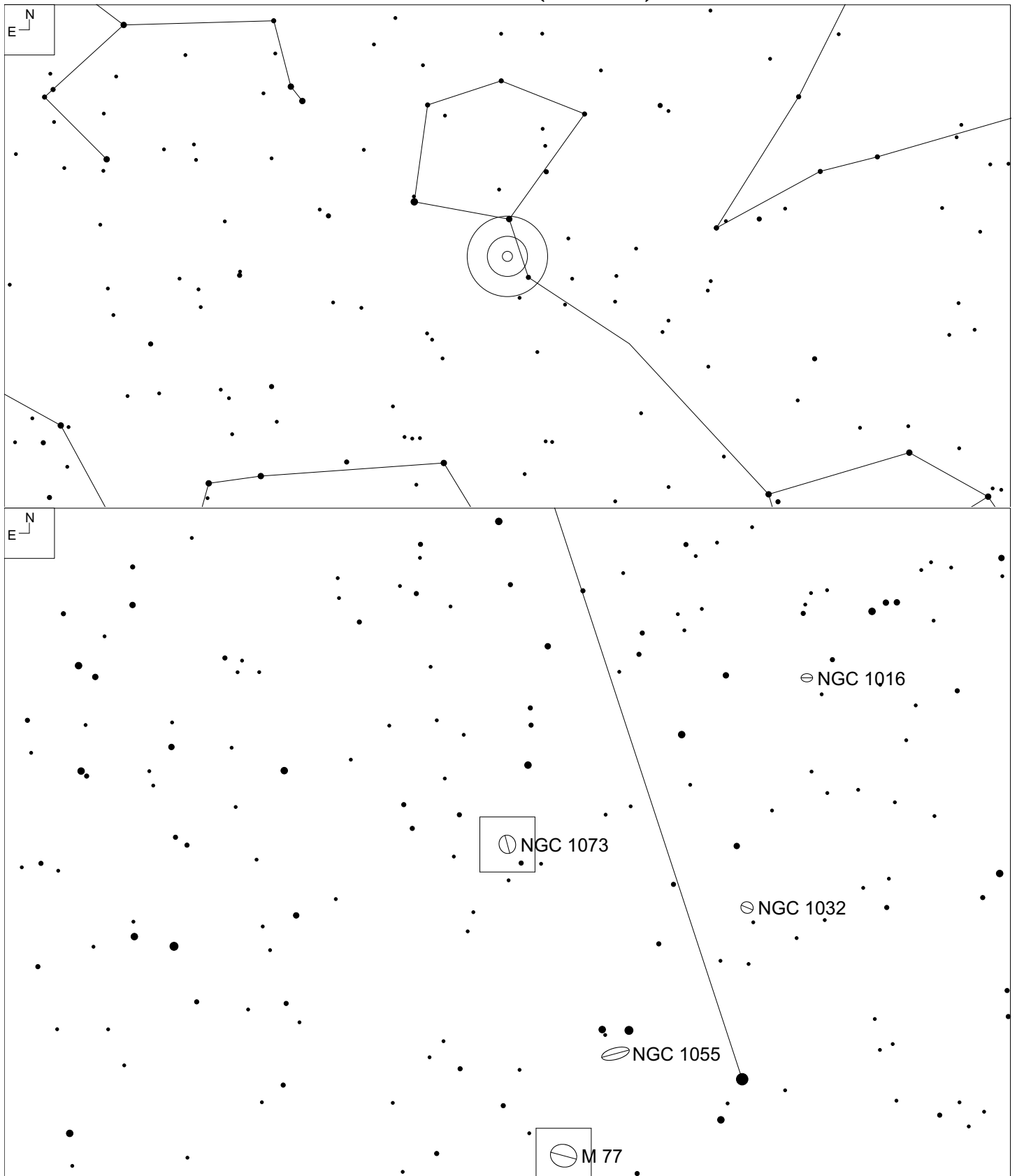


M 77 is one the first Seyfert galaxies I learned as a kid. It sits about 47 mly distant, about 90 kly across and type (R)SA(rs)b. Some calls it the Squid Galaxy.

See inset for PanSTARRS image. Three marked regions should be observable through large amateur telescopes. Annotations from I.N. Evans, et al, "An Atlas of H II Regions in Nearby Seyfert Galaxies," *Astrophysical Journal Supplement*, Volume 105 (July 1996): 93-127.

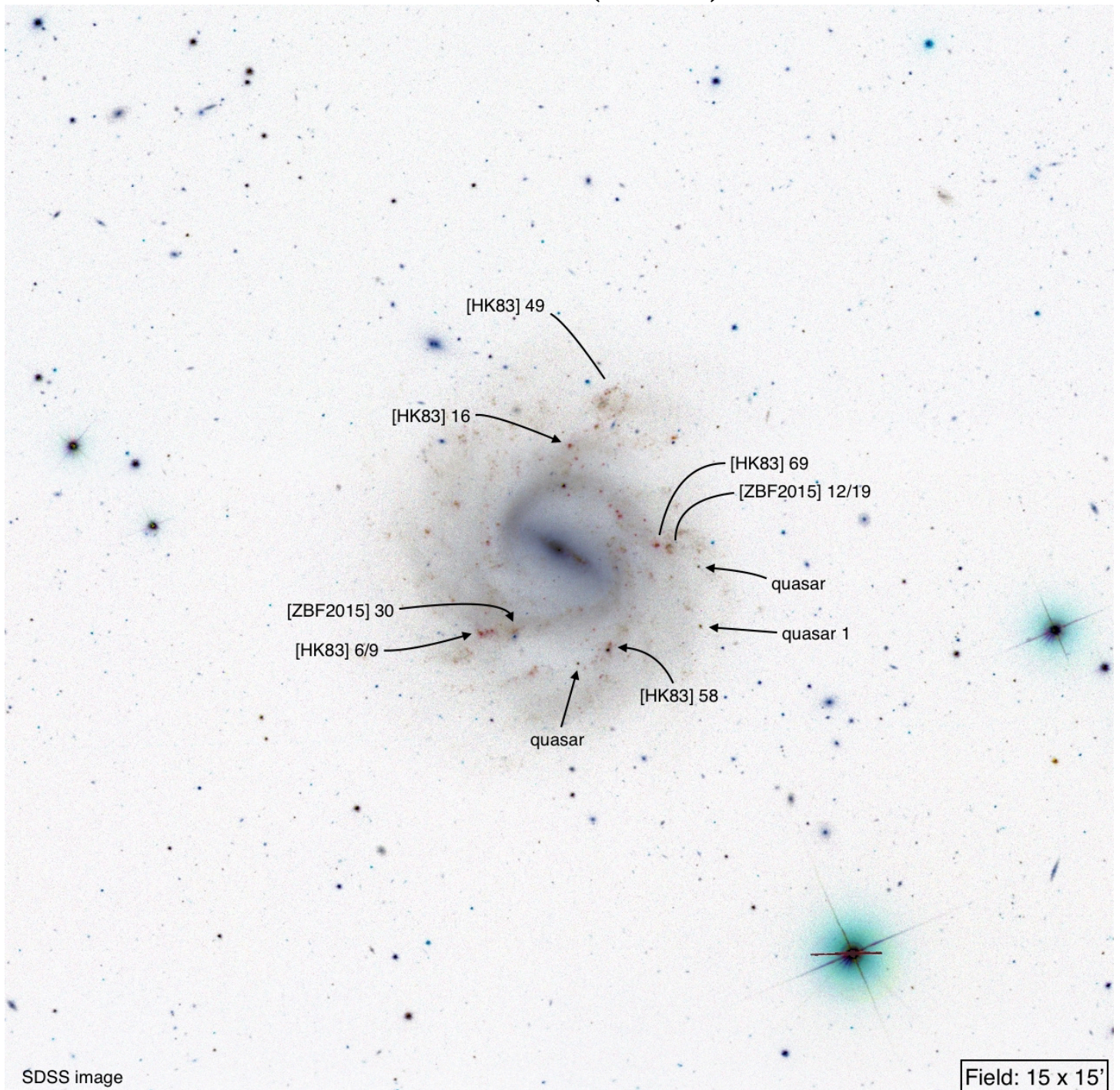
For observing notes with a 48-inch telescope, see Steve Gottlieb's notes: [NGC 1068](#). Also see Howard Banich's sketches and notes (scroll to M77): [Banich Notes](#). Uwe Glahn detected all three extragalactic objects with his 27" reflector as shown in his [sketch](#).

NGC 1073 (Cetus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1073	02 43 40.3	+01 22 33	11.0v	4.9 x 4.5'	62

NGC 1073 (Cetus)



NGC 1073 is a type SB(rs)c barred spiral galaxy sitting 48 mly away from us and 77 kly across. It is part of the NGC 1068 galaxy group

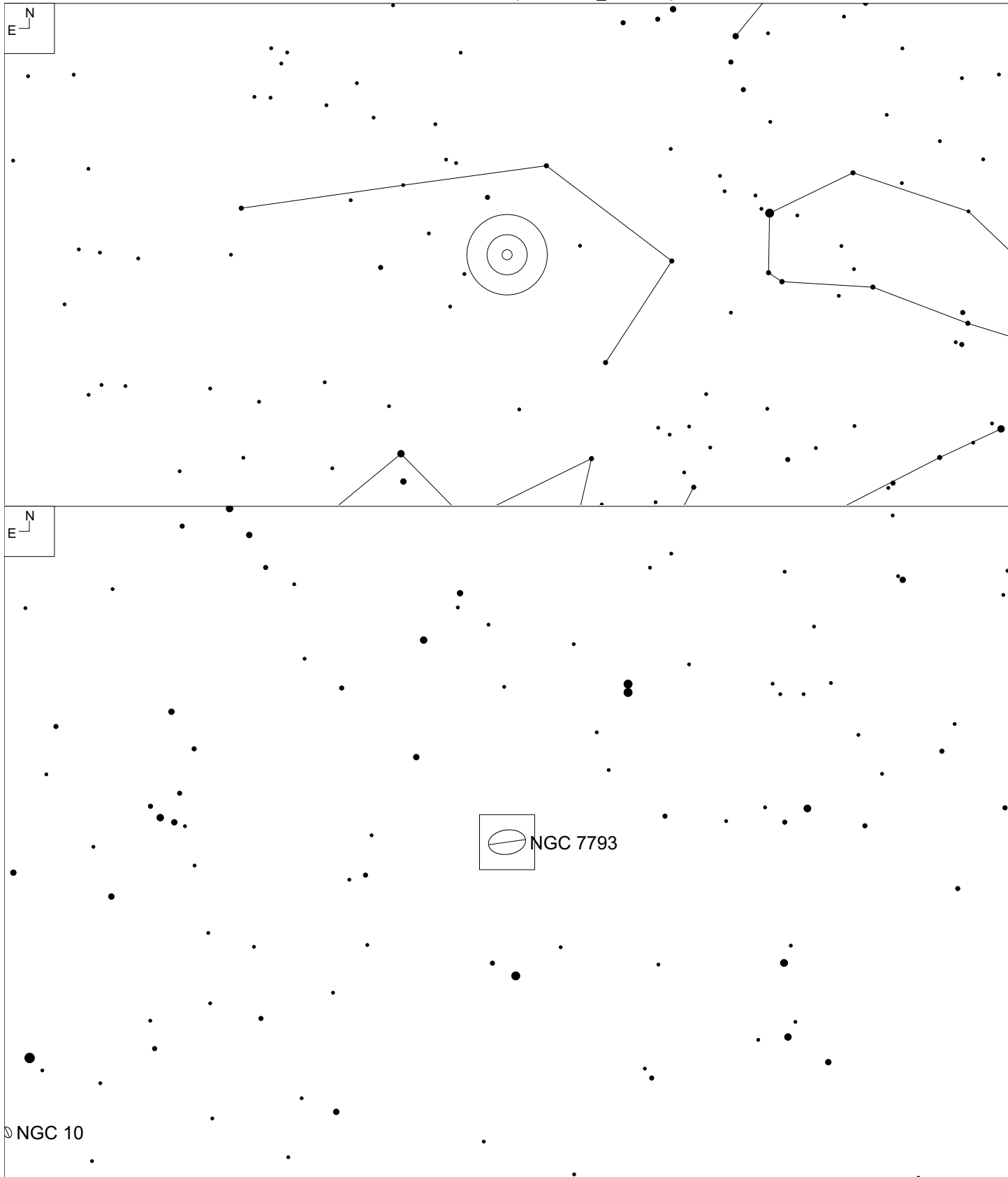
For the three marked quasars, see J. S. Dunlop, et al, “The Parkes selected regions: deep optical and infrared observations of radio galaxies and quasars at high redshifts,” *Monthly Notices of the Royal Astronomical Society*, Volume 238 (June 1989): 1171-1231. “quasar 1” is [HB89] 0240+011 with a redshift of $z=0.599$, which corresponds to about 8 bly distant!

H II [ZBF2015] annotations from Javier Zaragoza-Cardiel, et al, “Comparative internal kinematics of the H II regions in interacting and isolated galaxies: implications for massive star formation modes,” *Monthly Notices of the Royal Astronomical Society*, Volume 451, Issue 2 (Aug 2015): 1307 – 1330

For observing notes with a 48-inch telescope, see Steve Gottlieb’s notes: [NGC 1073](#).

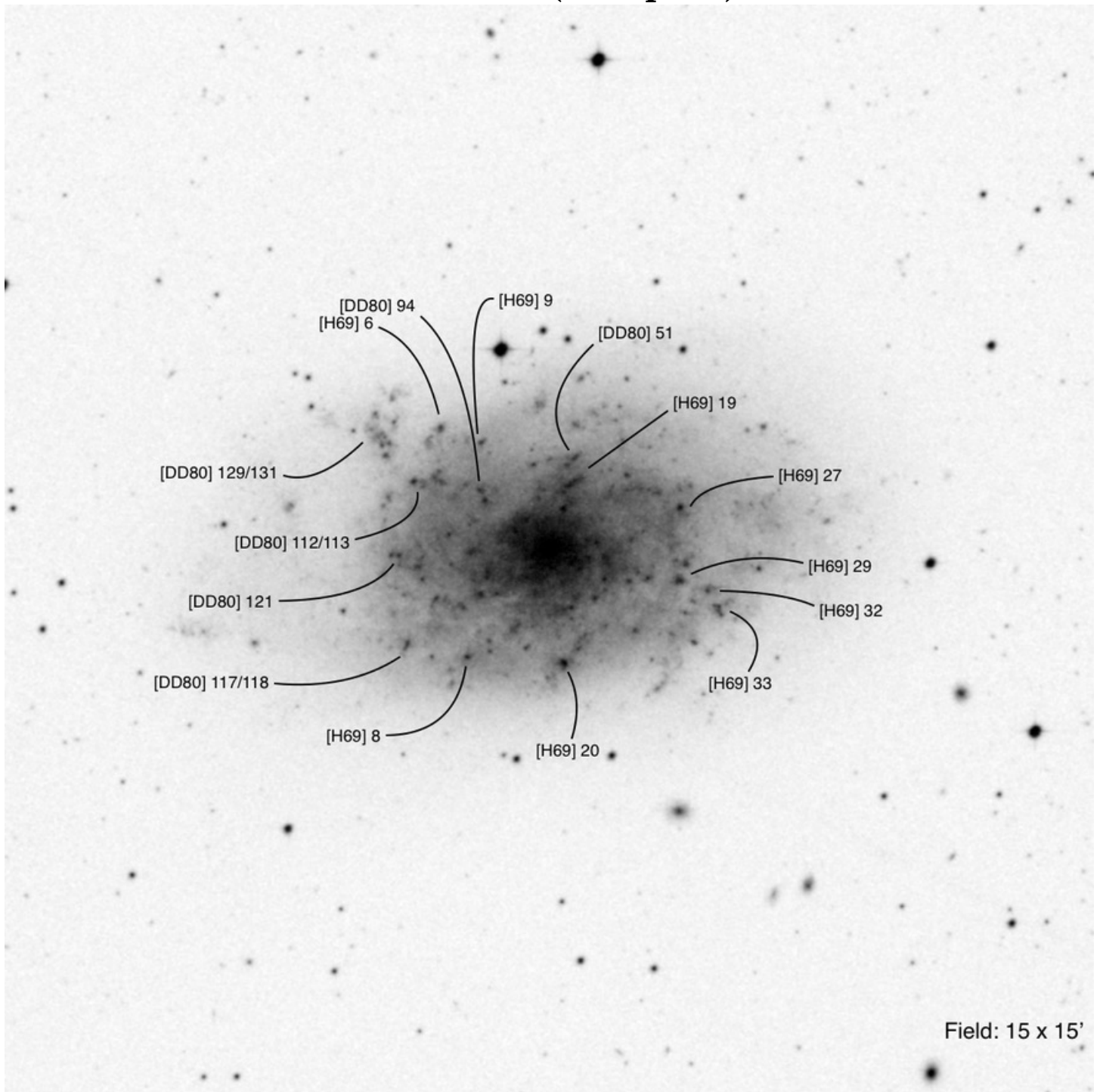
For a sketch in a 27” reflector, see Uwe Glahn’s sketch of [NGC 1073](#), where he picked up several H II regions.

NGC 7793 (Sculptor)



Object	RA	Dec	Mag	Size	iSDA
NGC 7793	23 57 50.3	-32 35 15	9.1	8.4 x 6.9'	76, 87

NGC 7793 (Sculptor)



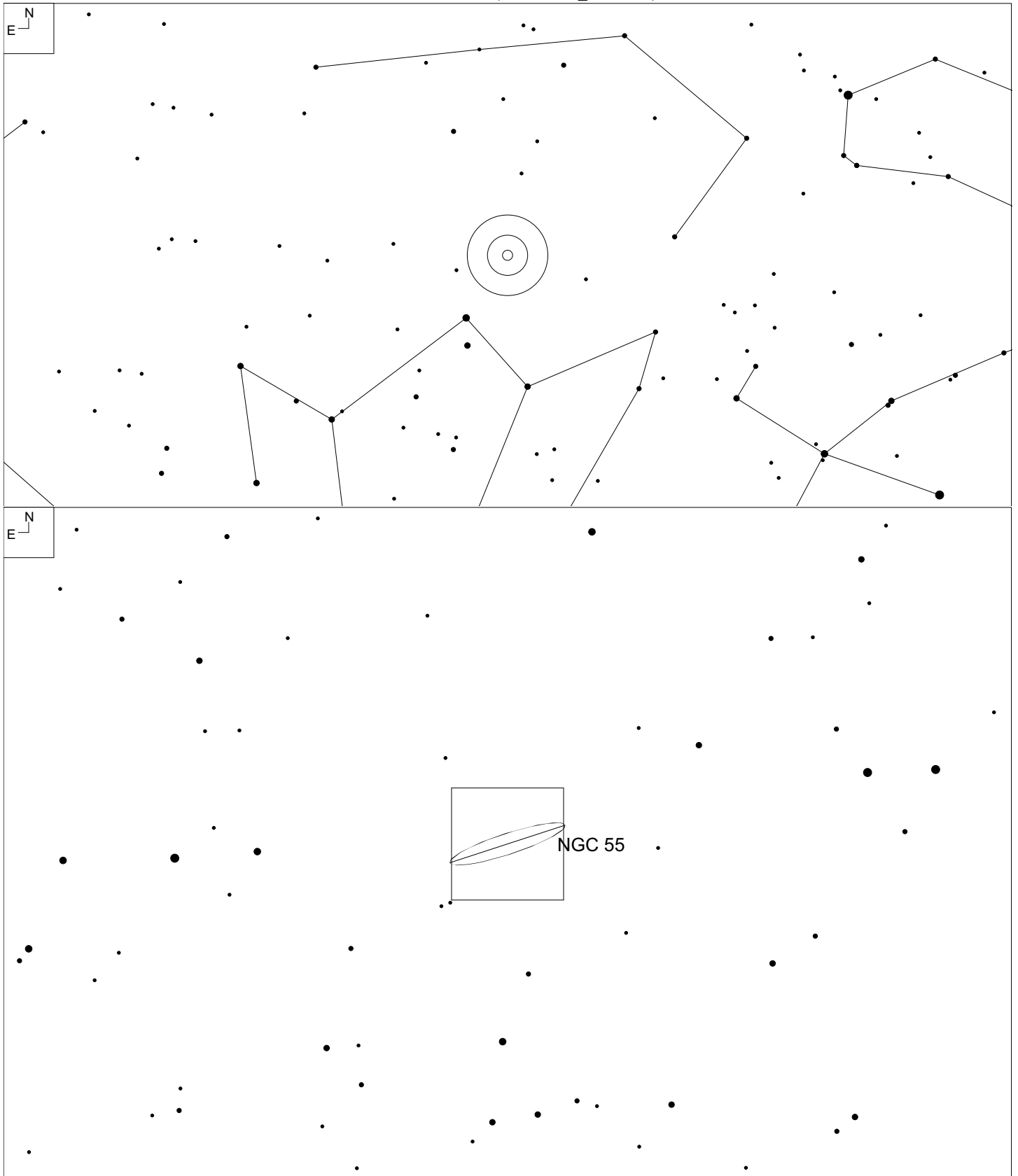
NGC 7793 is a type SA(s)d spiral sitting 12 mly distant and 32 kly across. It is part of the Sculptor Group and one of the five brightest members. It is one of the smaller examples of an Sd galaxy.

H II region **[H69]** annotations, see Paul W. Hodge, “H II Regions in Twenty Nearby Galaxies,” *The Astrophysical Journal Supplement Series*, Volume 18, Number 157 (1969): 73-124

H II region **[DD80]** annotations, see E. Davoust, G. de Vaucouleurs. “Velocity fields in late-type galaxies from Halpha Fabry-Perot interferometry. II. Kinematics and dynamics of the Sd spiral NGC 7793,” *Astrophysical Journal*, Volume 242 (1980): 30-52

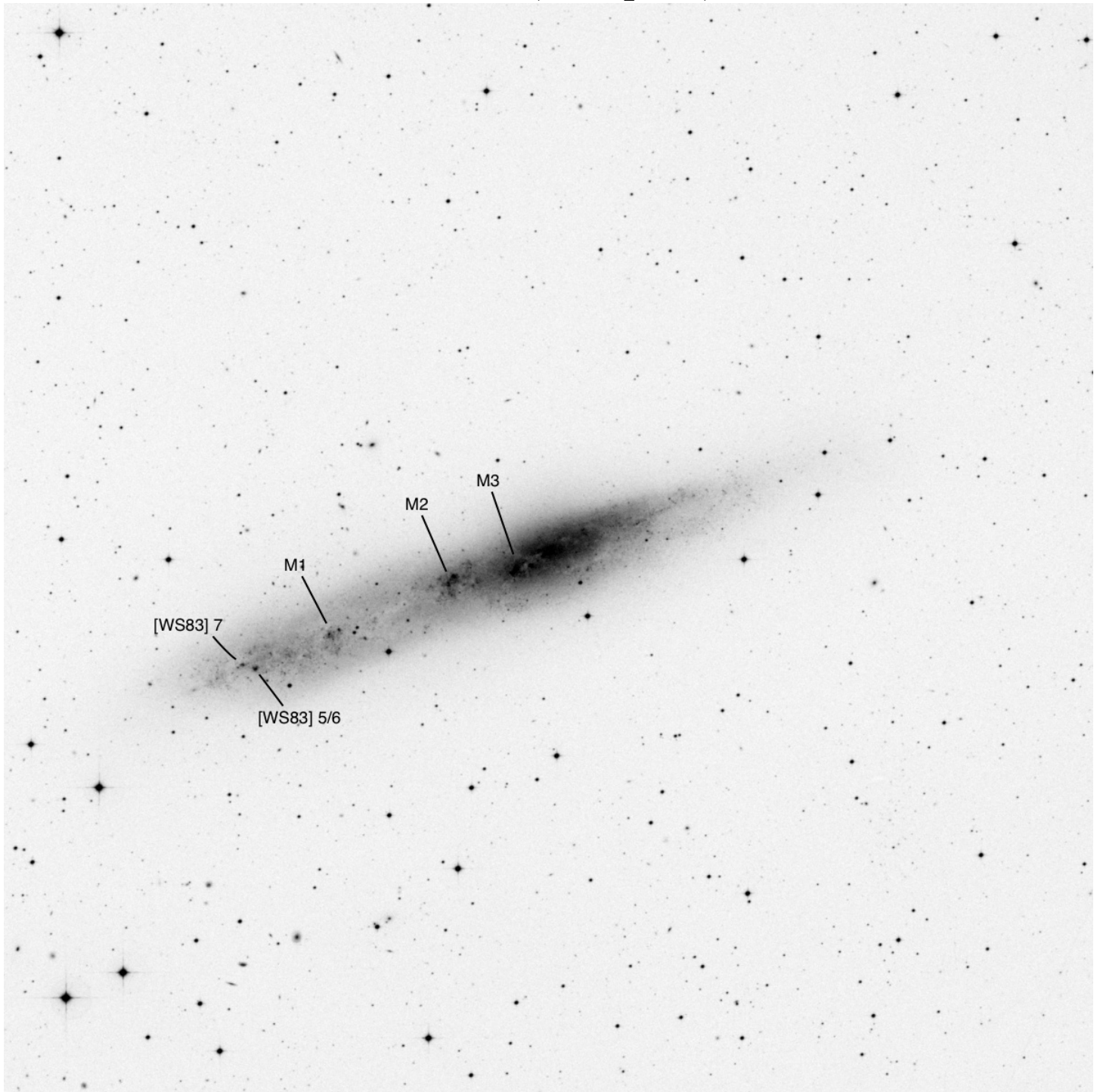
For observing notes with a 48-inch telescope, see Steve Gottlieb’s notes: [NGC 7793](#). For a sketch through a 24” reflector by a skilled observer, see Uwe Glahn’s sketch of [NGC 7793](#).

NGC 55 (Sculptor)



Object	RA	Dec	Mag	Size	iSDA
NGC 55	00 14 54.0	-39 11 34	7.9	32.4 x 5.6'	88, 99

NGC 55 (Sculptor)



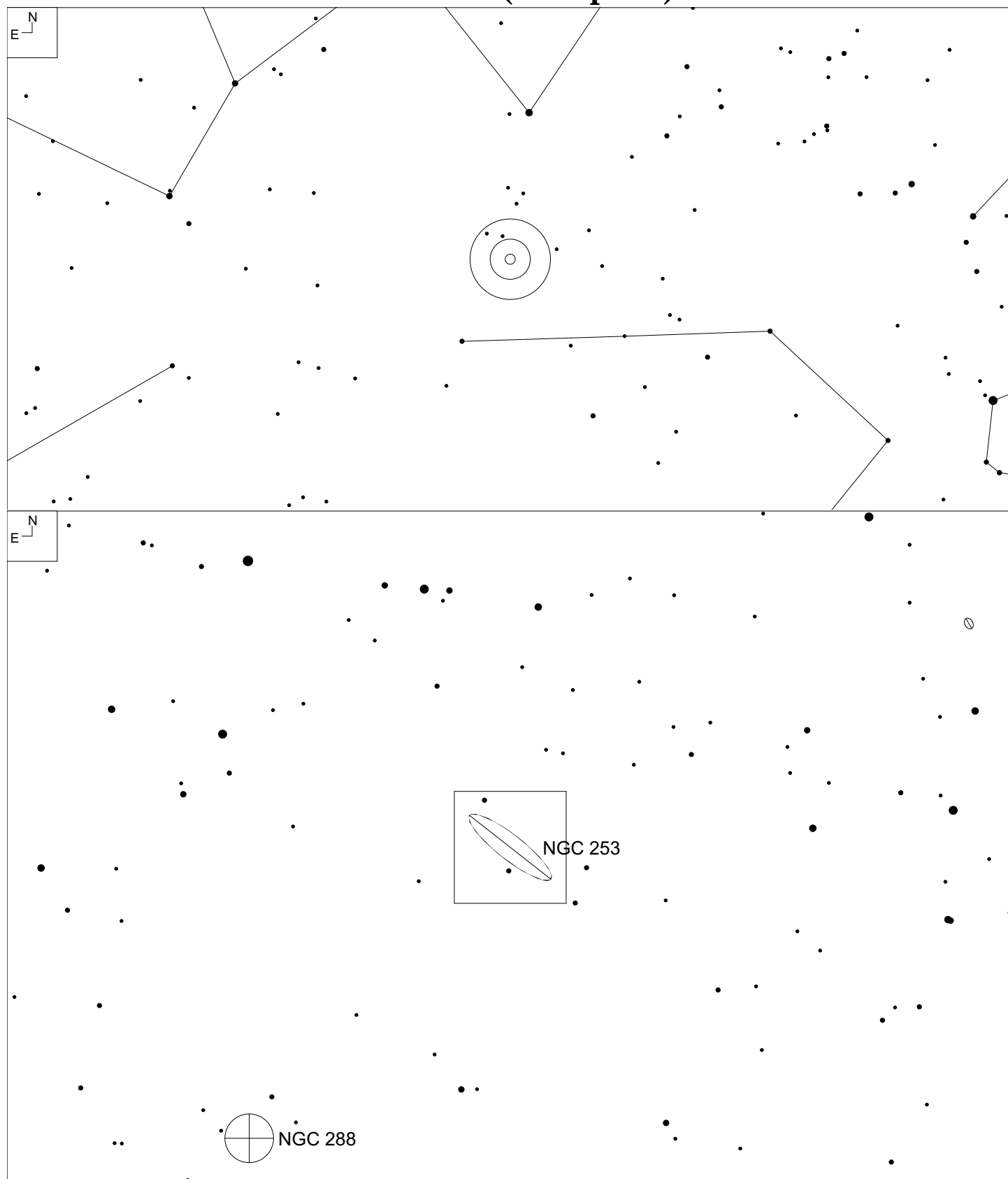
NGC 55 is a type SB(s)m galaxy sitting just 6.5 mly distant and about 64 kly across. It is between the Sculptor Group and the Local Group. Some call it the String of Pearls Galaxy for the rich knotty detail running across the middle.

M# annotations from Laura Magrini, et al, “NGC 55: A Disc Galaxy with Flat Abundance Gradients,” *Monthly Notices of the Royal Astronomical Society*, Volume 464, Issue 1 (Jan 2017): 739–753

H II [WS83] annotations from B. Louis Webster and Malcom G. Smith, “Abundance Gradients in Galaxies in the Sculptor and Centaurus Groups,” *Monthly Notices of the Royal Astronomical Society*, Volume 204 (1983): 743-763

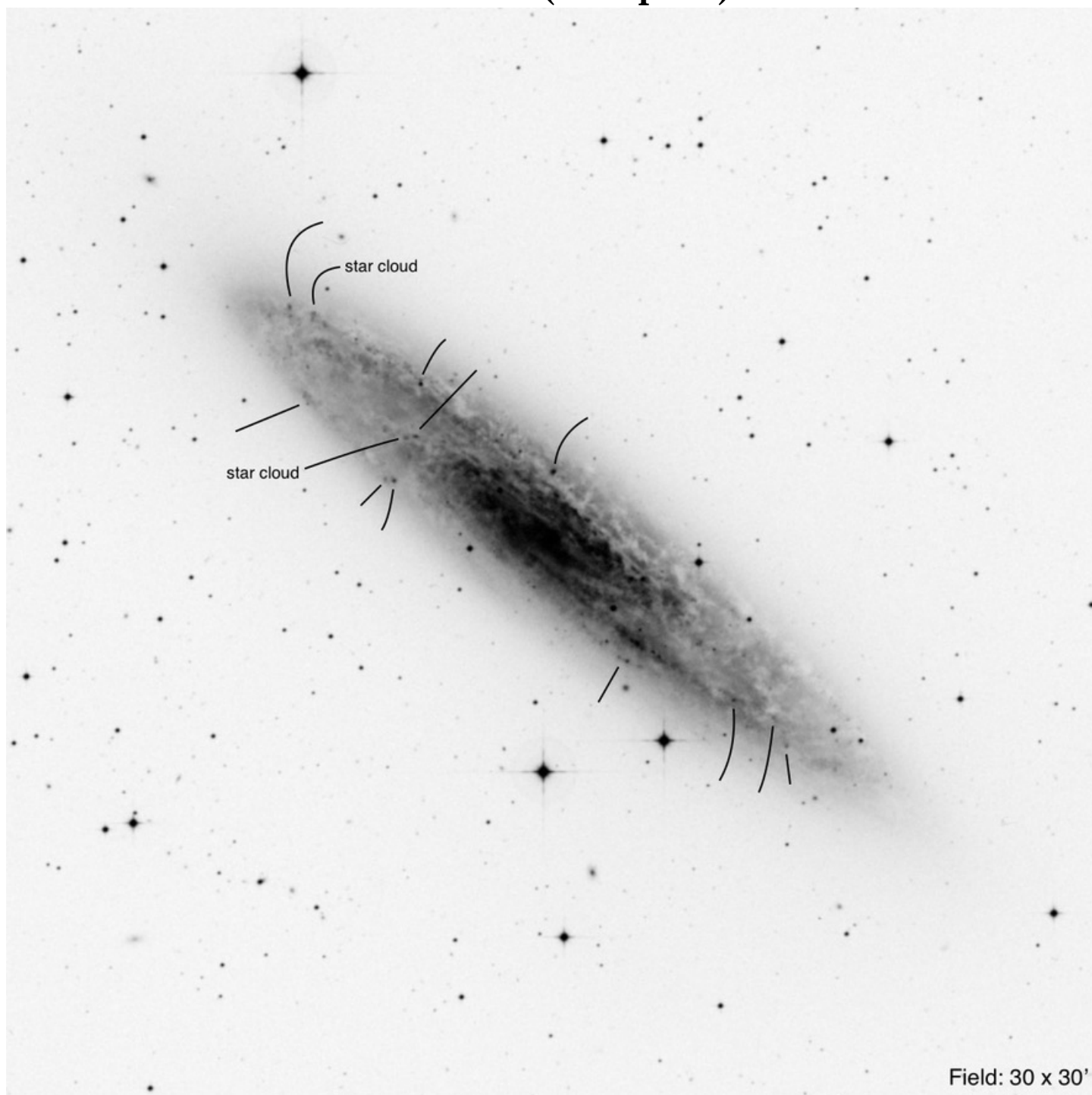
For observing notes with a 30-inch telescope, see Steve Gottlieb’s notes: [NGC 55](#). Uwe Glahn picked up all 5 extragalactic objects in his [sketch](#) with his 14.5” reflector.

NGC 253 (Sculptor)



Object	RA	Dec	Mag	Size	iSDA
NGC 253	00 47 33.2	-25 17 18	8.0v	27.5 x 6.8'	87

NGC 253 (Sculptor)

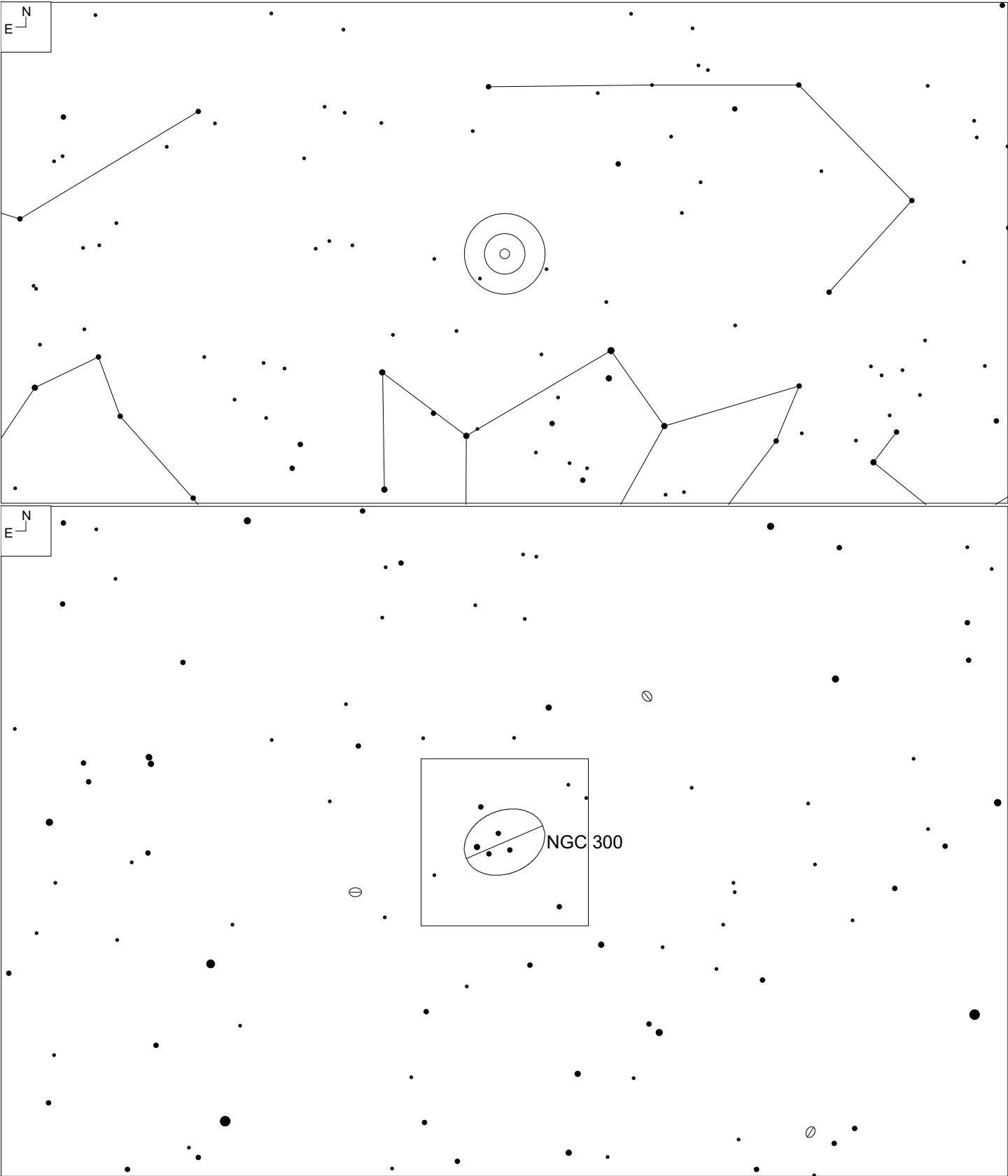


The Sculptor Galaxy, NGC 253, is a SAB(s)c galaxy and sits 11.4 mly distant and 91 kly across. It is the brightest in the Sculptor Group.

NED did not have any extragalactic regions listed; however, the more obvious objects are marked.

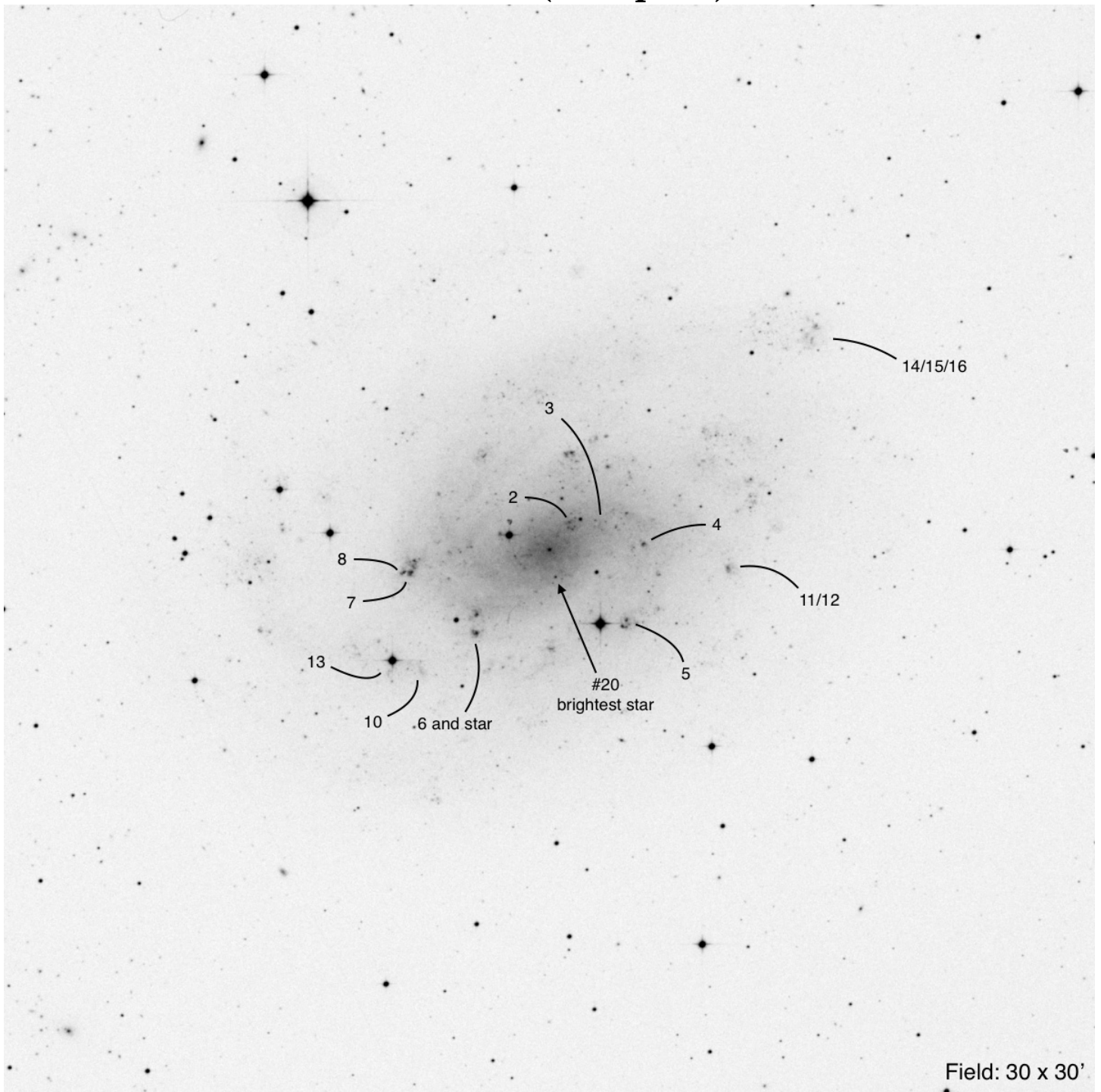
For observing notes with a 48-inch and 30-inch telescopes, see Steve Gottlieb's notes: [NGC 253](#).

NGC 300 (Sculptor)



Object	RA	Dec	Mag	Size	iSDA
NGC 300	00 54 53.5	-37 41 03	9	21.9 x 15.5'	87, 99

NGC 300 (Sculptor)



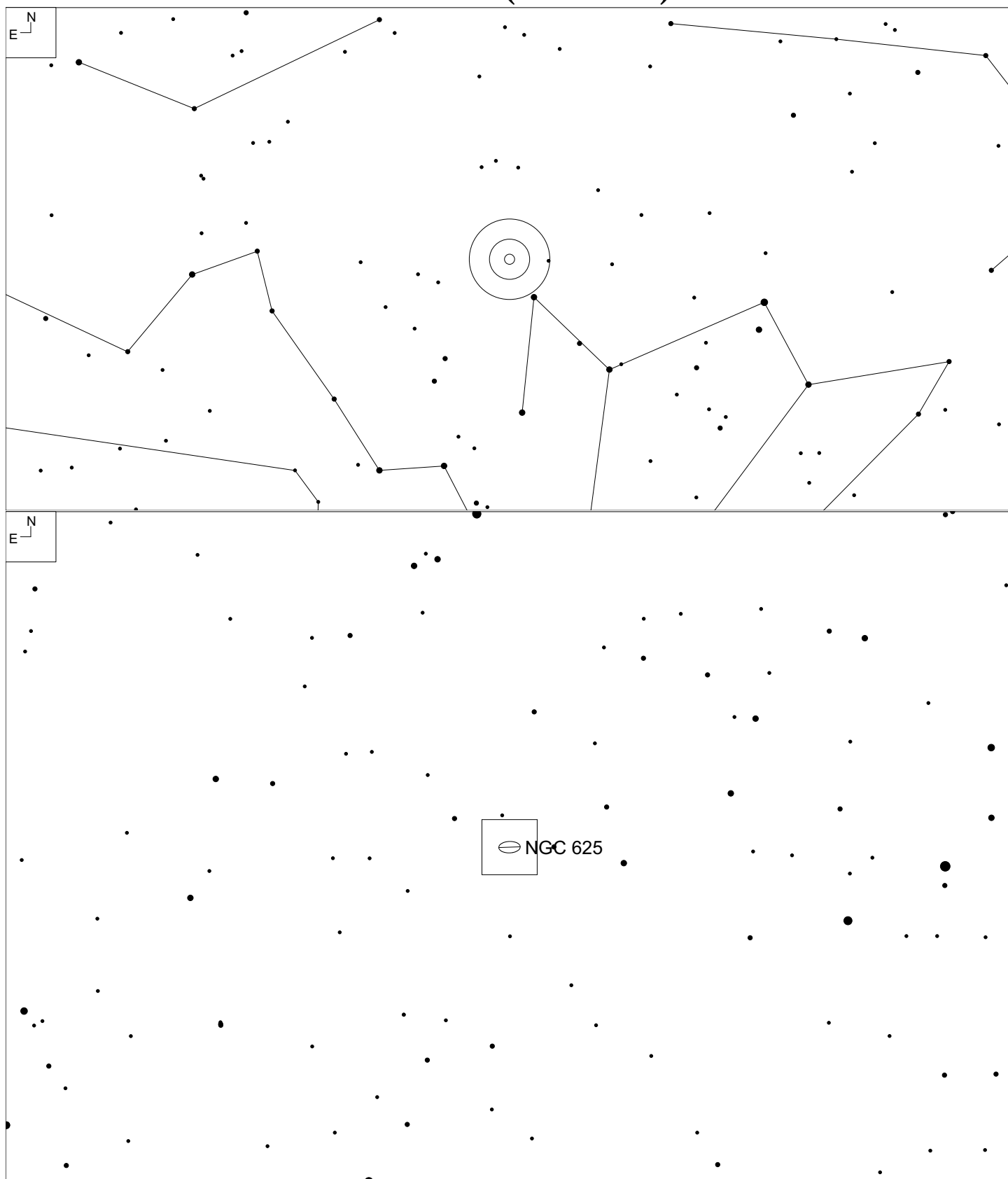
NGC 300 is a type SA(s)d galaxy sitting at 6.1 mly from us and 94 kly across. Along with NGC 55, it sits between the Sculptor Group and the Local Group.

The H II regions identified by Webster are annotated with numbers only. I left out [WS83] for clarity, see B.L. Webster and M.G. Smith. "Abundance gradients in galaxies in the Sculptor and Centaurus groups," *Monthly Notices of the Royal Astronomical Society*, Volume 204 (Aug 1983): 743-763.

The brightest star is annotated as **#20** just SSW from the center. If you see this, it is the farthest individual star detectable in the eyepiece. For an excellent article of the brightest stars in NGC 300 that are observable in amateur telescopes, see Dave Tosteson, "The Farthest Star" *Sky & Telescope* (Nov 2019), 57-59.

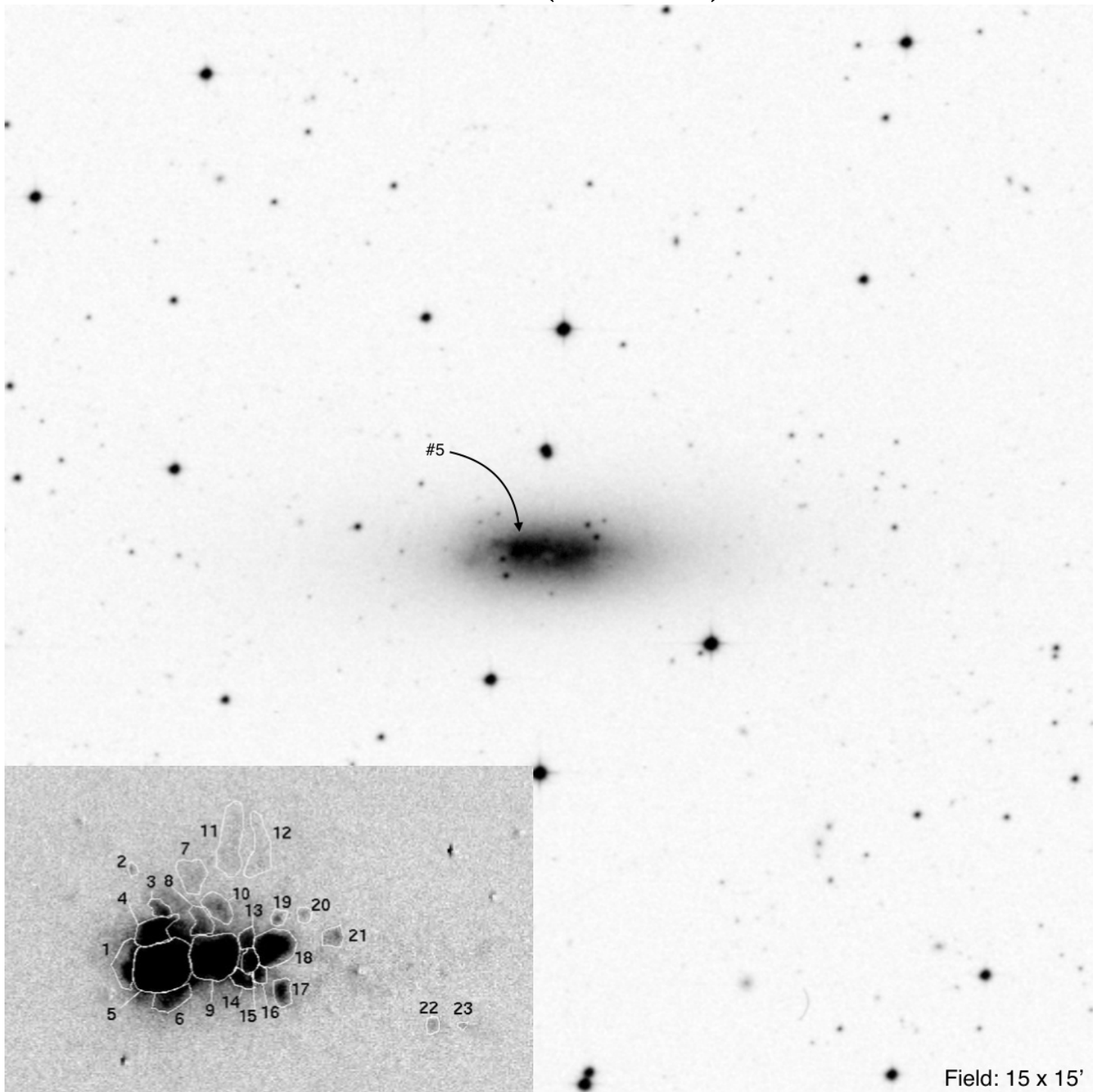
For a sketch with a 14.5", see Uwe Glahn's [sketch](#).

NGC 625 (Phoenix)



Object	RA	Dec	Mag	Size	iSDA
NGC 625	01 35 04.6	-41 26 12	11.1	5.8 x 1.9'	98, 99

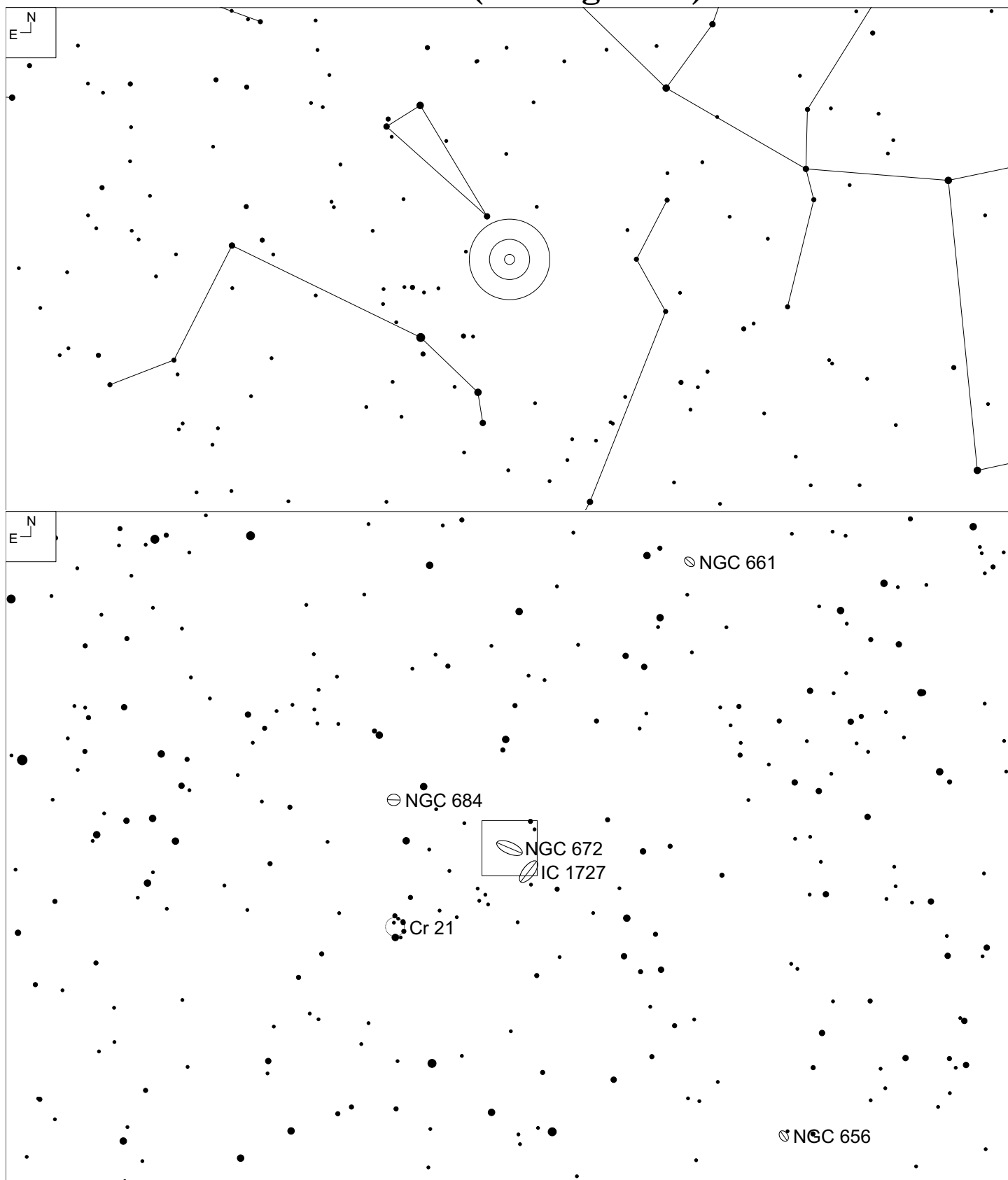
NGC 625 (Phoenix)



NGC 625 is a small type SB(s)m galaxy sitting 12.7 mly away. It is part of the Sculptor Group.

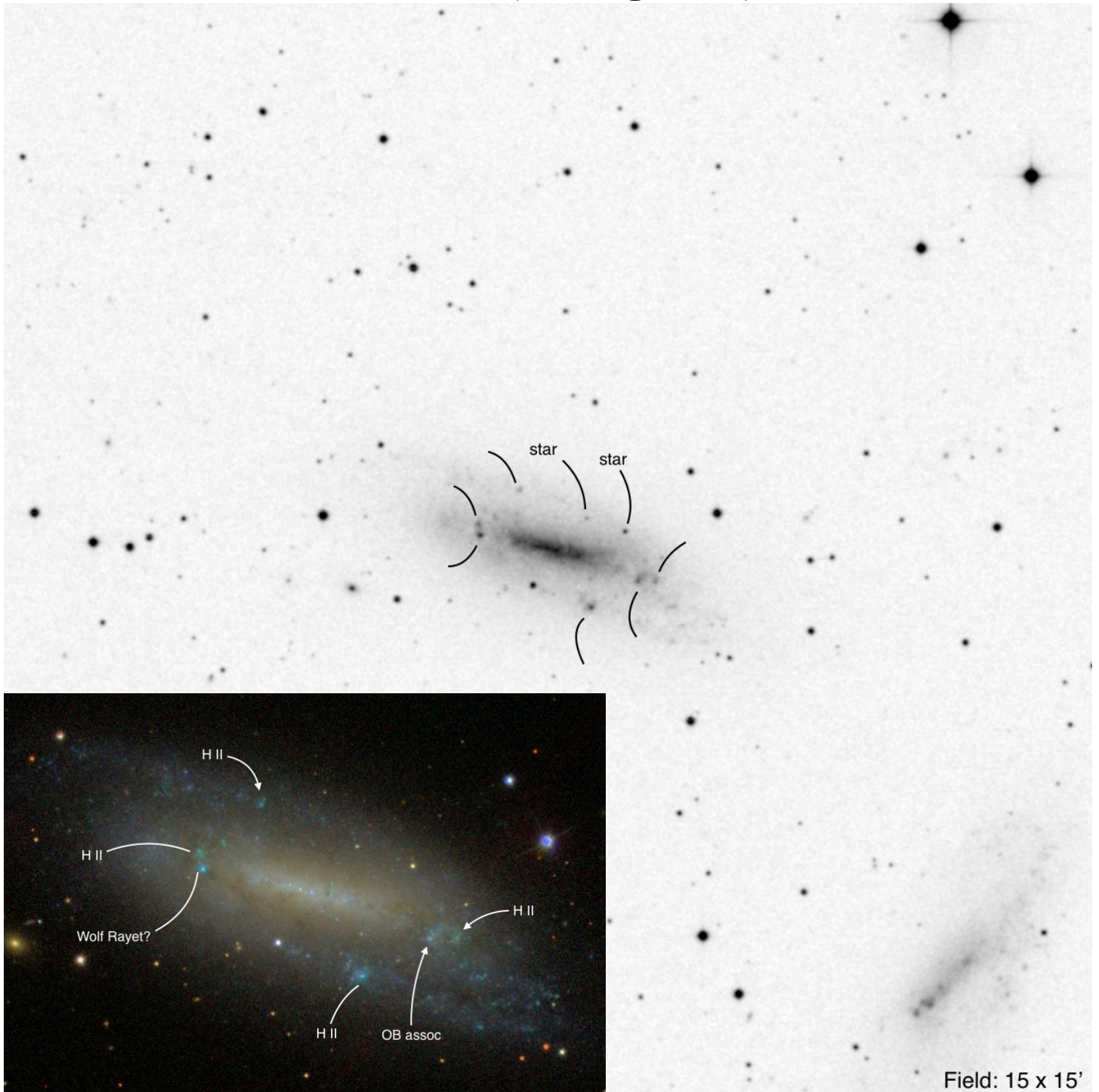
The west side has some significant H II regions, the brightest as marked #5. For inset, see Evan D. Skillman, et al. "Star Formation in Sculptor Group Dwarf Irregular Galaxies and the Nature of 'Transition' Galaxies," *The Astronomical Journal*, Volume 125, Issue 2 (Feb 2003): 599.

NGC 672 (Triangulum)



Object	RA	Dec	Mag	Size	iSDA
NGC 672	01 47 54.2	+27 25 51	11.4	6.5 x 1.8'	38, 39

NGC 672 (Triangulum)

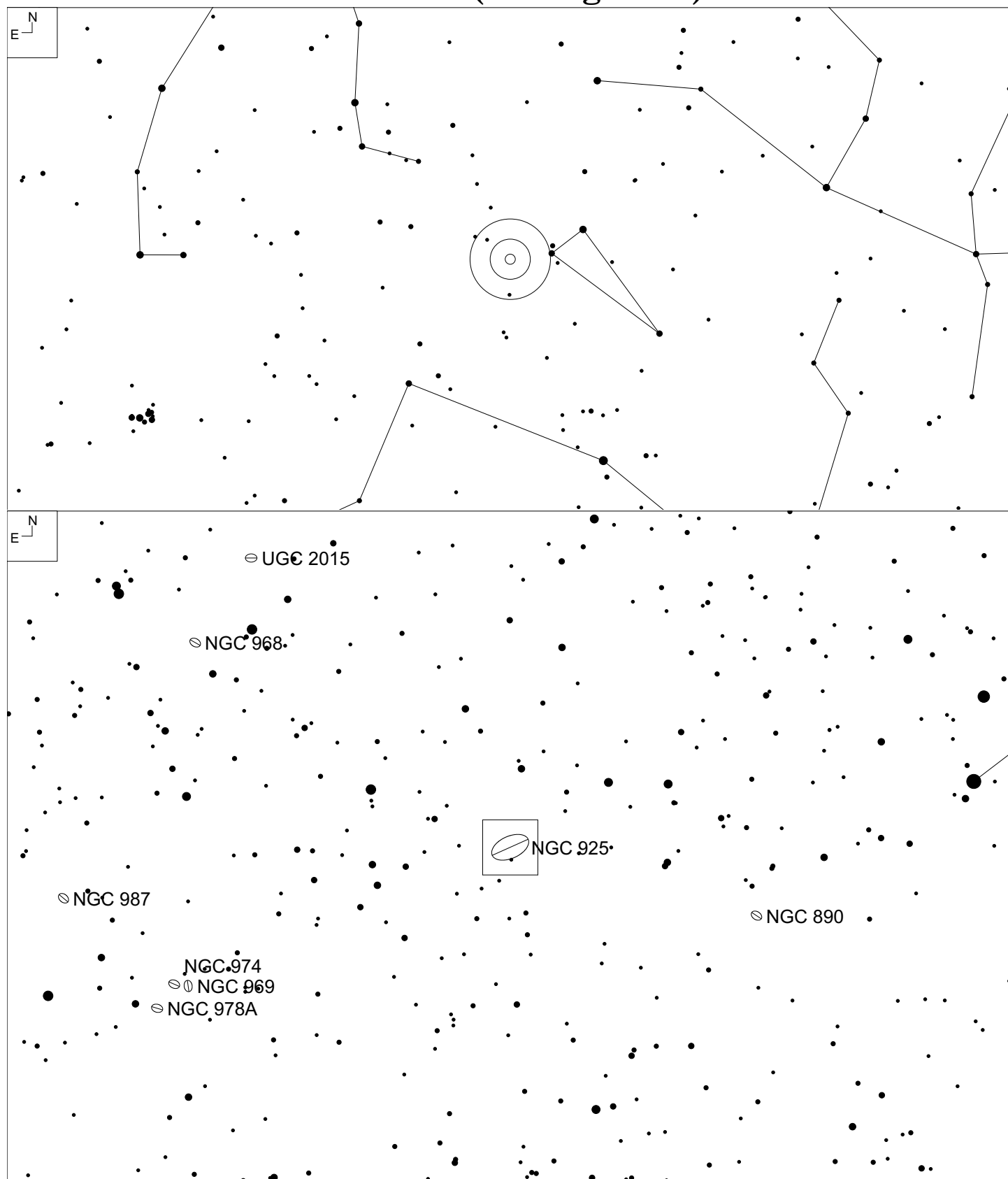


NGC 672 is a type SB(s)cd galaxy sitting at 23.4 mly away. It is part of a small galaxy group that includes NGC 784.

NED did not have any extragalactic regions listed; however, the more obvious objects are marked.

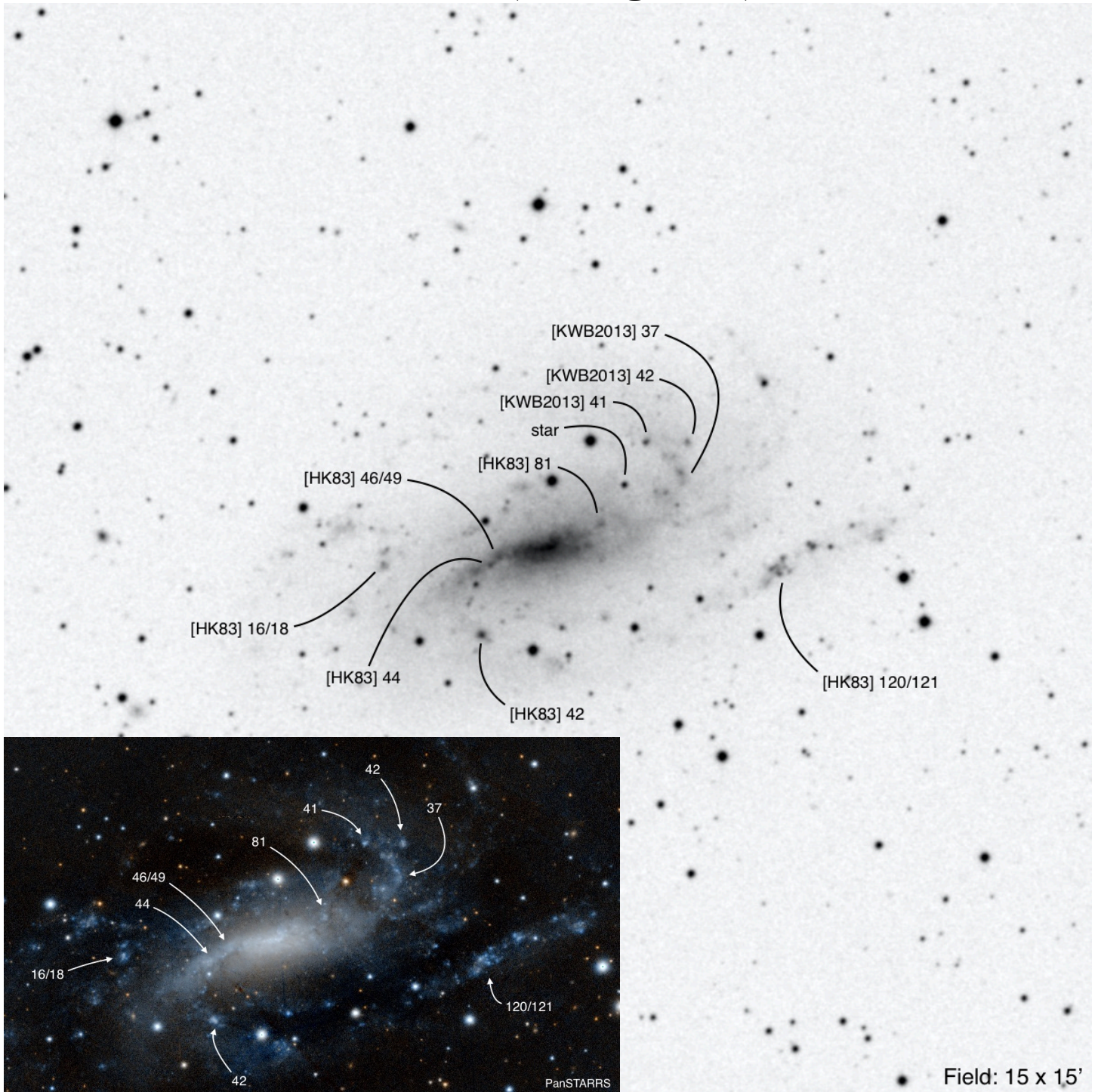
Hodge (1983) have identified 29 H II regions within 4' from the center, however the coordinates must be off as none of the obvious H II regions are not marked by the given coordinates in Hodge (1983) journal article.

NGC 925 (Triangulum)



Object	RA	Dec	Mag	Size	iSDA
NGC 925	02 27 16.3	+33 34 36	10.1	7.3 x 3.2'	38

NGC 925 (Triangulum)

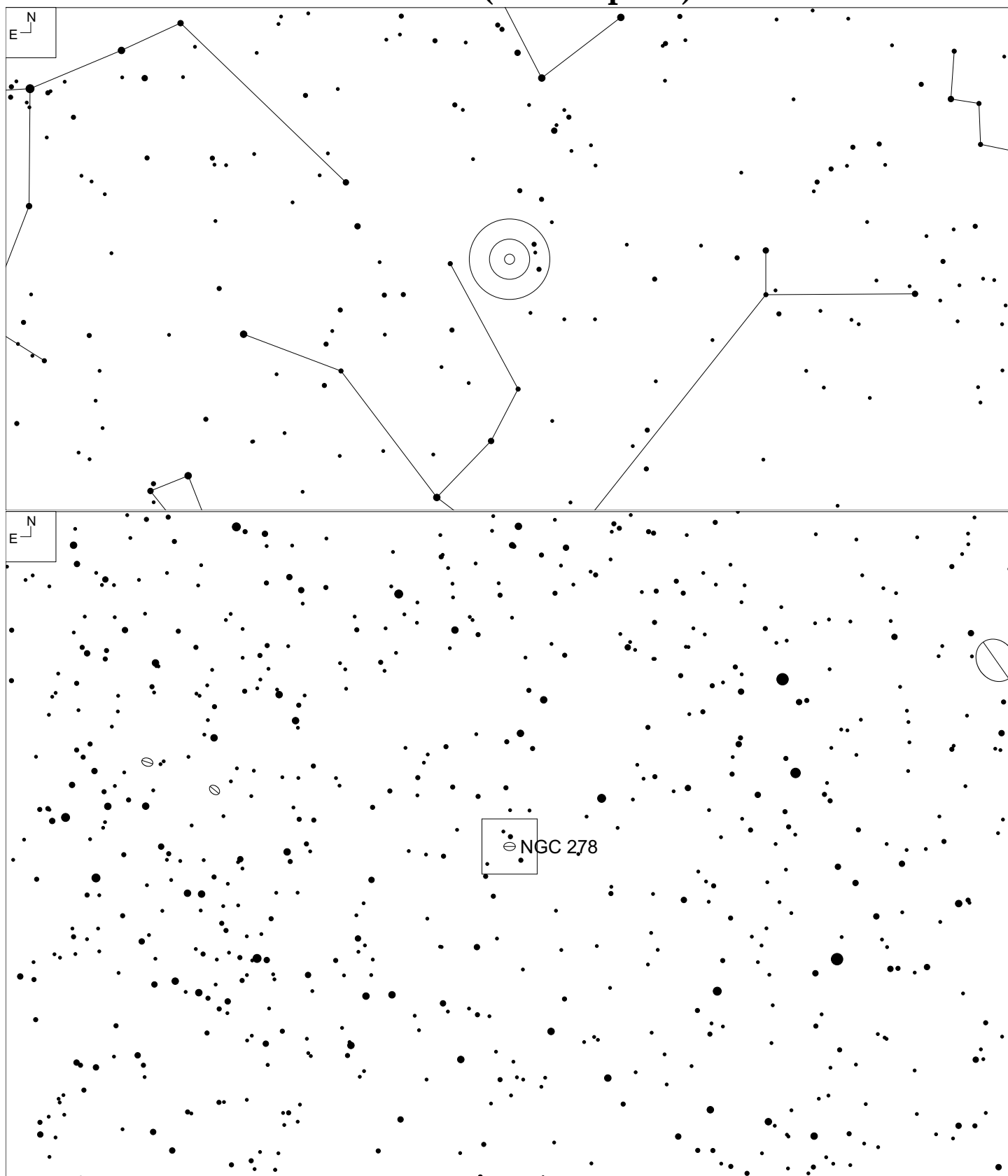


NGC 925 is a type SB(s)d galaxy sitting 28 mly distant and about 86 kly in diameter. It is part of the NGC 1023 group of galaxies, which includes NGC 891.

H II region **[KWB2013]** annotations from M. S. Khramtsova, et al, "Polycyclic aromatic hydrocarbons in spatially resolved extragalactic star-forming complexes," *Monthly Notices of the Royal Astronomical Society*, Volume 431, Issue 2 (May 2013): 2006-2016.

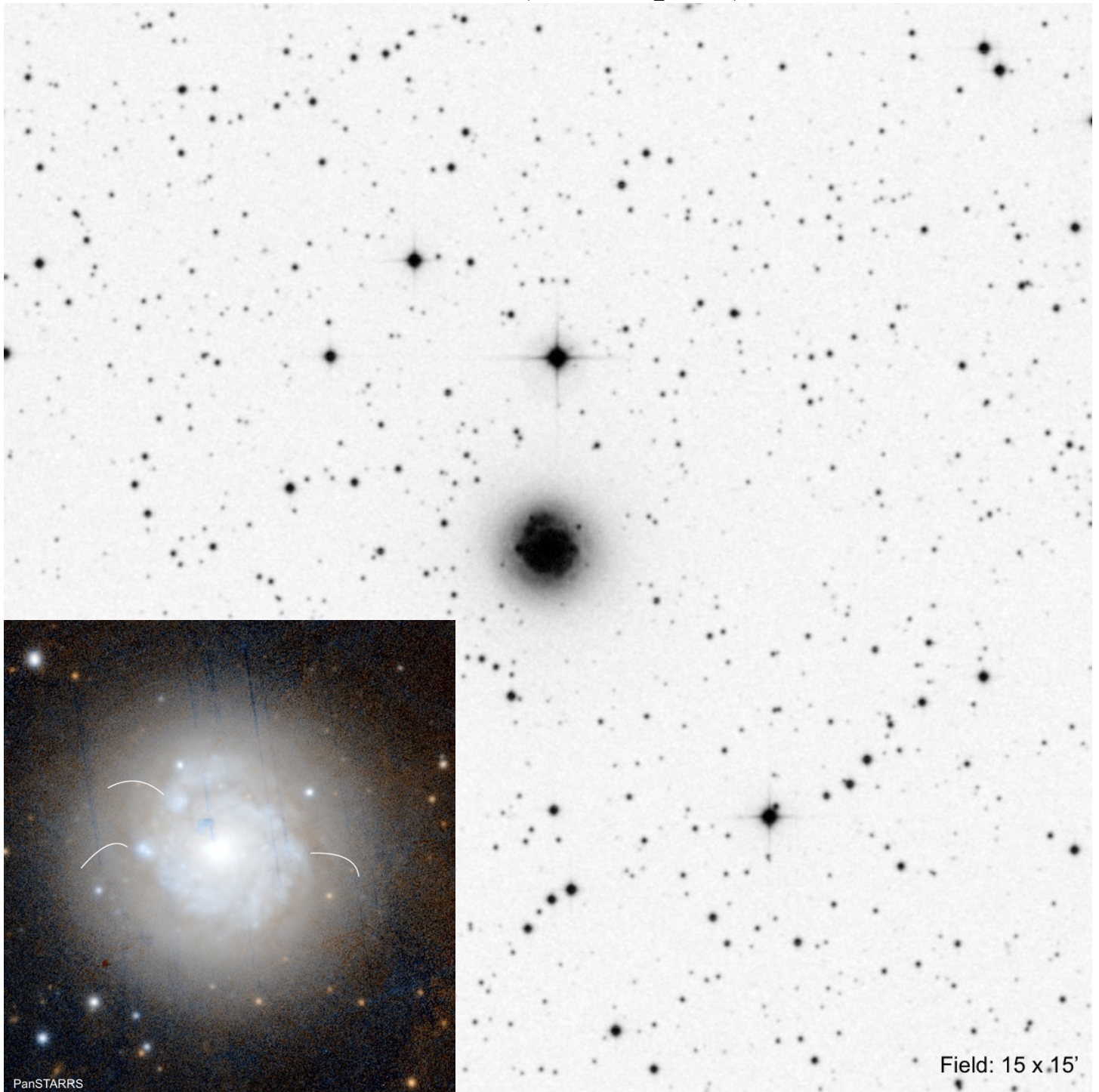
For observing notes with a 24-inch telescope, see Steve Gottlieb's notes: [NGC 925](#). Uwe Glahn picked up [HK83] 120/121 in his [sketch](#) with a 16" reflector.

NGC 278 (Cassiopeia)



Object	RA	Dec	Mag	Size	iSDA
NGC 278	00 52 04.3	+47 33 02	10.8	2.1 x 2.0'	27

NGC 278 (Cassiopeia)

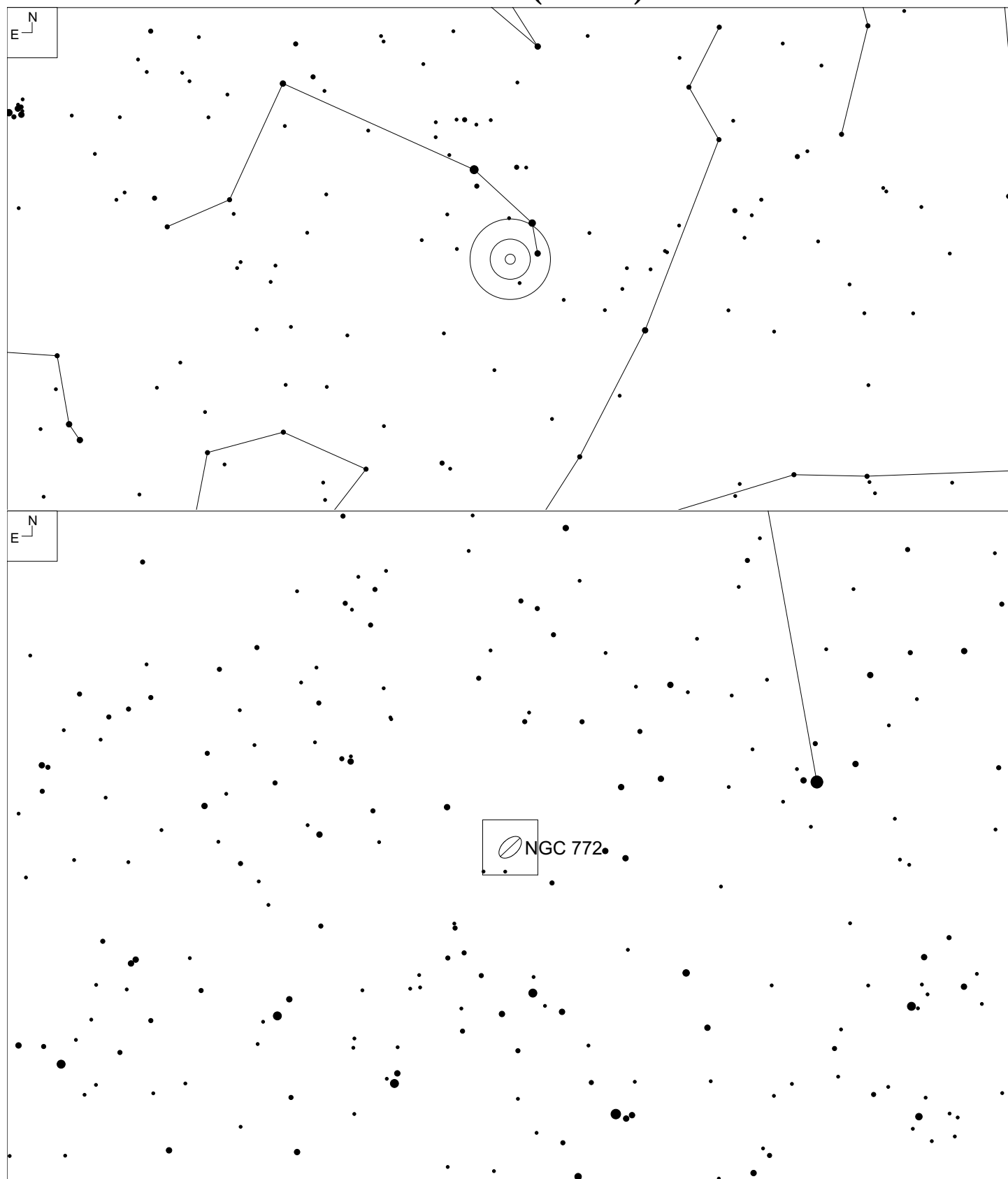


NGC 278 is a type SAB(rs)b galaxy. The distance from the Milky was calculated to be about 39 mly away.

NED does not have any labels, but [Glahn](#) was able to see the three marked star forming regions with his 14" reflector.

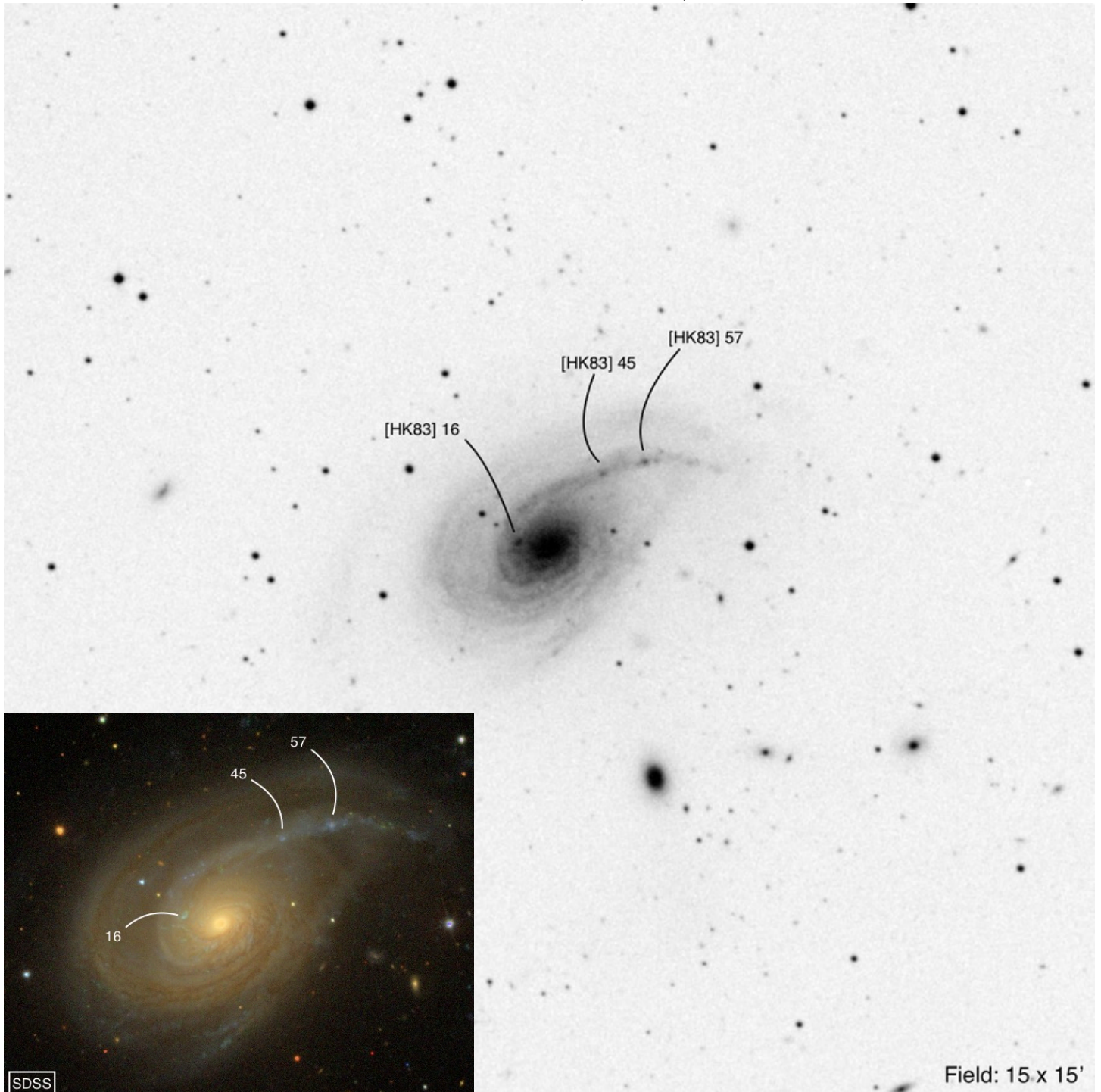
For observations with a 48" reflector, see Gottlieb's [notes](#).

NGC 772 (Aries)



Object	RA	Dec	Mag	Size	iSDA
NGC 772	01 59 19.2	+19 00 23	10.3	4.7 x 3.8'	50, 51

NGC 772 (Aries)

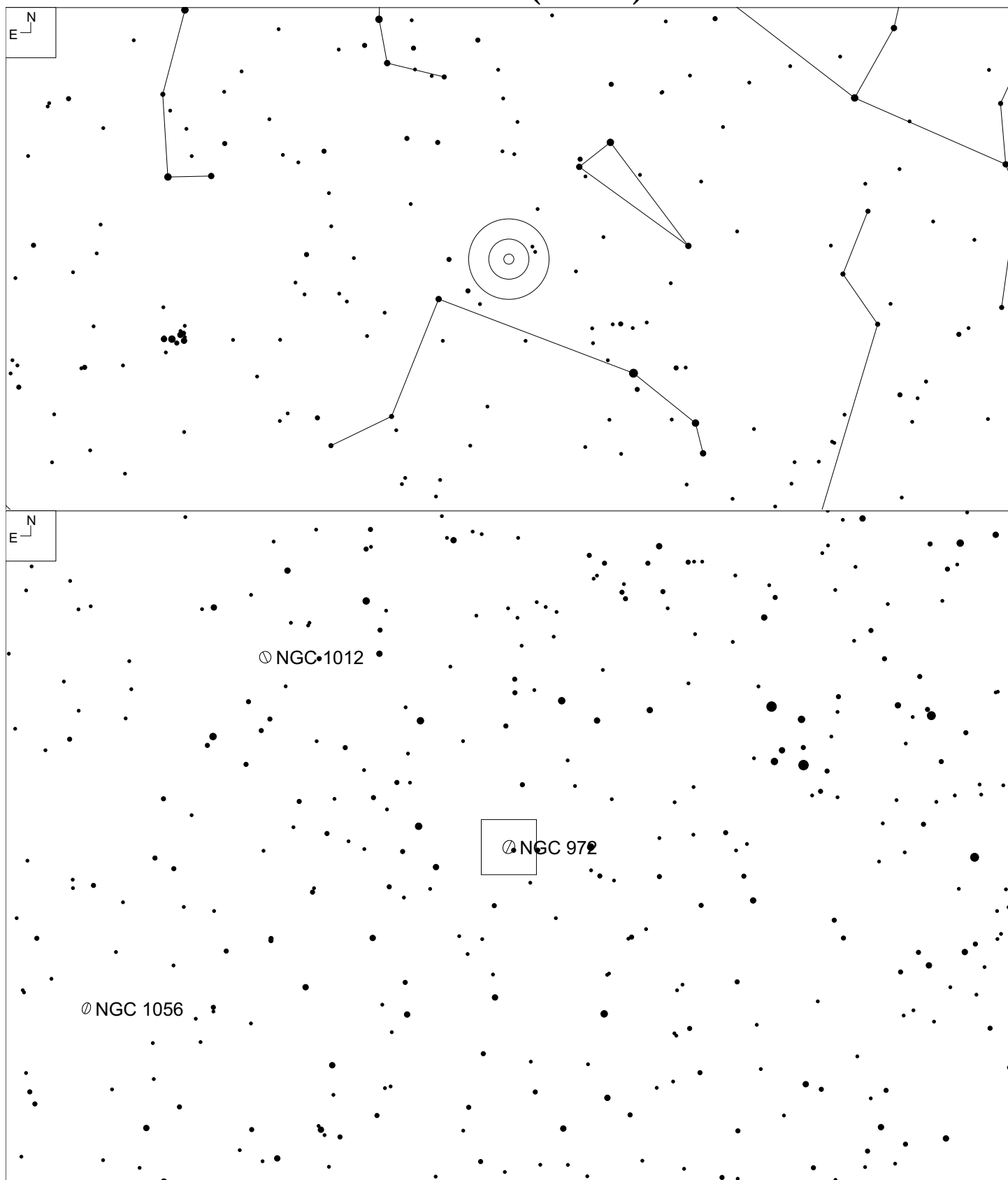


NGC 772 is a type SA(s)b galaxy sitting about 115 mly away. It is a pretty large galaxy at 240 kly across.

For observing notes with 24-inch and 48-inch telescopes, see Steve Gottlieb's notes: [NGC 772](#). Uwe Glahn's [sketch](#) with a 20" reflector showing a couple knots in the "strong arm"

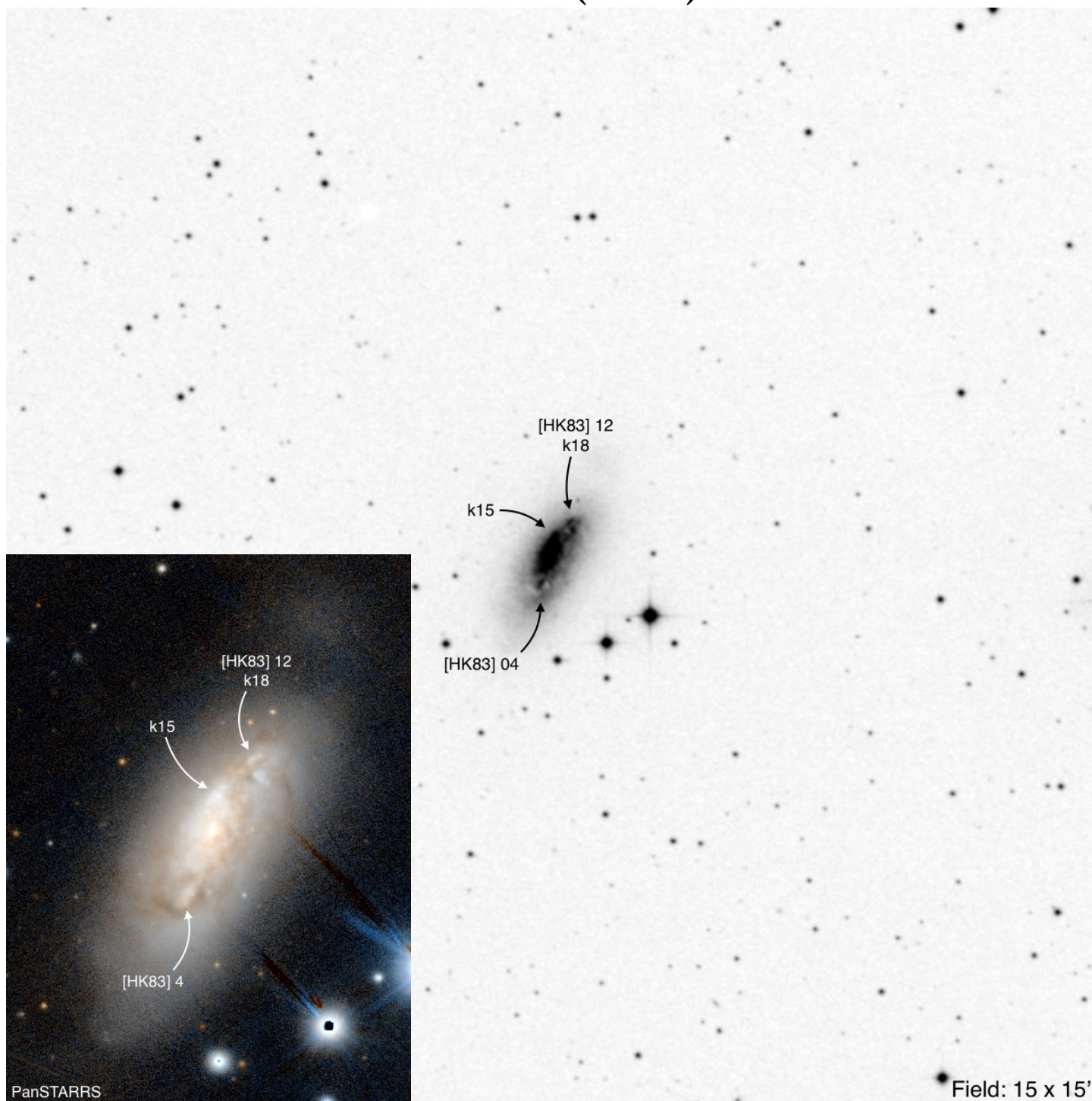
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 2: Aquila, Ara, Aries, Auriga, Boötes, Caelum*. (Richmond, VA: Willmann-Bell, Inc., 2015), 106-109.

NGC 972 (Aries)



Object	RA	Dec	Mag	Size	iSDA
NGC 972	02 34 12.8	+29 18 34	12.1	2.4 x 1.0'	38

NGC 972 (Aries)



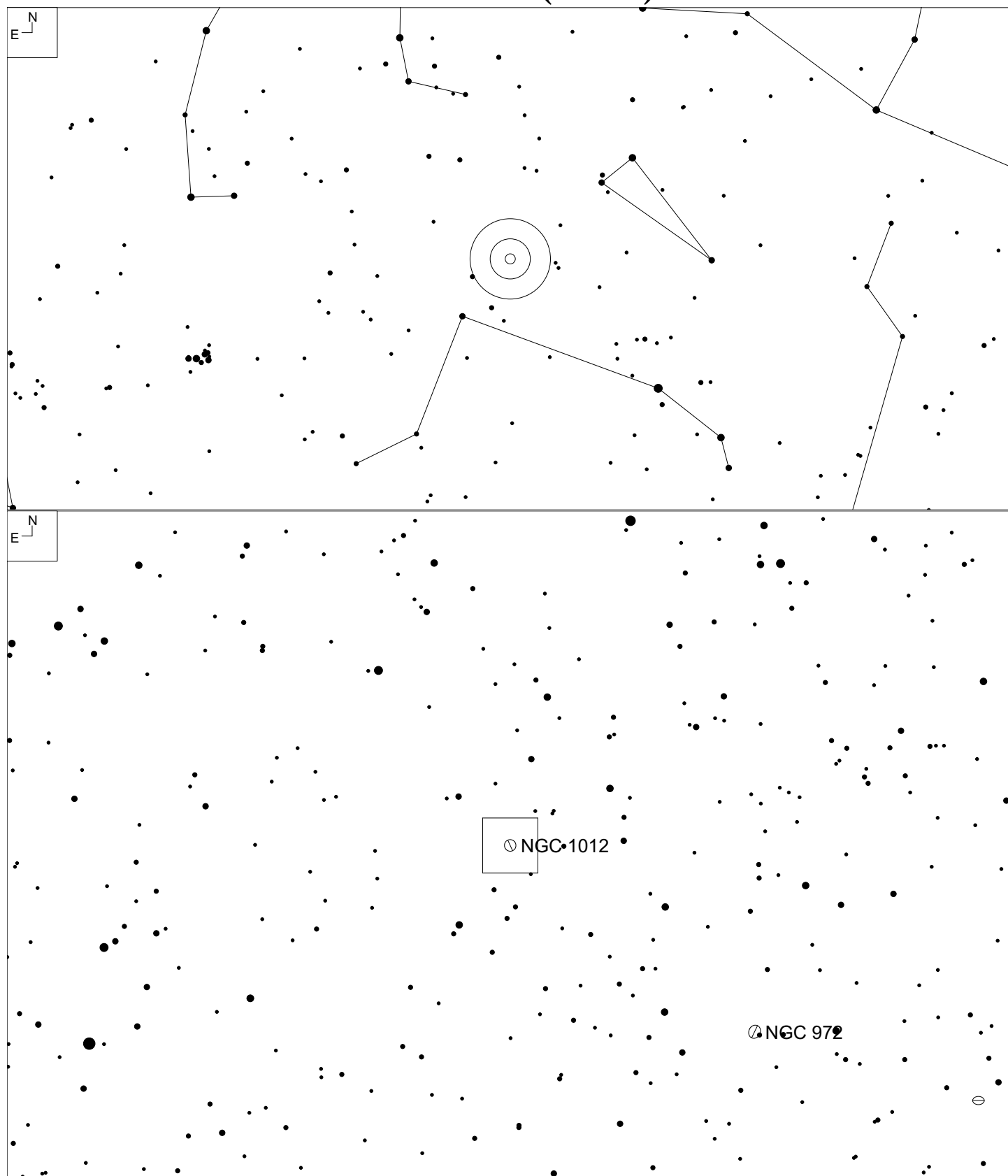
NGC 972 is a type Sab galaxy laying 50 mly distant.

Ravindranath (1998) discusses massive star formation in NGC 972. Regions **k15** and **k18** appears to be the brightest H II regions of the 18 identified in the paper. See Swara Ravindranath and Tushar P. Prabhu, "Massive Star Formation in the Infrared-bright Galaxy NGC 972," *The Astronomical Journal*, Volume 115, Issue 6 (June 1998): 2320-2330.

For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 2: Aquila, Ara, Aries, Auriga, Boötes, Caelum*. (Richmond, VA: Willmann-Bell, Inc., 2015), 102-105.

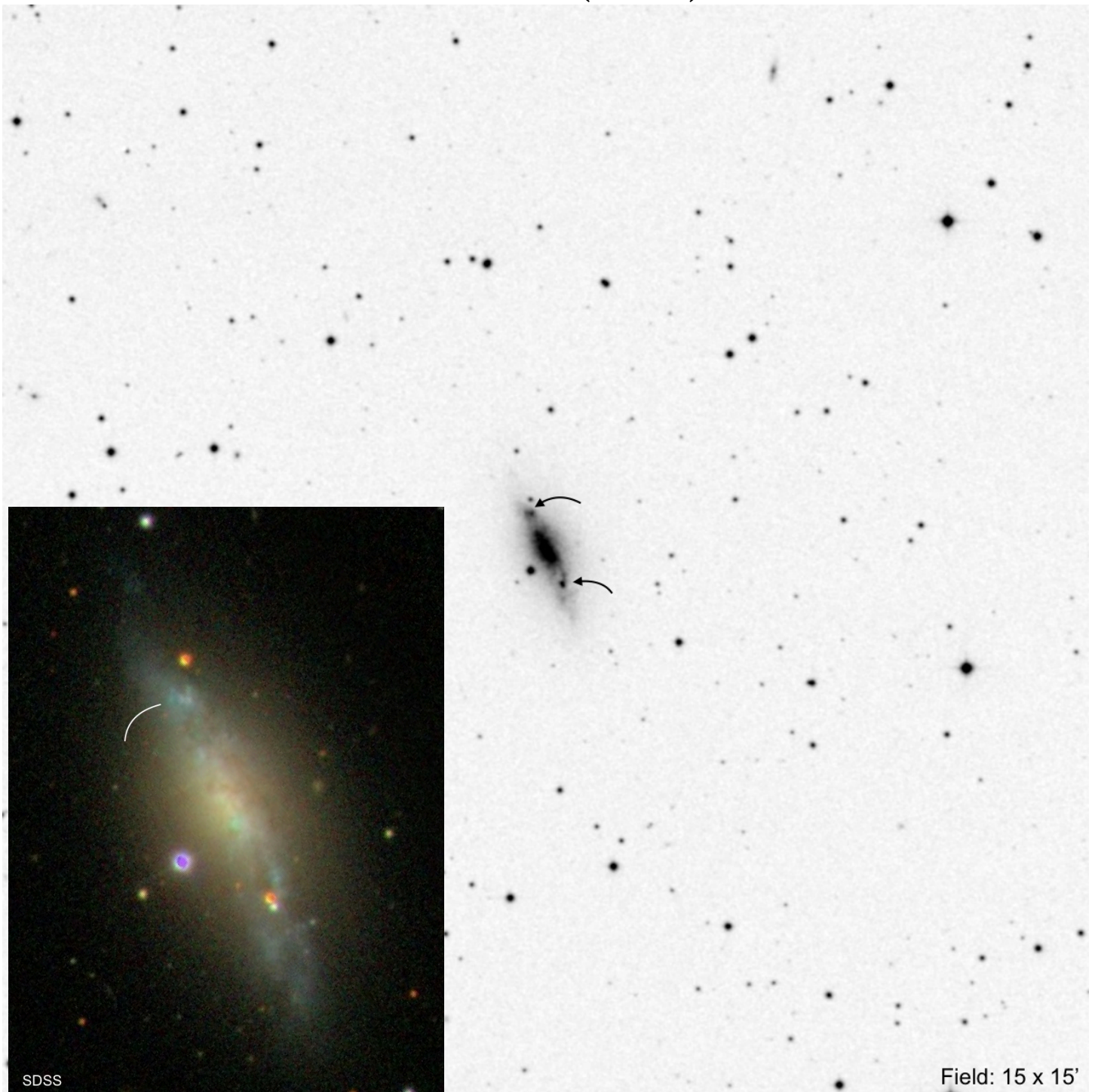
Uwe Glahn's [sketch](#) with his 27" shows the three knots.

NGC 1012 (Aries)



Object	RA	Dec	Mag	Size	iSDA
NGC 1012	02 39 14.9	+30 09 05	12.0	2.5 x 1.1'	38

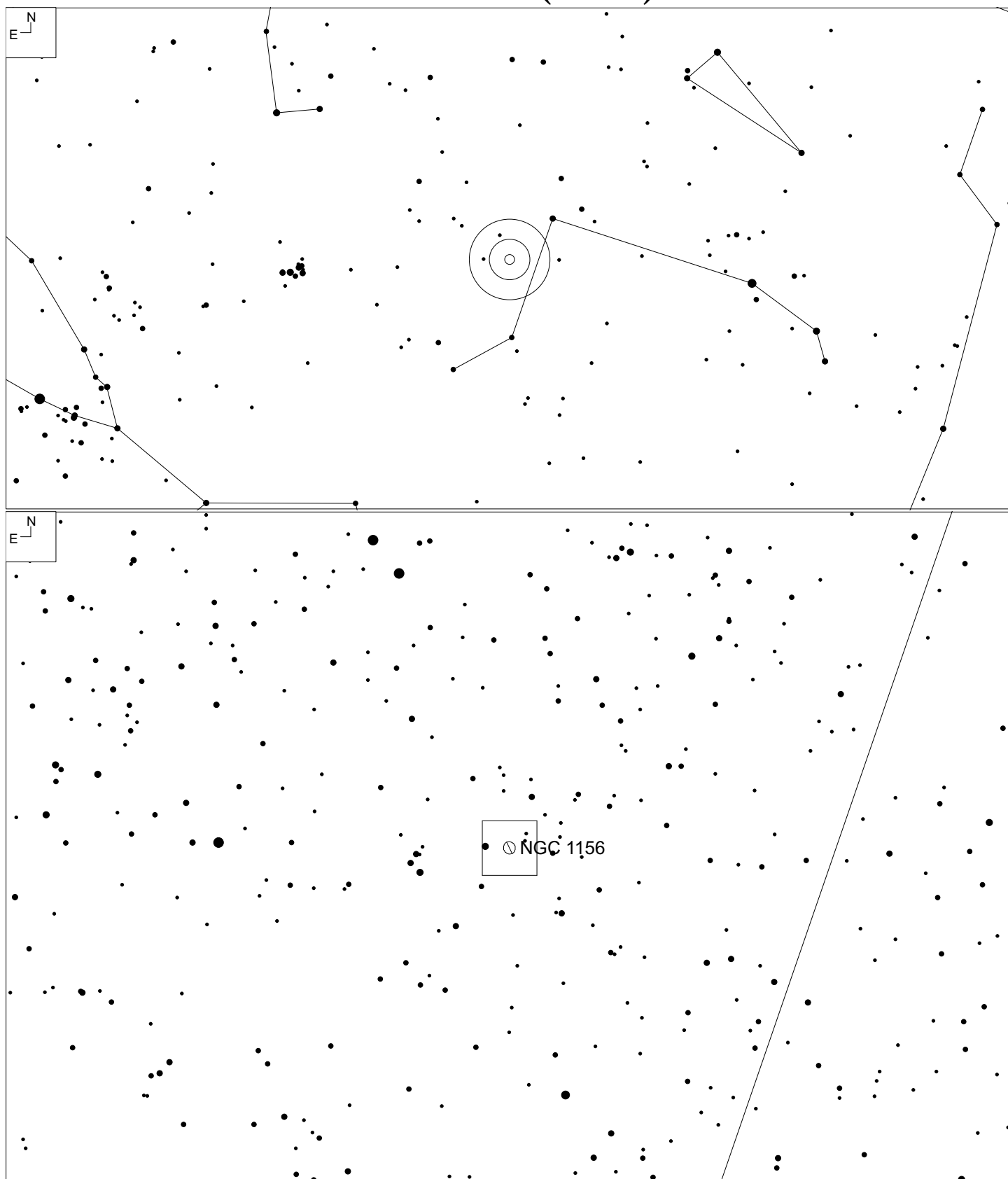
NGC 1012 (Aries)



NGC 1012 is a type S0/a? galaxy sitting 49 mly away from us.

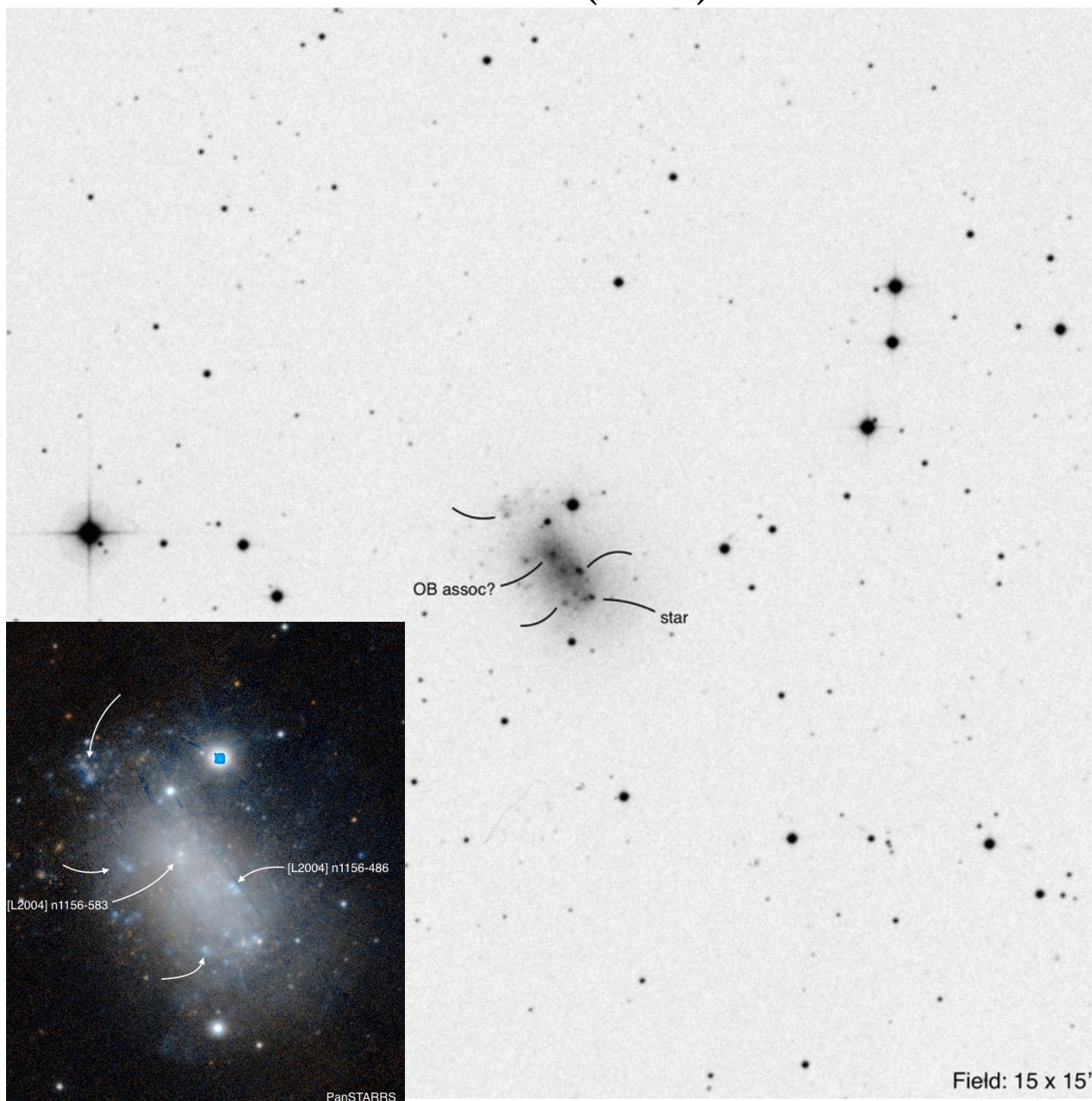
NED does not have any labeling for extragalactic features, but Glahn was able to see the knot on the north tip with his 27". He also noted a small stellar knot at the southern tip, but probably a star. See [sketch](#).

NGC 1156 (Aries)



Object	RA	Dec	Mag	Size	iSDA
NGC 1156	02 59 42.3	+25 14 16	11.7	2.6 x 1.7'	38

NGC 1156 (Aries)



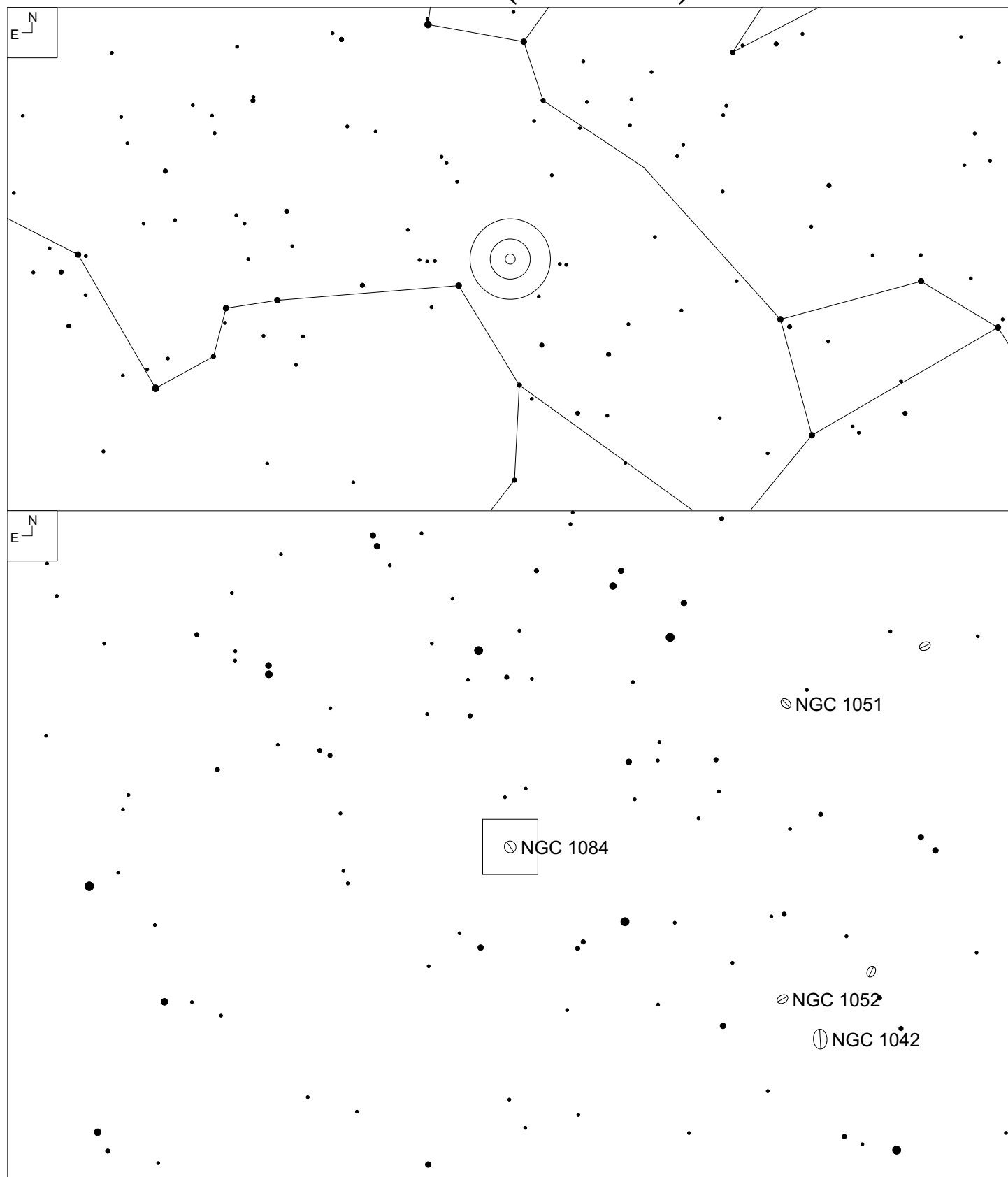
NGC 1156 is a type IB(s)m galaxy sitting about 25 mly distant. It is a dwarf irregular galaxy with a rich collection of H II regions.

For star cluster **[L2004]** annotations, see S. S. Larson, “The structure and environment of young stellar clusters in spiral galaxies,” *Astronomy and Astrophysics* Volume 416 (Mar 2004): 537-553

For observing notes with 24, 28 and 48” telescopes, see Steve Gottlieb’s notes: [NGC 1156](#). Glahn picked up several knots in his [sketch](#) with a 16” reflector.

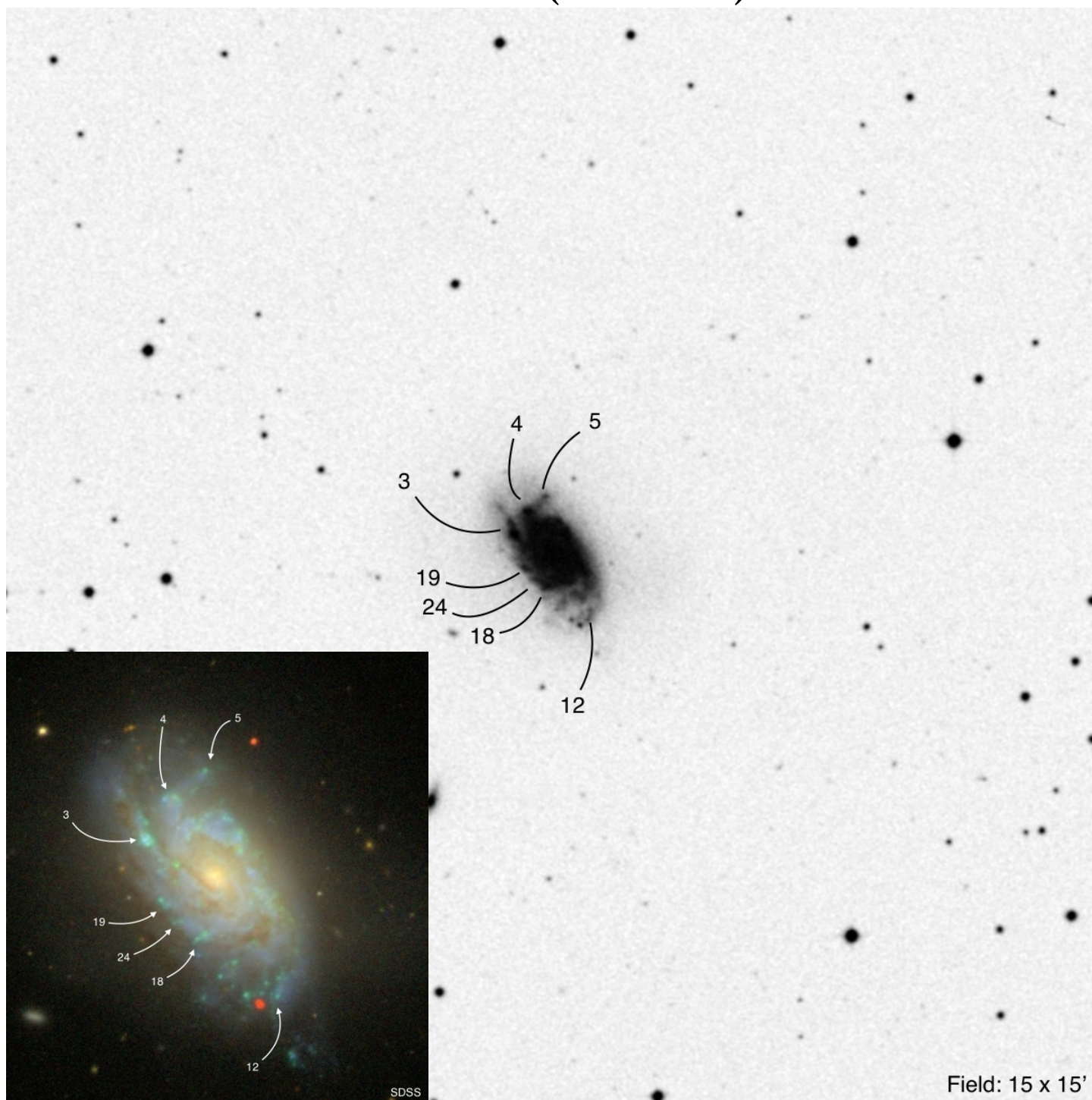
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 2: Aquila, Ara, Aries, Auriga, Boötes, Caelum*. (Richmond, VA: Willmann-Bell, Inc., 2015), 98-101

NGC 1084 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1084	02 45 59.3	-07 34 38	10.7	2.6 x 1.6'	62, 74

NGC 1084 (Eridanus)



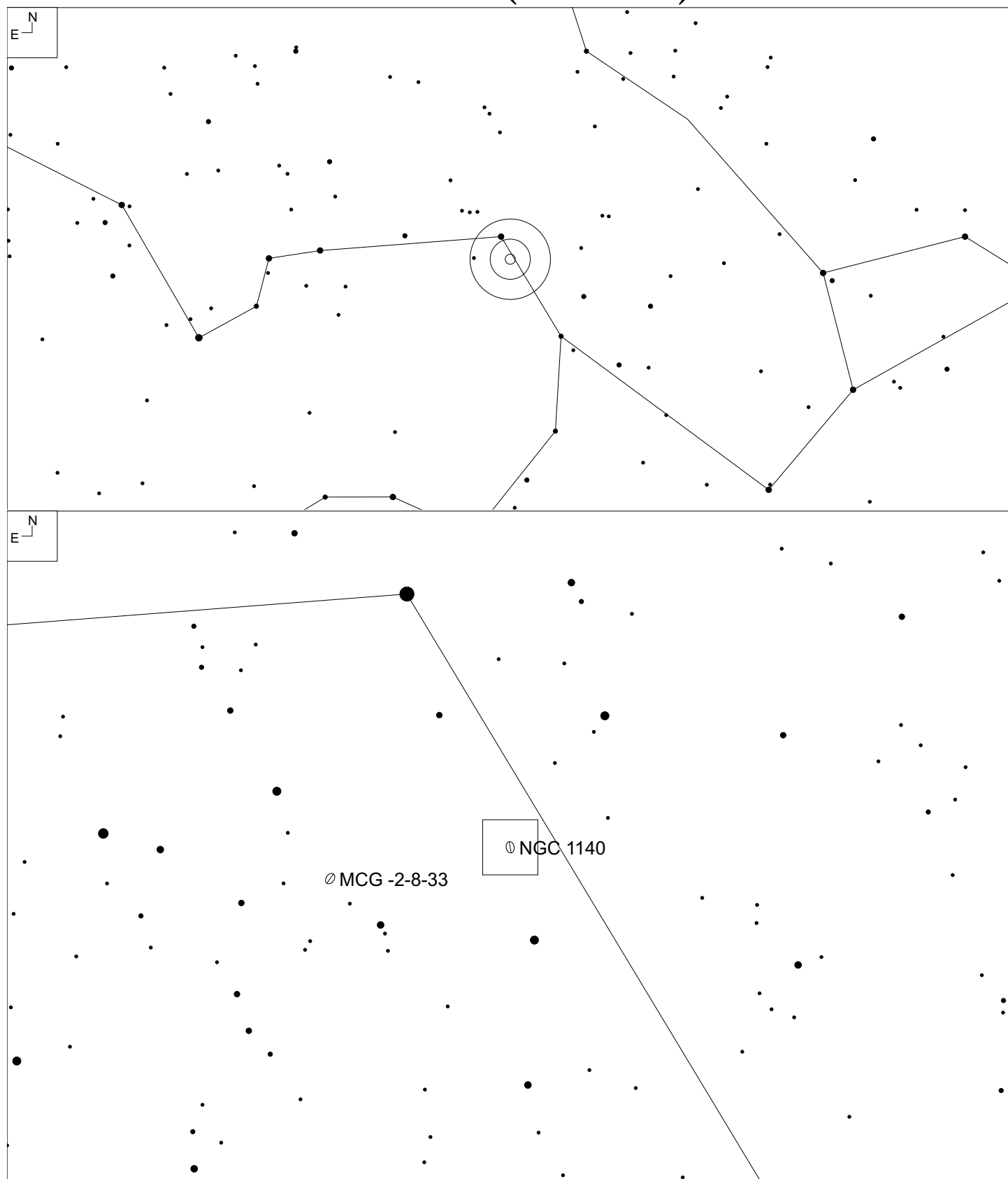
NGC 1084 is a type SA(s)c galaxy and 63 mly away from us.

Annotations from S. Ramya, et al, “Study of star formation in NGC 1084,” *Monthly Notices of the Royal Astronomical Society*, Volume 381, Issue 2 (Sept 2007): 511-524

For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 308-310.

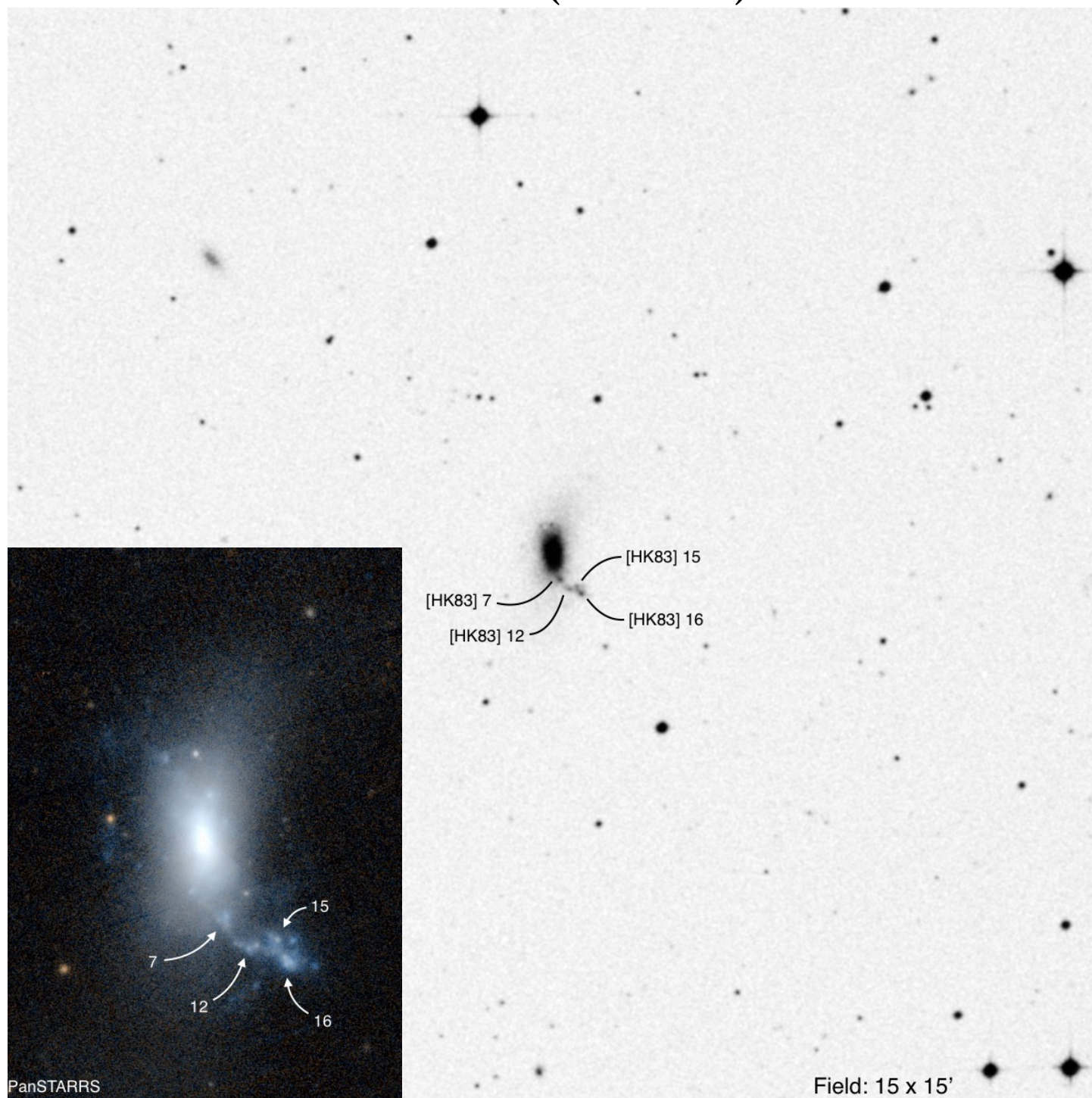
Glahn picked up the brightest H II [region](#), #3, in his sketch with a 27” reflector.

NGC 1140 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1140	02 54 32.9	-10 01 37	12.5	0.9 x 0.5'	74

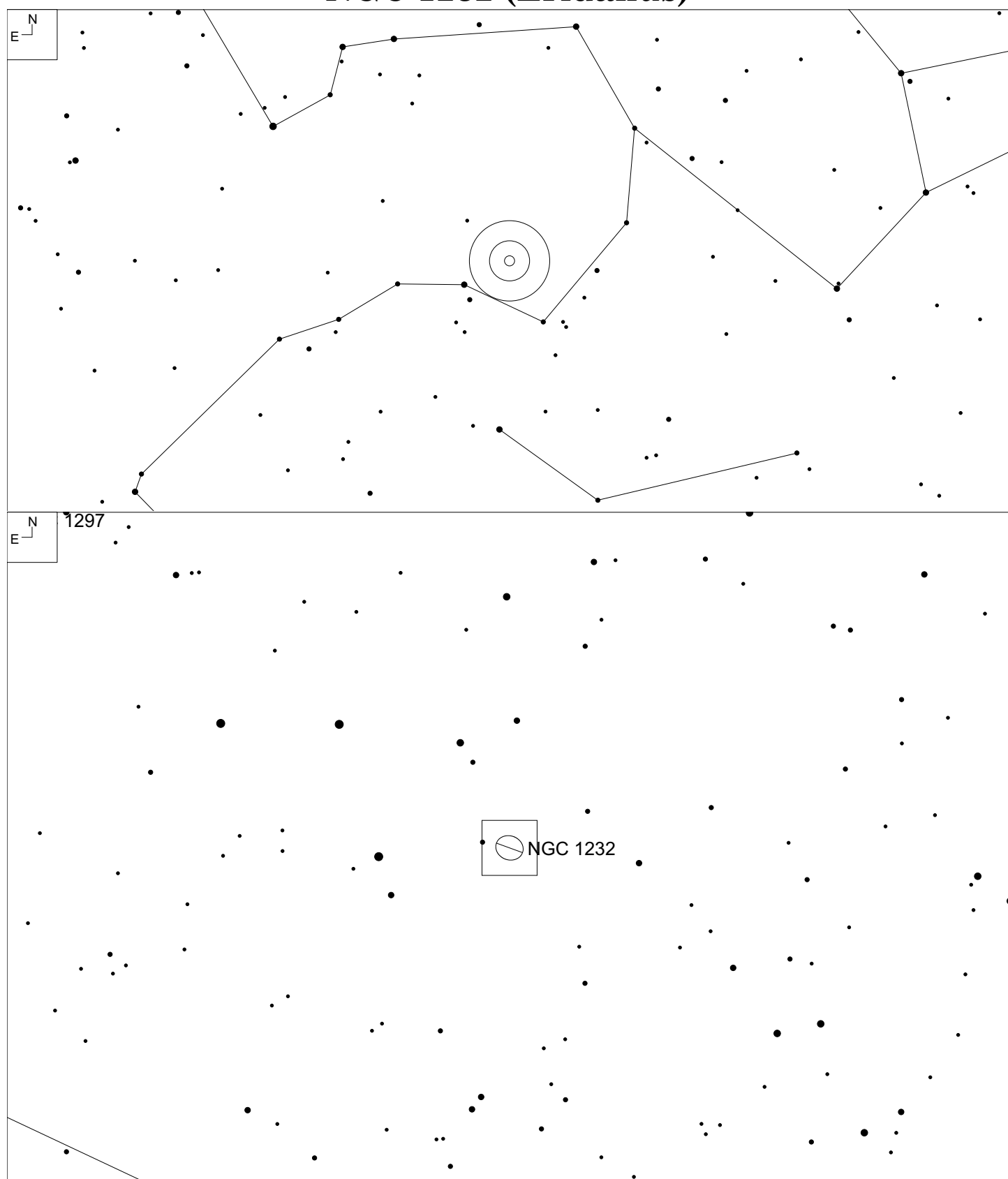
NGC 1140 (Eridanus)



NGC 1140 is a type IBm pec starburst galaxy laying about 59 mly away from the Milky Way.

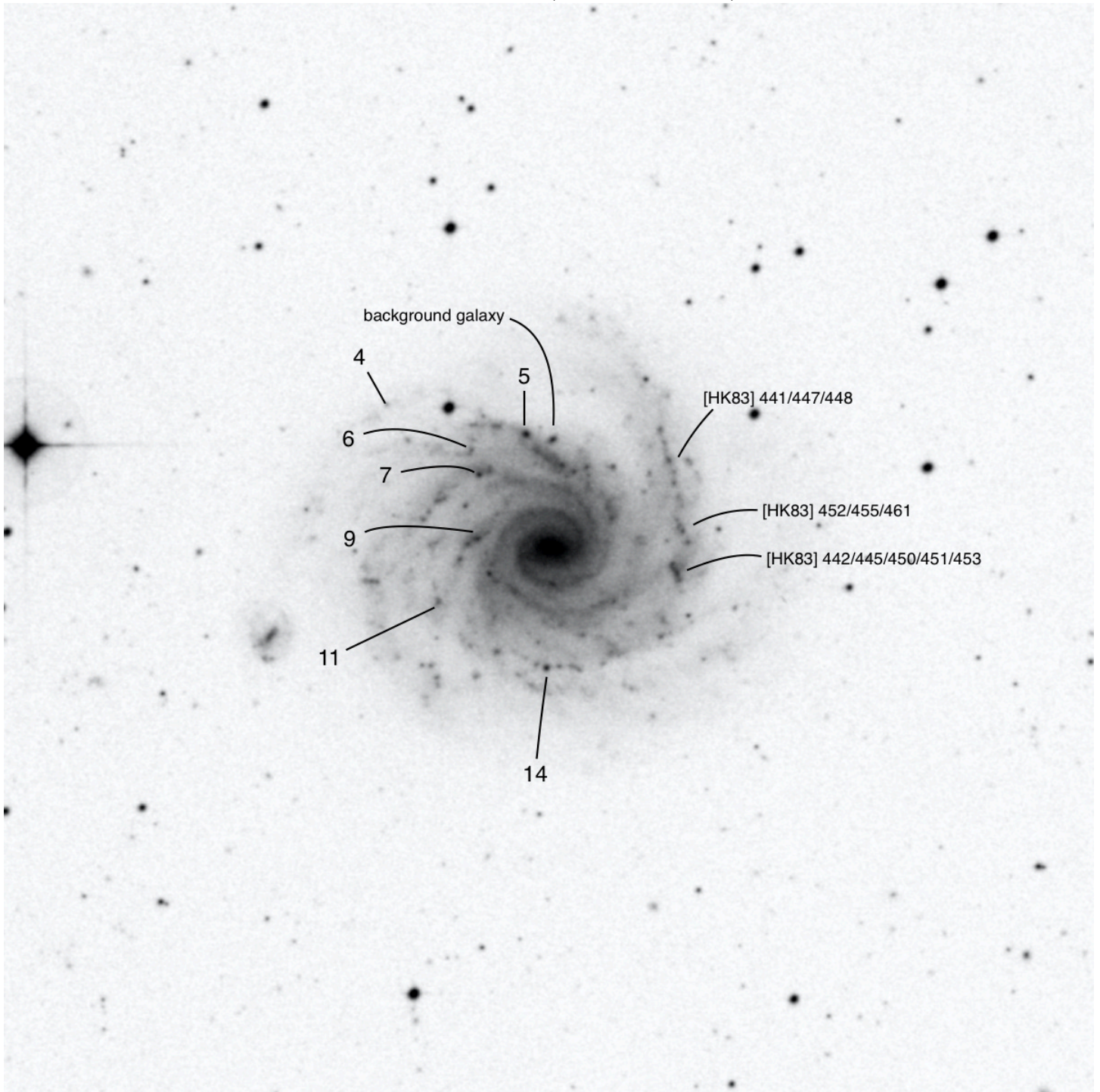
M. S. Westmoquette, et al, "Ionized gas in the starburst core and halo of NGC 1140," *Monthly Notices of the Royal Astronomical Society*, Volume 403, Issue 4 (April 2010): 1719-1728.

NGC 1232 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1232	03 09 44.8	-20 34 37	9.9	5.4 x 4.5'	74, 86

NGC 1232 (Eridanus)



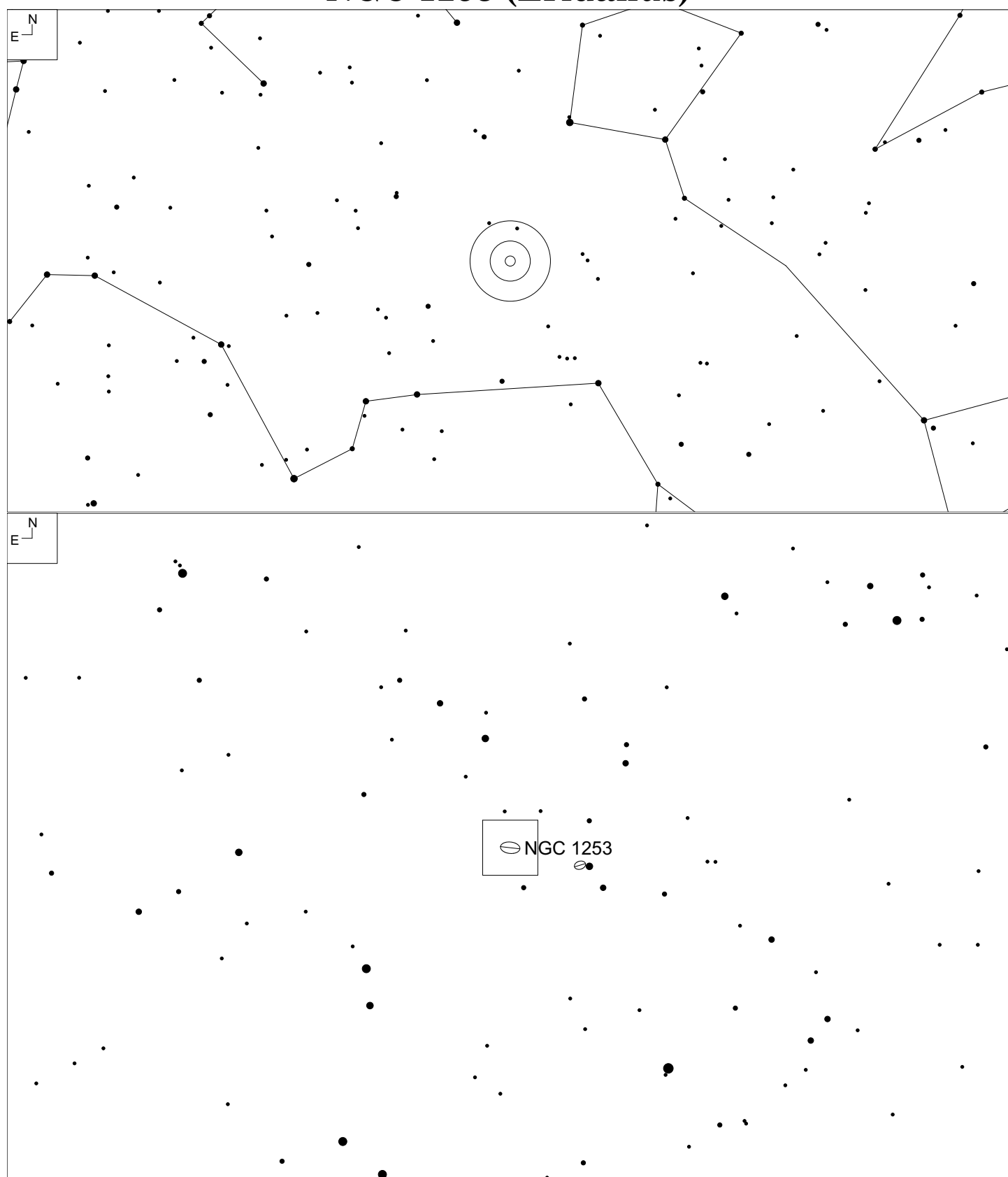
NGC 1232 is a type SAB(rs)c grand design spiral galaxy sitting 68 mly away and 146 kly across. It is part of the Eridanus cluster.

Numerical annotations from F. Bresolin, D. Schaerer, et al, “A VLT Study of metal-rich extragalactic H II regions,” *Astronomy & Astrophysics*, Volume 441, Number 3, (Oct 2005): 981-997. I’ve annotated the brighter H II regions. I believe that the fainter ones are still very difficult in very large amateur telescopes.

For observing notes with a 30” telescope from Australia, see Steve Gottlieb’s notes: [NGC 1232](#). Steve’s notes referring to [HK83] 110 is #9 in the annotated image. Also see Glahn’s [sketch](#) using a 14.5’ showing incredible detail in the spiral arms.

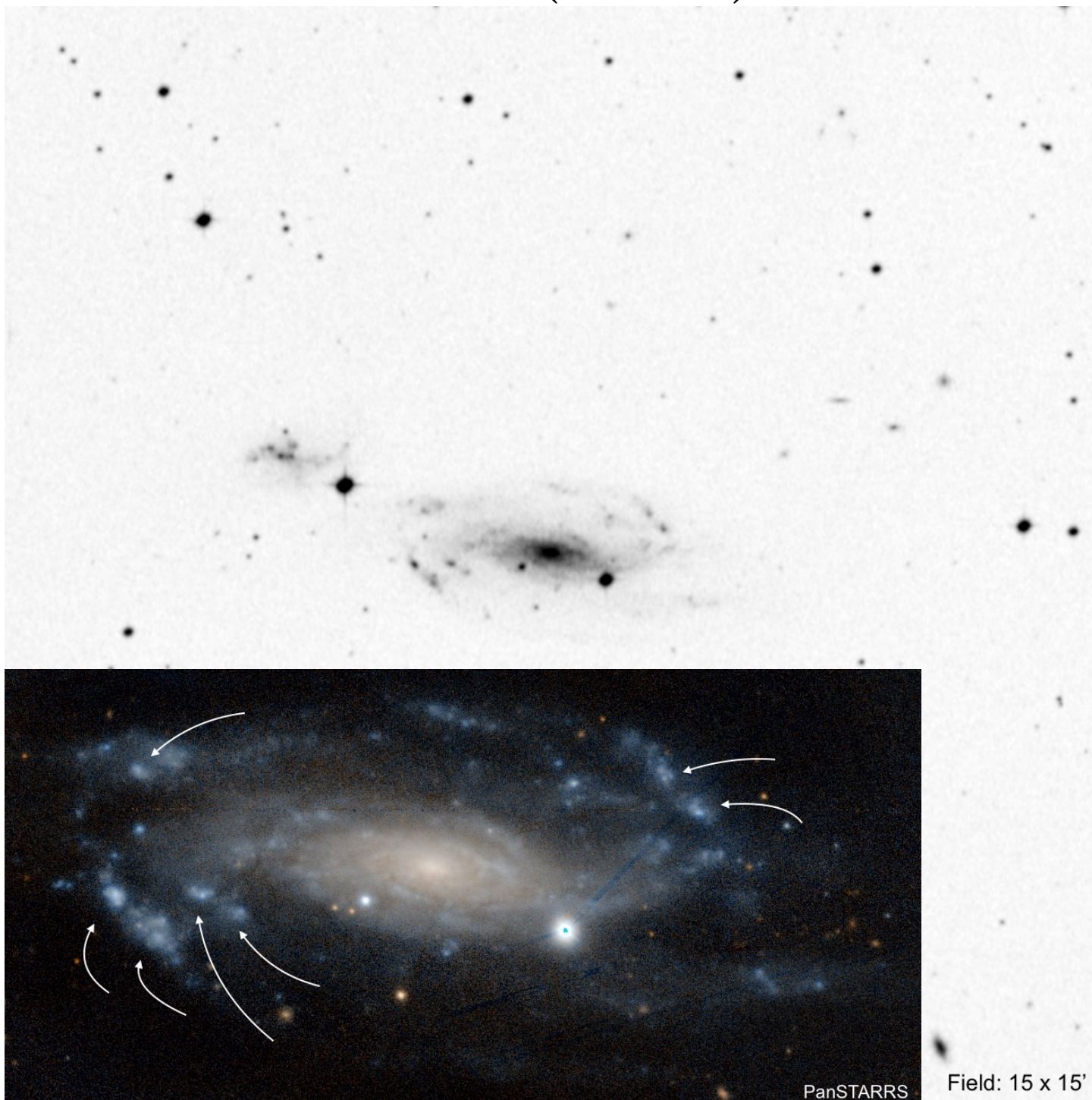
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 298-305.

NGC 1253 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1253	03 14 09.1	-02 49 22	11.7	5.2 x 2.3'	62

NGC 1253 (Eridanus)



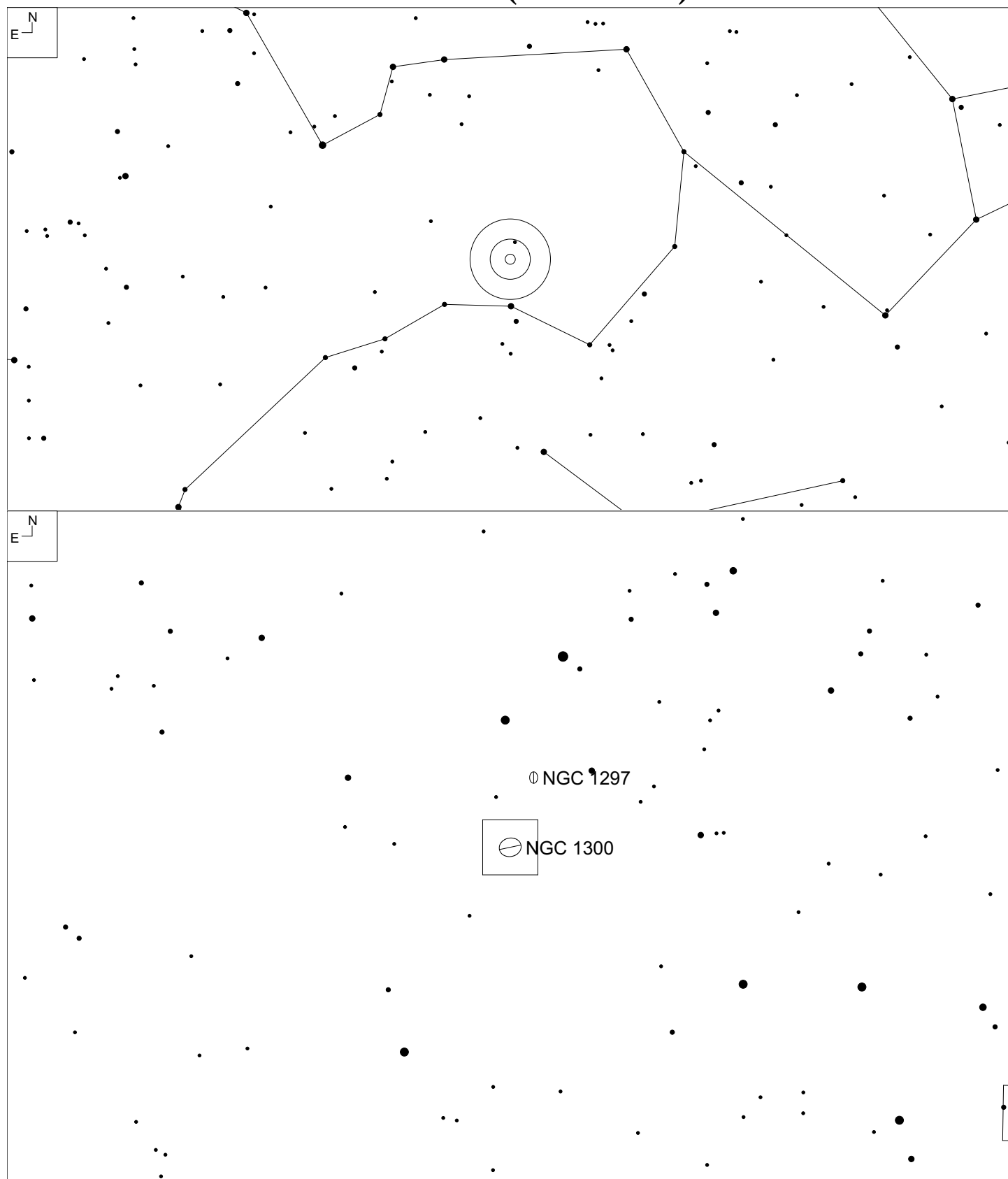
NGC 1253 is a type SA(rs)cd galaxy about 70 mly away and 110 kly across.

NED and SIMBAD does not have any H II region or SFR labeling, but marking those that are observable. There may be more. Glahn picked up all of the marked star forming regions (SFR) including the extended region to the east as seen in this [sketch](#) with his 27" reflector.

Also see Gottlieb's detailed [notes](#) with a 48" reflector.

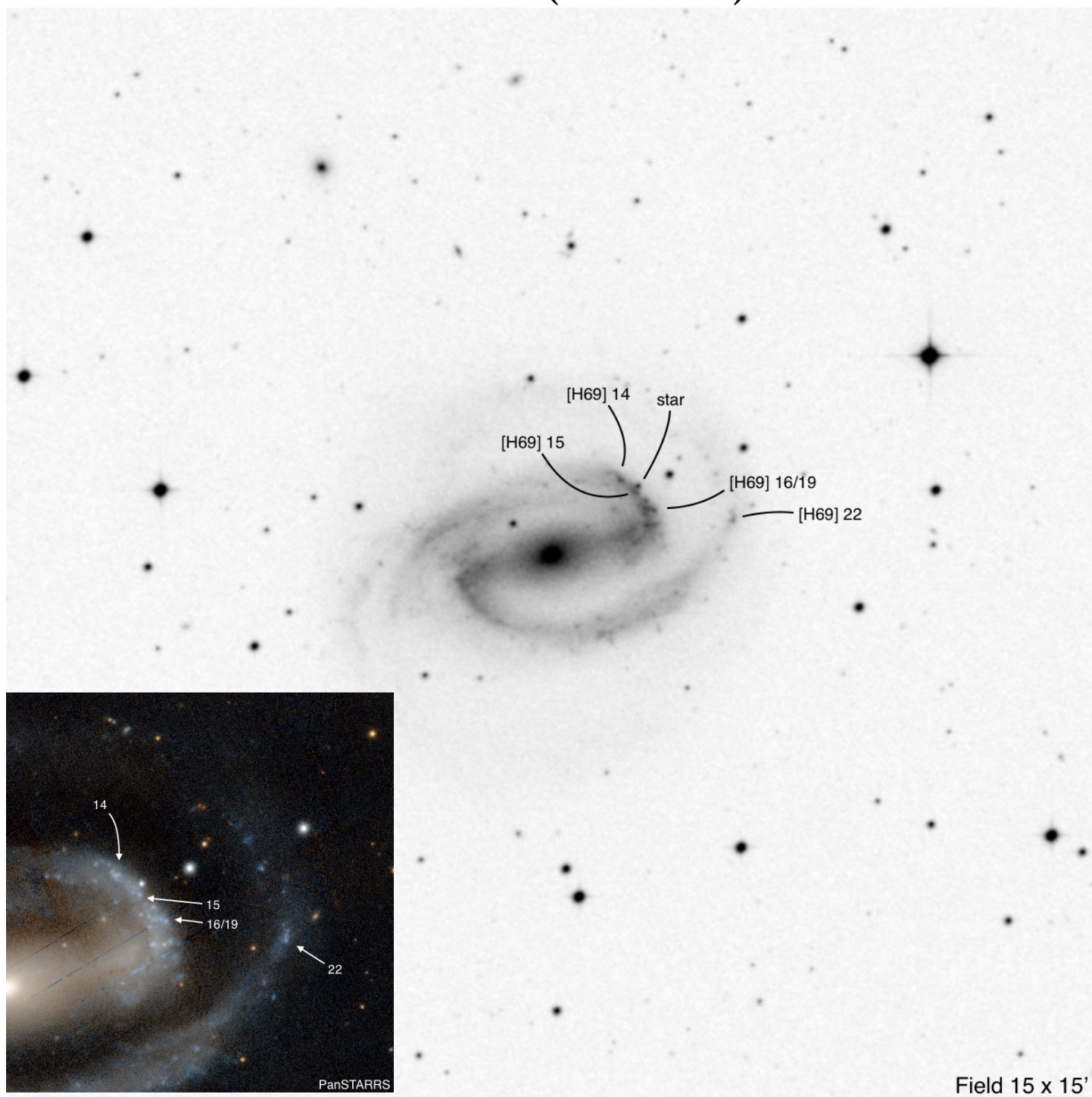
Hubble Space Telescope [image](#).

NGC 1300 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1300	03 19 40.3	-19 24 33	10.4	7.1 x 3.4'	74

NGC 1300 (Eridanus)



NGC 1300 is a type (R')SB(s)bc galaxy sitting 68 mly away and 123 kly across. One of the better examples of a barred spiral galaxy.

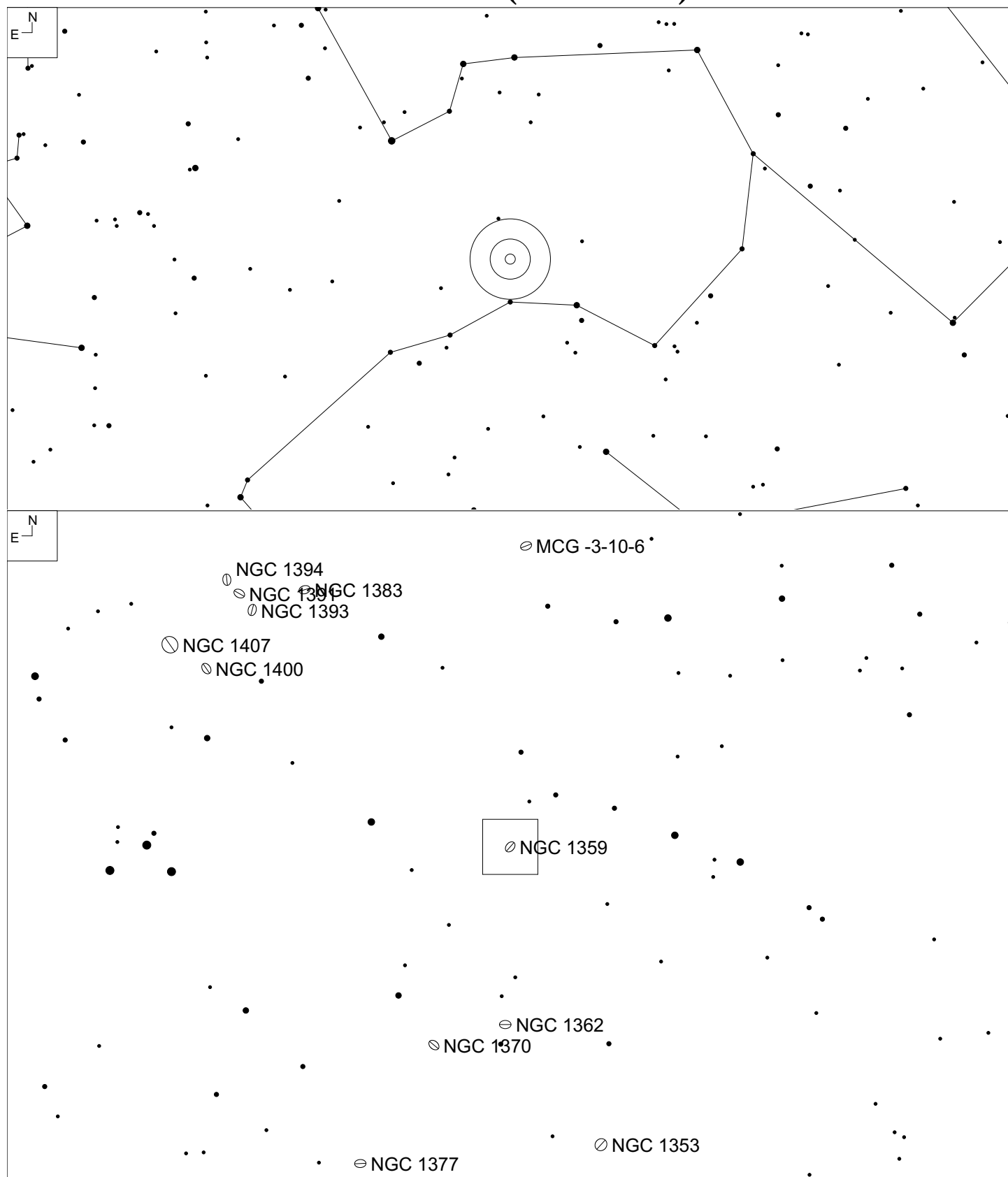
H II region **[H69]** annotations, see Paul W. Hodge, "H II Regions in Twenty Nearby Galaxies," *The Astrophysical Journal Supplement Series*, Volume 18, Number 157, (1969): 73-124.

For observing notes with a 30" and 48" telescopes, see Steve Gottlieb's notes: [NGC 1300](#).

See Glahn's [sketch](#) with his 16", where he noted the brighter western arm.

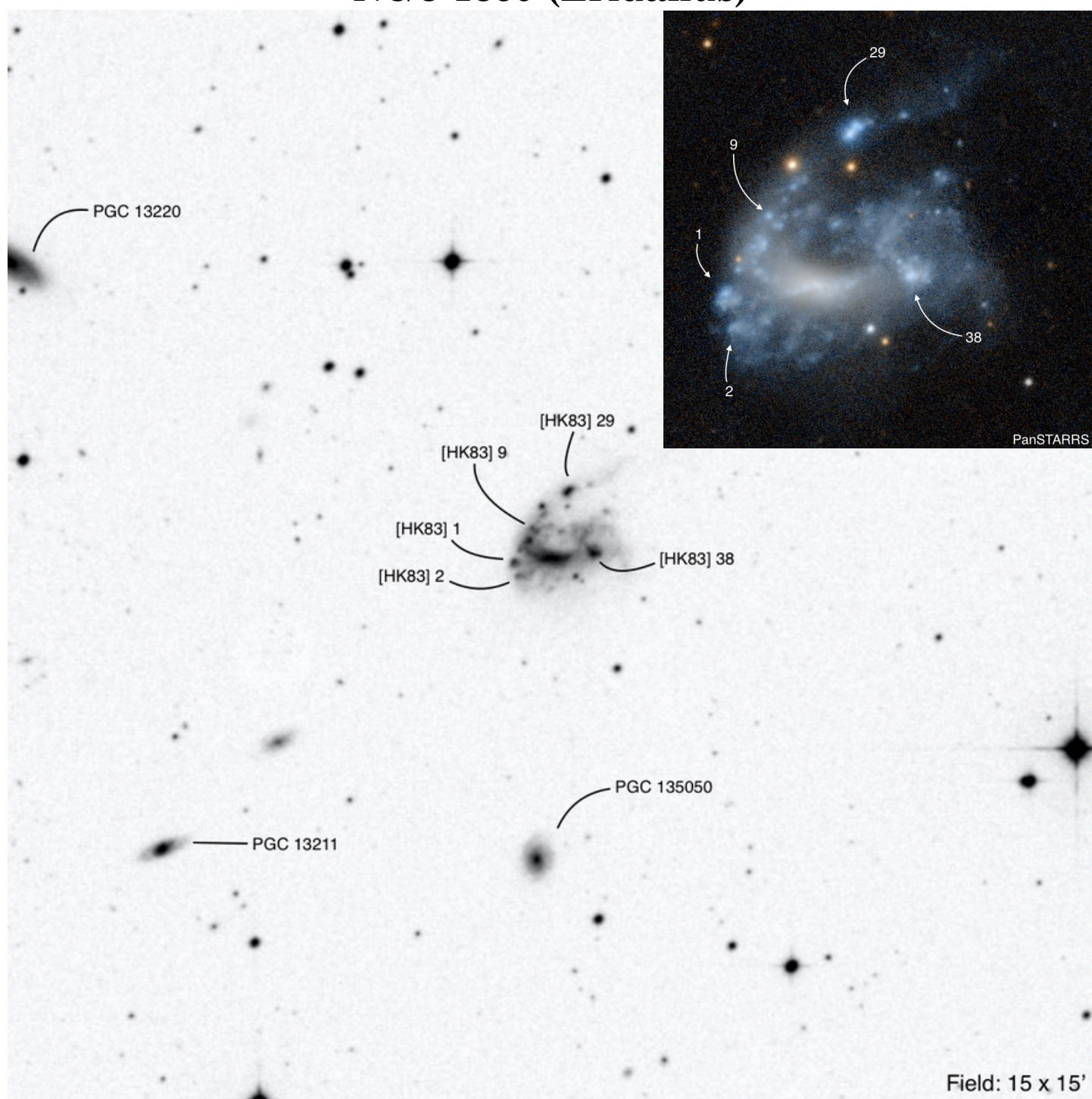
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 282-290.

NGC 1359 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1359	03 33 46.8	-19 29 24	12.6	1.7 x 0.5'	74

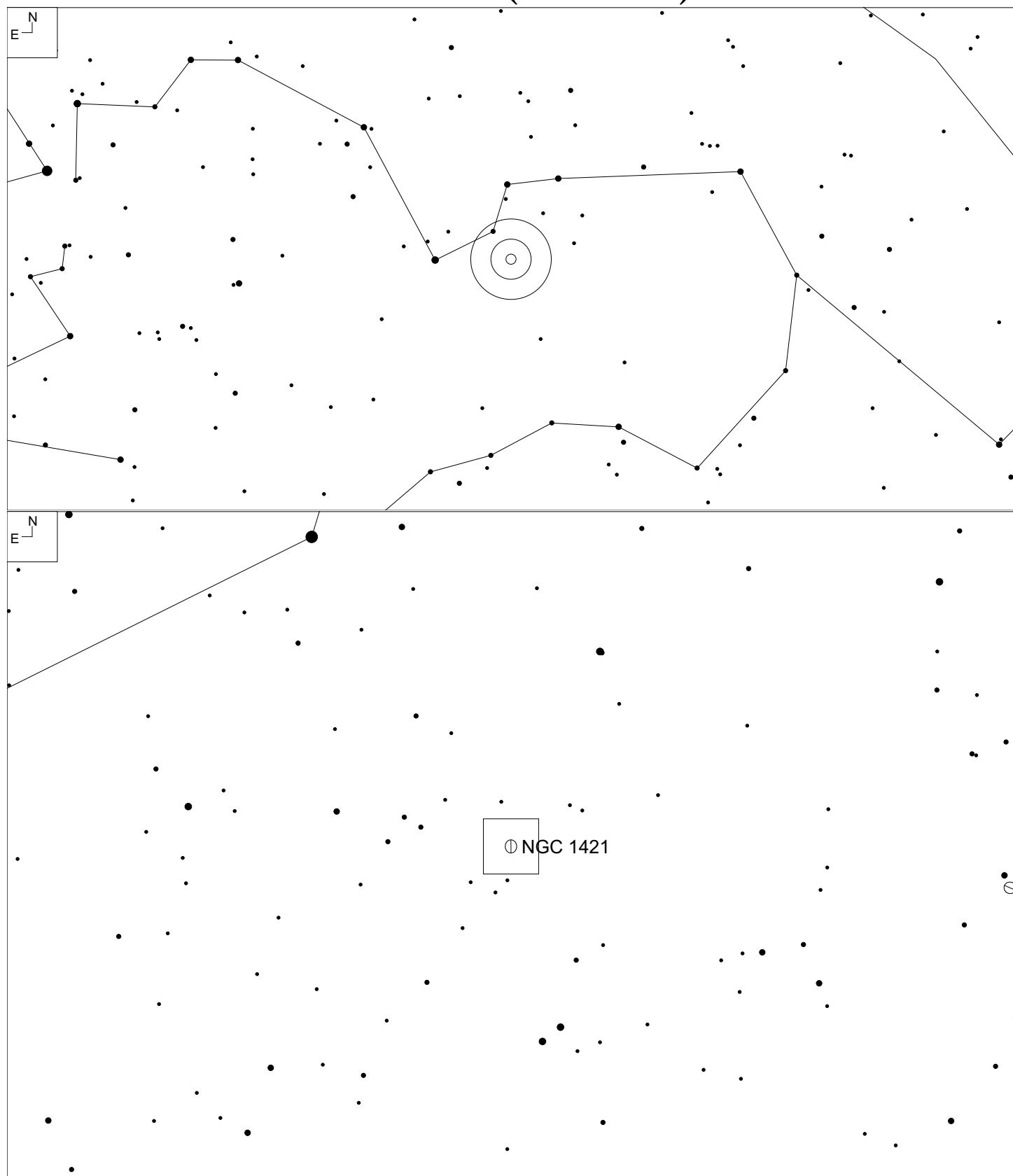
NGC 1359 (Eridanus)



NGC 1359 is a type SB(s)m? pec galaxy sitting about 112 mly away.

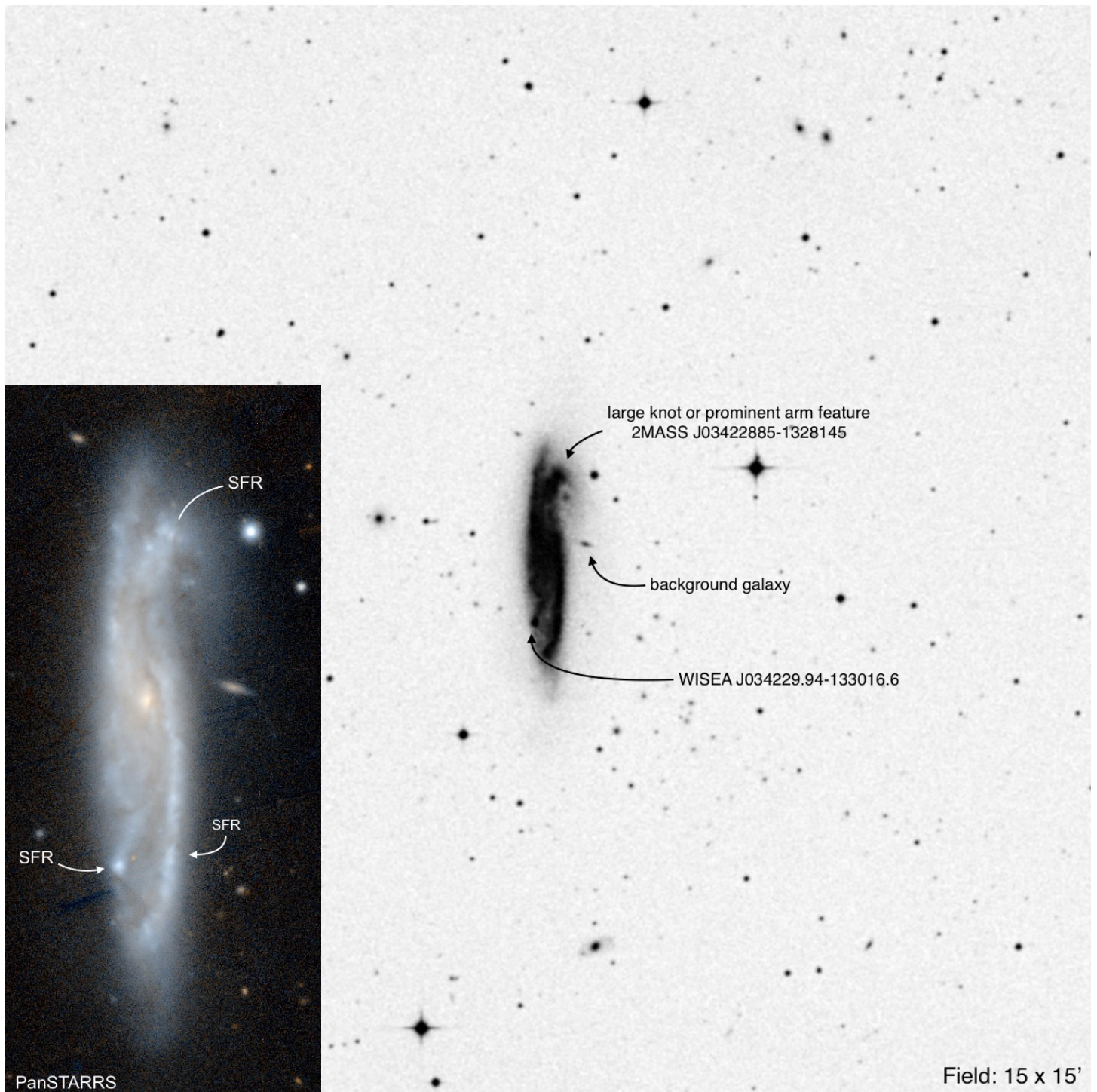
Uwe Glahn picked up all of the labeled knots with his 27" reflector as shown in his [sketch](#).

NGC 1421 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1421	03 42 29.4	-13 29 20	11.4	3.5 x 0.9'	74

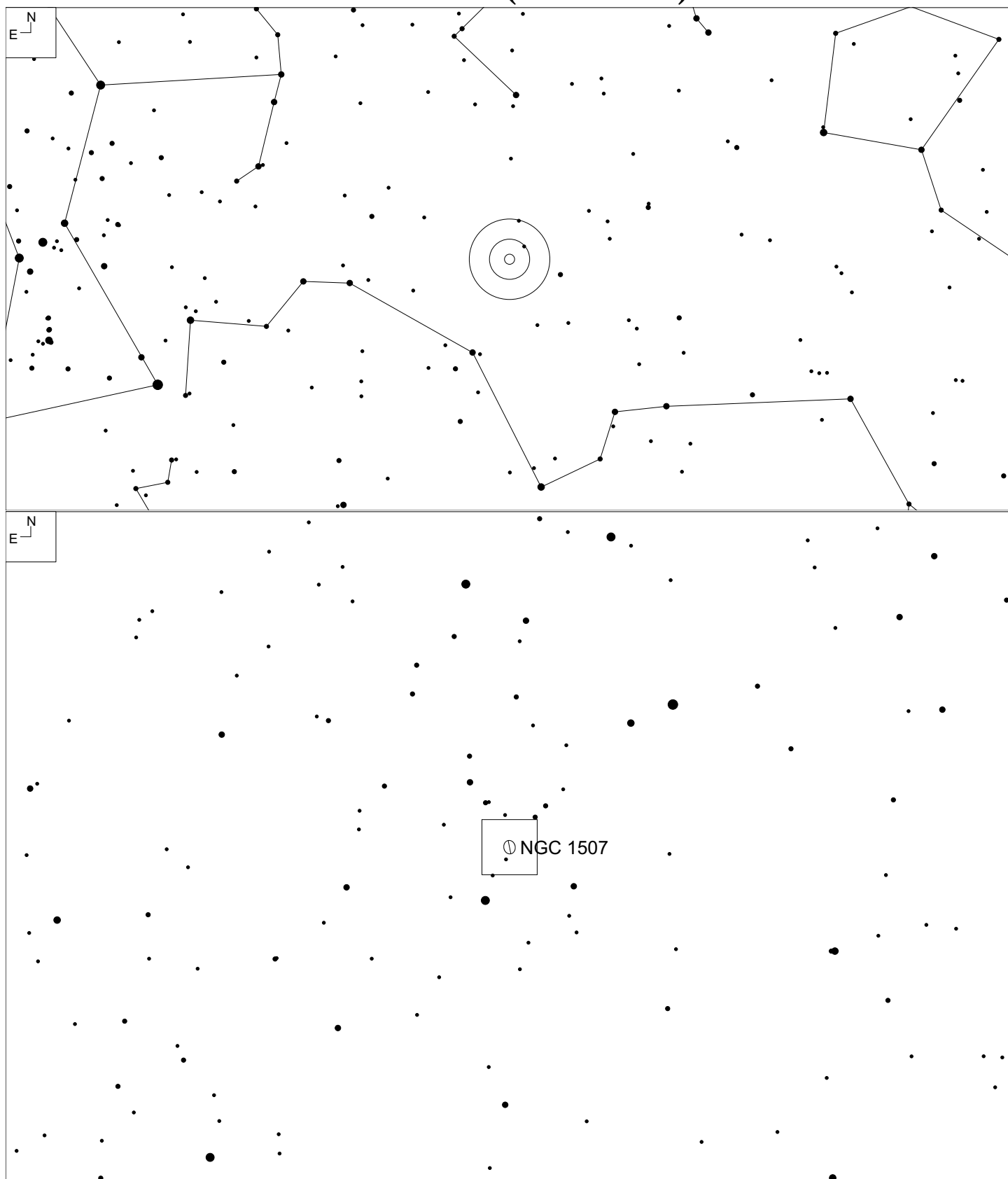
NGC 1421 (Eridanus)



NGC 1421 is a strange nearly edge on galaxy sitting about 90 mly away.

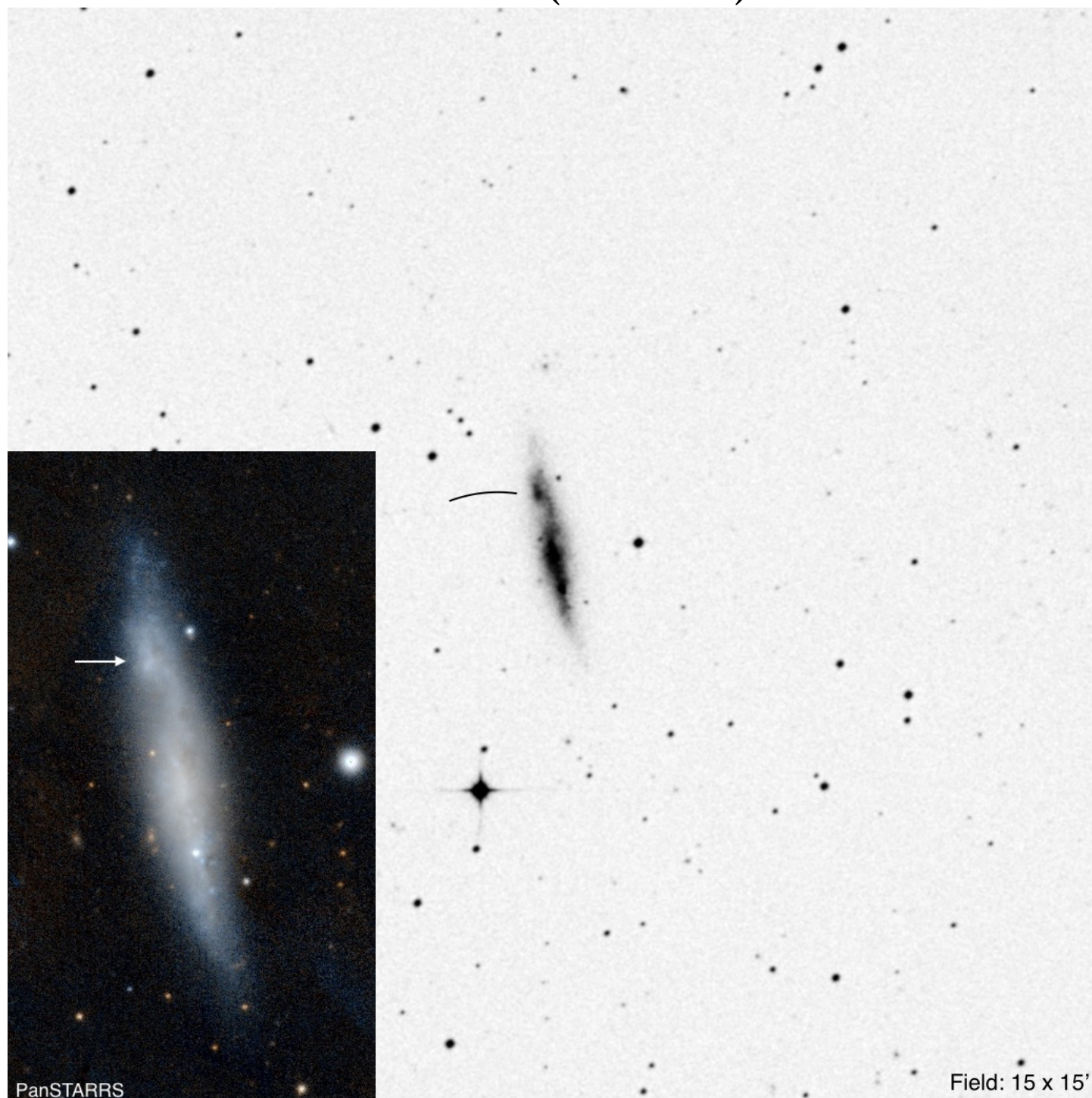
NED does not have any H II/SFR regions labeled. Glahn detected a SFR at the SW side of the host galaxy with his 16" as seen in his [sketch](#).

NGC 1507 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1507	04 04 27.2	-02 11 19	12.3	3.6 x 0.9'	61

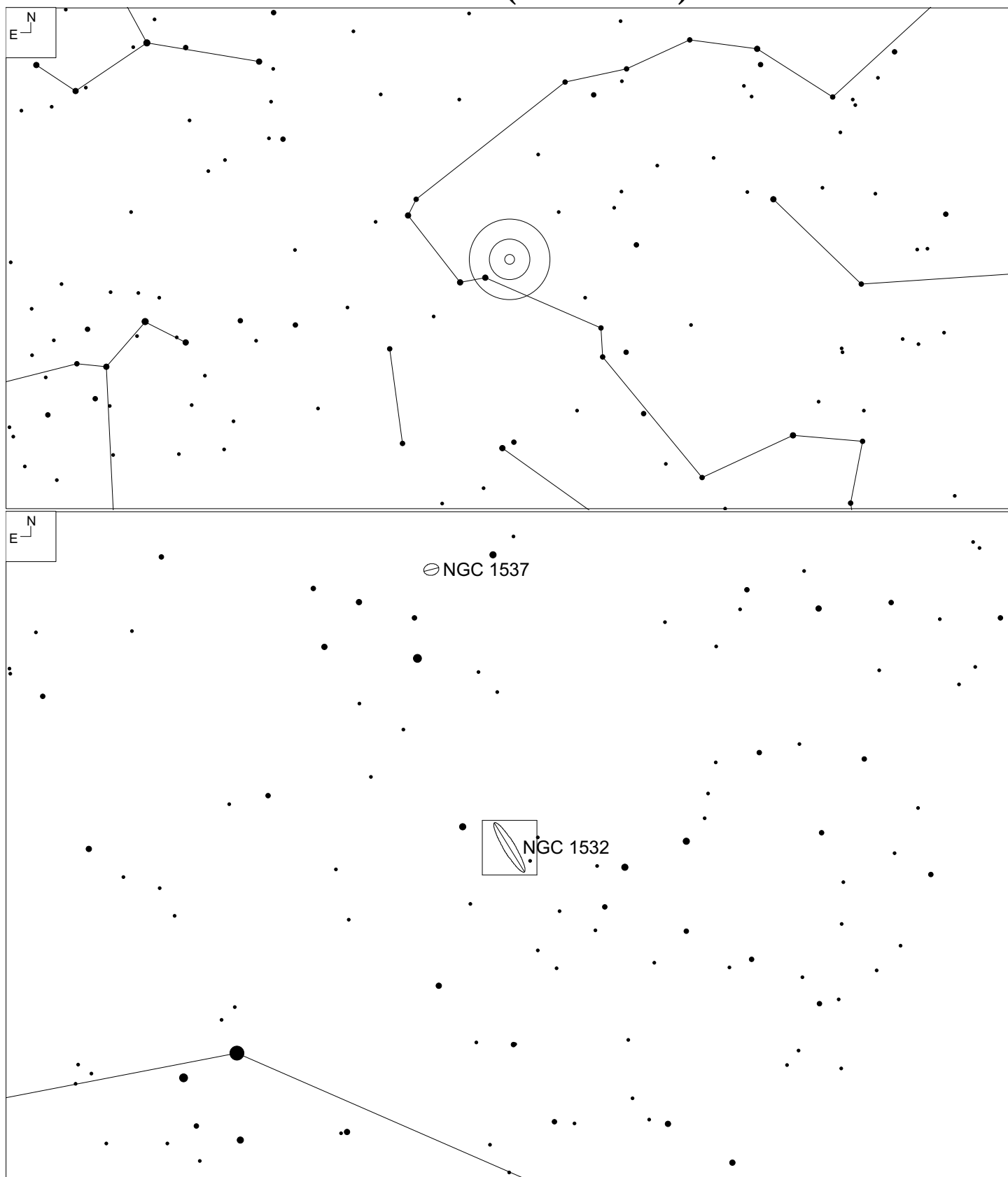
NGC 1507 (Eridanus)



NGC 1507 is an edge on galaxy with a huge missing chunk on the northeast side.. The De Vaucouleurs type is SB(s)m pec?. It sits about 41 mly away and about 41 kly across.

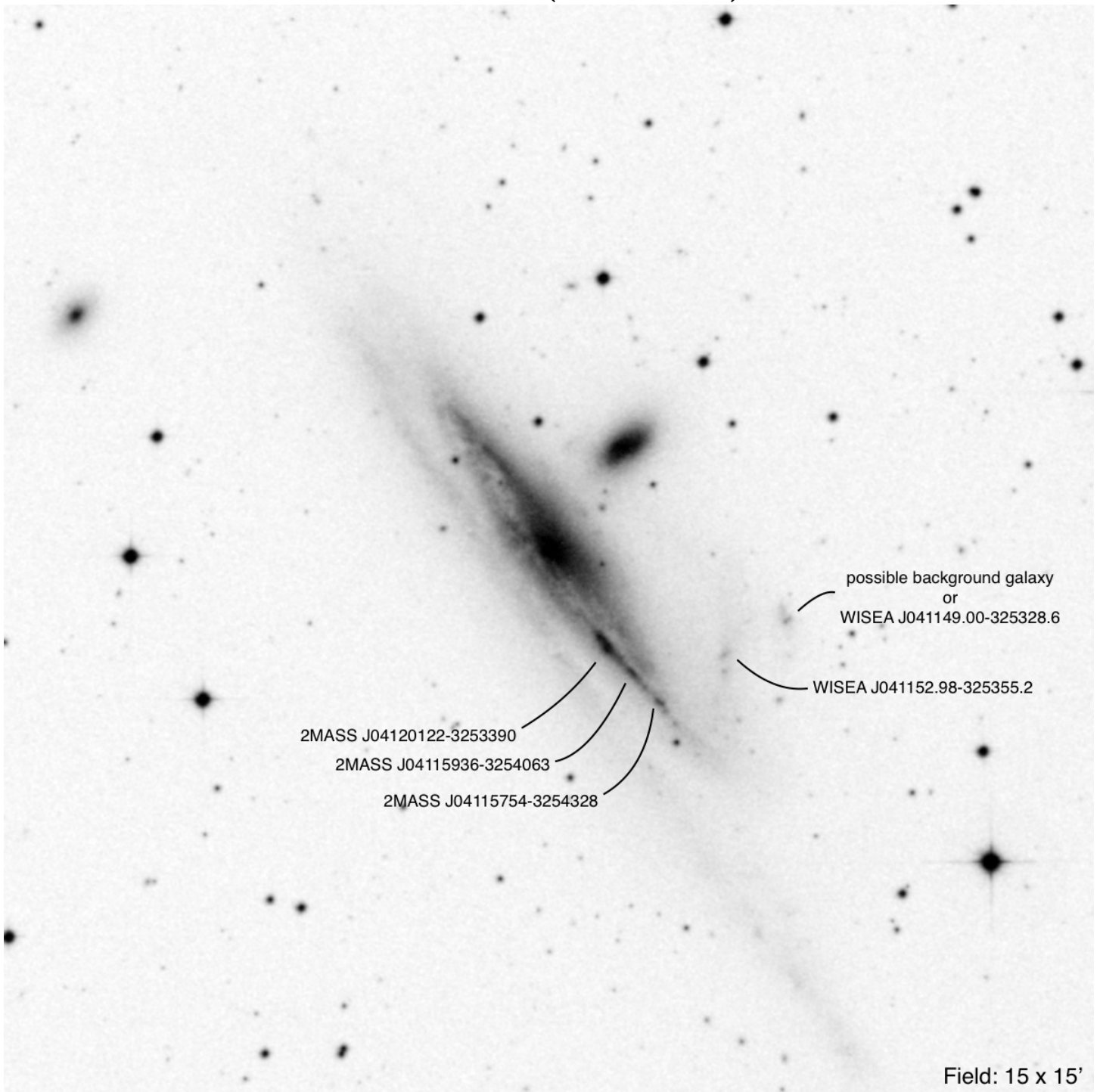
NED did not have any extragalactic regions listed; however, the more obvious object is marked.

NGC 1532 (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1532	04 12 02.5	-32 51 01	9.8	12.6 x 3.0	85, 86

NGC 1532 (Eridanus)

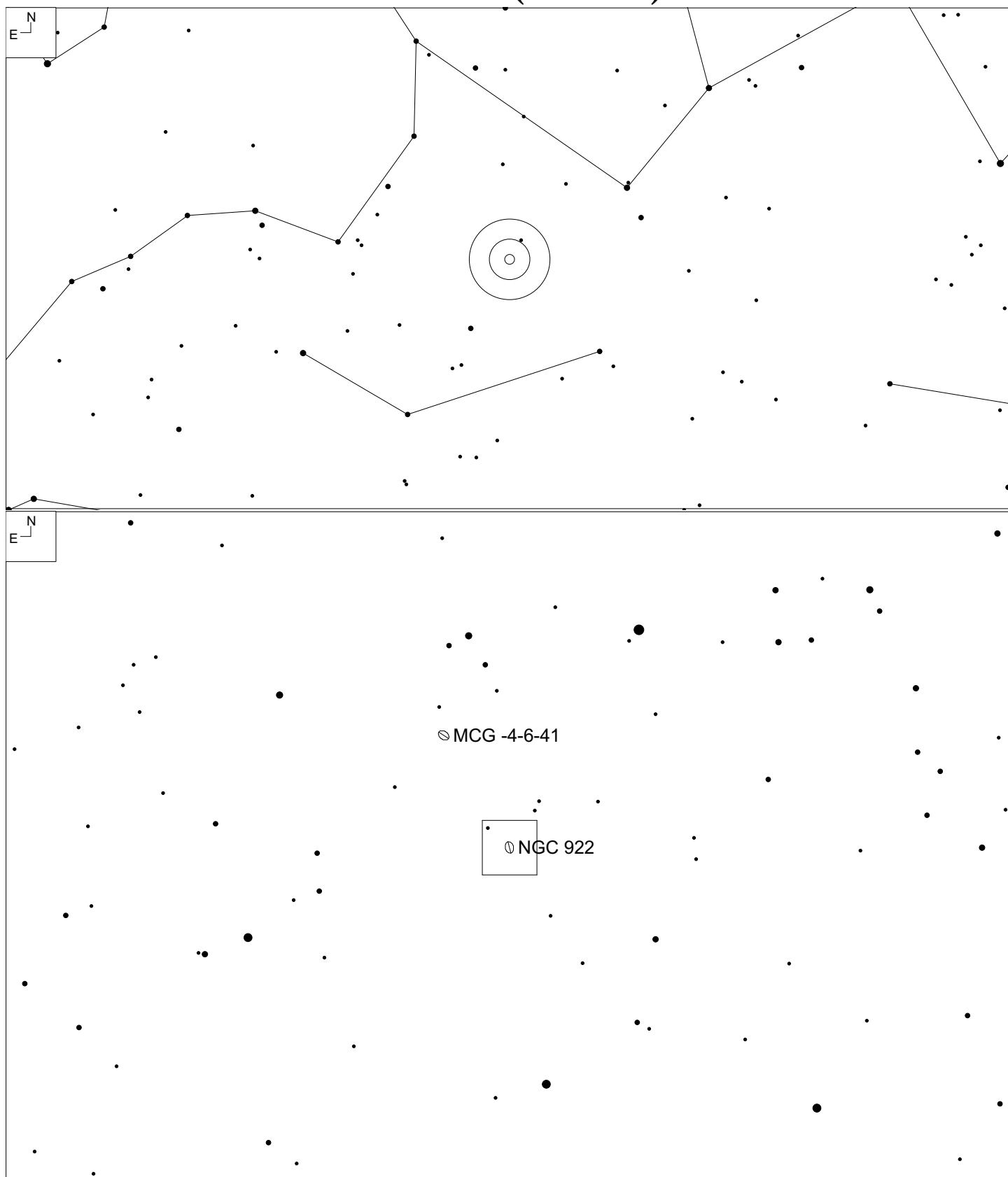


NGC 1532 is a type SB(s)b pec galaxy sitting about 55 mly away and 200 kly across. Some give it a popular name of Haley's Coronet.

I noted some of the brighter knots within NGC 1532. There is a possible background galaxy, but not sure based on the available images. The SDSS and PanSTARRS images were not available for this region making identification difficult.

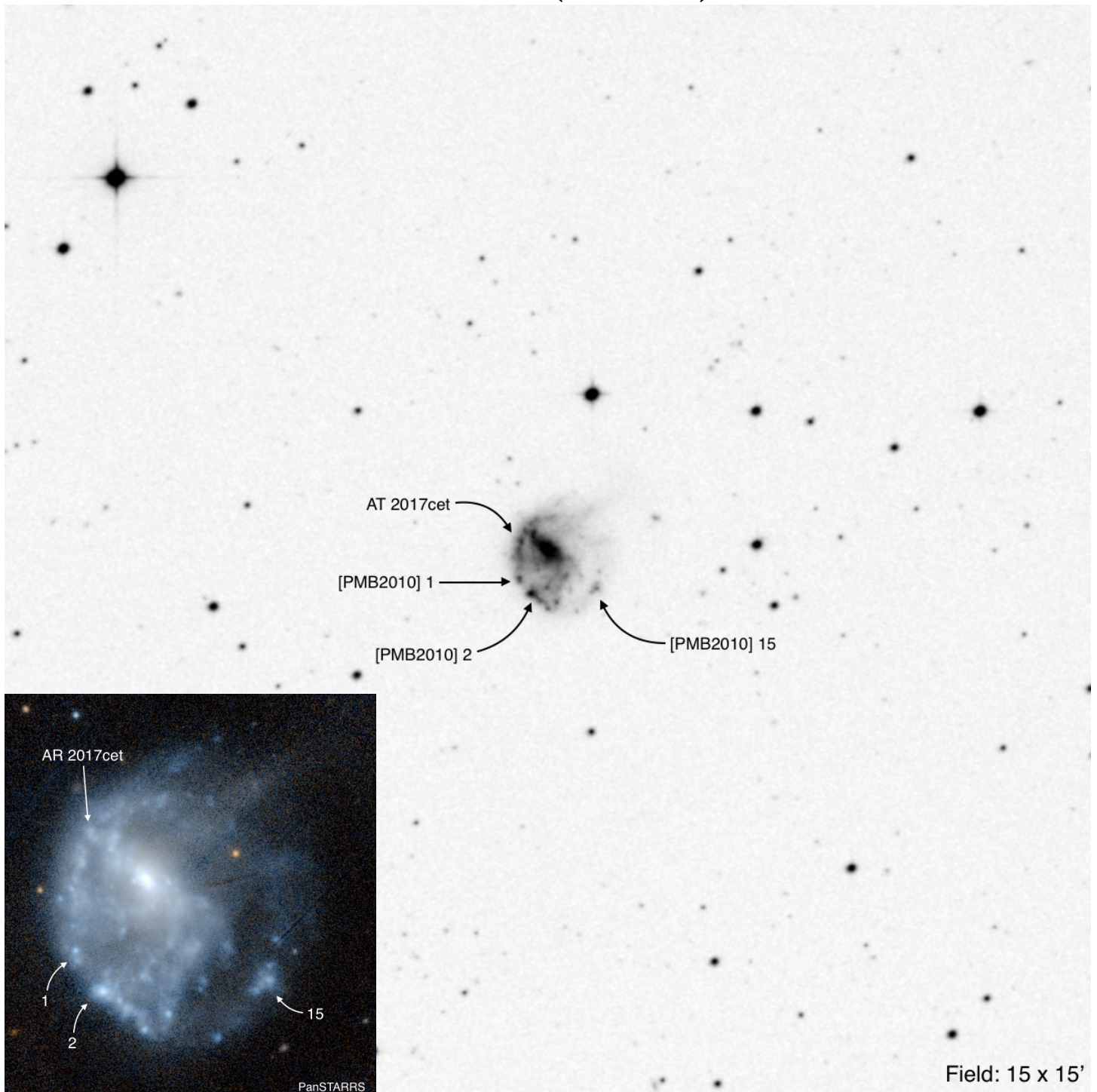
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willman-Bell, Inc., 2023), 276-282.

NGC 922 (Fornax)



Object	RA	Dec	Mag	Size	iSDA
NGC 922	02 25 04.4	-24 47 18	12.2	1.9 x 1.8'	86

NGC 922 (Fornax)



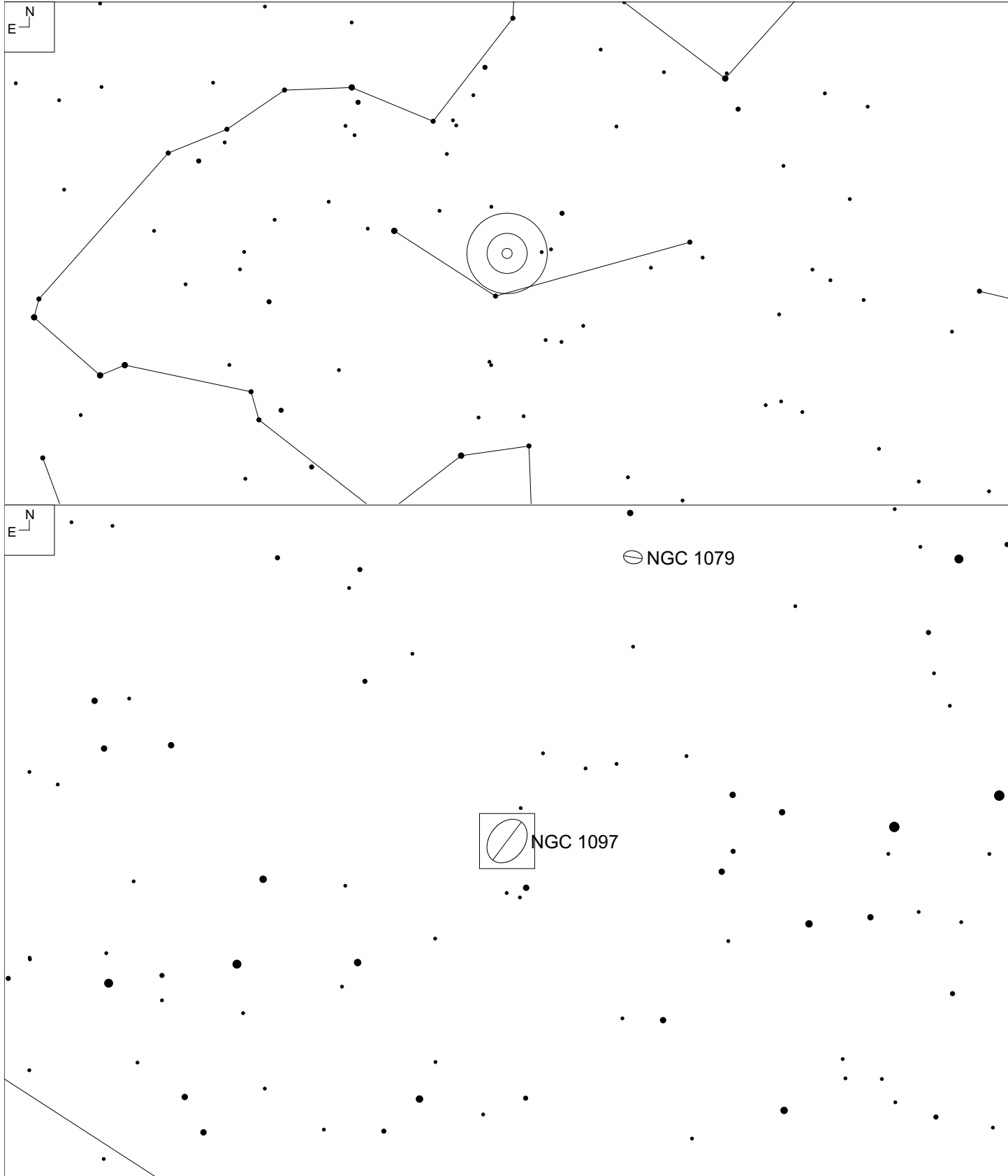
NGC 922 is a type SB(s)cd pec galaxy. It lies 142 mly away. It appears to have been involved with a collision with a nearby galaxy resulting in massive star formation and weird shape, some call it a collisional ring galaxy. The partial ring has a series of bright knots, especially the east side. I've marked a few brighter knots that could be visible in large amateur telescopes.

Star cluster **[PMB2010]** annotations, see A. Pellerin, et al. "The star cluster population of the collisional ring galaxy NGC 922," *The Astronomical Journal* Volume 139 (April 2010): 1369-1382.

For a sketch with a 16" SCT, see Uwe Glahn's [NGC 922](#).

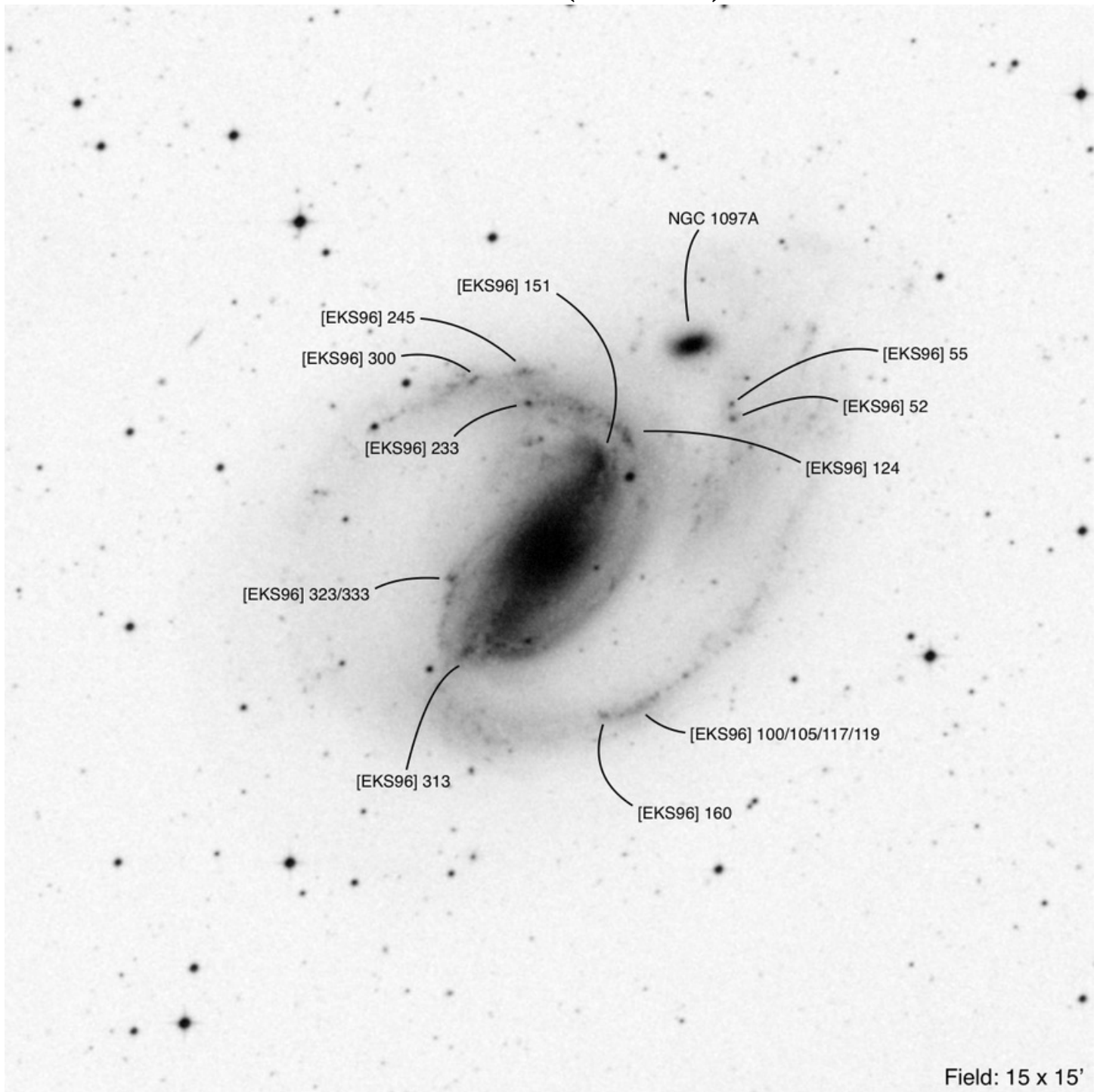
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 448-450.

NGC 1097 (Fornax)



Object	RA	Dec	Mag	Size	iSDA
NGC 1097	02 46 18.4	-30 16 19	9.5	6.0 x 3.3'	86

NGC 1097 (Fornax)



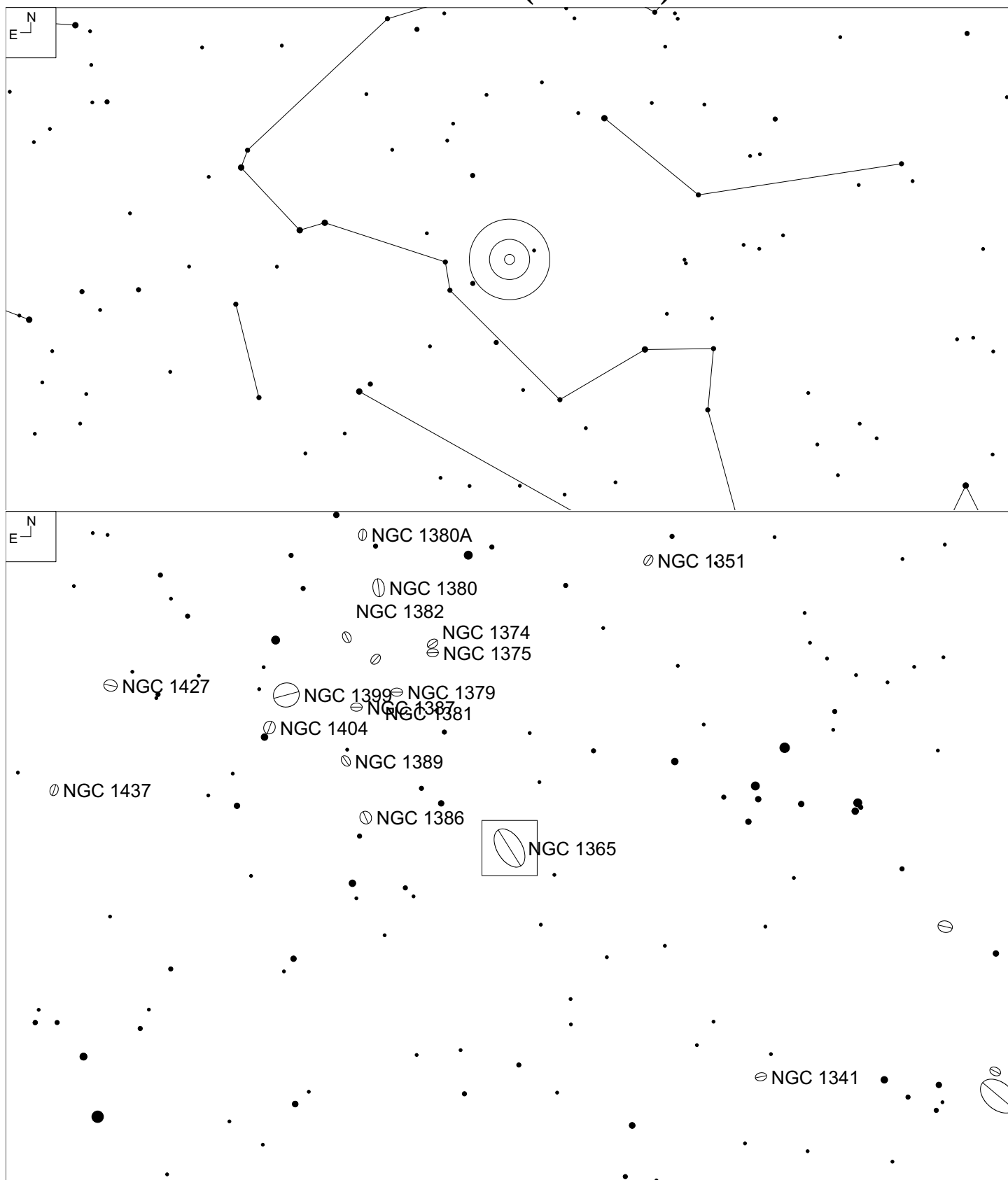
NGC 1097 is a type (R')SB(r')b Sy galaxy sitting 53 mly away and 148 kly across.

H II region **[EKS96]** annotations, see I.N. Evans, A.P. Koratkar, T. Storchi-Bergmann, et al, “An Atlas of H II Regions in Nearby Seyfert Galaxies,” *Astrophysical Journal Supplement*, Volume 105 (July 1996): 93-127.

For observing notes with a 30” telescope from Australia, see Steve Gottlieb’s notes: [NGC 1097](#). And see this [sketch](#) by Uwe Glahn with a 24” reflector. Note the faint hooks (outer star streamers).

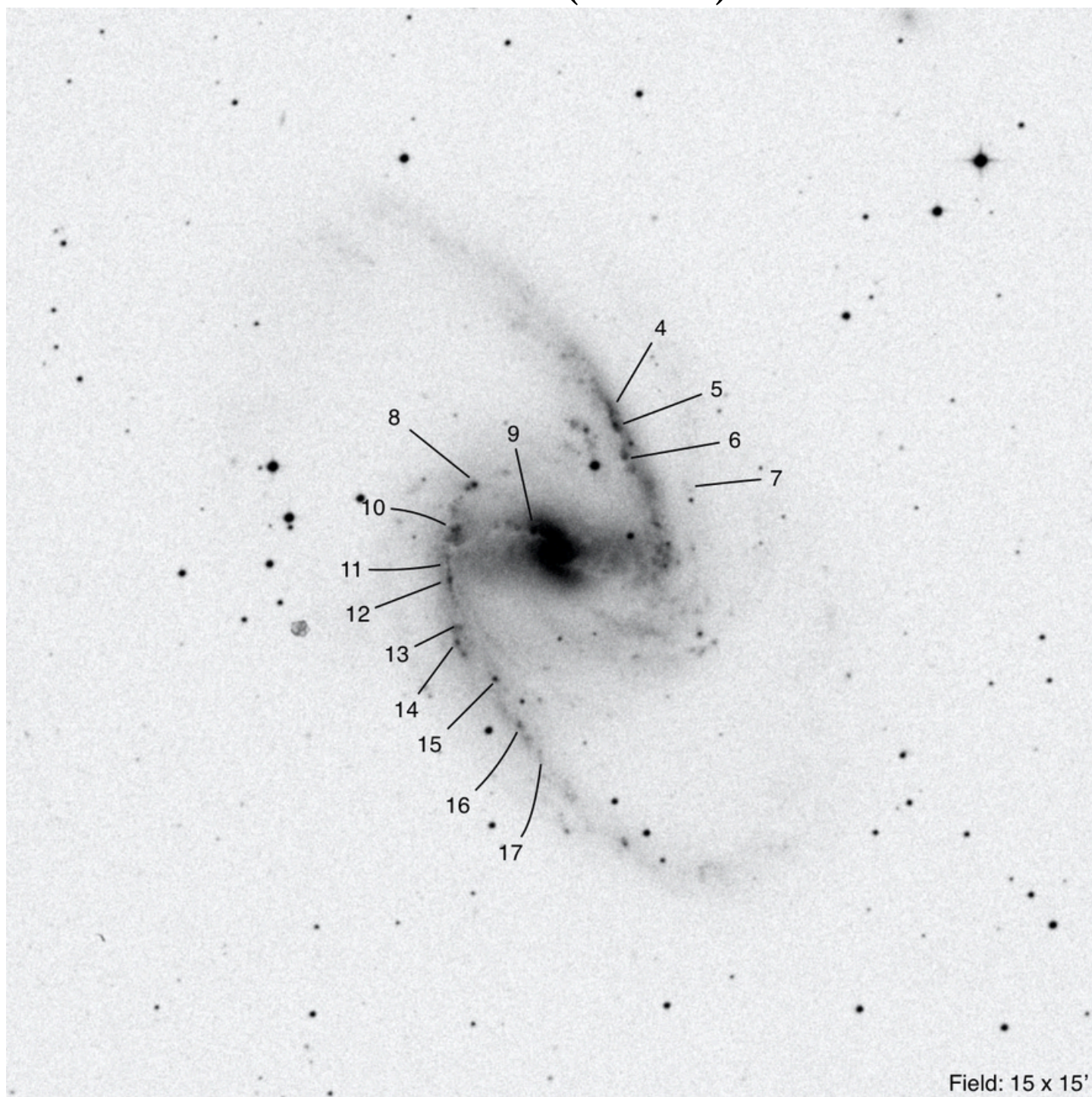
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 395-408.

NGC 1365 (Fornax)



Object	RA	Dec	Mag	Size	iSDA
NGC 1365	03 33 35.4	-36 08 15	9.6	5.4 x 4.1'	86, 98, D10

NGC 1365 (Fornax)



NGC 1365 is a type (R')SBb(s)b barred spiral galaxy laying 60 mly distant and estimate to be about 200 kly across. That is one huge galaxy. Imagine this thing at the distance of the Andromeda, what a sight!

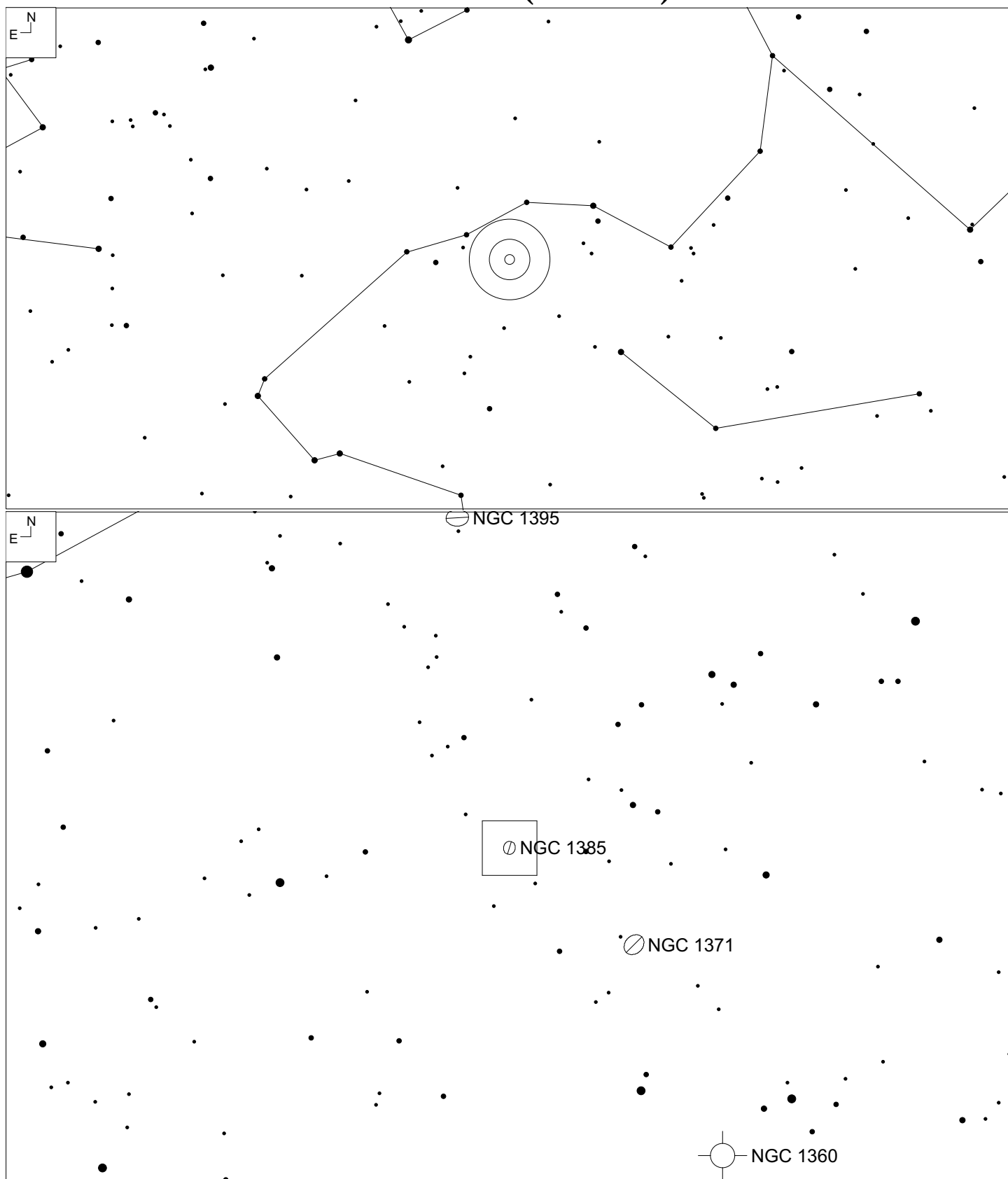
H II region annotations from F. Bresolin, D. Schaerer, et al, "A VLT Study of metal-rich extragalactic H II regions," *Astronomy & Astrophysics*, Volume 441, Number 3 (Oct 2005): 981-997. Just the numbers were used.

For an observing sketching article, see Howard Banich, "The Definitive Barred Spiral, NGC 1365", *Sky & Telescope* (Jan 2016). Also see his website (scroll to NGC 1365), [Banich Notes](#)

For observing notes with 20, 24 and 48" telescopes, see Steve Gottlieb's notes: [NGC 1365](#). Also see Uwe Glahn's detailed [sketch](#) with a 24" reflector.

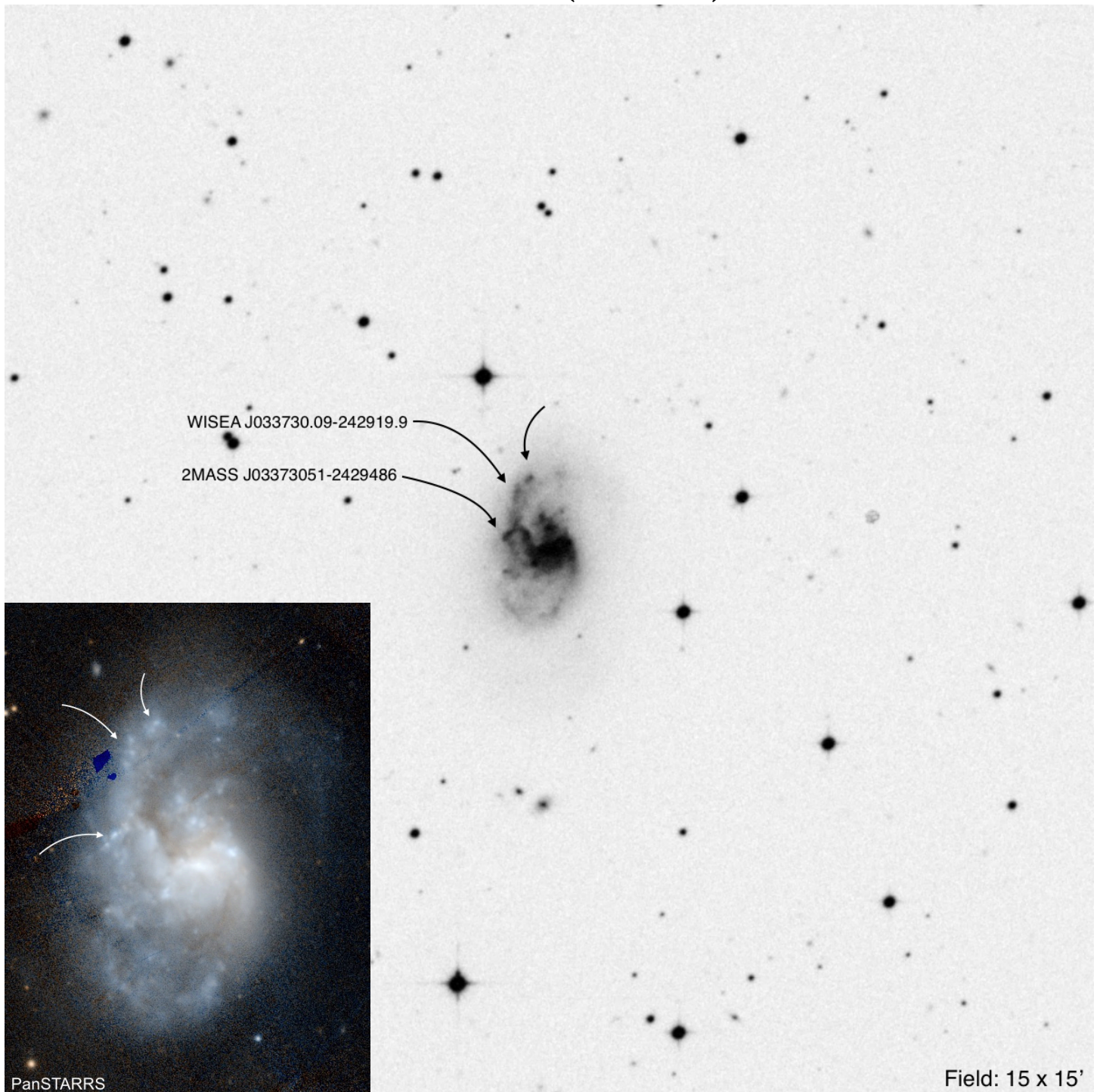
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 385-395.

NGC 1385 (Fornax)



Object	RA	Dec	Mag	Size	iSDA
NGC 1385	03 27 28.7	-24 30 08	10.9	3.4 x 2.0'	86

NGC 1385 (Fornax)



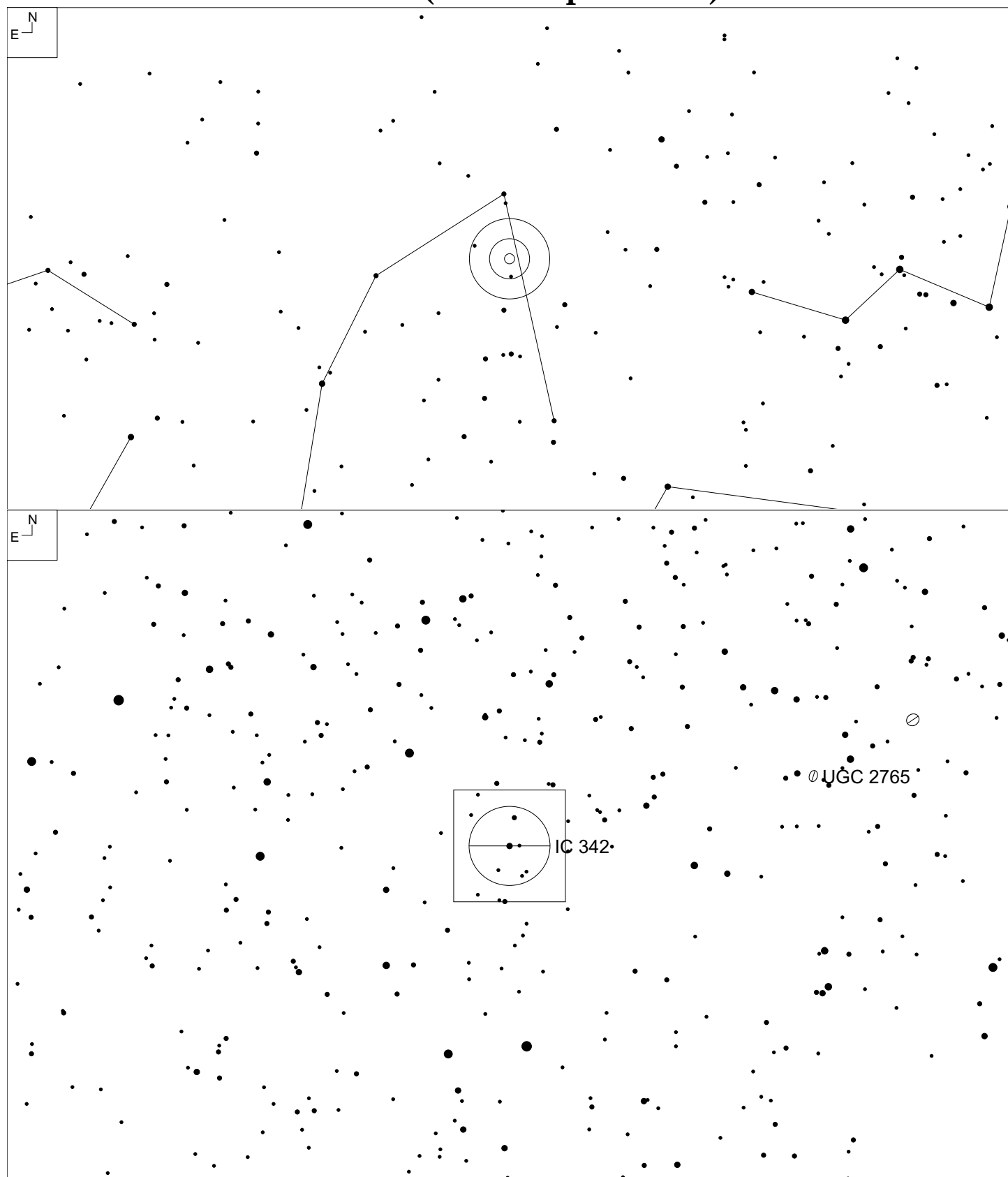
NGC 1385 is a SB(s)cd type galaxy and lies 30 mly away.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 1385](#). The annotated knots are likely non-stellar regions of the galaxy and not H II regions. Also see Glahn's [sketch](#) with a 16" SCT.

Hubble Space Telescope [image](#).

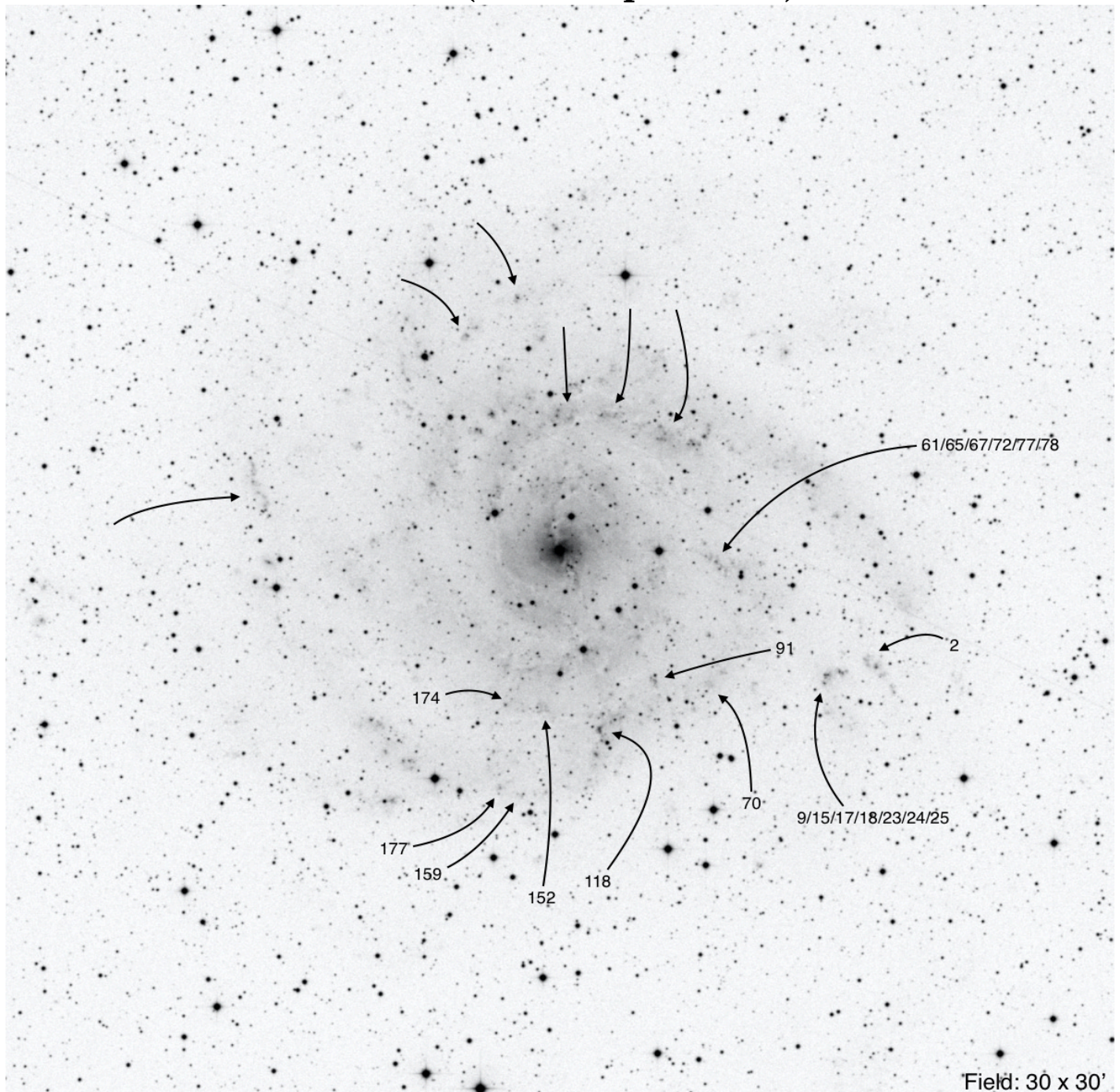
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 383-384.

IC 342 (Camelopardalis)



Object	RA	Dec	Mag	Size	iSDA
IC 342	03 46 46.2	+68 05 32	9.1	21.4 x 20.9'	6, 7, 14

IC 342 (Camelopardalis)



IC 342 is a type SAB(rs)cd galaxy. It would be one of the brighter galaxies in the night sky if it were not in the plane of the Milky Way and being partially obscured. It is located only 10 million light years from us or about 5 times farther than the Andromeda Galaxy. It was estimated that it is about 2 magnitudes fainter than it could be if not obscured. The cool thing is an observer in IC 342 would see the Milky Way as a very bright nearly edge on galaxy in a star poor region.

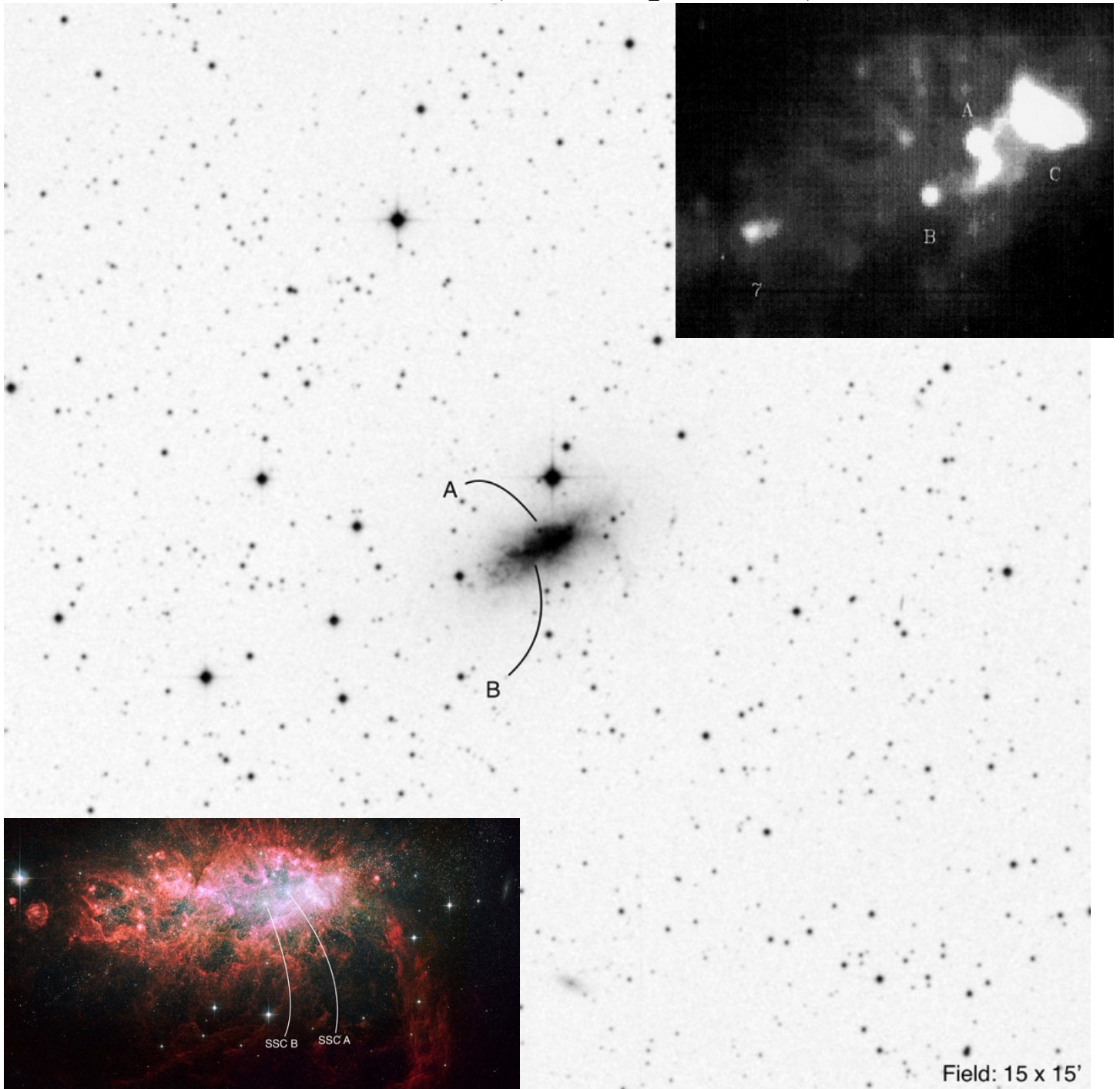
For identification of H II regions in IC 342, see M. M. Vucetic, et al, "Optical Observations of the Nearby Galaxy IC342 with Narrow Band [SII] and H alpha Filters. I," *Serbian Astronomical Journal*, Volume 187, (Dec 2013): 11-18. The numerical annotations are from Vucetic's work. Oddly the northern third were not labeled by Vucetic as the third field was not included in the paper.

Also see the original article on H II regions, see Marshall L. McCall, "H II Regions, Extinction, and IC 342: A New View of the Galactic Neighborhood," *Astronomical Journal*, Volume 97 (May 1989): 1341-1349

For discussion on the nature and observing comments from various medium to large amateur telescopes, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 48-53

www.FaintFuzzies.com

NGC 1569 (Camelopardalis)



NGC 1569 is a type IBm dwarf galaxy sitting about 11 mly away. It is a member of the IC 342 group.

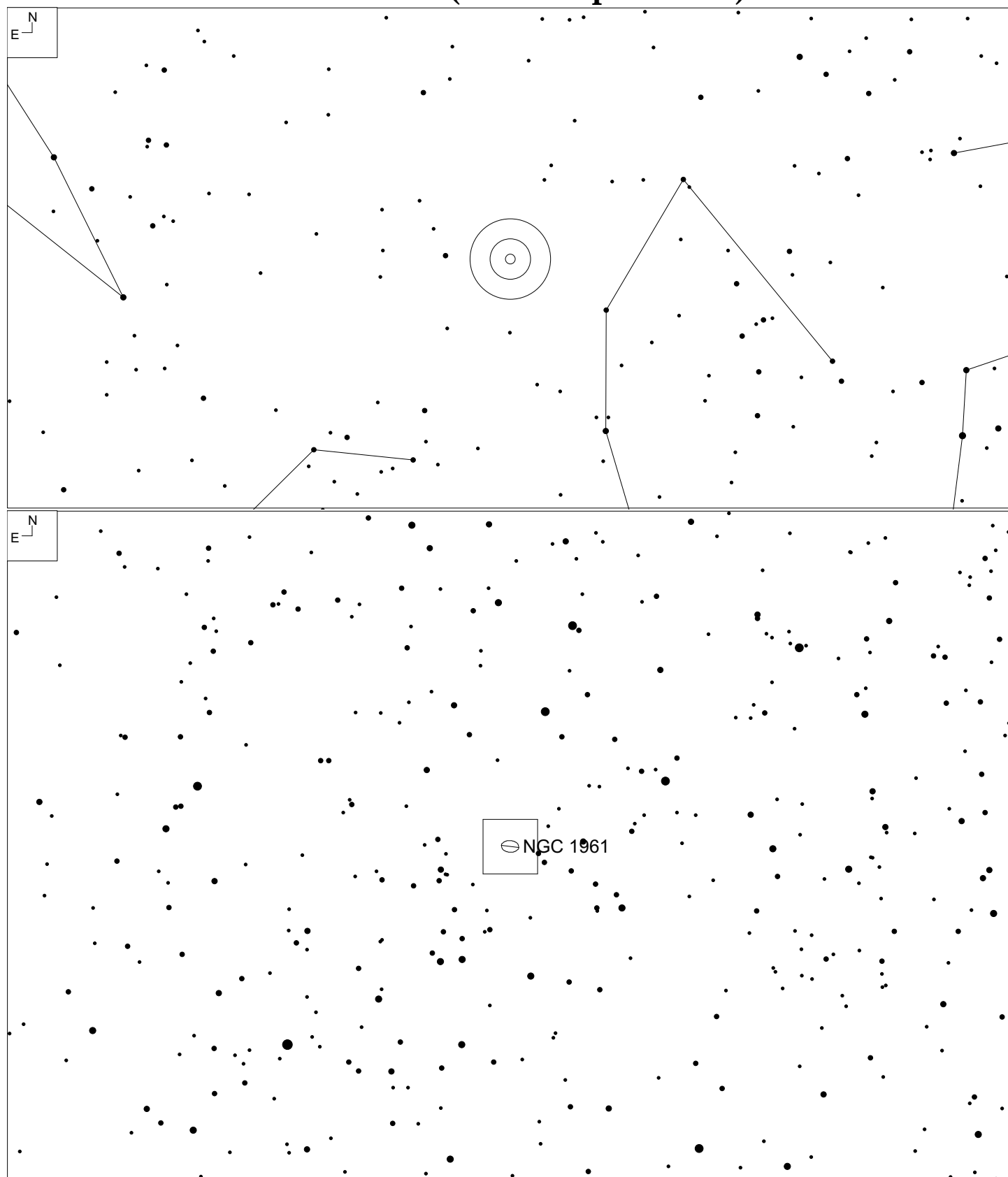
Upper right inset from A. Greve, T. Becker, et al, "NGC 1569 The Molecular and Ionized Gas Near the Superluminous Star Clusters A and B," *Astronomy & Astrophysics* Volume 312 (1996): 391 – 396

Bottom left inset from the Hubble Space Telescope. Credit for Advanced Camera Data: NASA, ESA, A. Aloisi (STScI/ESA), J. Mack and A. Grocholski (STScI), M. Sirianni (STScI/ESA), R. van der Marel (STScI), L. Angeretti, D. Romano, and M. Tosi (INAF-OAB), and F. Annibali, L. Greggio, and E. Held (INAF-OAP); Credit for Wide Field Planetary Camera 2 Data: NASA, ESA, P. Shopbell (California Institute of Technology), R. Dufour (Rice University), D. Walter (South Carolina State University, Orangeburg), and A. Wilson (University of Maryland, College Park)

S. Lianou, P. Barmby. et al, "Probing the interstellar medium of NGC 1569 with Herschel," *Monthly Notices of the Royal Astronomical Society* Volume 445 (2014): 1003-1022.

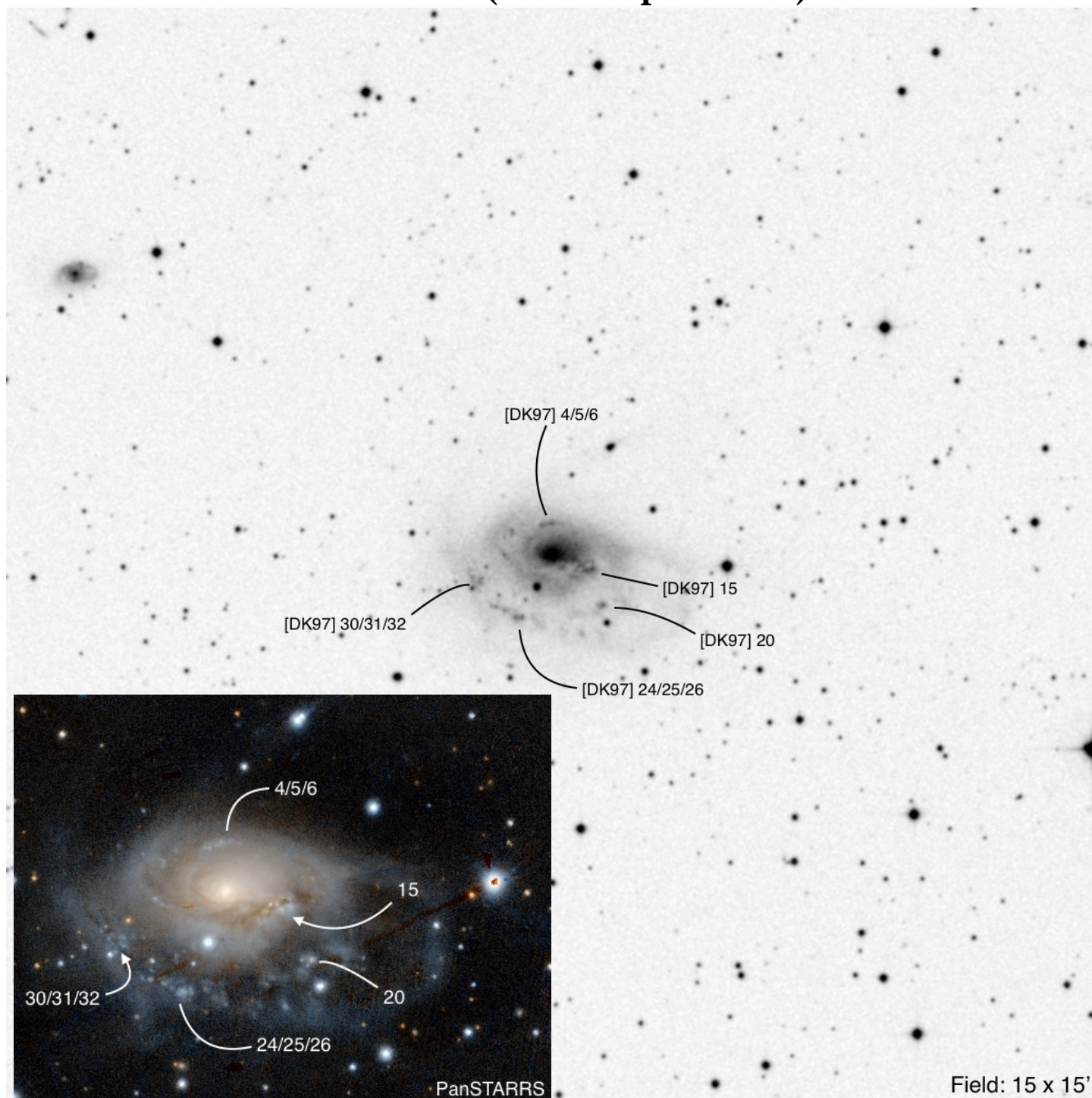
For observing notes with a 18" and a 48" telescope, see Steve Gottlieb's notes: [NGC 1569](#). Glahn [sketched](#) it with a 27" and picked up five knots in the NW tip.

NGC 1961 (Camelopardalis)



Object	RA	Dec	Mag	Size	iSDA
NGC 1961	05 42 04.8	+69 22 42	11	4.6 x 3.0'	6

NGC 1961 (Camelopardalis)



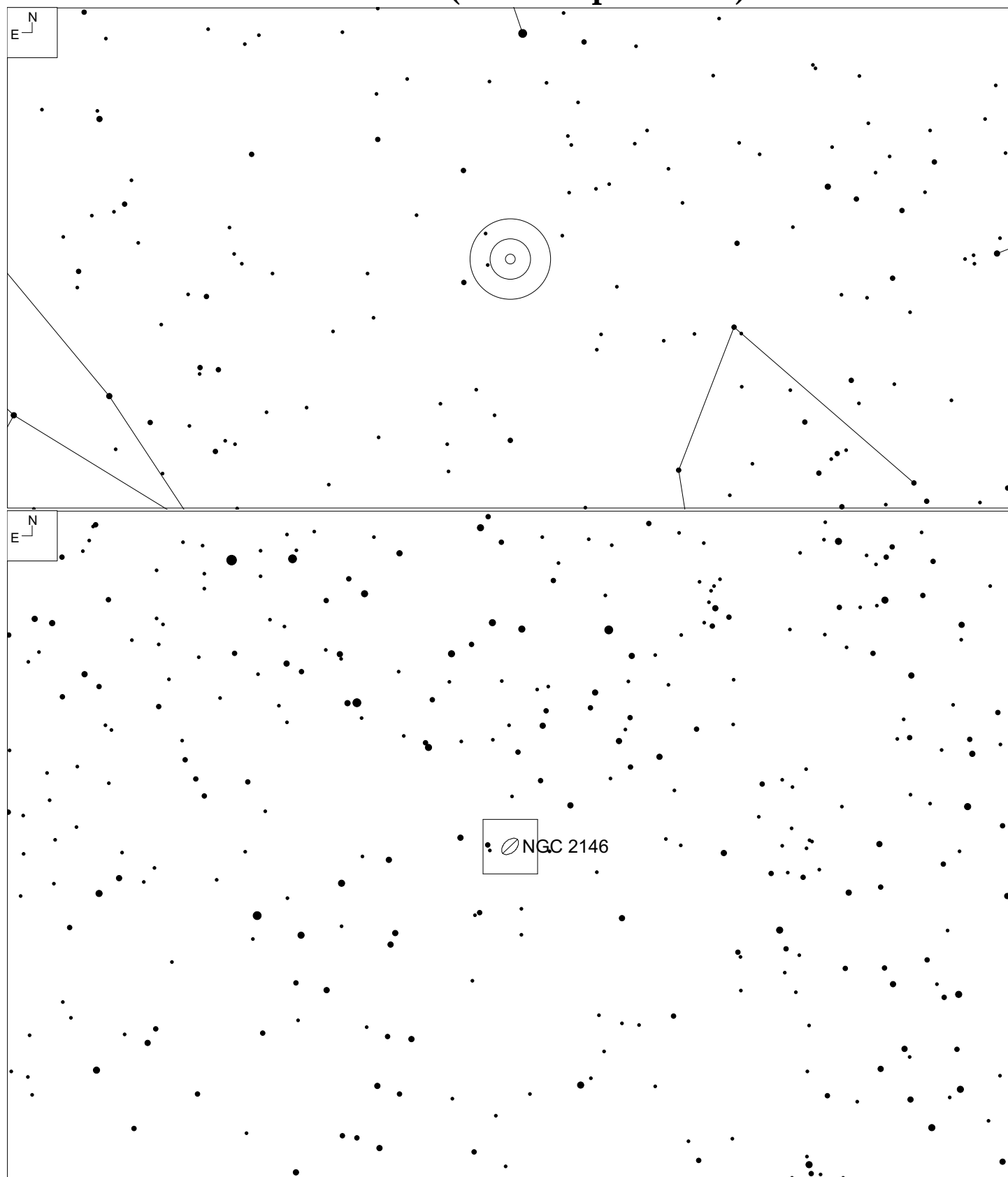
NGC 1961 is a type SAB(rs)c galaxy sitting 200 mly distance and a huge 220 kly across. It is one of the farthest galaxies in this catalogue and pretty cool to think even at that distance, it still shows extragalactic features visible through amateur telescopes.

H II region [ZK97] annotations from Davis S. Davis, et al, "Gravitational Interactions in Poor Galaxy Groups," *Astronomical Journal* Volume 114 (Aug 1997): 613-625 (1997).

Uwe Glahn picked up 4 knots with his 27" in this [sketch](#), which is all but [DK97] 4/5/6

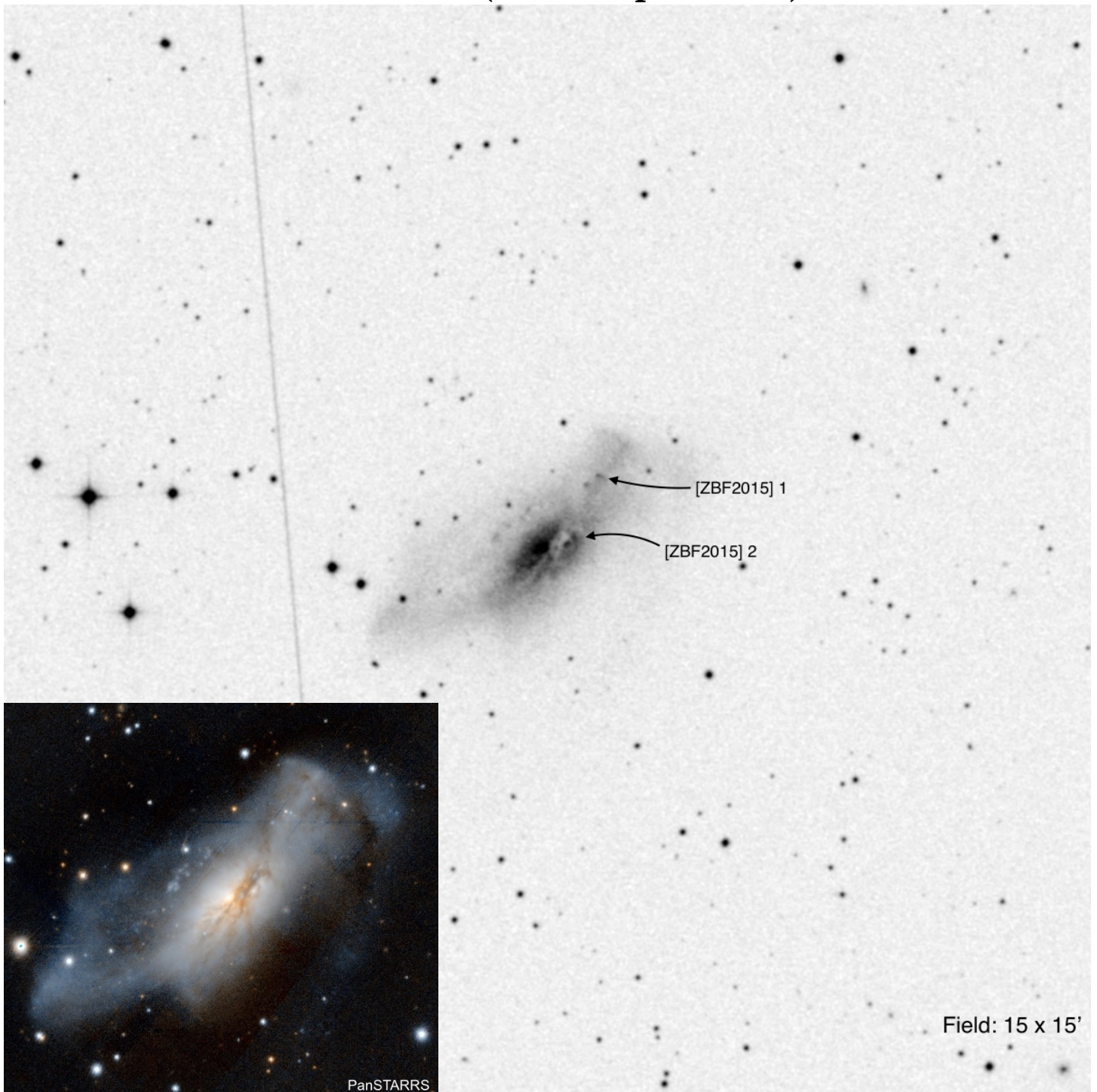
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 68-72

NGC 2146 (Camelopardalis)



Object	RA	Dec	Mag	Size	iSDA
NGC 2146	06 18 37.7	+78 21 25	10.6	5.4 x 2.9'	5, 6

NGC 2146 (Camelopardalis)



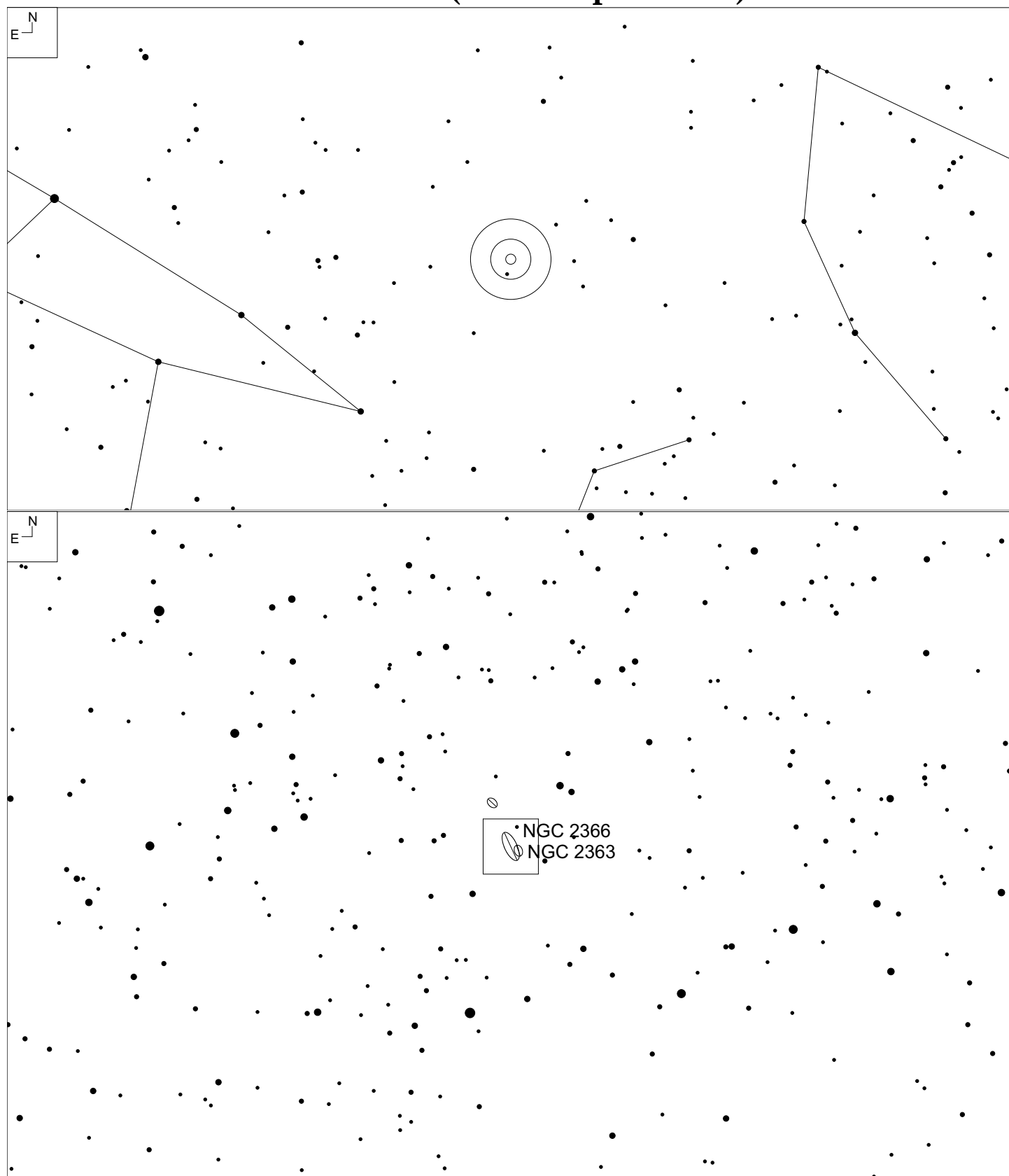
NGC 2146 is a type SB(s)ab pec galaxy sitting 70 mly distant and 80 kly across. It shows dust lane across with multiple H II regions and a bent arm due to a close encounter with another galaxy.

The two brightest H II regions annotated by Zaragoza-Cardiel (2015).

Glahn [sketched](#) this object with his 16" reflector and saw a bit of detail in the center and extensions.

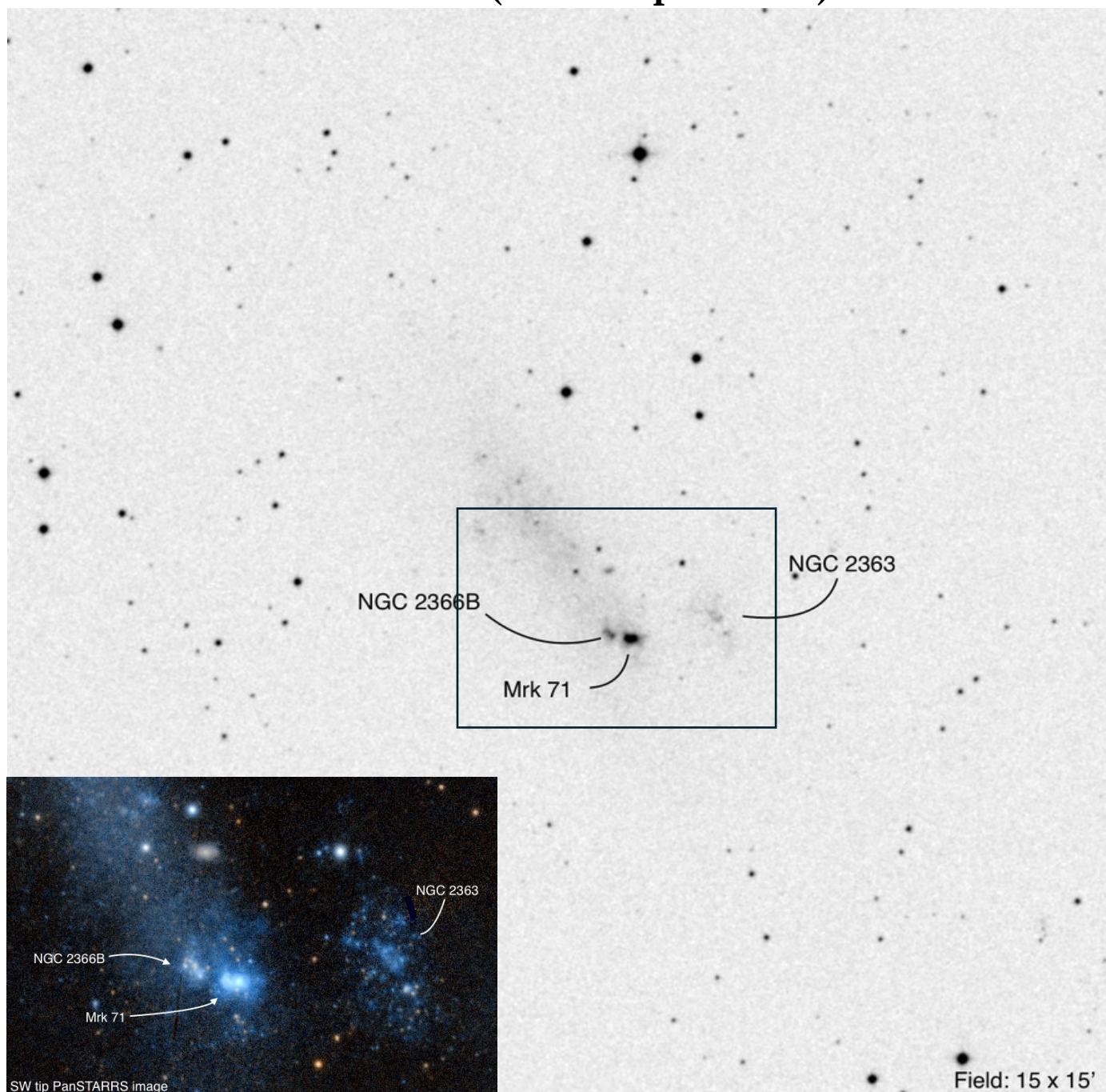
For additional discussion on NGC 2146 and what could be observed in 6 to 15-inch telescopes, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 56-60.

NGC 2366 (Camelopardalis)



Object	RA	Dec	Mag	Size	iSDA
NGC 2366	07 28 51.9	+69 12 31	11.4v	8.2 x 3.3'	5, 6, 13

NGC 2366 (Camelopardalis)



There was confusion on labeling the NGCs. Markarian 71 (Mrk 71) was often mislabeled as NGC 2363 which was actually a large H II region or galaxy. Astronomers weren't entirely sure of the nature of the "detached" glow. NGC 2366A = Mrk 71 and NGC 2366B is the smaller knot immediately to the east.

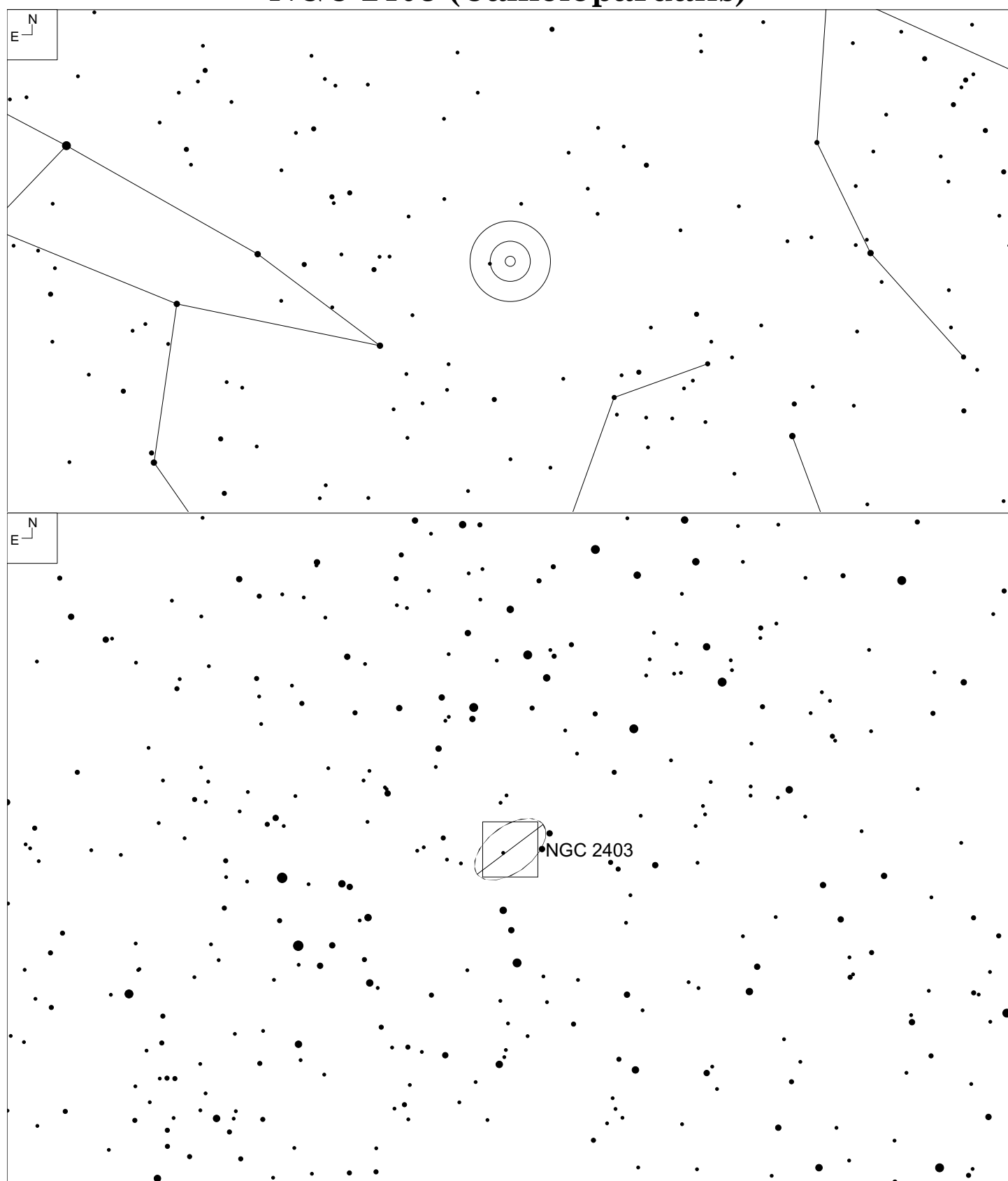
NGC 2363 is a large H II complex that appears detached from NGC 2366. See Robert Kennicutt, Bruce Balick, and Timothy Heckman, "A Remarkable H II Region Complex in NGC 2366," *Astronomical Society of the Pacific, Publications*, Volume 92, (Apr 1980): 134-144.

Genoveva Micheva, M.S. Oey, et al, "Mrk 71 / NGC 2366: The Nearest Green Pea Analog," *The Astrophysical Journal*, Volume 845, Number 2 (2017): 165-178

For two observing articles, see Scott Harrington. "Star-Forming Regions in Faraway Galaxies" *Sky & Telescope* (May 2021), 22-29 and Steve Gottlieb. "Celestial Fireworks" *Sky & Telescope* (Mar 2013).

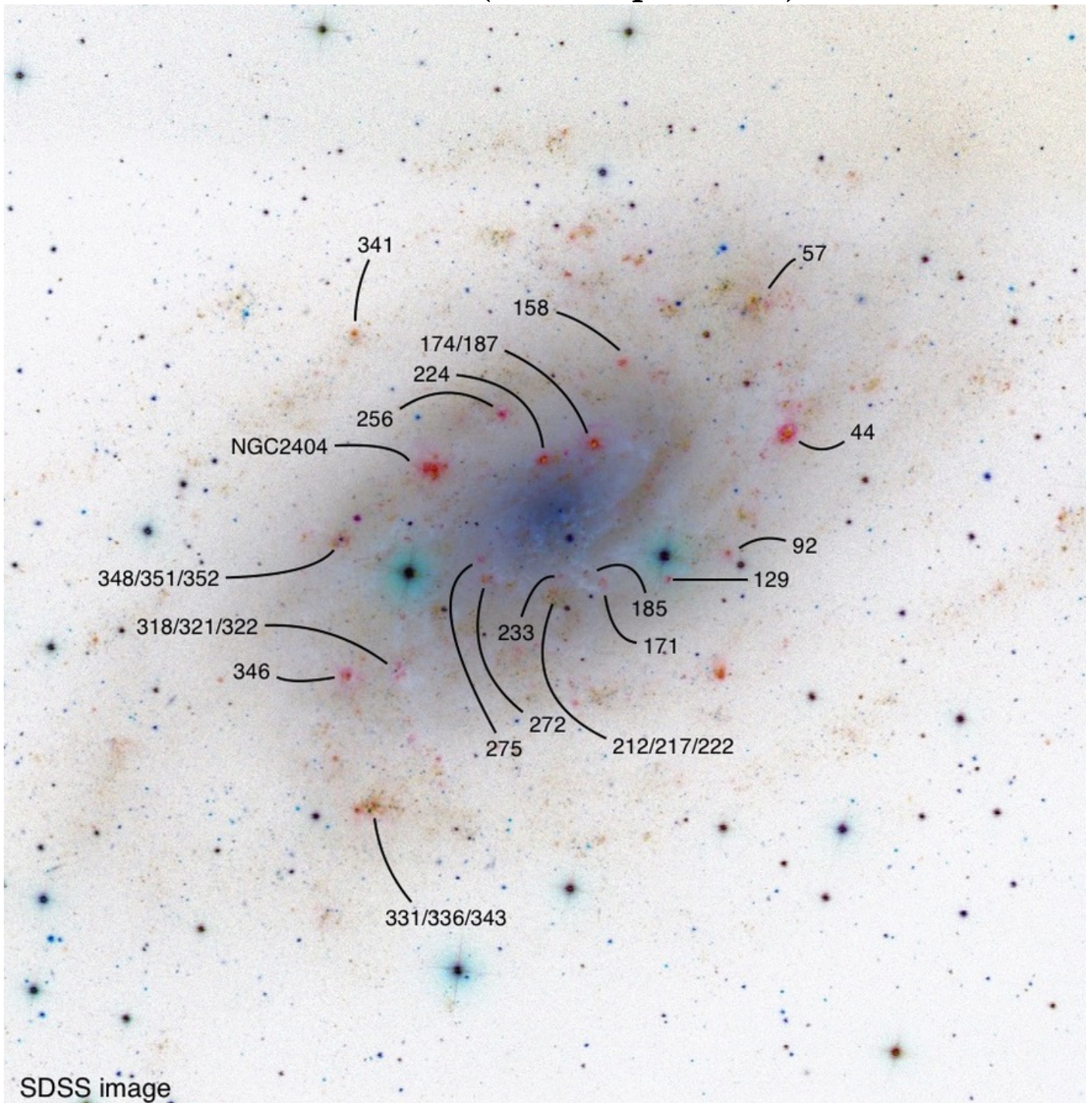
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 2366](#). Also See Glahn's [sketch](#) with a 16".

NGC 2403 (Camelopardalis)



Object	RA	Dec	Mag	Size	iSDA
NGC 2403	07 36 48.2	+65 36 13	8.9v	21.9 x 12.3'	5, 6, 13

NGC 2403 (Camelopardalis)



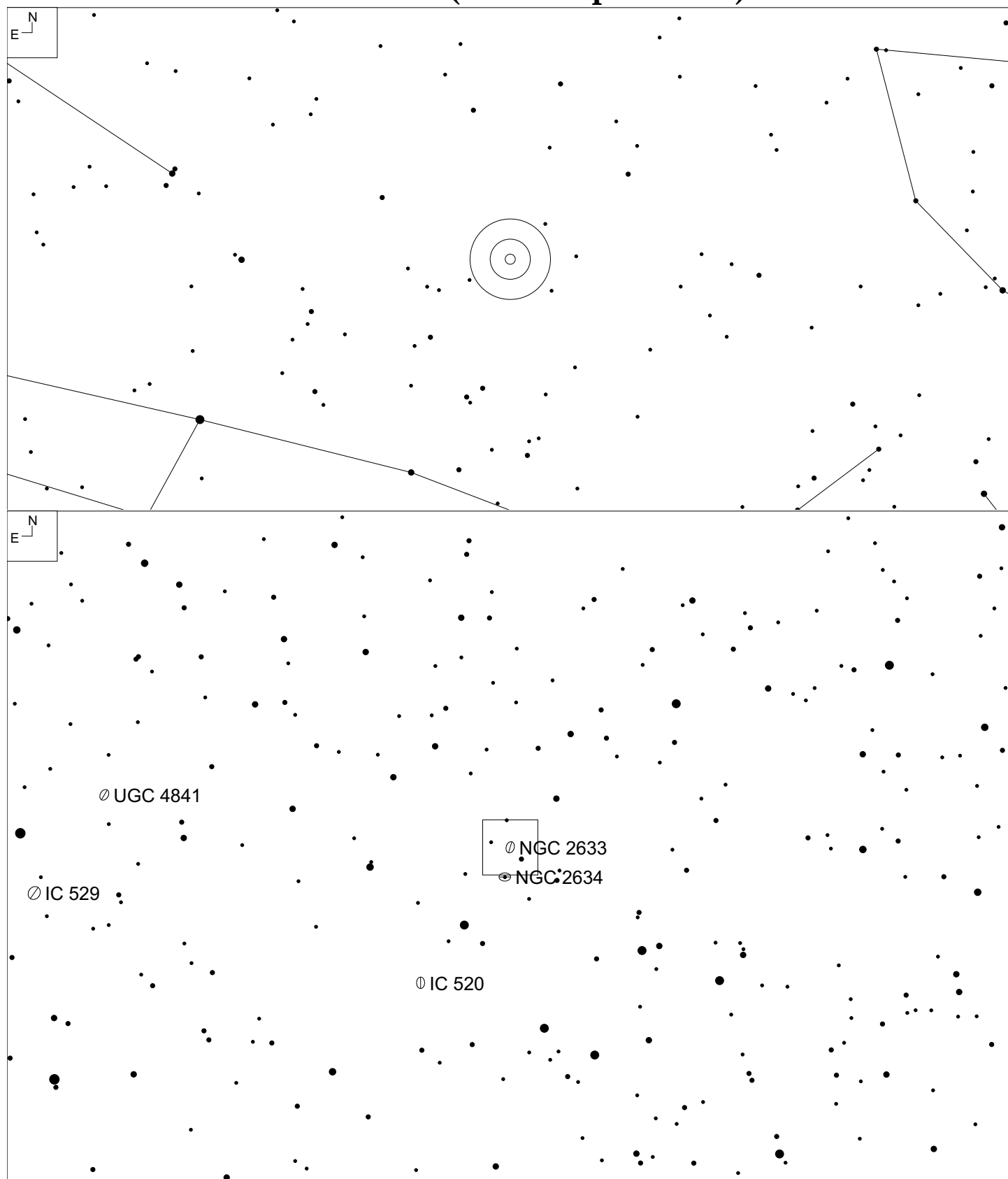
NGC 2403 is a type SAB(s)cd galaxy sitting 12 mly away and 77 kly in diameter. It may be part of the M81 group.

Annotations taken from page 25 of the following article, J.-P. Sivan, H. Petit, et al, "Optical H II Regions in NGC 2403," *Astronomy & Astrophysics*, Volume 237 (1990): 23-35

Also see Steve Gottlieb. "Celestial Fireworks" *Sky & Telescope* (Mar 2013) for an excellent observing article showcasing what is visible in an 18" reflector and see [NGC 2403](#) for Gottlieb's notes with a 48" reflector. Also see Glahn's [sketch](#) with his 16".

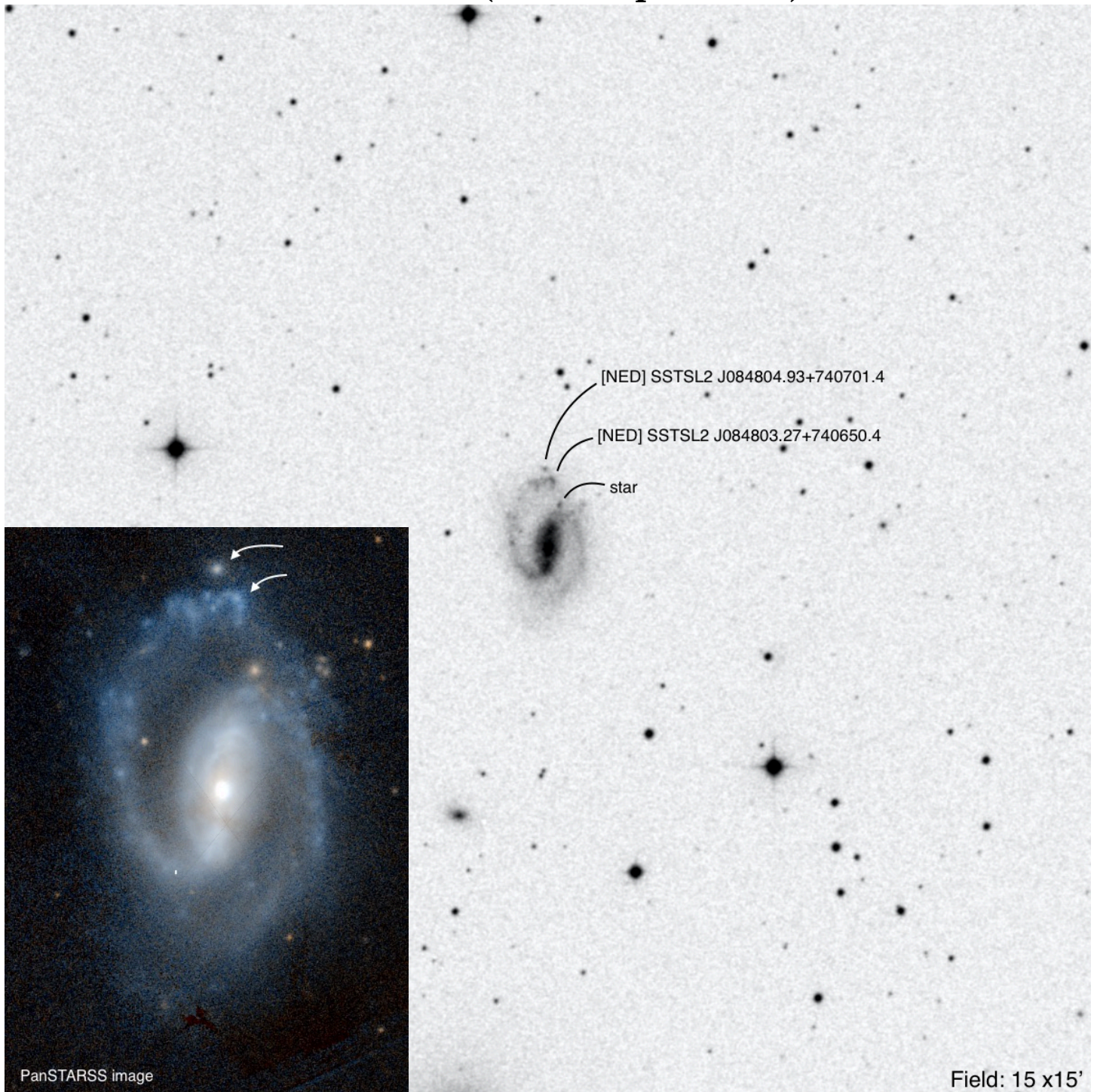
For an excellent discussion on the astrophysical nature and what could be observed in medium sized telescopes, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 43-48.

NGC 2633 (Camelopardalis)



Object	RA	Dec	Mag	Size	iSDA
NGC 2633	08 48 00.3	+74 06 05	12.4	1.8 x 0.9'	5, 6

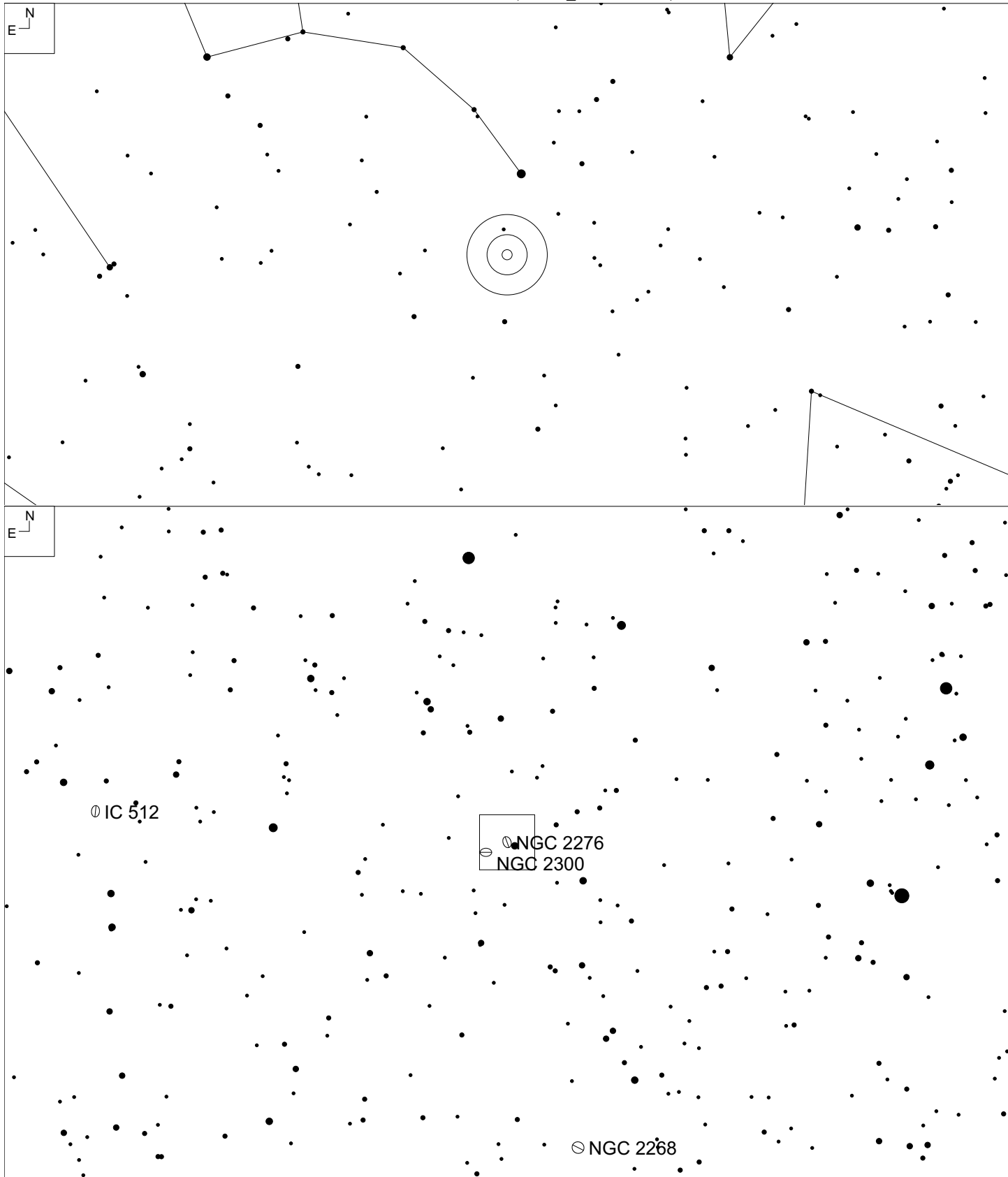
NGC 2633 (Camelopardalis)



NGC 2633 is a type SB(s)b galaxy and sits 98 mly away.

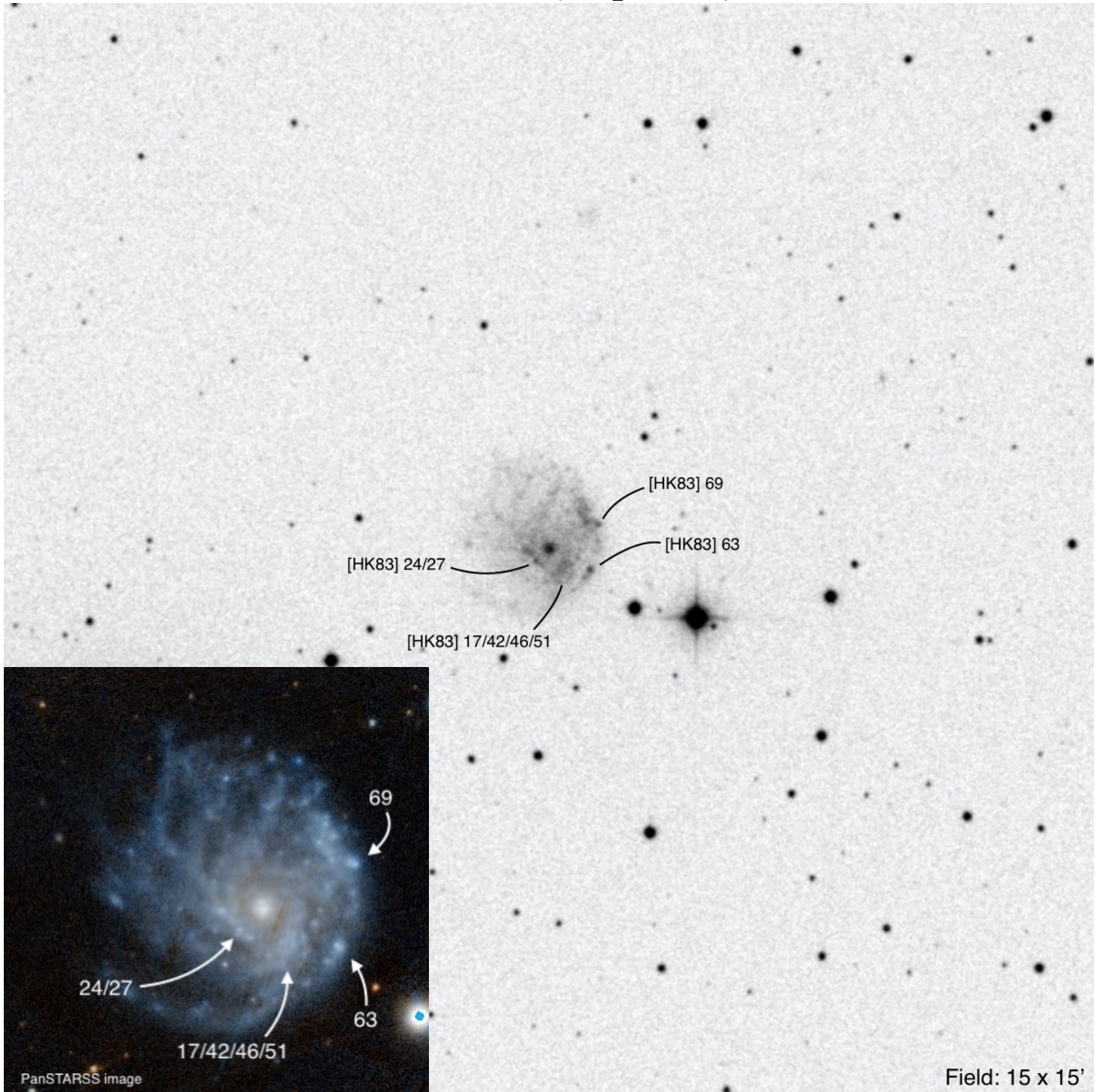
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 2633](#). Also see Glahn's [sketch](#) with his 27" where he saw the brightening on the end of the north arm.

NGC 2276 (Cepheus)



Object	RA	Dec	Mag	Size	iSDA
NGC 2276	07 26 56.6	+85 45 19	12.3	2.4 x 1.7'	1

NGC 2276 (Cepheus)

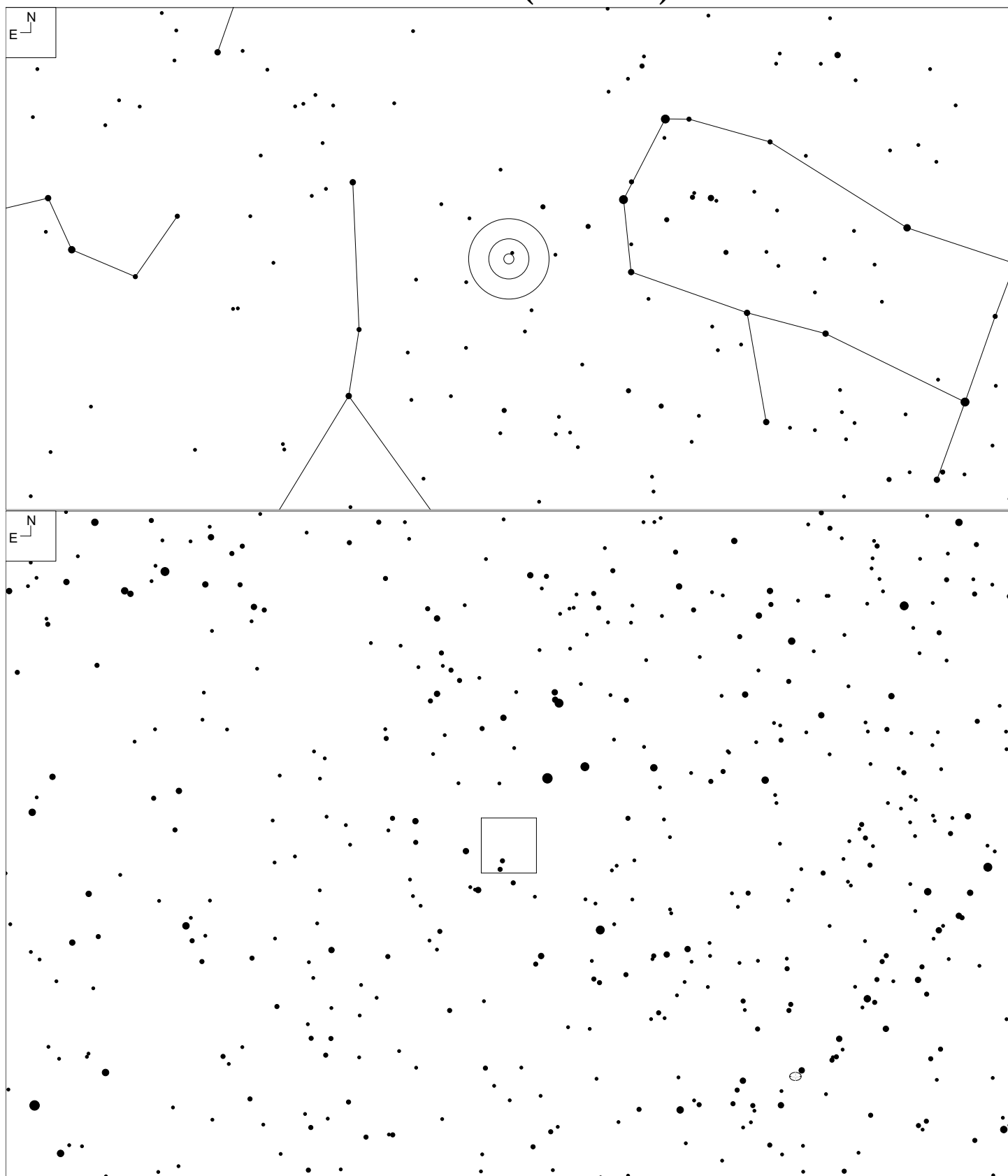


NGC 2276 is a SAB(rs)c midsize galaxy and 120 mly away near the celestial north pole. The distortion is probably due to interaction with NGC 2300 nearby.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 2276](#).

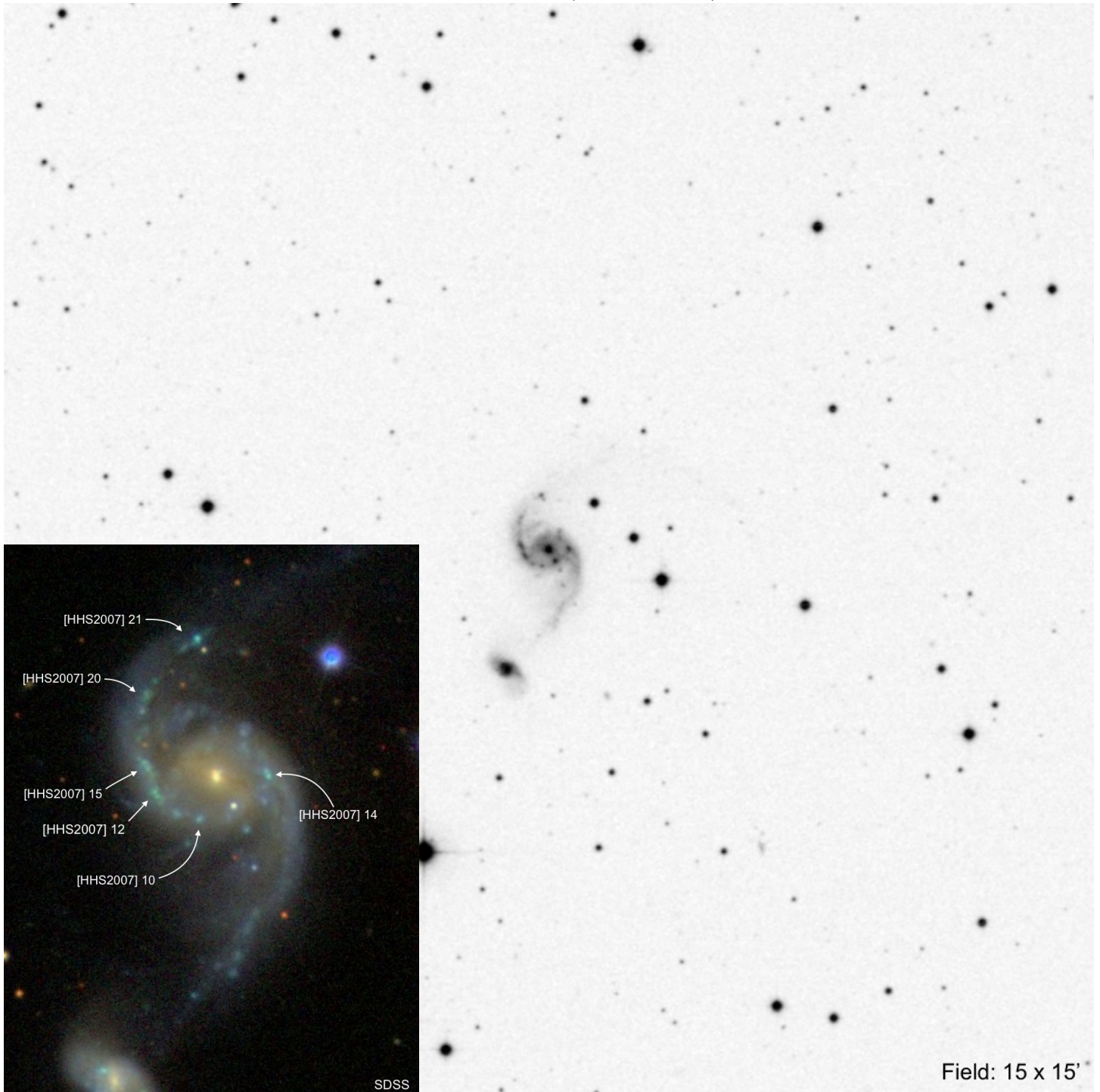
Glahn [sketched](#) this object with his 27" and picked up two knots, specifically [HK83] 17/42/46/51 and [HK83] 63.

NGC 2535 (Cancer)



Object	RA	Dec	Mag	Size	iSDA
NGC 2535	08 11 13.5	+25 12 23	12.8	2.5 x 1.2'	35

NGC 2535 (Cancer)



NGC 2535 is a type SA(r)c pec galaxy sitting 190 mly away and 140 kly in diameter.

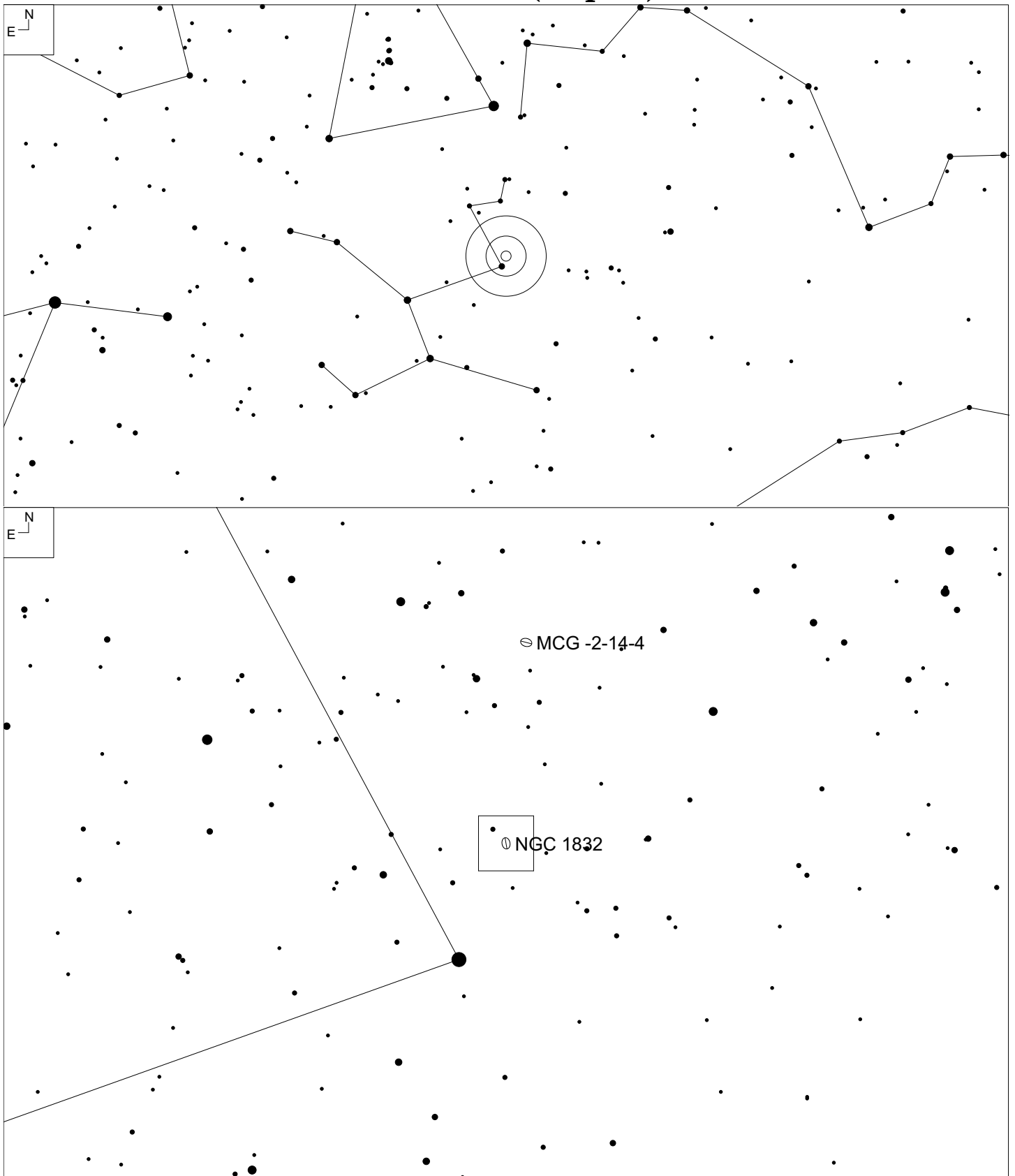
For the **[HHS2007]** annotations, see Mark Hancock, Beverly J. Smith, Curtis Struck, Mark L. Giroux, et al. “Large-Scale Star Formation Triggering in the Low-Mass Arp 82 System: A Nearby Example of Galaxy Downsizing Based on UV/Optical/Mid-IR Imaging” *The Astronomical Journal* Volume 133 Number 2 (Jan 2007): 676-693.

Five H I star clouds in the galaxy, see Michele Kaufman, , et al., “Observations of the Ocular Galaxy NGC 2535 and its Starburst Companion NGC 2536,” *Astronomical Journal*, Volume 114 (Dec 1997): 2323 – 2840.

Glahn detected one knot just south of the core with his 27”, see [sketch](#). He didn’t see the unlabeled knots.

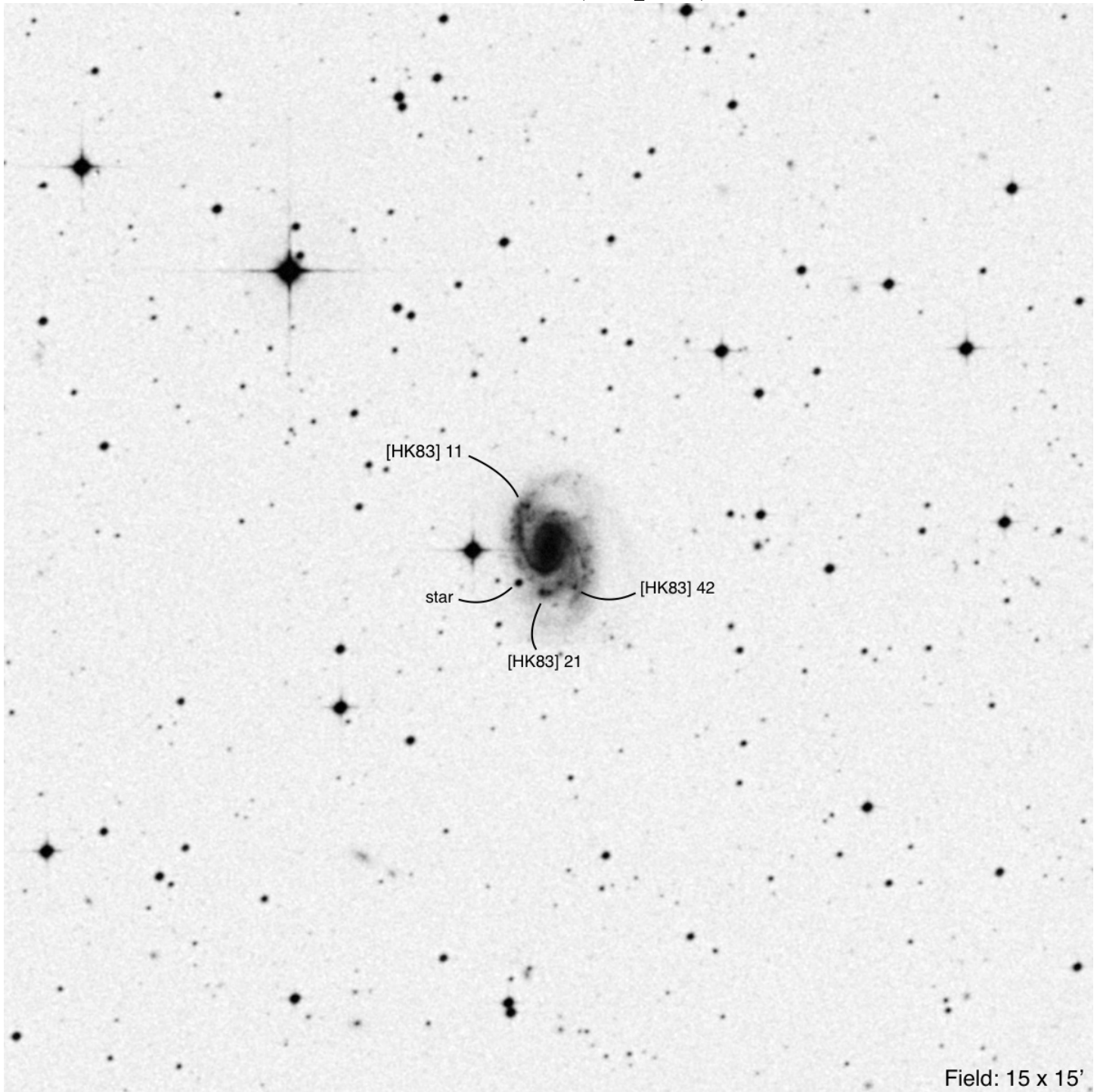
Also see Gottlieb’s observing [notes](#) through a 48” reflector.

NGC 1832 (Lepus)



Object	RA	Dec	Mag	Size	iSDA
NGC 1832	05 12 02.1	-15 41 11	12.2	2.0 x 1.7'	73

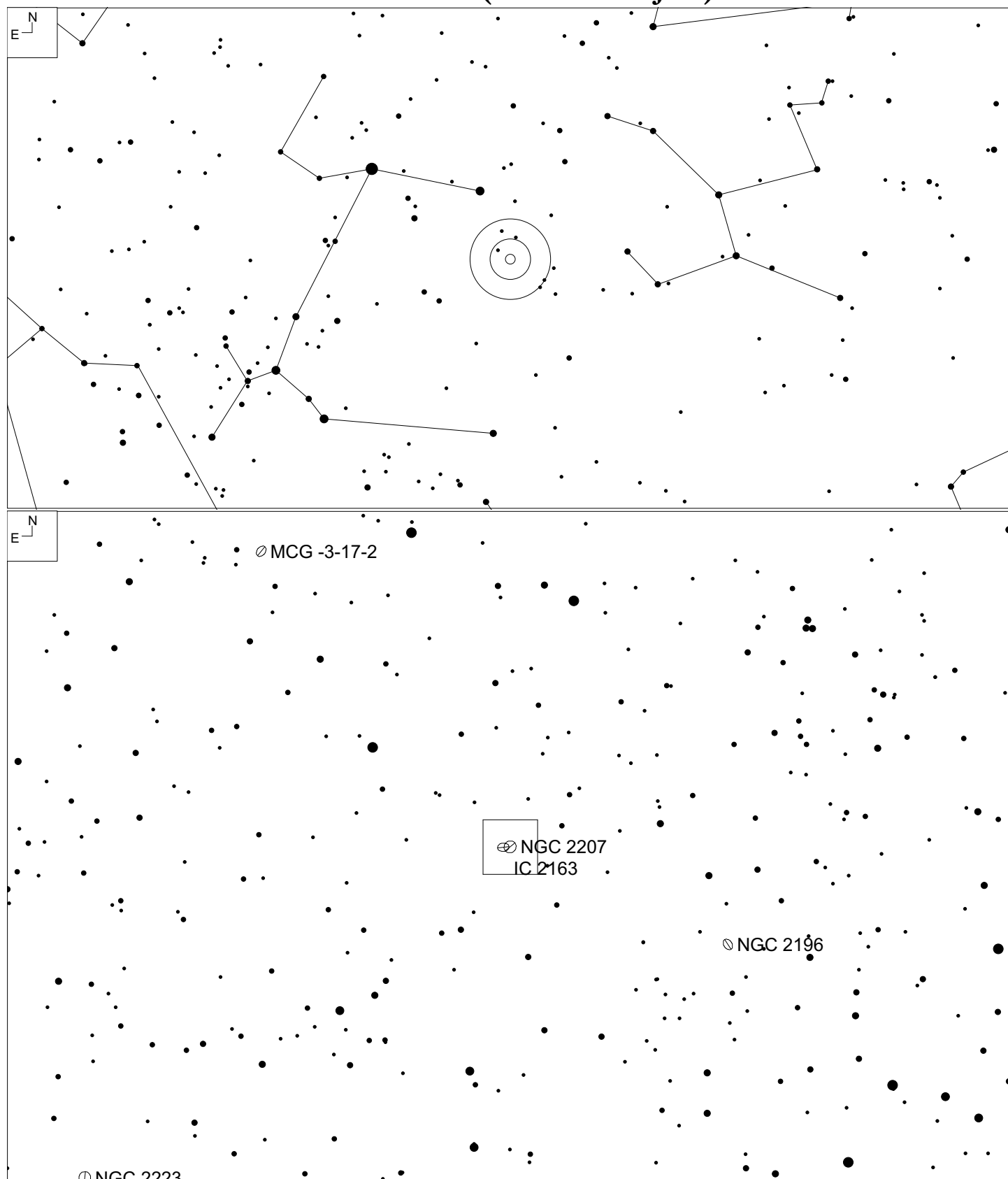
NGC 1832 (Lepus)



NGC 1832 is a type SB(r)bc galaxy and 80 mly away from us.

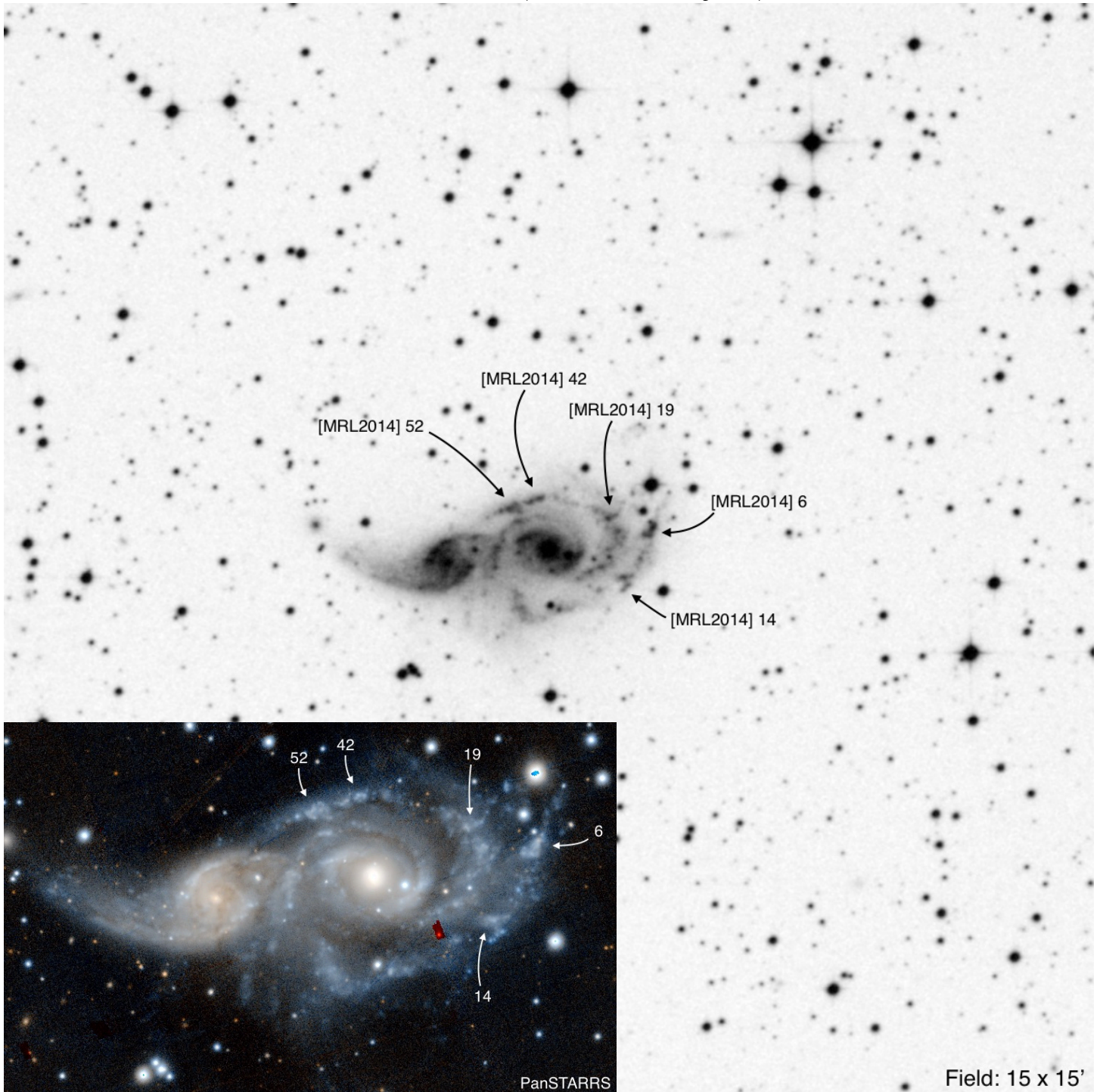
No observations published to date with knots.

NGC 2207 (Canis Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 2207	06 16 22.1	-21 22 22	10.9	3.9 x 2.2'	72, 84

NGC 2207 (Canis Major)



NGC 2207 and IC 2163 pair are types SAB(rs)bc pec and SB(rs)c pec galaxies respectively. They lie about 89 mly away.

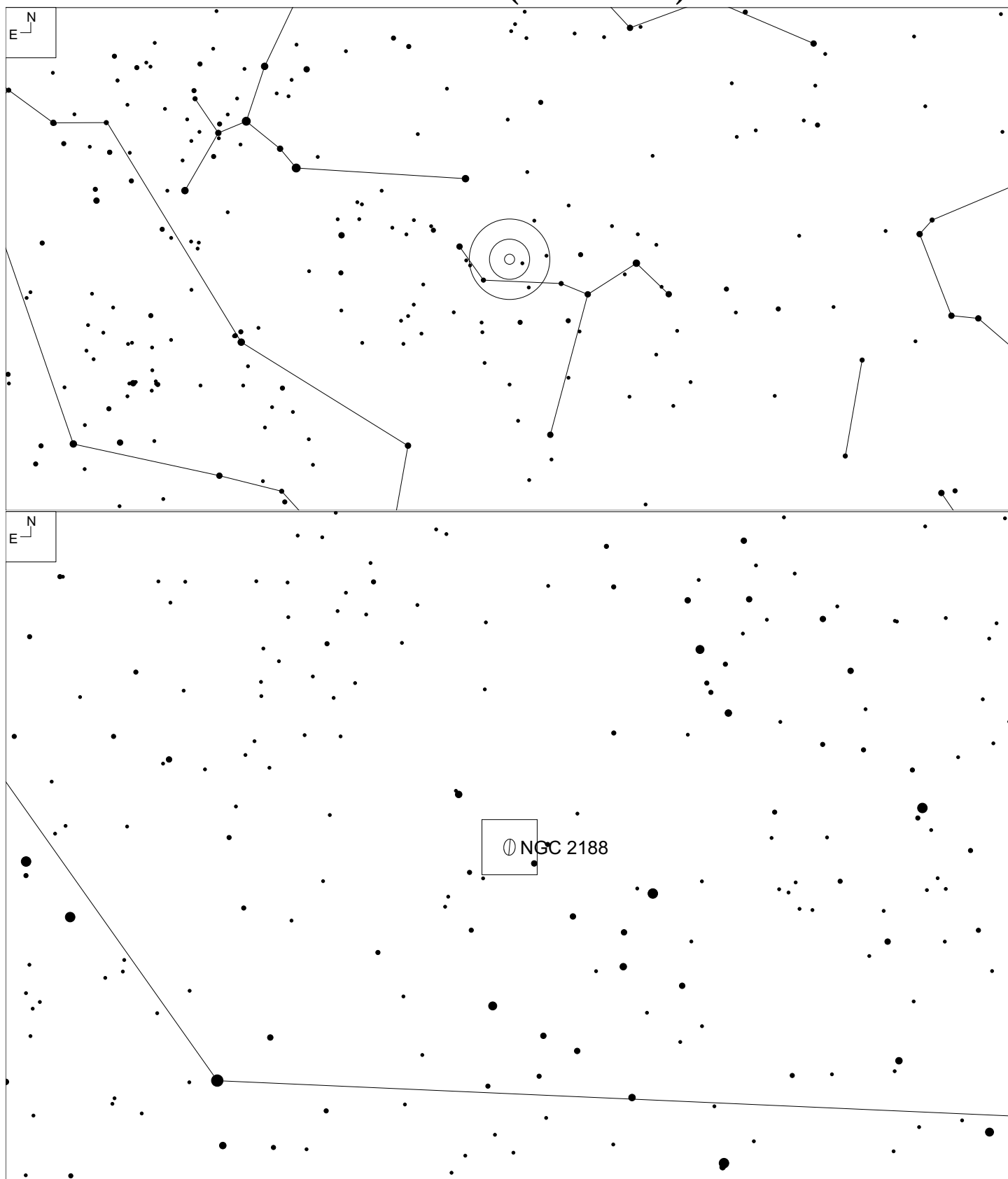
From the DSS image, a number of knots appears observable with a fairly large amateur telescope, however none are labeled in NED, but in SIMBAD. For the [MRL2014] annotations, see S. Mineo, S. Rappaport, A. Levine, et al. "A Comprehensive X-Ray and Multiwavelength Study of the Colliding Galaxy Pair NGC 2207/IC 2163" *The Astrophysical Journal* Volume 797, Number 2 (Dec 2014): 24 pp.

Elmegreen (1995) wrote that there are disturbances as a result of the interaction with nearby IC2163. Both galaxies do not have excess star formation, but there are several large gas clouds. See Elmegreen, Debra Meloy et al, "The Interaction between Spiral Galaxies IC 2163 and NGC 2207. I. Observations," *Astrophysical Journal* Volume 453: 100-138

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 2207](#). Also see Glahn's [sketch](#) with a 14.5".

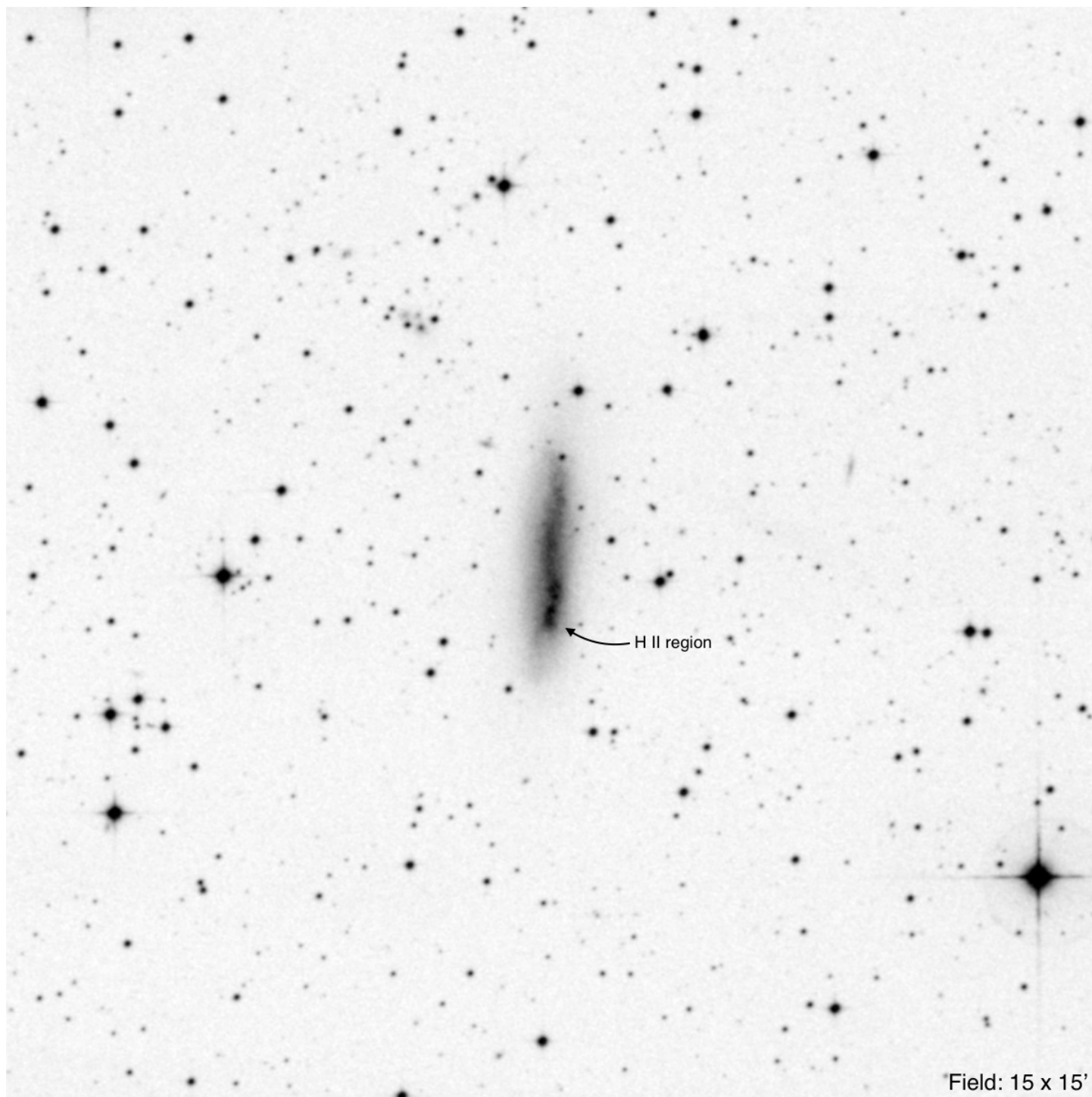
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 308-316.

NGC 2188 (Columba)



Object	RA	Dec	Mag	Size	iSDA
NGC 2188	06 10 09.5	-34 06 22	11.7	4.3 x 1.1'	84, 85, 97

NGC 2188 (Columba)

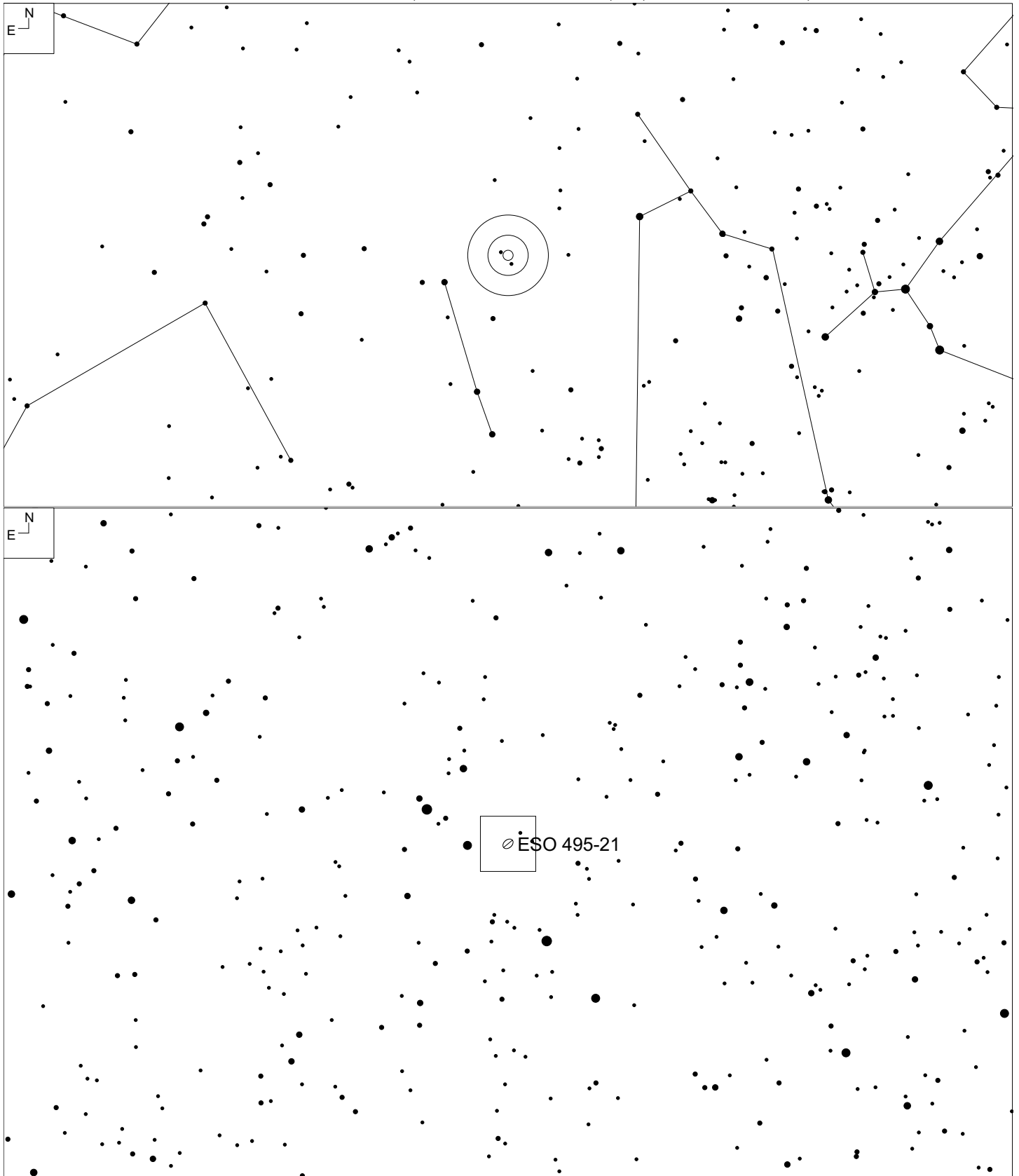


NGC 2188 is a type SB(s)m edge on galaxy and is about 24 mly away and 50 kly long.

The southern tip appears to have two substantial knots. Stasińska noted at least one, see G. Stasińska, et al, "Spectrophotometry of H II regions in irregular galaxies," *Astronomy and Astrophysics*, Volume 154 (Jan 1986): 352-356.

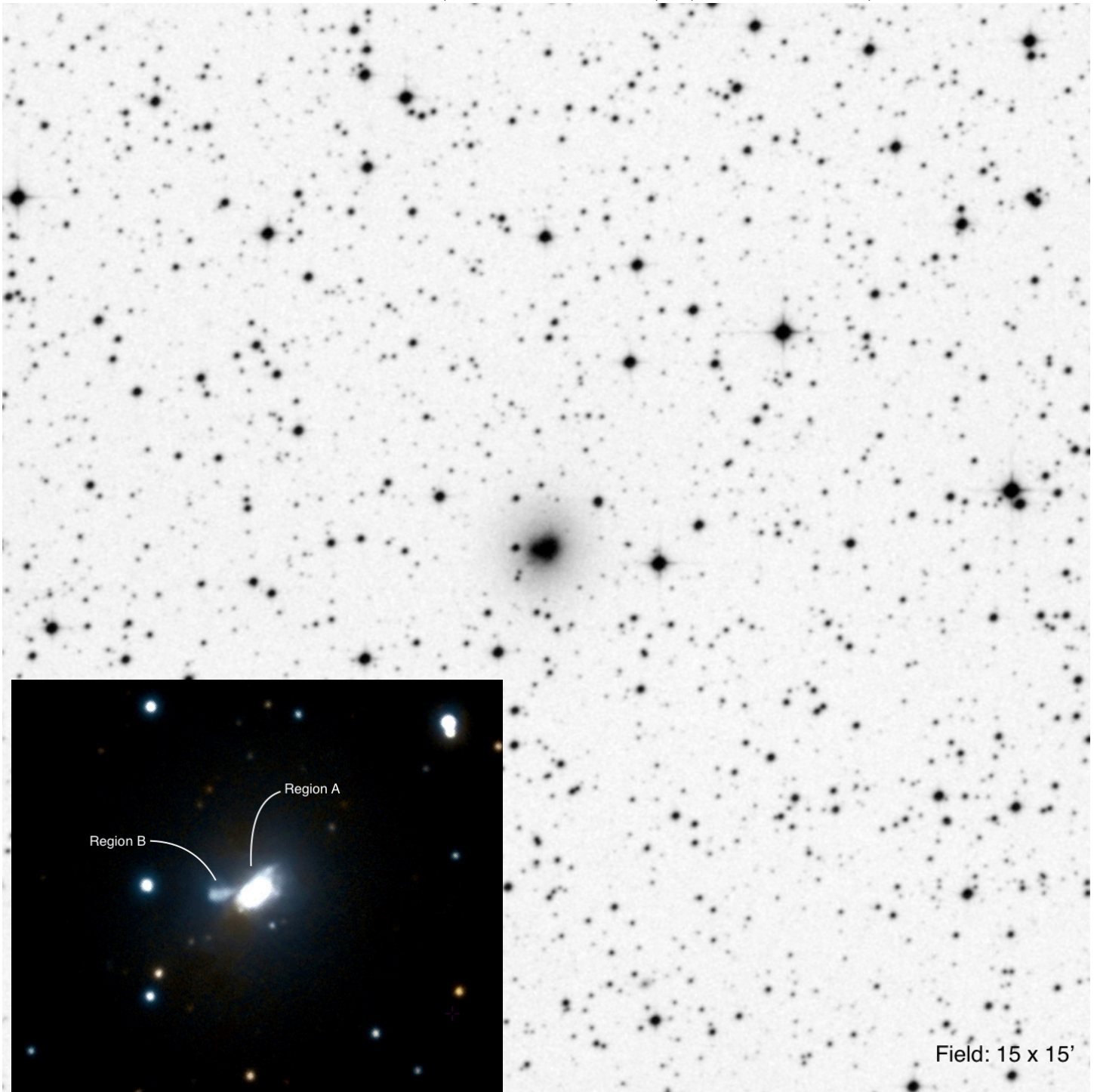
Glahn's [sketch](#) with a 20" from an observing site in La Palma. He picked up two brighter knots on the southern tip.

Henize 2-10 (ESO 495-21) (Eridanus)



Object	RA	Dec	Mag	Size	iSDA
He 2-10 (ESO 495-21)	08 36 15.1	-26 24 34	11.1	1.8'	83

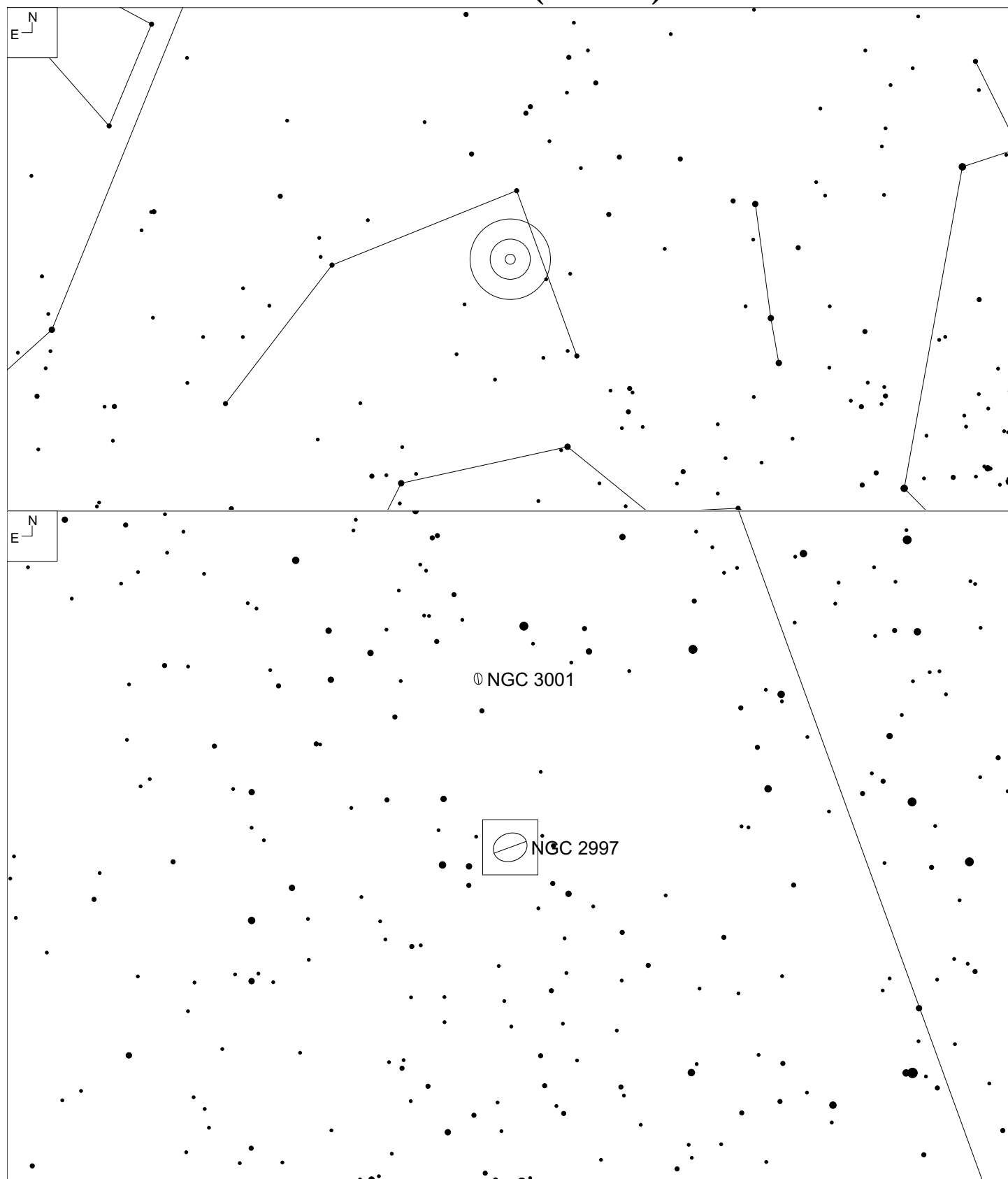
Henize 2-10 (ESO 495-21) (Eridanus)



Henize 2-10 is a small galaxy that sits at 30 mly away and just 3,000 light years across. That is a really small galaxy with a huge rate of star formation.

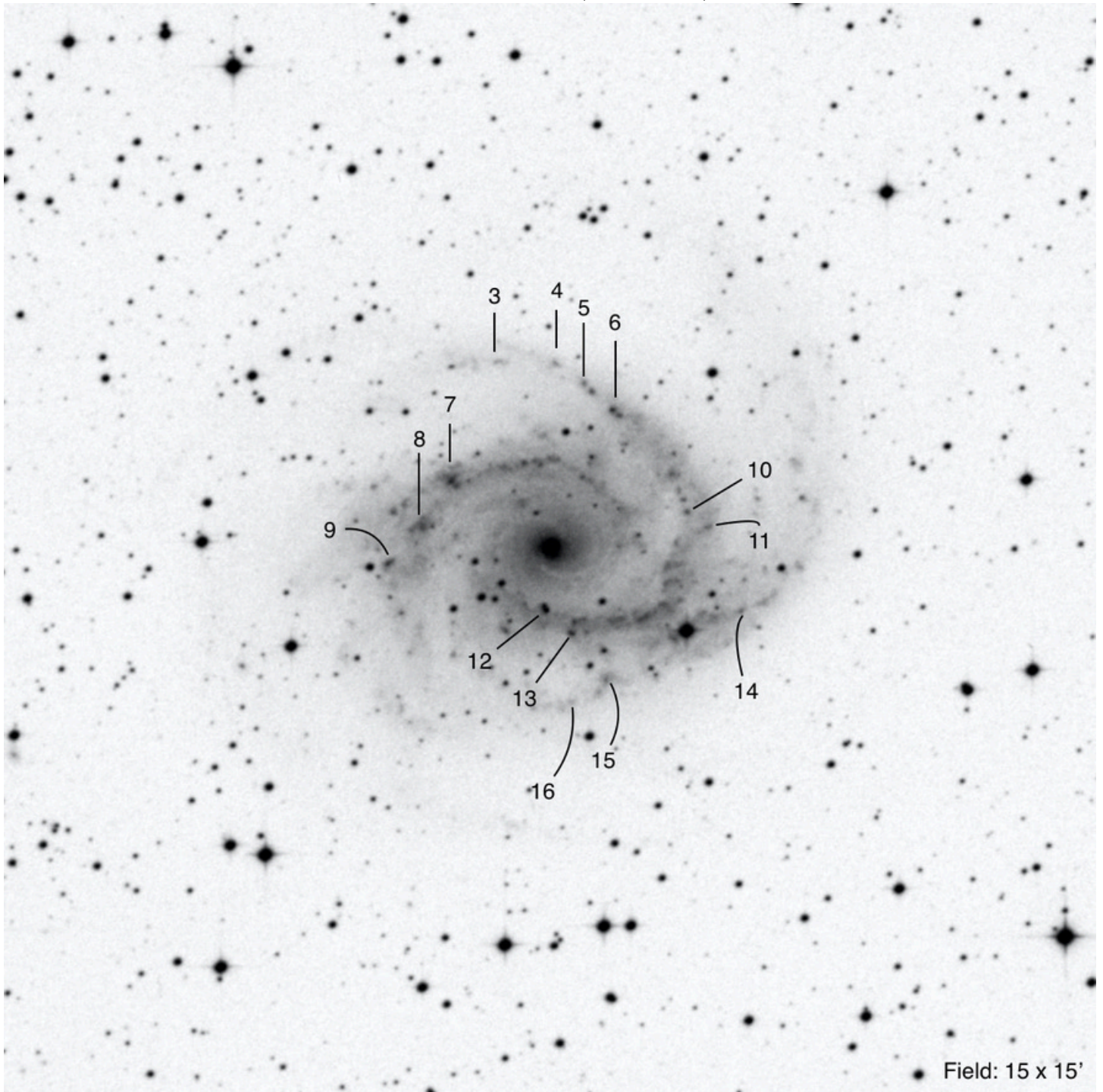
Inset from PanSTARRS and slightly enhanced to remove the glare from the photo. Two regions annotated. See Scott Harrington, “Celestia Obscura: Henize 2-10,” *Deep Sky Observer*, Issue 192 (Autumn 2023): 3-7

NGC 2997 (Antlia)



Object	RA	Dec	Mag	Size	iSDA
NGC 2997	09 45 38.8	-31 11 27	9.4v	9.2 x 7.4'	82,83

NGC 2997 (Antlia)



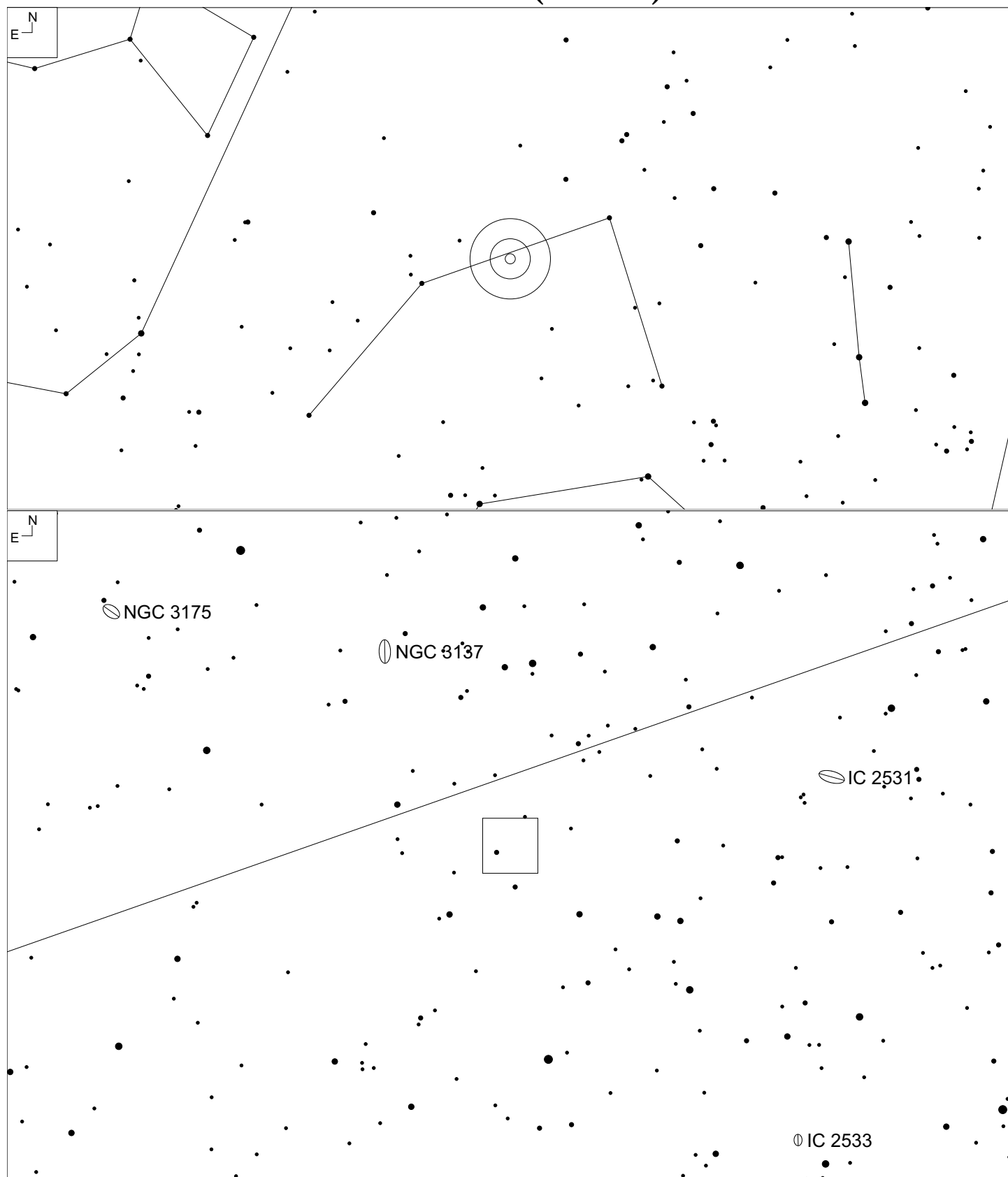
NGC 2997 is a type SAB(rs)c grand design spiral galaxy sitting 39 mly distant and 100 kly in diameter.

Annotations from F. Bresolin, et al, "A VLT Study of metal-rich extragalactic H II regions," *Astronomy & Astrophysics*, Volume 441, Number 3 (Oct 2005): 981-997.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 2997](#). Glahn [sketched](#) this object with a 12" and picked up H II region #7.

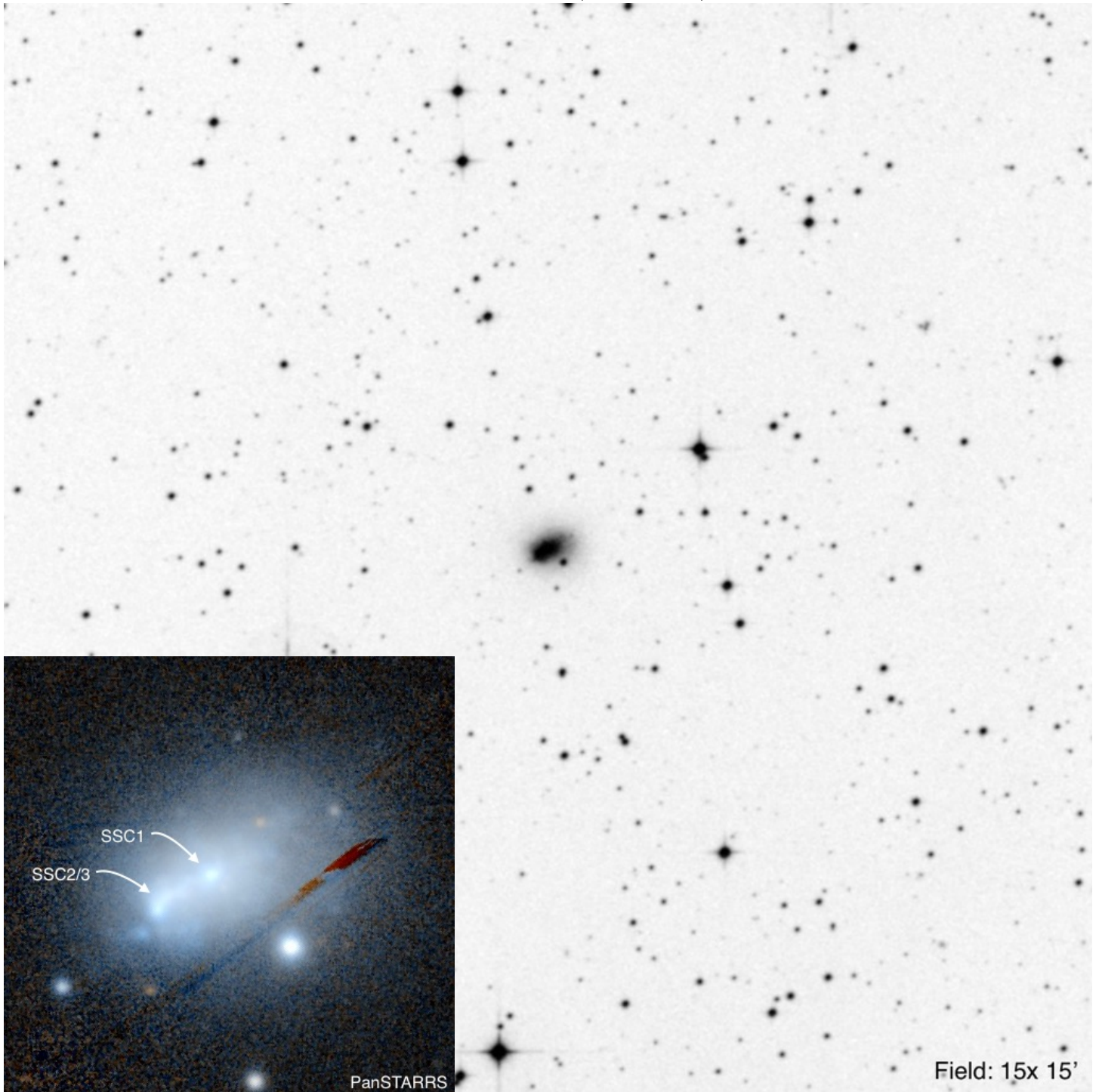
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 1.: Andromeda, Antlia, Apus, Aquarius* (Richmond, VA: Willmann-Bell, Inc., 2015), 221-223.

NGC 3125 (Antlia)



Object	RA	Dec	Mag	Size	iSDA
NGC 3125	10 06 33.1	-29 56 08	13.0	1.1 x 0.7'	82, 83

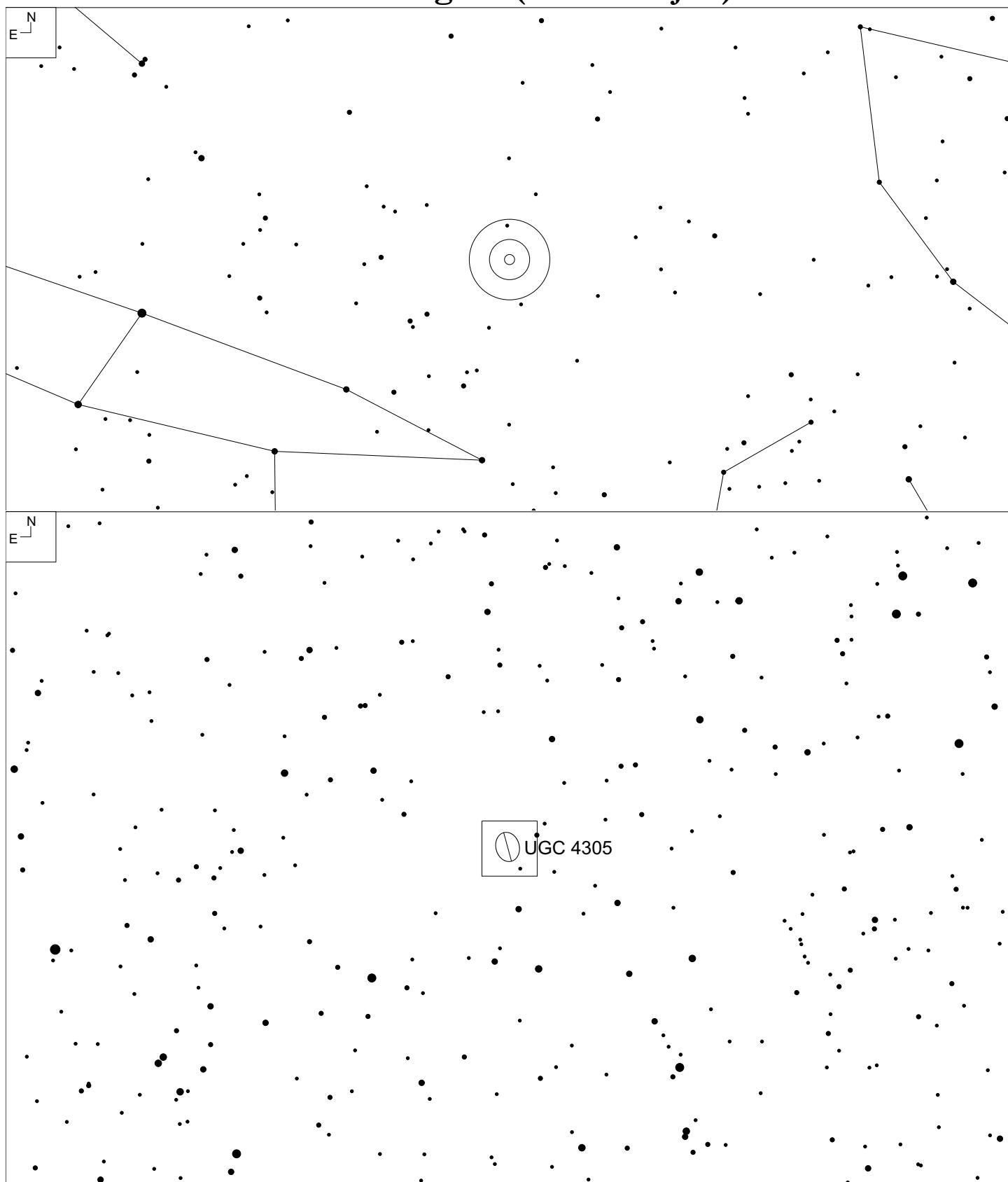
NGC 3125 (Antlia)



NGC 3125 is a large starburst galaxy with a ton of star formation. It sits 50 mly away.

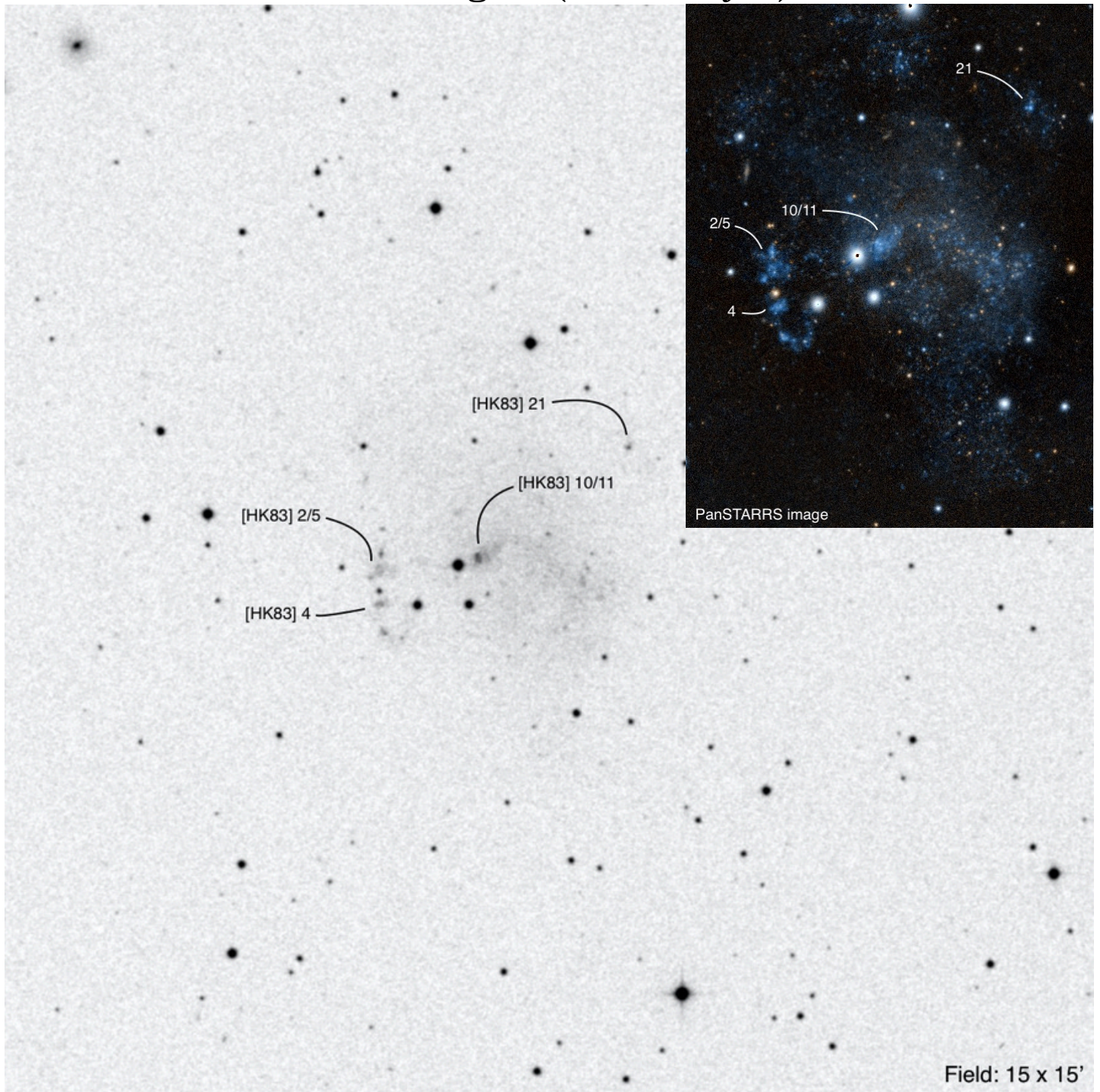
Three SSCs were detected and annotated as SSC1-3 in the PanSTARRS image inset. SSC2 and 3 are literally only 0.2" apart, so they will appear as one knot even at high powers. See Ian R. Stevens, et al, "Radio observations of super star clusters in dwarf starburst galaxies," *Monthly Notice of the Royal Astronomical Society*, Volume 335, Issue 4 (Oct 2002): 1079-1084.

Holmberg II (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
Ho II	08 19 01.2	+70 43 19	11.4	7.9 x 6.3'	5, 6

Holmberg II (Ursa Major)



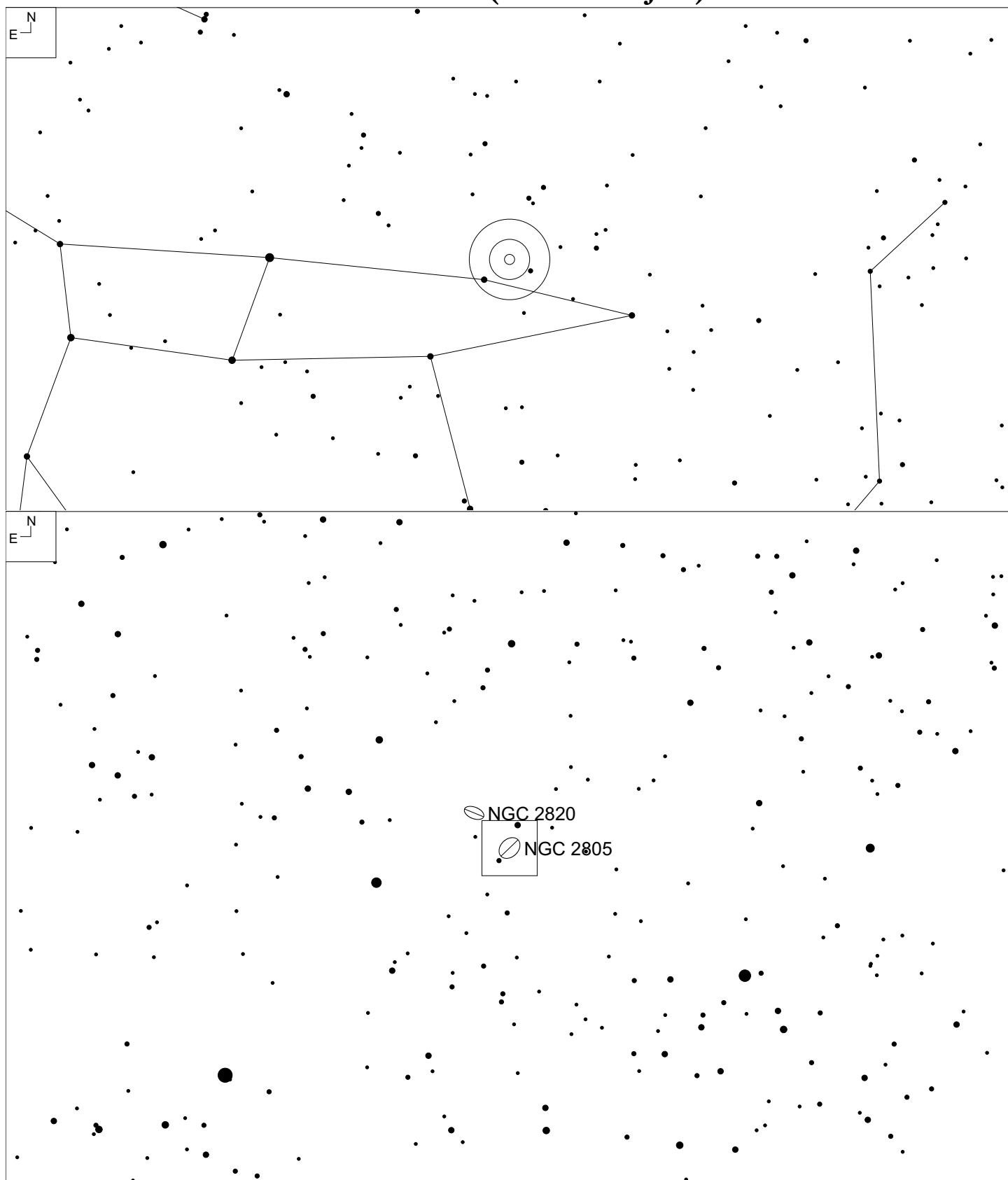
Holmberg II is a type Im dwarf irregular galaxy that sits just outside Local Group at a distance of 11 mly away. This galaxy contains a rich assortment of H II regions for the size.

Paul Hodge, Nicolas V. Strobel, and Robert C. Kennicutt, “The H II Regions of Holmberg II,” *Publications of the Astronomical Society of the Pacific*, Volume 106 (Mar 1994): 309.

Also see Steve Gottlieb. “Celestial Fireworks” *Sky & Telescope* (Mar 2013) for an excellent observing article showcasing what is visible in an 18” reflector. Gottlieb noted HSK 45, which is the same as [HK83] 10/11 above.

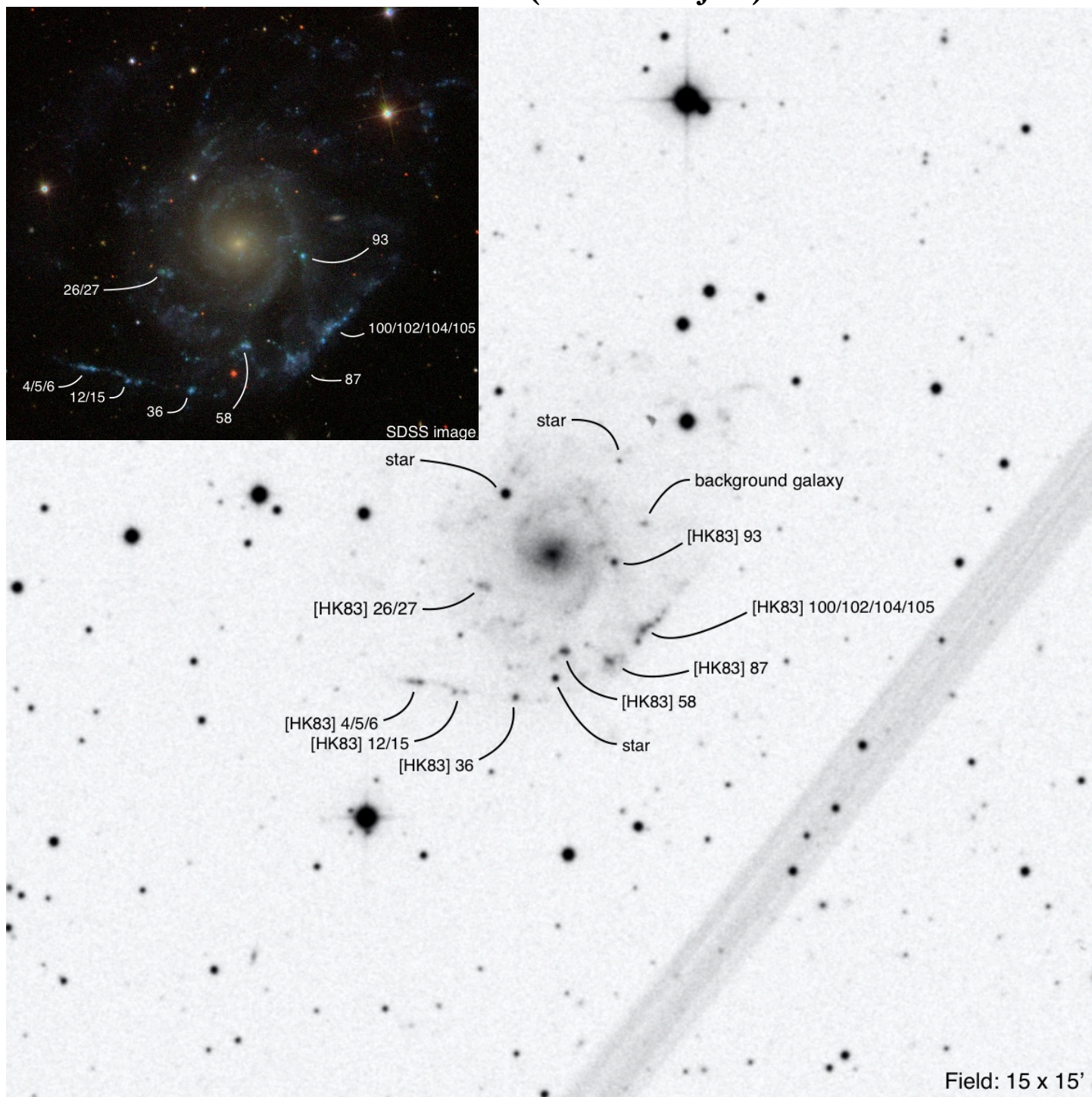
Glahn’s [sketch](#) with a 16” reflector.

NGC 2805 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 2805	09 20 17.9	+64 06 21	11.9	1.8 x 1.5'	12, 13

NGC 2805 (Ursa Major)



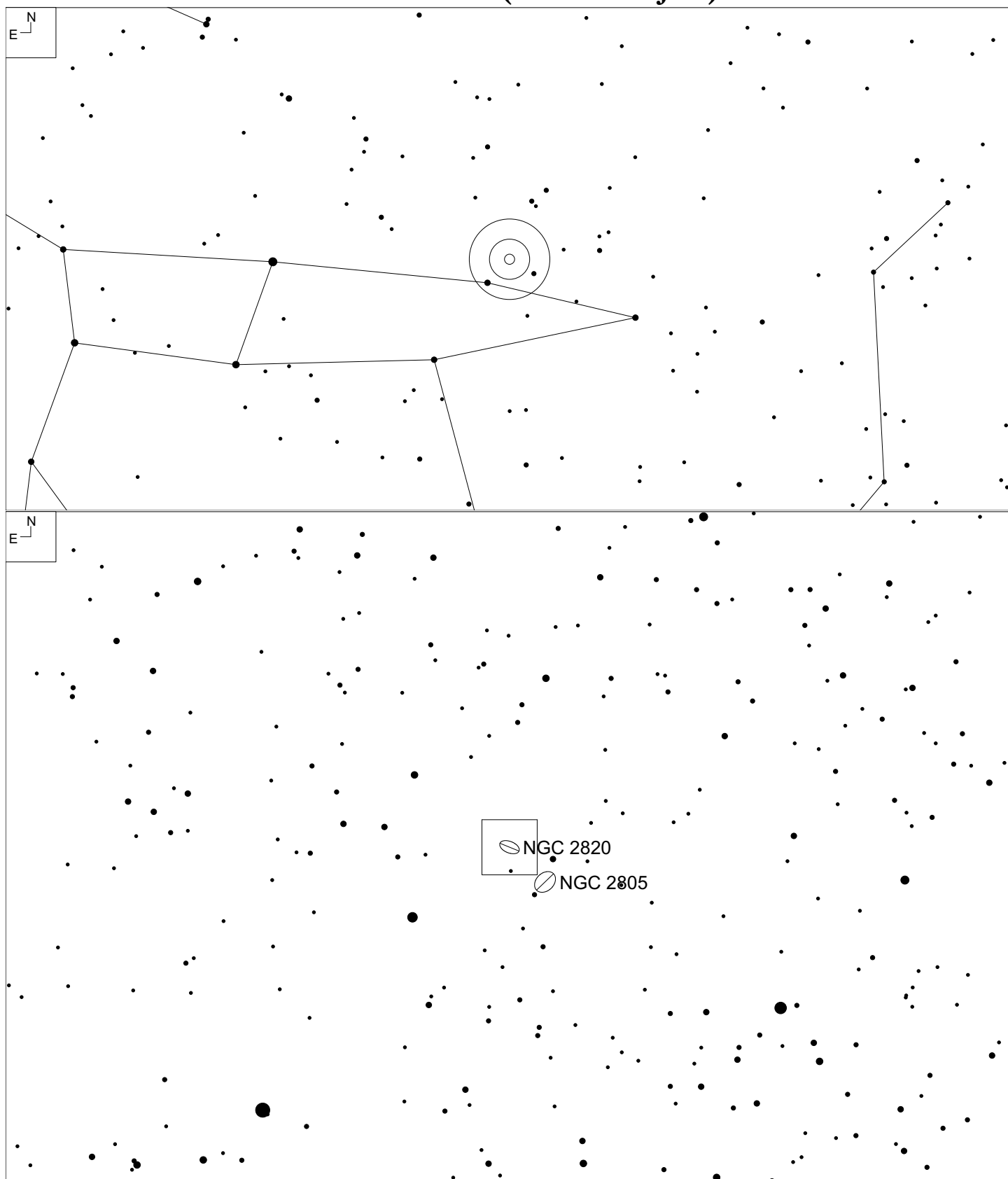
NGC 2805 is a type SAB(rs)d galaxy sitting about 80 mly away towards Ursa Major.

Bosma (1980) investigated the possibility that the late-type spiral galaxy, NGC 2805, may have a warped outer layer. Bosma also noted asymmetry of H II regions, which is evident in the outer arm to the SE to the SW have a significantly higher percentage of observable H II regions.¹²

There is an odd feature, the south arm has a stark edge and anything past the H II regions is nothing. The SDS and PanSTARRS image confirms that. See inset.

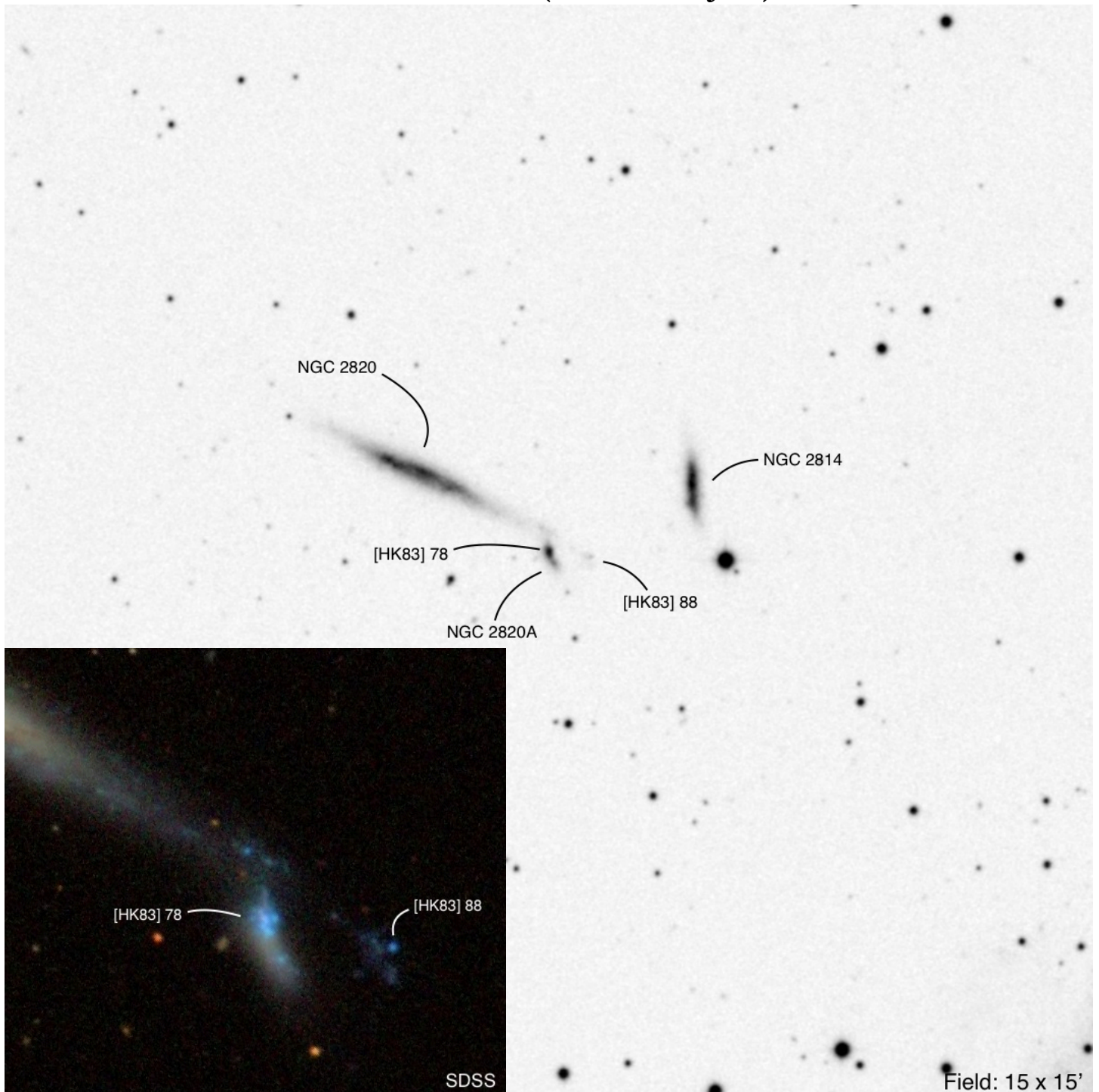
¹² A. Bosma, et al, "The group of galaxies NGC 2805-2814-2820 - MRK 108," *Astronomy and Astrophysics*, Volume 89 (Sept 1980): 345-352
Extragalactic Objects v1.0

NGC 2820A (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 2820A	09 21 30.1	+64 14 20	15.0v	0.8 x 0.4'	12, 13

NGC 2820A (Ursa Major)

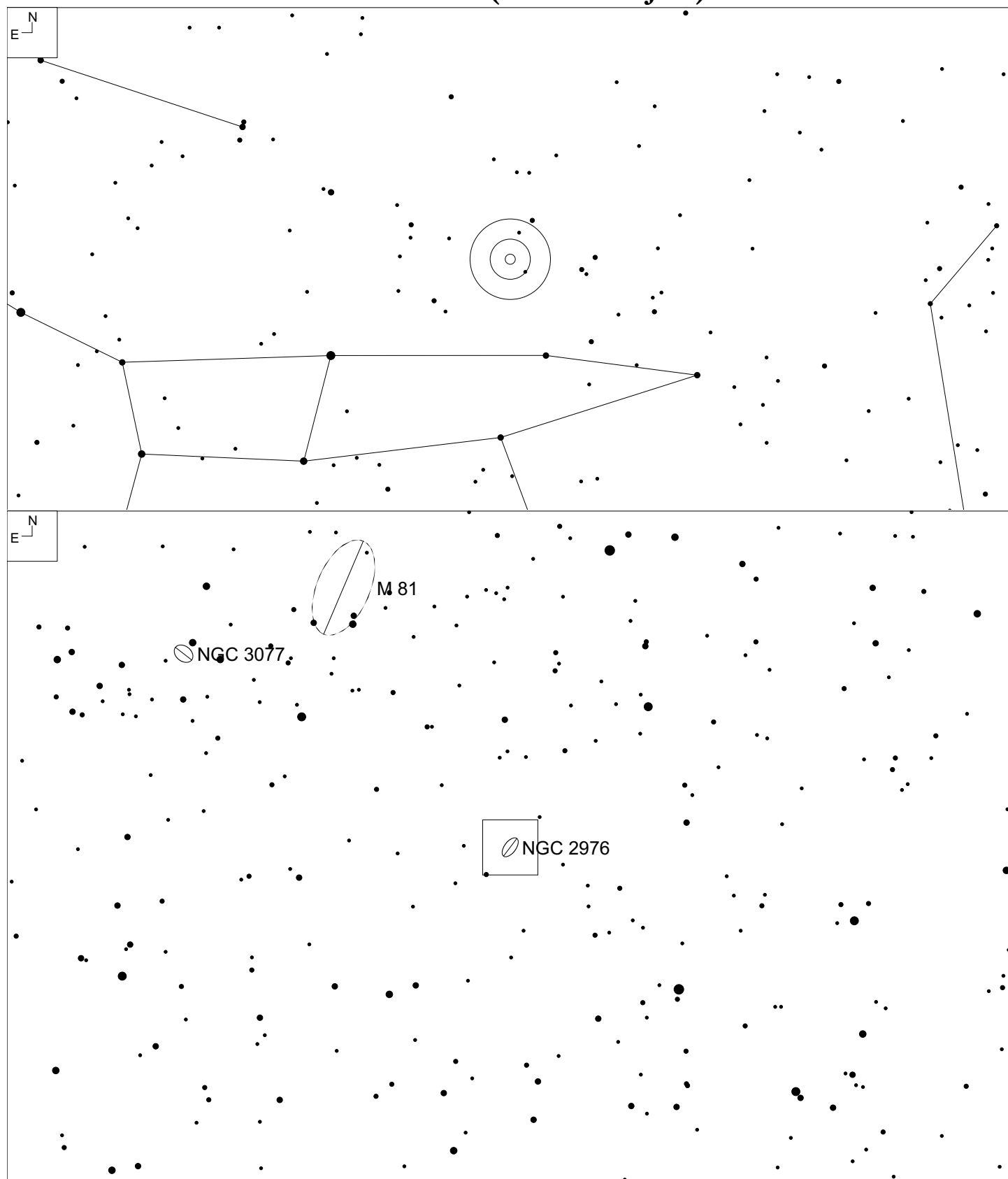


NGC 2820A is about 90 mly away with an H II region brighter than the galaxy itself.

Here you can spot a bright H II region, **[HK83] 78**, which is brighter than the host galaxy itself. It sits just north of the center of NGC 2820A. See SDSS inset showing the detail.

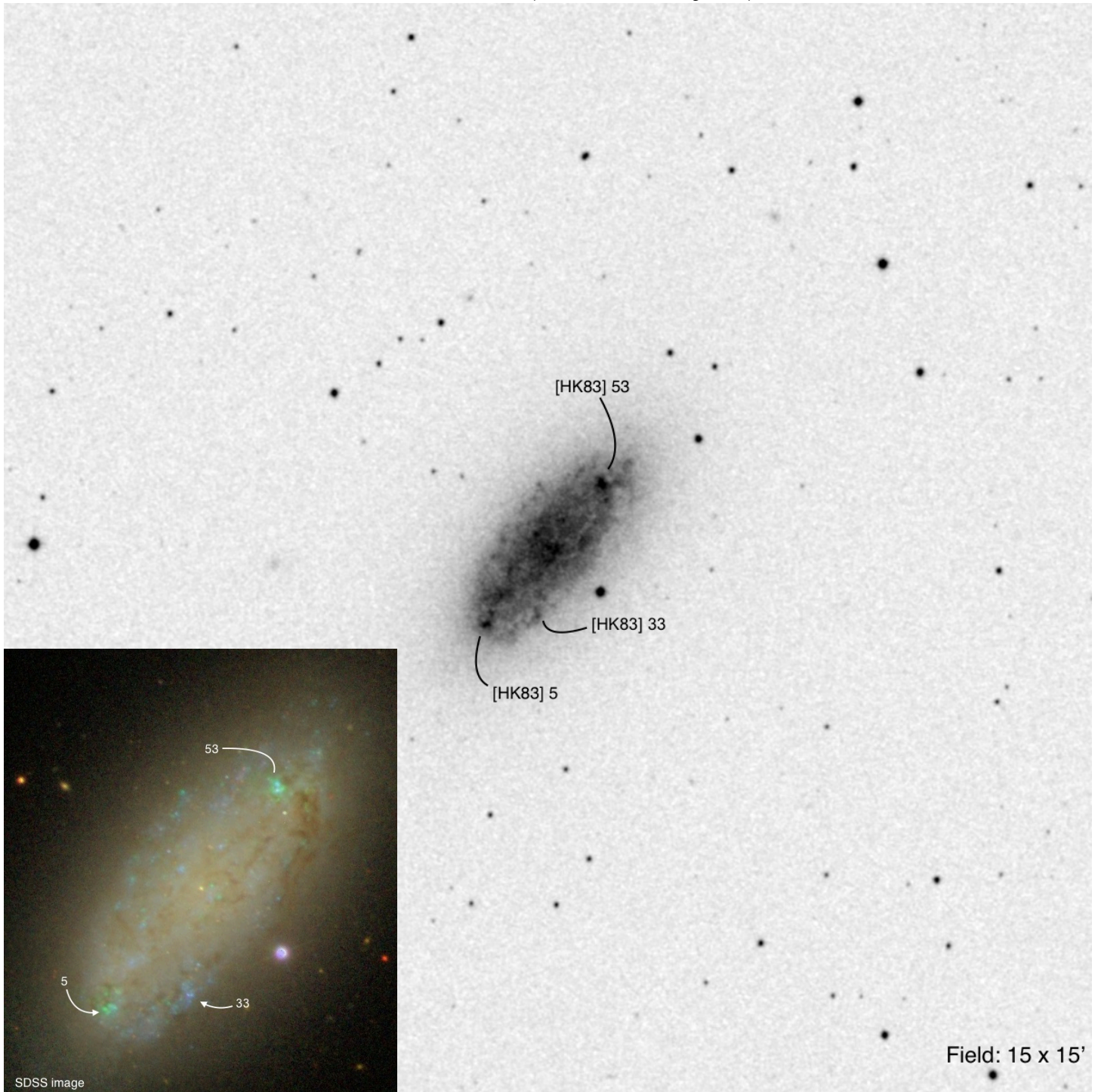
Glahn [observed](#) the NGC 2820 group, which includes this object with his 16" reflector.

NGC 2976 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 2976	09 47 12.8	+67 55 12	10.2	6.0 x 2.2'	5, 12

NGC 2976 (Ursa Major)

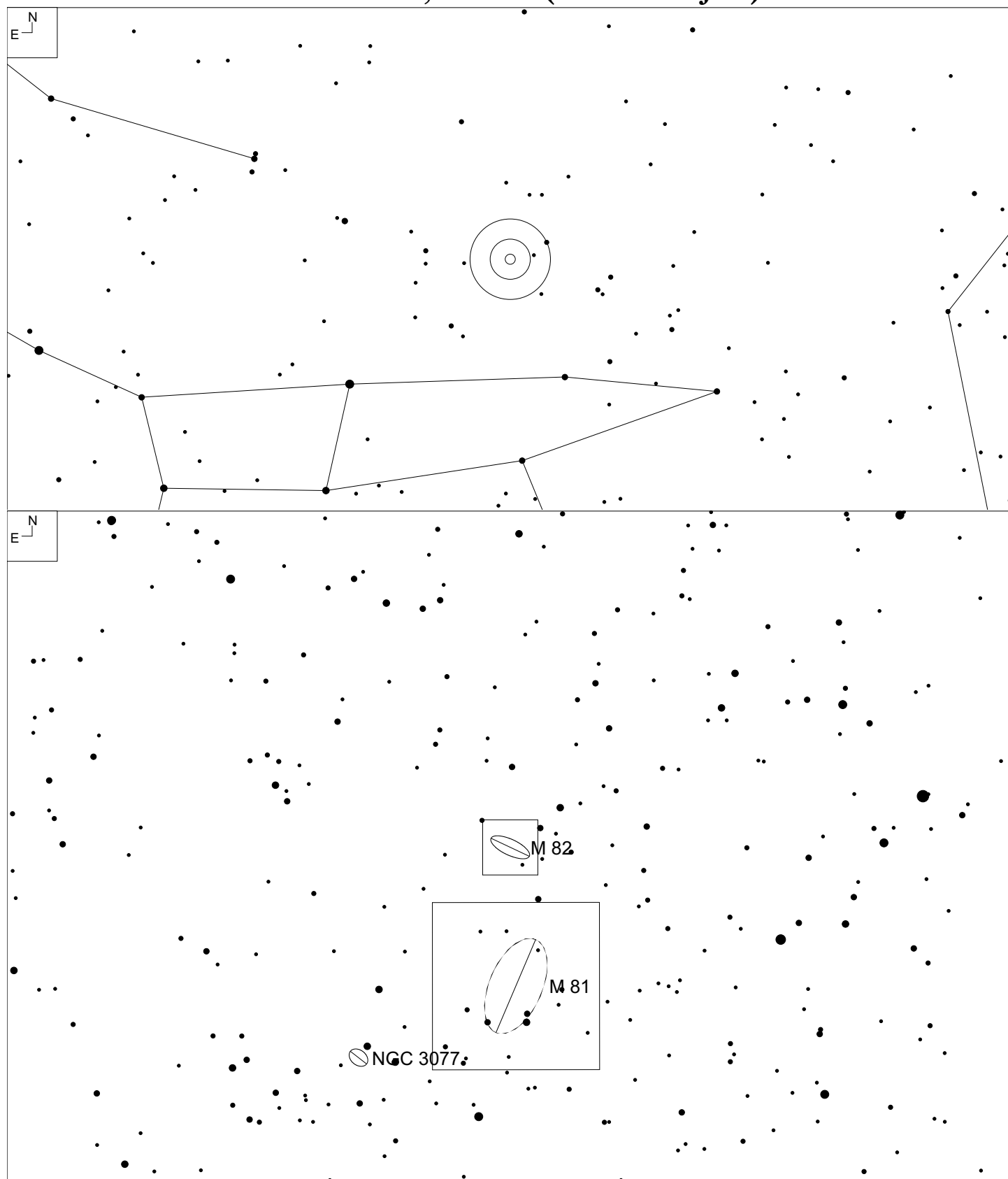


NGC 2976 is a type SAc pec small peculiar spiral galaxy that is 11.6 mly away.

Bronkalla (1992) in his article created a list of 39 bright knots. Two of the brightest were BK 5 ([HK83]58) and BK 38 ([HK83] 5). See W. Bronkalla, et al, "Stellar populations and dust in the galaxy NGC 2976, a low-luminosity member of the M 81 group," *Astronomische Nachrichten* Volume 313 (Jan 1992), 5-6

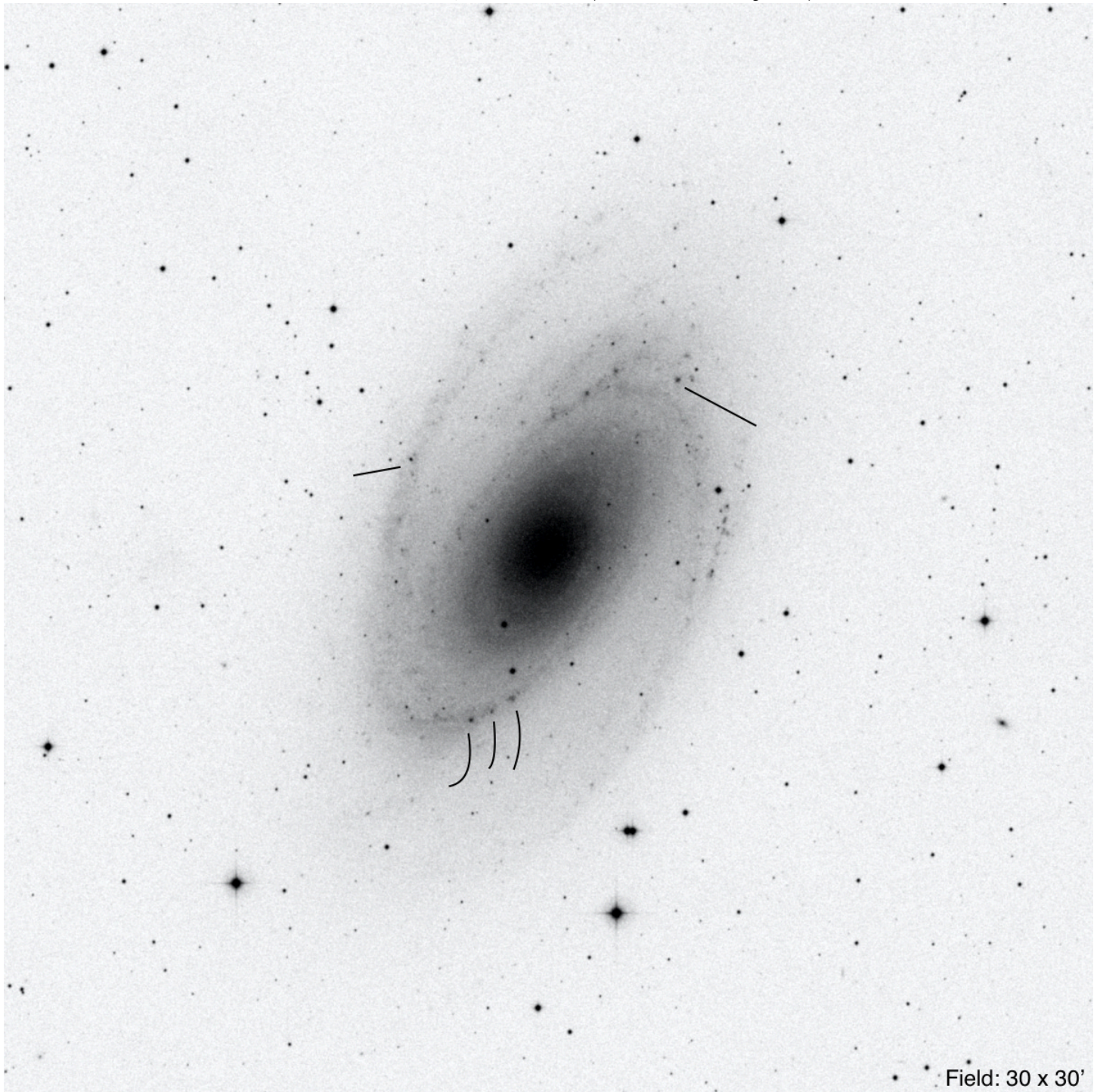
Uwe Glahn's [sketch](#) with a 16" reflector picked up a couple H II regions, specifically [HK83] 5 and 33.

NGC 3031, M 81 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3031 (M 81)	09 55 30.5	+69 04 09	6.9	26.9 x 14.1'	5, 12

NGC 3031, M 81 (Ursa Major)



M 81 is a type SA(s)ab late type spiral sitting 11.8 mly away and about 92 kly in diameter. It is often called Bode's Galaxy and forms a striking pair with M 82.

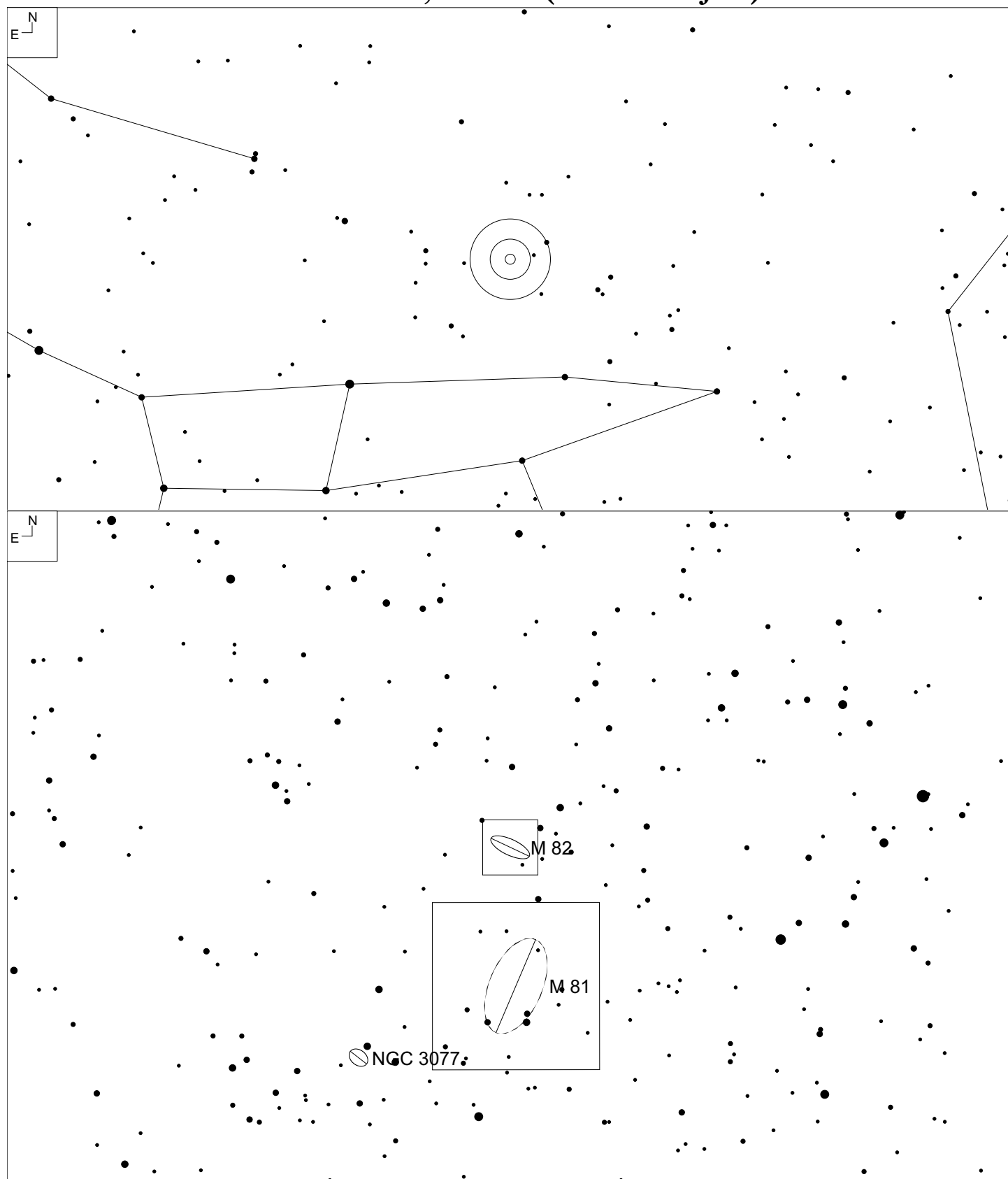
See H. Petit, et al, "Optical HII Regions in M81," *Astronomy & Astrophysics Supplement Series*, Volume 74 (1988): 475-484 for more about H II regions.

For star cluster candidates, see Julie B. Nantais, John P. Huchra, Brian McLeod, Jay Strader, Jean P. Brodie, "Star Cluster Candidates in M81," *The Astronomical Journal*, Volume 139, Issue 4 (Apr 2010), pp. 1413-1425.

I intentionally did not label the extragalactic region as Banich's article contains the observable ones in his article and website.

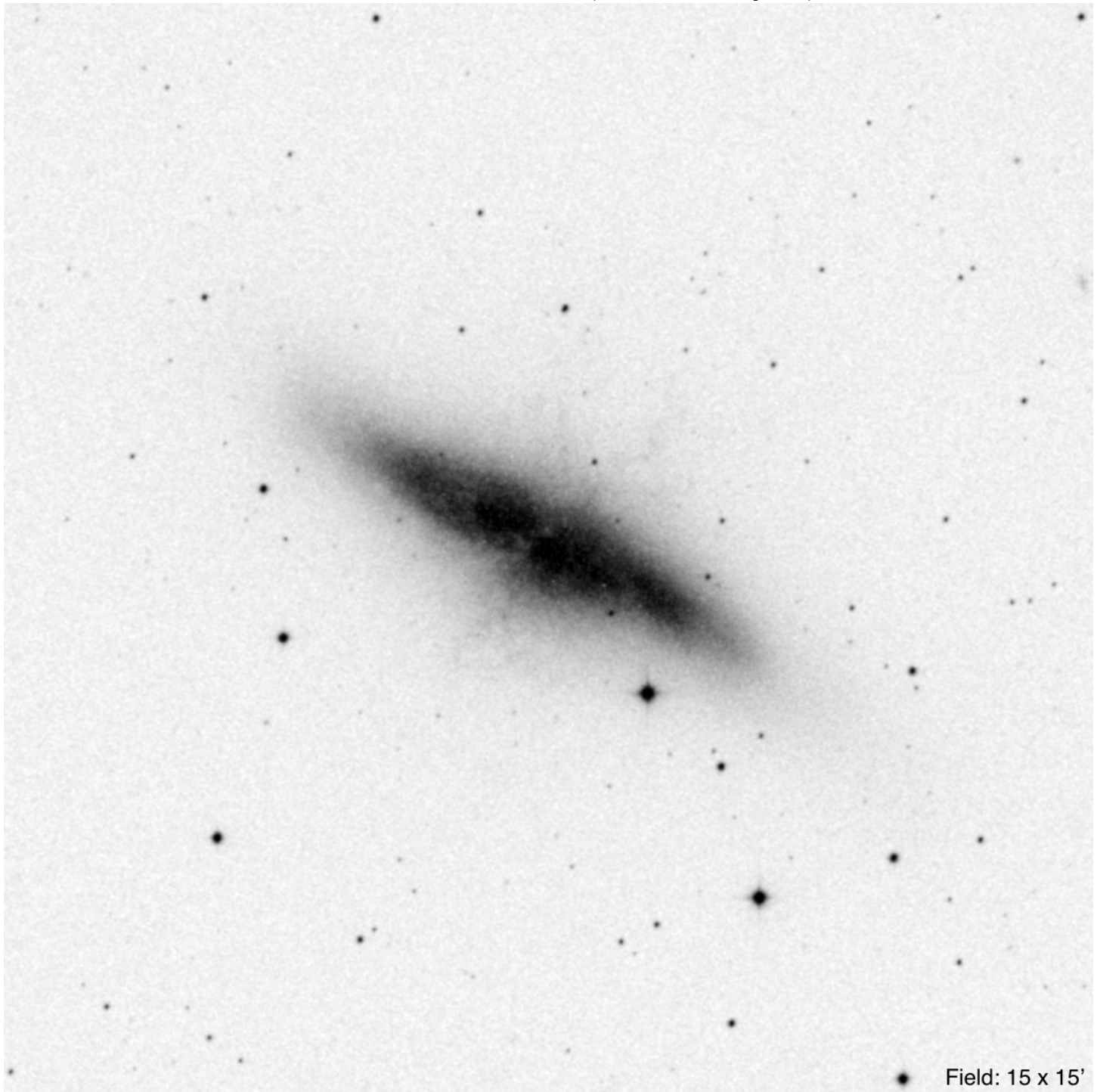
For an excellent observing article, see Howard Banich. "Two Cool Galaxies – the Incomparable M81 and M82" *Sky & Telescope* (May 2016), 18-23. Also see his website (scroll to M81 and M82), [Banich Notes](#). Also see Uwe Glahn's [sketch](#) with a 16" reflector.

NGC 3034, M 82 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3034 (M 82)	09 55 52.4	+69 40 47	8.4v	11.3 x 4.2'	5

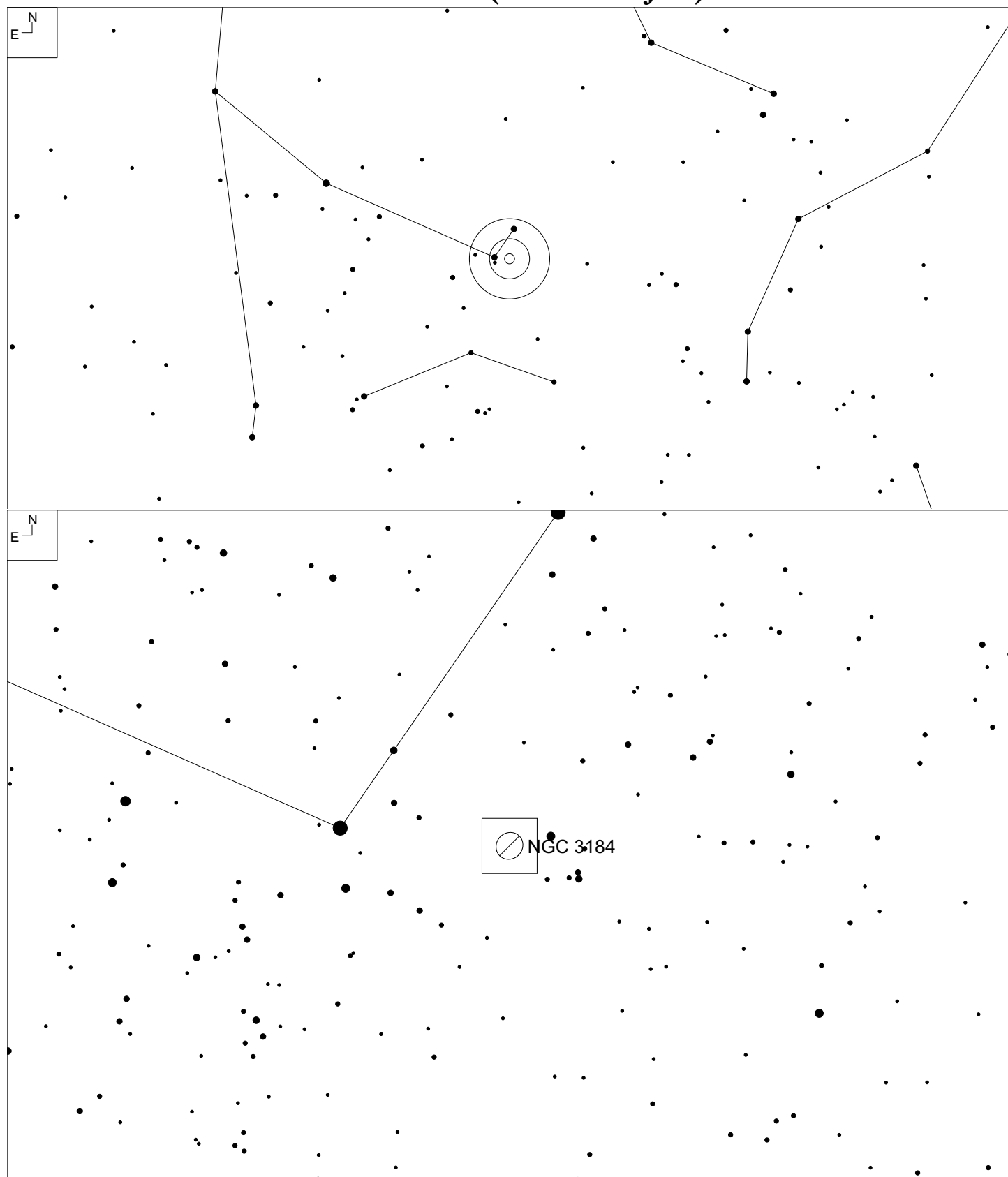
NGC 3034, M 82 (Ursa Major)



M 82 is a type I0 irregular starburst galaxy with an explosive center. It is about 12 mly away and part of the M81/M82 group. The diameter is about 50 kly.

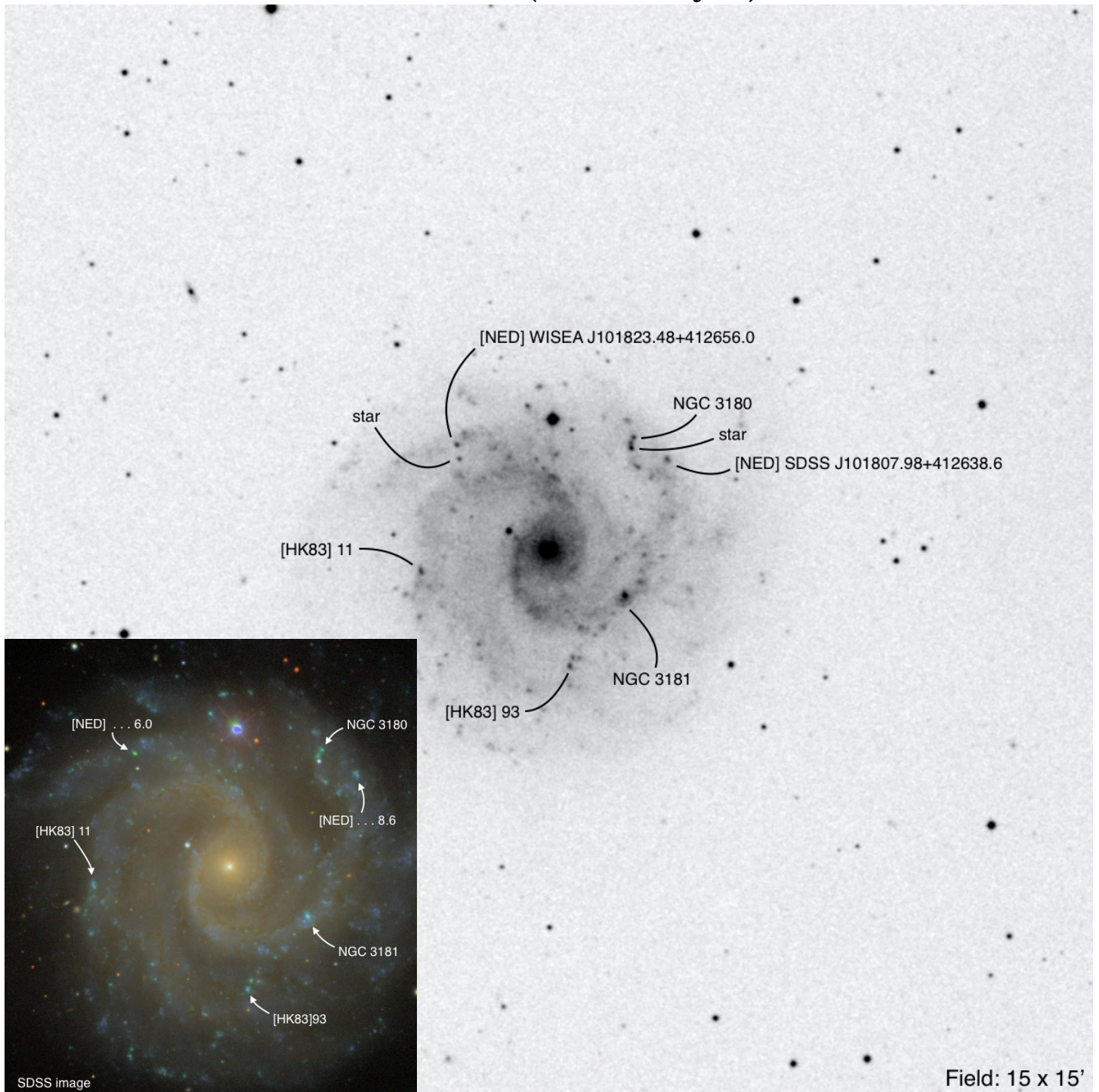
I intentionally did not label the extragalactic regions as Banich's article contains the observable ones in his article and website. For an observing article, see Howard Banich. "Two Cool Galaxies – the Incomparable M81 and M82" *Sky & Telescope* (May 2016), 18-23. Also see his website (scroll to M81 and M82), [Banich Notes](#). Uwe Glahn's [sketch](#) shows numerous knots in the center area.

NGC 3184 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3184 (3180?)	10 18 17.0	+41 25 28	12.7	6.7 x 5.8'	22, 23

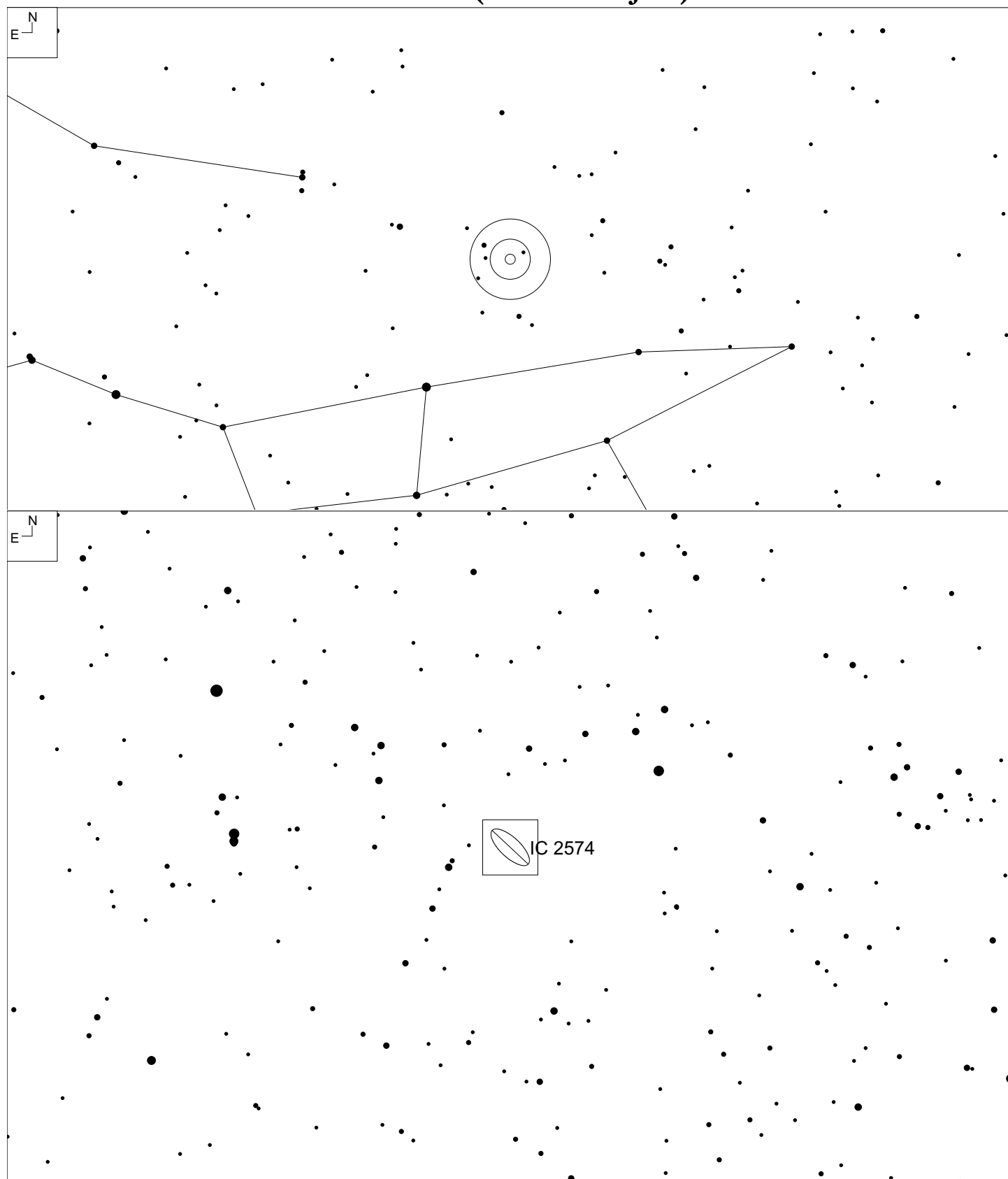
NGC 3184 (Ursa Major)



NGC 3184 is a type SA(s)b spiral galaxy sitting 30 mly away from us and 65 kly across. The popular name given to it is the Little Pinwheel Galaxy.

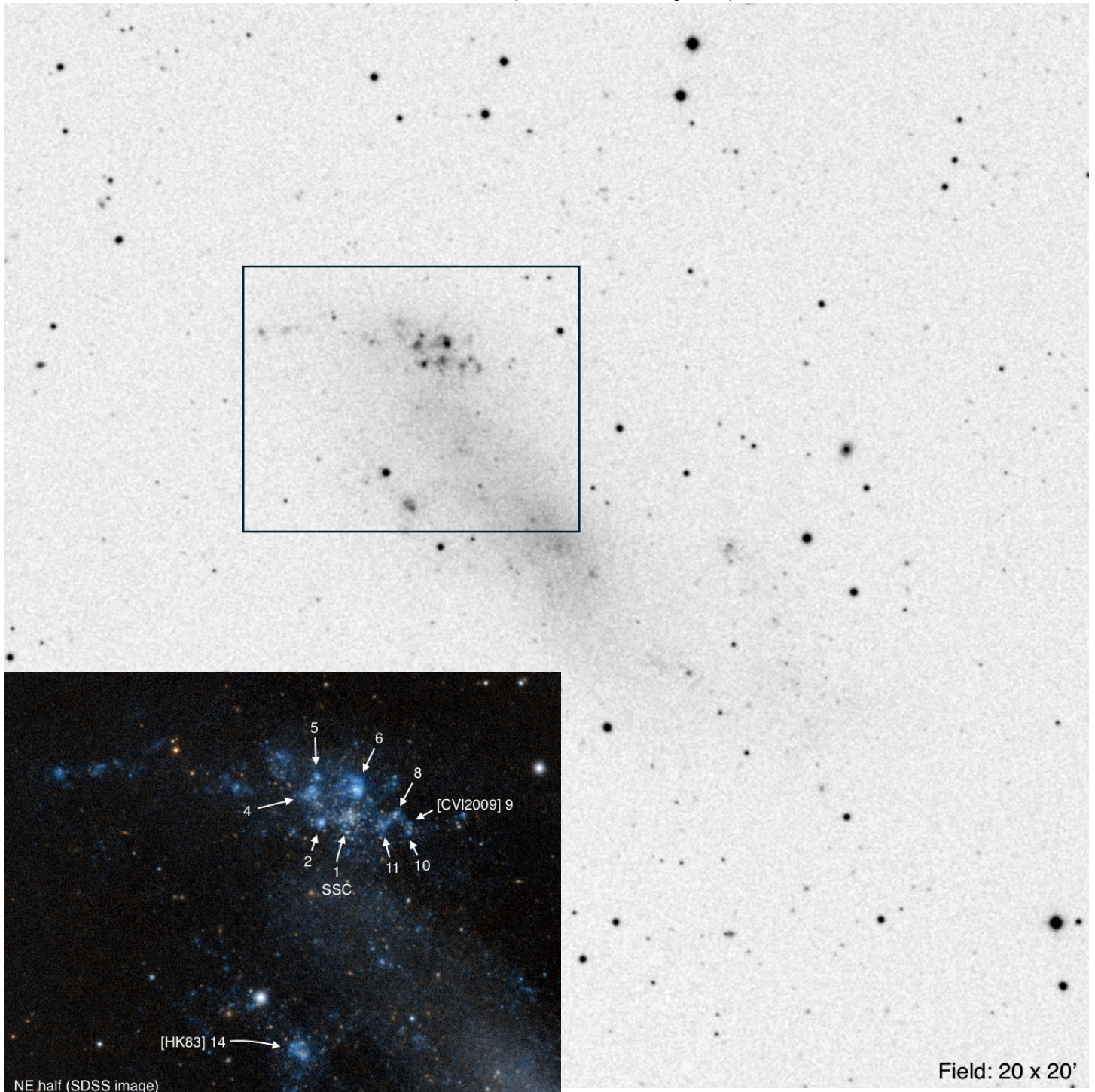
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3184](#). Also see Glahn's [sketch](#) with his 16" reflector where he saw NGC 3181.

IC 2574 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
IC 2574	10 28 21.2	+68 24 59	10.4	13.2 x 5.4'	5, 12

IC 2574 (Ursa Major)



IC 2574 is a type SABm dwarf spiral galaxy sitting about 12.5 mly away and 48 kly across. It is often called Coddington's Nebula. Part of the M 81 galaxy group.

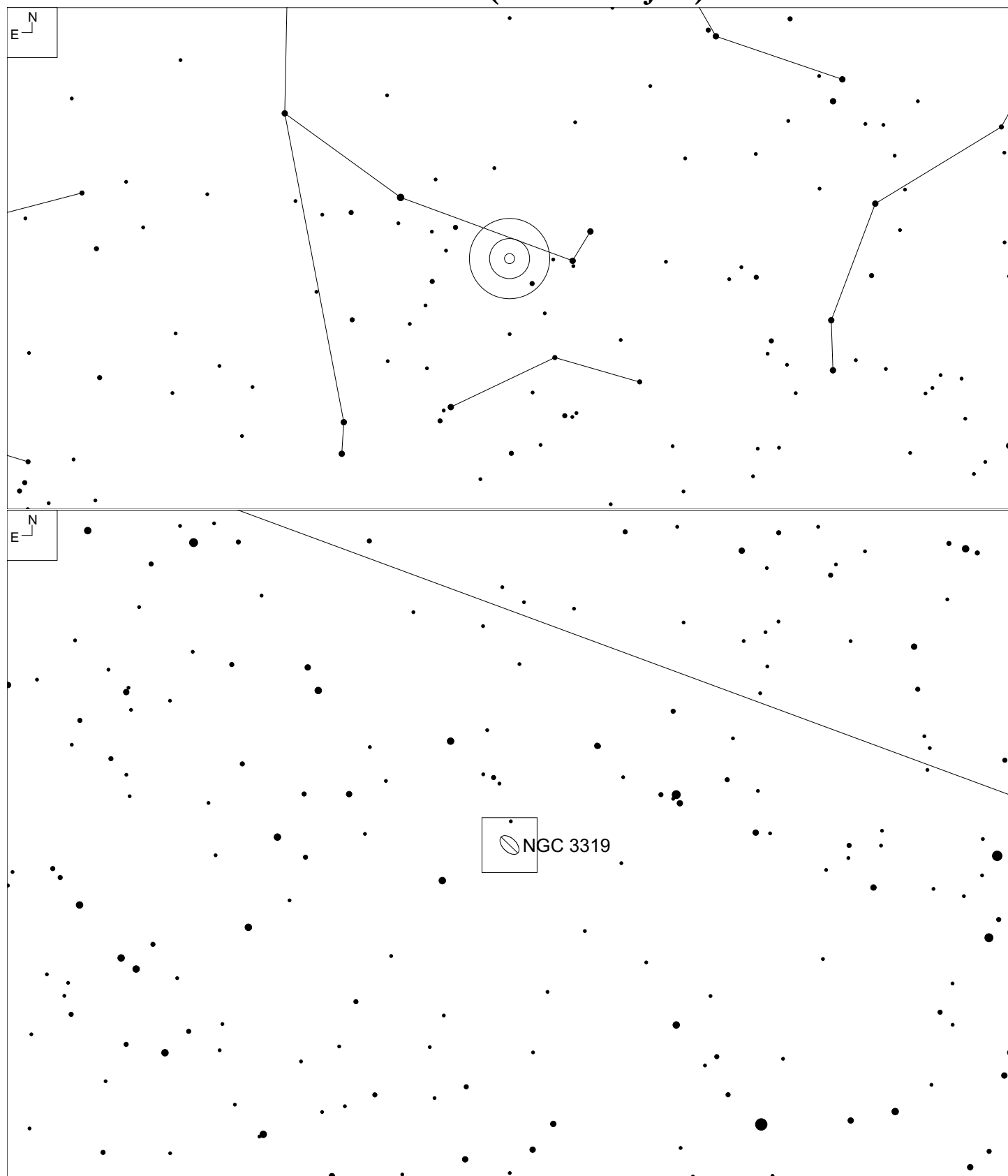
[CVL2009] annotations from Kevin V. Croxall and Liese van Zee, "Chemical Abundances of Seven Irregular and Three Tidal Dwarf Galaxies in the M81 Group," *Astrophysical Journal*, Volume 705 (2009): 723-738

Numerical annotations from O. V. Egorov, et al "The supergiant shell with triggered star formation in the dwarf irregular galaxy IC 2574: neutral and ionized gas kinematics," *Monthly Notices of the Royal Astronomical Society*, Volume 444, Issue 1 (Oct 2014): 376-391.

See SDSS image inset showing detail of the NW half of the galaxy.

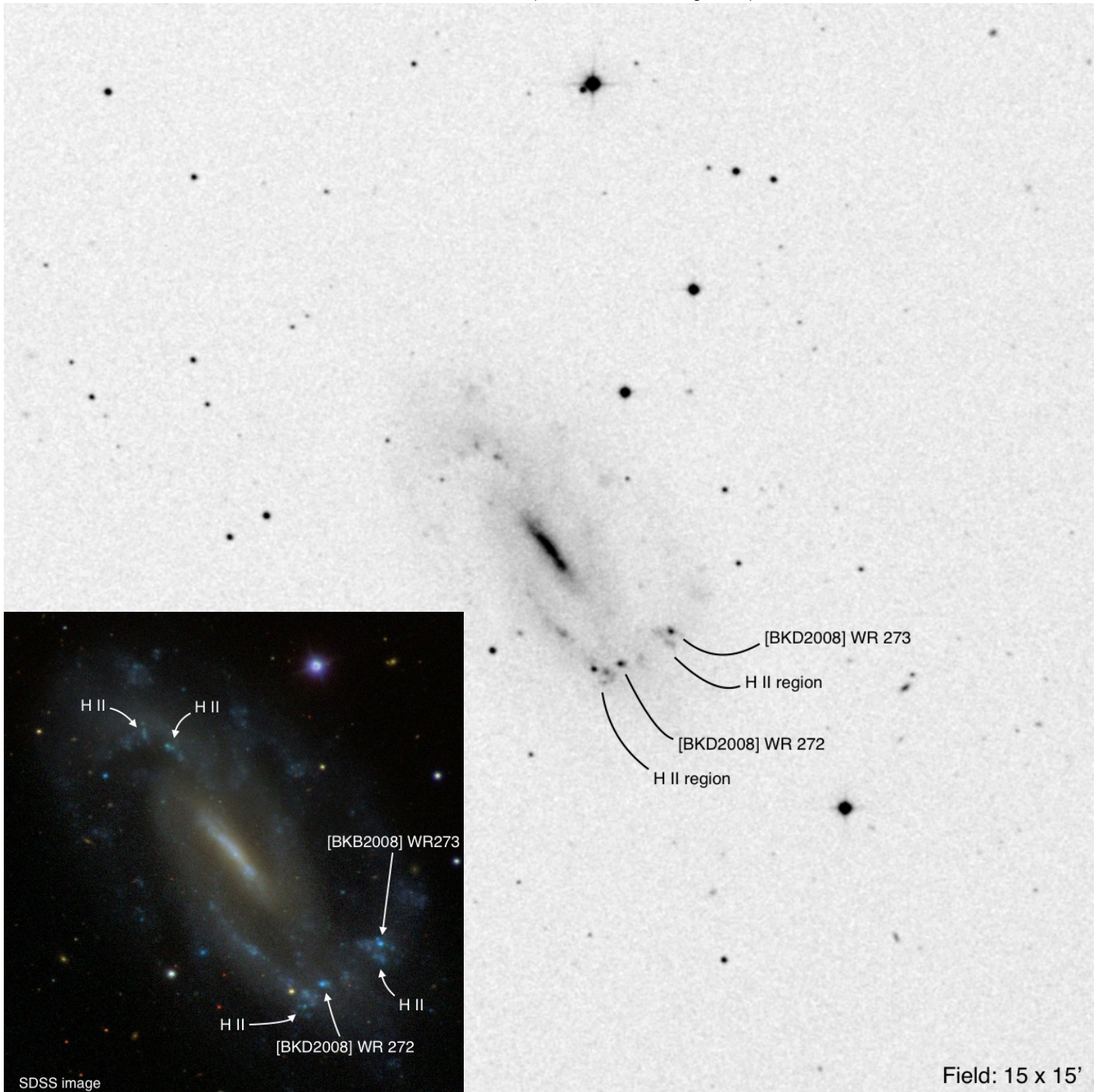
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [IC 2574](#). Also see Glahn's [sketch](#) with a 16".

NGC 3319 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3319	10 39 09.5	+41 41 13	11.1	6.2 x 3.4'	22

NGC 3319 (Ursa Major)

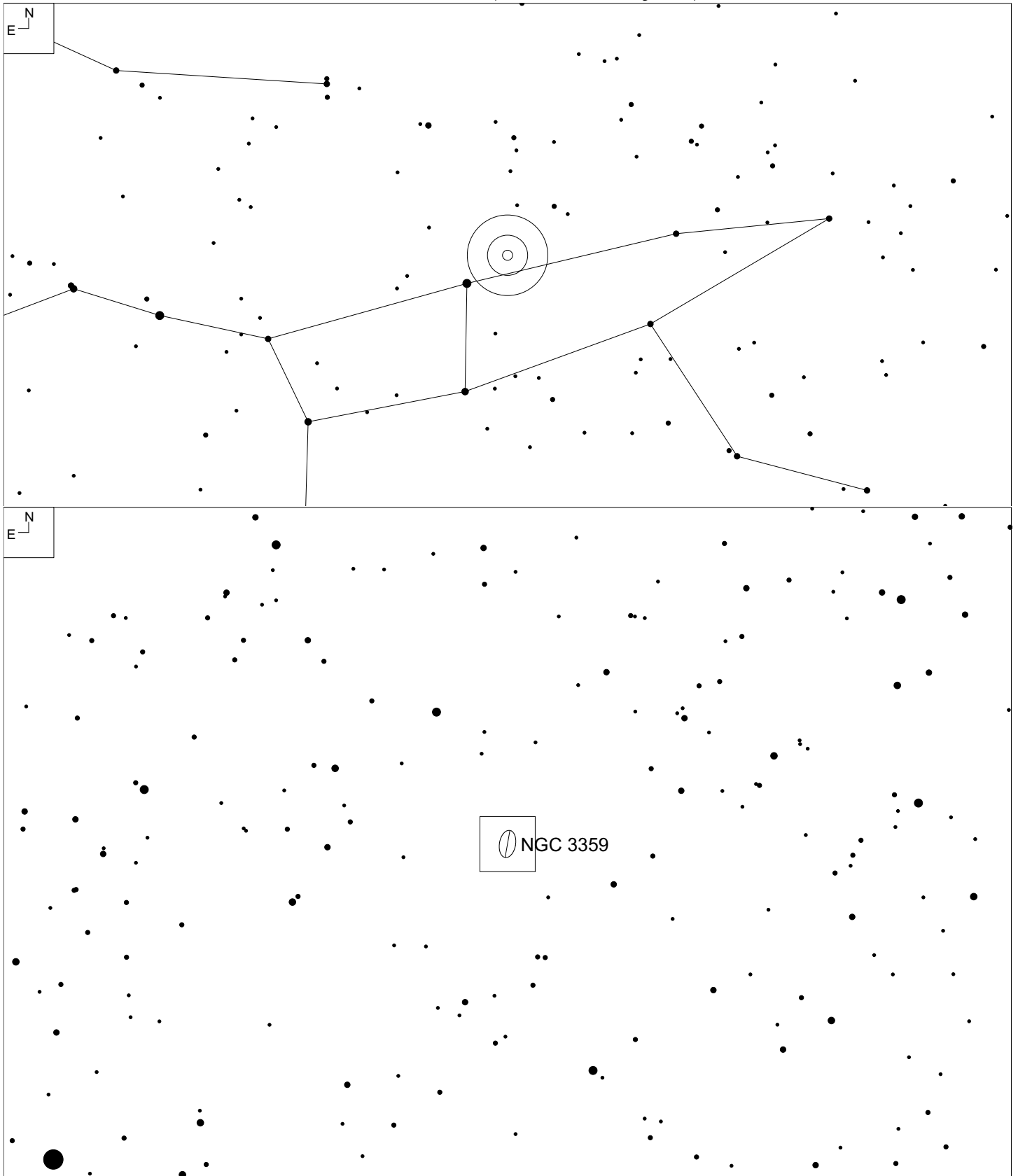


NGC 3319 is a type SB(rs)cd barred spiral Seyfert galaxy. It lies 46 mly away.

Possible Wolf Rayet star (super luminous star or stars) [BKD2008] annotation from J. Brinchmann, D. Kunth, F. Durret. "Galaxies with Wolf-Rayet signatures in the low-redshift Universe. A survey using the Sloan Digital Sky Survey," *Astronomy and Astrophysics*, Volume 485, Issue 3 (July 2008): 657-677.

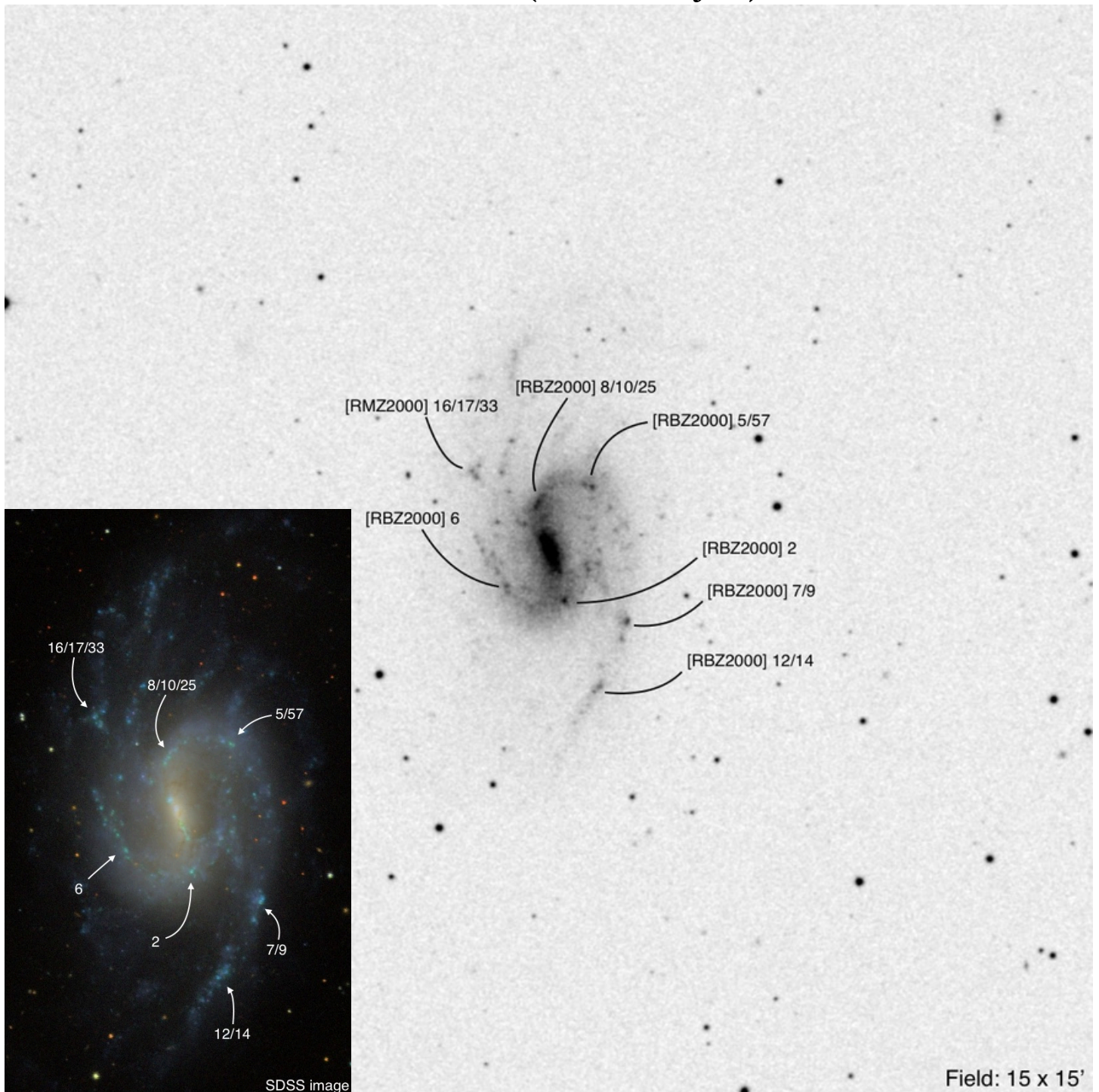
Glahn picked up all of the labeled H II regions in this [sketch](#) with his 27" reflector.

NGC 3359 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3359	10 46 35.2	+63 13 41	10.6	4.7 x 1.9'	12

NGC 3359 (Ursa Major)



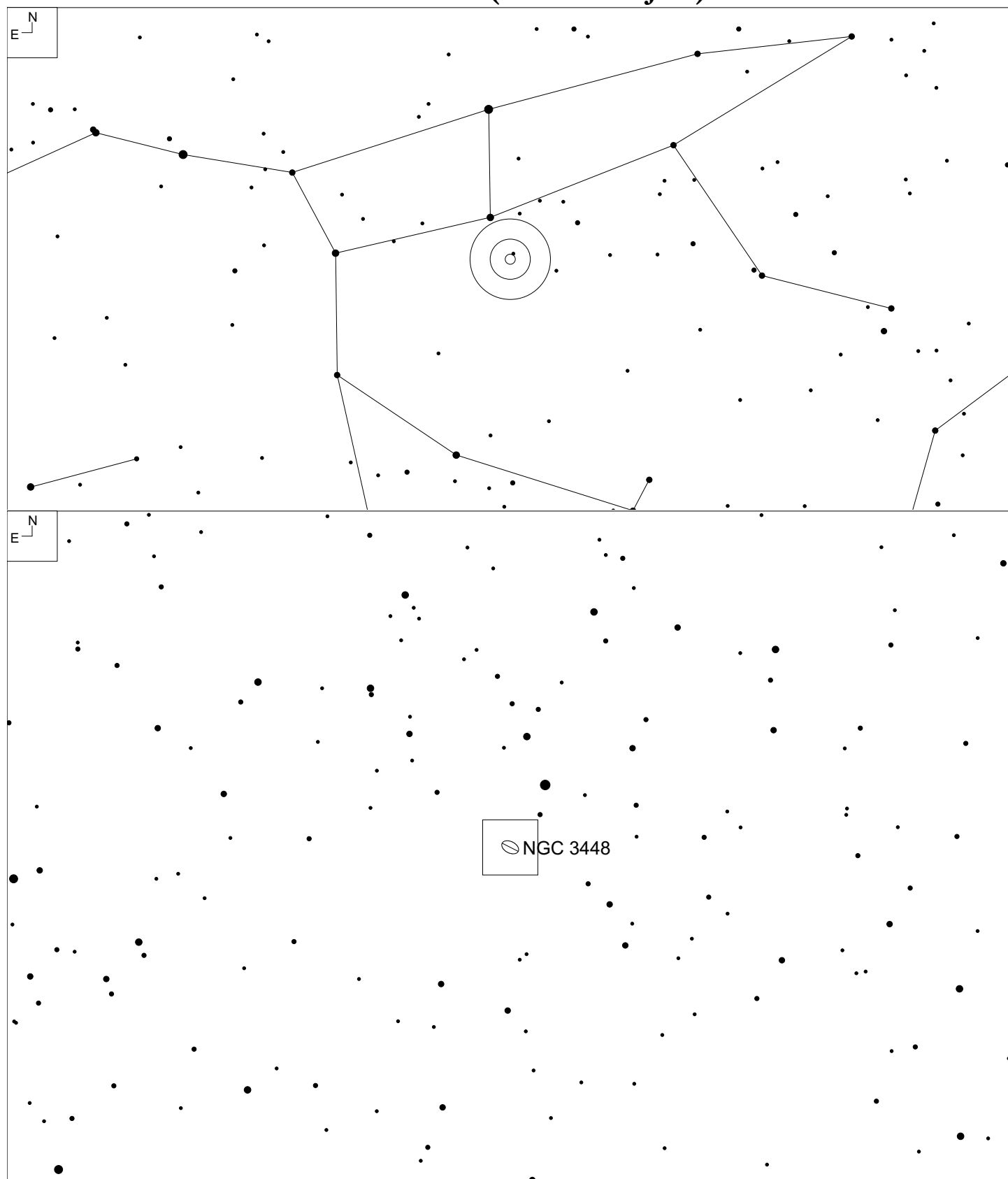
NGC 3359 is a type SB(rs)c galaxy at a distance of 59 mly away.

H II region **[RBZ2000]** annotations from M. Rozas, A Zurita, J.E. Beckman, "The ionized gas in the spiral galaxy NGC 3359. I. Photometry," *Astronomy & Astrophysics*, Volume 354 (2000): 823-835. The SDSS inset annotations is without [RBZ2000] for clarity.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3184](#). Gottlieb's reference to [H69] 42 is [RBZ2000] 7/9 in the image above.

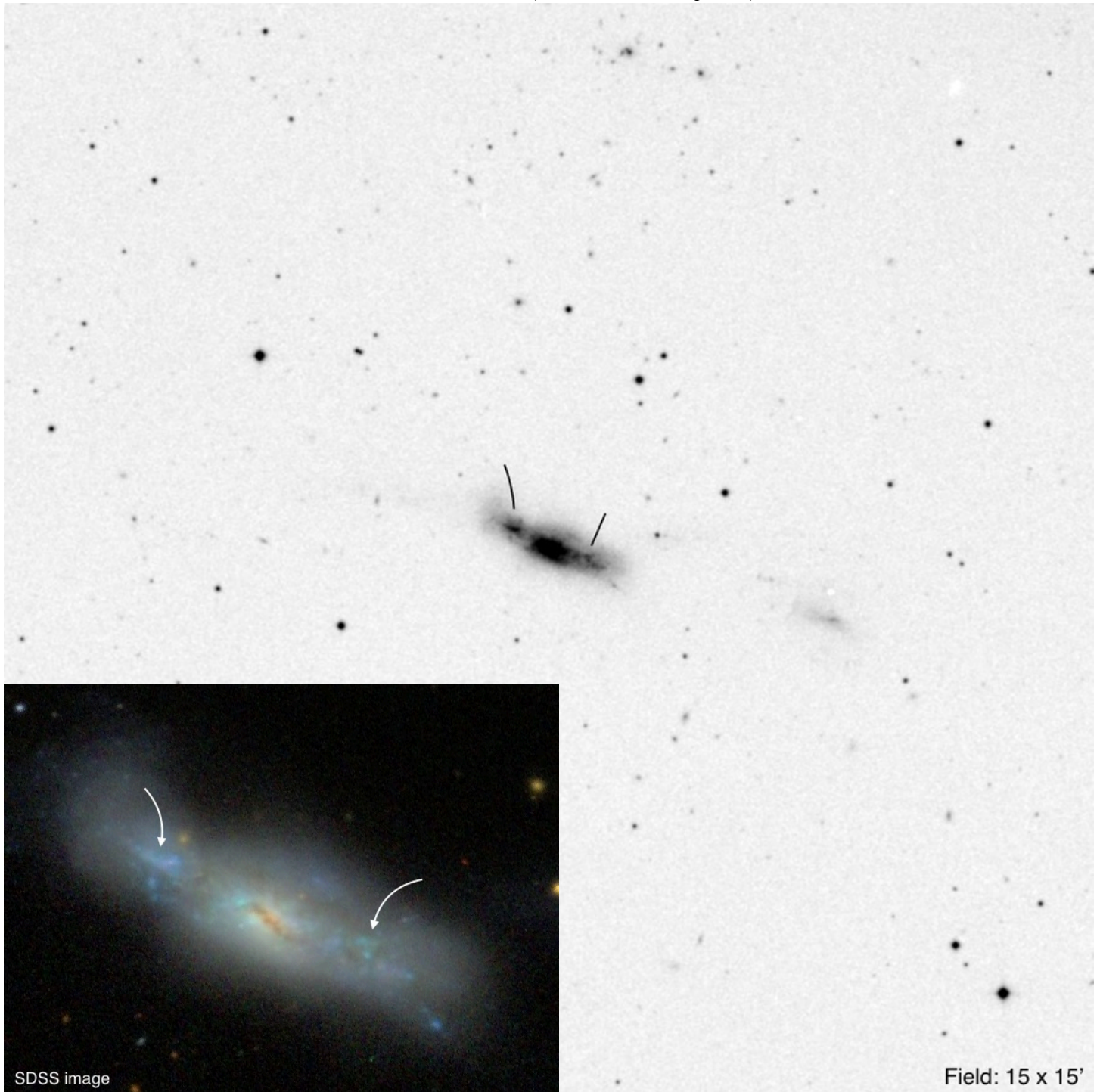
Uwe Glahn picked up two knots on the western edge, see his [sketch](#) with the 27" reflector, specifically [RBZ2000] 5/57 and 7/9.

NGC 3448 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3448	10 54 39.2	+54 18 19	12.2b	4.8 x 1.4'	12, 22

NGC 3448 (Ursa Major)



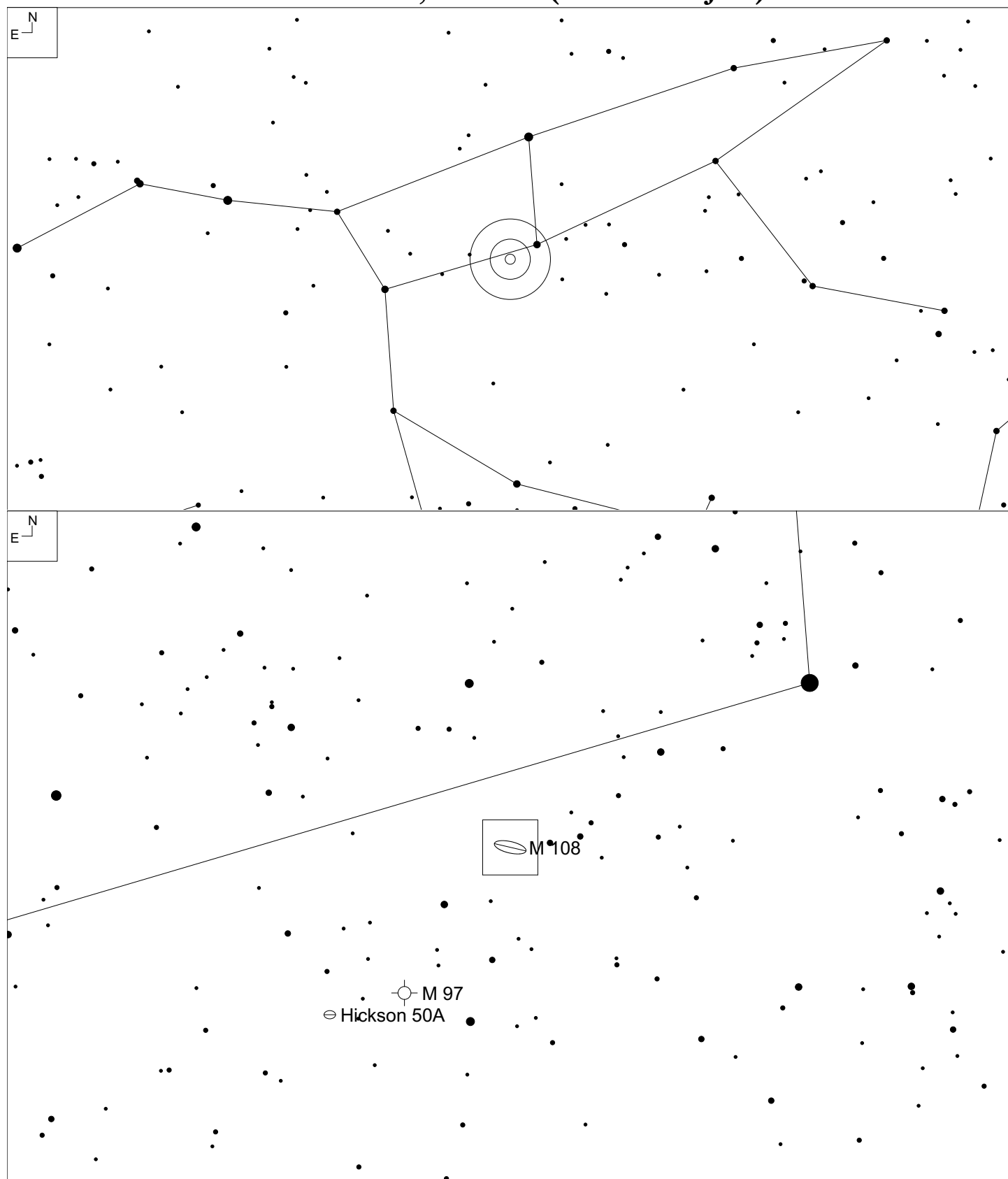
NGC 3448 is a type I0 dwarf irregular galaxy sitting 77 mly away and 125 kly in diameter.

NED did not have any extragalactic objects. Only the brighter regions are noted.

Noreau (1985) wrote a short piece on the star burst in NGC 3448 comparing it to M-82 in radio signals and dust lane. His case for starburst is the bulk of radio emission came from the nuclear region and the spectrum is mostly by FIR emission among a couple other attributes. See L. Noreau and P.P. Kronberg, "The Star-Burst in NGC 3448," *Bulletin of the American Astronomical Society*, Volume 17 (June 1985): 757.

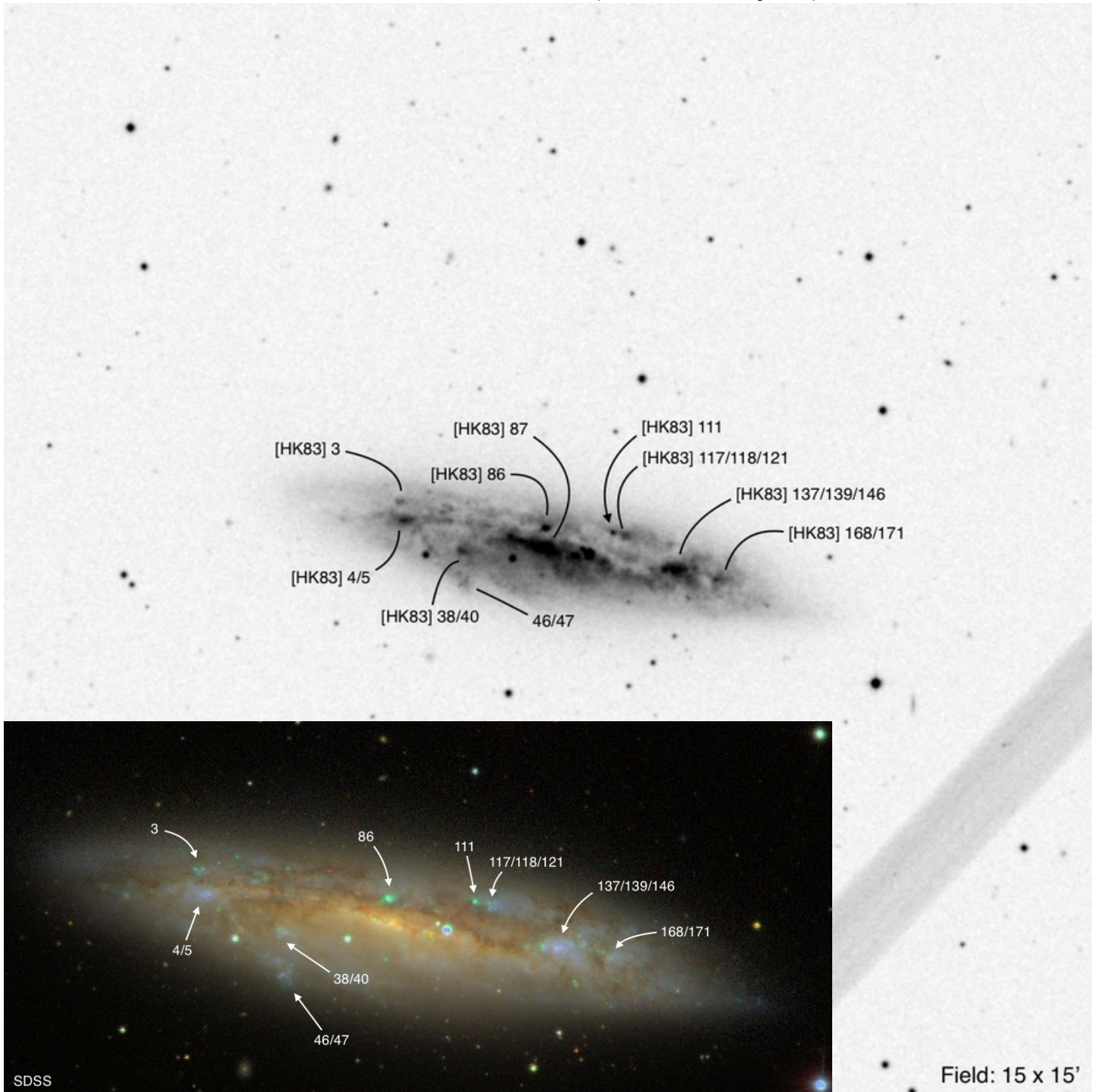
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3448](#). Also see Glahn's [sketch](#) with a 16" reflector where the eastern knot and a diagonal dust lane was picked up.

NGC 3556, M 108 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3556 (M108)	11 11 29.9	+55 40 43	10.0	8.7 x 2.2'	12

NGC 3556, M 108 (Ursa Major)

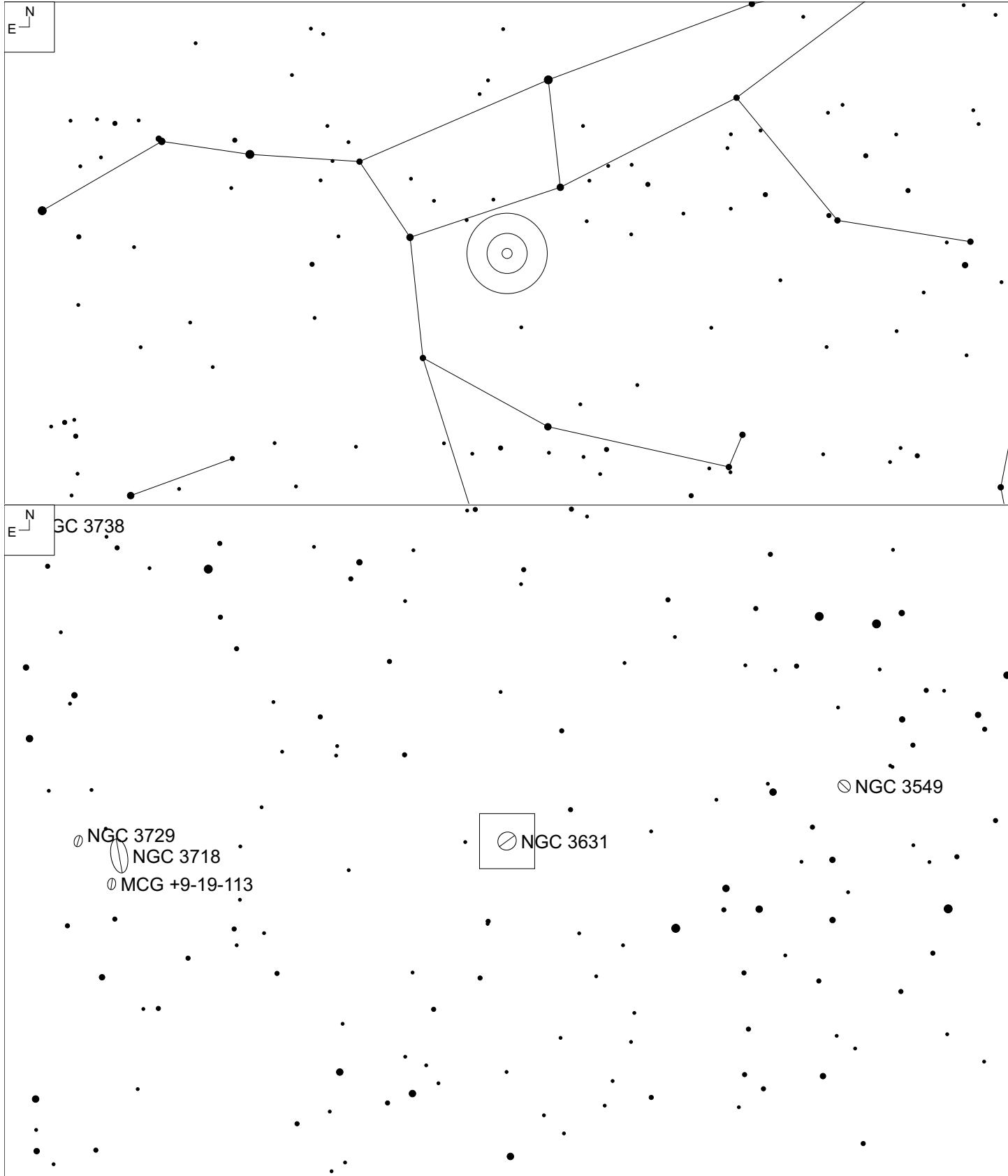


M 108 is a type SB(s)cd late type galaxy sitting 28 mly away. The popular name given was Surfboard Galaxy.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3556](#).

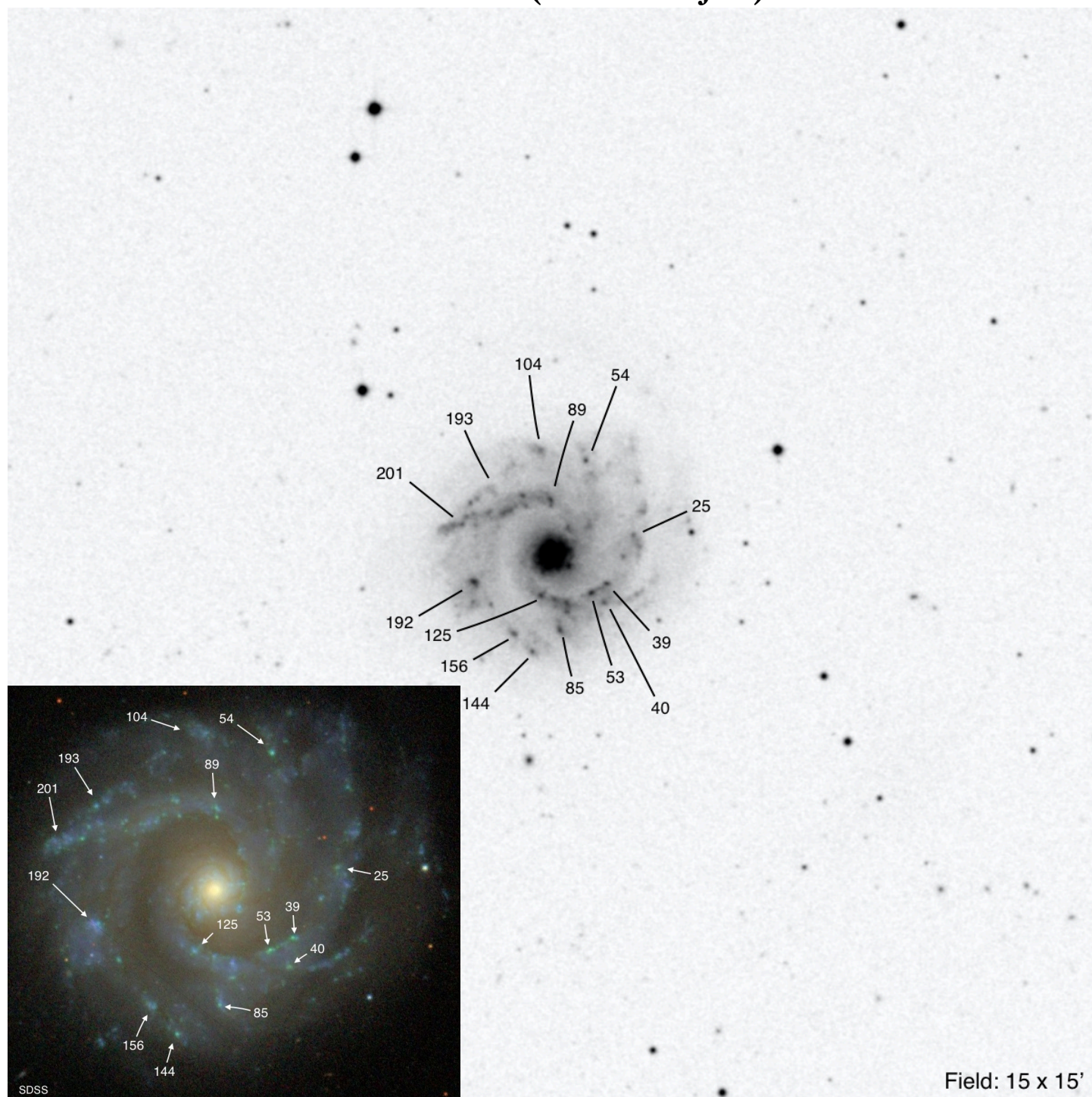
Uwe Glahn's [sketch](#) with a 16" reflector, where he picked up [HK83] 4/5, 86, and 137/139/146.

NGC 3631 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3631	11 21 02.9	+53 10 10	11.0b	5.0 x 4.7'	12,22

NGC 3631 (Ursa Major)

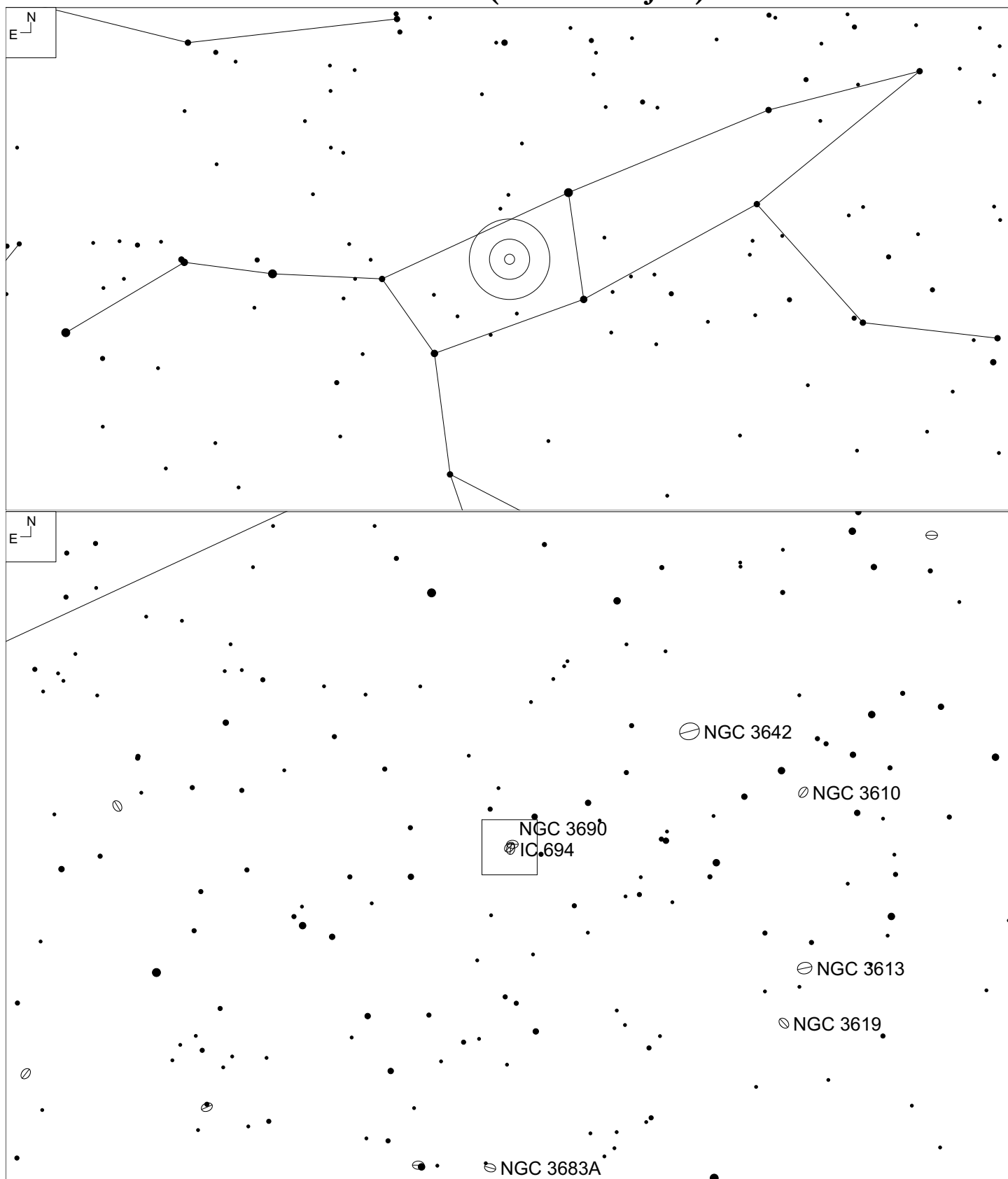


NGC 3631 is a type SA(s)c grad design spiral that sits 35 mly away and 60 kly in diameter.

Annotations from Plate 10. See G.O. Boeshaar and P.W. Hodge, "H II Regions and the Spiral Structure of NGC 3631," *The Astrophysical Journal*, Volume 213 (Apr 1977): 361-377

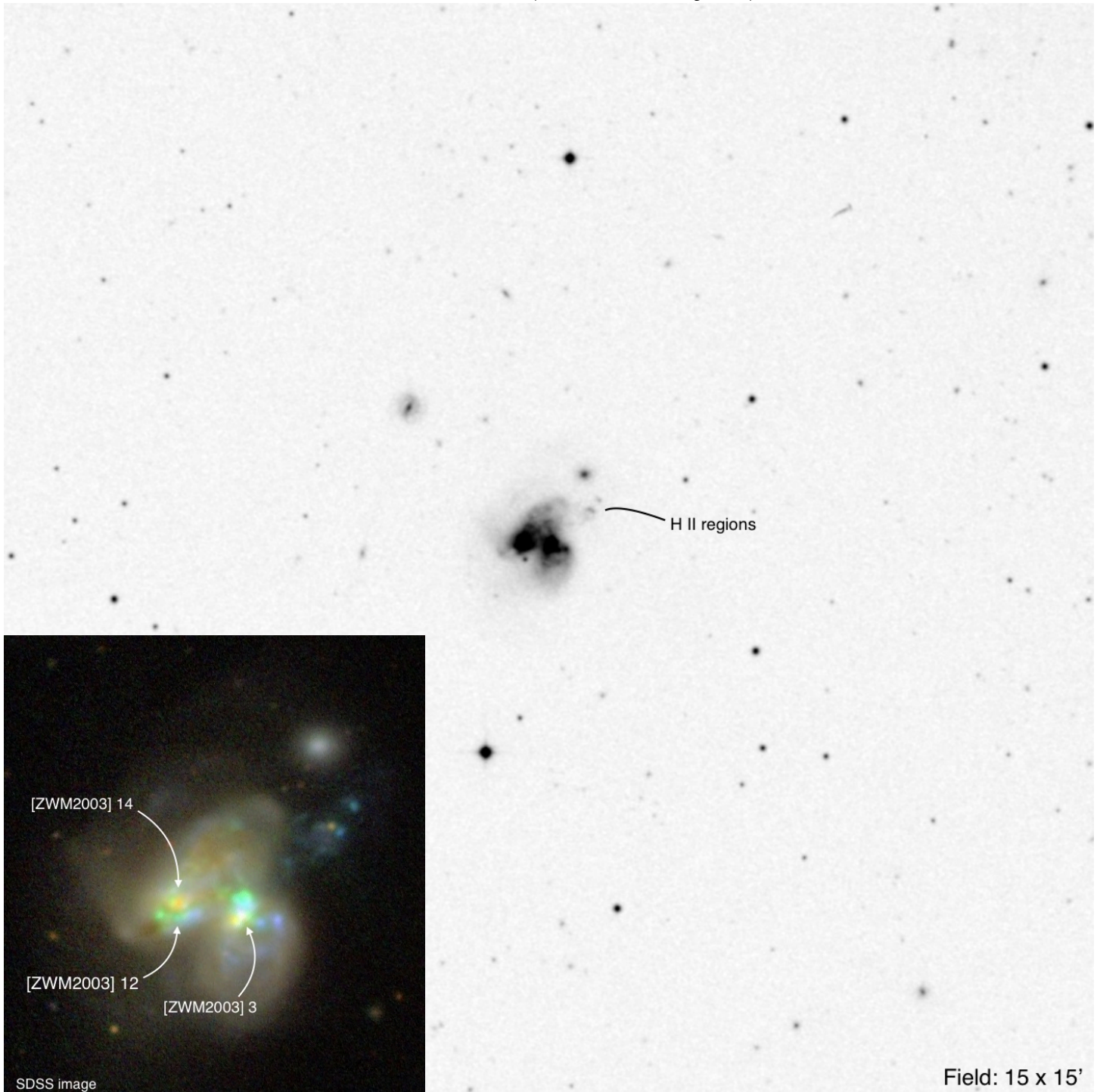
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3631](#). Also see Glahn's [sketch](#) with a 16" reflector where he picked up a couple knots.

NGC 3690 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3690	11 28 32.3	+58 33 43	11.5	2.9 x 2.1'	11, 12

NGC 3690 (Ursa Major)



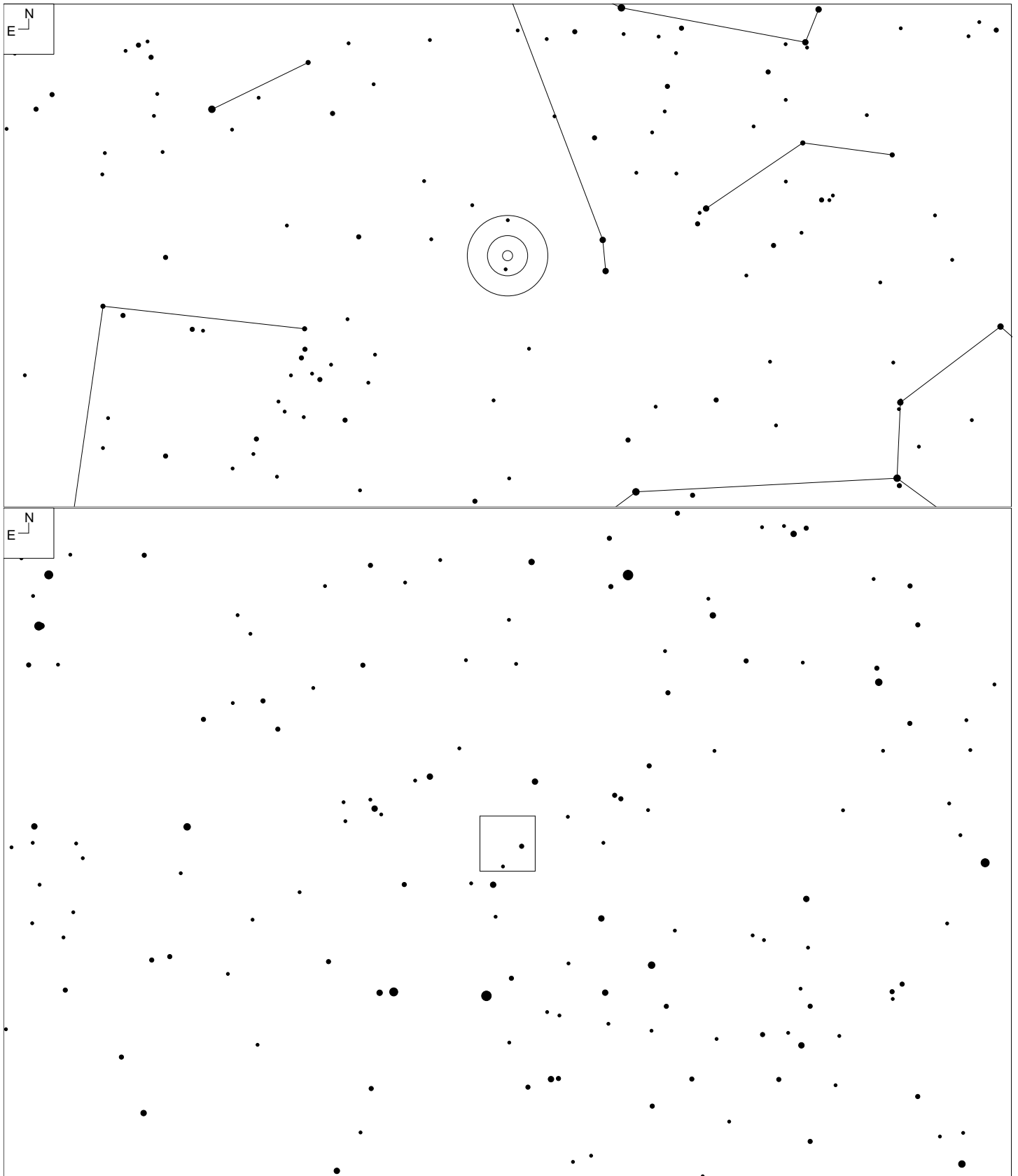
NGC 3690 is a double interacting galaxy sitting 150 mly away. The collision created so much star formation and remarkable to see 14 supernovae since 1992. Also it is a super luminous X-ray star forming galaxy and both cores seems to have intense X-ray regions. See A. Zezas, M. J. Ward, And S. S. Murray. "Chandra Observations of the X-Ray-luminous Star-forming Galaxy Merger Arp 299," *The Astrophysical Journal* Volume 594, Number 1 (Aug 2003): L31-L34 for locations of 18 X-ray regions annotated by [ZWM2003].

Willem A. Baan, Aubrey Haschick. "H I Absorption and OH Emission in IC 694/NGC 3690," *The Astrophysical Journal*, Volume 364 (Nov 1990), 65-76.

See Glahn's [sketch](#) with a 16" reflector.

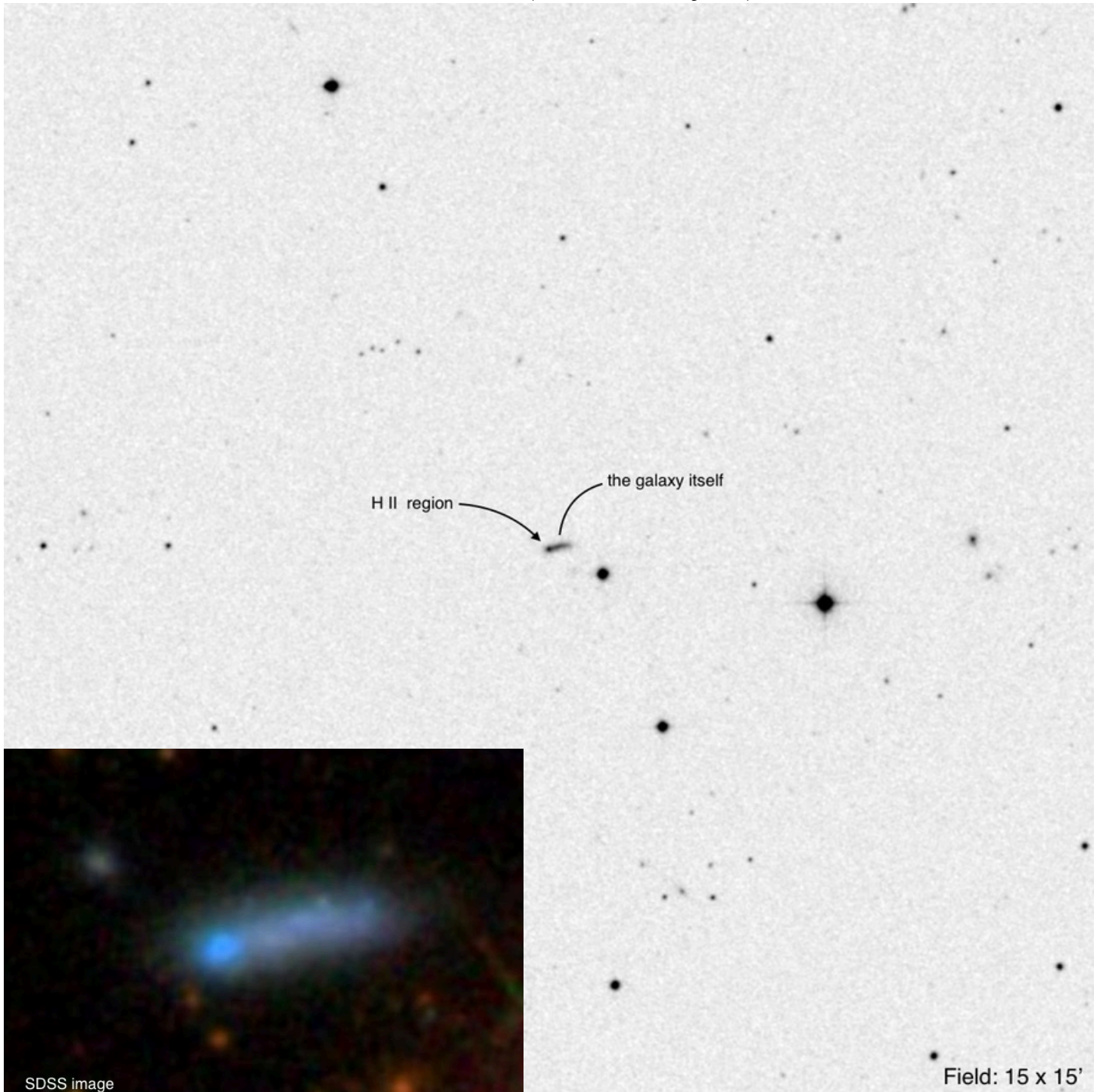
Hubble Space Telescope snapped a [photo](#).

Kiso 5639 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
Kiso 5639 (PGC 36252)	11 41 07.5	+32 25 37	15.5	0.4 x 0.2'	34

Kiso 5639 (Ursa Major)

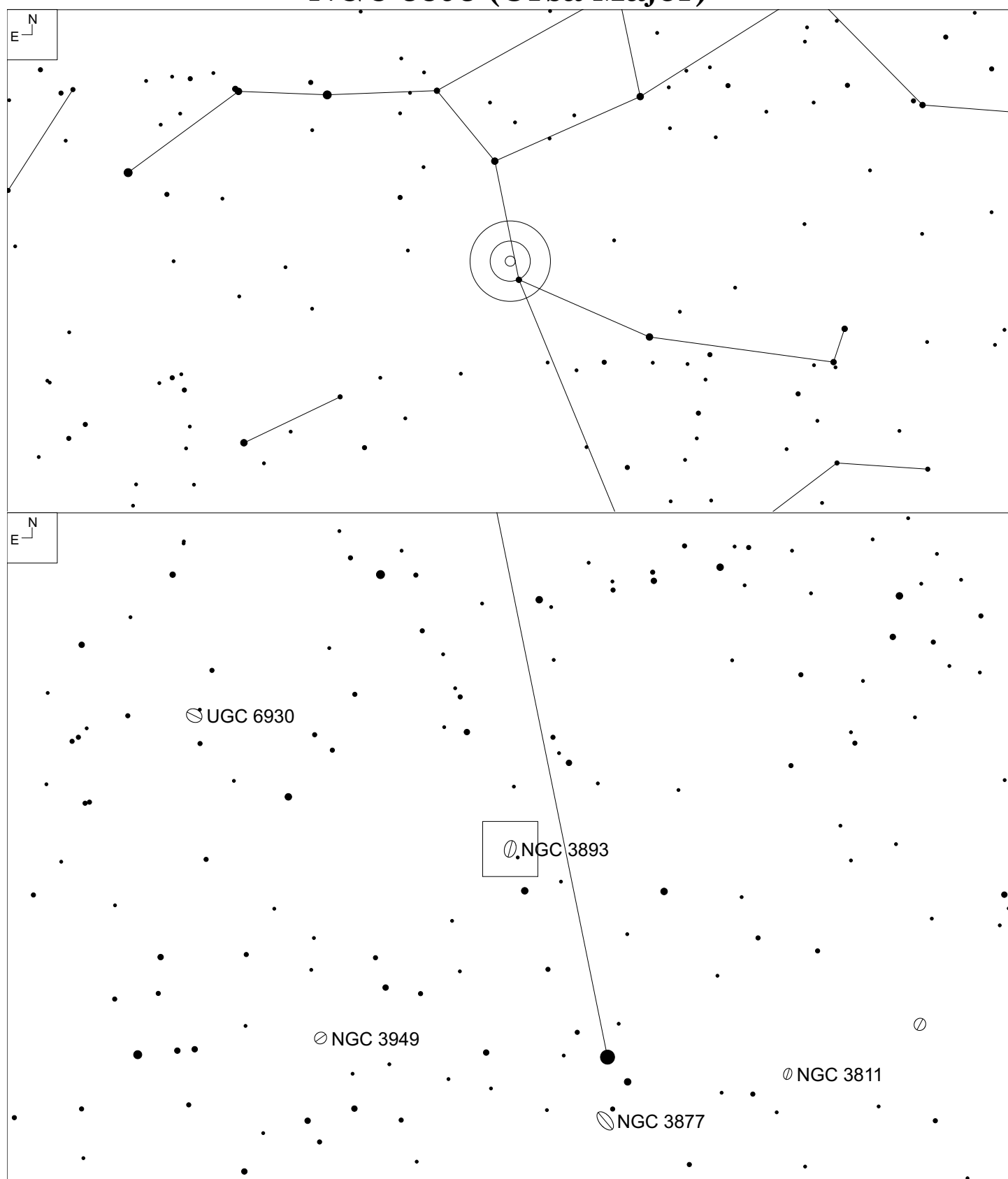


Kiso 5639 is a dwarf galaxy sitting at 85 mly distant and a maximum of 2,700 light years long.

Harrington wrote about this interesting tadpole galaxy in his article.¹³ The H II region appears brighter than the galaxy itself, so take the time to look carefully so you can catch the galaxy. Use high magnification.

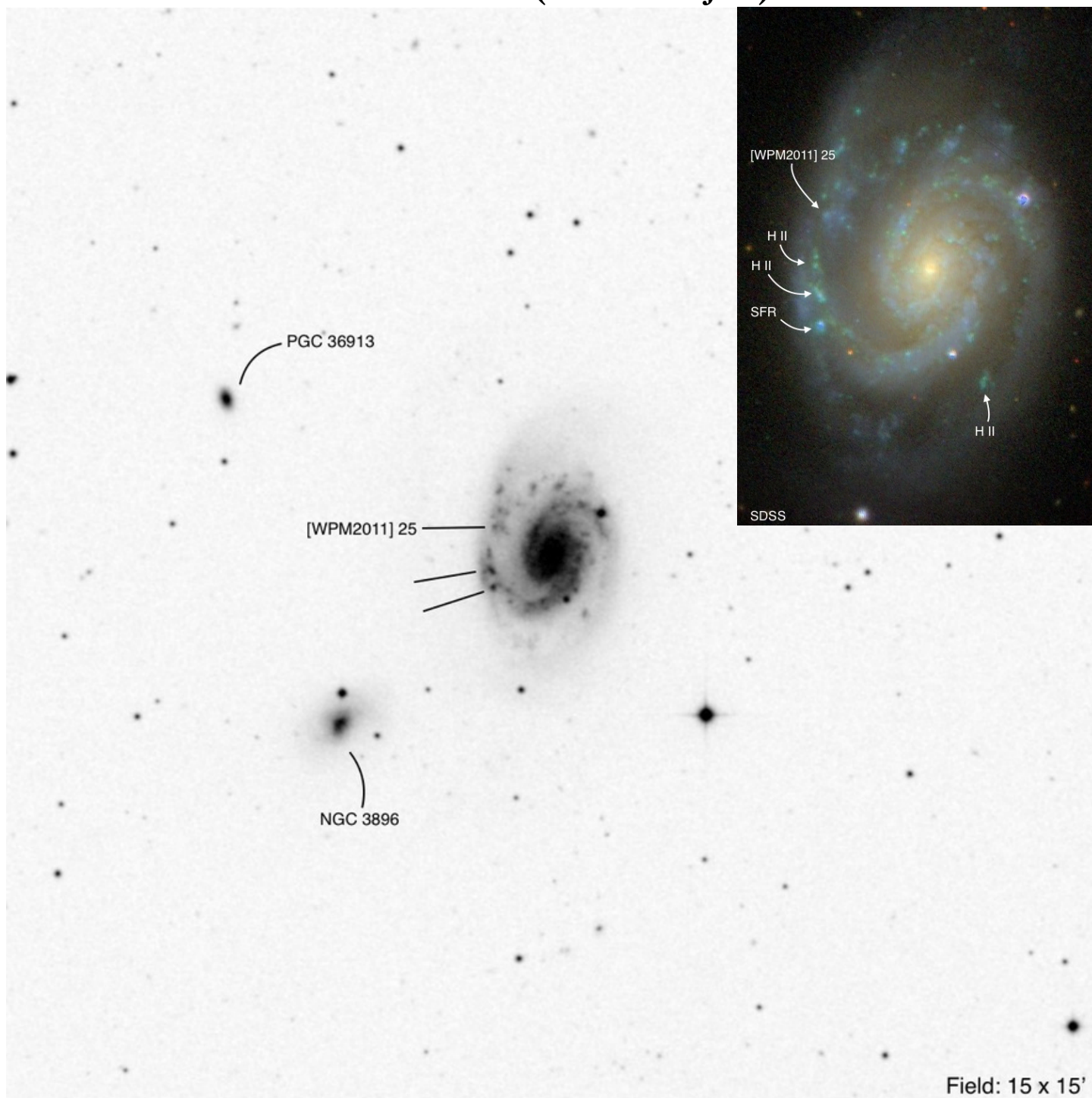
¹³ Harrington, Scott. “Star-Forming Regions in Faraway Galaxies” *Sky & Telescope* (May 2021).

NGC 3893 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3893	11 48 38.2	+48 42 39	10.7 _v	4.5 x 2.7'	21,22

NGC 3893 (Ursa Major)

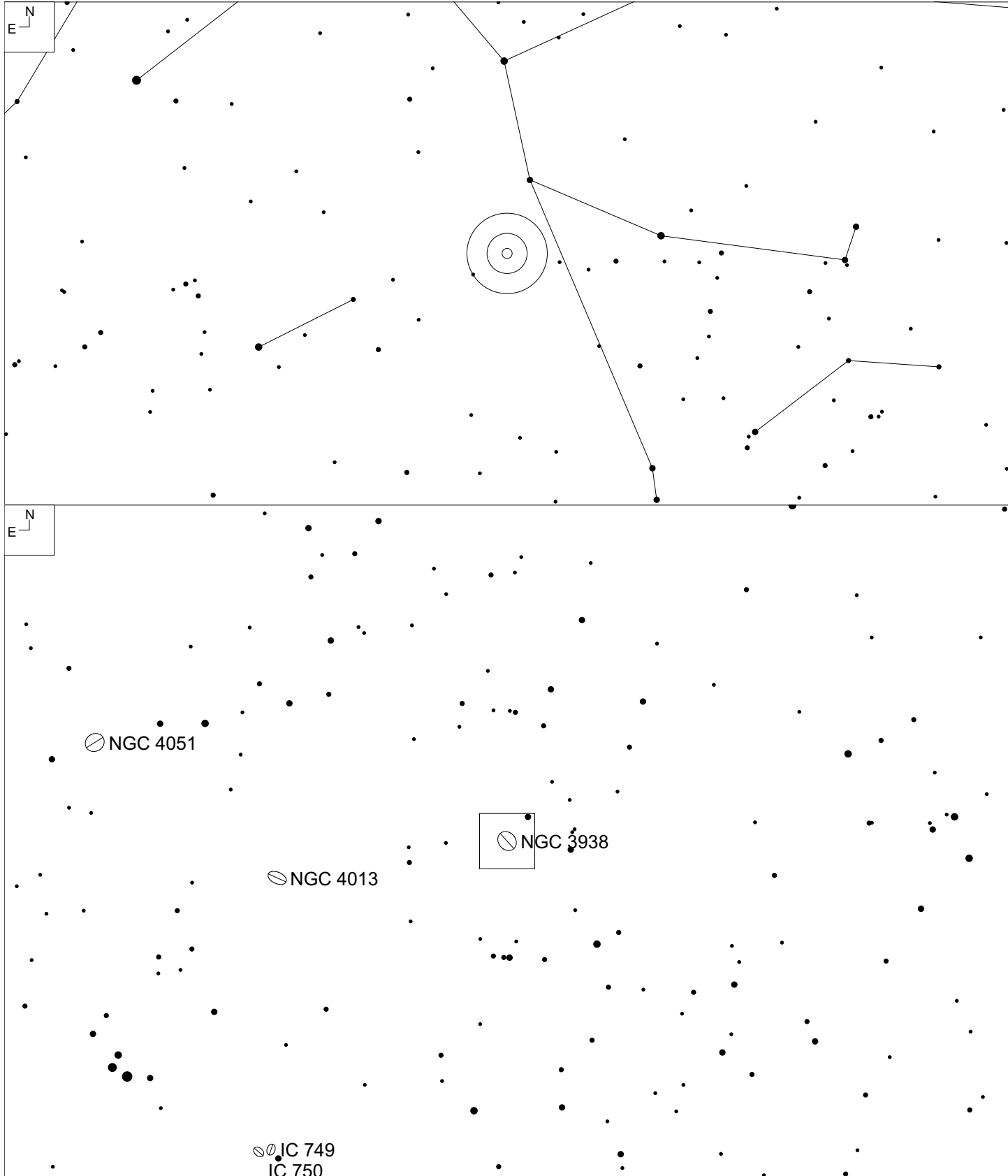


NGC 3893 is a type SAB(rs)c sitting 50 mly away and 70 kly in diameter. It has a ton of H II regions on the arms, but unfortunately both NED and SIMBAD doesn't have much labeled.

J.K. Werk, et al, "Metal Transport to the Gaseous Outskirts of Galaxies," *The Astrophysical Journal*, Volume 735, Number 2 (July 2011)

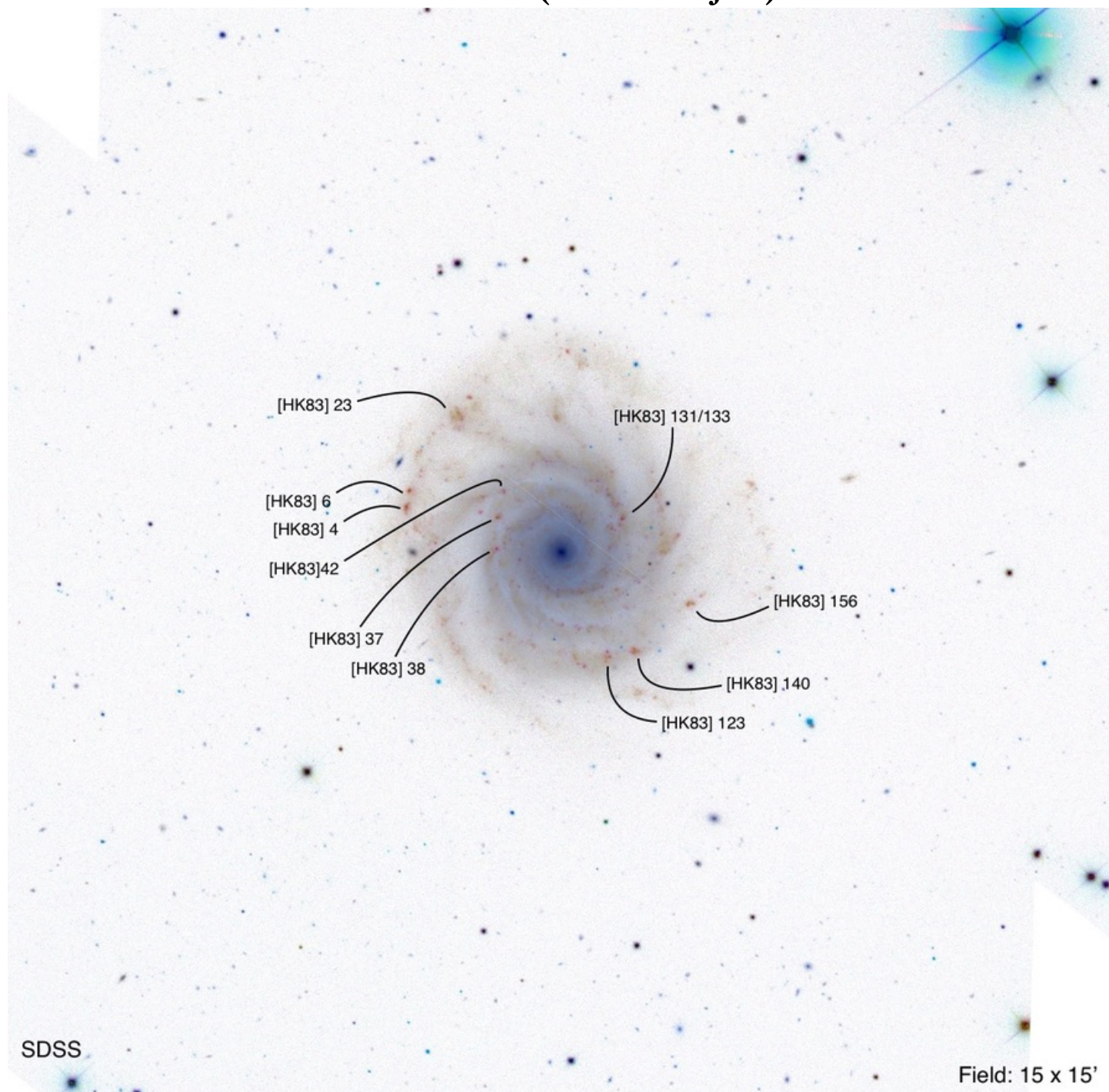
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3893](#). Glahn picked up the H II regions as one brightening on the eastern edge with a 16" reflector in this [sketch](#).

NGC 3938 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3938	11 52 48.9	+44 07 30	10.4	4.0 x 3.8'	21, 22

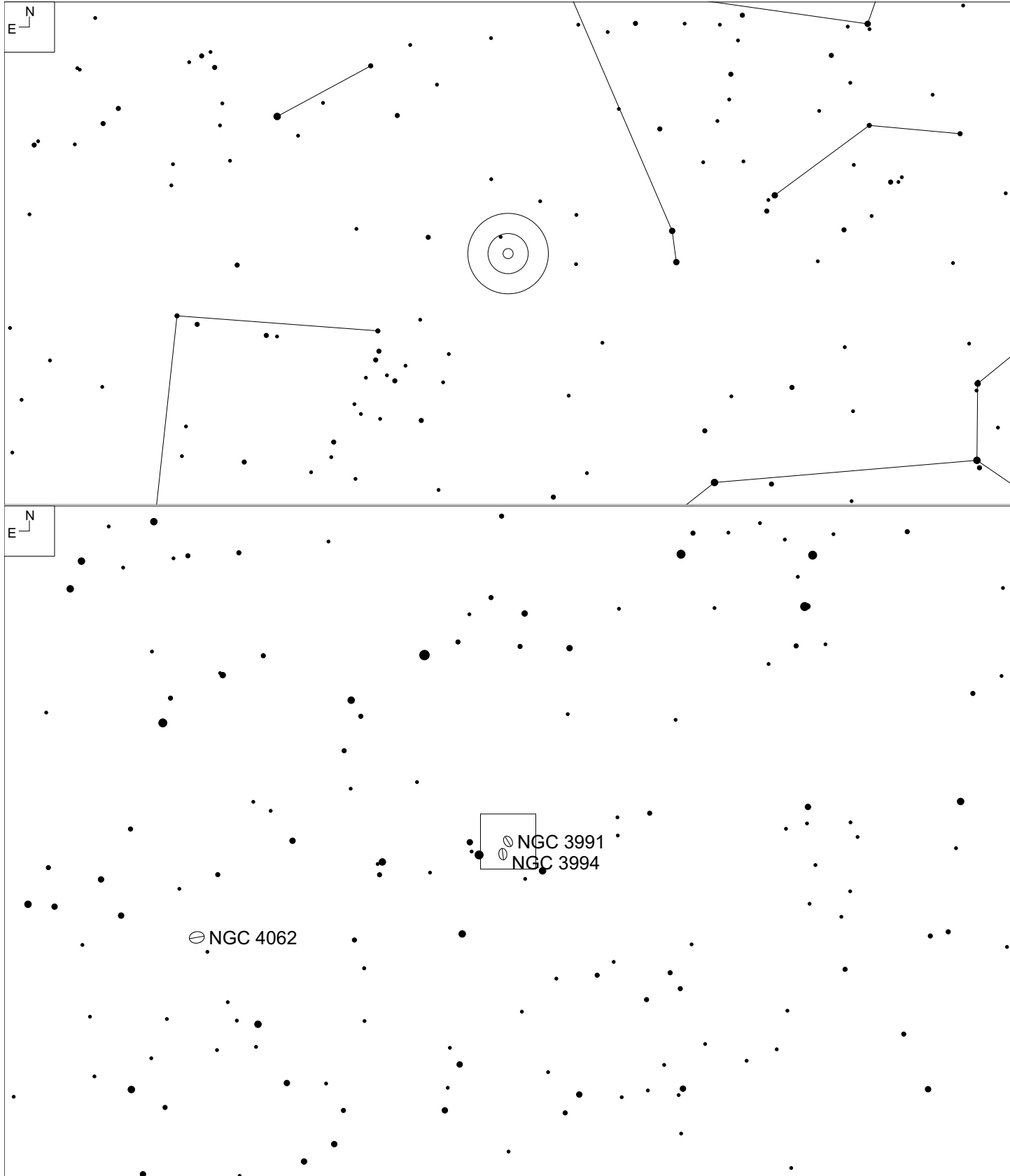
NGC 3938 (Ursa Major)



NGC 3938 is a type SA(s)c spiral sitting 60 mly away and 94 kly across.

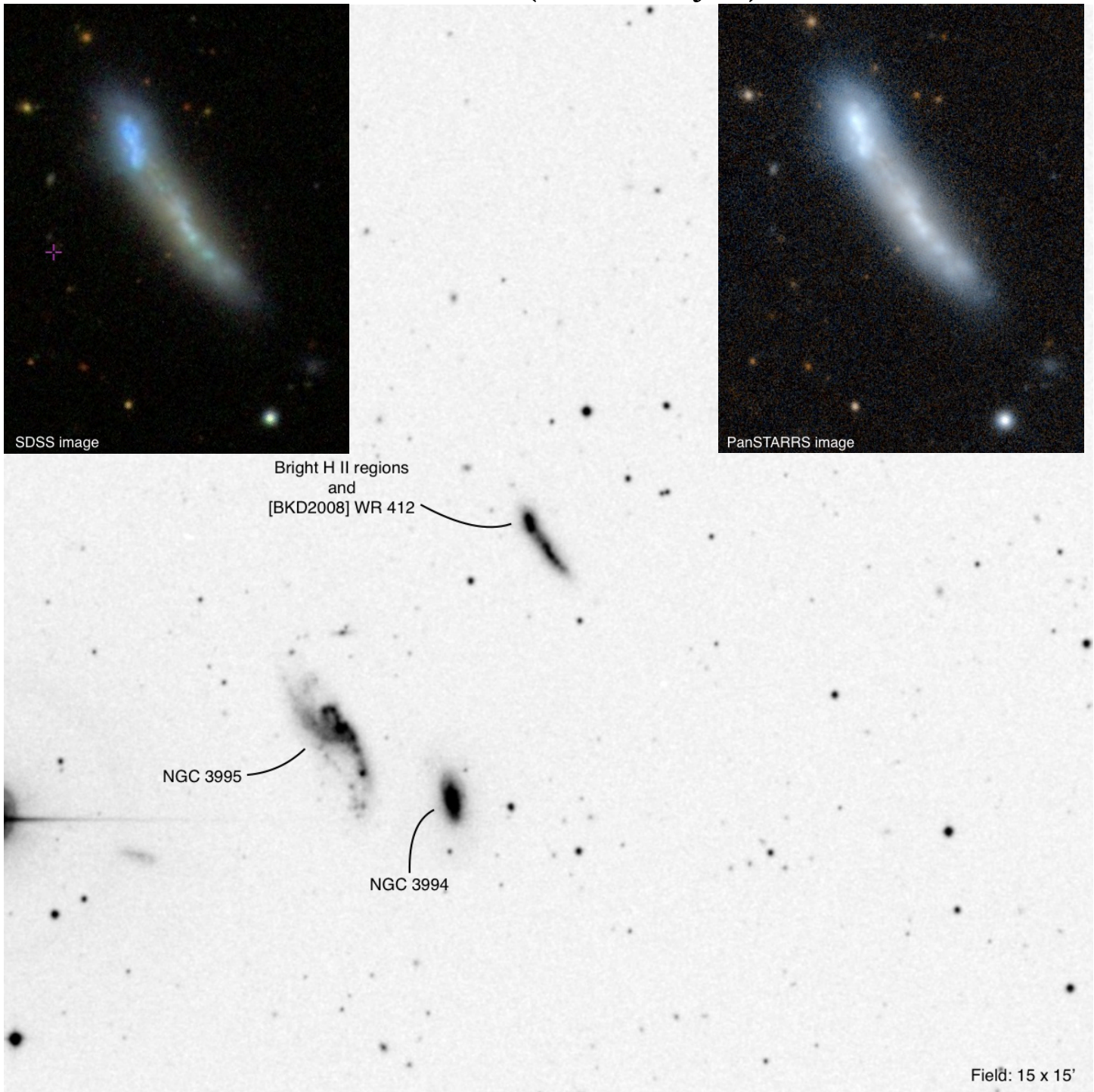
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3938](#). Gottlieb's reference to knots #3 and #4 is [HK83] 4 and [HK83] 6 respectively. It is not easy, but using NED's near object search and IRSA finder chart tool helped me identify the knots. Also see Glahn's [sketch](#) with a 14.5" reflector.

NGC 3991 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 3991	11 57 30.5	+32 20 03	13.1	1.4 x 0.4'	33, 34

NGC 3991 (Ursa Major)



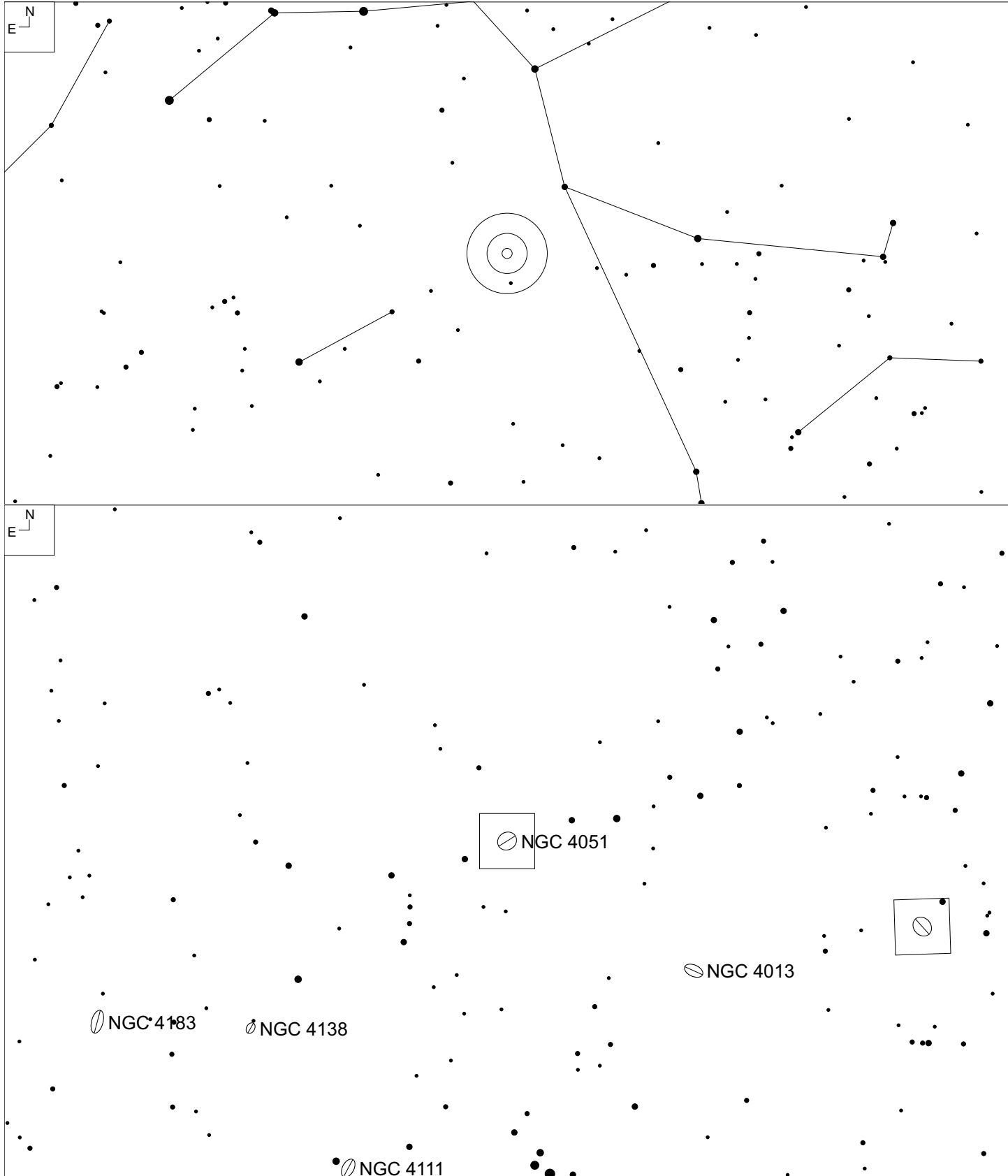
NGC 3991 is a probably a tadpole galaxy that is part of the NGC 3995 group which is about 100 mly away.

Possible Wolf Rayet star (super luminous star or stars) **[BKD2008]** annotation from J. Brinchmann, D. Kunth, F. Durret. "Galaxies with Wolf-Rayet signatures in the low-redshift Universe. A survey using the Sloan Digital Sky Survey," *Astronomy and Astrophysics*, Volume 485, Issue 3 (July 2008): 657-677.

See Glahn's [sketch](#) with a 27" reflector showing the knots on the NE and SW tips.

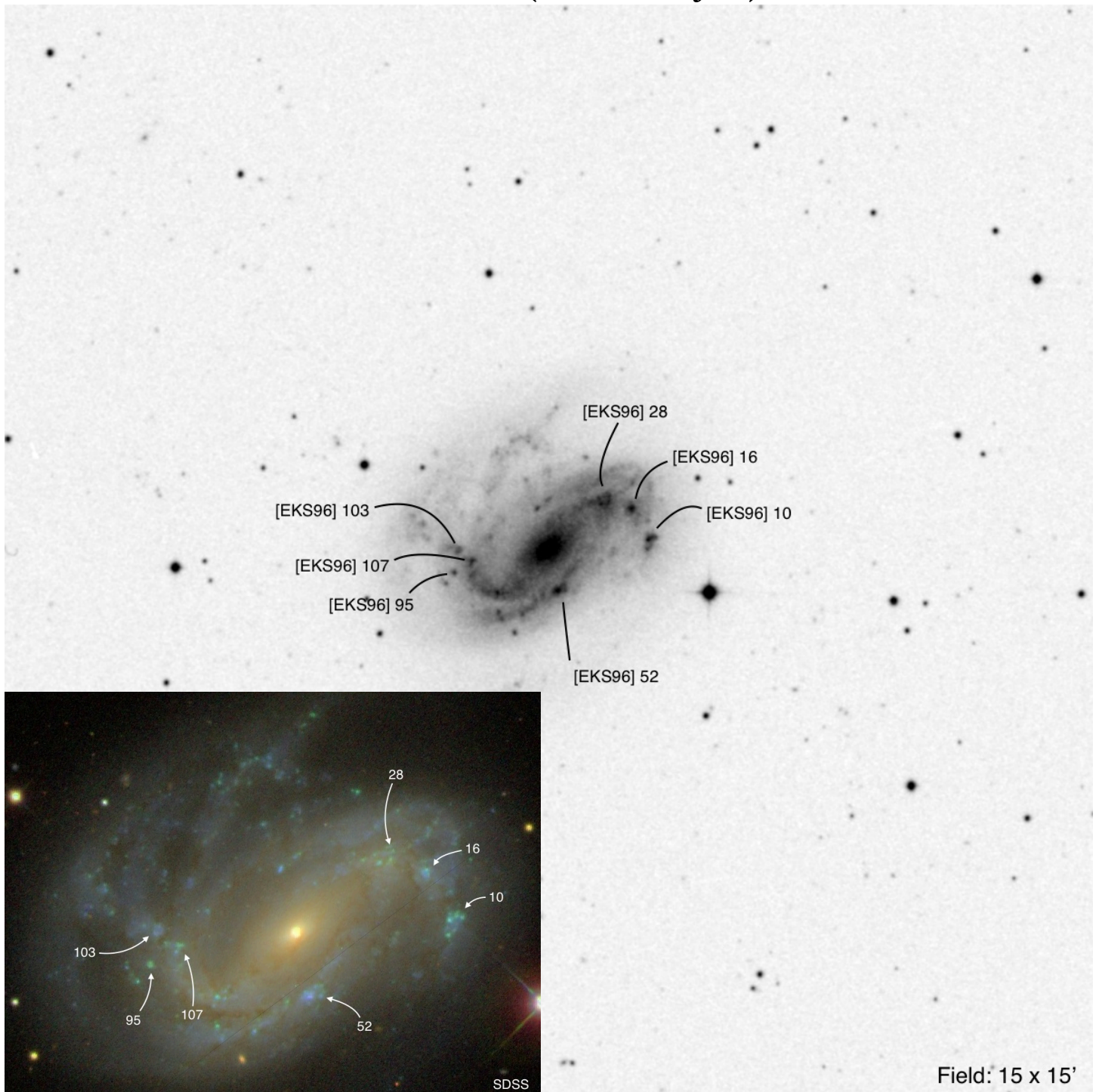
See inset captured by PanSTARRS and SDSS showing the detail of the brighter H II regions and OB associations.

NGC 4051 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 4051	12 03 09.6	+44 31 53	12.9v	5.2 x 4.6'	21, 22

NGC 4051 (Ursa Major)



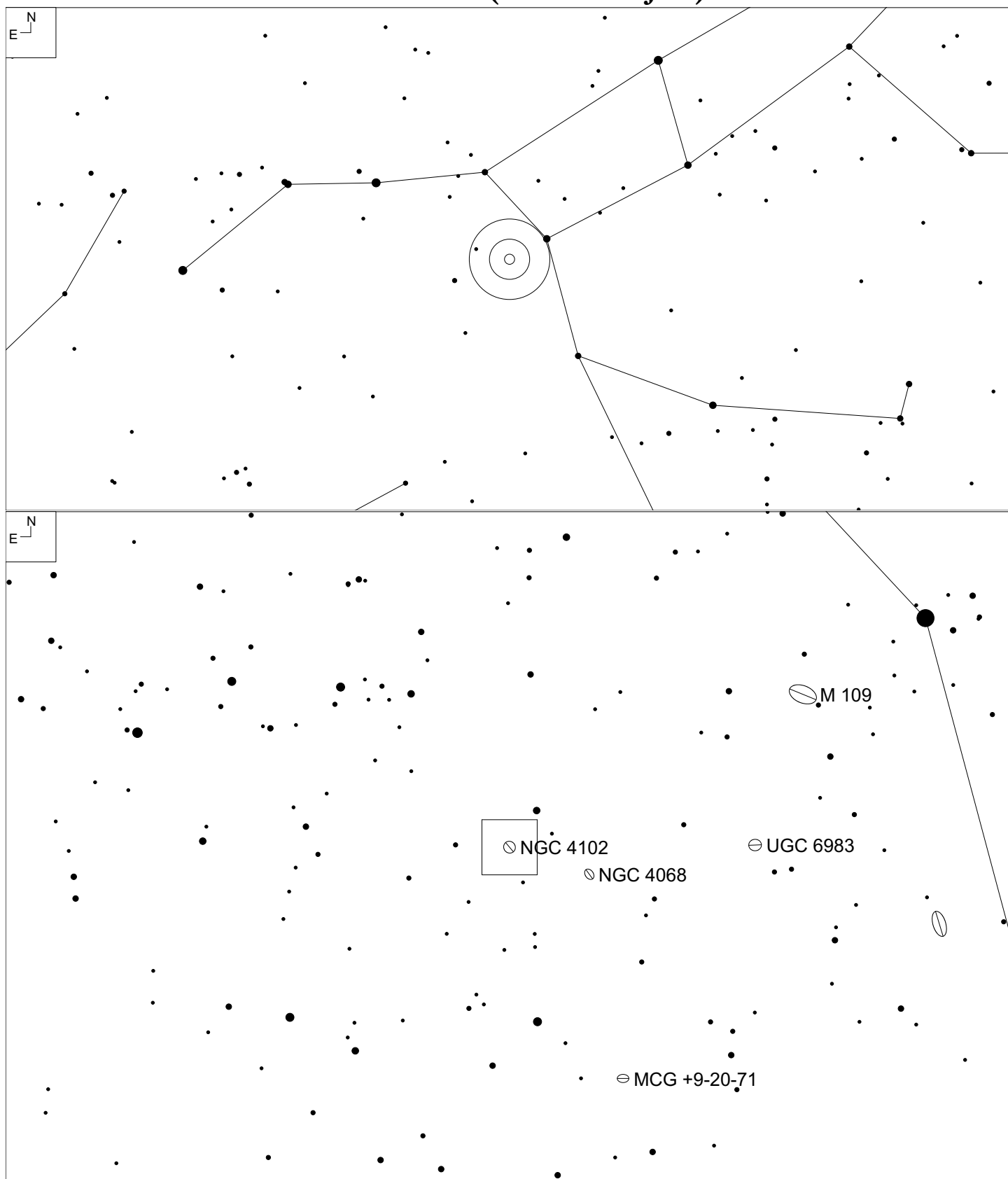
NGC 4051 is a type SAB(rs)bc midsize spiral galaxy that sits 54 mly away from us.

H II region **[EKS96]** annotations, see I.N. Evans, et al, “An Atlas of H II Regions in Nearby Seyfert Galaxies,” *Astrophysical Journal Supplement*, Volume 105 (July 1996): 93-127. The SDSS inset image annotation does not have [EKS96] for clarity.

Rosa M. Gonzalez Delgado, et al, “H II Region Population in a Sample of Nearby Galaxies with Nuclear Activity. I. Data and General Results,” *The Astrophysical Journal Supplement Series*, Volume 108, Number 1 (Jan 1997): 155-198.

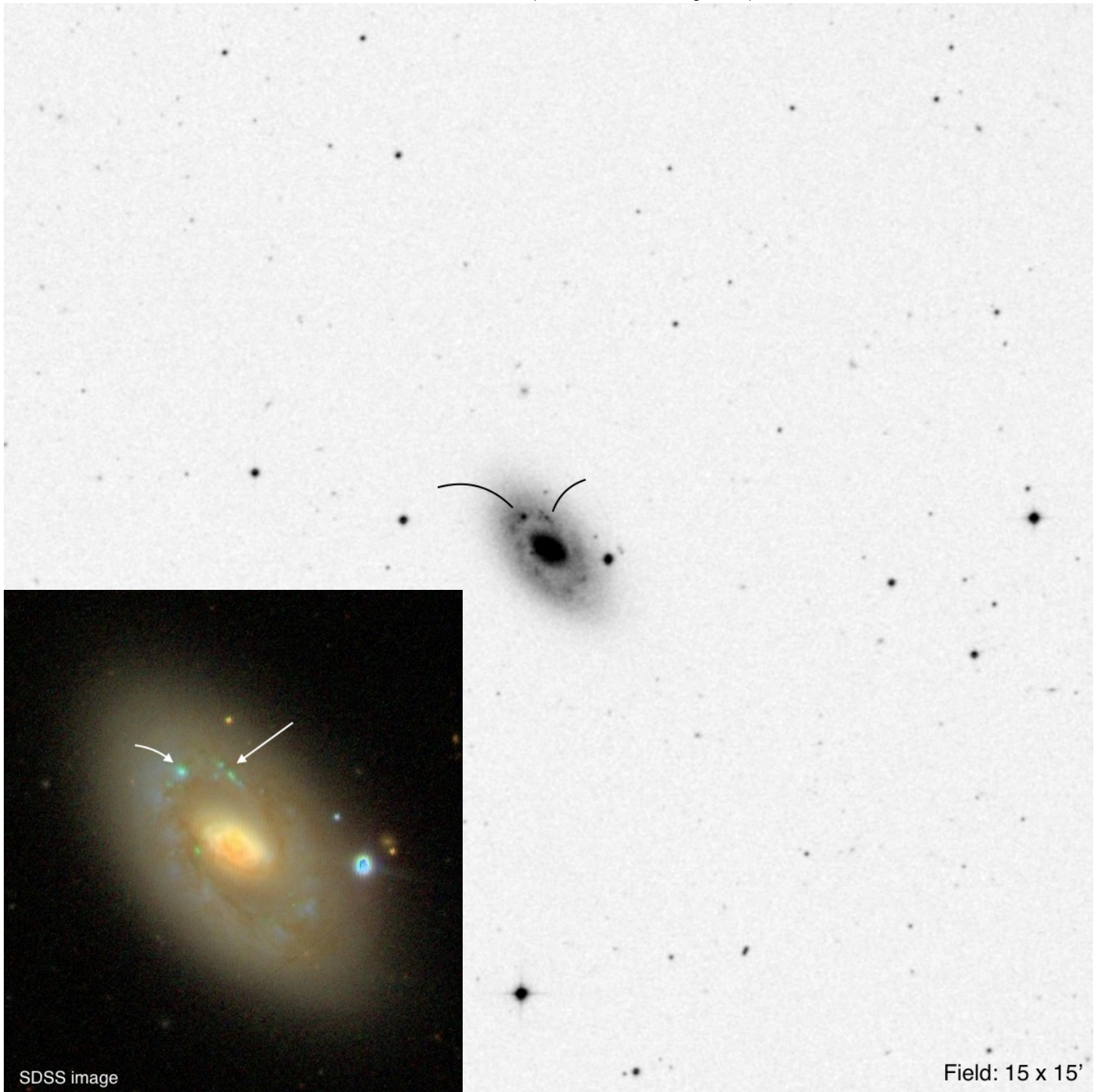
For observing notes with a 48” telescope, see Steve Gottlieb’s notes: [NGC 4051](#). Also see Glahn’s [sketch](#) where he picked up five knots, specifically, [EKS96] 10, 16, 28, 52, and 103.

NGC 4102 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 4102	12 06 23.0	+52 42 40	11.2	3.0 x 1.7'	11, 12, 21, 22

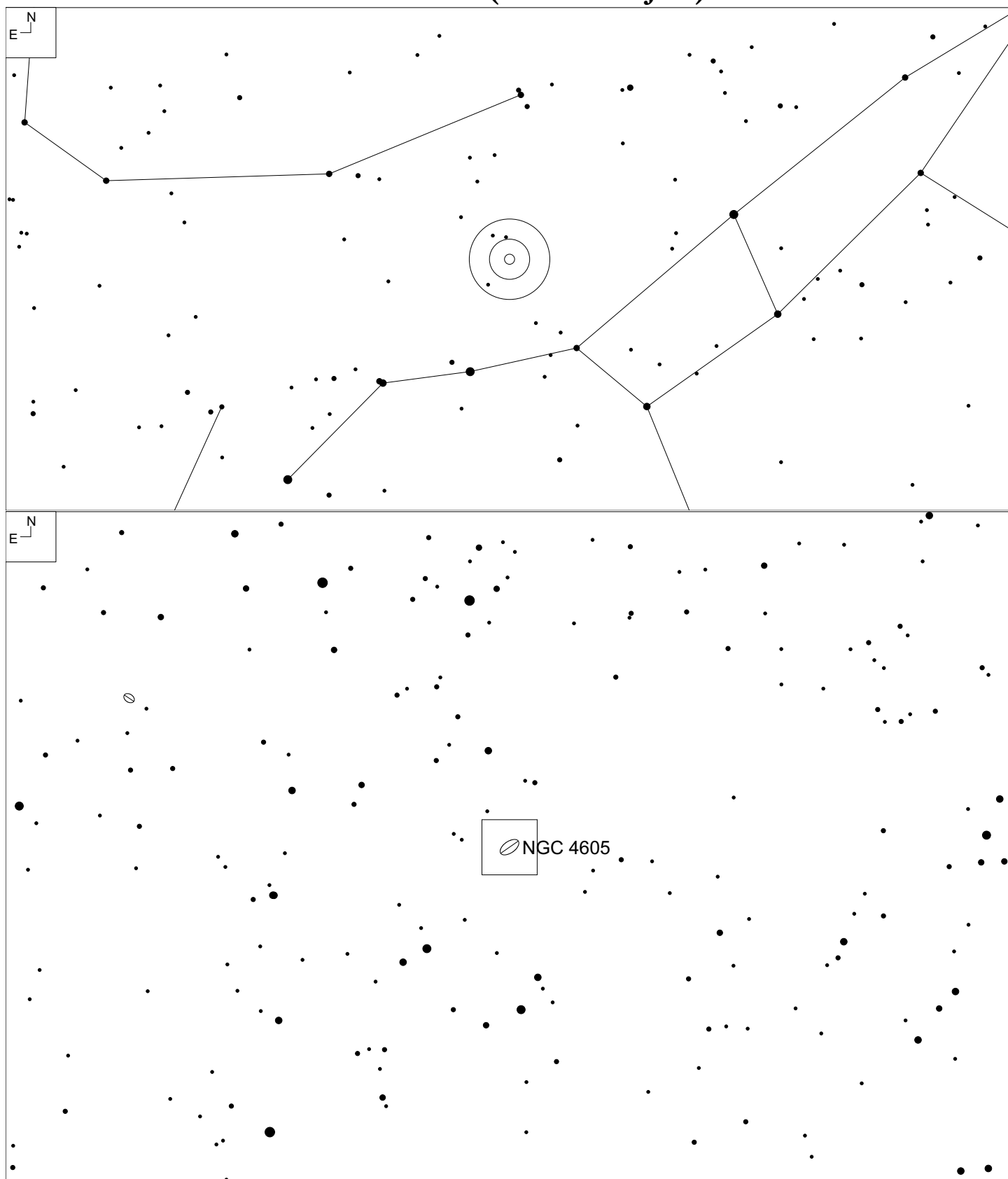
NGC 4102 (Ursa Major)



NGC 4102 is a type SAB(s)b midsize barred spiral galaxy that sits 60 mly away.

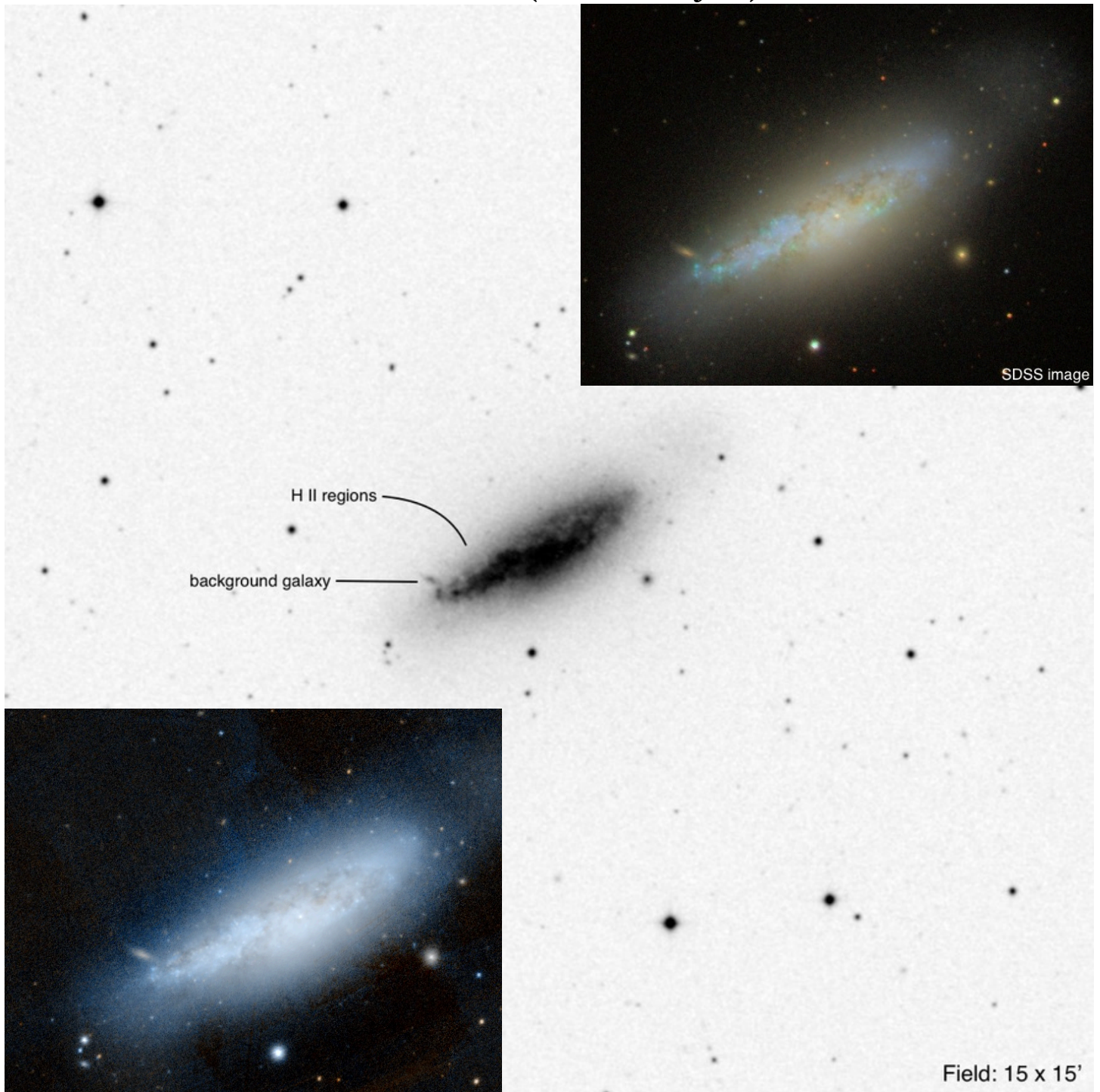
NED did not have any extragalactic objects labeled. The two obvious H II regions north of the center are noted. Also see Glahn's [sketch](#) with a 14.5" showing the ring structure.

NGC 4605 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 4605	12 39 59.4	+61 36 33	10.3	5.8 x 2.2'	11, 12

NGC 4605 (Ursa Major)

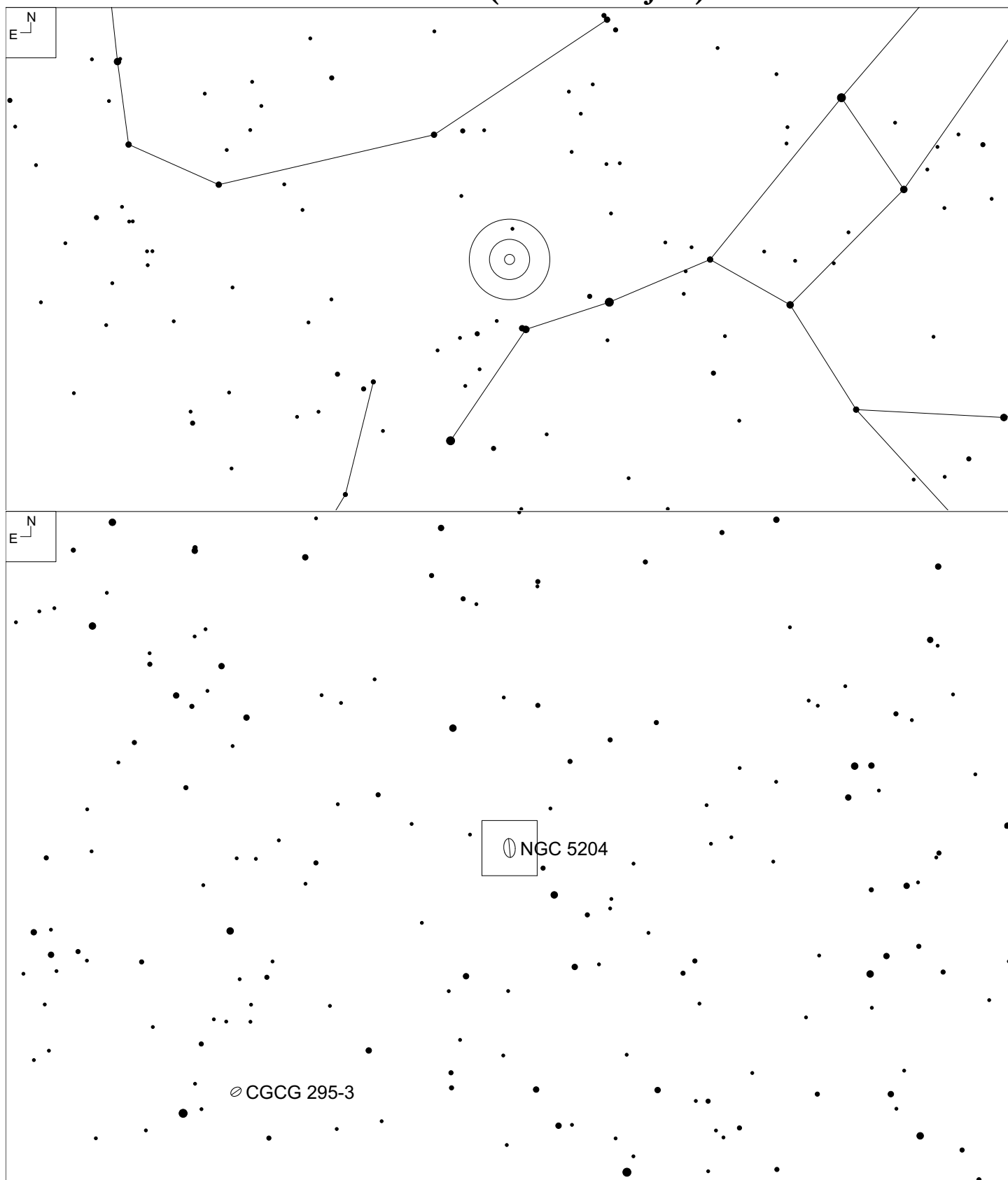


NGC 4605 is a type SB(s)c pec dwarf galaxy at a distance of 18 mly from Earth. It is part of the M 81 Group.

Taking a closer look at the PanSTARRS image, it appears that the southwestern half of the galaxy shows significant star forming regions. See inset from PanSTARRS.

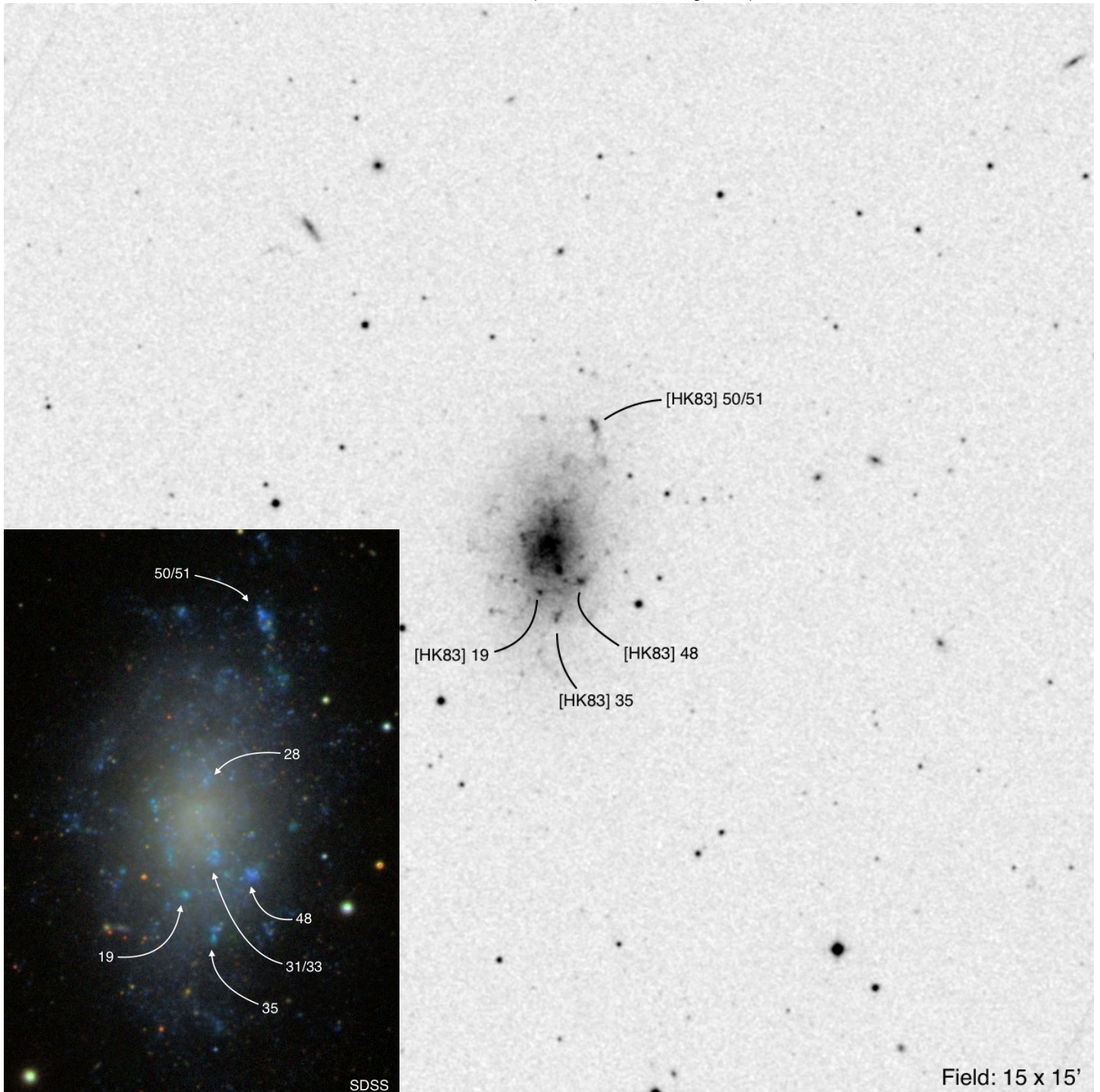
Steve Gottlieb noted that the SE tip is brighter with mottled H II regions through his 18" reflector. See: [NGC 4605](#). Also see Glahn's [sketch](#) with a 16" showing 3 knots on the eastern half.

NGC 5204 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 5204	13 29 36.8	+58 25 26	11.7	2.7 x 1.9'	11

NGC 5204 (Ursa Major)

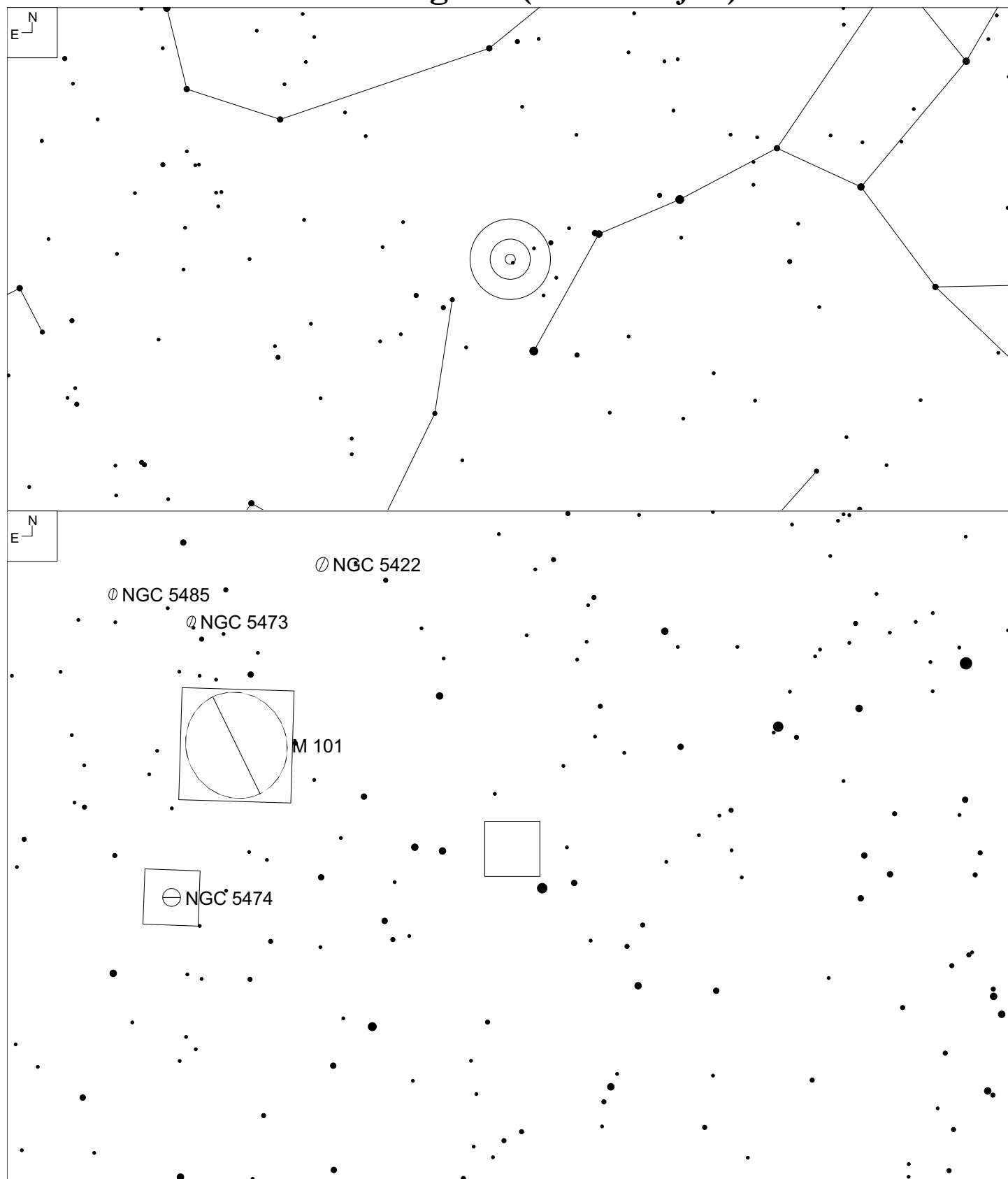


NGC 5204 is a type SA(s)m galaxy that sits 13 mly away and 19 kly across.

Additional labels provided in the SDSS as they are lost in the brighter center.

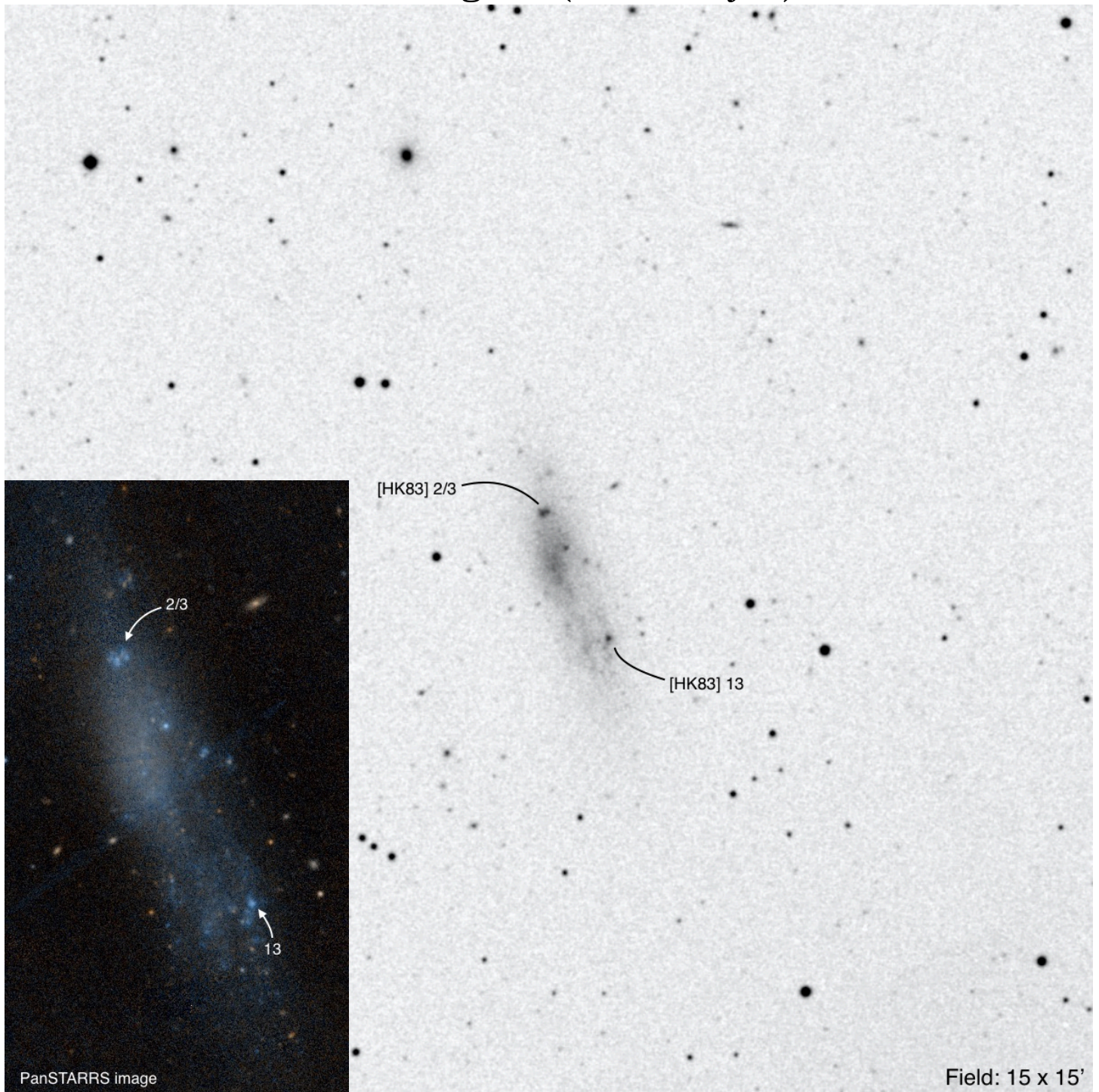
Glahn picked up 4 knots in his [sketch](#) with a 27" reflector, specifically [HK83] 28, 31/33, 48, and 50/51.

Holmberg IV (Ursa Major)



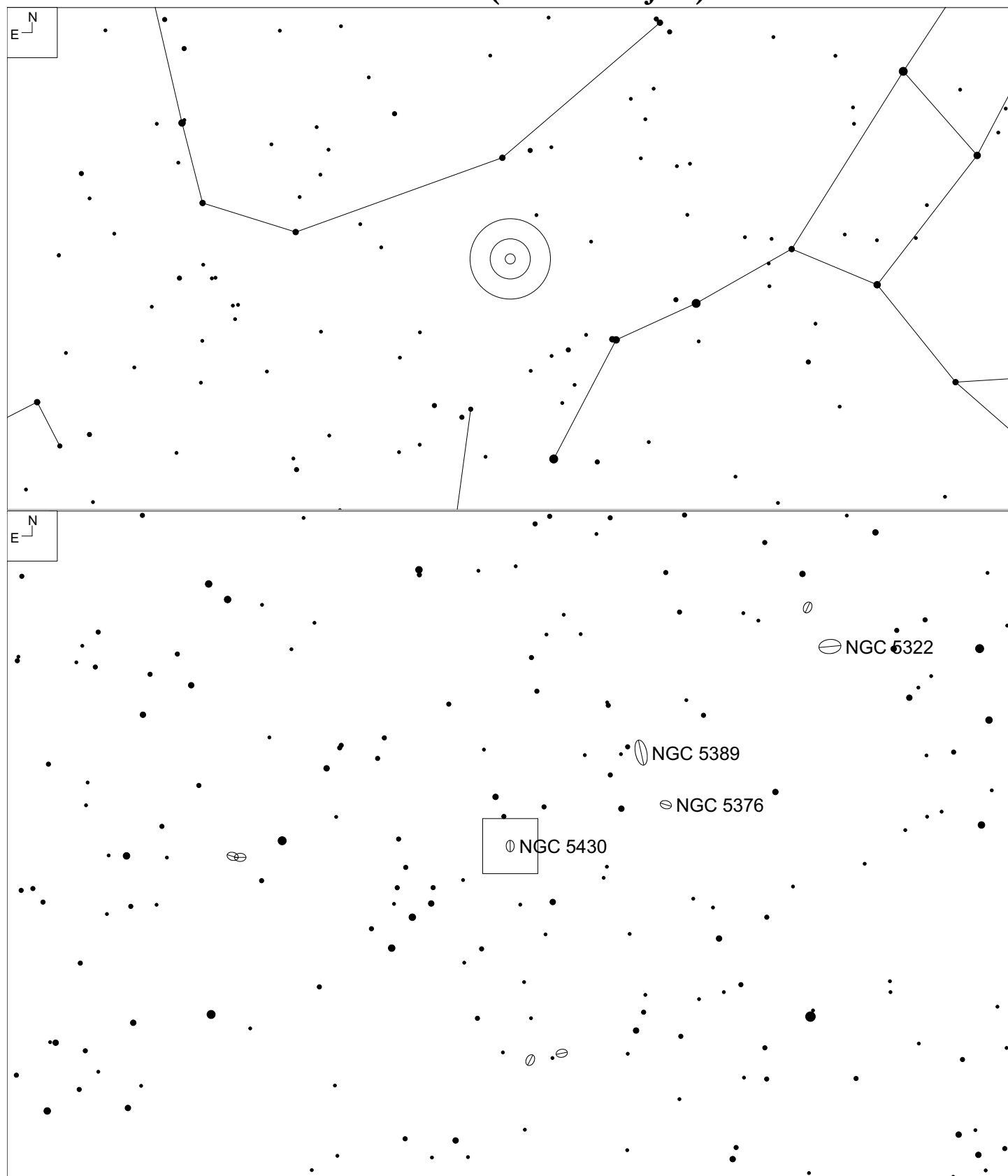
Object	RA	Dec	Mag	Size	iSDA
Holmberg IV	13 54 46.3	+53 54 20	14.2	2.1 x 0.7'	11

Holmberg IV (Ursa Major)



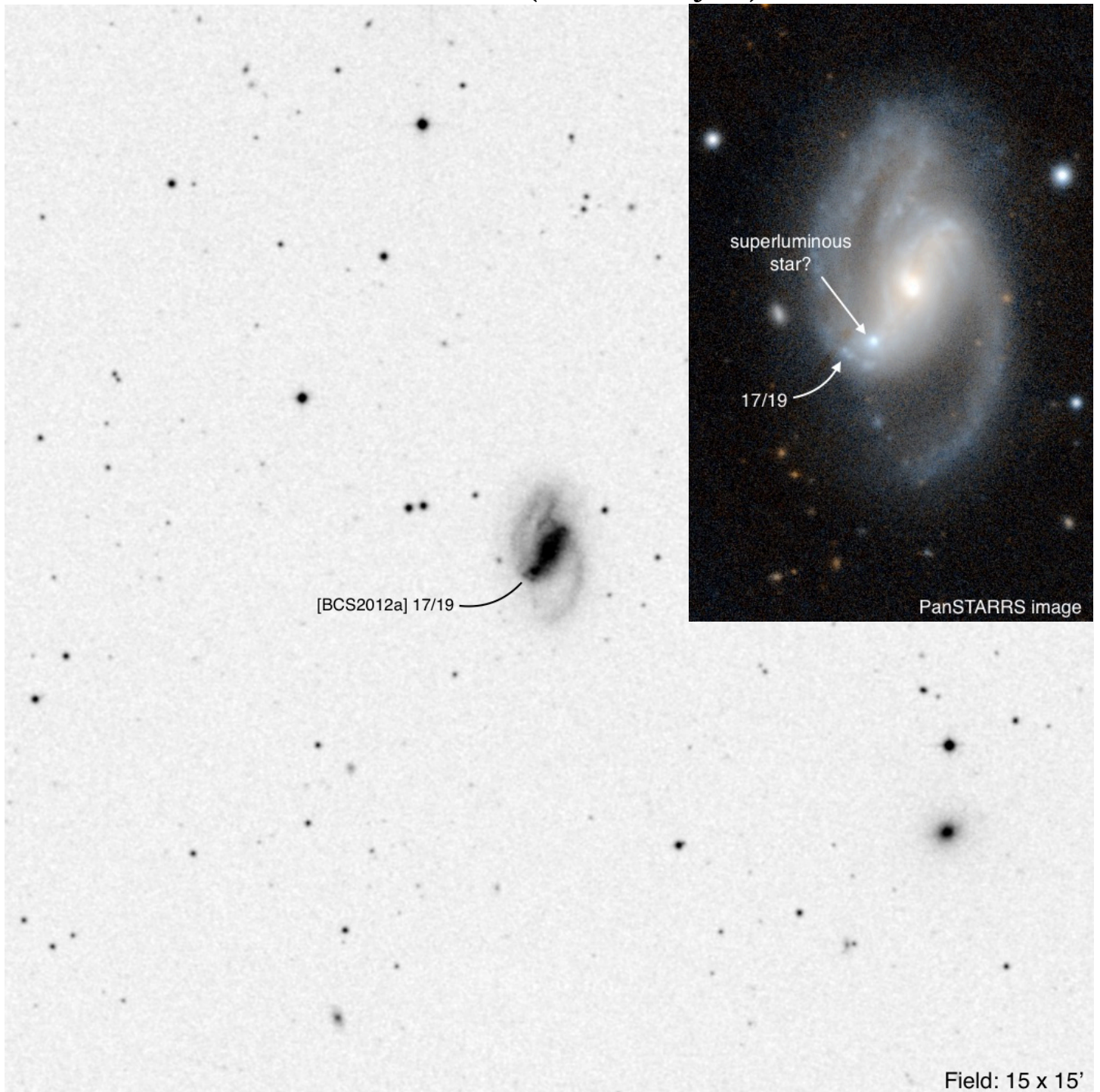
Holmberg IV is a type IB(s)m dwarf galaxy that lies 24 mly away from us. It is part of the M101 Group.

NGC 5430 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 5430	14 00 45.8	+59 19 43	11.9	2.2 x 1.1'	11

NGC 5430 (Ursa Major)

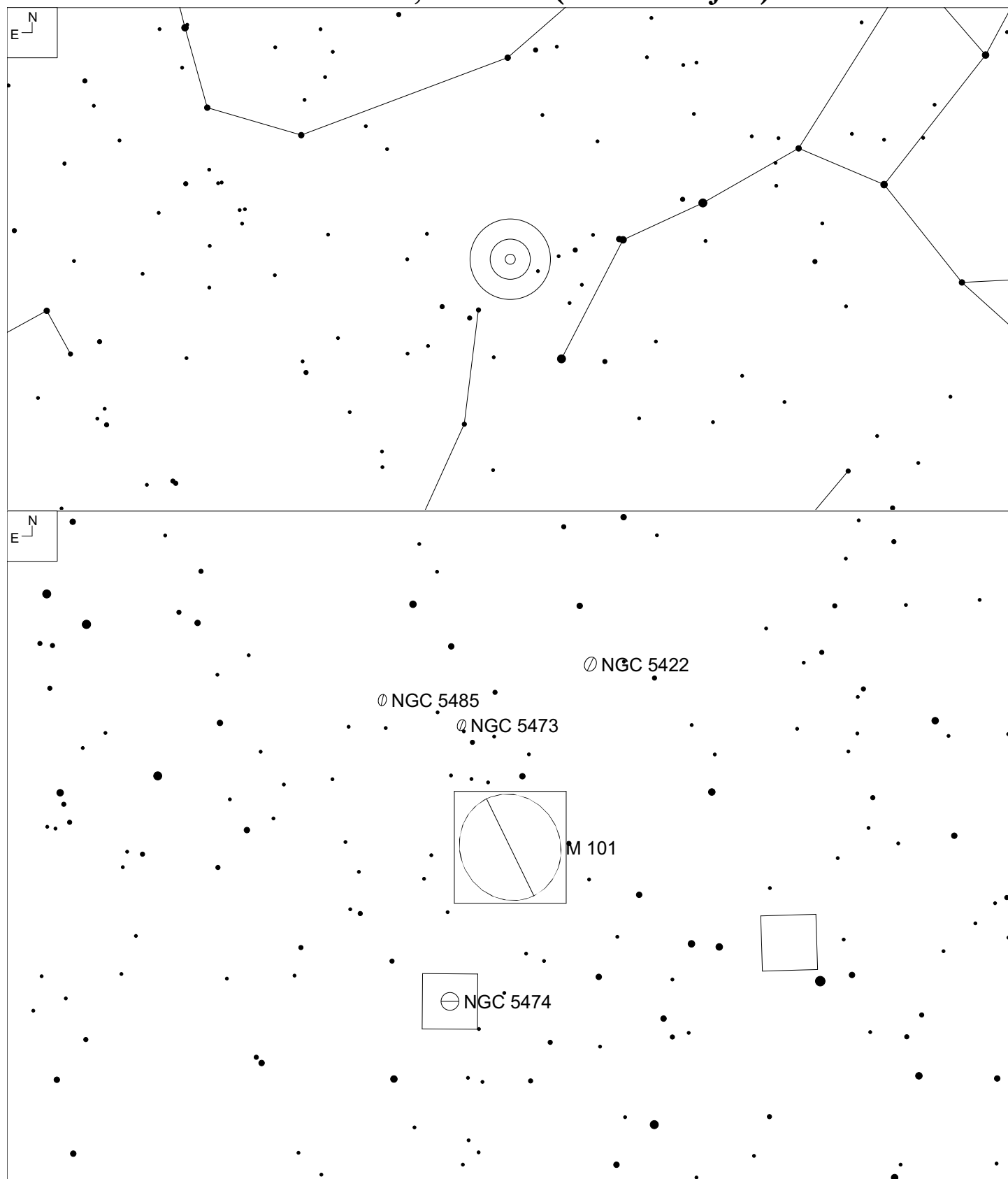


NGC 5430 is a type SB(s)b galaxy and sits 130 mly away. Some call this galaxy the Wolf Rayet Galaxy due to the superluminous H II regions with Wolf Rayet spectra.

H II region **[BCS2012a]** annotation from É. Brière, et al, “Properties of the giant H II regions and bar in the nearby spiral galaxy NGC 5430,” *Monthly Notices of the Royal Astronomical Society*, Volume 425, Issue 1 (Sept 2012): 261-272. Only the brightest H II region is marked on the SE tip.

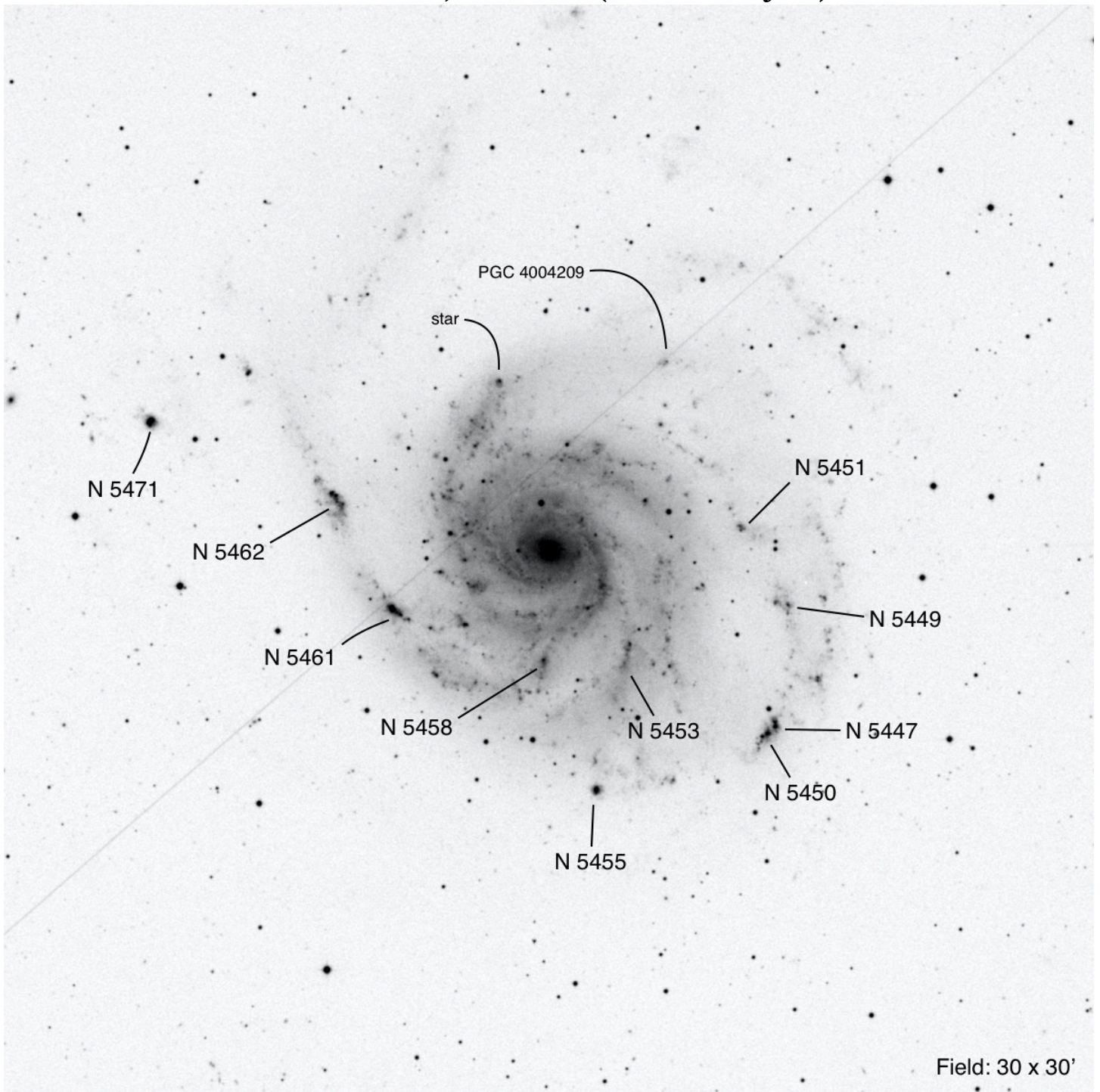
Glahn picked up a knot with his 27” on the southern tip of the bar, which could be the combined light of 17/19 and the superluminous star, see [sketch](#).

NGC 5457, M 101 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 5457 (M 101)	14 03 12.6	+54 20 56	7.9v	28.9 x 26.9'	11

NGC 5457, M 101 (Ursa Major)

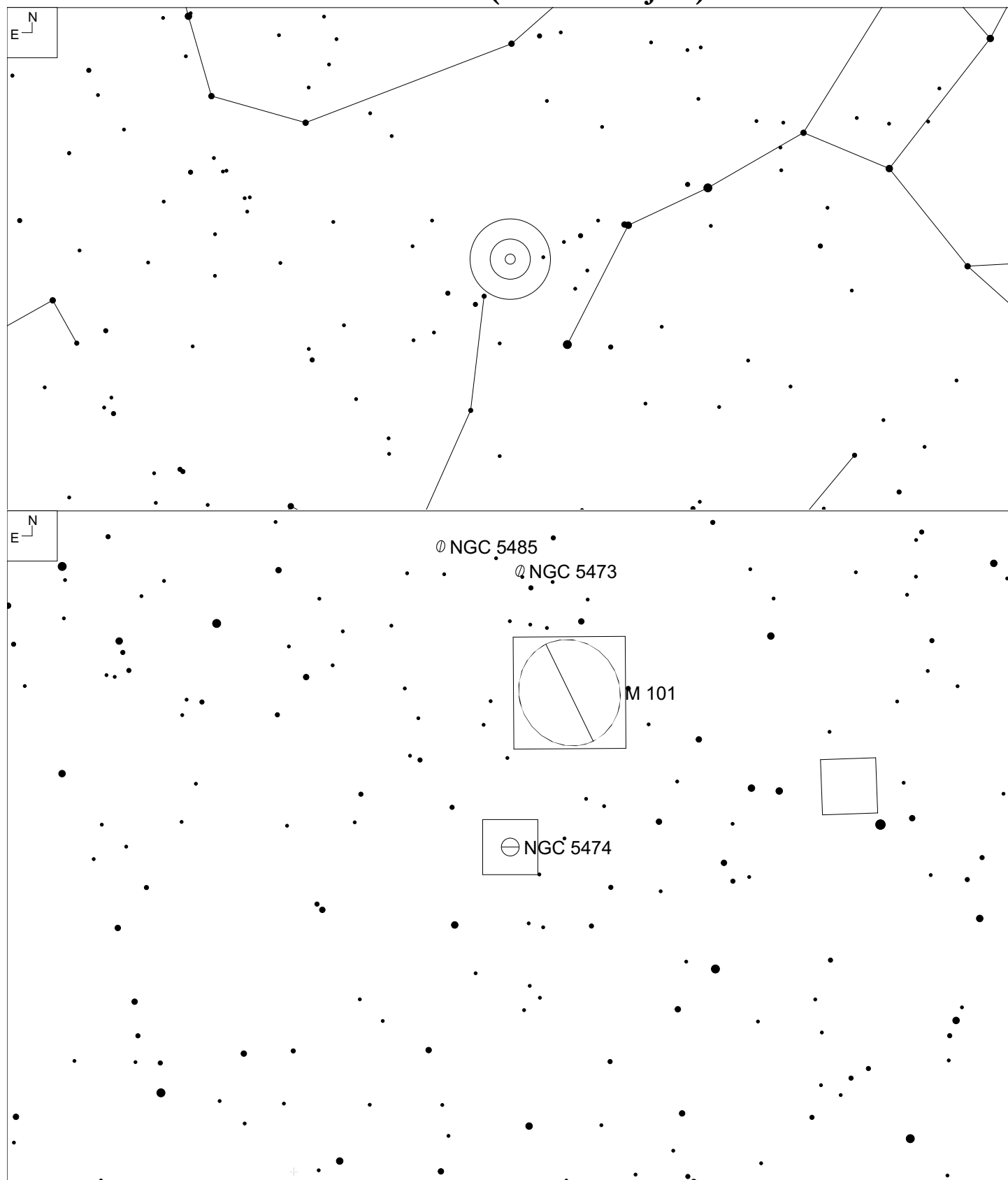


M 101 is a type SAB(rs)cd grand design spiral galaxy sitting 24 mly away and about 200 kly across. Lord Rosse was the first observer to see and note the spiral structure.

For a detailed observing article, see Howard Banich, “The Determined Observer’s Guide to M 101,” *Sky & Telescope* (June 2013). Also see his website (scroll to M 101), [Banich Notes](#)

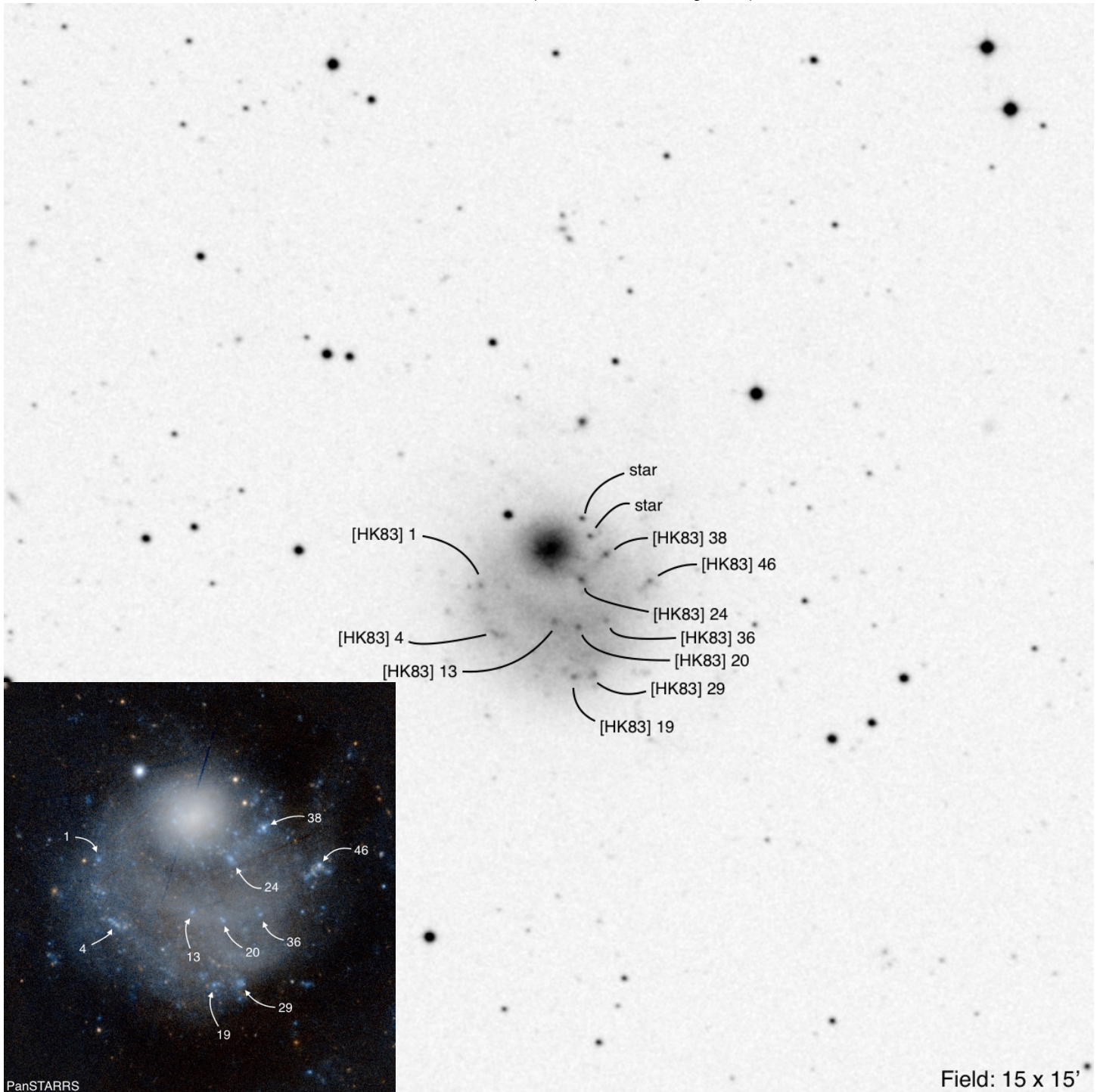
For detailed observing notes of the galaxy plus numerous H II regions and other knots, see Steve Gottlieb’s observing notes with the 18” and 24” reflectors: [NGC 5457](#). See Glahn’s [sketch](#) with a 14” reflector detailing how much detail can be seen with a midsized telescope.

NGC 5474 (Ursa Major)



Object	RA	Dec	Mag	Size	iSDA
NGC 5474	14 05 02.2	+53 40 01	10.8	2.6 x 2.3'	11, 20

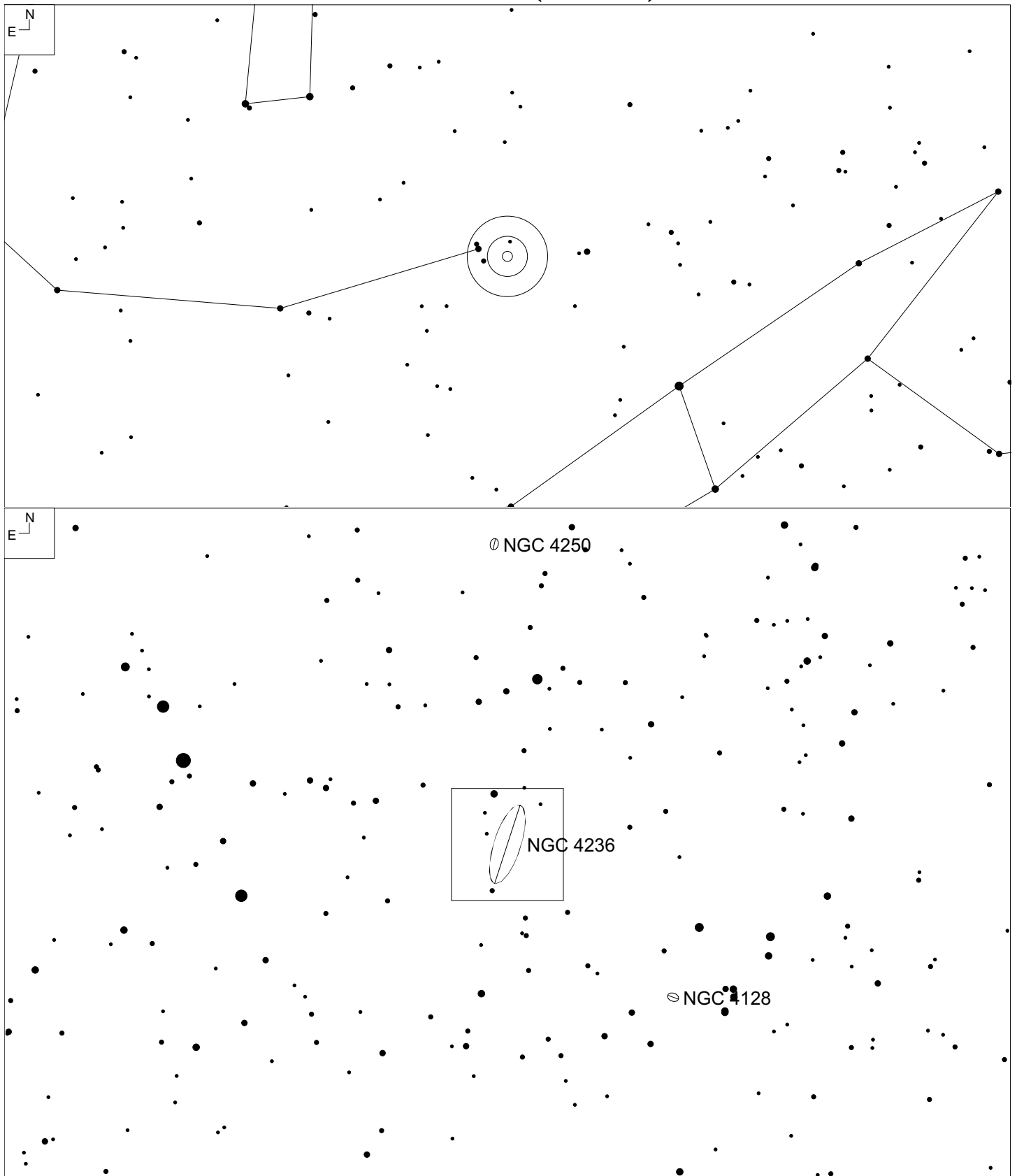
NGC 5474 (Ursa Major)



NGC 5474 is a type SA(s)cd pec dwarf galaxy sitting 21 mly away. It is one of M101's companions and likely the source of the asymmetric appearance.

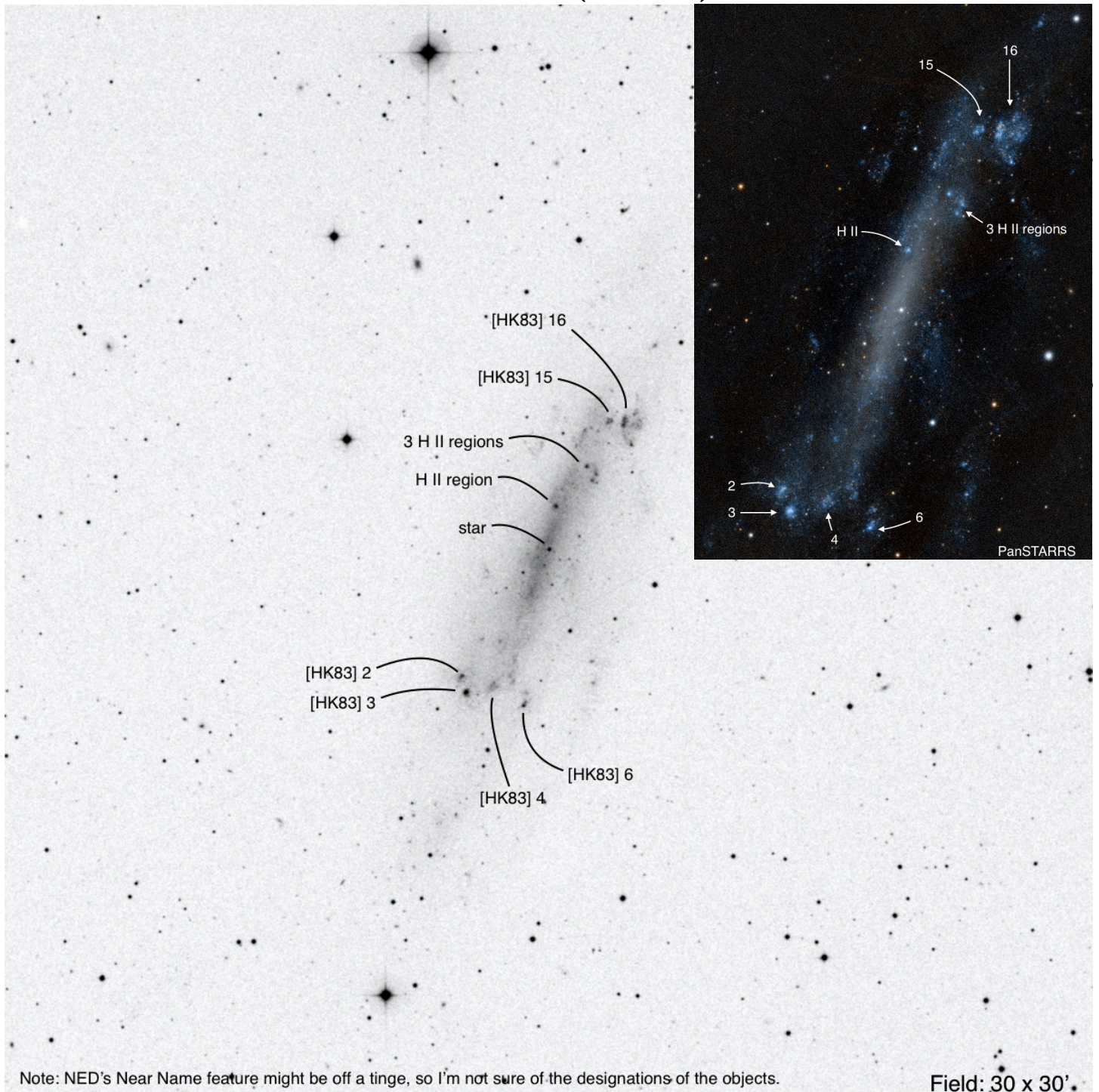
See Uwe Glahn's [sketch](#) with a 27'' where he picked up 4 knots, specifically, [HK83] 4, 19, 29, and 46.

NGC 4236 (Draco)



Object	RA	Dec	Mag	Size	iSDA
NGC 4236	12 16 41.4	+69 28 05	10.5	21.9 x 7.2'	4, 5

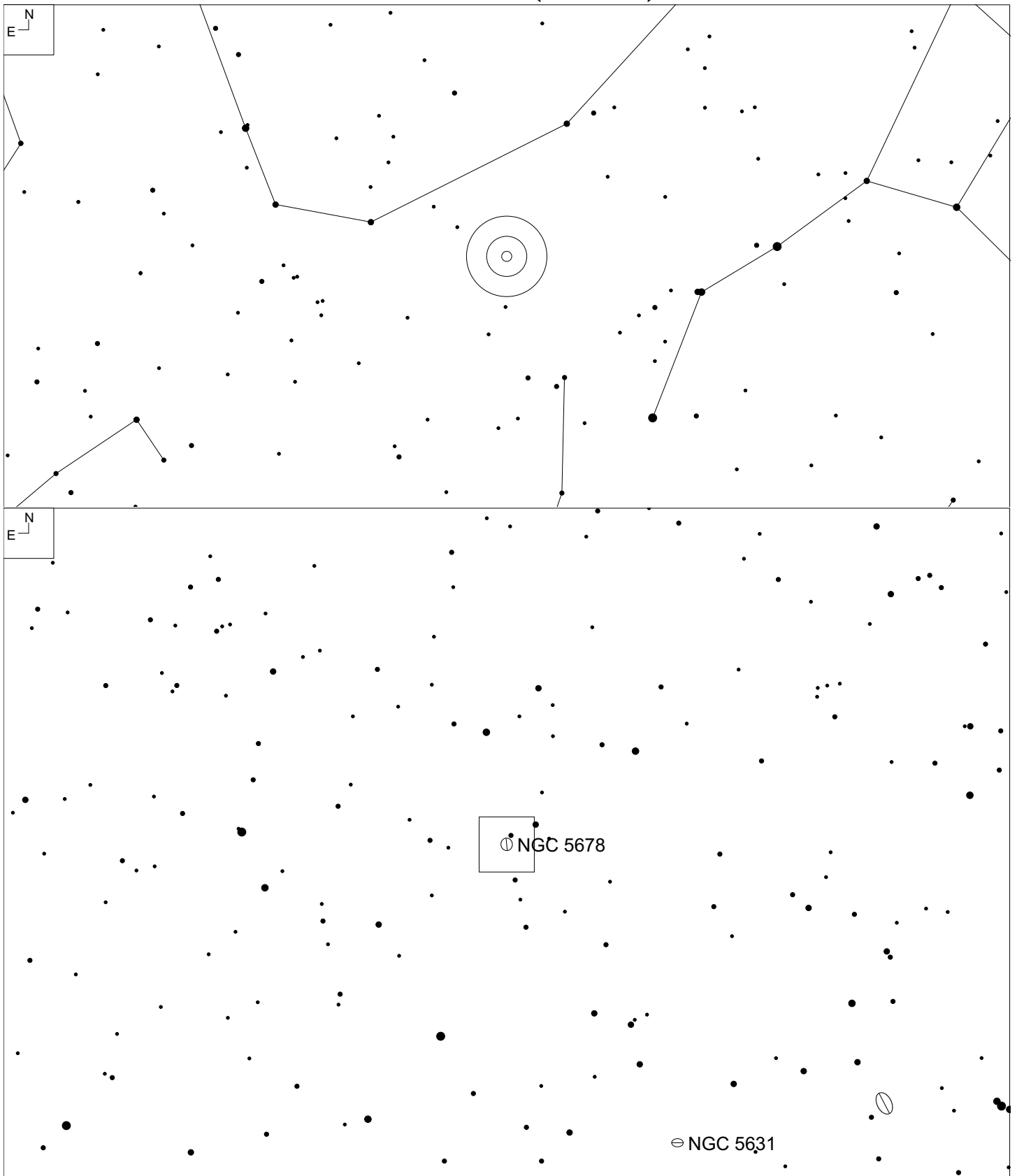
NGC 4236 (Draco)



For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4236](#). Glahn picked up nearly all of the labeled knots with just a 14" reflector as shown in his [sketch](#).

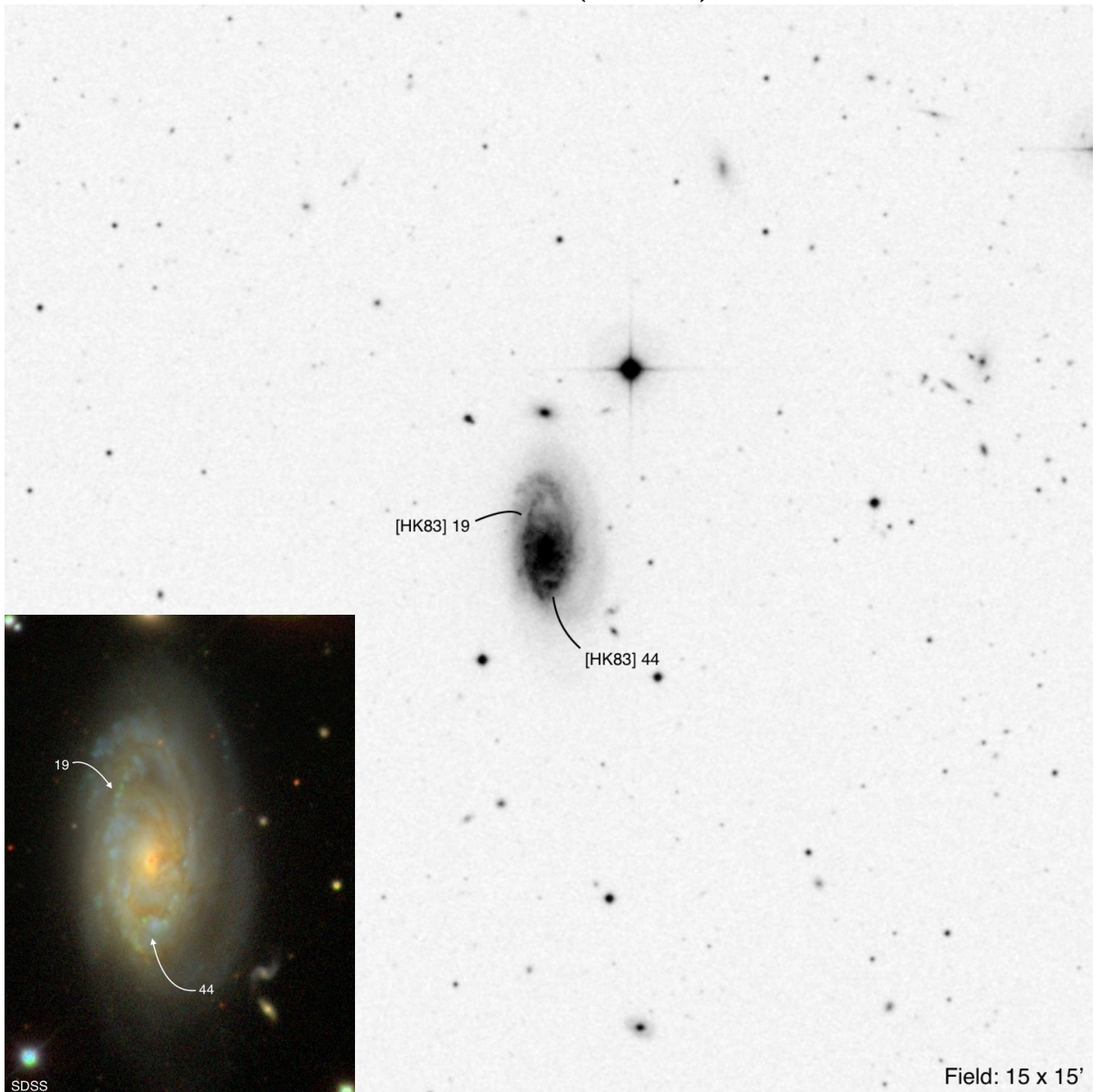
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 85-89.

NGC 5678 (Draco)



Object	RA	Dec	Mag	Size	iSDA
NGC 5678	14 32 06.6	+57 55 34	11.8	2.4 x 1.4'	10, 11

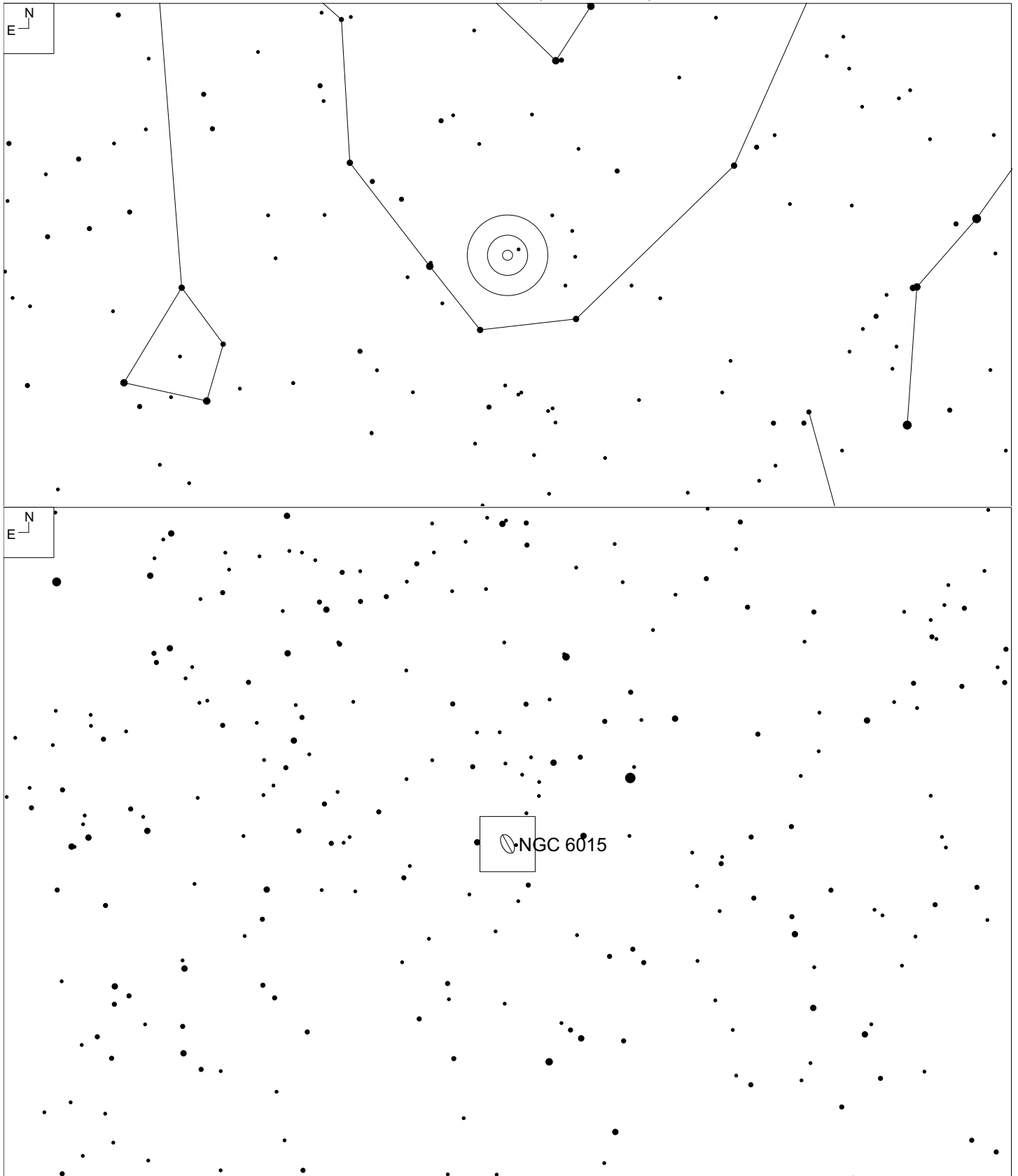
NGC 5678 (Draco)



NGC 5678 is a type SAB(rs)b barred spiral galaxy that is 80 mly away from us.

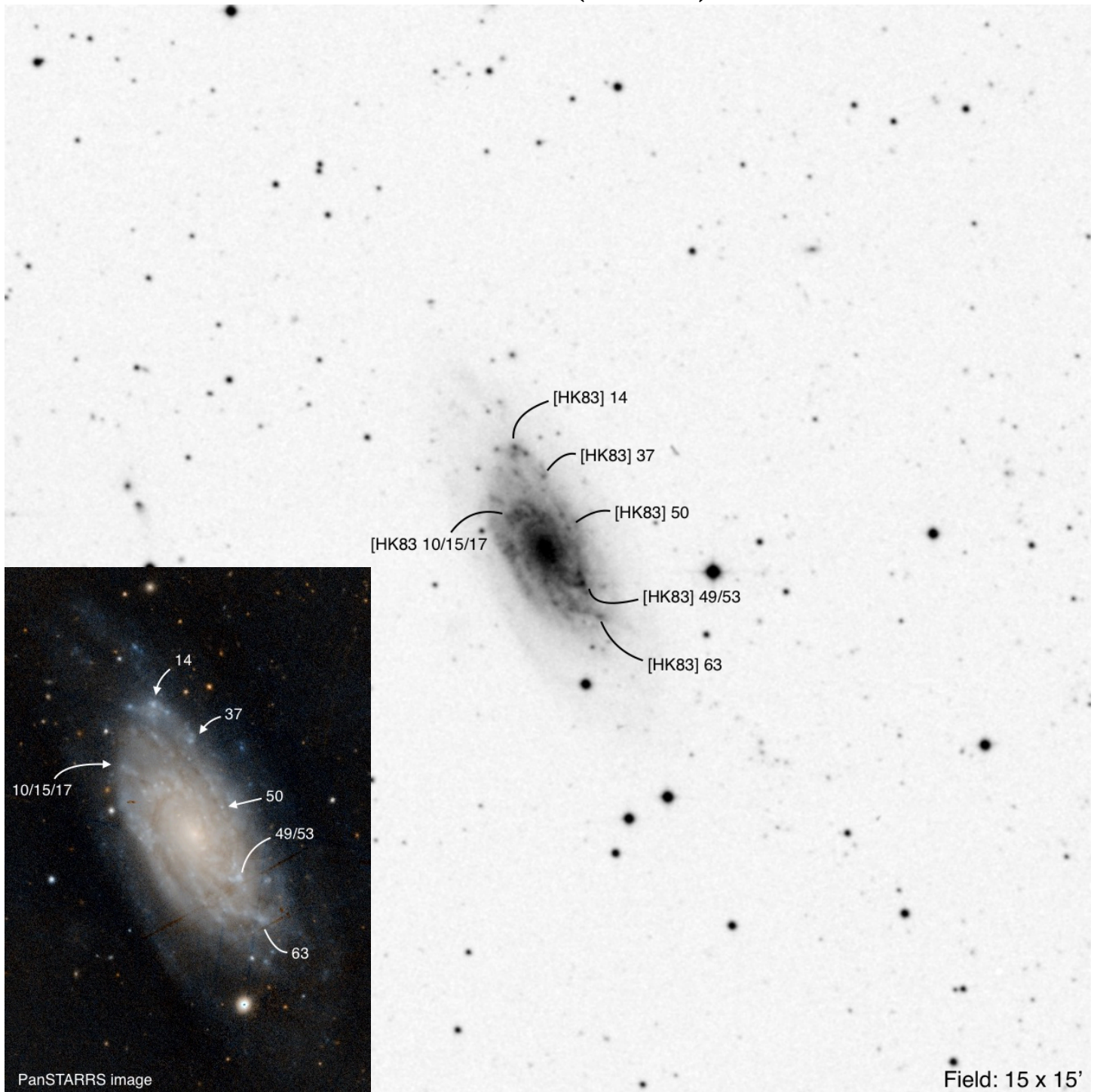
Taking a closer look at the Sloan Digital Sky Survey image should help you locate the two brighter H II regions, which Glahn picked the southern one up in his [sketch](#) with a 27" reflector.

NGC 6015 (Draco)



Object	RA	Dec	Mag	Size	iSDA
NGC 6015	15 51 27.2	+62 18 50	11.1	3.7 x 1.8'	3, 10, 11

NGC 6015 (Draco)

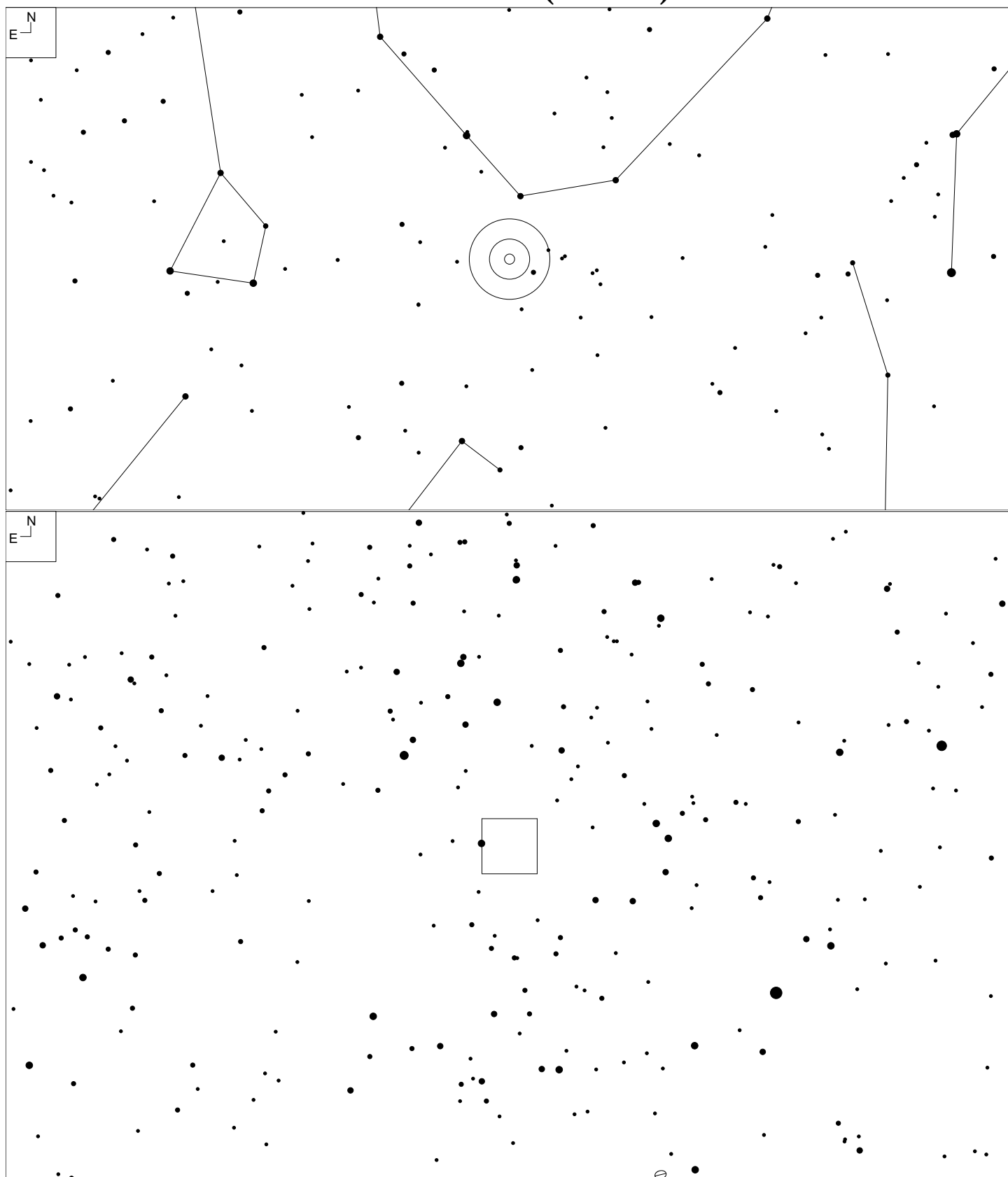


NGC 6015 is a type SA(s)c spiral galaxy that sits 40 mly away.

L. Verdes-Montenegro, et al. "The ringed, warped and isolated galaxy NGC 6015," *Astronomy and Astrophysics* Volume 321: 754-764

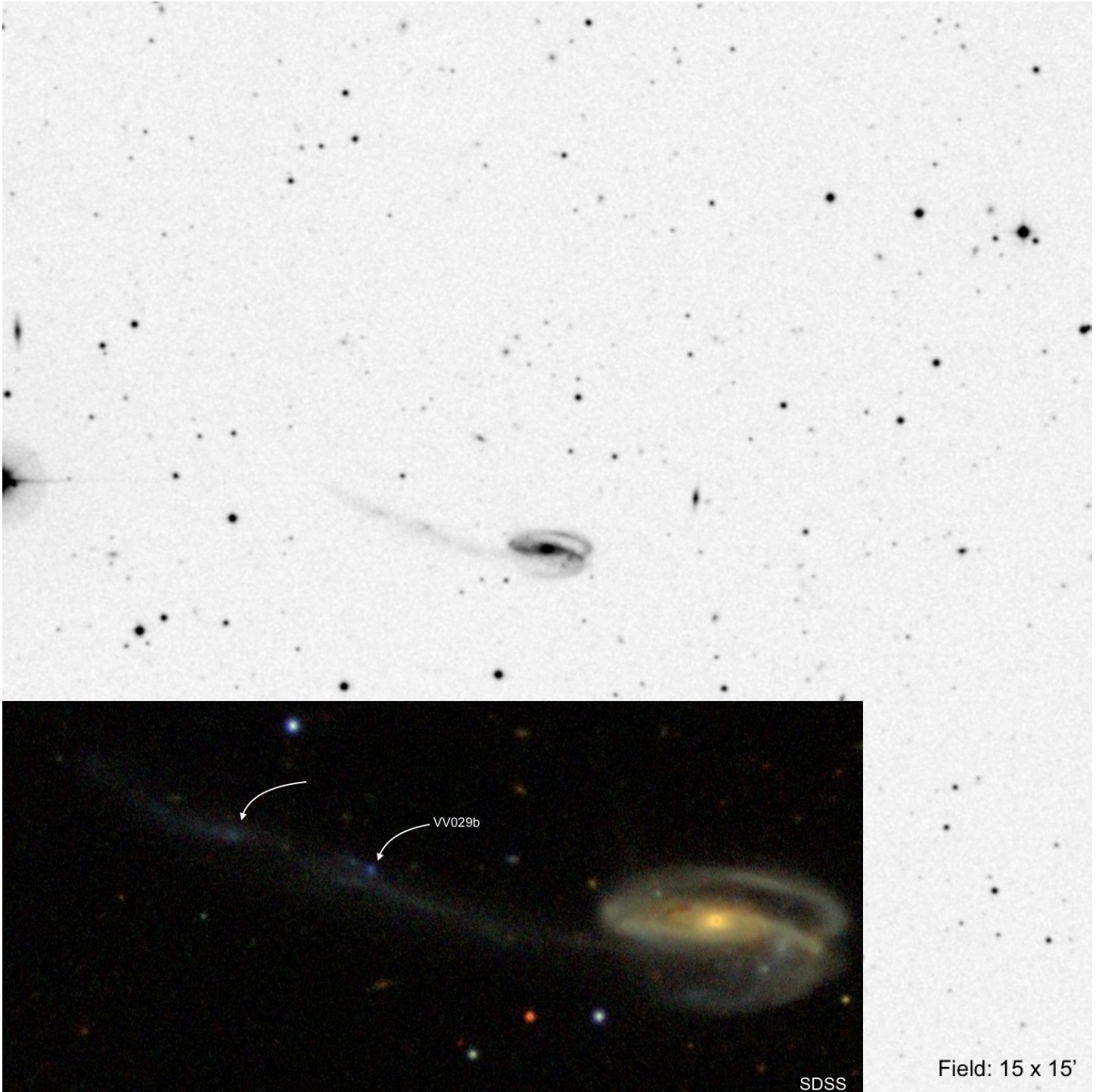
For more, see Jeff Kanipe. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. (Richmond, VA: Willmann-Bell, Inc., 2023), 158-159.

UGC 10214 (Draco)



Object	RA	Dec	Mag	Size	iSDA
UGC 10214	16 06 03.9	+55 25 32	13.7	1.5 x 0.7'	10

UGC 10214 (Draco)

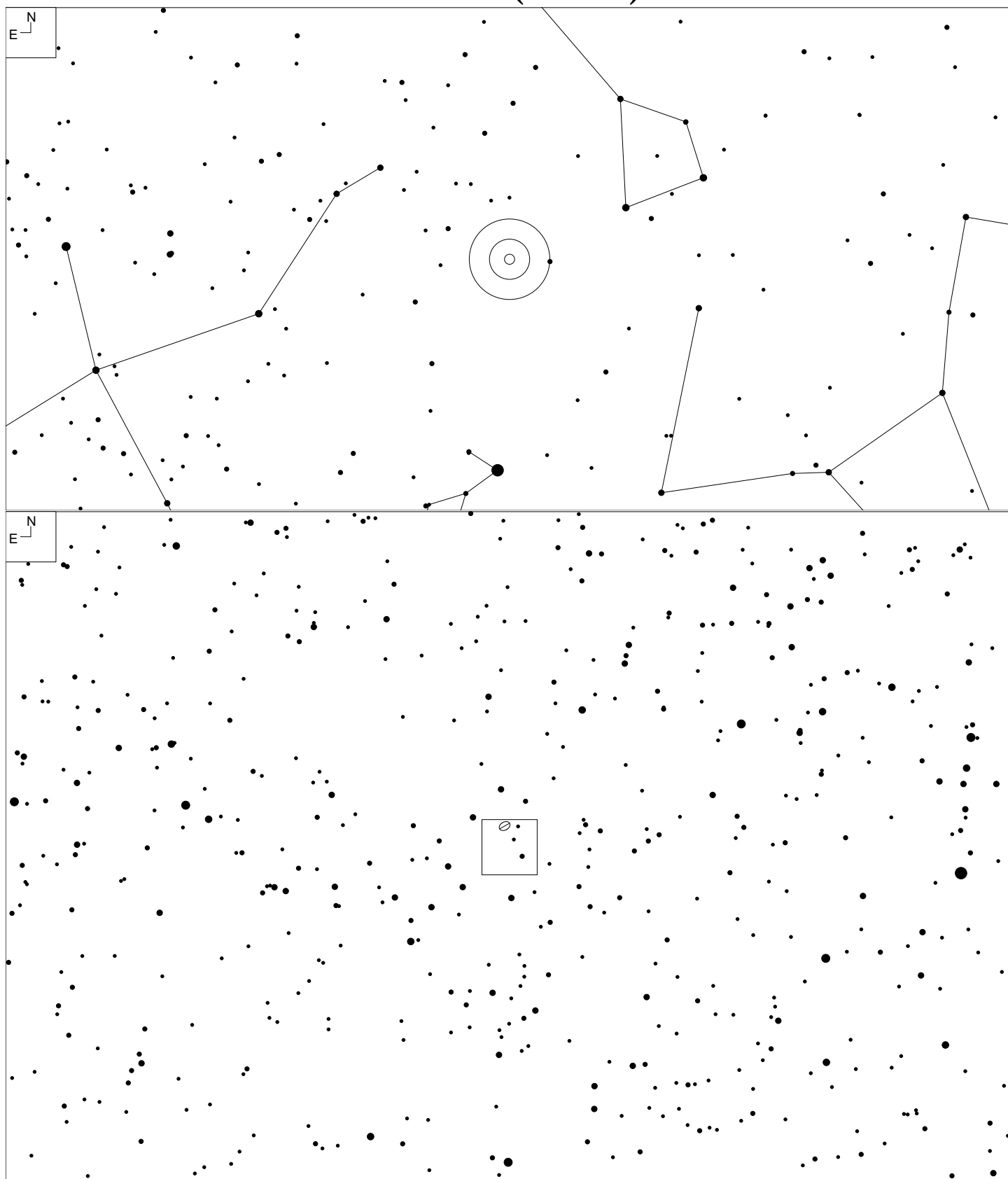


UGC 10214 is a type SB(s)c pec galaxy with a long streamer of stars that stretches three times longer than the galaxy itself. It is located 420 mly away and the streamer is 280 kly long! The streamer is likely caused by a merger with a smaller galaxy some time ago. The common name is the Tadpole Galaxy.

Two groups of young star clusters located on the tail to the east. Tran (2003) noted that the young star clusters in the tails/streamers that are between 3 to 10 million years old. The detailed image of the young clusters on page 752 is annotated as VV 029b in the SDSS image. See H. D. Tran, et al, "Advanced Camera for Surveys Observations of Young Star Clusters in the Interacting Galaxy UGC 10214" *The Astrophysical Journal* Volume 585, Issue 2, (Mar 2003): 750-755

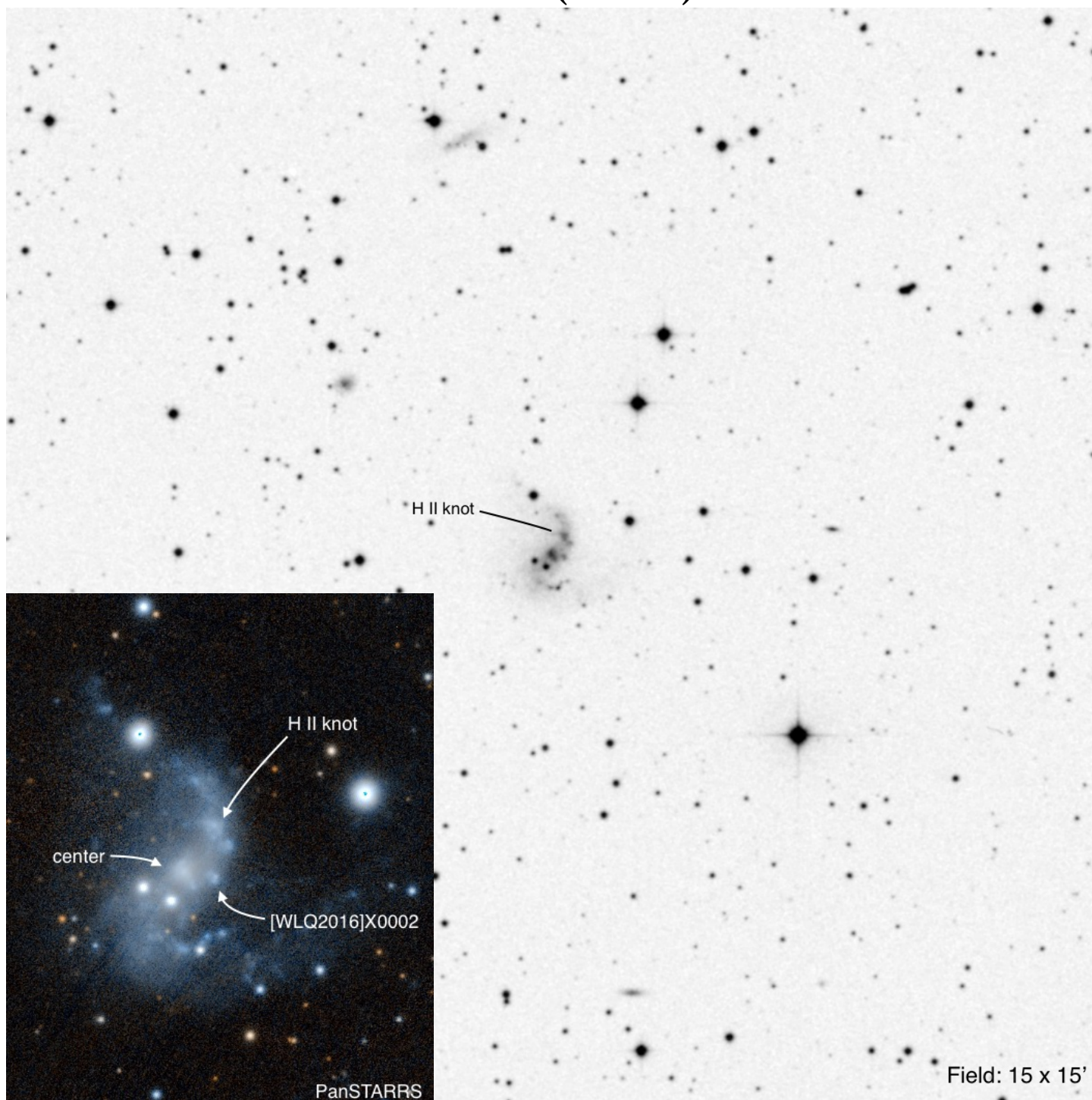
Glahn observed it with his 27" and picked up both of it as seen in his [sketch](#).

IC 1291 (Draco)



Object	RA	Dec	Mag	Size	iSDA
IC 1291	18 33 52.6	+49 16 43	13.0	1.8 x 1.5'	18, 19

IC 1291 (Draco)

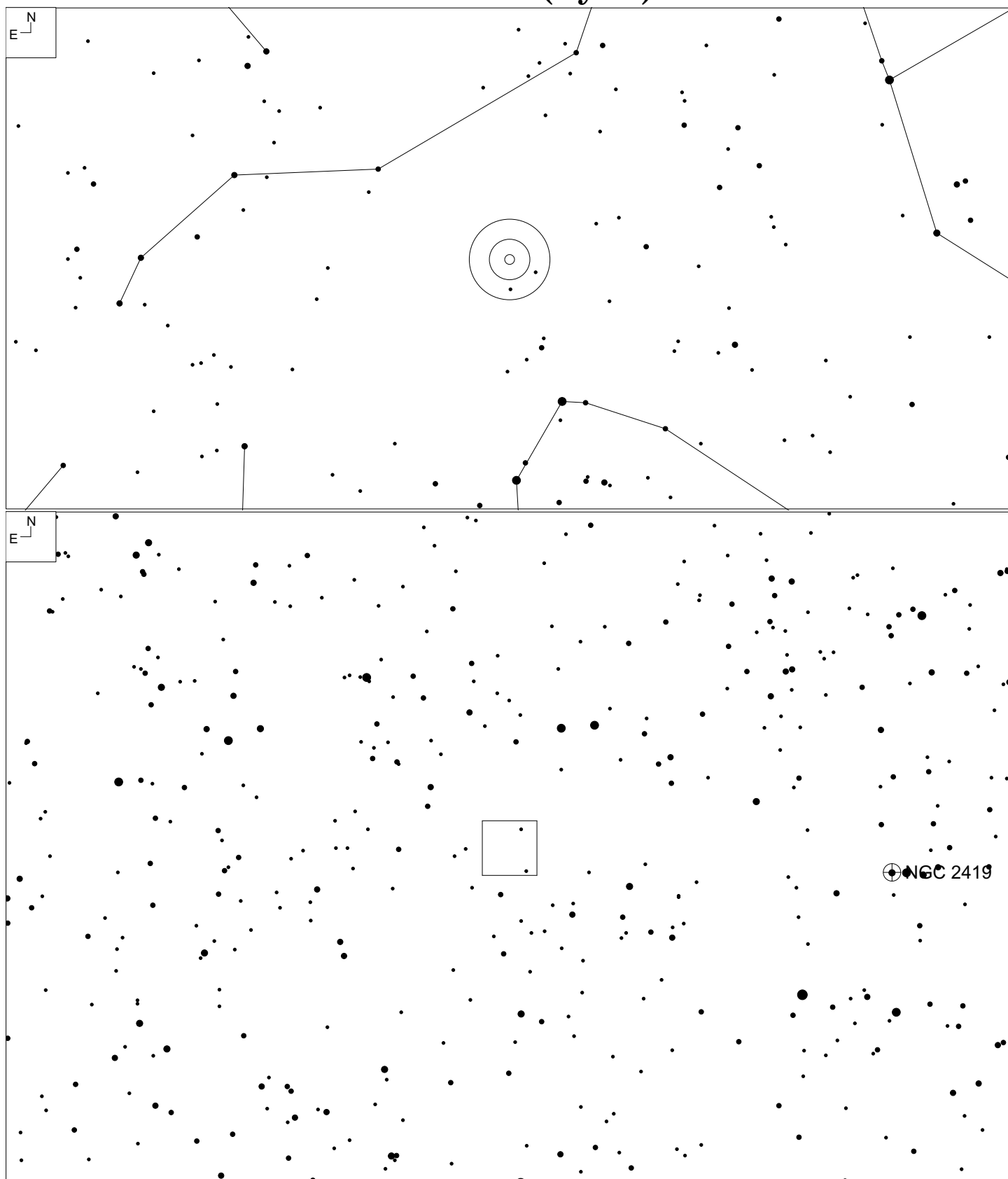


IC 1291 is a type SB(s)dm dwarf galaxy sitting about 100 mly distant.

X-ray source **[WLQ2016]** annotation, see Song Wang, et al. "CHANDRA ACIS Survey of X-Ray Point Sources: The Source Catalog," *The Astrophysical Journal Supplement Series*, Volume 224, Issue 2, Article ID 40 (June 2016): 22 pp.

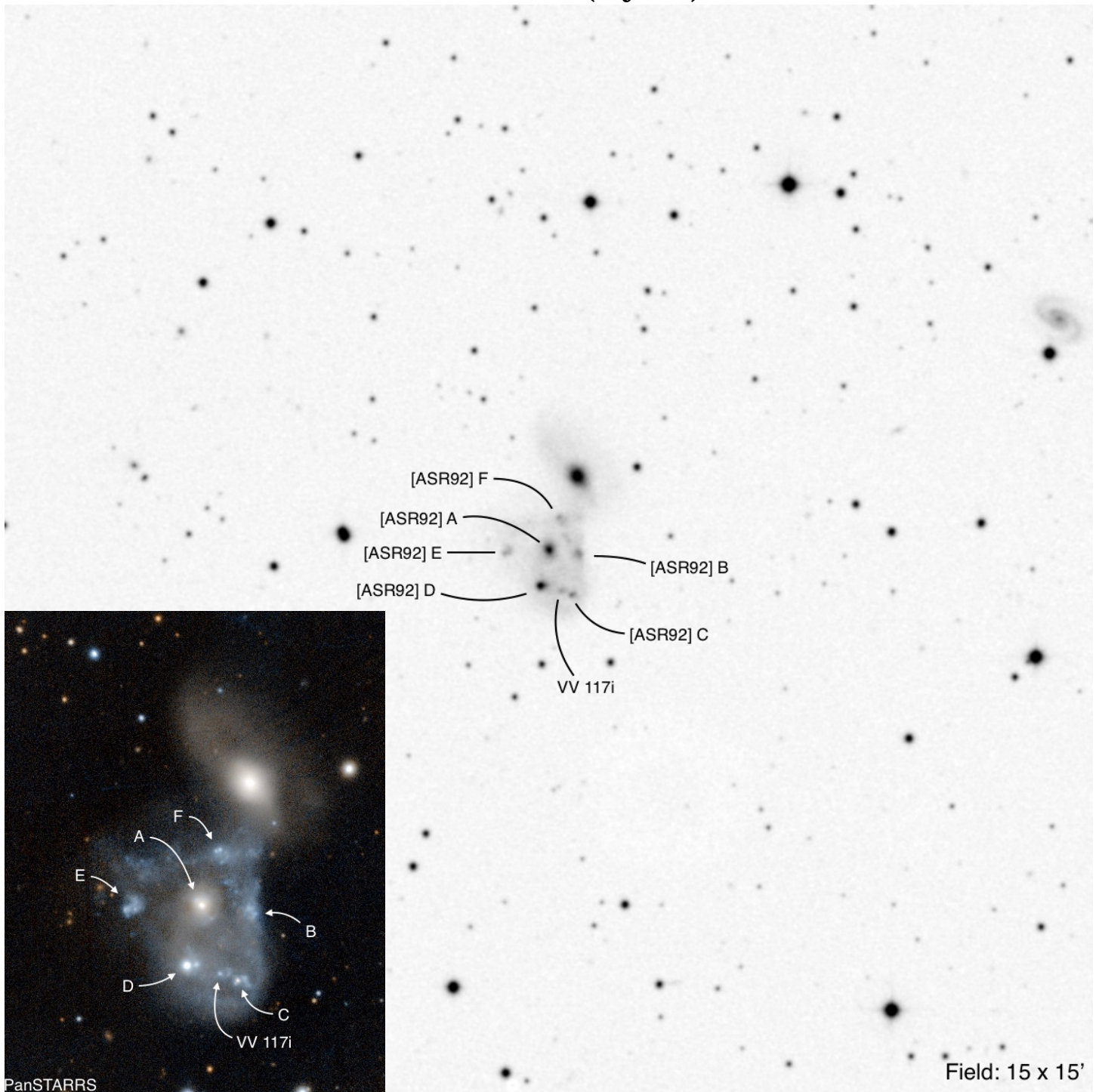
For observing notes with a 24" and 48" reflector, see Steve Gottlieb's notes: [IC 1291](#). Also see Glahn's [sketch](#) with a 27" where he picked up two knots and the center/knot.

NGC 2445 (Lynx)



Object	RA	Dec	Mag	Size	iSDA
NGC 2445	07 46 55.1	+39 00 55	13.0	1.4 x 1.1'	23, 24, 36

NGC 2445 (Lynx)



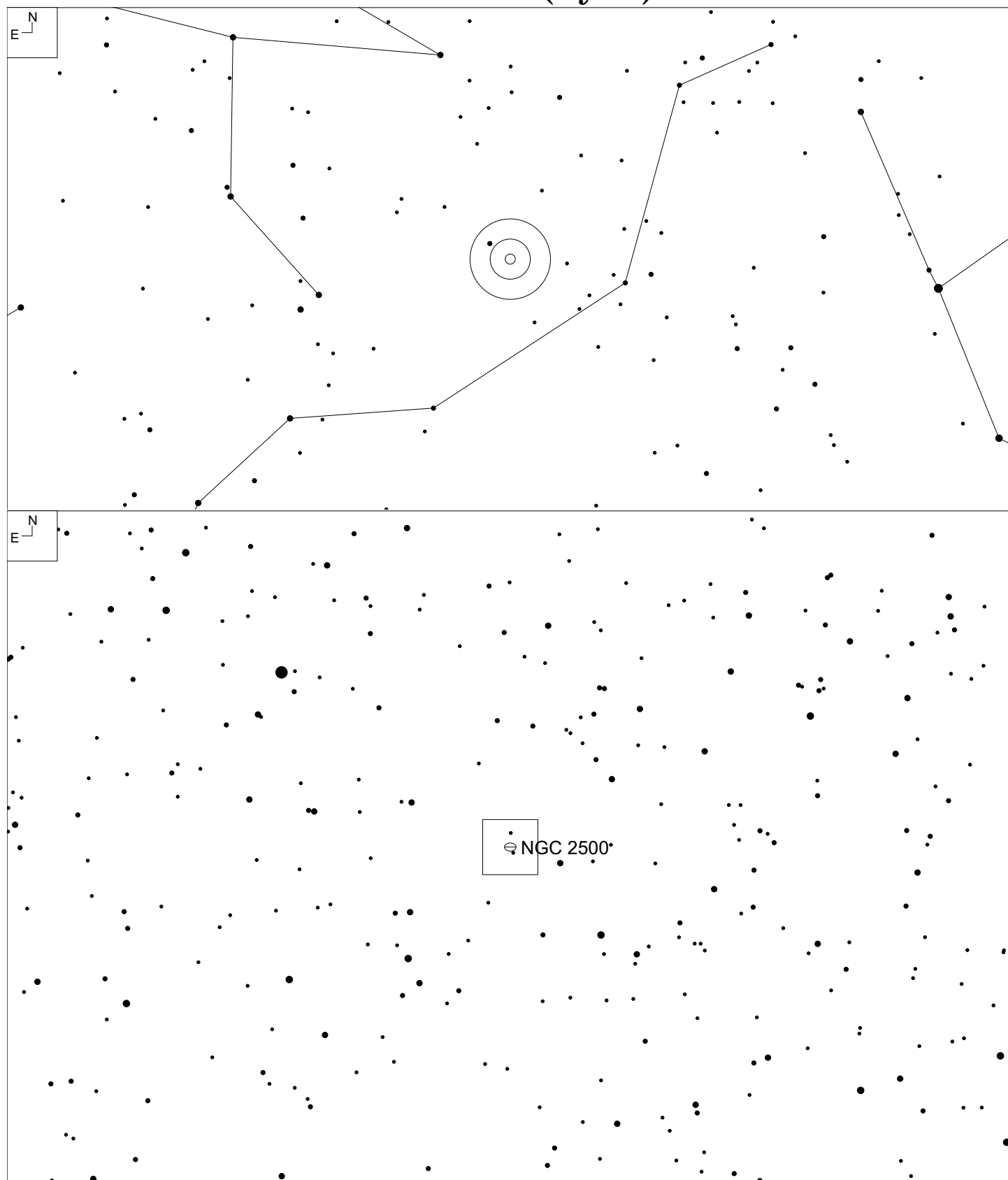
NGC 2445 is a type Im pec (Ring B) galaxy that is 180 mly away and 52 kly across. It became a peculiar ring galaxy due to a collision with NGC 2444.

H II region [ASR92] annotations from P. N. Appleton, Jet al. “A Multiwavelength Study of the Peculiar Interacting Galaxies ARP 143 = VV 117: Evidence for an Emerging Ring Galaxy?,” *Astrophysical Journal*, Volume 385 (Feb 1992): 491-500.

For observing notes with a 48” telescope, see Steve Gottlieb’s notes at: [NGC 2445](#).

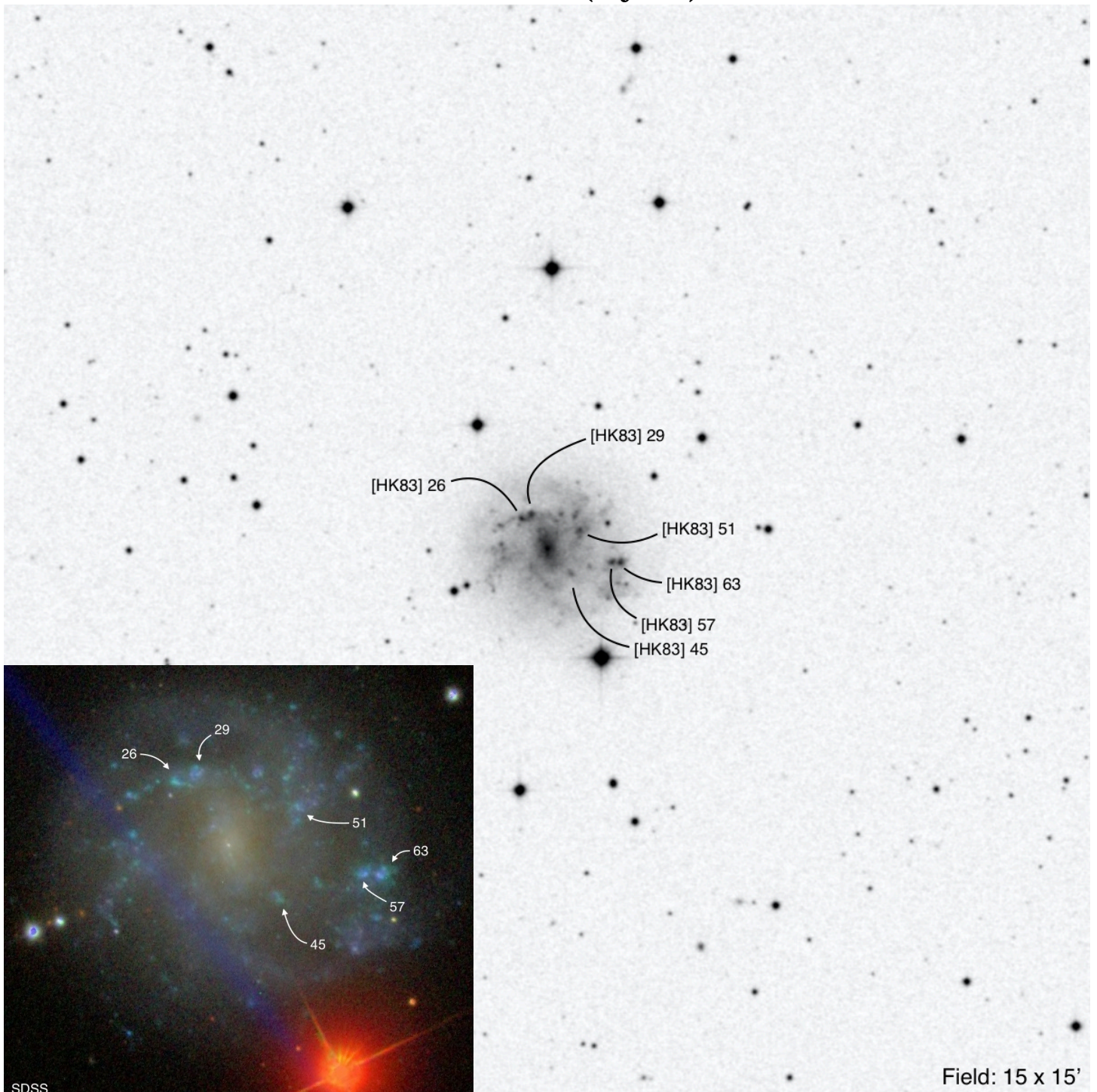
Glahn’s detailed [sketch](#) shows that he picked up all of the labeled knots with his 27” reflector.

NGC 2500 (Lynx)



Object	RA	Dec	Mag	Size	iSDA
NGC 2500	08 01 51.2	+50 44 19	11.6	2.3 x 1.5'	13, 23, 24

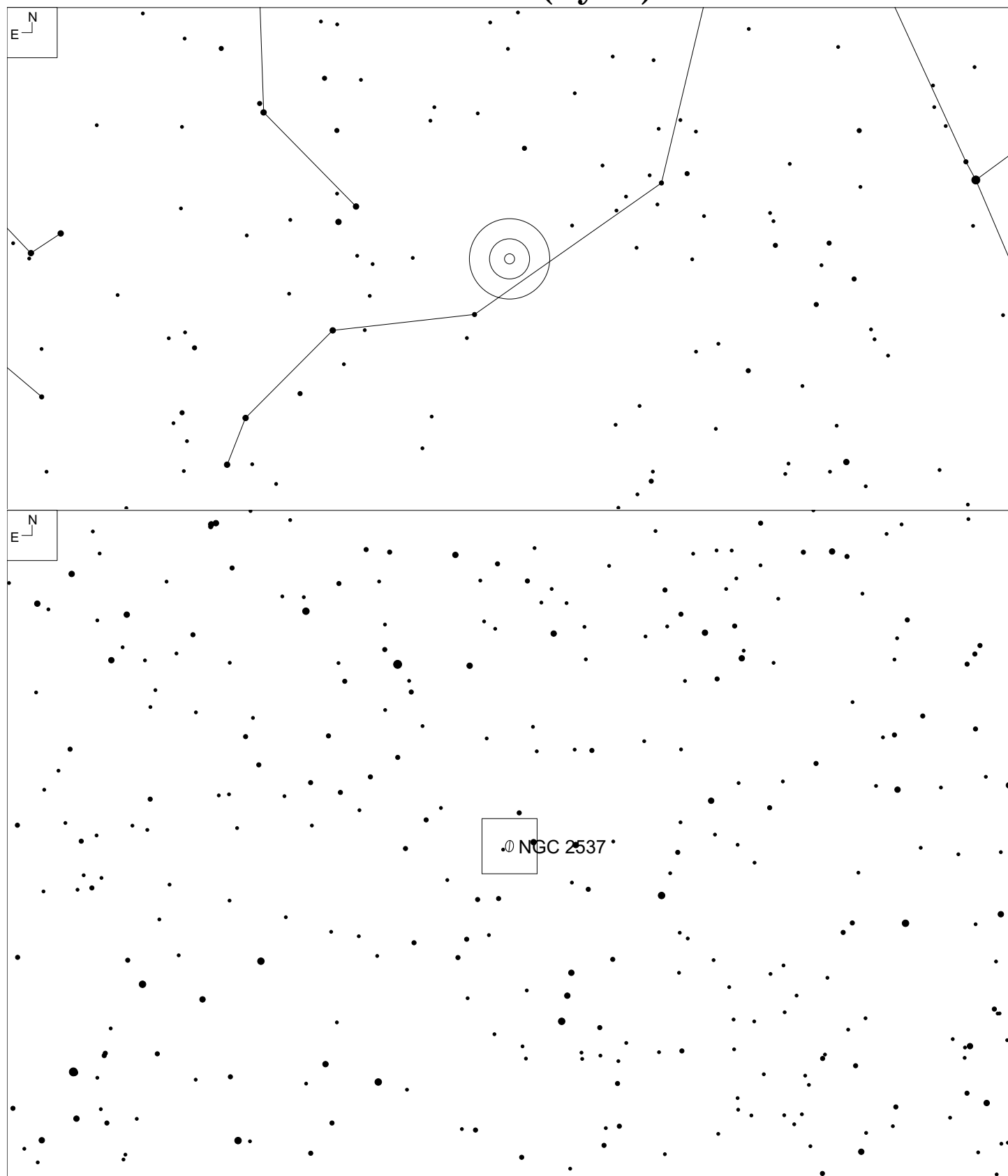
NGC 2500 (Lynx)



NGC 2500 is a type SB(rs)d late type barred spiral galaxy sitting 33 mly distant. It is part of the NGC 2841 Galaxy Group.

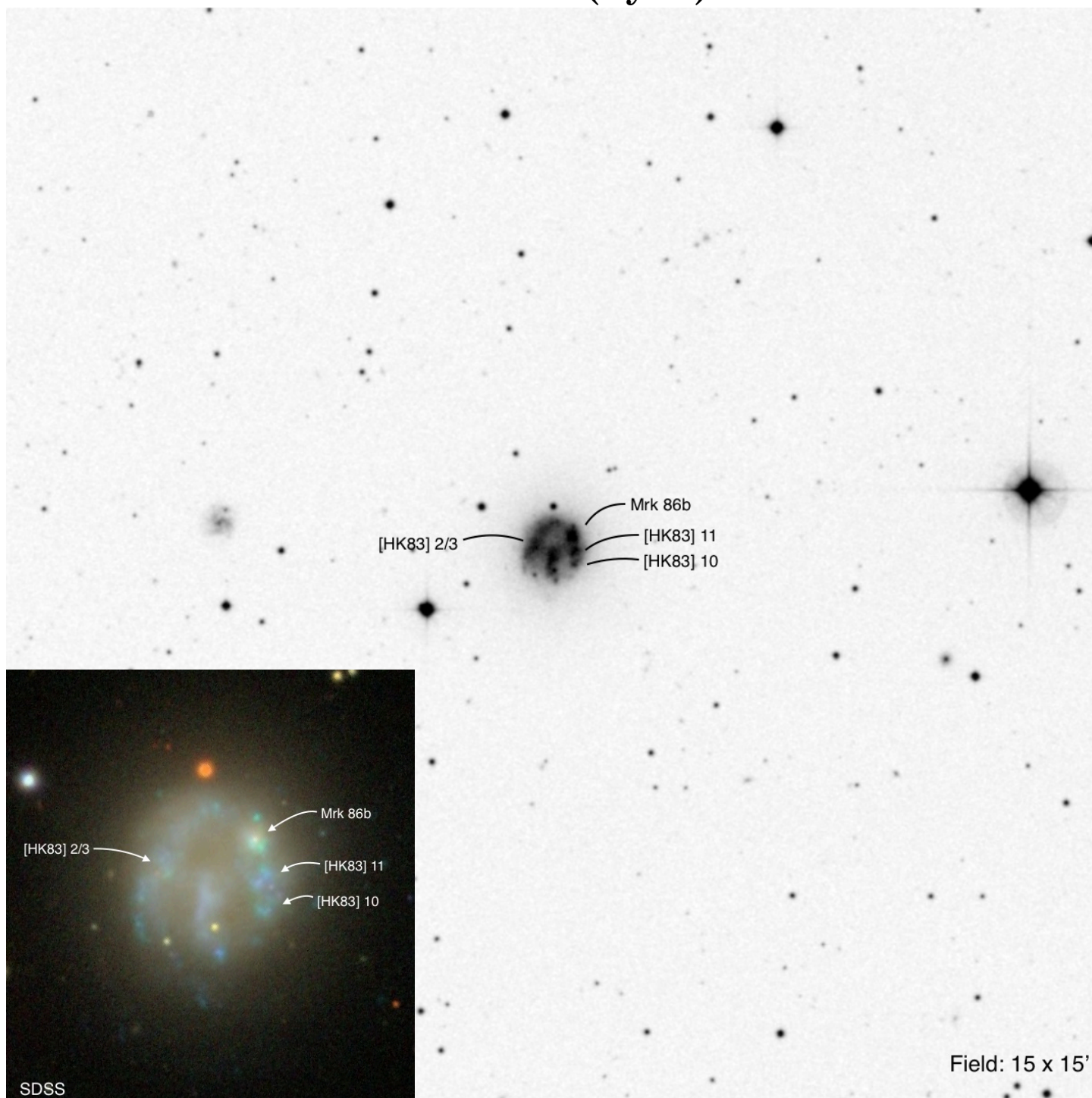
Uwe Glahn's detailed [sketch](#) showing detail on the surface of the galaxy.

NGC 2537 (Lynx)



Object	RA	Dec	Mag	Size	iSDA
NGC 2537	08 13 12.8	+45 59 29	11.7	2.2 x 1.9'	23, 24

NGC 2537 (Lynx)

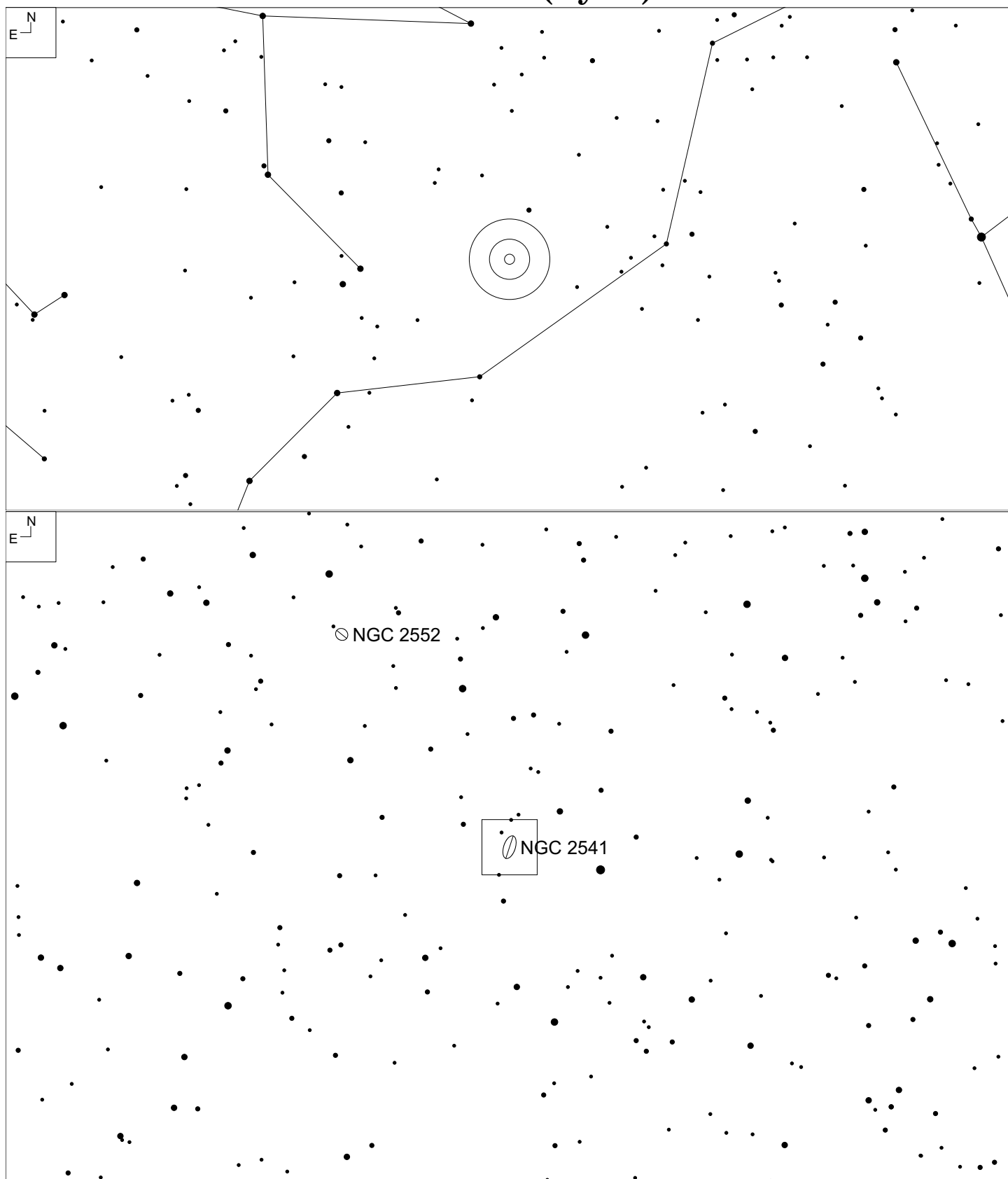


NGC 2537 is a type SB(rs)dm dwarf galaxy sitting 22 mly away. It is part of the iE class of Blue Compact Dwarf family of galaxies. Common name is Bear Paw Galaxy.

Mrk 86b = [BKD2008] WR 064. Possible Wolf Ryet super luminous star. See inset for clarity of extragalactic objects.

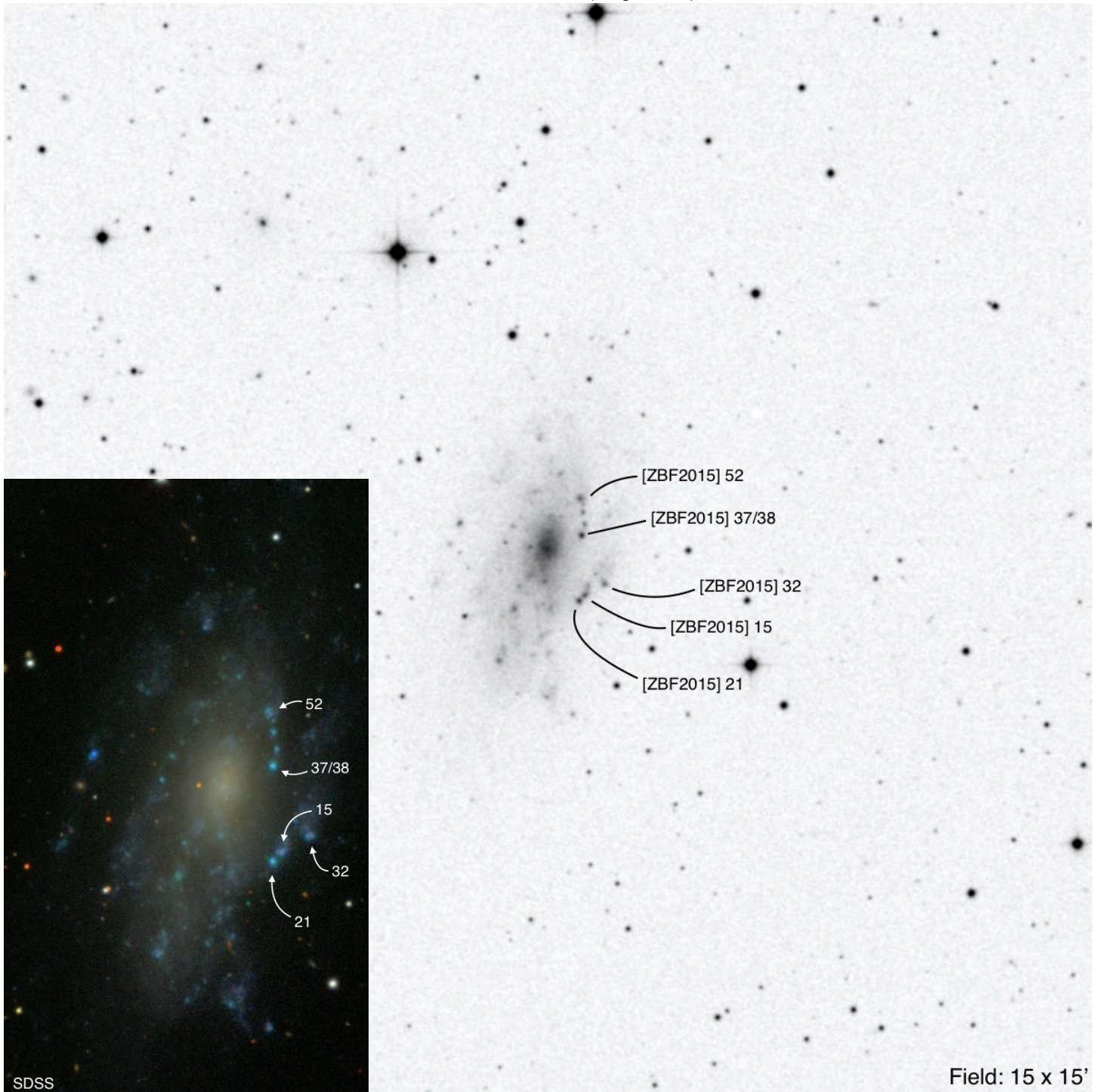
For observing notes with a 48" telescope, see Steve Gottlieb's notes : [NGC 2537](#). Glahn's [sketch](#) with a 20" showing detail and Mrk 86b.

NGC 2541 (Lynx)



Object	RA	Dec	Mag	Size	iSDA
NGC 2541	08 14 40.2	+49 03 43	11.8	6.3 x 3.2'	23, 24

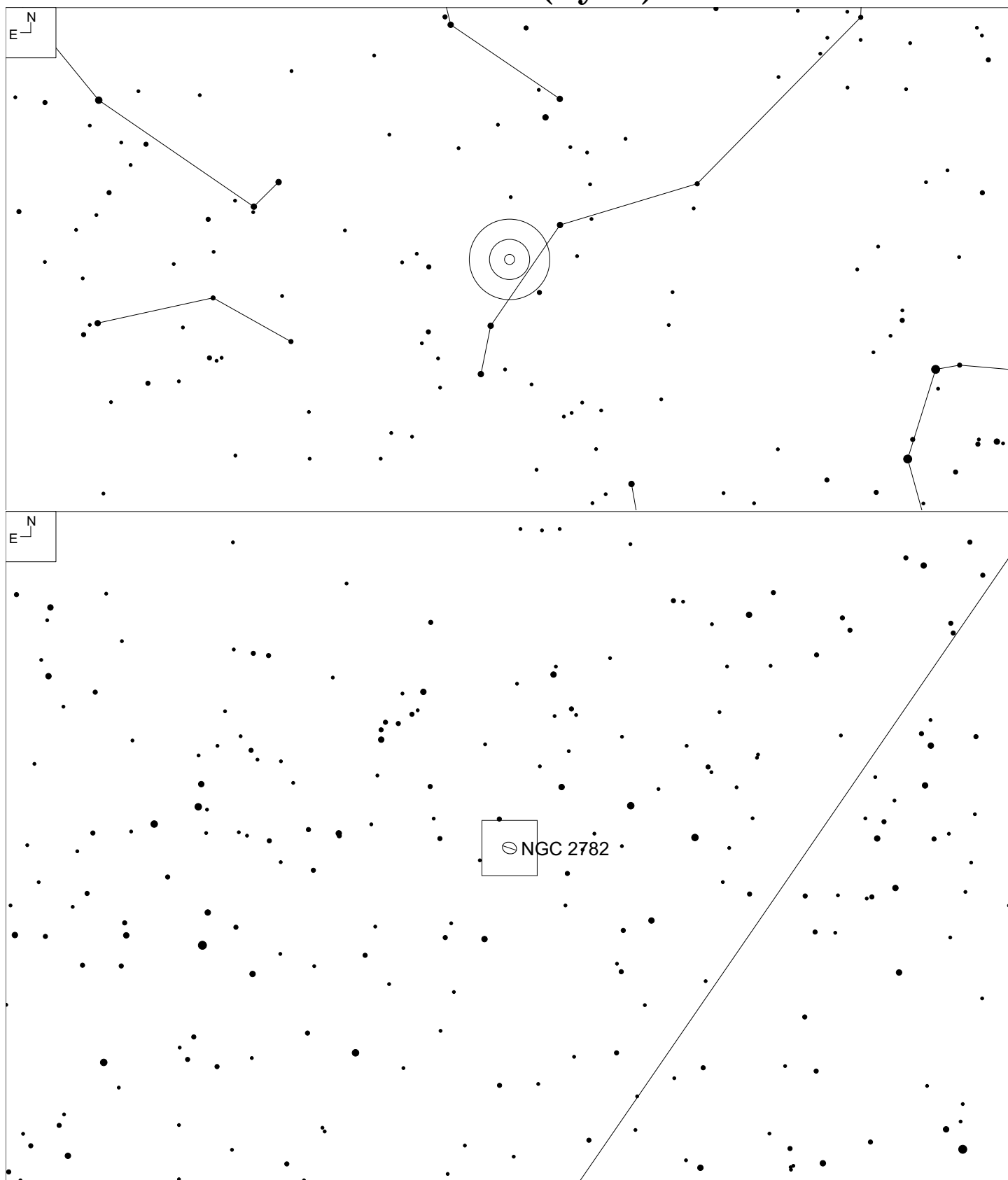
NGC 2541 (Lynx)



NGC 2541 is a type SA(s)c late type spiral galaxy sitting 41 mly away.

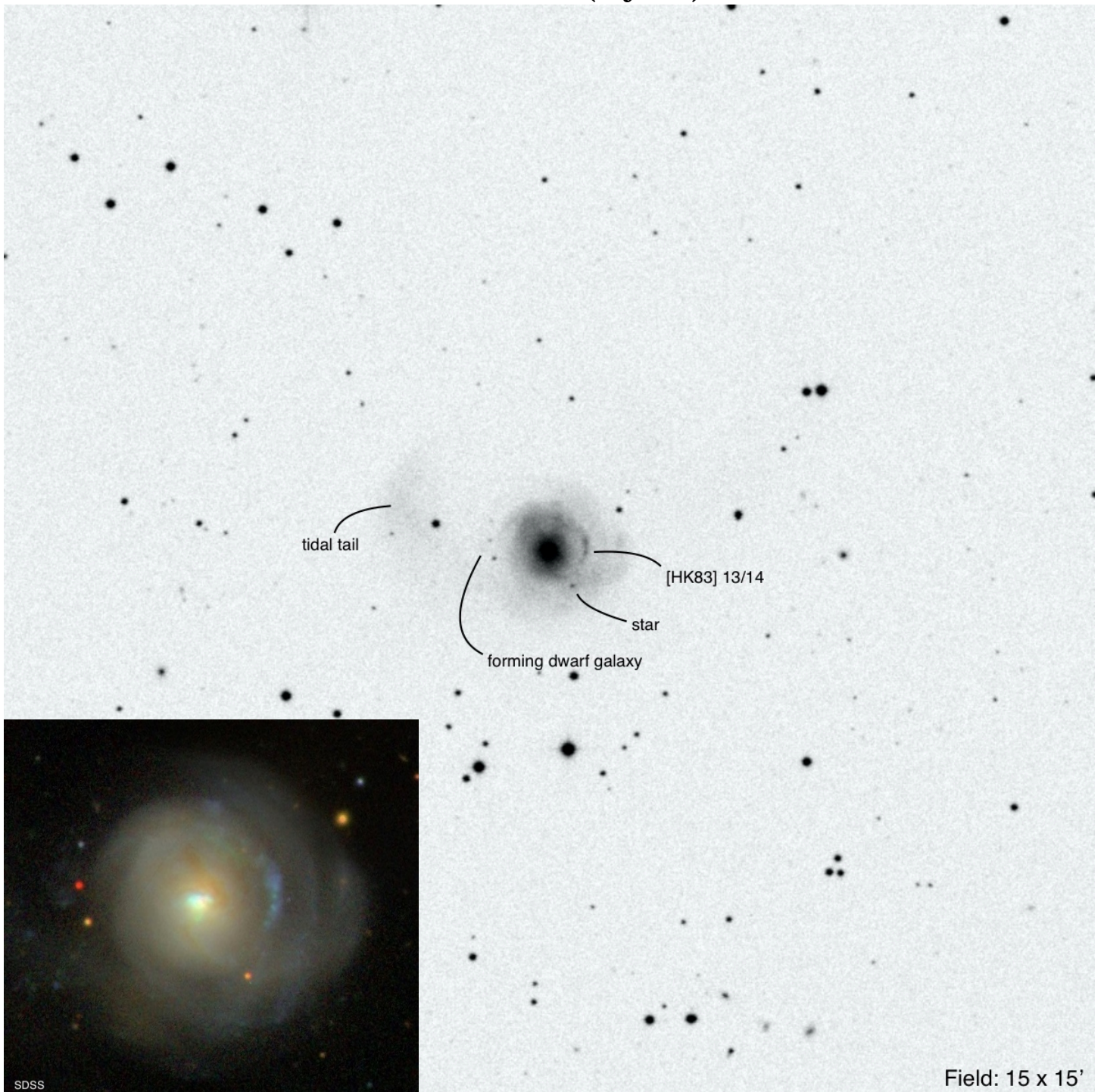
H II region **[ZBF2015]** annotations from Javier Zaragoza-Cardiel, et al, “Comparative internal kinematics of the H II regions in interacting and isolated galaxies: implications for massive star formation modes” *Monthly Notices of the Royal Astronomical Society*, Volume 451, Issue 2 (Aug 2015): 1307 – 1330

NGC 2782 (Lynx)



Object	RA	Dec	Mag	Size	iSDA
NGC 2782	09 14 03.7	+40 06 59	11.6	1.7 x 1.3'	23

NGC 2782 (Lynx)



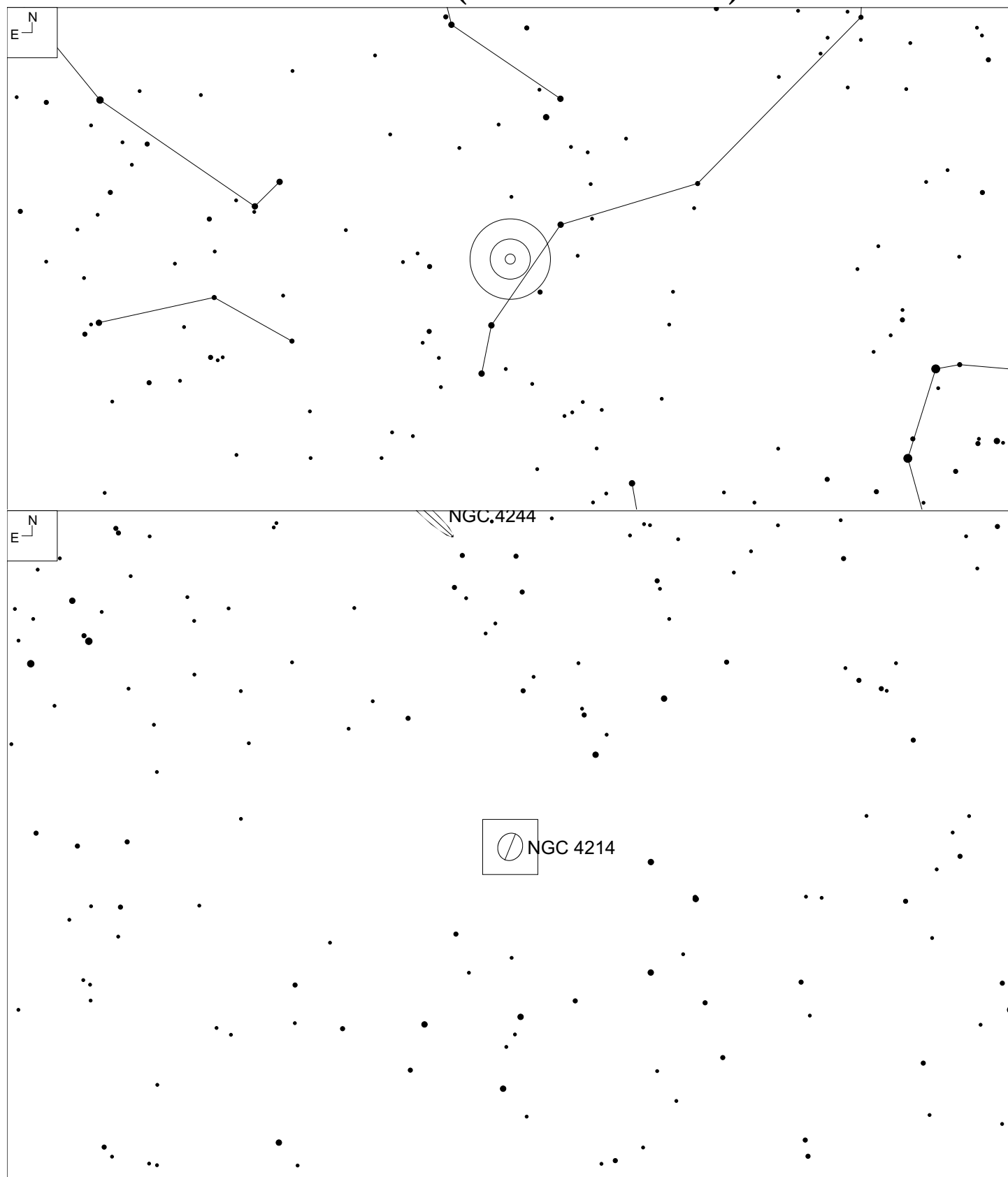
NGC 2782 is a type SAB(rs)a early type spiral galaxy. It is 76 mly away from us and 100 kly in diameter. It is a Type 1 Seyfert galaxy with an active nucleus.

There is a possible dwarf galaxy forming on the east edge, see Yoshida, Michitoshi et al, "A Forming Dwarf Galaxy in a Tidal Tail of the Merging Galaxy NGC 2782," *Publications of the Astronomical Society of Japan*, Volume 46, (Dec 1994): L195-L198.

For the discovery paper of the plume (tidal tail), see Beverly J. Smith, "The Discovery of a Long H i Plume near the Peculiar Galaxy NGC 2782 (Arp 215)," *Astrophysical Journal*, Volume 378 (Sept 1991): 39-46.

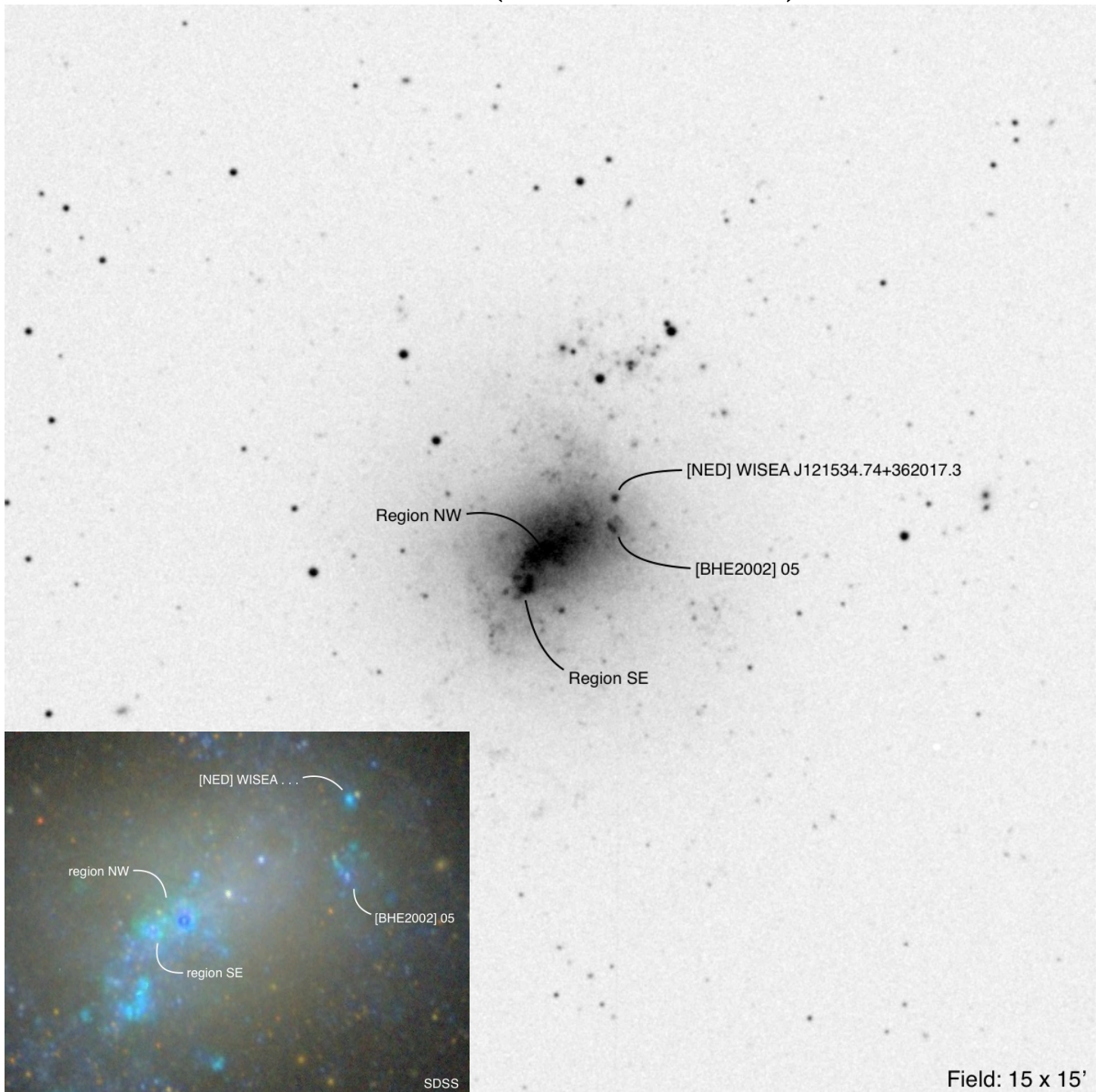
Glahn picked up the combined region HK83] 13/14 with his 27" in his [sketch](#).

NGC 4214 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4214	12 15 39.2	+36 19 37	9.9v	7.4 x 6.5'	21,22,33,34

NGC 4214 (Canes Venatici)



NGC 4124 is a type IAB(s)m galaxy sitting 10 mly away in the direction of Canes Venatici. It is part of the M94 Galaxy Group.

H II region **[BHE2002]** annotation from Olivia H. Billett, Deidre A. Hunter, and Bruce G Elmegreen, “Compact Star Clusters in Nearby Dwarf Irregular Galaxies,” *The Astronomical Journal*, Volume 123, Issue 3 (Mar 2002): 1454-1475

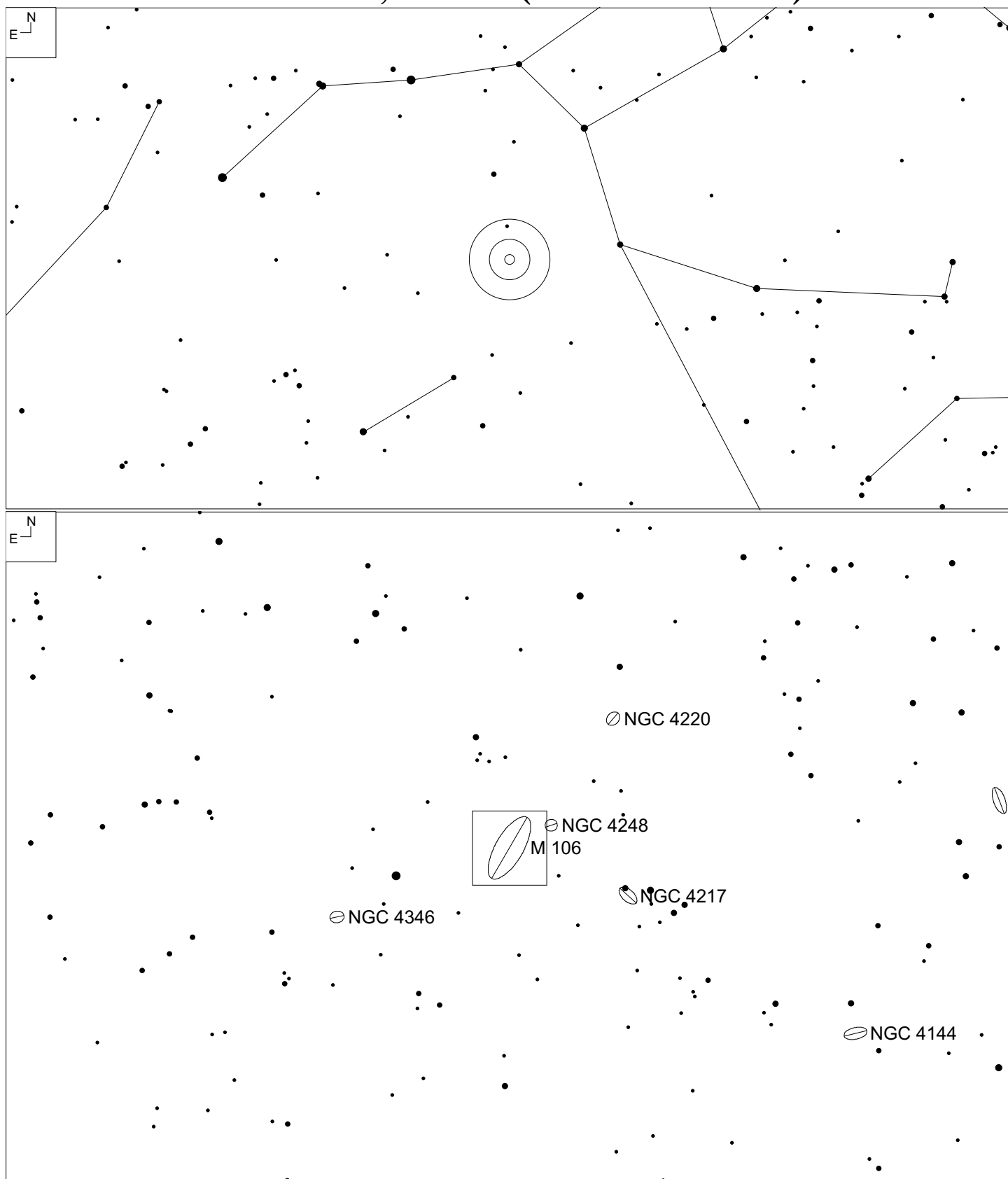
See inset showing detail of the center region.

For an observing article showing greater detail on what to see, see Scott Harrington. “Star-Forming Regions in Faraway Galaxies” *Sky & Telescope* (May 2021), 22-29.

For observing notes with a 48” telescope, see Steve Gottlieb’s notes: [NGC 4214](#). Also see Glahn’s [sketch](#) with a 20” showing that he picked up all of the labeled knots.

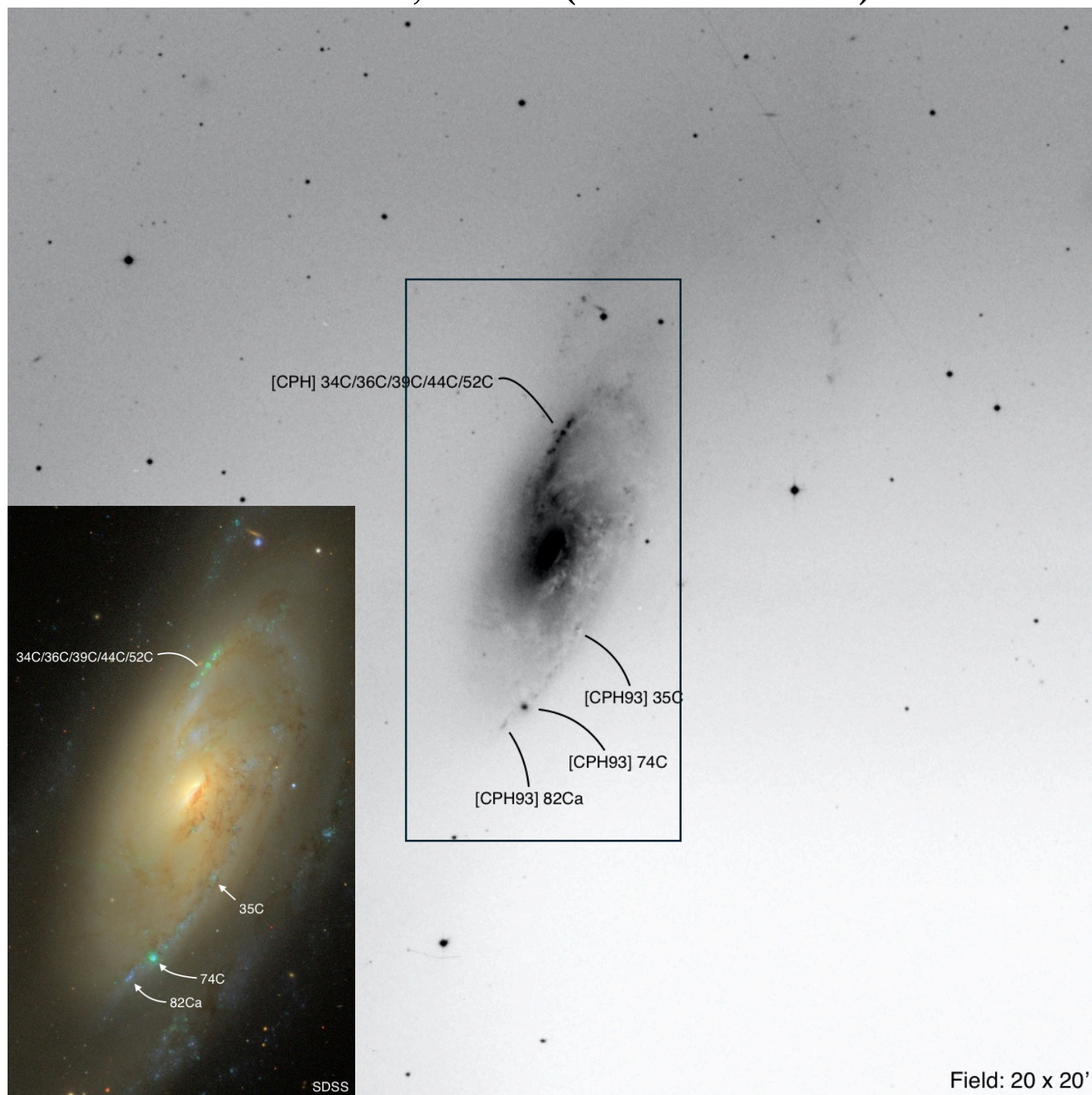
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 143-148.

NGC 4258, M 106 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4258 (M 106)	12 18 58.1	+47 18 13	8.4	18.6 X 7.2'	21, 22

NGC 4258, M 106 (Canes Venatici)



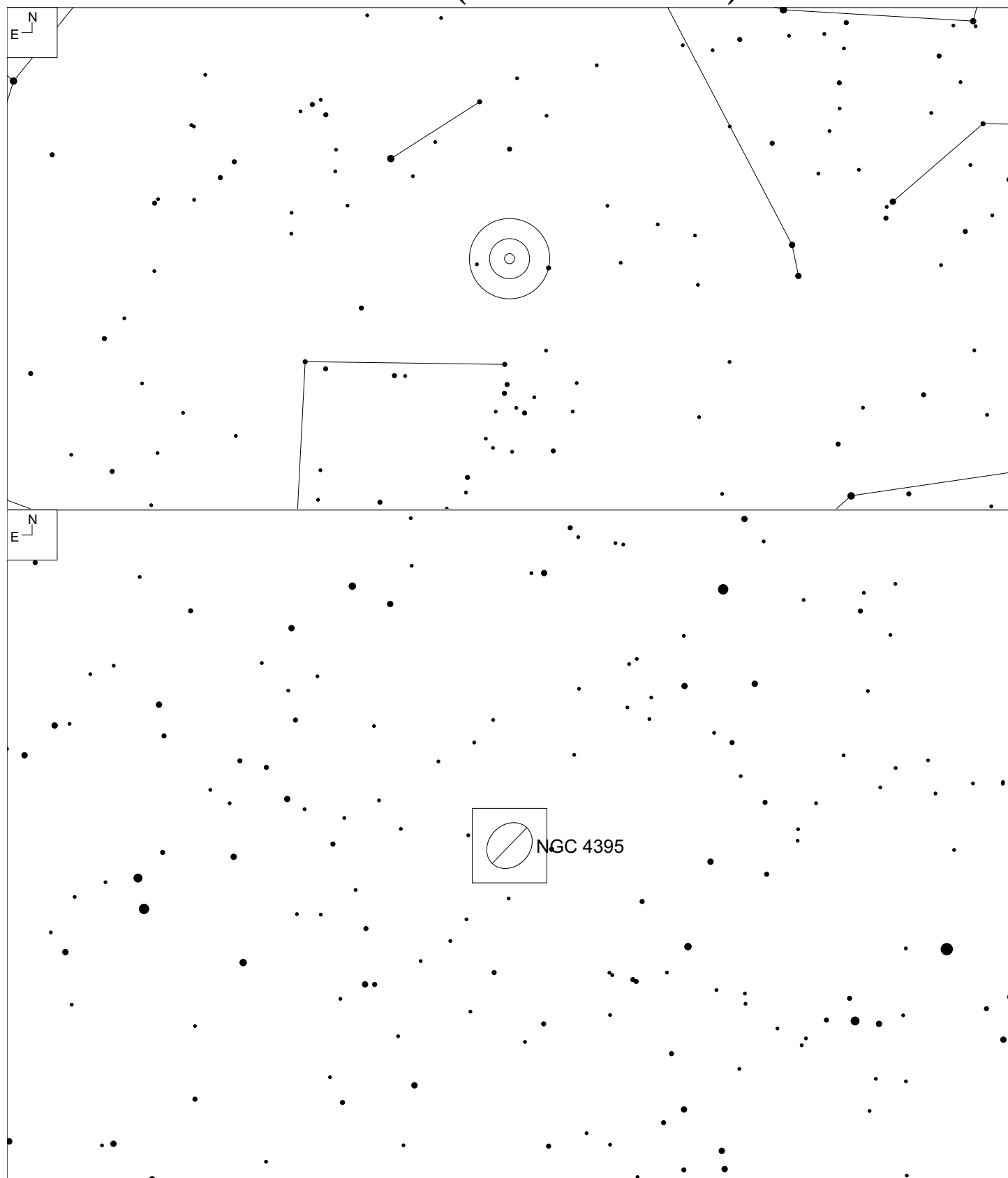
M 106 is a type SAB(s)bc midsize spiral galaxy. It is 23.7 mly away from us and 130 kly from end to end. It has an active nucleus and a Type 2 Seyfert galaxy.

H II region [CPH93] annotations from G. Courtes, et al, "Structure of the spiral arms of NGC 4258 in H-alpha and at 2000A," *Astronomy and Astrophysics*, Volume 268 (Feb 1993): 419-442

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4258](#). Also see Glahn's [sketch](#) with a 16" where he picked up the knotty brighter arm and a couple knots on the southern tip.

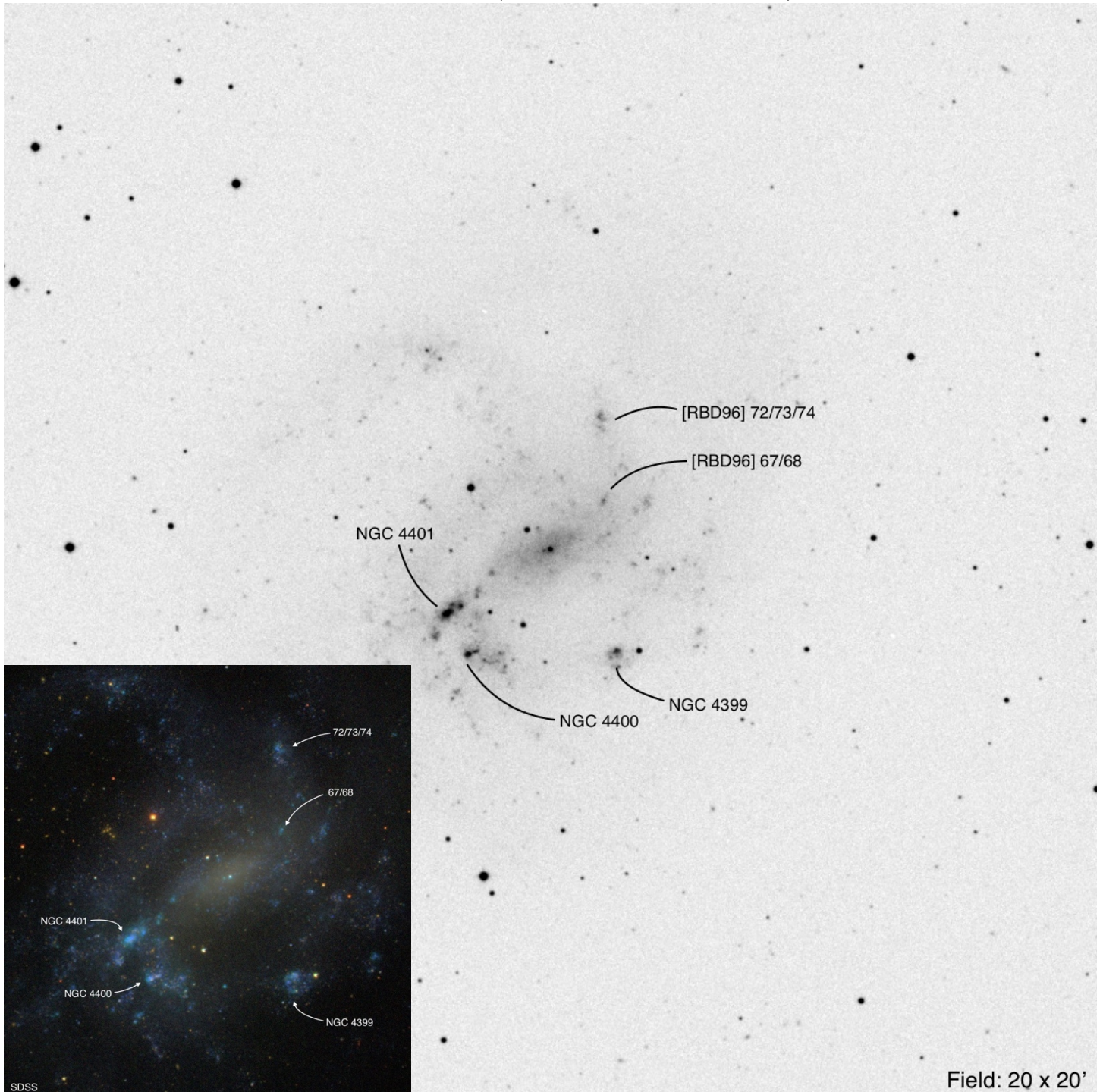
For an excellent discussion, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 164-172.

NGC 4395 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4395	12 25 48.7	+33 33 01	10.2	13.3 x 11.0'	33

NGC 4395 (Canes Venatici)



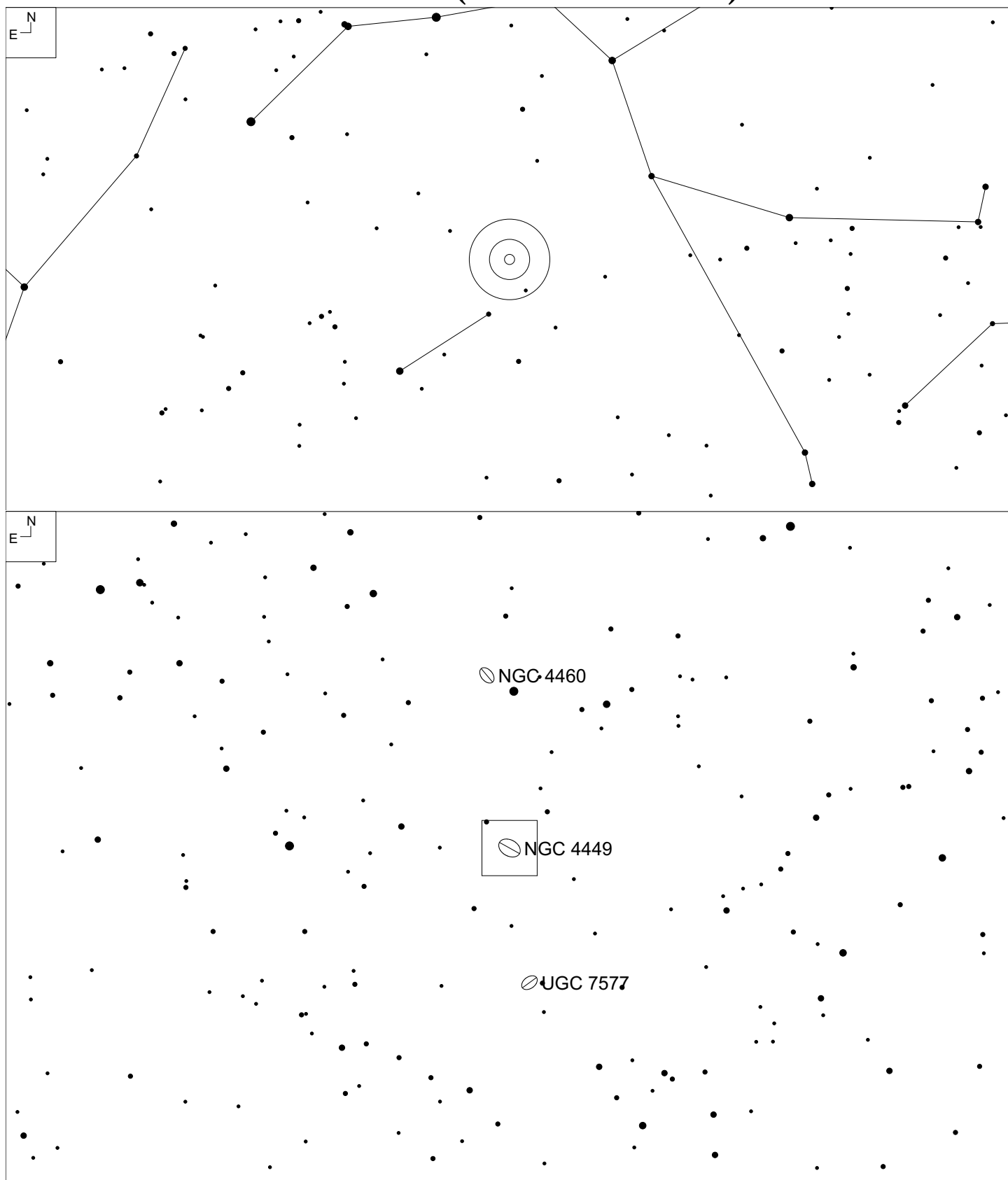
NGC 4395 is a SA(s)m galaxy sitting 14 mly away and the diameter is about 54 x 45 kly. This low surface brightness Type 1 Seyfert galaxy is a bit smaller than most. Several H II regions are so bright that they have their own NGC designations.

Jean-Rene Roy, Julien Belley, et al, "The O/H Distribution in the Low-Mass Galaxies NGC 2366 and NGC 4395," *The Astrophysical Journal*, Volume 460 (Mar 1996): 284–294.

Not sure if the variability of the nucleus is observable, here is a journal article that discuss the variability, see J. E. Skelton, et al, "Short time-scale optical variability of the dwarf Seyfert nucleus in NGC 4395," *Monthly Notices of the Royal Astronomical Society*, Volume 358, Issue 3, (Apr 2005): 781-794.

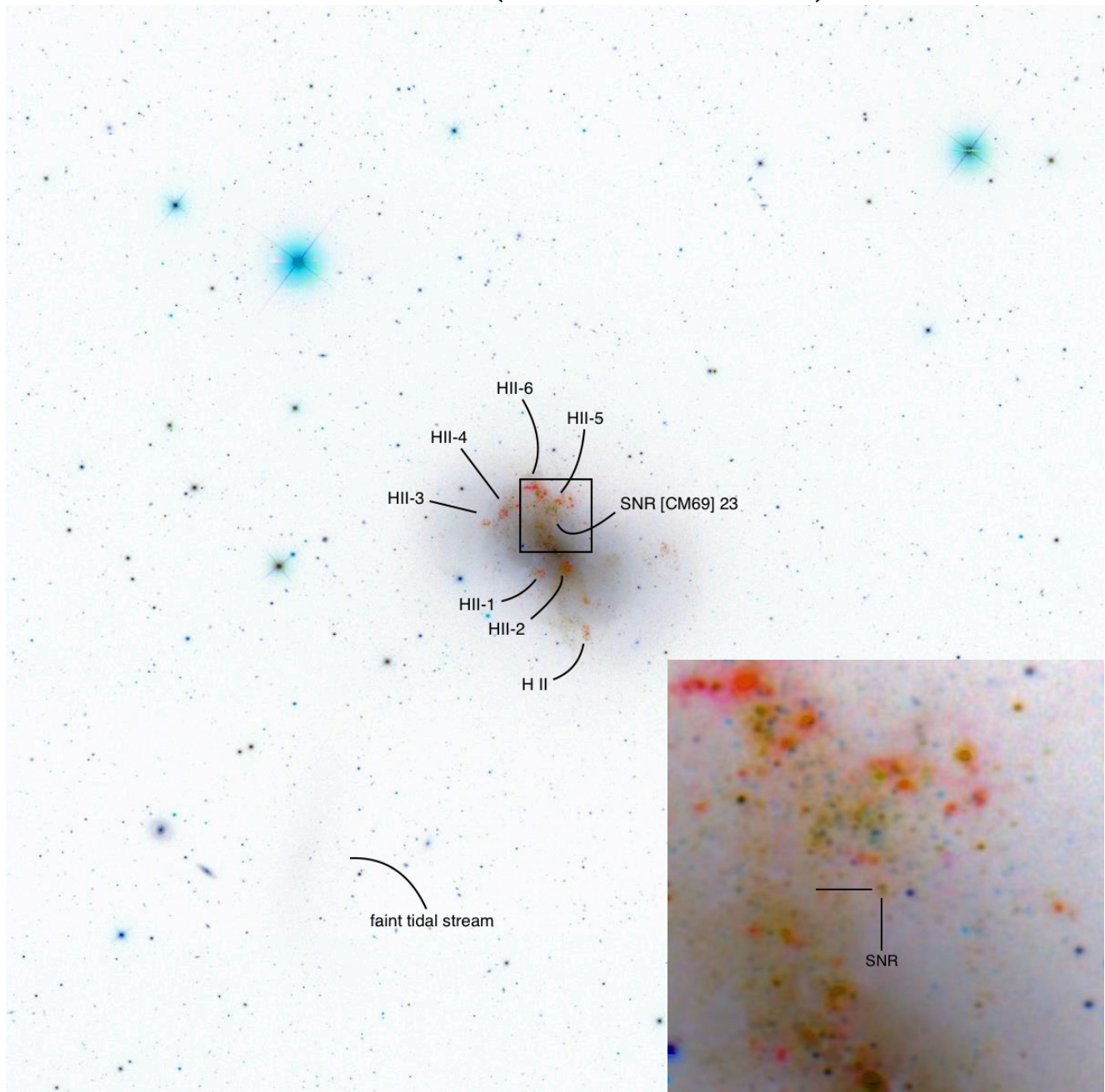
Glahn picked up the knots on the south and eastern ends in his [sketch](#) with a 16" reflector.

NGC 4449 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4449	12 28 11.1	+44 05 37	9.6v	6.1 x 4.3'	21,22

NGC 4449 (Canes Venatici)



NGC 4449 is a type IBm irregular dwarf galaxy sitting 12 mly away and about 22 kly across. This small galaxy has very active star formation and giant H II regions.

F. Annibali , M. Tosi, et al, "PNe and H II Regions in the Starburst Irregular Galaxy NGC 4449 from LBT MODS Data," *Astrophysical Journal*, Volume 843, Issue 1 (July 2017)

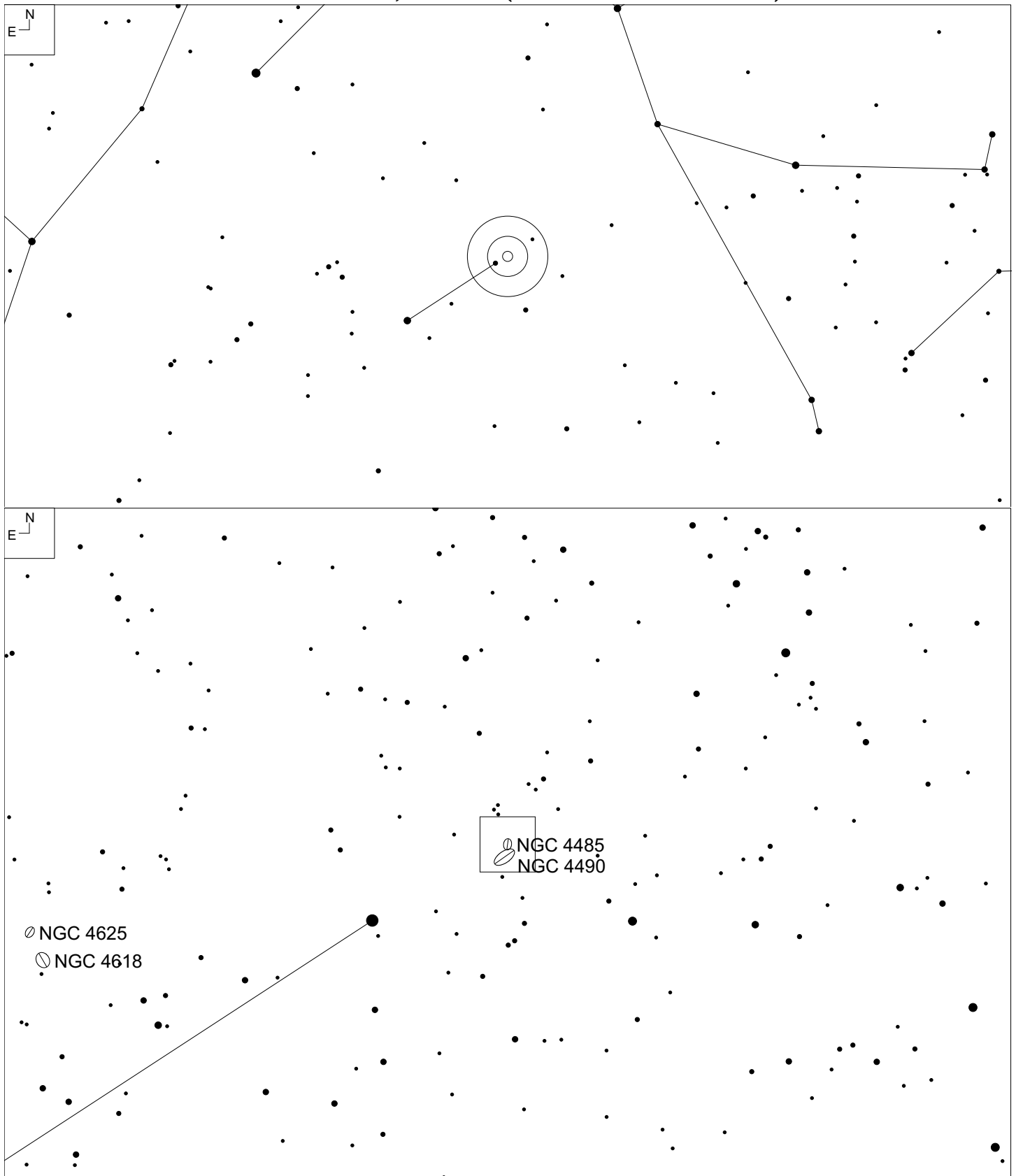
A supernova remnant was initially investigated by E.R. Seaquist and may be observable with a very large amateur telescope. See inset and Seaquist, E. R.; R. C.Bignell, "Radio emission from a possible supernova remnant in the galaxy NGC 4449," *Astrophysical Journal*, Volume 226, (Nov 1978): L5-L6. Also see Robert P. Kirshner and William P. Blair, "The extraordinary extragalactic supernova remnant in NGC 4449," *Astrophysical Journal*, Part 1, Volume 236 (Feb 1980): 135-142. There are more articles but these two give you a good base.

Numerous star clusters in the galaxy, see Andrea E. Gelatt, et al, "The Star Clusters in the Irregular Galaxy NGC 4449," *The Publications of the Astronomical Society of the Pacific*, Volume 113, Issue 780 (Feb 2001): 142-153

A faint tidal steam to the southwest of NGC 4449, see David Martínez-Delgado, et al, "Dwarfs Gobbling Dwarfs: A Stellar Tidal Stream around NGC 4449 and Hierarchical Galaxy Formation on Small Scales," *The Astrophysical Journal Letters*, Volume 748, Issue 2, Article ID L24 (Apr 2012)

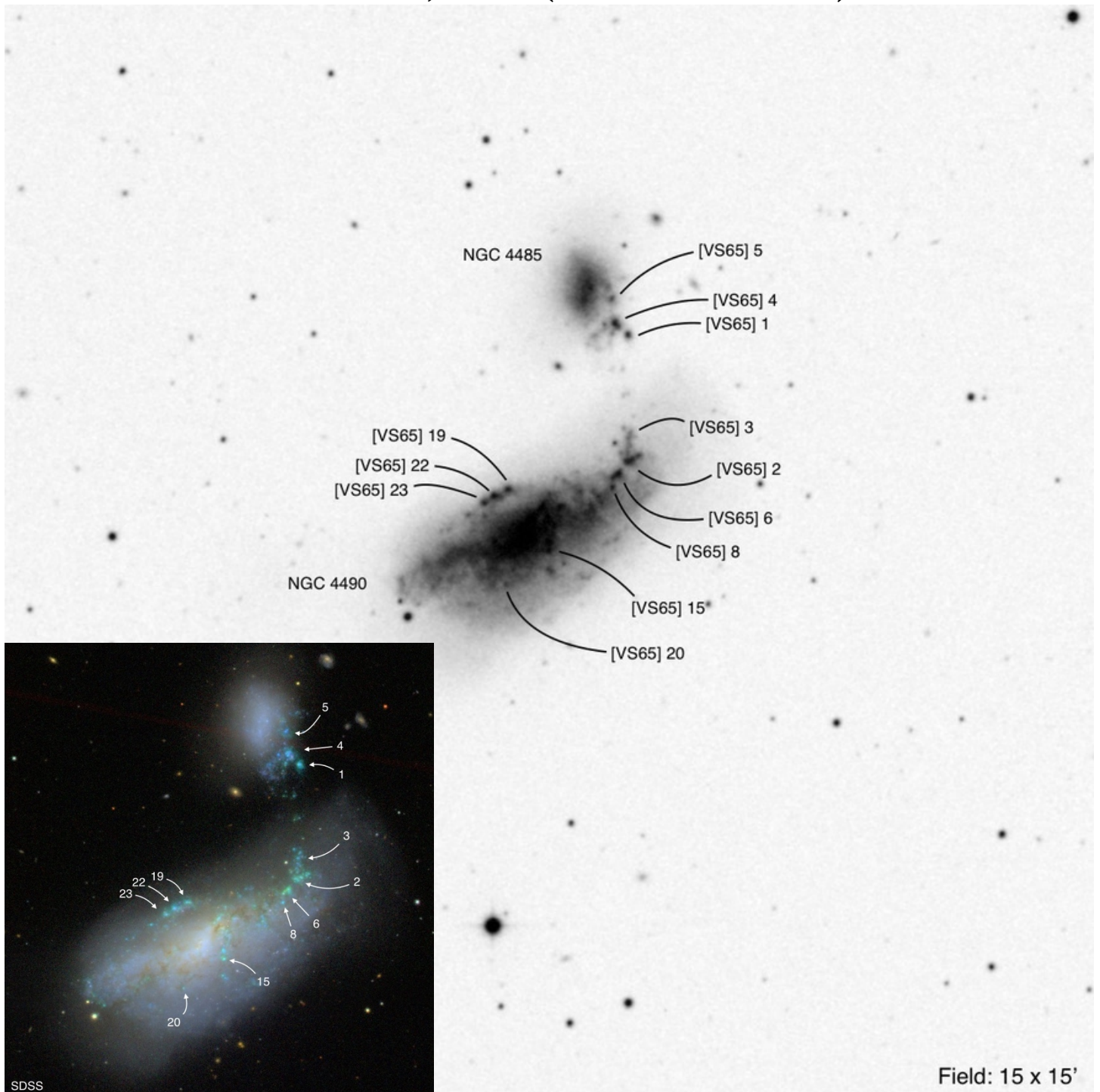
For detailed notes with a 48" see Steve Gottlieb's notes: [NGC 4449](#) . Also see Glahn's detailed [sketch](#) showing how much can be picked up in a 16". Not only that, some of the brighter knots can be seen with a 4" and a 6" reflector, see Glahn's [sketch](#).

NGC 4485, 4490 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4885	12 30 31.1	+41 42 04	11.9v	2.6 x 1.9'	57,69
	12 30 36.4	+41 38 37	9.8v	6.3 x 2.7'	

NGC 4485, 4490 (Canes Venatici)



NGC 4485 and 4490 are types IB(s)m pec and SB(s)d pec respectively and lies 29 mly away . Both are interacting with each other and created a stream of stars 25 kly long.

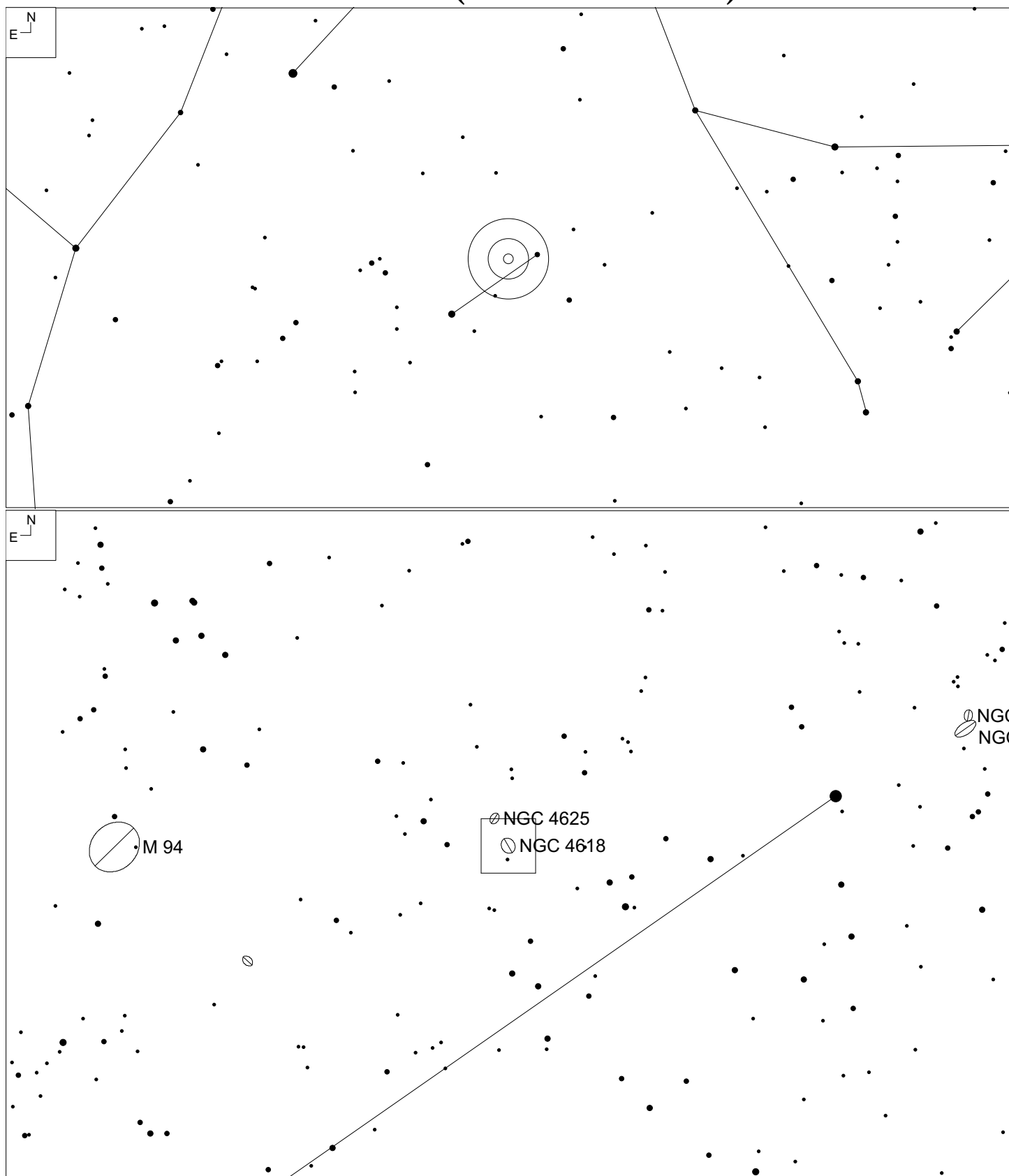
H II region **[VS65]** annotations from P. Véron, A.Sauvayre, “Étude des Galaxies en lumière monochromatique H. II. NGC 2403 - NGC 2903 - NGC 4490,” *Annales d'Astrophysique*, Volume 28 (Feb 1965): 698.T The inset SDSS image annotation is just the number for clarity.

Tidal tail between NGC 4485 and 4490 includes [VS65] 1-6 H II regions, see Debra Meloy Elmegreen, et al, “Observations of a Tidal Tail in the Interacting Galaxies NGC 4485/4490,” *The Astronomical Journal*, Volume 115, Issue 4 (Apr 1988): 1433-1437

For observing notes with a 48” telescope, see Steve Gottlieb’s notes: [NGC 4485/4490](#). Also see Glahn’s [sketch](#) with a 16”.

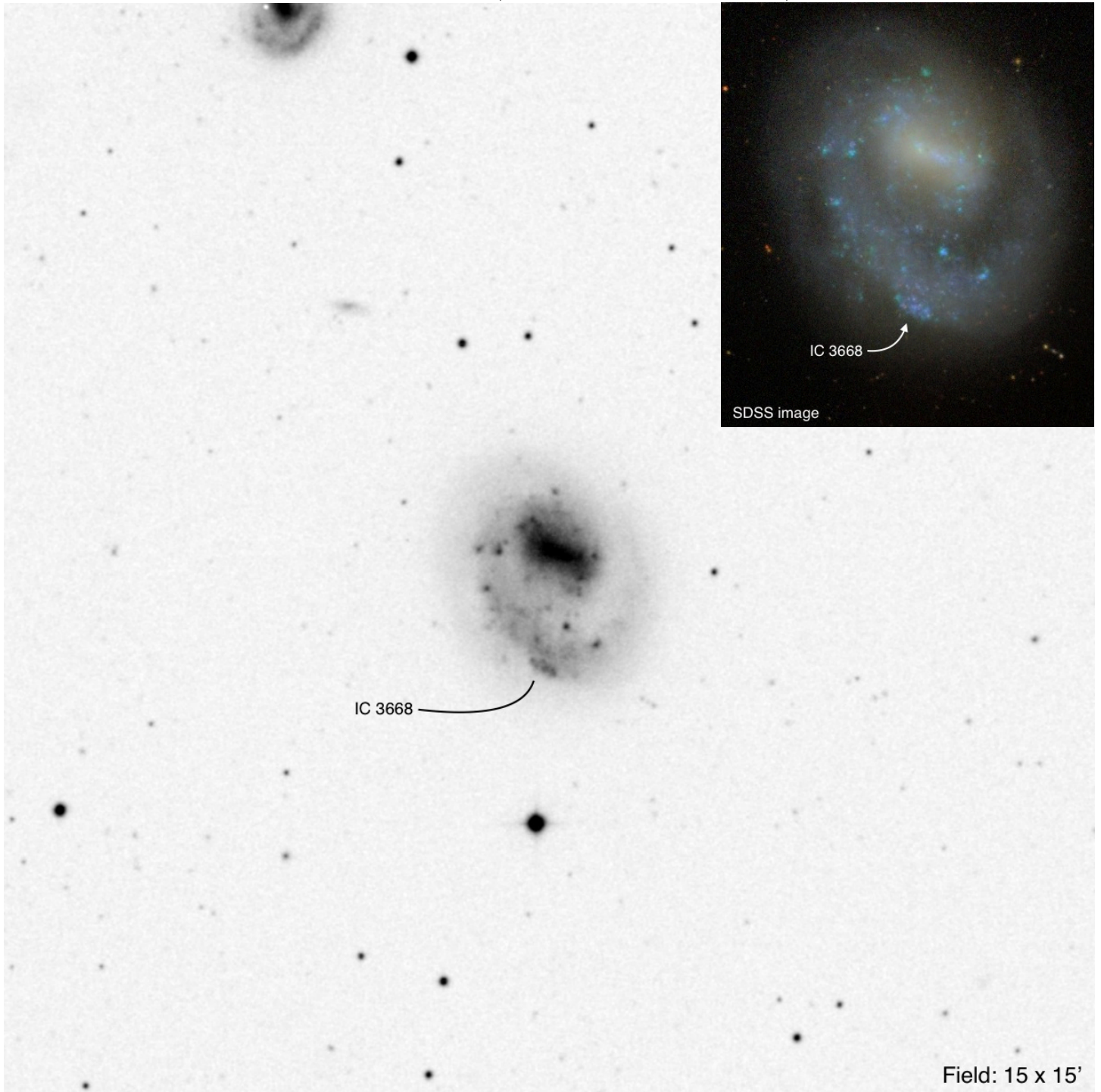
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 217-219

NGC 4618 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4618	12 41 32.9	+41 09 03	10.8	4.2 x 3.4'	21

NGC 4618 (Canes Venatici)

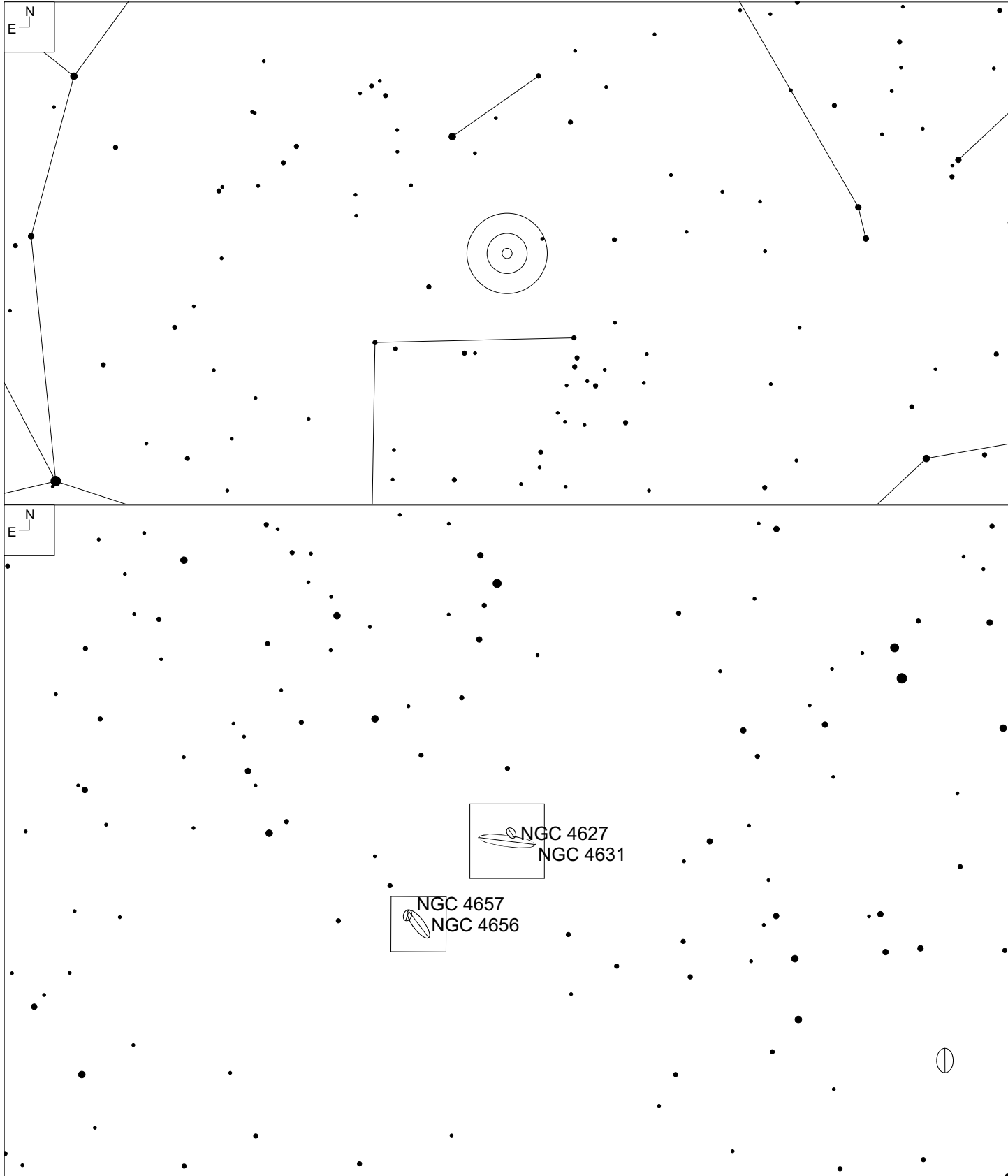


NGC 4618 is a type SB(rs)m dwarf barred spiral that located 24 mly away and about 29 kly. It lies in the direction of Canes Venatici.

For an observing article, see Scott Harrington. "Star-Forming Regions in Faraway Galaxies" *Sky & Telescope* (May 2021), 22-29.

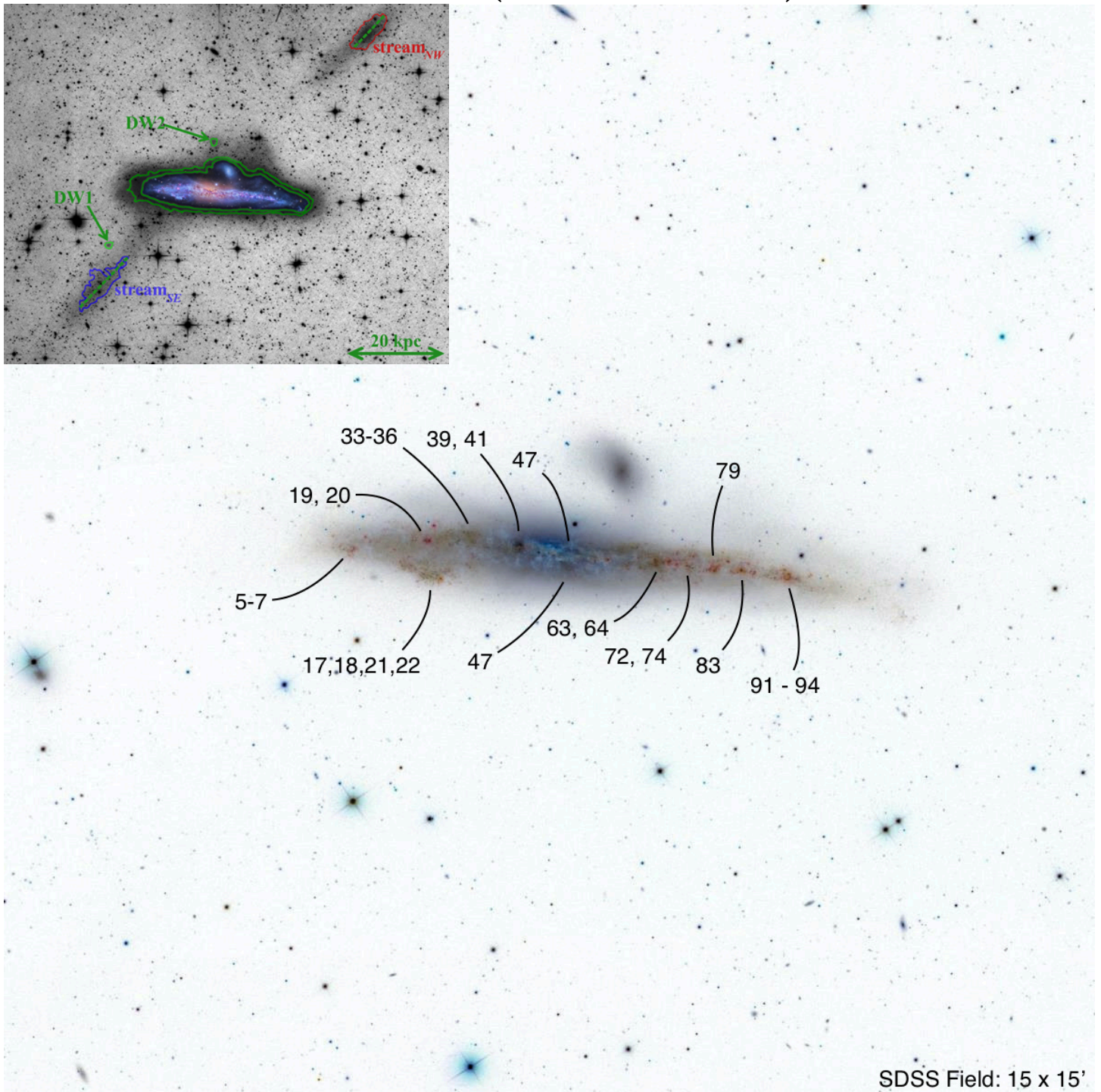
For observing notes with a 48" telescope, see Steve Gottlieb's notes at: [NGC 4618](#). Also see Glahn's [sketch](#) with a 16", where he picked up IC 3668.

NGC 4631 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4631	12 42 08.0	+32 32 29	9.2v	15.4 x 2.6'	33

NGC 4631 (Canes Venatici)



NGC 4631 is a type SB(s)d late type spiral about 20 mly away from us and about 90 kly across. The common name is Whale Galaxy.

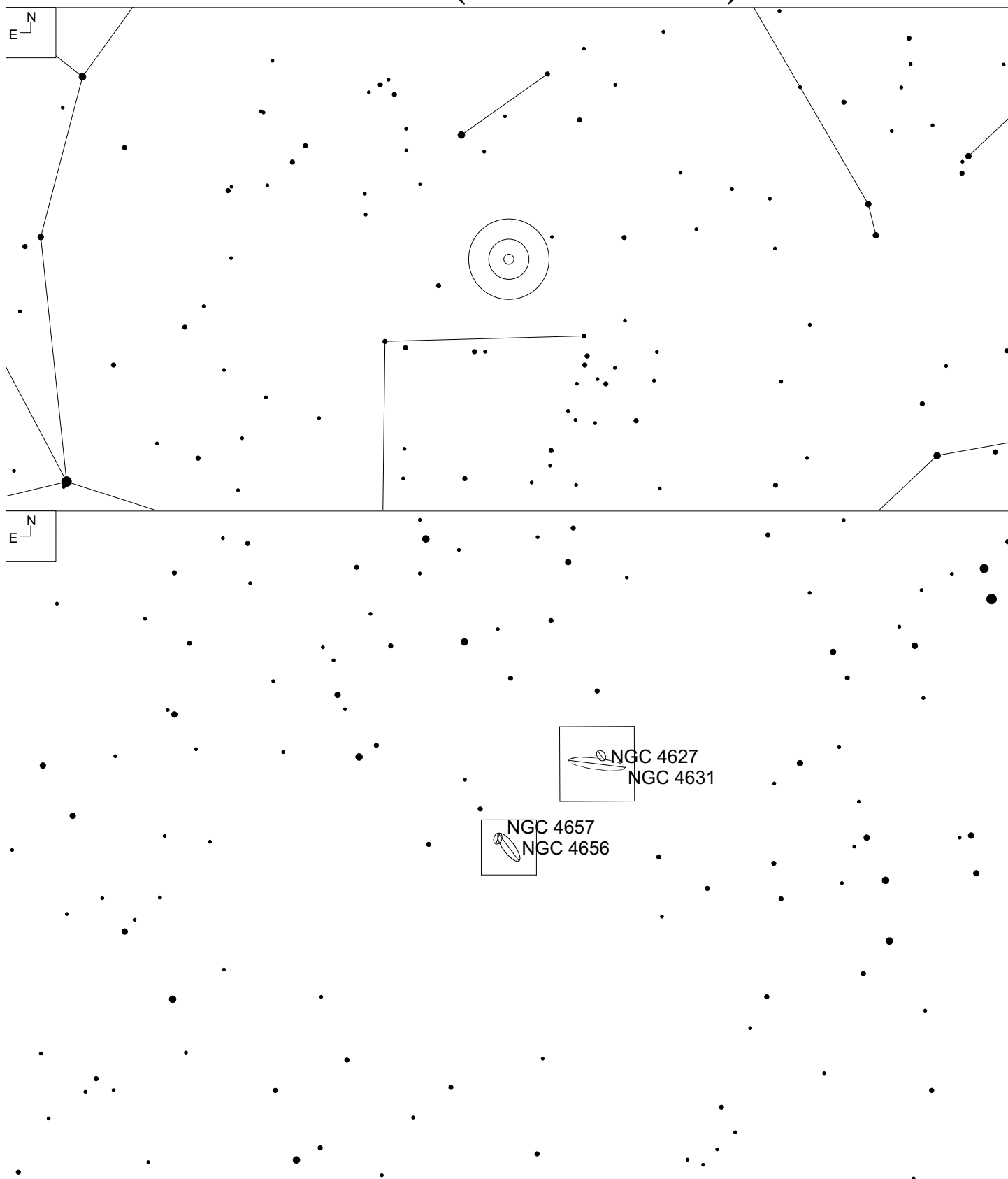
Annotations from Paul W Hodge and Robert C Kennicutt, Jr., "An Atlas of H II Regions in 125 galaxies," *The Astronomical Journal*, Volume 88, Number 3 (March 1983): 296-328. Note: I've left out "[HK83]" to reduce clutter.

Two tidal streams are in the field, see inset and David Martínez-Delgado, et al, "A Stellar Tidal Stream Around the Whale Galaxy, NGC 4631," *The Astronomical Journal*, Volume 150, Number 4 (Sept 2015): 116-125. The source of the inset is on page 119 of the above journal article.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4631](#). Glahn's [sketch](#) with a 16" showing incredible detail.

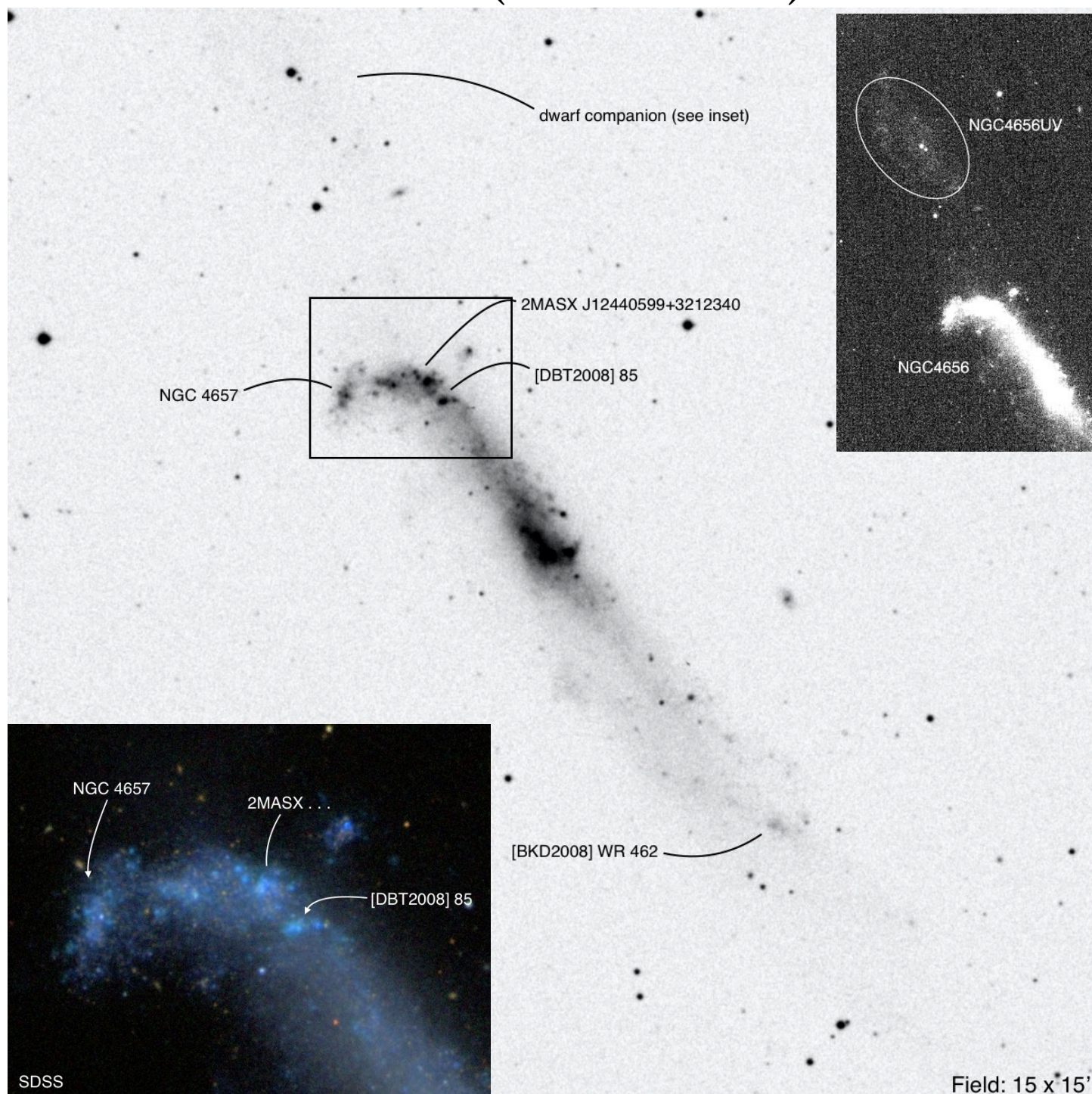
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 178-183

NGC 4656 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4656	12 43 57.6	+32 10 13	10.5v	9.1 x 1.7'	33

NGC 4656 (Canes Venatici)



NGC 4656 is a type SB(s)m pec galaxy that looks like a hockey stick with NGC 4657 at the north end, which gives it the name. It sits 30 mly away and 78 kly long.

Super Star Cluster **[DBT2008]** annotation from Jayce D. Dowell, et al. "The Initial Cluster Mass Function of Super Star Clusters in Irregular and Spiral Galaxies," *The Astronomical Journal*, Volume 135, Issue 3, (Mar 2008): 823-835

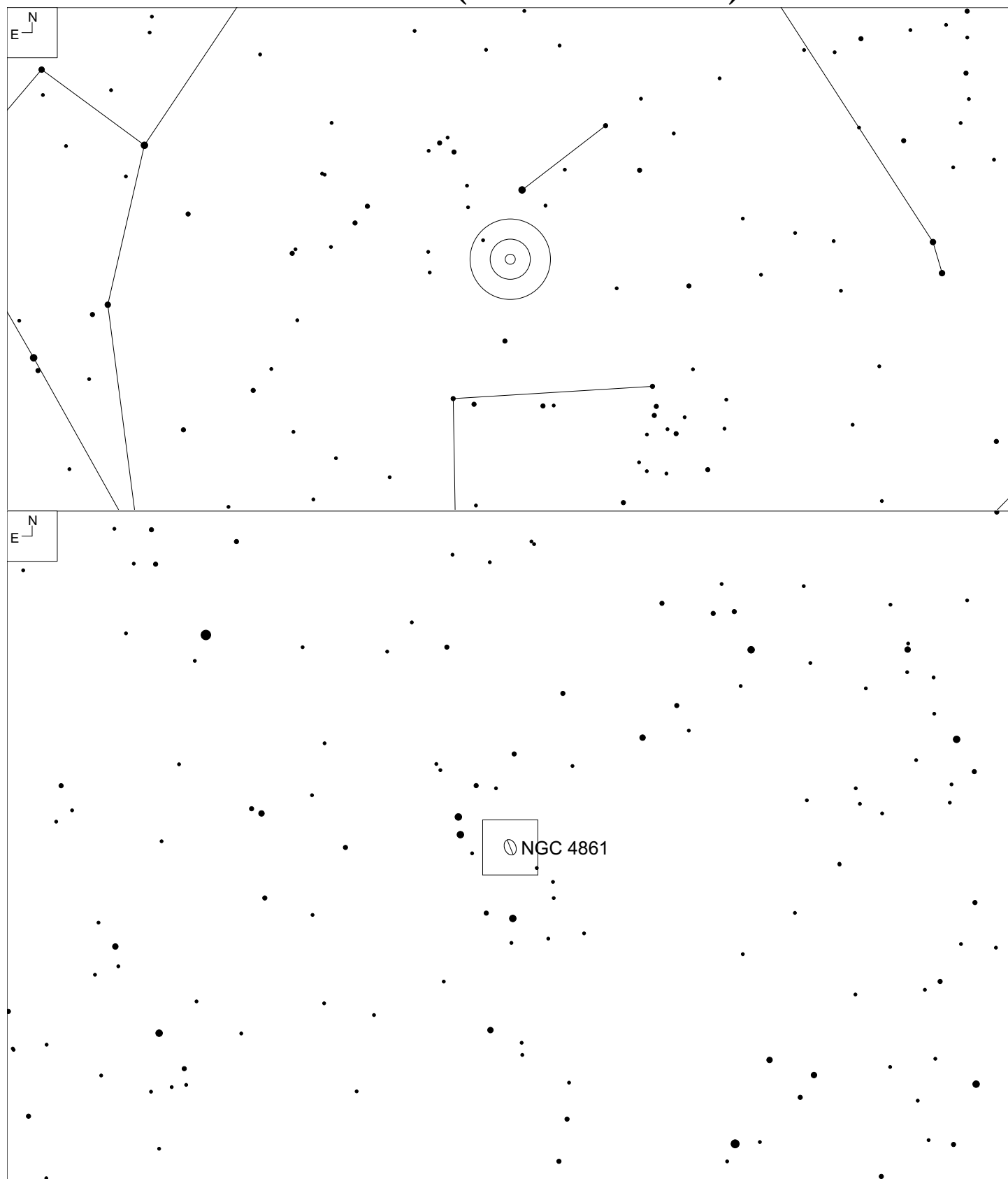
See SDSS inset image showing detail of the "hockey stick" at the NE end.

An extremely faint dwarf companion is NNE of NGC 4656, see Anatoly V. Zasov, et al, "Interacting galaxy NGC4656 and its unusual dwarf companion," *Monthly Notices of the Royal Astronomical Society*, Volume 469, Issue 4 (Aug 2017): 4370–4377. Note: The source of the inset is from page 4371 in A. V. Zasov's article.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4214](#). See Glahn's [sketch](#) with a 16".

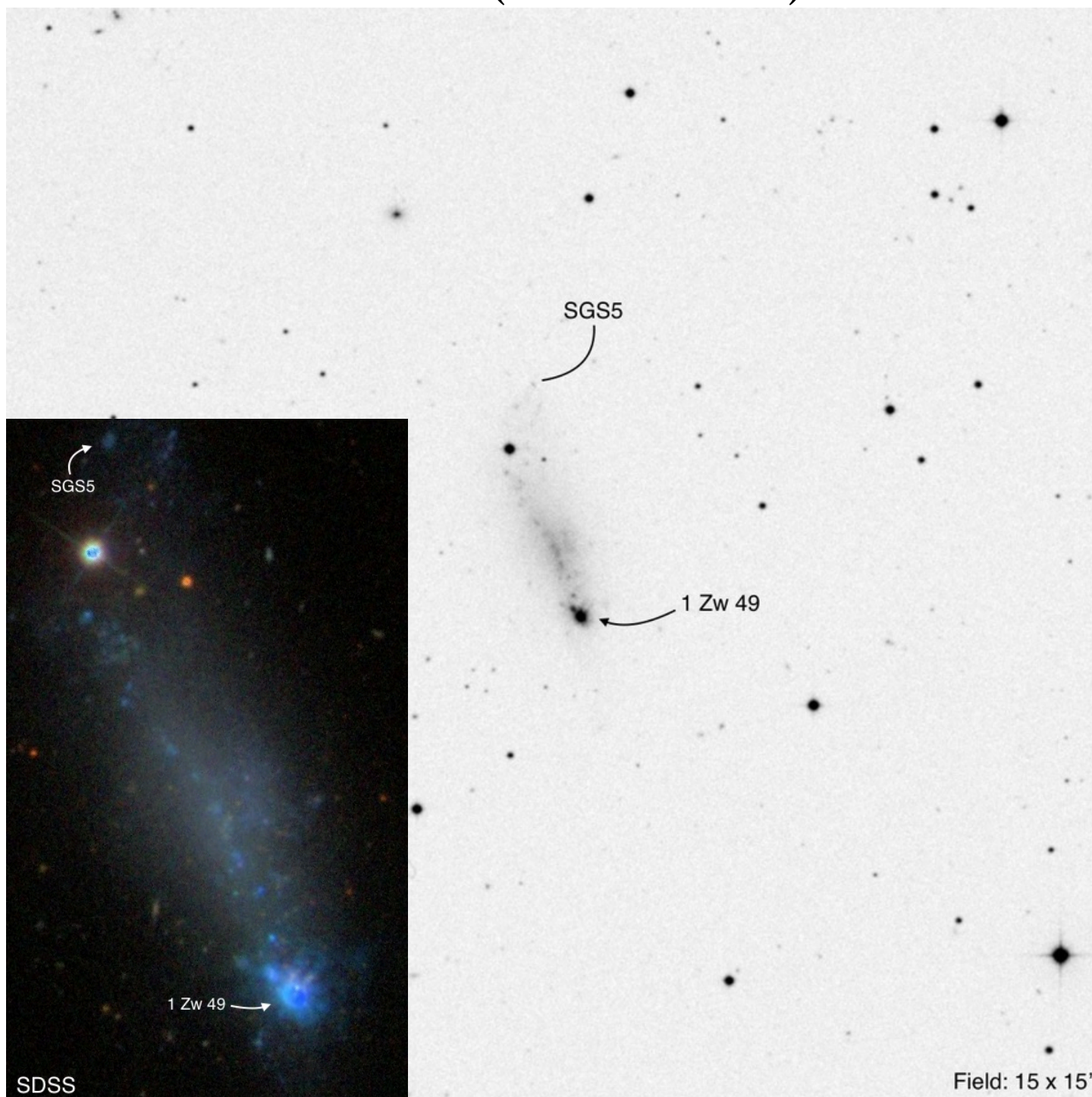
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 184-185

NGC 4861 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 4861	12 59 02.3	+34 51 34	12.3v	4.2 x 1.5'	33

NGC 4861 (Canes Venatici)



NGC 4861 is a SB(s)m galaxy that sits 35 mly away. It has a huge H II region on one end that gives it an odd comet like appearance.

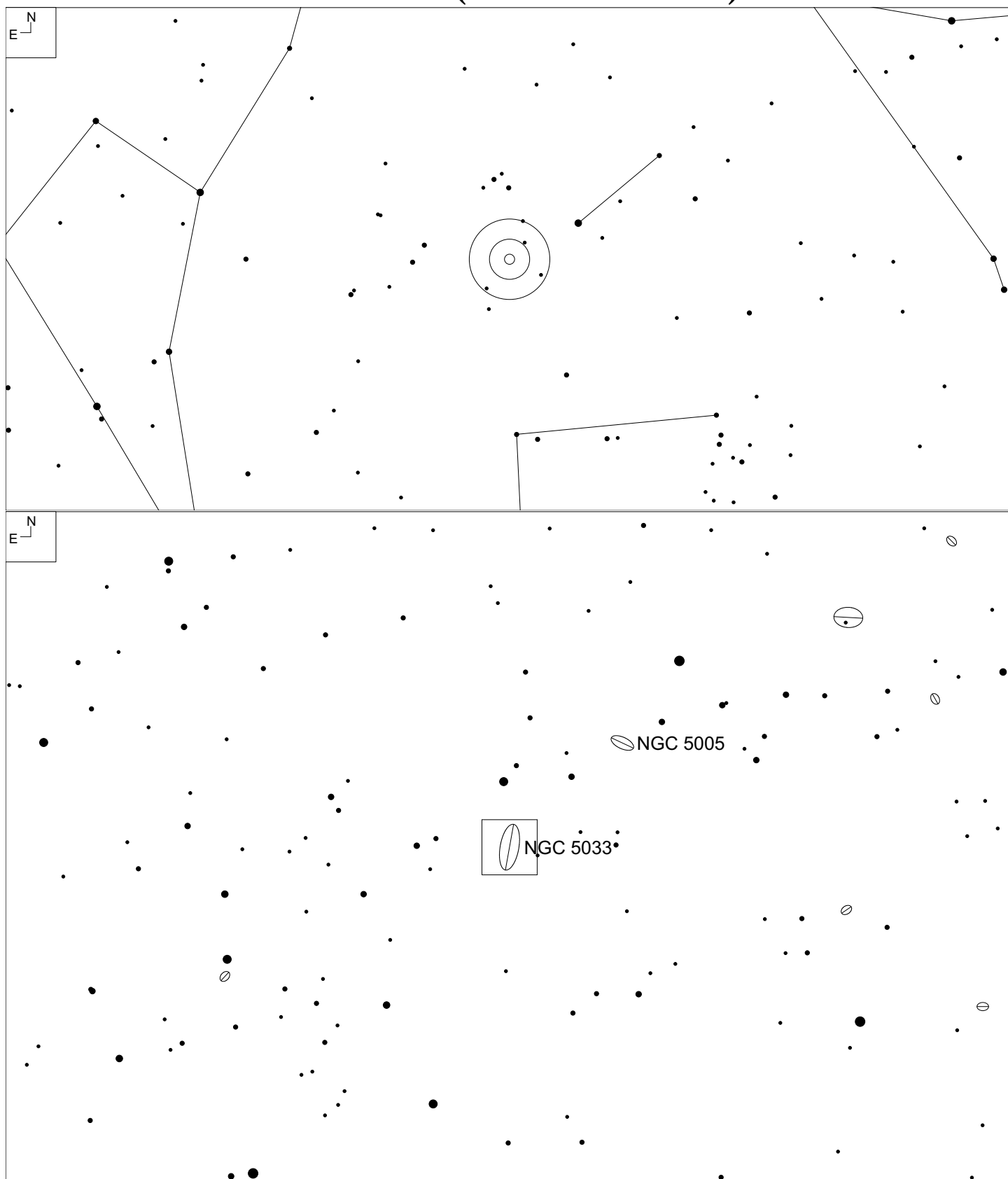
Annotations from J. van Eymeren, M. Marcelin, et al, “A kinematic study of the irregular dwarf galaxy NGC 4861 using H I and H α observations,” *Astronomy & Astrophysics*, Volume 505, Issue 1 (2009): 105-116

For an observing article, see Scott Harrington. “Star-Forming Regions in Faraway Galaxies” *Sky & Telescope* (May 2021), 22-29.

For observing notes with a 48” telescope, see Steve Gottlieb’s notes: [NGC 4861](#). Also see Glahn’s [sketch](#) with a 16” showing that he picked up 1 Zw 49.

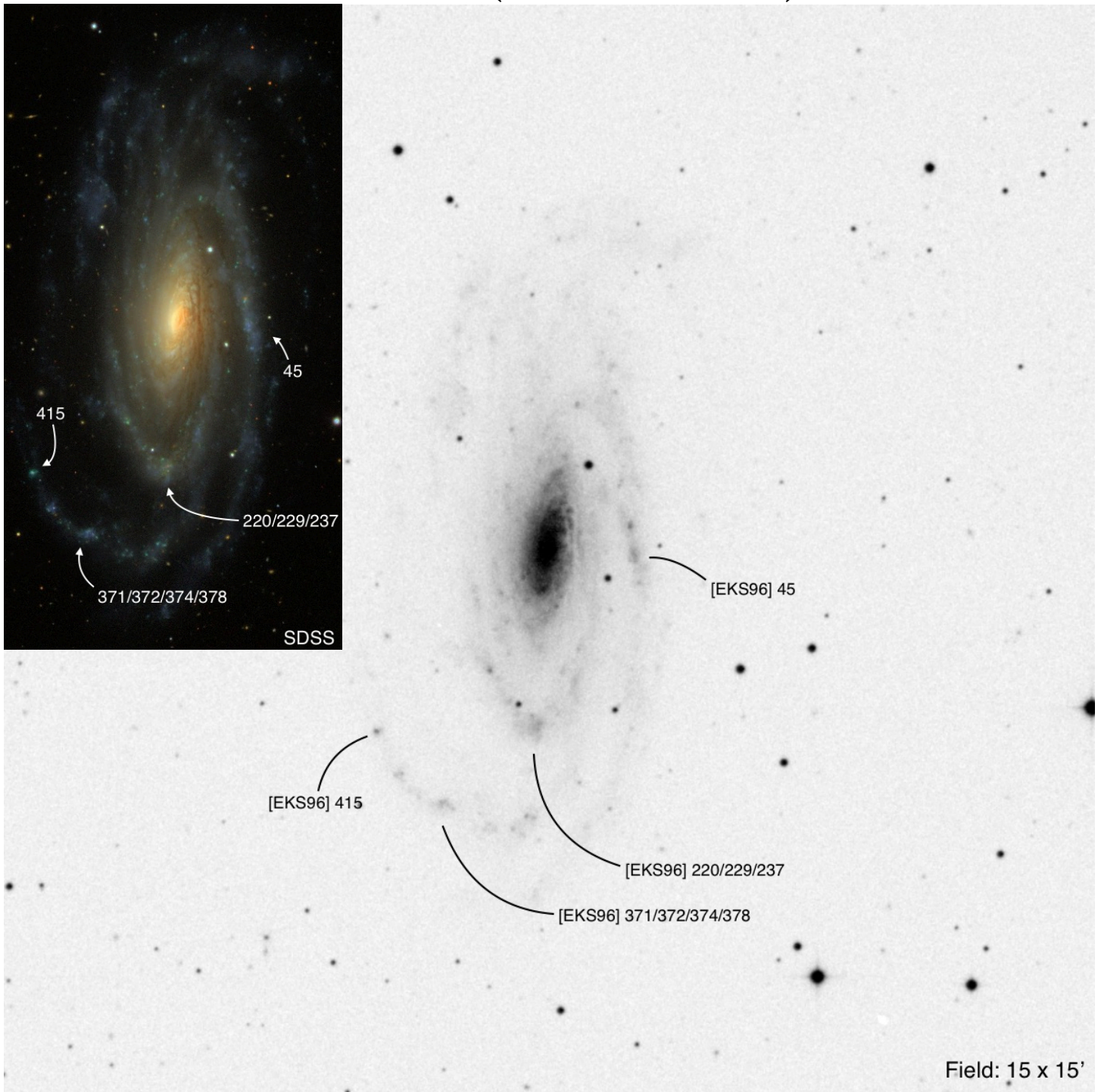
Hubble Space Telescope [image](#).

NGC 5033 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 5033	13 13 27.8	+36 35 40	10.2	10.7 x 5.0'	21, 33

NGC 5033 (Canes Venatici)



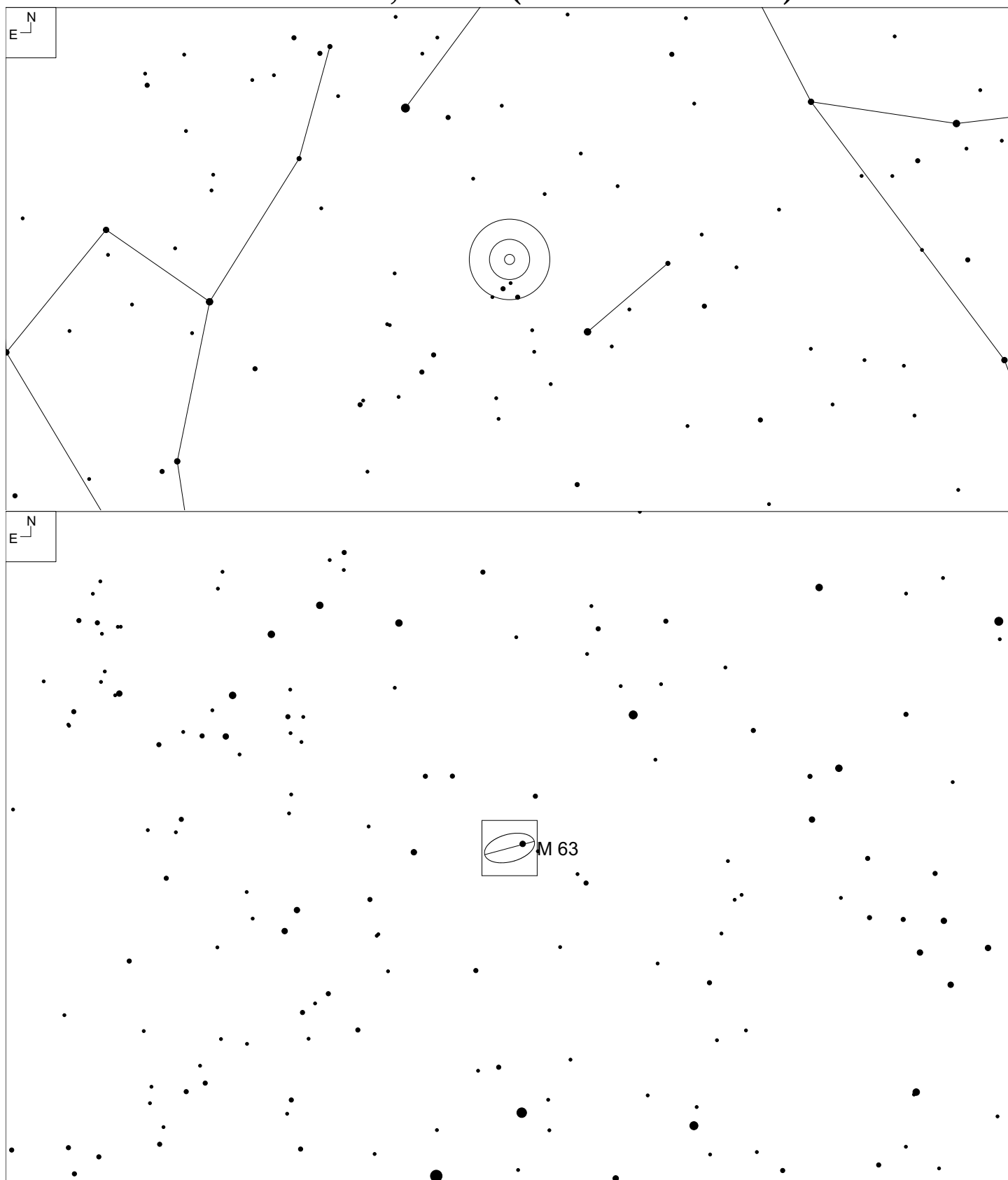
NGC 5033 is a type SA(s)c galaxy with graceful and detailed arms lies about 40 mly distant and about 125 kly in diameter.

H II regions annotated as **[EKS96]**. See I.N. Evans, A.P. Koratkar, T. Storchi-Bergmann, et al, "An Atlas of H II Regions in Nearby Seyfert Galaxies," *Astrophysical Journal Supplement*, Volume 105 (July 1996): 93-127.

For observing notes with a 24" and a 48" reflector, see Steve Gottlieb's notes: [NGC 5033](#). Note: The extremely faint nearly stellar knot Steve noted in his notes through his 24" is [EKS96] 45.

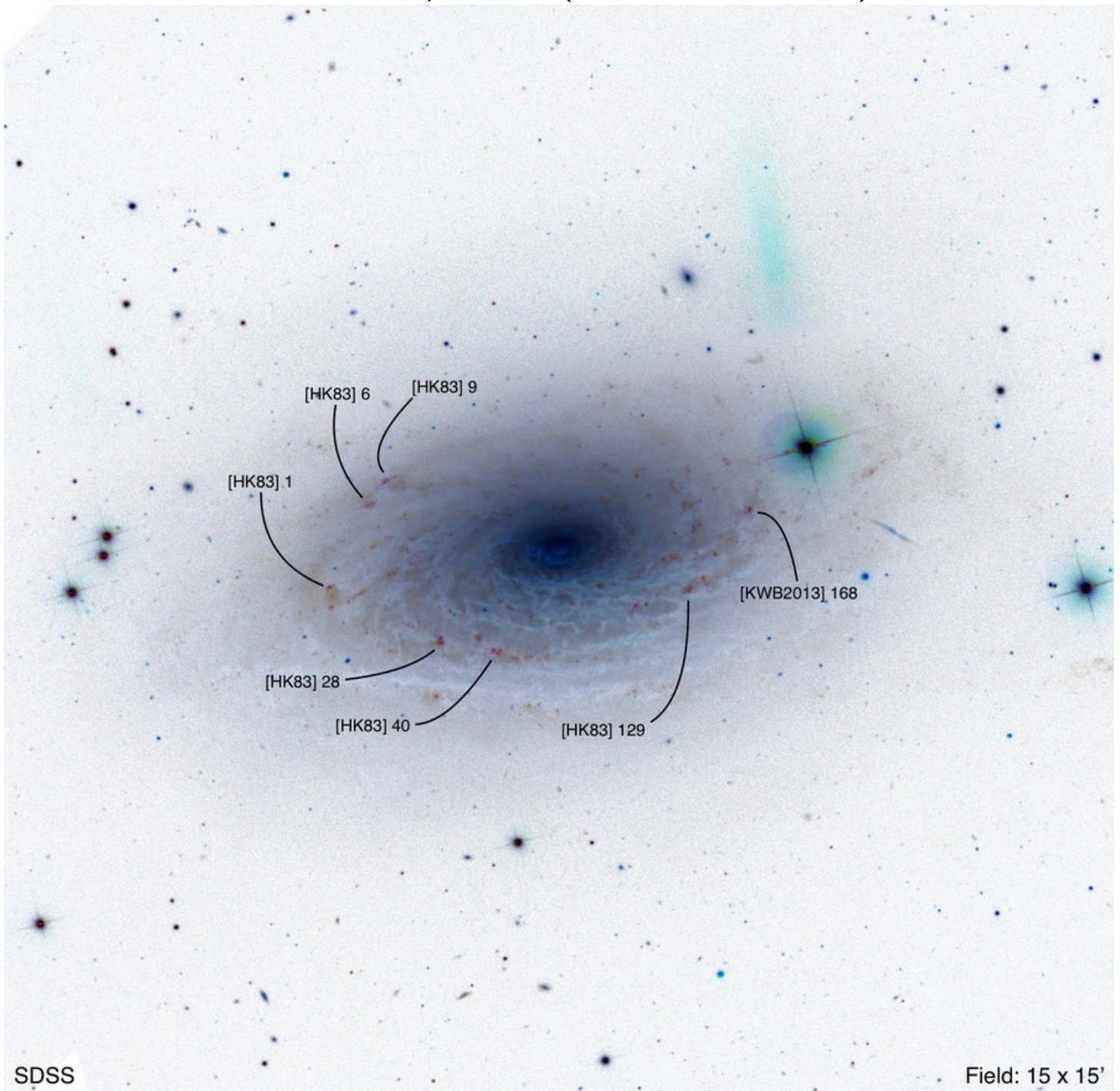
See Glahn's [sketch](#) with his 27" showing detail in the spiral arms

NGC 5055, M 63 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 5055 (M 63)	13 15 49.4	+42 02 01	8.6	13.2 x 7.9'	21

NGC 5055, M 63 (Canes Venatici)



M63 is a SAbc galaxy that lies 27 mly distant and part of the M51 group of galaxies. Some call it the *Sunflower Galaxy*.

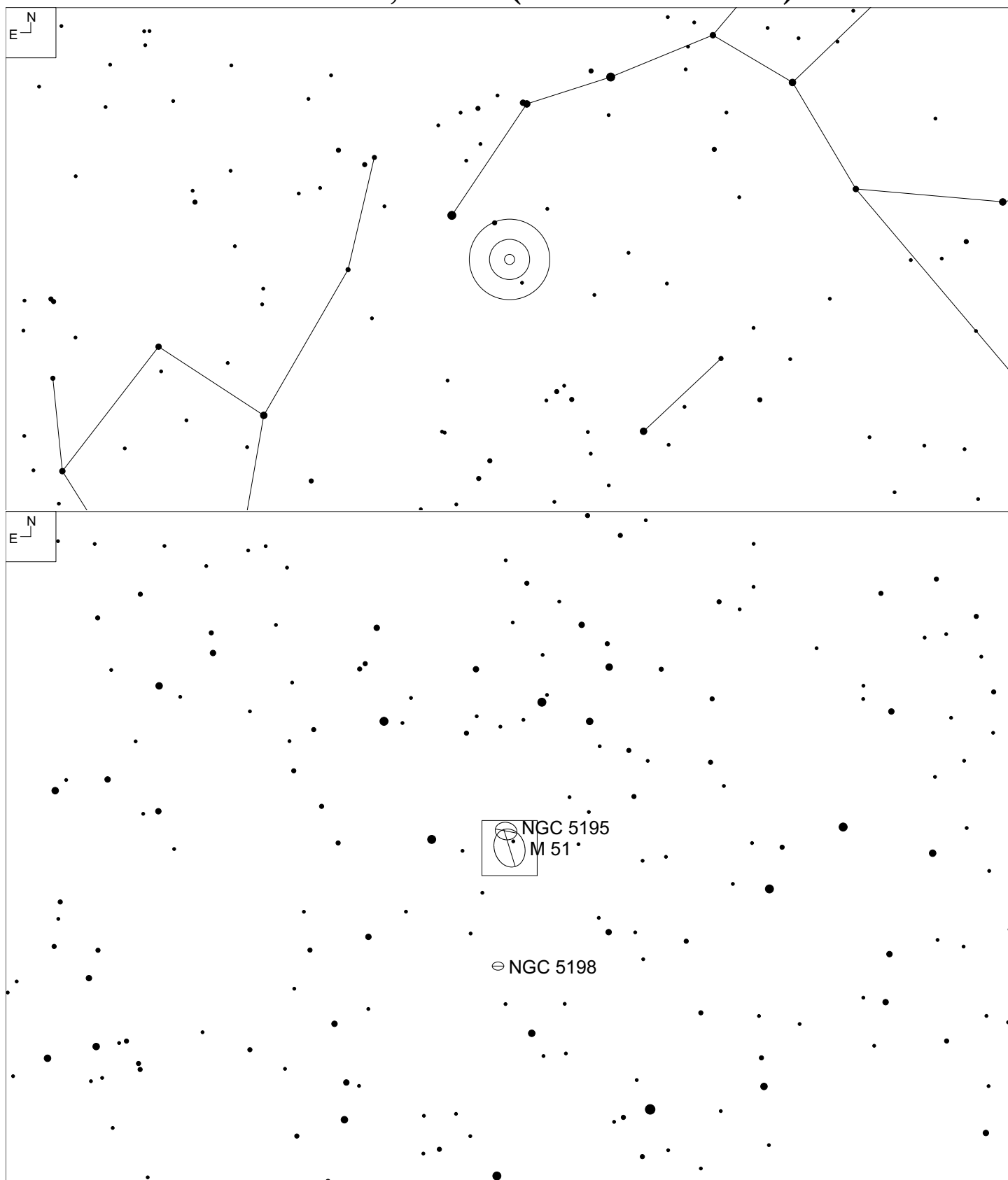
H II region **[KWB2013]** annotations from M.S. Khramtsova, D.S. Wiebe, et al, "Polycyclic aromatic hydrocarbons in spatially resolved extragalactic star forming complexes," *Monthly Notices of the Royal Astronomical Society*, Volume 421, Issue 2 (May 2013): 2006-2016.

[HK83] 28 is the closest to this obvious H II region, but the coordinates are off a tinge to the right, so I used [HK83] 28.

See Glahn's [sketch](#) with a 14.5" reflector.

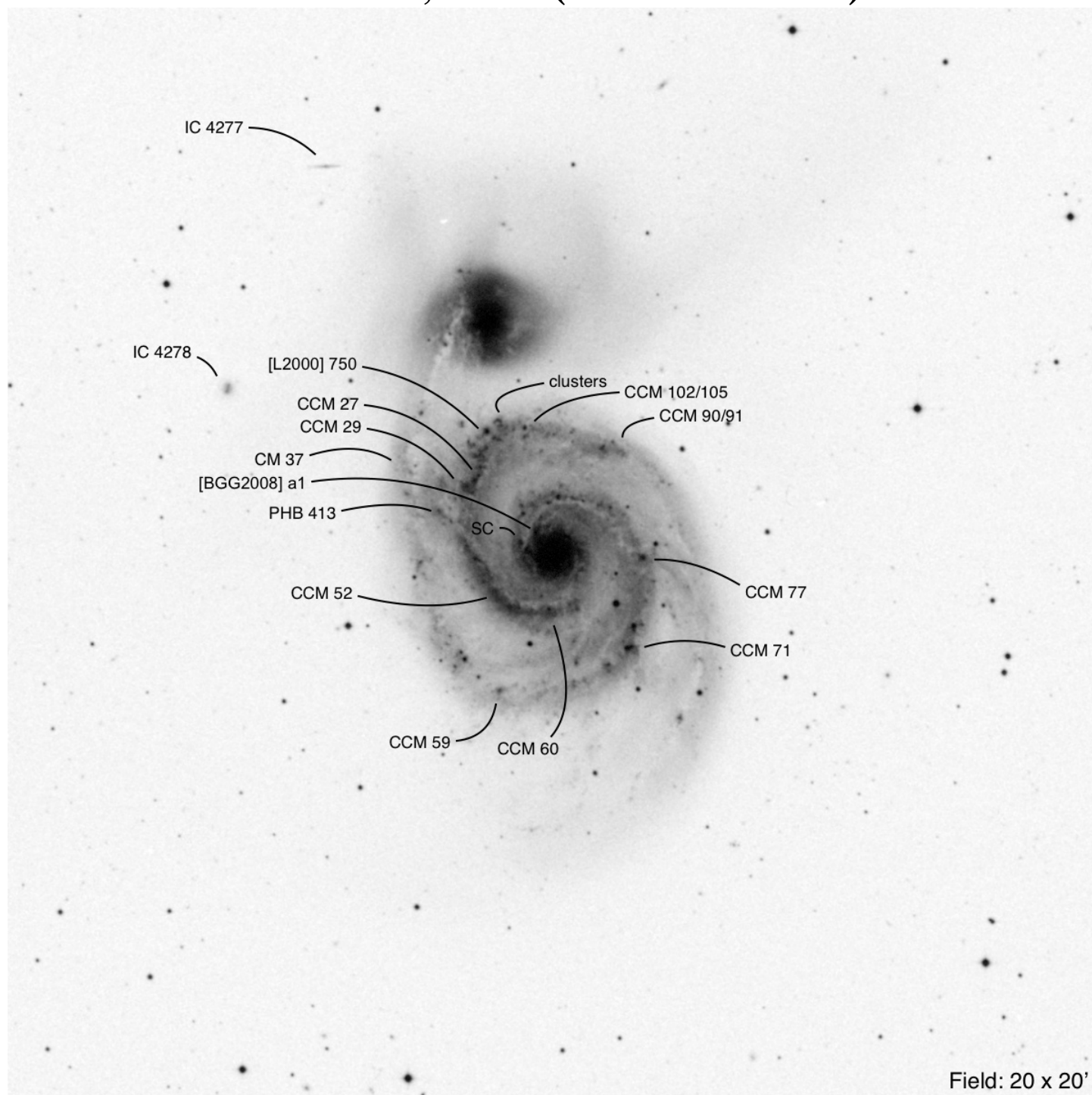
For an excellent discussion, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 172-177.

NGC 5194, M 51 (Canes Venatici)



Object	RA	Dec	Mag	Size	iSDA
NGC 5194 (M 51)	13.29 52.7	+47 11 43	8.4v	10.3 x 8.1'	45,D2

NGC 5194, M 51 (Canes Venatici)



Field: 20 x 20'

M51 is one of the best examples of a face on spiral galaxy and lies 23 mly away from us.

For an advanced observing article, see Howard Banich. "Sketching M51" *Sky & Telescope* (July 2011), 36-39. All annotations are from Banich's article, however for more, see the article. Also see his website, [Banich Notes](#)

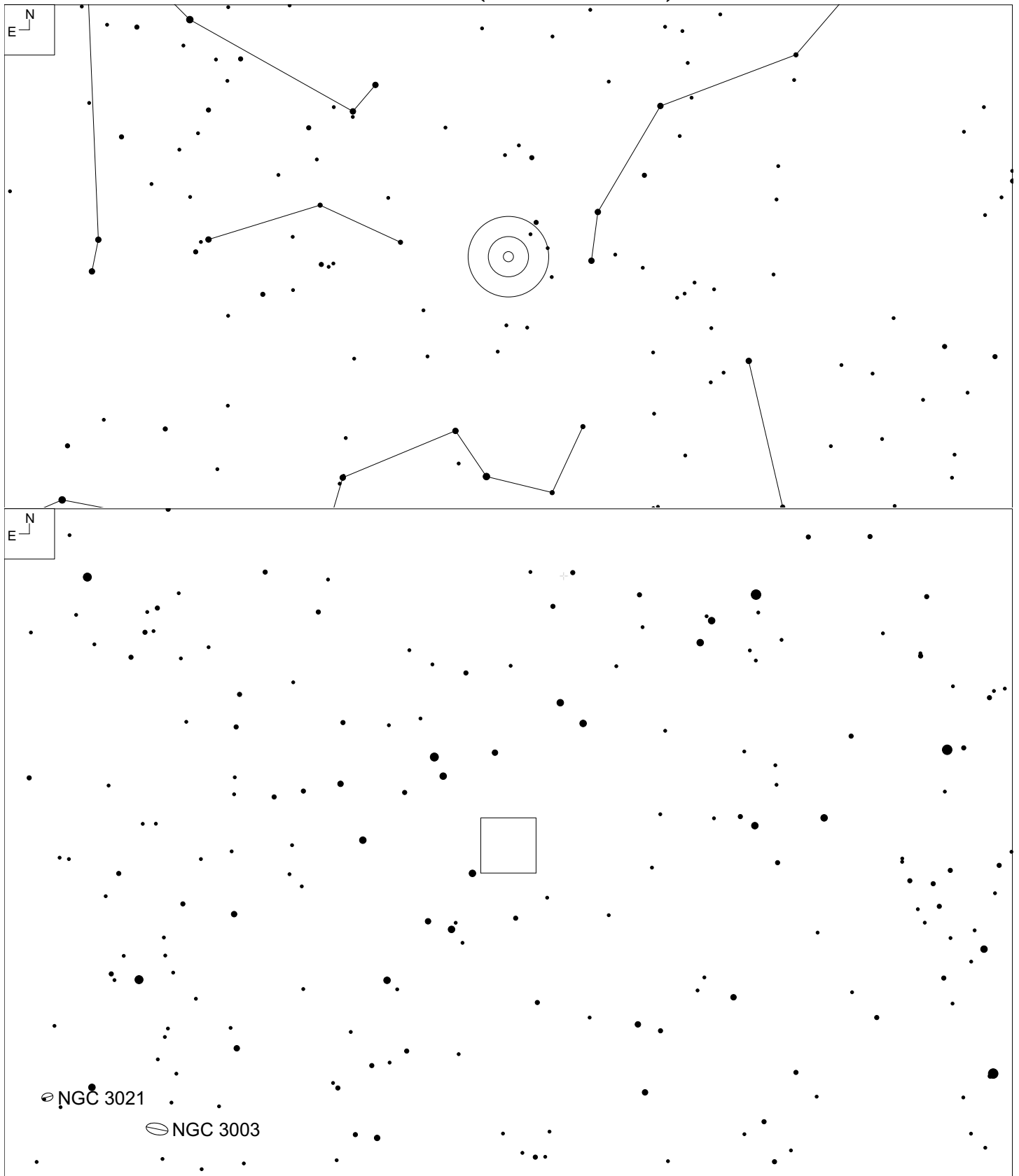
For detailed observing notes of M 51 plus H II regions through a 48" reflector, see Steve Gottlieb's notes: [NGC 5194](#).

See Glahn's [sketch with his 27"](#) and [14.5" reflectors](#) showing how much detail can be picked up.

In addition to the annotations from Banich and others, [L2000] 750 and [BGG2008] a1 are among the two brightest SSCs.

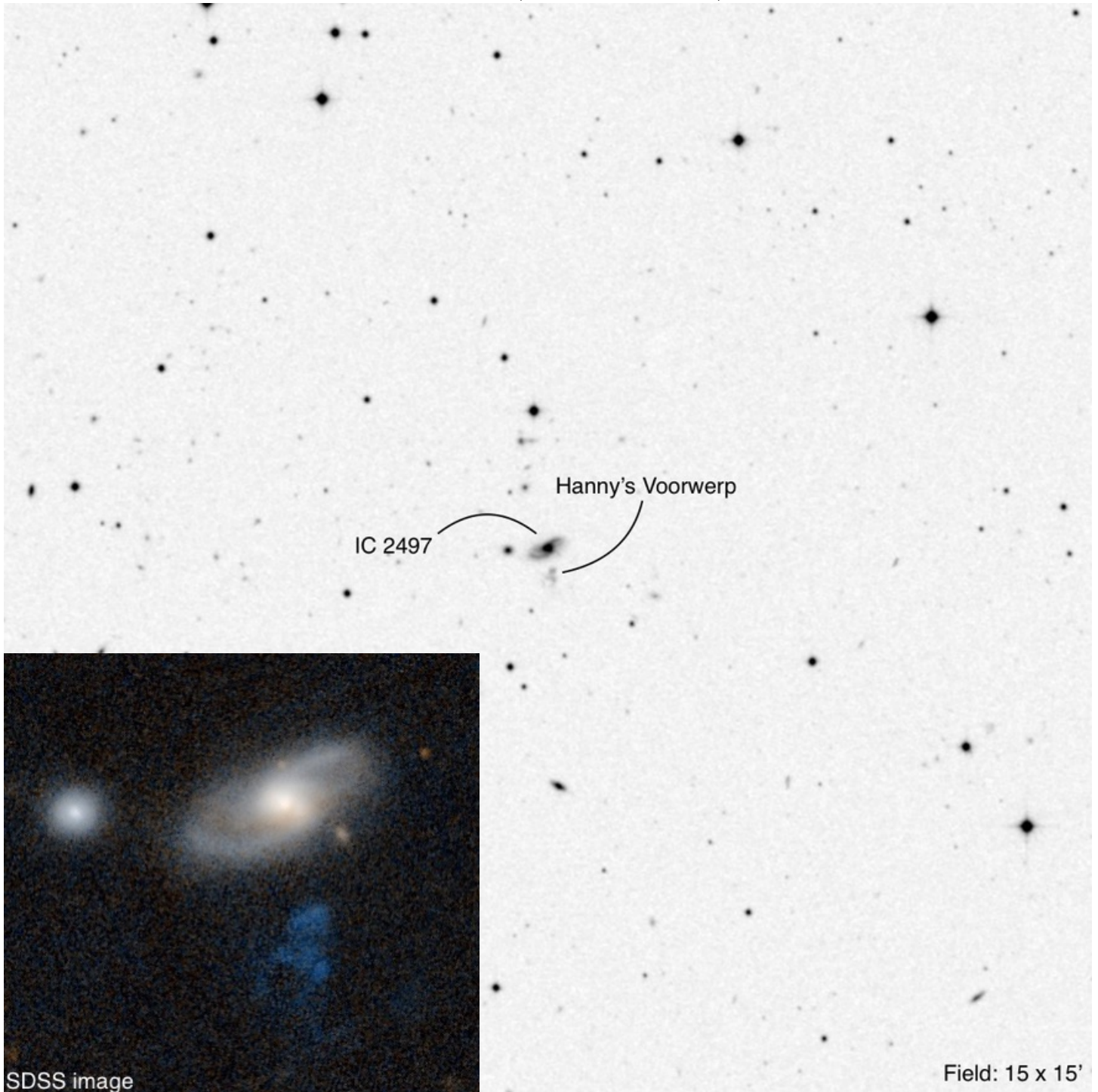
For more on the history and astrophysics, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. (Richmond, VA: Willmann-Bell, Inc., 2016), pp. 186-203

IC 2497 (Leo Minor)



Object	RA	Dec	Mag	Size	iSDA
IC 2497	09 41 04.1	+34 43 59	15.5g	0.4 x 0.3'	35

IC 2497 (Leo Minor)



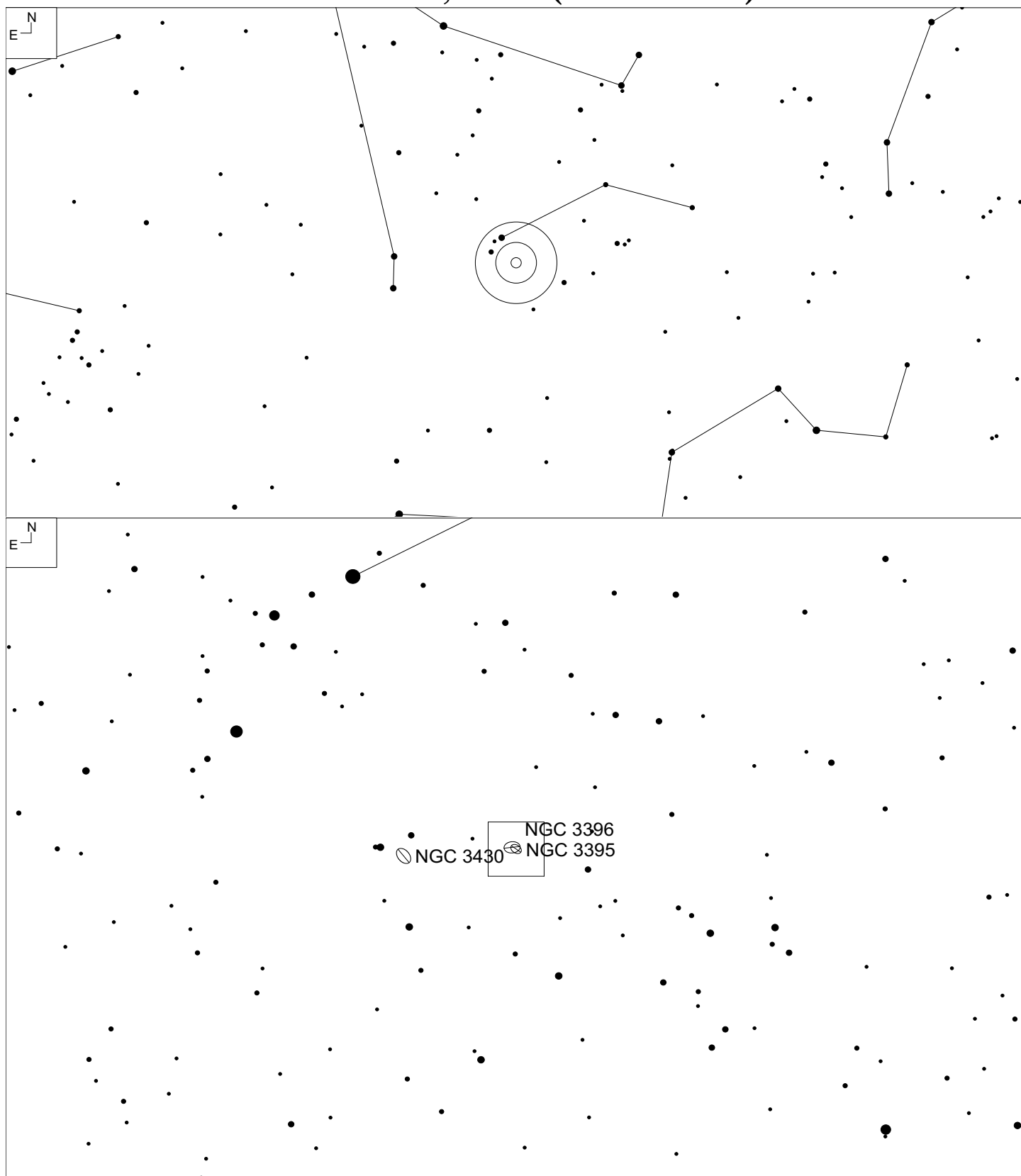
IC 2497 is a non-descript galaxy that was made famous because of Hanny's Voorwerp. It is 640 mly away.

For discussion of Hanny's Voorwerp, see Chris J. Lintott, et al, "Galaxy Zoo: 'Hanny's Voorwerp: a quasar light echo?," *Monthly Notices of the Royal Astronomical Society* (Oct 2009): 129-140.

Hanny's Voorwerp is an ionized gas injected from the host galaxy. Observation note: use a broadband filter that passes 524nm (5243 Angstroms). The object is over 600 million light years away so the primary O-III line at 500.7nm was redshifted almost 24nm to 524.3nm, which would take it outside the typical O-III filter and any well-made narrowband filters. For O III redshift, see Lintott, Chris J., et al, "Galaxy Zoo: 'Hanny's Voorwerp', a quasar light echo?" *Monthly Notices of the Royal Astronomical Society* (Oct 2009), 133

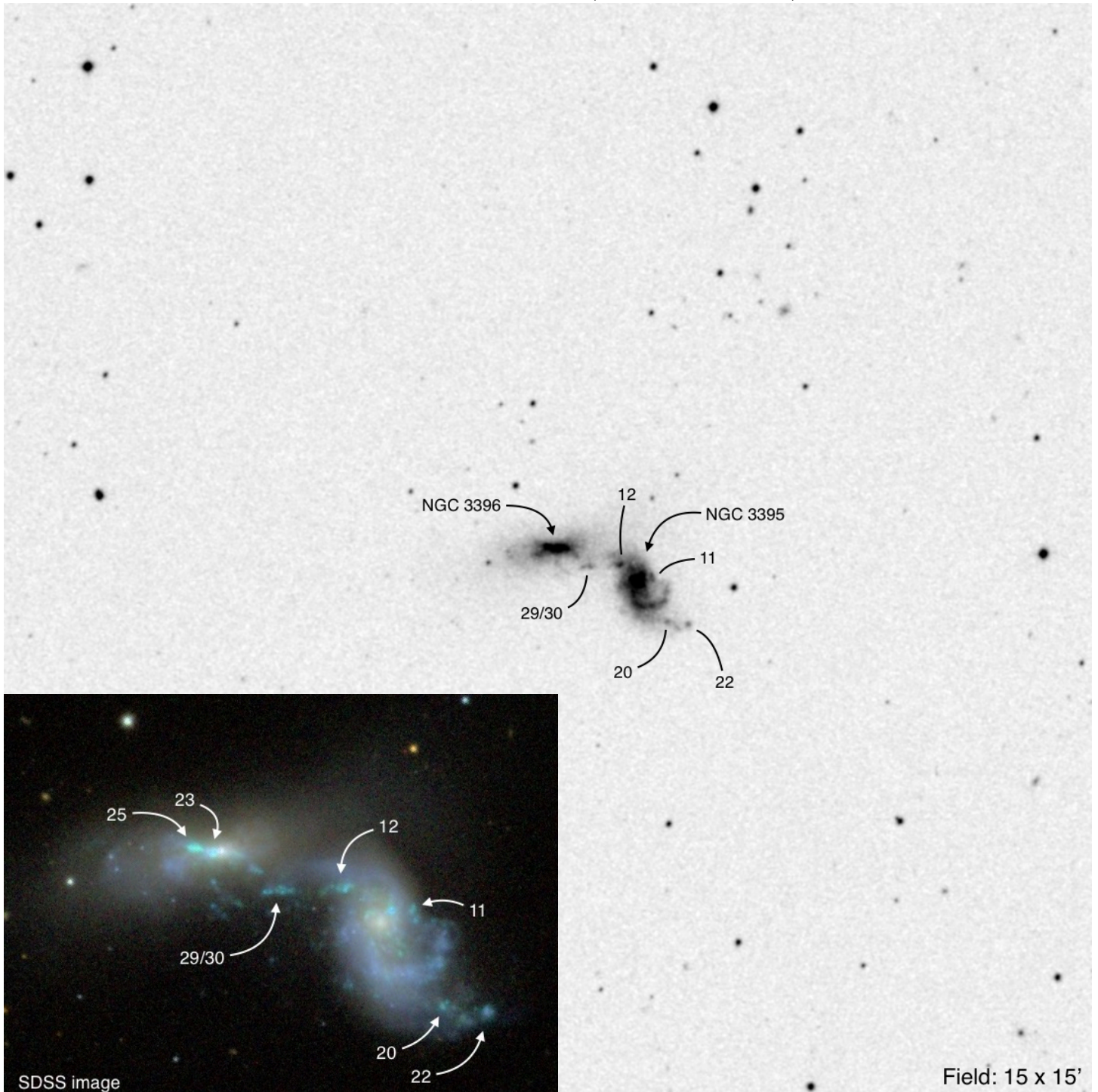
A quasar is likely at the core of IC 2497, see H. Rampadarath, et al, "Hanny's Voorwerp . Evidence of AGN activity and a nuclear starburst in the central regions of IC 2497," *Astronomy & Astrophysics*, Volume 517 (July 2010): L8

NGC 3395, 3396 (Leo Minor)



Object	RA	Dec	Mag	Size	iSDA
NGC 3395	10 49 49.3	+32 59 09	12.1	1.7 x 0.8'	34
NGC 3396	10 49 55.1	+32 59 38	12.5	1.1 x 0.9'	

NGC 3395, 3396 (Leo Minor)



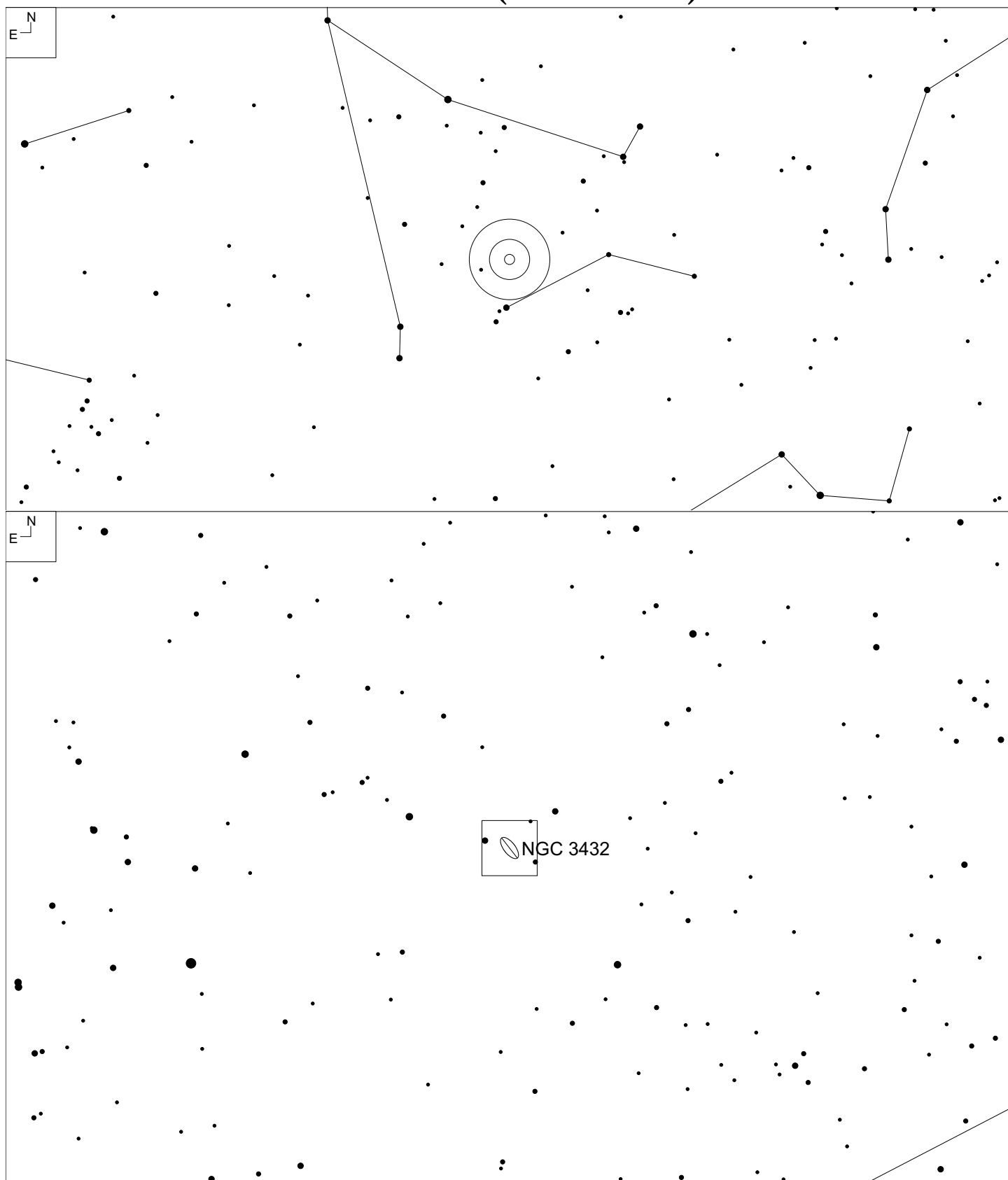
NGC 3395 and 3396 are types SAB(rs)cd pec and IBm pec respectively. Both interactive galaxies lie about 54 mly away with an large uncertainty of ± 23 mly.

Annotations from D. Weistrop, C. H. Nelson, R. Angione, and R. Bachilla, "Physical Properties of the Star-forming Regions in the Interacting Galaxies NGC 3395/NGC 3396," *The Astronomical Journal*, Volume 159, Issue 1, article 17 (Jan 2020). For further detail, see annotated SDSS image (bottom left inset).

Mark Hancock, Donna Weistrop, Diane Eggers, Charles H. Nelson, "Star-Forming Knots in the UV-Bright Interacting Galaxies NGC 3395 and NGC 3396," *The Astronomical Journal*, Volume 125, Issue 4, (Apr 2003): 1696-1710.

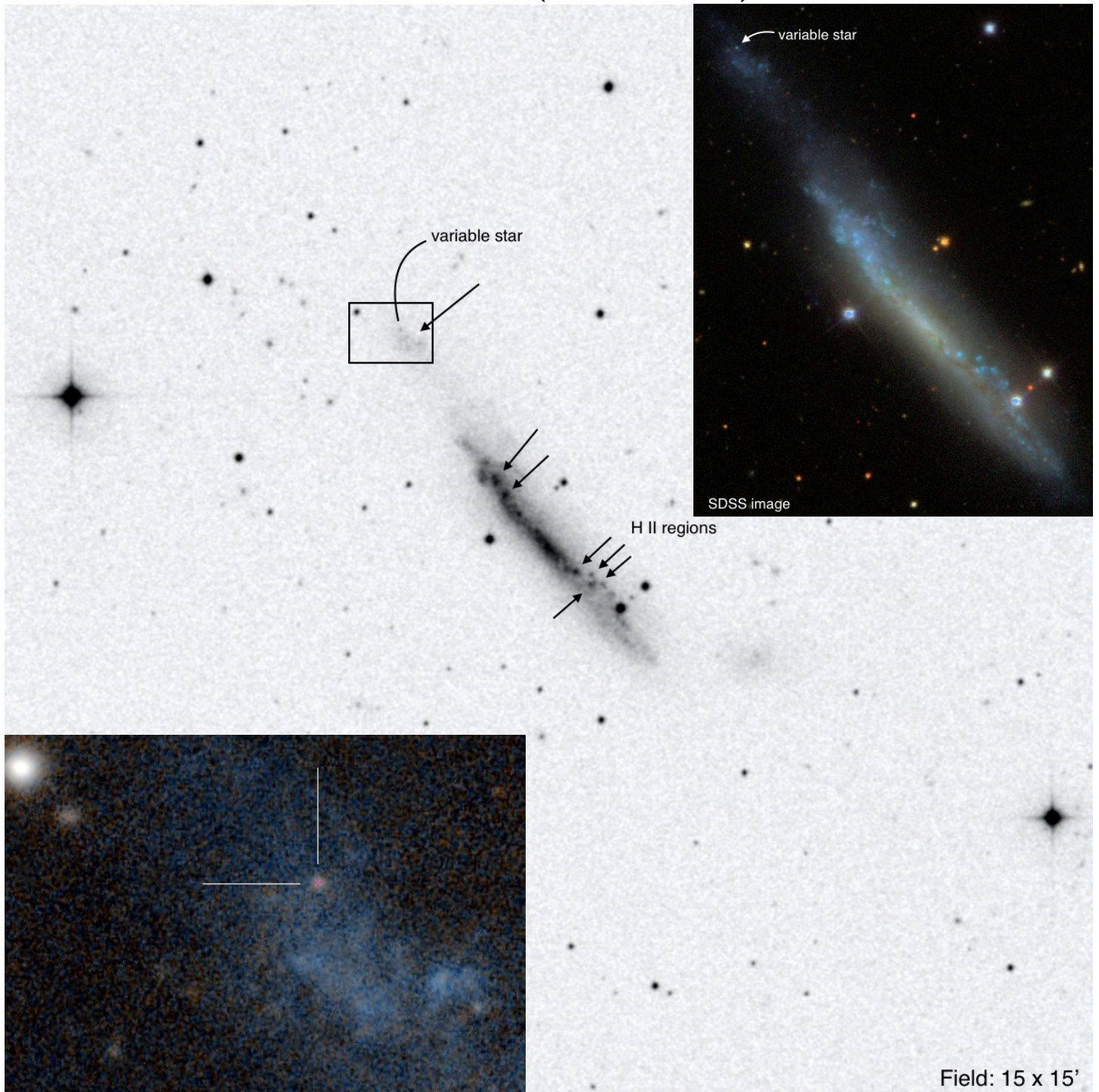
See Glahn's [sketch](#) with his 14.5" reflector under NELM 6 skies. This observation indicated that 14.5" is not enough under below ideal conditions.

NGC 3432 (Leo Minor)



Object	RA	Dec	Mag	Size	iSDA
NGC 3432	10 52 31.1	+36 37 08	11.7v	6.8 x 1.4'	22,34

NGC 3432 (Leo Minor)



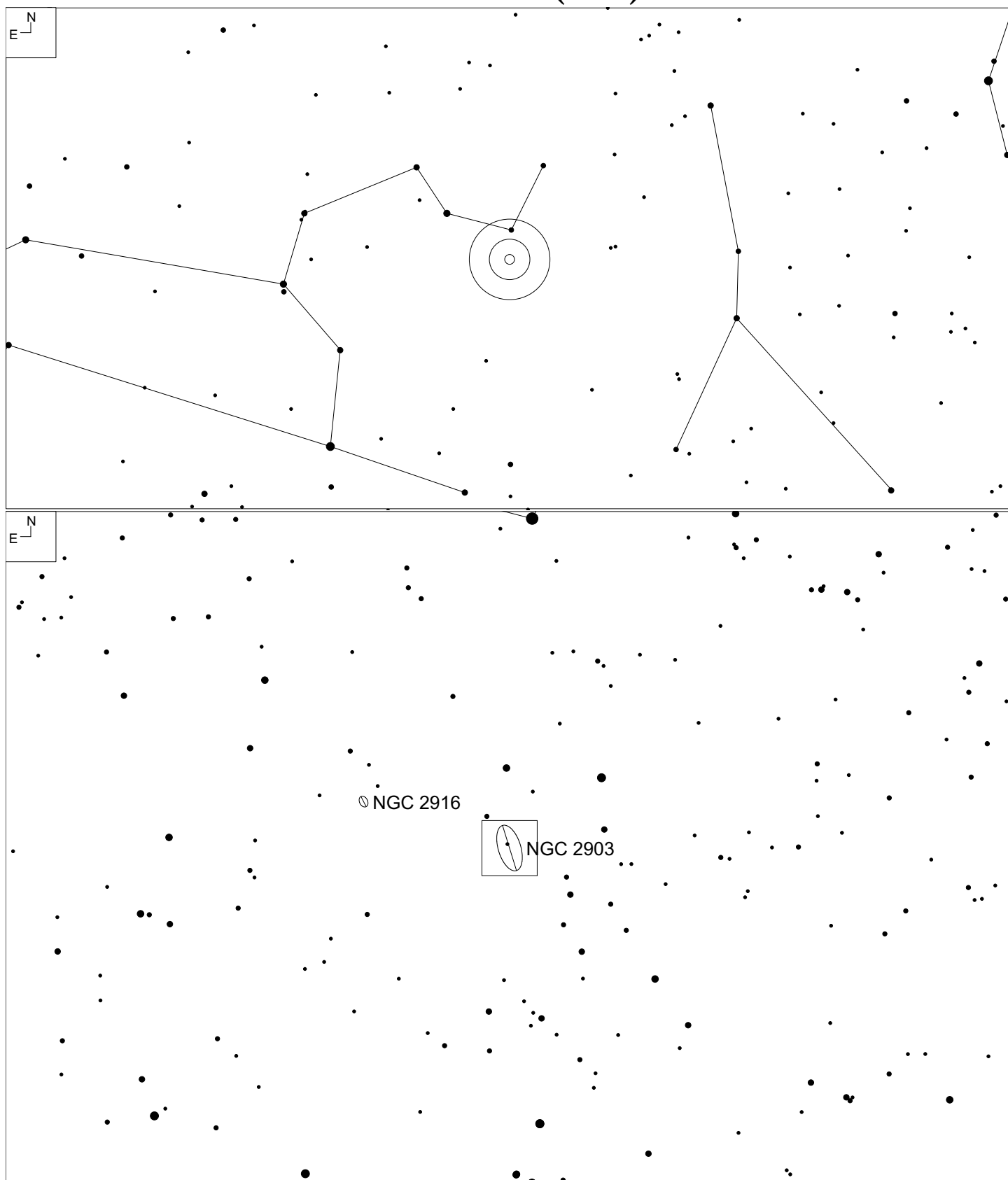
NGC 3432 is a SB(s)m edge on galaxy that lies 40 mly away.

Papenkova reported the discovery of a super bright variable star on the NE end of NGC 3432. The J2000 coordinates are RA: 10h52m41s.40, Dec: +36°40'08". The magnitudes reported was as high as 17.4 and as low as 21. See Papenkova, M., W. D. Li, "Variable Star in Field of NGC 3432," *International Astronomical Union Circular*, No. 7415, #1 (2000). Edited by Green, D. W. E. For further study of the variability and magnitude ranges, see Ancla Müller, et al, "Multi-epoch variability of AT 2000ch (SN 2000ch) in NGC 3432. A radio continuum and optical study," *Astronomy & Astrophysics*, Volume 670, article id A130 (Feb 2023). Inset showing the variable star is from a screengrab of the PanSTARRS image on the CDS portal found [here](#).

The Hubble Space Telescope [image](#) shows a lot of rich H II region across the surface with highest concentration on the northwest end. Note that NED does not have any extragalactic regions labeled. The brighter regions are noted.

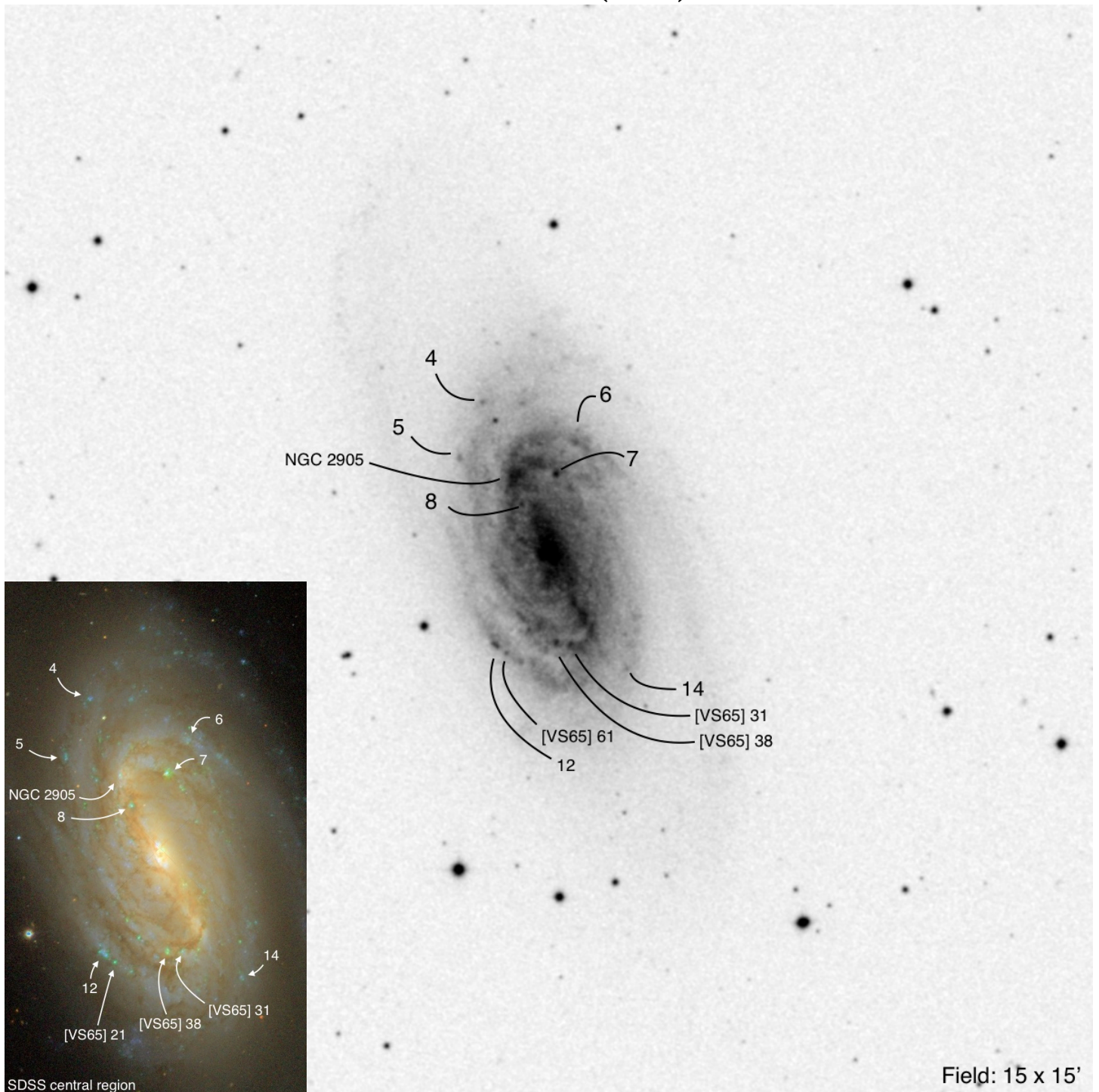
See Glahn's [sketch](#) with a 16" showing the combined light of the two major H II regions plus the extended knot on the north end.

NGC 2903 (Leo)



Object	RA	Dec	Mag	Size	iSDA
NGC 2903	09 32 10.1	+21 30 03	9.1v	12.6 x 6.0'	35,47

NGC 2903 (Leo)



NGC 2903 is a type SAB(rs)bc barred spiral galaxy that is fairly isolated. It lies 24 mly away in the direction of Leo. This was considered one of the brightest non-Messier galaxies.

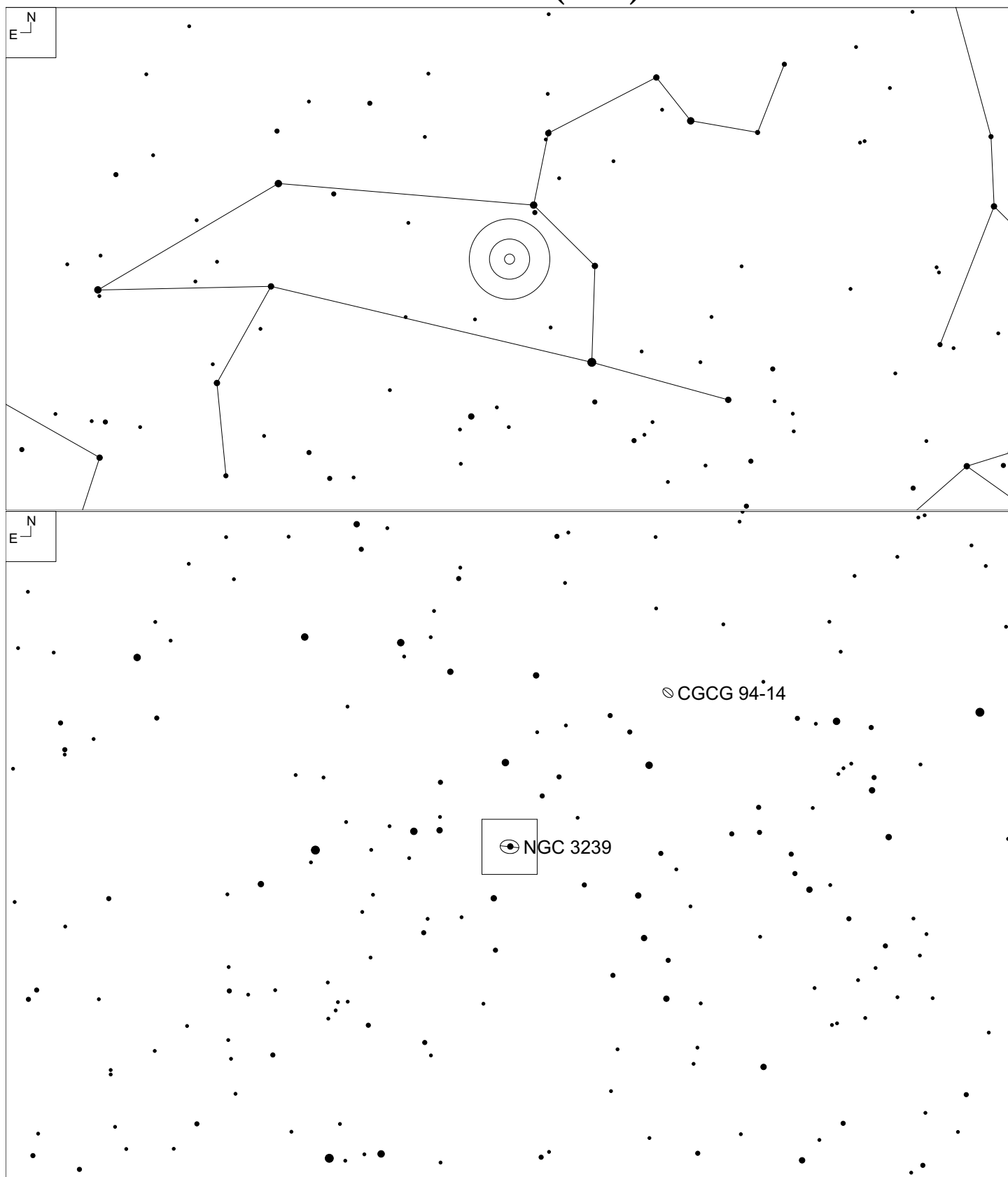
Numerical annotations from F. Bresolin, D. Schaerer, et al, "A VLT Study of metal-rich extragalactic H II regions," *Astronomy & Astrophysics*, Volume 441, Number 3 (Oct 2005): 981-997

H II region [VS65] annotations from Véron, P. and A.Sauvayre, "Étude des Galaxies en lumière monochromatique H. II. NGC 2403 - NGC 2903 - NGC 4490," *Annales d'Astrophysique*, Volume 28 (Feb 1965): 698-715.

For observing notes with a 48" telescope, see Steve Gottlieb's notes at: [NGC 2903](#). Also see Glahn's [sketch](#) with a 14.5"

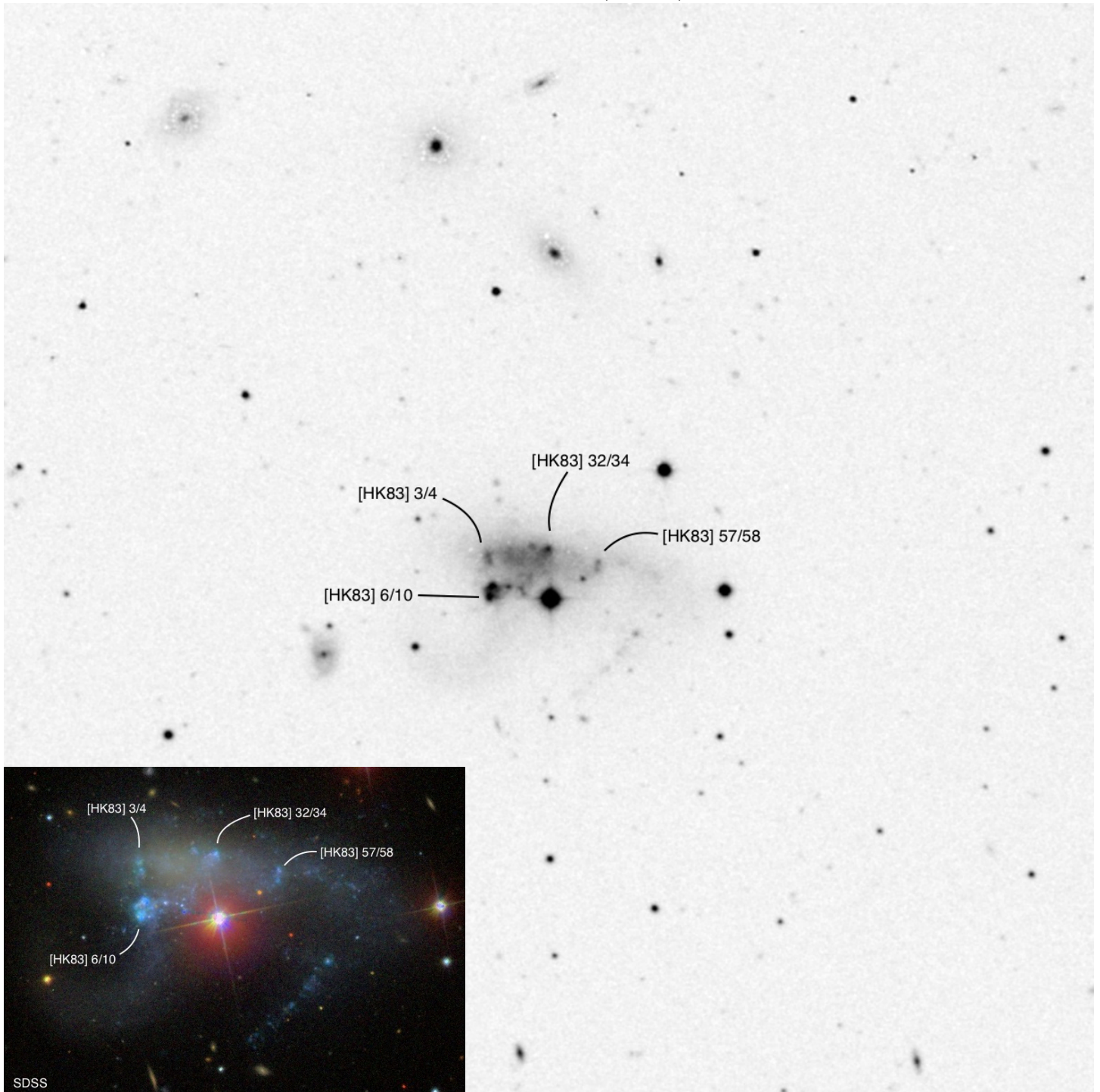
Hubble Space Telescope [image](#).

NGC 3239 (Leo)



Object	RA	Dec	Mag	Size	iSDA
NGC 3239	10 20 05.5	+17 09 35	12.9	1.4 x 1.3'	46

NGC 3239 (Leo)

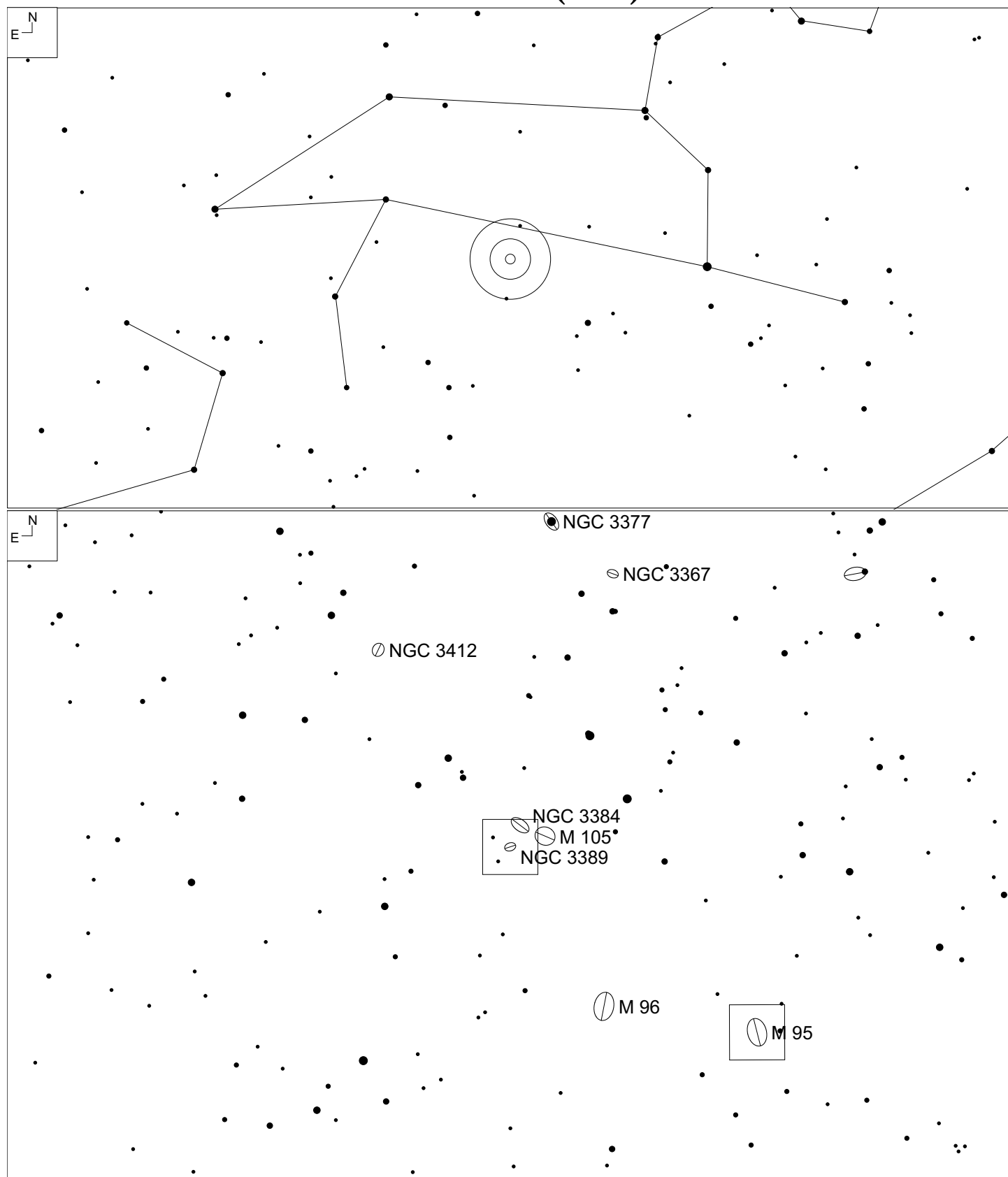


NGC 3239 is a type IB(s)m pec galaxy sitting 30 mly away and about 33 x 29 kly across.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3239](#).

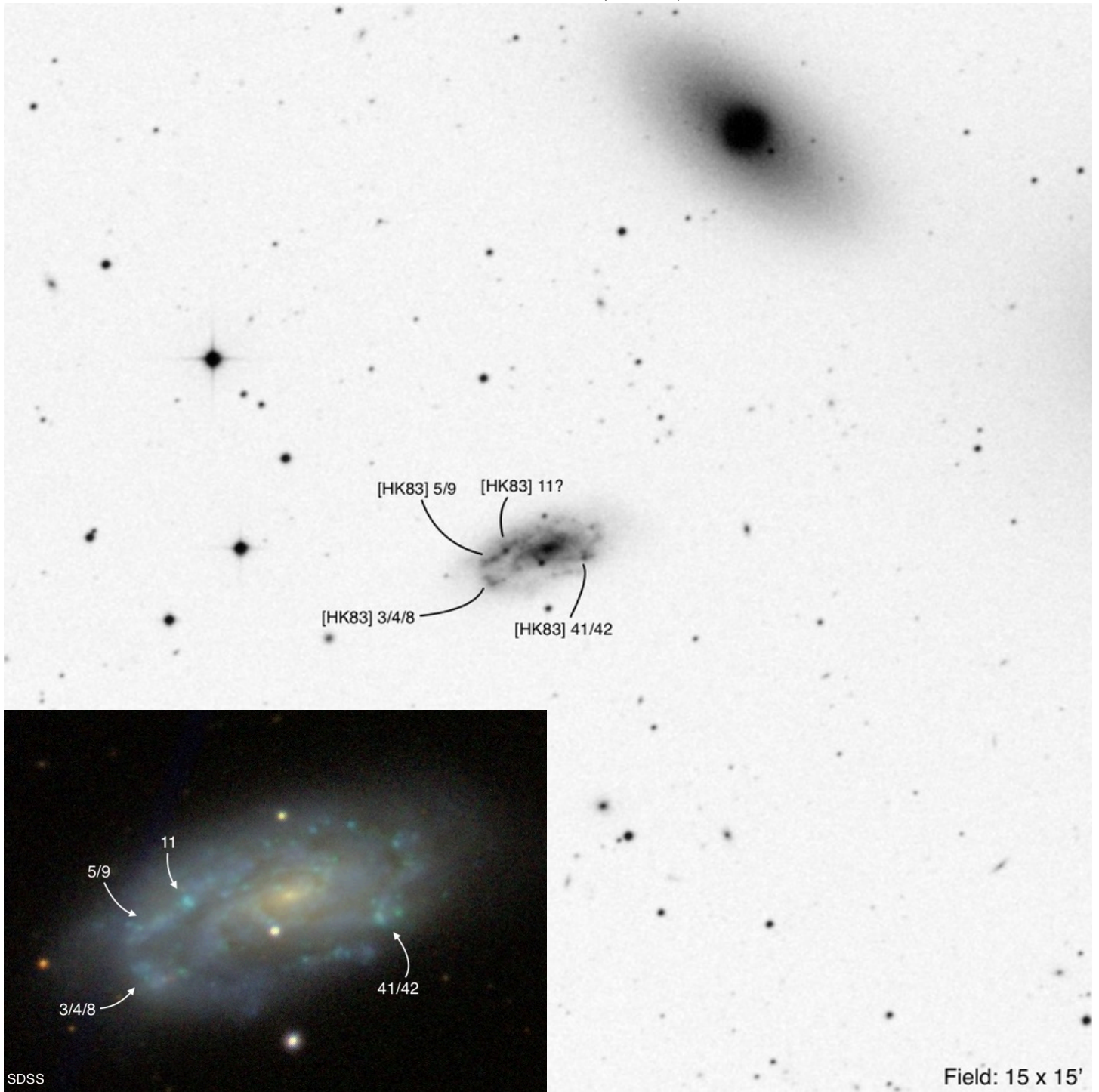
See Glahn's [sketch](#) with a 16" showing 2 knots.

NGC 3389 (Leo)



Object	RA	Dec	Mag	Size	iSDA
NGC 3389	10 48 27.2	+12 32 05	12.8	2.8 x 1.3'	46

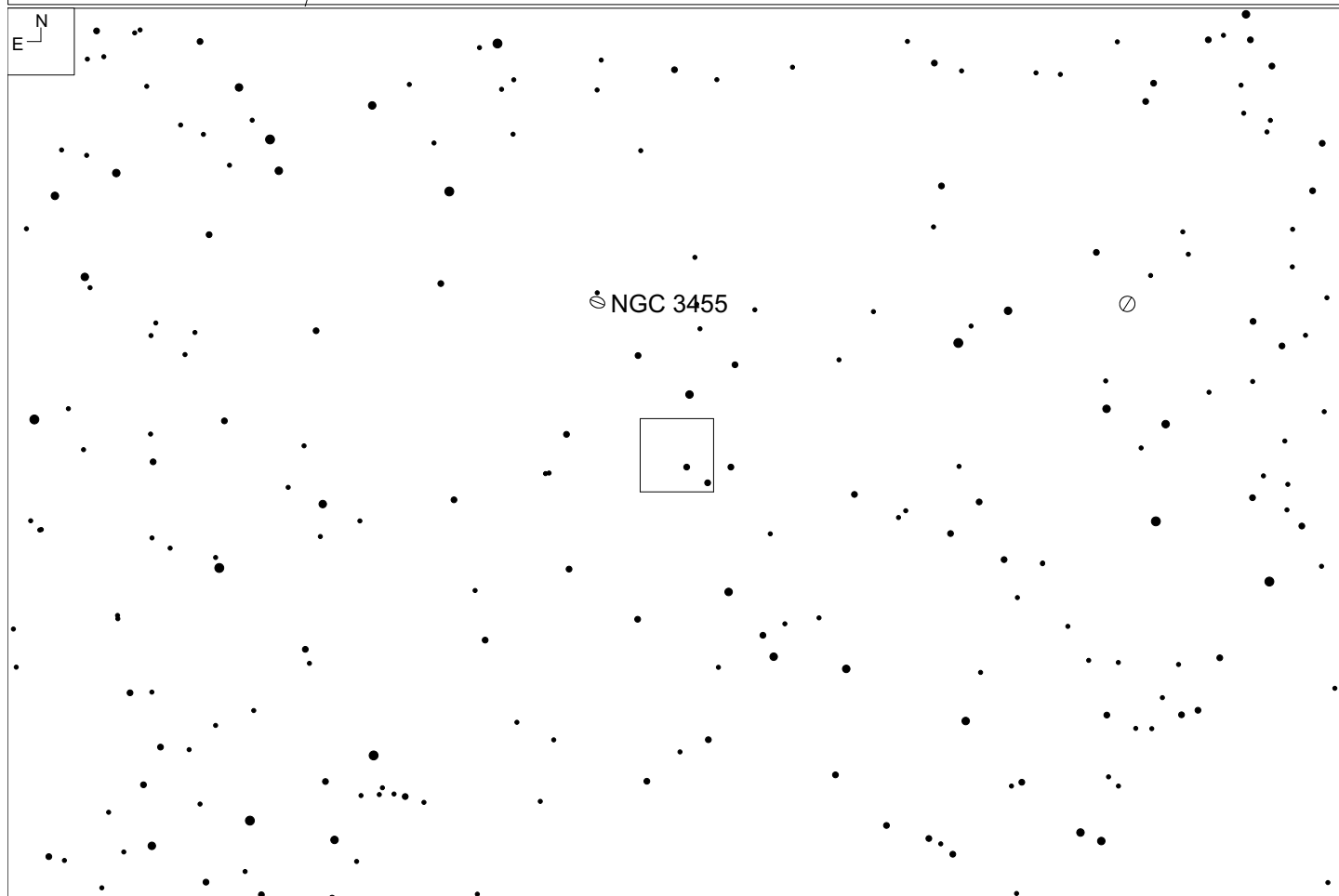
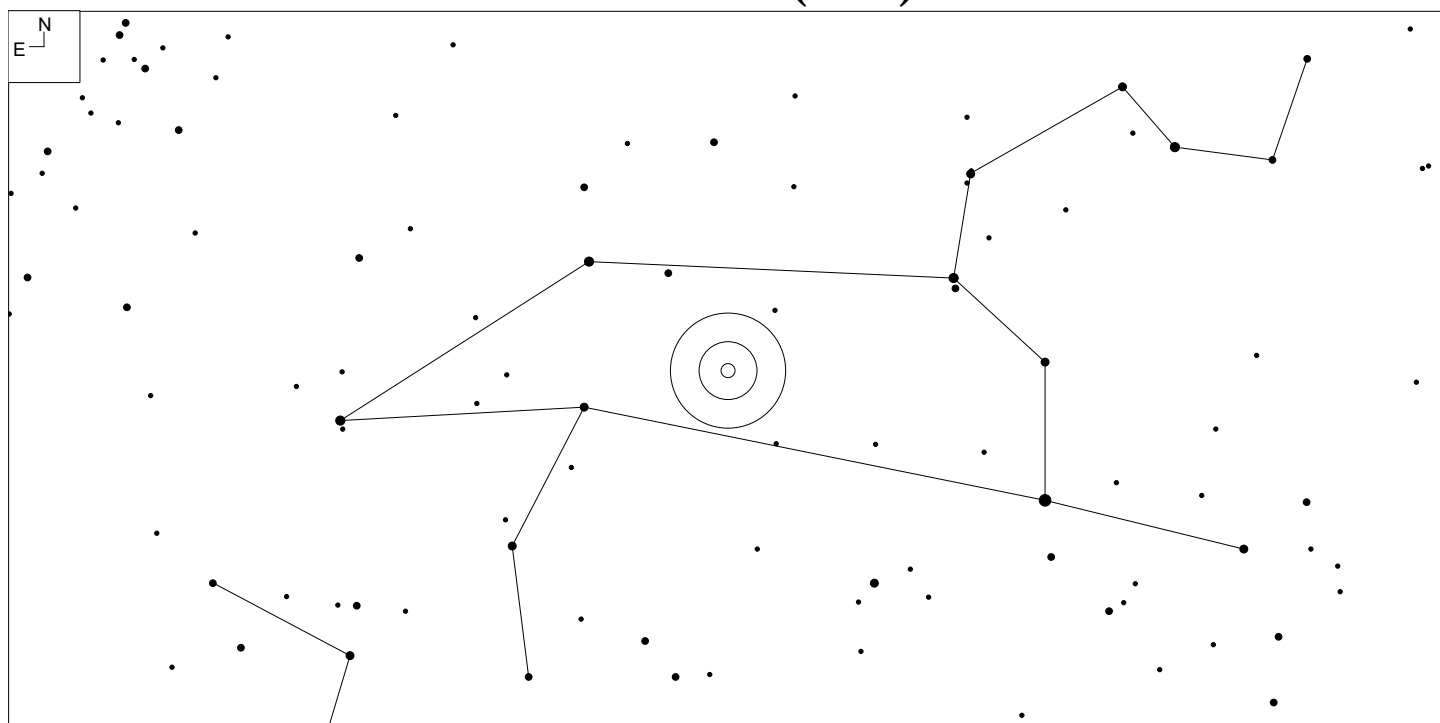
NGC 3389 (Leo)



NGC 3389 is a type SA(s)c galaxy and lies about 65 mly away.

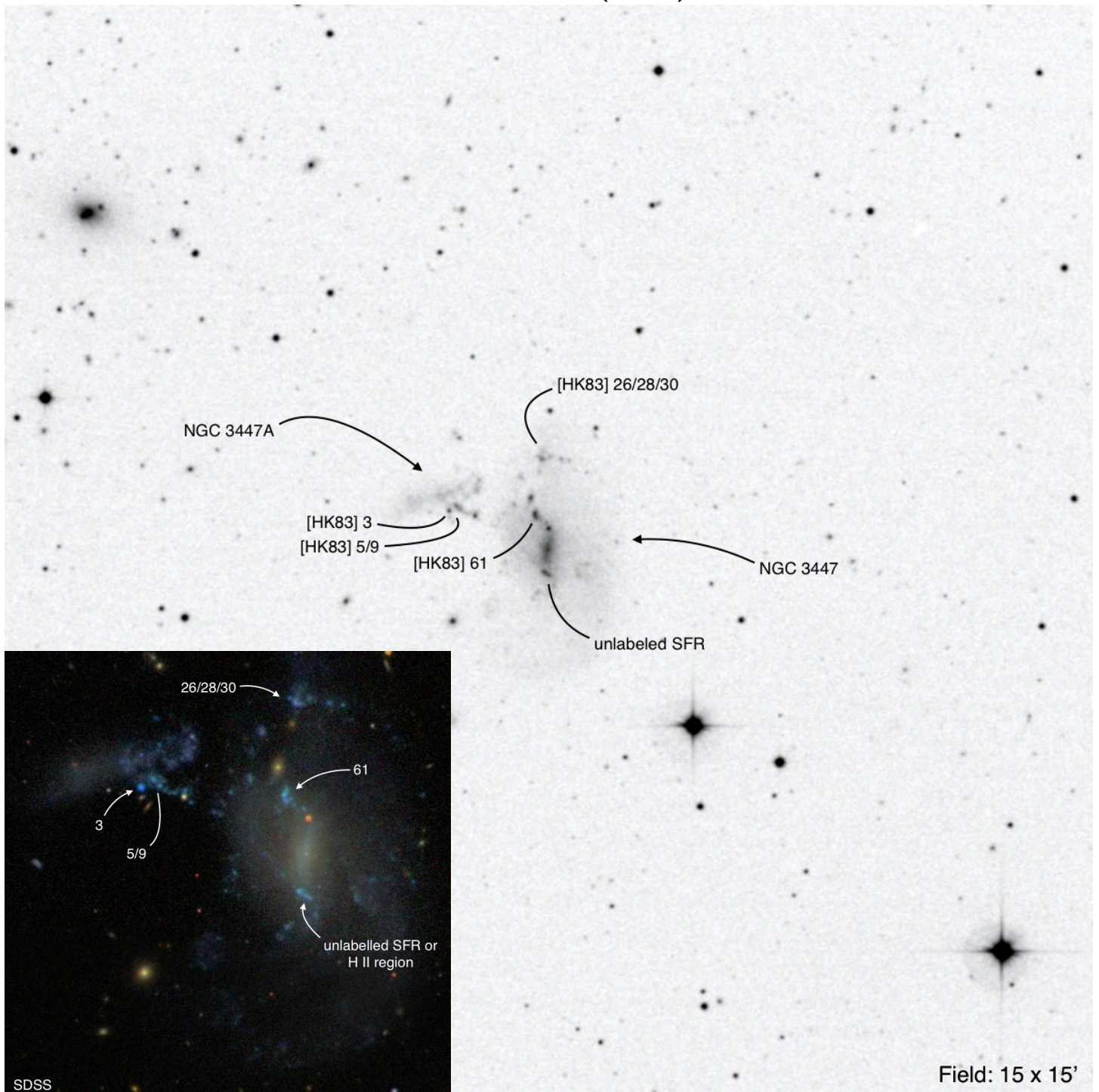
For observing notes with a 24" telescope, see Steve Gottlieb's notes: [NGC 3389](#).

NGC 3447 (Leo)



Object	RA	Dec	Mag	Size	iSDA
NGC 3447	10 53 23.4	+16 46 26	14.7	4.2 x 2.4	46

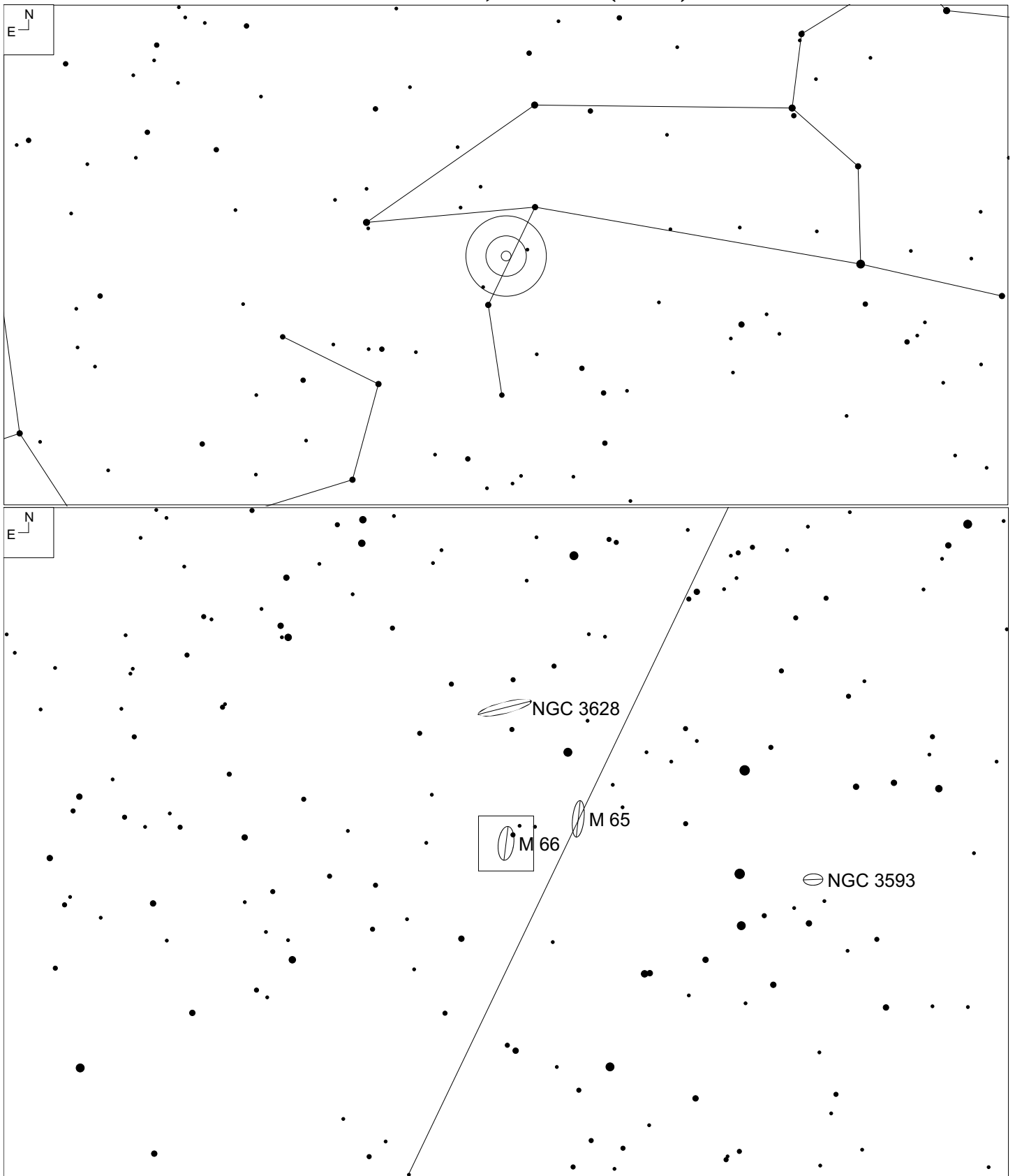
NGC 3447 (Leo)



NGC 3447 is a type SAm galaxy that lies 45 mly away. It is interacting with NGC 3447A to the east.

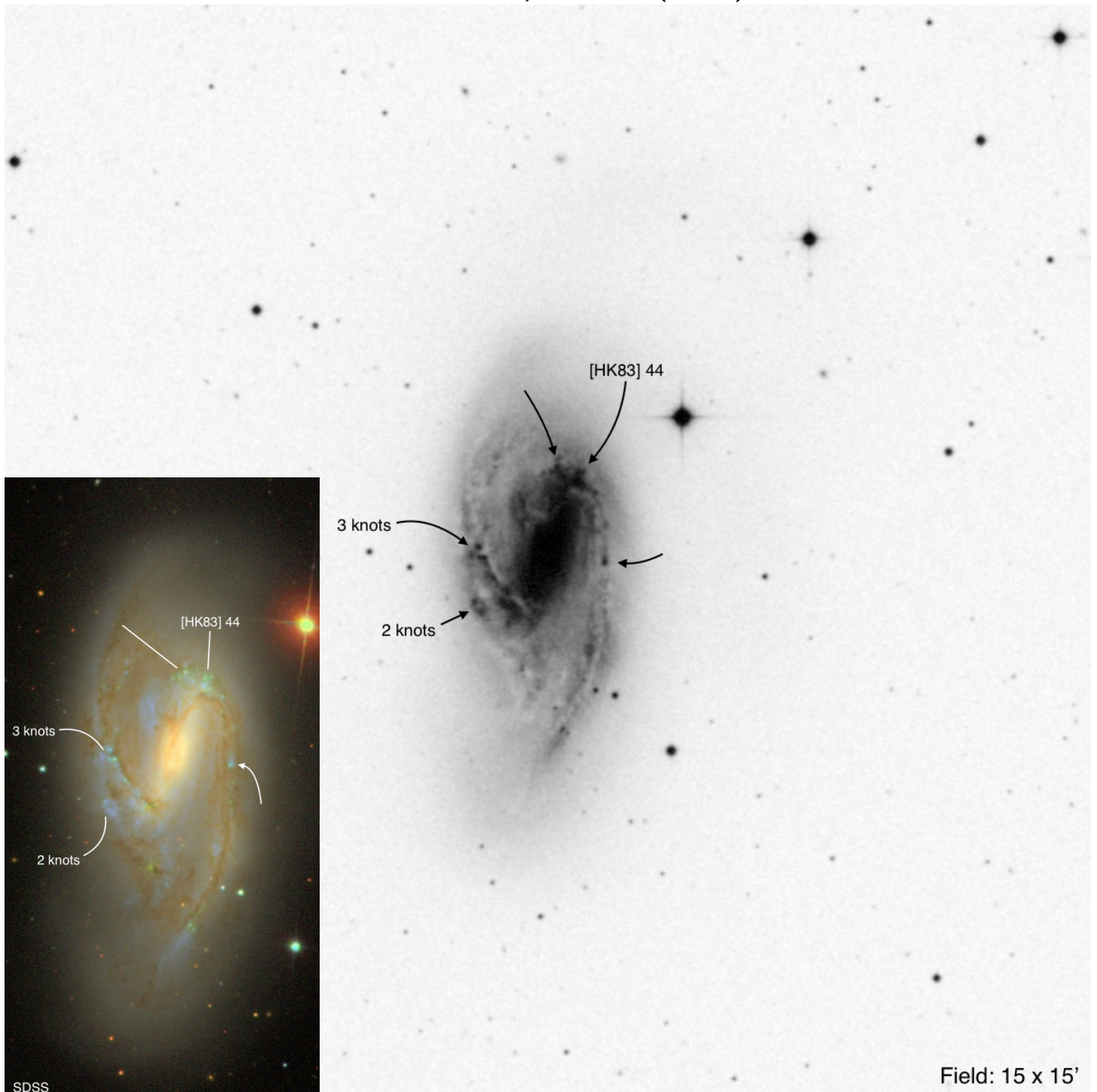
Inspecting the Hubble Space Telescope [image](#) helps clarify which “knot” is a background galaxy or star. **[HK83] 3** is a bright blue object in the Hubble image, possibly a Wolf Rayet star?

NGC 3627, M 66 (Leo)



Object	RA	Dec	Mag	Size	iSDA
NGC 3627	11 20 15.0	+12 59 29	8.9v	9.1 x 4.1'	46

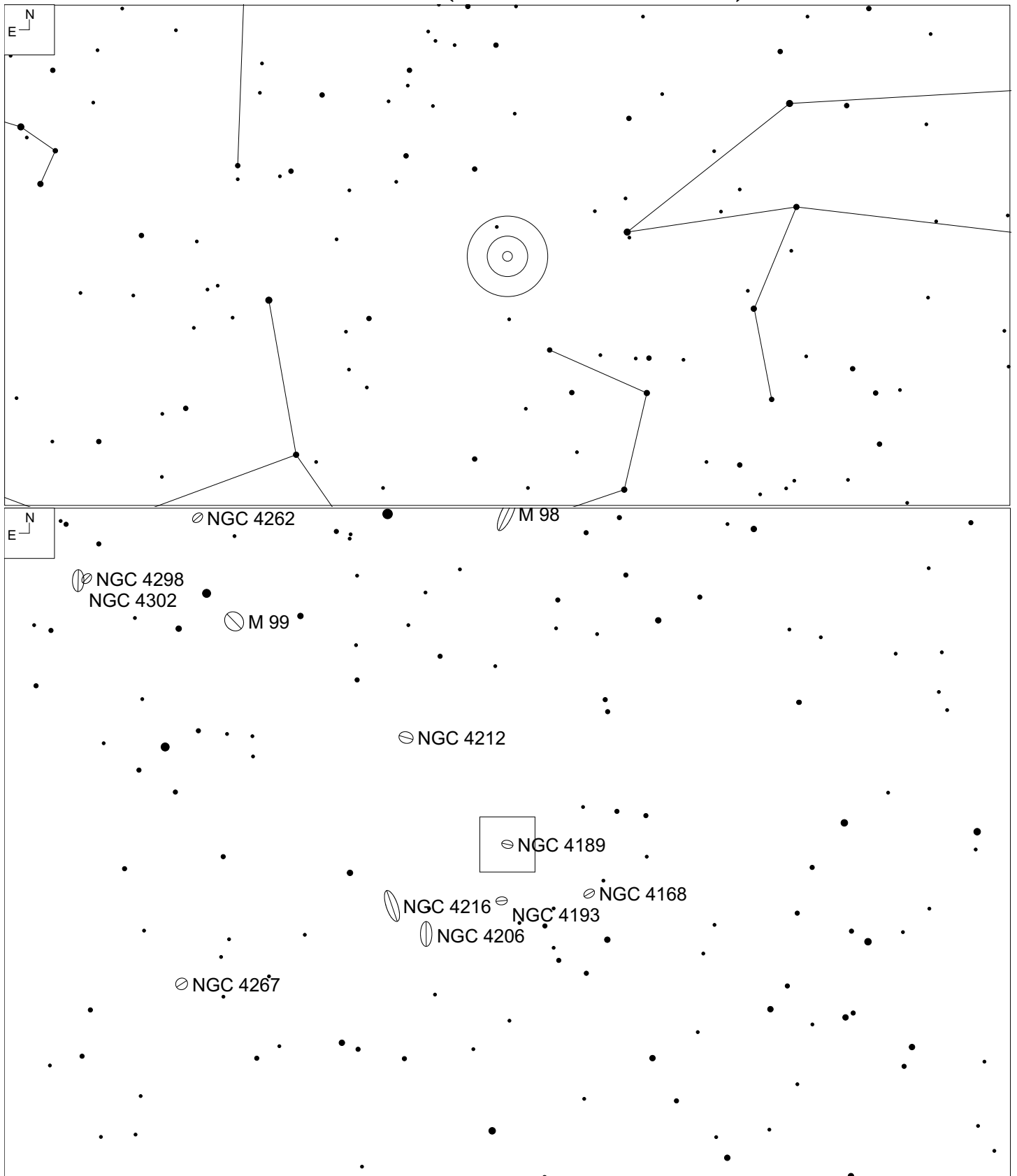
NGC 3627, M 66 (Leo)



M66 is a type SAB(s)b galaxy that lies 35 mly away in the direction of Leo. The diameter is 93 kly.

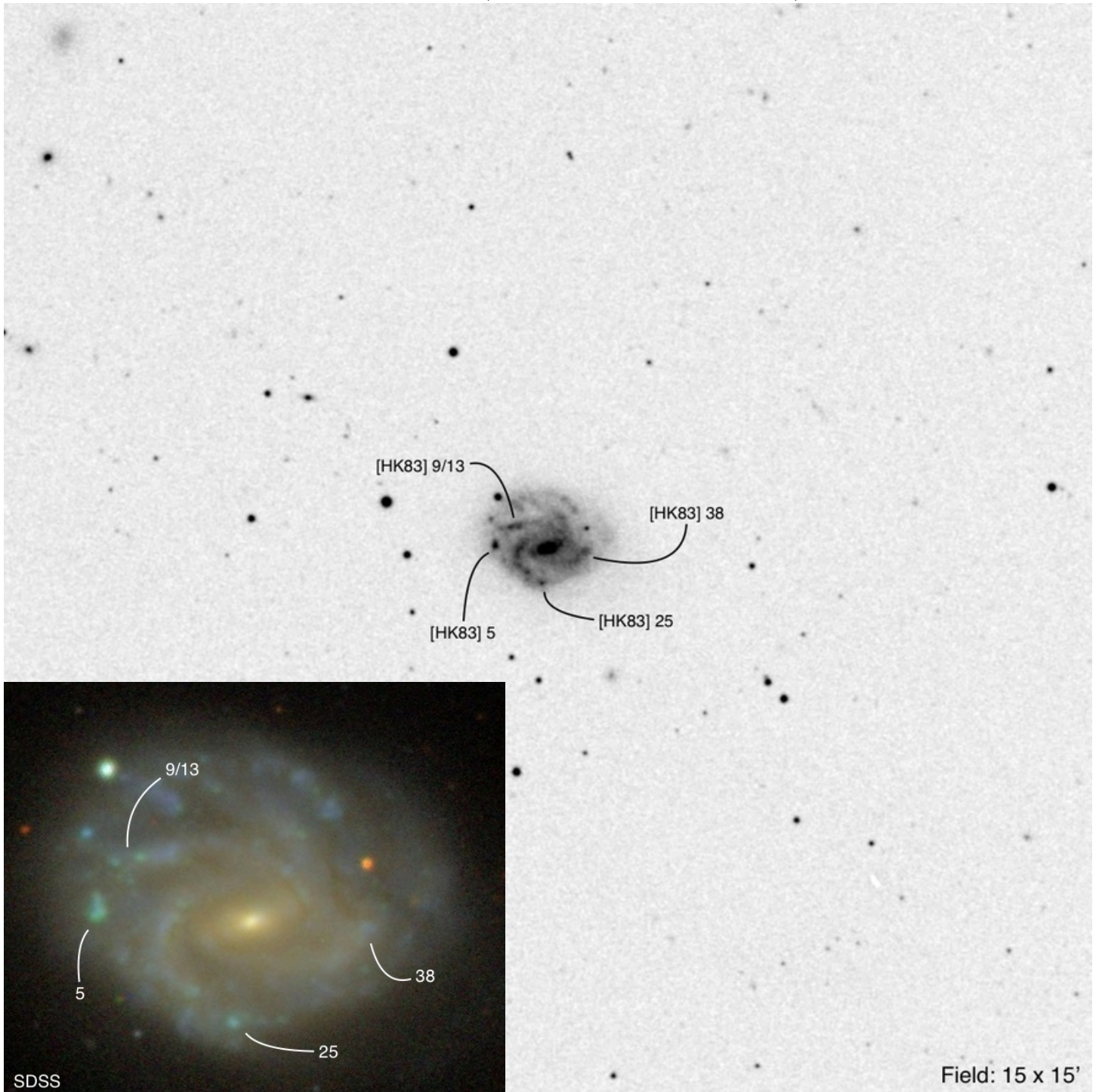
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3627](#). Glahn's [sketch](#) with a 16" showing knotty detail.

NGC 4189 (Coma Berenices)



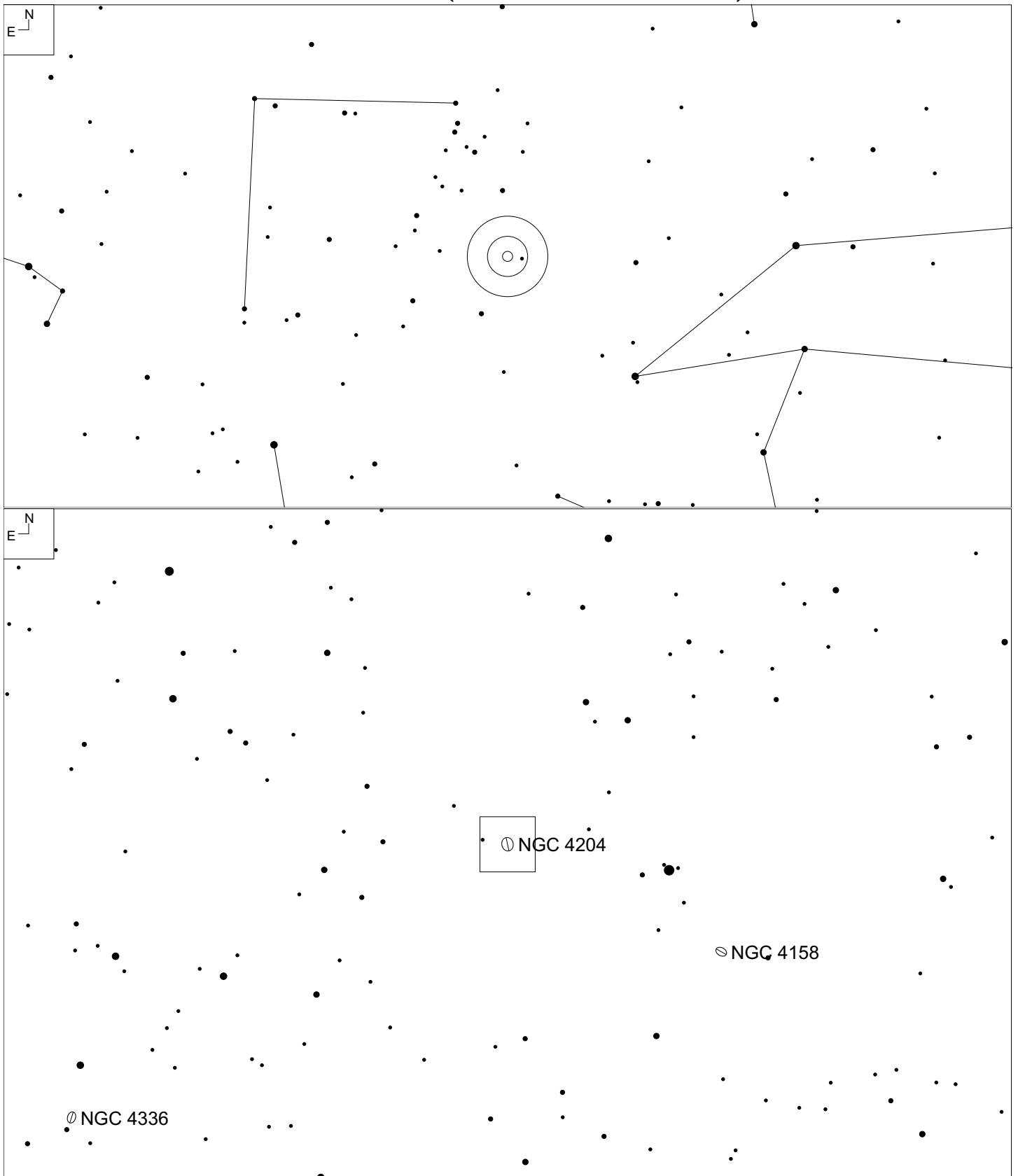
Object	RA	Dec	Mag	Size	iSDA
NGC 4189	12 13 47.0	+13 25 36	11.7	2.6 x 1.5'	D2

NGC 4189 (Coma Berenices)



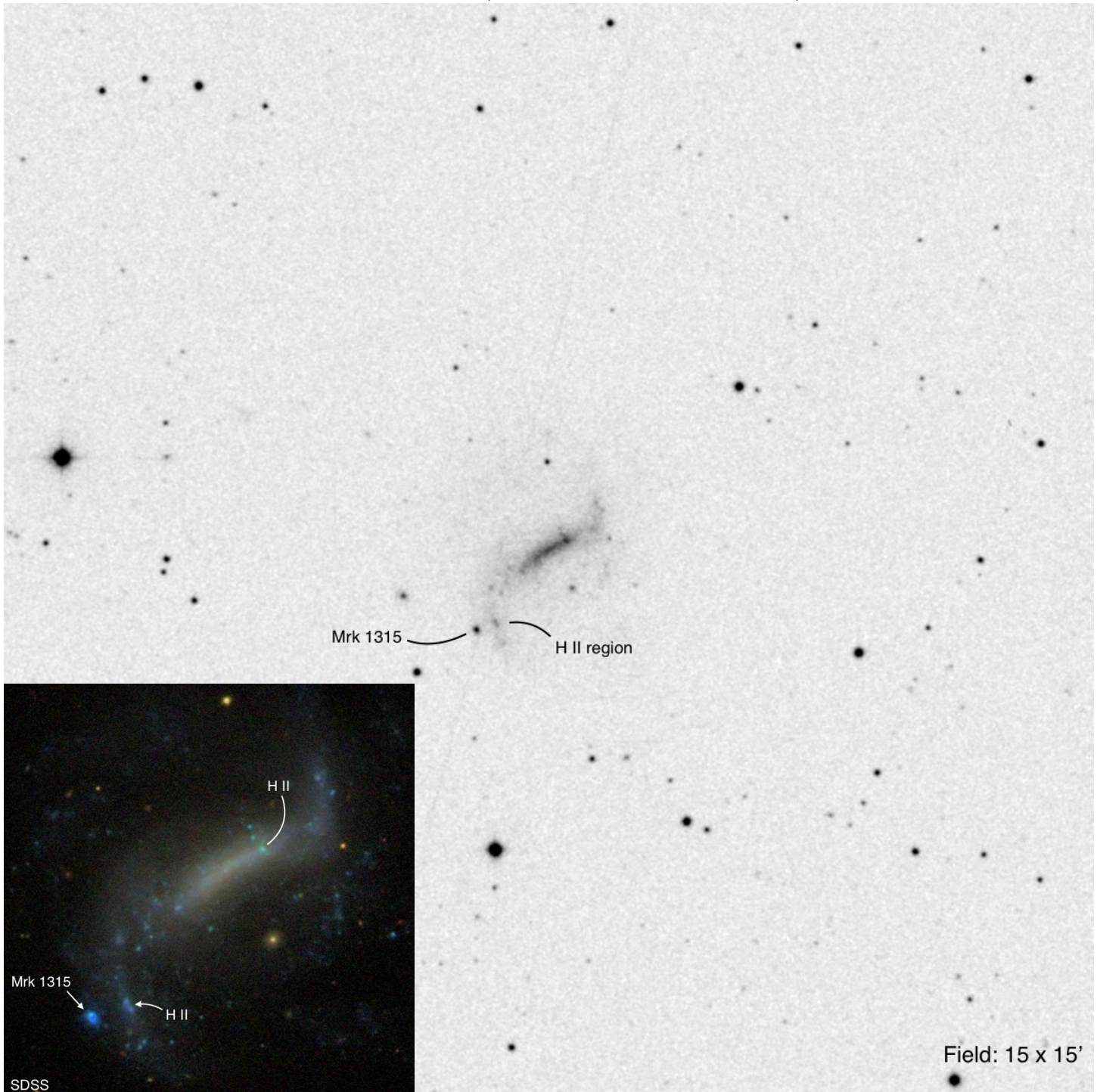
NGC 4189 is a type SAB(rs)cd galaxy and about 100 mly away.

NGC 4204 (Coma Berenices)



Object	RA	Dec	Mag	Size	iSDA
NGC 4204	12 15 14.4	+20 39 33	12.4	3.6 x 2.9'	45

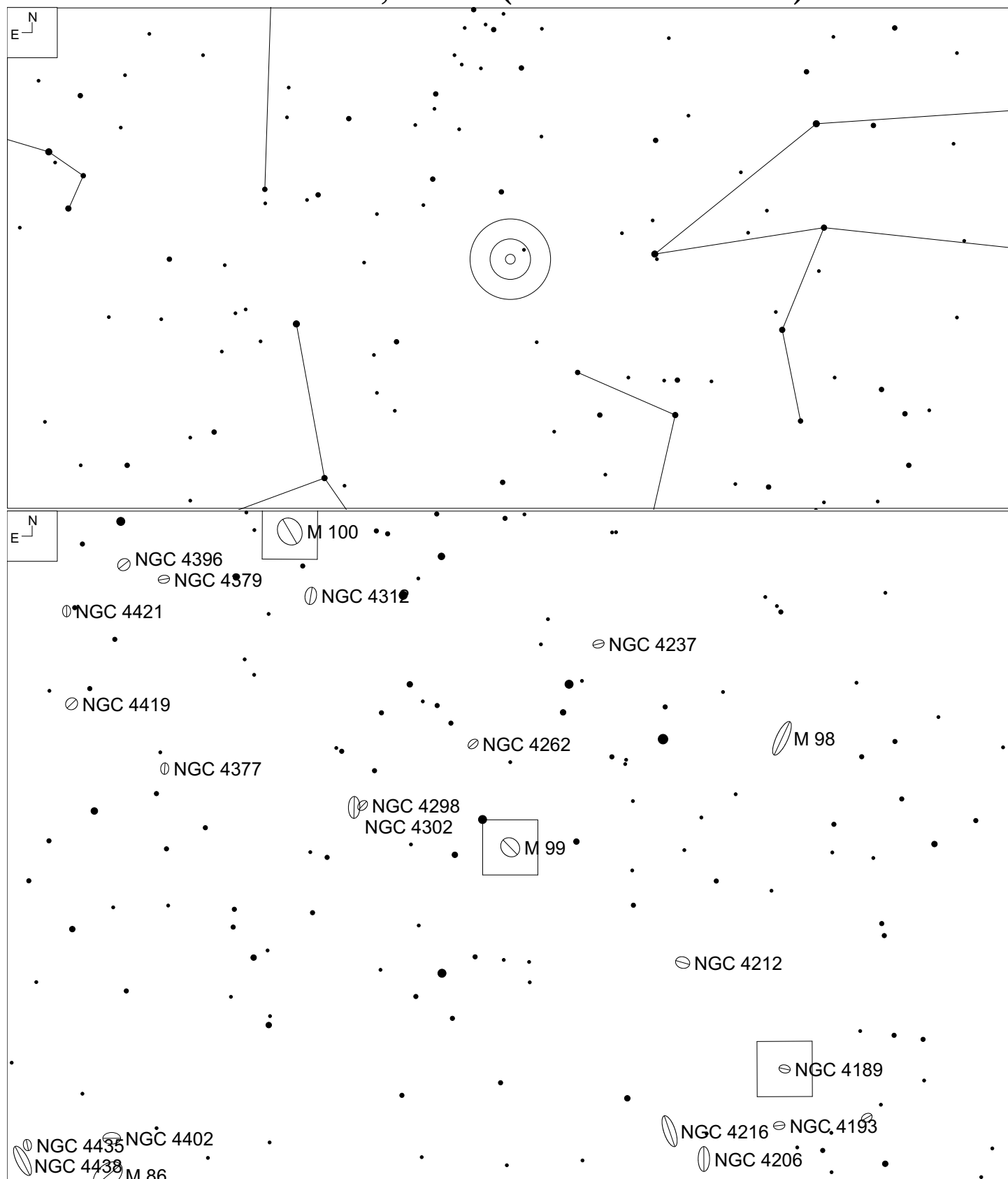
NGC 4204 (Coma Berenices)



NGC 4204 is a type SB(s)dm small dwarf galaxy and lies about 32 mly away.

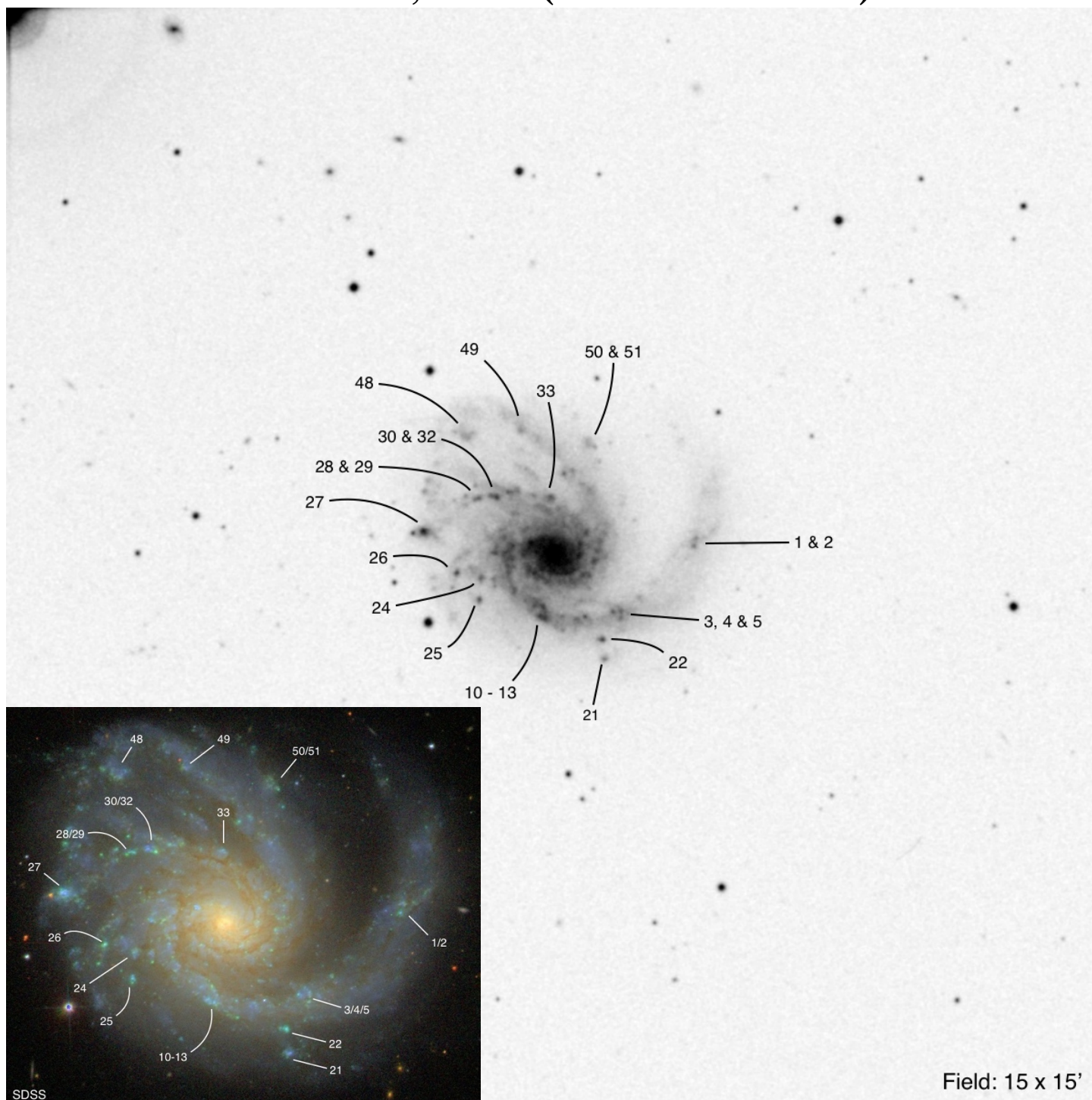
On the PanSTARRS image, Markarian 1315 appears as a bright Wolf Rayet star (?) or a very compact OB association.

NGC 4254, M 99 (Coma Berenices)



Object	RA	Dec	Mag	Size	iSDA
NGC 4254	12 18 49.6	+14 24 59	9.87 _v	5.4' x 4.7'	45, D2

NGC 4254, M 99 (Coma Berenices)



Field: 15 x 15'

M99 is a type SA(s)c galaxy that lies 50 mly away and 79 kly across.

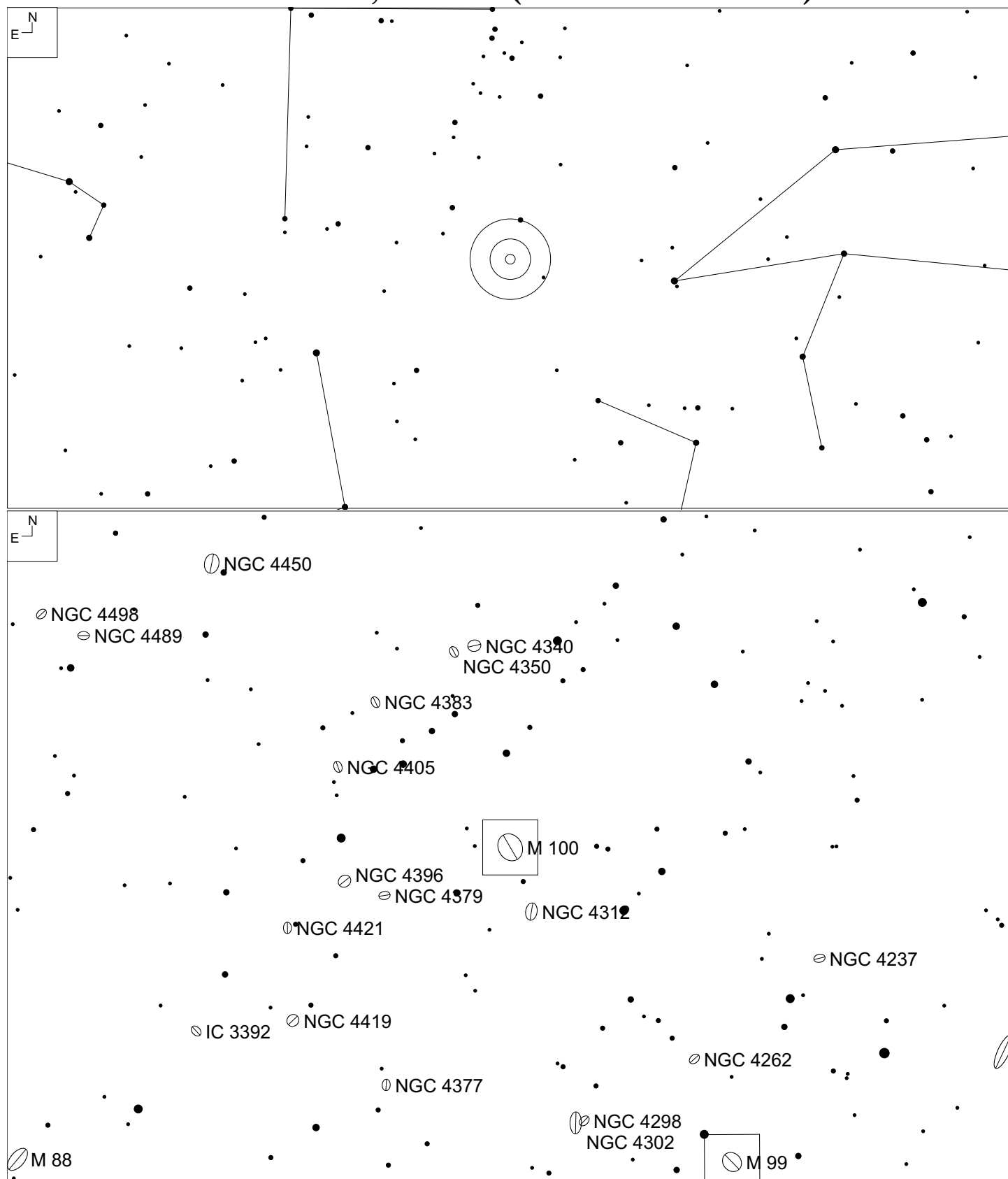
Annotations from K. Chuvaev and I Pronik, "H II Regions in NGC 628, NGC 4254, and 5194," *The Spiral Structure of our Galaxy, Proceedings from 38th International Astronomical Union Symposium* Edited by Wilhelm Becker and Georgios Ioannou Kontopoulos. *International Astronomical Union Symposium*, no. 38, Dordrecht, Reidel, (1970): 83

For an observing article, see Scott Harrington. "Star-Forming Regions in Faraway Galaxies" *Sky & Telescope* (May 2021), 22-29. Note that annotation #27 is the same as HK 1 = "[HK83] 1" in Harrington's article.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4254](#).

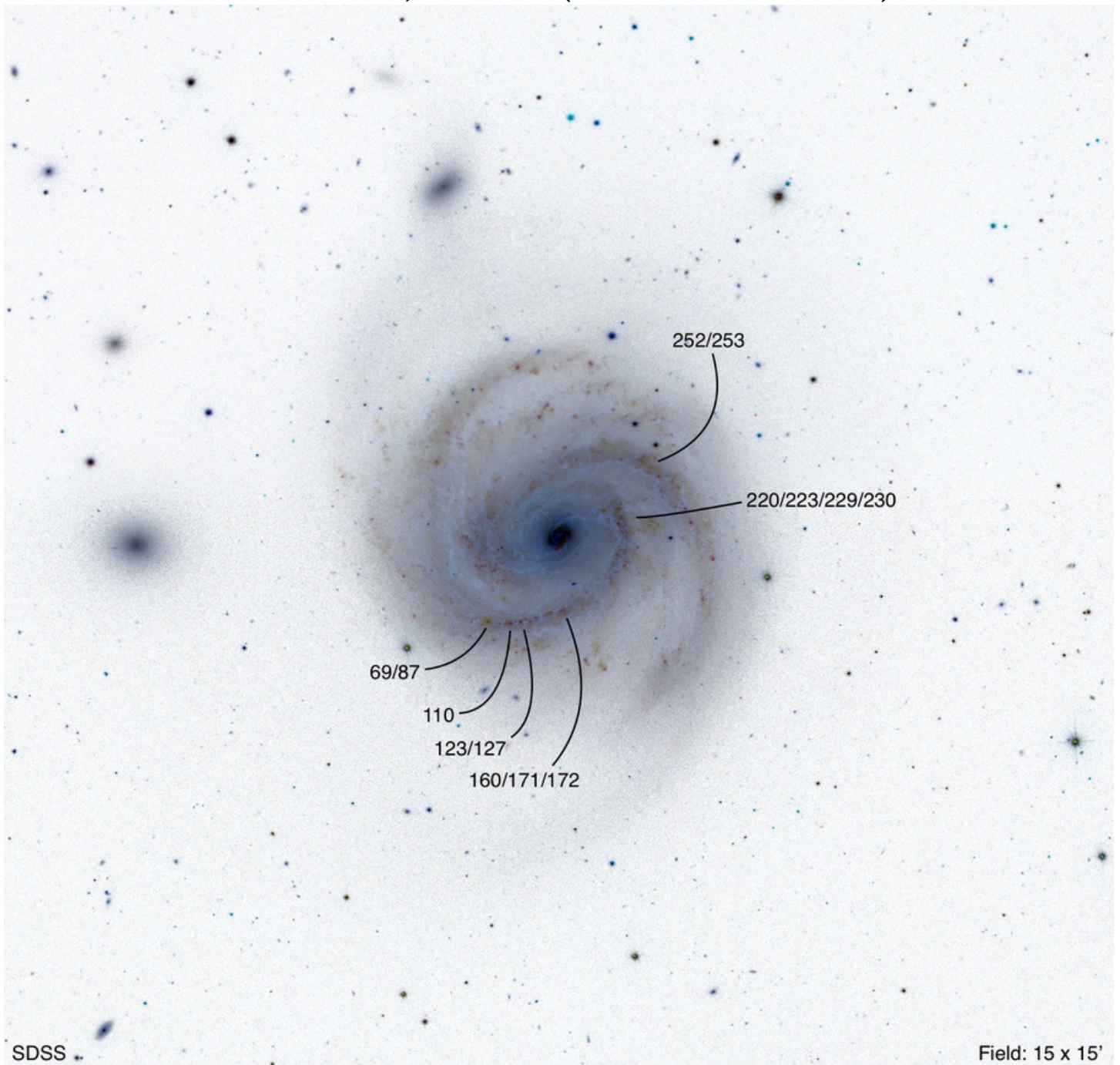
Glahn's [sketch](#) using a 16" showing two knots plus spiral detail.

NGC 4321, M 100 (Coma Berenices)



Object	RA	Dec	Mag	Size	iSDA
NGC 4321 (M 100)	12 22 54.7	+15 49 28	9.4	7.4 x 6.3'	45, D2

NGC 4321, M 100 (Coma Berenices)

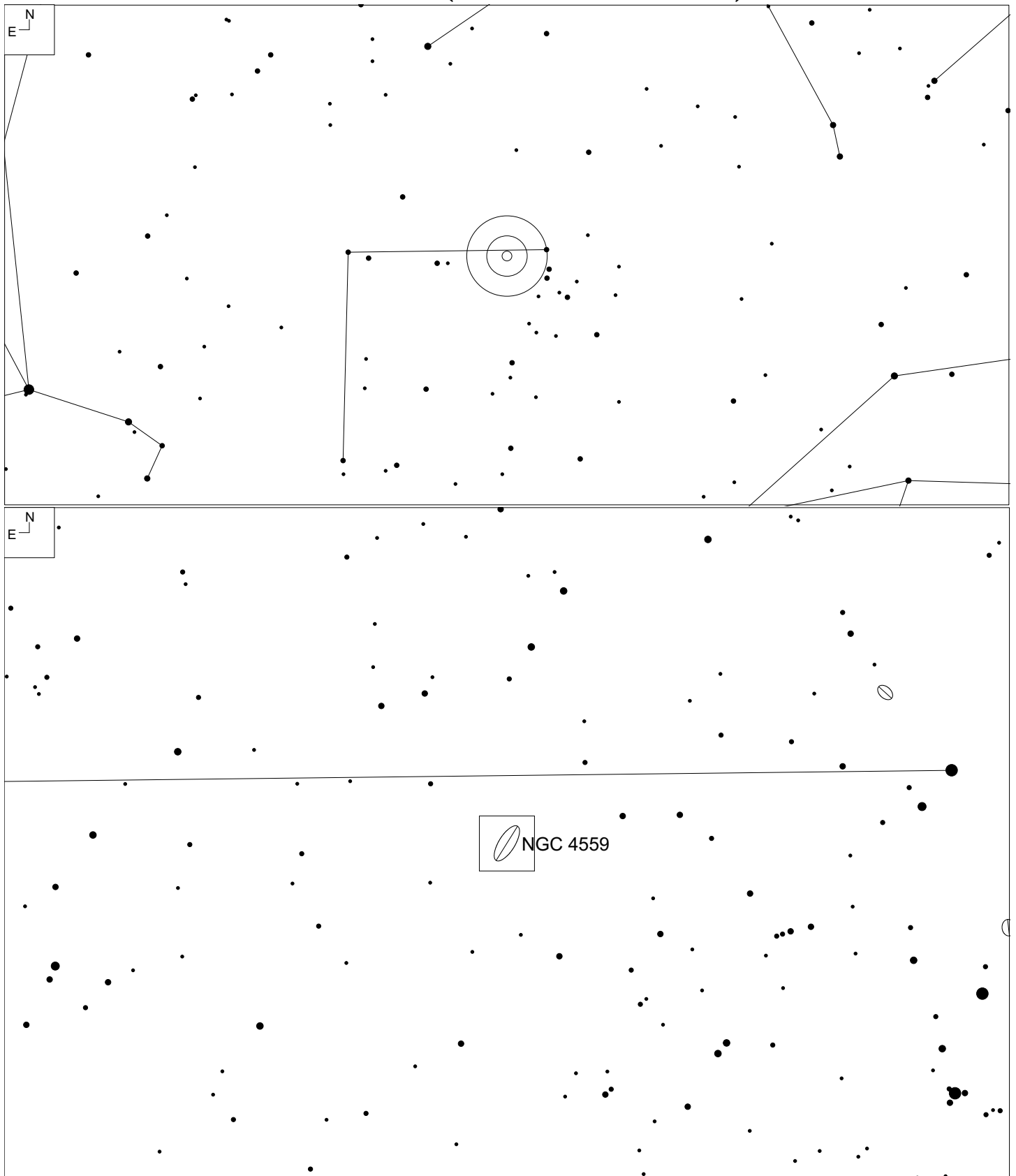


M100 is a type SAB(s)bc galaxy sitting 55 mly away in the direction of Coma Berenices. The diameter is about 118 kly across.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4321](#).

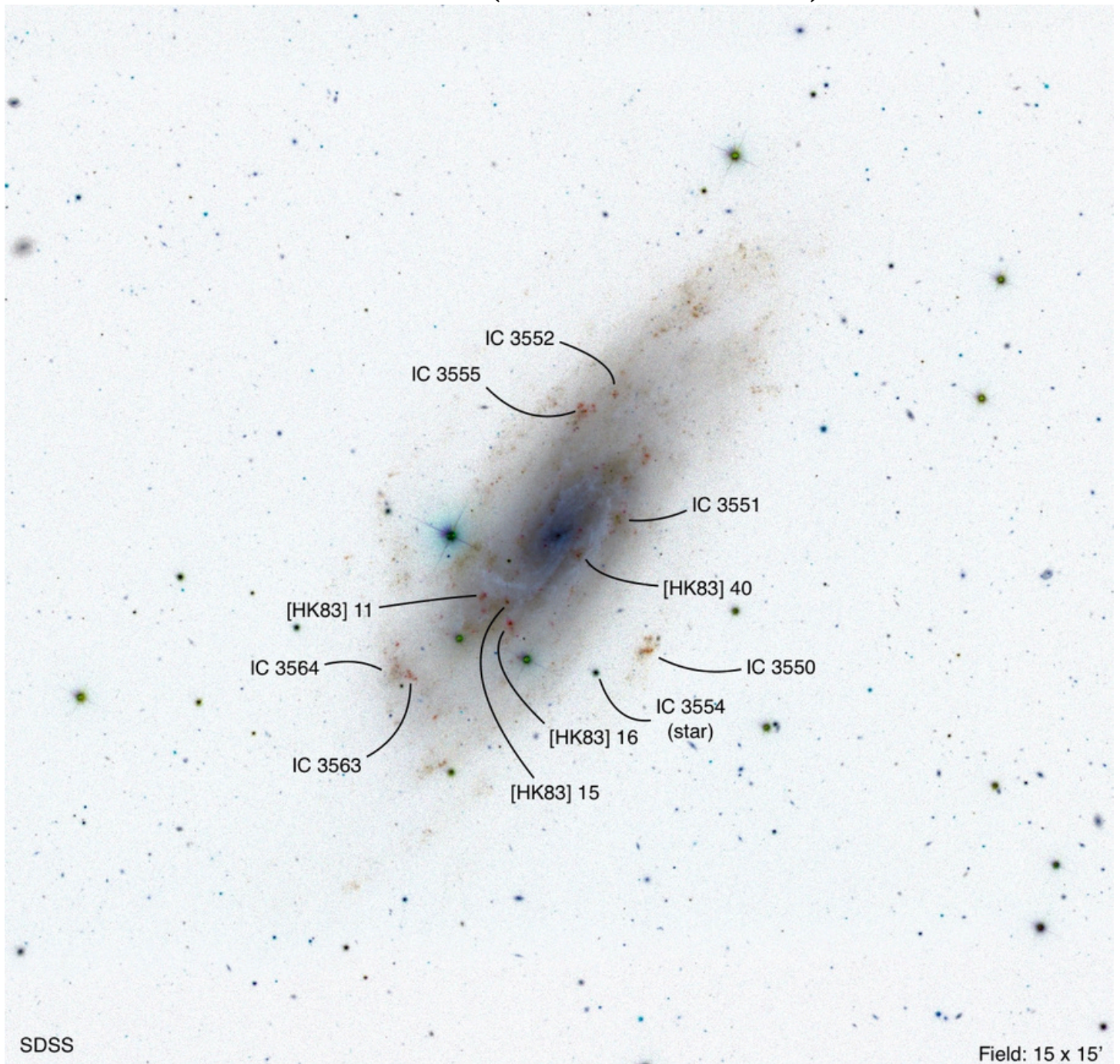
Glahn's [sketch](#) with a 16" reflector.

NGC 4559 (Coma Berenices)



Object	RA	Dec	Mag	Size	iSDA
NGC 4559	12 35 57.6	+27 57 36	10.0v	10.8 x 4.3'	33

NGC 4559 (Coma Berenices)

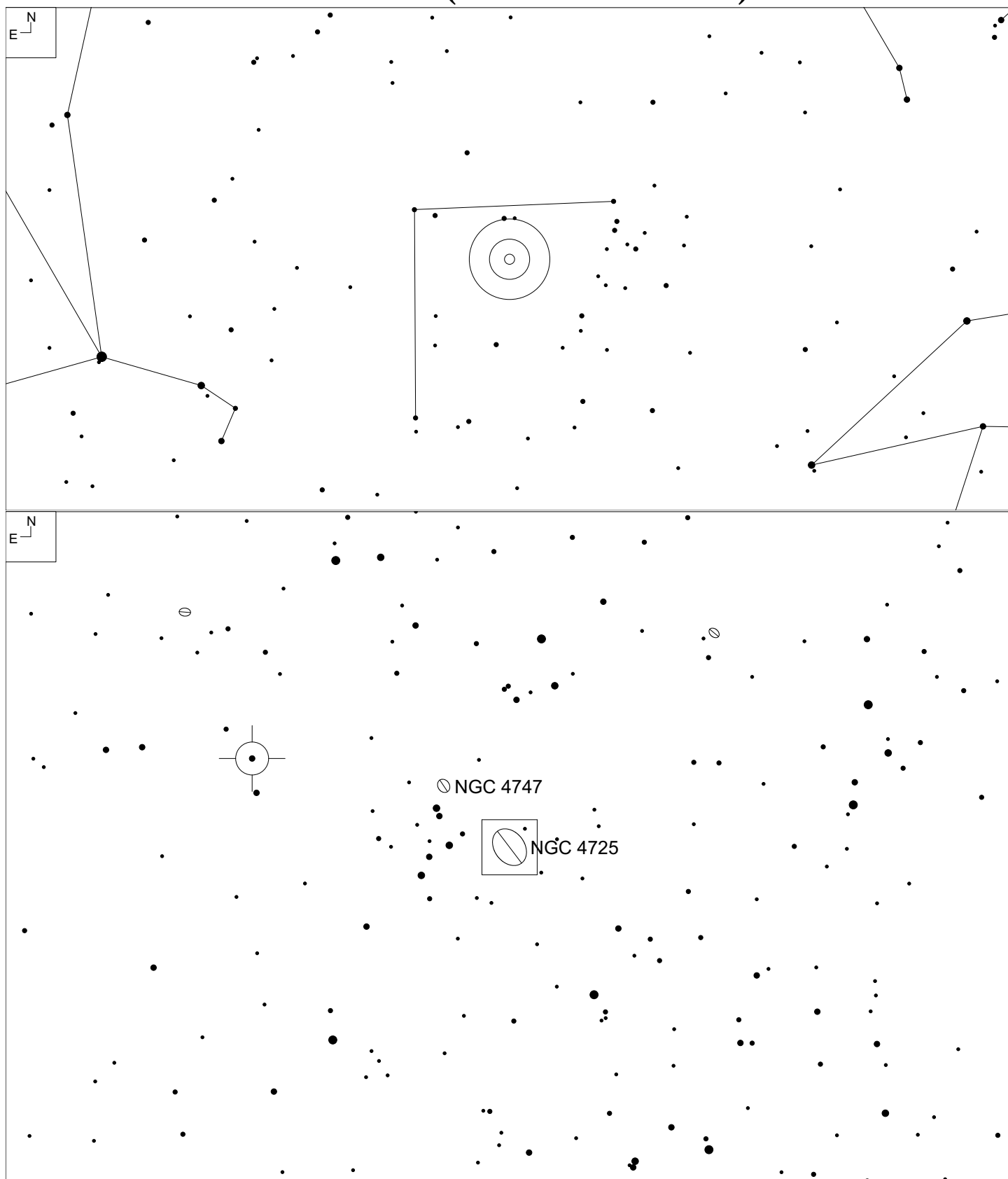


NGC 4559 is a type SAB(rs)cd galaxy sitting at a distance of 29 mly from us.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4559](#).

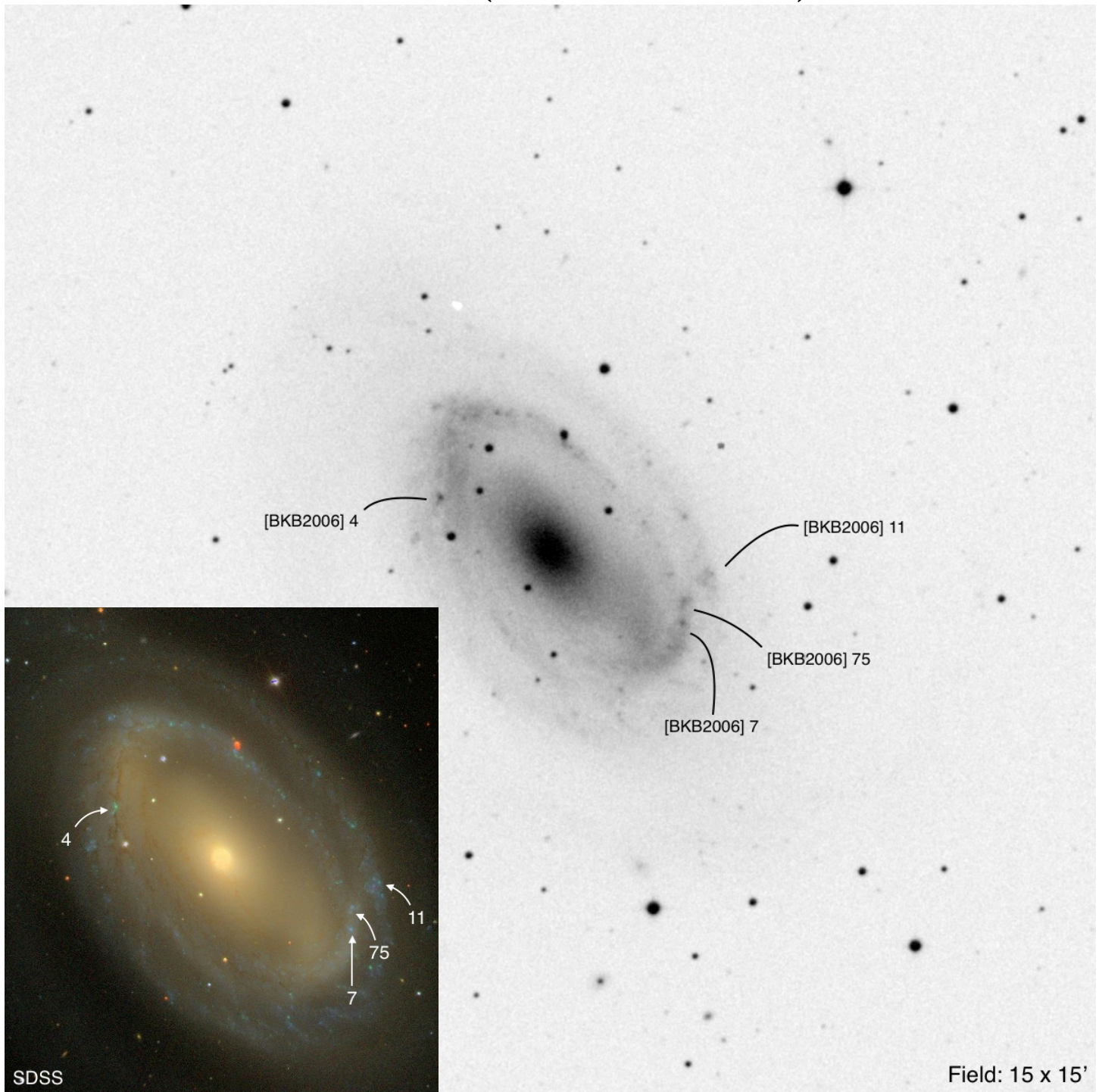
Glahn picked up several knots with a 16" reflector in this [sketch](#).

NGC 4725 (Coma Berenices)



Object	RA	Dec	Mag	Size	iSDA
NGC 4725	12 50 26.3	+25 30 03	9.4	10.7 x 7.6'	33

NGC 4725 (Coma Berenices)



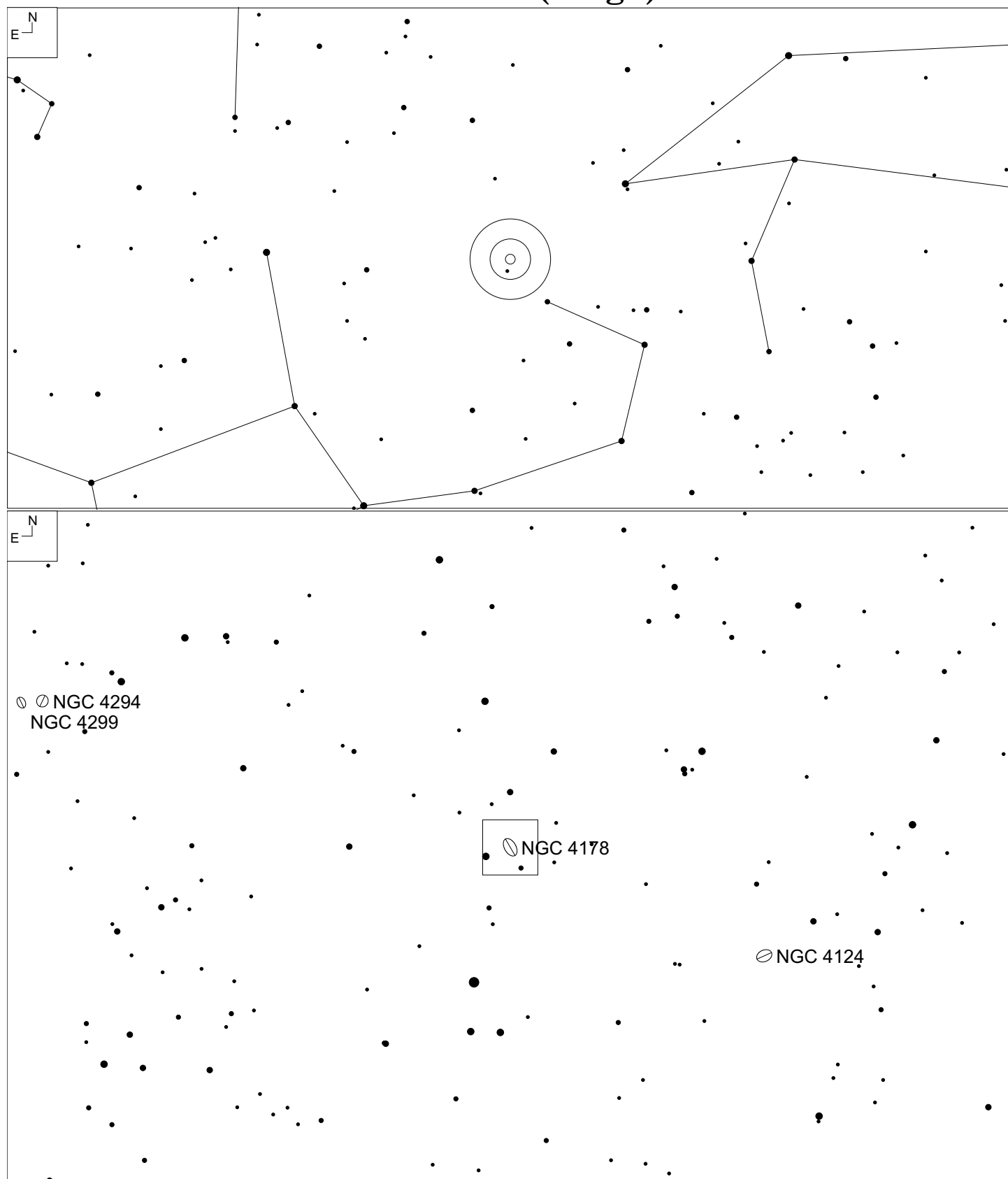
NGC 4725 is a type SAB(r)ab pec midsize barred spiral galaxy sitting 42 mly away in the direction of the north celestial pole. Observers from this galaxy would see the Milky Way as a face on barred spiral galaxy at roughly same brightness as we see them.

H II regions annotated with **[BSB2006]** is from T. R. Bradley, et al, "A composite H ii region luminosity function in H α of unprecedented statistical weight," *Astronomy and Astrophysics*, Volume 459, Issue 1 (Nov 2006): L13-L16. Note that the SDSS inset has the same annotations, but without "[BSB2006]" for clarity.

For observations with a 48" telescope, see Steve Gottlieb's notes: [NGC 4725](#). Also see Glahn's [sketch](#) with a 16" showing Darth Vader's tie fighter shape.

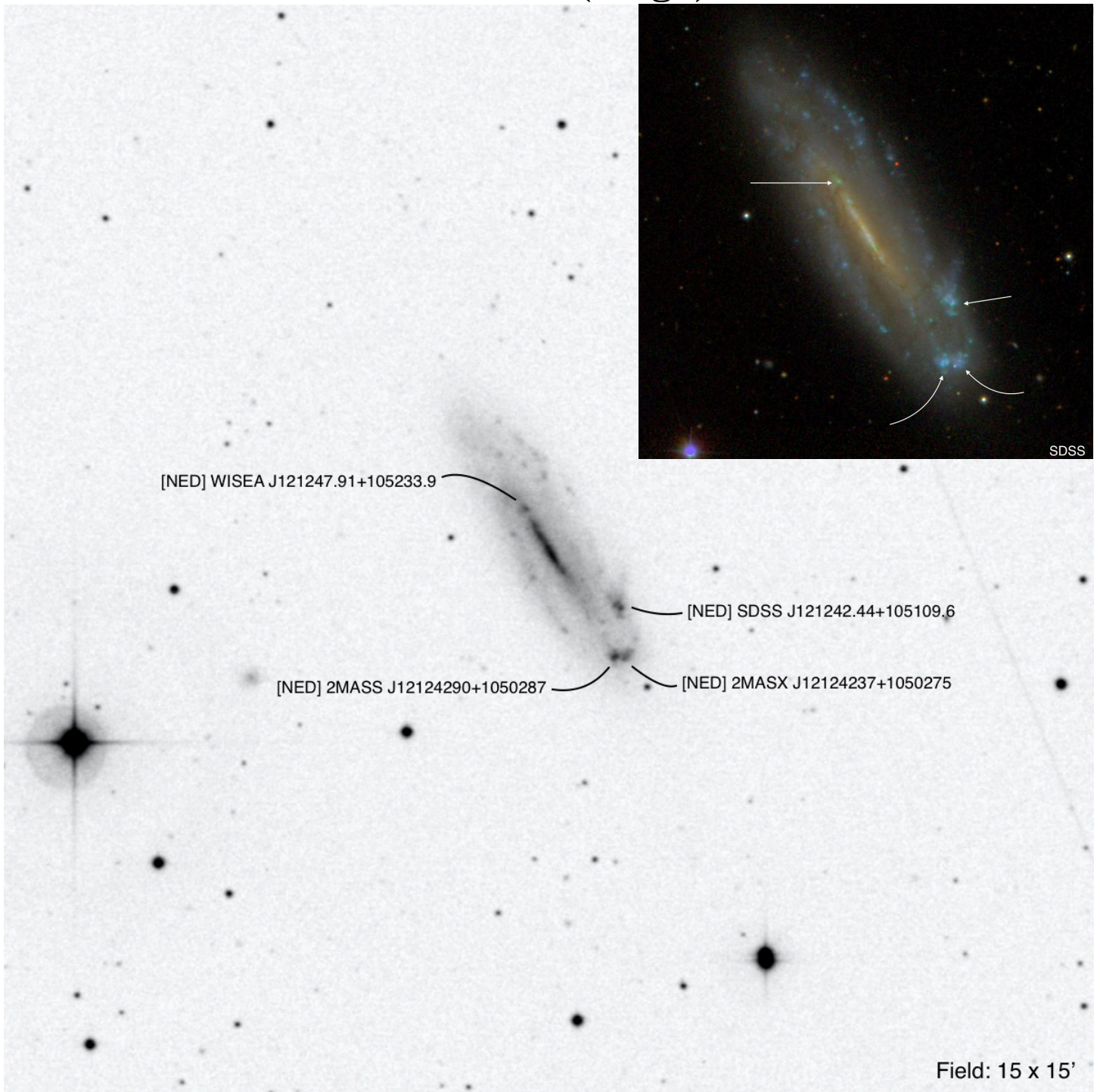
These may be very difficult to observe.

NGC 4178 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4178	12 12 46.4	+10 51 58	12.9b	5.1 x 1.8'	D2

NGC 4178 (Virgo)

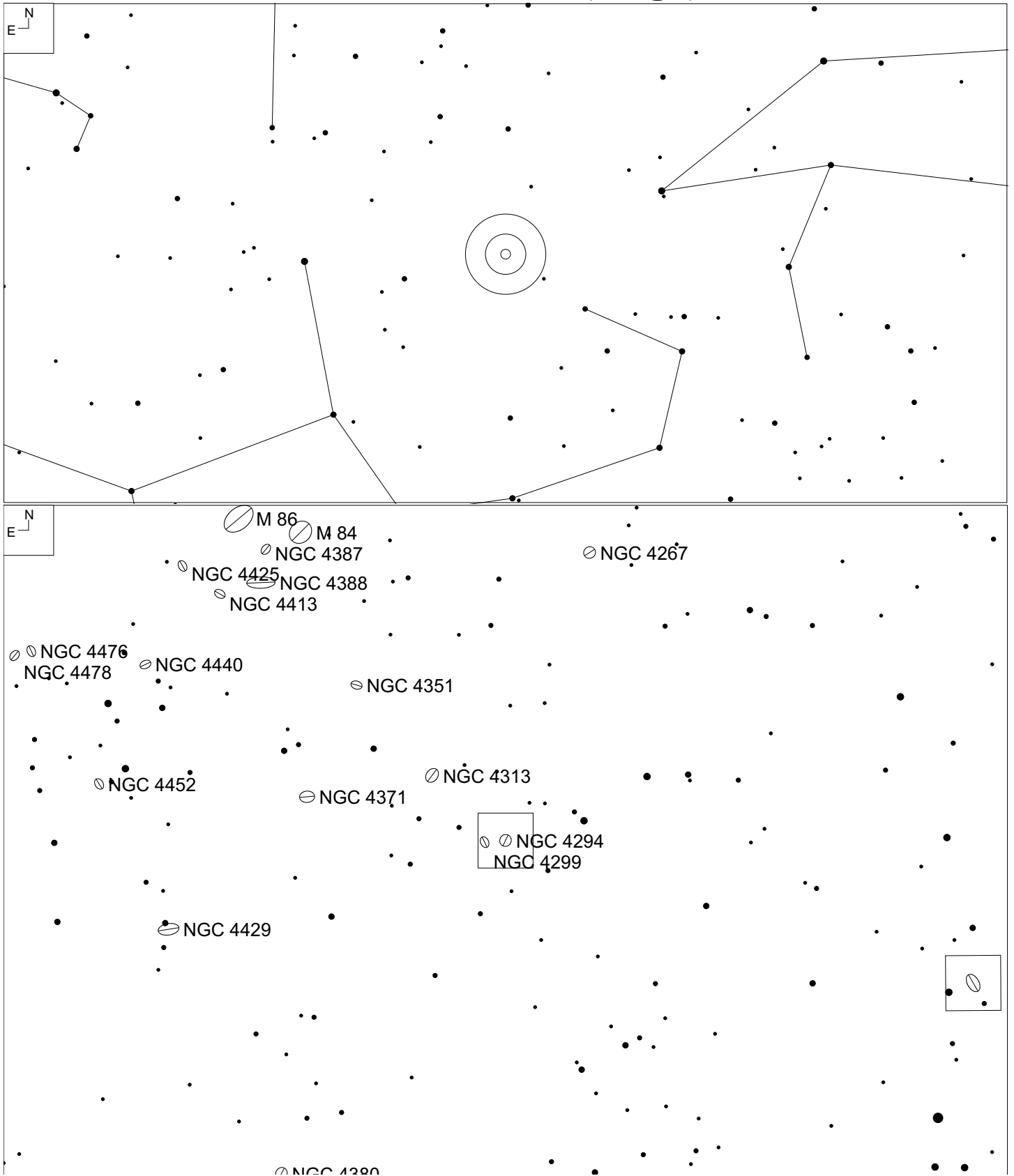


NGC 4178 is a type SB(s)dm late type small barred spiral galaxy. It lies 44 mly away as part of the Virgo Cluster of Galaxies.

R. C. Kennicutt Jr., "H II regions as extragalactic distance indicators. IV - The Virgo cluster," *Astrophysical Journal, Part 1*, Volume 247 (July 1981): 9-16.

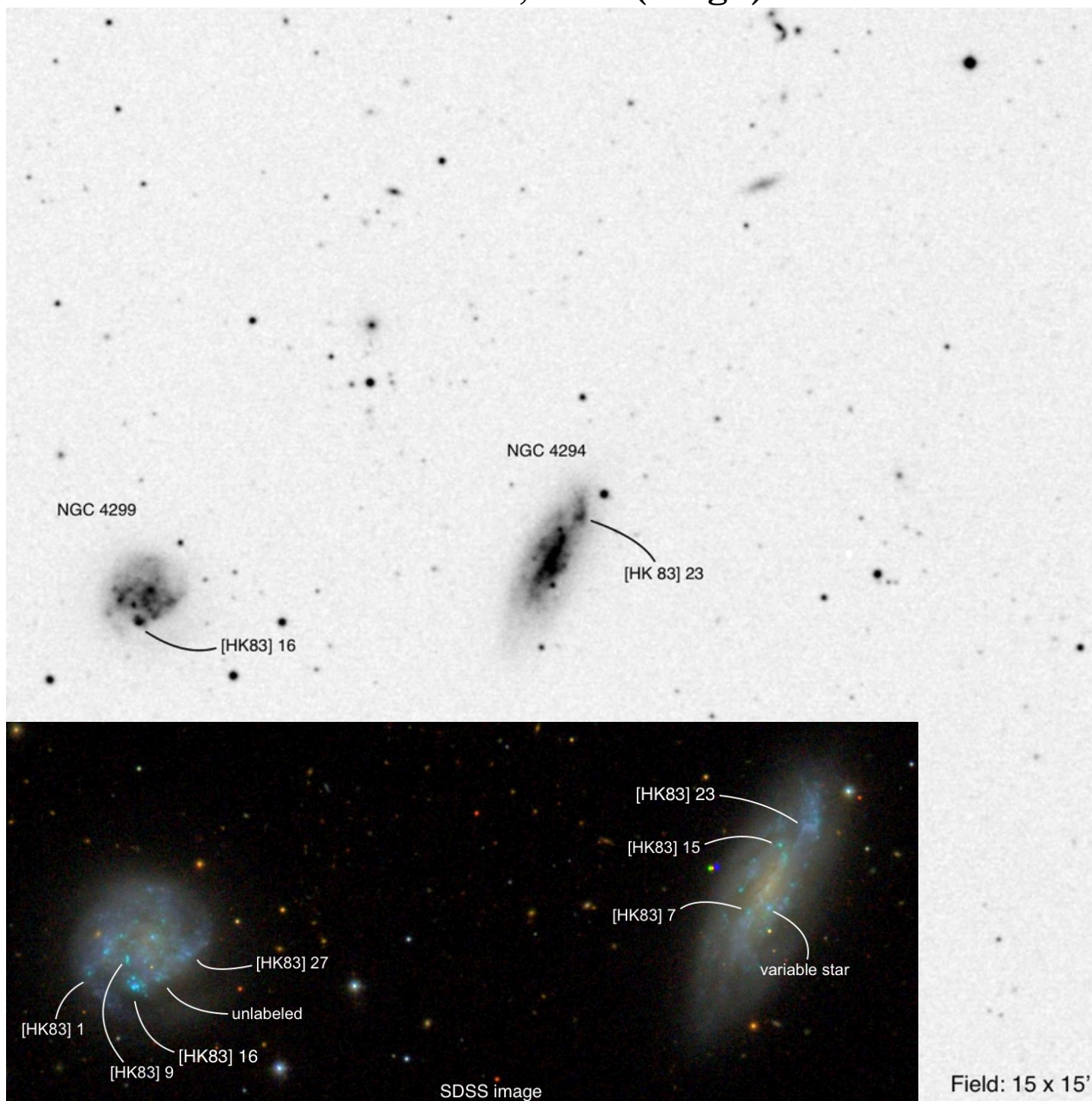
Glahn picked up two knots on the southern tip with a 16" reflector in this [sketch](#).

NGC 4294, 4299 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4294	12 21 17.6	+11 30 46	12.1	2.3 x 0.9'	D2
NGC 4299	12 21 40.0	+11 30 16	12.5	1.6 x 1.5'	

NGC 4294, 4299 (Virgo)

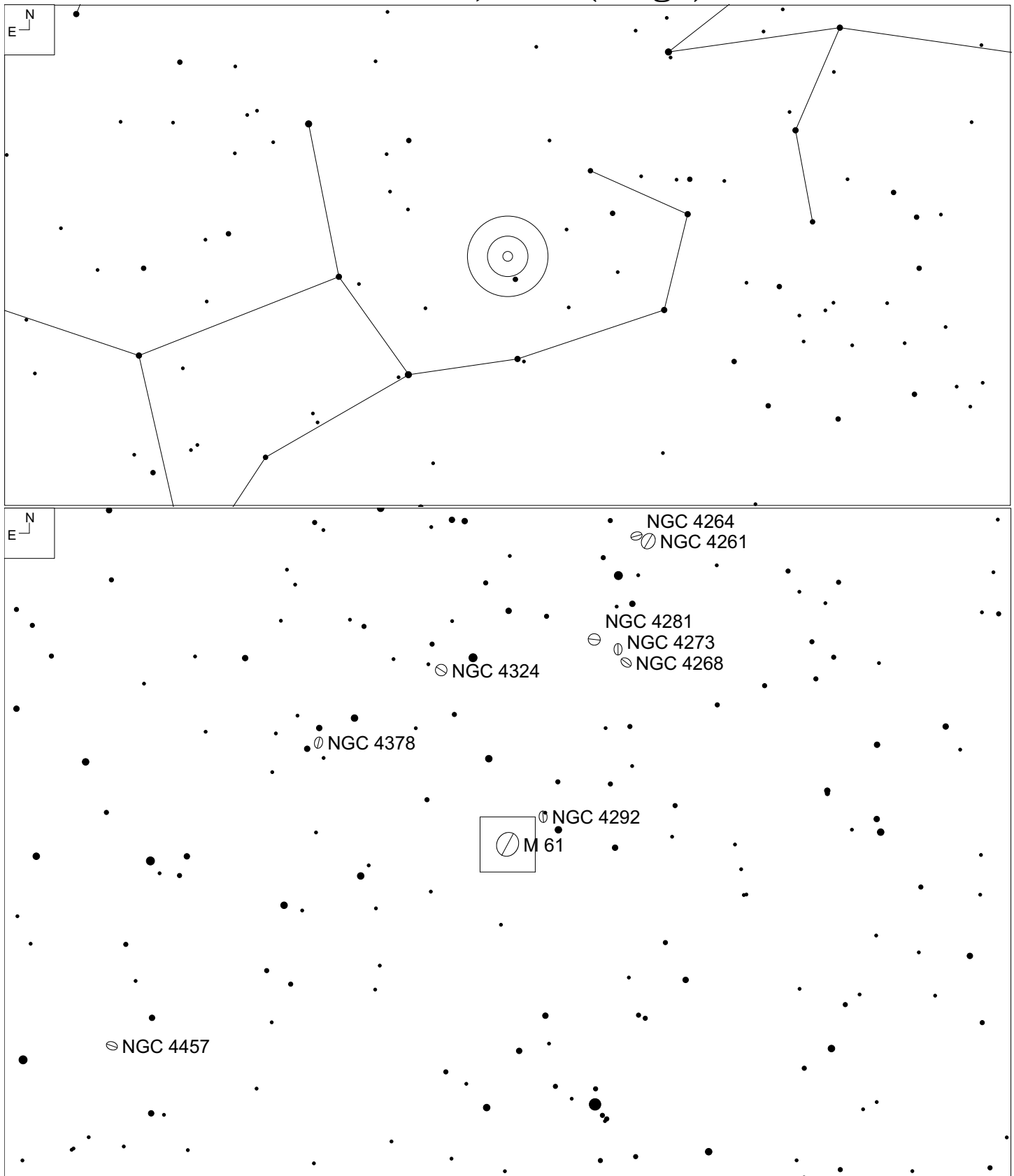


NGC 4294 is a type SB(s)cd galaxy that is 55 mly away and part of the Virgo Cluster. NGC 4299 is a type SAB(s)dm dwarf galaxy.

A possible variable star was detected by Dimai (2013), see A Dimai, et al., "Psn J12211796+1130252 in NGC 4294," *Central Bureau Electronic Telegrams*, No. 3419, #1 (Feb 2013). Edited by Green, D. W. E.

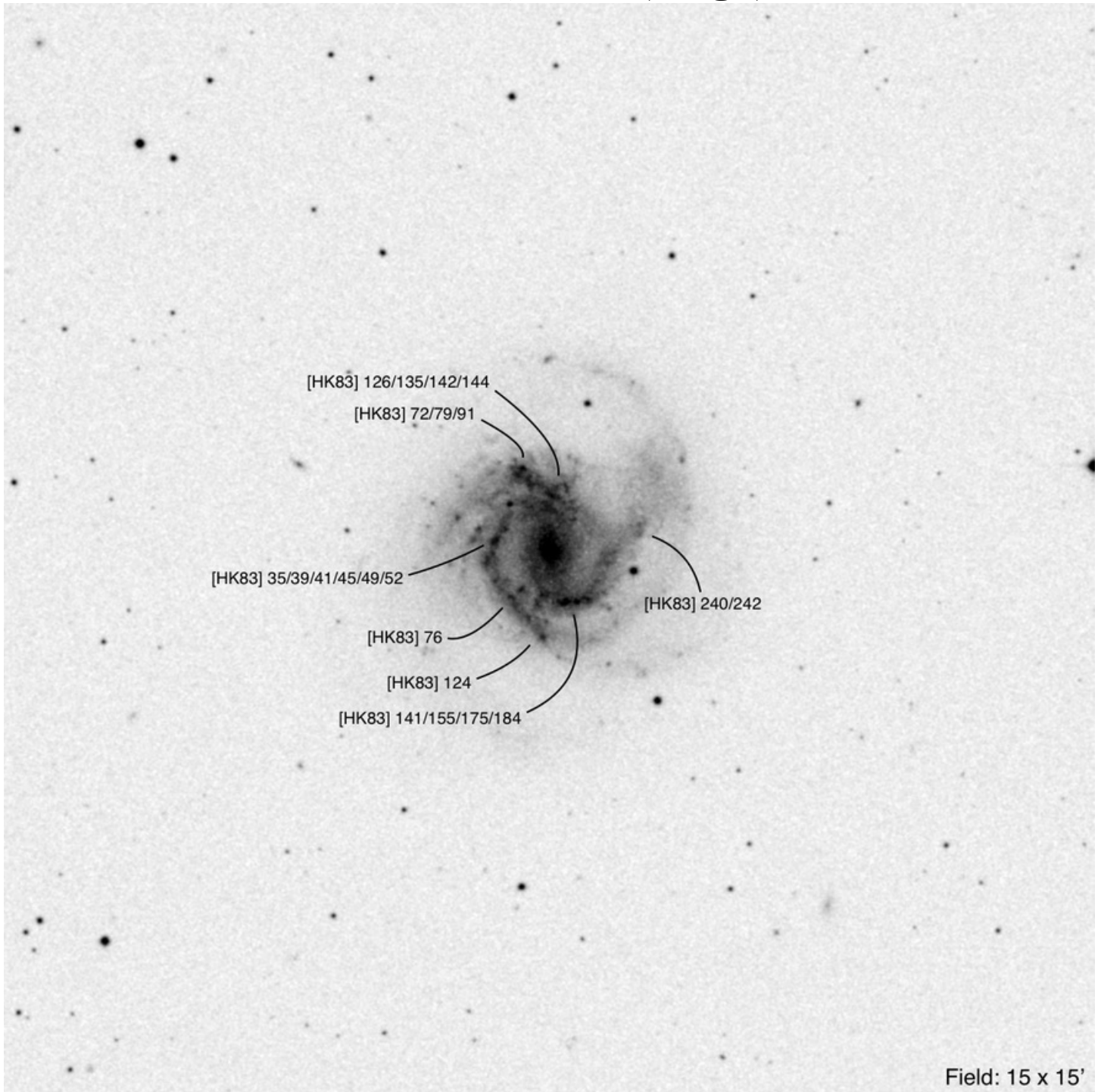
Glahn picked up incredible detail in both galaxies with his 27" reflector in this [sketch](#).

NGC 4303, M 61 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4303 (M 61)	12 21 54.7	+04 28 29	9.7	9.7 x 5.8'	57, D3

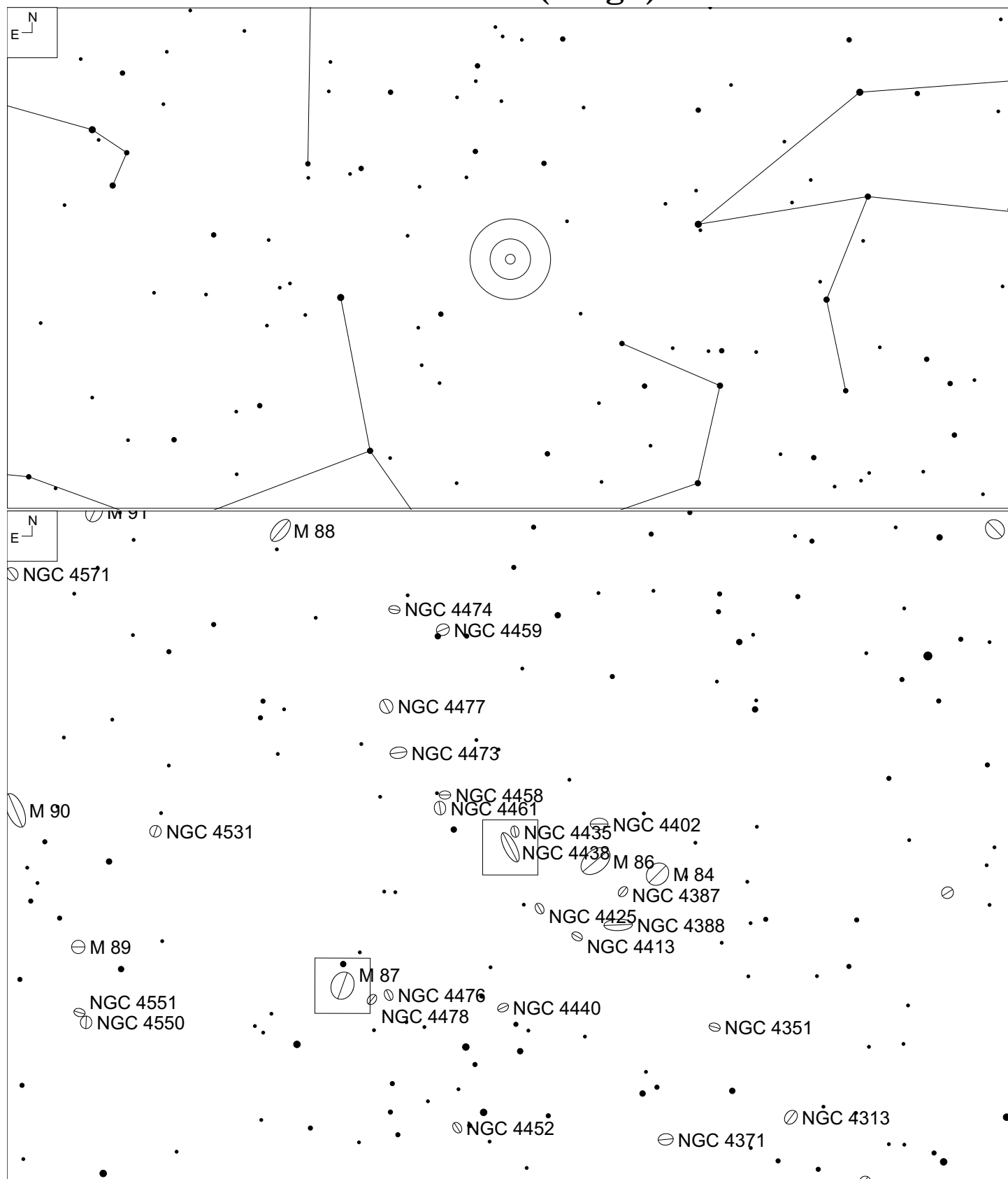
NGC 4303, M 61 (Virgo)



M61 is a type SAB(rs)bc large spiral galaxy sitting 50 mly away and with a diameter of 95 kly. It is part of the Virgo supercluster of galaxies.

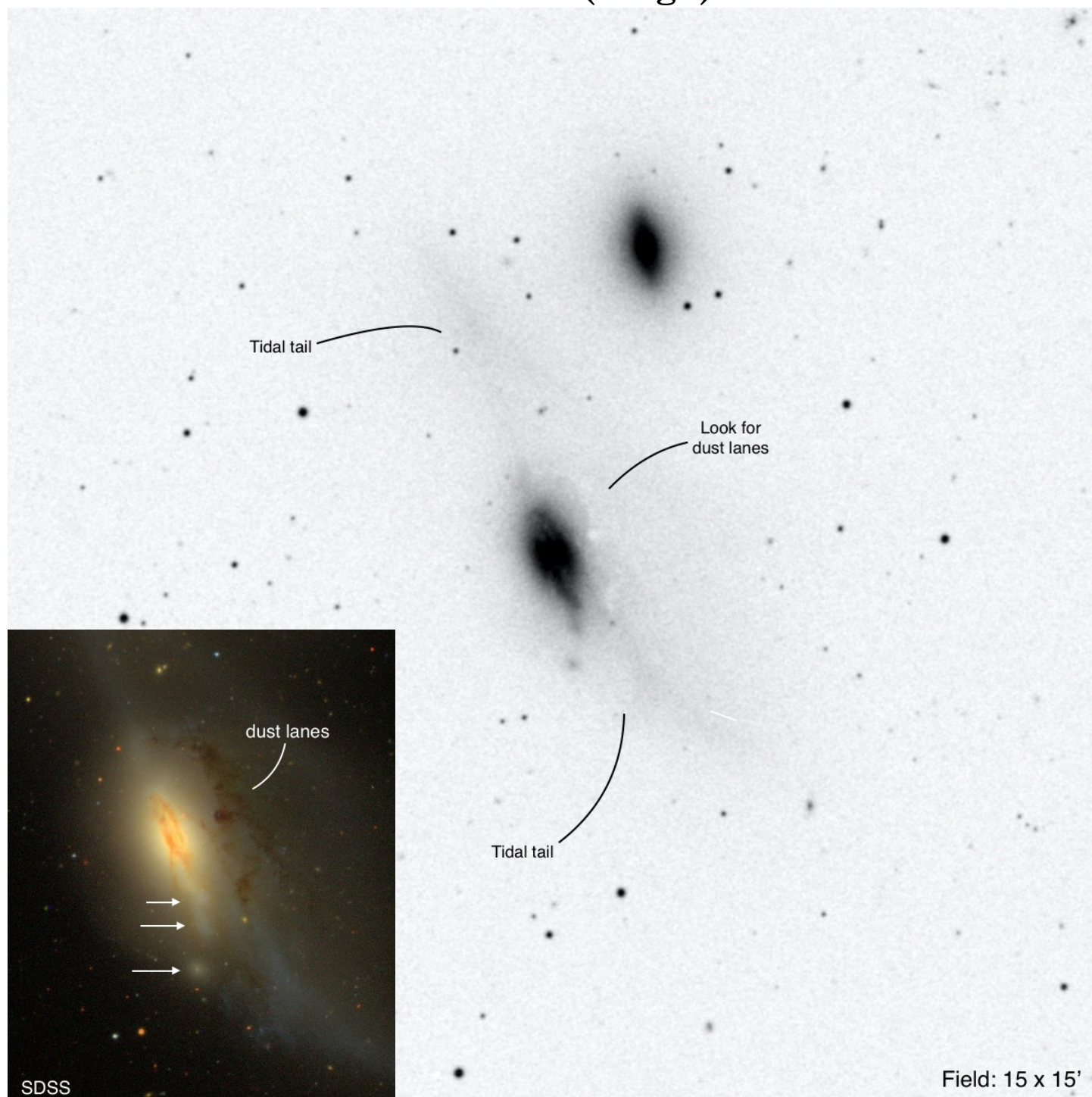
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4303](#). Also see Glahn's [sketch](#) with his 27".

NGC 4438 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4438	12 27 45.7	+13 00 32	10.2v	8.6' x 3.1'	45, D2

NGC 4438 (Virgo)



NGC 4438 is part of the "Eyes Galaxies" in the Markarian chain. It sits about 48 mly away.

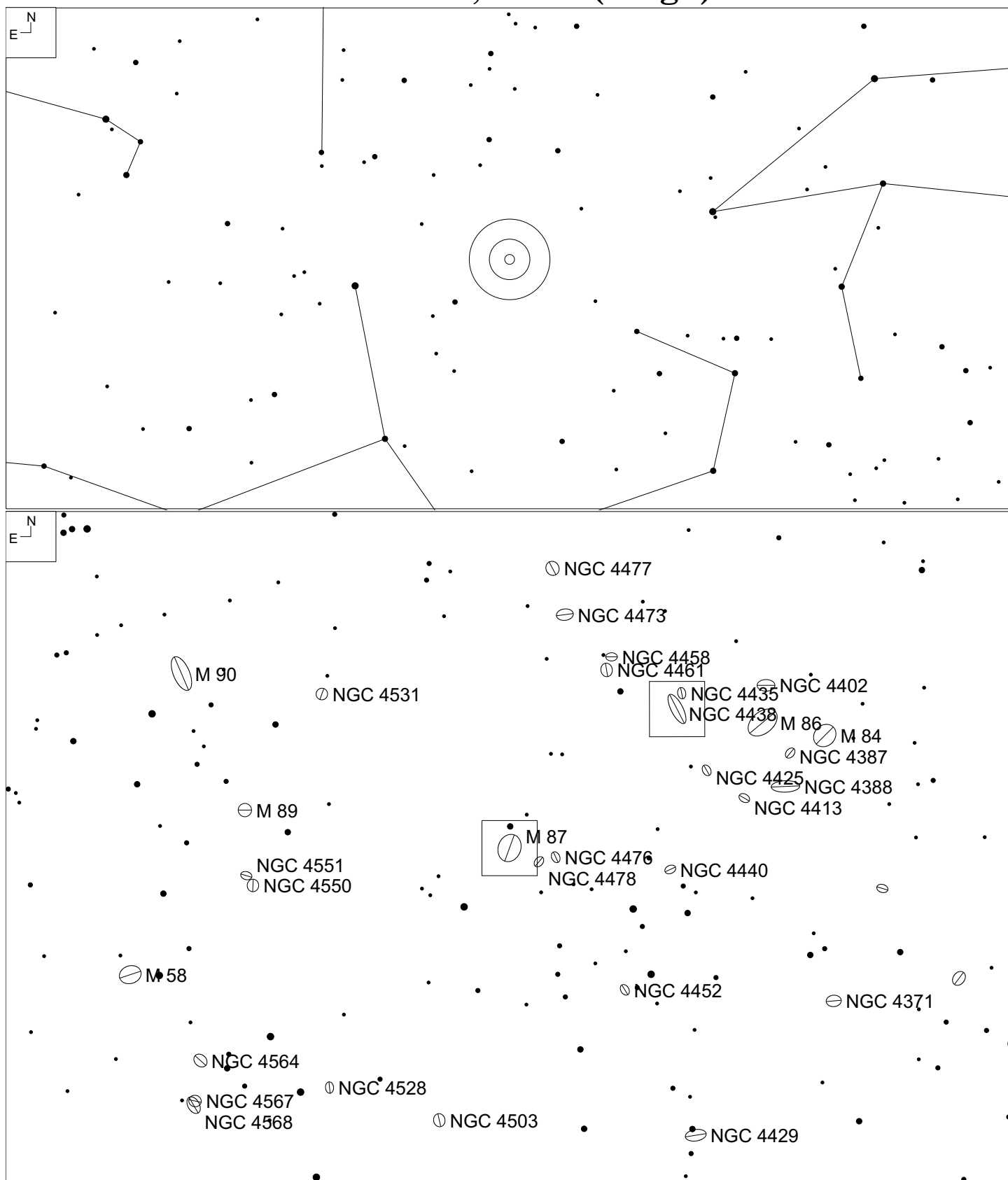
For an excellent discussion regarding very faint gas filaments to the west of the host galaxy, see Jeffrey D. P. Kenney, et al, "Gas Filaments in the Collisional Debris of NGC 4438," *Astrophysical Journal*, Volume 438 (Jan 1995): 135-154.

Inset image from PanSTARSS. Look for the three knots (marked) emanating from the core towards the south. Also look for irregular dark lanes on the west side of the center region.

See Akarsh Simha's observing notes from the 48" reflector. Simha [notes](#).

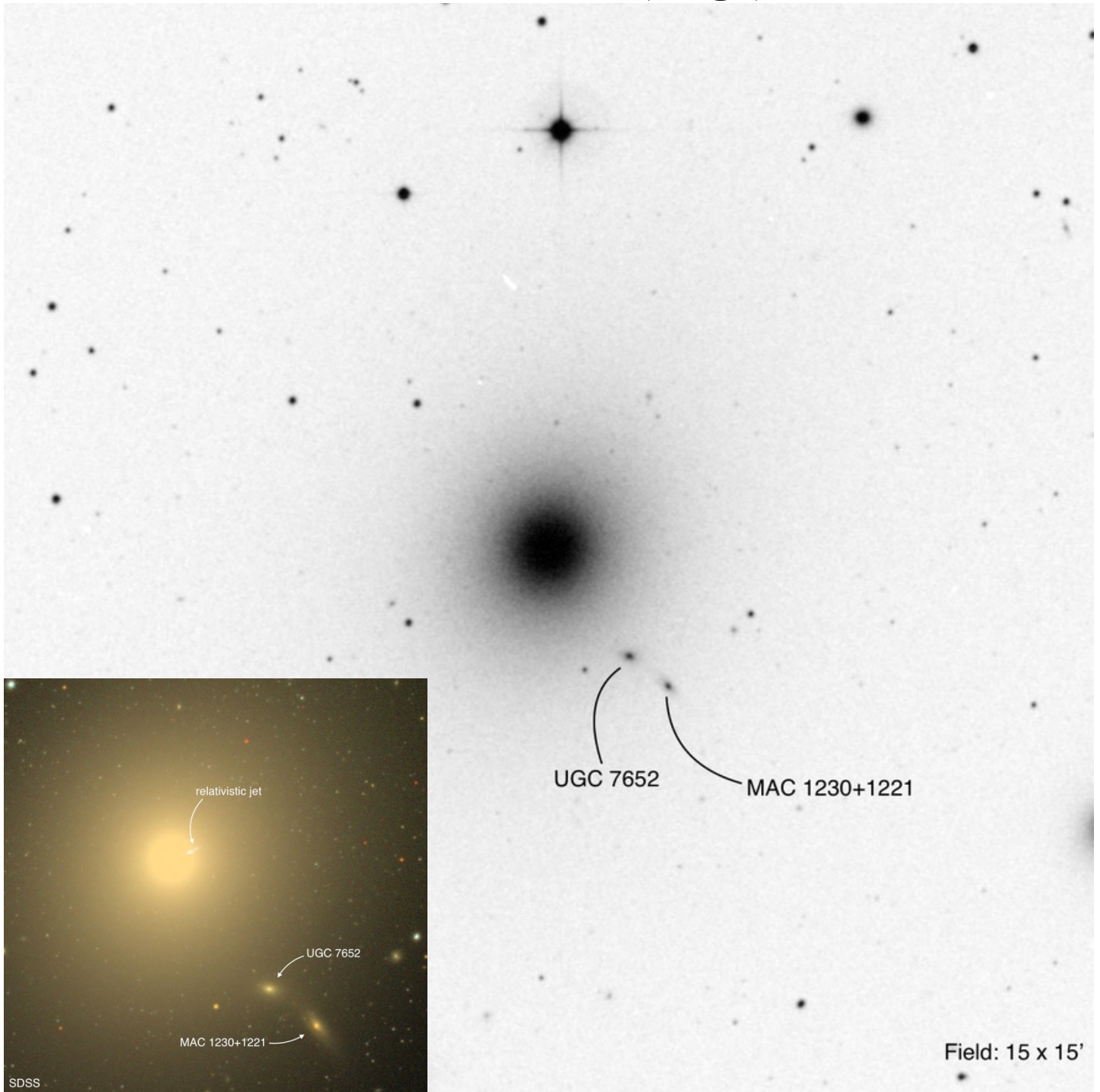
Also see Glahn's [sketch](#) with a 27" showing detail and the knots to the south of the center.

NGC 4486, M 87 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4486 (M 87)	12 30 49.7	+12 23 24	8.3	7.2 x 6.8'	45, D2

NGC 4486, M 87 (Virgo)



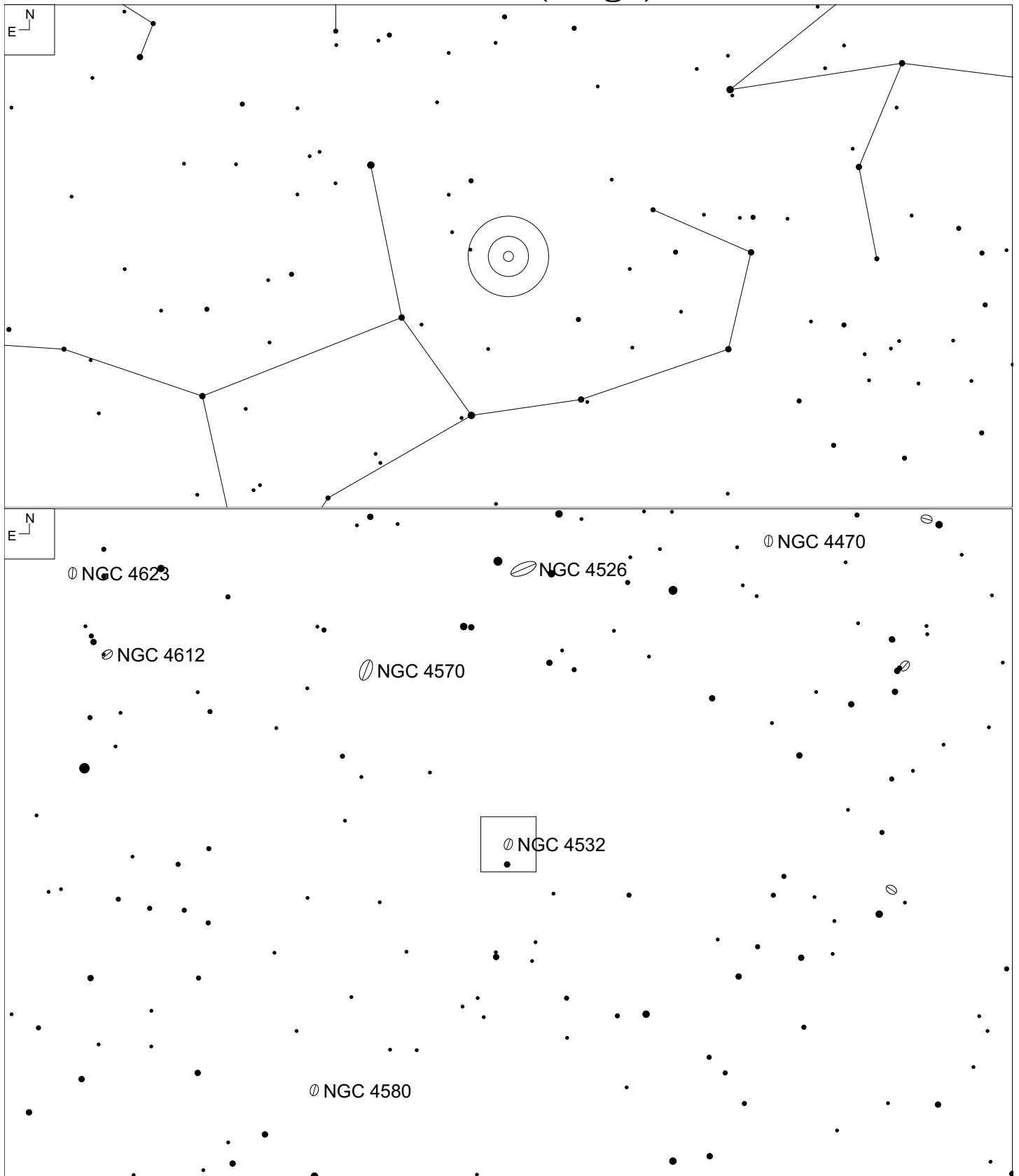
M87 is a giant elliptical galaxy sitting 54 mly away. It is the largest galaxy in the Virgo Supercluster.

For observing notes with a 48" and a 82" telescopes, see Steve Gottlieb's notes: [NGC 4486](#).

Also see Howard Banich's observing [notes and sketch](#) of the jet with his 28", a 48" and a 82" reflector (scroll to M87).

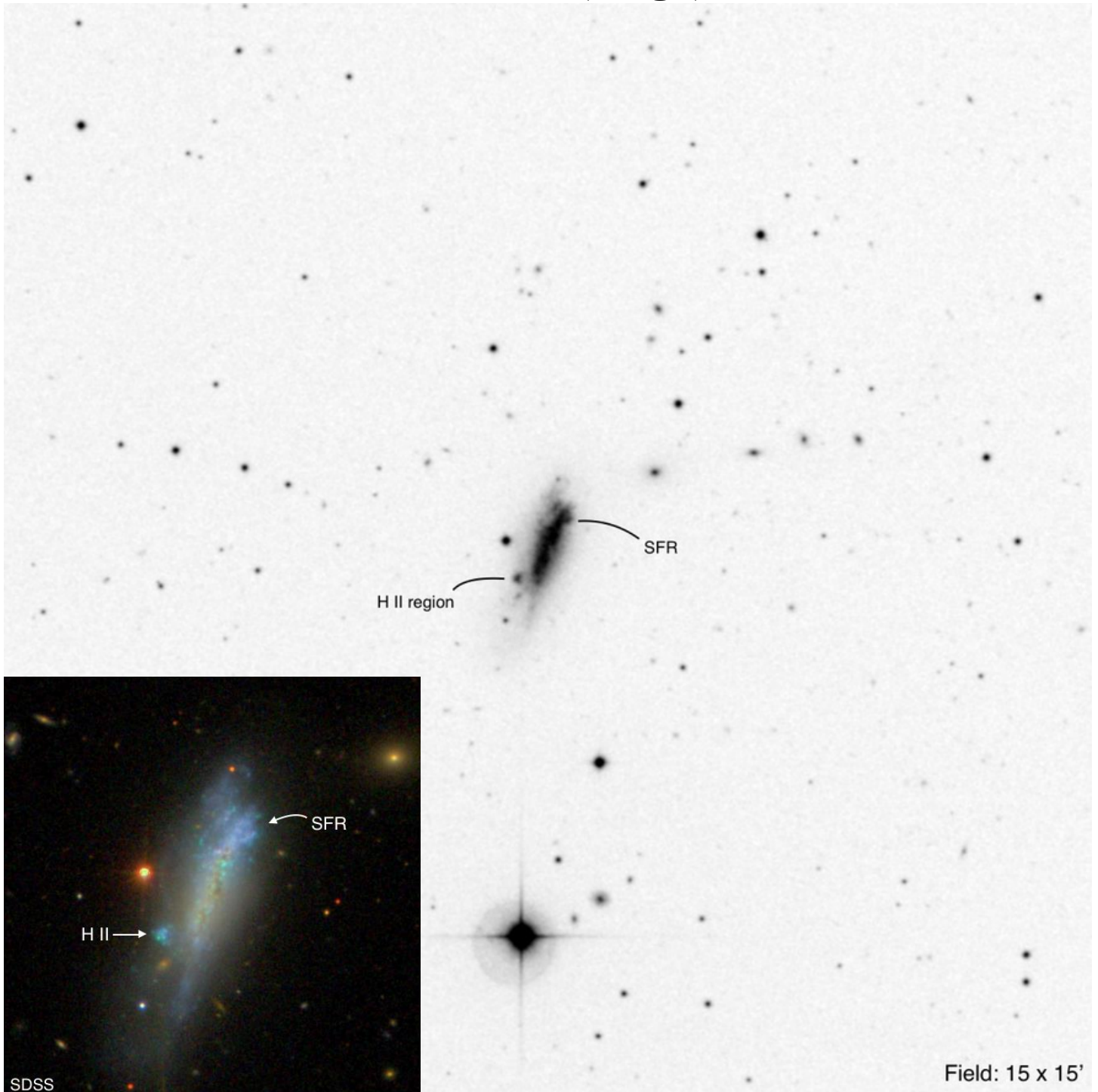
Glahn easily picked up the jet in a 36" reflector in this [sketch](#).

NGC 4532 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4532	12 34 19.3	+06 28 04	11.9	2.8 x 1.1'	D3

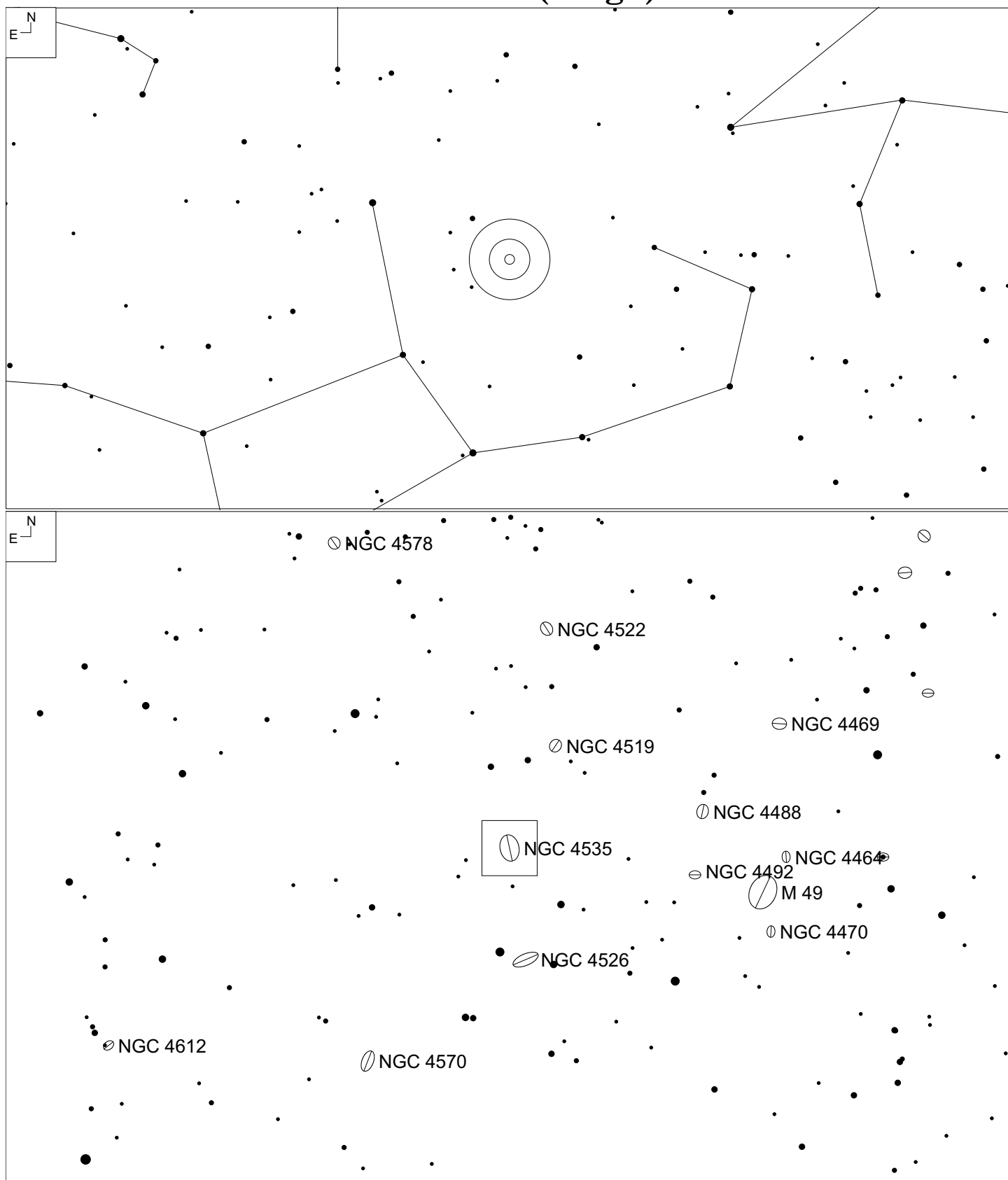
NGC 4532 (Virgo)



NGC 4532 is a type IBm small irregular galaxy that sits about 45 mly from the Milky Way.

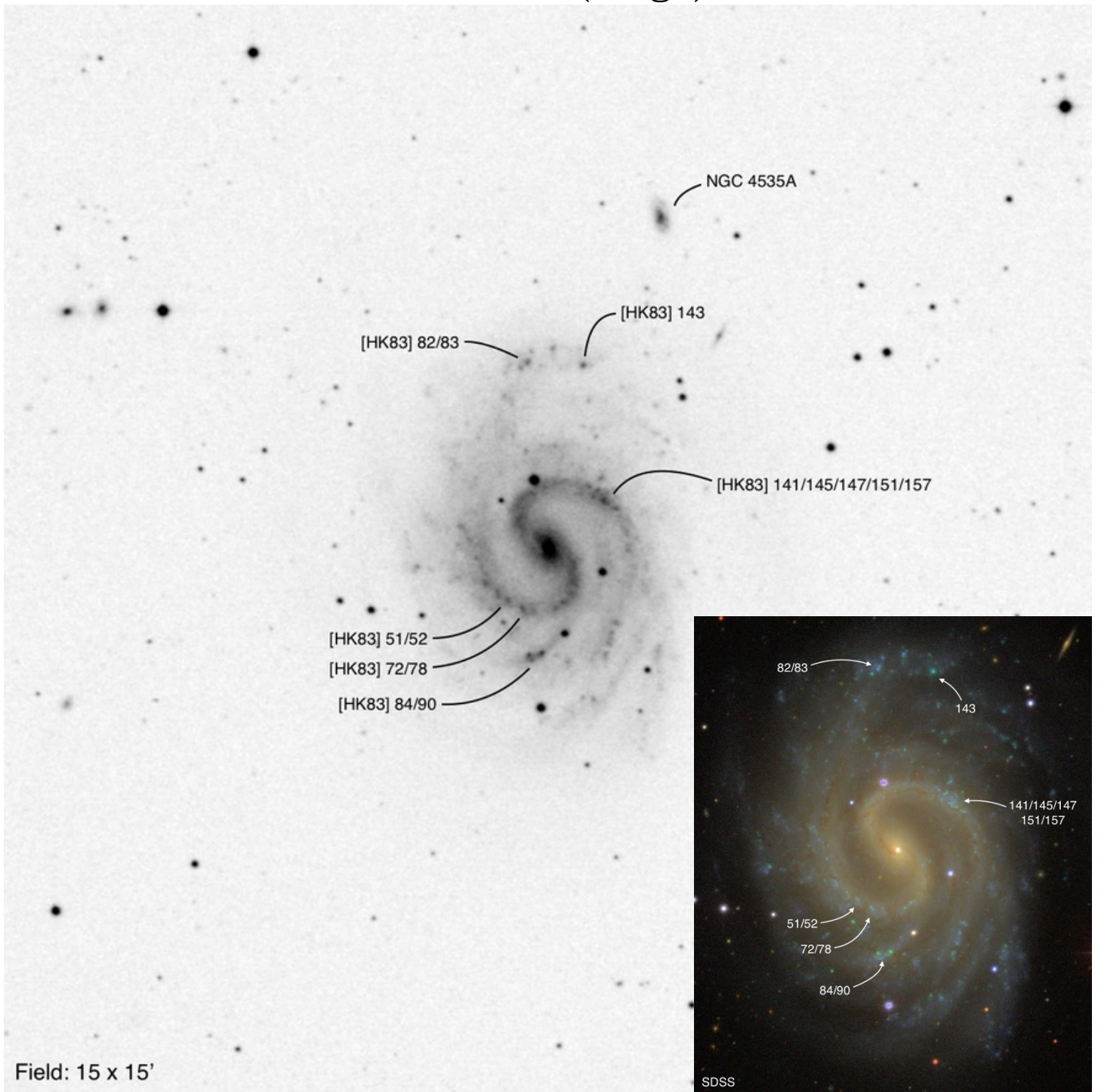
Note that NED does not have any extragalactic regions labeled. The brighter regions are noted. Gottlieb [noted](#) that the NNW end is a bit brighter and mottled than the other end with his 24", which is consistent with the H II regions/SFR.

NGC 4535 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4535	12 34 20.2	+08 11 57	9.7	5.9 x 2.9'	45, 57, D3

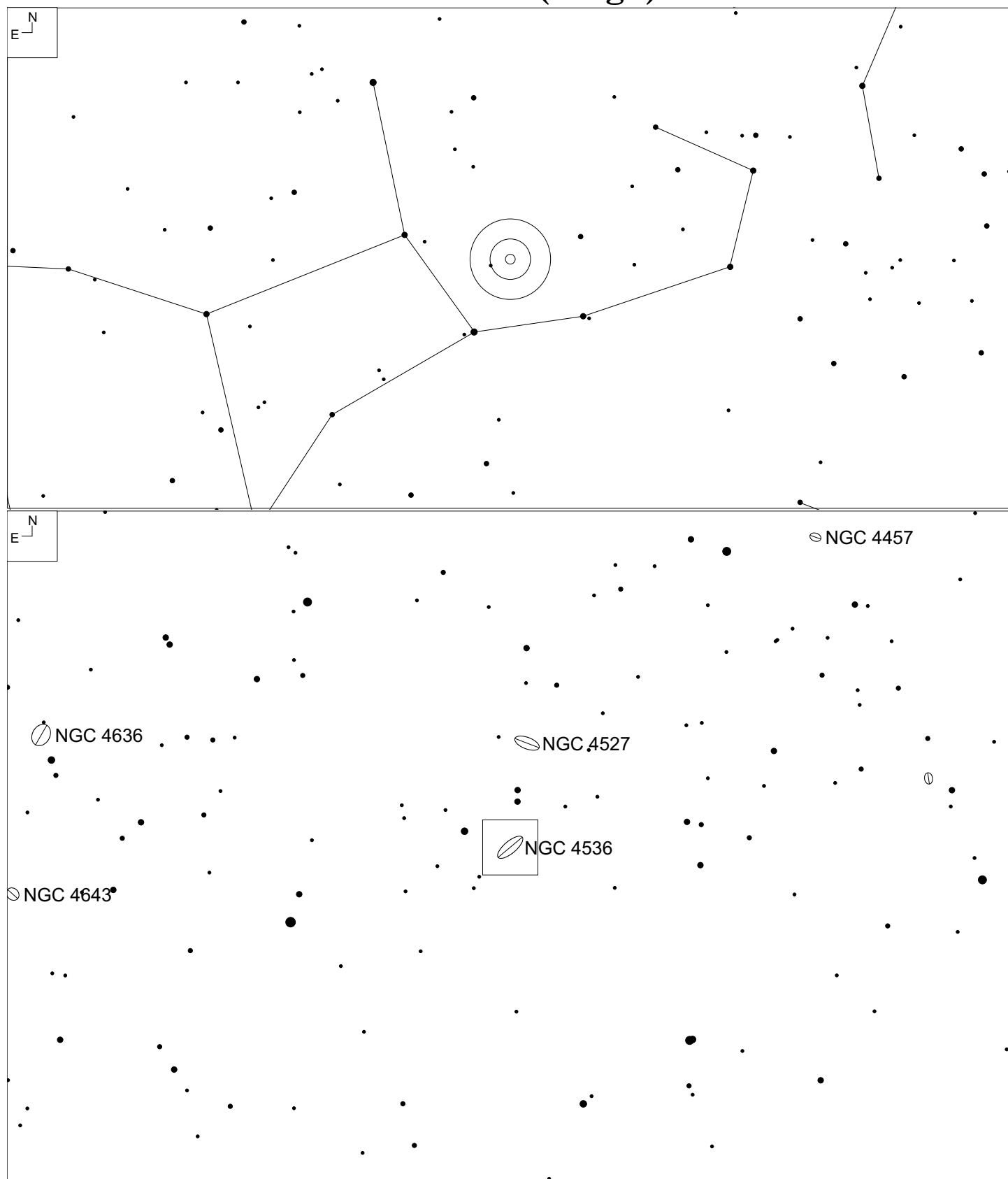
NGC 4535 (Virgo)



NGC 4535 is a type SAB(s)c barred spiral galaxy that sits 54 mly away and diameter of 112 kly. It is considered one of the largest spiral galaxies of the Virgo cluster.

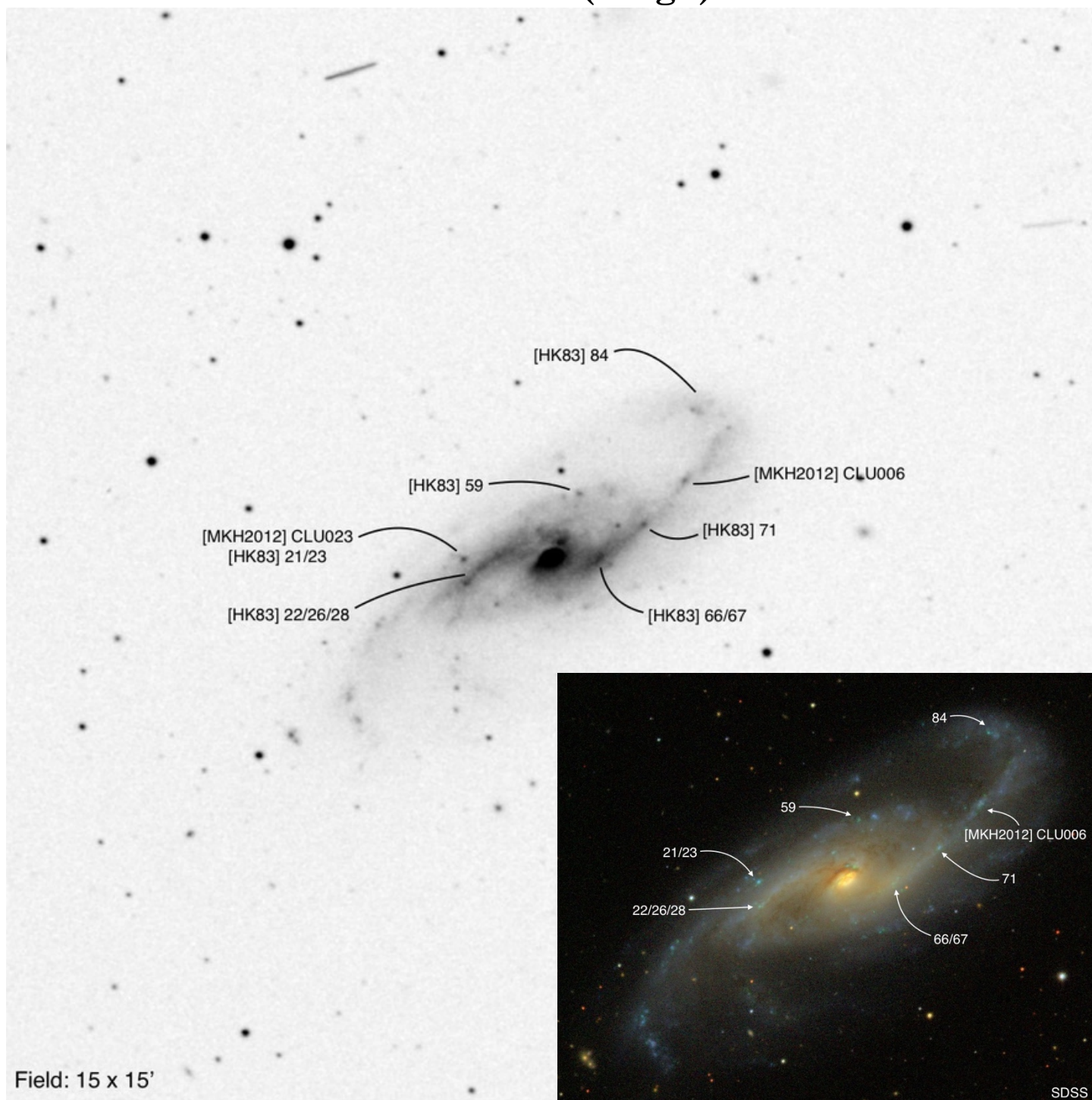
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4535](#). Also see Glahn's [sketch](#) with a 20" Hubble Space Telescope [image](#).

NGC 4536 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4536	12 34 27.0	+02 11 19	10.6	4.6 x 2.4'	57, D3

NGC 4536 (Virgo)



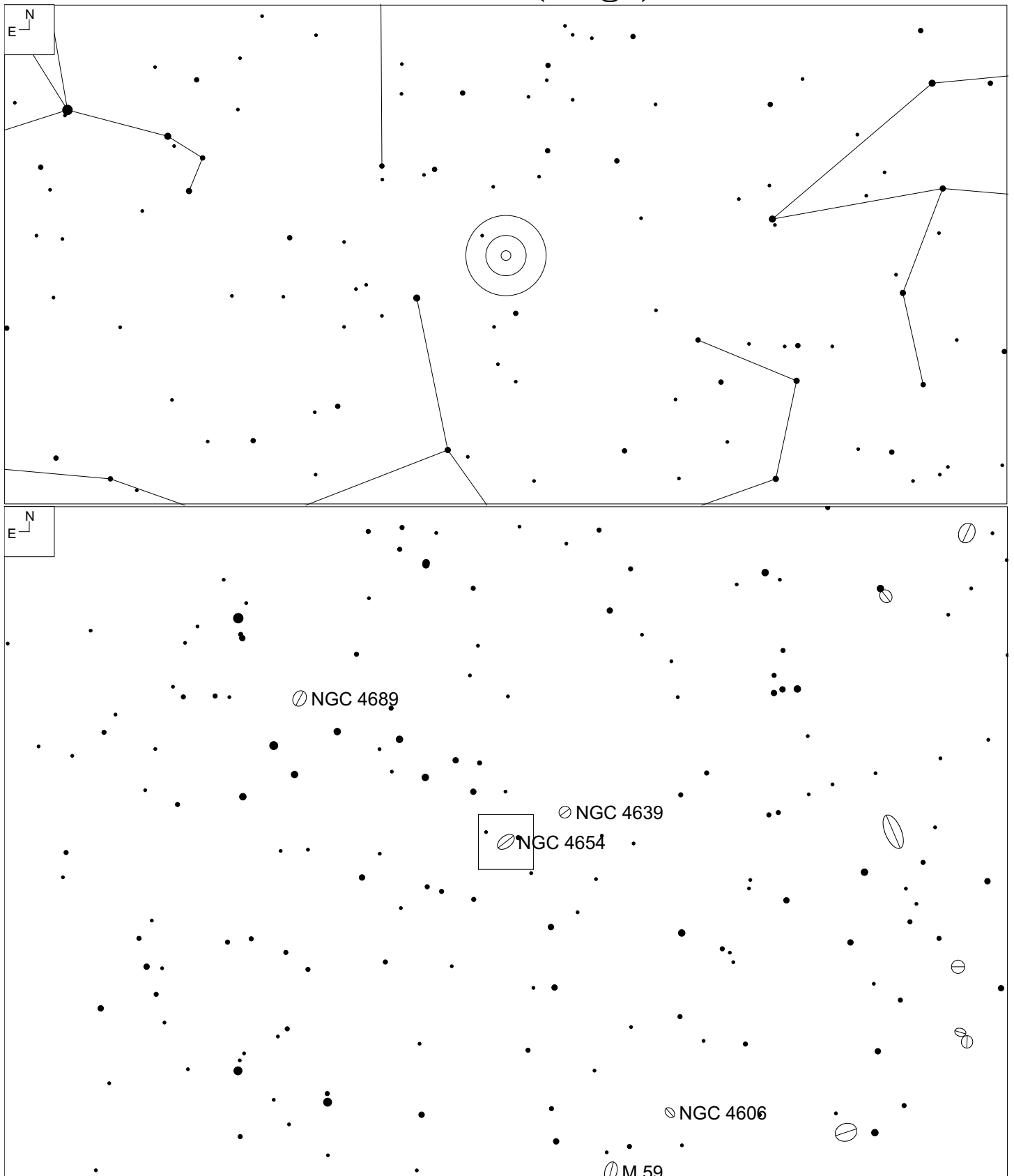
NGC 4536 is a type SAB(rs)bc midsize barred spiral galaxy that is 52 mly away from us and part of the Virgo Cluster.

H II region **[MKH2012]** annotations from Ye-Wei Mao, et al, “Characterizing Ultraviolet and Infrared Observational Properties for Galaxies. I. Influences of Dust Attenuation and Stellar Population Age” *The Astrophysical Journal*, Volume 757, Issue 1, article 52 (Sept 2012).

For observing notes with a 48” telescope, see Steve Gottlieb’s notes: [NGC 4536](#). Also see Glahn’s [sketch](#) with a 16”

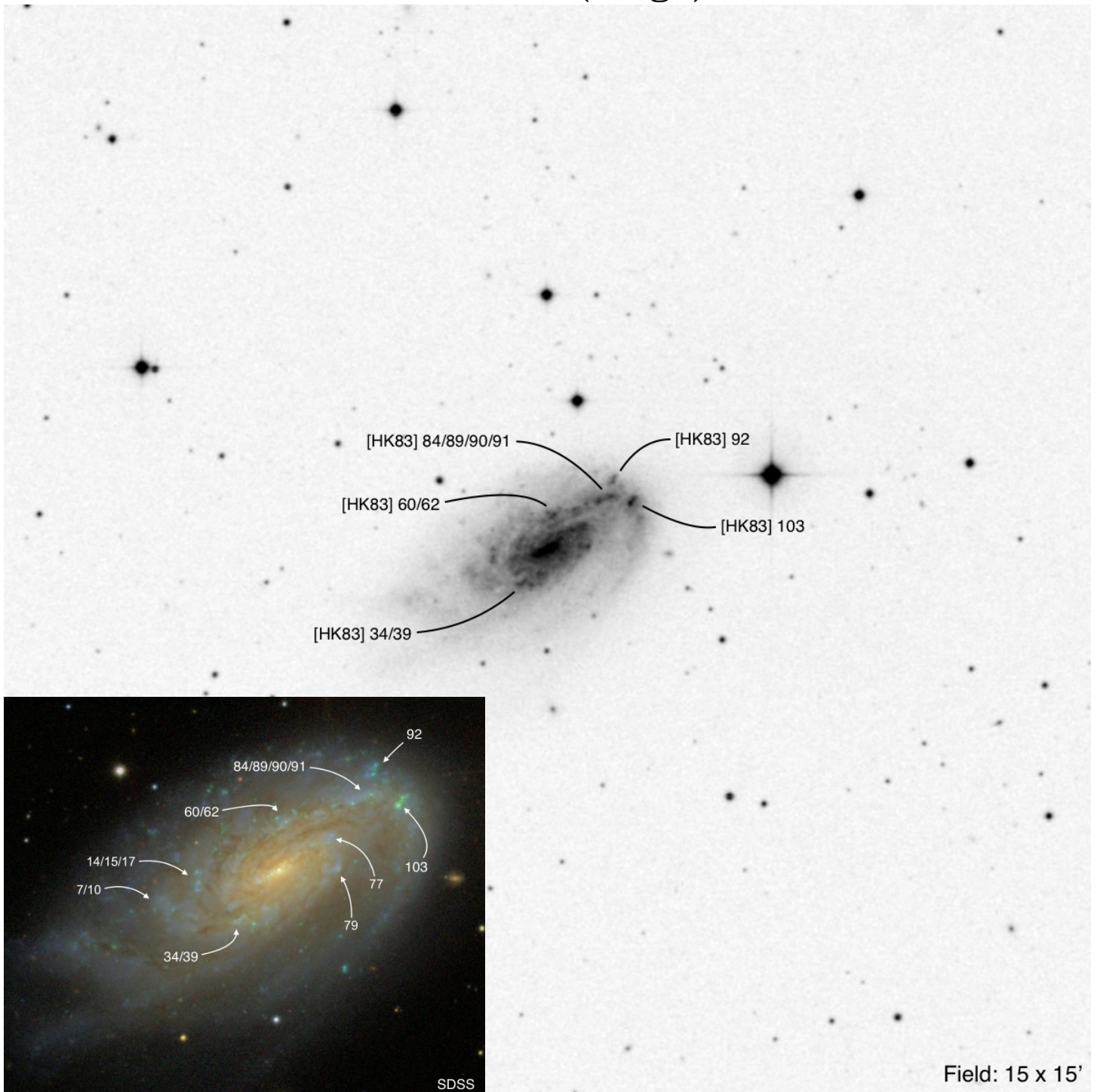
Taking a closer look at the Hubble Space Telescope [image](#) indicates that most of the **[HK83]** annotations are star forming regions or OB associations.

NGC 4654 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4654	12 43 56.5	+13 07 42	11.9	4.5 x 2.0	45

NGC 4654 (Virgo)

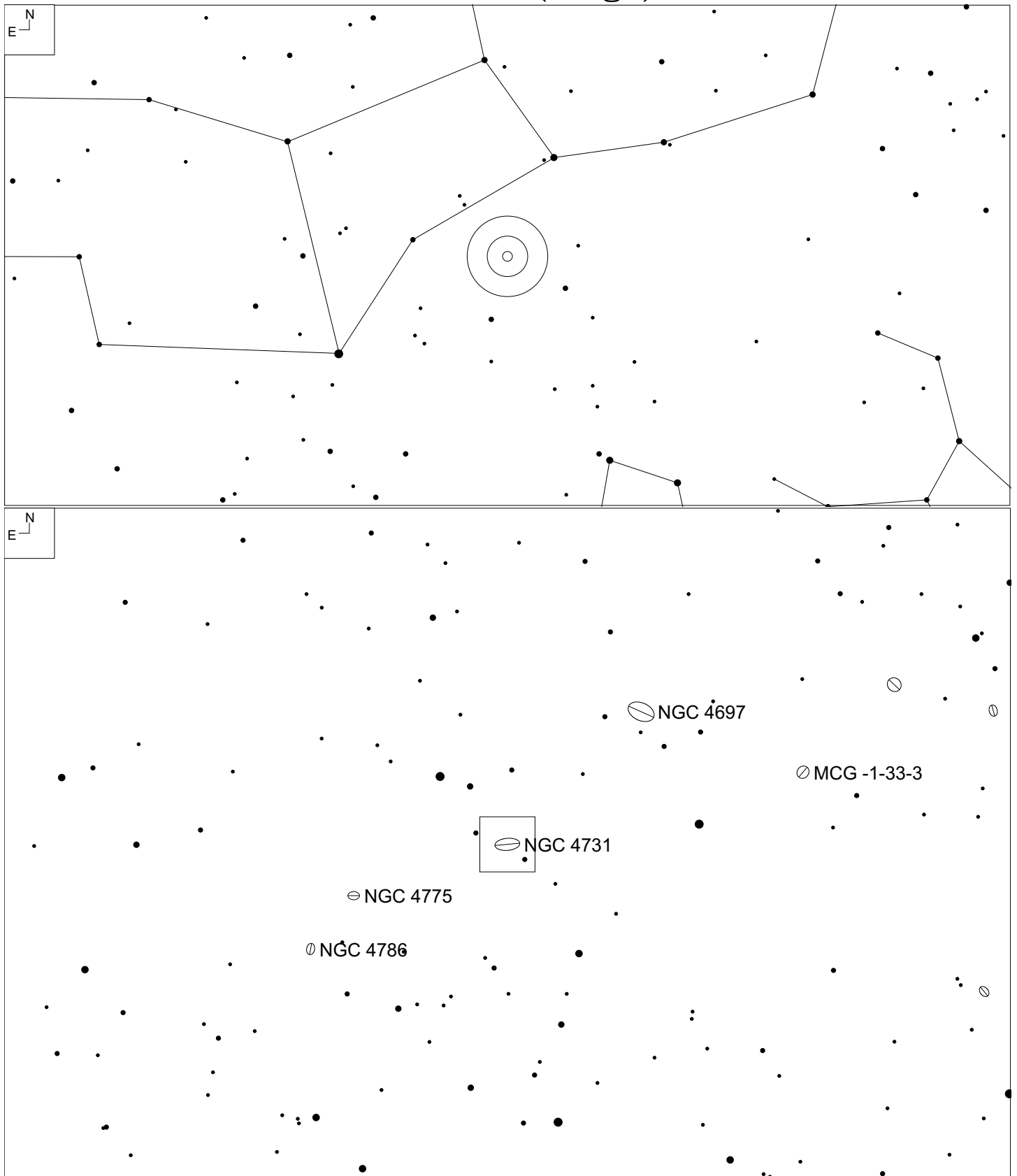


NGC 4654 is a type SAB(rs)cd galaxy sitting 55 mly away as part of the Virgo cloud of galaxies.

Glahn's [sketch](#) showing all of the knots picked up with his 27" reflector as labeled in the SDSS inset.

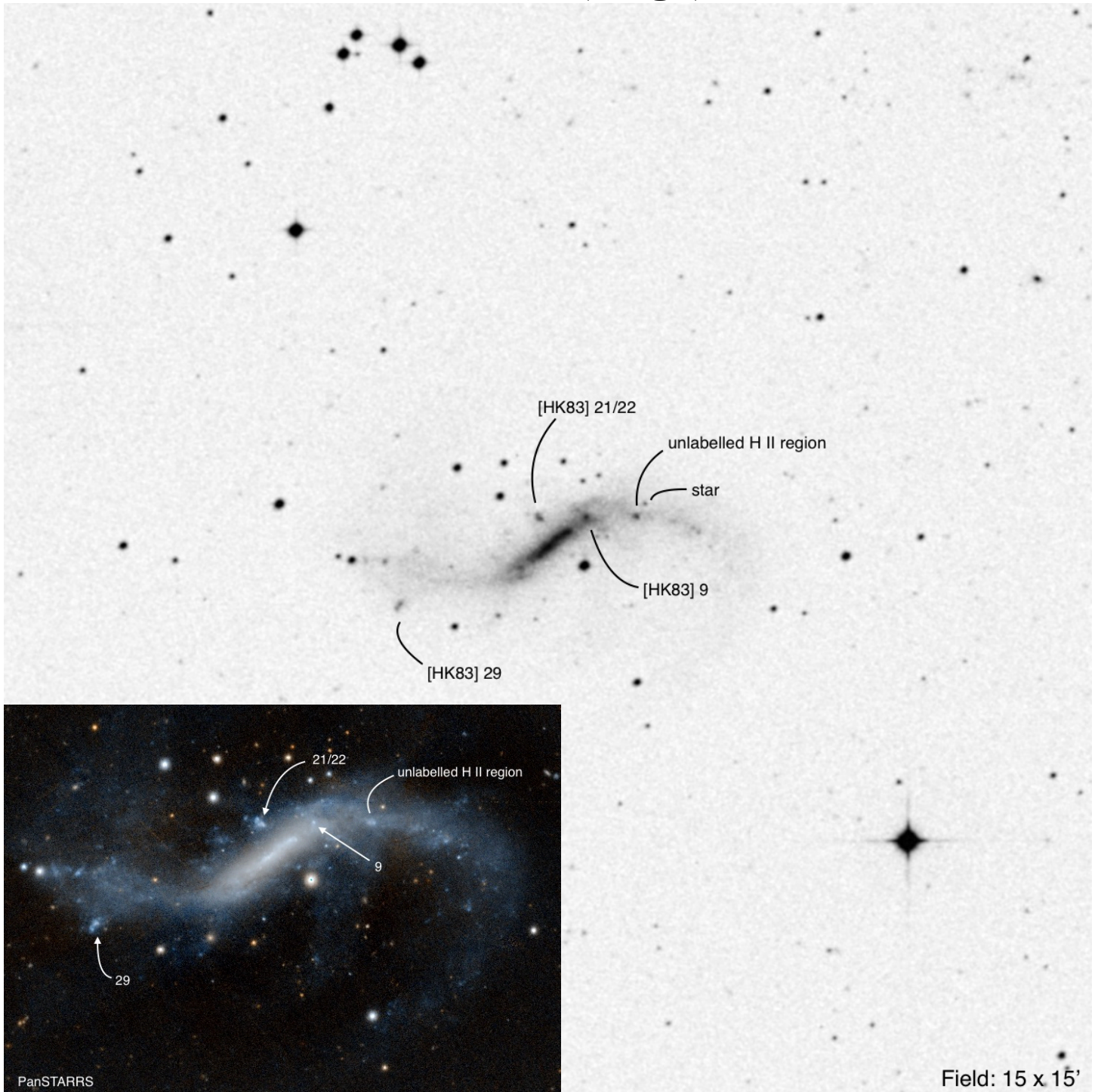
Hubble Space Telescope [image](#).

NGC 4731 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4731	12 51 01.0	-06 23 35	12.0	4.0 x 1.1'	57, 69

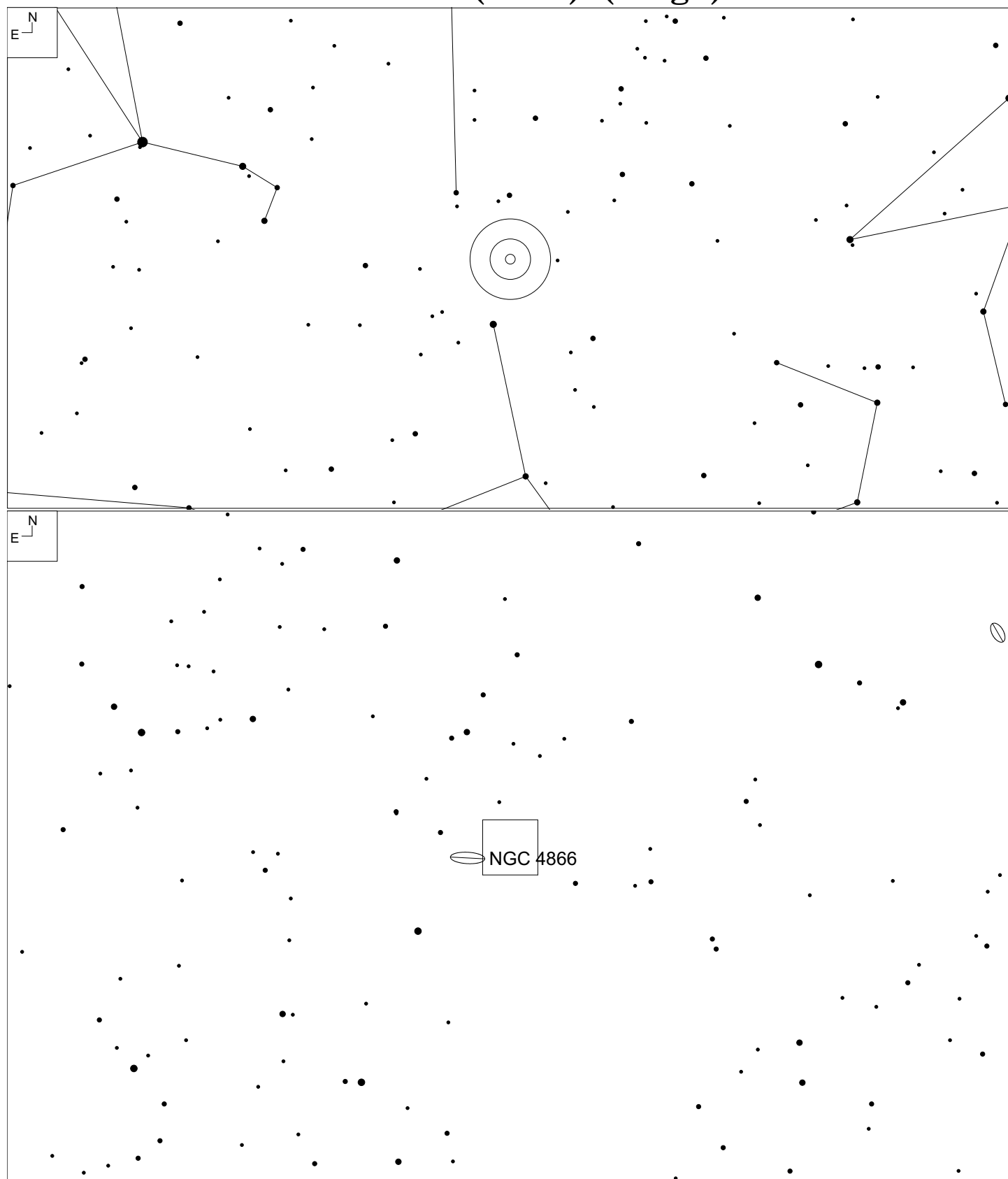
NGC 4731 (Virgo)



NGC 4731 is a type SBc flat barred spiral galaxy that is about 43 mly away.

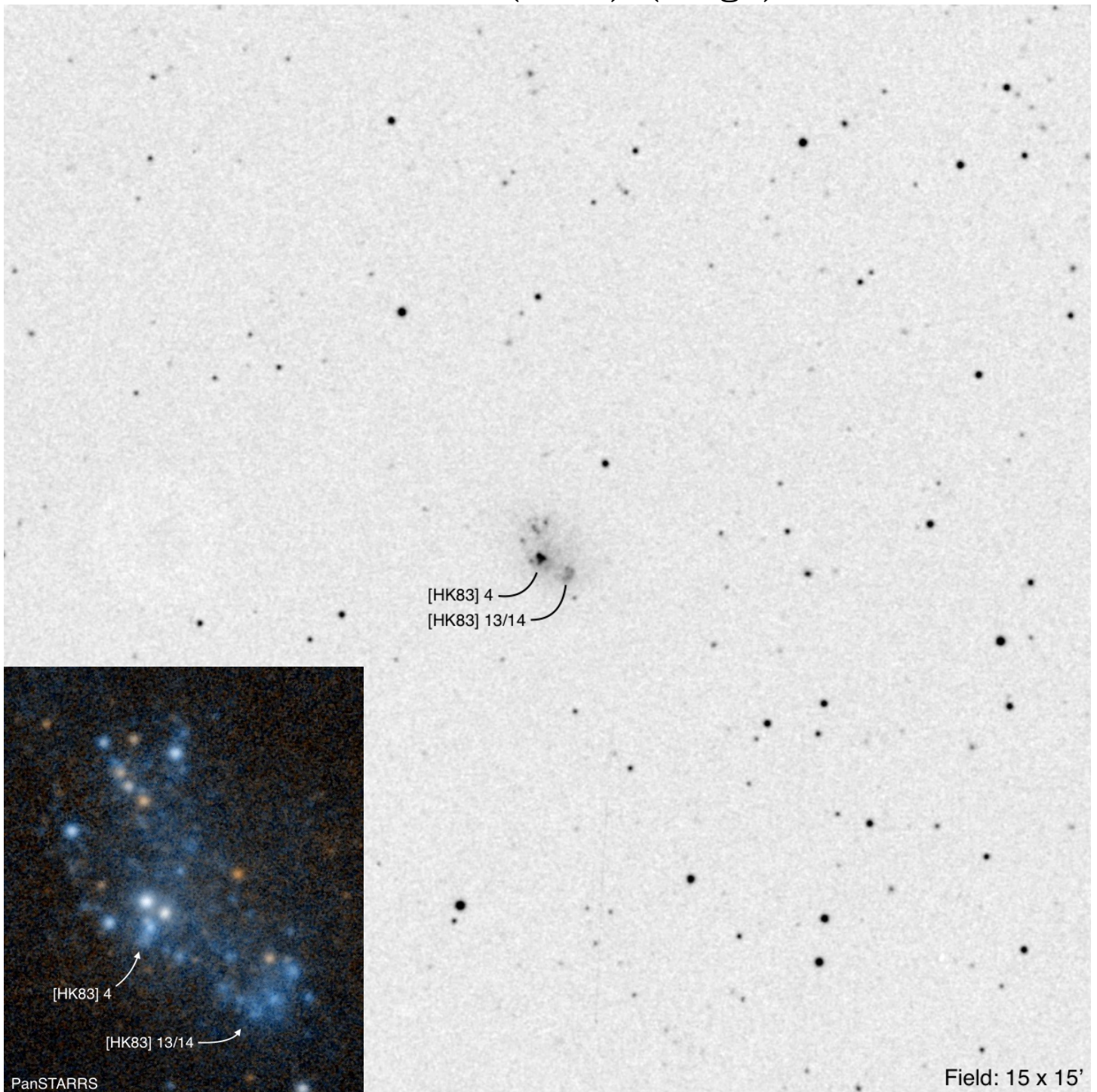
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 4731](#). Also see Glahn's [sketch](#) with a 16" reflector.

UGC 8091 (GR 8) (Virgo)



Object	RA	Dec	Mag	Size	iSDA
UGC 8091 (GR 8)	12 58 40.2	+14 13 08	15	0.8'	45

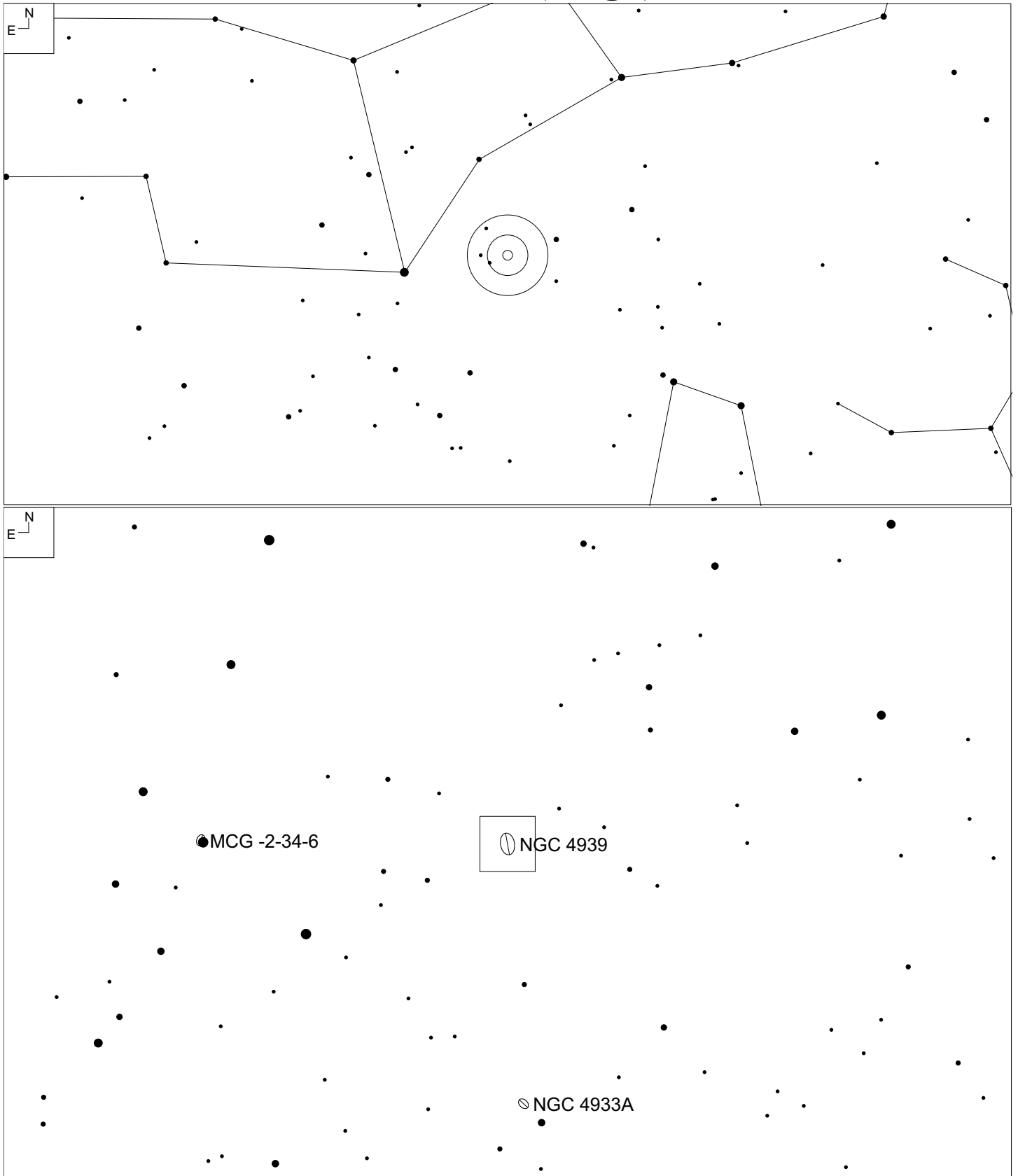
UGC 8091 (GR 8) (Virgo)



GR 8 is a small dwarf galaxy of type ImV sitting not too far from the Local Group at 7.9 mly away. For discussion on the nature of this very small galaxy. See Paul W. Hodge, “The Nature of the Remarkable Galaxy G. R. 8,” *Astrophysical Journal*, Volume 148 (June 1967): 719-725. It was later determined that GR 8 is 7.9 million light years distant, which is outside of the Local Group.

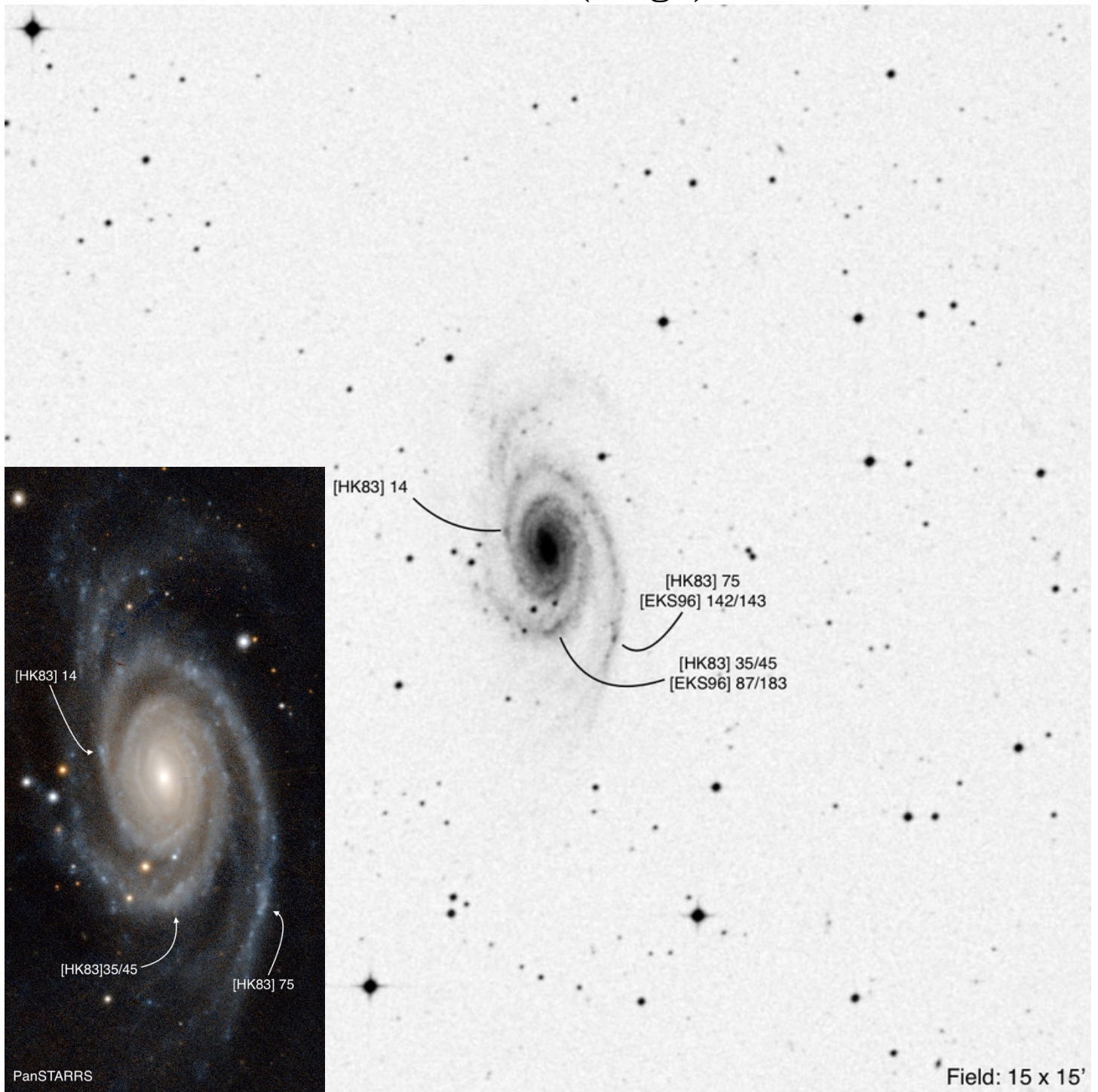
The PanSTARRS image shows that [HK83] 4 is a H II region next to two foreground stars (white), which forms an equilateral triangle. However, the Hubble Space Telescope [image](#) shows that the H II region envelops the entire area including the “double” star. The H II region, [HK83]13/14 appears to have a brighter knot on the western edge.

NGC 4939 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 4939	13 04 14.4	-10 20 24	13.8	3.0 x 2.0'	69

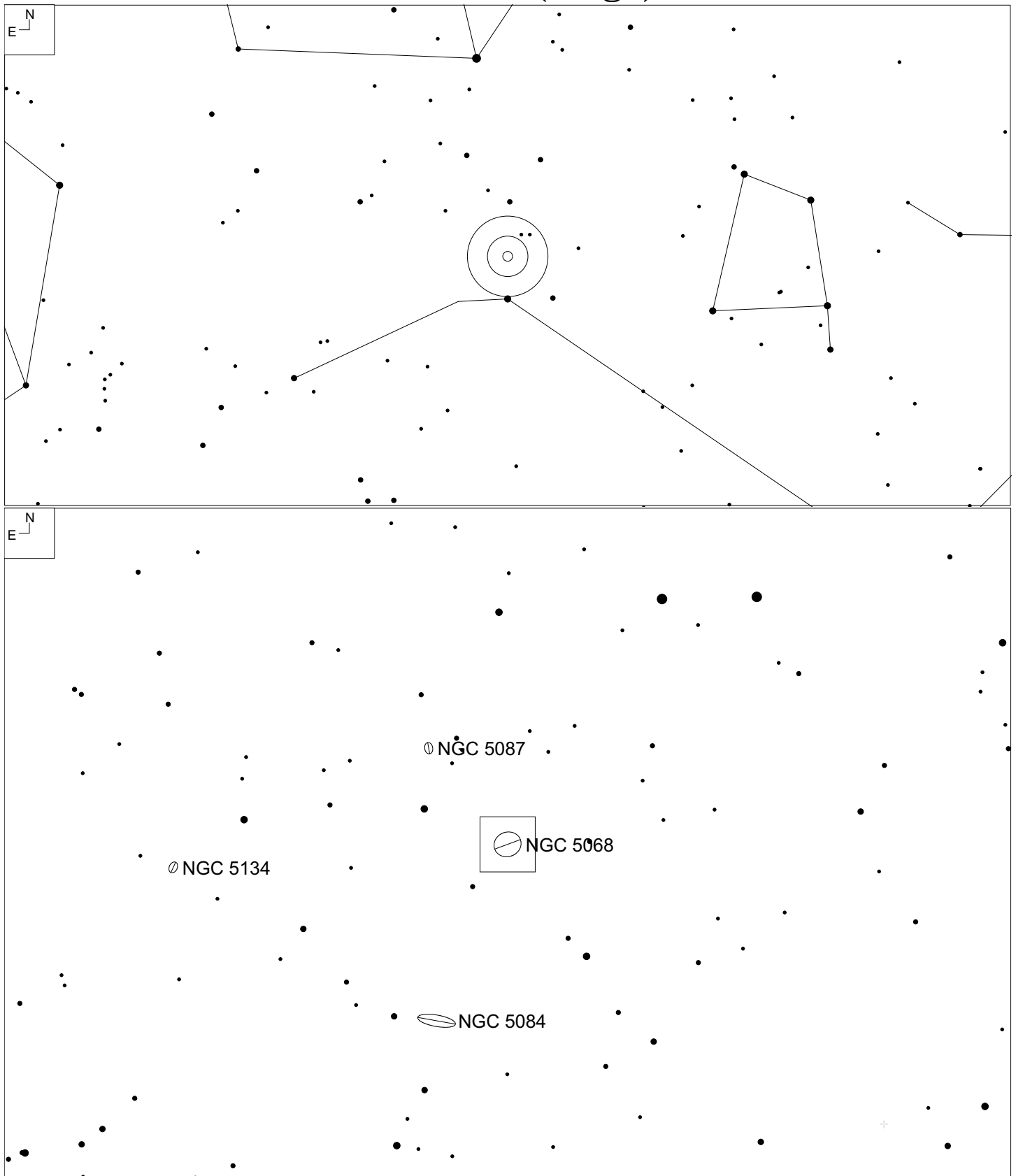
NGC 4939 (Virgo)



NGC 4939 is a type SA(s)bc galaxy that sits 118 mly distant and a giant 190 kly across.

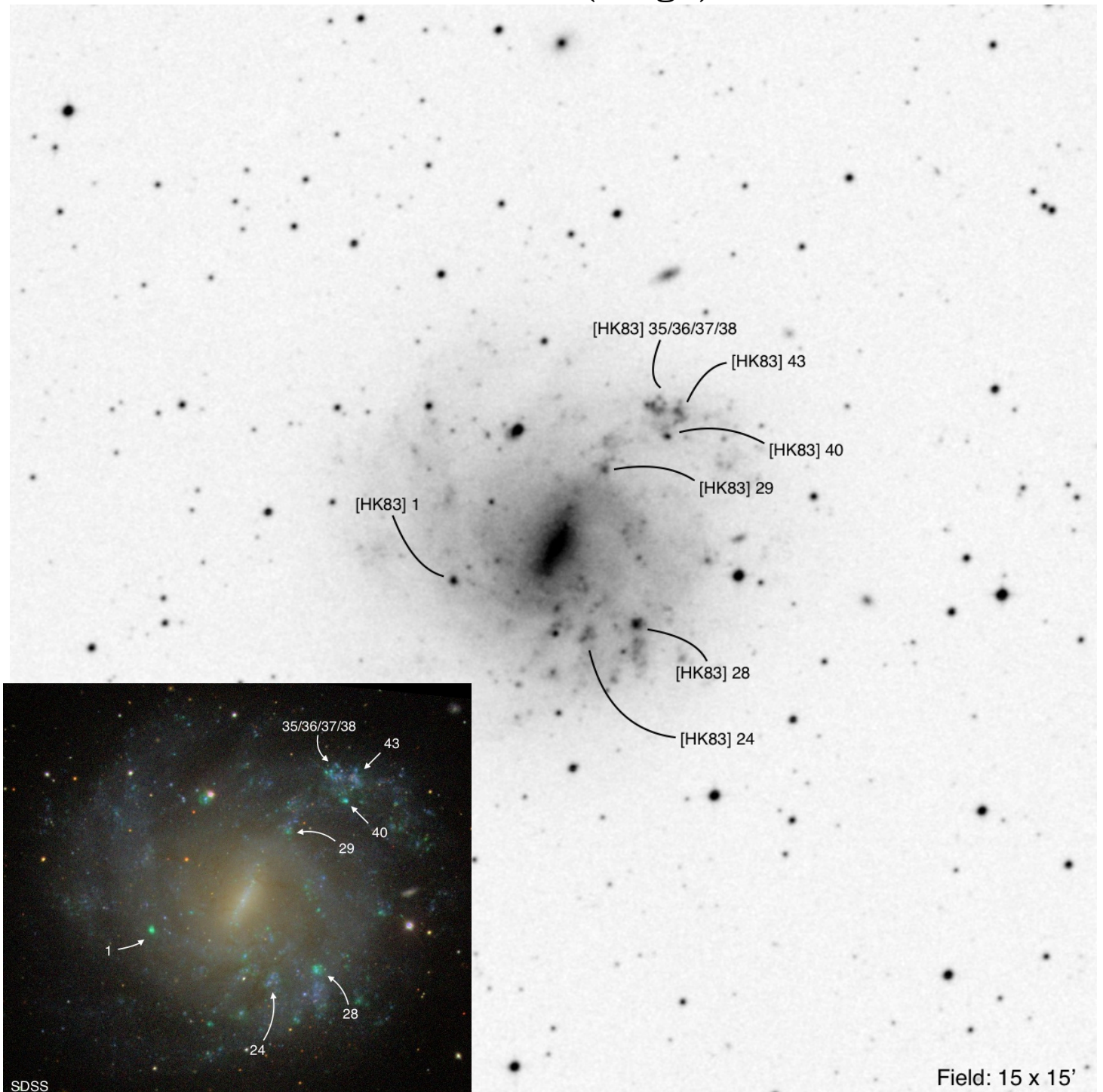
H II region **[EKS96]** annotations, see I.N. Evans, A.P. Koratkar, T. Storchi-Bergmann, et al, "An Atlas of H II Regions in Nearby Seyfert Galaxies," *Astrophysical Journal Supplement*, Volume 105 (July 1996): 93-127.

NGC 5068 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 5068	13 18 54.9	-21 02 26	9.9	6.4 x 4.4'	69, 81

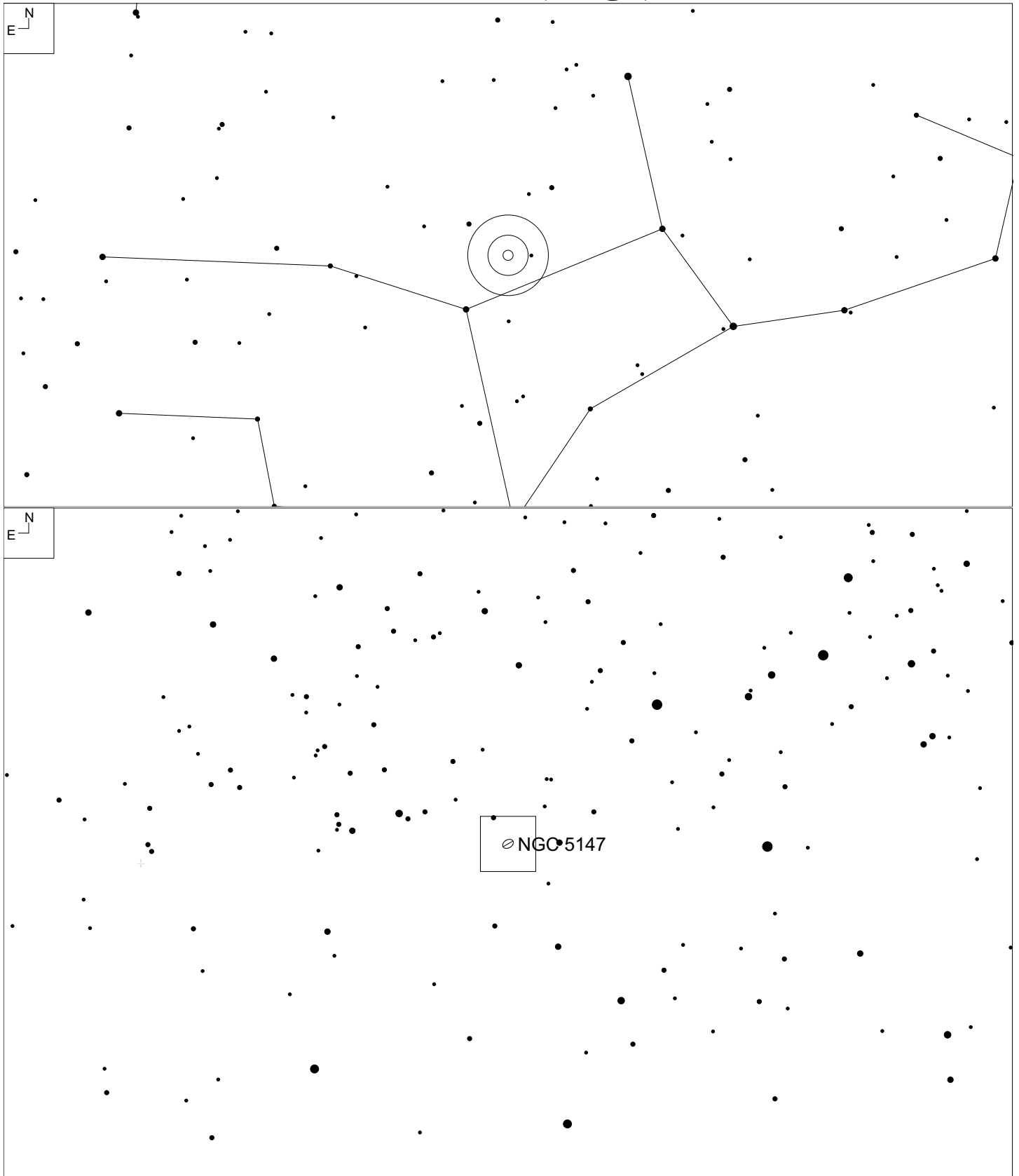
NGC 5068 (Virgo)



NGC 5068 is a type SB(s)d galaxy that sits 20 mly away and 45 kly across. It appears a majority of the H II regions are on one side of the galaxy.

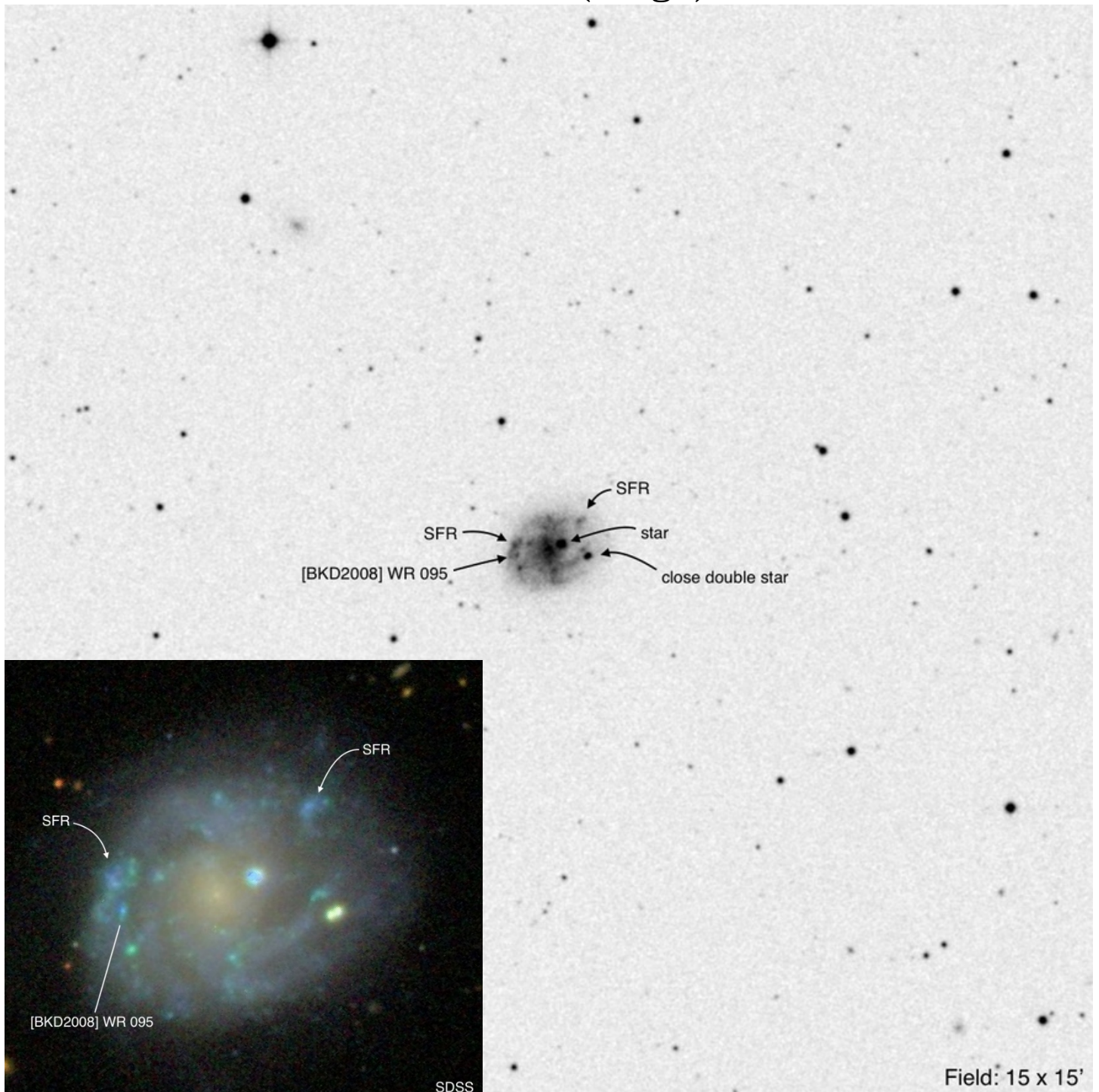
No published amateur observations notating the knots.

NGC 5147 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 5147	13 26 19.7	+02 06 03	11.8	1.9 x 1.5'	57

NGC 5147 (Virgo)



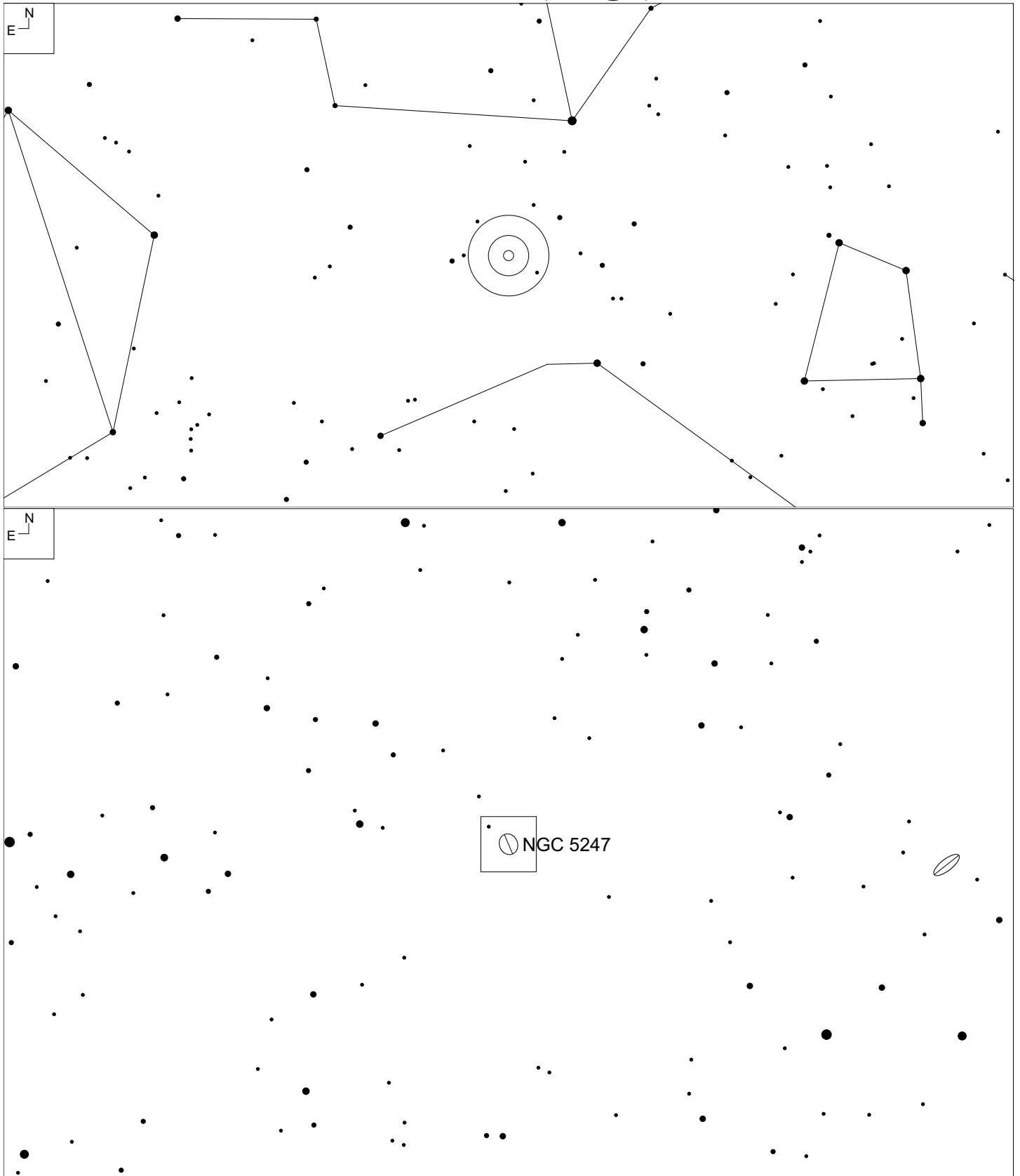
NGC 5147 is a type SB(s)dm galaxy and located about 58 mly from the Milky Way. A star near the center makes it difficult.

Possible Wolf Rayet star (super luminous star or stars) [BKD2008] annotation from J. Brinchmann, D. Kunth, F. Durret. "Galaxies with Wolf-Rayet signatures in the low-redshift Universe. A survey using the Sloan Digital Sky Survey," *Astronomy and Astrophysics*, Volume 485, Issue 3 (July 2008): 657-677.

Also, two star forming regions annotated based on visual inspection of the PanSTARRS image.

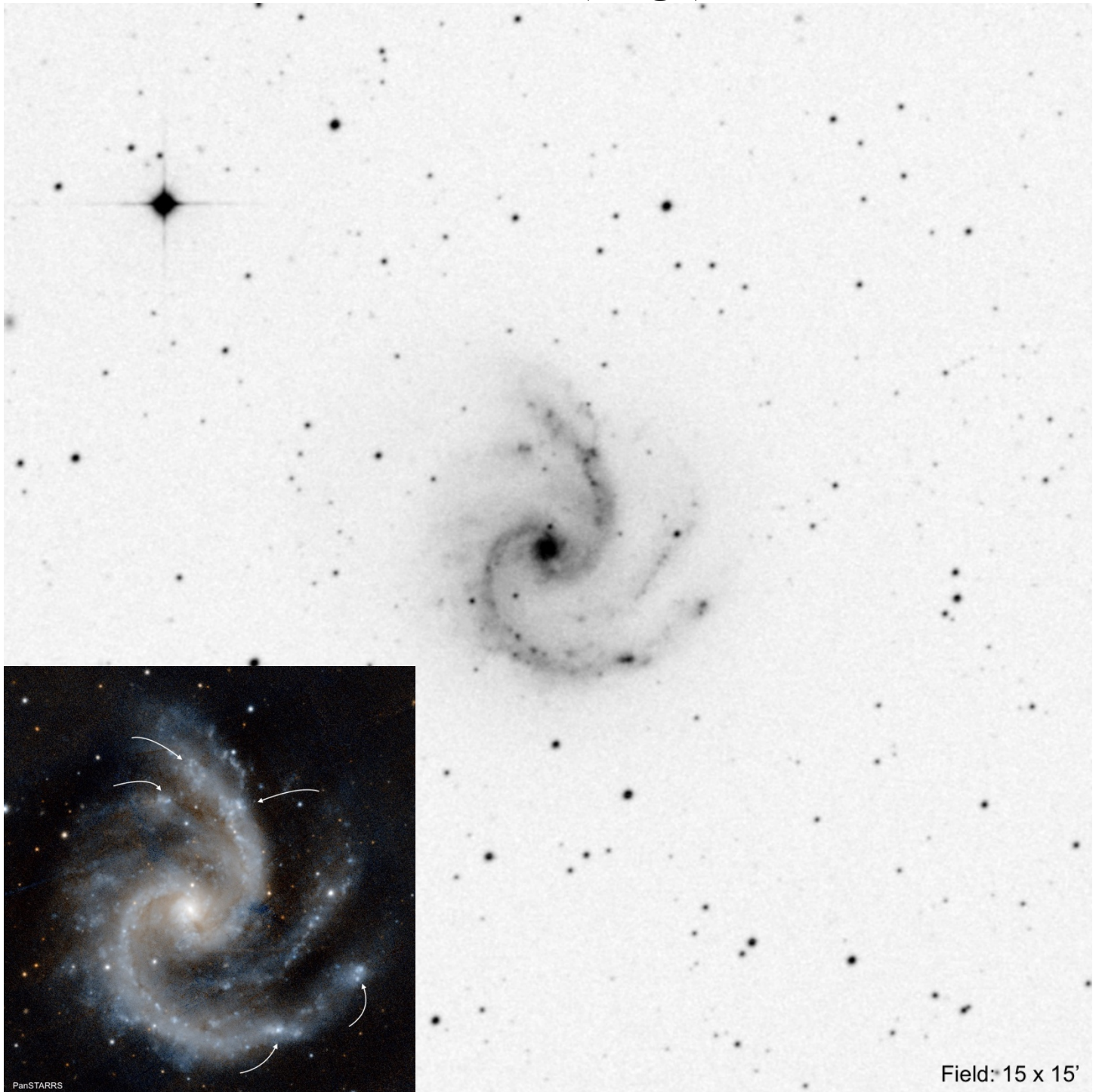
Using his 27" reflector, Glahn picked up both SFRs as shown in his [sketch](#).

NGC 5247 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 5247	13 38 02.5	-17 53 01	10	5.6 x 4.9'	69

NGC 5247 (Virgo)

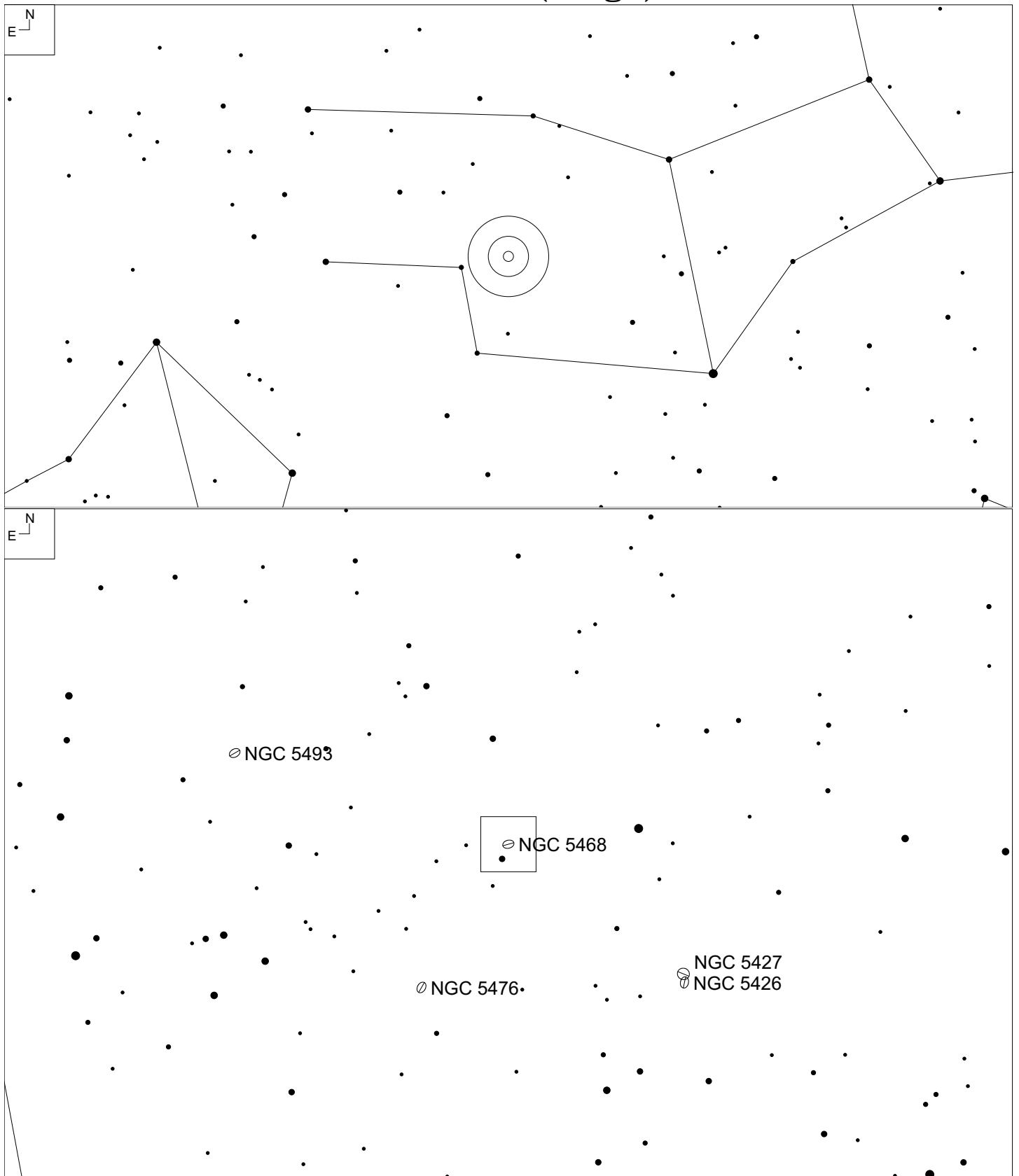


NGC 5247 is a type SA(s)bc galaxy that is about 60 mly away.

Gottlieb observed this object with a 48" reflector, see his [notes](#) and notated the five marked knots on the PanSTARRS image.

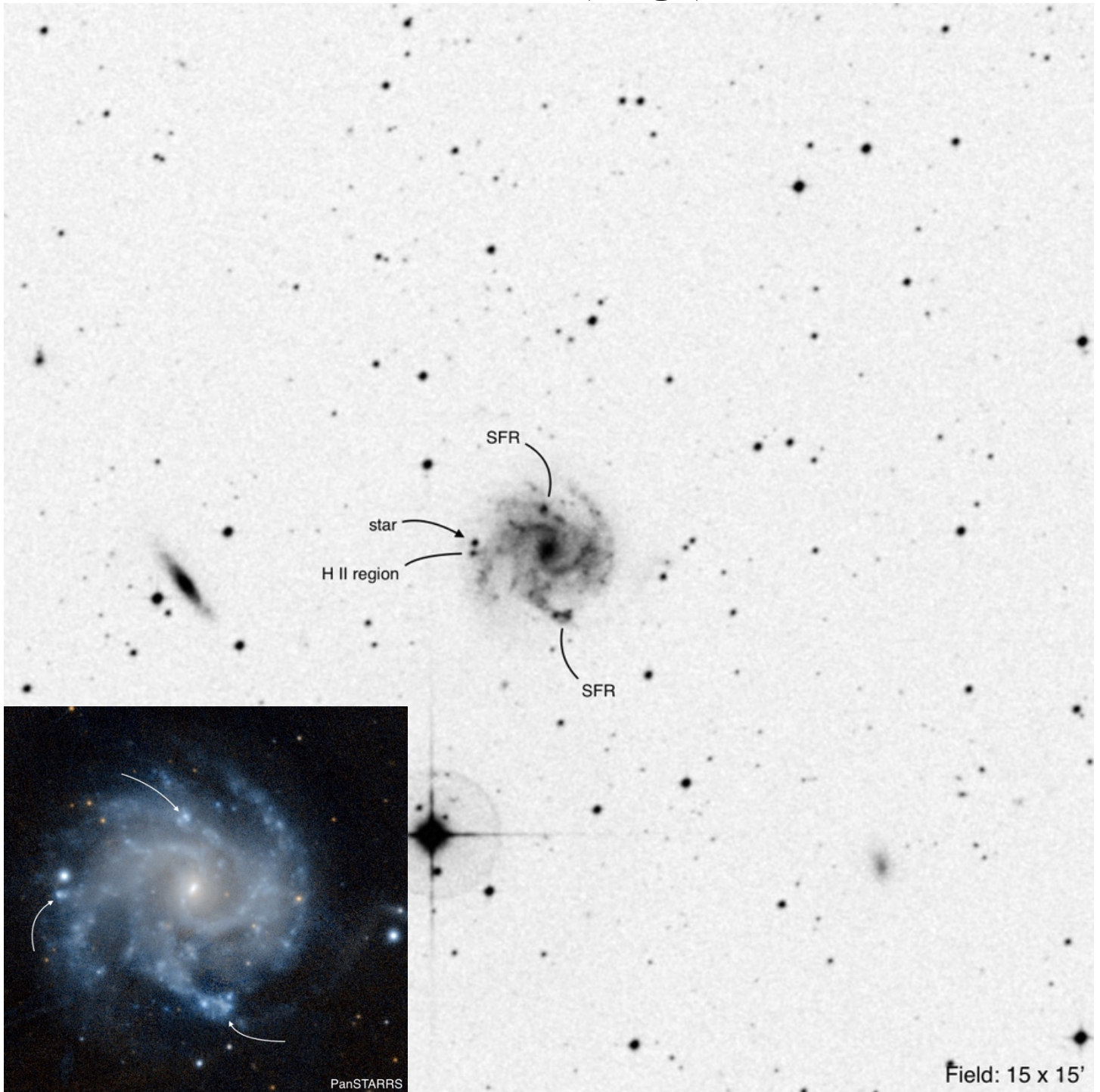
Also, Glahn sketched this object with his 16" reflector and detected one knot at the tip of the southern arm. See his [sketch](#).

NGC 5468 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 5468	14 06 34.9	-05 27 11	12.5	2.6 x 2.4'	56, 68

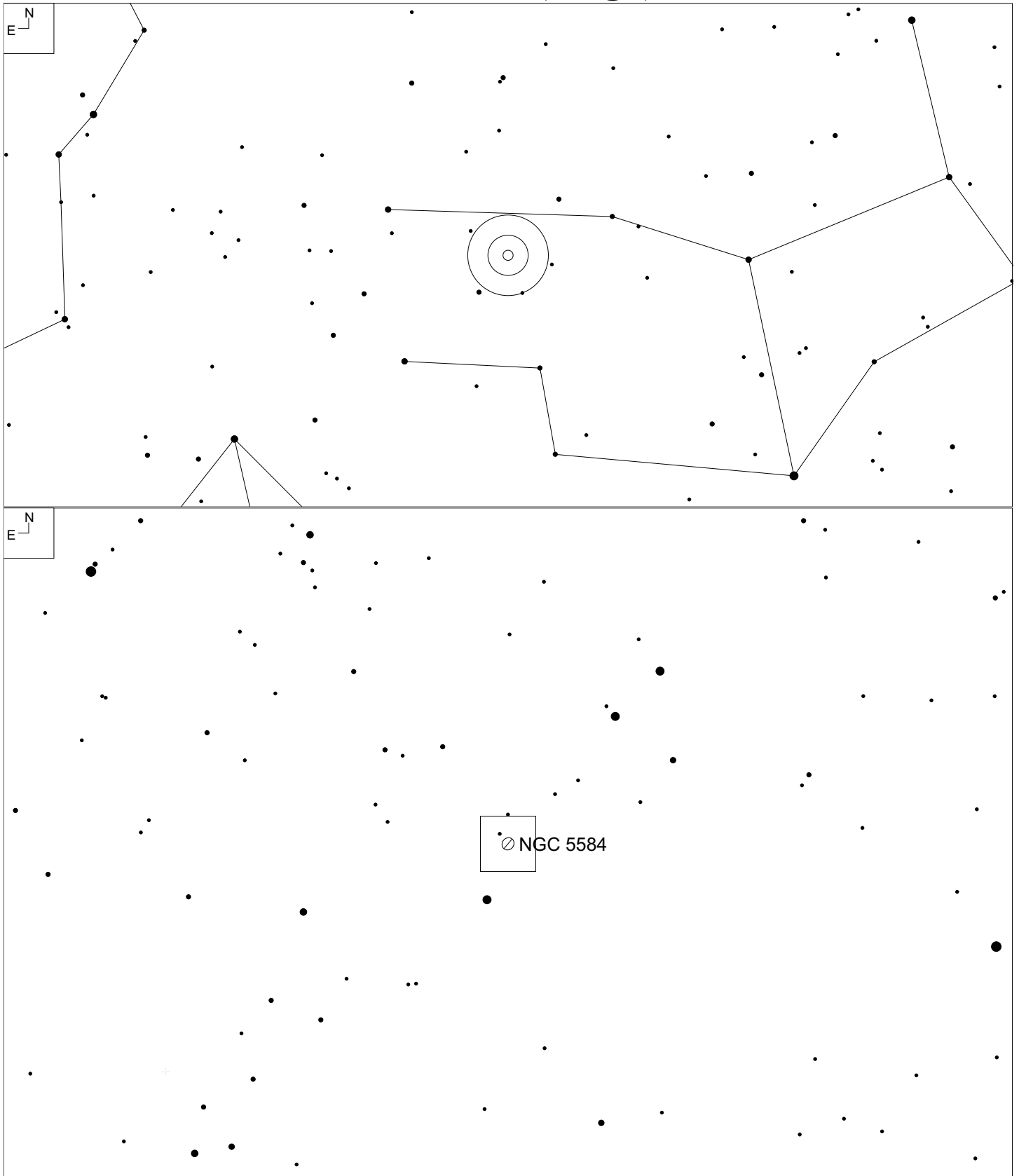
NGC 5468 (Virgo)



NGC 5468 is a type SAB(rs)cd galaxy that is 138 mly away. Six supernovae were seen since 1999.

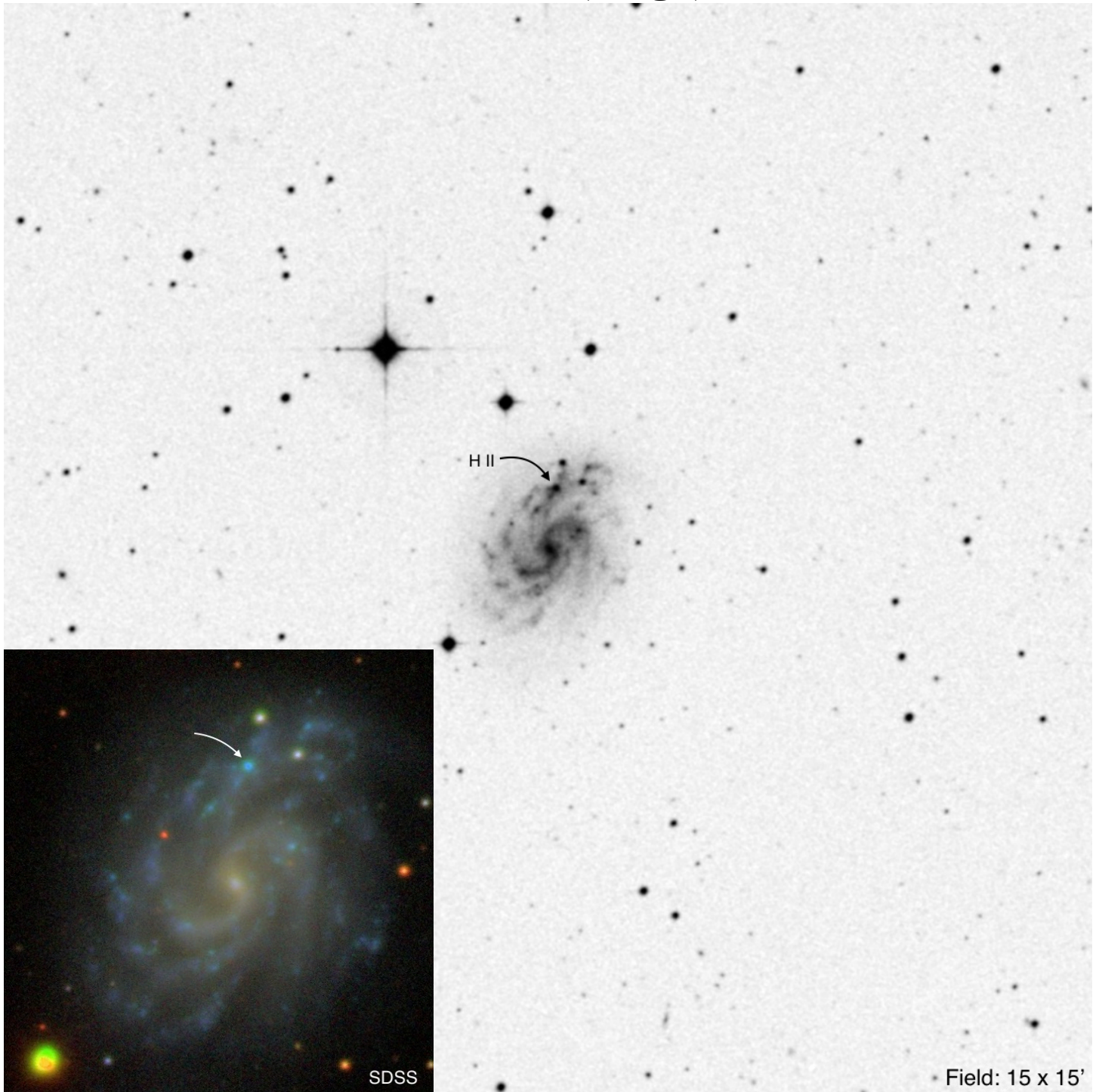
Taking a closer look at the composite James Webb Space Telescope and Hubble Space Telescope [image](#) resulted in the above labels. Glahn picked up both SFRs with his 14.5" reflector as shown in this [sketch](#) and Gottlieb also picked up both knots with a 48", see [notes](#).

NGC 5584 (Virgo)



Object	RA	Dec	Mag	Size	iSDA
NGC 5584	14 22 23.8	-00 23 15	11.4	3.4 x 2.5'	56

NGC 5584 (Virgo)

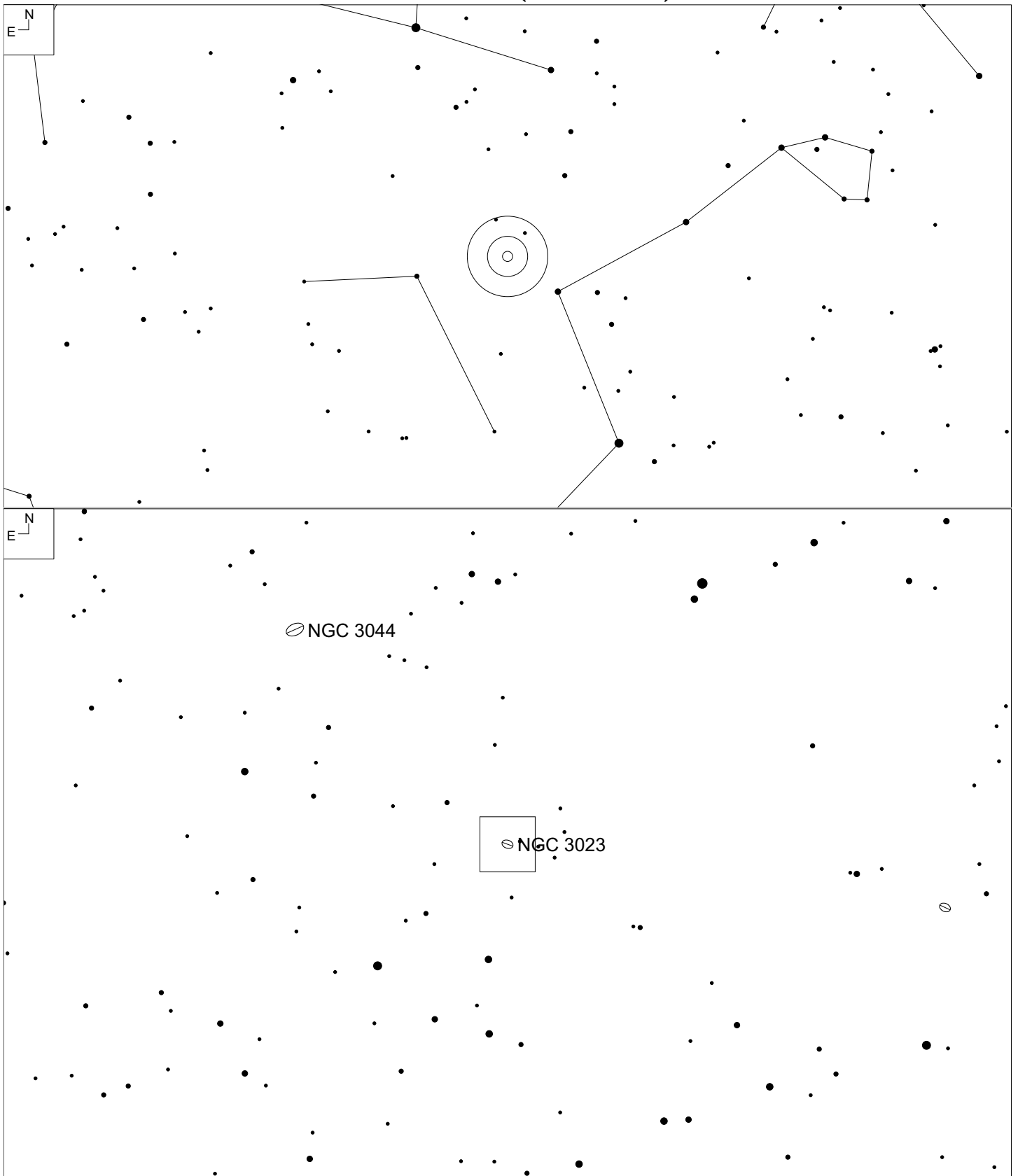


NGC 5584 is a type SAB(rs)cd galaxy that lies 75 mly away and more than 50 kly across.

Taking a closer look at the Hubble Space Telescope [image](#) (Note: The Hubble image is almost upside down) indicates that there are two foreground stars and one H II region.

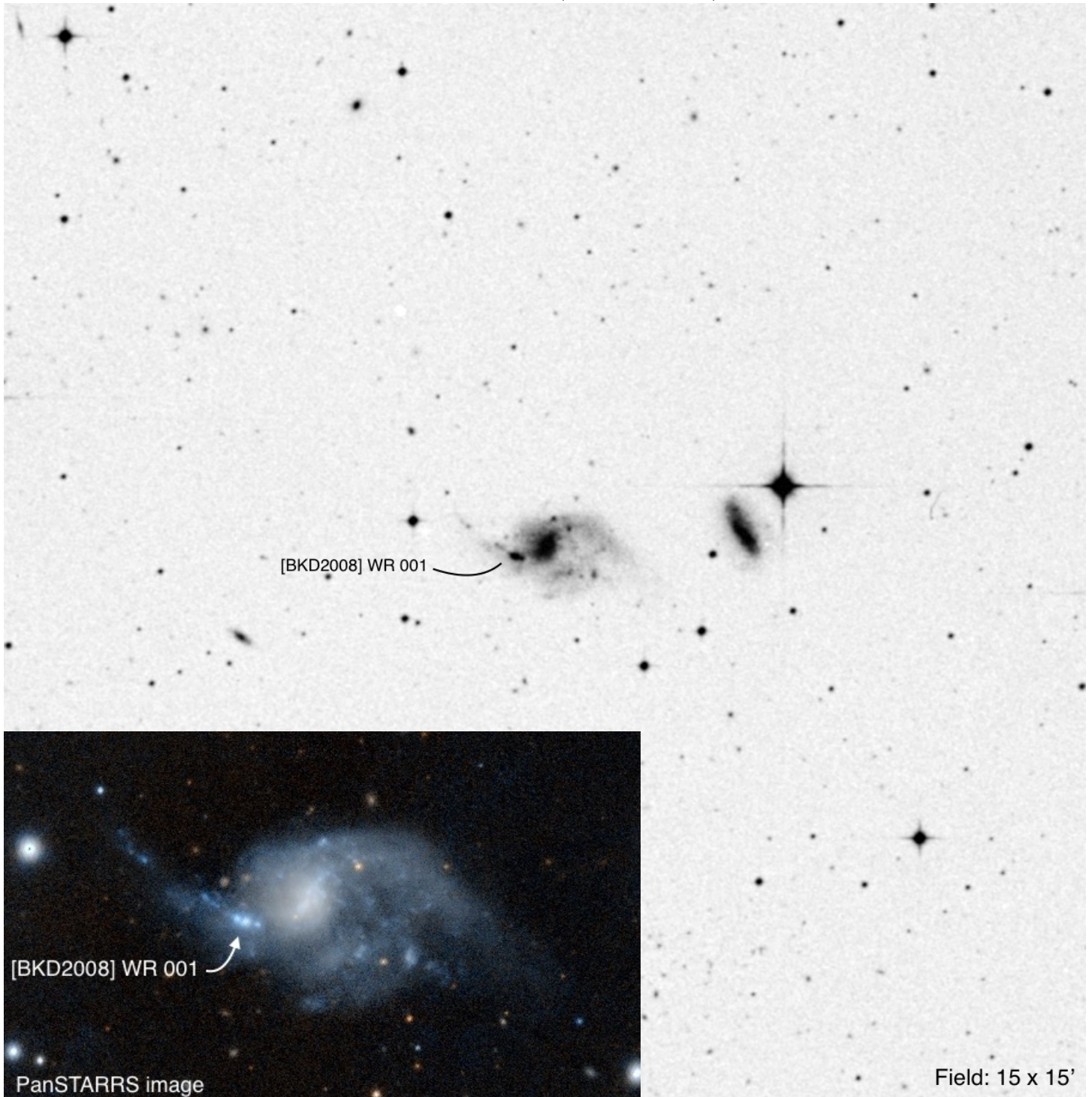
NED does not have any extragalactic regions labeled, only the brightest region is noted.

NGC 3023 (Sextans)



Object	RA	Dec	Mag	Size	iSDA
NGC 3023	09 49 52.6	+00 37 04	13.0	2.9 x 1.4'	59

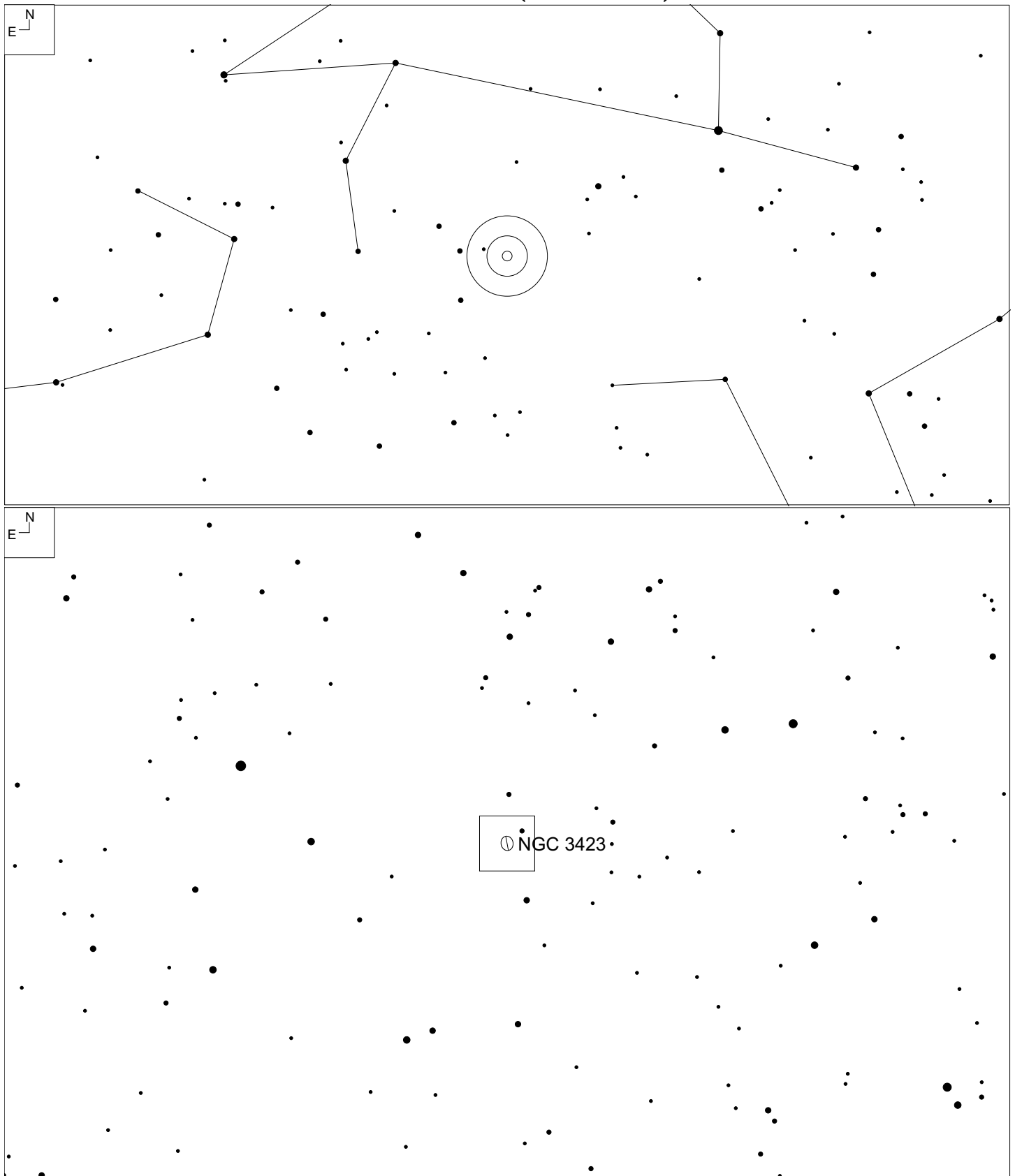
NGC 3023 (Sextans)



Possible Wolf Rayet star (super luminous star or stars) [BKD2008] annotation from J. Brinchmann, D. Kunth, F. Durret.
“Galaxies with Wolf-Rayet signatures in the low-redshift Universe. A survey using the Sloan Digital Sky Survey,” *Astronomy and Astrophysics*, Volume 485, Issue 3 (July 2008): 657-677.

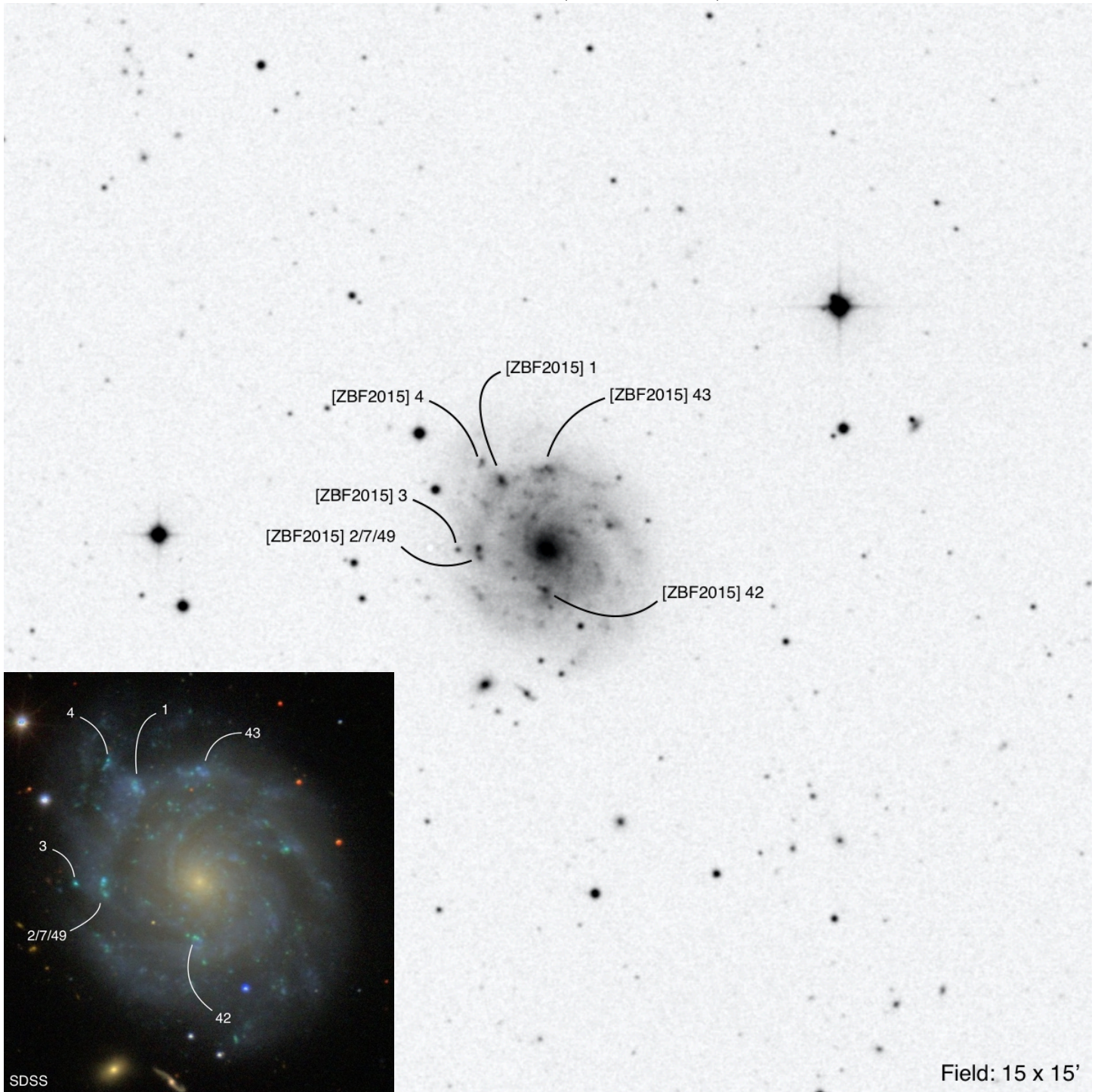
See Glahn’s [sketch](#) with a 27” reflector, showing the one lone labeled extragalactic object as a knot.

NGC 3423 (Sextans)



Object	RA	Dec	Mag	Size	iSDA
NGC 3423	10 51 14.3	+05 50 24	12.1b	3.8 x 3.2'	58

NGC 3423 (Sextans)

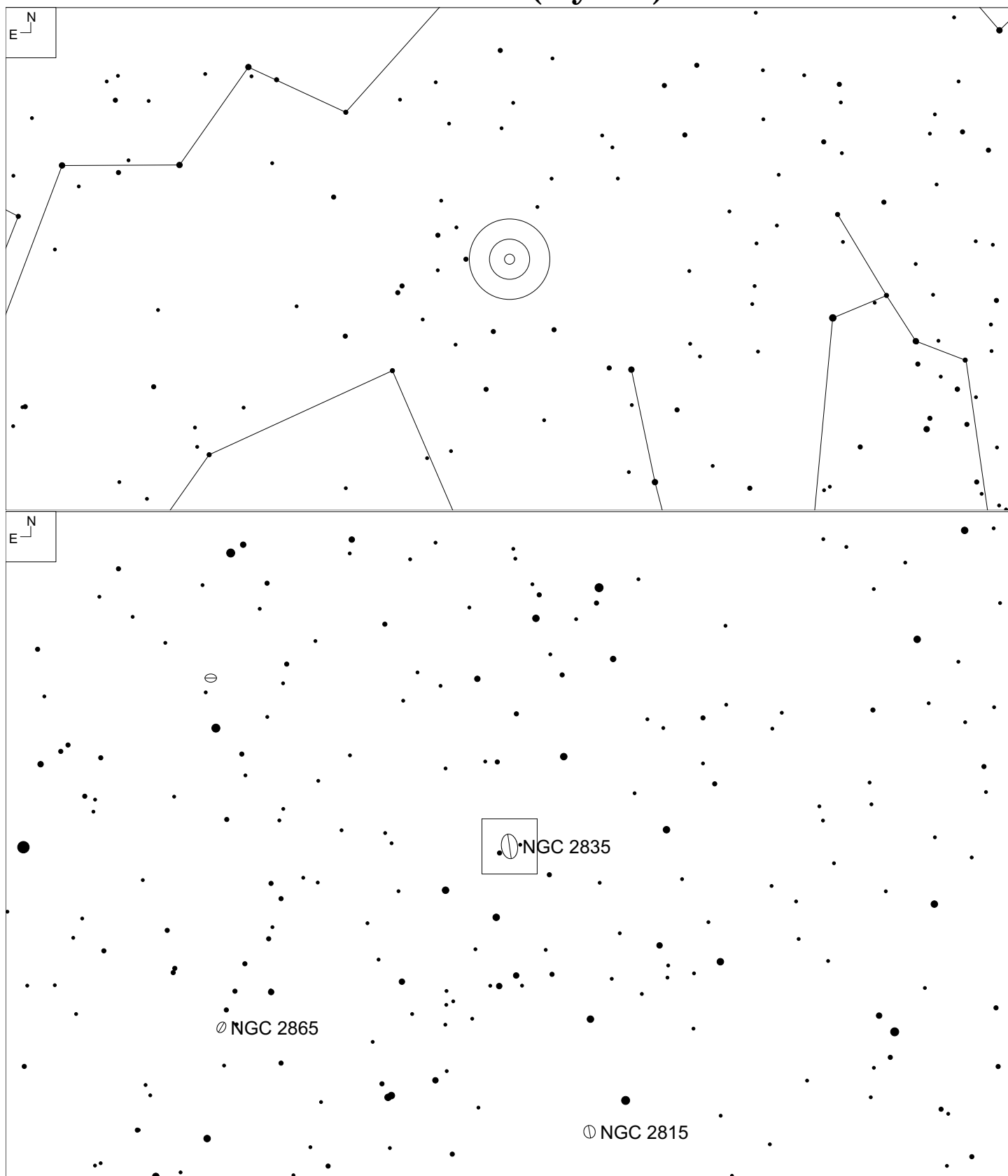


NGC 3423 is a type SA(s)c galaxy and situated about 42 mly away.

H II region **[ZBF2015]** annotations from Javier Zaragoza-Cardiel, et al, "Comparative internal kinematics of the H II regions in interacting and isolated galaxies: implications for massive star formation modes," *Monthly Notices of the Royal Astronomical Society*, Volume 451, Issue 2 (Aug 2015): 1307-1330.

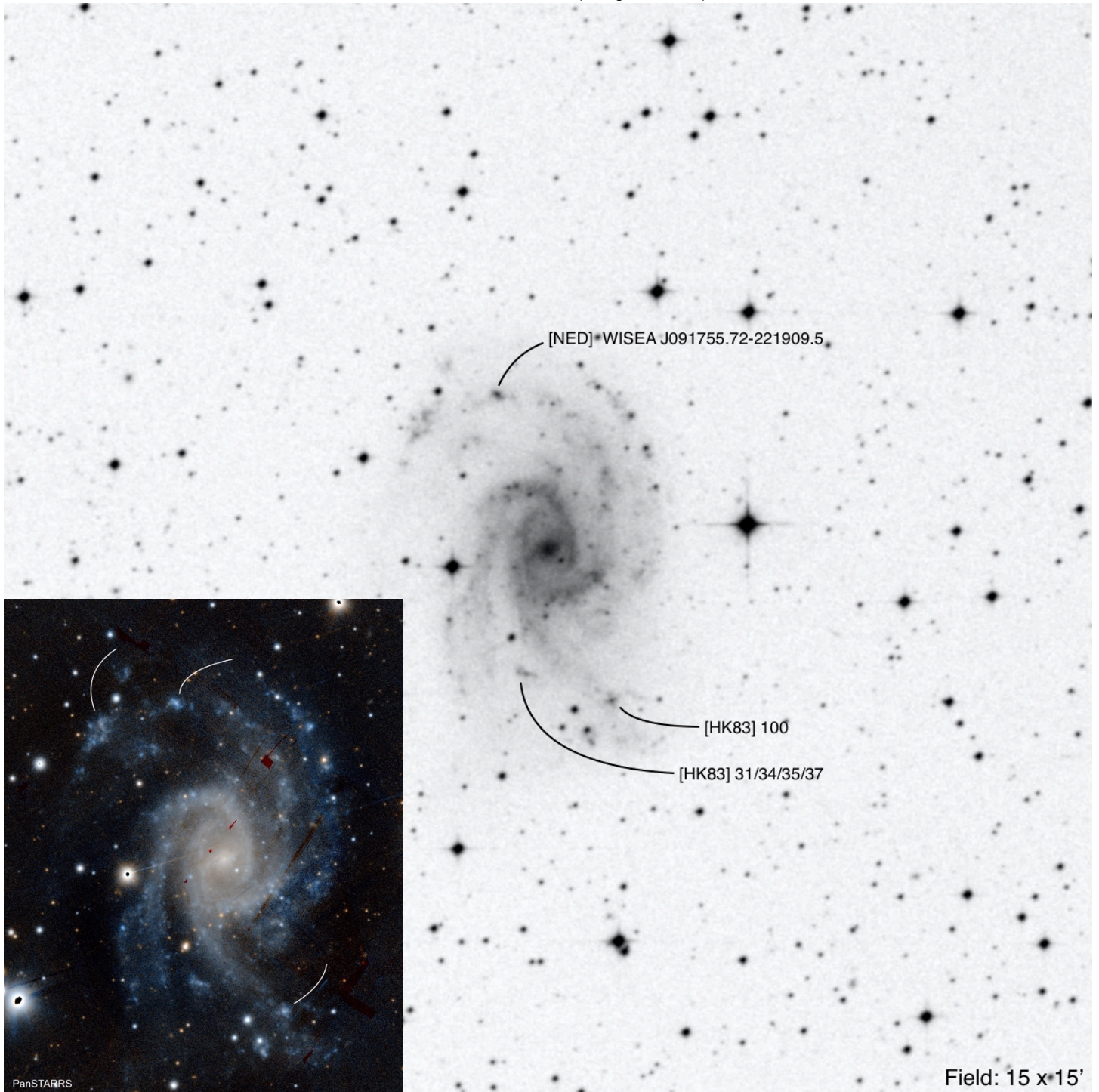
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3423](#).

NGC 2835 (Hydra)



Object	RA	Dec	Mag	Size	iSDA
NGC 2835	09 17 52.8	-22 21 17	10.5	6.6 x 4.4'	71

NGC 2835 (Hydra)

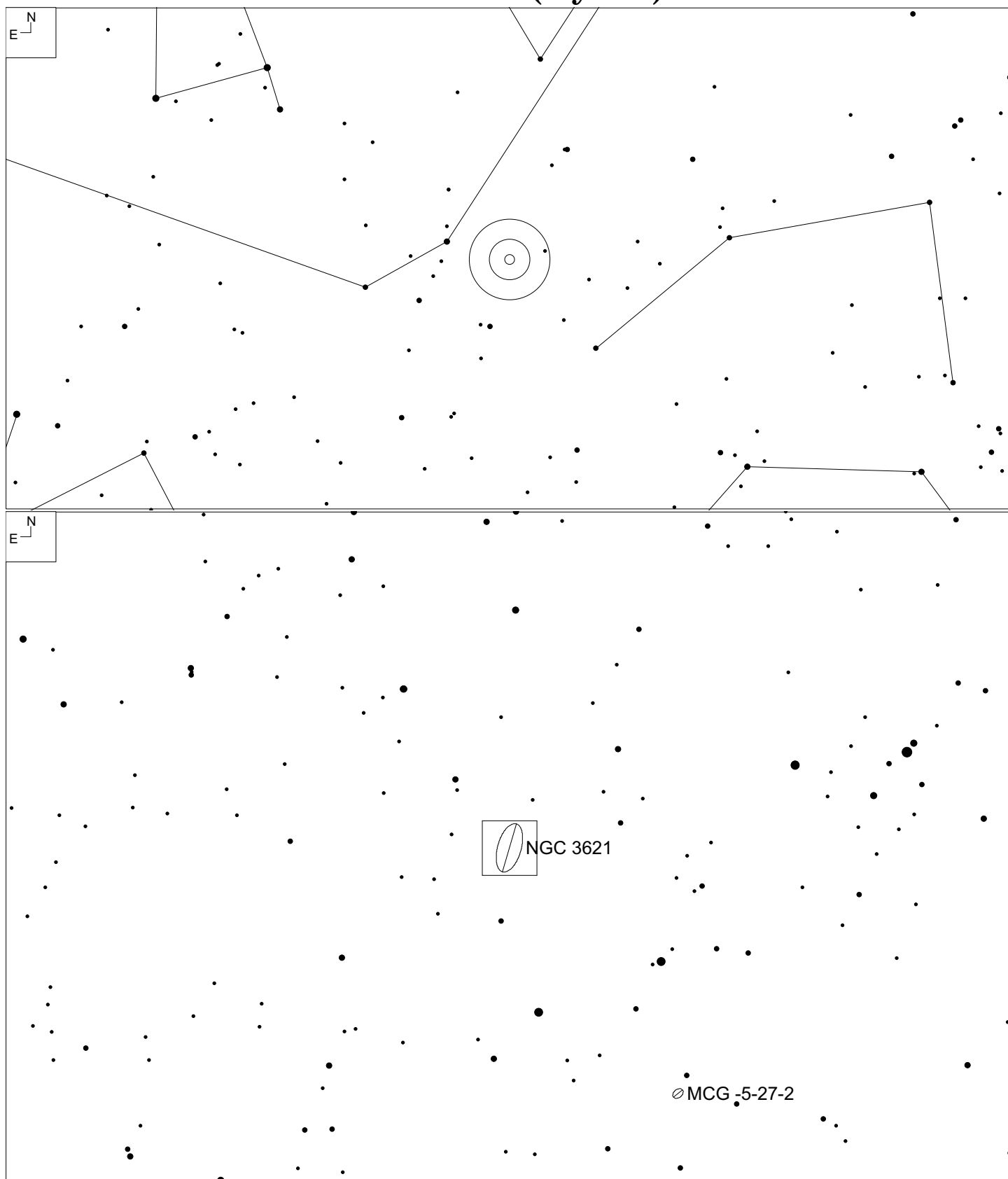


NGC 2835 is a type SAB(rs)c barred spiral galaxy sitting 34 mly away in Hydra.

Glahn detected one main SFR to the north of the center with his 20" reflector as shown in this [sketch](#).

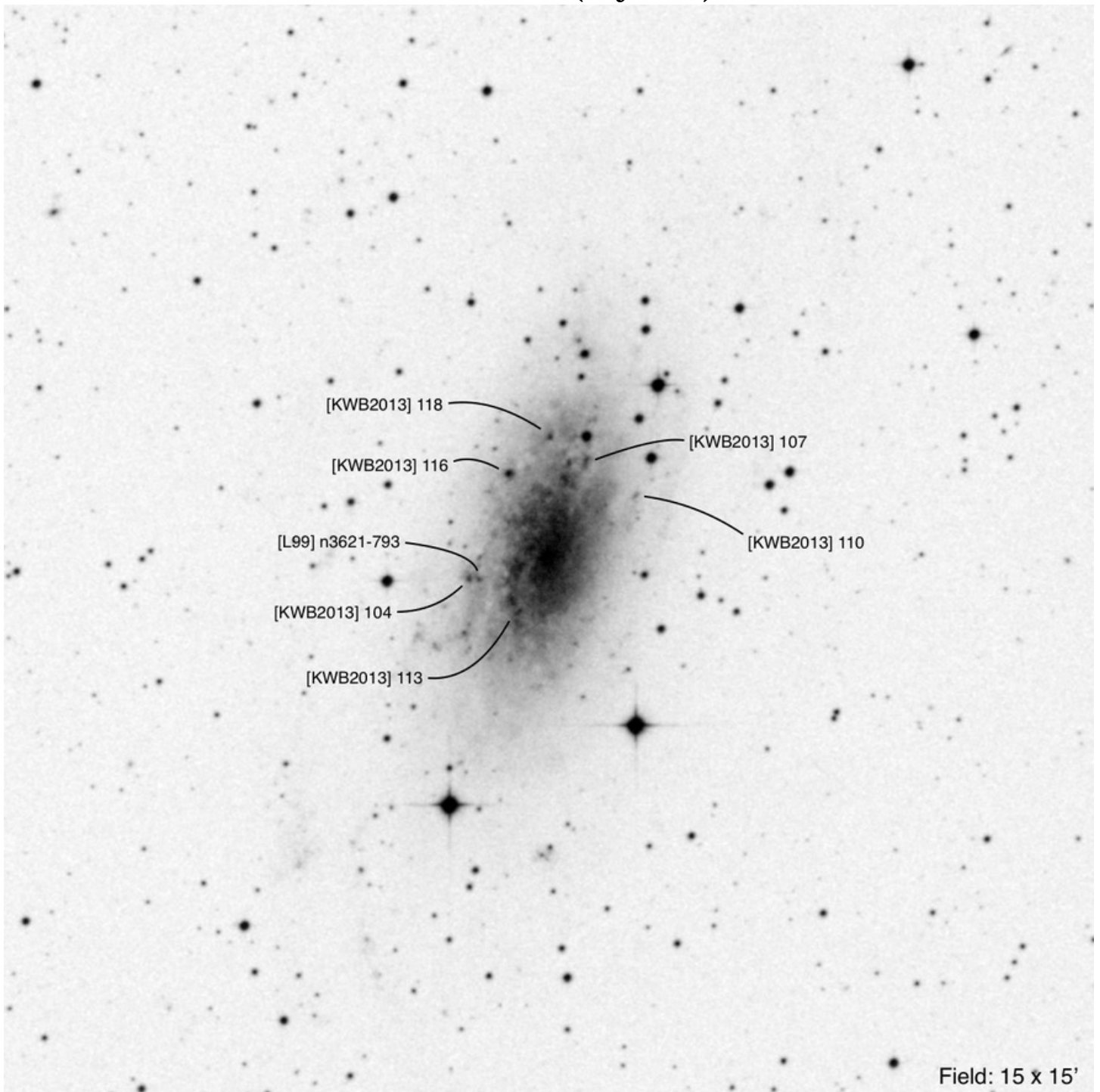
Hubble Space Telescope [image](#).

NGC 3621 (Hydra)



Object	RA	Dec	Mag	Size	iSDA
NGC 3621	11 18 16.5	-32 48 51	9.6v	11.0 x 4.8'	82

NGC 3621 (Hydra)



NGC 3621 is a type SA(s)d late type spiral galaxy that is about 24 mly away and 86 kly across.

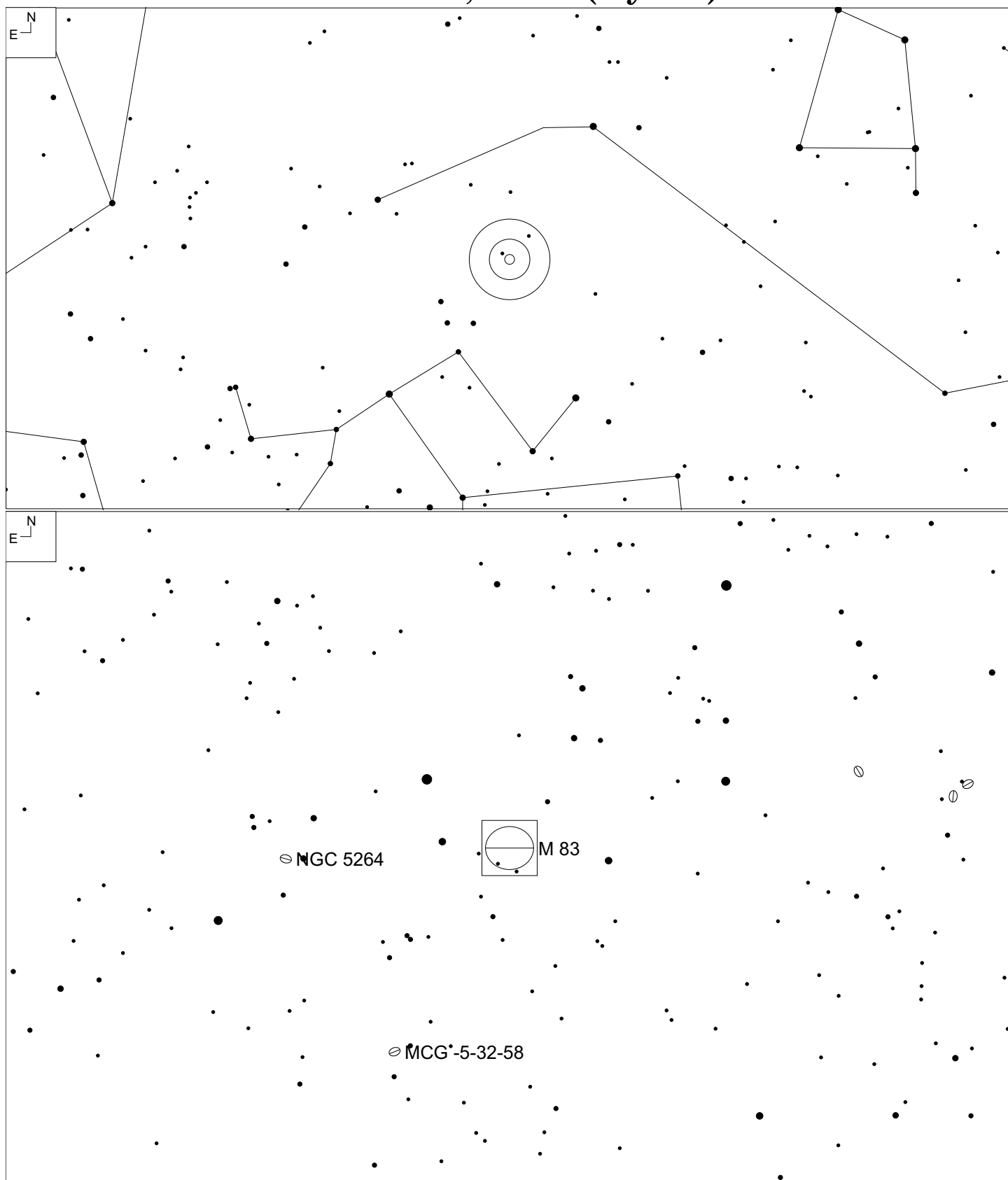
H II region **[KWB2013]** annotations from Khramtsova, M.S., D.S. Wiebe, et al, "Polycyclic aromatic hydrocarbons in spatially resolved extragalactic star forming complexes" *Monthly Notices of the Royal Astronomical Society*, Volume 421, Issue 2 (May 2013): 2006-2016

Star cluster **[L99]** annotation from S.S. Larsen. "Young massive star clusters in nearby galaxies. II. Software tools, data reductions and cluster sizes," *Astronomy and Astrophysics Supplement*, Volume 139 (Oct 1999): 393-415

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3621](#).

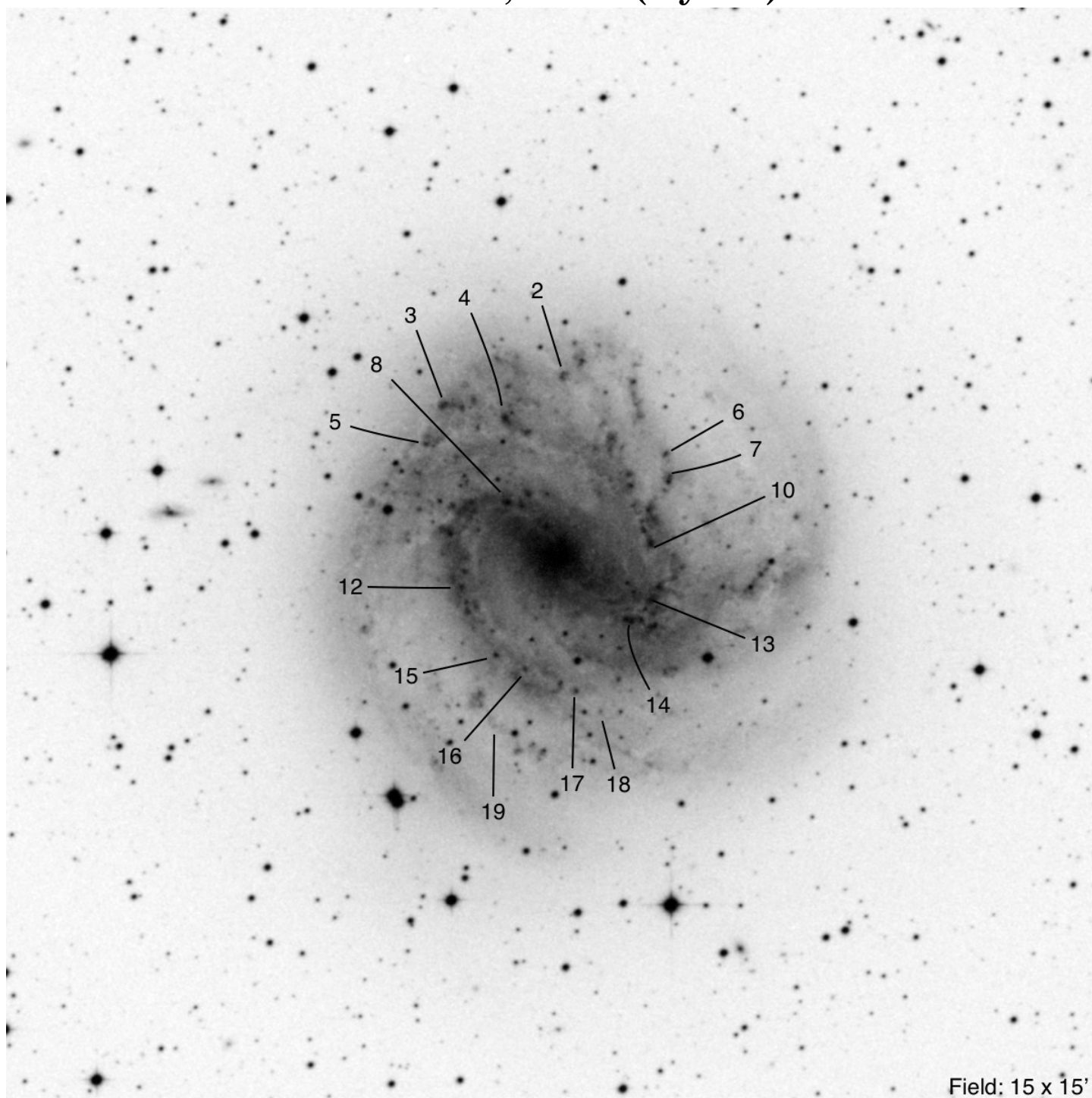
Hubble Space Telescope [image](#).

NGC 5236, M 83 (Hydra)



Object	RA	Dec	Mag	Size	iSDA
NGC 5236 (M 83)	13.37 00.9	-29 51 57	7.5v	12.8 x 11.4'	81

NGC 5236, M 83 (Hydra)



M83 is a type SAB(s)c galaxy that sits 20 mly away showing rich H II detail visible with smaller amateur telescopes.

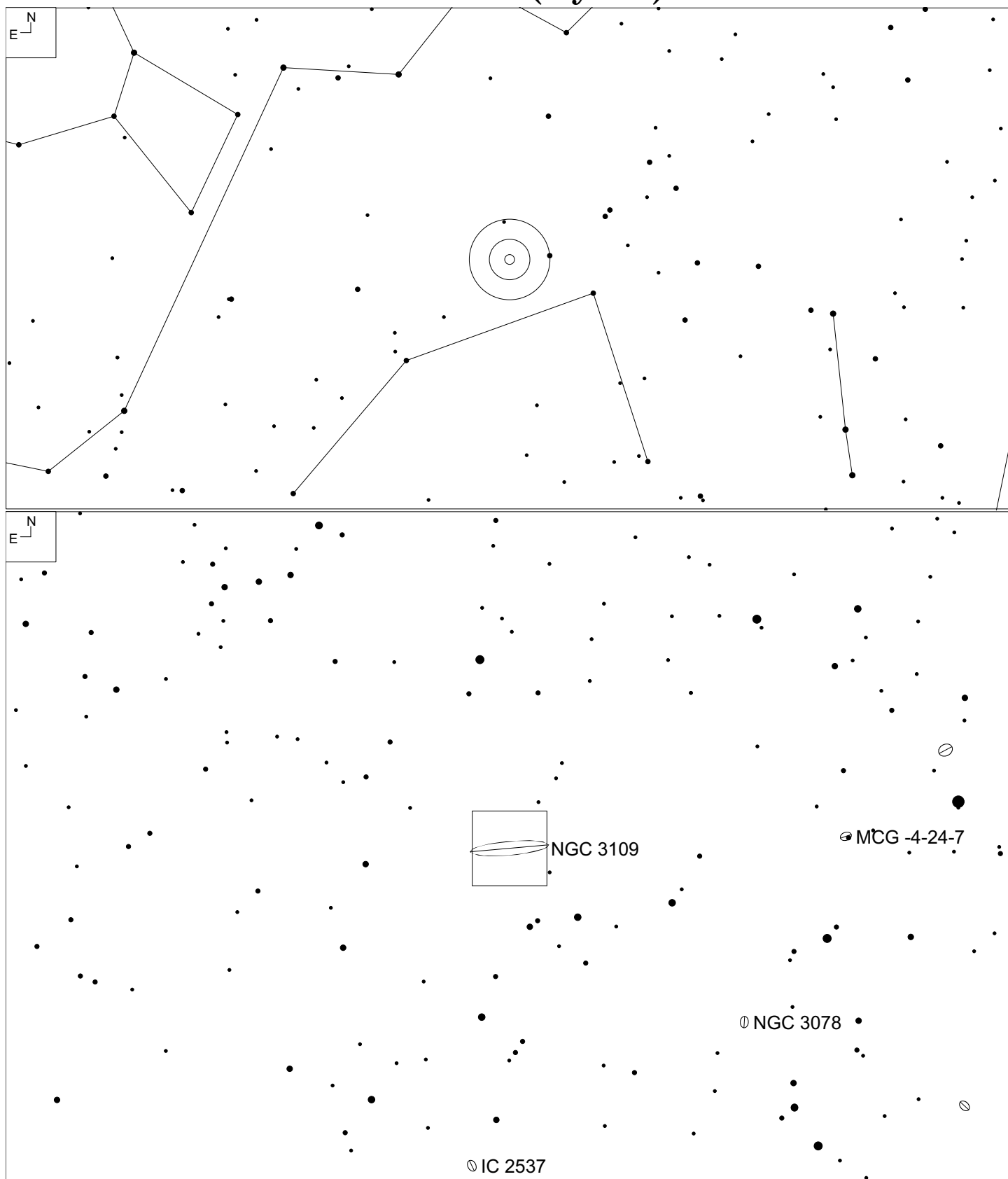
Annotations from F. Bresolin, D. Schaerer, et al, "A VLT Study of metal-rich extragalactic H II regions," *Astronomy & Astrophysics*, Volume 441, Number 3 (Oct 2005): 981-997.

For a detailed observing article, see Gottlieb, Steve. "Digging Deep in Messier 83" *Sky & Telescope* (May 2014), 60-61

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 5236](#)

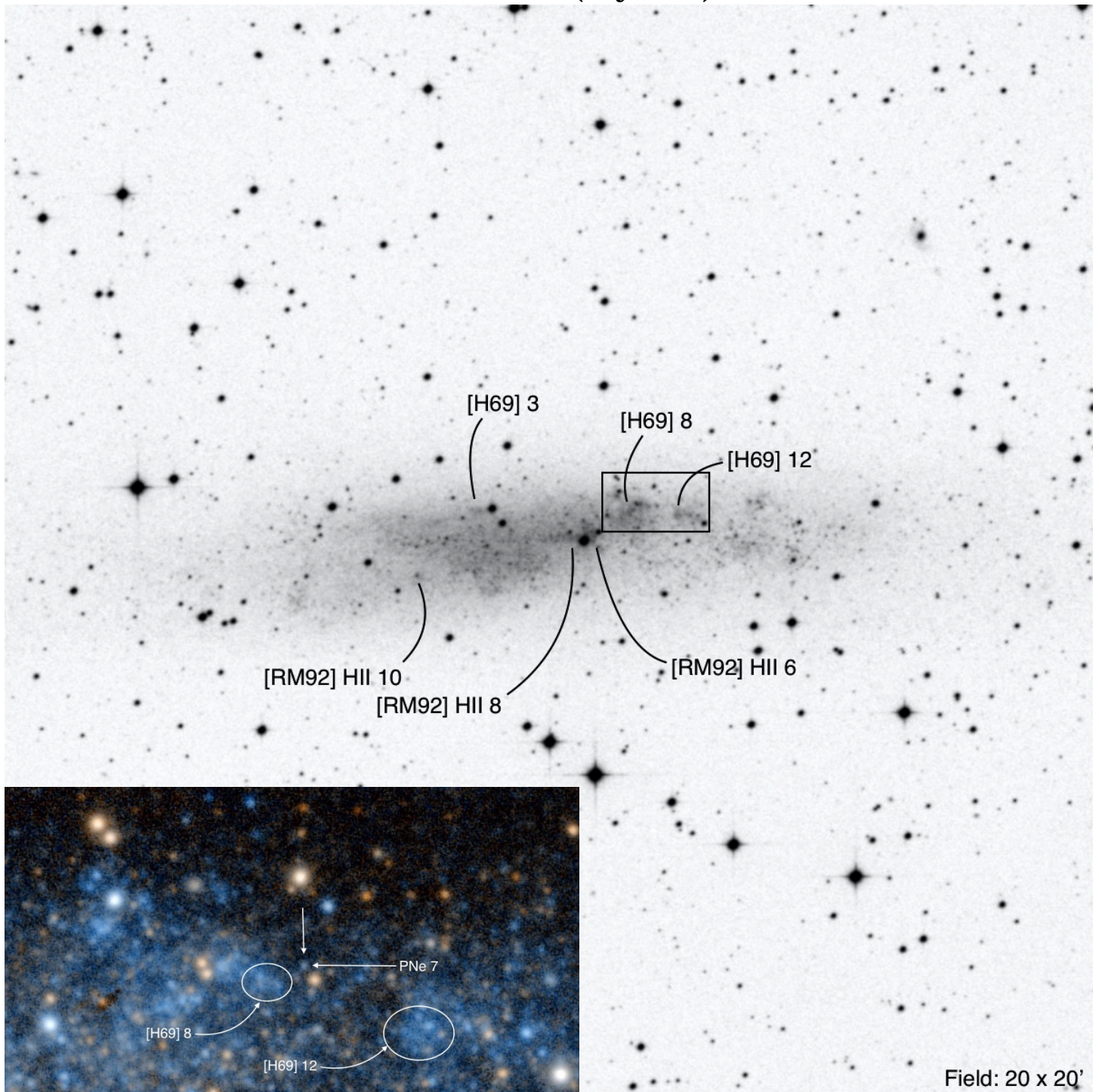
Uwe Glahn's excellent [sketch](#) with a 28" reflector.

NGC 3109 (Hydra)



Object	RA	Dec	Mag	Size	iSDA
NGC 3109	10 03 05.8	-26 09 39	10.7	19.1 x 3.7'	82, 83

NGC 3109 (Hydra)



Field: 20 x 20'

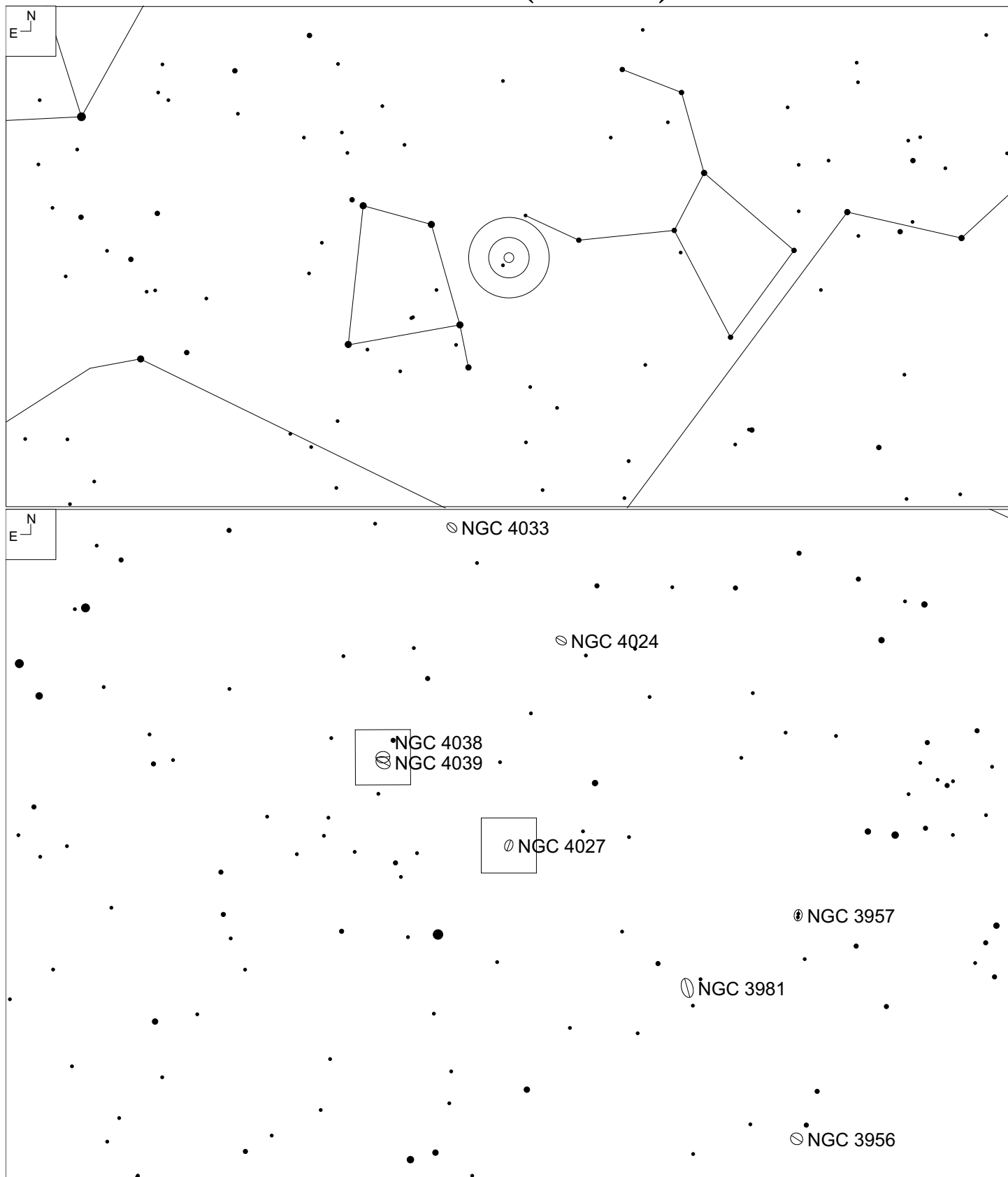
NGC 3109 is a type SB(s)m small galaxy that is just outside the Local Group at 4.3 mly away. In addition to the H II regions, there is potentially very difficult planetary nebula that may be observable with a very large telescope.

H II region **[RM92]** annotation from Michael G. Richer and Marshall L. McCall, "Planetary Nebulae and H II Regions in NGC 3109," *Astronomical Journal*, Volume 103, Number 1 (Jan 1992): 54-59.

For **PNe7**, the brightest planetary nebula in NGC 3109, see M. Pena, et al, "A catalog of planetary nebula candidates and HII regions in NGC 3109," *Astronomy & Astrophysics*, Volume 466 (2007): 75-82. Also see Michael G. Richer, Marshall L. McCall, "Planetary Nebulae and H II Regions in NGC 3109," *Astronomical Journal*, Volume 103 (Jan 1992): 54-59 for the original paper on planetary nebulae. See PanSTARRS inset. Note: PNe7 is my own designation for the planetary nebula.

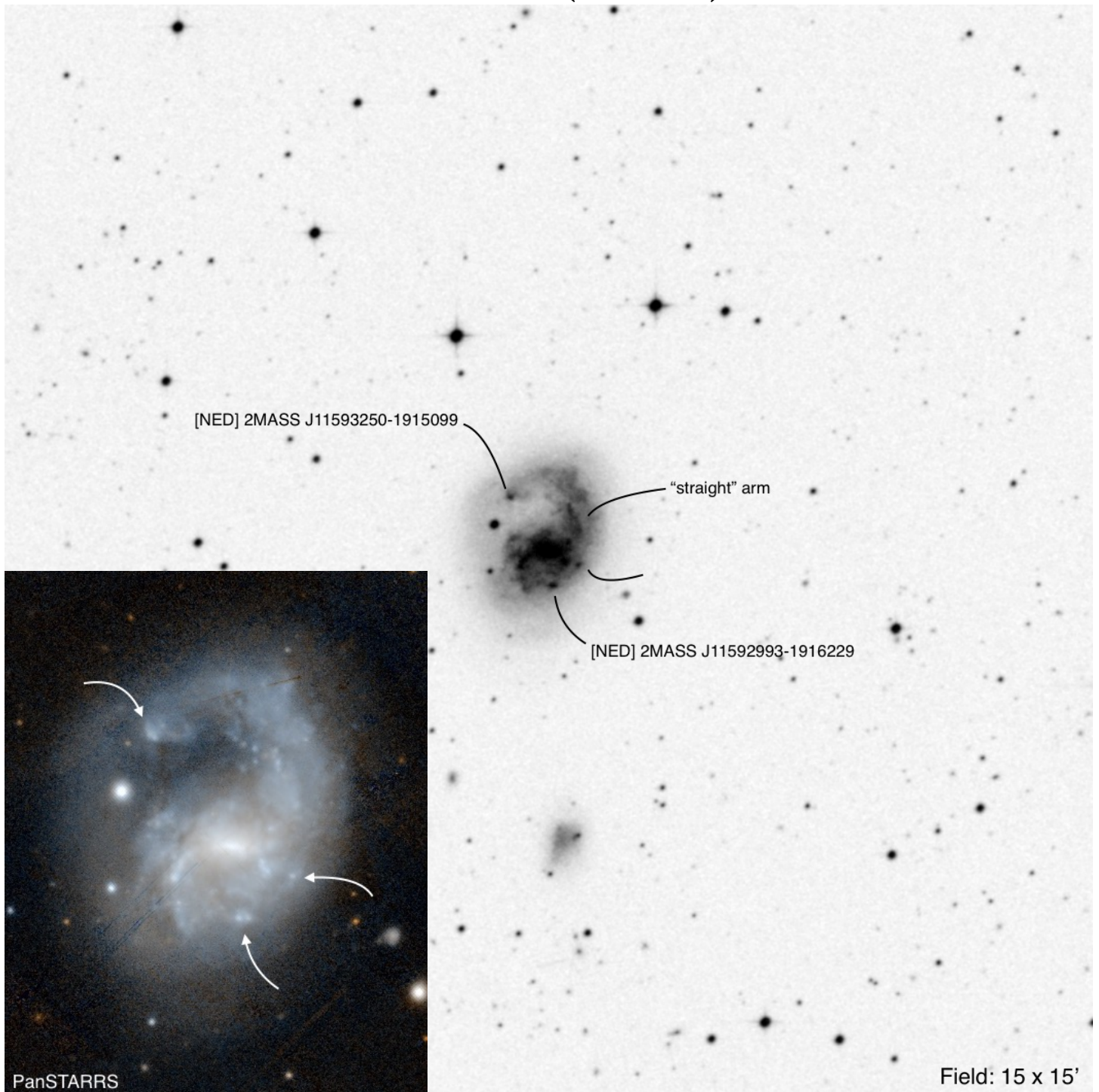
For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 3109](#).

NGC 4027 (Corvus)



Object	RA	Dec	Mag	Size	iSDA
NGC 4027	11 59 30.2	-19 15 15	11.1v	2.8 x 2.5'	69, 70

NGC 4027 (Corvus)



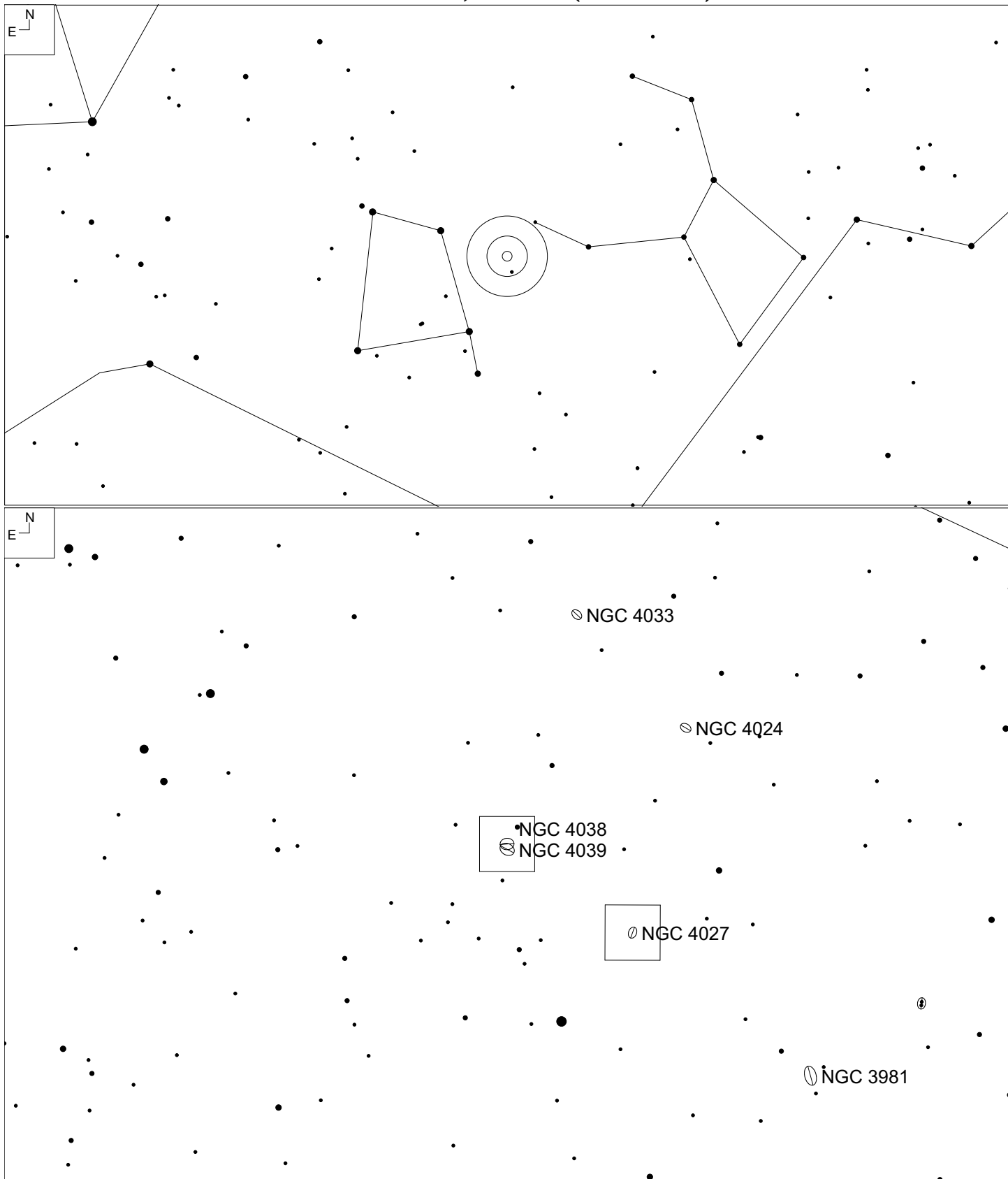
NGC 4027 is a type SB(s)dm small barred spiral galaxy that shows a weird asymmetrical huge arm. It lies 83 mly away towards west Corvus near the border with Crater.

The distortion of the one-armed galaxy is likely due to the interaction with its companion 4' to the south. See Bikram Phookun, et al, "NGC 4027: an Interacting One-armed Spiral Galaxy with a Warped Ring," *Astrophysical Journal*, Volume 400 (Dec 1992): 516-527.

For observing notes with a 24" telescope, see Steve Gottlieb's notes: [NGC 4027](#)

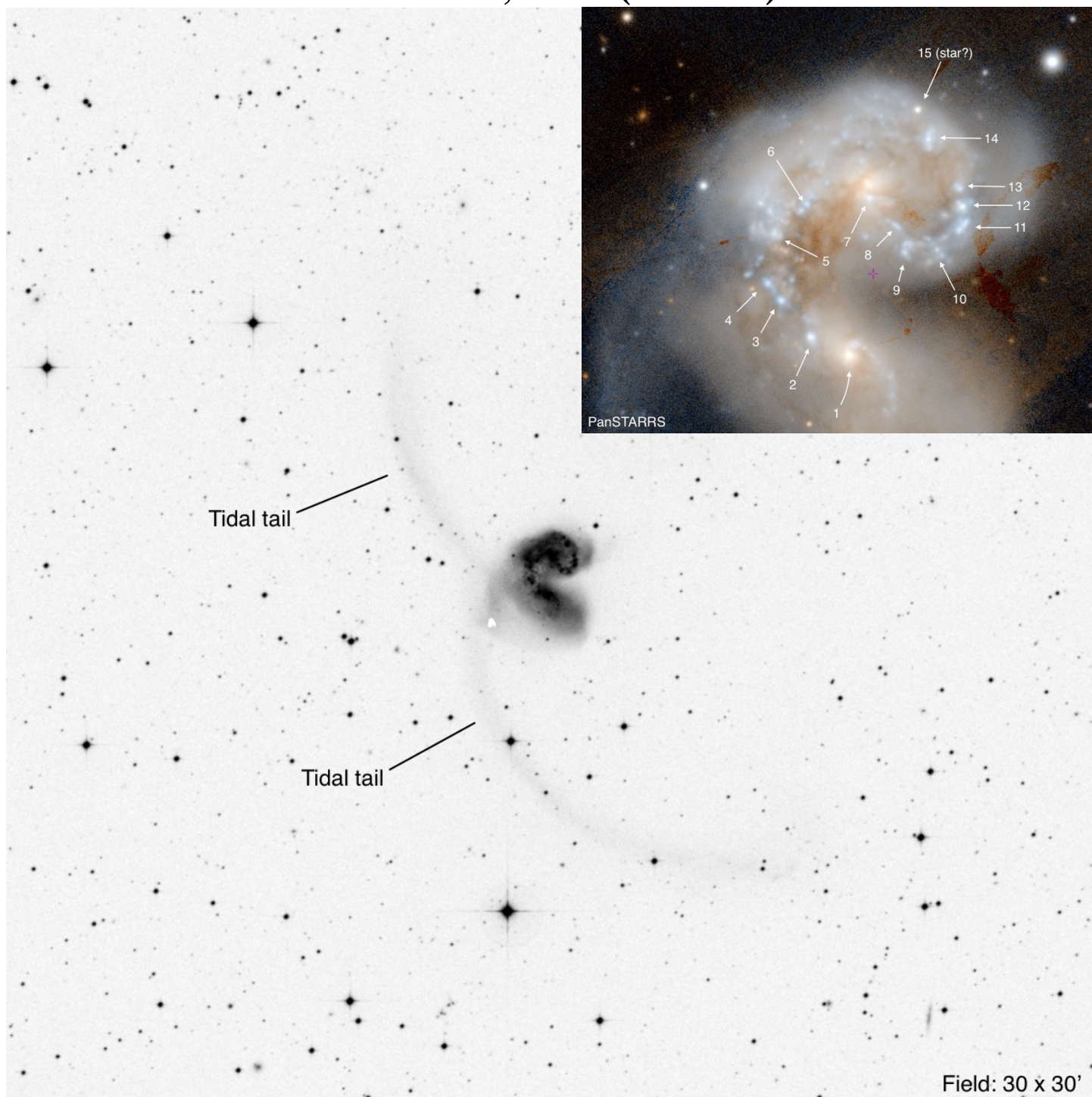
Also see Glahn's [sketch](#) with a 16" reflector.

NGC 4038, 4039 (Corvus)



Object	RA	Dec	Mag	Size	iSDA
NGC 4038	12 01 53.0	-18 52 03	10.9p	3.7 x 1.7'	69, 70
NGC 4039	12 01 53.8	-18 53 05	11.1p	4.0 x 2.2'	

NGC 4038, 4039 (Corvus)



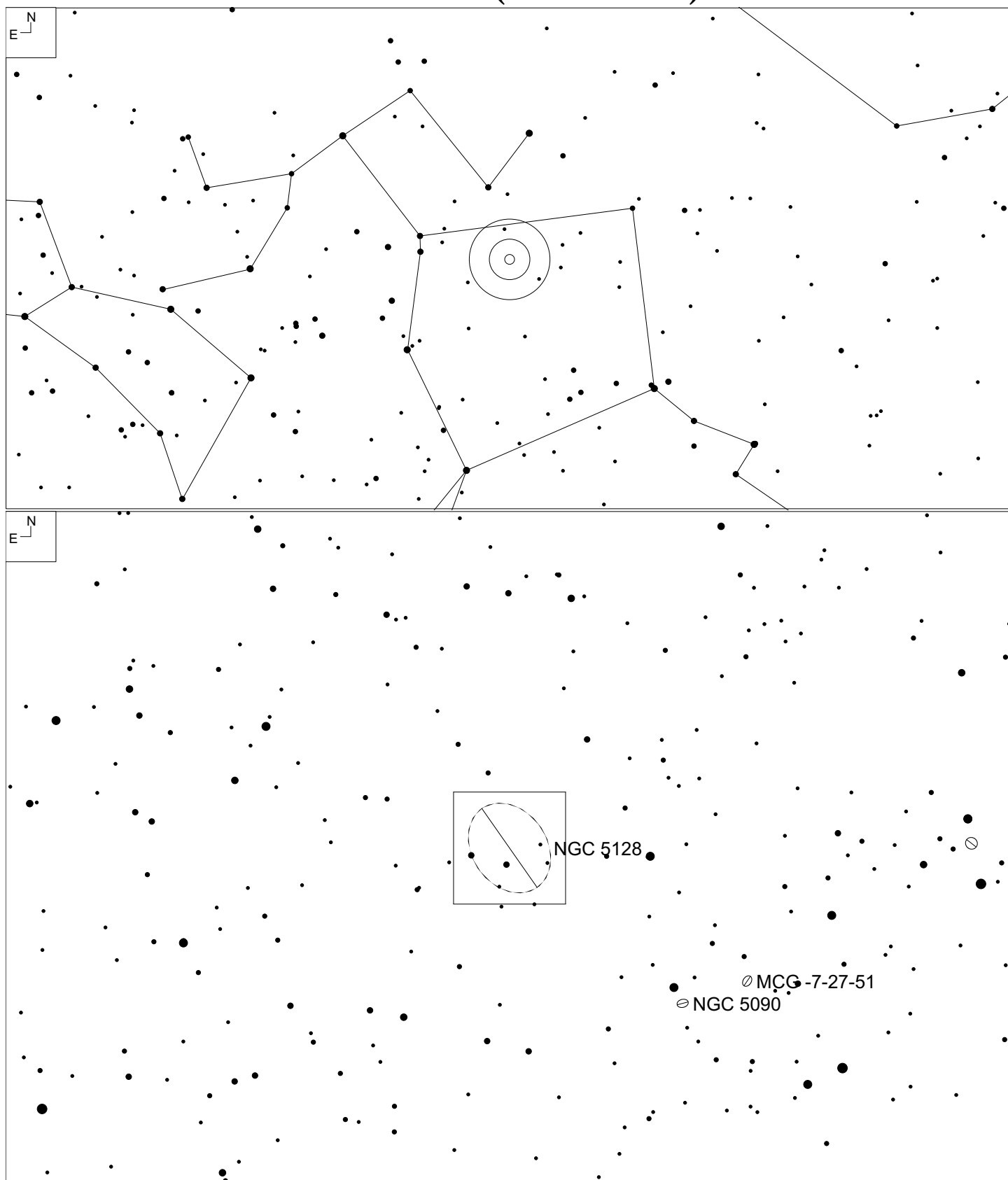
NGC 4038 and 4039 are the famous Antennae Galaxies which are interacting and spewing out two long curved streams of stars giving it the name. It lies 45 mly away.

V. G. Metlov, "Giant H II regions in the interacting galaxies NGC 4038-4039," *Soviet Astronomy*, Volume 22 (Nov-Dec 1978): 660-663. See inset for detailed annotations. Inset is from PanSTARRS image on the CDS tool.

For observing notes with 24, 48 and 82" telescopes, see Steve Gottlieb's notes: [NGC 4038/9](#)

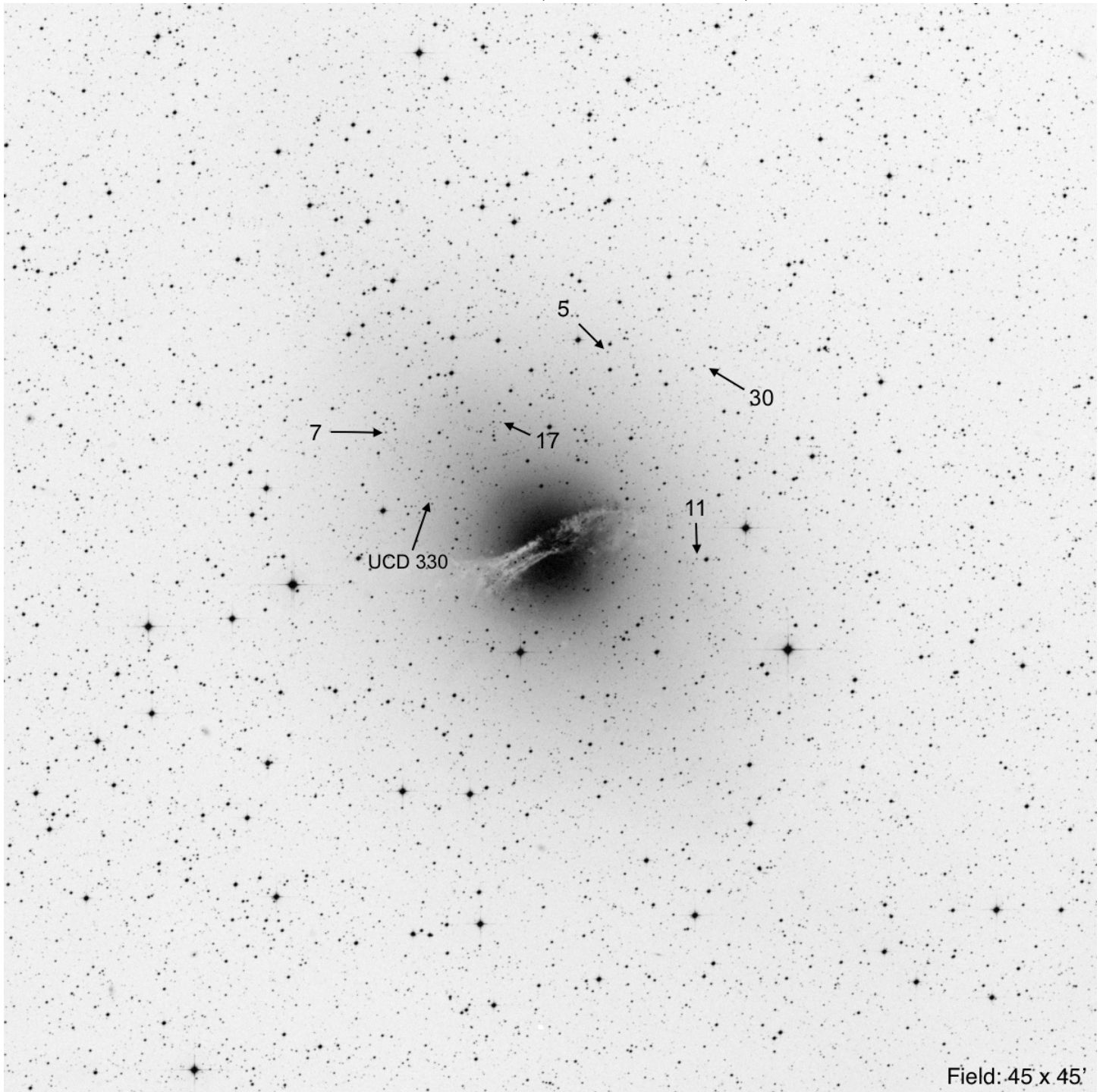
Glahn picked up incredible detail in this sketch with a [28" reflector](#) and a [14.5" reflector](#).

NGC 5128 (Centaurus)



Object	RA	Dec	Mag	Size	iSDA
NGC 5128	13 25 27.8	-43 01 21	6.8	25.6 x 20.0'	93

NGC 5128 (Centaurus)



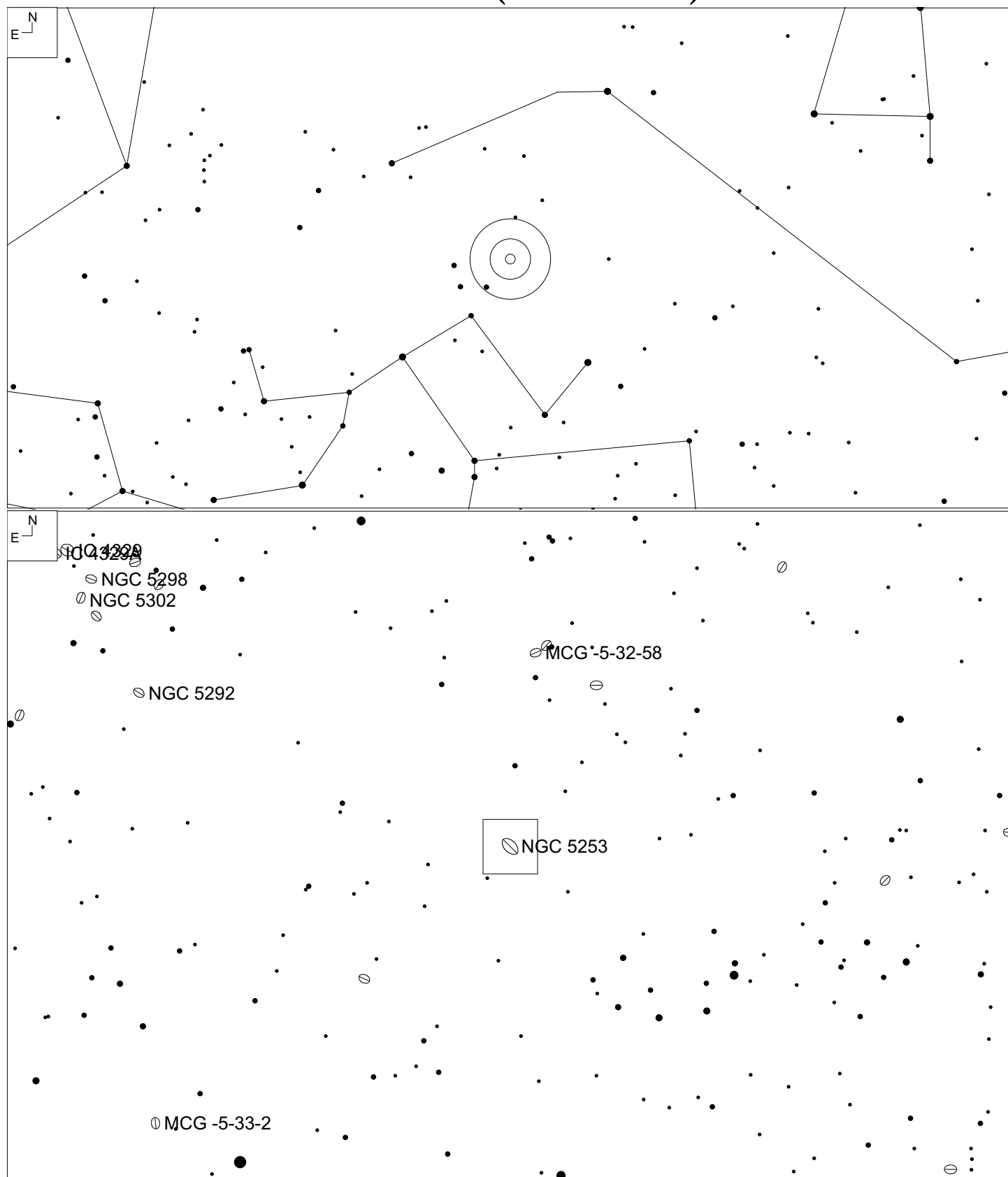
NGC 5128 is a huge radio elliptical galaxy that probably has one of the largest known globular cluster systems. One source indicated that there are about 2,000 globular clusters.

S.van den Bergh, et al. "Observations of the brightest globular clusters associated with NGC 5128" *Astronomical Journal*, Volume 86 (Jan 1981), 24-29. Annotations of the brightest globular clusters are notated by numbers.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 5128](#).

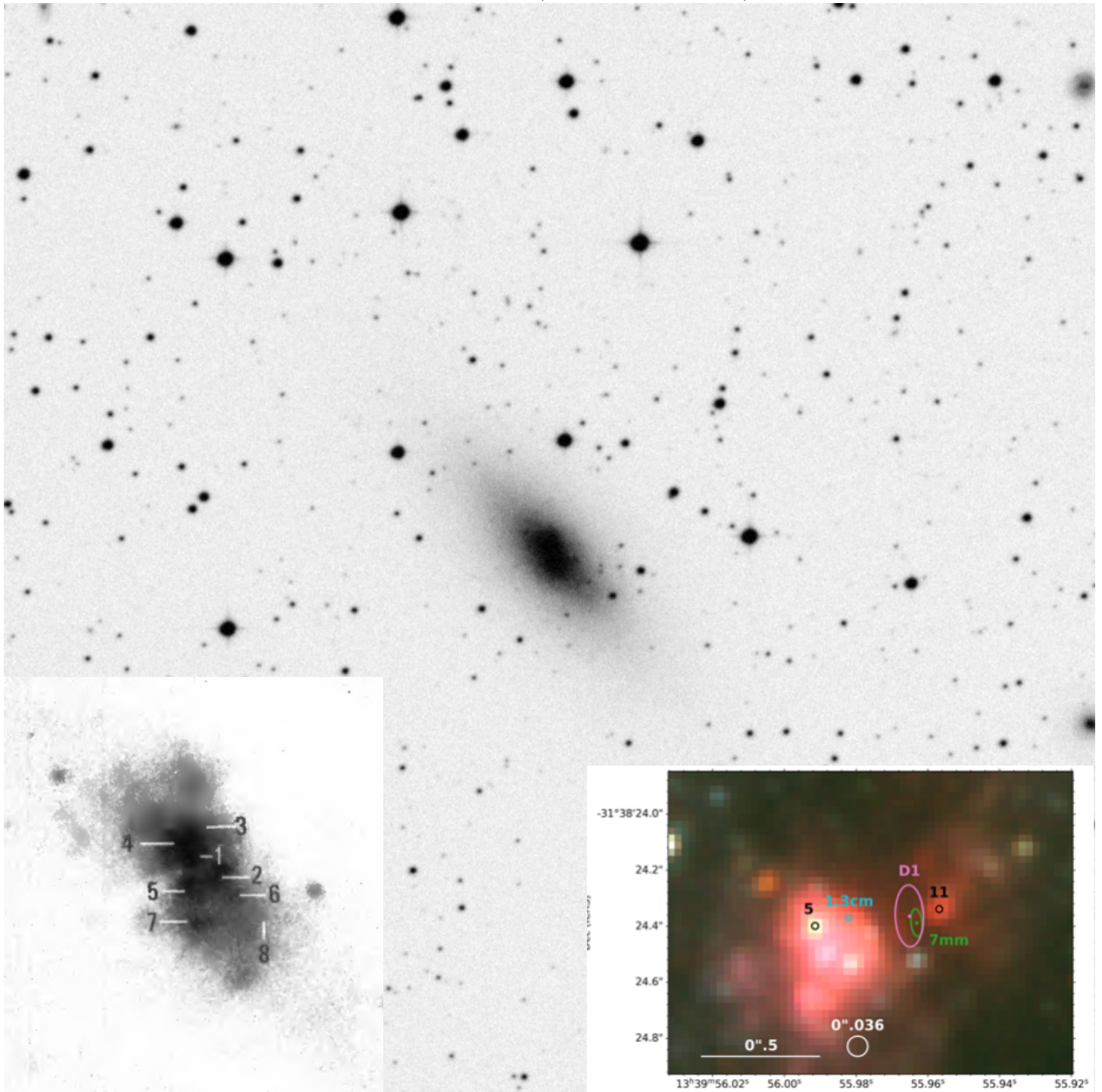
See Glahn's [sketch](#) showing incredible detail with a 12" reflector.

NGC 5253 (Centaurus)



Object	RA	Dec	Mag	Size	iSDA
NGC 5253	13 39 56.0	-31 38 24	10.9	5.0 x 1.9'	81

NGC 5253 (Centaurus)

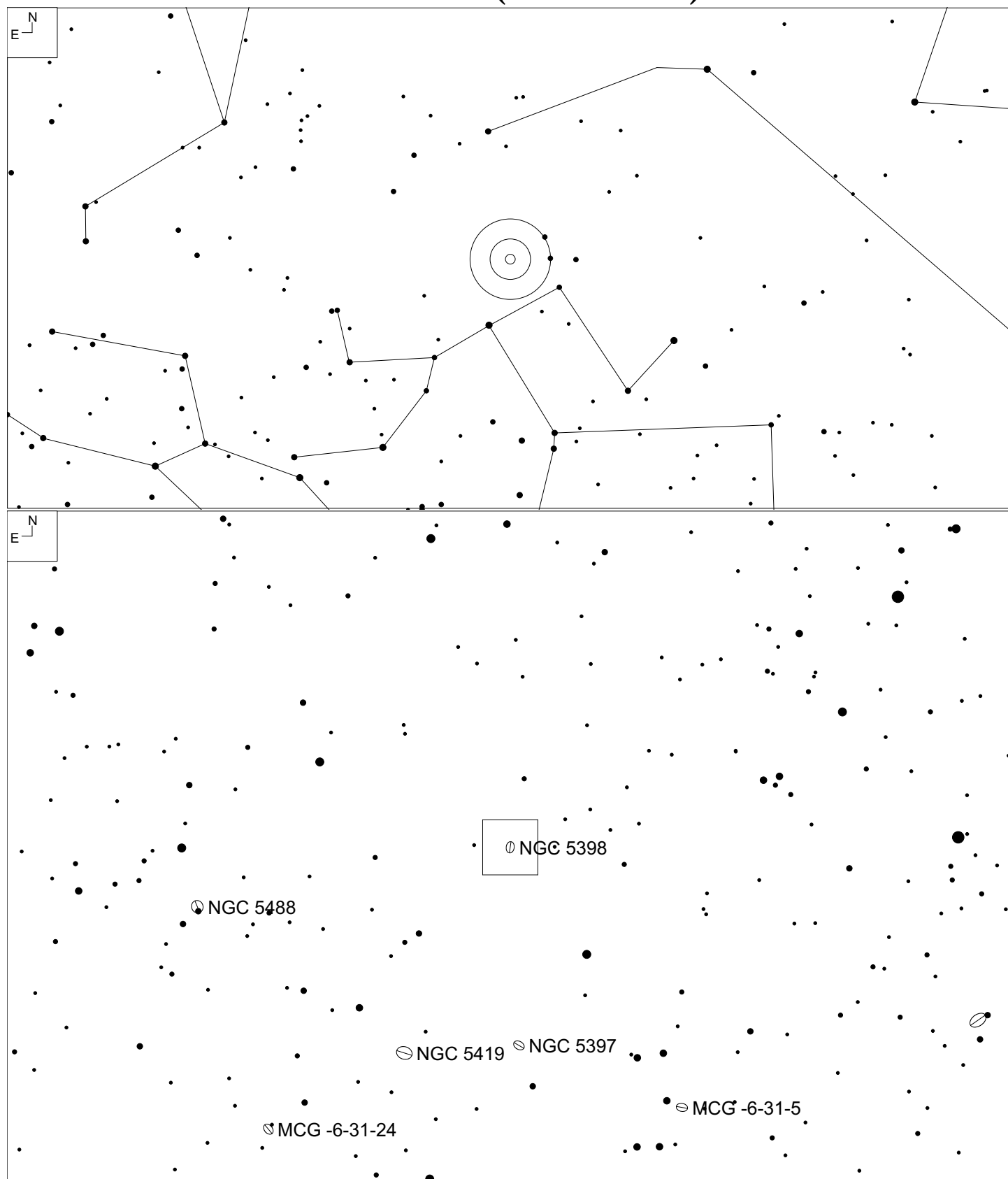


NGC 5253 is a type Im pec dwarf irregular galaxy that sits 11 mly away. It is part of the M83 subgroup.

The H II regions identified by Webster are near the center, see B.L. Webster and M.G. Smith. “Abundance gradients in galaxies in the Sculptor and Centaurus groups,” *Monthly Notices of the Royal Astronomical Society*, Volume 204 (Aug 1983): 743-763. Note: The inset is from page 747 in Webster’s article above.

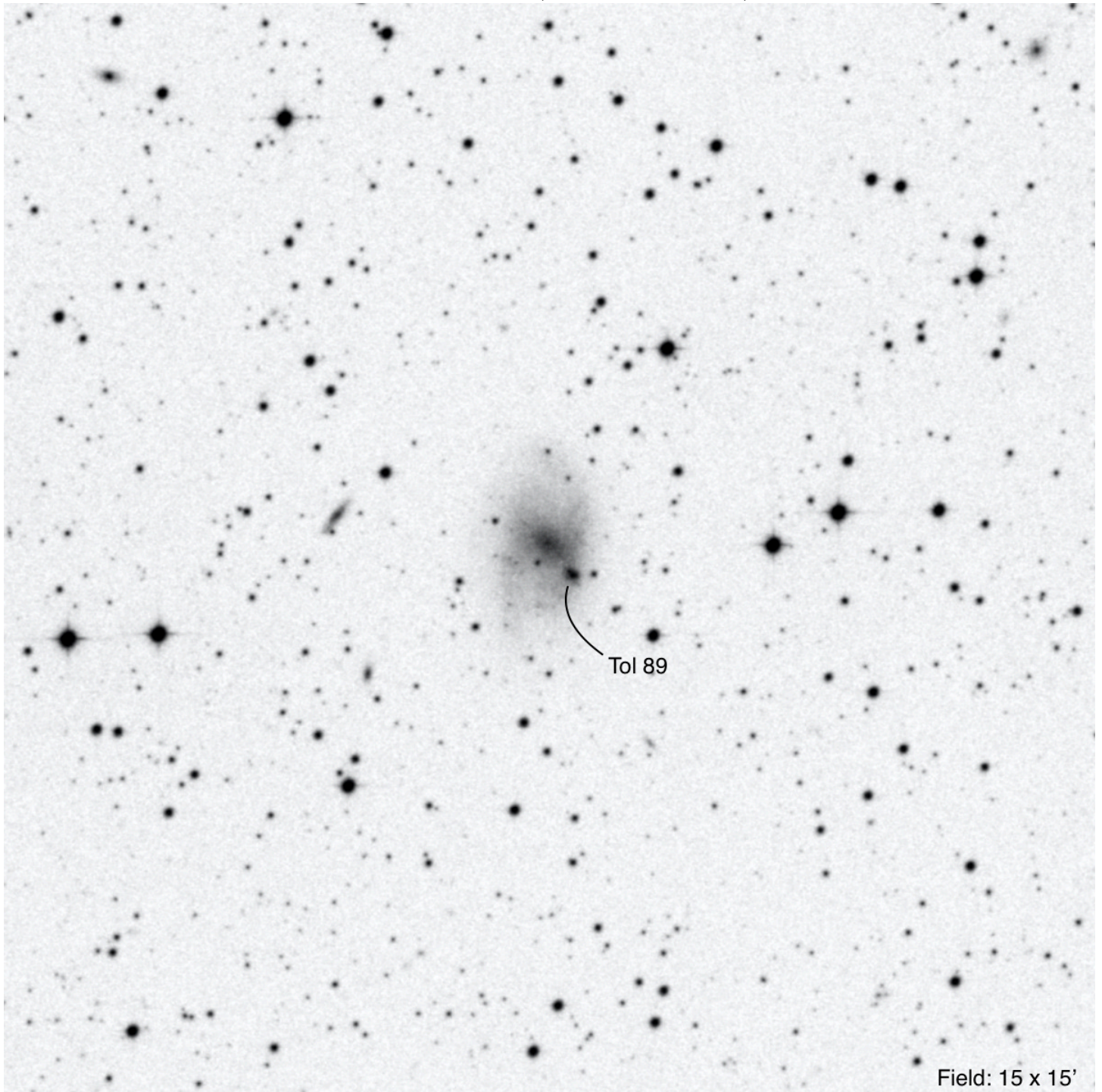
Super star clusters were detected recently by Calzetti, see D. Calzetti, et al. “The Brightest Young Star Clusters in NGC 5253,” *The Astrophysical Journal*, Volume 811, Number 2, (Sept 2015). Smith (2022) wrote an updated article on SSC #5 and #11, see Linda J. Smith, et al, “The Three Young Nuclear Super Star Clusters in NGC 5253,” *The Astrophysical Journal*, Volume 896, Number 1, (June 2022). Unfortunately, SDSS and PanSTARRS images were not available for this region of the sky, the bottom right inset was sourced from, Smith (2022), hopefully to illustrate where they are located. #5 is on the NNE edge of the core. Cluster #5 apparently was the brightest SSC and Gottlieb observed it with a 48” telescope, see Steve Gottlieb’s notes: [NGC 5253](#).

NGC 5398 (Centaurus)



Object	RA	Dec	Mag	Size	iSDA
NGC 5398	14 01 21.6	-33 03 50	12.4v	2.8 x 1.6'	80, 81

NGC 5398 (Centaurus)



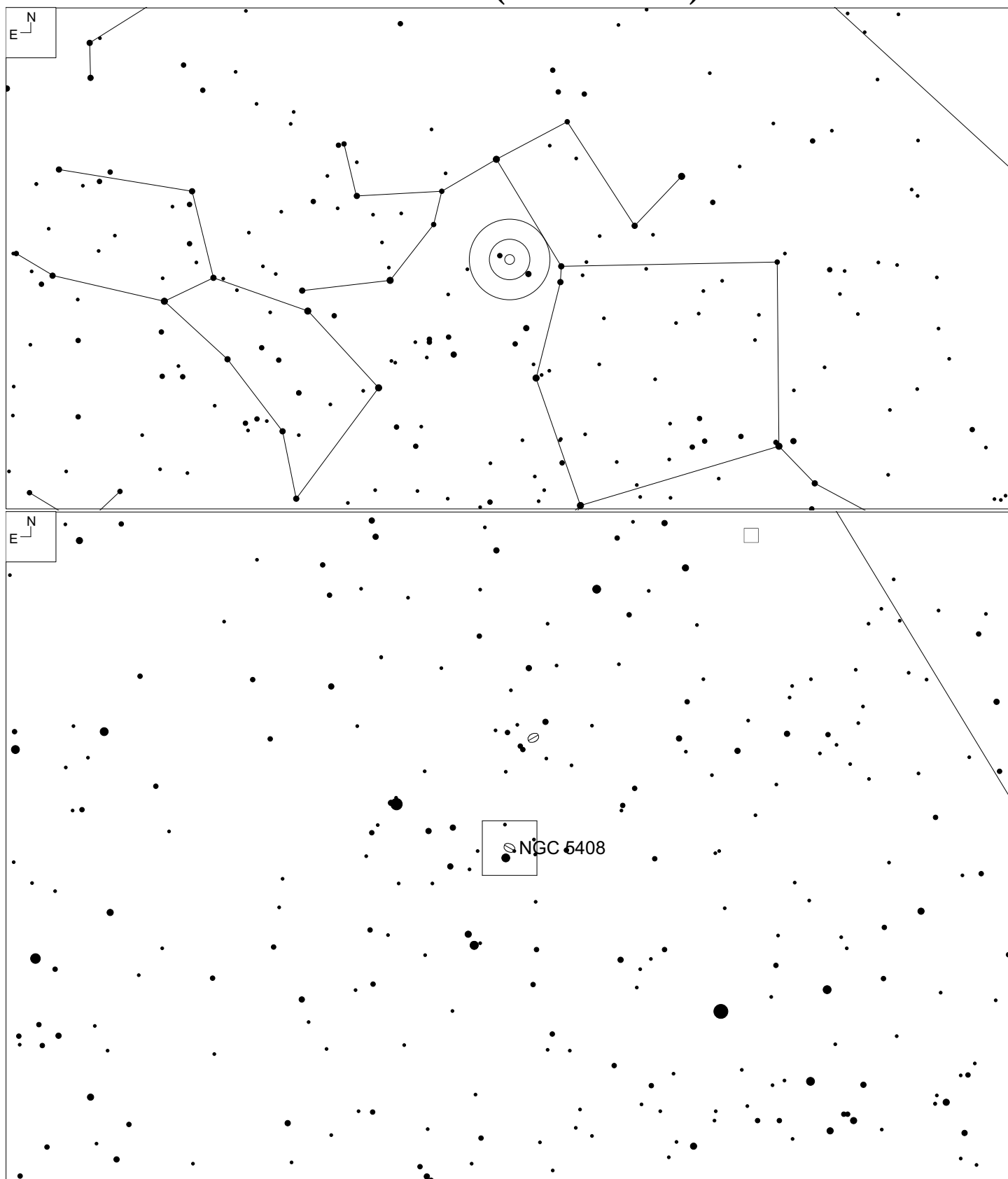
NGC 5398 is a type SB(rs)dm dwarf spiral galaxy that sits 28 mly away. A dominant H II region punctuates the SW end of the bar.

Fabrizio Sidoli, Linda J. Smith, and Paul A. Crowther, “The Massive Star Population in the Giant H II Region Tol 89 in NGC 5398,” *Monthly Notices of the Royal Astronomical Society*, Volume 370, Issue 2(Aug 2006), 799-818.

For an observing article, see Scott Harrington. “Star-Forming Regions in Faraway Galaxies” *Sky & Telescope* (May 2021), 22-29.

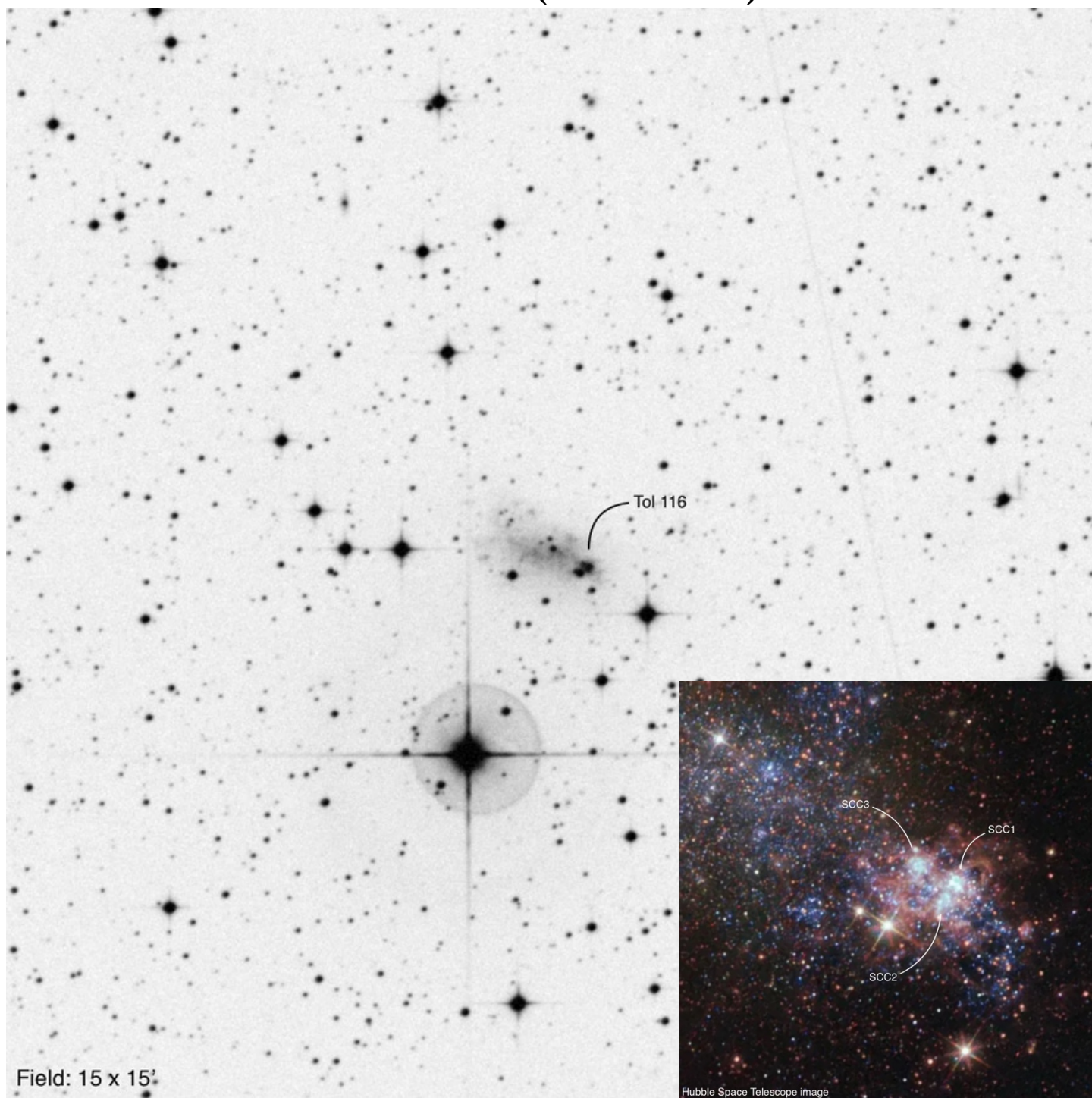
Hubble Space Telescope image of [NGC 5398](#)

NGC 5408 (Centaurus)



Object	RA	Dec	Mag	Size	iSDA
NGC 5408	14 03 20.9	-41 22 40	11.6	2.0 x 1.2'	92, 93

NGC 5408 (Centaurus)



NGC 5408 is a type IB(s)m small irregular galaxy with a huge H II region on one end. It sits 16 mly away in the direction of central Centaurus, which is not too far from the plane of the Milky Way. Imagine an observer from this small galaxy would see the Milky Way within 10-20 degrees of being edge on.

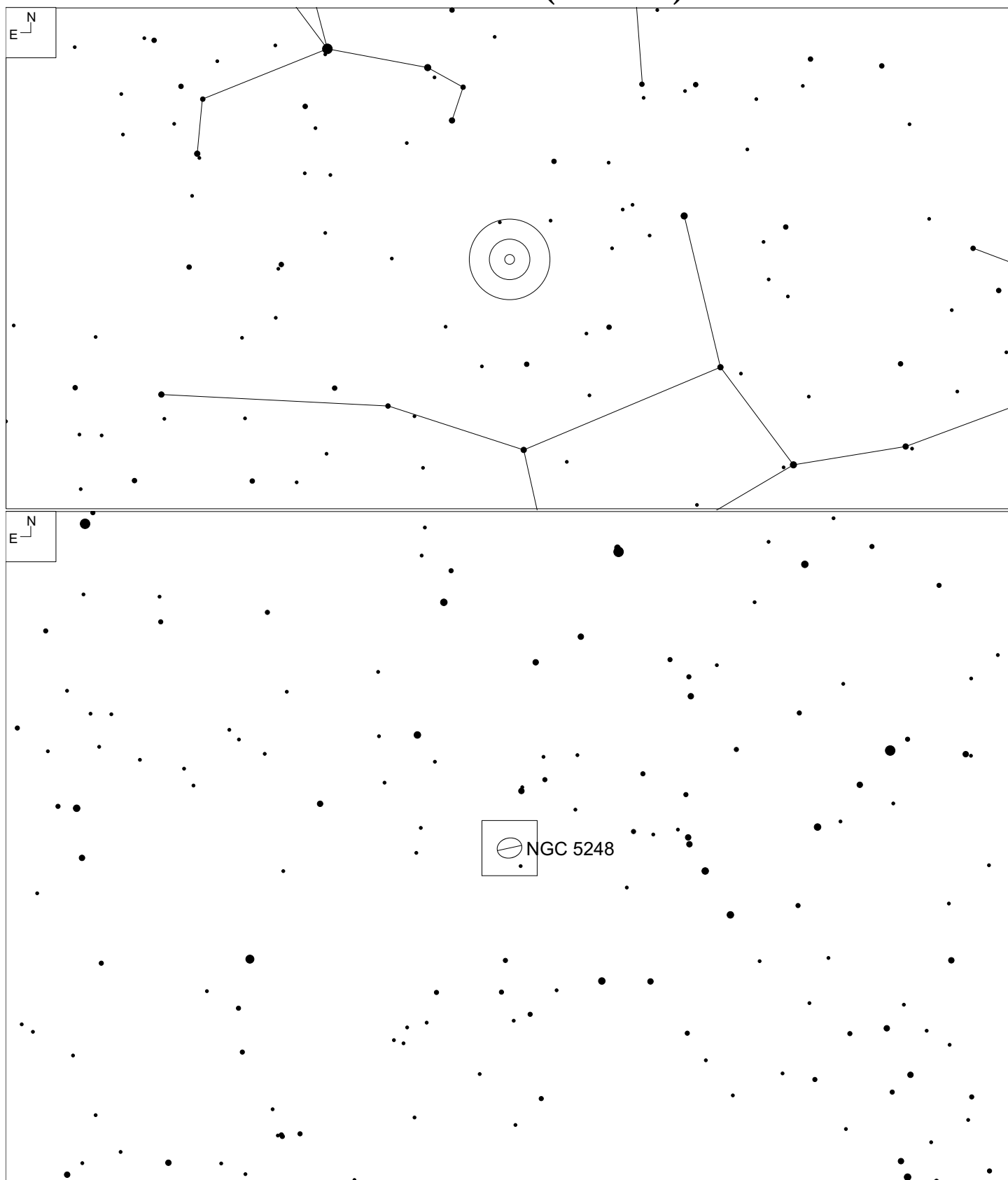
Three SSCs were detected and annotated as SSC1-3 in the Hubble Space Telescope image inset. The inset has been cropped and rotated such that north is up and aligned the DSS photo. See Ian R. Stevens, et al, "Radio observations of super star clusters in dwarf starburst galaxies," *Monthly Notice of the Royal Astronomical Society*, Volume 335, Issue 4 (Oct 2002): 1079-1084.

For an observing article, see Scott Harrington. "Star-Forming Regions in Faraway Galaxies" *Sky & Telescope* (May 2021), 22-29.

Glahn picked up two of the three super star clusters with a 28" reflector as shown in this [sketch](#).

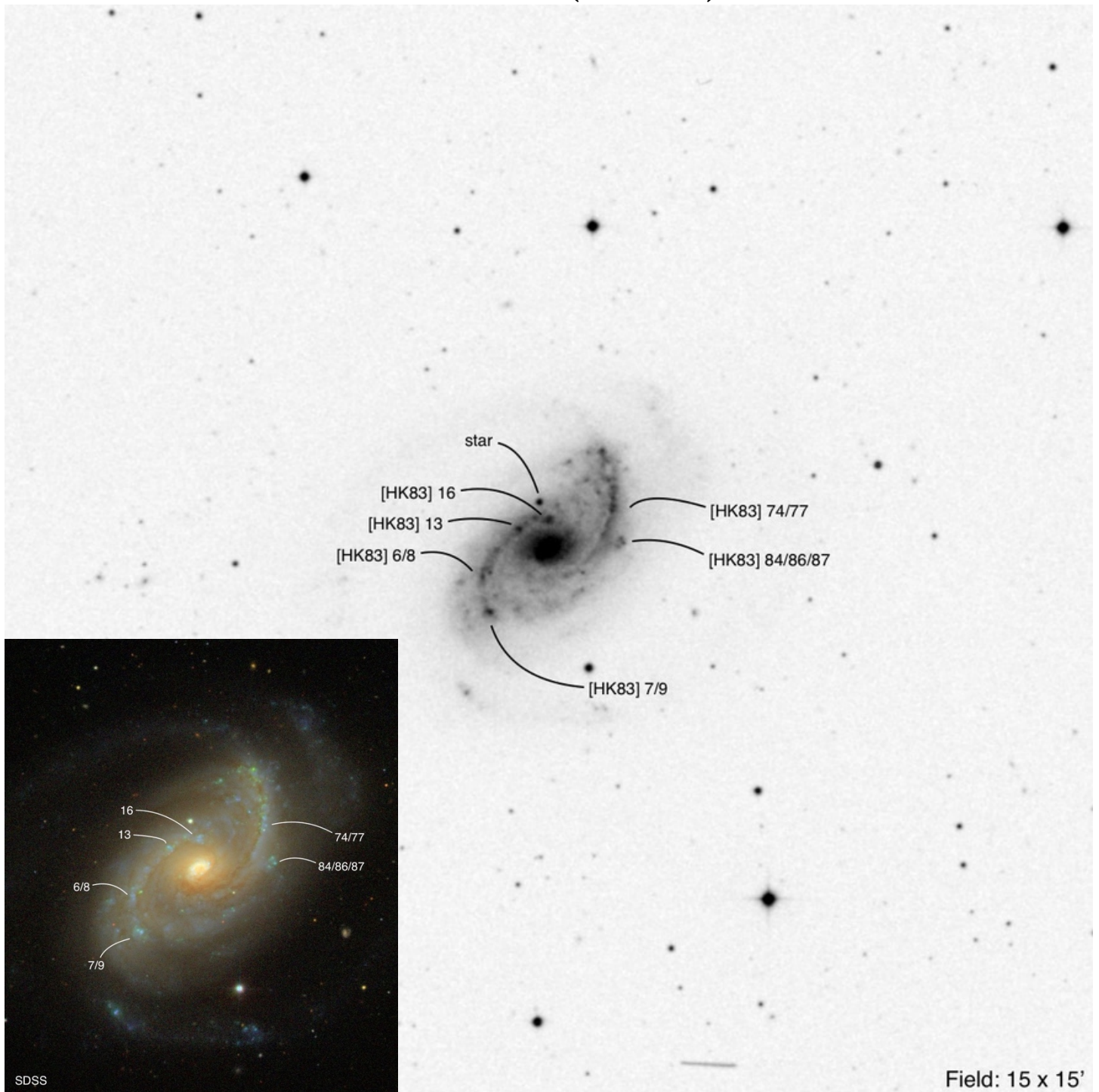
Cropped and rotated inset is from this [image](#) from the Hubble Space Telescope.

NGC 5248 (Boötes)



Object	RA	Dec	Mag	Size	iSDA
NGC 5248	13 37 32.3	+08 52 12	11.0	6.2 x 4.5'	45, 57

NGC 5248 (Boötes)



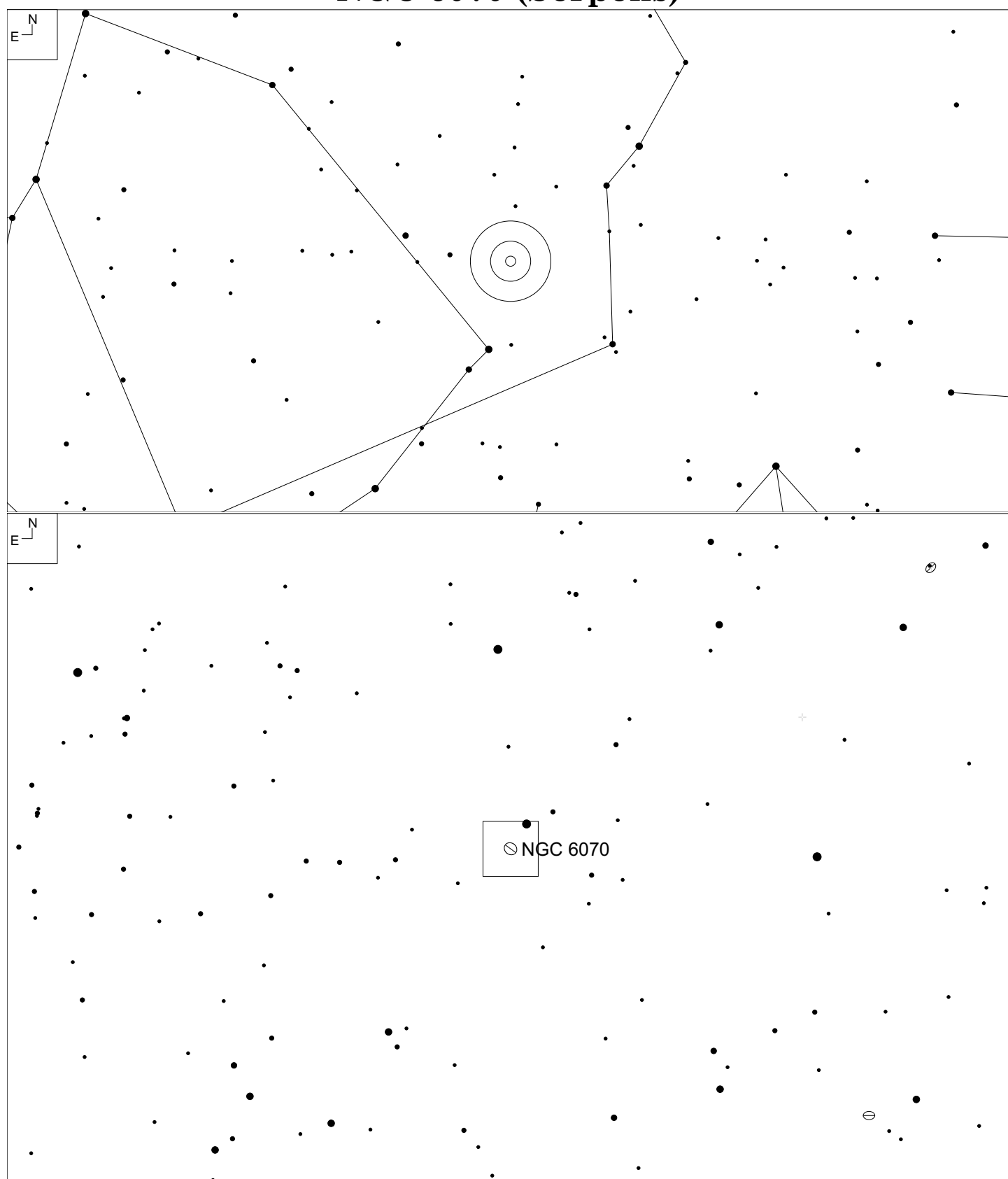
NGC 5248 is a type SAB(rs)bc galaxy that sits 59 mly distant near the southern border of Boötes with Virgo. Two arms, both with rich strings of H II regions which a number are observable.

See inset for SDSS with annotations. I have left out [HK83] for clarity.

For observing notes with a 48" telescope, see Steve Gottlieb's notes: [NGC 5248](#). Also see Glahn's [sketch](#) with a 16" reflector.

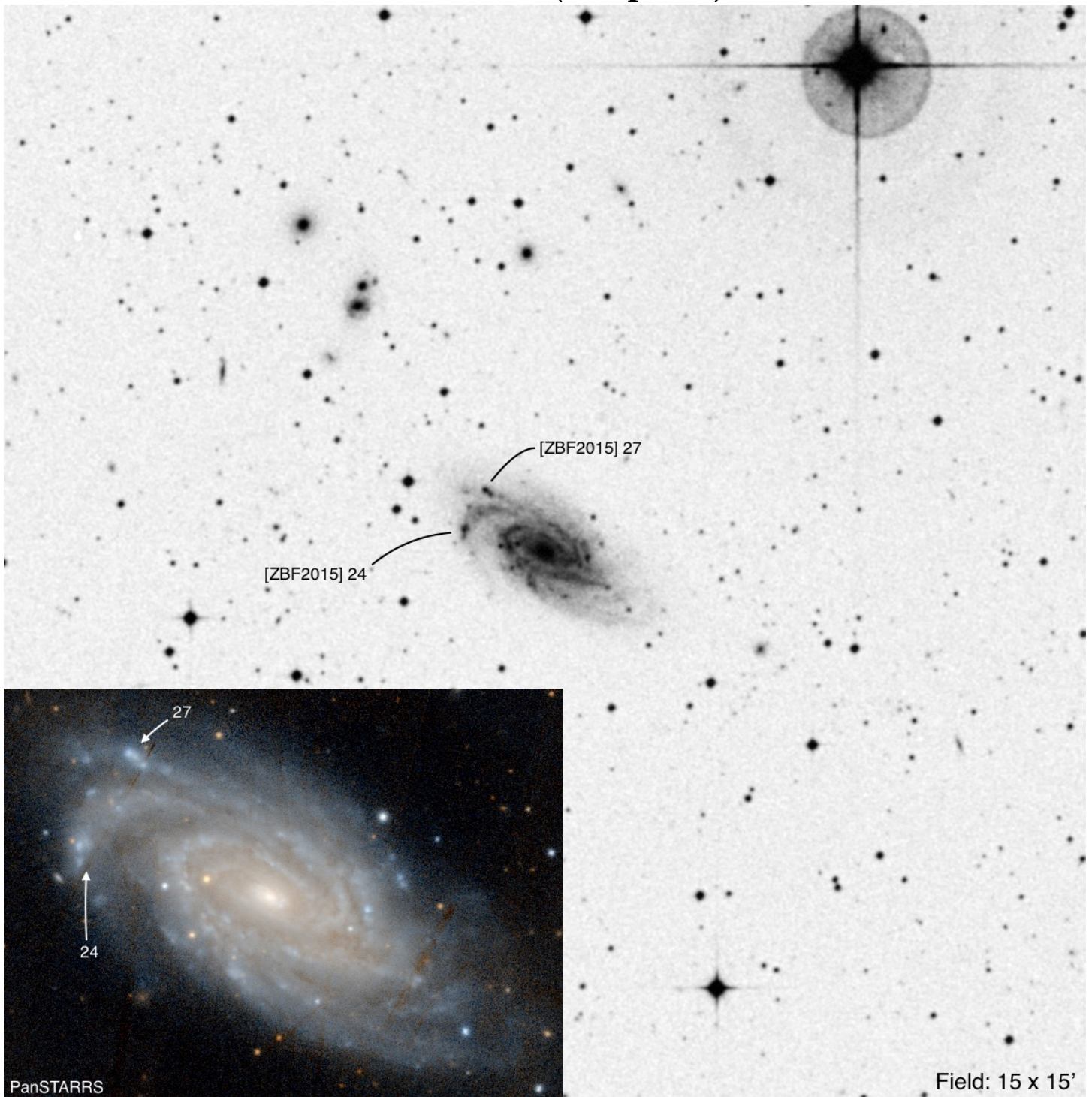
For more, see Jeff Kanipe and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 2: Aquila, Ara, Aries, Auriga, Boötes, Caelum*. (Richmond, VA: Willmann-Bell, Inc., 2015), 212-214.

NGC 6070 (Serpens)



Object	RA	Dec	Mag	Size	iSDA
NGC 6070	16 09 58.6	+00 42 32	11.8	3.5 x 1.9'	55

NGC 6070 (Serpens)

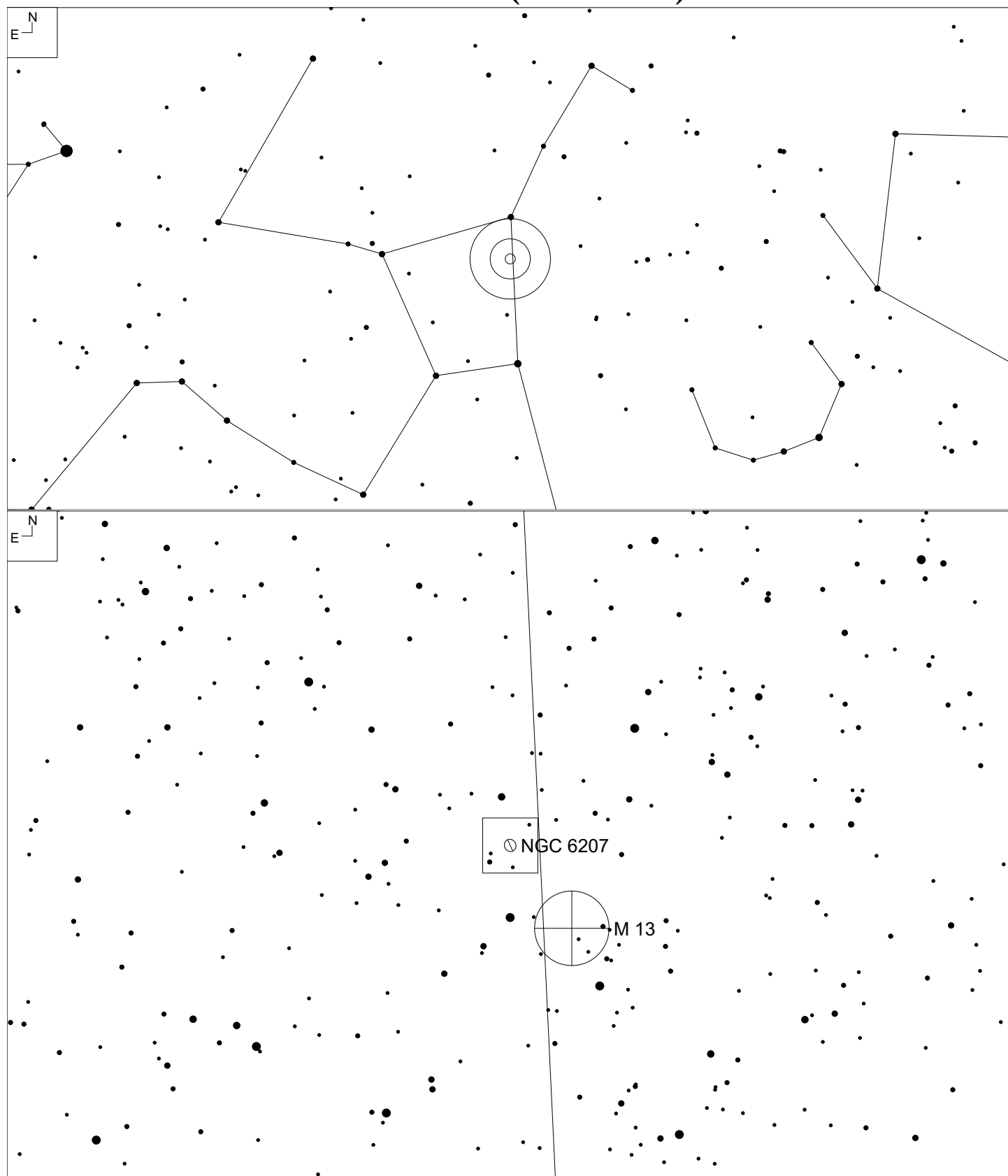


NGC 6070 is a type SA(s)cd galaxy and is situated about 95 mly away. Two observable H II region are on the eastern edge.

H II region [ZBF2015] annotations from Javier Zaragoza-Cardiel, et al, "Comparative internal kinematics of the H II regions in interacting and isolated galaxies: implications for massive star formation modes," *Monthly Notices of the Royal Astronomical Society*, Volume 451, Issue 2 (Aug 2015): 1307 – 1330.

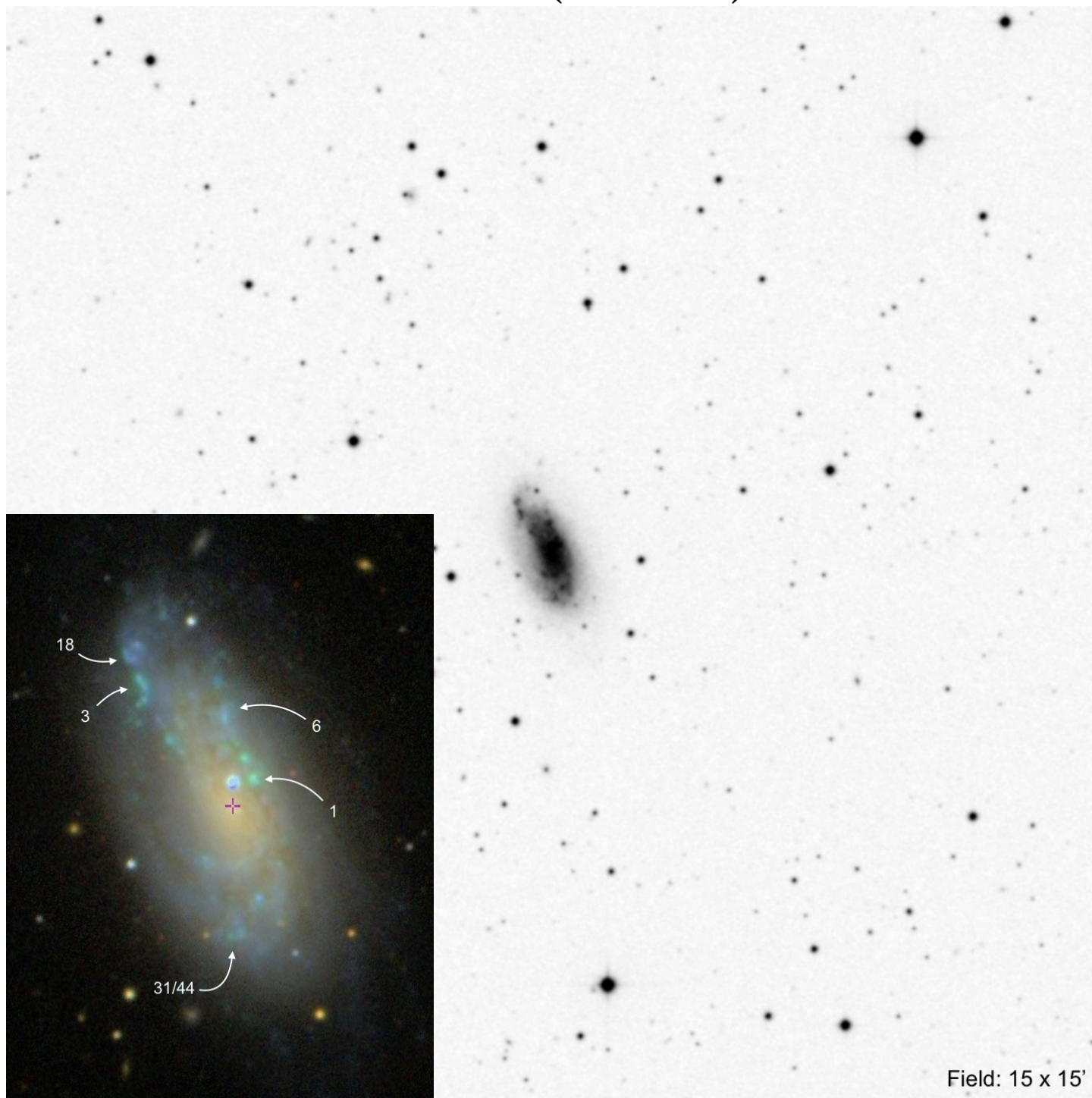
See Glahn's [sketch](#) picking up both H II regions with his 27" reflector.

NGC 6207 (Hercules)



Object	RA	Dec	Mag	Size	iSDA
NGC 6207	16 43 03.9	+36 49 57	11.6	3.0 x 1.3'	31

NGC 6207 (Hercules)



Field: 15 x 15'

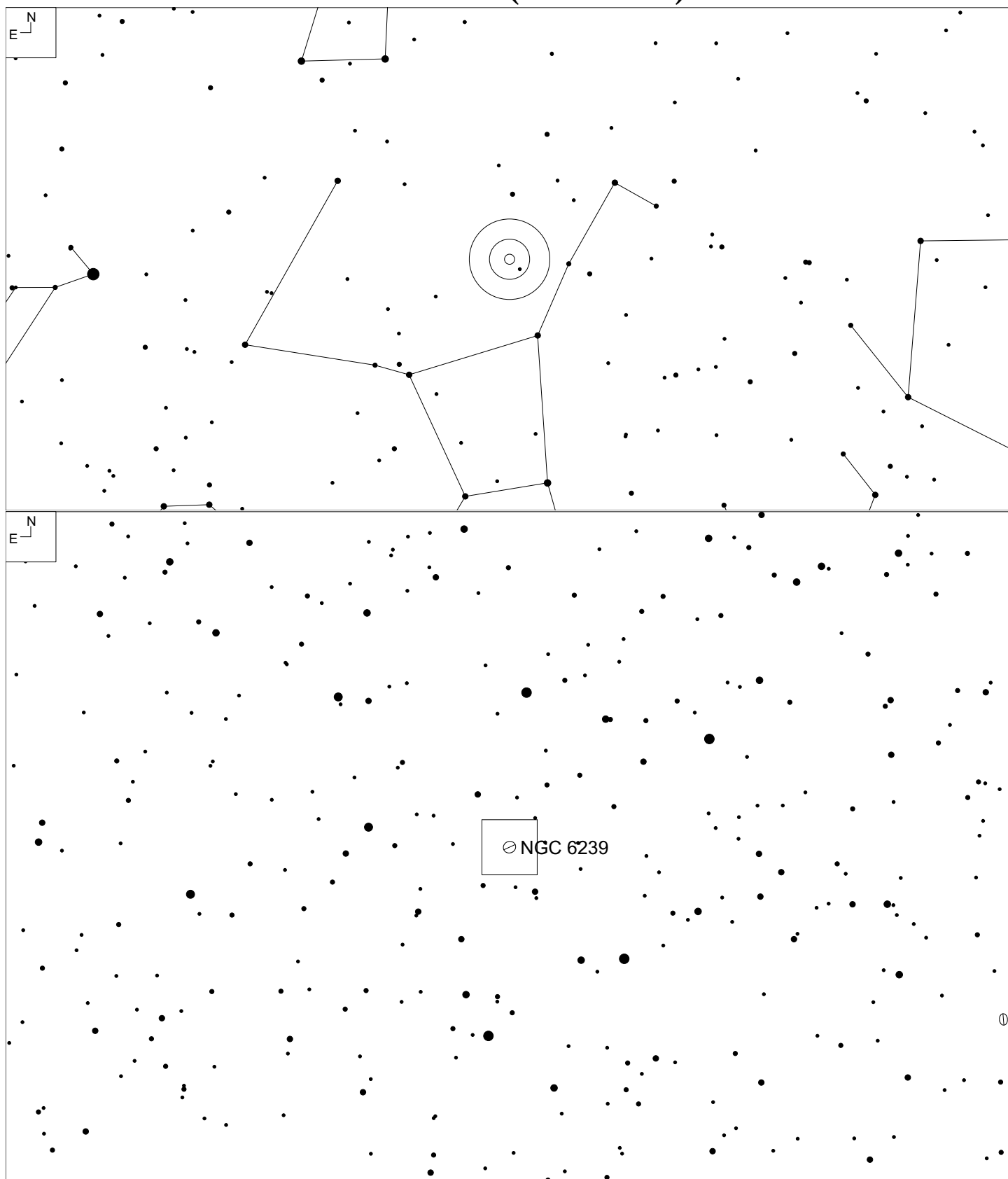
NGC 6207 is a type SA(s)c galaxy that is about 30 mly away. It is well known because it sits about 1/2 degree from M13, which is about 1300 times closer than the galaxy. Most are not aware that if one takes a closer look there are quite a few H II regions and other extragalactic objects that can be had for the patient observer with access to a large telescope.

H II region [ZBF2015] annotations from Javier Zaragoza-Cardiel, et al, "Comparative internal kinematics of the H II regions in interacting and isolated galaxies: implications for massive star formation modes" *Monthly Notices of the Royal Astronomical Society*, Volume 451, Issue 2 (Aug 2015): 1307 – 1330. It should be noted that the annotations in NED and Simbad are different. Simbad is used on this image. I left out the [ZBF2015] text in the annotation to reduce clutter.

Glahn observed it with his 27" and detected a number of knots and H II regions as seen in his [sketch](#).

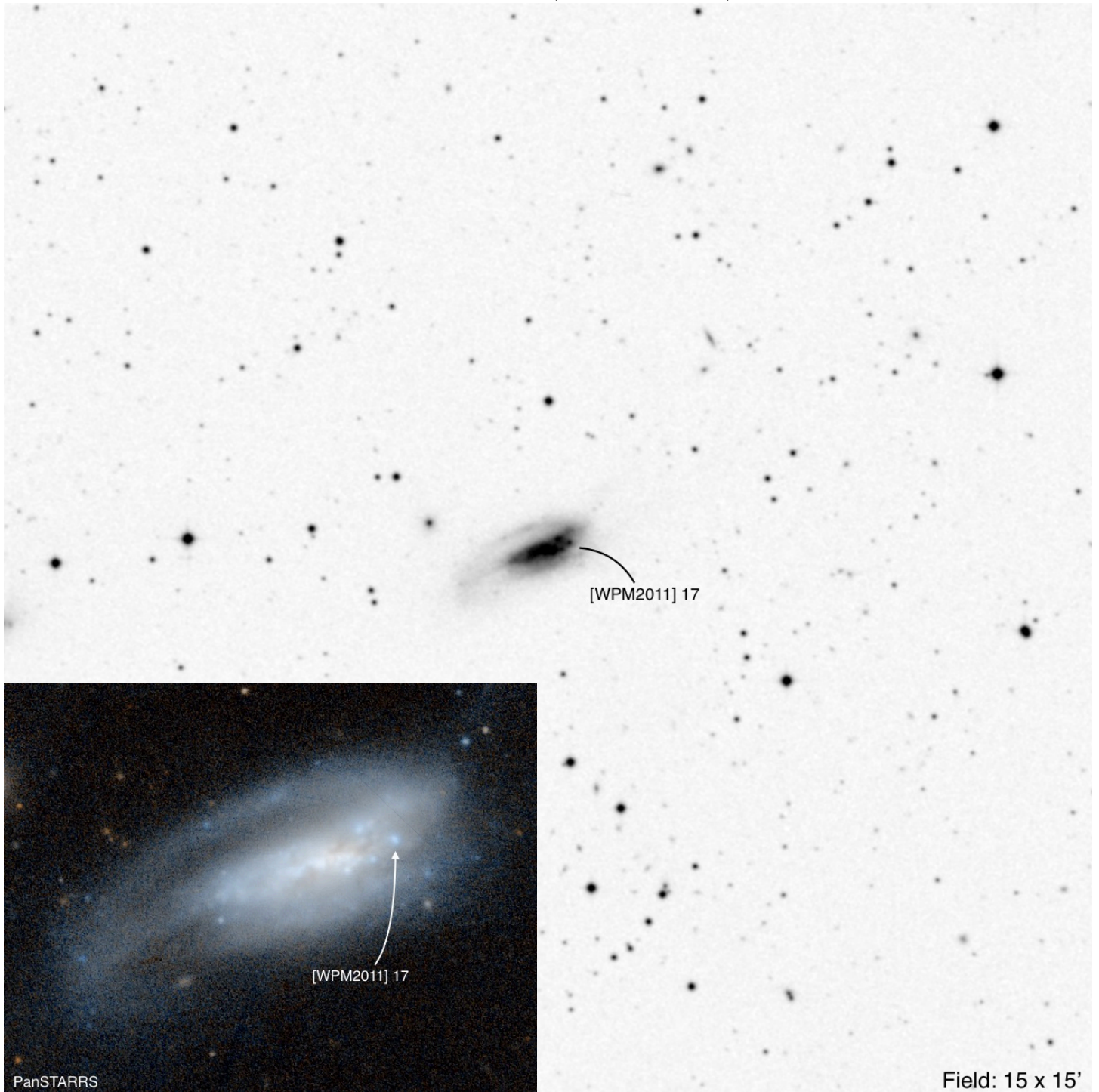
Hubble Space Telescope [image](#).

NGC 6239 (Hercules)



Object	RA	Dec	Mag	Size	iSDA
NGC 6239	16 50 05.6	+42 44 22	12.4	2.6 x 1.1'	19

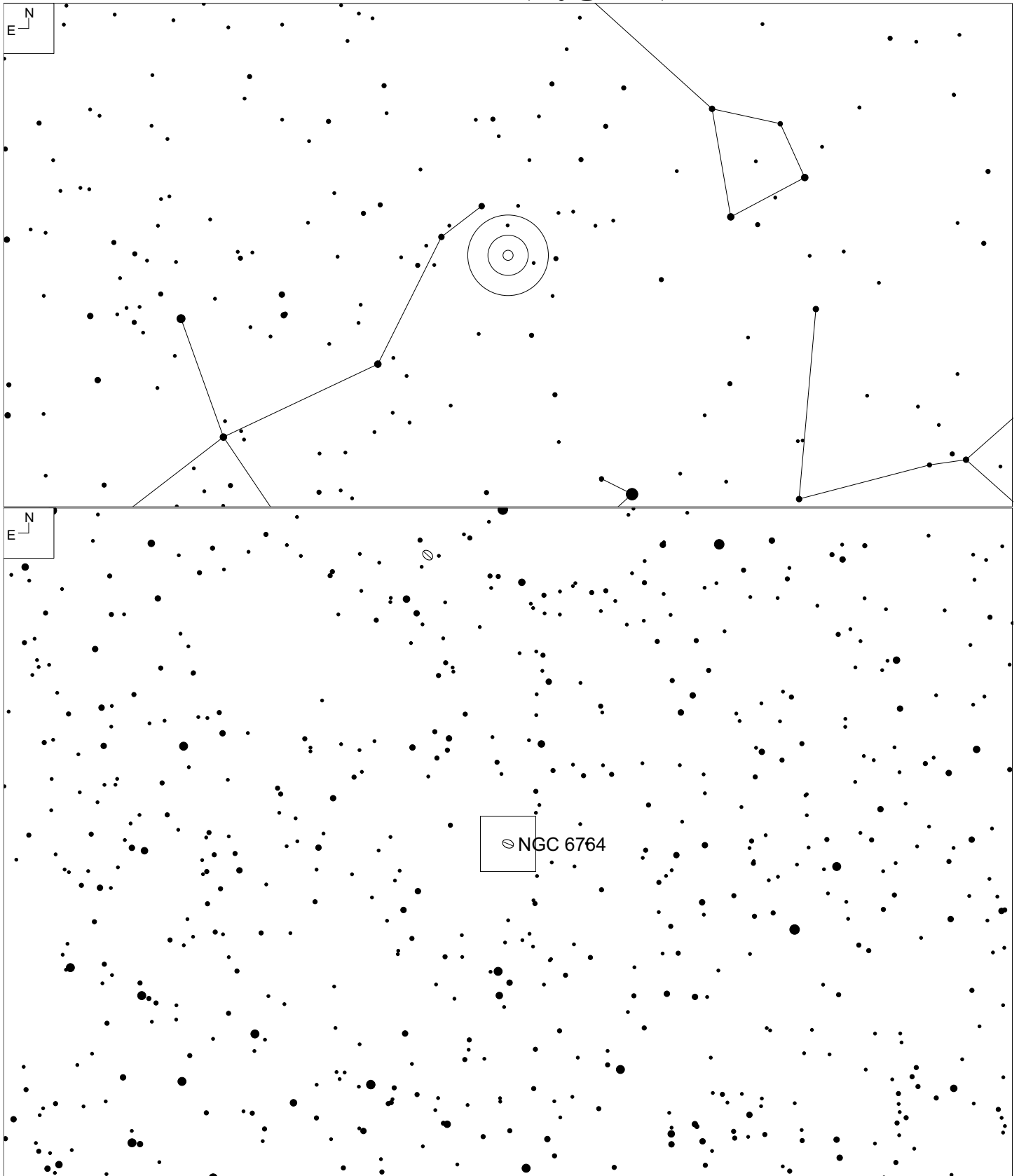
NGC 6239 (Hercules)



The brightest H II region, **[WPM2011] 17**, see J. K. Werk, et al, “Metal Transport to the Gaseous Outskirts of Galaxies,” *The Astrophysical Journal*, Volume 735, Issue 2, Article ID 71 (Jul 2011).

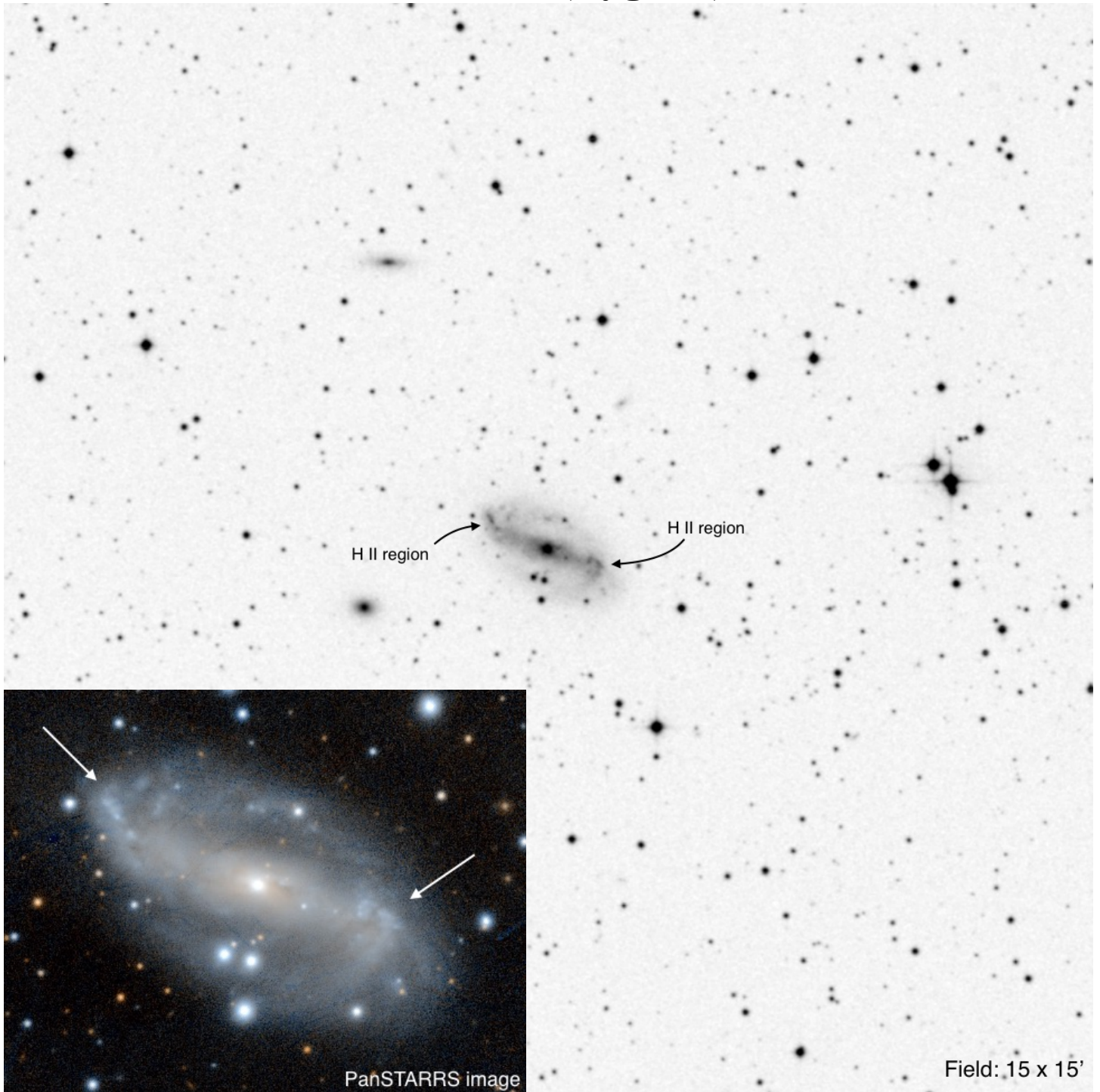
Glahn’s [sketch](#) showing incredible detail and multiple knots detected, beyond what was labeled here.

NGC 6764 (Cygnus)



Object	RA	Dec	Mag	Size	iSDA
NGC 6764	19 08 16.4	+50 56 00	11.8	2.3 x 1.3'	9, 18

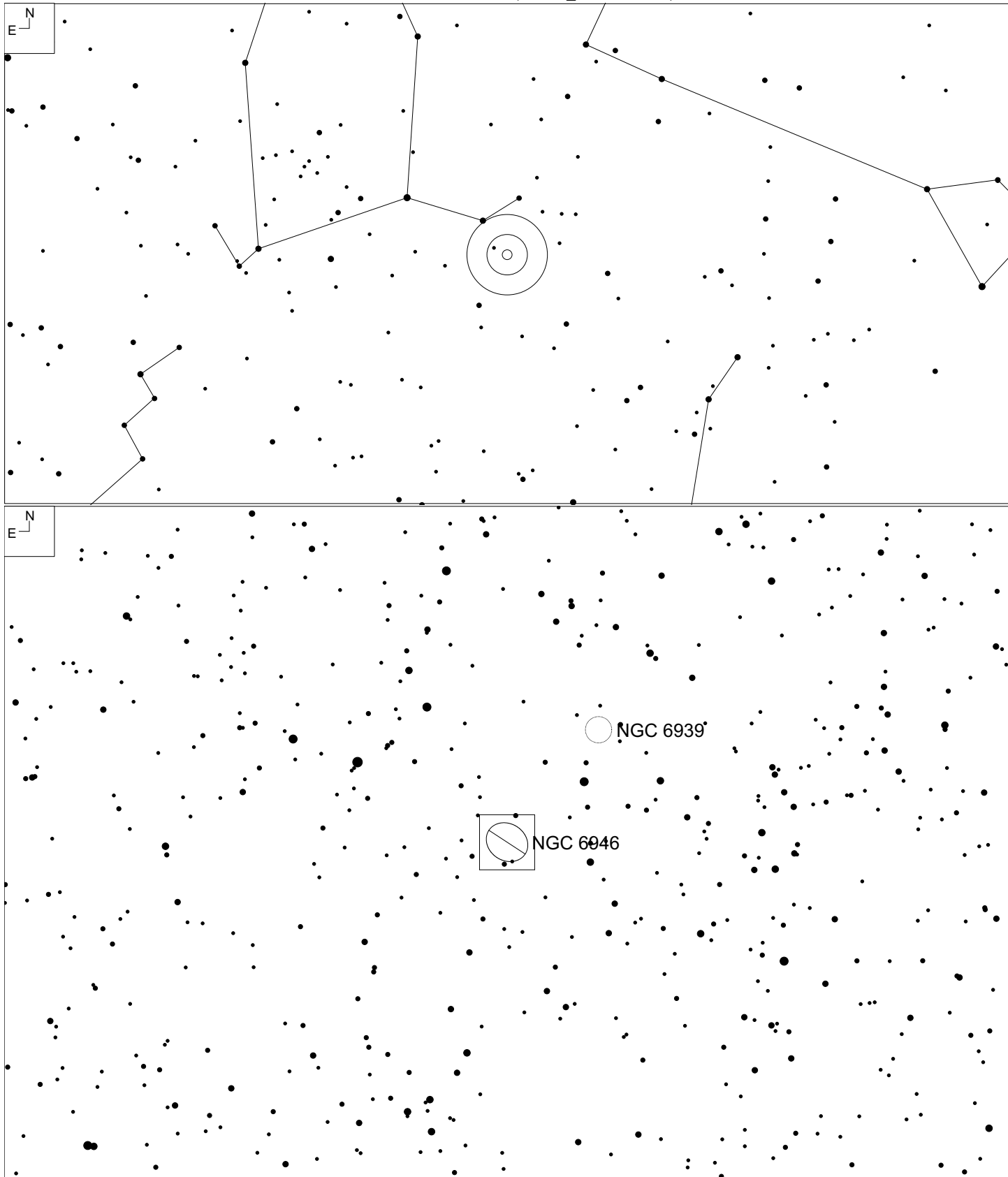
NGC 6764 (Cygnus)



NGC 6764 is a type SB(s)bc galaxy and located about 111 mly away in the direction of Cygnus. Two potentially difficult H II regions are on each end of the major axis of the galaxy. Since it is nearly on the plane of the Milky Way, observers of this galaxy would probably see us as a faint edge on galaxy.

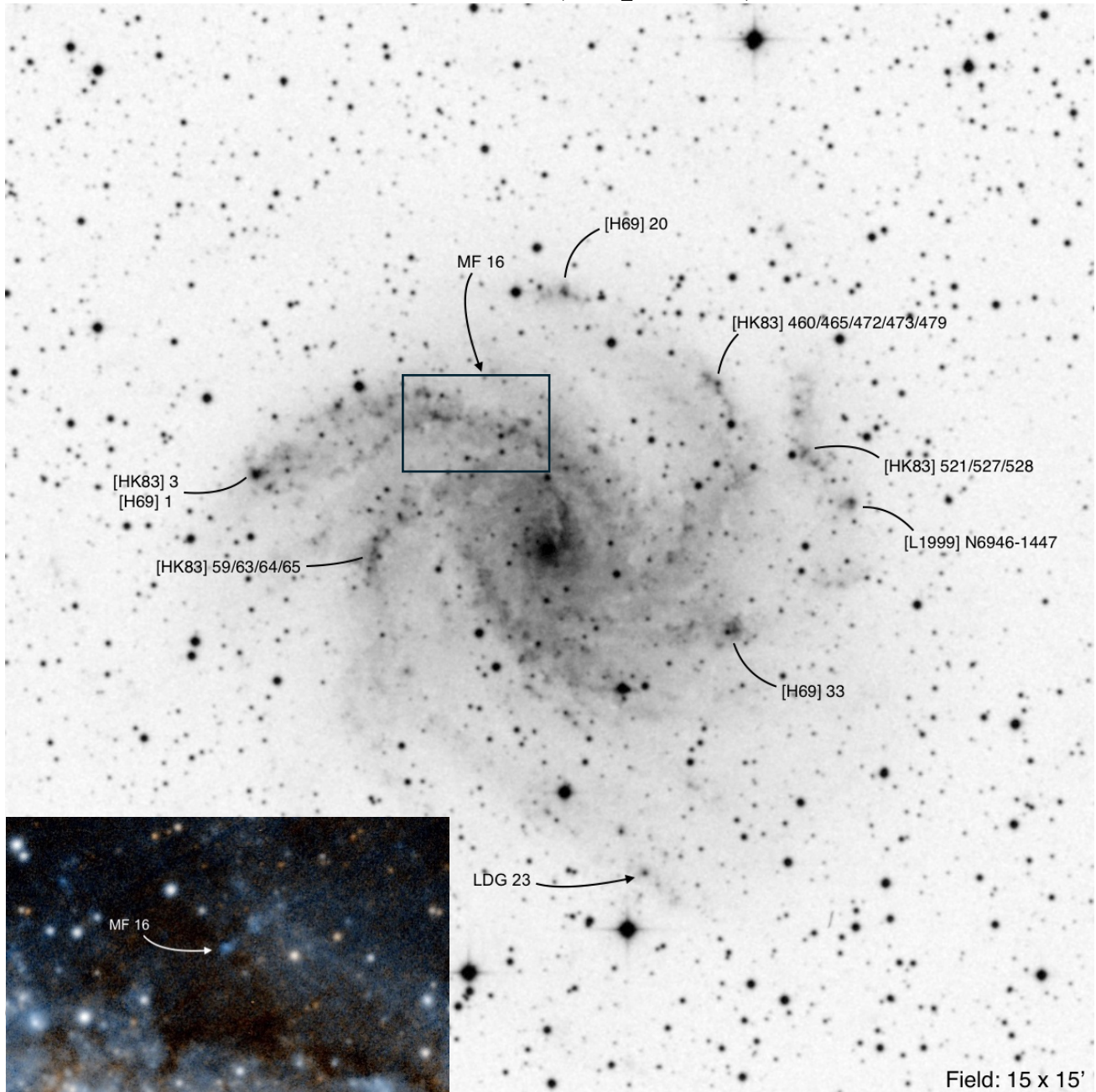
For observing notes with a 24" and 48" reflector, see Steve Gottlieb's notes: [NGC 6764](#). Also see Glahn's [sketch](#) with a 27" reflector showing both knots.

NGC 6946 (Cepheus)



Object	RA	Dec	Mag	Size	iSDA
NGC 6946	20 34 54.8	+60 09 08	9.6	11.6 x 9.8'	8, 9

NGC 6946 (Cepheus)



NGC 6946 is a type SAB(rs)cd galaxy that sits 18 mly away and only 60 kly across. The sheer number of H II region gave it the name of Fireworks Galaxy.

Matonick reported 27 possible supernova remnants. I think at least one, **MF 16**, may be observable with a very large amateur telescope. See David M. Matonick and Robert A. Fesen, "Optically Identified Supernova Remnants in the Nearby Spiral Galaxies: NGC 5204, NGC 5585, NGC 6946, M81, and M101," *The Astrophysical Journal Supplement Series*, Volume 112, Issue 1 (Sept 1997): 49-107. Also see Bryan Dunne, et al. "What Produced the Ultraluminous Supernova Remnant in NGC 6946?" *The Astronomical Journal* Volume 119, Issue 3 (Mar 2000): 1172-1179. See inset for finder chart.

A brighter SNR was uncovered in C. Lacey, et al, "A Survey of Compact Radio Sources in NGC 6946." *The Astrophysical Journal Supplement Series* Volume 109 (Apr 1997): 417-460. It is annotated as **LDG 23**.

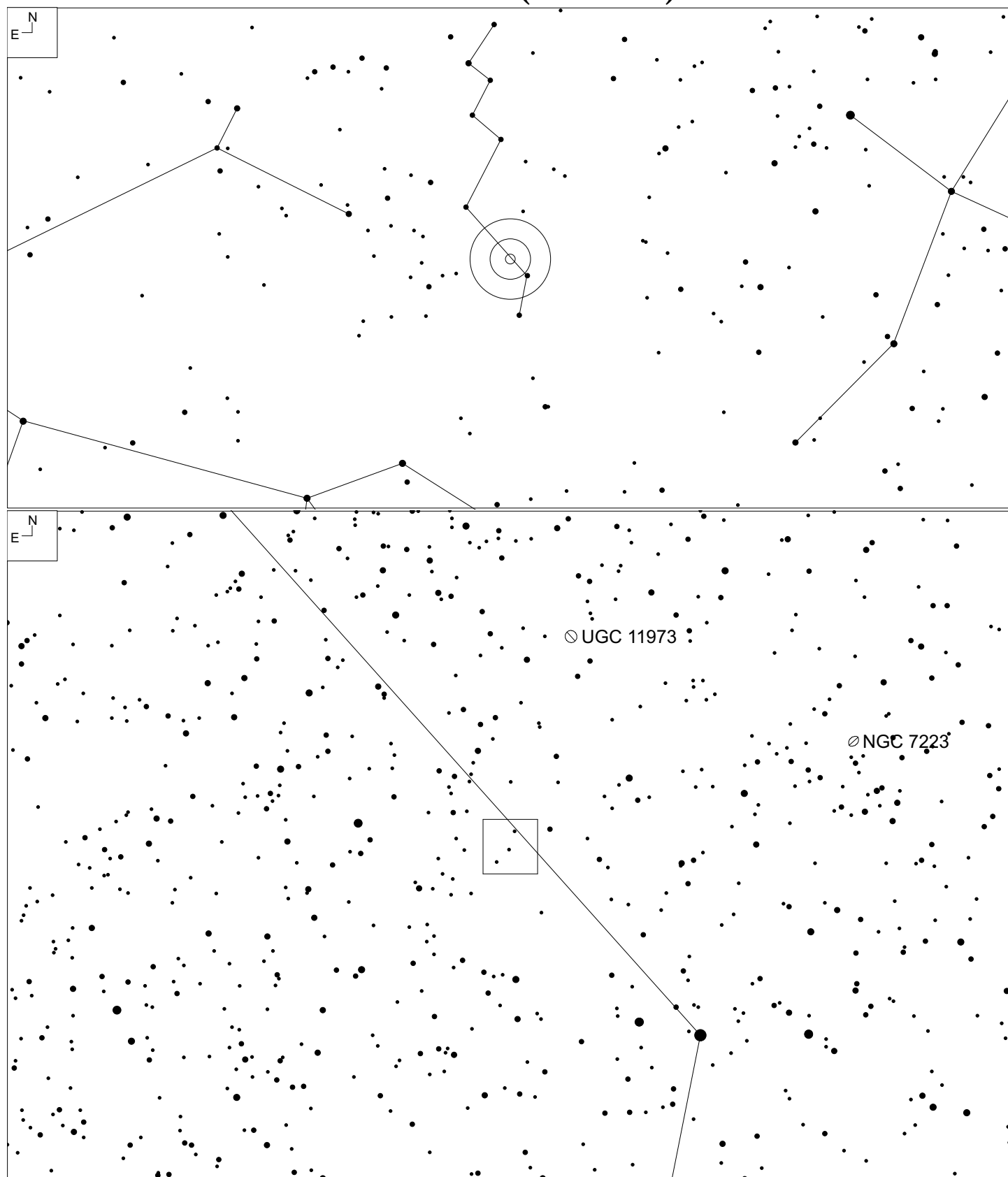
For more, see Gottlieb, Steve "Celestial Fireworks" *Sky & Telescope* (July 2013), Howard Banich, "NGC 6946" *Amateur Astronomy*, Issue 73 (Winter 2012): 54-55, and Scott Harrington, "[A Field Guide to Observing NGC 6946](#)".

For extensive observing notes with a 48" telescope, see Steve Gottlieb's notes at: [NGC 6946](#).

Uwe Glahn's beautiful [sketch](#) with a 14.5" reflector.

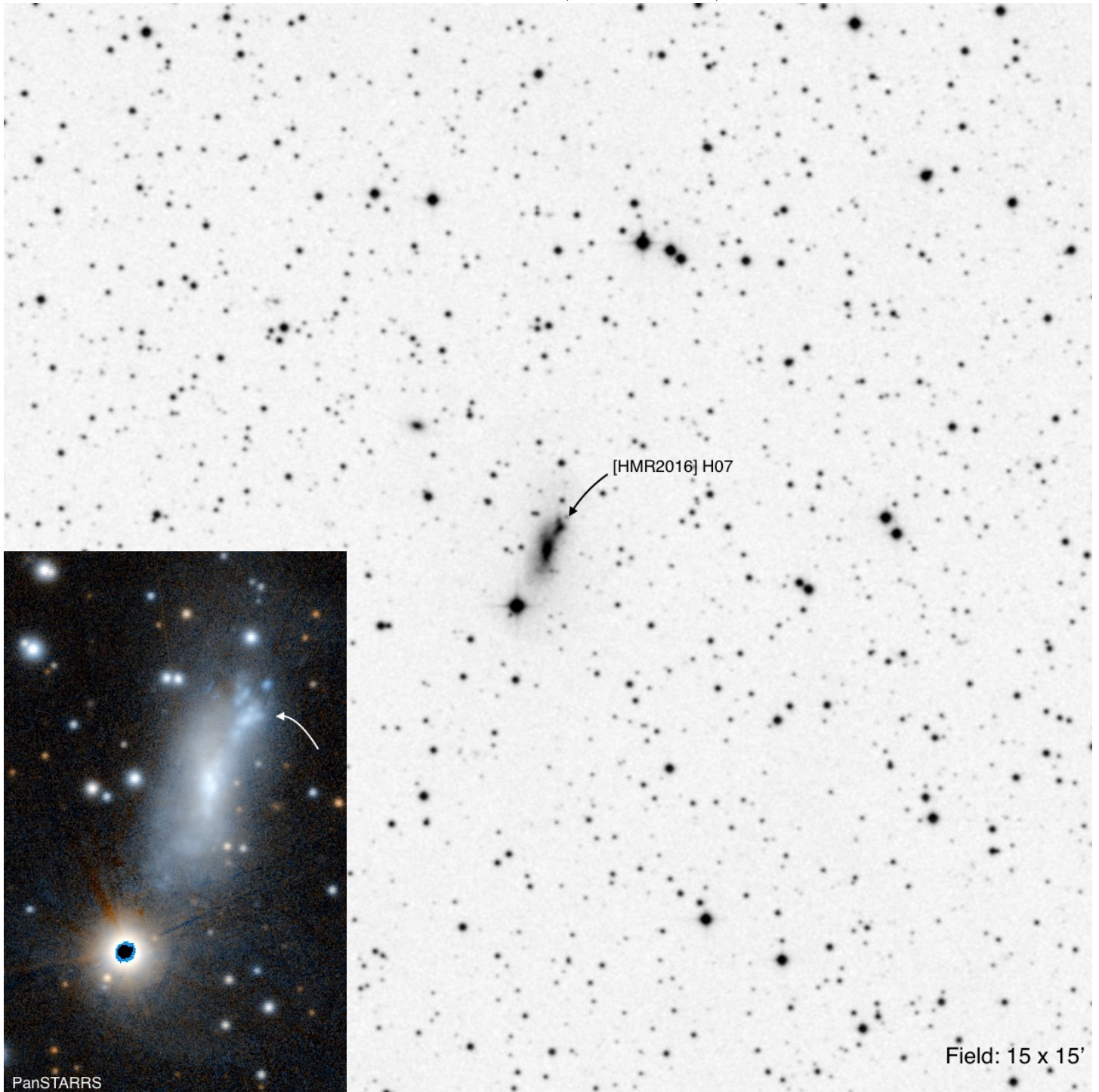
[H69] 33 (NGC 6946-1447) may be a young globular cluster, see [the article](#) by a German amateur astronomer and detailed [sketch](#) by Glahn of this extragalactic object with his 27" at 837x

NGC 7250 (Lacerta)



Object	RA	Dec	Mag	Size	iSDA
NGC 7250	22 18 17.8	+40 33 45	12.6v	1.7 x 0.8'	16, 17

NGC 7250 (Lacerta)



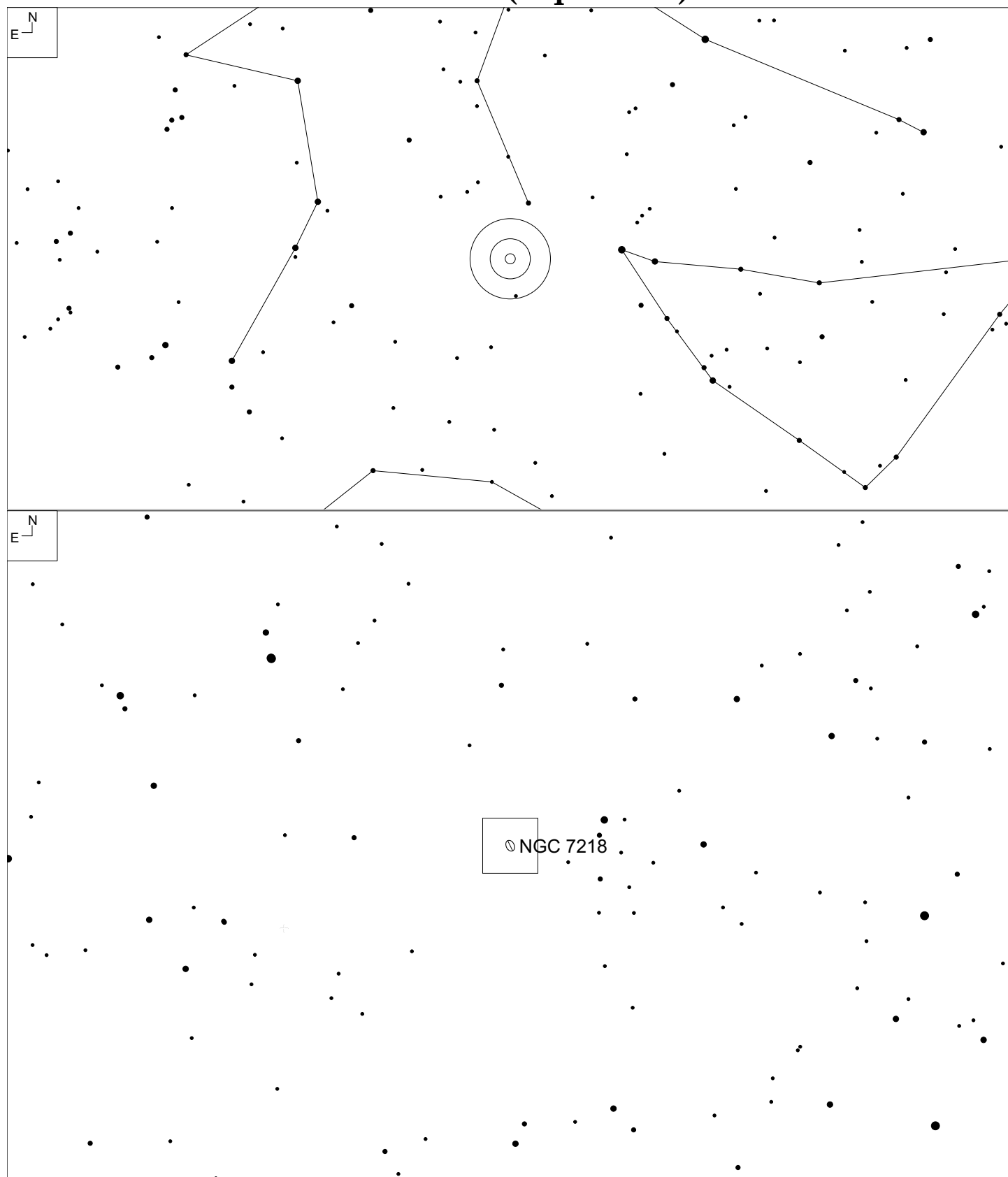
NGC 7250 is an irregular galaxy that is 50 mly away. A blazing mag 10.9 star lies less than 1' SSE from the center and can interfere with the observation. On the north end, there is an interesting triangle shaped star forming region.

The H II region **[HMR2016]** annotation, see Samantha L. Hoffman¹, Lucas M. Macri, Adam G. Riess, et al. "Optical Identification of Cepheids in 19 Host Galaxies of Type 1a Supernovae and NGC 4258 with the Hubble Space Telescope," *The Astrophysical Journal* Volume 830, Number 1 (Oct 2016), 10 pp.

For observing notes with a 24" telescope, see Steve Gottlieb's notes: [NGC 7250](#).

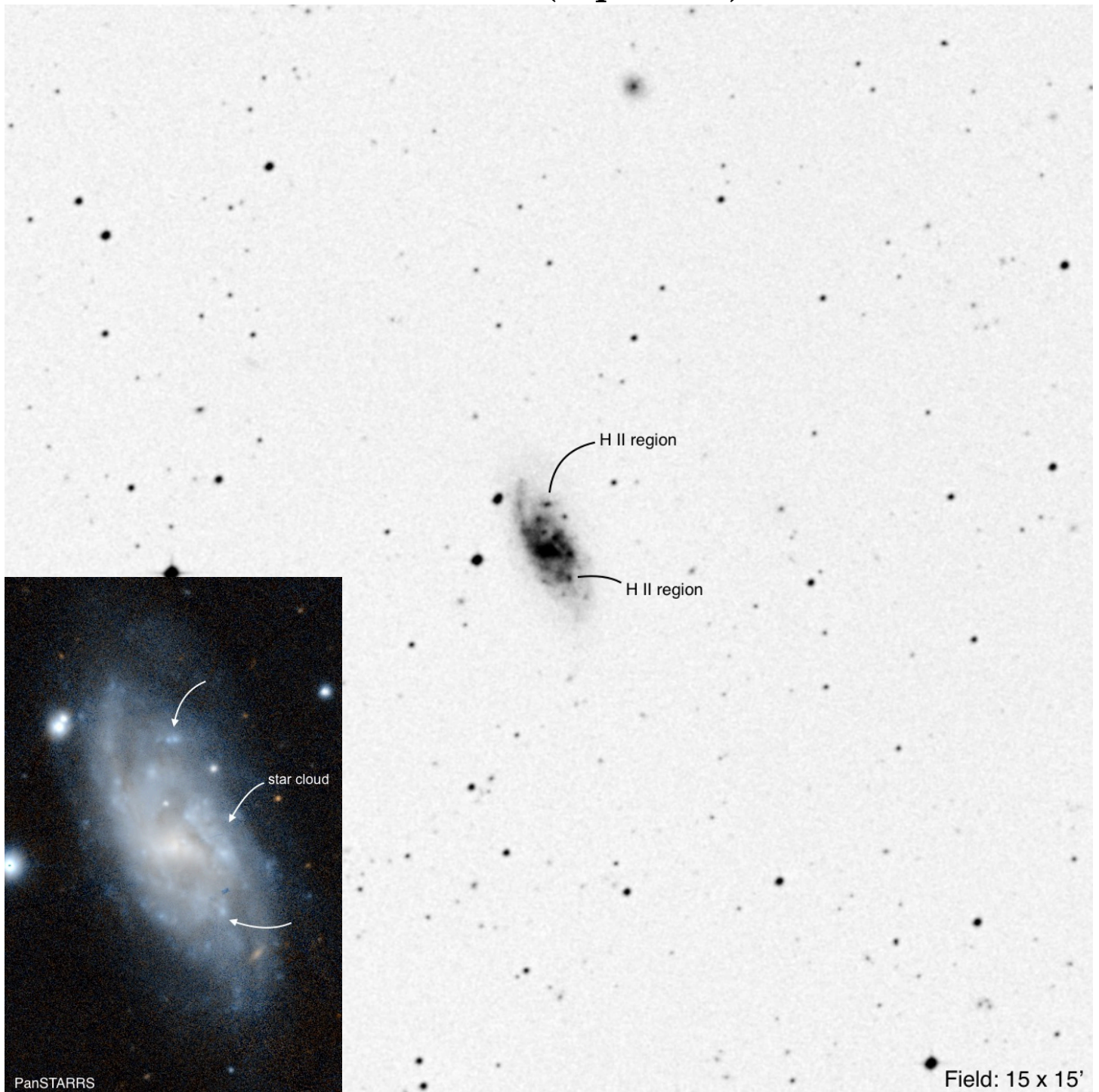
See Glahn's [sketch](#) with a 27" reflector showing two distinct knots where it was labeled.

NGC 7218 (Aquarius)



Object	RA	Dec	Mag	Size	iSDA
NGC 7218	22 10 11.7	-16 39 40	12.0	2.5 x 1.1'	64

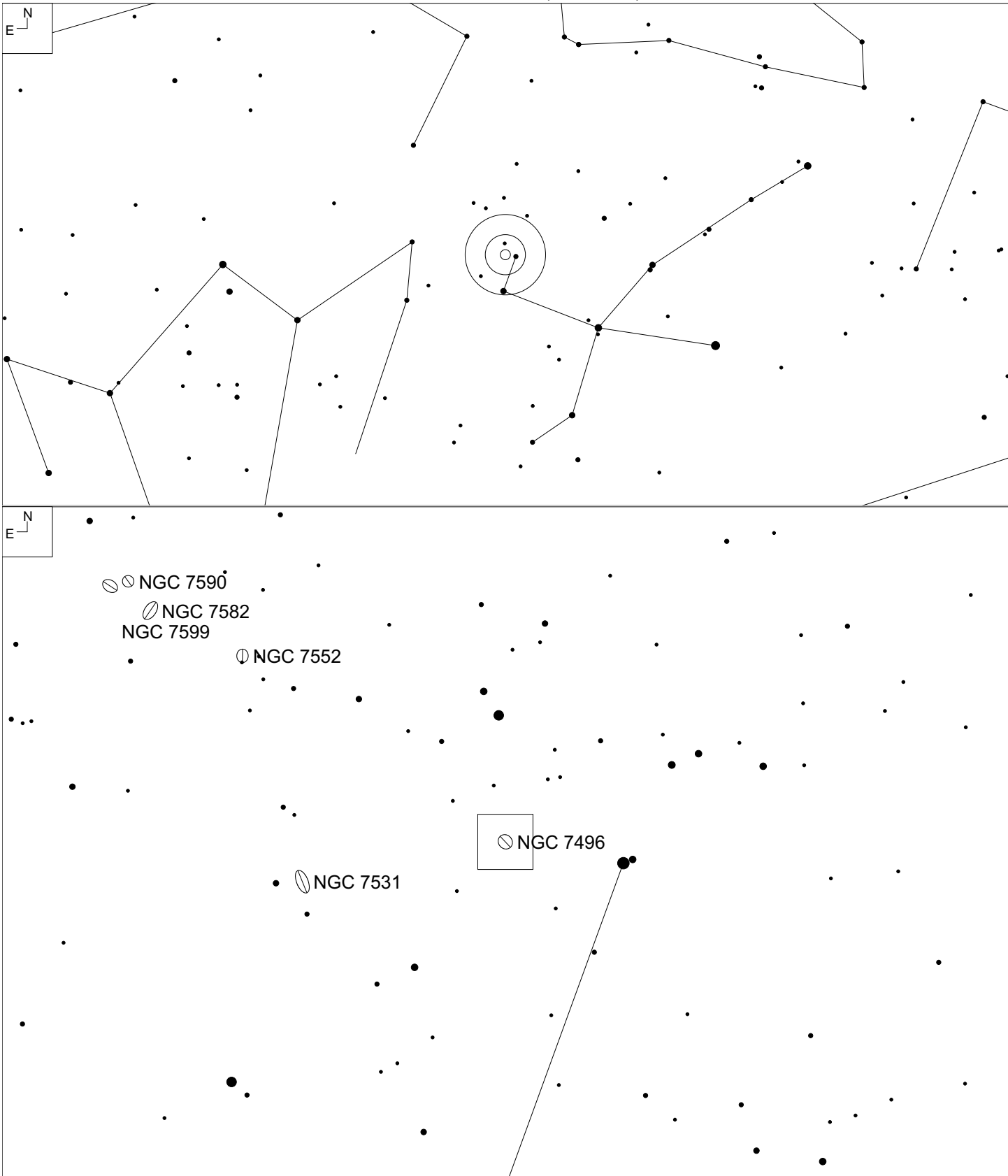
NGC 7218 (Aquarius)



NGC 7218 is a type SB(r)c galaxy sitting 73 mly in the direction of southern part of Aquarius.

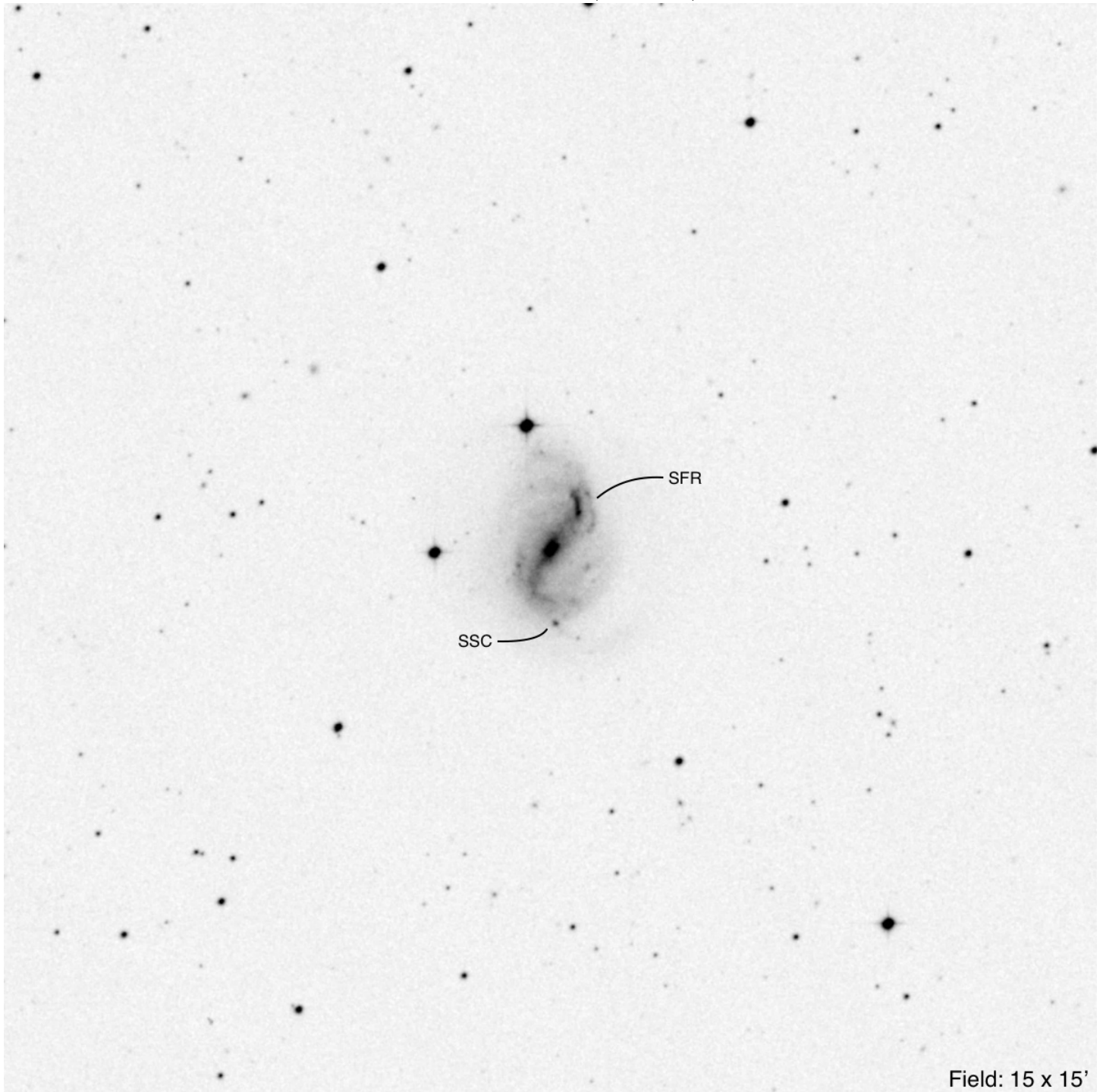
In the PanSTARRS image, there are two possibly observable H II regions on each end and one large star cloud on the west side.

NGC 7496 (Grus)



Object	RA	Dec	Mag	Size	iSDA
NGC 7496	23 09 47.3	-43 25 40	11.1	3.3 x 3.0'	88

NGC 7496 (Grus)



NGC 7496 is a type (R')SB(rs)bc galaxy that sits 61 mly away and about 75 kly across. It is a type 2 Seyfert galaxy. Two notable features are observable: a super star cluster on the south end and a string of star forming region on the north arm.

Note that NED does not have any extragalactic regions labeled. The brighter regions are noted.

See Glahn's [sketch](#) with a 24" reflector showing the knotty SFR region and the SSC.

A composite image from the Hubble, James Webb and a radio telescope shows a massive star forming region that stretches across $\frac{1}{4}$ of the north arm and a blue super star cluster at the southern tip. [Composite image of NGC 7496](#)

Extragalactic Objects within Host Galaxies (Sorted by Host Galaxy)

Page	Object	RA	Dec	Mag	Size	iSDA	Const
132	Henize 2-10 (ESO 495-21)	08 36 15.1	-26 24 34	11.1	1.8'	83	Pix
138	Holmberg II (UGC 4305)	08 19 01.2	+70 43 19	11.4	7.9 x 6.3'	5, 6	UMa
182	Holmberg IV (UGC 8837)	13 54 46.3	+53 54 20	14.2	2.1 x 0.7'	11	UMa
108	IC 342	03 46 46.2	+68 05 32	9.1	21.4 x 20.9'	6, 7, 14	Cam
198	IC 1291	18 33 52.6	+49 16 43	13.0	1.8 x 1.5'	18, 19	Dra
234	IC 2497	09 41 04.1	+34 43 59	15.5	0.4 x 0.3'	35	LMi
152	IC 2574	10 28 21.2	+68 24 59	10.4	13.2 x 5.4'	5, 12	UMa
166	Kiso 5639 (PGC 36252)	11 41 07.5	+32 25 37	15.5	0.4 x 0.2'	34	UMa
38	NGC 45	00 14 03.9	-23 10 52	10.7	8.5 x 5.9'	87	Cet
60	NGC 55	00 14 54.0	-39 11 34	7.9	32.4 x 5.6'	88, 99	Scl
40	NGC 157	00 34 46.9	-08 23 42	10.4	3.0 x 1.7'	63, 75	Cet
42	NGC 210	00 40 34.8	-13 52 28	10.9	5.0 x 3.3'	75	Cet
44	NGC 247	00 47 08.5	-20 45 37	9.9v	21.4 x 6.9'	75, 87	Cet
62	NGC 253	00 47 33.2	-25 17 18	8.0v	27.5 x 6.8'	87	Scl
72	NGC 278	00 52 04.3	+47 33 02	10.8	2.1 x 2.0'	27	Cas
64	NGC 300	00 54 53.5	-37 41 03	9.0	21.9 x 15.5'	87, 99	Scl
46	NGC 337	00 59 50.3	-07 34 43	11.6	2.9 x 1.8'	75	Cet
48	NGC 428	01 12 55.7	+00 58 56	12.1	2.3 x 2.0'	63	Cet
50	NGC 450	01 15 30.5	-00 51 39	11.5	3.1 x 2.3'	63	Cet
34	NGC 470	01 19 44.7	+03 24 37	11.8	2.0 x 1.3'	63	Psc
66	NGC 625	01 35 04.6	-41 26 12	11.1	5.8 x 1.9'	98, 99	Phe
68	NGC 672	01 47 54.2	+27 25 51	11.4	6.5 x 1.8'	38, 39	Tri
36	NGC 628 (M 74)	01 36 41.6	+15 46 57	9.4	10.5 x 9.5'	51	Psc
74	NGC 772	01 59 19.2	+19 00 23	10.3	4.7 x 3.8'	50, 51	Ari
52	NGC 864	02 15 27.8	+06 00 09	10.9	4.7 x 3.5'	62	Cet
100	NGC 922	02 25 04.4	-24 47 18	12.2	1.9 x 1.8'	86	For
70	NGC 925	02 27 16.3	+33 34 36	10.1	7.3 x 3.2'	38	Tri
76	NGC 972	02 34 12.8	+29 18 34	12.1	2.4 x 1.0'	38	Ari
78	NGC 1012	02 39 14.9	+30 09 05	12.0	2.5 x 1.1'	38	Ari
54	NGC 1068 (M 77)	02 42 40.8	-00 00 48	8.9v	7.1 x 6.0'	62	Cet
56	NGC 1073	02 43 40.3	+01 22 33	11.0v	4.9 x 4.5'	62	Cet
82	NGC 1084	02 45 59.3	-07 34 38	10.7	2.6 x 1.6'	62, 74	Eri
102	NGC 1097	02 46 18.4	-30 16 19	9.5	6.0 x 3.3'	86	For
84	NGC 1140	02 54 32.9	-10 01 37	12.5	0.9 x 0.5'	74	Eri

Page	Object	RA	Dec	Mag	Size	iSDA	Const
80	NGC 1156	02 59 42.3	+25 14 16	11.7	2.6 x 1.7'	38	Ari
86	NGC 1232	03 09 44.8	-20 34 37	9.9	5.4 x 4.5'	74, 86	Eri
88	NGC 1253	03 14 09.1	-02 49 22	11.7	5.2 x 2.3'	62	Eri
90	NGC 1300	03 19 40.3	-19 24 33	10.4	7.1 x 3.4'	74	Eri
92	NGC 1359	03 33 46.8	-19 29 24	12.6	1.7 x 0.5'	74	Eri
104	NGC 1365	03 33 35.4	-36 08 15	9.6	5.4 x 4.1'	86, 98, D10	For
106	NGC 1385	03 27 28.7	-24 30 08	10.9	3.4 x 2.0'	86	For
94	NGC 1421	03 42 29.4	-13 29 20	11.4	3.5 x 0.9'	74	Eri
96	NGC 1507	04 04 27.2	-02 11 19	12.3	3.6 x 0.9'	61	Eri
98	NGC 1532	04 12 02.5	-32 51 01	9.8	12.6 x 3.0	85, 86	Eri
110	NGC 1569	04 30 46.7	+64 50 42	11.0	3.4 x 1.5	6, 7, 14	Cam
126	NGC 1832	05 12 02.1	-15 41 11	12.2	2.0 x 1.7'	73	Lep
112	NGC 1961	05 42 04.8	+69 22 42	11.0	4.6 x 3.0'	6	Cam
114	NGC 2146	06 18 37.7	+78 21 25	10.6	5.4 x 2.9'	5, 6	Cam
130	NGC 2188	06 10 09.5	-34 06 22	11.7	4.3 x 1.1'	84, 85, 97	Col
128	NGC 2207	06 16 22.1	-21 22 22	10.9	3.9 x 2.2'	72, 84	CMa
122	NGC 2276	07 26 56.6	+85 45 19	12.3	2.4 x 1.7'	1	Cep
116	NGC 2366	07 28 51.9	+69 12 31	11.4v	8.2 x 3.3'	5, 6, 13	Cam
118	NGC 2403	07 36 48.2	+65 36 13	8.9v	21.9 x 12.3'	5, 6, 13	Cam
200	NGC 2445	07 46 55.1	+39 00 55	13.0	1.4 x 1.1'	23, 24, 36	Lyn
202	NGC 2500	08 01 51.2	+50 44 19	11.6	2.3 x 1.5'	13, 23, 24	Lyn
124	NGC 2535	08 11 13.5	+25 12 23	12.8	2.5 x 1.2'	35	Cnc
204	NGC 2537	08 13 12.8	+45 59 29	11.7	2.2 x 1.9'	23, 24	Lyn
206	NGC 2541	08 14 40.2	+49 03 43	11.8	6.3 x 3.2'	23, 24	Lyn
120	NGC 2633	08 48 00.3	+74 06 05	12.4	1.8 x 0.9'	5, 6	Cam
208	NGC 2782	09 14 03.7	+40 06 59	11.6	1.7 x 1.3'	23	Lyn
140	NGC 2805	09 20 17.9	+64 06 21	11.9	1.8 x 1.5'	12, 13	UMa
142	NGC 2820A	09 21 30.1	+64 14 20	15.0v	0.8 x 0.4'	12, 13	UMa
300	NGC 2835	09 17 52.8	-22 21 17	10.5	6.6 x 4.4'	71	Hya
240	NGC 2903	09 32 10.1	+21 30 03	9.1v	12.6 x 6.0'	35,47	Leo
144	NGC 2976	09 47 12.8	+67 55 12	10.2	6.0 x 2.2'	5, 12	UMa
134	NGC 2997	09 45 38.8	-31 11 27	9.4v	9.2 x 7.4'	82, 83	Ant
296	NGC 3023	09 49 52.6	+00 37 04	13.0	2.9 x 1.4'	59	Sex
146	NGC 3031 (M 81)	09 55 30.5	+69 04 09	6.9	26.9 x 14.1'	5, 12	UMa
148	NGC 3034 (M 82)	09 55 52.4	+69 40 47	8.4v	11.3 x 4.2'	5	UMa
306	NGC 3109	10 03 05.8	-26 09 39	10.7	19.1 x 3.7'	82, 83	Hya
136	NGC 3125	10 06 33.1	-29 56 08	13.0	1.1 x 0.7'	82, 83	Ant
150	NGC 3184	10 18 17.0	+41 25 28	12.7	6.7 x 5.8'	22, 23	UMa
242	NGC 3239	10 20 05.5	+17 09 35	12.9	1.4 x 1.3'	46	Leo
154	NGC 3319	10 39 09.5	+41 41 13	11.1	6.2 x 3.4'	22	UMa

Page	Object	RA	Dec	Mag	Size	iSDA	Const
156	NGC 3359	10 46 35.2	+63 13 41	10.6	4.7 x 1.9'	12	UMa
244	NGC 3389	10 48 27.2	+12 32 05	12.8	2.8 x 1.3'	46	Leo
236	NGC 3395	10 49 49.3	+32 59 09	12.1	1.7 x 0.8'	34	LMi
	NGC 3396	10 49 55.1	+32 59 38	12.5	1.1 x 0.9'		
298	NGC 3423	10 51 14.3	+05 50 24	12.1b	3.8 x 3.2'	58	Sex
238	NGC 3432	10 52 31.1	+36 37 08	11.7v	6.8 x 1.4'	22,34	LMi
246	NGC 3447	10 53 23.4	+16 46 26	14.7	4.2 x 2.4	46	Leo
158	NGC 3448	10 54 39.2	+54 18 19	12.2b	4.8 x 1.4'	12, 22	UMa
160	NGC 3556 (M 108)	11 11 29.9	+55 40 43	10.0	8.7 x 2.2'	12	UMa
302	NGC 3621	11 18 16.5	-32 48 51	9.6v	11.0 x 4.8'	82	Hya
248	NGC 3627 (M 66)	11 20 15.0	+12 59 29	8.9v	9.1 x 4.1'	46	Leo
162	NGC 3631	11 21 02.9	+53 10 10	11.0b	5.0 x 4.7'	12, 22	UMa
164	NGC 3690	11 28 32.3	+58 33 43	11.5	2.9 x 2.1'	11, 12	UMa
168	NGC 3893	11 48 38.2	+48 42 39	10.7v	4.5 x 2.7'	21, 22	UMa
170	NGC 3938	11 52 48.9	+44 07 30	10.4	4.0 x 3.8'	21, 22	UMa
172	NGC 3991	11 57 30.5	+32 20 03	13.1	1.4 x 0.4'	33, 34	UMa
308	NGC 4027	11 59 30.2	-19 15 15	11.1v	2.8 x 2.5'	69, 70	Crv
310	NGC 4038	12 01 53.0	-18 52 03	10.9p	3.7 x 1.7'	69, 70	Crv
	NGC 4039	12 01 53.8	-18 53 05	11.1p	4.0 x 2.2'		
174	NGC 4051	12 03 09.6	+44 31 53	12.9v	5.2 x 4.6'	21, 22	UMa
176	NGC 4102	12 06 23.0	+52 42 40	11.2	3.0 x 1.7'	11, 12, 21, 22	UMa
262	NGC 4178	12 12 46.4	+10 51 58	12.9b	5.1 x 1.8'	D2	Vir
250	NGC 4189	12 13 47.0	+13 25 36	11.7	2.6 x 1.5'	D2	Com
252	NGC 4204	12 15 14.4	+20 39 33	12.4	3.6 x 2.9'	45	Com
210	NGC 4214	12 15 39.2	+36 19 37	9.9v	7.4 x 6.5'	21,22,33,34	CVn
190	NGC 4236	12 16 41.4	+69 28 05	10.5	21.9 x 7.2'	4, 5	Dra
254	NGC 4254 (M 99)	12 18 49.6	+14 24 59	9.87v	5.4' x 4.7'	45, D2	Com
212	NGC 4258 (M 106)	12 18 58.1	+47 18 13	8.4	18.6 X 7.2'	21, 22	CVn
264	NGC 4294	12 21 17.6	+11 30 46	12.1	2.3 x 0.9'	D2	Vir
	NGC 4299	12 21 40.0	+11 30 16	12.5	1.6 x 1.5'		
266	NGC 4303 (M 61)	12 21 54.7	+04 28 29	9.7	9.7 x 5.8'	57, D3	Vir
256	NGC 4321 (M 100)	12 22 54.7	+15 49 28	9.4	7.4 x 6.3'	45, D2	Com
214	NGC 4395	12 25 48.7	+33 33 01	10.2	13.2 x 11.0'	33	CVn
268	NGC 4438	12 27 45.7	+13 00 32	10.17v	8.6' x 3.1'	45, D2	Vir
216	NGC 4449	12 28 11.1	+44 05 37	9.6v	6.1 x 4.3'	21, 22	CVn
218	NGC 4485	12 30 31.1	+41 42 04	11.9v	2.6 x 1.9'	57, 69	CVn
	NGC 4490	12 30 36.4	+41 38 37	9.8v	6.3 x 2.7'		
270	NGC 4486 (M 87)	12 30 49.7	+12 23 24	8.3	7.2 x 6.8'	45, D2	Vir
272	NGC 4532	12 34 19.3	+06 28 04	11.9	2.8 x 1.1'	D3	Vir

Page	Object	RA	Dec	Mag	Size	iSDA	Const
274	NGC 4535	12 34 20.2	+08 11 57	9.7	5.9 x 2.9'	45, 57, D3	Vir
276	NGC 4536	12 34 27.0	+02 11 19	10.6	4.6 x 2.4'	57, D3	Vir
258	NGC 4559	12 35 57.6	+27 57 36	10.0v	10.8 x 4.3'	33	Com
178	NGC 4605	12 39 59.4	+61 36 33	10.3	5.8 x 2.2'	11, 12	UMa
220	NGC 4618	12 41 32.9	+41 09 03	10.8	4.2 x 3.4'	21	CVn
222	NGC 4631	12 42 08.0	+32 32 29	9.2v	15.4 x 2.6'	33	CVn
278	NGC 4654	12 43 56.5	+13 07 42	11.9	4.5 x 2.0	45	Vir
224	NGC 4656	12 43 57.6	+32 10 13	10.5v	9.1 x 1.7'	33	CVn
260	NGC 4725	12 50 26.3	+25 30 03	9.4	10.7 x 7.6'	33	Com
280	NGC 4731	12 51 01.0	-06 23 35	12.0	4.0 x 1.1'	57, 69	Vir
226	NGC 4861	12 59 02.3	+34 51 34	12.3v	4.2 x 1.5'	33	CVn
284	NGC 4939	13 04 14.4	-10 20 24	13.8	3.0 x 2.0'	69	Vir
228	NGC 5033	13 13 27.8	+36 35 40	10.2	10.7 x 5.0'	21, 33	CVn
230	NGC 5055 (M 63)	13 15 49.4	+42 02 01	8.6	13.2 x 7.9'	21	CVn
286	NGC 5068	13 18 54.9	-21 02 26	9.9	6.4 x 4.4'	69, 81	Vir
312	NGC 5128	13 25 27.8	-43 01 21	6.8	25.6 x 20.0'	93	Cen
288	NGC 5147	13 26 19.7	+02 06 03	11.8	1.9 x 1.5'	57	Vir
232	NGC 5194 (M 51)	13.29 52.7	+47 11 43	8.4v	10.3 x 8.1'	45,D2	CVn
180	NGC 5204	13 29 36.8	+58 25 26	11.7	2.7 x 1.9'	11	UMa
304	NGC 5236 (M 83)	13.37 00.9	-29 51 57	7.5v	12.8 x 11.4'	81	Hya
290	NGC 5247	13 38 02.5	-17 53 01	10.0	5.6 x 4.9'	69	Vir
320	NGC 5248	13 37 32.3	+08 52 12	11.0	6.2 x 4.5'	45, 57	Boo
314	NGC 5253	13 39 56.0	-31 38 24	10.9	5.0 x 1.9'	81	Cen
316	NGC 5398	14 01 21.6	-33 03 50	12.4v	2.8 x 1.6'	80,81	Cen
318	NGC 5408	14 03 20.9	-41 22 40	11.6	2.0 x 1.2'	92, 93	Cen
184	NGC 5430	14 00 45.8	+59 19 43	11.9	2.2 x 1.1'	11	UMa
186	NGC 5457 (M 101)	14 03 12.6	+54 20 56	7.9v	28.9 x 26.9'	11	UMa
292	NGC 5468	14 06 34.9	-05 27 11	12.5	2.6 x 2.4'	56, 68	Vir
188	NGC 5474	14 05 02.2	+53 40 01	10.8	2.6 x 2.3'	11, 20	UMa
294	NGC 5584	14 22 23.8	-00 23 15	11.4	3.4 x 2.5'	56	Vir
192	NGC 5678	14 32 06.6	+57 55 34	11.8	2.4 x 1.4'	10, 11	Dra
194	NGC 6015	15 51 27.2	+62 18 50	11.1	3.7 x 1.8'	3, 10, 11	Dra
322	NGC 6070	16 09 58.6	+00 42 32	11.8	3.5 x 1.9'	55	Ser
324	NGC 6207	16 43 03.9	+36 49 57	11.6	3.0 x 1.3'	31	Her
326	NGC 6239	16 50 05.6	+42 44 22	12.4	2.6 x 1.1'	19	Her
328	NGC 6764	19 08 16.4	+50 56 00	11.8	2.3 x 1.3'	9, 18	Cyg
330	NGC 6946	20 34 54.8	+60 09 08	9.6	11.6 x 9.8'	8, 9	Cep
334	NGC 7218	22 10 11.7	-16 39 40	12.0	2.5 x 1.1'	64	Aqr
332	NGC 7250	22 18 17.8	+40 33 45	12.6v	1.7 x 0.8'	16, 17	Lac
22	NGC 7331	22 37 05.1	+34 24 50	9.5	10.5 x 3.7'	28, D13	Peg

Page	Object	RA	Dec	Mag	Size	iSDA	Const
24	NGC 7448	23 00 03.6	+15 58 49	11.6v	2.5 x 1.2'	40	Peg
26	NGC 7479	23 04 57.3	+12 19 21	10.9	4.1 x 3.1'	40	Peg
336	NGC 7496	23 09 47.3	-43 25 40	11.1	3.3 x 3.0'	88	Gru
28	NGC 7678	23 28 27.9	+22 25 17	11.8	2.2 x 1.7'	28, 40	Peg
30	NGC 7741	23 43 54.9	+26 04 26	11.3	2.3 x 1.0'	28	Peg
58	NGC 7793	23 57 50.3	-32 35 15	9.1	8.4 x 6.9'	76, 87	Scl
282	UGC 8091 (GR 8)	12 58 40.2	+14 13 08	15.0	0.8'	45	Vir
196	UGC 10214	16 06 03.9	+55 25 32	13.7	1.5 x 0.7'	10	Dra
32	UGC 12856	23 56 45.3	+16 48 50	13.9	1.8 x 0.7'	40,51	Peg

Additional Resources

Books

The following books are among my favorites and listed here for reference. This list is by no means complete list but gives a solid start for the intermediate and some advanced observers.

Star Atlas

Stoyan, Ronald and Stephan Schurig. *interstellarum Deep Sky Atlas*. Cambridge, MA: Cambridge University Press, 2015

If I bring just one paper atlas, the iDSA would be in my field bag. It has a good balance between the number of pages and convenience. I like the scale, which isn't too "zoomed" in, where it would be difficult to identify the sky from the narrow fields in more detailed atlas and the right amount of detail for the brighter deep sky objects visible in telescopes up to 12 to 14-inches. And it is at the right level of detail for star hoppers with a TelRad or similar.

Stoyan, Ronald and Uwe Glahn. *interstellarum Deep Sky Guide*. Cambridge, MA: Cambridge University Press, 2018.

Excellent collection of images and deep sky sketches by Uwe Glahn and Ronald Stoyan. The Guide contains a curated collection of interesting and "cool" deep sky objects arranged by page number of the iDSA.

There are more Star Atlas in my library but listed only my favorite. I currently own the Uranometria, Sky Atlas 2000.0 and Pocket Sky Atlas, but use only the iDSA on the field.

Semi-Technical Books

Hodge, Paul W. *Galaxies: The Harvard Books on Astronomy*. Edited by Owen Gingerich and Charles A, Whitney. Cambridge, MA: Harvard University Press, 1986.

Classic text about galaxies written by well-known galaxy astronomer, Paul Hodge. It is not technical and accessible by the lay amateur astronomer. It may be a little dated, but a good read.

Kanipe, Jeff and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 1.: Andromeda, Antlia, Apus, Aquarius* Richmond, VA: Willmann-Bell, Inc., 2015.

The Annals of the Deep sky Series is considered the *modern* Burnham's Celestial Handbook by Robert Burnham. It contains the latest scholarship and other interesting ponderings. If you enjoyed Burnham's this this series may be for you. It is taking time for Kanipe to write the volumes as he averages 1 volume a year. At the time of writing, the latest volume, Volume 10, contains Fornax, so you can see that he still has a long way to go.

Kanipe, Jeff and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 2: Aquila, Ara, Aries, Auriga, Boötes, Caelum*. Richmond, VA: Willmann-Bell, Inc., 2015.

Kanipe, Jeff and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 3: Camelopardalis, Cancer, Canes Venatici, Canis Major*. Richmond, VA: Willmann-Bell, Inc., 2016.

Kanipe, Jeff and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 4: Canis Minor, Capricornus, Carina, Cassiopeia*. Richmond, VA: Willmann-Bell, Inc., 2016.

Kanipe, Jeff and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 5: Centaurus, Cepheus, Cetus*. Richmond, VA: Willmann-Bell, Inc., 2017.

Kanipe, Jeff and Dennis Webb. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 6: Chamaeleon, Circinus, Columba, Coma Berenices, Corona Australis*. Richmond, VA: Willmann-Bell, Inc., 2018.

Kanipe, Jeff. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 7: Corona Borealis, Corvus, Crater, Crux*. Richmond, VA: Willmann-Bell, Inc., 2019.

Kanipe, Jeff. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 8: Cygnus, Delphinus, Dorado*. Richmond, VA: Willmann-Bell, Inc., 2020.

Kanipe, Jeff. *Annals of the Deep Sky: A Survey of Galactic and Extragalactic Objects, Volume 10: Draco, Equuleus, Eridanus, Fornax*. Richmond, VA: Willmann-Bell, Inc., 2023.

Kitchen, Chris. *Galaxies in Turmoil: The Active and Starburst Galaxies and the Black Holes That Drive Them*. London: Springer-Verlag, 2007.

Very accessible read for the amateur astronomer who wants to learn more about radio active and starburst galaxies.

Observing Books

Eicher, David J. *Galaxies and the Universe*. Milwaukee, WI: Kalmbach Publishing Co., 1992.

This contains a collection of Deep Sky Magazine articles from yesteryear, the 1980s. Good collection.

Kanipe, Jeff and Dennis Webb. *The Arp Atlas of Peculiar Galaxies: A Chronicle and Observer's Guide*. Richmond, VA: Willmann-Bell, 2006.

Kepple, George R. and Glen W. Sanner. *The Night Sky Observer's Guide, Volume 1 Autumn & Winter*. Richmond, VA: Willmann-Bell, 1998.

Kepple, George R. and Glen W. Sanner. *The Night Sky Observer's Guide, Volume 2 Spring & Summer*. Richmond, VA: Willmann-Bell, 1998.

The Night Sky Observer's Guide series is a guide with a compilation of objects and observing notes. Deep Sky observing notes with telescopes from 4 to 20+ inches from a wide variety of observers comprise the bulk of the series.

Luginbuhl, Christian B. and Brian A. Skiff. *Observing Handbook and Catalogue of Deep-Sky Objects*. New York: Cambridge University Press, 1989.

One of the first observing handbooks containing a collection of curated observing notes by the authors. Most, if not all, objects in this book are observable with 8 to 10 inch telescopes.

Steinicke, Wolfgang and Richard Jakiel. *Galaxies and How to Observe Them*. New York: Springer Publishing Company, 2007.

Well written text on observing galaxies. This is a must have in the library of any serious galaxy observer. This is easily one of the best, if not the best, book in the Patrick Moore's Practical Astronomy series.

Webb Society. *Webb Society Deep-Sky Observer's Handbook, Volume 4: Galaxies*. Edited by Kenneth Glyn Jones. Hillside, NJ: Enslow Publishers Hillside, 1982.

A bit dated, but solid handbook to have in your library. This was one of my first observing guides I had when I was a budding young astronomer in the early 80s.

There are more observing books but listed only the relevant books for this observing program. I included only the books in my personal library, and that I have read them. Any books not included are not intentional, just that I have not read nor acquired them.

Journal Articles

This list contains the journal articles I have referenced one way or another while building this observing project. By no means this is an exhaustive list. As I mentioned in my introduction, this is not an exhaustive research project to include every feature in host galaxies or every host galaxy with observable extragalactic features within reach of a 20-inch telescope, but to give a solid start for this observing program.

- Annibali, F., M. Tosi, et al. "PNe and H II Regions in the Starburst Irregular Galaxy NGC 4449 from LBT MODS Data." *Astrophysical Journal*. Volume 843, Issue 1 (July 2017).
- Appleton, P. N., J. M. Schombert, E. I. Robson. "A Multiwavelength Study of the Peculiar Interacting Galaxies ARP 143 = VV 117: Evidence for an Emerging Ring Galaxy?" *Astrophysical Journal*. Volume 385 (Feb 1992): 491-500.
- Arp, Halton, J. Surdej, and J.P. Swings. "Two Quasars Seen Near the Spiral Galaxy NGC 470" *Astronomy & Astrophysics*. Volume 138 (Sept 1984): 179-182
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- Brière, E., S. Cantin, K. Spekkens. "Properties of the giant H II regions and bar in the nearby spiral galaxy NGC 5430" *Monthly Notices of the Royal Astronomical Society*. Volume 425, Issue 1 (Sept 2012): 261-272
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Websites

[Deep Sky Forum](#) – The premier Deep Sky forum where advanced deep sky observers converge and discuss various aspects of deep sky observing.

[Cloudy Nights](#) – Great resource for like-minded amateurs discussing various aspects of the hobby.

[Adventures in Deep Space](#) - Great source of observing projects for all skill levels by Steve Gottlieb and Mark Wagner.

[Uwe Glahn's website](#) with incredible sketches of deep sky objects. His sketches are also in the interstellarum Deep Sky Guide, another incredible resource.

[Howard Banich's website](#) with his sketches and his 30" f/2.7 rebuild project.

[NASA-IPAC Extragalactic Database](#) – NED. Wealth of data and helps immensely with identification of knots.

[Strasbourg astronomical Data Center](#). An impressive tool to use to validate many objects and host galaxies.

[The STScI Digitized Sky Survey](#)

[SkyServer DR10 Tools for Visual Exploration \(SDSS\)](#)

Sources of charts

Charts by *Megastar version 5*. Willmann-Bell Richmond, VA

Acknowledgements and Citations for the three main image sources

Digital Sky Survey (DSS) images: [Acknowledgements](#)

Sloan Digital Sky Survey (SDSS): Funding for the Sloan Digital Sky Survey V has been provided by the Alfred P. Sloan Foundation, the Heising-Simons Foundation, the National Science Foundation, and the Participating Institutions. SDSS acknowledges support and resources from the Center for High-Performance Computing at the University of Utah. SDSS telescopes are located at Apache Point Observatory, funded by the Astrophysical Research Consortium and operated by New Mexico State University, and at Las Campanas Observatory, operated by the Carnegie Institution for Science. The SDSS web site is www.sdss.org.

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PanSTARRS: The Pan-STARRS1 Surveys (PS1) and the PS1 public science archive have been made possible through contributions by the Institute for Astronomy, the University of Hawaii, the Pan-STARRS Project Office, the Max-Planck Society and its participating institutes, the Max Planck Institute for Astronomy, Heidelberg and the Max Planck Institute for Extraterrestrial Physics, Garching, The Johns Hopkins University, Durham University, the University of Edinburgh, the Queen's University Belfast, the Harvard-Smithsonian Center for Astrophysics, the Las Cumbres Observatory Global Telescope Network Incorporated, the National Central University of Taiwan, the Space Telescope Science Institute, the National Aeronautics and Space Administration under Grant No. NNX08AR22G Issued through the Planetary Science Division of the NASA Science Mission Directorate, the National Science Foundation Grant No. AST-1238877, the University of Maryland, Eotvos Lorand University (ELTE), the Los Alamos National Laboratory, and the Gordon and Betty Moore Foundation.

Revision History

Date	Revision
August 2024	New Observing Guide with 158 host galaxies.
Sept 2024	Correct mislabeling in NGC 7331 DSS image. The two NGC galaxies on the northwest corner is NGC 7326 and 7325 respectively. NGC 278 is in Cassiopeia not Aries. Inadvertently mislabeled.

