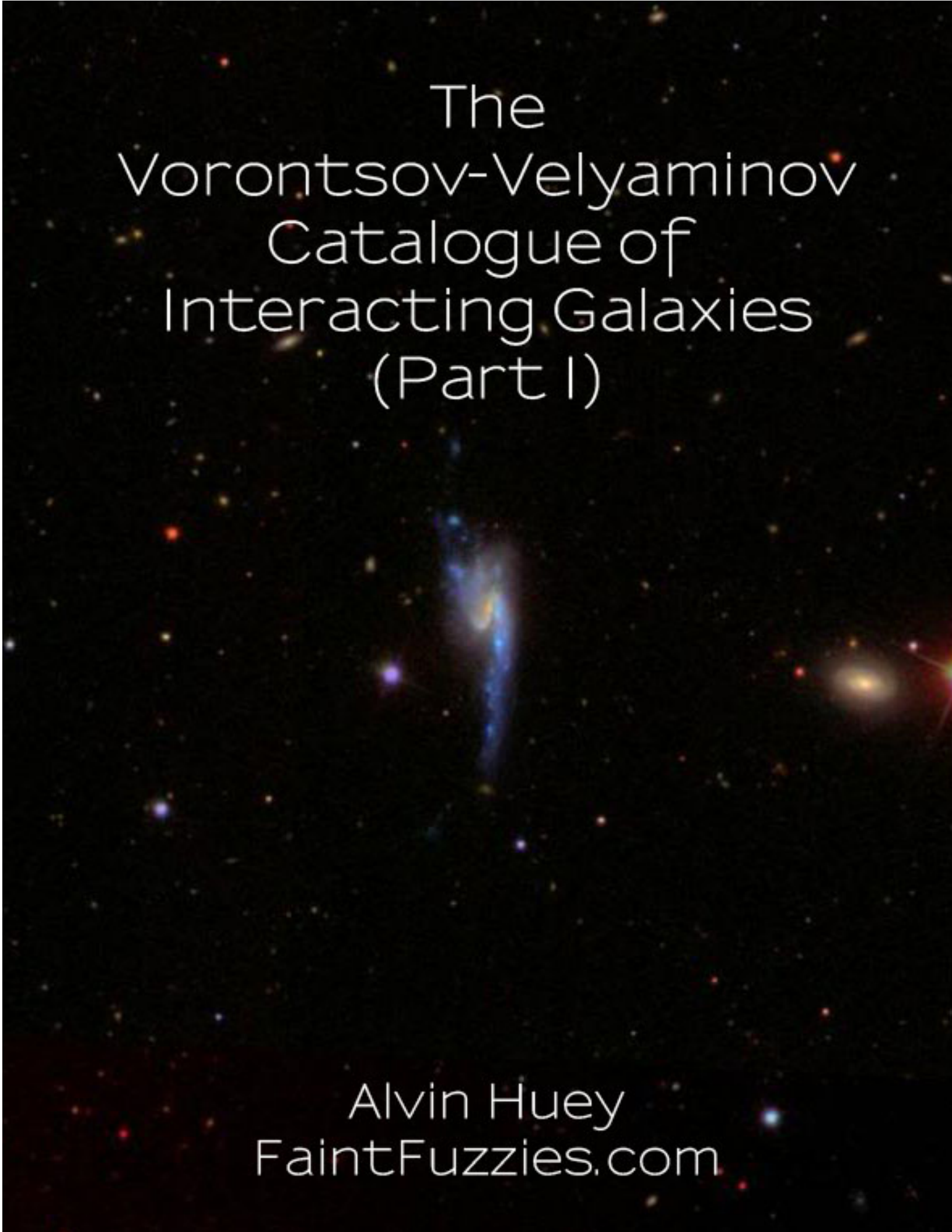


The background of the entire image is a deep space photograph. It features a dense field of stars of various colors (white, yellow, red, blue) against a black background. In the center, there is a prominent galaxy system consisting of two bright, yellowish-white cores very close together, surrounded by a diffuse, blueish-white nebula or gas cloud. To the right of this central system, there is another bright, yellowish-white point source, possibly another galaxy or a star. The overall scene suggests a distant, high-energy cosmic environment.

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

Alvin Huey
FaintFuzzies.com

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www.FaintFuzzies.com

Updated: November 2025

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Ring Galaxies
Palomar Compact Galaxy Catalogue
Object of the Week 2012 and 2013 – Deep Sky Forum

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All SDSS images (Sloan Digital Sky Survey) <http://www.sdss.org/>

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The Vorontsov-Velyaminov Catalogue

Dr. Boris Vorontsov-Velyaminov (1904–1994), affiliated with the Sternberg Astronomical Institute at Moscow University, compiled a series of catalogues of interacting galaxies starting in 1959. In 1966, Boris Vorontsov-Velyaminov released Part I of his catalog, which introduced 355 interacting galaxy systems, designated VV1 through VV355. This foundational work established a systematic approach to identifying and classifying interacting galaxies, paving the way for subsequent research in the field. His meticulous methodology and attention to morphological details set a new standard for cataloging extragalactic phenomena and provided astronomers with an invaluable resource for studying galactic interactions.

Most of the systems were identified on POSS plates taken with the Palomar 48-inch Schmidt astrograph. Part I of the original list included 355 systems and preceded the better-known Arp Peculiar Galaxies catalog, which Arp compiled after being inspired by Boris Vorontsov-Velyaminov's work. About half of Boris's entries also appear in Arp's list. With access to the 200-inch reflector, Arp obtained deeper and clearer images of these galaxies' structures. As noted by Steve Gottlieb, some of Vorontsov-Velyaminov's "nests" and "chains" were later found to be single dwarf irregular galaxies, not multiple systems, due to their active star-forming regions. Visually through the eyepiece of a large reflector, you may see some "nests" and "chains" as stars on the galaxy or part of a chain.

In 1977, Boris Vorontsov-Velyaminov (VV) added 497 interacting systems (VV356–VV852) to his list, which is Part II. In 2001, 1162 more objects (VV853–VV2014) from the Morphological Catalogue of Galaxies were included.

Boris systematically classified each interacting galaxy into several categories, noting unique details for most objects. The classification scheme includes M51 types, nested galaxies, pairs of galaxies, chains of galaxies, ring galaxies, and enigmatic galaxies. Specific features identified encompass tails, bridges, and various disruptions. A comprehensive table outlining these categories and their respective characteristics can be found on page 14. Some of these features are fun and challenging to advanced observers with large telescopes. Some may be too faint to see, but knowing what you are looking at is fun too.

Boris maintained a particular research focus on M51 type systems, interactions involving multiple systems (nests and chains), and the tidal theory related to bridges and tails. His contributions are likely to significantly influence future work within these areas of study. For reference, a list of his published papers is provided on page 186. Appreciation extended to Steve Gottlieb for providing several of Boris's authored works.

This observing guide covers only **Part I**. Part II is also available.

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* and developed a classification system for planetary nebulae (see the table below), which continues to be utilized in contemporary research.

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

Boris was the lead architect of the Morphological Catalogue of Galaxies (MCG), listing 30,642 galaxies to magnitude 15, published in five parts from 1962 to 1974. He often noted¹ that his MCG and "Catalogue of Interacting Galaxies" were overlooked by other astronomers, likely because he published mainly in less accessible Soviet journals. Boris also expressed frustration² that his Ring Galaxies paper³ received little recognition.

Thanks to my observing friends

I'm grateful to my observing group—late Gregg Blandin, Shneur Sherman, late Bill Porte, and Marsha Robinson-Porte—for their camaraderie at remote sites over the past three plus decades.

¹ Vorontsov-Velyaminov, B.A. *Correspondence – Morphological Catalogue of Galaxies Discriminated Against*. The Observatory, Vol. **94**, 1974, 319-320.

² Vorontsov-Velyaminov, B.A. *Ring Galaxies*. The Observatory, vol. 103, 1983, 259-260.

³ Vorontsov-Velyaminov, B.A. *Ring Galaxies*. Soviet Astronomy, Vol. 4, 365

The Vorontsov-Velyaminov Catalogue – Part I

Page	VV	RA	Dec	NED Type	Int. Type	Const	Major component IDs
18	84	22 57 56.9	+26 09 00	GPair	NNNP	Peg	NGC 7436
19	305	23 23 36.8	+19 35 04	GTrpl	NNN	Peg	UGC 12574
20	254	00 01 40.2	+23 29 23	GPair	PKdf	Peg	UGC 12914
21	37	02 04 23.8	+45 46 33	GPair	PDb	And	UGC 1562
22	94	02 16 50.9	+37 21 12	GPair	PC	And	UGCA 25
23	107	02 29 01.5	+38 05 55	GPair	PC	And	MCG+06-06-043
24	96	02 35 37.3	+37 38 21	G	PC	And	UGC 2069
25	187	23 34 04.5	+01 35 03	GPair	PK	Psc	MCG+00-60-009
26	36	01 24 43.9	+33 26 08	GPair	N	Psc	NGC 517
27	177	01 42 04.8	+07 38 57	GPair	PKb	Psc	UGC 1191
27	176	01 42 06.4	+07 39 46	GPair	PK	Psc	MCG+01-05-022
28	54	01 48 44.2	+10 30 26	GPair	Nb	Psc	IC 161
29	175	01 56 22.6	+05 37 40	GPair	PK	Psc	NGC 741, 742
30	332	23 57 33.4	-21 59 22	GPair	PD	Cet	MCG-04-01-007
31	258	01 12 59.7	-19 00 14	GTrpl	NNN	Cet	MCG-03-04-028
32	302	02 18 19.2	-12 12 38	GPair	PD	Cet	MCG-02-06-052
33	285	02 34 37.4	-08 47 08	G	R	Cet	NGC 985
34	200	02 40 28.1	-12 52 35	GPair	PDb	Cet	MCG-02-07-060
35	338	01 47 42.2	+27 22 59	GPair	PDdf	Tri	NGC 672, IC 1727
36	93	01 47 00.7	+12 24 21	G	PC	Ari	UGC 1246
37	44	02 11 30.4	+14 17 54	GPair	PDb	Ari	MCG+2-6-41
38	27	02 12 38.7	+14 22 00	G	M	Ari	MCG+02-06-046
39	278	02 43 26.7	+16 39 59	GPair	NNNP	Ari	MCG+03-07-050
40	85	02 54 25.5	+41 34 33	GGroup	PC	Per	NGC 1129
41	78	03 55 46.1	-42 22 05	GPair	N	Eri	NGC 1487
42	161	05 16 36.9	+06 26 30	GGroup	Ch	Ori	UGC 3274
43	225	05 21 57.7	+03 29 03	GPair	PK	Ori	IC 412, 413
44	162	05 45 28.6	-25 55 55	GTrpl	Ch	Lep	MCG-04-14-022
45	180	05 47 25.2	-25 15 04	GPair	PD	Lep	ESO 488-15
46	178	06 47 40.8	-26 45 00	GPair	PK	CMa	NGC 2292, 2293
47	141	07 30 56.6	+72 31 03	GGroup	N	Cam	UGC 3864
48	157	08 27 48.9	+73 39 01	G	N	Cam	UGC 4389
49	284	07 43 49.7	+52 21 11	GPair	PDbt	Lyn	NGC 2429/B
50	168	08 52 45.4	-01 49 02	GPair	NNN	Hya	MCG+00-23-009
51	171	09 23 25.7	+22 19 10	GTrpl	Ch	Leo	MCG+04-22-037
52	154	09 24 49.9	+21 34 21	GTrpl	N	Leo	MCG+04-22-047

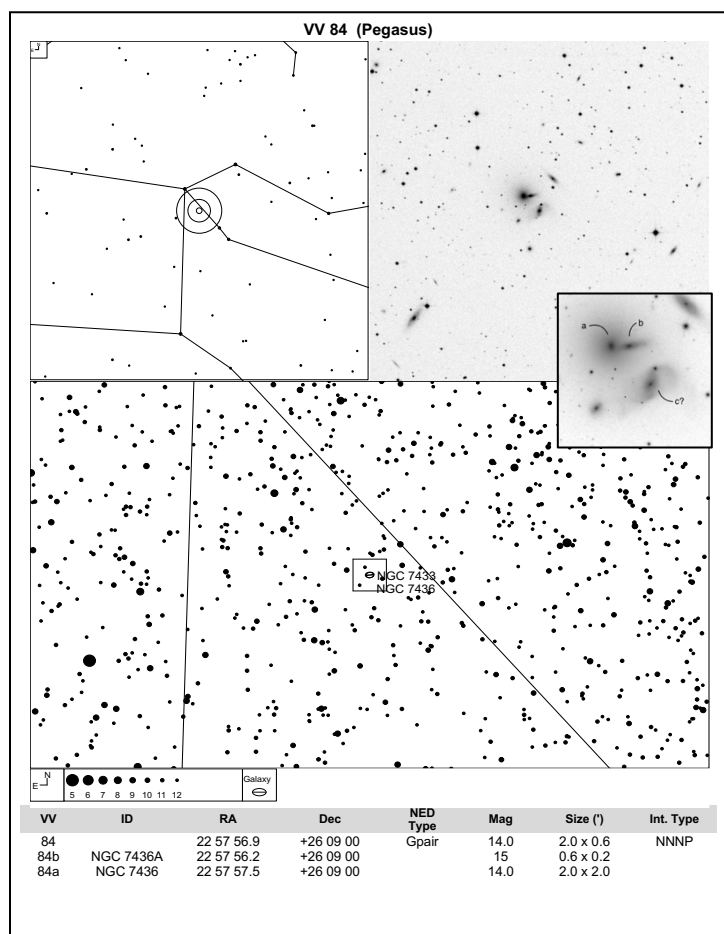
Page	VV	RA	Dec	NED Type	Int. Type	Const	Major component IDs
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55	252	10 53 26.8	+16 46 44	GPair	PKdf	Leo	NGC 3447/B
56	149	10 56 51.0	+06 54 22	G	N	Leo	UGC 6046
57	145	11 13 20.8	+02 32 55	GTrpl	NNN	Leo	MCG+01-29-019
58	218	11 51 27.4	+22 01 37	GPair	PK	Leo	NGC 3926/B
59	230	11 58 05.2	+27 52 44	G	PKdf	Leo	NGC 4004
60	110	09 50 56.5	-04 59 52	G	PC	Sex	MCG-01-25-049
61	111	09 54 32.9	-06 51 27	G	PC	Sex	IC 575
62	97	10 17 10.9	-03 29 52	G	PC	Sex	IC 600
63	113	10 41 53.4	+00 47 35	G	PC	Sex	UGC 5823
64	65	10 27 51.3	-43 54 13	G	PC	Vel	NGC 3256
65	330	10 24 16.4	+78 37 08	GPair	PD	Dra	UGC 5600
66	196	09 07 57.1	+49 35 59	GPair	PKb	UMa	MCG+08-17-034
67	131	09 15 16.3	+48 40 03	GPair	N	UMa	UGC 4874
68	124	09 16 02.2	+52 50 24	G	N	UMa	UGC 4879
69	321	09 59 52.8	+45 16 41	GPair	PDb	UMa	UGC 5367
70	312	10 23 47.1	+53 06 12	GPair	PDb	UMa	UGC 5615
71	294	10 30 32.1	+70 02 16	GPair	PDb	UMa	UGC 5688
72	182	11 10 12.7	+36 57 56	GPair	PKb	UMa	NGC 3545/B
73	160	11 14 25.0	+53 41 27	GGroup	NPNP	UMa	MCG+09-19-00A
74	153	11 15 53.2	+53 45 12	GGroup	N	UMa	MCG+09-19-019A, Shk 3
75	198	11 16 56.0	+35 15 23	GPair	PDb	UMa	MCG+06-25-034
76	87	11 25 31.8	+38 03 38	G	PC	UMa	UGC 6433
77	265	11 27 21.3	+50 16 39	GPair	PK	UMa	MCG+08-21-036
78	60	11 29 23.9	+41 52 16	GTrpl	NNN	UMa	MCG+07-24-014
79	148	11 37 50.3	+56 08 42	G	N	UMa	UGC 6596
80	320	11 44 00.6	+55 02 28	GPair	PK	UMa	NGC 3846A
81	273	11 50 47.7	+56 27 21	G	N	UMa	UGC 6816
82	57	11 56 14.4	+58 11 49	G	R	UMa	UGC 6912
83	241	11 57 24.9	+57 55 48	G	PKdf	UMa	UGC 6931
84	259	12 02 29.4	+62 25 02	G	PK	UMa	UGC 7019
85	136	12 03 13.1	+57 53 40	GTrpl	N	UMa	NGC 4054
86	270	12 04 56.2	+58 06 10	GPair	PKt	UMa	UGC 7070
87	183	12 14 50.2	+59 54 27	GPair	PD	UMa	NGC 4199A/B
88	235	13 23 17.4	+52 39 10	GPair	PKt	UMa	UGC 8416
89	344	14 04 07.4	+54 00 24	GPair	PD	UMa	NGC 5474
90	236	12 10 36.7	+34 57 24	G	PK	CVn	MCG+6-27-19

Page	VV	RA	Dec	NED Type	Int. Type	Const	Major component IDs
91	345	12 12 39.5	+34 41 48	GPair	PD	CVn	UGC 7212
92	104	12 13 44.8	+36 38 03	G	PC	CVn	NGC 4190
93	127	12 44 25.1	+34 23 12	G	PD	CVn	UGC 7916
94	222	12 59 59.7	+37 11 26	GPair	PK	CVn	NGC 4893/A
95	292	13 06 50.5	+35 07 00	GPair	PDb	CVn	UGC 8199, 8200
96	325	13 29 45.1	+33 20 45	GPair	PDt	CVn	MCG+06-30-019
97	69	13 30 17.3	+31 19 59	GGroup	PC	CVn	UGC 8496
98	326	10 30 38.0	+31 17 07	GPair	PD	CVn	UGC 8502
99	317	13 47 04.1	+33 53 14	GPair	PDdf	CVn	UGC 8713, 8715
100	202	13 53 52.3	+33 11 32	GPair	NN	CVn	UGC 8817
100	203	13 53 45.5	+33 13 15	GPair	PK	CVn	MCG+06-31-016
101	158	13 56 20.7	+28 31 22	GGroup	Ch	CVn	MCG+05-33-024
102	310	13 59 54.0	+38 11 30	GPair	PD	CVn	NGC 5403
103	256	14 00 55.4	+40 59 49	GPair	PKdf	CVn	NGC 5410
104	185	12 00 49.0	+15 27 07	GPair	PK	Com	MCG+03-31-012
105	45	12 01 38.7	+22 39 41	GPair	PDb	Com	MCG+04-28-121
106	276	12 03 53.5	+25 25 57	G	PK	Com	UGC 7040
107	179	12 04 03.8	+20 14 01	GPair	PD	Com	NGC 4065
108	46	12 04 15.9	+24 08 40	GPair	PDb	Com	UGC 7055
109	61	12 06 03.9	+20 36 22	GPair	PK	Com	NGC 4098
110	62	12 06 18.3	+20 36 40	GPair	PDb	Com	MCG+04-29-024
111	147	12 12 11.6	+18 05 37	GGroup	Ch	Com	MCG+03-31-069
112	279	12 27 53.9	+28 38 17	GTrpl	PK	Com	MCG+05-29-088
113	287	12 39 15.7	+27 42 52	GPair	PK	Com	MCG+05-30-049
114	151	12 43 03.6	+30 22 58	GTrpl	PDb	Com	UGC 7891
115	88	13 30 58.7	+19 26 17	G	PC	Com	UGC 8507
116	105	11 52 44.1	+01 44 26	GPair	N	Vir	UGC 6854
117	76	12 31 40.0	+03 55 58	GPair	PK	Vir	NGC 4496A/B
118	219	12 36 33.5	+11 14 54	GPair	PK	Vir	NGC 4567, 4568
119	64	12 44 20.5	+04 25 35	GPair	PDb	Vir	UGC 7909
120	283	13 01 50.8	+04 20 00	GPair	PK	Vir	MCG+01-33-036
121	47	13 10 28.6	-21 35 13	GPair	PDb	Vir	MCG-03-34-007
122	184	13 21 37.6	-16 16 57	GPair	PD	Vir	MCG-03-34-057
123	18	13 34 39.4	+04 08 00	GPair	M	Vir	NGC 5213
124	211	13 35 14.8	+10 41 22	GPair	PK	Vir	UGC 8563, 8562
125	108	13 39 12.4	+04 37 20	GPair	PC	Vir	UGC 8635
126	170	13 41 53.3	+02 04 41	GTrpl	Ch	Vir	UGC 8666
127	135	13 49 11.1	-07 13 15	GTrpl	NNN	Vir	Hickson 67, NGC 5306

Page	VV	RA	Dec	NED Type	Int. Type	Const	Major component IDs
128	253	13 52 16.3	+02 06 11	GPair	PKt	Vir	NGC 5331
129	99	13 55 34.2	-05 58 22	G	PC	Vir	MCG-01-35-021
129	100	13 55 45.4	-06 00 10	G	PC	Vir	MCG-01-35-022
130	269	12 04 26.3	-18 30 59	GPair	PK	Crv	MCG-03-31-019
131	49	12 06 07.2	-22 50 58	G	N	Crv	UGCA 270
132	201	12 54 36.2	-12 33 47	GPair	PK	Crv	NGC 4782, 4783
133	333	12 16 58.0	-26 12 37	GPair	PD	Hya	MCG-04-29-015
134	290	12 47 44.1	-26 11 58	GPair	PKb	Hya	MCG-04-30-016
135	351	13 54 30.5	-26 33 58	GPair	PD	Hya	MCG-04-33-010
136	133	13 39 19.4	+24 46 32	G	N	Boo	UGC 8638
137	195	13 41 49.4	+26 22 19	GPair	PDb	Boo	MCG+05-32-063
138	163	13 44 25.0	20 24 50	GTrpl	Ch	Boo	UGC 8691
139	306	13 48 08.9	+07 23 27	GTrpl	NNNP	Boo	UGC 8728
140	190	13 48 15.1	+25 43 59	GPair	PDb	Boo	MCG+04-33-006
140	191	13 48 22.1	+25 50 50	GPair	PDb	Boo	MCG+04-33-003
141	281	13 55 30.0	+25 04 26	GTrpl	Ch	Boo	UGC 8842, Hickson 69
142	335	13 55 59.6	+17 30 21	GPair	PDb	Boo	IC 960
143	339	14 00 22.5	+12 57 26	GPair	PD	Boo	UGC 8920
144	277	14 01 08.2	+21 14 24	GPair	PKdf	Boo	UGC 8929
145	328	14 04 54.2	+12 42 48	GPair	PD	Boo	UGC 9002
146	103	14 07 00.1	+10 27 44	Gpair?	PC	Boo	MCG+02-36-041
147	125	14 11 27.0	+50 12 33	G	N	Boo	UGC 9083
148	299	14 13 06.9	+08 37 31	GPair	PD	Boo	NGC 5511
149	70	14 13 38.8	+07 39 34	GPair	PC	Boo	NGC 5514
150	223	14 13 44.7	+08 13 13	GTrpl	NNNP	Boo	UGC 9103
151	24	14 27 01.5	+39 57 25	GPair	M	Boo	NGC 5625
152	15	14 28 45.3	+28 57 51	G	M	Boo	IC 4442
153	152	14 29 50.7	+44 26 52	G	N	Boo	UGC 9324
154	262	14 31 56.8	+36 18 15	GPair	PK	Boo	MCG+06-32-059
155	146	14 35 38.9	+13 09 56	GTrpl	N	Boo	UGC 9394
156	109	14 46 02.8	+08 30 11	GTrpl	NNNP	Boo	UGC 9509
157	324	14 51 05.5	+35 33 23	GPair	PD	Boo	UGC 9562
158	274	14 55 28.2	+32 50 25	GPair	PKt	Boo	MCG+06-33-009
158	275	14 55 30.8	+32 49 51	GPair	PDt	Boo	UGC 9603
159	26	14 56 53.1	+09 16 18	GPair	M	Boo	UGC 9616
160	204	15 04 57.2	+26 00 54	G	NNNP	Boo	MCG+04-36-004
161	59	15 08 04.9	+34 23 14	GPair	N	Boo	MCG+06-33-022, Rose 25
162	98	14 45 01.6	-13 56 48	GGroup	PC	Lib	NGC 5745

Page	VV	RA	Dec	NED Type	Int. Type	Const	Major component IDs
163	164	14 45 25.8	-20 41 07	G	Ch	Lib	MCG-03-38-005
164	322	14 50 48.6	-13 31 49	GTrpl	NNN	Lib	MCG-02-38-018
165	130	14 51 12.4	-20 26 27	G	NNN	Lib	MCG-03-38-021
166	137	14 55 12.8	-19 39 53	G	N	Lib	MCG-03-38-026
167	139	15 19 28.2	+20 53 37	GGroup	N	Ser	NGC 5910
168	227	15 25 39.8	+20 47 18	GPair	PK	Ser	UGC 9843
169	132	15 35 10.5	+16 32 58	G	N	Ser	UGC 9912
170	115	15 59 11.9	+20 45 31	GGroup	NNN	Ser	NGC 6027, Hickson 79
171	156	16 00 14.7	+18 22 32	GPair	N	Ser	MCG+03-41-022
172	91	16 02 02.4	+15 40 43	GPair	PC	Her	MCG+03-41-046
172	90	16 02 08.2	+15 41 38	GPair	PC	Her	IC 1165/S
172	92	16 02 08.7	+15 42 39	GPair	PDb	Her	MCG+03-41-050
173	213	16 04 35.3	+17 43 09	GPair	PC	Her	NGC 6041
174	327	16 06 05.1	+20 47 13	GTrpl	PD	Her	UGC 10197, 10198
175	214	16 06 18.2	+15 40 29	GPair	PK	Her	VV 214a
175	215	16 06 25.7	+15 41 23	GPair	PK	Her	UGC 10201
176	192	16 15 34.8	+19 27 27	GPair	PKb	Her	NGC 6098, 6099
177	129	16 18 06.3	+21 33 39	GGroup	NN	Her	UGC 10321
178	289	16 55 00.5	+43 03 30	GPair	PDbt	Her	UGC 10610
179	268	17 33 38.0	+50 22 25	GPair	N	Her	UGC 10908
180	121	17 58 15.8	+66 38 00	Other	Other	Dra	IC 4677
181	72	19 59 28.3	+40 44 02	G	PC	Cyg	MCG+07-41-003, CygA
182	304	19 18 30.0	-60 29 56	GPair	PDdf	Pav	NGC 6769, 6770
183	297	20 16 57.3	-70 45 30	GPair	PD	Pav	NGC 6872, IC 4970
184	102	21 04 28.7	+16 05 01	GPair	PC	Del	UGC 11672
185	17	22 54 56.7	-16 08 12	GPair	MM	Aqr	MCG-03-58-012

How to Use the Atlas



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 15' square for consistent scale from one object to another.

The bottom panel is a finder field of about 5.0° across and 3.0° high. The finder field is wide enough for the finder scope and detailed enough for those who choose to use a low-power eyepiece as a “finder”. The limiting magnitude of the field stars is 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.

Most VV objects have an inset showing detail and labeled components. Most inset images are from PanSTARRS and Sloan Digital Sky Survey.

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. The primary source used is www.sai.msu.su/sn/vv/

Italicized rows are extra rows not included in VV’s catalog hosted by Sternberg Astronomical Institute. It was included to provides more data and clarity.

ID – Major catalog ID

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

GGroup – Galaxy Group

Star – a star

GPair – Galaxy Pair

PofG – Part of Galaxy

Dbl star – double star

GTrpl – Triple Galaxy

Star Cl – star cluster

Magnitude as listed by Simbad or NED. I prioritize the listed magnitude by v, then g, then b based on available data. I feel that the **visual** magnitude is closest to what we see through the eyepiece, followed by **green**, then **blue**.

Size as provided by the original VV Catalogue, NED or RC3.

Interaction Type – The Interaction Type as listed by Vorontsov-Velyaminov.

Type	Description
HII-regions	
H	large inner subsystems, the galaxies with vast HII-regions
M-51 type⁴	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
Nests⁵	
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.

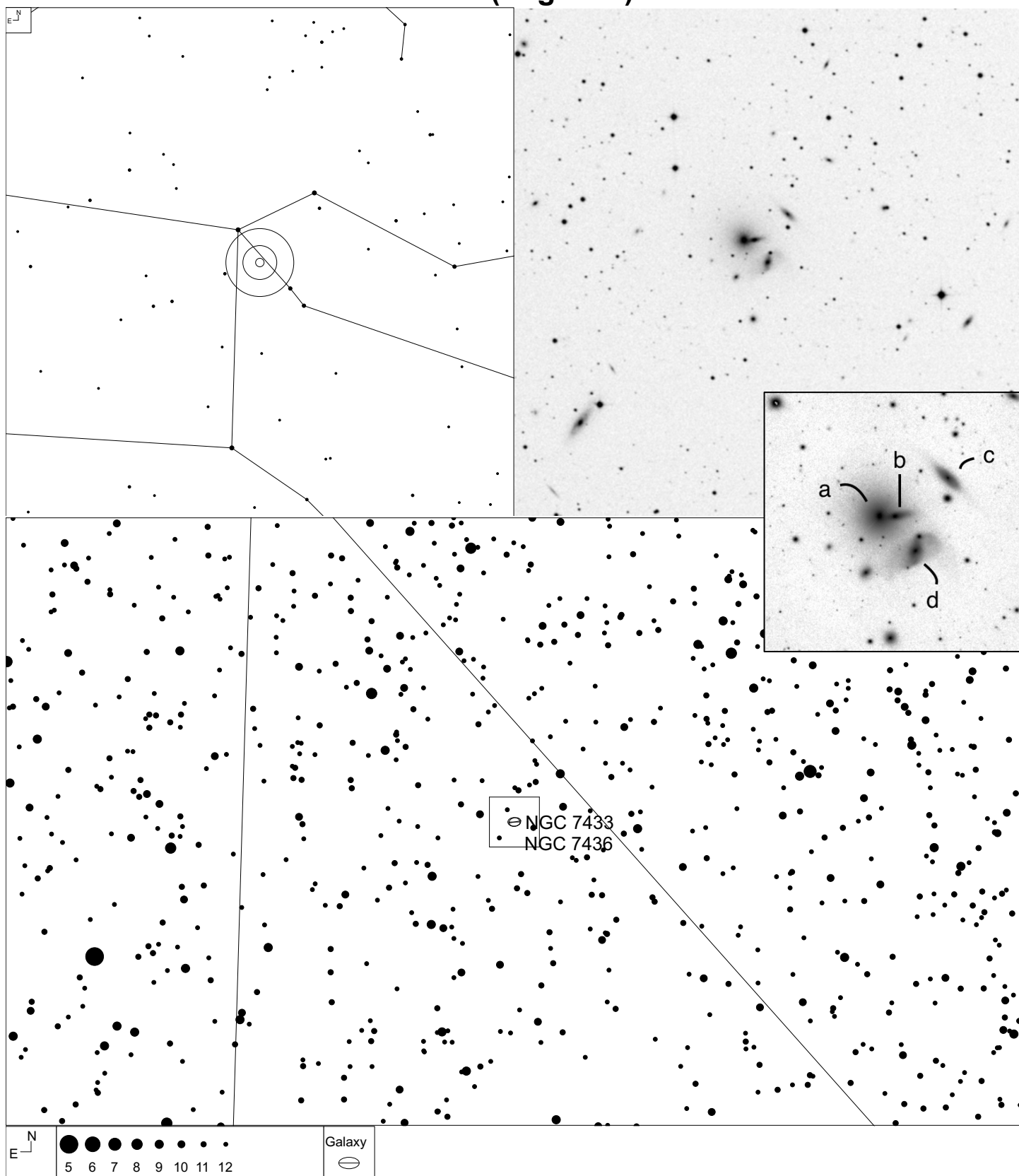
Any feedback or suggestions would be greatly appreciated. I hope to keep this resource updated and made available to all of you, the deep sky observer.

⁴ Jokimäki, A et al "A Catalogue of M51 type Galaxy Associations". *Astrophysics and Space Science*, **315**(1), 249-283

⁵ Zasov, A. V. & Arkhipova, V. P. "Vorontsov-Velyaminov' nests: what are they?". *Small Galaxy Groups: IAU Colloquium* 174, ASP Conference Series, Volume **209**

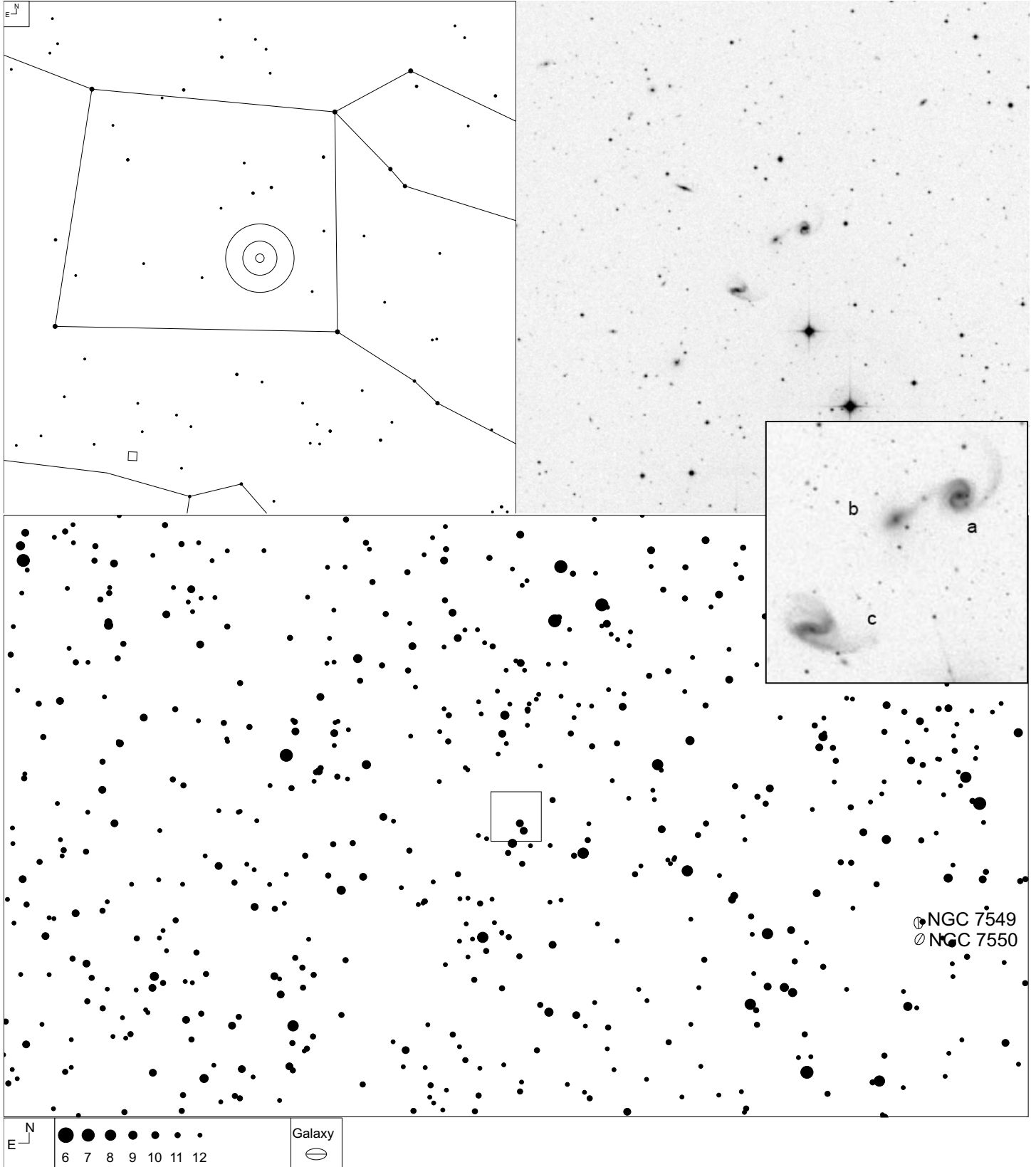
The Vorontsov-Velyaminov Interacting Galaxies Atlas (Part I)

VV 84 (Pegasus)



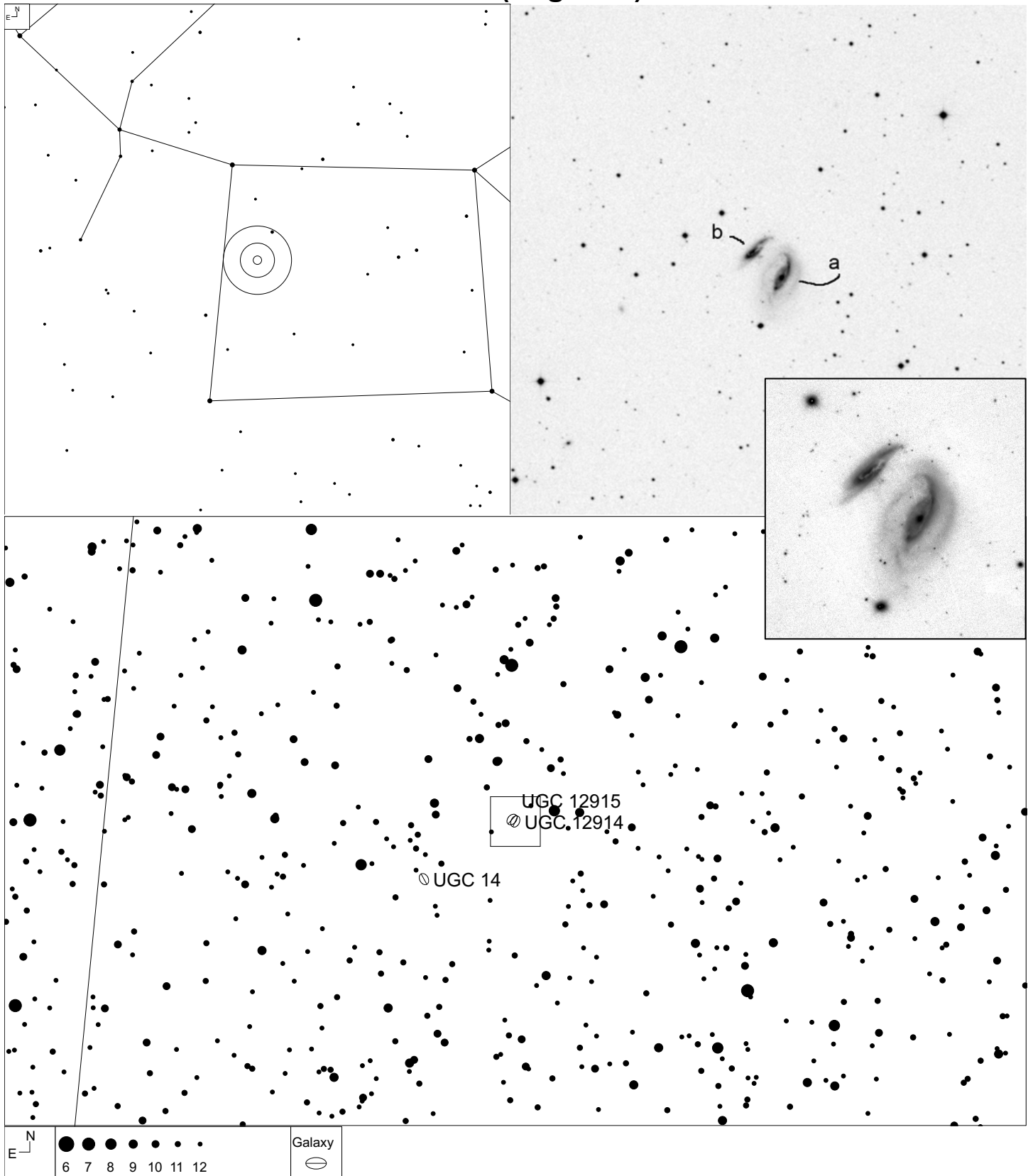
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
84		22 57 56.9	+26 09 00	GPair			NNNP
84a	NGC 7436	22 57 57.5	+26 09 00	G	13.2g	2.0 x 2.0	
84b	NGC 7436A	22 57 56.2	+26 09 00	G	14.7g	0.6 x 0.2	
84c	NGC 7433	22 57 51.7	+26 09 43	G	15.8g	0.5 x 0.2	
84d	NGC 7434	22 57 54.5	+26 08 19	G	14.7g	0.7 x 0.5	

VV 305 (Pegasus)



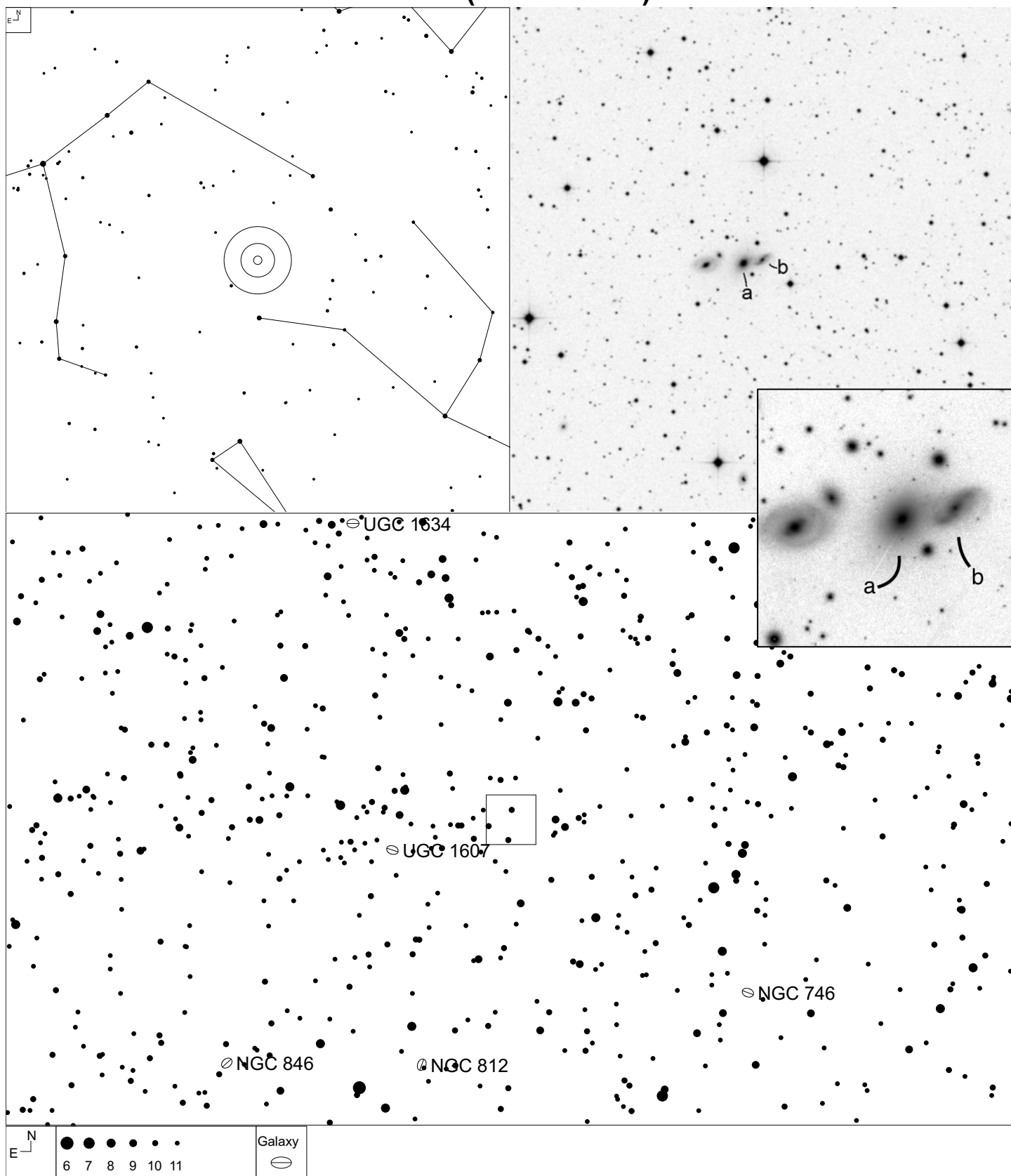
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
305		23 23 36.8	+19 35 04	GTrpl			NNN
305a	MCG+03-59-051	23 23 32.7	+19 35 59	G	15.3g	0.5 x 0.4	
305b	PGC 95716	23 23 36.3	+19 35 39	G	16.9g	0.4 x 0.2	
305c	UGC 12574	23 23 41.0	+19 34 10	G	15.3g	1.2 x 0.6	

VV 254 (Pegasus)



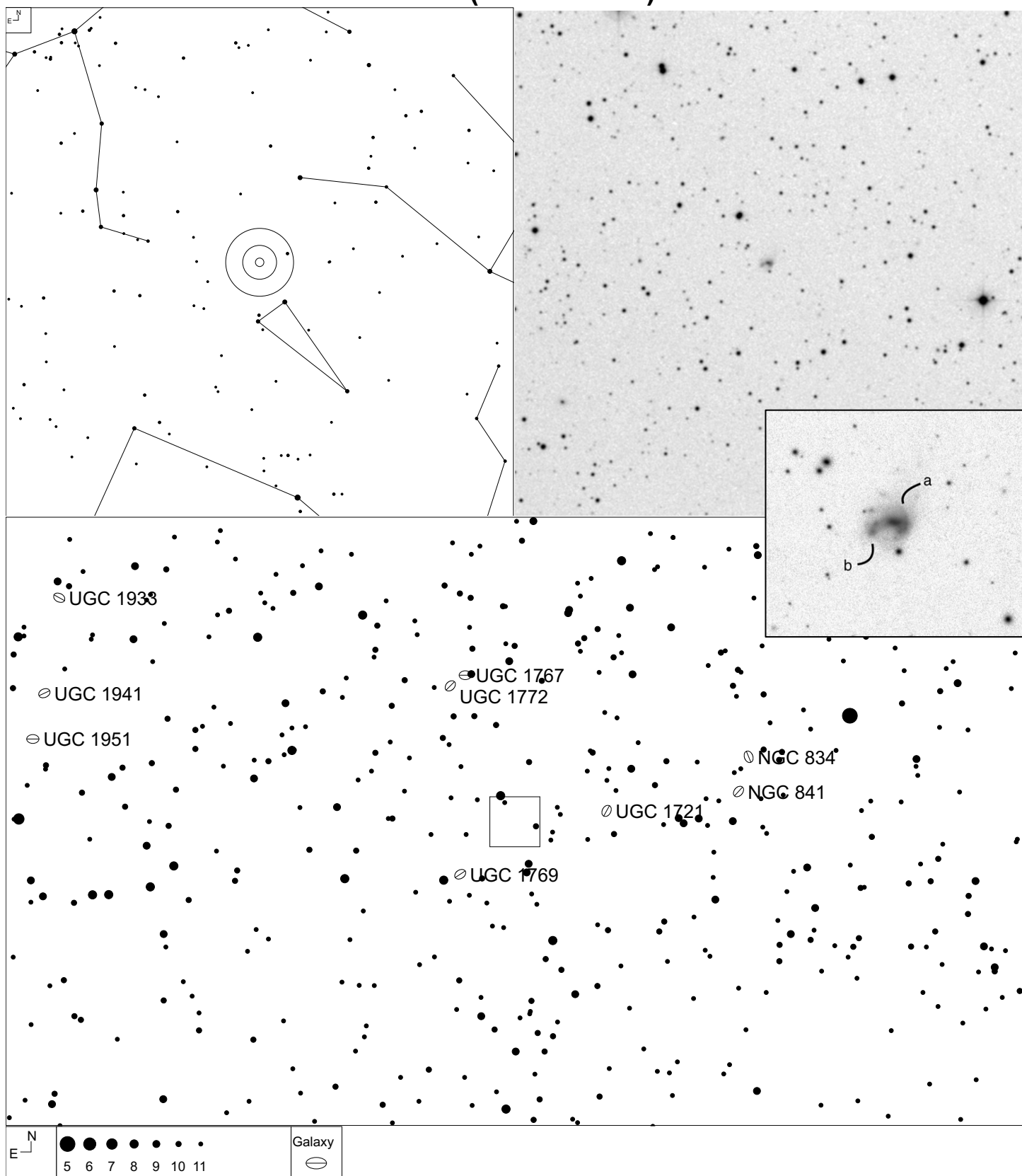
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
254	III Zw 125	00 01 40.2	+23 29 23	GPair			PKdf
254a	UGC 12914	00 01 38.2	+23 29 04	G	13.5g	2.3 x 1.3	
254b	UGC 12915	00 01 42.2	+23 29 42	G	13.9b	1.5 x 0.5	

VV 37 (Andromeda)



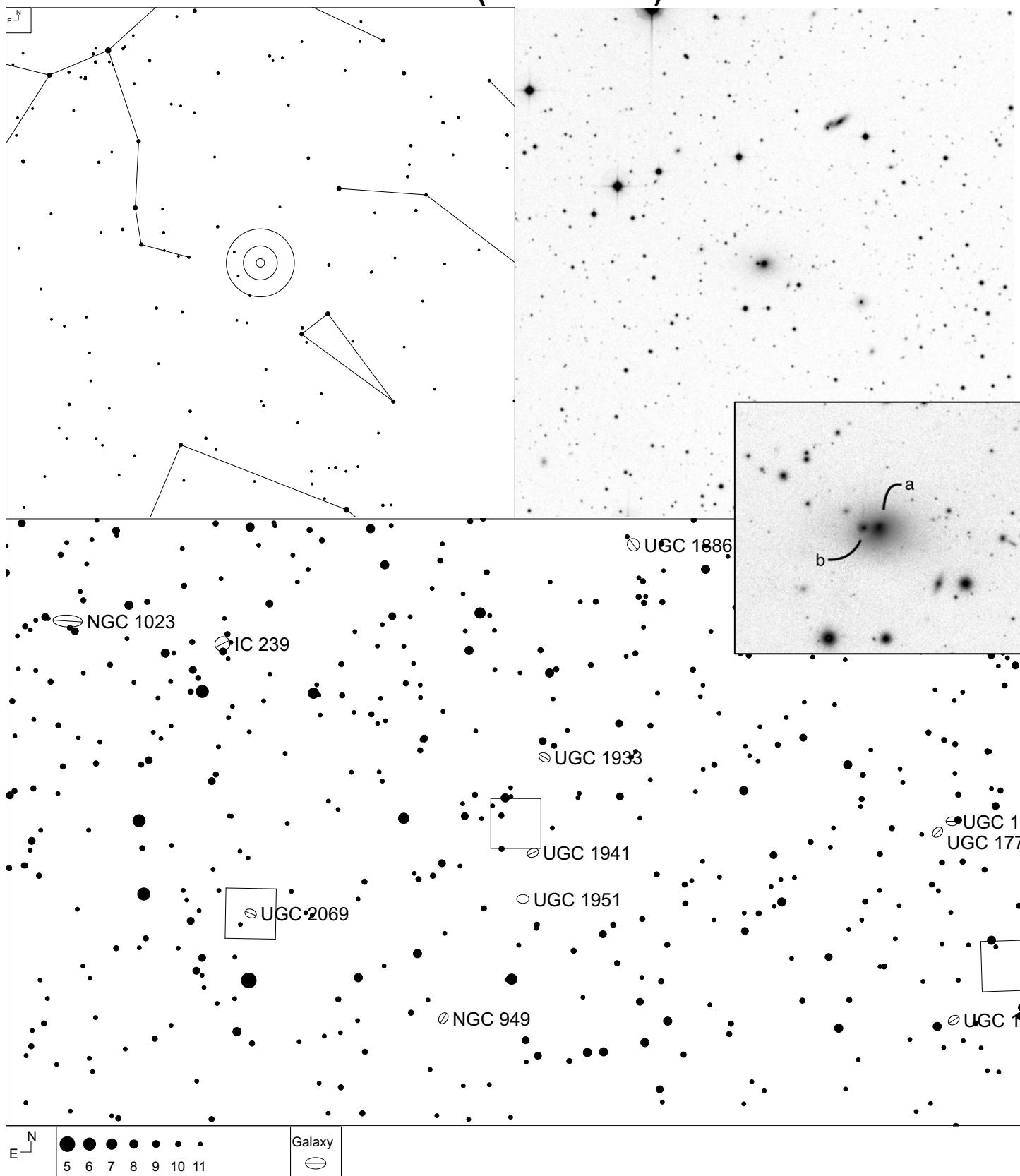
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
37		02 04 23.8	+45 46 33	GPair			PDb
37a	MCG+08-04-019	02 04 25.4	+45 46 27	G	15.0b	0.4 x 0.4	
37b	UGC 1562	02 04 22.3	+45 46 35	G	16.2b	0.6 x 0.3	

VV 94 (Andromeda)



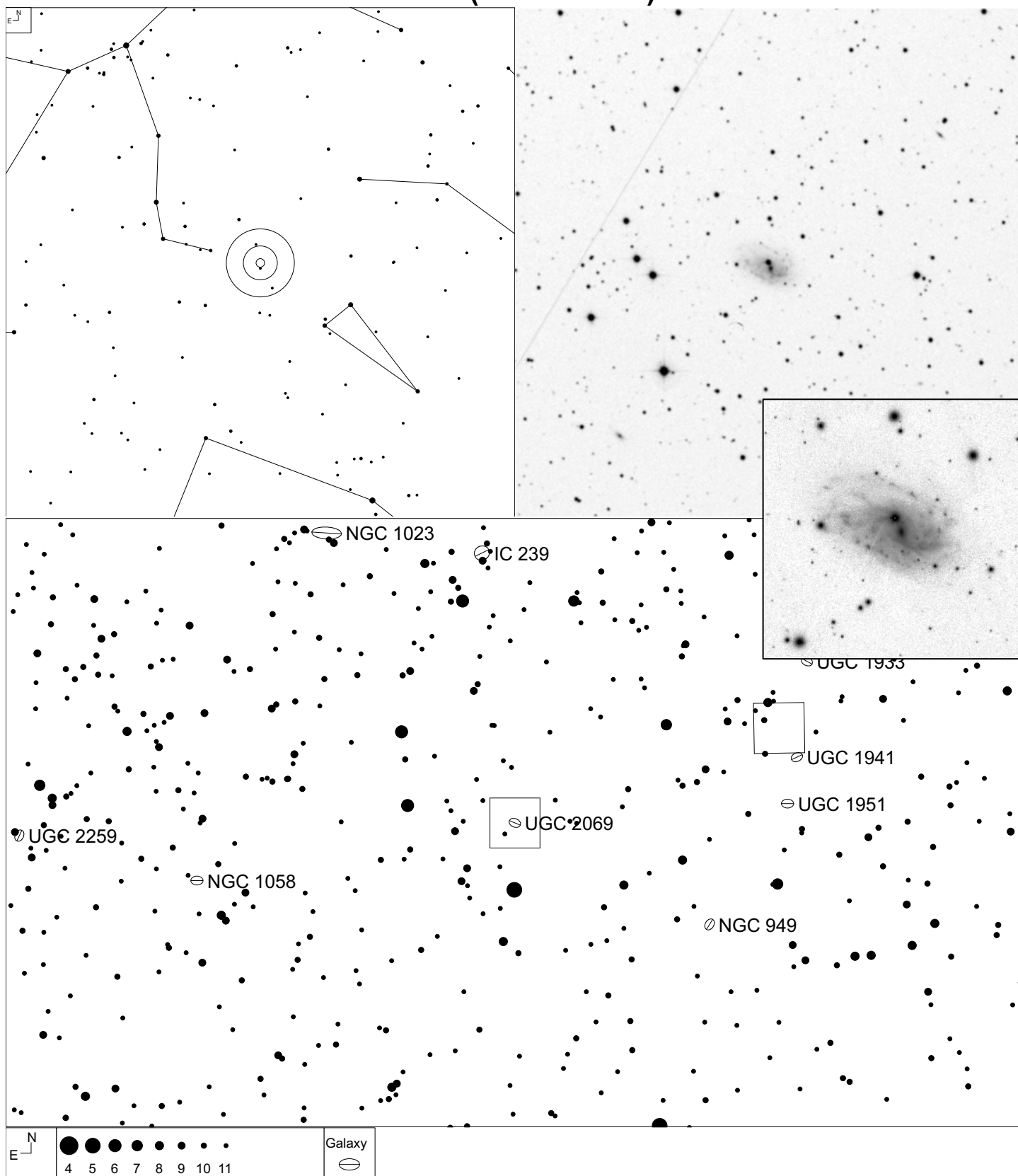
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
94	UGCA 25	02 16 50.9	+37 21 12	GPair	15.0b	0.6 x 0.6	PC

VV 107 (Andromeda)



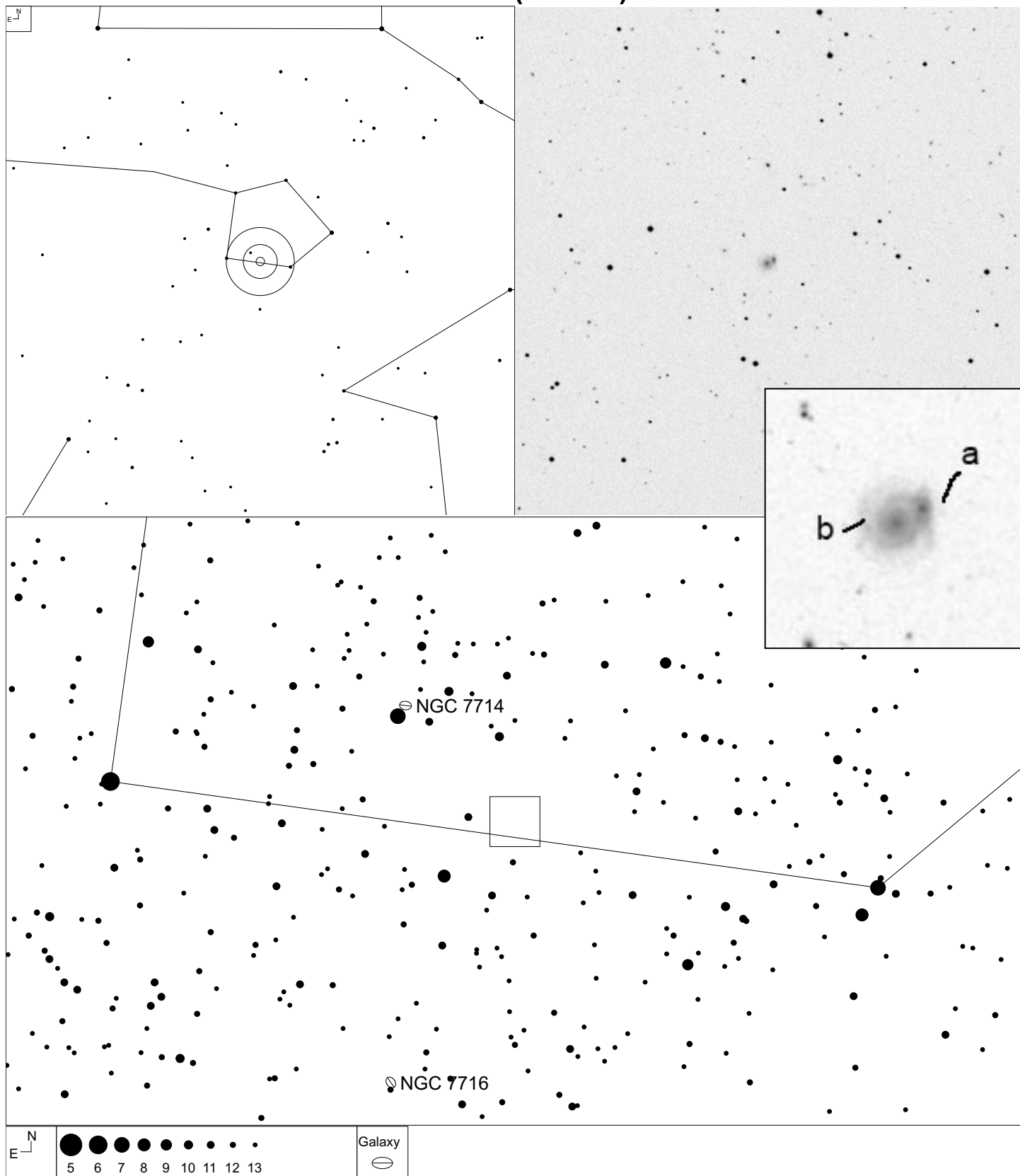
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
107	MCG+06-06-043	02 29 01.5	+38 05 55	GPair	15.5b	0.6 x 0.6	PC

VV 96 (Andromeda)



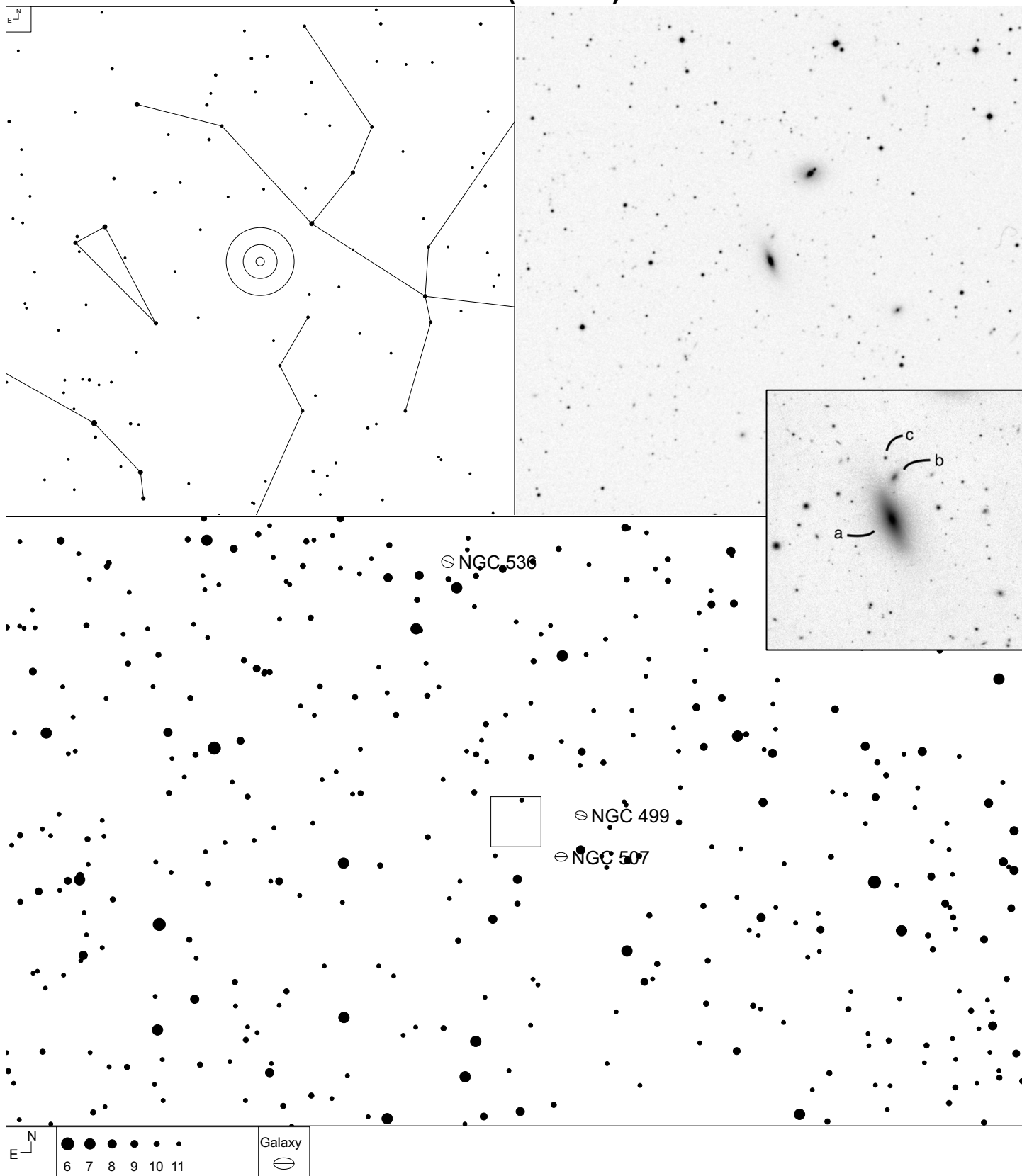
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
96	UGC 2069	02 35 37.3	+37 38 21	G	13.2b	2.3 x 1.4	PC

VV 187 (Pisces)



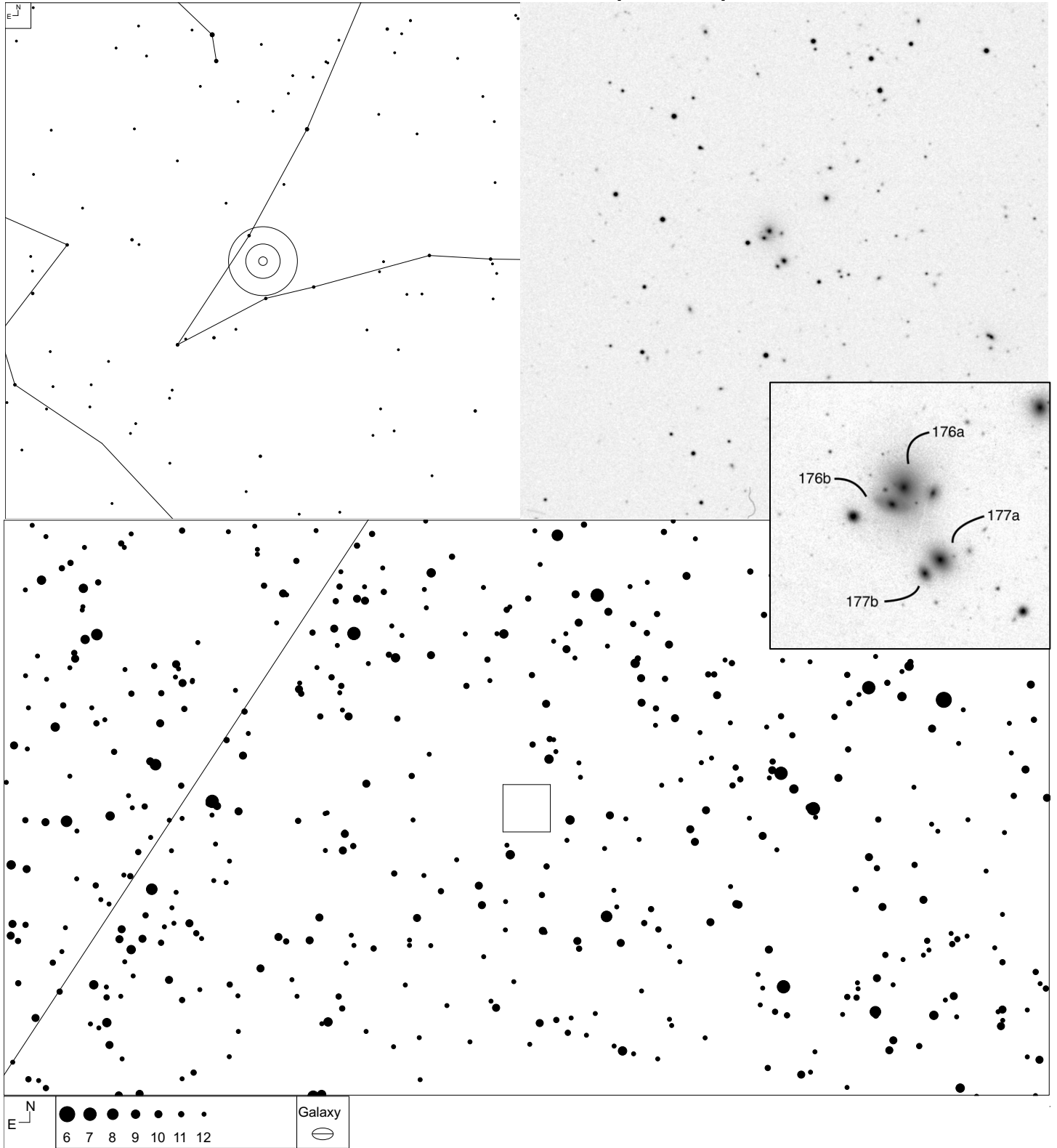
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
187	MCG+00-60-009	23 34 04.5	+01 35 03	GPair	16.2g	0.7 x 0.4	PK
187a		23 24 04.1	+01 35 07	G	17.3g		

VV 36 (Pisces)



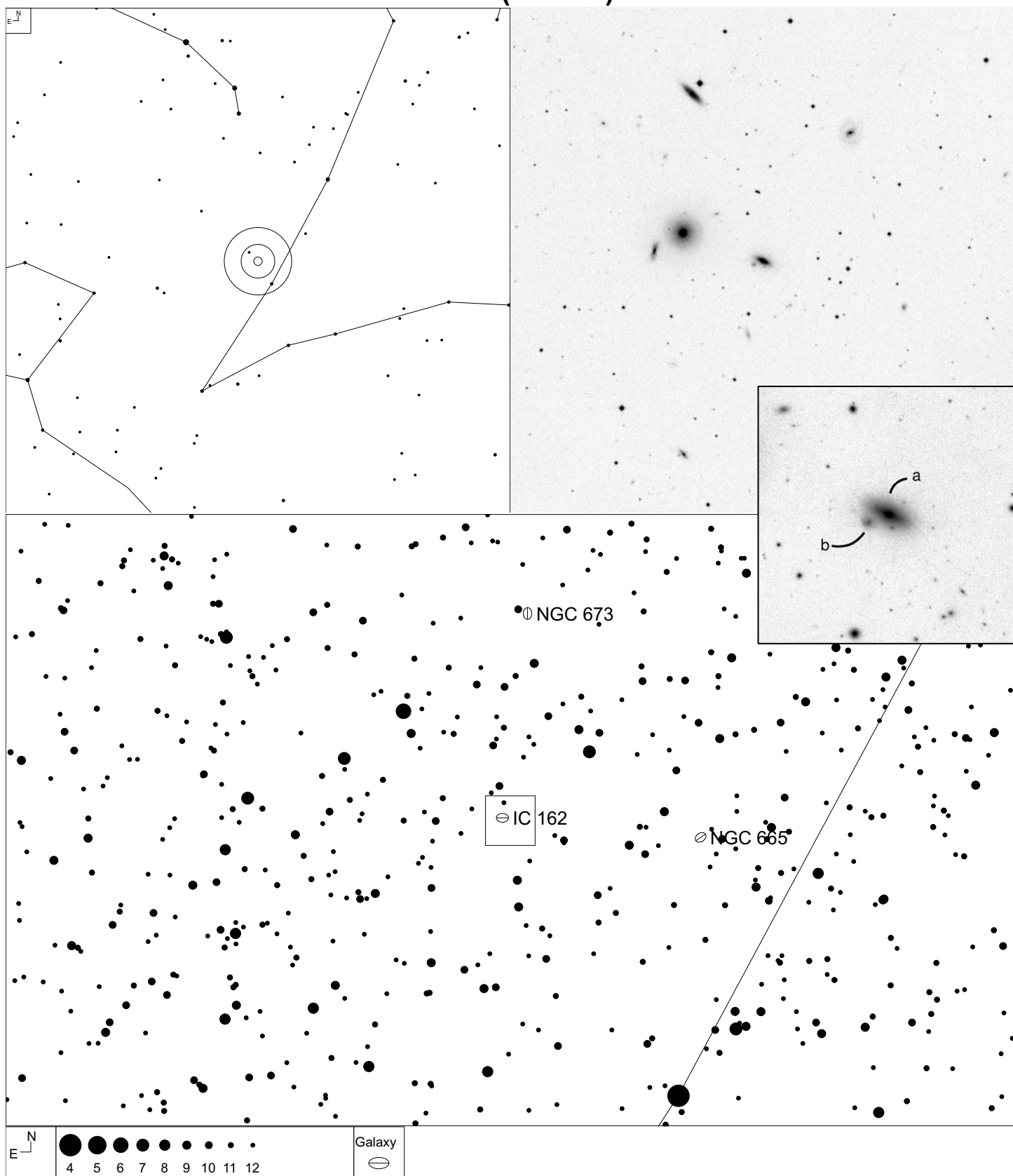
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
36	NGC 517	01 24 43.9	+33 26 08	GPair	13.7g	2.0 x 1.0	N
36b	PGC 212751	01 24 43.6	+33 26 08	G			
36c		01 24 44.3	+33 26 51	star			

VV 176 and VV 177 (Pisces)



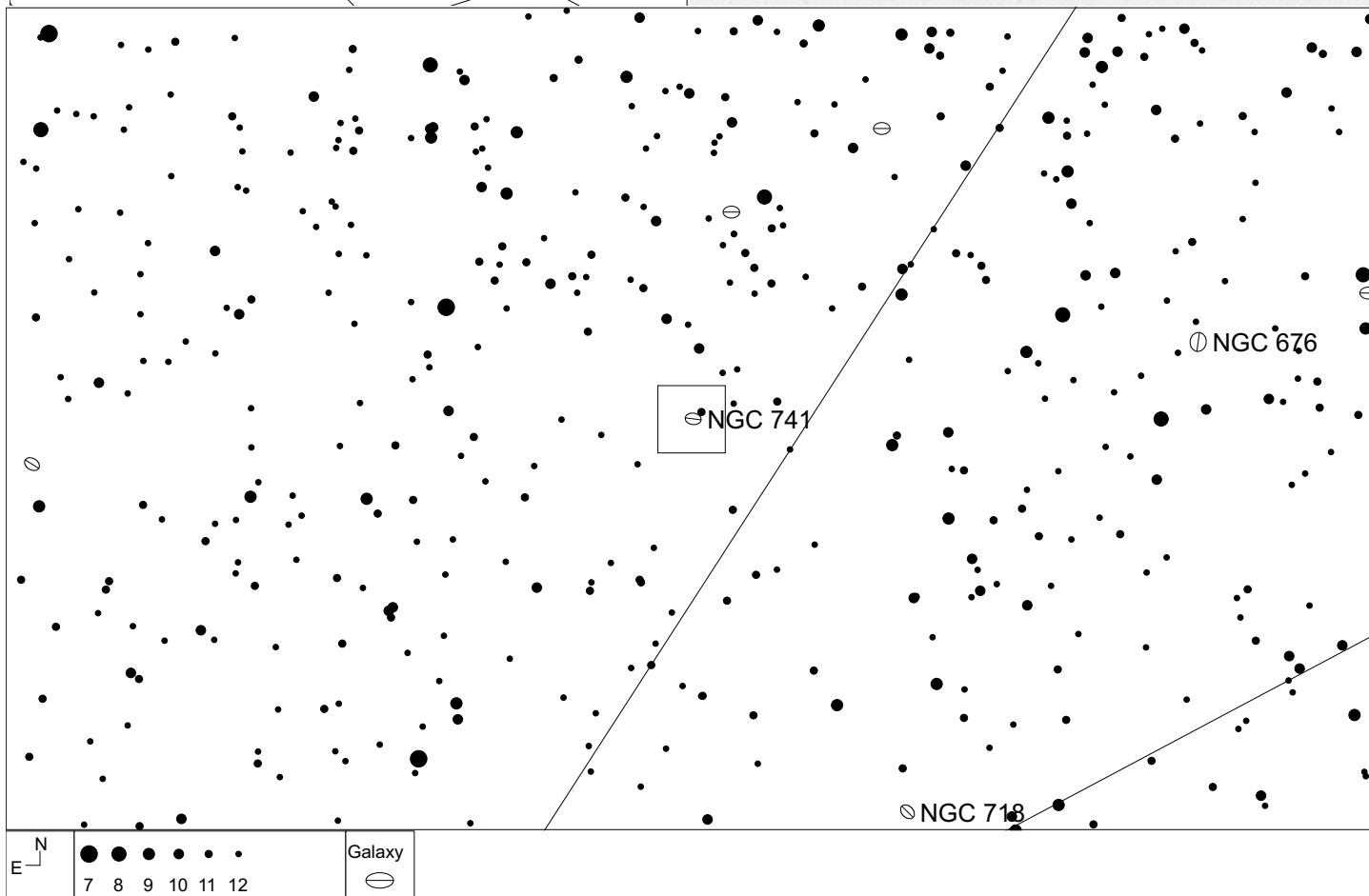
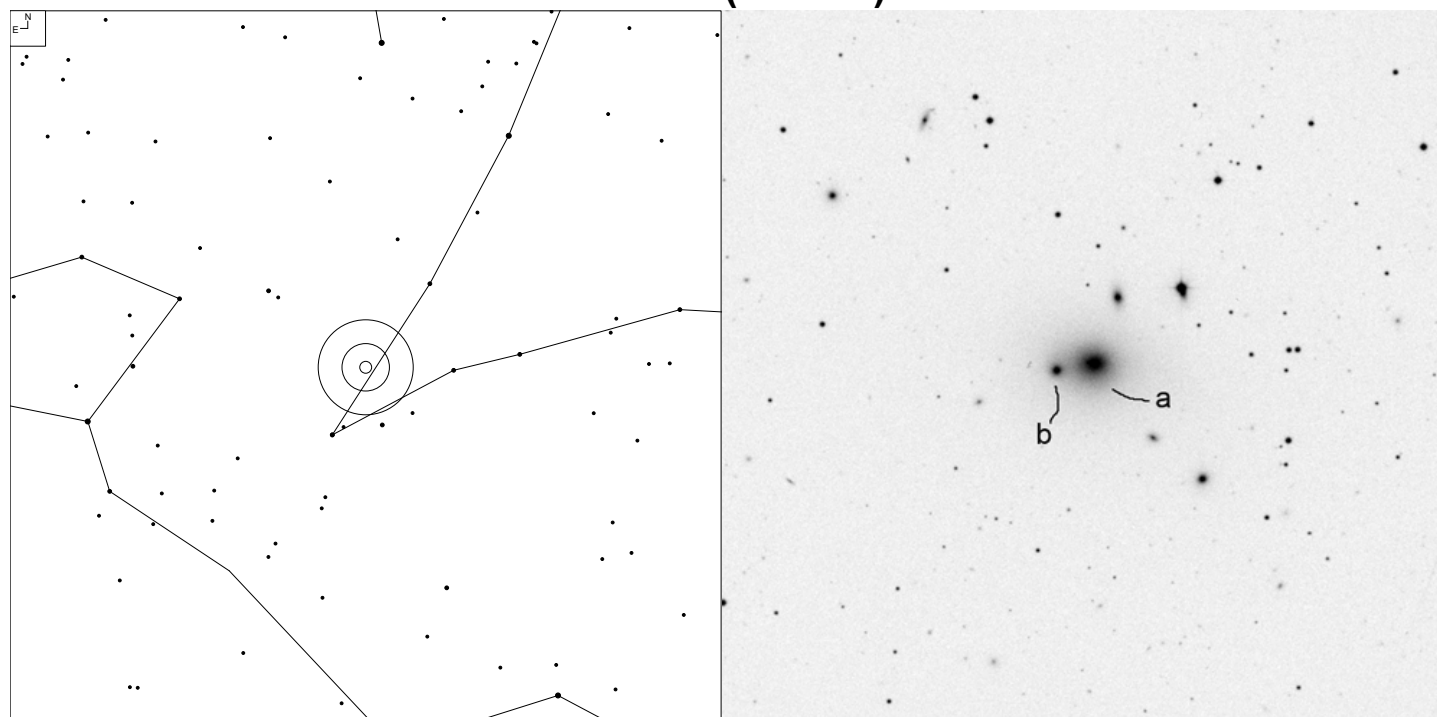
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
177		01 42 04.8	+07 38 57	GPair			PKb
177a	UGC 1191	01 42 04.3	+07 39 02	G	15.1g	0.7 x 0.4	
177b	PGC 200196	01 42 05.0	+07 38 52	G		0.3 x 0.2	
176		01 42 06.4	+07 39 46	GPair			PK
176a	MCG+01-05-022	01 42 06.0	+07 39 54	G	15.7g	0.6 x 0.6	
176b	PGC 1327202	01 42 06.7	+07 39 39	G	17.0g	0.2 x 0.2	

VV 54 (Pisces)



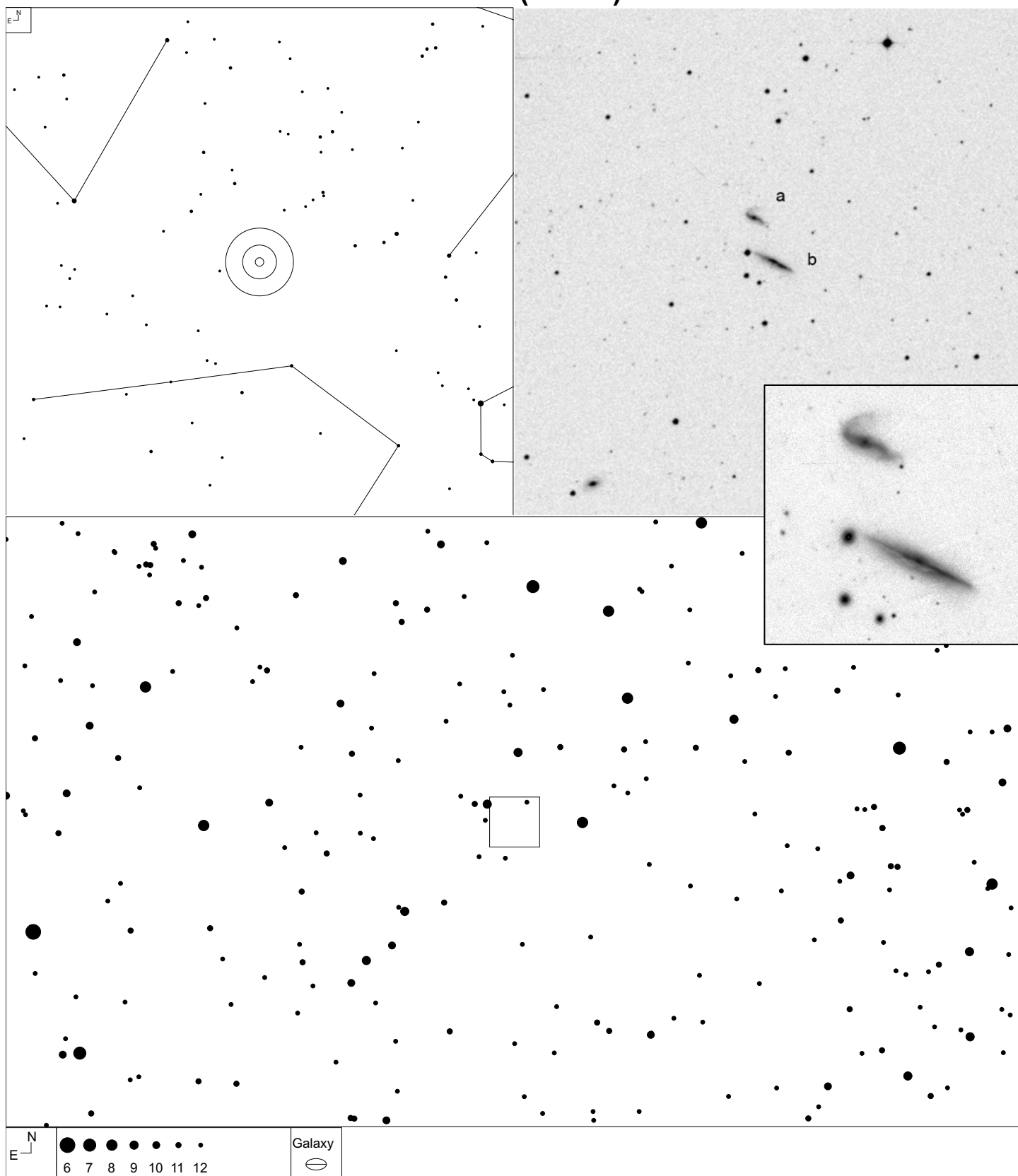
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
54		01 48 44.2	+10 30 26	GPair			Nb
54a	IC 161	01 48 43.7	+10 30 28	G	14.1g	0.8 x 0.6	
54b		01 48 44.9	+10 30 23	G	20	0.1	

VV 175 (Pisces)



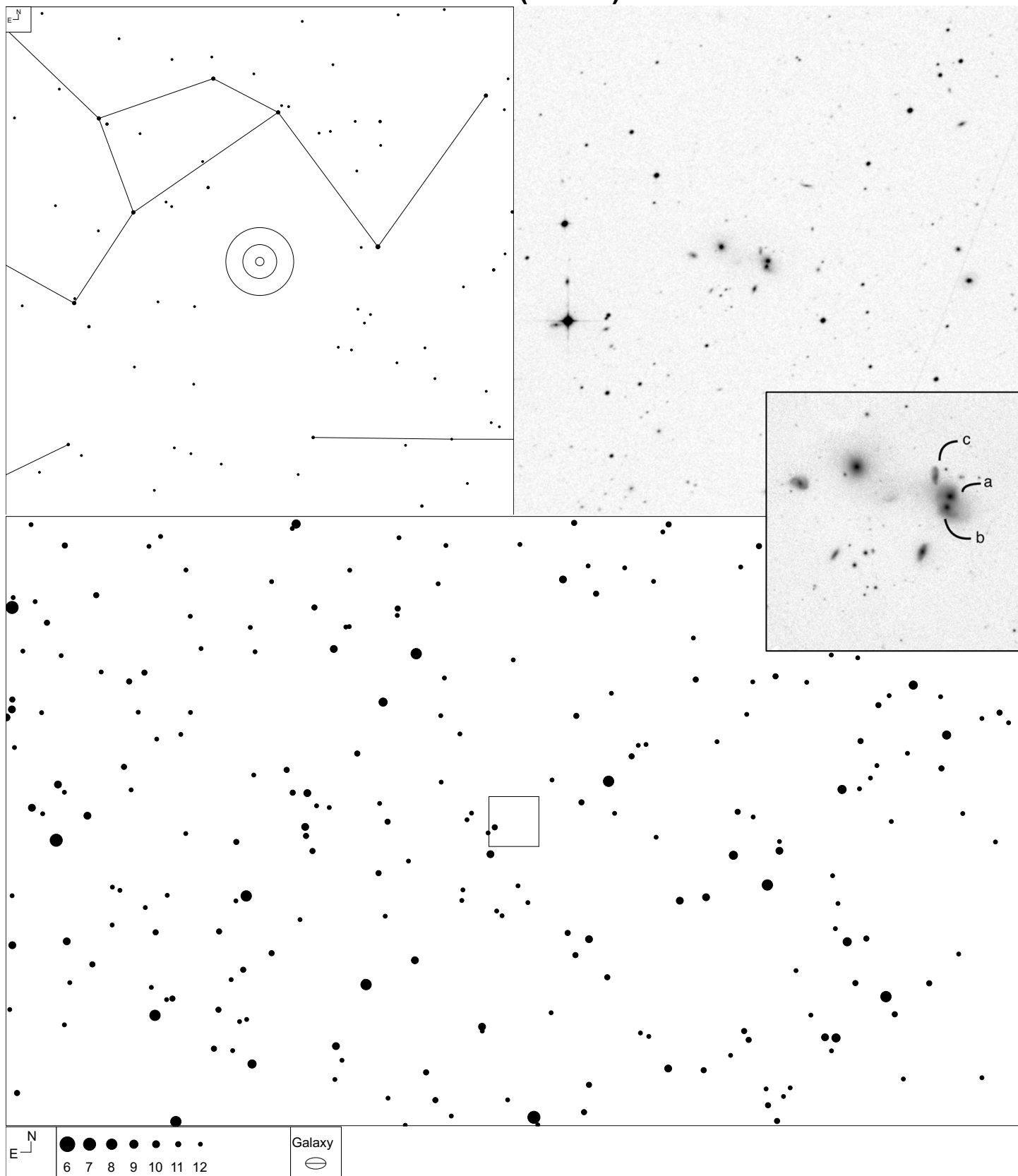
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
175		01 56 22.6	+05 37 40	GPair			PK
175a	NGC 741	01 56 21.0	+05 37 44	G	12.3g	3.0 x 2.8	
175b	NGC 742	01 56 24.2	+05 37 36	G	14.6g	0.2 x 0.2	

VV 332 (Cetus)



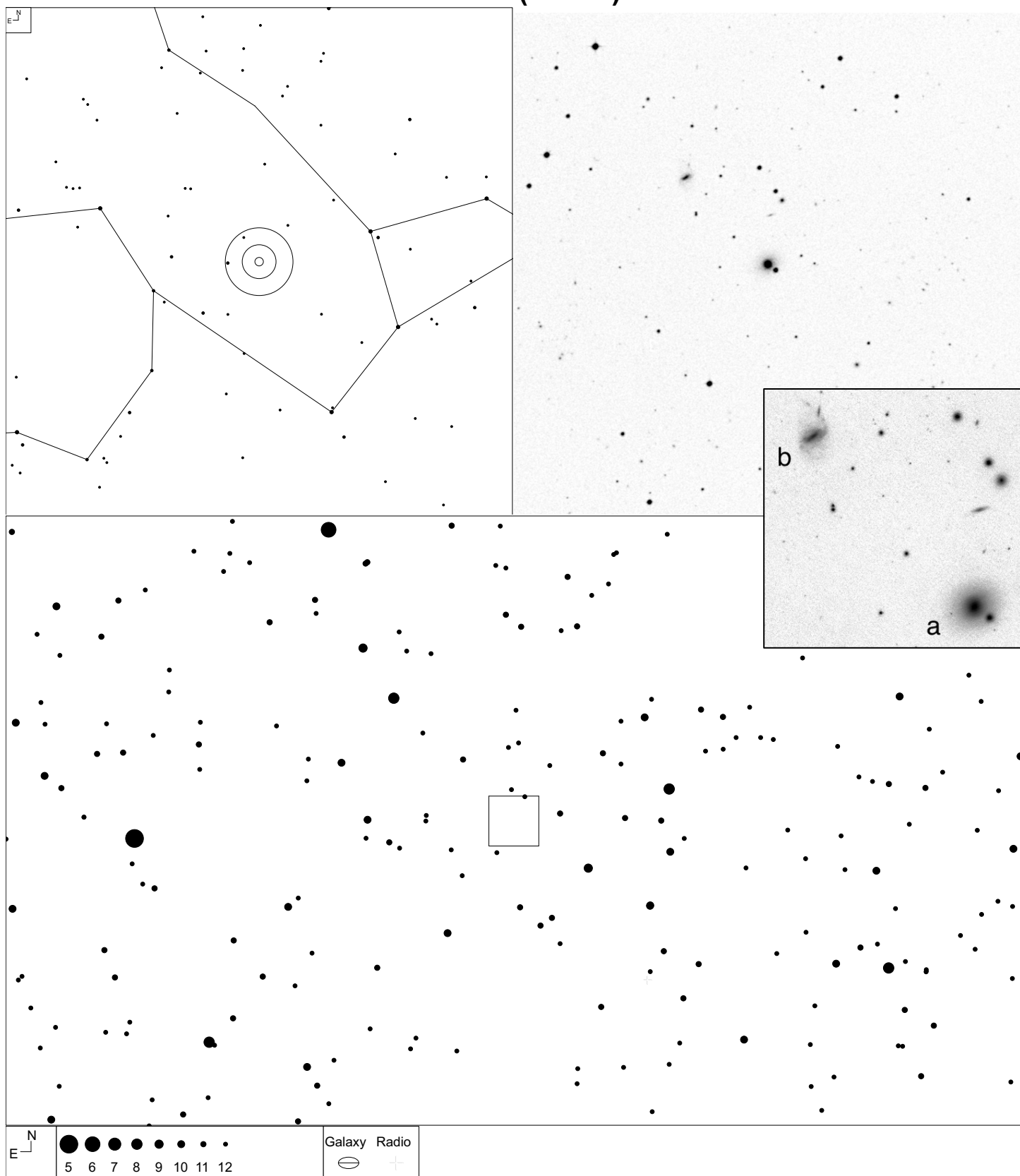
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
332		23 57 33.4	-21 59 22	GPair			PD
332a	MCG-04-01-008	23 57 34.8	-21 58 44	G	15.8b	1.0 x 0.7	
332b	MCG-04-01-007	23 57 32.6	-22 00 00	G	15.7g	1.6 x 0.4	

VV 258 (Cetus)



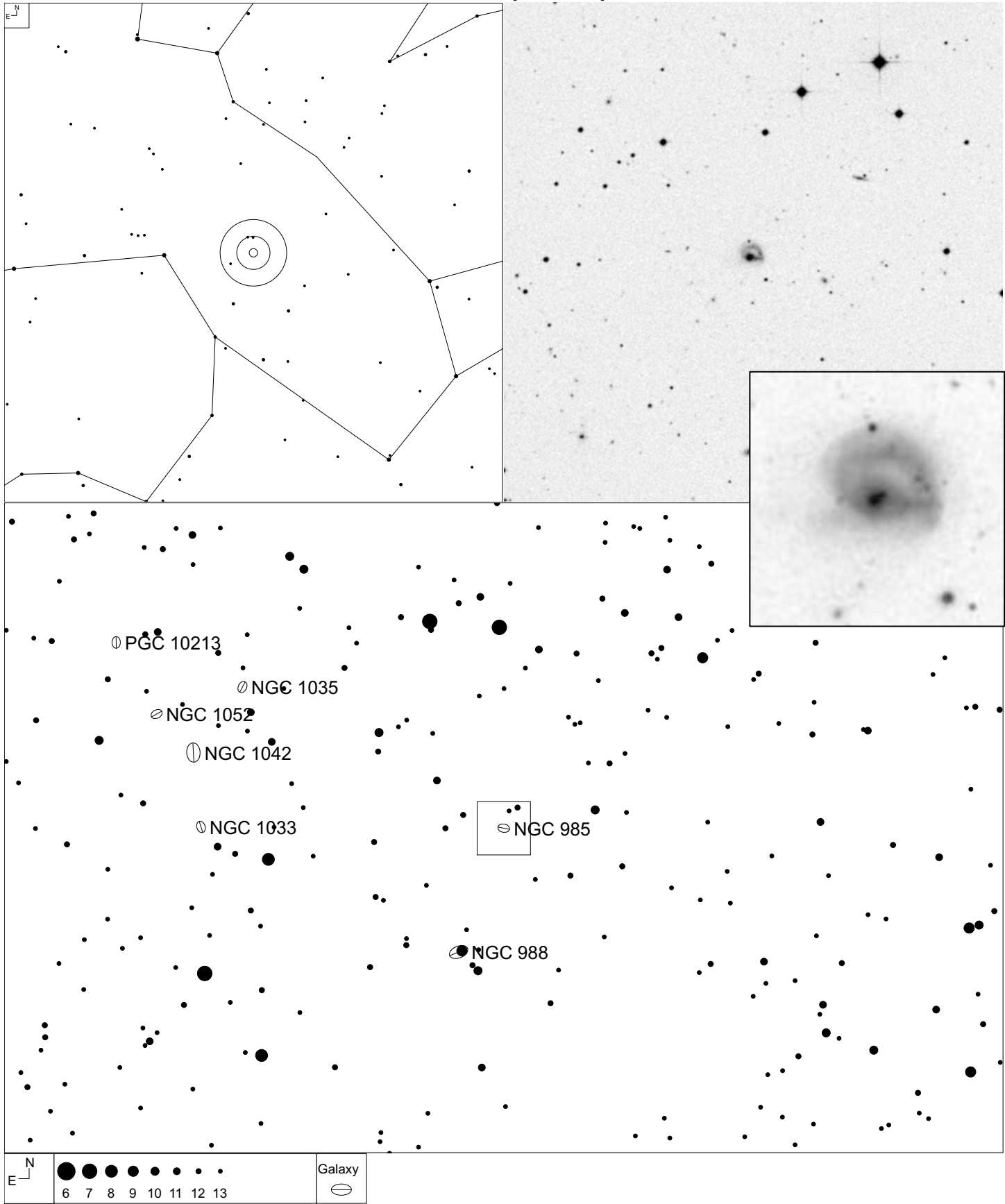
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
258		01 12 59.7	-19 00 14	GTrpl			NNN
258a	MCG-03-04-028	01 12 58.6	-19 00 15	G	15.3g	0.1 x 0.1	
258b	MCG-03-04-028a?	01 12 59.0	-19 00 24	G	15.5	0.2 x 0.2	
258c	MCG-03-04-029	01 12 59.8	-18 59 59	G	15.5g	0.2 x 0.1	

VV 302 (Cetus)

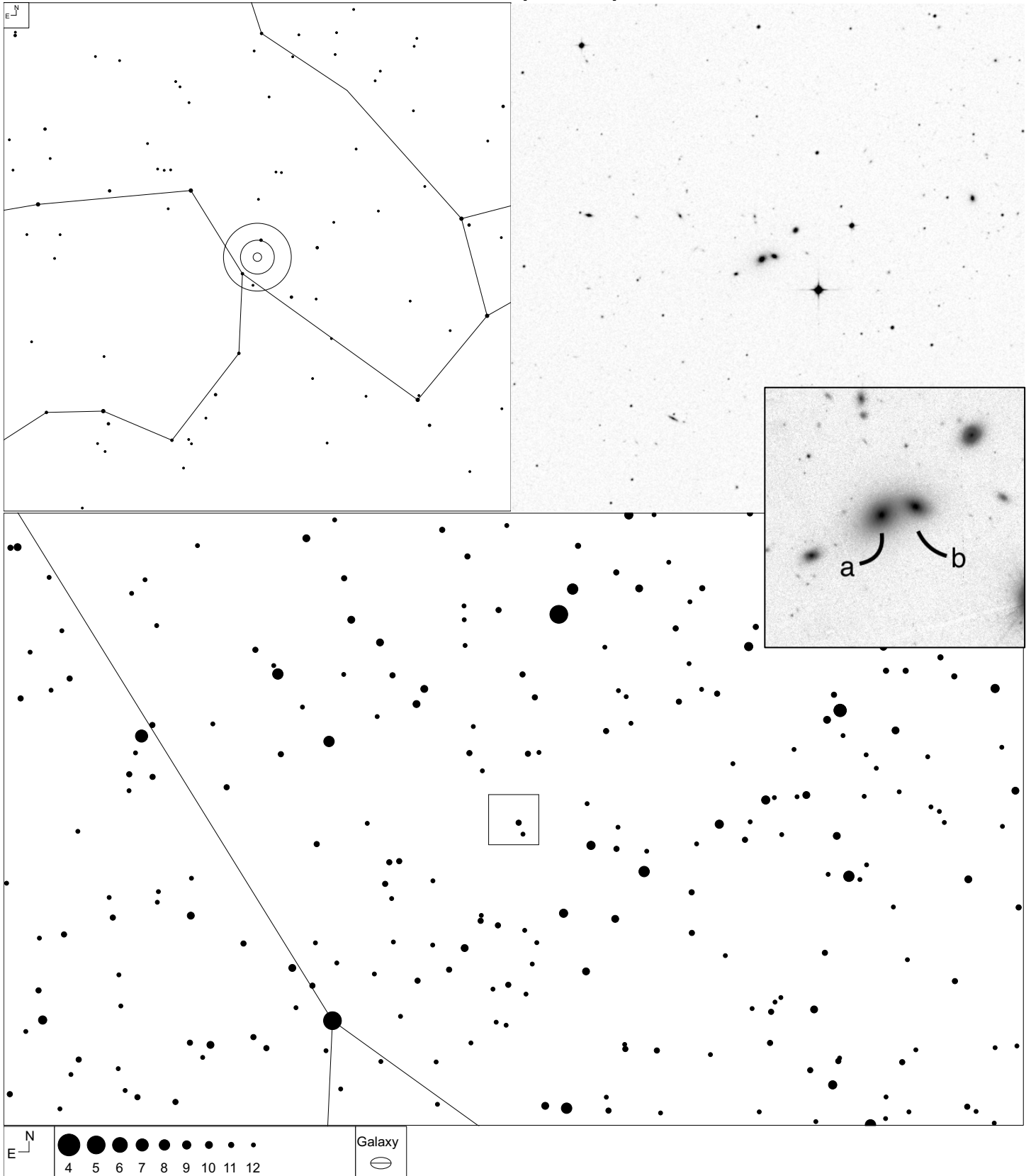


VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
302		02 18 19.2	-12 12 38	GPair			PD
302a	MCG-02-06-052	02 18 14.2	-12 13 55	G	14.3b	0.9 x 0.9	
302b	MCG-02-06-054	02 18 24.2	-12 11 20	G	15.5g	0.9 x 0.7	

VV 285 (Cetus)

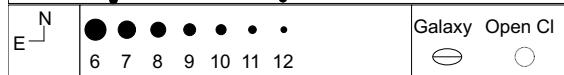
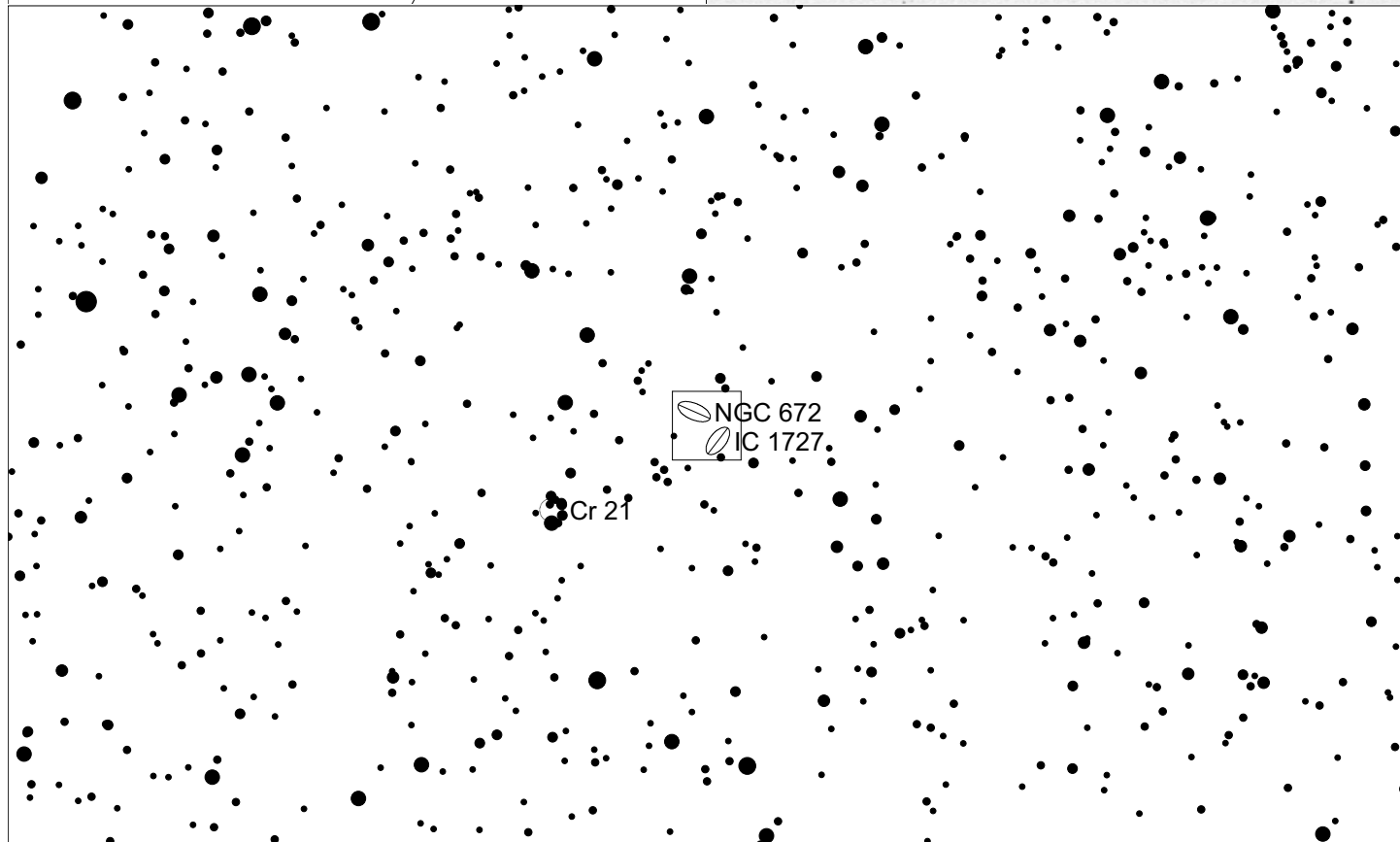
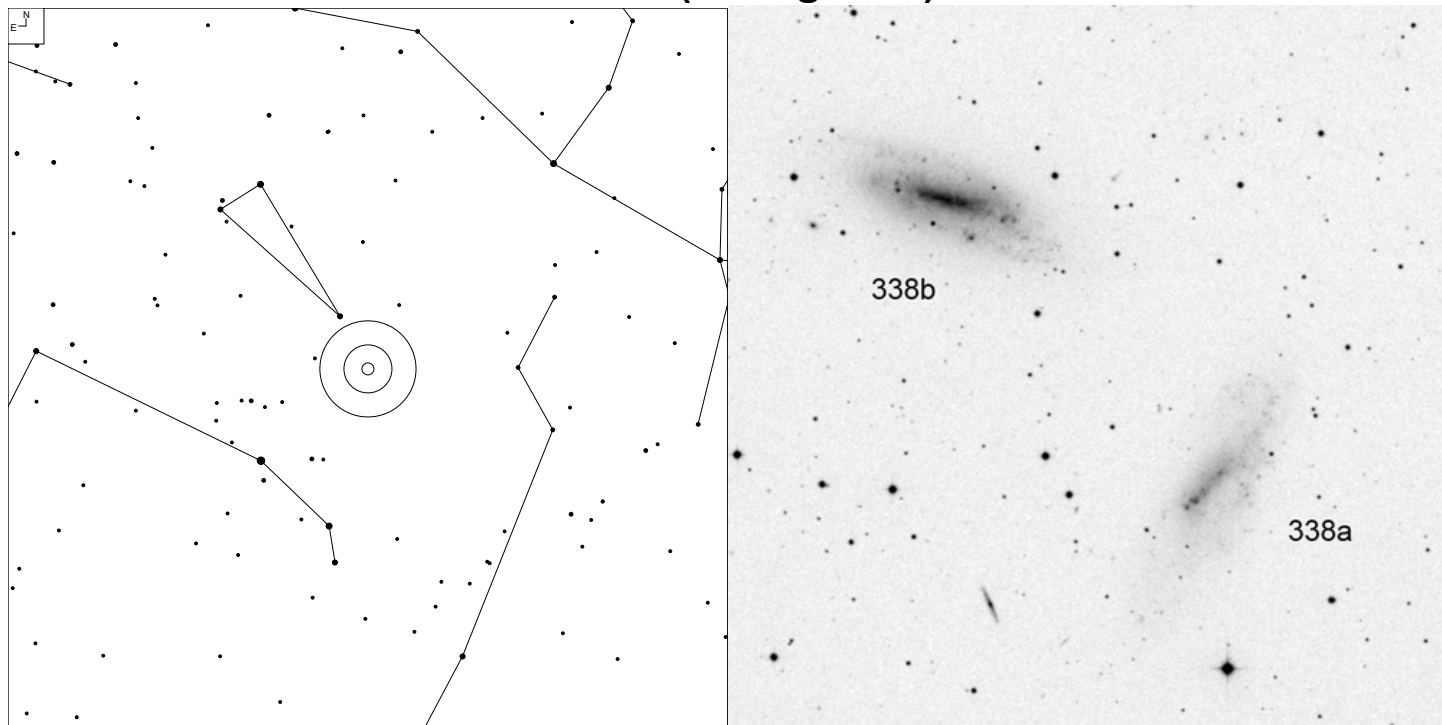


VV 200 (Cetus)



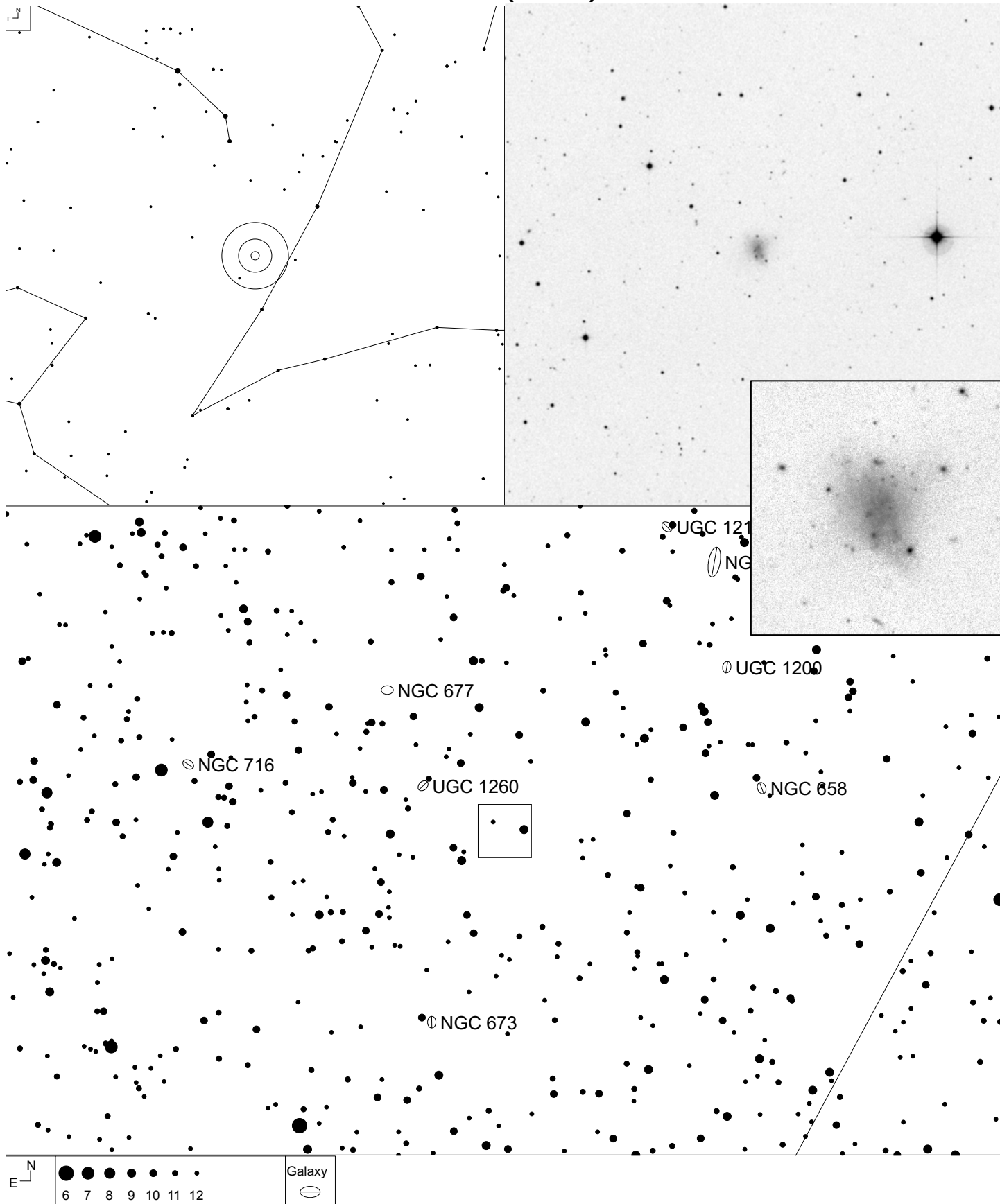
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
200		02 40 28.1	-12 52 35	GPair			PDb
200a	MCG-02-07-061	02 40 28.9	-12 52 38	G	15.0g	0.3 x 0.3	
200b	MCG-02-07-060	02 40 27.4	-12 52 33	G	15.0b	0.3 x 0.2	

VV 338 (Triangulum)



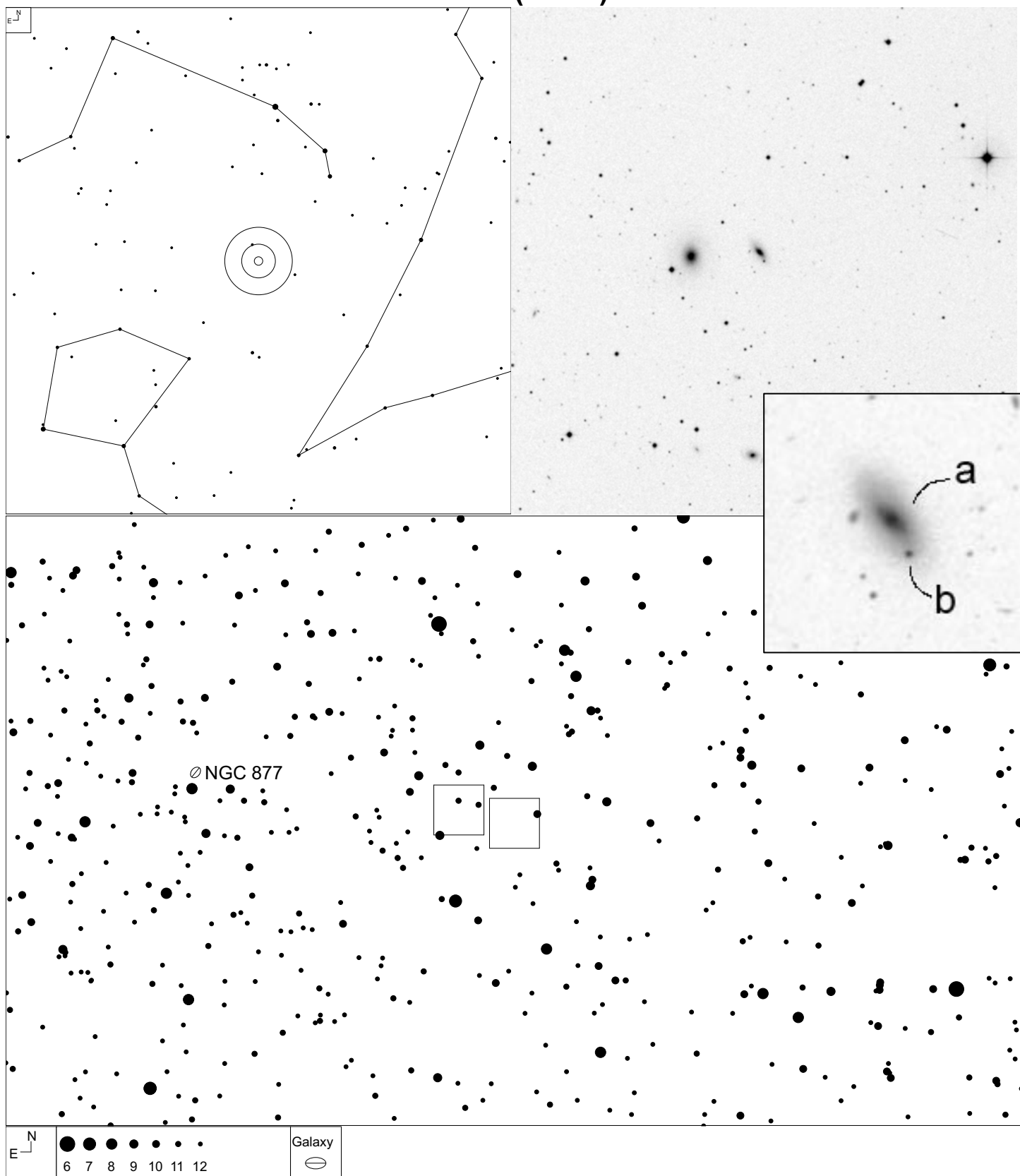
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
338		01 47 42.2	+27 22 59	GPair			PDdf
338a	IC 1727	01 47 29.9	+27 20 00	G	12.0v	6.9 x 3.0	
338b	NGC 672	01 47 54.5	+27 25 58	G	11.1v	7.2 x 2.5	

VV 93 (Aries)



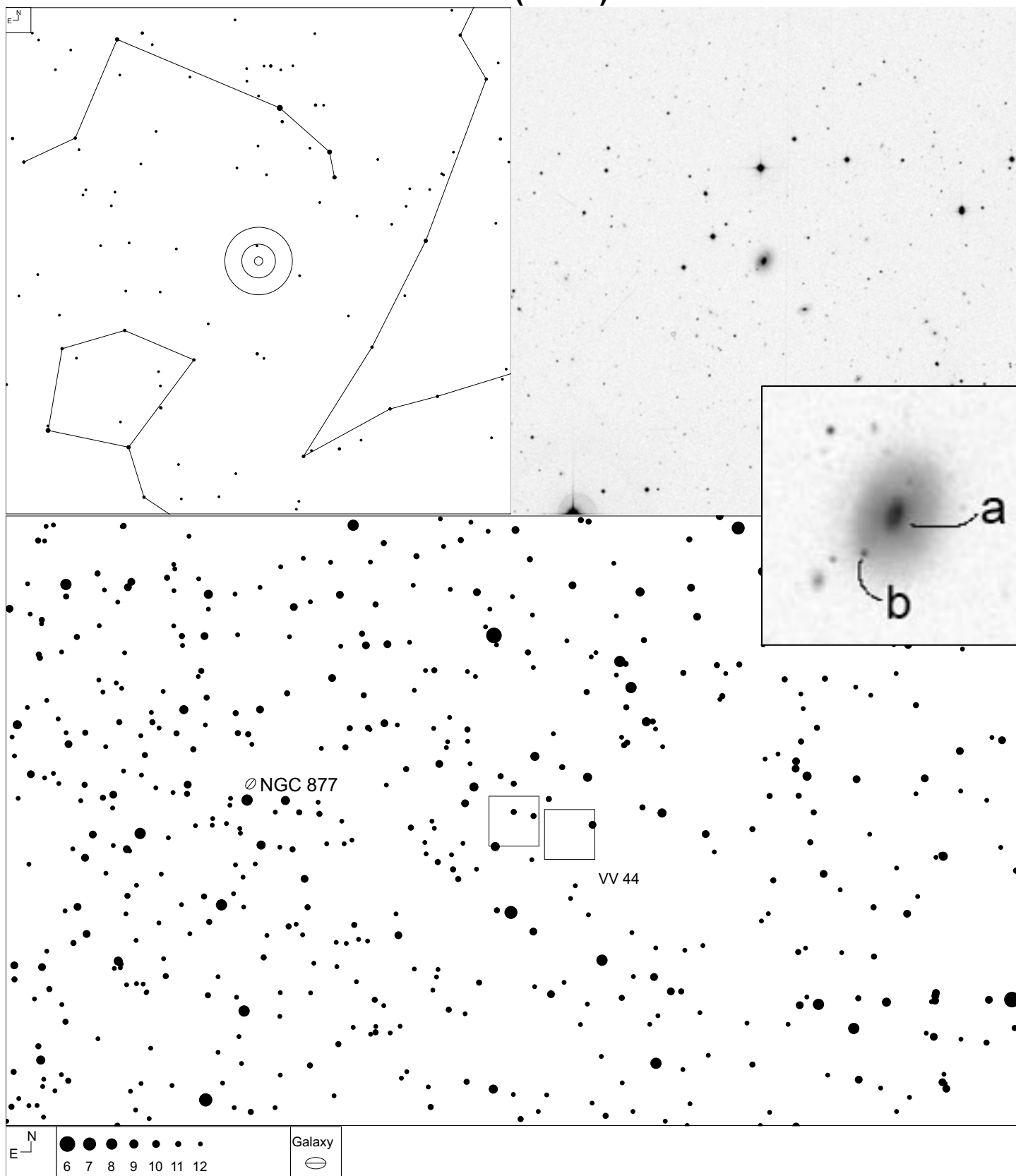
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
93	UGC 1246	01 47 00.7	+12 24 21	G	14.8g	1.4 x 1.2	PC

VV 44 (Aries)



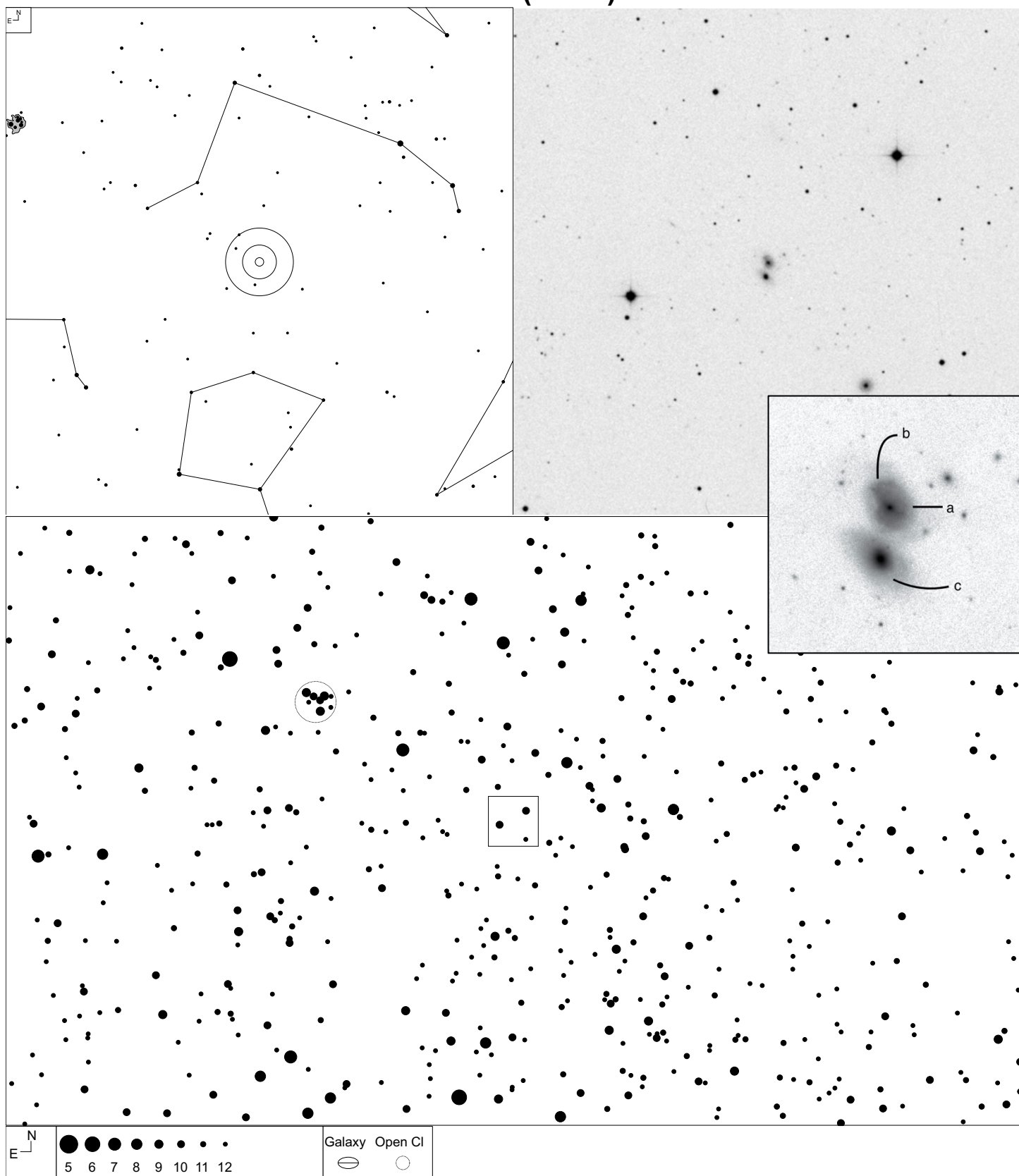
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
44		02 11 30.4	+14 17 54	GPair			PDb
44a	MCG+02-06-041	02 11 30.8	+14 18 02	G	15.1g	0.8 x 0.5	
44b		02 11 30.2	+14 17 46	G	19	0.1	

VV 27 (Aries)



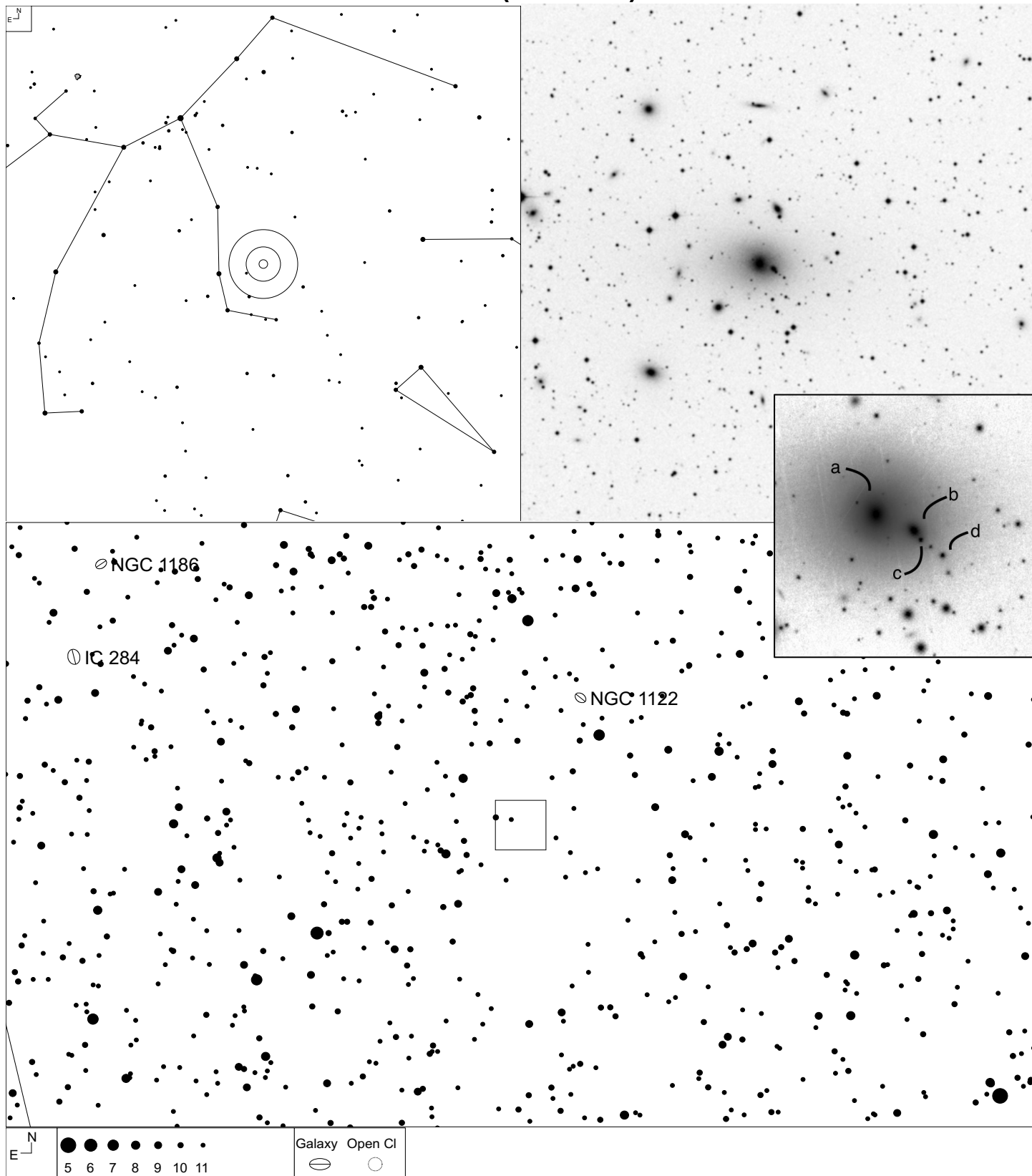
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
27	MCG+02-06-046	02 12 38.7	+14 22 00		14.6g	0.6 x 0.6	M

VV 278 (Aries)



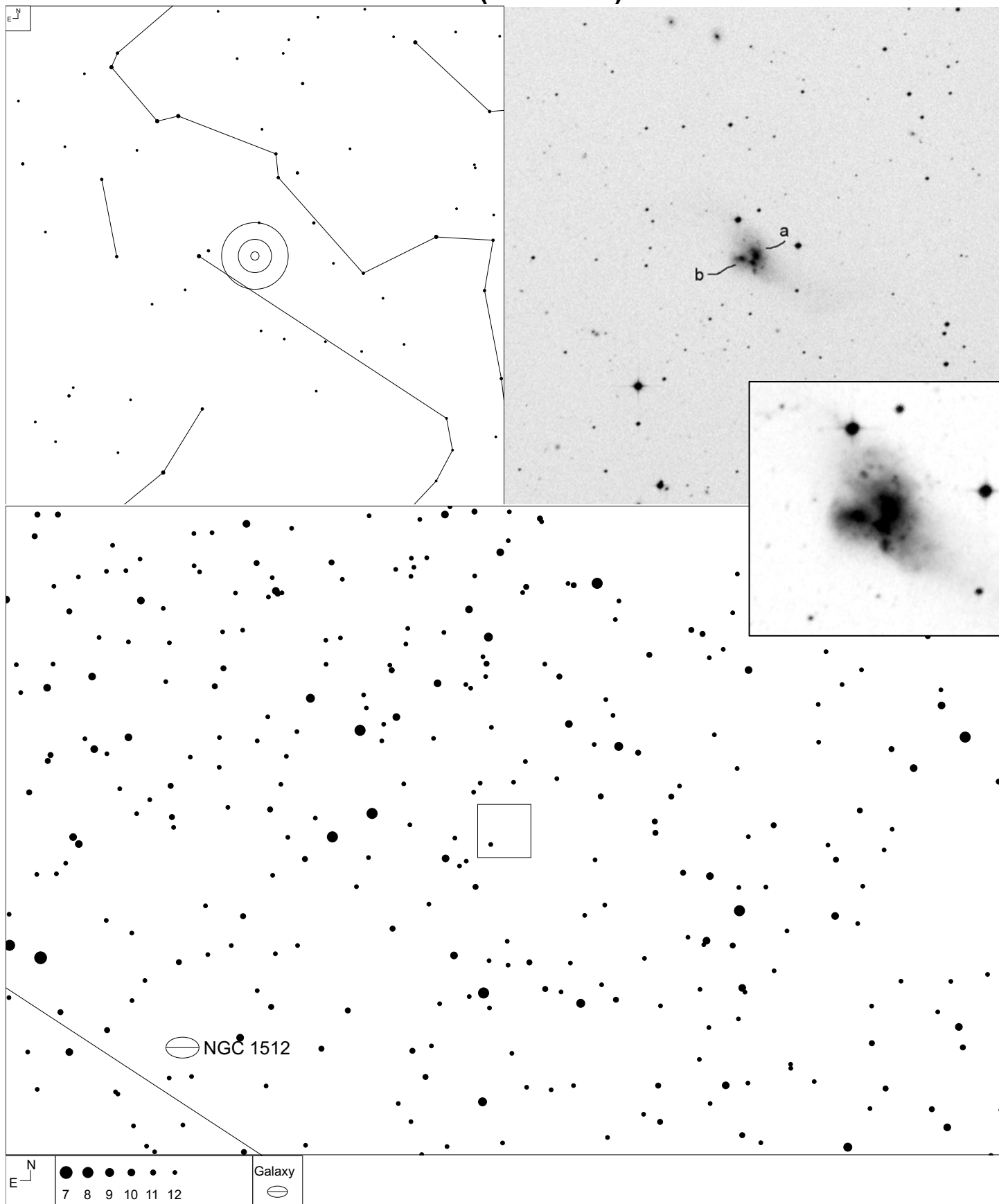
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
278		02 43 26.7	+16 39 59	GPair			NNNP
278a	MCG+03-07-050	02 43 26.6	+16 40 12	G	15.3b	0.6 x 0.5	
278b		02 43 26.8	+16 40 21	PofG	-	-	
278c		02 43 26.8	+16 39 46	G	14.8b	0.5 x 0.5	

VV 85 (Perseus)



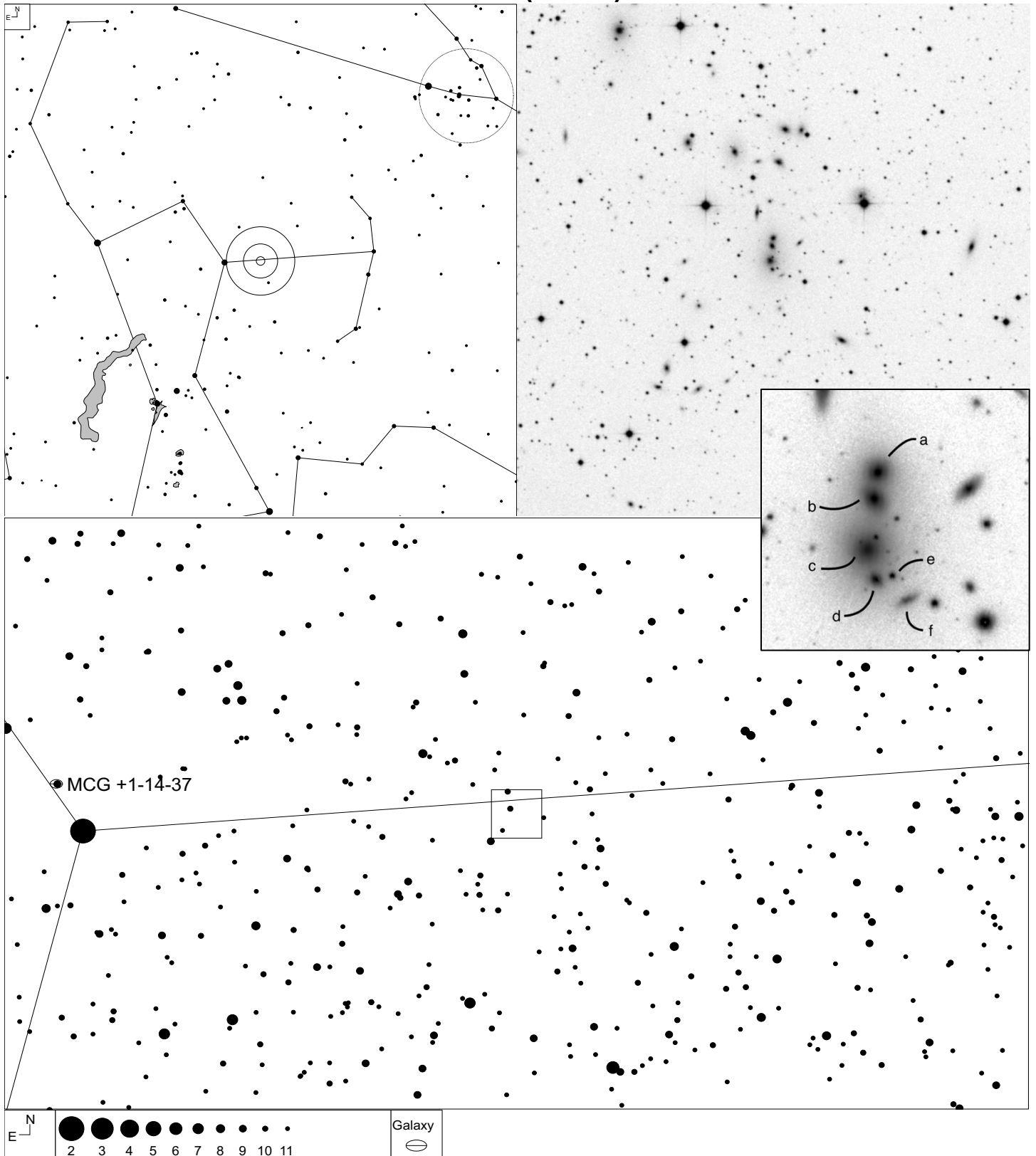
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
85		02 54 25.5	+41 34 33	GGroup			PC
85a	NGC 1129	02 54 27.5	+41 36 20	G	13.6v	3.0 x 2.1	
85b	MCG+07-07-003	02 54 25.2	+41 34 37	G	15.0b	0.4 x 0.2	
C and D are stars							

VV 78 (Eridanus)



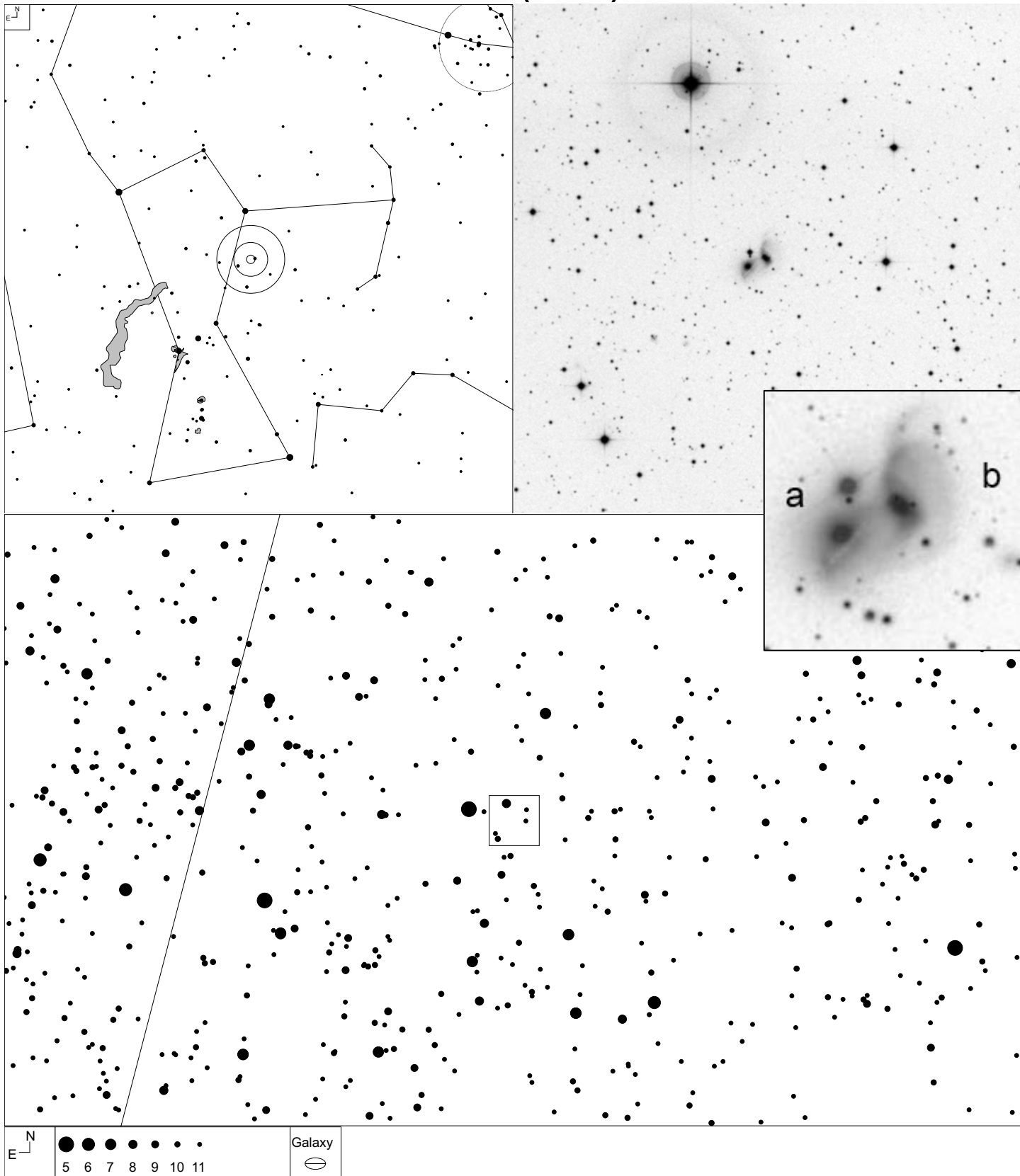
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
78		03 55 46.1	-42 22 05	GPair			N
78a	NGC 1487	03 55 45.4	-42 22 04	G	11.7v	3.3 x 2.1	
78b	NGC 1487NE	03 55 47.2	-42 22 07	G	12.3b	2.5 x 1.9	

VV 161 (Orion)



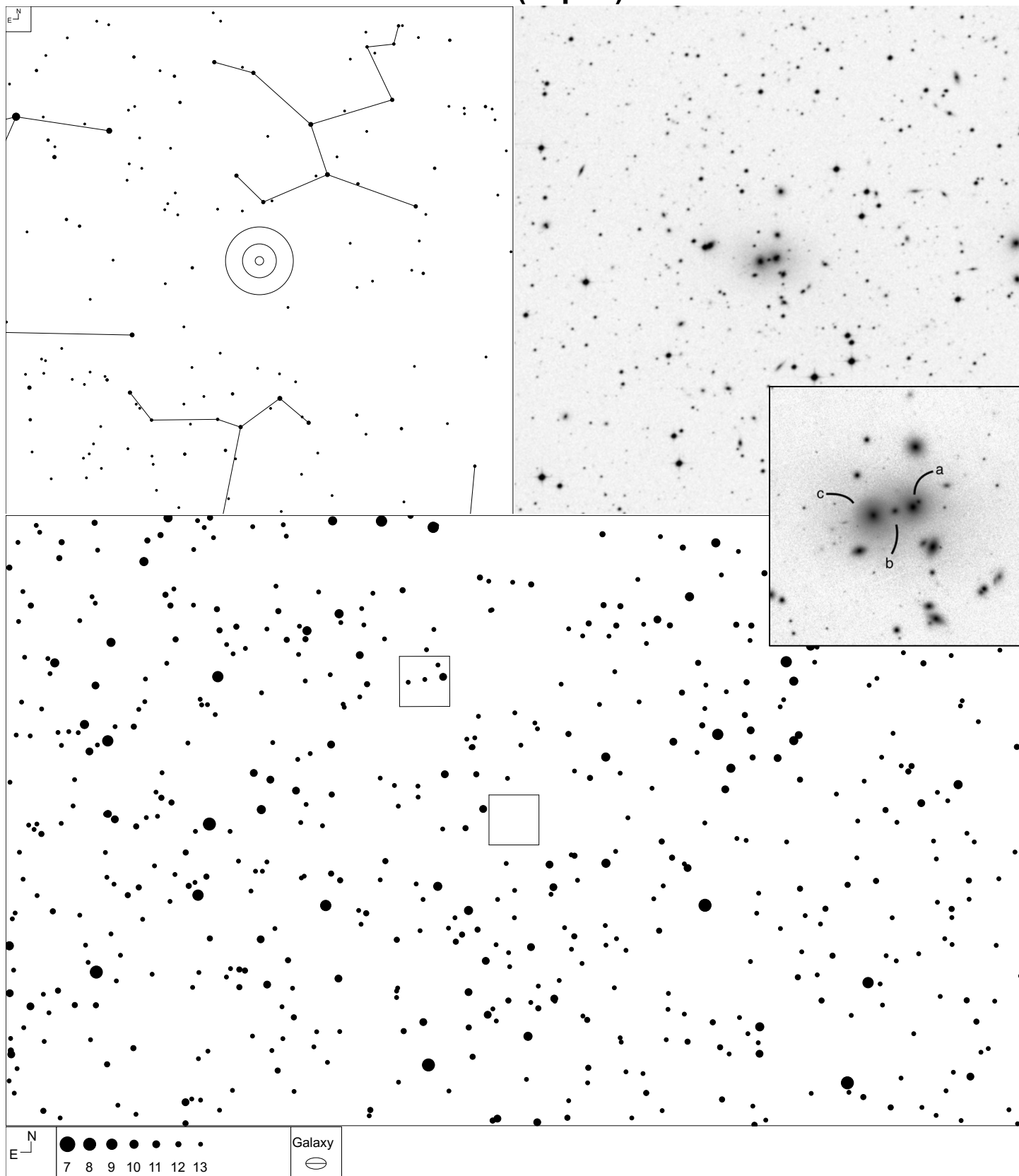
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
161		05 16 36.9	+06 26 30	GGroup			Ch
161a	PGC 75313	05 16 37.1	+06 26 13	G	15.0b	0.3 x 0.3	
161b	UGC 3274	05 16 37.1	+06 26 53	G	14.0b	0.4 x 0.3	
161c	PGC 17025	05 16 37.3	+06 26 27	G	15.0b	0.7 x 0.7	
161d	PGC 75314	05 16 37.1	+06 26 13	G	16.0b	-	
161e		05 16 36.5	+06 26 15	G	Star	-	
161f		05 16 36.0	+06 26 02	G	18	-	

VV 225 (Orion)



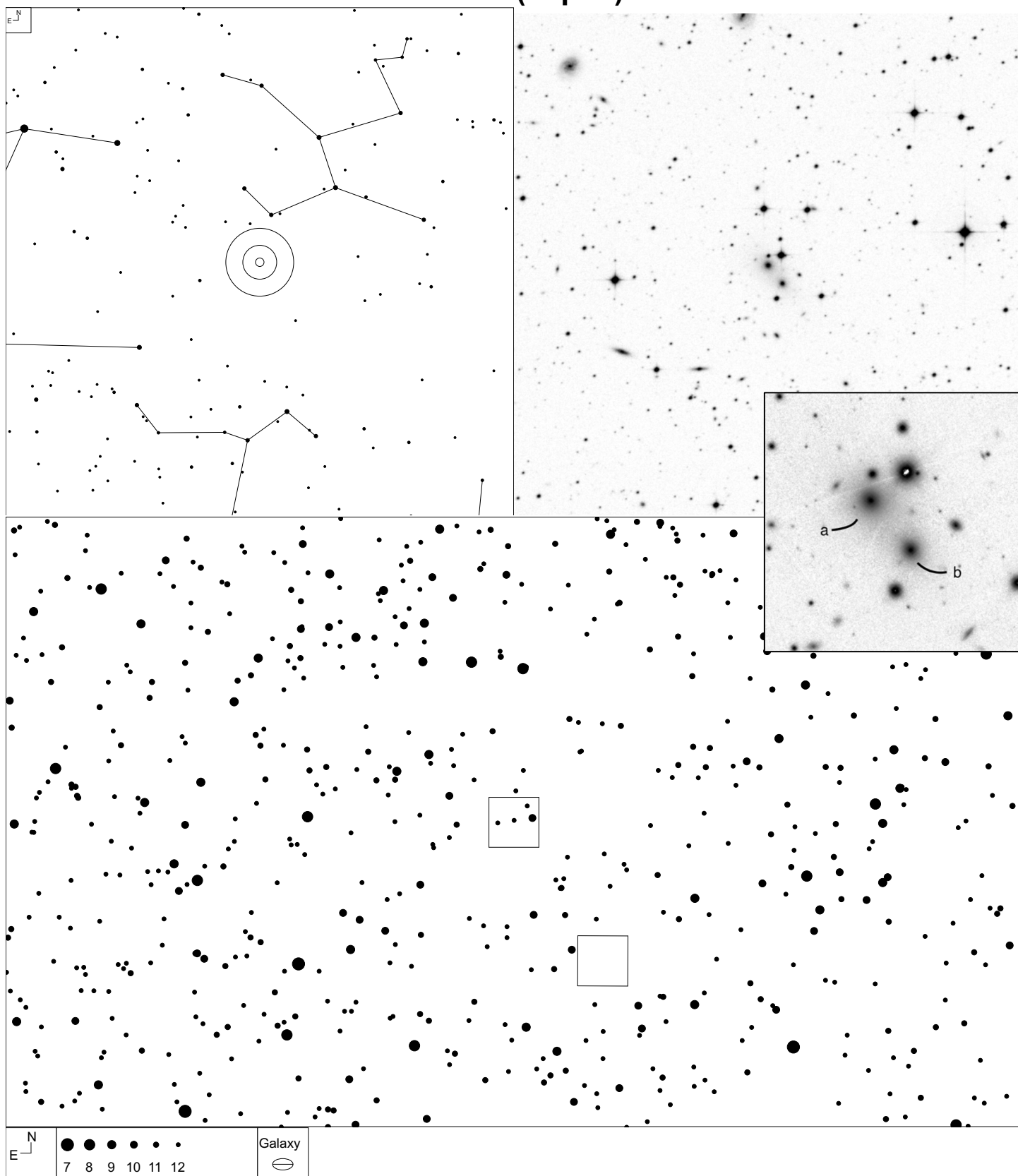
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
225		05 21 57.7	+03 29 03	GPair			PK
225a	IC 413	05 21 58.8	+03 28 56	G	14.9b		
225b	IC 412	05 21 56.7	+03 29 11	G	14.8b	1.0 x 0.7	

VV 162 (Lepus)



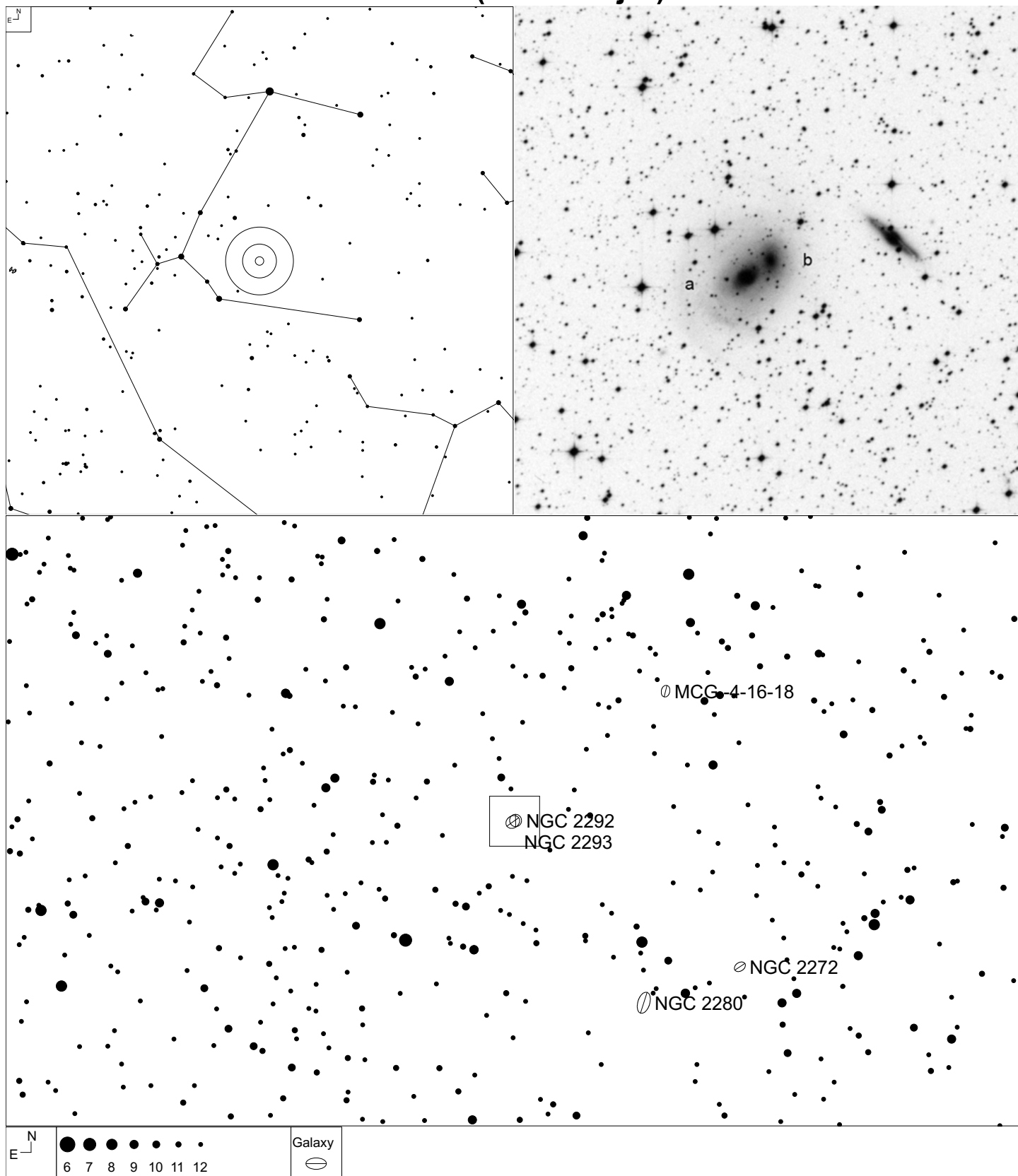
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
162		05 45 28.6	-25 55 55	GTrpl			Ch
162a	MCG-04-14-022a	05 45 27.6	-25 55 51	G	13.9b	0.6 x 0.6	
162b	ESO 488-8	05 45 28.5	-25 55 54	G	14.1b		
162c	MCG-04-14-022c	05 45 29.6	-25 55 57	G	14.1b	0.8 x 0.8	

VV 180 (Lepus)



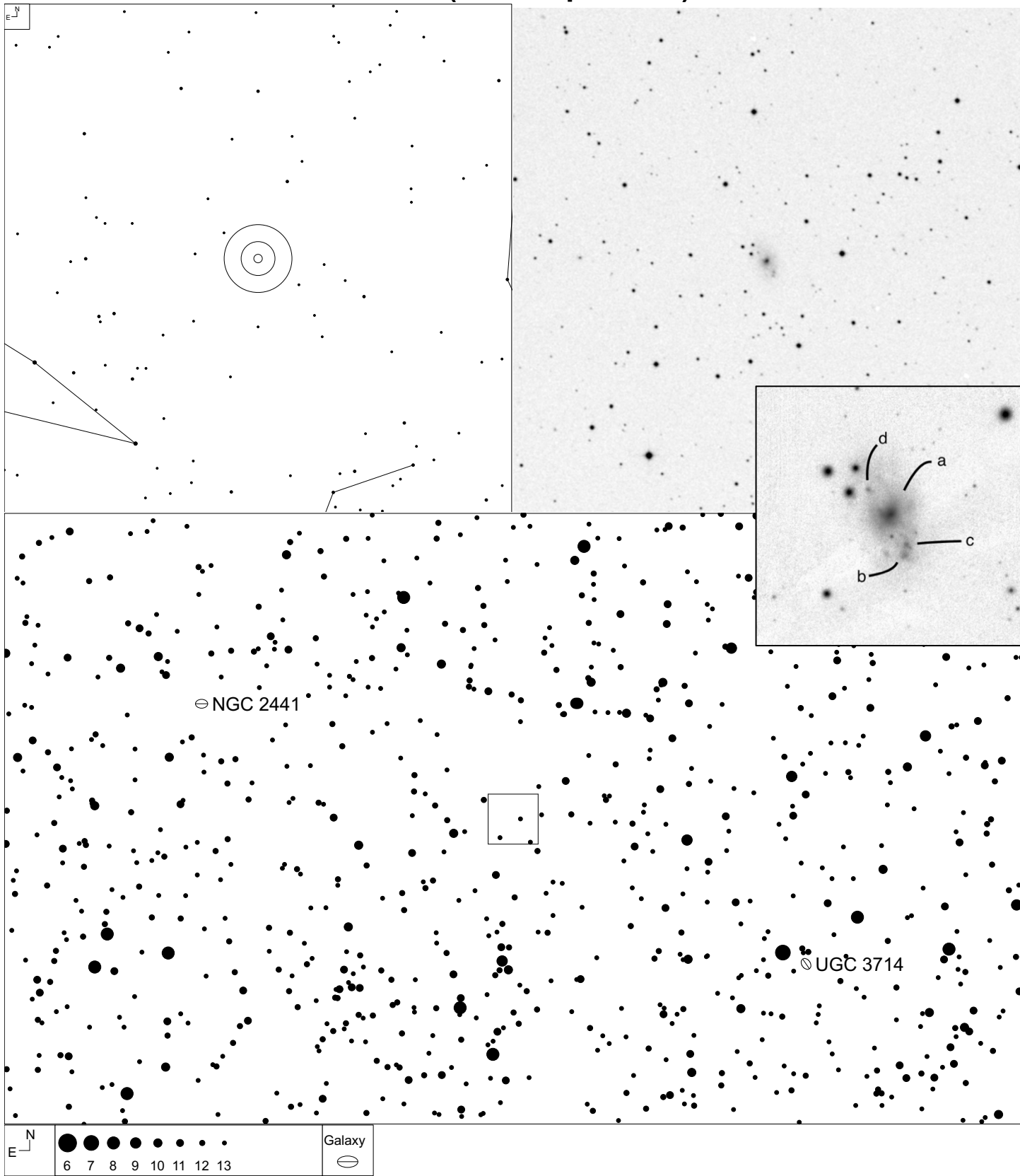
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
180		05 47 25.2	-25 15 04	GPair			PD
180a	ESO 488-19	05 47 26.5	-25 14 49	G	14.8b	0.9 x 0.7	
180b	ESO 488-15	05 47 24.6	-25 15 21	G	14.8b	0.7 x 0.6	

VV 178 (Canis Major)



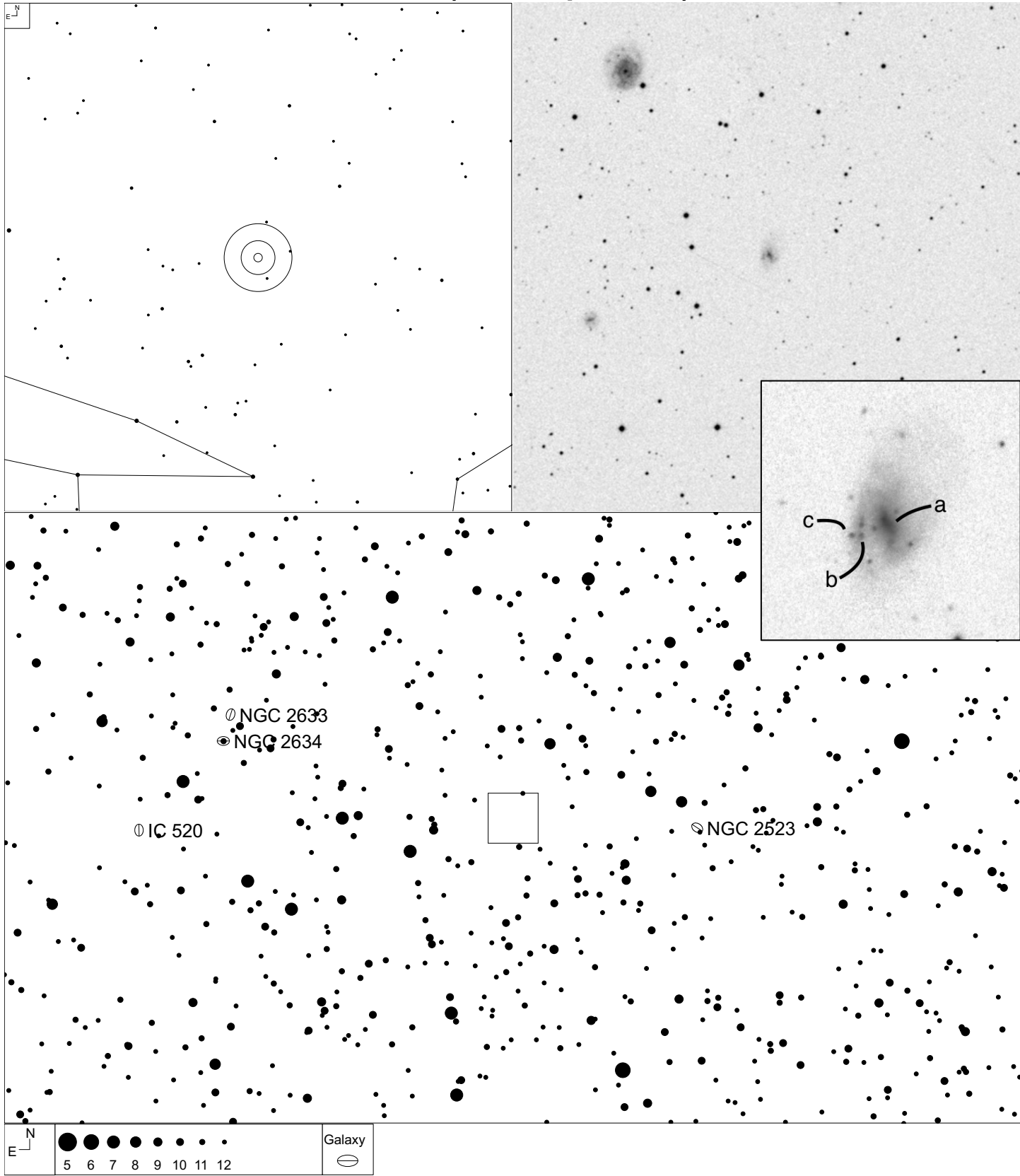
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
178		06 47 40.8	-26 45 00	GPair			PK
178a	NGC 2293	06 47 42.9	-26 45 16	G	11.7b	4.2 x 3.3	
178b	NGC 2292	06 47 39.6	-26 44 46	G	11.8b	3.5 x 2.8	

VV 141 (Camelopardalis)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
141	UGC 3864	07 30 56.6	+72 31 03	GGroup	14.7g	1.2 x 1.2	N

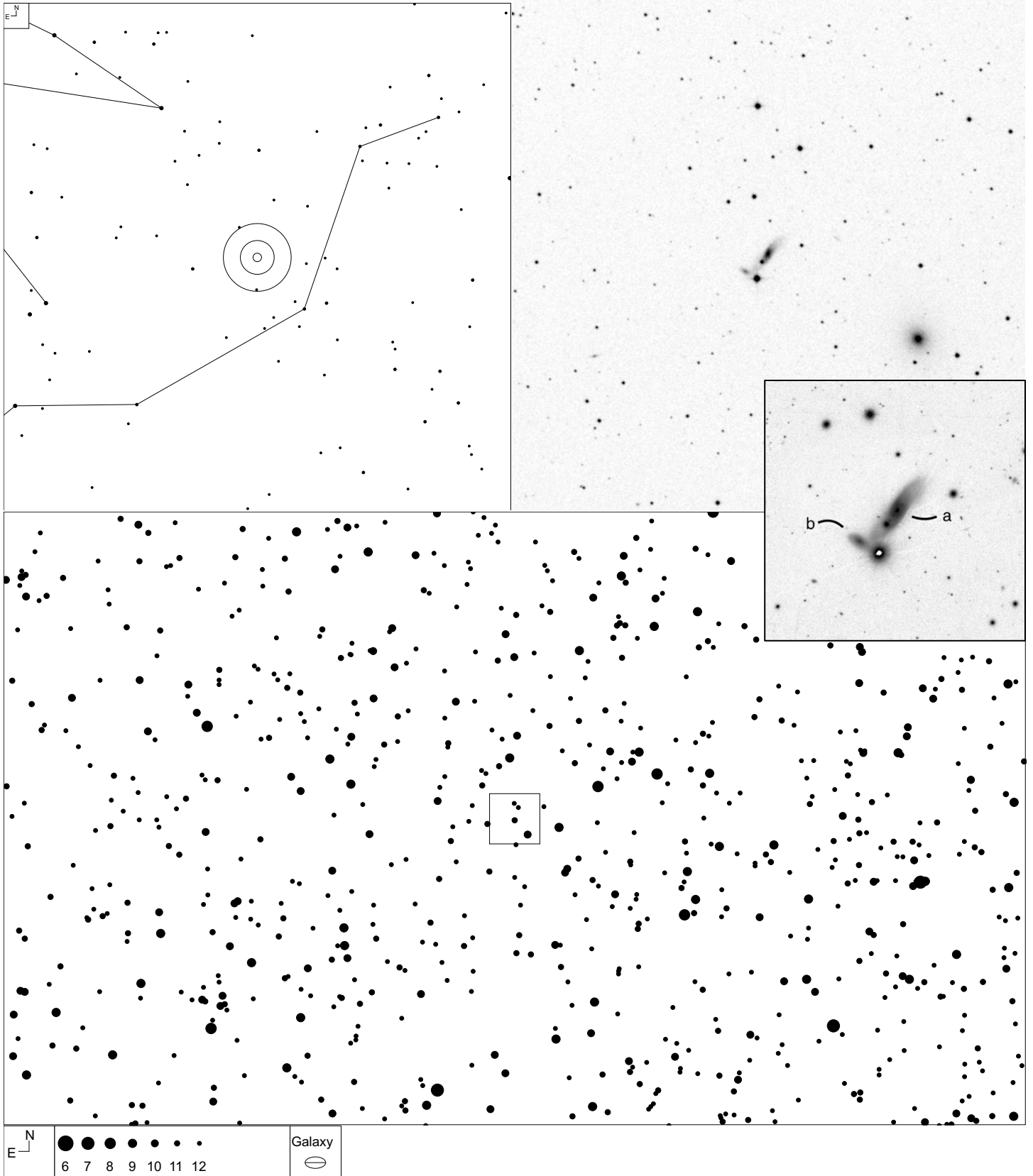
VV 157 (Camelopardalis)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
157	UGC 4389	08 27 48.9	+73 39 01	G	15.4g	0.9 x 0.6	N

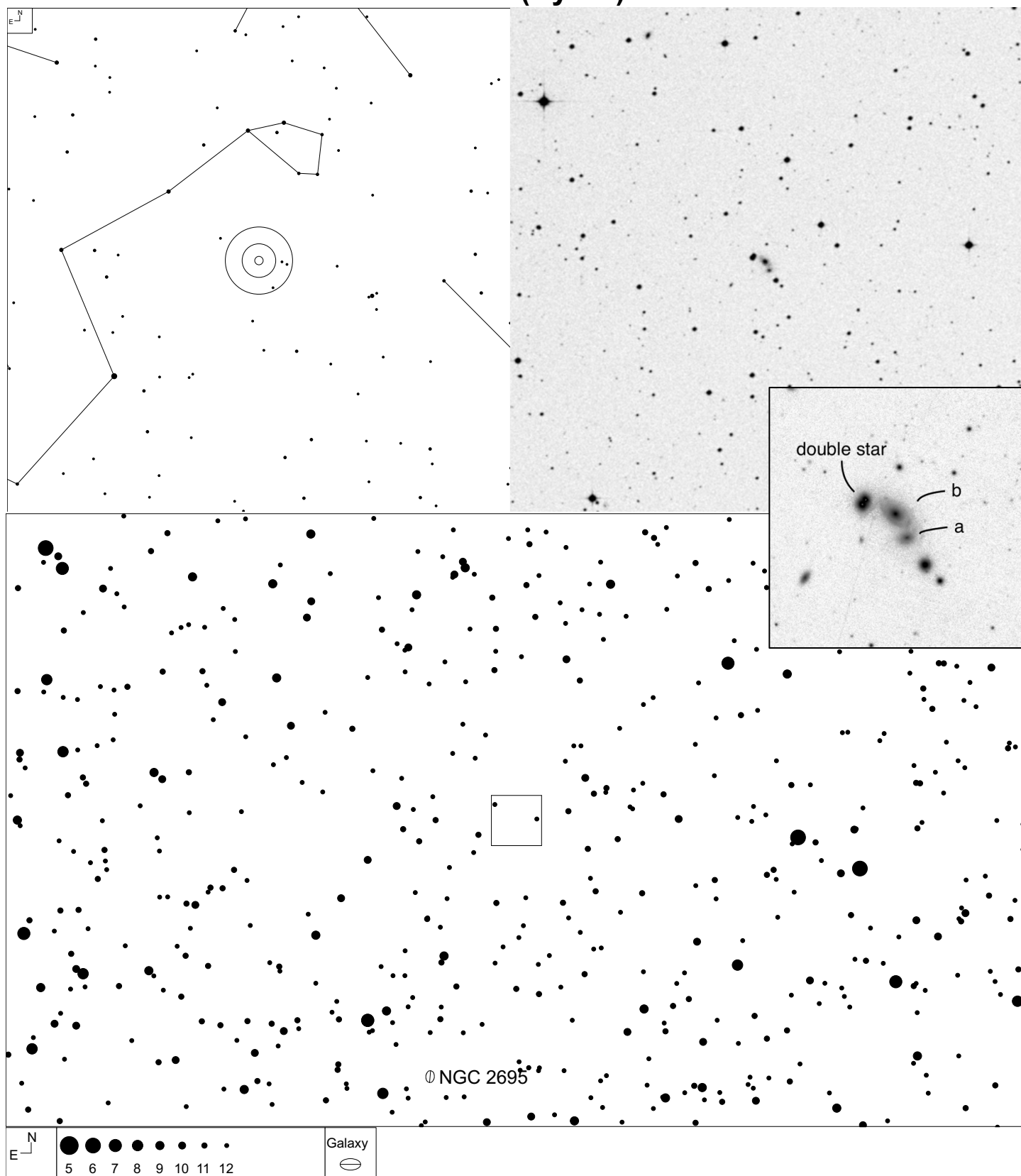
b is a knot and c is a star

VV 284 (Lynx)



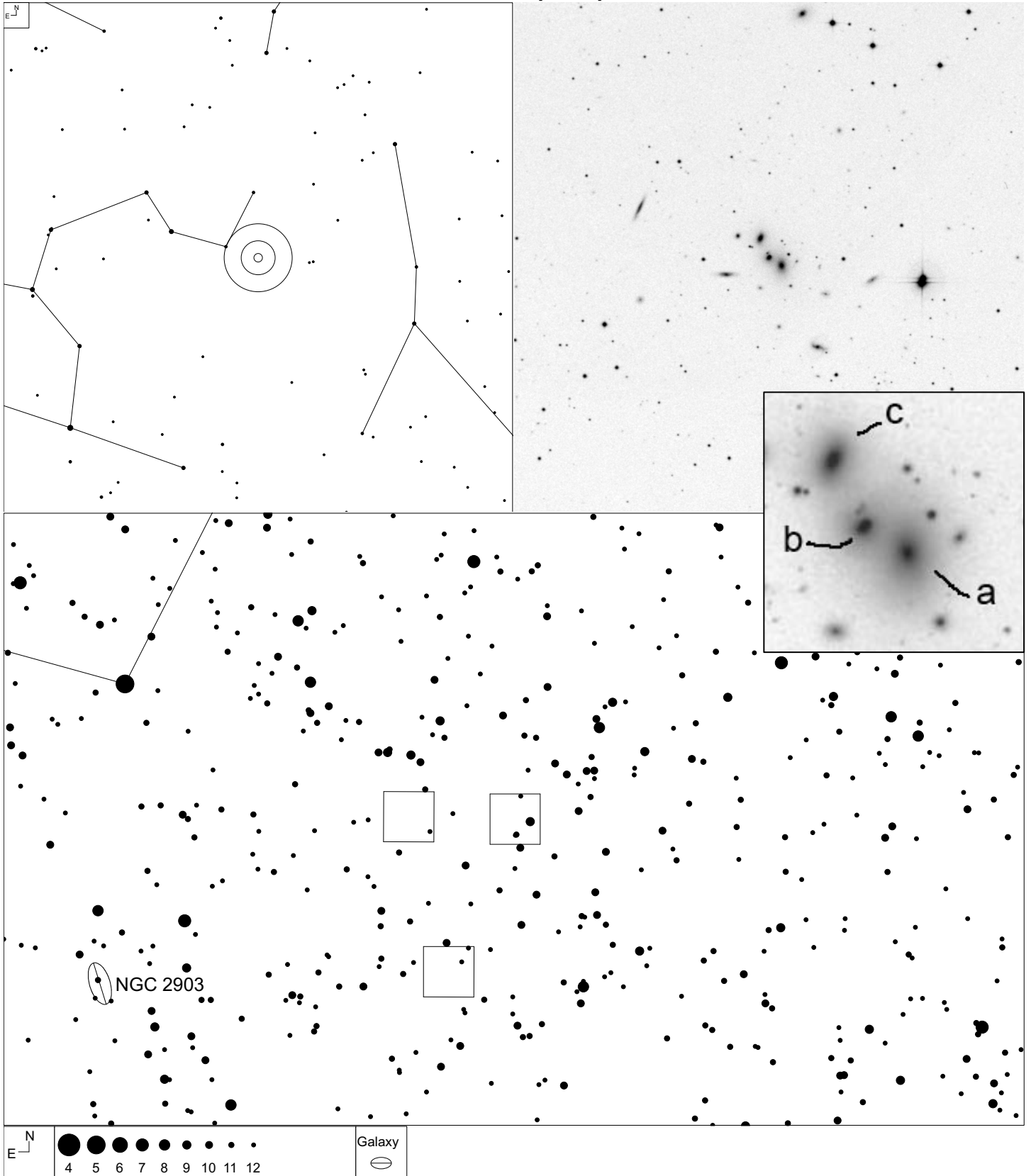
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
284		07 43 49.7	+52 21 11	GPair			PDbt
284a	NGC 2429	07 43 47.6	+52 21 27	G	14.2g	1.5 x 0.4	
284b	NGC 2429B	07 43 51.8	+52 20 54	G	15.0b	0.4 x 0.2	

VV 168 (Hydra)



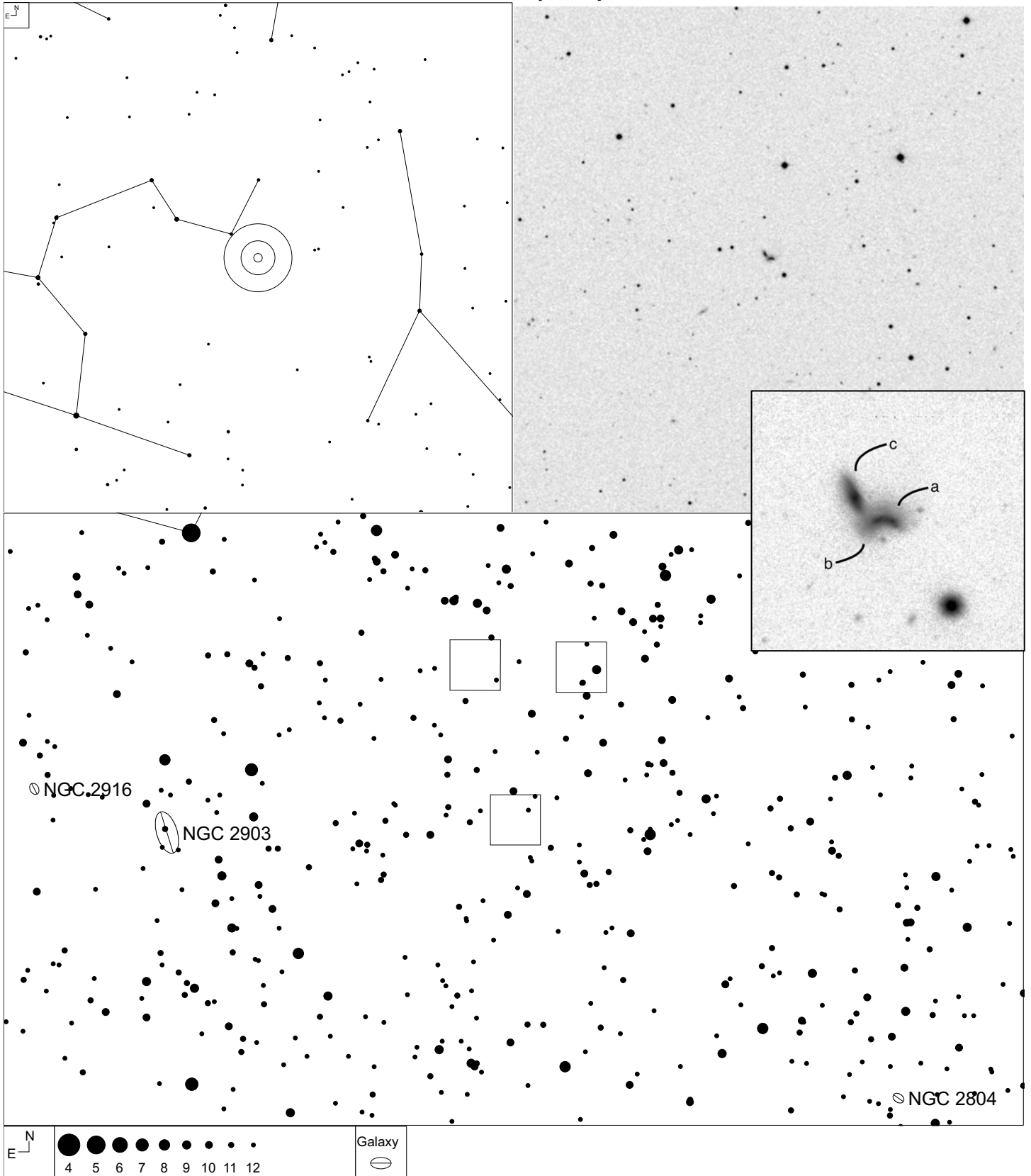
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
168	MCG++00-23-009	08 52 45.4	-01 49 02	GPair	16.0g	0.9 x 0.5	NNN

VV 171 (Leo)



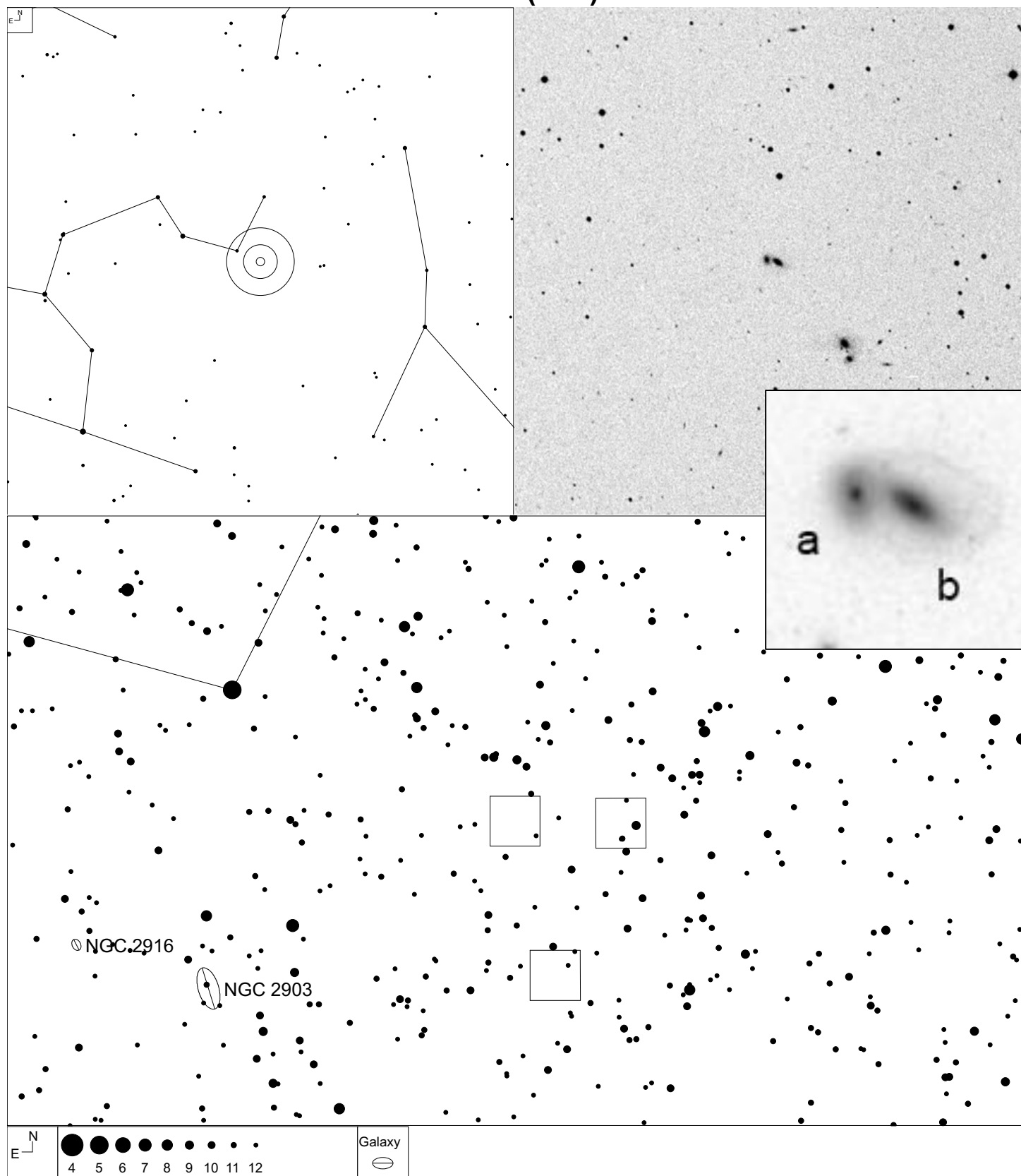
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
171		09 23 25.7	+22 19 10	GTrpl			Ch
171a	MCG+04-22-037	09 23 24.3	+22 18 47	G	14.6g	0.9 x 0.8	
171b	MCG+04-22-038	09 23 25.9	+22 19 00	G	15.6g	0.6 x 0.4	
171c	MCG+04-22-039	09 23 27.0	+22 19 35	G	15.1g	0.4 x 0.2	

VV 154 (Leo)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
154		09 24 49.9	+21 34 21	GTrpl			N
154a	MCG+04-22-047	09 24 50.4	+21 34 26	G	16.7g	0.4 x 0.2	
154c	MAC 0924+2134	09 24 49.8	+21 34 18	G	17.1g	0.4 x 0.1	

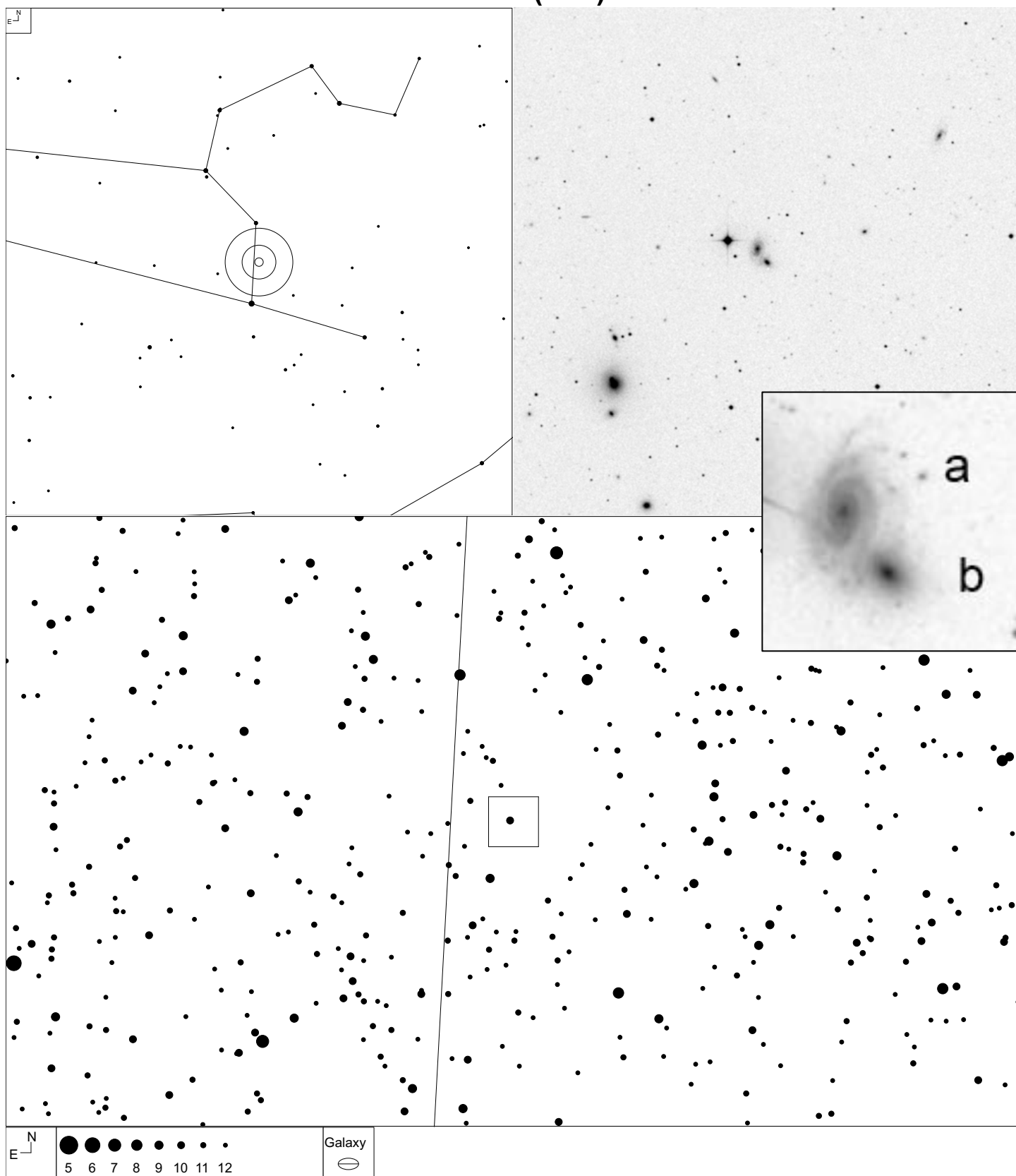
VV 63 (Leo)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
63	MCG+04-22-051	09 25 50.3	+22 22 11	GPair	15.0g	0.4 x 0.4	PDb
63a	PGC 2802354	09 25 50.4	+22 22 10	G	17.6g	-	

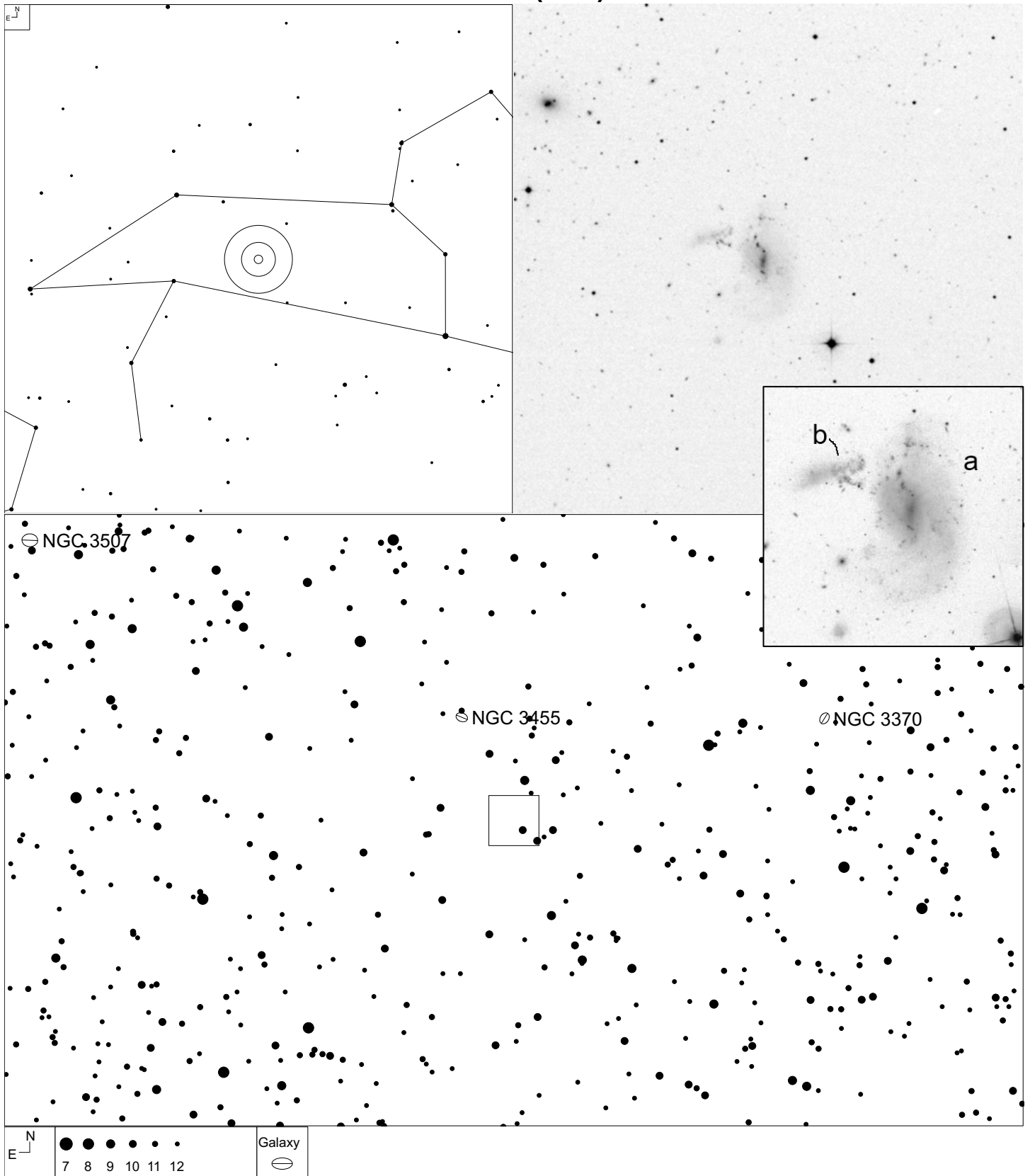
Megastar mislabeled CGCG 121-89 and VV63 - true location is 3.4' NE. Corrected in above chart.

VV 240 (Leo)



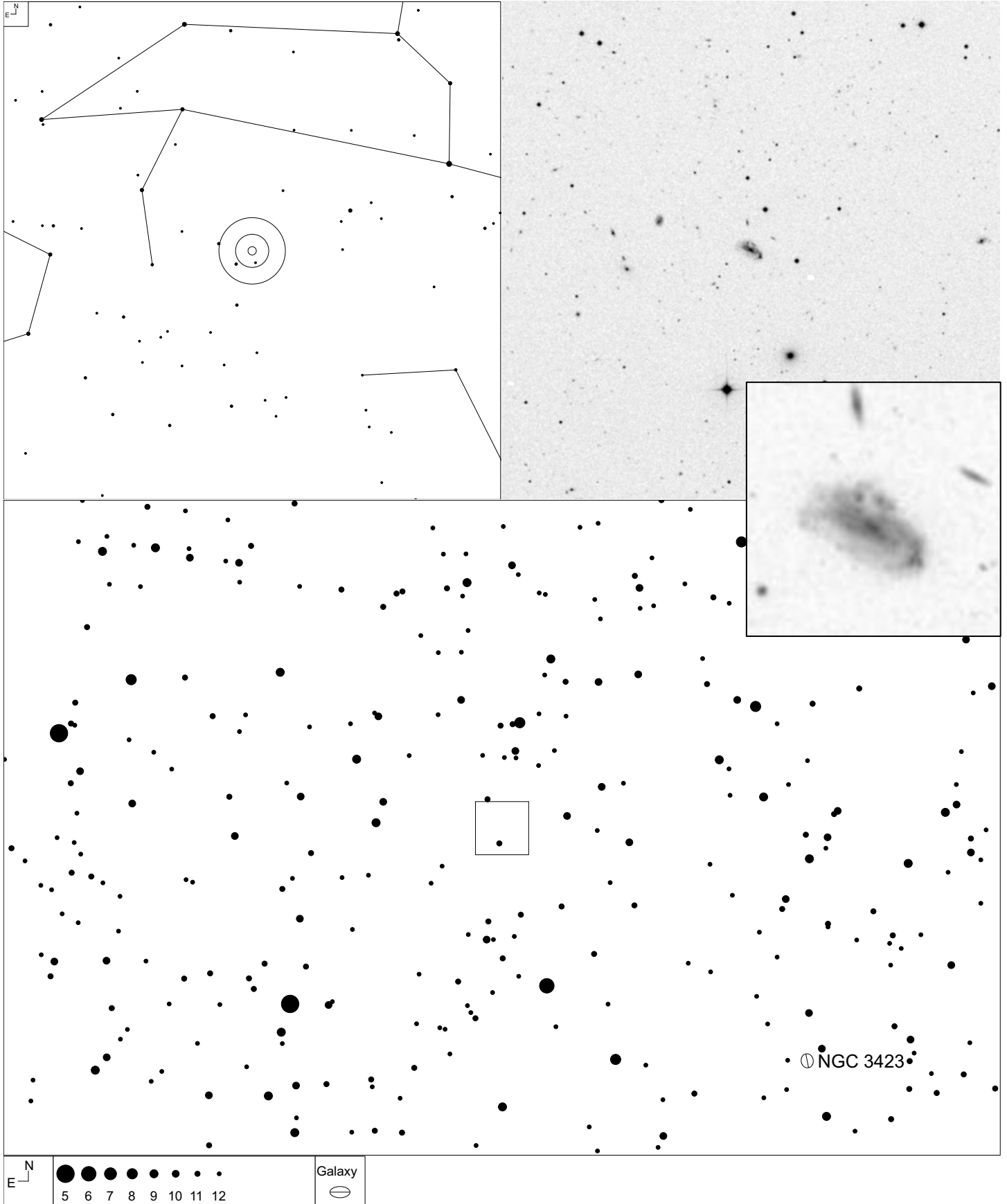
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
240		10 06 33.8	+14 26 12	GPair			Pkb
240a	UGC 5448	10 06 34.4	+14 26 25	G	15.3g	1.0 x 0.8	
240b	MCG+03-26-025	10 06 33.3	+14 26 01	G	15.7g	0.5 x 0.4	

VV 252 (Leo)



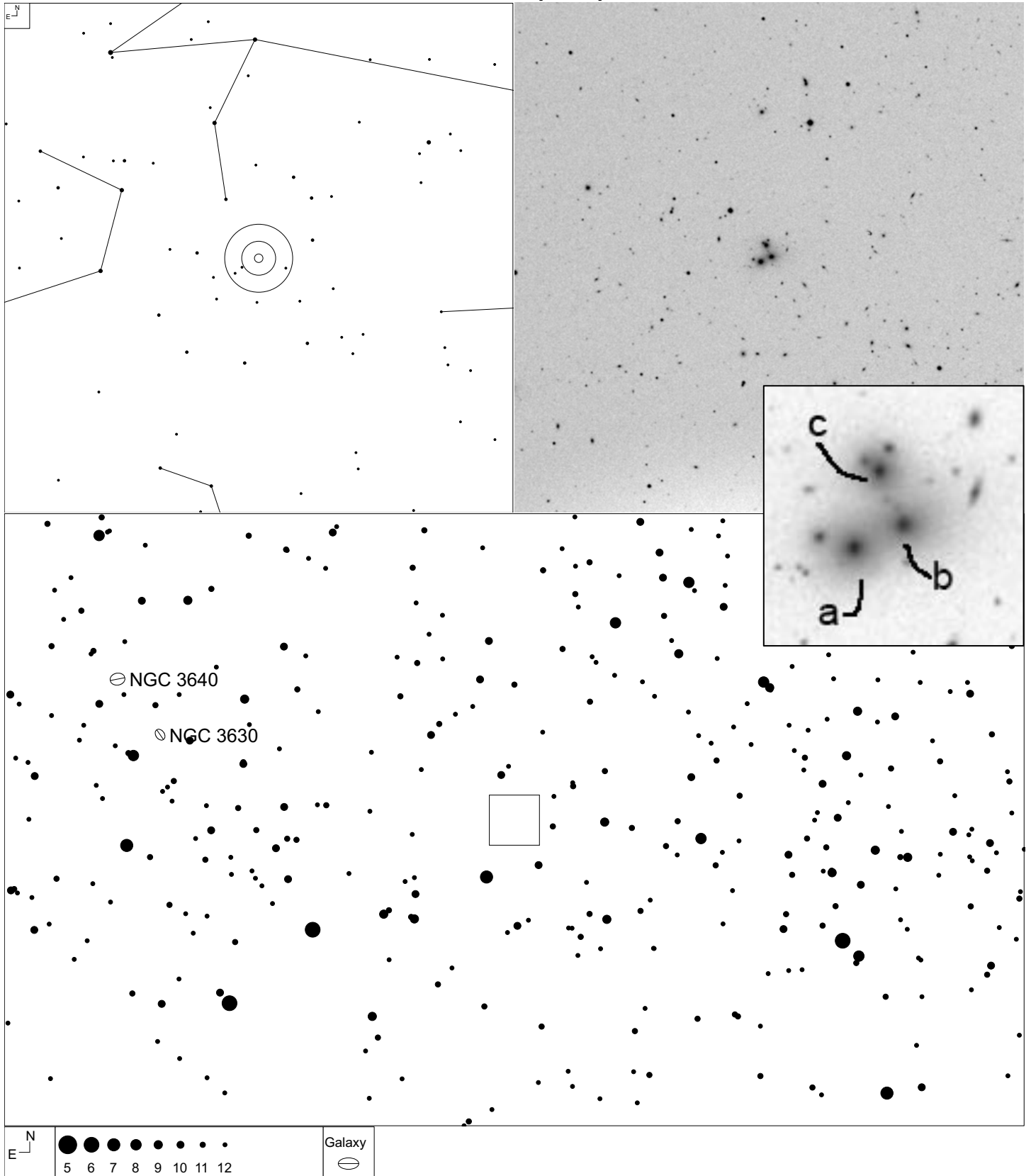
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
252		10 53 26.8	+16 46 44	GPair			PKdf
252a	NGC 3447	10 53 24.0	+16 46 21	G	14.3g	3.7 x 2.1	
252b	NGC 3447B	10 53 29.6	+16 47 10	G	16.2g	1.5 x 0.8	

VV 149 (Leo)



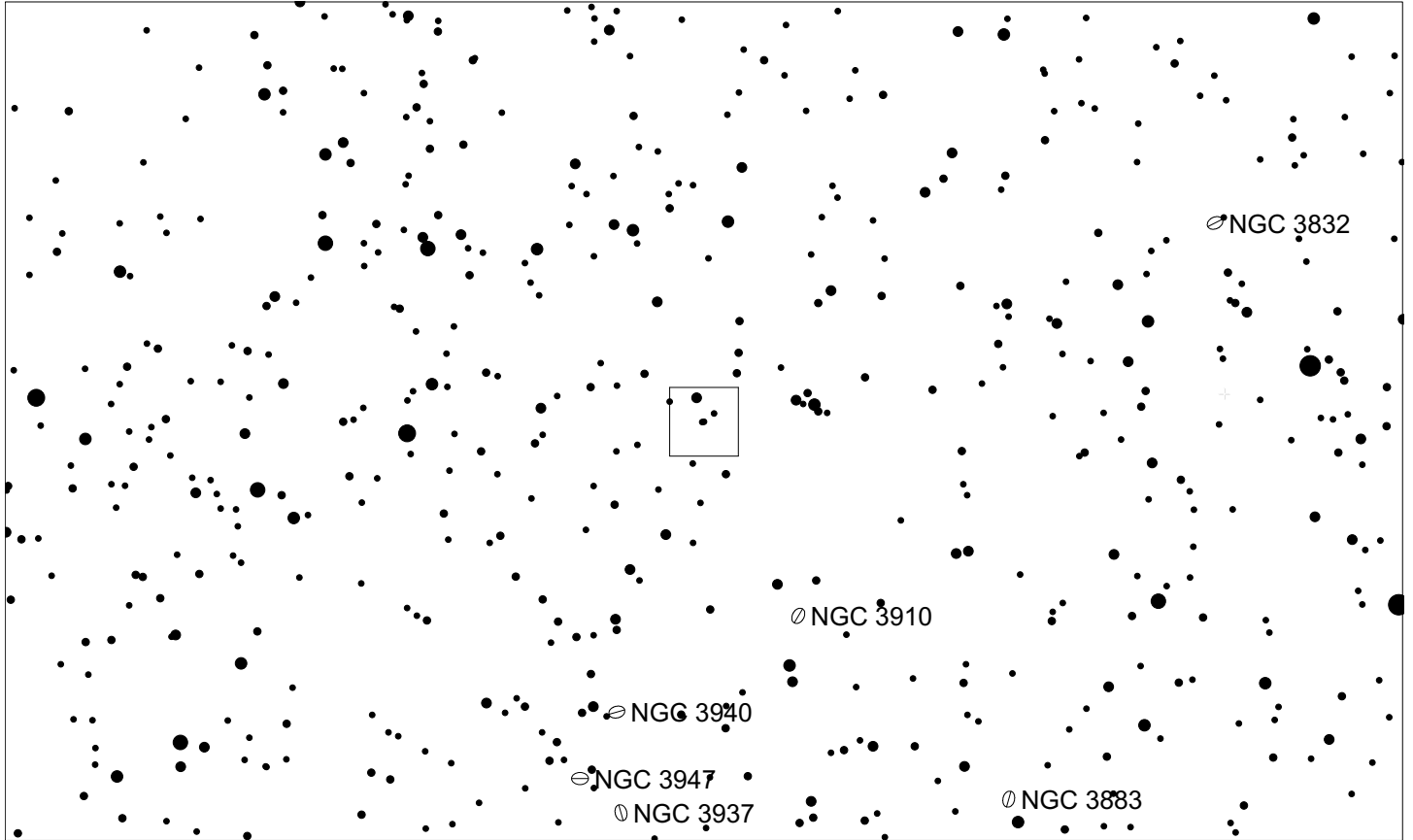
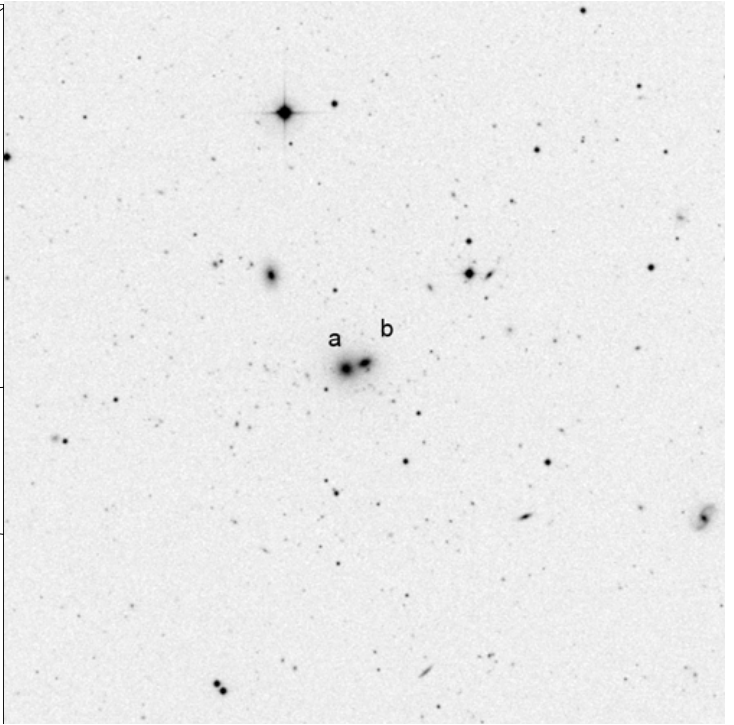
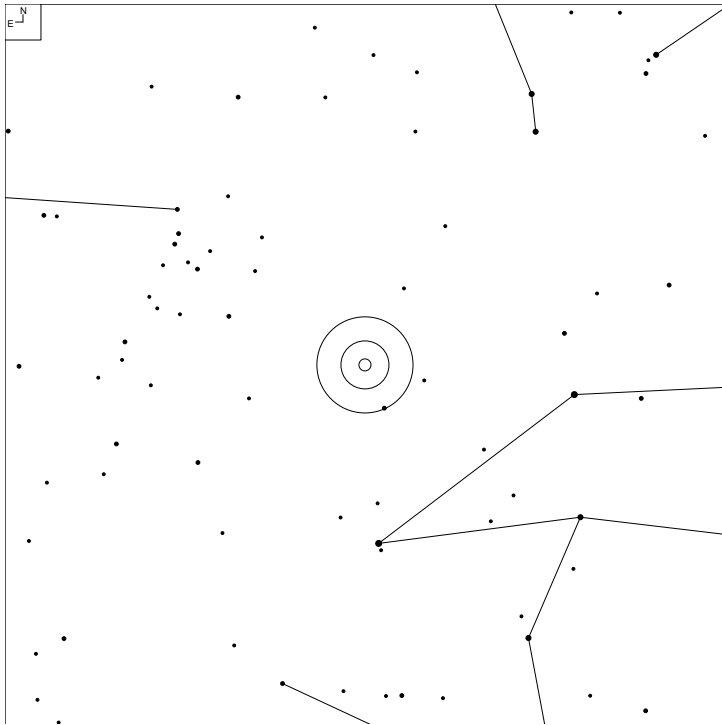
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
149	UGC 6046	10 56 51.0	+06 54 22	G	15.4g	0.9 x 0.7	N

VV 145 (Leo)



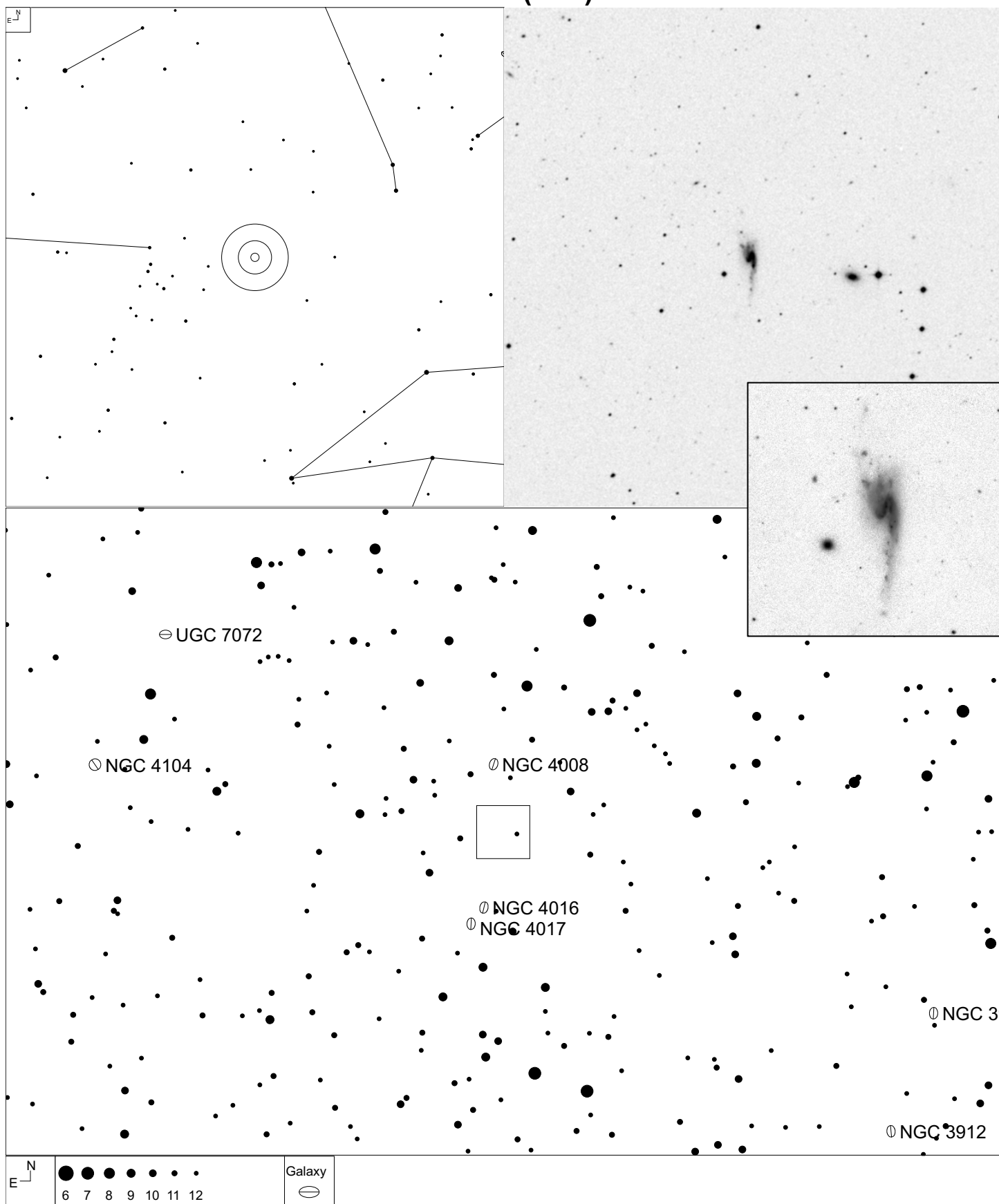
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
145	MCG+01-29-019	11 13 20.8	+02 32 55	GTrpl			NNN
145a	PGC 1230226	11 13 21.4	+02 32 39	G	16.0g	0.5 x 0.4	
145b	PGC 34164	11 13 20.1	+02 32 48	G	15.6g	-	
145c	PGC 1230506	11 13 20.7	+02 33 09	G	16.0g	0.4 x 0.4	

VV 218 (Leo)



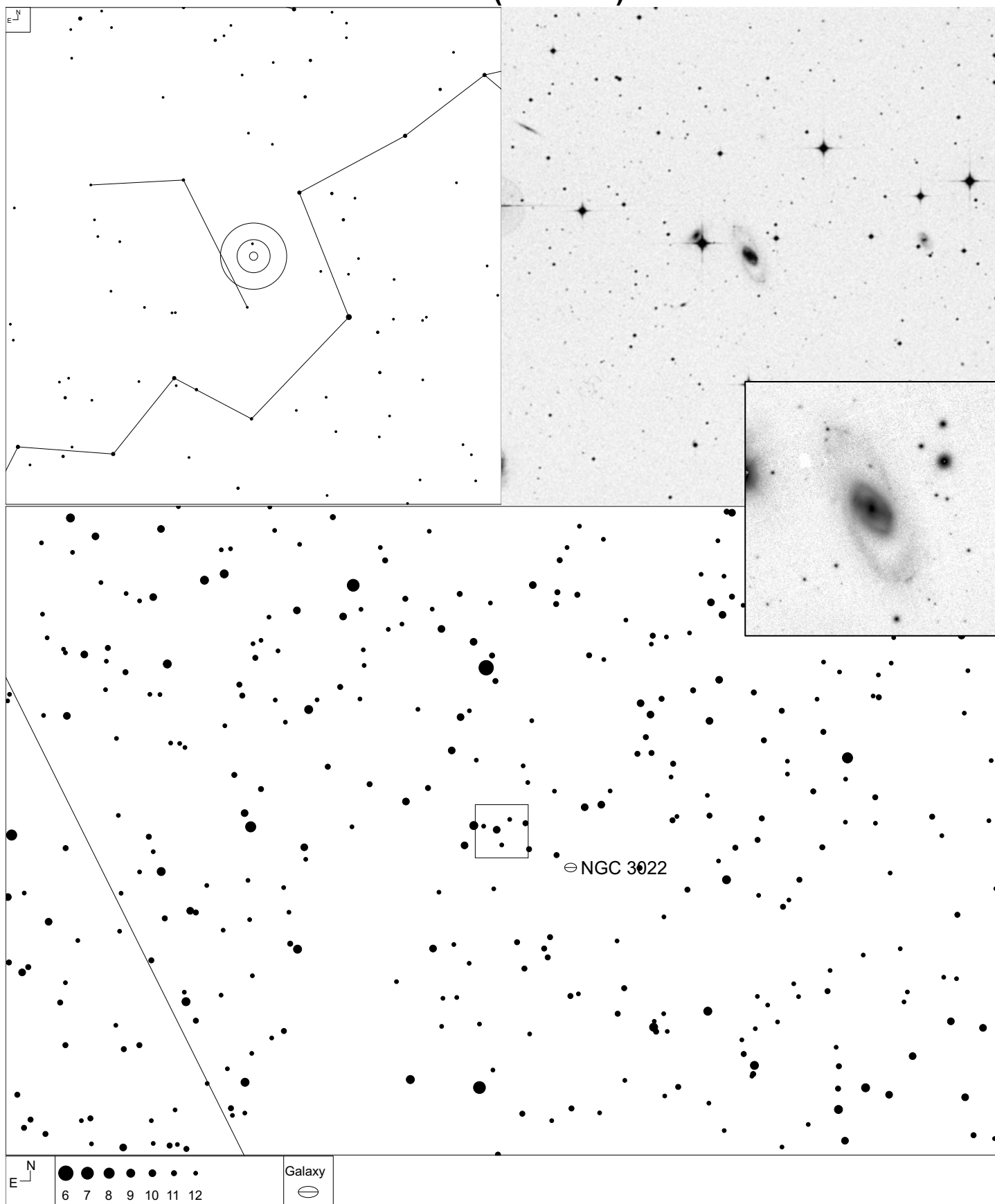
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
218		11 51 27.4	+22 01 37	GPair			PK
218a	NGC 3926	11 51 26.5	+22 01 41	G	14.3g	0.3 x 0.2	
218b	NGC 3926B	11 51 28.2	+22 01 33	G	14.8g	0.3 x 0.2	

VV 230 (Leo)



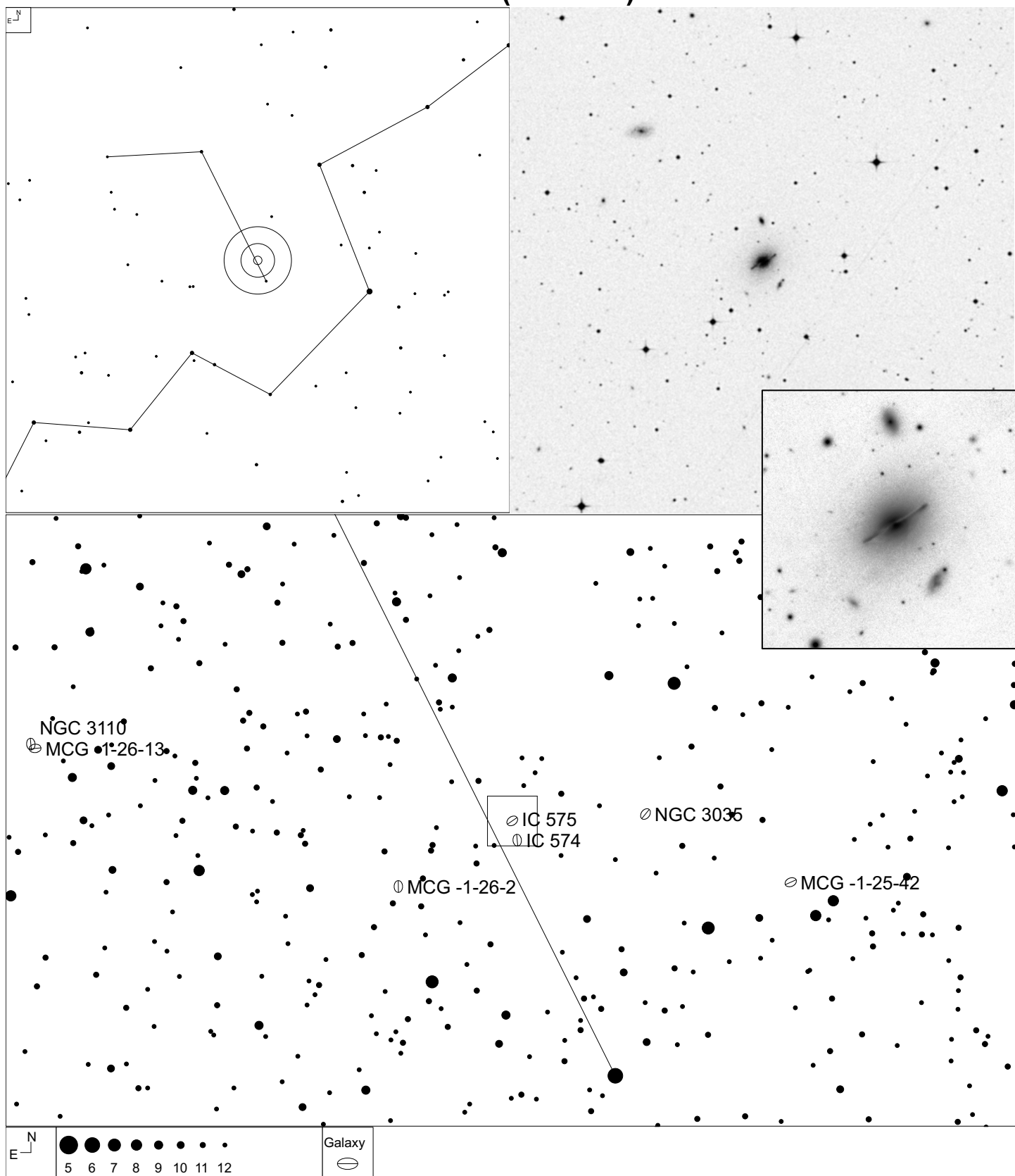
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
230	NGC 4004	11 58 05.2	+27 52 44	G	14.1g	1.8 x 0.6	PKdf

VV 110 (Sextans)



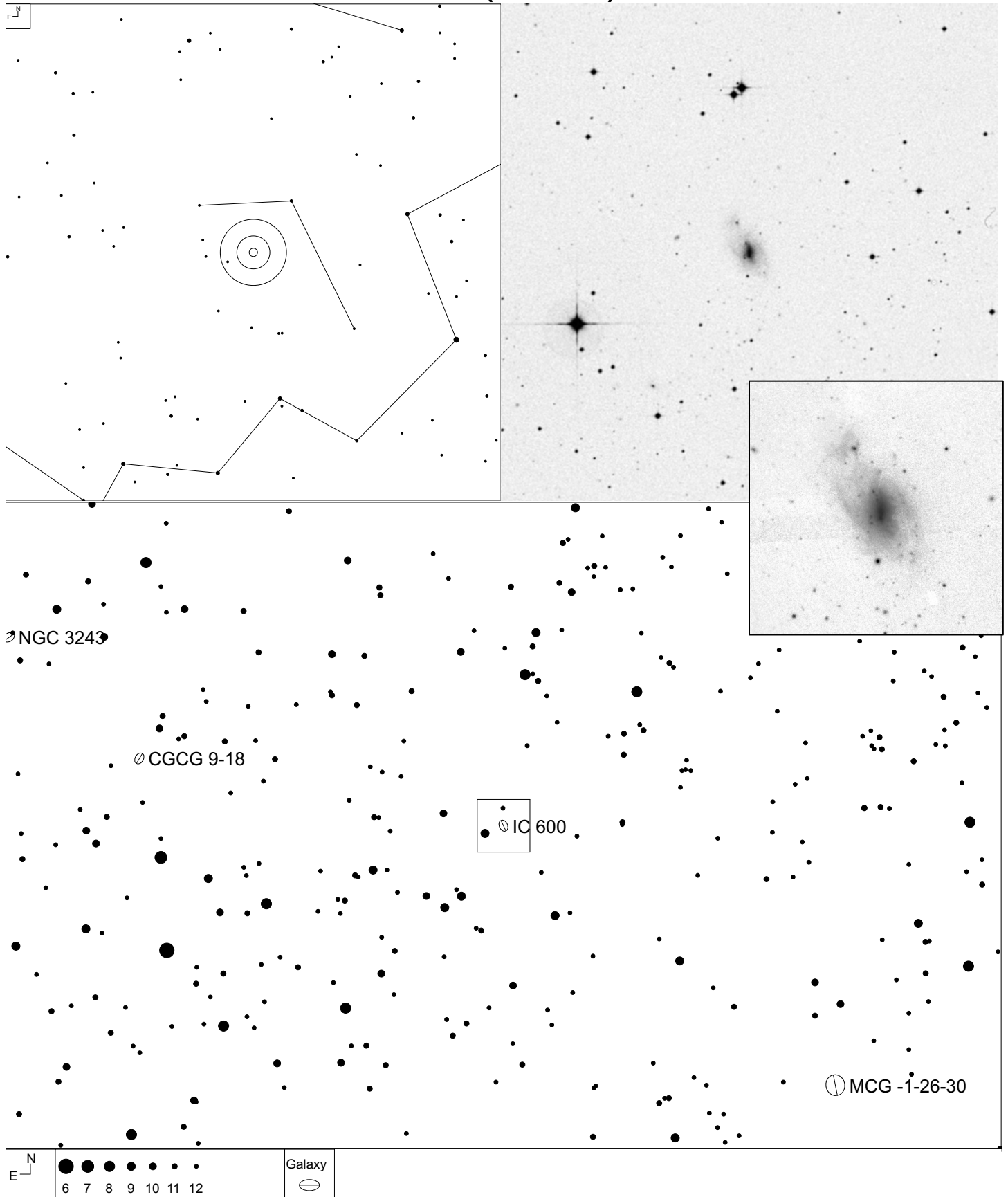
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
110	MCG-01-25-049	09 50 56.5	-04 59 52	G	14.5v	1.9 x 0.8	PC

VV 111 (Sextans)



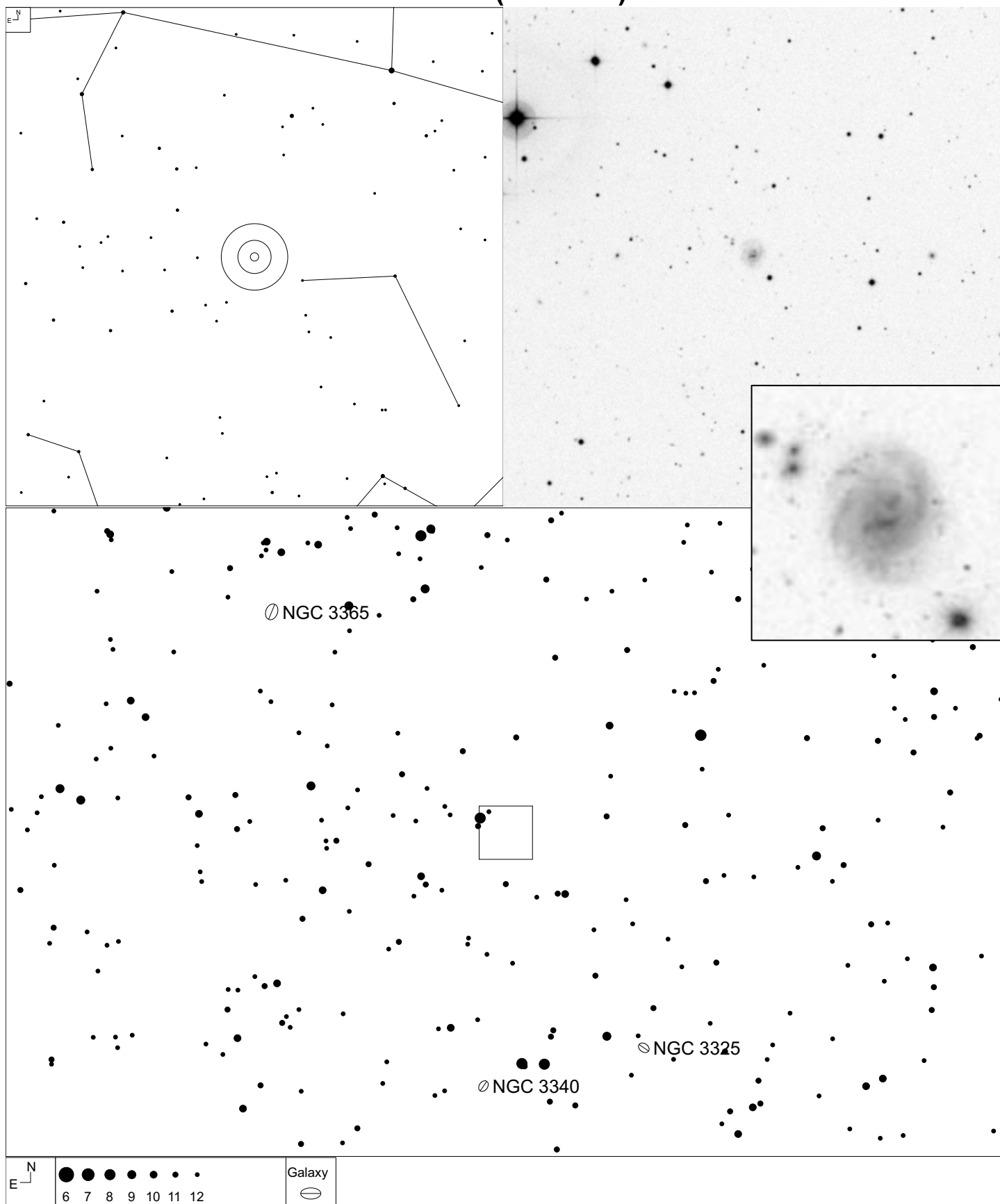
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
111	IC 575	09 54 32.9	-06 51 27	G	14.0g	1.7 x 1.2	PC

VV 97 (Sextans)



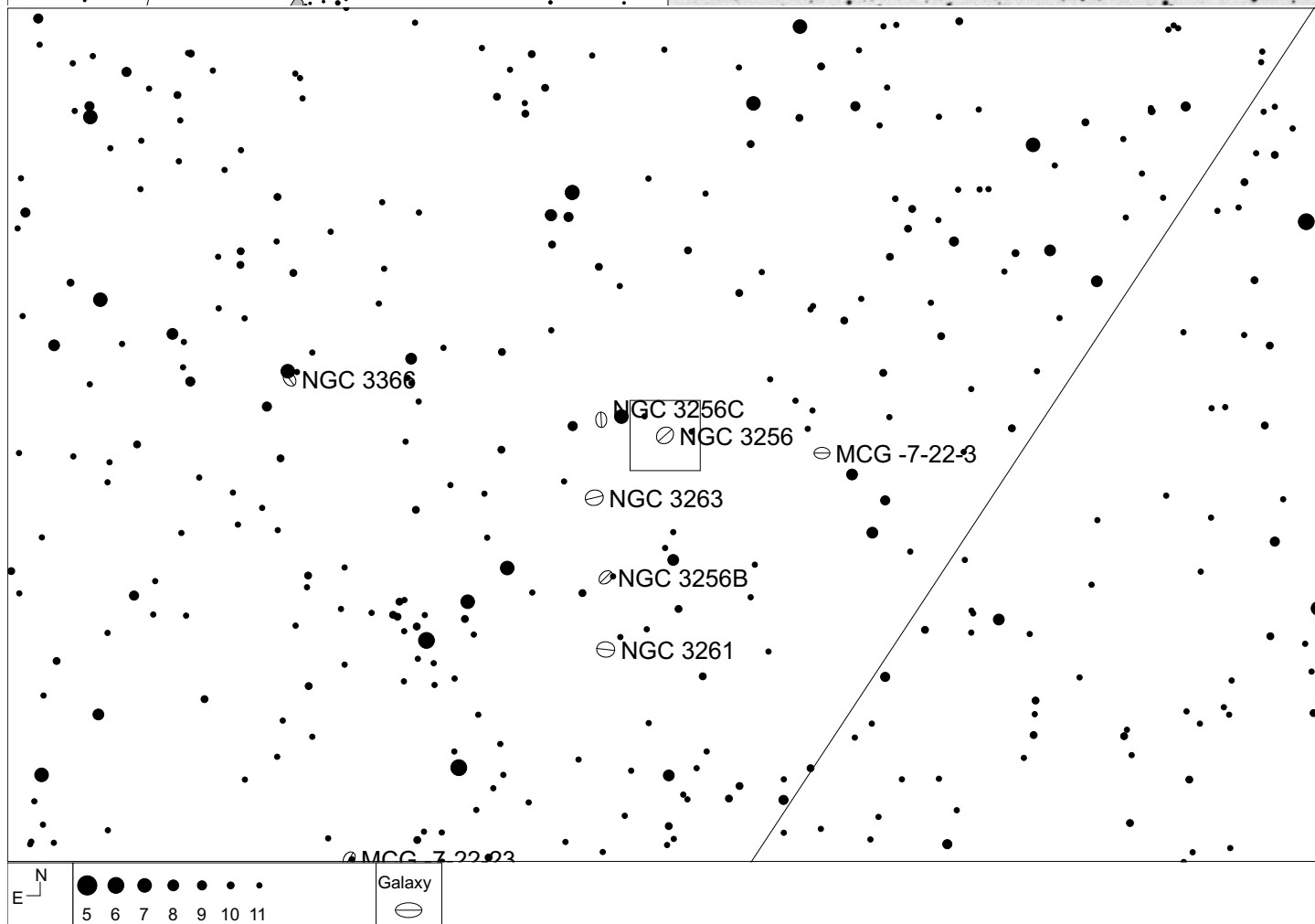
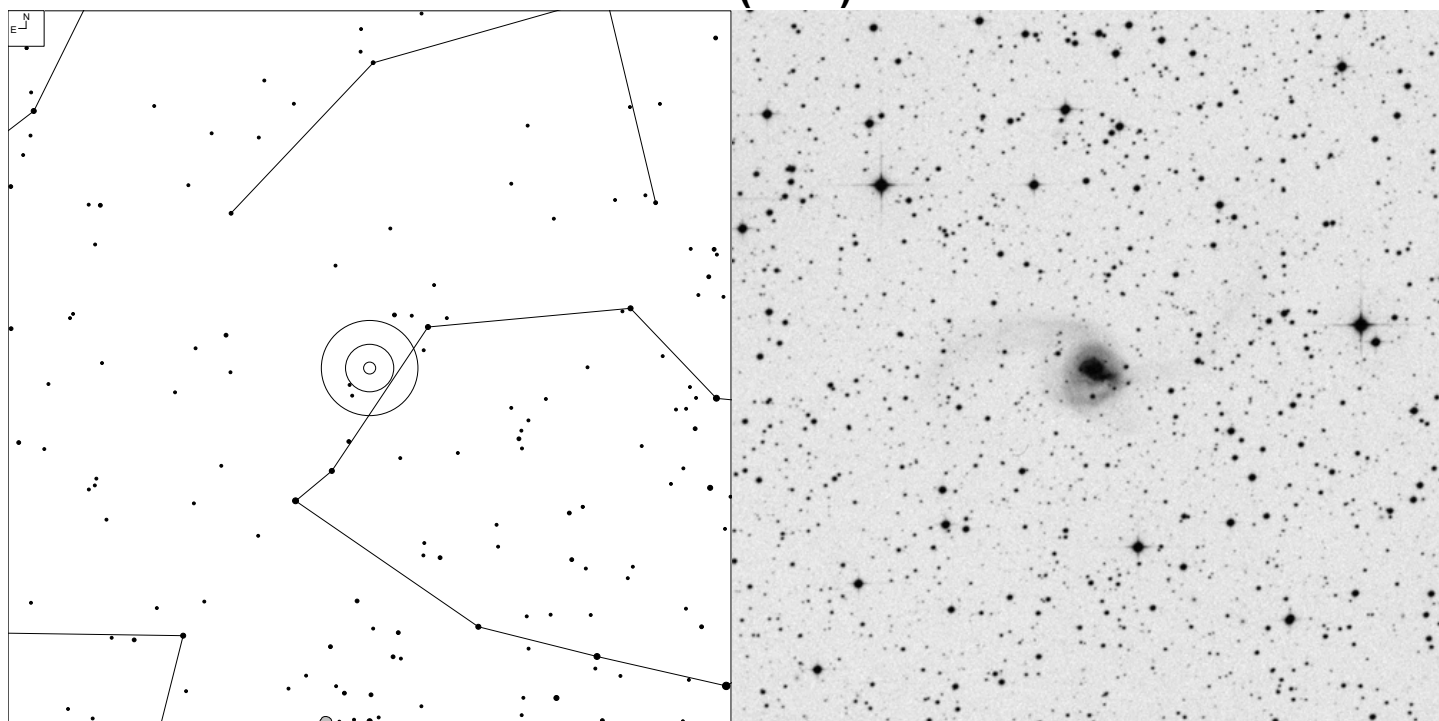
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
97	IC 600	10 17 10.9	-03 29 52	G	13.7g	2.3 x 1.2	PC

VV 113 (Sextans)



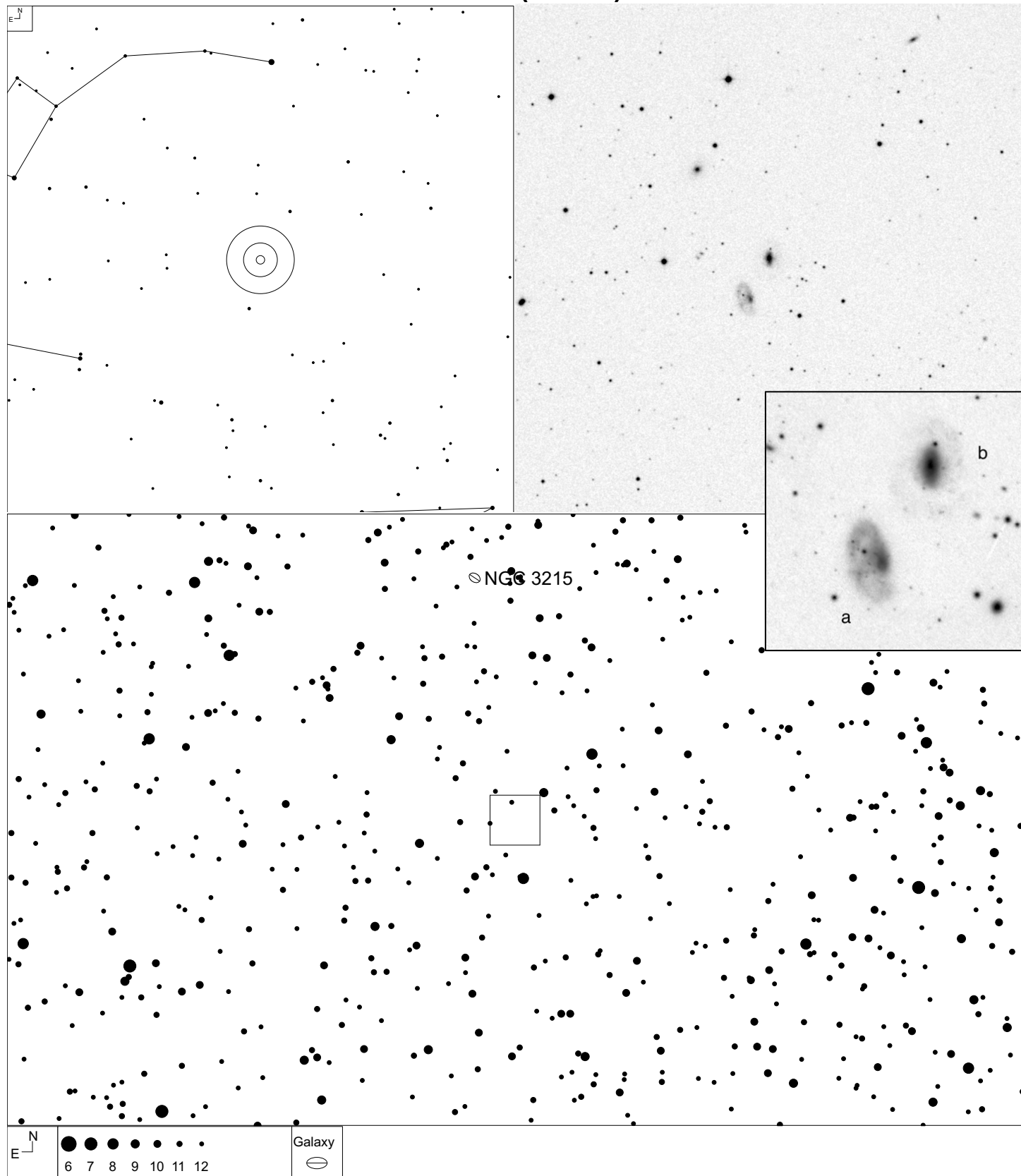
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
113	UGC 5823	10 41 53.4	+00 47 35	G	14.7v	0.9 x 0.8	PC

VV 65 (Vela)



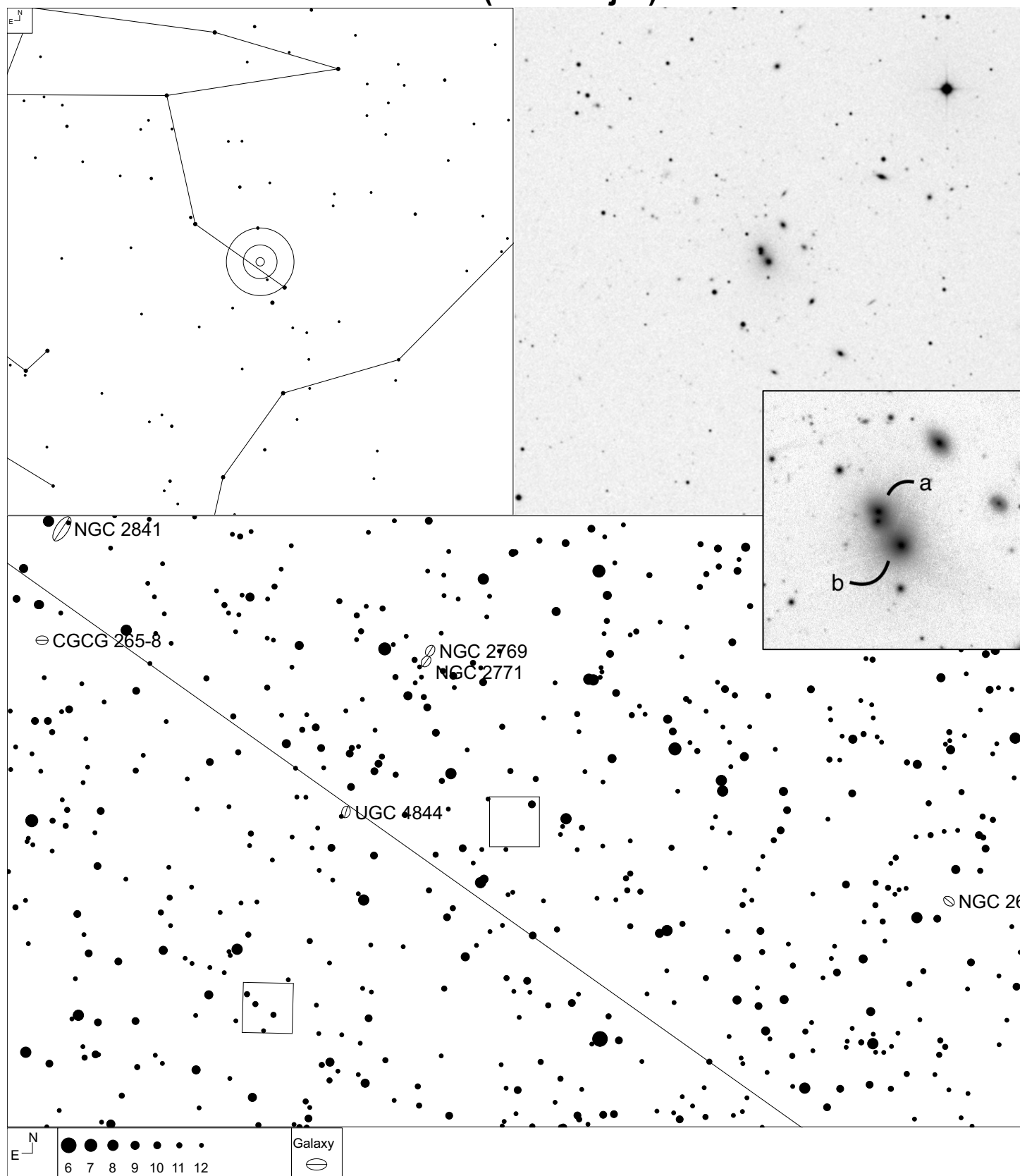
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
65	NGC 3256	10 27 51.3	-43 54 13	G	11.3v	3.8 x 2.1	PC

VV 330 (Draco)



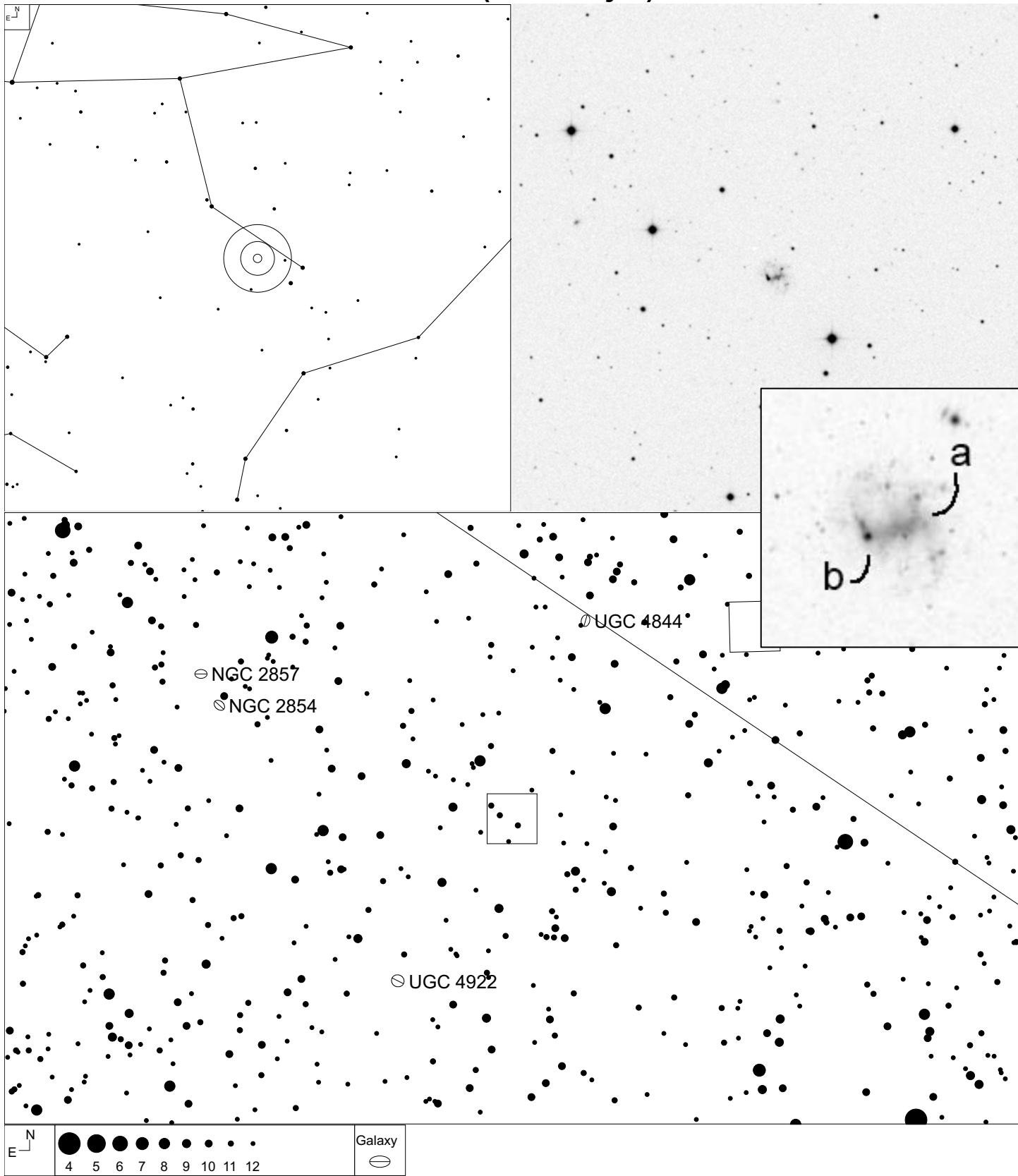
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
330	VII Zw 323	10 24 16.4	+78 37 08	GPair			PD
330a	UGC 5609	10 24 22.3	+78 36 33	G	14.9g	1.3 x 0.8	
330b	UGC 5600	10 24 09.9	+78 37 44	G	14.6g	1.4 x 1.0	

VV 196 (Ursa Major)



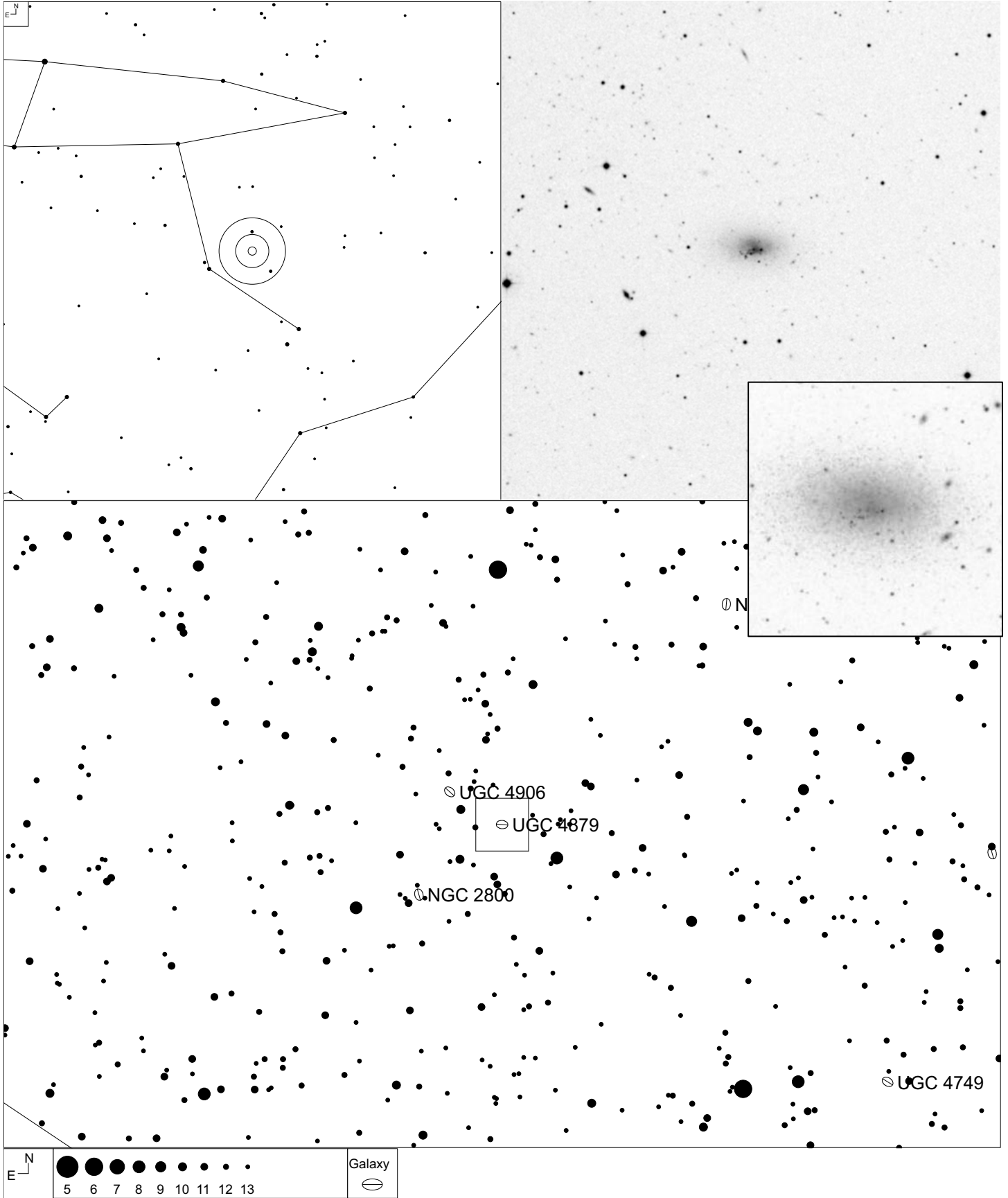
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
196		09 07 57.1	+49 35 59	GPair			PKb
196a	MCG+08-17-035	09 07 57.8	+49 36 10	G	15.6g	0.5 x 0.4	
196b	MCG+08-17-034	09 07 56.3	+49 35 48	G	14.9g	0.9 x 0.6	

VV 131 (Ursa Major)



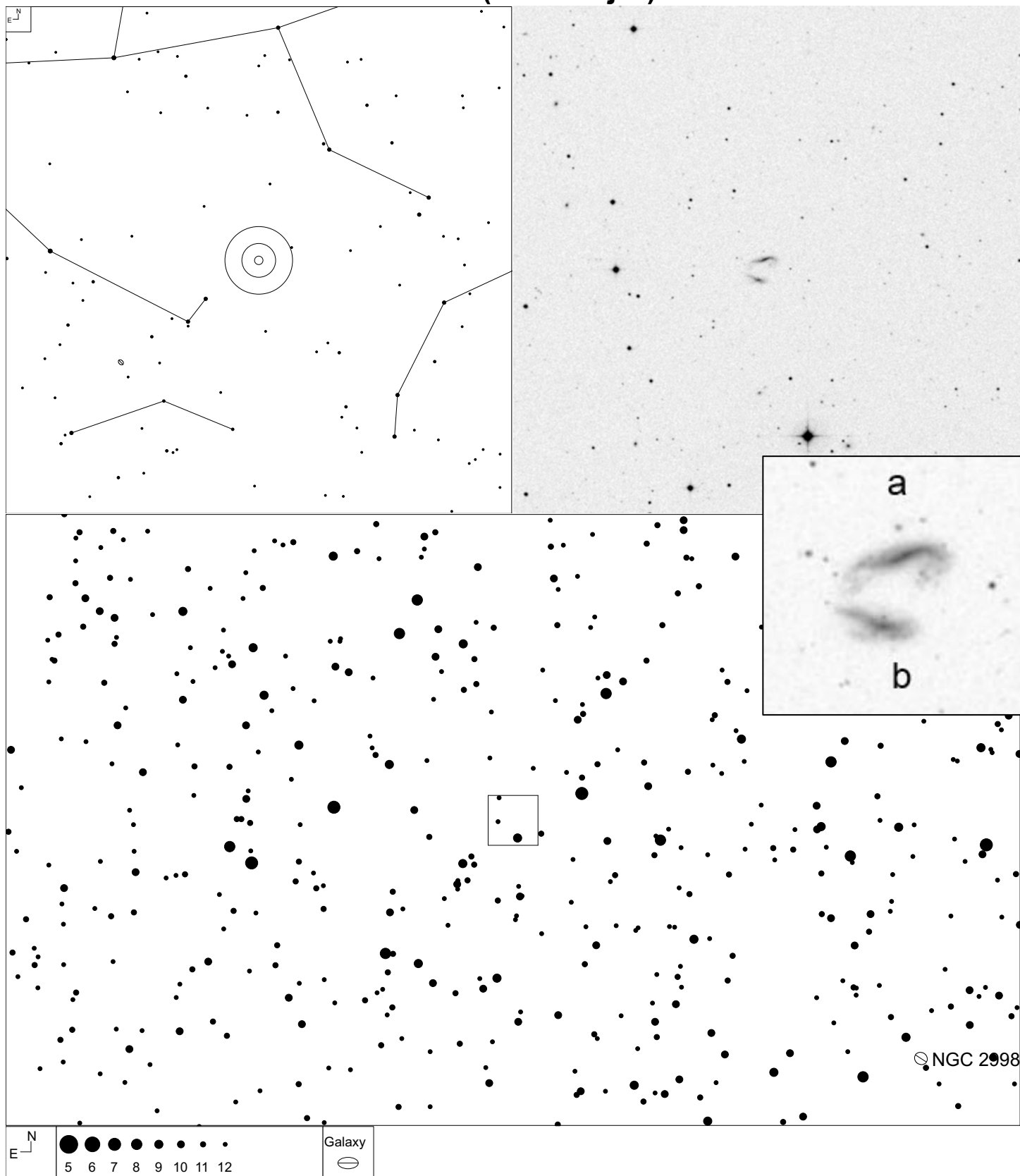
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
131	UGC 4874	09 15 16.3	+48 40 03	GPair	16.6g	1.1 x 0.9	N
b = star							

VV 124 (Ursa Major)



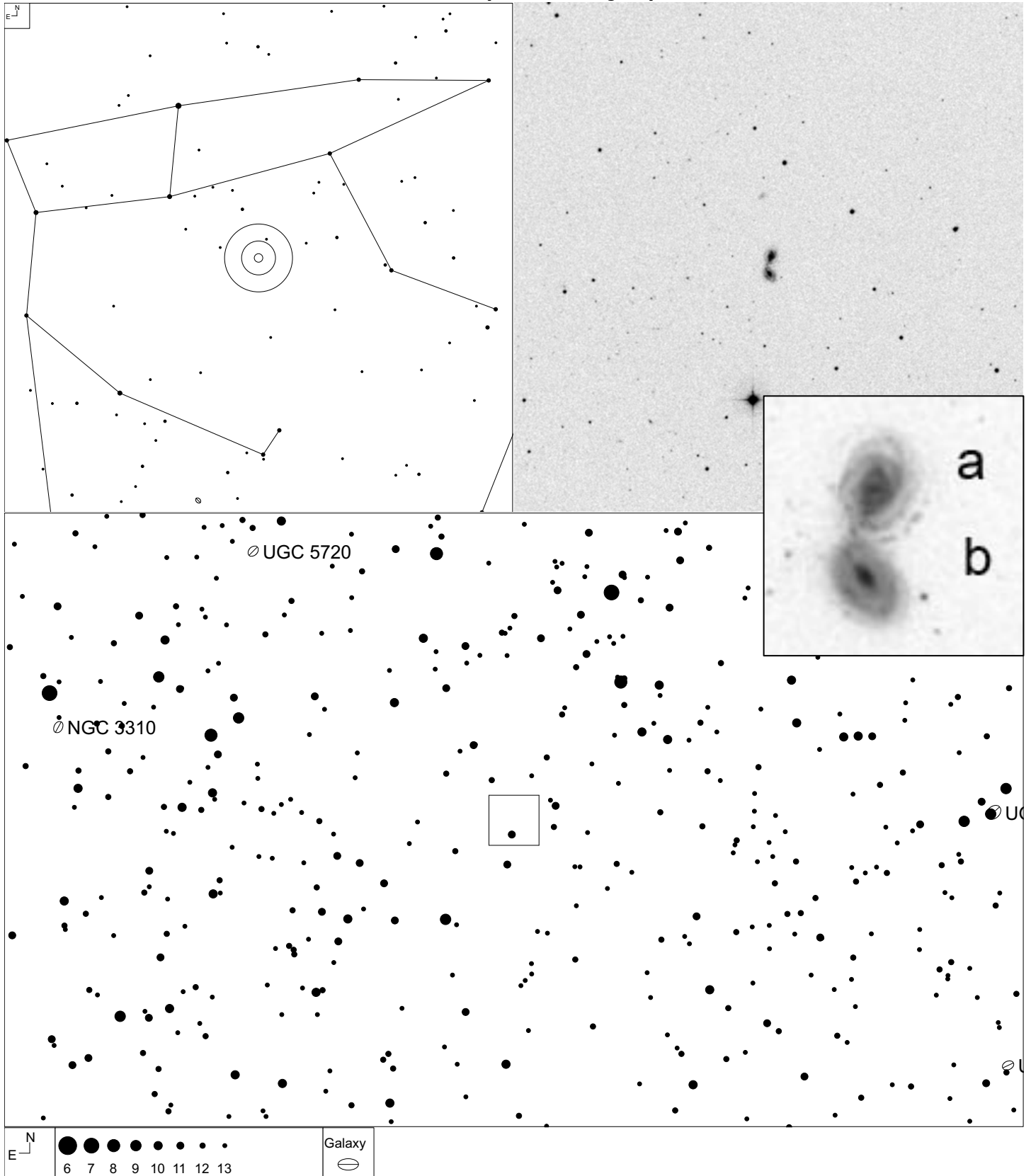
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
124	UGC 4879	09 16 02.2	+52 50 24	G	13.2v	1.7 x 1.3	N

VV 321 (Ursa Major)



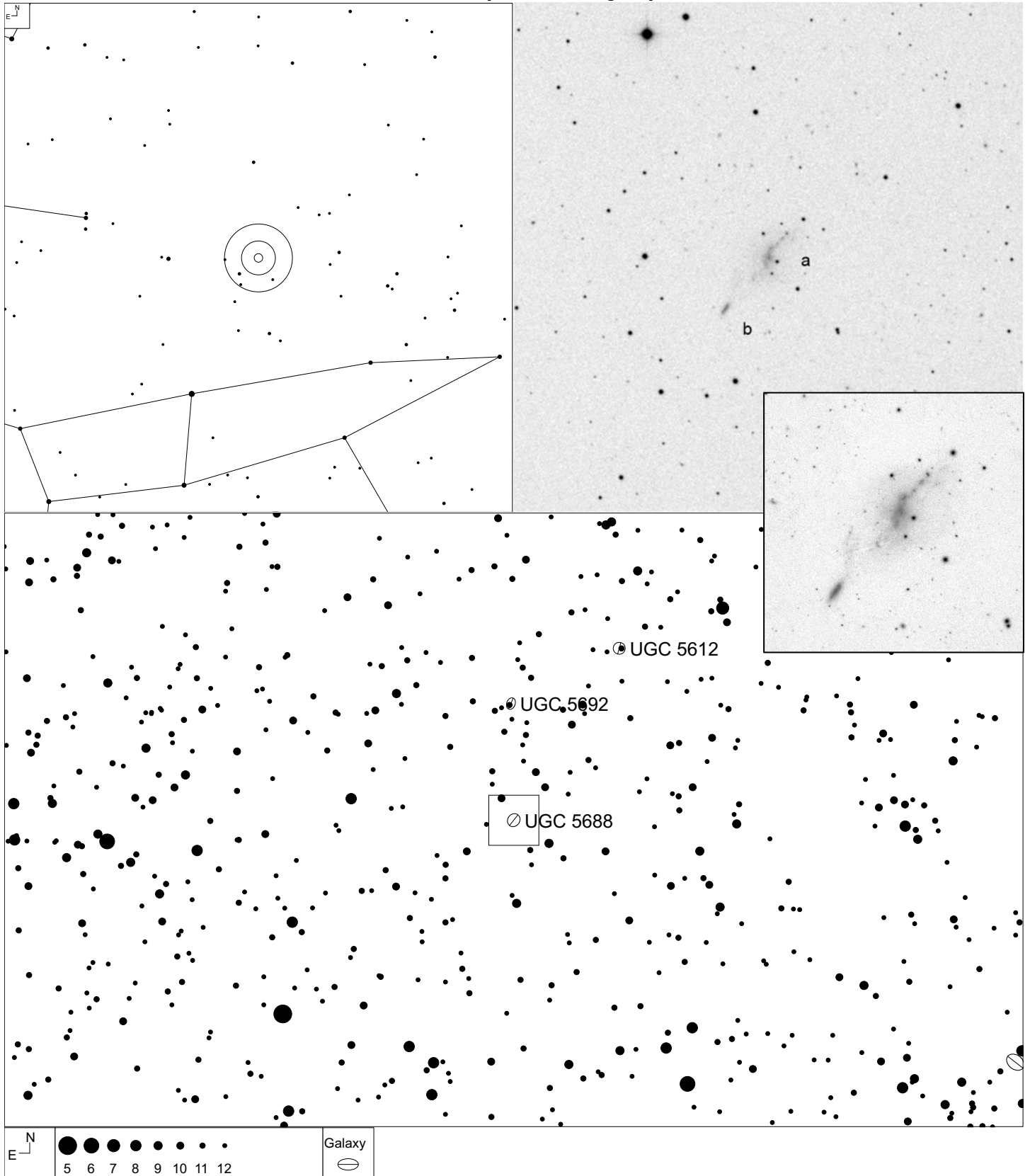
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
321	UGC 5367	09 59 52.8	+45 16 41	GPair			PDb
321a	MCG+08-18-053	09 59 52.4	+45 16 59	G	16.0g	1.1 x 0.3	
321b	MCG+08-18-052	09 59 53.4	+45 16 22	G	16.3g	0.7 x 0.3	

VV 312 (Ursa Major)



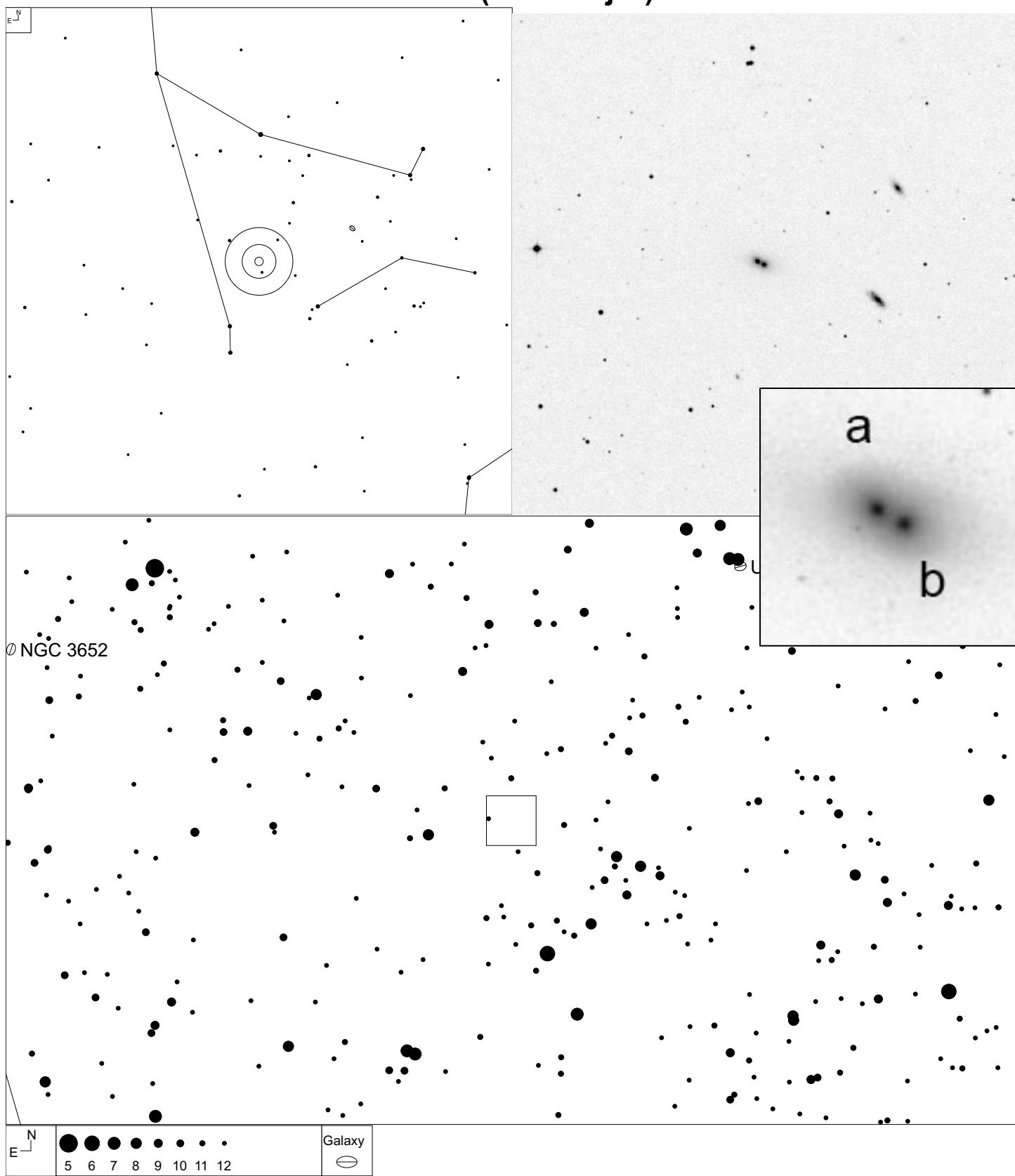
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
312		10 23 47.1	+53 06 12	GPair			PDb
312a	UGC 5615	10 23 46.9	+53 06 28	G	14.9g	0.8 x 0.7	
312b	MCG+09-17-062	10 23 47.3	+53 05 57	G	15.0g	0.7 x 0.5	

VV 294 (Ursa Major)



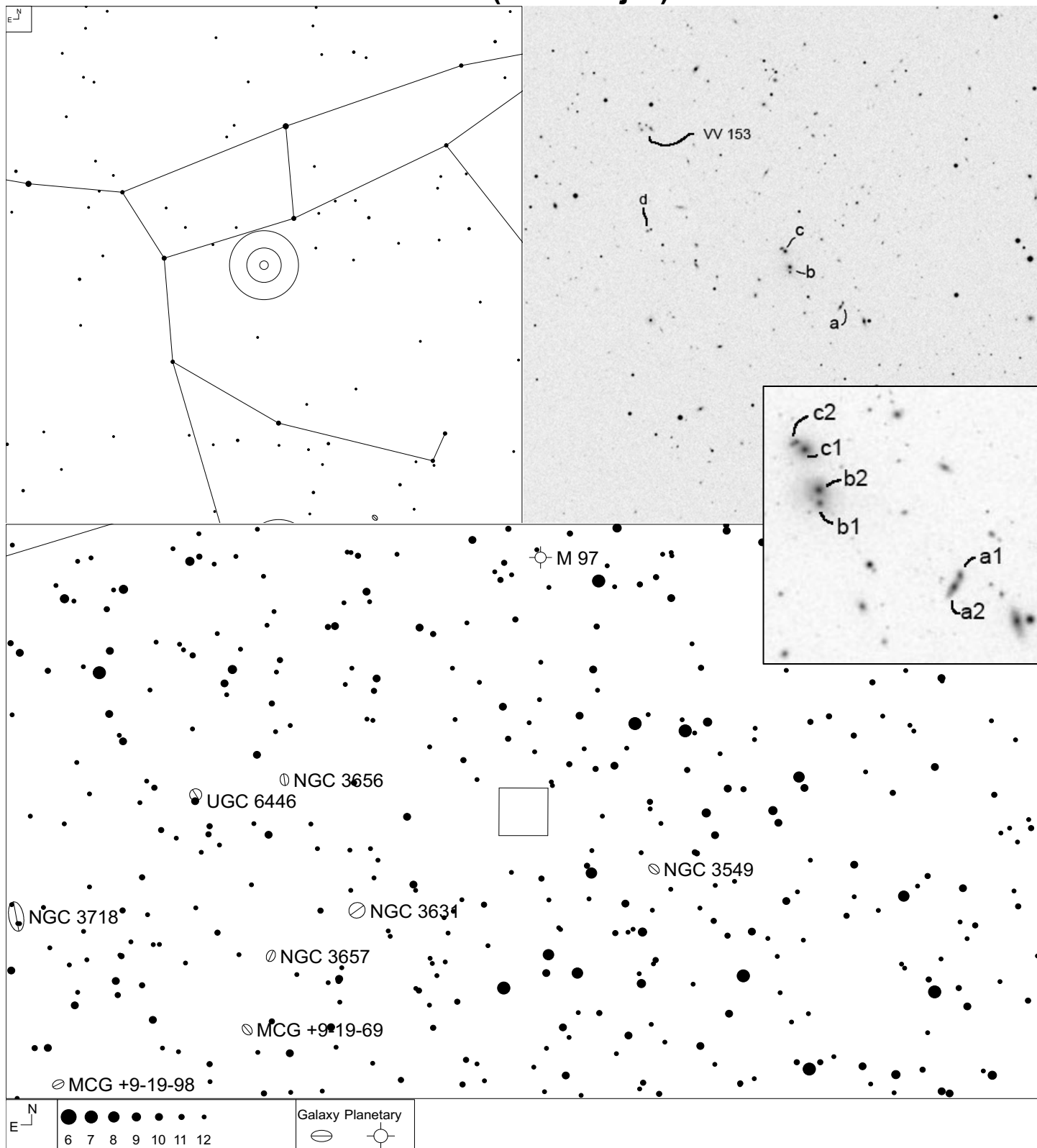
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
294	VII Zw 331	10 30 32.1	+70 02 16	GPair			PDb
294a	UGC 5688	10 30 24.8	+70 03 01	G	14.6g	4.0 x 1.9	
294b	PGC 213706	10 30 39.4	+70 01 32	G	16.6g	0.5 x 0.1	

VV 182 (Ursa Major)



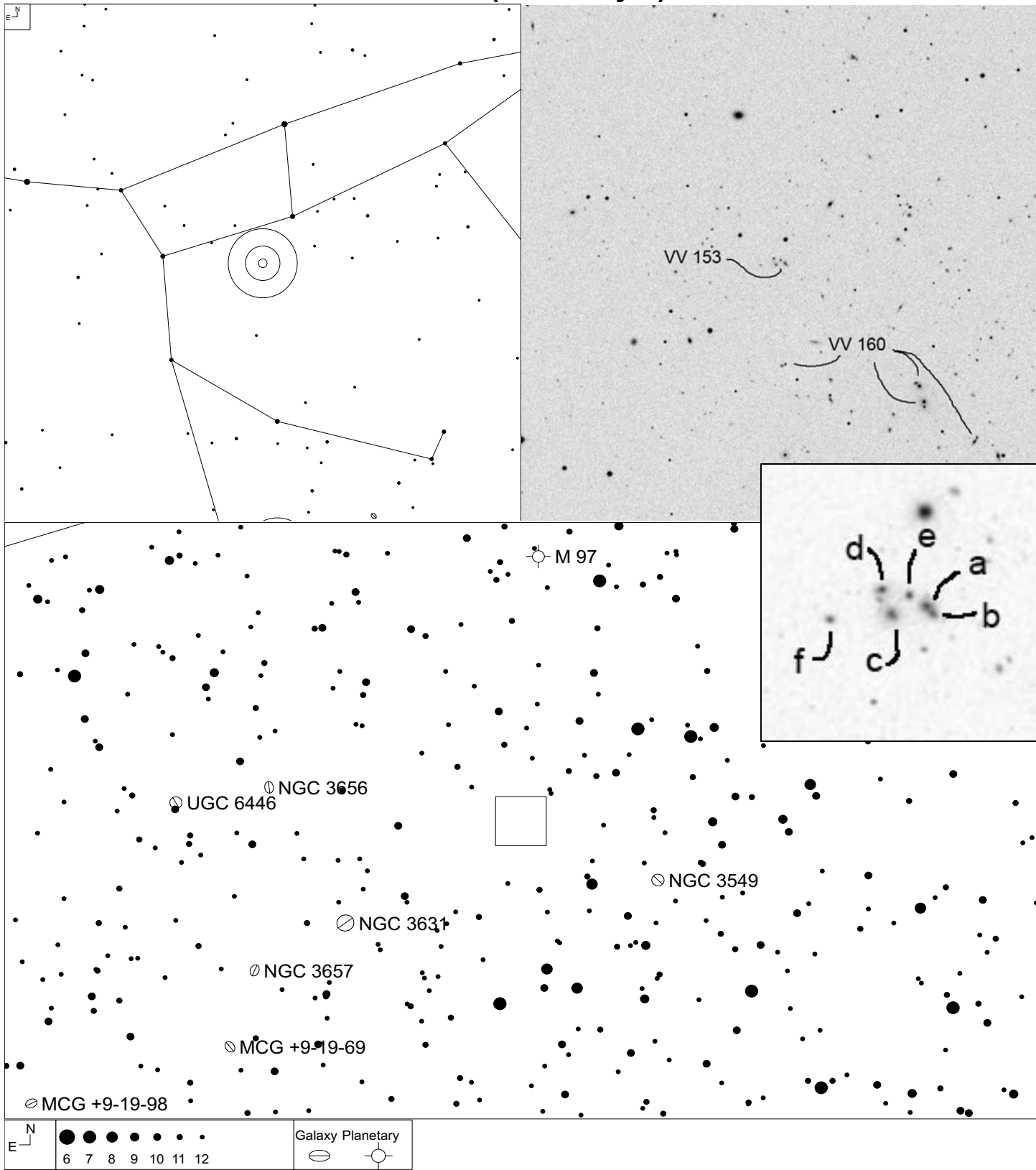
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
182		11 10 12.7	+36 57 56	GPair		0.9 x 0.6	PKb
182a	NGC 3545B	11 10 13.2	+36 58 00	G	15.7g		
182b	NGC 3545	11 10 12.2	+36 57 53	G	14.6g		

VV 160 (Ursa Major)



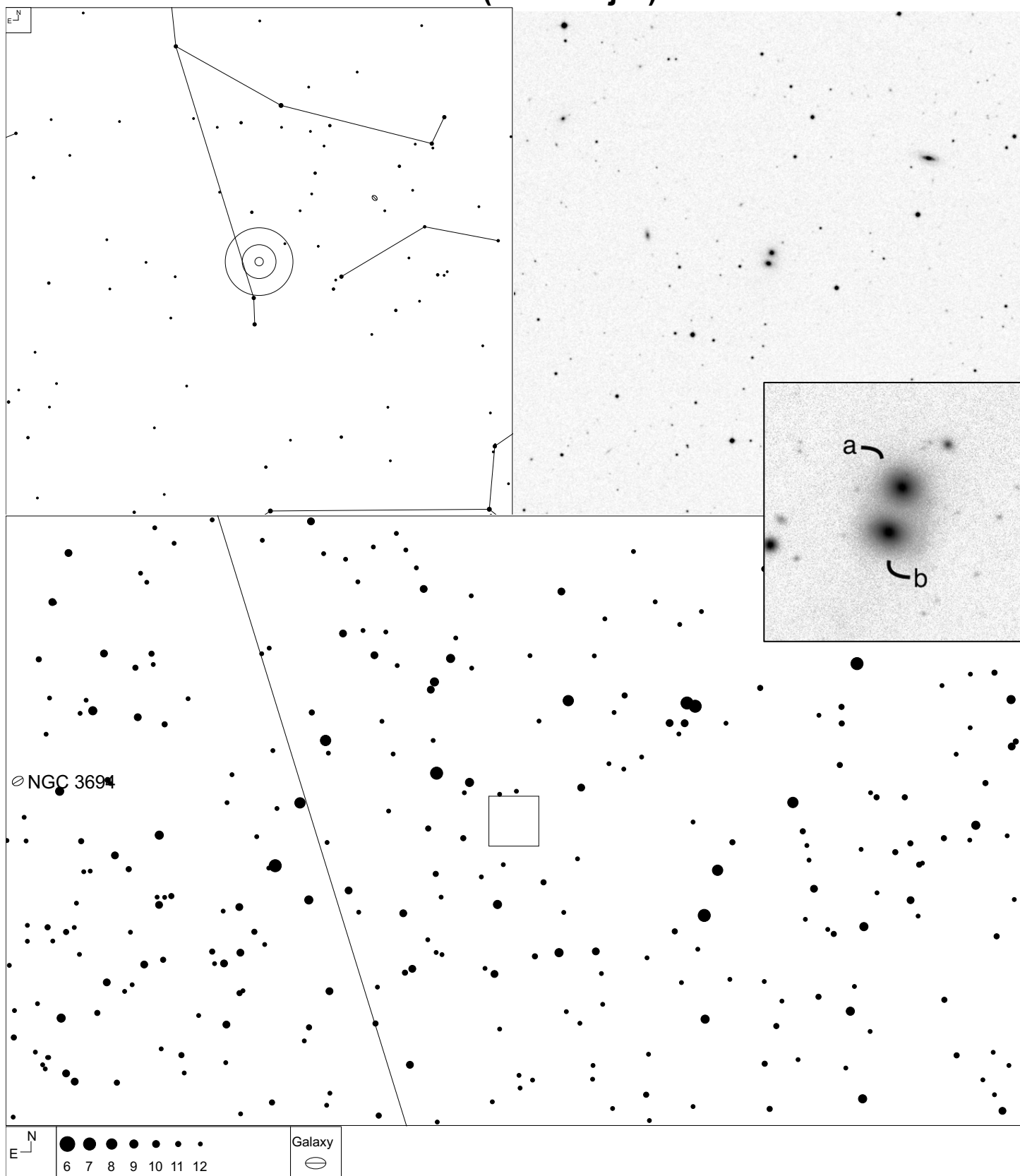
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
160	MCG +09-19-00A	11 14 25.0	+53 41 27	GGroup			NPNP
160a1		11 15 12.8	+53 40 21	G			
160a2	PGC 2447588	11 15 13.2	+53 40 17	G	17.7g	0.3 x 0.1	
160b1		11 15 23.3	+53 41 14	G	18.2g		
160b2		11 15 23.5	+53 41 22	G	17.0g	0.4 x 0.2	
160c1	PGC 2448298	11 15 24.5	+53 41 49	G	17.3g	0.3 x 0.1	
160c2		11 15 25.4	+53 41 53	G			
160d1		11 15 50.9	+53 42 18	G			/
160d2		11 15 51.5	+53 41 14	G	star		

VV 153 (Ursa Major)



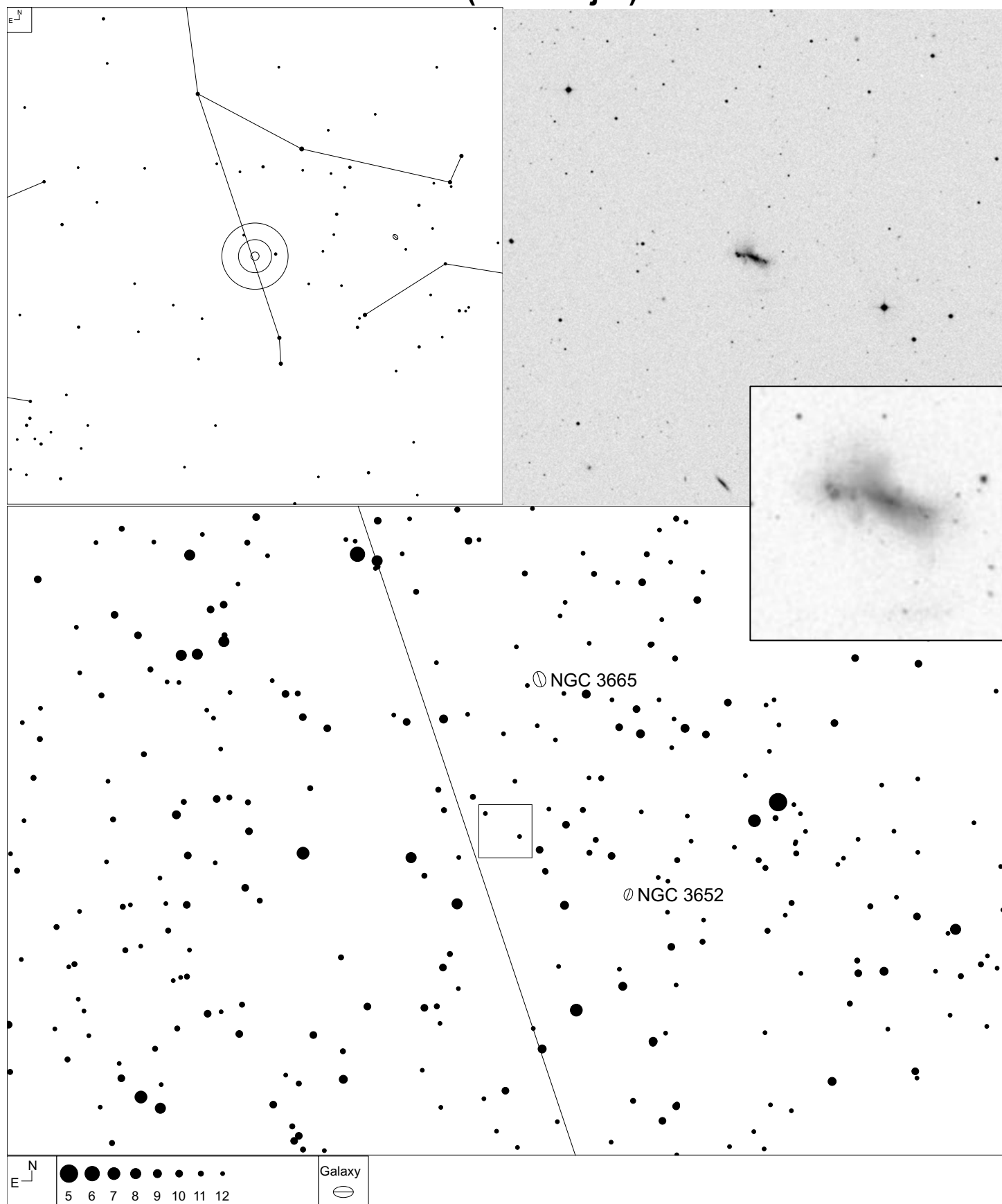
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
153	Shk 3 MCG+09-19-015	11 15 53.2	+53 45 12	GGroup	18.7g		

VV 198 (Ursa Major)



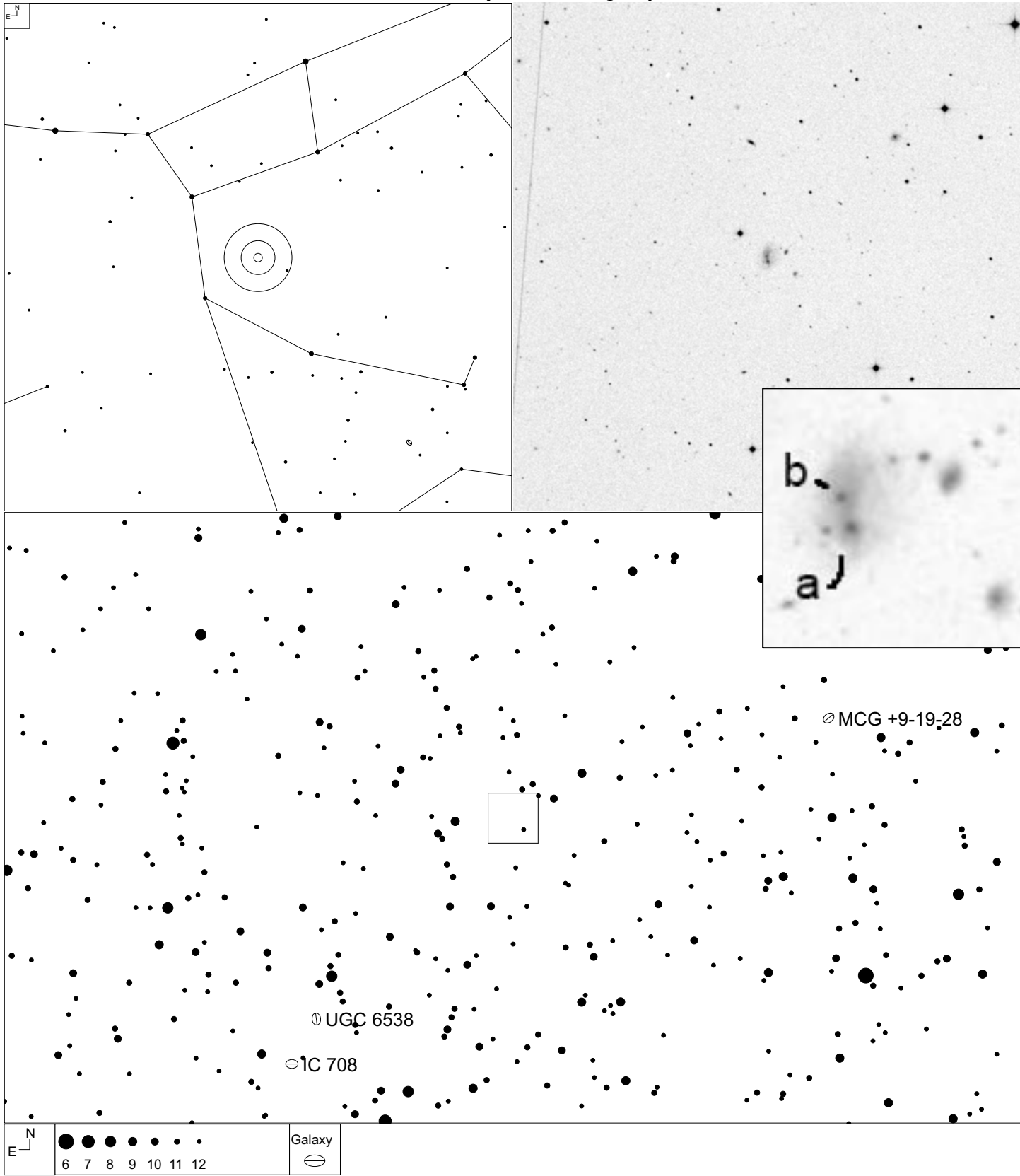
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
198		11 16 56.0	+35 15 23	GPair			PDb
198a	MCG+06-25-34	11 16 55.8	+35 15 33	G	15.8g	0.6 x 0.5	
198b	MCG+06-25-33	11 16 56.3	+35 15 14	G	15.4g	0.6 x 0.5	

VV 87 (Ursa Major)



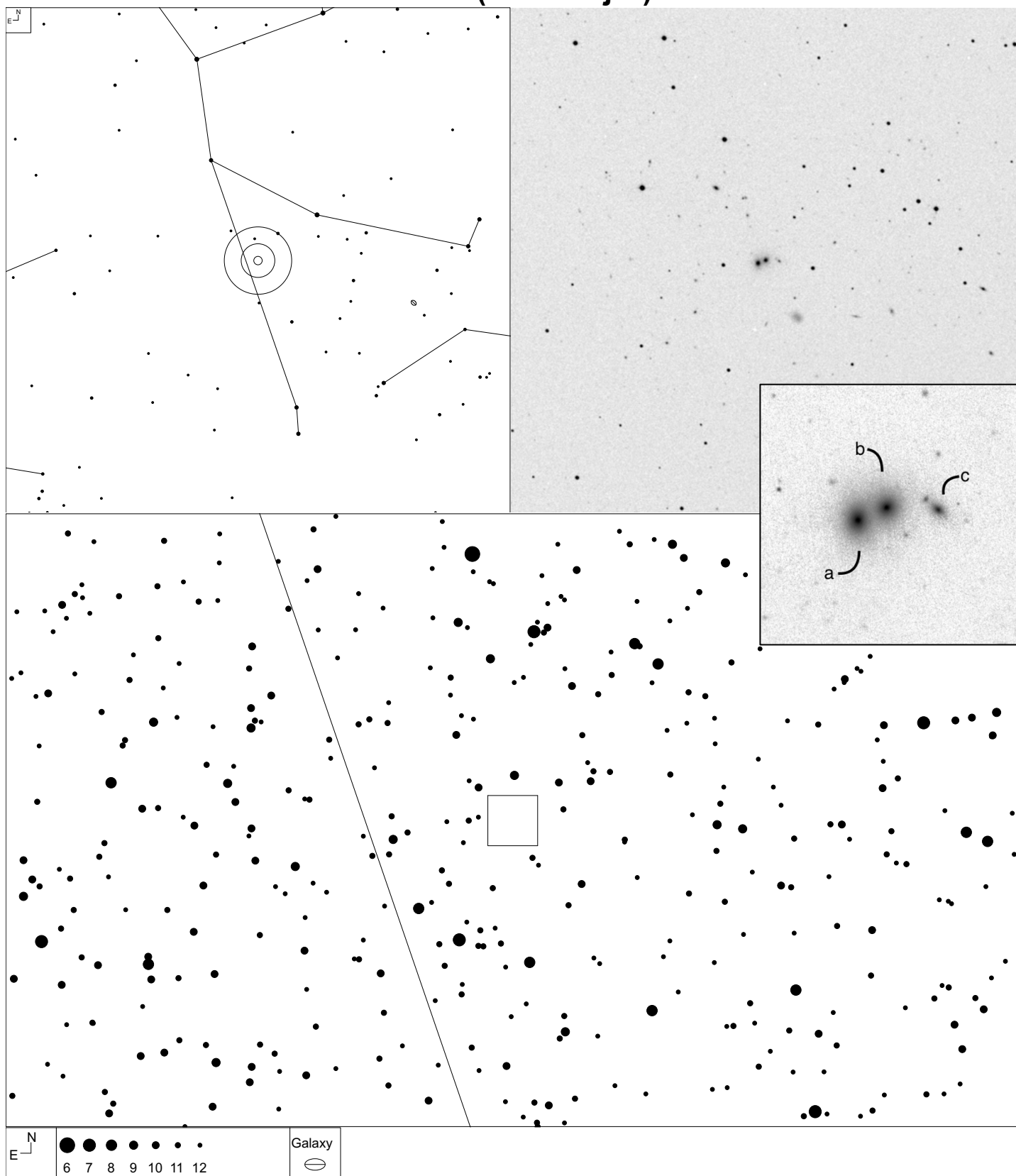
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
87	UGC 6433	11 25 31.8	+38 03 38	G	14.8g	1.6 x 0.4	PC

VV 265 (Ursa Major)



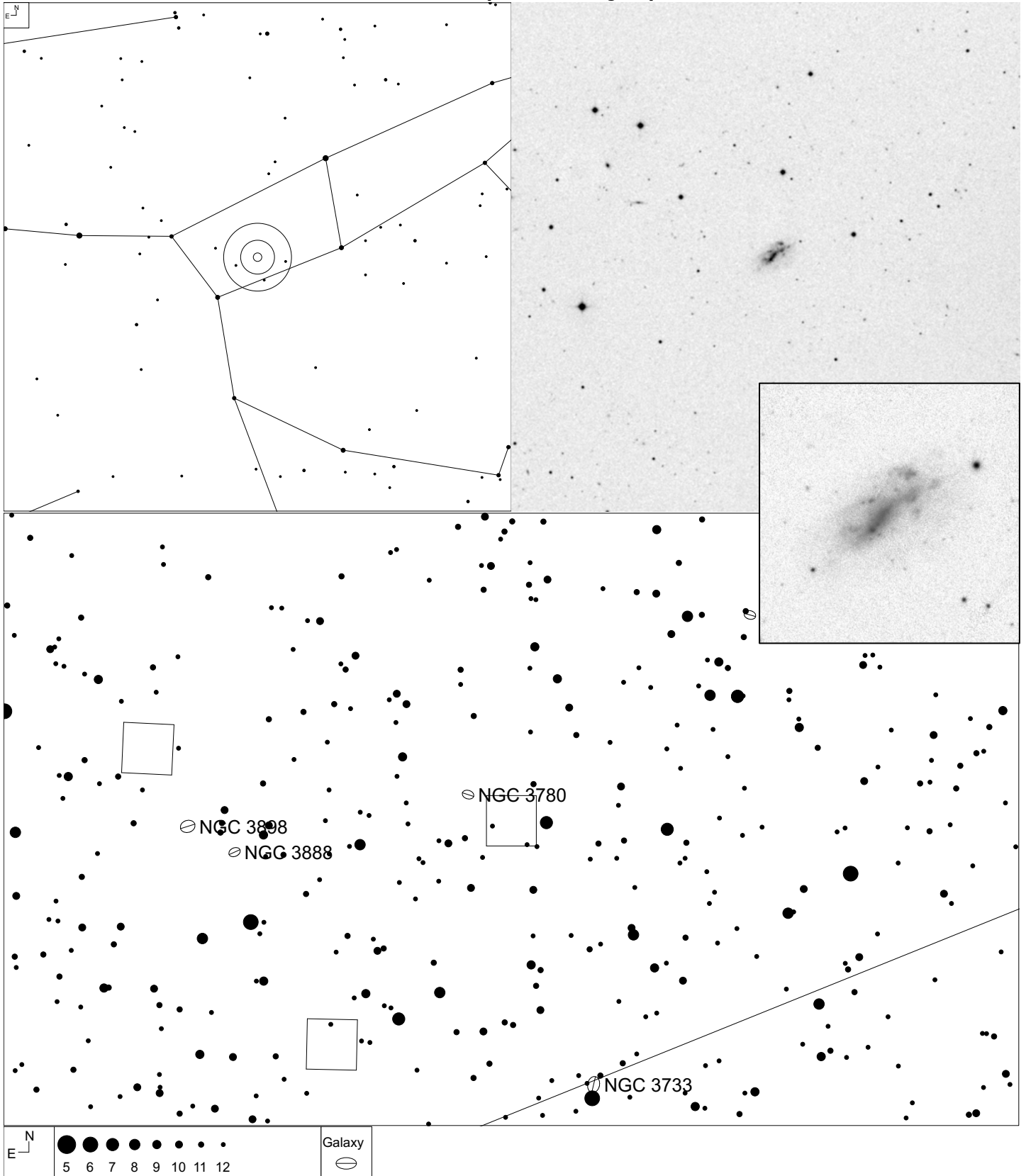
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
265	MCG+08-21-036	11 27 21.3	+50 16 39	GPair	17.2g	0.7 x 0.4	PK

VV 60 (Ursa Major)



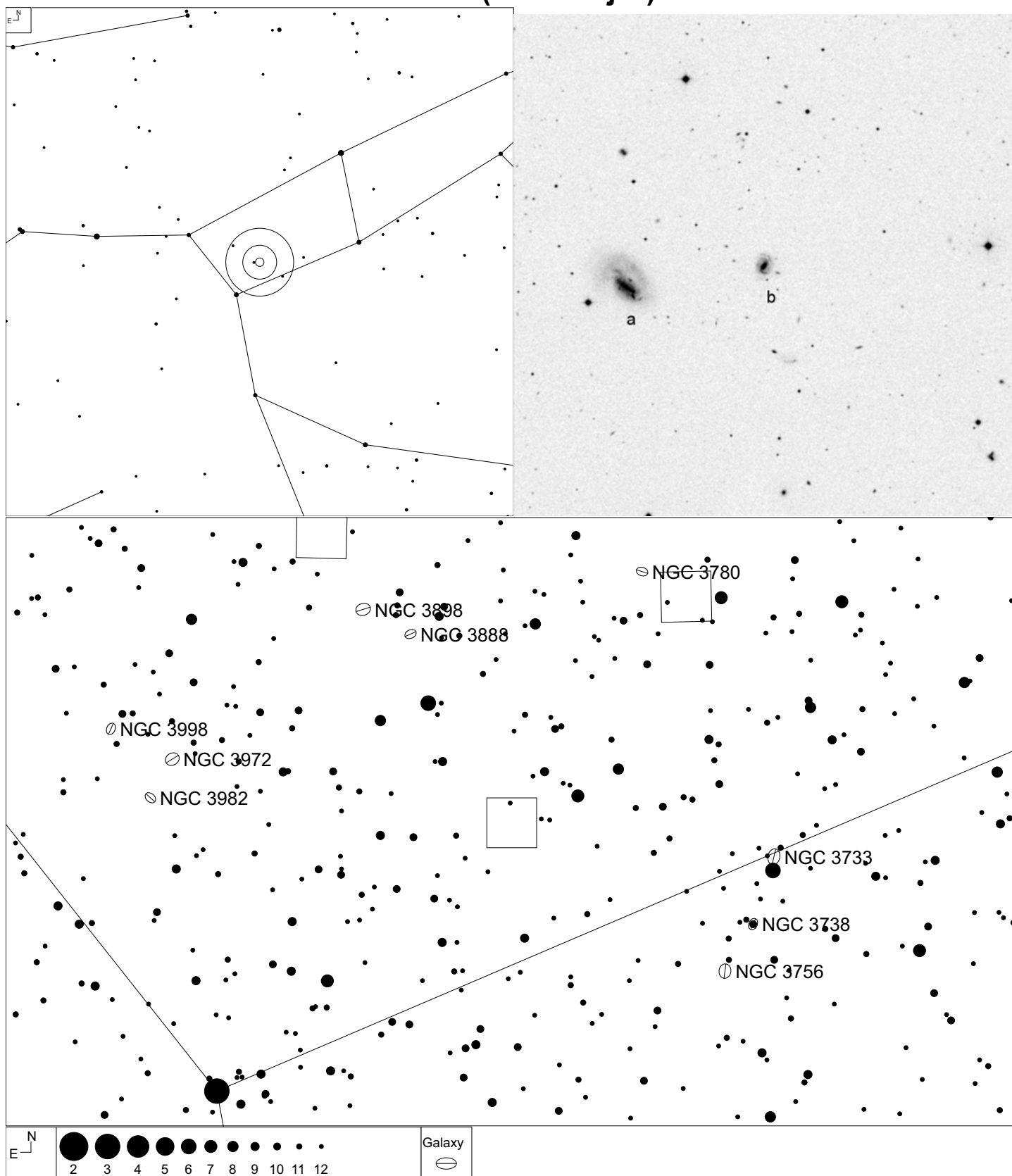
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
60	MCG+07-24-014	11 29 23.9	+41 52 16	GTrpl			NNN
60a	PGC 2188282	11 29 25.5	+41 52 14	G	16.0g	0.5 x 0.4	
60b		11 29 24.3	+41 52 19	G	16.0g	0.6 x 0.5	
60c		11 29 22.2	+41 52 18	G	18.6g	0.2 x 0.1	

VV 148 (Ursa Major)



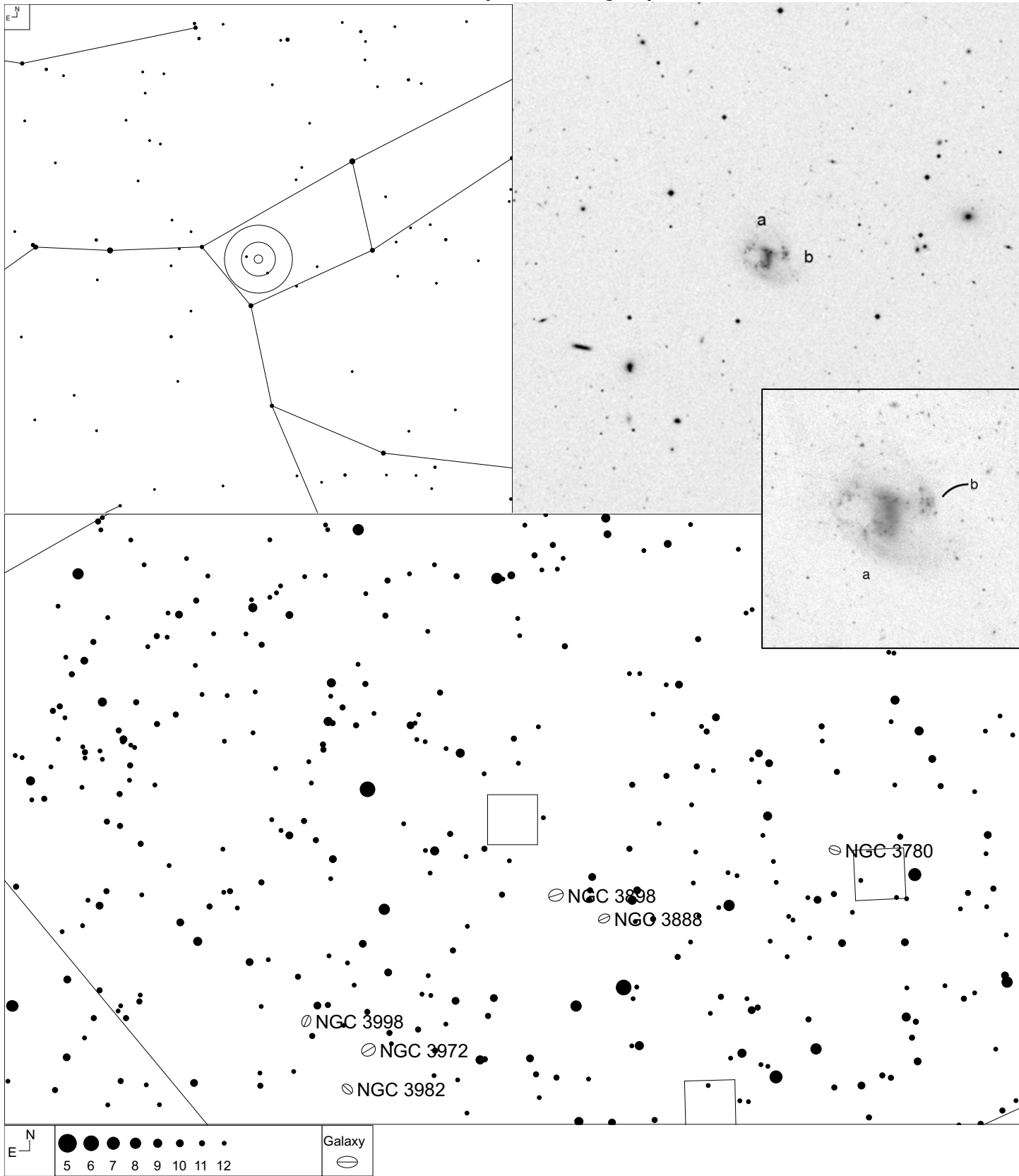
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
148	UGC 6596	11 37 50.3	+56 08 42	G	15.5g	1.1 x 0.7	N

VV 320 (Ursa Major)



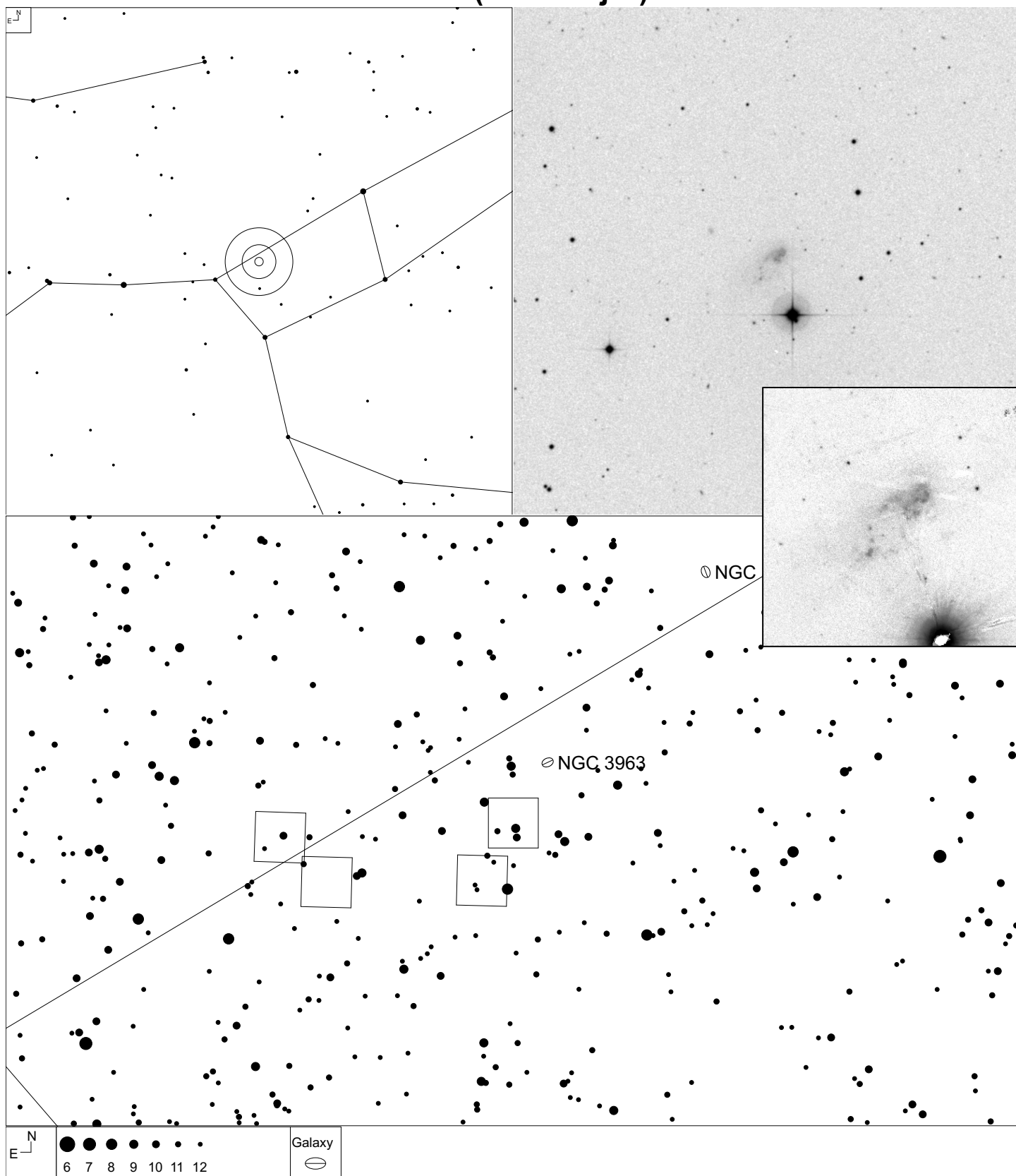
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
320		11 44 00.6	+55 02 28	GPair			PK
320a	NGC 3846A	11 44 14.8	+55 02 06	G	13.8g	1.9 x 1.0	
320b	MCG+09-19-165	11 43 46.4	+55 02 51	G	14.8g	0.7 x 0.6	

VV 273 (Ursa Major)



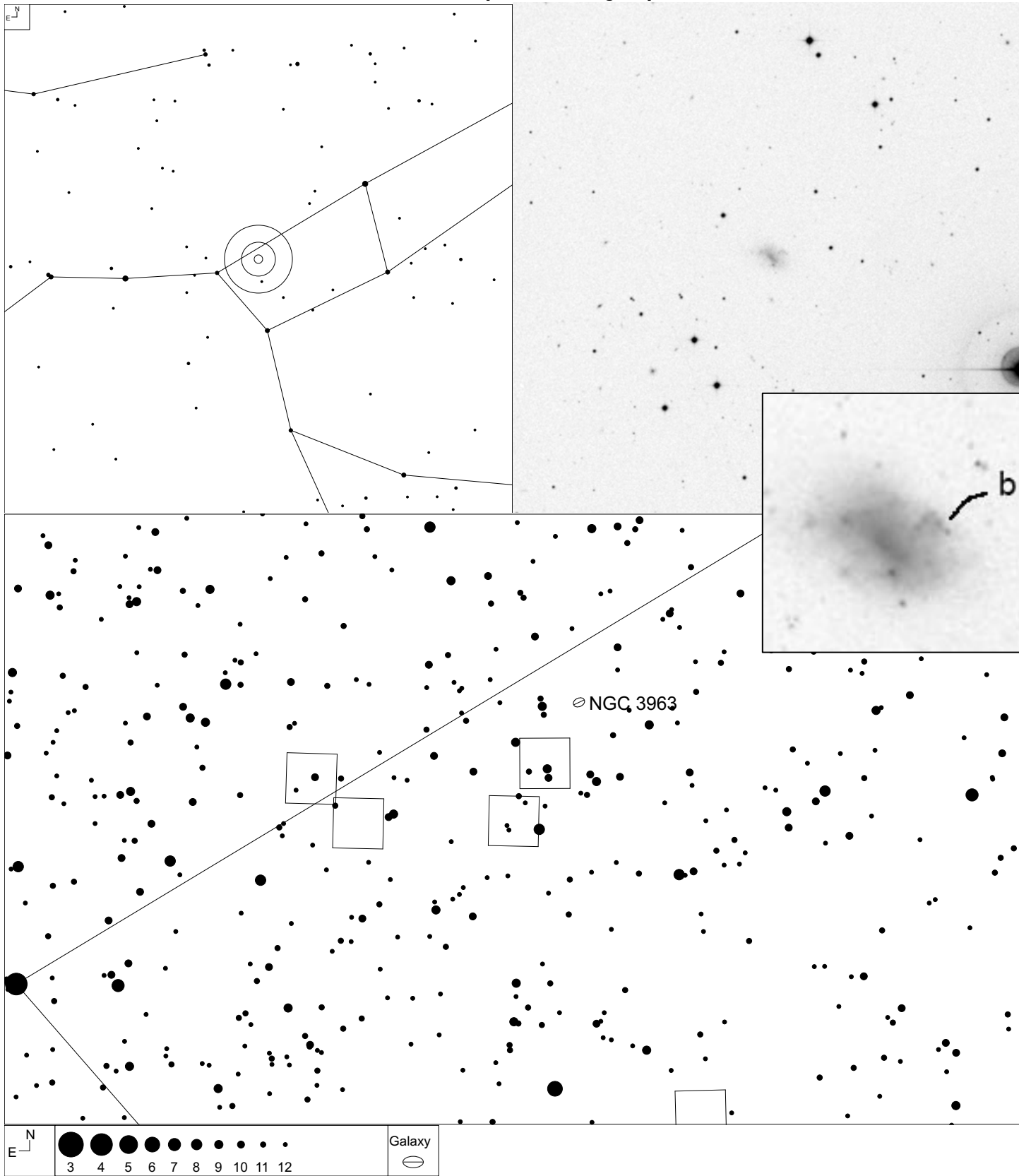
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
273	UGC 6816	11 50 47.7	+56 27 21	G	15.1g	1.5 x 1.3	N

VV 57 (Ursa Major)



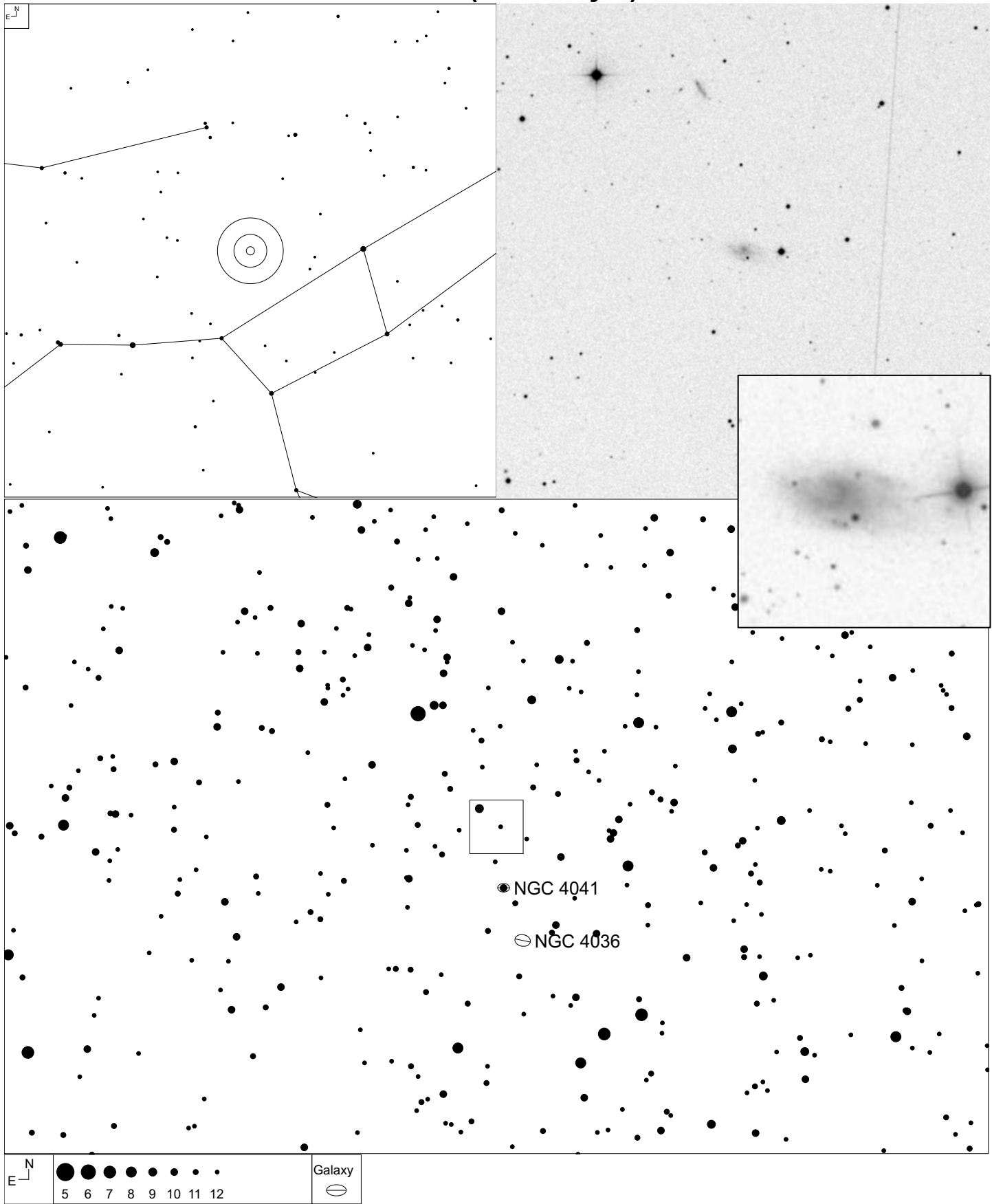
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
57	UGC 6912	11 56 14.4	+58 11 49	G	15.2g	2.1 x 1.4	R

VV 241 (Ursa Major)



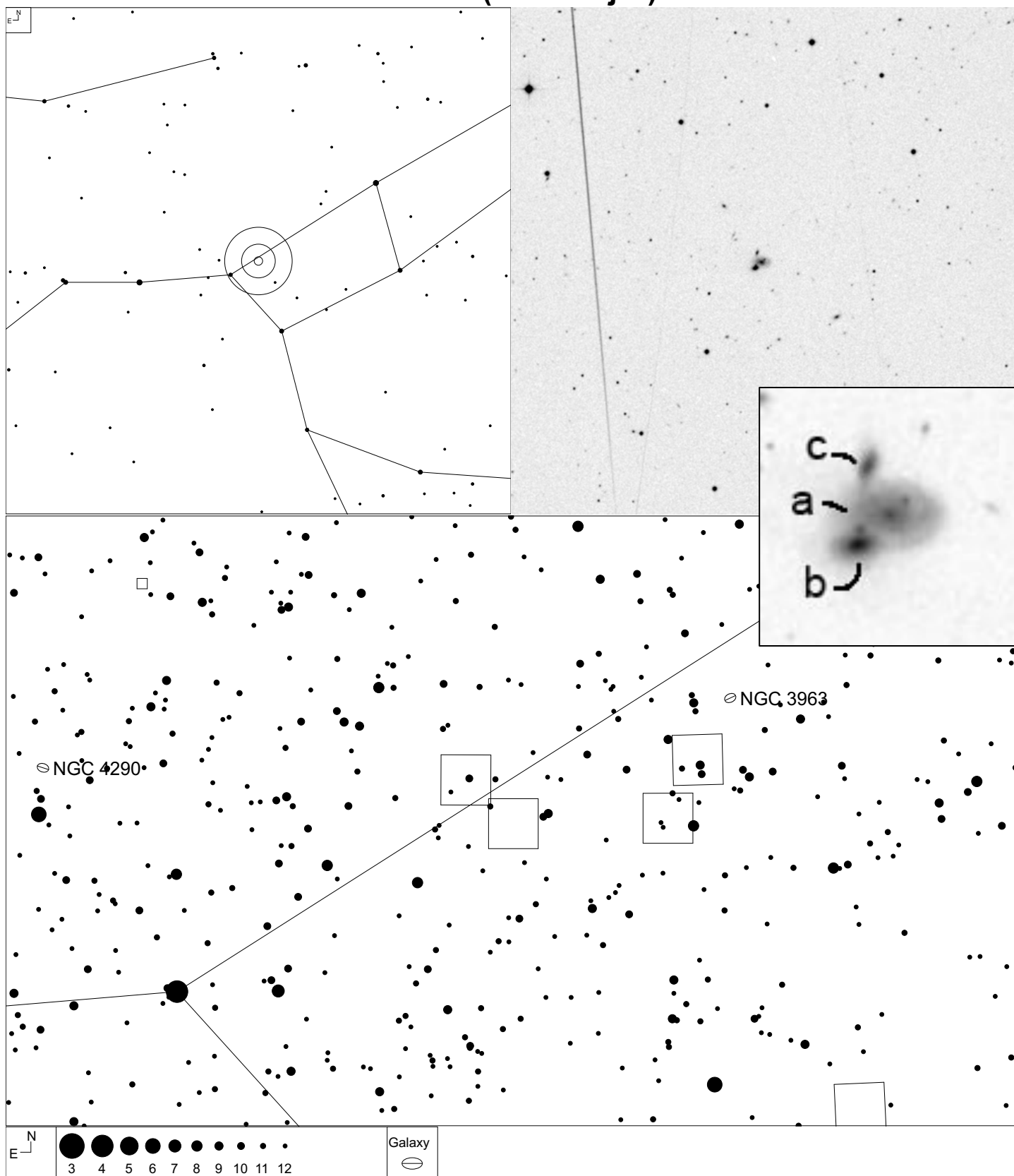
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
241	UGC 6931	11 57 24.9	+57 55 48	G	14.6g	1.4 x 1.0	PKdf

VV 259 (Ursa Major)



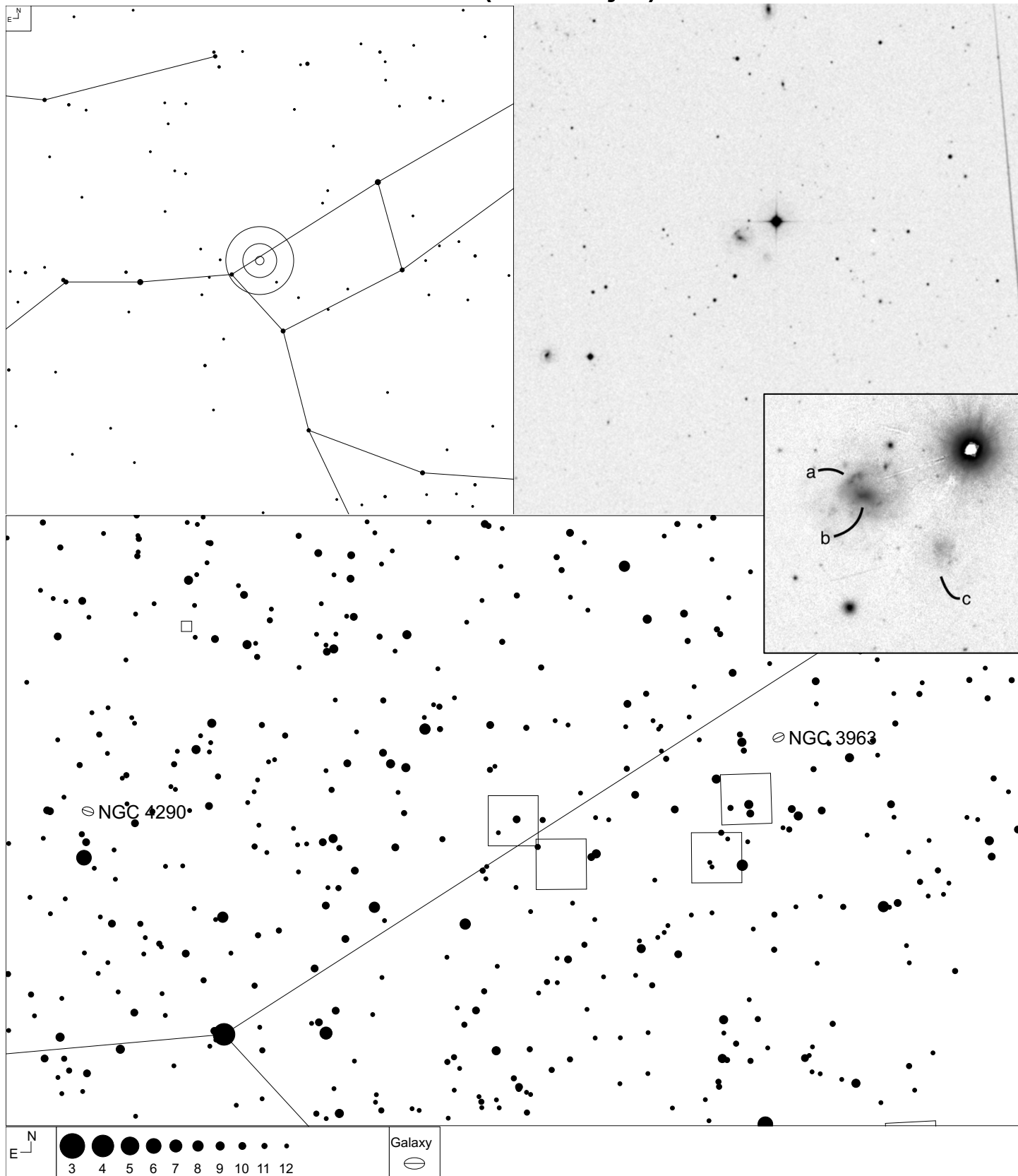
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
259	UGC 7019	12 02 29.4	+62 25 02	G	15.3g	1.5 x 0.8	PK

VV 136 (Ursa Major)



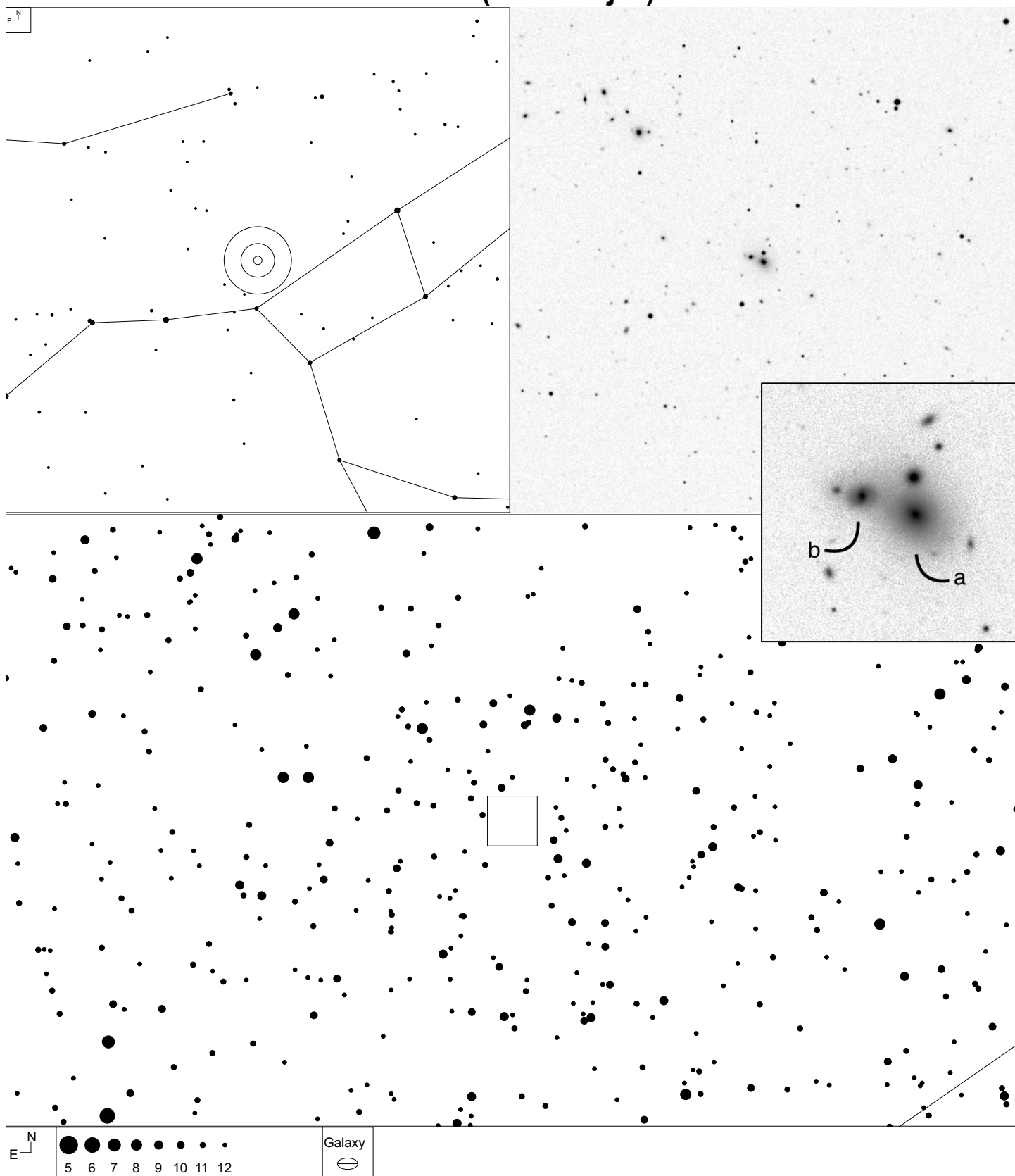
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
136		12 03 13.1	+57 53 40	GTrpl			N
136a	NGC 4054	12 03 12.4	+57 53 36	G	15.7g	0.7 x 0.4	
136b	PGC 3547623	12 03 13.8	+57 53 26	G	15.6g	0.5 x 0.3	
136c		12 03 13.4	+57 53 53	G	17.2g	0.3 x 0.2	

VV 270 (Ursa Major)



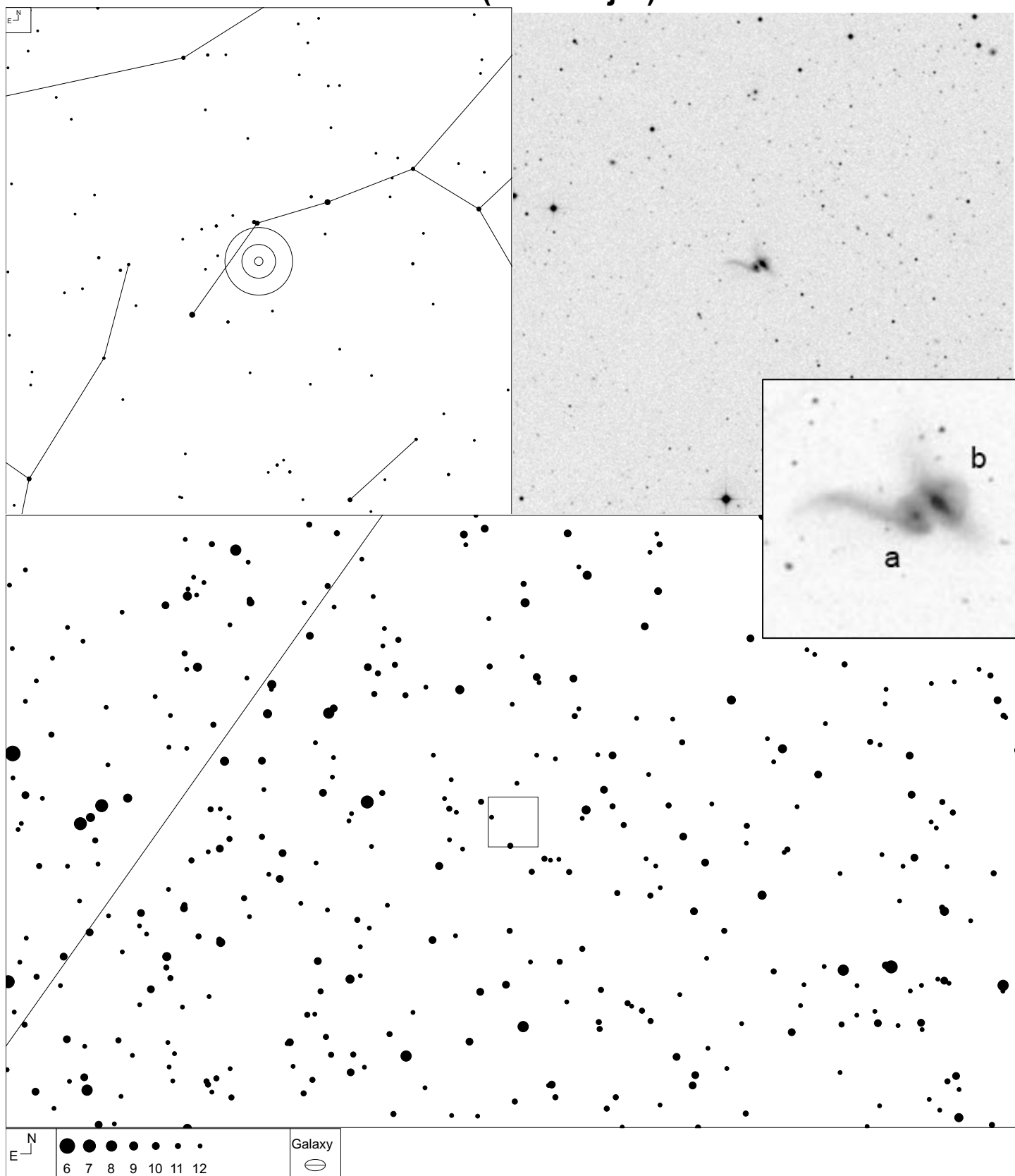
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
270		12 04 56.2	+58 06 10	GPair			PKt
270a		12 04 59.7	+58 06 35	PofG			
270b	UGC 7070	12 04 59.0	+58 06 24	G	15.0g	0.8 x 0.6	
270c	UGC 7070A	12 04 52.8	+58 05 49	G	17.5	0.4 x 0.4	

VV 183 (Ursa Major)



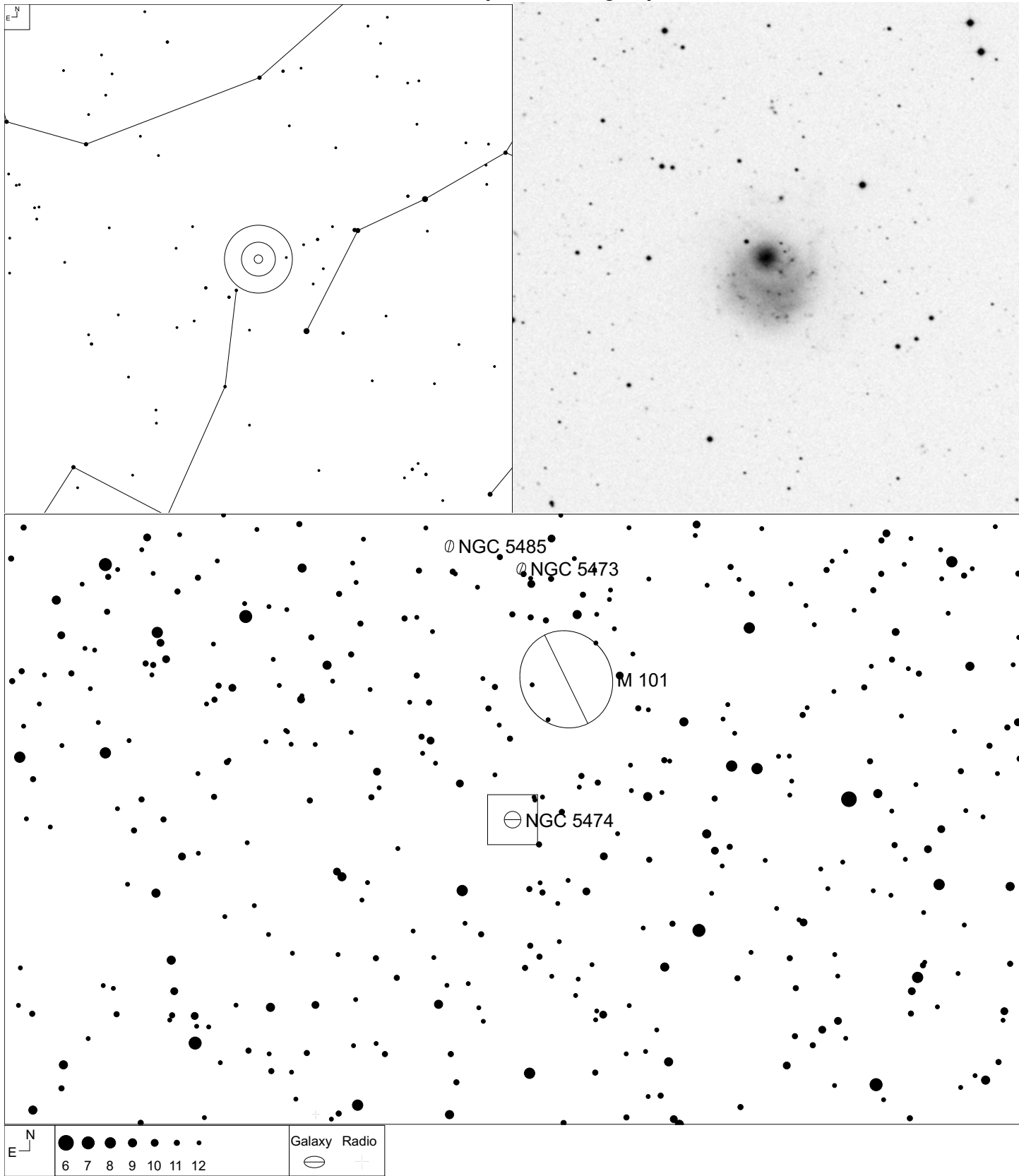
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
183		12 14 50.2	+59 54 27	GPair			PD
183a	NGC 4199A	12 14 48.6	+59 54 22	G	14.9g	0.9 x 0.6	
183b	NGC 4199B	12 14 51.7	+59 53 30	G	16.2g	0.7 x 0.3	
Part of AGC 1507							

VV 235 (Ursa Major)



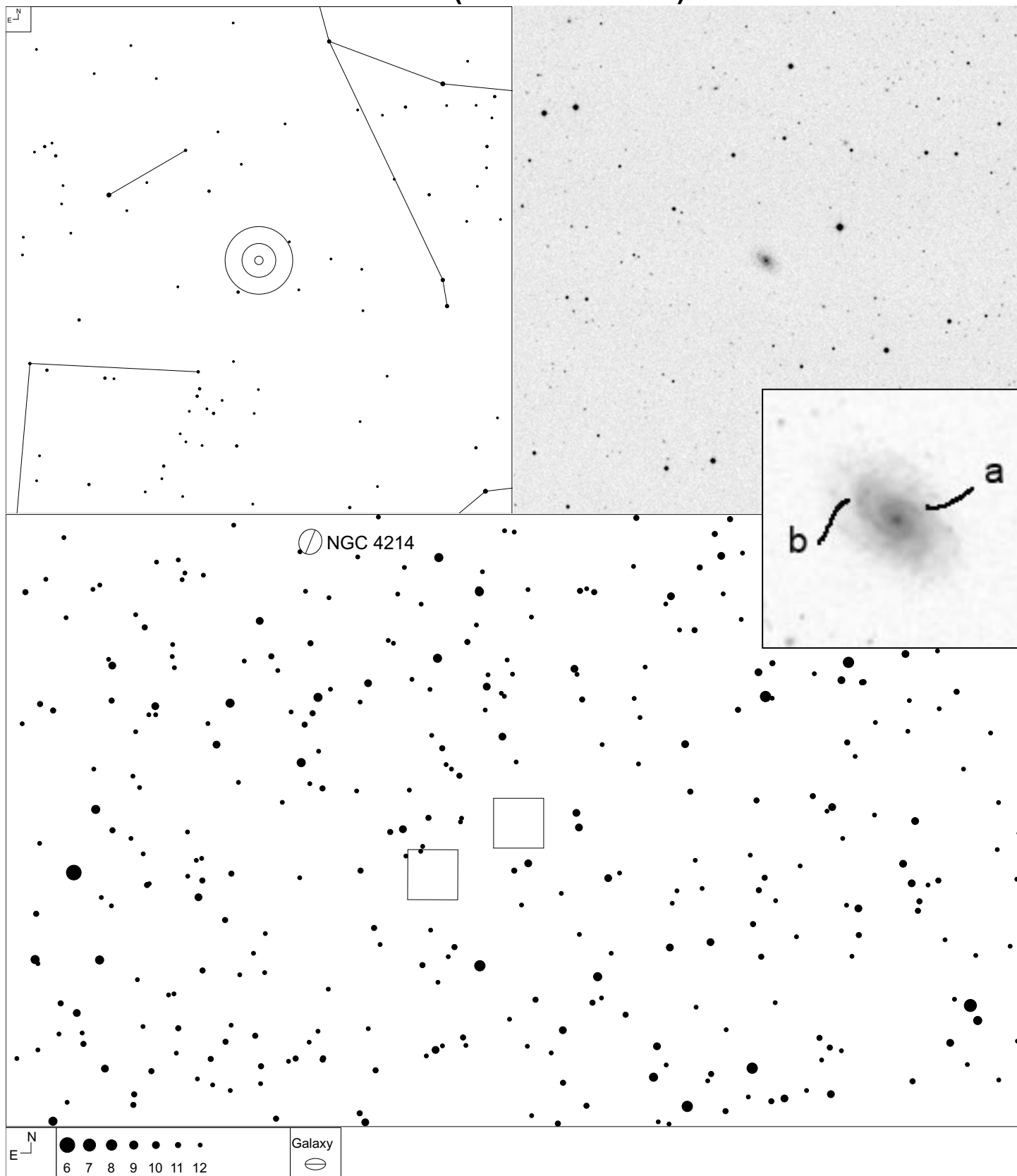
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
235	I Zw 57	13 23 17.4	+52 39 10	GPair			PKt
235a	MCG+09-22-056	13 23 18.0	+52 39 07	G	15.5g	1.1 x 0.4	
235b	UGC 8416	13 23 16.7	+52 39 13	G	15.1g	0.6 x 0.5	

VV 344 (Ursa Major)



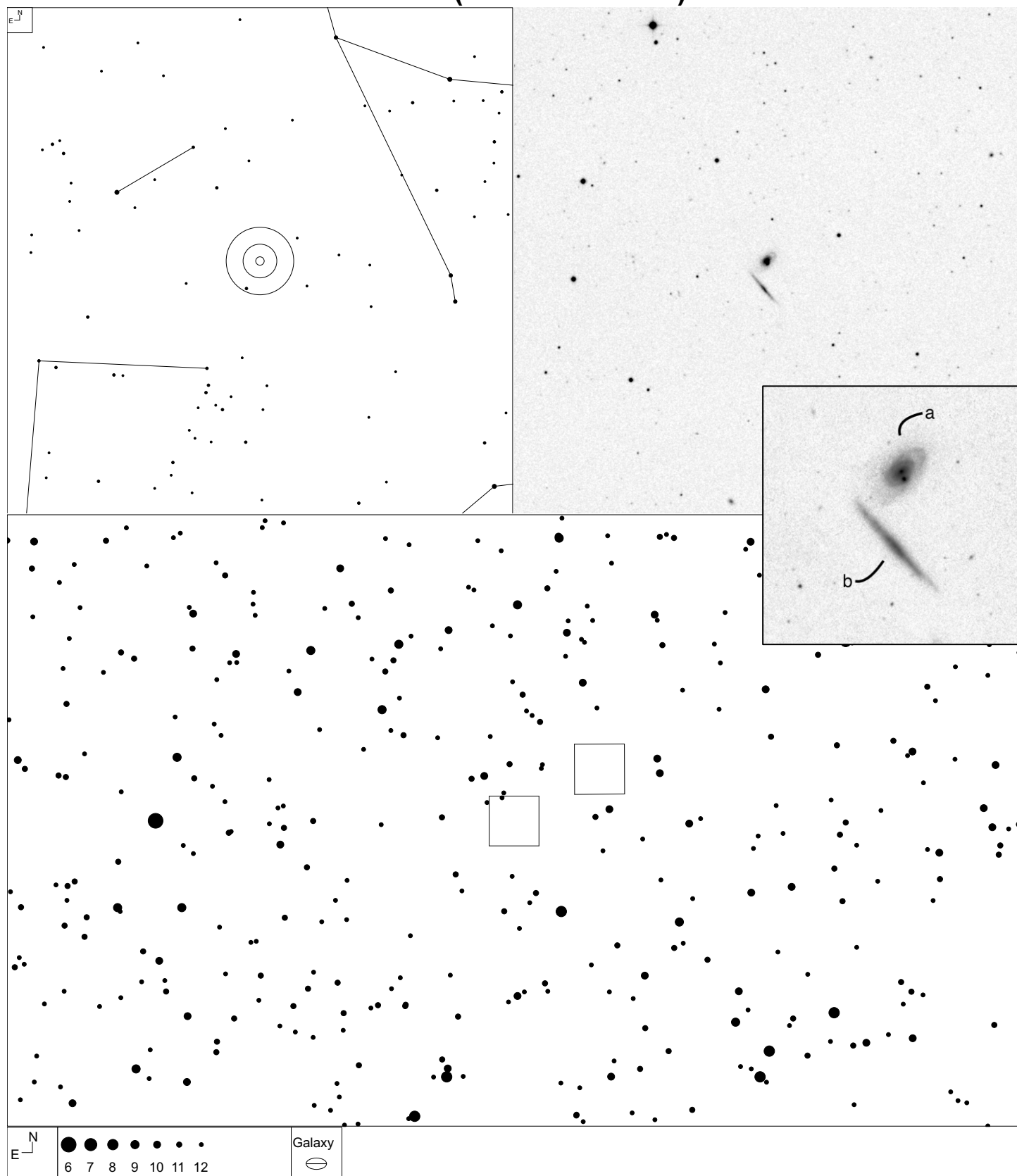
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
344	NGC 5474	14 04 07.4	+54 00 24	GPair	10.79v	4.7 x 4.7	PD

VV 236 (Canes Venatici)



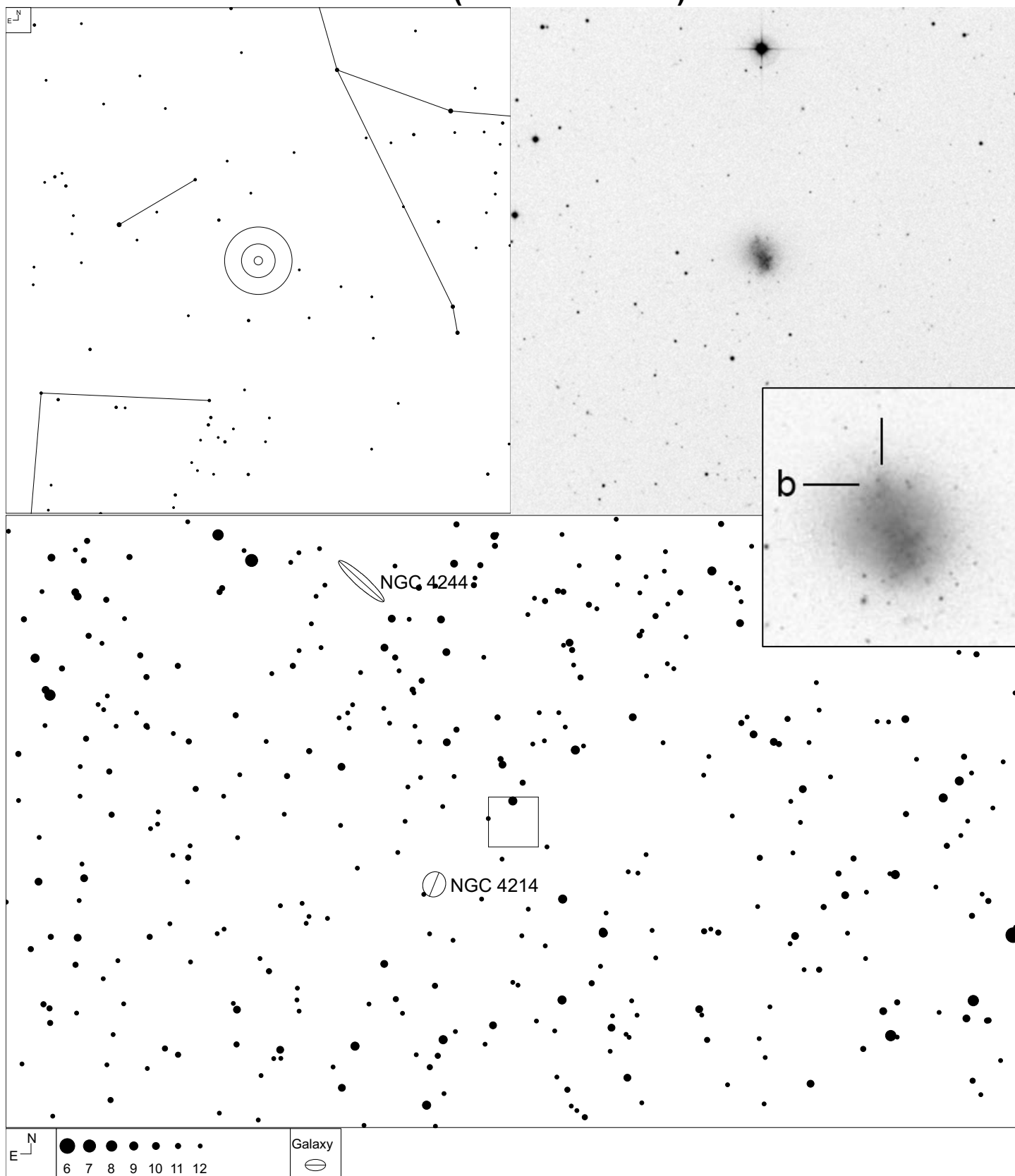
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
236	MCG+06-27-019	12 10 36.7	+34 57 24	G	15.8g	0.8 x 0.6	PK
236a		12 10 36.3	+34 57 18	PofG			
236b		12 10 37.0	+34 57 28	PofG			

VV 345 (Canes Venatici)



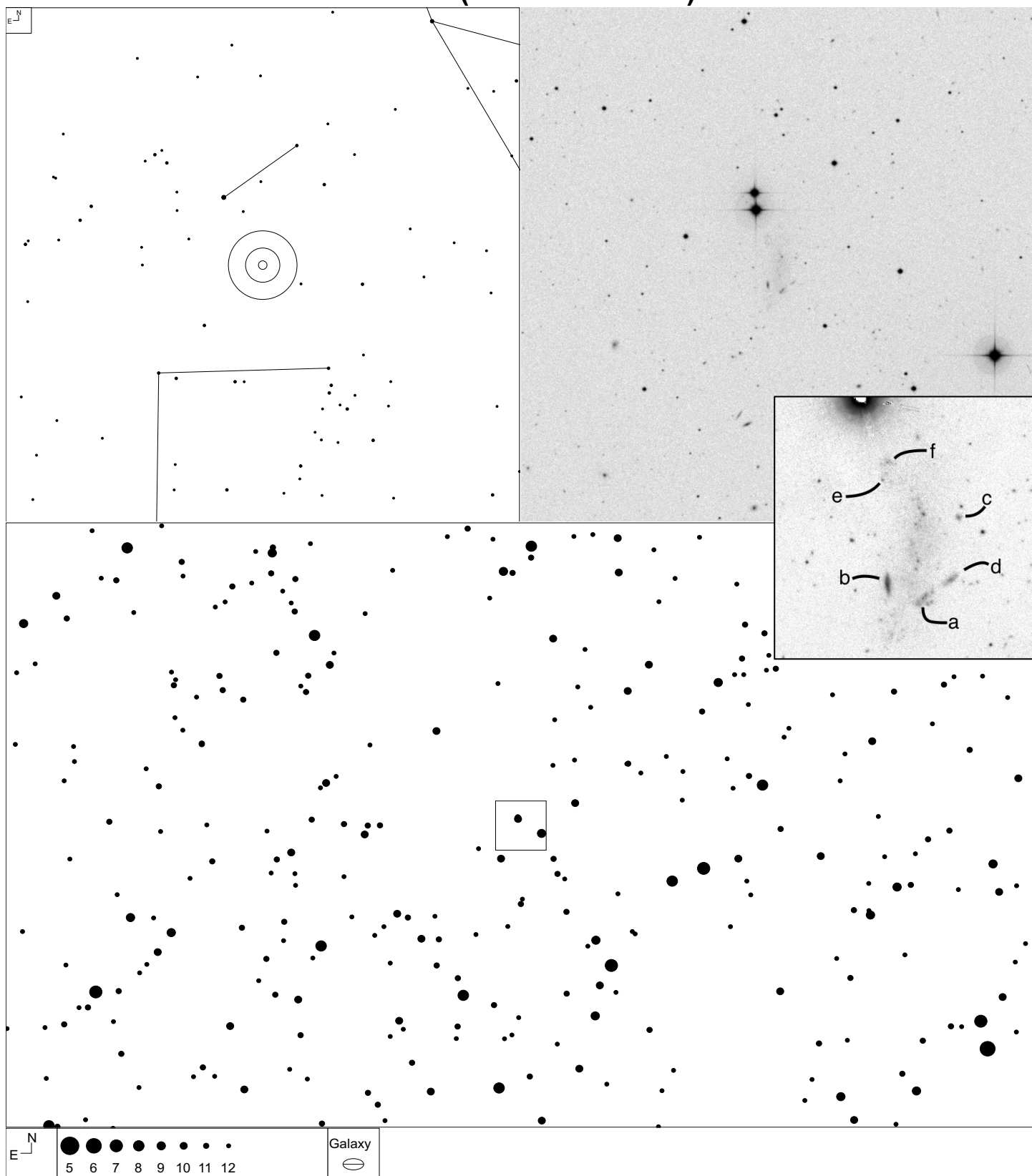
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
345		12 12 39.5	+34 41 48	GPair			PD
345a	MCG+06-27-028	12 12 39.2	+34 42 13	G	15.3g	0.7 x 0.4	
345b	UGC 7212	12 12 39.4	+34 41 25	G	15.6g	1.5 x 0.2	

VV 104 (Canes Venatici)



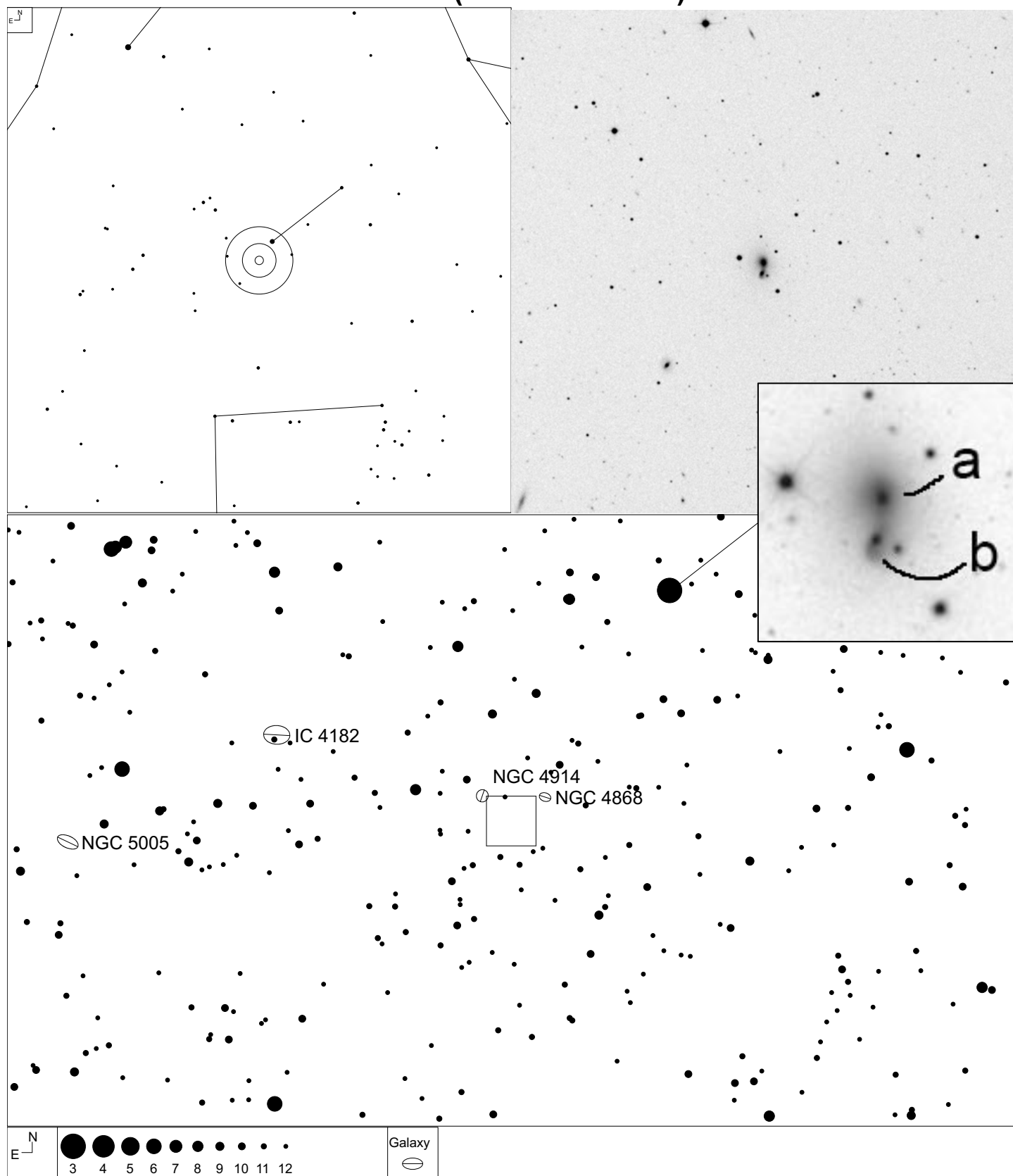
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
104	NGC 4190	12 13 44.8	+36 38 03	G	13.3v	1.5 x 1.2	PC

VV 127 (Canes Venatici)



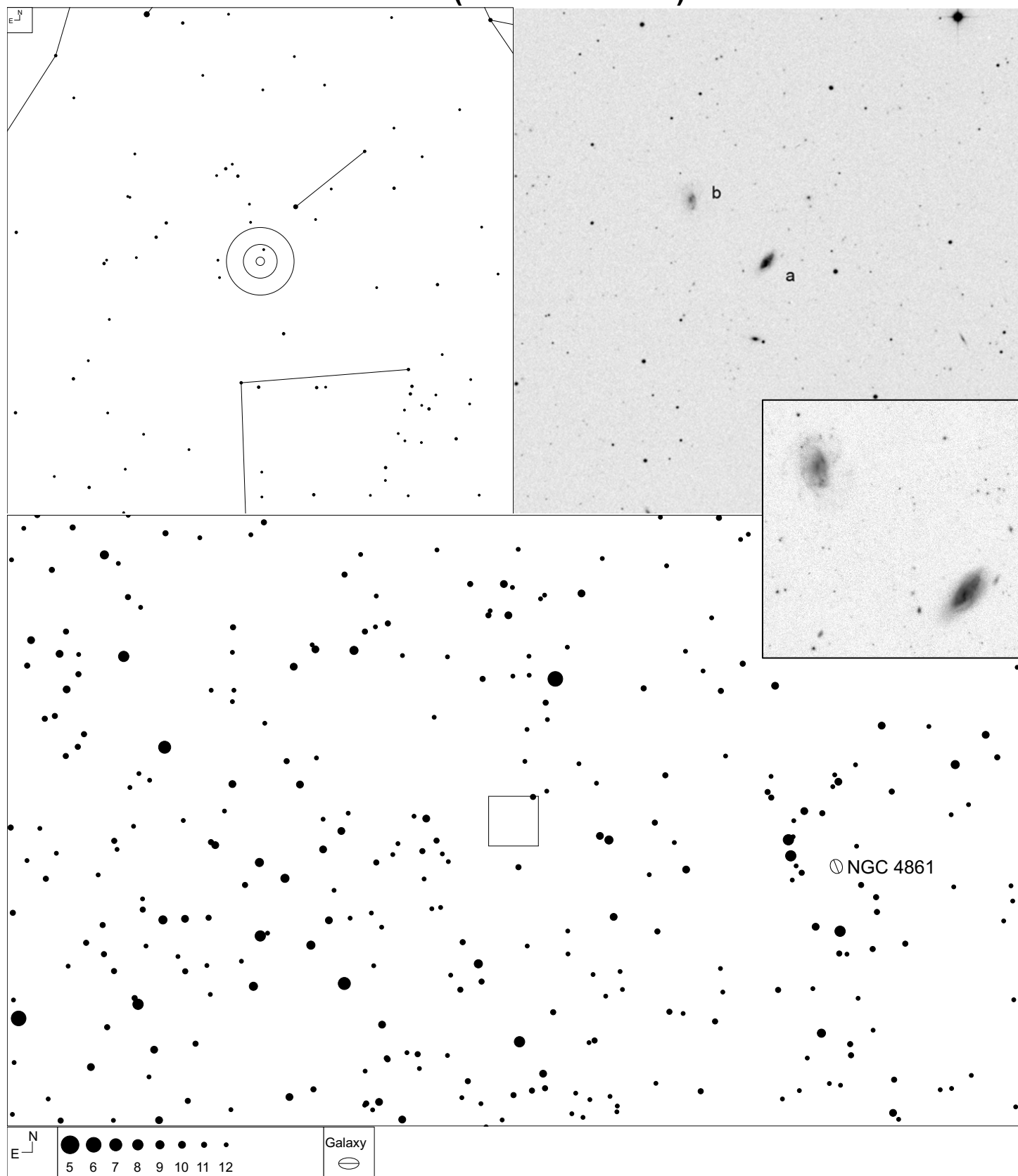
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
127	UGC 7916	12 44 25.1	+34 23 12	G	18.6g	2.4 x 1.6	PD
127b		12 44 26.6	+34 22 47	G	17.7g	0.3 x 0.1	

VV 222 (Canes Venatici)



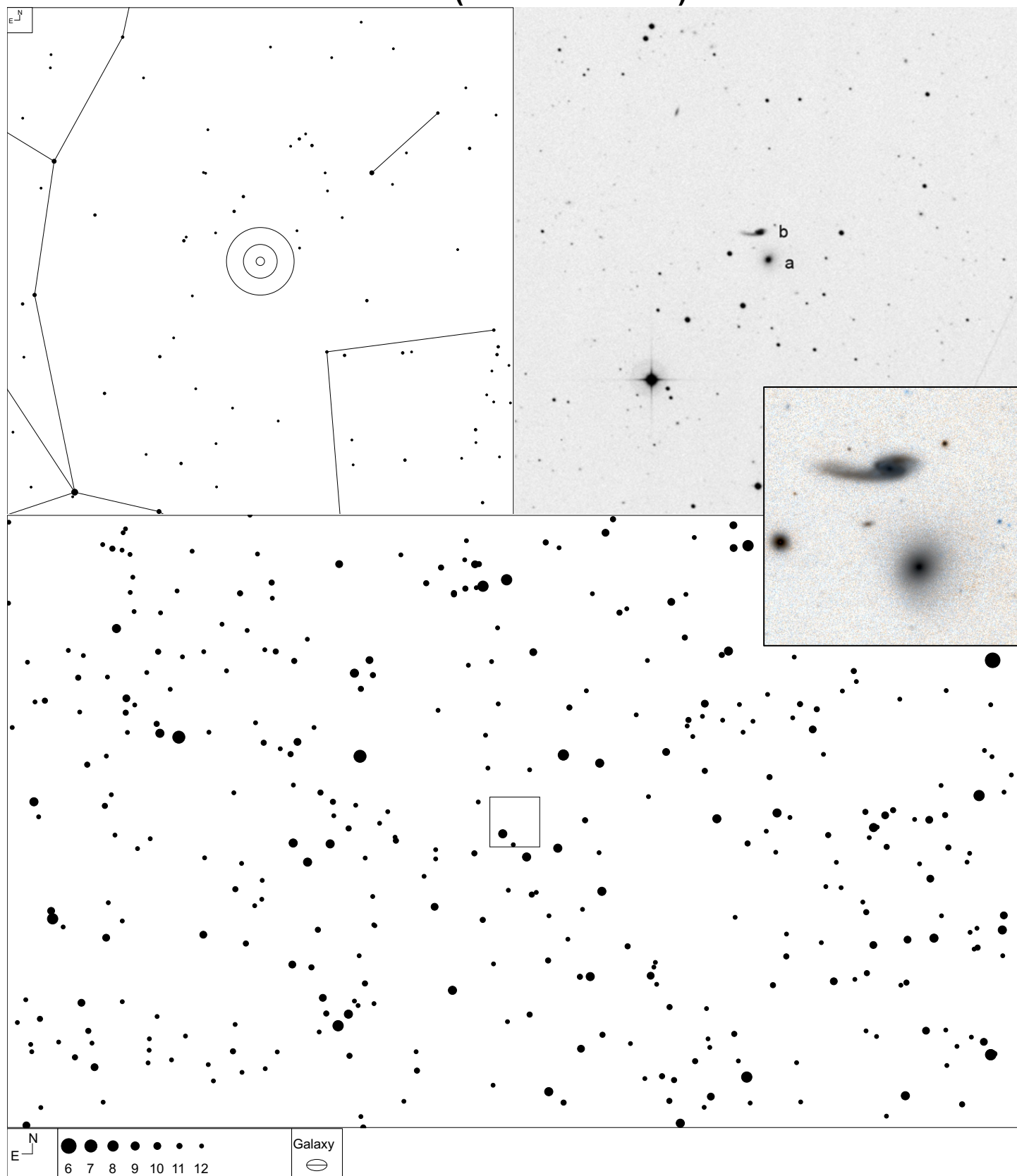
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
222		12 59 59.7	+37 11 26	GPair			PK
222a	NGC 4893	12 59 59.8	+37 11 16	G	14.7g	0.4 x 0.4	
222b	NGC 4893A	12 59 59.6	+37 11 36	G	15.9g	0.5 x 0.5	

VV 292 (Canes Venatici)



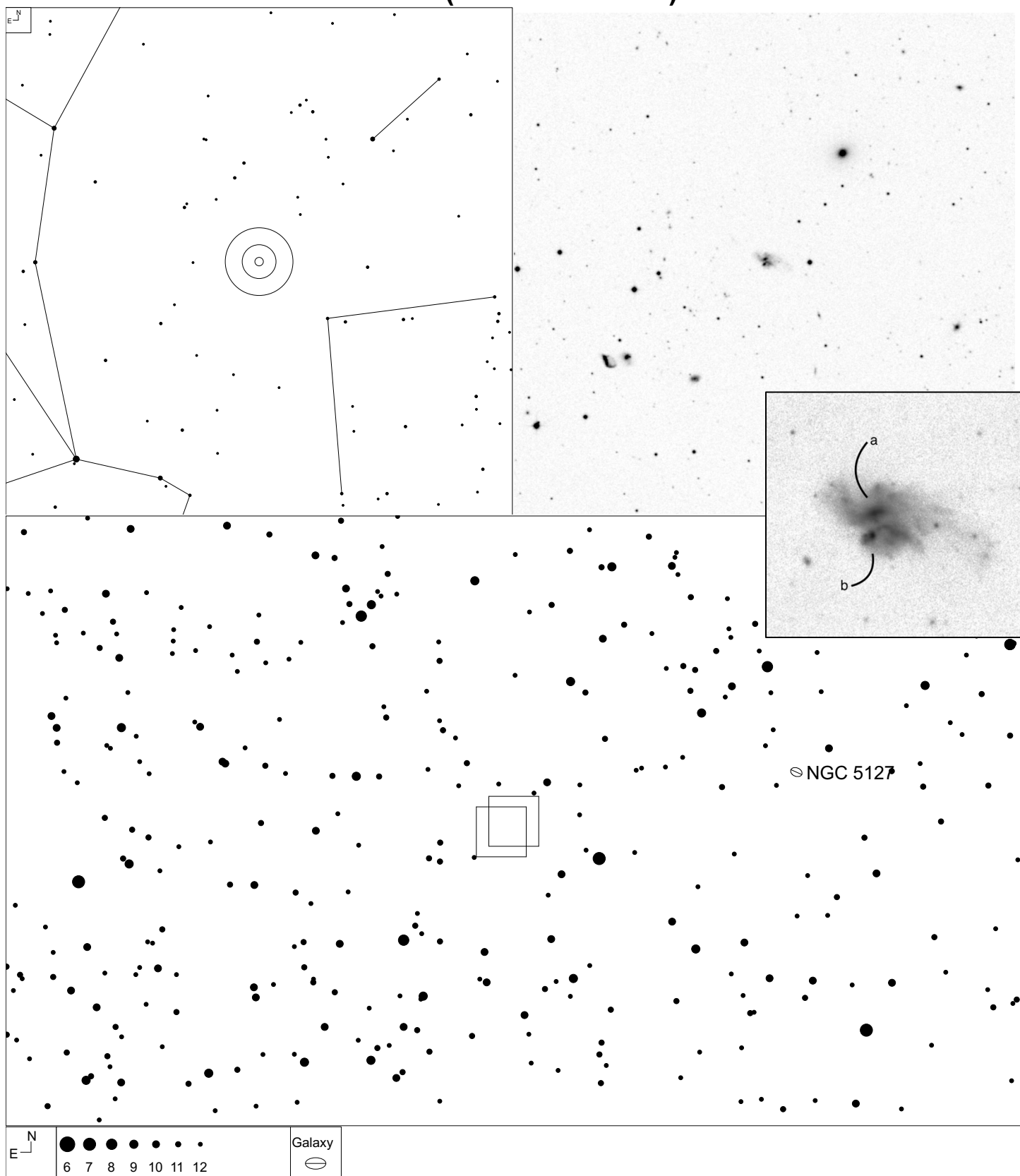
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
292		13 06 50.5	+35 07 00	GPair			PDb
292a	UGC 8199	13 06 45.2	+35 06 02	G	14.6g	1.3 x 0.7	
292b	UGC 8200	13 06 55.9	+35 07 57	G	15.8g	0.9 x 0.5	

VV 325 (Canes Venatici)



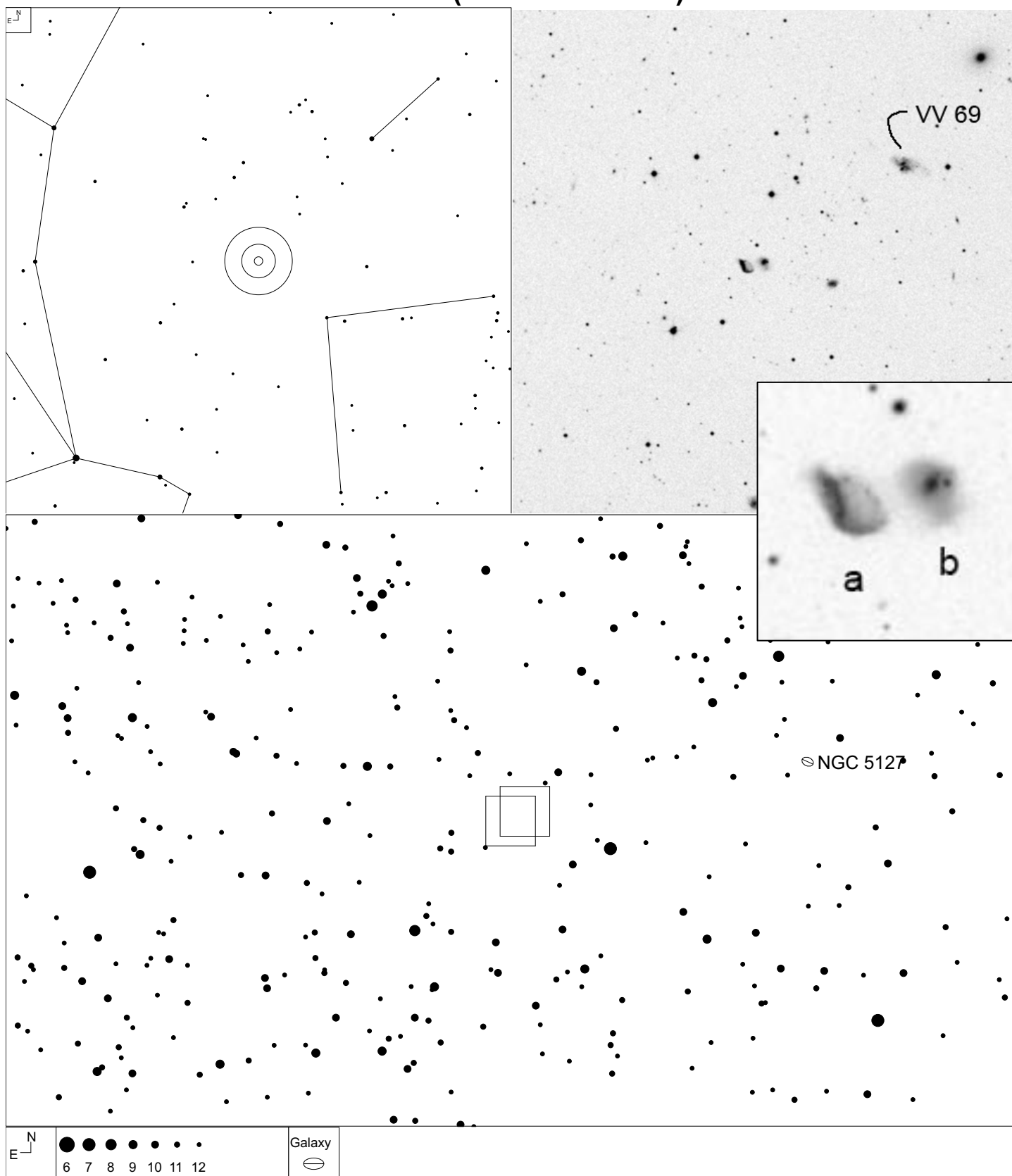
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
325		13 29 45.1	+33 20 45	GPair			PDt
325a	MCG+06-30-019	13 29 44.5	+33 20 21	G	15.1g	0.7 x 0.6	
325b	MCG+06-30-020	13 29 45.7	+33 21 09	G	16.4b	0.7 x 0.2	

VV 69 (Canes Venatici)



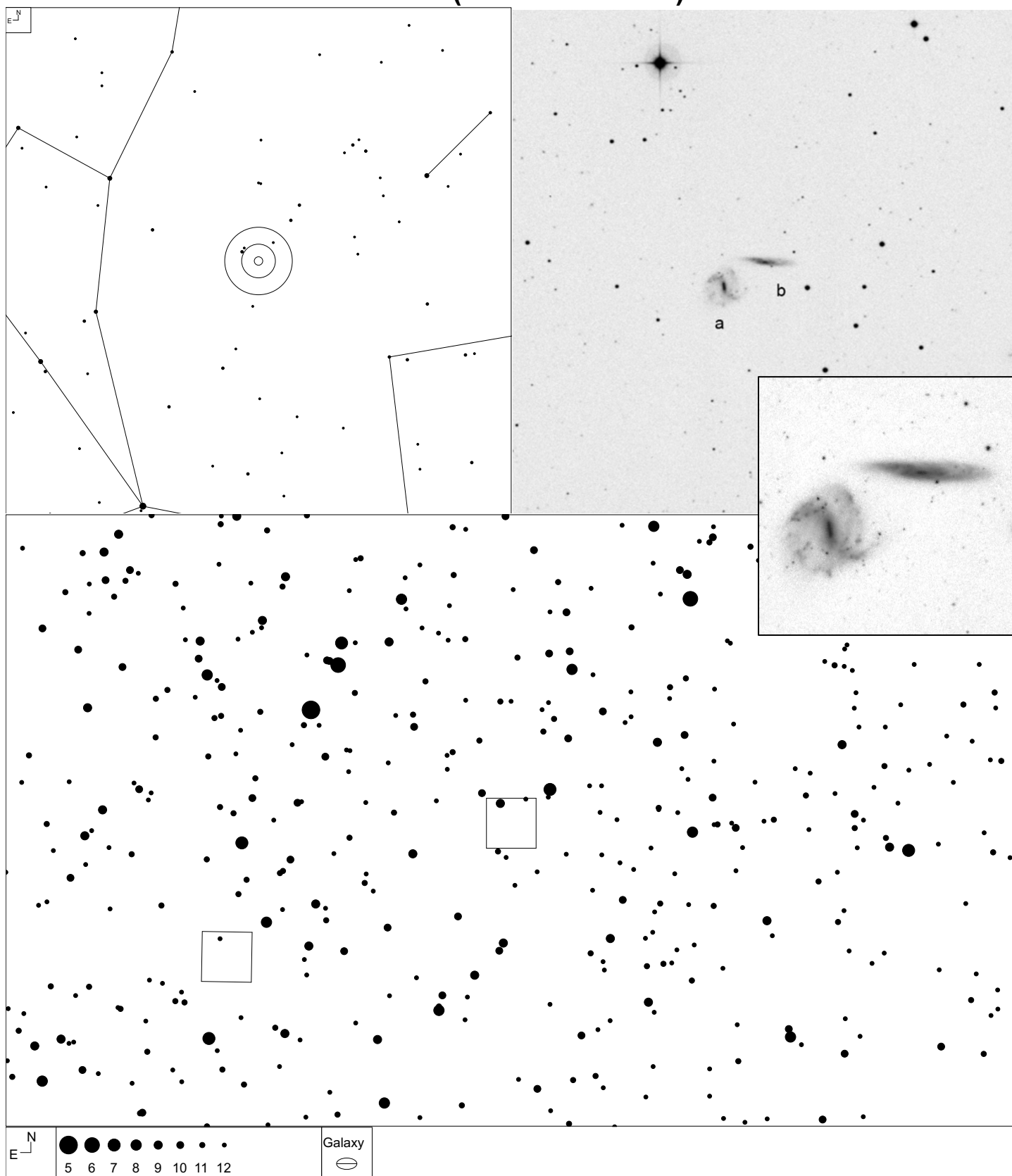
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
69	UGC 8496	13 30 17.3	+31 19 59	GGroup	16.1g	0.5 x 0.3	PC

VV 326 (Canes Venatici)



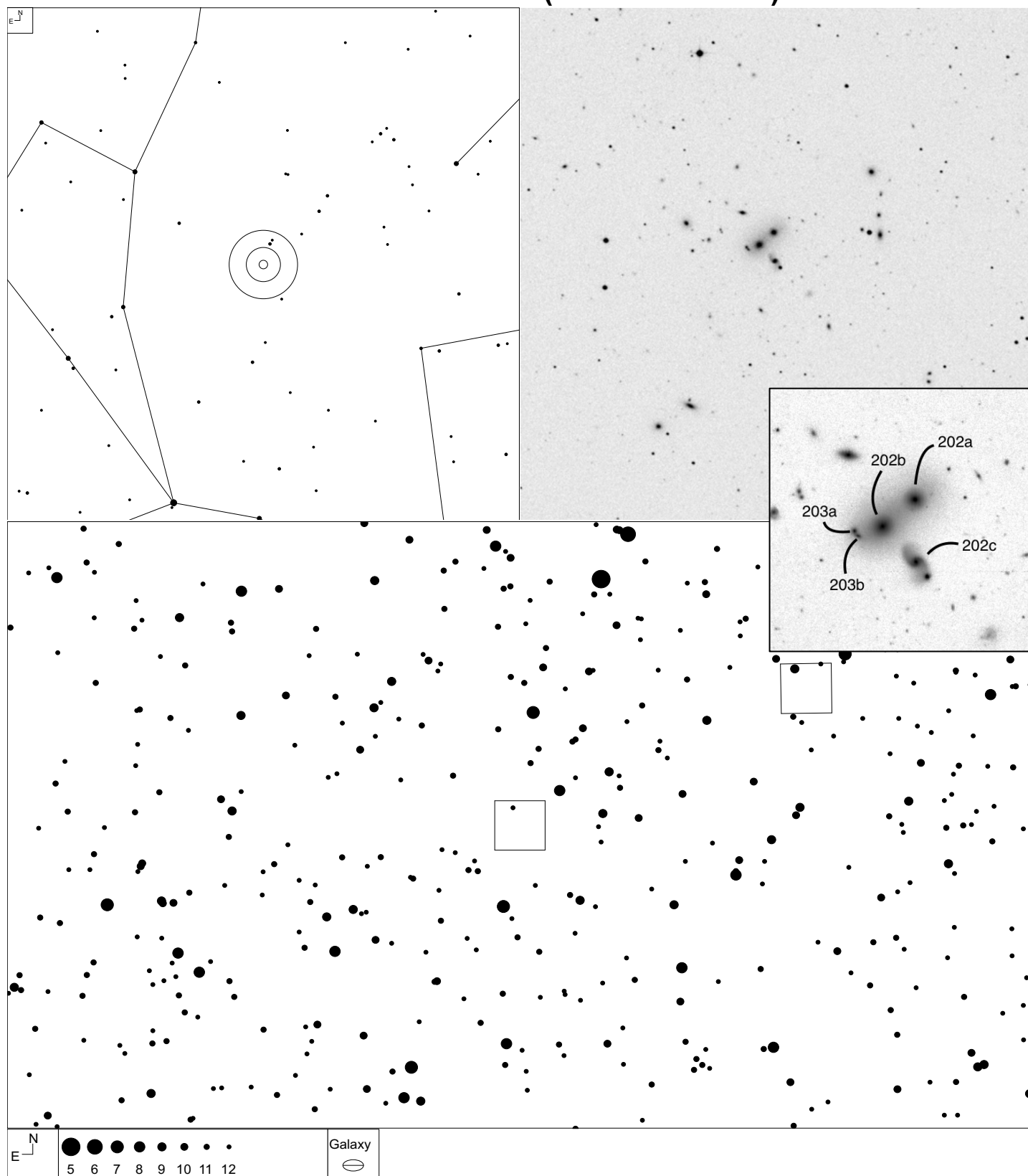
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
326		10 30 38.0	+31 17 07	GPair			PD
326a	MCG+05-32-35	13 30 39.4	+31 17 04	G	15.8g	0.7 x 0.4	
326b	UGC 8502	13 30 36.6	+31 17 10	G	15.9g	0.6 x 0.5	

VV 317 (Canes Venatici)



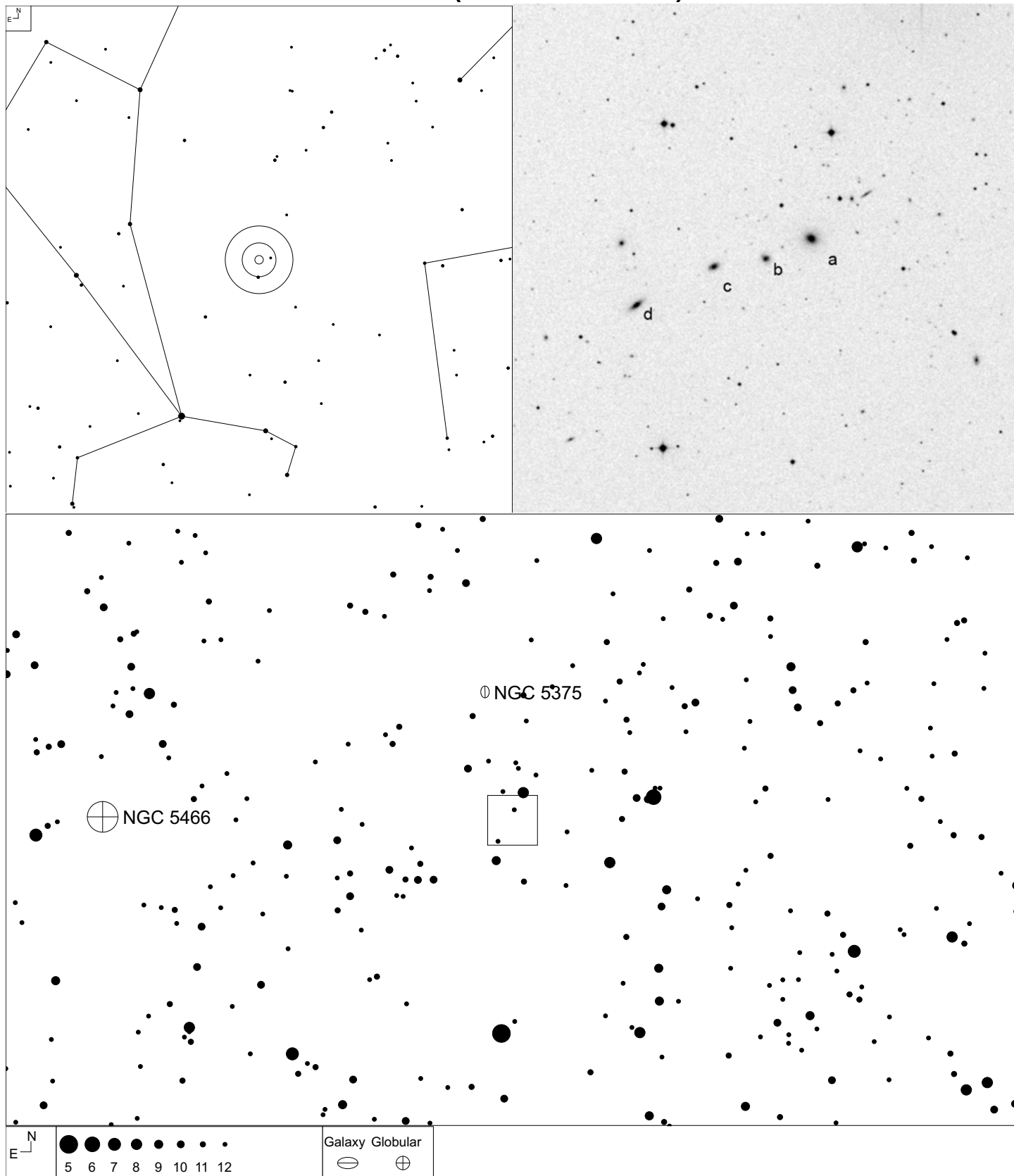
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
317		13 47 04.1	+33 53 14	GPair			PDdf
317a	UGC 8715	13 47 07.0	+33 52 53	G	13.65v	1.3 x 1.1	
317b	UGC 8713	13 47 01.2	+33 53 37	G	14.26v	1.8 x 1.4	

VV 202 and VV 203 (Canes Venatici)



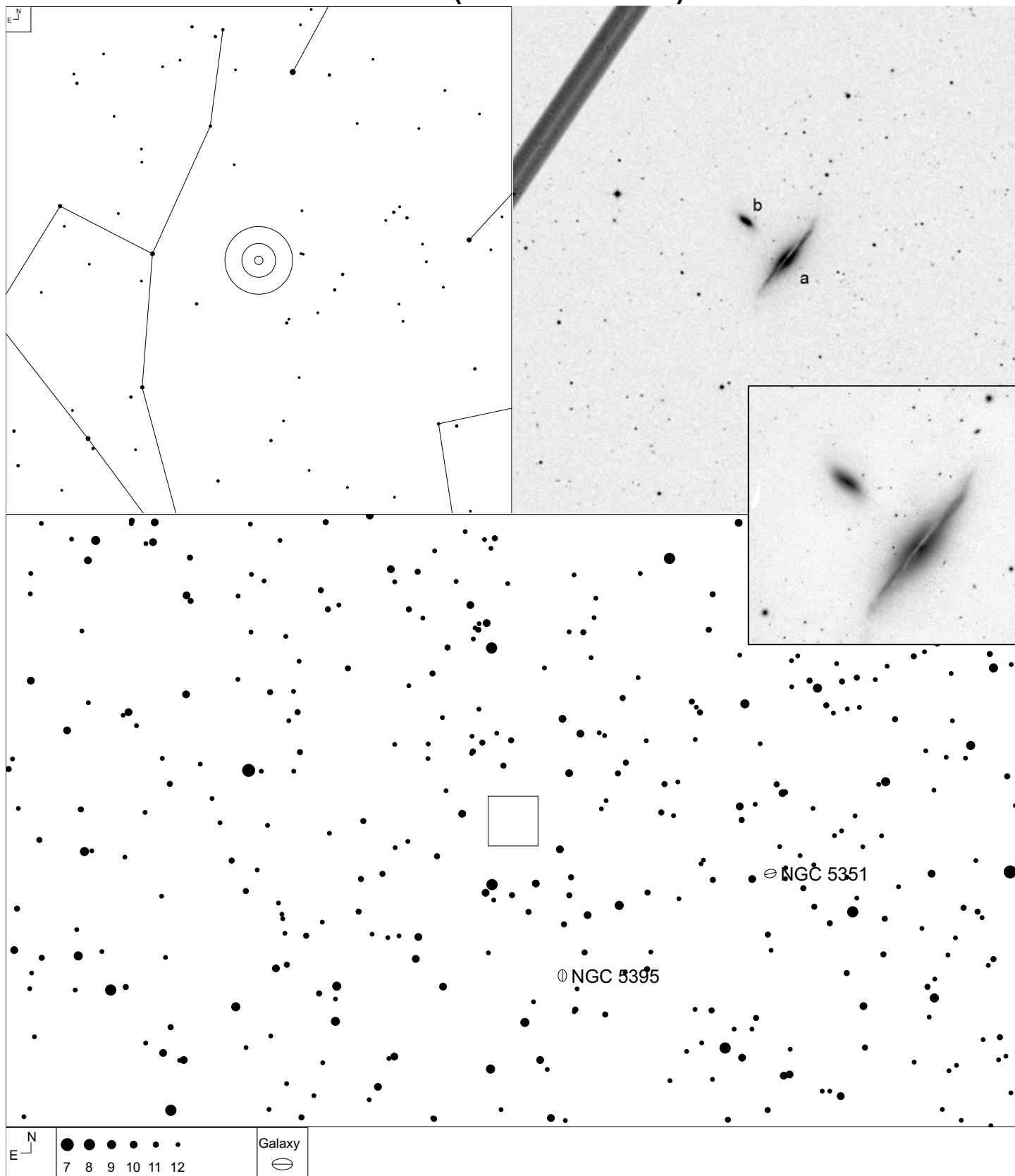
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
202		13 53 52.3	+33 11 32	GPair			NN
202a	UGC 8817	13 53 41.7	+33 13 41	G	15.2g	0.3 x 0.3	
202b	MCG+06-31-005	13 53 43.8	+33 13 20	G	14.7g	0.4 x 0.4	
202c	MCG+06-31-013	13 53 41.4	+33 12 45	G	15.8g	0.5 x 0.3	
203	MCG+06-31-016	13 53 45.5	+33 13 15	GPair	18b		PK
203a		13 53 45.6	+33 13 18	G	18	0.1	
203b		13 53 45.4	+33 13 12	G	18	0.1	

VV 158 (Canes Venatici)



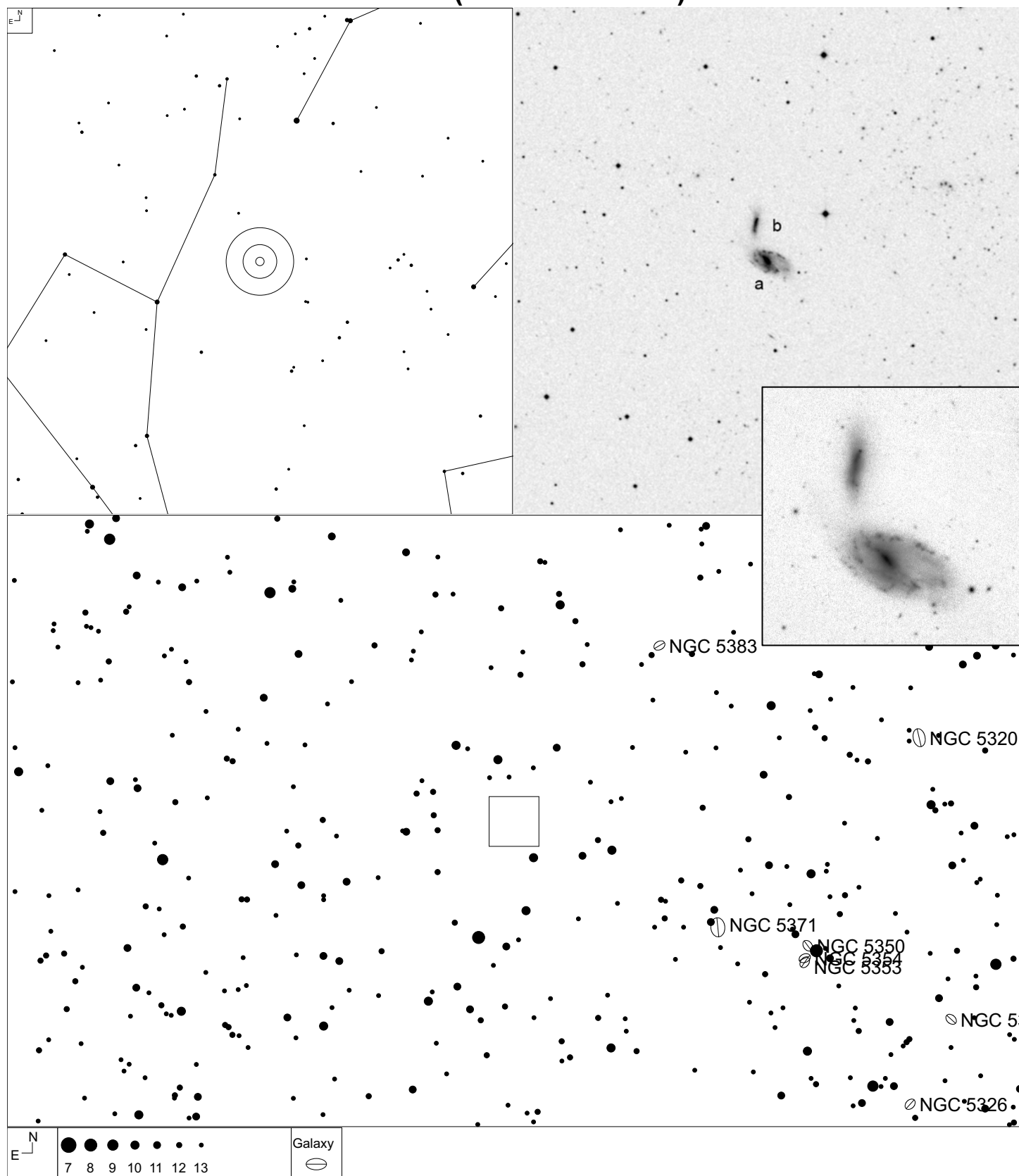
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
158		13 56 20.7	+28 31 22	GGroup			Ch
158a	MCG+05-33-024	13 56 19.2	+28 32 11	G	14.8g	0.4 x 0.3	
158b	MCG+05-33-024A	13 56 25.3	+28 31 35	G	15.9g	0.3 x 0.3	
158c	MCG+05-33-025	13 56 32.2	+28 31 20	G	15.8g	0.4 x 0.3	
158d	MCG+05-33-026	13 56 42.6	+28 30 10	G	15.3g	0.7 x 0.2	

VV 310 (Canes Venatici)



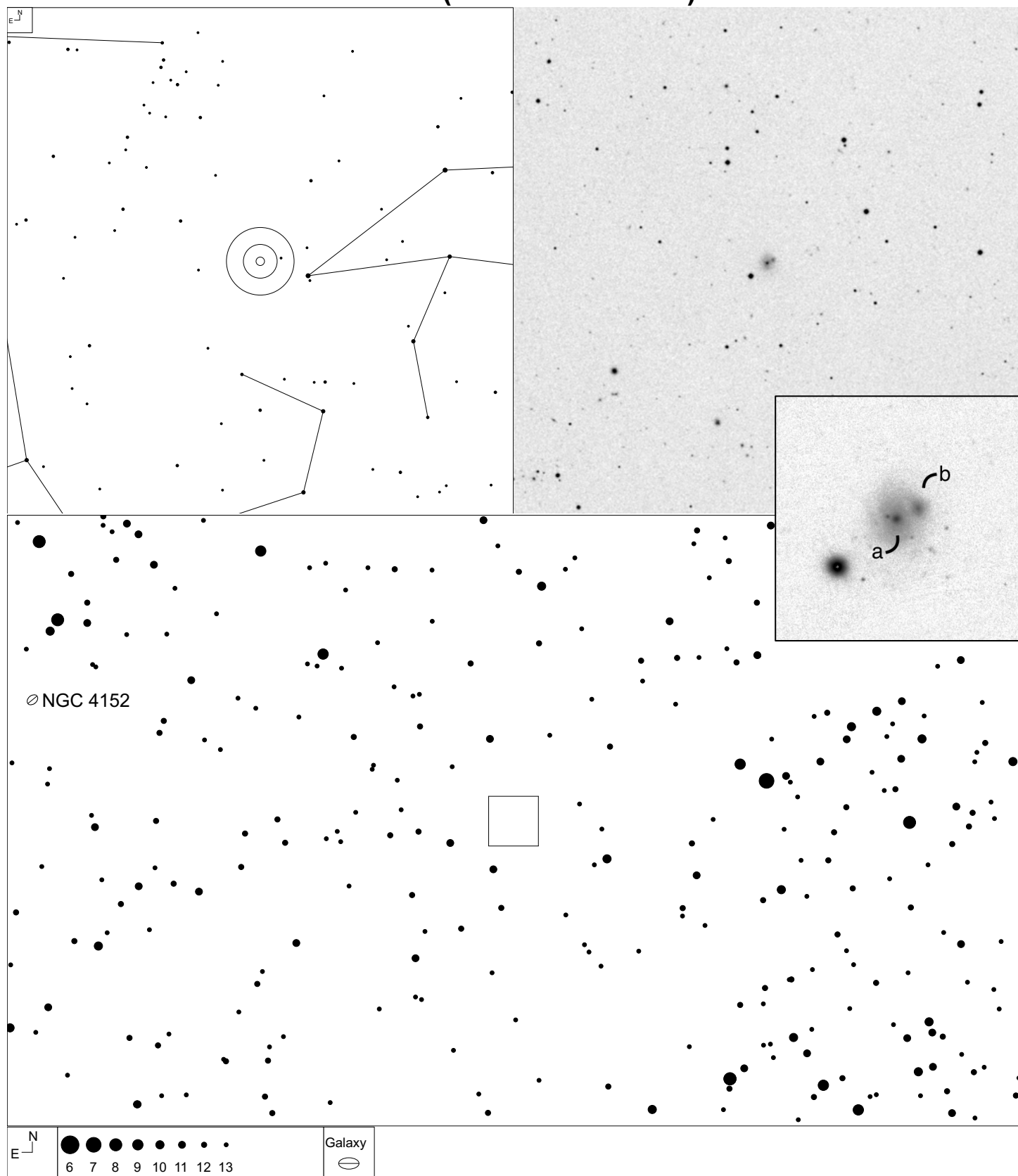
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
310		13 59 54.0	+38 11 30	GPair			PD
310a	NGC 5403	13 59 50.9	+38 10 55	G	13.4g	3.4 x 0.6	
310b	MCG+06-31-042	13 59 57.1	+38 12 02	G	14.8g	0.8 x 0.4	

VV 256 (Canes Venatici)



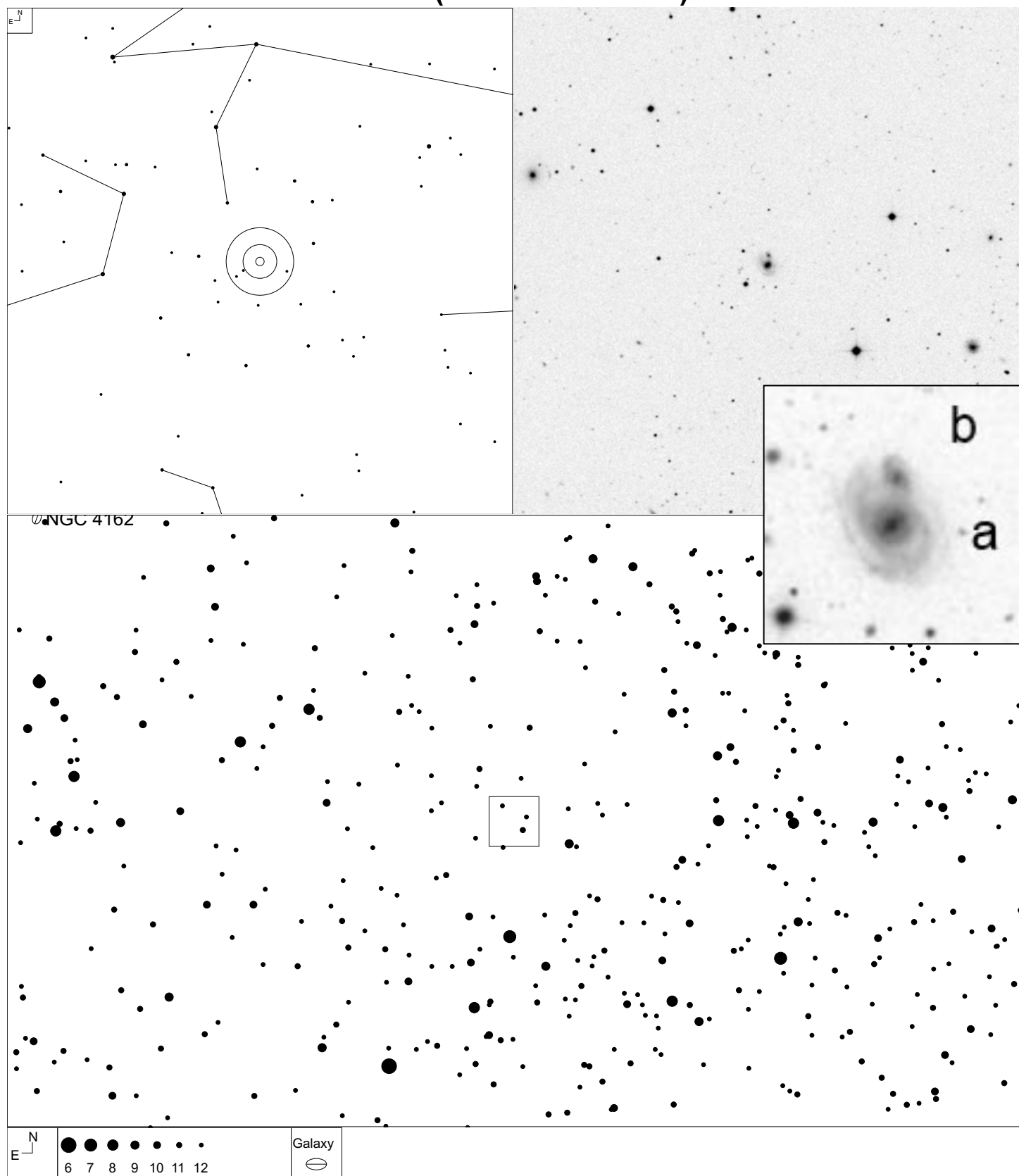
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
256		14 00 55.4	+40 59 49	GPair			PKdf
256a	NGC 5410	14 00 54.5	+40 59 17	G	14.0g	1.5 x 0.8	
256b	UGC 8932	14 00 56.4	+41 00 21	G	15.6g	0.8 x 0.3	

VV 185 (Coma Berenices)



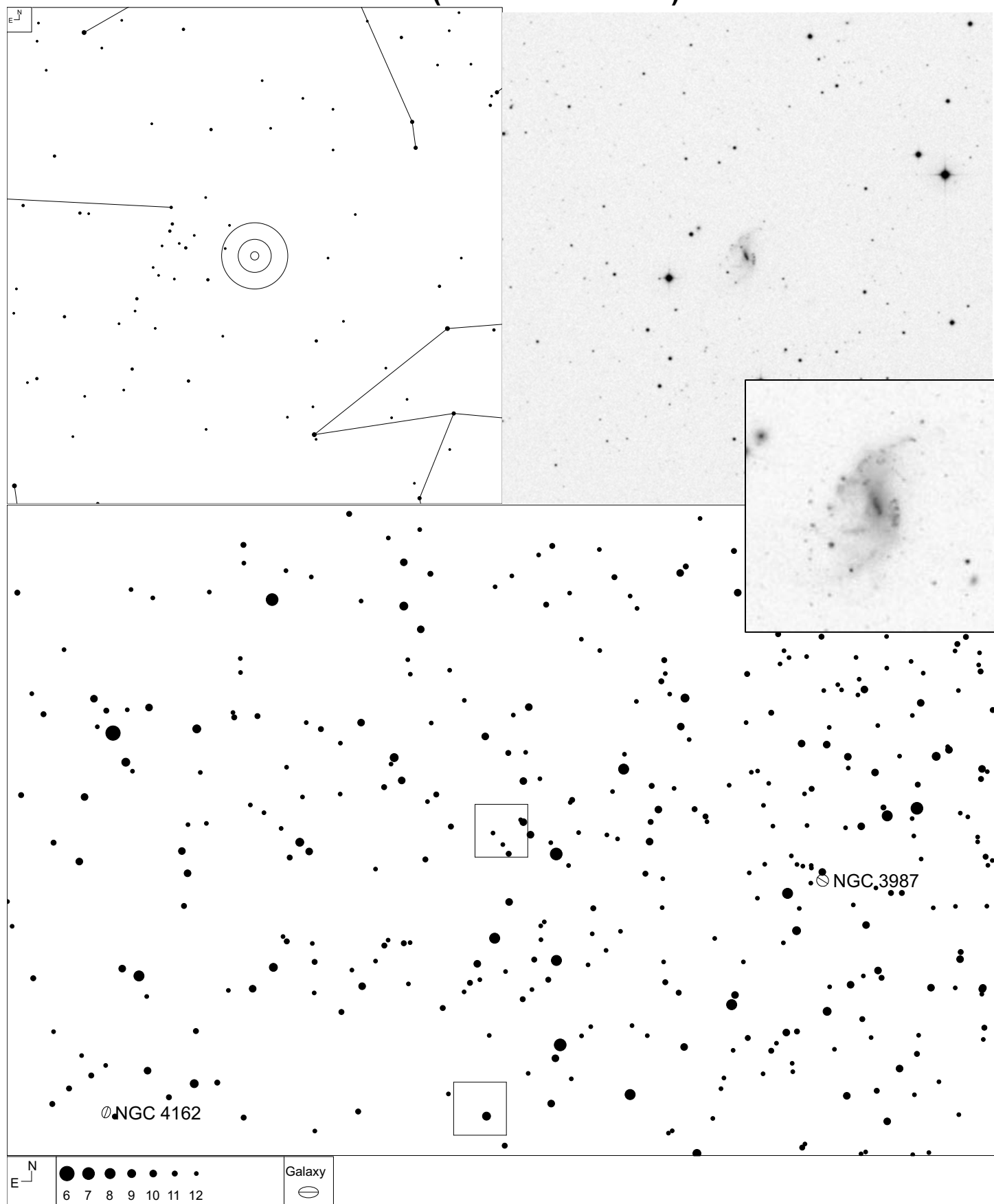
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
185	MCG+03-31-012	12 00 49.0	+15 27 07	GPair	15.6g	0.7 x 0.6	PK

VV 45 (Coma Berenices)



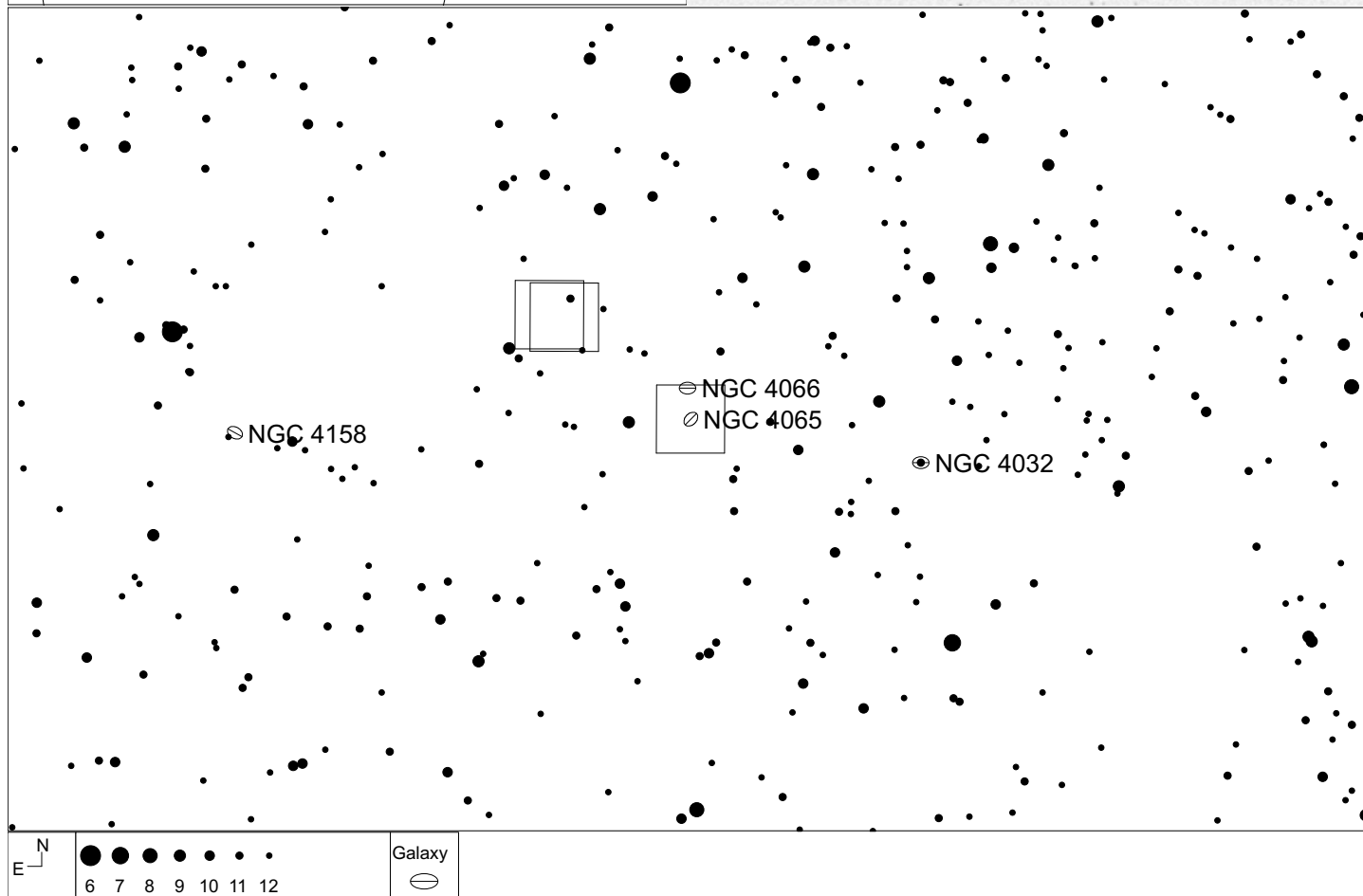
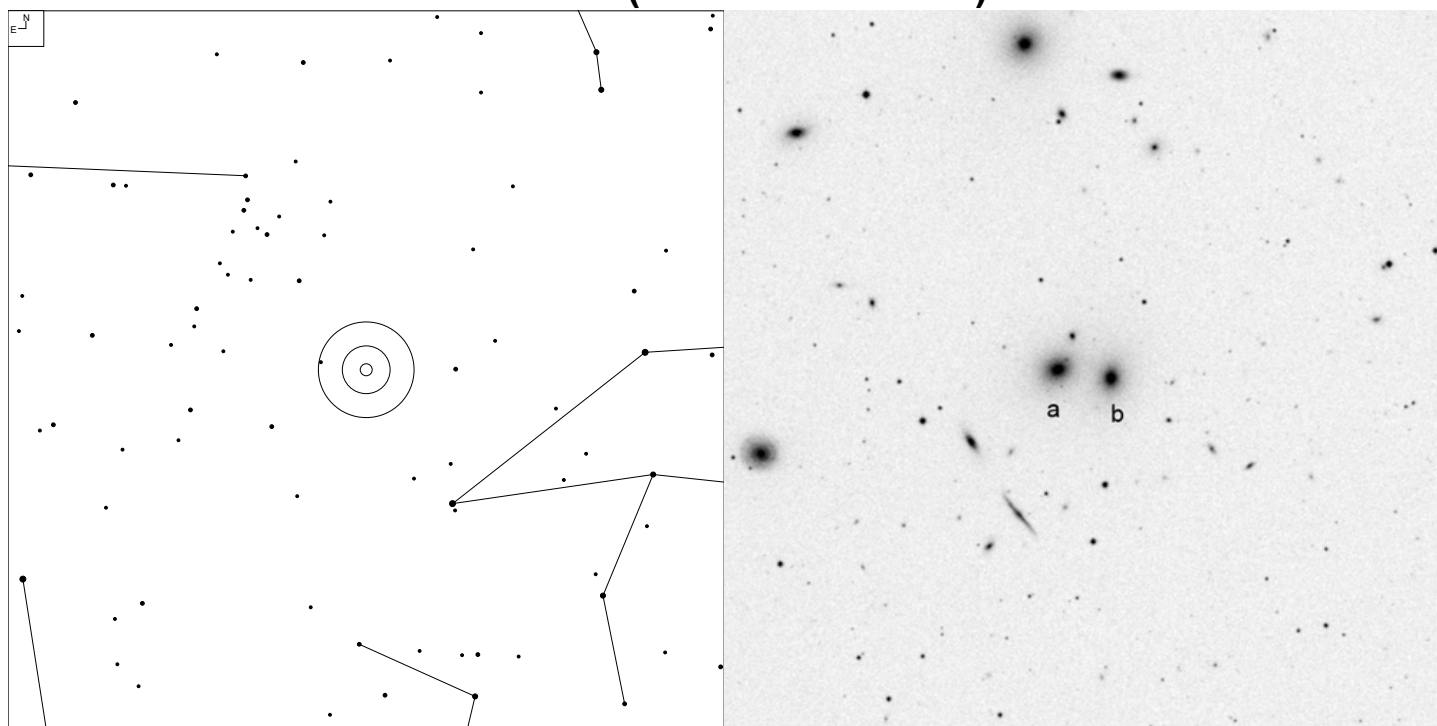
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
45	MCG+04-28-121	12 01 38.7	+22 39 41	GPair	15.4g	0.6 x 0.4	PDb

VV 276 (Coma Berenices)



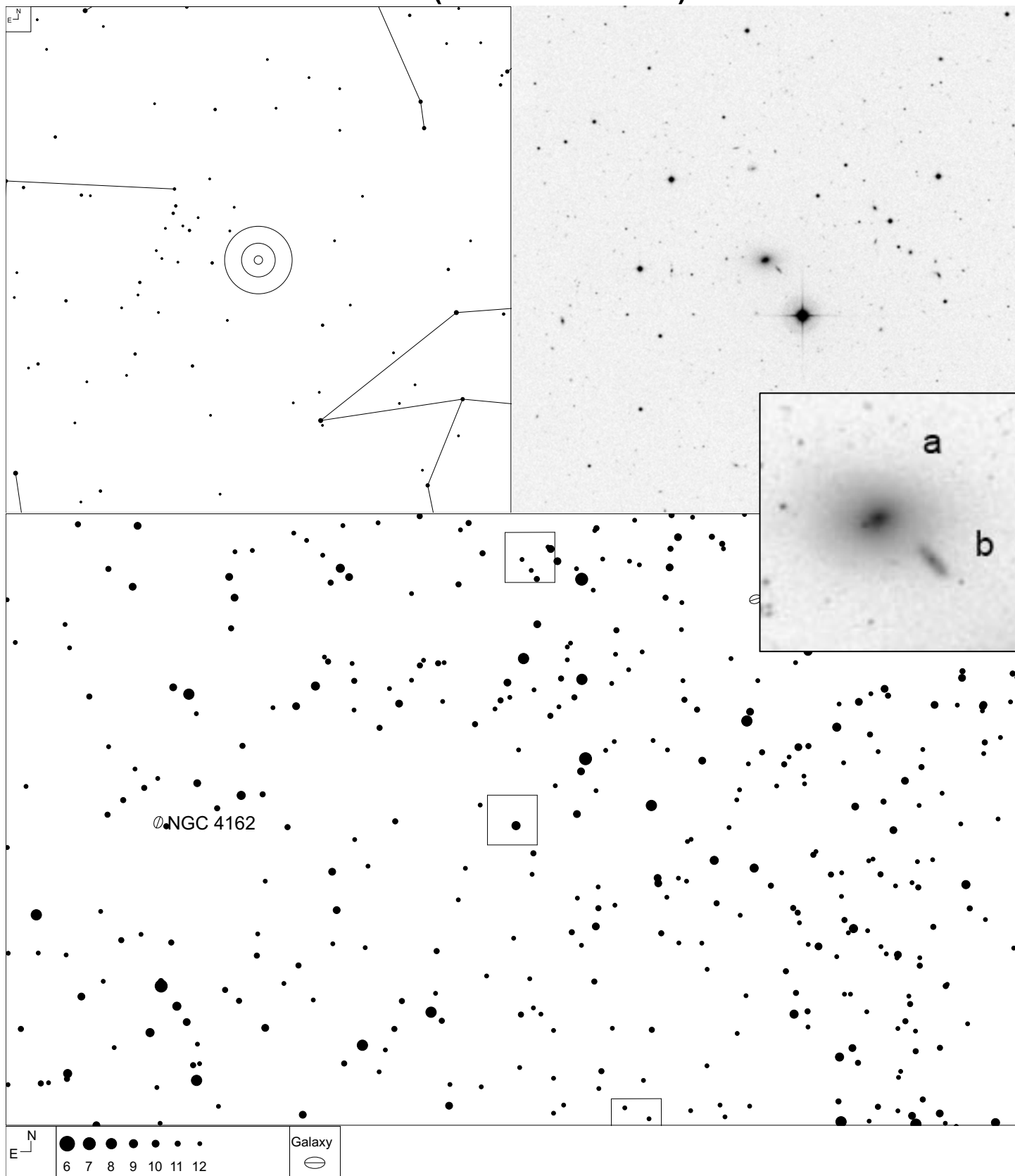
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
276	UGC 7040	12 03 53.5	+25 25 57	G	14.6g	1.9 x 1.1	PK

VV 179 (Coma Berenices)



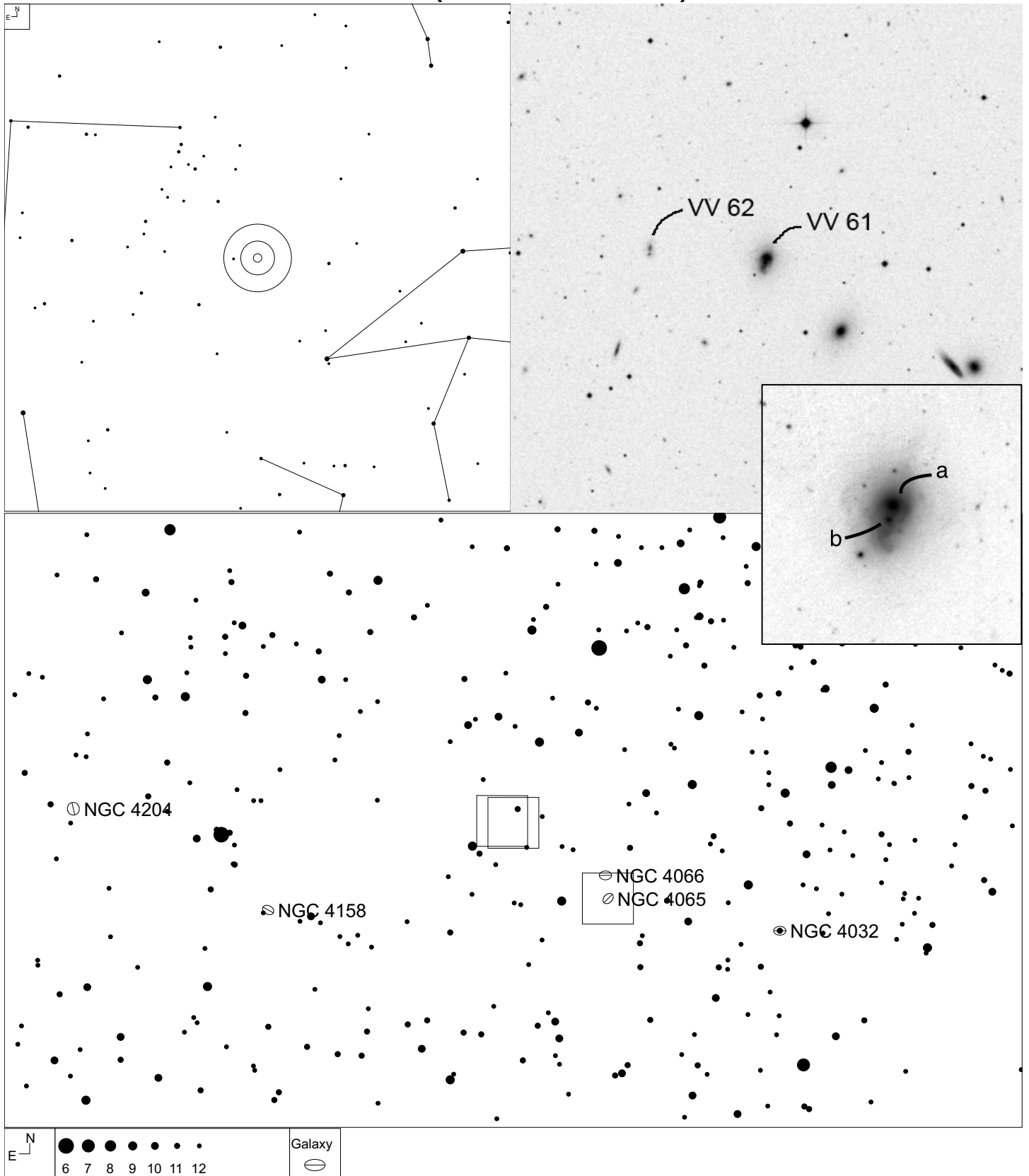
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
179		12 04 03.8	+20 14 01	GPair			PD
179a	NGC 4065	12 04 06.2	+20 14 06	G	13.3g	1.1 x 1.0	
179b	NGC 4055 = NGC 4061	12 04 01.5	+20 13 56	G	13.5g	1.2 x 0.9	

VV 46 (Coma Berenices)



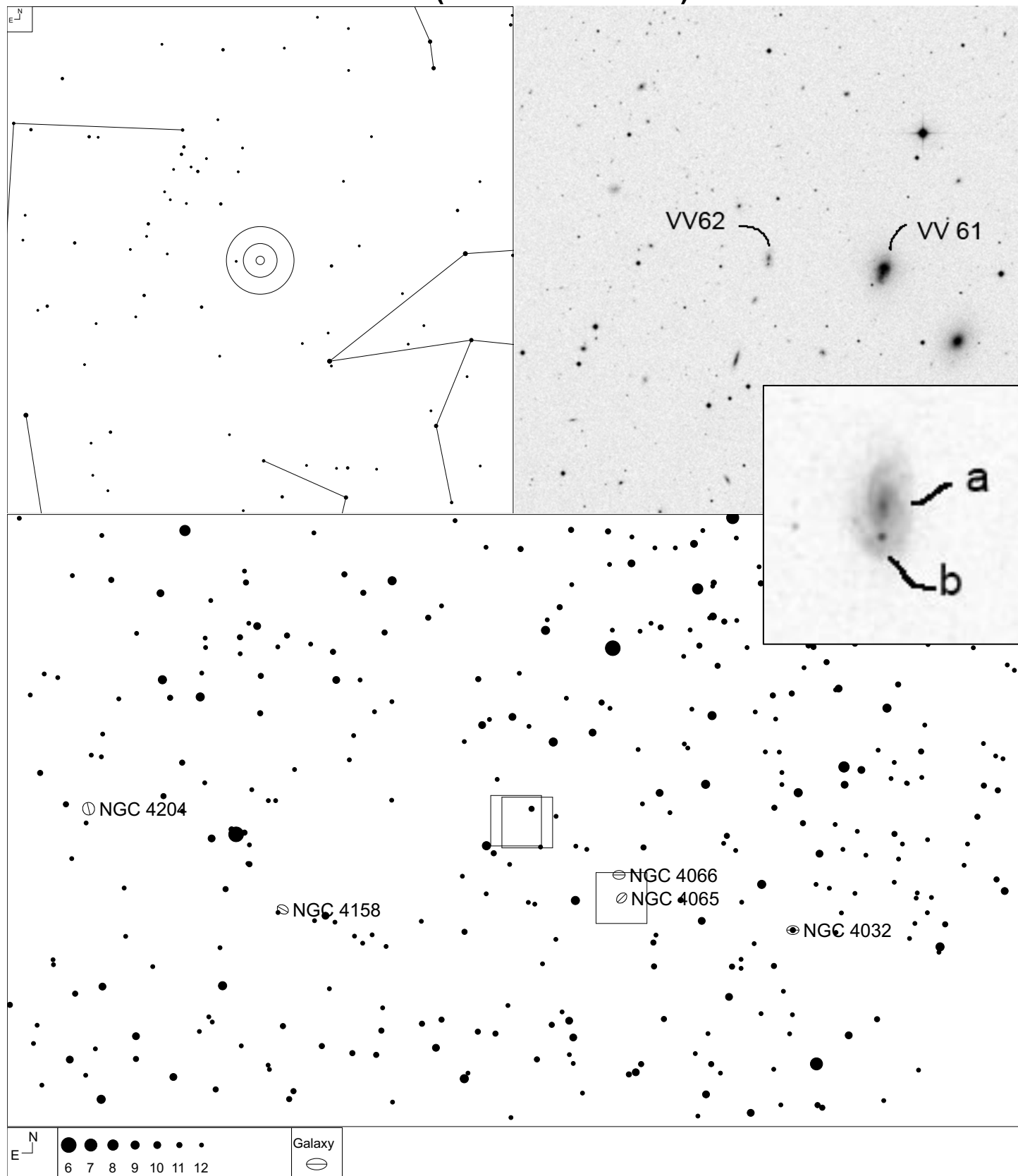
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
46		12 04 15.9	+24 08 40	GPair			PDb
46a	UGC 7055	12 04 16.8	+24 08 49	G	14.7g	1.0 x 0.8	
46b		12 04 15.1	+24 08 32	G	17.6g	0.4 x 0.2	

VV 61 (Coma Berenices)



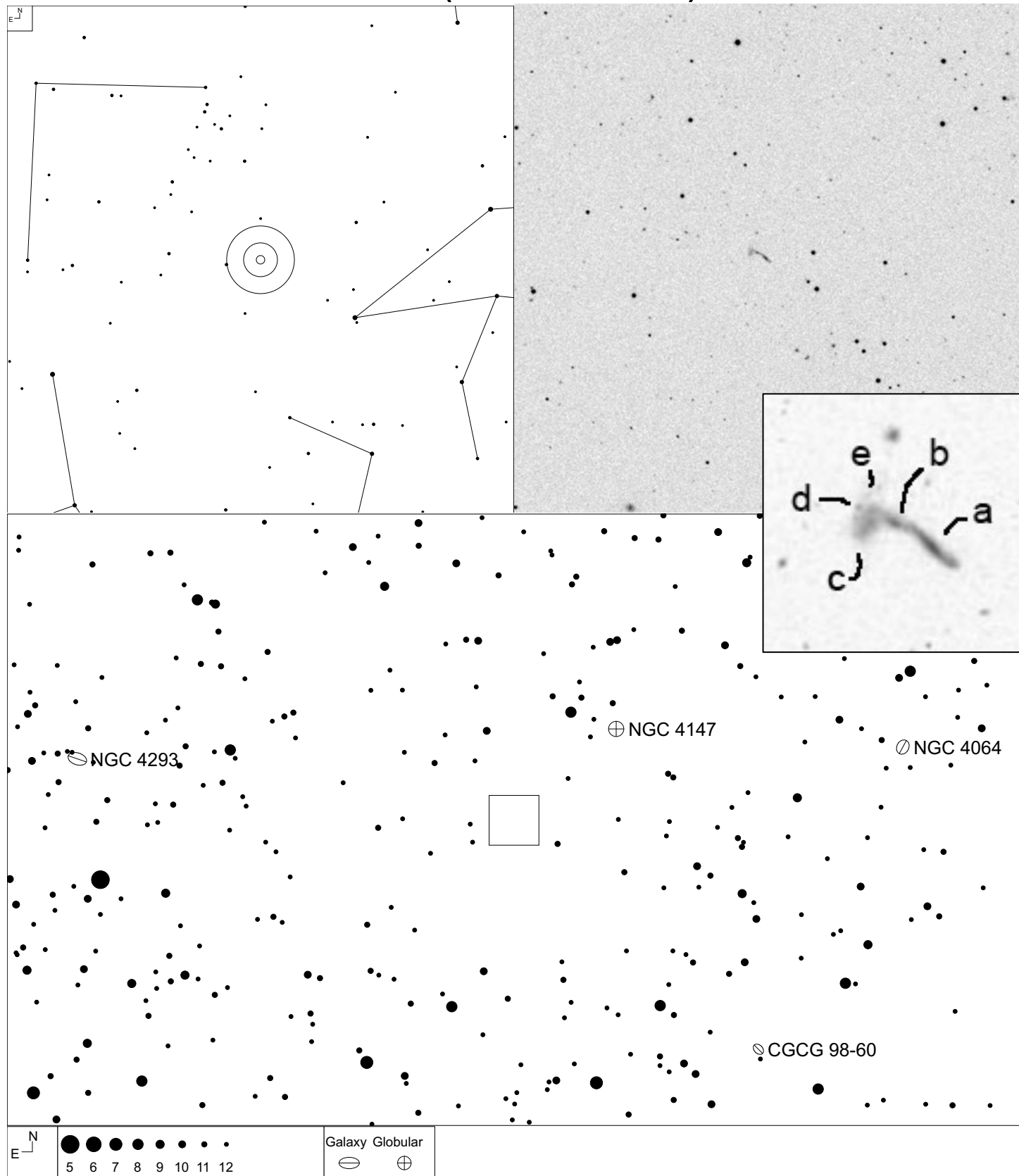
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
61	NGC 4098	12 06 03.9	+20 36 22	GPair	13.7g	1.3 x 1.8	PK

VV 62 (Coma Berenices)



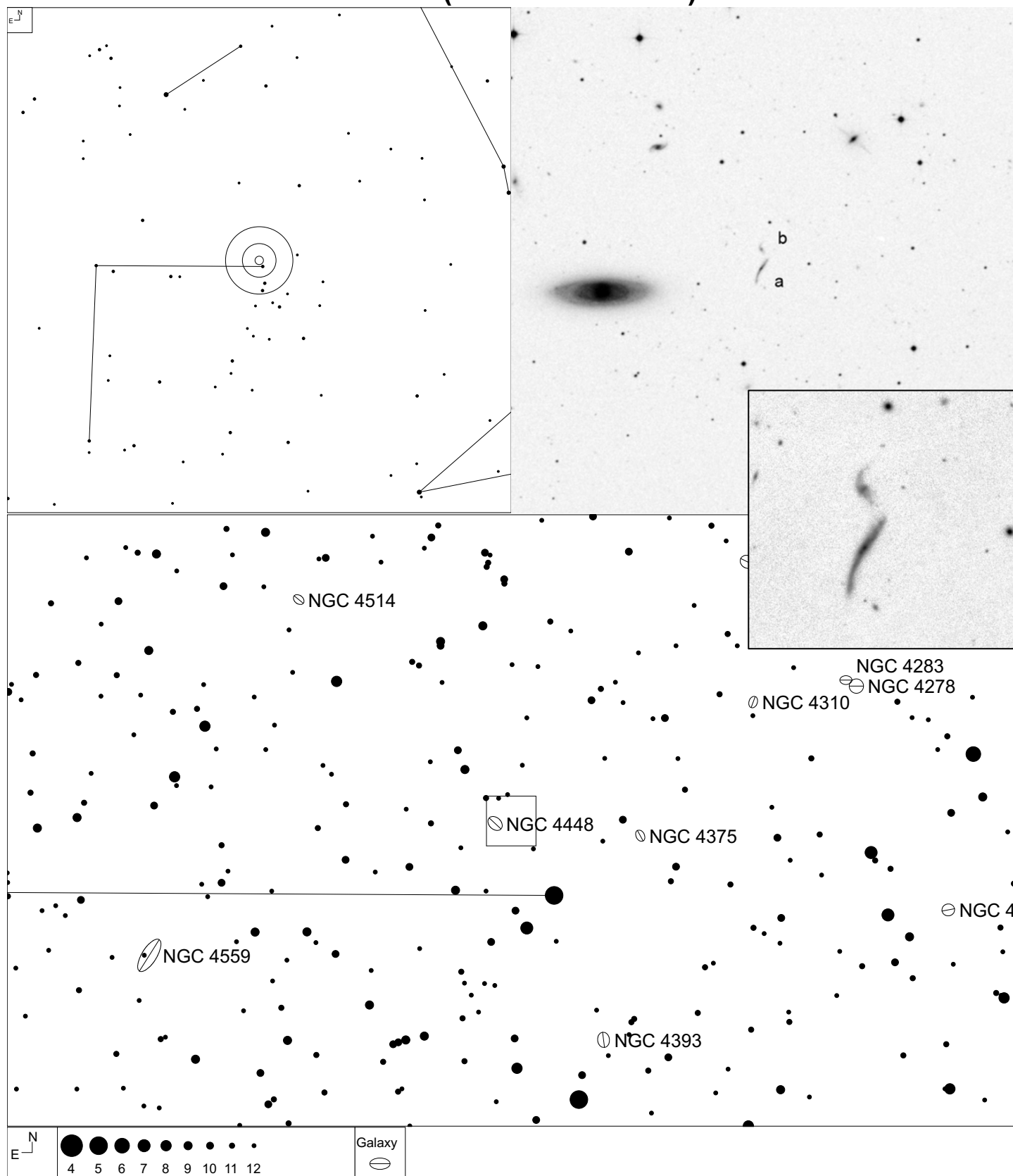
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
62	MCG+04-29-024	12 06 18.3	+20 36 40	GPair	16.8g	0.3 x 0.3	PDb

VV 147 (Coma Berenices)



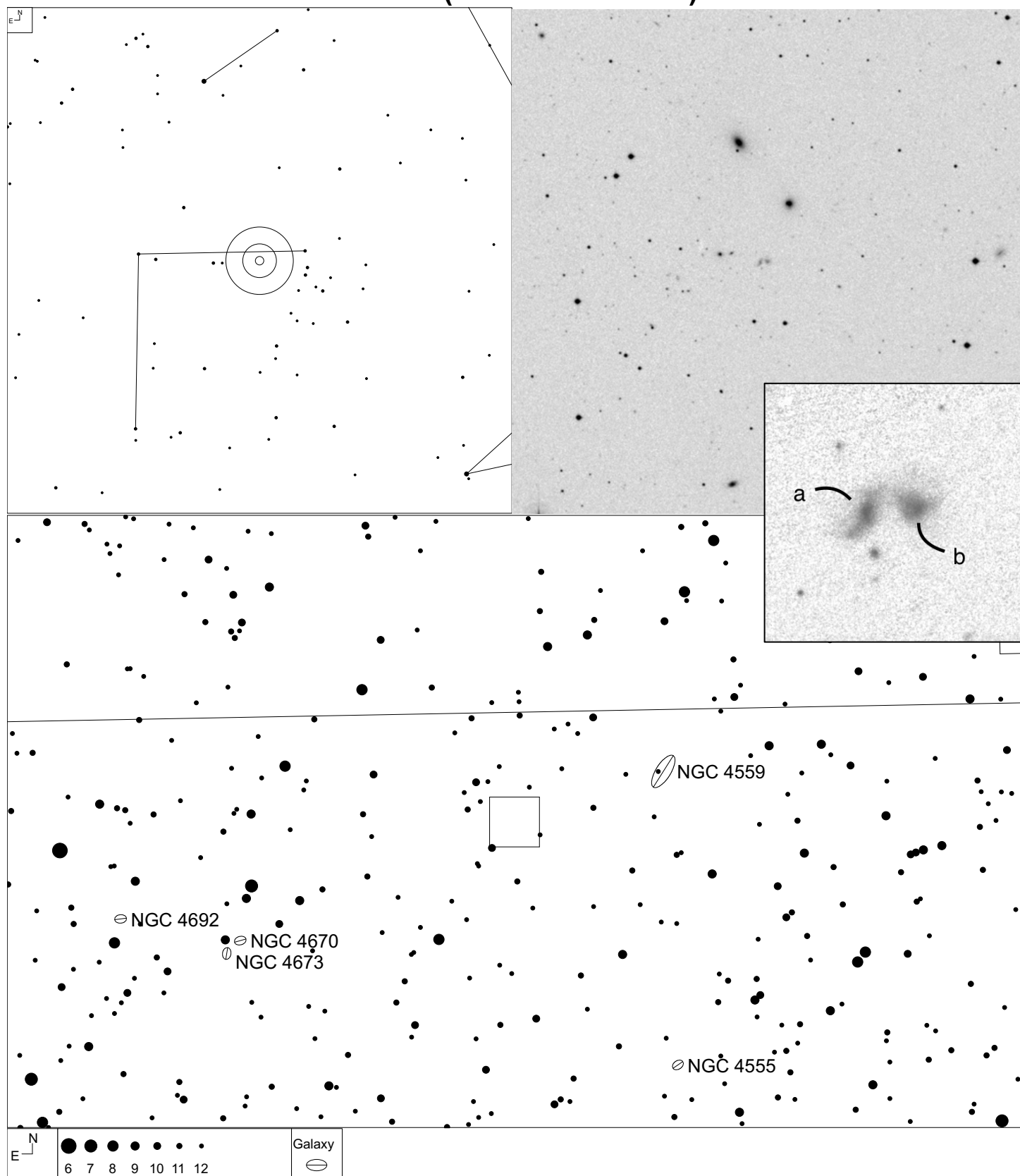
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
147	MCG+03-31-069	12 12 11.6	+18 05 37	GGroup	17.0g	0.8 x 0.1	Ch

VV 279 (Coma Berenices)



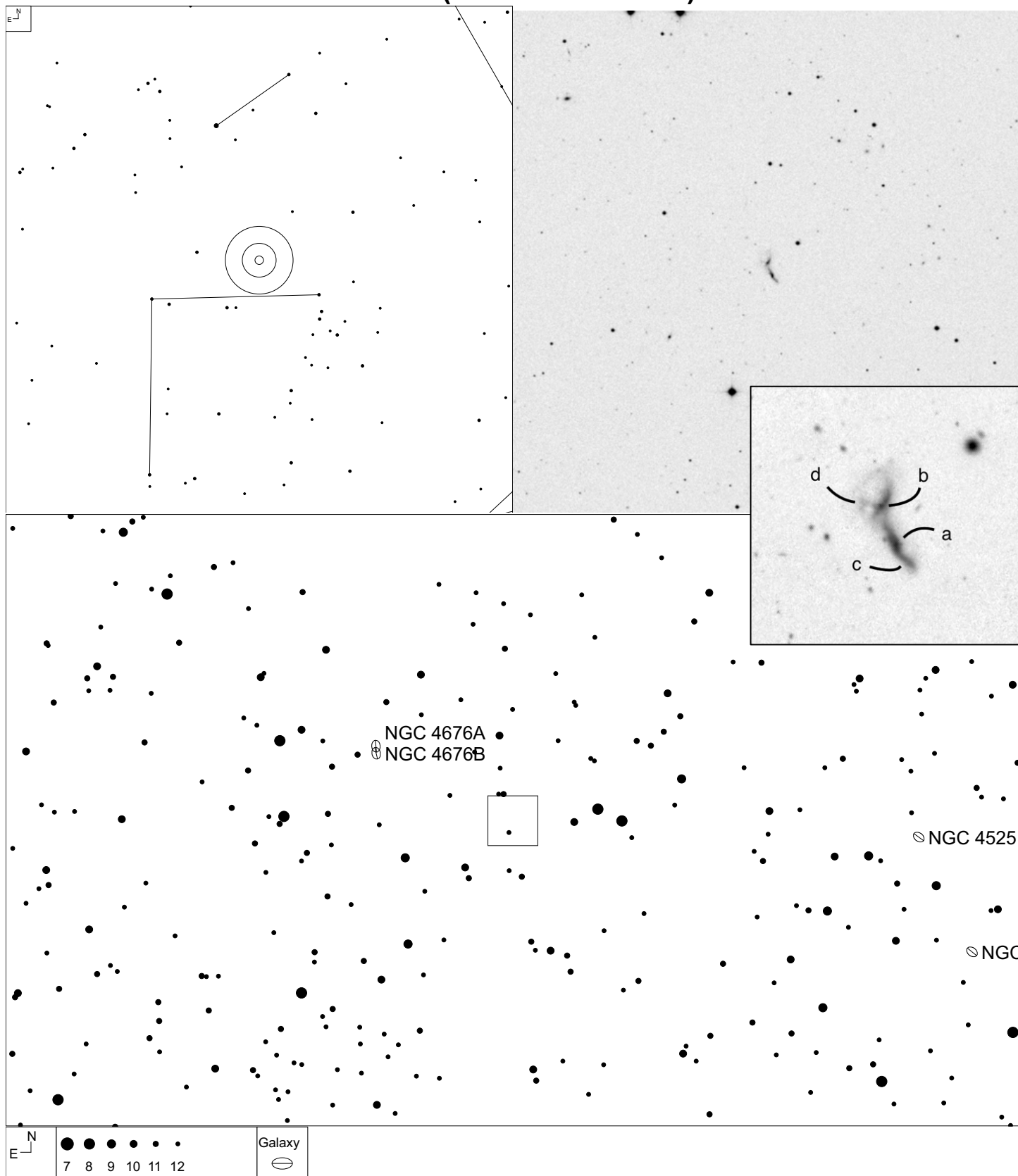
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
279		12 27 53.9	+28 38 17	GTrpl			PK
279a	MCG+05-28-088	12 27 53.9	+28 38 24	GPair	16.2g	0.9 x 0.1	
279b		12 27 54.0	+28 38 01	G	16.9g	1.7 x 0.2	

VV 287 (Coma Berenices)



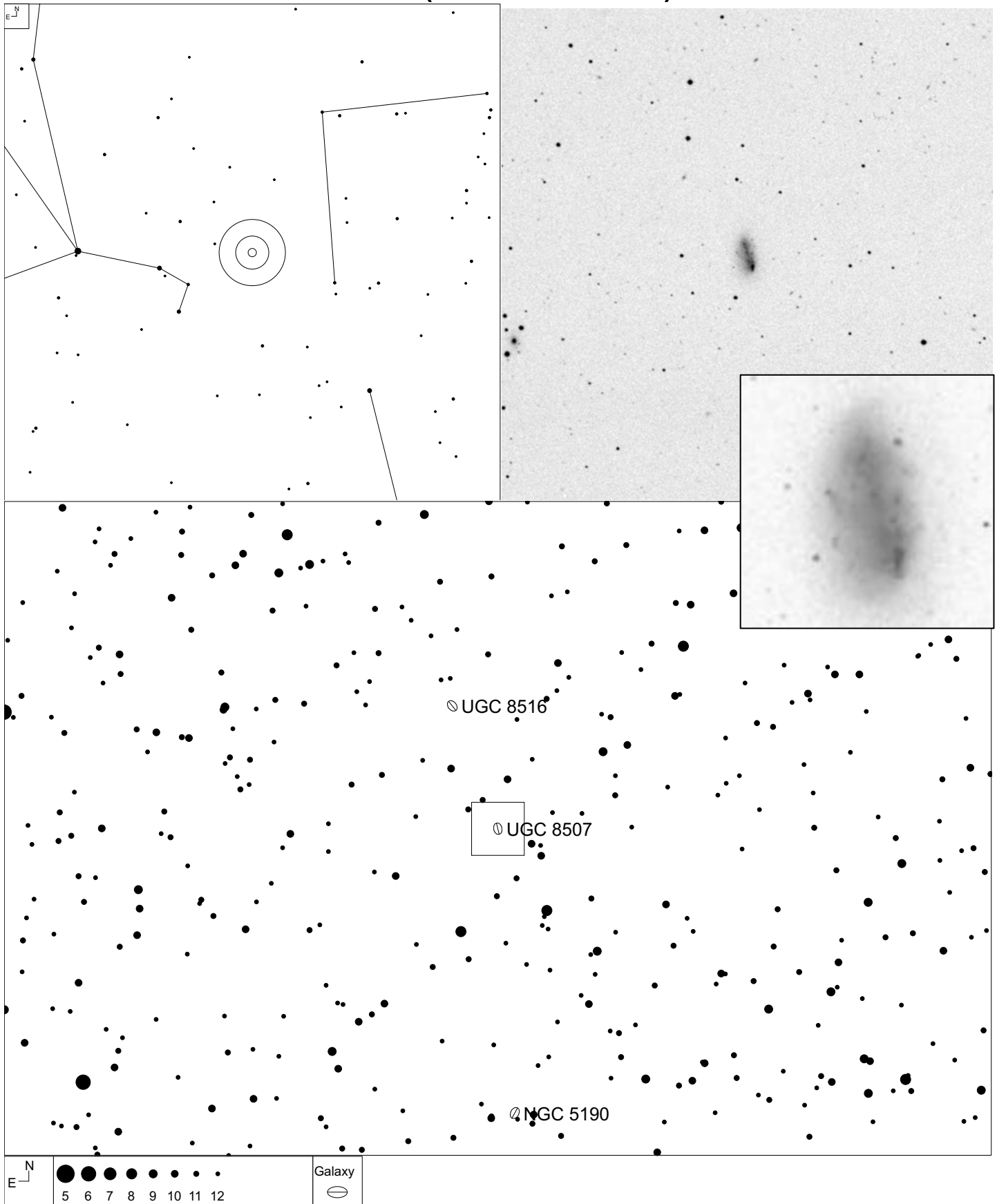
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
287	MCG+05-30-049	12 39 15.7	+27 42 52	GPair			PK
287a		12 39 15.1	+27 42 52	G	18.0g	0.2 x 0.2	
287b		12 39 16.1	+27 42 51	G	17.6g		

VV 151 (Coma Berenices)



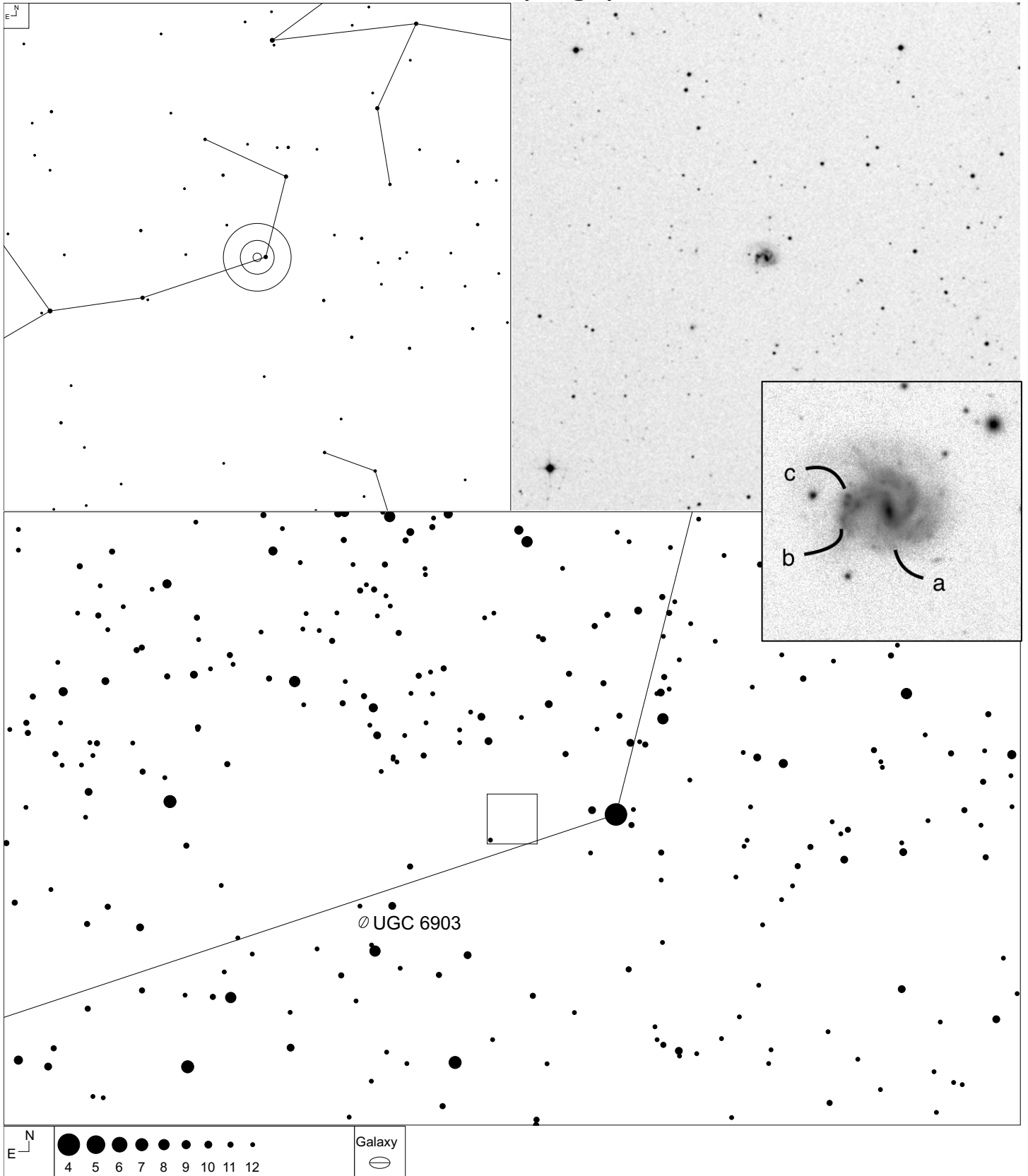
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
151		12 43 03.6	+30 22 58	GTppl			PDb
151a	UGC 7891	12 43 03.7	+30 22 55	G	15.3	0.7 x 0.3	
151b	MAC 1243+3023	12 43 04.2	+30 23 14	G	15.5g	0.7 x 0.5	
151c		12 43 03.0	+30 22 44	G	-	0.6 x 0.2	
151d		12 43 05.1	+30 23 17	PofG	-	0.3	

VV 88 (Coma Berenices)



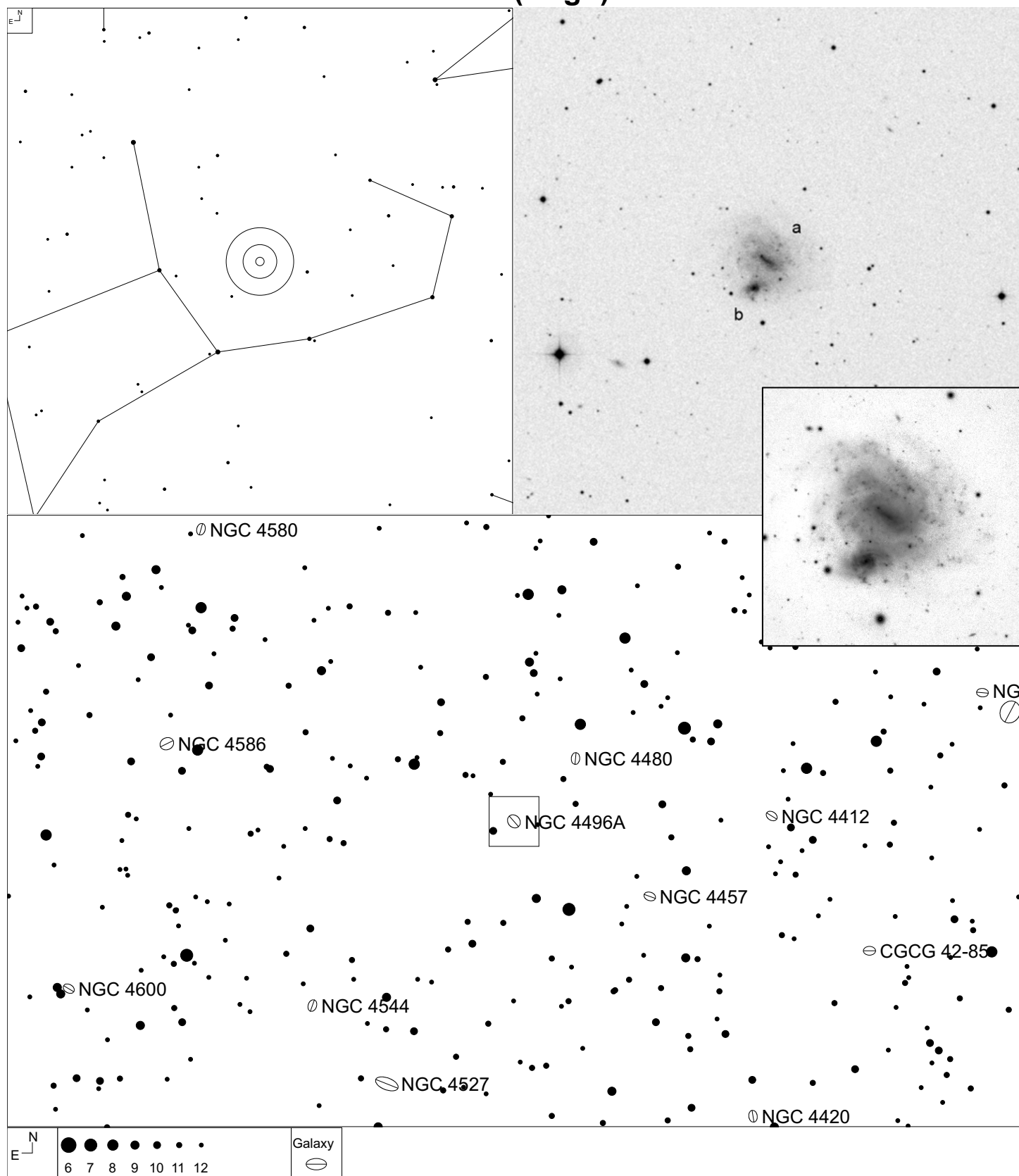
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
88	UGC 8507	13 30 58.7	+19 26 17	G	14.4g	1.4 x 0.8	PC

VV 105 (Virgo)



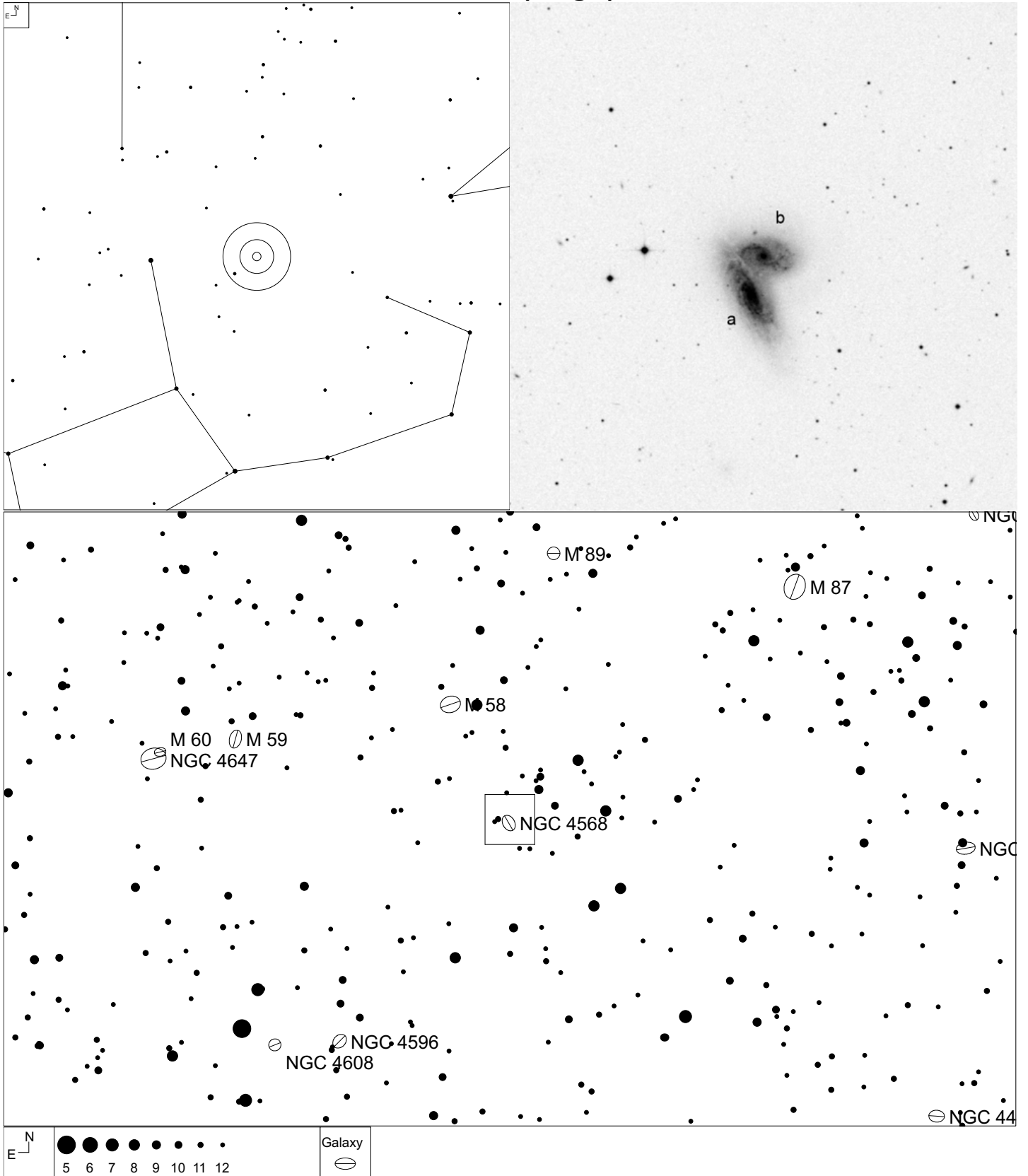
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
105		11 52 44.1	+01 44 26	GPair			N
105a	UGC 6854	11 52 43.4	+01 44 27	G	14.5g	0.8 x 0.7	
105b		11 52 44.7	+01 44 24	G			

VV 76 (Virgo)



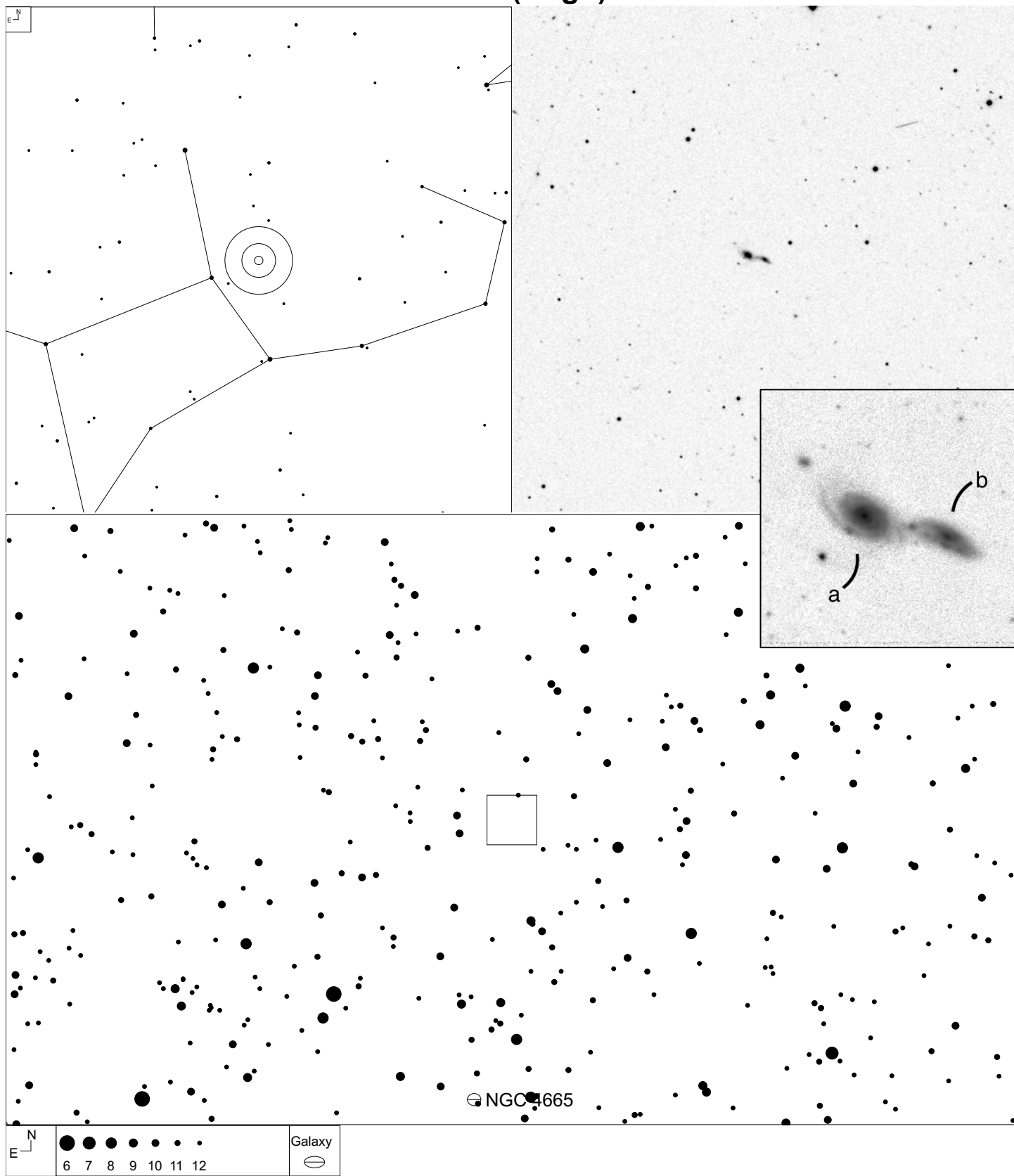
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
76		12 31 40.0	+03 55 58	GPair			PK
76a	NGC 4496A	12 31 39.2	+03 56 23	G	12.3g	4.0 x 3.2	
76b	NGC 4496B	12 31 40.9	+03 55 34	G	14.0g	1.3 x 0.7	

VV 219 (Virgo)



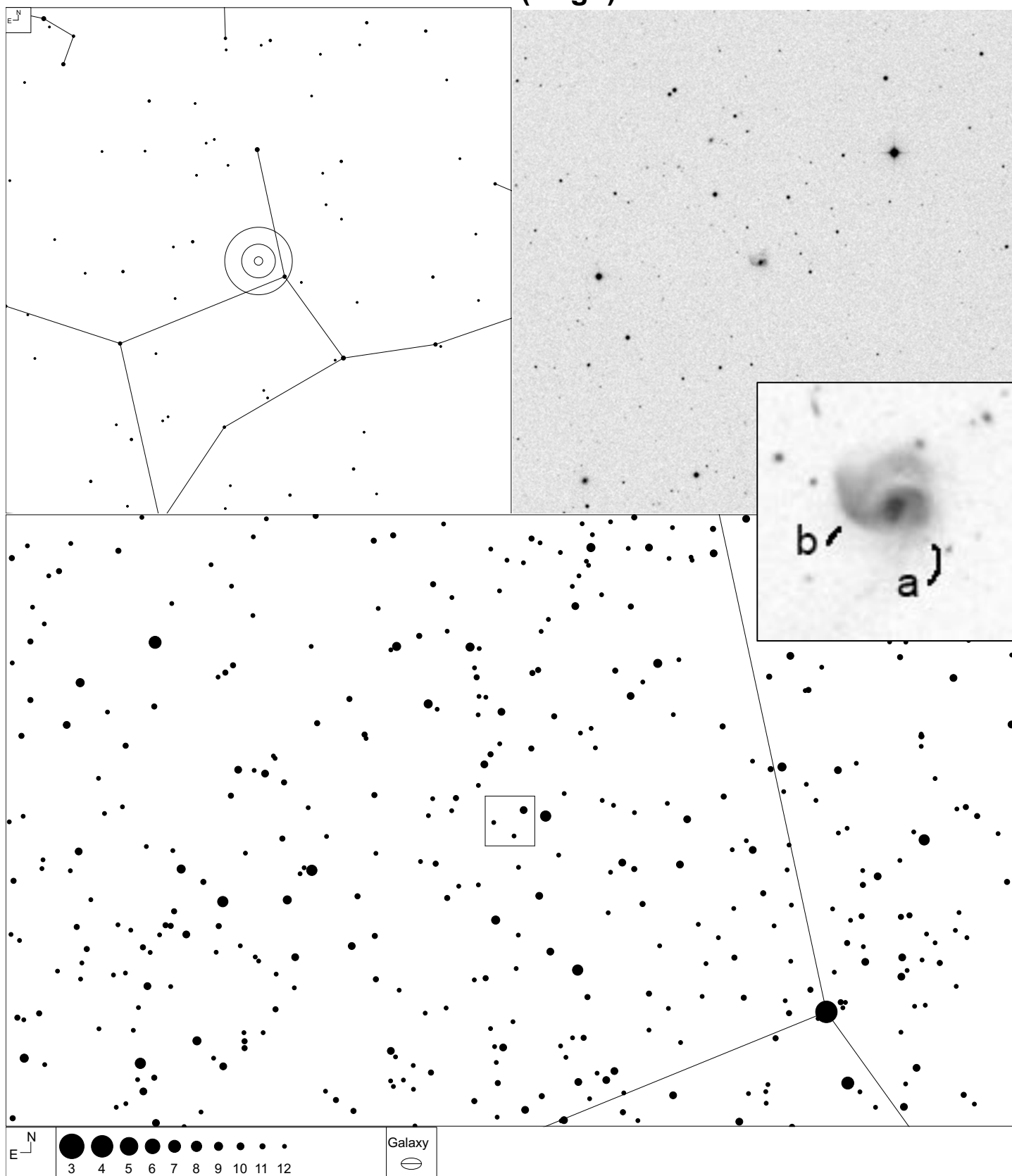
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
219	Siamese Twins	12 36 33.5	+11 14 54	GPair			PK
219a	NGC 4567	12 36 34.2	+11 14 20	G	11.7b	4.8 x 2.0	
219b	NGC 4568	12 36 32.7	+11 15 28	G	12.1b	3.3 x 2.0	

VV 64 (Virgo)



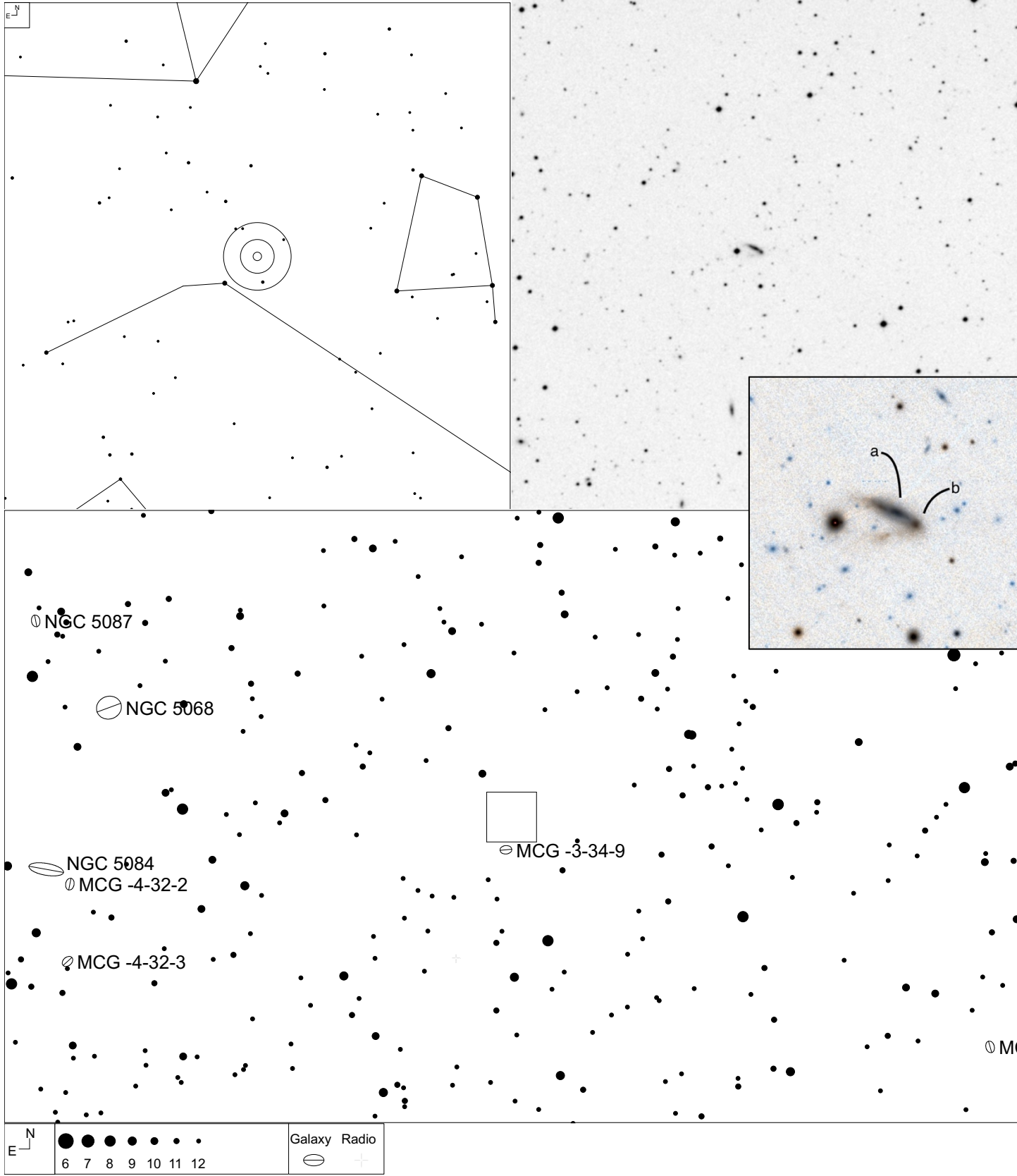
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
64		12 44 20.5	+04 25 35	GPair			PDb
64a	MCG+01-33-003	12 44 21.5	+04 25 39	G	15.9g	0.3 x 0.2	
64b	UGC 7909	12 44 19.5	+04 25 31	G	15.3p	0.5 x 0.2	

VV 283 (Virgo)



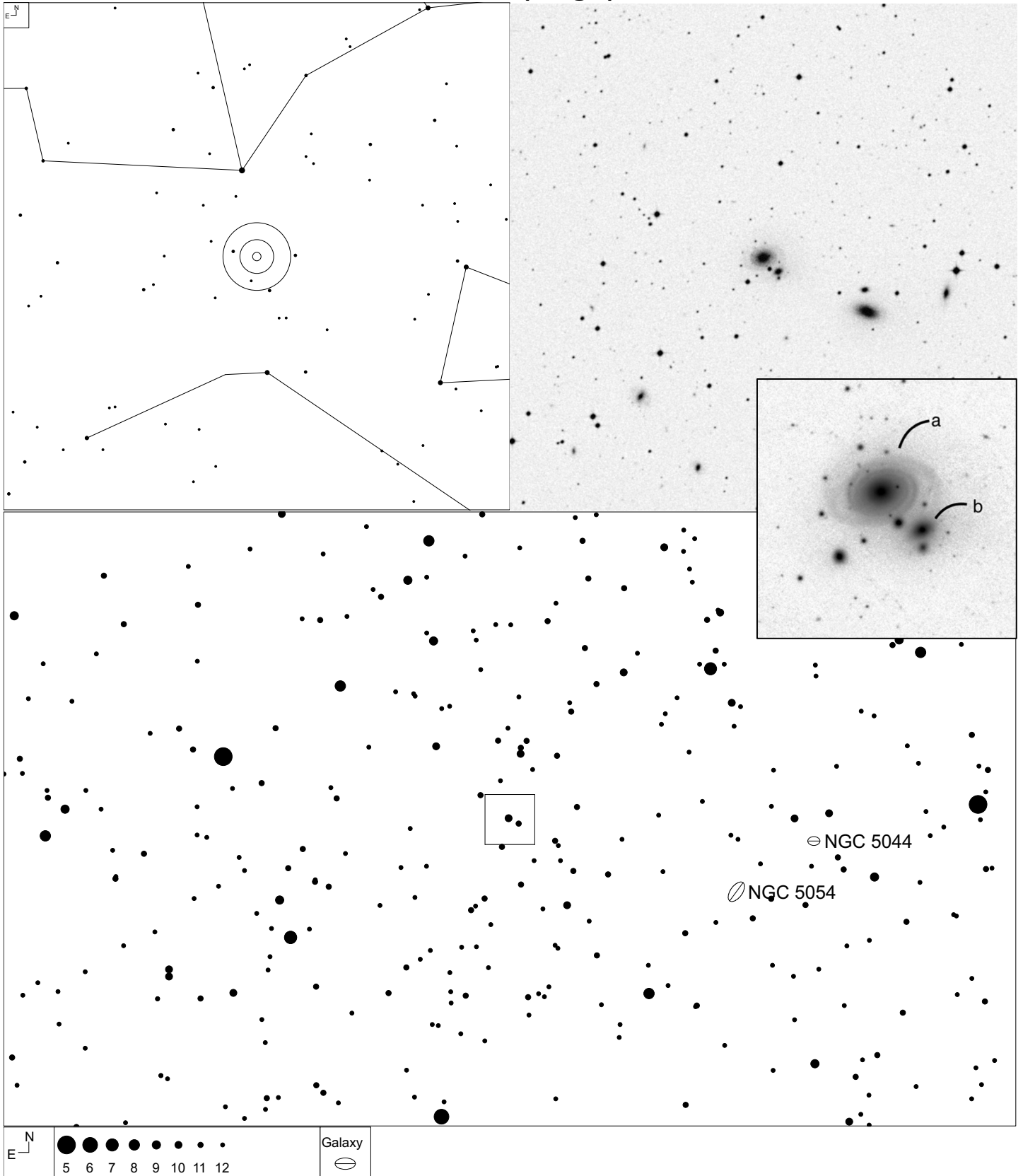
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
283	MCG+01-33-036	13 01 50.8	+04 20 00	GPair	15.5g	0.6 x 0.6	PK

VV 47 (Virgo)



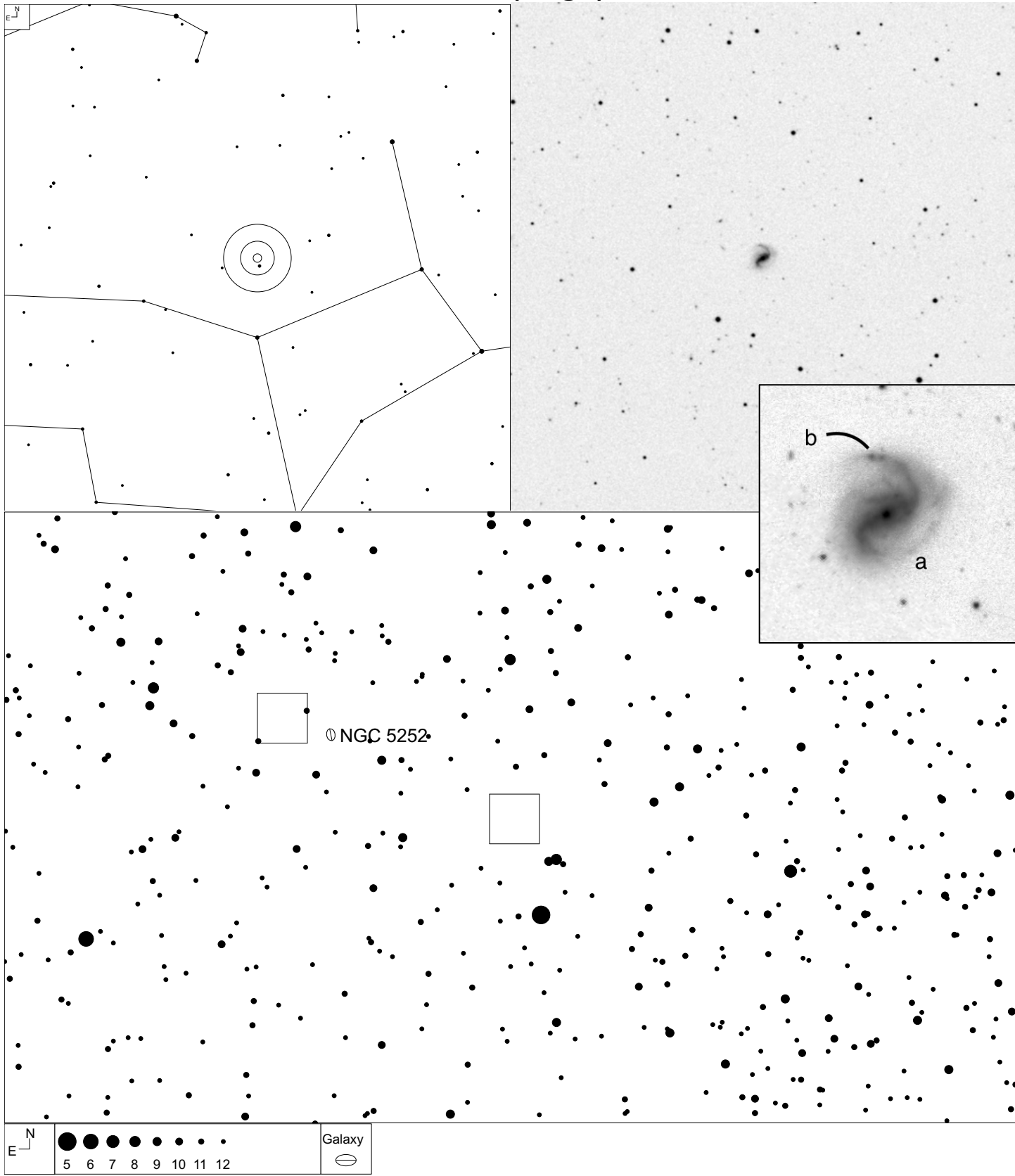
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
47		13 10 28.6	-21 35 13	GPair			PDb
47a	MCG-03-34-007	13 10 28.8	-21 35 11	G	15.9b	0.4 x 0.1	
47b	PGC 45712	13 10 28.1	-21 35 17	G	17.1b	0.1 x 0.1	

VV 184 (Virgo)



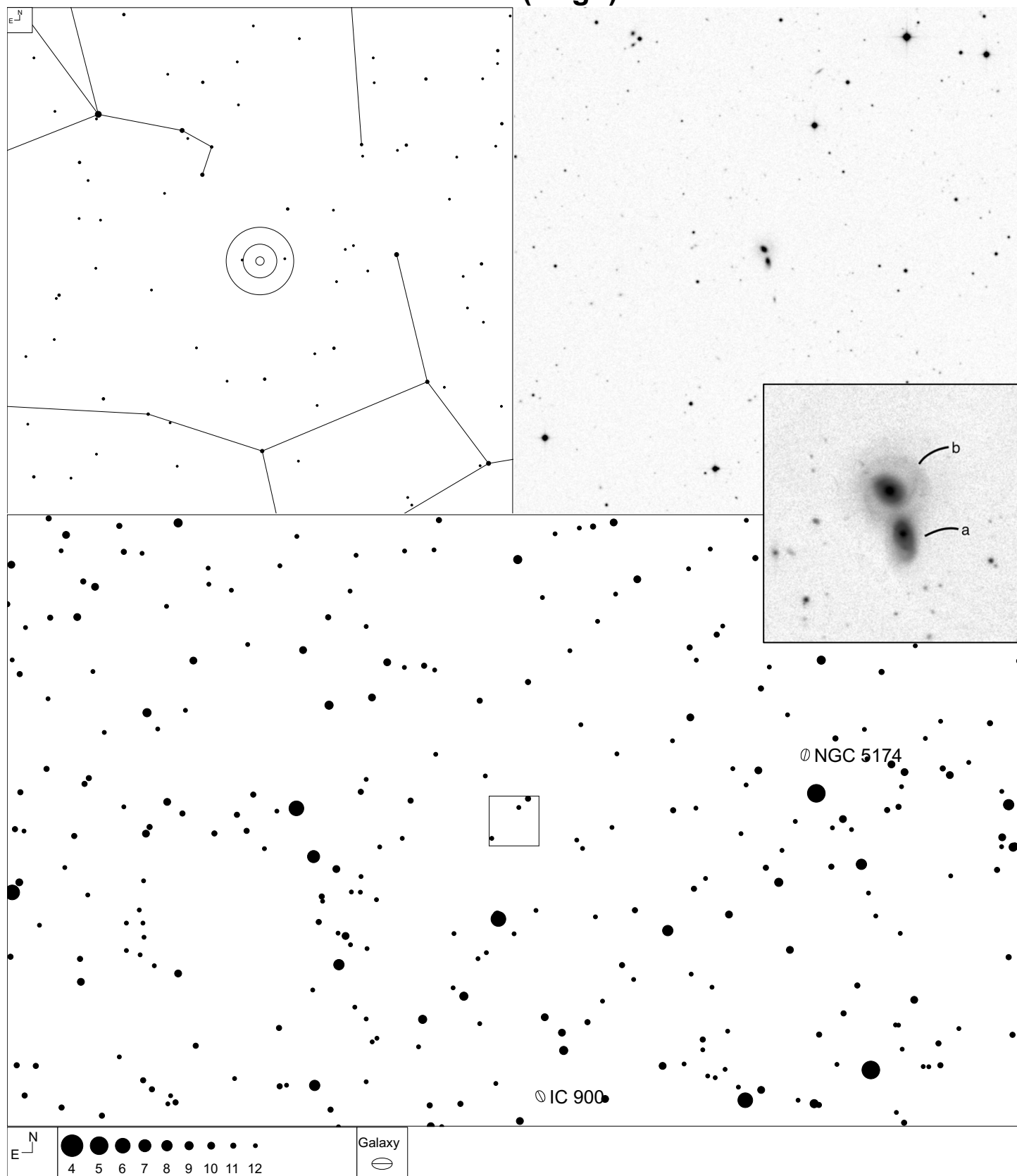
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
184		13 21 37.6	-16 16 57	GPair			PD
184a	MCG-03-34-058	13 21 38.5	-16 16 45	G	15.0g	0.3 x 0.2	
184b	MCG-03-34-057	13 21 36.7	-16 17 10	G	16.0b	0.2 x 0.2	

VV 18 (Virgo)



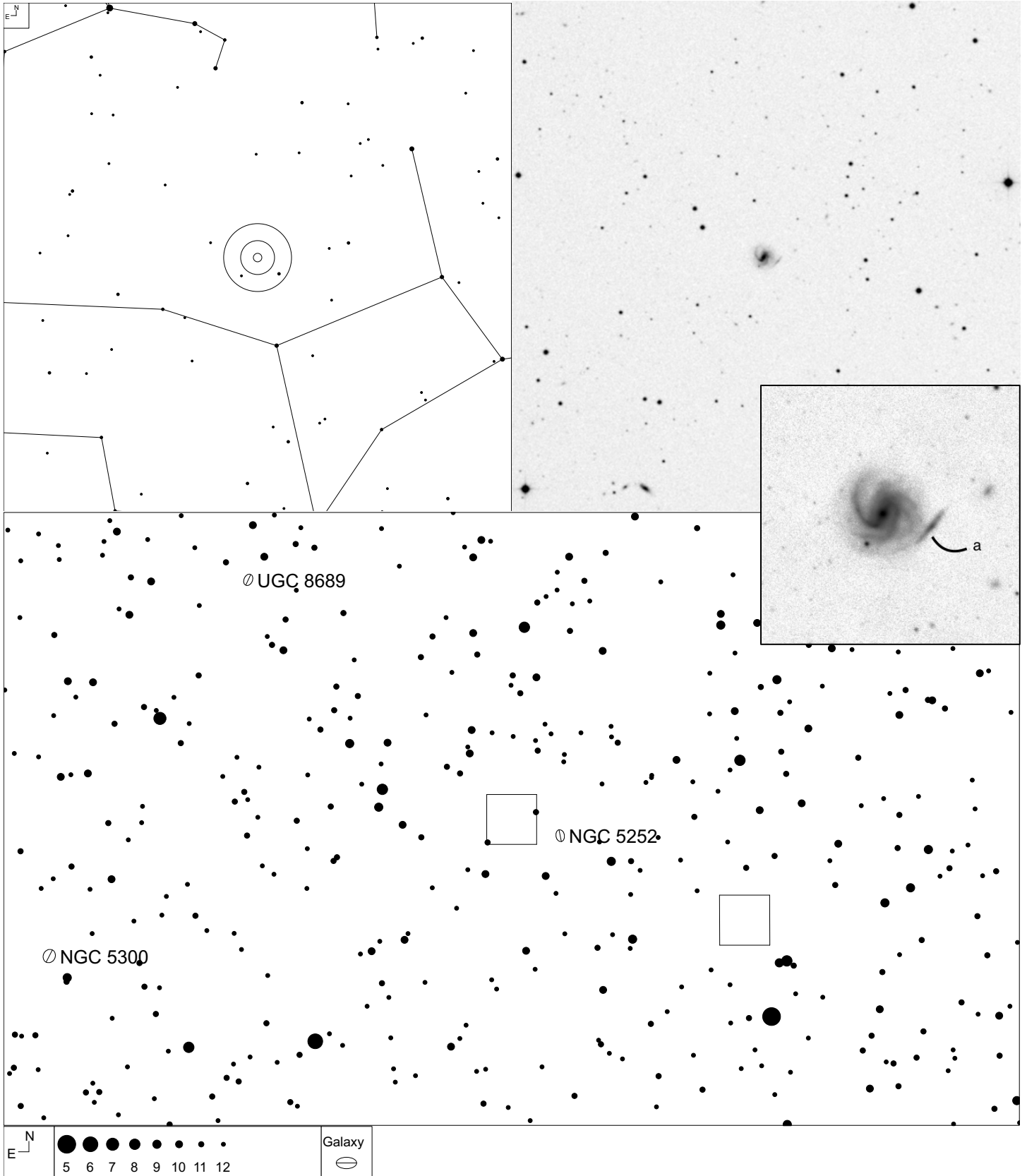
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
18	NGC 5213	13 34 39.4	+04 08 00	GPair	14.4g	0.9 x 0.7	M

VV 211 (Virgo)



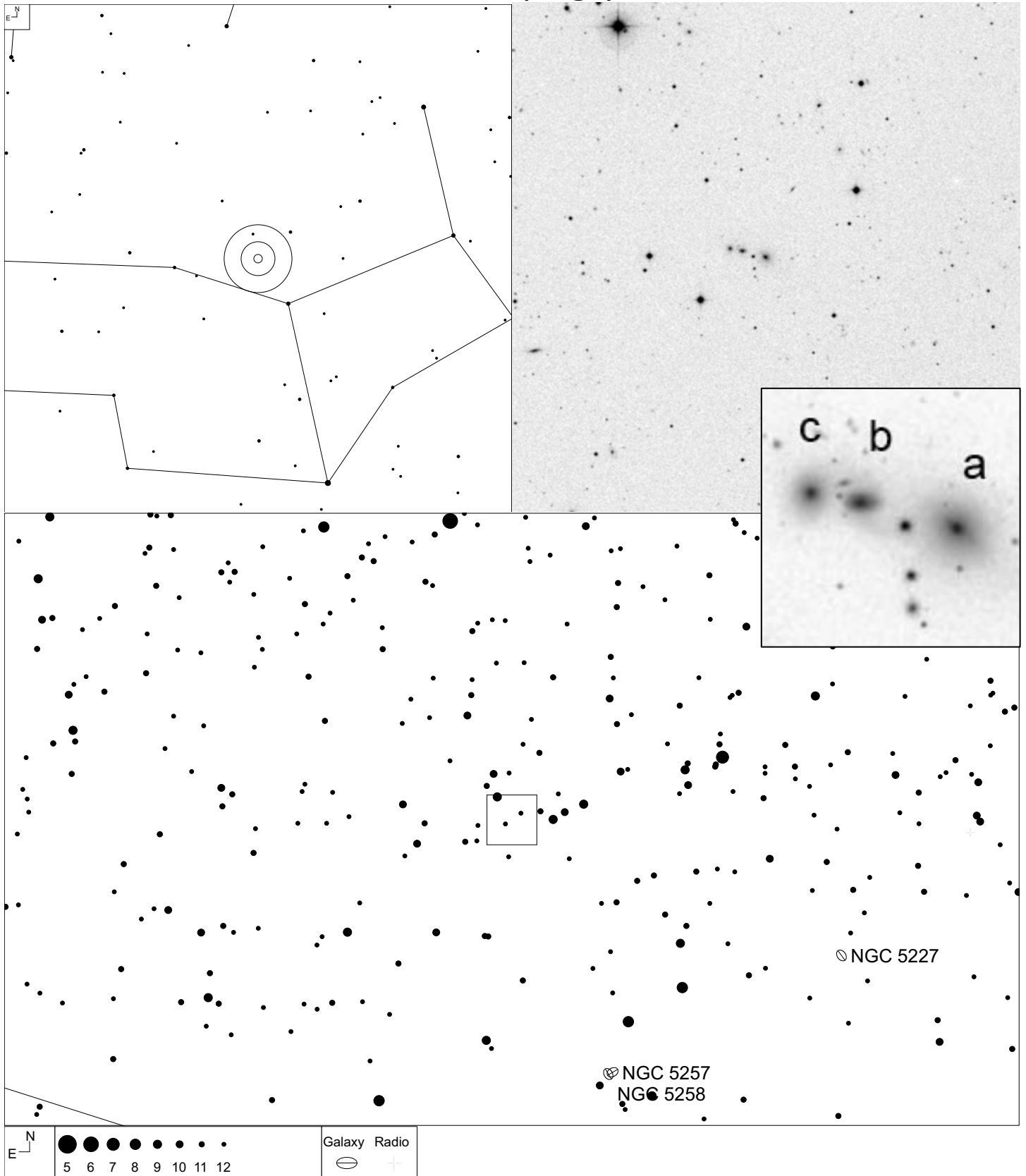
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
211		13 35 14.8	+10 41 22	GPair			PK
211a	UGC 8562	13 35 14.4	+10 41 10	G	15.3g	0.6 x 0.3	
211b	UGC 8563	13 35 14.8	+10 41 31	G	14.9g	0.5 x 0.5	

VV 108 (Virgo)



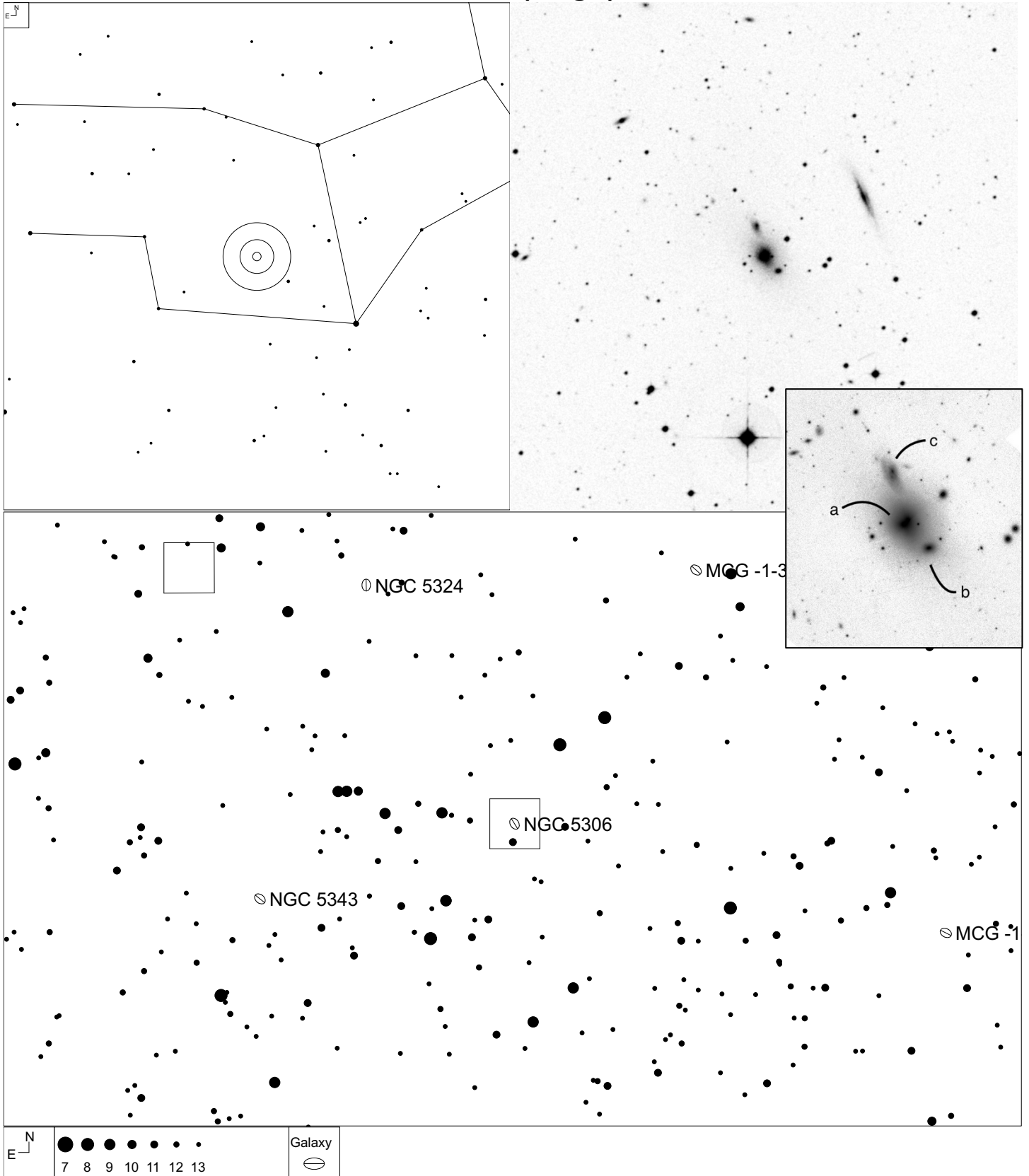
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
108	UGC 8635	13 39 13.2	+04 37 24	GPair	14.6g	0.9 x 0.7	PC
108a	UGC 8635a	13 39 11.5	+04 37 17	G	18.6g	0.4 x 0.1	

VV 170 (Virgo)



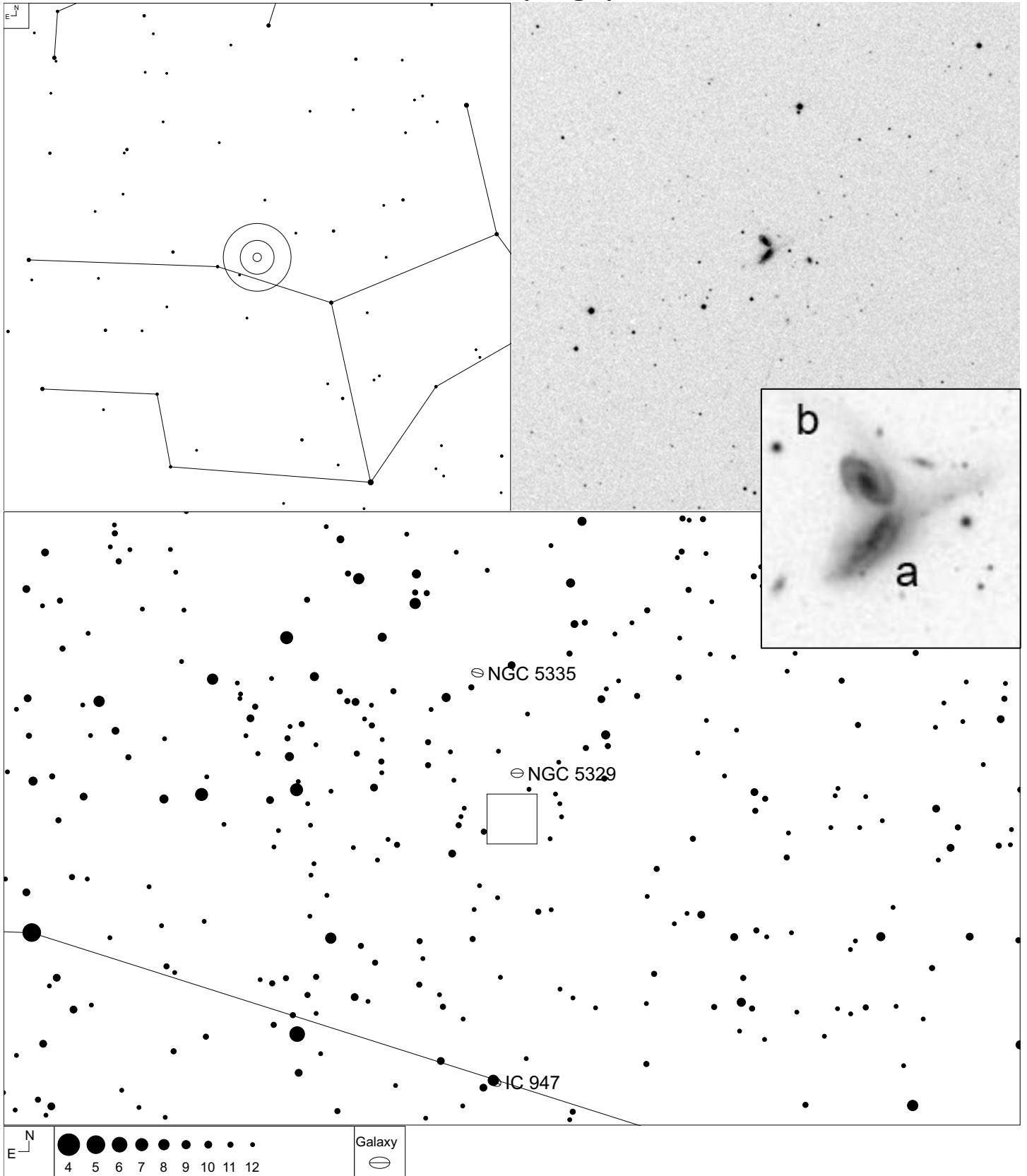
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
170		13 41 53.3	+02 04 41	GTrpl			Ch
170a	UGC 8666	13 41 51.2	+02 04 34	G	15.5g	0.6 x 0.5	
170b	MAC 1341+0204A	13 41 54.0	+02 04 45	G	15.9g	0.4 x 0.3	
170c	MAC 1341+0204B	13 41 55.4	+02 04 49	G	16.4g	0.2 x 0.2	

VV 135 (Virgo)



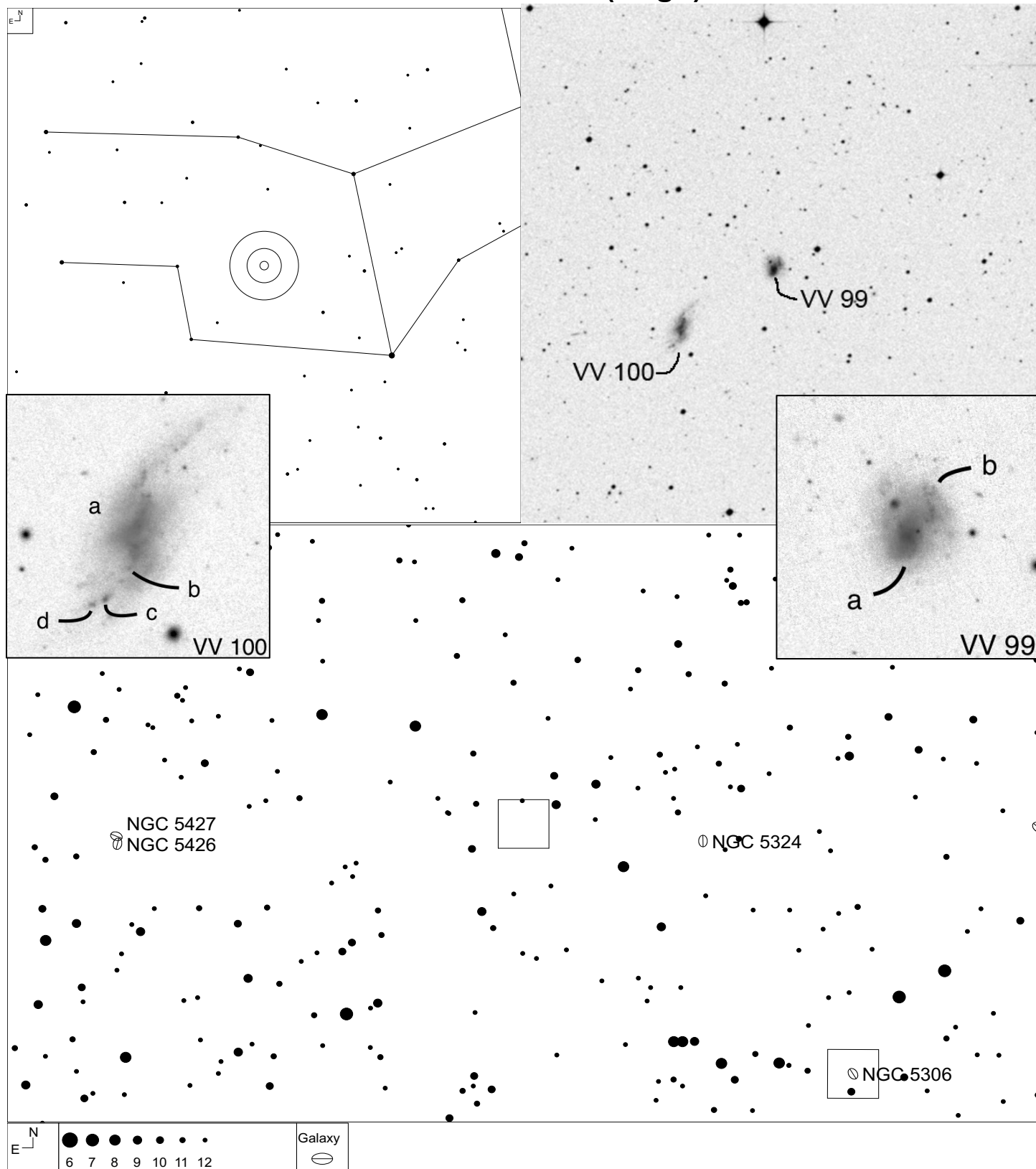
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
135	Hickson 67	13 49 11.1	-07 13 15	GTppl			NNN
135a	NGC 5306	13 49 11.4	-07 13 28	G	13.1g	2.0 x 1.8	
135b	MCG-01-35-014	13 49 09.8	-07 13 54	G	15.9b	0.5 x 0.3	
135c	MCG-01-35-015	13 49 12.3	-07 12 33	G	15.8b	0.7 x 0.3	

VV 253 (Virgo)



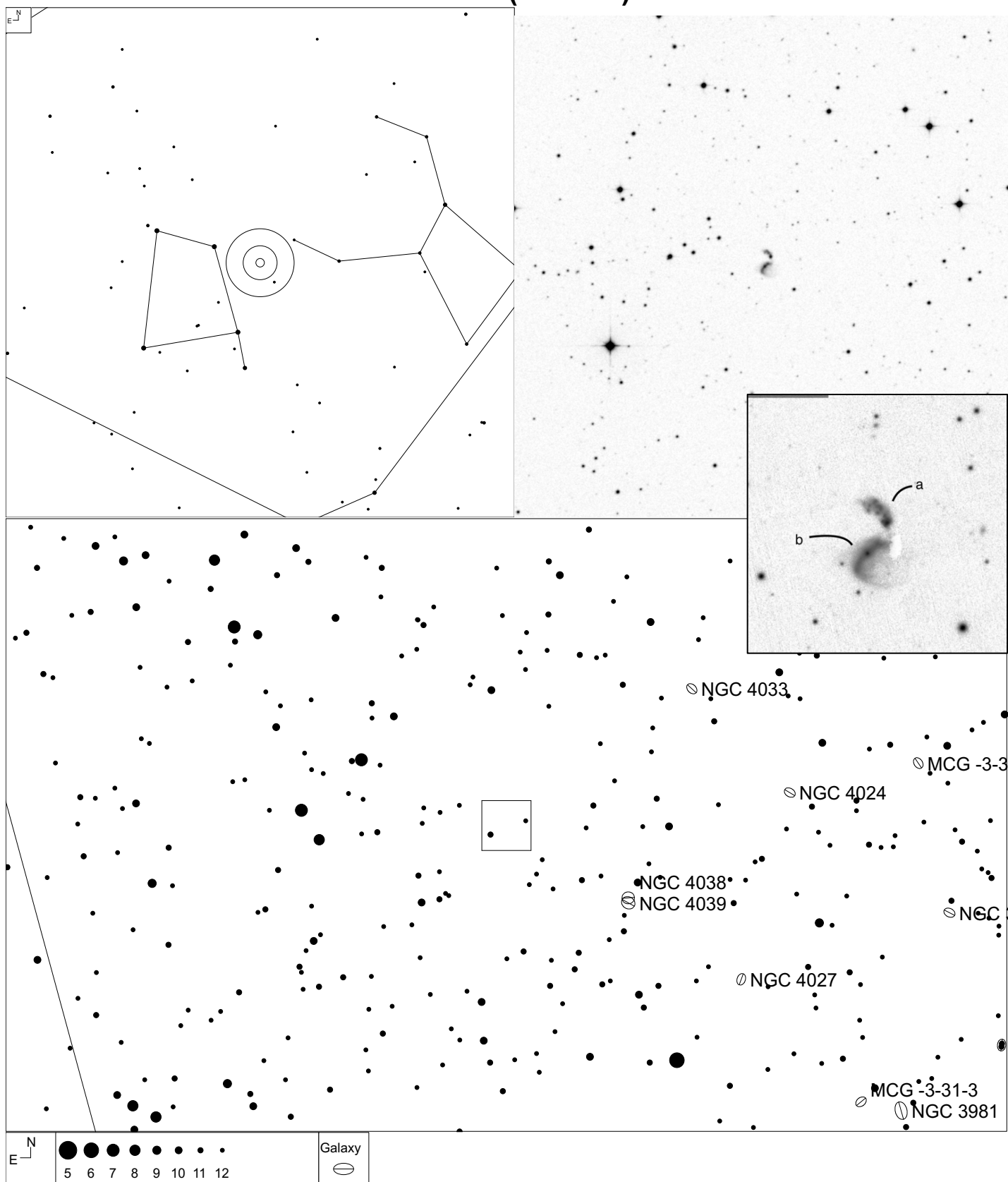
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
253	NGC 5331	13 52 16.3	+02 06 11	GPair			PKt
253a	NGC 5331S	13 52 16.1	+02 06 03	G	14.3b	0.6 x 0.3	
253b	NGC 5331N	13 52 16.4	+02 06 31	G	14.8g	0.6 x 0.4	

VV 99 and VV 100 (Virgo)



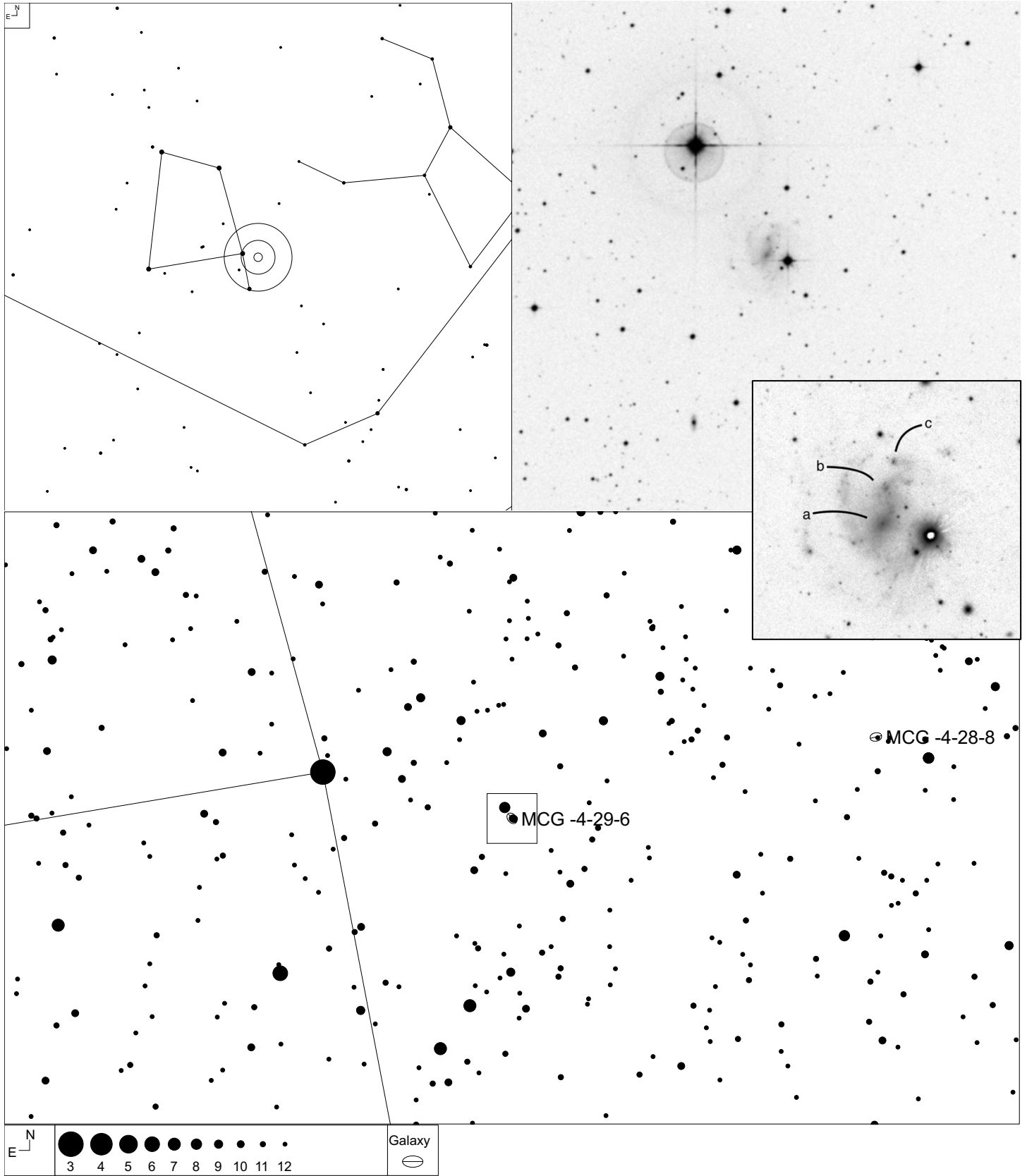
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
99	MCG+01-35-021	13 55 34.2	-05 58 22	G	15.2g	0.6 x 0.5	PC
99b		13 55 33.9	-05 58 18	G			
99a		13 55 34.5	-05 58 26	G			
100	MCG+01-35-022	13 55 45.4	-06 00 10	G	15.1g	1.6 x 0.8	PC

VV 269 (Corvus)



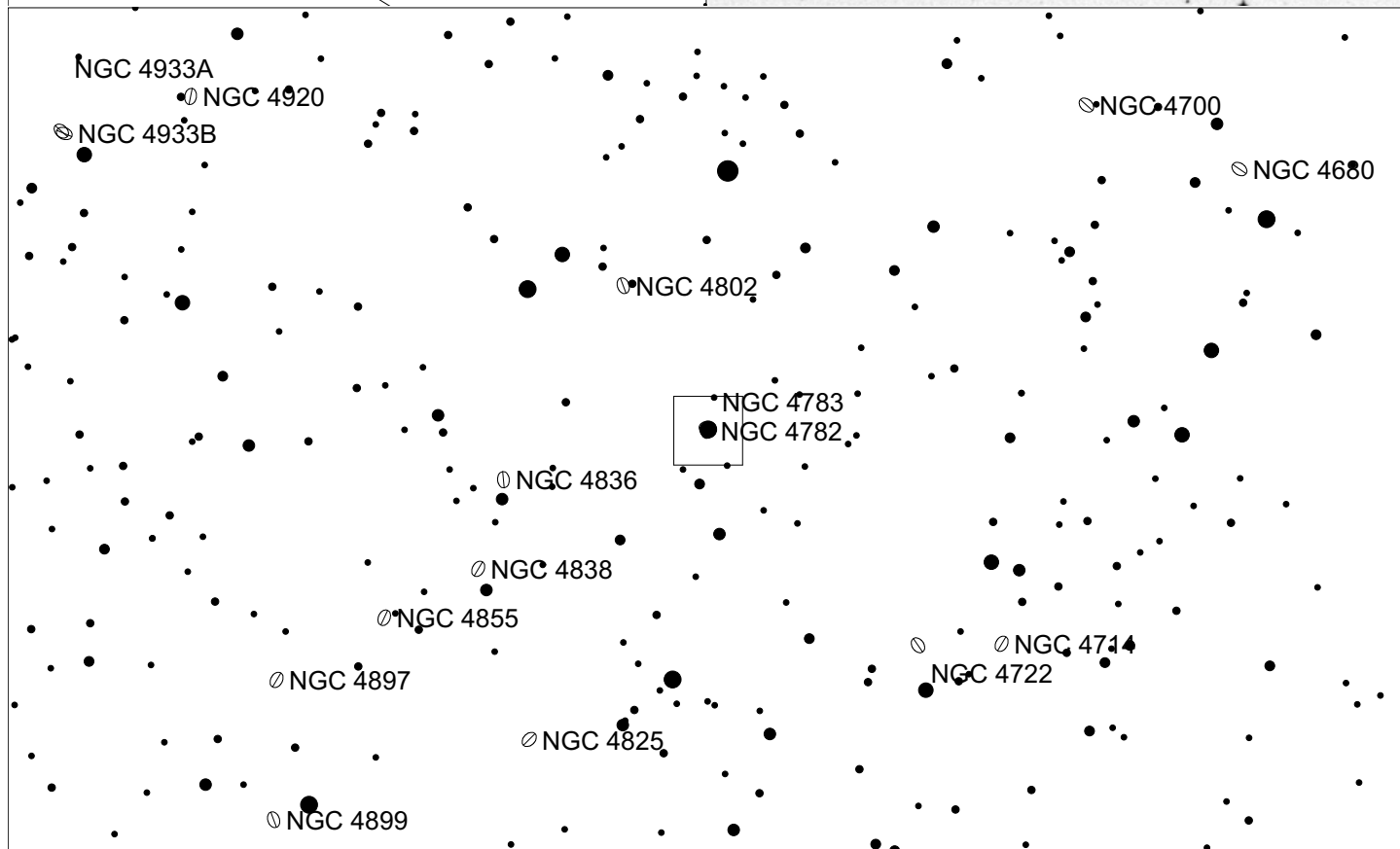
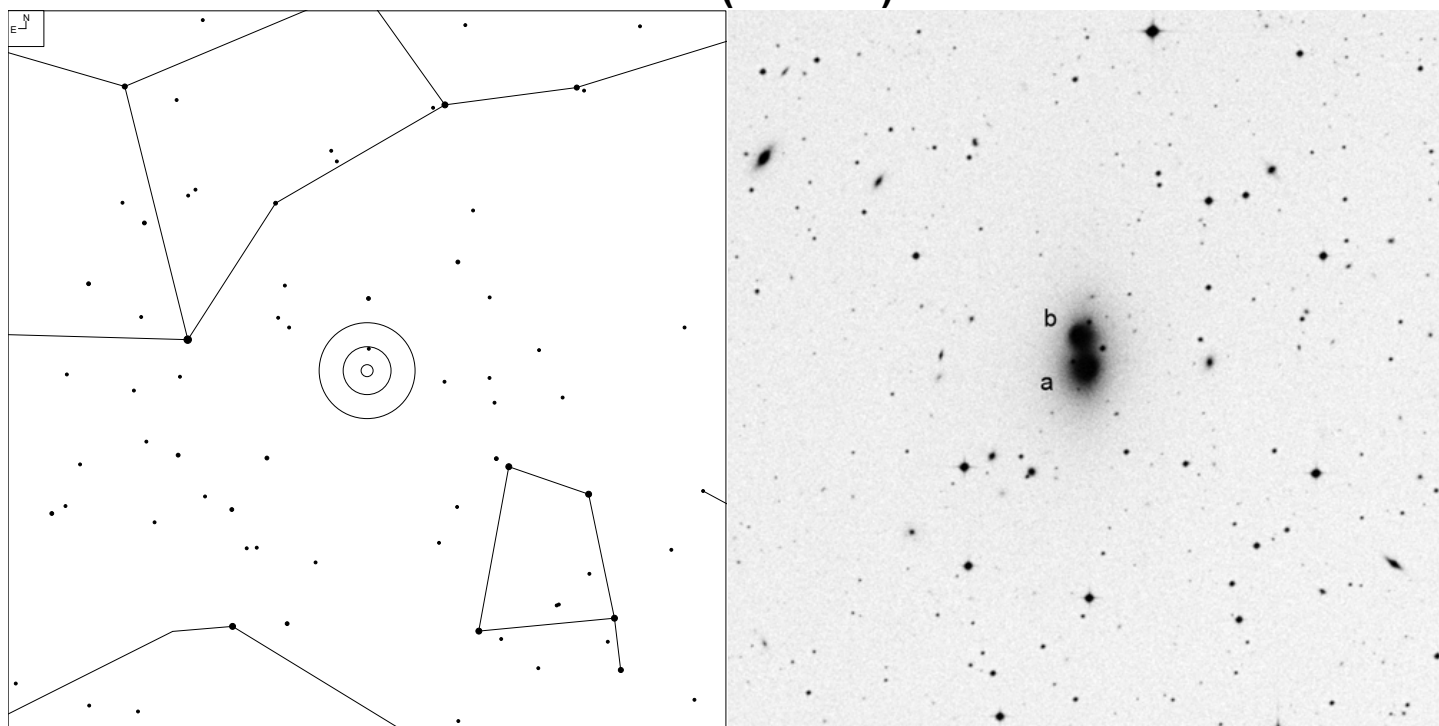
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
269		12 04 26.3	-18 30 59	GPair			PK
269a	MCG-03-31-019	12 04 26.1	-18 30 48	G	15.9b	0.4 x 0.2	
269b	MCG-03-31-020	12 04 26.6	-18 31 11	G	16.3b	0.4 x 0.2	

VV 49 (Corvus)



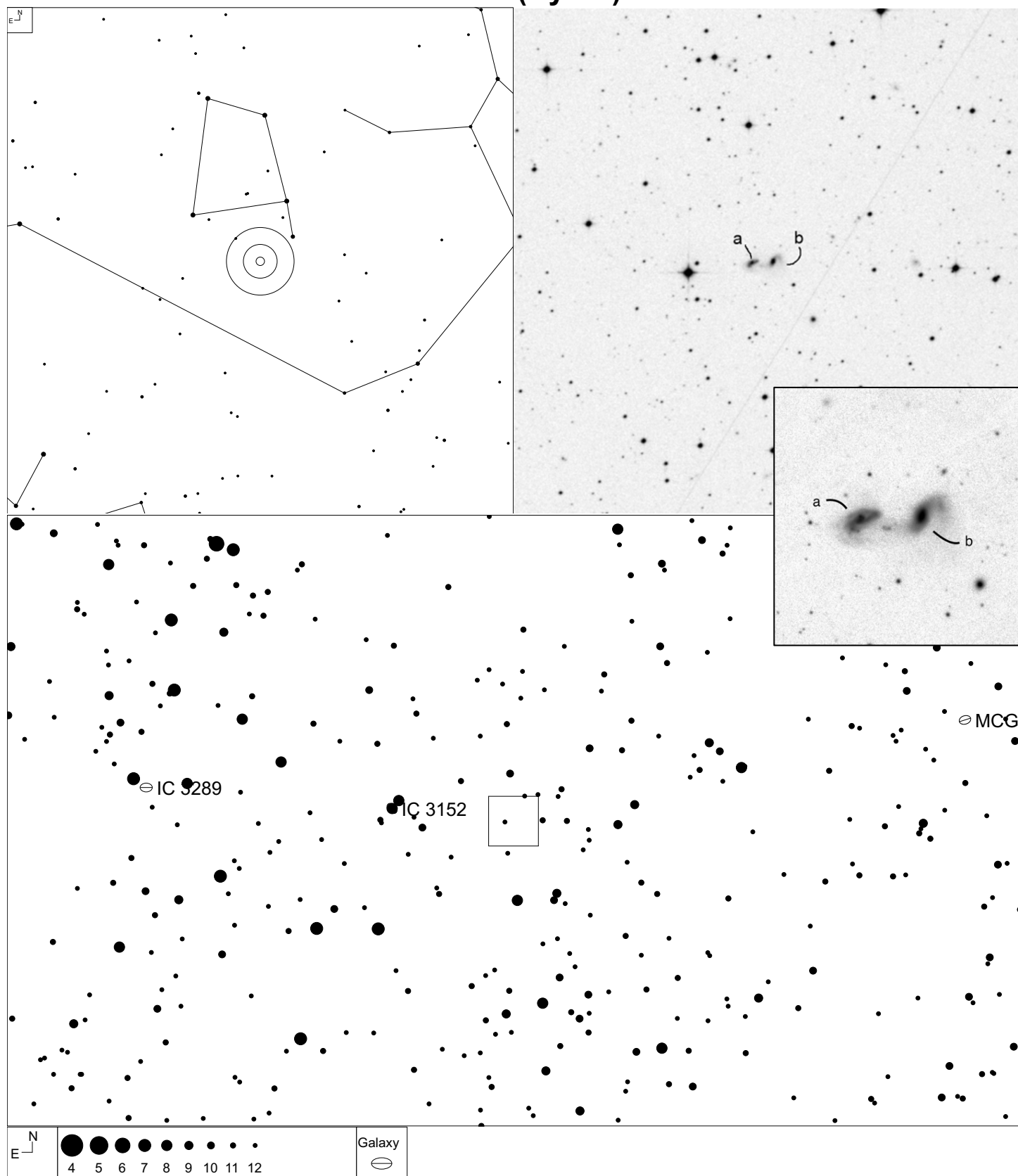
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
49	UGCA 270	12 06 07.2	-22 50 58	G	13.0b	2.9 x 2.1	N

VV 201 (Corvus)



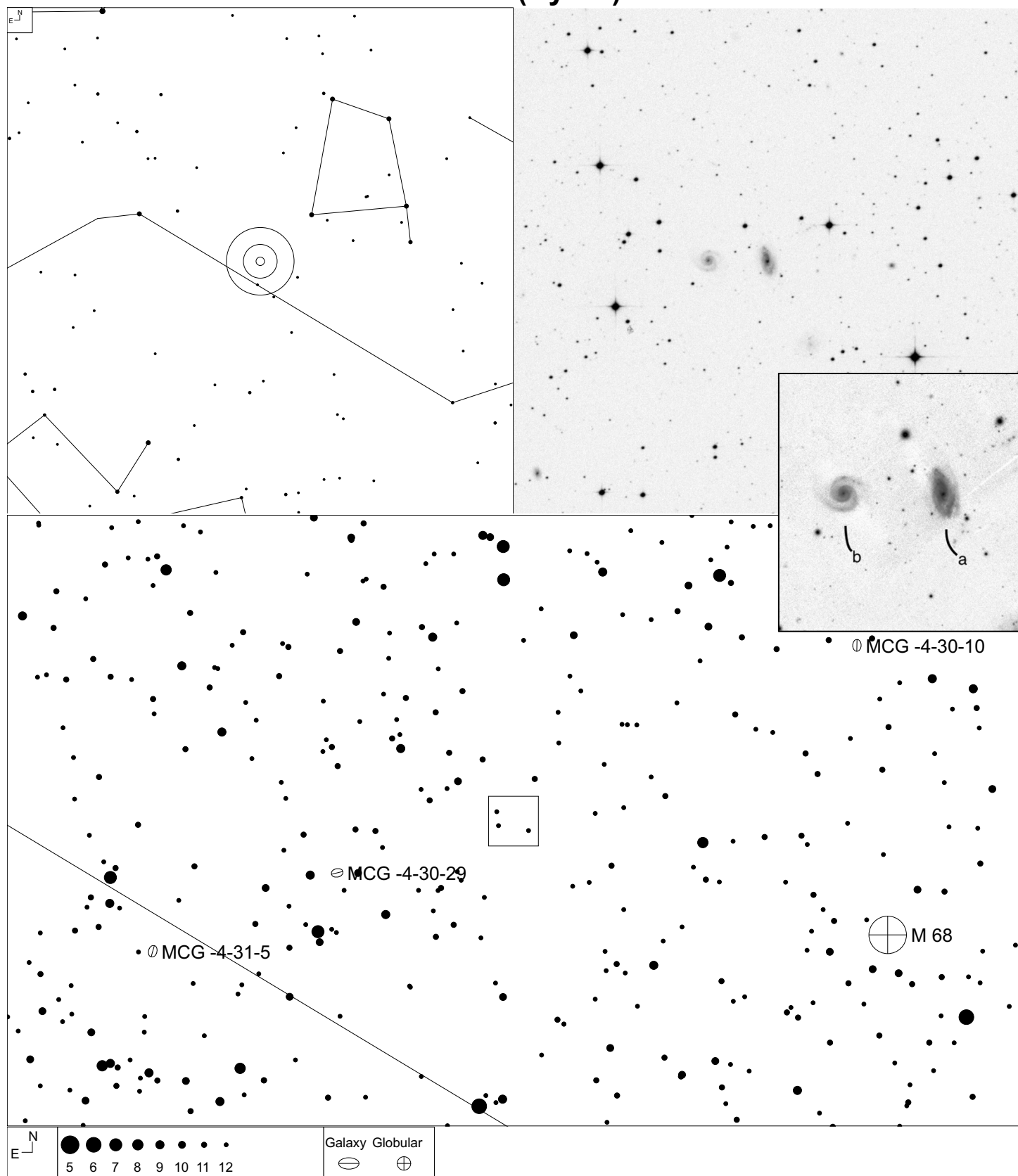
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
201		12 54 36.2	-12 33 47	GPair			PK
201a	NGC 4782	12 54 35.7	-12 34 07	G	12.7v	1.7 x 1.6	
201b	NGC 4783	12 54 36.6	-12 33 28	G	12.8v	1.7 x 1.7	

VV 333 (Hydra)



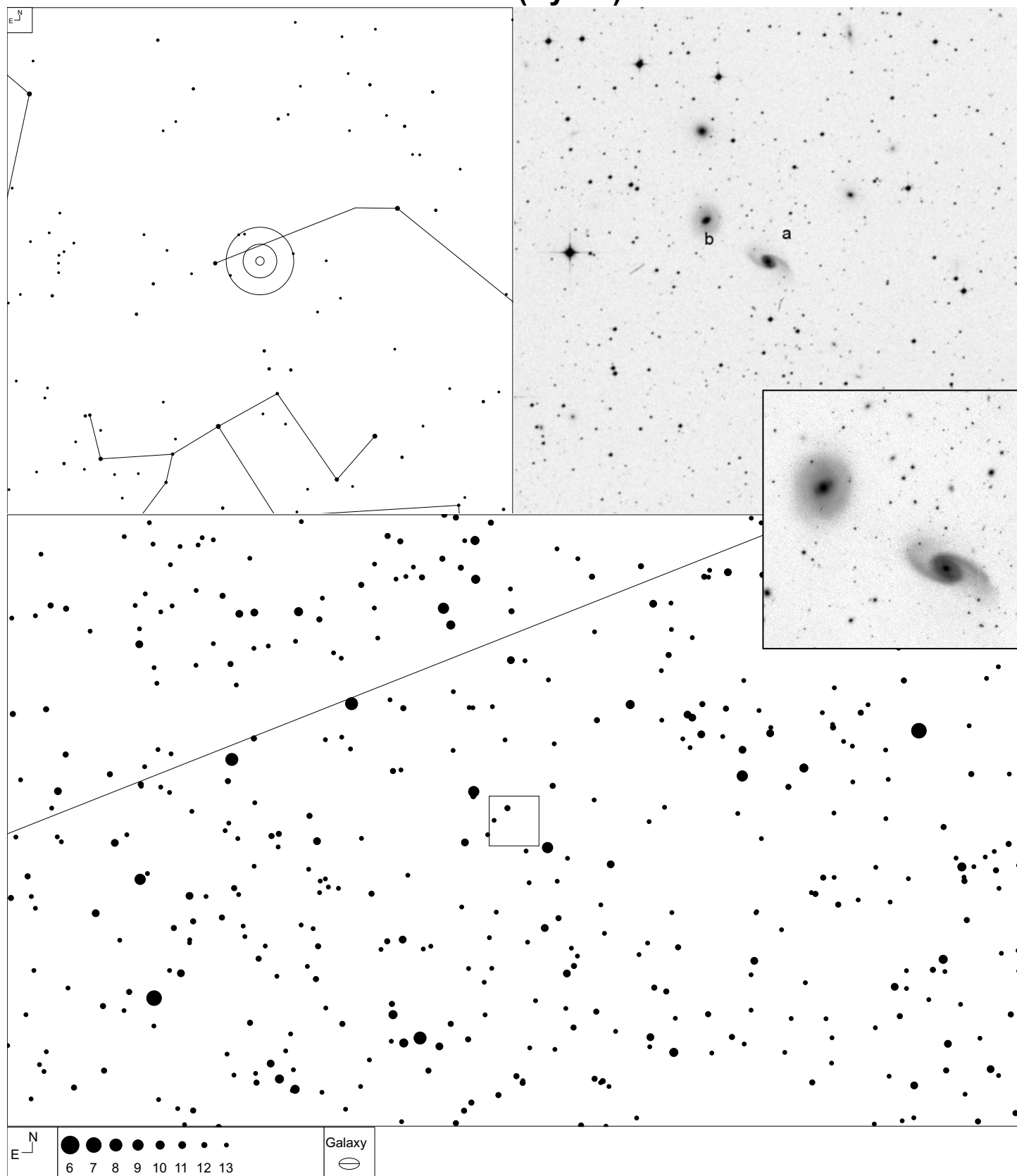
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
333		12 16 58.0	-26 12 37	GPair			PD
333a	MCG-04-29-016	12 16 59.9	-26 12 36	G	15.1b	0.8 x 0.7	
333b	MCG-04-29-015	12 16 57.1	-26 12 34	G	15.2v	0.8 x 0.7	

VV 290 (Hydra)



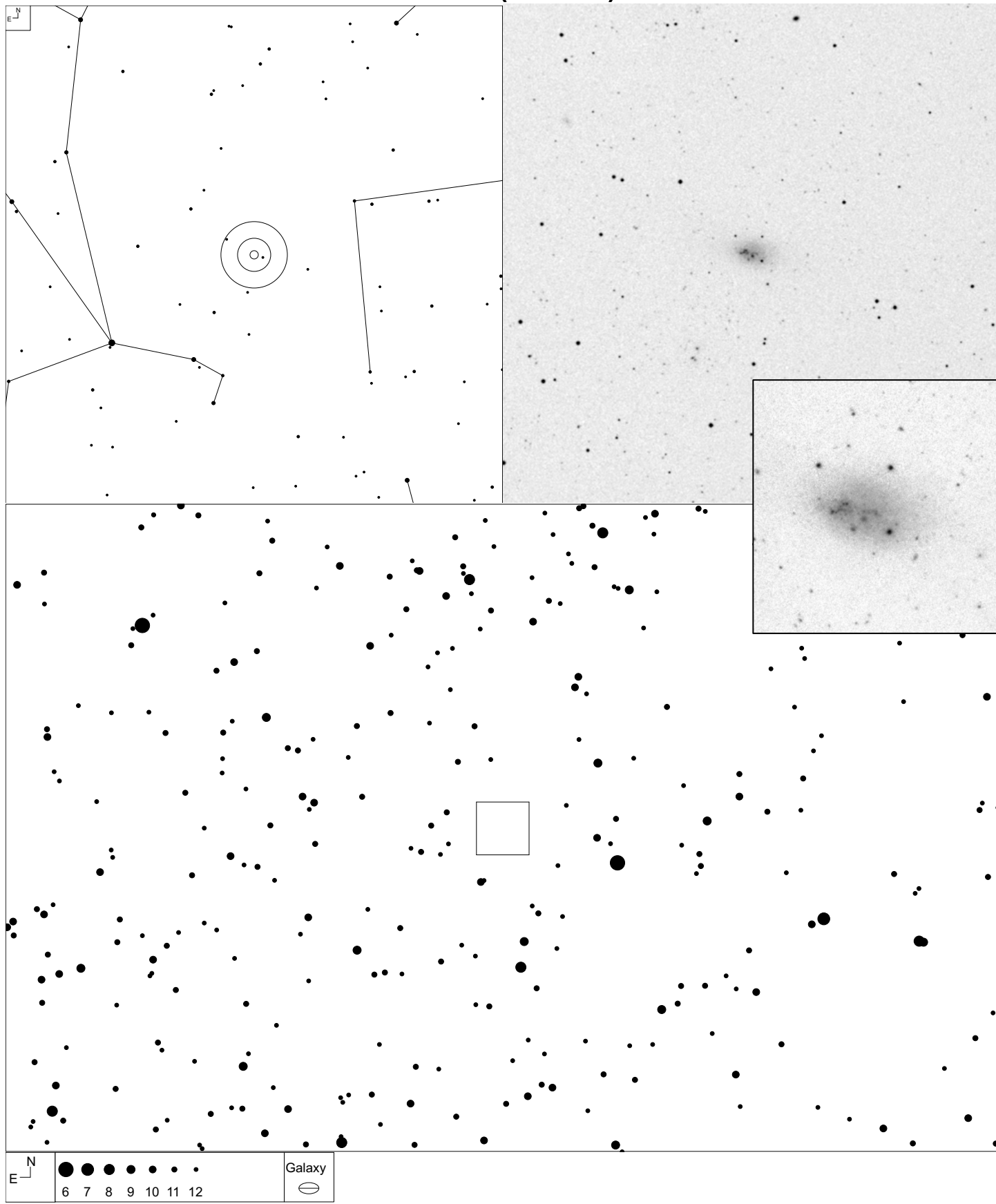
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
290		12 47 44.1	-26 11 58	GPair			PKb
290a	MCG-04-30-016	12 47 40.3	-26 12 00	G	14.8b	1.2 x 0.5	
290b	MCG-04-30-017	12 47 48.1	-26 11 59	G	15.5b	1.2 x 1.0	

VV 351 (Hydra)



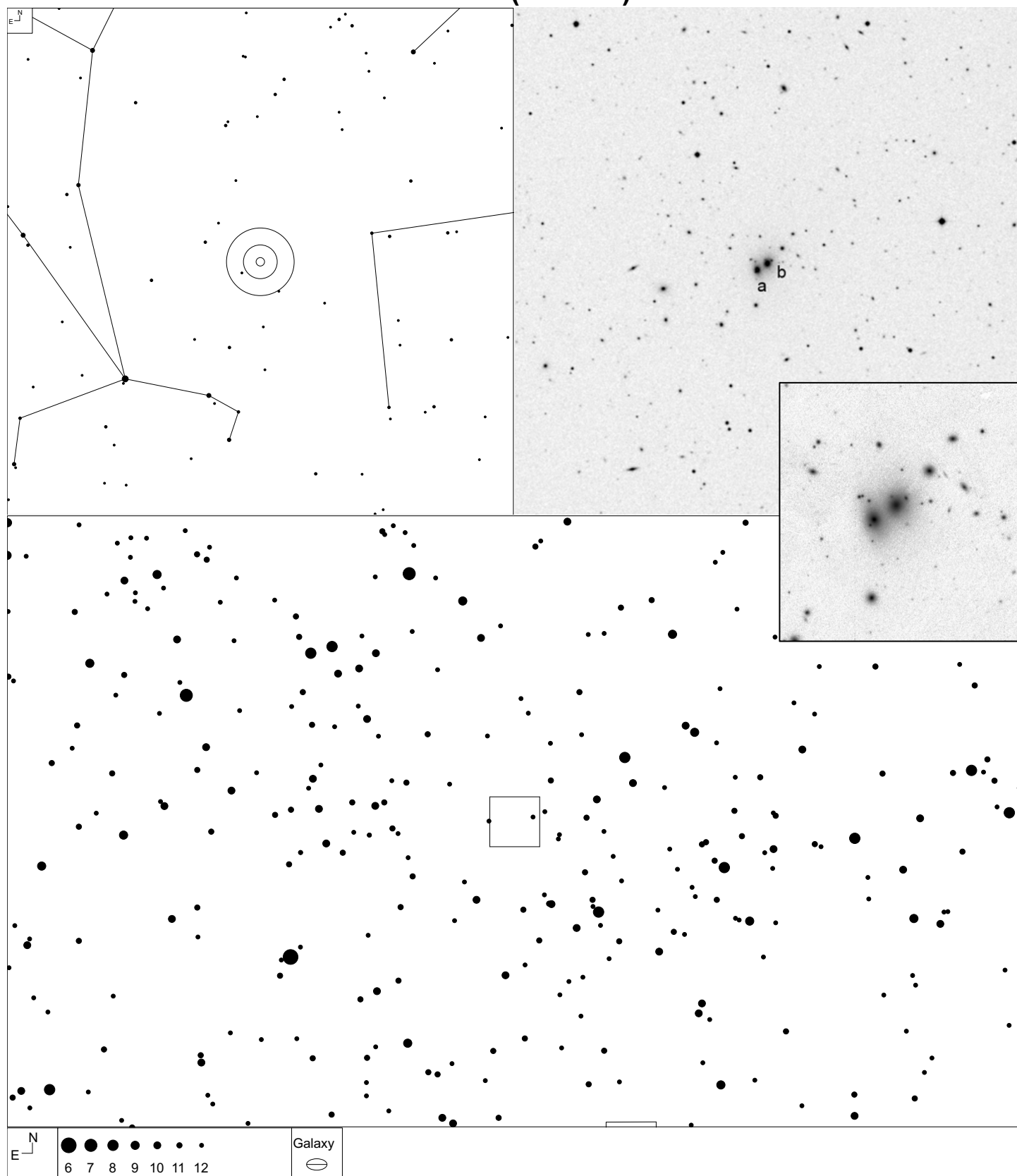
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
351		13 54 30.5	-26 33 58	GPair			PD
351a	MCG-04-33-010	13 54 26.4	-26 34 35	G	14.4b	1.4 x 0.7	
351b	MCG-04-33-011	13 54 34.7	-26 33 22	G	14.6b	1.2 x 1.0	

VV 133 (Boötes)



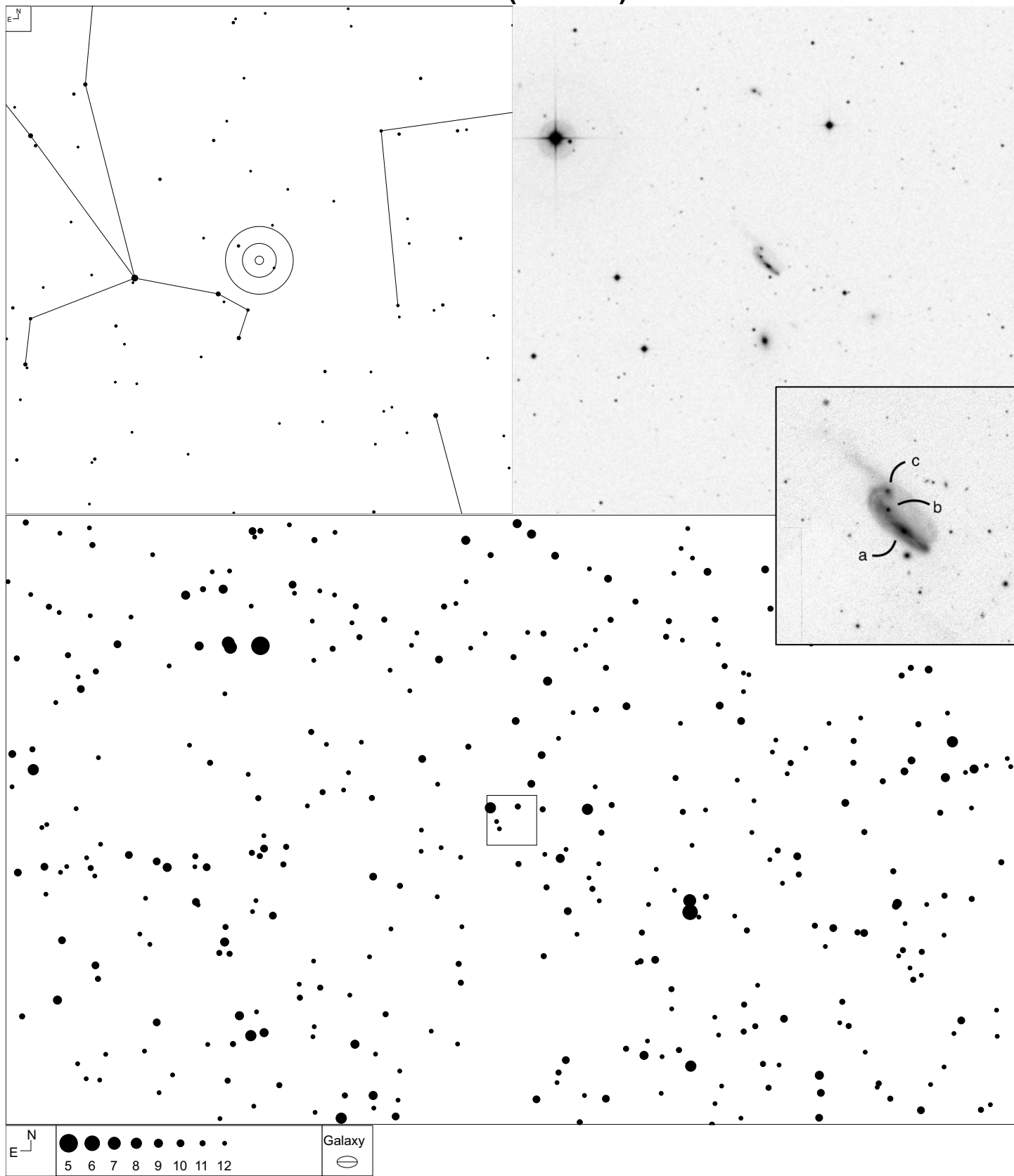
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
133	UGC 8638	13 39 19.4	+24 46 32	G	15.0g	1.2 x 0.8	N

VV 195 (Boötes)



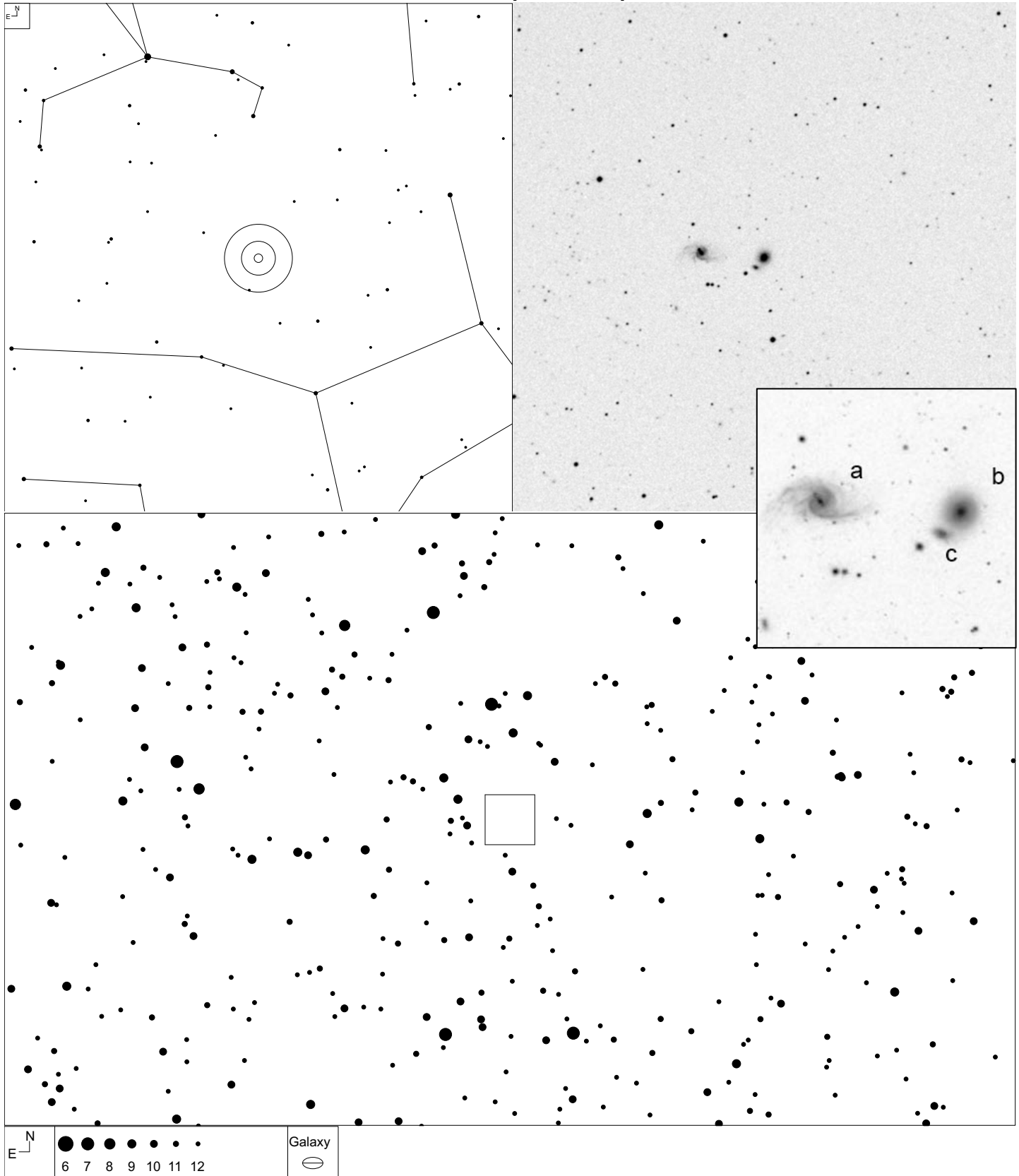
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
195		13 41 49.4	+26 22 19	GPair			PDb
195a	MCG+05-32-064	13 41 50.4	+26 22 13	G	15.3g	0.2 x 0.2	
195b	MCG+05-32-063	13 41 49.1	+26 22 25	G	15.0g	0.8 x 0.6	

VV 163 (Boötes)



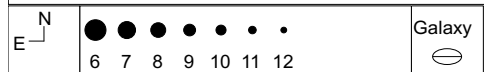
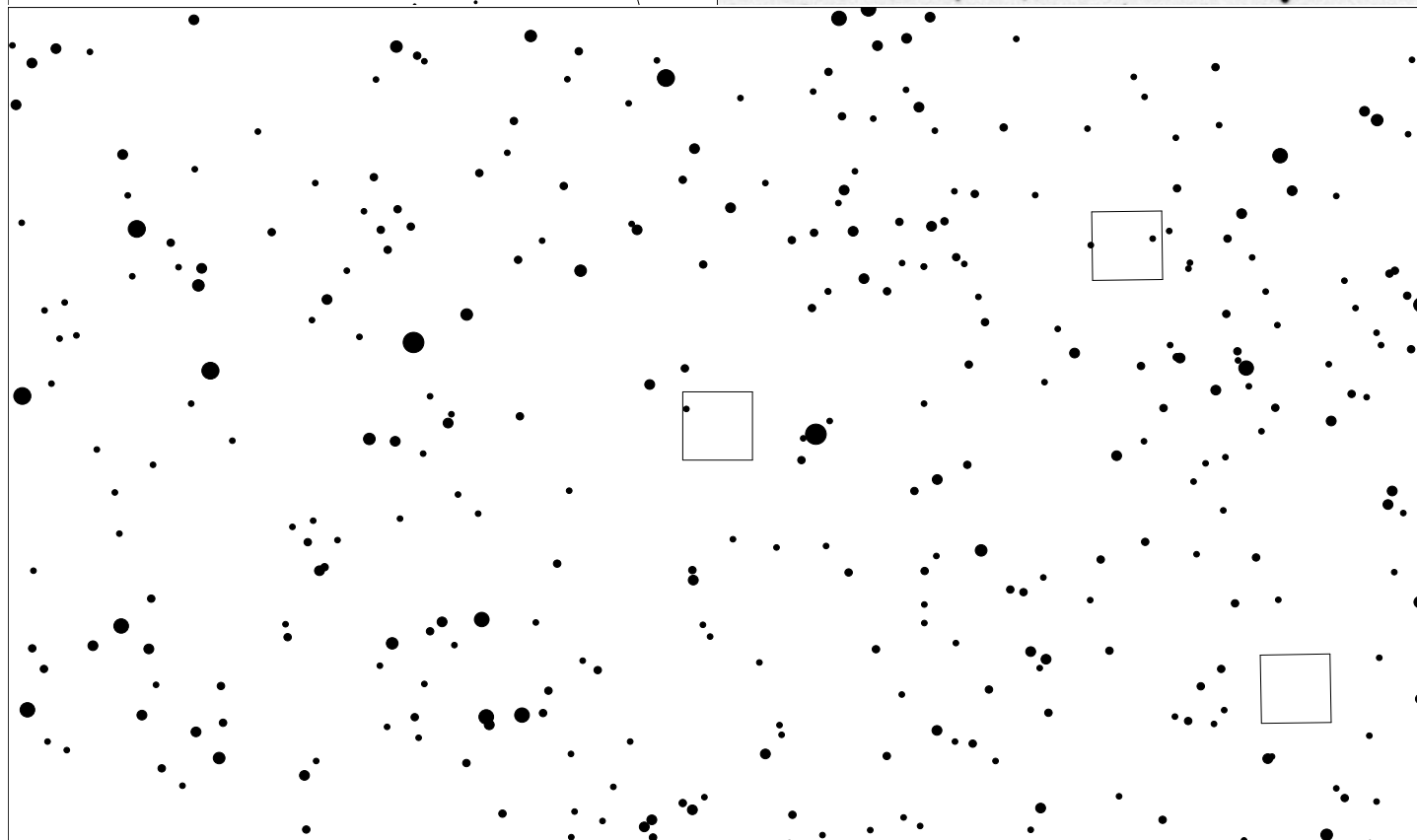
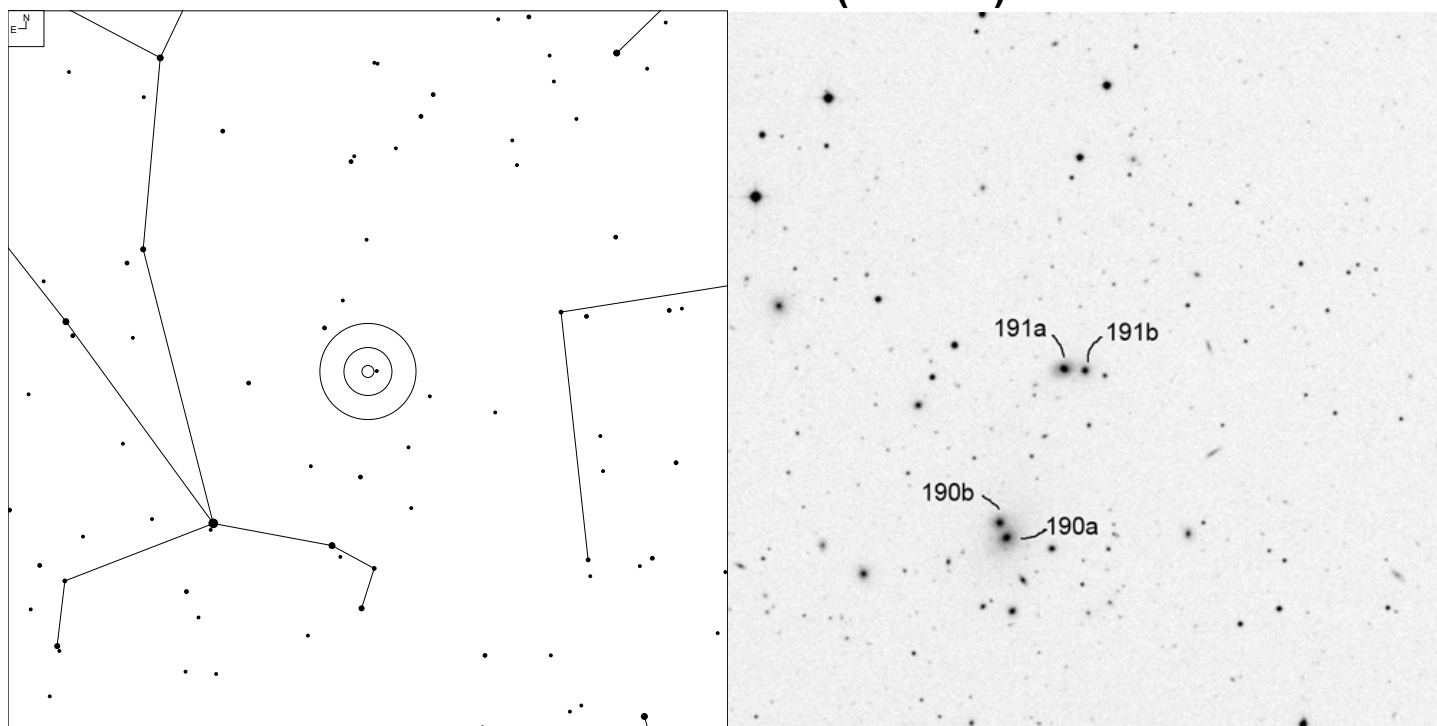
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
163	UGC 8691	13 44 25.0	20 24 50	GTrpl	15.3g	1.2 x 0.5	Ch

VV 306 (Boötes)



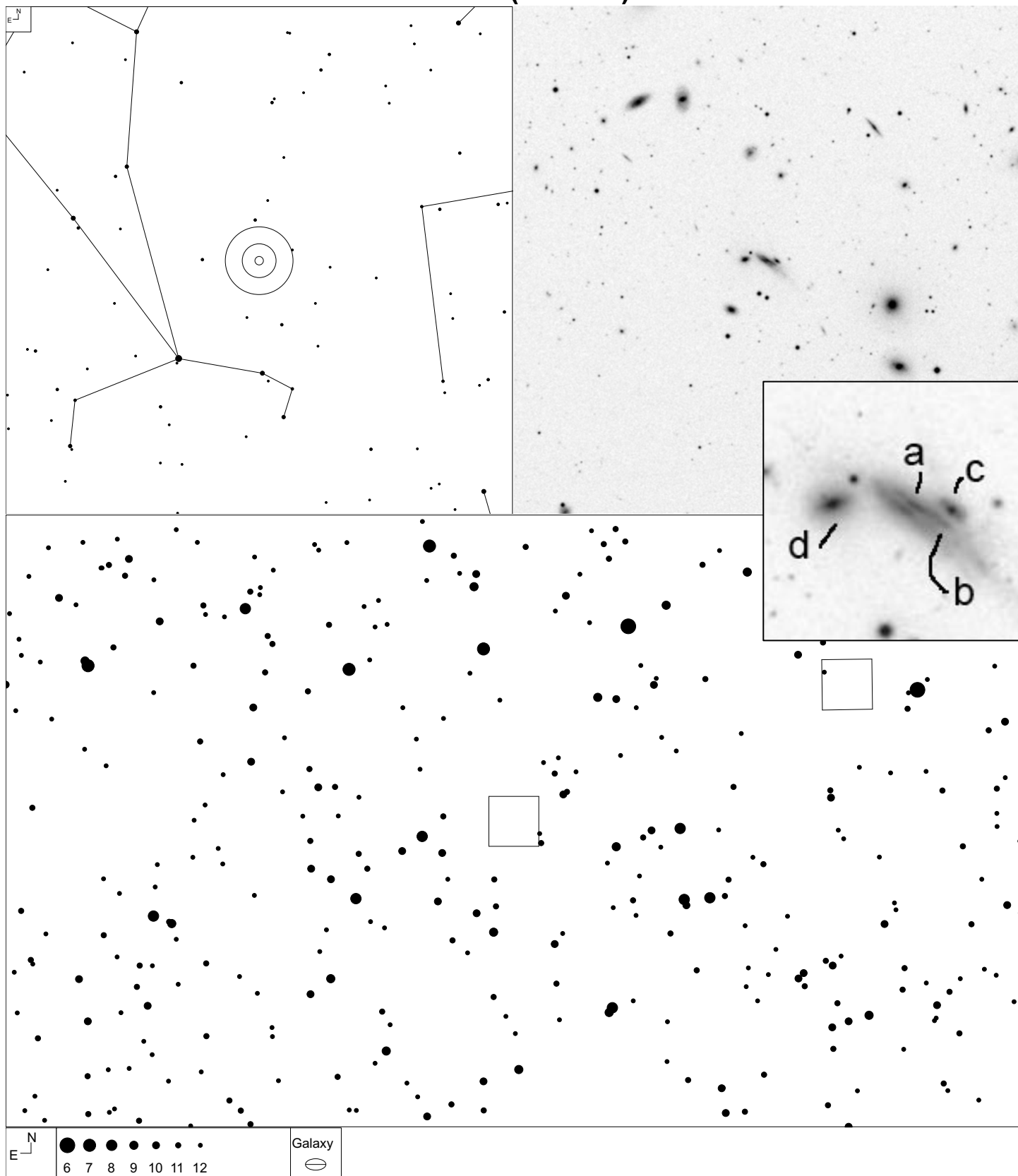
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
306		13 48 08.9	+07 23 27	GTtpl			NNNP
306a	UGC 8728	13 48 12.5	+07 23 41	G	15.1g	1.3 x 0.7	
306b	MCG+01-35-037	13 48 06.0	+07 23 15	G	14.5g	0.4 x 0.4	
306c	MAC 1348+0723	13 48 05.0	+07 23 32	G	16.6g	0.2	

VV 190 and VV 191 (Boötes)



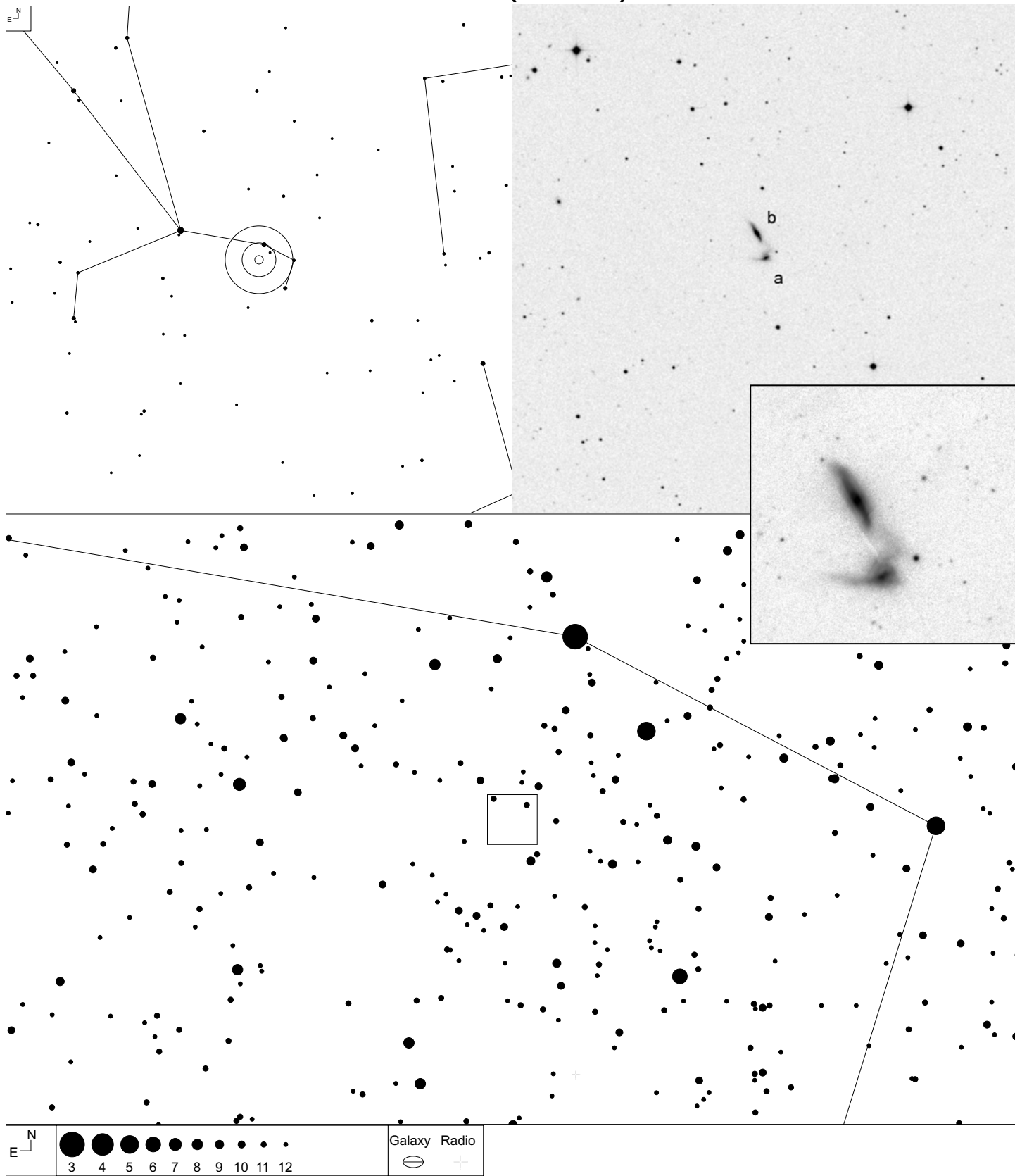
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
190		13 48 15.1	+25 43 59	GPair			PDb
190a	MCG+04-33-006	13 48 16.1	+25 44 01	G	15.0g	0.7 x 0.5	
190b	MCG+04-33-005	13 48 14.1	+25 43 58	G	15.4g	0.4 x 0.4	
191		13 48 22.1	+25 50 50	GPair			PDb
191a	MCG+04-33-003	13 48 21.8	+25 40 31	G	15.3g	0.5 x 0.5	
191b	MCG+04-33-004	13 48 22.4	+25 40 50	G	16.1g	0.5 x 0.5	

VV 281 (Boötes)



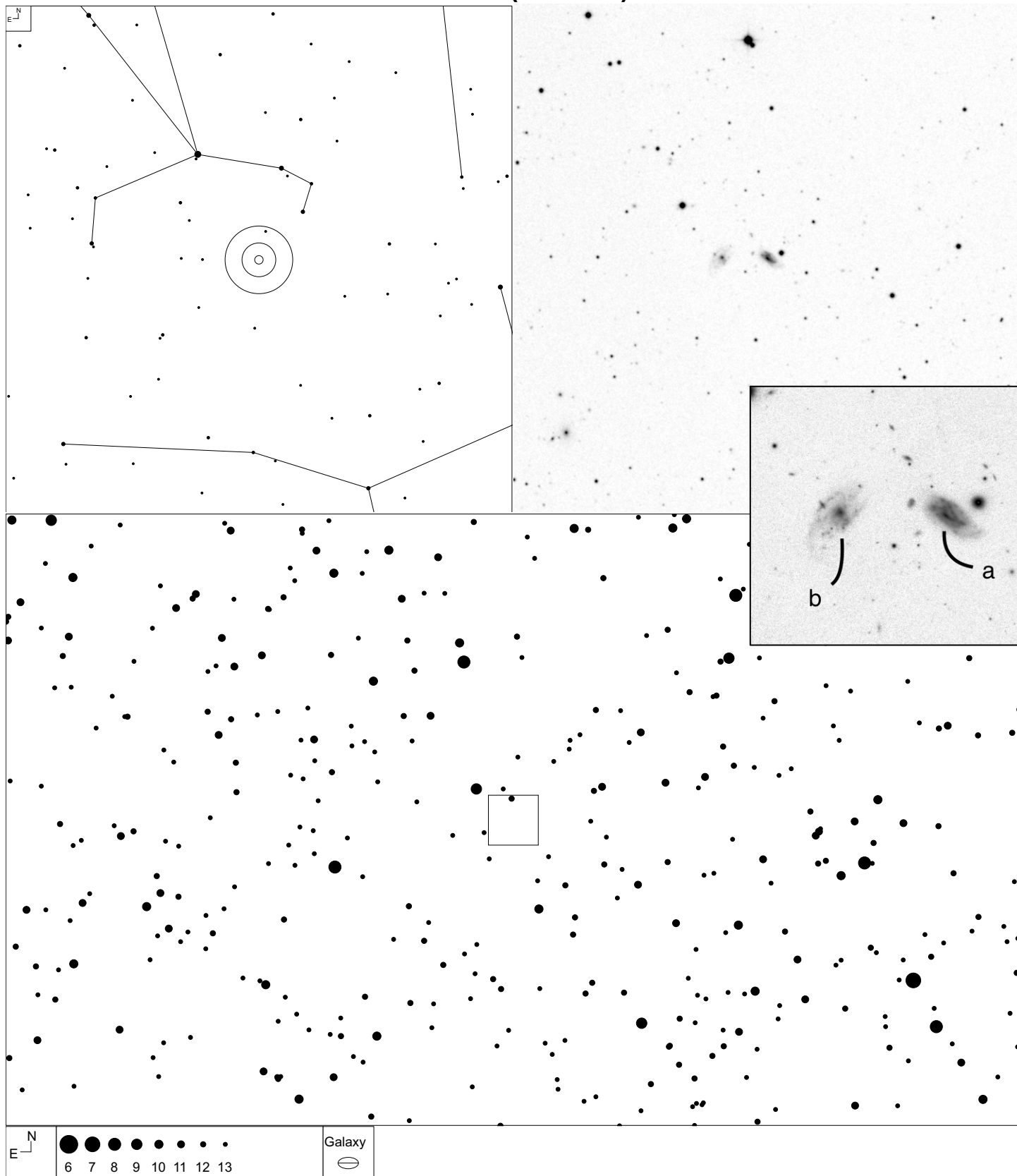
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
281	Hickson 69	13 55 30.0	+25 04 26	GTrpl			Ch
281a	UGC 8842	13 55 29.9	+25 04 27	PofG	15.1g		
281b		13 55 28.7	+25 04 19	PofG			
281c		13 55 28.4	+25 04 25	G	16.8g	0.1 x 0.1	
281d	MCG+04-33-028	13 55 32.6	+25 04 28	G	15.6g	0.5 x 0.4	

VV 335 (Boötes)



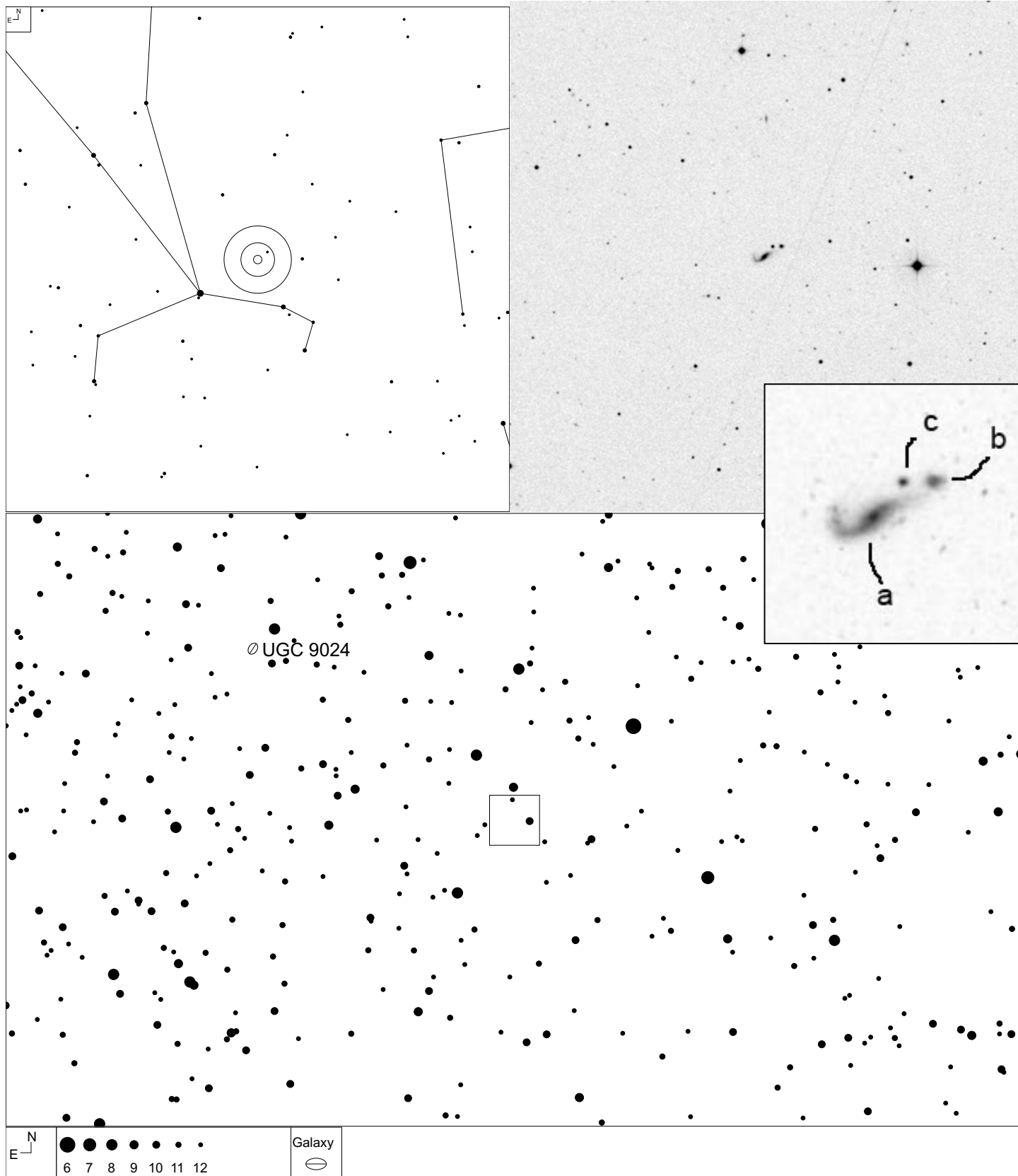
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
335		13 55 59.6	+17 30 21	GPair			PDb
335a	IC 960	13 55 59.1	+17 29 57	G	15.0g	0.9 x 0.6	
335b	IC 960B	13 56 00.1	+17 30 42	G	14.9g	0.7 x 0.2	

VV 339 (Boötes)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
339		14 00 22.5	+12 57 26	GPair			PD
339a	MCG+02-36-007	14 00 19.8	+12 57 26	G	15.2g	1.0 x 0.6	
339b	UGC 8920	14 00 25.3	+12 57 27	G	15.8g	0.9 x 0.7	

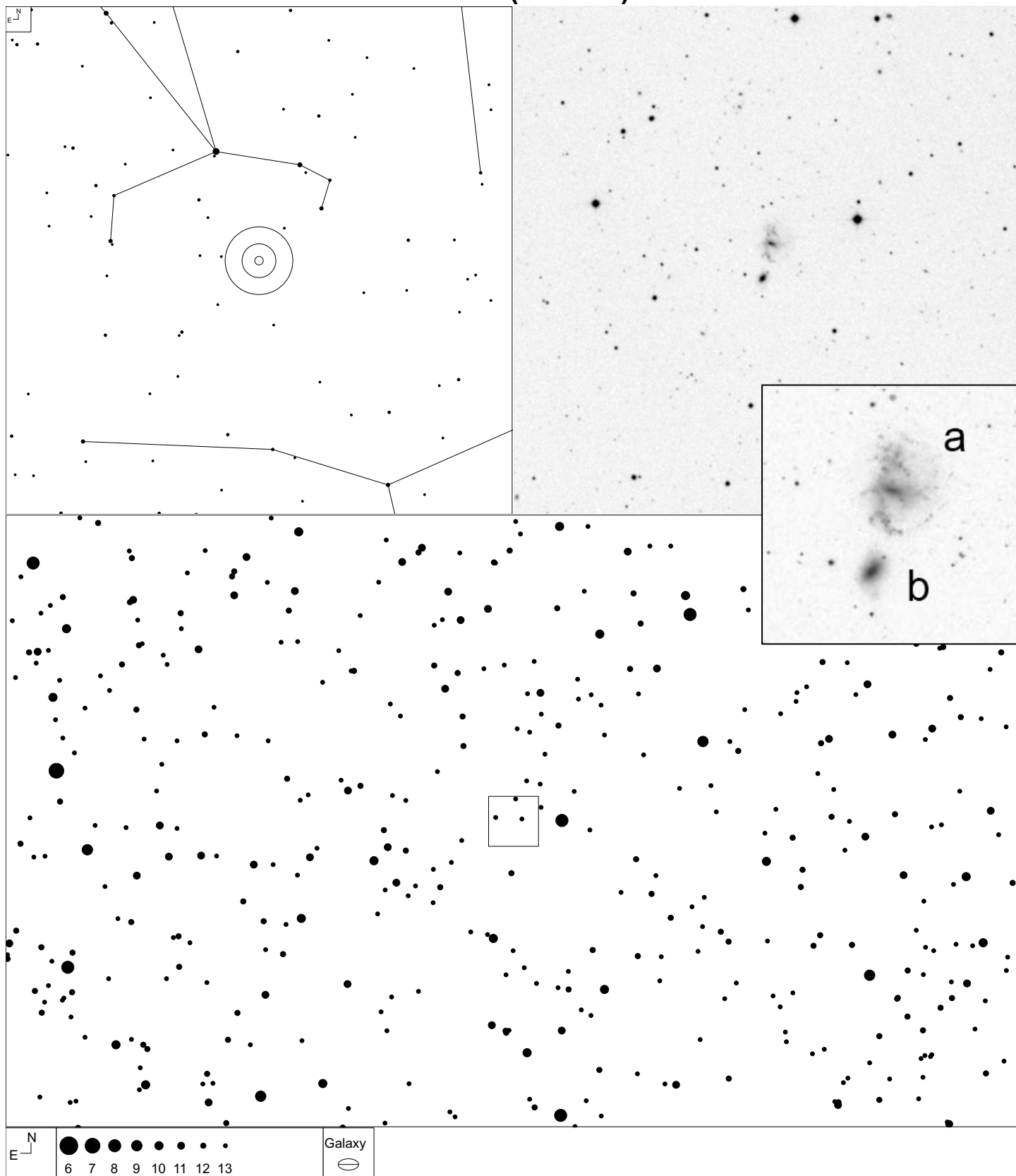
VV 277 (Boötes)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
277	UGC 8929	14 01 08.2	+21 14 24	GPair	15.1g	1.0 x 0.4	PKdf
277b	PGC 200312	14 01 07.1	+21 14 35	G	16.3g	0.2 x 0.2	

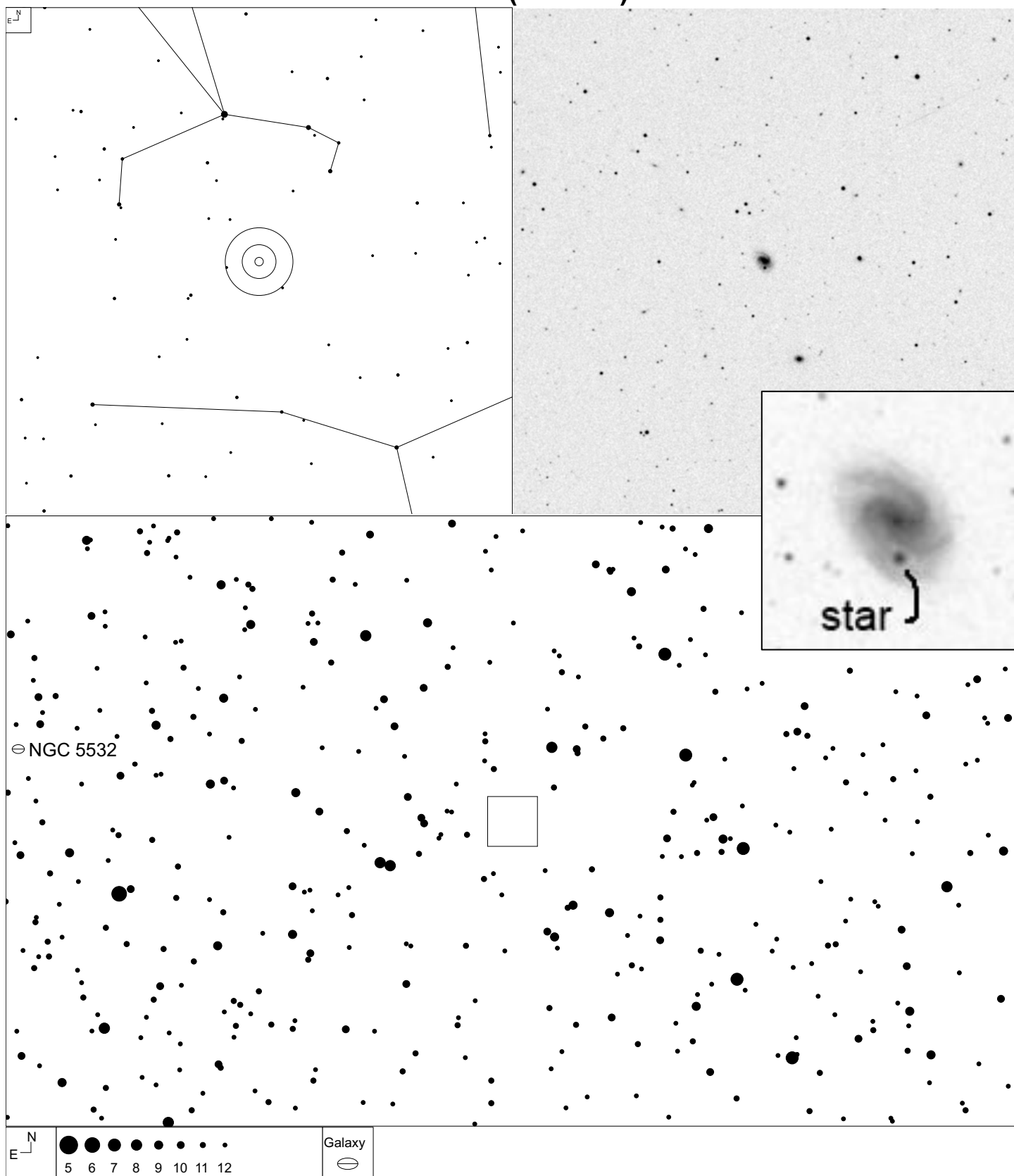
C is a star

VV 328 (Boötes)



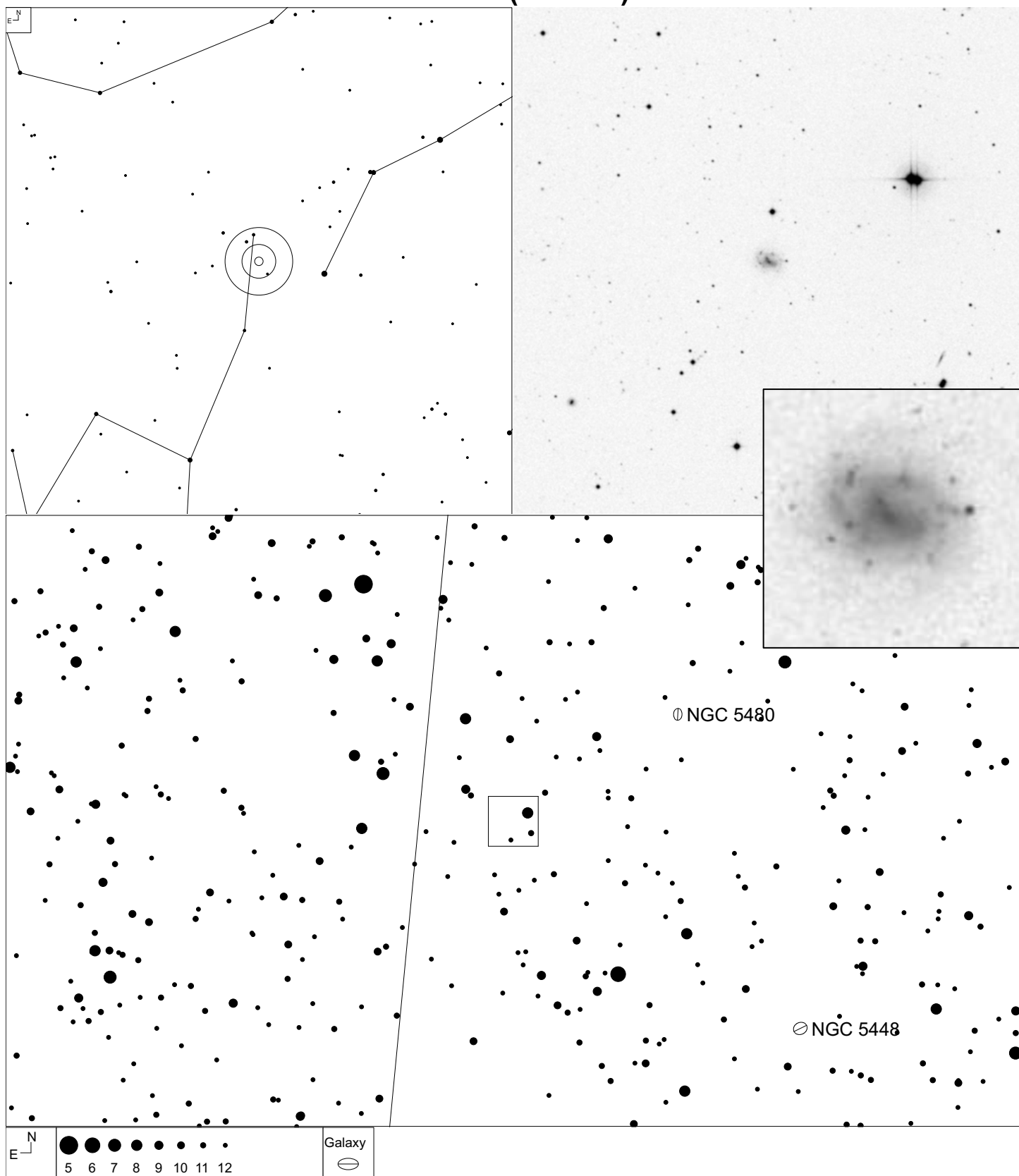
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
328		14 04 54.2	+12 42 48	GPair			PD
328a	UGC 9002	14 04 53.7	+12 43 18	G	14.4p	1.3 x 0.8	
328b	MCG+02-36-035	14 04 54.7	+12 42 17	G	14.9g	0.4 x 0.2	

VV 103 (Boötes)



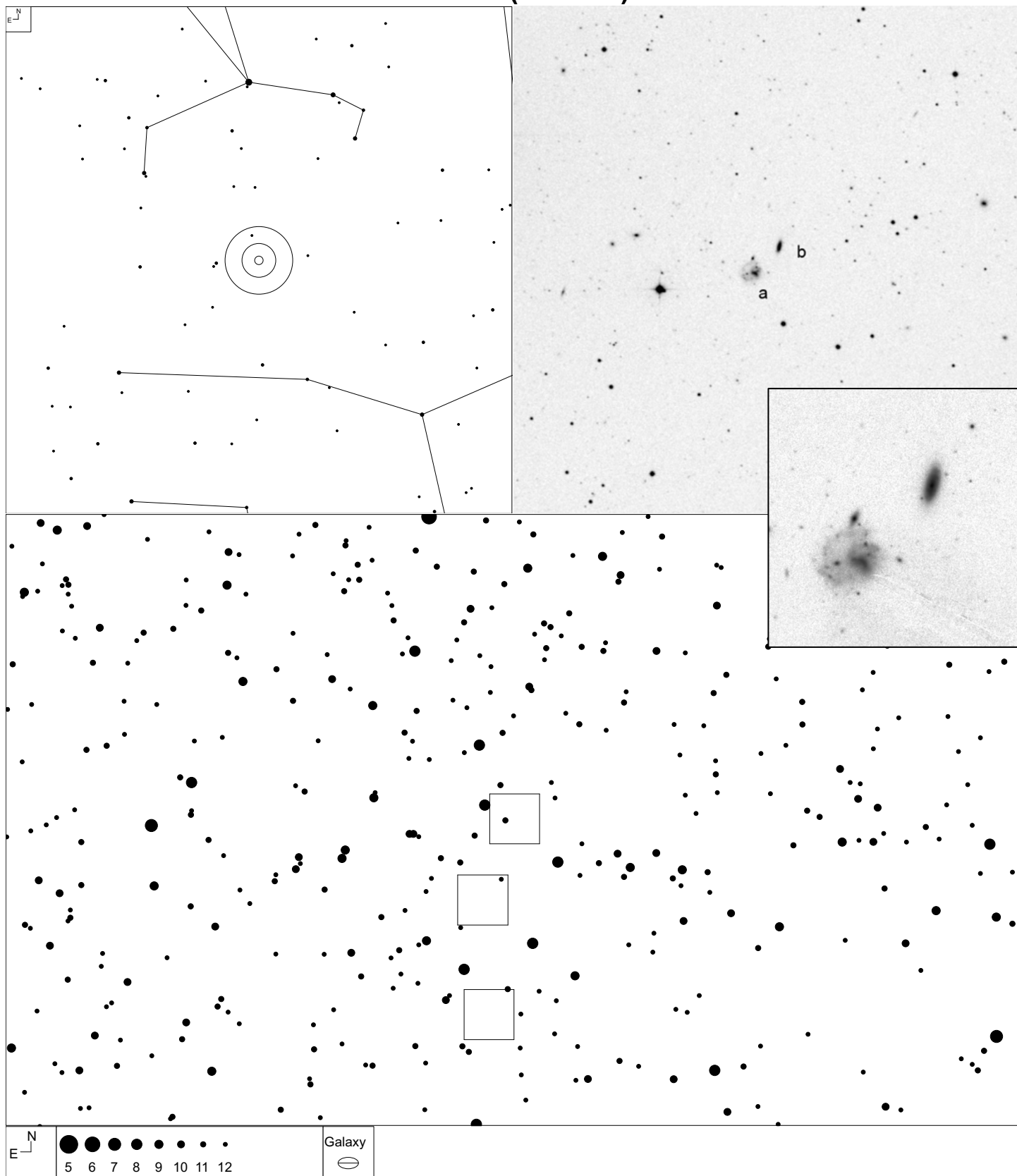
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
103	MCG+02-36-041	14 07 00.1	+10 27 44	GPair	14.8g	0.9 x 0.6	PC

VV 125 (Boötes)



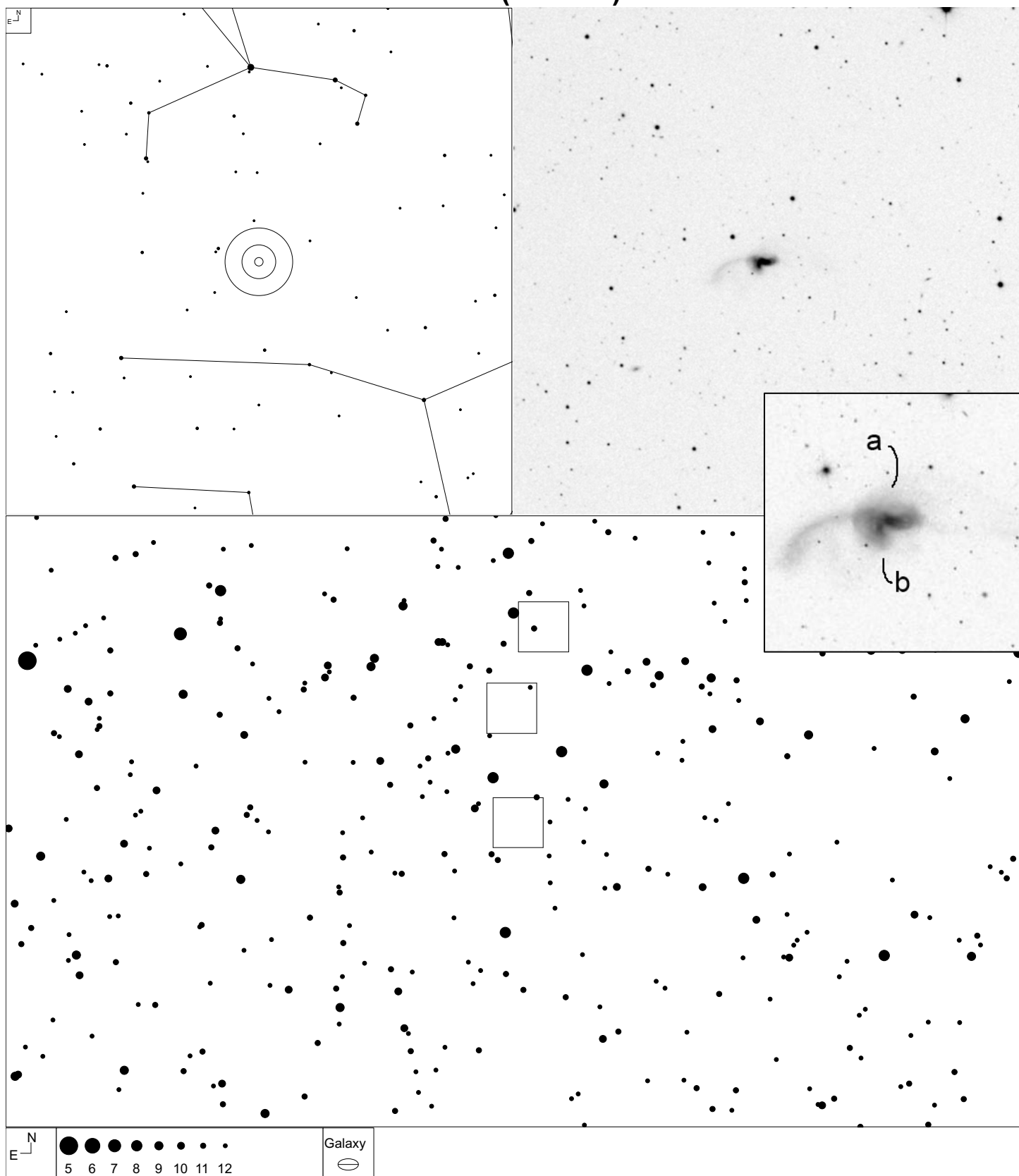
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
125	UGC 9083	14 11 27.0	+50 12 33	G	15.1g	1.1 x 0.8	N

VV 299 (Boötes)



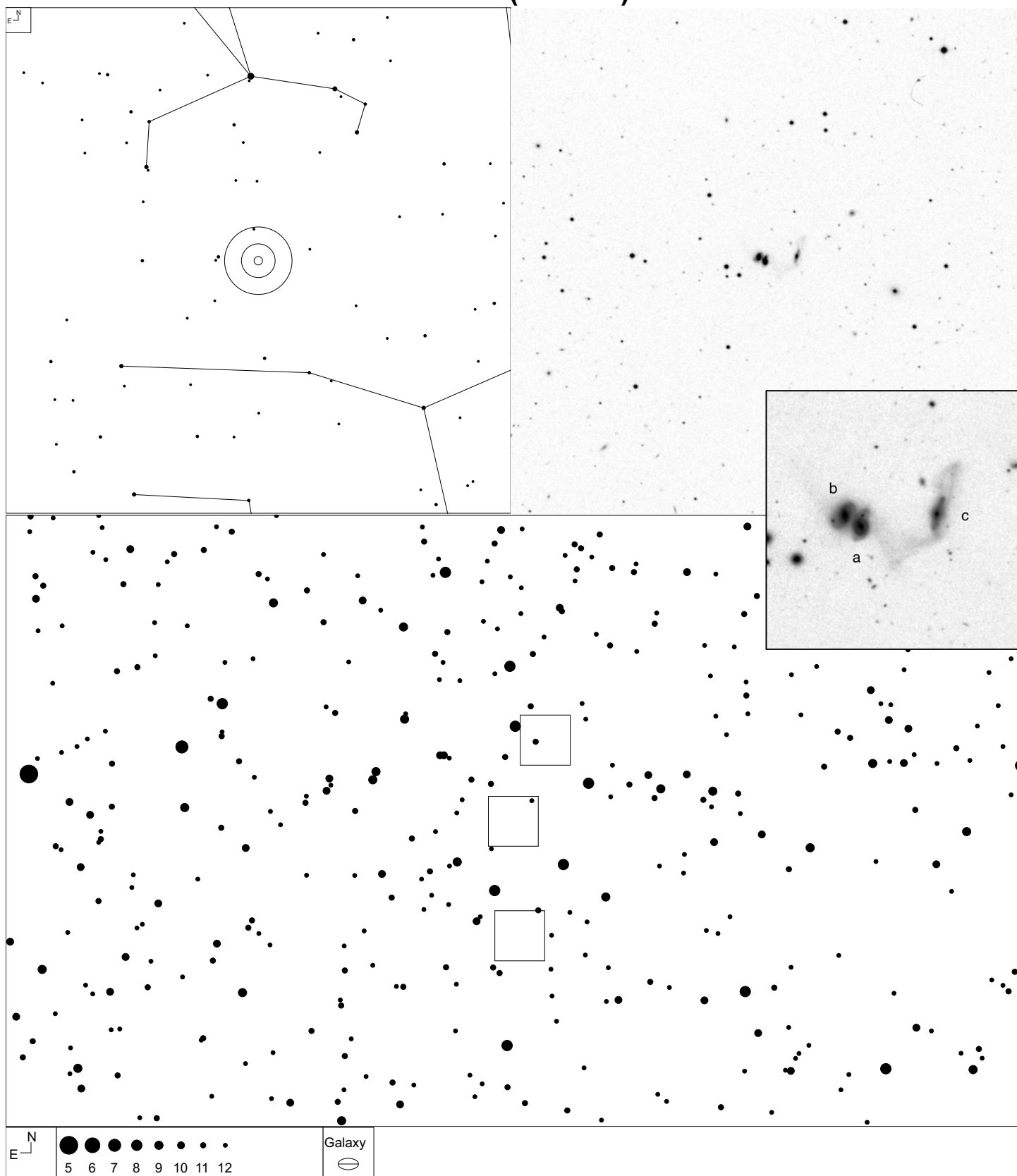
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
299		14 13 06.9	+08 37 31	GPair			PD
299a	NGC 5511	14 13 08.3	+08 37 08	G	15.4g	0.6 x 0.6	
299b	NGC 5511B	14 13 05.4	+08 37 55	G	15.8g	0.6 x 0.2	

VV 70 (Boötes)



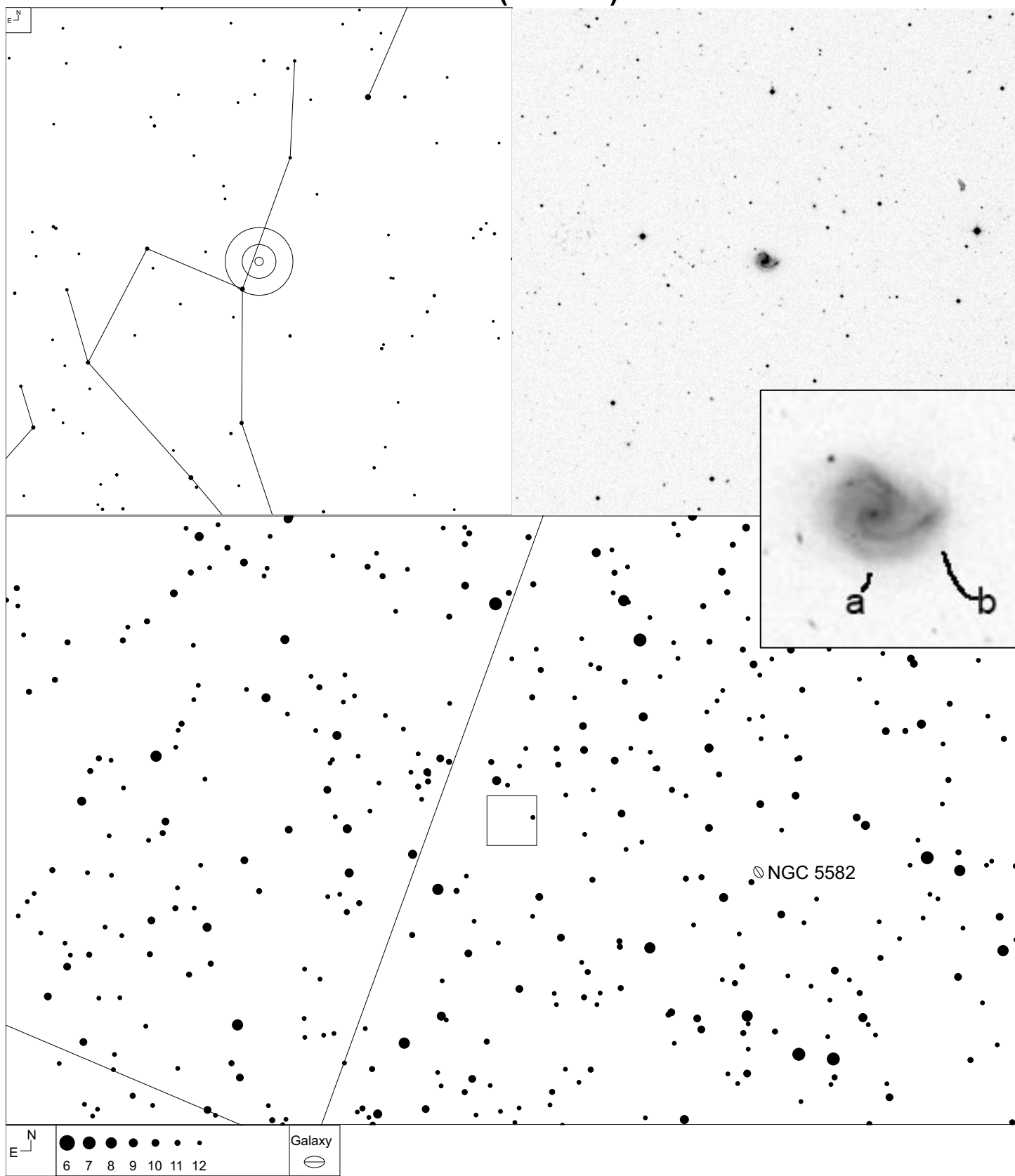
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
70	NGC 5514	14 13 38.8	+07 39 34	GPair	13.7g		PC
70a		14 13 38.4	+07 39 38	G		1.0 x 0.5	
70b		14 13 39.4	+07 39 29	G		0.8 x 0.7	

VV 223 (Boötes)



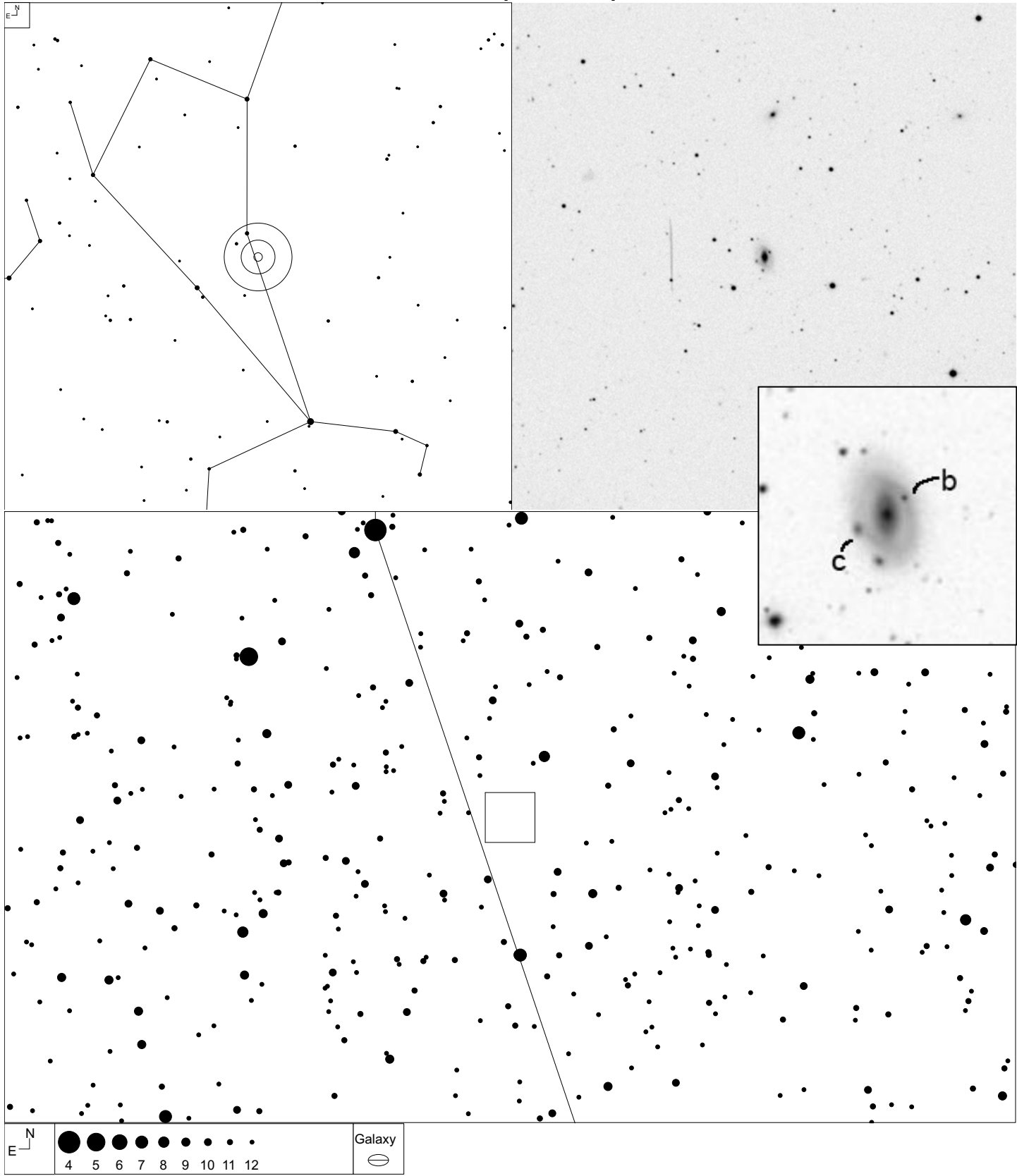
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
223		14 13 44.7	+08 13 13	GTrpl			NNNP
223a	MCG+02-36-057a	14 13 45.7	+08 13 07	G	15.2g	0.4 x 0.2	
223b	MCG+02-36-057b	14 13 46.5	+08 13 15	G	15.1g	0.5 x 0.2	
223c	UGC 9103	14 13 42.0	+08 13 16	G	16.1g	1.0 x 0.2	

VV 24 (Boötes)



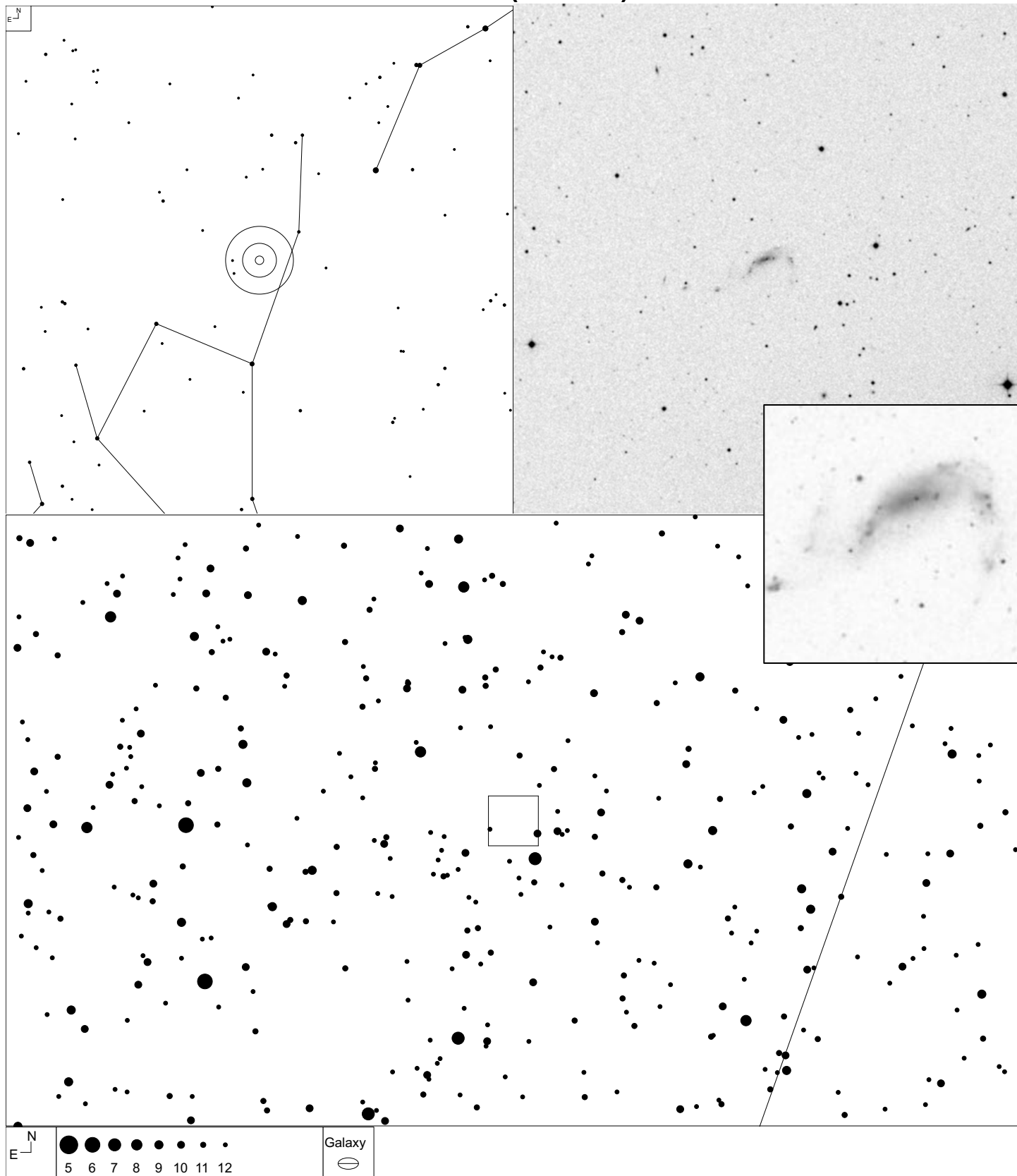
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
24	NGC 5625	14 27 01.5	+39 57 25	GPair	14.8g	0.8 x 0.6	M

VV 15 (Boötes)



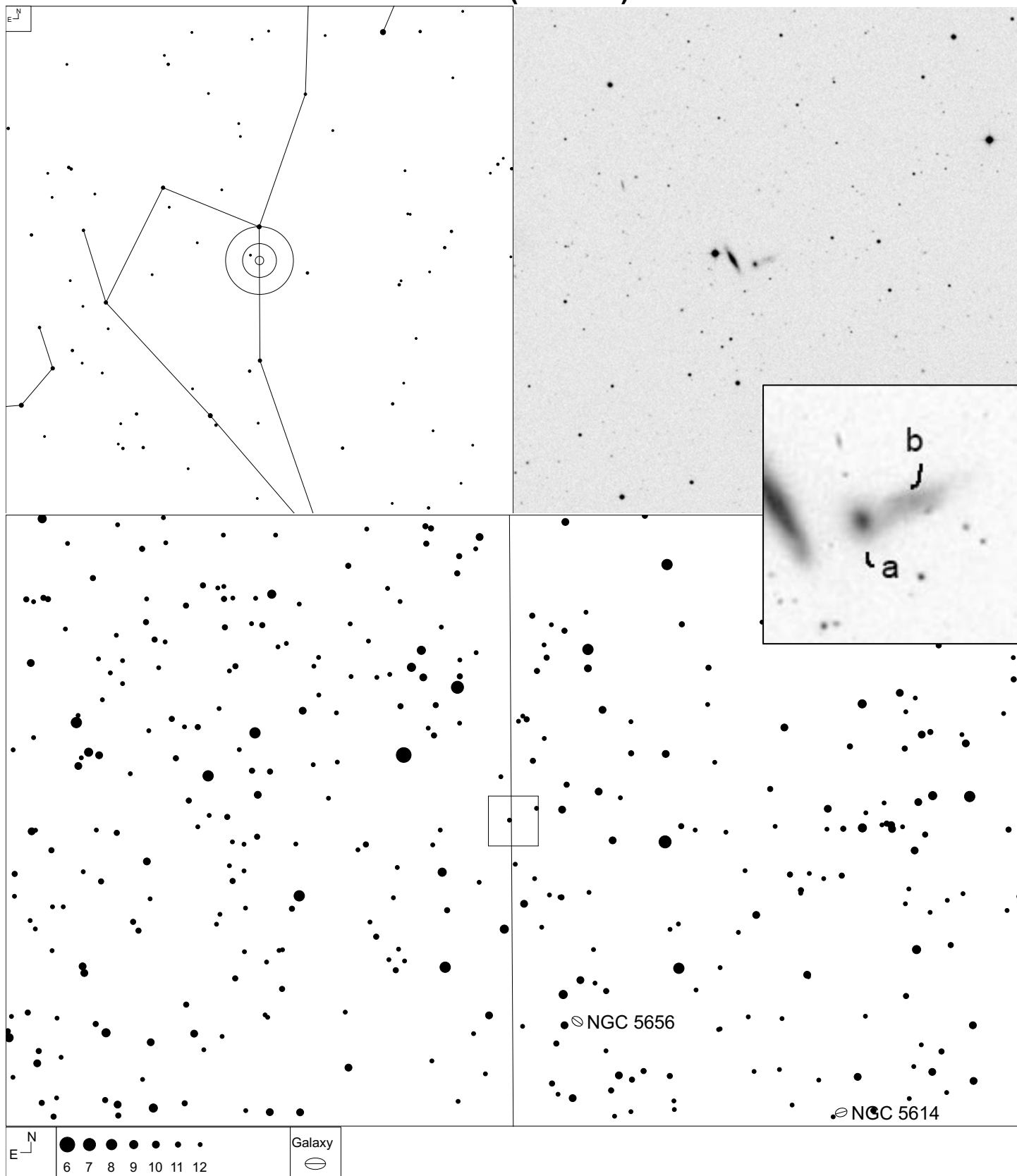
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
15	IC 4442	14 28 45.3	+28 57 51	G	14.6p	1.0 x 0.6	M

VV 152 (Boötes)



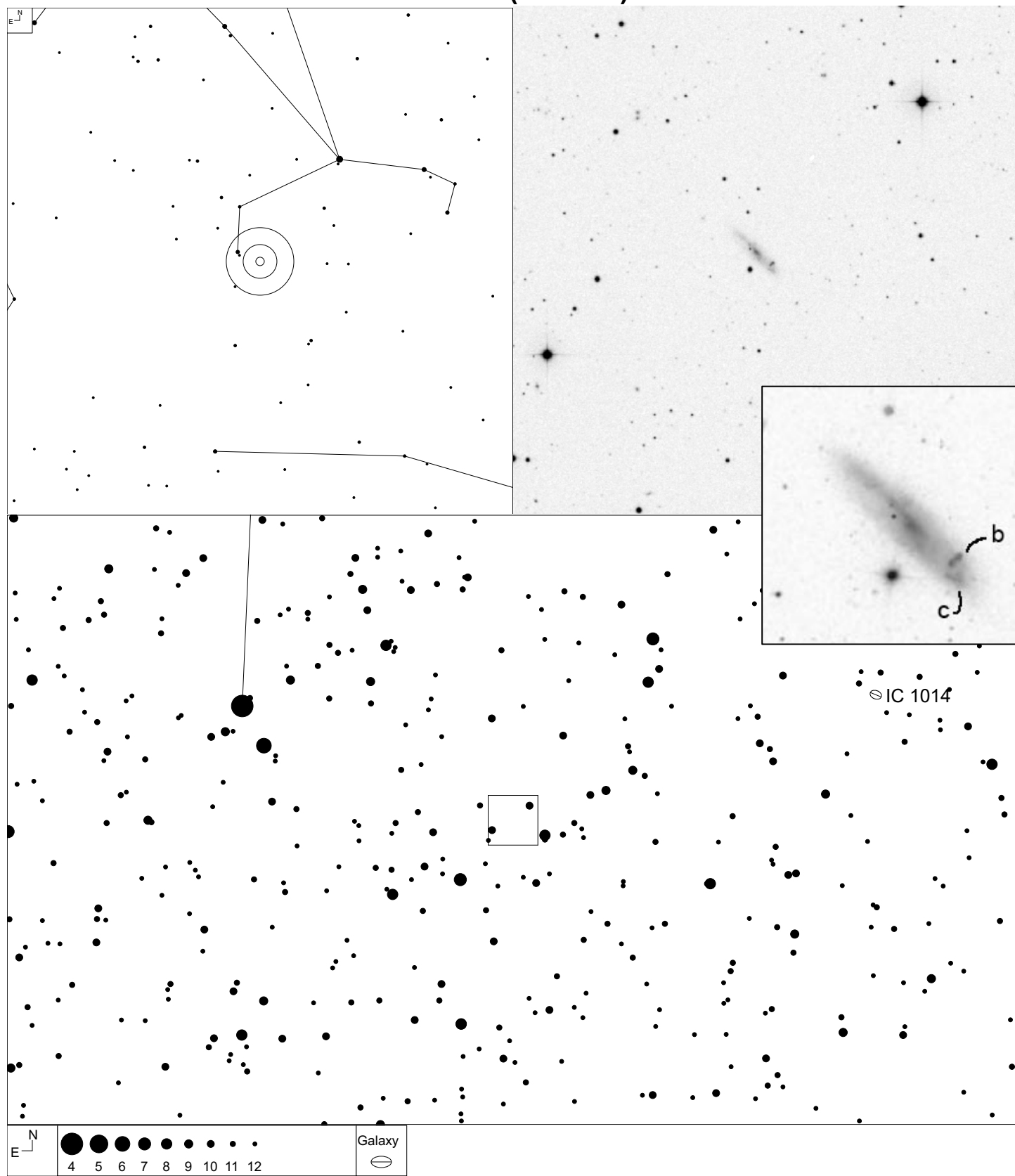
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
152	UGC 9324	14 29 50.7	+44 26 52	G	15.3g	2.3 x 0.1	N

VV 262 (Boötes)



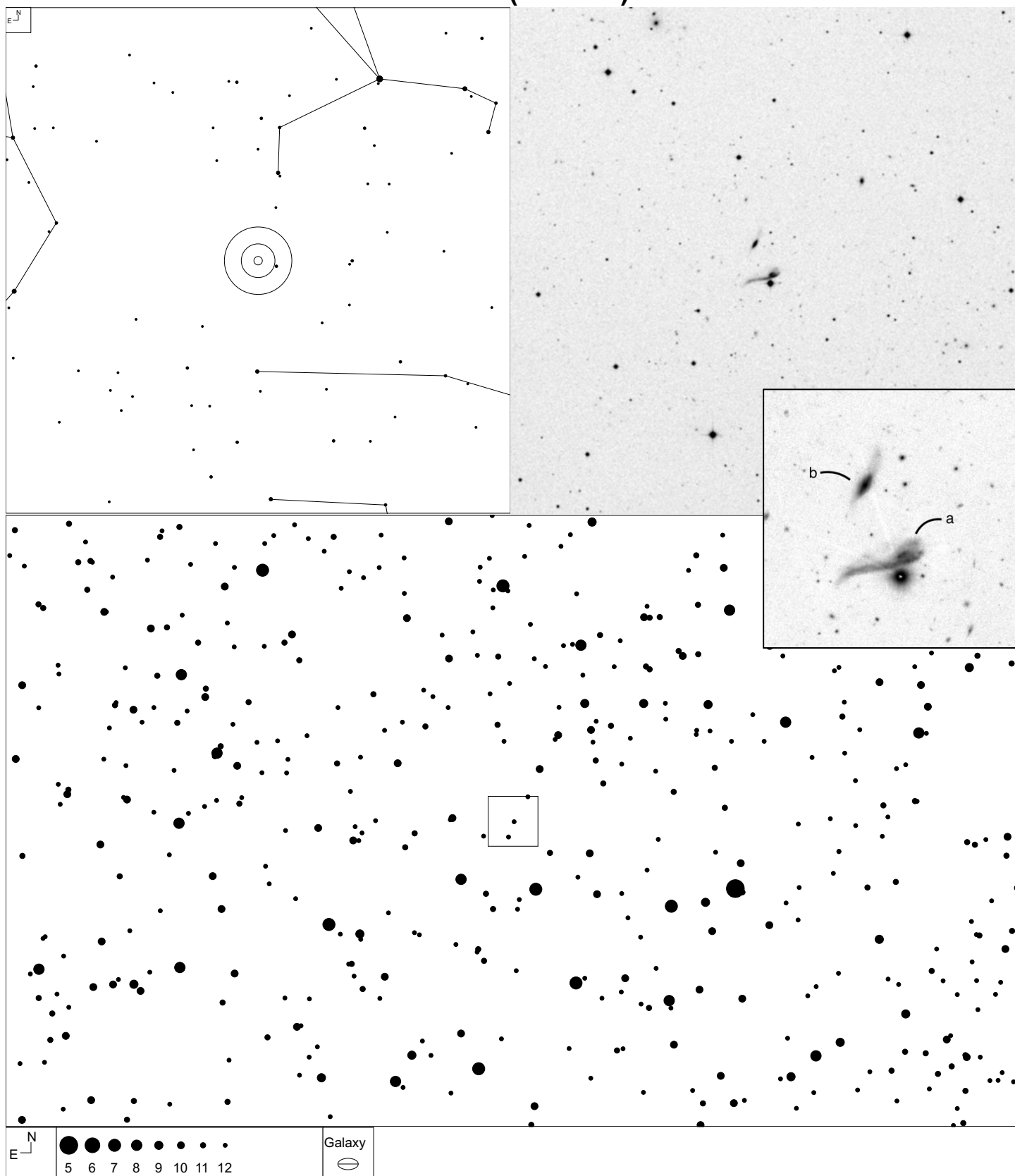
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
262	MCG+06-32-059	14 31 56.8	+36 18 15	GPair	16.5g	0.6 x 0.2	PK
262b	MAC 1431+3618	14 31 55.7	+36 18 21	G	16.5g	0.9 x 0.3	

VV 146 (Boötes)



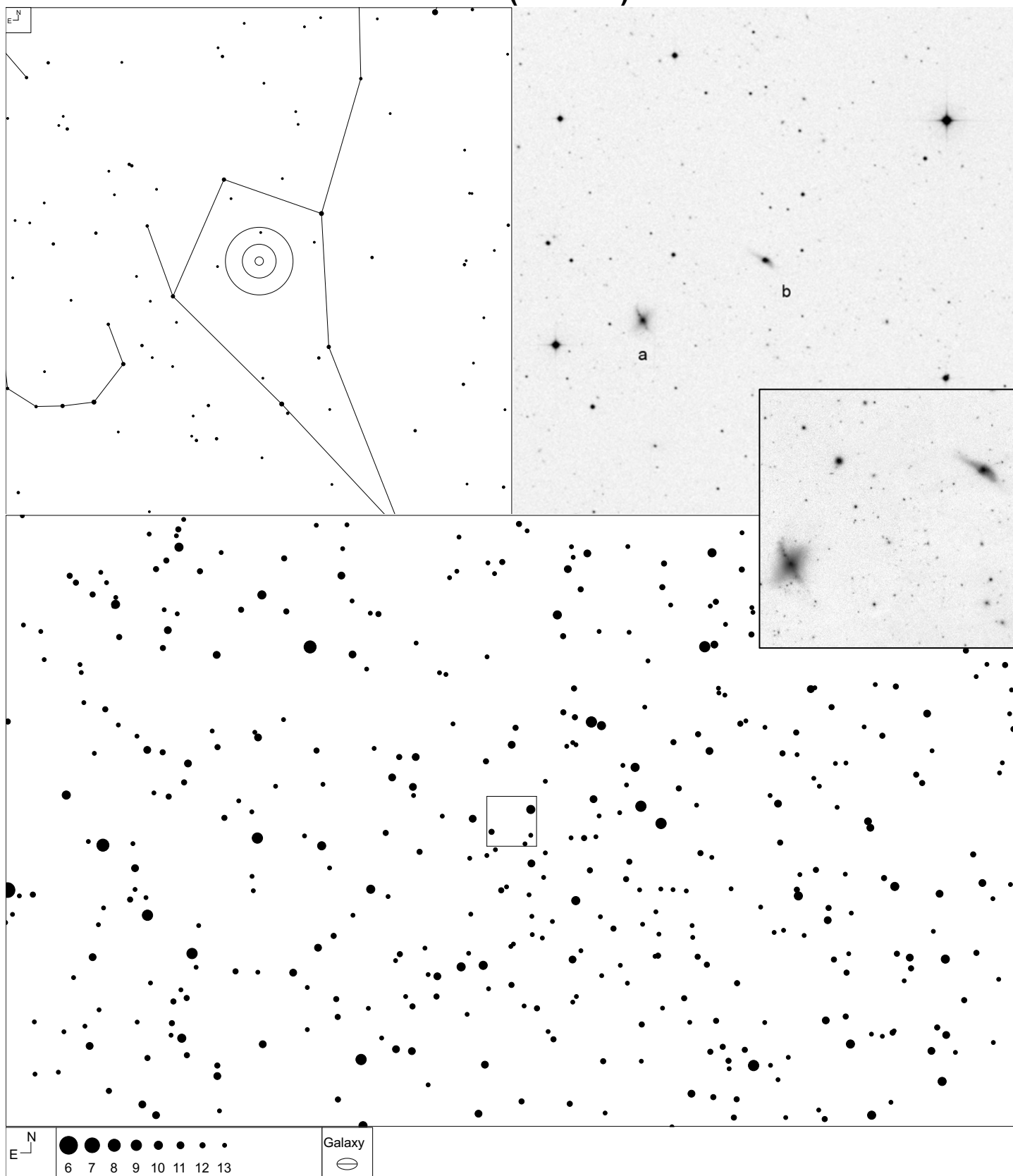
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
146	UGC 9394	14 35 38.9	+13 09 56	GTrpl	14.8g	2.2 x 0.7	N

VV 109 (Boötes)



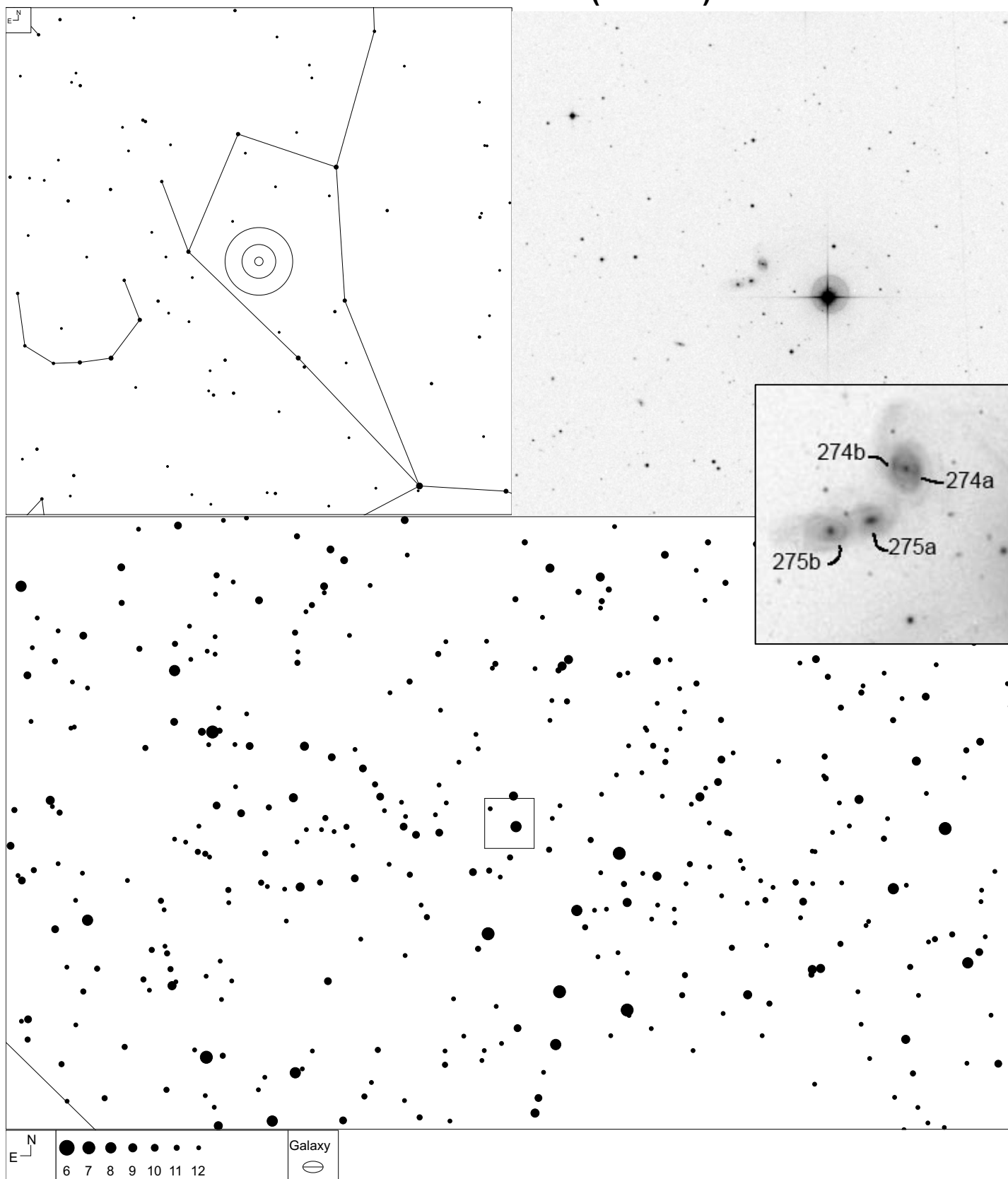
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
109		14 46 02.8	+08 30 11	GTrpl			NNNP
109a	UGC 9509	14 46 01.8	+08 29 47	GPair	15.1g	1.2 x 0.4	
109b	MCG+02-38-004	14 46 03.8	+08 30 40	G	15.7g	0.4 x 0.2	

VV 324 (Boötes)



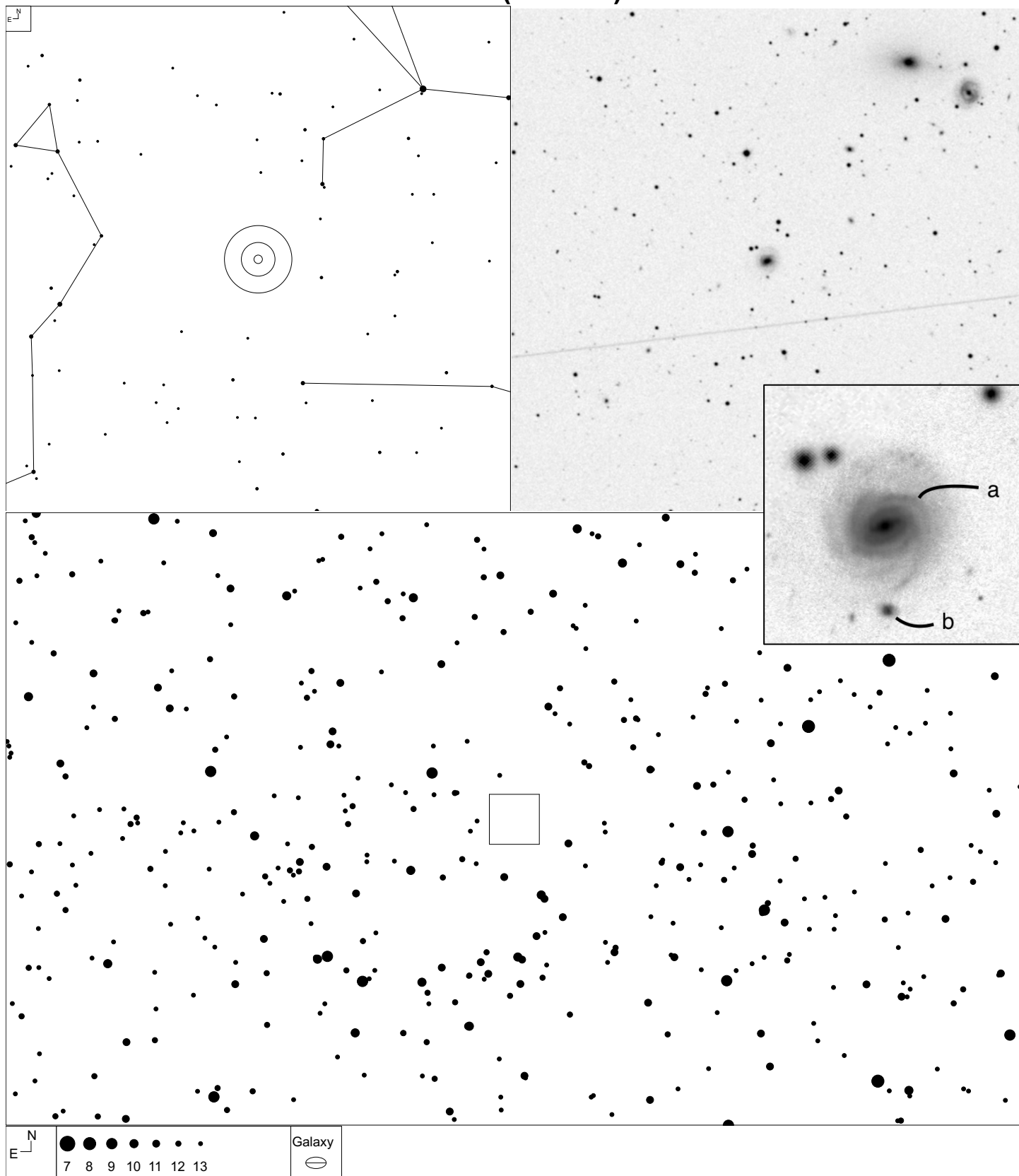
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
324		14 51 05.5	+35 33 23	GPair			PD
324a	UGC 9562	14 51 14.4	+35 32 29	G	14.4b	1.1 x 0.8	
324b	UGC 9560	14 50 56.5	+35 34 18	G	14.8b	1.0 x 0.3	

VV 274 and VV 275 (Boötes)



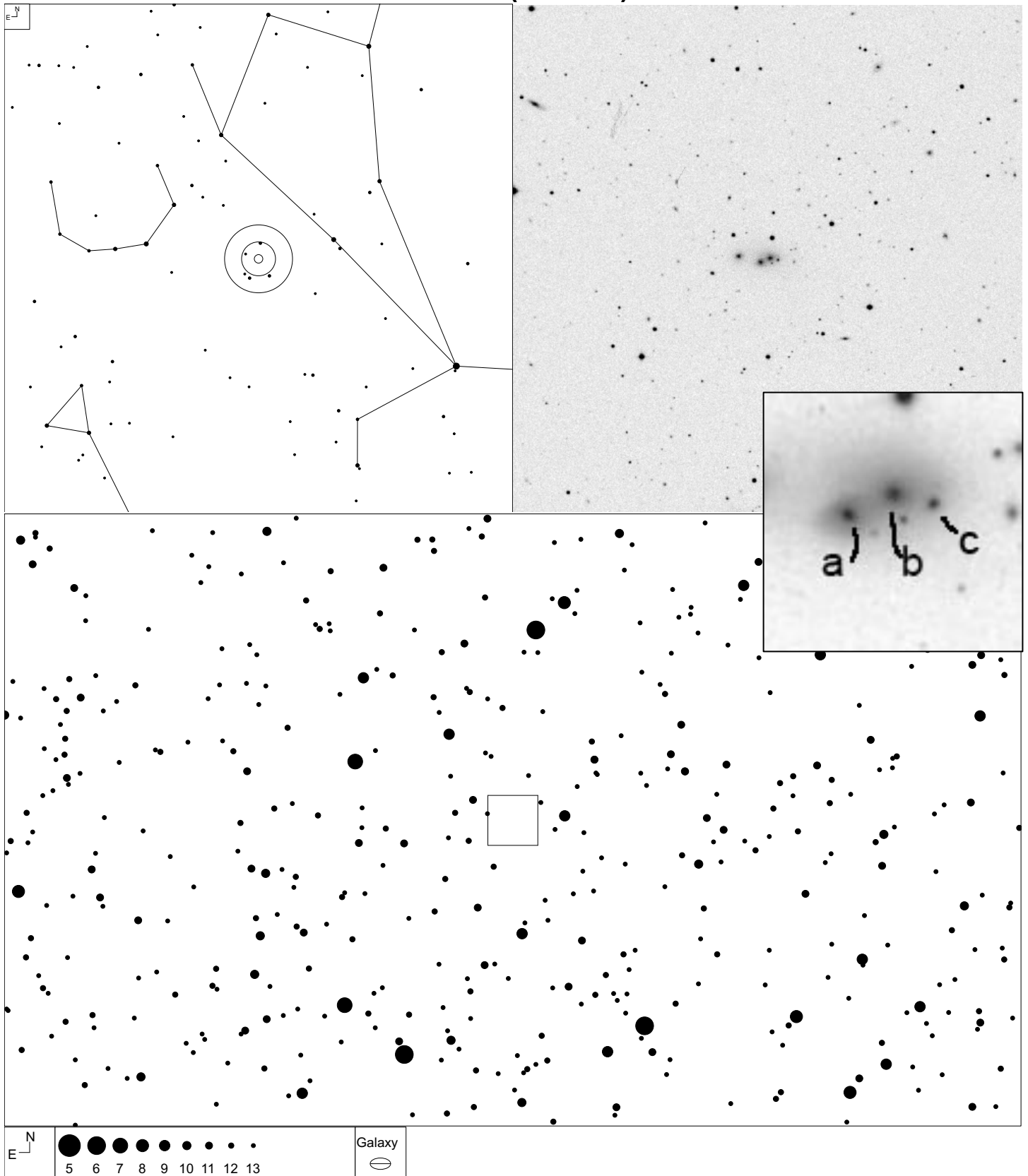
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
274	MCG+06-33-009	14 55 28.2	+32 50 25	GPair	15.6g	0.6 x 0.5	PKt
275		14 55 30.8	+32 49 51	GPair		1.2 x 0.5	PDt
275a	UGC 9603	14 55 29.8	+32 49 54	G	16.5g	0.5 x 0.3	
275b	MCG+06-33-011	14 55 31.7	+32 49 47	G	16.3g	0.8 x 0.4	

VV 26 (Boötes)



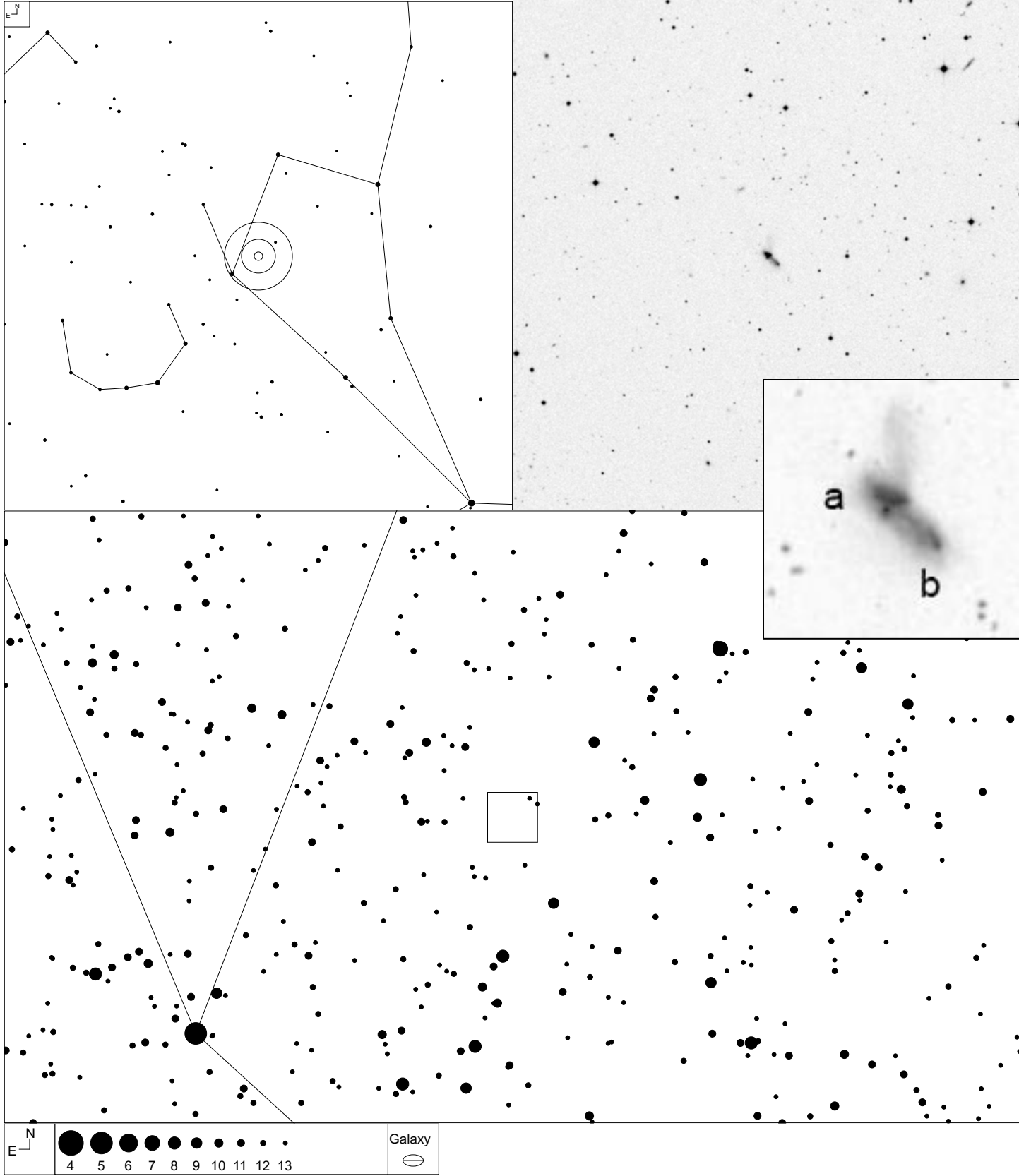
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
26	UGC 9616	14 56 53.1	+09 16 18	GPair	14.6g	1.0 x 0.9	M

VV 204 (Boötes)



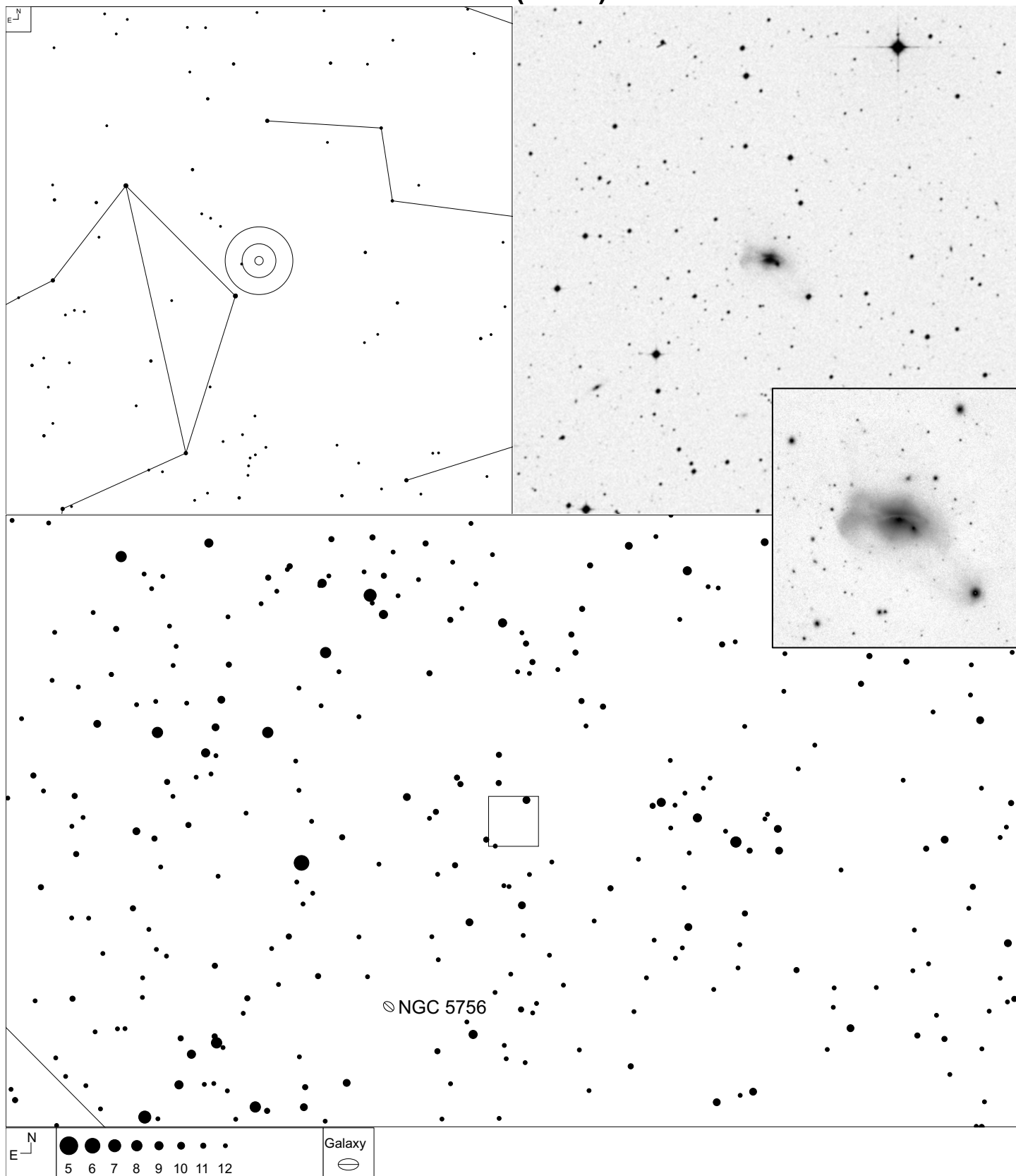
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
204		15 04 57.2	+26 00 54	G			NNNP
204a	MCG+04-36-005	15 04 58.3	+26 00 51	G	16.2g	0.5 x 0.4	
204b	MCG+04-36-004	15 04 57.1	+26 00 58	G	15.5g	0.7 x 0.6	
204c	MCG +04-36-(003a)	15 04 56.1	+26 00 55	G	18.1g	0.2 x 0.2	

VV 59 (Boötes)



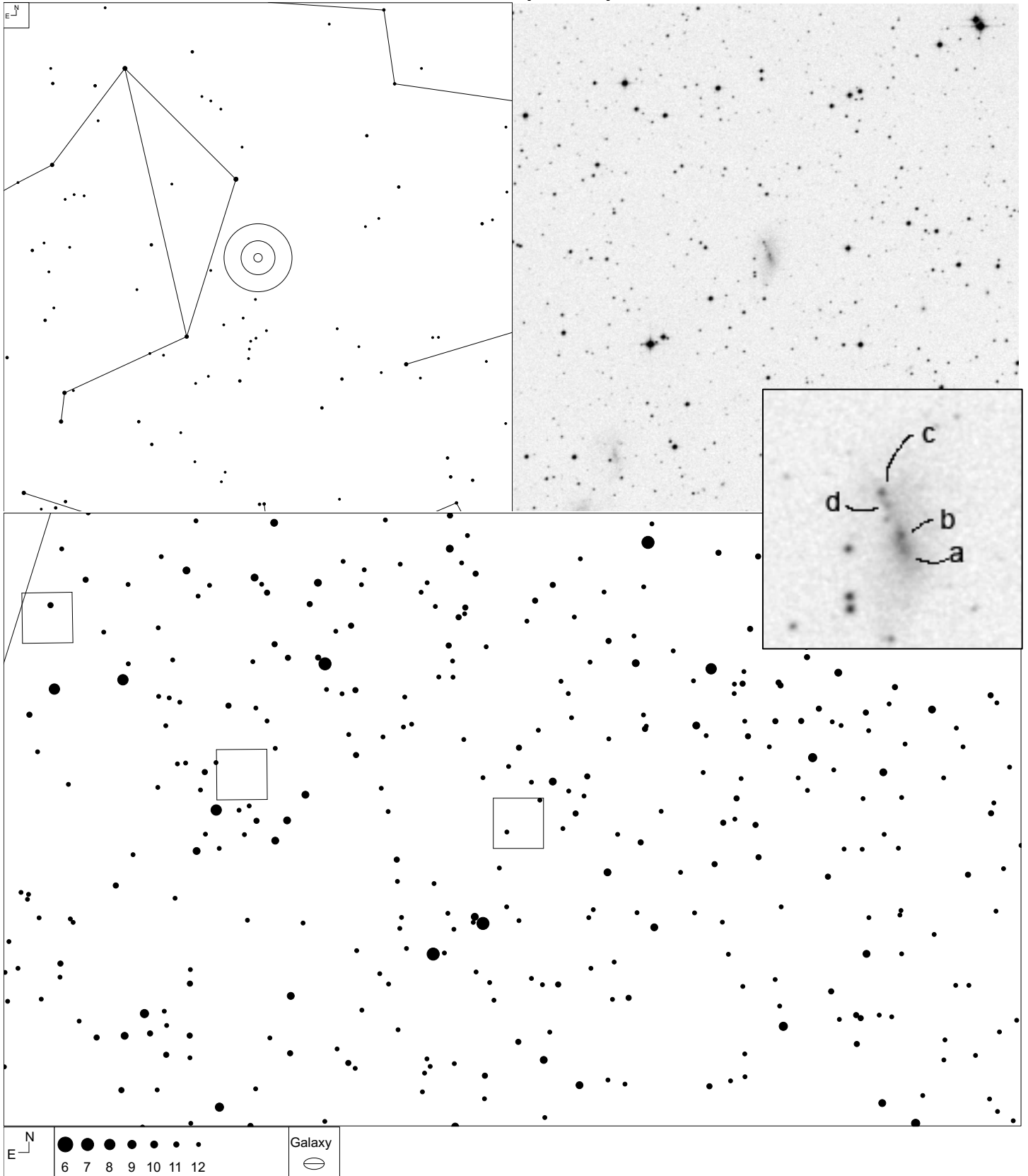
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
59	Rose 25 MCG+06-33-022	15 08 04.9	+34 23 14	GPair	15.9g	1.0 x 0.3	N

VV 98 (Libra)



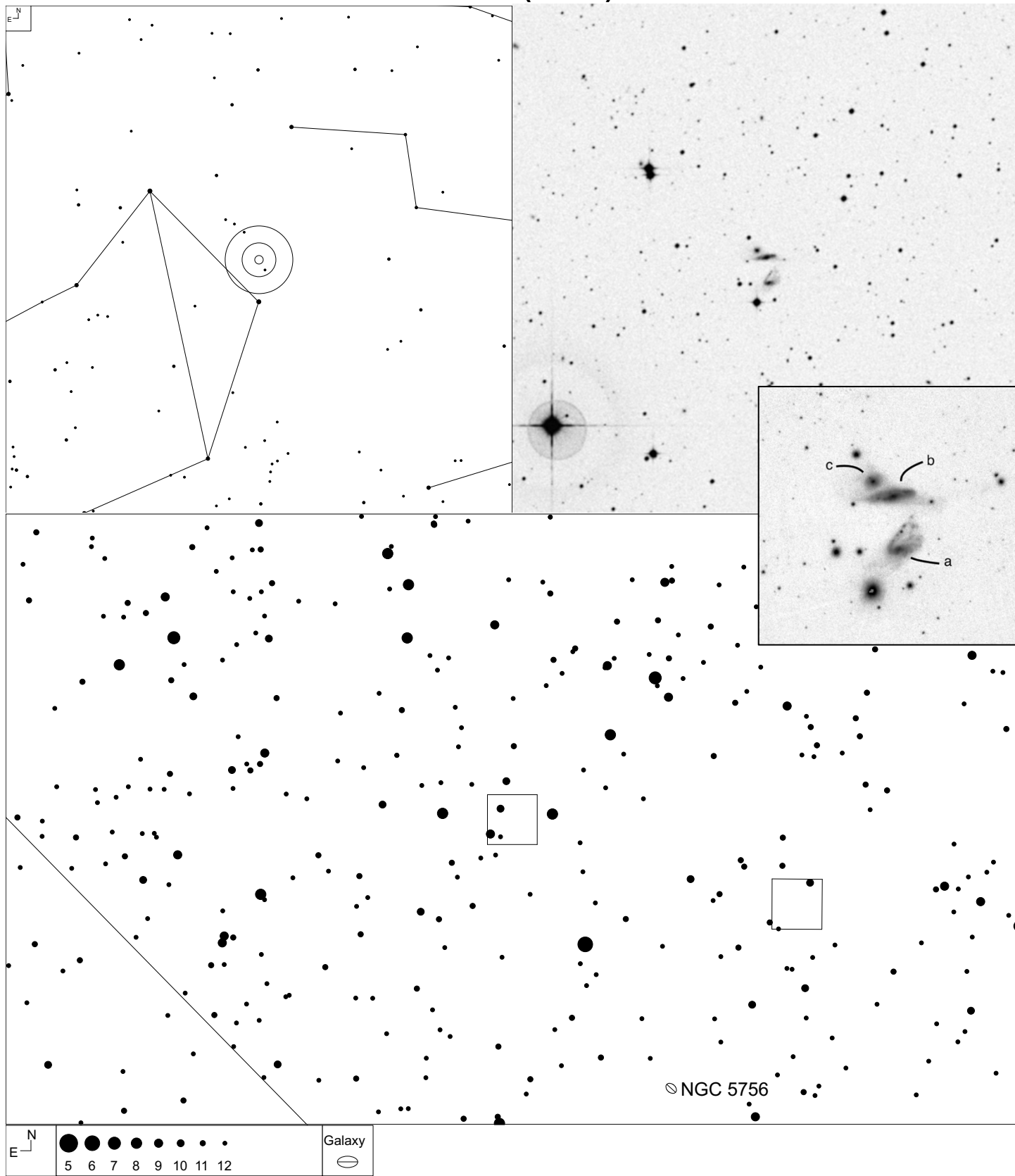
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
98	NGC 5745	14 45 01.6	-13 56 48	GGroup	13.9g	1.6 x 1.0	PC

VV 164 (Libra)



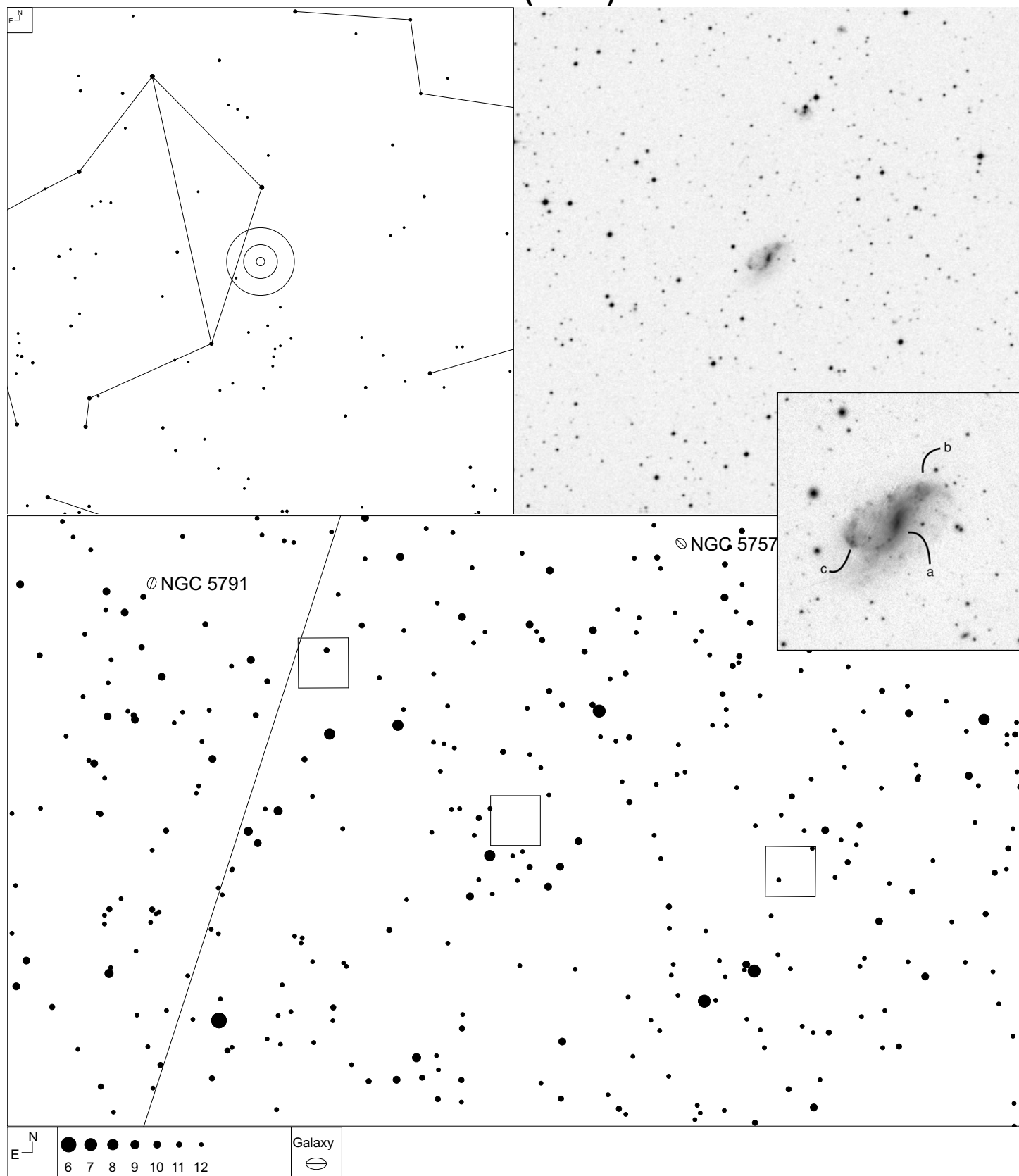
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
164	MCG-03-38-005	14 45 25.8	-20 41 07	G	15.1b	1.4 x 0.8	Ch

VV 322 (Libra)



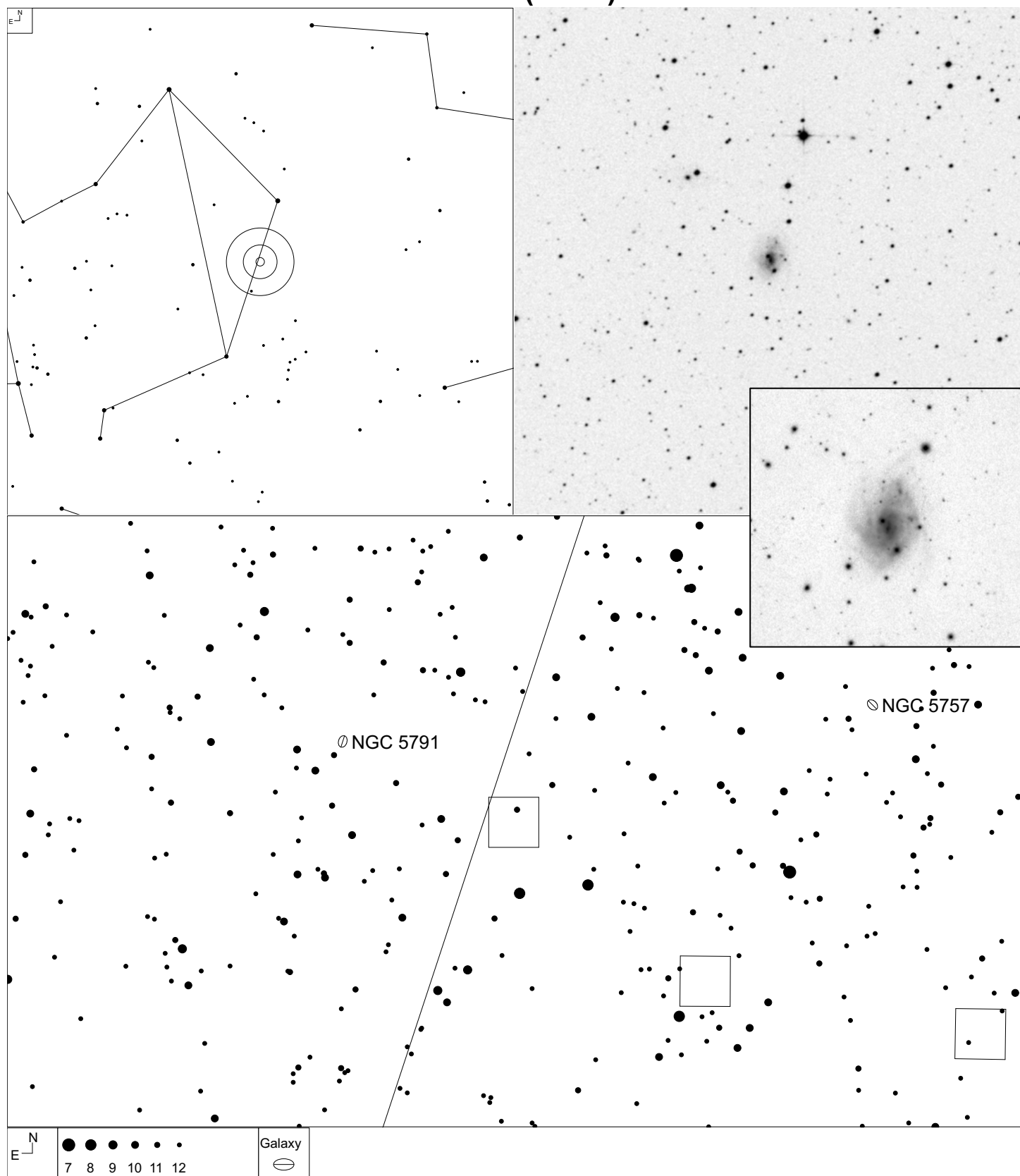
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
322		14 50 48.6	-13 31 49	GTrpl			NNN
322a	MCG-02-38-019	14 50 47.9	-13 32 16	G	15.6b	0.6 x 0.5	
322b	MCG-02-38-018	14 50 48.2	-13 31 31	G	15.8g	0.7 x 0.2	
322c	MCG-02-38-018A	14 50 49.3	-13 31 19	G	16.7b	0.3 x 0.3	

VV 130 (Libra)



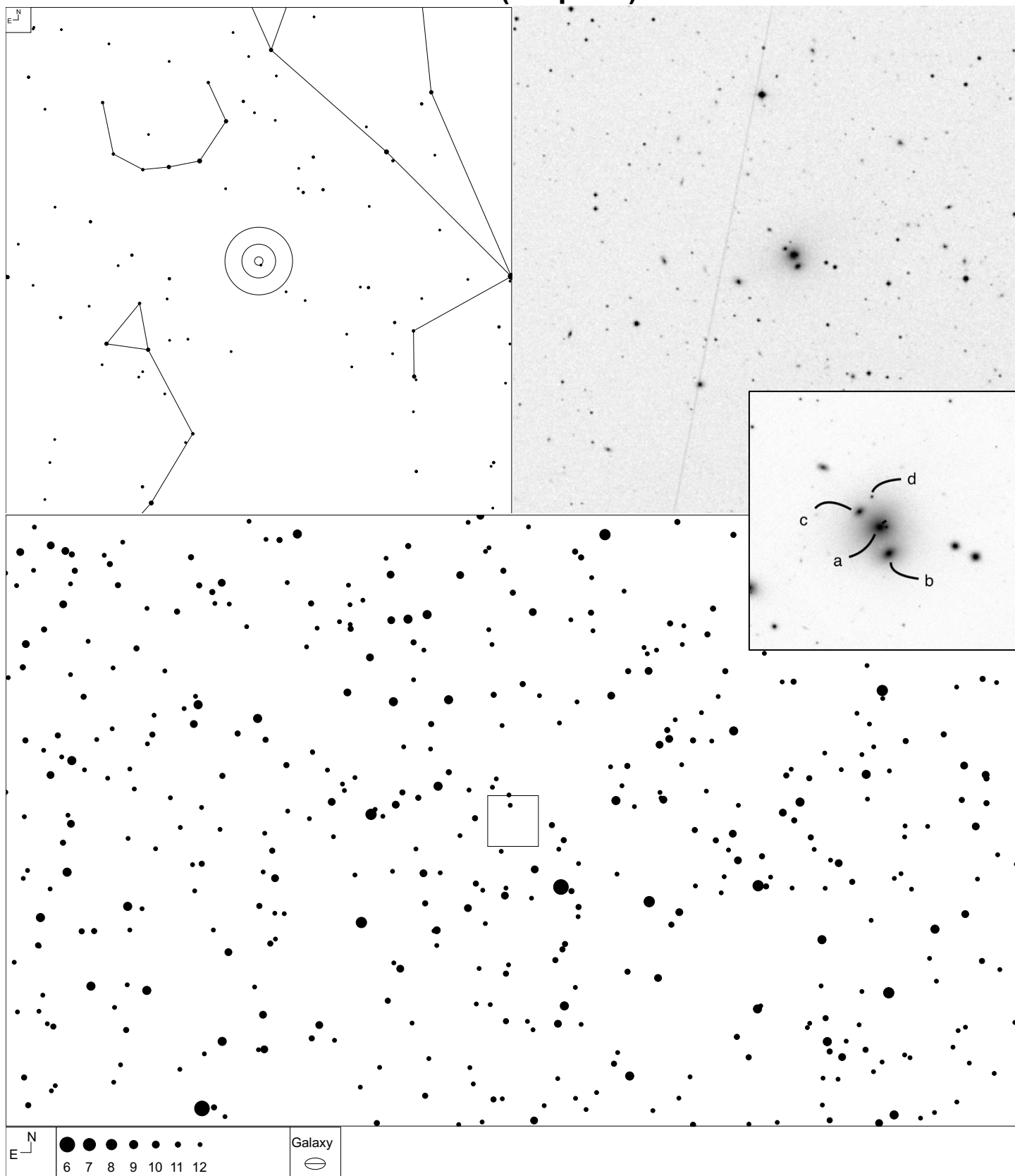
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
130	MCG-03-38-021	14 51 12.4	-20 26 27	G	14.0b	2.0 x 1.1	NNN

VV 137 (Libra)



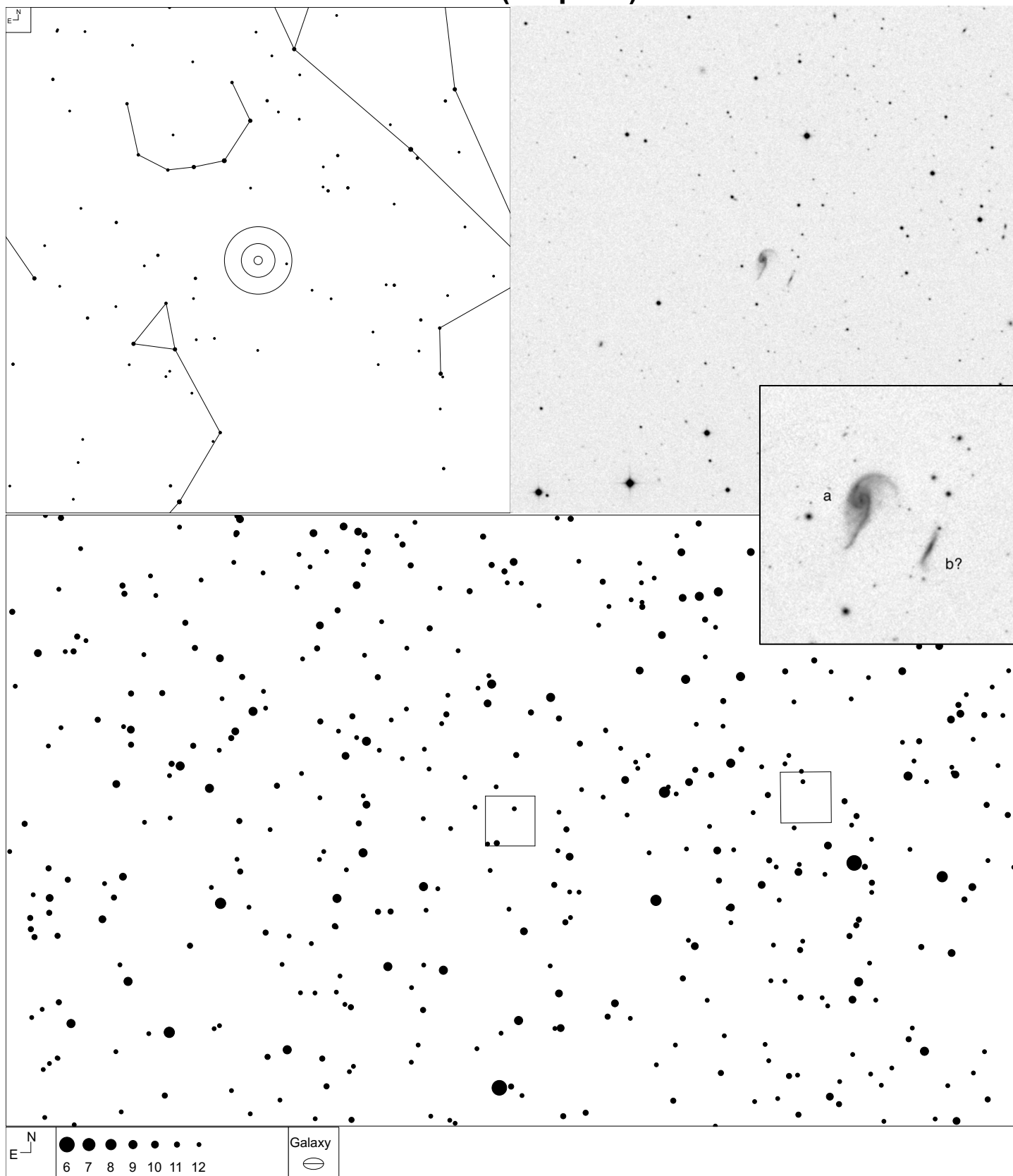
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
137	MCG-03-38-026	14 55 12.8	-19 39 53	G	14.1b	1.7 x 0.1?	N

VV 139 (Serpens)



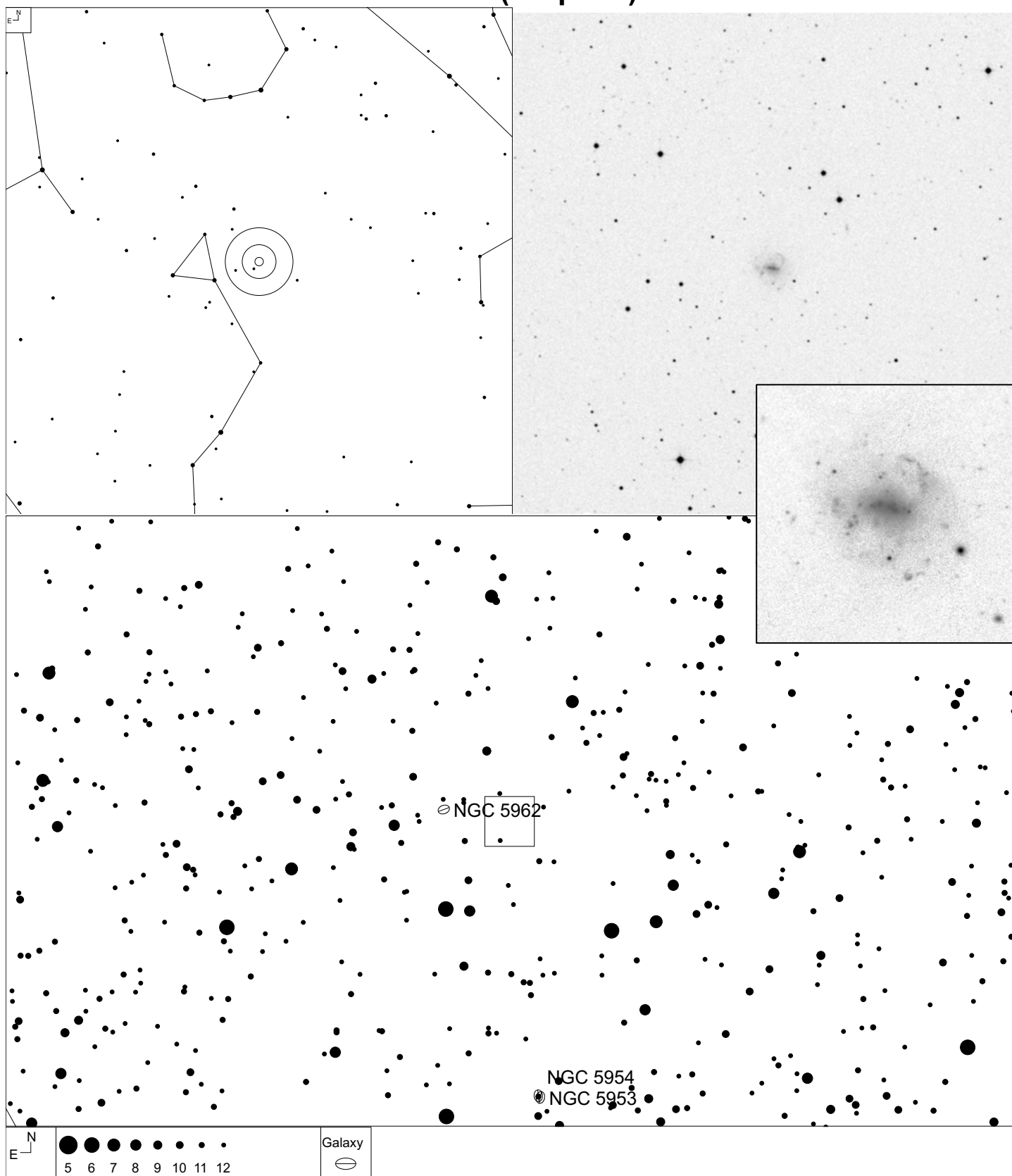
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
139		15 19 28.2	+20 53 37	GGroup			N
139a	NGC 5910	15 19 24.7	+20 53 47	G	14.2g	0.8 x 0.8	
139b	MCG+04-36-036	15 19 24.2	+20 53 27	G	15.5g	0.6 x 0.4	
139c	MCG+04-36-036b	15 19 25.8	+20 53 58	G	16.7g	0.5 x 0.3	
139d	MCG+04-36-036a	15 19 25.2	+20 54 10	G	19	0.1	

VV 227 (Serpens)



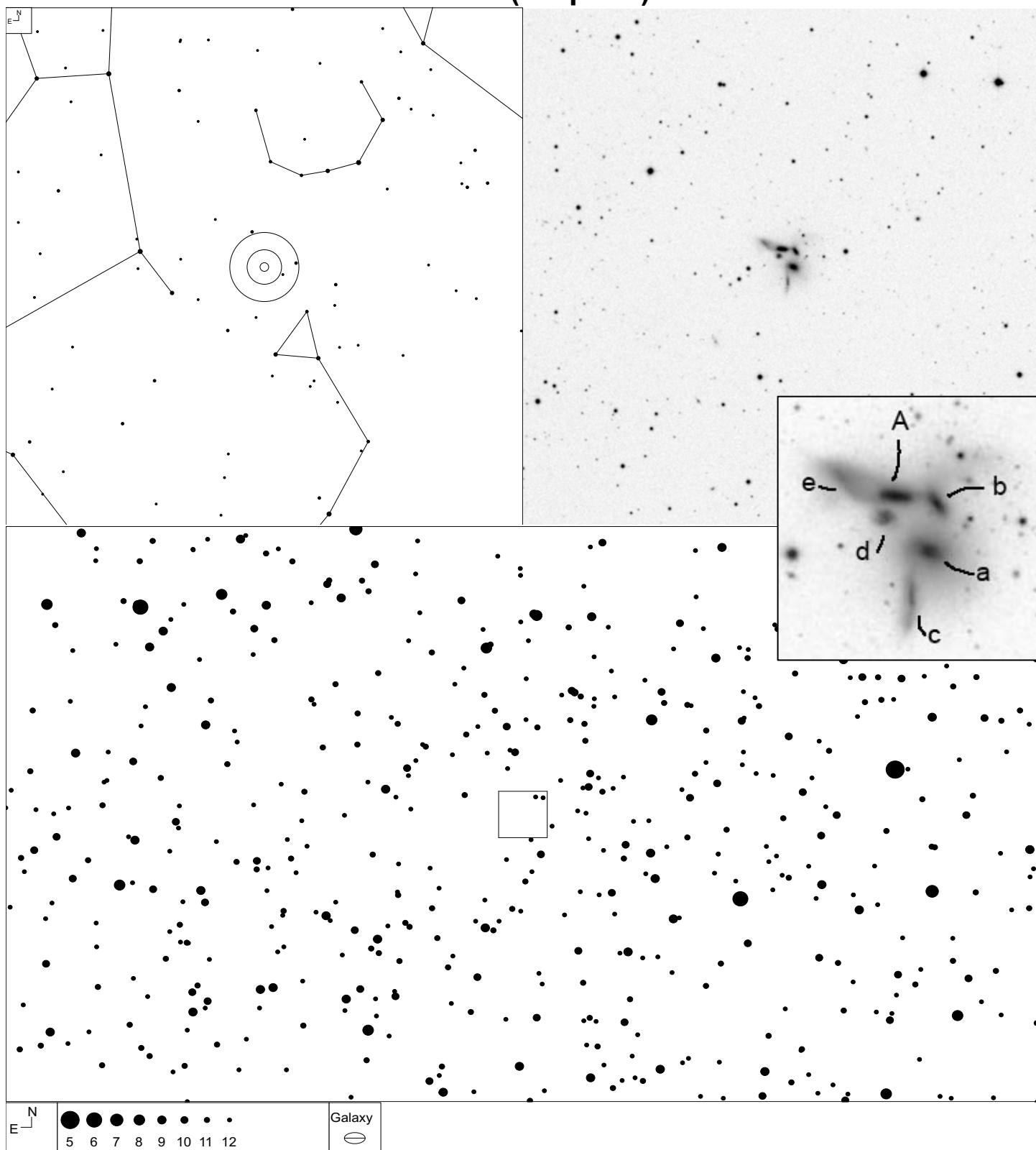
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
227	UGC 9843	15 25 39.8	+20 47 18	GPair?	15.7g	1.1 x 0.7	PK

VV 132 (Serpens)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
132	UGC 9912	15 35 10.5	+16 32 58	G	15.1g	1.7 x 1.7	N

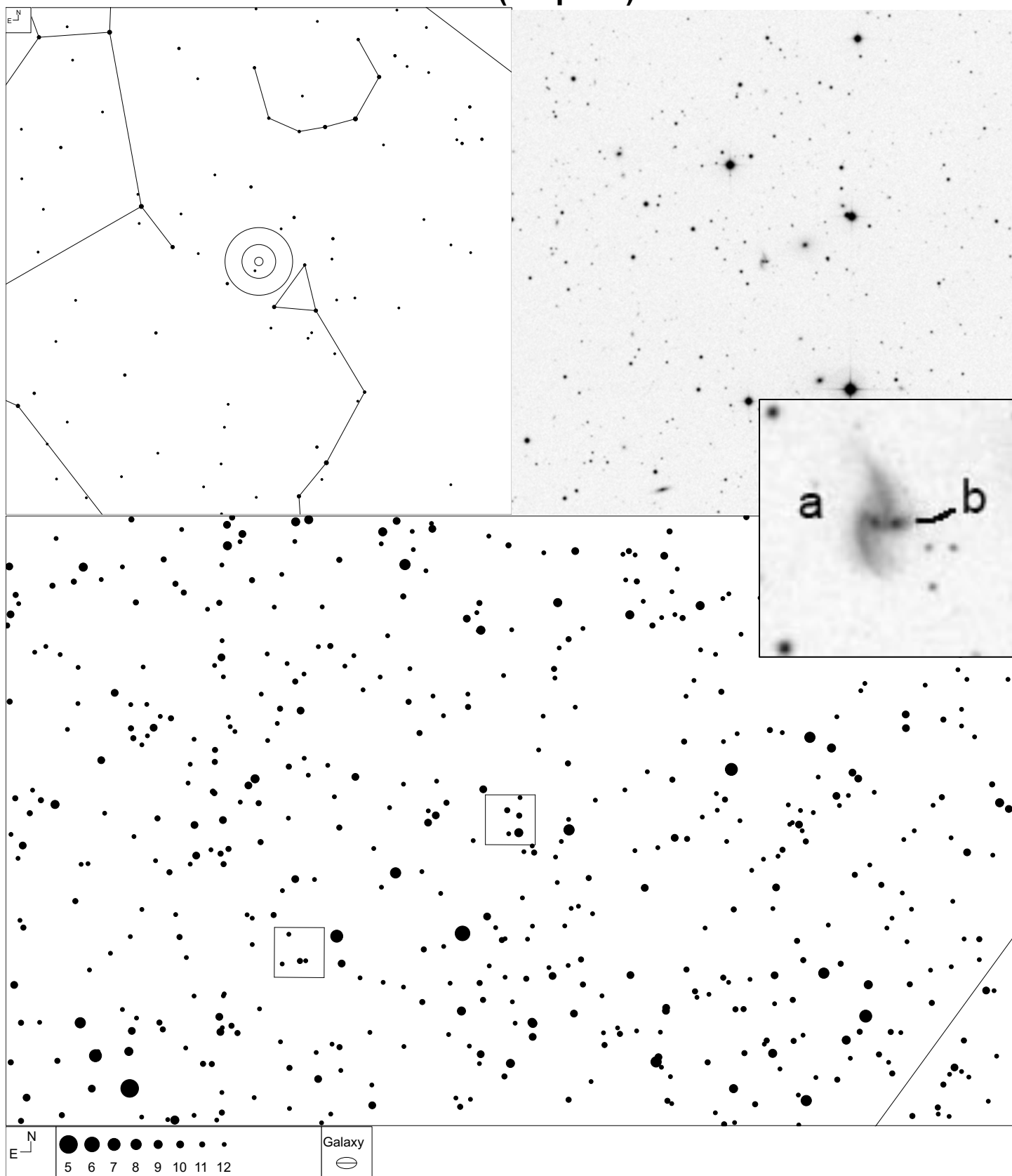
VV 115 (Serpens)



VV	ID	RA	Dec	NED Type	Mag ¹	Size (')	Int. Type
115	Hickson 79	15 59 11.9	+20 45 31	GGroup			NNN
115A	NGC 6027B	15 59 12.5	+20 45 48	G	15.3	0.4 x 0.2	
115a	NGC 6027A	15 59 11.1	+20 45 17	G	14.8b	0.5 x 0.4	
115b	NGC 6027	15 59 10.8	+20 45 44	G	15.3b	0.4 x 0.2	
115c	NGC 6027C	15 59 11.8	+20 44 49	G	16.5	0.9 x 0.2	
115d	NGC 6027D	15 59 12.9	+20 45 36	G	16.5b	0.2 x 0.2	
115e	NGC 6027E	15 59 14.5	+20 45 57	G	16.7	0.8 x 0.4	

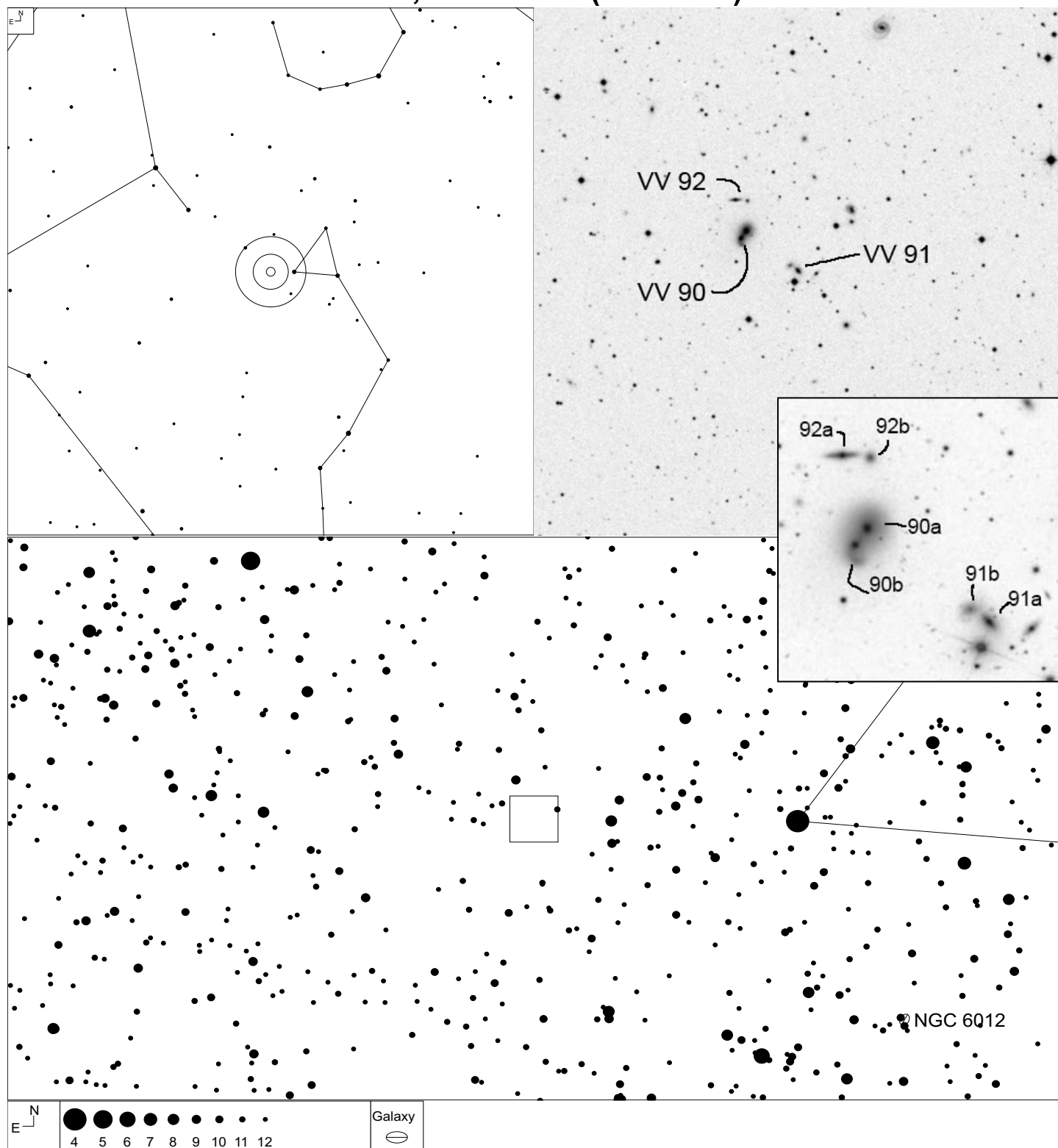
¹ Magnitude figures from my Hickson Observing guide

VV 156 (Serpens)



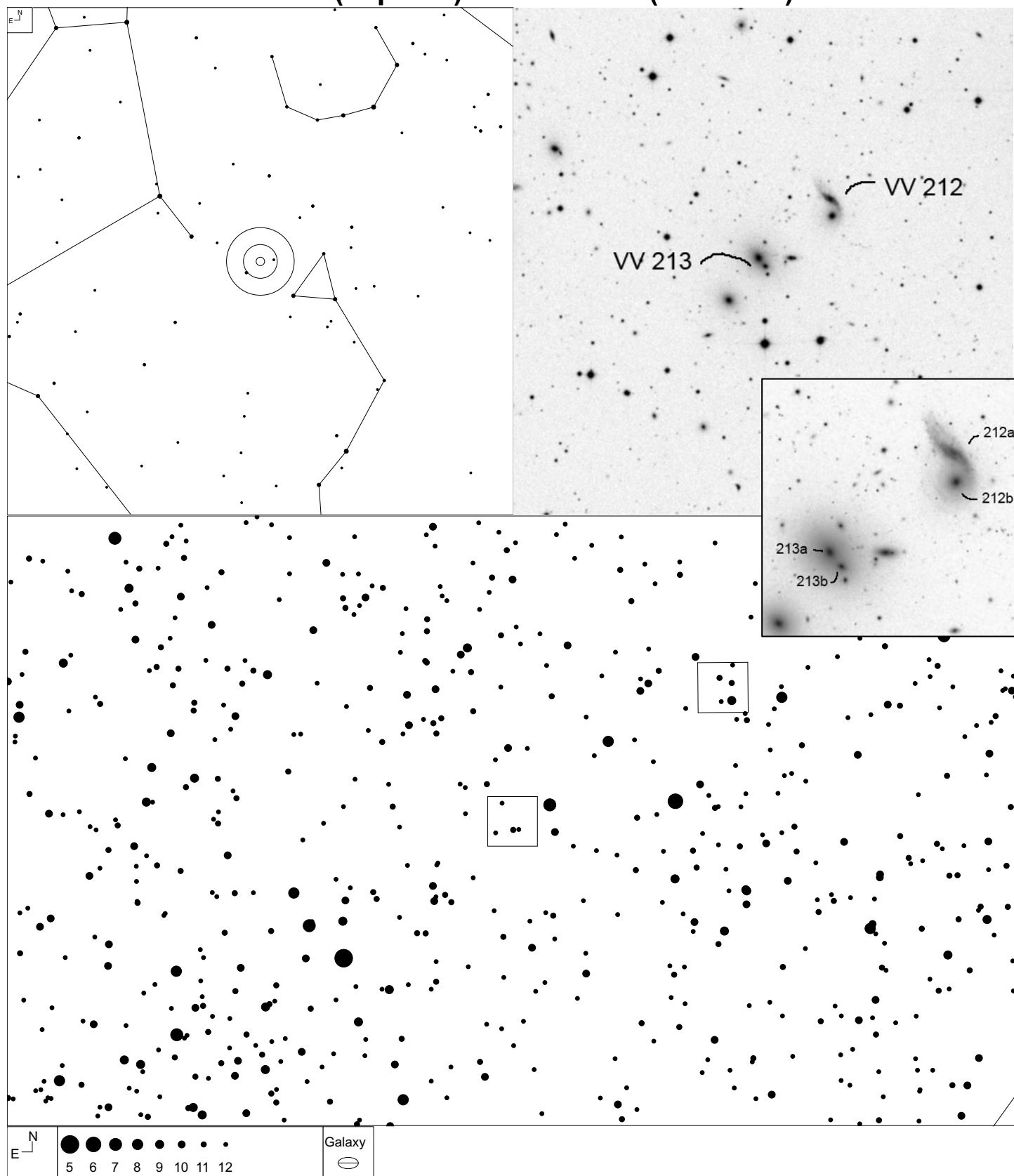
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
156	MCG+3-41-022	16 00 14.7	+18 22 32	GPair	16.0g	0.4 x 0.3	N

VV 90, 91 and 92 (Hercules)



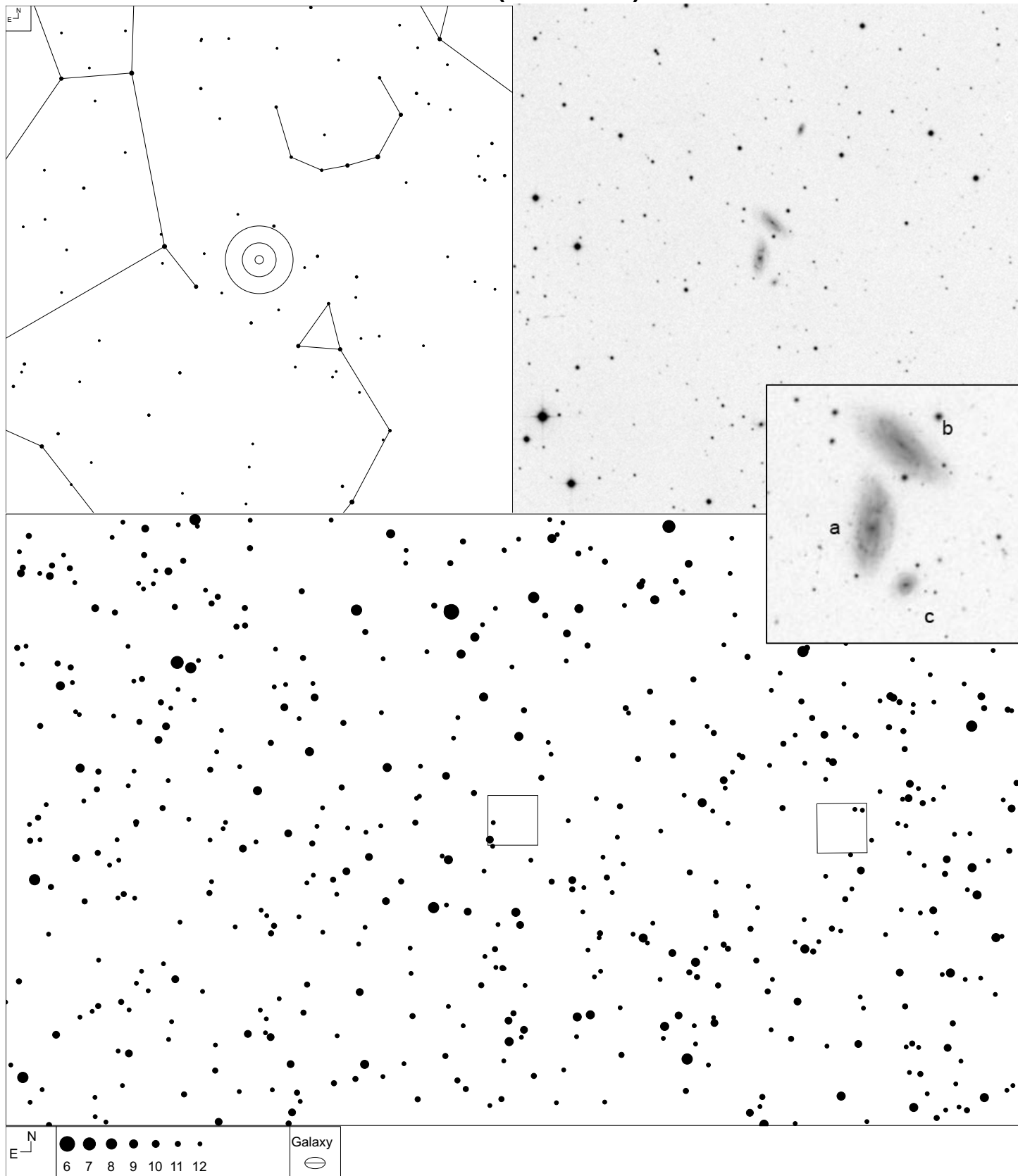
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
90		16 02 08.2	+15 41 38	GPair			PC
90a	IC 1165	16 02 08.0	+15 41 47	G	14.7g	0.7 x 0.6	
90b	IC 1165S	16 02 08.6	+15 41 35	G	15.4g	0.7 x 0.5	
91		16 02 02.4	+15 40 43	GPair			PC
91a	MCG+03-41-046	16 02 01.9	+15 40 38	G	16.0g	0.2 x 0.2	
91b		16 02 02.8	+15 40 49	G		0.3 x 0.2	
92	MCG+03-41-050	16 02 08.7	+15 42 39	GPair			PDb
92b		16 02 07.9	+15 42 39	G	16.4g	0.5 x 0.2	
92a		16 02 09.3	+15 42 40	G	18.0g	0.2 x 0.2	

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



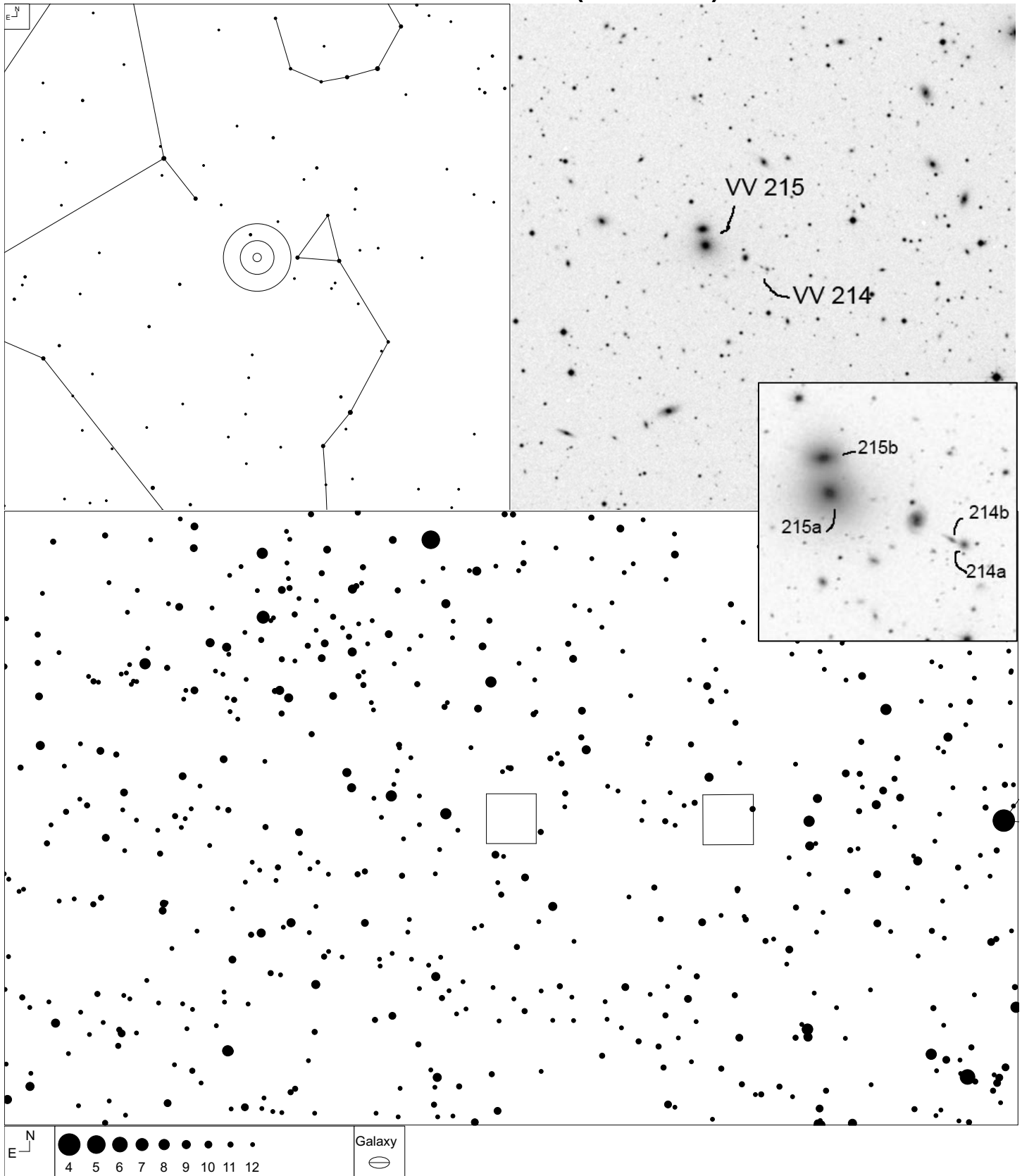
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
213	NGC 6041	16 04 35.3	+17 43 09	GPair			PC
213a	NGC 6041A	16 04 35.8	+17 43 18	G	14.5g	1.1 x 0.8	
213b	NGC 6401B	16 04 34.9	+17 43 03	G	15.4g	0.7 x 0.6	

VV 327 (Hercules)



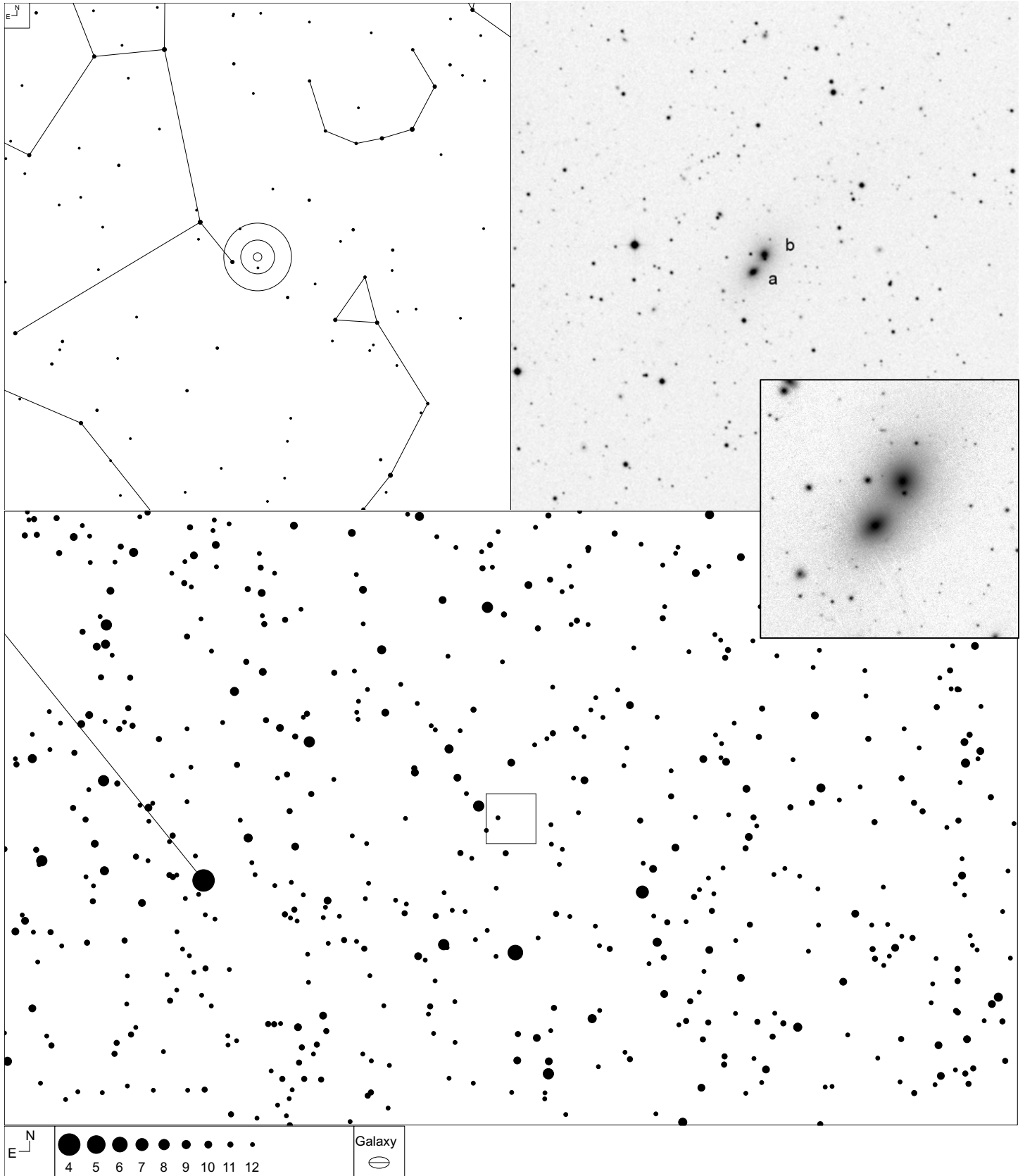
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
327		16 06 05.1	+20 47 13	GTrpl			PD
327a	UGC 10198	16 06 05.9	+20 47 03	G	15.4g	1.1 x 0.6	
327b	UGC 10197	16 06 04.4	+20 48 06	G	15.2g	1.2 x 0.5	
327c	MAC 1606+2046	16 06 04.1	+20 46 21	G	17.0	0.3 x 0.3	

VV 214 and VV 215 (Hercules)



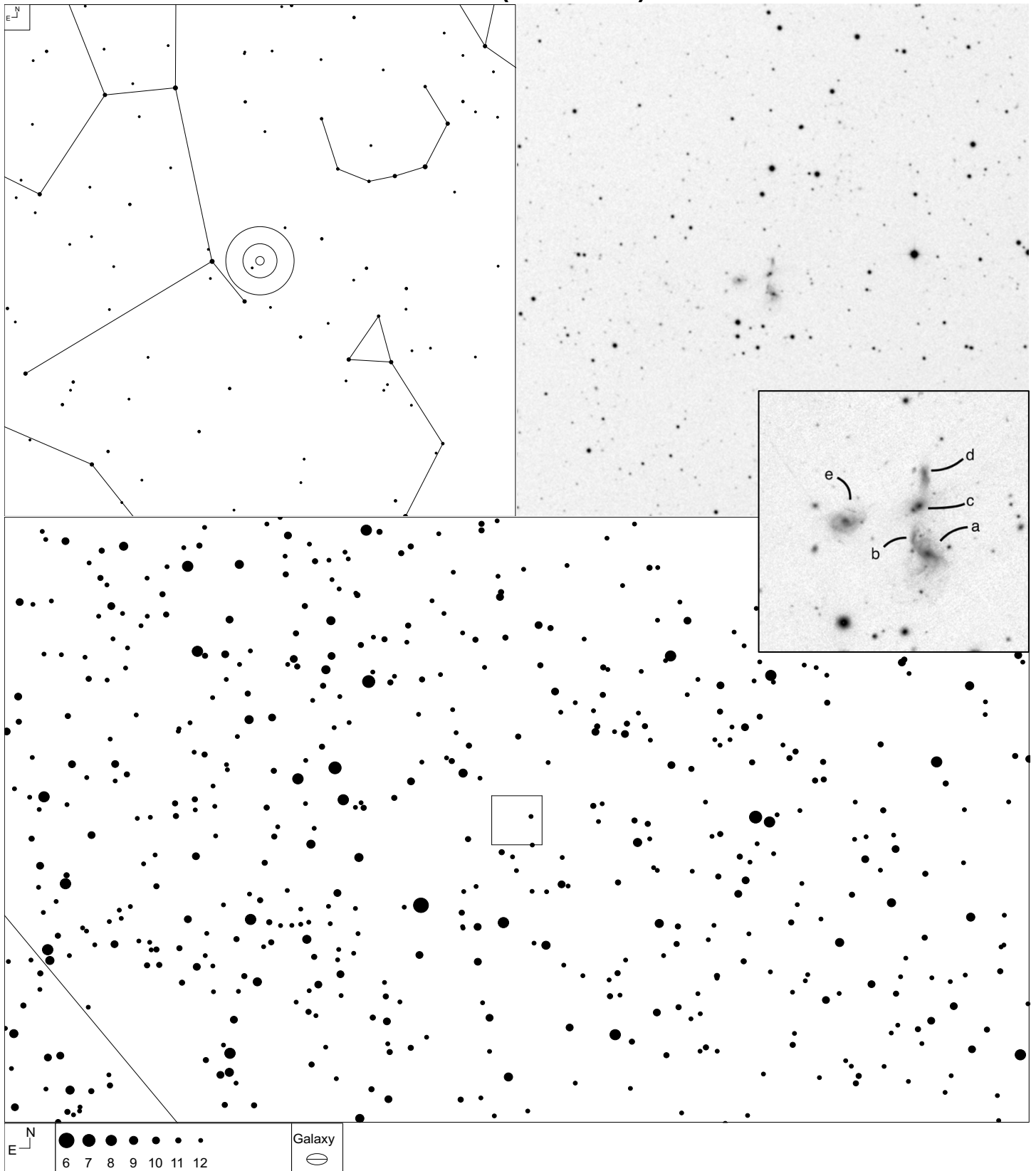
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
214		16 06 18.2	+15 40 29	GPair			PK
214a	VV 214a	16 06 17.8	+15 40 27	G	18.2g	0.2 x 0.2	
214b		16 06 18.3	+15 40 49	G	18.4g	0.2 x 0.1	
215	UGC 10201	16 06 25.7	+15 41 23	GPair			PK
215a	MCG+03-41-123	16 06 25.5	+15 41 07	G	14.4g	0.8 x 0.8	
215b	MCG+03-41-124	16 06 25.8	+15 41 37	G	15.4g	0.6 x 0.4	

VV 192 (Hercules)



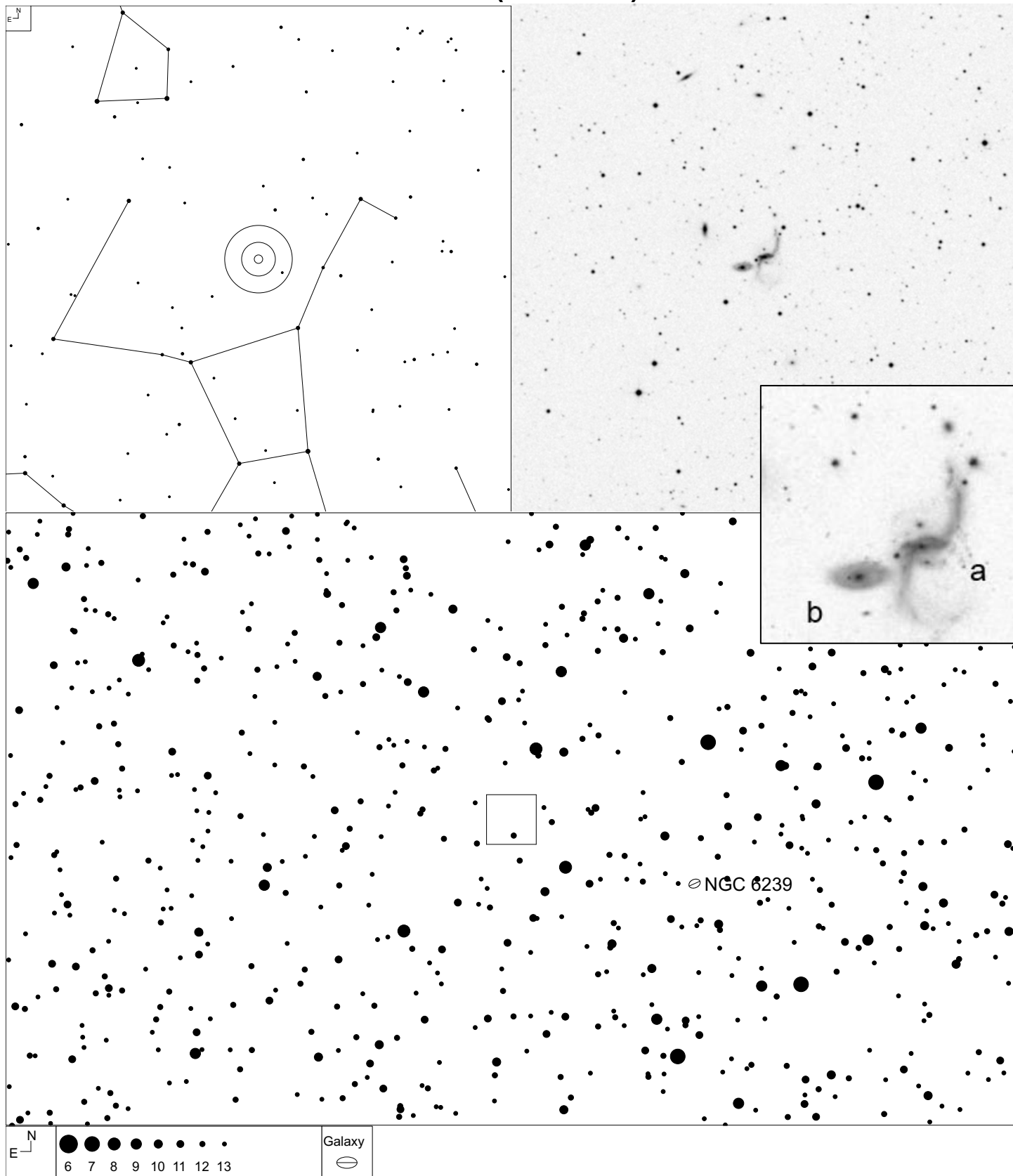
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
192		16 15 34.8	+19 27 27	GPair			PKb
192a	NGC 6099	16 15 35.6	+19 27 12	G	14.3b	0.8 x 0.6	
192b	NGC 6098	16 15 34.1	+19 27 41	G	14.4b	1.2 x 0.9	

VV 129 (Hercules)



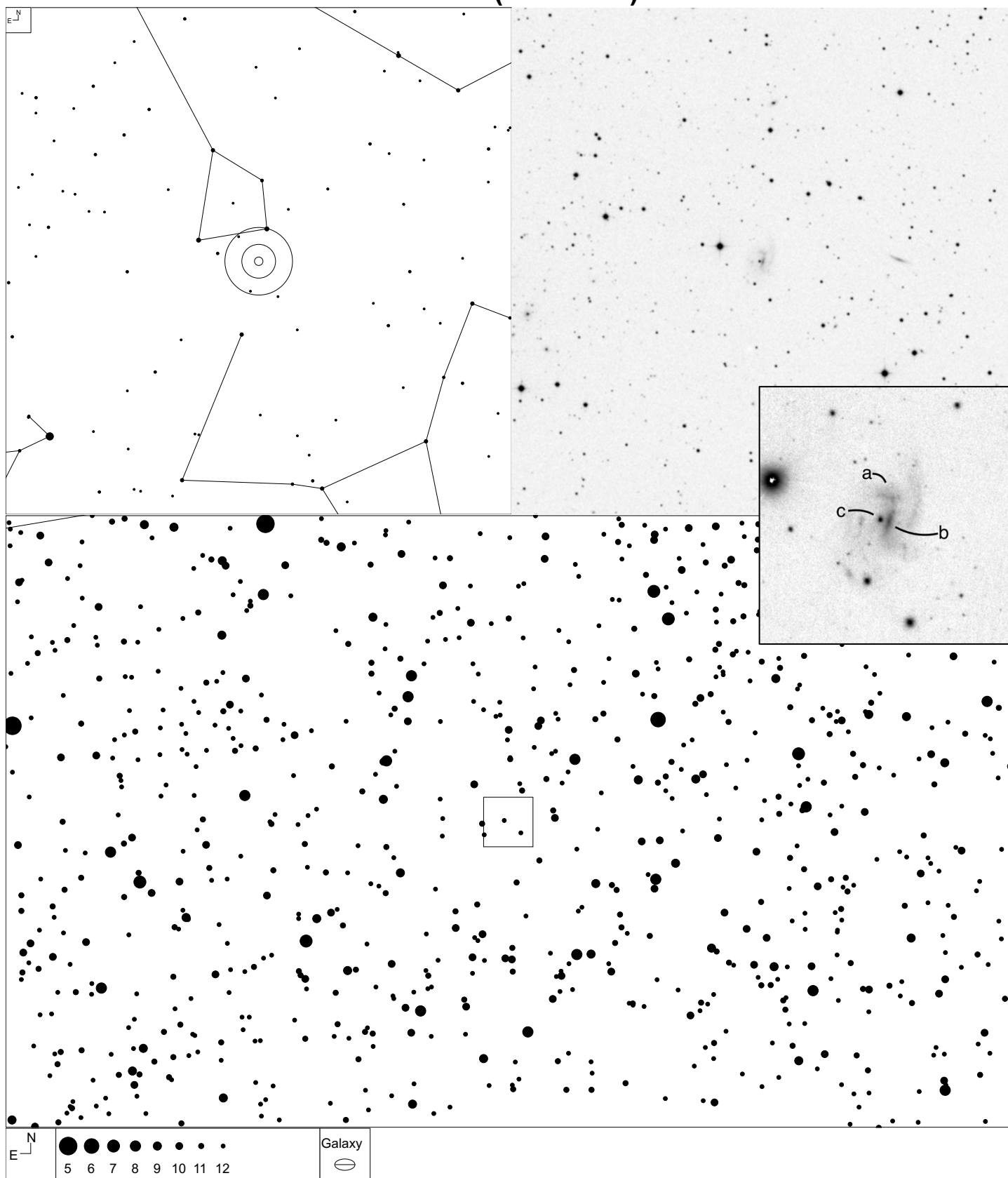
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
129		16 18 06.3	+21 33 39	GGroup			NN
129a	UGC 10321	16 18 05.3	+21 33 14	G	16.1g	0.7 x 0.4	
129b		16 18 05.9	+21 33 24	G	15.5	0.5 x 0.3	
129c	PGC 200336	16 18 05.7	+21 33 48	G	17.6g	0.2 x 0.1	
129d	PGC 200337	16 18 05.5	+21 34 12	G	17.9g	0.4 x 0.1	
129e	MCG+04-38-047	16 18 09.7	+21 33 37	G	16.6g	0.5 x 0.4	

VV 289 (Hercules)



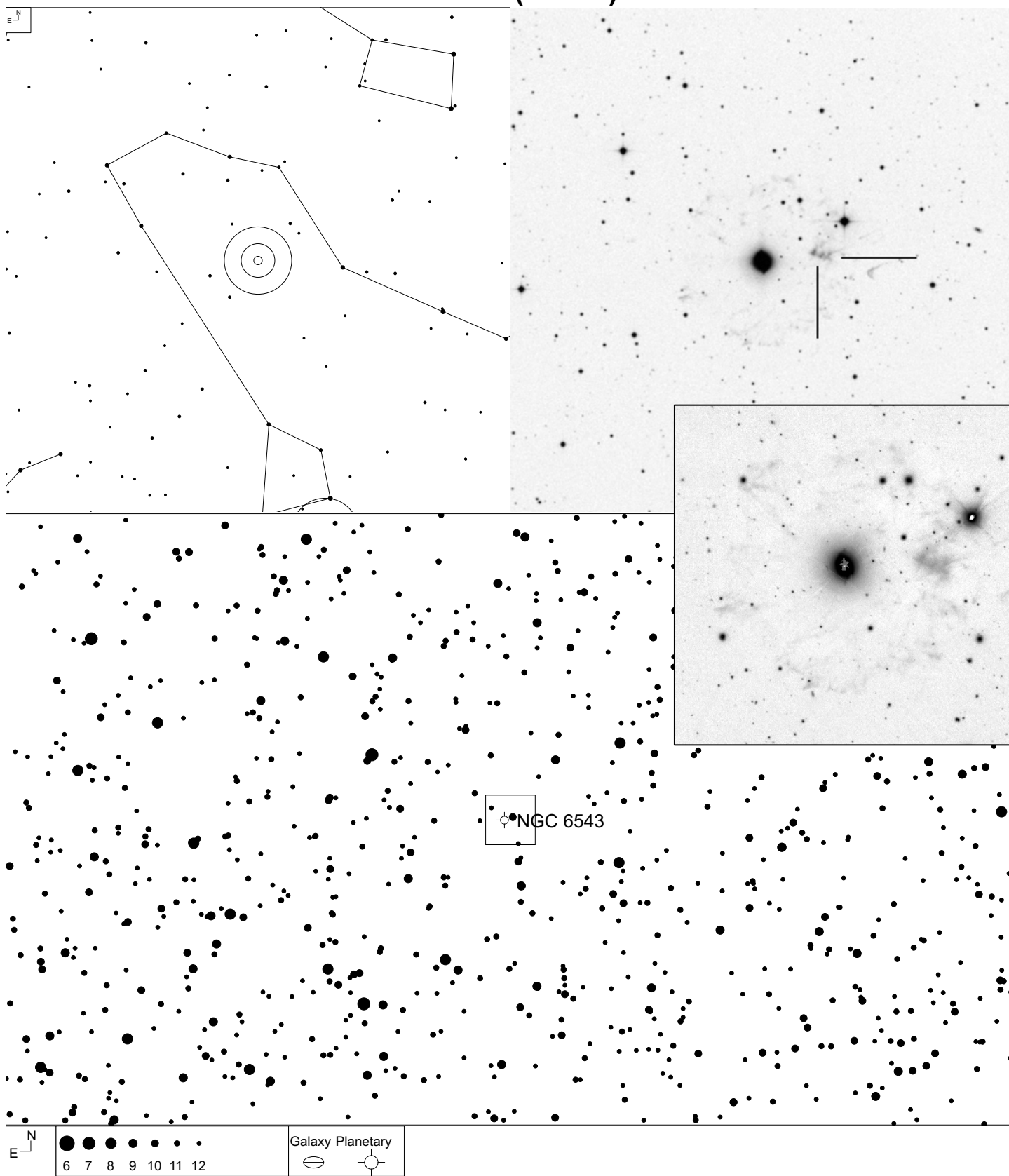
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
289	UGC 10610	16 55 00.5	+43 03 30	GPair			PDbt
289a	MCG+07-35-004	16 54 58.7	+43 03 40	G	15.3g	0.7 x 0.4	
289b	MCG+07-35-005	16 55 02.4	+43 03 19	G	15.7g	0.6 x 0.4	

VV 268 (Hercules)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
268	UGC 10908	17 33 38.0	+50 22 25	GPair	16.4g	1.5 x 0.9	N

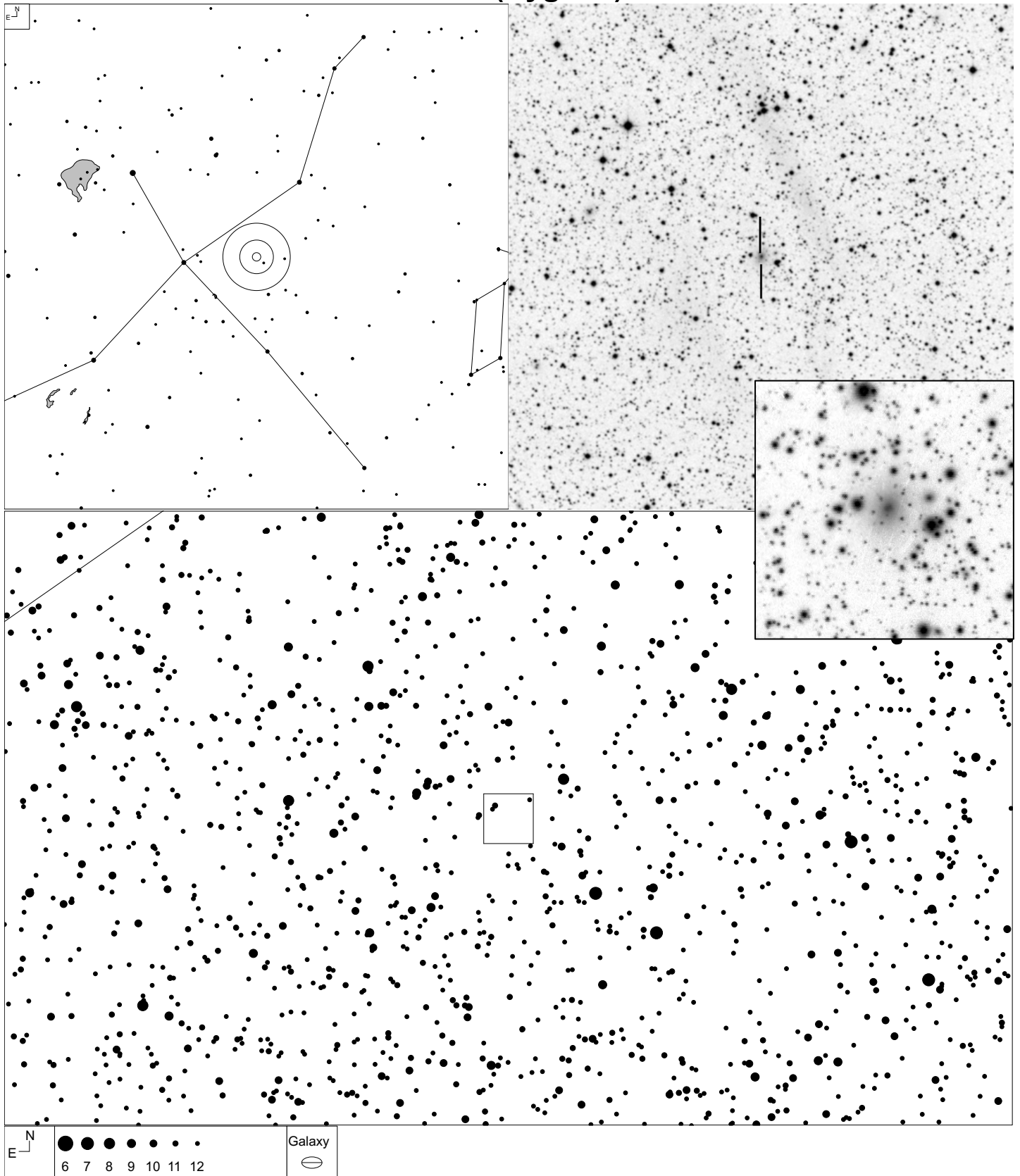
VV 121 (Draco)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
121	IC 4677	17 58 15.8	+66 38 00	Other	15.0b	1.0 x 0.7	

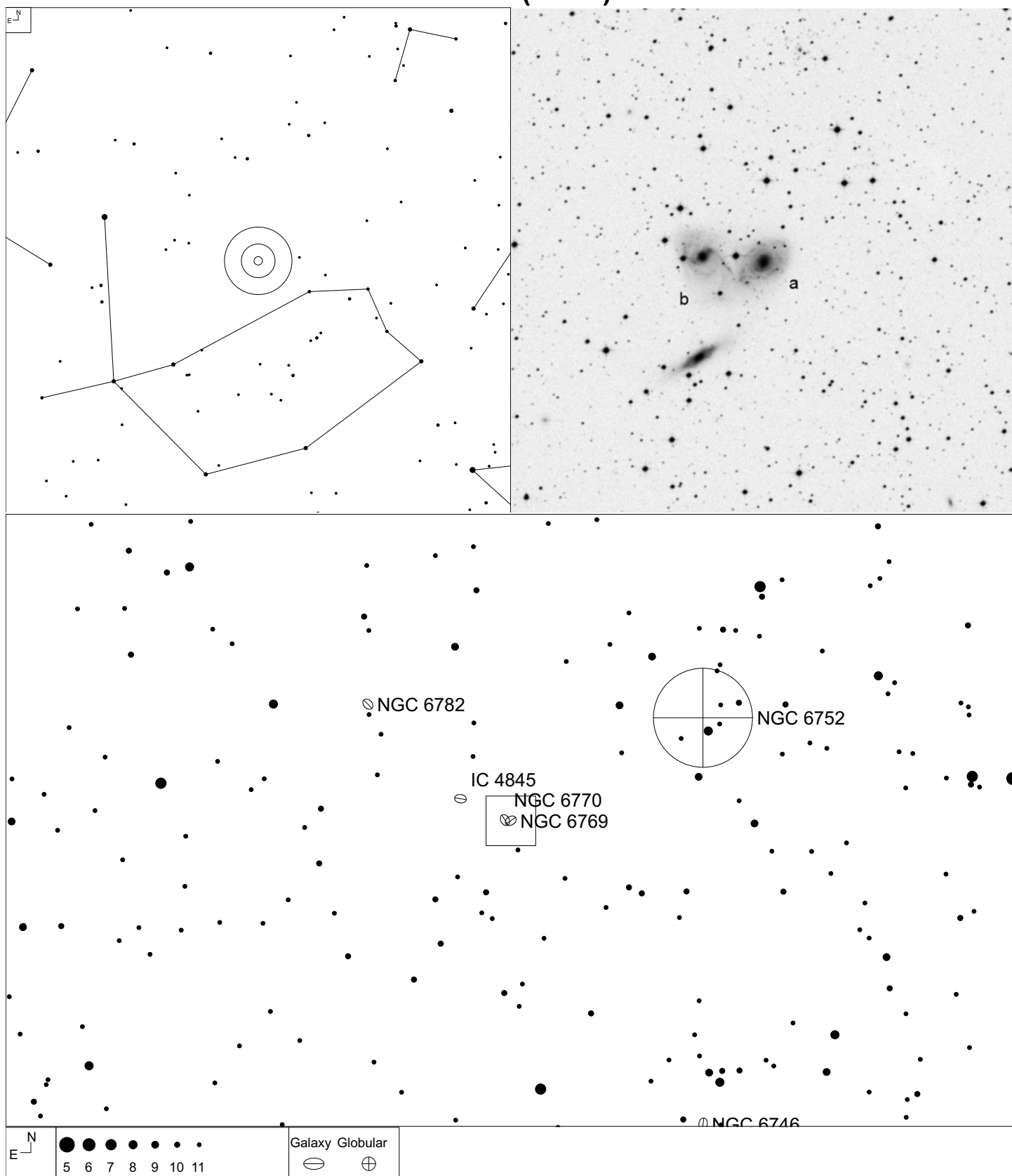
This object is not a galaxy, but rather the brightest segment of the outer halo of NGC 6543.

VV 72 (Cygnus)



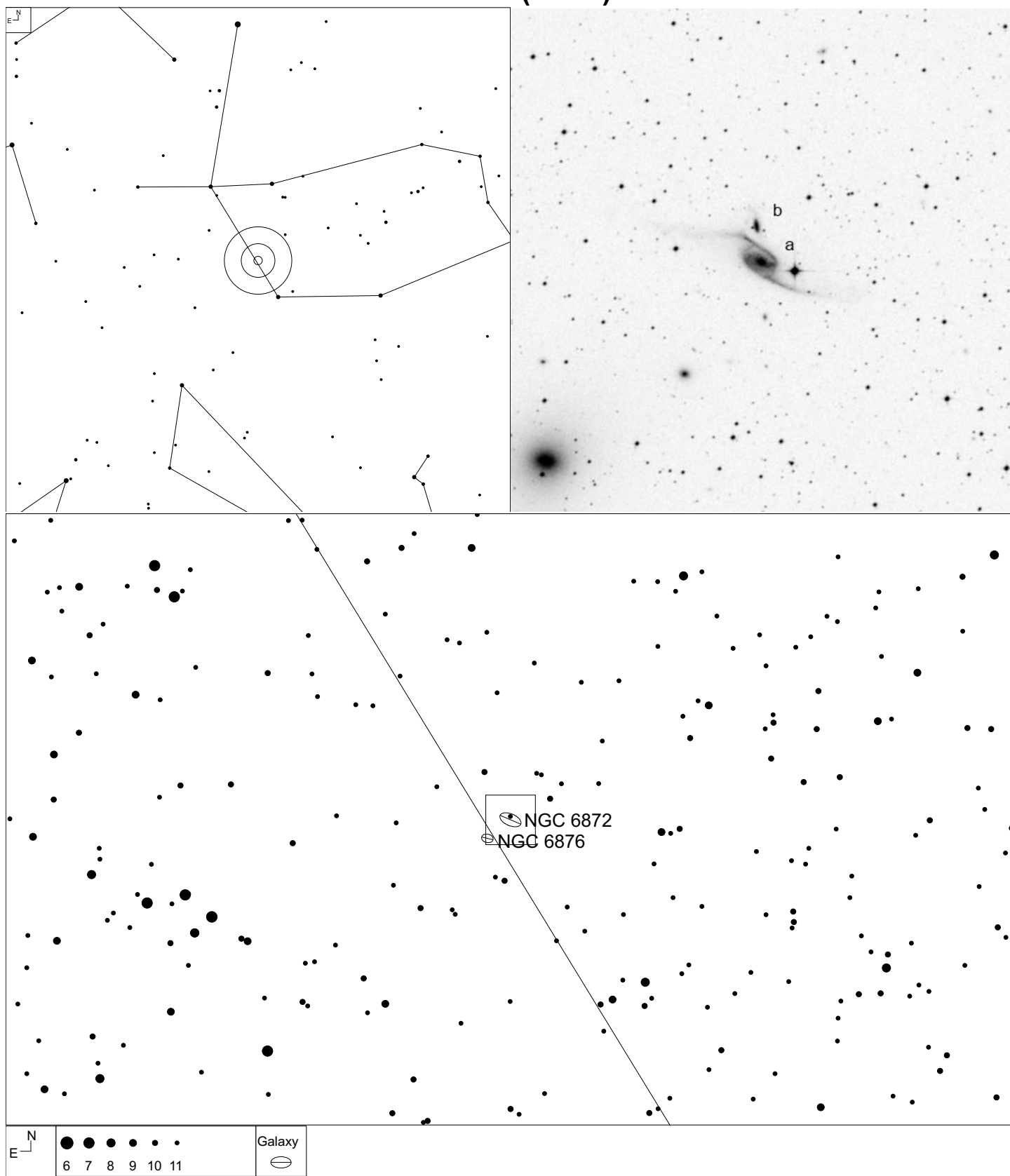
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
72	MCG+07-41-003 Cygnus A	19 59 28.3	+40 44 02	G	15.1v		PC

VV 304 (Pavo)



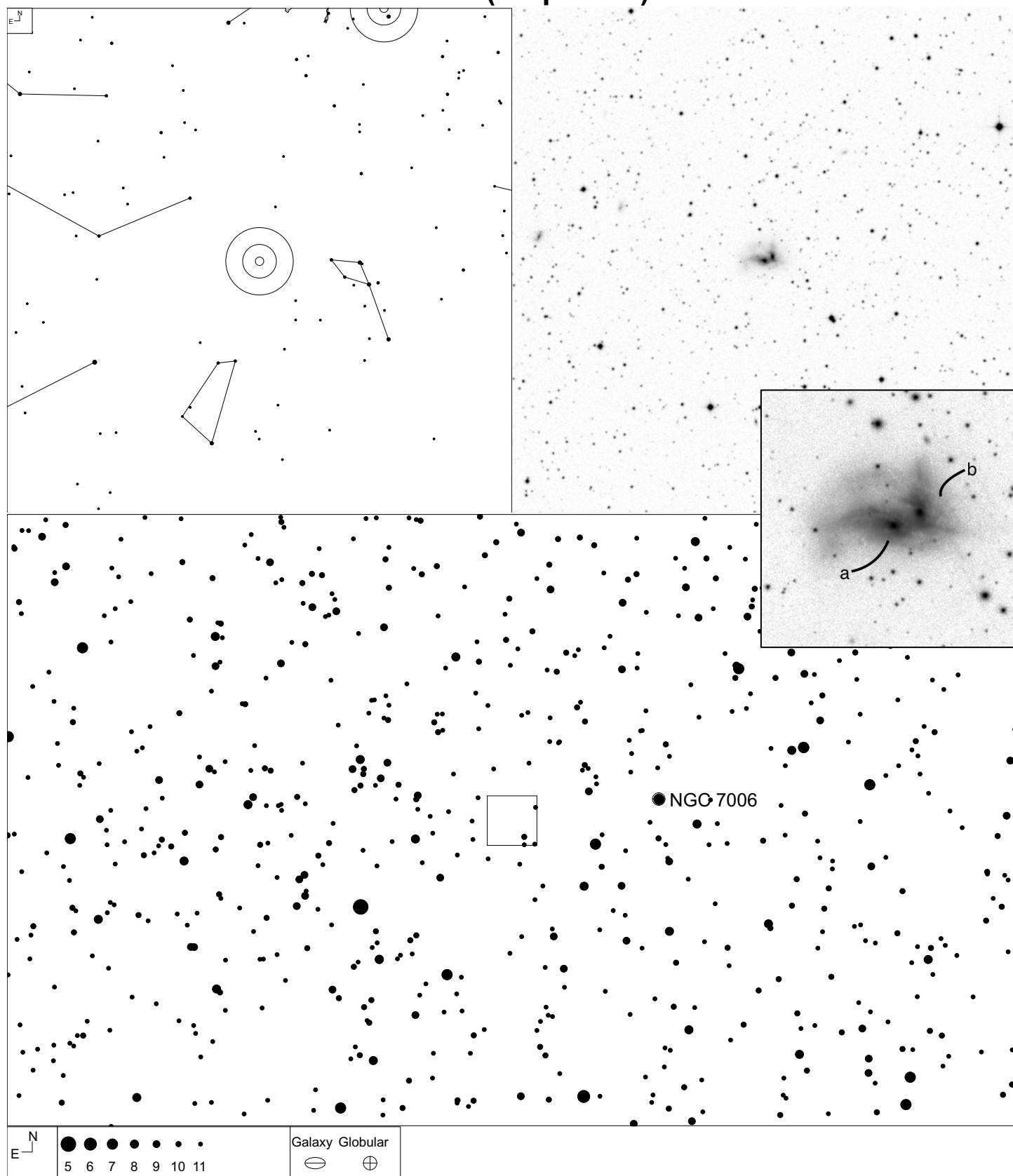
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
304		19 18 30.0	-60 29 56	GPair			PDdf
304a	NGC 6769	19 18 22.6	-60 30 03	G	11.8v	2.3 x 1.5	
304b	NGC 6770	19 18 37.3	-60 29 50	G	11.9v	2.3 x 1.7	

VV 297 (Pavo)



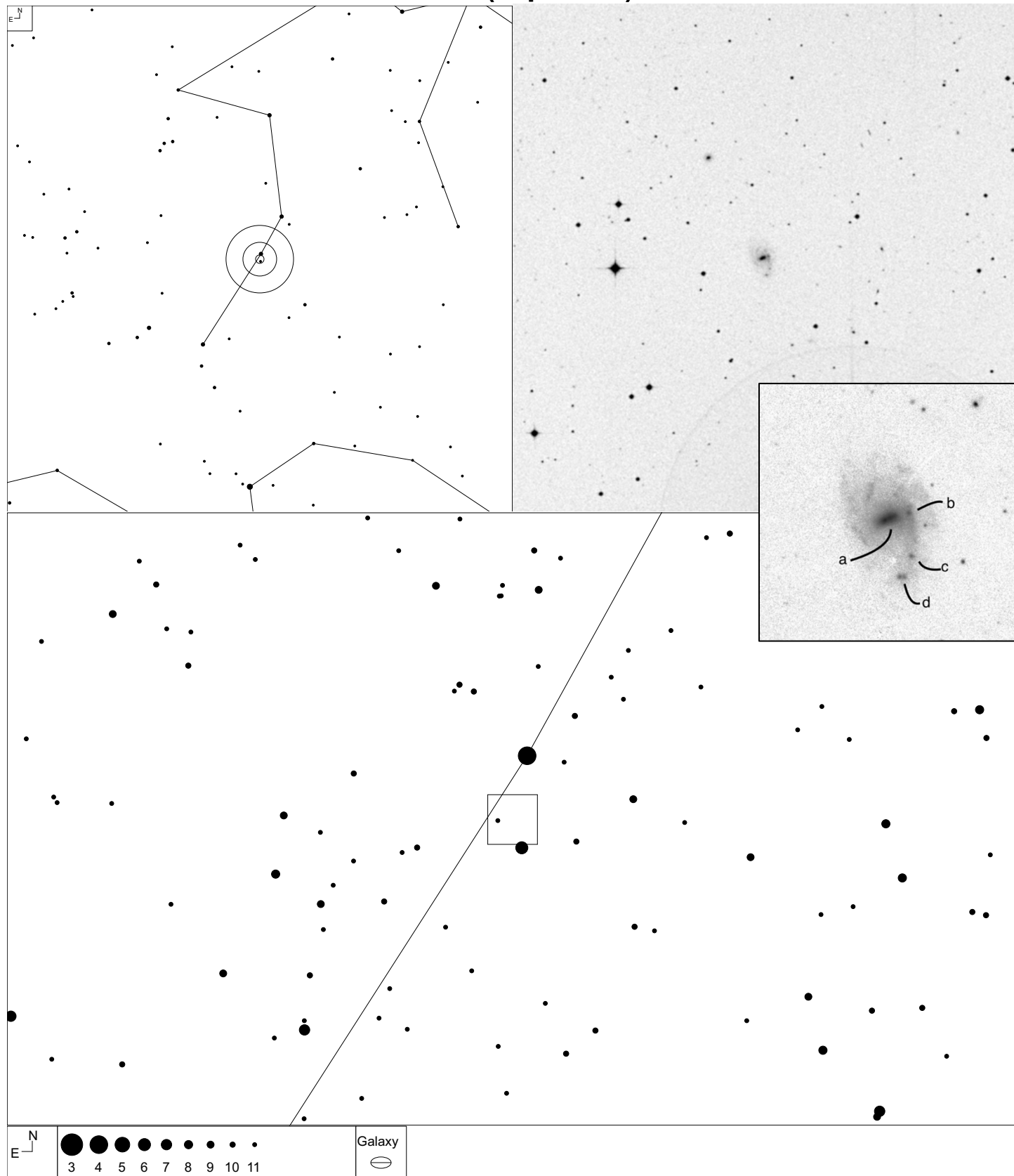
VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
297		20 16 57.3	-70 45 30	GPair			PD
297a	NGC 6872	20 16 56.5	-70 46 03	G	11.6v	6.0 x 1.7	
297b	IC 4970	20 16 57.3	-70 44 57	G	13.8v	0.7 x 0.2	

VV 102 (Delphinus)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
102	UGC 11672	21 04 28.7	+16 05 01	GPair	13.8g	1.0 x 0.6	PC
102b	MAC 2104+1605	21 04 28.2	+16 05 04	G	15.0	0.8 x 0.4	

VV 17 (Aquarius)



VV	ID	RA	Dec	NED Type	Mag	Size (')	Int. Type
17	MCG-03-58-012	22 54 56.7	-16 08 12	GPair	14.0b	1.3 x 0.9	MM

Vorontsov-Velyaminov Catalogue (Part I) - Arp

VV	Arp	VV	Arp	VV	Arp	VV	Arp
1	85	46		91		136	
2	45	47		92		137	
3	197	48	84	93		138	6
4	36	49		94		139	
5	86	50	283	95	263	140	261
6	33, 326	51	284	96		141	
7	42	52	253	97		142	69
8	289	53	228	98		143	258
9	82	54		99		144	151
10	102	55	240	100		145	
11	206	56	189	101	310	146	
12	56	57		102		147	
13	97	58	207	103		148	
14	24	59		104		149	
15		60		105		150	322
16	72	61		106	300	151	
17		62		107		152	
18		63		108		153	
19	239	64		109		154	
20	150	65	-	110		155	55
21	271	66	22	111		156	
22	155	67	222	112	291	157	
23	39	68	15	113		158	
24		69		114	236	159	324
25	50	70		115		160	
26		71	192	116	321	161	
27		72		117	143	162	
28	7	73	23	118	296	163	
29	188	74	93	119	264	164	
30	269	75	335	120	111	165	328
31	224	76		121		166	113
32	148	77	178	122	126	167	325
33	104	78		123	141	168	
34	295	79	243	124		169	327
35	248	80	235	125		170	
36		81	140	126	194	171	
37		82	63	127		172	329
38	201	83	129	128	260	173	306
39	204	84		129		174	306
40	287	85		130		175	
41	257	86	209	131		176	
42	211	87		132		177	
43	175	88		133		178	
44		89	32	134*	Defect!	179	
45		90		135		180	

VV	Arp	VV	Arp	VV	Arp	VV	Arp
181	170	226	112	271	208	316	142
182		227		272	144	317	
183		228	294	273		318	101
184		229	301	274		319	181
185		230		275		320	
186	249	231	157	276		321	
187		232	30	277		322	
188	120	233	107	278		323	273
189	166	234	100	279		324	
190		235		280	212	325	
191		236		281		326	
192		237	105	282	320	327	
193	331	238	276	283		328	
194	172	239	191	284		329	216
195		240		285		330	
196		241		286	62	331	118
197	312	242	278	287		332	
198		243	195	288	319	333	
199	106	244	91	289		334	304
200		245	244	290		335	
201		246	270	291	109	336	131
202		247	81	292		337	332
203		248	96	293	275	338	
204		249	313	294		339	
205		250	238	295	314	340	302
206	116	251	5	296	173	341	70
207	229	252		297		342	255
208	323	253		298	57	343	182
209	94	254		299		344	
210	199	255	262	300	87	345	
211		256		301	98	346	108
212	122	257	35	302		347	119
213		258		303	95	348	11
214		259		304		349	17
215		260	332	305		350	83
216	138	261	160	306		351	
217	309	262		307	316	352	256
218		263	130	308	317	353	115
219		264	241	309	290	354	44
220	272	265		310		355	40
221	190	266	265	311	218		
222		267	198	312			
223		268		313	277		
224	242	269		314	46		
225		270		315	288		

This table cross references the VV Part I objects with the Arp Peculiar Galaxy catalog.

Additional Resources

Journal Articles

Chernin, A.D., et al “Vorontsov-Velyaminov Rows: Straight Segments in the Spiral Arms of Galaxies.” *Astronomy Letters*, Vol 26, No 5 (2000), 285-296

Jokimäki, Ari., et al “A Catalogue of M51 type Galaxy Associations.” *Astrophysics and Space Science*, Vol 315 (Jan 2008), 249-283

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

Vorontsov-Velyaminov, Boris.A. “Atlas of Interacting Galaxies, Part II and the Concept of Fragmentation of Galaxies.” *Astronomy and Astrophysics Supplement Series*, Vol 28 (1977), 1-117

Vorontsov-Velyaminov, Boris A. “Correspondence – Morphological Catalogue of Galaxies Discriminated Against.” *The Observatory*, Vol 94 (1974), 319-320

Vorontsov-Velyaminov, Boris A. “Interaction of Multiple Systems” *Problems of Extra-Galactic Research, Proceedings from IAU Symposium No 15* (1962), 194-200

Vorontsov-Velyaminov, Boris A. “Interacting Galaxies and the Tidal Theory of Intergalactic Bridges.” *Soviet Astronomy Letters*, Vol 1 (Nov-Dec 1975), 215-217

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

Vorontsov-Velyaminov, Boris A. “Nine Enigmatic New Objects.” *Soviet Astronomy Letters*, Vol 1 (Feb 1975), 23

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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

Zasov, A. V. and Arkhipova, V. P. “Vorontsov-Velyaminov' nests: what are they?” *Small Galaxy Groups: IAU Colloquium 174, ASP Conference Series*, Vol 209 (2000), 126-131

Books

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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

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

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

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

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 2013	New document
May 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
November 2025	Enhancements throughout the guide • Enhanced object table to include primary ID. • Simplified tables throughout to match the VV catalogue hosted by the Sternberg Astronomical Institute located in Moscow, Russia. • Enhanced some closeup photos with improved labeling or added new insets. Most objects now have an inset. • Aligned magnitude figures using Simbad as primary source and NED and Megastar (MAC galaxies) as secondary. As usual take the magnitude figures with a grain of salt. • Simplified the primary index (pages 8-12) with reduced data and clutter for ease of reading on the field, while retaining useful data.