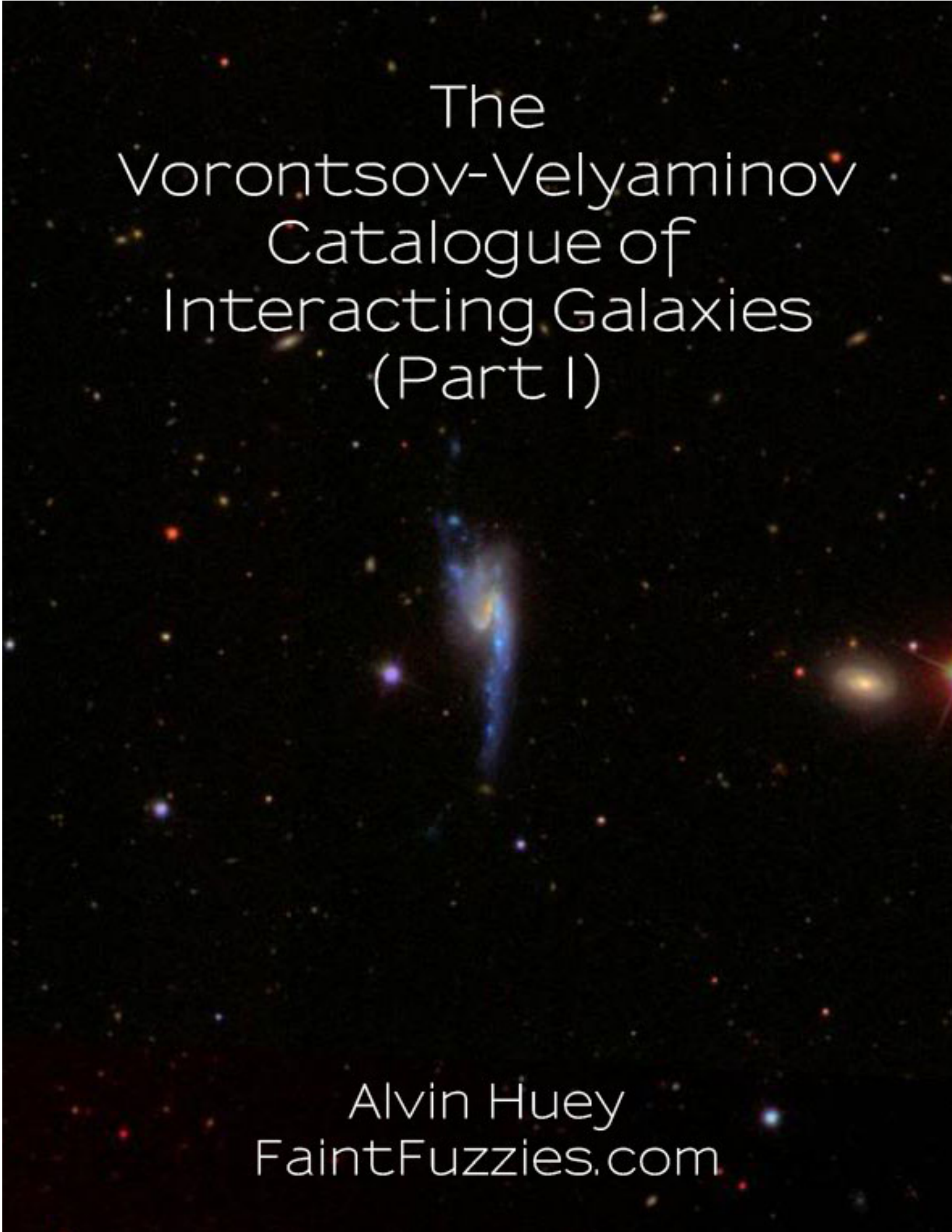
The Vorontsov-Velyaminov Catalogue of Interacting Galaxies (Part I)



Alvin Huey
FaintFuzzies.com

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www.FaintFuzzies.com

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Globular Clusters – North of -50°

Planetary Nebulae and Supernovae Remnants

The Local Group

Flat Galaxies

Abell Galaxy Clusters

Voronstov-Velyaminov Catalogue – Part I and II

Rose Catalogue of Compact Galaxies

Variable Galaxies

Selected Shakhbazian Groups

Ring Galaxies

Palomar Compact Galaxy Catalogue

Object of the Week 2012 and 2013 – Deep Sky Forum

All Maps by MegaStar™ v5
All DSS images (Digital Sky Survey) http://archive.stsci.edu/dss/acknowledging.html
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Contents

The History of the Vorontsov-Velyaminov Catalogue

Dr. Boris Vorontsov-Velyaminov (1904-1994) of Sternberg Astronomical Institute, Moscow University, created a series of lists of interacting galaxies starting in 1959. A majority of the systems were found on the POSS plates from the Palomar 48-inch Schmidt astrograph. The original list, Part I, contained 355 systems. It should be noted that the more famous list, Arp Peculiar Galaxies, was done *after* Boris's list. Approximately half of Boris' Part I list was listed as an Arp[1] as Boris' paper was the inspiration for Arp's list. Dr. Halton Arp had access to the 200-inch reflector, which in turn gave Arp the ability to dig deeper and get a clearer image of the structure within these galaxies. As Steve Gottlieb pointed out, a number of Vorontsov-Velyaminov "nests" and chains turned out to be late-type single dwarf irregulars (eg VV124 and VV104) with active star formations regions mimicking the appearance of multiple galaxies.

Then in 1977, Vorontsov-Velyaminov (V-V) published Part II of his list, containing an additional 497 interacting systems, labeled as VV356 through VV852. Lastly, in 2001, an additional 1162 objects were added from the Morphological Catalogue of Galaxies by Vorontsov-Velyaminov et al. These objects have numbers ranging from VV853 to VV2014.

V-V has classified each interacting galaxy within several categories, and for most objects, he classified some unique details. Categories include M-51 types, Nested galaxies, Pairs of galaxies, Chain of galaxies, Ring galaxies, and Enigmatic galaxies. Some details he listed include tails, bridges, and disruptions to list a few. A full table listing the categories and details is on page 28.

V-V was interested in M-51 type systems, interacting of multiple systems (nests and chains), tidal theory of bridges, and tails. I believe that his work has a profound impact on near-future work on these classes of objects. I've provided a list of papers that he wrote on page 479. I want to thank Steve Gottlieb for providing a list of several of the papers that V-V authored.

This observing guide covers only Part I.

Background information of this very interesting Russian astronomer.

Boris didn't just do work on interacting galaxies; he wrote some articles on planetary nebulae. He compiled the *General Catalogue of Planetary Nebulae*, in which he created the classification of planetary nebulae (see table below), which is still being used today.

Table 1: Vorontsov-Velyaminov Planetary Nebula Types

Type	Description
1	Stellar
2a	Smooth disc – brighter towards the center
2b	Smooth disc – uniform brightness
2c	Smooth disc – traces of ring structure
3a	Irregular disc – very irregular brightness distribution
3b	Irregular disc – traces of ring structure
4	Ring structure
5	Irregular form
6	Anomalous form

[1] A table on page 198 is provided cross-referencing VV Part I with Arp's list.

V-V was the principal architect in the Morphological Catalogue of Galaxies (MCG), which consists of 30,642 galaxies based on scrutiny of the POSS plates. The catalogue was published in five parts between 1962 and 1974. The key is that this list is limited to magnitude 15, otherwise, it would be insanely large. V-V complained to other professional astronomers that his "Catalogue of Interacting Galaxies" and MCG were often ignored or not recognized in their papers, so he did not receive credit for the original discovery or designation. This probably occurred as he published primarily in Soviet astronomy journals, which were not easily accessible to many astronomers. Anyhow, he wrote a correspondence expressing displeasure[2]. This is not the only "complaint" that V-V wrote, he wrote another[3] regarding that his Ring Galaxies[4] paper was largely ignored as well.

Thanks to my observing friends

Big thanks to Steve Gottlieb for supplying some missing holes as the complete picture of Boris V-V's work is largely missing from internet searches. And thanks for being a sound board for me to bounce ideas off before implementing into this observing guide.

Big thanks to Jimi Lowrey for suggesting this list as my next observing guide. Also, thanks to Jimi for his encouragement for going after the impossible and for the many joys of observing through his 48" reflector.

Lastly, giving thanks to my observing core of observing buddies, late Gregg Blandin, Shneor Sherman, late Bill Porte, and Marsha Robinson-Porte, for camaraderie when observing at remote sites over several decades.

[2] Vorontsov-Velyaminov, B.A. *Correspondence – Morphological Catalogue of Galaxies Discriminated Against*. The Observatory, Vol. **94**, 1974, 319-320.

[3] Vorontsov-Velyaminov, B.A. *Ring Galaxies*. The Observatory, vol. 103, 1983, 259-260.

[4] Vorontsov-Velyaminov, B.A. *Ring Galaxies*. Soviet Astronomy, Vol. 4, 365

The Vorontsov-Velyaminov Catalogue

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
24	84	22 57 56.9	+26 09 00	GPair	14.0	25x25	NNNP	Peg	
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	84a	22 57 57.5	+26 09 00	G	14.0	20x20			MCG+4-54-6, NGC 7436B, UGC 12269
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	305a	23 23 32.7	+19 35 59	G	15.4	5x4			MCG+3-59-51, UGC 12574
	305b	23 23 36.3	+19 35 39	G	16.5	4x2			MAC 2323+1935
	305c	23 23 41.0	+19 34 10	G	15.07	12x6			MCG+3-59-52, UGC 12574
26	254	00 01 40.2	+23 29 23	GPair			PKdf	Peg	III Zw 125
	254a	00 01 38.2	+23 29 04	G	13.07	23x13			MCG+4-1-10, UGC 12914
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	37b	02 04 22.3	+45 46 35	G	16.2	6x3			MCG+8-4-17
	37a	02 04 25.4	+45 46 27	G	15.0	4x4			MCG+8-4-18
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	36a	01 24 43.8	+33 25 46	G	13.42	20x10			MCG+5-4-54, NGC 517, UGC 960
	36c	01 24 44.3	+33 26 51	star					
33	177	01 42 04.8	+07 38 57	GPair			PKb	Psc	
	177a	01 42 04.3	+07 39 02	G	13.7	7x4			MCG+1-5-22
	177b	01 42 05.0	+07 38 52	G	16.0	3x2			MAC 0142+0738
33	176	01 42 06.4	+07 39 46	GPair			PK	Psc	
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	176b	01 42 06.7	+07 39 39	G	16.0	2x2			MAC 0142+0739
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	54a	01 48 43.7	+10 30 28	G	14.69	8x6			
	54b	01 48 44.9	+10 30 23	G	16.99g	1x1			
35	175	01 56 22.6	+05 37 40	GPair			PK	Psc	UGC 1413
	175a	01 56 21.0	+05 37 44	G	12.2	30x28			MCG+1-6-3, NGC 741, III Zw 38
	175b	01 56 24.2	+05 37 36	G	15.30	2x2			MCG+1-6-4, NGC 742
36	332	23 57 33.4	-21 59 22	GPair			PD	Cet	
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	258c	01 12 59.8	-18 59 59	G	18	4x1			MAC 0112-1859
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	302b	02 18 24.2	-12 11 20	G	15	9x7			MCG-2-6-54
39	285	02 34 37.4	-08 47 08	G	14.01	10x9	R	Cet	MCG-2-7-35, NGC 985, , Mrk 1048
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41	338	01 47 42.2	+27 22 59	GPair			PDdf	Tri	
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	338b	01 47 54.5	+27 25 58	G	11.47	72x25			MCG+4-5-11, NGC 672, UGC 1256
42	93	01 47 00.7	+12 24 21	G	14.52	14x12	PC	Ari	MCG+2-5-30, UGC 1246
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	78b	03 55 47.2	-42 22 07	G	12.3	25x19			PGC 14118
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	161a	05 16 37.1	+06 26 13	G	15.5	3x3			MAC 0516+0627B
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	161c	05 16 37.3	+06 26 27	G	14.8	7x7			UGC 3274
49	225	05 21 57.7	+03 29 03	GPair			PK	Ori	
	225b	05 21 56.7	+03 29 11	G	14.56	15x7			MCG+1-14-34, IC 412, UGC 3298
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51	180	05 47 25.2	-25 15 04	GPair			PD	Lep	
	180b	05 47 24.6	-25 15 21	G	14.72	7x6			ESO 488-15
	180a	05 47 26.5	-25 14 49	G	14.78	6x7			ESO 488-19
52	178	06 47 40.8	-26 45 00	GPair			PK	CMa	
	178b	06 47 39.6	-26 44 46	G	11.8p	35x28			MCG-4-16-22, NGC 2292
	178a	06 47 42.9	-26 45 16	G	12.3b	42x33			MCG-4-16-23, NGC 2293
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	141a	07 30 57.0	+72 31 02	G	14.80	12x12			MCG+12-8-1, UGC 3864
	141d	07 30 59.9	+72 31 18	G					
54	157	08 27 48.9	+73 39 01	G	15.5	14x7	N	Cam	MCG+12-8-41, UGC 4389
	157a	08 27 48.1	+73 39 05	G	15.5	9x6			
	157b	08 27 50.1	+73 39 02	G					
	157c	08 27 50.2	+73 39 06	G					
55	284	07 43 49.7	+52 21 11	GPair			PDbt	Lyn	
	284a	07 43 47.6	+52 21 27	G	14.7	15x4			MCG+9-13-39, NGC 2429A, UGC 3983
	284b	07 43 51.8	+52 20 54	G	15	4x2			MCG+9-13-40, NGC 2429B
56	168	08 52 45.4	-01 49 02	GPair	15.1	9x5	NNN	Hya	MCG+0-23-9
	168a	08 52 45.1	-01 49 10	G					
	168b	08 52 45.6	-01 48 54	G					
	168c	08 52 47.0	-01 48 45	Dbl star					
57	171	09 23 25.7	+22 19 10	GTrpl			Ch	Leo	
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	171b	09 23 25.9	+22 19 00	G	16.2g	6x4			MCG+4-22-38, UGC 4991
	171c	09 23 27.0	+22 19 35	G	15.1	4x2			MCG+4-22-39
58	154	09 24 49.9	+21 34 21	GTrpl			N	Leo	MCG+4-22-47
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	154a	09 24 50.4	+21 34 26	G	14.8	4x2			
59	63	09 25 50.3	+22 22 11	GPair			PDb	Leo	MCG+4-22-51
	63a	09 25 50.4	+22 22 10	G	15.5	9x5			MAC 0925+2222A
	63b	09 25 51.0	+22 22 13	G	15.0	4x4			MAC 0925+2222
60	240	10 06 33.8	+14 26 12	GPair			Pkb	Leo	
	240b	10 06 33.3	+14 26 01	G	16.3	5x4			MCG+3-26-25, UGC 5448
	240a	10 06 34.4	+14 26 25	G	15.0	10x8			MCG+3-26-26
61	252	10 53 26.8	+16 46 44	GPair			PKdf	Leo	
	252a	10 53 24.0	+16 46 21	G	13.1	37x21			MCG+3-28-27, NGC 3447A, UGC 6006
	252b	10 53 29.6	+16 47 10	G	14.3	15x8			MCG+3-28-28, NGC 3447B, UGC 6007
62	149	10 56 51.0	+06 54 22	G	14.6p	9x7	N	Leo	MCG+1-28-23, UGC 6046

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	145c	11 13 20.7	+02 33 09	G	15.6	4x4			
	145a	11 13 21.4	+02 32 39	G	15.4	5x4			
64	218	11 51 27.4	+22 01 37	GPair			PK	Leo	
	218a	11 51 26.5	+22 01 41	G	14.5	3x2			MCG+4-28-73, NGC 3926B, UGC 6829
	218b	11 51 28.2	+22 01 33	G	14.5	3x2			MCG+4-28-74, NGC 3926A
65	230	11 58 05.2	+27 52 44	G	13.9g	18x6	PKdf	Leo	MCG+5-28-60, NGC 4004, Mrk 432, UGC 6950
66	110	09 50 56.5	-04 59 52	G	14.46	19x8	PC	Sex	MCG-1-25-49
	110a	09 50 55.9	-04 59 57	PofG					E part
	110b	09 50 57.1	-04 59 49	PofG					W part
67	111	09 54 32.9	-06 51 27	G	14.02	17x12	PC	Sex	MCG-1-25-58, IC 575
	111a	09 54 32.9	-06 51 30	PofG					S half
	111b	09 54 33.2	-06 51 24	PofG					N half
68	97	10 17 10.9	-03 29 52	G	13.68	23x12	PC	Sex	MCG+0-26-34, IC 600, UGCA 209
69	113	10 41 53.4	+00 47 35	G	14.9g	9x8	PC	Sex	MCG+0-27-41
70	65	10 27 51.3	-43 54 13	G	12.15	38x21	PC	Vel	MCG-7-22-10, NGC 3256
71	330	10 24 16.4	+78 37 08	GPair			PD	Dra	VII Zw 323
	330b	10 24 09.9	+78 37 44	G	14.19	14x10			MCG+13-8-16B, UGC 5600
	330a	10 24 22.3	+78 36 33	G	14.40	13x8			MCG+13-8-16A, UGC 5609
72	196	09 07 57.1	+49 35 59	GPair			PKb	UMa	
	196b	09 07 56.3	+49 35 48	G	15.0g	9x6			MCG+8-17-34
	196a	09 07 57.8	+49 36 10	G	15.8g	5x4			MCG+8-17-35
73	131	09 15 16.3	+48 40 03	GPair			N	UMa	
	131a	09 15 15.1	+48 40 12	G	16.5	11x9			MCG+8-17-64, UGC 4874
	131b	09 15 17.4	+48 39 54	star	15.1				
74	124	09 16 02.2	+52 50 24	G	13.78	17x13	N	UMa	MCG+9-15-113, UGC 4879
75	321	09 59 52.8	+45 16 41	GPair			PDb	UMa	UGC 5367
	321a	09 59 52.4	+45 16 59	G	15.8g	11x3			MCG+8-18-53
	321b	09 59 53.4	+45 16 22	G	16.1g	7x3			MCG+8-18-52
76	312	10 23 47.1	+53 06 12	GPair			PDb	UMa	UGC 5615
	312a	10 23 46.9	+53 06 28	G	13.8	8x7			MCG+9-17-61
	312b	10 23 47.3	+53 05 57	G	13.5	7x5			MCG+9-17-62
77	294	10 30 32.1	+70 02 16	GPair			PDb	UMa	
	294a	10 30 24.8	+70 03 01	G	13.8	40x19			MCG+12-10-44, VII Zw 331, UGC 5688
	294b	10 30 39.4	+70 01 32	G	14.6	5x1			
78	182	11 10 12.7	+36 57 56	GPair			PKb	UMa	
	182b	11 10 12.2	+36 57 53	G	15.2g	9x6			MCG+6-25-16, NGC 3545A
	182a	11 10 13.2	+36 58 00	G	15.0g	9x6			MCG+6-25-17, NGC 3545B

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
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	160b1	11 15 23.3	+53 41 14	G					
	160b2	11 15 23.5	+53 41 22	G	17.68	4x2			
	160c1	11 15 24.5	+53 41 49	G	17.73	3x1			
	160c2	11 15 25.4	+53 41 53	G	18.0r				
	160d1	11 15 50.9	+53 42 18	G					
	160d2	11 15 51.5	+53 41 14	G					
80	153	11 15 53.2	+53 45 12	GGroup			N	UMa	MCG+9-19-19A, Shakhbazian 3
	153b	11 15 51.8	+53 45 10	G					
	153a	11 15 52.1	+53 45 12	G	18.7g				
	153e	11 15 52.9	+53 45 17	G	19.5g				
	153c	11 15 53.8	+53 45 08	G	18.7g				
	153d	11 15 54.1	+53 45 20	G					
	153f	11 15 56.8	+53 45 06	G	20.0g	-			
81	198	11 16 56.0	+35 15 23	GPair			PDb	UMa	
	198a	11 16 55.8	+35 15 33	G	15.6g	6x5			MCG+6-25-34
	198b	11 16 56.3	+35 15 14	G	15.5g	6x5			MCG+6-25-33
82	87	11 25 31.8	+38 03 38	G	14.9g	16x4	PC	UMa	MCG+6-25-66, UGC 6433
83	265	11 27 21.3	+50 16 39	GPair			PK	UMa	MCG+8-21-36
	265a	11 27 21.1	+50 16 33	G	16.8g	7x4			
	265b	11 27 21.5	+50 16 44	G					
84	60	11 29 23.9	+41 52 16	GTrpl			NNN	UMa	
	60c	11 29 22.2	+41 52 18	G	16.5	2x1			MAC 1129+4152A
	60b	11 29 24.3	+41 52 19	G	15.0	6x5			MAC 1129+4152
	60a	11 29 25.5	+41 52 14	G	14.9	5x4			MCG+7-24-14
85	148	11 37 50.3	+56 08 42	G	15.20	11x7	N	UMa	MCG+9-19-140, UGC 6596
86	320	11 44 00.6	+55 02 28	GPair			PK	UMa	
	320b	11 43 46.4	+55 02 51	G	15.2p	7x6			MCG+9-19-165, Mrk 1452
	320a	11 44 14.8	+55 02 06	G	13.8p	19x1			MCG+9-19-169, NGC 3846, UGC 6706
87	273	11 50 47.7	+56 27 21	G			N	UMa	
	273b	11 50 43.7	+56 27 28	PofG	18.0r				
	273a	11 50 47.7	+56 27 21	G	14.12	15x13			MCG+10-17-86, UGC 6816
88	57	11 56 14.4	+58 11 49	G	14.6	21x14	R	UMa	MCG+10-17-104
	57a	11 56 13.8	+58 12 01	PofG					
	57b	11 56 14.3	+58 11 46	PofG					
	57c	11 56 18.4	+58 11 16	PofG					UGC 6912
89	241	11 57 24.9	+57 55 48	G	14.31	14x10	PKdf	UMa	MCG+10-17-115, UGC 6931
	241b	11 57 22.4	+57 55 52	PofG	20.6g	1x1			
	241a	11 57 25.2	+57 55 50	PofG					UGC 6931
90	259	12 02 29.4	+62 25 02	G	15.2	15x8	PK	UMa	MCG+11-15-11,UGC 7019

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
91	136	12 03 13.1	+57 53 40	GTrpl	15.2		N	UMa	MCG+10-17-131, NGC 4054
	136a	12 03 12.4	+57 53 36	G	15.2	7x4			main component
	136c	12 03 13.4	+57 53 53	G	17.2g	3x2			NE component
	136b	12 03 13.8	+57 53 26	G	15.6g	5x3			SE component
92	270	12 04 56.2	+58 06 10	GPair			PKt	UMa	
	270c	12 04 52.8	+58 05 49	G	17.5	4x4			MCG+10-17-136A, MAC 1204+5805
	270b	12 04 59.0	+58 06 24	G	15.1p	8x6			MCG+10-17-137, UGC 7070
	270a	12 04 59.7	+58 06 35	PofG					MCG+10-17-137, UGC 7070
93	183	12 14 50.2	+59 54 27	GPair			PD	UMa	MCG+10-18-11, NGC 4199, UGC 7253
	183a	12 14 48.6	+59 54 22	G	15.2g	9x6			
	183b	12 14 51.7	+59 53 30	G	17	7x3			
94	235	13 23 17.4	+52 39 10	GPair			PKt	UMa	I Zw 57, UGC 8416
	235b	13 23 16.7	+52 39 13	G	15.2	6x5			MCG+9-22-55
	235a	13 23 18.0	+52 39 07	G	15.6	11x4			MCG+9-22-56
95	344	14 04 07.4	+54 00 24	GPair			PD	UMa	
	344a	14 03 12.5	+54 20 55	G	8.3b	289x269			MCG+9-23-28, NGC 5457, UGC 8981
	344b	14 05 01.3	+53 39 44	G	11.3b	47x47			MCG+9-23-32, NGC 5474, UGC 9013
96	236	12 10 36.7	+34 57 24	G	15.7g	8x6	PK	CVn	MCG+6-27-19
	236a	12 10 36.3	+34 57 18	PofG					
	236b	12 10 37.0	+34 57 28	PofG					
97	345	12 12 39.5	+34 41 48	GPair			PD	CVn	
	345a	12 12 39.2	+34 42 13	G	15.5g	7x4			MCG+6-27-28
	345b	12 12 39.4	+34 41 25	G	16.0g	15x2			MCG+6-27-29, UGC 7212
98	104	12 13 44.8	+36 38 03	G	13.4g	15x12	PC	CVn	MCG+6-27-30, NGC 4190, UGC 7232
	104a	12 13 44.1	+36 37 53	PofG					
	104b	12 13 45.5	+36 38 40	Star Cl					
99	127	12 44 25.1	+34 23 12	G	14.7	24x16	PD	CVn	MCG+6-28-24, I Zw 42, UGC 7916
	127d	12 44 23.1	+34 22 49	PofG	19.64				
	127c	12 44 24.5	+34 23 36	PofG	19.8g	1x1			
	127a	12 44 24.6	+34 22 37	PofG	18.17				
	127f	23 4 26.4	+34 24 13	PofG	19.08				
	127b	12 44 26.6	+34 22 47	G	17.7g	3x1			
	127e	12 44 26.9	+34 24 01	PofG	20.00				
100	222	12 59 59.7	+37 11 26	GPair			PK	CVn	UGC 8111
	222b	12 59 59.6	+37 11 36	G	15.6	5x5			MCG+6-29-8, NGC 4893
	222a	12 59 59.8	+37 11 16	G	16.9	4x4			MCG+6-29-9, NGC 4893A
101	292	13 06 50.5	+35 07 00	GPair			PDb	CVn	
	292a	13 06 45.2	+35 06 02	G	14.8p	13x7			MCG+6-29-35, UGC 8199
	292b	13 06 55.9	+35 07 57	G	15.6g	9x5			MCG+6-29-36, UGC 8200
102	325	13 29 45.1	+33 20 45	GPair			PDt	CVn	
	325a	13 29 44.5	+33 20 21	G	15.1g	7x6			MCG+6-30-19
	325b	13 29 45.7	+33 21 09	G	15.7g	7x2			MCG+6-30-20

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
	69	13 03 17.3	+31 19 59	GGroup			PC	CVn	MCG+5-32-31, UGC 8496
103	69a	13 03 17.3	+31 20 07	G	14.9				
	69b	13 30 17.4	+31 19 59	G	16.4g	5x3			
	326	10 30 38.0	+31 17 07	GPair			PD	CVn	UGC 8502
104	326b	13 30 36.6	+31 17 10	G	14.6	6x5			MCG+5-32-34
	326a	13 30 39.4	+31 17 04	G	14.6	7x4			MCG+5-32-35, Mrk 455
	317	13 47 04.1	+33 53 14	GPair			PDdf	CVn	
105	317b	13 47 01.2	+33 53 37	G	15.3p	18x14			MCG+6-30-81, UGC 8713
	317a	13 47 07.0	+33 52 53	G	14.5p	13x11			MCG+6-30-83, UGC 8715
	202	13 53 52.3	+33 11 32	GPair			NN	CVn	
106	202a	13 53 41.7	+33 13 41	G	15.3	3x3			MCG+6-31-12, UGC 8817
	202b	13 53 43.8	+33 13 20	G	15.5	4x4			MCG+6-31-15
	203	13 53 45.5	+33 13 15	GPair			PK	CVn	MCG+6-31-16
106	203b	13 53 45.4	+33 13 12	G	18	1x1			
	203a	13 53 45.6	+33 13 18	G	18	1x1			
	158	13 56 20.7	+28 31 22	GGroup			Ch	CVn	
	158a	13 56 19.2	+28 32 11	G	15.3	4x3			MCG+5-33-24
107	158b	13 56 25.3	+28 31 35	G	15.8	3x3			MCG+5-33-24A
	158c	13 56 32.2	+28 31 20	G	15.7	4x3			MCG+5-33-25
	158d	13 56 42.6	+28 30 10	G	15.6	7x2			MCG+5-33-26
	310	13 59 54.0	+38 11 30	GPair			PD	CVn	
108	310a	13 59 50.9	+38 10 55	G	14.4p	34x6			MCG+6-31-41, NGC 5403, UGC 8919
	310b	13 59 57.1	+38 12 02	G	15.4	8x4			MCG+6-31-42
	256	14 00 55.4	+40 59 49	GPair			PKdf	CVn	
109	256a	14 00 54.5	+40 59 17	G	14.03	15x8			MCG+7-29-34, NGC 5410, UGC 8931
	256b	14 00 56.4	+41 00 21	G	15.43	8x3			MCG+7-29-35, UGC 8932
	185	12 00 49.0	+15 27 07	GPair			PK	Com	MCG+3-31-12
110	185b	12 00 48.6	+15 27 10	G					
	185a	12 00 49.3	+15 27 04	G	15.6g	7x6			
	45	12 01 38.7	+22 39 41	GPair	15.5	8	PDb	Com	MCG+4-28-121
111	45b	12 01 38.6	+22 39 50	G					
	45a	12 01 38.8	+22 39 32	G	16.53	6x4			
112	276	12 03 53.5	+25 25 57	G	14.1	19x11	PK	Com	MCG+4-29-5, UGC 7040
	179	12 04 03.8	+20 14 01	GPair			PD	Com	
113	179b	12 04 01.5	+20 13 56	G	14.12	12x9			MCG+4-29-6, NGC 4061, UGC 7044
	179a	12 04 06.2	+20 14 06	G	13.58	11x10			MCG+4-29-7, NGC 4065, UGC 7050
	46	12 04 15.9	+24 08 40	GPair			PDb	Com	MCG+4-29-10, UGC 7055
114	46b	12 04 15.1	+24 08 32	G	17.6g	4x2			
	46a	12 04 16.8	+24 08 49	G	15.84	10x8			
	61	12 06 03.9	+20 36 22	GPair	14.36	13x18	PK	Com	MCG+4-29-23, NGC 4098, UGC 7091
115	61a	12 06 03.6	+20 36 29	G					
	61b	12 06 04.2	+20 36 14	G					

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
116	62	12 06 18.3	+20 36 40	GPair			PDb	Com	MCG+4-29-24
	62b	12 06 18.2	+20 36 33	G	19.0g	1x1			
	62a	12 06 18.2	+20 36 45	G	18	3x3			
117	147	12 12 11.6	+18 05 37	GGroup			Ch	Com	MCG+3-31-69
	147a	12 12 11.8	+18 05 38	G	17.0g	8x1			
	147b	12 12 12.9	+18 05 47	G					
	147e	12 12 13.5	+18 05 48	G					
	147d	12 12 13.8	+18 05 58	PofG					
	147c	12 12 13.9	+18 05 43	G					
118	279	12 27 53.9	+28 38 17	GTrpl			PK	Com	MCG+5-29-88
	279a1	12 27 53.7	+28 38 15	G	16	9x1			
	279a	12 27 53.9	+28 38 24	GPair					
	279a2	12 27 54.0	+28 38 35	G	17.3g	8x1			
	279b	12 27 54.0	+28 38 01	G	16.9	17x2			
119	287	12 39 15.7	+27 42 52	GPair			PK	Com	MCG+5-30-49
	287a	12 39 15.1	+27 42 52	G	17.9g	2x2			
	287b	12 39 16.1	+27 42 51	G	17.2r				
120	151	12 43 03.6	+30 22 58	GTrpl			PDb	Com	
	151c	12 43 03.0	+30 22 44	G					MCG+5-30-63, UGC 7891
	151a	12 43 03.7	+30 22 55	G	15.3	7x3			MCG+5-30-63, UGC 7891
	151b	12 43 04.2	+30 23 14	G	16.0	7x5			MAC 1243+3023
	151d	12 43 05.1	+30 23 17	PofG					
121	88	13 30 58.7	+19 26 17	G	13.94	14x8	PC	Com	MCG+3-34-44, VIII Zw321, UGC 8507
122	105	11 52 44.1	+01 44 26	GPair			N	Vir	
	105a	11 52 43.4	+01 44 27	G	14.7g	8x7			MCG+0-30-33, Mrk 752, UGC 6854
	105c	11 52 44.5	+01 44 29	PofG	19.6g	1x1			
	105b	11 52 44.7	+01 44 24	G	17	1x1			MCG+0-30-33, UGC 6854
123	76	12 31 40.0	+03 55 58	GPair			PK	Vir	MCG+1-32-90, UGC 7668
	76a	12 31 39.2	+03 56 23	G	11.94	40x32			NGC 4496A
	76b	12 31 40.9	+03 55 34	G	14.0g	13x7			NGC 4496B
124	219	12 36 33.5	+11 14 54	GPair			PK	Vir	Siamese twins
	219b	12 36 32.7	+11 15 28	G	12.1b	33x20			MCG+2-32-151, NGC 4567, UGC 7777
	219a	12 36 34.2	+11 14 20	G	11.7b	48x20			MCG+2-32-152, NGC 4568, UGC 7776
125	64	12 44 20.5	+04 25 35	GPair			PDb	Vir	
	64b	12 44 19.5	+04 25 31	G	15.3p	5x2			MCG+1-33-2, UGC 7909
	64a	12 44 21.5	+04 25 39	G	15.7	3x2			MCG+1-33-3
126	283	13 01 50.8	+04 20 00	GPair	15.28	6x6	PK	Vir	MCG+1-33-36
	283a	13 01 50.2	+04 20 02	G	15.5				
	283b	13 01 51.2	+04 20 00	G					
127	47	13 10 28.6	-21 35 13	GPair			PDb	Vir	MCG-3-34-7
	47b	13 10 28.1	-21 35 17	G	17.10	1x1			PGC 45712
	47a	13 10 28.8	-21 35 11	G	15.86	4x1			
128	184	13 21 37.6	-16 16 57	GPair			PD	Vir	
	184b	13 21 36.7	-16 17 10	G	16	2x2			MCG-3-34-57
	184a	13 21 38.5	-16 16 45	G	14.29	3x2			MCG-3-34-58

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
129	18	13 34 39.4	+04 08 00	GPair			M	Vir	MCG+1-35-8, NGC 5213, UGC 8552
	18a	13 34 39.2	+04 07 48	G	14.5g	9x7			
	18b	13 34 39.6	+04 08 11	G	17.9g	5x1			
130	211	13 35 14.8	+10 41 22	GPair			PK	Vir	
	211a	13 35 14.4	+10 41 10	G	15.4g	6x3			MCG+2-35-7, Mrk 1356b, UGC 8562
	211b	13 35 14.8	+10 41 31	G	15.03	5x5			MCG+2-35-8, Mrk 1356, UGC 8563
131	108	13 39 12.4	+04 37 20	GPair			PC	Vir	MCG+1-35-24, UGC 8635
	108a	13 39 11.5	+04 37 17	G	18.6g	4x1			
	108b	13 39 13.2	+04 37 24	G	14.6g	9x7			
132	170	13 41 53.3	+02 04 41	GTrpl			Ch	Vir	
	170a	13 41 51.2	+02 04 34	G	15.5	6x5			MCG+0-35-17, UGC 8666
	170b	13 41 54.0	+02 04 45	G	15.5	4x3			MAC 1341+0204A
	170c	13 41 55.4	+02 04 49	G	16.5	2x2			MAC 1341+0204B
133	135	13 49 11.1	-07 13 15	GTrpl			NNN	Vir	Hickson 67
	135b	13 49 09.8	-07 13 54	G	15.77	5x3			MCG-1-35-14
	135a	13 49 11.4	-07 13 28	G	13.43	20x18			MCG-1-35-14, NGC 5306
	135c	13 49 12.3	-07 12 33	G	15.69	7x3			MCG-1-35-15
134	253	13 52 16.3	+02 06 11	GPair	14.3		PKt	Vir	MCG+0-35-22, NGC 5331, UGC 8774
	253a	13 52 16.1	+02 06 03	G	15.0	6x3			
	253b	13 52 16.4	+02 06 31	G	16.2	6x4			PGC 49266
135	99	13 55 34.2	-05 58 22	G	14.53	6x5	PC	Vir	MCG-1-35-21
	99b	13 55 33.9	-05 58 18	G	15.5				
	99a	13 55 34.5	-05 58 26	G					
135	100	13 55 45.4	-06 00 10	G	13.93	16x8	PC	Vir	MCG-1-35-22
	100b	13 55 45.3	-06 00 28	PofG					
	100a	13 55 45.5	-06 00 18	PofG					
	100c	13 55 46.4	-06 00 40	PofG					
	100d	13 55 46.7	-06 00 42	PofG					
136	269	12 04 26.3	-18 30 59	GPair			PK	Crv	
	269a	12 04 26.1	-18 30 48	G	15.92	4x2			MCG-3-31-19
	269b	12 04 26.6	-18 31 11	G	16.32	4x2			MCG-3-31-20
137	49	12 06 07.2	-22 50 58	G	13.03	29x21	N	Crv	MCG-4-29-6, UGCA 270
	49c	12 06 06.5	-22 50 07	PofG					
	49b	12 06 07.0	-22 50 29	PofG					
	49a	12 06 07.2	-22 50 58	PofG					
138	201	12 54 36.2	-12 33 47	GPair			PK	Crv	
	201a	12 54 35.7	-12 34 07	G	12.7p	17x16			MCG-2-33-50, NGC 4782
	201b	12 54 36.6	-12 33 28	G	12.5p	17x17			MCG-2-33-51, NGC 4783
139	333	12 16 58.0	-26 12 37	GPair			PD	Hya	
	333b	12 16 57.1	-26 12 34	G	16	8x7			MCG-4-29-15
	333a	12 16 59.9	-26 12 36	G	15.49	8x7			MCG-4-29-16
140	290	12 47 44.1	-26 11 58	GPair			PKb	Hya	
	290a	12 47 40.3	-26 12 00	G	14.81	12x5			MCG-4-30-16
	290b	12 47 48.1	-26 11 59	G	15.51	12x10			MCG-4-30-17
141	351	13 54 30.5	-26 33 58	GPair			PD	Hya	
	351a	13 54 26.4	-26 34 35	G	14.43	14x7			MCG-4-33-10
	351b	13 54 34.7	-26 33 22	G	14.82	12x10			MCG-4-33-11

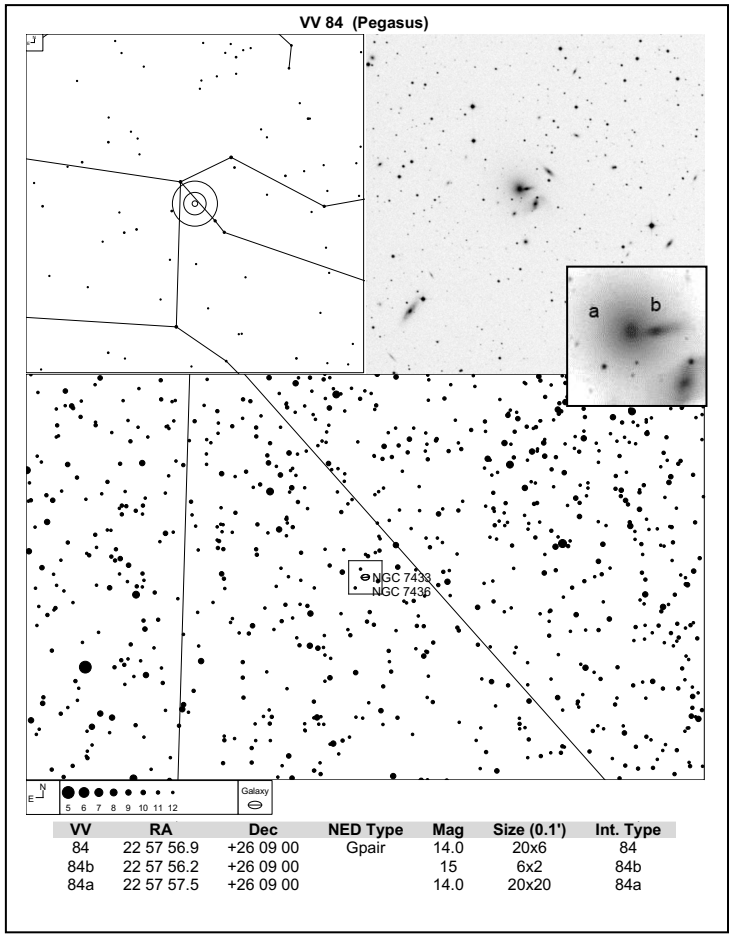
Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
142	133	13 39 19.4	+24 46 32	G	14.47	12x8	N	Boo	MCG+4-32-18, UGC 8638
143	195	13 41 49.4	+26 22 19	GPair			PDb	Boo	
	195b	13 41 49.1	+26 22 25	G	15.0g	8x6			MCG+5-32-63
	195a	13 41 50.4	+26 22 13	G	15.3	2x2			MCG+5-32-64
144	163	13 44 25.0	20 24 50	GTrpl	14.89	11	Ch	Boo	
	163a	13 44 24.5	+20 24 34	G	15.0				MCG+4-32-34, UGC 8691
	163c	13 44 25.4	+20 24 52	G	16.0	1x1			MAC 1344+2025
	163b	13 44 25.4	+20 25 06	G		1x1			MCG+4-32-34, UGC 8691
145	306	13 48 08.9	+07 23 27	GTrpl			NNNP	Boo	UGC 8728
	306c	13 48 05.0	+07 23 32	G	15.5	6x6			MAC 1348+0723
	306b	13 48 06.0	+07 23 15	G	14.7	4x4			MCG+1-35-37
	306a	13 48 12.5	+07 23 41	G	14.39	13x7			MCG+1-35-39
146	190	13 48 15.1	+25 43 59	GPair				Boo	
	190b	13 48 14.1	+25 43 58	G	16.1g	4x4	PDb		MCG+4-33-4
	190a	13 48 16.1	+25 44 01	G	15.3g	7x5			MCG+4-33-3
146	191	13 48 22.1	+25 50 50	GPair			PDb	Boo	
	191a	13 48 21.8	+25 40 31	G	15.5	5x5			MCG+4-33-6
	191b	13 48 22.4	+25 40 50	G	15.8g	5x5			MCG+4-33-5
147	281	13 55 30.0	+25 04 26	GTrpl			Ch	Boo	
	281c	13 55 28.4	+25 04 25	G	17.7g	1x1			MCG+4-33-27, UGC 8842
	281b	13 55 28.7	+25 04 19	PofG	21.3	1x1			
	281a	13 55 29.9	+25 04 27	PofG					
	281d	13 55 32.6	+25 04 28	G	15.76	5x4			MCG+4-33-28
148	335	13 55 59.6	+17 30 21	GPair			PDb	Boo	IC 960, UGC 8849
	335a	13 55 59.1	+17 29 57	G	14.50	9x6			MCG+3-36-3
	335b	13 56 00.1	+17 30 42	G	14.50	7x2			MCG+3-36-4
149	339	14 00 22.5	+12 57 26	GPair			PD	Boo	
	339a	14 00 19.8	+12 57 26	G	14.77	10x6			MCG+2-36-7
	339b	14 00 25.3	+12 57 27	G	14.93	9x7			MCG+2-36-8, UGC 8920
150	277	14 01 08.2	+21 14 24	GPair	15.1	10x4	PKdf	Boo	MCG+4-33-38, UGC 8929
	277b	14 01 07.1	+21 14 35	G	14.8	2x2			
	277c	14 01 08.2	+21 14 34	PofG	16.6g	1x1			
	277a	14 01 09.3	+21 14 16	G	14.70	6x4			
151	328	14 04 54.2	+12 42 48	GPair			PD	Boo	
	328a	14 04 53.7	+12 43 18	G	14.4p	13x8			MCG+2-36-34, UGC 9002
	328b	14 04 54.7	+12 42 17	G	15.6	4x2			MCG+2-36-35, Mrk 803
152	103	14 07 00.1	+10 27 44	Gpair?	14.8	8x5	PC	Boo	MCG+2-36-41
	103a	14 07 00.2	+10 27 45	G	14.8g	9x6			
153	125	14 11 27.0	+50 12 33	G	14.85	11x8	N	Boo	MCG+8-26-9, UGC 9083
154	299	14 13 06.9	+08 37 31	GPair			PD	Boo	
	299b	14 13 05.4	+08 37 55	G	15.8g	6x2			MCG+2-36-50, NGC 5511, VIII Zw 381
	299a	14 13 08.3	+08 37 08	G	15.0	6x6			MCG+2-36-51, , VIII Zw 382
155	70	14 13 38.8	+07 39 34	GPair	13.7			Boo	MCG+1-36-23, NGC 5514, UGC 9102
	70a	14 13 38.4	+07 39 38	G	14.5	10x5	PC		
	70b	14 13 39.4	+07 39 29	G	15.50	8x7			

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
156	223	14 13 44.7	+08 13 13	GTrpl			NNNP	Boo	MCG+1-36-24, UGC 9103
	223c	14 13 42.0	+08 13 16	G	16.0g	10x2			PGC 50811
	223a	14 13 45.7	+08 13 07	G	14.7	4x2			PGC 50821
	223b	14 13 46.5	+08 13 15	G	15.3	5x2			PGC 50830
157	24	14 27 01.5	+39 57 25	GPair	14.8	8x6	M	Boo	MCG+7-30-13, NGC 5625
	24b	14 27 00.6	+39 57 22	G	20.5g	1x1			
	24a	14 27 01.6	+39 57 25	G	14.7g	8x6			
158	15	14 28 45.3	+28 57 51	G			M	Boo	MCG+5-34-50, IC 4442, UGC 9287
	15b	14 28 44.6	+28 58 00	PofG	19.6	1x1			
	15a	14 28 45.3	+28 57 51	G	14.9p	10x6			
	15c	14 28 46.4	+28 57 44	PofG	18.7g	2x1			
159	152	14 29 50.7	+44 26 52	G	14.9	23x1	N	Boo	MCG+7-30-18, UGC 9324
160	262	14 31 56.8	+36 18 15	GPair			PK	Boo	MCG+6-32-59
	262b	14 31 55.7	+36 18 21	G	17.0	9x3			MAC 1431+3618
	262a	14 31 57.7	+36 18 11	G	16.3				
161	146	14 35 38.9	+13 09 56	GTrpl	14.10	22x7	N	Boo	MCG+2-37-26, UGC 9394
	146c	14 35 37.9	+13 09 40	G	16				
	146b	14 35 38.1	+13 09 50	G	15.0				
	146a	14 35 39.9	+13 10 12	G	15.0g	10x5			
162	109	14 46 02.8	+08 30 11	GTrpl			NNNP	Boo	UGC 9509
	109a1	14 46 01.8	+08 29 46	G	15.4	4x2			MCG+2-38-3
	109a	14 46 01.8	+08 29 47	GPair	15.4	12x4			MCG+2-38-3
	109a2	14 46 02.8	+08 29 43	G	16	5x3			MCG+2-38-3
	109b	14 46 03.8	+08 30 40	G	15.7g	4x2			MCG+2-38-4
163	324	14 51 05.5	+35 33 23	GPair			PD	Boo	
	324b	14 50 56.5	+35 34 18	G	14.8b	10x3			MCG+6-33-2, II Zw 70, Mrk 829, UGC 9560
	324a	14 51 14.4	+35 32 29	G	14.4b	11x8			MCG+6-33-4, II Zw 71, UGC 9562
164	274	14 55 28.2	+32 50 25	GPair			PKt	Boo	MCG+6-33-9
	274a	14 55 28.2	+32 50 24	G	15.6g	6x5			
	274b	14 55 28.7	+32 50 26	G	19.9g	1x1			
164	275	14 55 30.8	+32 49 51	GPair	16.0	12x5	PDt	Boo	UGC 9603
	275a	14 55 29.8	+32 49 54	G	16.5g	5x3			MCG+6-33-10
	275b	14 55 31.7	+32 49 47	G	16.3g	8x4			MCG+6-33-11
165	26	14 56 53.1	+09 16 18	GPair			M	Boo	MCG+2-38-28, UGC 9616
	26a	14 56 53.1	+09 16 18	G	14.39	10x9			
	26b	14 56 53.1	+09 15 49	PofG					
166	204	15 04 57.2	+26 00 54	G	15.24		NNNP	Boo	
	204c	15 04 56.1	+26 00 55	G	18.1g	2x2			
	204b	15 04 57.1	+26 00 58	G	15.5g	7x6			MCG+4-36-4
	204a	15 04 58.3	+26 00 51	G	16.2g	5x4			MCG+4-36-5
167	59	15 08 04.9	+34 23 14	GPair	15.9g	10x3	N	Boo	MCG+6-33-22, Rose 25
	59b	15 08 04.3	+34 23 07	G	15.6	1x1			
	59a	15 08 05.8	+34 23 24	G	13.8	1x1			

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
168	98	14 45 01.6	-13 56 48	GGroup	13.3	16x10	PC	Lib	MCG-2-38-4, NGC 5745
	98d	14 44 57.2	-13 57 54	star	14.0b				
	98c	14 45 00.9	-13 56 56	G	14.96				
	98a	14 45 01.9	-13 56 40	G	14.96				
	98b	14 45 01.9	-13 56 50	G	15.45				
169	164	14 45 25.8	-20 41 07	G	15.03	14x8	Ch	Lib	MCG-3-38-5
	164a	14 45 25.5	-20 41 13	PofG					
	164b	14 45 25.7	-20 41 07	PofG					
	164d	14 45 16.1	-20 40 51	PofG					
	164c	14 45 26.3	-20 40 45	PofG					
170	322	14 50 48.6	-13 31 49	GTrpl			NNN	Lib	
	322a	14 50 47.9	-13 32 16	G	15.5	6x5			MCG-2-38-19
	322b	14 50 48.2	-13 31 31	G	15.5	7x2			MCG-2-38-18
	322c	14 50 49.3	-13 31 19	G	17	3x3			MCG-2-38-18A
171	130	14 51 12.4	-20 26 27	G	13.98	20x11	NNN	Lib	MCG-3-38-21
	130b	14 51 10.9	-20 26 03	PofG					
	130a	14 51 12.1	-20 26 24	PofG					
	130c	14 51 12.5	-20 26 41	PofG					
172	137	14 55 12.8	-19 39 53	G	14.06	17x1	N	Lib	MCG-3-38-26
173	139	15 19 28.2	+20 53 37	GGroup			N	Ser	
	139b	15 19 24.2	+20 53 27	G	15.65	6x4			MCG+4-36-35, UGC 9813
	139a	15 19 24.7	+20 53 47	G	14.96	8x8			MCG+4-36-35, NGC 5910
	139d	15 19 25.2	+20 54 10	G	19.2g	1x1			MCG+4-36-36
	139c	15 19 25.8	+20 53 58	G	17.00	5x3			MCG+4-36-36A
174	227	15 25 39.8	+20 47 18	GPair	15.5	11x7	PK	Ser	MCG+4-36-45, UGC 9843
175	132	15 35 10.5	+16 32 58	G	14	17x17	N	Ser	MCG+3-40-7, UGC 9912
176	115	15 59 11.9	+20 45 31	GGroup			NNN	Ser	NGC 6027, VII Zw631, UGC 10116, Hickson 79
	115b	15 59 10.8	+20 45 44	G	15.31	4x2			MCG+4-38-5
	115a	15 59 11.1	+20 45 17	G	14.98	5x4			MCG+4-38-6
	115c	15 59 11.8	+20 44 49	G	16.75	9x2			MCG+4-38-7
	115A	15 59 12.5	+20 45 48	G	14.7	4x2			MCG+4-38-8
	115d	15 59 12.9	+20 45 36	G	16.47	2x2			MCG+4-38-9
	115e	15 59 14.5	+20 45 57	G	16.7	8x4			MCG+4-38-10
177	156	16 00 14.7	+18 22 32	GPair			N	Ser	MCG+3-41-22
	156a	16 00 14.4	+18 22 33	G	17.8g	4x3			
	156b	16 00 14.9	+18 22 33	G	14.87	5x4			
178	91	16 02 02.4	+15 40 43	GPair			PC	Her	
	91a	16 02 01.9	+15 40 38	G	15.8	2x2			MCG+3-41-46
	91b	16 02 02.8	+15 40 49	G	16.5	3x2			MAC 1602+1540
178	90	16 02 08.2	+15 41 38	GPair			PC	Her	
	90a	16 02 08.0	+15 41 47	G	14.8g	7x6			MCG+3-41-48, IC 1165A
	90b	16 02 08.6	+15 41 35	G	15.4g	7x5			MCG+3-41-49, IC 1165B
178	92	16 02 08.7	+15 42 39	GPair			PDb	Her	MCG+3-41-50
	92b	16 02 07.9	+15 42 39	G	17.9g	2x2			
	92a	16 02 09.3	+15 42 40	G	16.5g	5x2			

Page	VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type	Const	Other IDs
179	213	16 04 35.3	+17 43 09	GPair			PC	Her	MCG+3-41-78, NGC 6041, UGC 10170
	213b	16 04 34.9	+17 43 03	G	15.4g	7x6			NGC 6041B, PGC 56960
	213a	16 04 35.8	+17 43 18	G	14.5g	11x8			NGC 6041A, PGC 56962
180	327	16 06 05.1	+20 47 13	GTrpl			PD	Her	
	327c	16 06 04.1	+20 46 21	G	17.0	3x3			MAC 1606+2046
	327b	16 06 04.4	+20 48 06	G	15.4g	12x5			MCG+4-38-27, UGC 10198
	327a	16 06 05.9	+20 47 03	G	15.2	11x6			MCG+4-38-26, UGC 10197
181	214	16 06 18.2	+15 40 29	GPair			PK	Her	
	214a	16 06 17.8	+15 40 27	G	18.2g	2x2			
	214b	16 06 18.3	+15 40 49	G	18.4g	2x1			
181	215	16 06 25.7	+15 41 23	GPair			PK	Her	UGC 10201
	215a	16 06 25.5	+15 41 07	G	13.4	8x8			MCG+3-41-123
	215b	16 06 25.8	+15 41 37	G	15.4	6x4			MCG+3-41-124
182	192	16 15 34.8	+19 27 27	GPair			PKb	Her	
	192b	16 15 34.1	+19 27 41	G	14.4b	12x9			MCG+3-41-145, NGC 6098,UGC 10299
	192a	16 15 35.6	+19 27 12	G	14.3b	8x6			MCG+3-41-146, NGC 6099
183	129	16 18 06.3	+21 33 39	GGroup			NN	Her	UGC 10321
	129a	16 18 05.3	+21 33 14	G	16.1g	7x4			MCG+4-38-46
	129d	16 18 05.5	+21 34 12	G	17.7g	4x1			MCG+4-38-46, UGC 10321
	129c	16 18 05.7	+21 33 48	G	18	2x1			MCG+4-38-46, UGC 10321
	129b	16 18 05.9	+21 33 24	G	15.5	5x3			MCG+4-38-46
	129e	16 18 09.7	+21 33 37	G	16.6g	5x4			MCG+4-38-47
184	289	16 55 00.5	+43 03 30	GPair			PDbt	Her	UGC 10610
	289a	16 54 58.7	+43 03 40	G	15.4g	7x4			MCG+7-35-4
	289b	16 55 02.4	+43 03 19	G	15.5	6x4			MCG+7-35-5
185	268	17 33 38.0	+50 22 25	GPair	16	15x9	N	Her	MCG+8-32-10, UGC 10908
	268a	17 33 37.8	+50 22 41	G					
	268b	17 33 37.9	+50 22 25	G					
	268c	17 33 38.0	+50 22 22	PofG	16.5				
186	121	17 58 15.8	+66 38 00	Other	15	10x7	Other	Dra	
187	72	19 59 28.3	+40 44 02	G	17.04		PC	Cyg	MCG+7-41-3, CygA
188	304	19 18 30.0	-60 29 56	GPair			PDdf	Pav	
	304a	19 18 22.6	-60 30 03	G	12.55	23x15			NGC 6769
	304b	19 18 37.3	-60 29 50	G	12.83	23x17			NGC 6770
189	297	20 16 57.3	-70 45 30	GPair			PD	Pav	
	297a	20 16 56.5	-70 46 03	G	12.69	60x17			NGC 6872
	297b	20 16 57.3	-70 44 57	G	14.7	7x2			IC 4970
190	102	21 04 28.7	+16 05 01	GPair			PC	Del	MCG+3-53-13, UGC 11672
	102b	21 04 28.2	+16 05 04	G	15.0	8x4			MAC 2104+1605
	102a	21 04 29.1	+16 04 58	G	14.7	10x6			
191	17	22 54 56.7	-16 08 12	GPair			MM	Aqr	
	17c	22 54 56.1	-16 08 16	PofG	19				
	17b	22 54 56.3	-16 07 55	PofG	18				
	17d	22 54 56.5	-16 08 27	G	18				
	17a	22 54 56.9	-16 07 57	G	13.73	13x9			MCG-3-58-12

How to Use the Atlas



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
84	22 57 56.9	+26 09 00	Gpair	14.0	20x6	84
84b	22 57 56.2	+26 09 00		15	6x2	84b
84a	22 57 57.5	+26 09 00		14.0	20x20	84a

The top left panel contains the naked eye field with the TelRad™ superimposed on the center of the galaxy trio or triple system. The top right panel contains the inverted labeled DSS image. The image is generally 15' square, otherwise larger.

The bottom panel is a finder field of about 5.0º across and 3.0º 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 set to 12.0 (or 11.0 in star-rich regions). The field of the DSS image is superimposed on the finder chart. All charts and images are oriented north pointed up and west to the right.

Many VV objects have an inset showing detail and labeled components as listed by Boris Vorontsov-Velyaminov. Most inset images are from the Sloan Digital Sky Survey (SDSS) others are from the DSS from where the SDSS is not available.

A table provided at the bottom of each page includes:

VV – The first row contains the main catalogue item. The remaining rows contain details of components of the VV object as listed by Dr. Vorontsov-Velyaminov.

RA and **Dec** are in Epoch 2000.0. For the main catalogue item, the coordinates listed is the center of the group as provided by NASA Extragalactic Database (NED).

NED Type – Type as provided by NED

G – Galaxy	GPair – Galaxy Pair	GTrpl – Triple Galaxy
GGroup – Galaxy Group	PofG – Part of Galaxy	Star Cl – star cluster
Star – a star	Dbl star – double star	

Magnitude as listed by NED or RC3 (Third Reference Catalogue of Bright Galaxies)

Size as provided by the original VV Catalogue, NED or RC3. The size given is in 0.1' units. For example, 20x7 is 2.0 x 0.7'. Since Vorontsov-Velyaminov provided the sizes in this format, I've decided to leave it alone.

Interaction **Type** – The Interaction Type as listed by Vorontsov-Velyaminov. See table below:

Type	Description
HII-regions	
H	large inner subsystems, the galaxies with vast HII-regions
M-51 type[5]	the satellite on the spiral branch of primary component
M	one satellite
MM	two satellites on the spirals
MMM	satellite lies on the bridge connecting the components
Nests[6]	
N	three or more members in a tight group
NN	disrupted nest
NNN	separated triples
NNNP	triples with a tight pair
NPNP	the pair of tight pairs
NP	nest with clear pair
Ch	chain
Pairs	
PC	pair of coalescents
PK	pair in contact
PD	distant pair
b	bridge
t	tail
df	disruption of the facade
Pseudo-Rings	
R	a ring without a nucleus together the non-elliptic galaxy
"Comets"	
K	comet-like single galaxy
Enigmatic	
En	including
Ent	a single galaxy with a tail
Enf	a single with breaking of inner structure
Enat	not tidal phenomena

Any comments or to share any observations, send them to Alvin.Huey@FaintFuzzies.com.

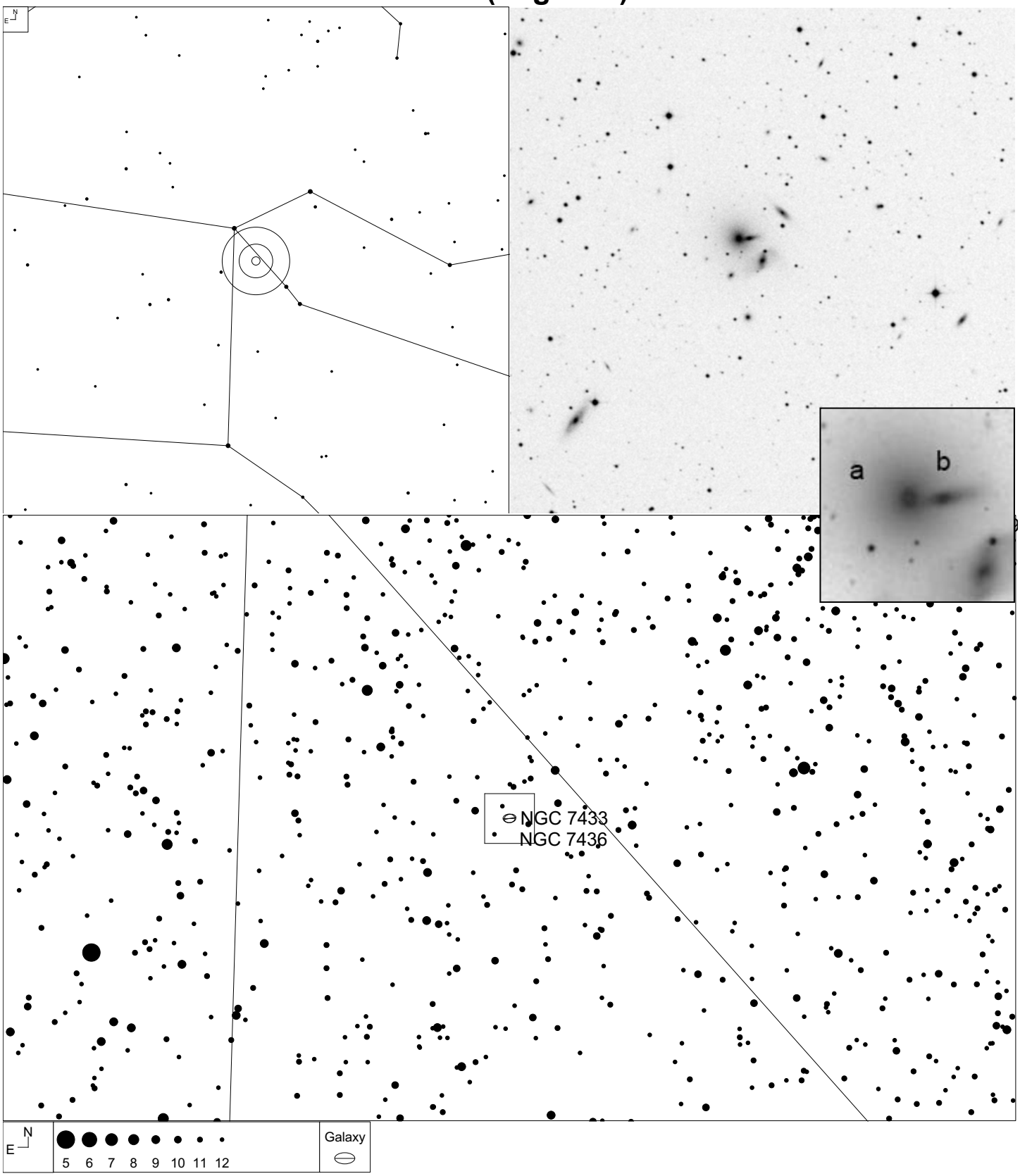
Any feedback or suggestions would be greatly appreciated. I hope to keep this resource updated and made available to all of you, the deep sky observer.

[5] Jokimäki, A et al "A Catalogue of M51 type Galaxy Associations". *Astrophysics and Space Science*, **315**(1), 249-283

[6] Zasov, A. V. & Arkhipova, V. P. "Vorontsov-Velyaminov' nests: what are they?". *Small Galaxy Groups: IAU Colloquium* 174, ASP Conference Series, Volume **209**

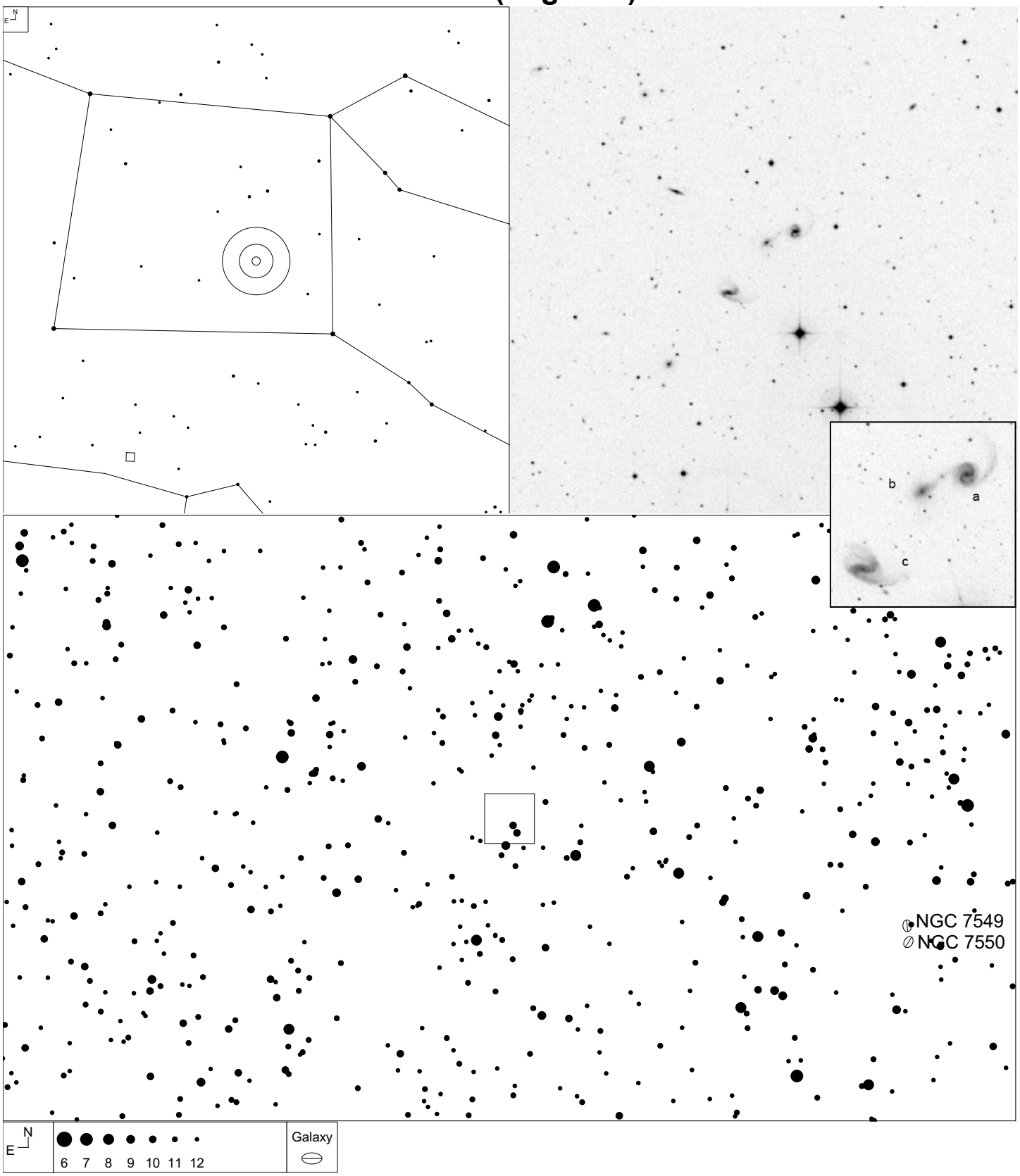
The Vorontsov-Velyaminov Atlas of Interacting Galaxies (Part I)

VV 84 (Pegasus)



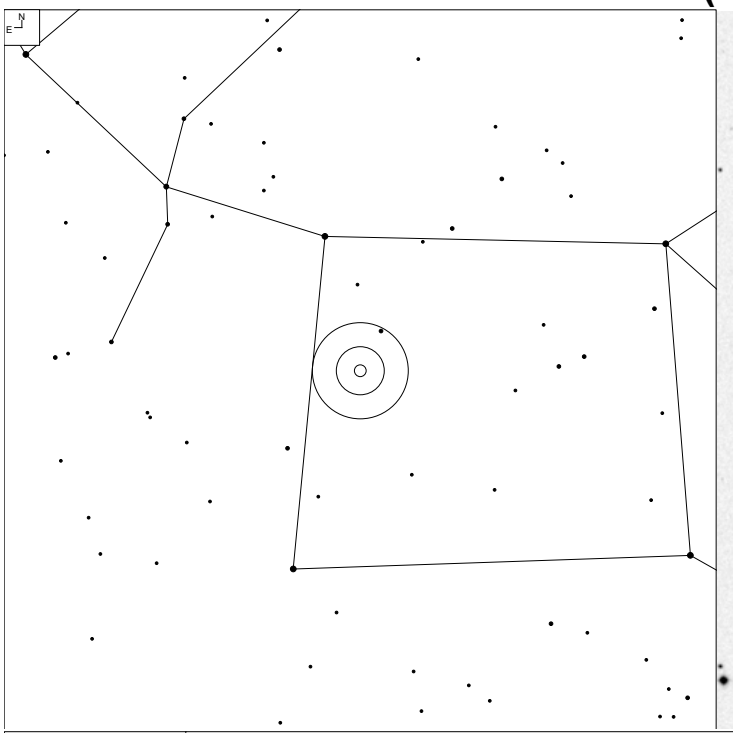
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
84	22 57 56.9	+26 09 00	GPair	14.0	25x25	NNNP
84b	22 57 56.2	+26 09 00	G	15	6x2	
84a	22 57 57.5	+26 09 00	G	14.0	20x20	

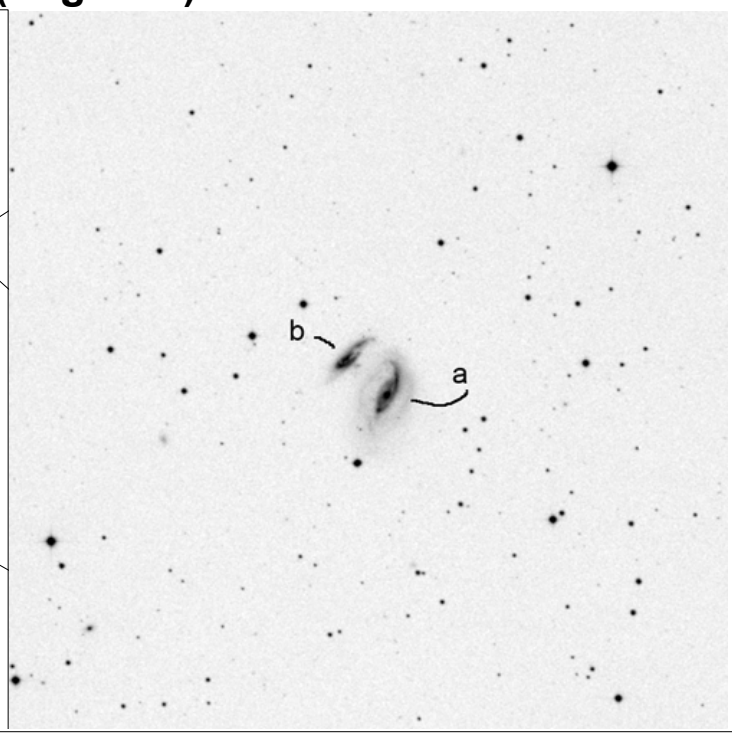
VV 305 (Pegasus)

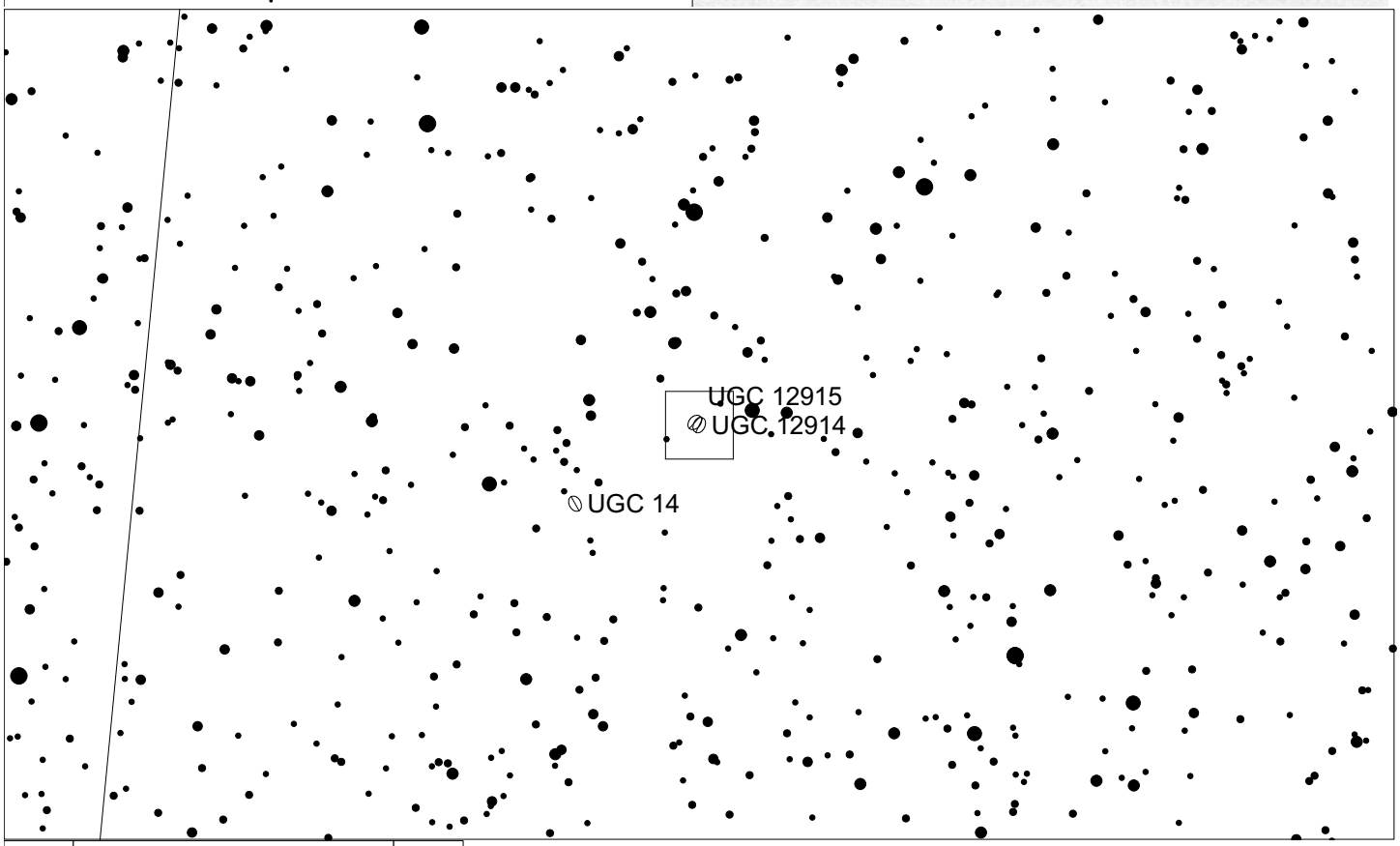


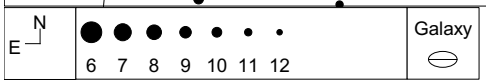
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
305	23 23 36.8	+19 35 04	GTrpl			NNN
305a	23 23 32.7	+19 35 59	G	15.4	5x4	
305b	23 23 36.3	+19 35 39	G	16.5	4x2	
305c	23 23 41.0	+19 34 10	G	15.07	12x6	

VV 254 (Pegasus)



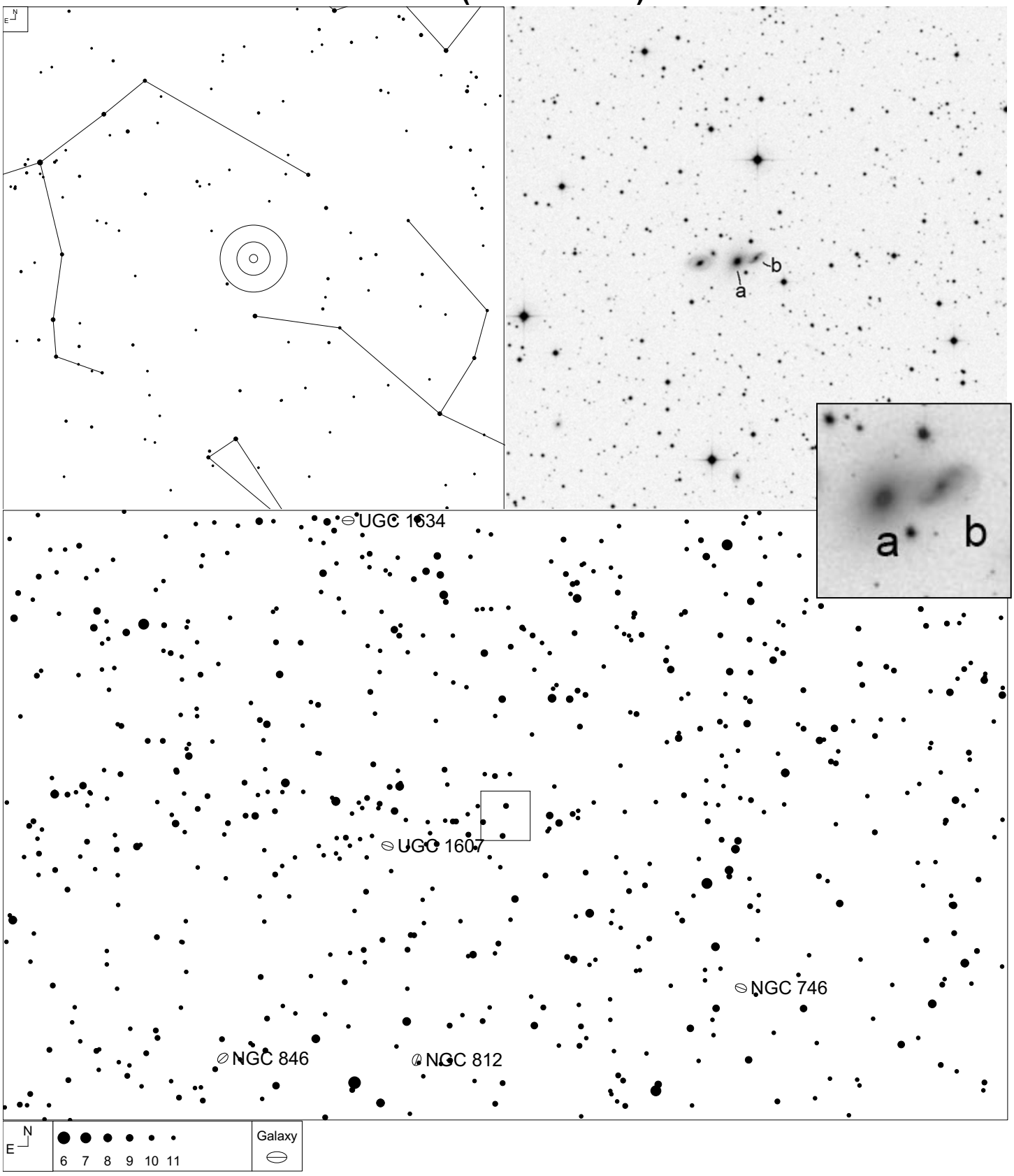






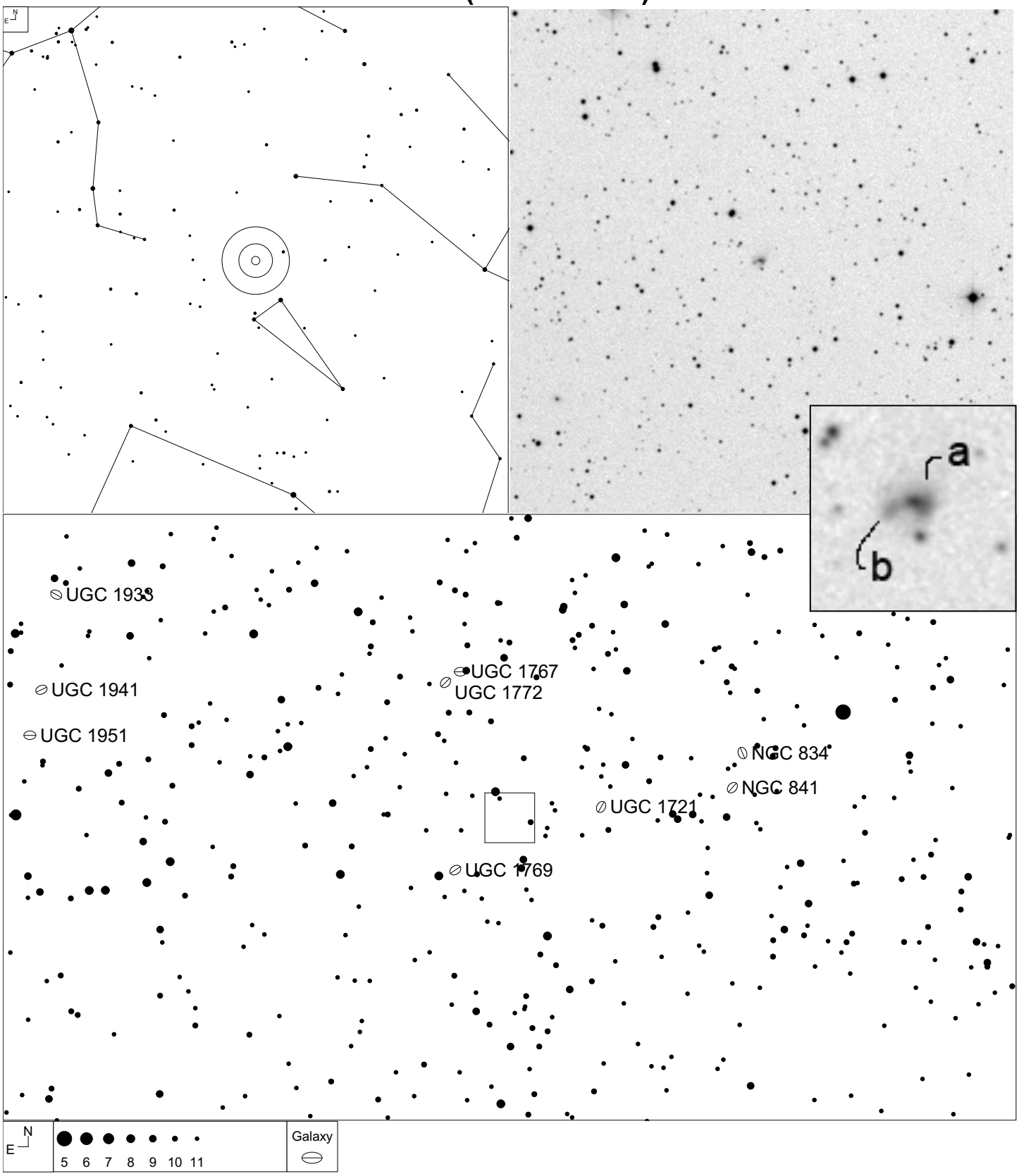
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
254	00 01 40.2	+23 29 23	GPair			PKdf
254a	00 01 38.2	+23 29 04	G	13.07	23x13	
254b	00 01 42.2	+23 29 42	G	13.95	15x5	

VV 37 (Andromeda)



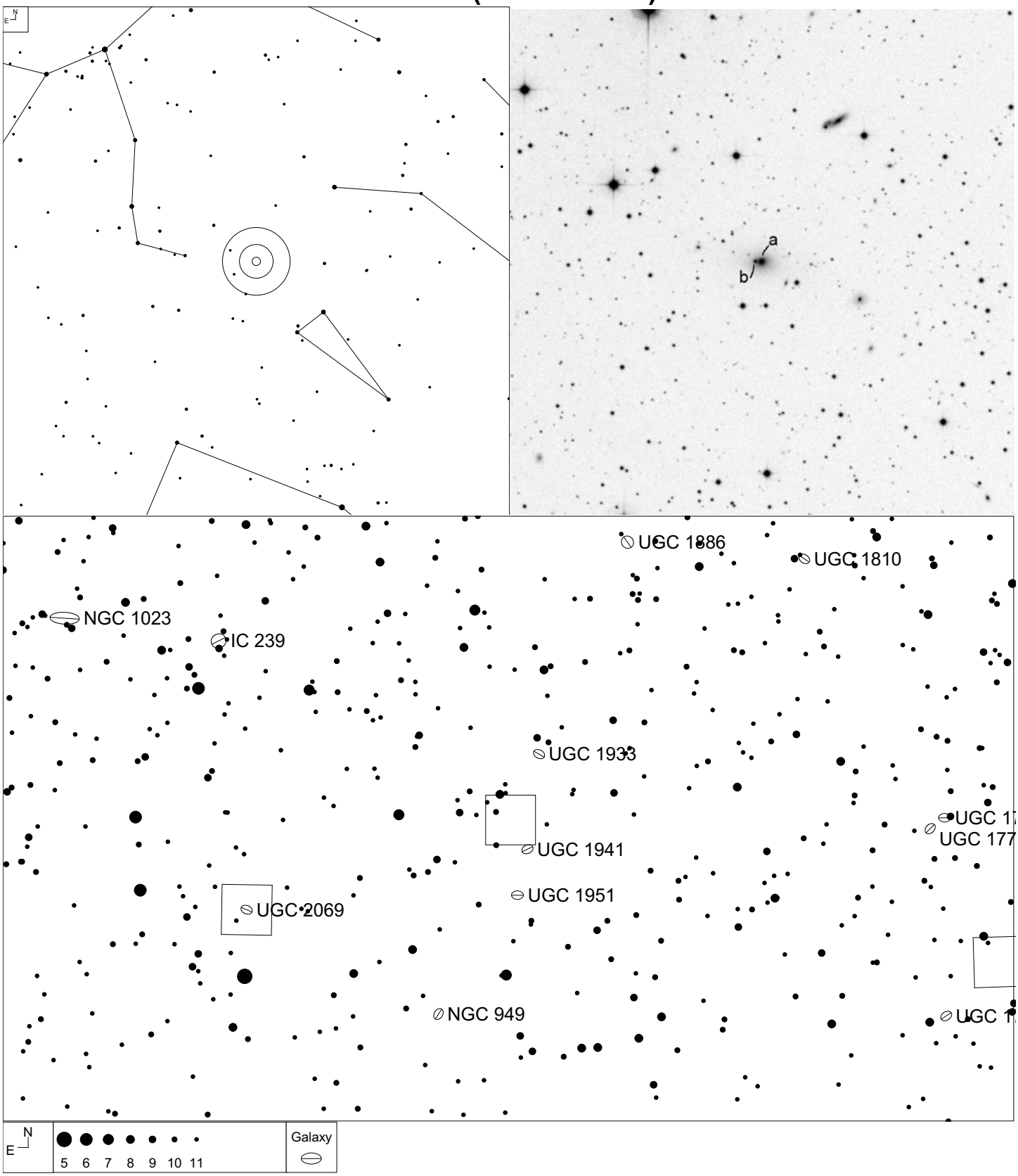
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
37	02 04 23.8	+45 46 33	GPair			PDb
37b	02 04 22.3	+45 46 35	G	16.2	6x3	
37a	02 04 25.4	+45 46 27	G	15.0	4x4	

VV 94 (Andromeda)



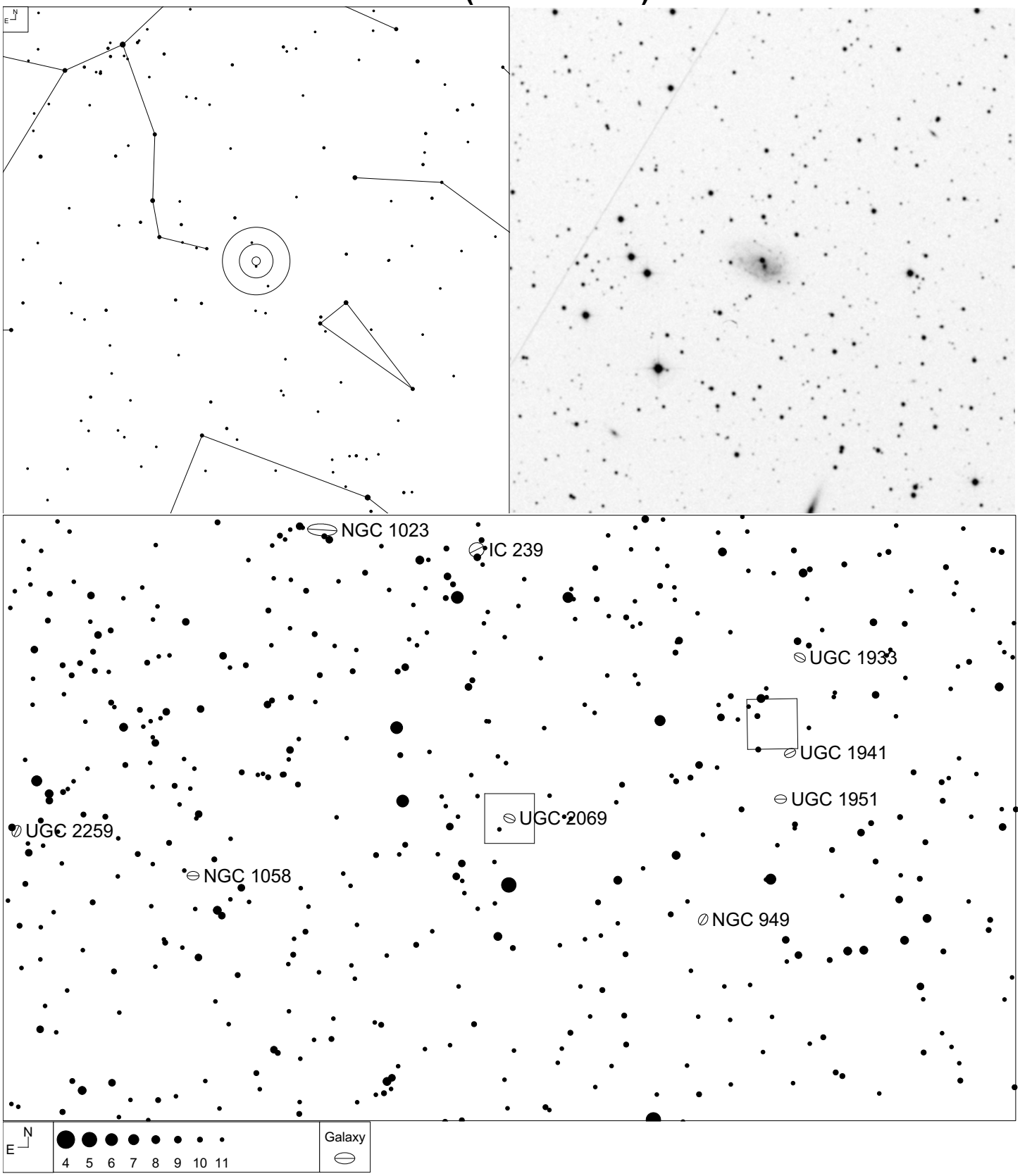
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
94	02 16 50.9	+37 21 12	GPair	15.6	6x6	PC
94a	02 16 50.5	+37 21 12	G			
94b	02 16 51.3	+37 21 11	G			

VV 107 (Andromeda)



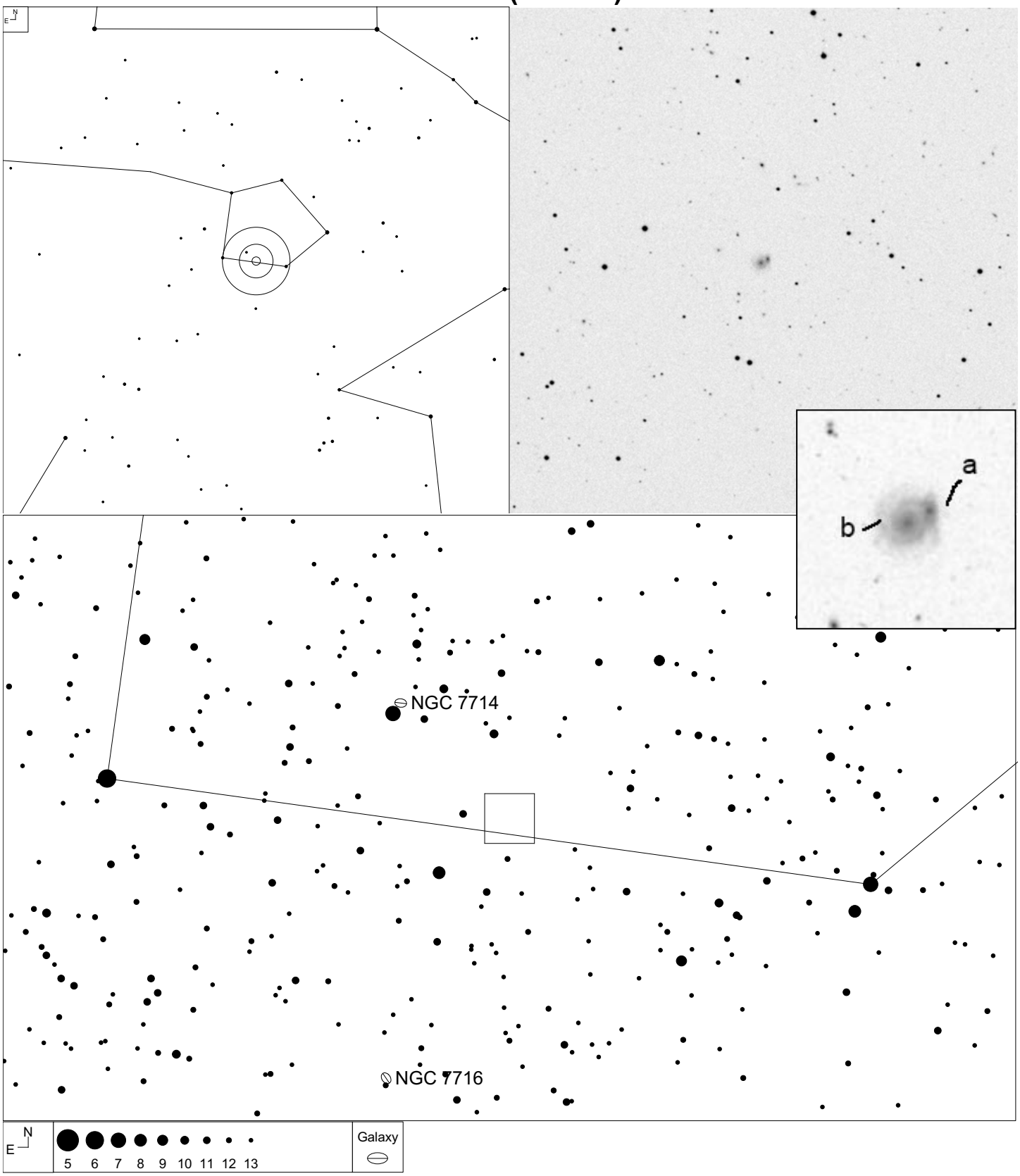
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
107	02 29 01.5	+38 05 55	GPair	15.5	6x6	PC
107a	02 29 01.1	+38 05 53	G			
107b	02 29 02.0	+38 05 56	G			

VV 96 (Andromeda)



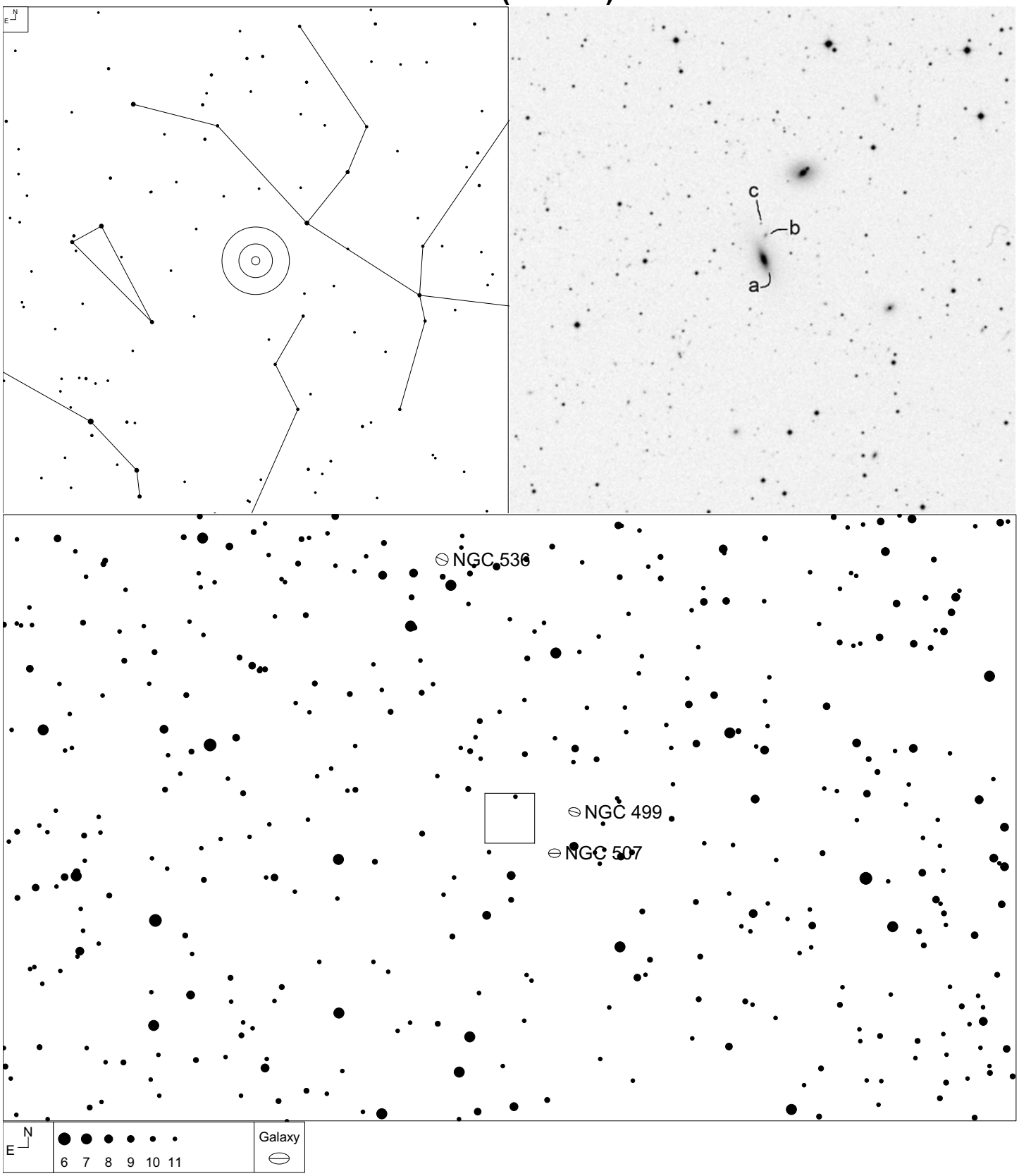
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
96	02 35 37.3	+37 38 21	G	13.03	23x14	PC

VV 187 (Pisces)



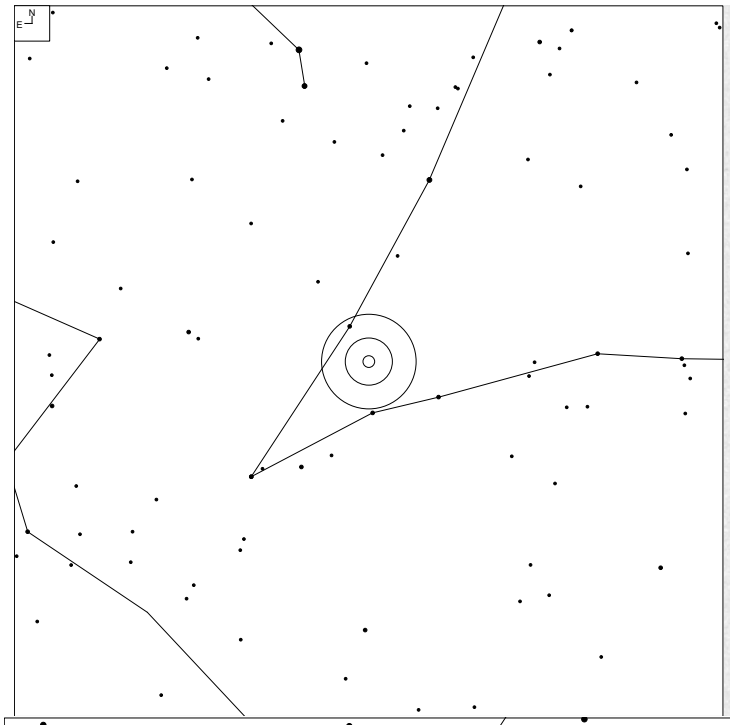
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
187	23 34 04.5	+01 35 03	GPair	15.85	7x4	PK
187a	23 24 04.1	+01 35 07	G			
187b	23 34 04.9	+01 35 00	G			

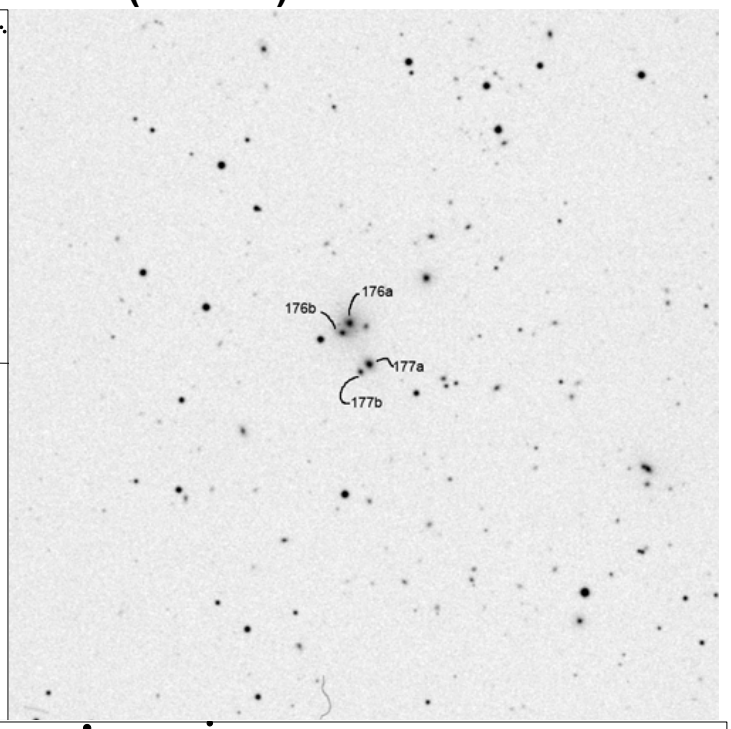
VV 36 (Pisces)

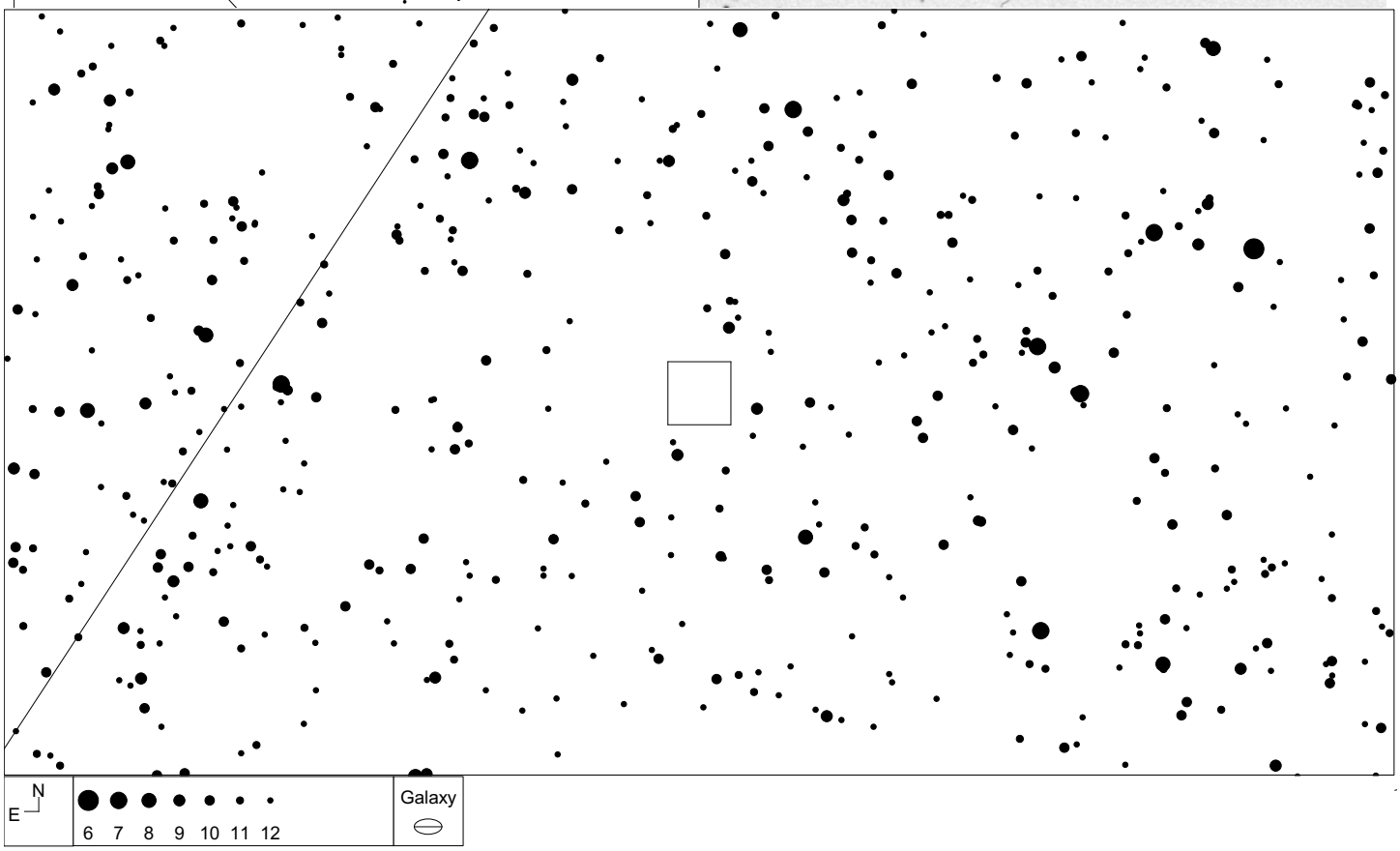


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
36	01 24 43.9	+33 26 08	GPair			N
36b	01 24 43.6	+33 26 08	G	17.5	2x2	
36a	01 24 43.8	+33 25 46	G	13.42	20x10	
36c	01 24 44.3	+33 26 51	star			

VV 176 and VV 177 (Pisces)

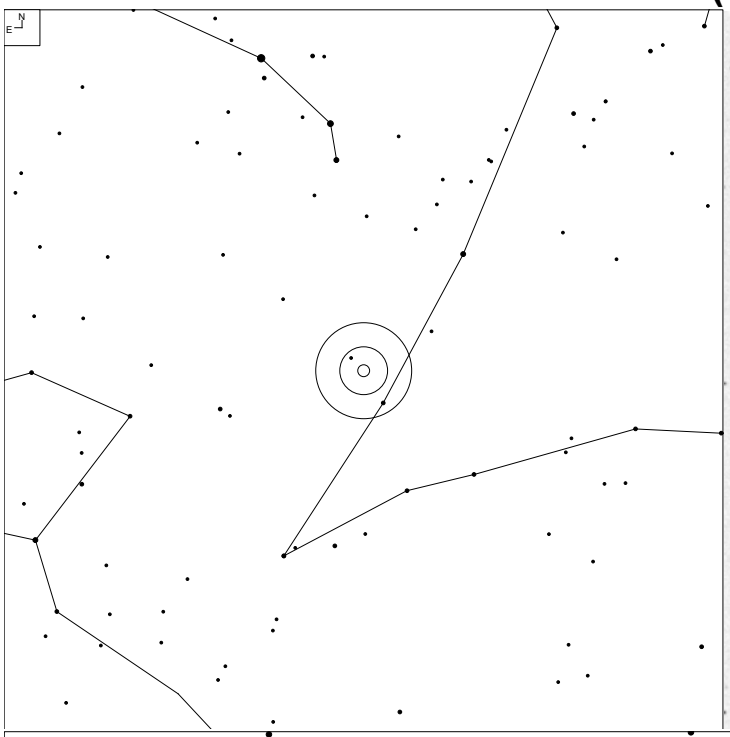


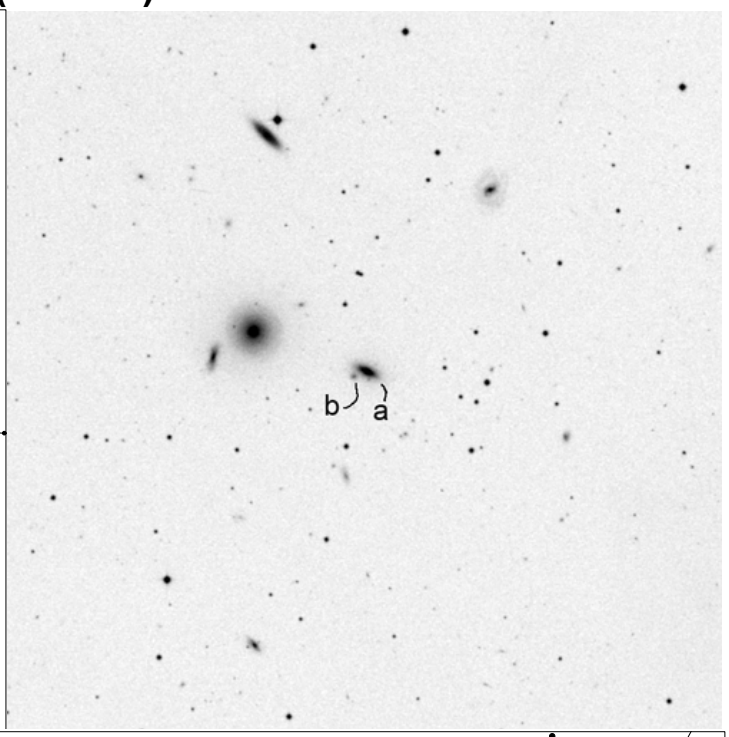


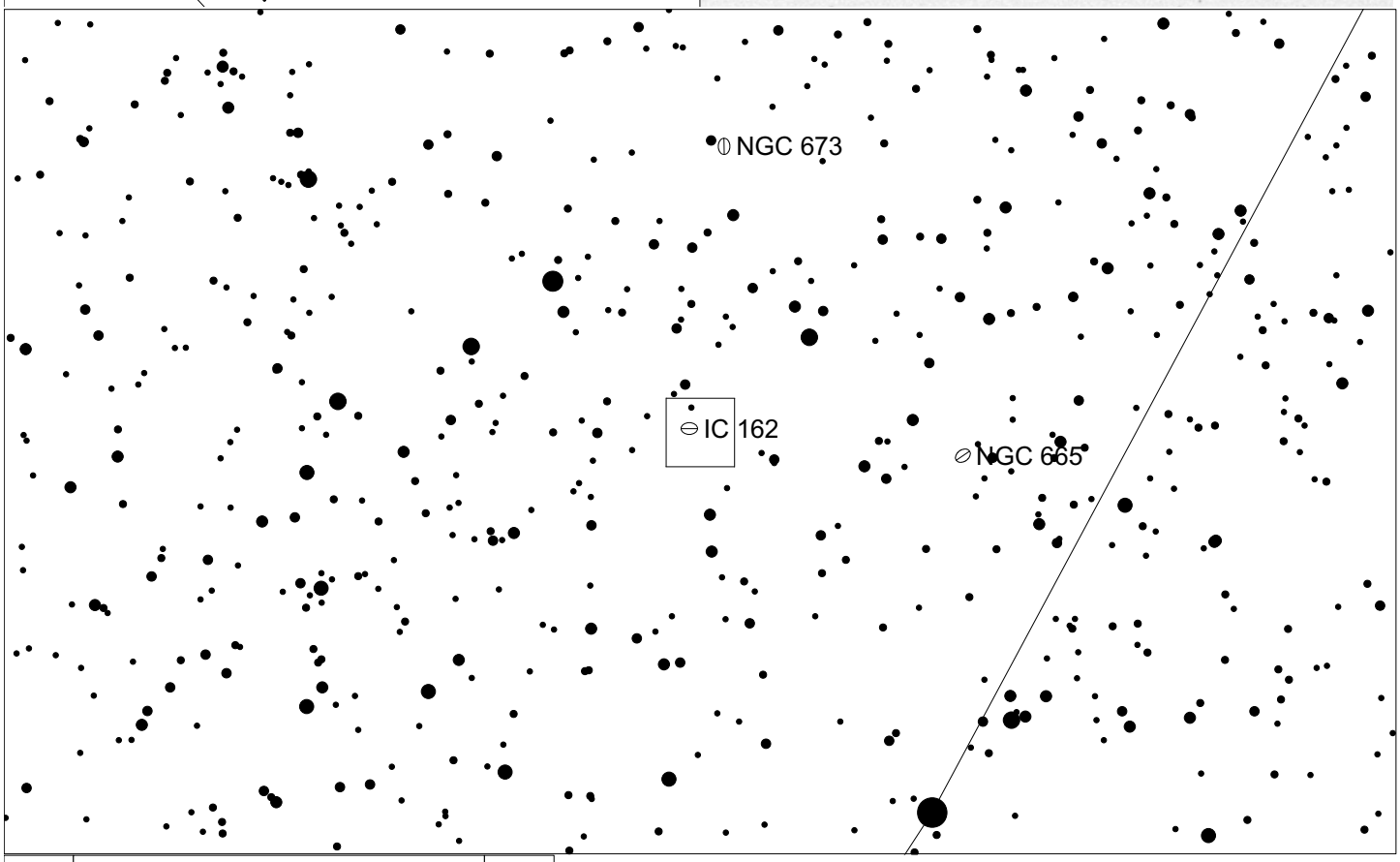


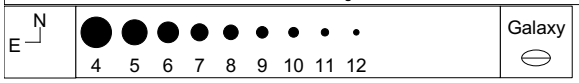
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
177	01 42 04.8	+07 38 57	GPair			PKb
177a	01 42 04.3	+07 39 02	G	13.7	7x4	
177b	01 42 05.0	+07 38 52	G	16.0	3x2	
176	01 42 06.4	+07 39 46	GPair			PK
176a	01 42 06.0	+07 39 54	G	14.9	6x6	
176b	01 42 06.7	+07 39 39	G	16.0	2x2	

VV 54 (Pisces)



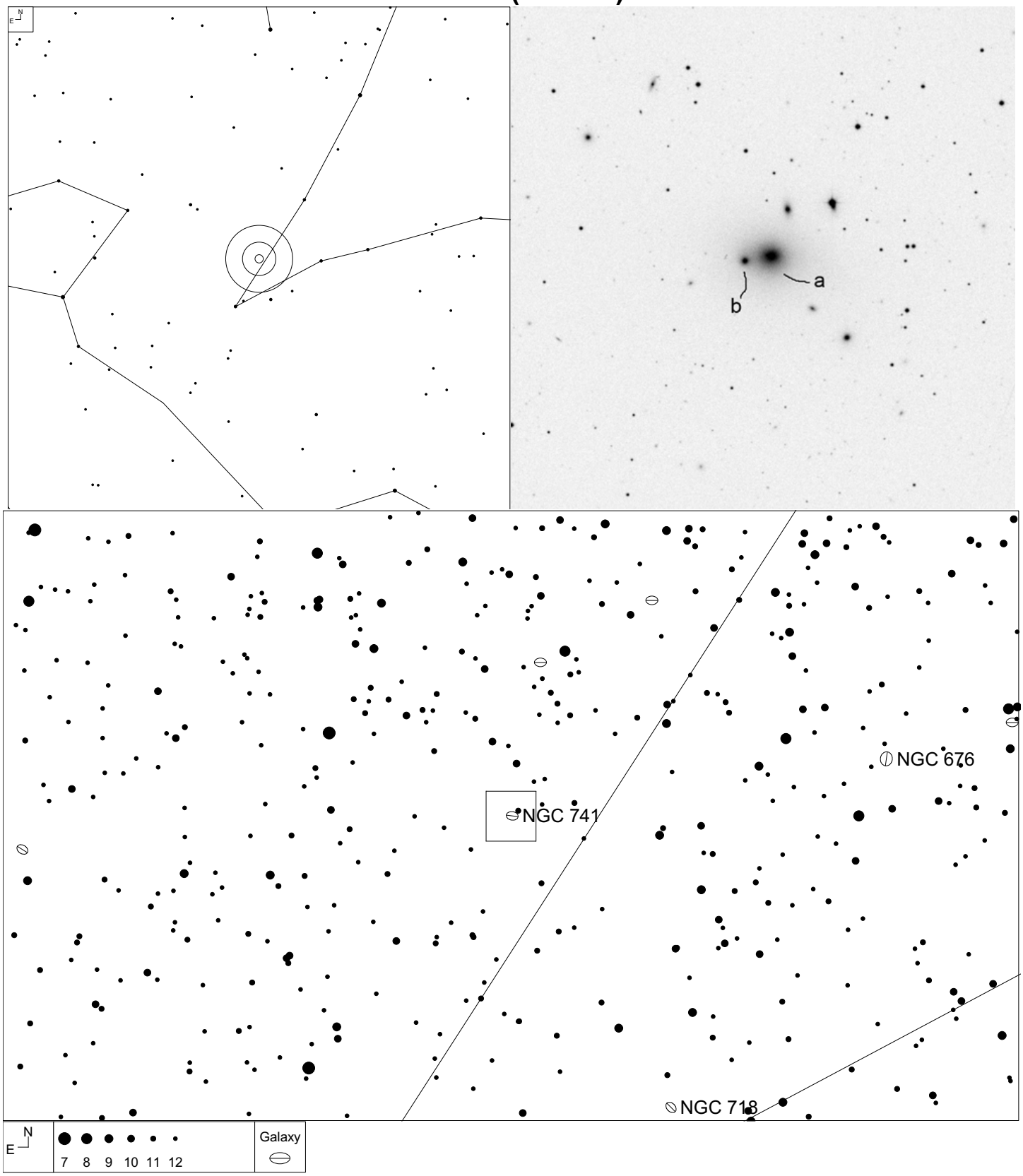






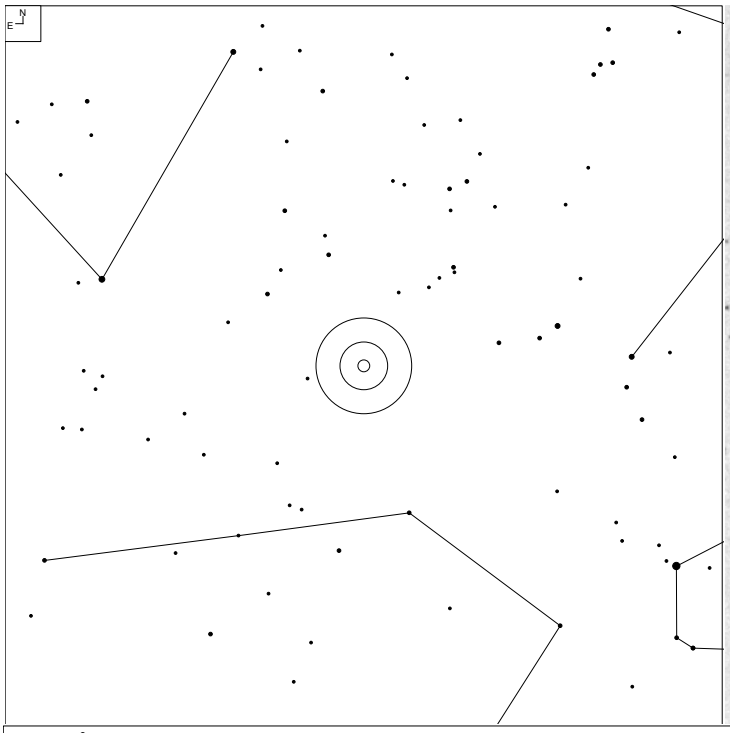
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
54	01 48 44.2	+10 30 26	GPair			Nb
54a	01 48 43.7	+10 30 28	G	14.69	8x6	
54b	01 48 44.9	+10 30 23	G	16.99g	1x1	

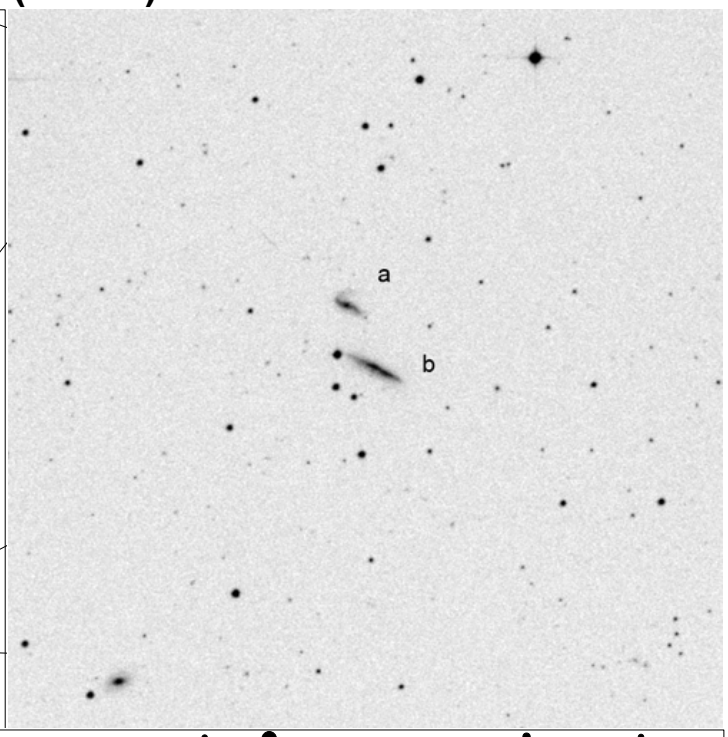
VV 175 (Pisces)

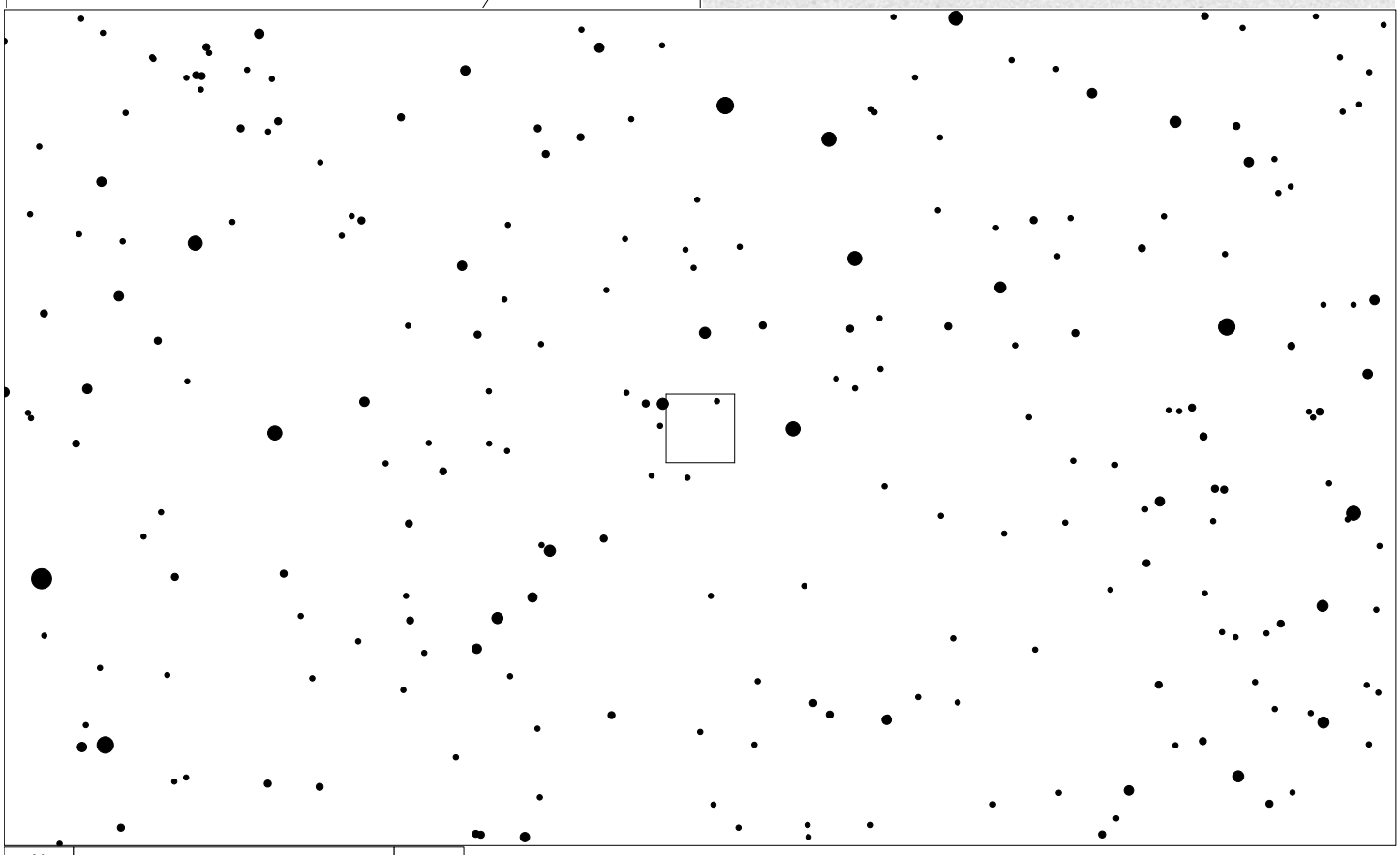


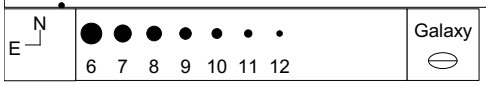
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
175	01 56 22.6	+05 37 40	GPair			PK
175a	01 56 21.0	+05 37 44	G	12.2	30x28	
175b	01 56 24.2	+05 37 36	G	15.30	2x2	

VV 332 (Cetus)



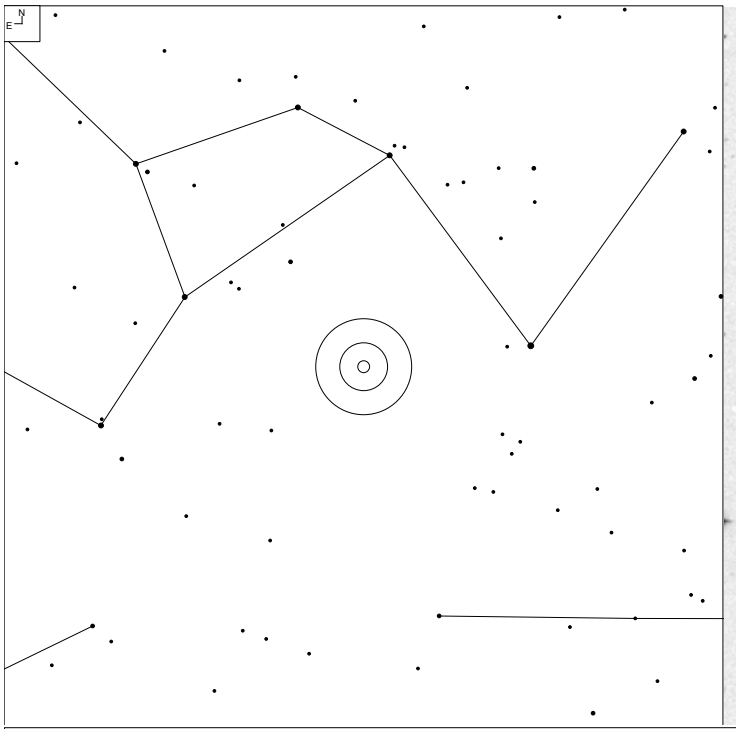


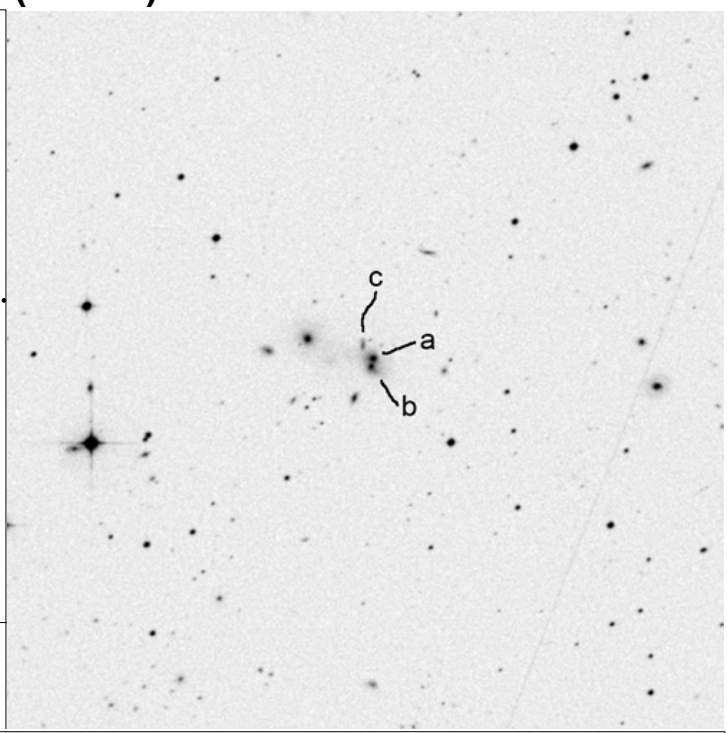


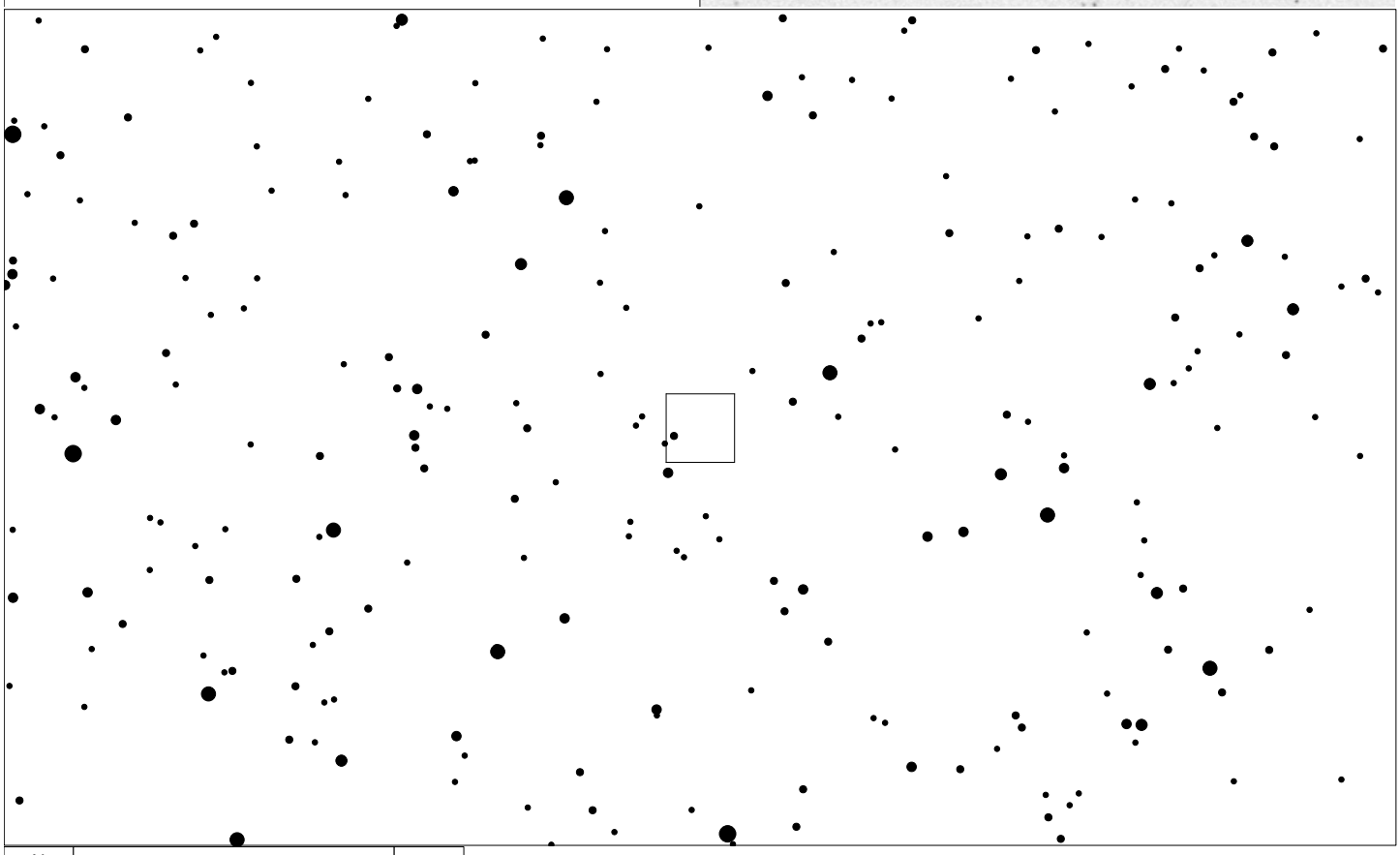


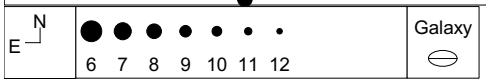
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
332	23 57 33.4	-21 59 22	GPair			PD
332b	23 57 32.6	-22 00 00	G	16.59	16x4	
332a	23 57 34.8	-21 58 44	G	15	10x7	

VV 258 (Cetus)



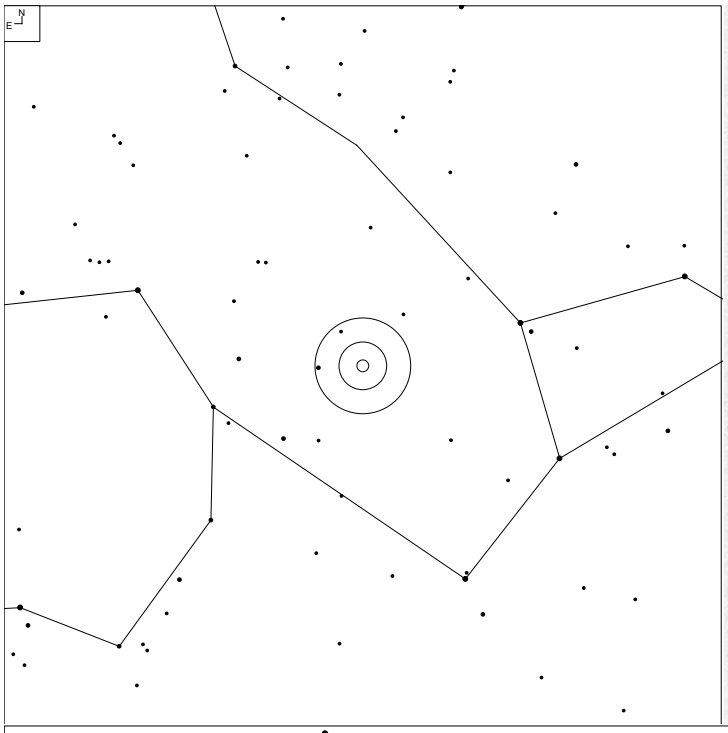


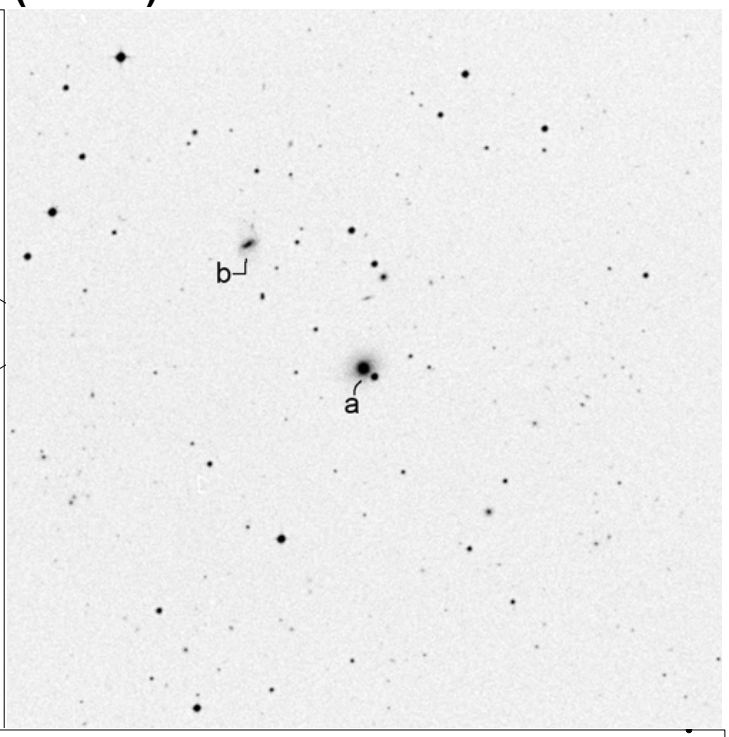


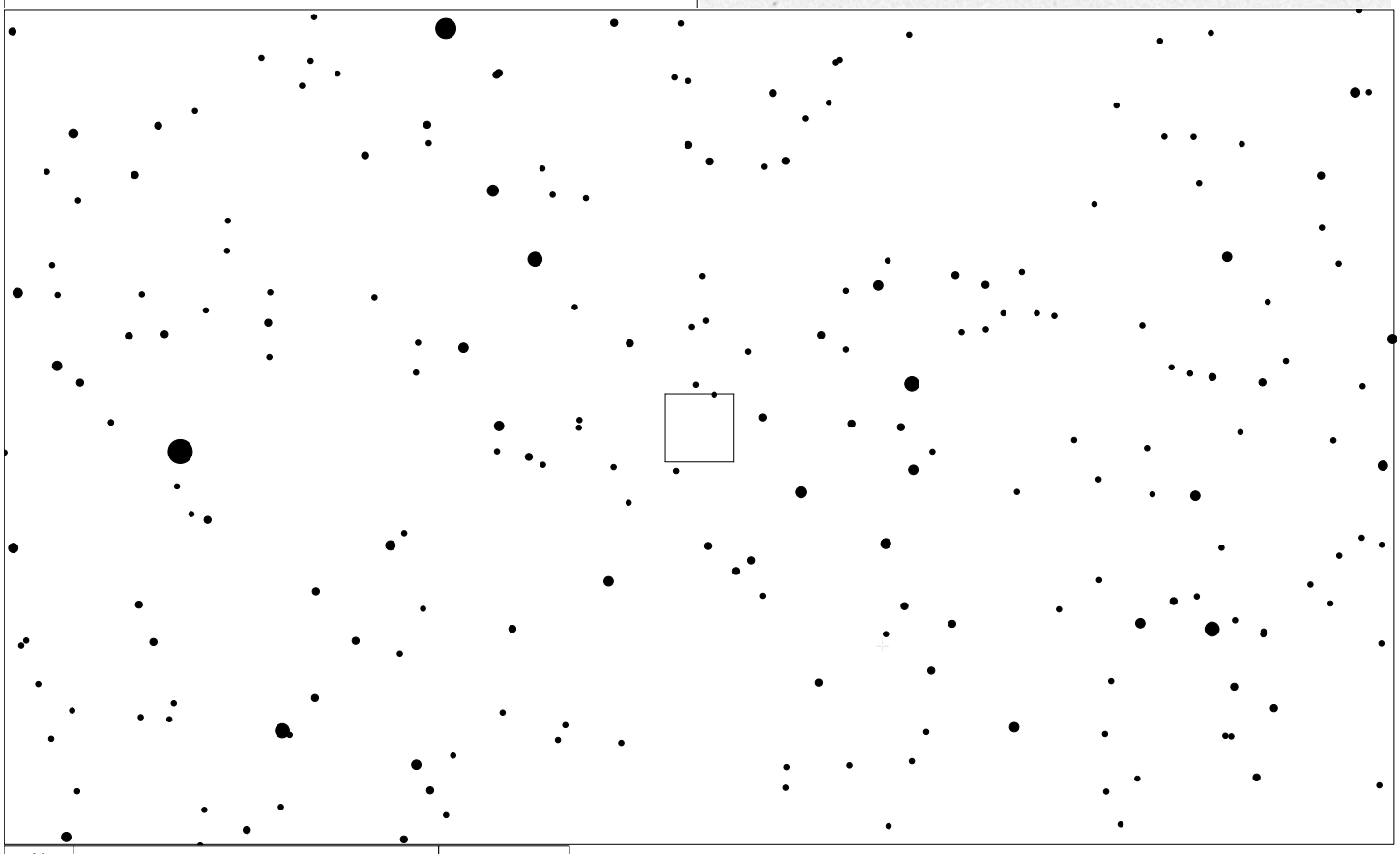


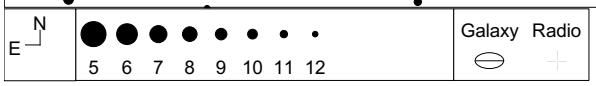
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
258	01 12 59.7	-19 00 14	GTrpl			NNN
258a	01 12 58.6	-19 00 15	G	15.5	1x1	
258b	01 12 59.0	-19 00 24	G	16	2x2	
258c	01 12 59.8	-18 59 59	G	18	3x2	

VV 302 (Cetus)



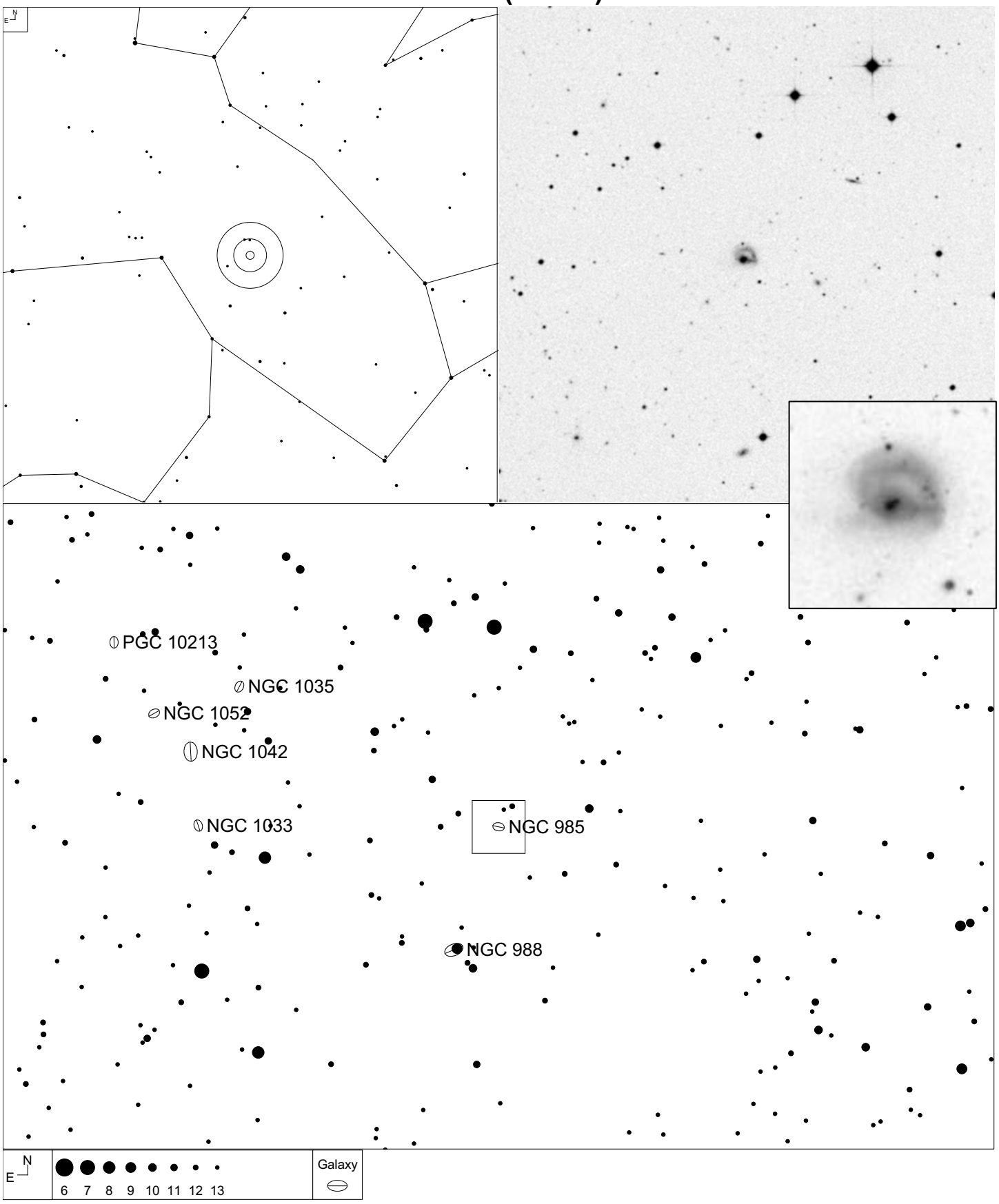






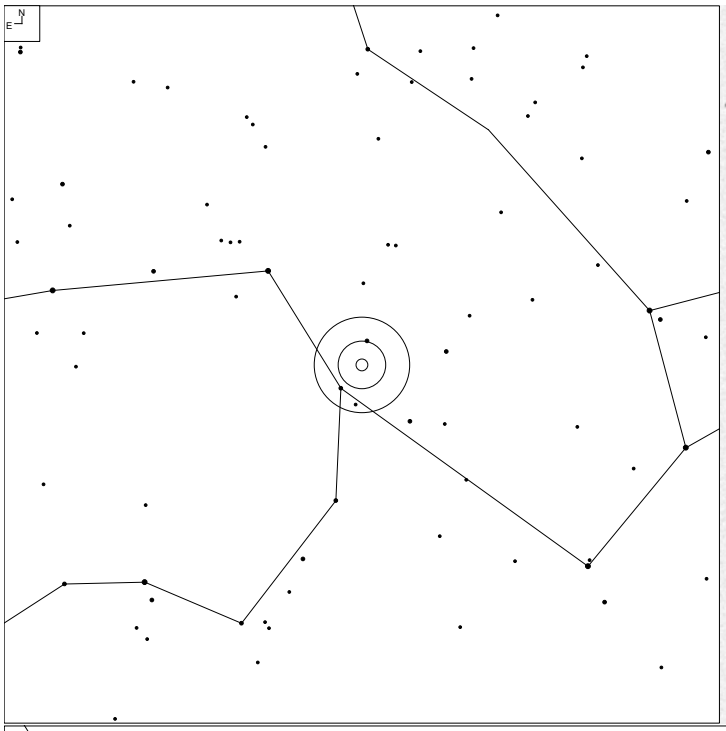
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
302	02 18 19.2	-12 12 38	GPair			PD
302a	02 18 14.2	-12 13 55	G	14.58	9x9	
302b	02 18 24.2	-12 11 20	G	15	9x7	

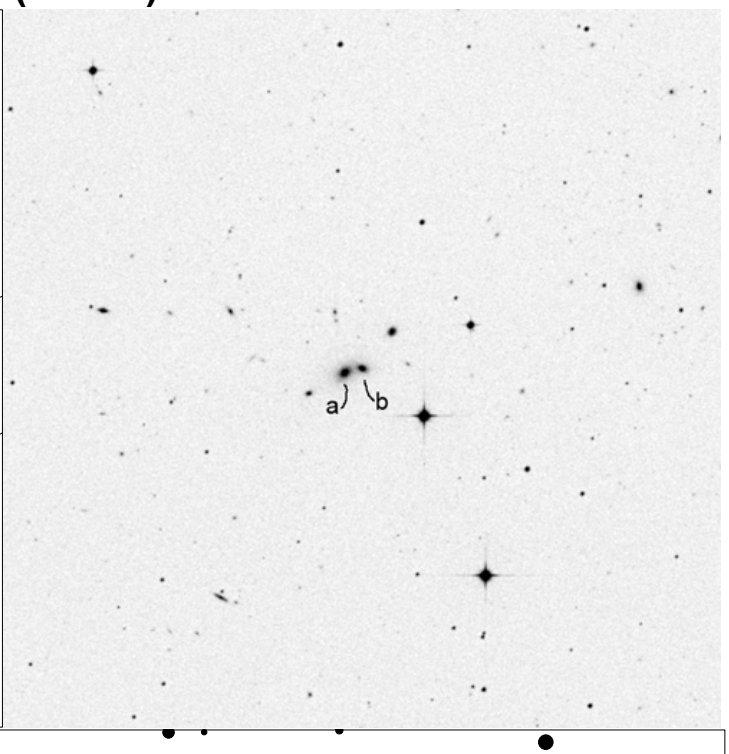
VV 285 (Cetus)

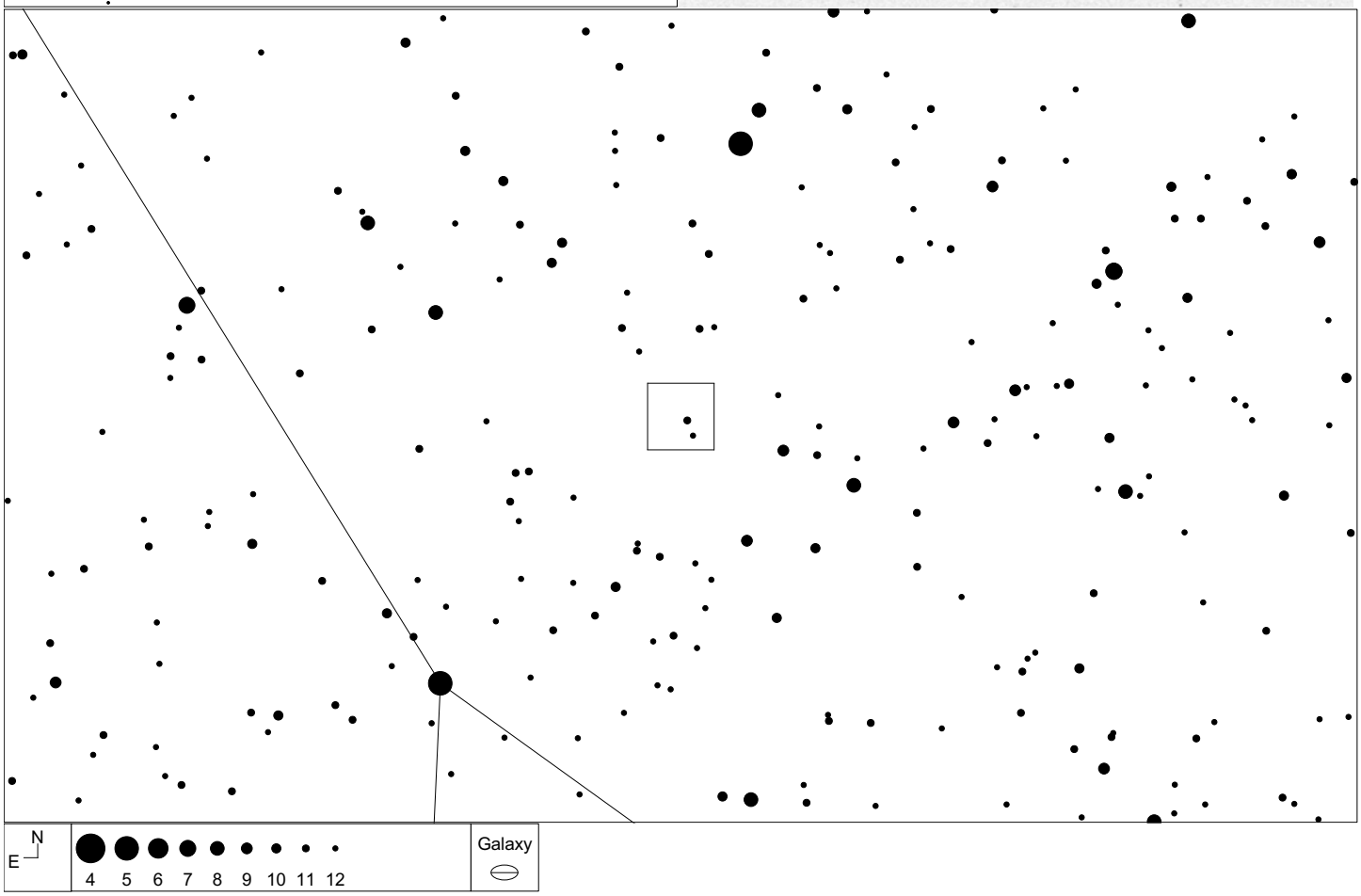


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
285	02 34 37.4	-08 47 08	G	14.01	10x9	R

VV 200 (Cetus)

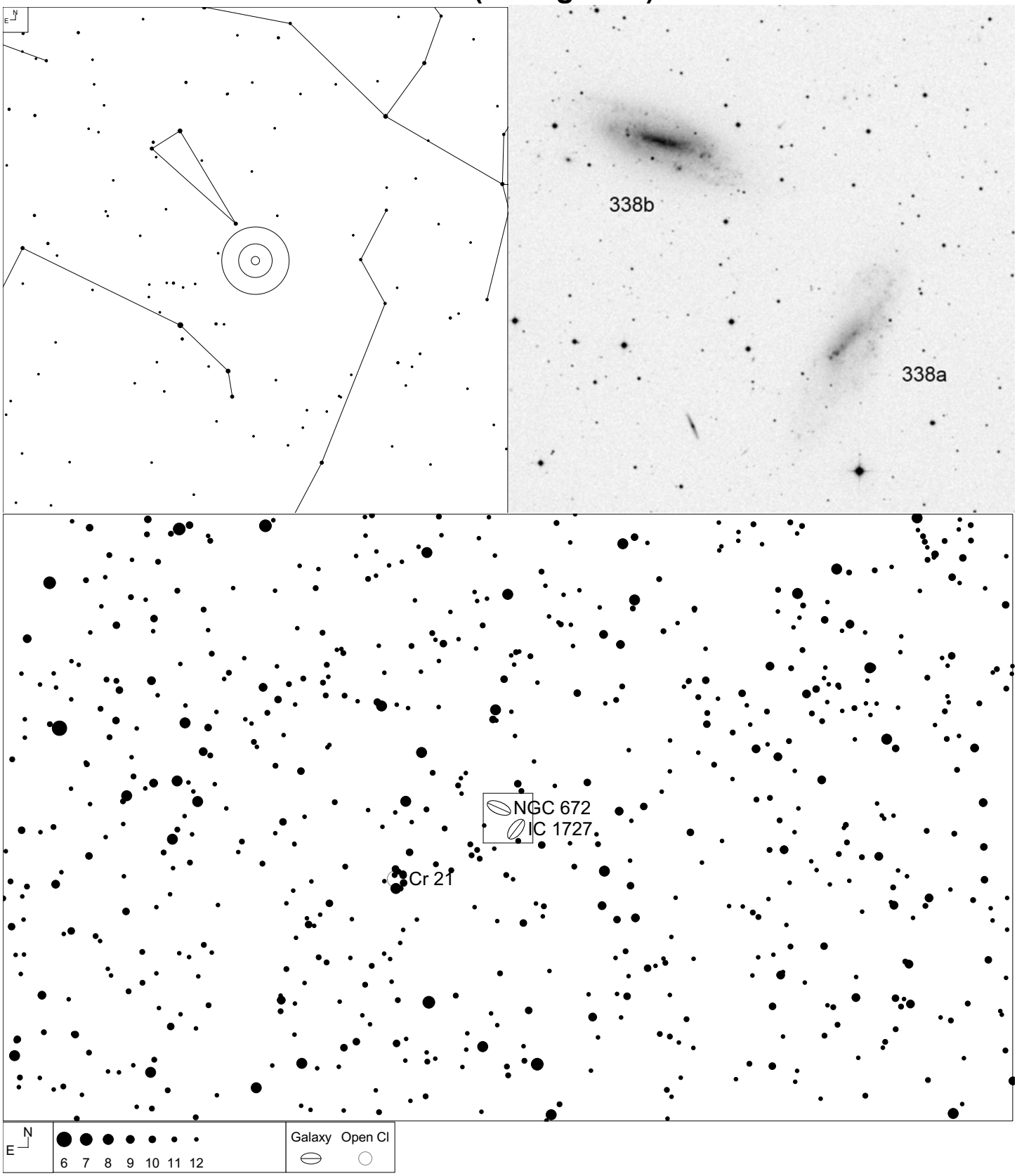






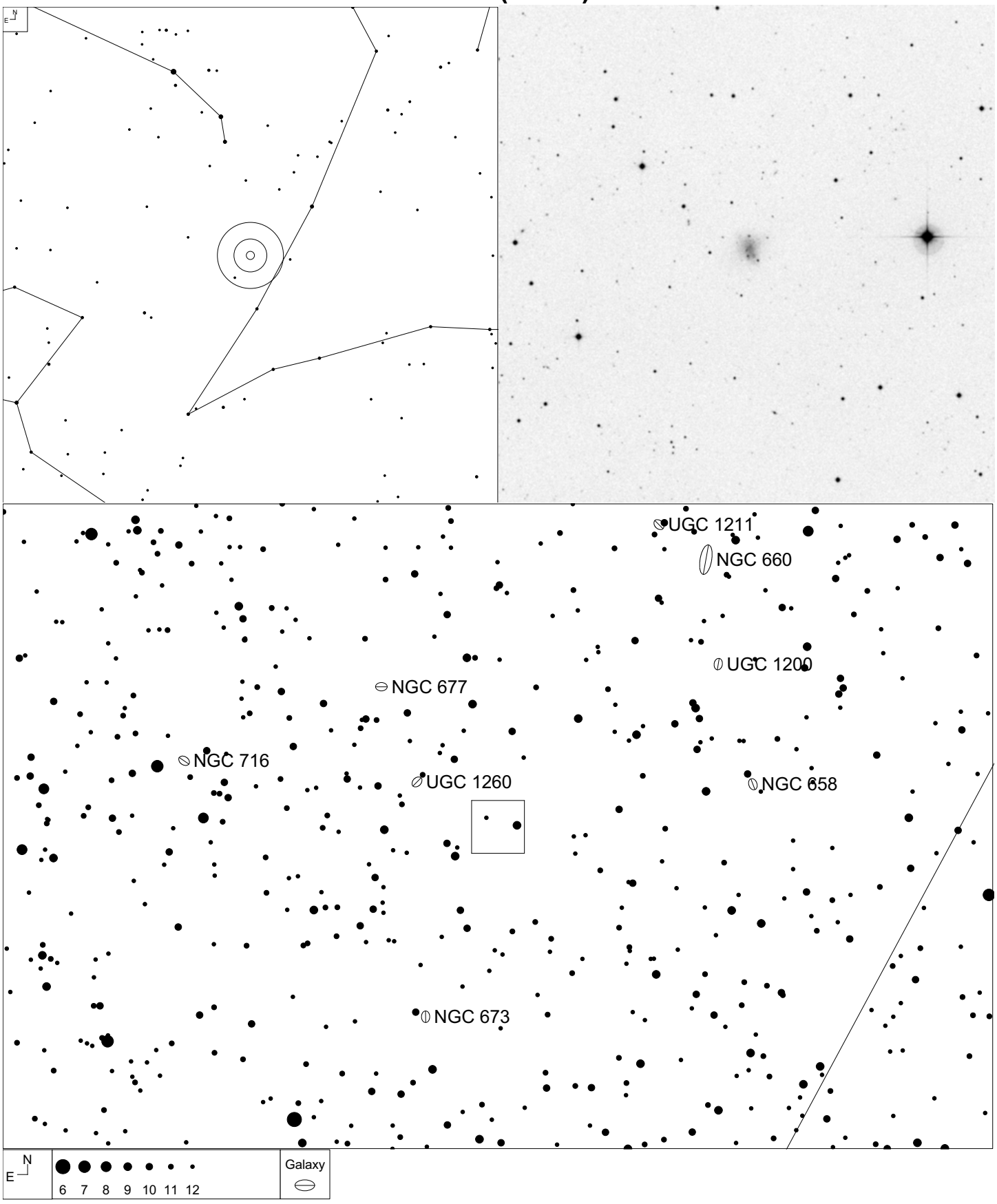
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
200	02 40 28.1	-12 52 35	GPair			PDb
200b	02 40 27.4	-12 52 33	G	15.5	3x2	
200a	02 40 28.9	-12 52 38	G	15.6b	3x3	

VV 338 (Triangulum)



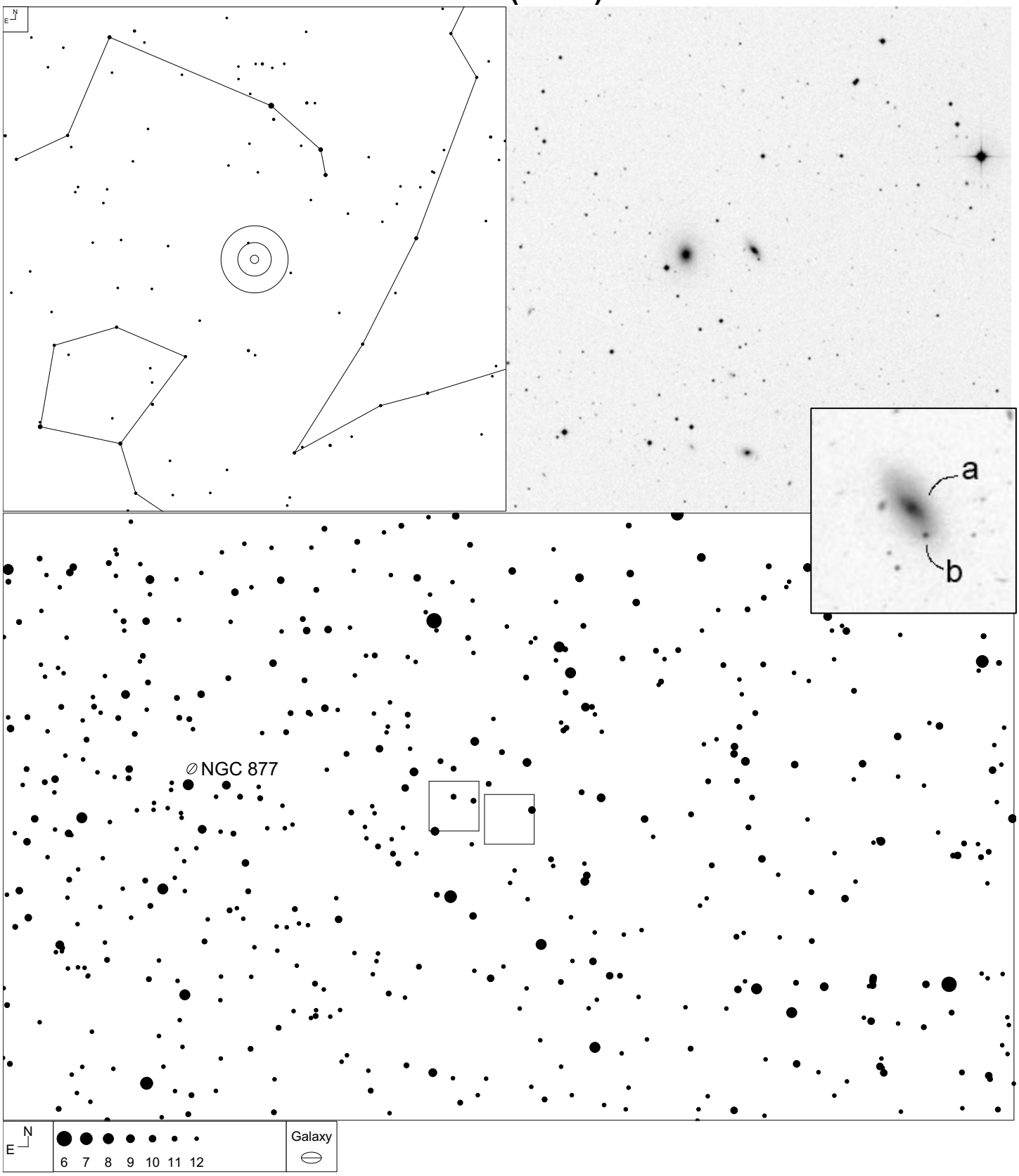
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
338	01 47 42.2	+27 22 59	GPair			PDdf
338a	01 47 29.9	+27 20 00	G	12.07	69x30	
338b	01 47 54.5	+27 25 58	G	11.47	72x25	

VV 93 (Aries)



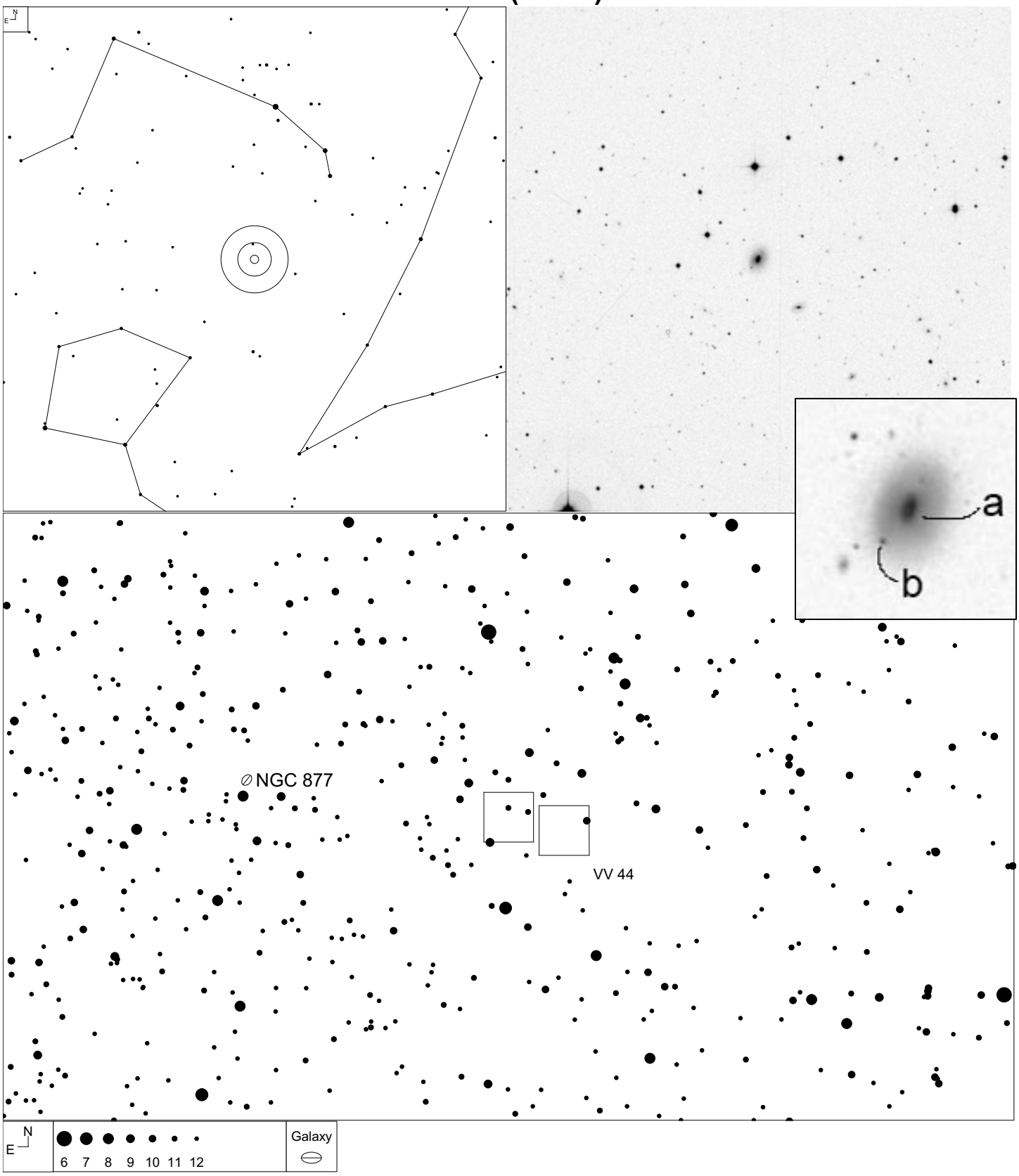
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
93	01 47 00.7	+12 24 21	G	14.52	14x12	PC

VV 44 (Aries)



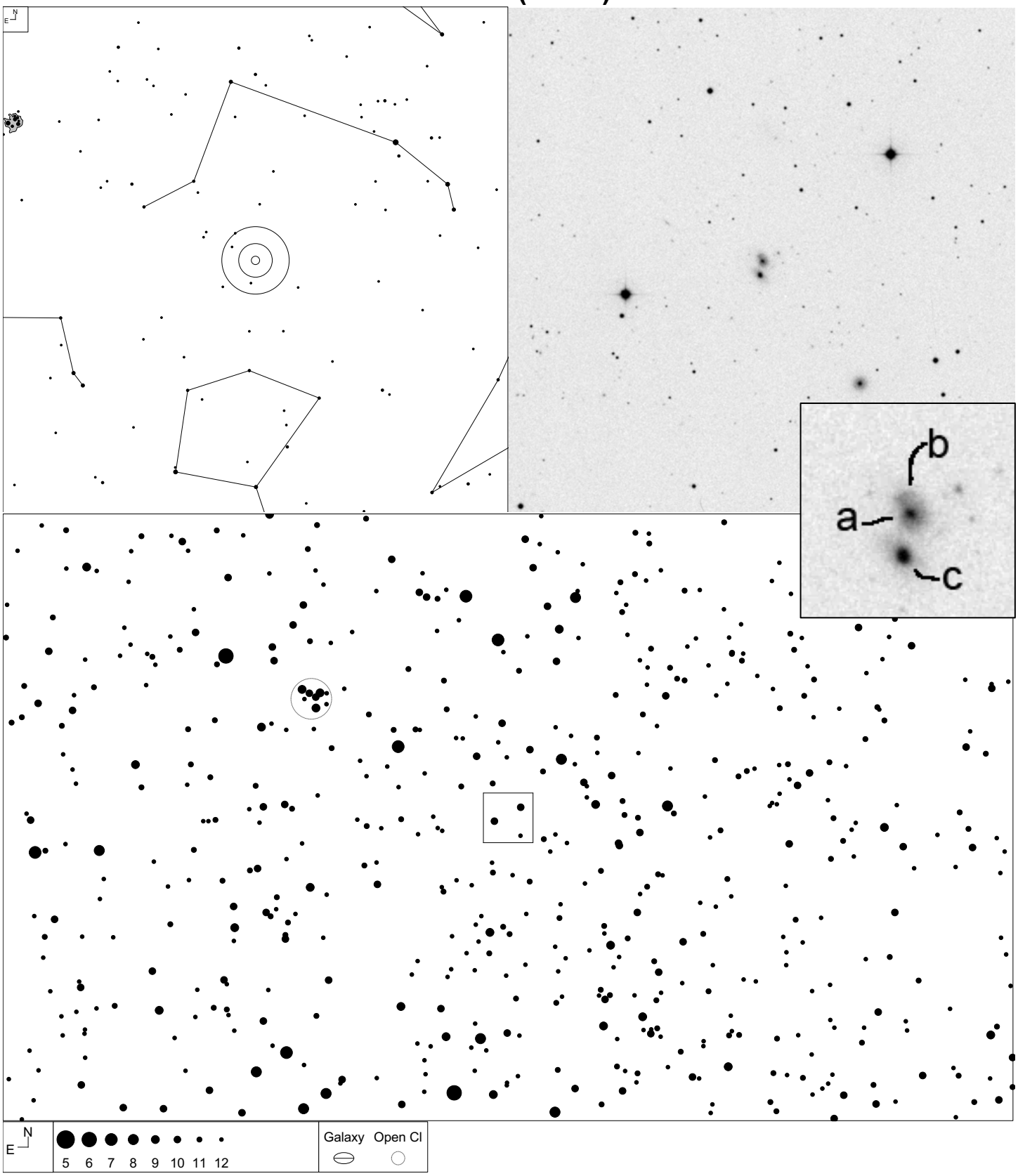
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
44	02 11 30.4	+14 17 54	GPair			PDb
44b	02 11 30.2	+14 17 46	G	18.9g	1x1	
44a	02 11 30.8	+14 18 02	G	15.2g	8x5	

VV 27 (Aries)



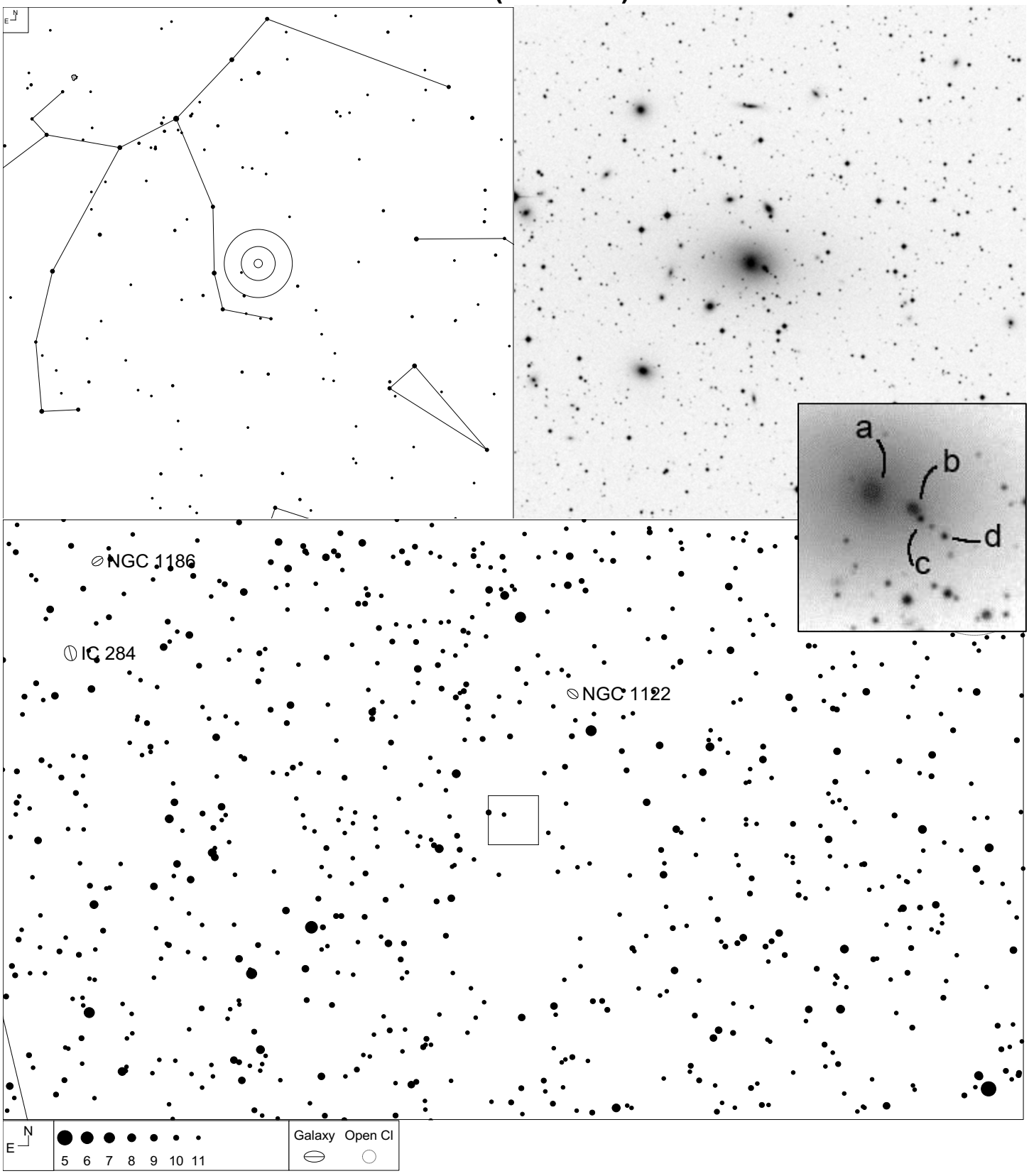
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
27	02 12 38.7	+14 22 00	G	14.6g	6x6	M
27b	02 12 39.6	+14 21 45	PofG	15.2		

VV 278 (Aries)



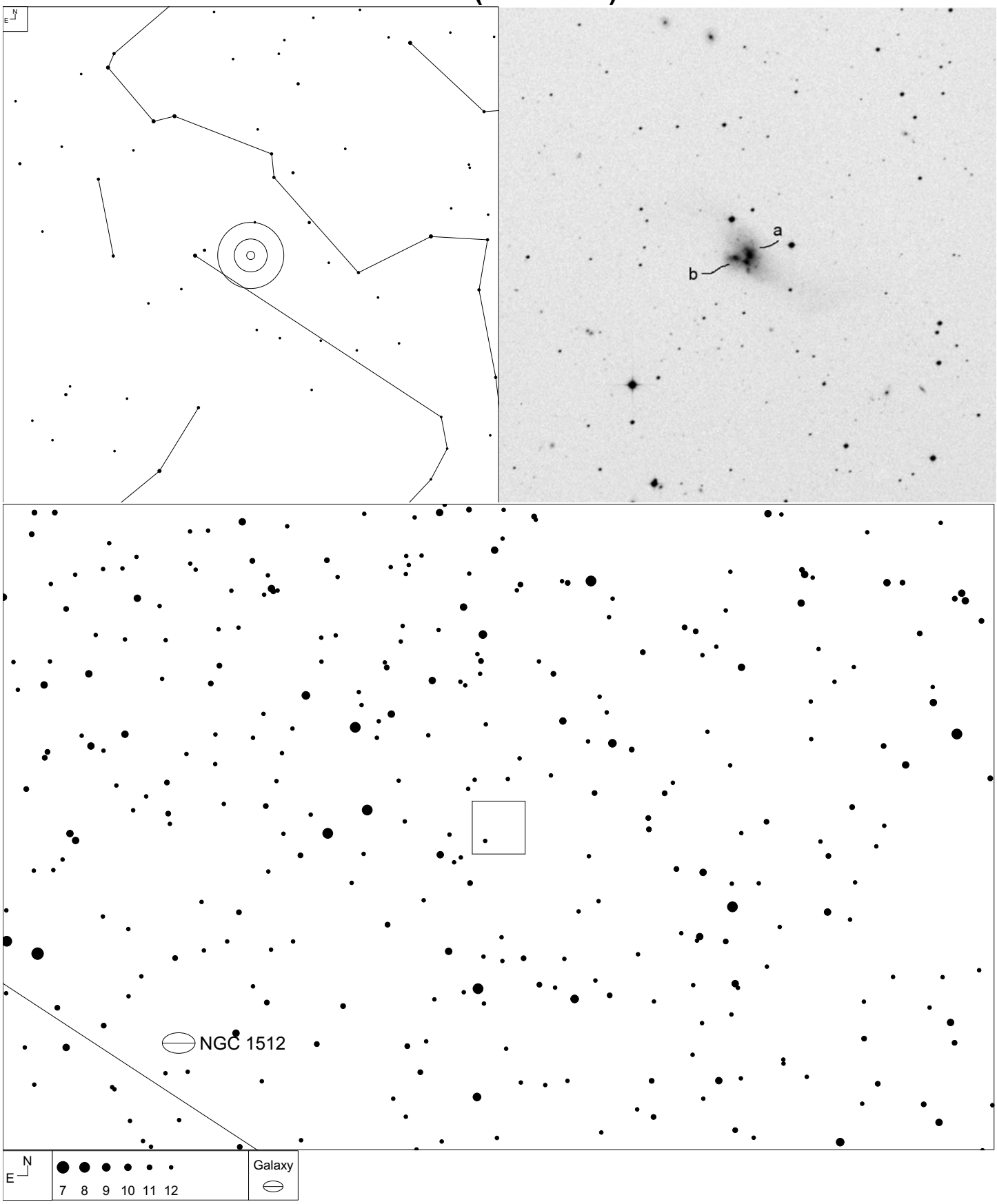
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
278	02 43 26.7	+16 39 59	GPair			NNNP
278a	02 43 26.6	+16 40 12	G	15.6	6x5	
278b	02 43 26.8	+16 40 21	PofG	16.5	-	
278c	02 43 26.8	+16 39 46	G	15.5	6x4	

VV 85 (Perseus)



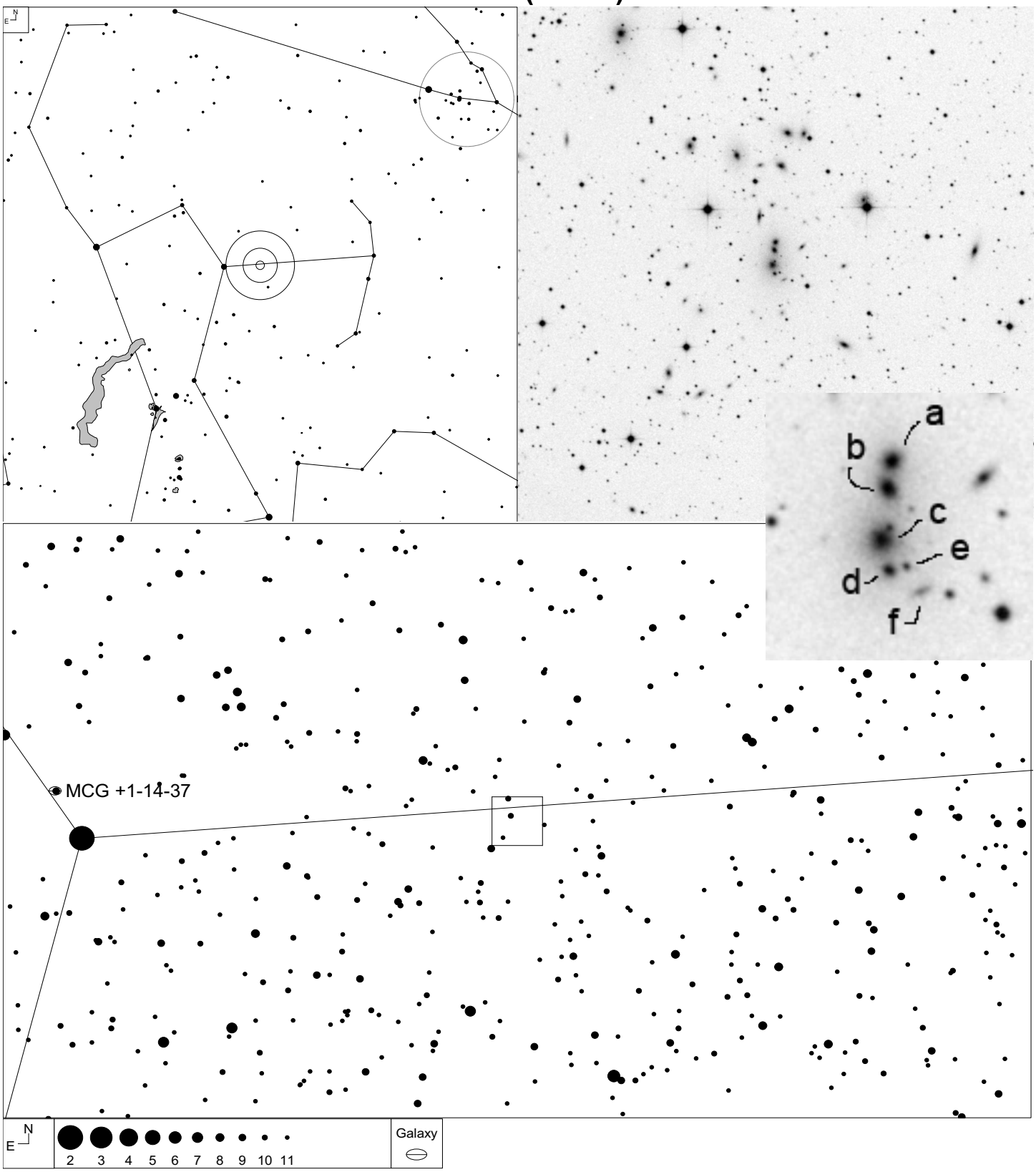
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
85	02 54 25.5	+41 34 33	GGroup			PC
85d	02 54 23.6	+41 34 21	star	18		
85c	02 54 24.8	+41 34 31	star	17		
85b	02 54 25.2	+41 34 37	G	16.5	4x2	
85a	02 54 27.5	+41 36 20	G	13.5	30x21	

VV 78 (Eridanus)



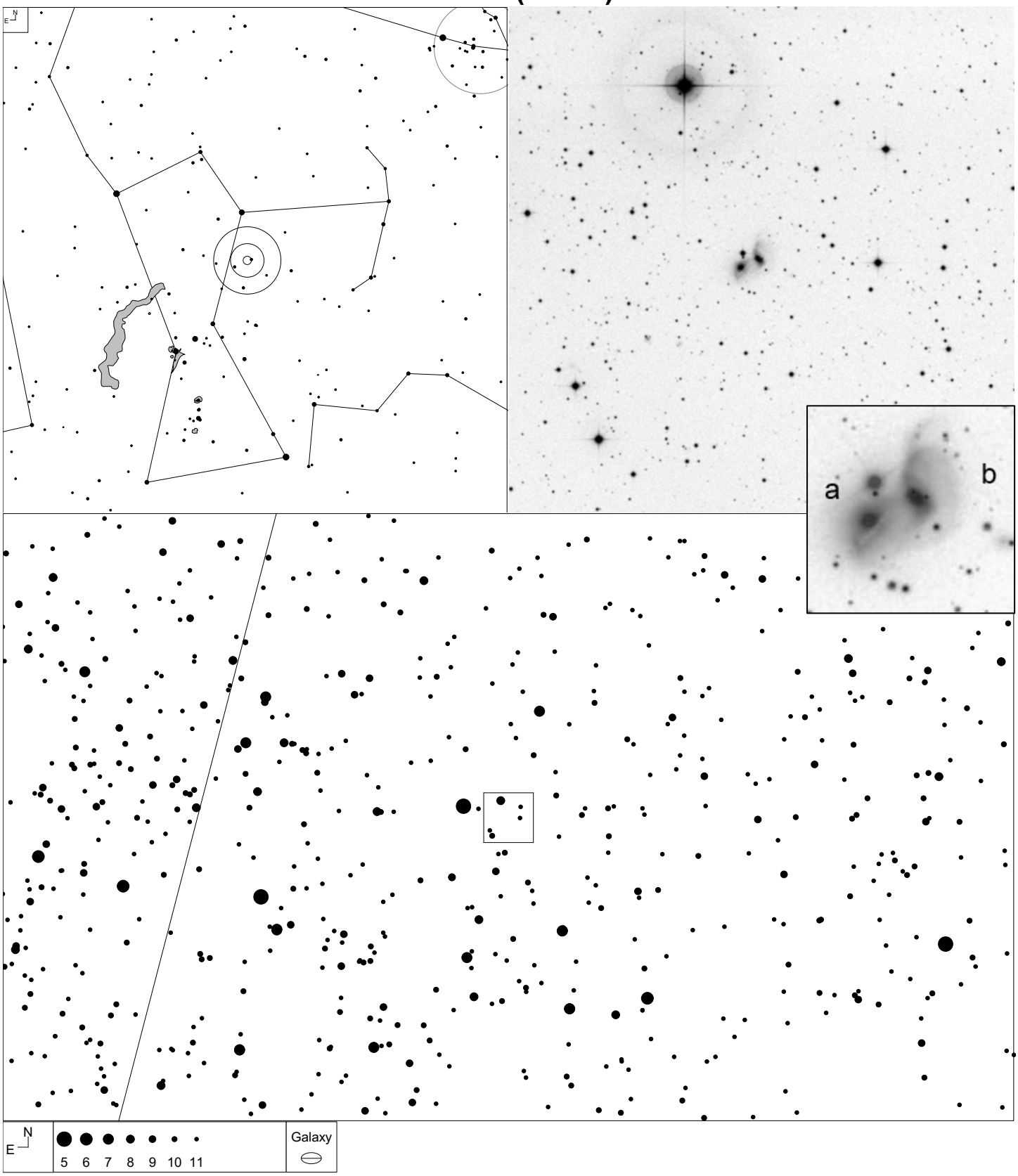
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
78	03 55 46.1	-42 22 05	GPair			N
78a	03 55 45.4	-42 22 04	G	12.3b	33x21	
78b	03 55 47.2	-42 22 07	G	12.3	25x19	

VV 161 (Orion)



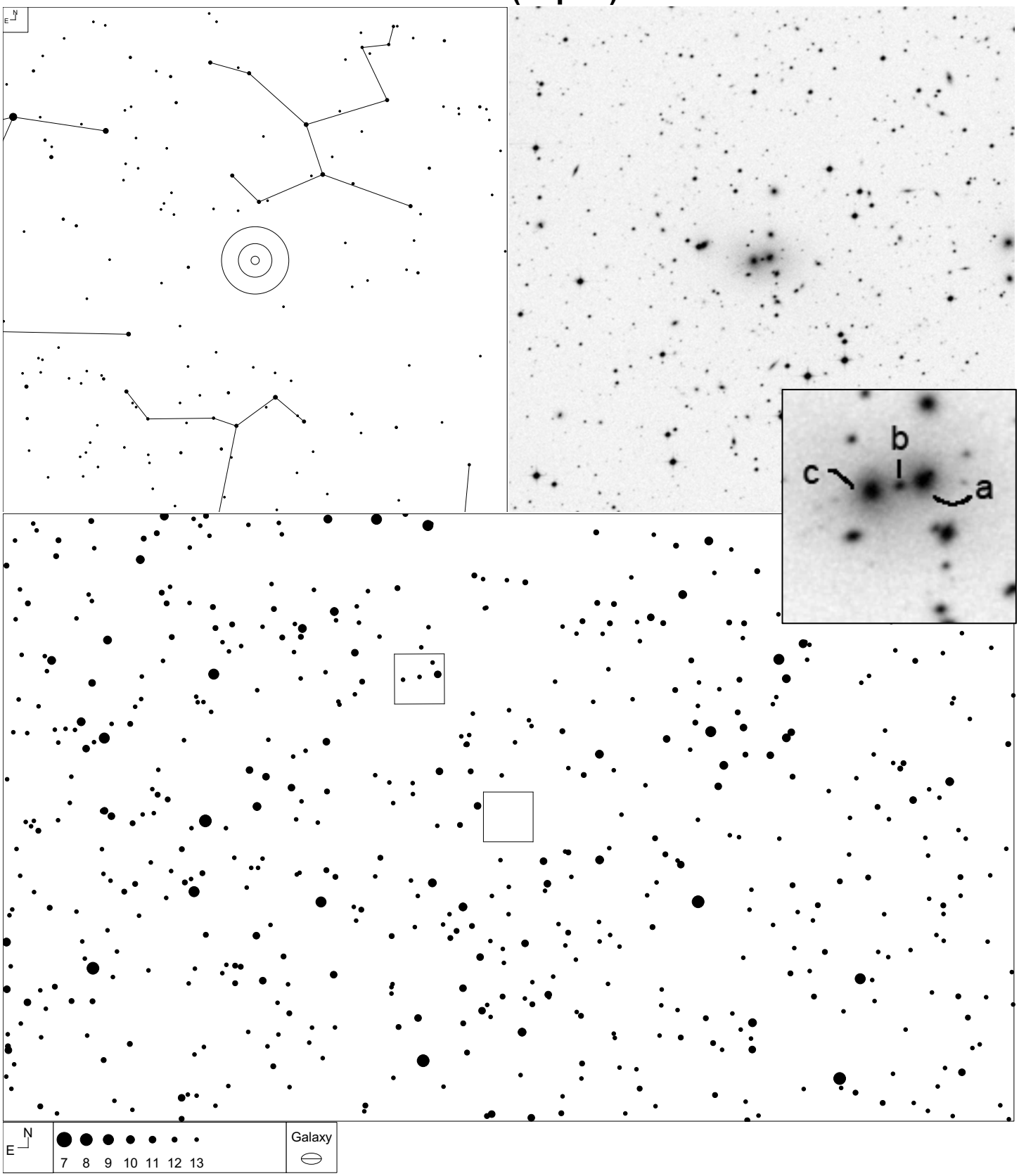
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
161	05 16 36.9	+06 26 30	GGroup			Ch
161f	05 16 36.0	+06 26 02	G	18		
161e	05 16 36.5	+06 26 15	G	16		
161a	05 16 37.1	+06 26 13	G	15.5	3x3	
161d	05 16 37.1	+06 26 13	G	17.5		
161b	05 16 37.1	+06 26 53	G	15.5	4x3	
161c	05 16 37.3	+06 26 27	G	14.8	7x7	

VV 225 (Orion)



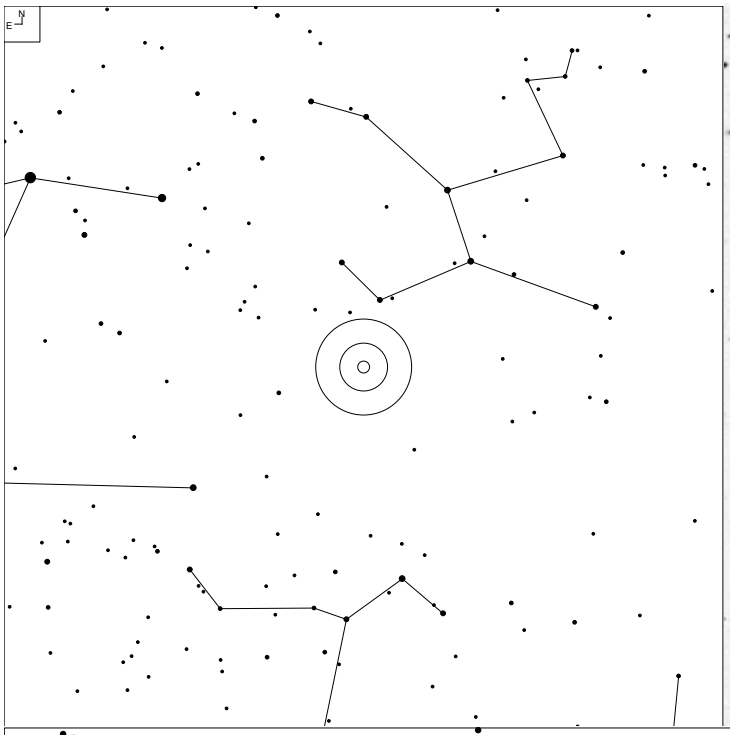
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
225	05 21 57.7	+03 29 03	GPair			PK
225b	05 21 56.7	+03 29 11	G	14.56	10x7	
225a	05 21 58.8	+03 28 56	G	14.66		

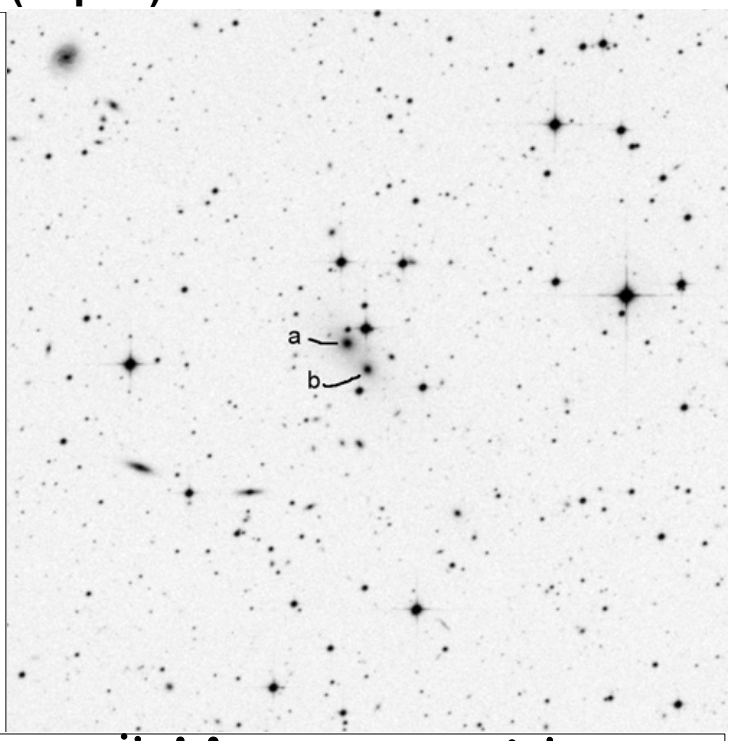
VV 162 (Lepus)

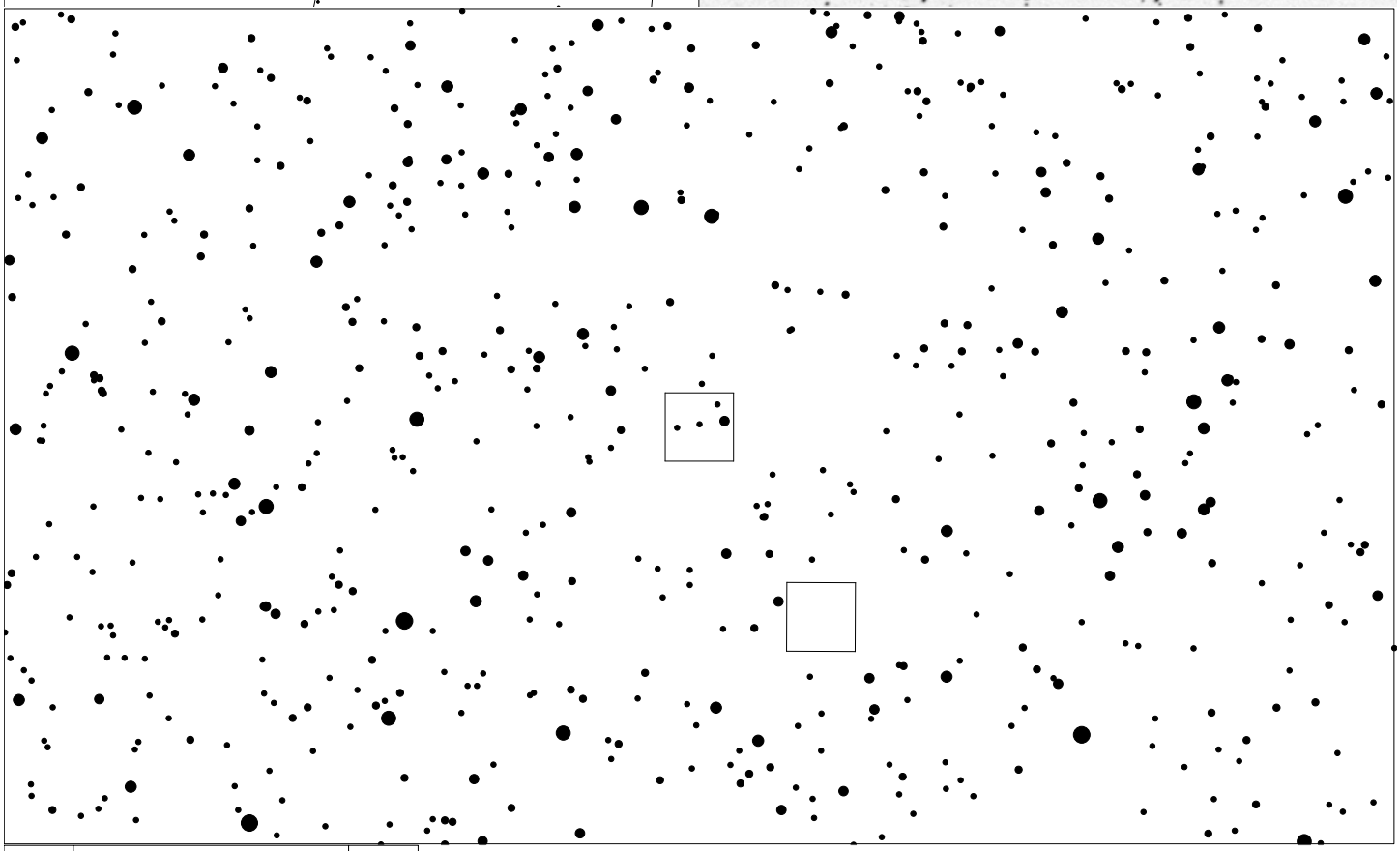


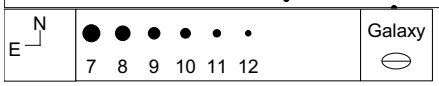
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
162	05 45 28.6	-25 55 55	GTrpl			Ch
162a	05 45 27.6	-25 55 51	G	13.89	6x6	
162b	05 45 28.5	-25 55 54	G	14.14		
162c	05 45 29.6	-25 55 57	G	14.08	8x8	

VV 180 (Lepus)



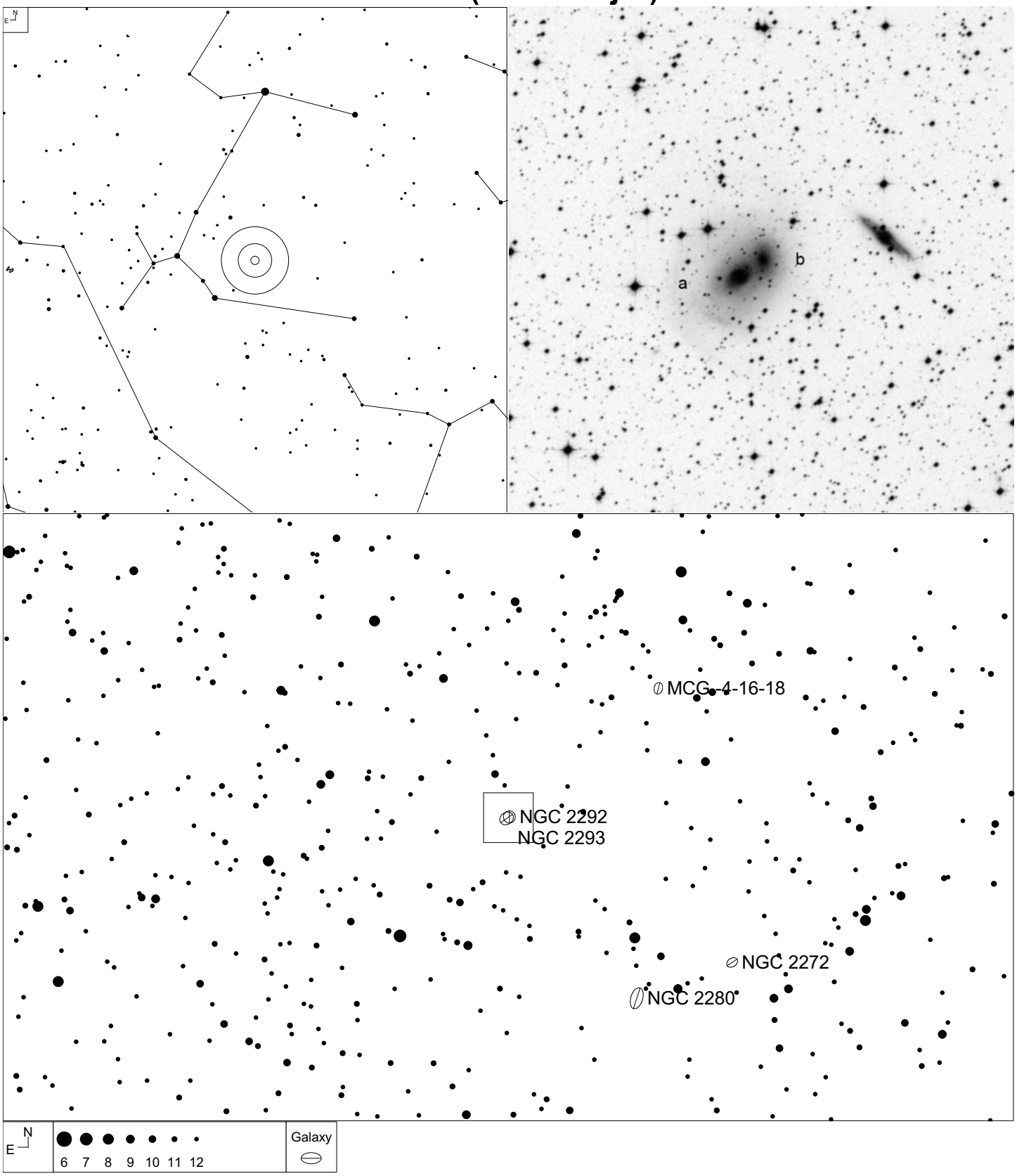






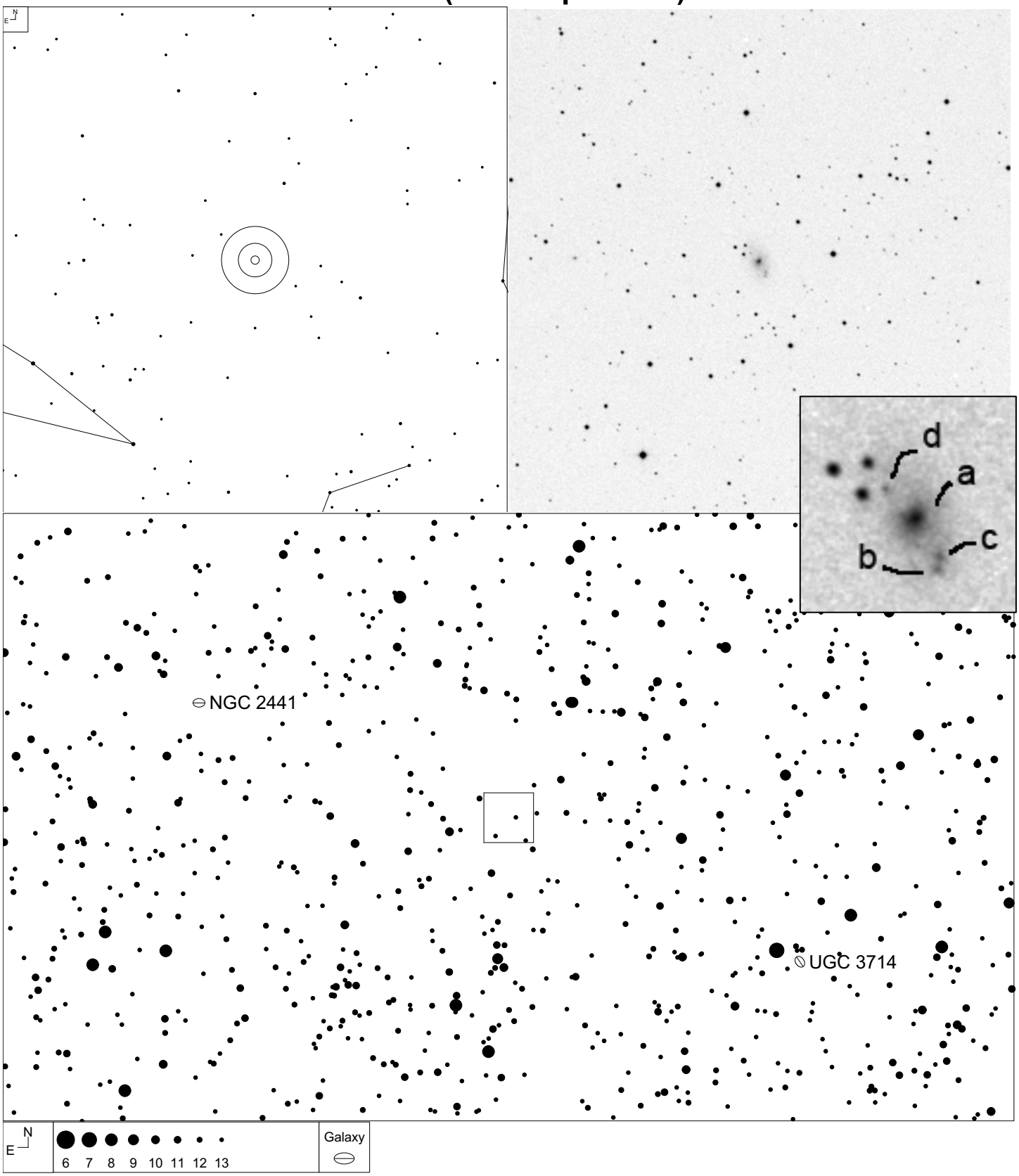
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
180	05 47 25.2	-25 15 04	GPair			PD
180b	05 47 24.6	-25 15 21	G	14.72	7x6	
180a	05 47 26.5	-25 14 49	G	14.78	9x7	

VV 178 (Canis Major)



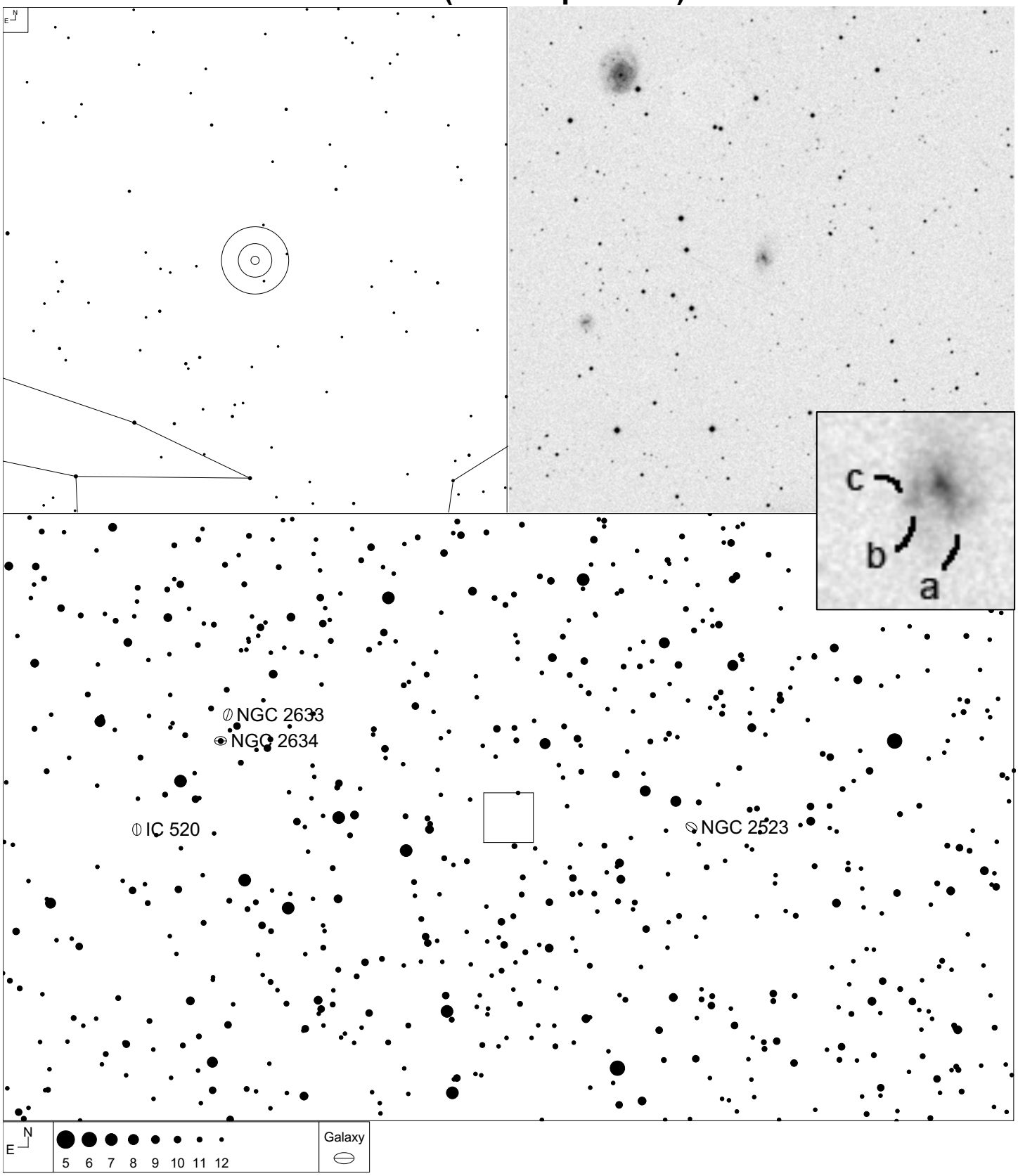
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
178	06 47 40.8	-26 45 00	GPair			PK
178b	06 47 39.6	-26 44 46	G	11.8p	35x28	
178a	06 47 42.9	-26 45 16	G	12.3b	42x33	

VV 141 (Camelopardalis)



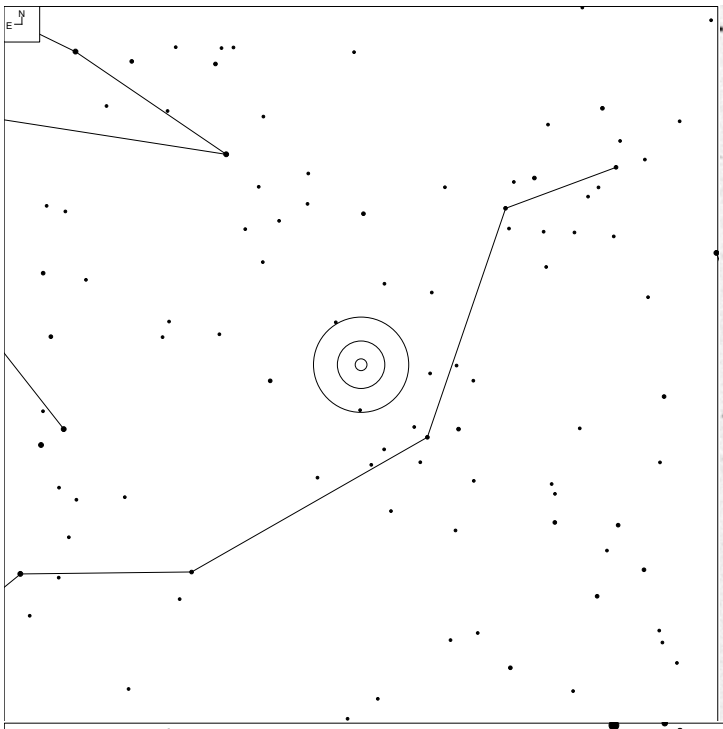
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
141	07 30 56.6	+72 31 03	GGroup			N
141c	07 30 54.6	+72 30 42	G			
141b	07 30 54.8	+72 30 37	G			
141a	07 30 57.0	+72 31 02	G	14.80	12x12	
141d	07 30 59.9	+72 31 18	G			

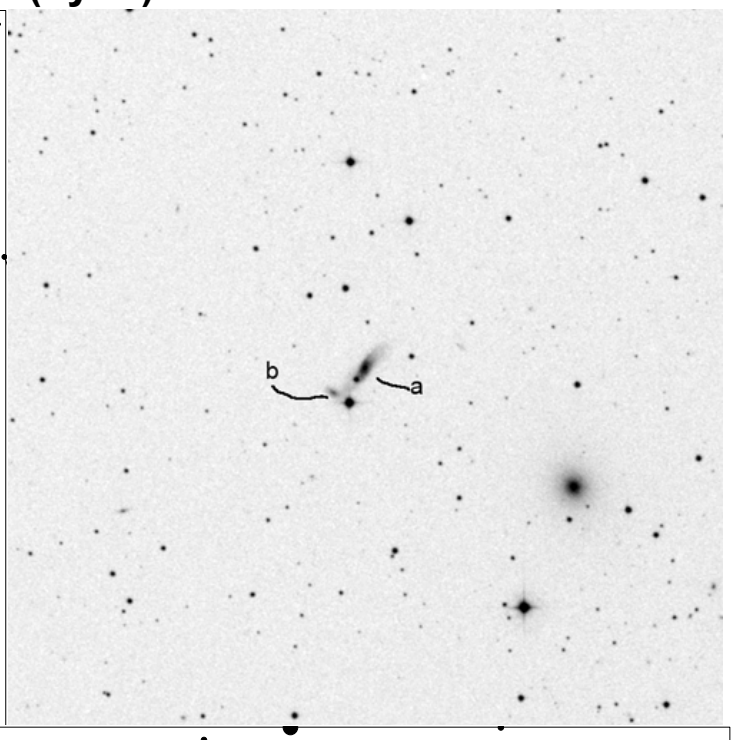
VV 157 (Camelopardalis)

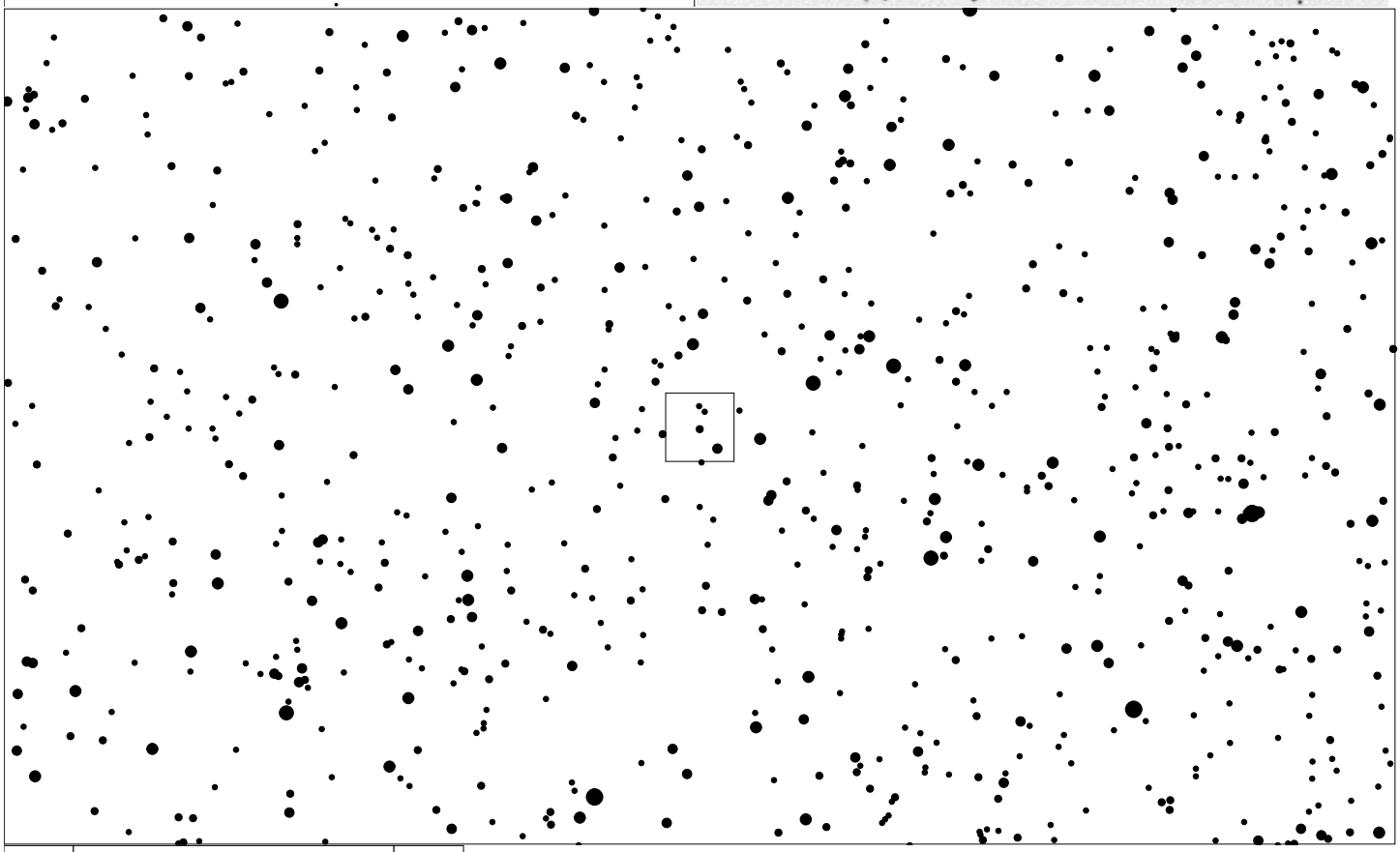


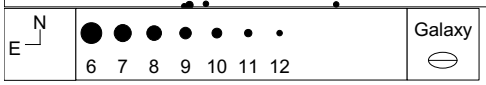
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
157	08 27 48.9	+73 39 01	G	15.5	14x7	N
157a	08 27 48.1	+73 39 05	G	15.5	9x6	
157b	08 27 50.1	+73 39 02	G			
157c	08 27 50.2	+73 39 06	G			

VV 284 (Lynx)



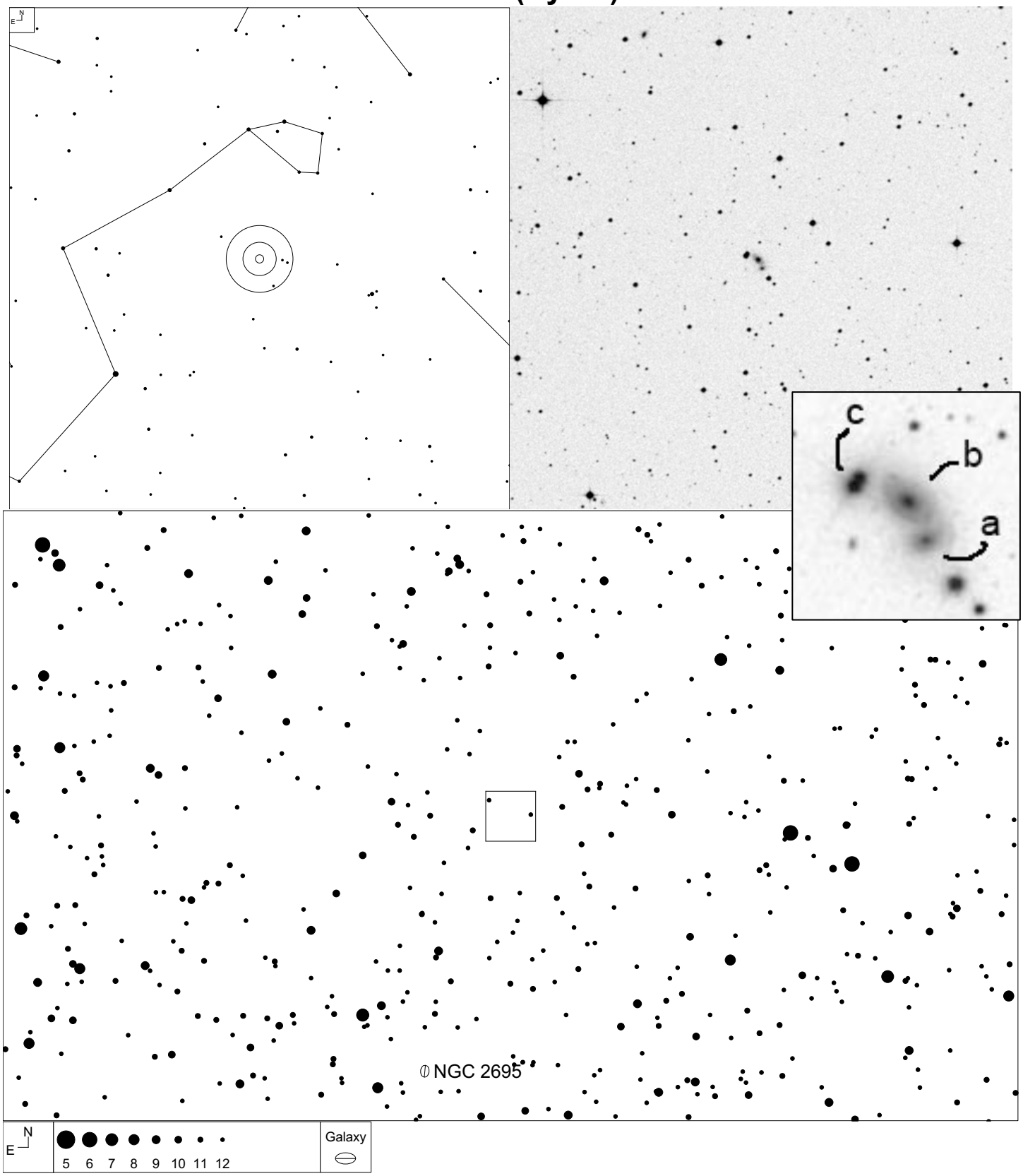






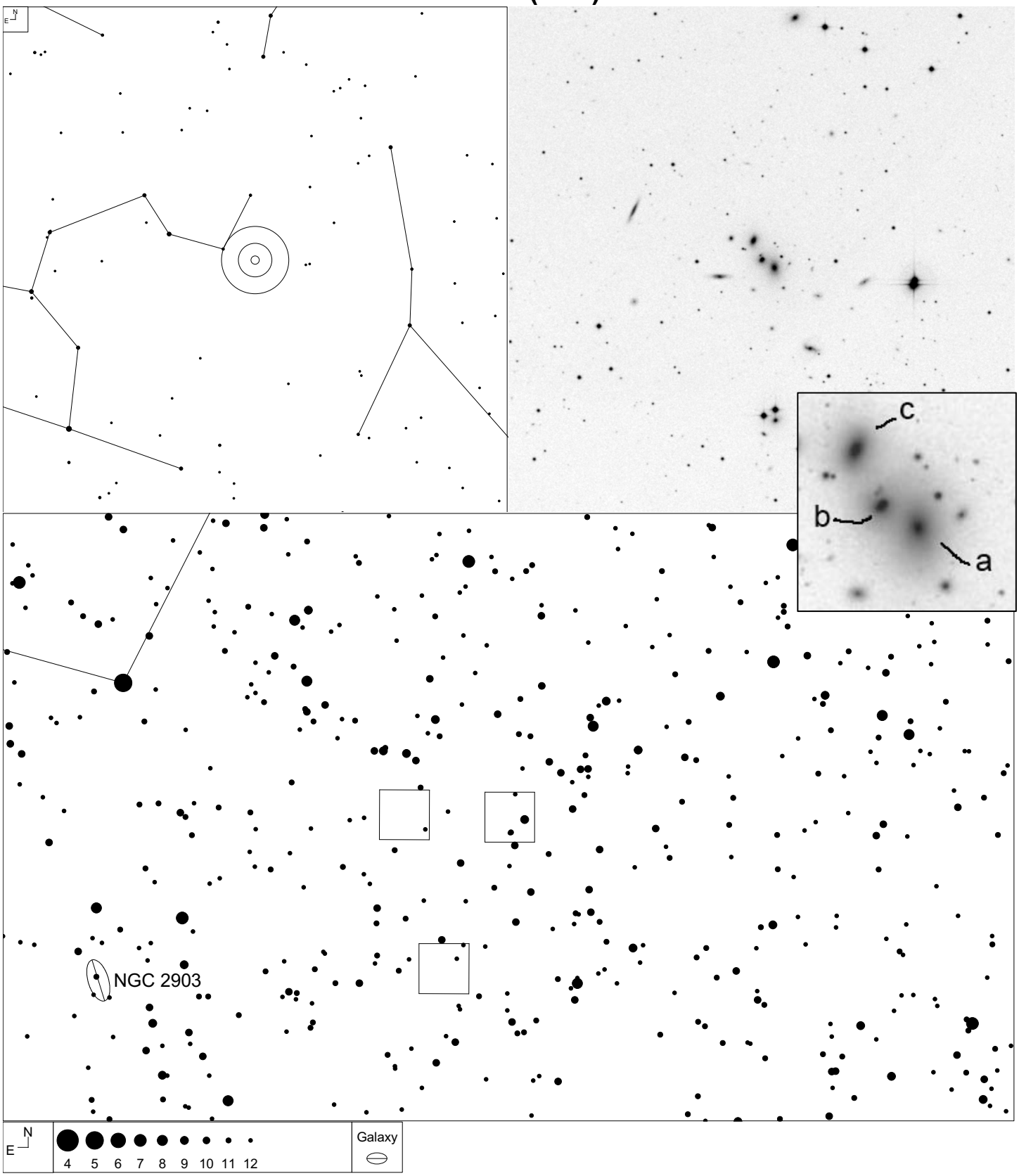
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
284	07 43 49.7	+52 21 11	GPair			PDbt
284a	07 43 47.6	+52 21 27	G	14.7	15x4	
284b	07 43 51.8	+52 20 54	G	15	4x2	

VV 168 (Hydra)



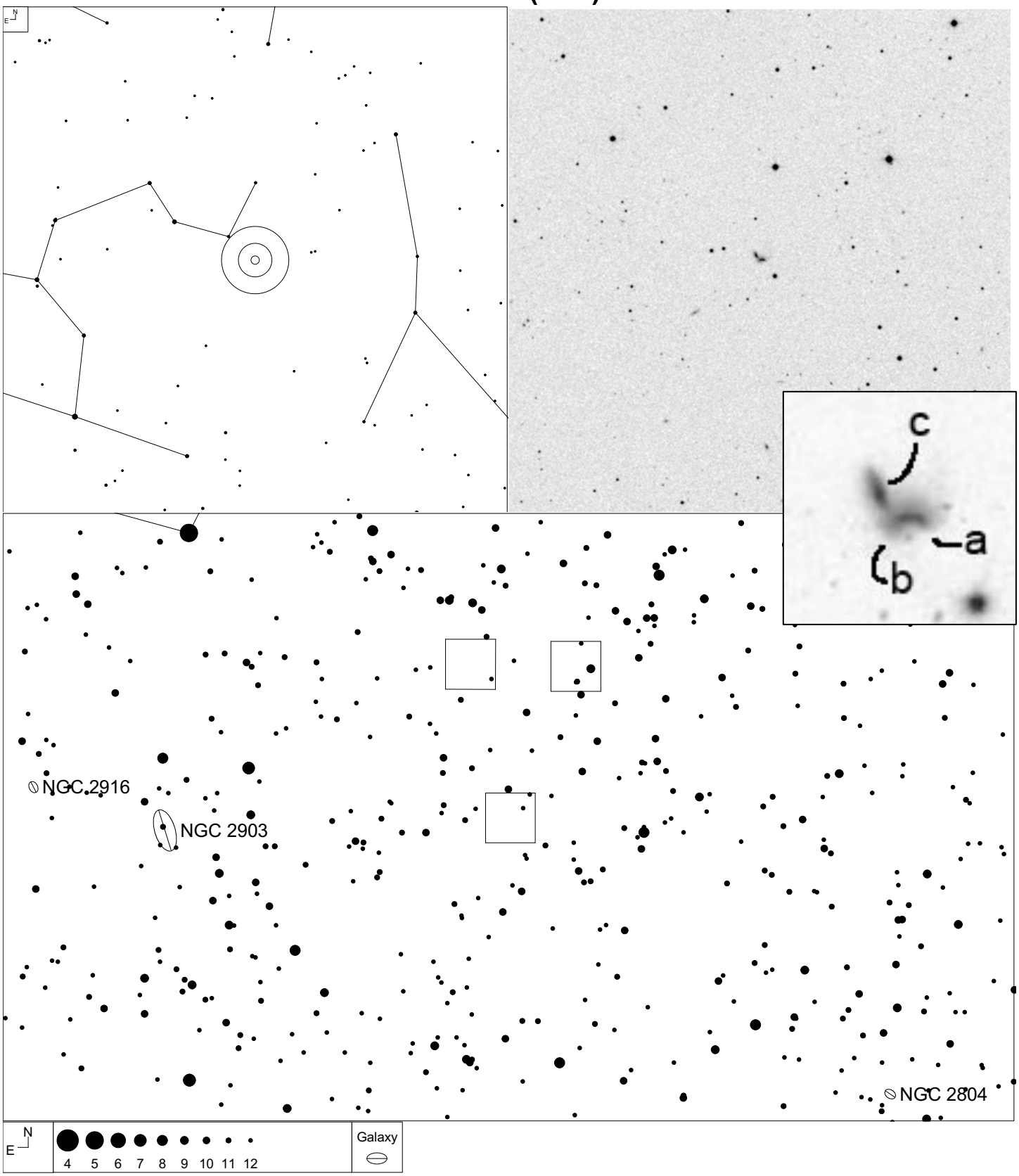
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
168	08 52 45.4	-01 49 02	GPair	15.1	9x5	NNN
168a	08 52 45.1	-01 49 10	G			
168b	08 52 45.6	-01 48 54	G			
168c	08 52 47.0	-01 48 45	Dbl star			

VV 171 (Leo)



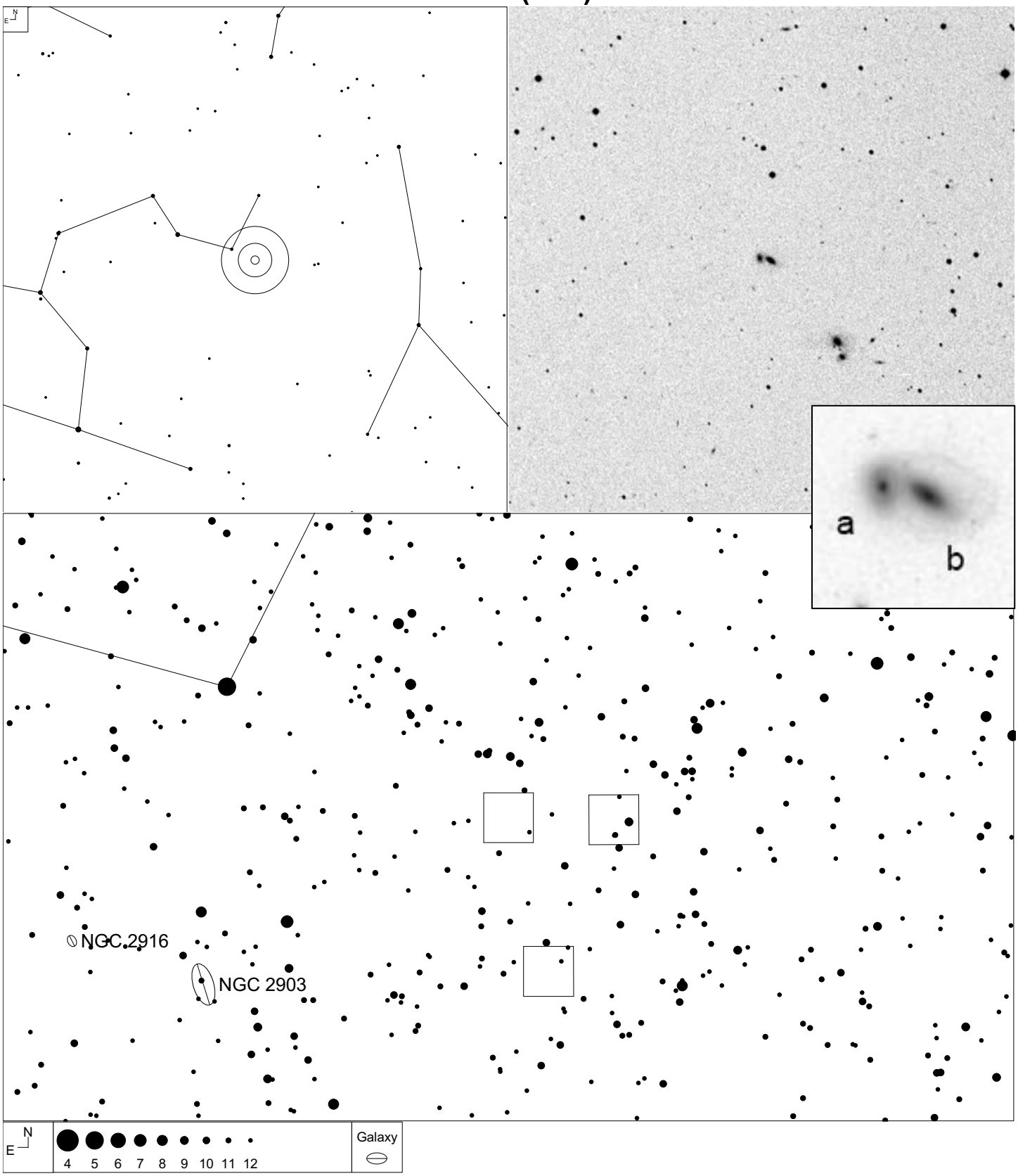
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
171	09 23 25.7	+22 19 10	GTrpl			Ch
171a	09 23 24.3	+22 18 47	G	14.7g	9x8	
171b	09 23 25.9	+22 19 00	G	16.2g	6x4	
171c	09 23 27.0	+22 19 35	G	15.1	4x2	

VV 154 (Leo)



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
154	09 24 49.9	+21 34 21	GTrpl			N
154b	09 24 49.4	+21 34 18	G	17.0g		
154c	09 24 49.8	+21 34 18	G	16.0	4x1	
154a	09 24 50.4	+21 34 26	G	14.8	4x2	

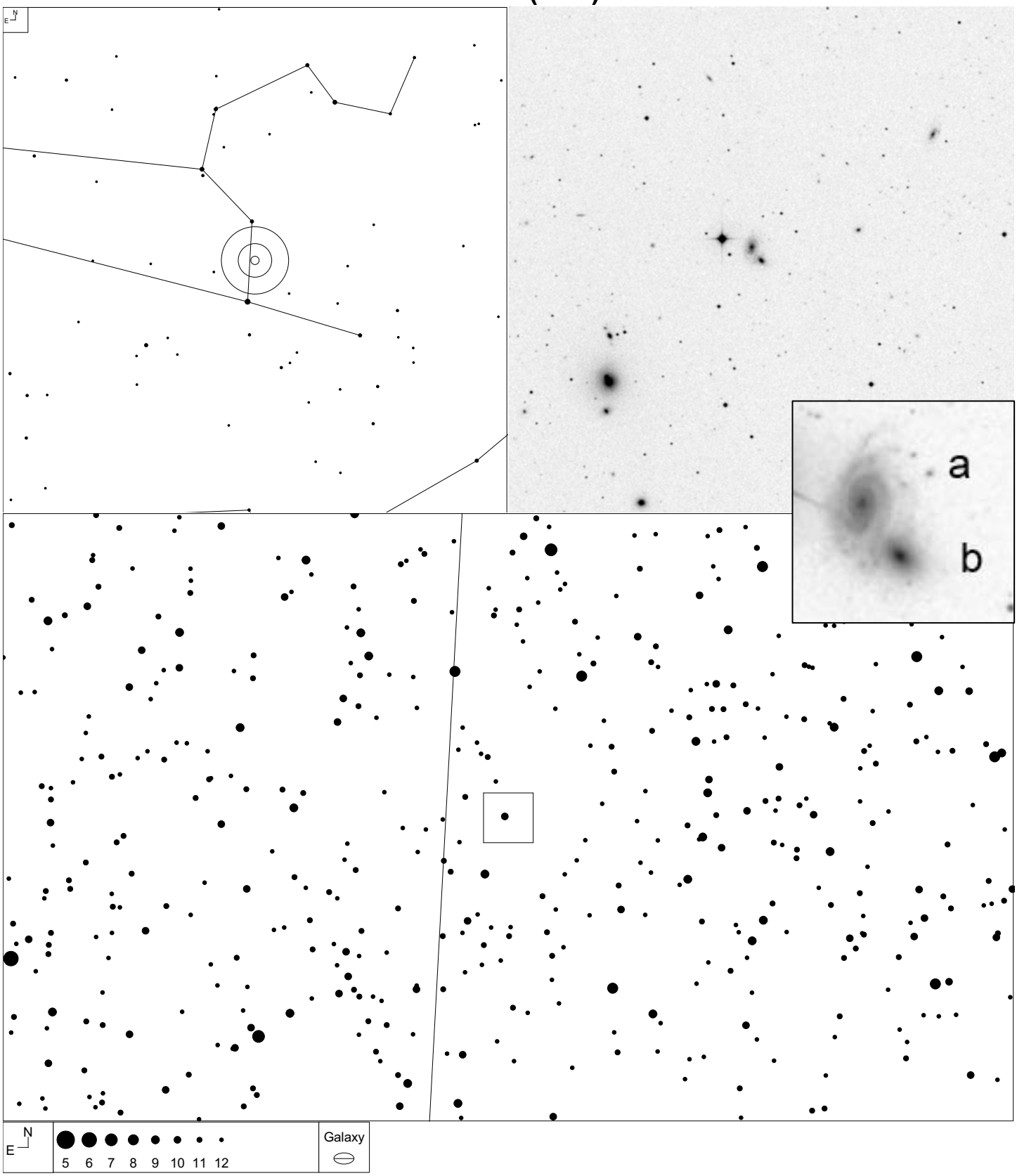
VV 63 (Leo)



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
63	09 25 50.3	+22 22 11	GPair			PDb
63a	09 25 50.4	+22 22 10	G	15.5	9x5	
63b	09 25 51.0	+22 22 13	G	15.0	4x4	

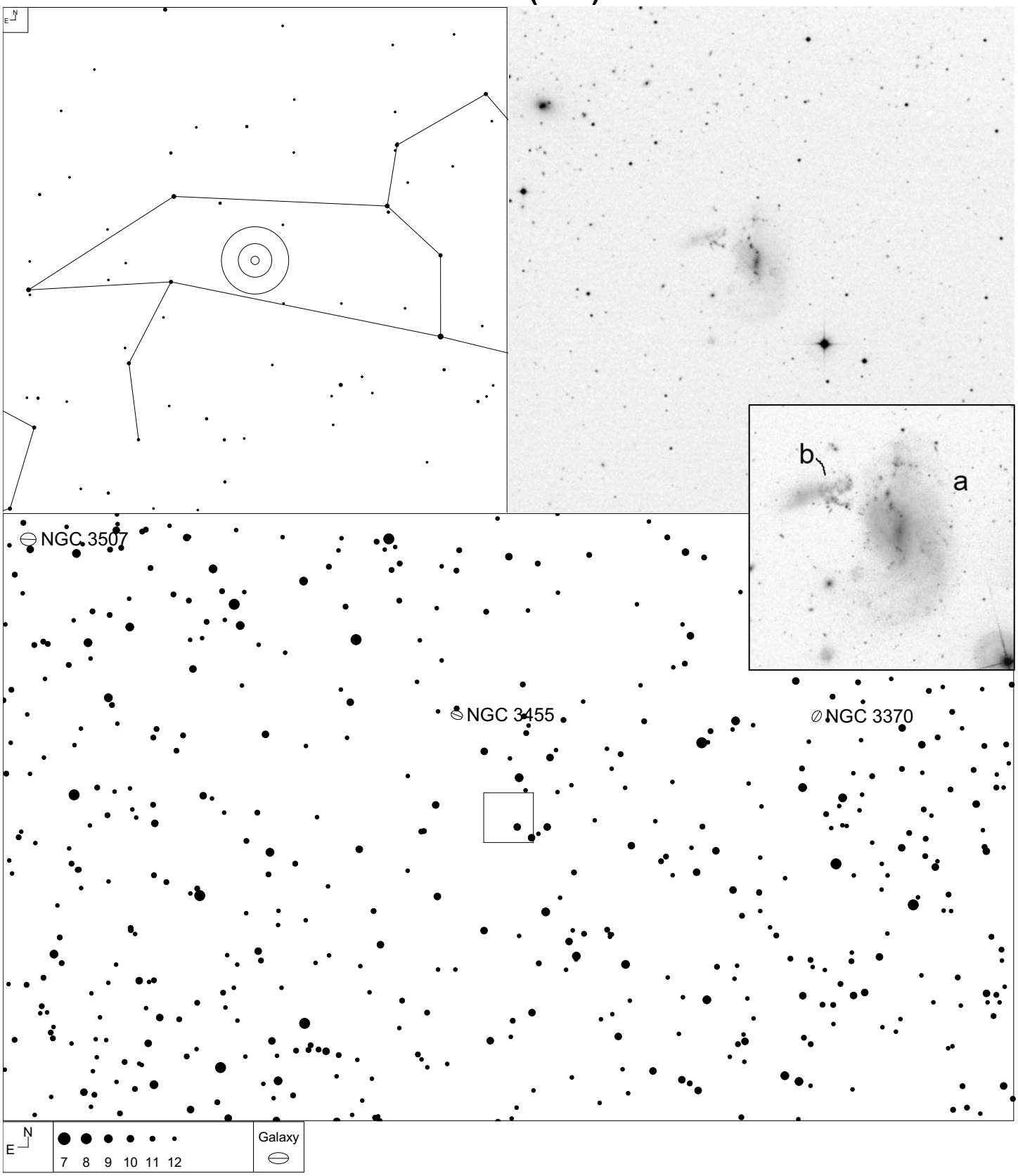
Megastar mislabeled CGCG 121-89 and VV63 - true location is 3.4' NE. Corrected in above chart.

VV 240 (Leo)



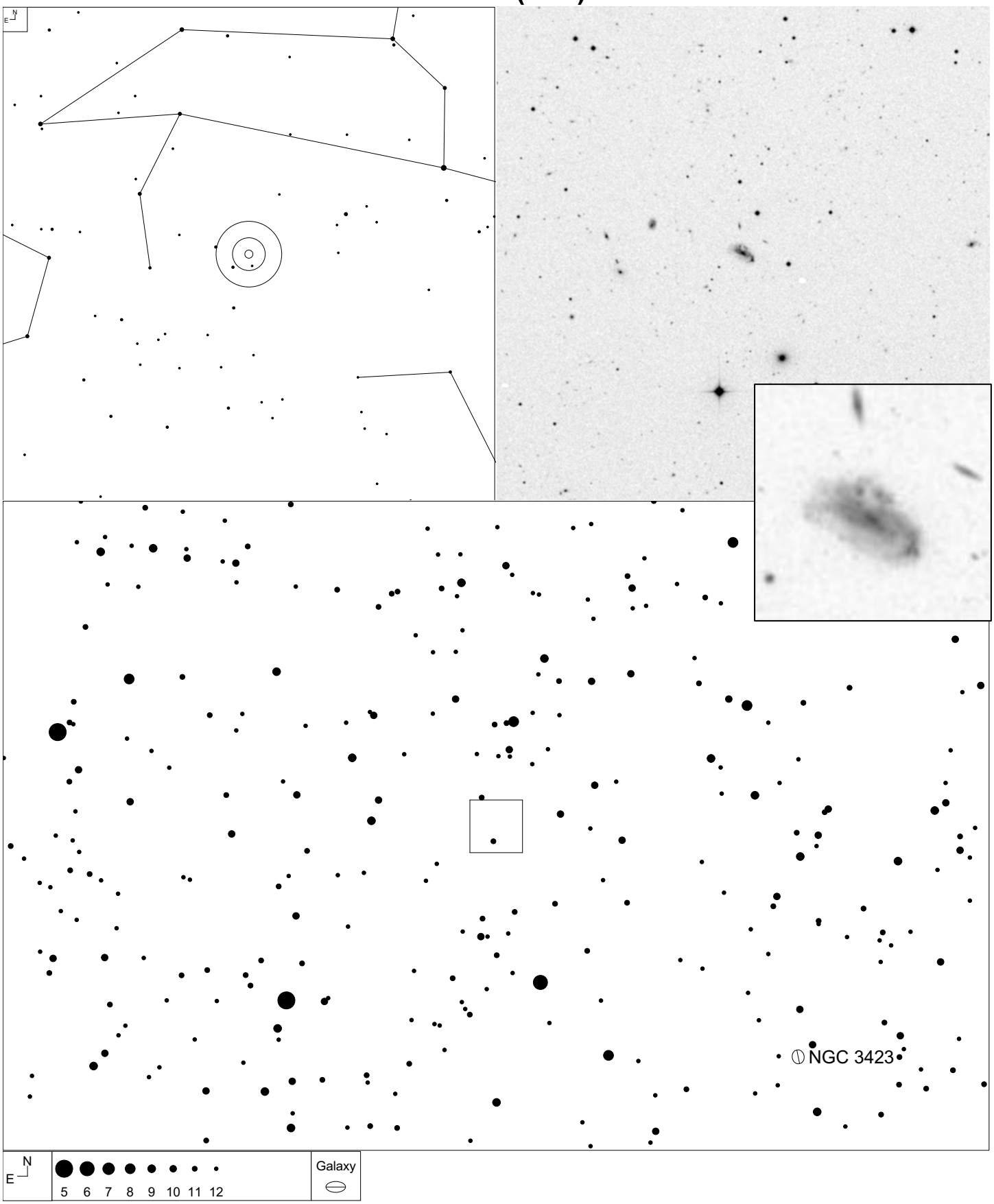
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
240	10 06 33.8	+14 26 12	GPair			Pkb
240b	10 06 33.3	+14 26 01	G	16.3	5x4	
240a	10 06 34.4	+14 26 25	G	15.0	10x8	

VV 252 (Leo)



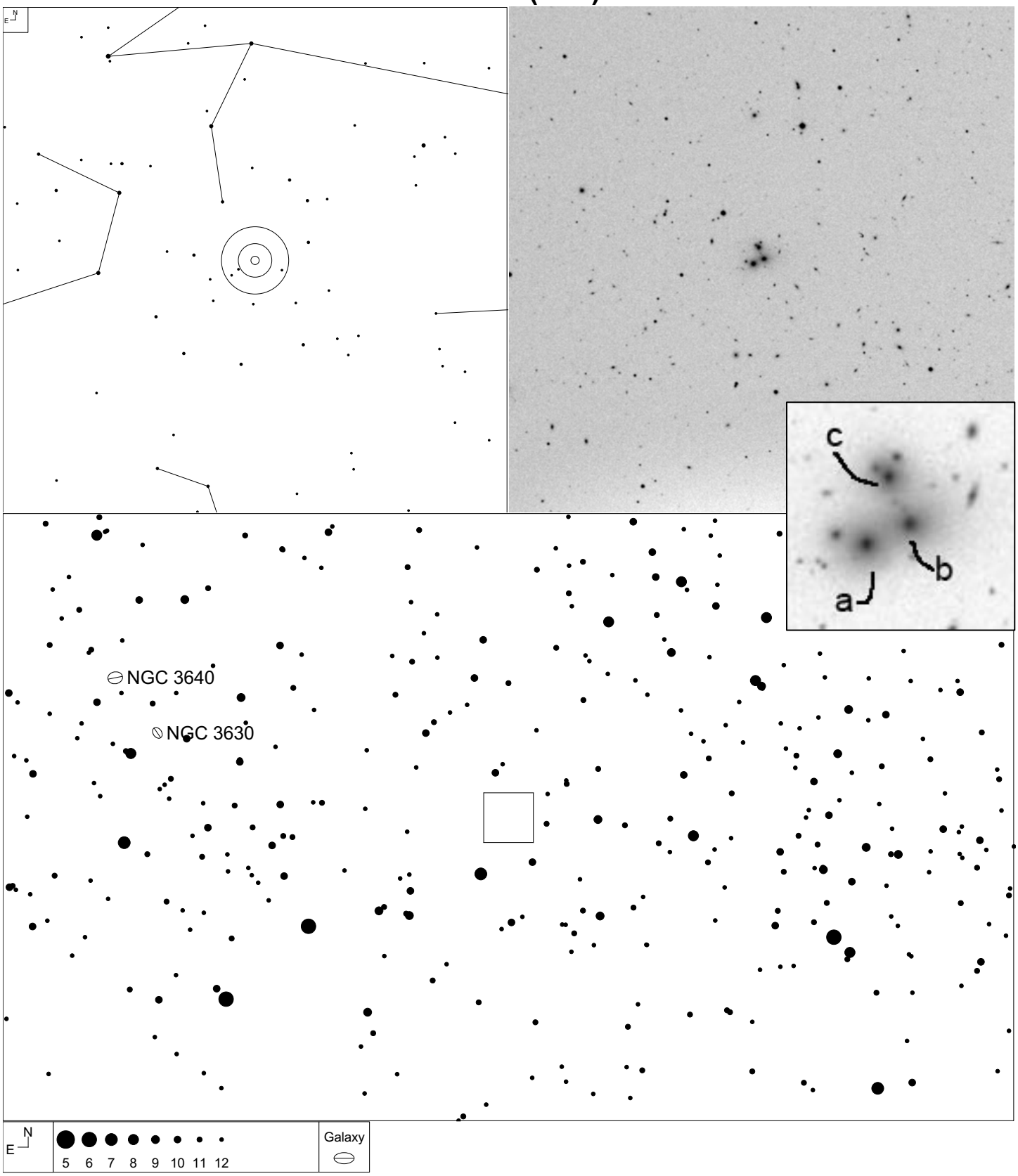
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
252	10 53 26.8	+16 46 44	GPair			PKdf
252a	10 53 24.0	+16 46 21	G	13.1	37x21	
252b	10 53 29.6	+16 47 10	G	14.3	15x8	

VV 149 (Leo)



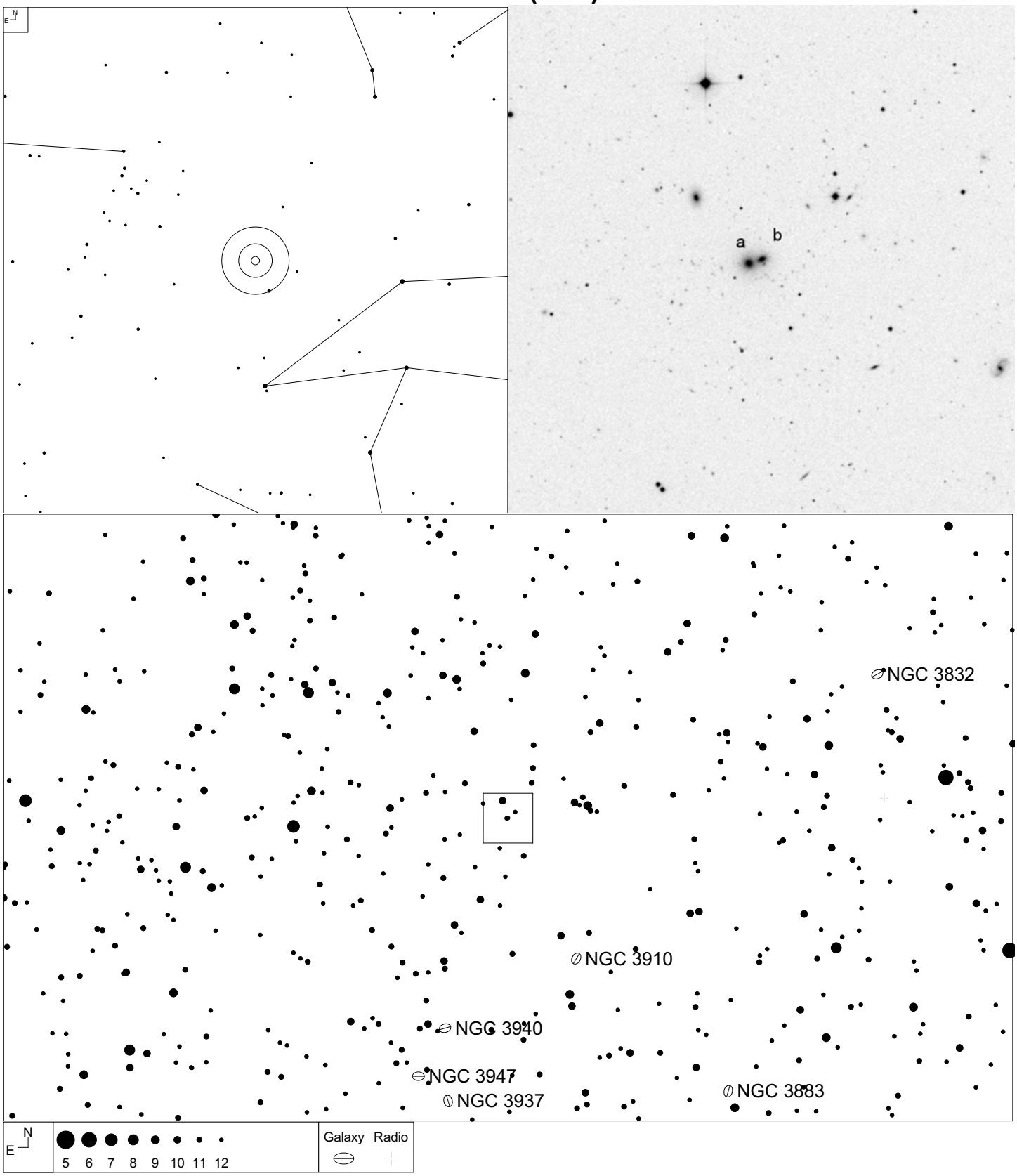
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
149	10 56 51.0	+06 54 22	G	14.6p	9x7	N

VV 145 (Leo)



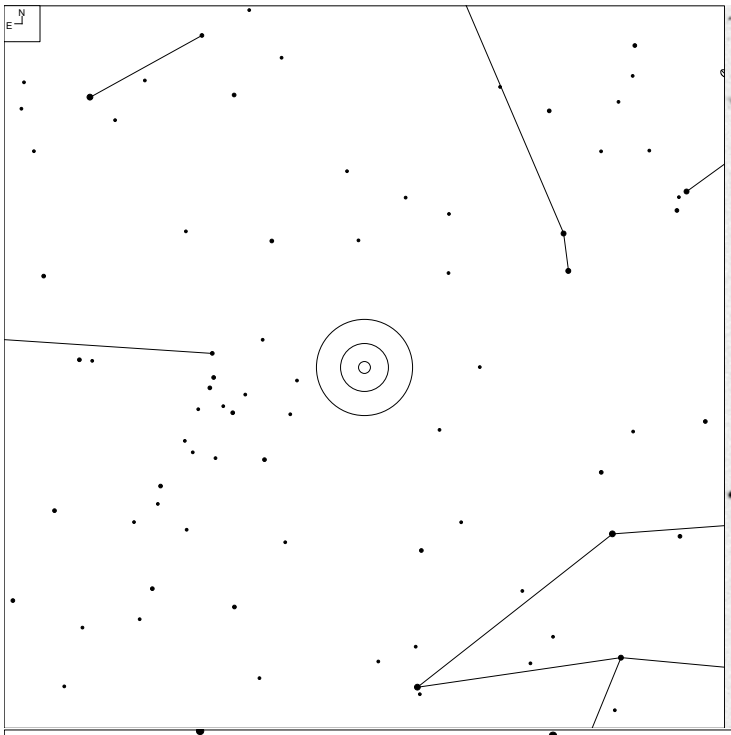
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
145	11 13 20.8	+02 32 55	GTrpl			NNN
145b	11 13 20.1	+02 32 48	G	16.0	-	
145c	11 13 20.7	+02 33 09	G	15.6	4x4	
145a	11 13 21.4	+02 32 39	G	15.4	5x4	

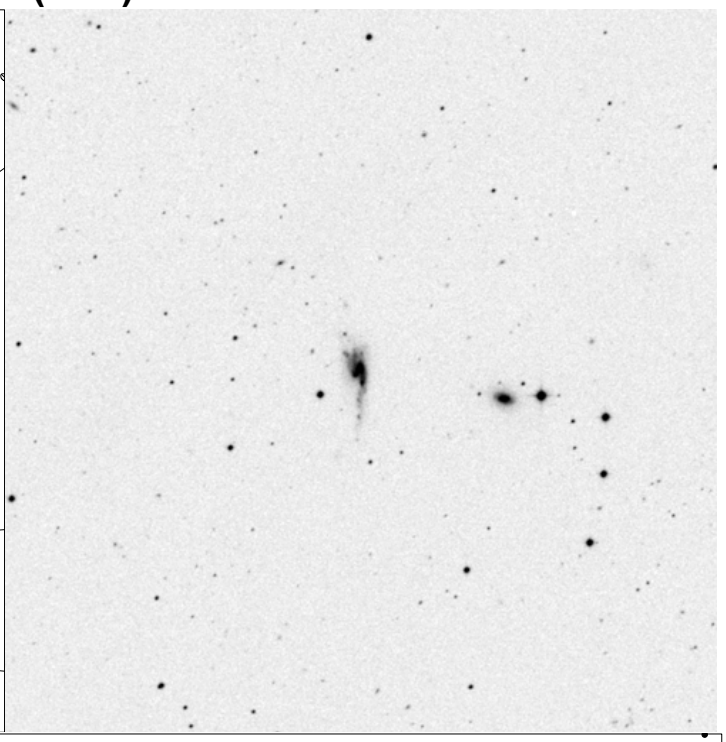
VV 218 (Leo)

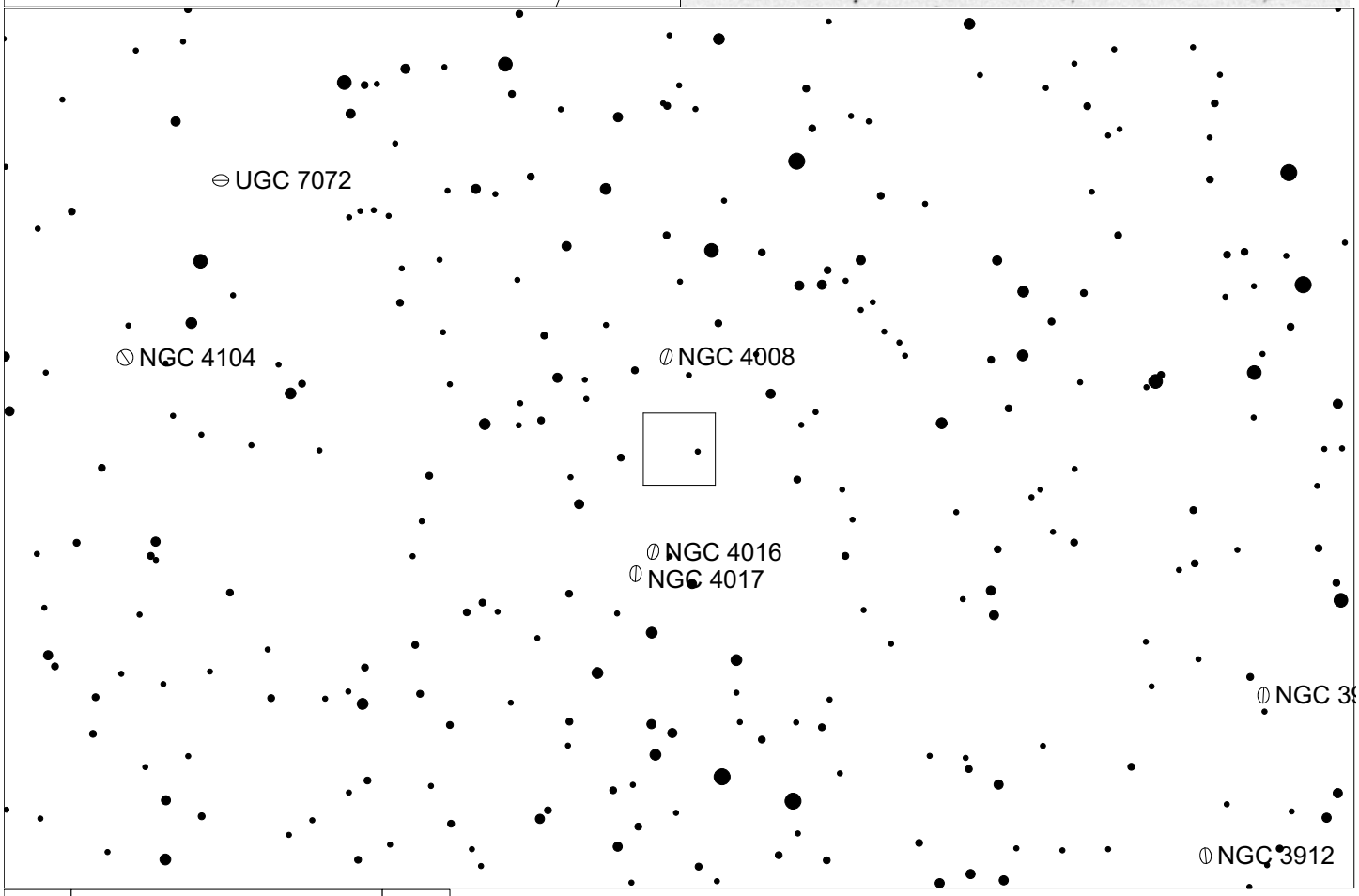


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
218	11 51 27.4	+22 01 37	GPair			PK
218a	11 51 26.5	+22 01 41	G	14.5	3x2	
218b	11 51 28.2	+22 01 33	G	14.5	3x2	

VV 230 (Leo)

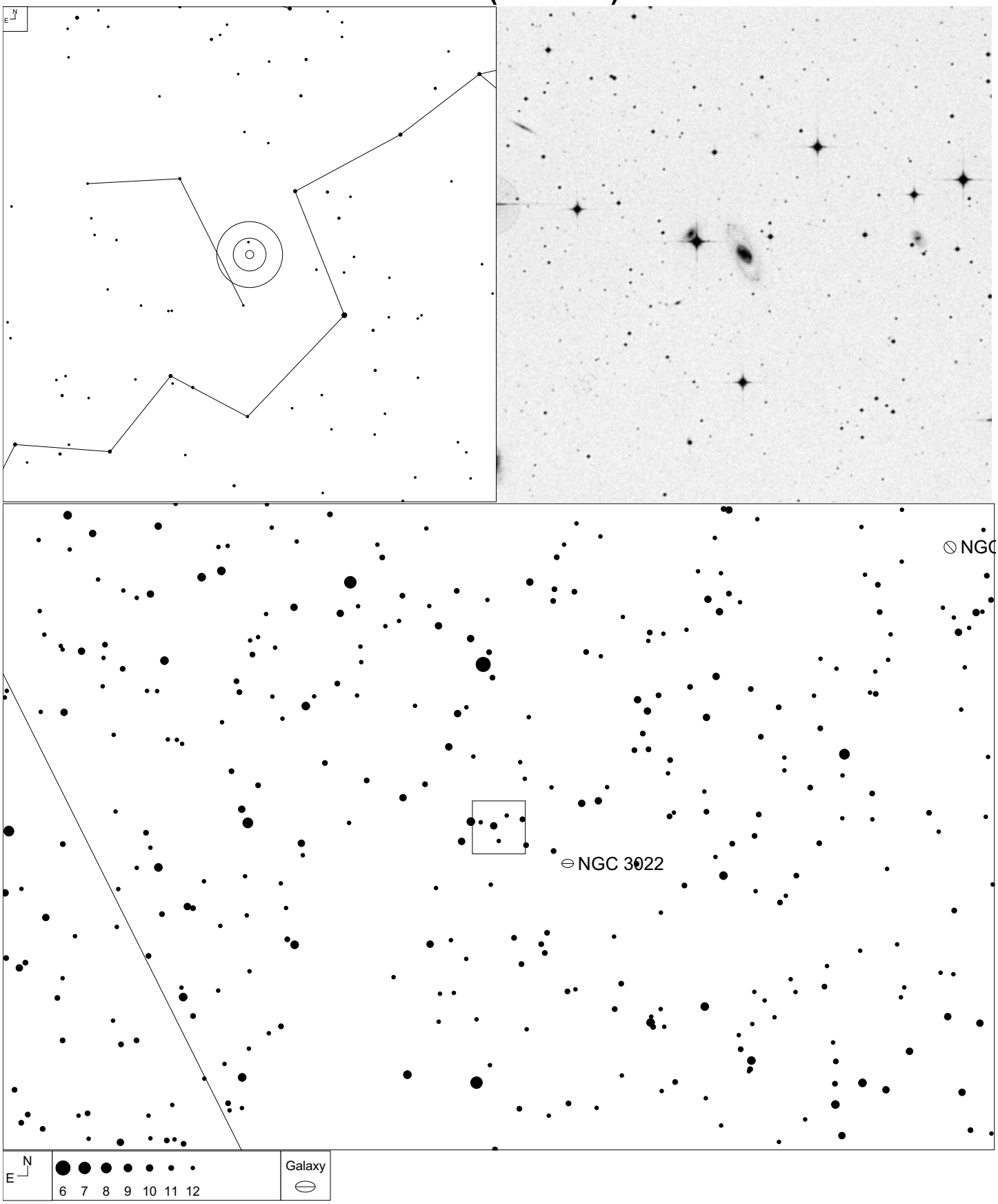






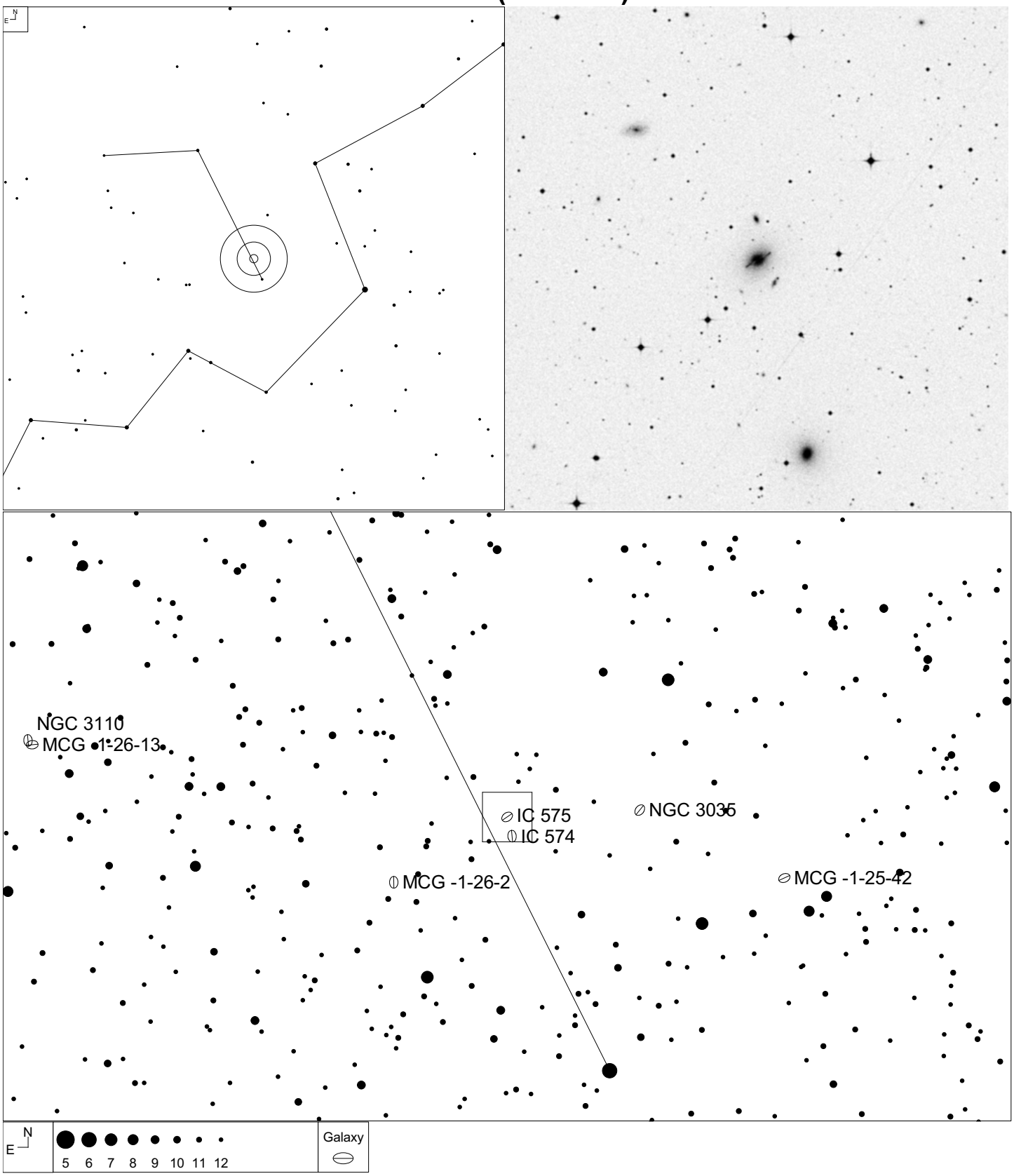
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
230	11 58 05.2	+27 52 44	G	13.9g	18x6	PKdf

VV 110 (Sextans)



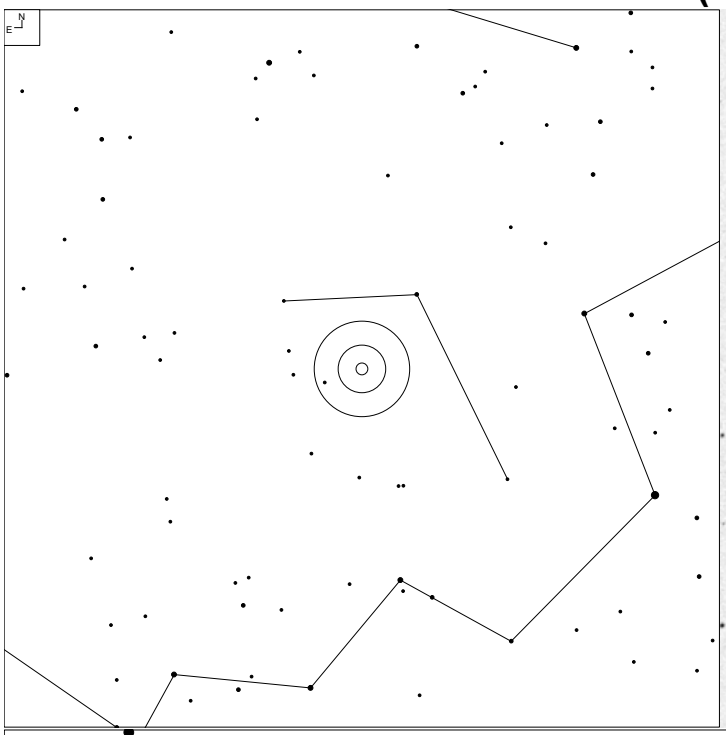
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
110	09 50 56.5	-04 59 52	G	14.46	19x8	PC
110a	09 50 55.9	-04 59 57	PofG			
110b	09 50 57.1	-04 59 49	PofG			

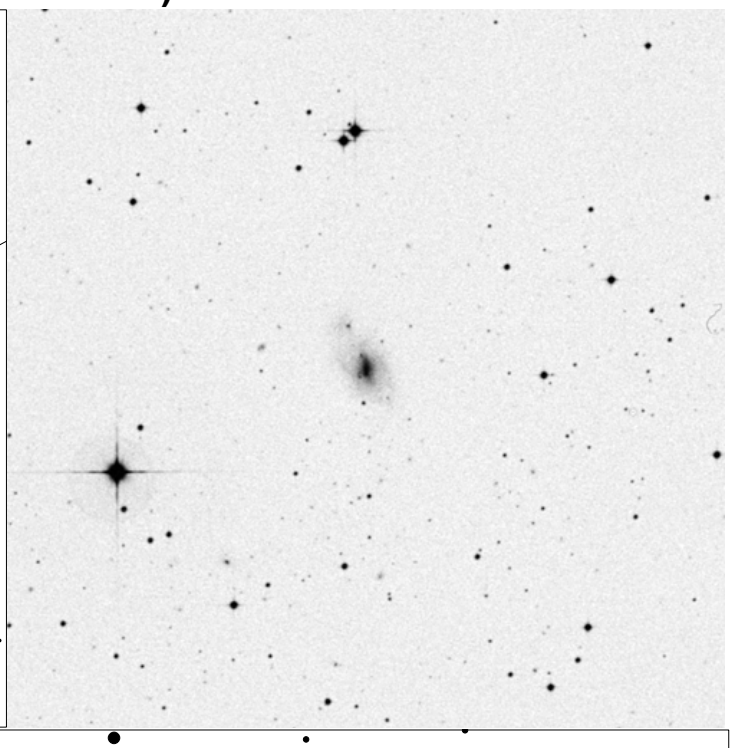
VV 111 (Sextans)

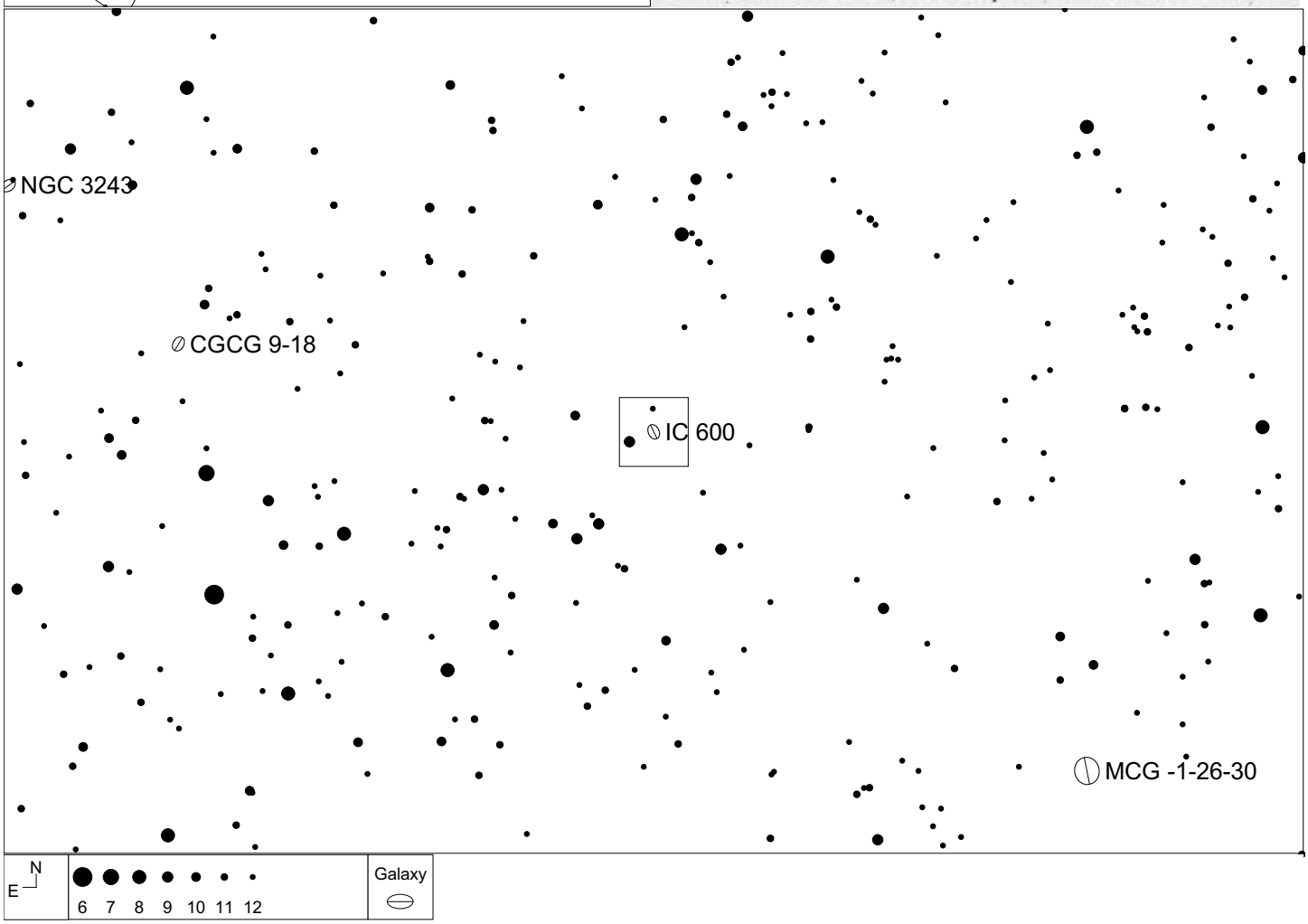


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
111	09 54 32.9	-06 51 27	G	14.02	17x12	PC
111a	09 54 32.9	-06 51 30	PofG			
111b	09 54 33.2	-06 51 24	PofG			

VV 97 (Sextans)

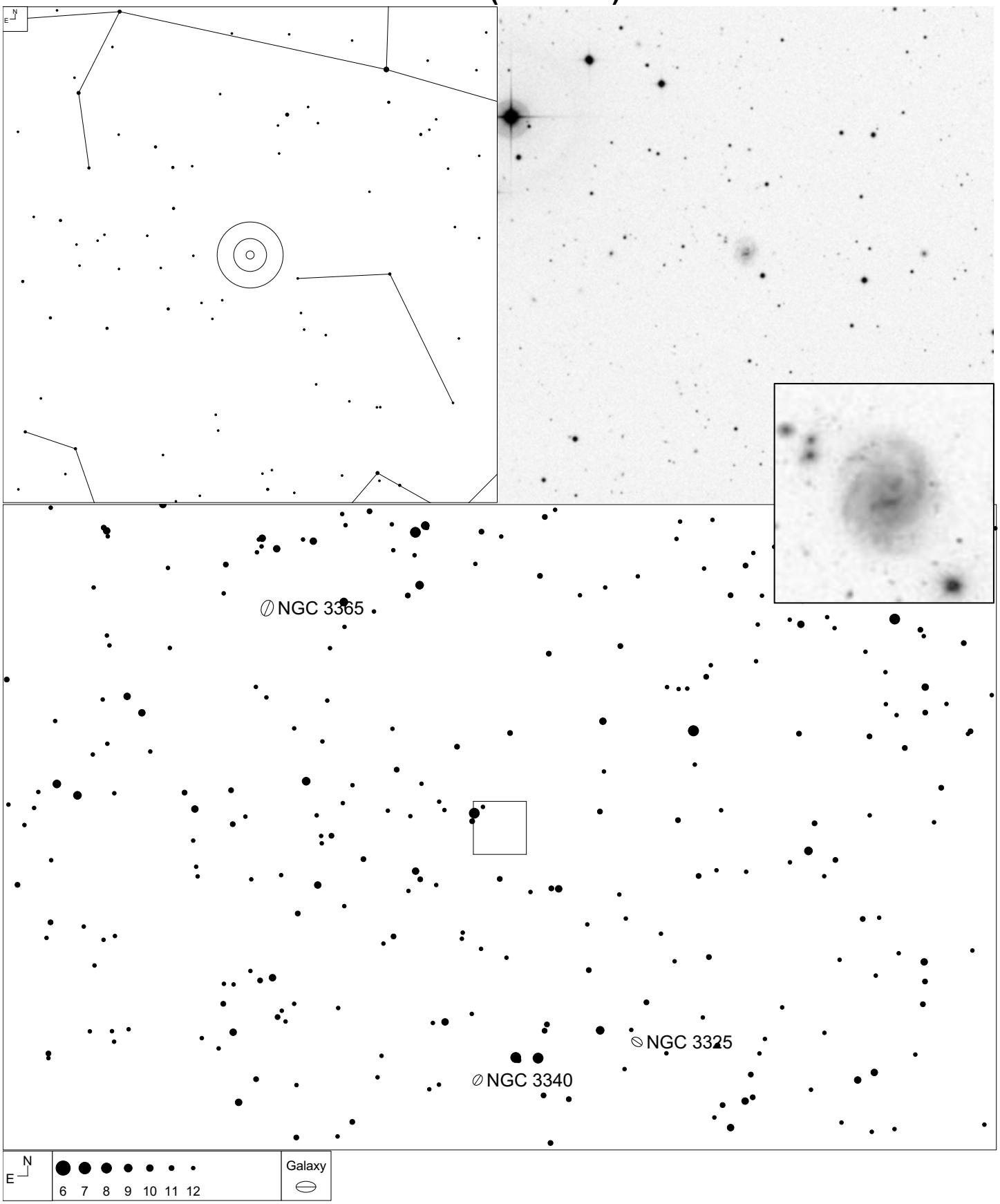






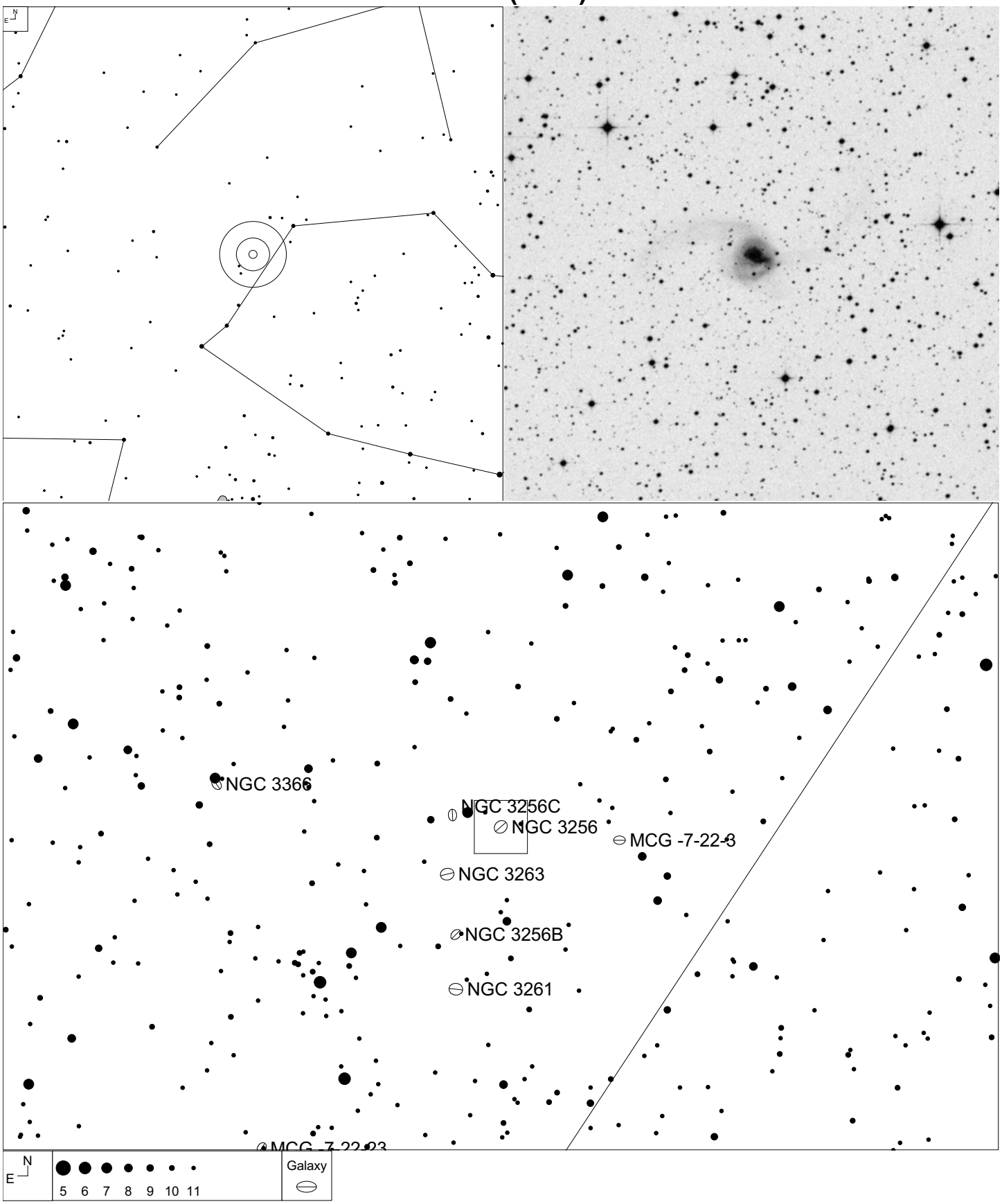
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
97	10 17 10.9	-03 29 52	G	13.68	23x12	PC

VV 113 (Sextans)



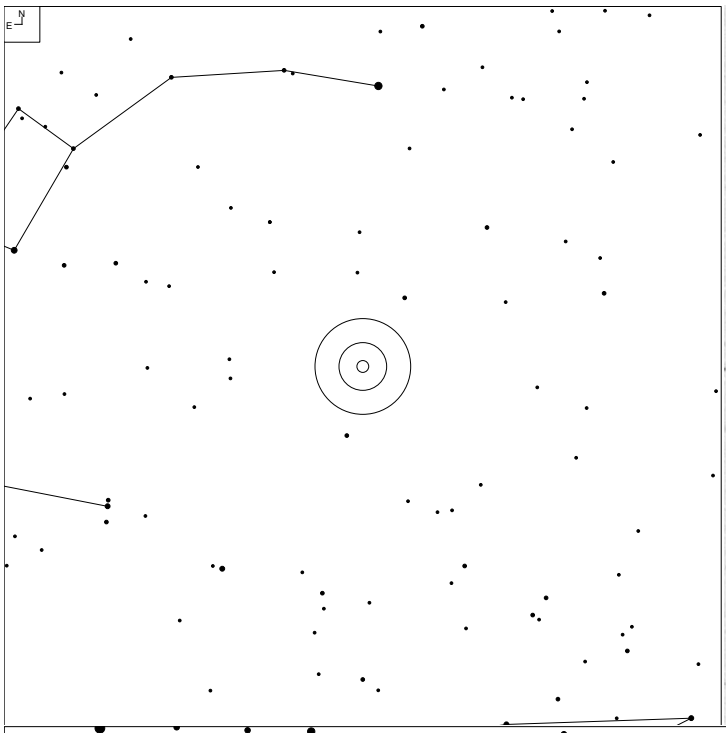
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
113	10 41 53.4	+00 47 35	G	14.9g	9x8	PC

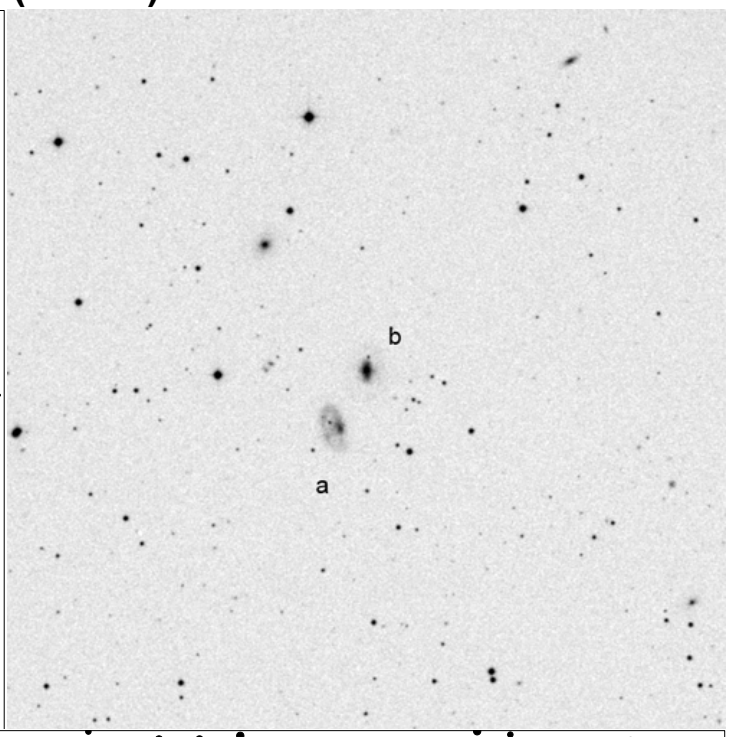
VV 65 (Vela)

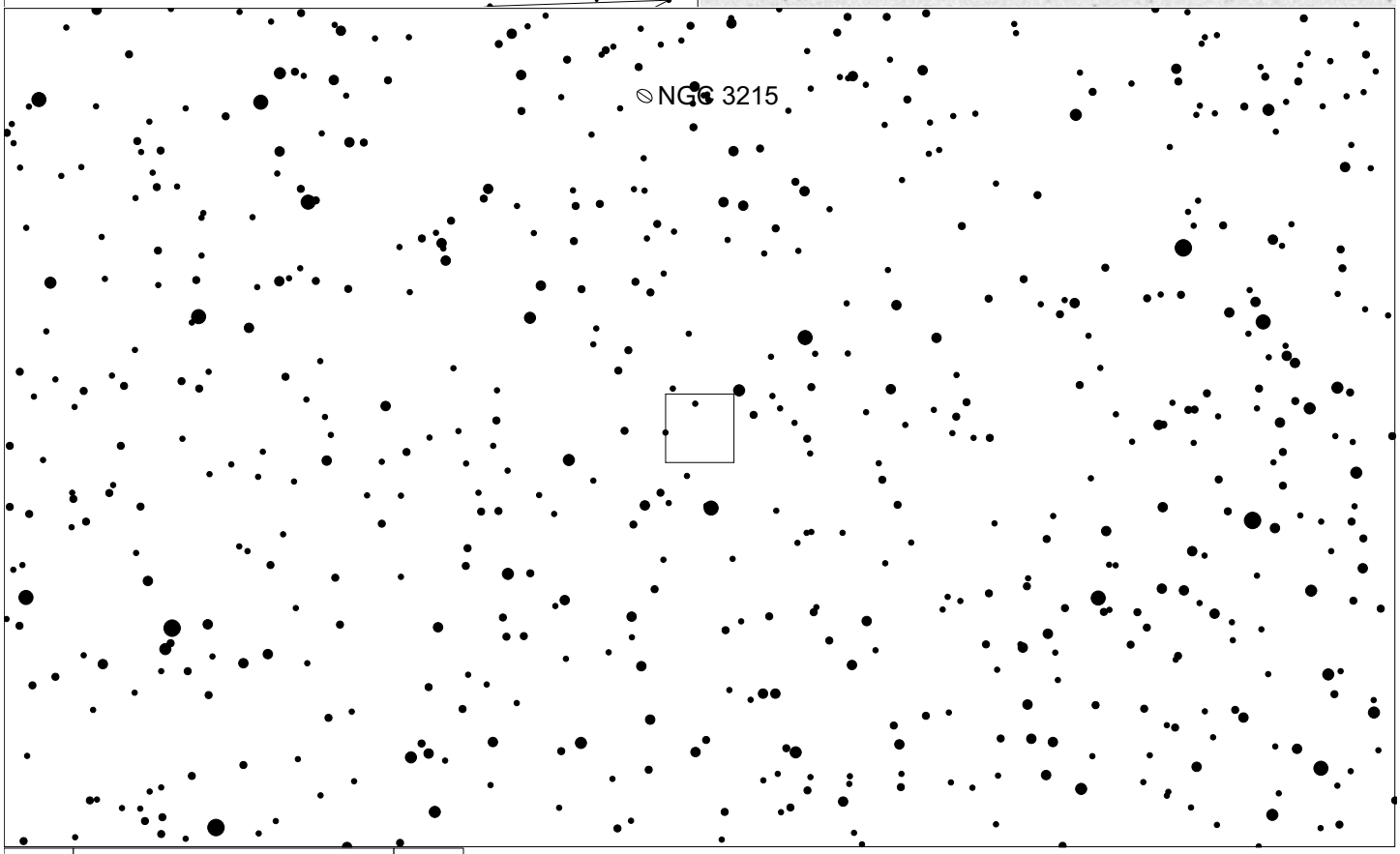


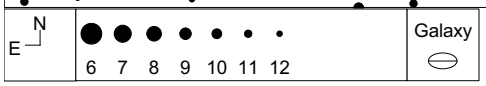
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
65	10 27 51.3	-43 54 13	G	12.15	38x21	PC

VV 330 (Draco)



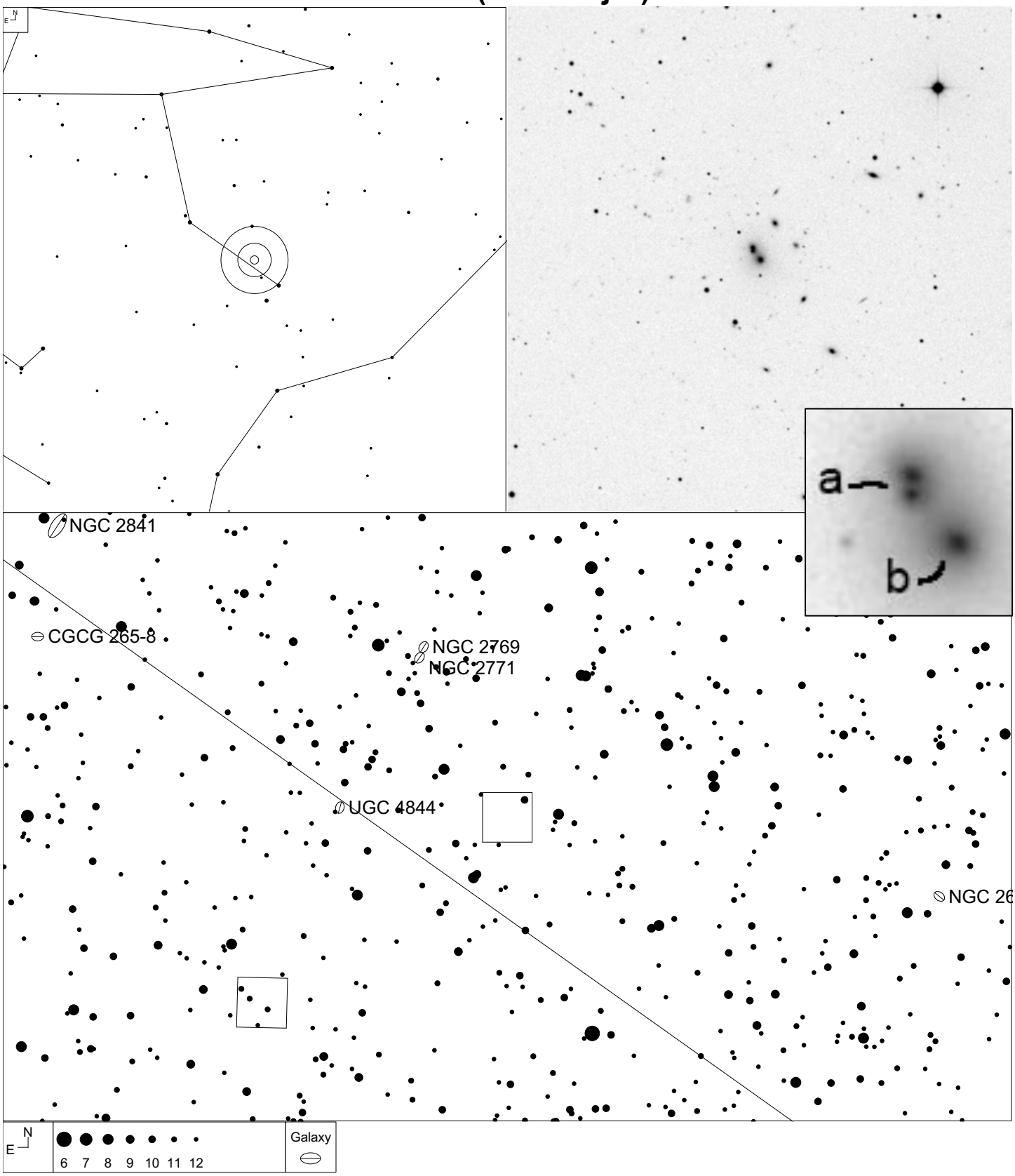






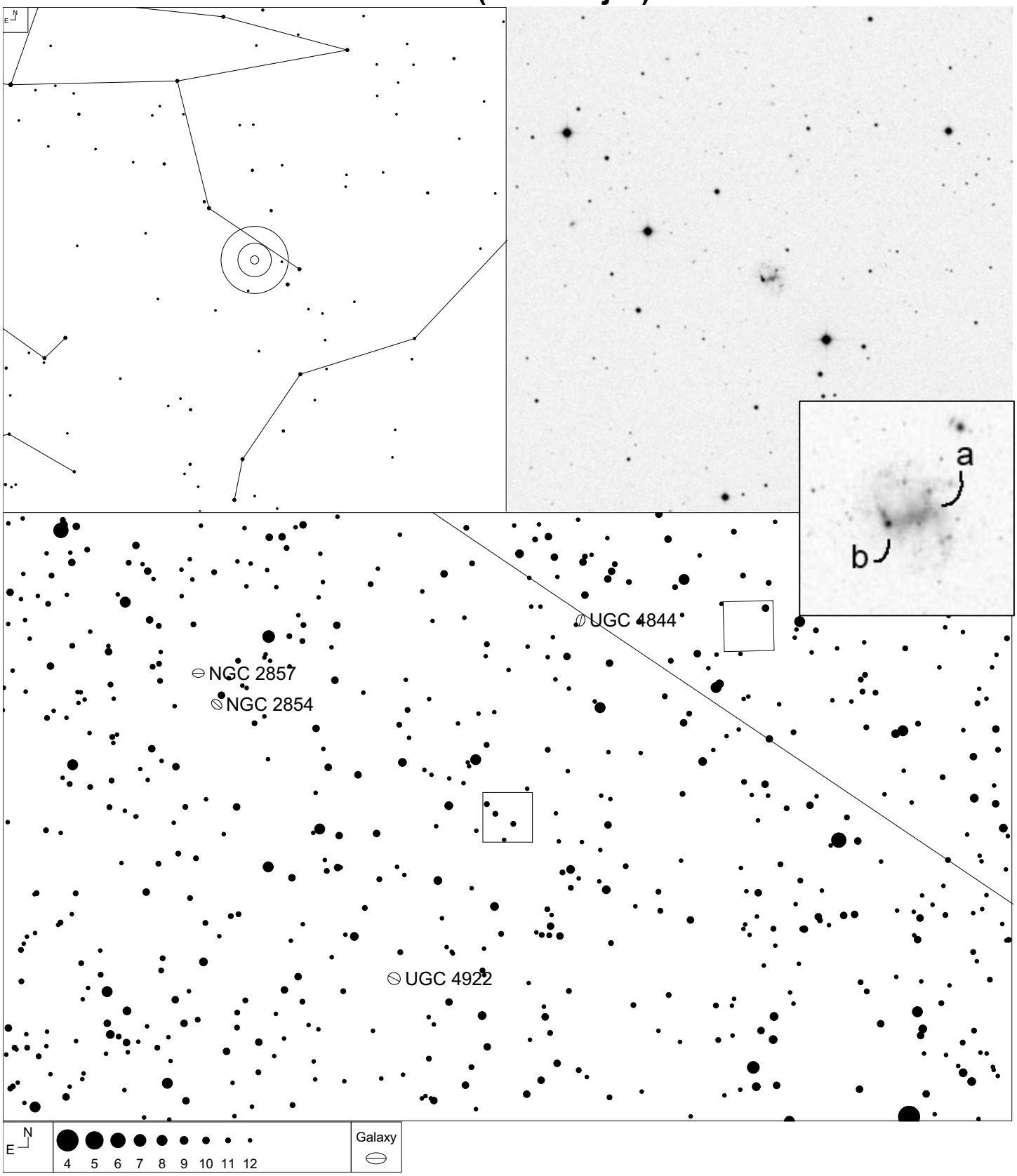
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
330	10 24 16.4	+78 37 08	GPair			PD
330b	10 24 09.9	+78 37 44	G	14.19	14x10	
330a	10 24 22.3	+78 36 33	G	14.40	13x8	

VV 196 (Ursa Major)



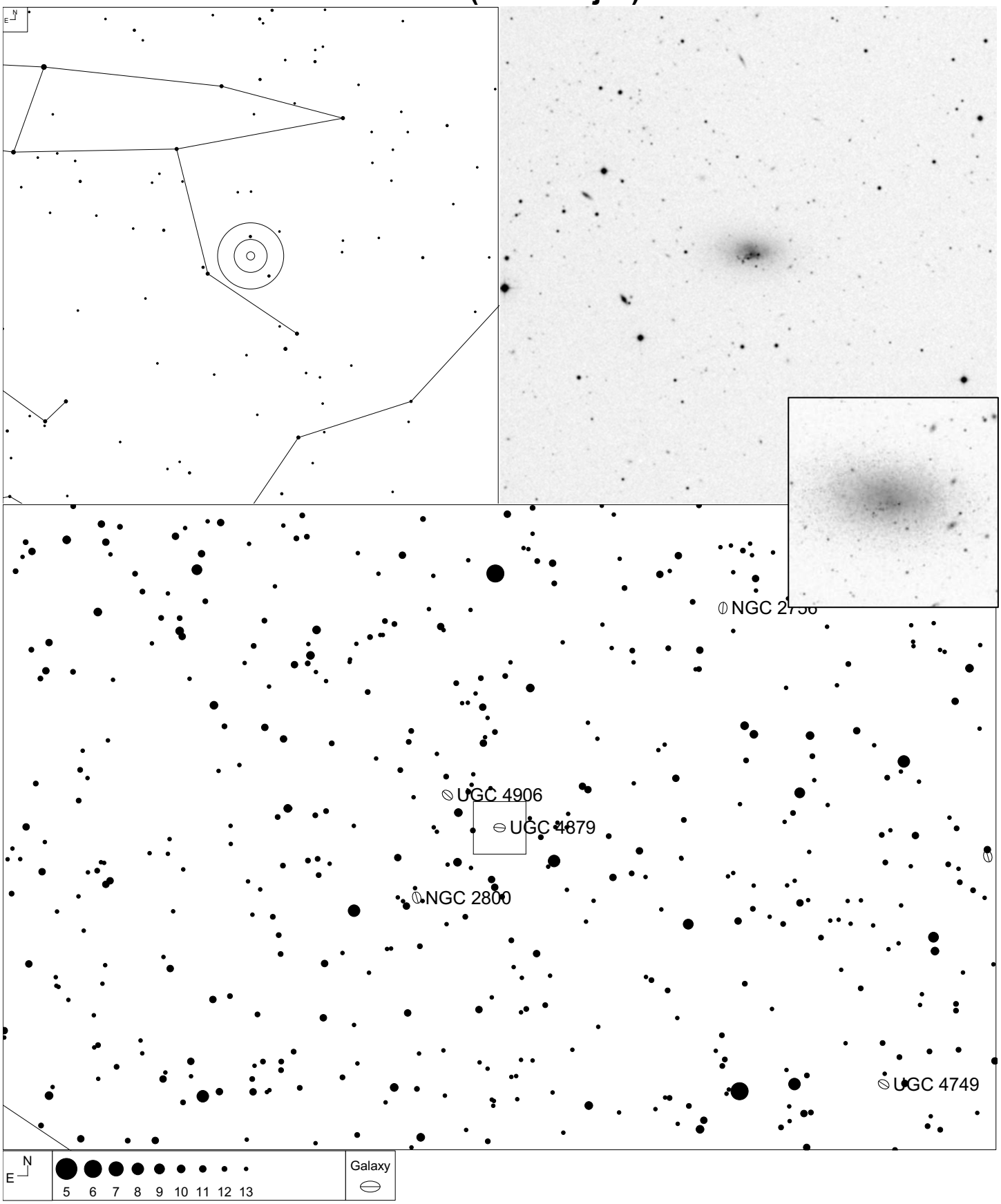
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
196	09 07 57.1	+49 35 59	GPair			PKb
196b	09 07 56.3	+49 35 48	G	15.0g	9x6	
196a	09 07 57.8	+49 36 10	G	15.8g	5x4	

VV 131 (Ursa Major)



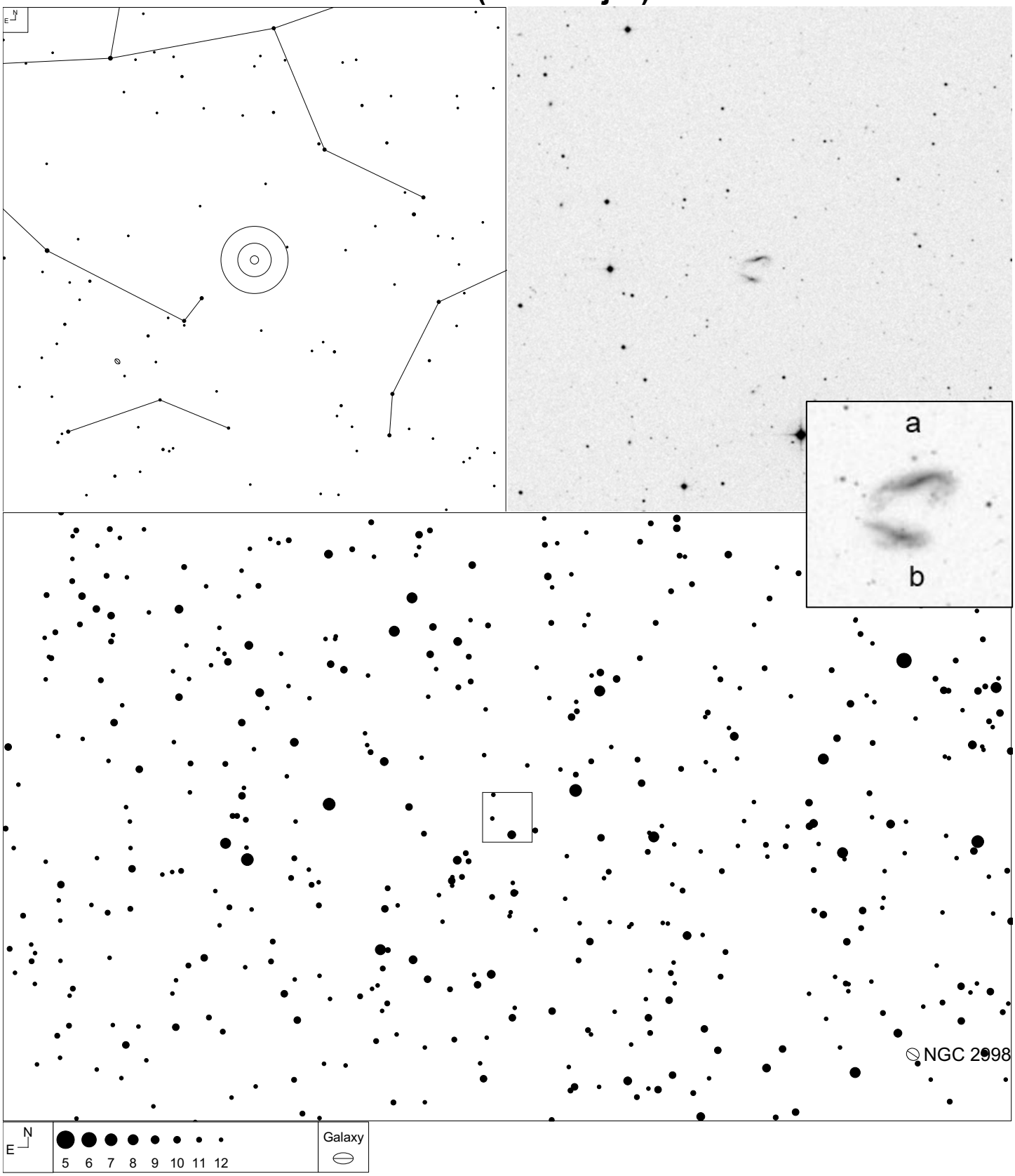
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
131	09 15 16.3	+48 40 03	GPair			N
131a	09 15 15.1	+48 40 12	G	16.5	11x9	
131b	09 15 17.4	+48 39 54	star	15.1		

VV 124 (Ursa Major)



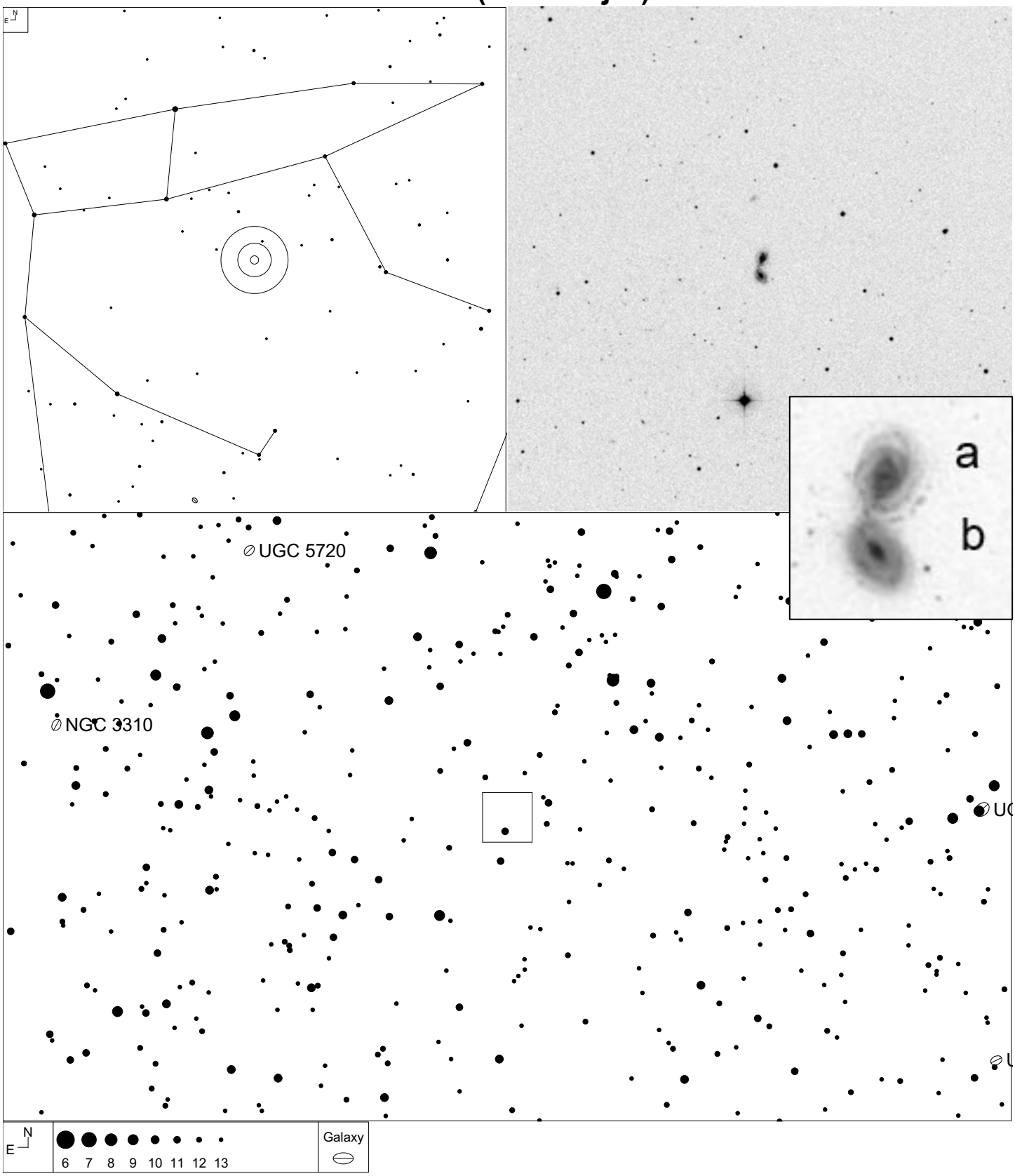
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
124	09 16 02.2	+52 50 24	G	13.78	17x13	N

VV 321 (Ursa Major)



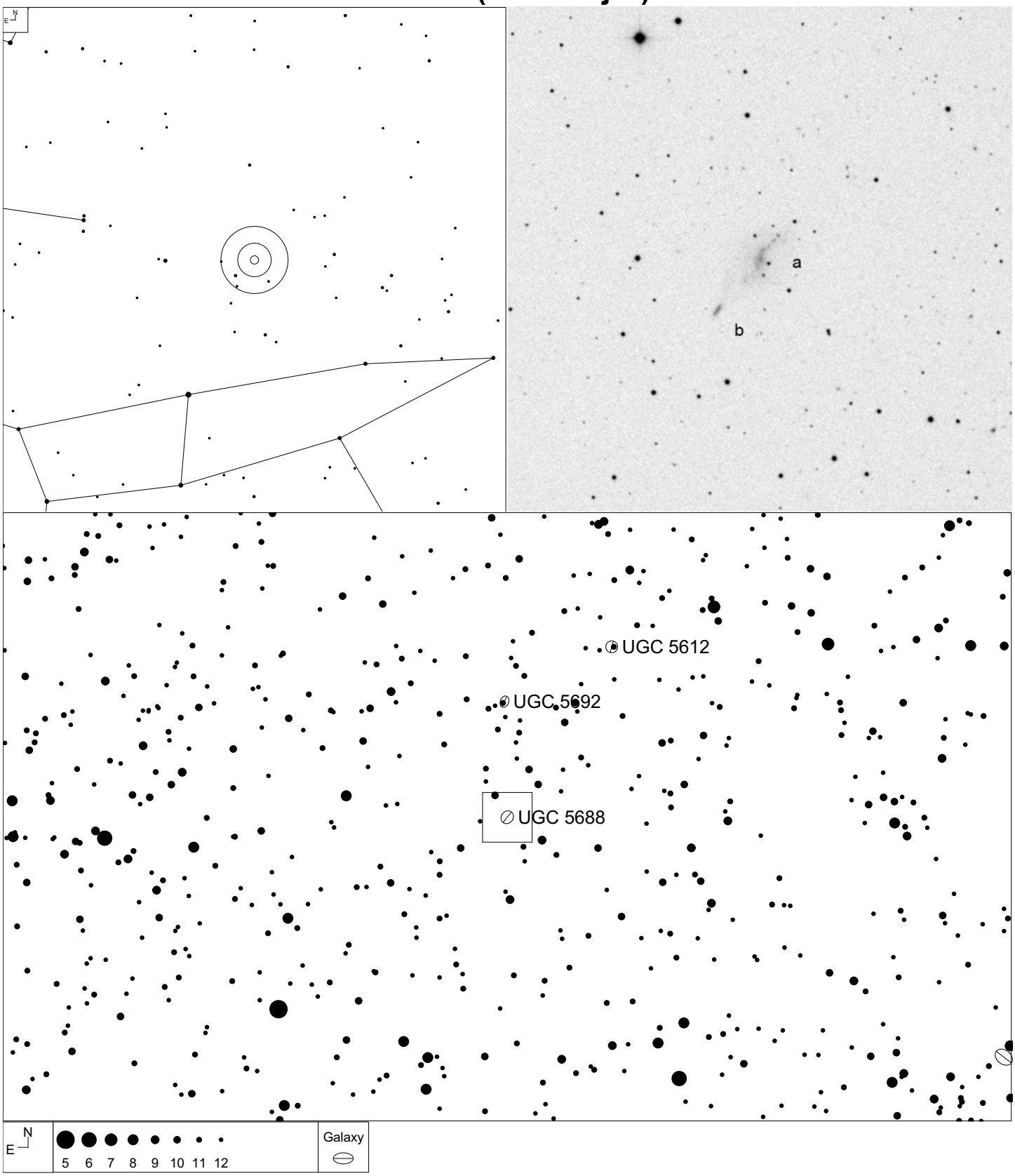
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
321	09 59 52.8	+45 16 41	GPair			PDb
321a	09 59 52.4	+45 16 59	G	15.8g	11x3	
321b	09 59 53.4	+45 16 22	G	16.1g	7x3	

VV 312 (Ursa Major)



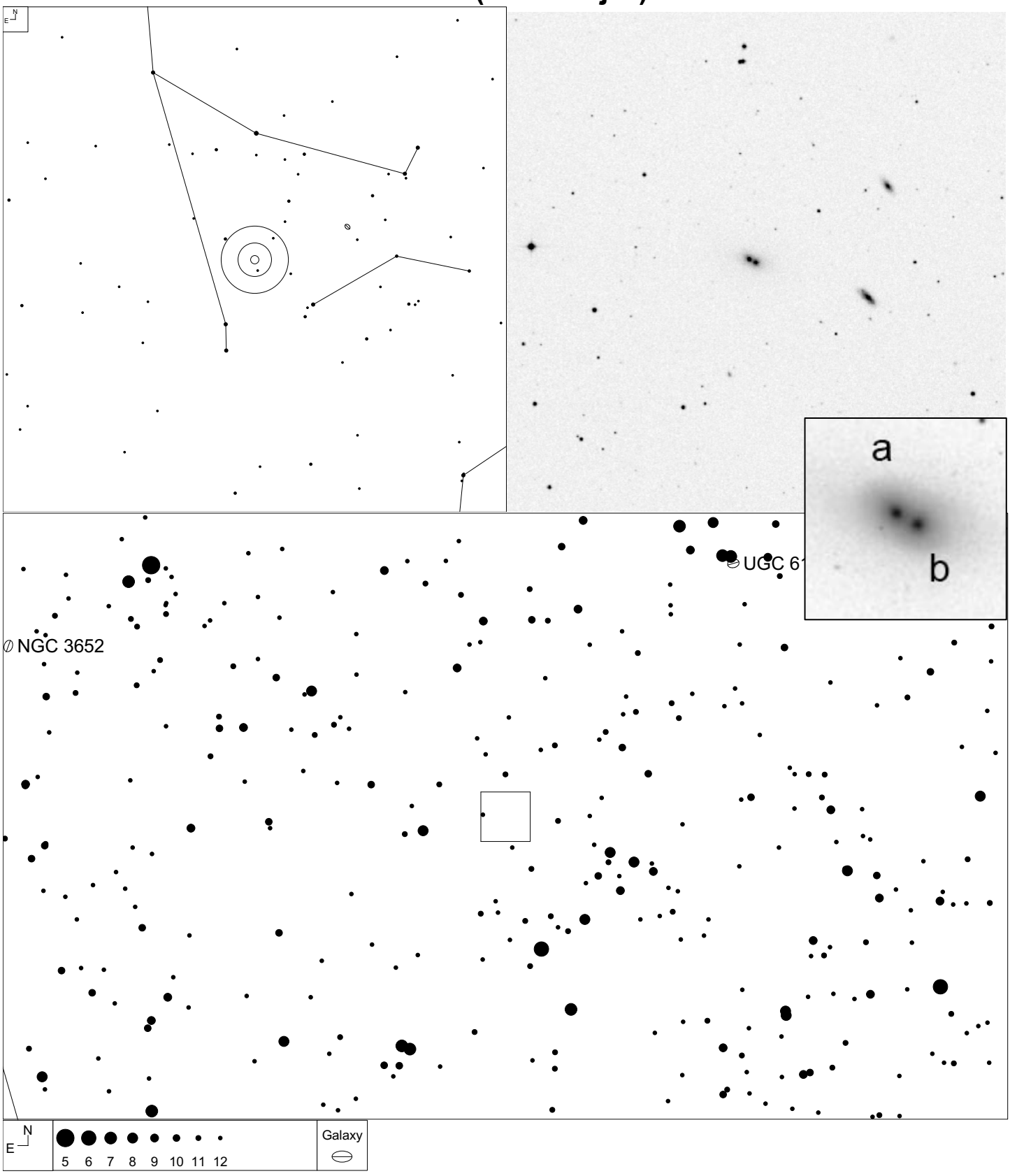
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
312	10 23 47.1	+53 06 12	GPair			PDb
312a	10 23 46.9	+53 06 28	G	13.8	8x7	
312b	10 23 47.3	+53 05 57	G	13.5	7x5	

VV 294 (Ursa Major)



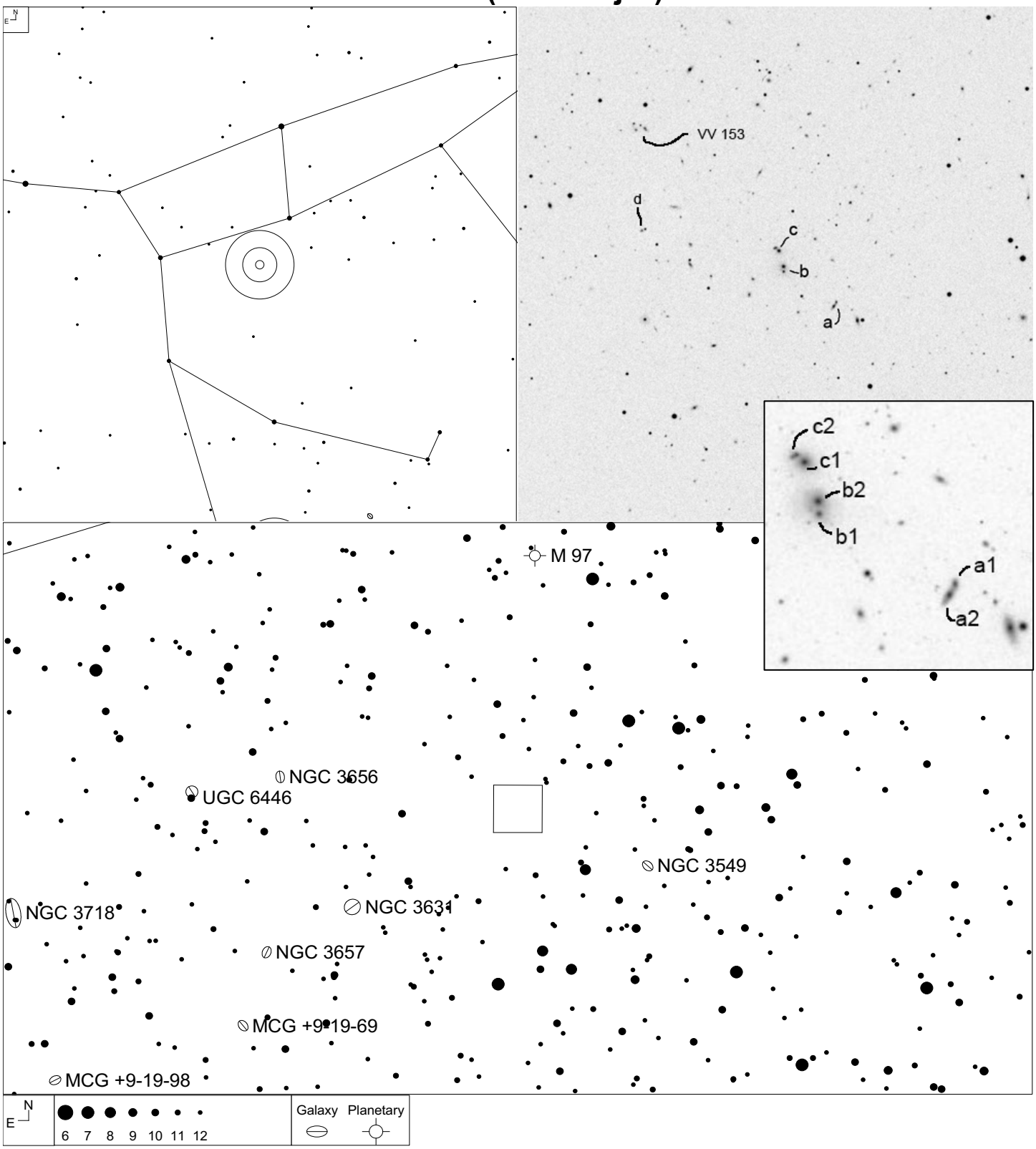
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
294	10 30 32.1	+70 02 16	GPair			PDb
294a	10 30 24.8	+70 03 01	G	13.8	40x19	
294b	10 30 39.4	+70 01 32	G	14.6	5x1	

VV 182 (Ursa Major)



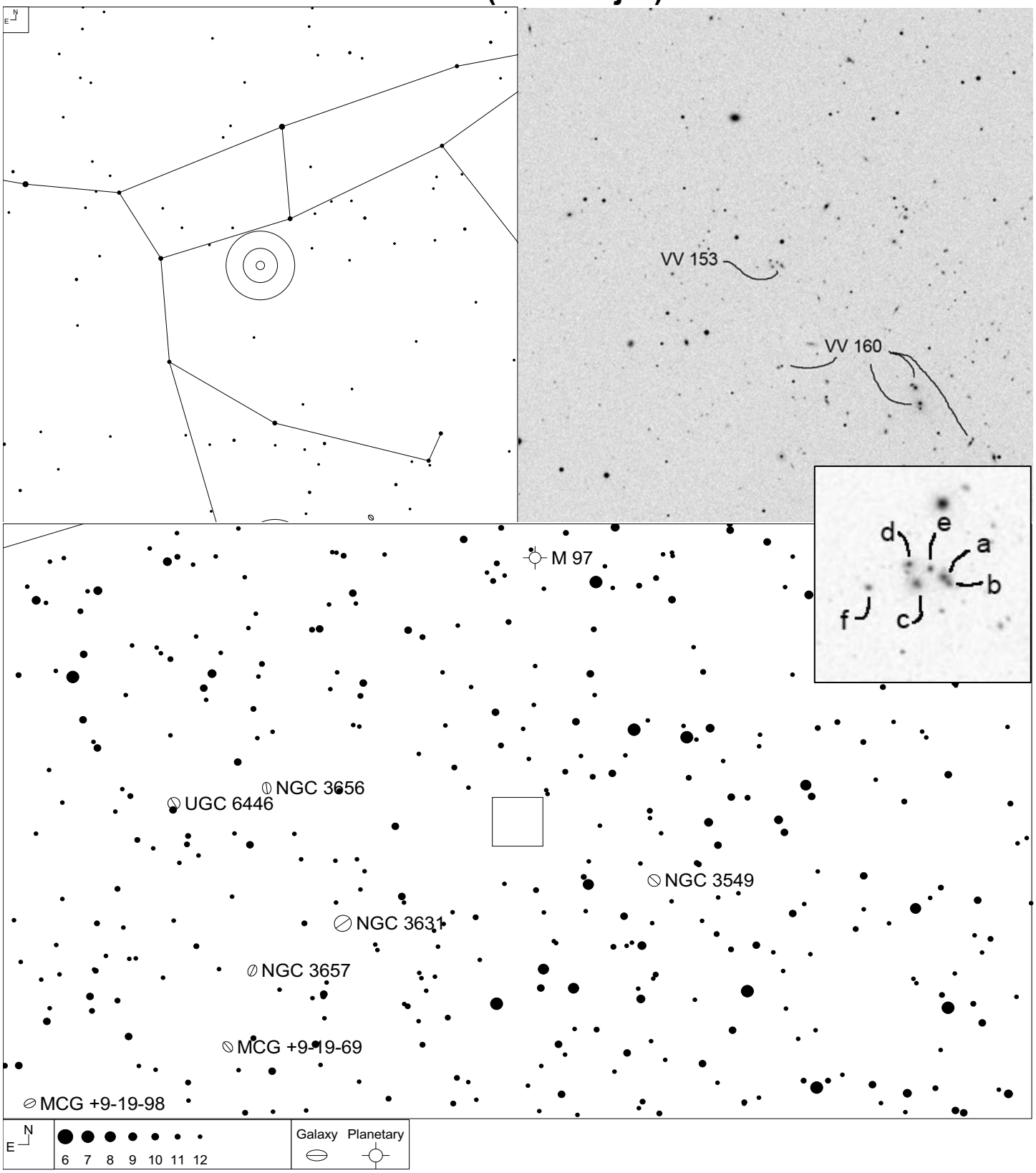
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
182	11 10 12.7	+36 57 56	GPair			PKb
182b	11 10 12.2	+36 57 53	G	15.2g	9x6	
182a	11 10 13.2	+36 58 00	G	15.0g	9x6	

VV 160 (Ursa Major)



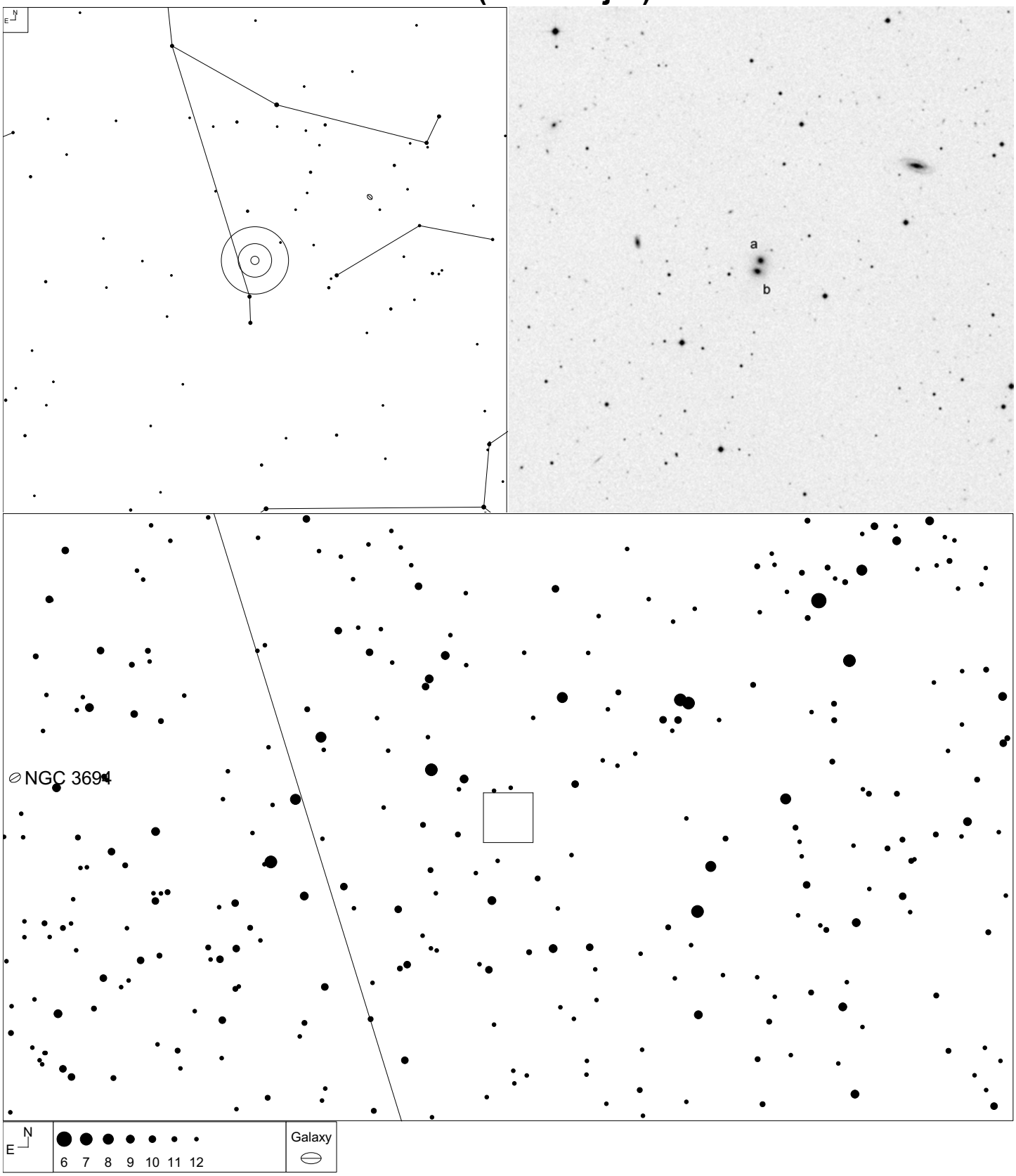
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
160	11 14 25.0	+53 41 27	GGroup			NPNP
160a1	11 15 12.8	+53 40 21	G			
160a2	11 15 13.2	+53 40 17	G	18.21	3x1	
160b1	11 15 23.3	+53 41 14	G			
160b2	11 15 23.5	+53 41 22	G	17.68	4x2	
160c1	11 15 24.5	+53 41 49	G	17.73	3x1	
160c2	11 15 25.4	+53 41 53	G	18.0r		
160d1	11 15 50.9	+53 42 18	G			I
160d2	11 15 51.5	+53 41 14	G			

VV 153 (Ursa Major)



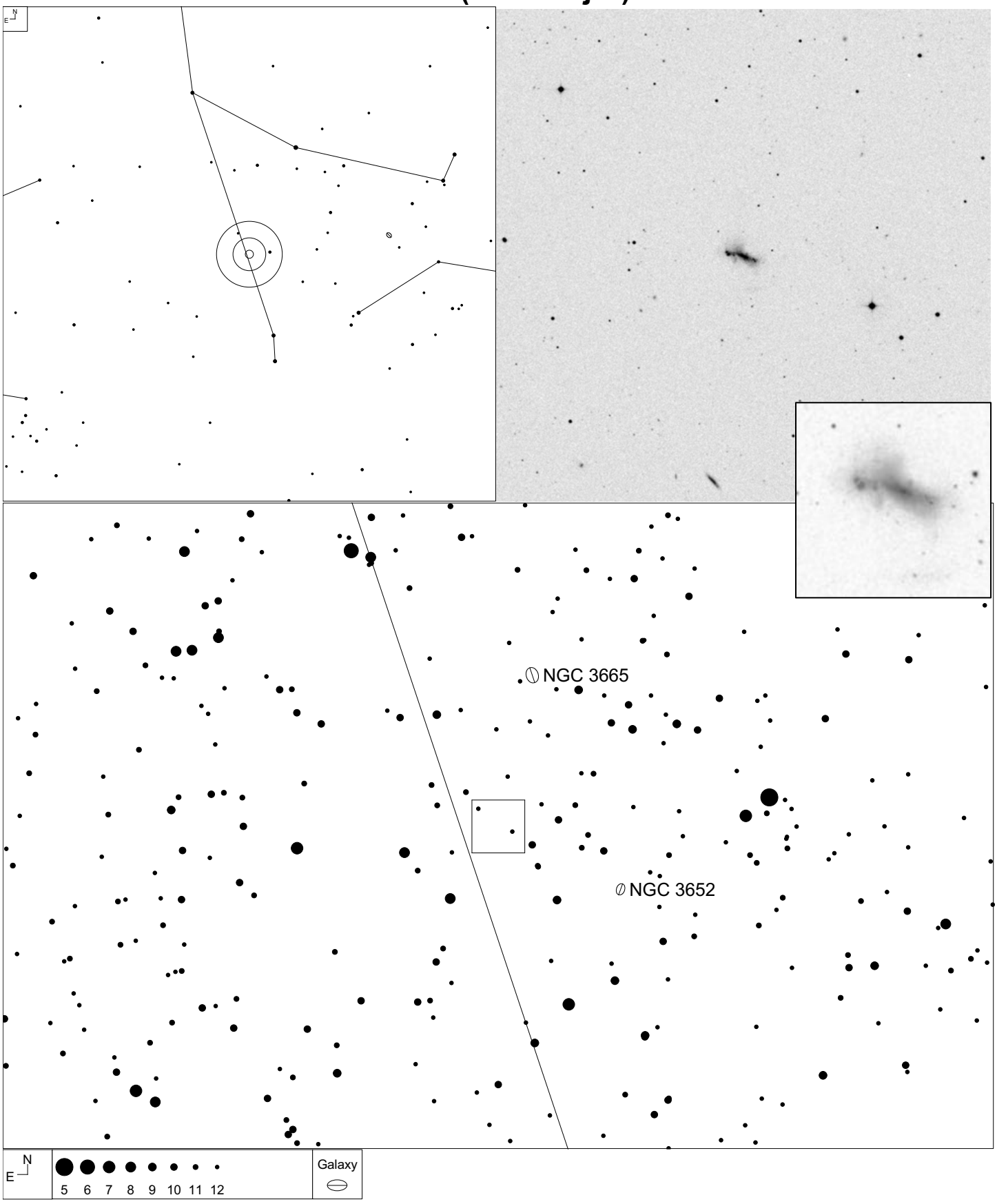
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
153	11 15 53.2	+53 45 12	GGroup			N
153b	11 15 51.8	+53 45 10	G			
153a	11 15 52.1	+53 45 12	G	18.7g		
153e	11 15 52.9	+53 45 17	G	19.5g		
153c	11 15 53.8	+53 45 08	G	18.7g		
153d	11 15 54.1	+53 45 20	G			
153f	11 15 56.8	+53 45 06	G	20.0g	-	

VV 198 (Ursa Major)



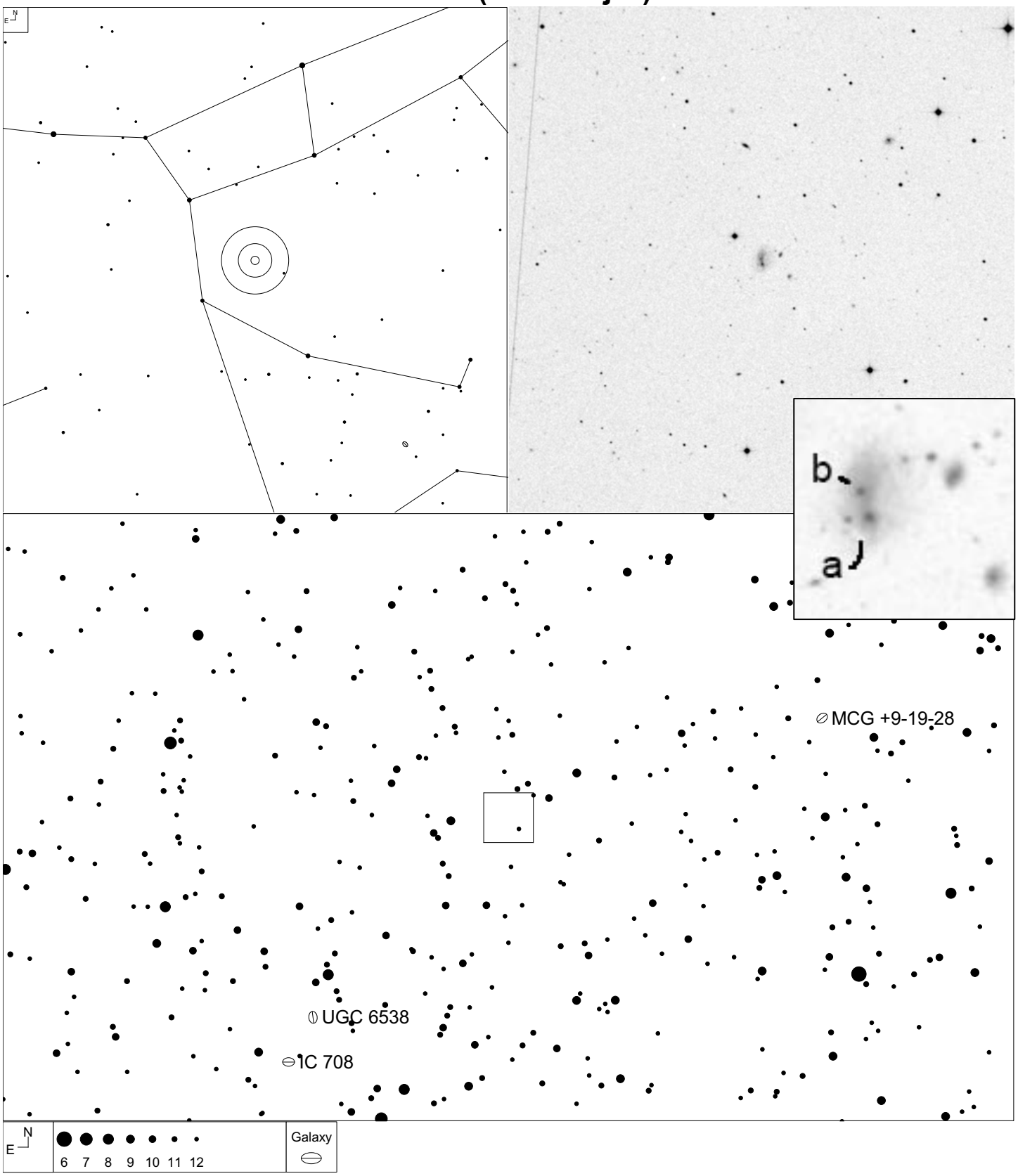
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
198	11 16 56.0	+35 15 23	GPair			PDb
198a	11 16 55.8	+35 15 33	G	15.6g	6x5	
198b	11 16 56.3	+35 15 14	G	15.5g	6x5	

VV 87 (Ursa Major)



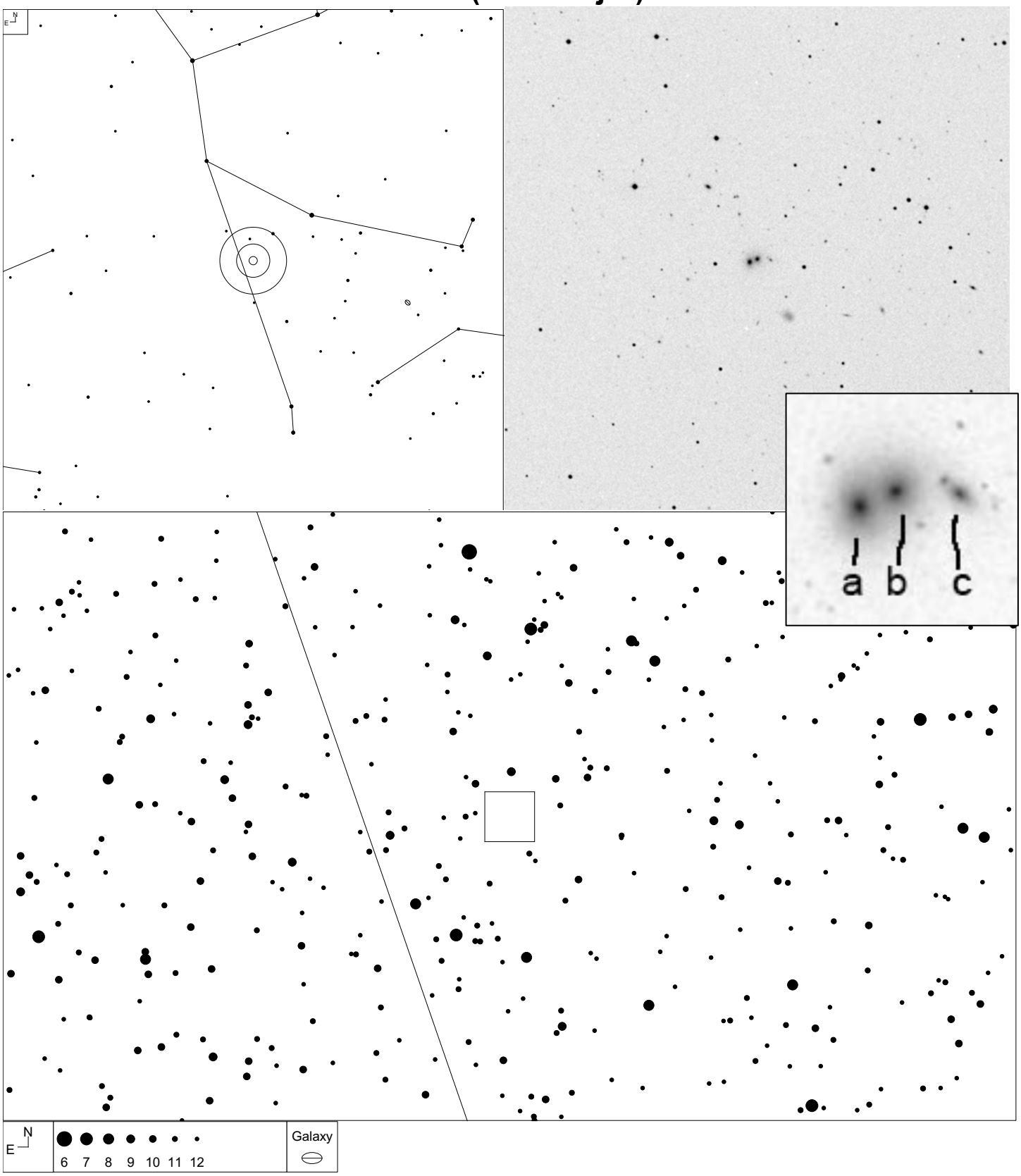
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
87	11 25 31.8	+38 03 38	G	14.9g	16x4	PC

VV 265 (Ursa Major)



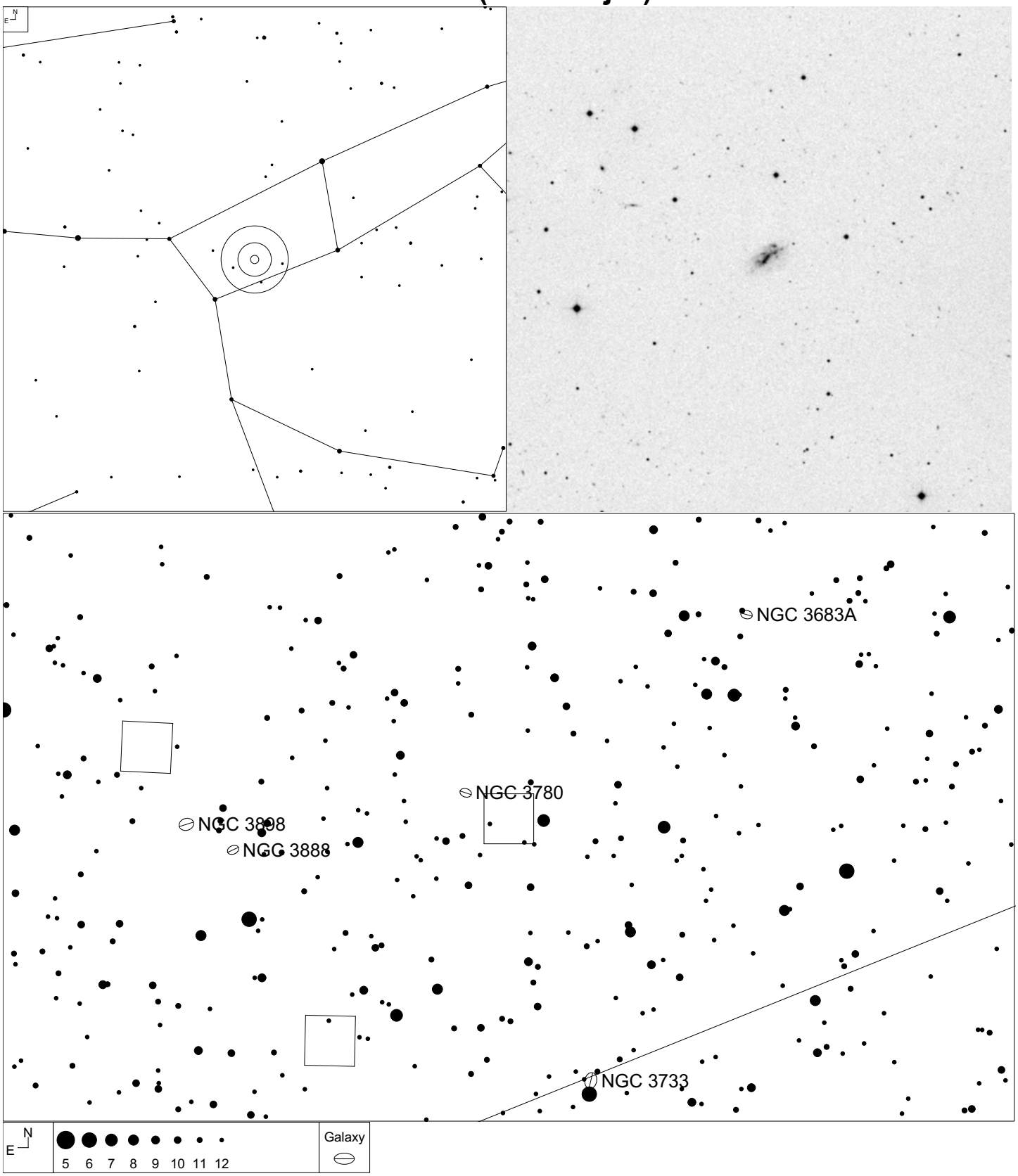
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
265	11 27 21.3	+50 16 39	GPair			PK
265a	11 27 21.1	+50 16 33	G	16.8g	7x4	
265b	11 27 21.5	+50 16 44	G			

VV 60 (Ursa Major)



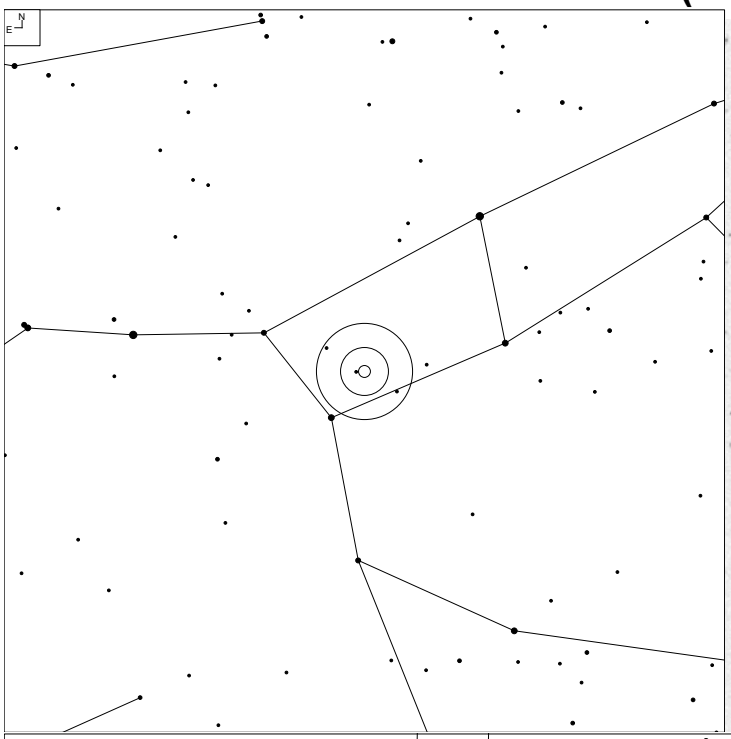
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
60	11 29 23.9	+41 52 16	GTrpl			NNN
60c	11 29 22.2	+41 52 18	G	16.5	2x1	
60b	11 29 24.3	+41 52 19	G	15.0	6x5	
60a	11 29 25.5	+41 52 14	G	14.9	5x4	

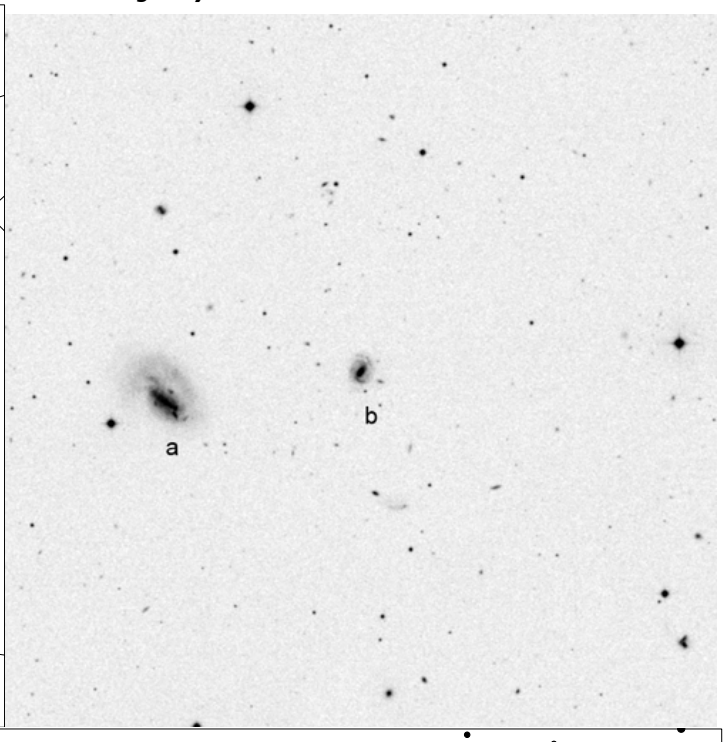
VV 148 (Ursa Major)

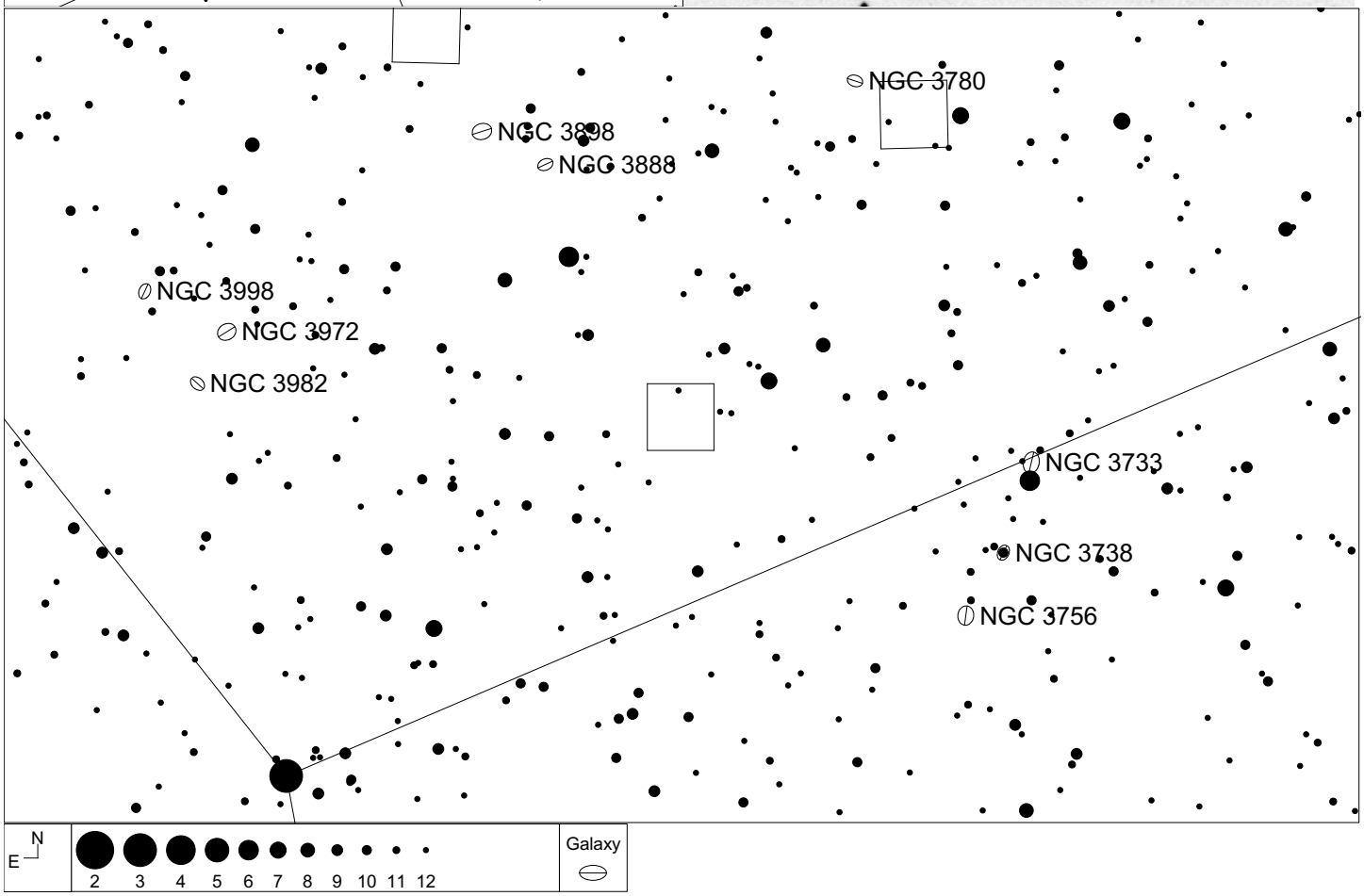


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
148	11 37 50.3	+56 08 42	G	15.20	11x7	N

VV 320 (Ursa Major)

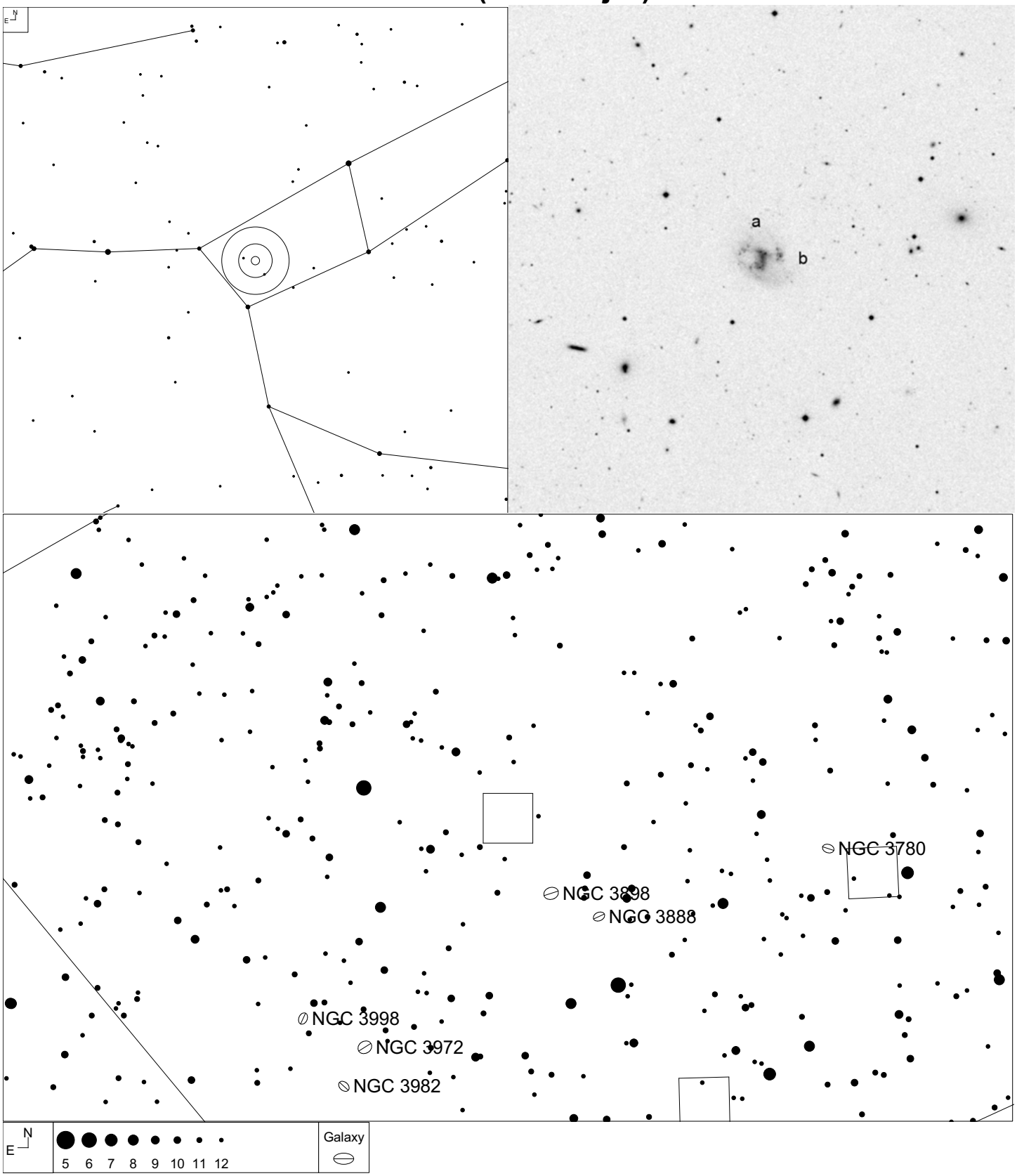






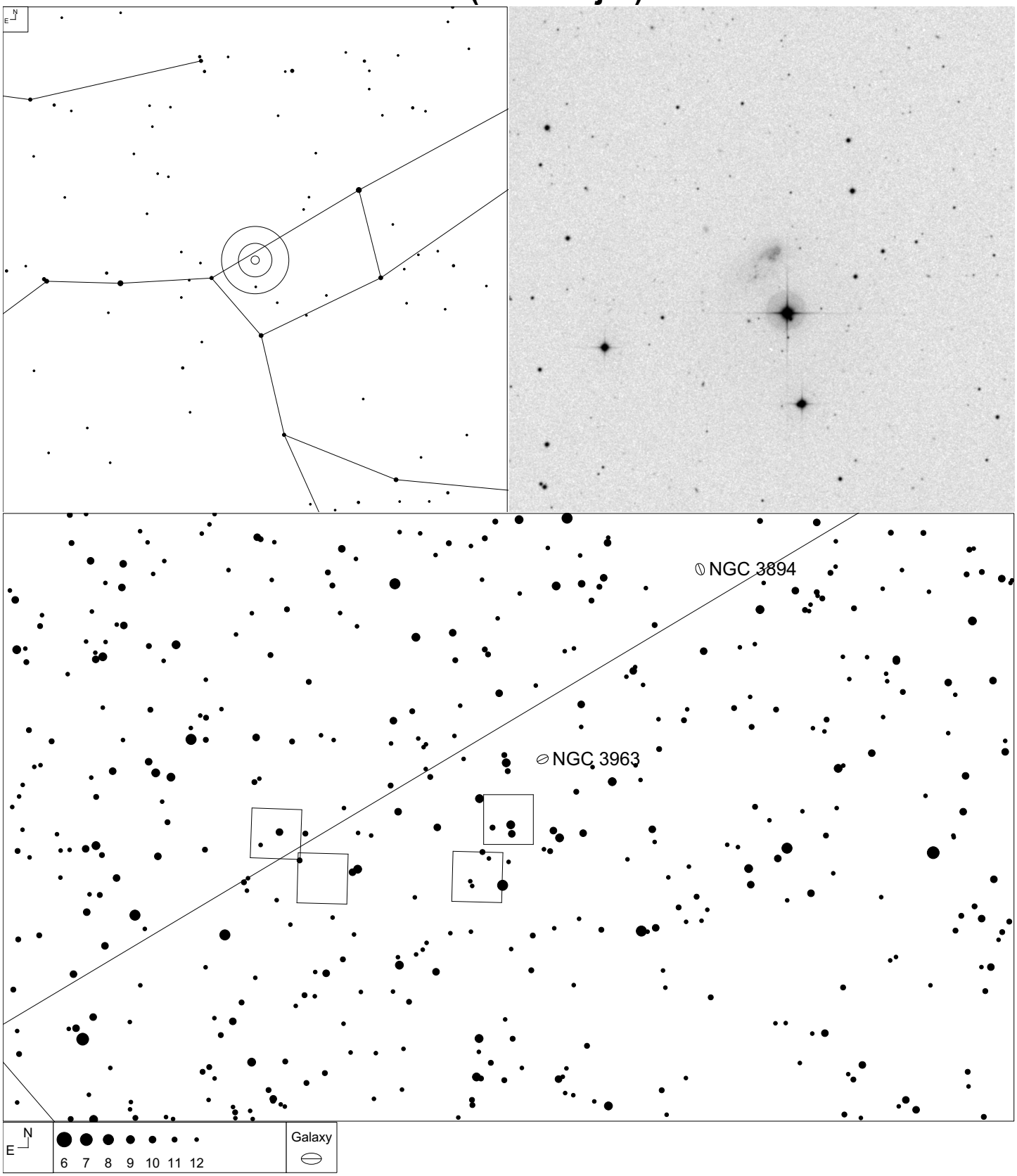
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
320	11 44 00.6	+55 02 28	GPair			PK
320b	11 43 46.4	+55 02 51	G	15.2p	7x6	
320a	11 44 14.8	+55 02 06	G	13.8p	19x1	

VV 273 (Ursa Major)



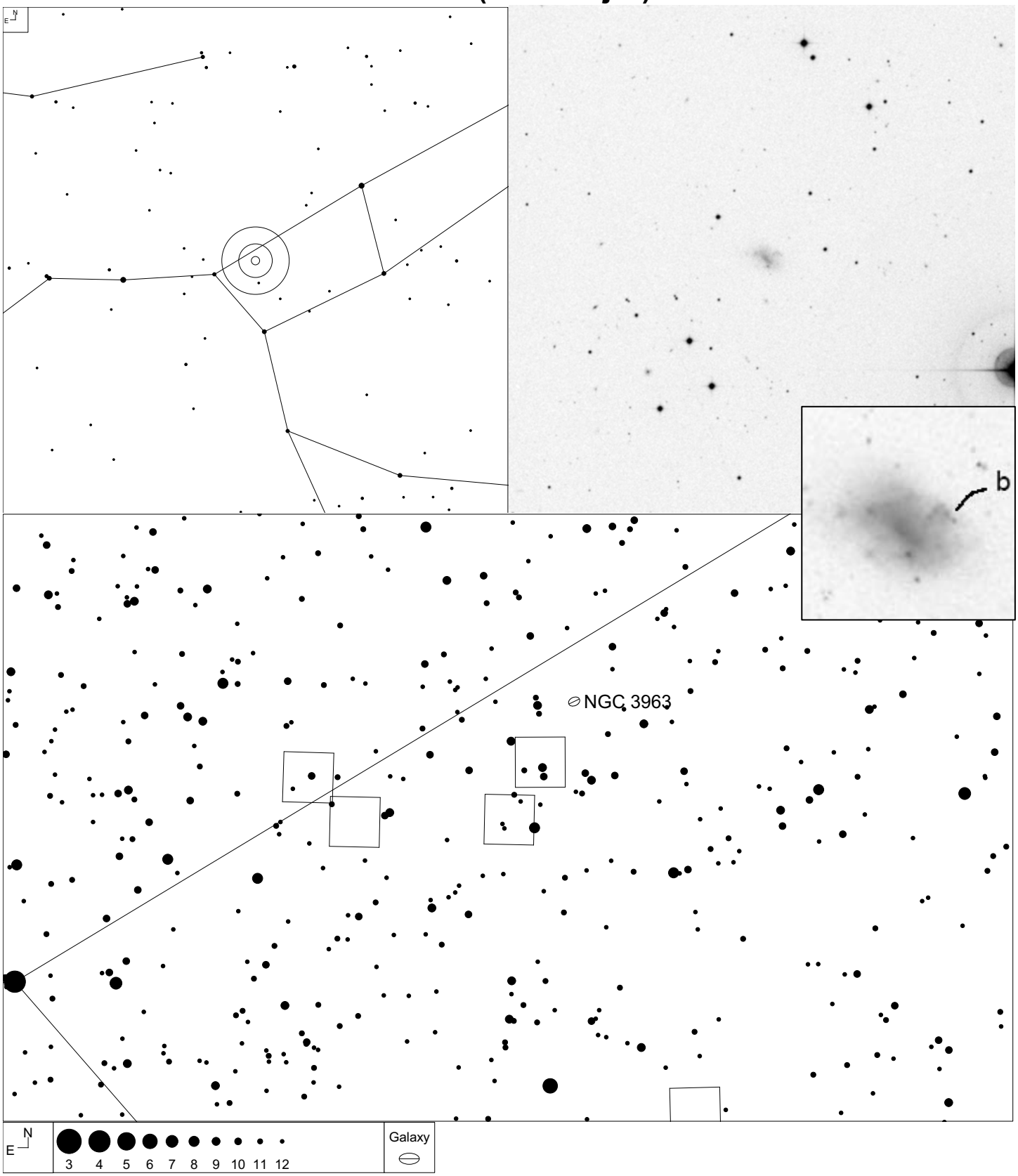
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
273	11 50 47.7	+56 27 21	G			N
273b	11 50 43.7	+56 27 28	PofG	18.0r		
273a	11 50 47.7	+56 27 21	G	14.12	15x13	

VV 57 (Ursa Major)



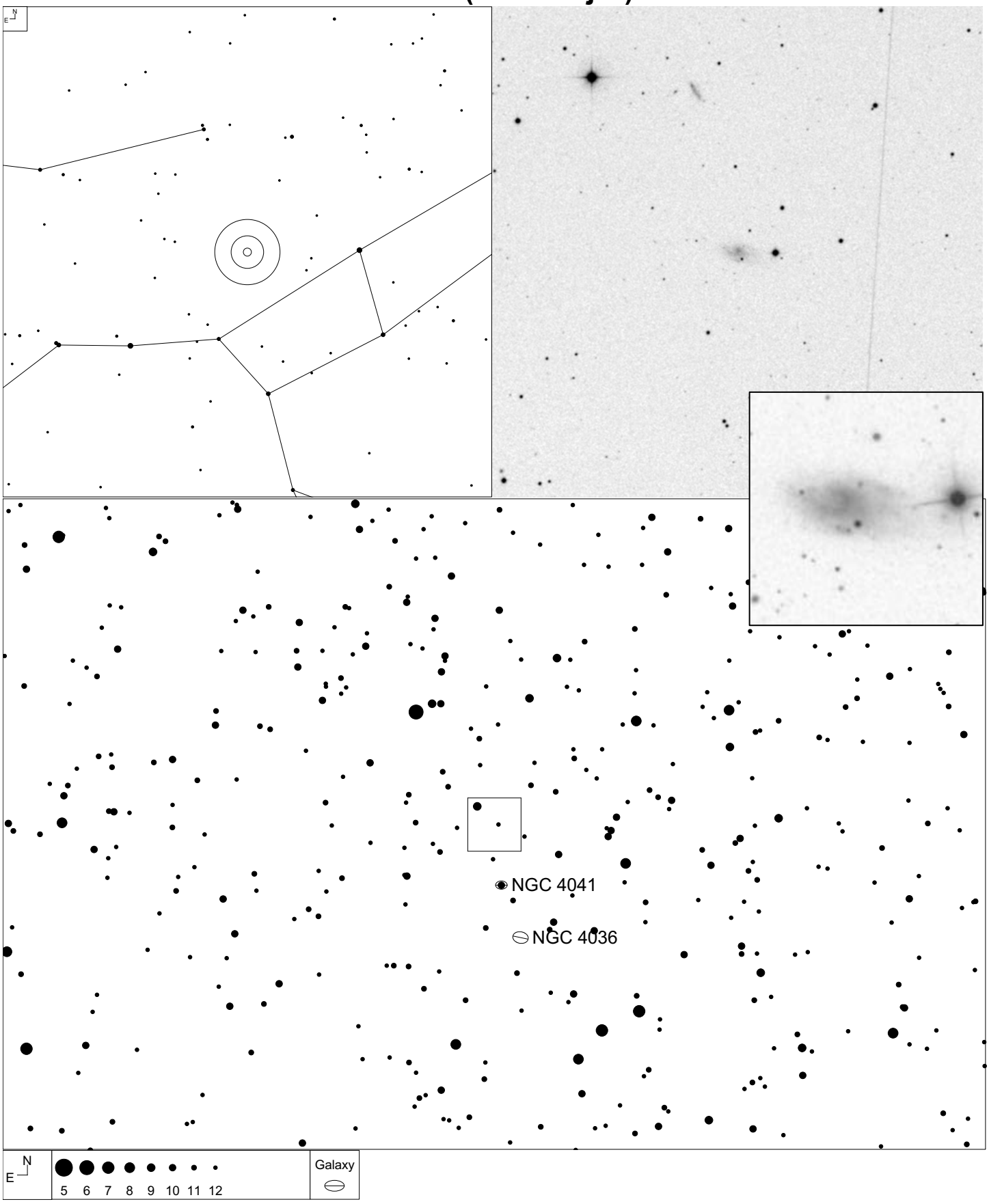
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
57	11 56 14.4	+58 11 49	G	14.6	21x14	R
57a	11 56 13.8	+58 12 01	PofG			
57b	11 56 14.3	+58 11 46	PofG			
57c	11 56 18.4	+58 11 16	PofG			

VV 241 (Ursa Major)



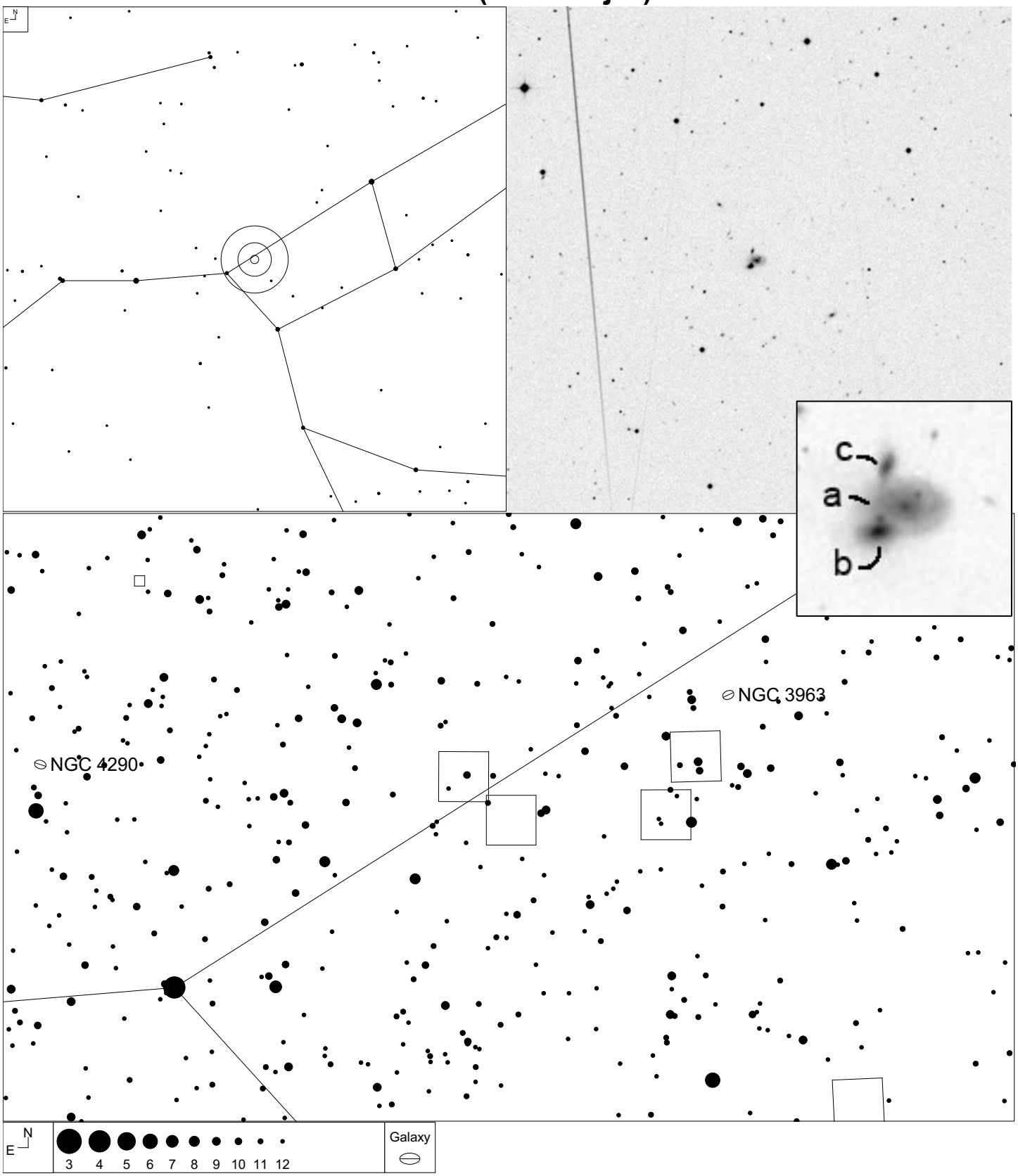
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
241	11 57 24.9	+57 55 48	G	14.31	14x10	PKdf
241b	11 57 22.4	+57 55 52	PofG	20.6g	1x1	
241a	11 57 25.2	+57 55 50	PofG			

VV 259 (Ursa Major)



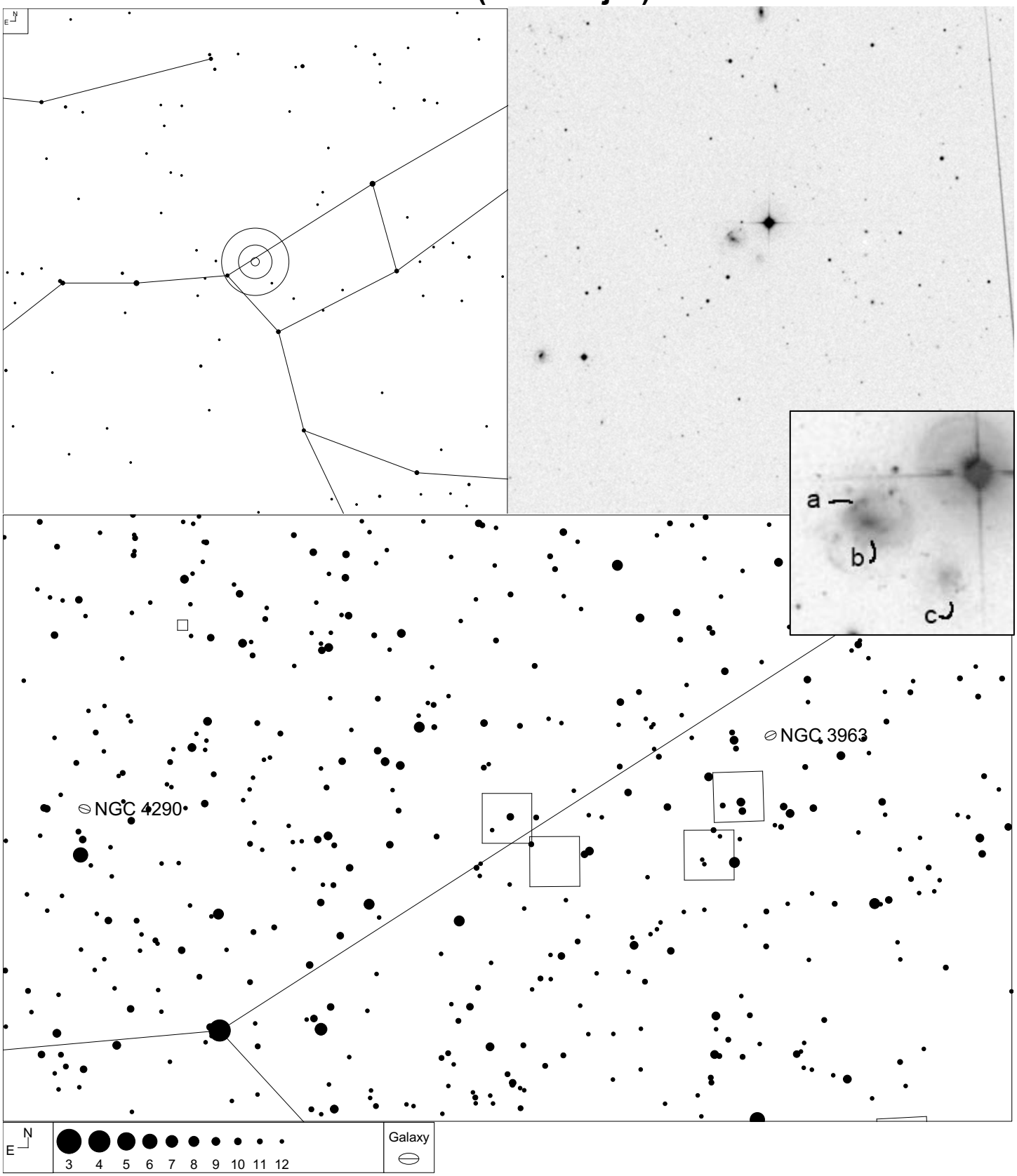
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
259	12 02 29.4	+62 25 02	G	15.2	15x8	PK

VV 136 (Ursa Major)



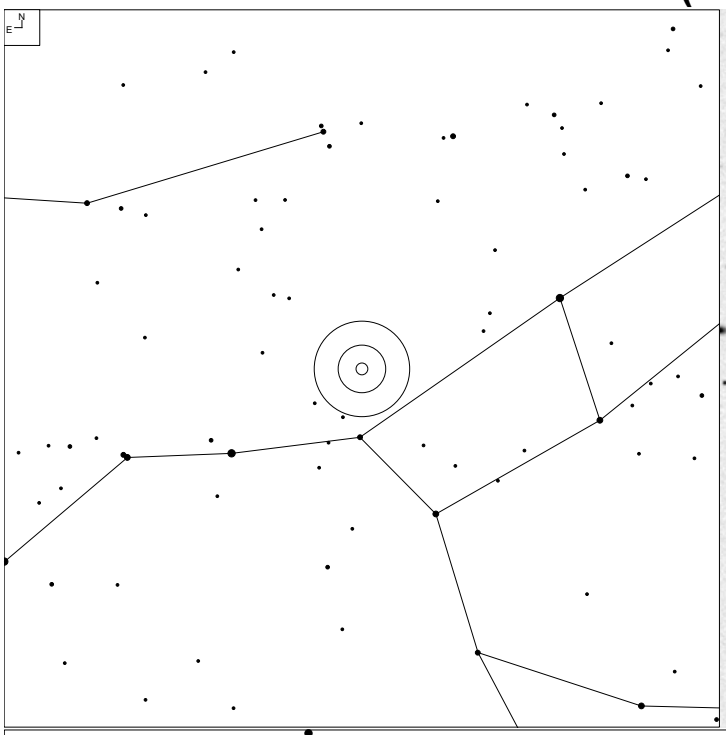
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
136	12 03 13.1	+57 53 40	GTrpl	15.2		N
136a	12 03 12.4	+57 53 36	G	15.2	7x4	
136c	12 03 13.4	+57 53 53	G	17.2g	3x2	
136b	12 03 13.8	+57 53 26	G	15.6g	5x3	

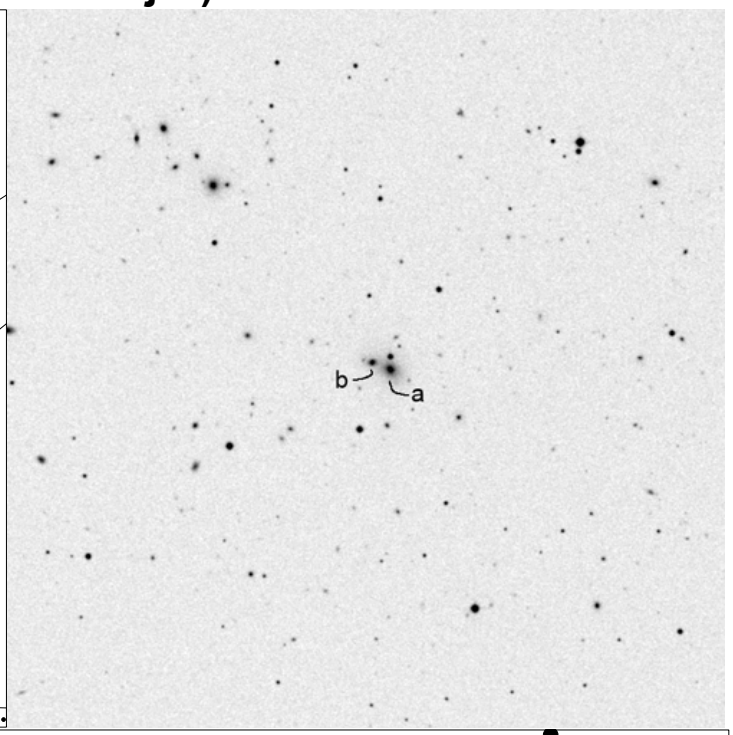
VV 270 (Ursa Major)

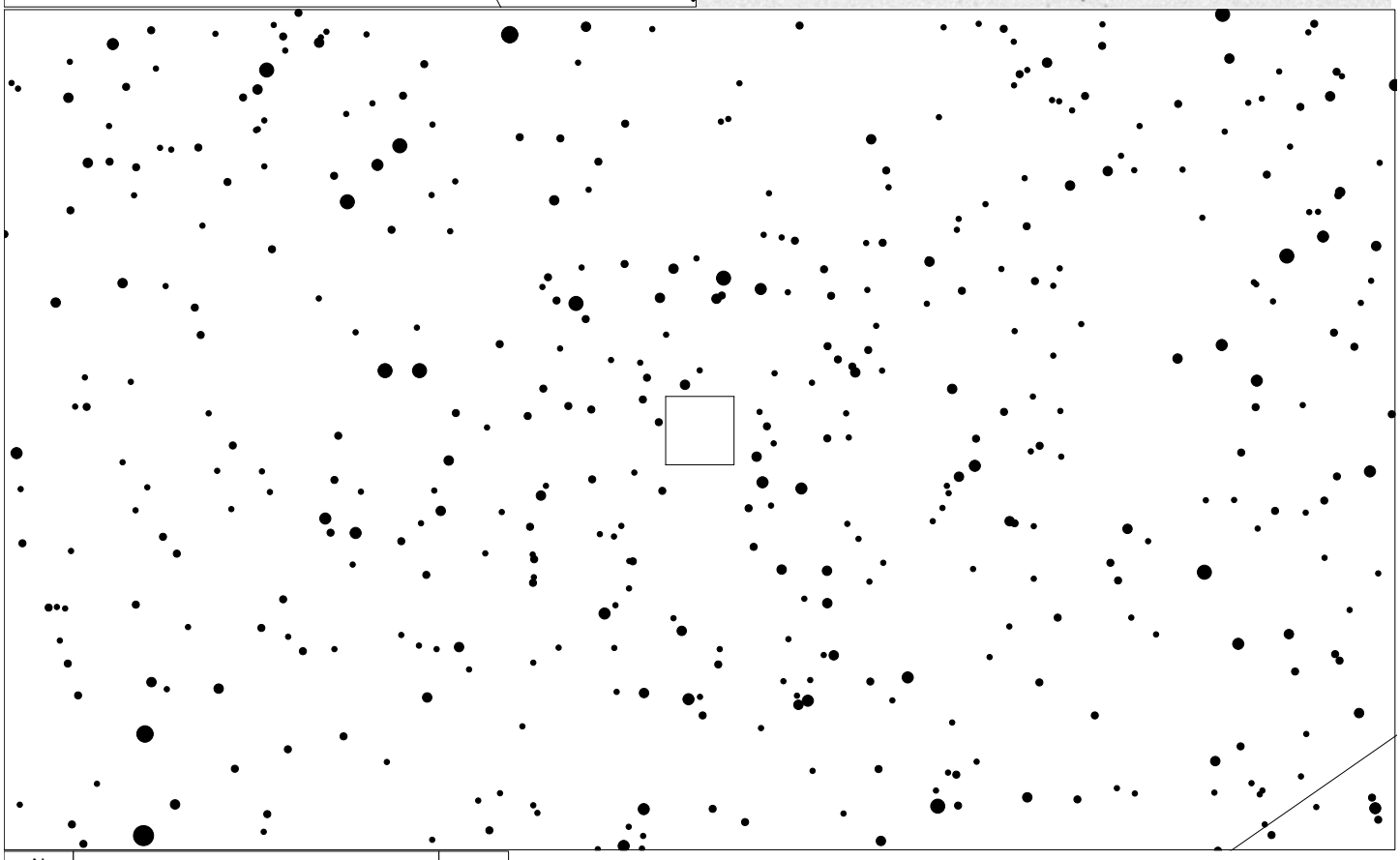


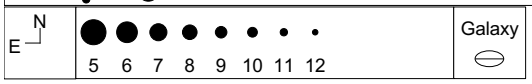
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
270	12 04 56.2	+58 06 10	GPair			PKt
270c	12 04 52.8	+58 05 49	G	17.5	4x4	
270b	12 04 59.0	+58 06 24	G	15.1p	8x6	
270a	12 04 59.7	+58 06 35	PofG			

VV 183 (Ursa Major)



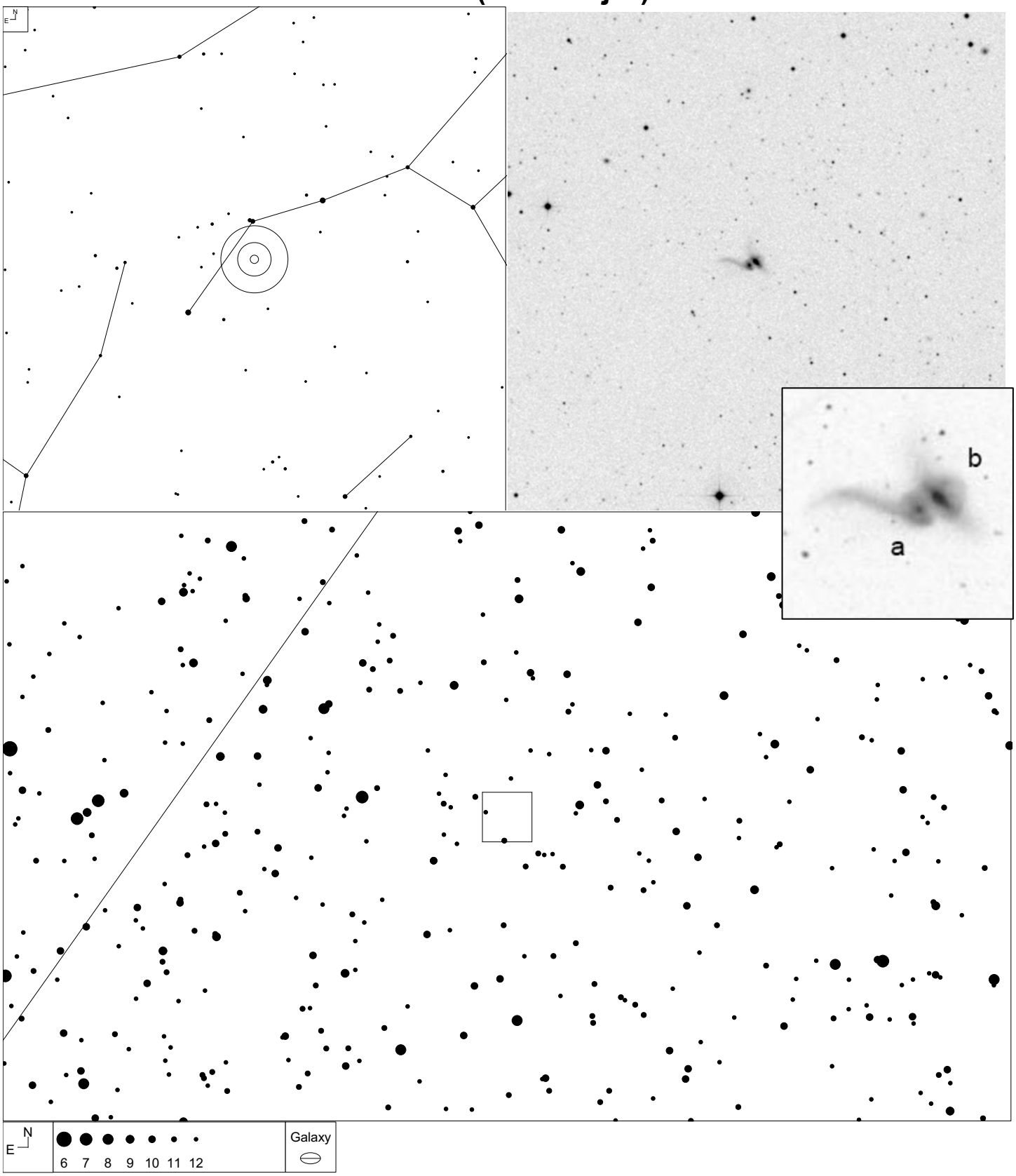






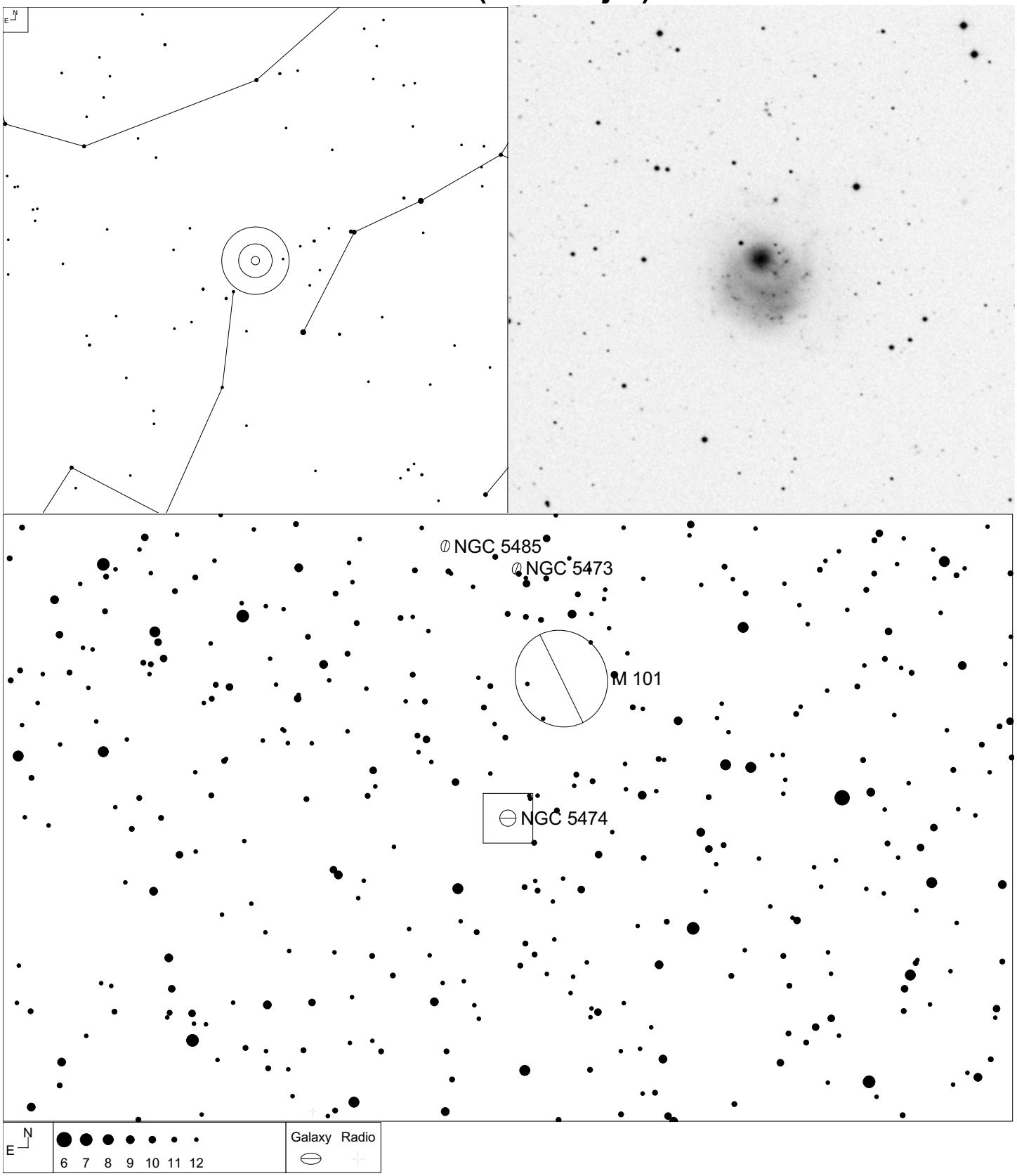
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
183	12 14 50.2	+59 54 27	GPair			PD
183a	12 14 48.6	+59 54 22	G	15.2g	9x6	
183b	12 14 51.7	+59 53 30	G	17	7x3	

VV 235 (Ursa Major)



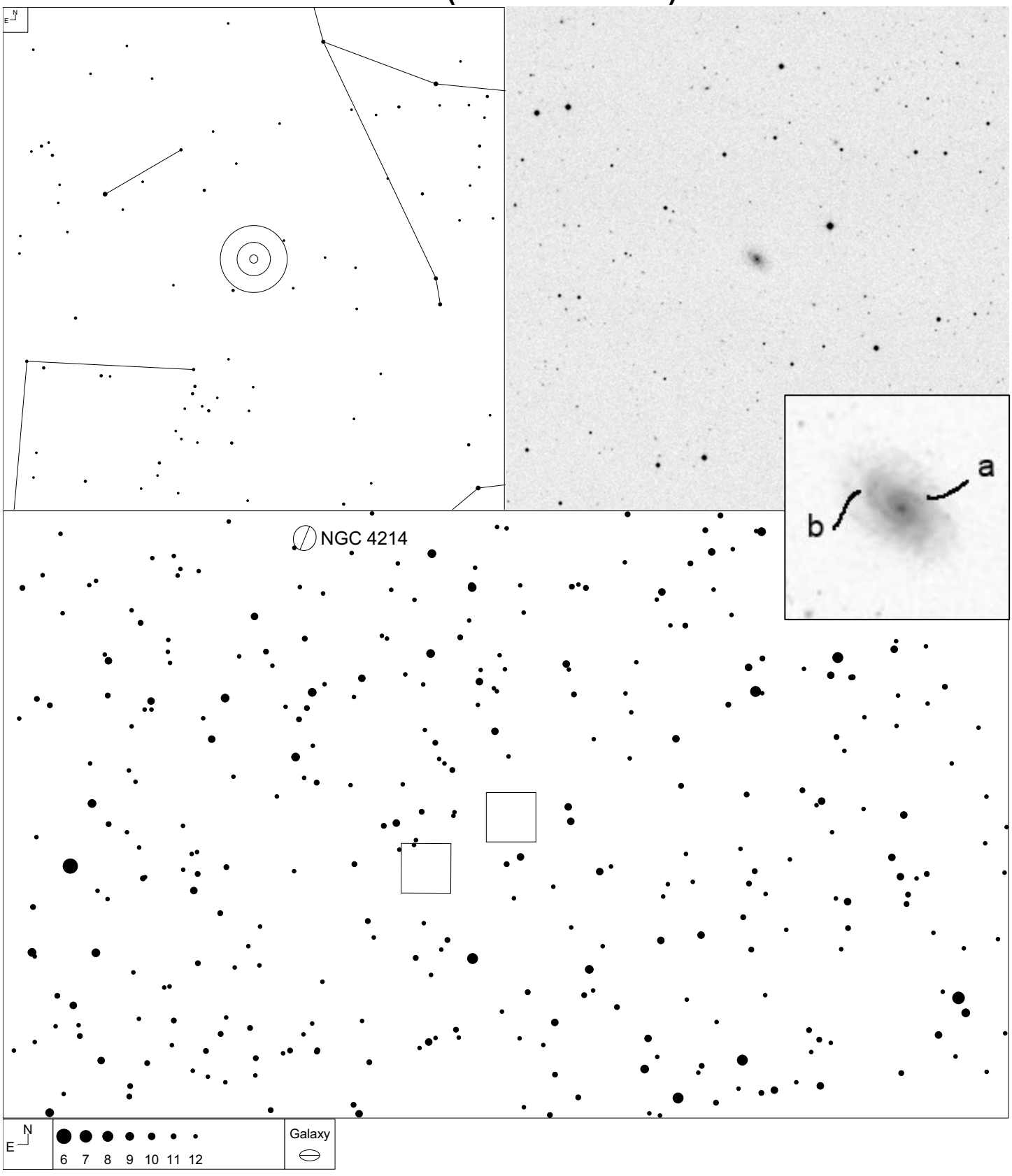
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
235	13 23 17.4	+52 39 10	GPair			PKt
235b	13 23 16.7	+52 39 13	G	15.2	6x5	
235a	13 23 18.0	+52 39 07	G	15.6	11x4	

VV 344 (Ursa Major)



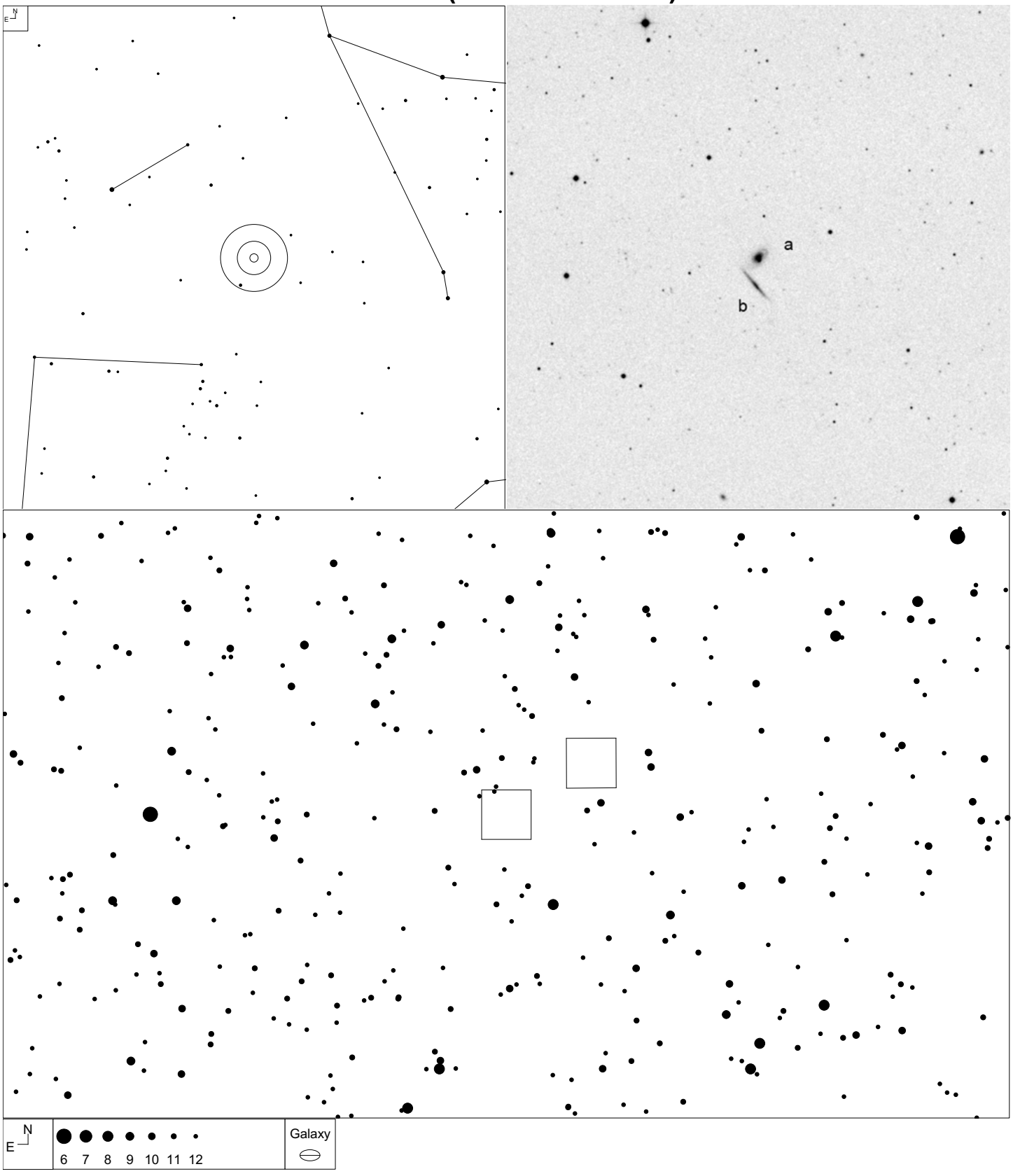
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
344	14 04 07.4	+54 00 24	GPair			PD
344a	14 03 12.5	+54 20 55	G	8.3b	289x269	
344b	14 05 01.3	+53 39 44	G	11.3b	47x47	

VV 236 (Canes Venatici)



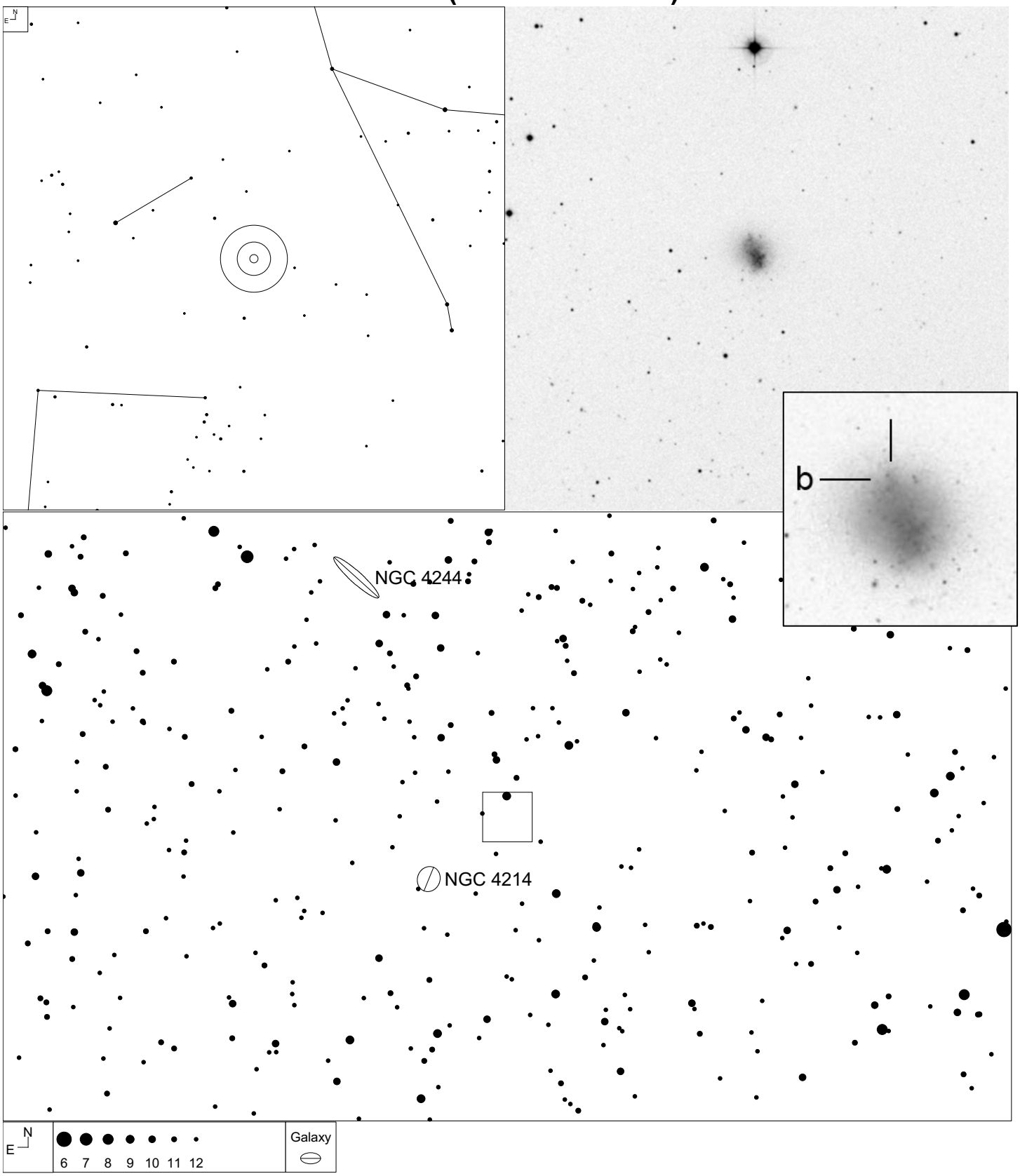
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
236	12 10 36.7	+34 57 24	G	15.7g	8x6	PK
236a	12 10 36.3	+34 57 18	PofG			
236b	12 10 37.0	+34 57 28	PofG			

VV 345 (Canes Venatici)



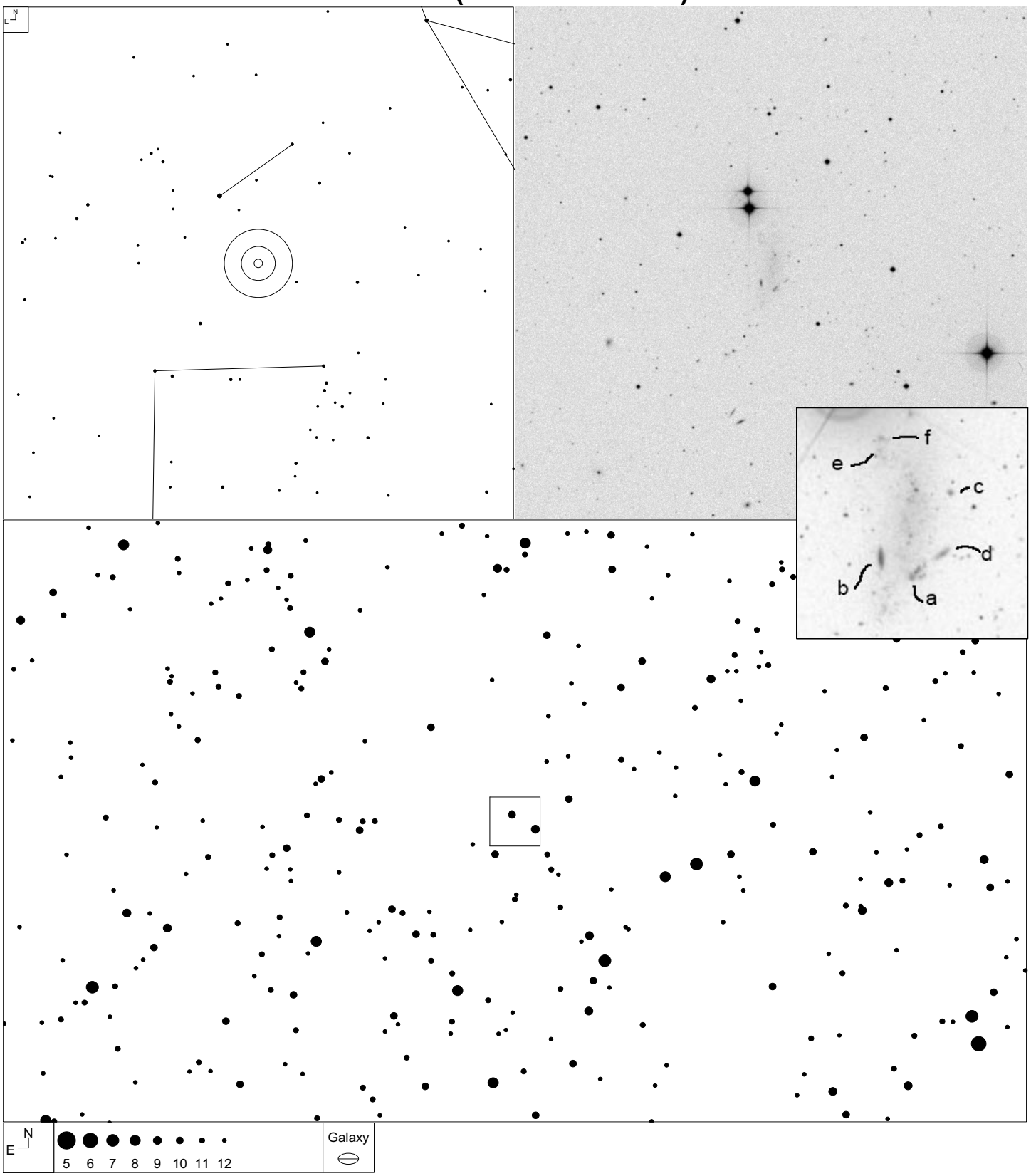
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
345	12 12 39.5	+34 41 48	GPair			PD
345a	12 12 39.2	+34 42 13	G	15.5g	7x4	
345b	12 12 39.4	+34 41 25	G	16.0g	15x2	

VV 104 (Canes Venatici)



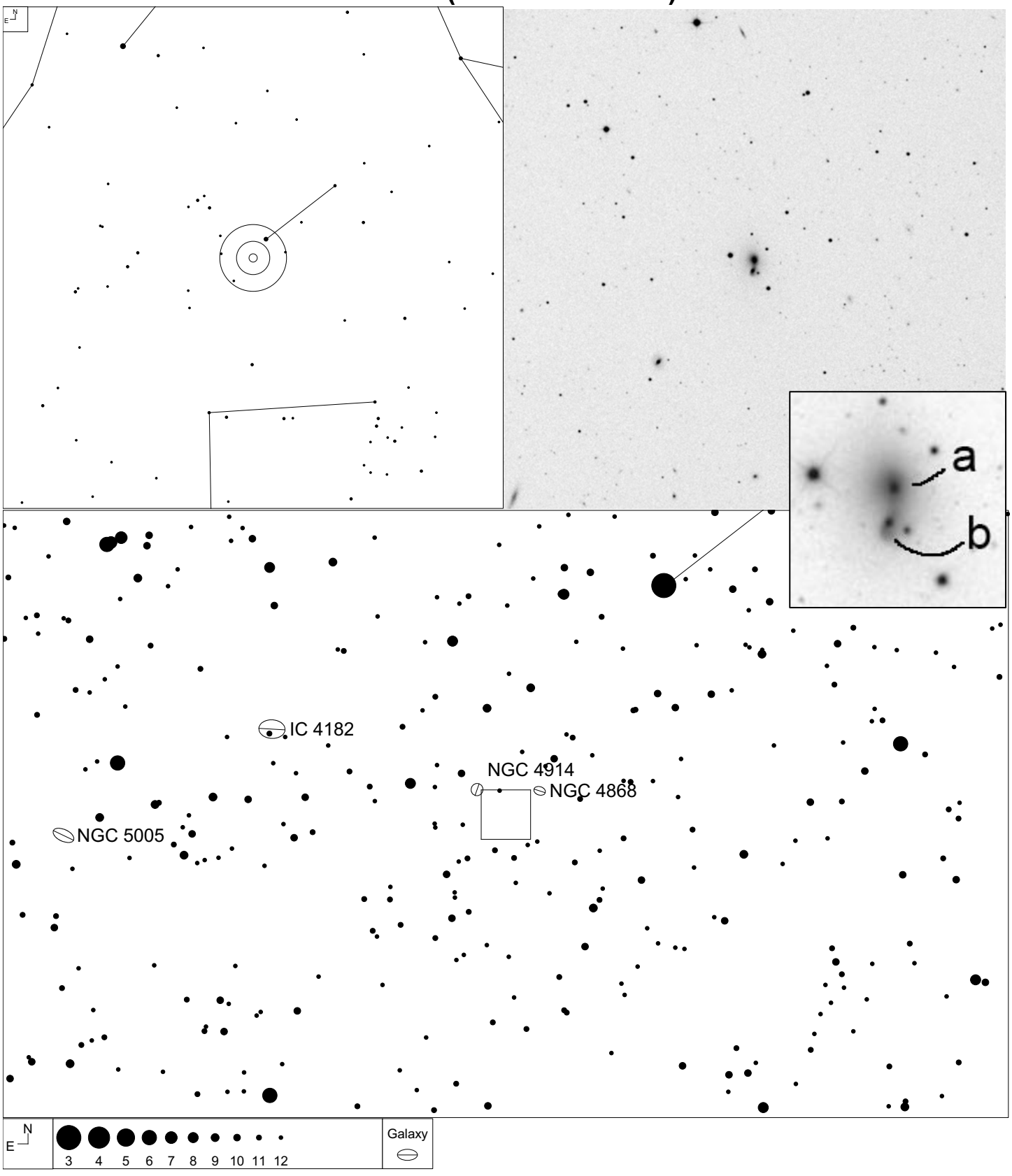
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
104	12 13 44.8	+36 38 03	G	13.4g	15x12	PC
104a	12 13 44.1	+36 37 53	PofG			
104b	12 13 45.5	+36 38 40	Star Cl			

VV 127 (Canes Venatici)



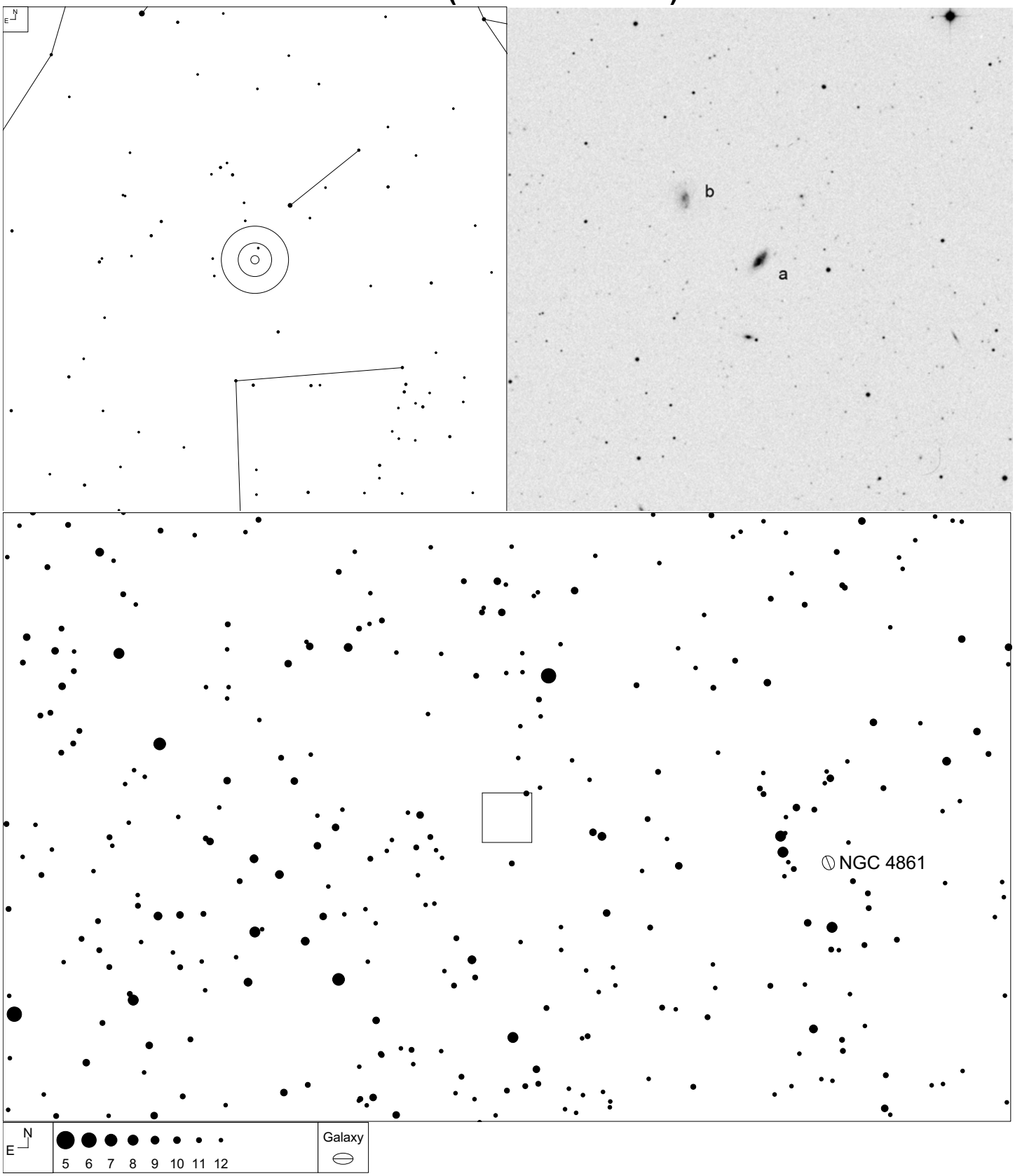
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
127	12 44 25.1	+34 23 12	G	14.7	24x16	PD
127d	12 44 23.1	+34 22 49	PofG	19.64		
127c	12 44 24.5	+34 23 36	PofG	19.8g	1x1	
127a	12 44 24.6	+34 22 37	PofG	18.17		
127f	23 4 26.4	+34 24 13	PofG	19.08		
127b	12 44 26.6	+34 22 47	G	17.7g	3x1	
127e	12 44 26.9	+34 24 01	PofG	20.00		

VV 222 (Canes Venatici)



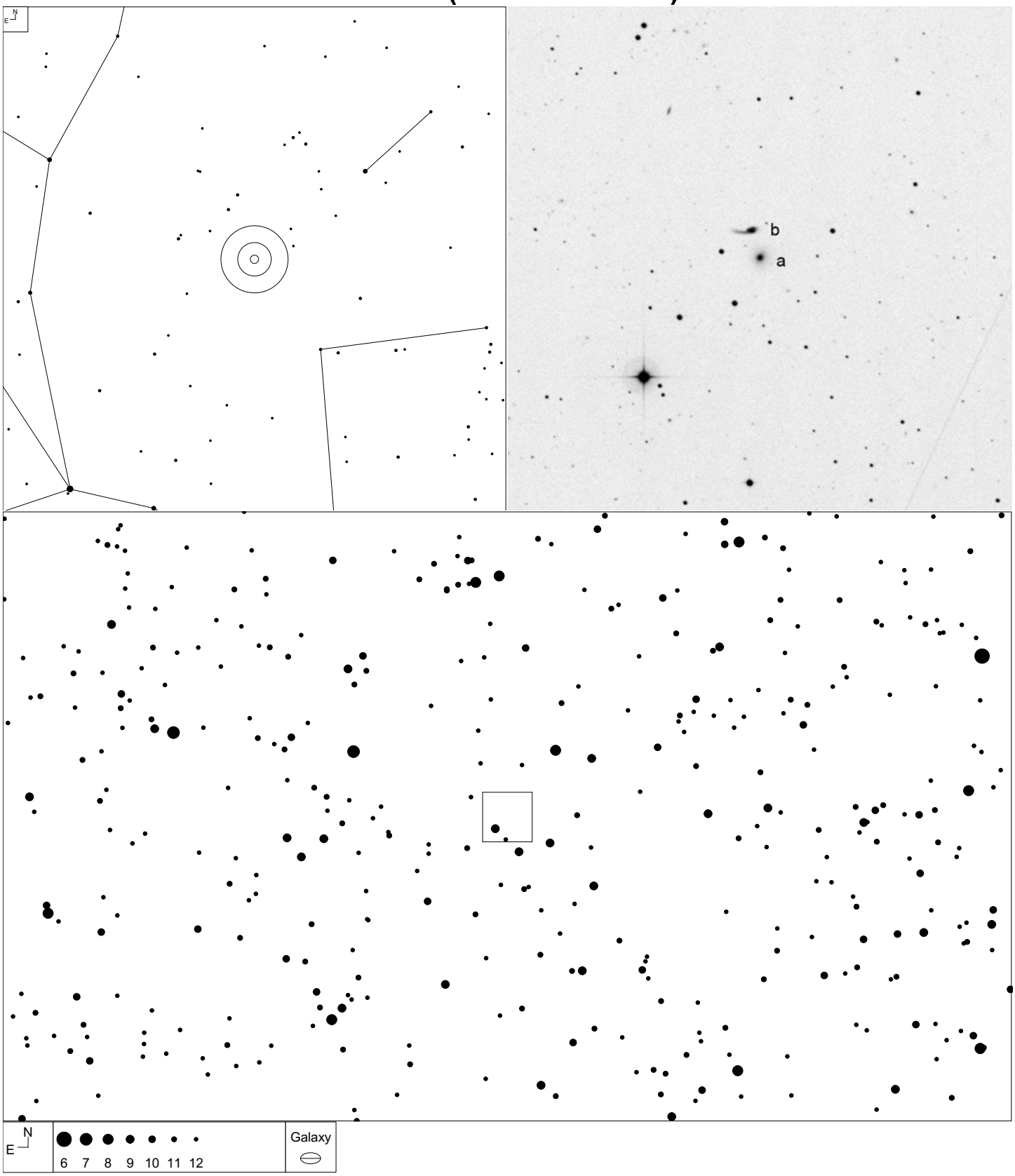
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
222	12 59 59.7	+37 11 26	GPair			PK
222b	12 59 59.6	+37 11 36	G	15.6	5x5	
222a	12 59 59.8	+37 11 16	G	16.9	4x4	

VV 292 (Canes Venatici)



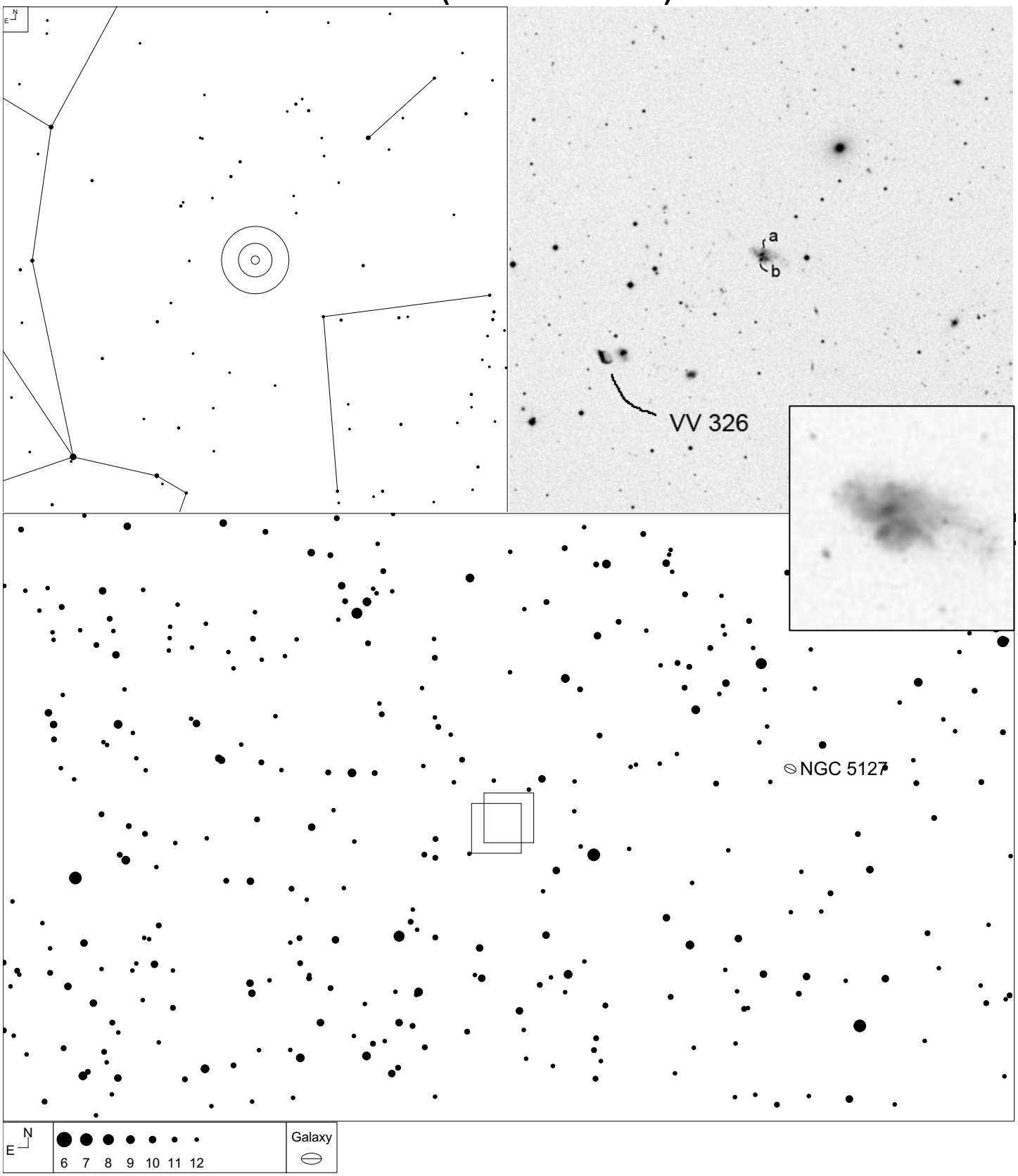
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
292	13 06 50.5	+35 07 00	GPair			PDb
292a	13 06 45.2	+35 06 02	G	14.8p	13x7	
292b	13 06 55.9	+35 07 57	G	15.6g	9x5	

VV 325 (Canes Venatici)



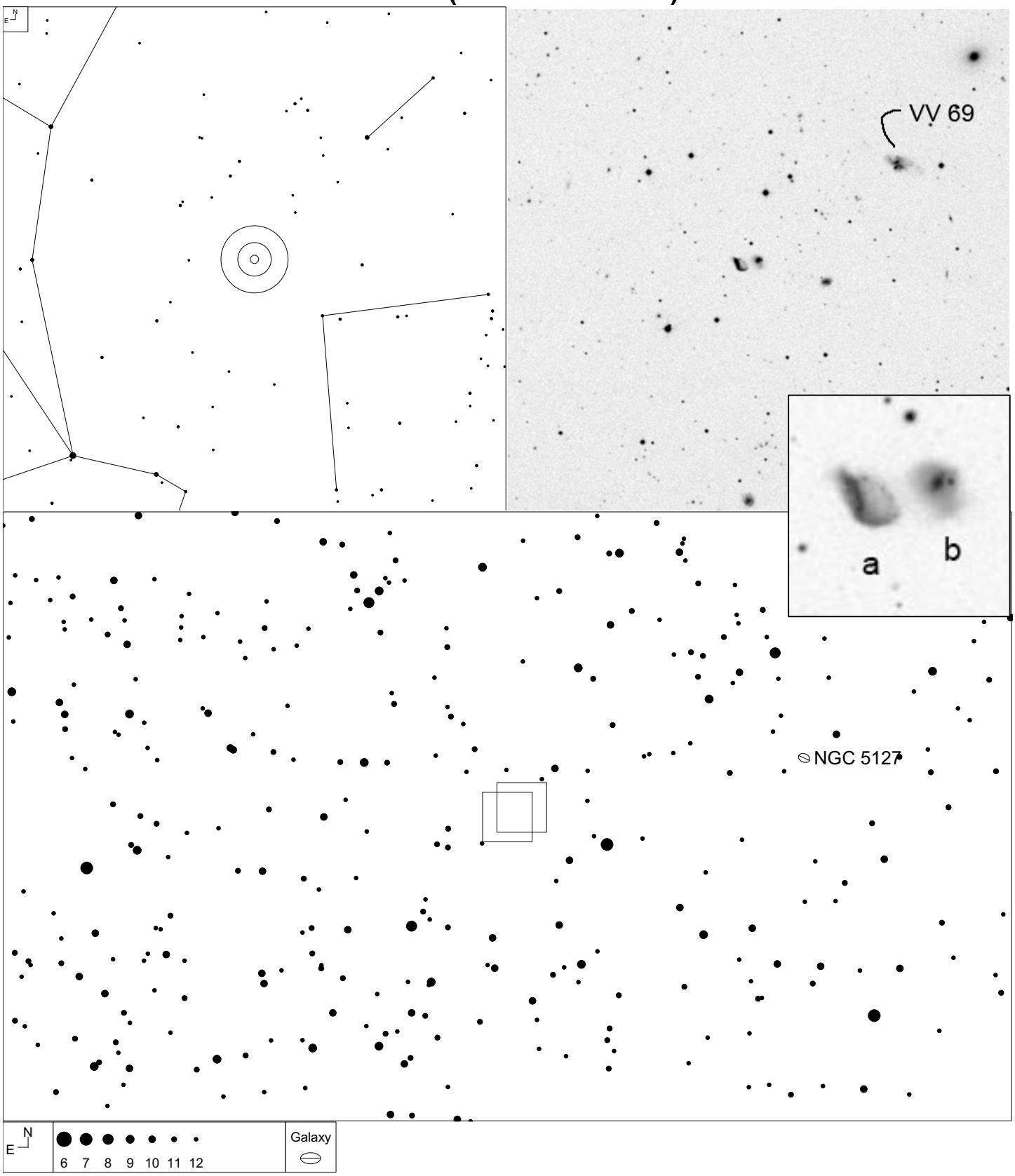
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
325	13 29 45.1	+33 20 45	GPair			PDt
325a	13 29 44.5	+33 20 21	G	15.1g	7x6	
325b	13 29 45.7	+33 21 09	G	15.7g	7x2	

VV 69 (Canes Venatici)



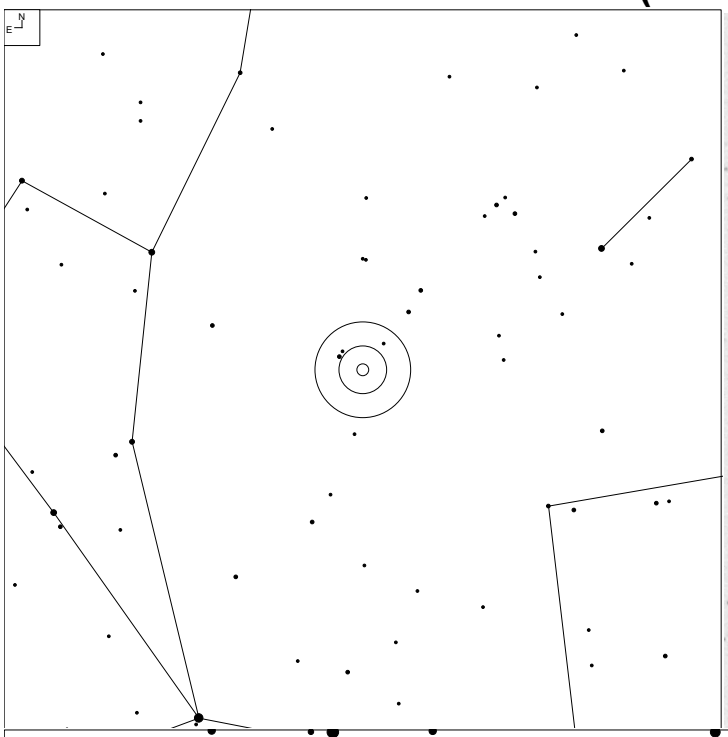
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
69	13 03 17.3	+31 19 59	GGroup			PC
69a	13 03 17.3	+31 20 07	G	14.9		
69b	13 30 17.4	+31 19 59	G	16.4g	5x3	

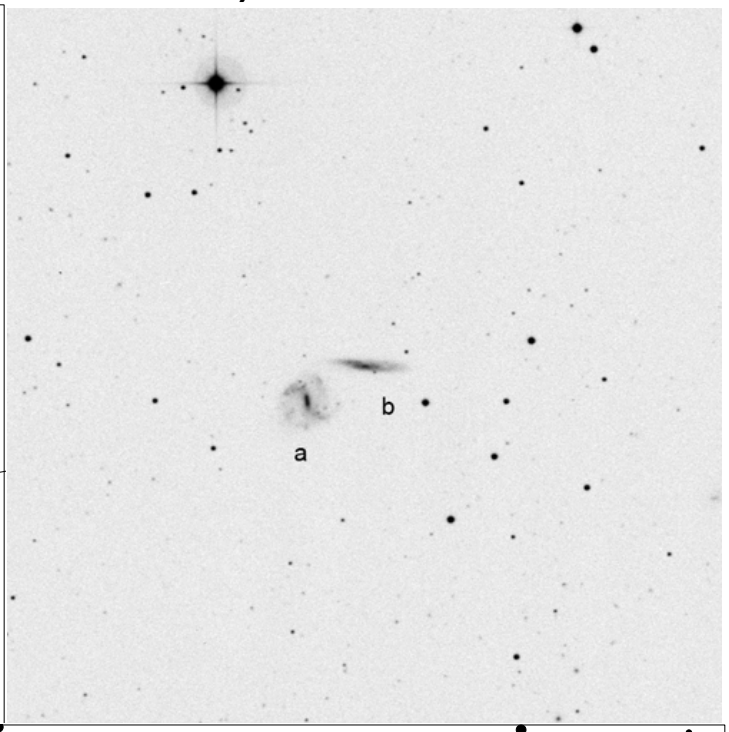
VV 326 (Canes Venatici)

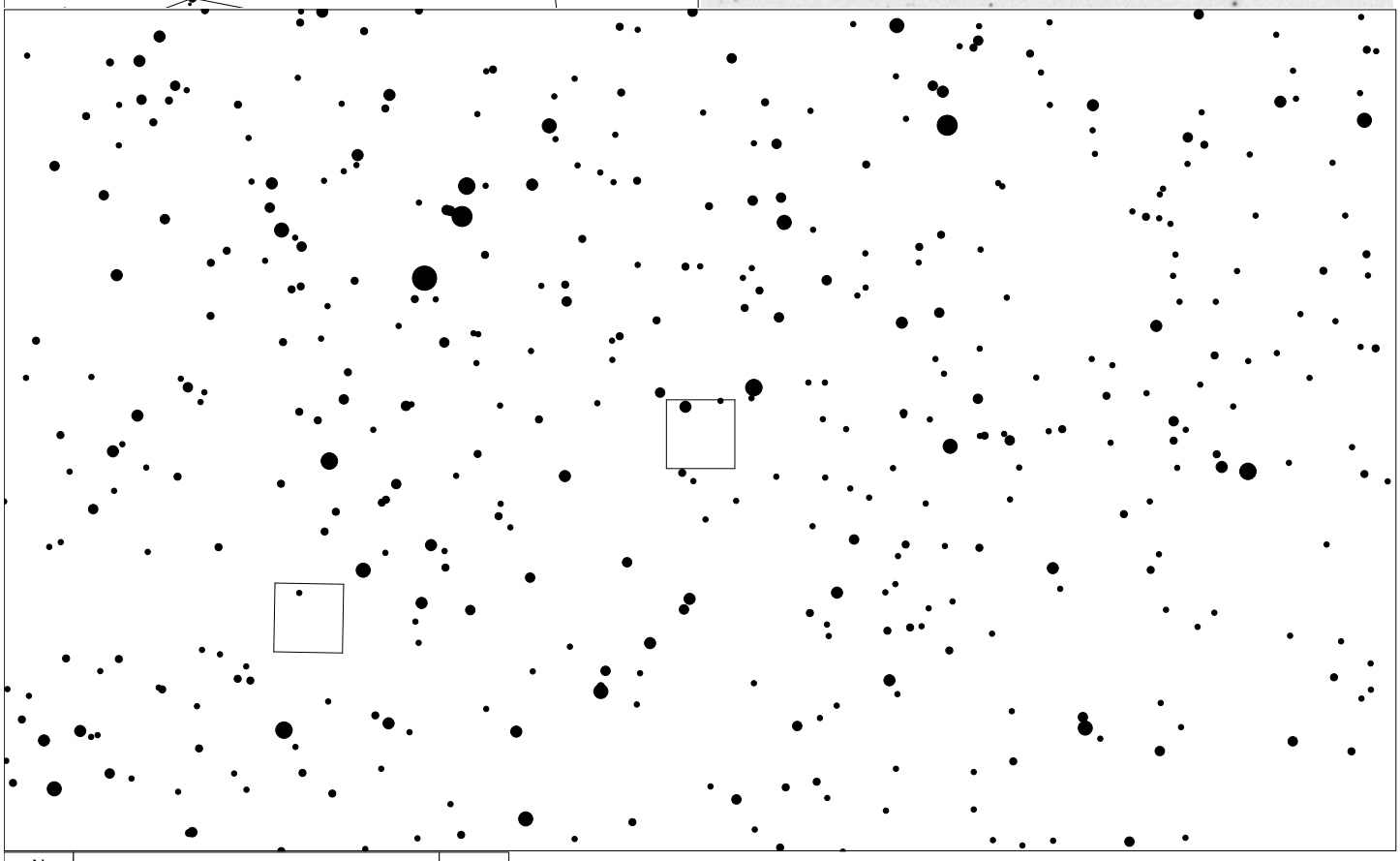


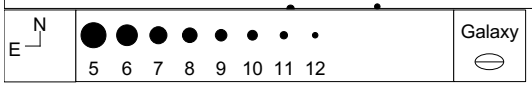
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
326	10 30 38.0	+31 17 07	GPair			PD
326b	13 30 36.6	+31 17 10	G	14.6	6x5	
326a	13 30 39.4	+31 17 04	G	14.6	7x4	

VV 317 (Canes Venatici)



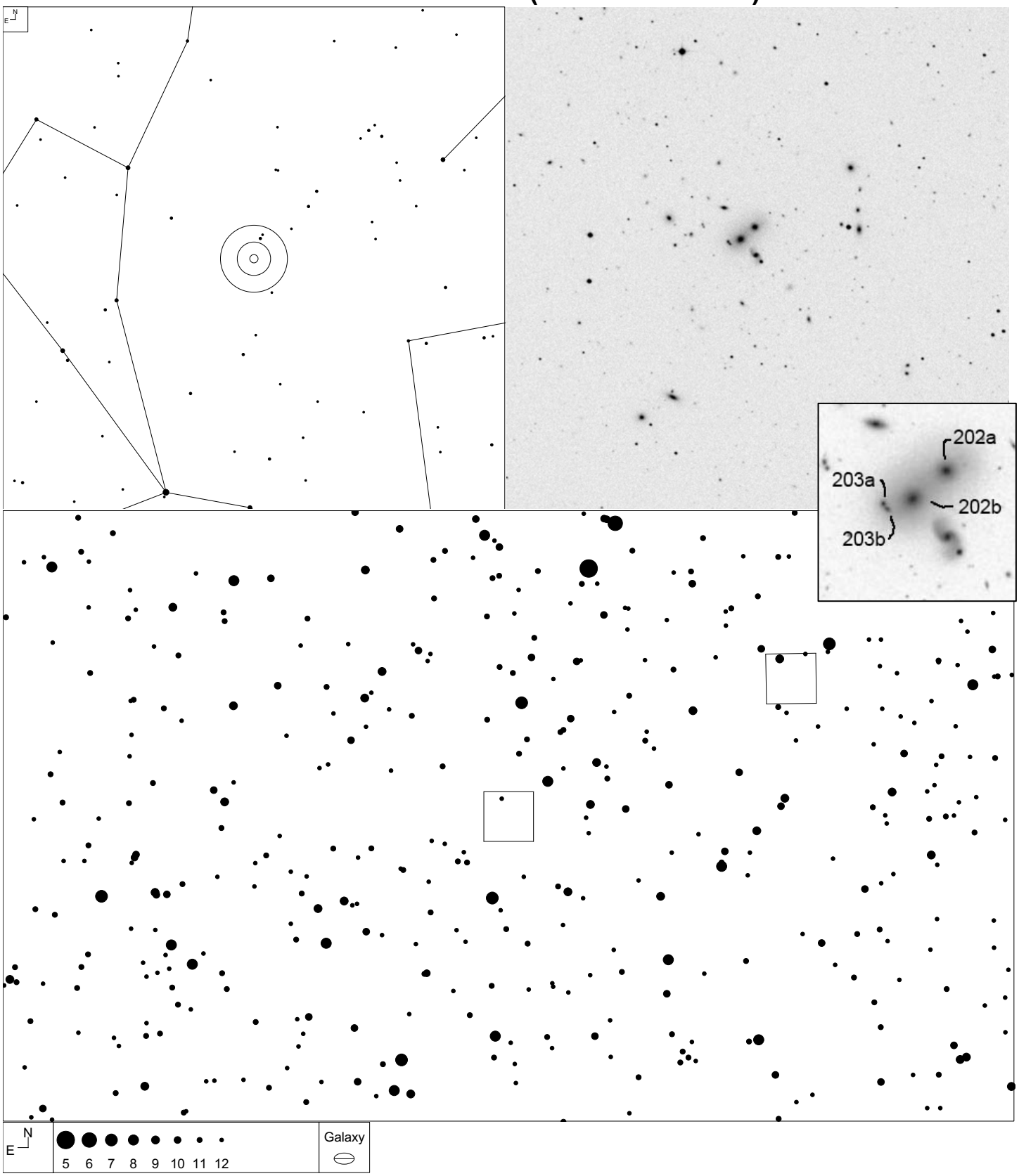






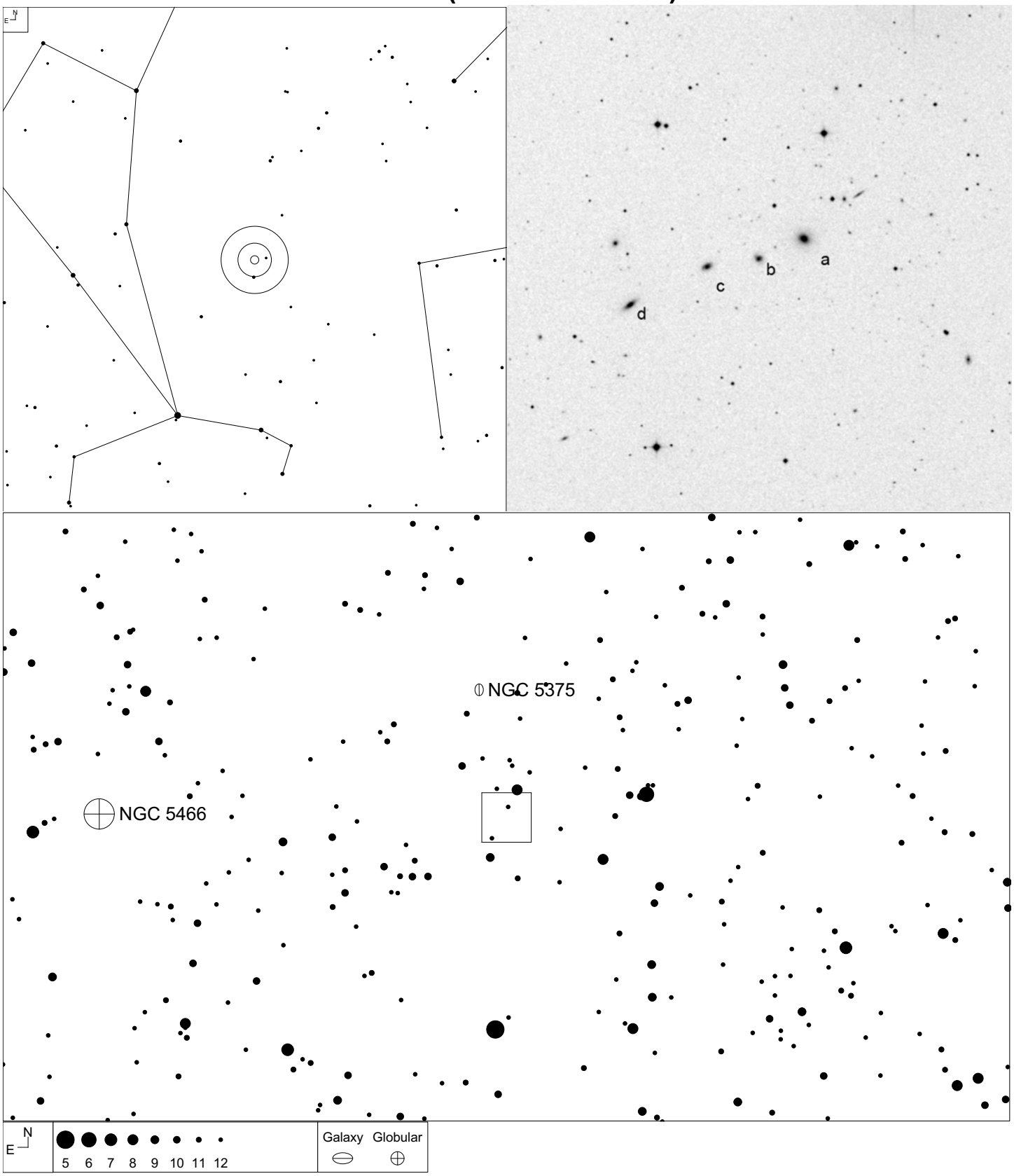
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
317	13 47 04.1	+33 53 14	GPair			PDdf
317b	13 47 01.2	+33 53 37	G	15.3p	18x14	
317a	13 47 07.0	+33 52 53	G	14.5p	13x11	

VV 202 and VV 203 (Canes Venatici)



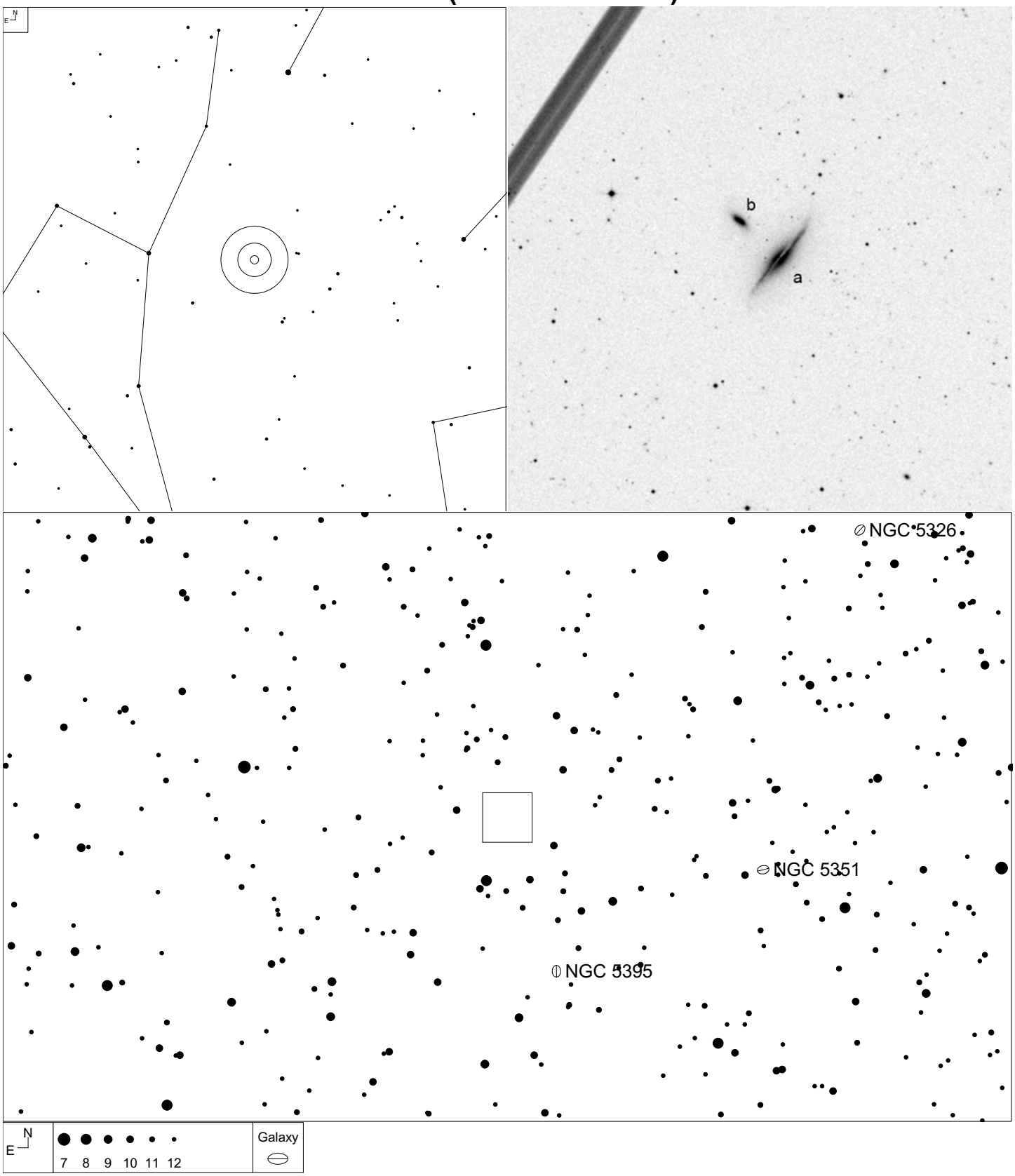
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
202	13 53 52.3	+33 11 32	GPair			NN
202a	13 53 41.7	+33 13 41	G	15.3	3x3	
202b	13 53 43.8	+33 13 20	G	15.5	4x4	
203	13 53 45.5	+33 13 15	GPair			PK
203b	13 53 45.4	+33 13 12	G	18	1x1	
203a	13 53 45.6	+33 13 18	G	18	1x1	

VV 158 (Canes Venatici)



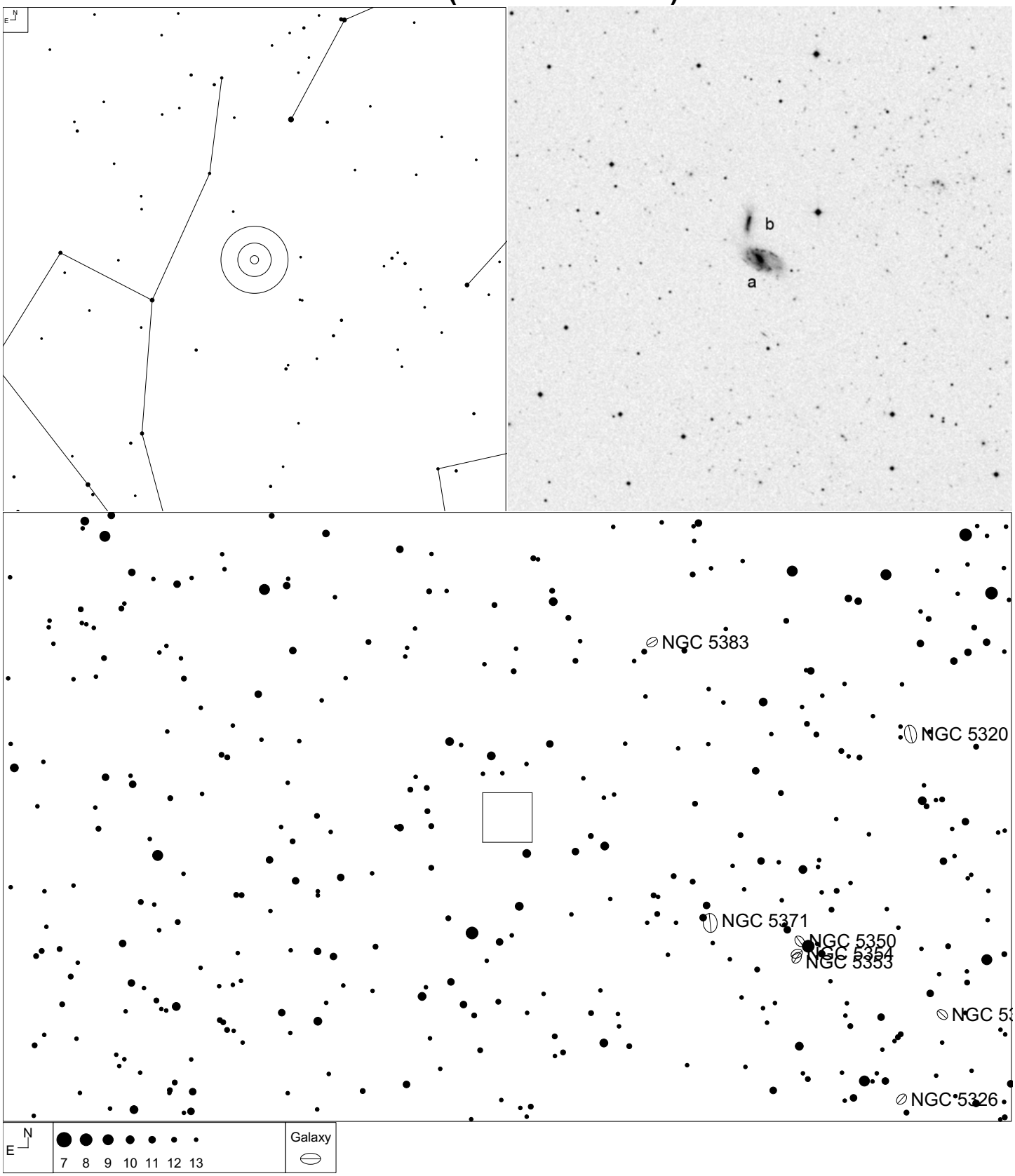
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
158	13 56 20.7	+28 31 22	GGroup			Ch
158a	13 56 19.2	+28 32 11	G	15.3	4x3	
158b	13 56 25.3	+28 31 35	G	15.8	3x3	
158c	13 56 32.2	+28 31 20	G	15.7	4x3	
158d	13 56 42.6	+28 30 10	G	15.6	7x2	

VV 310 (Canes Venatici)



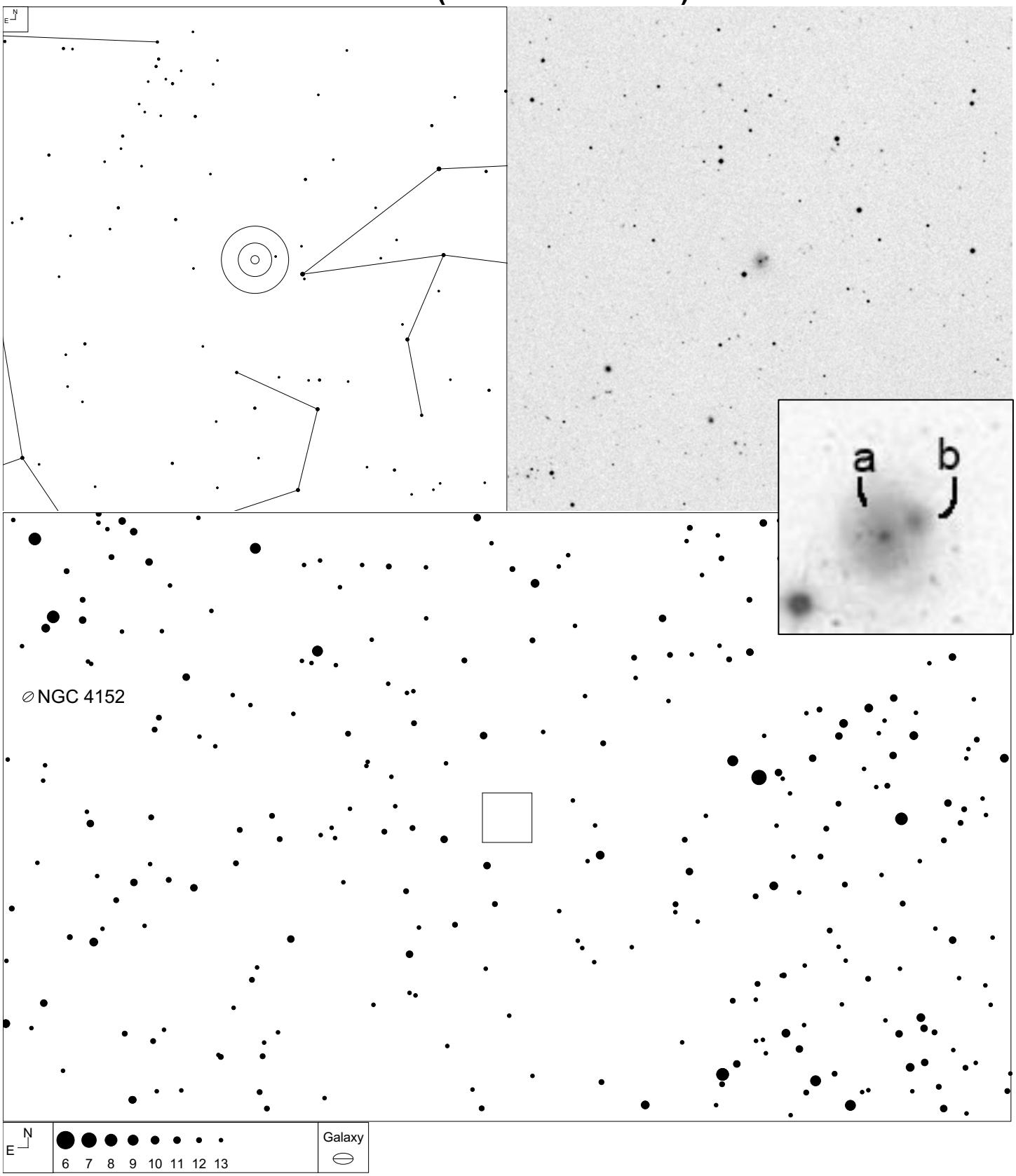
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
310	13 59 54.0	+38 11 30	GPair			PD
310a	13 59 50.9	+38 10 55	G	14.4p	34x6	
310b	13 59 57.1	+38 12 02	G	15.4	8x4	

VV 256 (Canes Venatici)



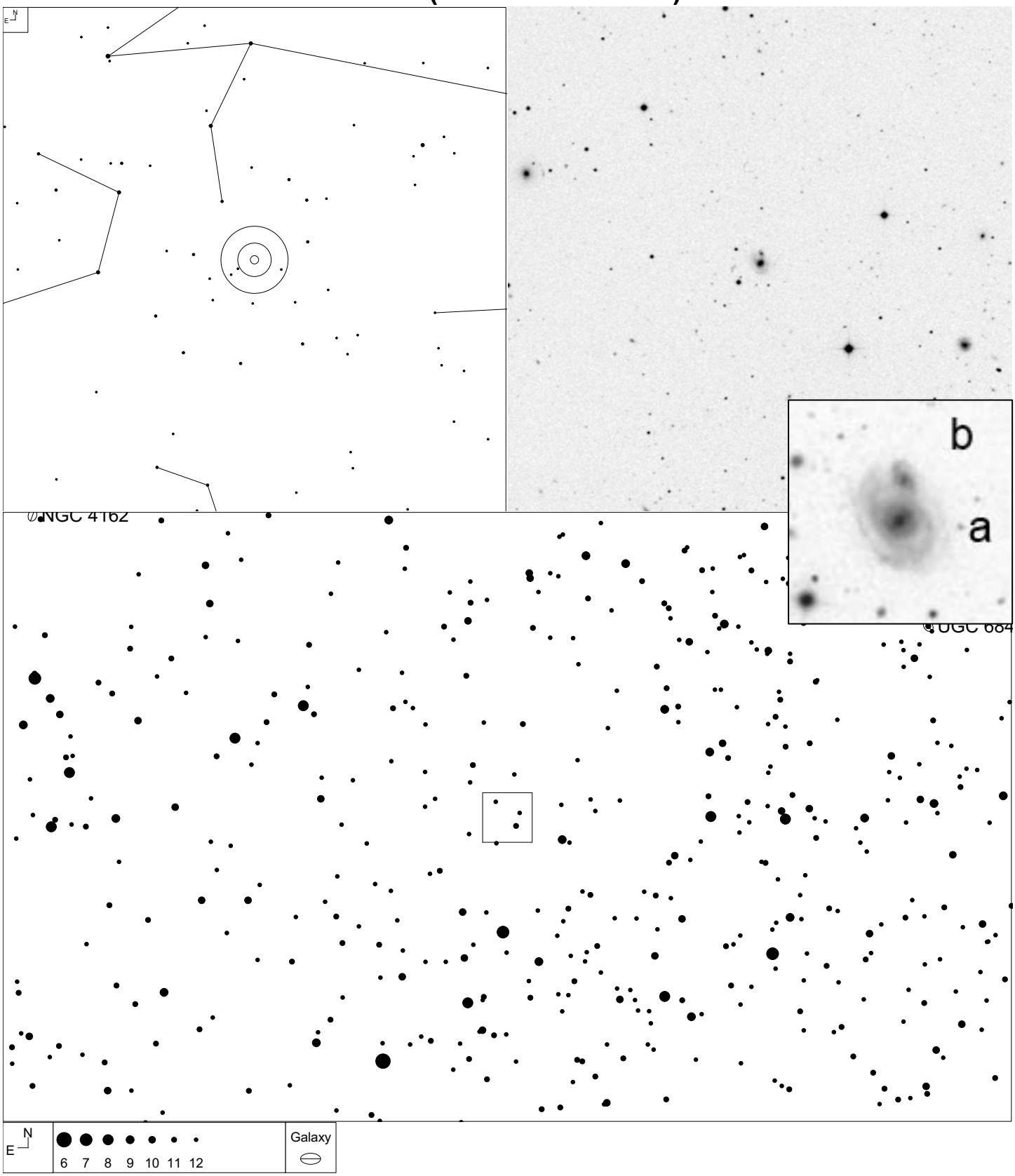
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
256	14 00 55.4	+40 59 49	GPair			PKdf
256a	14 00 54.5	+40 59 17	G	14.03	15x8	
256b	14 00 56.4	+41 00 21	G	15.43	8x3	

VV 185 (Coma Berenices)



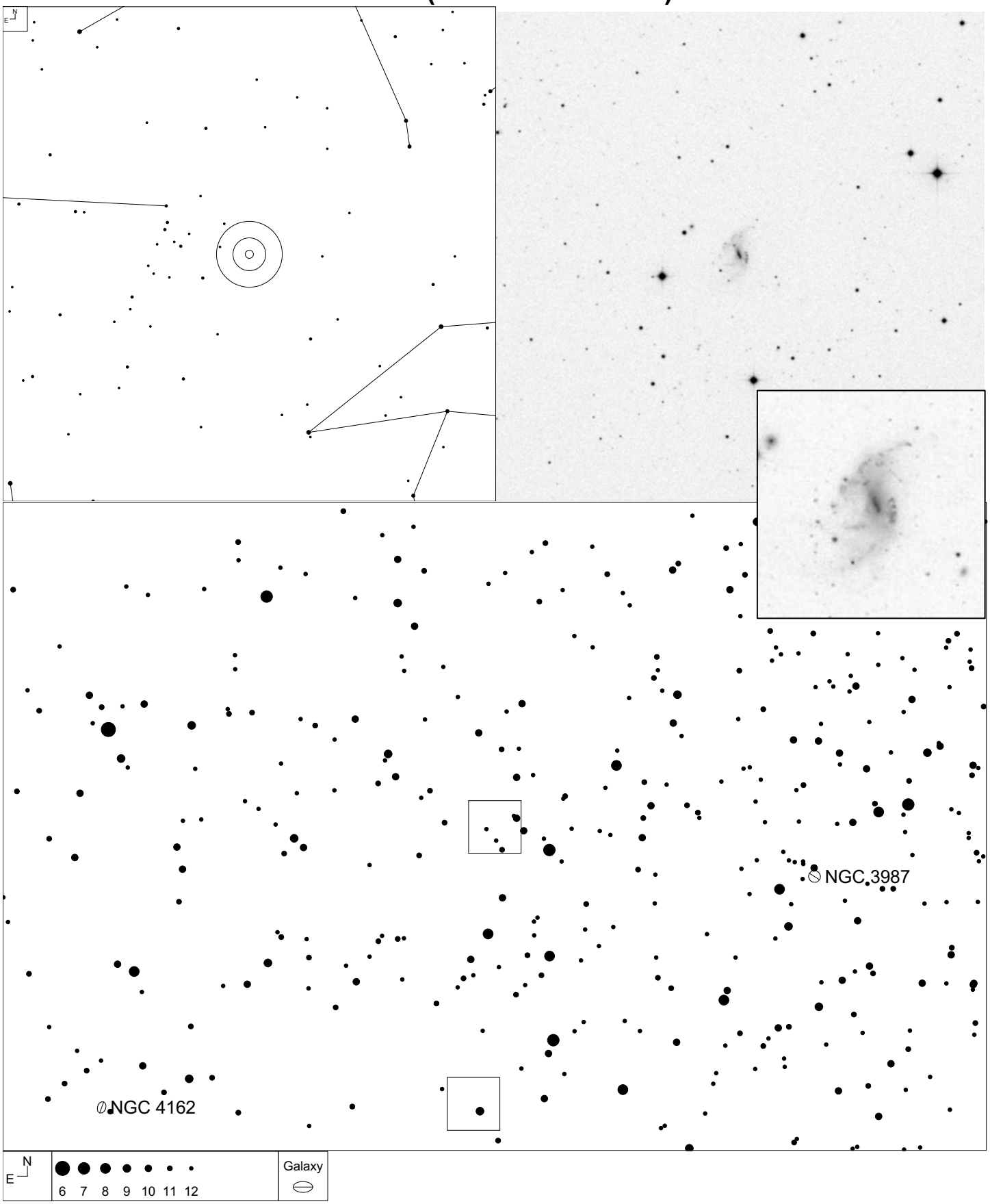
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
185	12 00 49.0	+15 27 07	GPair			PK
185b	12 00 48.6	+15 27 10	G			
185a	12 00 49.3	+15 27 04	G	15.6g	7x6	

VV 45 (Coma Berenices)



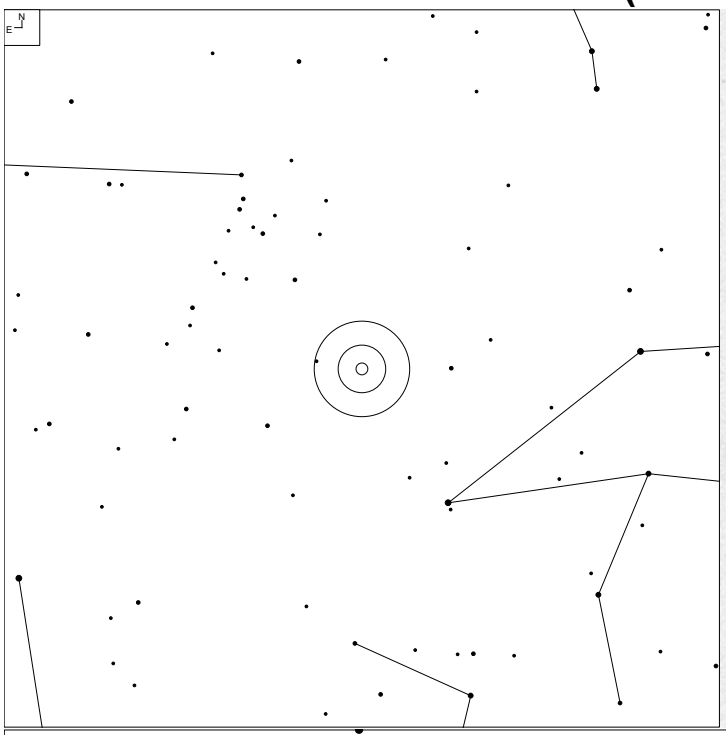
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
45	12 01 38.7	+22 39 41	GPair	15.5	8	PDb
45b	12 01 38.6	+22 39 50	G			
45a	12 01 38.8	+22 39 32	G	16.53	6x4	

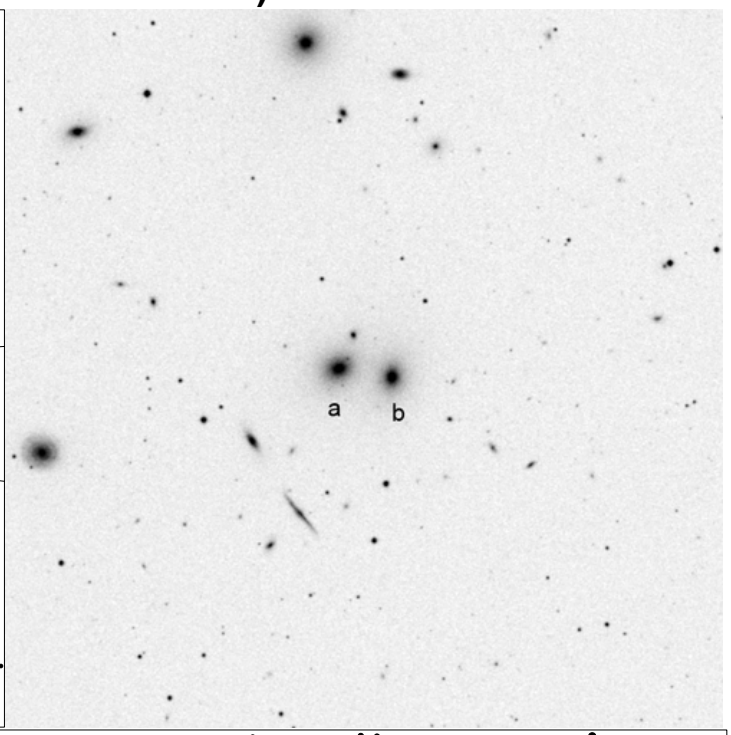
VV 276 (Coma Berenices)

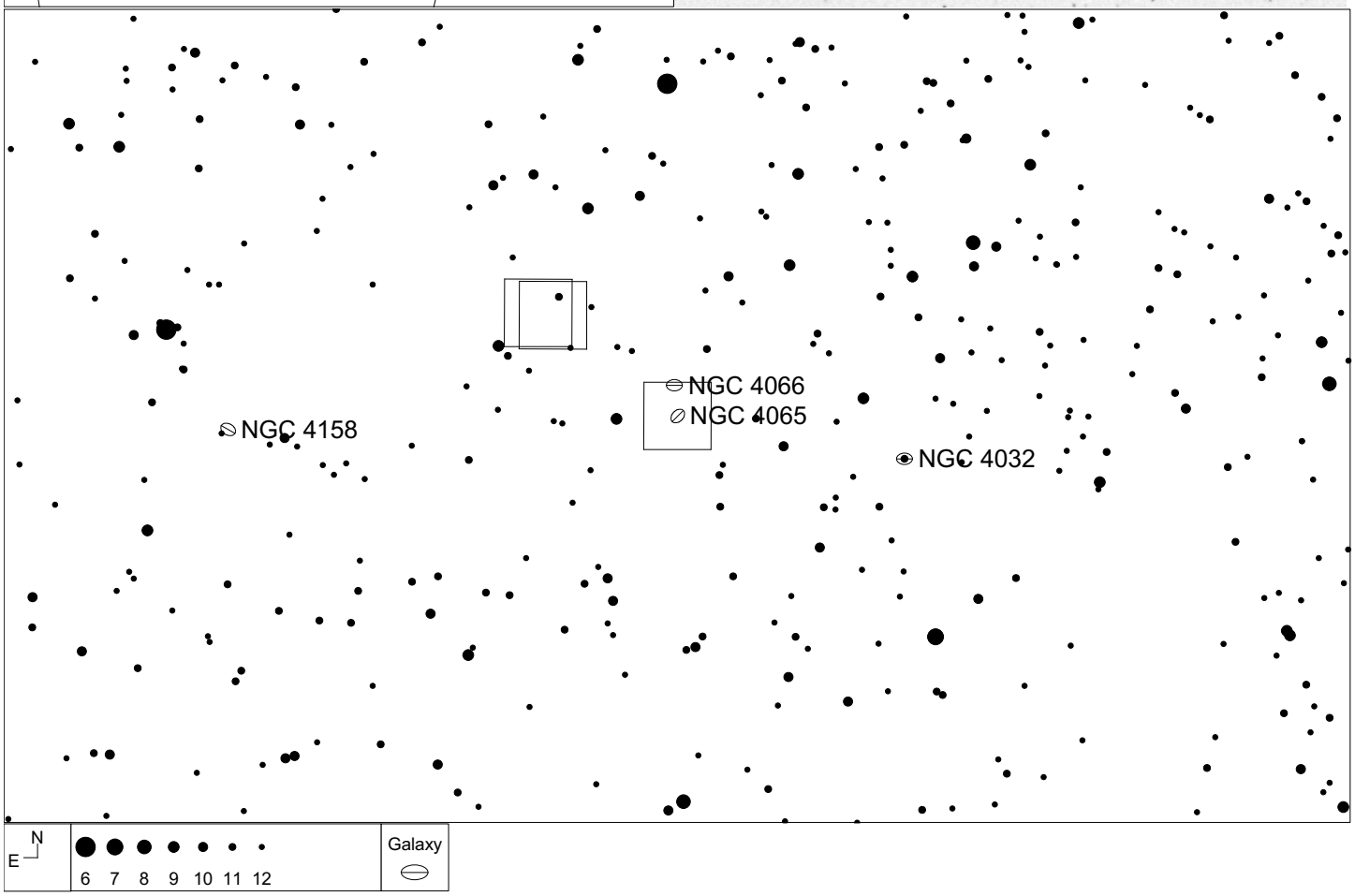


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
276	12 03 53.5	+25 25 57	G	14.1	19x11	PK

VV 179 (Coma Berenices)

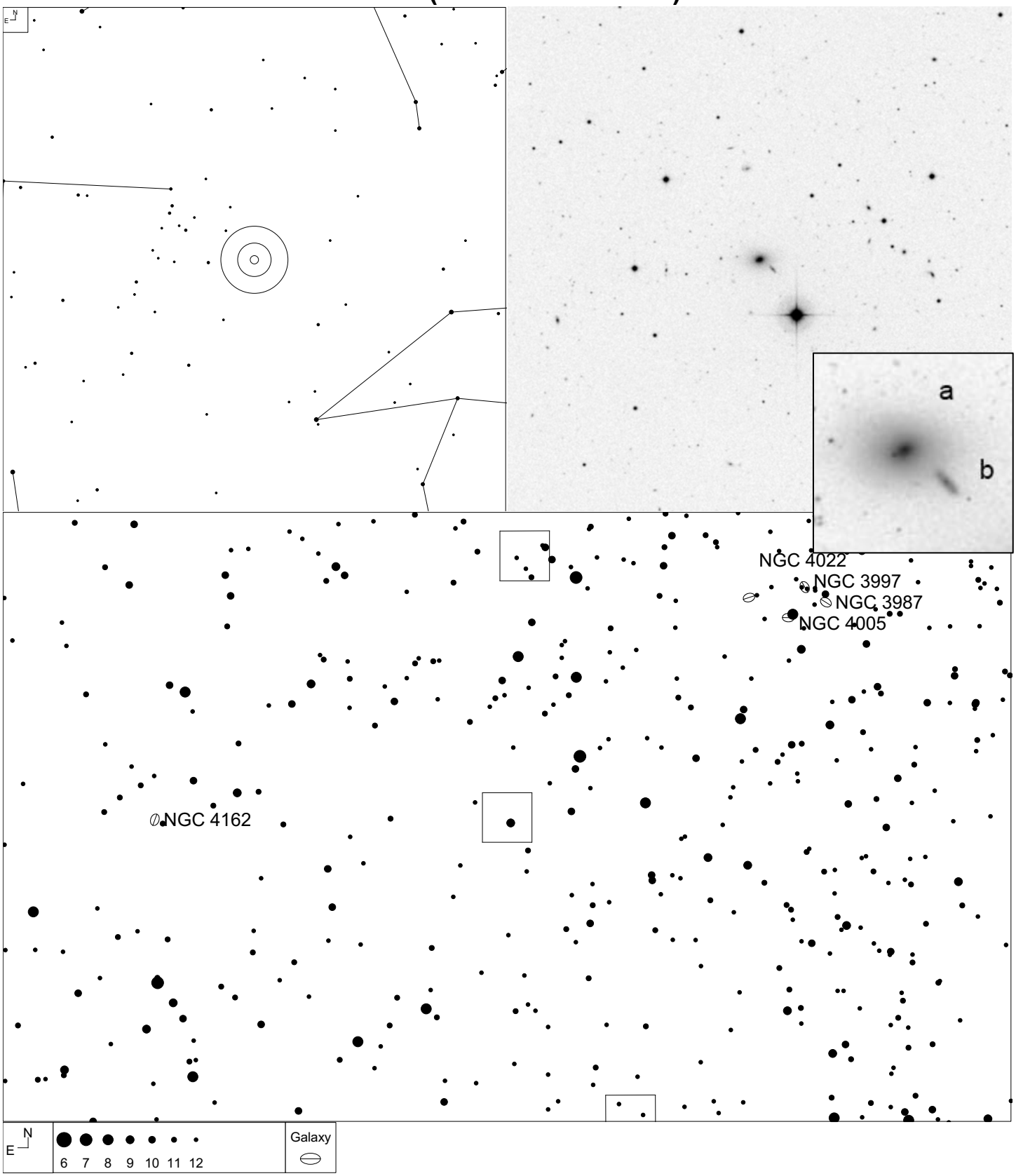






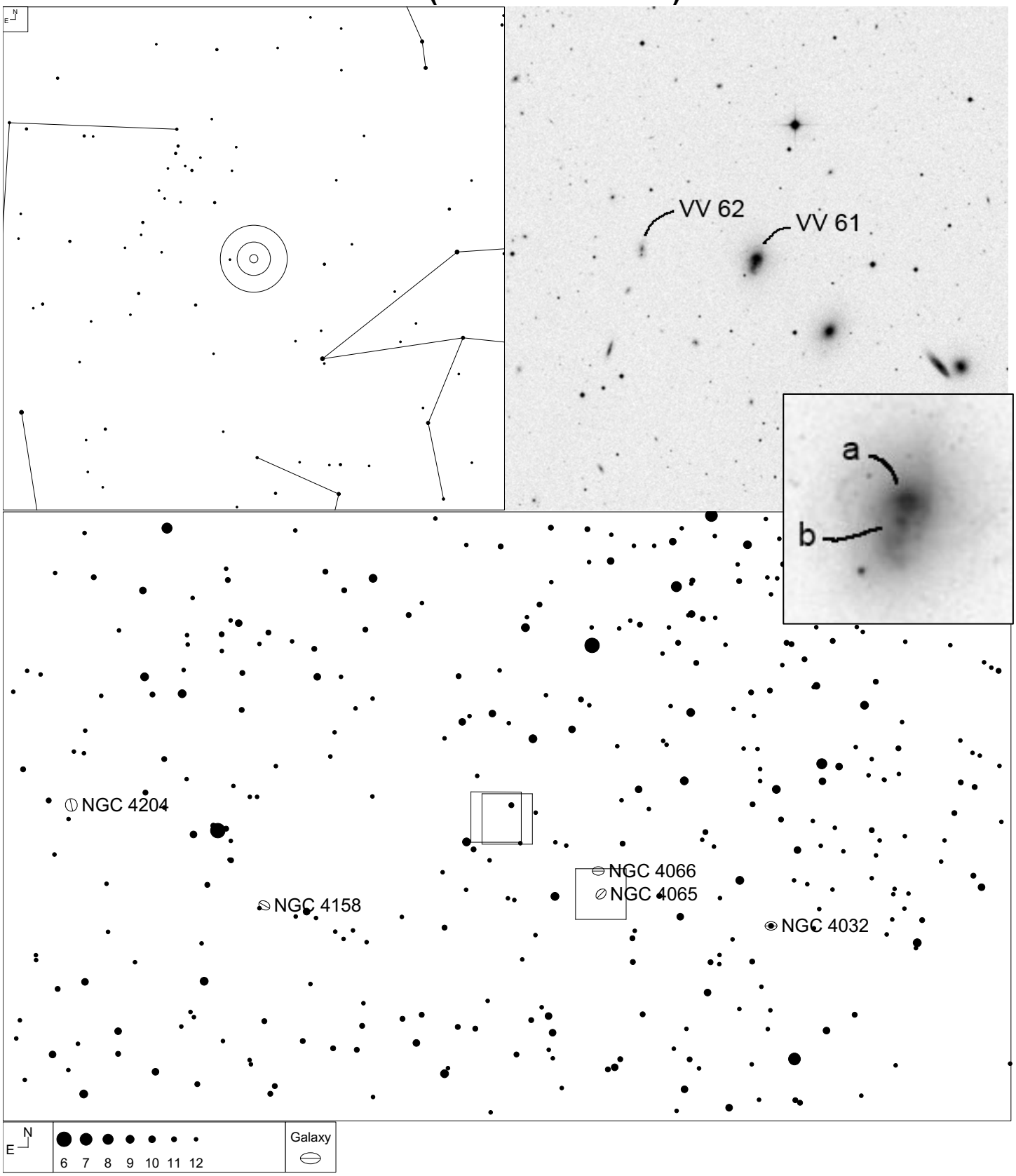
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
179	12 04 03.8	+20 14 01	GPair			PD
179b	12 04 01.5	+20 13 56	G	14.12	12x9	
179a	12 04 06.2	+20 14 06	G	13.58	11x10	

VV 46 (Coma Berenices)



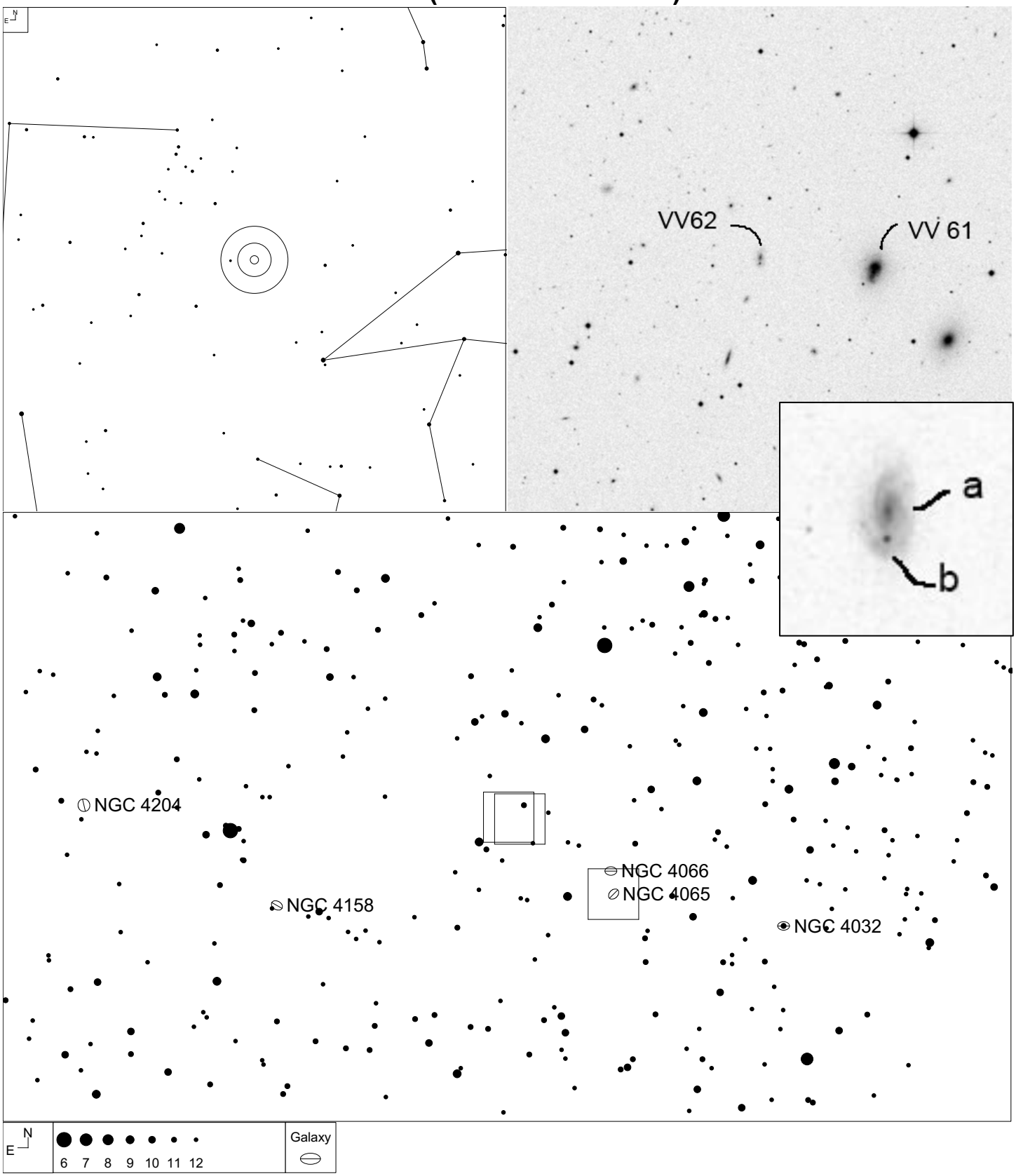
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
46	12 04 15.9	+24 08 40	GPair			PDb
46b	12 04 15.1	+24 08 32	G	17.6g	4x2	
46a	12 04 16.8	+24 08 49	G	15.84	10x8	

VV 61 (Coma Berenices)



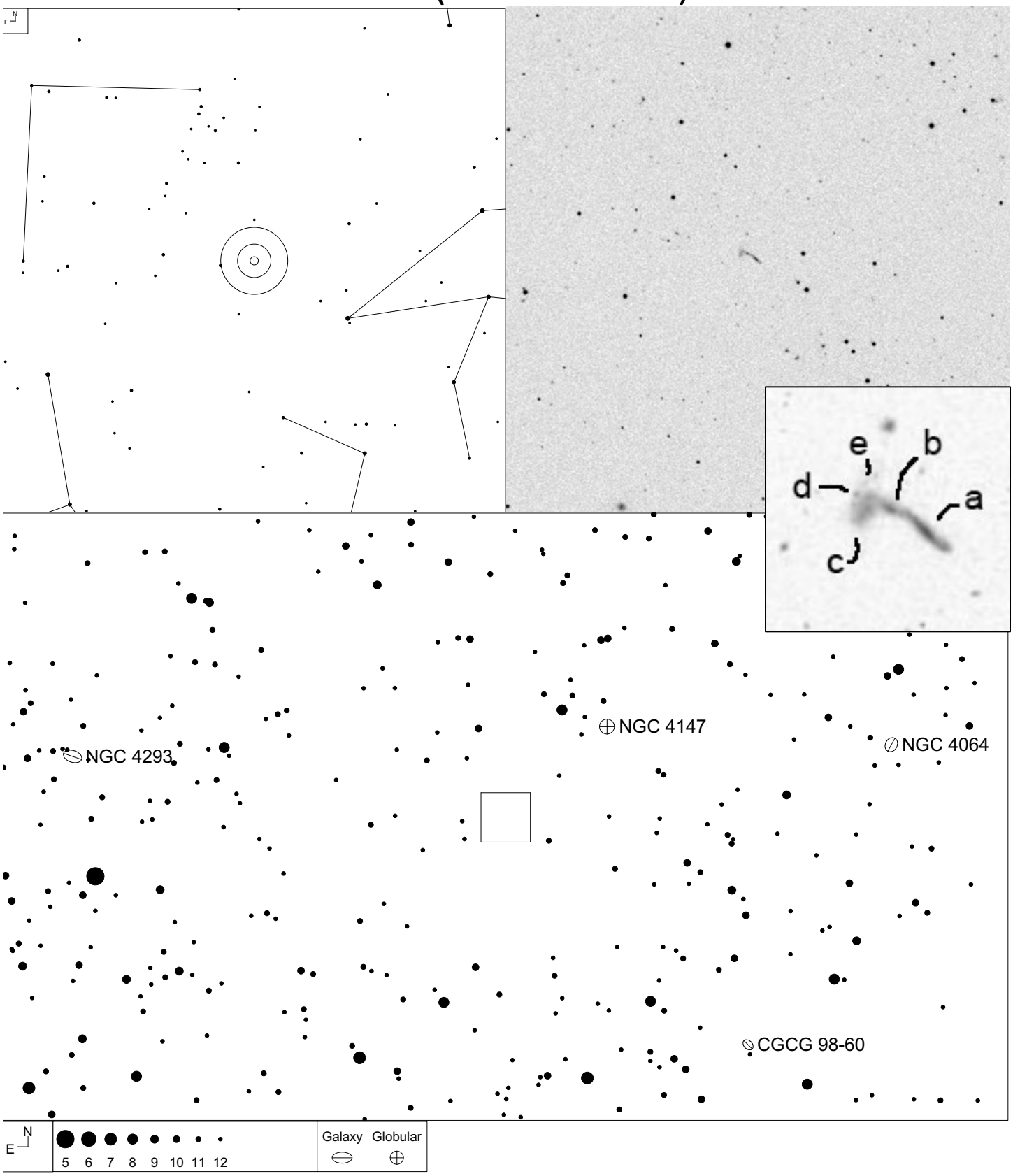
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
61	12 06 03.9	+20 36 22	GPair	14.36	13x18	PK
61a	12 06 03.6	+20 36 29	G			
61b	12 06 04.2	+20 36 14	G			

VV 62 (Coma Berenices)



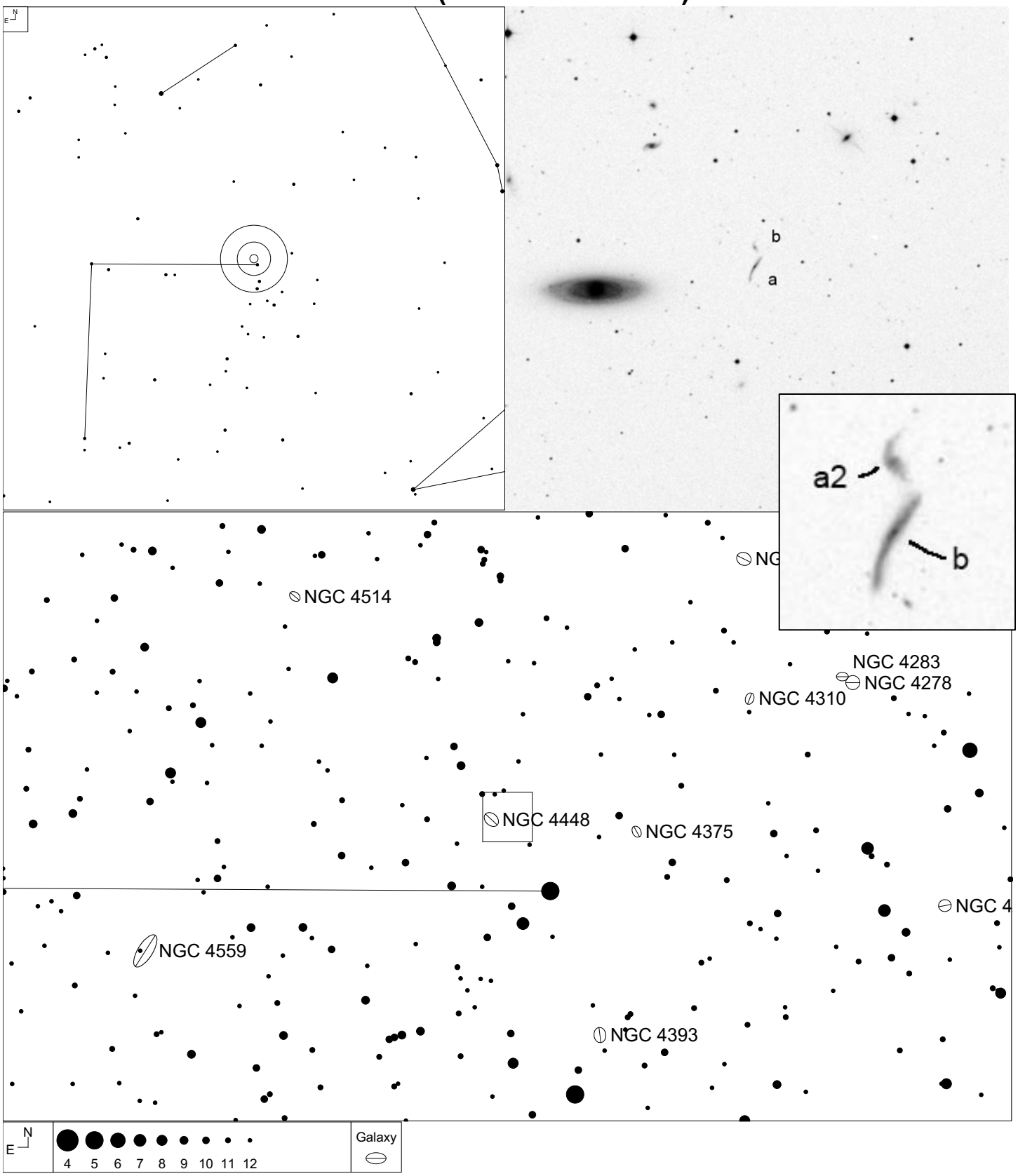
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
62	12 06 18.3	+20 36 40	GPair			PDb
62b	12 06 18.2	+20 36 33	G	19.0g	3x3	
62a	12 06 18.2	+20 36 45	G	18	3x3	

VV 147 (Coma Berenices)



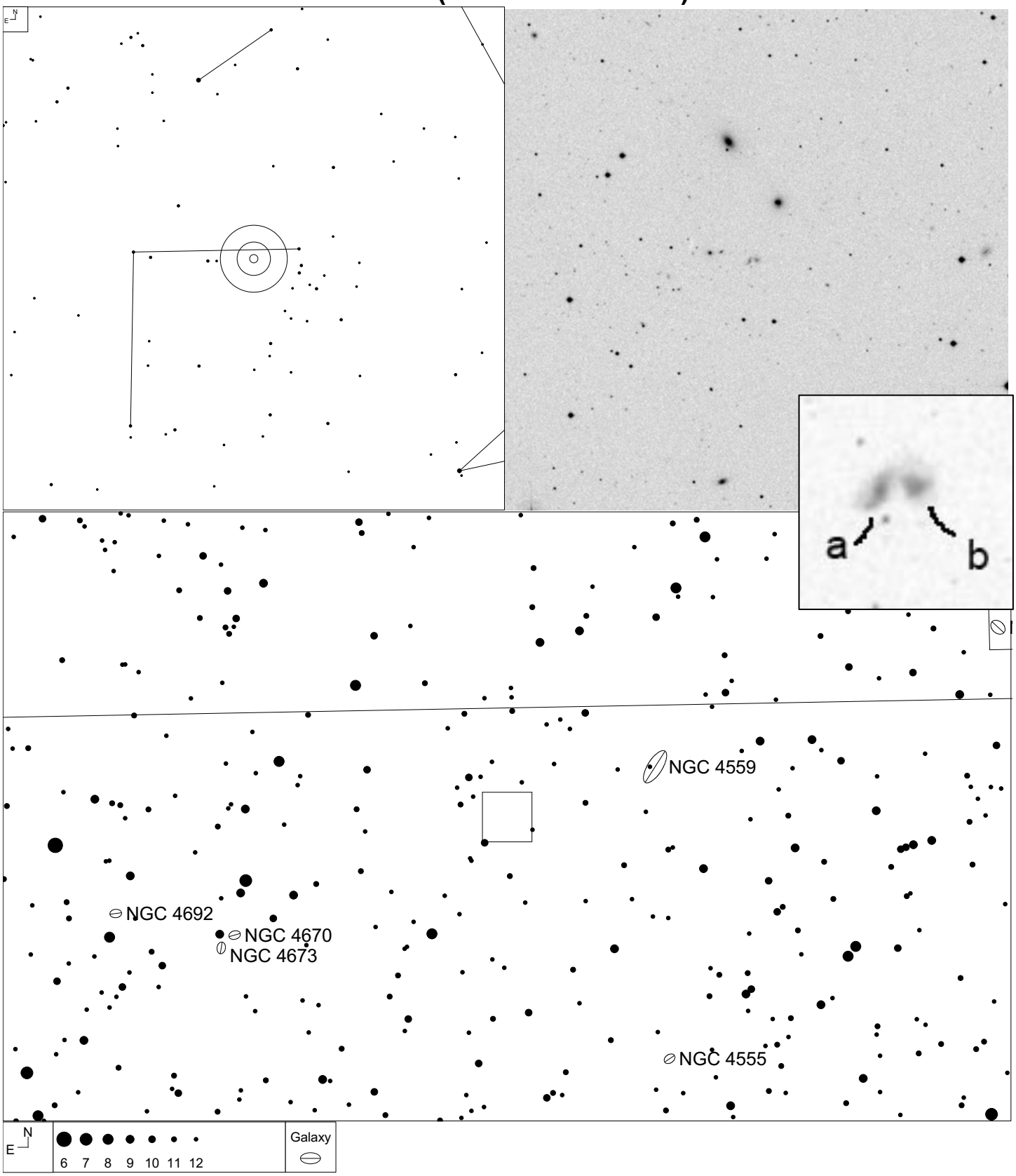
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
147	12 12 11.6	+18 05 37	GGroup			Ch
147a	12 12 11.8	+18 05 38	G	17.0g	8x1	
147b	12 12 12.9	+18 05 47	G			
147e	12 12 13.5	+18 05 48	G			
147d	12 12 13.8	+18 05 58	PofG			
147c	12 12 13.9	+18 05 43	G			

VV 279 (Coma Berenices)



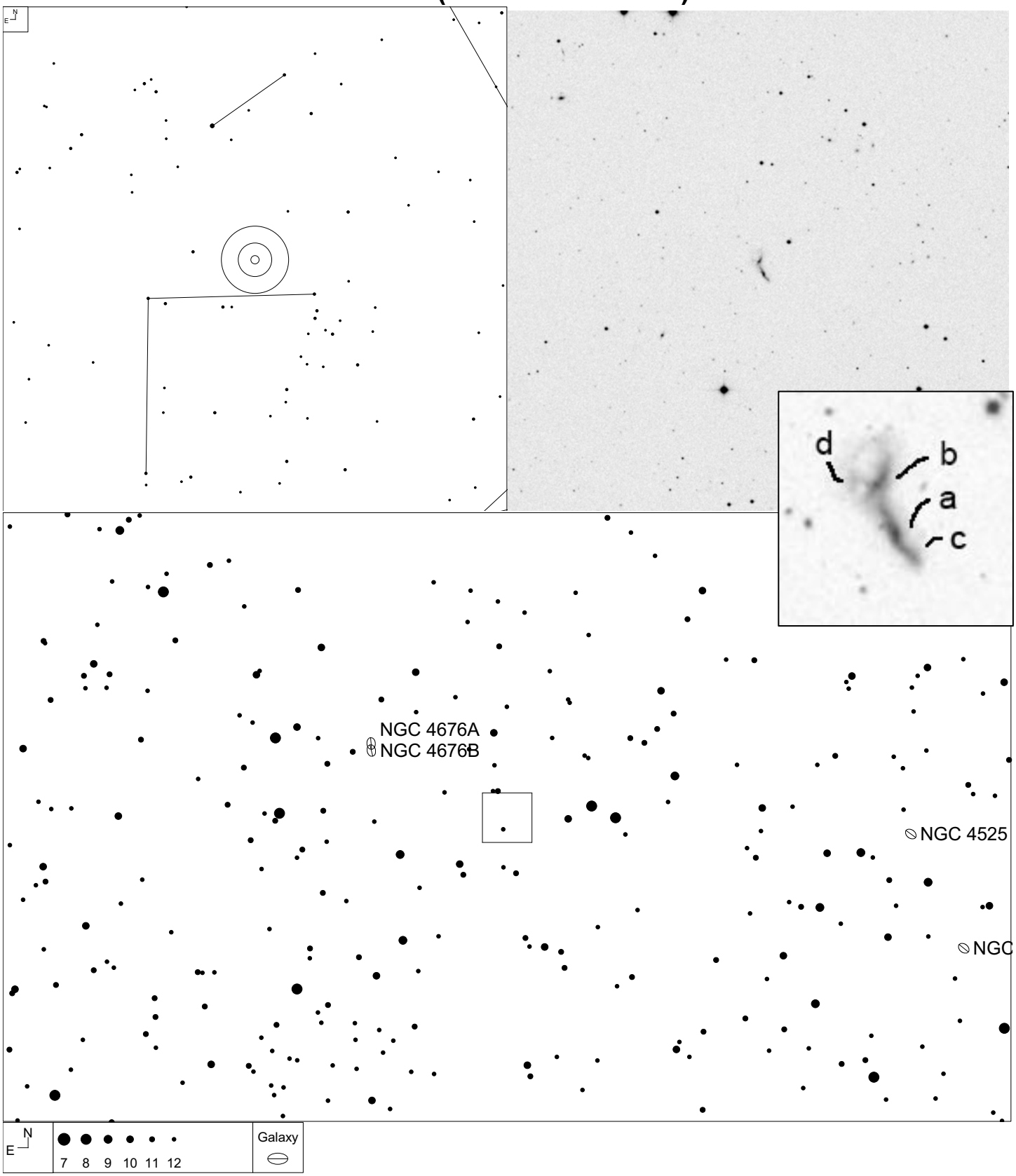
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
279	12 27 53.9	+28 38 17	GTrpl			PK
279a1	12 27 53.7	+28 38 15	G	16	9x1	
279a	12 27 53.9	+28 38 24	GPair			
279a2	12 27 54.0	+28 38 35	G	17.3g	8x1	
279b	12 27 54.0	+28 38 01	G	16.9	17x2	

VV 287 (Coma Berenices)



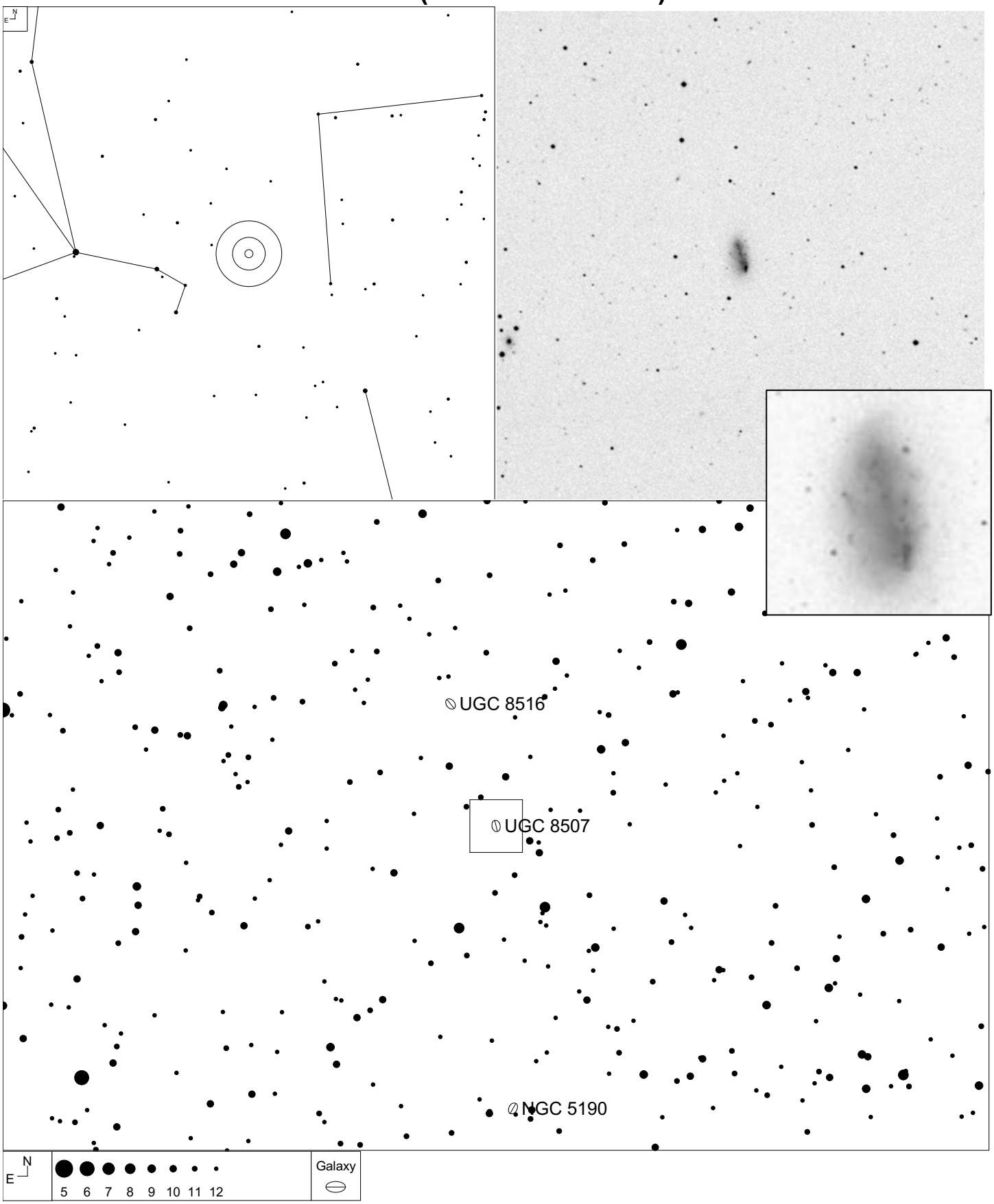
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
287	12 39 15.7	+27 42 52	GPair			PK
287a	12 39 15.1	+27 42 52	G	17.9g	2x2	
287b	12 39 16.1	+27 42 51	G	17.2r		

VV 151 (Coma Berenices)



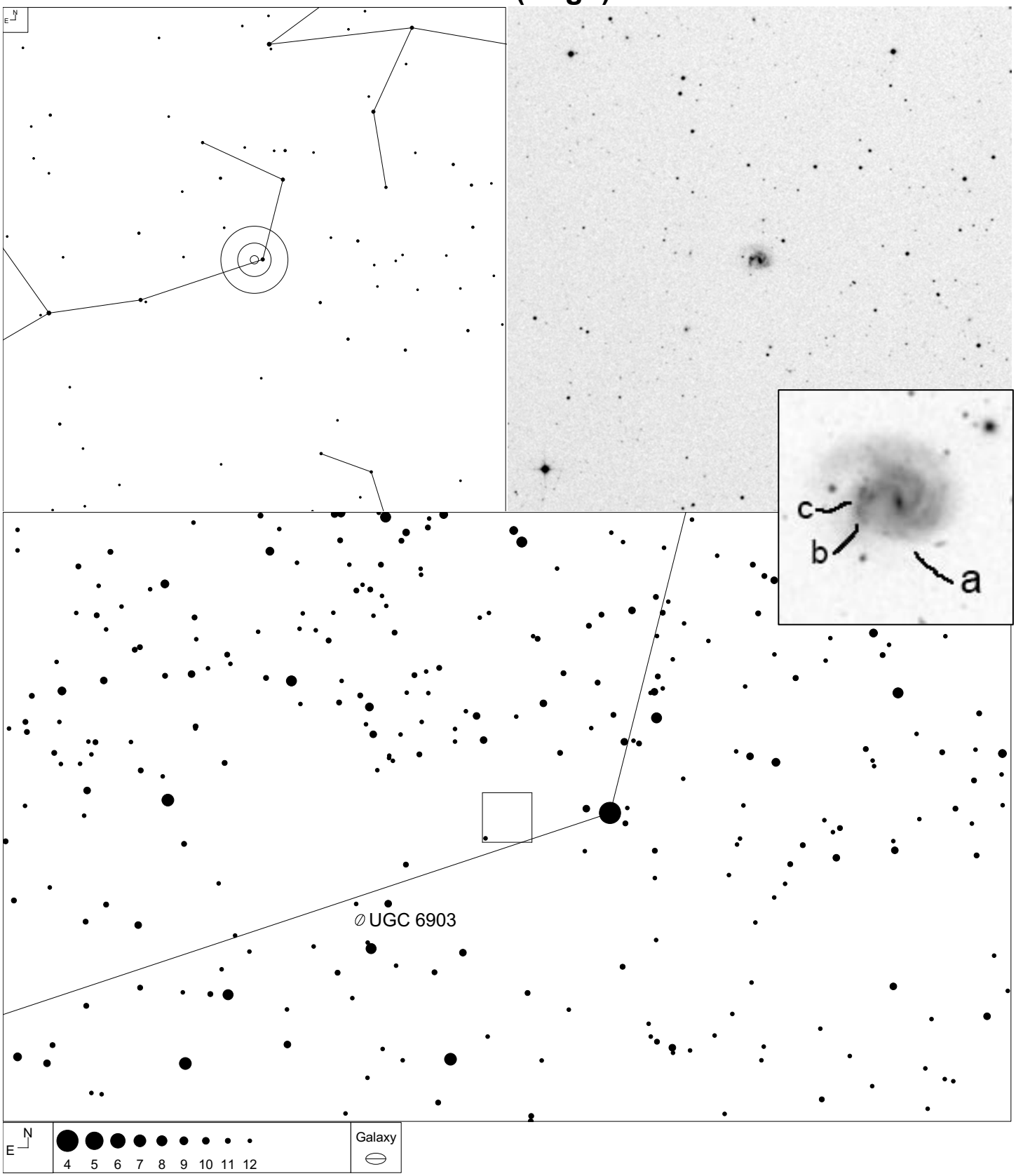
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
151	12 43 03.6	+30 22 58	GTrpl			PDb
151c	12 43 03.0	+30 22 44	G			
151a	12 43 03.7	+30 22 55	G	15.3	7x3	
151b	12 43 04.2	+30 23 14	G	16.0	7x5	
151d	12 43 05.1	+30 23 17	PofG			

VV 88 (Coma Berenices)



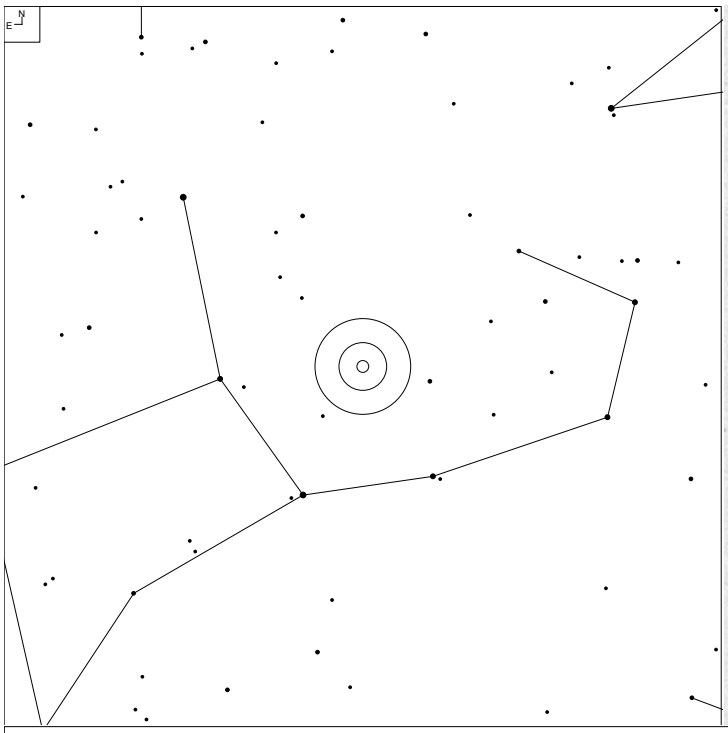
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
88	13 30 58.7	+19 26 17	G	13.94	14x8	PC

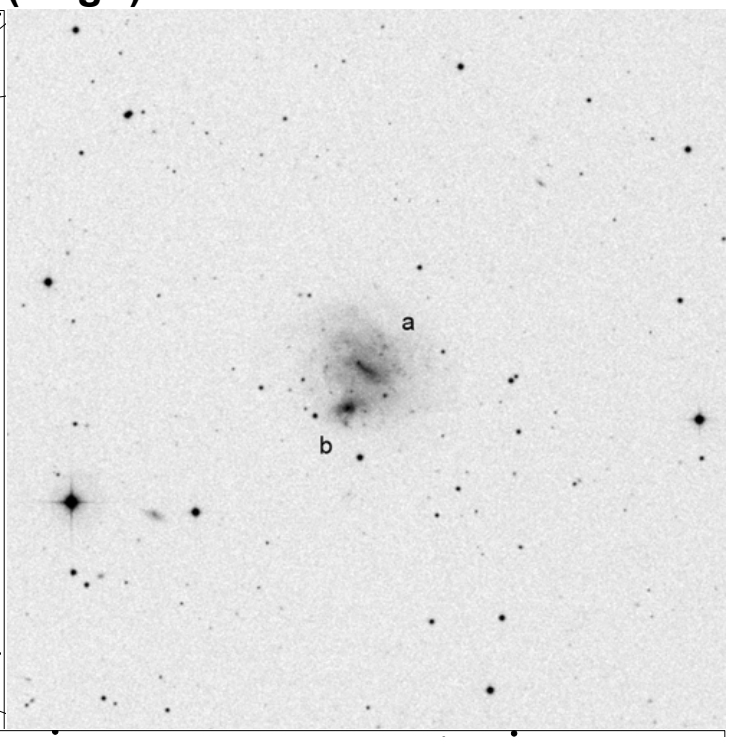
VV 105 (Virgo)

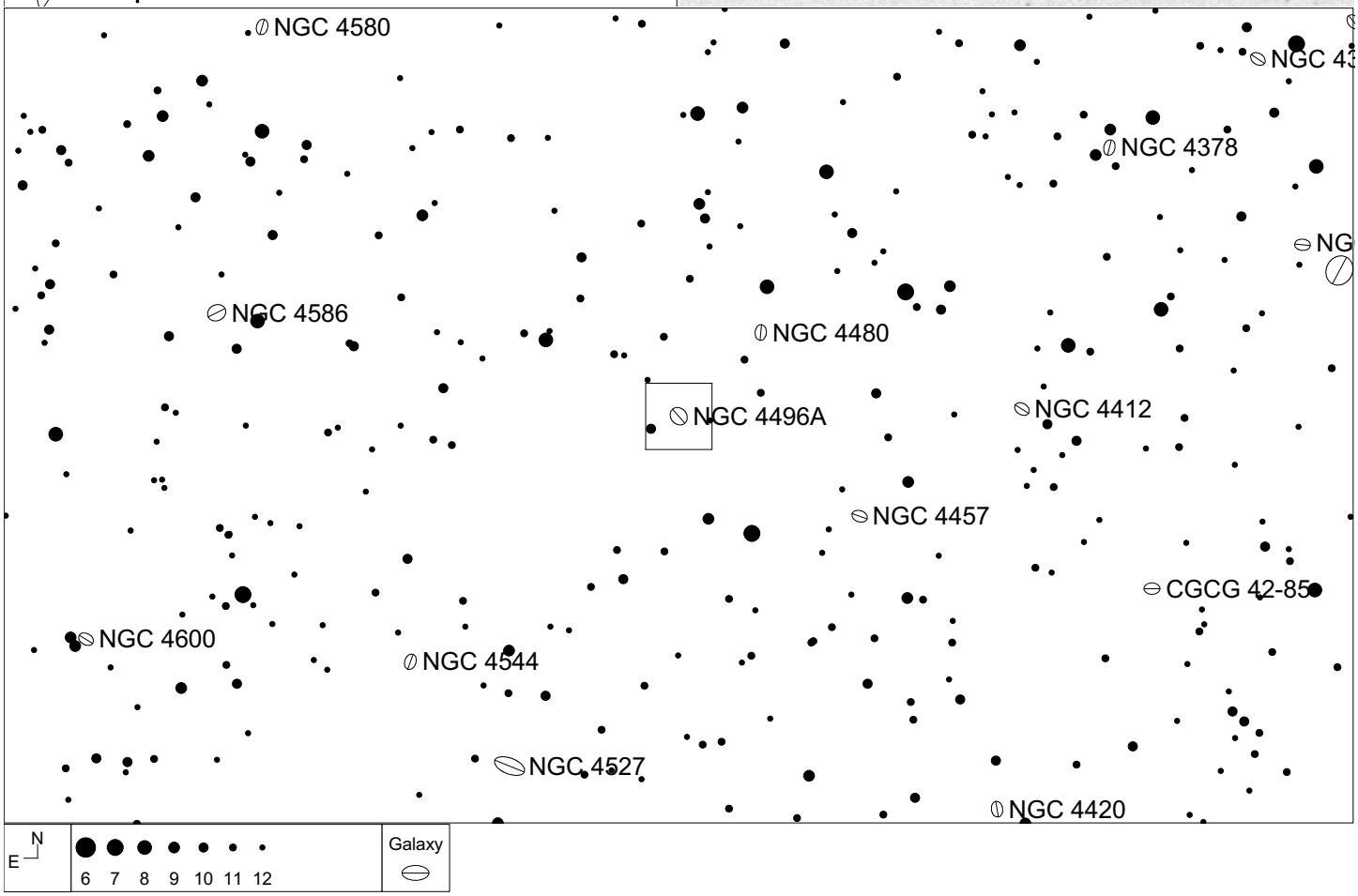


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
105	11 52 44.1	+01 44 26	GPair			N
105a	11 52 43.4	+01 44 27	G	14.7g	8x7	
105c	11 52 44.5	+01 44 29	PofG	19.6g	1x1	
105b	11 52 44.7	+01 44 24	G	17	1x1	

VV 76 (Virgo)

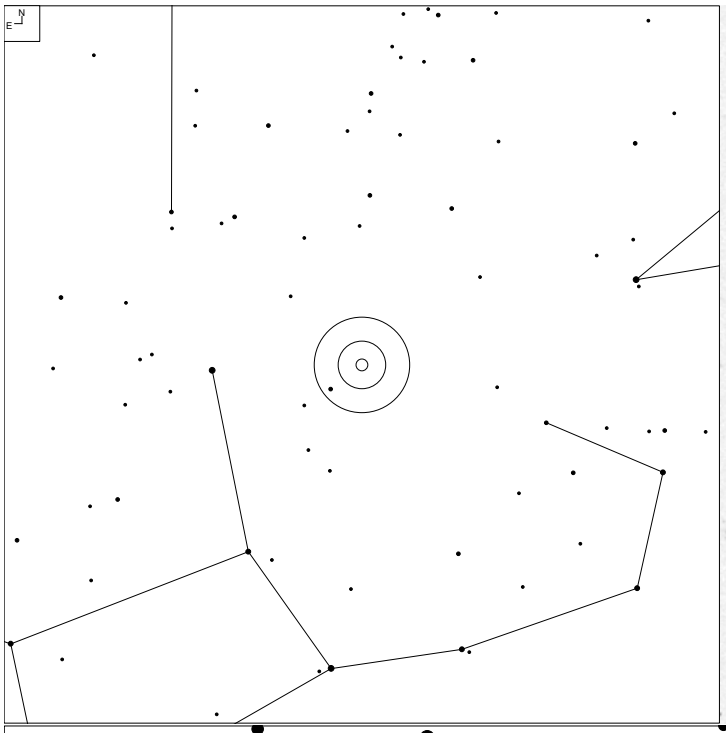


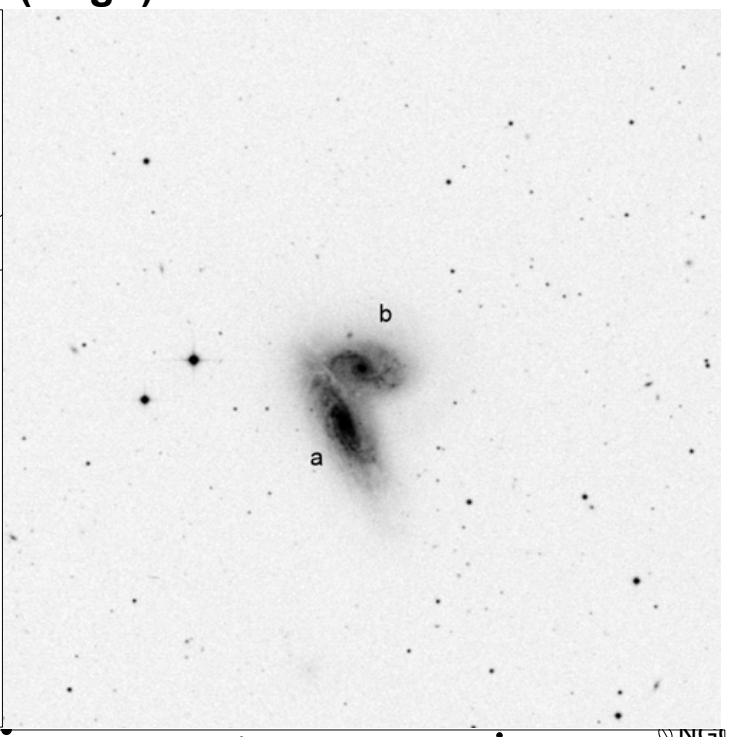


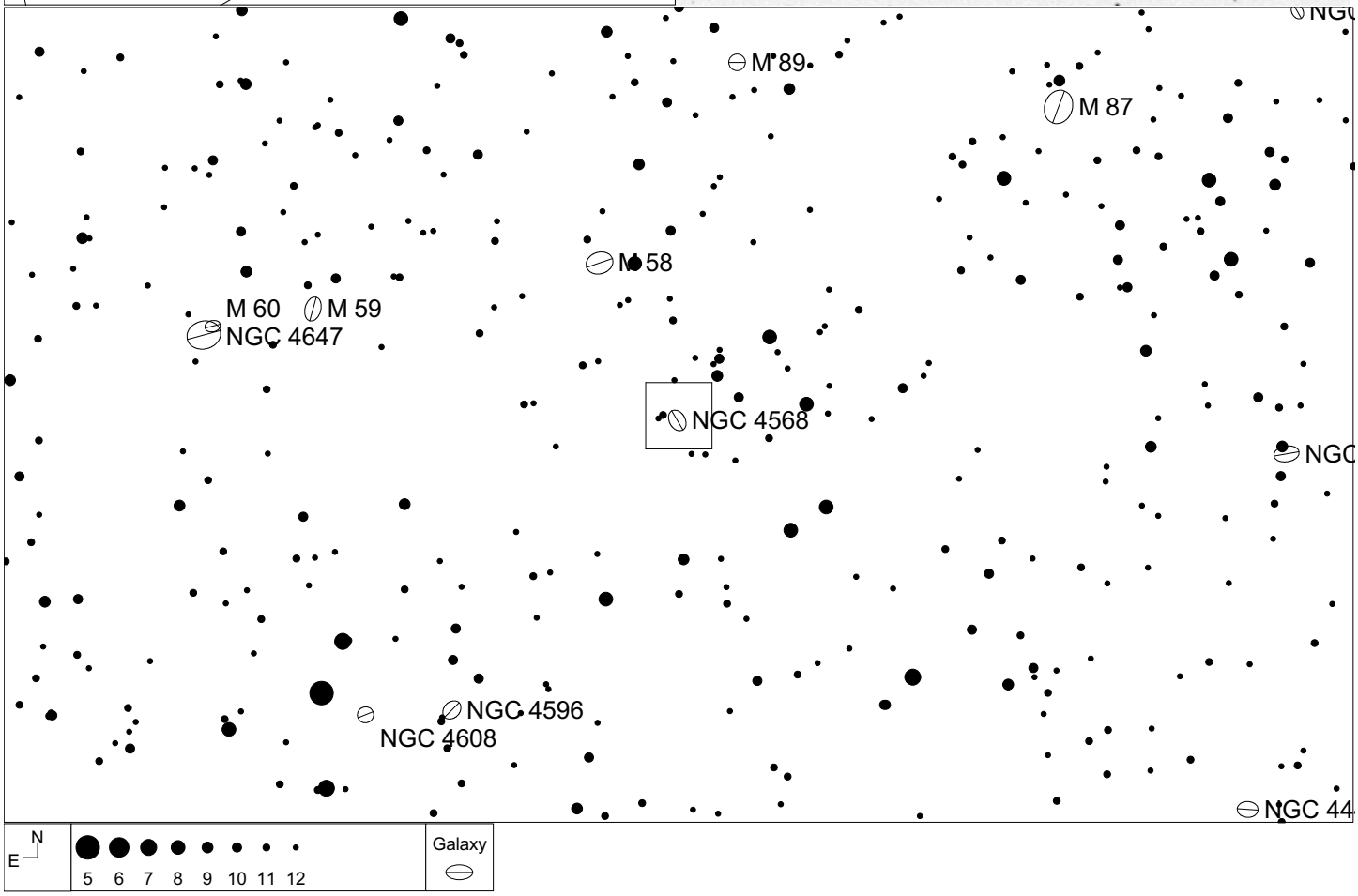


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
76	12 31 40.0	+03 55 58	GPair			PK
76a	12 31 39.2	+03 56 23	G	11.94	40x32	
76b	12 31 40.9	+03 55 34	G	14.0g	13x7	

VV 219 (Virgo)

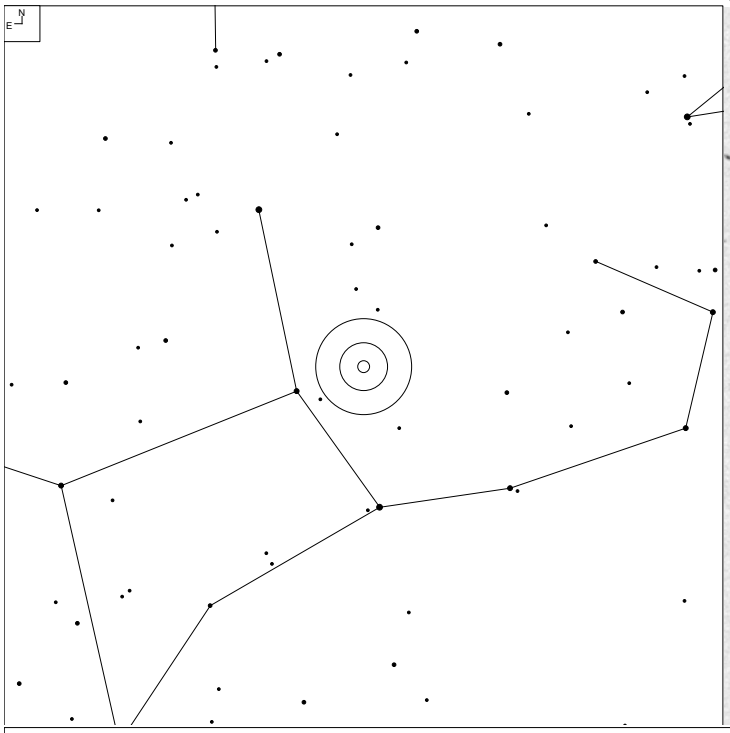


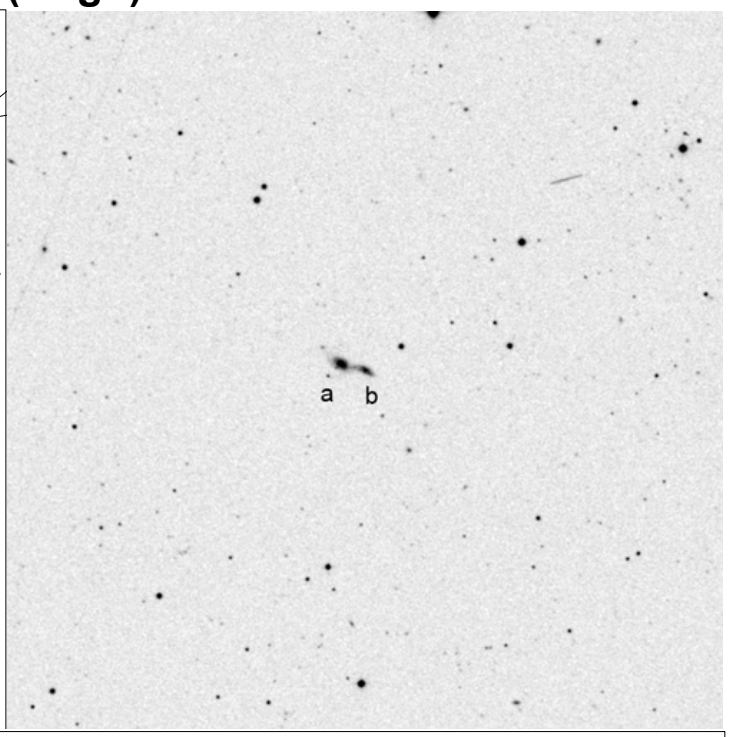


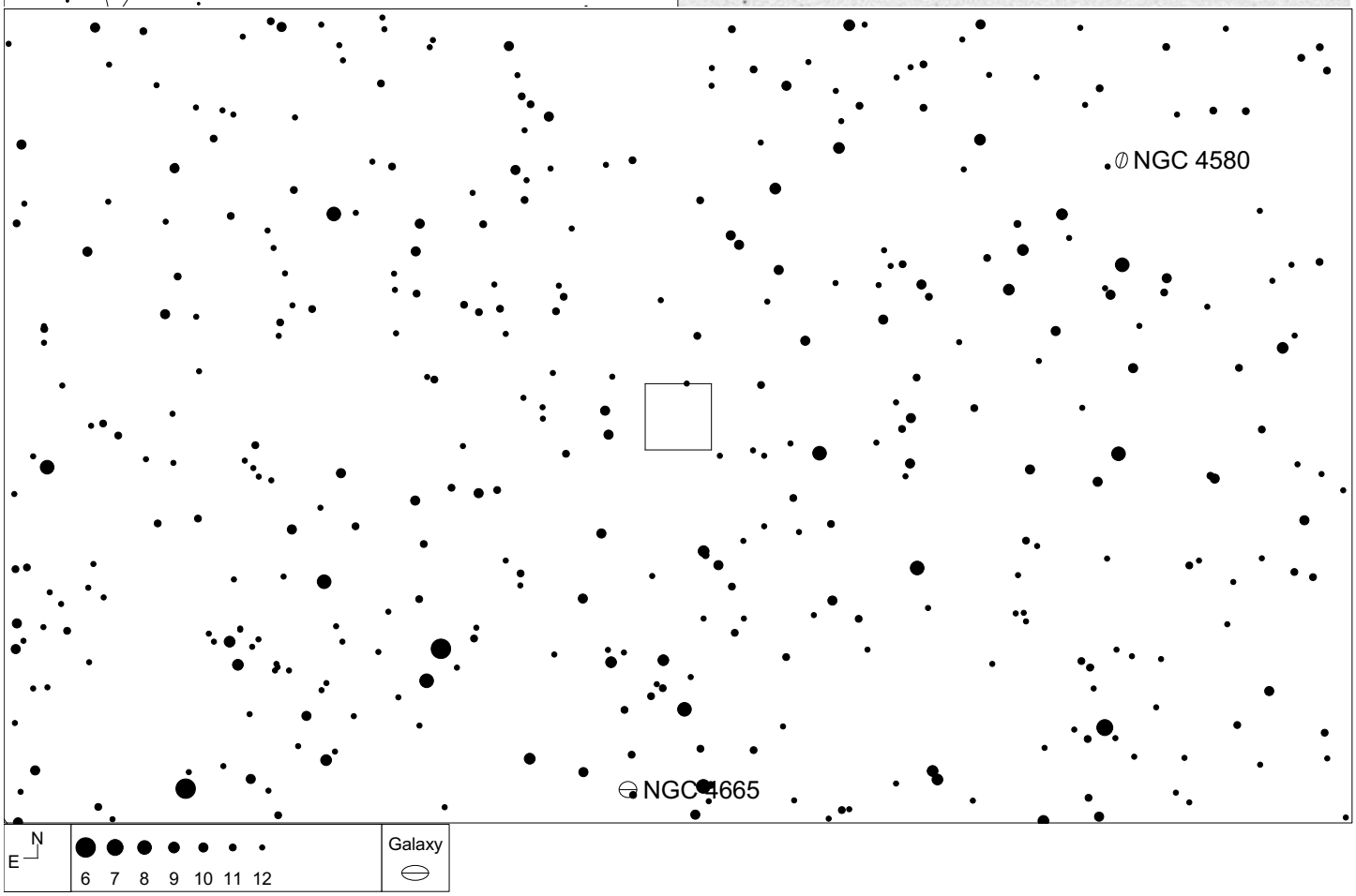


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
219	12 36 33.5	+11 14 54	GPair			PK
219b	12 36 32.7	+11 15 28	G	12.1b	33x20	
219a	12 36 34.2	+11 14 20	G	11.7b	48x20	

VV 64 (Virgo)

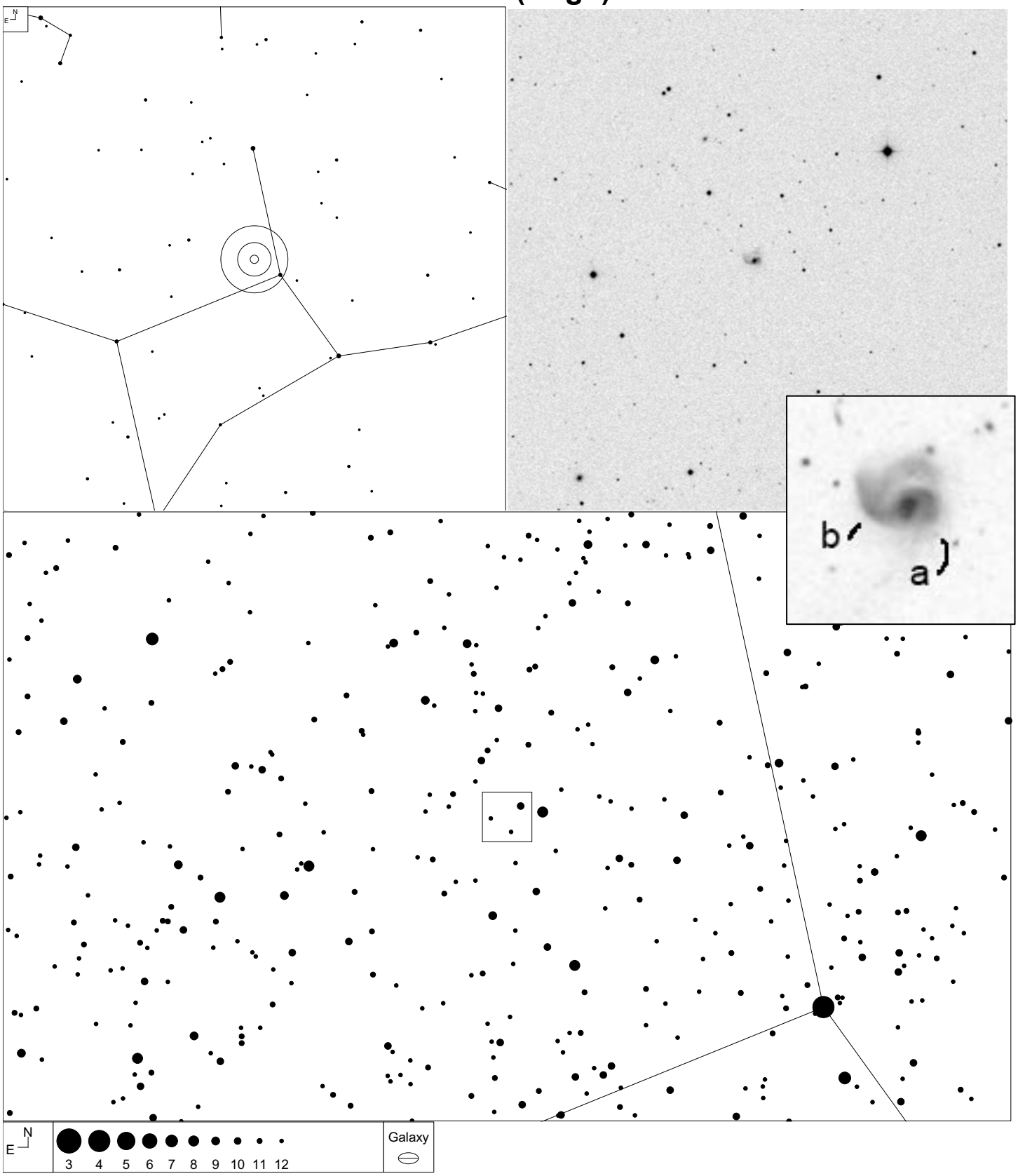






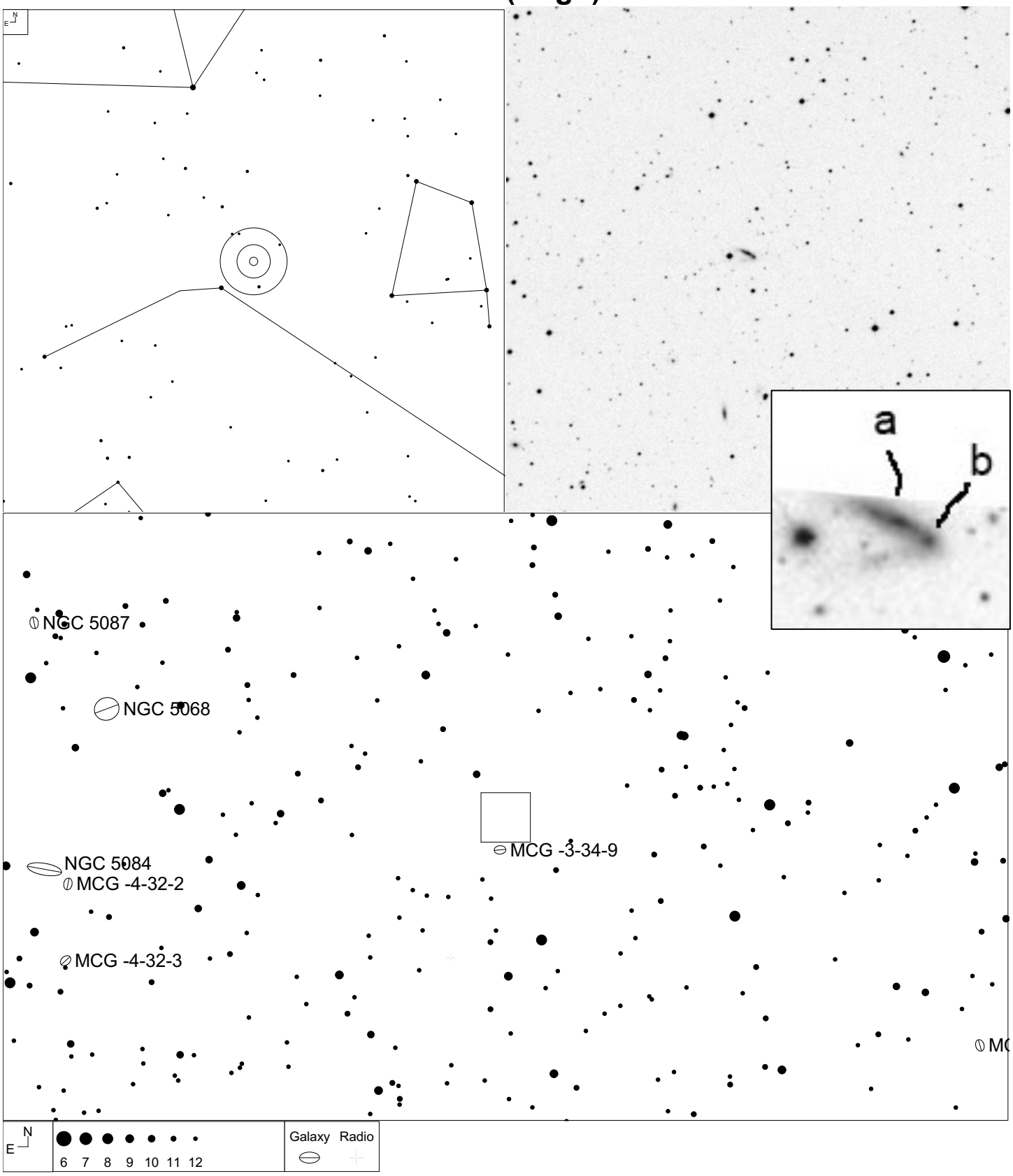
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
64	12 44 20.5	+04 25 35	GPair			PDb
64b	12 44 19.5	+04 25 31	G	15.3p	5x2	
64a	12 44 21.5	+04 25 39	G	15.7	3x2	

VV 283 (Virgo)



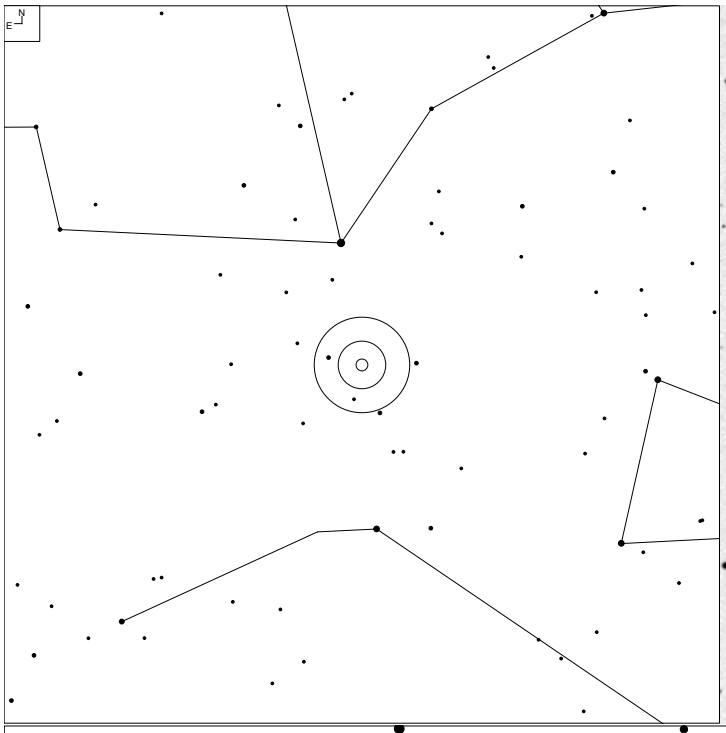
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
283	13 01 50.8	+04 20 00	GPair	15.28	6x6	PK
283a	13 01 50.2	+04 20 02	G	15.5		
283b	13 01 51.2	+04 20 00	G			

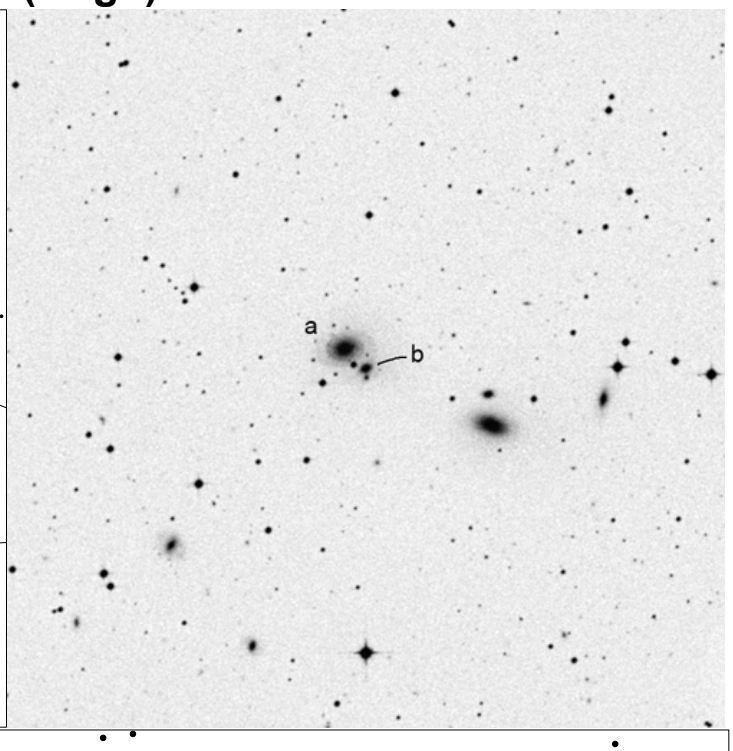
VV 47 (Virgo)

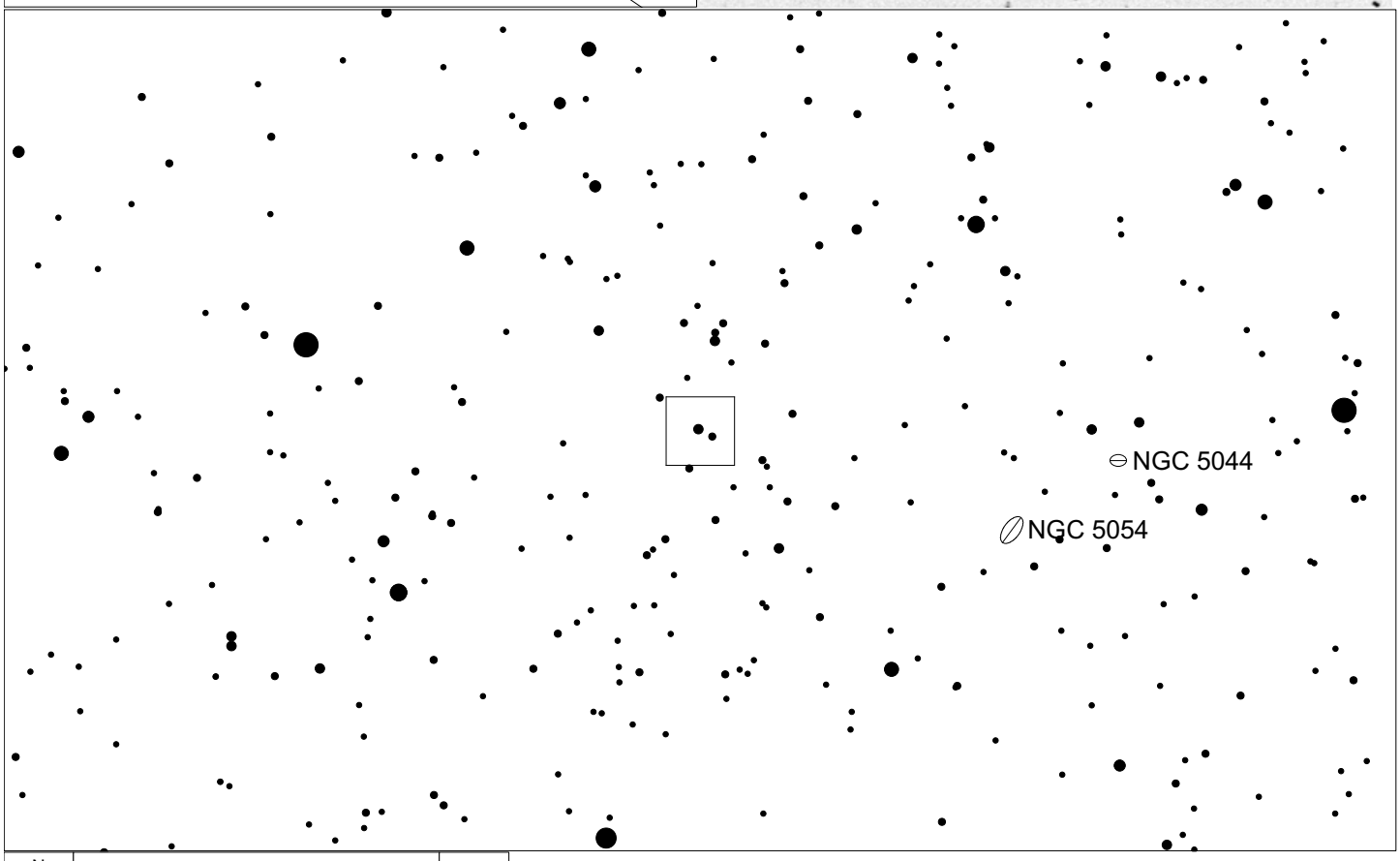


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
47	13 10 28.6	-21 35 13	GPair			PDb
47b	13 10 28.1	-21 35 17	G	17.10	1x1	
47a	13 10 28.8	-21 35 11	G	15.86	4x1	

VV 184 (Virgo)

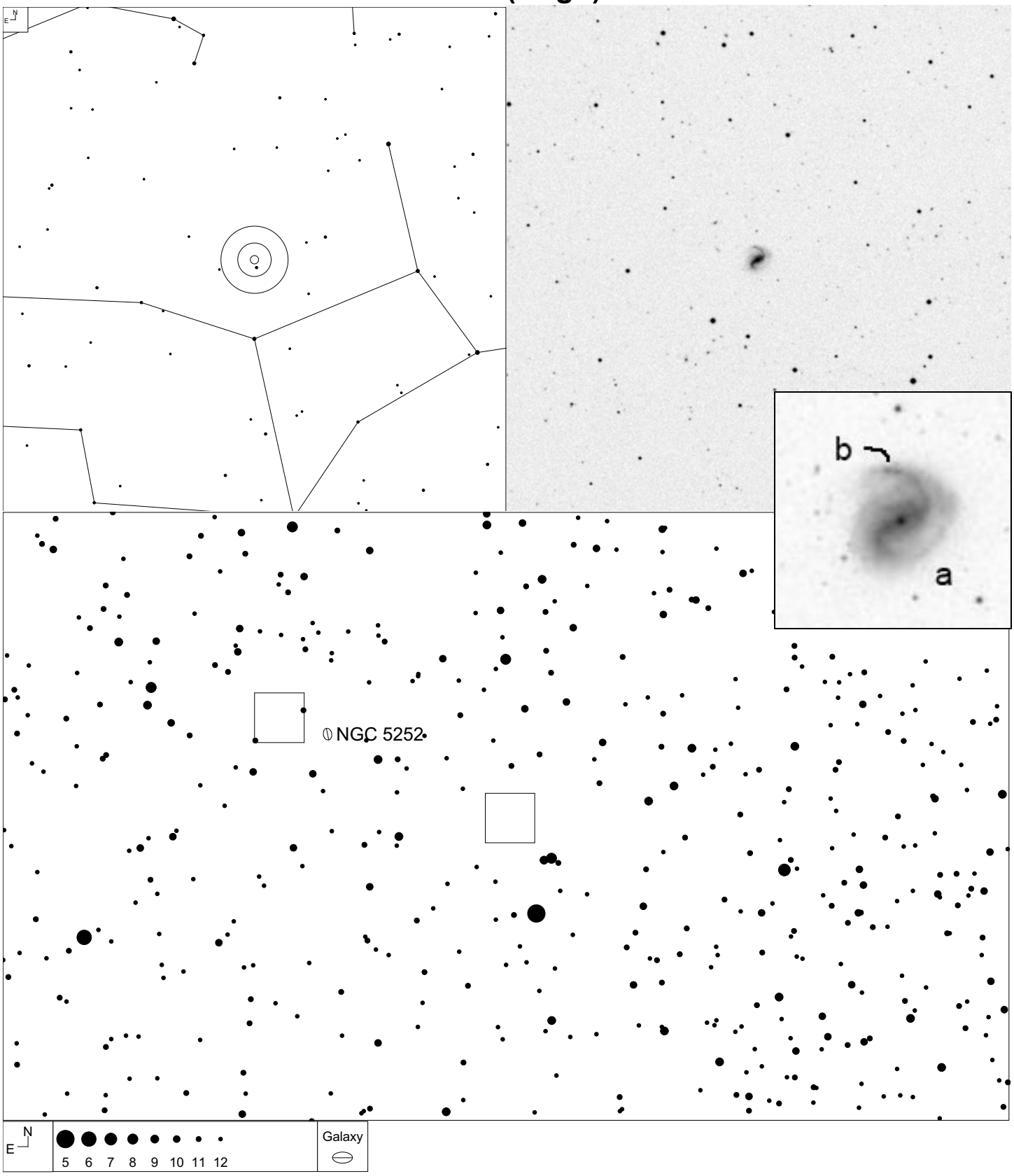






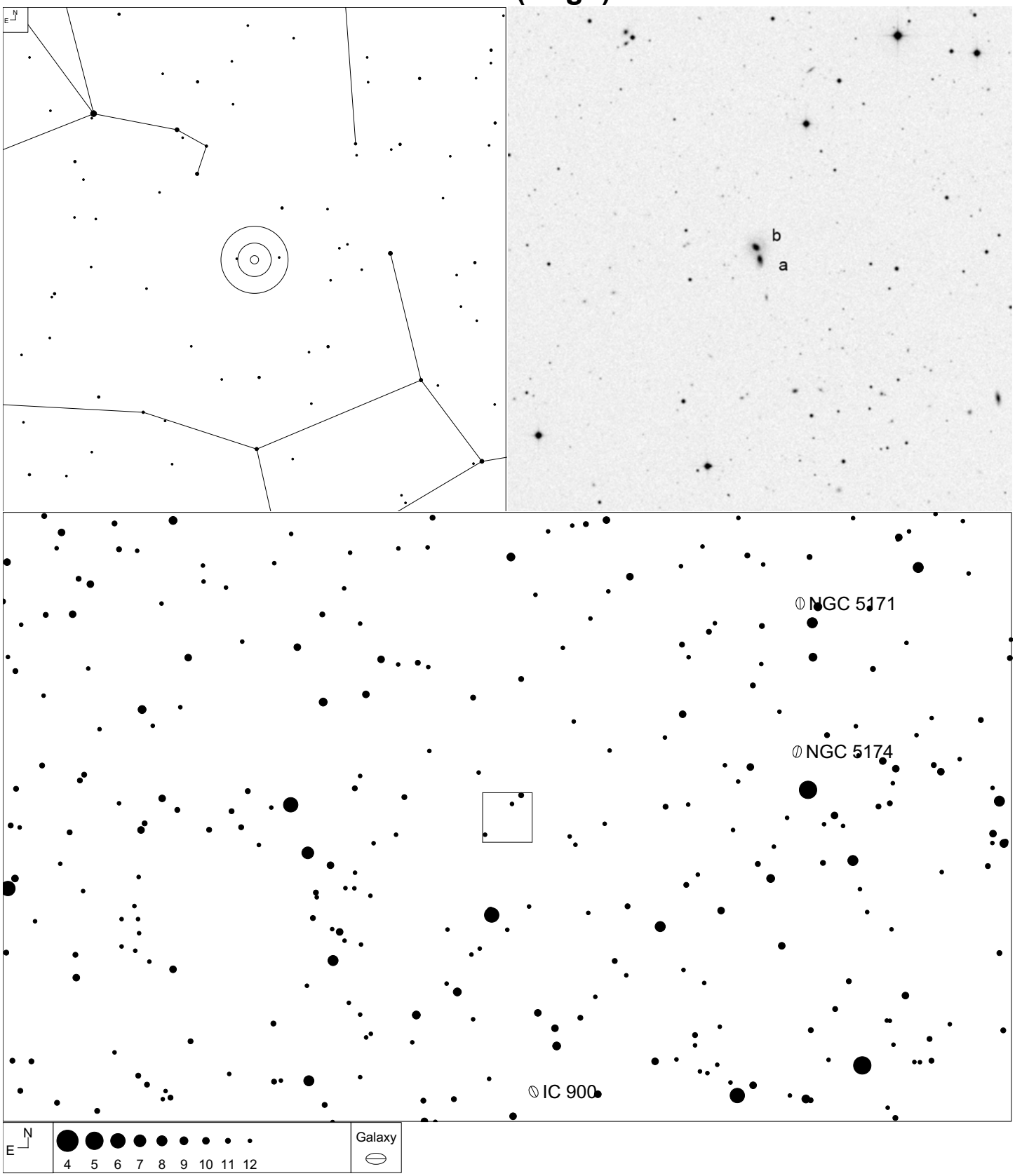
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
184	13 21 37.6	-16 16 57	GPair			PD
184b	13 21 36.7	-16 17 10	G	16	2x2	
184a	13 21 38.5	-16 16 45	G	14.29	3x2	

VV 18 (Virgo)



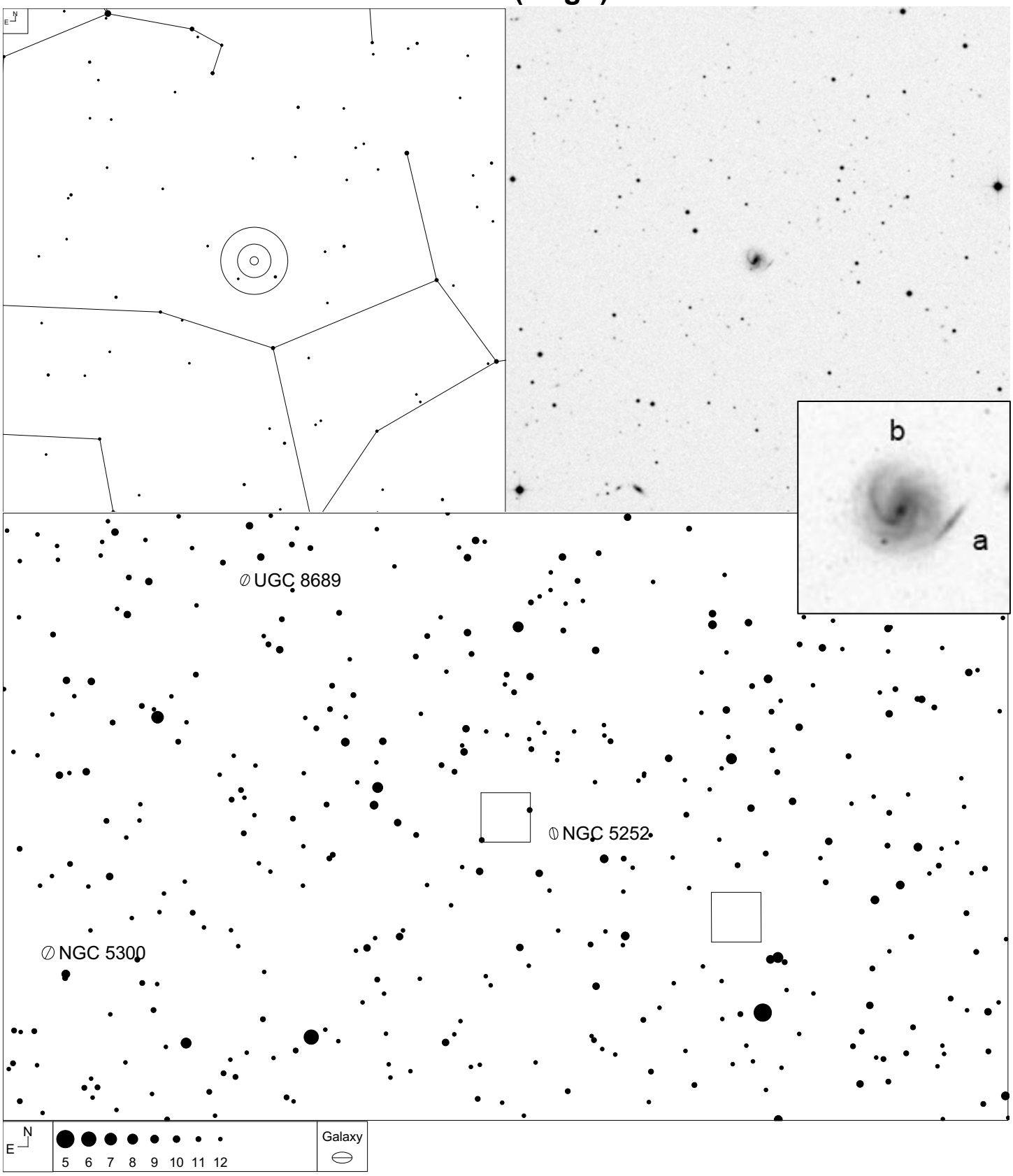
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
18	13 34 39.4	+04 08 00	GPair			M
18a	13 34 39.2	+04 07 48	G	14.5g	9x7	
18b	13 34 39.6	+04 08 11	G	17.9g	5x1	

VV 211 (Virgo)



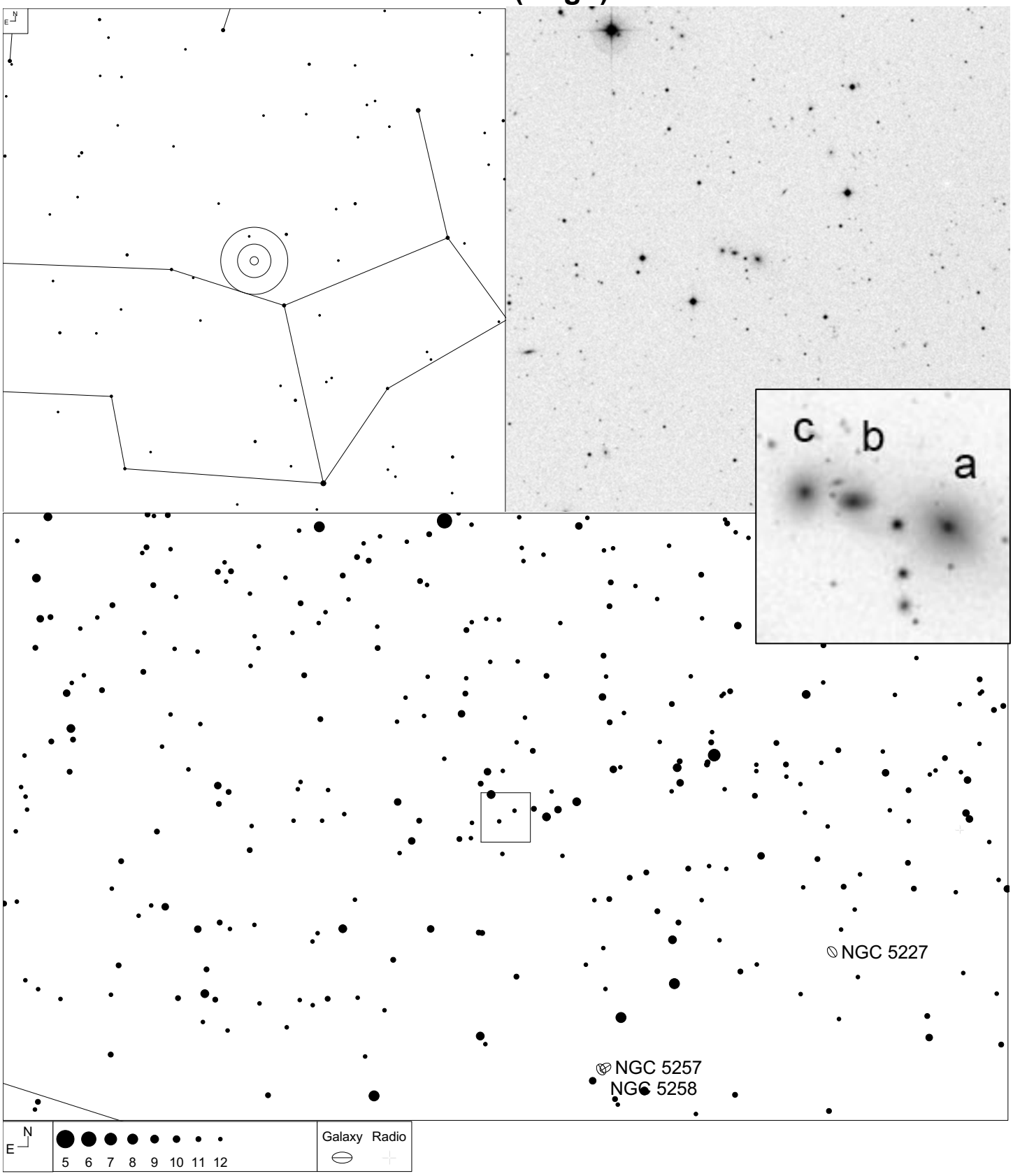
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
211	13 35 14.8	+10 41 22	GPair			PK
211a	13 35 14.4	+10 41 10	G	15.4g	6x3	
211b	13 35 14.8	+10 41 31	G	15.03	5x5	

VV 108 (Virgo)



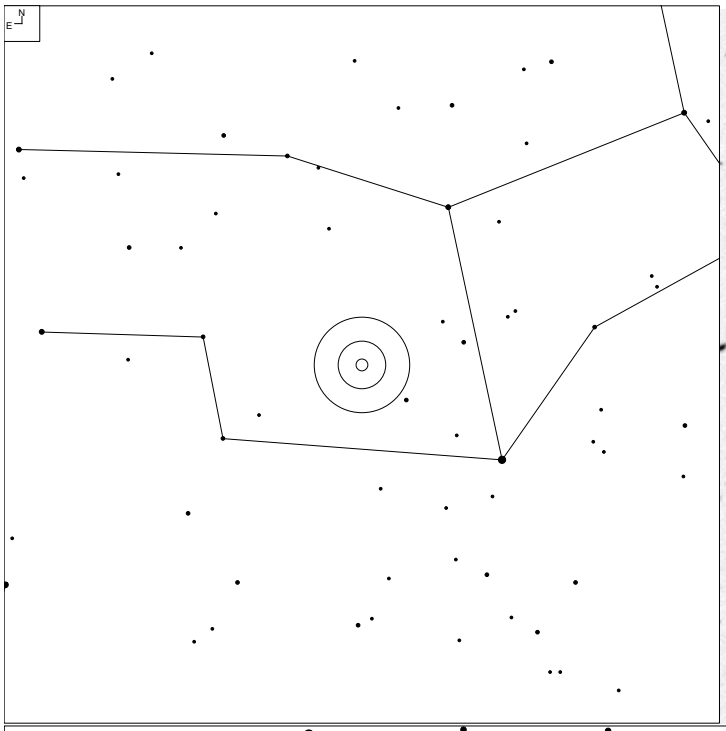
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
108	13 39 12.4	+04 37 20	GPair			PC
108a	13 39 11.5	+04 37 17	G	18.6g	4x1	
108b	13 39 13.2	+04 37 24	G	14.6g	9x7	

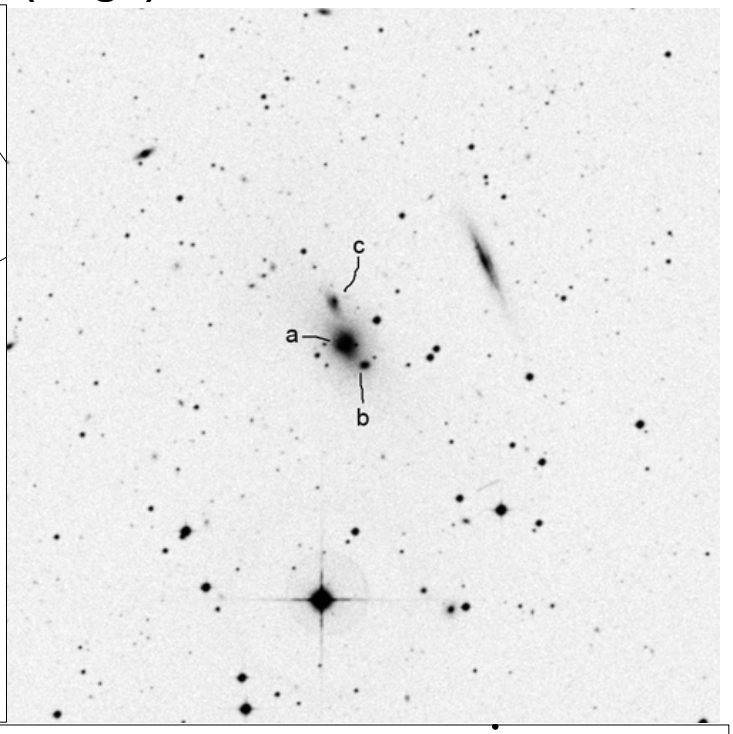
VV 170 (Virgo)

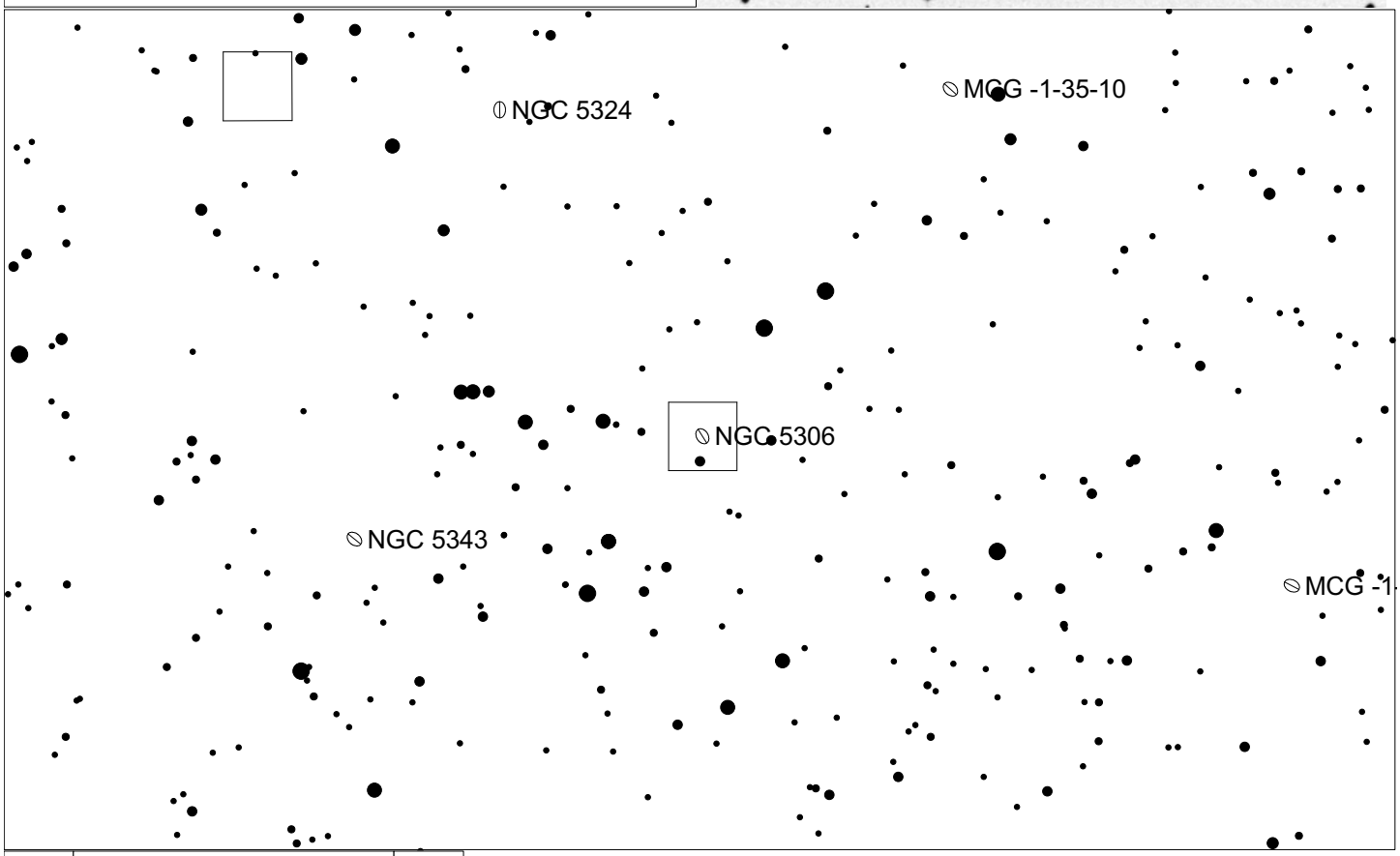


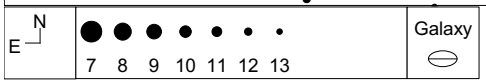
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
170	13 41 53.3	+02 04 41	GTrpl			Ch
170a	13 41 51.2	+02 04 34	G	15.5	6x5	
170b	13 41 54.0	+02 04 45	G	15.5	4x3	
170c	13 41 55.4	+02 04 49	G	16.5	2x2	

VV 135 (Virgo)



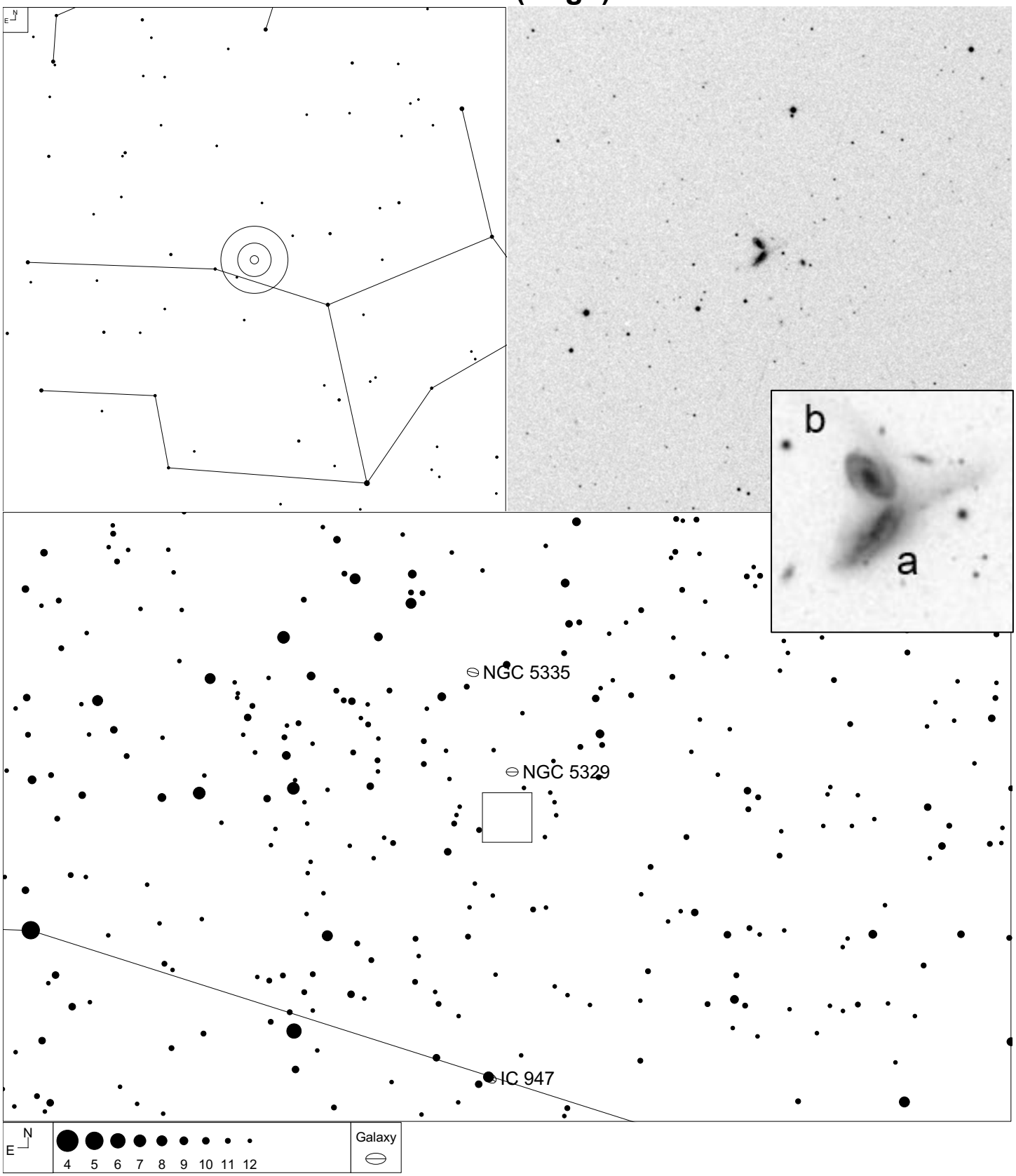






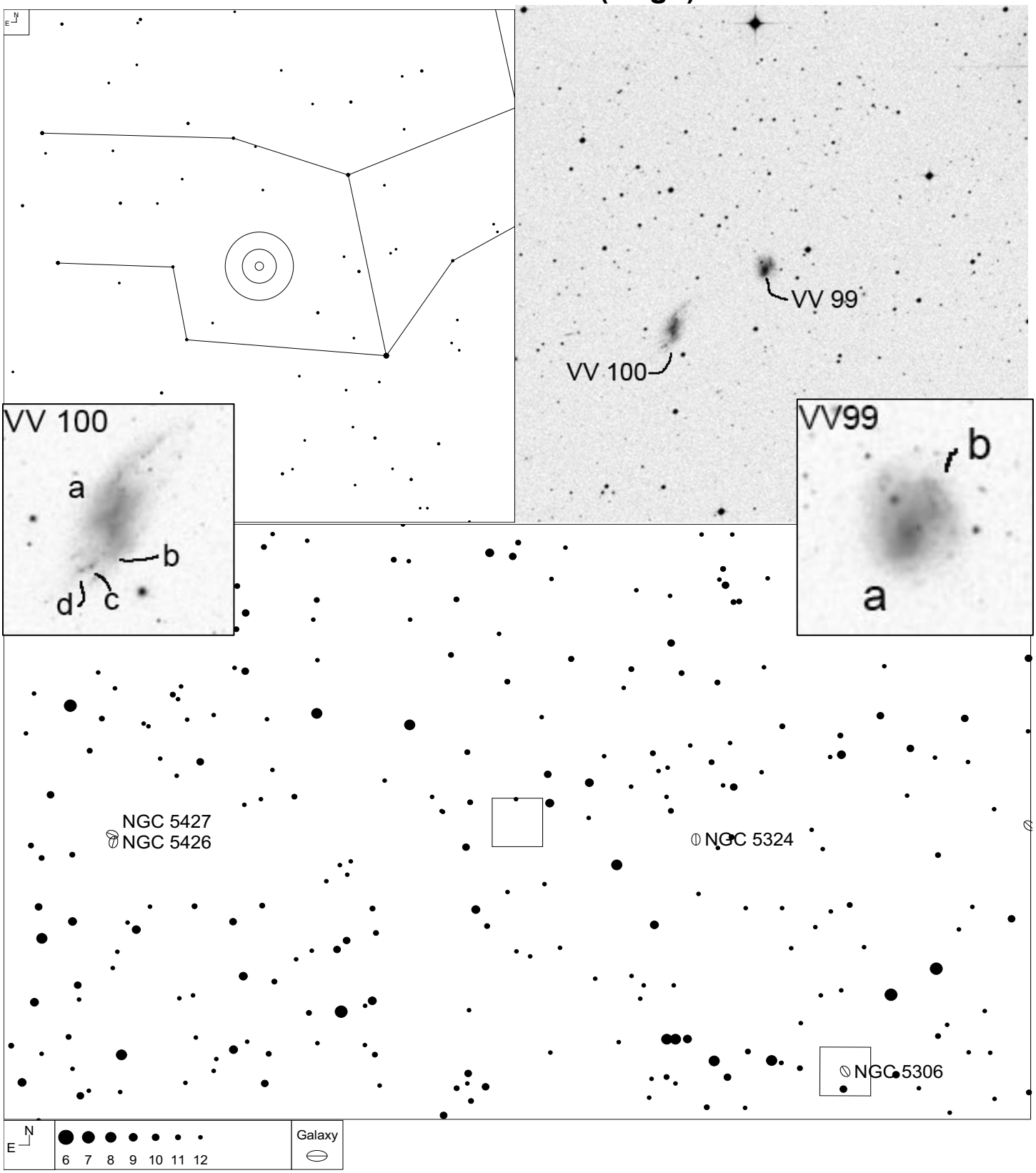
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
135	13 49 11.1	-07 13 15	GTrpl			NNN
135b	13 49 09.8	-07 13 54	G	15.77	5x3	
135a	13 49 11.4	-07 13 28	G	13.43	20x18	
135c	13 49 12.3	-07 12 33	G	15.69	7x3	

VV 253 (Virgo)



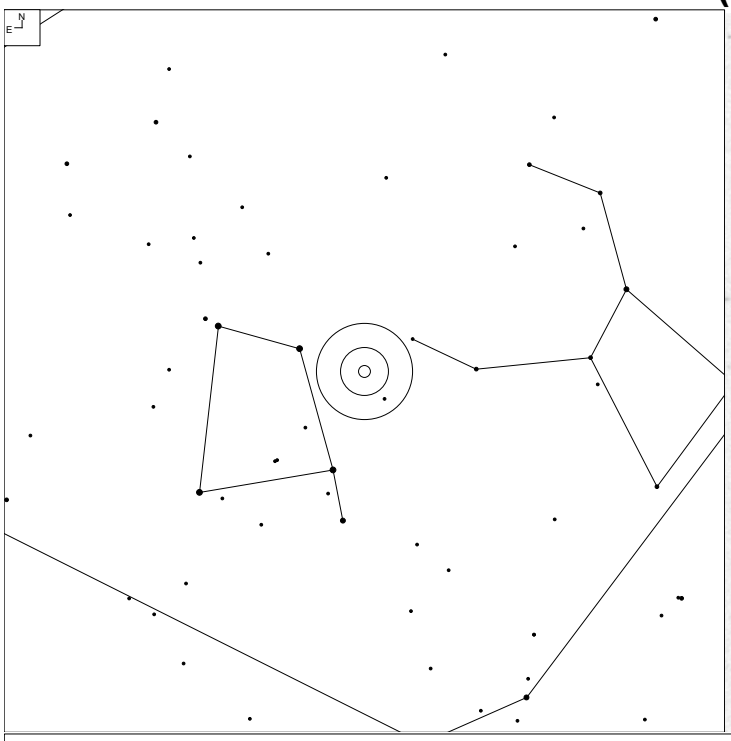
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
253	13 52 16.3	+02 06 11	GPair	14.3		PKt
253a	13 52 16.1	+02 06 03	G	15.0	6x3	
253b	13 52 16.4	+02 06 31	G	16.2	6x4	

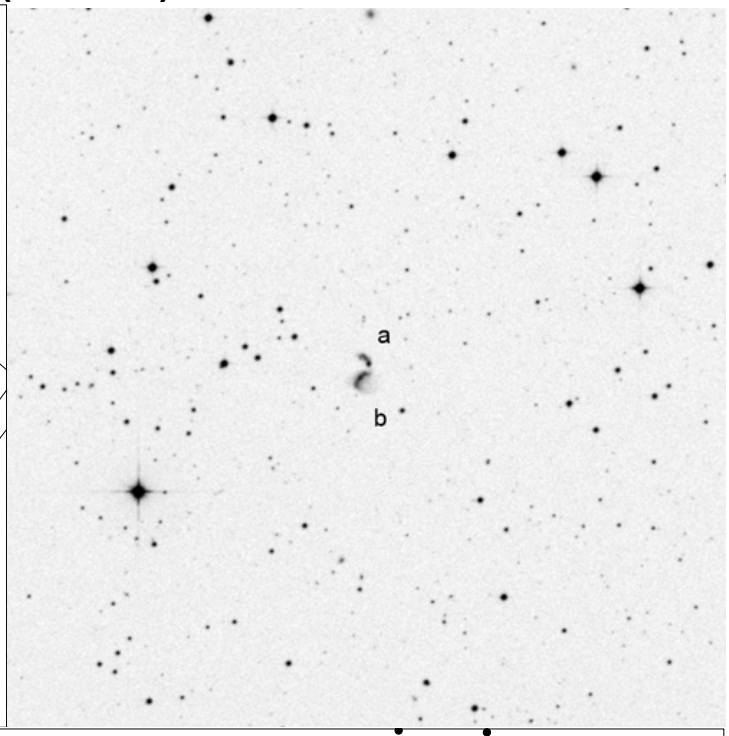
VV 99 and VV 100 (Virgo)

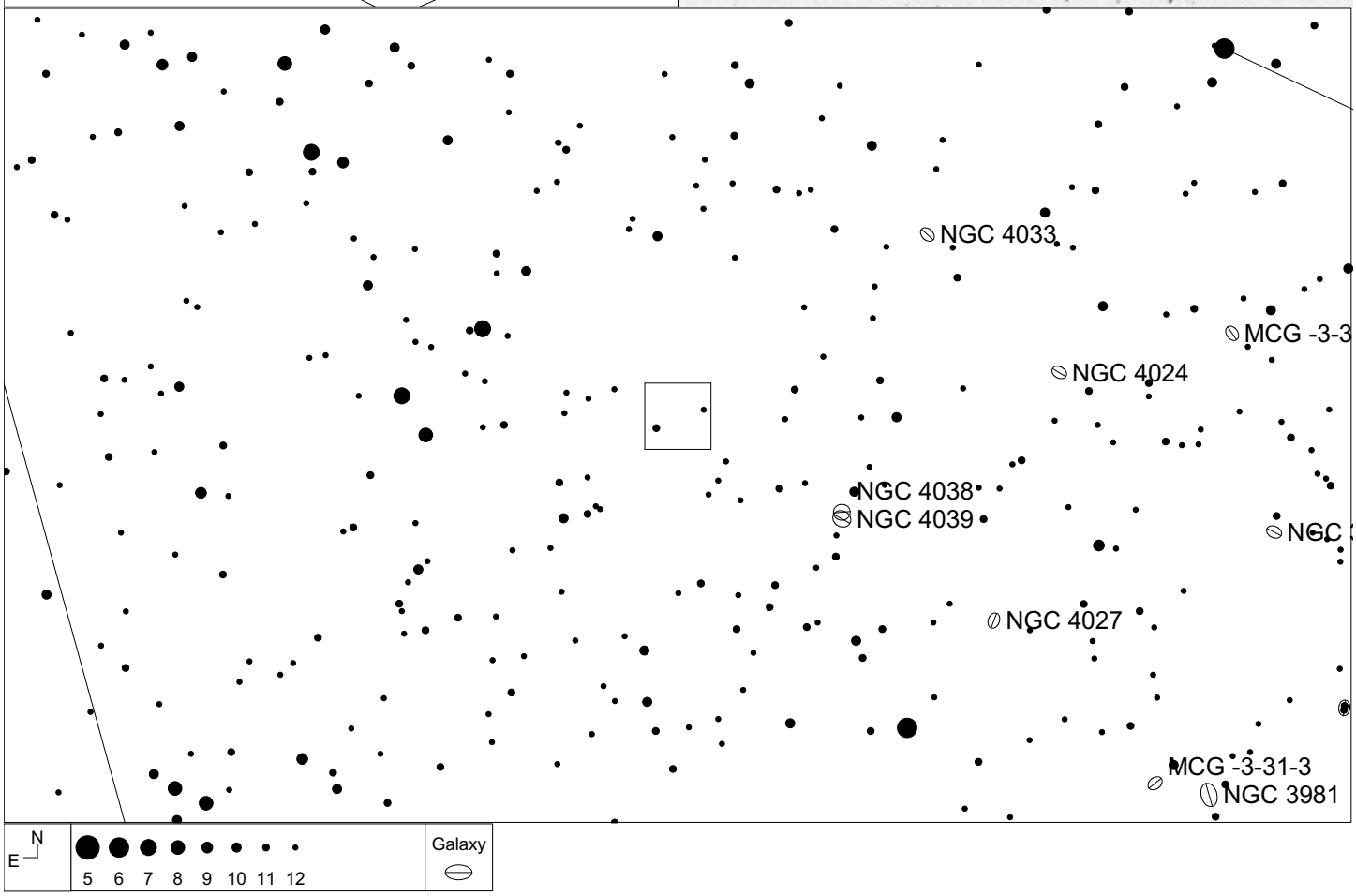


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
99	13 55 34.2	-05 58 22	G	14.53	6x5	PC
99b	13 55 33.9	-05 58 18	G	15.5		
99a	13 55 34.5	-05 58 26	G			
100	13 55 45.4	-06 00 10	G	13.93	16x8	PC
100b	13 55 45.3	-06 00 28	PofG			
100a	13 55 45.5	-06 00 18	PofG			
100c	13 55 46.4	-06 00 40	PofG			
100d	13 55 46.7	-06 00 42	PofG			

VV 269 (Corvus)

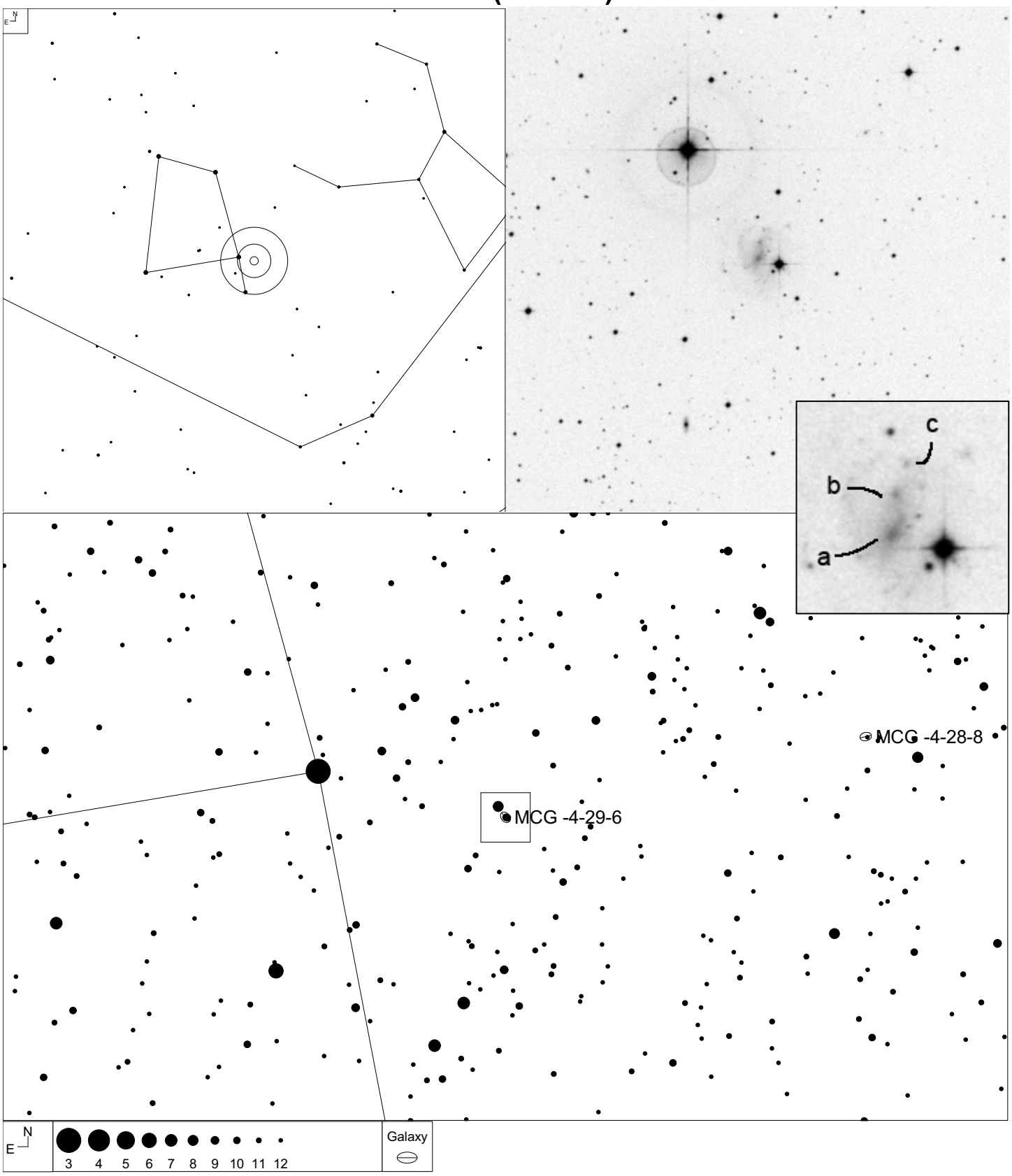






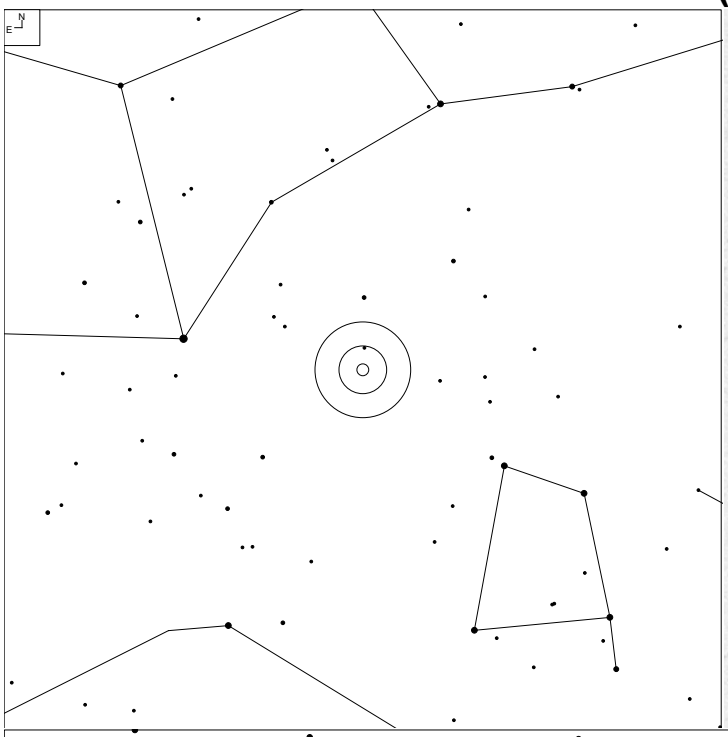
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
269	12 04 26.3	-18 30 59	GPair			PK
269a	12 04 26.1	-18 30 48	G	15.92	4x2	
269b	12 04 26.6	-18 31 11	G	16.32	4x2	

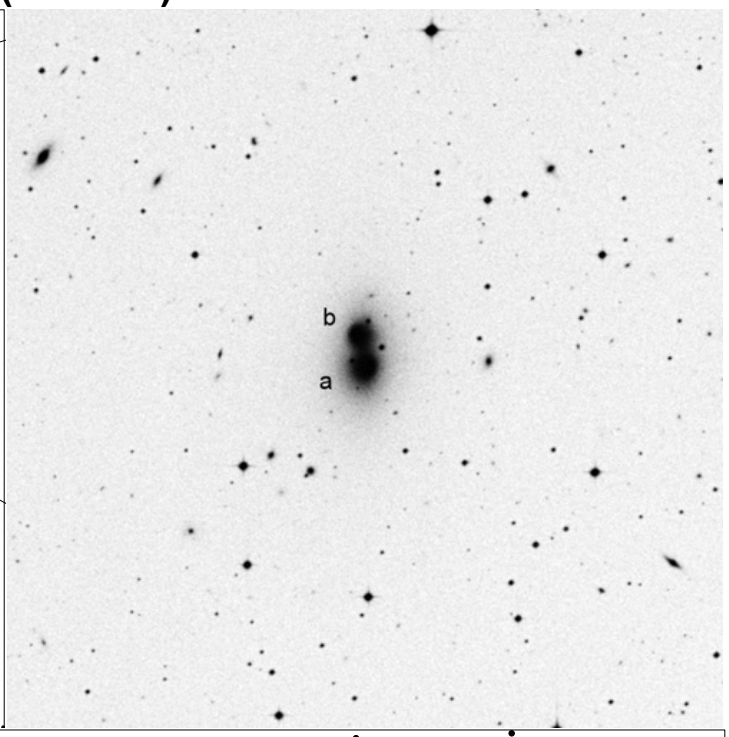
VV 49 (Corvus)

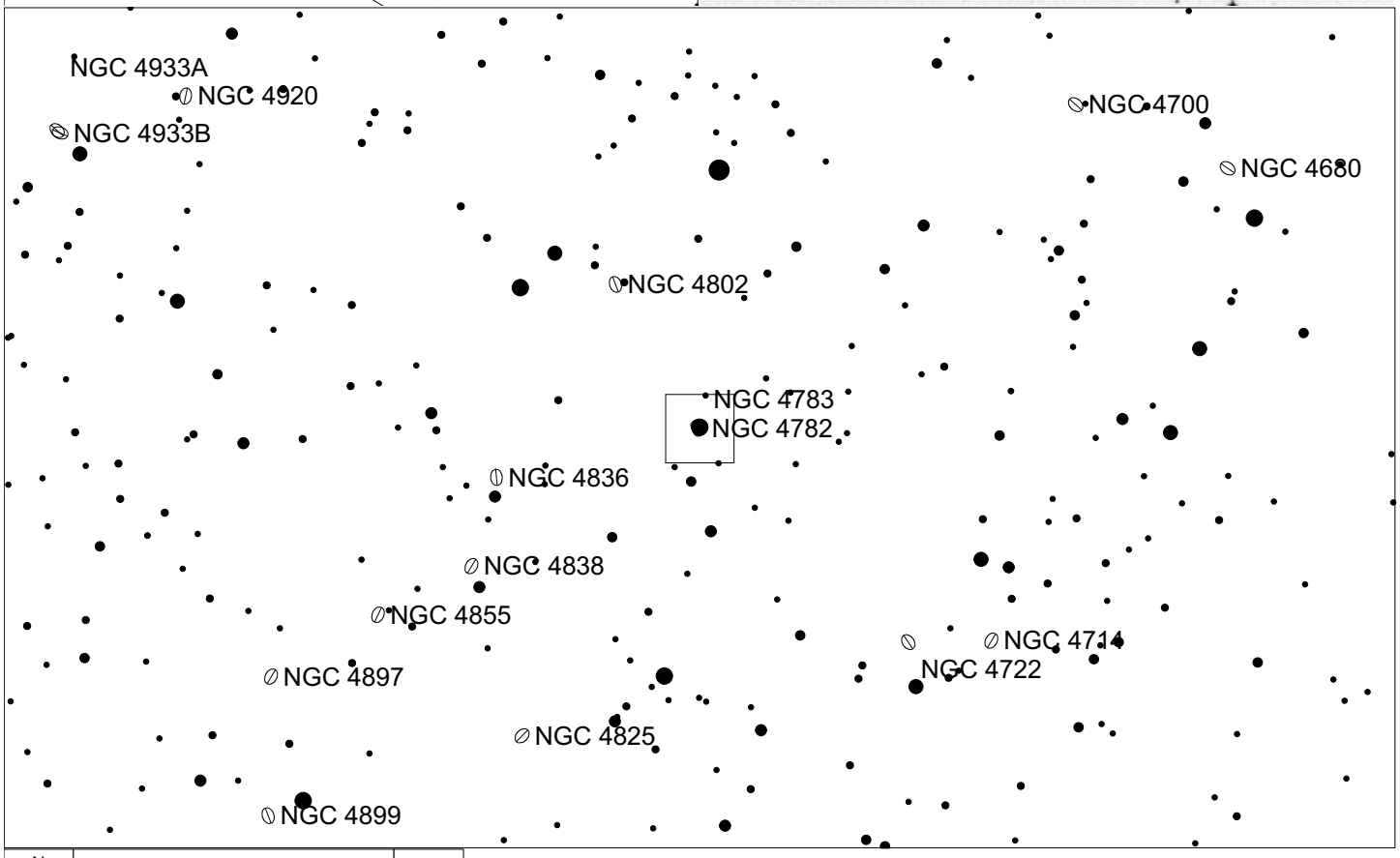


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
49	12 06 07.2	-22 50 58	G	13.03	29x21	N
49c	12 06 06.5	-22 50 07	PofG			
49b	12 06 07.0	-22 50 29	PofG			
49a	12 06 07.2	-22 50 58	PofG			

VV 201 (Corvus)

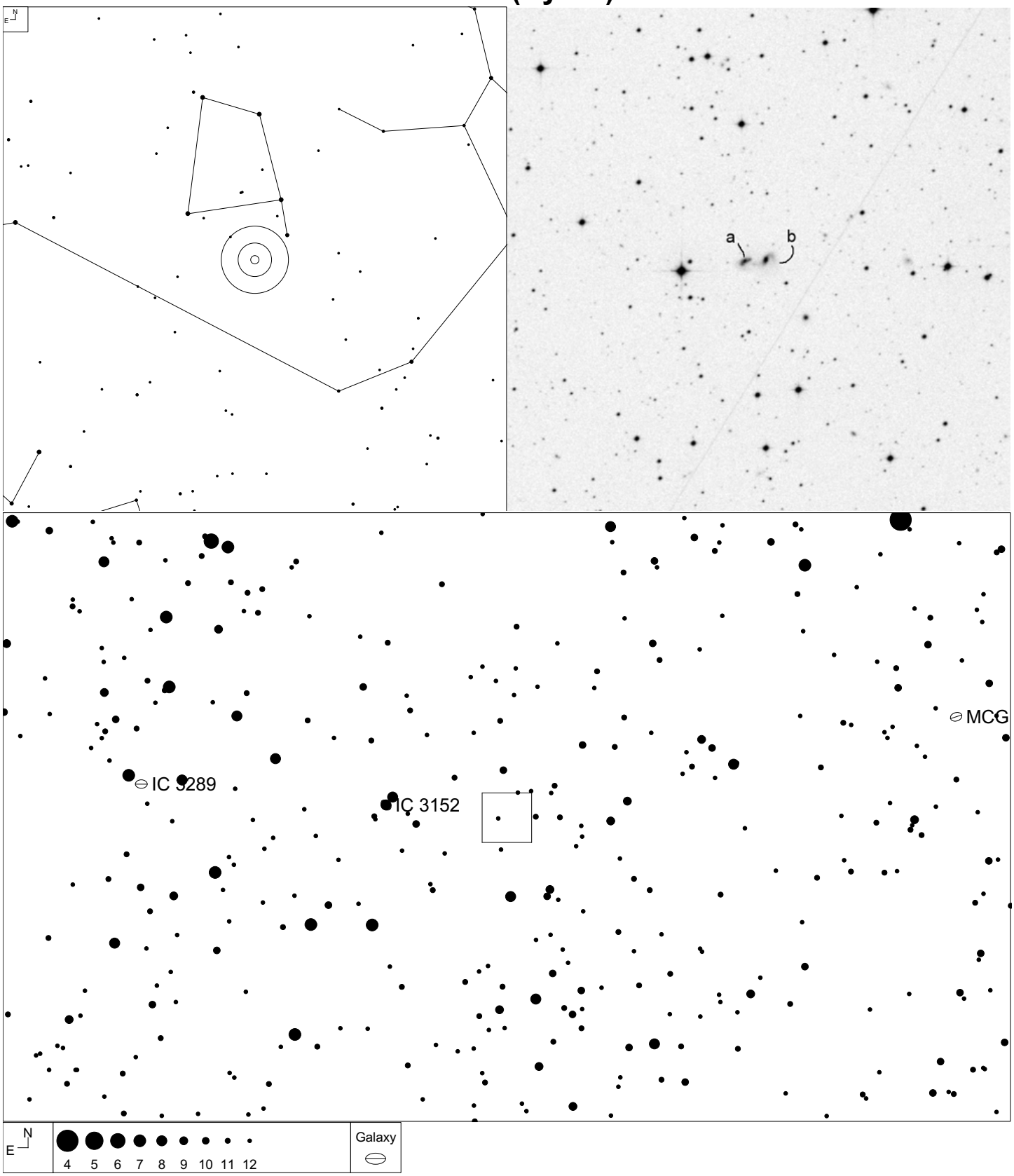






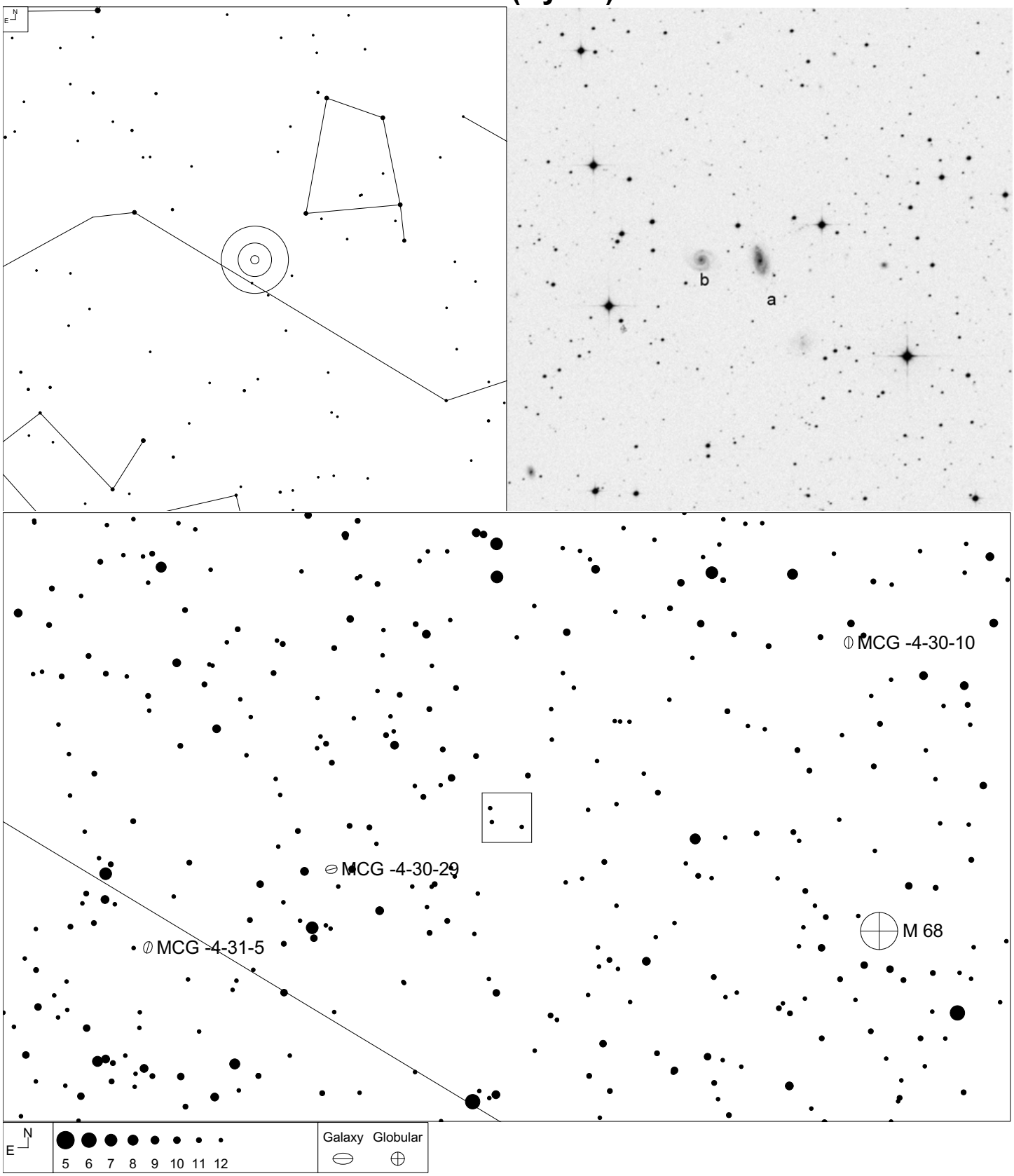
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
201	12 54 36.2	-12 33 47	GPair			PK
201a	12 54 35.7	-12 34 07	G	12.7p	17x16	
201b	12 54 36.6	-12 33 28	G	12.5p	17x17	

VV 333 (Hydra)



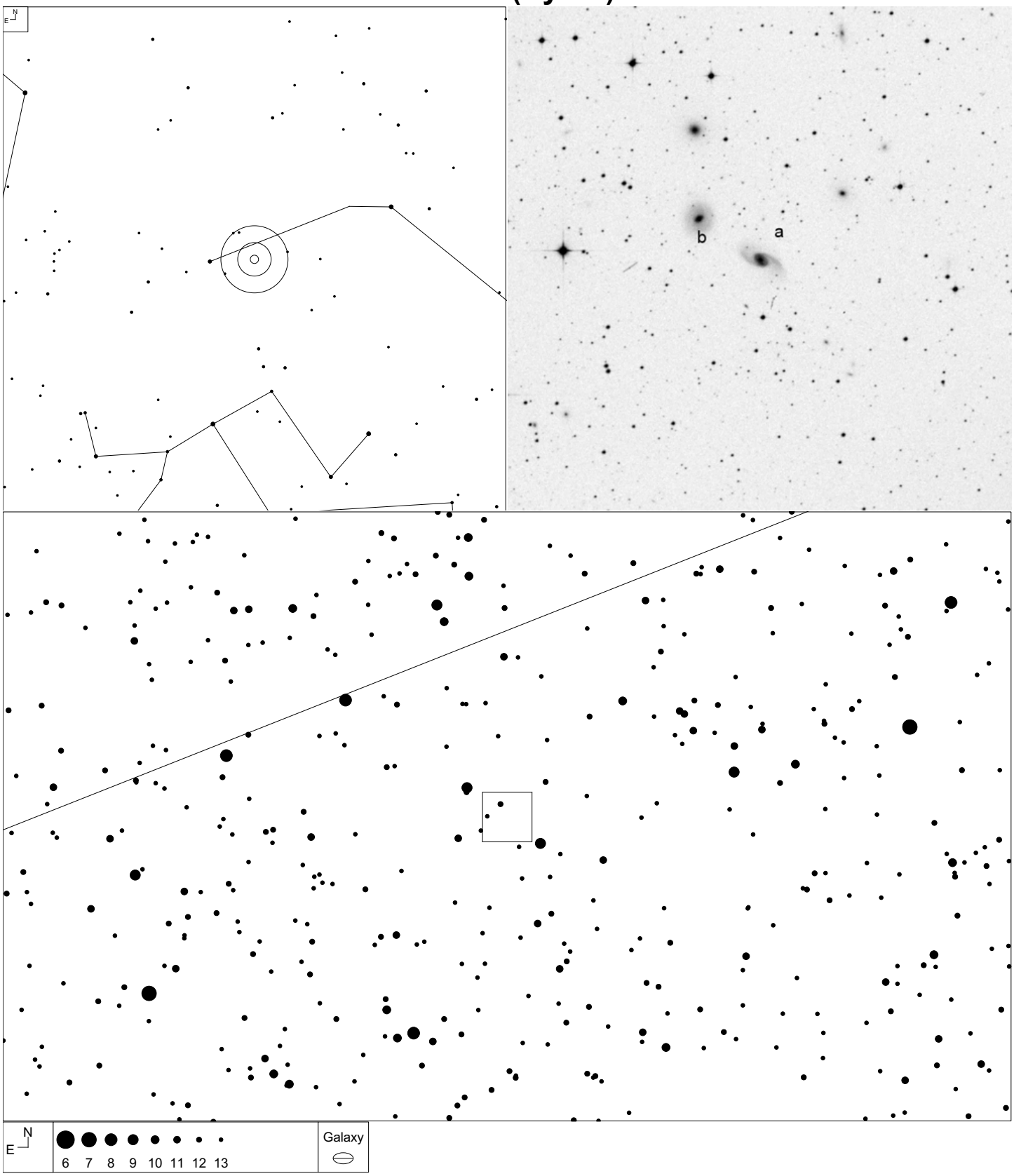
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
333	12 16 58.0	-26 12 37	GPair			PD
333b	12 16 57.1	-26 12 34	G	16	8x7	
333a	12 16 59.9	-26 12 36	G	15.49	8x7	

VV 290 (Hydra)



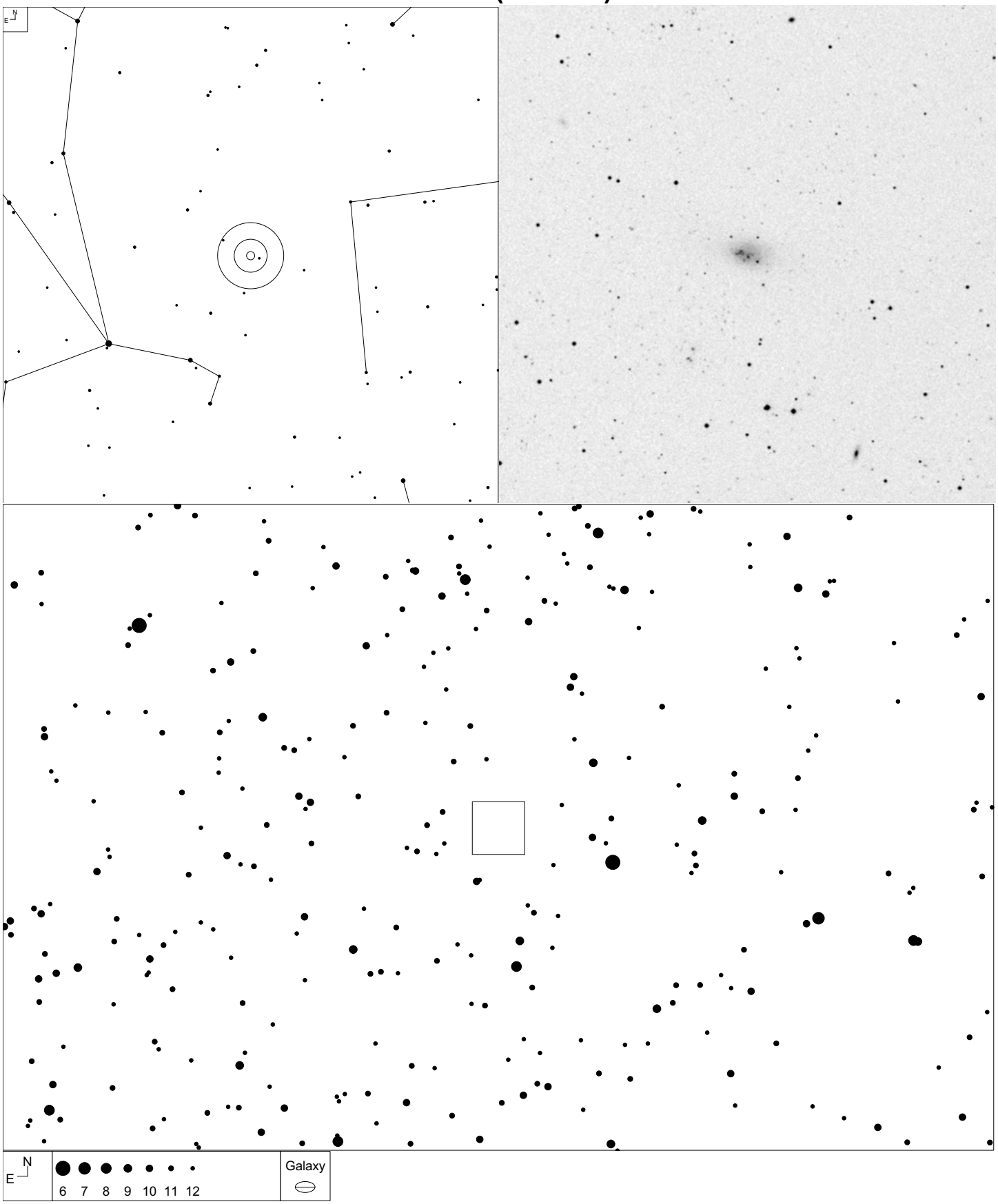
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
290	12 47 44.1	-26 11 58	GPair			PKb
290a	12 47 40.3	-26 12 00	G	14.81	12x5	
290b	12 47 48.1	-26 11 59	G	15.51	12x10	

VV 351 (Hydra)



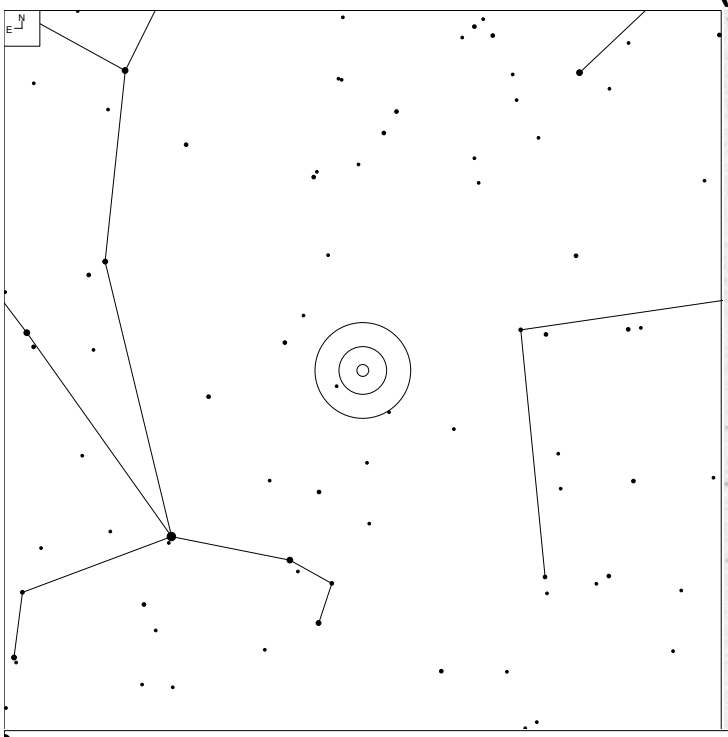
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
351	13 54 30.5	-26 33 58	GPair			PD
351a	13 54 26.4	-26 34 35	G	14.43	14x7	
351b	13 54 34.7	-26 33 22	G	14.82	12x10	

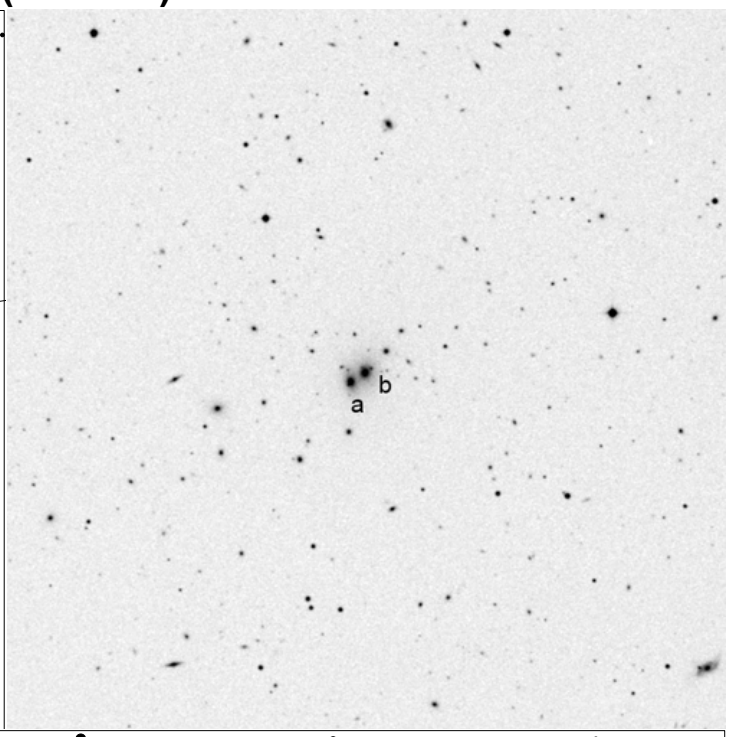
VV 133 (Boötes)

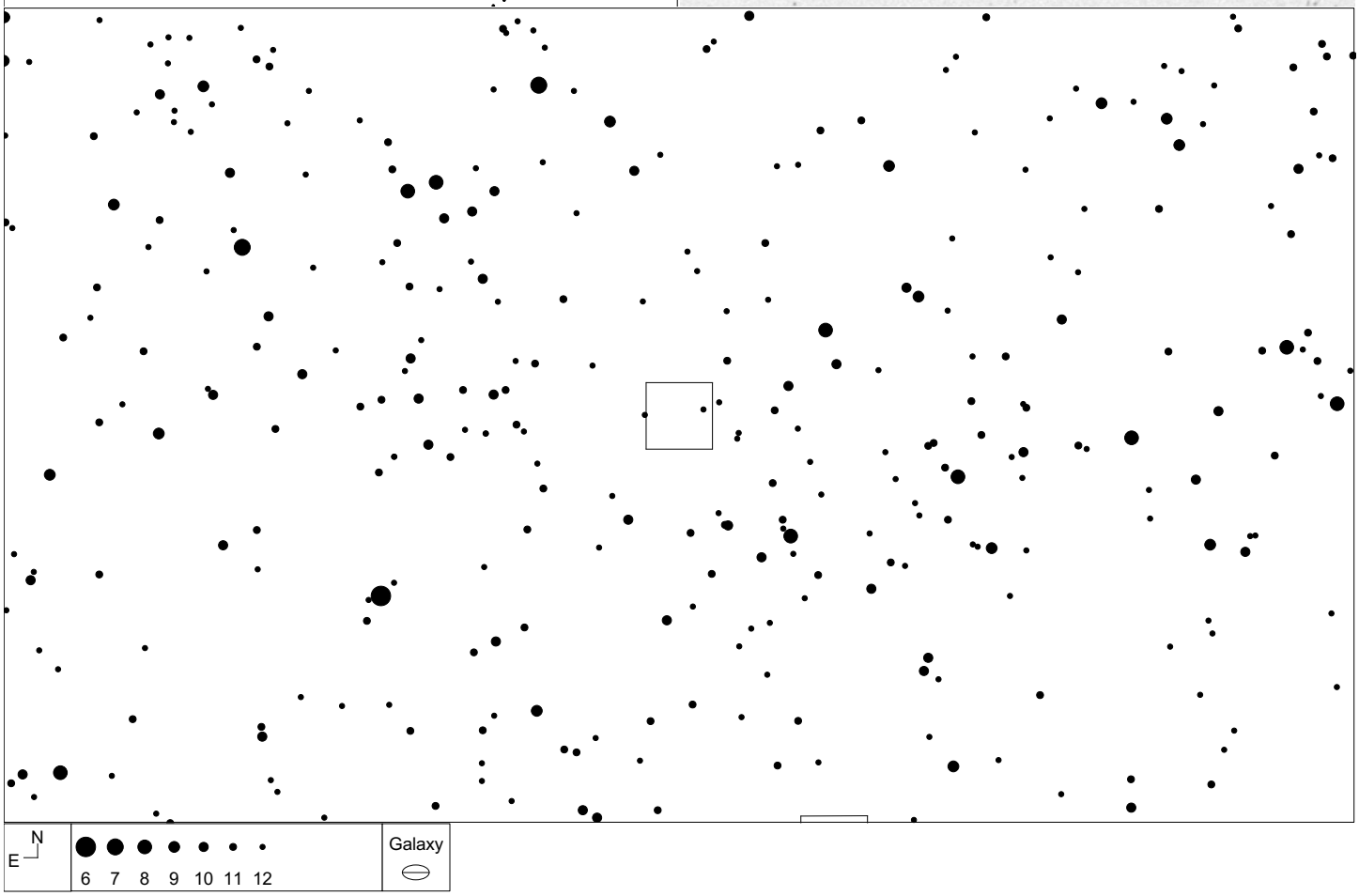


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
133	13 39 19.4	+24 46 32	G	14.47	12x8	N

VV 195 (Boötes)

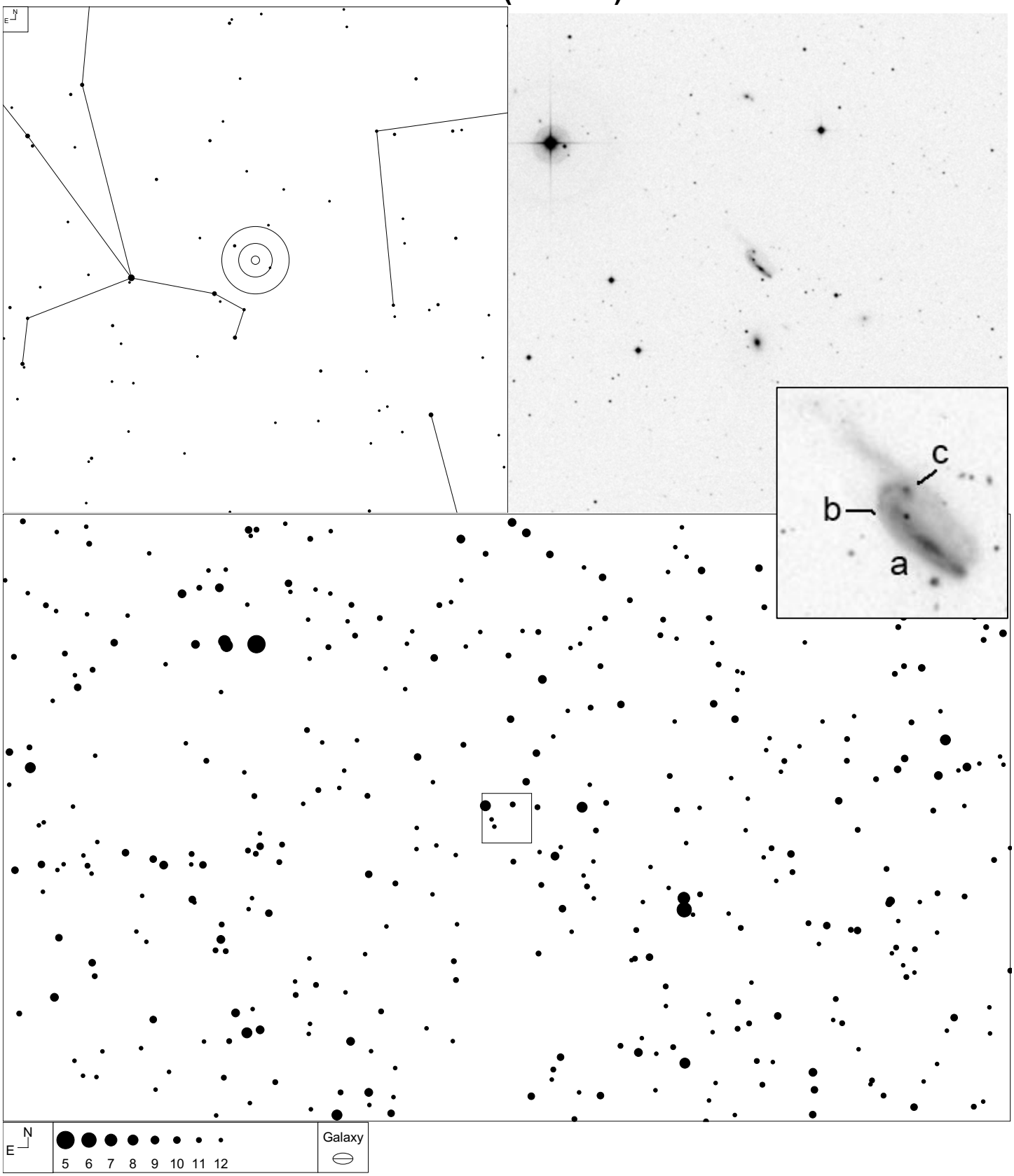






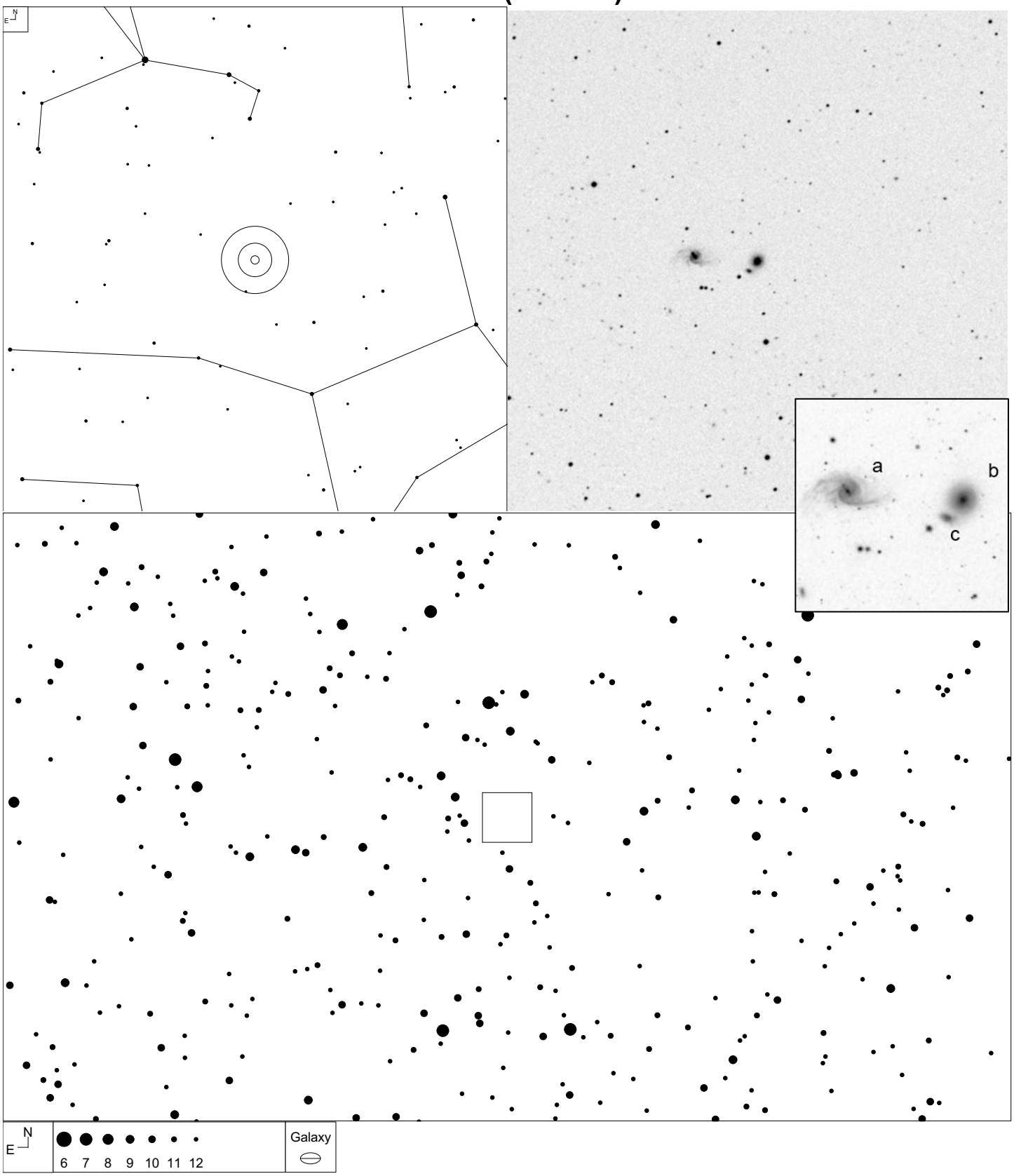
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
195	13 41 49.4	+26 22 19	GPair			PDb
195b	13 41 49.1	+26 22 25	G	15.0g	8x6	
195a	13 41 50.4	+26 22 13	G	15.3	2x2	

VV 163 (Boötes)



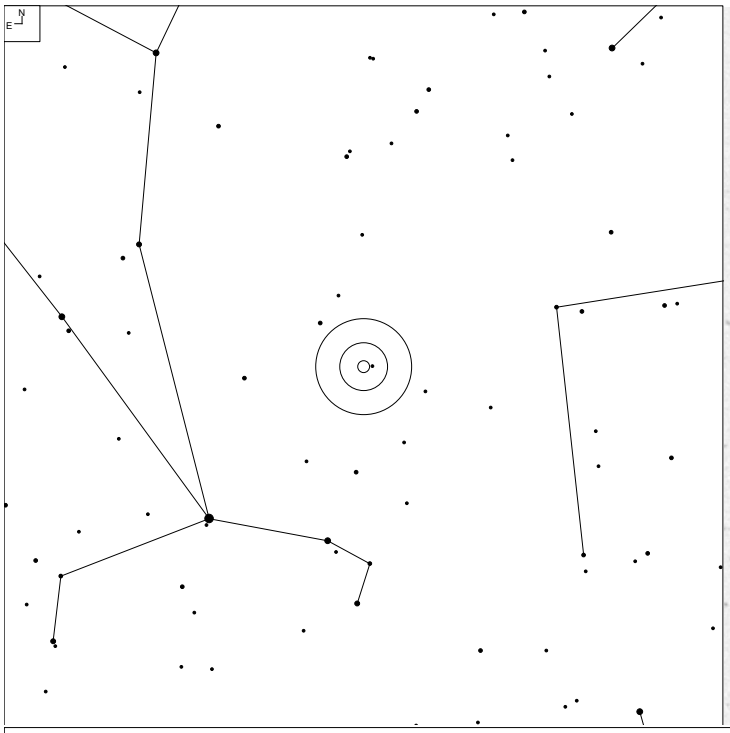
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
163	13 44 25.0	20 24 50	GTrpl	14.89	11	Ch
163a	13 44 24.5	+20 24 34	G	15.0		
163c	13 44 25.4	+20 24 52	G	16.0	1x1	
163b	13 44 25.4	+20 25 06	G		1x1	

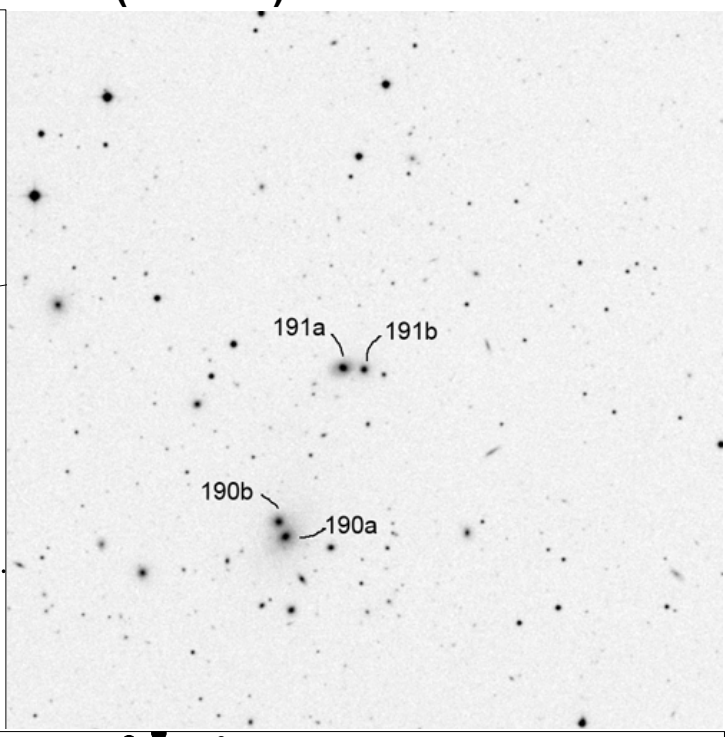
VV 306 (Boötes)

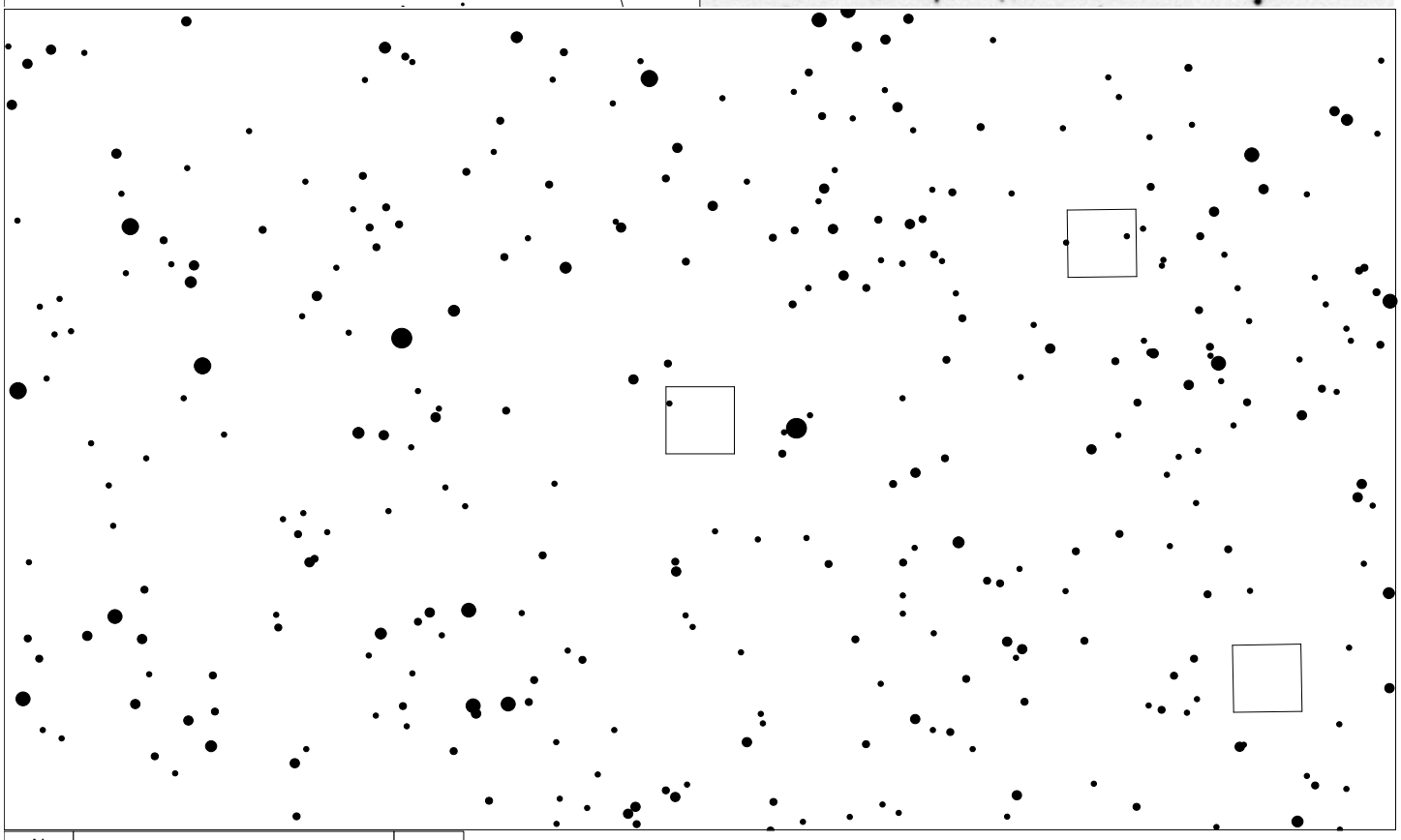


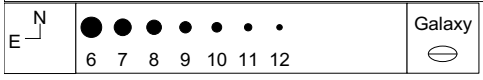
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
306	13 48 08.9	+07 23 27	GTrpl			NNNP
306c	13 48 05.0	+07 23 32	G	15.5	6x6	
306b	13 48 06.0	+07 23 15	G	14.7	4x4	
306a	13 48 12.5	+07 23 41	G	14.39	13x7	

VV 190 and VV 191 (Boötes)



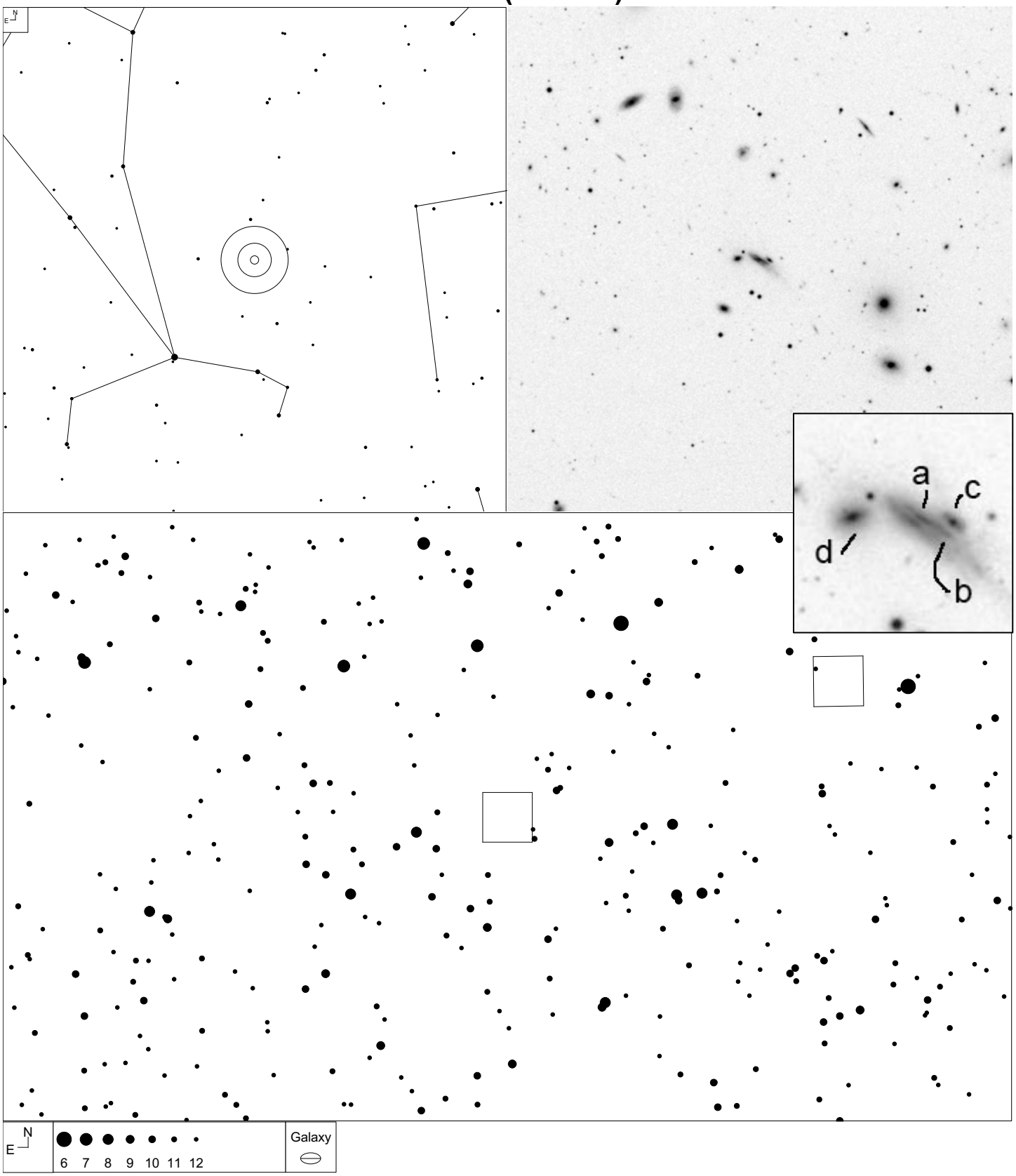






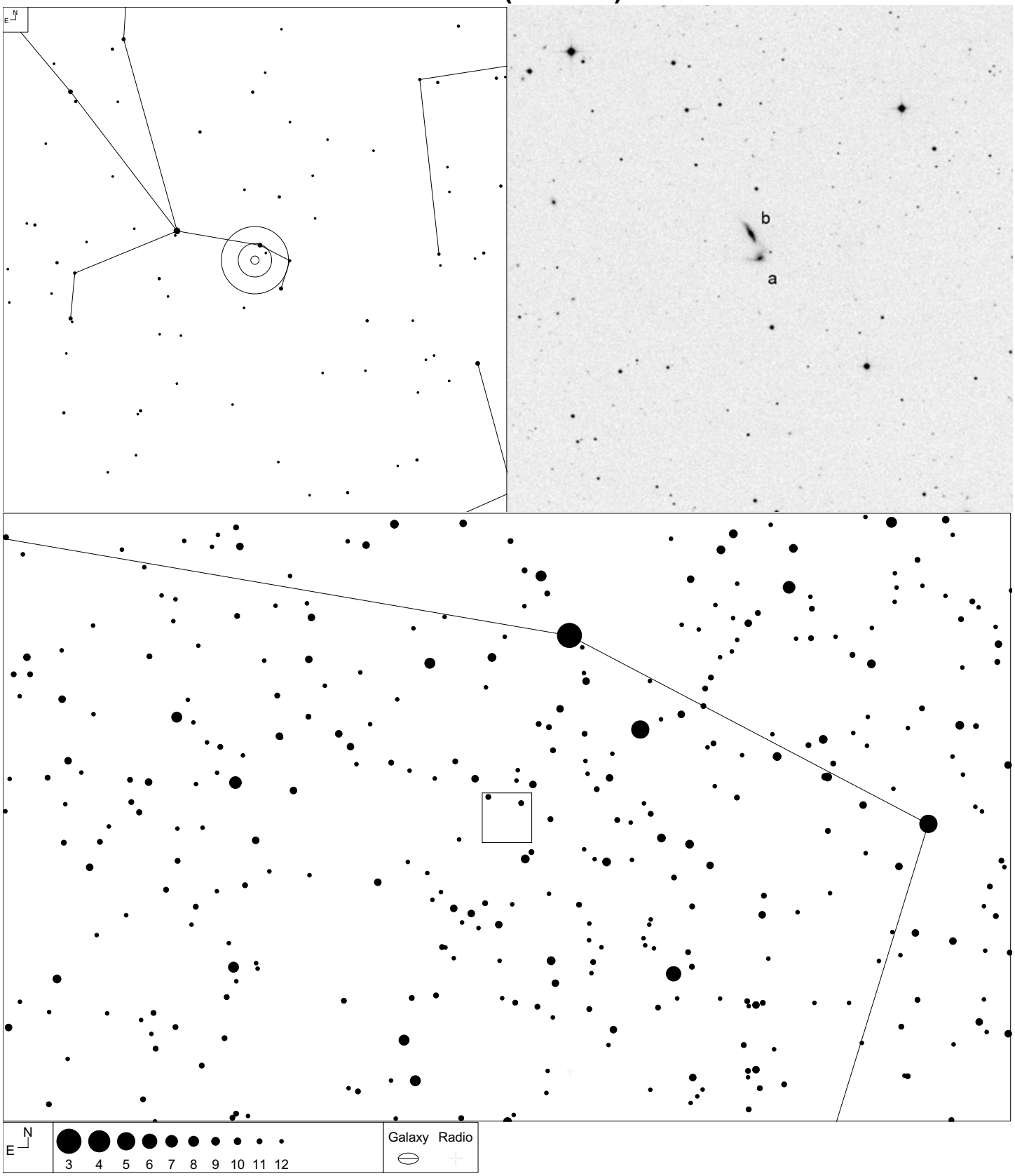
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
190	13 48 15.1	+25 43 59	GPair			
190b	13 48 14.1	+25 43 58	G	16.1g	4x4	PDb
190a	13 48 16.1	+25 44 01	G	15.3g	7x5	
191	13 48 22.1	+25 50 50	GPair			PDb
191a	13 48 21.8	+25 40 31	G	15.5	5x5	
191b	13 48 22.4	+25 40 50	G	15.8g	5x5	

VV 281 (Boötes)



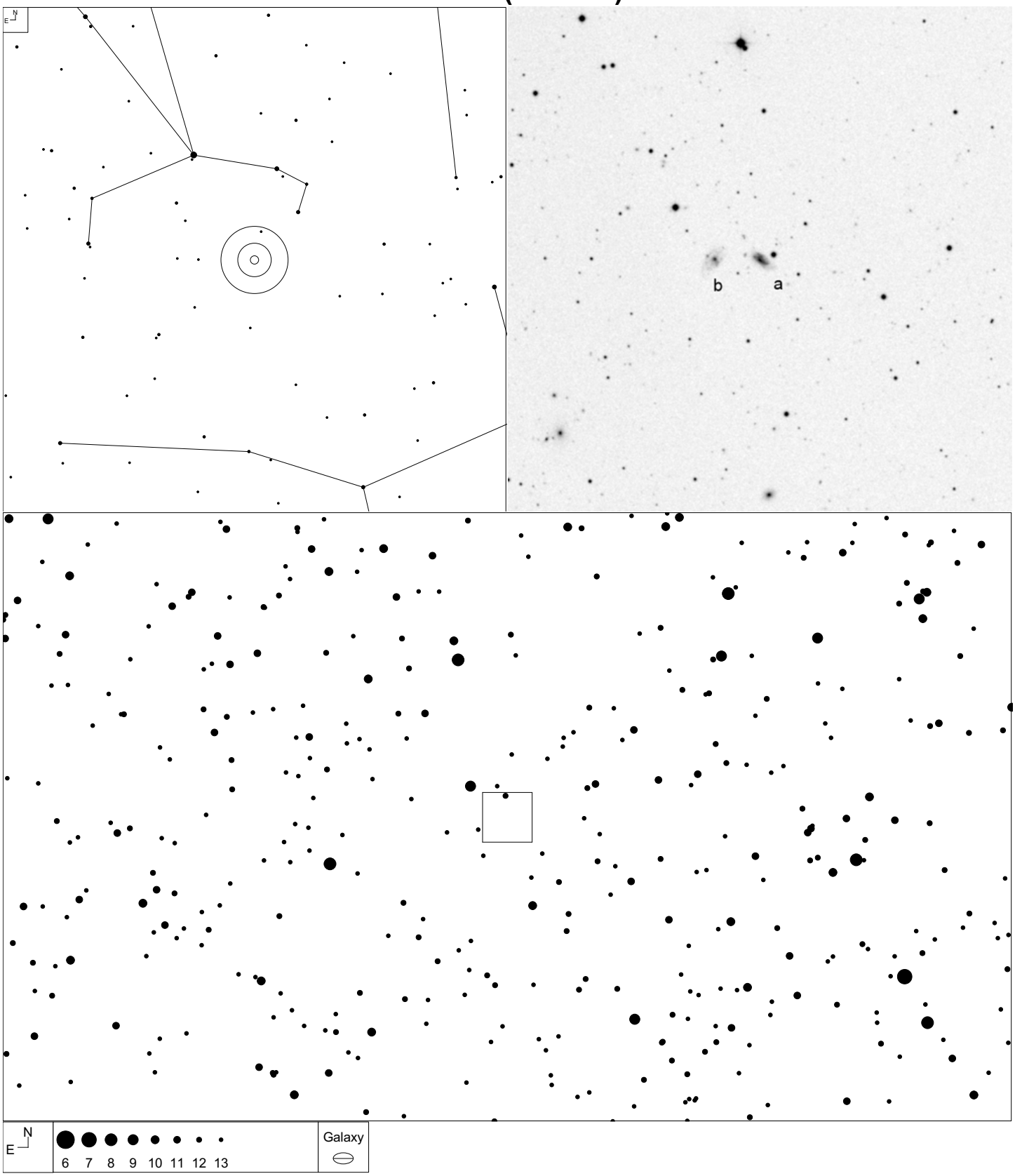
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
281	13 55 30.0	+25 04 26	GTrpl			Ch
281c	13 55 28.4	+25 04 25	G	17.7g	1x1	
281b	13 55 28.7	+25 04 19	PofG	21.3	1x1	
281a	13 55 29.9	+25 04 27	PofG			
281d	13 55 32.6	+25 04 28	G	15.76	5x4	

VV 335 (Boötes)



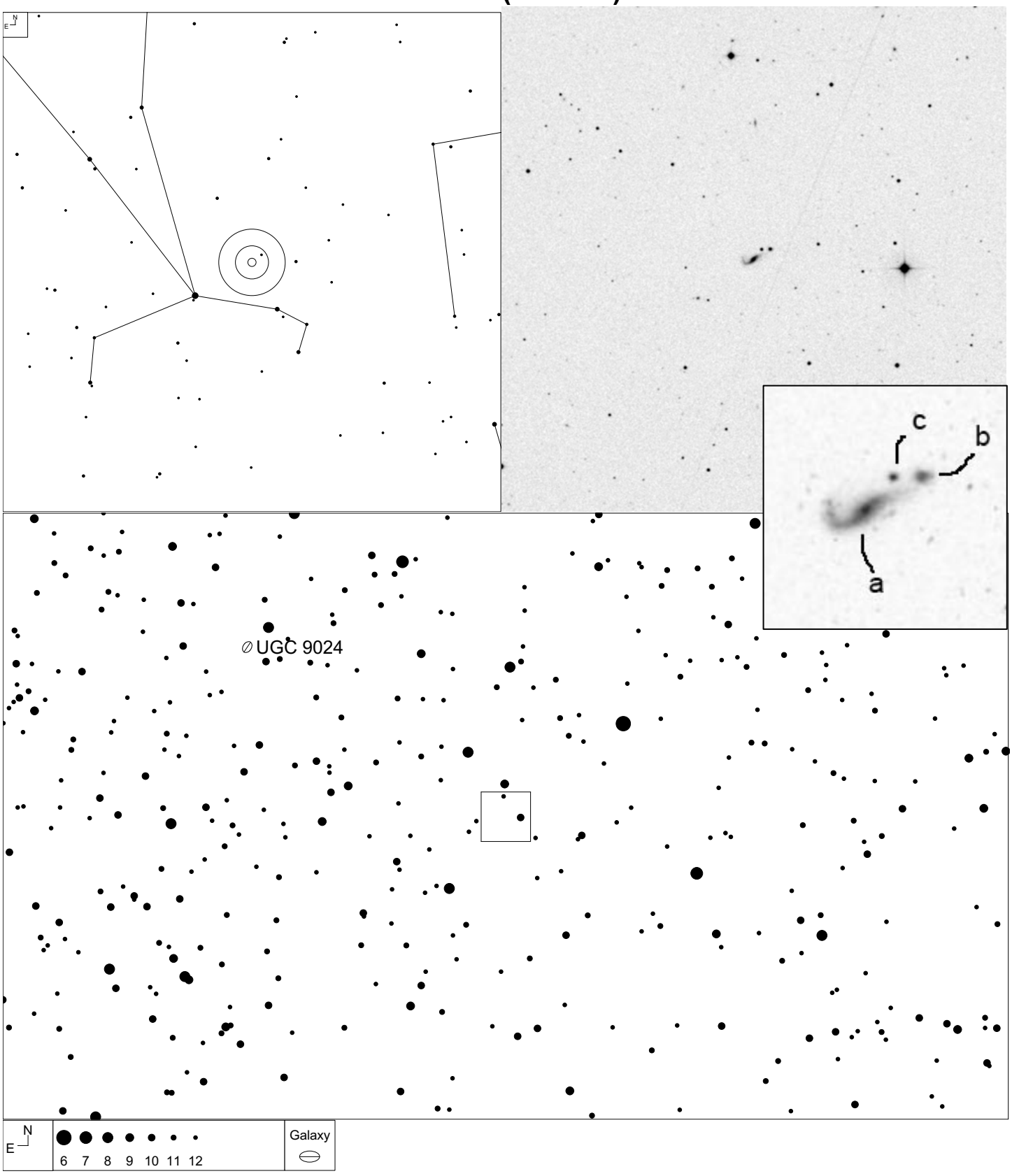
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
335	13 55 59.6	+17 30 21	GPair			PDb
335a	13 55 59.1	+17 29 57	G	14.50	9x6	
335b	13 56 00.1	+17 30 42	G	14.50	7x2	

VV 339 (Boötes)



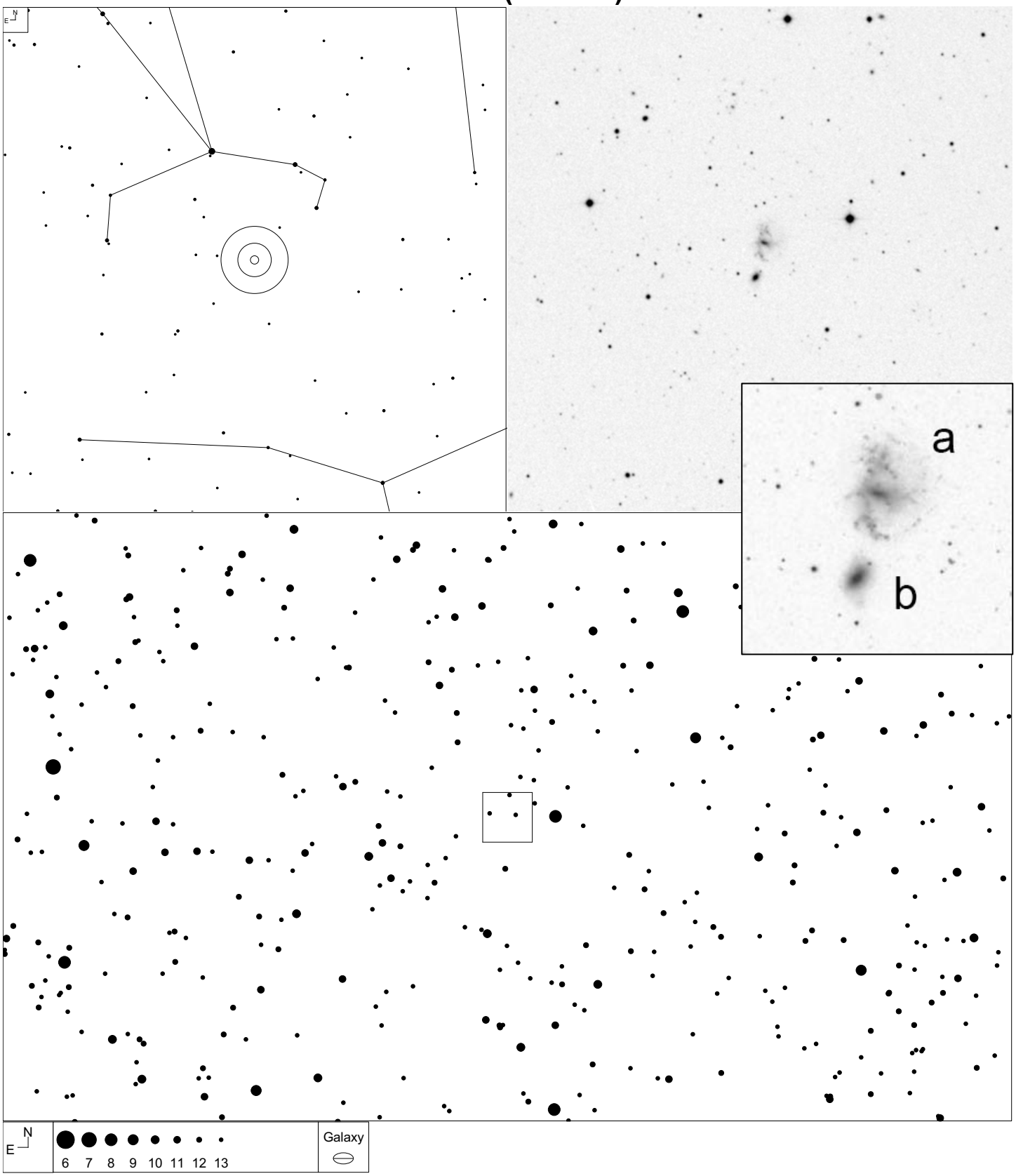
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
339	14 00 22.5	+12 57 26	GPair			PD
339a	14 00 19.8	+12 57 26	G	14.77	10x6	
339b	14 00 25.3	+12 57 27	G	14.93	9x7	

VV 277 (Boötes)



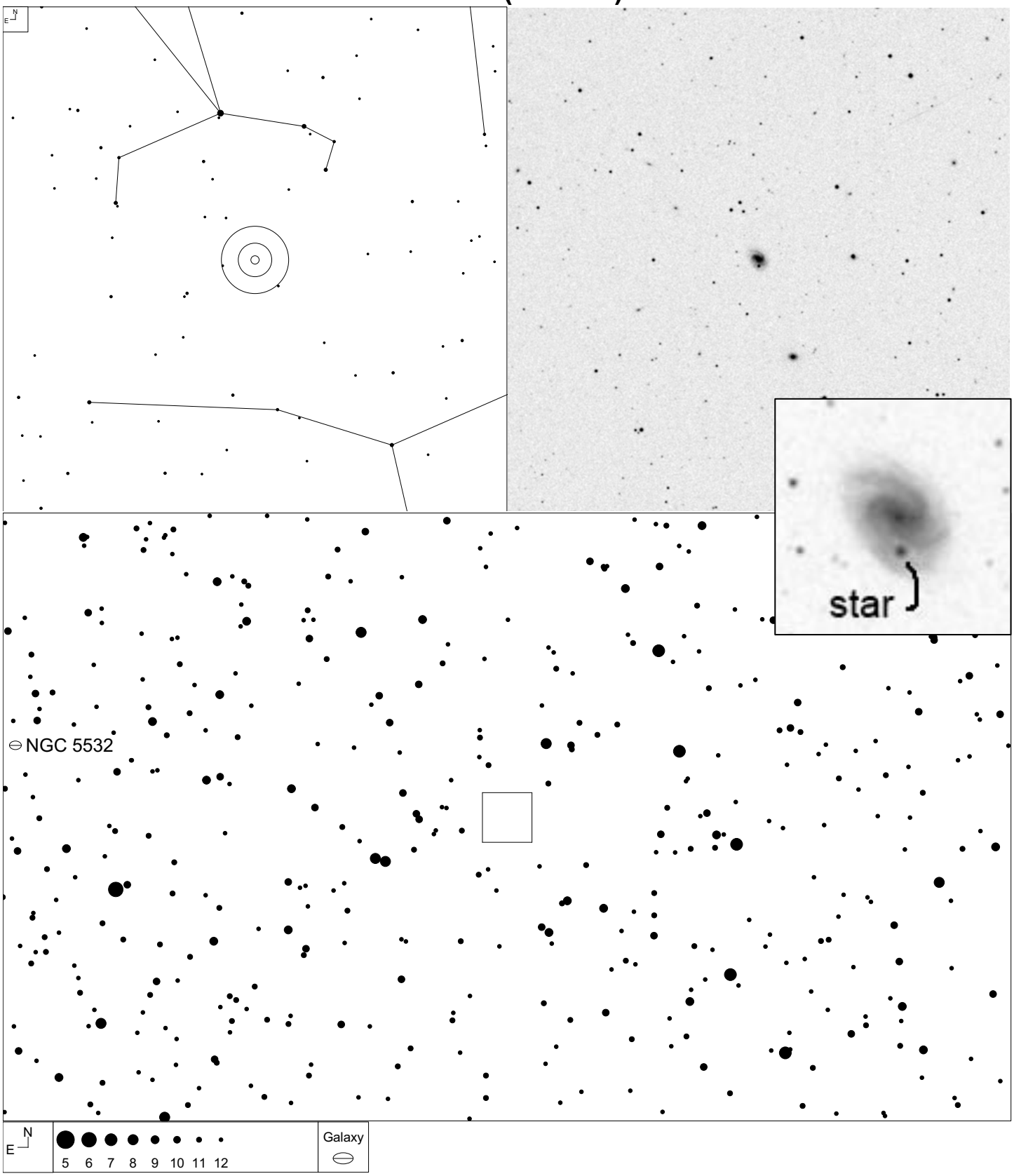
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
277	14 01 08.2	+21 14 24	GPair	15.1	10x4	PKdf
277b	14 01 07.1	+21 14 35	G	14.8	2x2	
277c	14 01 08.2	+21 14 34	PofG	16.6g	1x1	
277a	14 01 09.3	+21 14 16	G	14.70	6x4	

VV 328 (Boötes)



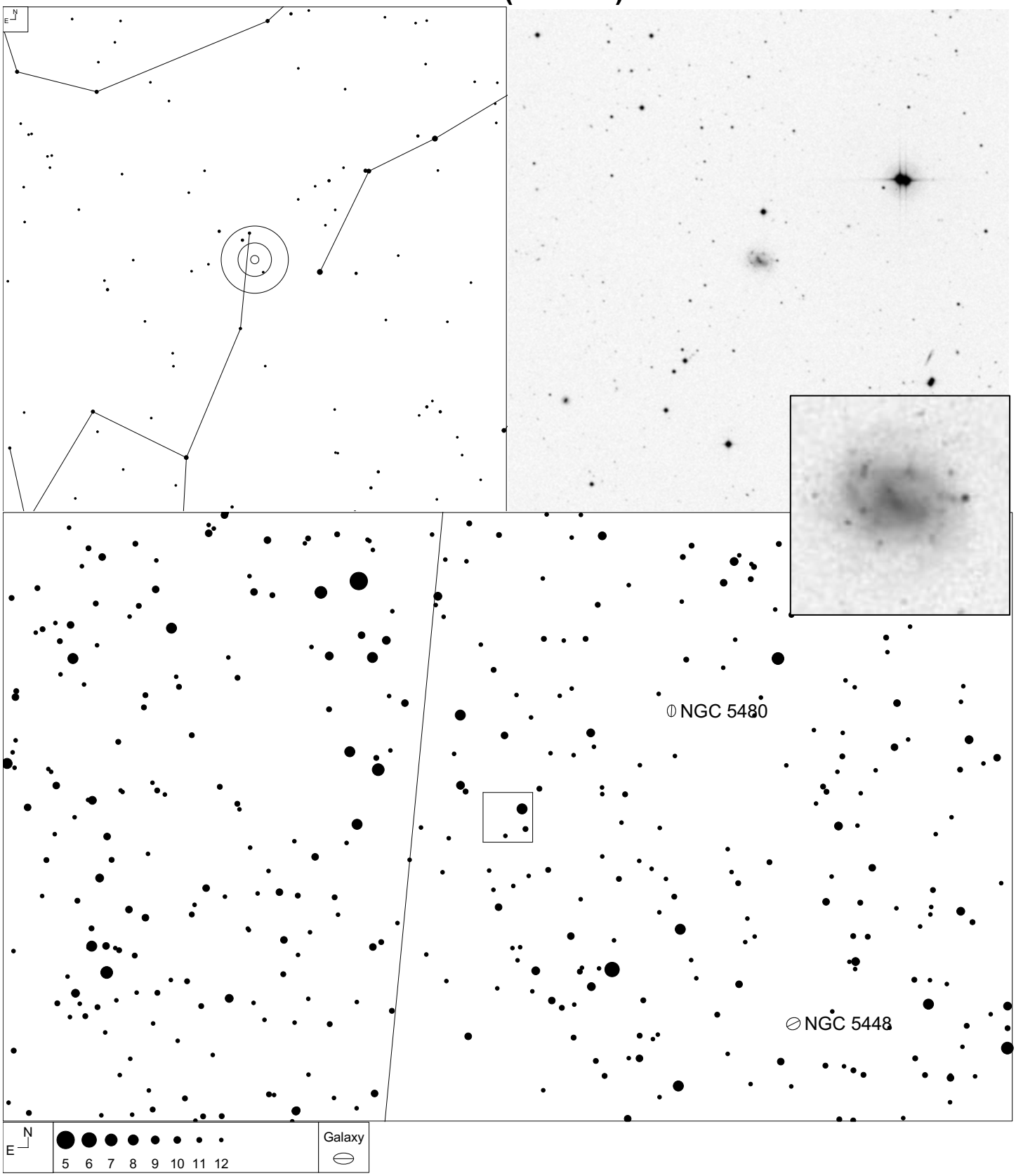
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
328	14 04 54.2	+12 42 48	GPair			PD
328a	14 04 53.7	+12 43 18	G	14.4p	13x8	
328b	14 04 54.7	+12 42 17	G	15.6	4x2	

VV 103 (Boötes)



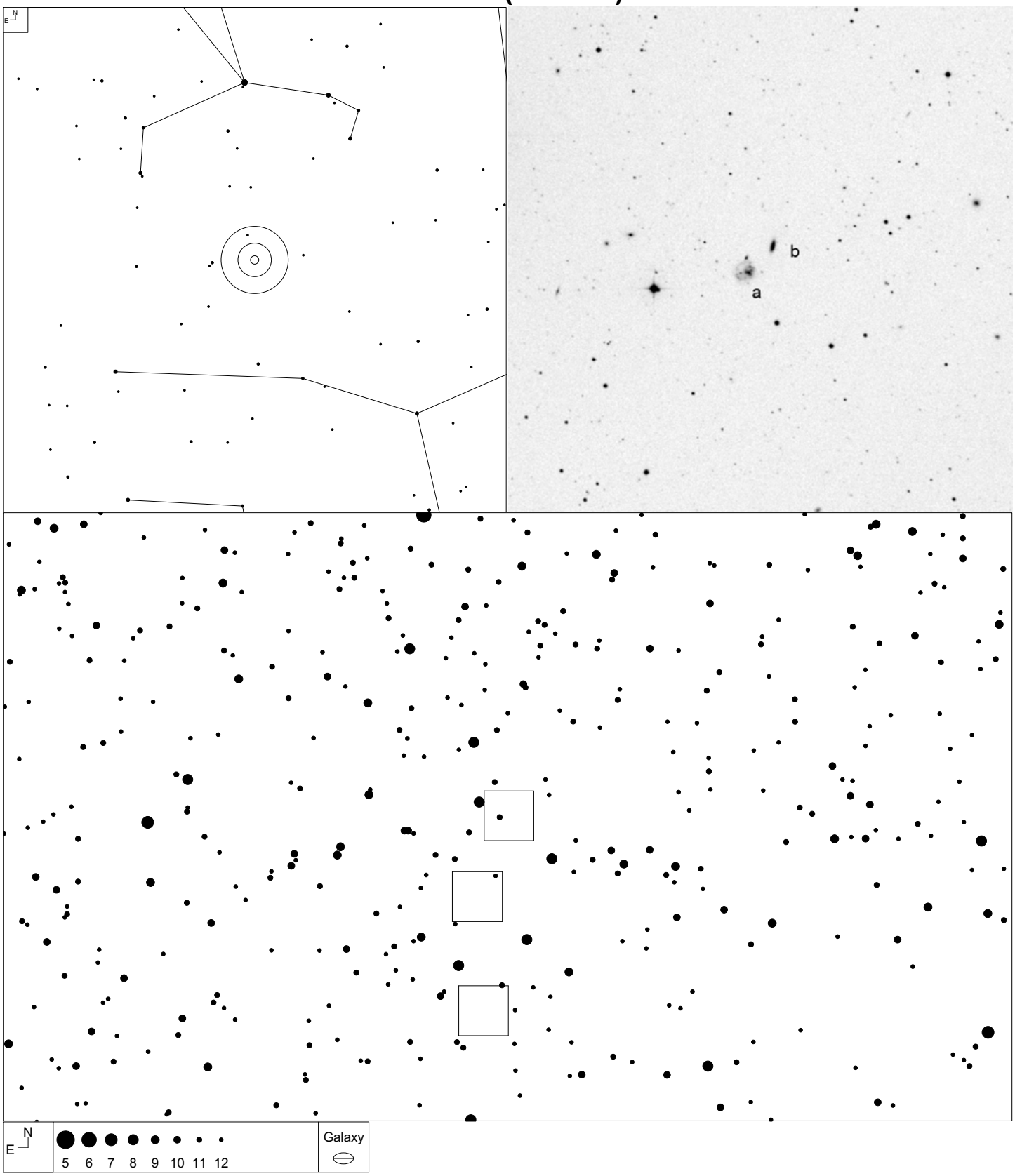
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
103	14 07 00.1	+10 27 44	GPair?	14.8	8x5	PC
103a	14 07 00.2	+10 27 45	G	14.8g	9x6	

VV 125 (Boötes)



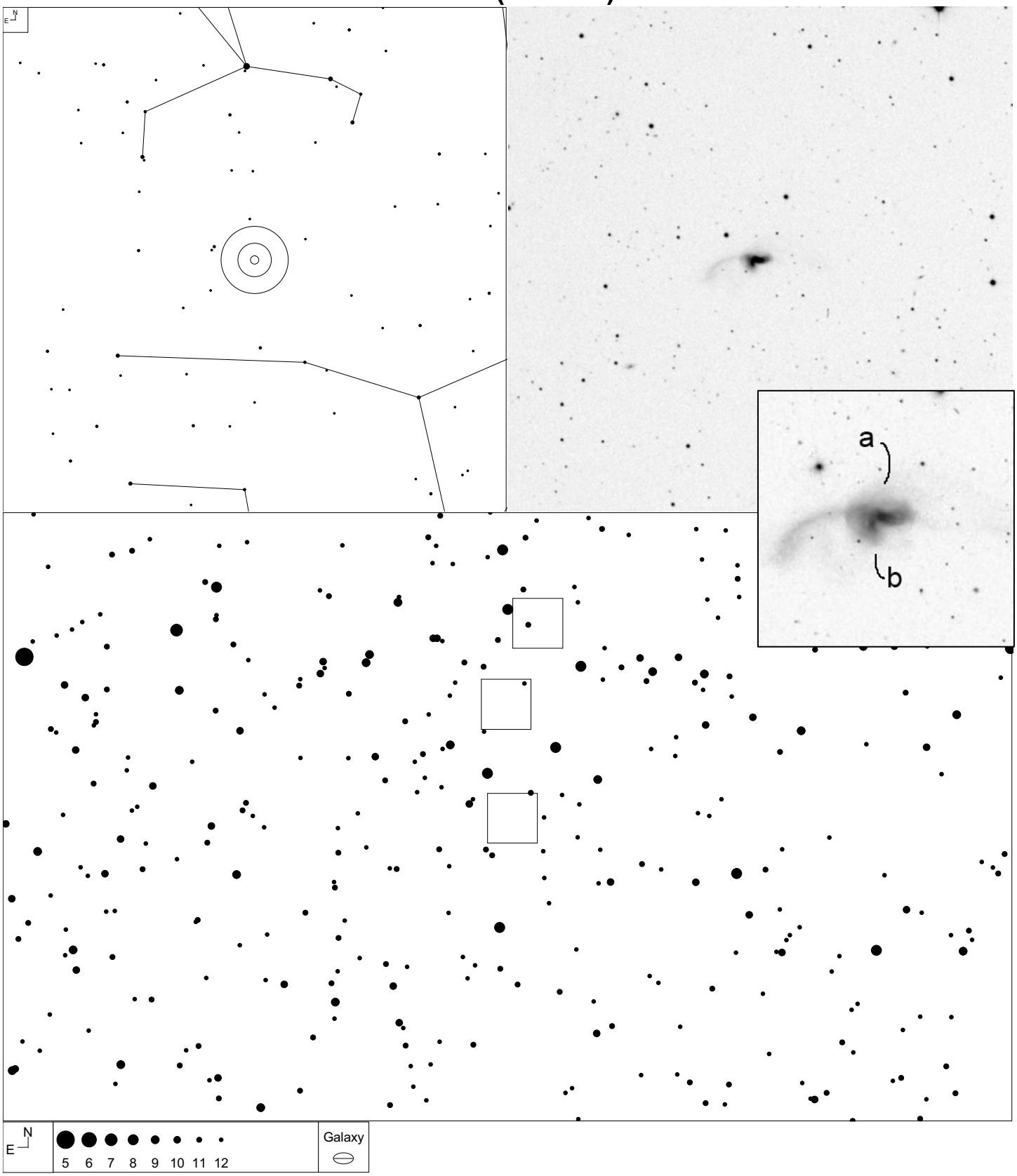
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
125	14 11 27.0	+50 12 33	G	14.85	11x8	N

VV 299 (Boötes)



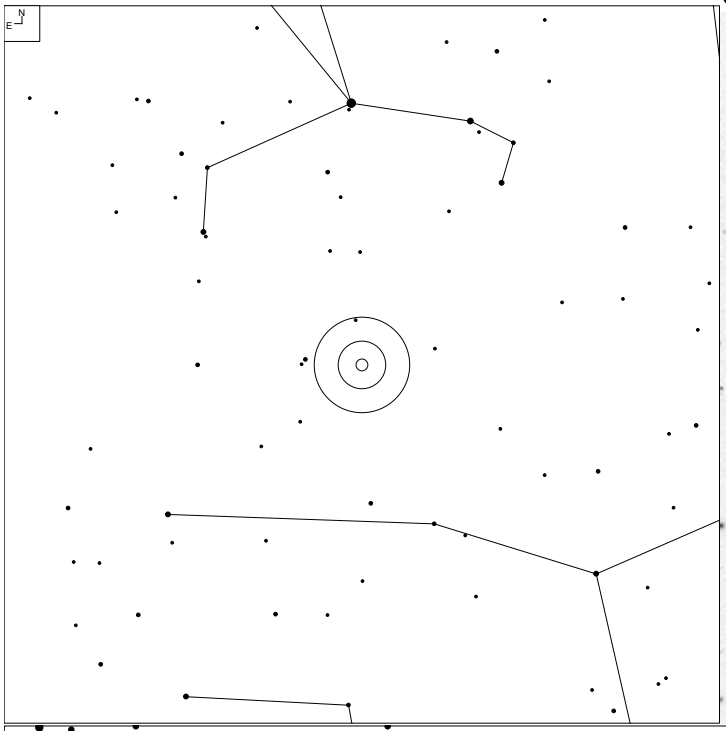
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
299	14 13 06.9	+08 37 31	GPair			PD
299b	14 13 05.4	+08 37 55	G	15.8g	6x2	
299a	14 13 08.3	+08 37 08	G	15.0	6x6	

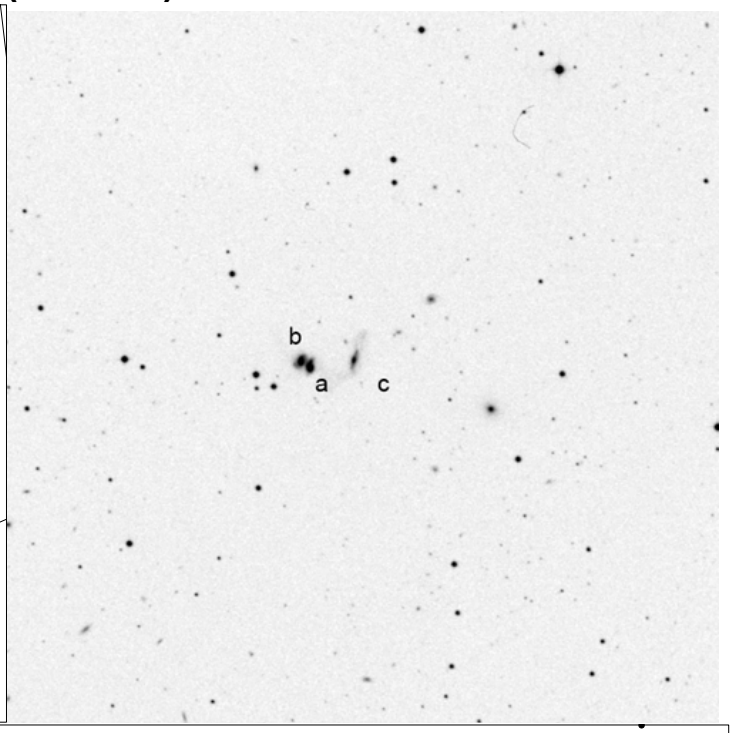
VV 70 (Boötes)

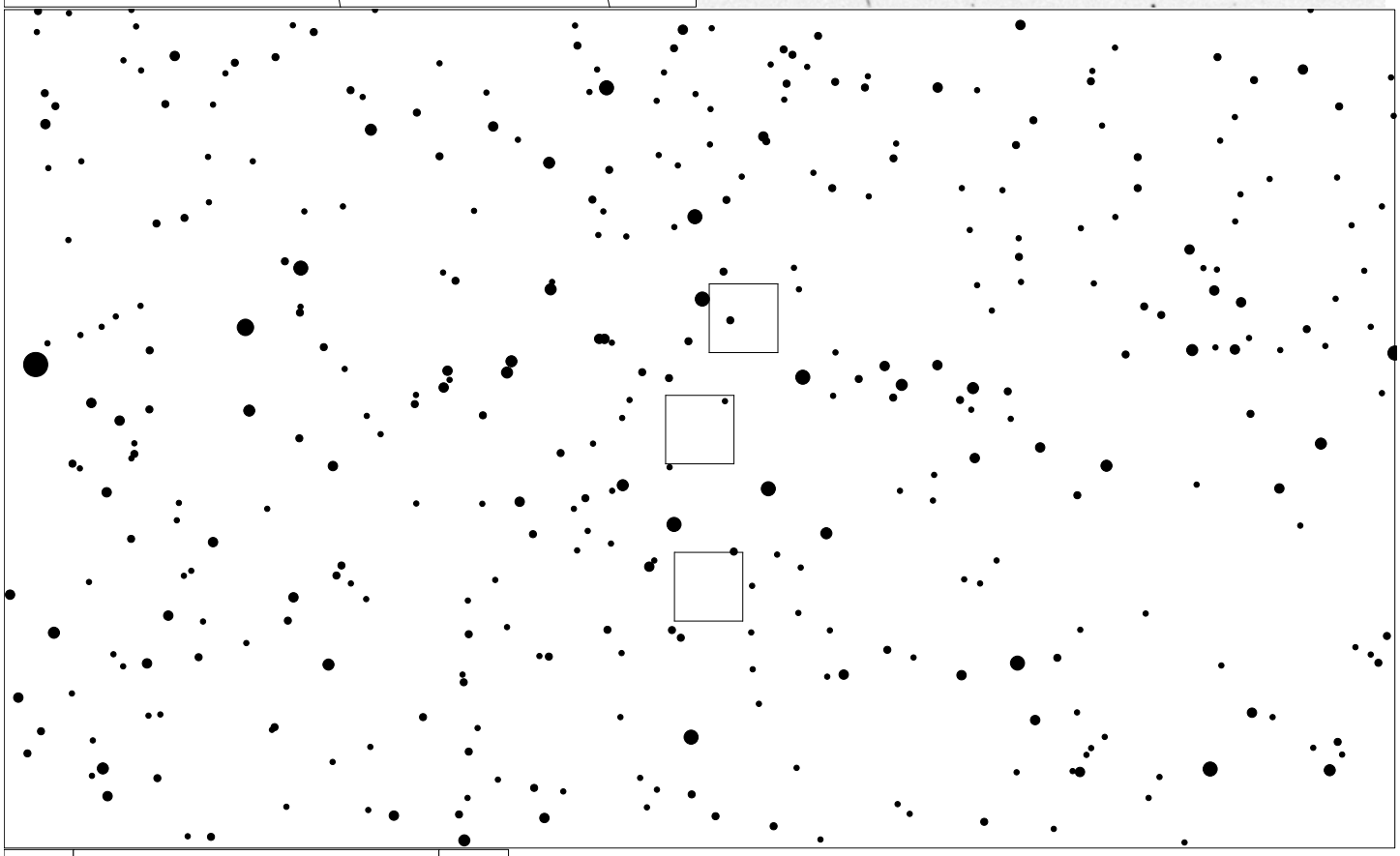


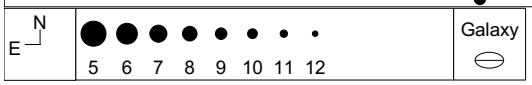
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
70	14 13 38.8	+07 39 34	GPair	13.7		PC
70a	14 13 38.4	+07 39 38	G	14.5	10x5	
70b	14 13 39.4	+07 39 29	G	15.50	8x7	

VV 223 (Boötes)



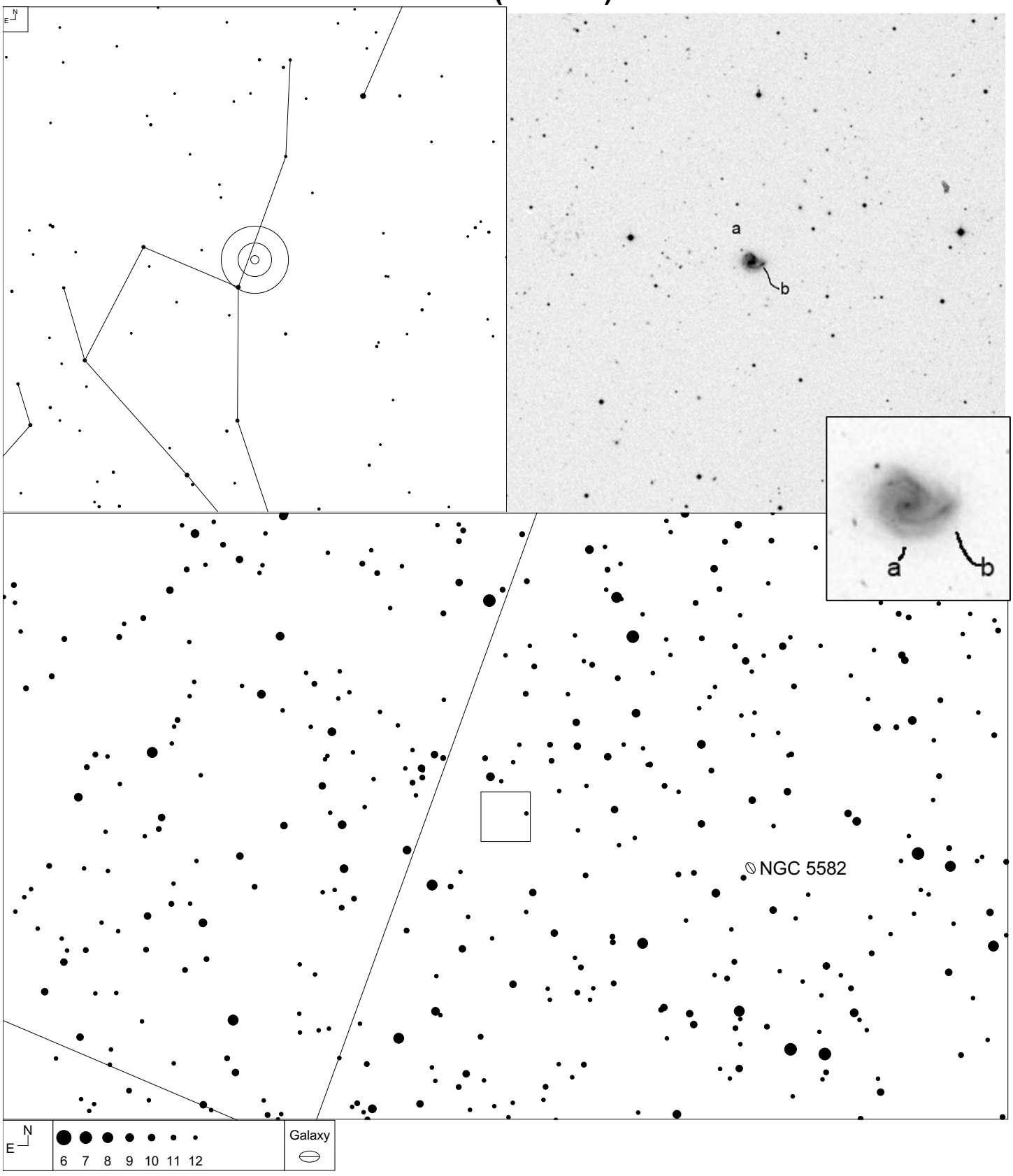






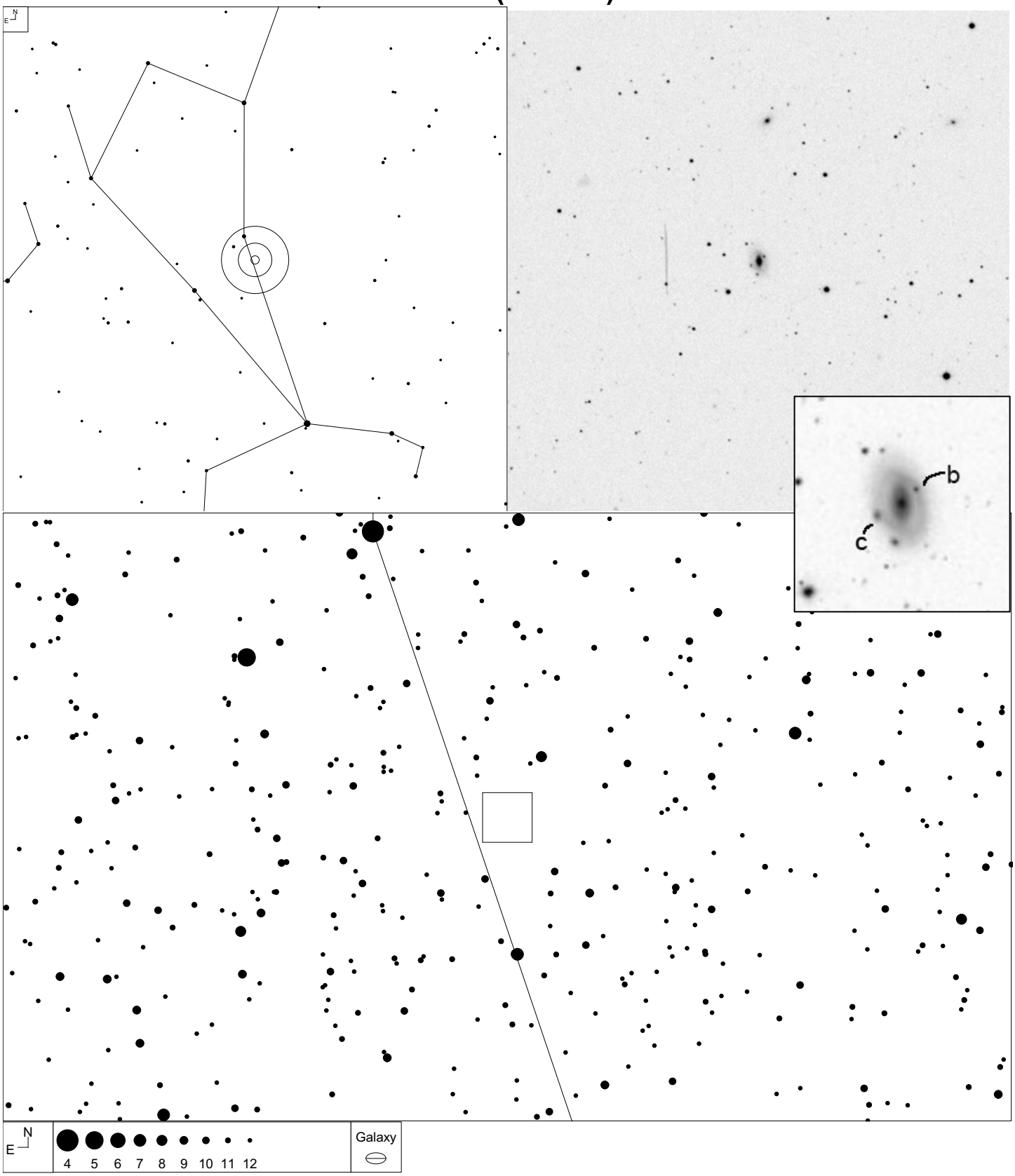
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
223	14 13 44.7	+08 13 13	GTrpl			NNNP
223c	14 13 42.0	+08 13 16	G	16.0g	10x2	
223a	14 13 45.7	+08 13 07	G	14.7	4x2	
223b	14 13 46.5	+08 13 15	G	15.3	5x2	

VV 24 (Boötes)



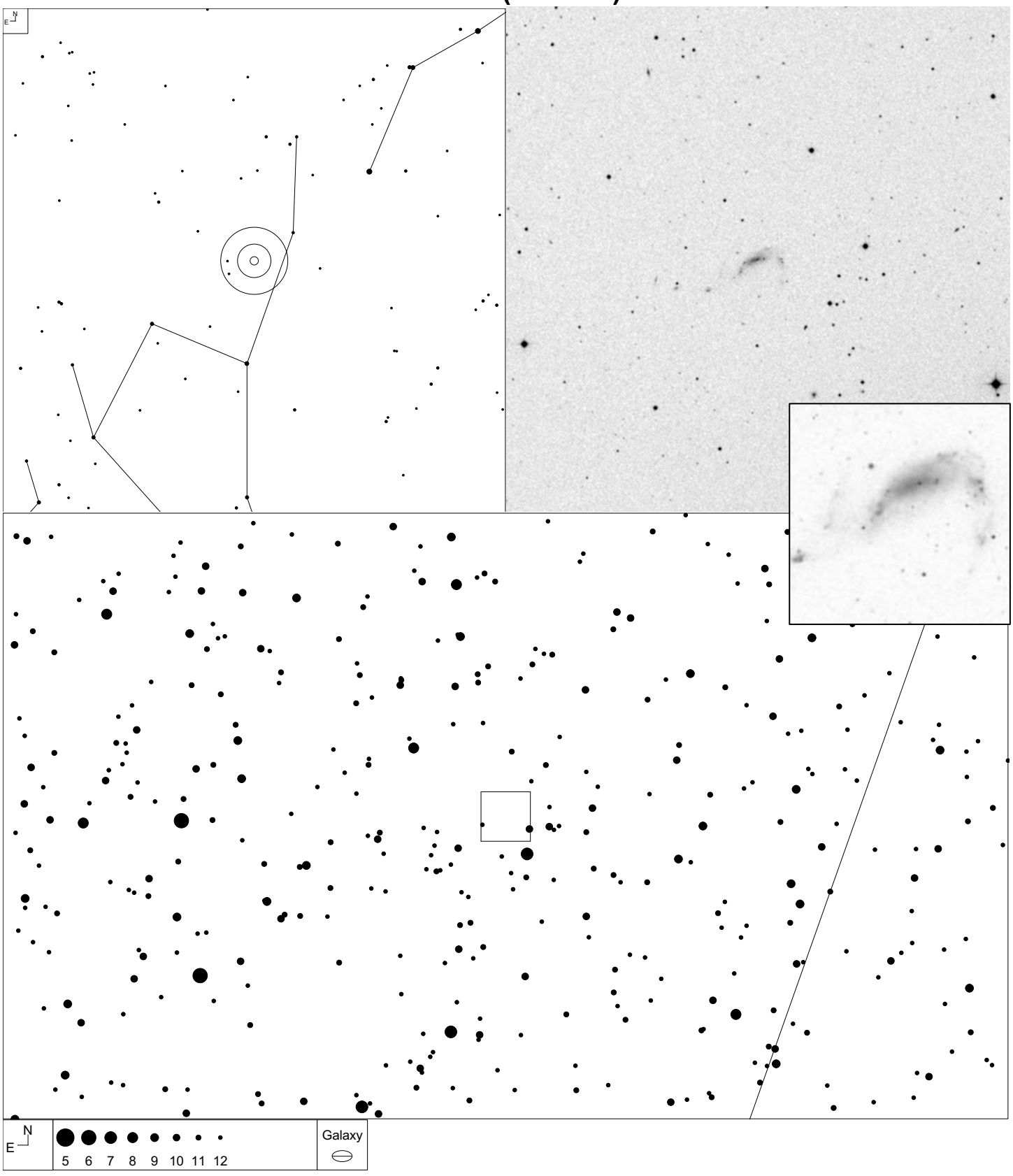
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
24	14 27 01.5	+39 57 25	GPair	14.8	8x6	M
24b	14 27 00.6	+39 57 22	G	20.5g	1x1	
24a	14 27 01.6	+39 57 25	G	14.7g	8x6	

VV 15 (Boötes)



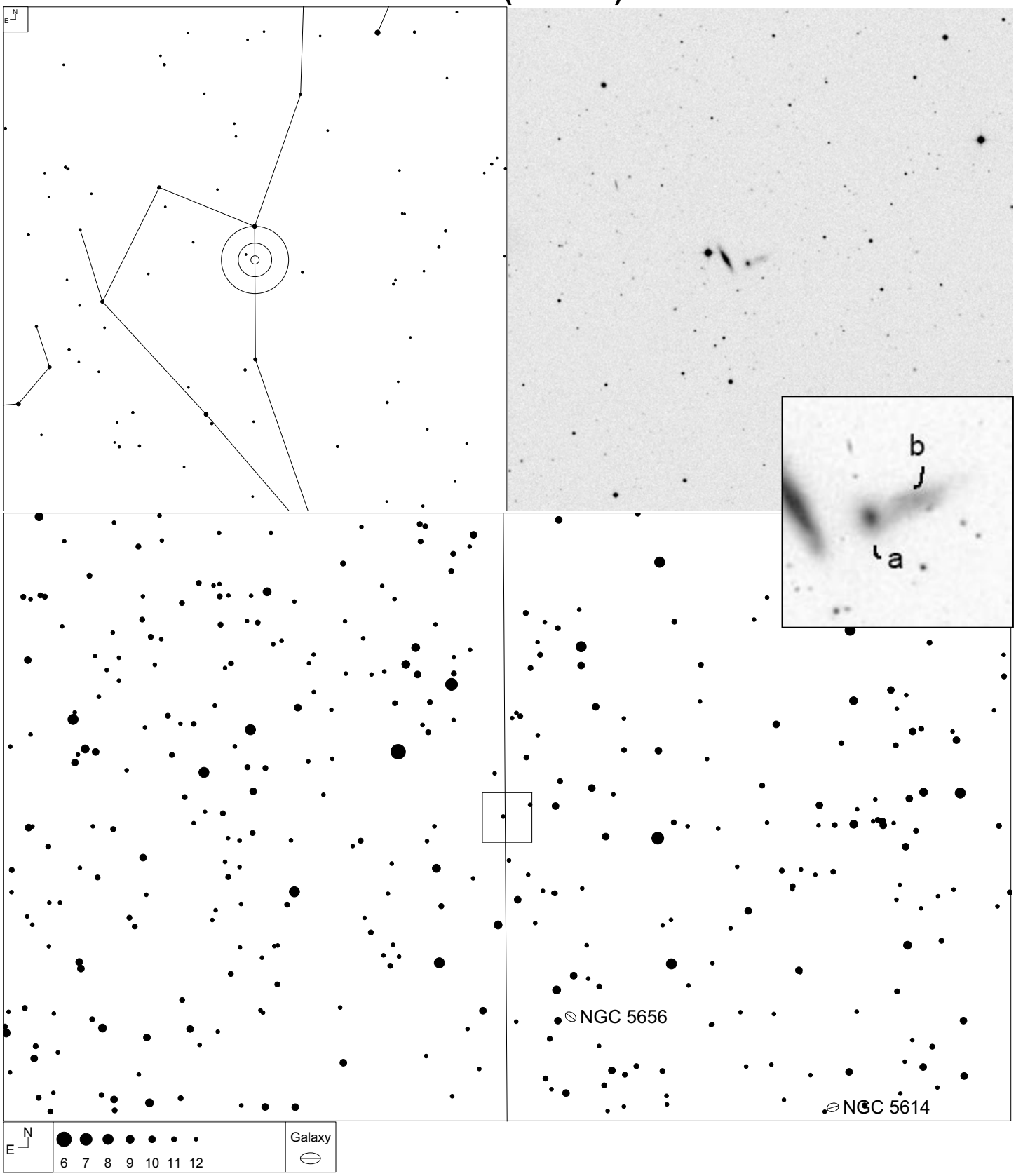
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
15	14 28 45.3	+28 57 51	G			M
15b	14 28 44.6	+28 58 00	PofG	19.6	1x1	
15a	14 28 45.3	+28 57 51	G	14.9p	10x6	
15c	14 28 46.4	+28 57 44	PofG	18.7g	2x1	

VV 152 (Boötes)



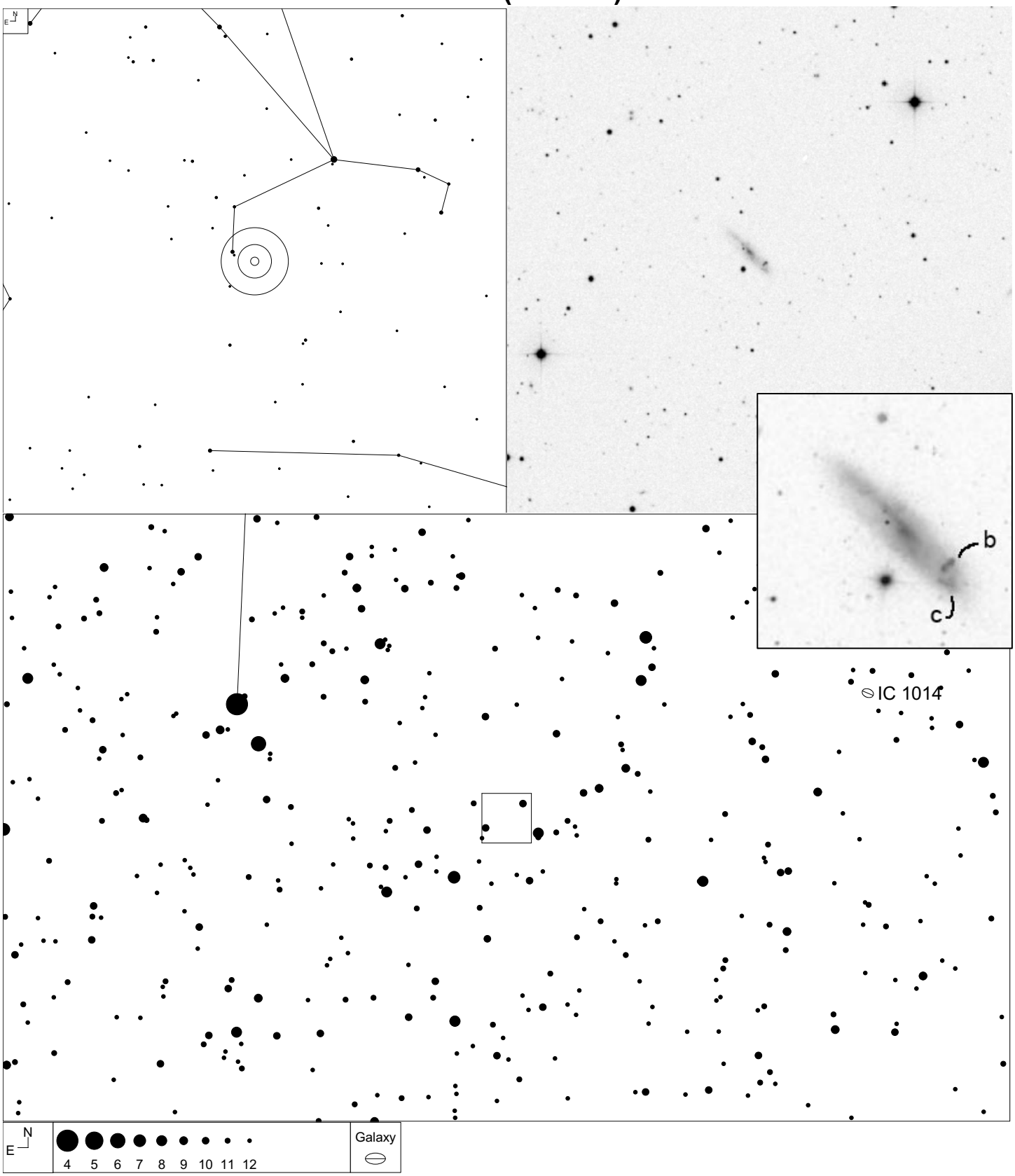
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
152	14 29 50.7	+44 26 52	G	14.9	23x1	N

VV 262 (Boötes)



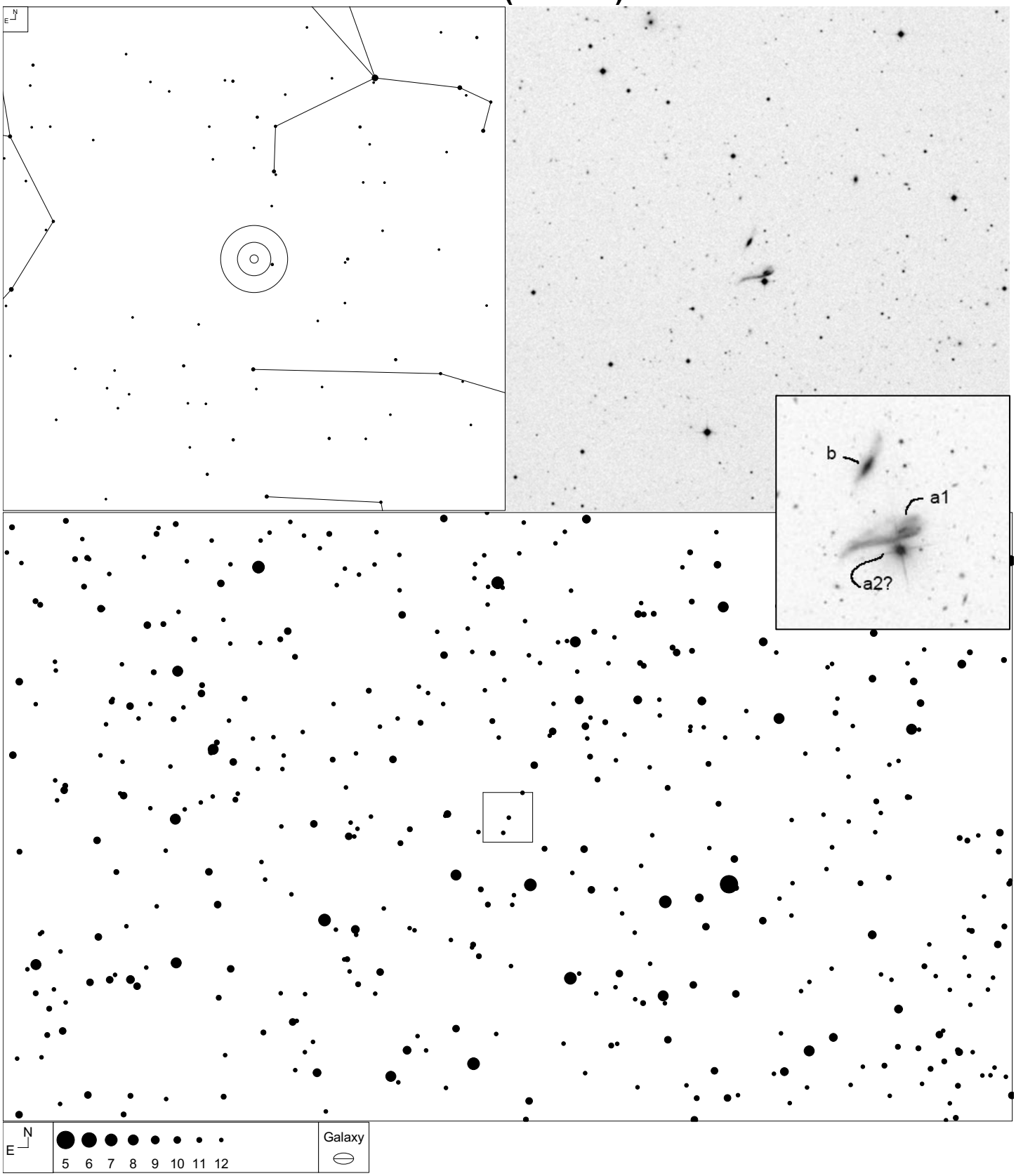
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
262	14 31 56.8	+36 18 15	GPair			PK
262b	14 31 55.7	+36 18 21	G	17.0	9x3	
262a	14 31 57.7	+36 18 11	G	16.3		

VV 146 (Boötes)



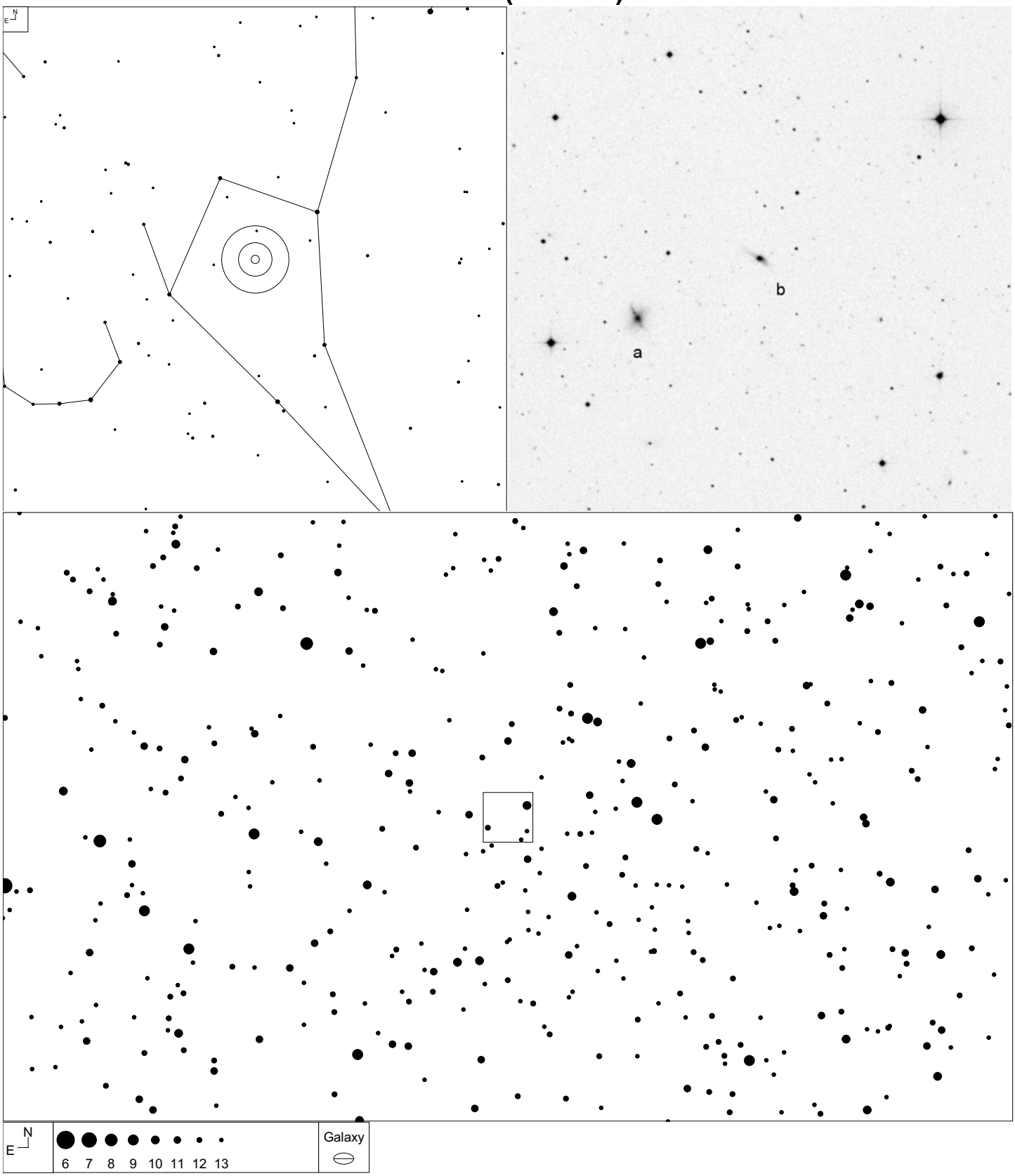
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
146	14 35 38.9	+13 09 56	GTrpl	14.10	22x7	N
146c	14 35 37.9	+13 09 40	G	16		
146b	14 35 38.1	+13 09 50	G	15.0		
146a	14 35 39.9	+13 10 12	G	15.0g	10x5	

VV 109 (Boötes)



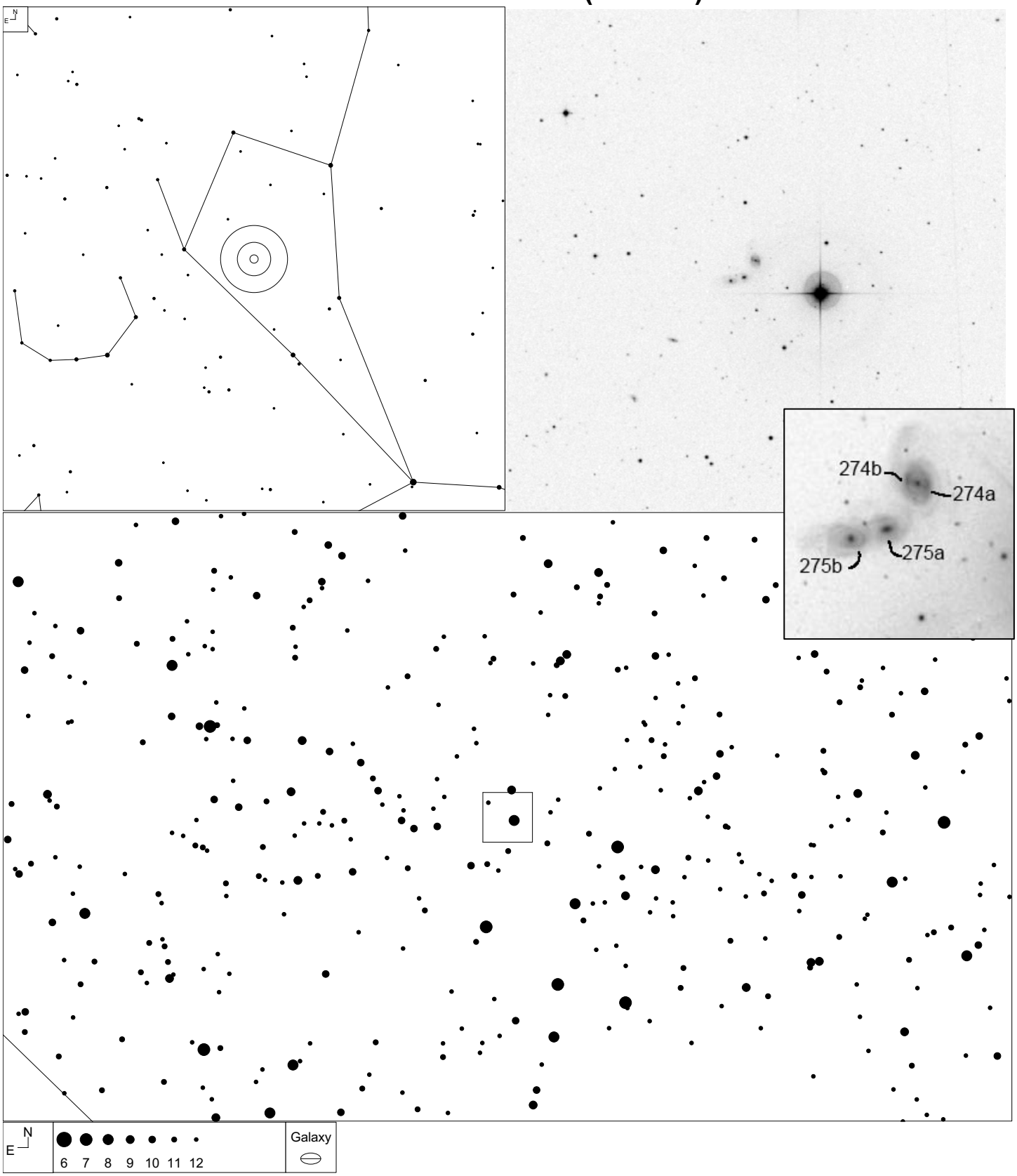
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
109	14 46 02.8	+08 30 11	GTrpl			NNNP
109a1	14 46 01.8	+08 29 46	G	15.4	4x2	
109a	14 46 01.8	+08 29 47	GPair	15.4	12x4	
109a2	14 46 02.8	+08 29 43	G	16	5x3	
109b	14 46 03.8	+08 30 40	G	15.7g	4x2	

VV 324 (Boötes)



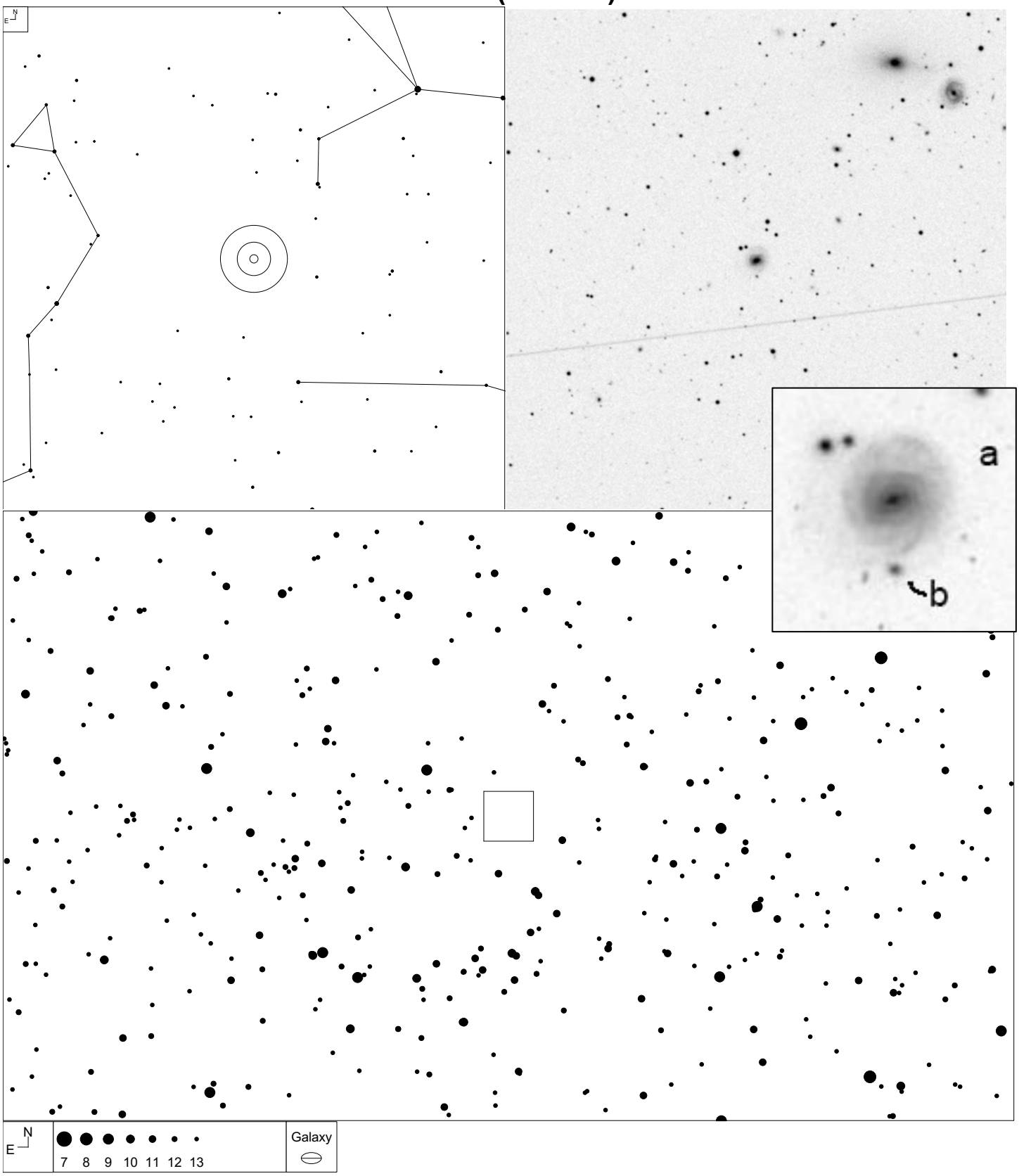
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
324	14 51 05.5	+35 33 23	GPair			PD
324b	14 50 56.5	+35 34 18	G	14.8b	10x3	
324a	14 51 14.4	+35 32 29	G	14.4b	11x8	

VV 274 and VV 275 (Boötes)



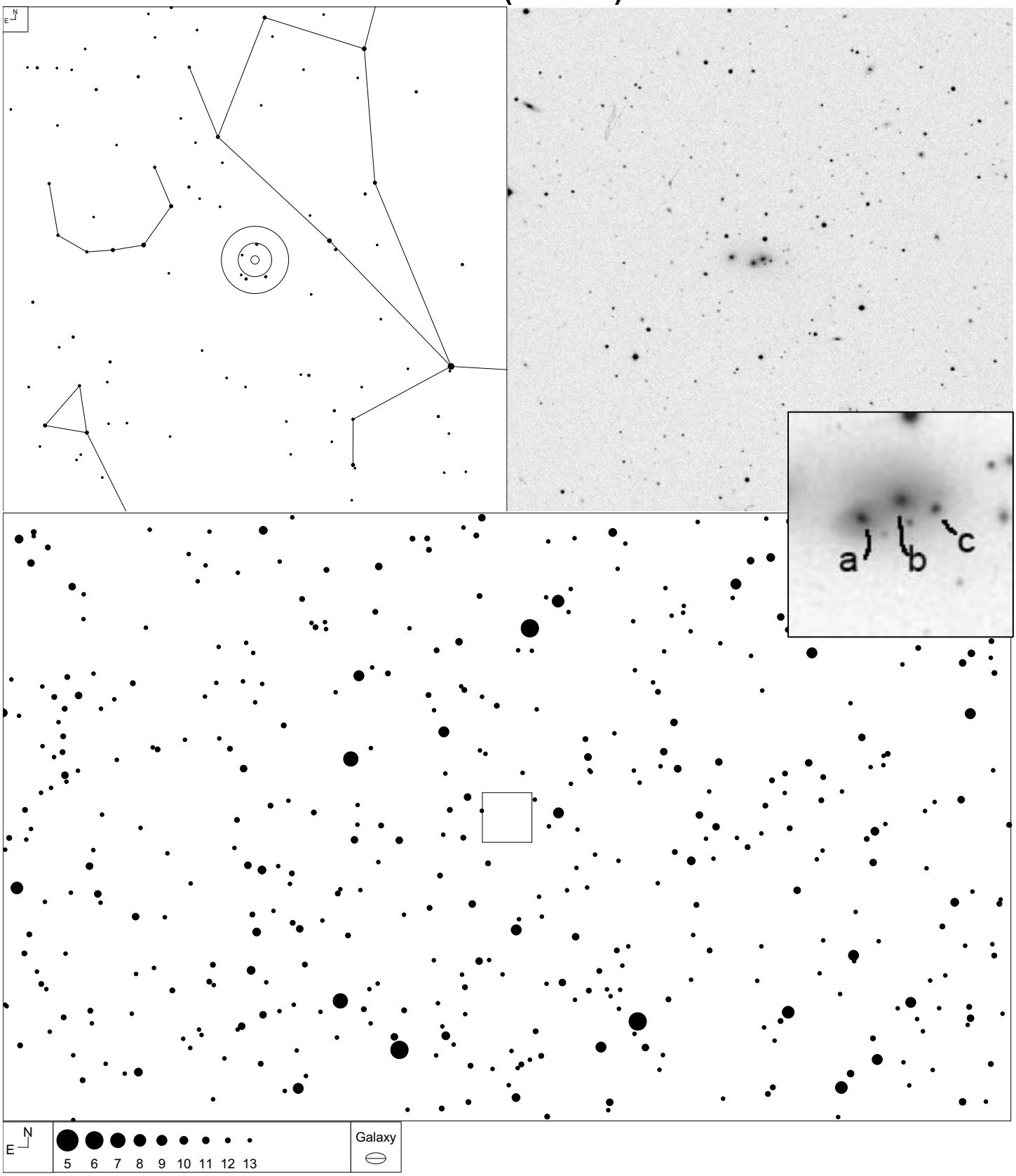
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
274	14 55 28.2	+32 50 25	GPair			PKt
274a	14 55 28.2	+32 50 24	G	15.6g	6x5	
274b	14 55 28.7	+32 50 26	G	19.9g	1x1	
275	14 55 30.8	+32 49 51	GPair	16.0	12x5	PDt
275a	14 55 29.8	+32 49 54	G	16.5g	5x3	
275b	14 55 31.7	+32 49 47	G	16.3g	8x4	

VV 26 (Boötes)



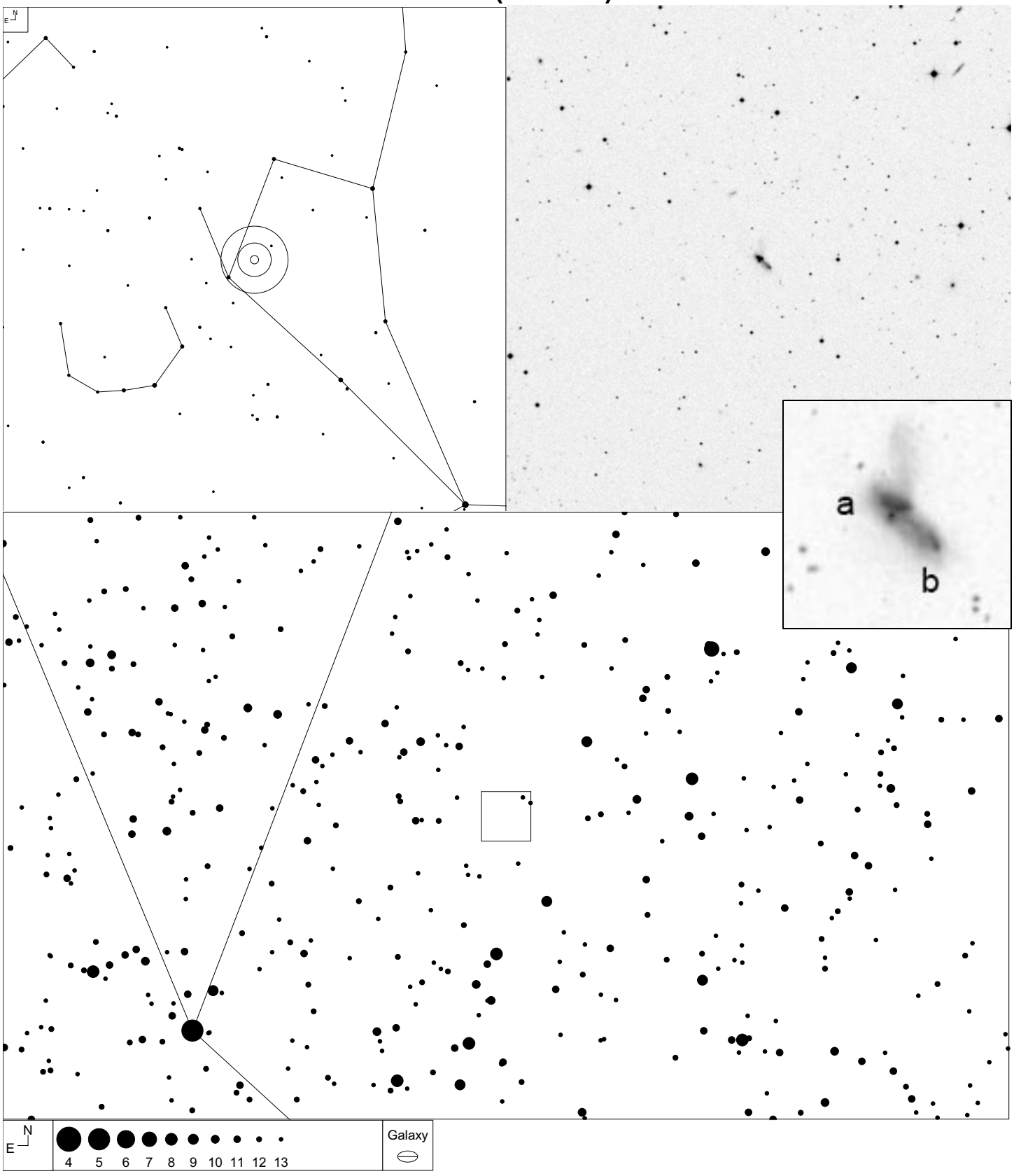
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
26	14 56 53.1	+09 16 18	GPair			M
26a	14 56 53.1	+09 16 18	G	14.39	10x9	
26b	14 56 53.1	+09 15 49	PofG			

VV 204 (Boötes)



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
204	15 04 57.2	+26 00 54	G	15.24		NNNP
204c	15 04 56.1	+26 00 55	G	18.1g	2x2	
204b	15 04 57.1	+26 00 58	G	15.5g	7x6	
204a	15 04 58.3	+26 00 51	G	16.2g	5x4	

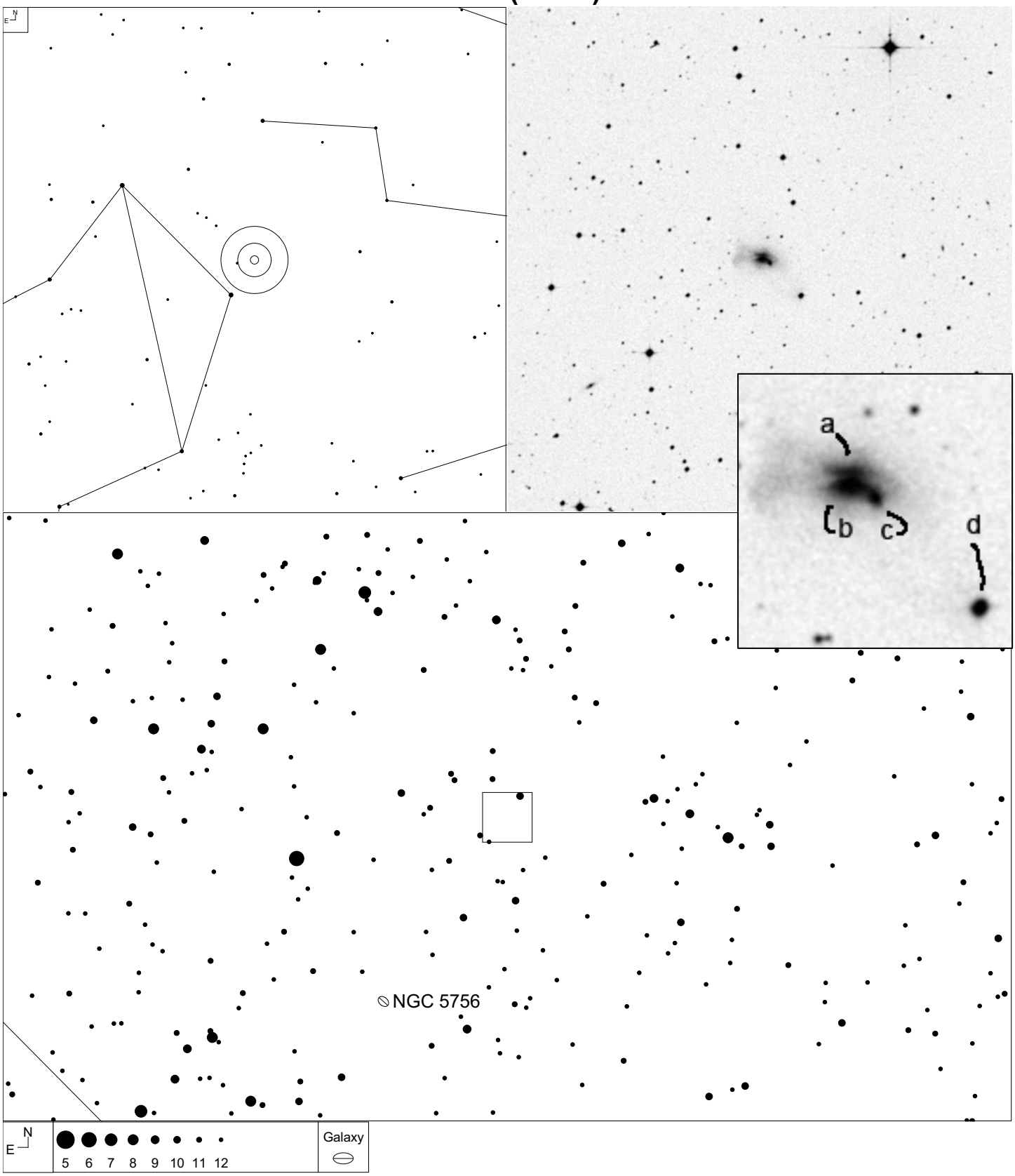
VV 59 (Boötes)



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
59	15 08 04.9	+34 23 14	GPair	15.9g	10x3	N
59b	15 08 04.3	+34 23 07	G	15.6	1x1	
59a	15 08 05.8	+34 23 24	G	13.8	1x1	

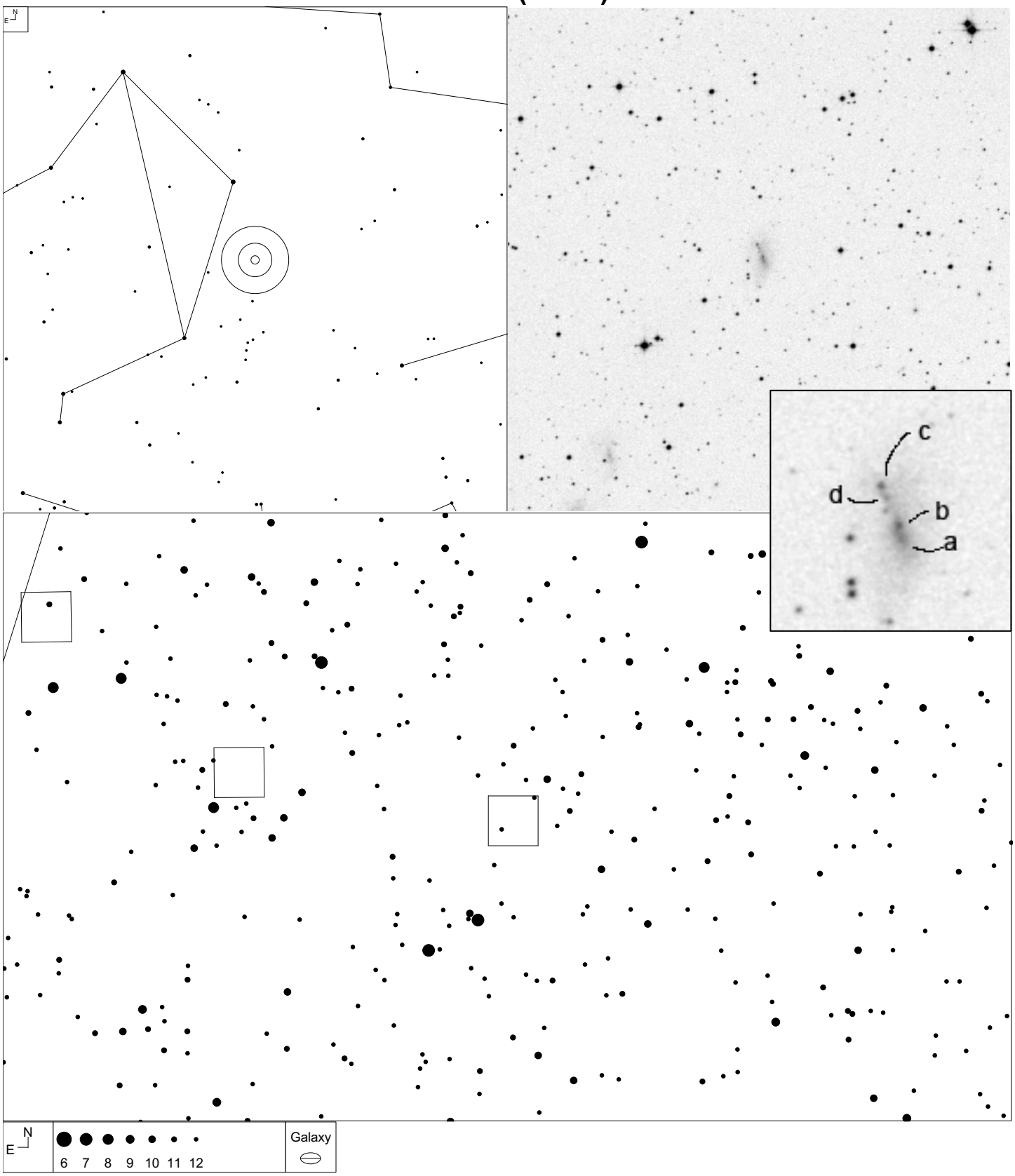
This object is also known as Rose 25.

VV 98 (Libra)



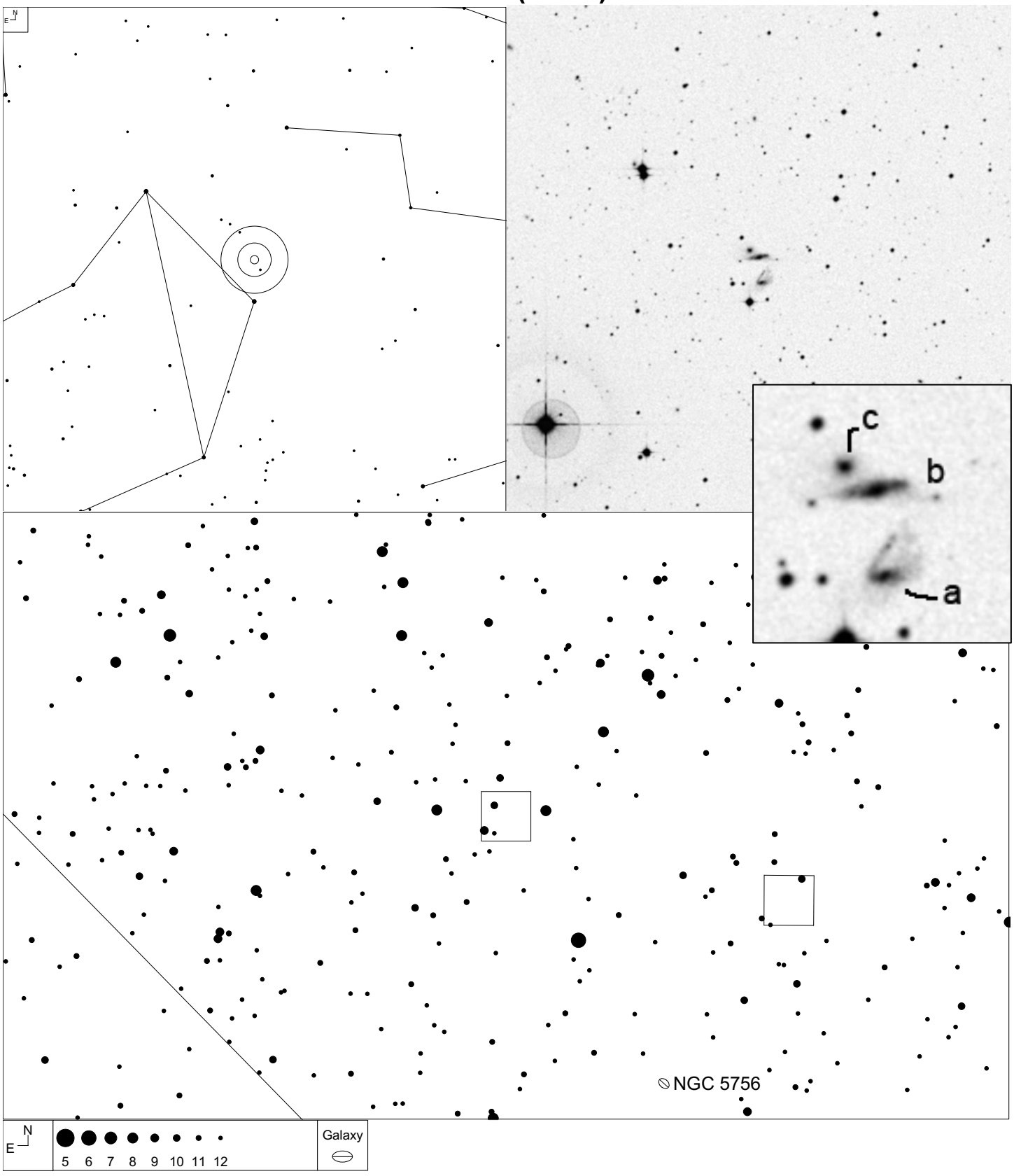
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
98	14 45 01.6	-13 56 48	GGroup	13.3	16x10	PC
98d	14 44 57.2	-13 57 54	Star	14.0b		
98c	14 45 00.9	-13 56 56	G	14.96		
98a	14 45 01.9	-13 56 40	G	14.96		
98b	14 45 01.9	-13 56 50	G	15.45		

VV 164 (Libra)



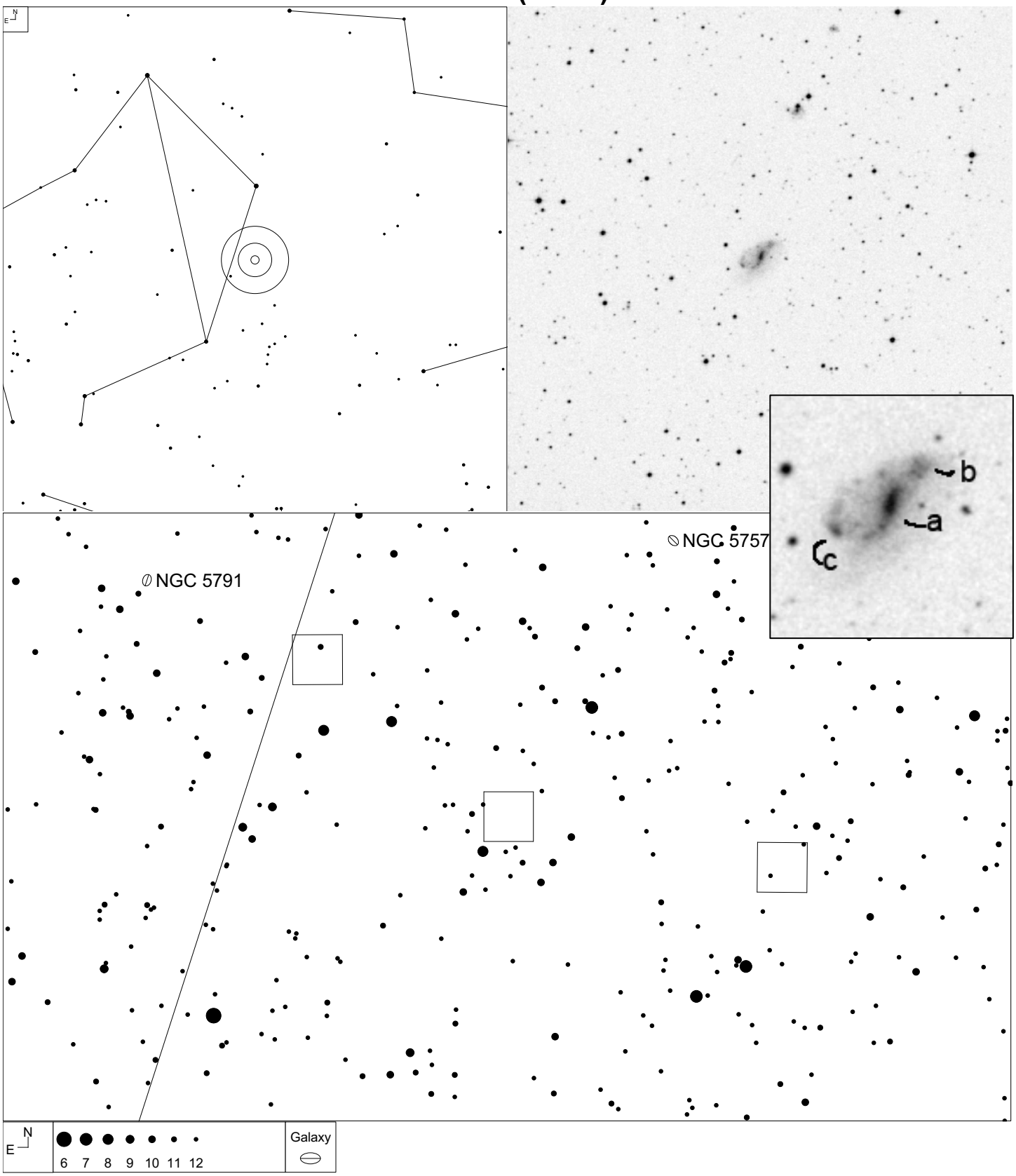
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
164	14 45 25.8	-20 41 07	G	15.03	14x8	Ch
164a	14 45 25.5	-20 41 13	PofG			
164b	14 45 25.7	-20 41 07	PofG			
164d	14 45 16.1	-20 40 51	PofG			
164c	14 45 26.3	-20 40 45	PofG			

VV 322 (Libra)



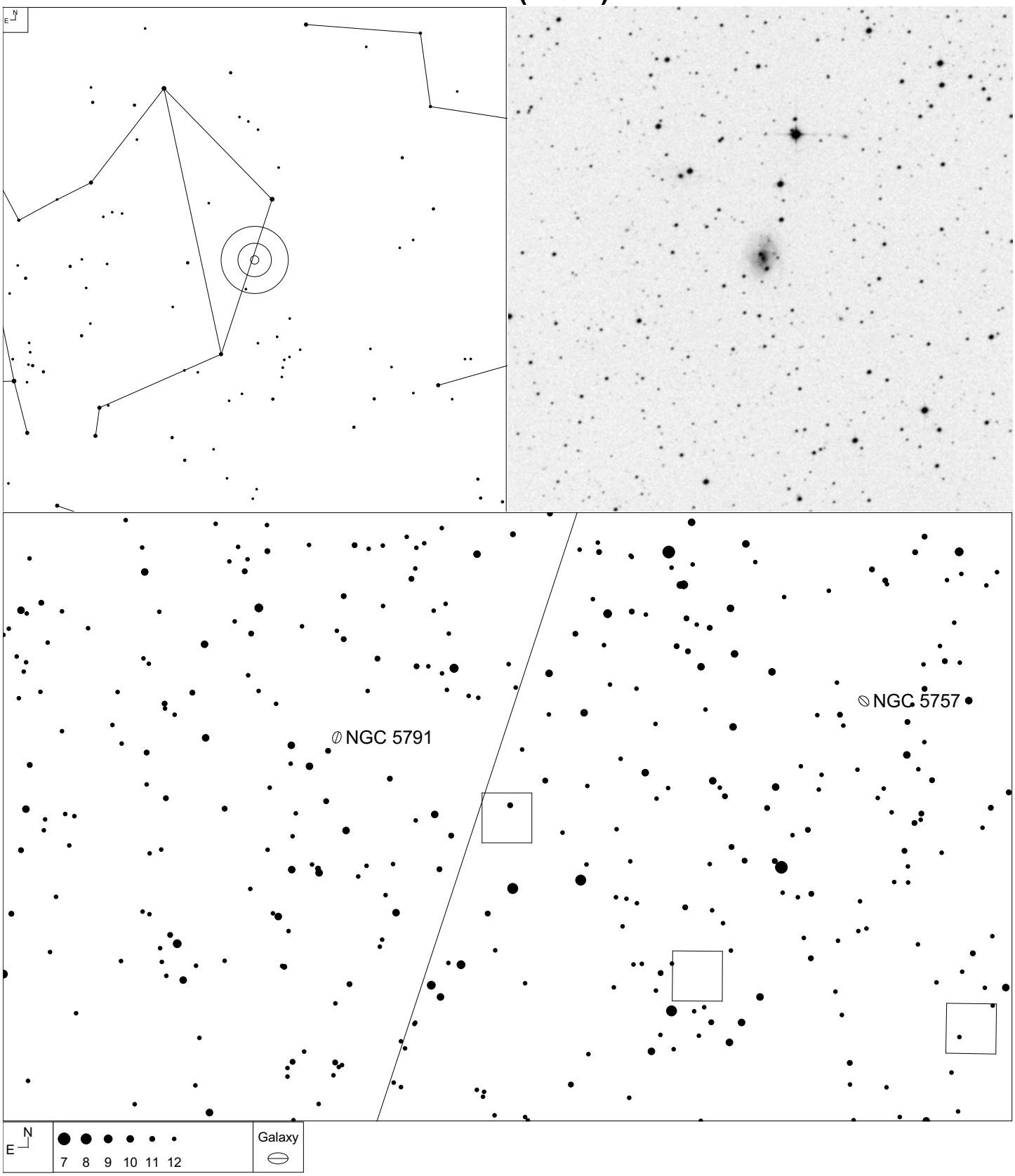
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
322	14 50 48.6	-13 31 49	GTrpl			NNN
322a	14 50 47.9	-13 32 16	G	15.5	6x5	
322b	14 50 48.2	-13 31 31	G	15.5	7x2	
322c	14 50 49.3	-13 31 19	G	17	3x3	

VV 130 (Libra)



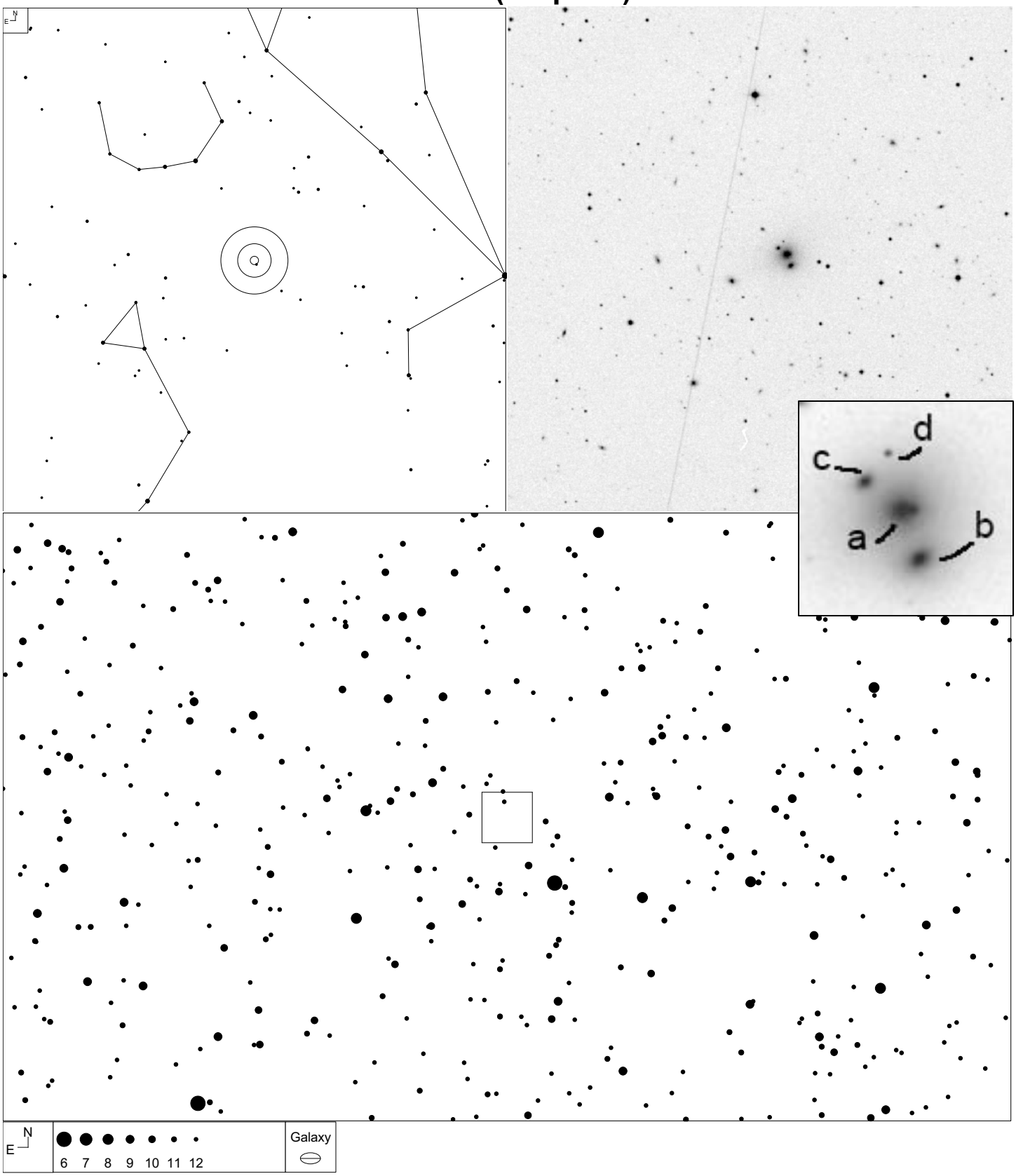
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
130	14 51 12.4	-20 26 27	G	13.98	20x11	NNN
130b	14 51 10.9	-20 26 03	PofG			
130a	14 51 12.1	-20 26 24	PofG			
130c	14 51 12.5	-20 26 41	PofG			

VV 137 (Libra)



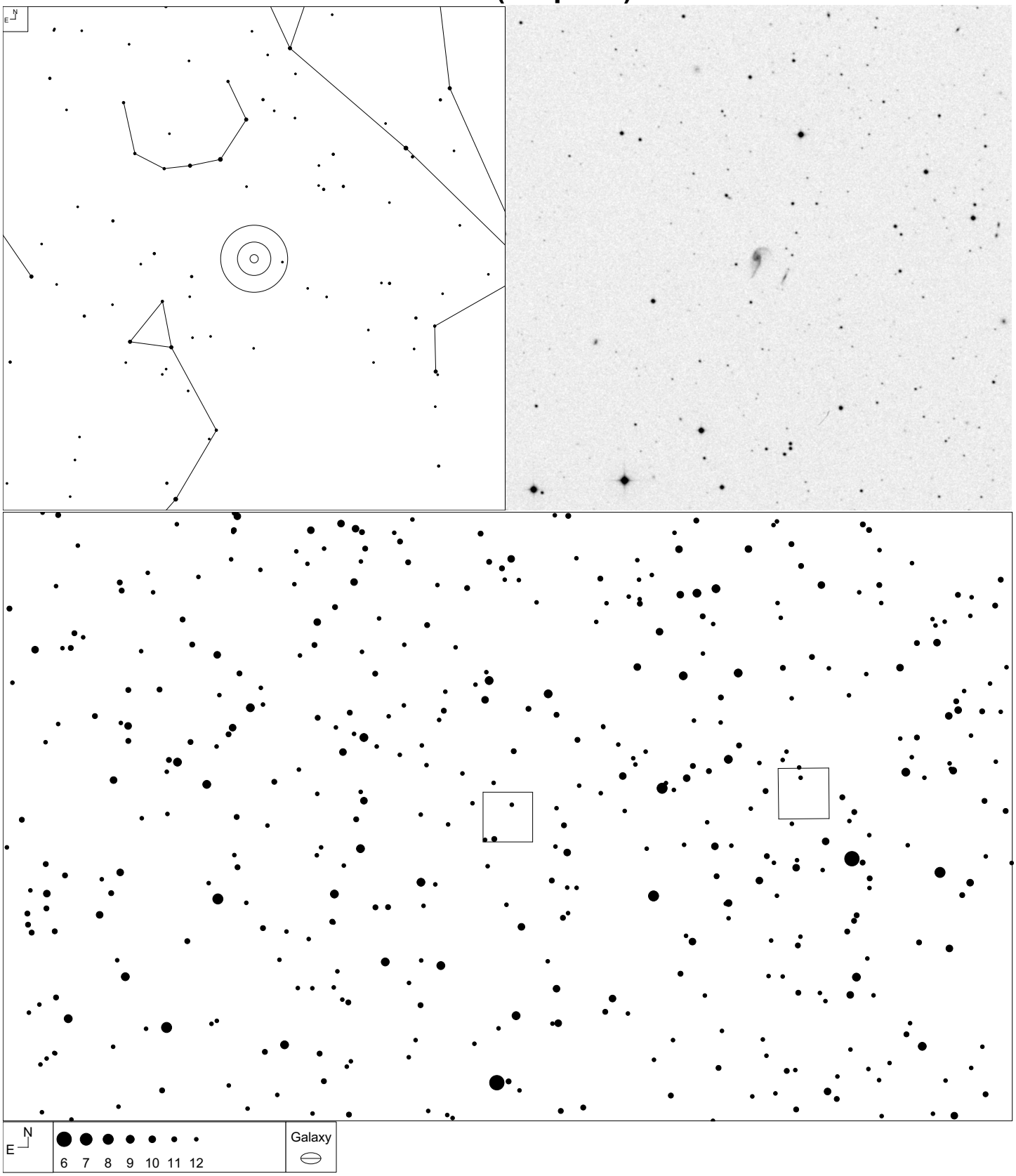
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
137	14 55 12.8	-19 39 53	G	14.06	17x1	N

VV 139 (Serpens)



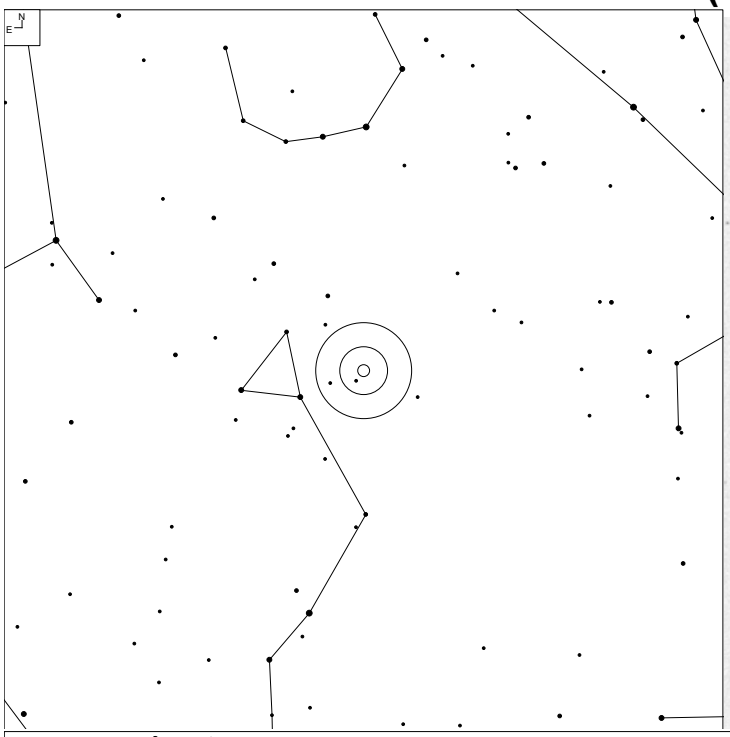
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
139	15 19 28.2	+20 53 37	GGroup			N
139b	15 19 24.2	+20 53 27	G	15.65	6x4	
139a	15 19 24.7	+20 53 47	G	14.96	8x8	
139d	15 19 25.2	+20 54 10	G	19.2g	1x1	
139c	15 19 25.8	+20 53 58	G	17.00	5x3	

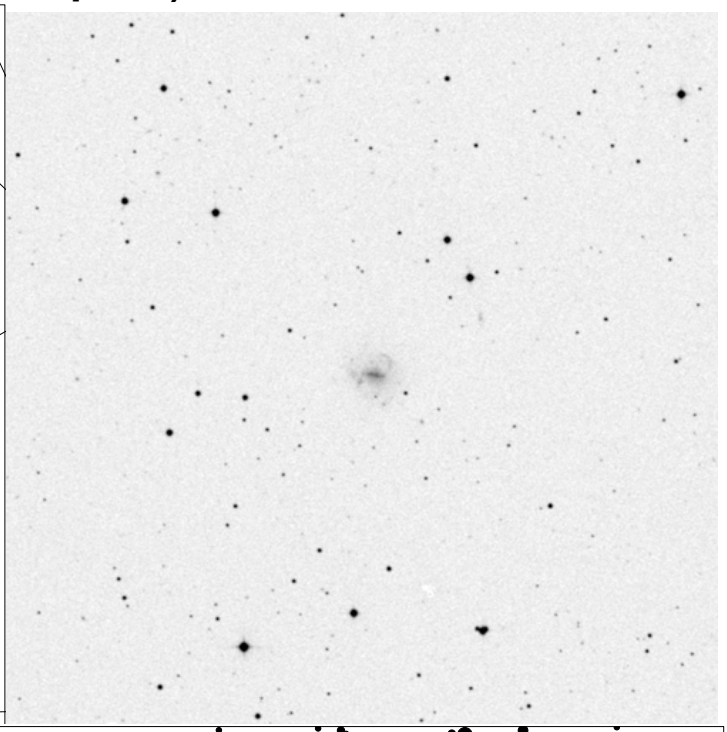
VV 227 (Serpens)

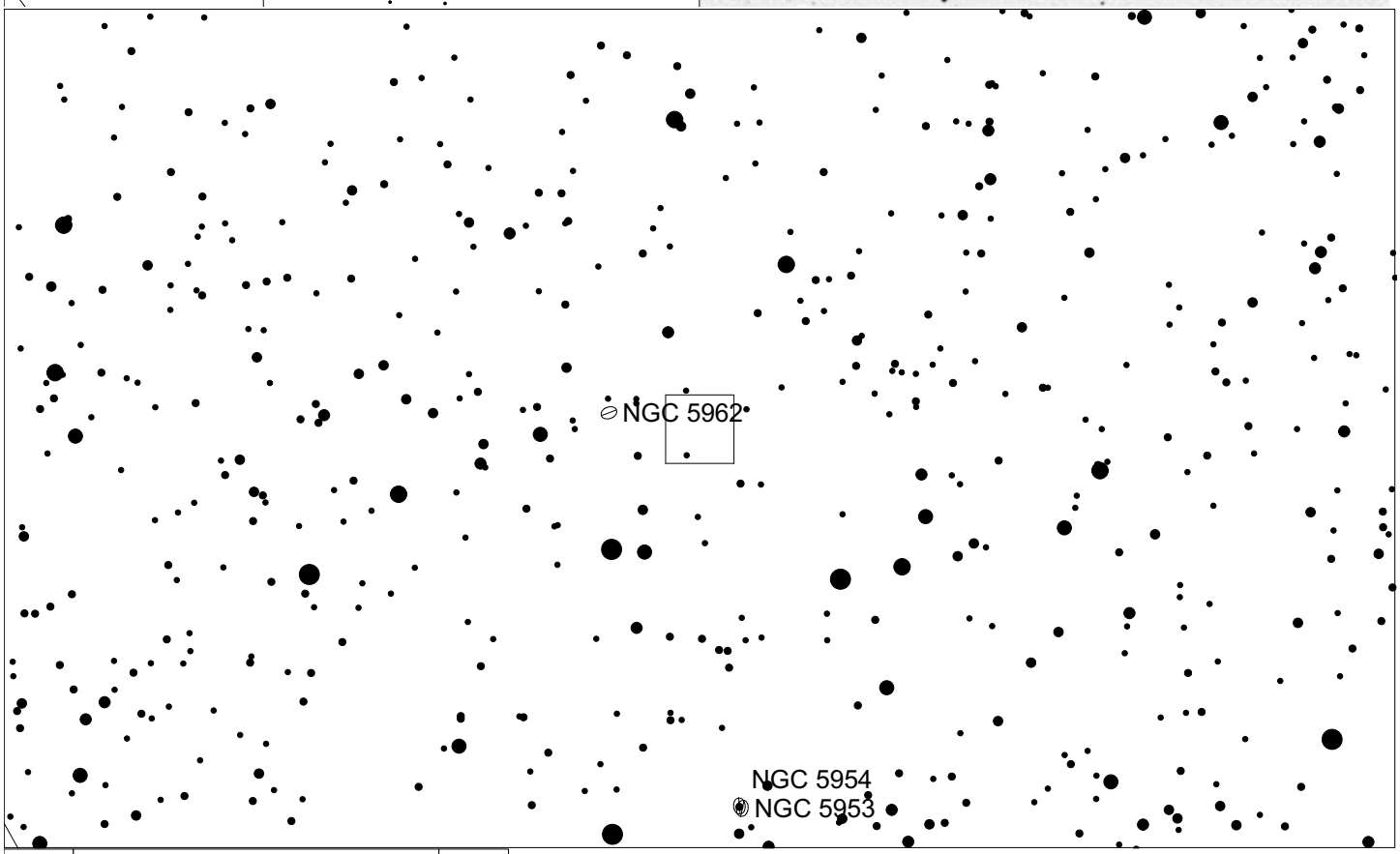


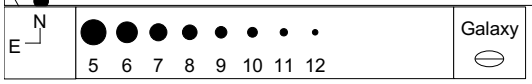
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
227	15 25 39.8	+20 47 18	GPair?	15.5	11x7	PK

VV 132 (Serpens)



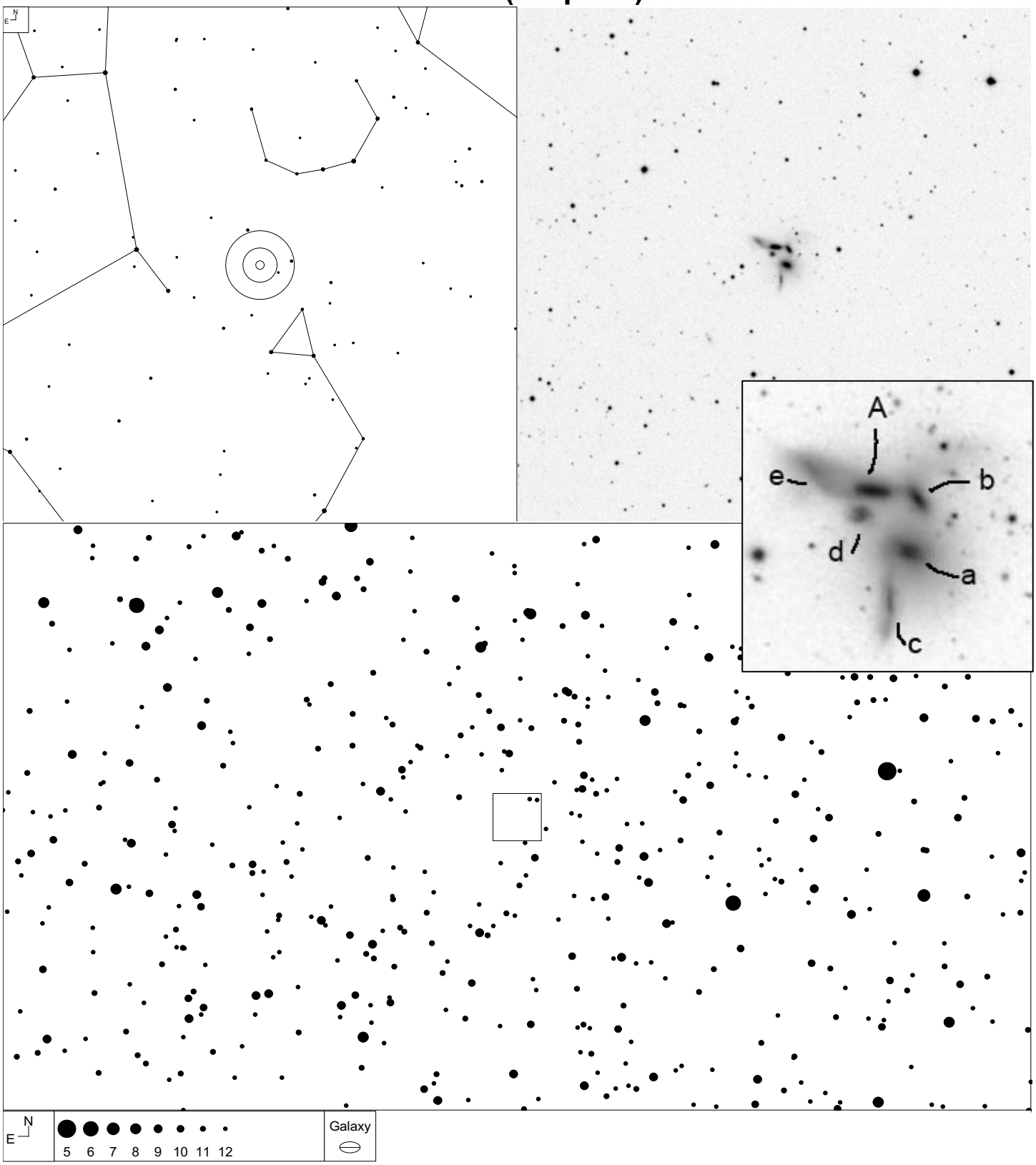






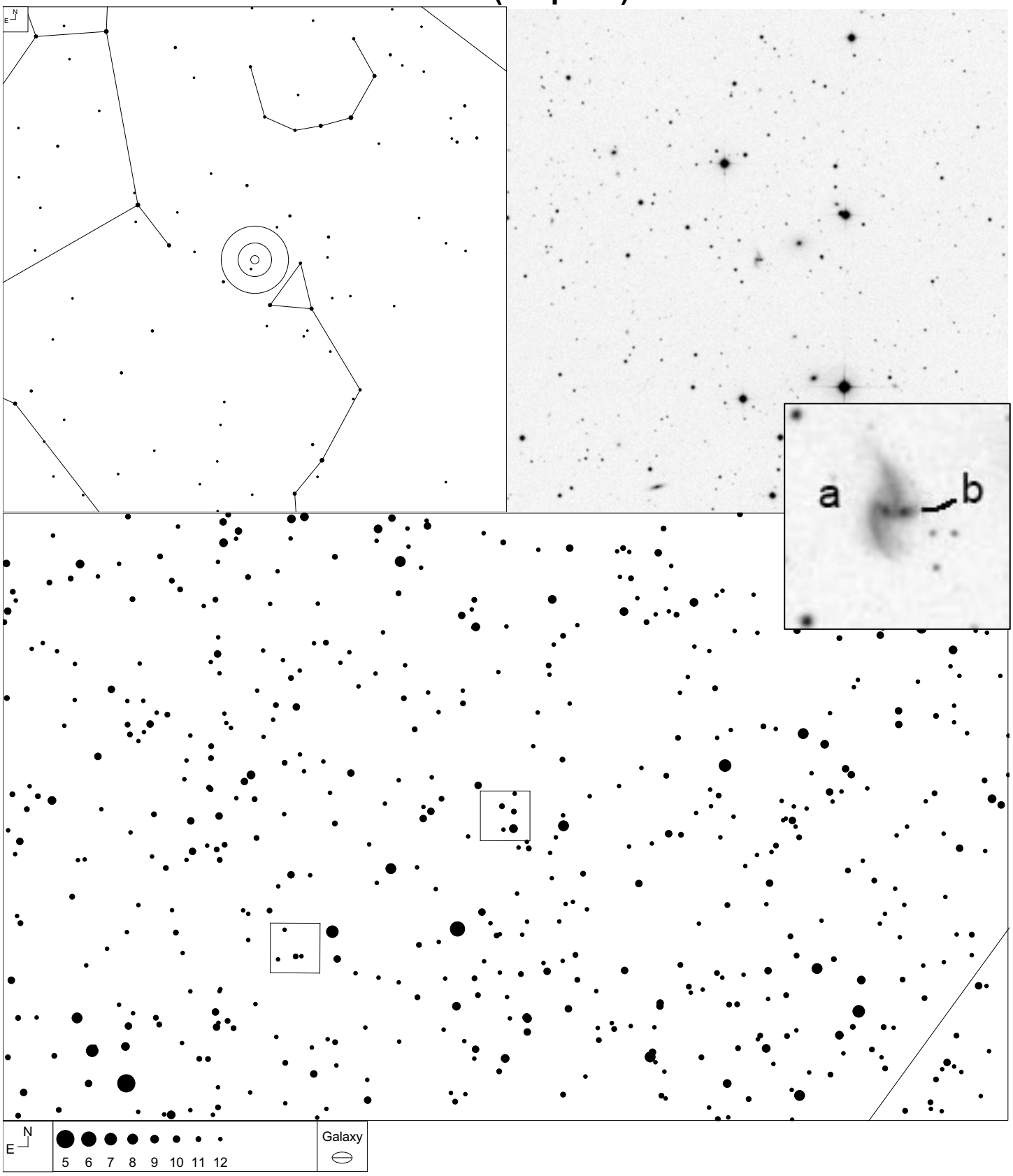
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
132	15 35 10.5	+16 32 58	G	14	17x17	N

VV 115 (Serpens)



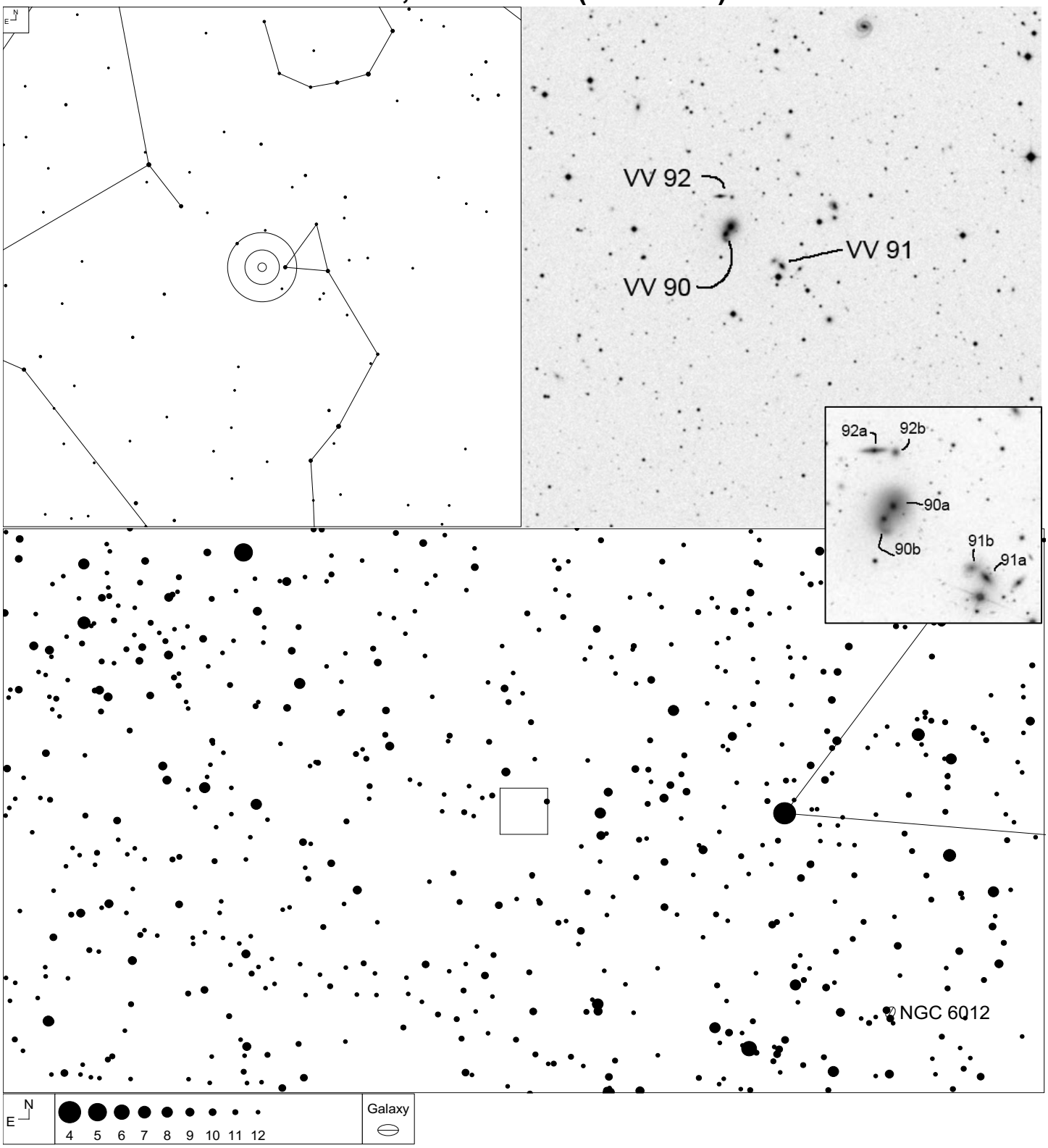
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
115	15 59 11.9	+20 45 31	GGroup			NNN
115b	15 59 10.8	+20 45 44	G	15.31	4x2	
115a	15 59 11.1	+20 45 17	G	14.98	5x4	
115c	15 59 11.8	+20 44 49	G	16.75	9x2	
115A	15 59 12.5	+20 45 48	G	14.7	4x2	
115d	15 59 12.9	+20 45 36	G	16.47	2x2	
115e	15 59 14.5	+20 45 57	G	16.7	8x4	

VV 156 (Serpens)



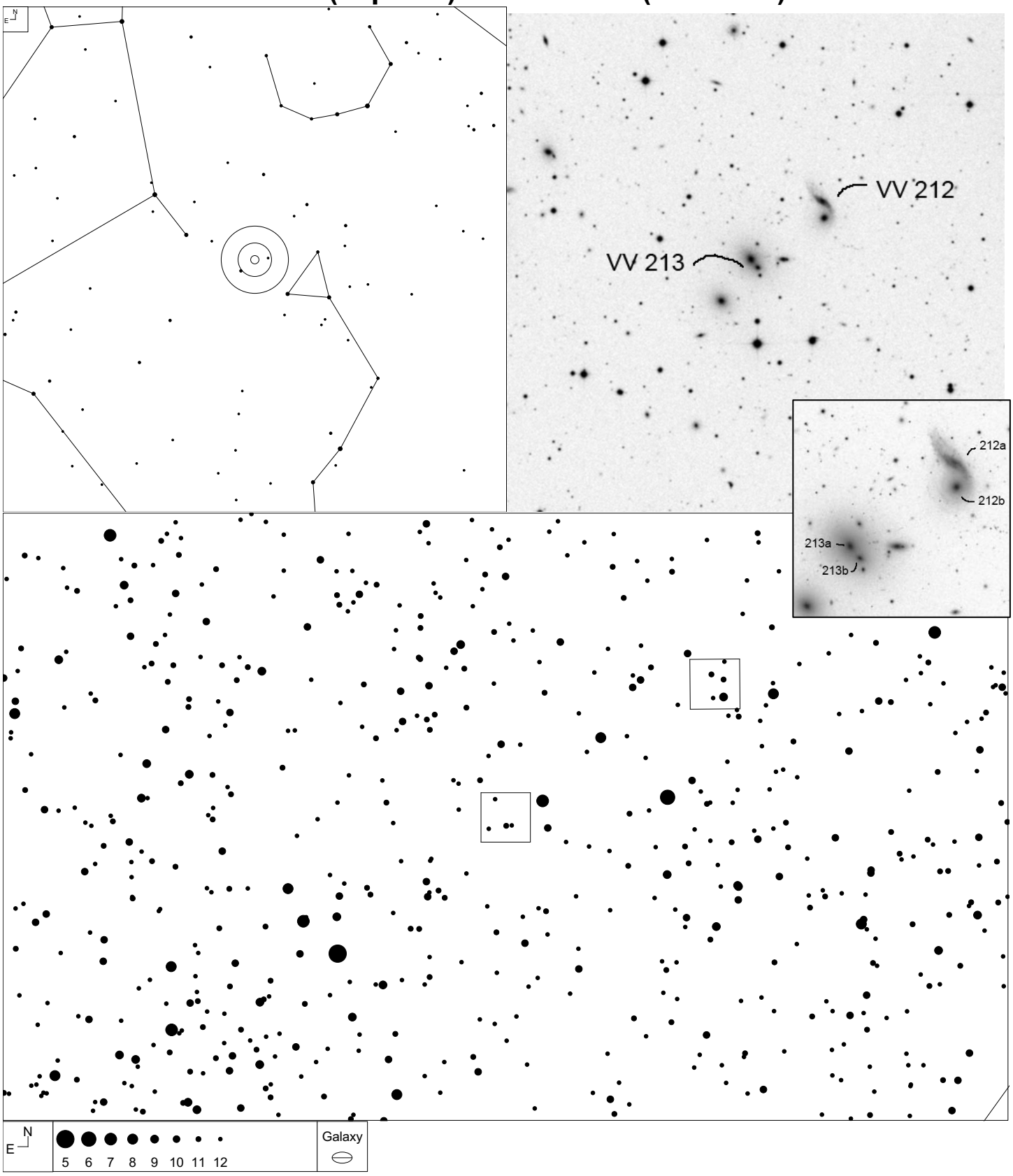
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
156	16 00 14.7	+18 22 32	GPair			N
156a	16 00 14.4	+18 22 33	G	17.8g	4x3	
156b	16 00 14.9	+18 22 33	G	14.87	5x4	

VV 90, 91 and 92 (Hercules)



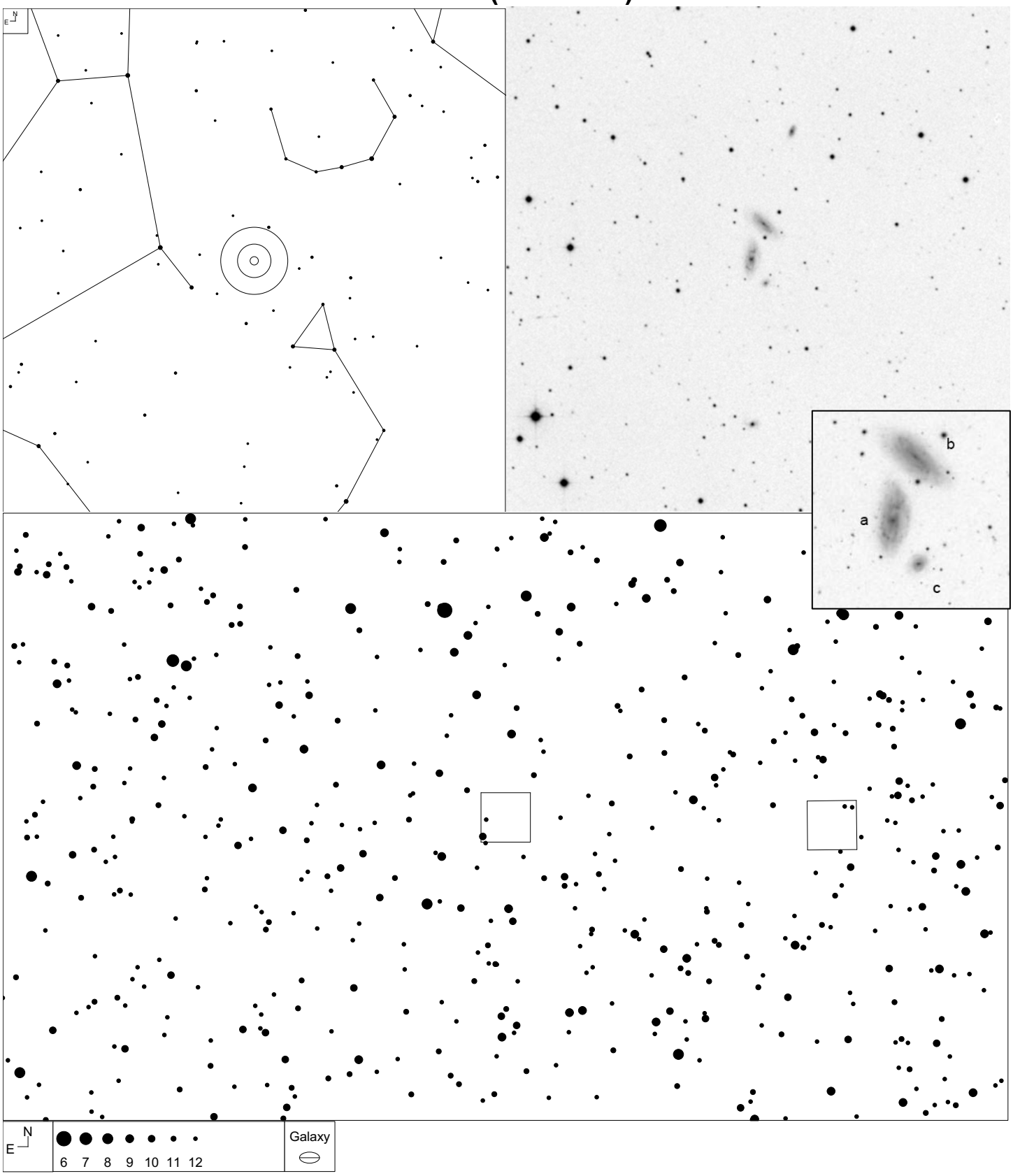
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
90	16 02 08.2	+15 41 38	GPair			PC
90a	16 02 08.0	+15 41 47	G	14.8g	7x6	
90b	16 02 08.6	+15 41 35	G	15.4g	7x5	
91	16 02 02.4	+15 40 43	GPair			PC
91a	16 02 01.9	+15 40 38	G	15.8	2x2	
91b	16 02 02.8	+15 40 49	G	16.5	3x2	
92	16 02 08.7	+15 42 39	GPair			PDb
92b	16 02 07.9	+15 42 39	G	17.9g	2x2	
92a	16 02 09.3	+15 42 40	G	16.5g	5x2	

VV 212 (Arp 122) and VV 213 (Hercules)



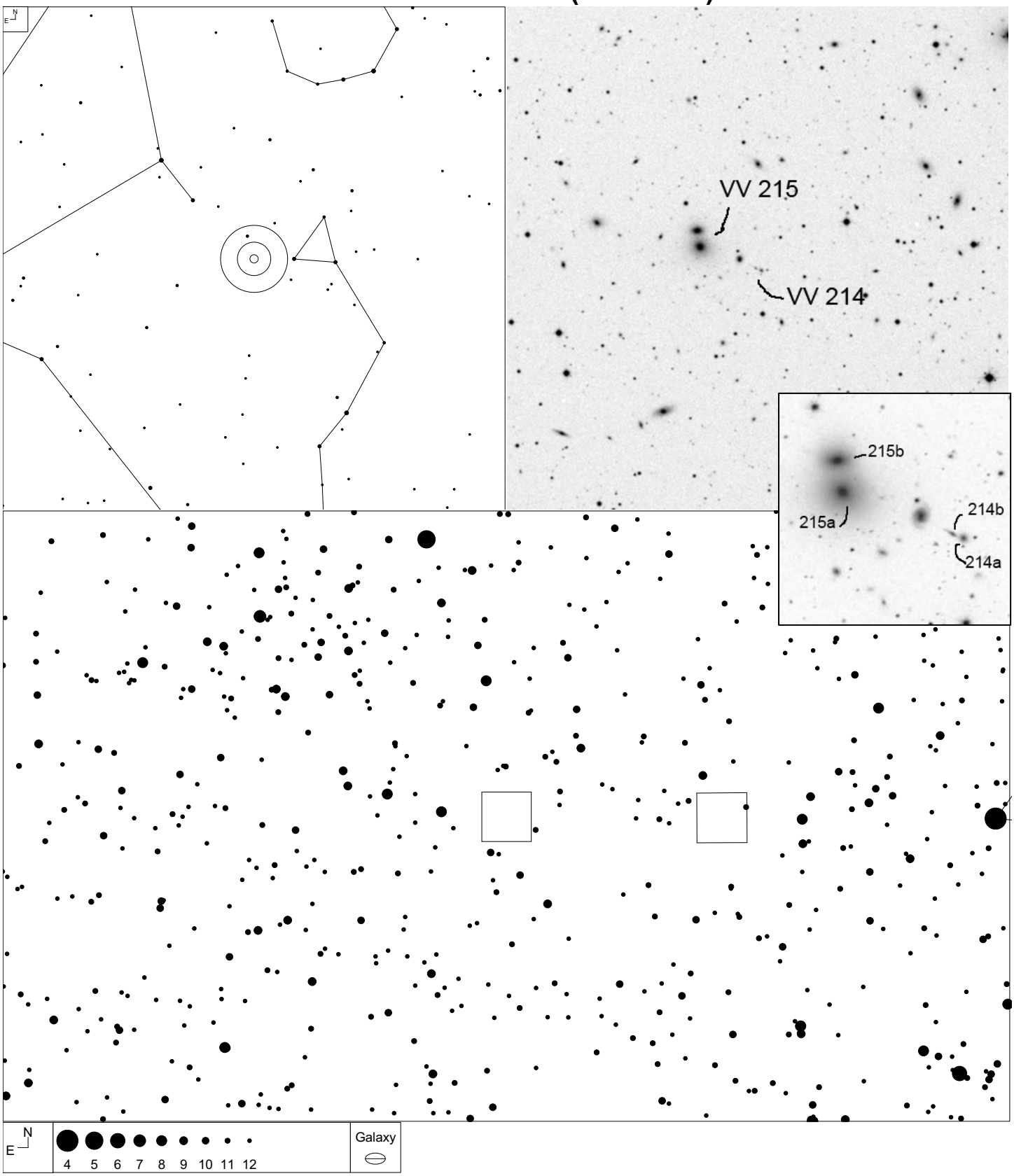
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
213	16 04 35.3	+17 43 09	GPair			PC
213b	16 04 34.9	+17 43 03	G	15.4g	7x6	
213a	16 04 35.8	+17 43 18	G	14.5g	11x8	

VV 327 (Hercules)



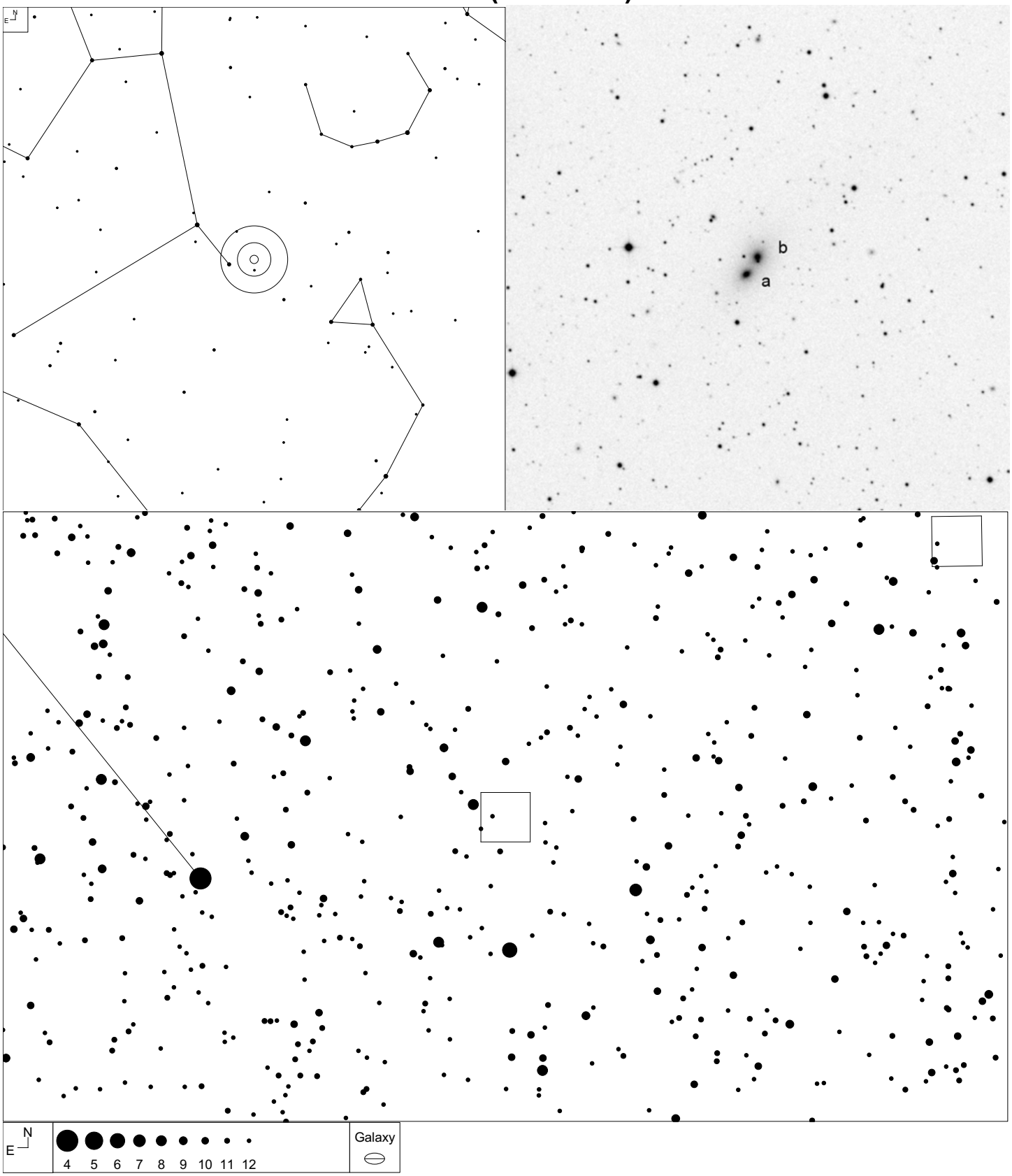
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
327	16 06 05.1	+20 47 13	GTrpl			PD
327c	16 06 04.1	+20 46 21	G	17.0	3x3	
327b	16 06 04.4	+20 48 06	G	15.4g	12x5	
327a	16 06 05.9	+20 47 03	G	15.2	11x6	

VV 214 and VV 215 (Hercules)



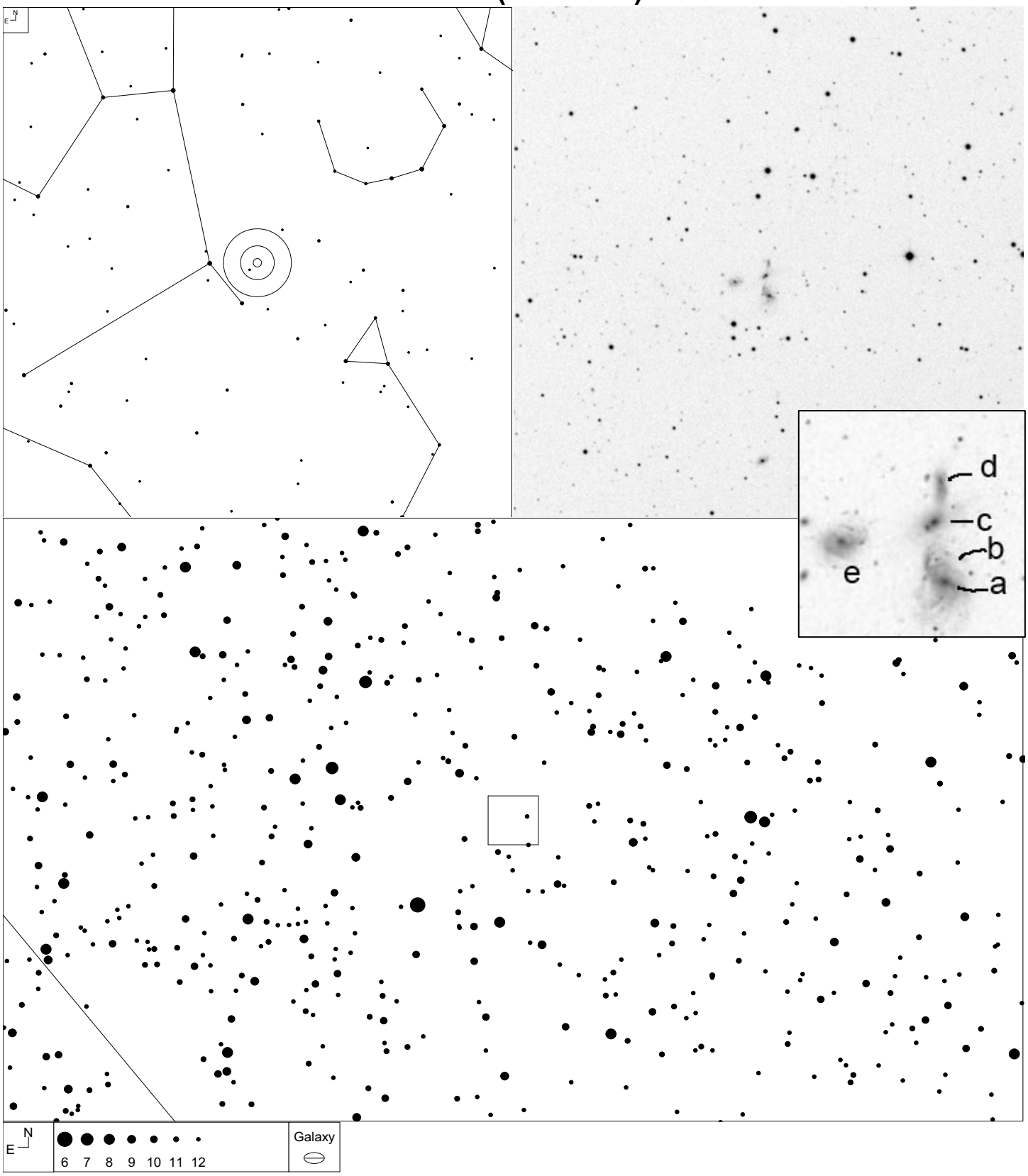
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
214	16 06 18.2	+15 40 29	GPair			PK
214a	16 06 17.8	+15 40 27	G	18.2g	2x2	
214b	16 06 18.3	+15 40 49	G	18.4g	2x1	
215	16 06 25.7	+15 41 23	GPair			PK
215a	16 06 25.5	+15 41 07	G	13.4	8x8	
215b	16 06 25.8	+15 41 37	G	15.4	6x4	

VV 192 (Hercules)



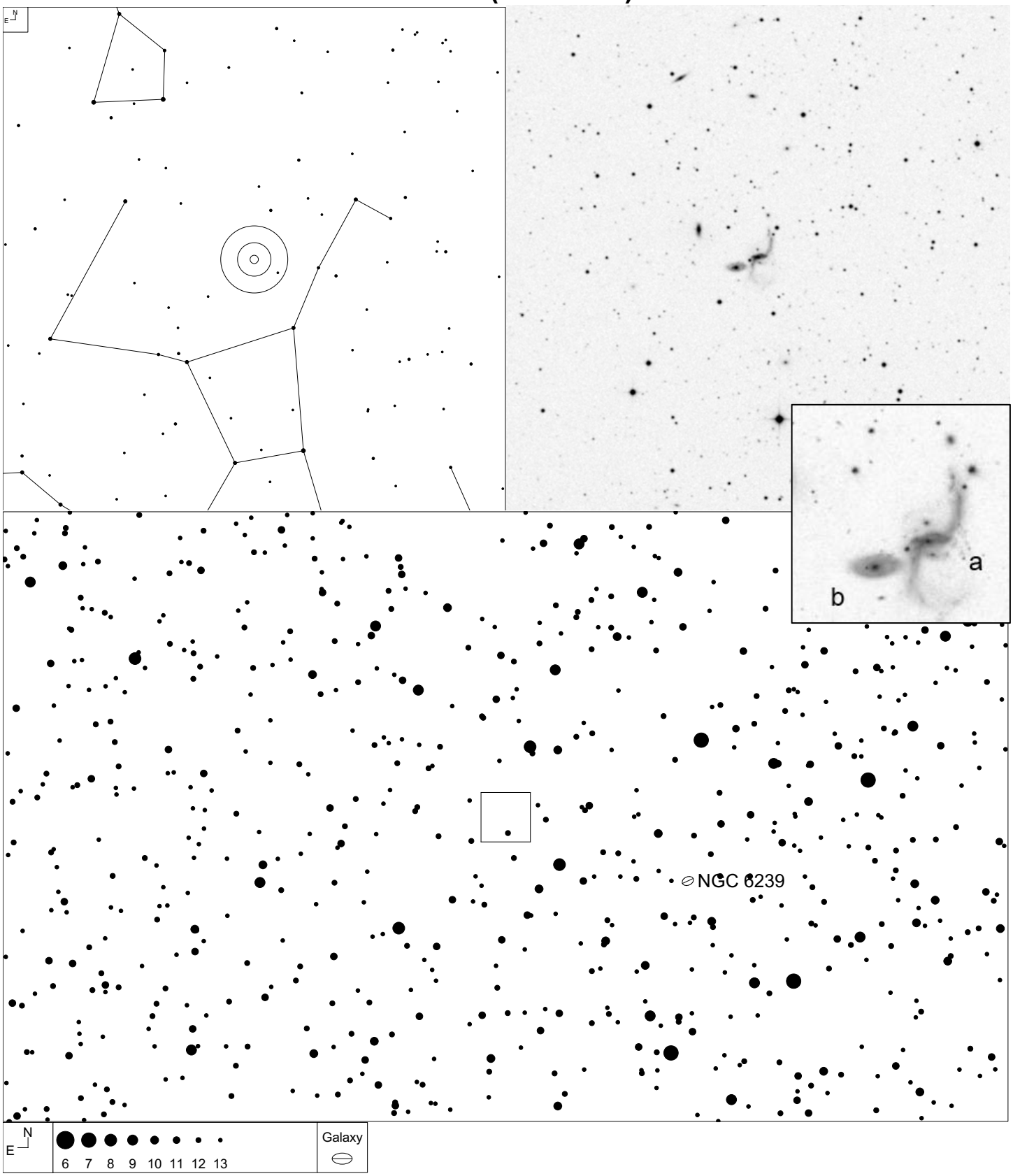
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
192	16 15 34.8	+19 27 27	GPair			PKb
192b	16 15 34.1	+19 27 41	G	14.4b	12x9	
192a	16 15 35.6	+19 27 12	G	14.3b	8x6	

VV 129 (Hercules)



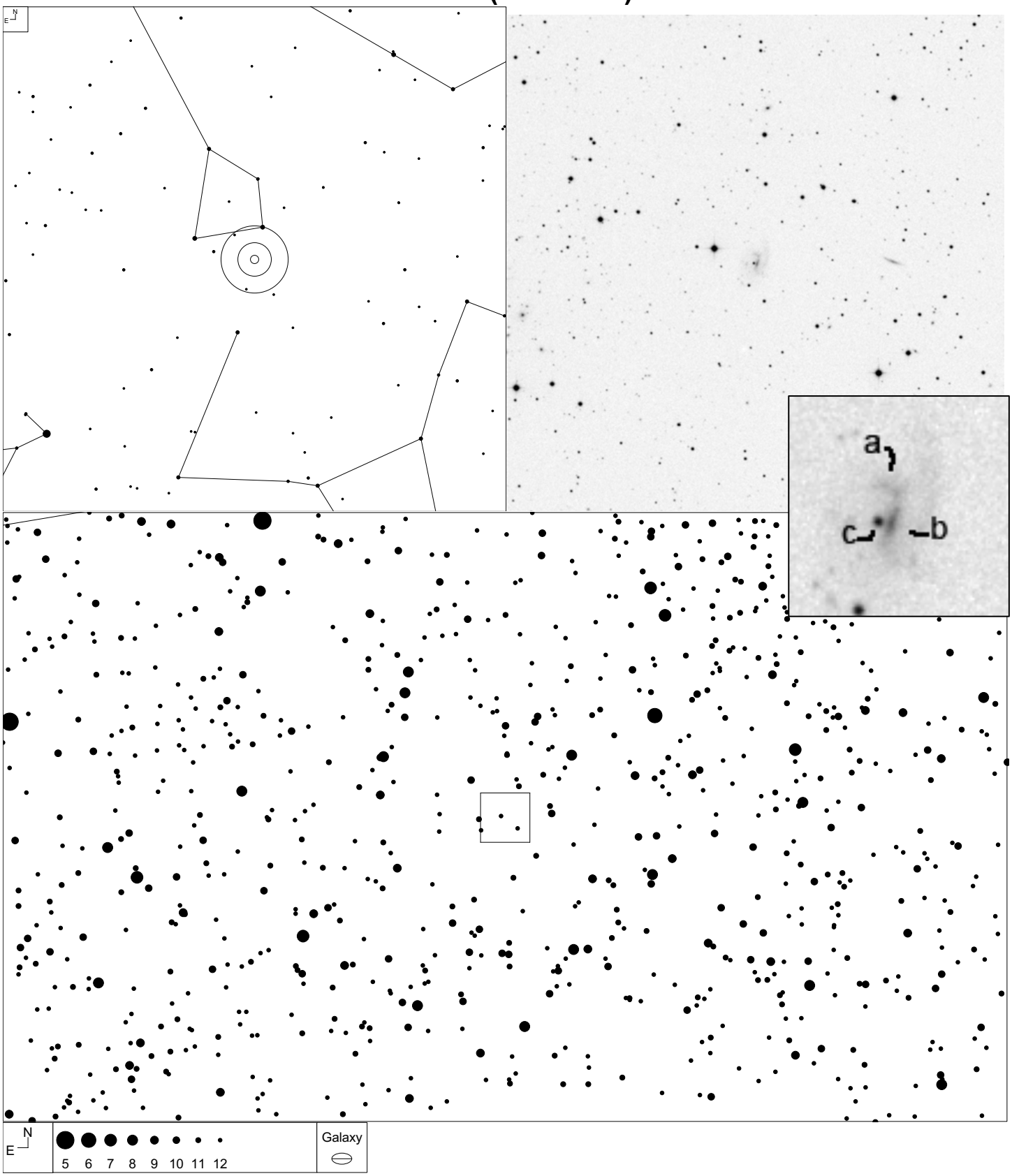
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
129	16 18 06.3	+21 33 39	GGroup			NN
129a	16 18 05.3	+21 33 14	G	16.1g	7x4	
129d	16 18 05.5	+21 34 12	G	17.7g	4x1	
129c	16 18 05.7	+21 33 48	G	18	2x1	
129b	16 18 05.9	+21 33 24	G	15.5	5x3	
129e	16 18 09.7	+21 33 37	G	16.6g	5x4	

VV 289 (Hercules)



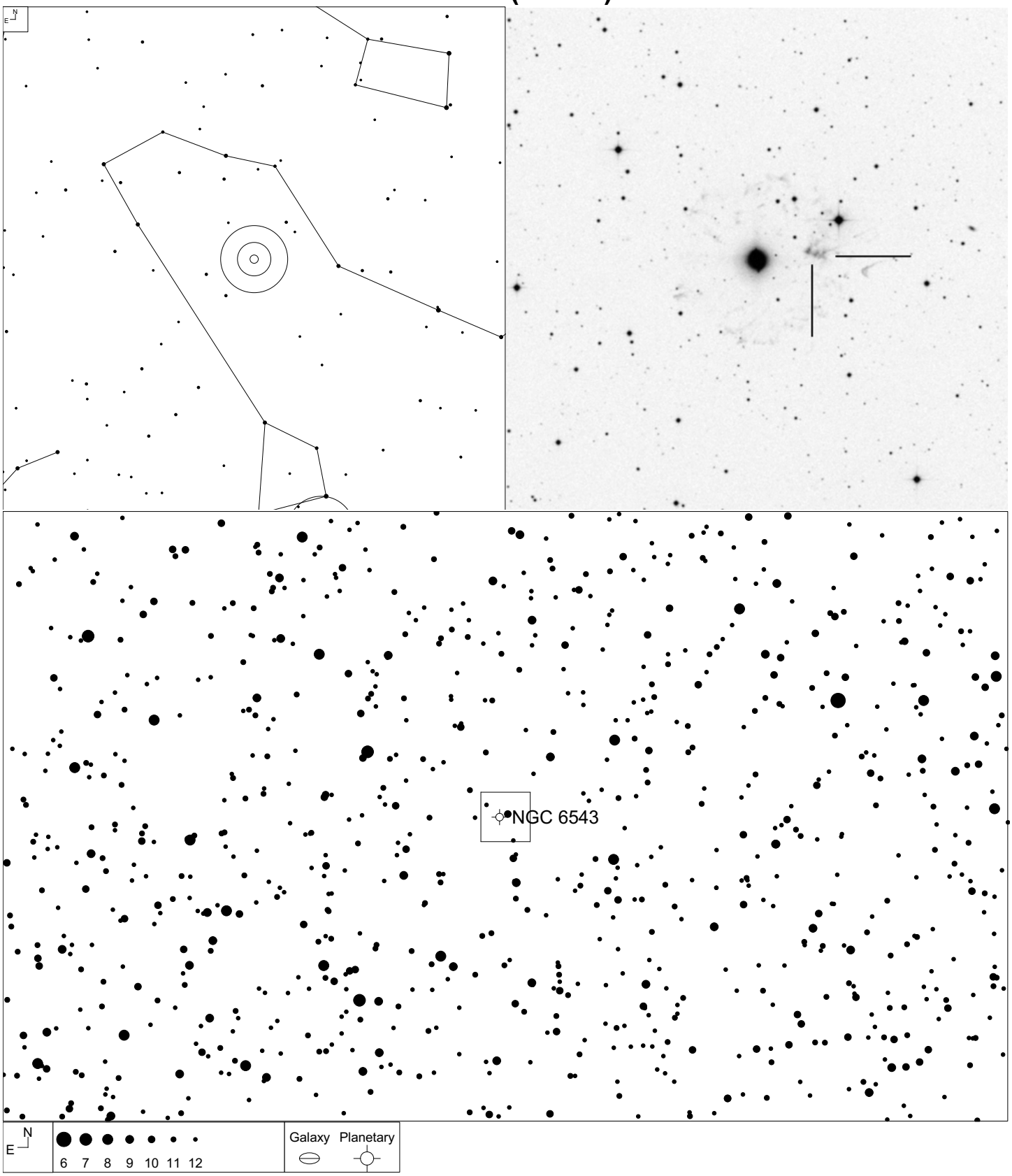
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
289	16 55 00.5	+43 03 30	GPair			PDbt
289a	16 54 58.7	+43 03 40	G	15.4g	7x4	
289b	16 55 02.4	+43 03 19	G	15.5	6x4	

VV 268 (Hercules)



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
268	17 33 38.0	+50 22 25	GPair	16	15x9	N
268a	17 33 37.8	+50 22 41	G			
268b	17 33 37.9	+50 22 25	G			
268c	17 33 38.0	+50 22 22	PofG	16.5		

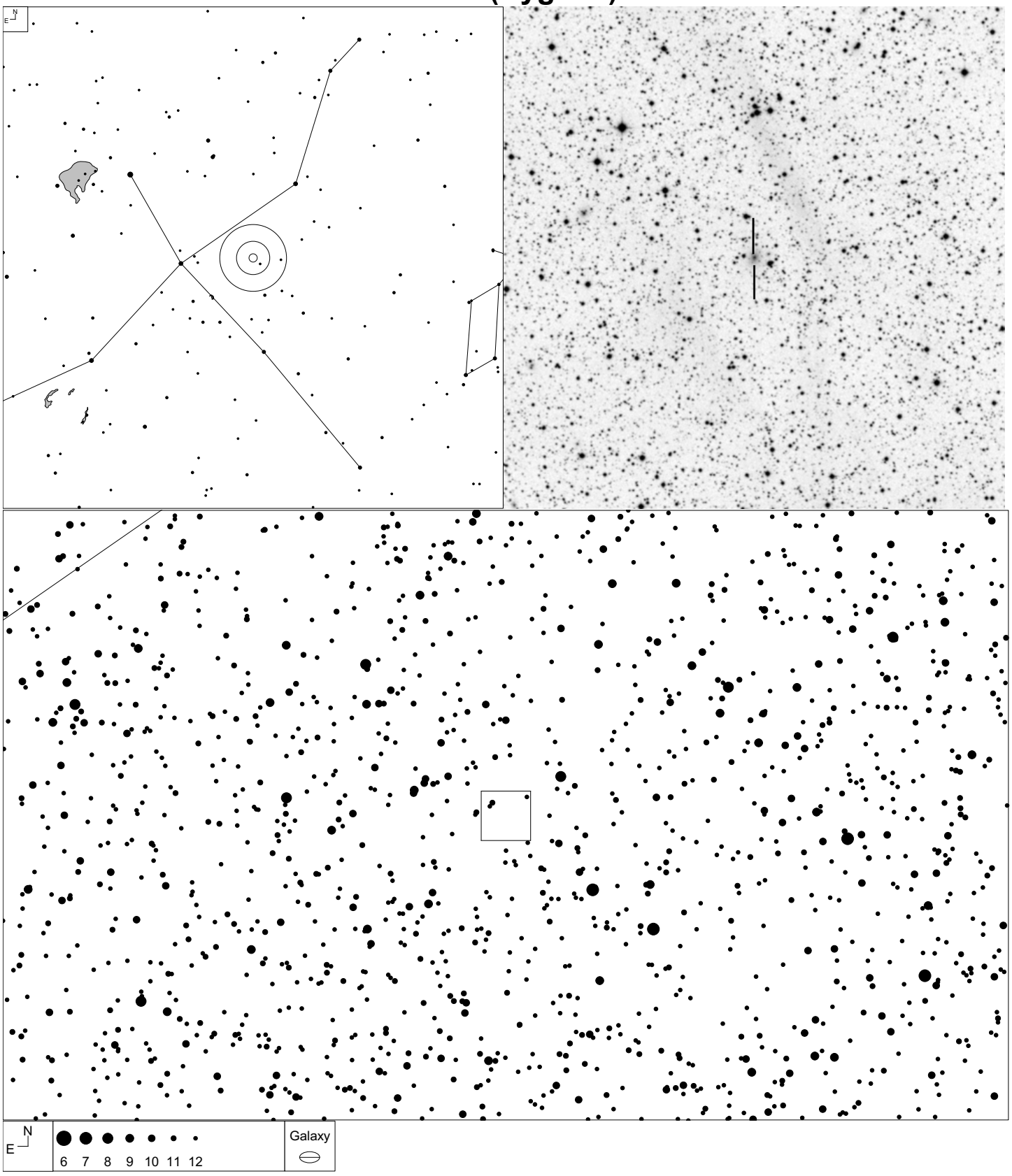
VV 121 (Draco)



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
121	17 58 15.8	+66 38 00	Other	15	10x7	

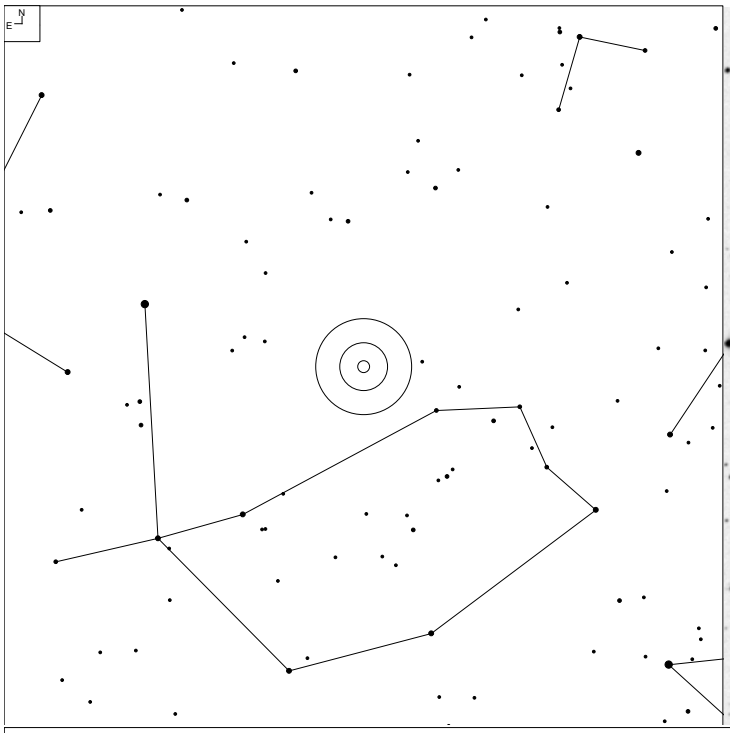
This object is not a galaxy, but rather the brightest segment of the outer halo of NGC 6543.

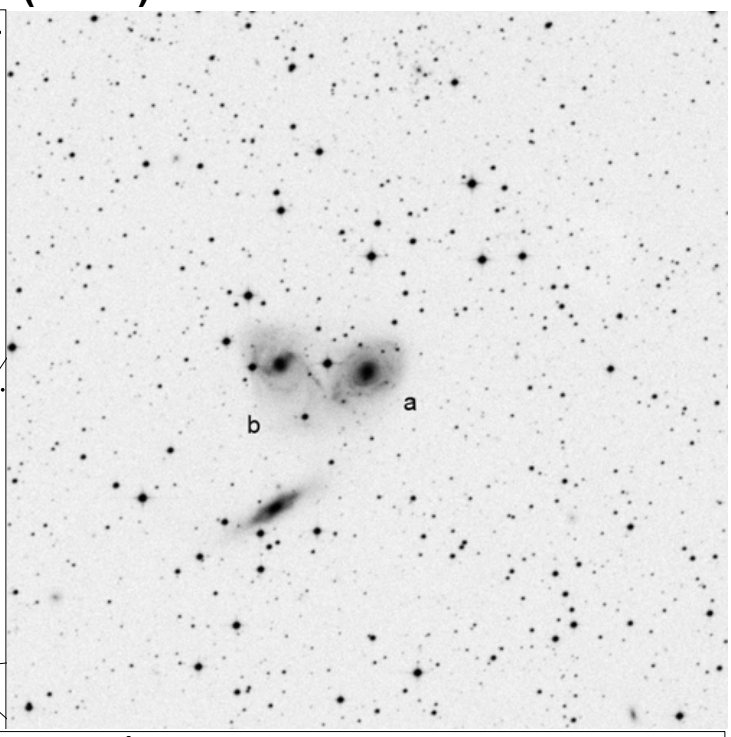
VV 72 (Cygnus)

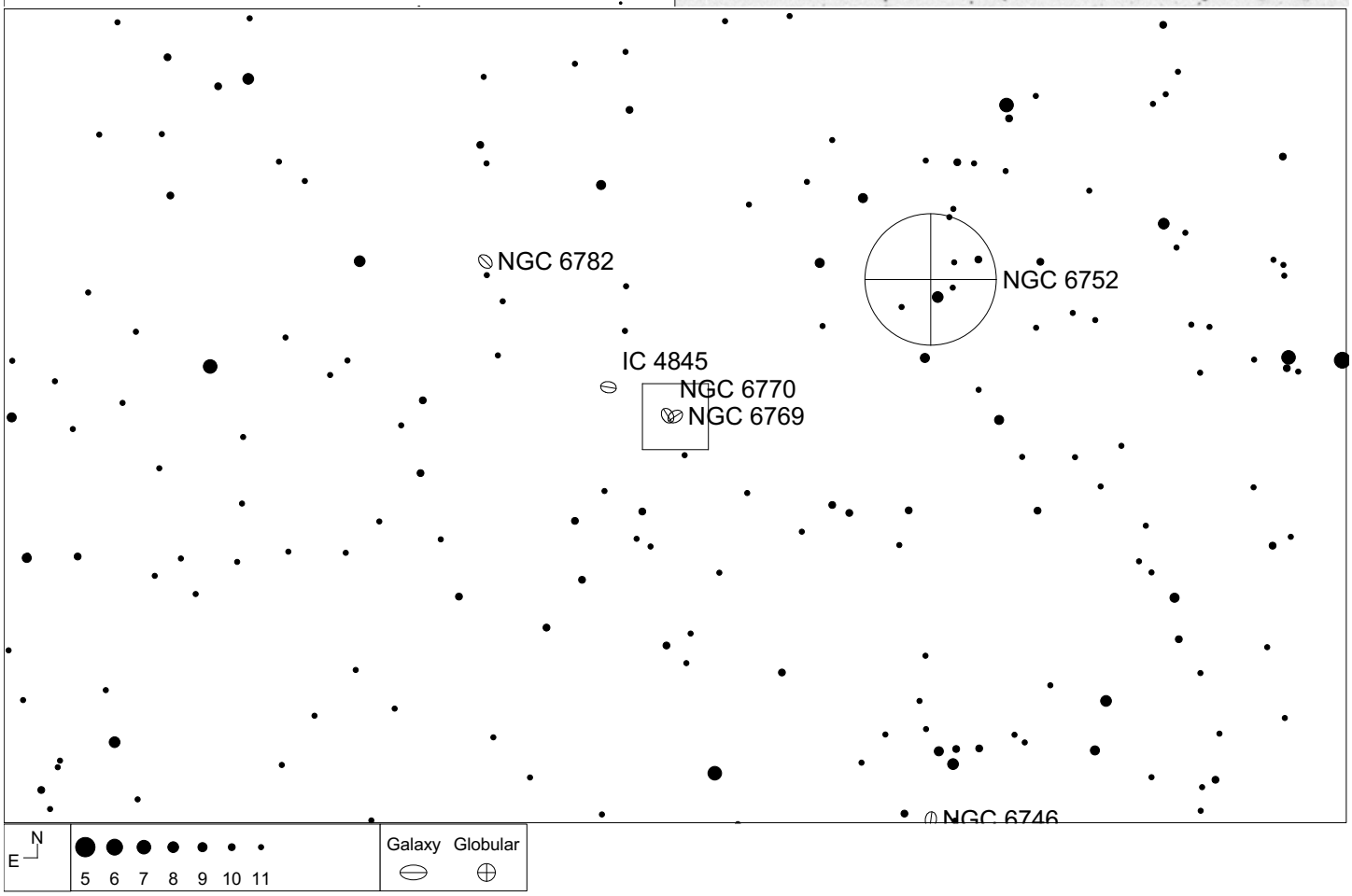


VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
72	19 59 28.3	+40 44 02	G	17.04		PC

VV 304 (Pavo)

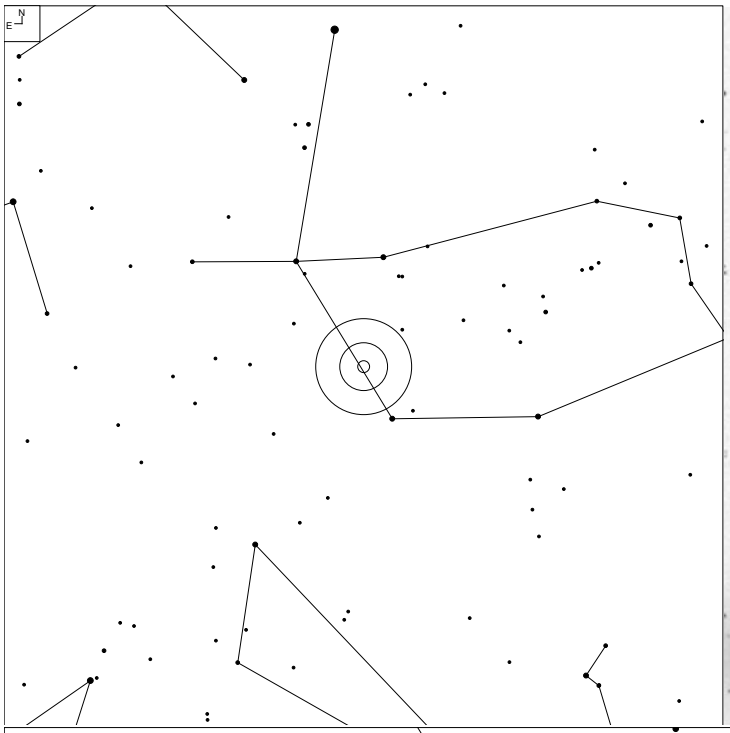


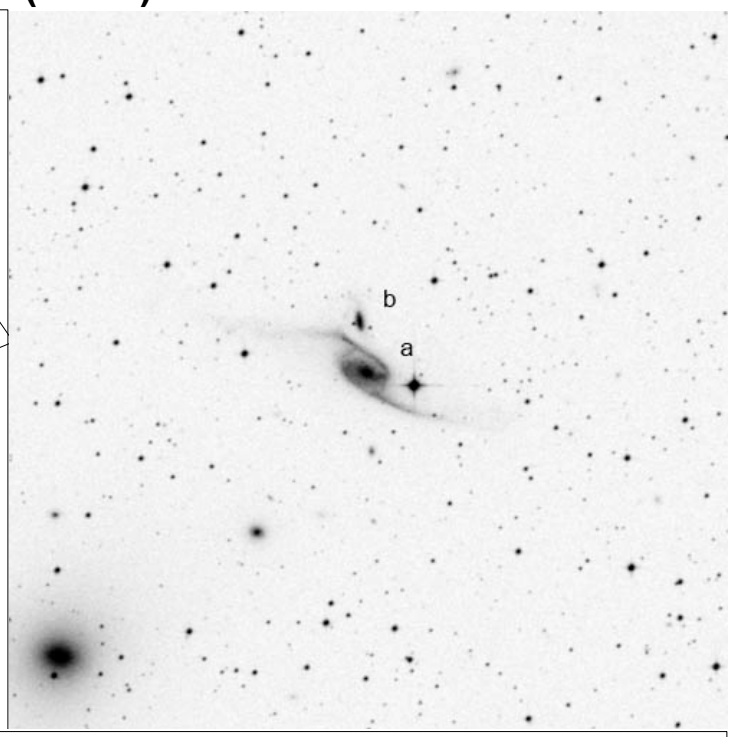


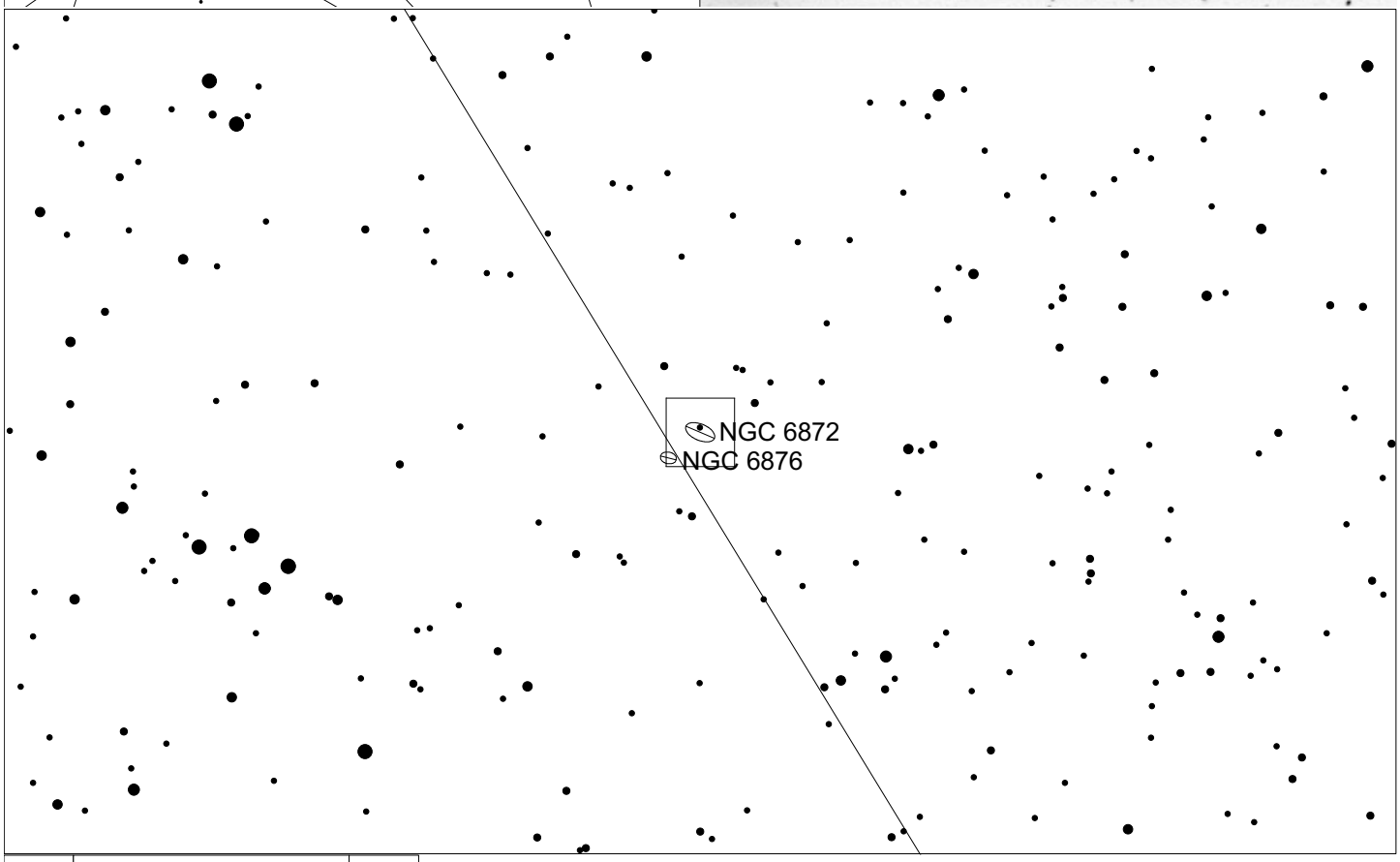


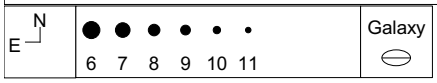
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
304	19 18 30.0	-60 29 56	GPair			PDdf
304a	19 18 22.6	-60 30 03	G	12.55	23x15	
304b	19 18 37.3	-60 29 50	G	12.83	23x17	

VV 297 (Pavo)



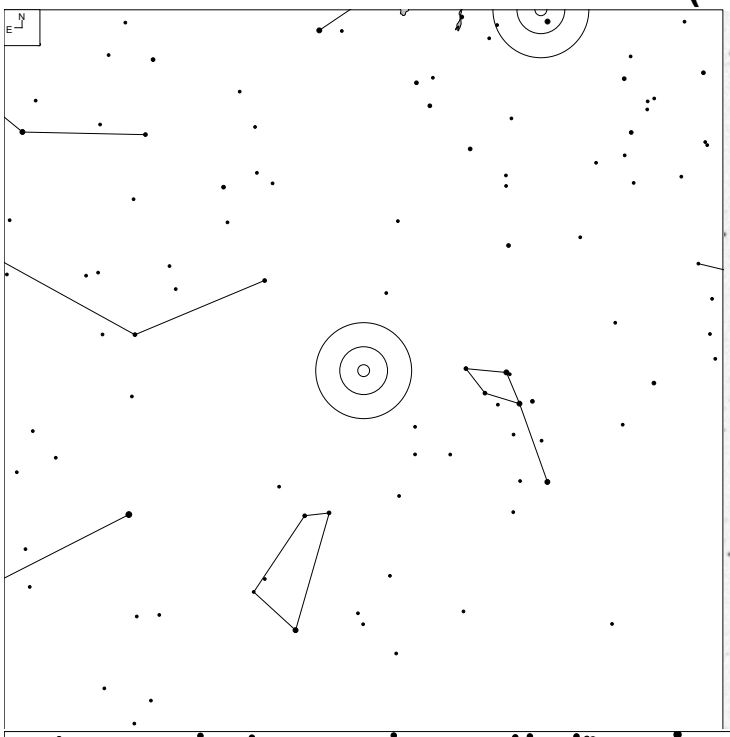


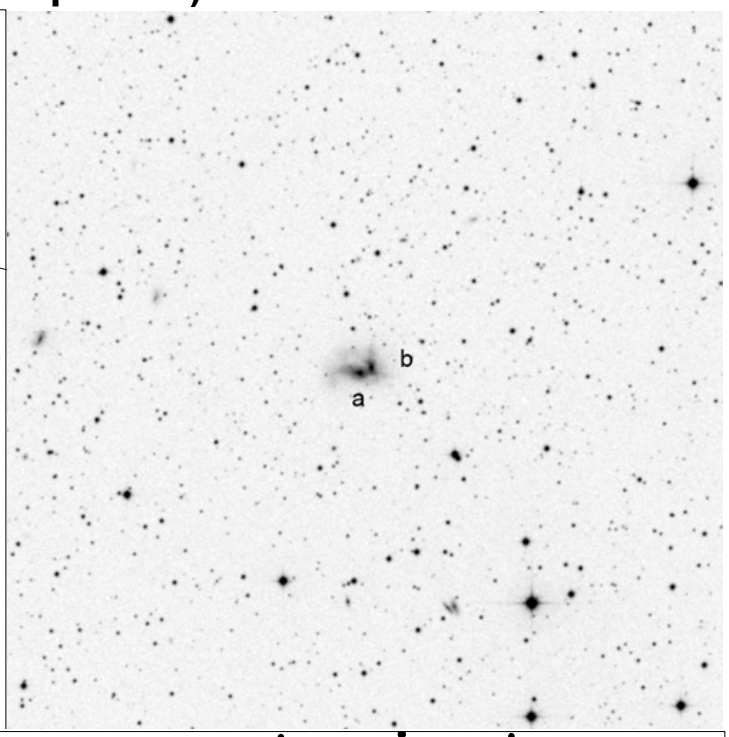


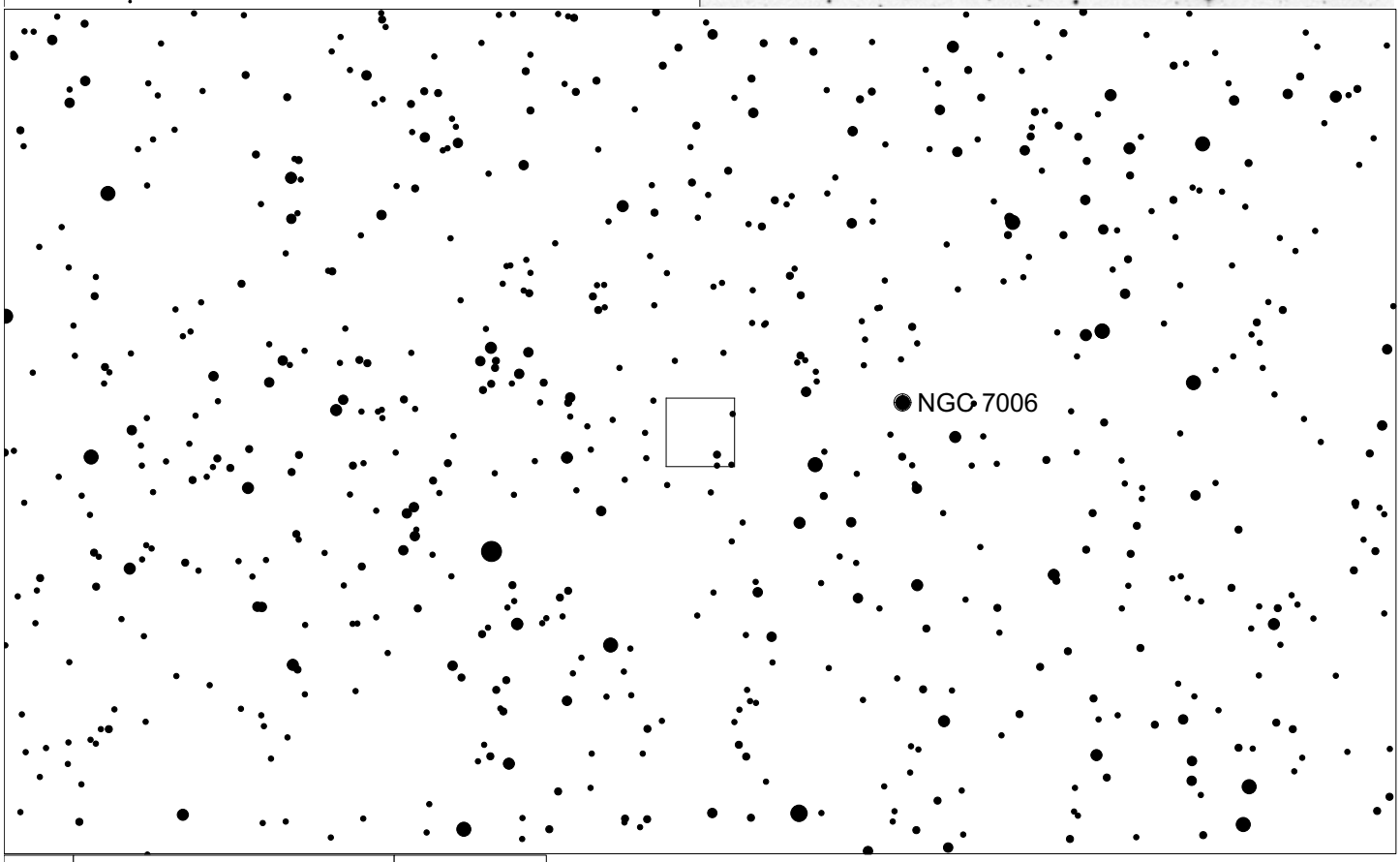


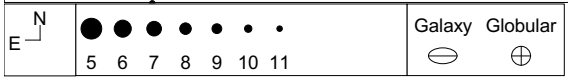
VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
297	20 16 57.3	-70 45 30	GPair			PD
297a	20 16 56.5	-70 46 03	G	12.69	60x17	
297b	20 16 57.3	-70 44 57	G	14.7	7x2	

VV 102 (Delphinus)



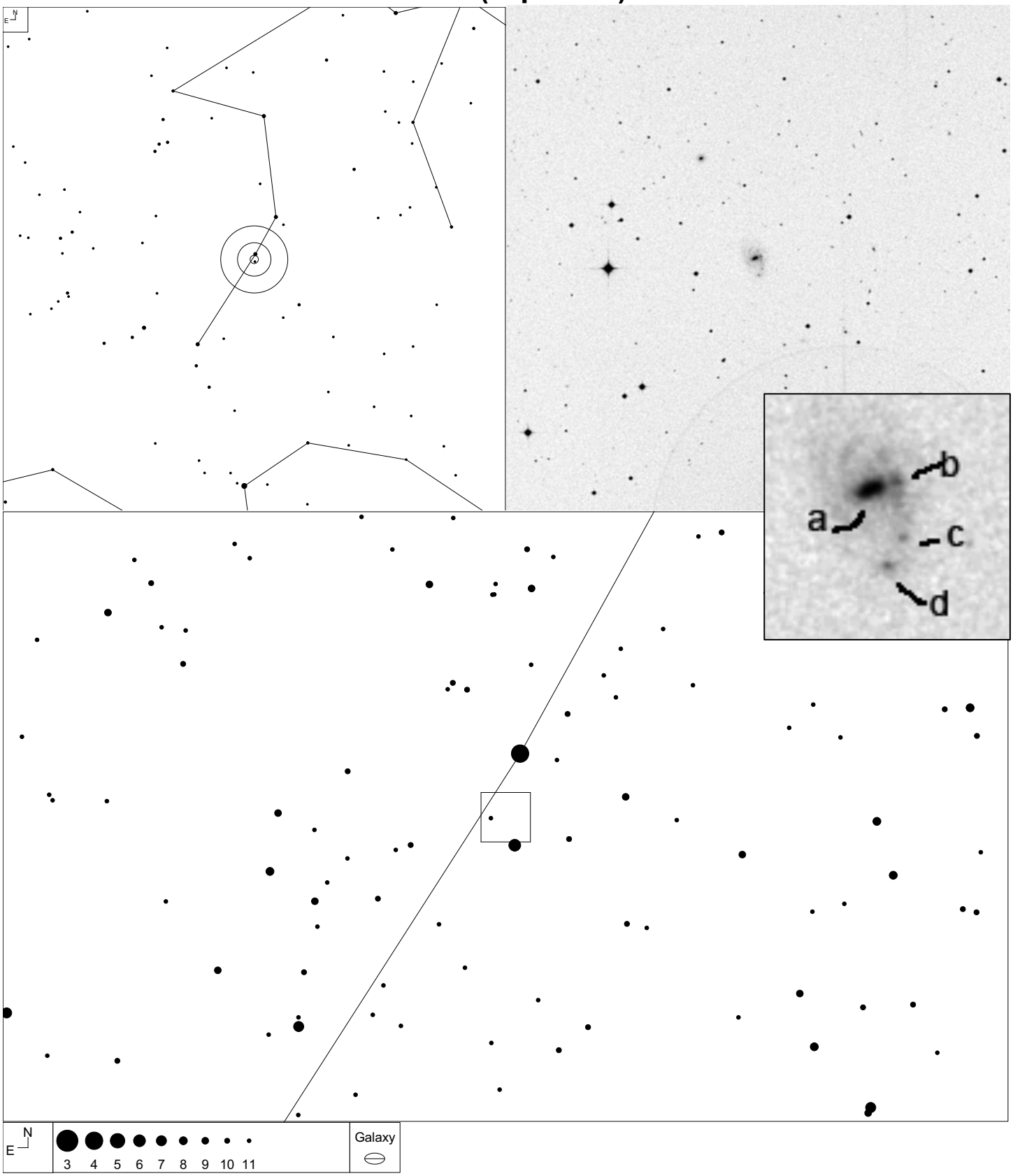






VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
102	21 04 28.7	+16 05 01	GPair			PC
102b	21 04 28.2	+16 05 04	G	15.0	8x4	
102a	21 04 29.1	+16 04 58	G	14.7	10x6	

VV 17 (Aquarius)



VV	RA	Dec	NED Type	Mag	Size (0.1')	Int. Type
17	22 54 56.7	-16 08 12	GPair			MM
17c	22 54 56.1	-16 08 16	PofG	19		
17b	22 54 56.3	-16 07 55	PofG	18		
17d	22 54 56.5	-16 08 27	G	18		
17a	22 54 56.9	-16 07 57	G	13.73	13x9	

The Entire Vorontsov-Velyaminov Catalogue – Part I

VV	RA	Dec	Arp
1	13 29 52.4	+47 11 54	85
2	14 19 52.0	+51 53 33	45
3	11 31 01.9	+20 28 21	197
4	13 34 14.8	+31 25 31	36
5	23 46 58.5	+29 27 32	86
6	13 37 23.9	+06 26 11	33, 326
7	15 02 42.2	+23 19 57	42
8	11 56 07.1	-19 53 49	289
9	08 11 13.5	+25 12 26	82
10	17 19 17.4	+49 00 35	102
11	10 52 17.0	+36 35 43	206
12	01 57 26.8	+17 13 14	56
13	12 05 45.5	+31 03 32	97
14	10 54 35.9	+56 59 24	24
15	14 28 45.3	+28 57 51	
16	15 46 53.3	+17 52 21	72
17	22 54 56.6	-16 07 57	
18	13 34 39.1	+04 07 51	
19	13 41 39.8	+55 40 11	239
20	23 19 27.9	+09 29 40	150
21	14 03 25.0	-06 04 10	271
22	11 23 38.4	+53 50 31	155
23	03 29 42.0	-22 16 45	39
24	14 27 01.6	+39 57 25	
25	23 57 54.4	-14 02 22	50
26	14 56 53.1	+09 16 18	
27	02 12 38.7	+14 22 00	
28	08 50 20.0	-16 34 44	7
29	16 06 03.9	+55 25 31	188
30	12 30 31.2	+41 41 58	269
31	11 51 06.6	+55 04 45	224
32	11 03 53.2	+40 50 57	148
33	13 32 07.9	+62 42 04	104
34	23 41 47.4	-03 40 03	295
35	11 46 35.0	-03 51 19	248
36	01 24 43.9	+33 26 08	
37	02 04 23.8	+45 46 33	
38	00 23 37.7	-00 30 35	201
39	13 22 30.5	+84 29 58	204
40	09 02 38.6	+25 56 06	287
41	08 51 38.0	-02 21 15	257
42	12 37 21.7	+38 44 28	211
43	12 32 52.3	+11 24 15	175
44	02 11 30.4	+14 17 54	
45	12 01 38.8	+22 39 39	

VV	RA	Dec	Arp
46	12 04 16.8	+24 08 49	
47	13 10 27.6	-21 35 21	
48	13 58 33.7	+37 27 13	84
49	12 06 07.3	-22 51 00	
50	09 17 22.8	+41 59 58	283
51	23 36 14.1	+02 09 19	284
52	09 43 24.0	-05 16 48	253
53	01 48 53.4	+10 31 18	228
54	01 48 44.2	+10 30 26	
55	13 39 53.0	+00 50 22	240
56	12 43 42.5	+16 23 36	189
57	11 56 17.1	+58 11 47	
58	09 31 01.2	+76 27 27	207
59	15 08 05.8	+34 23 24	
60	11 29 22.1	+41 52 17	
61	12 06 03.6	+20 36 28	
62	12 06 18.3	+20 36 40	
63	09 25 50.4	+22 22 11	
64	12 44 19.5	+04 25 31	
65	10 27 51.8	-43 54 09	-
66	11 59 30.5	-19 15 44	22
67	23 39 54.2	-12 17 31	222
68	22 51 39.4	-05 33 28	15
69	13 30 17.4	+31 19 59	
70	14 13 38.4	+07 39 38	
71	10 36 59.6	+18 08 13	192
72	19 59 28.4	+40 44 02	
73	12 41 32.5	+41 09 03	23
74	22 28 36.0	-24 50 39	93
75	11 04 23.7	+04 49 50	335
76	12 31 39.3	+03 56 23	
77	14 24 06.0	+34 53 31	178
78	03 55 45.0	-42 22 03	
79	08 38 24.0	+25 45 17	243
80	00 08 46.3	+15 48 56	235
81	00 51 01.7	-07 03 24	140
82	09 39 16.7	+32 18 38	63
83	09 39 24.4	+32 21 45	129
84	22 57 51.7	+26 09 43	
85	02 54 24.4	+41 34 47	
86	16 05 12.7	+20 32 33	209
87	11 25 32.0	+38 03 40	
88	13 30 58.8	+19 26 17	
89	17 13 07.7	+59 19 23	32
90	16 02 08.0	+15 41 47	

VV	RA	Dec	Arp
91	16 02 02.0	+15 40 38	
92	16 02 08.7	+15 42 39	
93	01 47 00.7	+12 24 21	
94	02 16 50.9	+37 21 12	
95	10 25 04.9	+17 09 49	263
96	02 35 37.6	+37 38 30	
97	10 17 10.9	-03 29 54	
98	14 45 02.2	-13 56 50	
99	13 55 33.9	-05 58 18	
100	13 55 45.5	-06 00 11	
101	17 27 24.9	+58 31 00	310
102	21 04 28.7	+16 05 01	
103	14 07 00.1	+10 27 44	
104	12 13 44.2	+36 37 58	
105	11 52 43.5	+01 44 28	
106	09 27 50.2	+68 24 47	300
107	02 29 01.5	+38 05 55	
108	13 39 13.0	+04 37 26	
109	14 46 02.8	+08 30 11	
110	09 50 56.5	-04 59 53	
111	09 54 33.1	-06 51 25	
112	10 42 48.7	+13 27 34	291
113	10 41 53.5	+00 47 34	
114	01 07 47.6	-17 30 29	236
115	15 59 11.0	+20 45 42	
116	09 38 53.2	-04 51 34	321
117	07 46 53.0	+39 01 55	143
118	11 28 27.3	+58 34 42	296
119	10 03 57.4	+40 45 25	264
120	14 01 40.8	+33 49 46	111
121	17 58 15.8	+66 37 59	
122	01 58 05.5	+03 04 57	126
123	07 14 20.9	+73 28 51	141
124	09 16 03.6	+52 50 25	
125	14 11 27.2	+50 12 34	
126	11 57 55.8	+36 23 11	194
127	12 44 25.1	+34 23 23	
128	12 13 38.7	+16 07 21	260
129	16 18 05.3	+21 33 14	
130	14 51 12.5	-20 26 32	
131	09 15 18.0	+48 39 56	
132	15 35 11.6	+16 33 06	
133	13 39 19.4	+24 46 32	
134*	06 39 50.2	-27 12 25	Defect!
135	13 49 09.8	-07 13 54	

VV	RA	Dec	Arp
136	12 03 12.0	+57 53 38	
137	14 55 13.1	-19 39 56	
138	08 13 14.6	+45 59 28	6
139	15 19 24.3	+20 53 27	
140	14 49 30.6	-10 10 24	261
141	07 30 56.6	+72 31 04	
142	14 20 26.5	+35 11 20	69
143	02 39 04.7	+18 23 38	258
144	11 25 36.3	+54 22 56	151
145	11 13 19.4	+02 32 46	
146	14 35 38.7	+13 09 58	
147	12 12 11.6	+18 05 37	
148	11 37 52.1	+56 08 36	
149	10 56 50.9	+06 54 21	
150	11 32 35.3	+52 56 50	322
151	12 43 03.0	+30 22 42	
152	14 29 50.8	+44 26 52	
153	11 15 53.2	+53 45 12	
154	09 24 50.0	+21 34 16	
155	09 15 55.6	+44 19 57	55
156	16 00 14.9	+18 22 33	
157	08 27 49.0	+73 39 01	
158	13 56 19.3	+28 32 11	
159	16 02 09.0	+15 53 17	324
160	11 15 25.0	+53 41 27	
161	05 16 36.1	+06 26 00	
162	05 45 27.7	-25 55 52	
163	13 44 24.9	+20 24 44	
164	14 45 26.2	-20 41 12	
165	14 47 53.4	+19 04 37	328
166	00 18 12.2	+30 03 19	113
167	22 06 22.2	-21 04 21	325
168	08 52 45.3	-01 48 52	
169	05 21 45.2	+06 41 20	327
170	13 41 51.2	+02 04 34	
171	09 23 24.4	+22 18 46	
172	11 32 05.5	+70 48 24	329
173	01 32 29.2	+04 35 45	306
174	01 32 42	+04 38.4	306
175	01 56 22.6	+05 37 40	
176	01 42 06.4	+07 39 46	
177	01 42 04.8	+07 38 57	
178	06 47 39.8	-26 44 47	
179	12 04 01.5	+20 13 57	
180	05 47 24.6	-25 15 23	

*Note: VV134 was determined to be a group of reflection nebulosity. So I left it out.

VV	RA	Dec	Arp
181	23 17 12.0	+18 42 03	170
182	11 10 12.2	+36 57 53	
183	12 14 48.8	+59 54 21	
184	13 21 36.7	-16 17 10	
185	12 00 49.3	+15 27 07	
186	00 00 21.0	+22 59 42	249
187	23 34 04.5	+01 35 03	
188	12 27 40.5	+13 04 44	120
189	01 57 32.5	+33 12 36	166
190	13 48 14.1	+25 43 57	
191	13 48 21.8	+25 40 30	
192	16 15 34.1	+19 27 41	
193	01 07 23.9	+32 24 13	331
194	16 05 33.1	+17 36 05	172
195	13 41 49.0	+26 22 28	
196	09 07 56.5	+49 35 49	
197	16 49 48.5	+46 43 05	312
198	11 16 55.8	+35 15 33	
199	12 15 35.9	+28 10 39	106
200	02 40 27.4	-12 52 33	
201	12 54 35.9	-12 34 09	
202	13 53 41.4	+33 12 45	
203	13 53 45.4	+33 13 12	
204	15 04 56.2	+26 00 52	
205	01 17 28.7	+14 42 12	
206	12 43 32.3	+11 34 55	116
207	01 23 39.8	+33 15 23	229
208	23 54 10.1	+00 22 58	323
209	10 23 27.0	+19 53 54	94
210	14 17 02.5	+36 34 17	199
211	13 35 14.4	+10 41 10	
212	16 04 26.5	+17 44 31	122
213	16 04 35.2	+17 43 10	
214	16 06 18.3	+15 40 49	
215	16 06 25.5	+15 41 07	
216	11 58 42.5	+25 02 13	138
217	02 29 09.4	-10 49 37	309
218	11 51 26.6	+22 01 40	
219	12 36 32.7	+11 15 28	
220	16 05 22.3	+17 45 10	272
221	02 50 20	+12 53.4	190
222	12 59 59.6	+37 11 36	
223	14 13 41.3	+08 13 07	
224	12 46 10.1	+30 43 55	242
225	05 21 56.3	+03 29 09	

VV	RA	Dec	Arp
226	00 01 26.9	+31 26 02	112
227	15 25 39.6	+20 47 16	
228	11 39 43.6	+31 55 12	294
229	11 09 51.5	+24 15 44	301
230	11 58 05.0	+27 52 41	
231	01 24 35.1	+03 47 33	157
232	17 22 43.0	+62 10 27	30
233	10 52 15.0	+30 03 28	107
234	00 28 34.8	-11 35 07	100
235	13 23 16.6	+52 39 13	
236	12 10 36.7	+34 57 24	
237	11 11 13.0	+28 42 43	105
238	02 28 10.9	+19 35 59	276
239	11 07 19.6	+18 25 47	191
240	10 06 33.3	+14 26 01	
241	11 57 25.9	+57 55 47	
242	22 19 26.2	+29 23 55	278
243	08 53 54.5	+35 09 01	195
244	15 34 32.3	+15 11 42	91
245	12 01 52.8	-18 51 54	244
246	10 49 49.8	+32 58 50	270
247	18 12 54.7	+68 21 50	81
248	07 02 26.0	+86 34 43	96
249	11 57 36.9	+32 16 39	313
250	13 15 29.4	+62 07 43	238
251	11 24 24.8	+03 19 39	5
252	10 53 23.4	+16 46 24	
253	13 52 16.3	+02 06 02	
254	00 01 40.2	+23 29 23	
255	23 56 44.6	+16 48 10	262
256	14 00 54.5	+40 59 17	
257	00 22 22.6	-01 18 12	35
258	01 12 59.7	-19 00 14	
259	12 02 29.4	+62 25 02	
260	03 08 27.5	-23 03 11	332
261	12 14 09.6	+54 31 35	160
262	14 31 55.8	+36 18 18	
263	00 02 37.8	+16 39 08	130
264	14 37 50.4	+30 29.0	241
265	11 27 21.3	+50 16 41	
266	12 53 52.9	+36 05 13	265
267	10 59 45.2	+17 39 01	198
268	17 33 38.0	+50 22 25	
269	12 04 26.1	-18 31 00	
270	12 04 52.8	+58 05 49	

VV	RA	Dec	Arp
271	16 51 01.4	+47 13 25	208
272	00 06 27.1	-13 24 58	144
273	11 50 47.7	+56 27 21	
274	14 55 28.2	+32 50 24	
275	14 55 29.8	+32 49 54	
276	12 03 53.5	+25 25 57	
277	14 01 09.2	+21 14 16	
278	02 43 26.6	+16 40 12	
279	12 27 53.7	+28 38 15	
280	23 20 30.0	+17 13 32	212
281	13 55 28.4	+25 04 25	
282	11 37 51.6	+21 58 27	320
283	13 01 49.9	+04 20 02	
284	07 43 47.6	+52 21 27	
285	02 34 37.4	-08 47 08	
286	11 53 39.0	+43 27 24	62
287	12 39 15.2	+27 42 52	
288	22 35 52.0	+33 56 41	319
289	16 54 58.7	+43 03 38	
290	12 47 40.3	-26 11 58	
291	15 47 59.4	+69 27 52	109
292	13 06 45.0	+35 06 04	
293	09 25 54.9	-11 59 42	275
294	10 30 25.1	+70 03 02	
295	22 58 01.0	-03 46 08	314
296	14 51 27.9	+09 19 19	173
297	20 16 56.0	-70 46 03	
298	13 16 47.5	+14 25 40	57
299	14 13 06.9	+08 37 31	
300	11 40 44.0	+22 25 49	87
301	01 32 08.6	+32 06 12	98
302	02 18 19.2	-12 12 38	
303	14 35 00.2	+26 31 56	95
304	19 18 22.6	-60 30 03	
305	23 23 32.6	+19 35 59	
306	13 48 05.0	+07 23 32	
307	10 17 48.0	+21 52 24	316
308	11 20 15.0	+12 59 30	317
309	02 03 44.6	+14 42 31	290
310	13 59 51.1	+38 10 55	
311	15 53 35.4	+18 36 26	218
312	10 23 47.4	+53 06 26	
313	12 54 50.9	+02 39 12	277
314	23 33 38.6	+30 02 20	46
315	13 34 55.5	+13 44 30	288
316	09 37 44.2	+02 45 38	142
317	13 47 01.2	+33 53 38	
318	16 04 28.2	+14 46 53	101
319	10 28 16.5	+79 49 24	181
320	11 43 46.4	+55 02 52	
321	09 59 52.2	+45 16 58	
322	14 50 47.9	-13 32 18	
323	02 21 28.8	+39 22 31	273
324	14 50 56.5	+35 34 18	
325	13 29 44.5	+33 20 20	
326	13 30 36.5	+31 17 10	
327	16 06 05.1	+20 47 03	
328	14 04 54.2	+12 42 48	
329	23 28 46.8	+03 30 41	216
330	10 24 10.0	+78 37 44	
331	02 55 09.7	-00 10 40	118
332	23 57 32.4	-22 00 03	
333	12 16 57.0	-26 12 34	
334	03 11 14.7	-08 55 20	304
335	13 55 59.0	+17 29 57	
336	02 47 19.9	-14 48 07	131
337	03 08 10.8	-22 57 39	332
338	01 47 42.2	+27 22 59	
339	14 00 19.8	+12 57 26	
340	14 57 00.5	+24 36 20	302
341	01 23 26.8	+30 46 20	70
342	09 53 17.4	+07 52 08	255
343	23 27 56.7	+08 46 44	182
344	14 05 01.3	+53 39 44	
345	12 12 39.3	+34 42 13	
346	03 03 05.4	-22 13 02	108
347	01 19 24.2	+12 26 49	119
348	01 09 22.1	+14 20 30	11
349	07 44 41.6	+73 49 16	17
350	11 40 09.4	+15 19 38	83
351	13 54 26.5	-26 34 31	
352	00 18 50.1	-10 21 42	256
353	11 43 02.0	+26 15 30	115
354	10 25 35.7	-02 12 58	44
355	13 29 21.2	+37 24 32	40

Note: The coordinates are from the original catalogue, there may be a few typos. I just left them alone. The idea of this table is to list all V-V Part I objects with associated Arp Peculiar Galaxies.

Additional Resources

Journal Articles

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Pustilnik S., et al "Possibly Interacting Vorontsov-Velyaminov Galaxies." *Astronomy and Astrophysics,* Vol 400 (2003), 841-857

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Vorontsov-Velyaminov, Boris A. "Some Characteristics of Galaxy Chains." *Soviet Astronomy Letters*, Vol 5 (Sept-Oct 1979), 267-269

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Vorontsov-Velyaminov, Boris A., et al "VV 644, a Very Compact Nest of Galaxies" *Soviet Astronomy Letters*, Vol 6 (July-Aug 1980), 217-219

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

Harrington, Philip S. *Cosmic Challenge: The Ultimate Observing List for Amateurs*, Cambridge: Cambridge University Press, 2010

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

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

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

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

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

Websites

ned.ipac.caltech.edu/level5/VV_Cat/frames.html - The Atlas and Catalogue of Interactive Galaxies by B.A. Vorontsov-Velyaminov (Part I only)

www.sai.msu.su/sn/vv/ - The Catalogue of Interacting Galaxies by Vorontsov-Velyaminov. This is the complete list. I've used this list to generate this observing guide, but focused on Part I only.

www.deepskyforum.com - The premier Deep Sky forum where advanced deep sky observers converge and discuss various aspects of deep sky observing.

www.astronomy-mall.com/Adventures.In.Deep.Space/ - Great source of observing projects for all skill levels.

nedwww.ipac.caltech.edu/ - NASA-IPAC Extragalactic Database – NED

archive.stsci.edu/cgi-bin/dss_form - The STScI Digitized Sky Survey

skyserver.sdss3.org/dr8/en/tools/chart/chart.asp - SkyServer DR8 Tools for Visual Exploration (SDSS)

www.cloudynights.com – Great resource for like-minded amateurs discussing most aspects of the hobby.

www.galaxyzoo.com – Galaxy Zoo

Sources of Charts and Images

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

archive.stsci.edu/dss/acknowledging.html - DSS images (Digital Sky Survey)

www.sdss.org - Sloan Digital Sky Survey – Data Release 10

Revision History

Date	Revision
May 30, 2013	New document
May 13, 2014	Turned the Index from landscape to portrait format to keep in line of publisher requirements.
March 2024	Minor edits. No material changes.
April 2024	Minor grammatical corrections