



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

Alvin Huey  
FaintFuzzies.com



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Alvin Huey

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# 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's Part I list was listed as an Arp<sup>1</sup> as Boris's paper was the inspiration for Arp's list. Dr. Halton Arp has access to the 200-inch reflector, which in turn gives 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 formation 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 203. 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 a number of 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  |

<sup>1</sup> A table on page 198 is provided cross-referencing VV Part I with Arp's list.

V-V is 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 by 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. It is possible that since he published primarily in Soviet astronomy journals, which is not widely available to the rest of the world. Anyhow, he wrote a correspondence expressing displeasure<sup>2</sup>. This is not the only "complaint" that V-V wrote, he wrote another<sup>3</sup> regarding that his Ring Galaxies<sup>4</sup> paper was largely ignored as well.

### **Some Thanks for 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 to suggest 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, Shneur Sherman, late Bill Porte, and Marsha Robinson-Porte, for camaraderie when observing at remote sites over many years.

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

<sup>3</sup> Vorontsov-Velyaminov, B.A. *Ring Galaxies*. The Observatory, vol. 103, 1983, 259-260.

<sup>4</sup> 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                              |
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| 24   | 84   | 22 57 56.9 | +26 09 00 | GPair    | 14.0   | 25x25       | NNNP      | Peg   |  |
|      | 84b  | 22 57 56.2 | +26 09 00 | G        | 15     | 6x2         |           |       | MCG+4-54-5, NGC 7436A                  |
|      | 84a  | 22 57 57.5 | +26 09 00 | G        | 14.0   | 20x20       |           |       | MCG+4-54-6, NGC 7436B, UGC 12269       |
| 25   | 305  | 23 23 36.8 | +19 35 04 | GTrpl    |        |             | NNN       | Peg   |  |
|      | 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                  |
|      | 254b | 00 01 42.2 | +23 29 42 | G        | 13.95  | 15x5        |           |       | MCG+4-1-11, UGC 12915                  |
| 27   | 37   | 02 04 23.8 | +45 46 33 | GPair    |        |             | PDb       | And   | UGC 1562, V Zw 175                     |
|      | 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                             |
| 28   | 94   | 02 16 50.9 | +37 21 12 | GPair    | 15.6   | 6x6         | PC        | And   | MCG+6-6-5, UGCA 25                     |
|      | 94a  | 02 16 50.5 | +37 21 12 | G        |        |             |           |       |  |
|      | 94b  | 02 16 51.3 | +37 21 11 | G        |        |             |           |       |  |
| 29   | 107  | 02 29 01.5 | +38 05 55 | GPair    | 15.5   | 6x6         | PC        | And   | MCG+6-6-43                             |
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|      | 107b | 02 29 02.0 | +38 05 56 | G        |        |             |           |       |  |
| 30   | 96   | 02 35 37.3 | +37 38 21 | G        | 13.03  | 23x14       | PC        | And   | MCG+6-6-62, UGC 2069                   |
| 31   | 187  | 23 34 04.5 | +01 35 03 | GPair    | 15.85  | 7x4         | PK        | Psc   | MCG+0-60-9                             |
|      | 187a | 23 34 04.1 | +01 35 07 | G        |        |             |           |       |  |
|      | 187b | 23 34 04.9 | +01 35 00 | G        |        |             |           |       |  |
| 32   | 36   | 01 24 43.9 | +33 26 08 | GPair    |        |             | N         | Psc   |  |
|      | 36b  | 01 24 43.6 | +33 26 08 | G        | 17.5   | 2x2         |           |       | MAC 0124+3326                          |
|      | 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   |  |
|      | 176a | 01 42 06.0 | +07 39 54 | G        | 14.9   | 6x6         |           |       | MCG+1-5-23, UGC 1191                   |
|      | 176b | 01 42 06.7 | +07 39 39 | G        | 16.0   | 2x2         |           |       | MAC 0142+0739                          |
| 34   | 54   | 01 48 44.2 | +10 30 26 | GPair    |        |             | Nb        | Psc   | MCG+2-5-36, IC 161, Mrk 1007, UGC 1266 |
|      | 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   |  |
|      | 332b | 23 57 32.6 | -22 00 00 | G        | 16.59  | 16x4        |           |       | MCG-4-1-7                              |
|      | 332a | 23 57 34.8 | -21 58 44 | G        | 15     | 10x7        |           |       | MCG-4-1-8                              |



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|      | 258b | 01 12 59.0 | -19 00 24 | G        | 16    | 2x2         |           |       | MCG-3-4-29                      |
|      | 258c | 01 12 59.8 | -18 59 59 | G        | 18    | 4x1         |           |       | MAC 0112-1859                   |
| 38   | 302  | 02 18 19.2 | -12 12 38 | GPair    |       |             | PD        | Cet   |                                 |
|      | 302a | 02 18 14.2 | -12 13 55 | G        | 14.58 | 9x9         |           |       | MCG-2-6-52                      |
|      | 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 |
| 40   | 200  | 02 40 28.1 | -12 52 35 | GPair    |       |             | PDb       | Cet   |                                 |
|      | 200b | 02 40 27.4 | -12 52 33 | G        | 15.5  | 3x2         |           |       | MCG-2-7-60                      |
|      | 200a | 02 40 28.9 | -12 52 38 | G        | 15.6b | 3x3         |           |       | MCG-2-7-61                      |
| 41   | 338  | 01 47 42.2 | +27 22 59 | GPair    |       |             | PDdf      | Tri   |                                 |
|      | 338a | 01 47 29.9 | +27 20 00 | G        | 12.07 | 69x30       |           |       | MCG+4-5-9, IC 1727, UGC 1249    |
|      | 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            |
| 43   | 44   | 02 11 30.4 | +14 17 54 | GPair    |       |             | PDb       | Ari   | MCG+2-6-41                      |
|      | 44b  | 02 11 30.2 | +14 17 46 | G        | 18.9g | 1x1         |           |       |                                 |
|      | 44a  | 02 11 30.8 | +14 18 02 | G        | 15.2g | 8x5         |           |       |                                 |
| 44   | 27   | 02 12 38.7 | +14 22 00 | G        | 14.6g | 6x6         | M         | Ari   | MCG+2-6-46                      |
|      | 27b  | 02 12 39.6 | +14 21 45 | PofG     | 15.2  |             |           |       |                                 |
| 45   | 278  | 02 43 26.7 | +16 39 59 | GPair    |       |             | NNNP      | Ari   | MCG+3-7-50                      |
|      | 278a | 02 43 26.6 | +16 40 12 | G        | 15.6  | 6x5         |           |       | MCG+3-7-50                      |
|      | 278b | 02 43 26.8 | +16 40 21 | PofG     | 16.5  | -           |           |       |                                 |
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| 46   | 85   | 02 54 25.5 | +41 34 33 | GGroup   |       |             | PC        | Per   |                                 |
|      | 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         |           |       | MCG+7-7-3                       |
|      | 85a  | 02 54 27.5 | +41 36 20 | G        | 13.5  | 30x21       |           |       | MCG+7-7-4, NGC 1129, UGC 2373   |
| 47   | 78   | 03 55 46.1 | -42 22 05 | GPair    |       |             | N         | Eri   | MCG-7-9-2, NGC 1487             |
|      | 78a  | 03 55 45.4 | -42 22 04 | G        | 12.3b | 33x21       |           |       | PGC 14117                       |
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| 48   | 161  | 05 16 36.9 | +06 26 30 | GGroup   |       |             | Ch        | Ori   | MCG+1-14-16                     |
|      | 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         |           |       | MAC 0516+0627B                  |
|      | 161d | 05 16 37.1 | +06 26 13 | G        | 17.5  |             |           |       |                                 |
|      | 161b | 05 16 37.1 | +06 26 53 | G        | 15.5  | 4x3         |           |       | MAC 0516+0627C                  |
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|      | 225b | 05 21 56.7 | +03 29 11 | G        | 14.56 | 15x7        |           |       | MCG+1-14-34, IC 412, UGC 3298   |
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| 50   | 162  | 05 45 28.6 | -25 55 55 | GTrpl    |       |             | Ch        | Lep   | MCG-4-14-22                      |
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|      | 162b | 05 45 28.5 | -25 55 54 | G        | 14.14 |             |           |       |                                  |
|      | 162c | 05 45 29.6 | -25 55 57 | G        | 14.08 | 8x8         |           |       | ESO 488-9                        |
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| 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            |
| 53   | 141  | 07 30 56.6 | +72 31 03 | GGroup   |       |             | N         | Cam   |                                  |
|      | 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       |           |       | 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   |                                  |
|      | 171a | 09 23 24.3 | +22 18 47 | G        | 14.7g | 9x8         |           |       | MCG+4-22-37                      |
|      | 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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|      | 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                   |

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| 79   | 160   | 11 14 25.0 | +53 41 27 | GGroup   |       |             | NPNP      | UMa   |                                  |
|      | 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        |       |             |           |       |                                  |
|      | 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           |

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| 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                      |

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| 103  | 69         | 13 03 17.3 | +31 19 59 | GGroup   |       |             | PC        | CVn         | MCG+5-32-31, UGC 8496           |
|      | 69a        | 13 03 17.3 | +31 20 07 | G        | 14.9  |             |           |             |                                 |
|      | 69b        | 13 30 17.4 | +31 19 59 | G        | 16.4g | 5x3         |           |             |                                 |
| 104  | 326        | 10 30 38.0 | +31 17 07 | GPair    |       |             | PD        | CVn         | UGC 8502                        |
|      | 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            |
| 105  | 317        | 13 47 04.1 | +33 53 14 | GPair    |       |             | PDdf      | CVn         |                                 |
|      | 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           |
| 106  | 202        | 13 53 52.3 | +33 11 32 | GPair    |       |             | NN        | CVn         |                                 |
|      | 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                     |
| 106  | 203        | 13 53 45.5 | +33 13 15 | GPair    |       |             | PK        | CVn         | MCG+6-31-16                     |
|      | 203b       | 13 53 45.4 | +33 13 12 | G        | 18    | 1x1         |           |             |                                 |
|      | 203a       | 13 53 45.6 | +33 13 18 | G        | 18    | 1x1         |           |             |                                 |
| 107  | 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                     |
|      | 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 |                                 |
| 108  | 310        | 13 59 54.0 | +38 11 30 | GPair    |       |             | PD        | CVn         |                                 |
|      | 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                     |
| 109  | 256        | 14 00 55.4 | +40 59 49 | GPair    |       |             | PKdf      | CVn         |                                 |
|      | 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           |
| 110  | 185        | 12 00 49.0 | +15 27 07 | GPair    |       |             | PK        | Com         | MCG+3-31-12                     |
|      | 185b       | 12 00 48.6 | +15 27 10 | G        |       |             |           |             |                                 |
|      | 185a       | 12 00 49.3 | +15 27 04 | G        | 15.6g | 7x6         |           |             |                                 |
| 111  | 45         | 12 01 38.7 | +22 39 41 | GPair    | 15.5  | 8           | PDb       | Com         | MCG+4-28-121                    |
|      | 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            |
| 113  | 179        | 12 04 03.8 | +20 14 01 | GPair    |       |             | PD        | Com         |                                 |
|      | 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  |
| 114  | 46         | 12 04 15.9 | +24 08 40 | GPair    |       |             | PDb       | Com         | MCG+4-29-10, UGC 7055           |
|      | 46b        | 12 04 15.1 | +24 08 32 | G        | 17.6g | 4x2         |           |             |                                 |
|      | 46a        | 12 04 16.8 | +24 08 49 | G        | 15.84 | 10x8        |           |             |                                 |
| 115  | 61         | 12 06 03.9 | +20 36 22 | GPair    | 14.36 | 13x18       | PK        | Com         | MCG+4-29-23, NGC 4098, UGC 7091 |
|      | 61a        | 12 06 03.6 | +20 36 29 | G        |       |             |           |             |                                 |
|      | 61b        | 12 06 04.2 | +20 36 14 | G        |       |             |           |             |                                 |

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| 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                       |
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| 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                     |



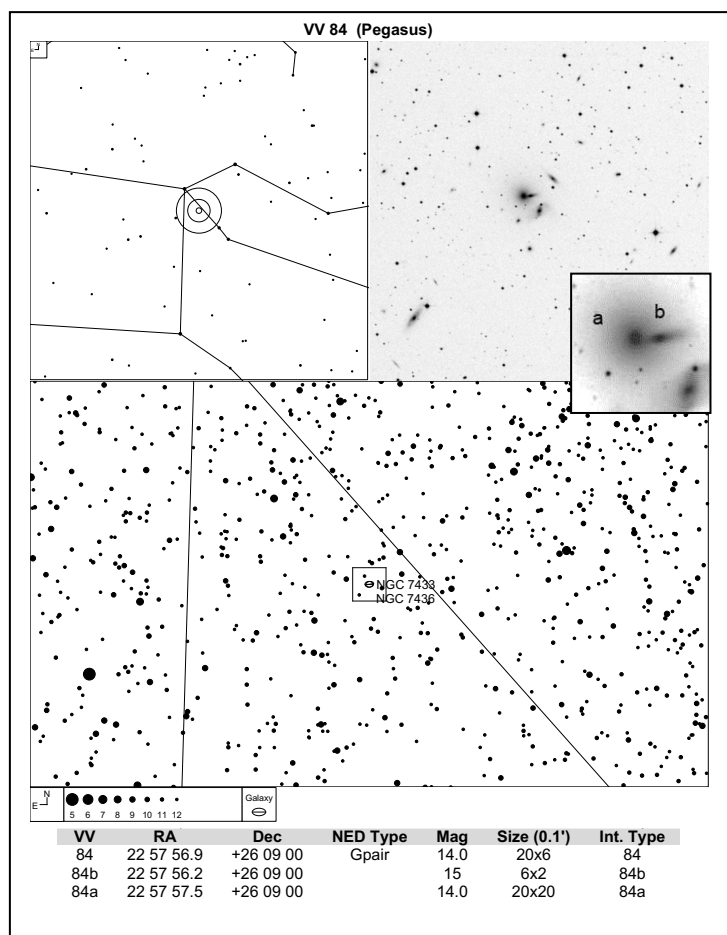
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| 142  | 133  | 13 39 19.4 | +24 46 32 | G        | 14.47 | 12x8        | N         | Boo   | MCG+4-32-18, UGC 8638              |
| 143  | 195  | 13 41 49.4 | +26 22 19 | GPair    |       |             | PDb       | Boo   |                                    |
|      | 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                               |
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| 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         |           |       |   |

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|      | 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



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 5.0° 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.

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

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 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  |
|------------------------------|--|
| <b>HII-regions</b>           |  |
| H                            | large inner subsystems, the galaxies with vast HII-regions |
| <b>M-51 type<sup>5</sup></b> |  |
| M                            | the satellite on the spiral branch of primary component    |
| MM                           | one satellite  |
| MMM                          | two satellites on the spirals                              |
|                              | satellite lies on the bridge connecting the components     |
| <b>Nests<sup>6</sup></b>     |  |
| 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  |
| <b>Pairs</b>                 |  |
| PC                           | pair of coalescents  |
| PK                           | pair in contact  |
| PD                           | distant pair   |
| b                            | bridge   |
| t                            | tail   |
| df                           | disruption of the facade                                   |
| <b>Pseudo-Rings</b>          |  |
| R                            | a ring without a nucleus together the non-elliptic galaxy  |
| <b>"Comets"</b>              |  |
| K                            | comet-like single galaxy                                   |
| <b>Enigmatic</b>             |  |
| 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](mailto: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.

<sup>5</sup> Jokimäki, A et al “A Catalogue of M51 type Galaxy Associations”. *Astrophysics and Space Science*, **315**(1), 249-283

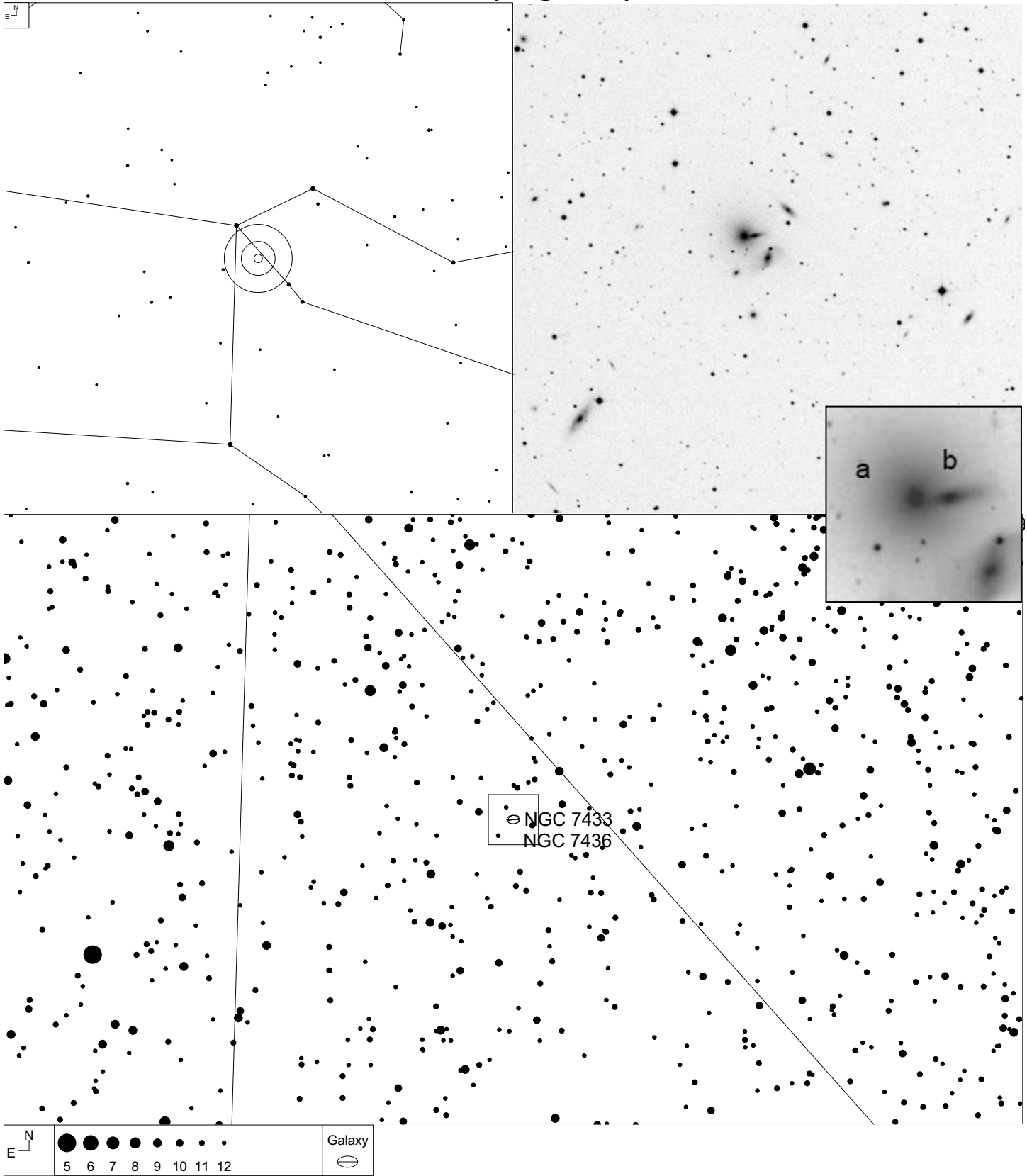
<sup>6</sup> Zasov, A. V. & Arhipova, V. P. “Vorontsov-Velyaminov' nests: what are they?”. *Small Galaxy Groups: IAU Colloquium* 174, ASP Conference Series, Volume **209**



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

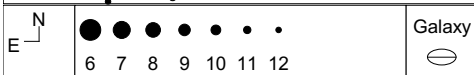
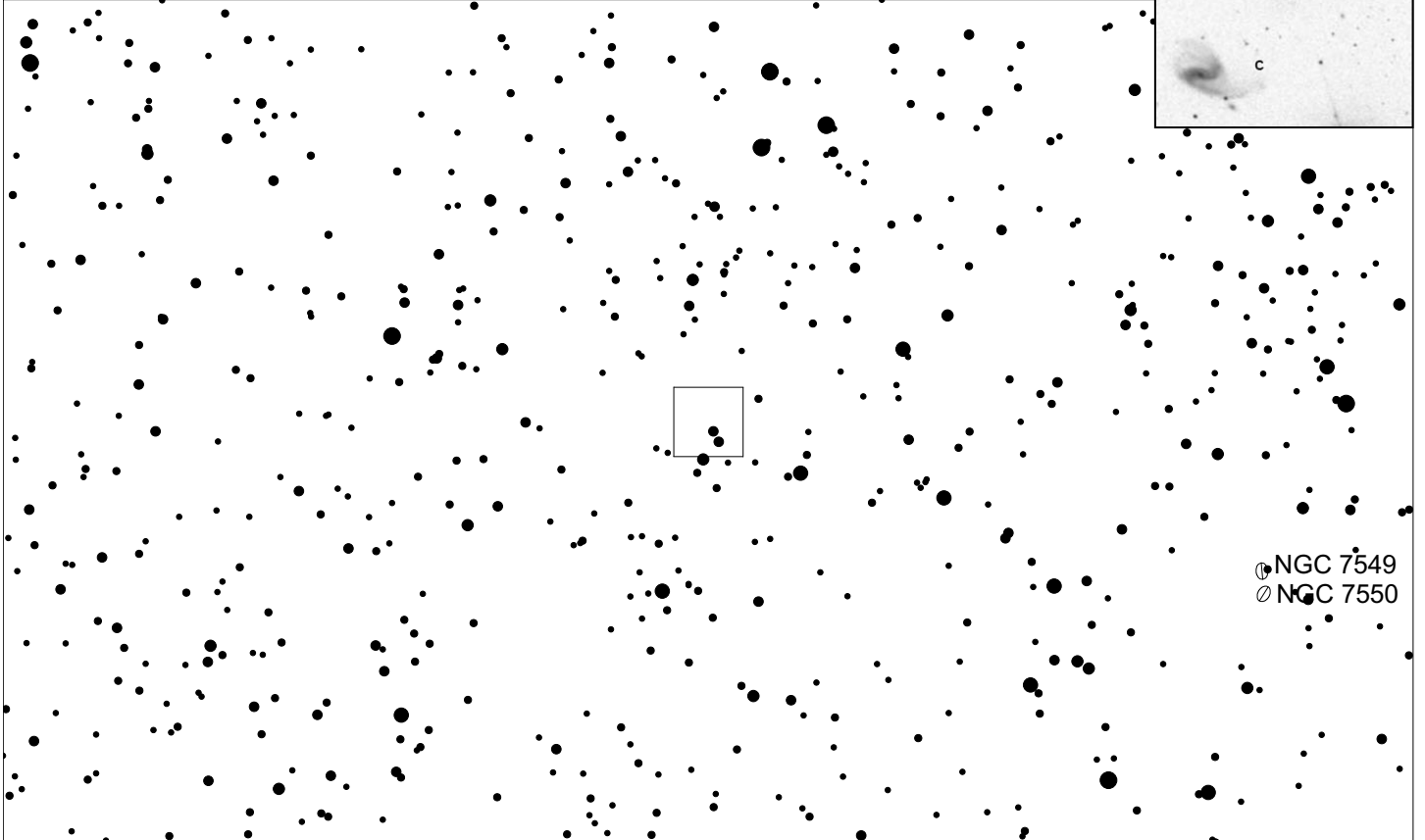
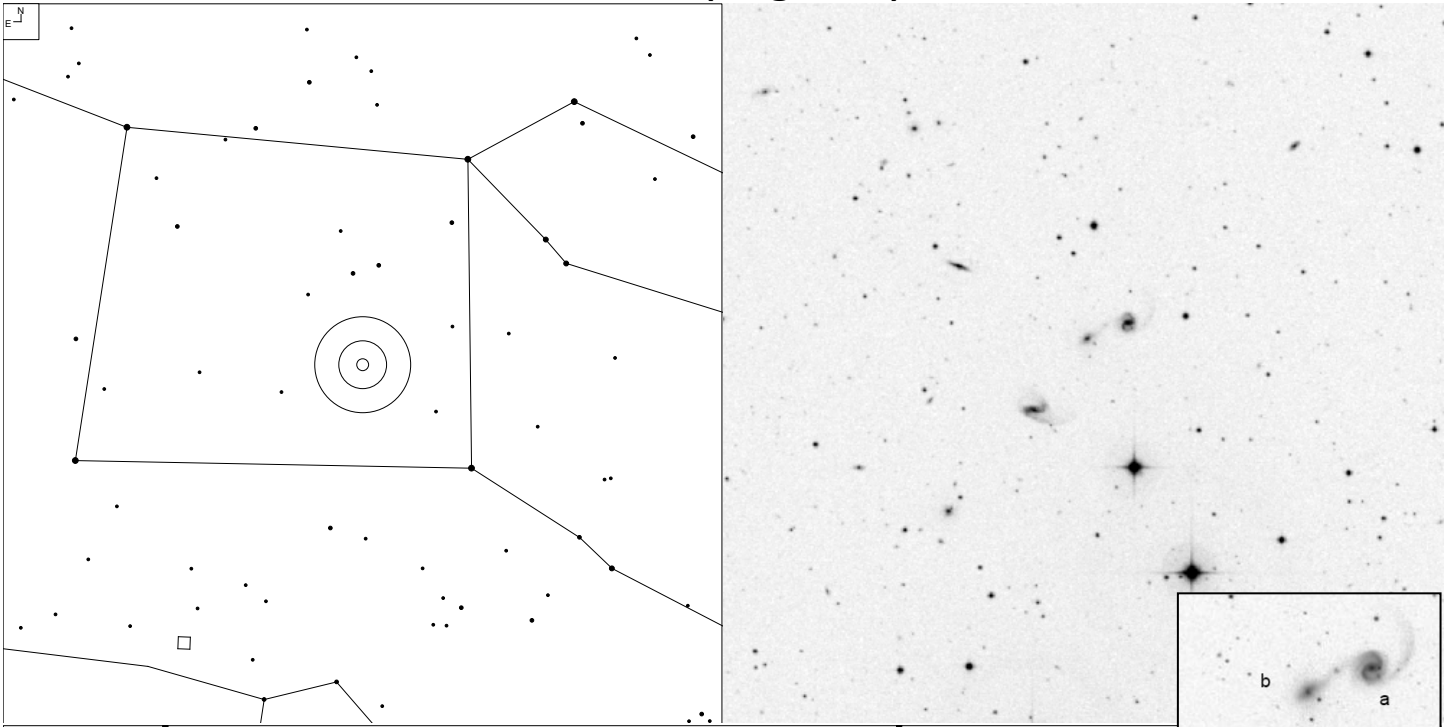


# VV 84 (Pegasus)



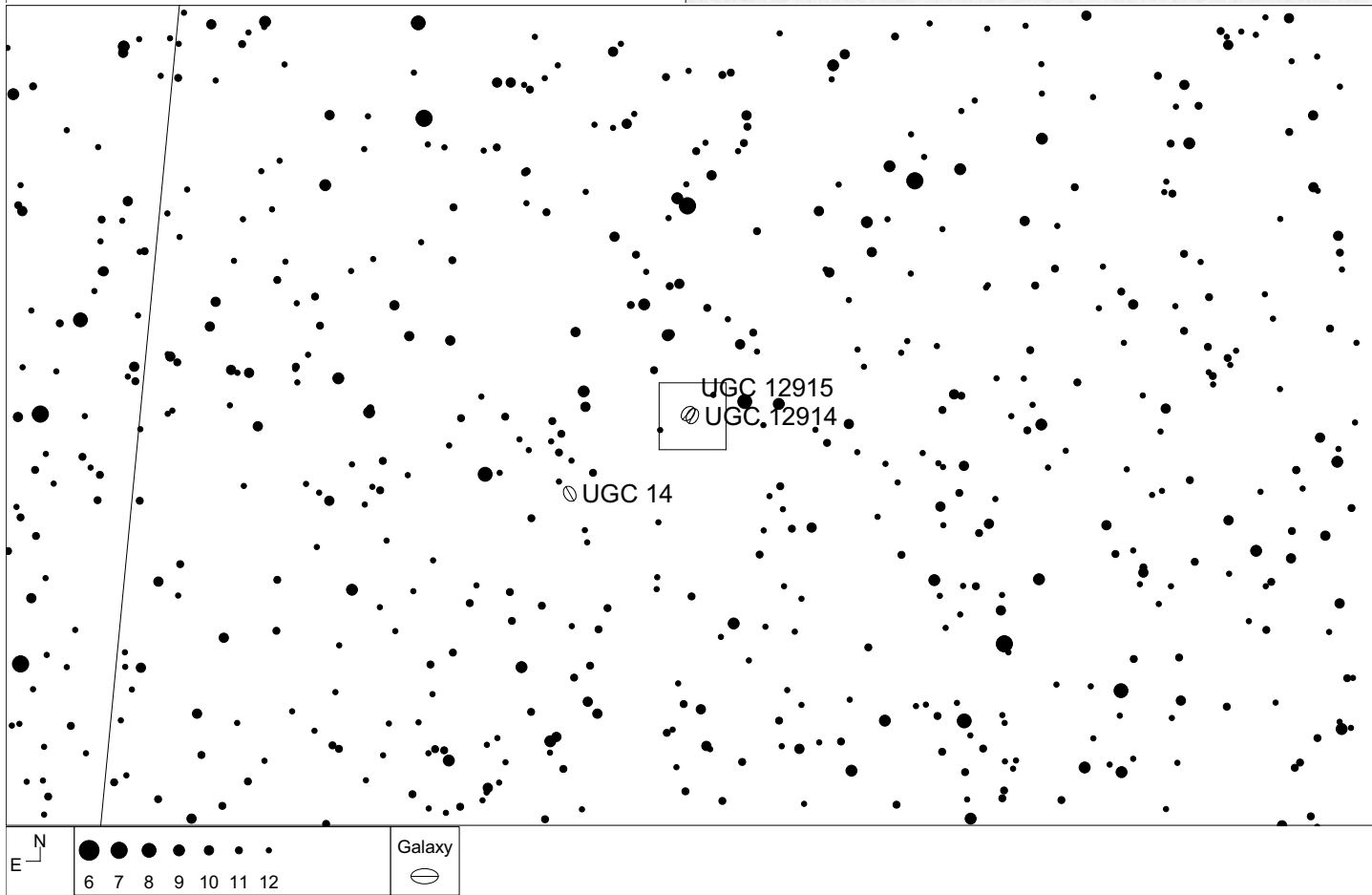
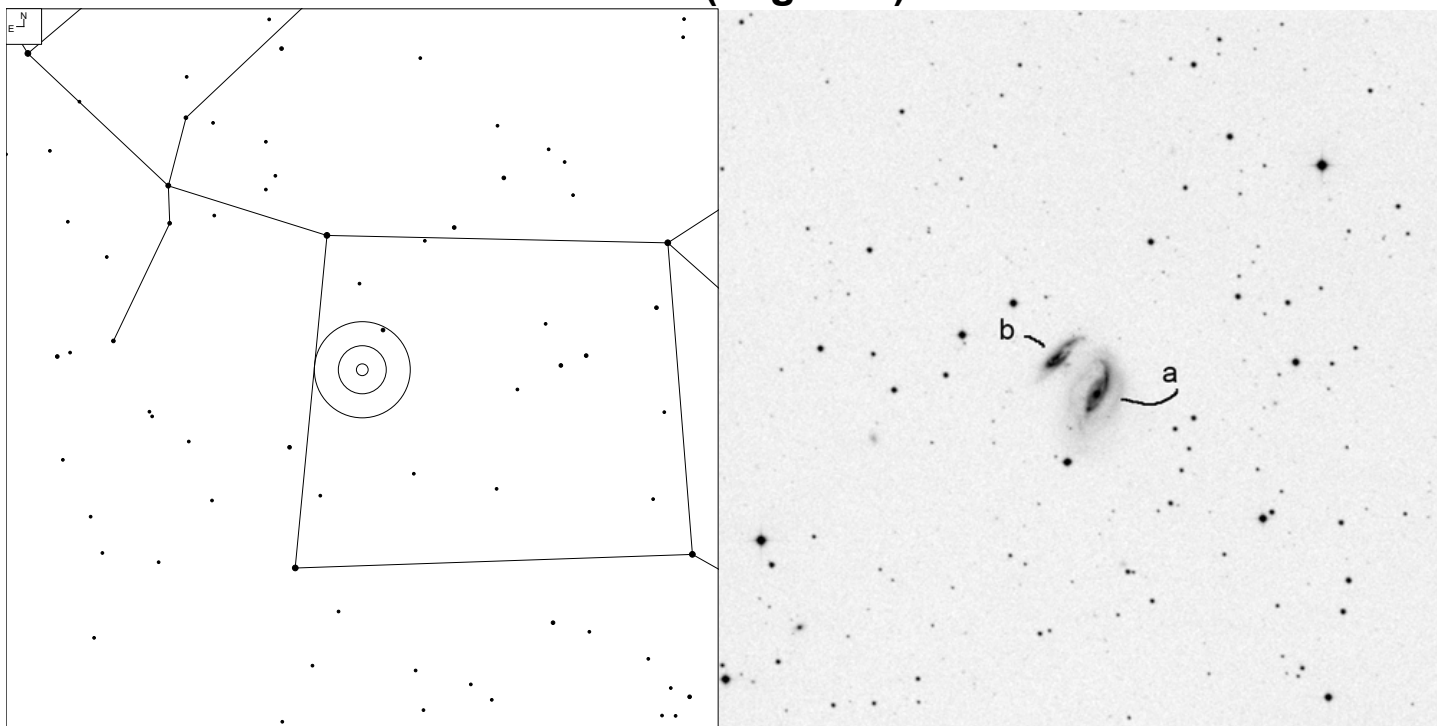
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|-----|------------|-----------|----------|------|-------------|-----------|
| 84  | 22 57 56.9 | +26 09 00 | GPair    | 14.0 | 25x25       | NNNP      |
| 84b | 22 57 56.2 | +26 09 00 | G        | 15   | 6x2         |           |
| 84a | 22 57 57.5 | +26 09 00 | G        | 14.0 | 20x20       |           |

# VV 305 (Pegasus)



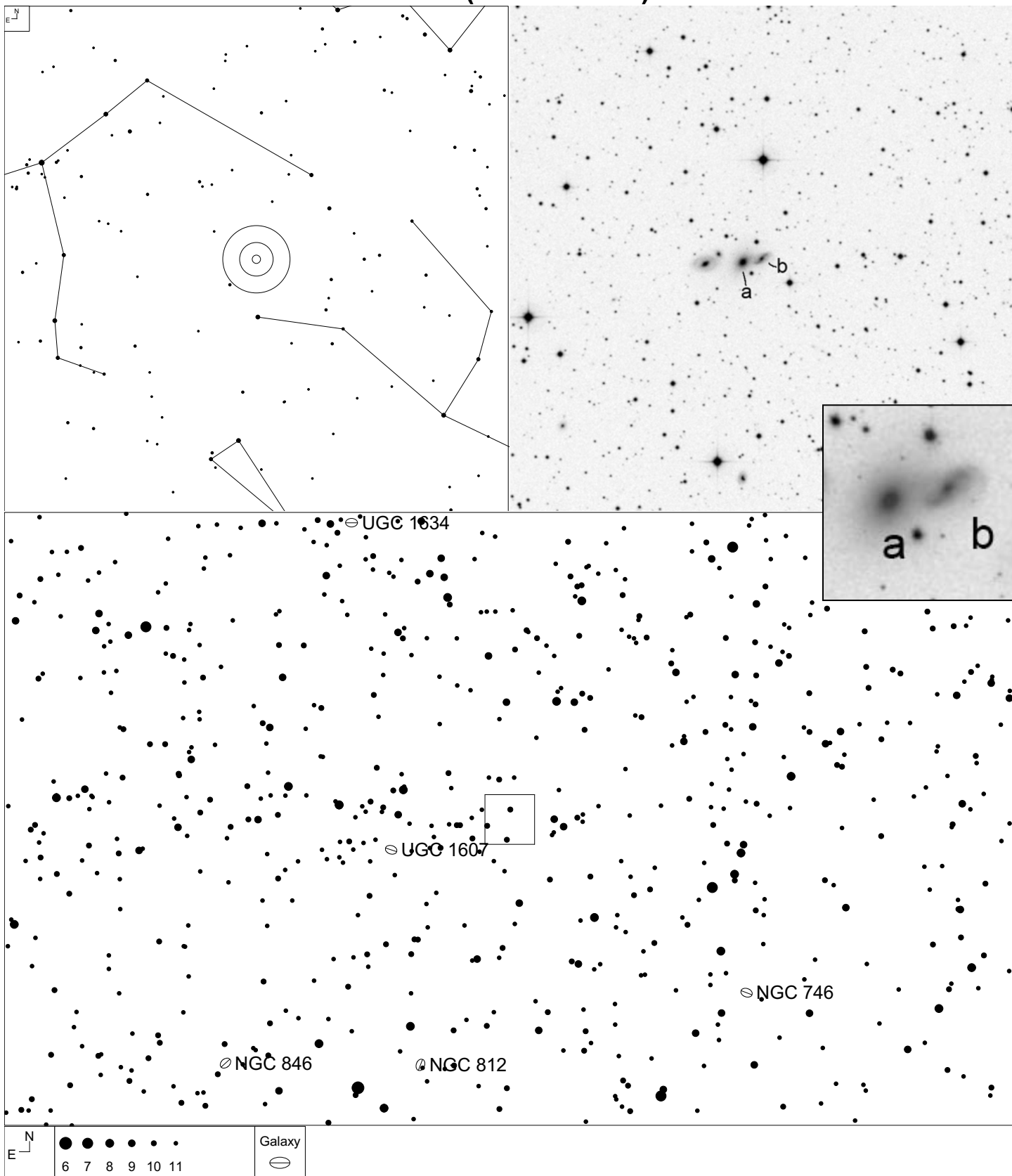
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 305  | 23 23 36.8 | +19 35 04 | GTrpl    |       |             | NNN       |
| 305a | 23 23 32.7 | +19 35 59 | G        | 15.4  | 5x4         |           |
| 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)



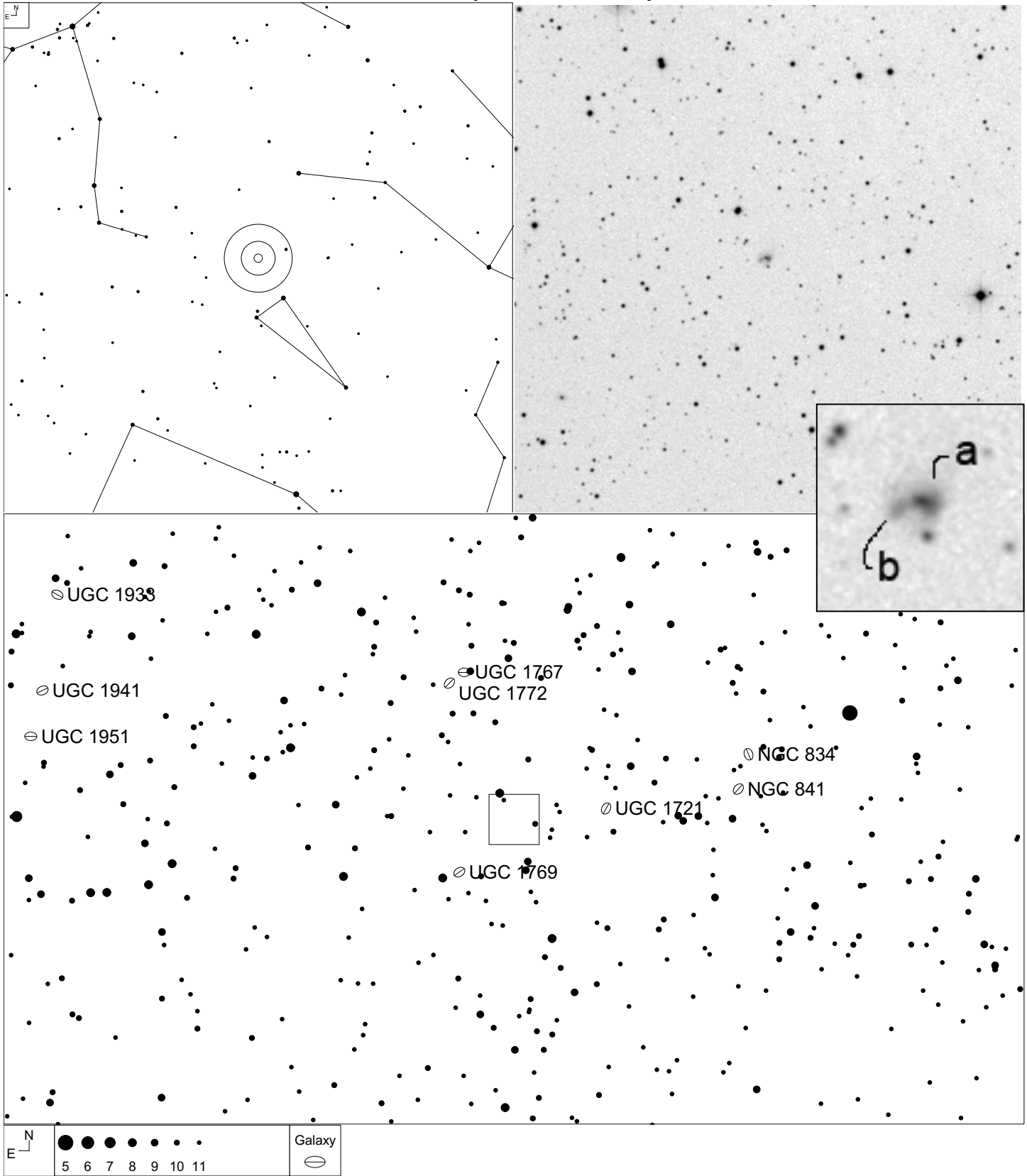
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 254  | 00 01 40.2 | +23 29 23 | GPair    |       |             | PKdf      |
| 254a | 00 01 38.2 | +23 29 04 | G        | 13.07 | 23x13     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

# VV 37 (Andromeda)



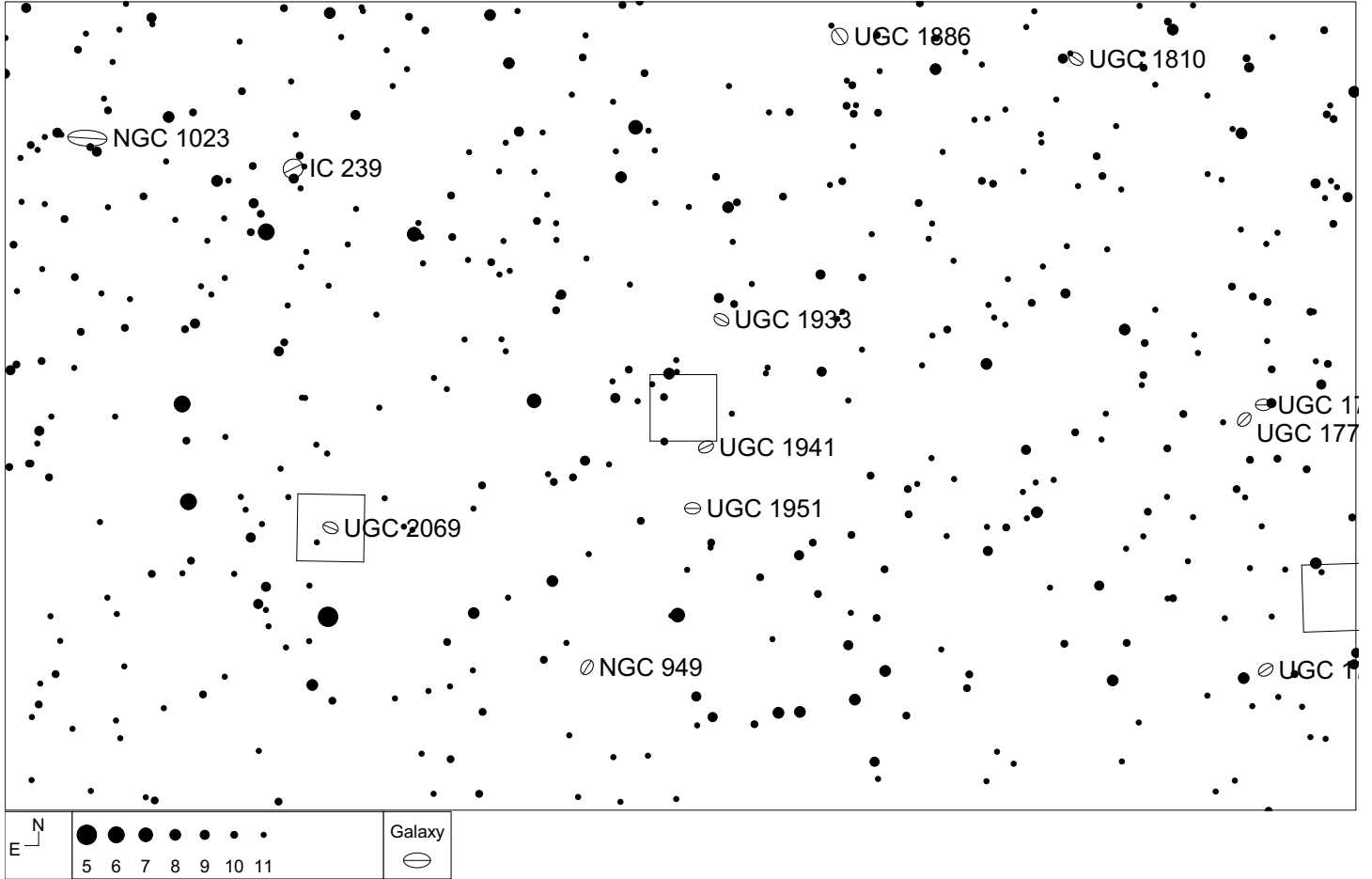
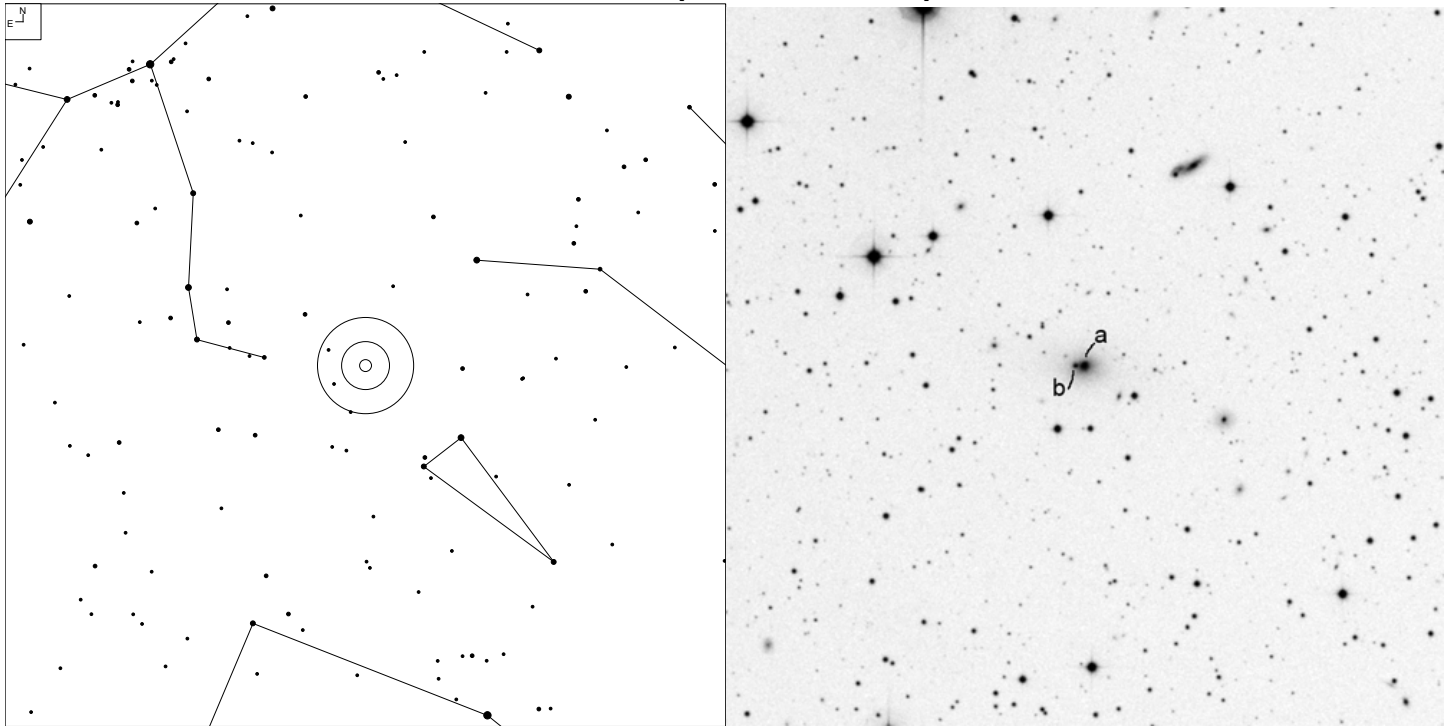
| VV  | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|------|-------------|-----------|
| 37  | 02 04 23.8 | +45 46 33 | GPair    |      |             | PDb       |
| 37b | 02 04 22.3 | +45 46 35 | G        | 16.2 | 6x3         |     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

# VV 94 (Andromeda)



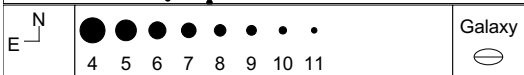
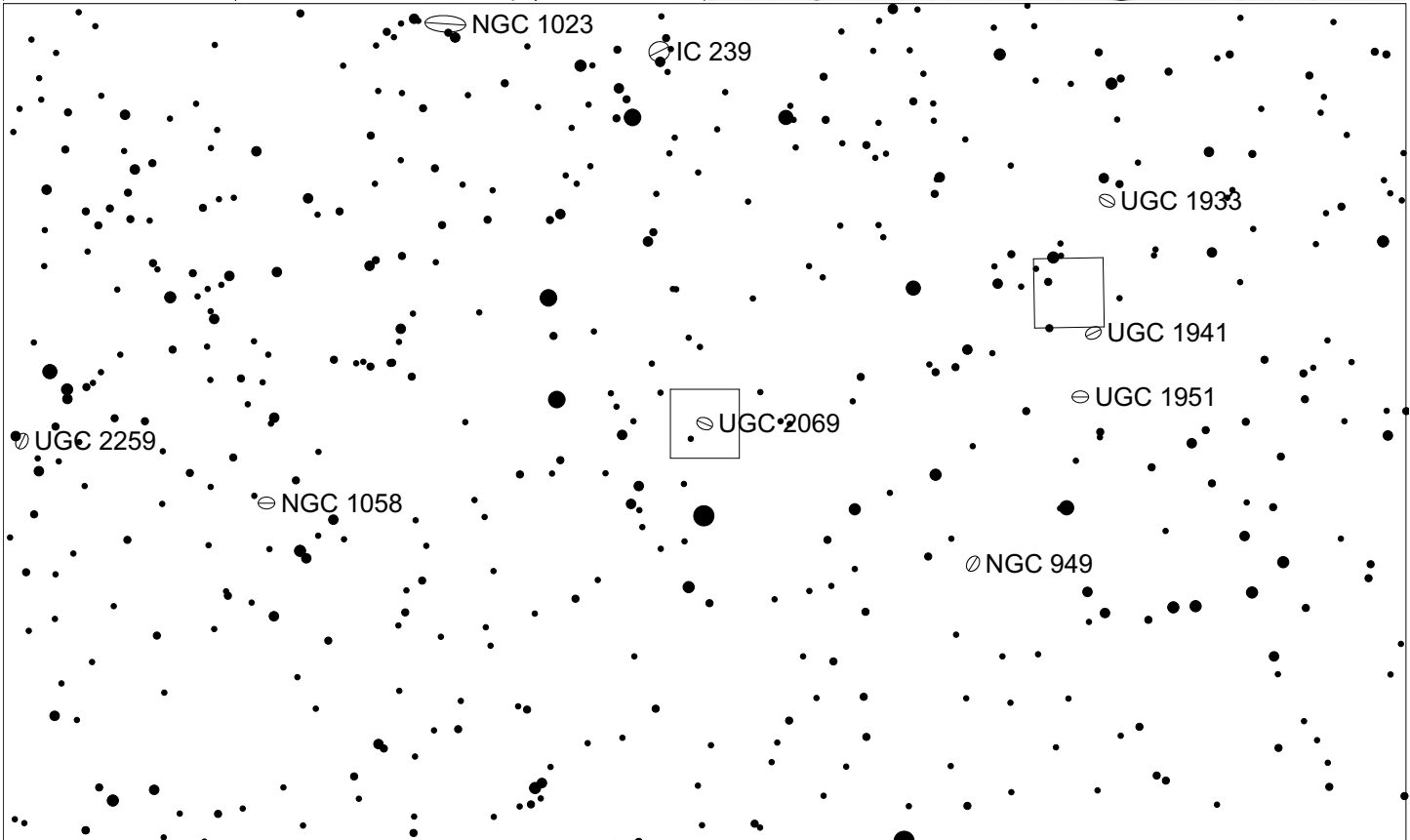
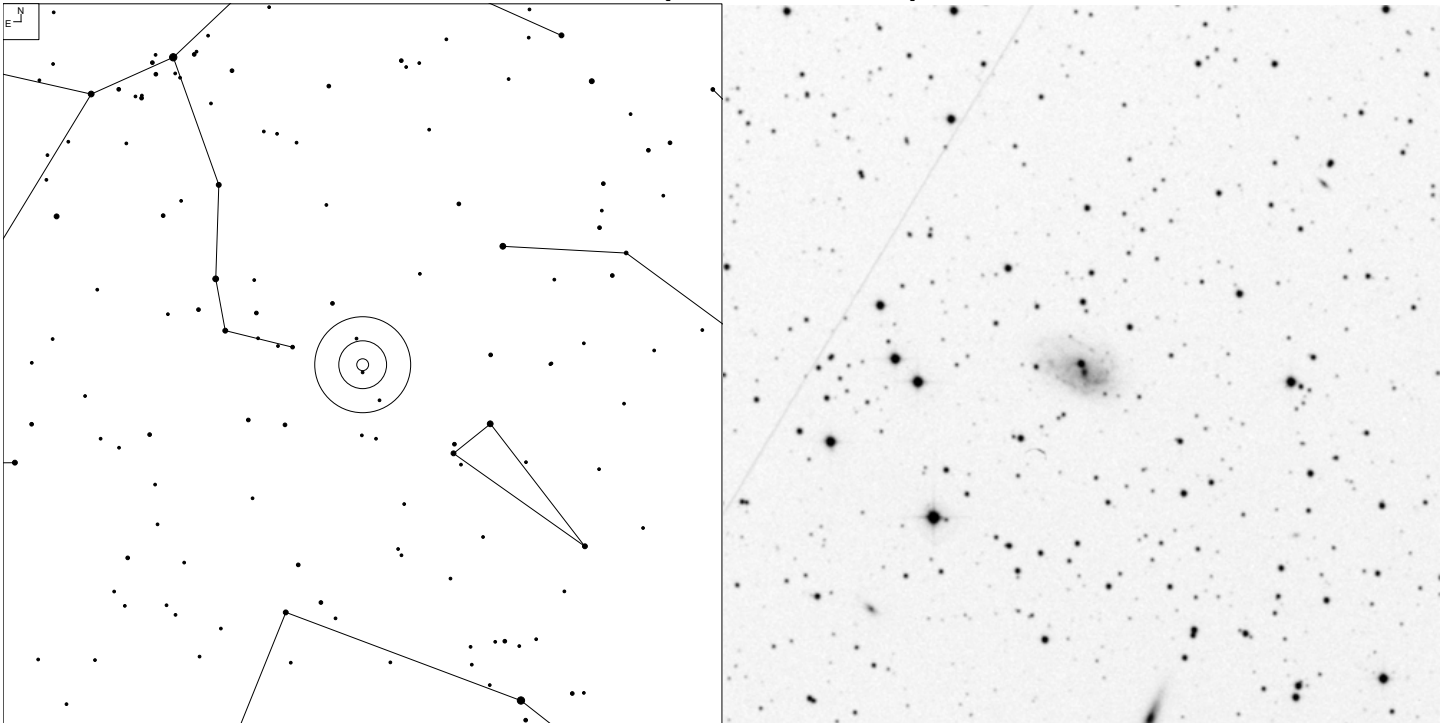
| VV  | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|------|-------------|-----------|
| 94  | 02 16 50.9 | +37 21 12 | GPair    | 15.6 | 6x6         | PC        |
| 94a | 02 16 50.5 | +37 21 12 | G        |      |             |     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

# VV 107 (Andromeda)



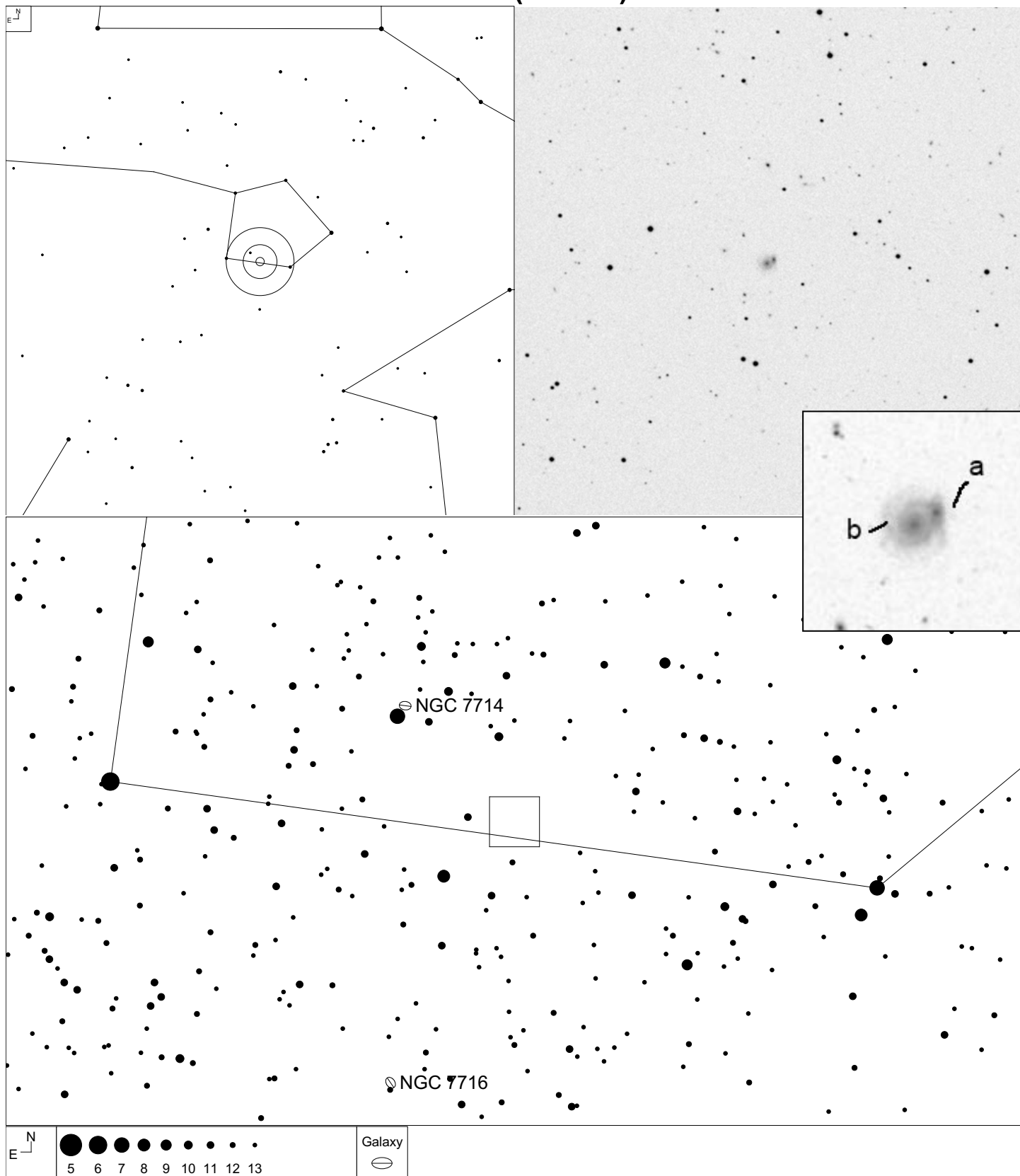
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 107  | 02 29 01.5 | +38 05 55 | GPair    | 15.5 | 6x6         | PC        |
| 107a | 02 29 01.1 | +38 05 53 | G        |      |             | 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

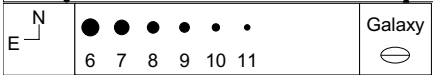
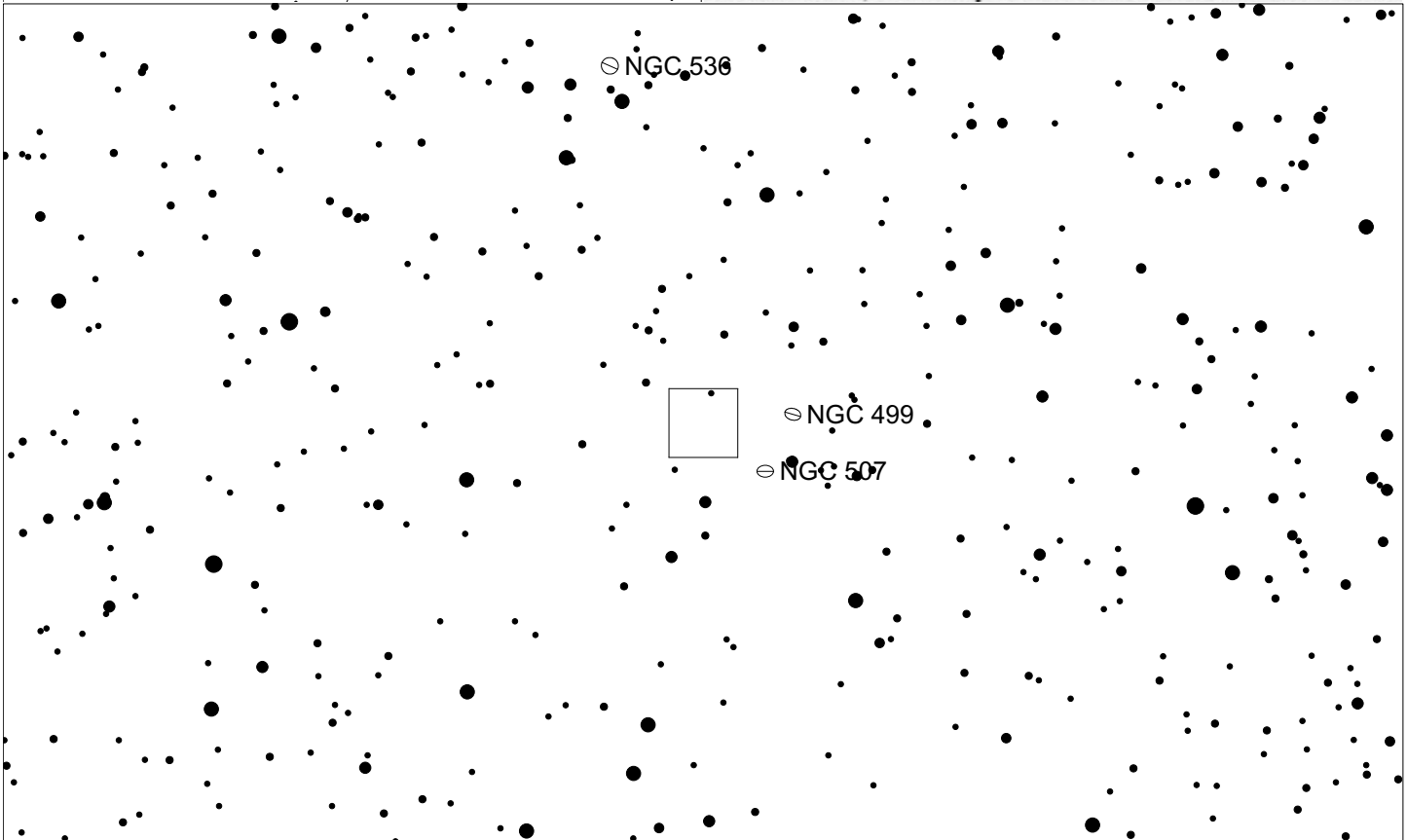
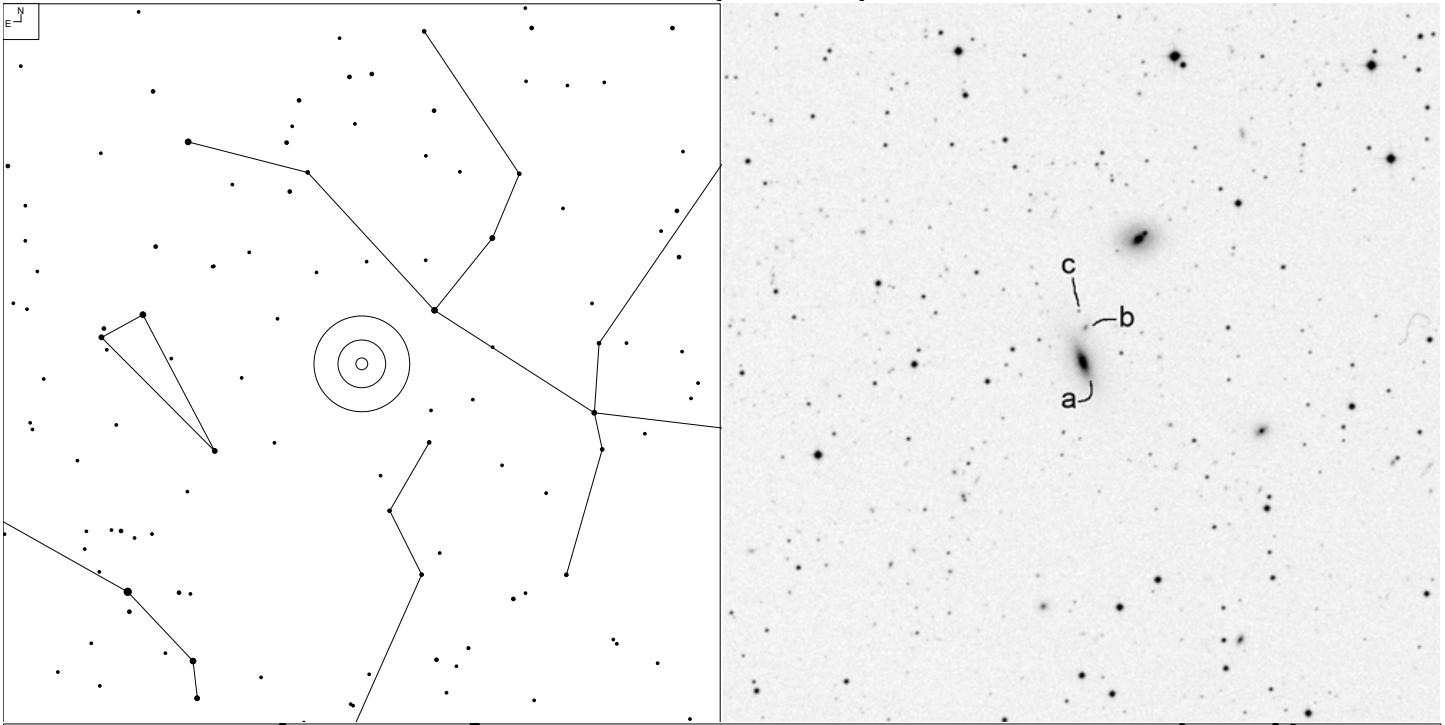
# VV 187 (Pisces)



| 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        |       |             |           |

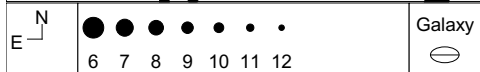
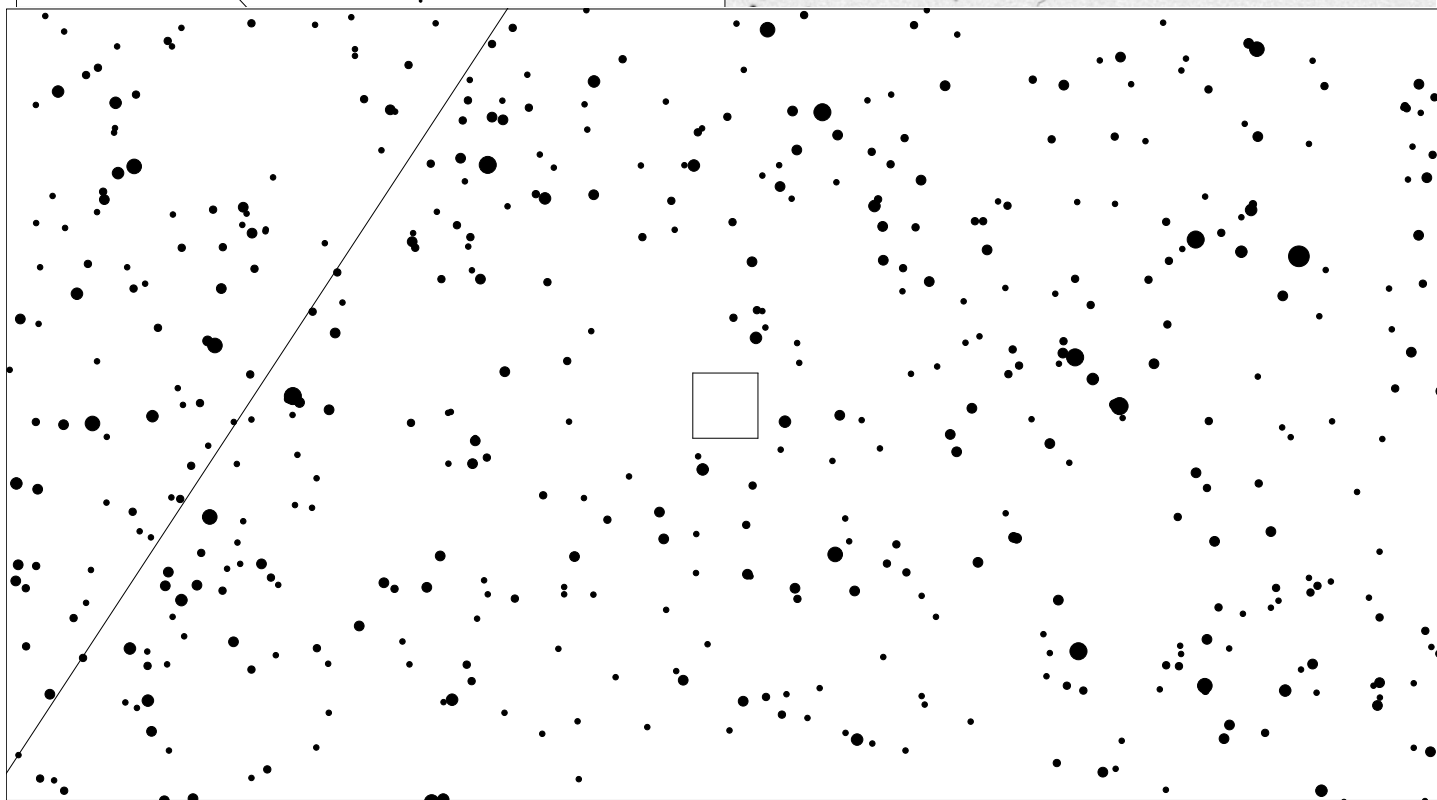
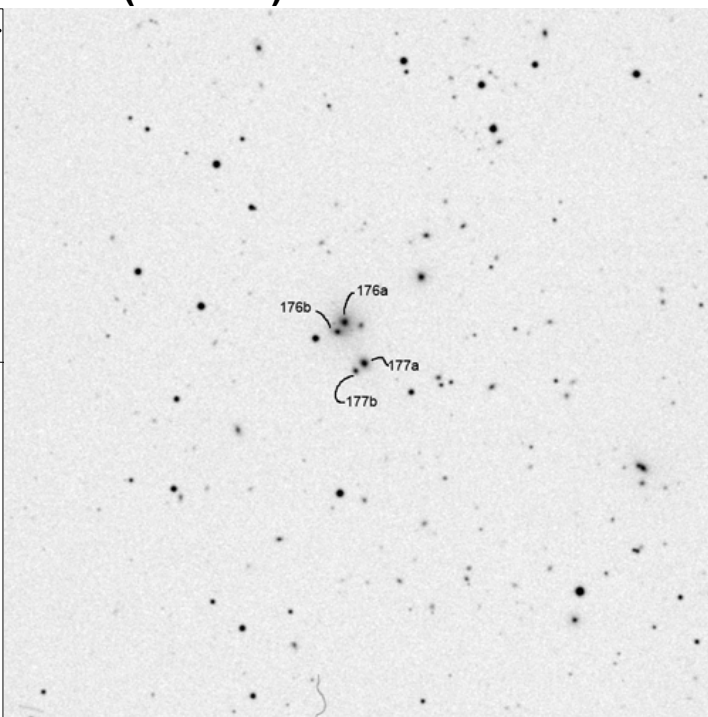
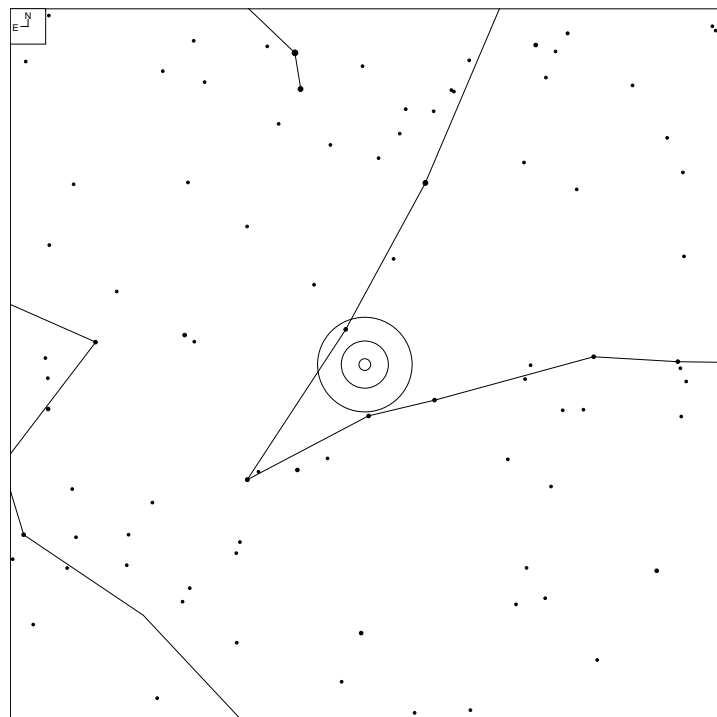


# VV 36 (Pisces)



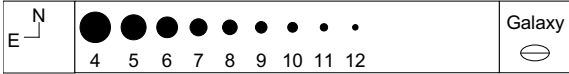
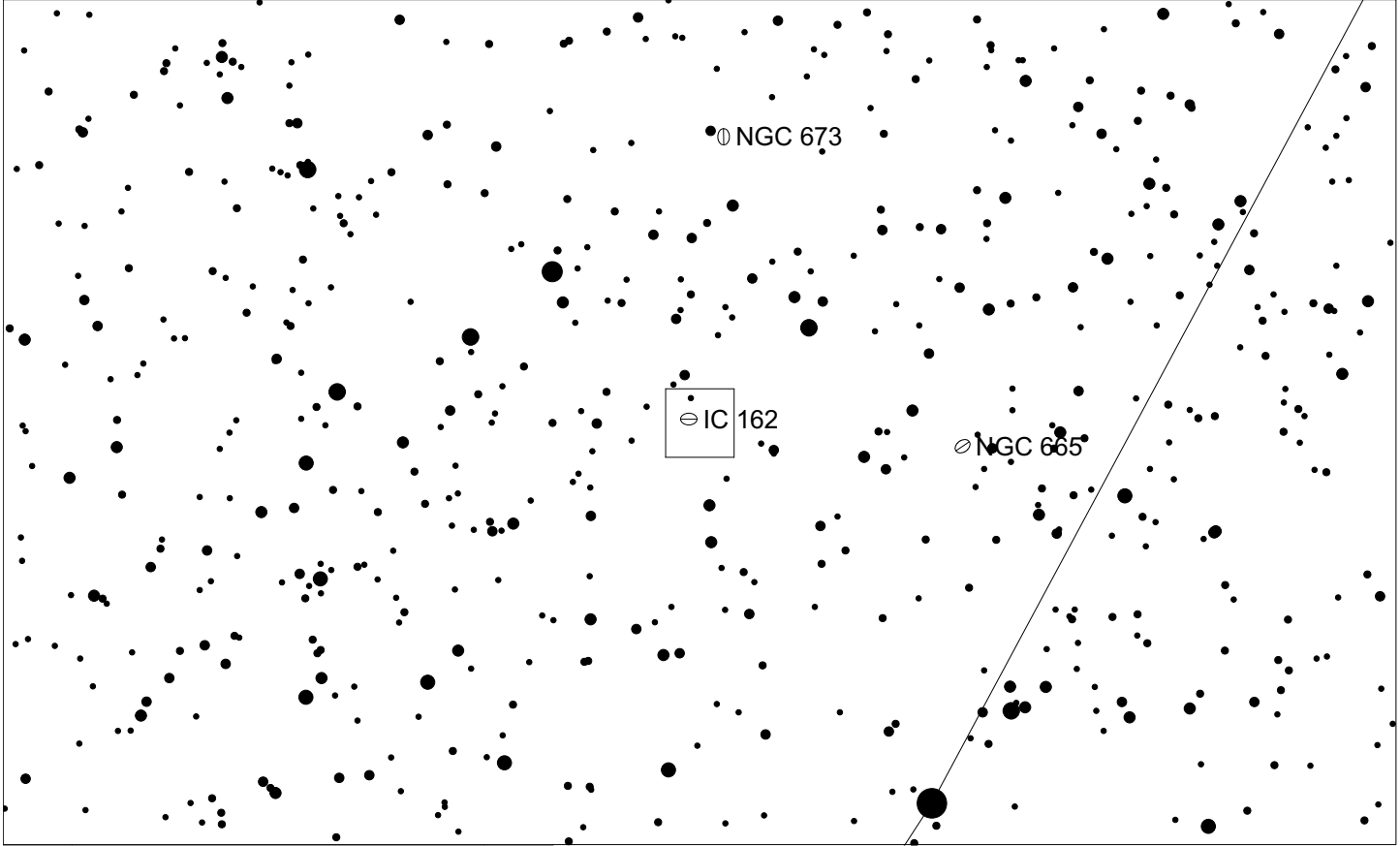
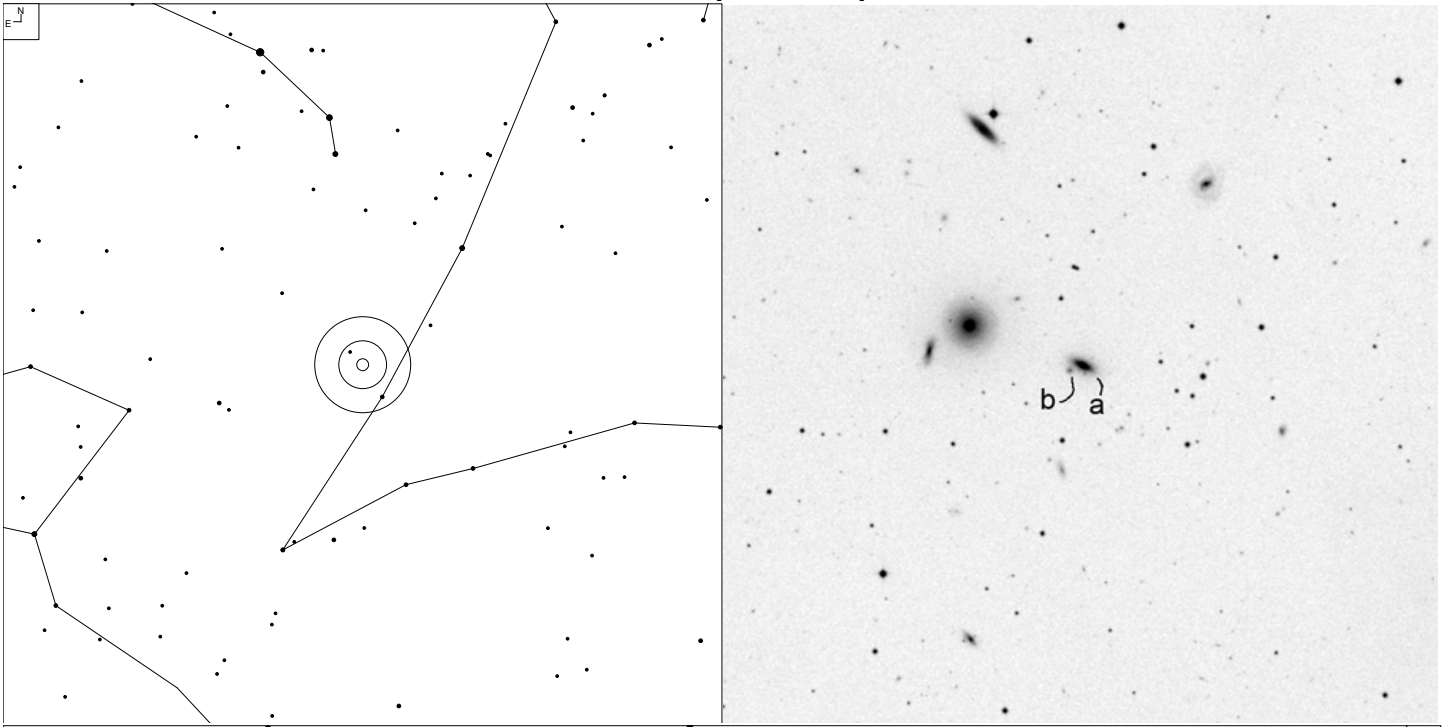
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 36  | 01 24 43.9 | +33 26 08 | GPair    |       |             | N         |
| 36b | 01 24 43.6 | +33 26 08 | G        | 17.5  | 2x2         |           |
| 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)



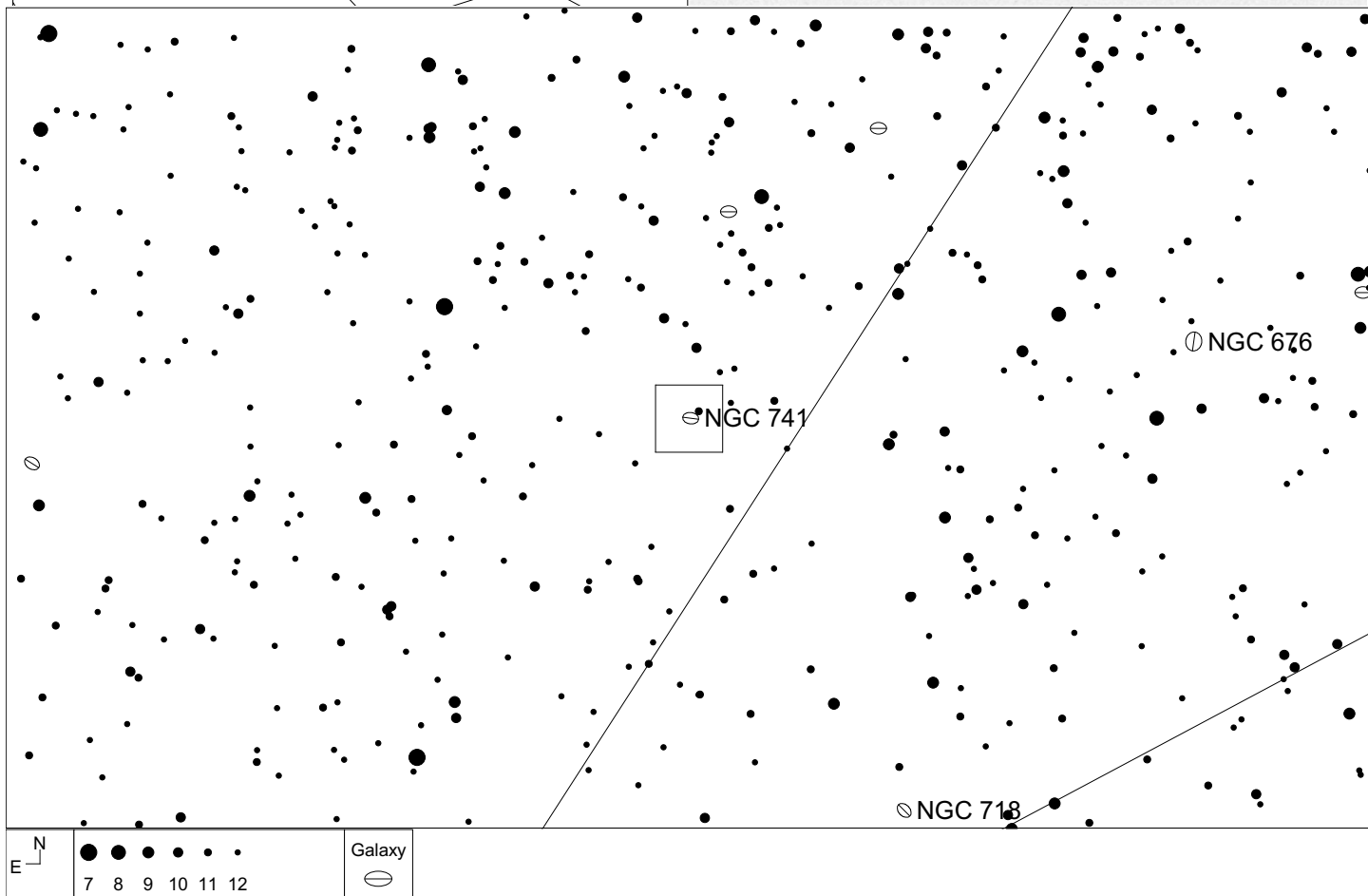
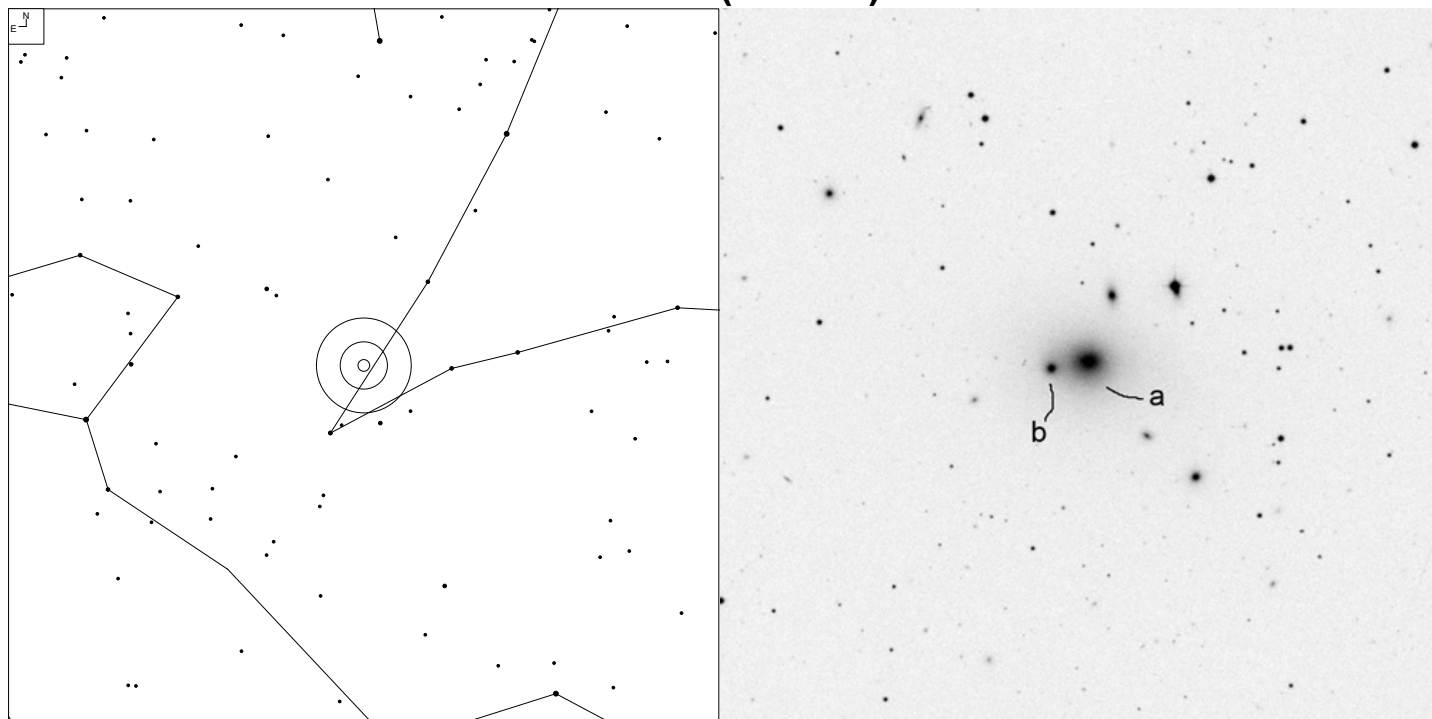
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 177  | 01 42 04.8 | +07 38 57 | GPair    |      |             | PKb       |
| 177a | 01 42 04.3 | +07 39 02 | G        | 13.7 | 7x4         |           |
| 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)



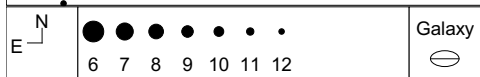
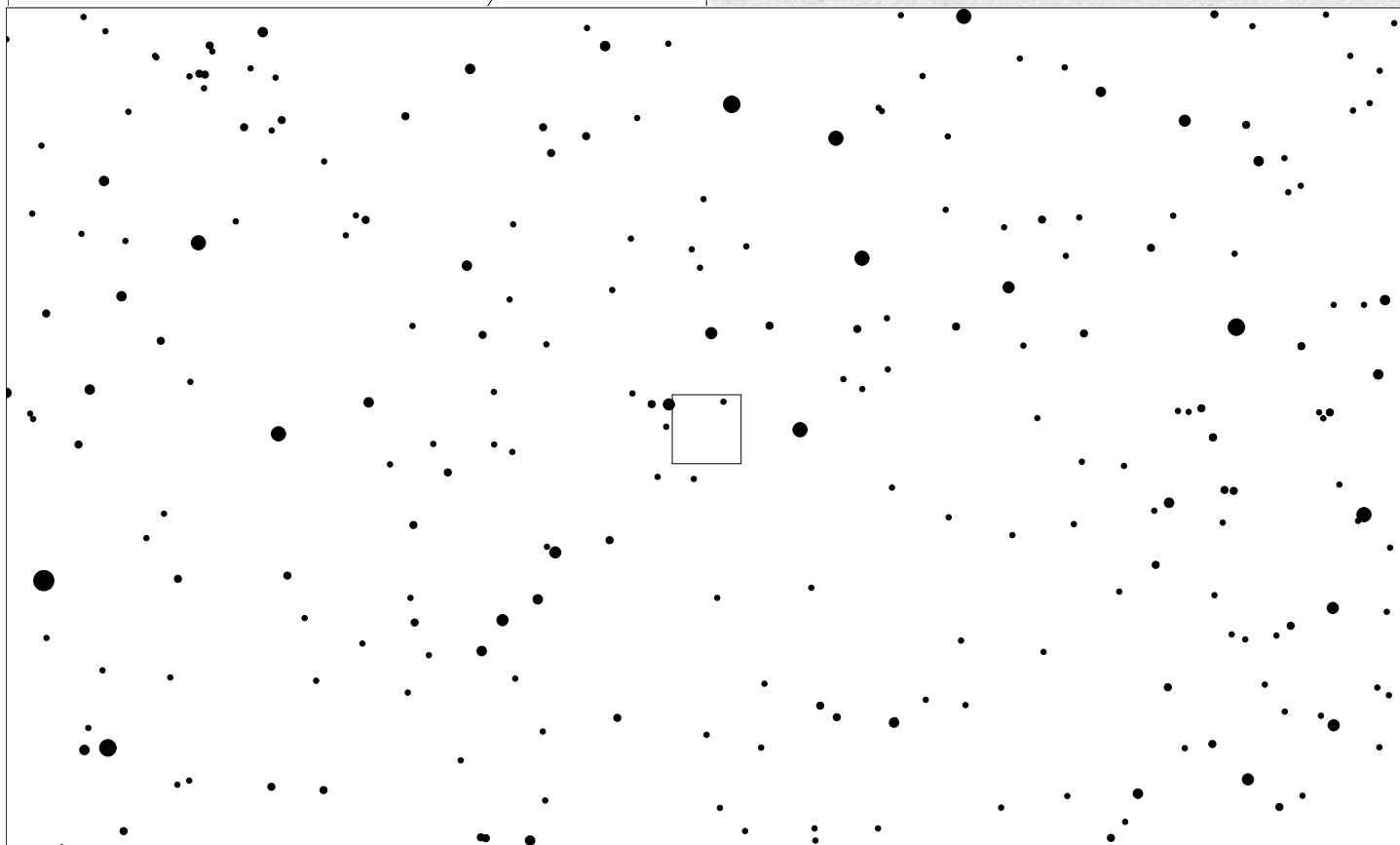
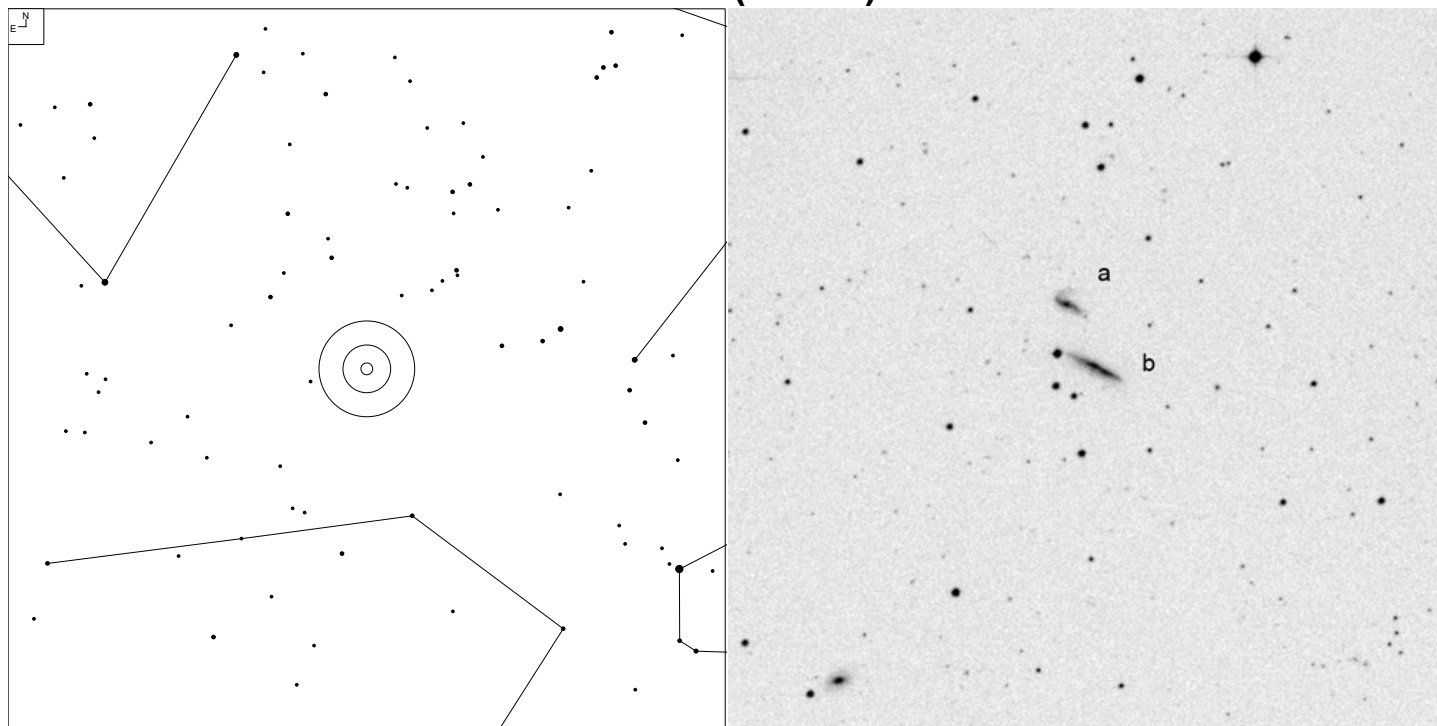
| VV  | RA         | Dec       | NED Type | Mag    | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|--------|-------------|-----------|
| 54  | 01 48 44.2 | +10 30 26 | GPair    |        |             | Nb        |
| 54a | 01 48 43.7 | +10 30 28 | G        | 14.69  | 8x6       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

# VV 175 (Pisces)



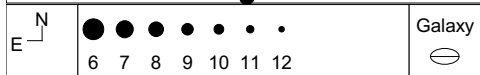
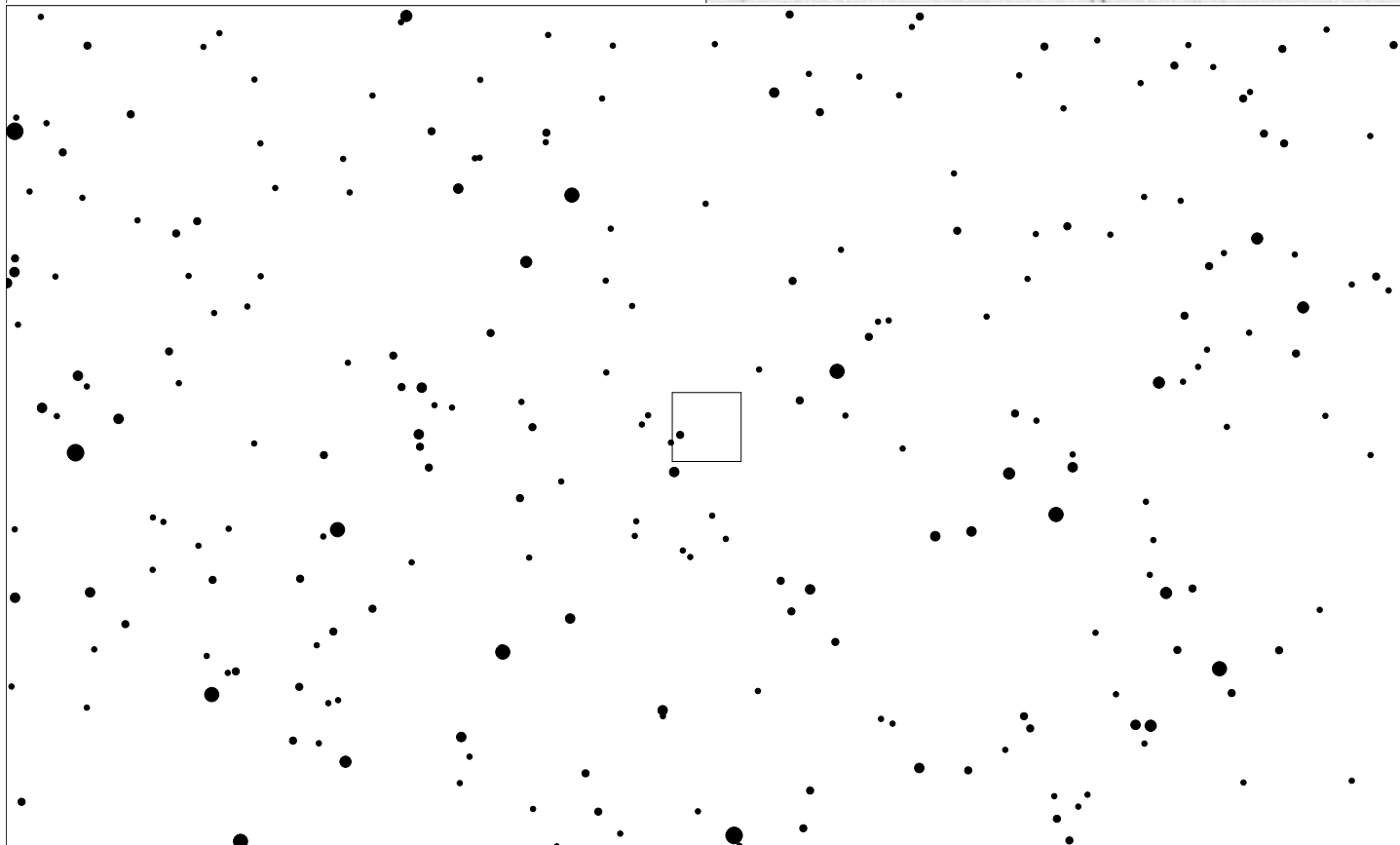
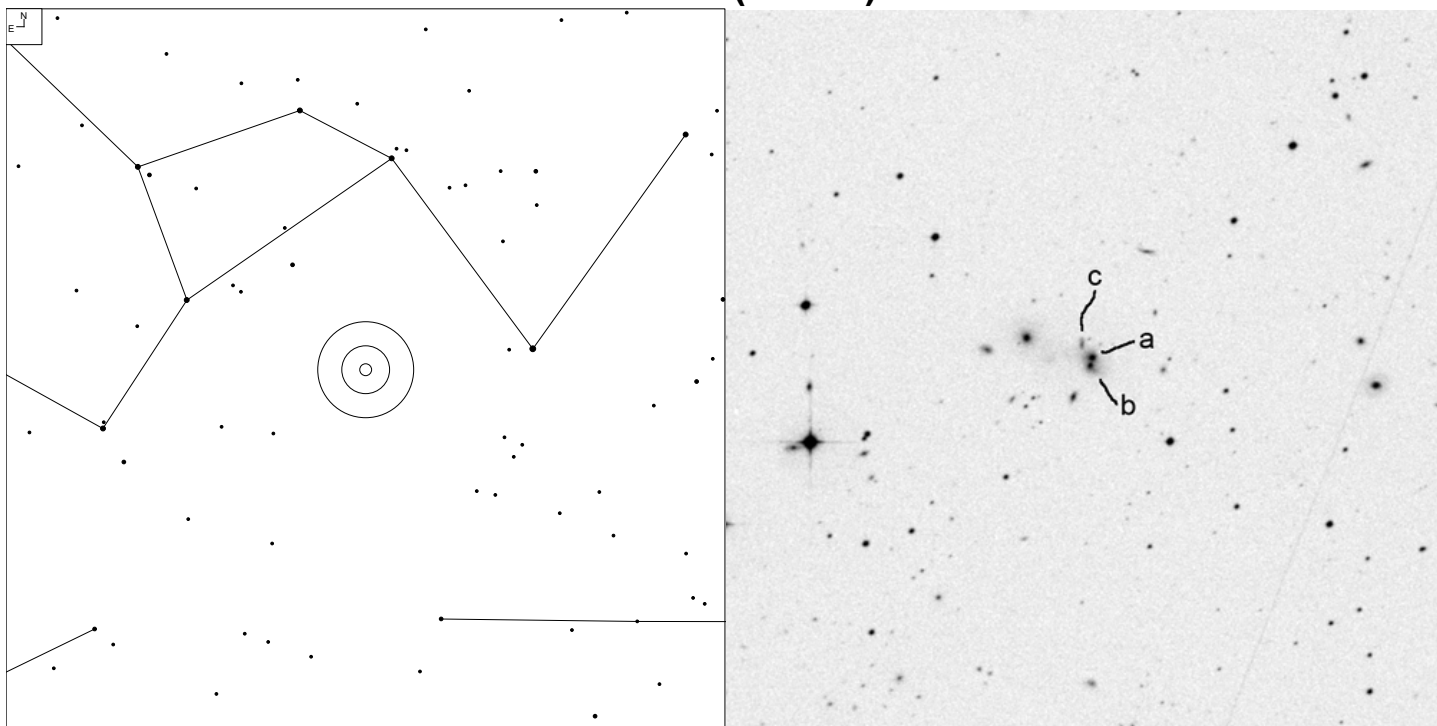
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 175  | 01 56 22.6 | +05 37 40 | GPair    |       |             | PK        |
| 175a | 01 56 21.0 | +05 37 44 | G        | 12.2  | 30x28     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

# VV 332 (Cetus)



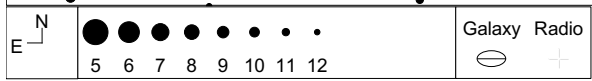
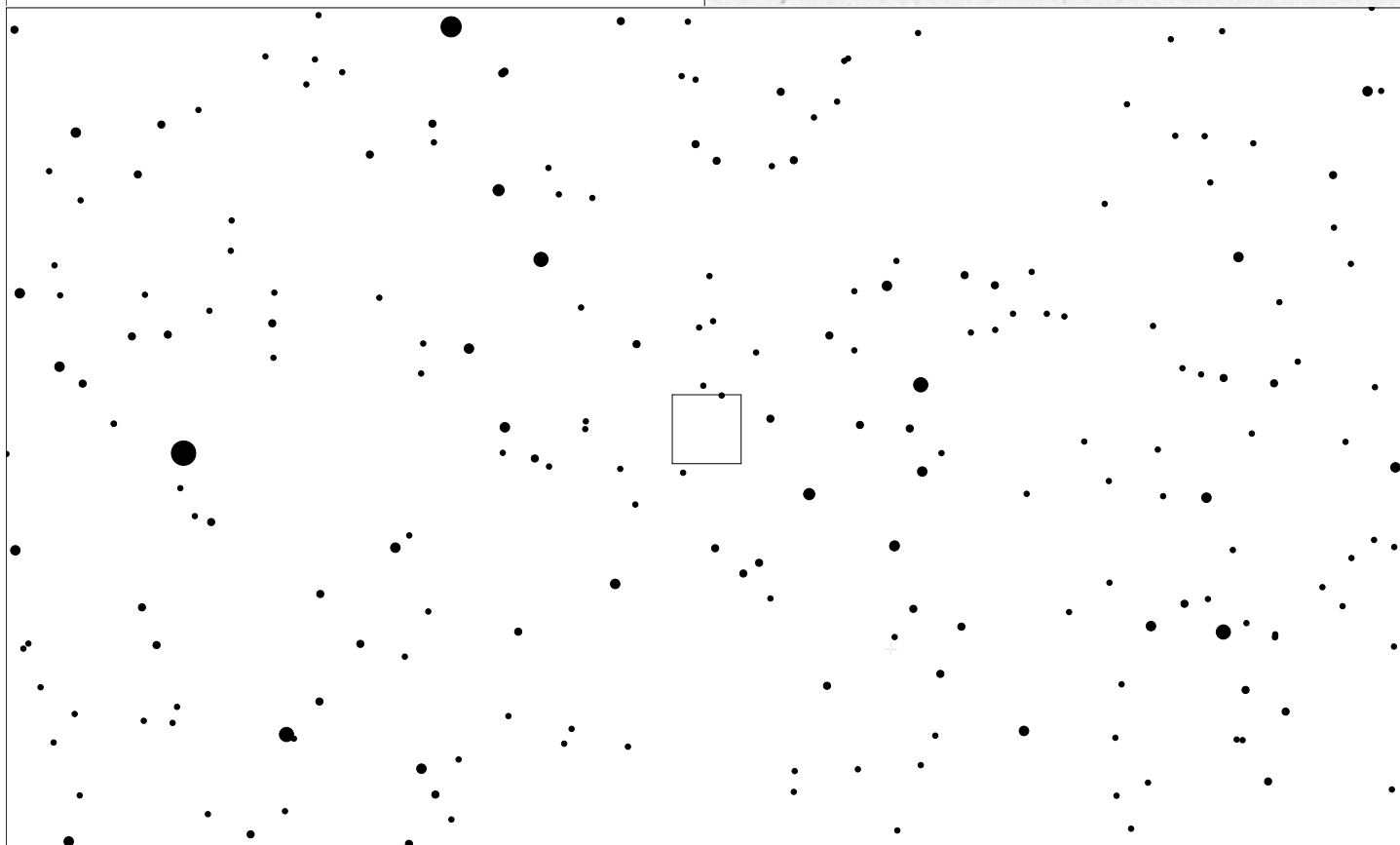
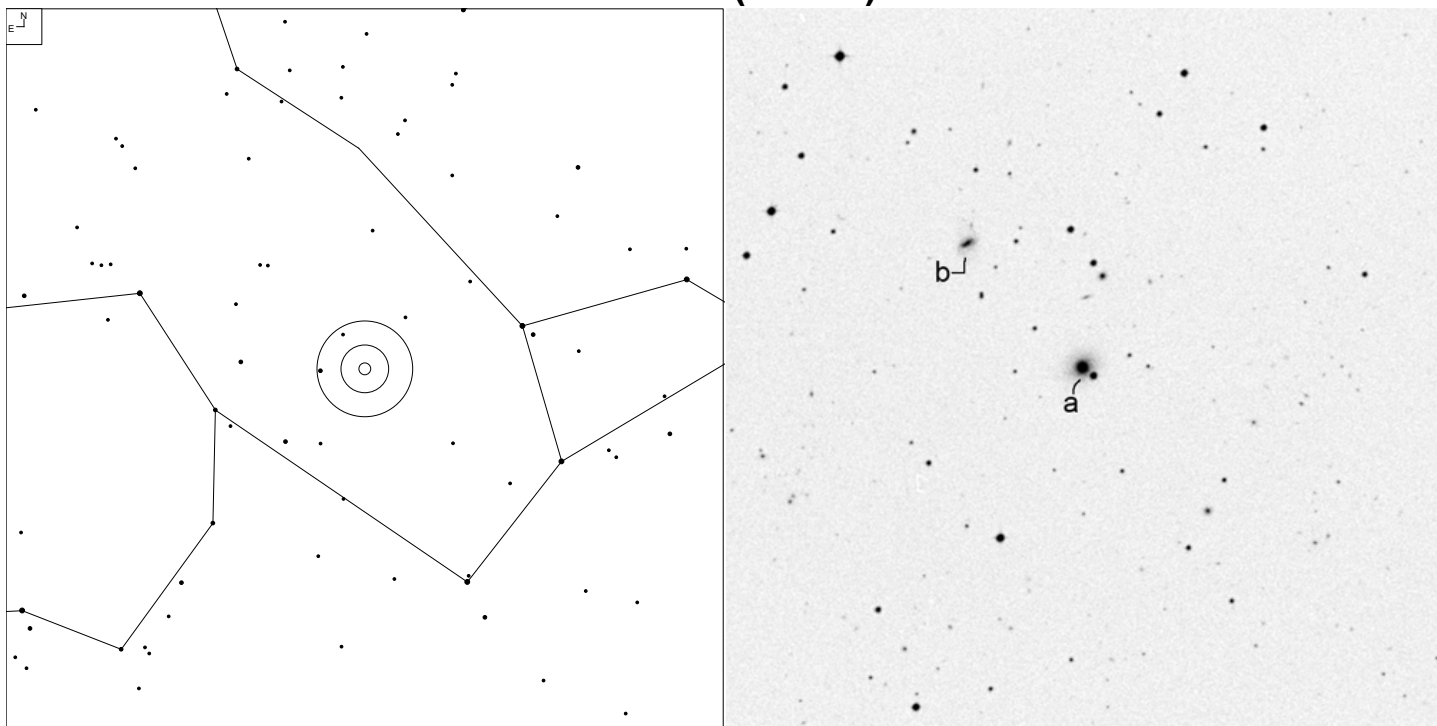
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 332  | 23 57 33.4 | -21 59 22 | GPair    |       |             | PD        |
| 332b | 23 57 32.6 | -22 00 00 | G        | 16.59 | 16x4      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

# VV 258 (Cetus)



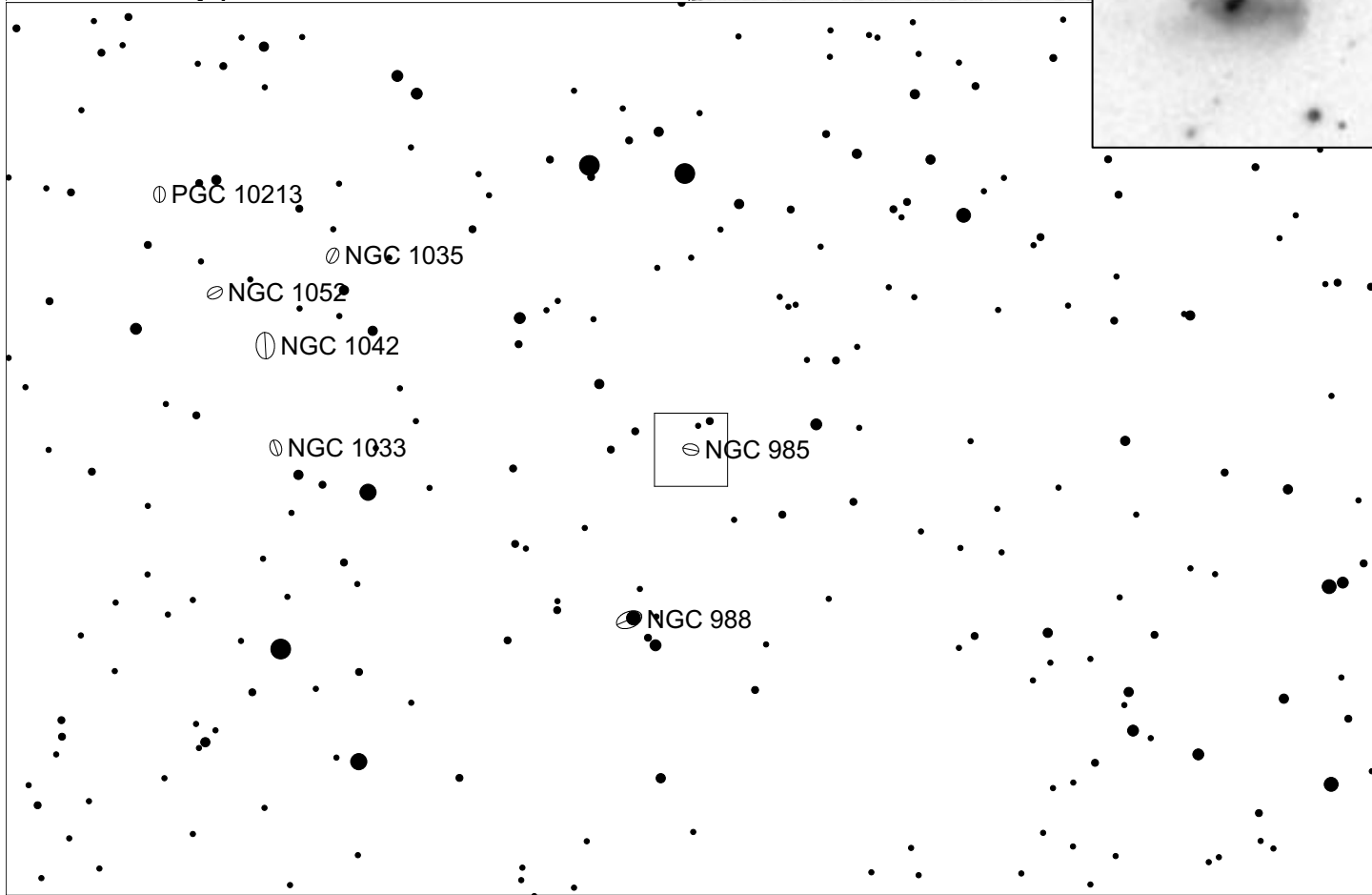
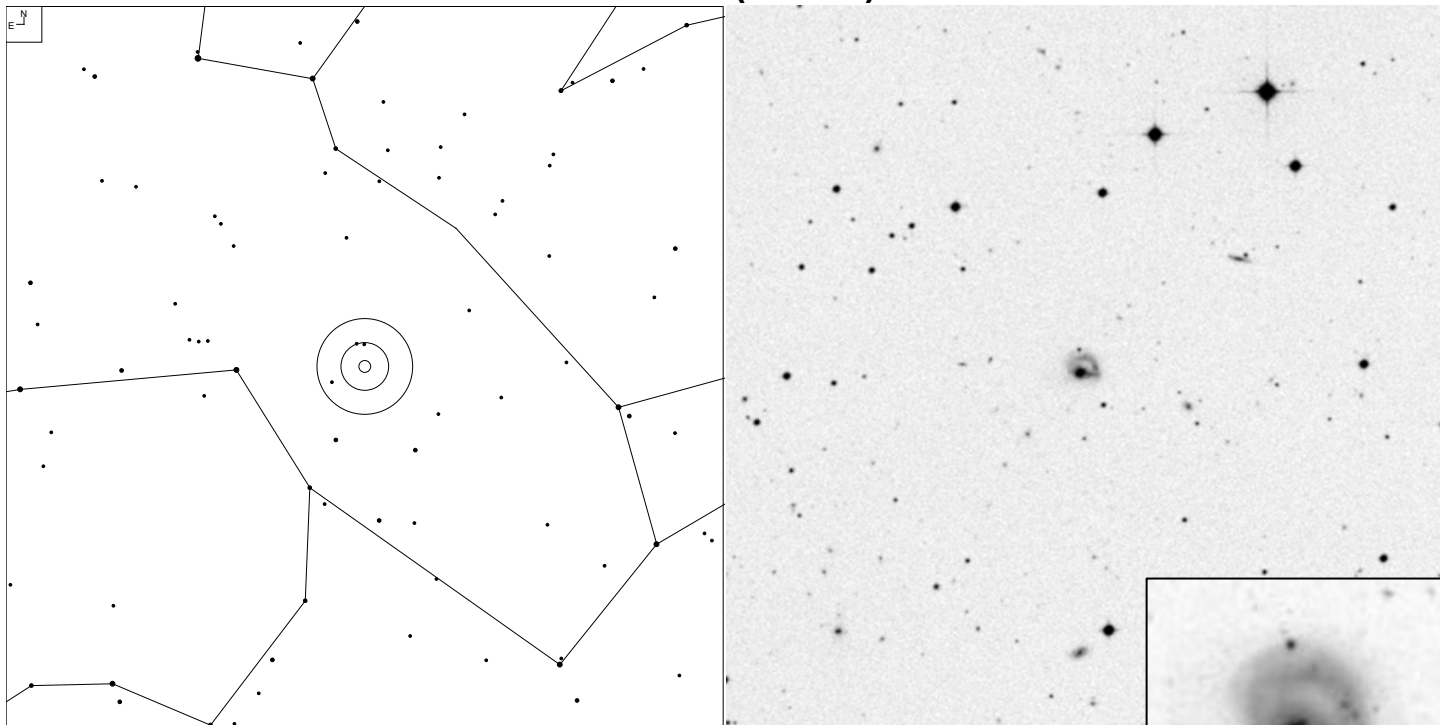
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 258  | 01 12 59.7 | -19 00 14 | GTrpl    |      |             | NNN       |
| 258a | 01 12 58.6 | -19 00 15 | G        | 15.5 | 1x1         |           |
| 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         |           |

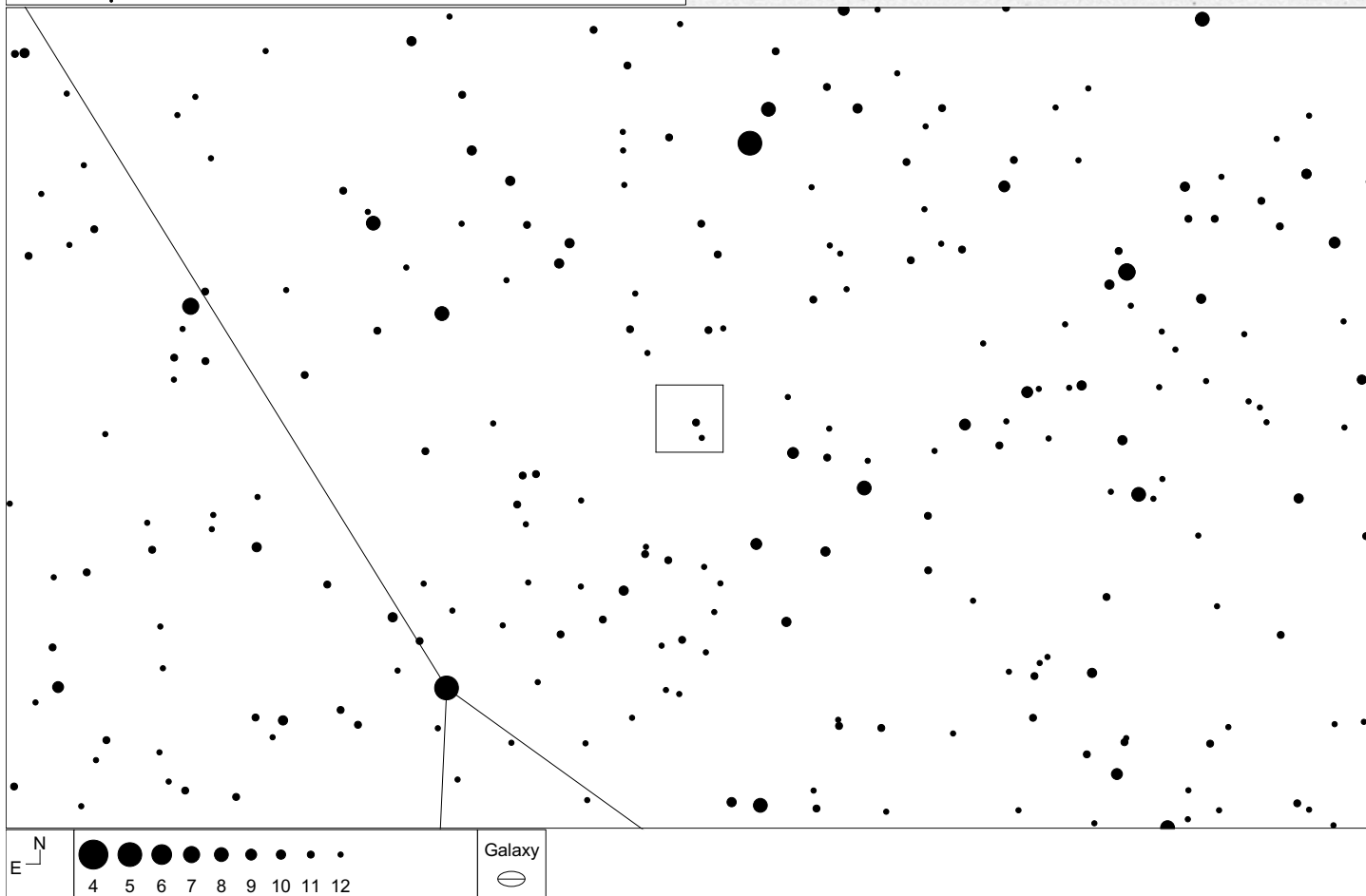
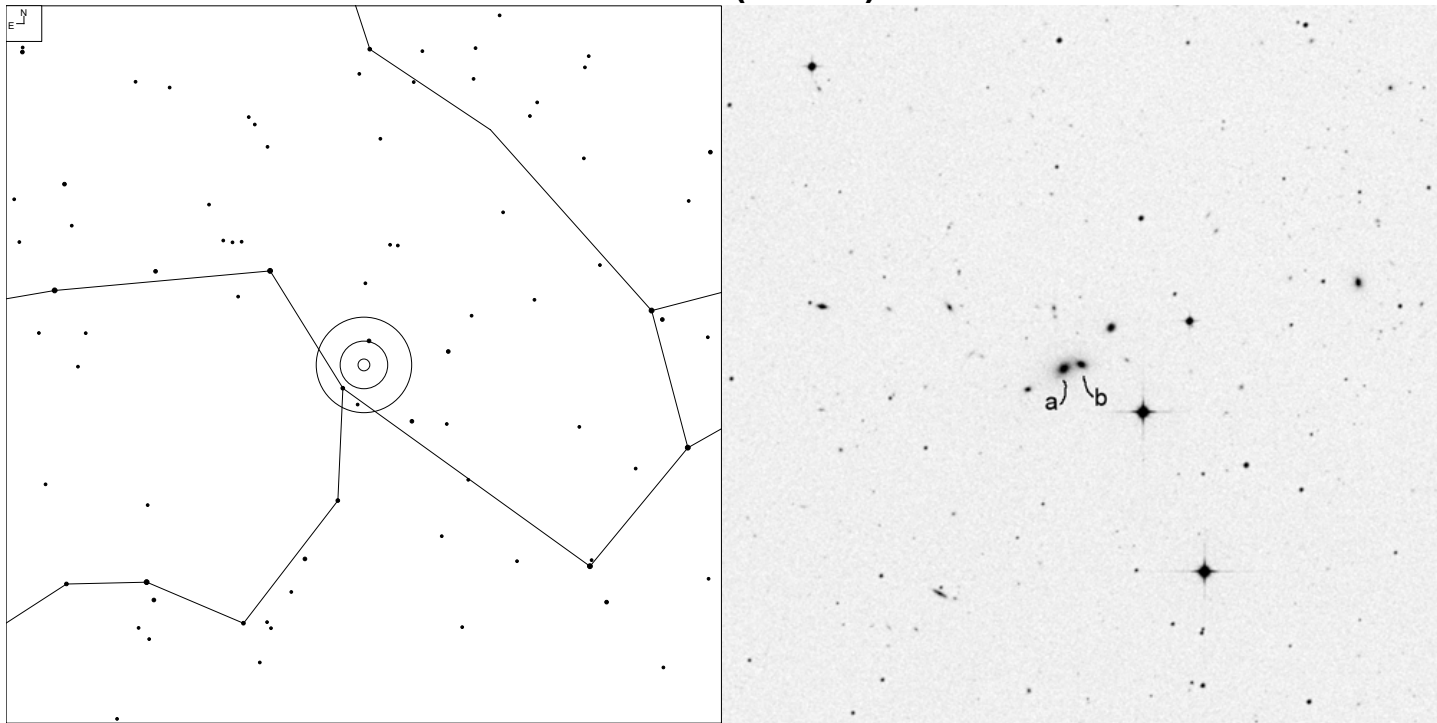
# VV 285 (Cetus)



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

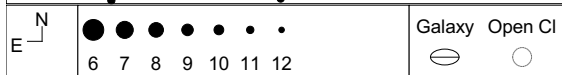
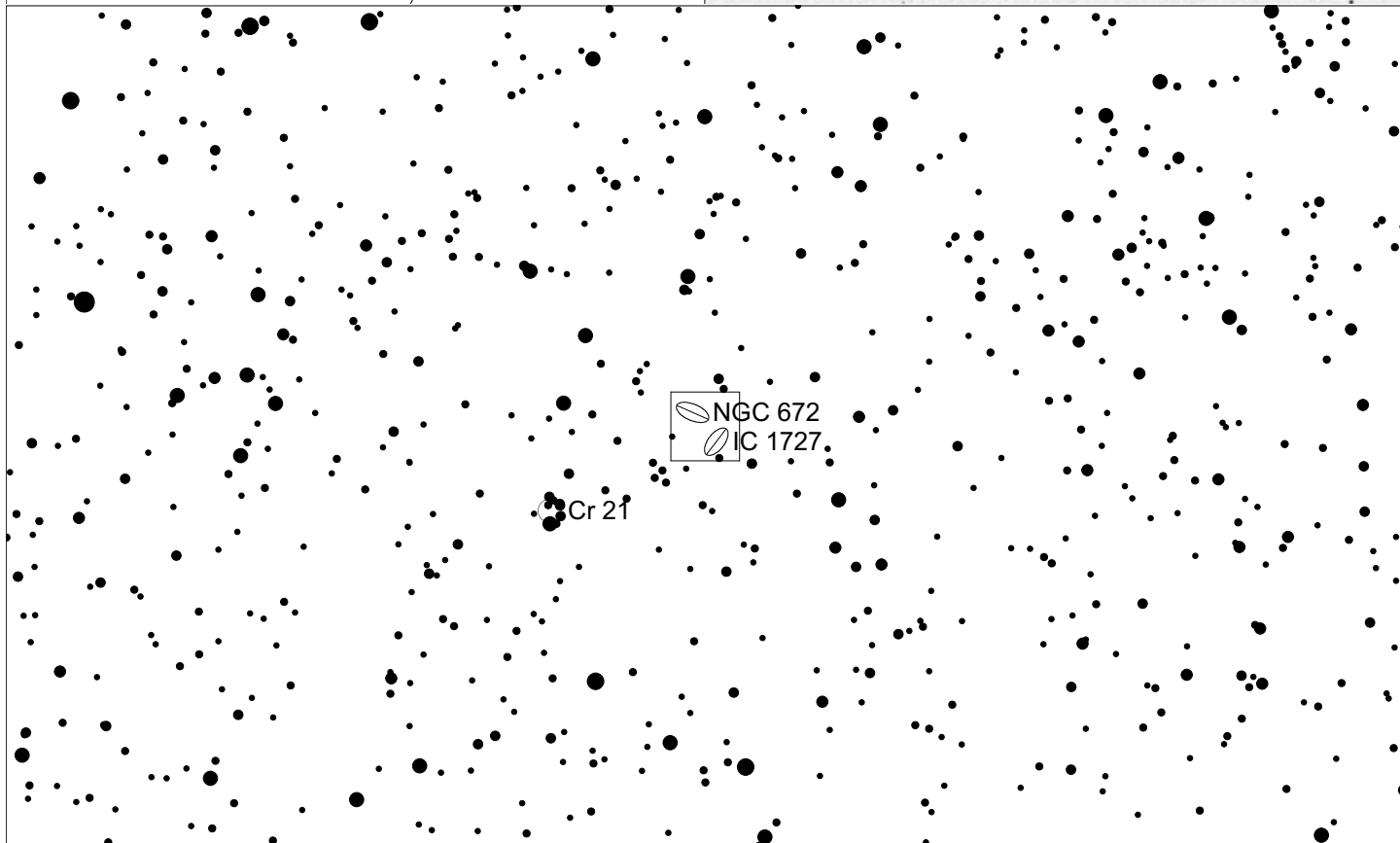
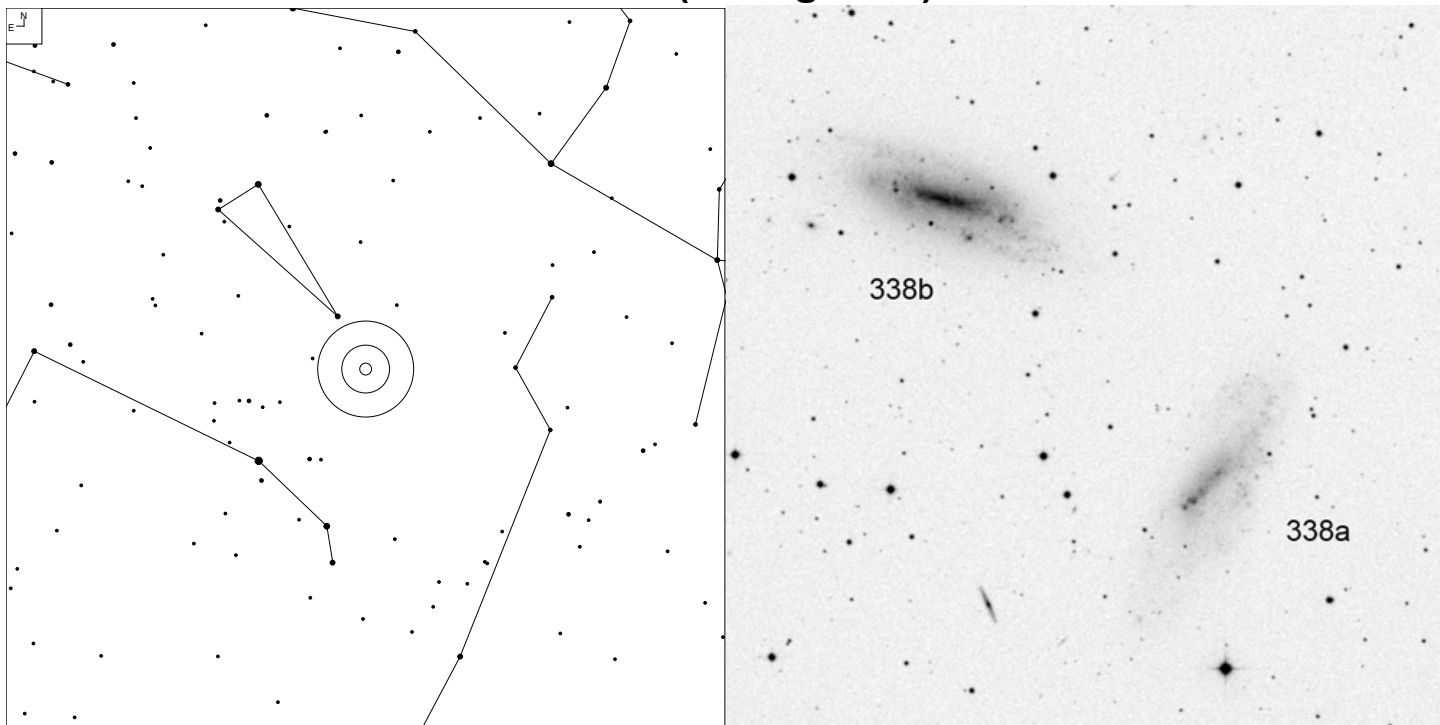


# VV 200 (Cetus)



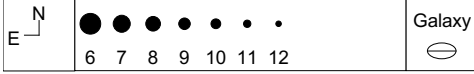
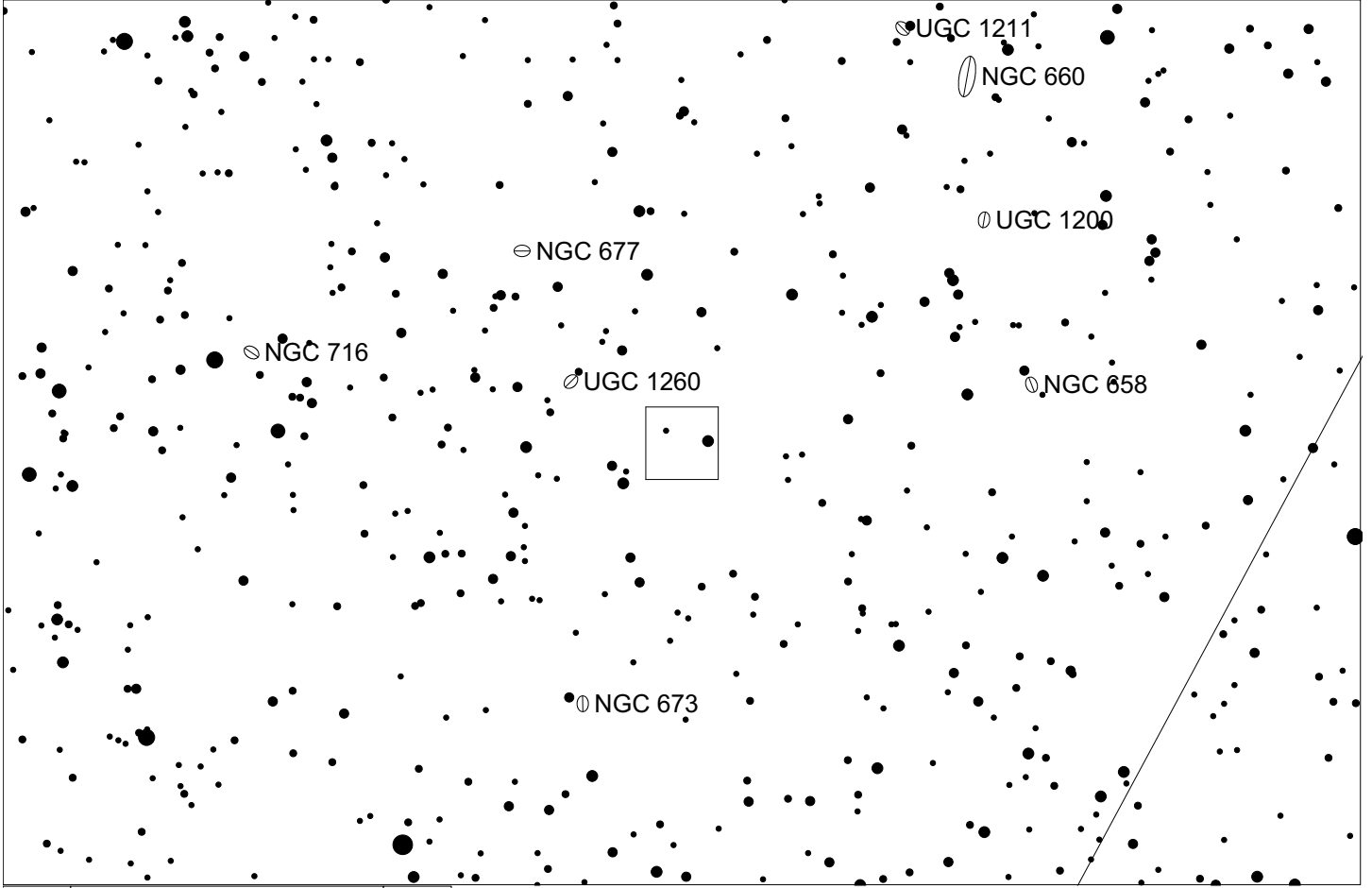
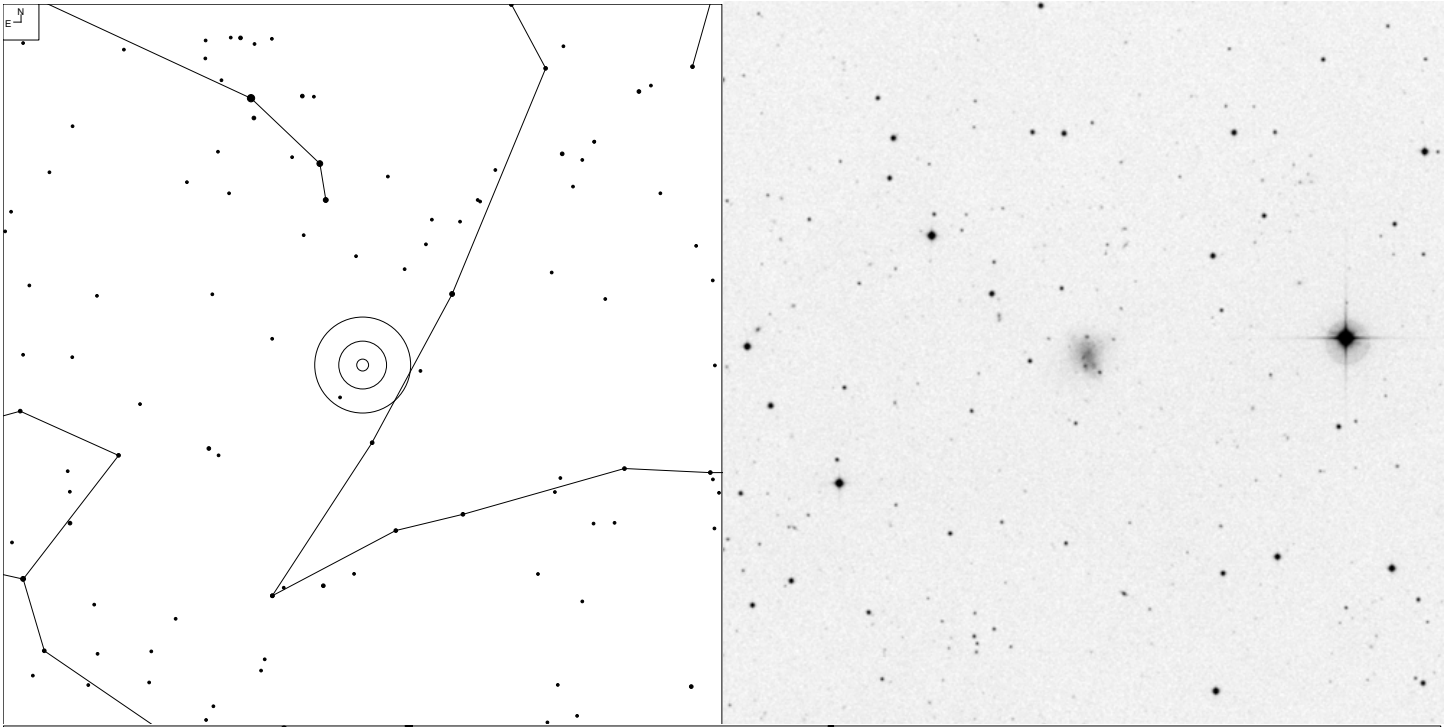
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 200  | 02 40 28.1 | -12 52 35 | GPair    |       |             | PDb       |
| 200b | 02 40 27.4 | -12 52 33 | G        | 15.5  | 3x2       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

# VV 338 (Triangulum)



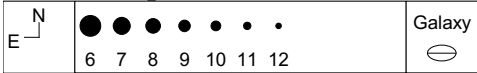
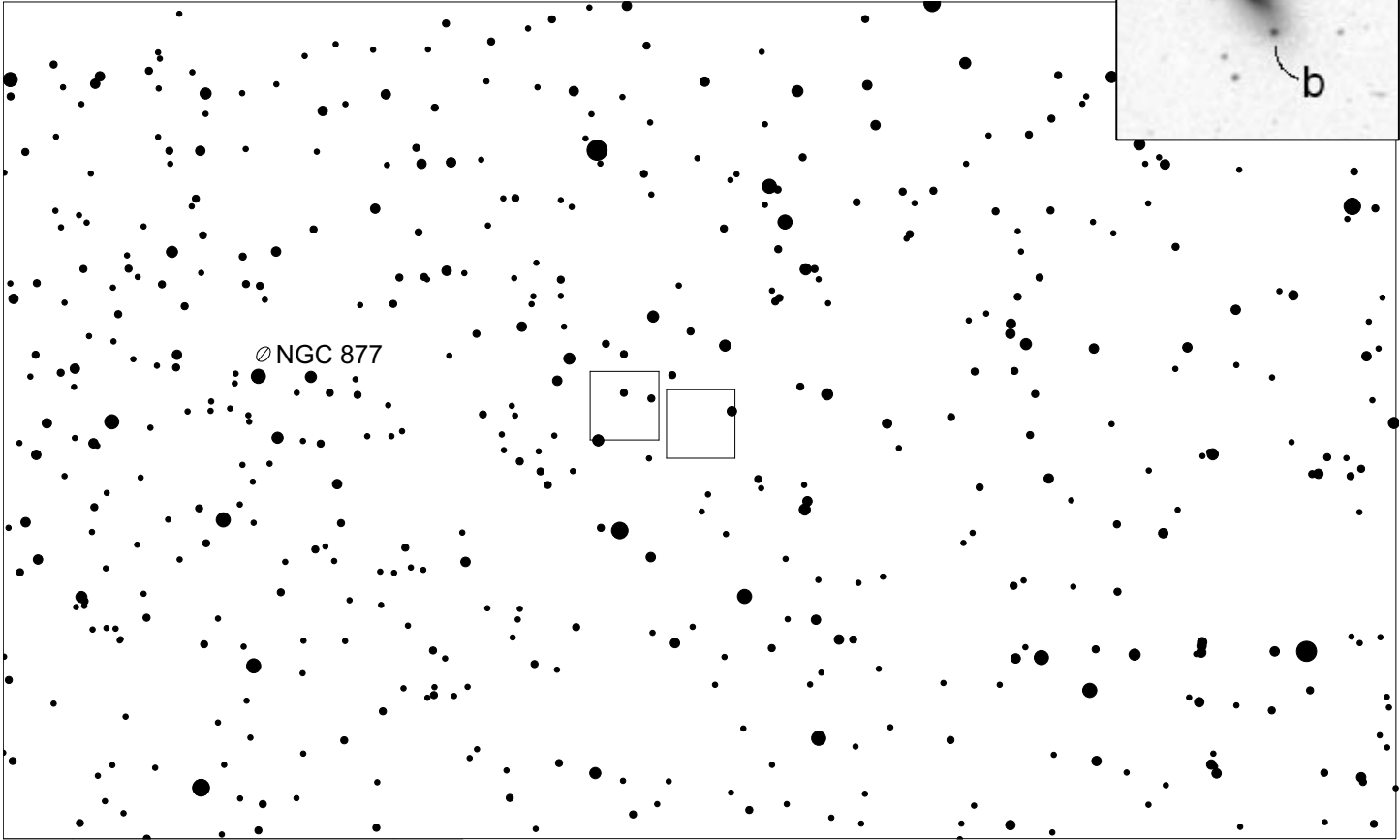
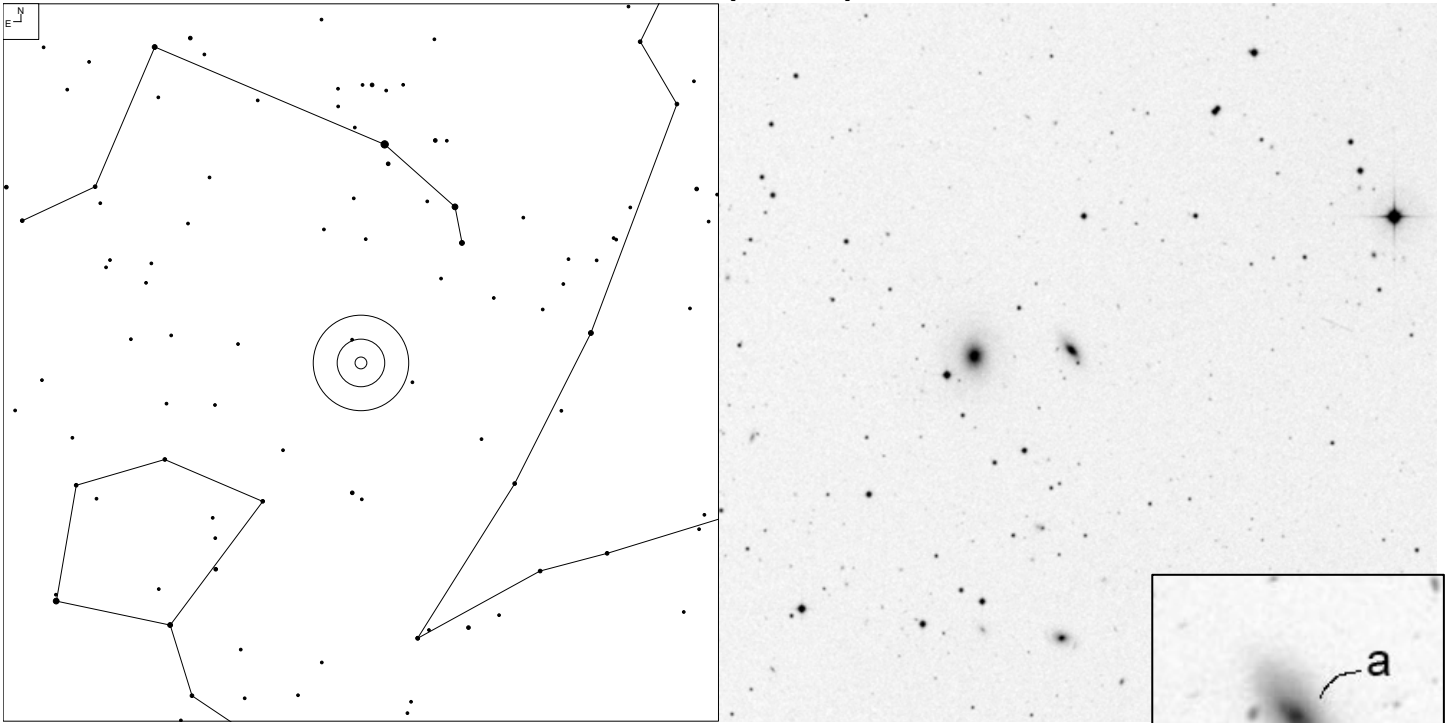
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 338  | 01 47 42.2 | +27 22 59 | GPair    |       |             | PDdf      |
| 338a | 01 47 29.9 | +27 20 00 | G        | 12.07 | 69x30     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

# VV 93 (Aries)



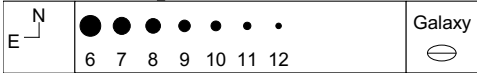
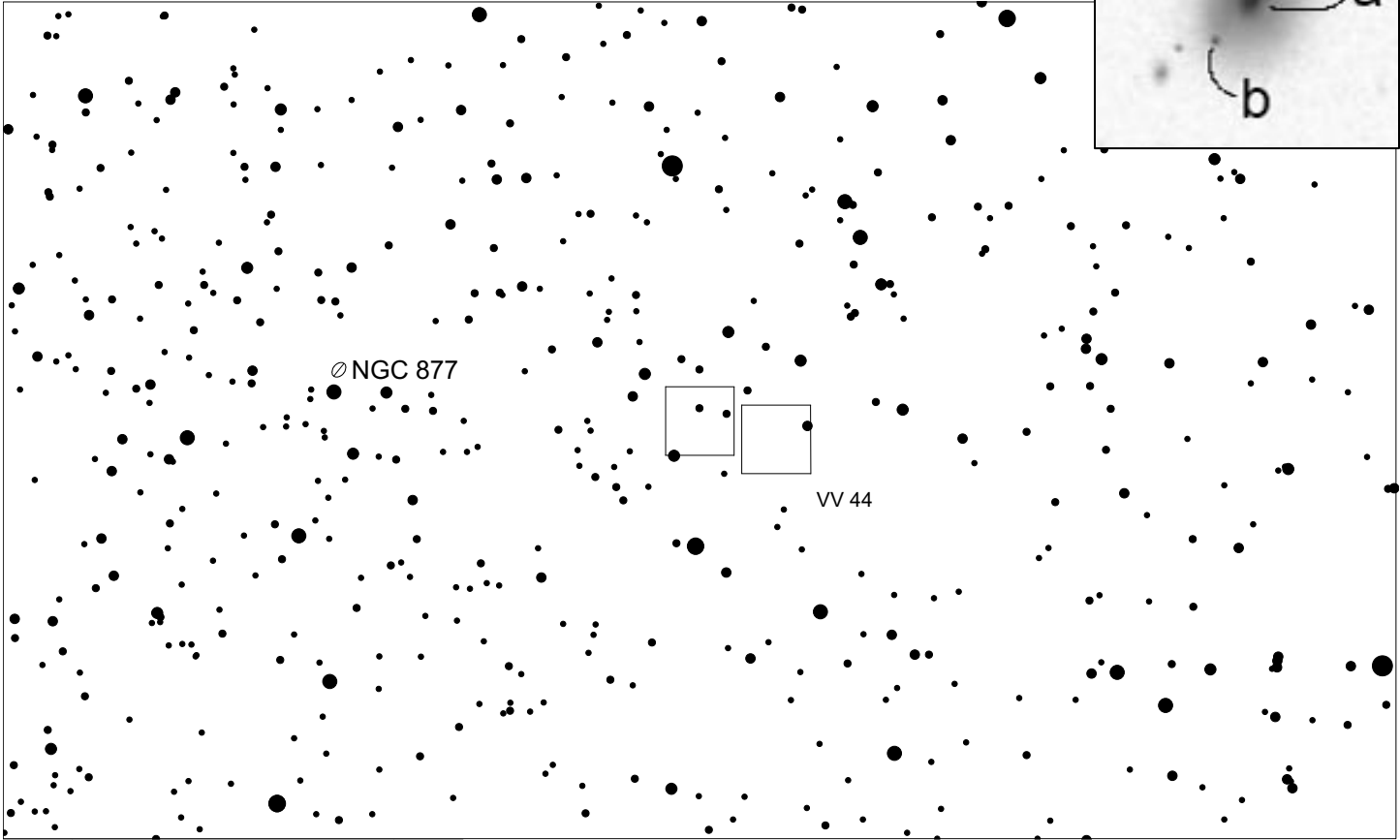
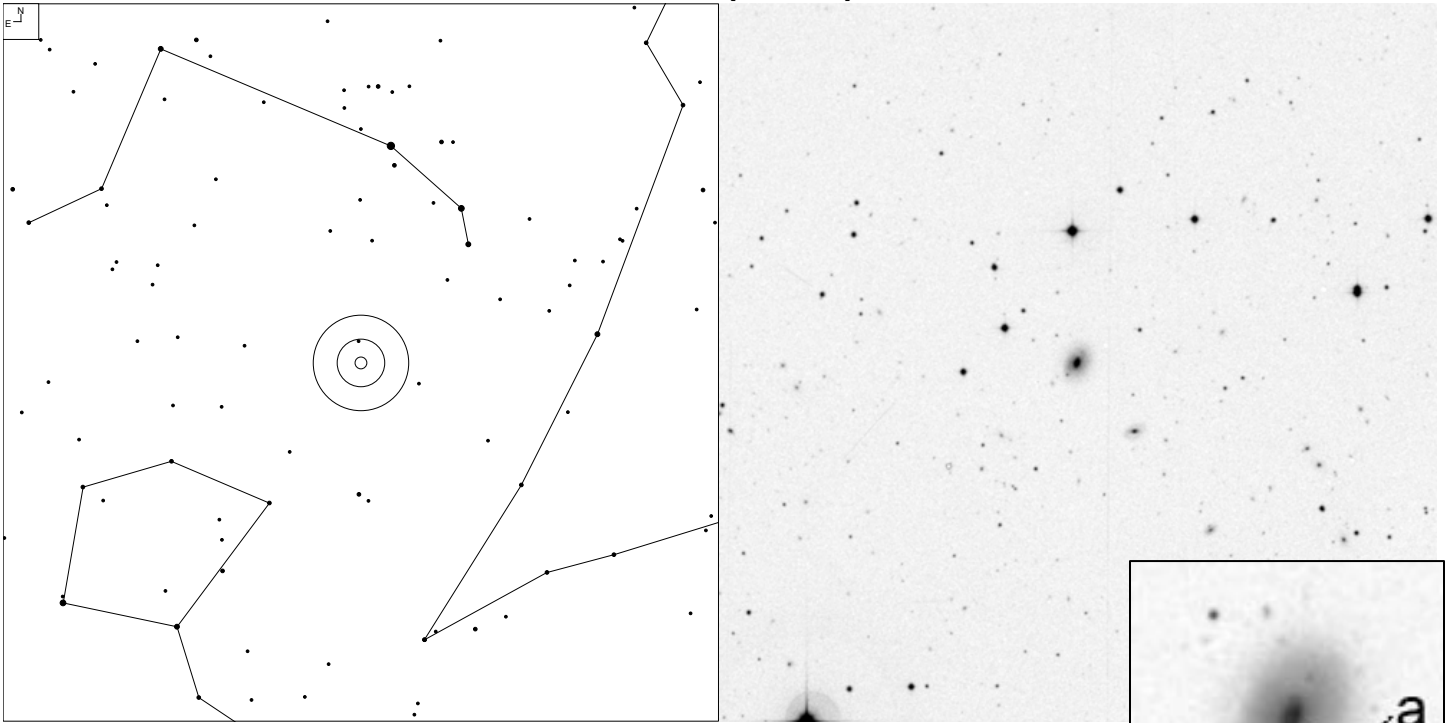
| VV | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|----|------------|-----------|----------|-------|-------------|-----------|
| 93 | 01 47 00.7 | +12 24 21 | G        | 14.52 | 14x12       | PC        |

# VV 44 (Aries)



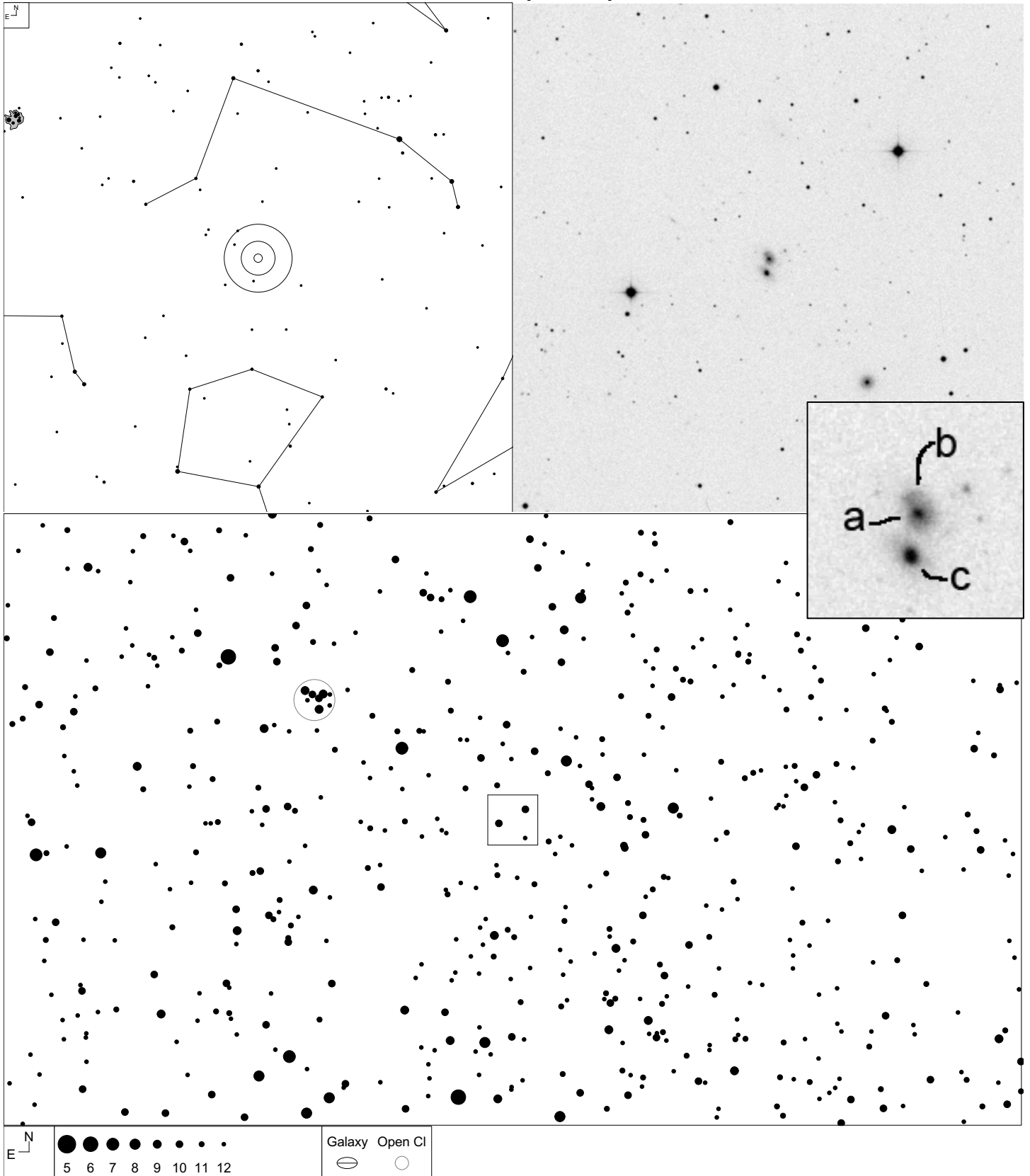
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 44  | 02 11 30.4 | +14 17 54 | GPair    |       |             | PDb       |
| 44b | 02 11 30.2 | +14 17 46 | G        | 18.9g | 1x1         | 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

# VV 27 (Aries)



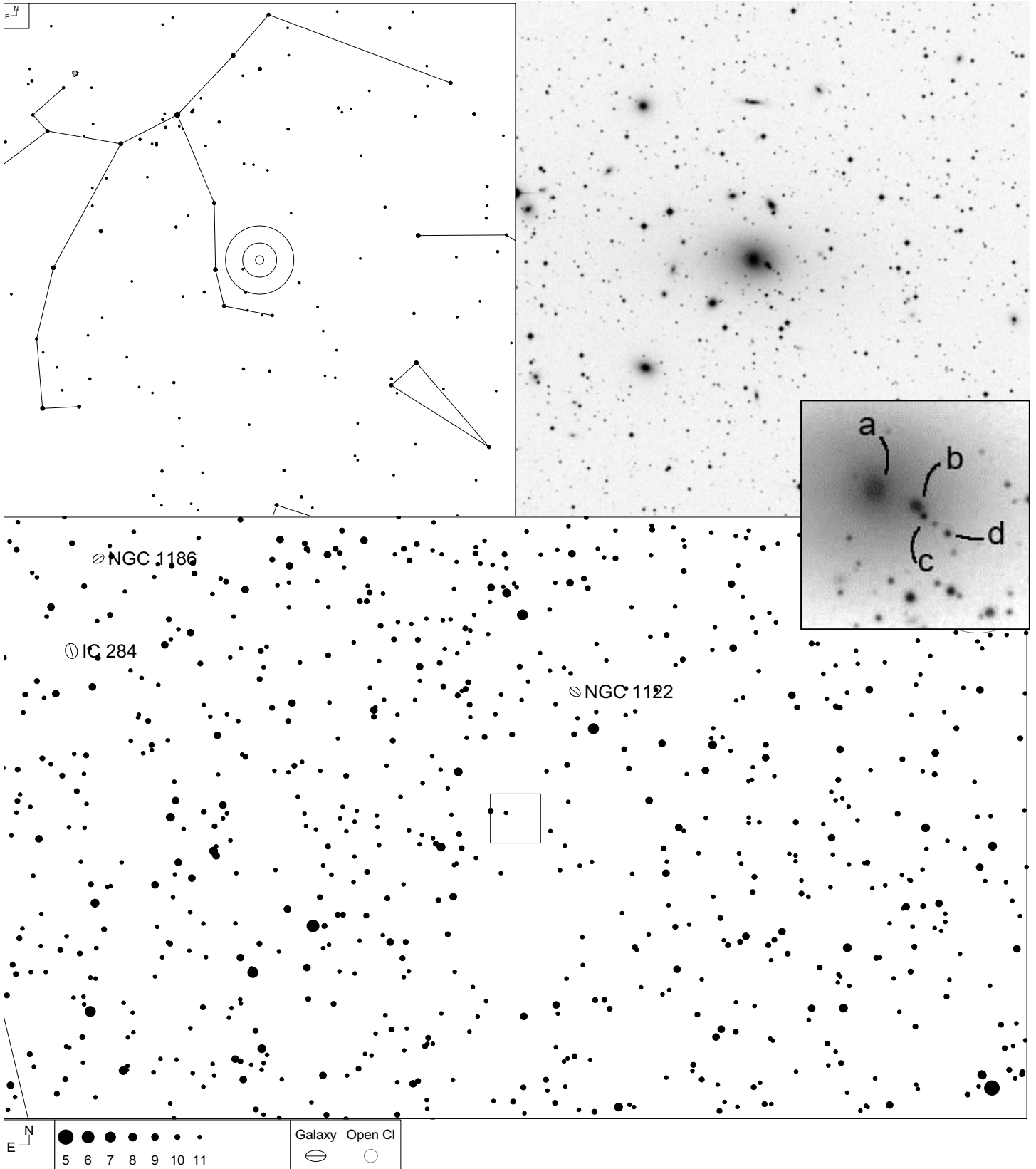
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 27  | 02 12 38.7 | +14 22 00 | G        | 14.6g | 6x6         | M         |
| 27b | 02 12 39.6 | +14 21 45 | PofG     | 15.2  |             | 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

# VV 278 (Aries)



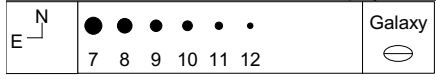
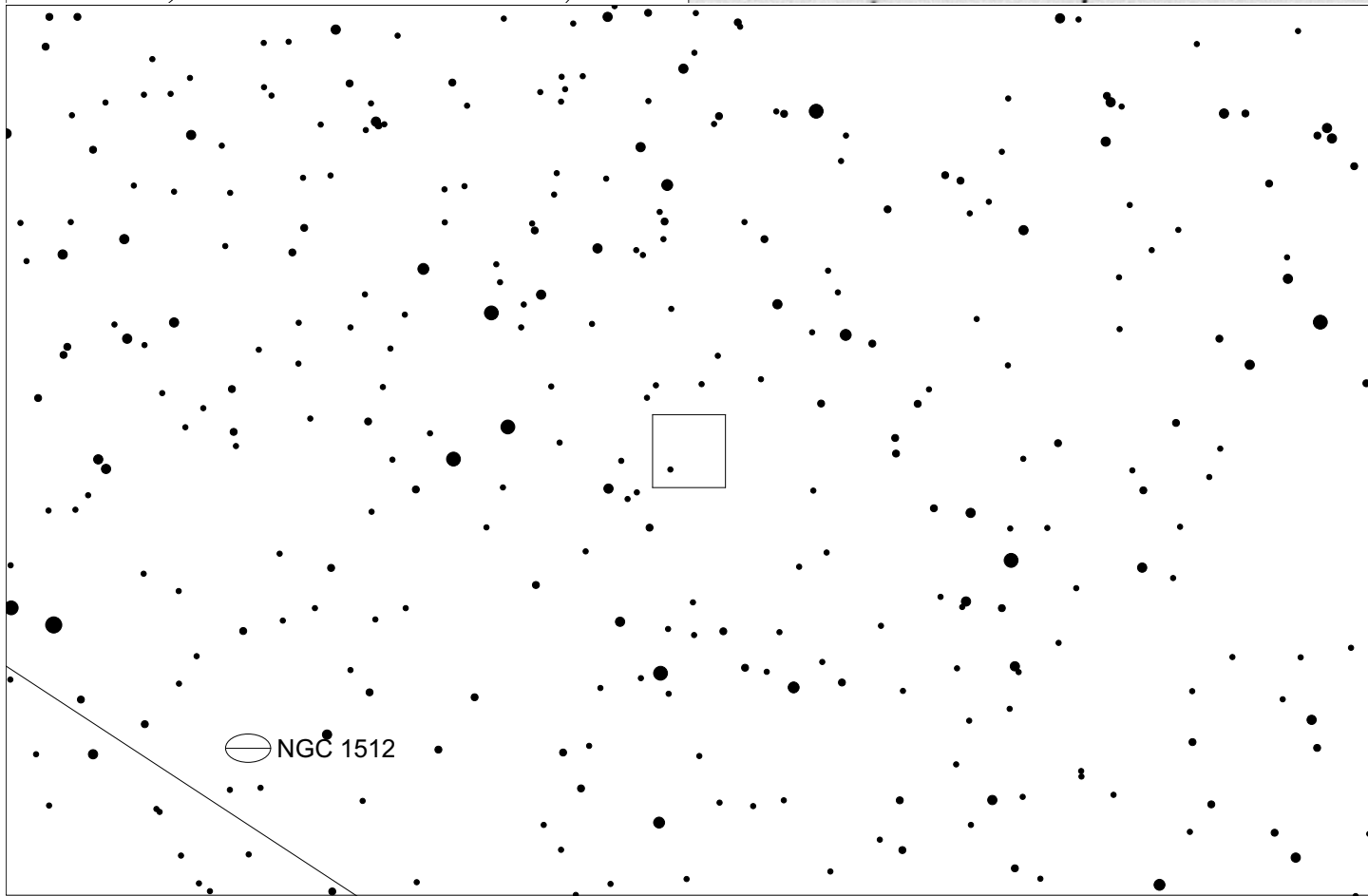
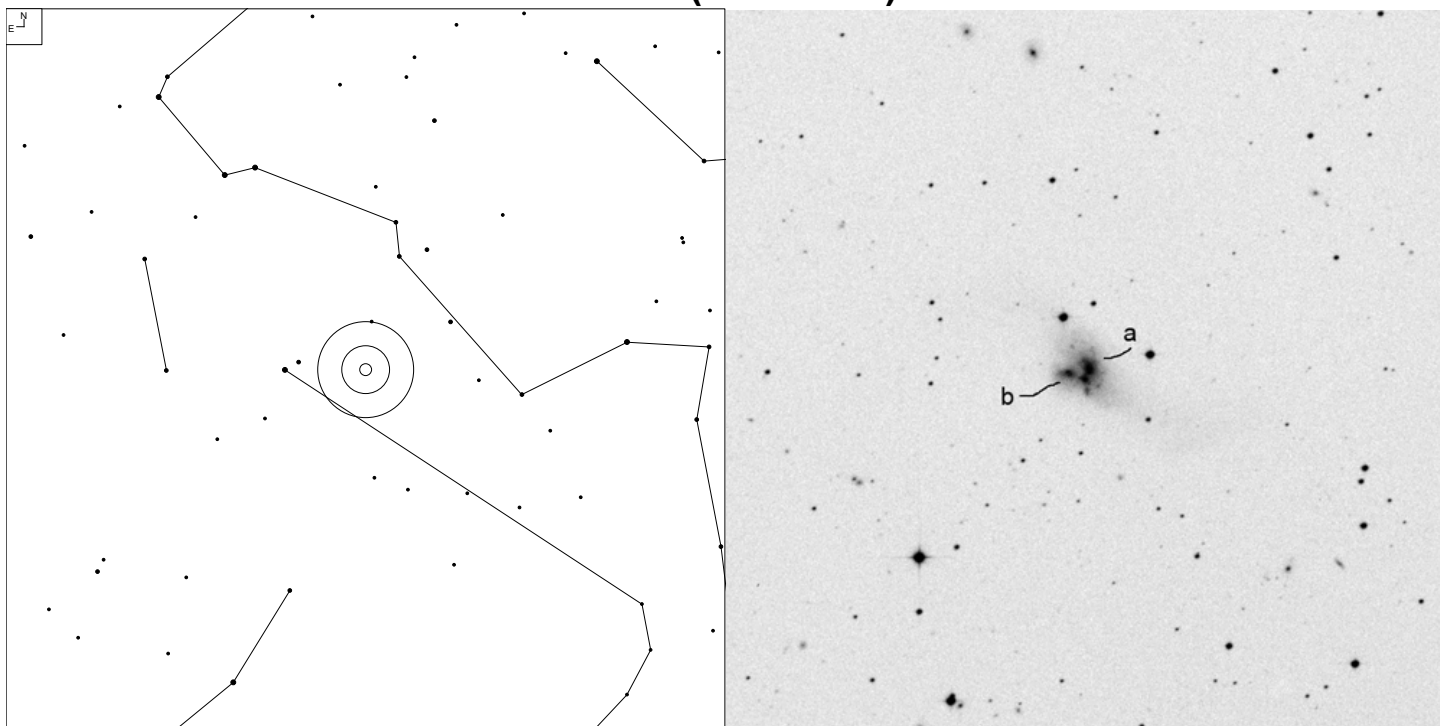
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 278  | 02 43 26.7 | +16 39 59 | GPair    |      |             | NNNP      |
| 278a | 02 43 26.6 | +16 40 12 | G        | 15.6 | 6x5         |           |
| 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       |           |

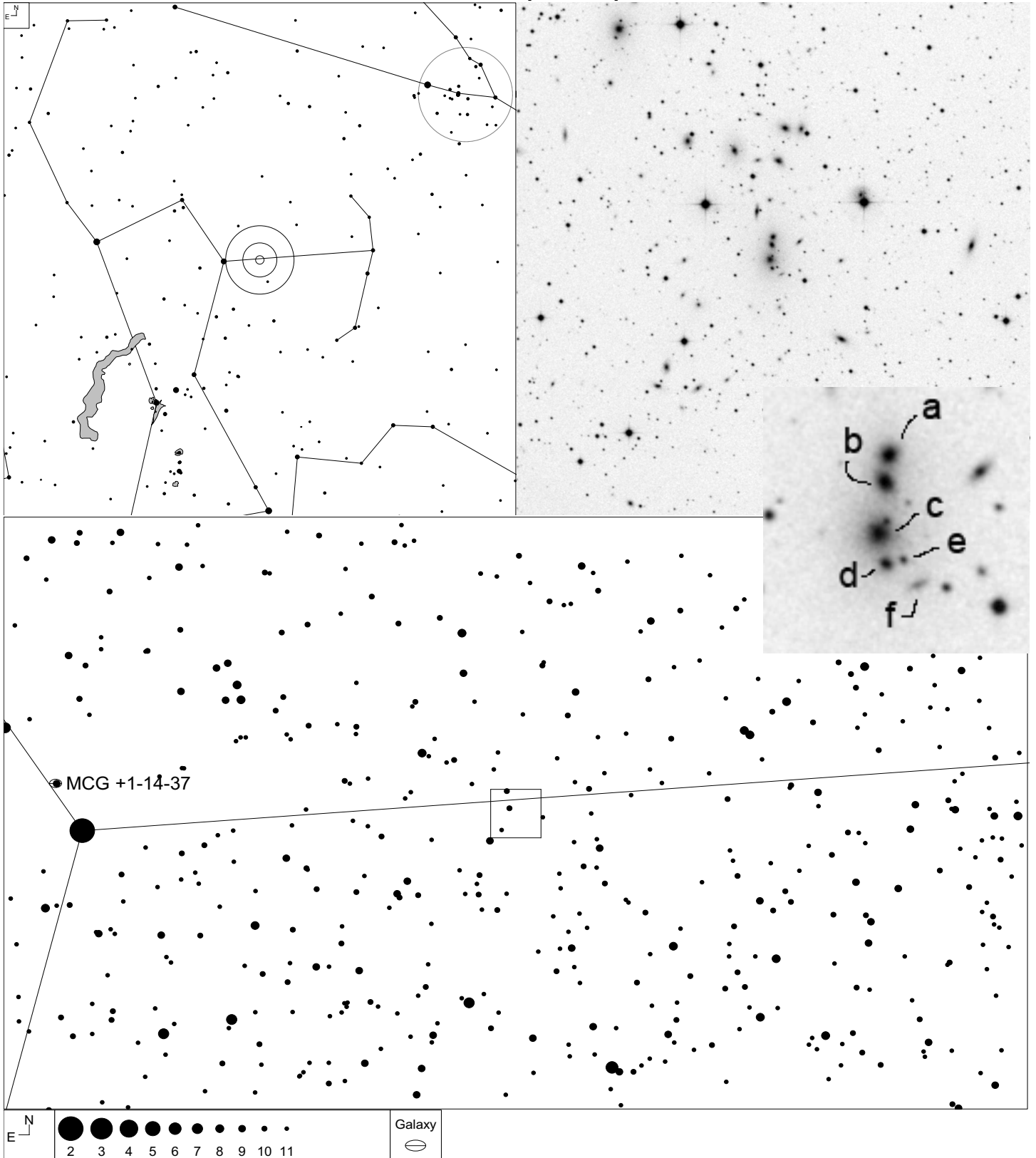
# VV 78 (Eridanus)



| 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       |           |

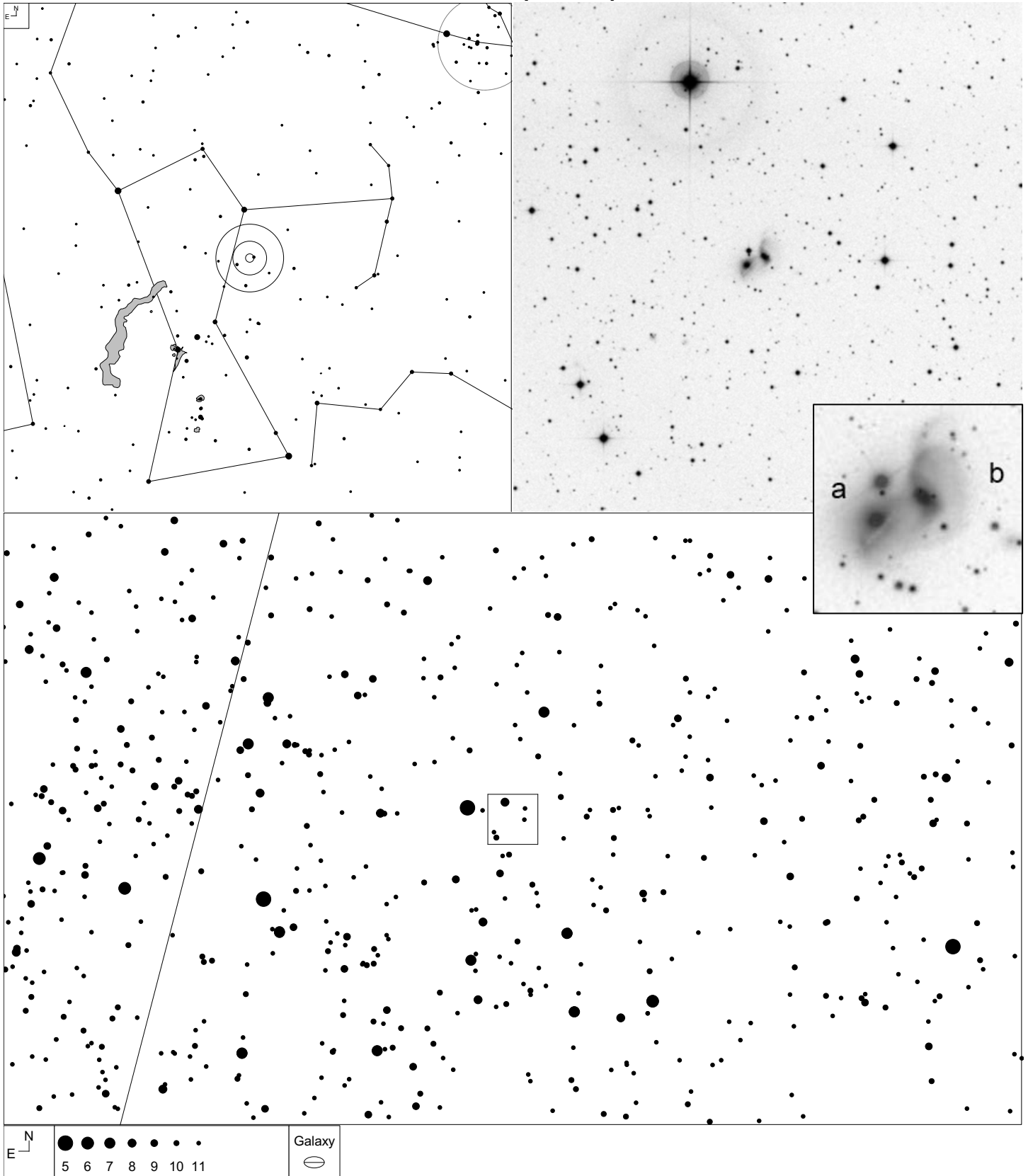


# VV 161 (Orion)



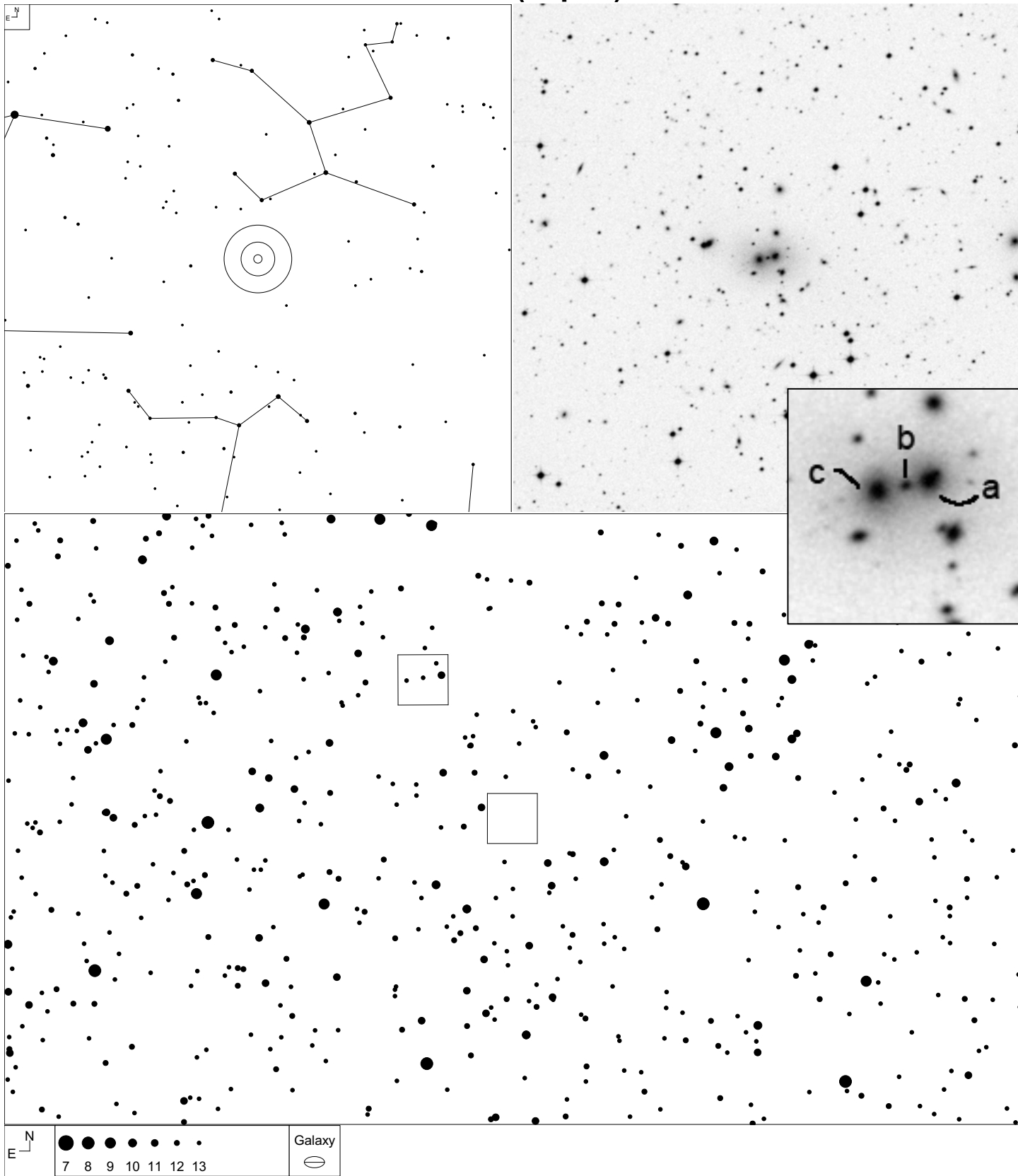
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 161  | 05 16 36.9 | +06 26 30 | GGroup   |      |             | Ch        |
| 161f | 05 16 36.0 | +06 26 02 | G        | 18   |             |           |
| 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)



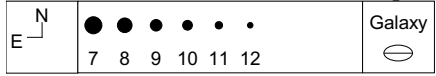
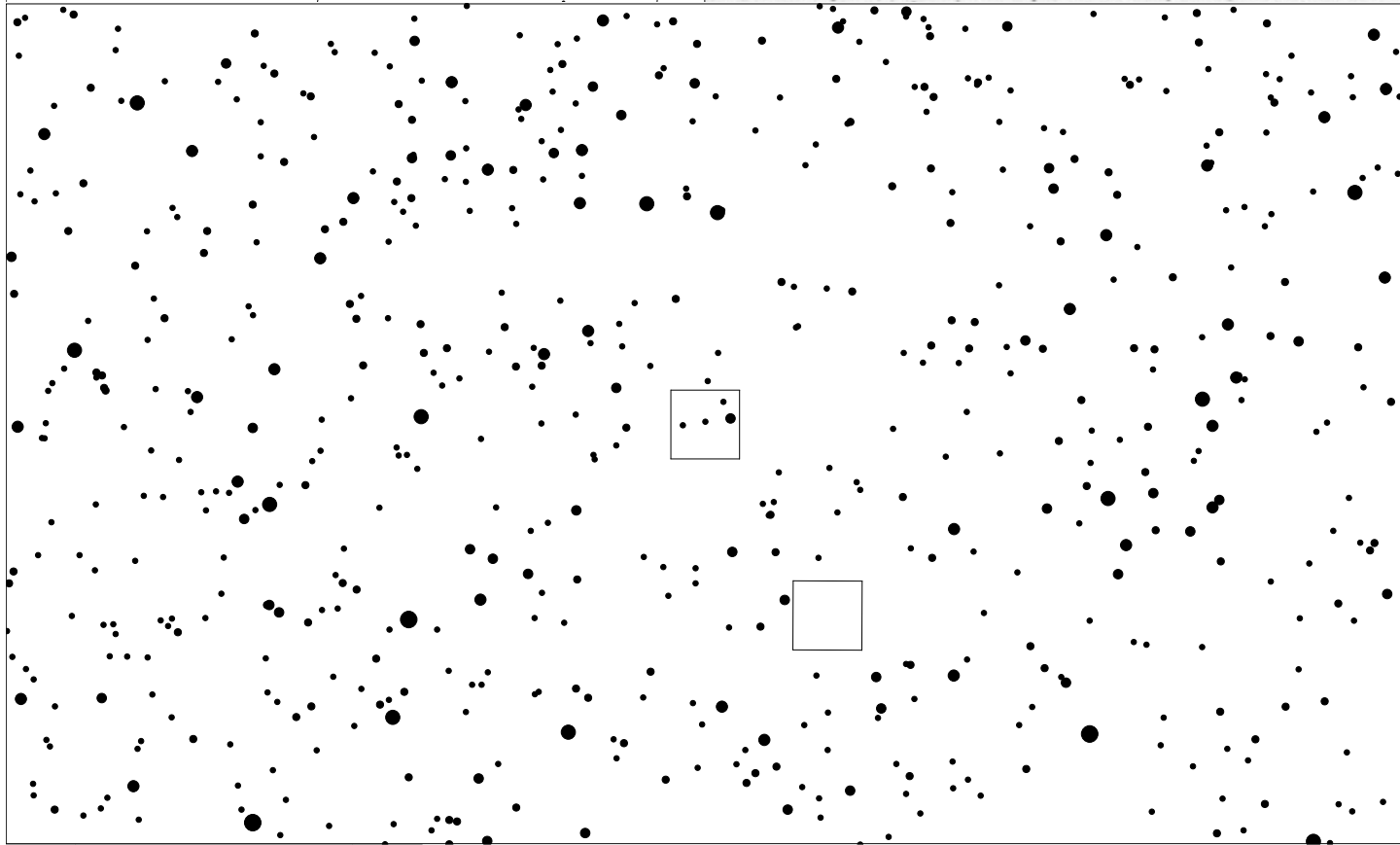
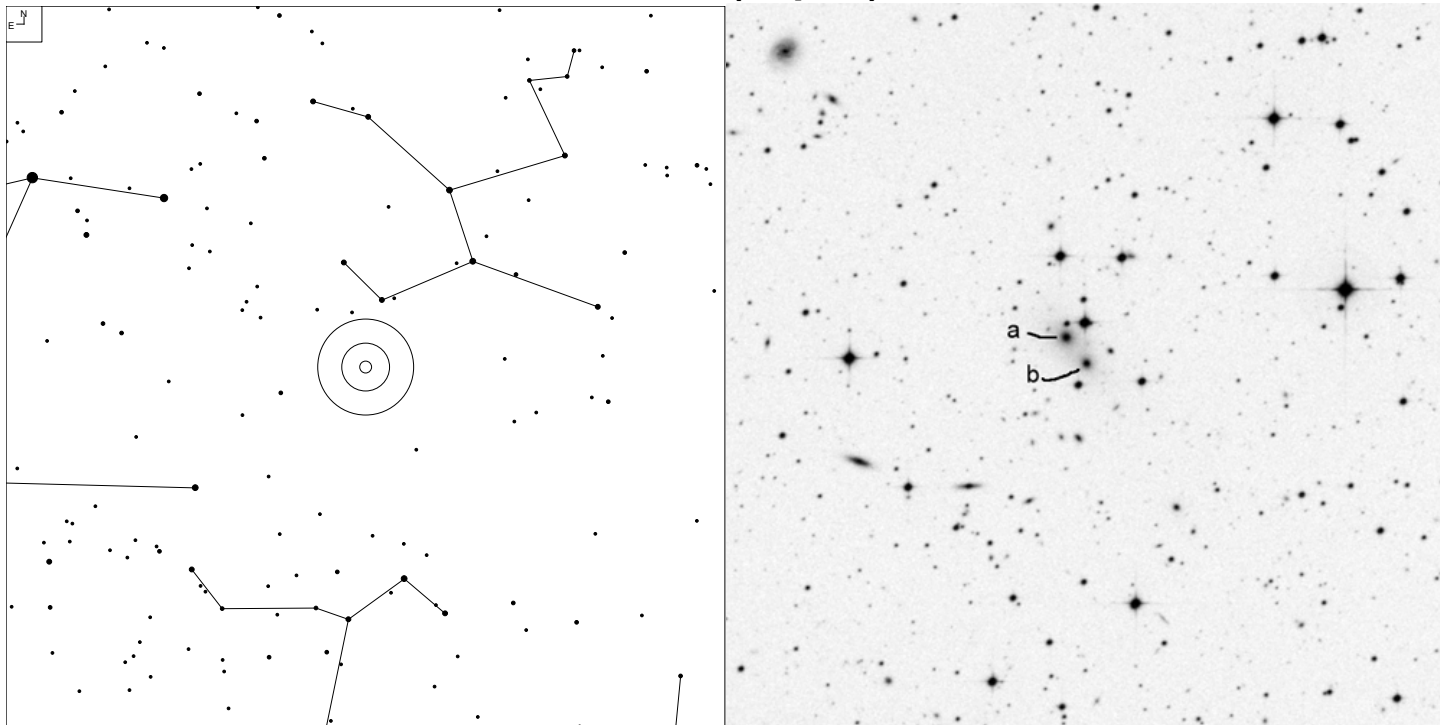
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 225  | 05 21 57.7 | +03 29 03 | GPair    |       |             | PK        |
| 225b | 05 21 56.7 | +03 29 11 | G        | 14.56 | 10x7      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

# VV 162 (Lepus)



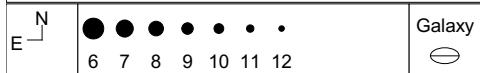
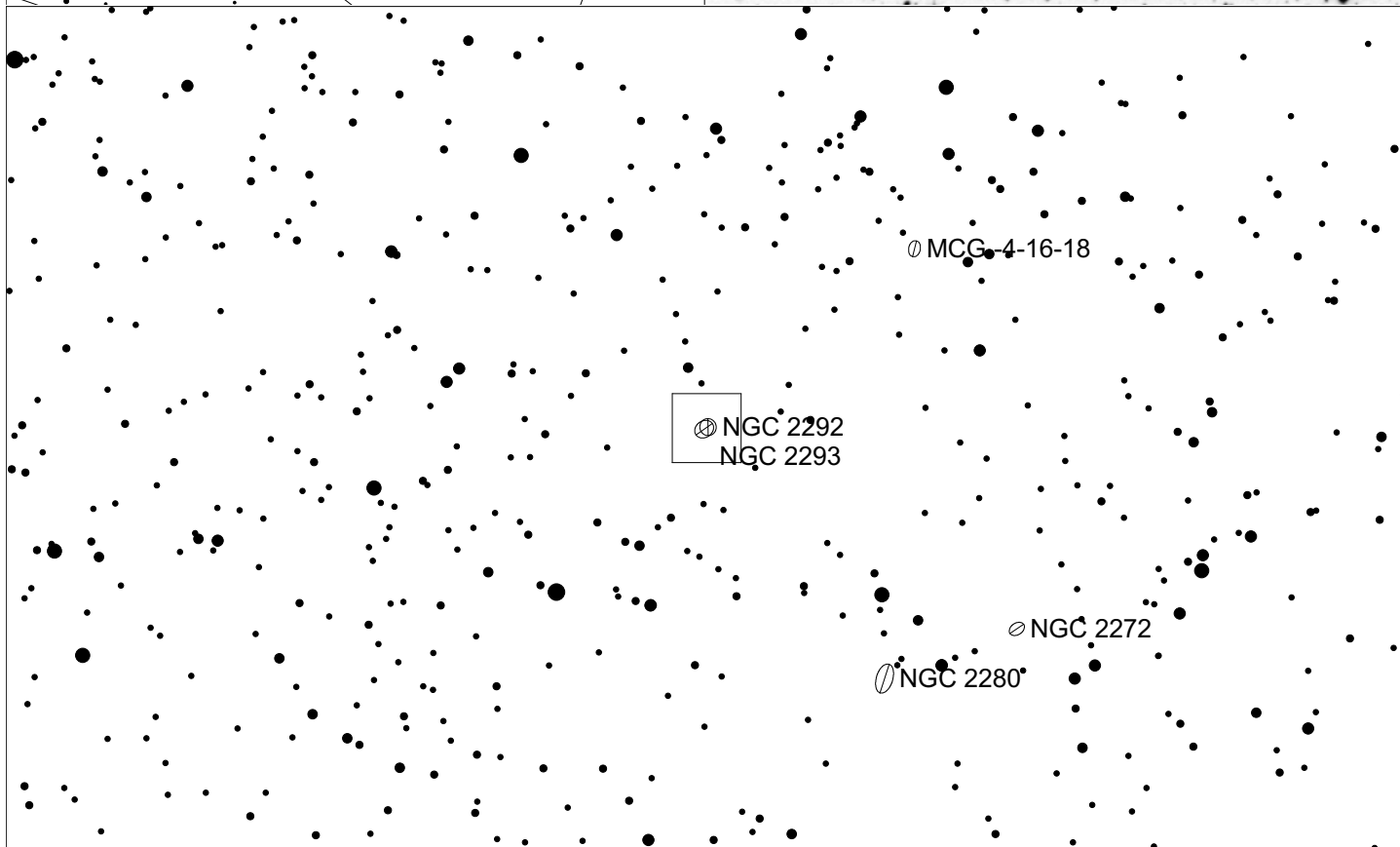
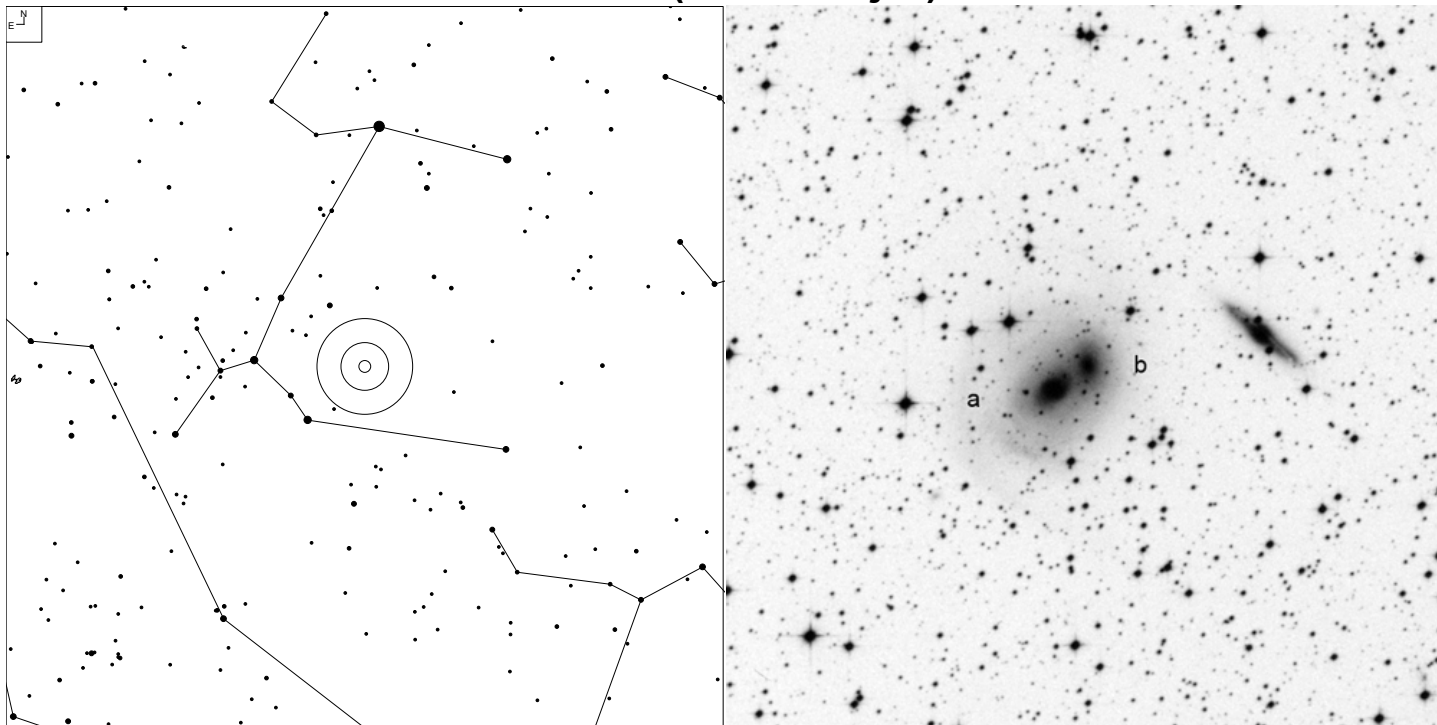
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 162  | 05 45 28.6 | -25 55 55 | GTrpl    |       |             | Ch        |
| 162a | 05 45 27.6 | -25 55 51 | G        | 13.89 | 6x6         |           |
| 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)



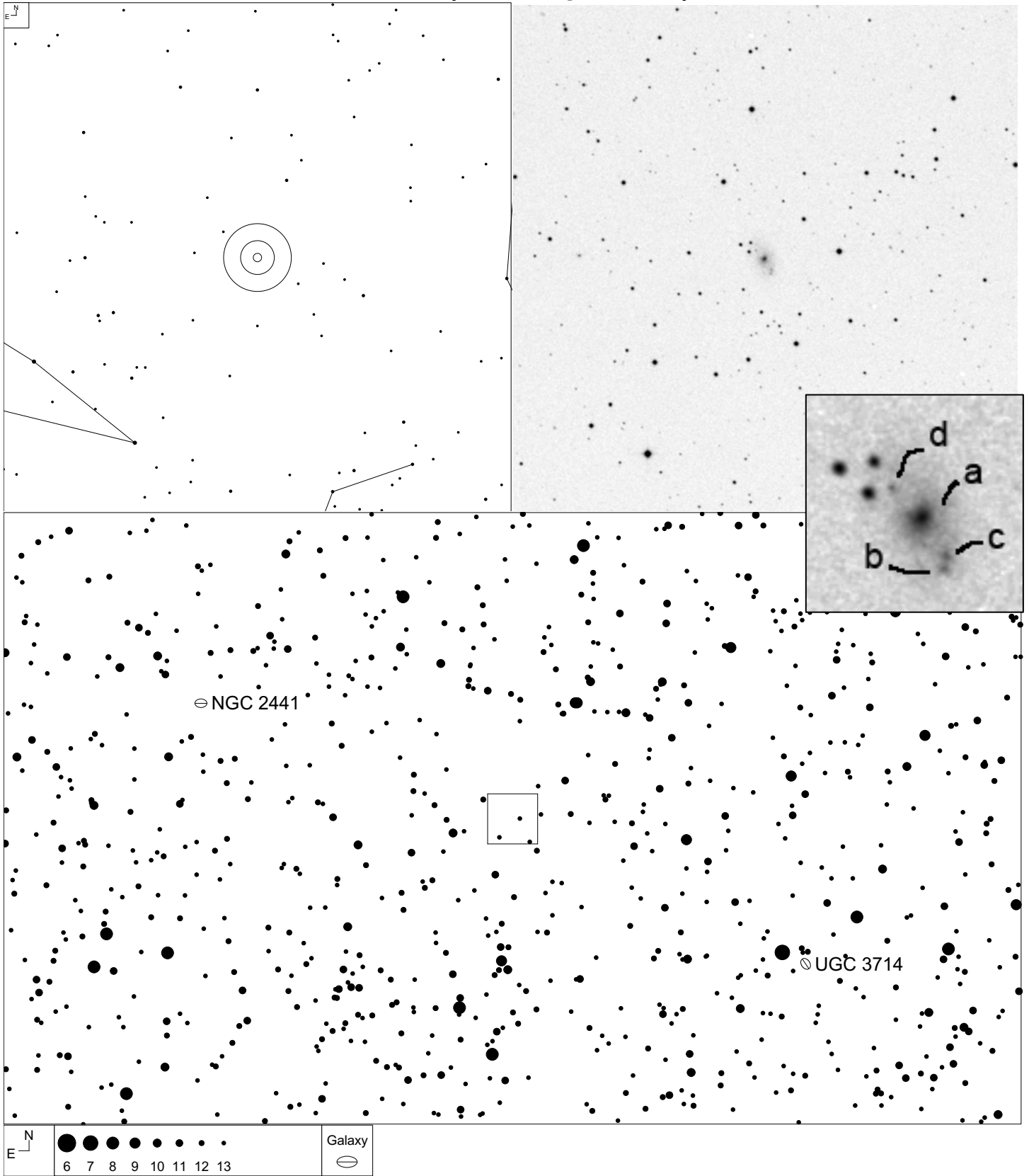
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 180  | 05 47 25.2 | -25 15 04 | GPair    |       |             | PD        |
| 180b | 05 47 24.6 | -25 15 21 | G        | 14.72 | 7x6       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

# VV 178 (Canis Major)



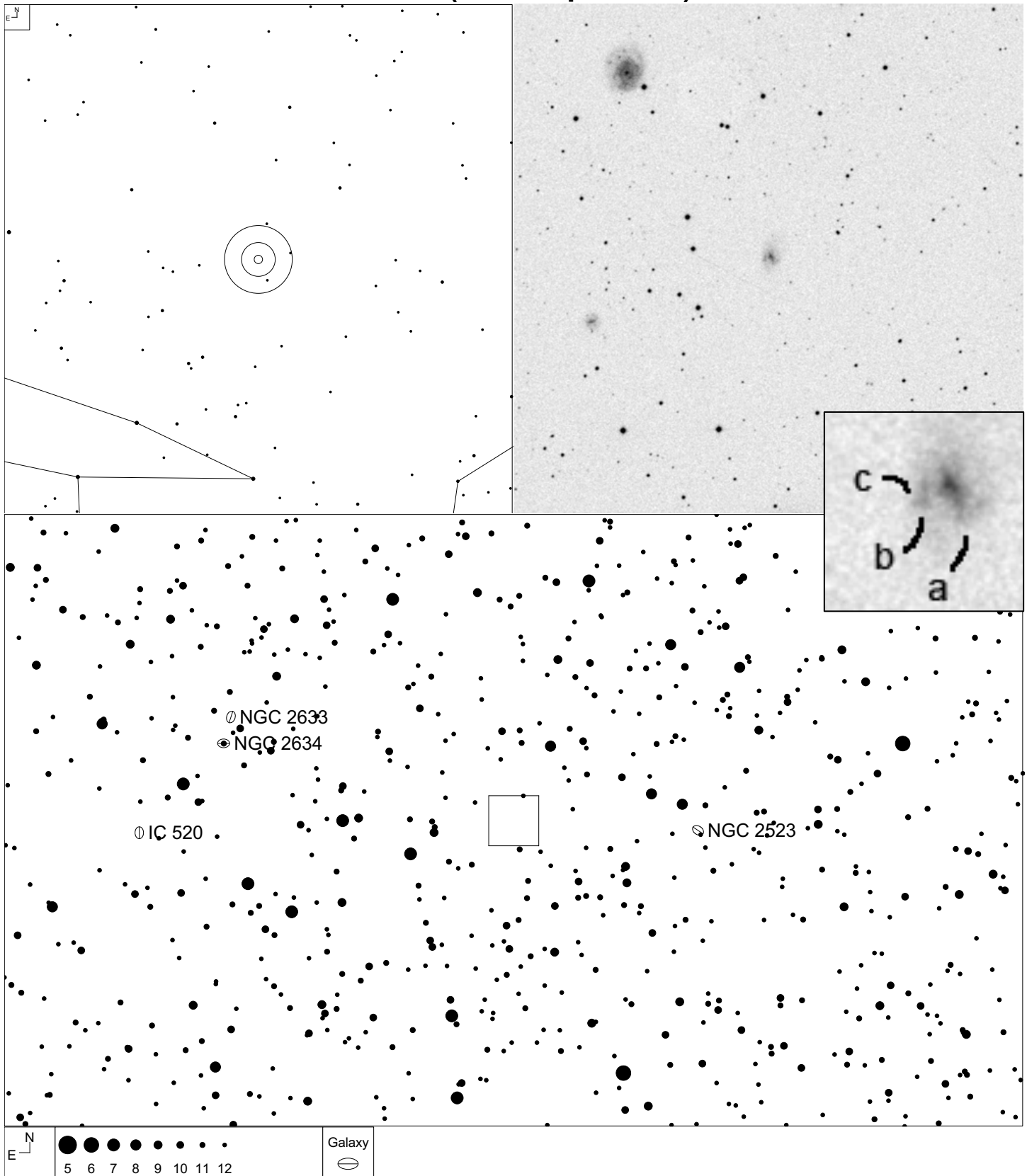
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 178  | 06 47 40.8 | -26 45 00 | GPair    |       |             | PK        |
| 178b | 06 47 39.6 | -26 44 46 | G        | 11.8p | 35x28     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

# VV 141 (Camelopardalis)



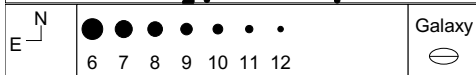
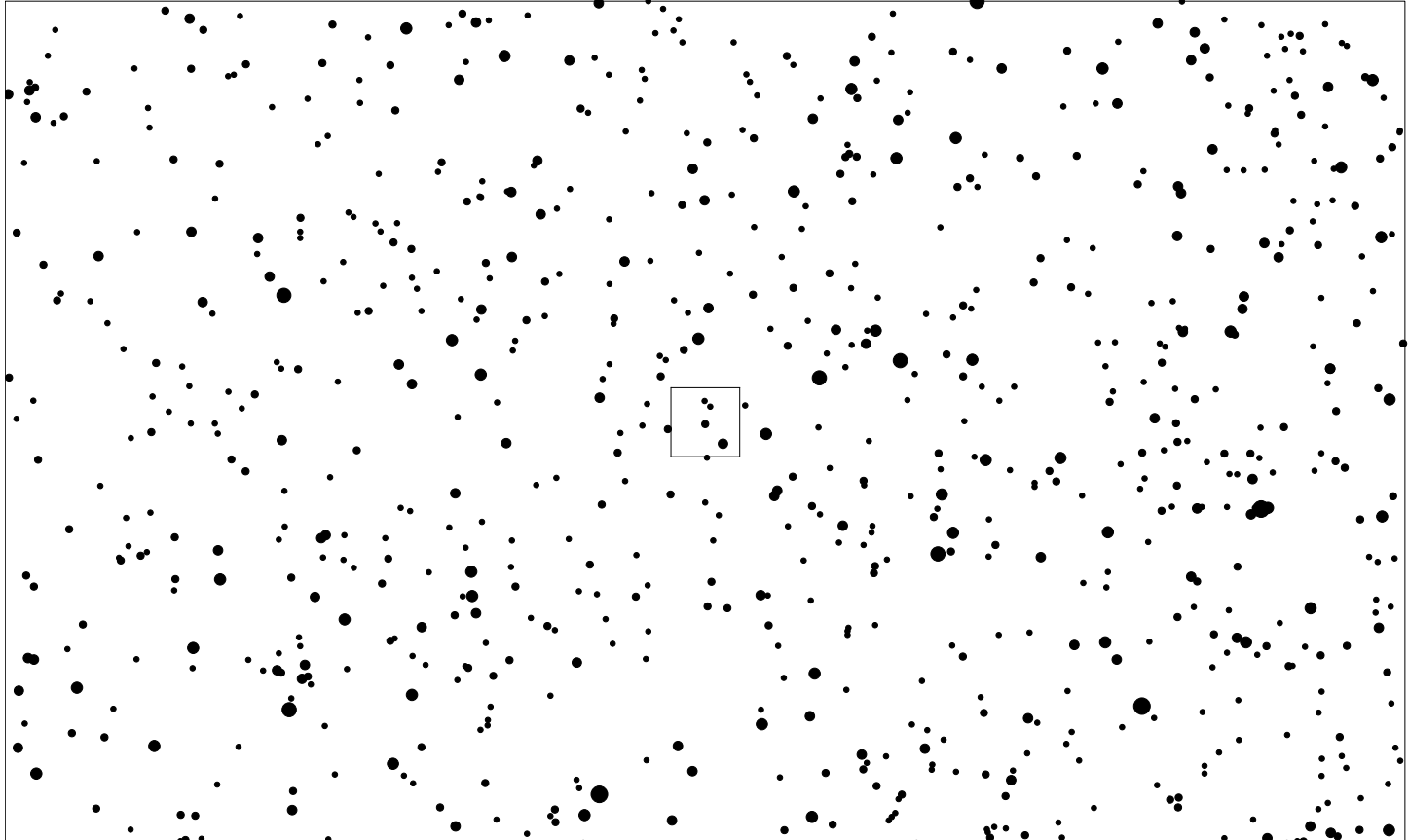
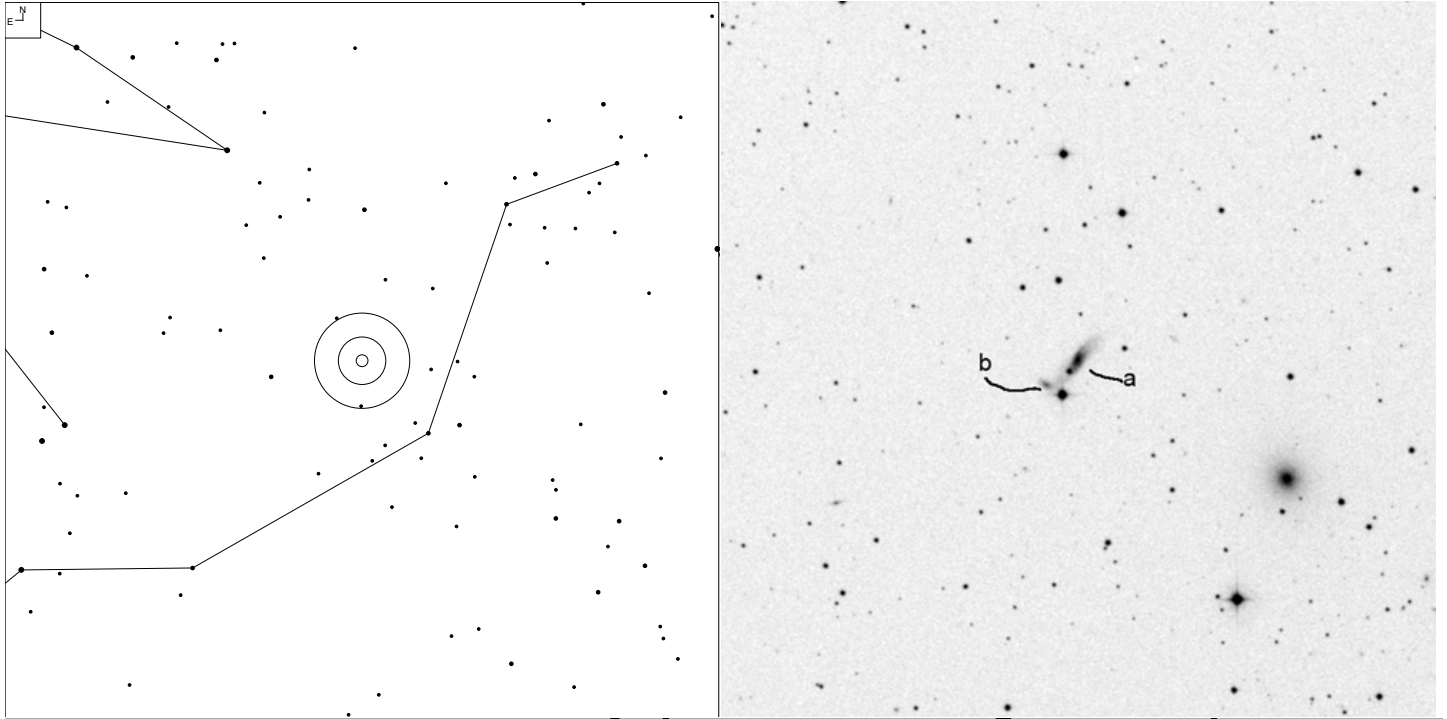
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 141  | 07 30 56.6 | +72 31 03 | GGroup   |       |             | N         |
| 141c | 07 30 54.6 | +72 30 42 | G        |       |             |           |
| 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        |      |             |           |

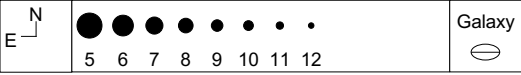
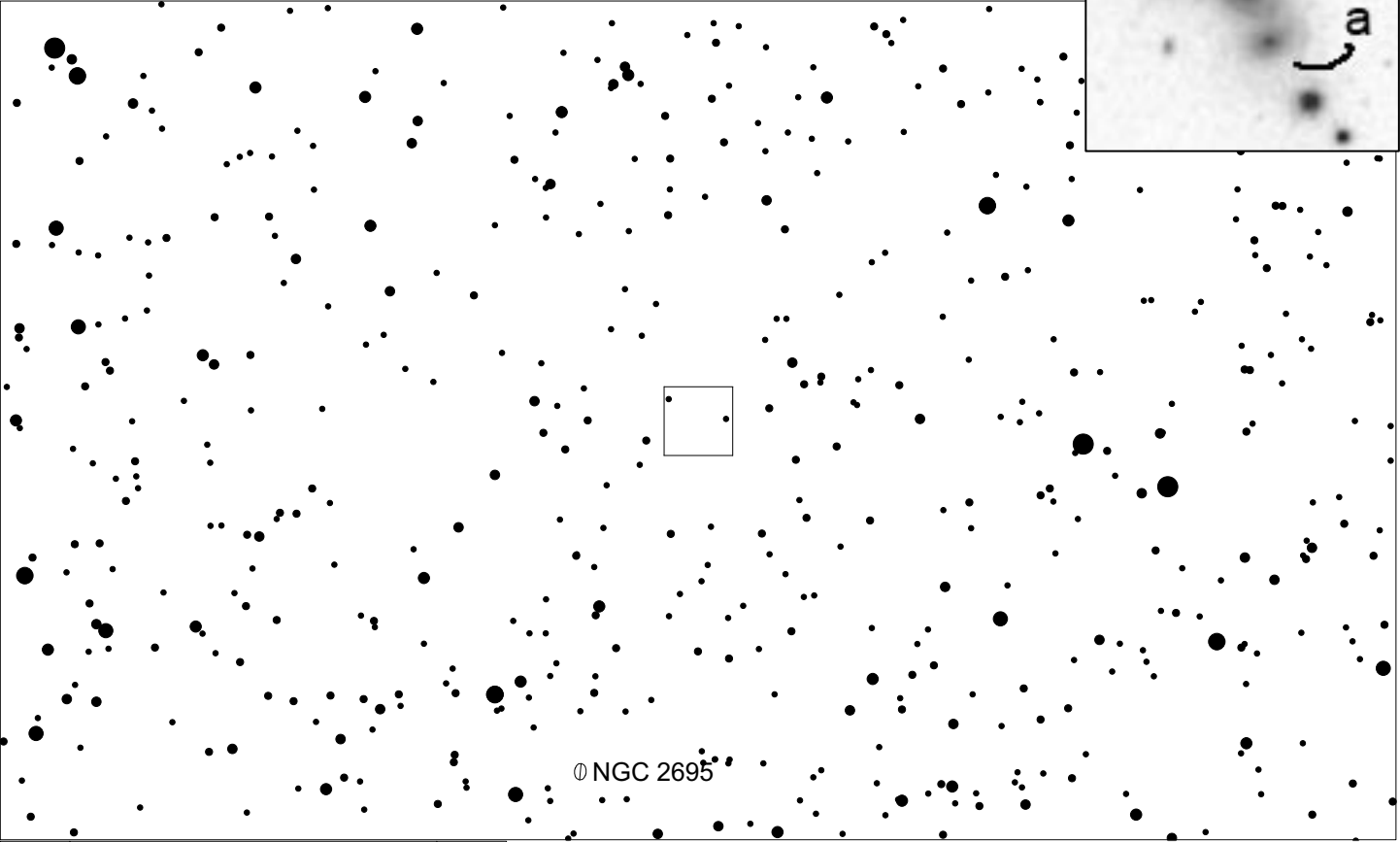
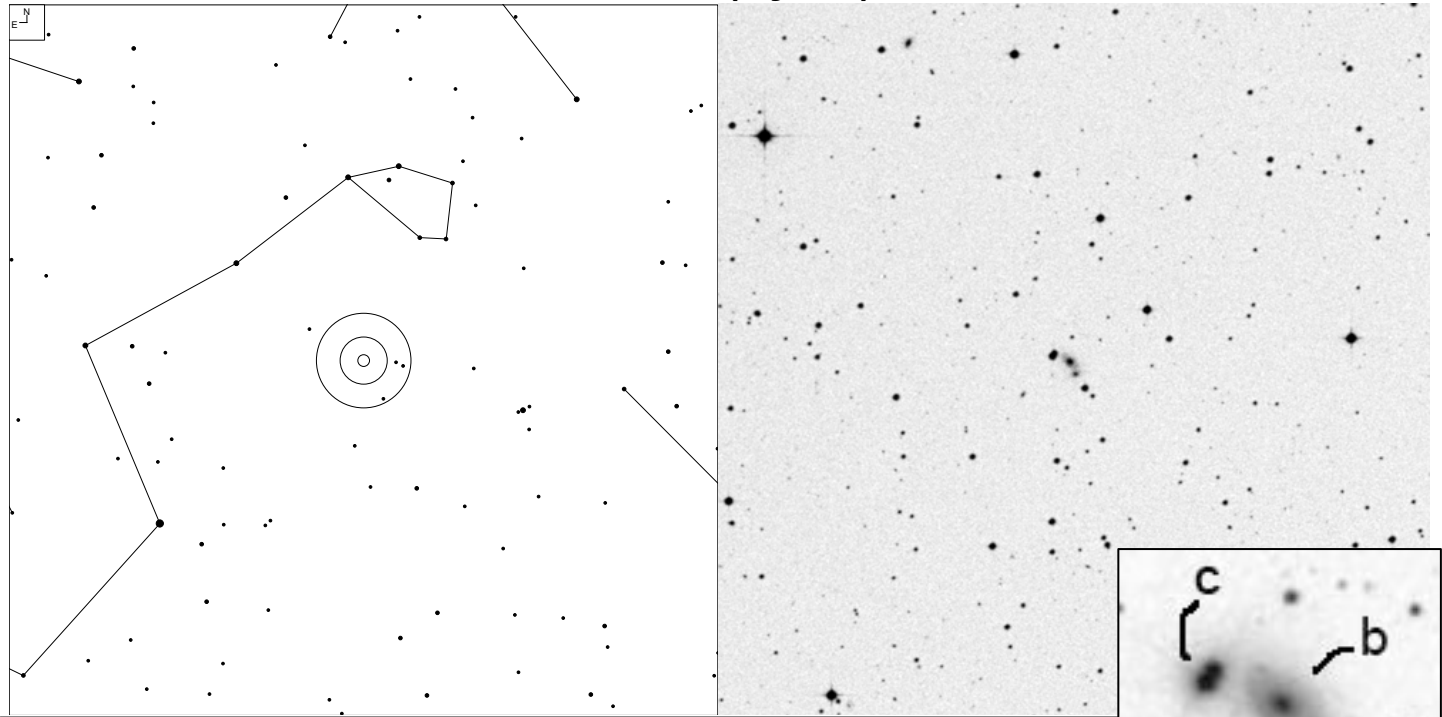
# VV 284 (Lynx)



| 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         |           |

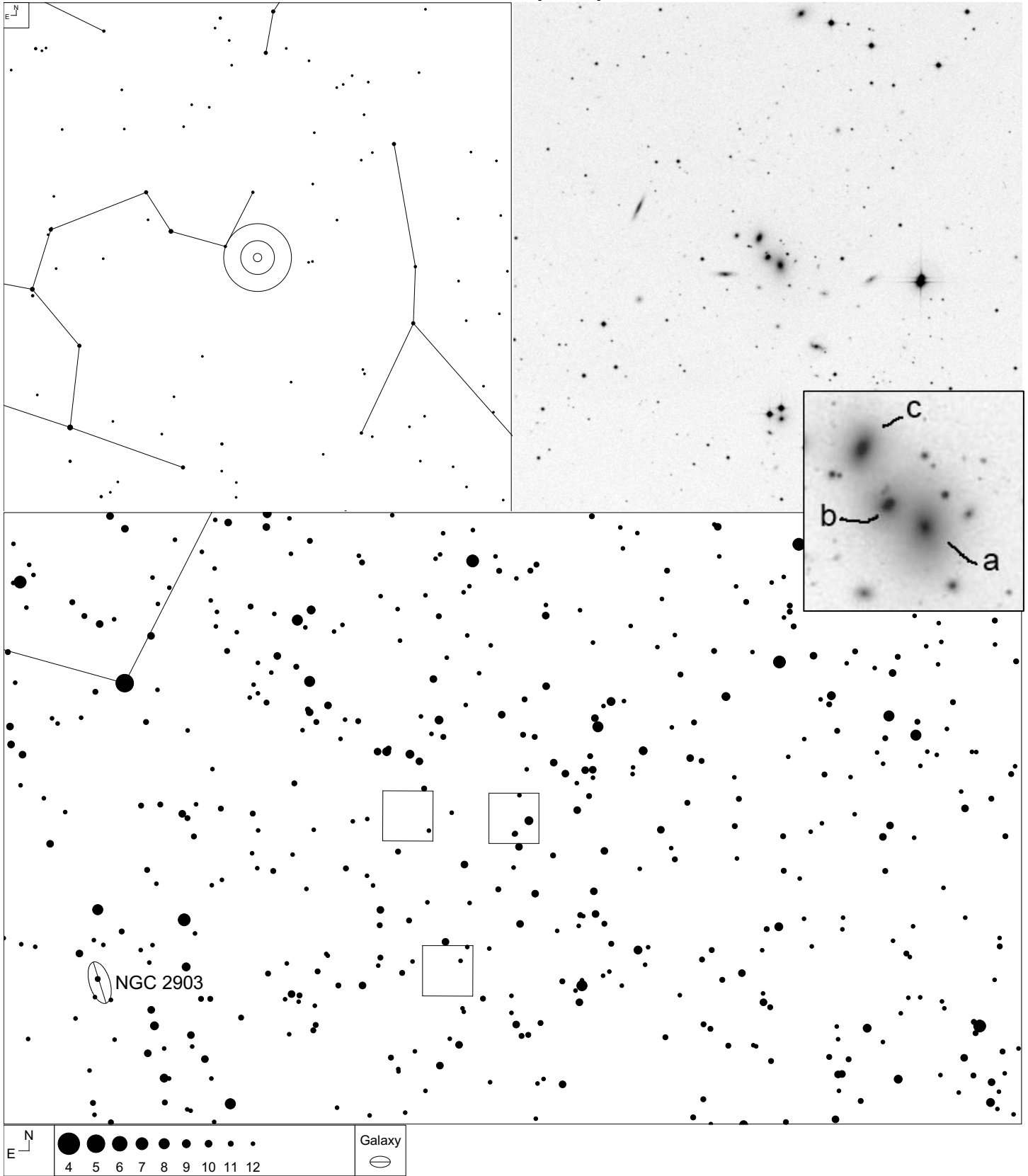


# VV 168 (Hydra)



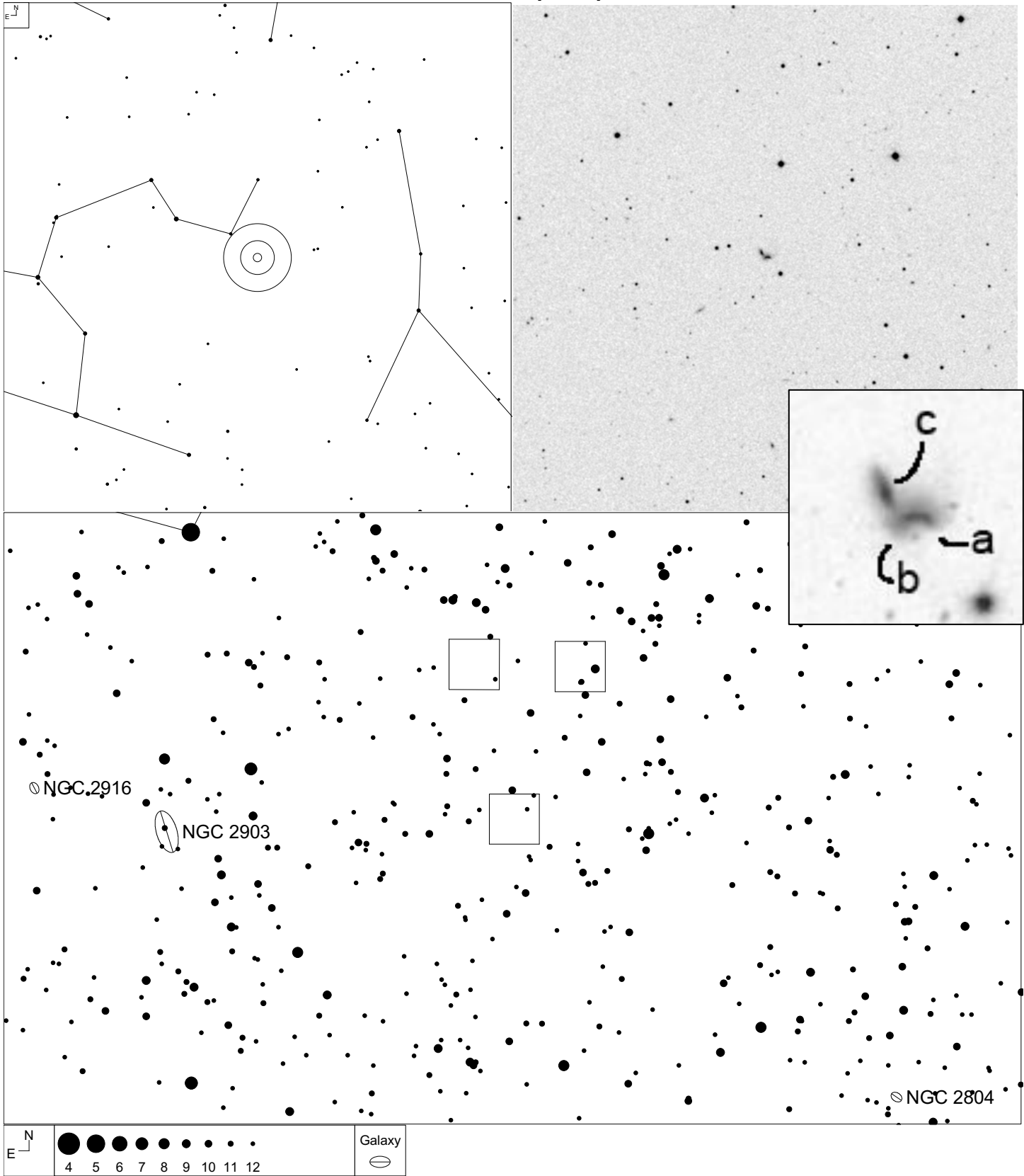
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 168  | 08 52 45.4 | -01 49 02 | GPair    | 15.1 | 9x5         | NNN       |
| 168a | 08 52 45.1 | -01 49 10 | G        |      |             | 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

# VV 171 (Leo)



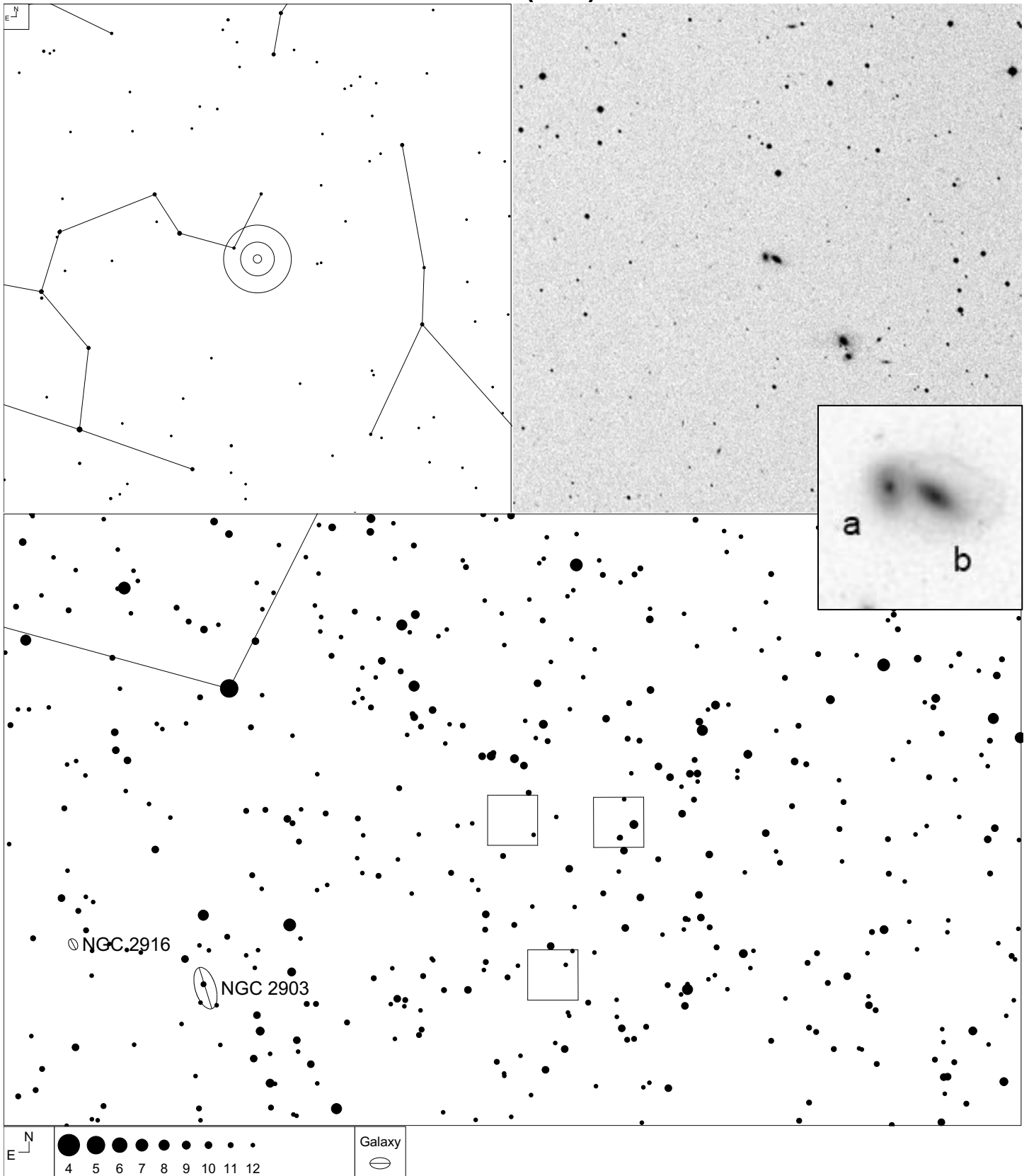
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 171  | 09 23 25.7 | +22 19 10 | GTrpl    |       |             | Ch        |
| 171a | 09 23 24.3 | +22 18 47 | G        | 14.7g | 9x8         |           |
| 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         |           |

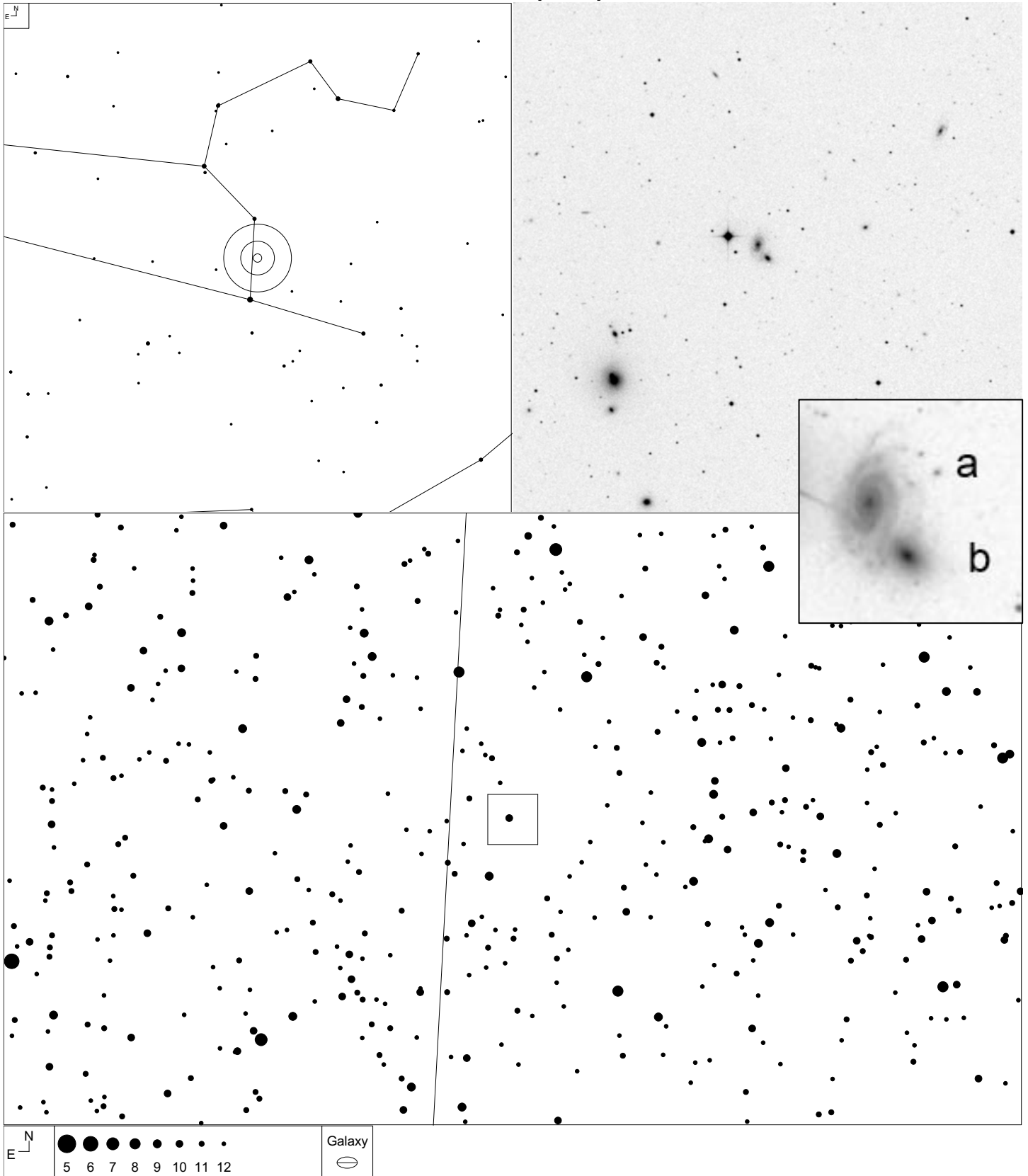
# VV 63 (Leo)



| 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         |           |

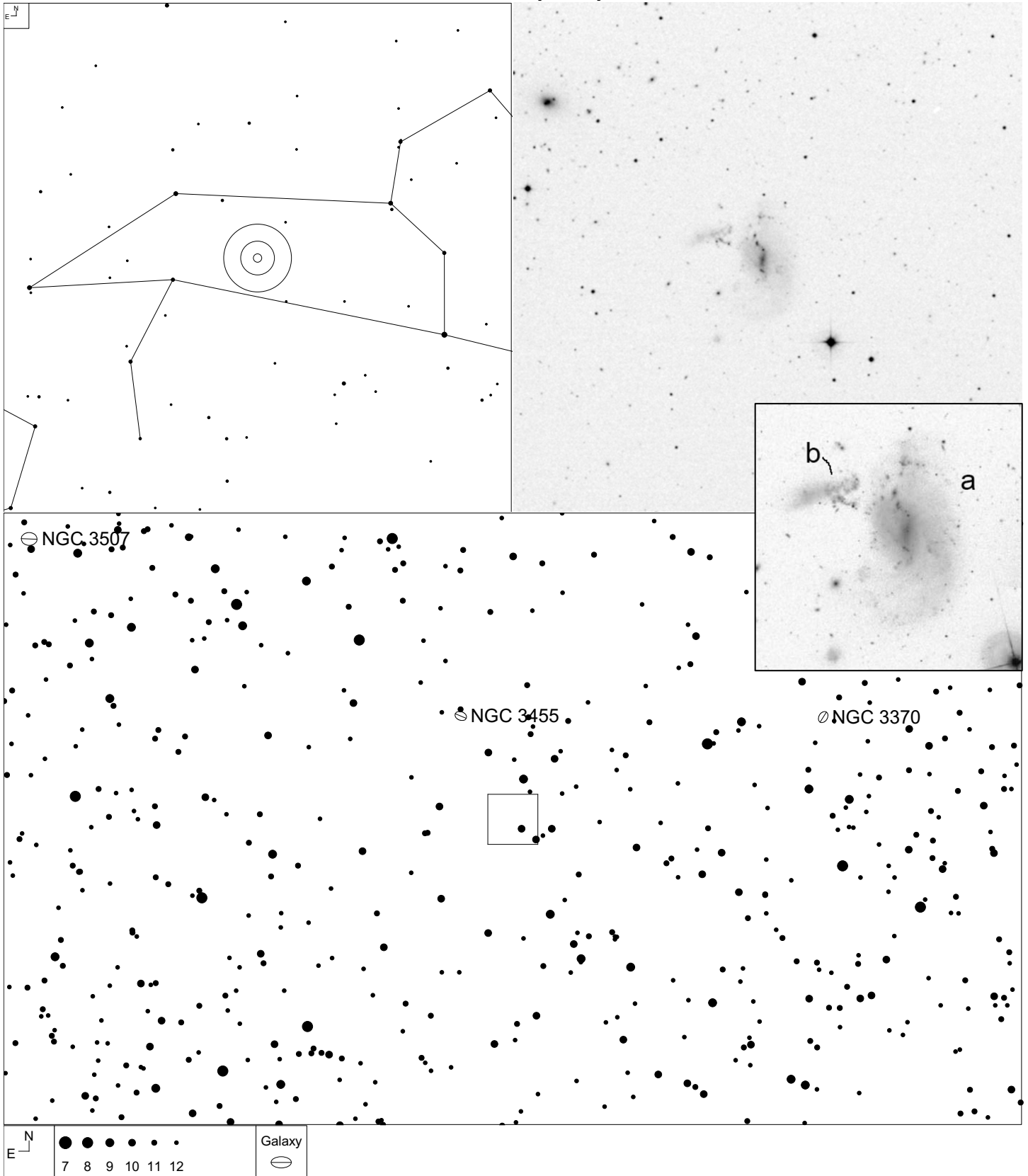
Megastar mislabeled CGCG 121-89 and VV63 - true location is 3.4' NE. Corrected in above chart.

# VV 240 (Leo)



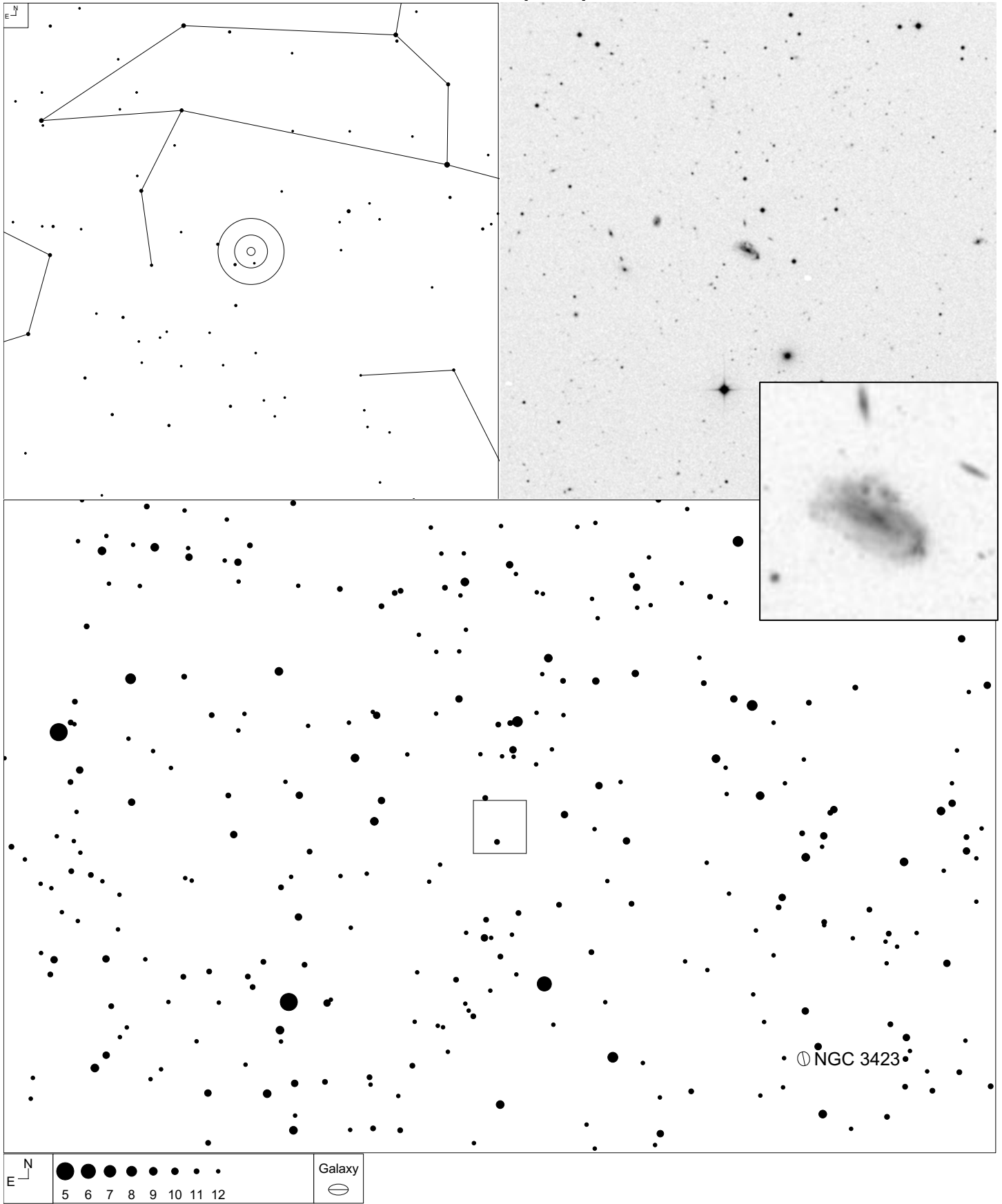
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 240  | 10 06 33.8 | +14 26 12 | GPair    |      |             | Pkb       |
| 240b | 10 06 33.3 | +14 26 01 | G        | 16.3 | 5x4         | 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

# VV 252 (Leo)



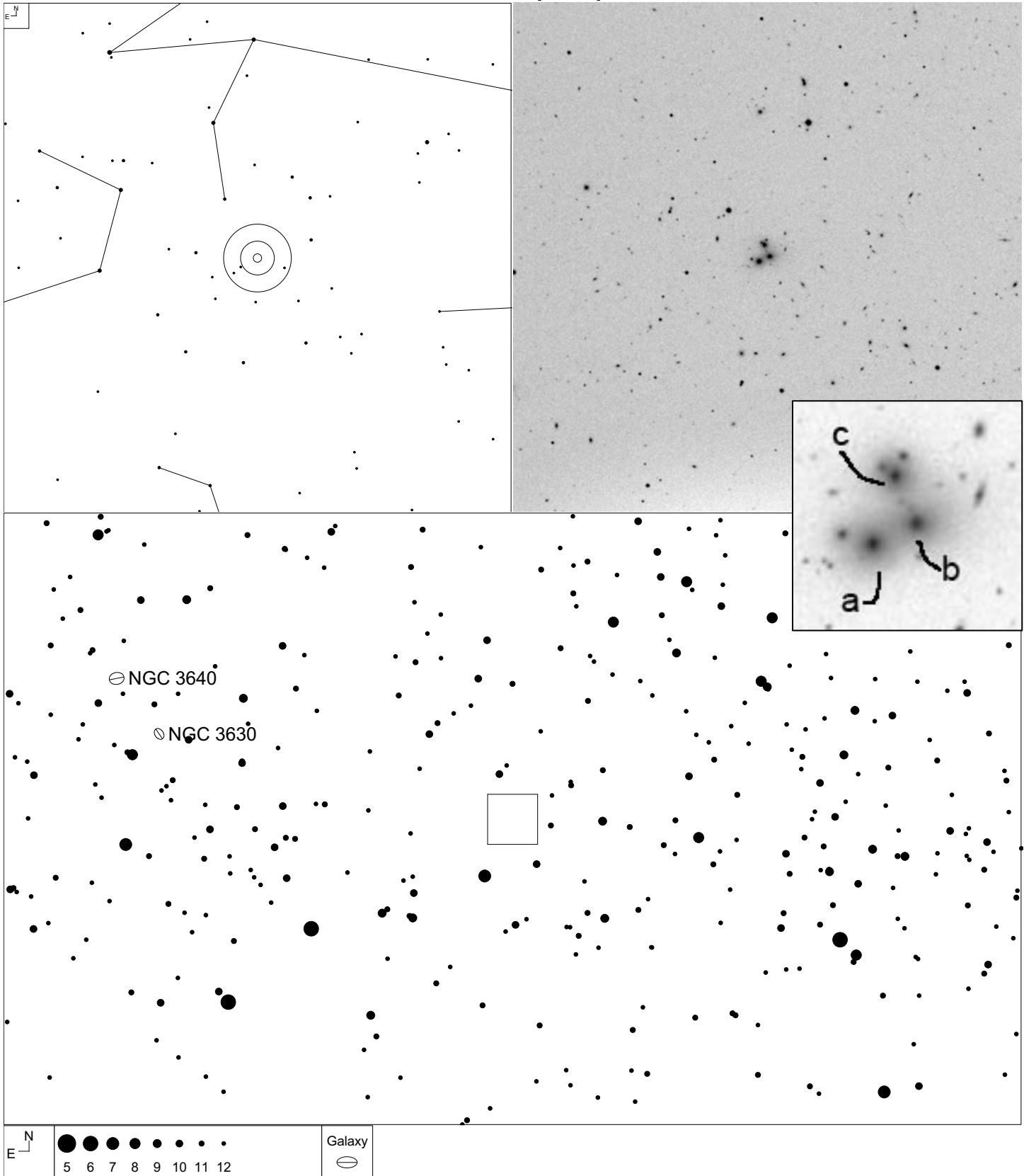
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 252  | 10 53 26.8 | +16 46 44 | GPair    |      |             | PKdf      |
| 252a | 10 53 24.0 | +16 46 21 | G        | 13.1 | 37x21       |           |
| 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         |

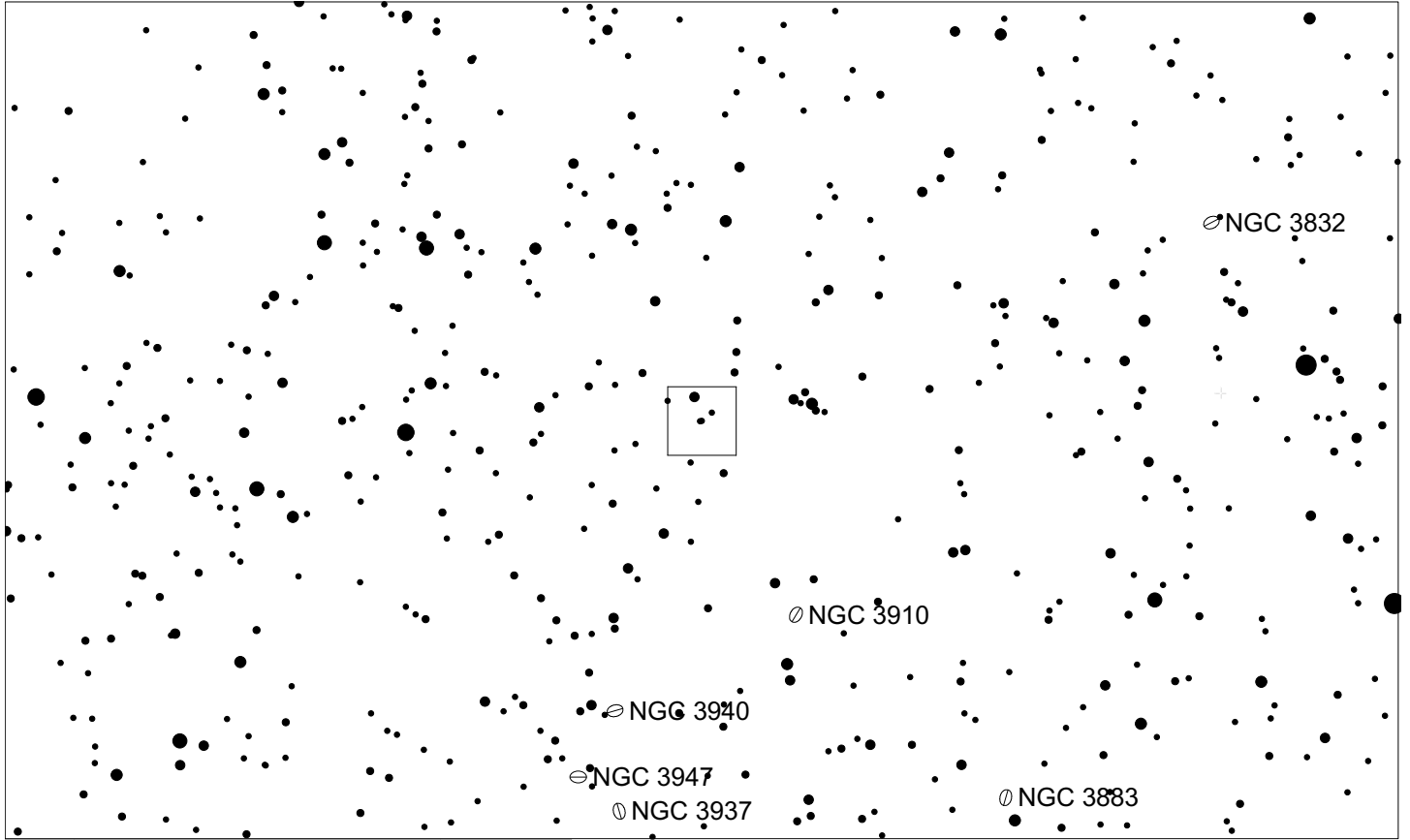
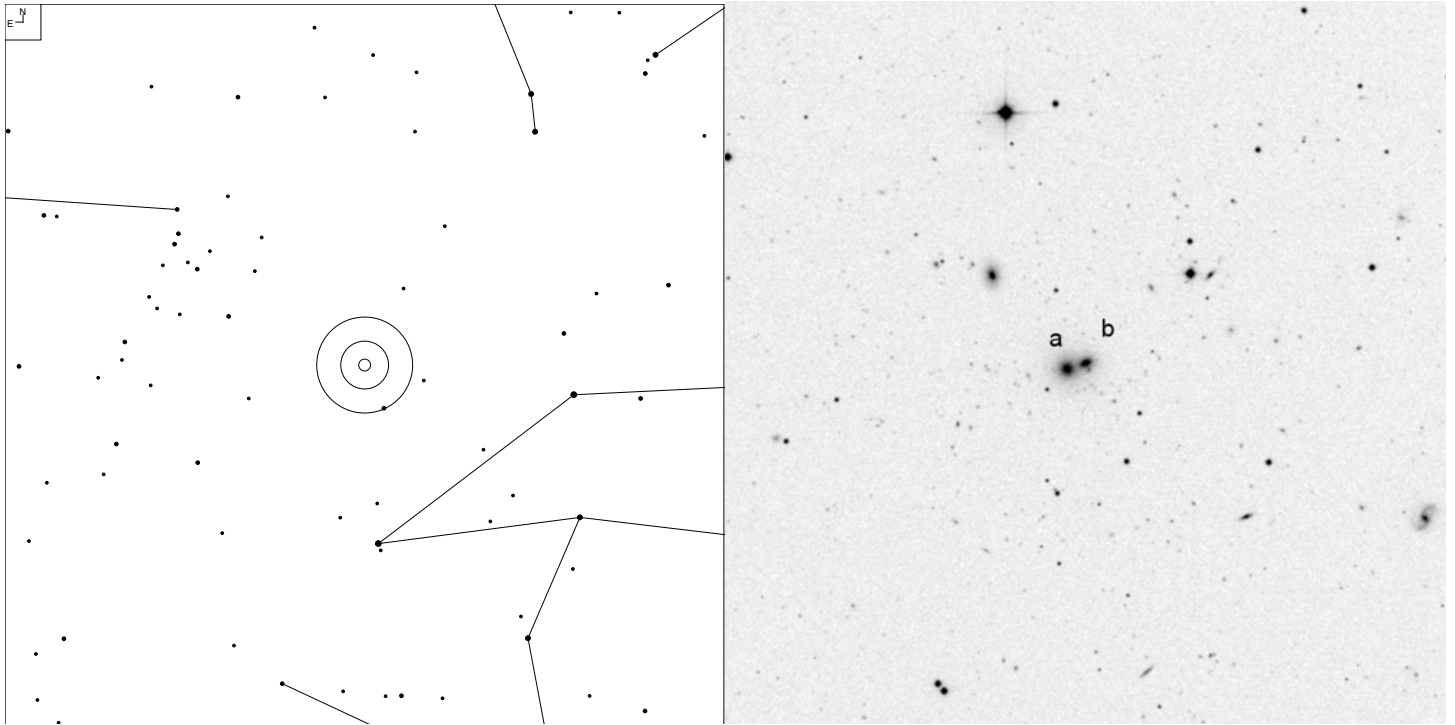
# VV 145 (Leo)



| 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         |           |



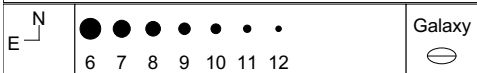
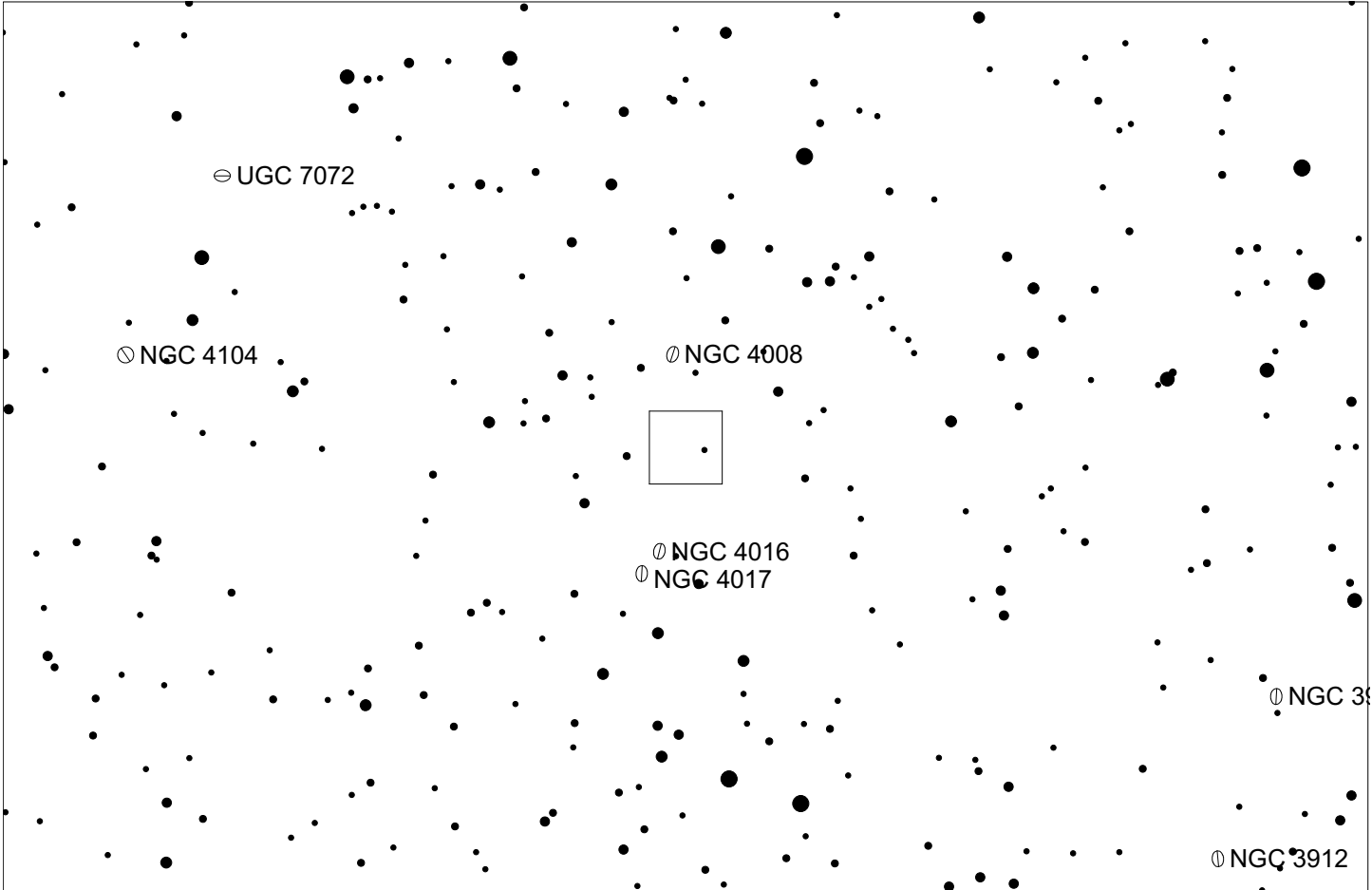
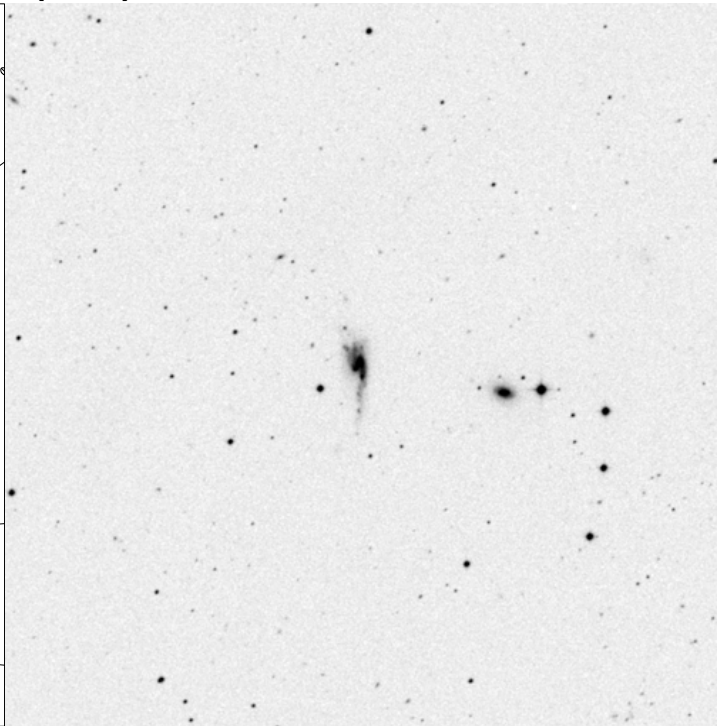
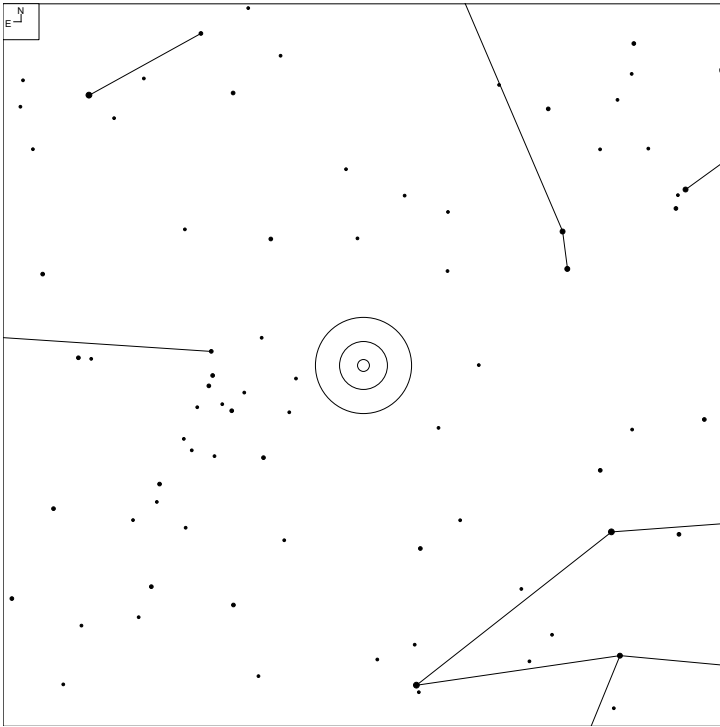
# VV 218 (Leo)



Galaxy  
  Radio

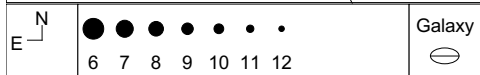
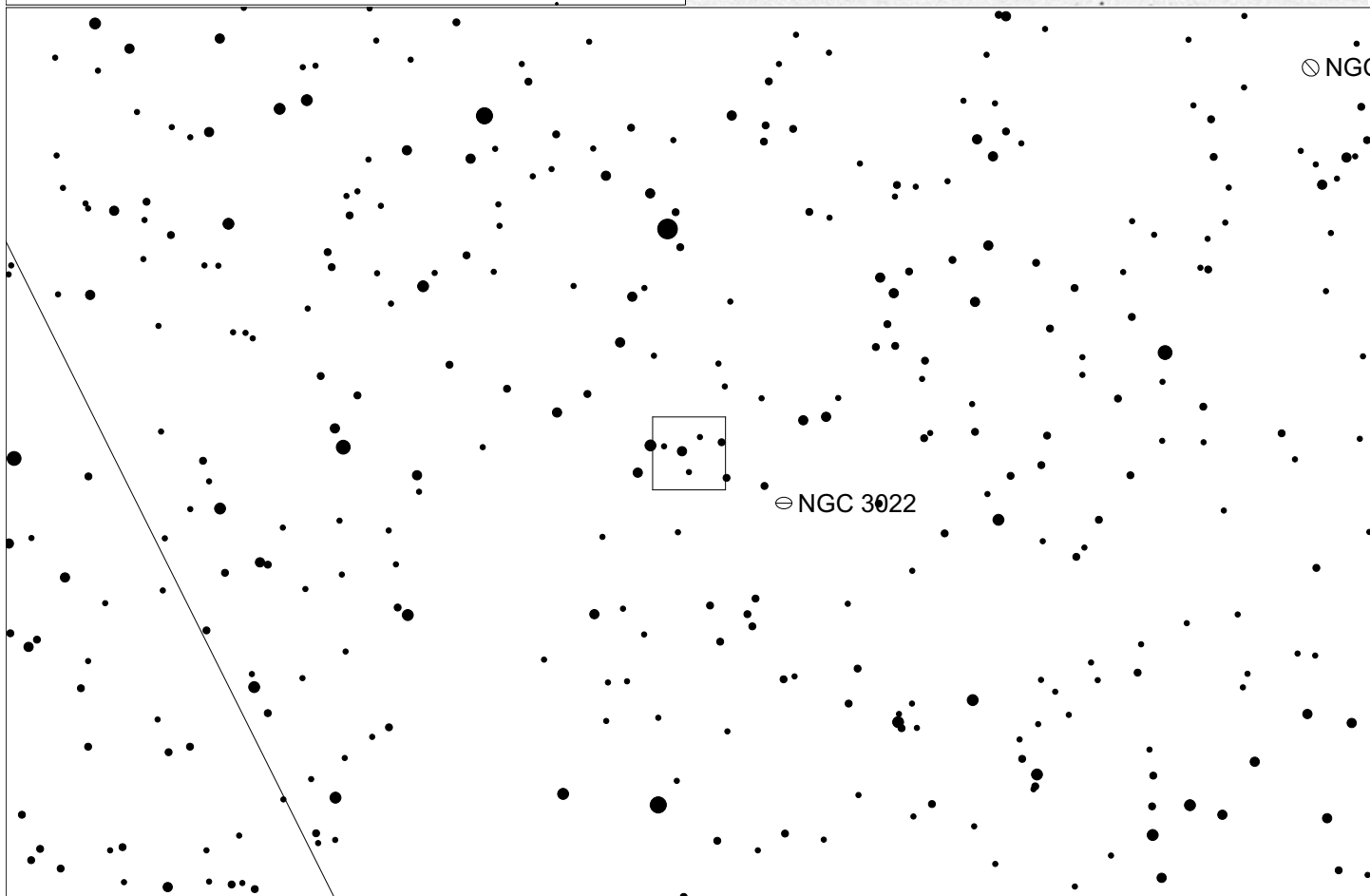
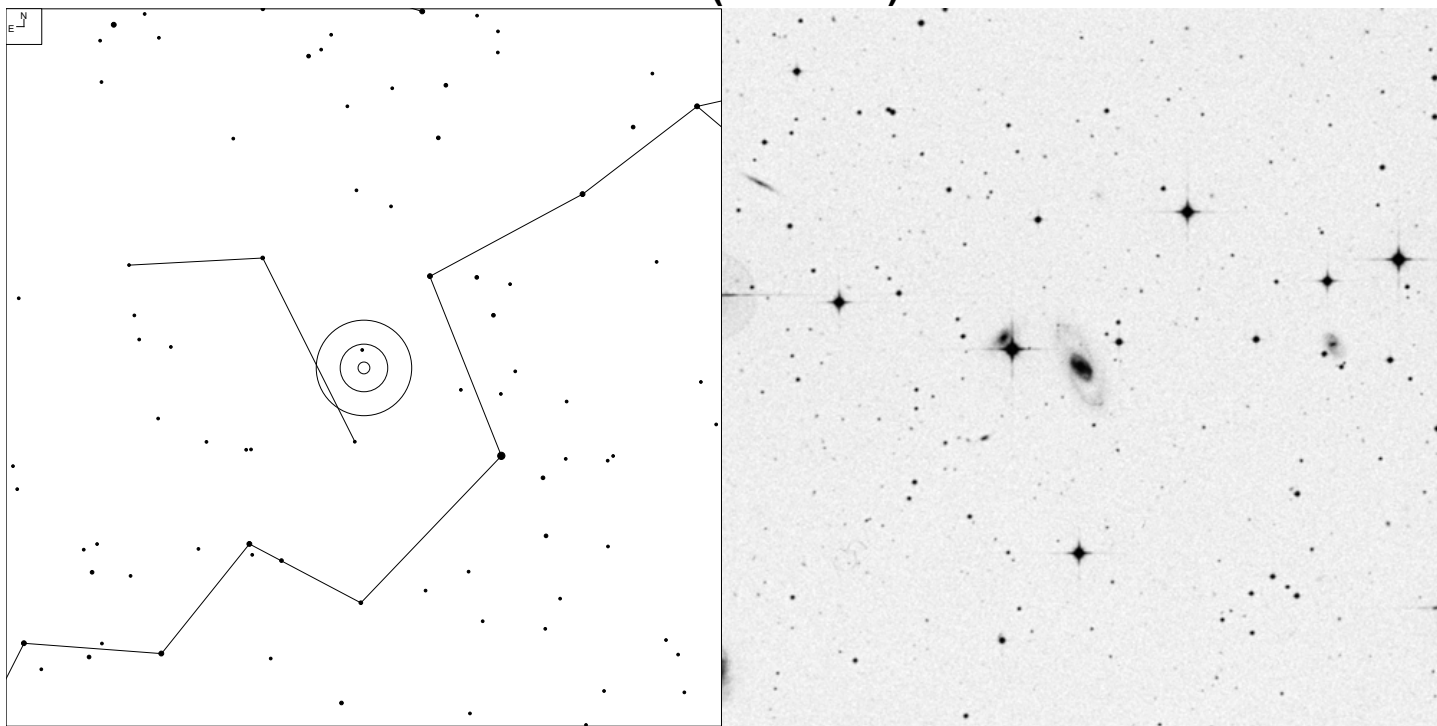
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 218  | 11 51 27.4 | +22 01 37 | GPair    |      |             | PK        |
| 218a | 11 51 26.5 | +22 01 41 | G        | 14.5 | 3x2         | 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

# VV 230 (Leo)



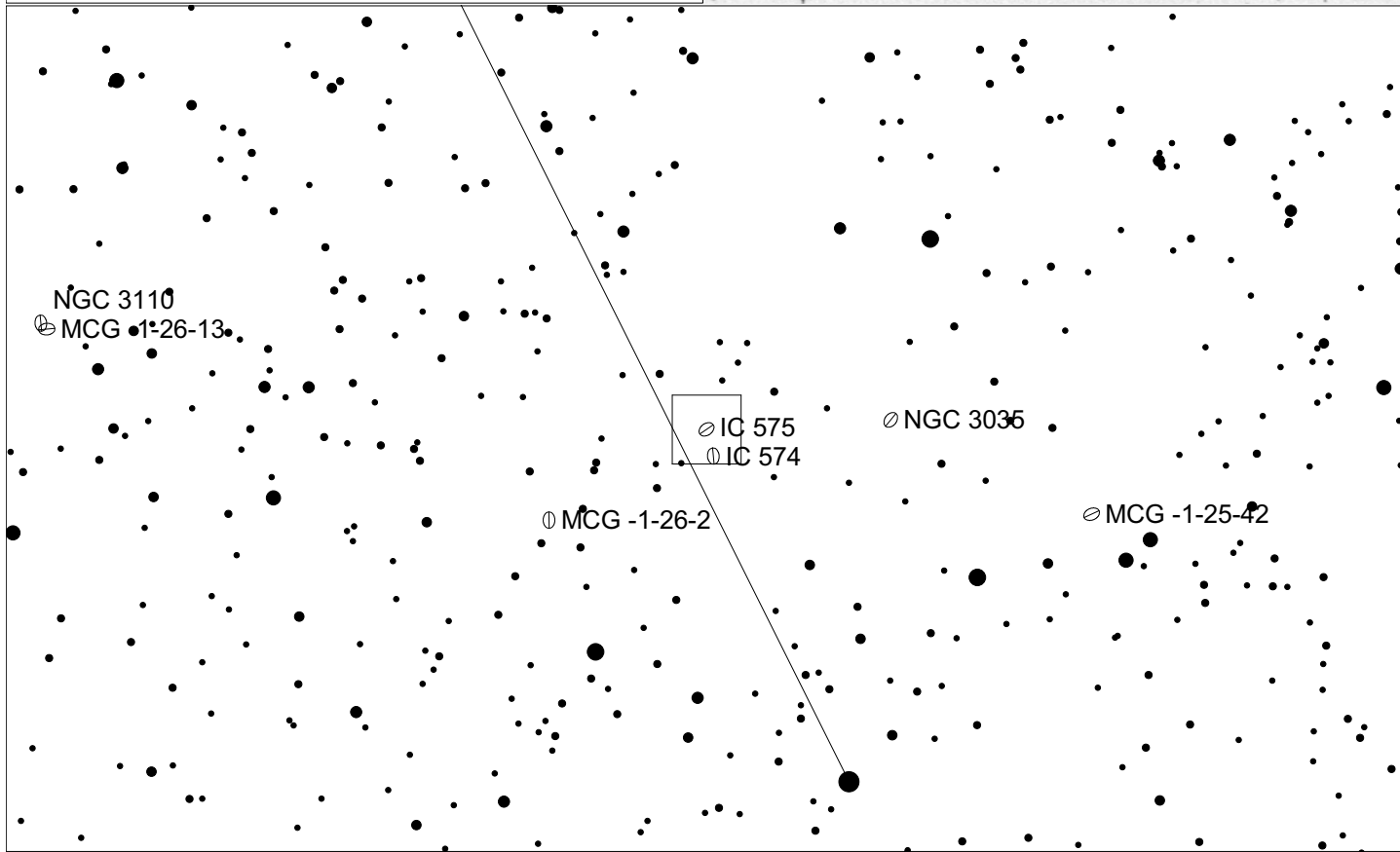
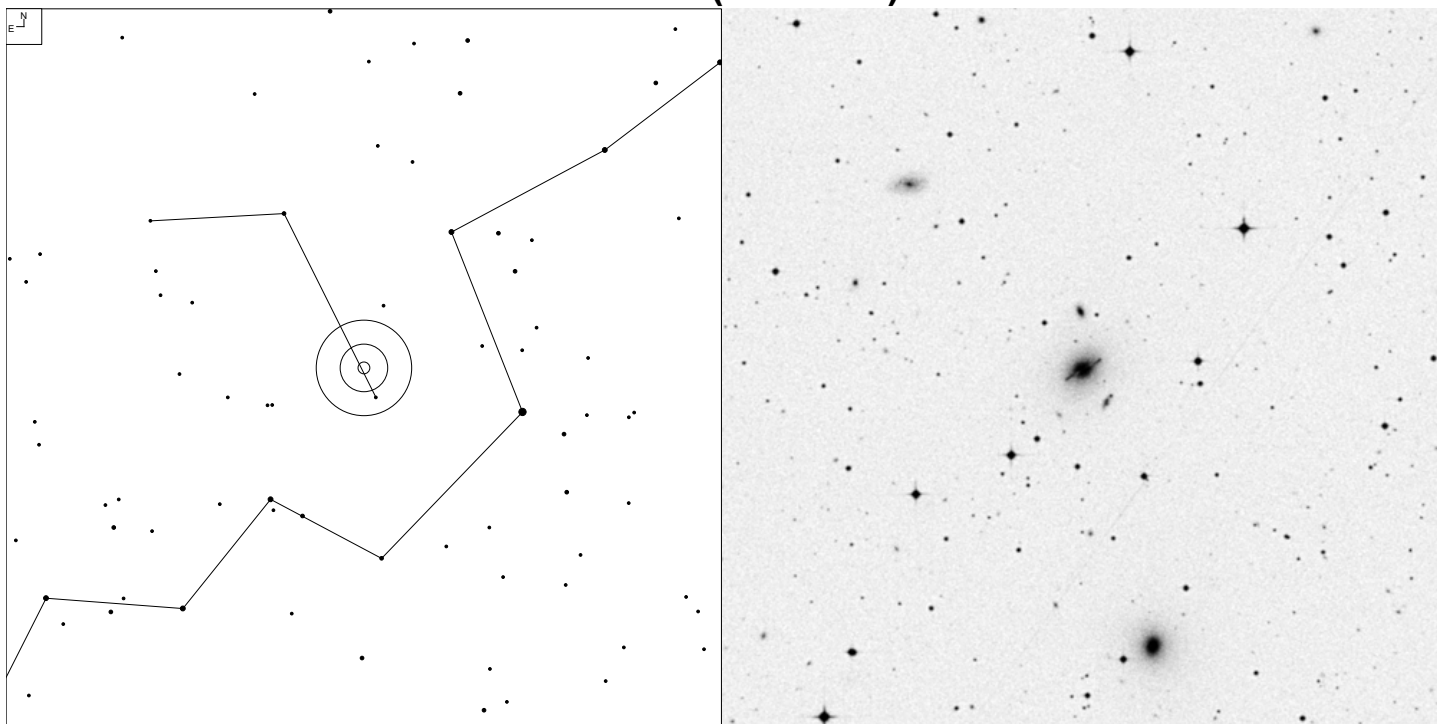
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 230 | 11 58 05.2 | +27 52 44 | G        | 13.9g | 18x6        | PKdf      |

# VV 110 (Sextans)



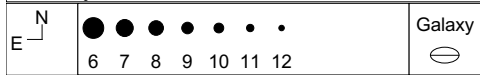
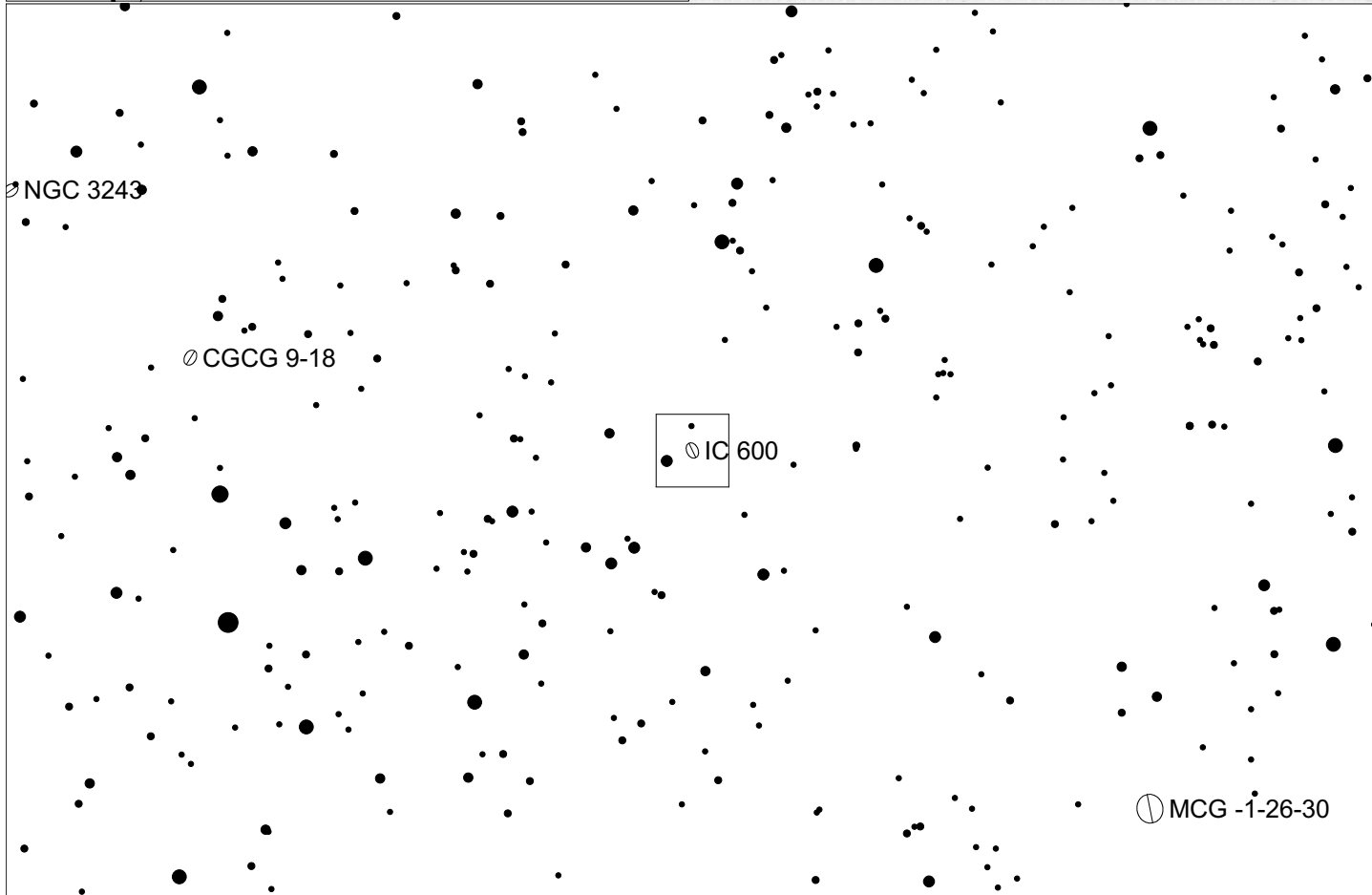
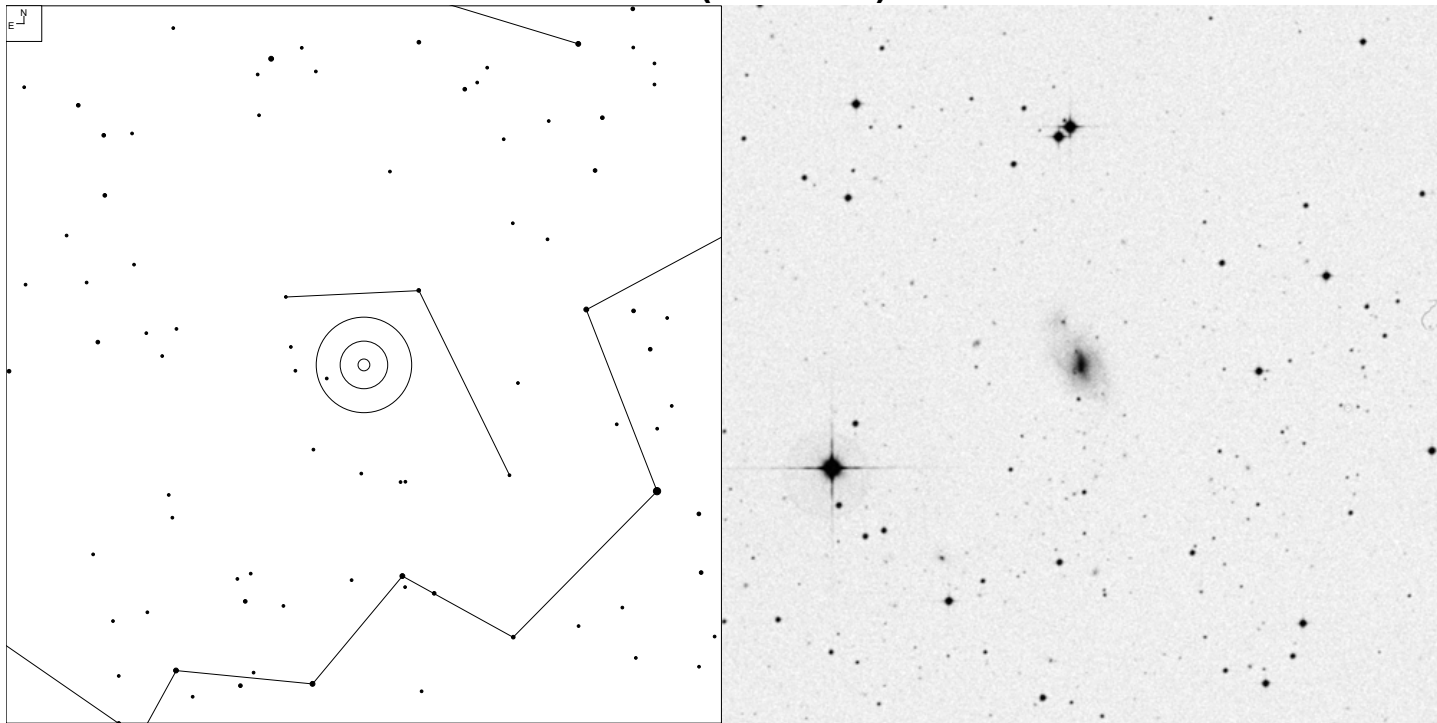
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 110  | 09 50 56.5 | -04 59 52 | G        | 14.46 | 19x8        | PC        |
| 110a | 09 50 55.9 | -04 59 57 | PofG     |       |           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

# VV 111 (Sextans)



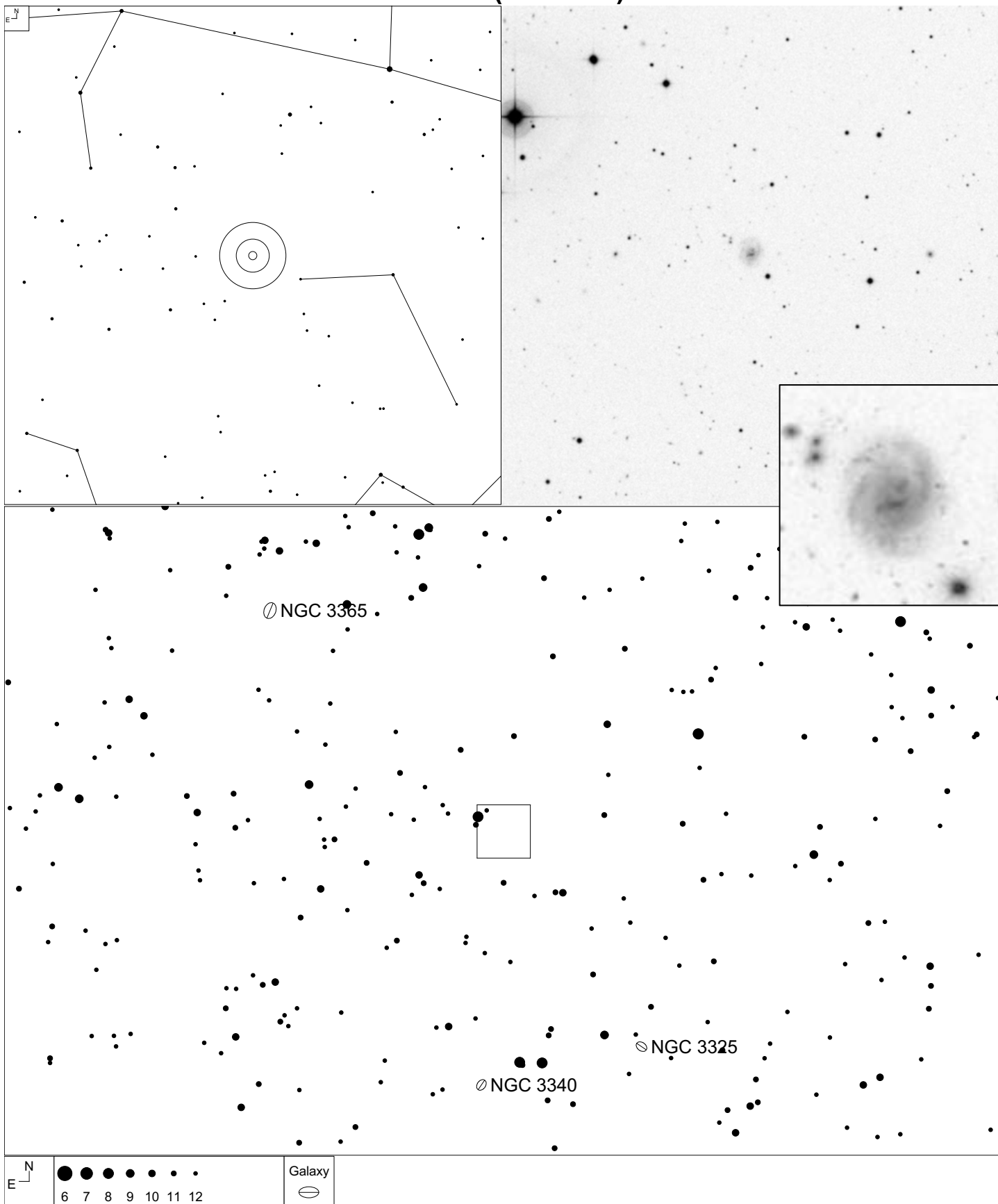
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 111  | 09 54 32.9 | -06 51 27 | G        | 14.02 | 17x12       | PC        |
| 111a | 09 54 32.9 | -06 51 30 | PofG     |       |           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

# VV 97 (Sextans)



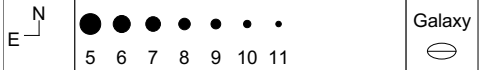
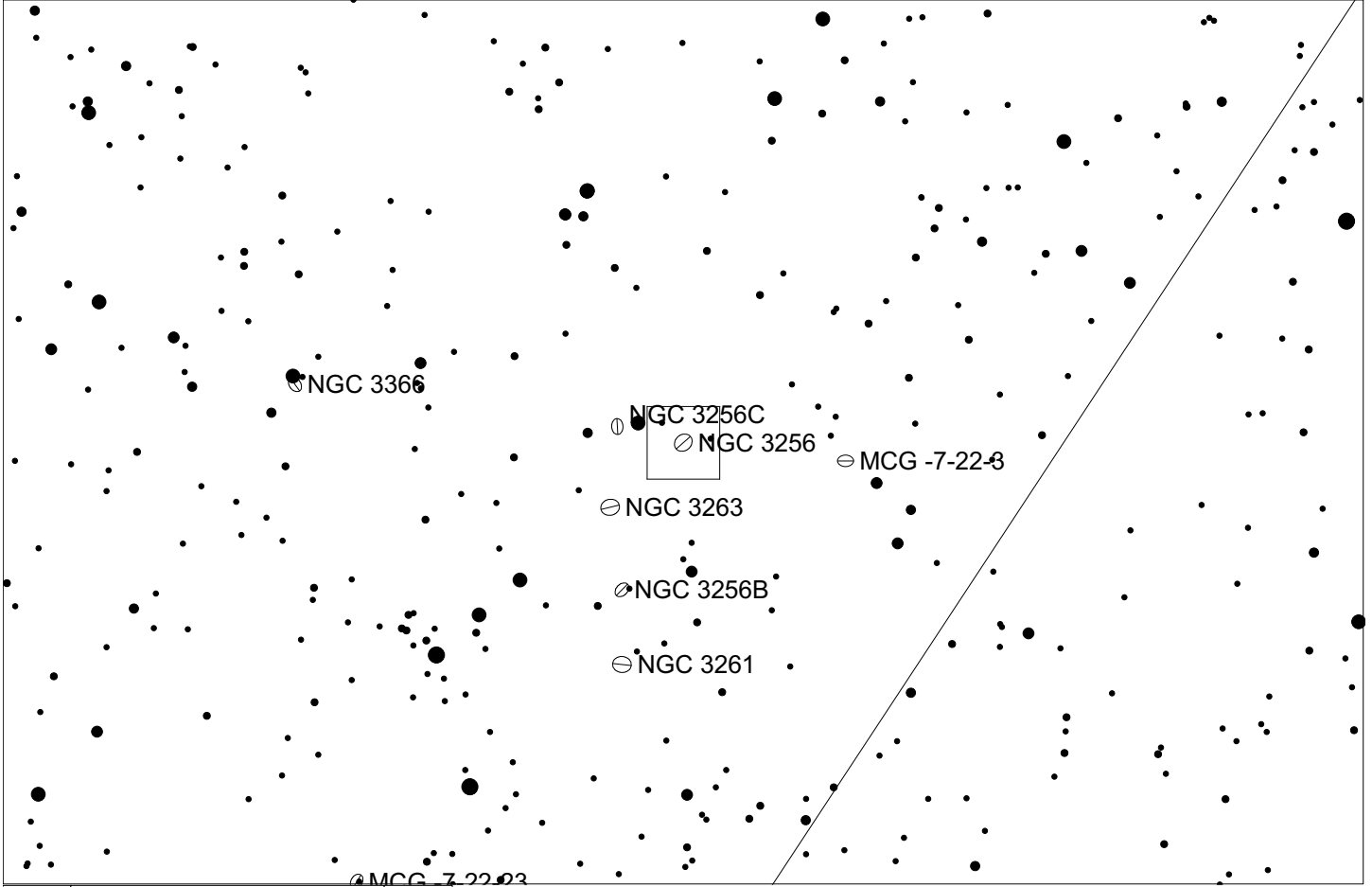
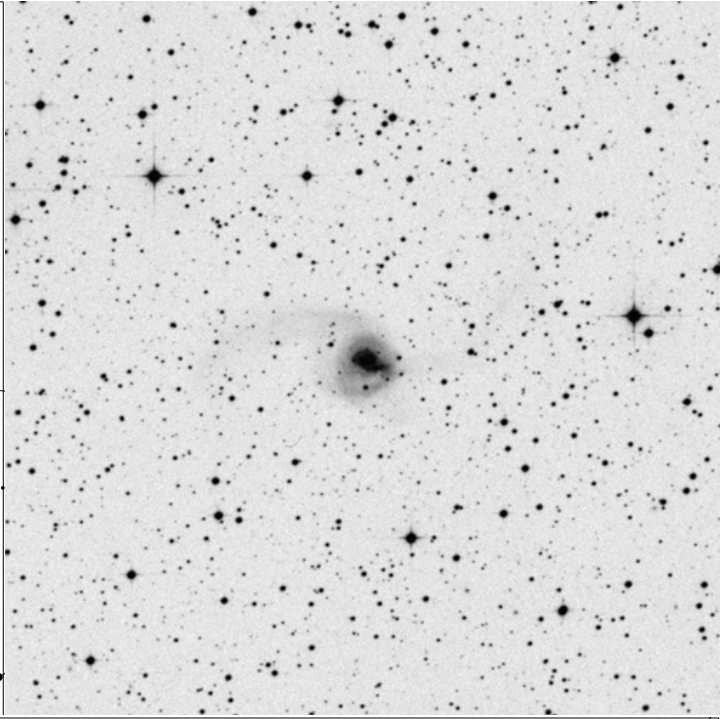
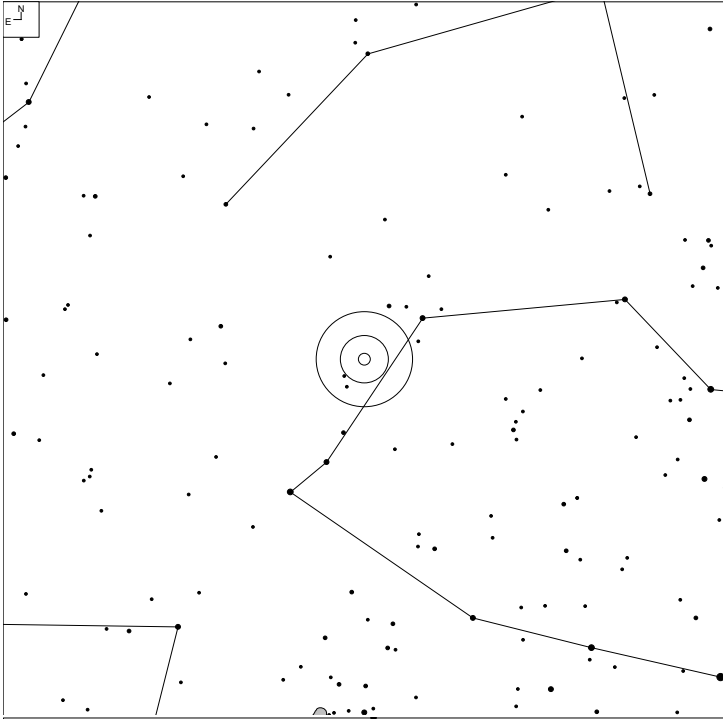
| VV | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|----|------------|-----------|----------|-------|-------------|-----------|
| 97 | 10 17 10.9 | -03 29 52 | G        | 13.68 | 23x12       | PC        |

# VV 113 (Sextans)



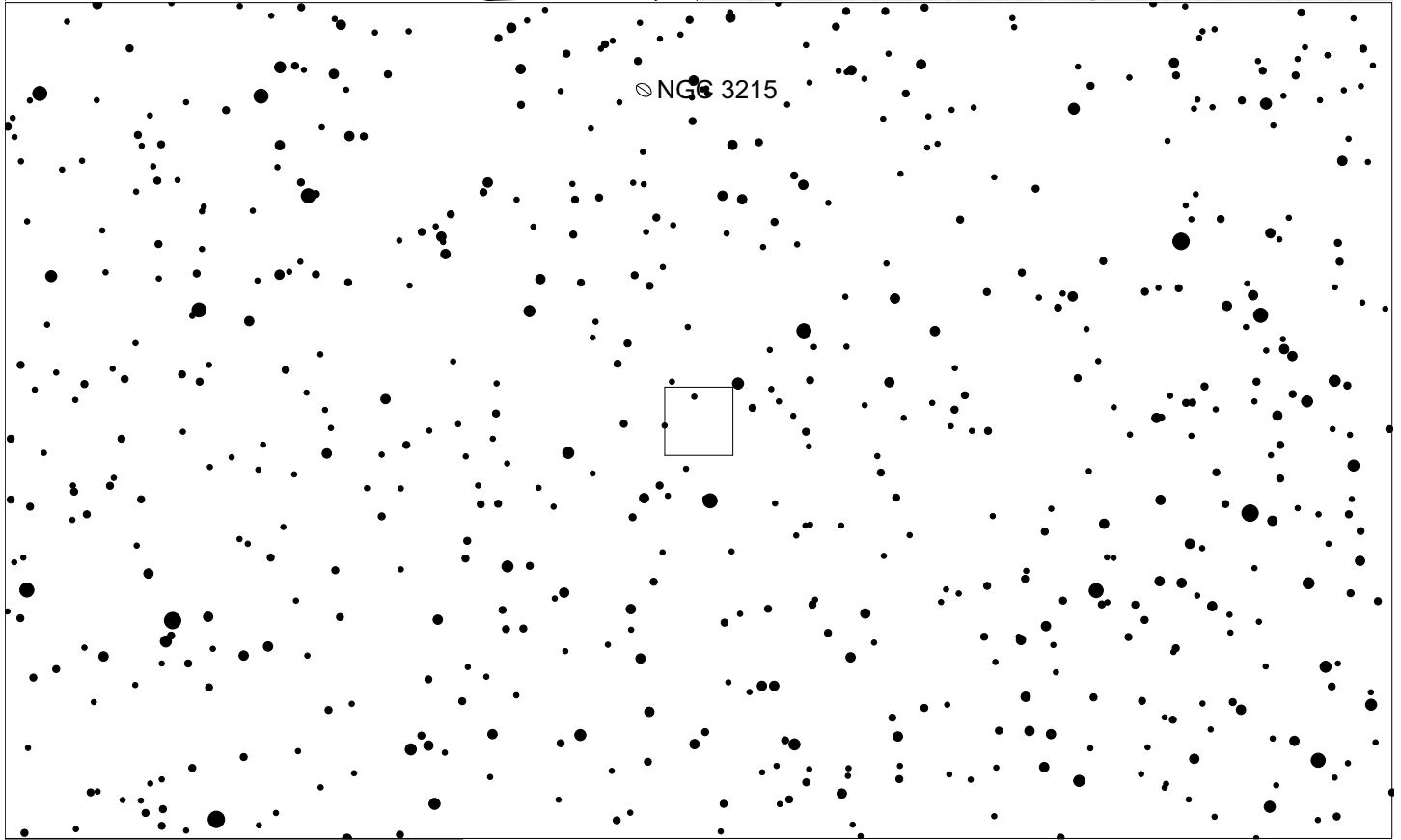
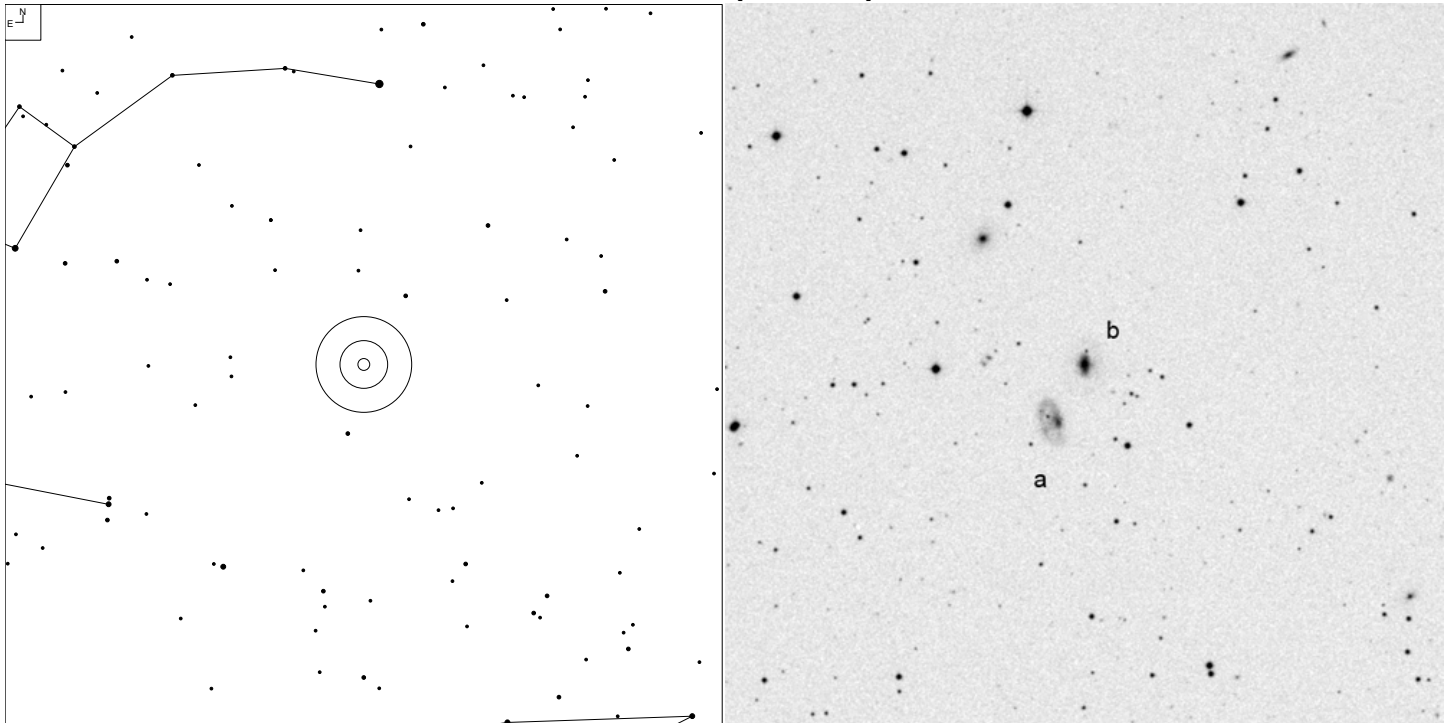
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 113 | 10 41 53.4 | +00 47 35 | G        | 14.9g | 9x8         | PC        |

# 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        |

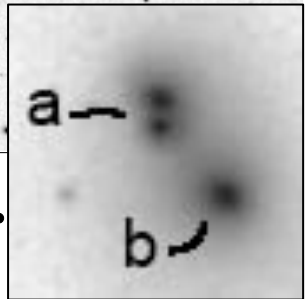
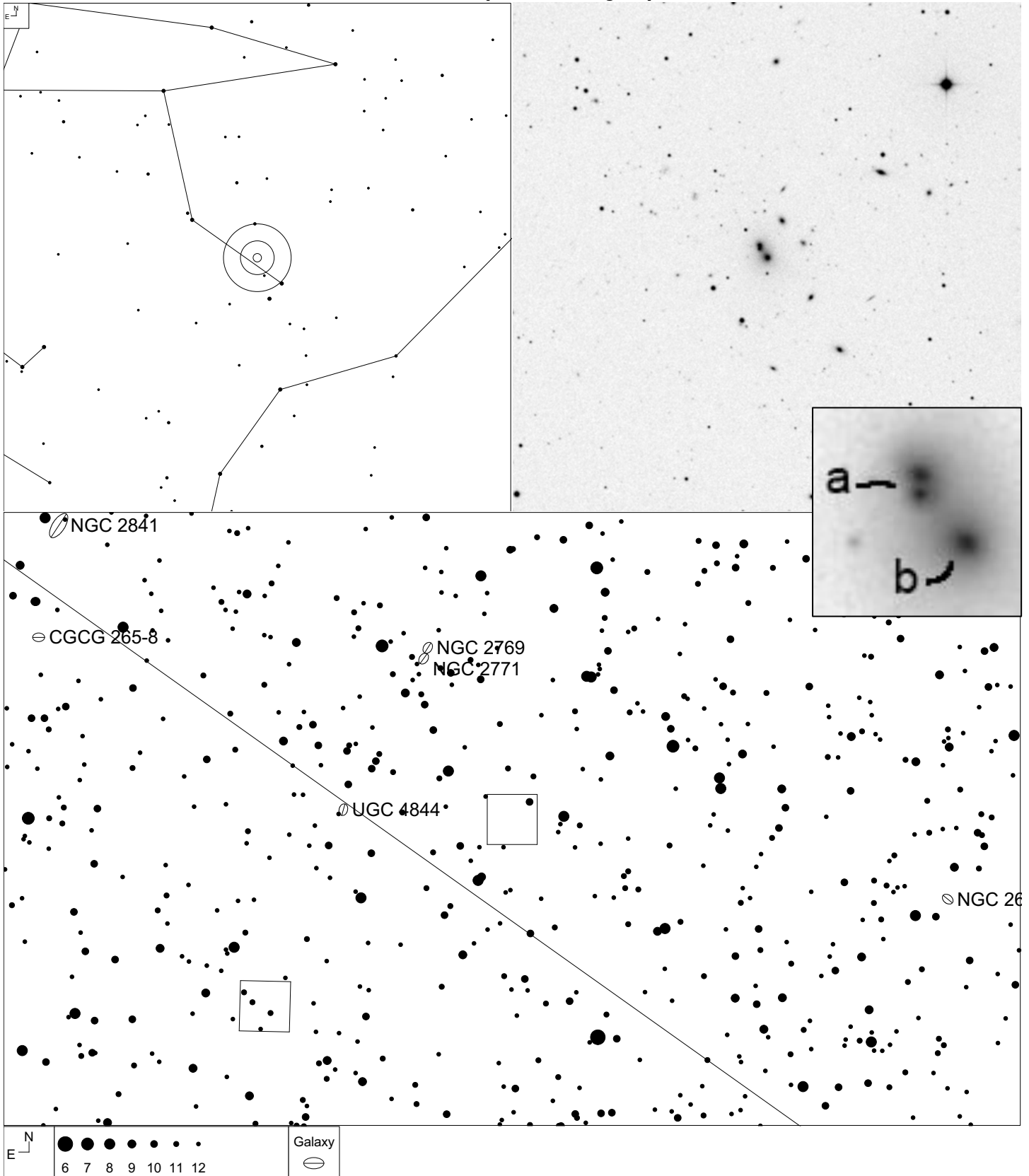
# VV 330 (Draco)



| 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        |           |

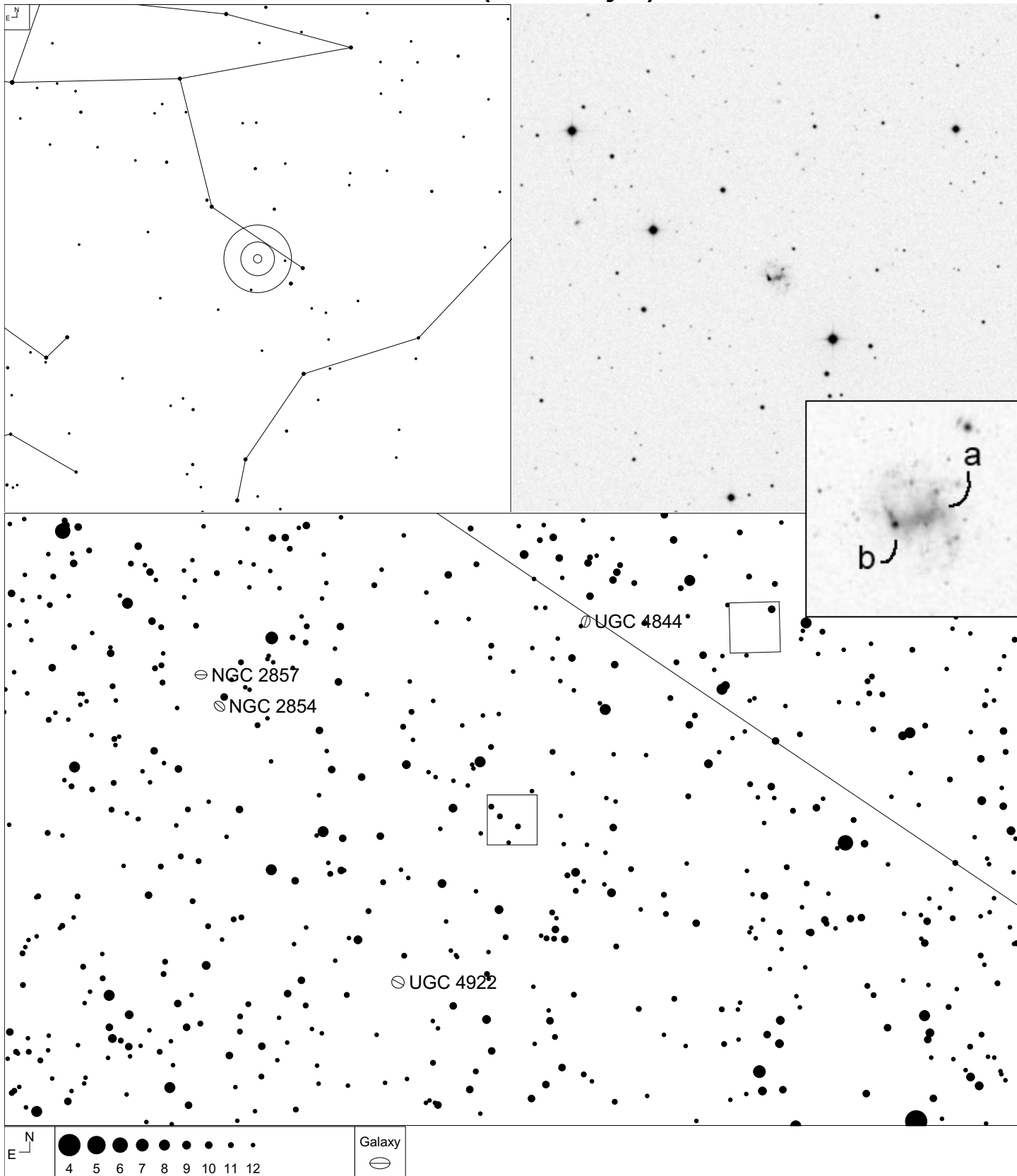


# VV 196 (Ursa Major)



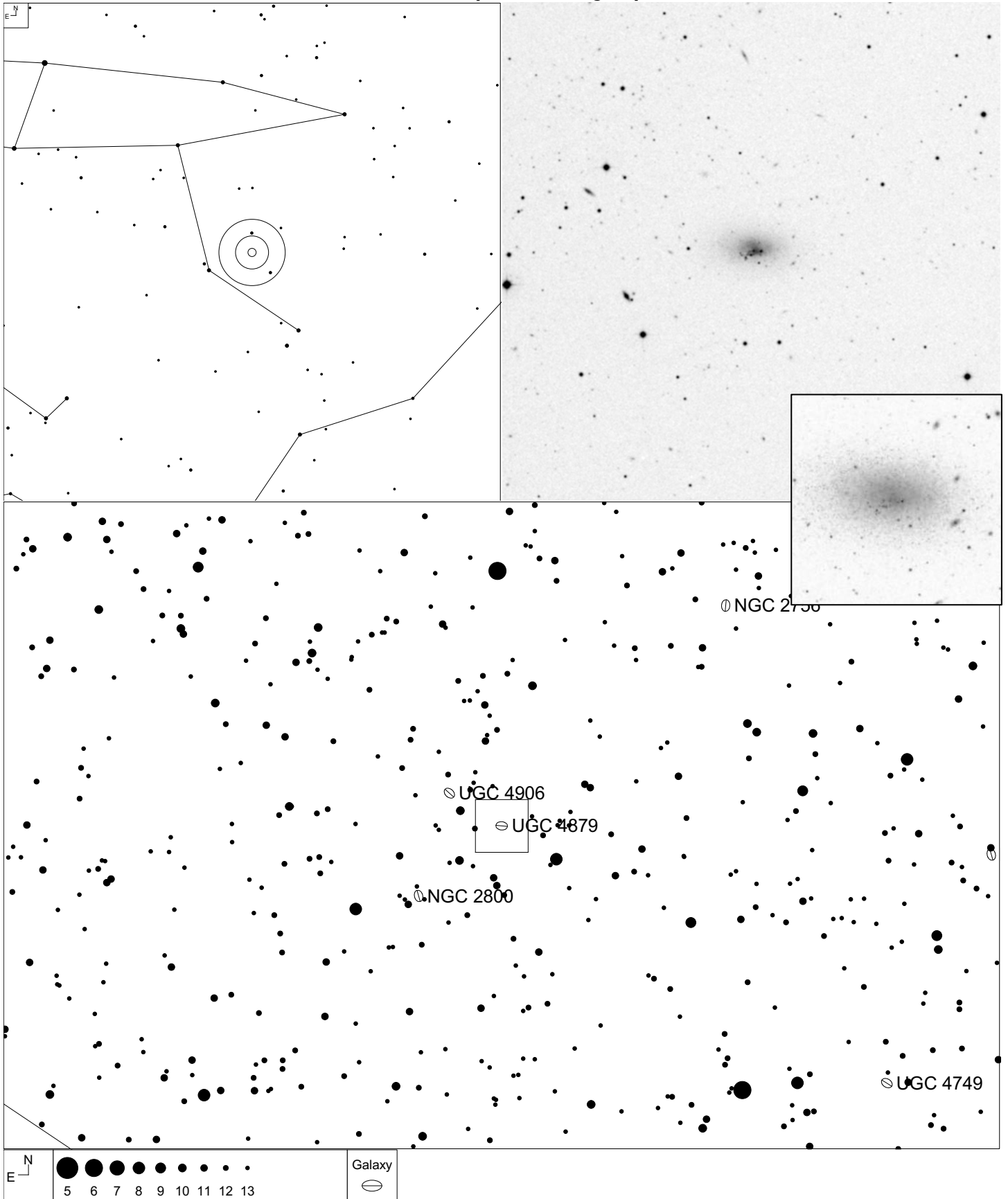
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 196  | 09 07 57.1 | +49 35 59 | GPair    |       |             | PKb       |
| 196b | 09 07 56.3 | +49 35 48 | G        | 15.0g | 9x6       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

# VV 131 (Ursa Major)



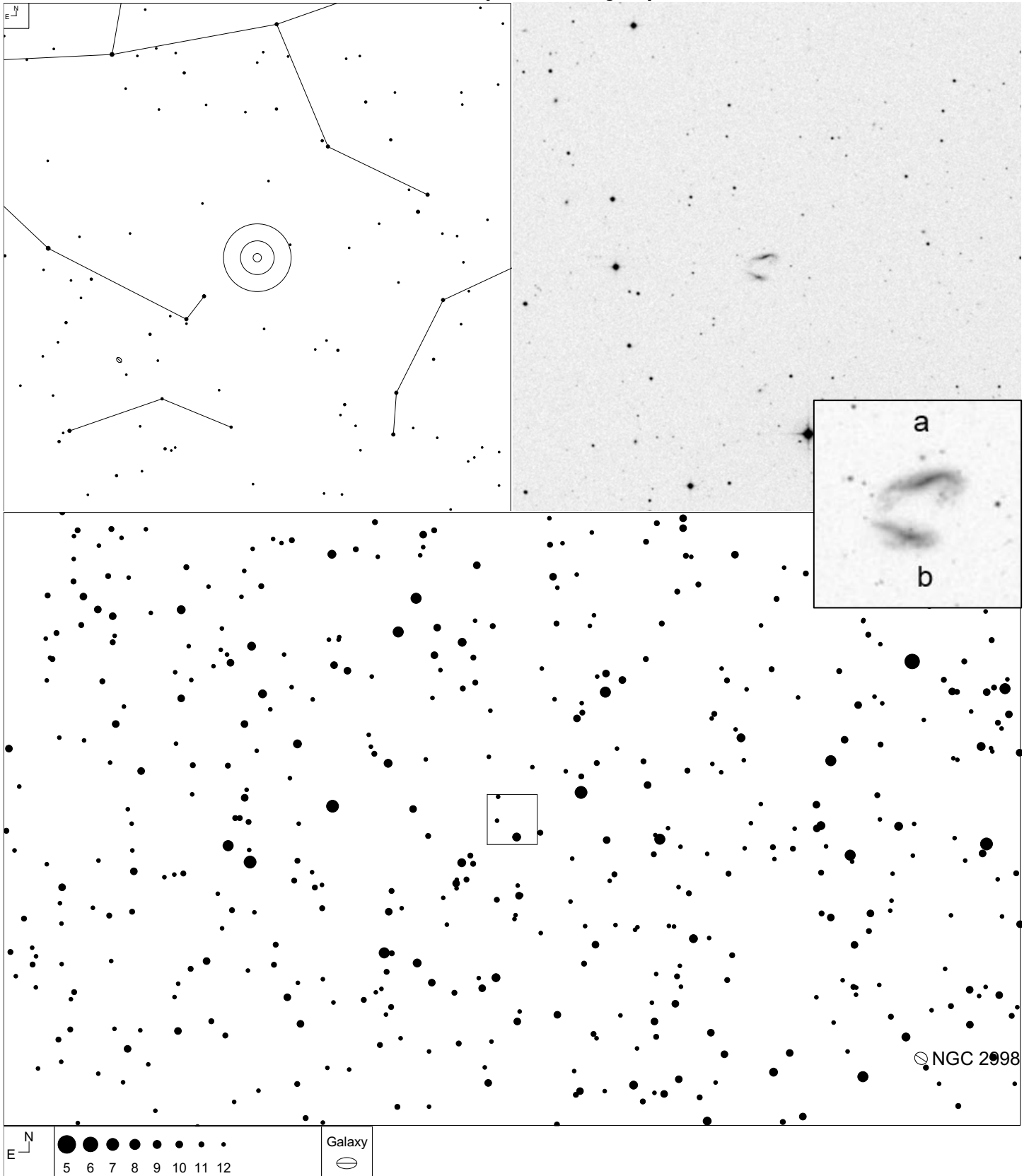
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 131  | 09 15 16.3 | +48 40 03 | GPair    |      |             | N         |
| 131a | 09 15 15.1 | +48 40 12 | G        | 16.5 | 11x9        | 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

# VV 124 (Ursa Major)



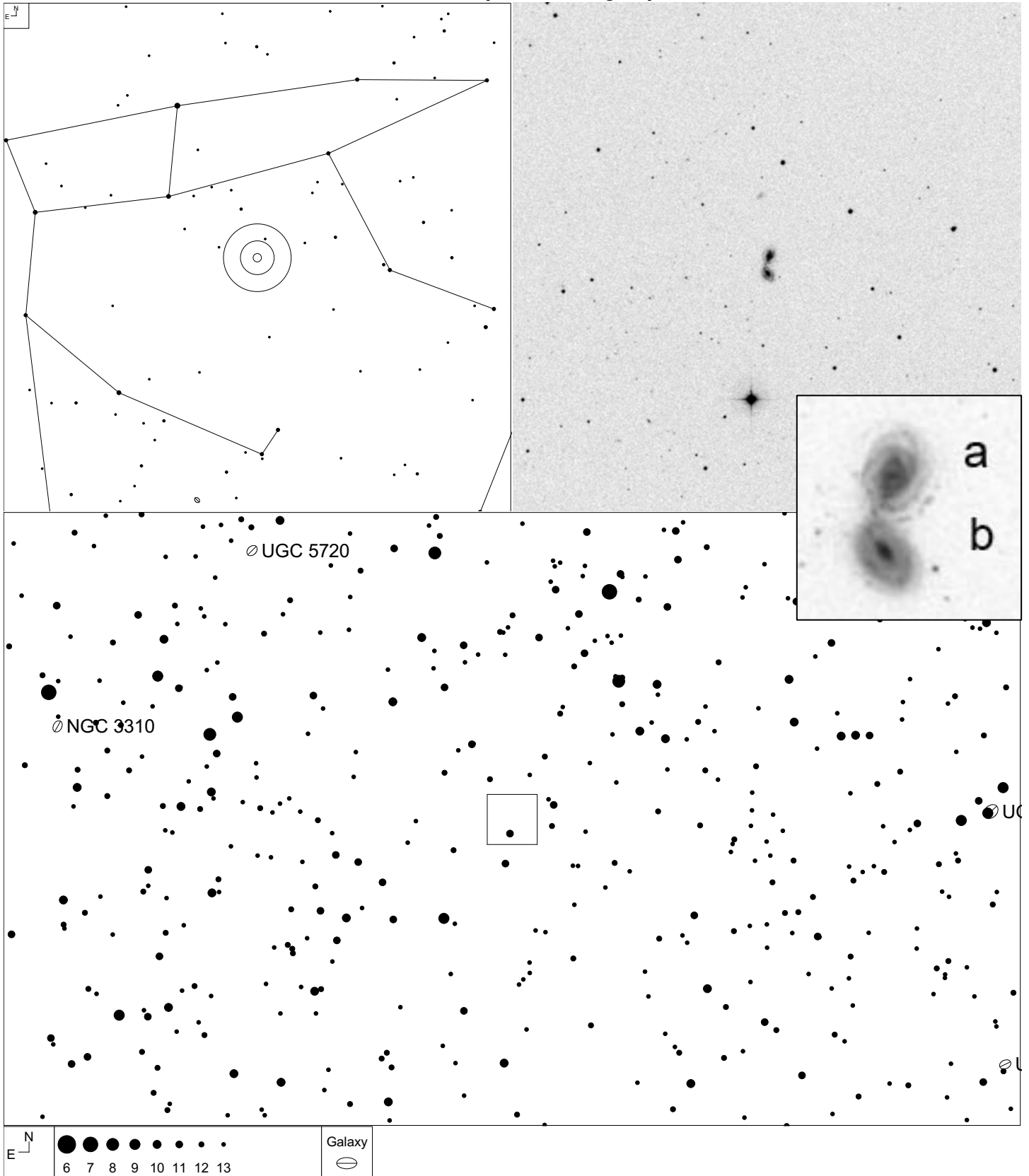
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 124 | 09 16 02.2 | +52 50 24 | G        | 13.78 | 17x13       | N         |

# VV 321 (Ursa Major)



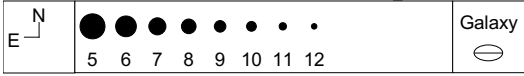
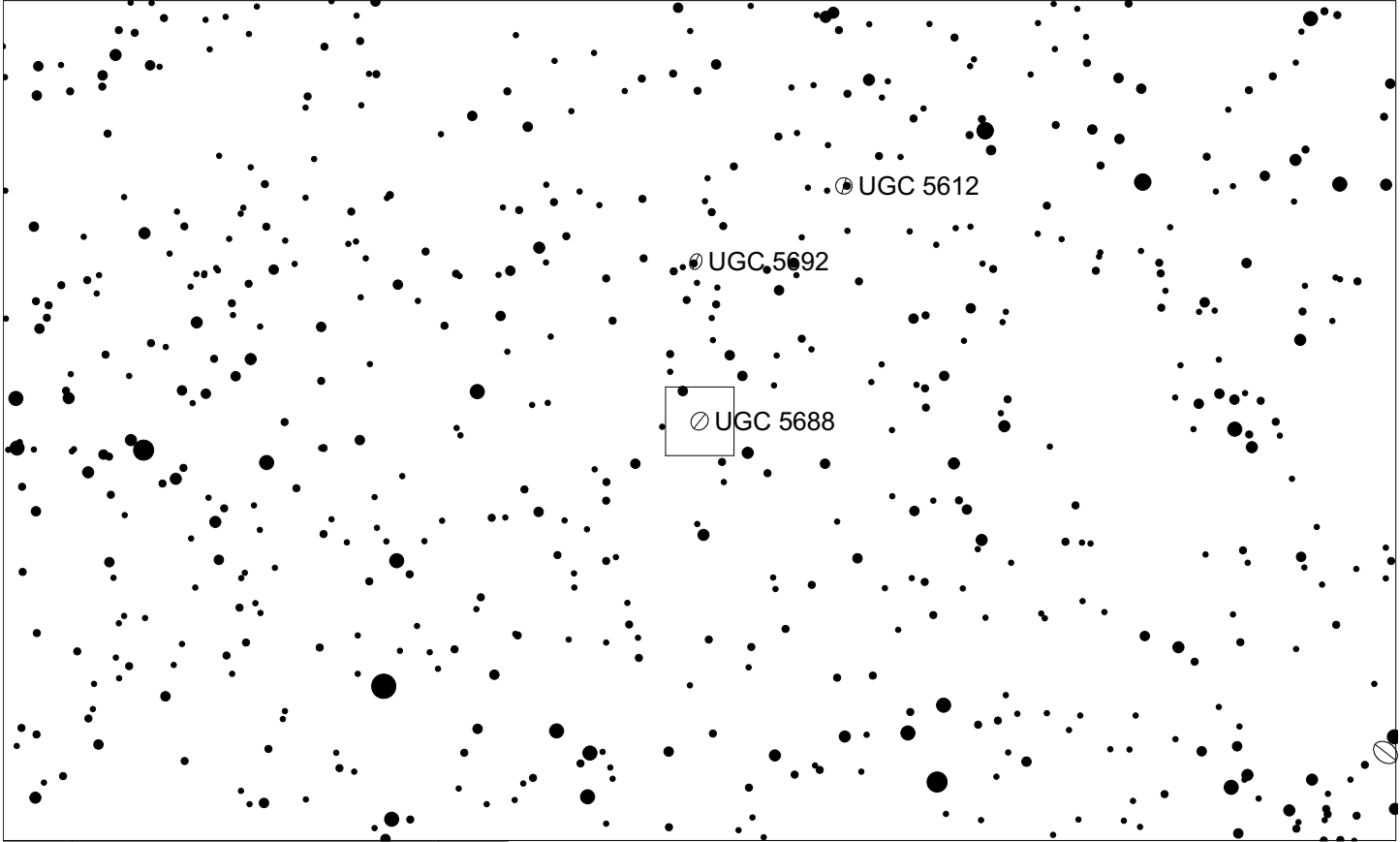
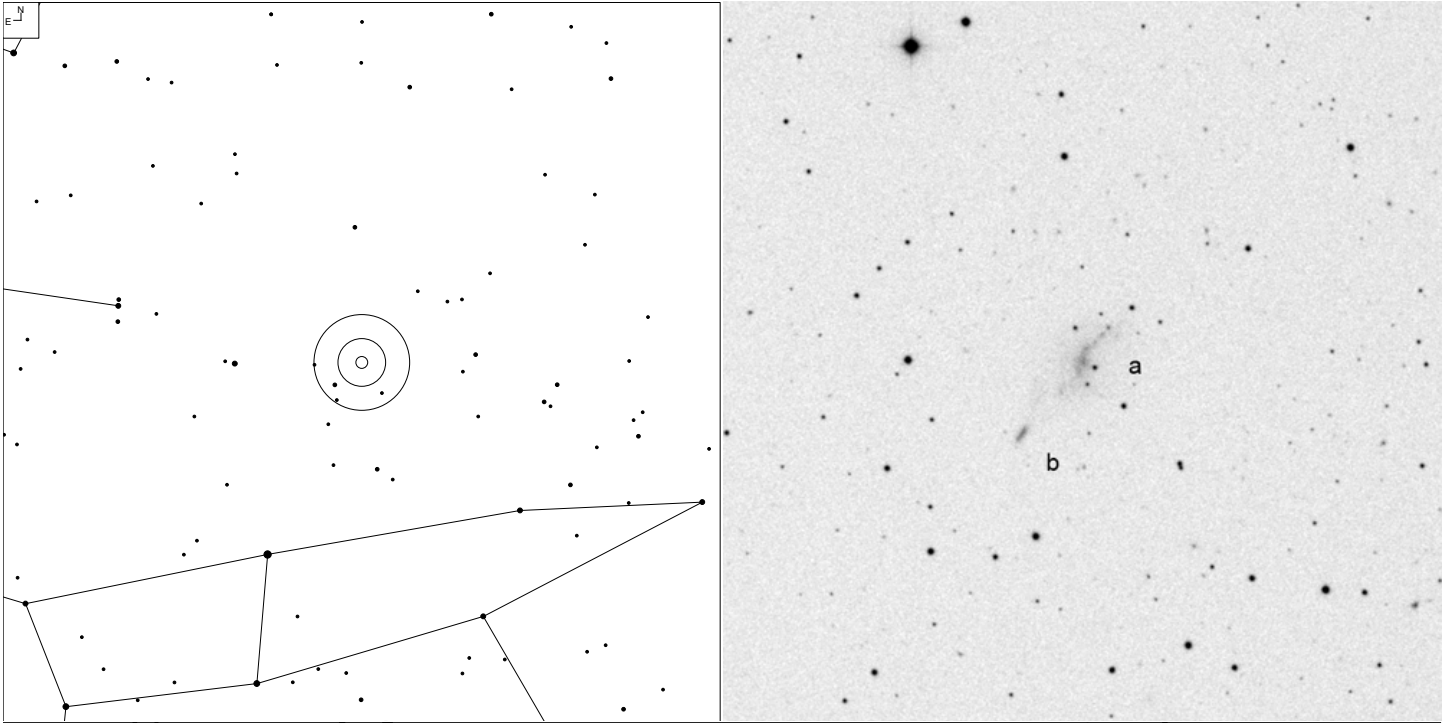
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 321  | 09 59 52.8 | +45 16 41 | GPair    |       |             | PDb       |
| 321a | 09 59 52.4 | +45 16 59 | G        | 15.8g | 11x3      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

# VV 312 (Ursa Major)



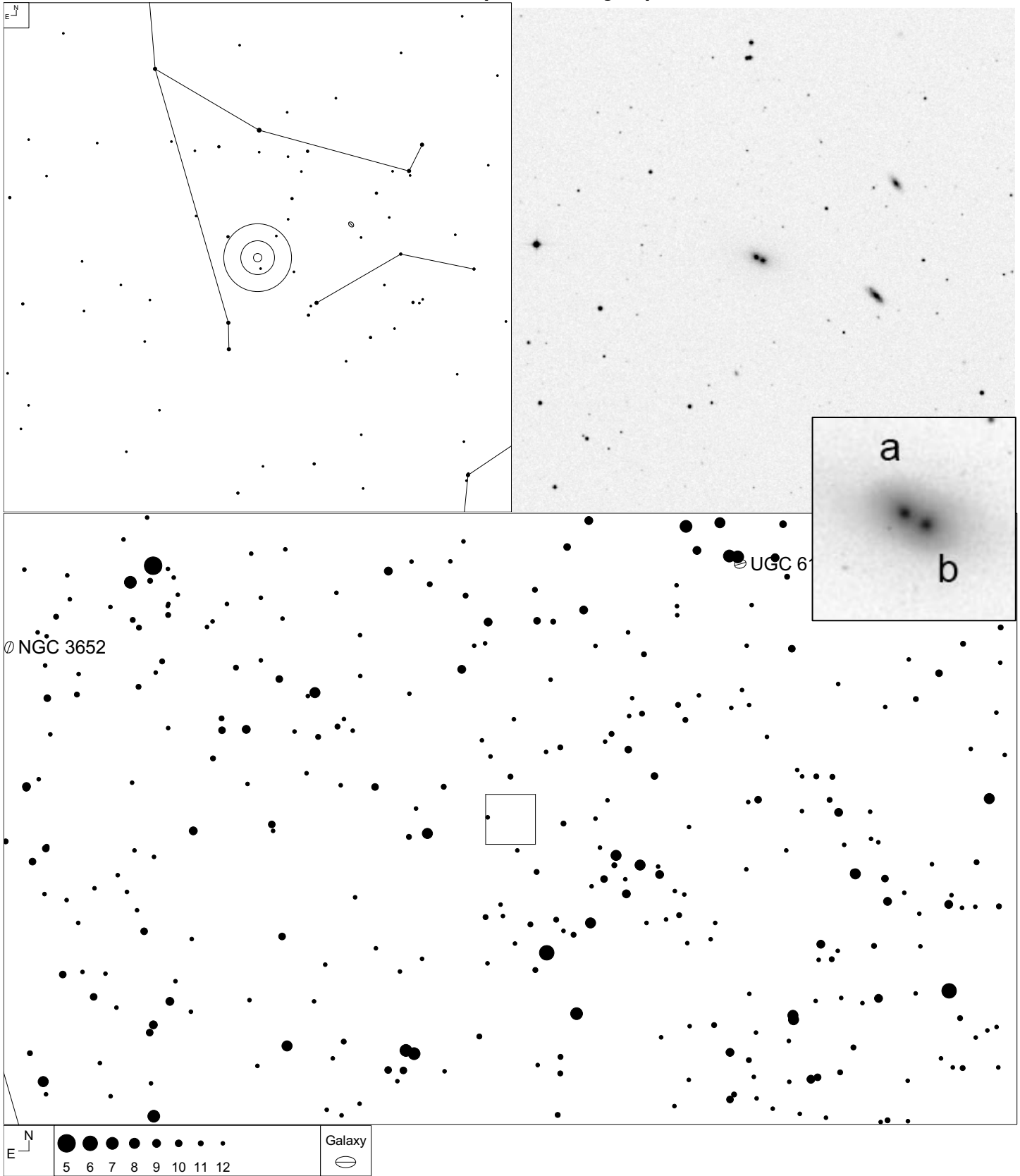
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 312  | 10 23 47.1 | +53 06 12 | GPair    |      |             | PDb       |
| 312a | 10 23 46.9 | +53 06 28 | G        | 13.8 | 8x7         |           |
| 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)



NGC 3652

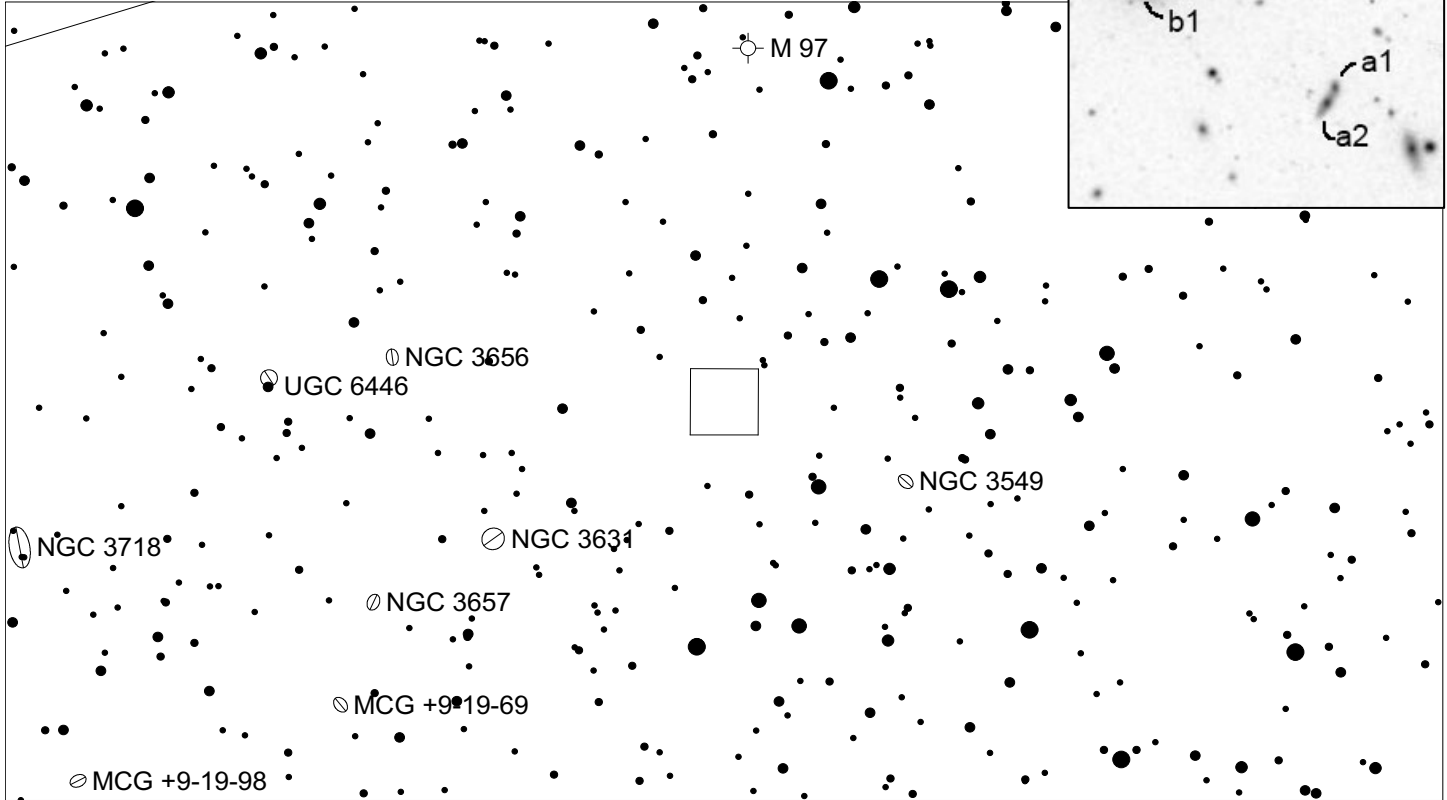
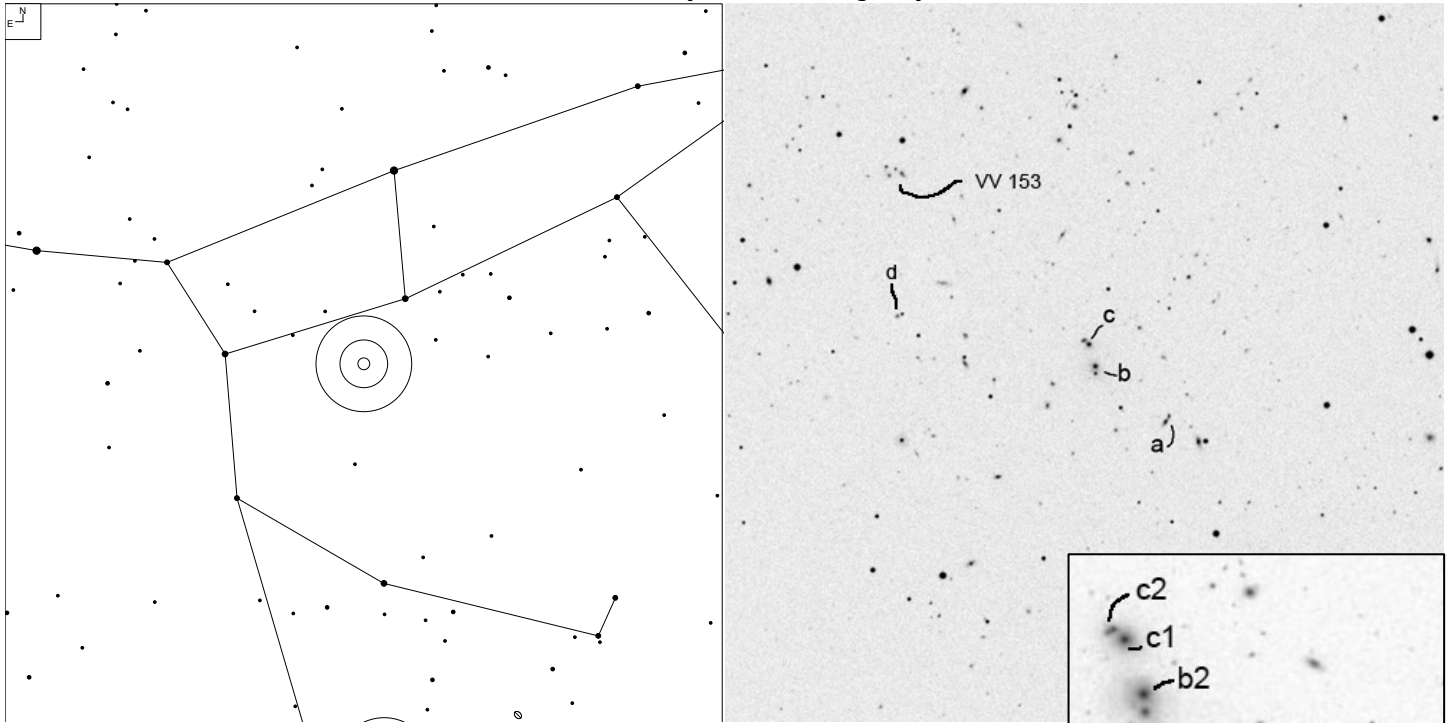
UGC 61

a

b

| 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         |           |

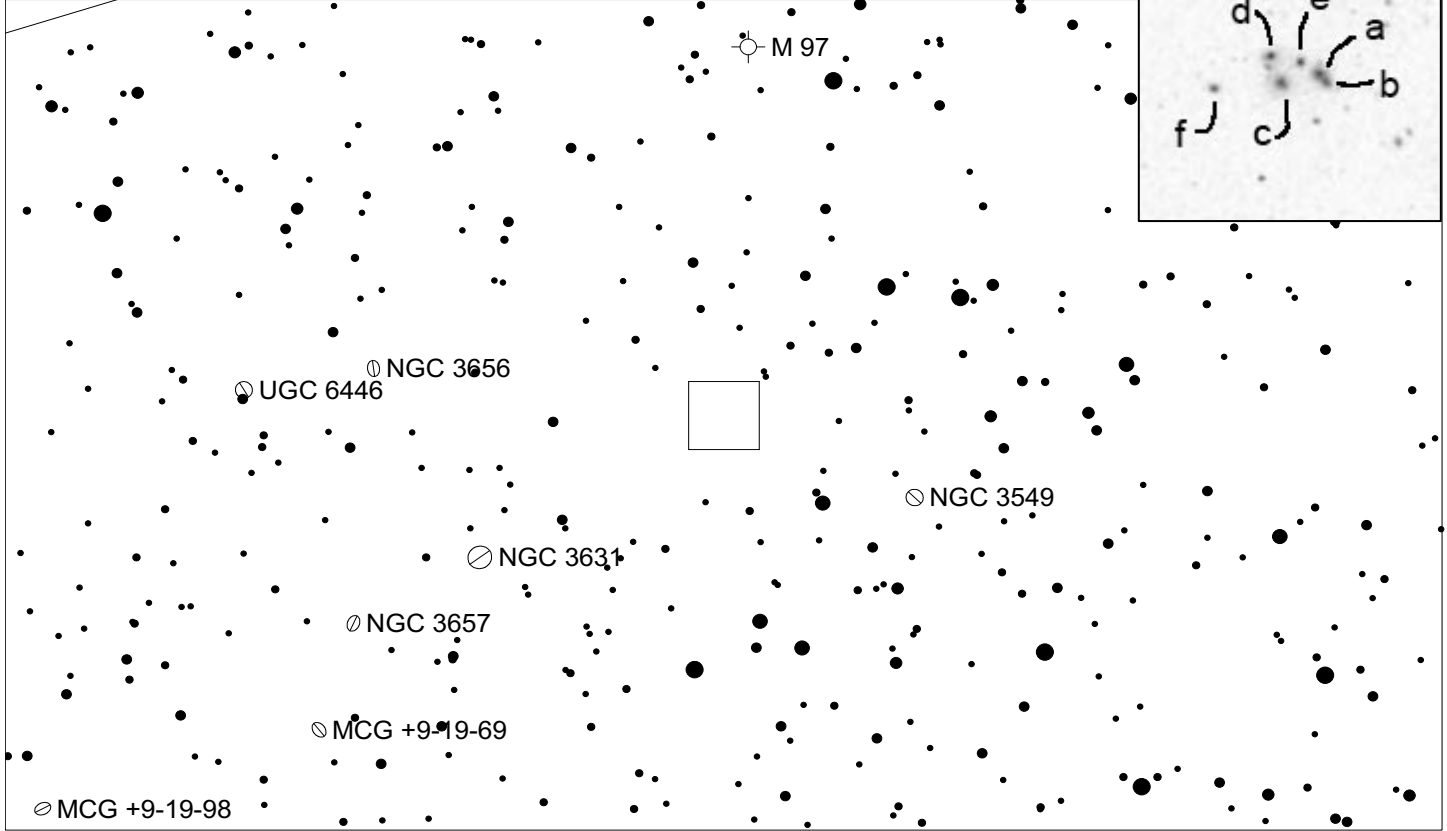
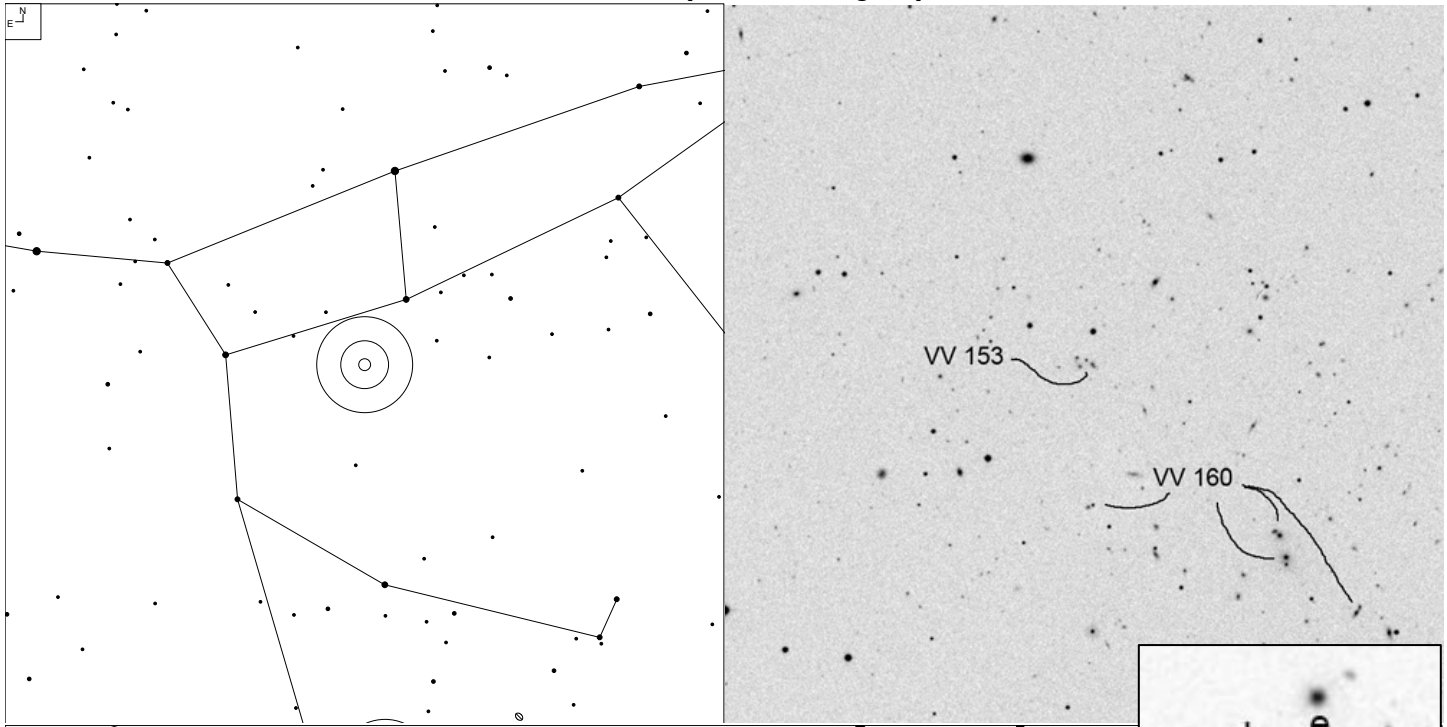
# VV 160 (Ursa Major)



| 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        |       |             |           |

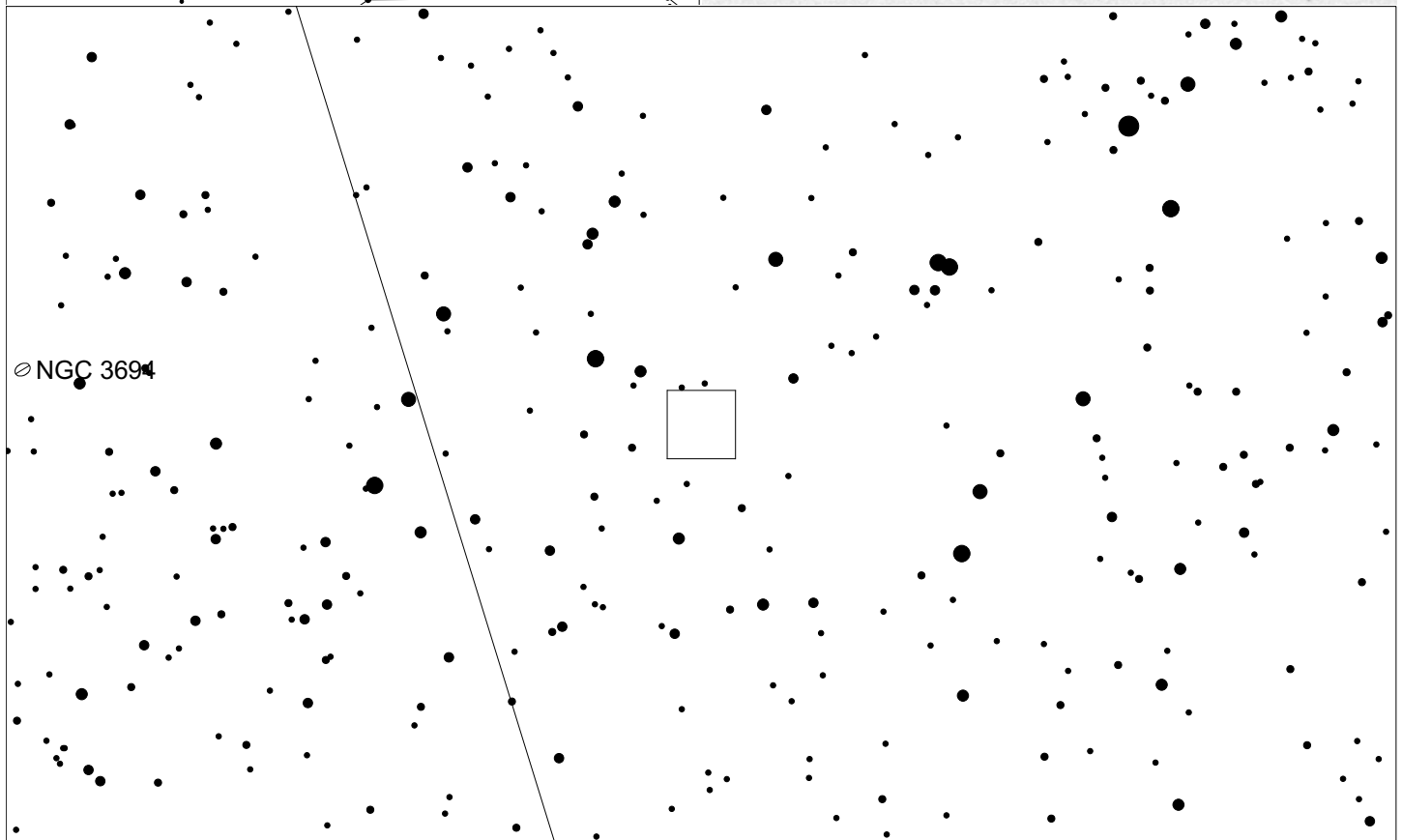
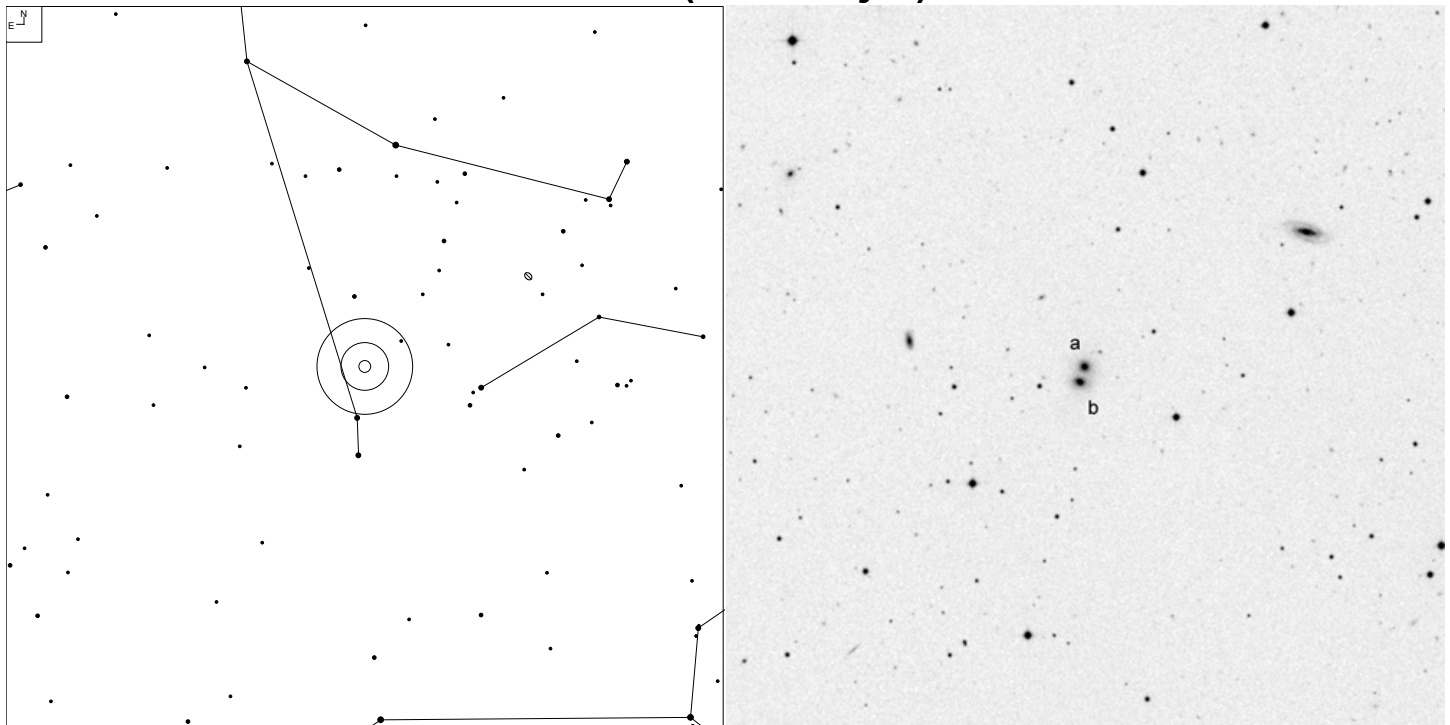


# VV 153 (Ursa Major)



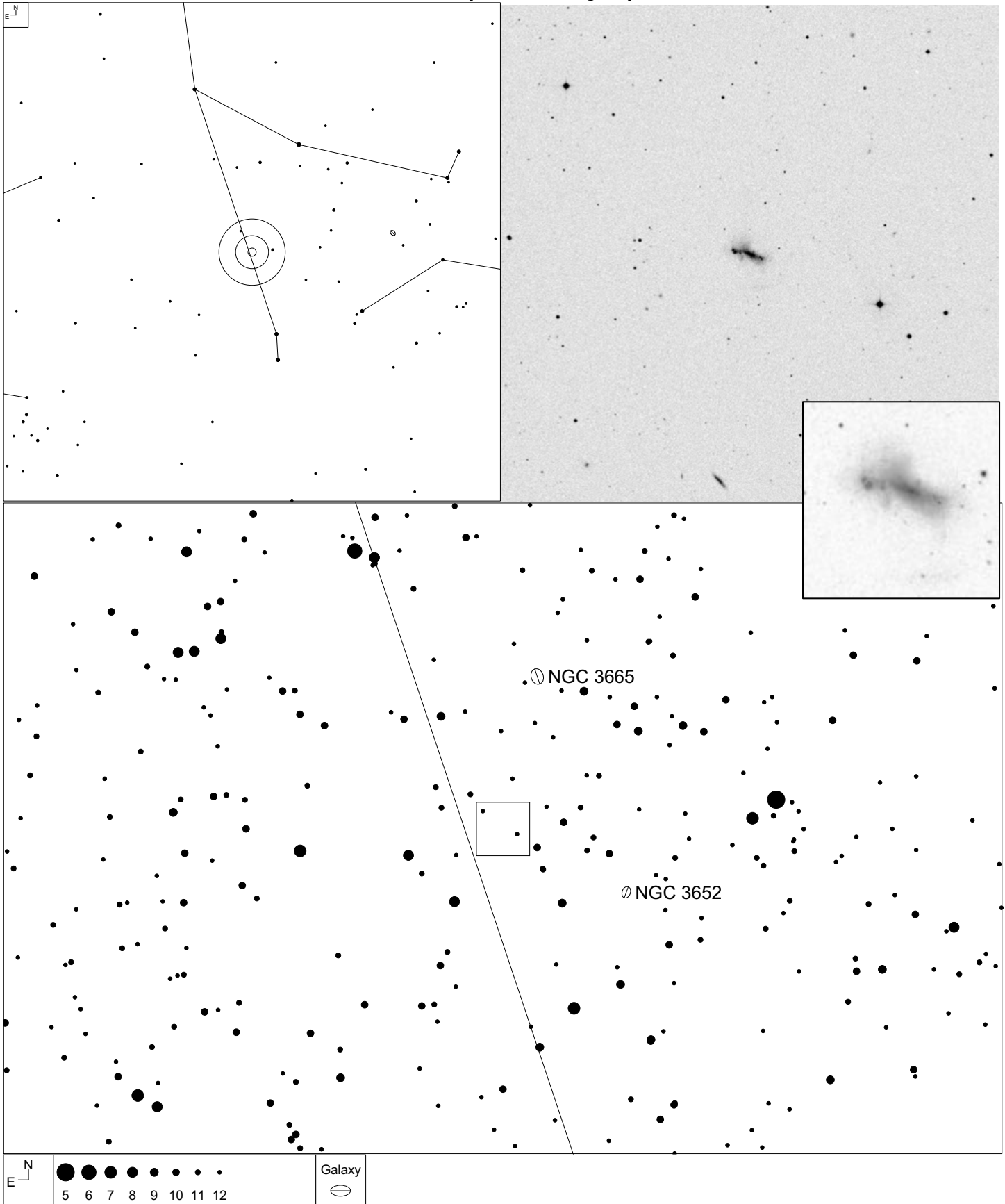
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 153  | 11 15 53.2 | +53 45 12 | GGroup   |       |             | N         |
| 153b | 11 15 51.8 | +53 45 10 | G        |       |             |           |
| 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)



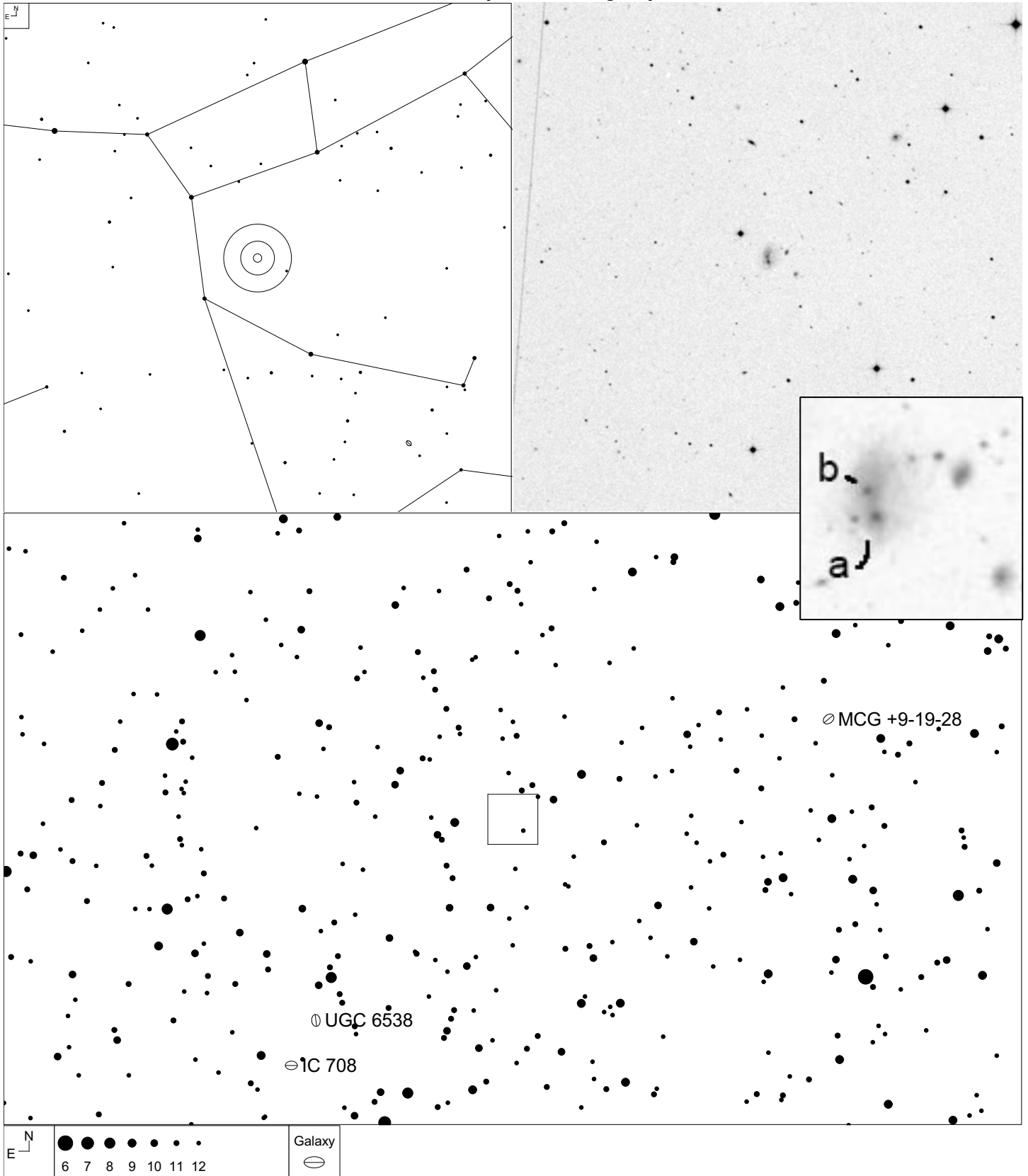
⊙ NGC 3665

⊙ NGC 3652



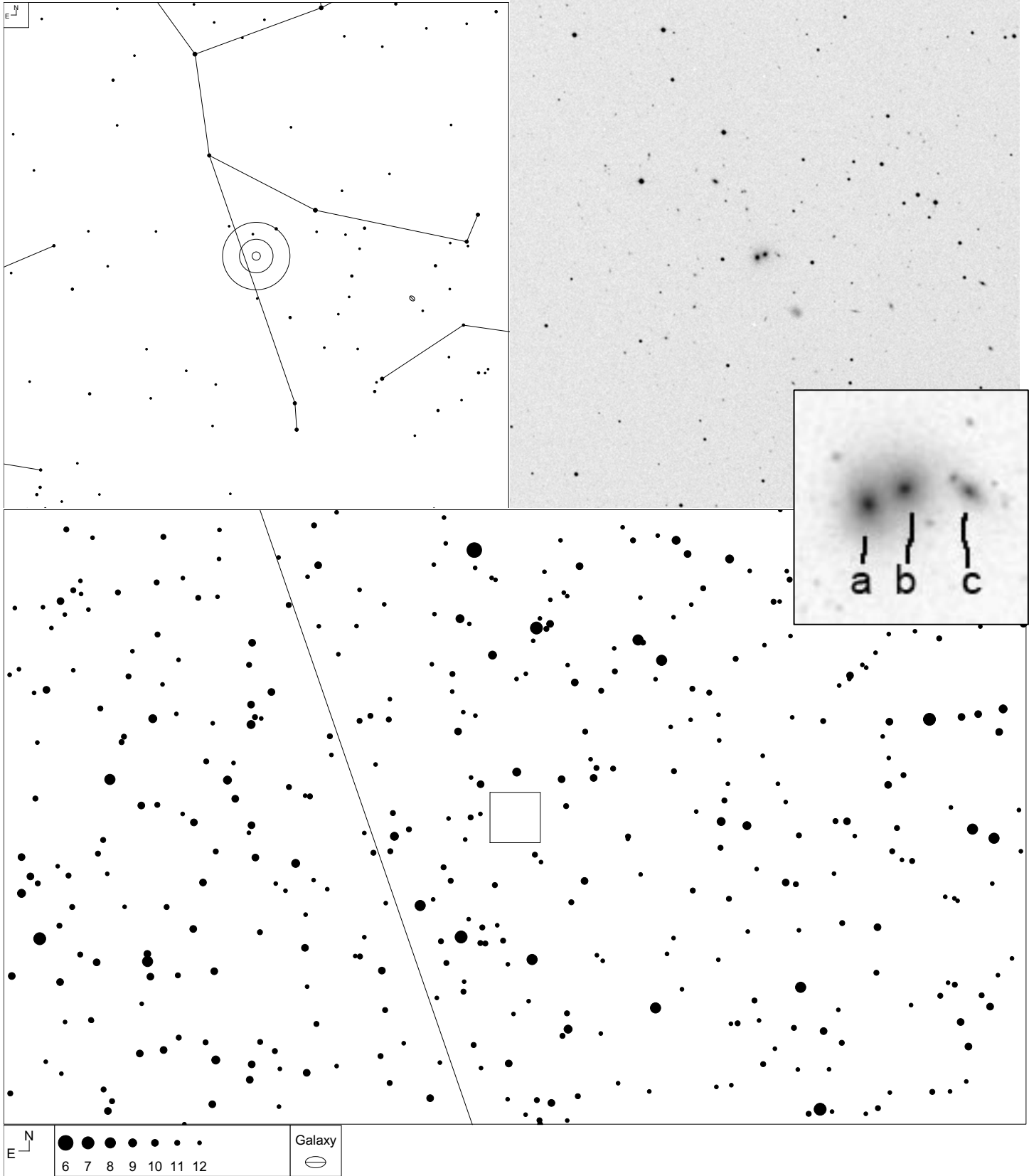
| VV | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|----|------------|-----------|----------|-------|-------------|-----------|
| 87 | 11 25 31.8 | +38 03 38 | G        | 14.9g | 16x4        | PC        |

# VV 265 (Ursa Major)



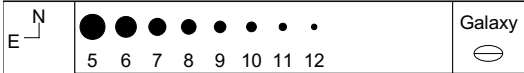
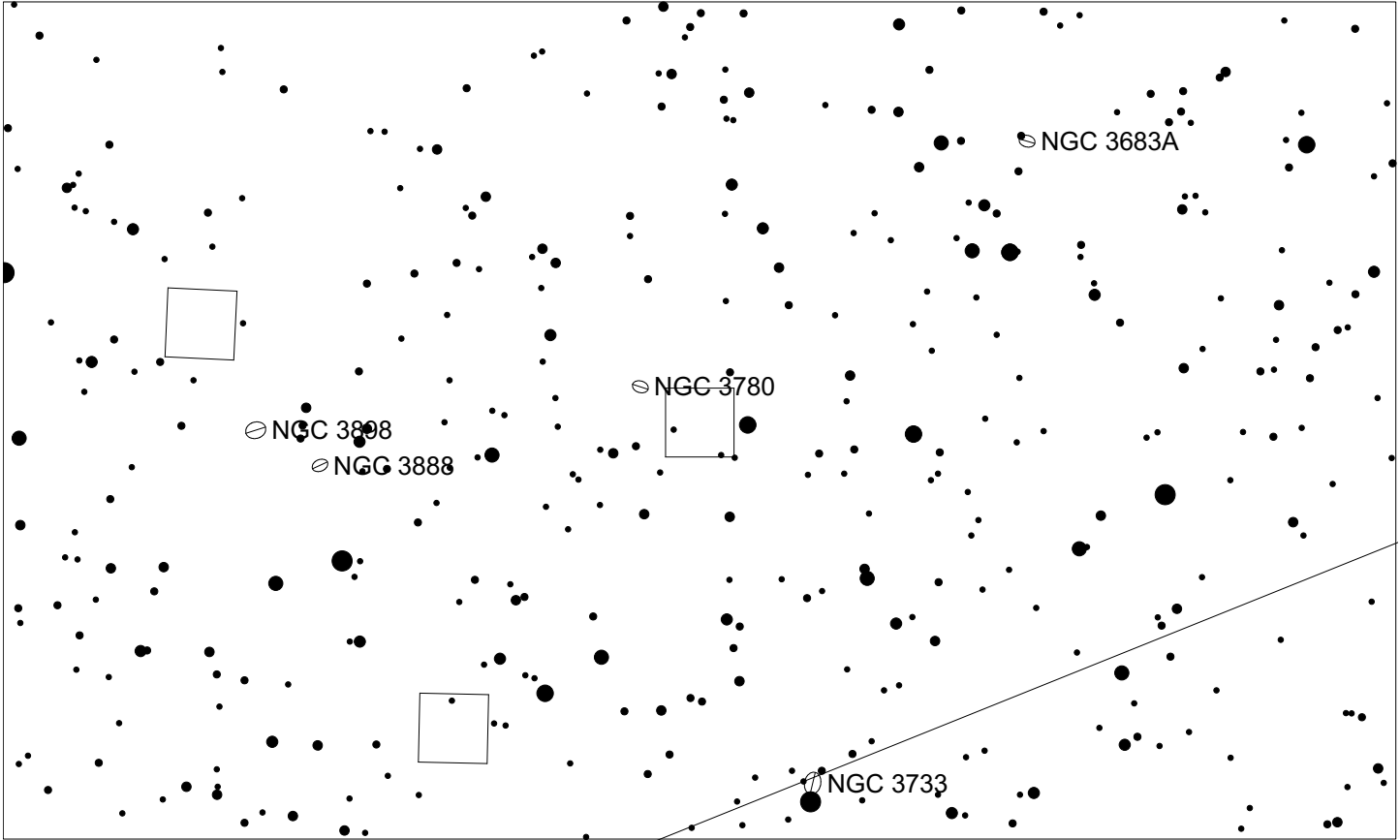
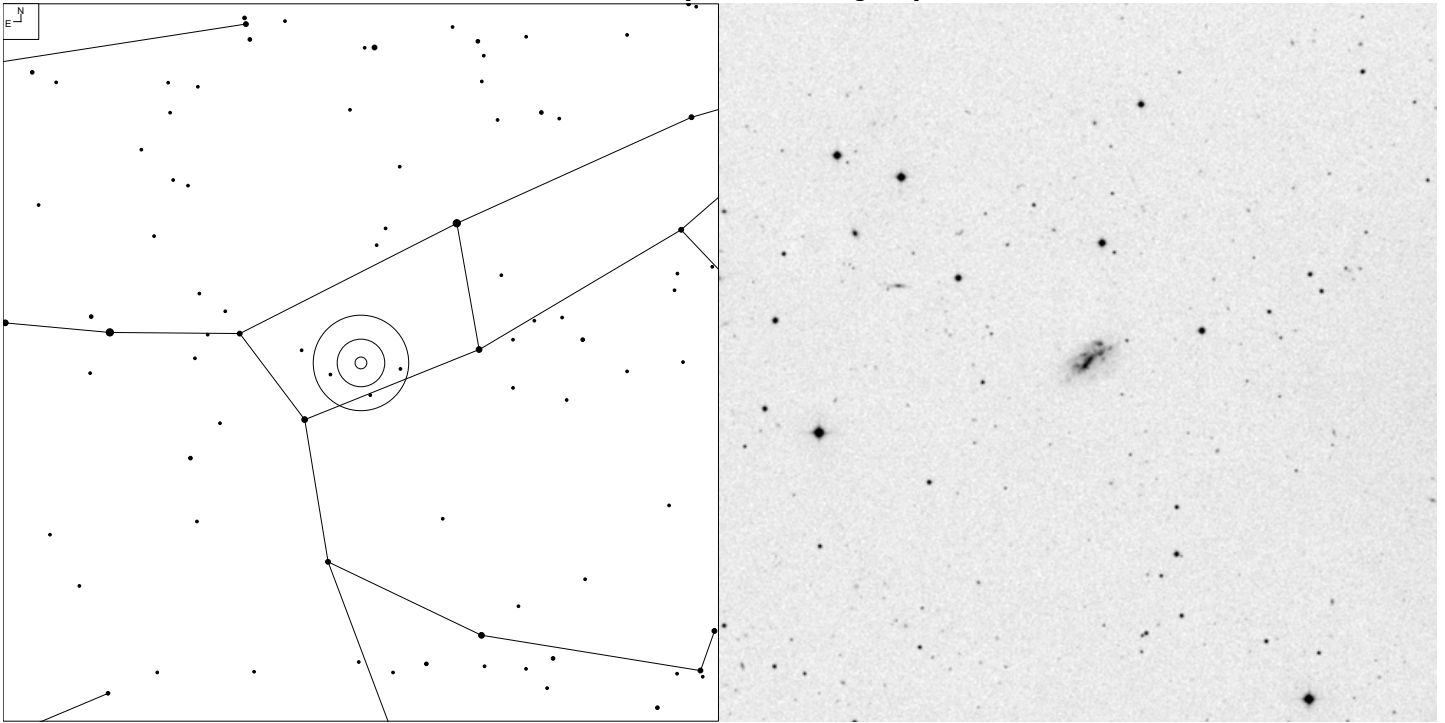
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 265  | 11 27 21.3 | +50 16 39 | GPair    |       |             | PK        |
| 265a | 11 27 21.1 | +50 16 33 | G        | 16.8g | 7x4       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

# VV 60 (Ursa Major)



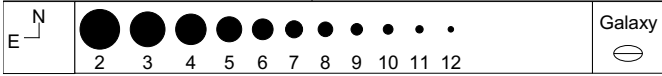
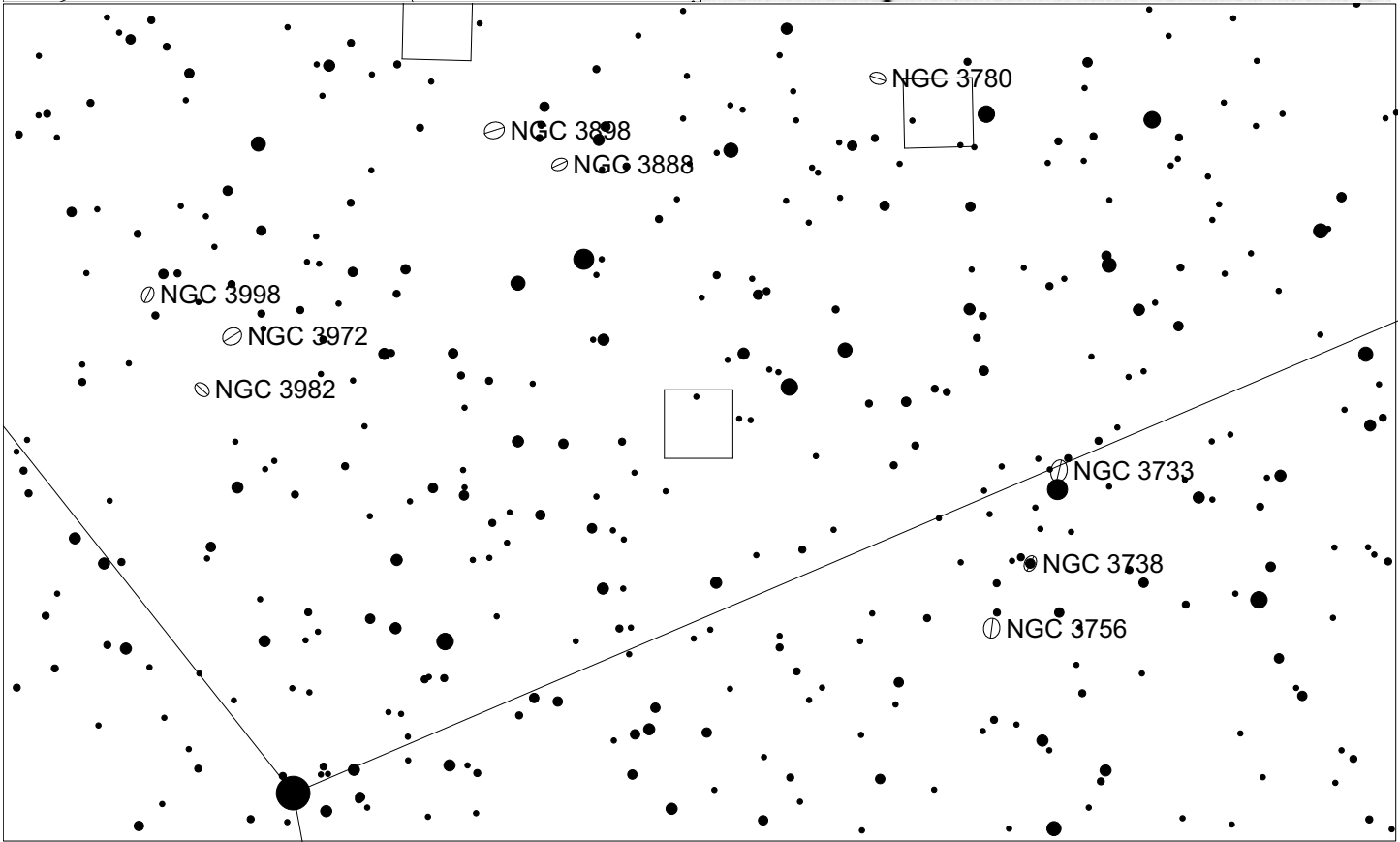
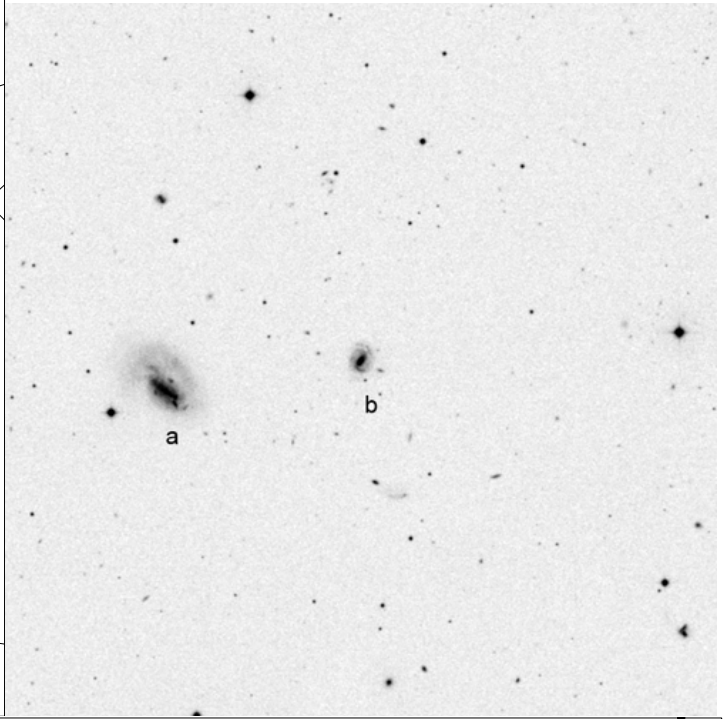
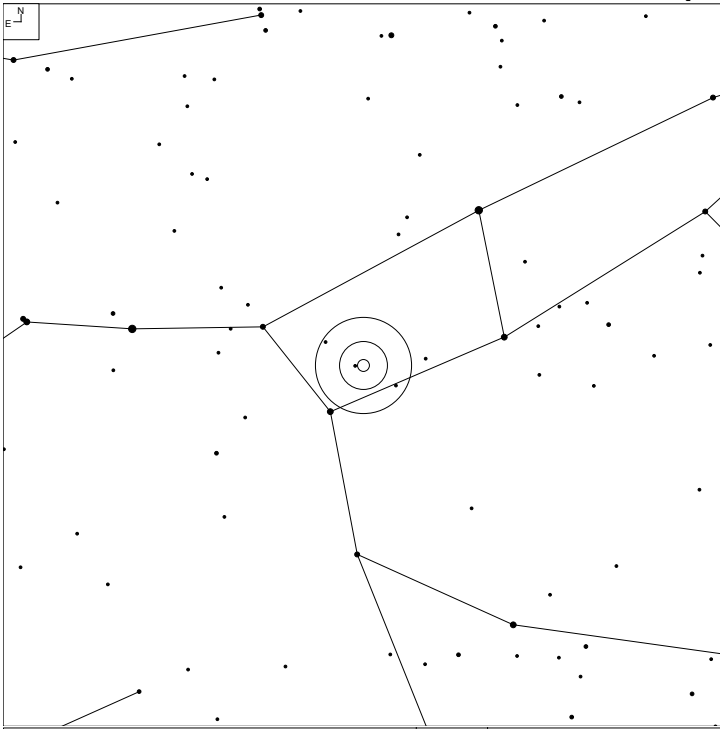
| VV  | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|------|-------------|-----------|
| 60  | 11 29 23.9 | +41 52 16 | GTrpl    |      |             | NNN       |
| 60c | 11 29 22.2 | +41 52 18 | G        | 16.5 | 2x1         |           |
| 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)



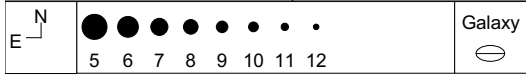
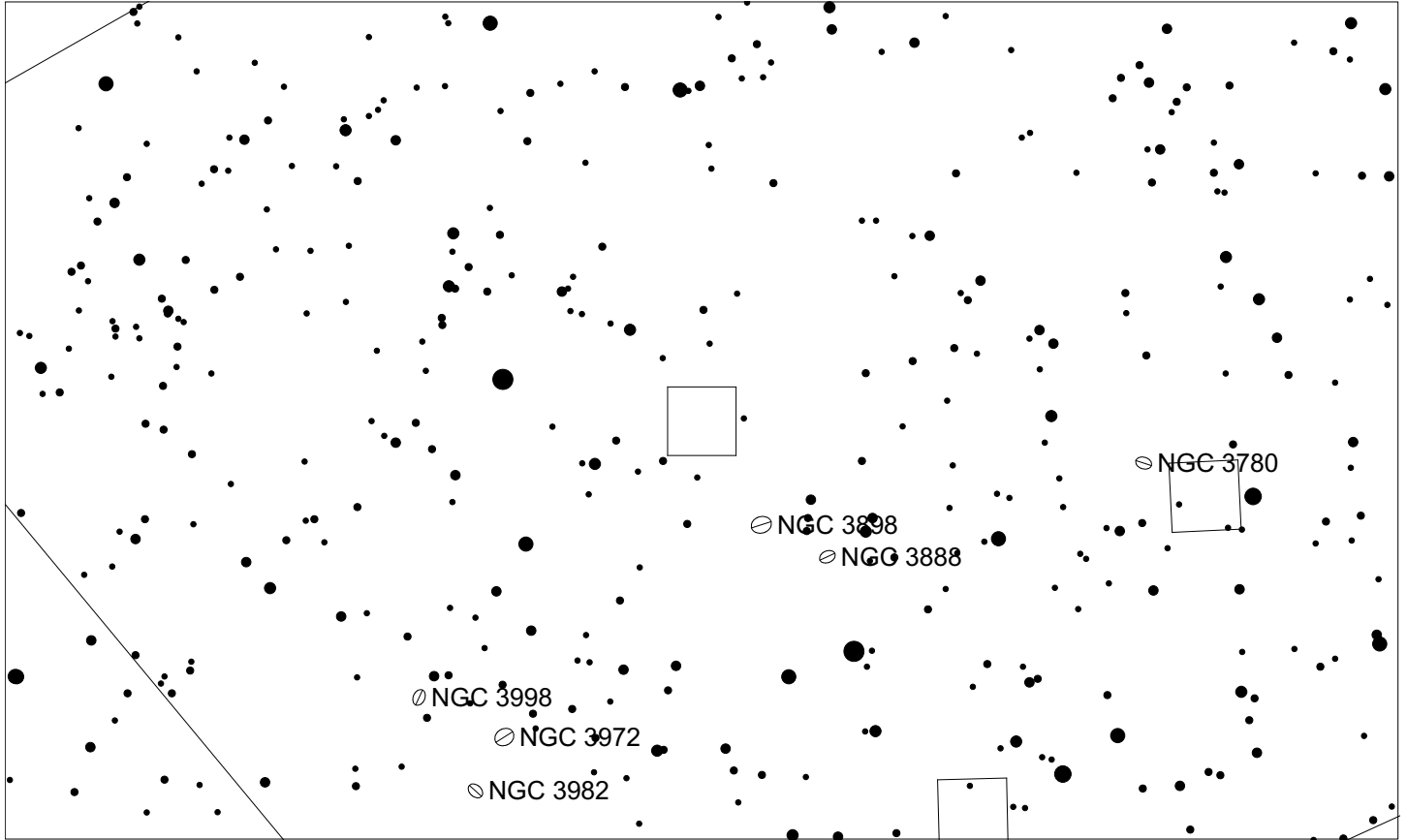
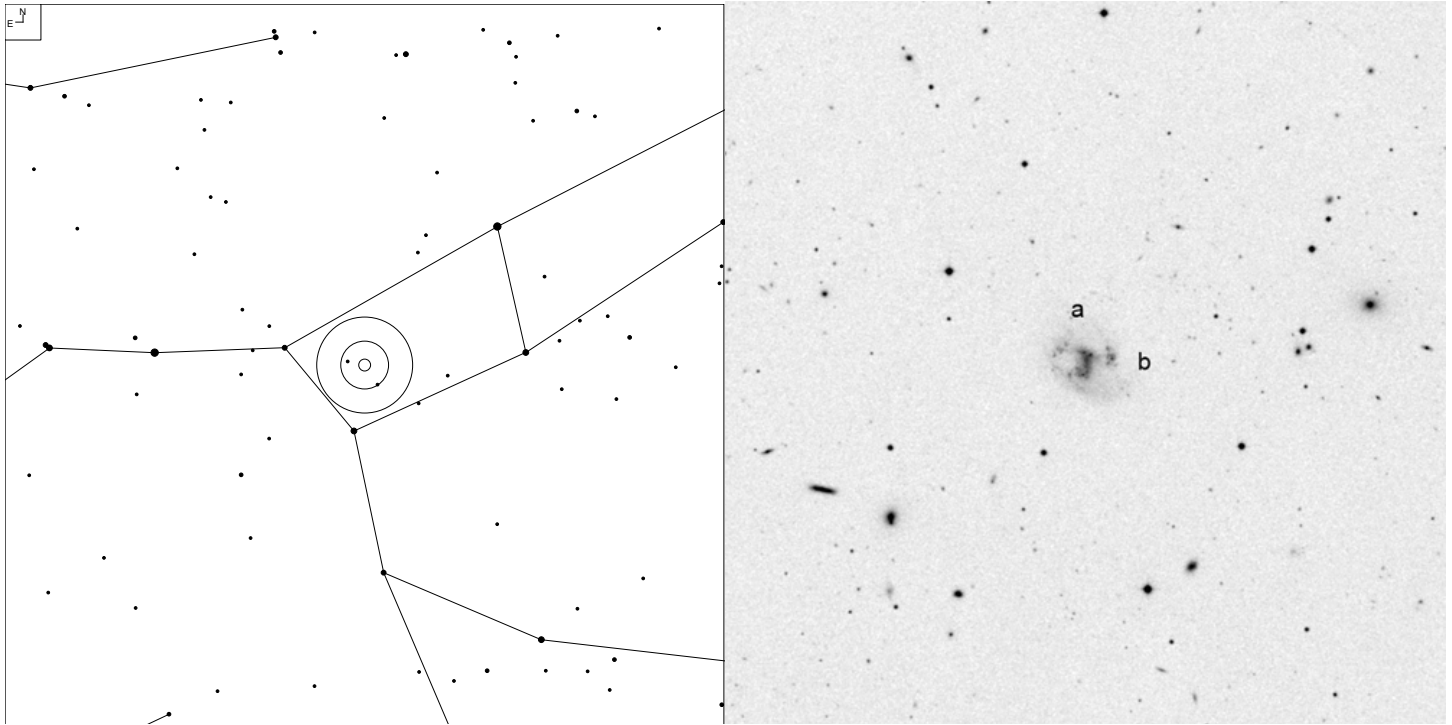
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 148 | 11 37 50.3 | +56 08 42 | G        | 15.20 | 11x7        | N         |

# 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        |           |

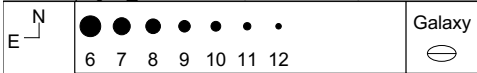
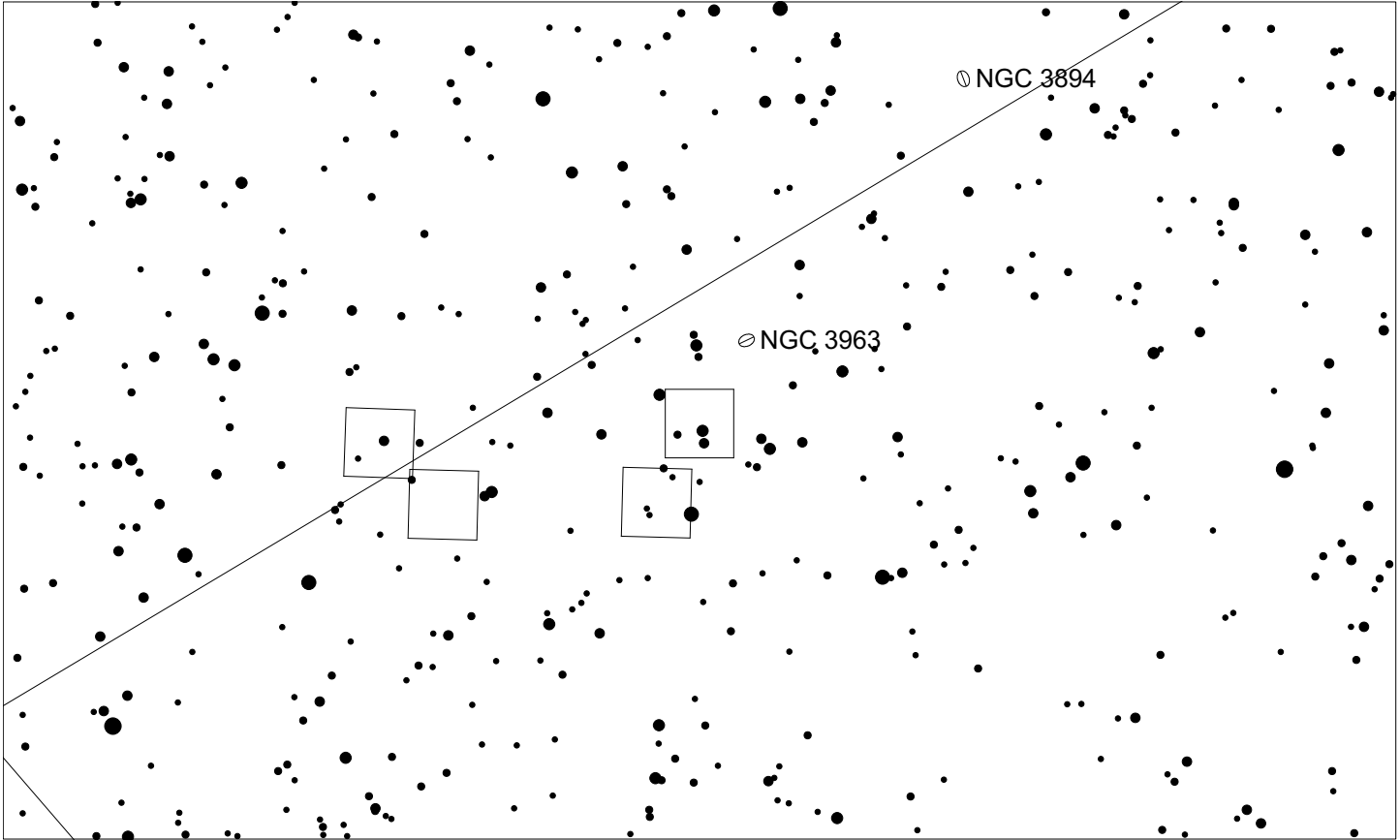
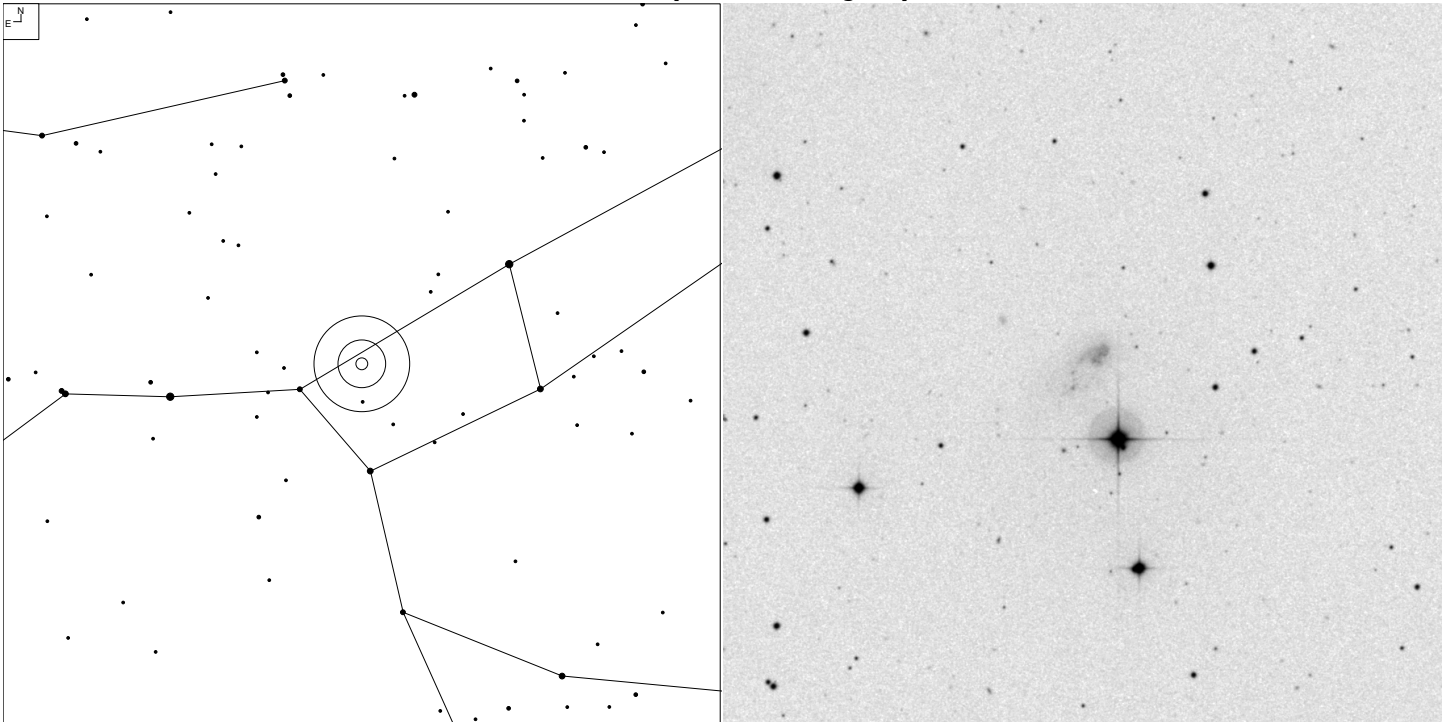
# VV 273 (Ursa Major)



| 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       |           |

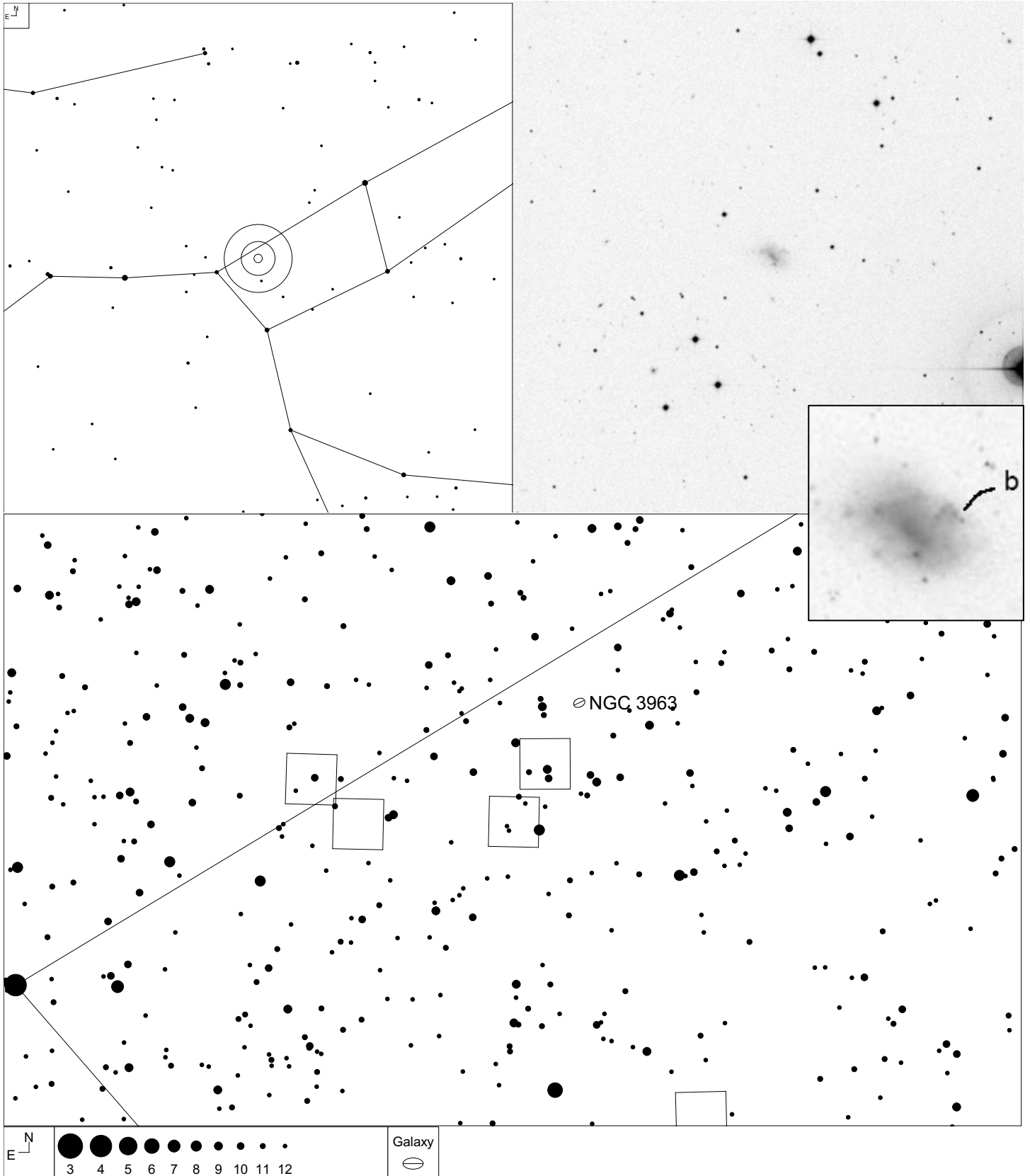


# VV 57 (Ursa Major)



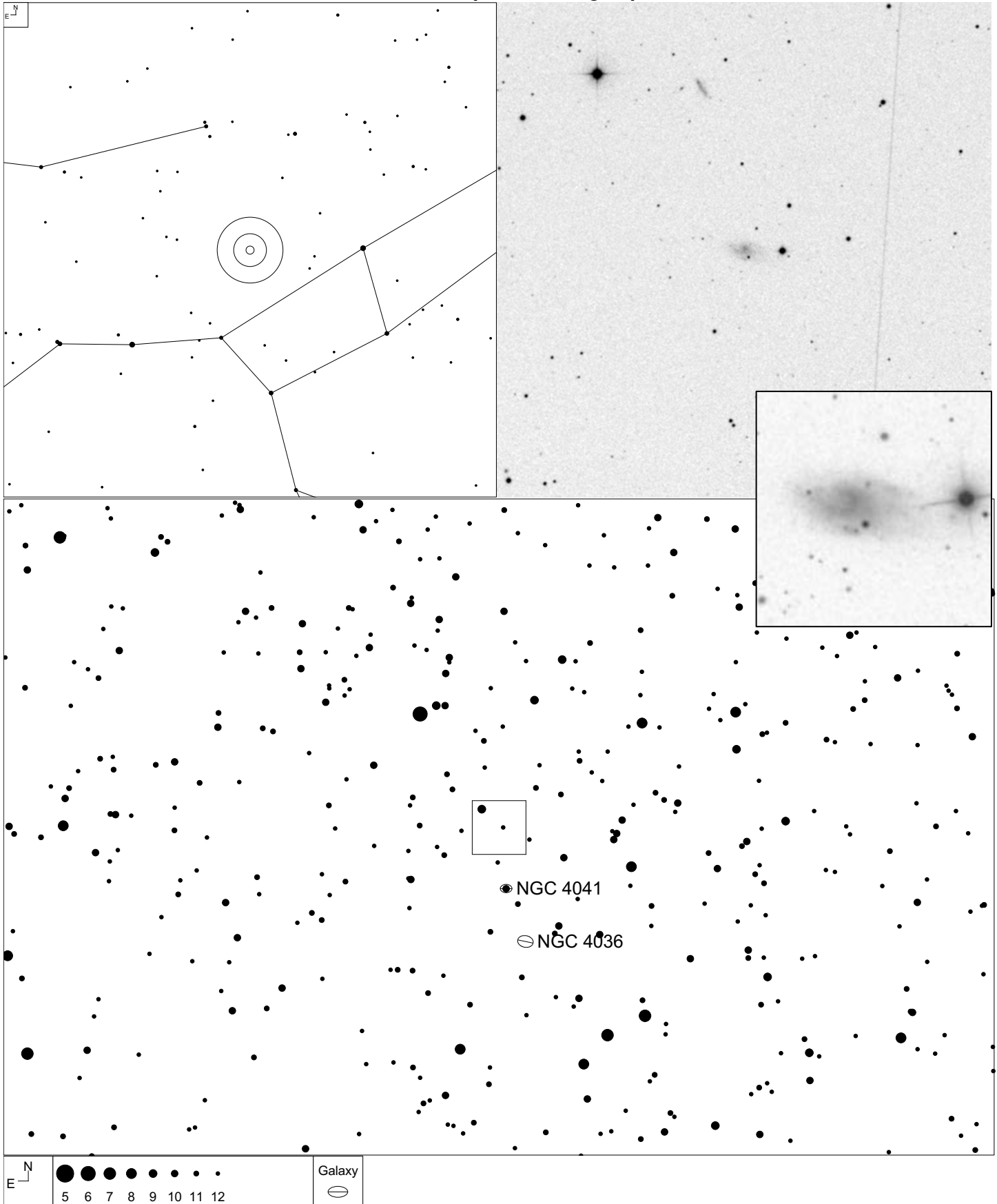
| VV  | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|------|-------------|-----------|
| 57  | 11 56 14.4 | +58 11 49 | G        | 14.6 | 21x14       | R         |
| 57a | 11 56 13.8 | +58 12 01 | PofG     |      |             |     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

# VV 241 (Ursa Major)



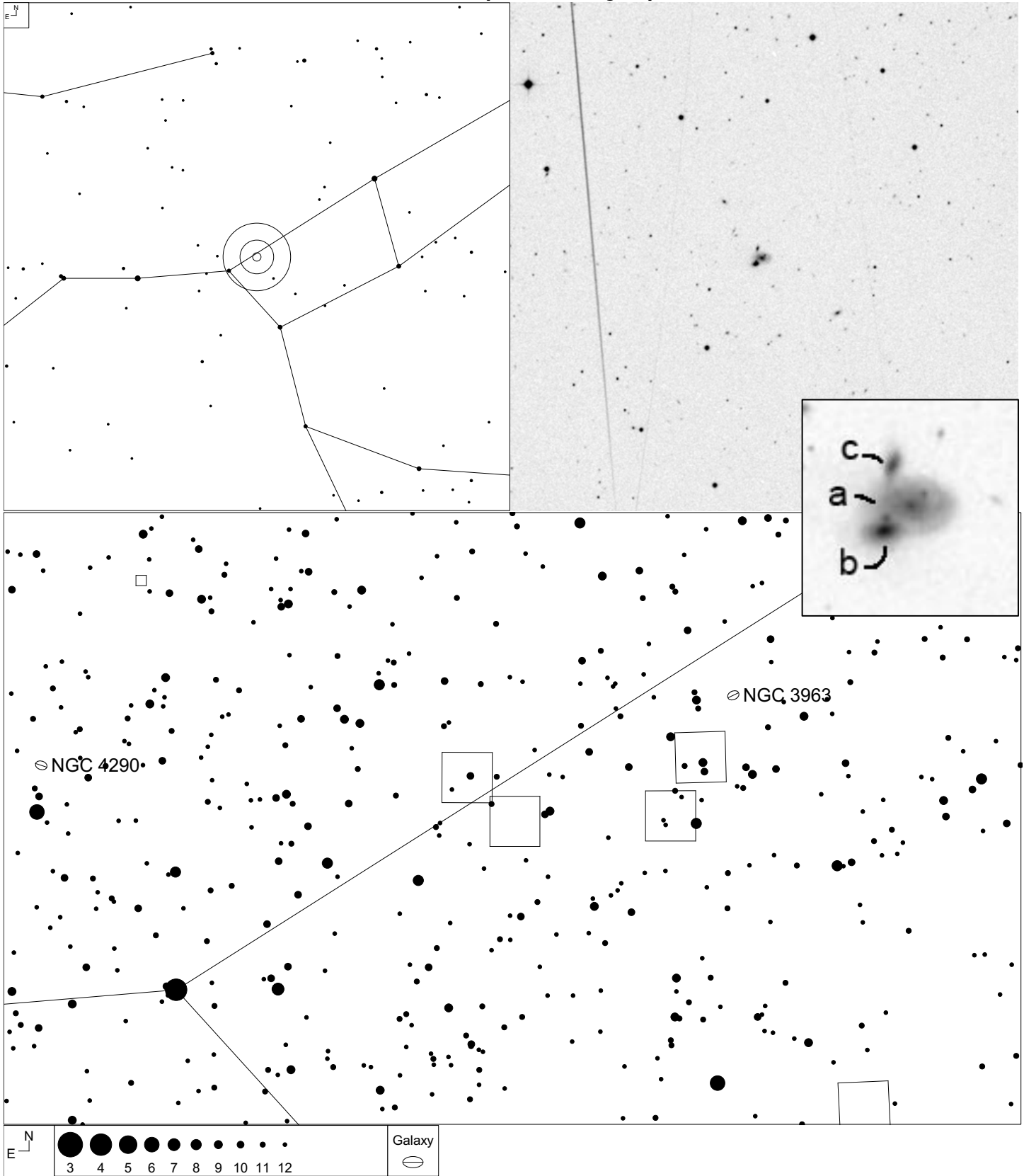
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 241  | 11 57 24.9 | +57 55 48 | G        | 14.31 | 14x10       | PKdf      |
| 241b | 11 57 22.4 | +57 55 52 | PofG     | 20.6g | 1x1       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

# VV 259 (Ursa Major)



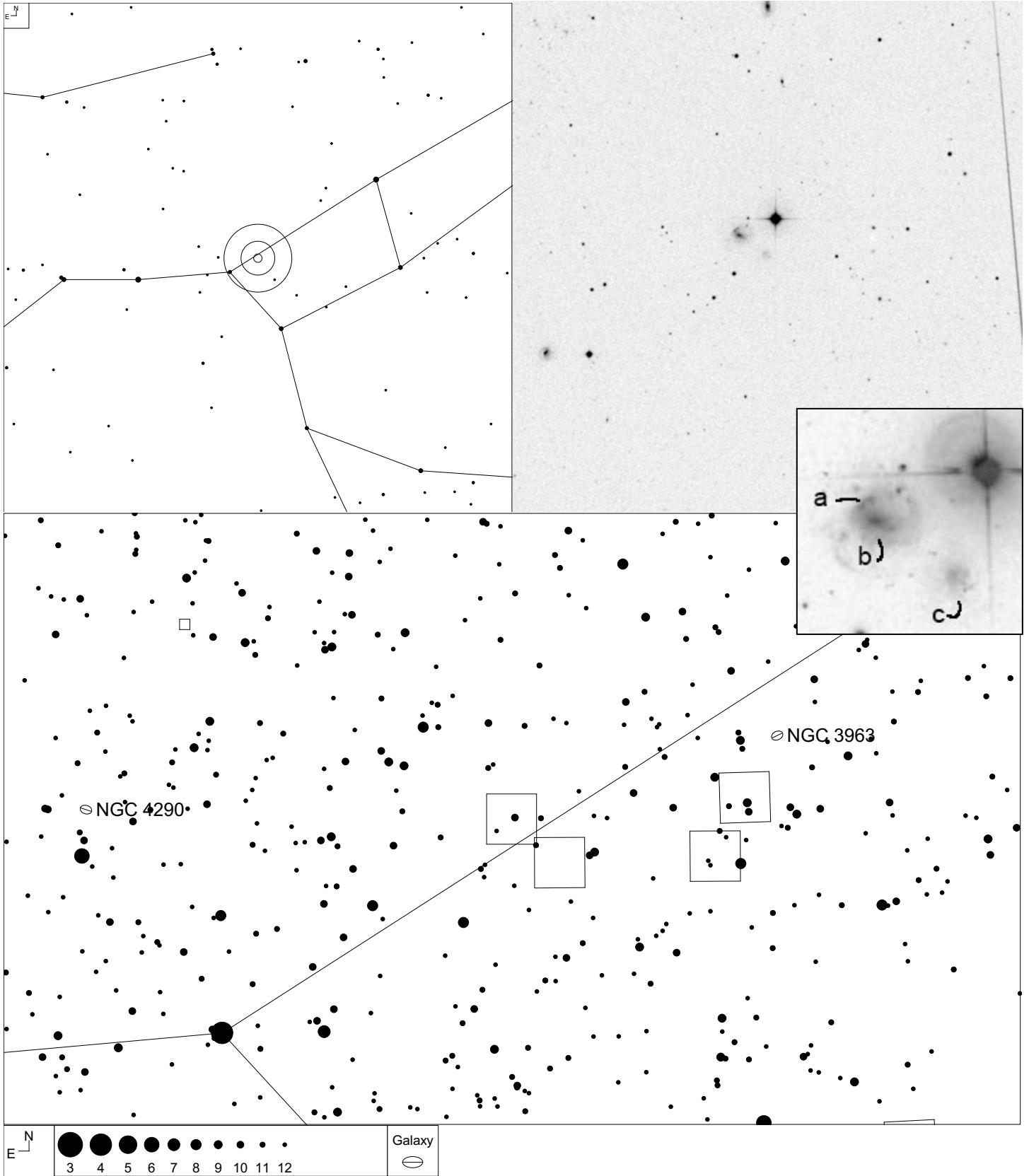
| VV  | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|------|-------------|-----------|
| 259 | 12 02 29.4 | +62 25 02 | G        | 15.2 | 15x8        | PK        |

# VV 136 (Ursa Major)



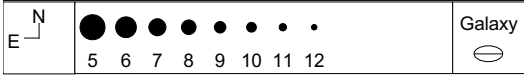
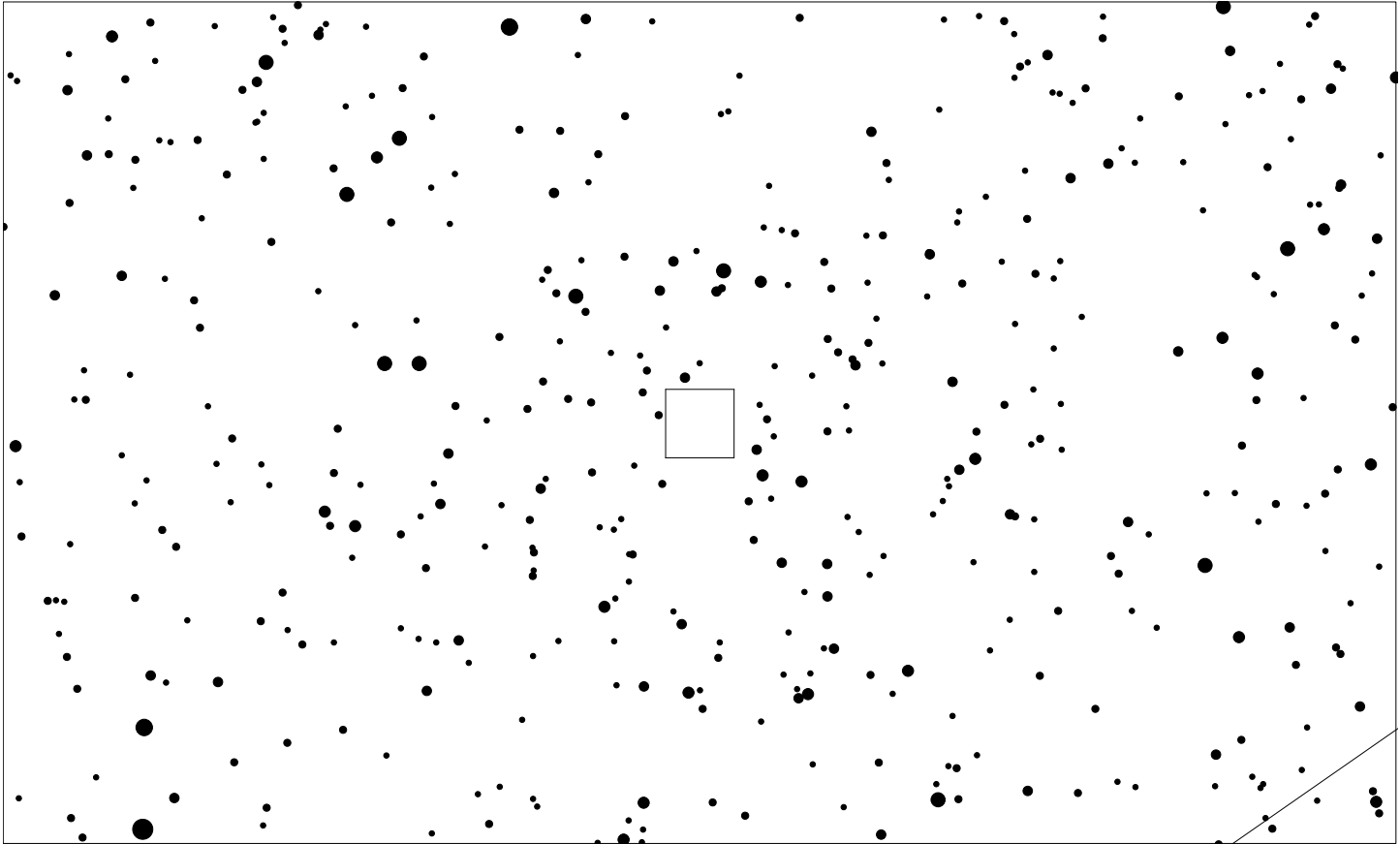
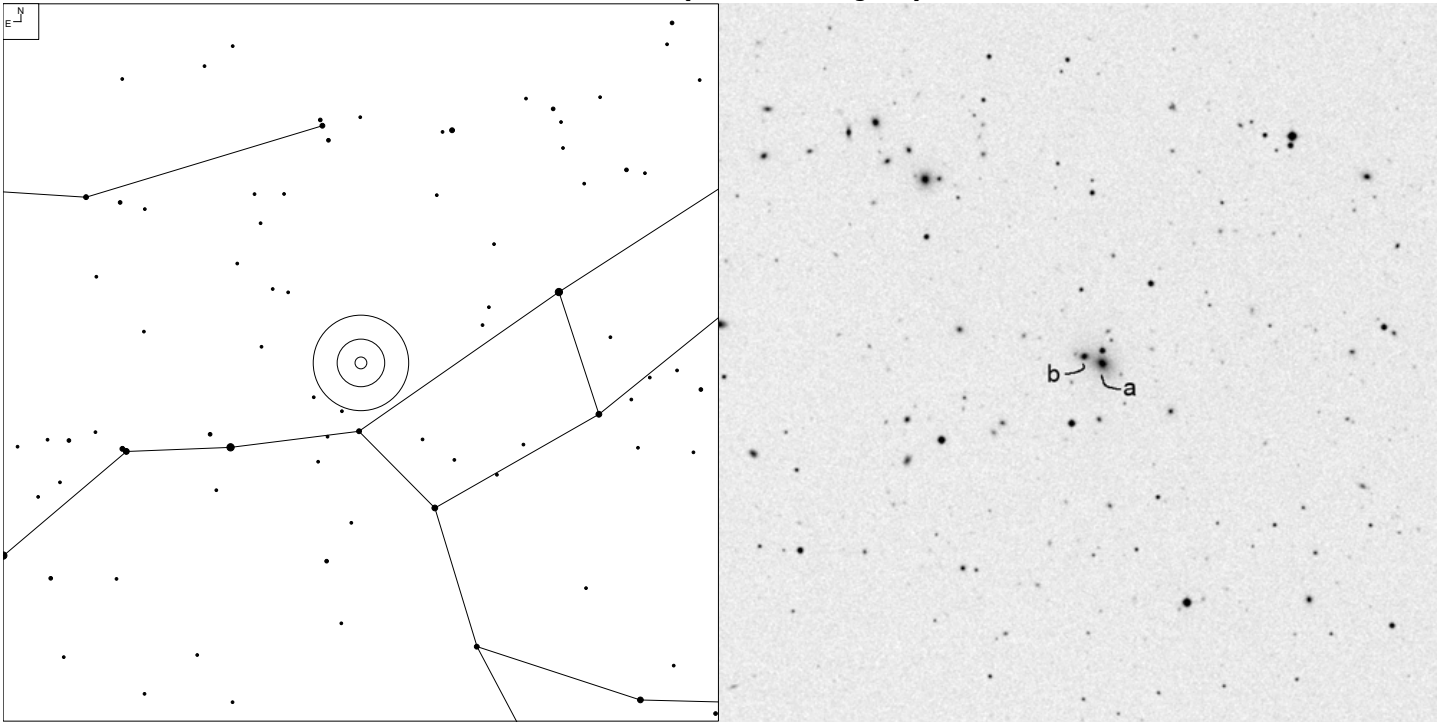
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 136  | 12 03 13.1 | +57 53 40 | GTrpl    | 15.2  |             | N         |
| 136a | 12 03 12.4 | +57 53 36 | G        | 15.2  | 7x4         |           |
| 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)



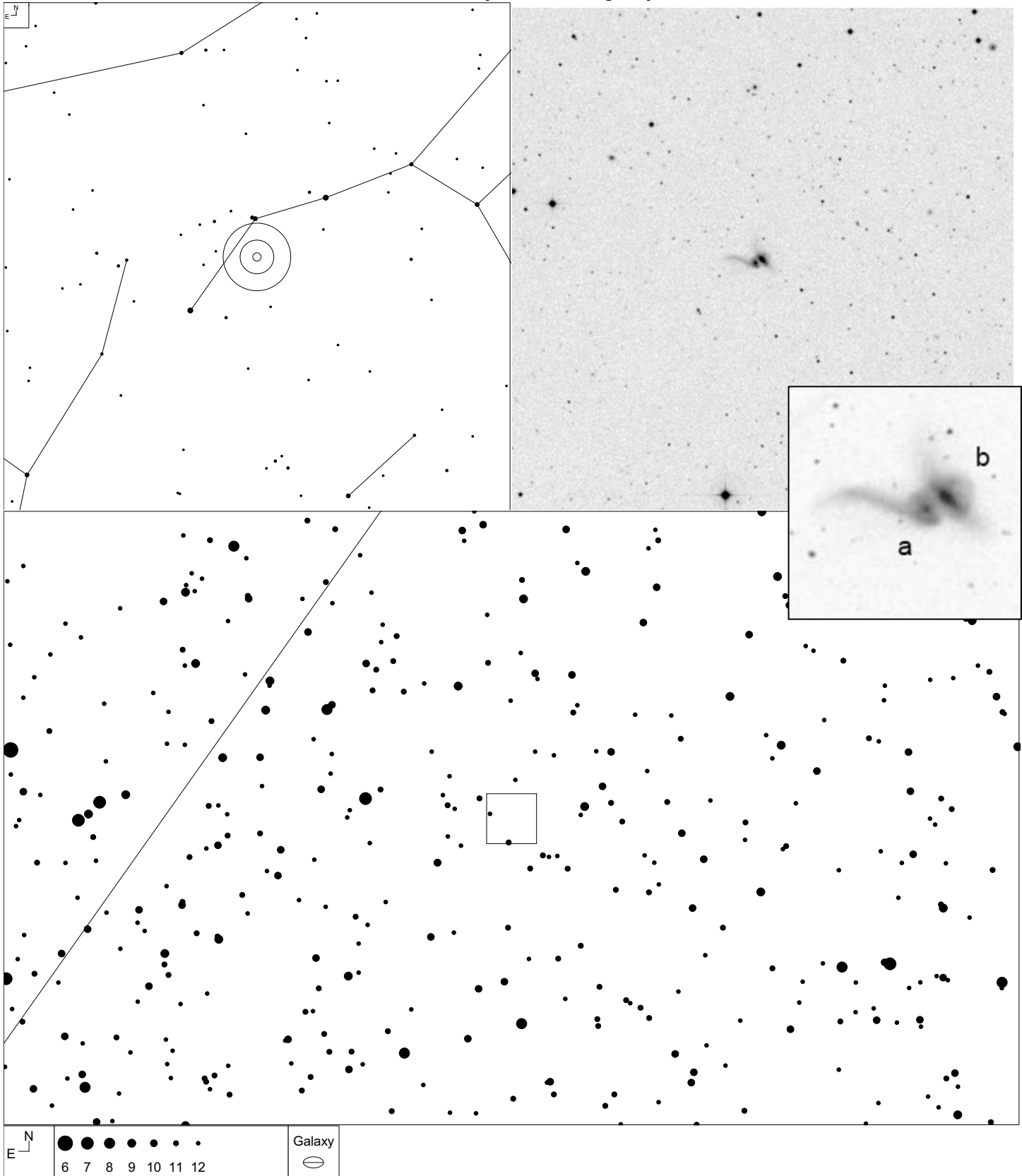
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 270  | 12 04 56.2 | +58 06 10 | GPair    |       |             | PKt       |
| 270c | 12 04 52.8 | +58 05 49 | G        | 17.5  | 4x4         |           |
| 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)



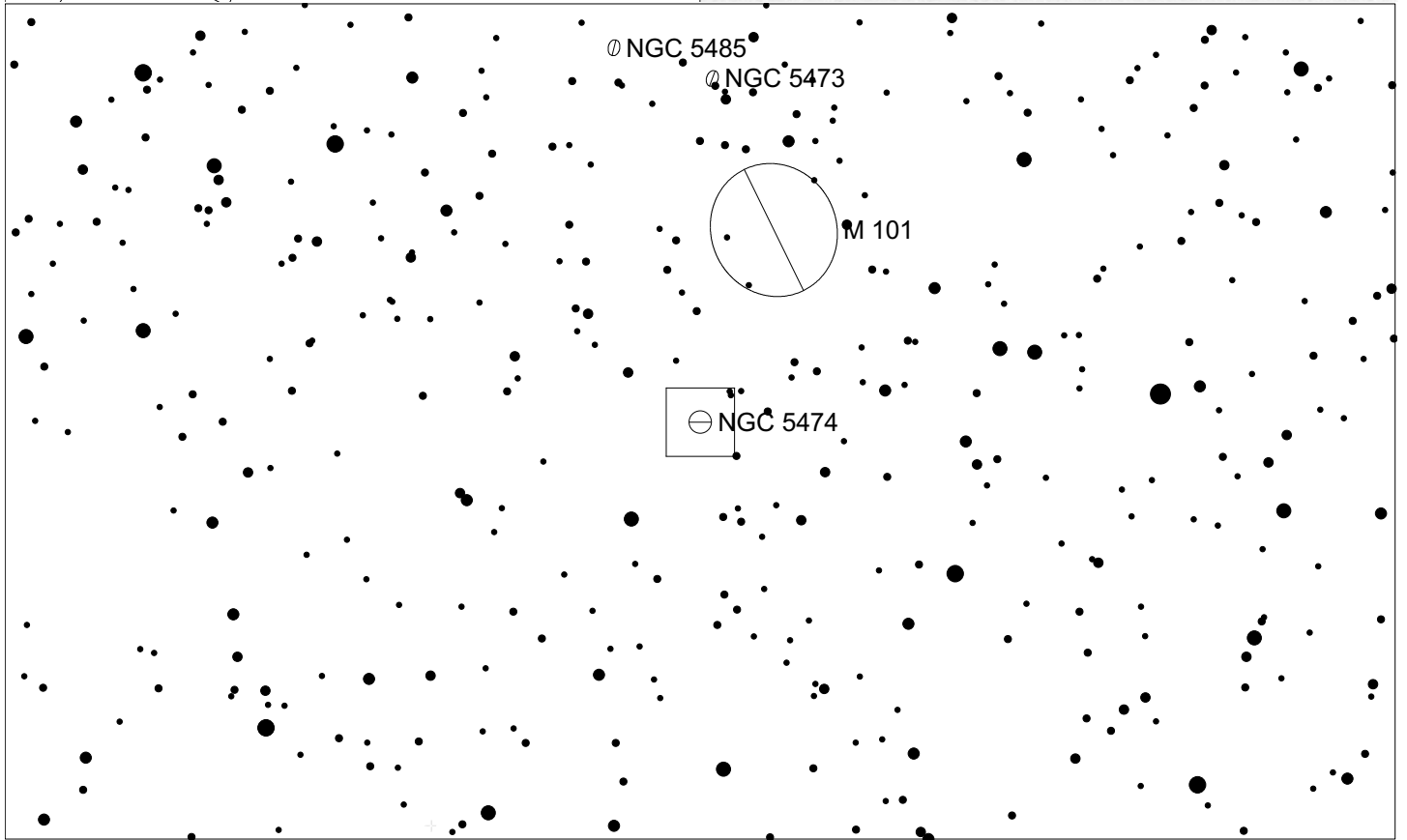
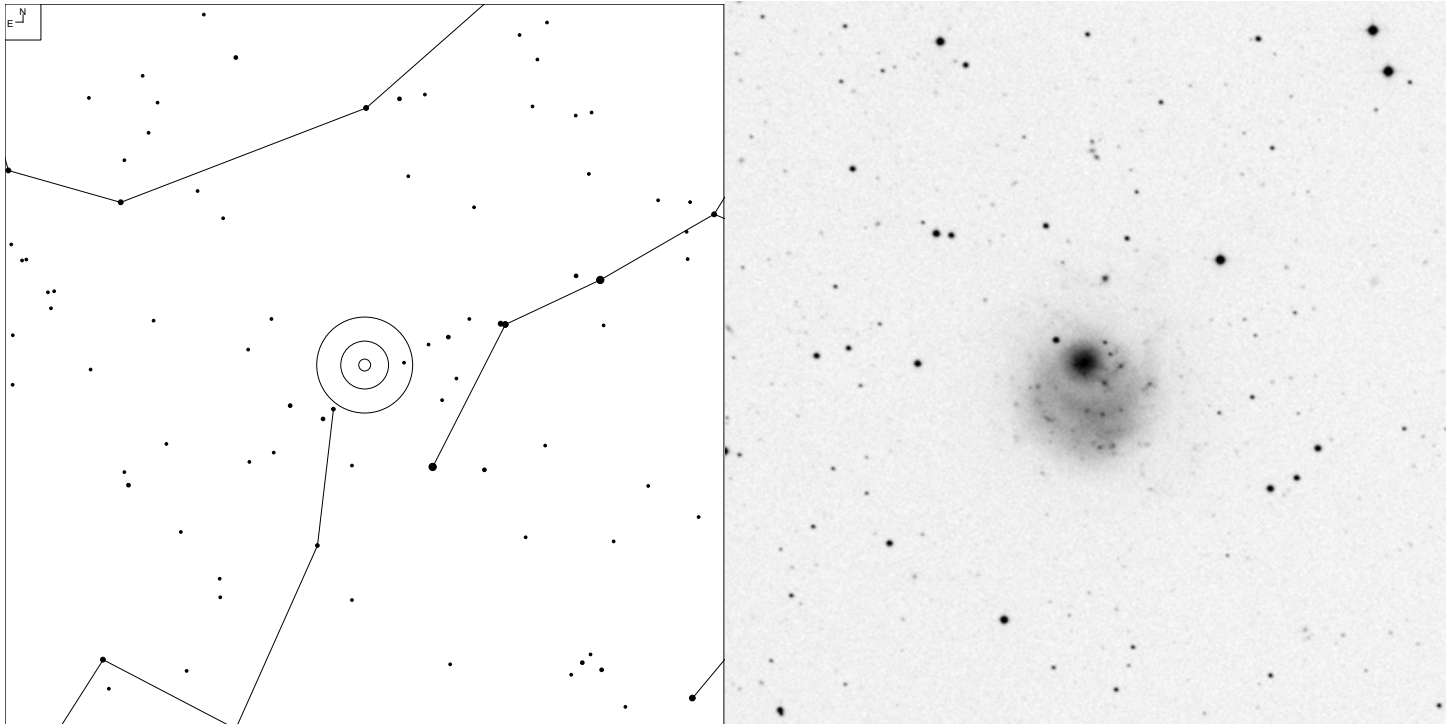
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 183  | 12 14 50.2 | +59 54 27 | GPair    |       |             | PD        |
| 183a | 12 14 48.6 | +59 54 22 | G        | 15.2g | 9x6         |           |
| 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)

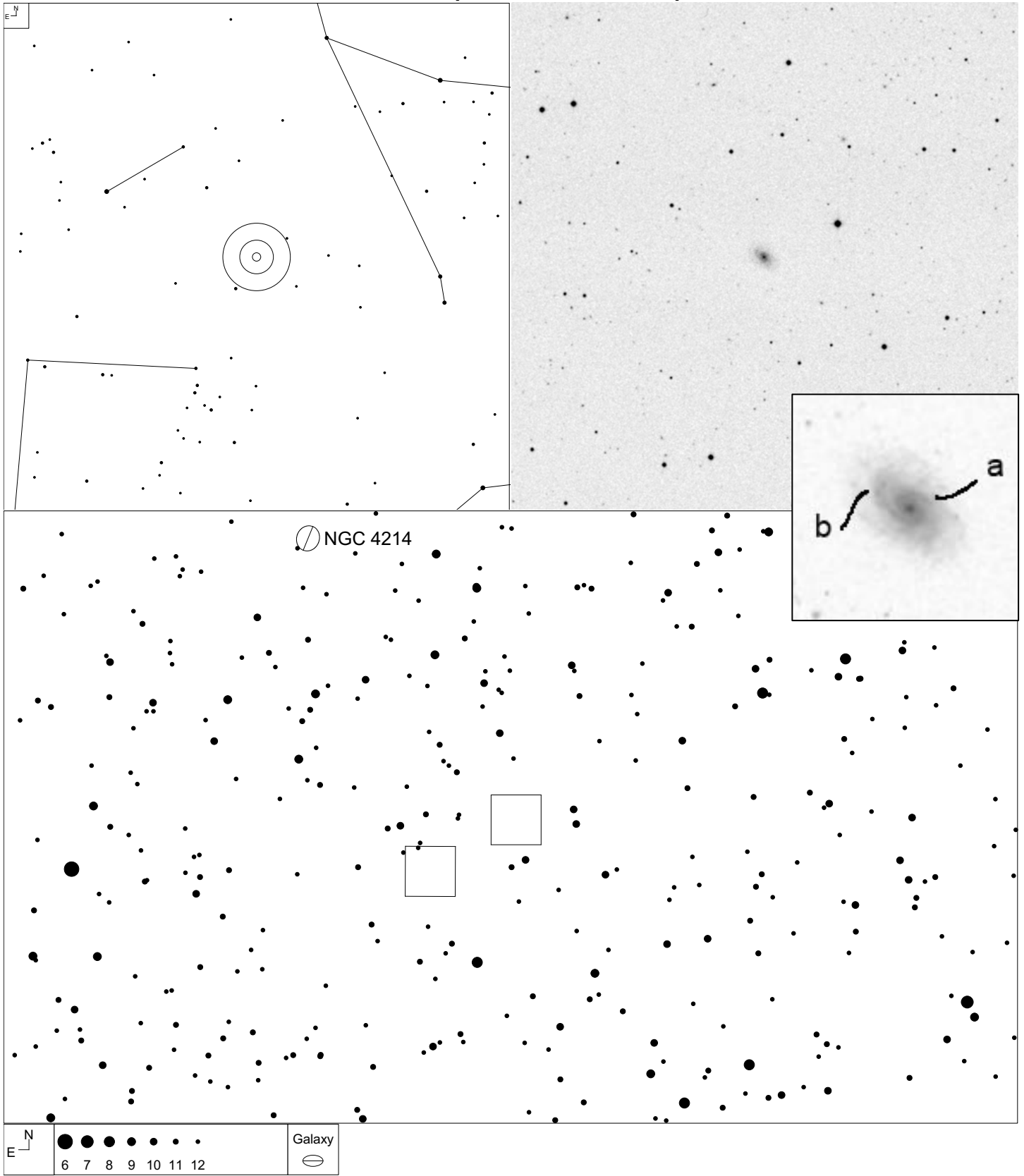


Galaxy     Radio

| 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)

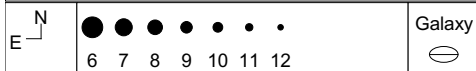
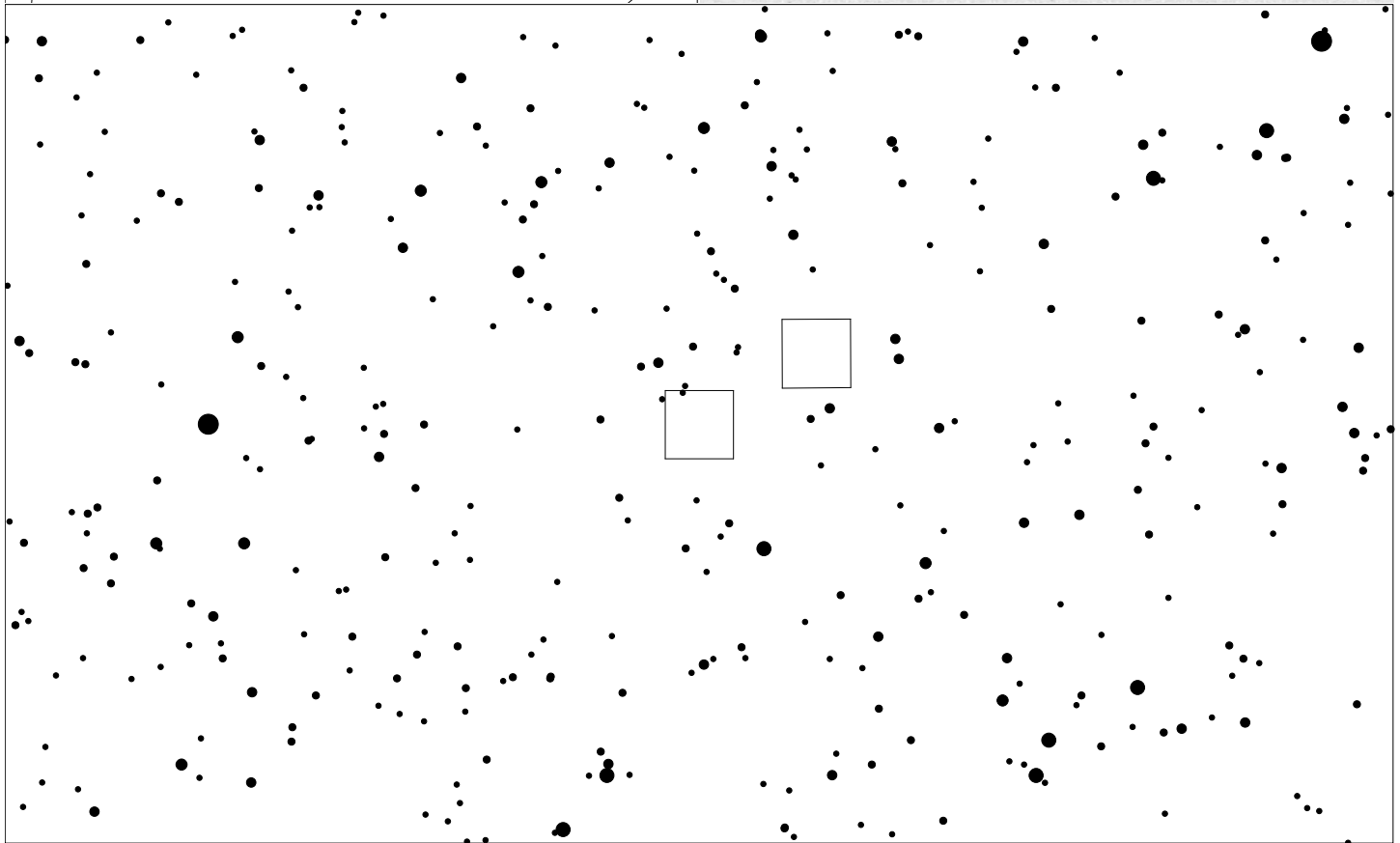
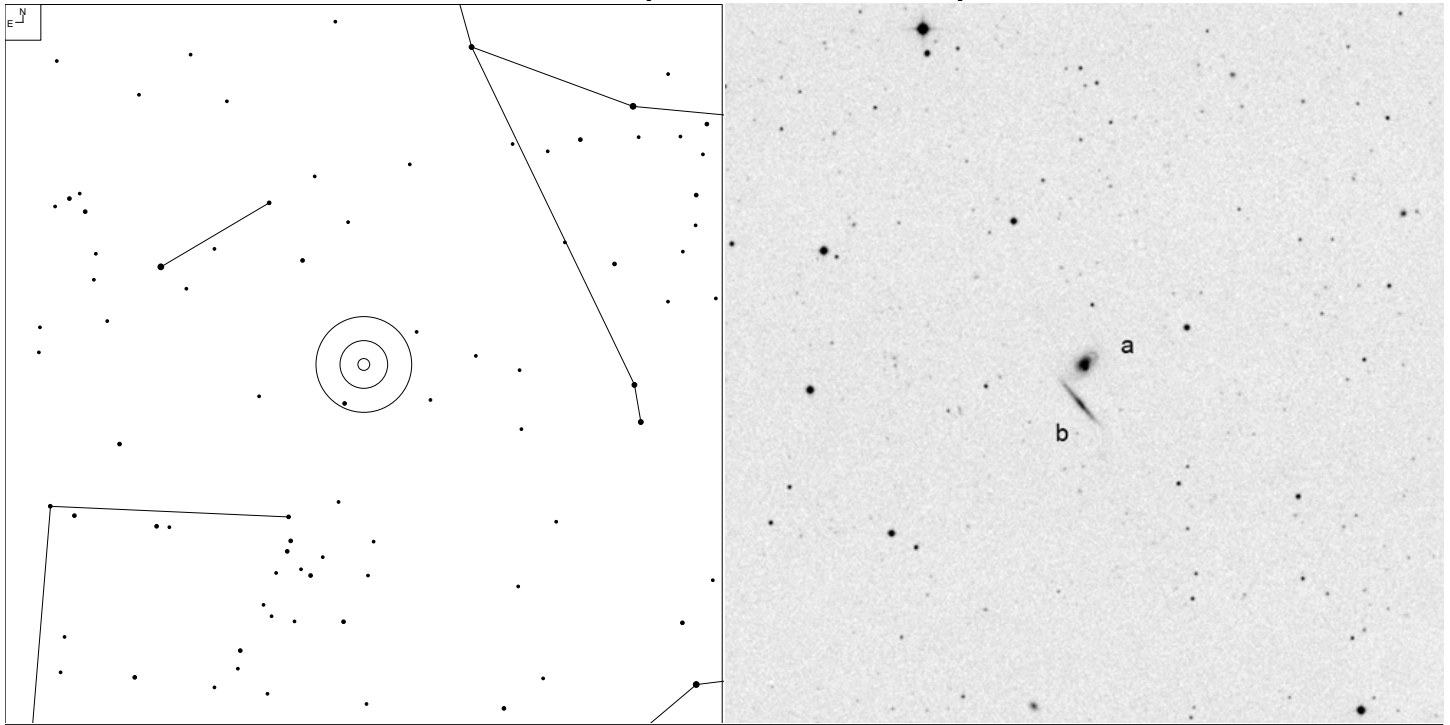


NGC 4214

a  
b

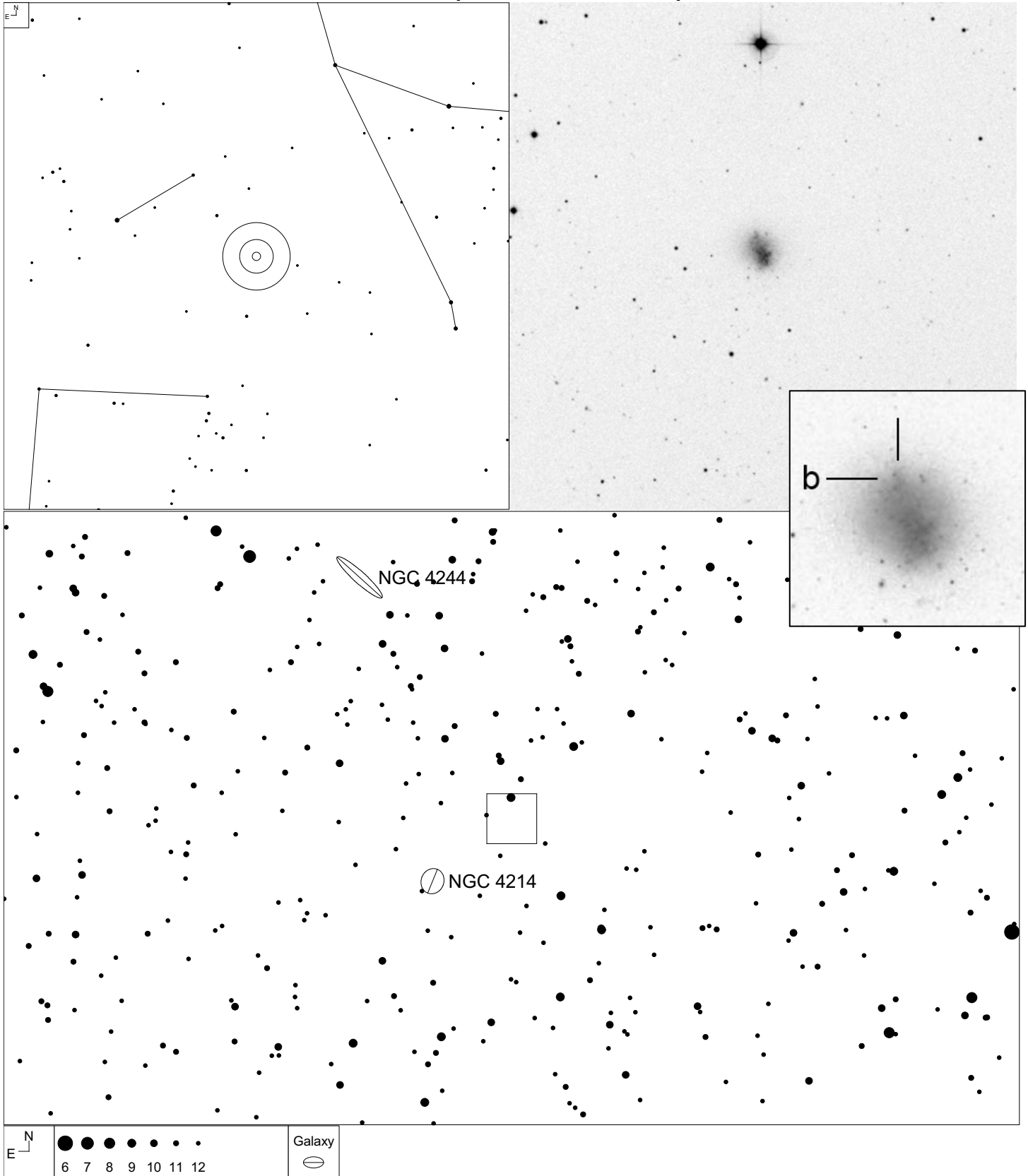
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 236  | 12 10 36.7 | +34 57 24 | G        | 15.7g | 8x6         | PK        |
| 236a | 12 10 36.3 | +34 57 18 | PofG     |       |           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

# VV 345 (Canes Venatici)



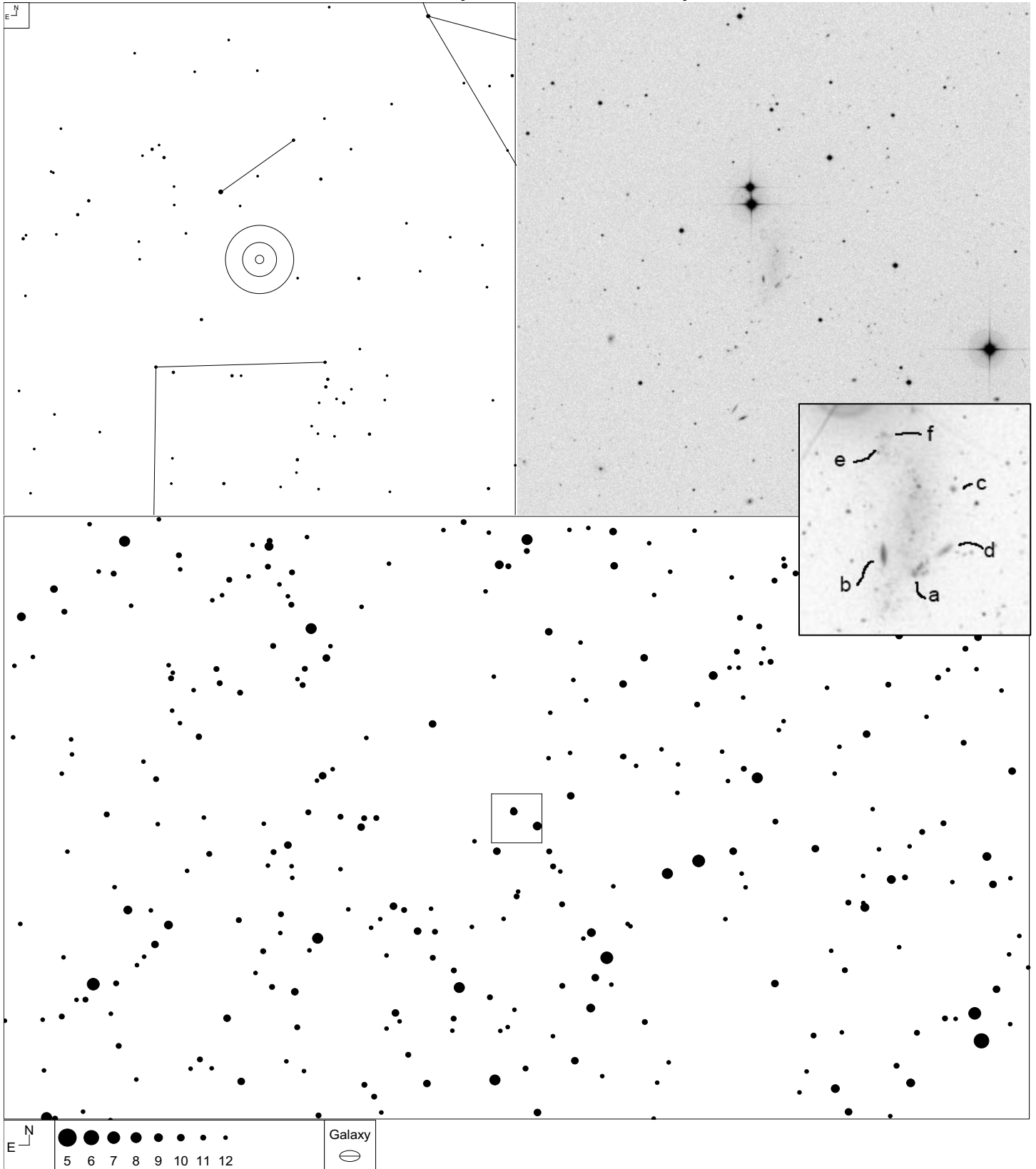
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 345  | 12 12 39.5 | +34 41 48 | GPair    |       |             | PD        |
| 345a | 12 12 39.2 | +34 42 13 | G        | 15.5g | 7x4       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

# VV 104 (Canes Venatici)



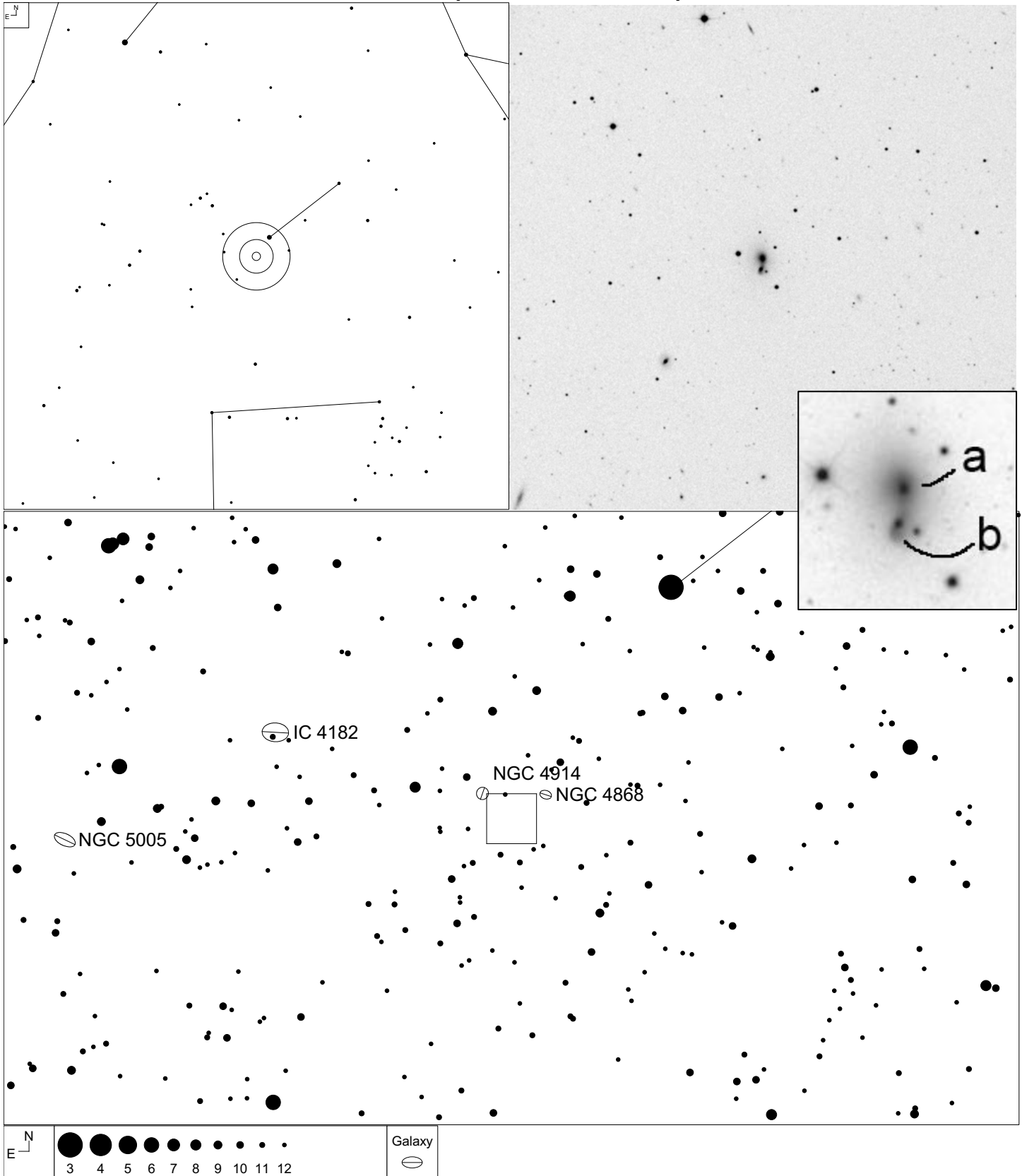
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 104  | 12 13 44.8 | +36 38 03 | G        | 13.4g | 15x12       | PC        |
| 104a | 12 13 44.1 | +36 37 53 | PofG     |       |           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

# VV 127 (Canes Venatici)



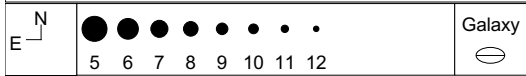
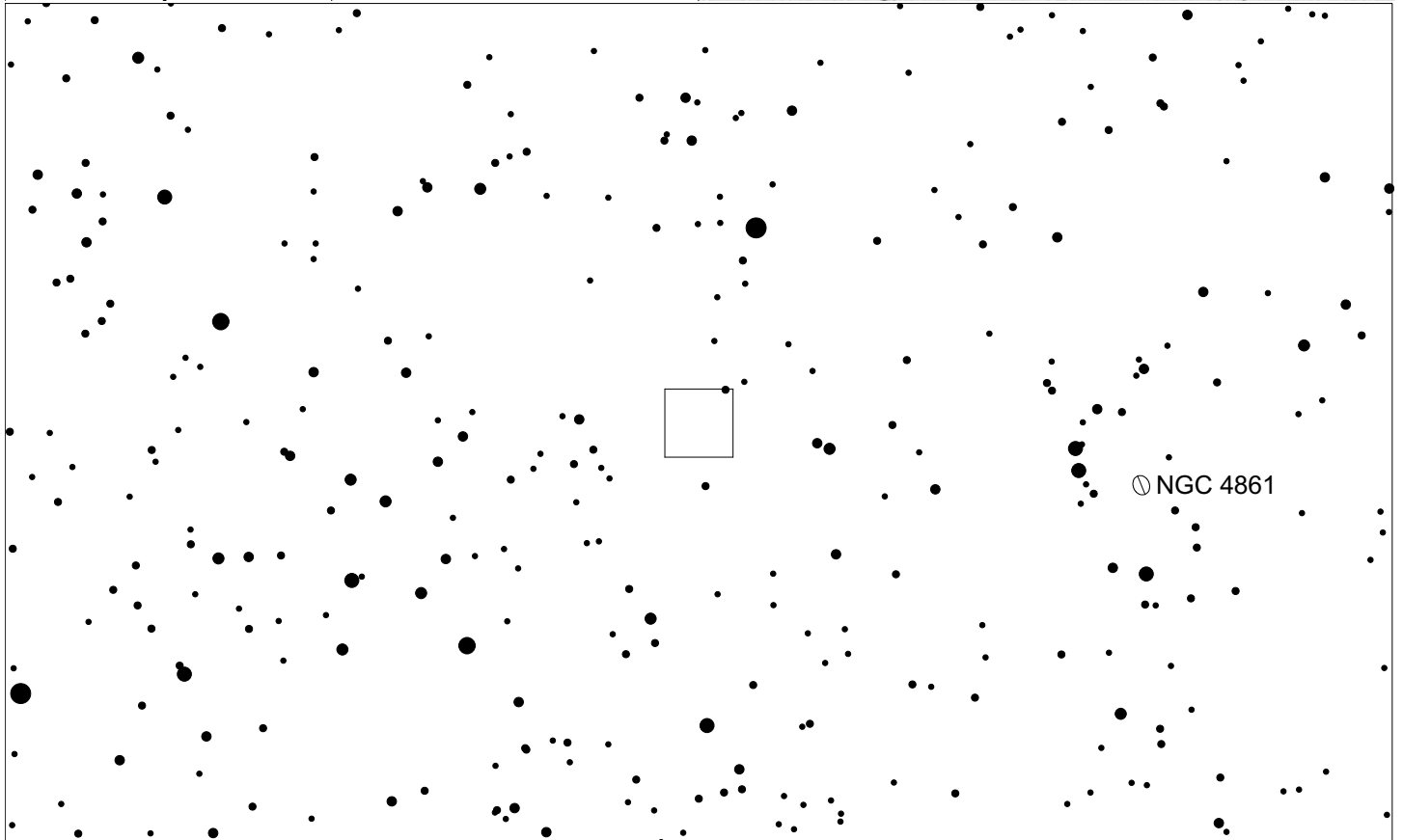
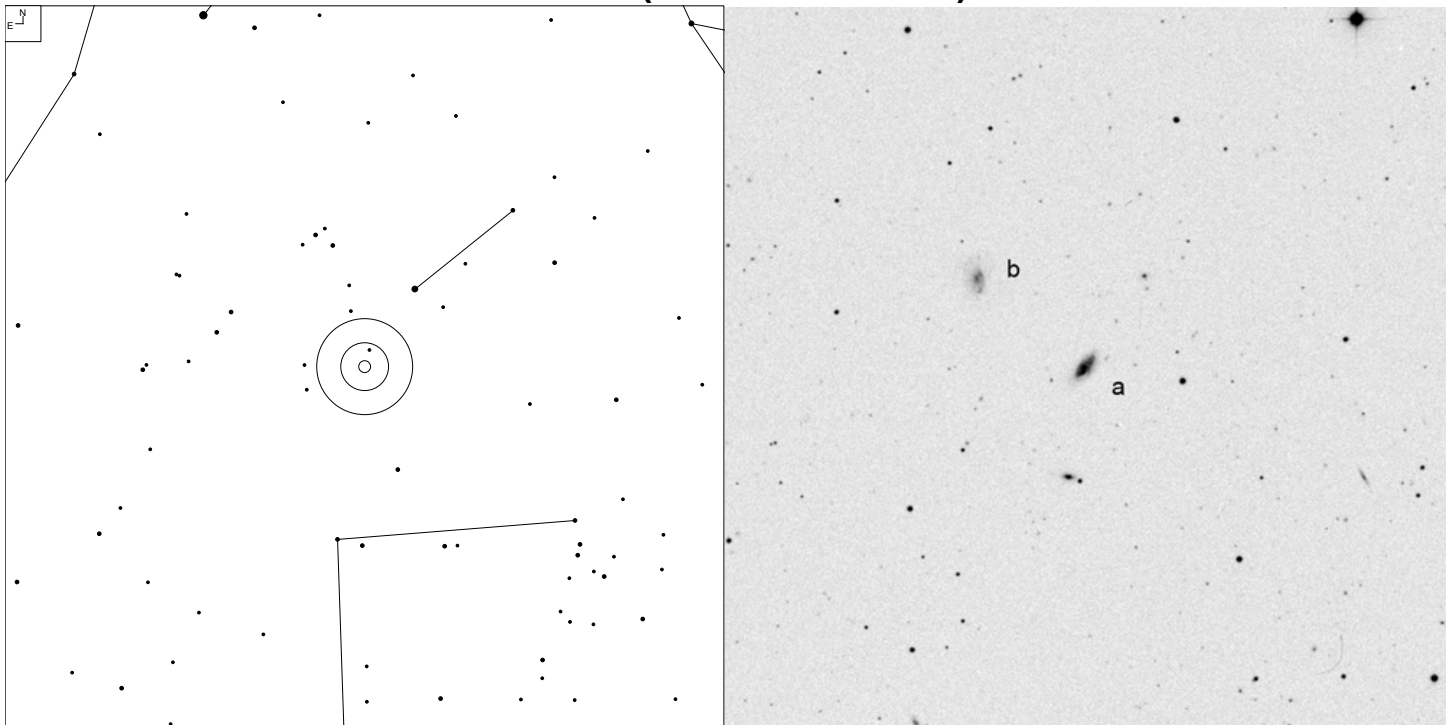
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 127  | 12 44 25.1 | +34 23 12 | G        | 14.7  | 24x16       | PD        |
| 127d | 12 44 23.1 | +34 22 49 | PofG     | 19.64 |             |           |
| 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)



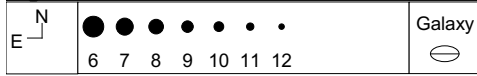
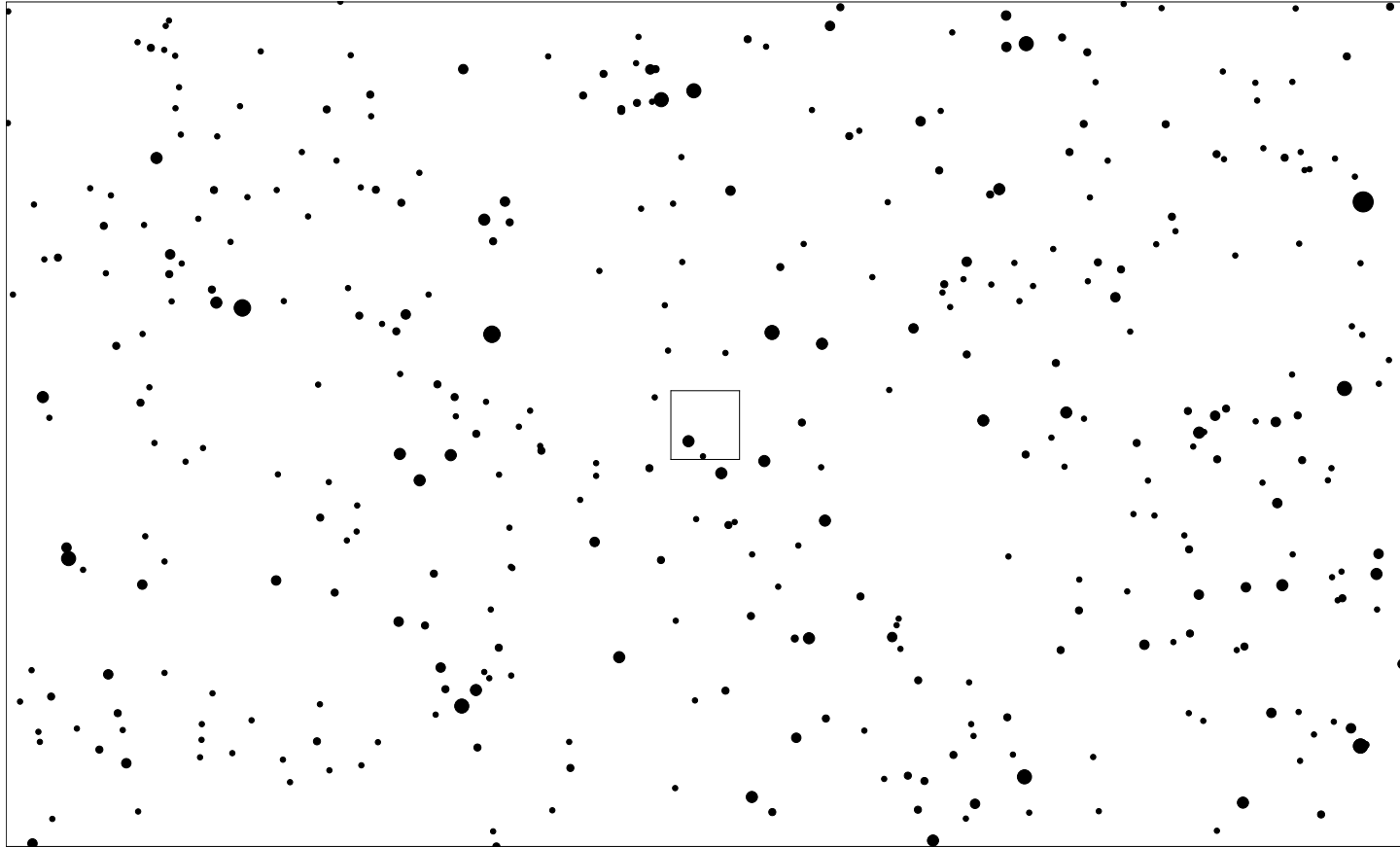
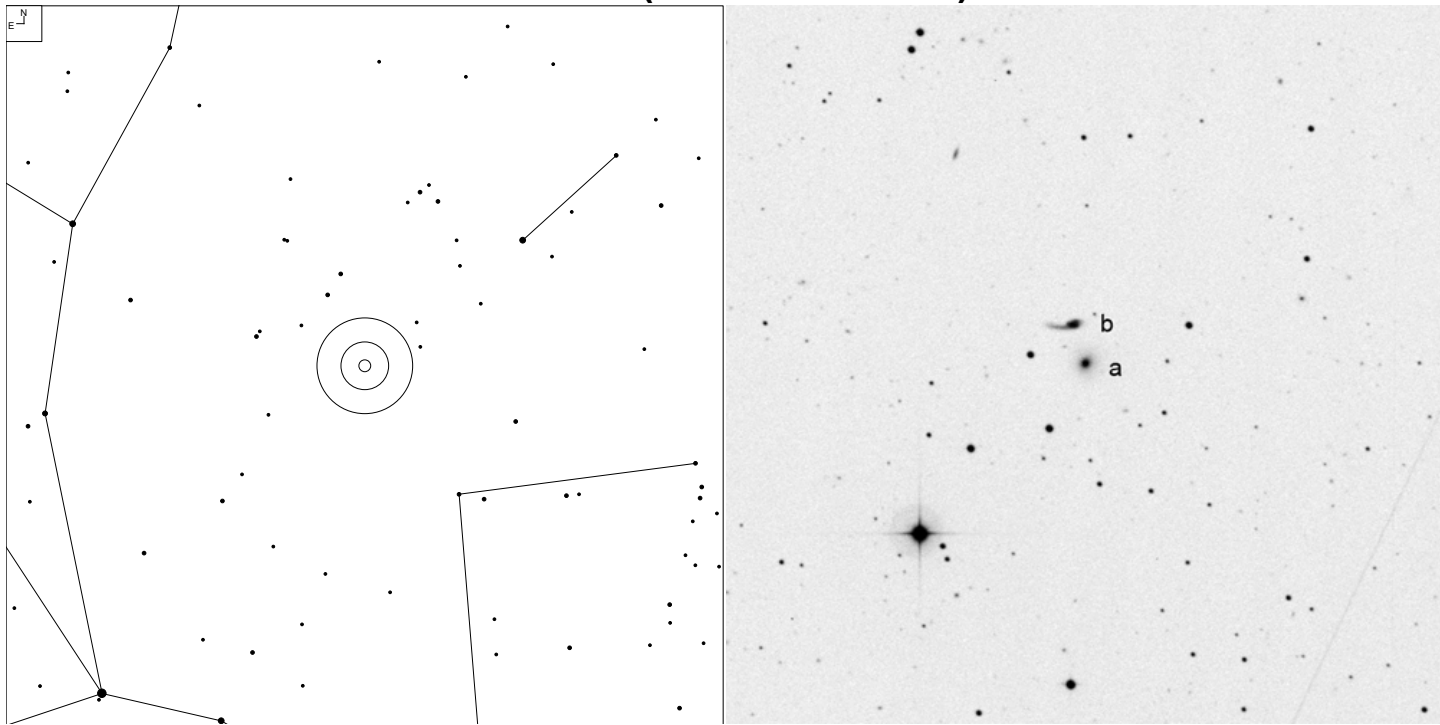
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 222  | 12 59 59.7 | +37 11 26 | GPair    |      |             | PK        |
| 222b | 12 59 59.6 | +37 11 36 | G        | 15.6 | 5x5         | 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

# VV 292 (Canes Venatici)



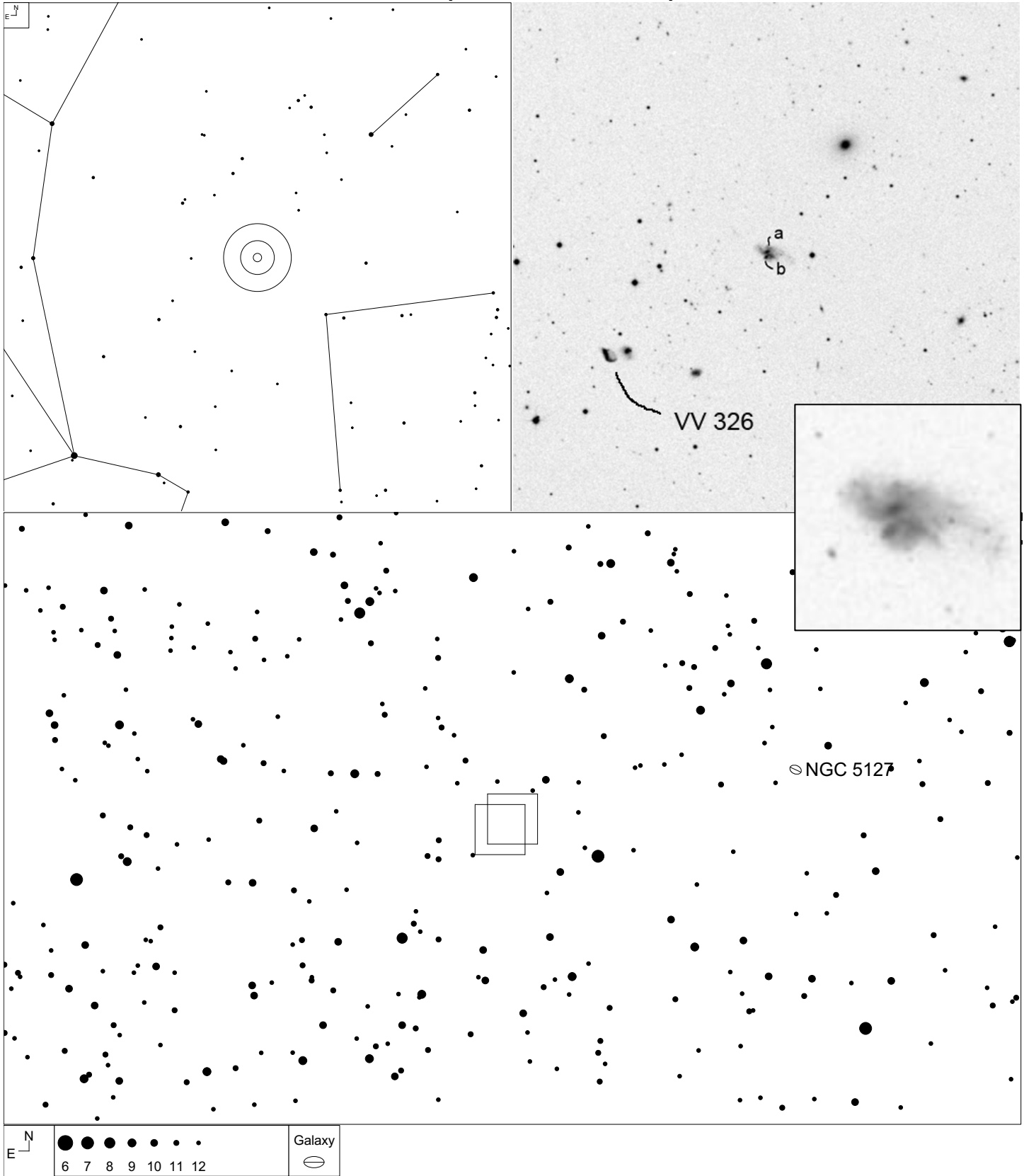
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 292  | 13 06 50.5 | +35 07 00 | GPair    |       |             | PDb       |
| 292a | 13 06 45.2 | +35 06 02 | G        | 14.8p | 13x7        |           |
| 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         |           |

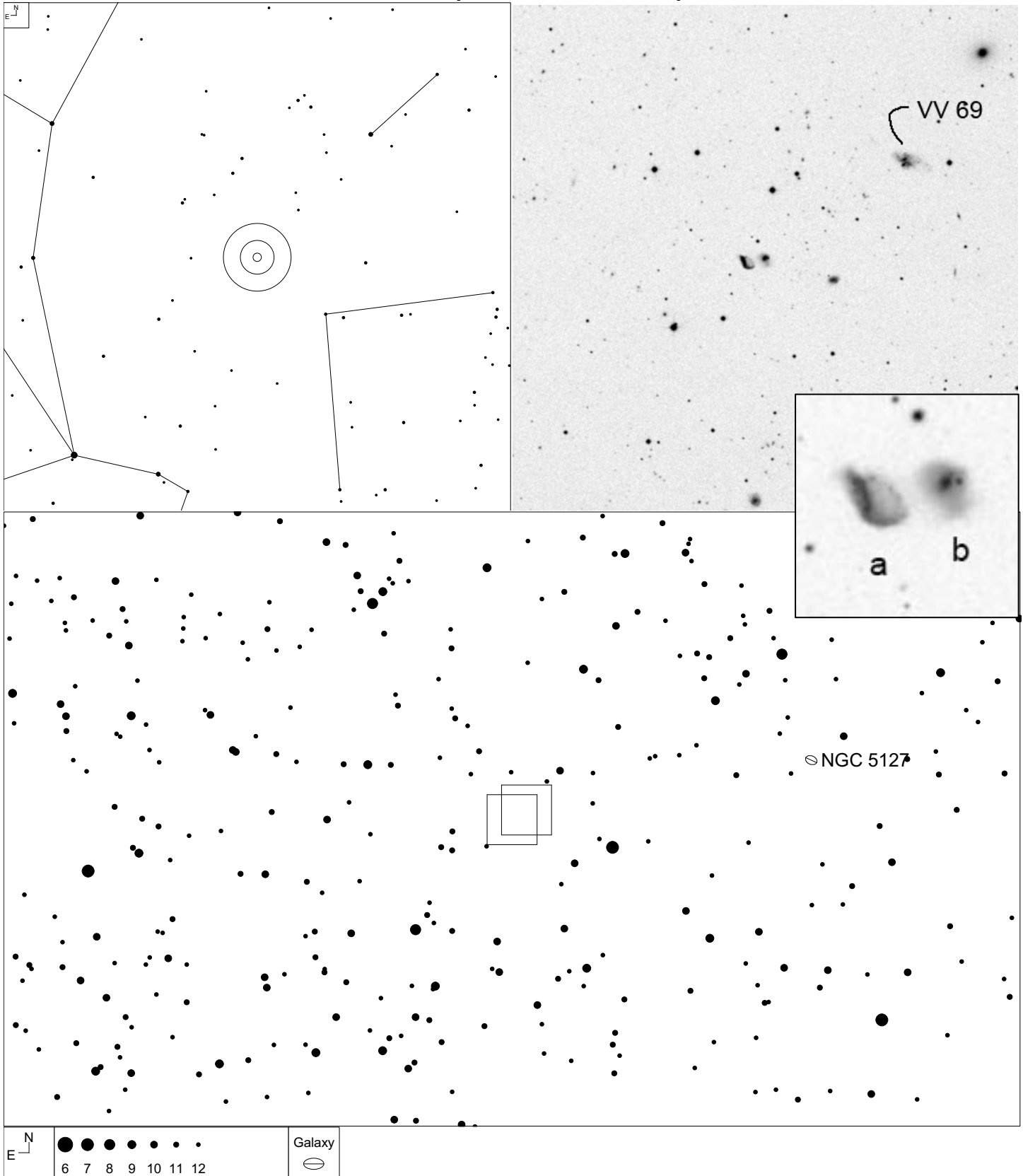
# VV 69 (Canes Venatici)



| 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         |           |

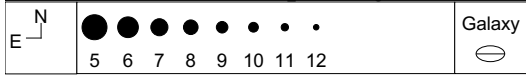
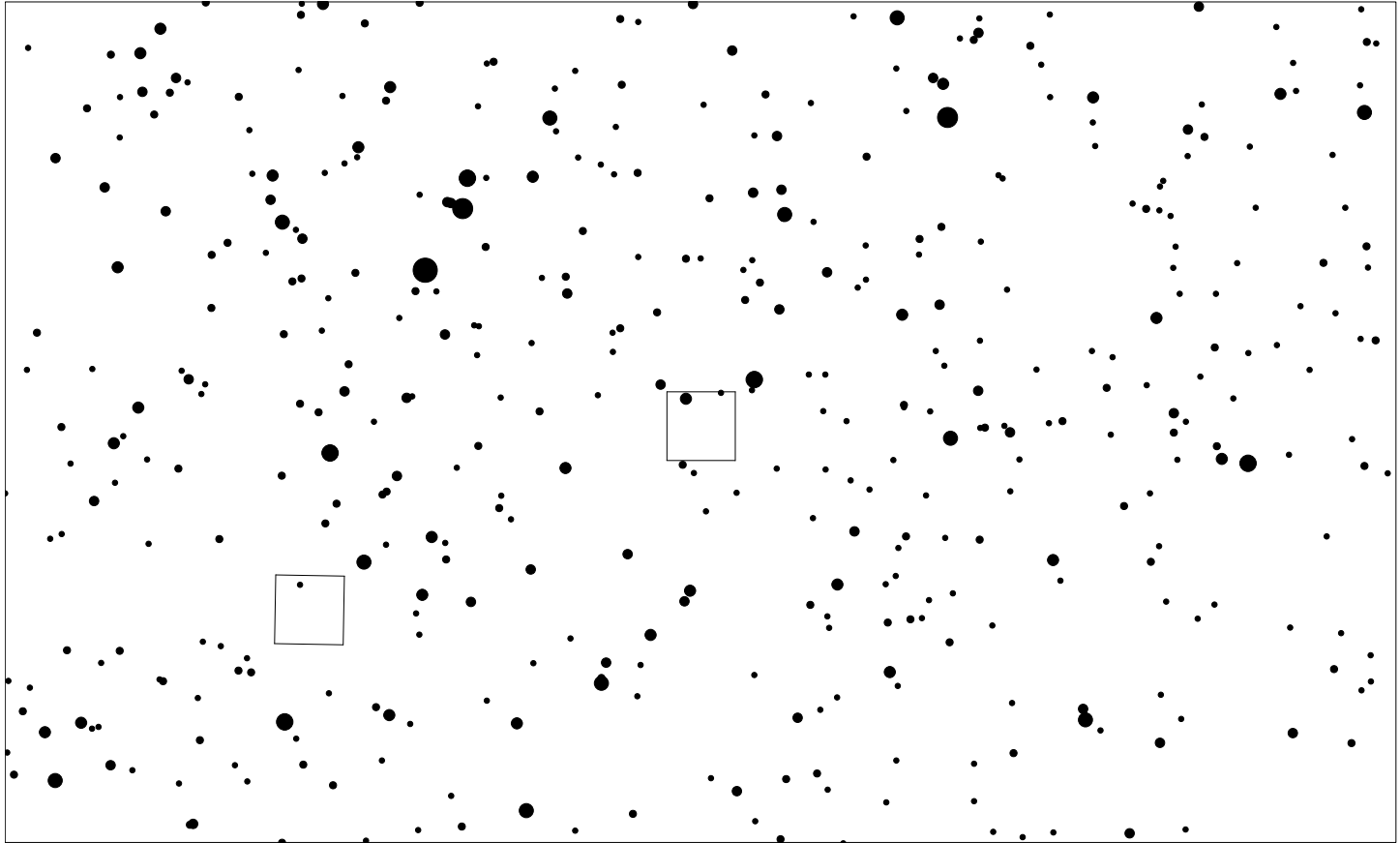
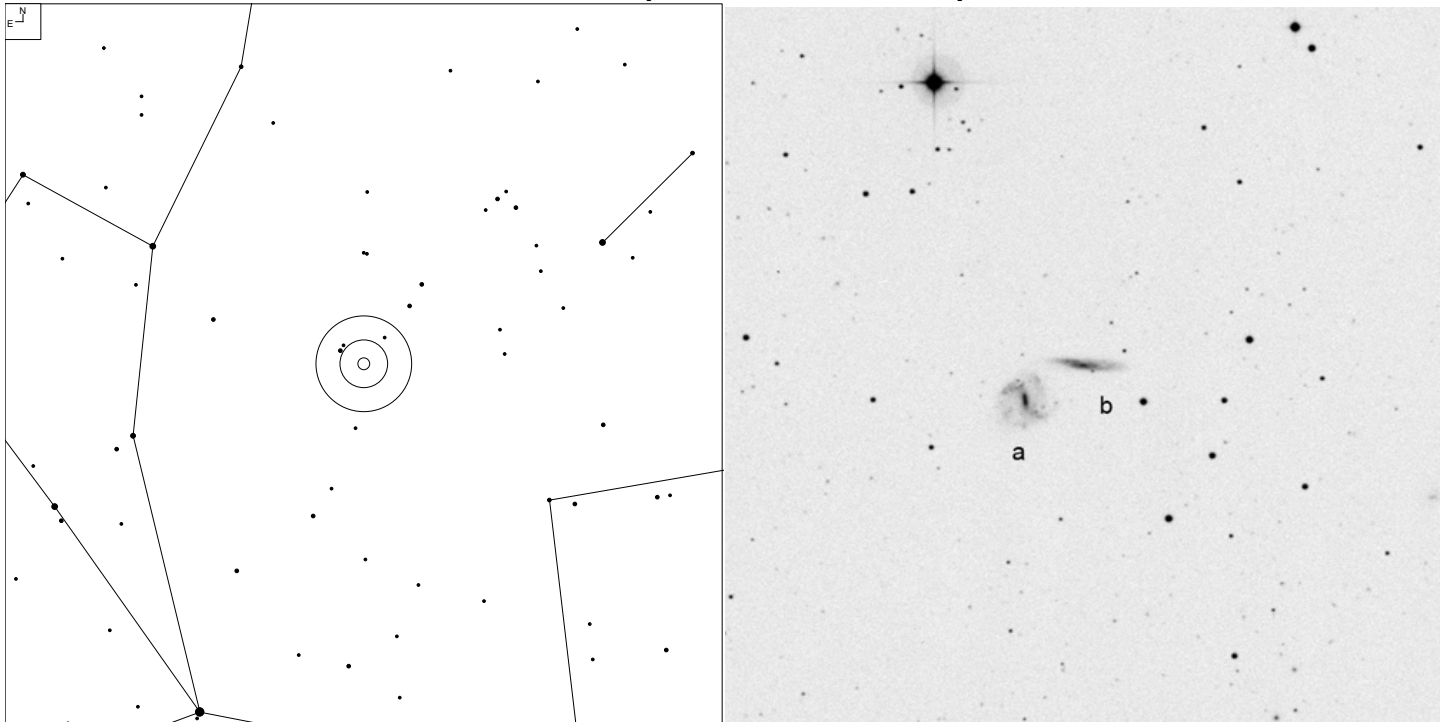


# VV 326 (Canes Venatici)



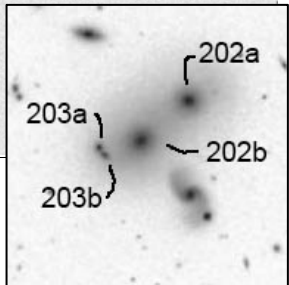
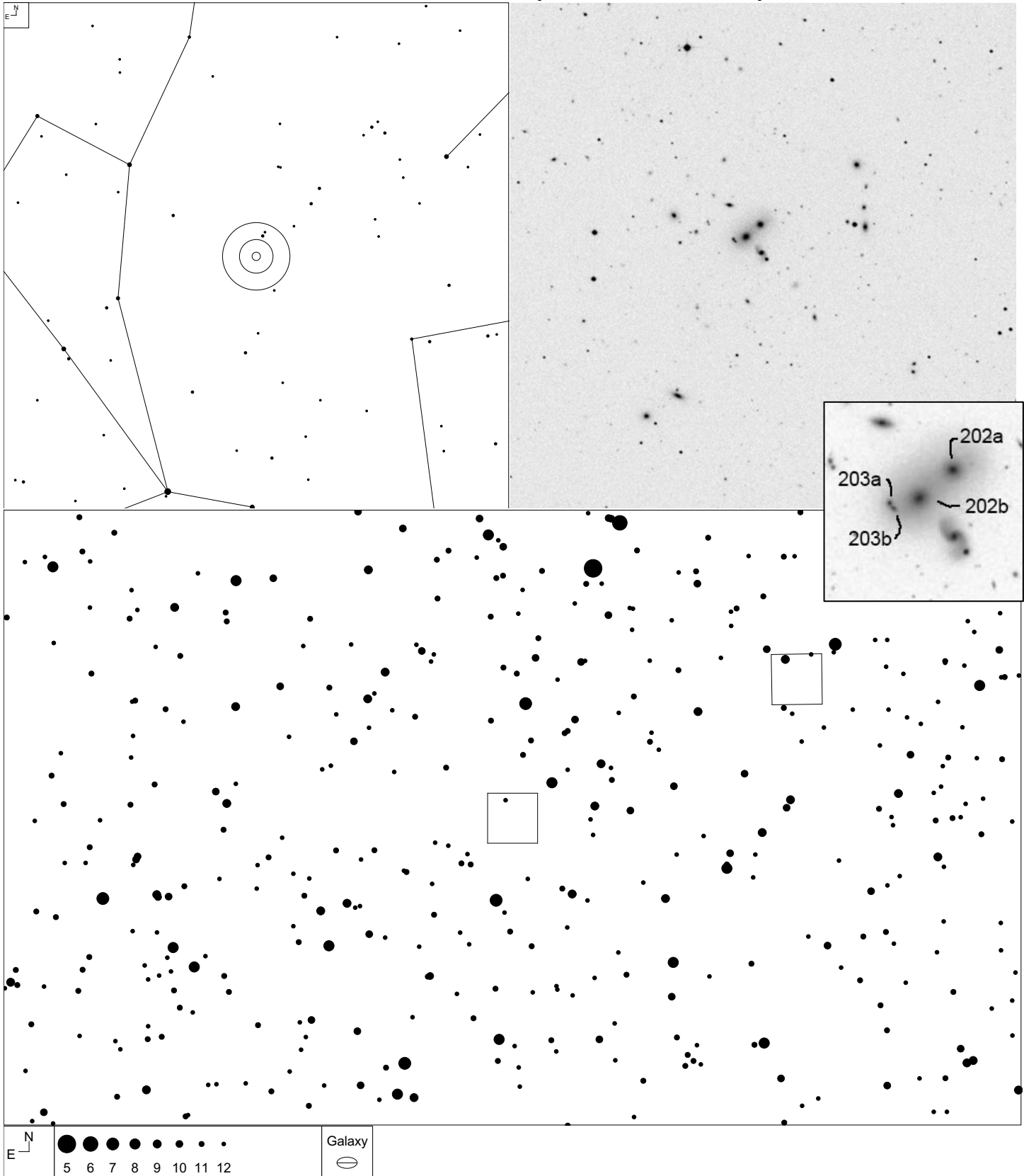
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 326  | 10 30 38.0 | +31 17 07 | GPair    |      |             | PD        |
| 326b | 13 30 36.6 | +31 17 10 | G        | 14.6 | 6x5         | 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

# VV 317 (Canes Venatici)



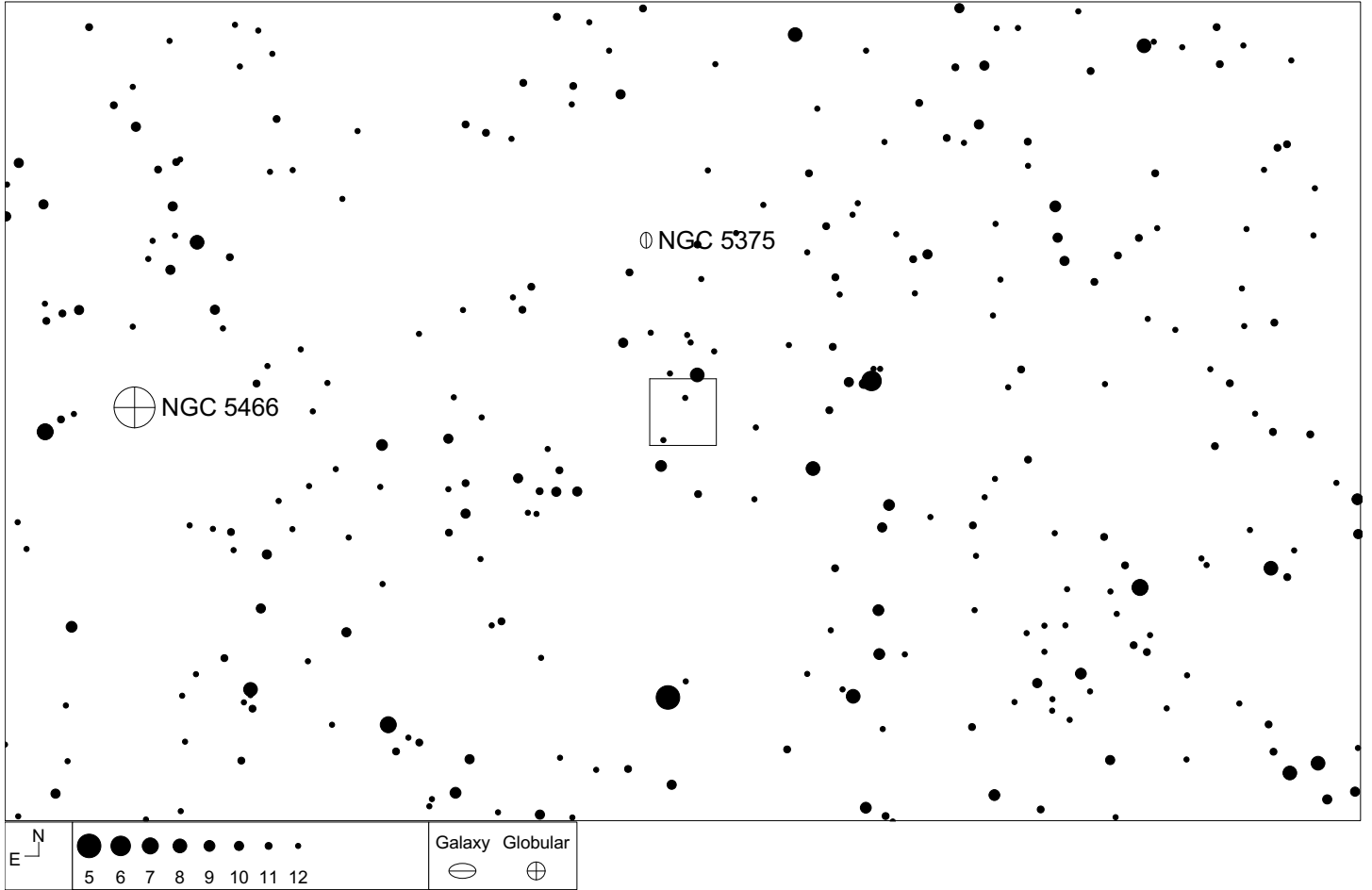
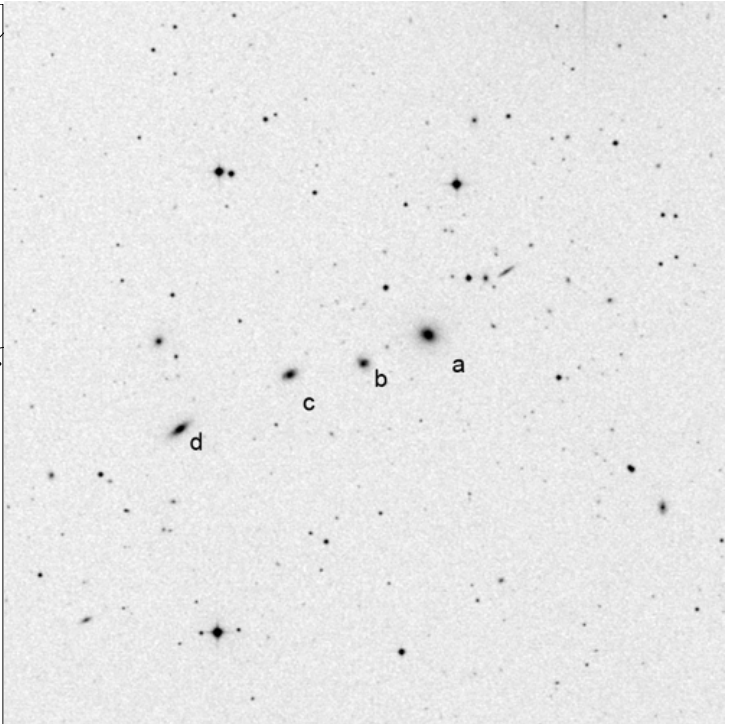
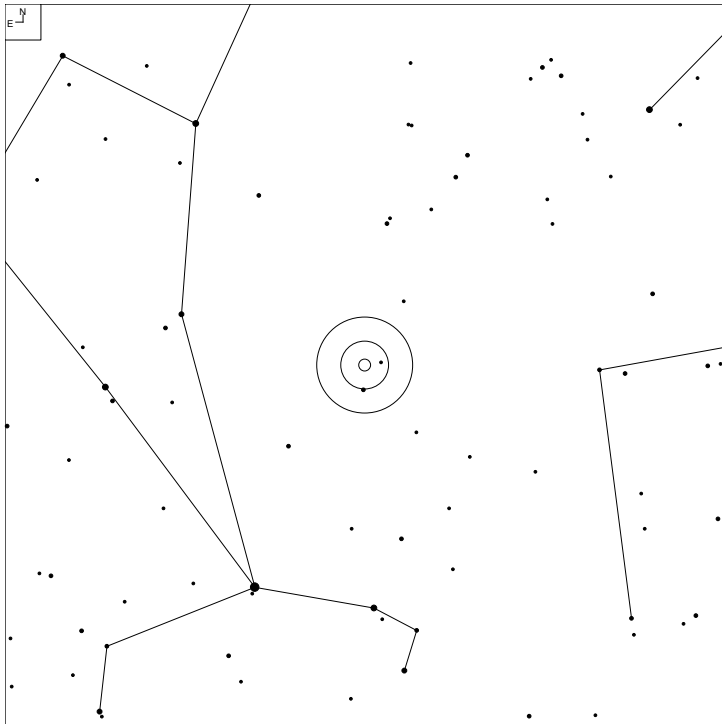
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 317  | 13 47 04.1 | +33 53 14 | GPair    |       |             | PDdf      |
| 317b | 13 47 01.2 | +33 53 37 | G        | 15.3p | 18x14     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

# VV 202 and VV 203 (Canes Venatici)



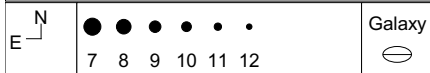
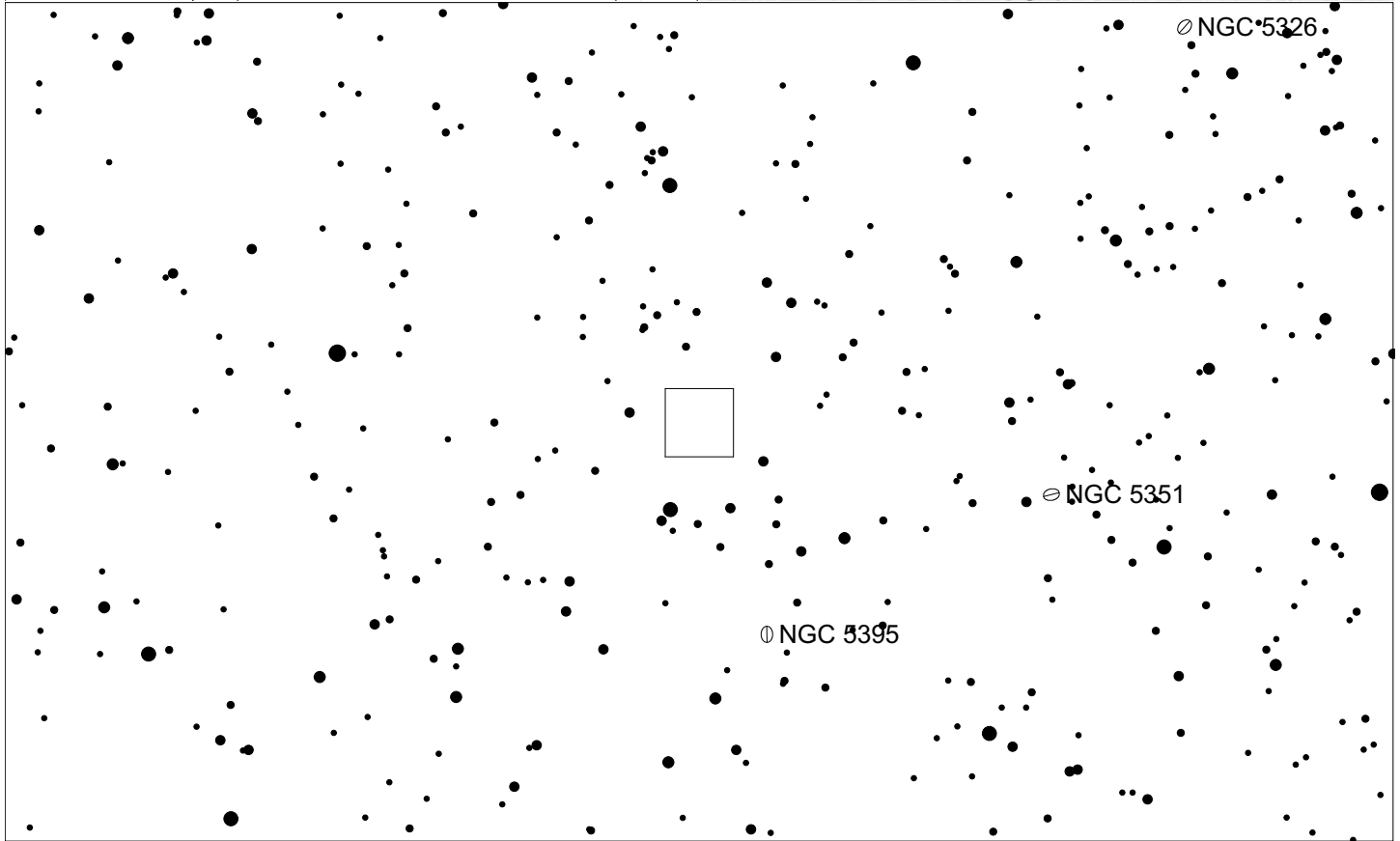
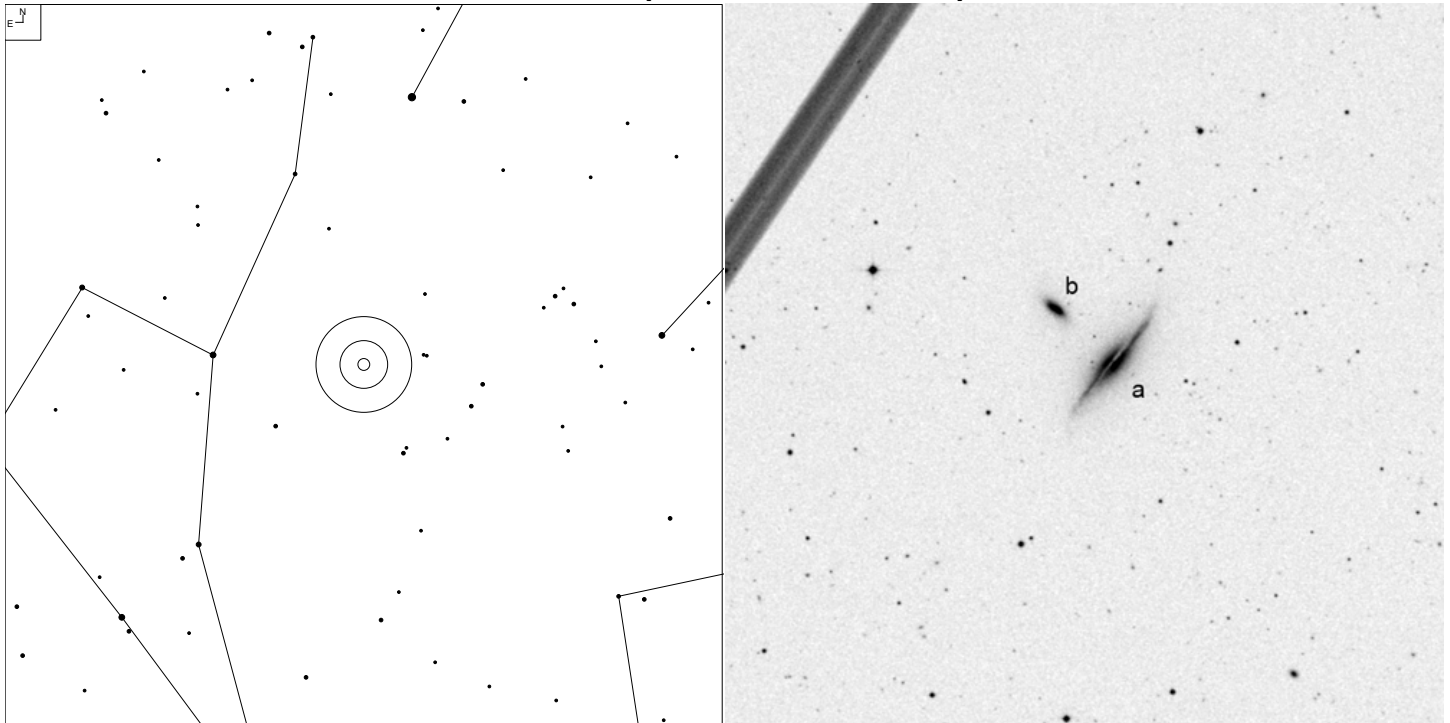
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 202  | 13 53 52.3 | +33 11 32 | GPair    |      |             | NN        |
| 202a | 13 53 41.7 | +33 13 41 | G        | 15.3 | 3x3         |           |
| 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)



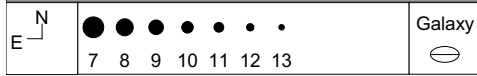
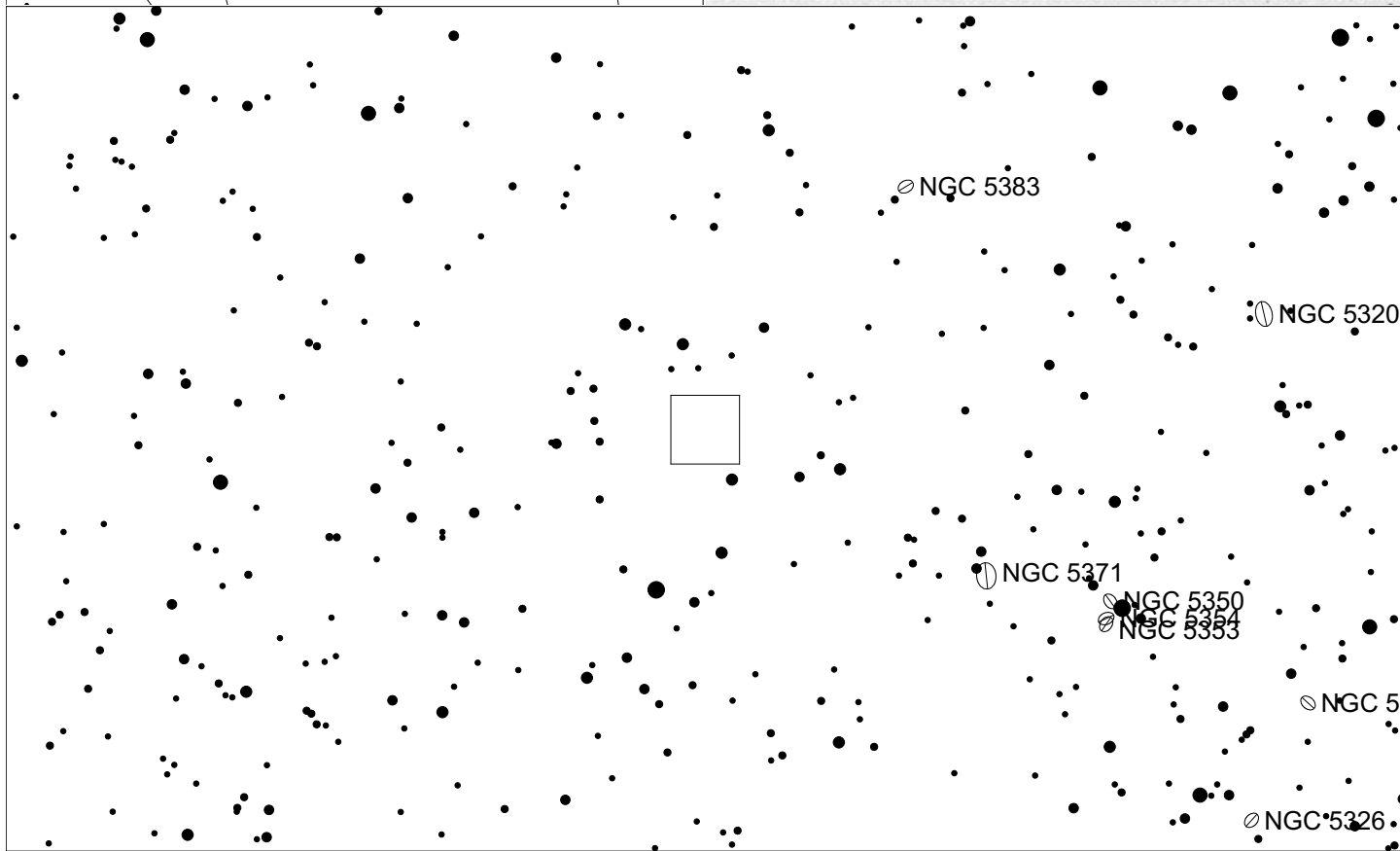
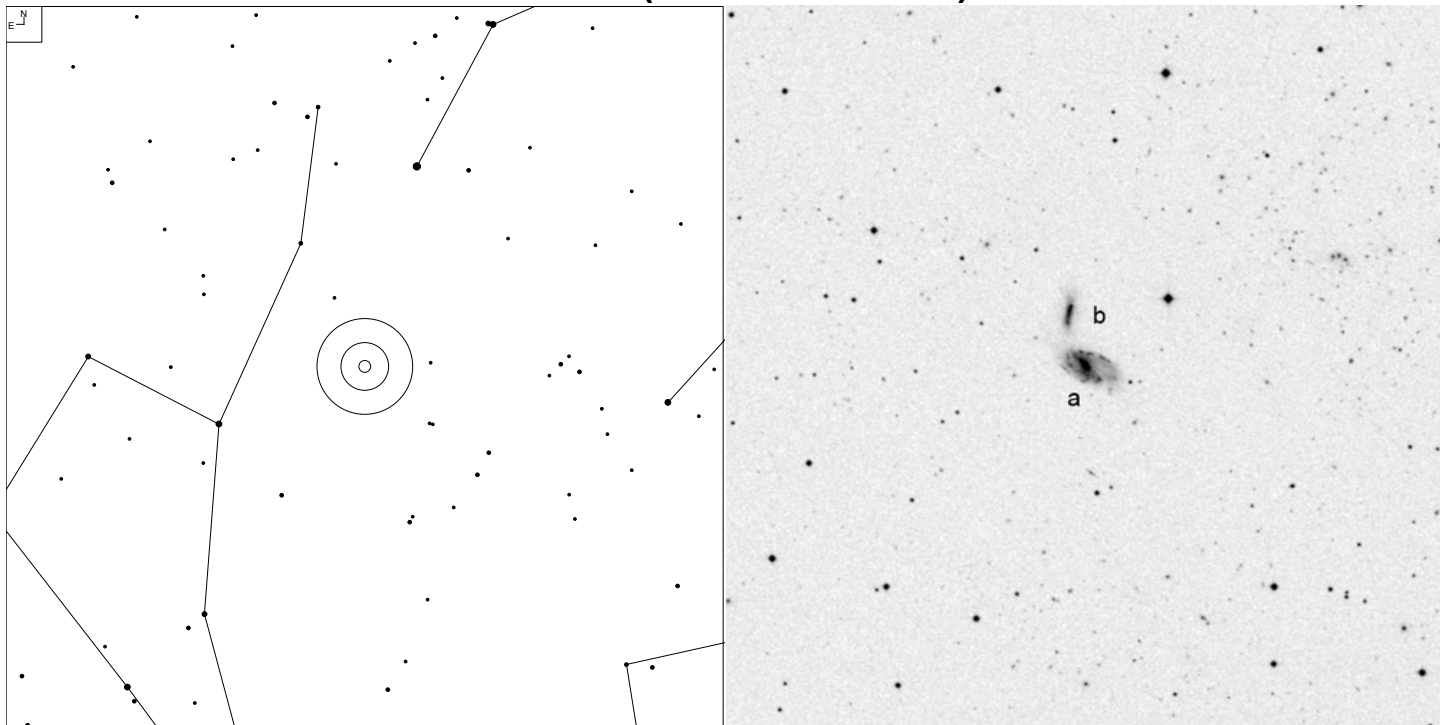
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 158  | 13 56 20.7 | +28 31 22 | GGroup   |      |             | Ch        |
| 158a | 13 56 19.2 | +28 32 11 | G        | 15.3 | 4x3         |           |
| 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)



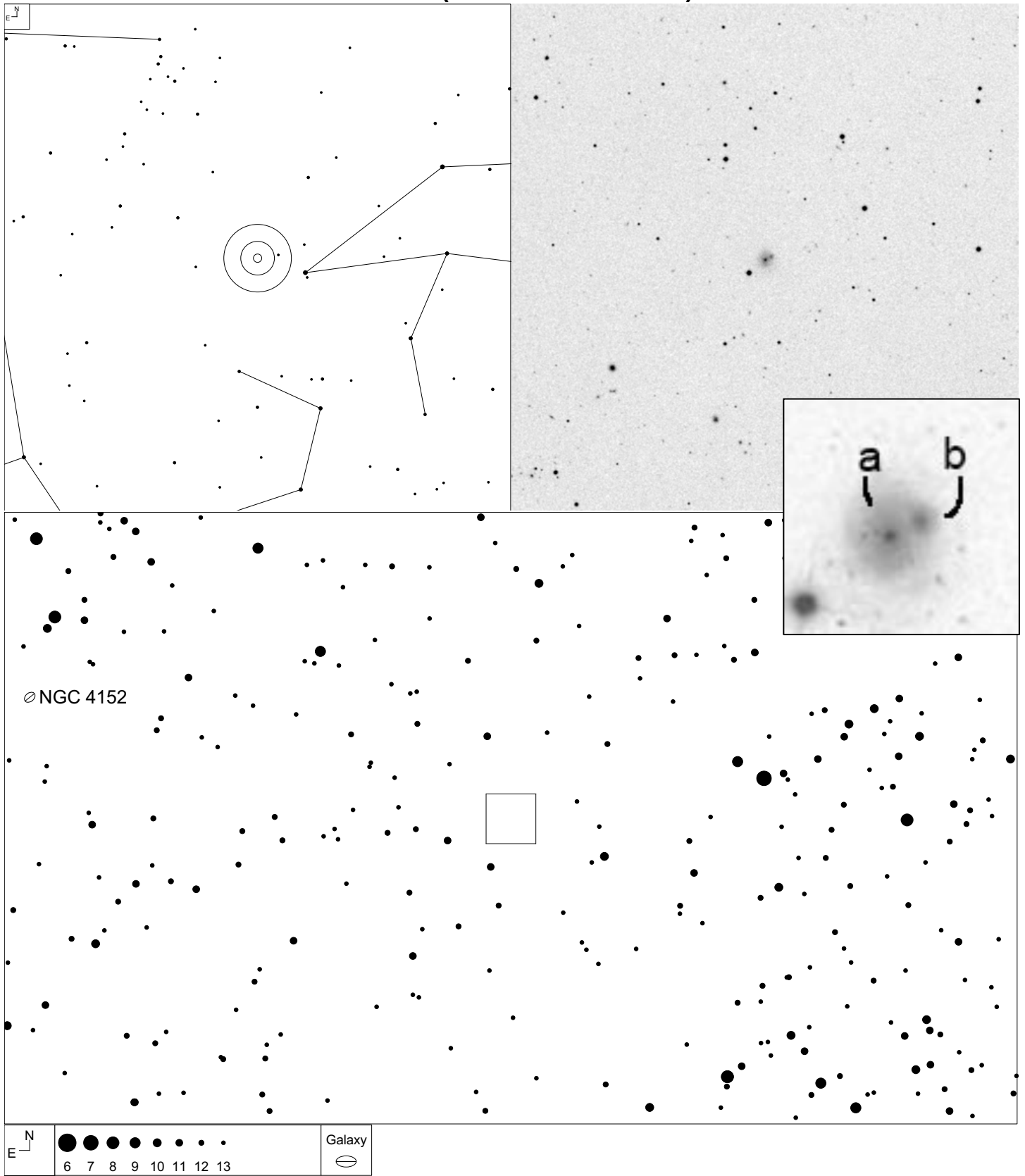
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 310  | 13 59 54.0 | +38 11 30 | GPair    |       |             | PD        |
| 310a | 13 59 50.9 | +38 10 55 | G        | 14.4p | 34x6      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

# VV 256 (Canes Venatici)



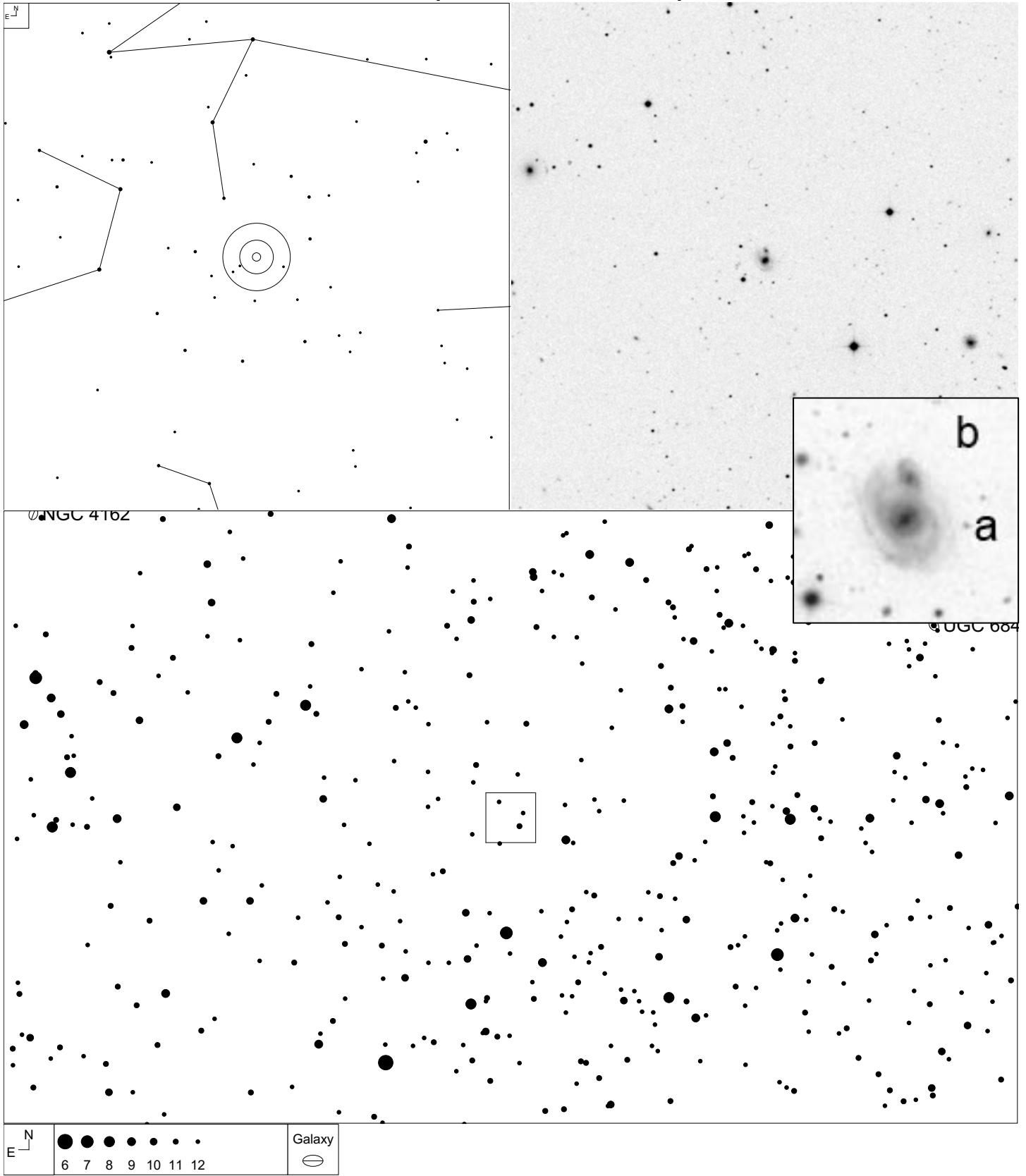
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 256  | 14 00 55.4 | +40 59 49 | GPair    |       |             | PKdf      |
| 256a | 14 00 54.5 | +40 59 17 | G        | 14.03 | 15x8        |           |
| 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         |           |

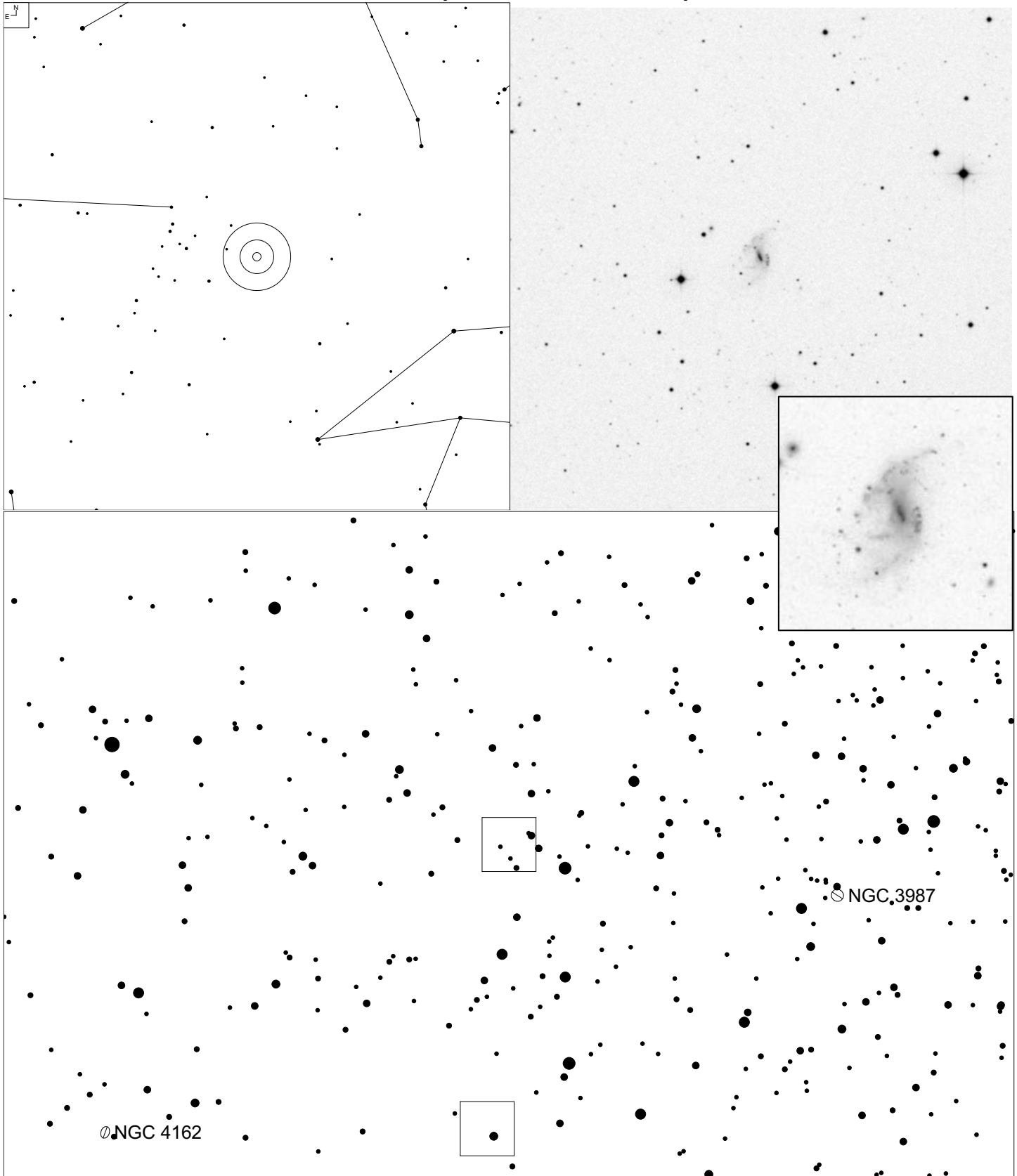
# VV 45 (Coma Berenices)



| 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         |           |

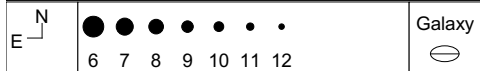
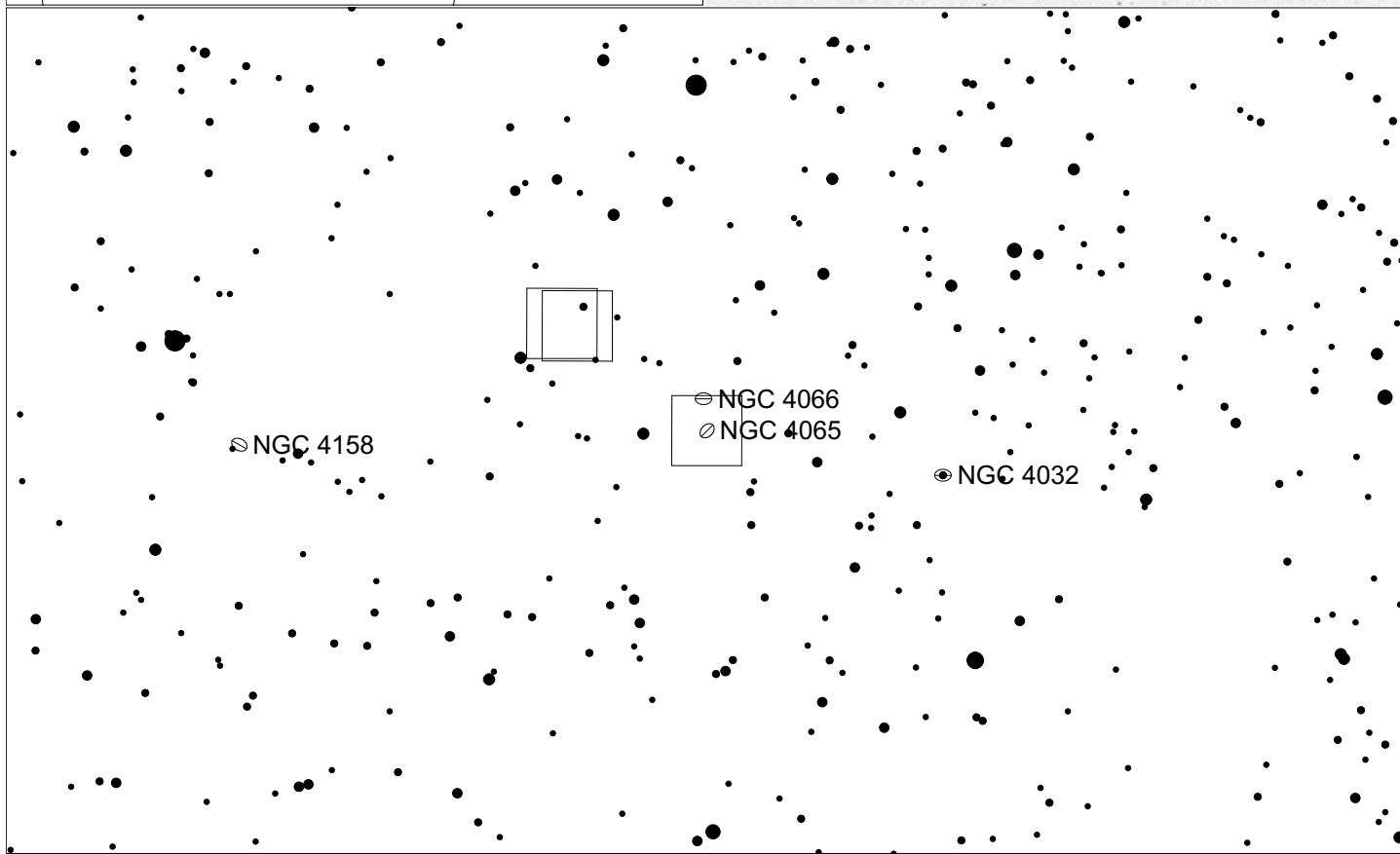
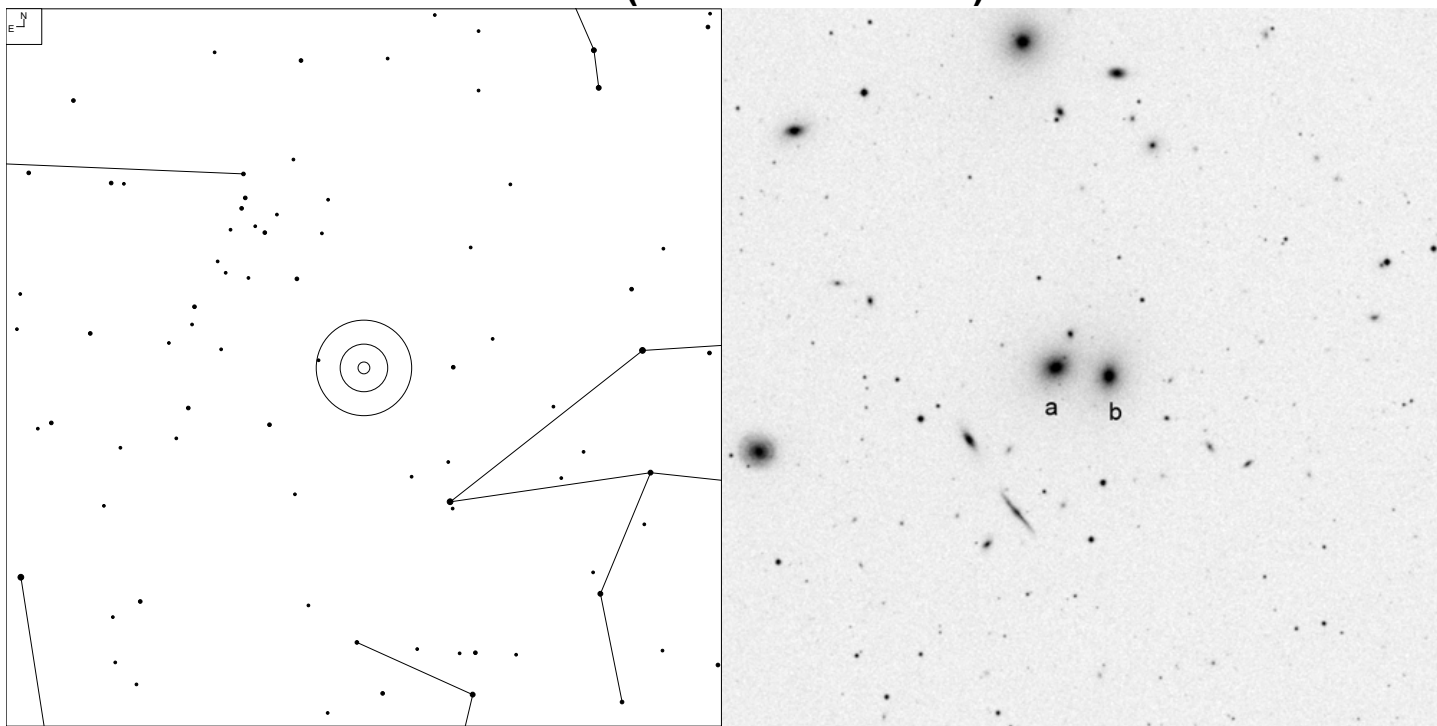


# VV 276 (Coma Berenices)



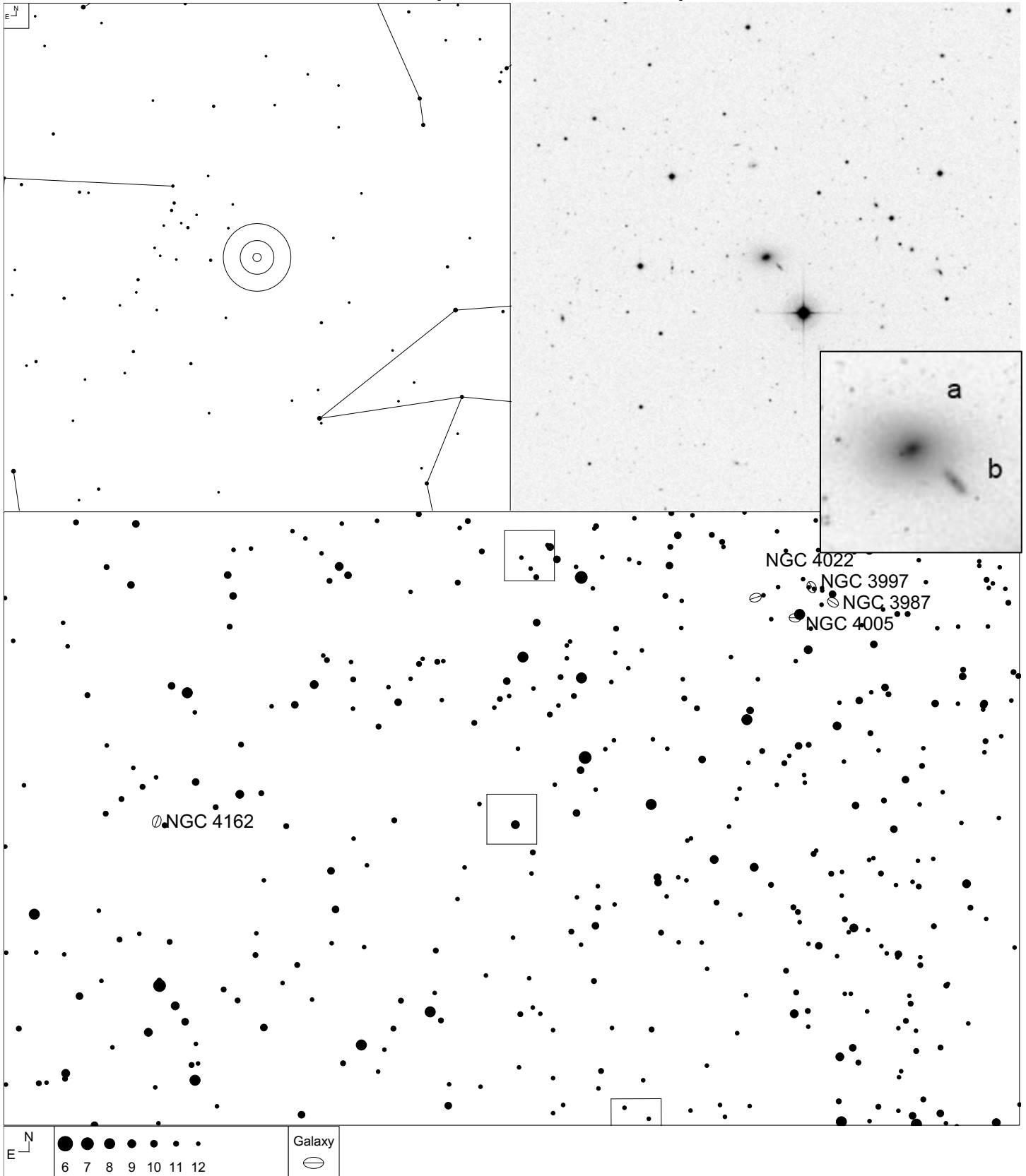
| VV  | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|------|-------------|-----------|
| 276 | 12 03 53.5 | +25 25 57 | G        | 14.1 | 19x11       | PK        |

# VV 179 (Coma Berenices)



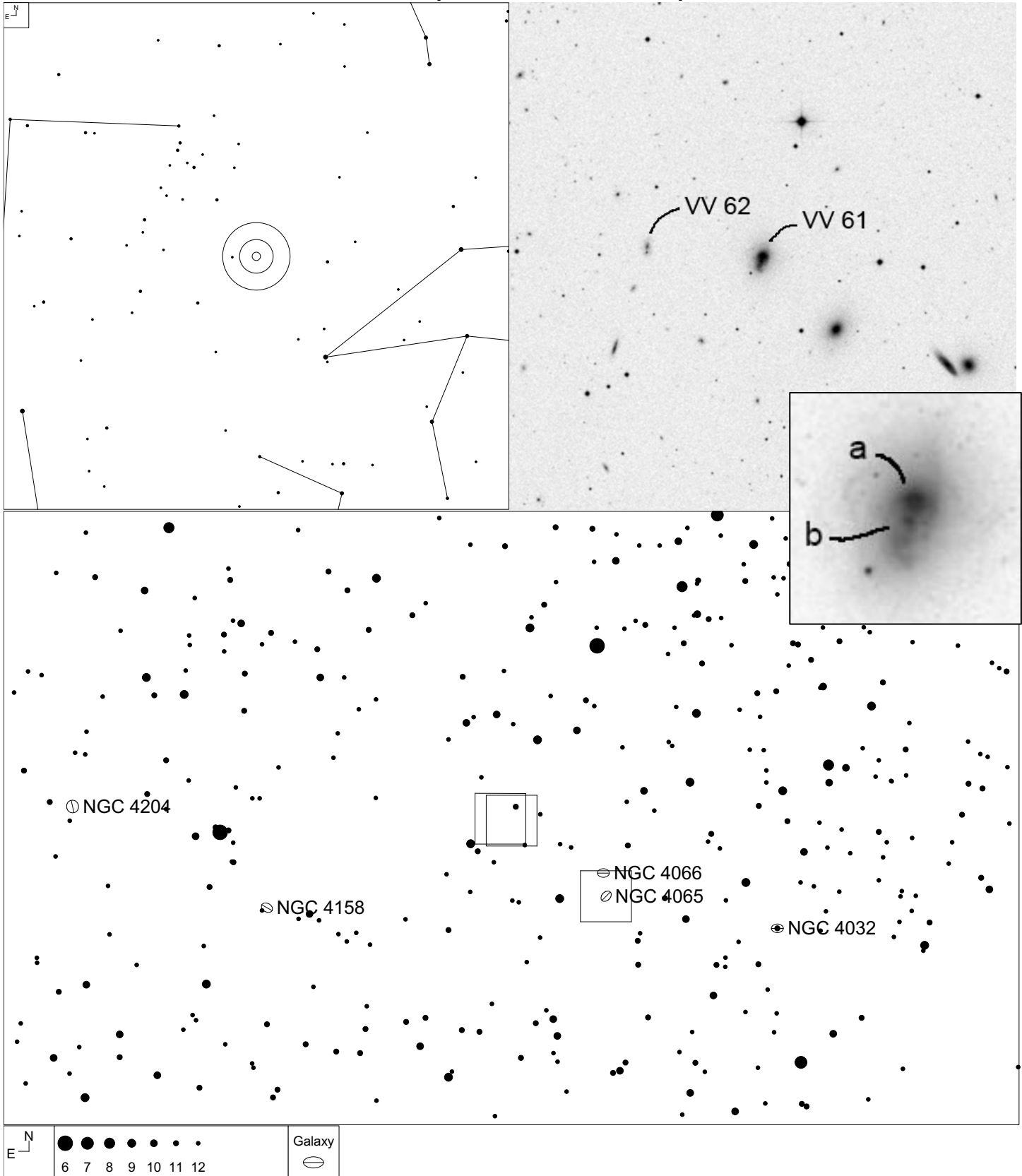
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 179  | 12 04 03.8 | +20 14 01 | GPair    |       |             | PD        |
| 179b | 12 04 01.5 | +20 13 56 | G        | 14.12 | 12x9      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

# VV 46 (Coma Berenices)



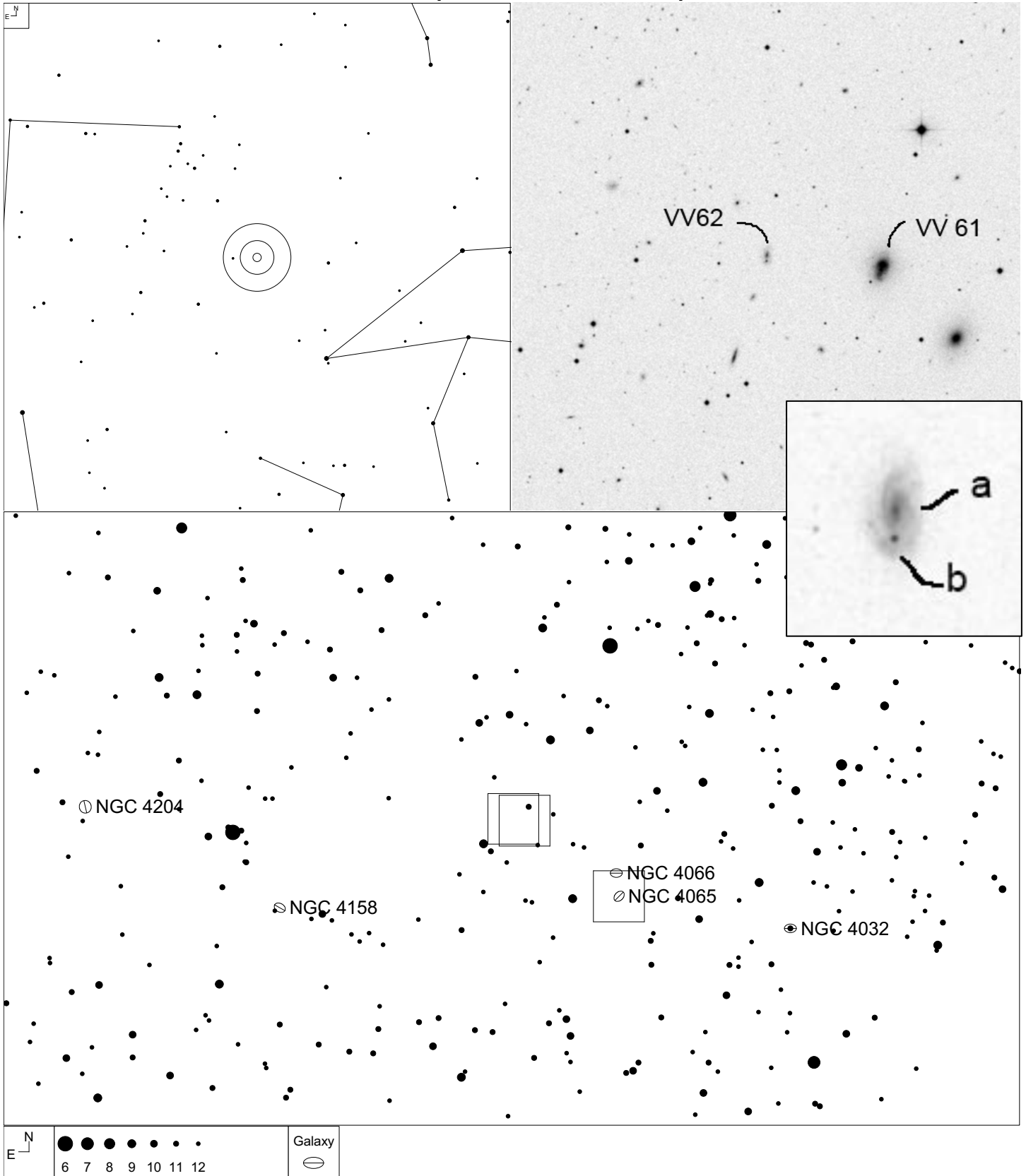
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 46  | 12 04 15.9 | +24 08 40 | GPair    |       |             | PDb       |
| 46b | 12 04 15.1 | +24 08 32 | G        | 17.6g | 4x2         | 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

# VV 61 (Coma Berenices)



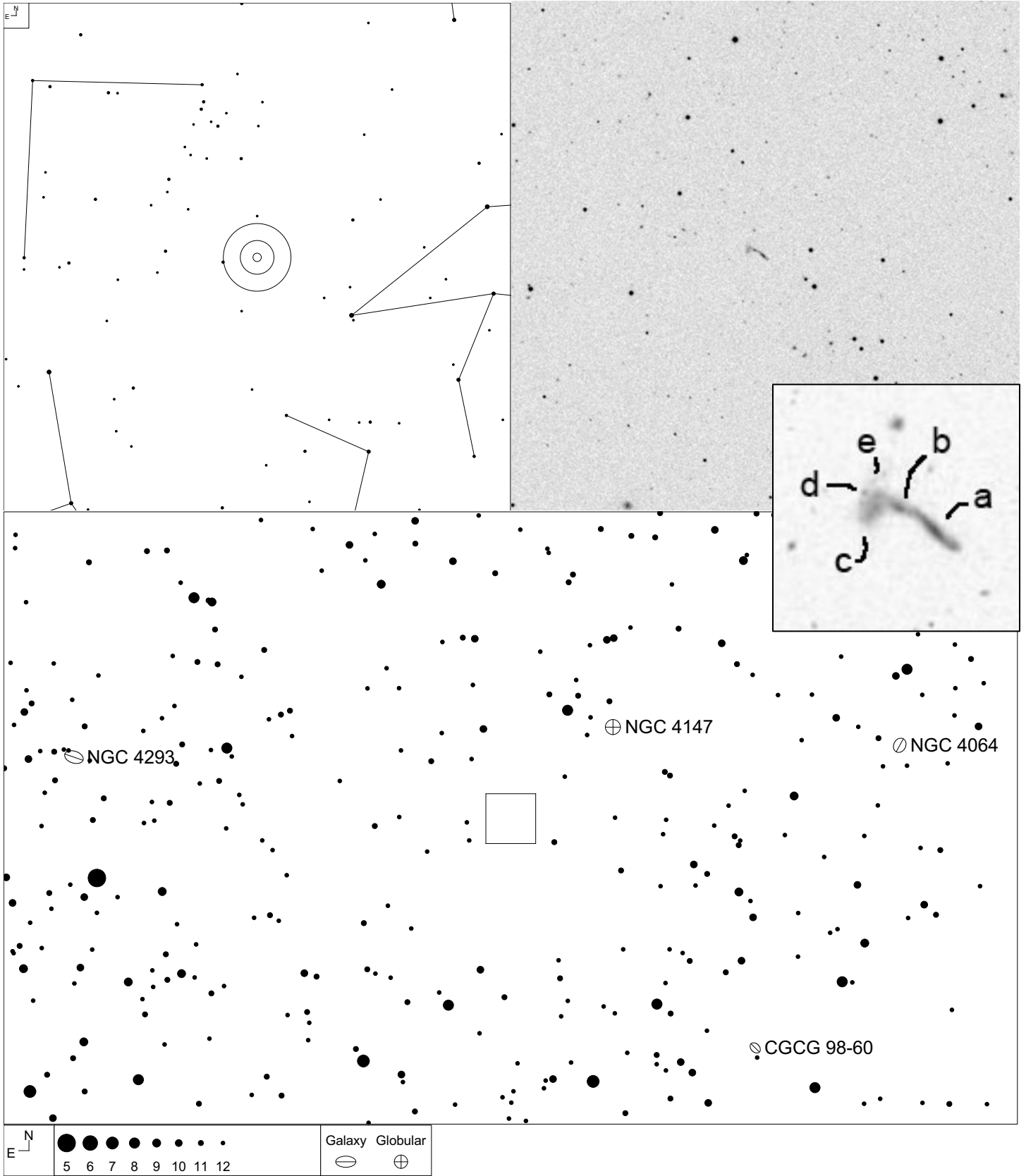
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 61  | 12 06 03.9 | +20 36 22 | GPair    | 14.36 | 13x18       | PK        |
| 61a | 12 06 03.6 | +20 36 29 | G        |       |             | 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

# VV 62 (Coma Berenices)



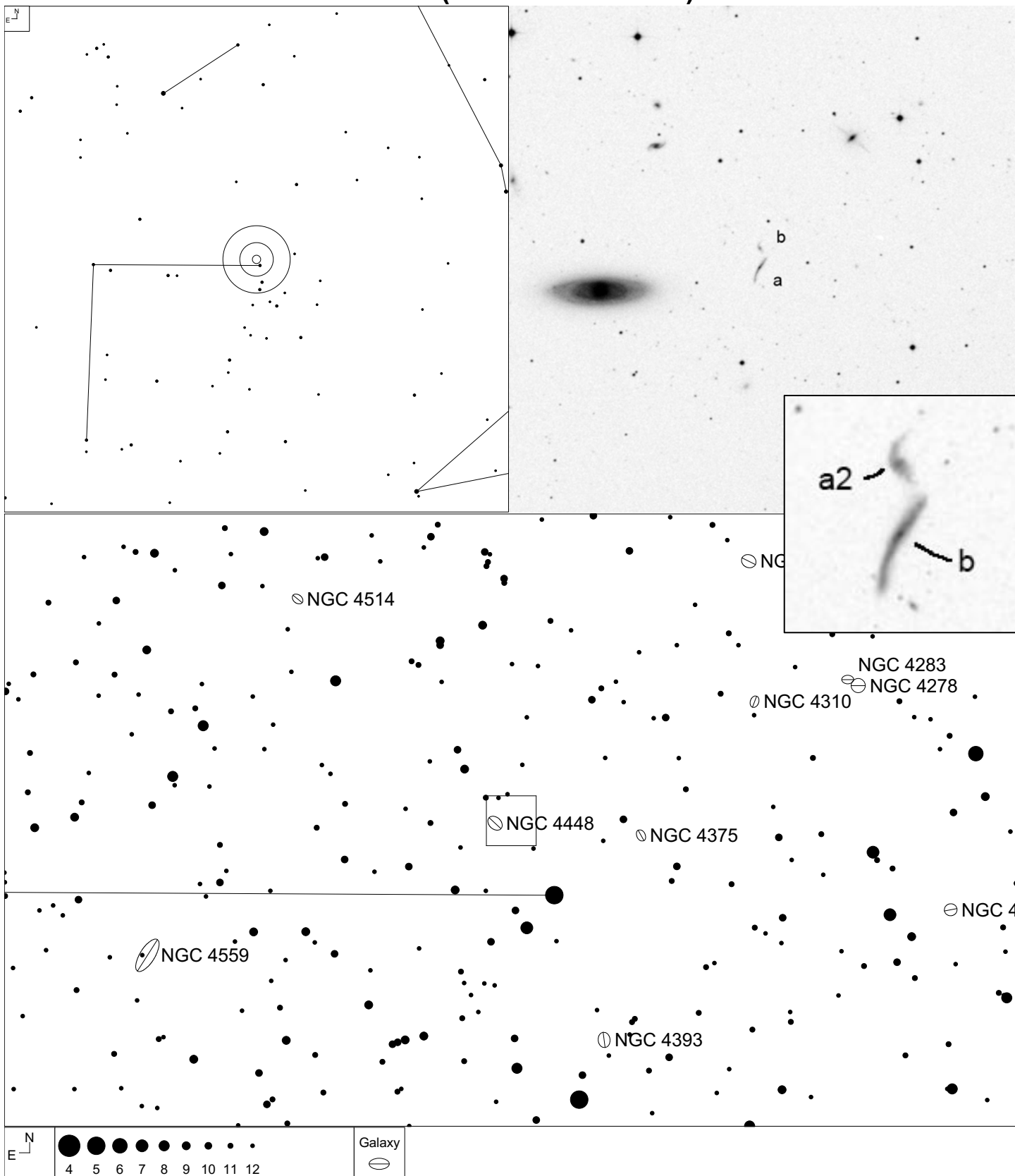
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 62  | 12 06 18.3 | +20 36 40 | GPair    |       |             | PDb       |
| 62b | 12 06 18.2 | +20 36 33 | G        | 19.0g | 3x3         | 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

# VV 147 (Coma Berenices)



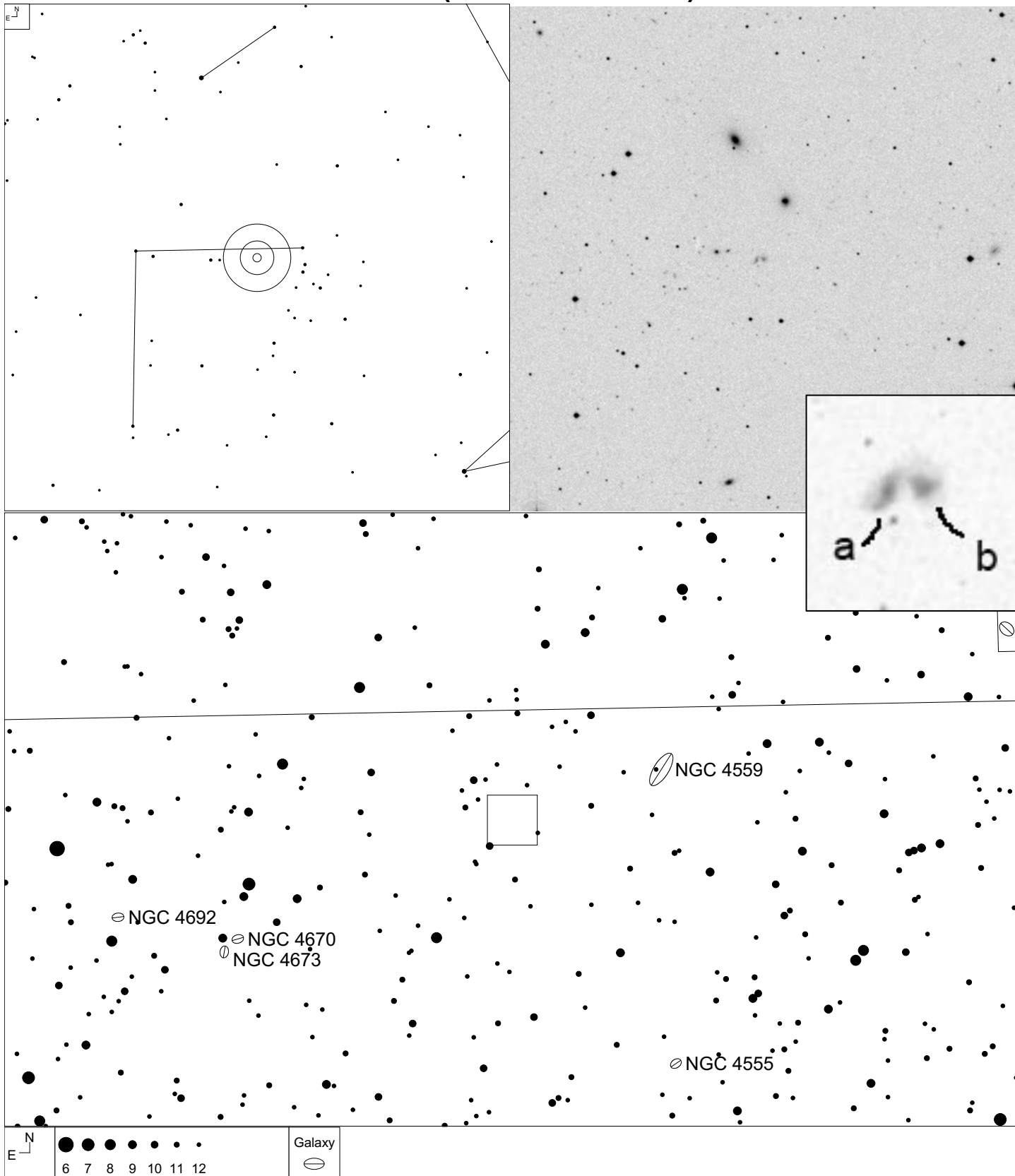
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 147  | 12 12 11.6 | +18 05 37 | GGroup   |       |             | Ch        |
| 147a | 12 12 11.8 | +18 05 38 | G        | 17.0g | 8x1         |           |
| 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        |           |

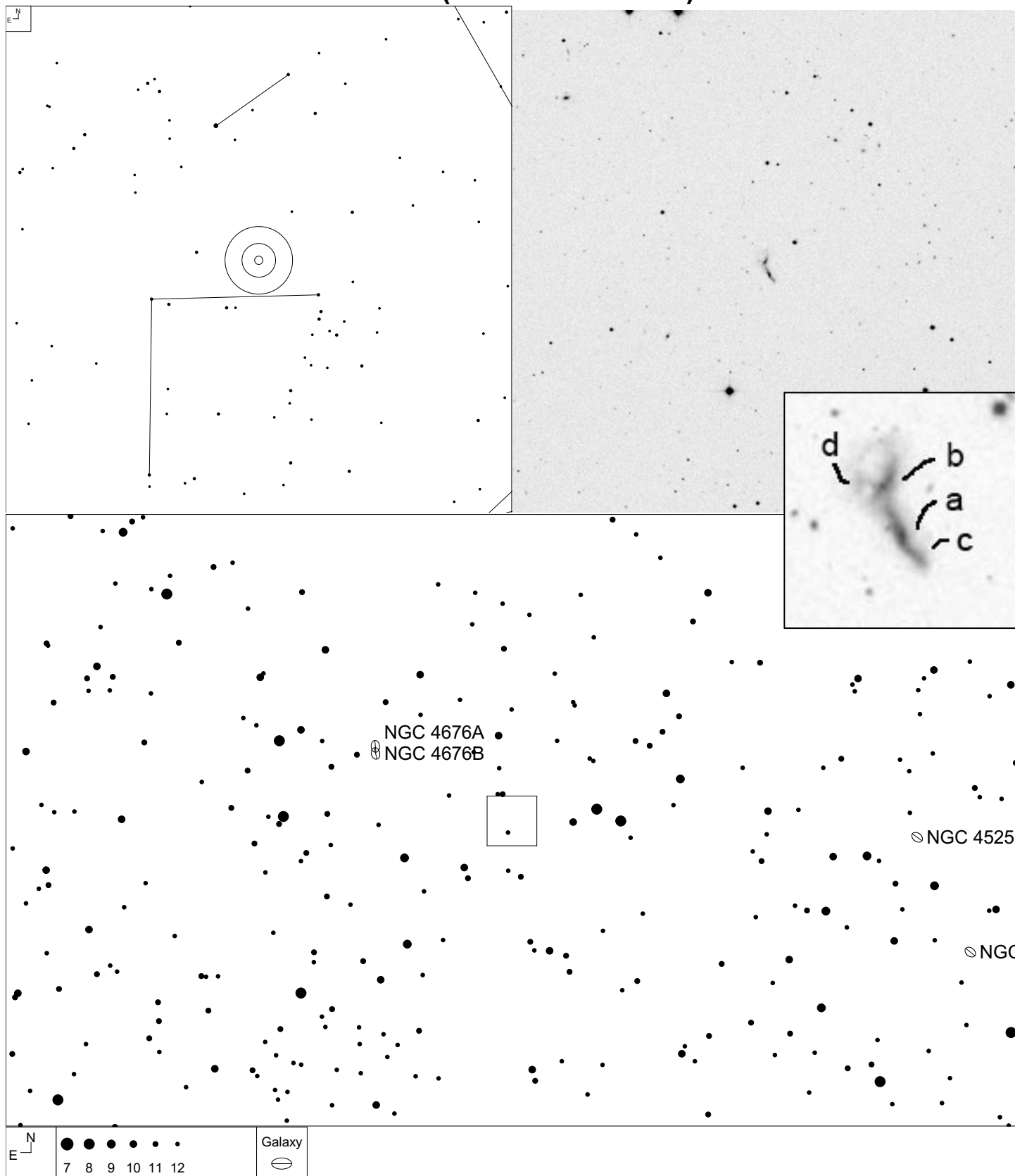
# VV 287 (Coma Berenices)



| 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 |             |           |

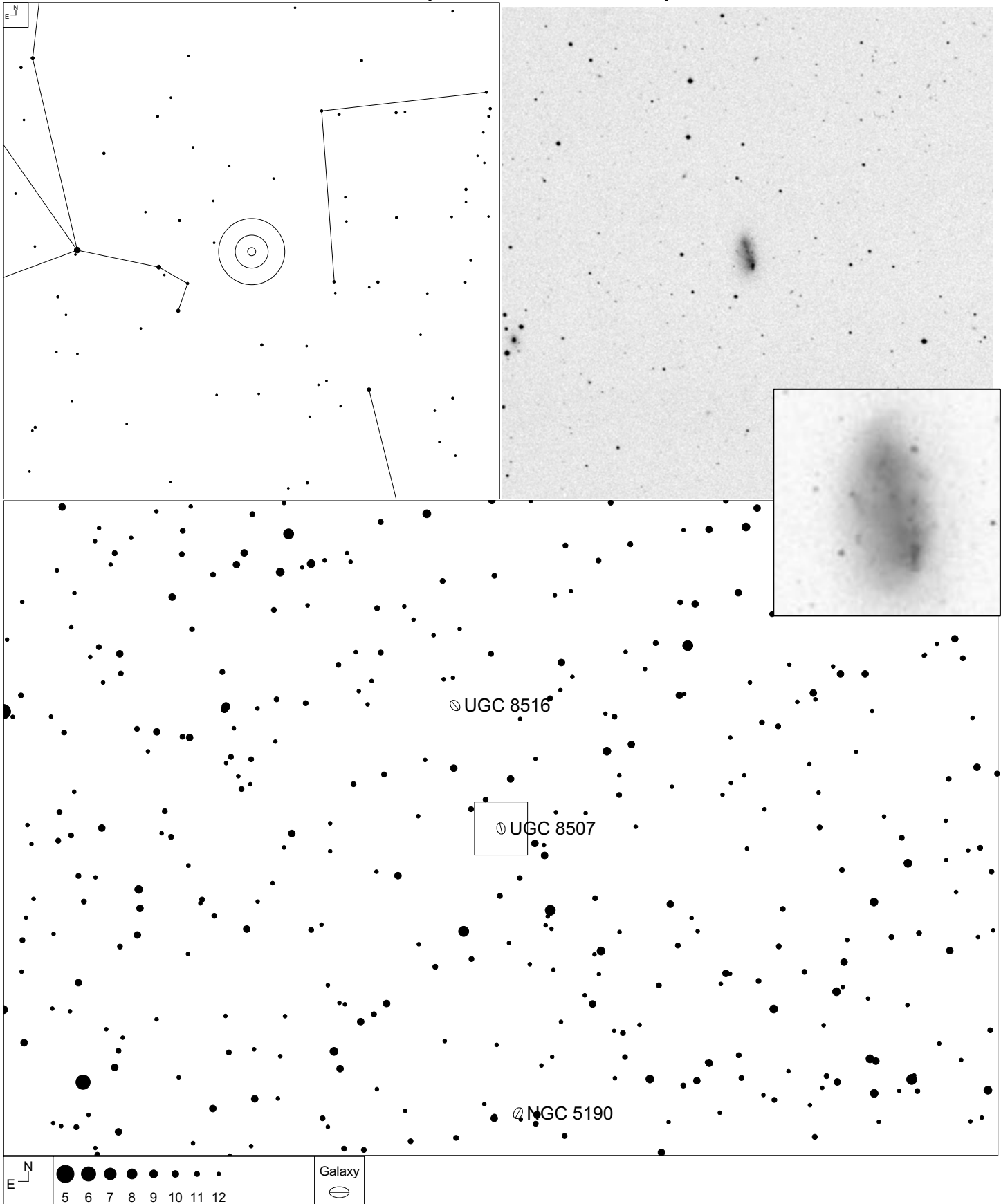


# VV 151 (Coma Berenices)



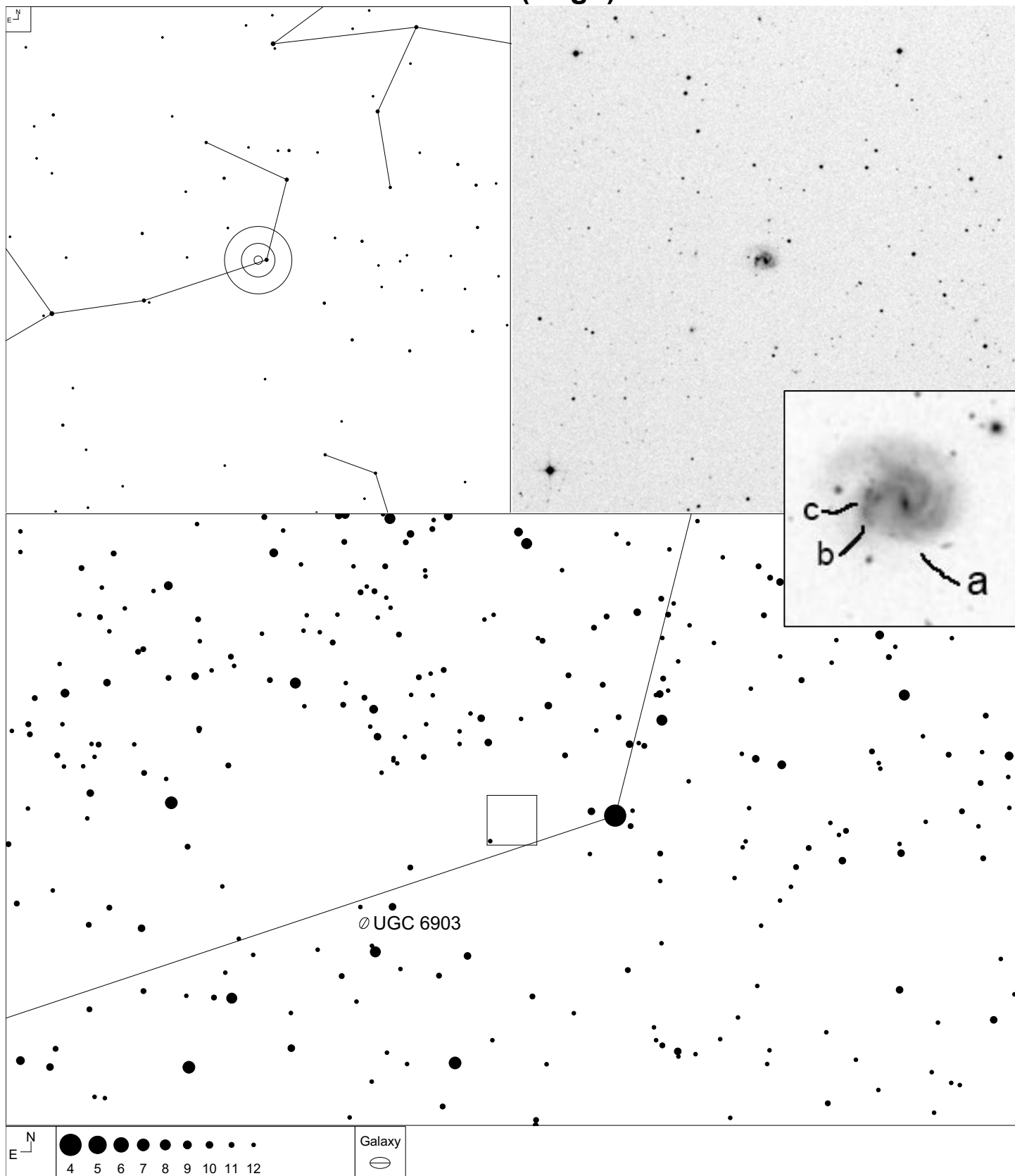
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 151  | 12 43 03.6 | +30 22 58 | GTrpl    |      |             | PDb       |
| 151c | 12 43 03.0 | +30 22 44 | G        |      |             |           |
| 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)



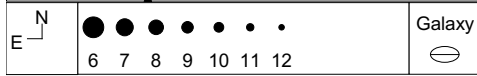
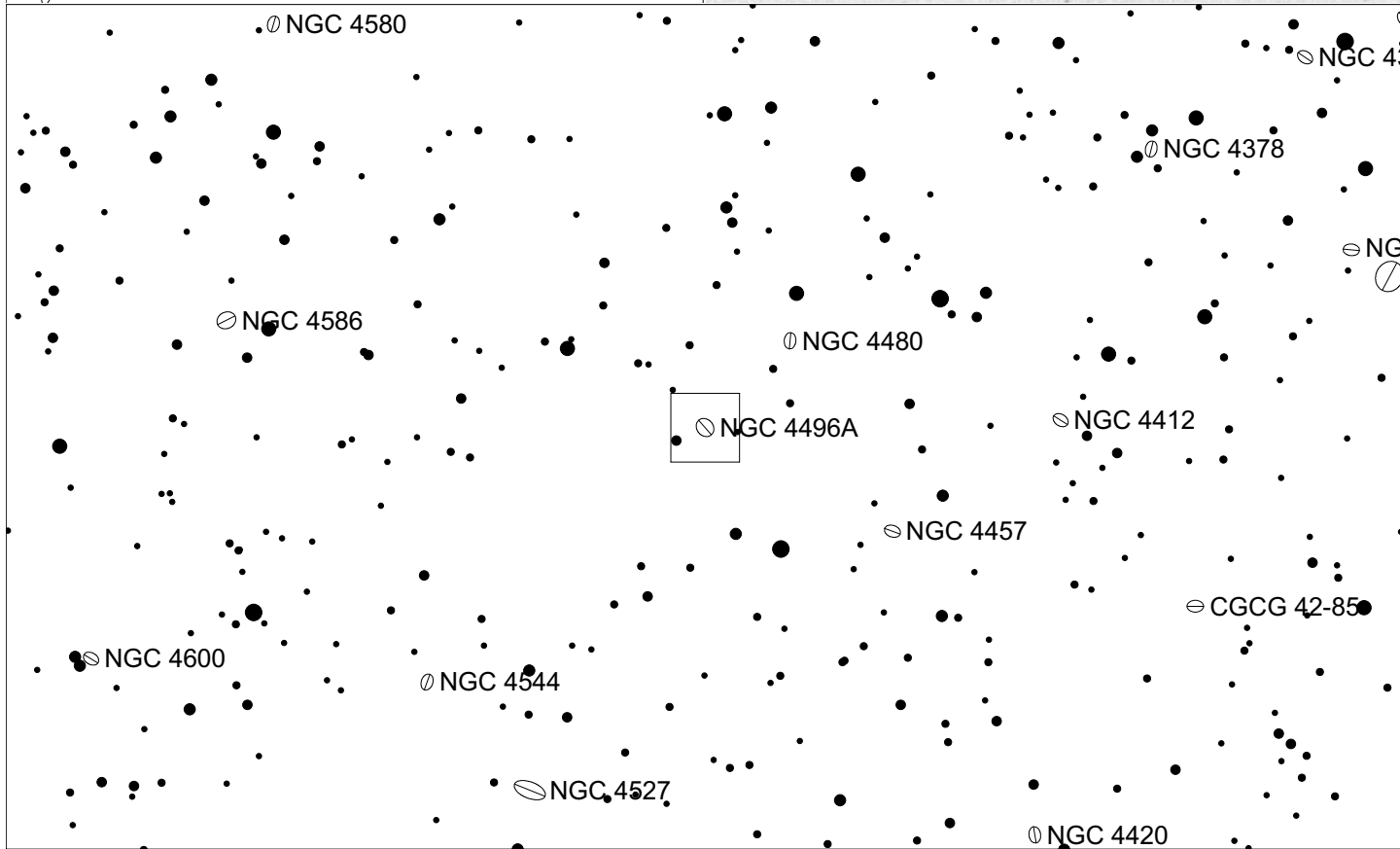
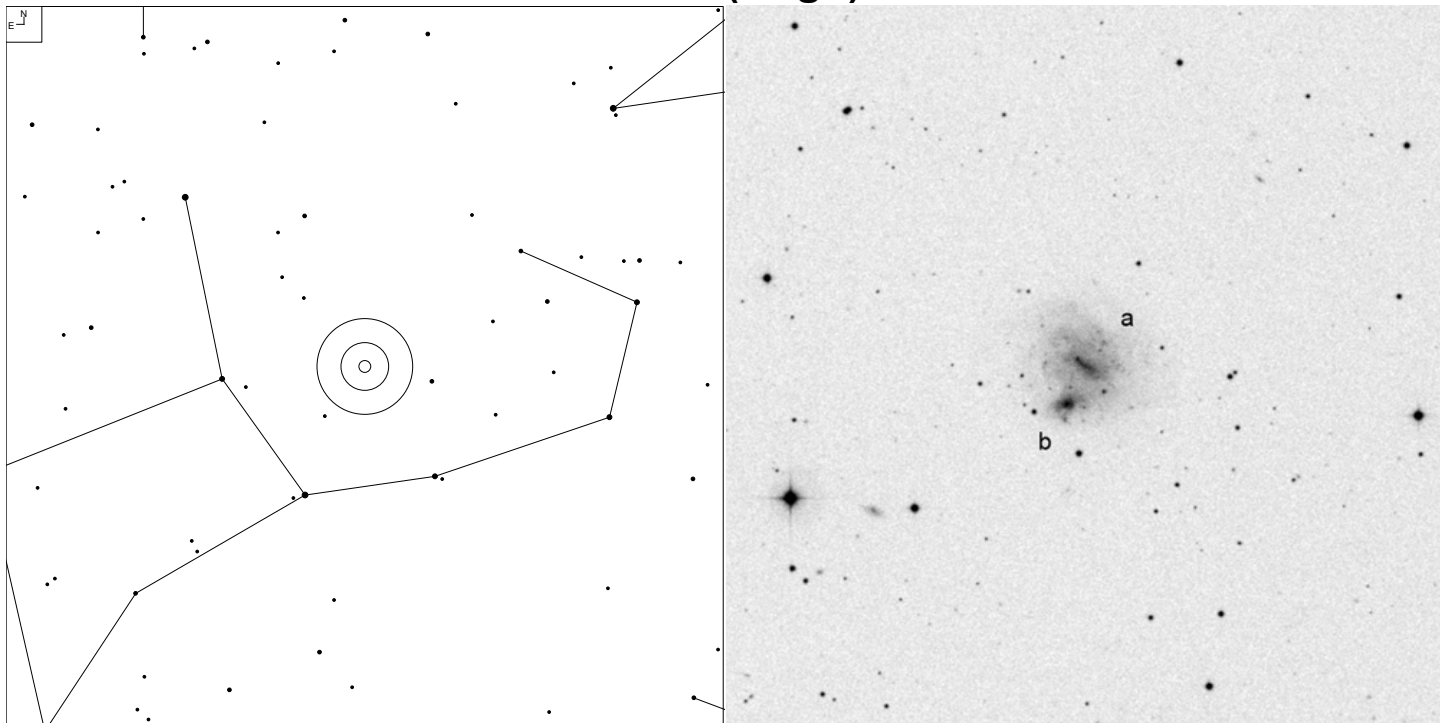
| VV | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|----|------------|-----------|----------|-------|-------------|-----------|
| 88 | 13 30 58.7 | +19 26 17 | G        | 13.94 | 14x8        | PC        |

# VV 105 (Virgo)



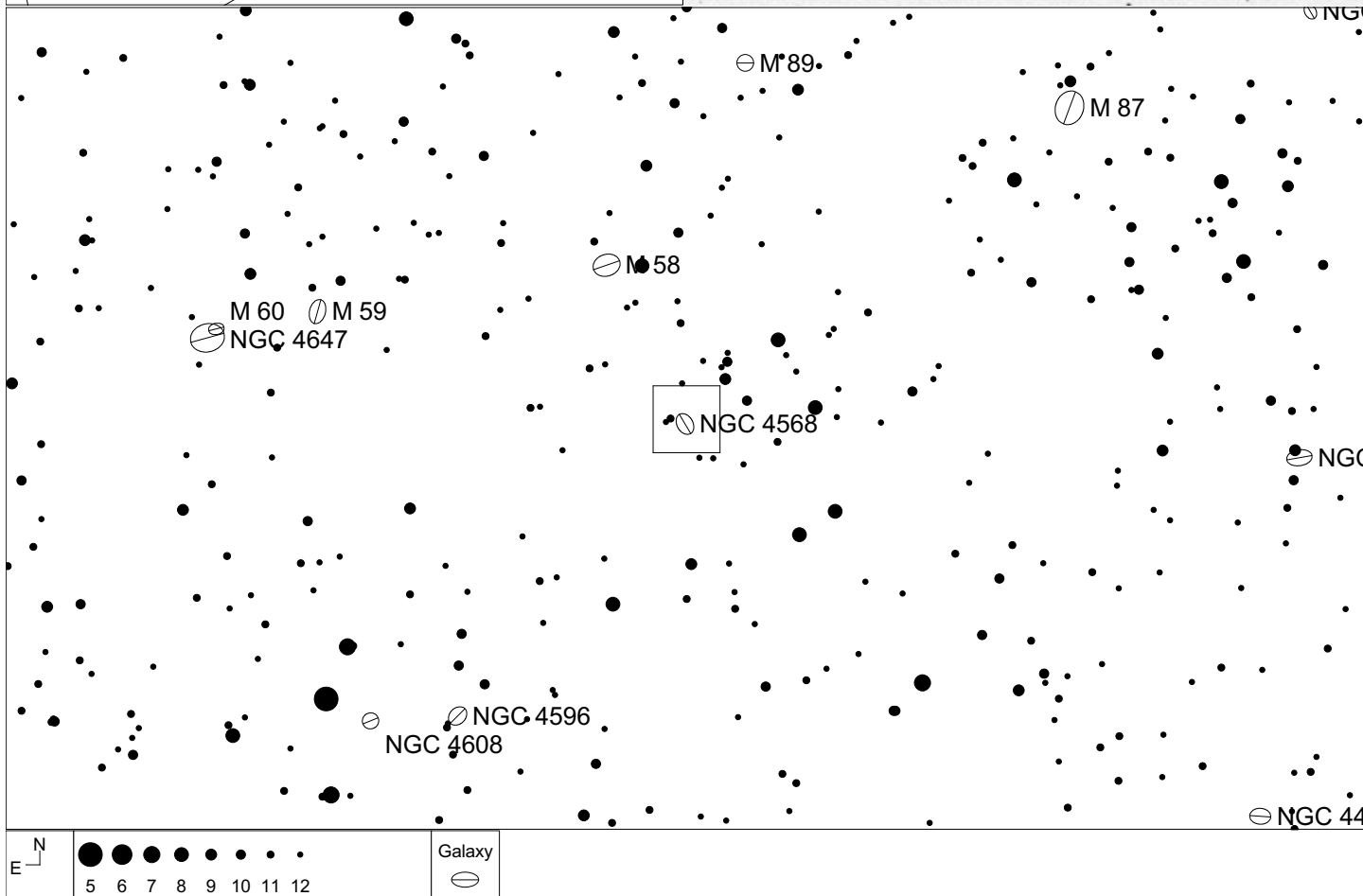
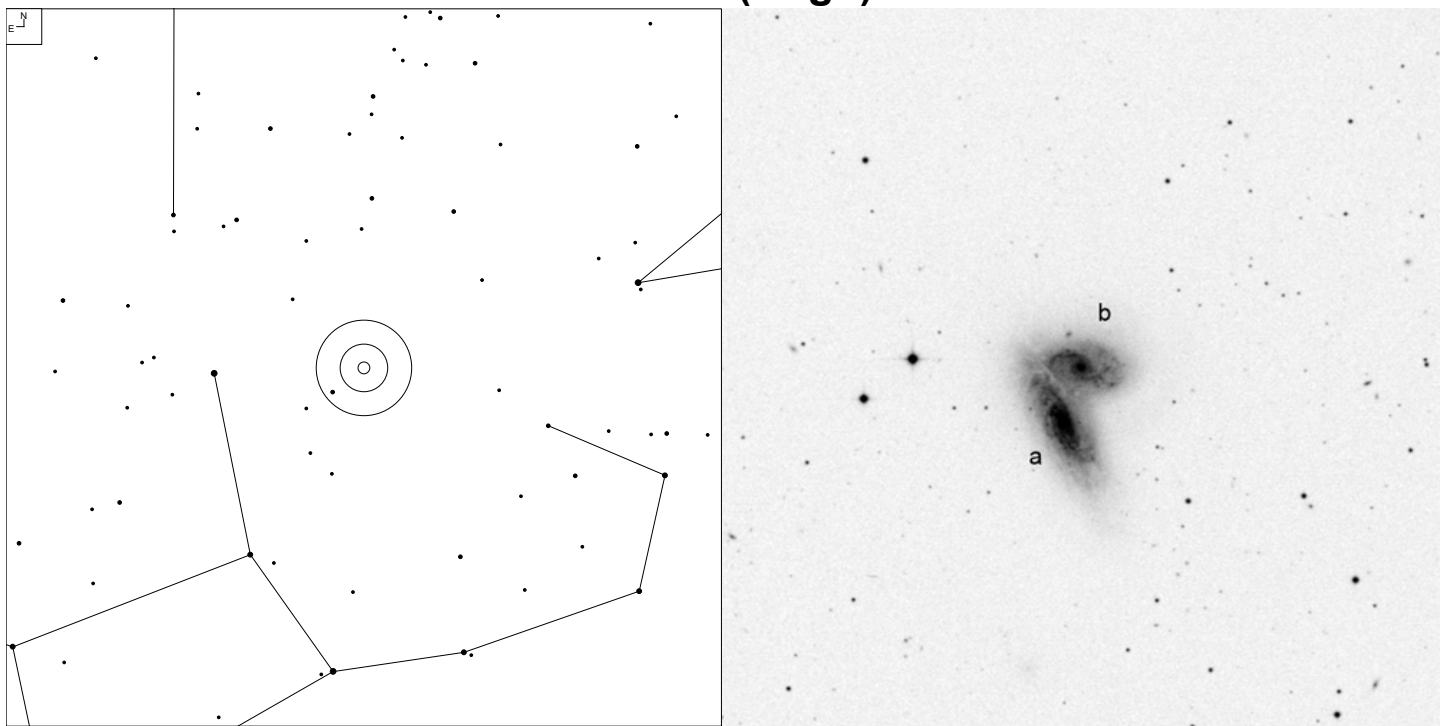
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 105  | 11 52 44.1 | +01 44 26 | GPair    |       |             | N         |
| 105a | 11 52 43.4 | +01 44 27 | G        | 14.7g | 8x7         |           |
| 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)



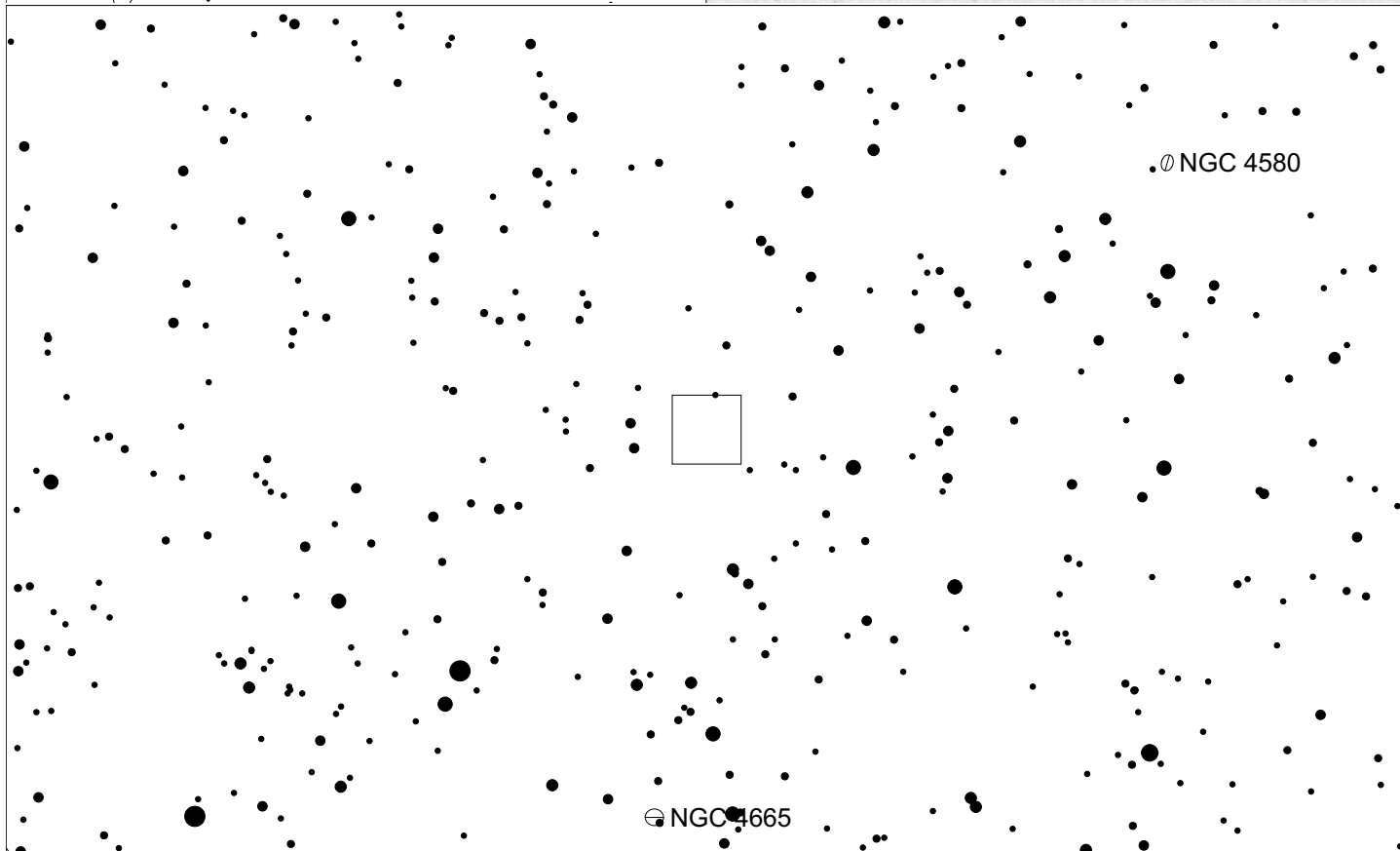
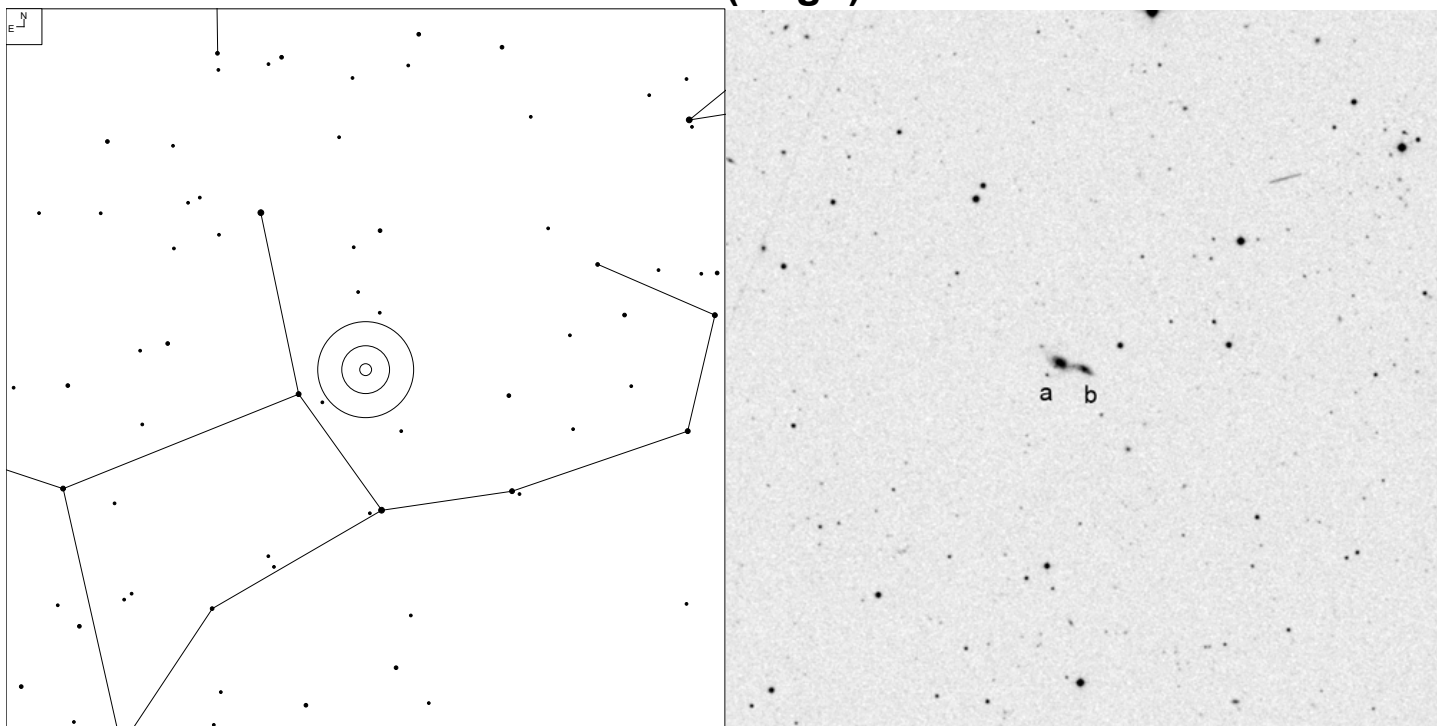
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 76  | 12 31 40.0 | +03 55 58 | GPair    |       |             | PK        |
| 76a | 12 31 39.2 | +03 56 23 | G        | 11.94 | 40x32       | 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

# VV 219 (Virgo)



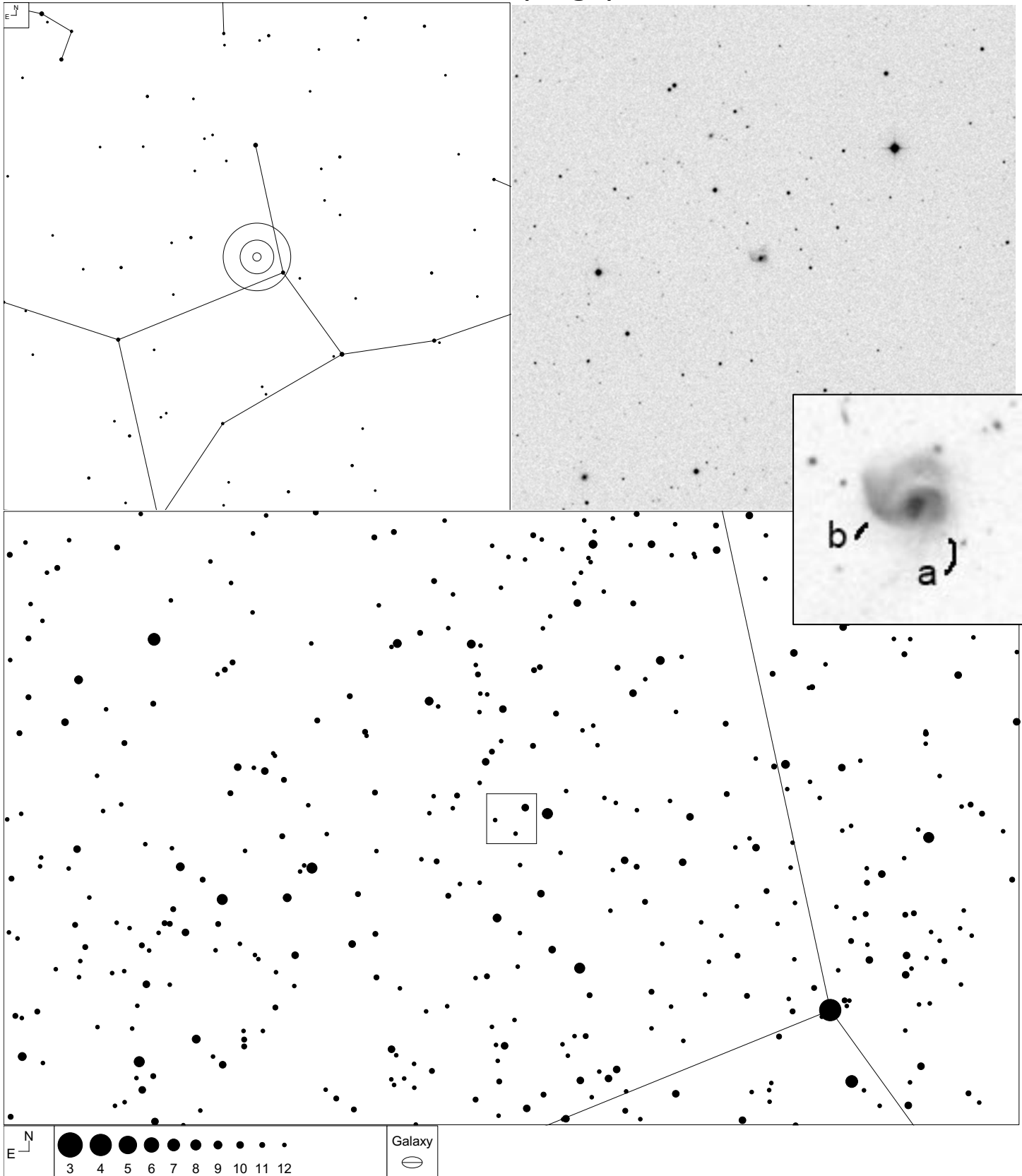
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 219  | 12 36 33.5 | +11 14 54 | GPair    |       |             | PK        |
| 219b | 12 36 32.7 | +11 15 28 | G        | 12.1b | 33x20     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

# VV 64 (Virgo)



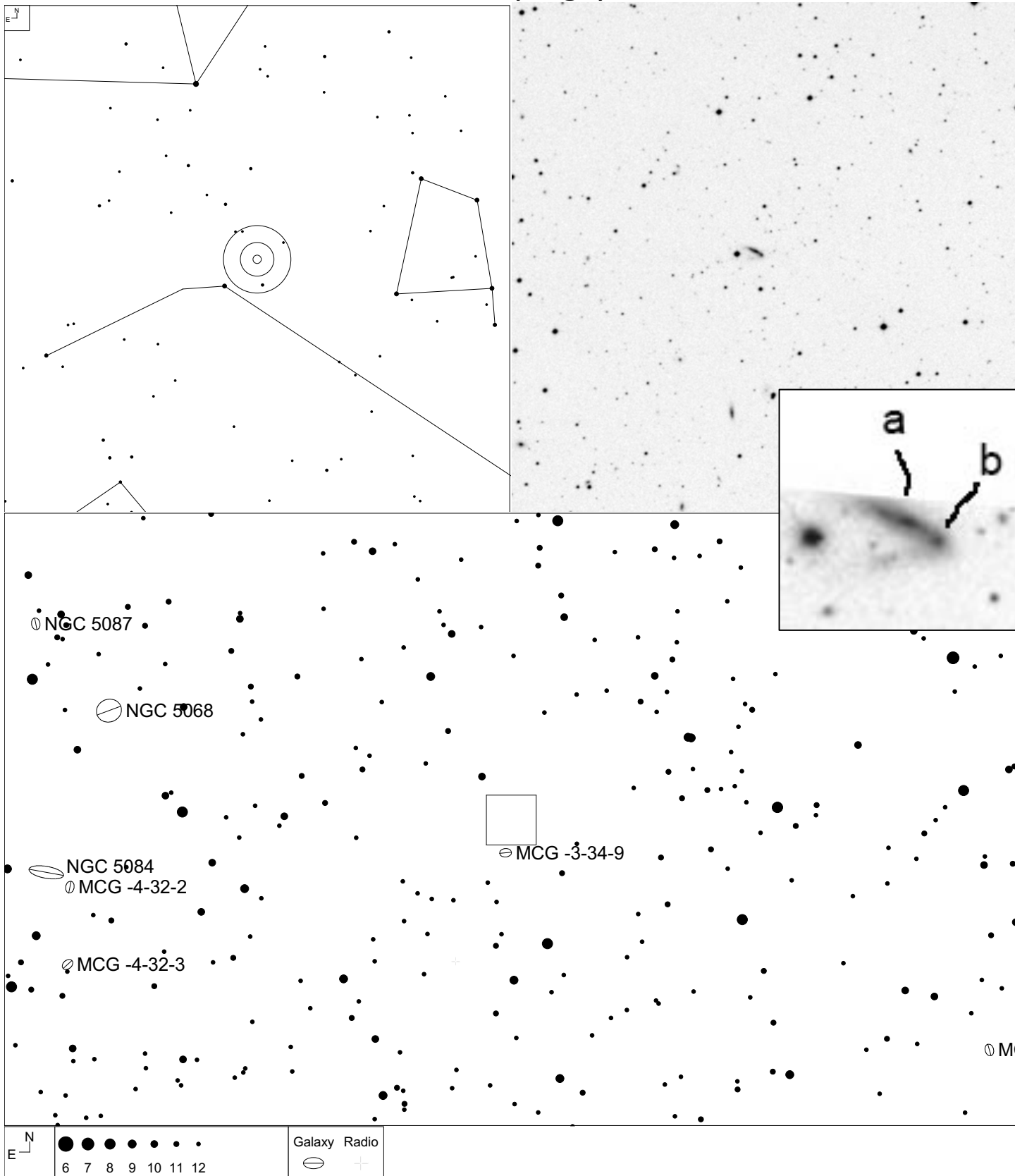
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 64  | 12 44 20.5 | +04 25 35 | GPair    |       |             | PDb       |
| 64b | 12 44 19.5 | +04 25 31 | G        | 15.3p | 5x2         | 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

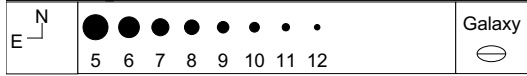
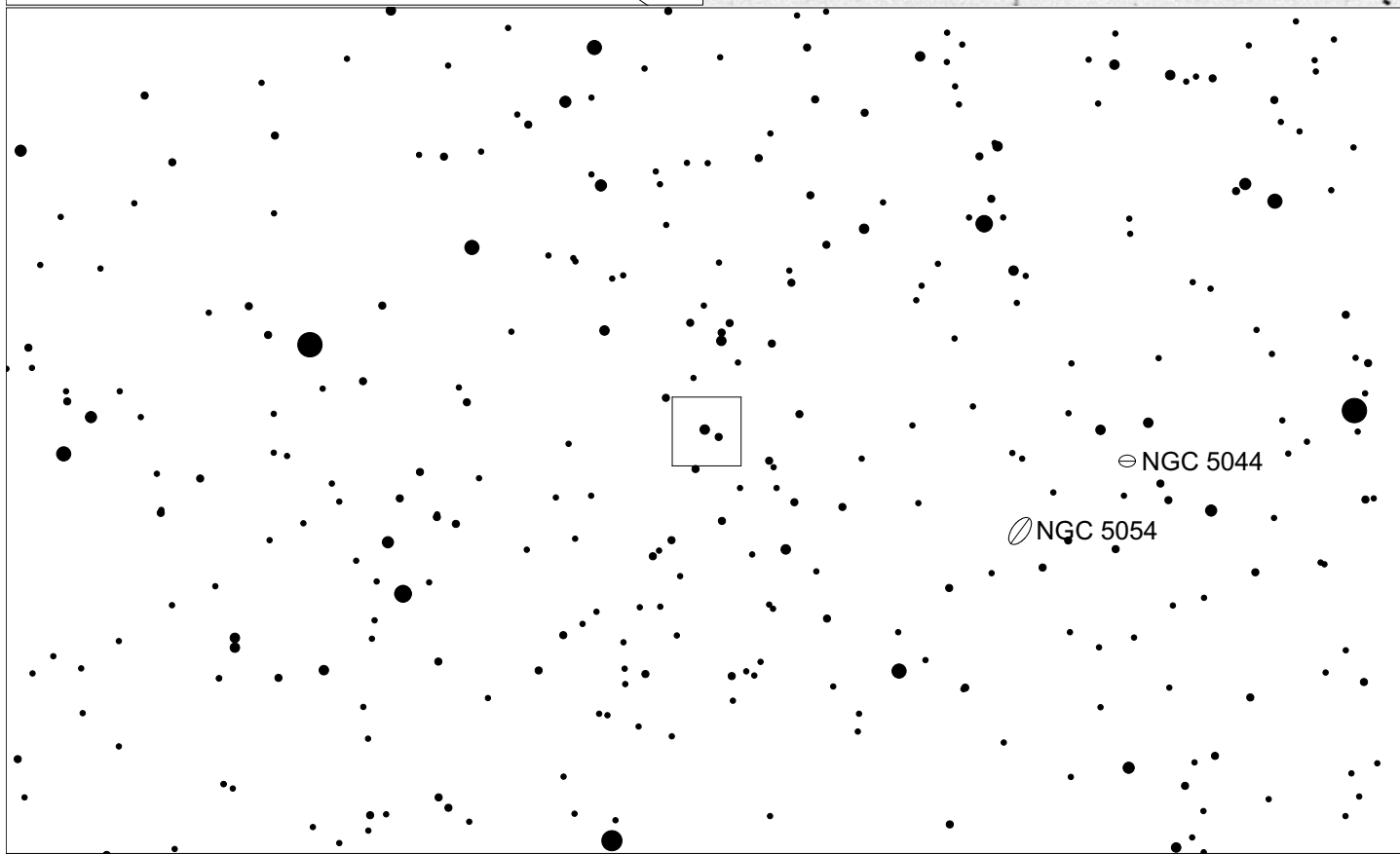
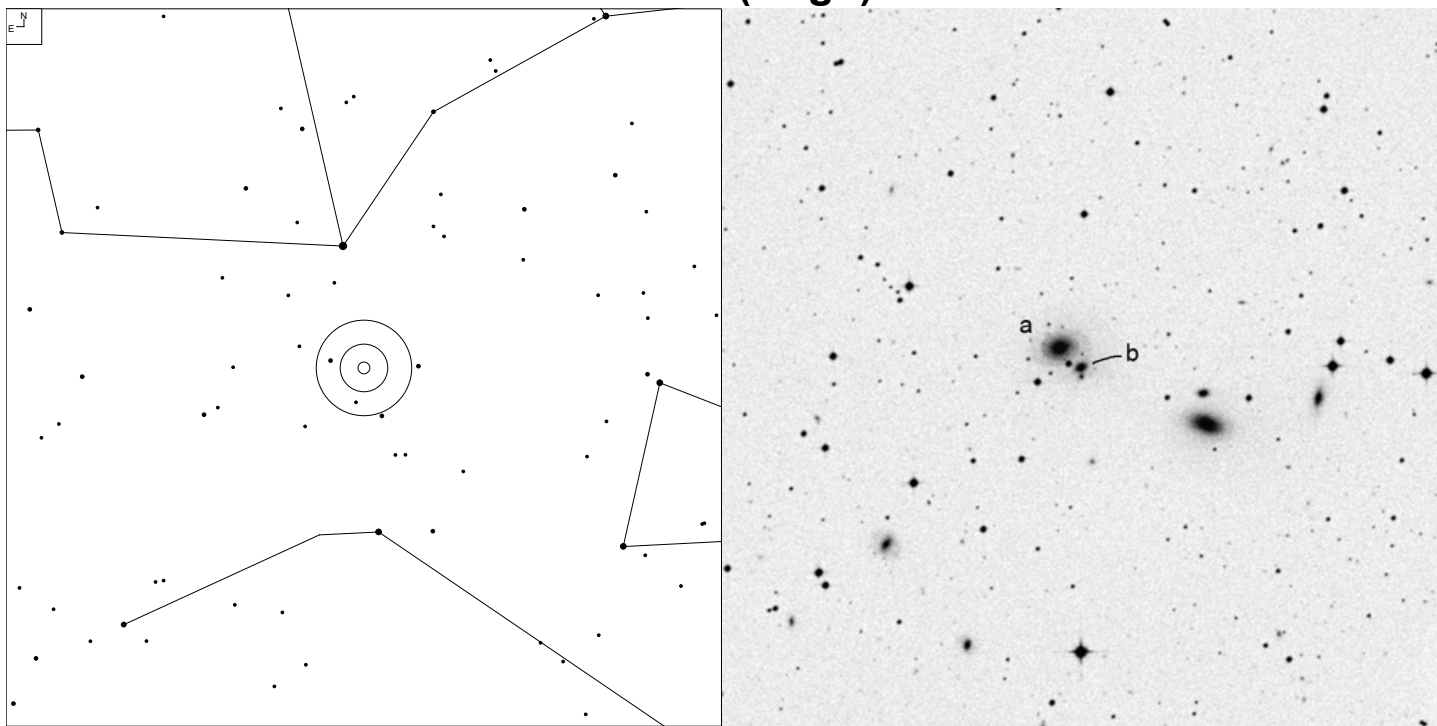
# VV 47 (Virgo)



| 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         |           |

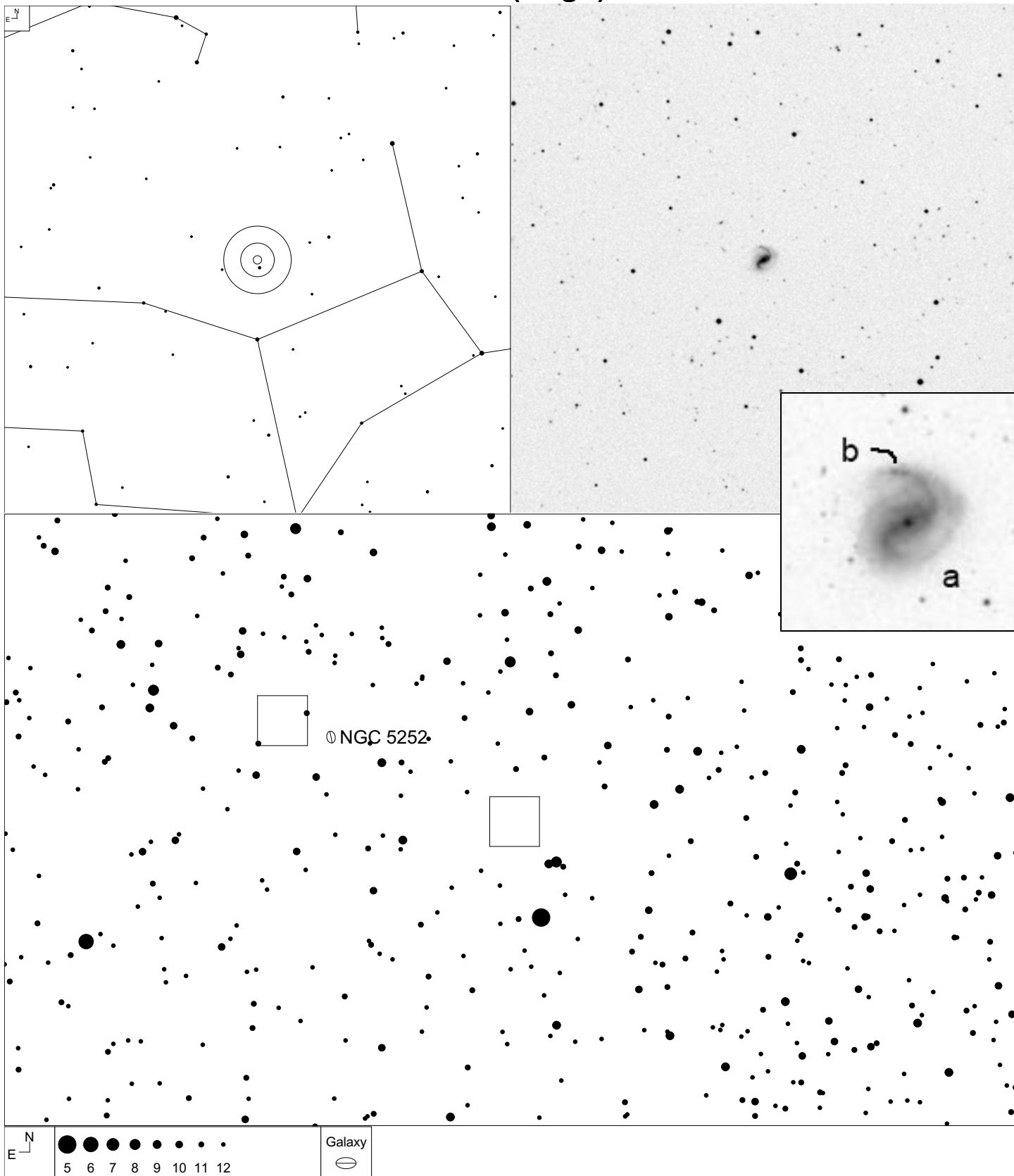


# VV 184 (Virgo)



| 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)

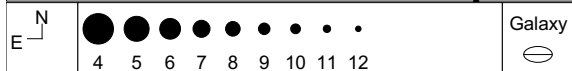
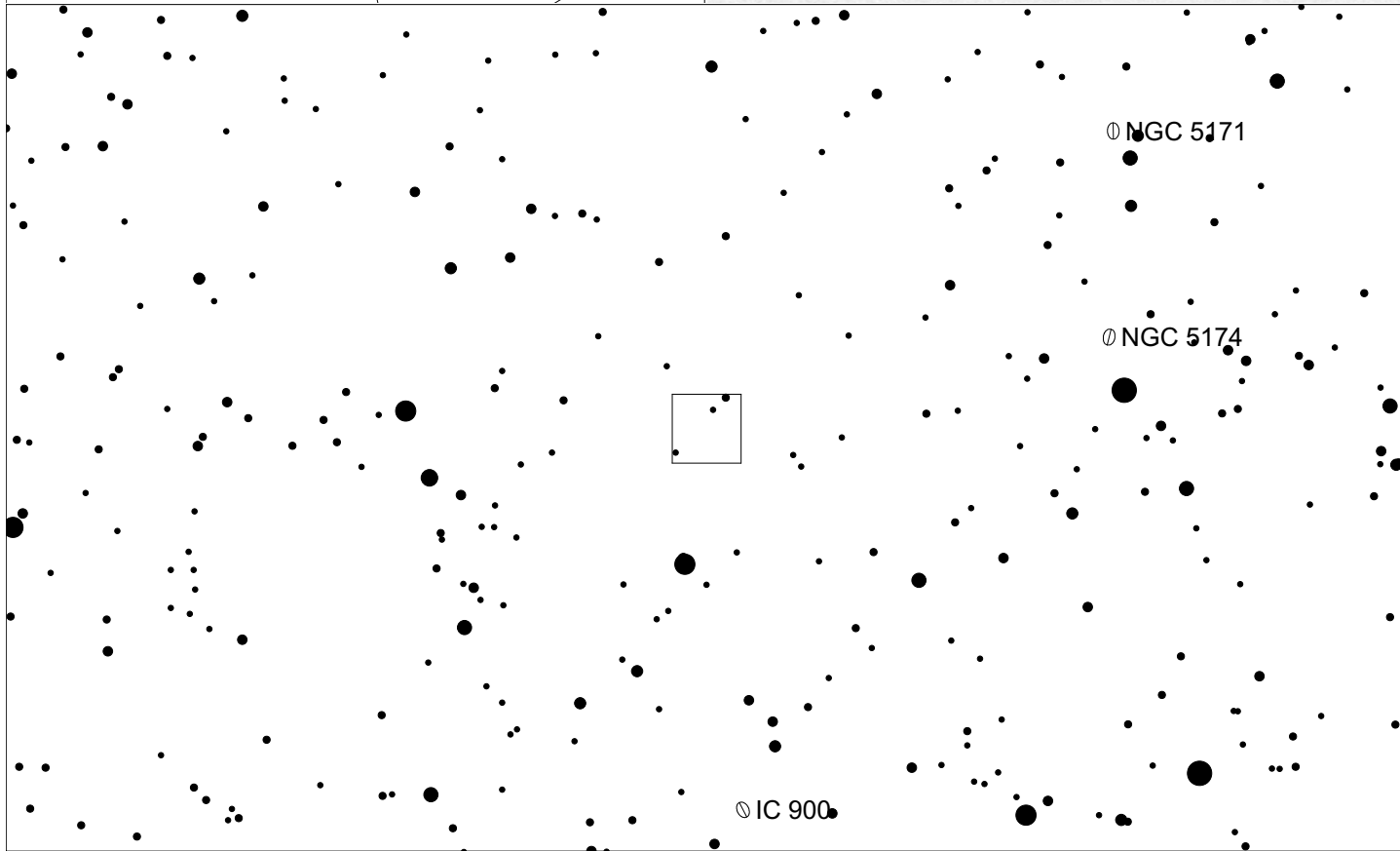
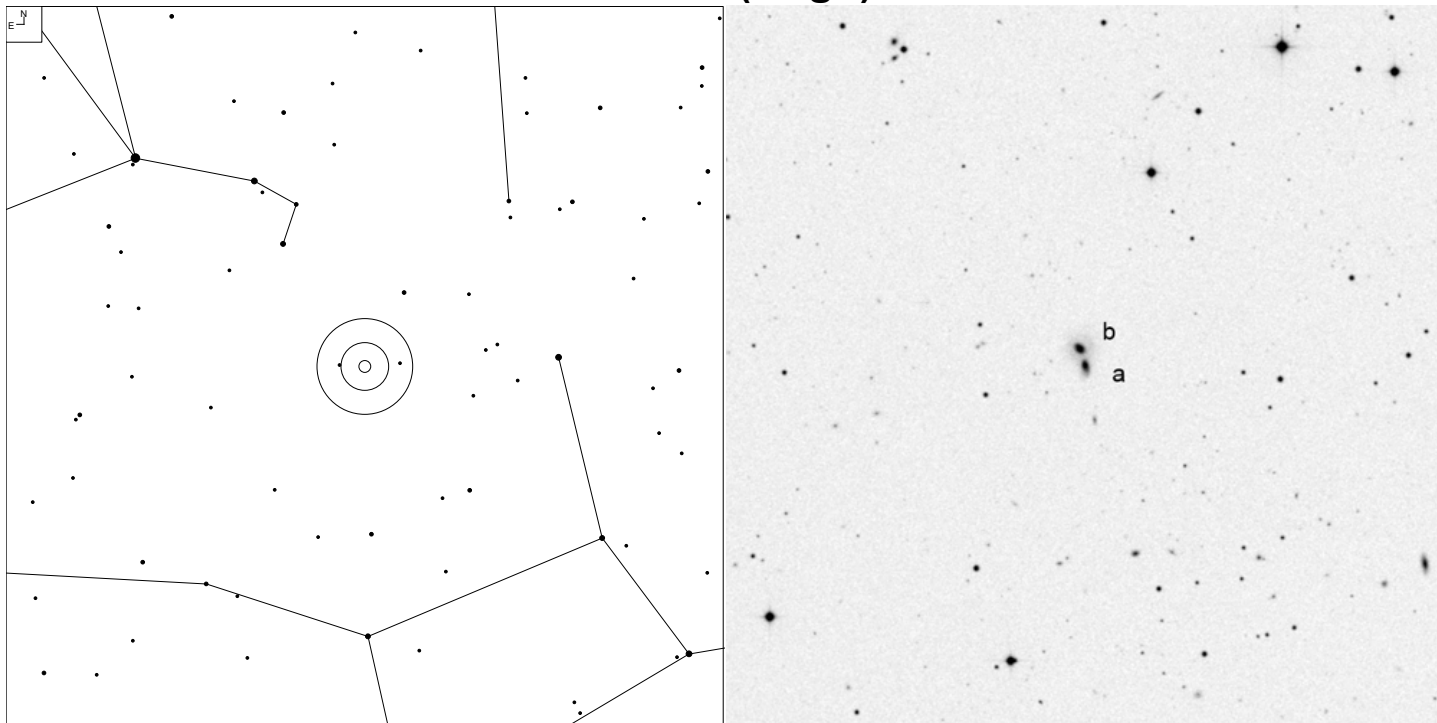


NGC 5252

Galaxy

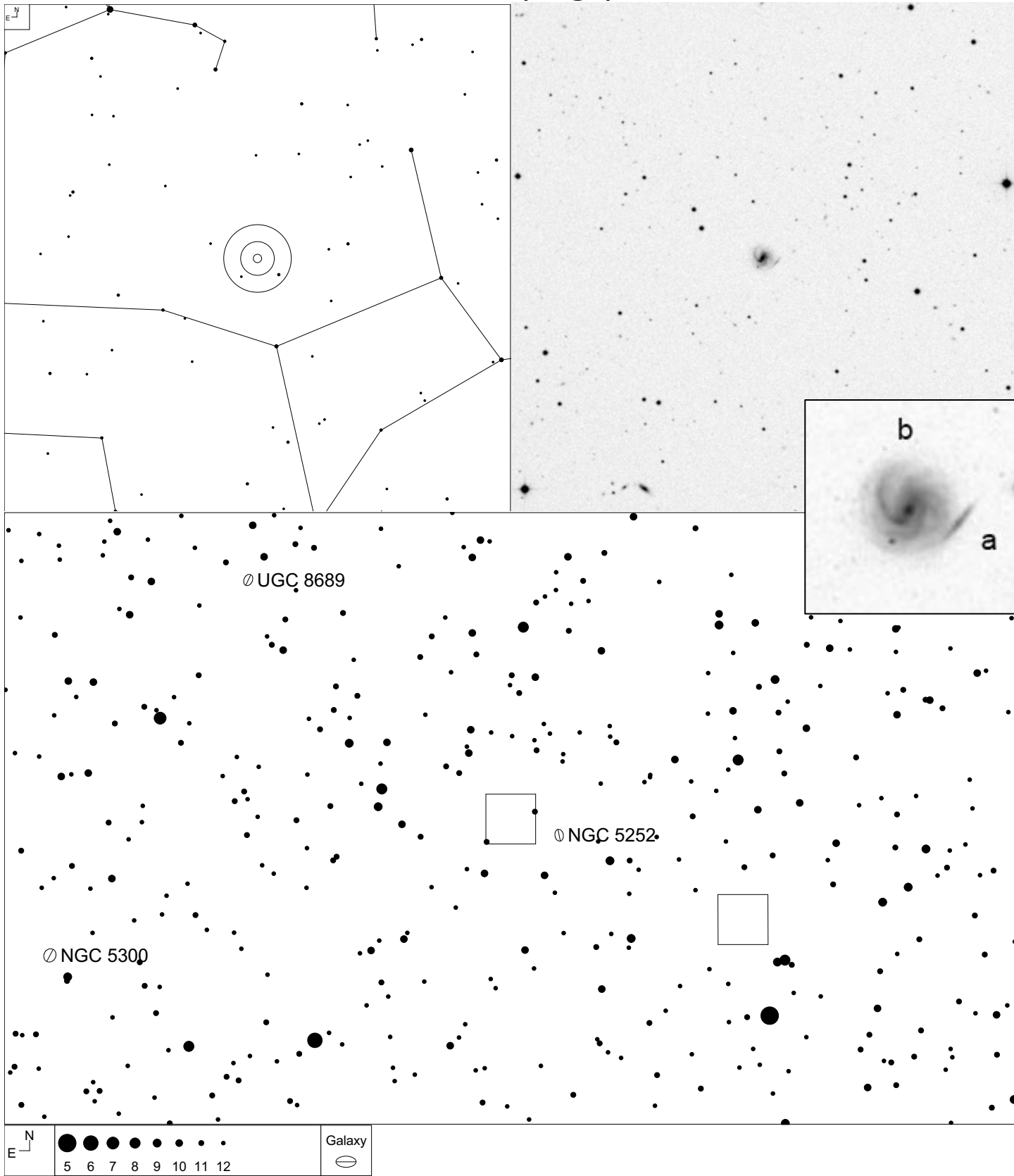
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 18  | 13 34 39.4 | +04 08 00 | GPair    |       |             | M         |
| 18a | 13 34 39.2 | +04 07 48 | G        | 14.5g | 9x7         | 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

# VV 211 (Virgo)



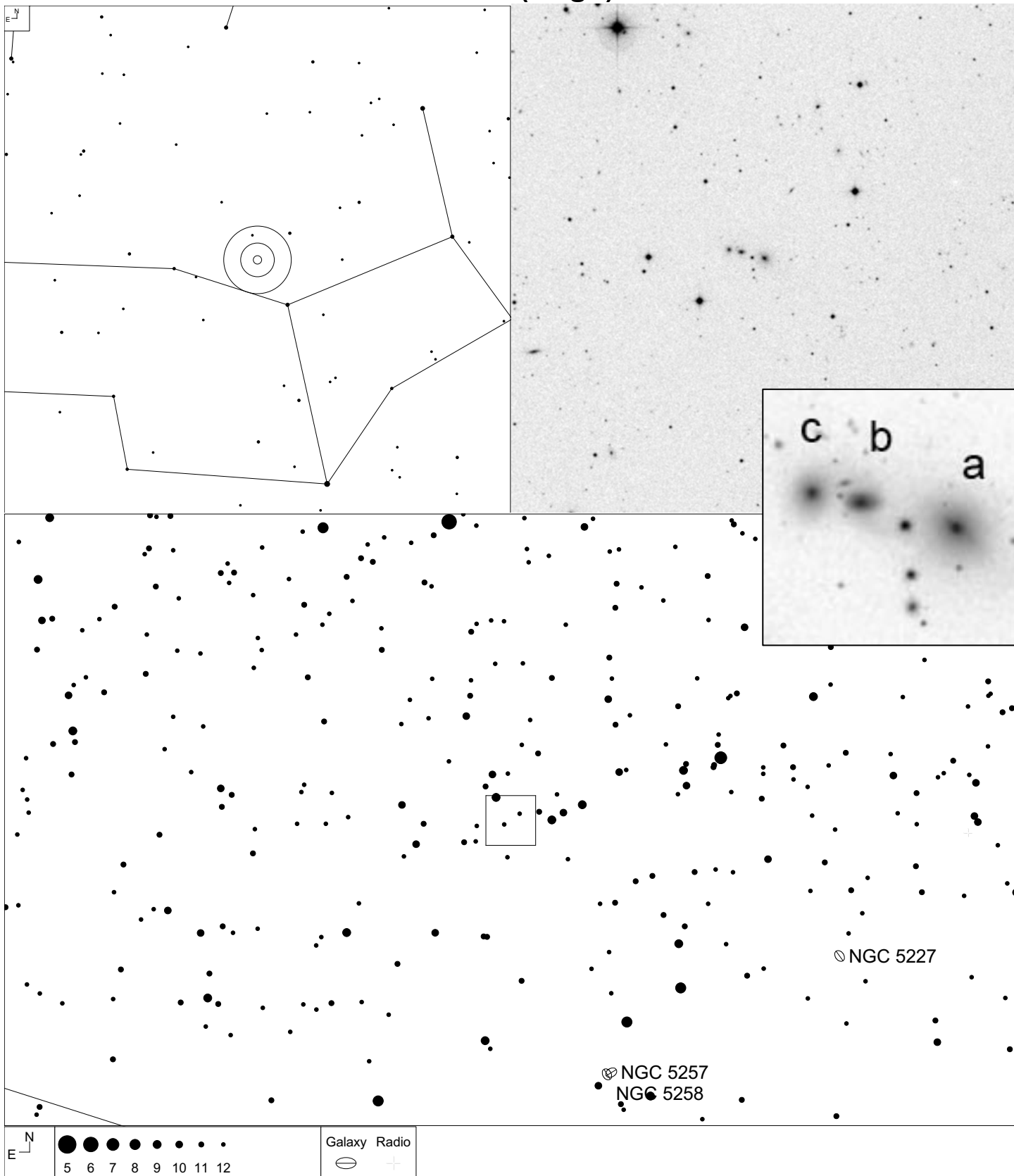
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 211  | 13 35 14.8 | +10 41 22 | GPair    |       |             | PK        |
| 211a | 13 35 14.4 | +10 41 10 | G        | 15.4g | 6x3       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

# VV 108 (Virgo)



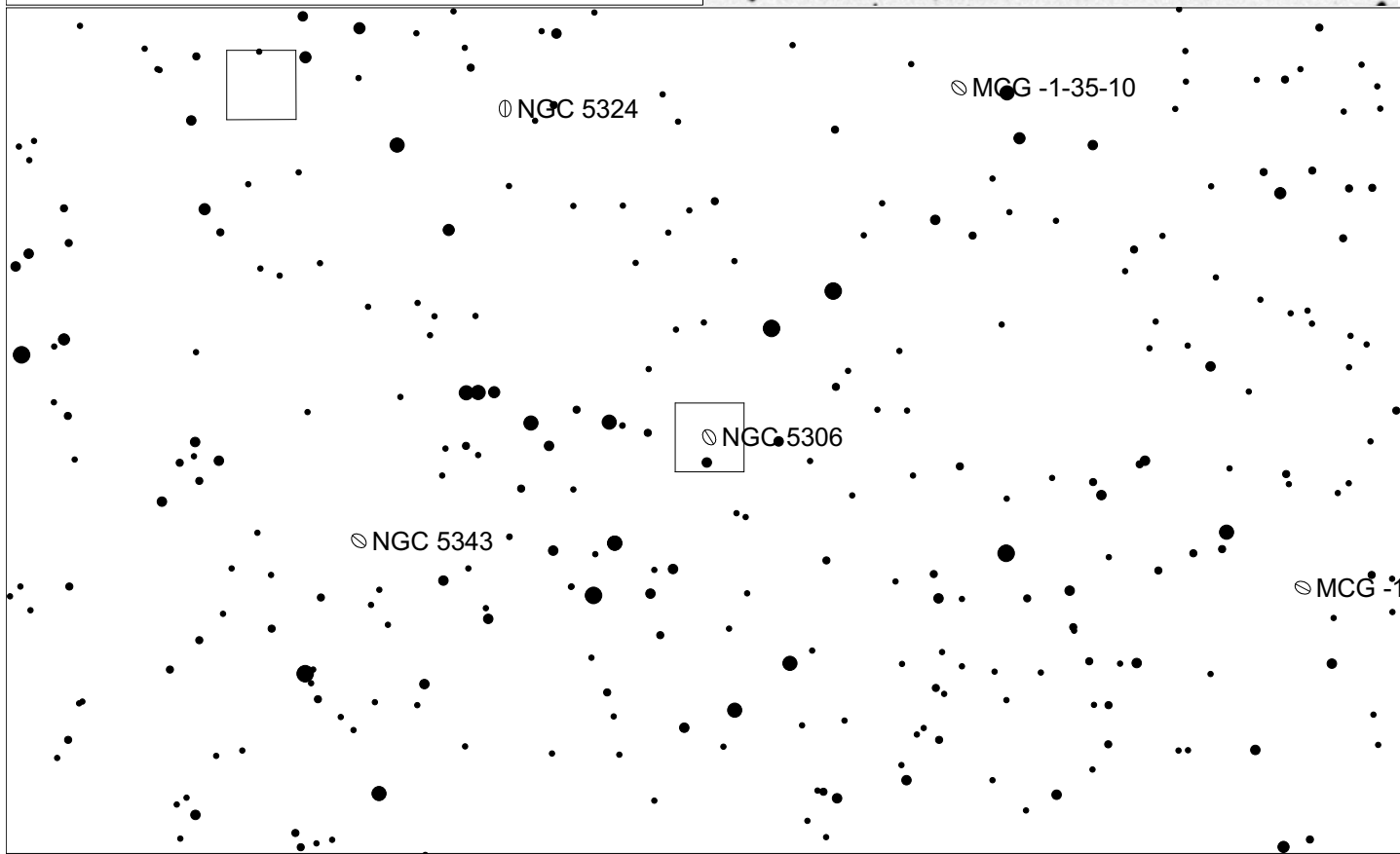
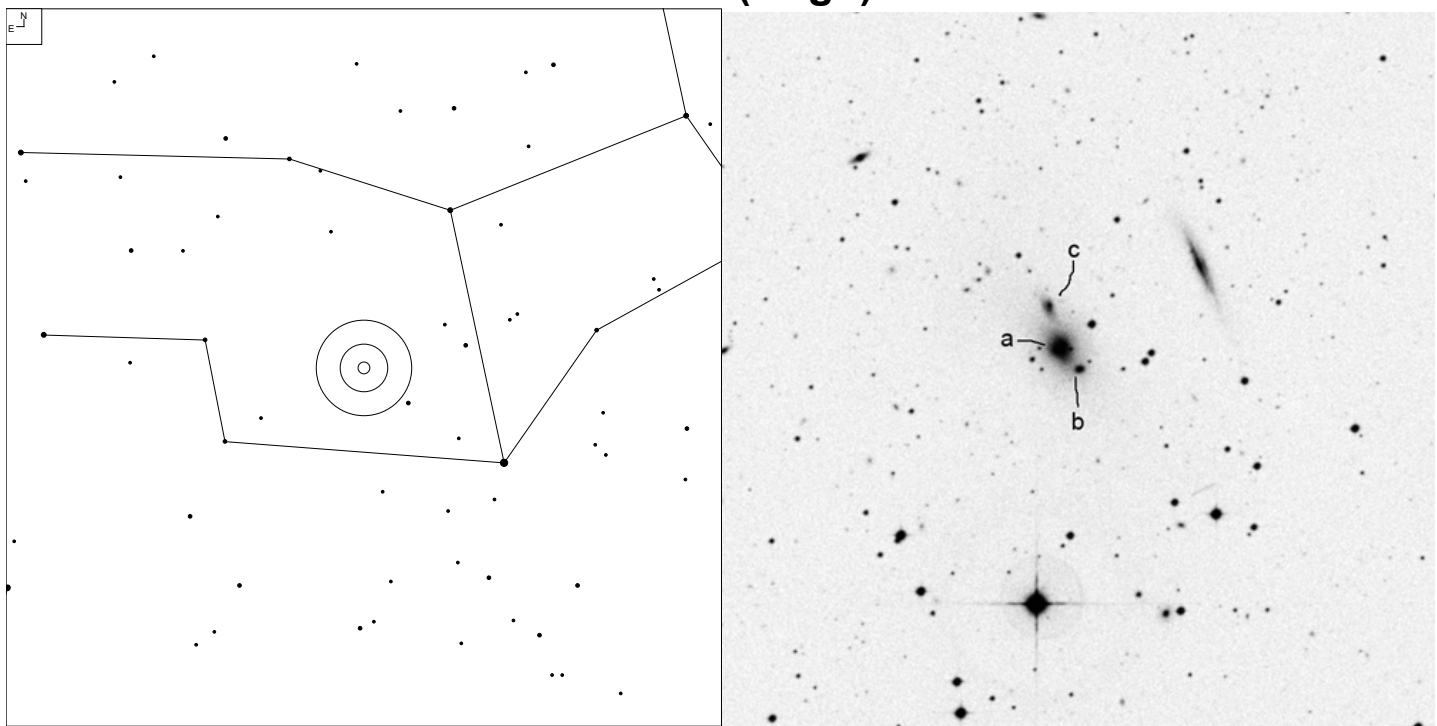
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 108  | 13 39 12.4 | +04 37 20 | GPair    |       |             | PC        |
| 108a | 13 39 11.5 | +04 37 17 | G        | 18.6g | 4x1       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

# VV 170 (Virgo)



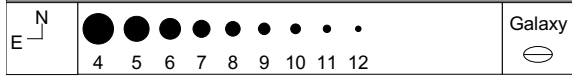
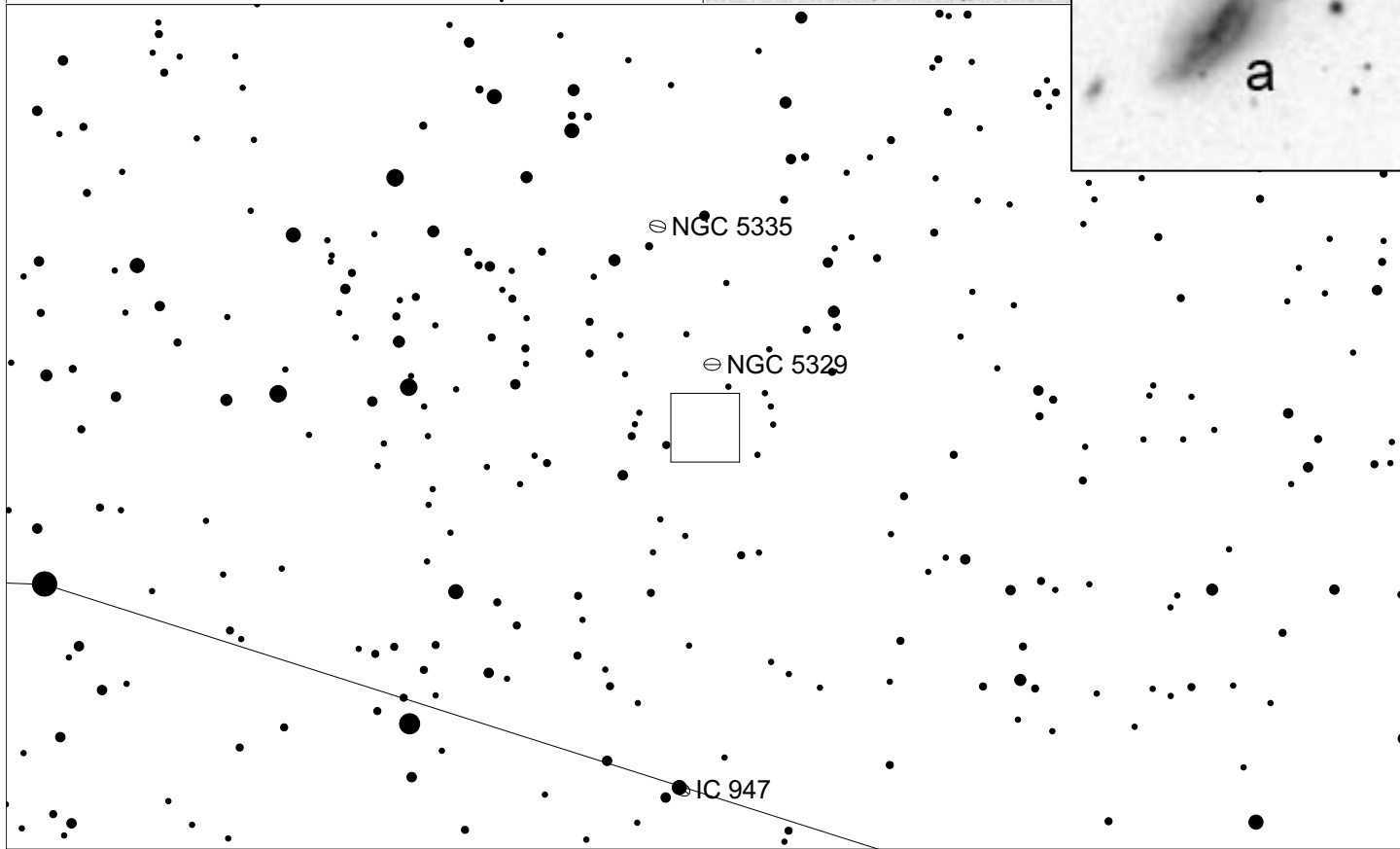
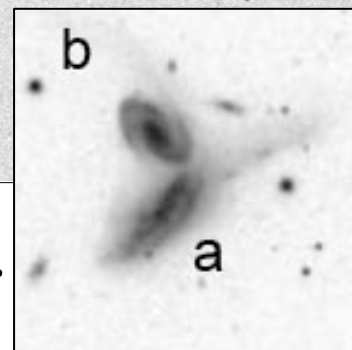
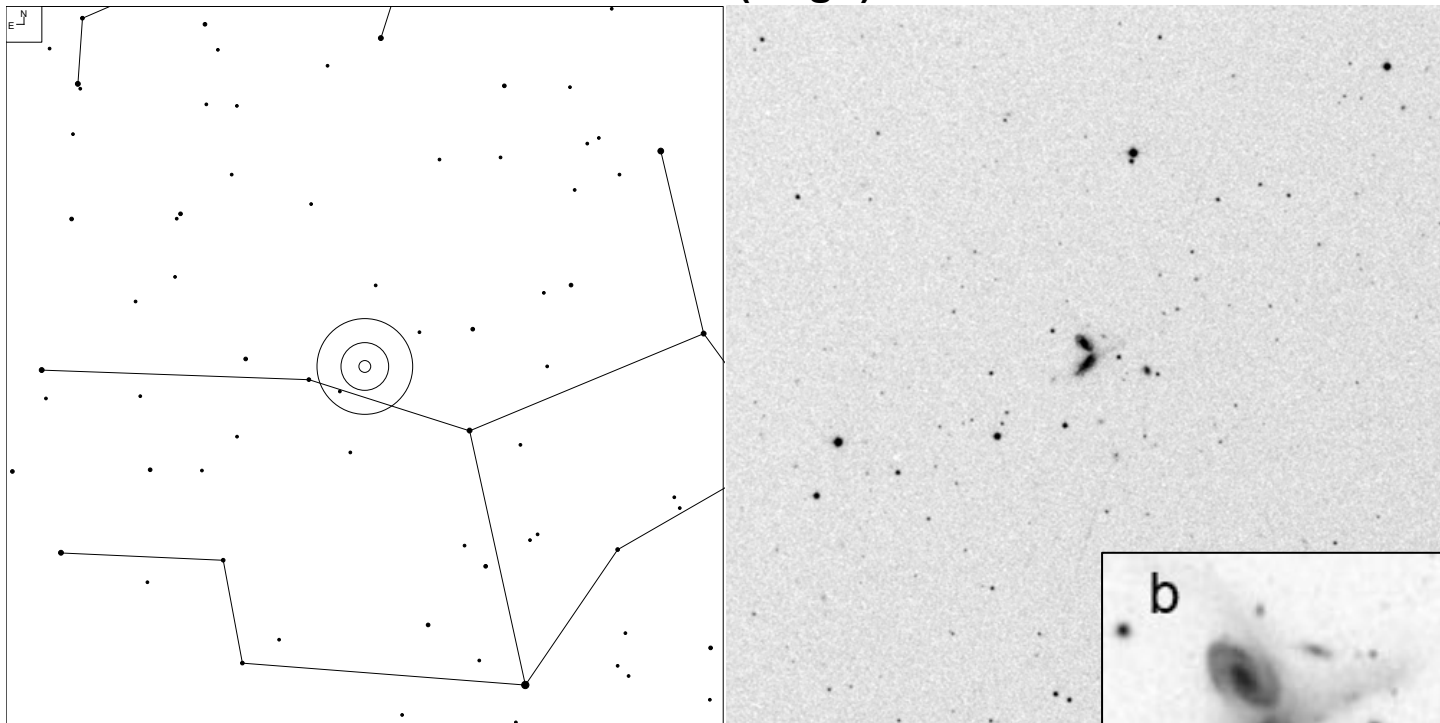
| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 170  | 13 41 53.3 | +02 04 41 | GTrpl    |      |             | Ch        |
| 170a | 13 41 51.2 | +02 04 34 | G        | 15.5 | 6x5         |           |
| 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)



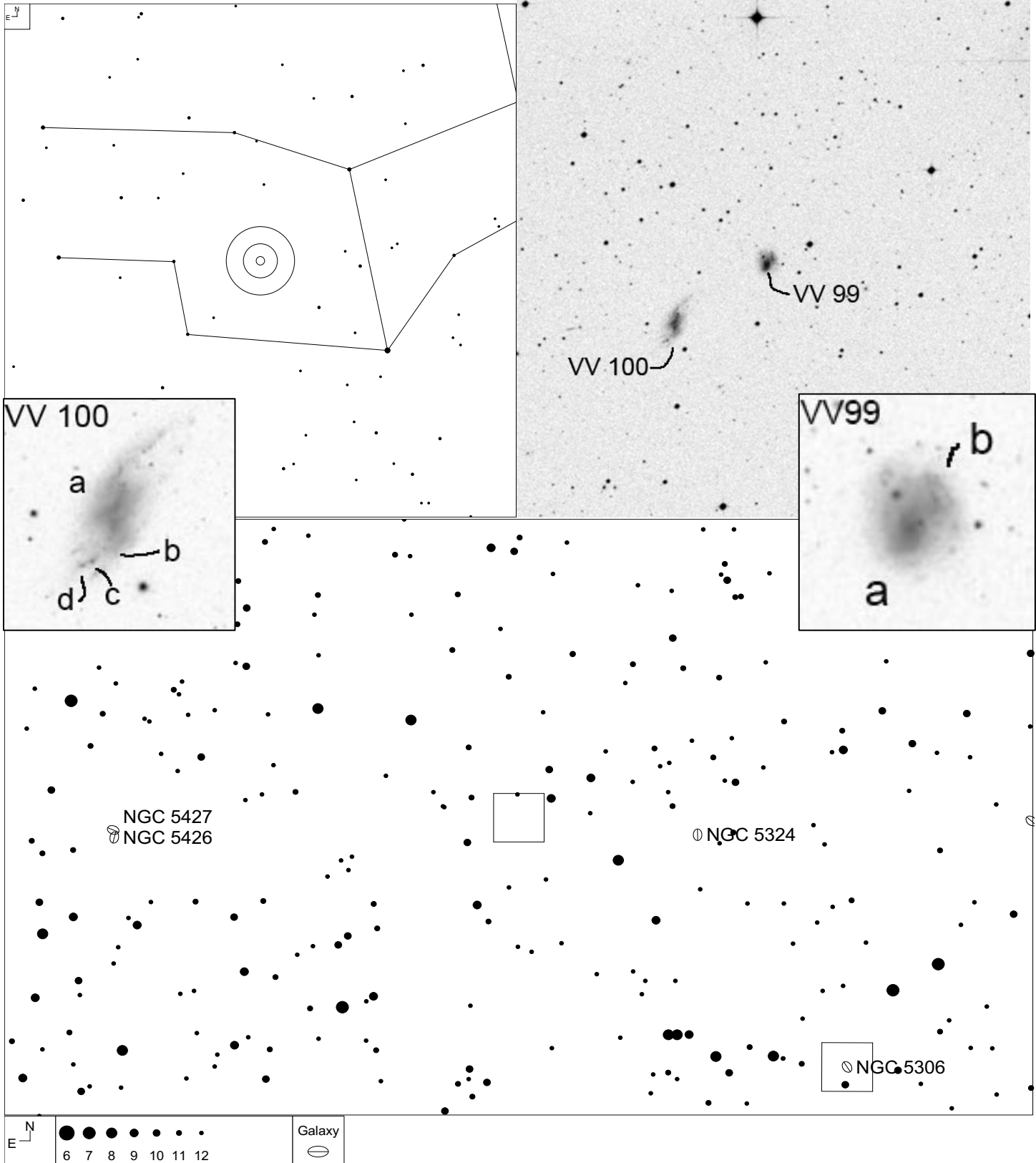
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 135  | 13 49 11.1 | -07 13 15 | GTrpl    |       |             | NNN       |
| 135b | 13 49 09.8 | -07 13 54 | G        | 15.77 | 5x3         |           |
| 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         |           |

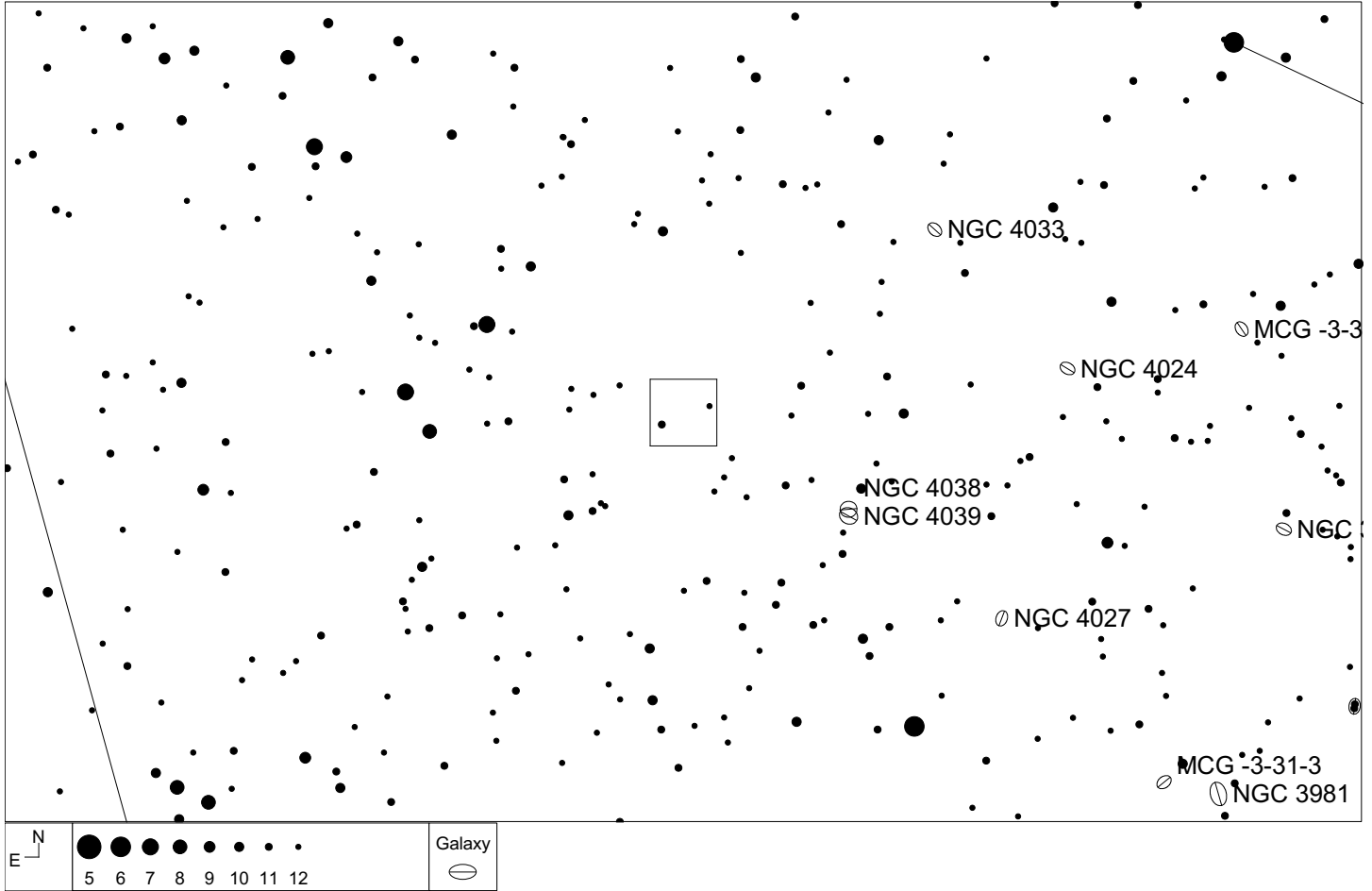
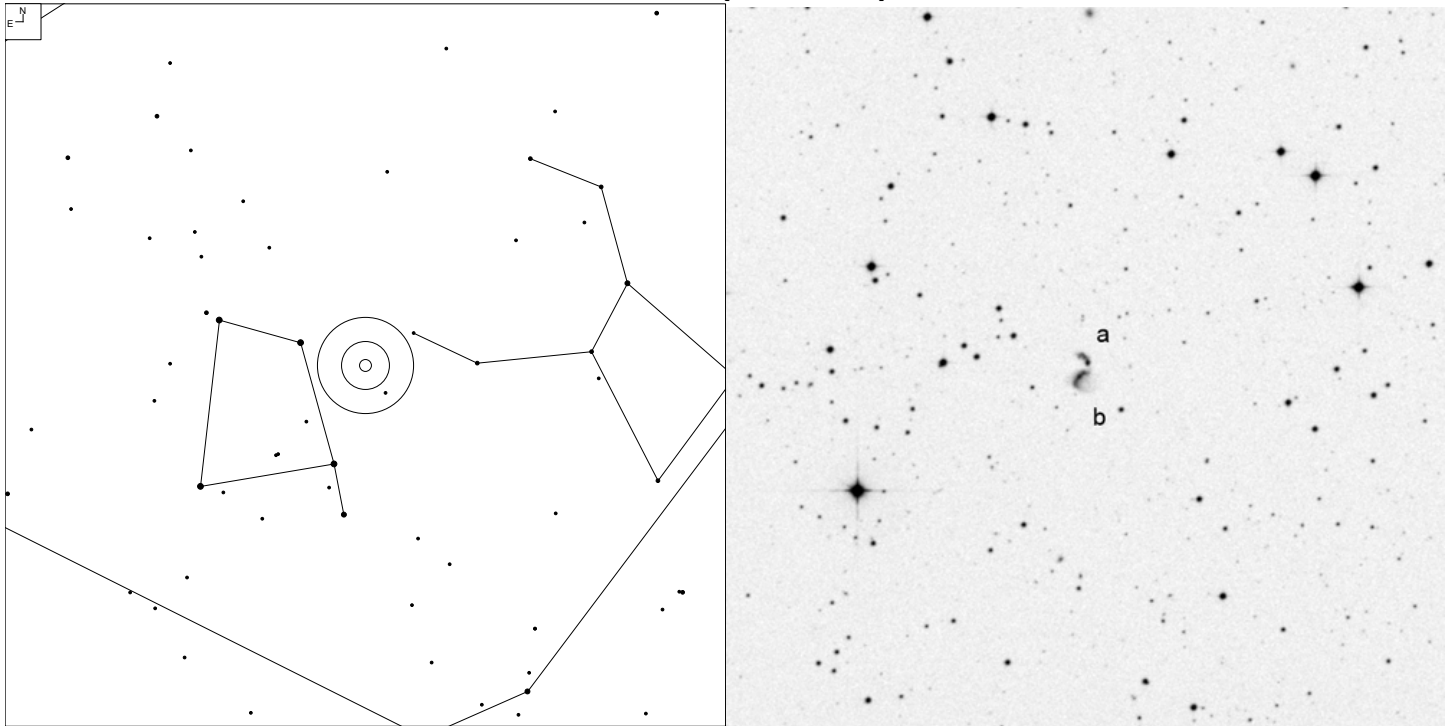
# VV 99 and VV 100 (Virgo)



| 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     |       |             |           |

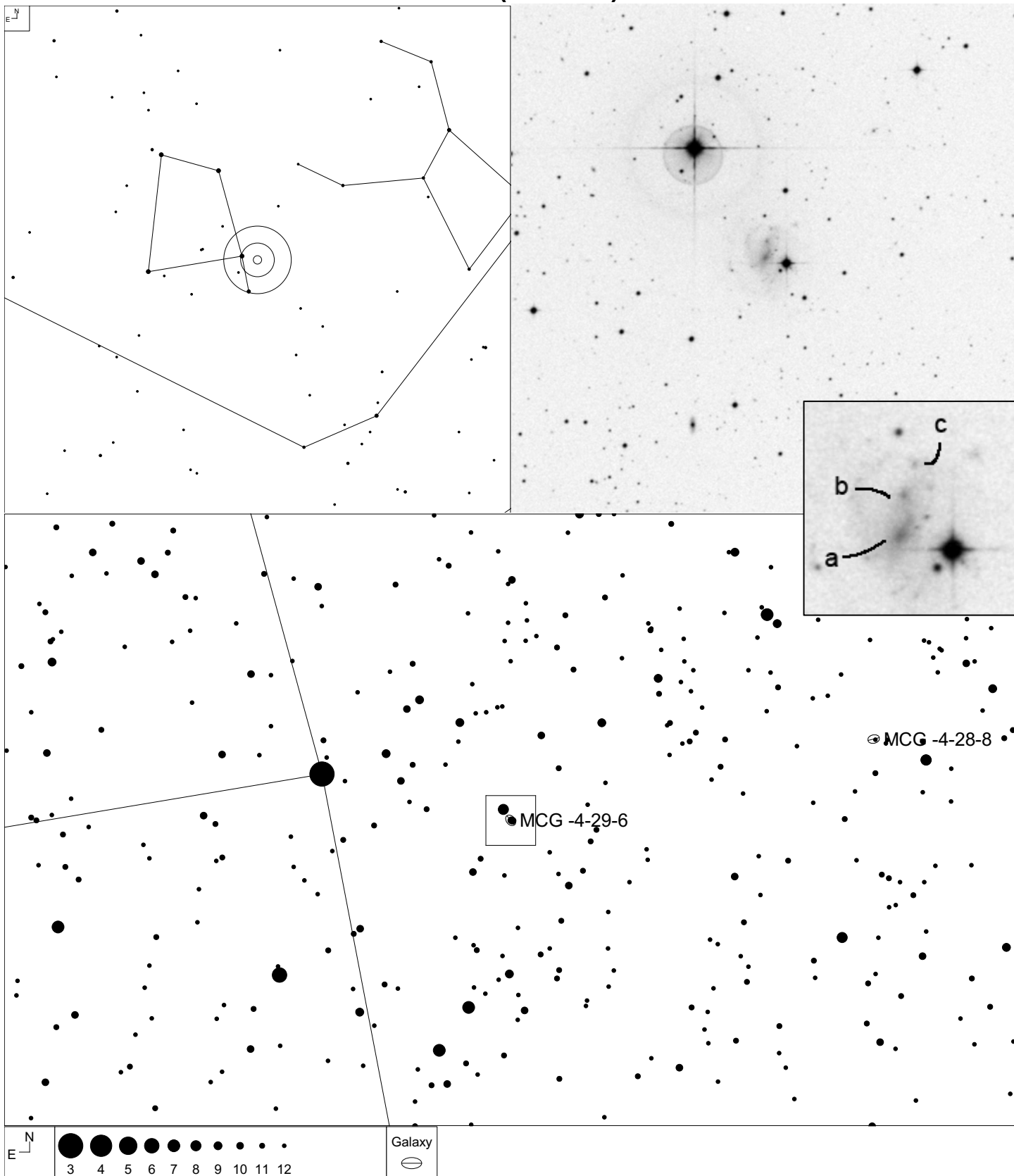


# VV 269 (Corvus)



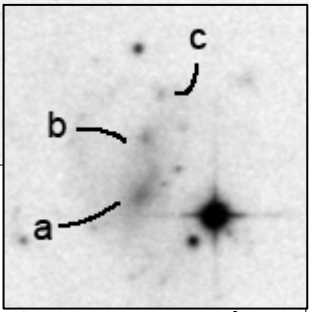
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 269  | 12 04 26.3 | -18 30 59 | GPair    |       |             | PK        |
| 269a | 12 04 26.1 | -18 30 48 | G        | 15.92 | 4x2       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

# VV 49 (Corvus)



MCG -4-28-8

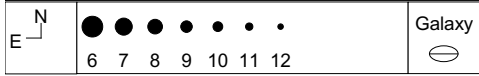
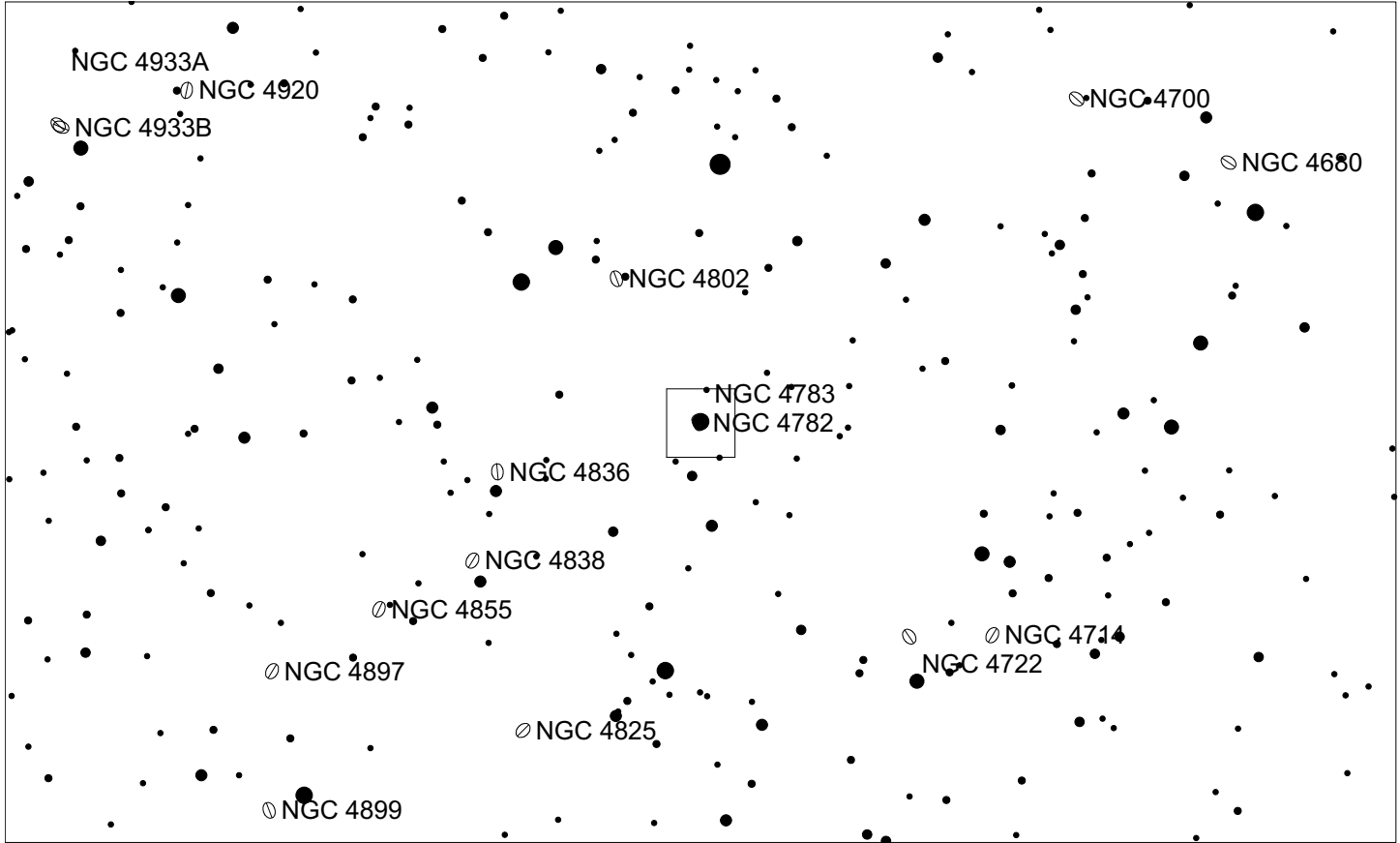
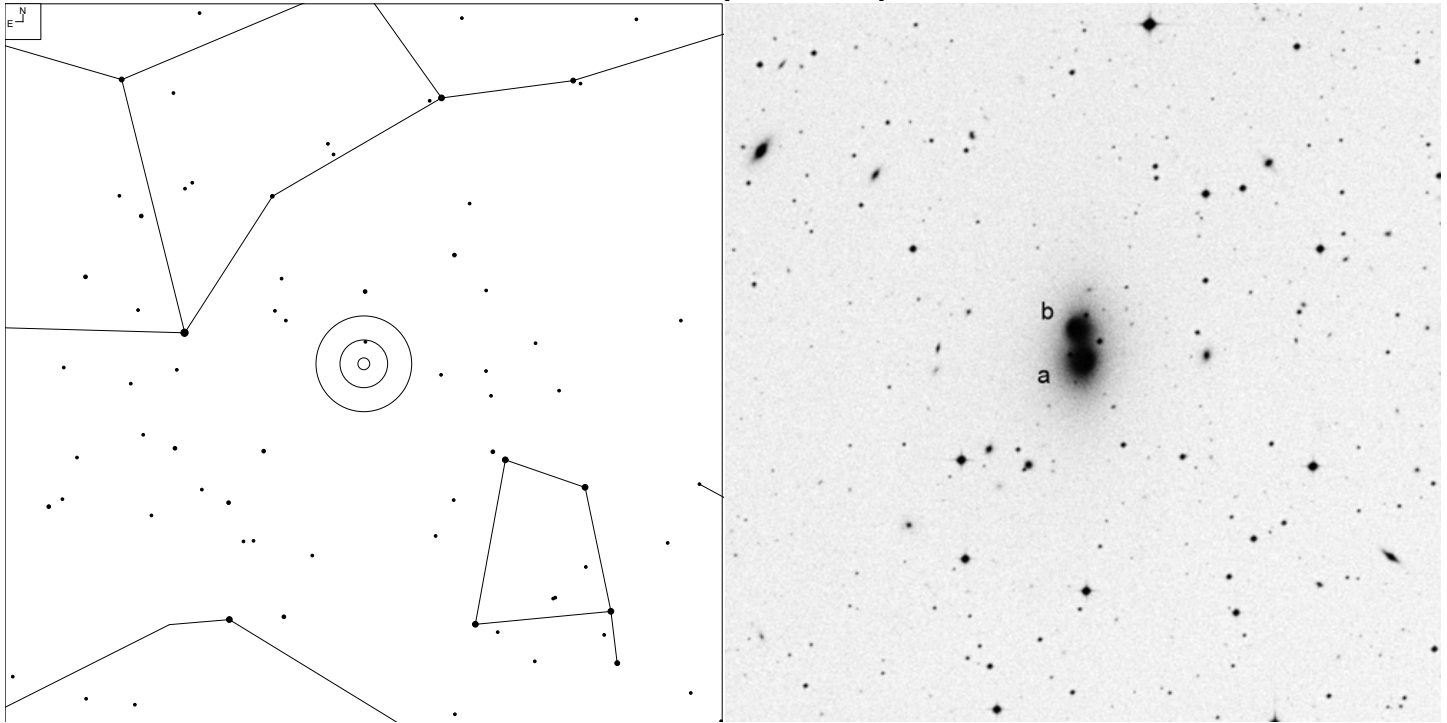
MCG -4-29-6



| VV | RA | Dec | NED Type | Mag | Size (0.1') | Int. Type |
|----|----|-----|----------|-----|-------------|-----------|
|----|----|-----|----------|-----|-------------|-----------|

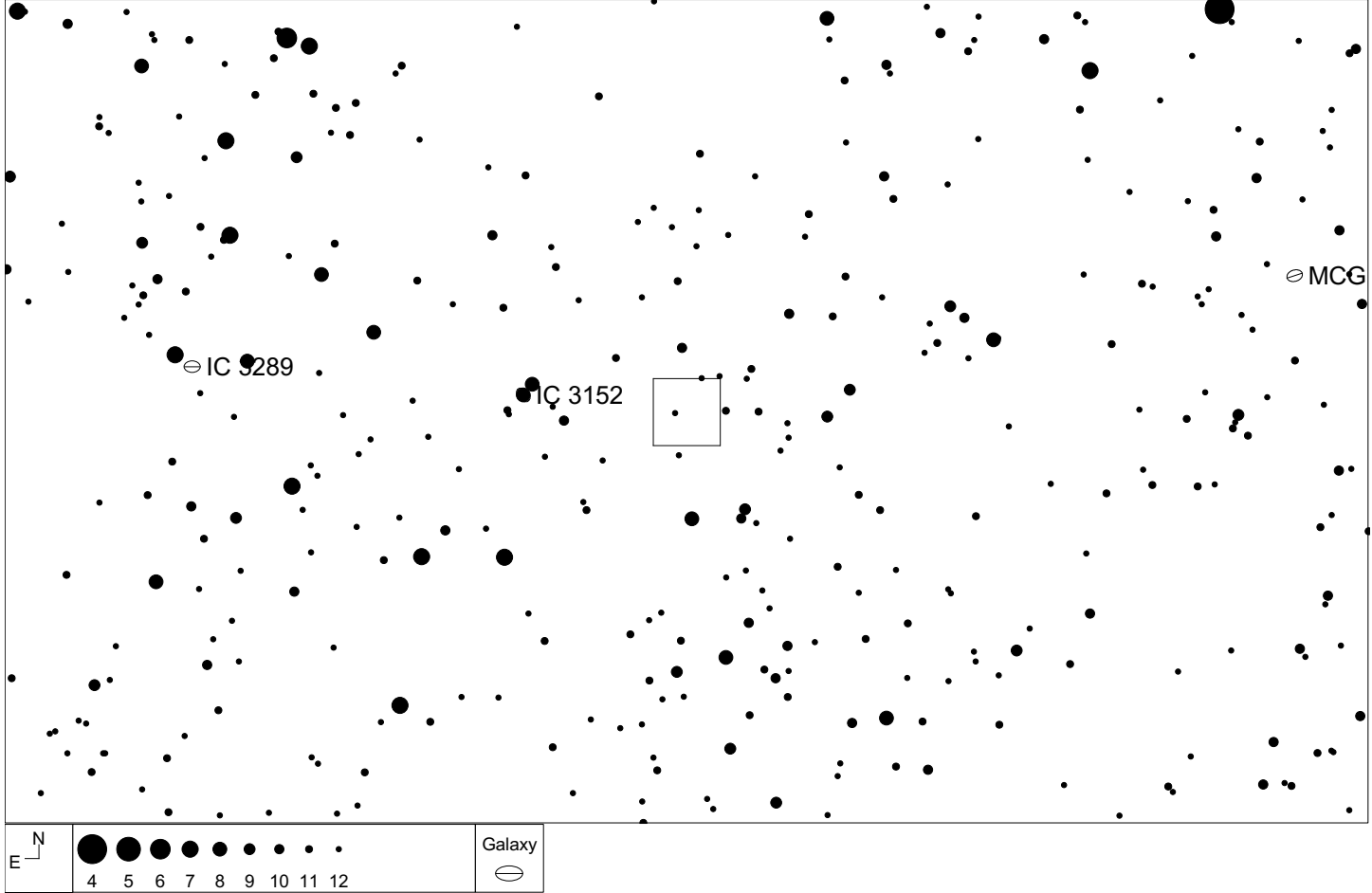
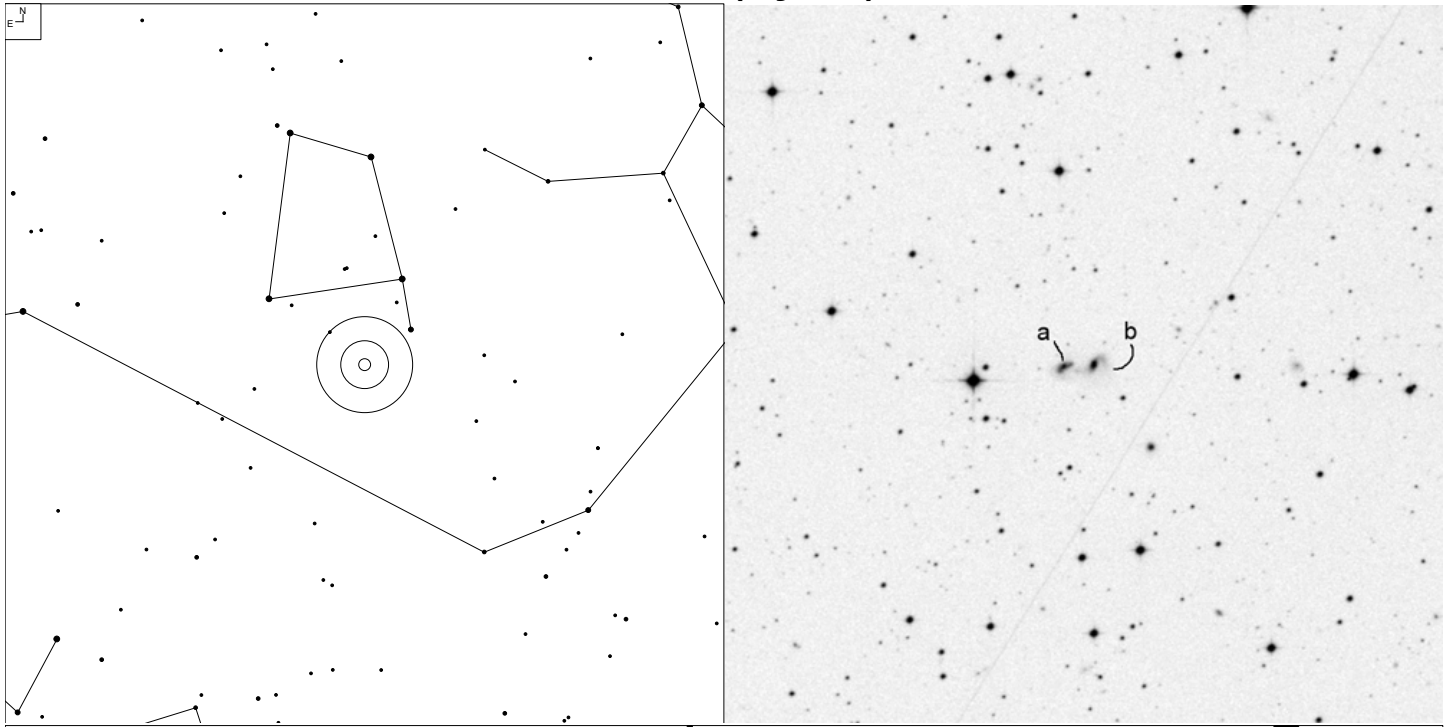
|     |            |           |      |       |       |   |
|-----|------------|-----------|------|-------|-------|---|
| 49  | 12 06 07.2 | -22 50 58 | G    | 13.03 | 29x21 | N |
| 49c | 12 06 06.5 | -22 50 07 | PofG |       |       |   |
| 49b | 12 06 07.0 | -22 50 29 | PofG |       |       |   |
| 49a | 12 06 07.2 | -22 50 58 | PofG |       |       |   |

# VV 201 (Corvus)



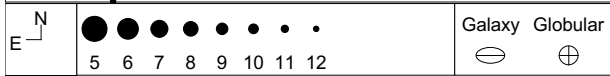
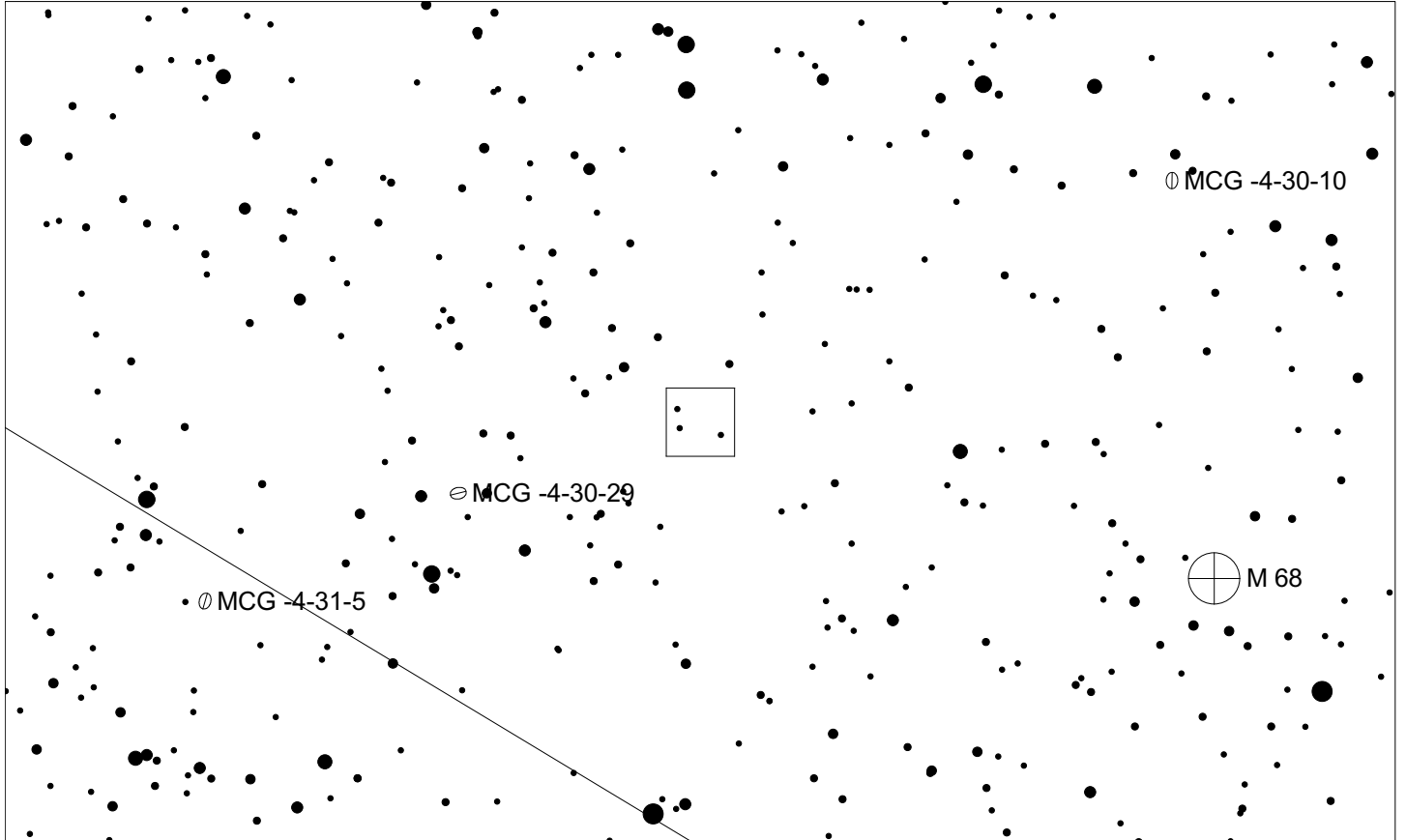
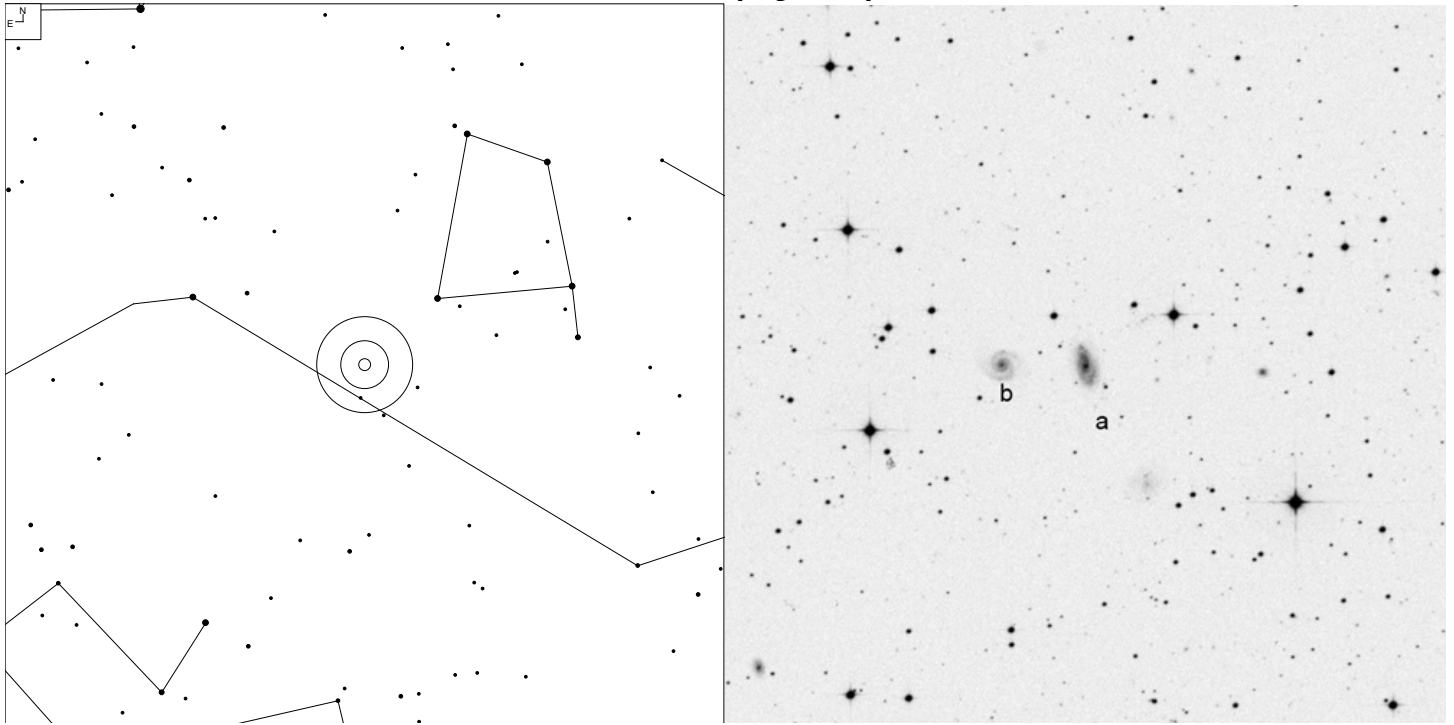
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 201  | 12 54 36.2 | -12 33 47 | GPair    |       |             | PK        |
| 201a | 12 54 35.7 | -12 34 07 | G        | 12.7p | 17x16     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

# VV 333 (Hydra)



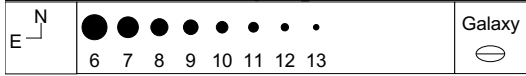
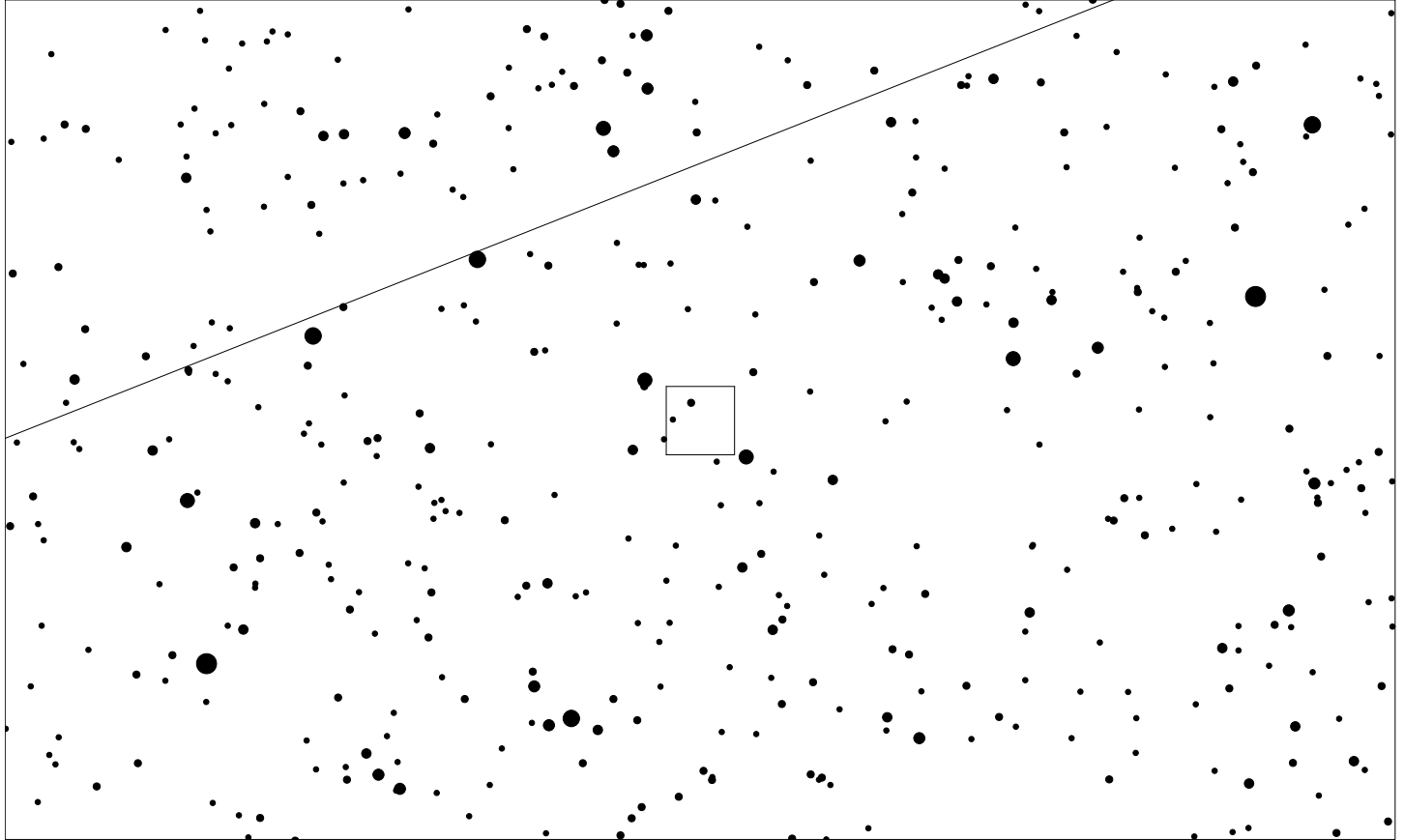
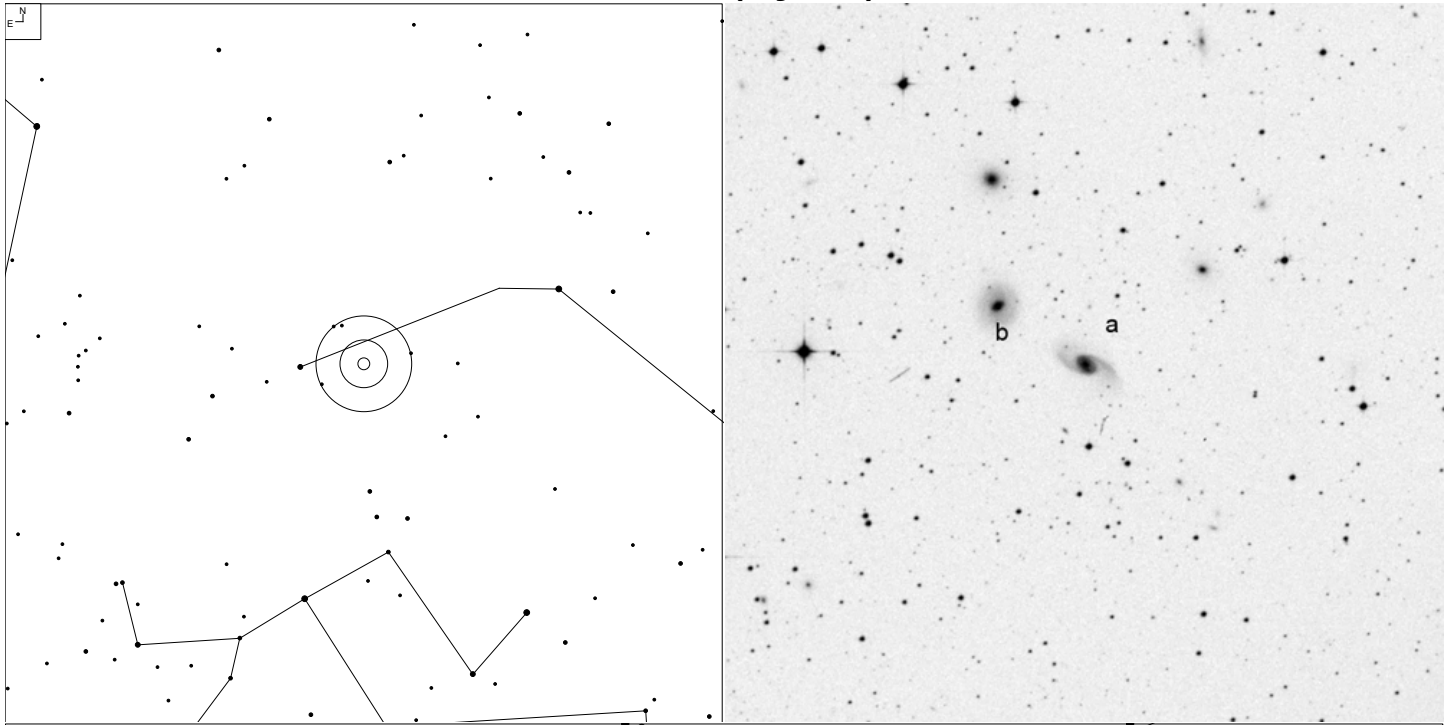
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 333  | 12 16 58.0 | -26 12 37 | GPair    |       |             | PD        |
| 333b | 12 16 57.1 | -26 12 34 | G        | 16    | 8x7       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

# VV 290 (Hydra)



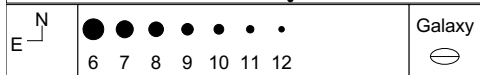
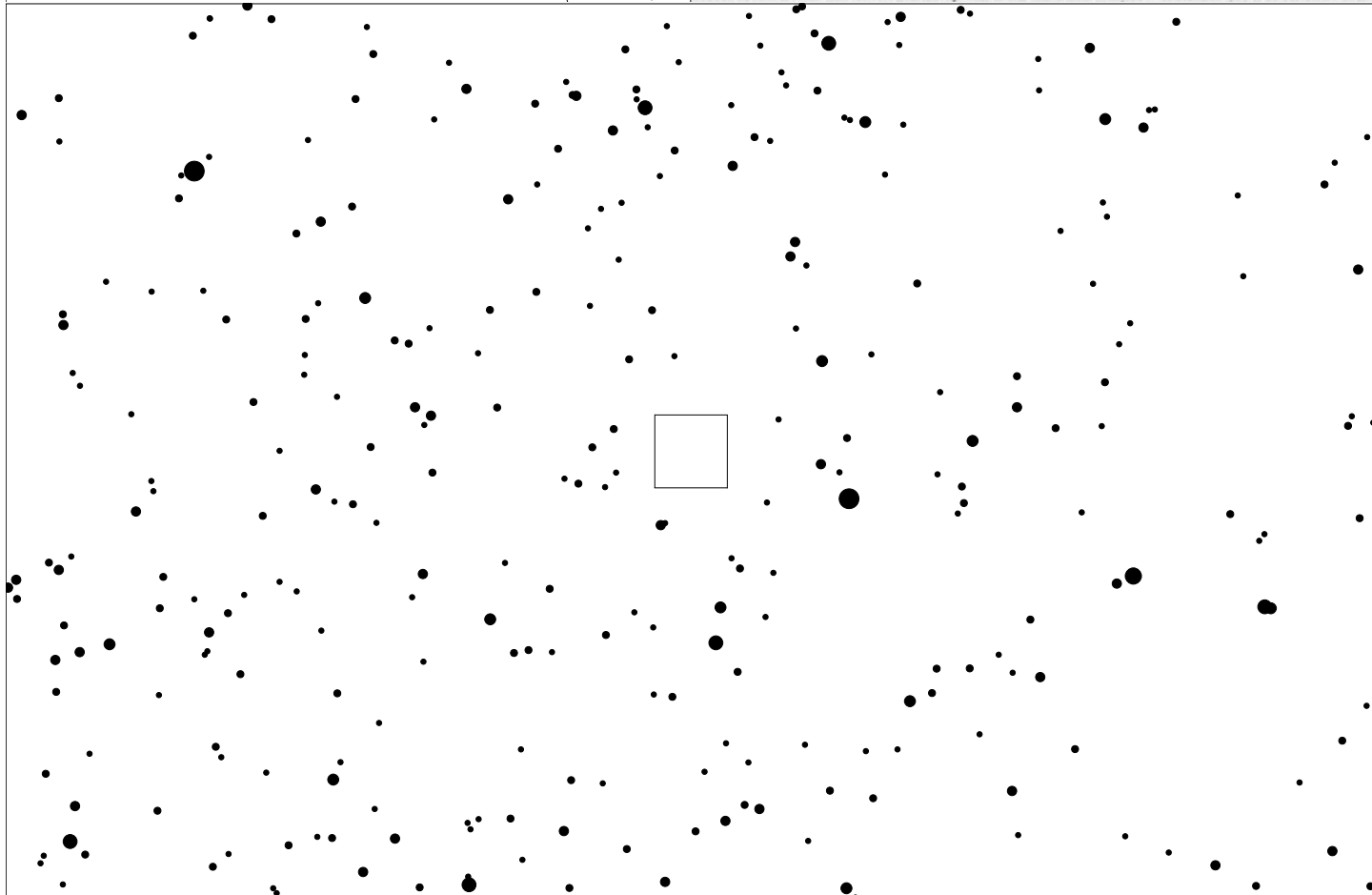
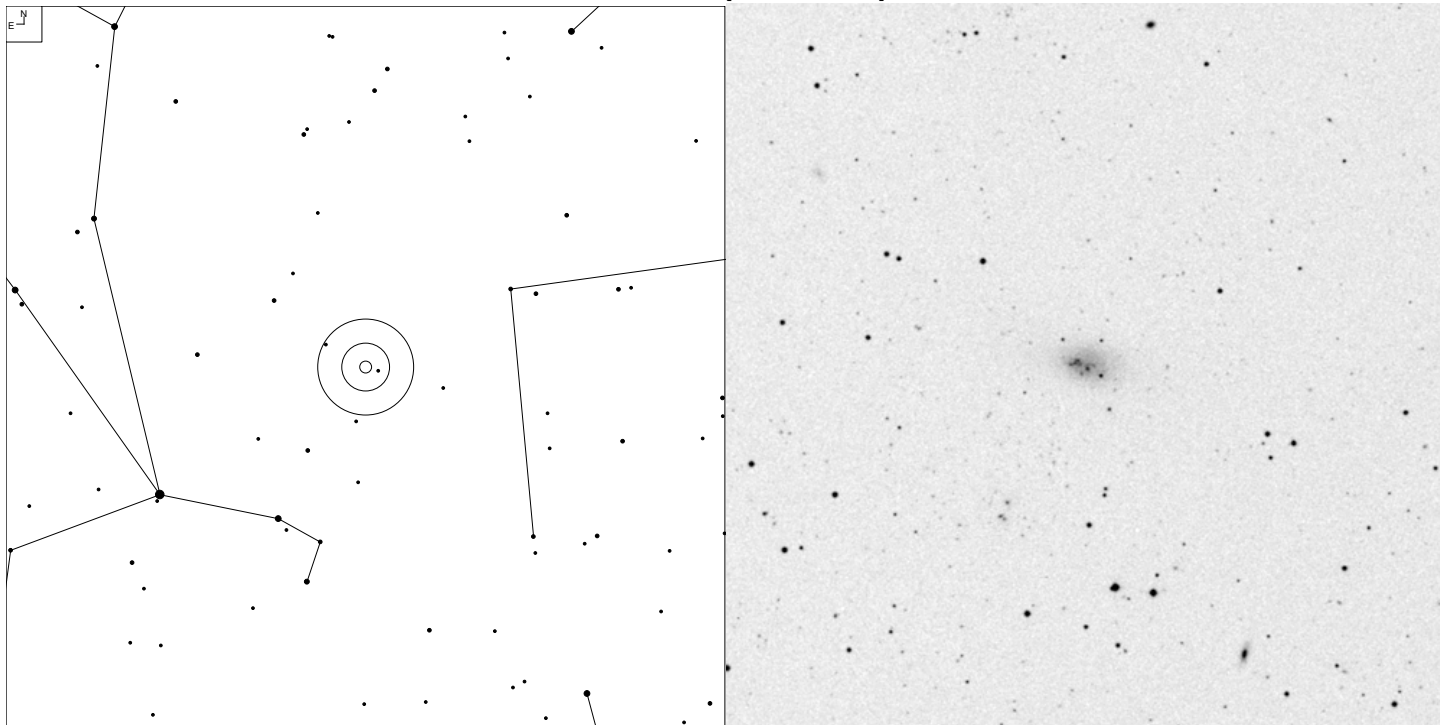
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 290  | 12 47 44.1 | -26 11 58 | GPair    |       |             | PKb       |
| 290a | 12 47 40.3 | -26 12 00 | G        | 14.81 | 12x5      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

# VV 351 (Hydra)



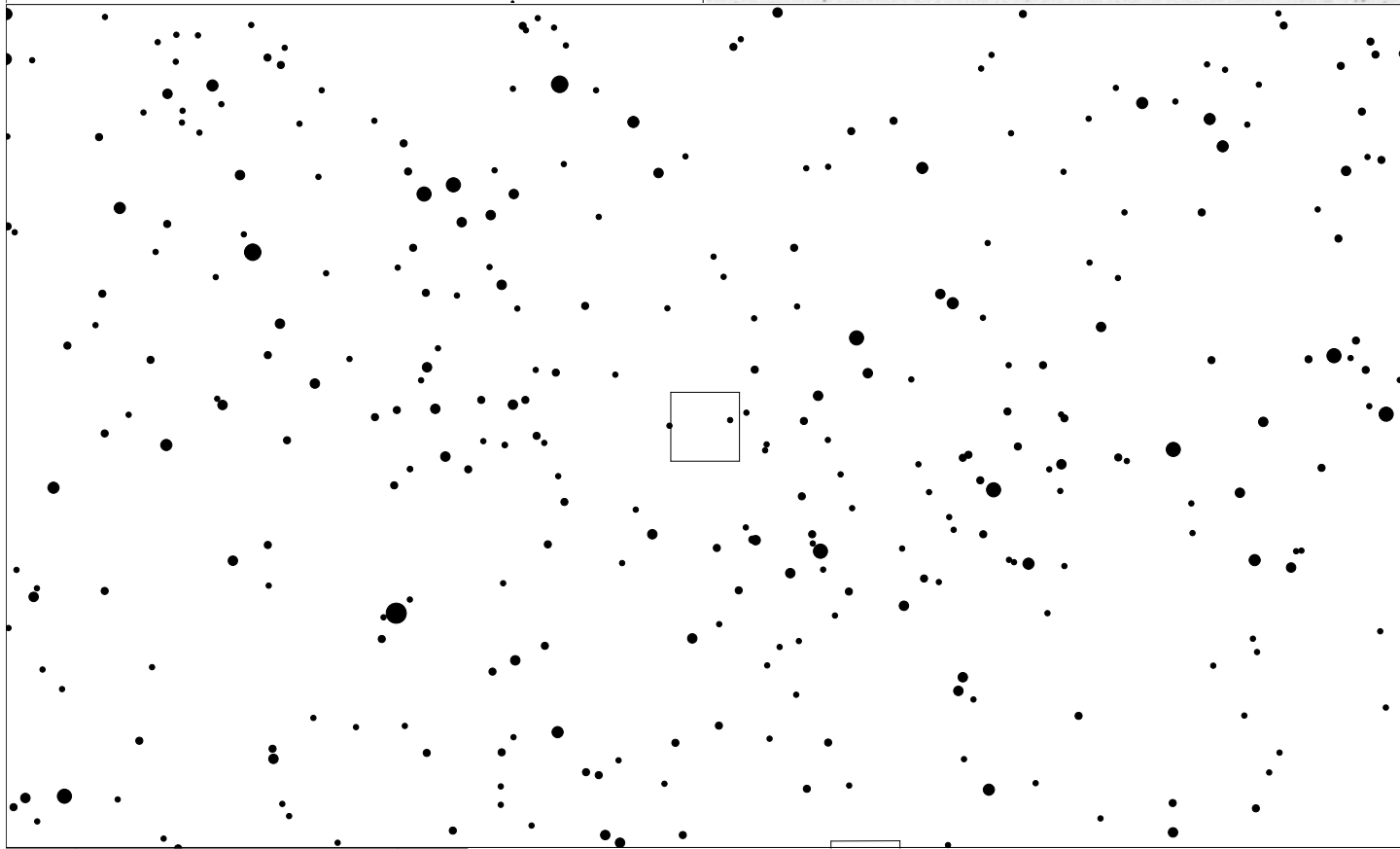
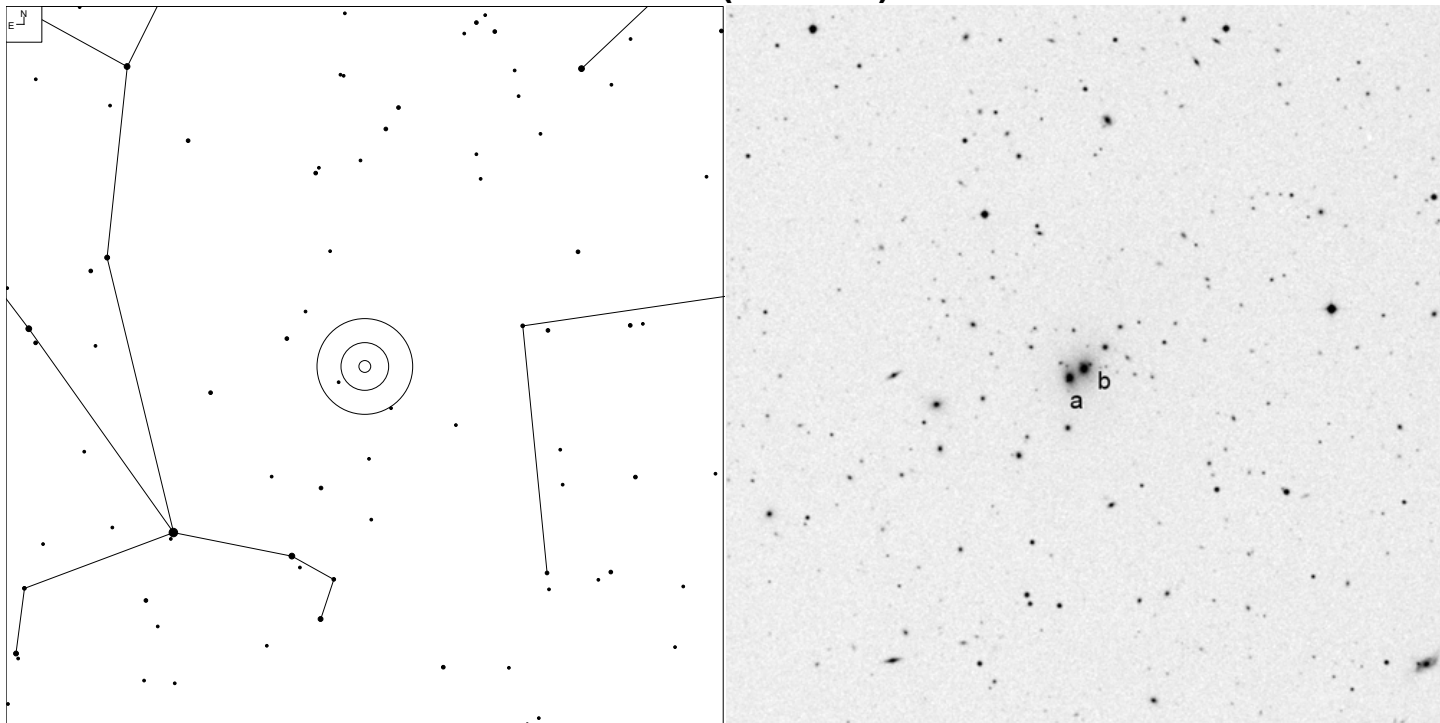
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 351  | 13 54 30.5 | -26 33 58 | GPair    |       |             | PD        |
| 351a | 13 54 26.4 | -26 34 35 | G        | 14.43 | 14x7      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

# VV 133 (Bootes)



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

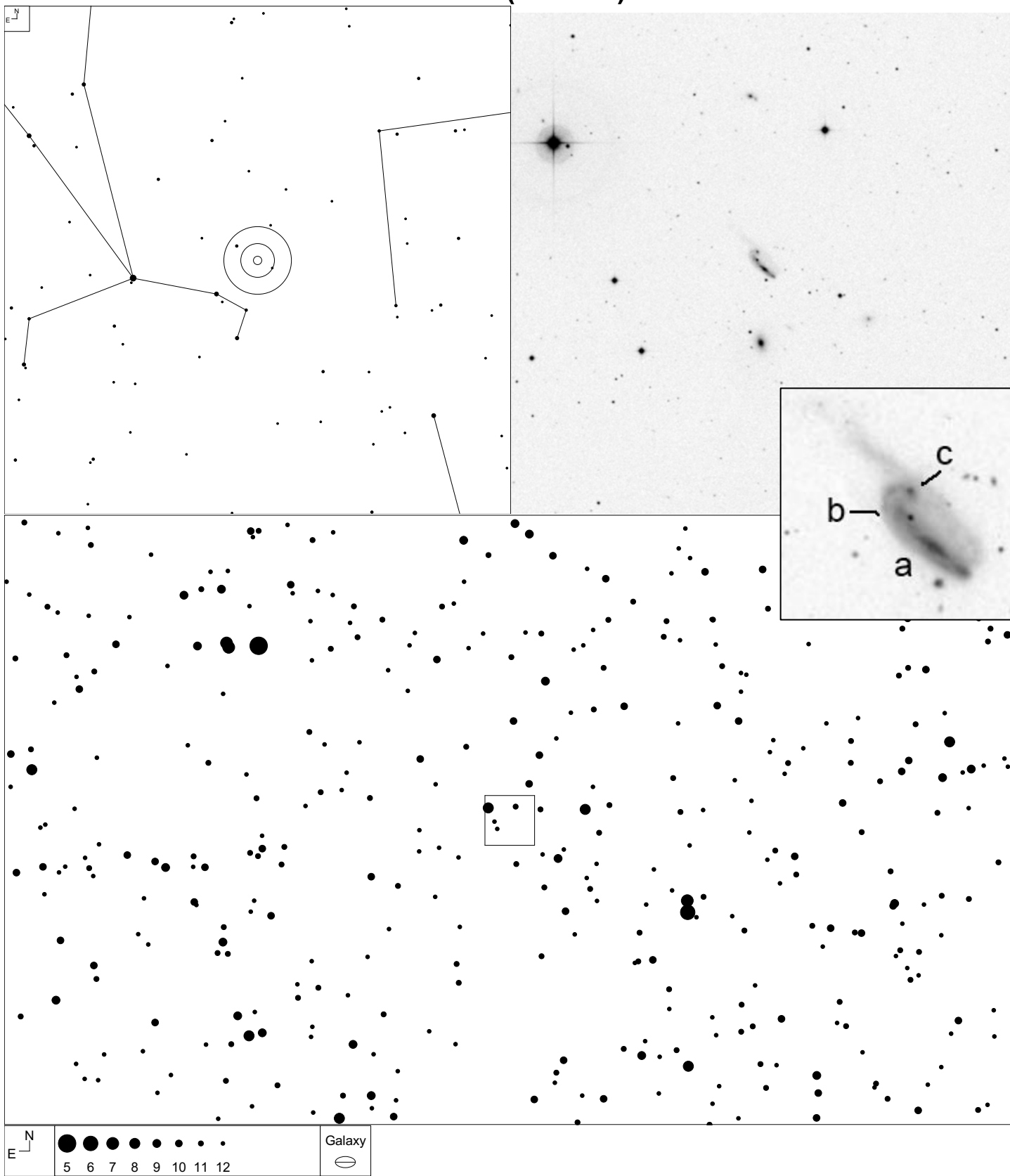
# VV 195 (Bootes)



| 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         |           |

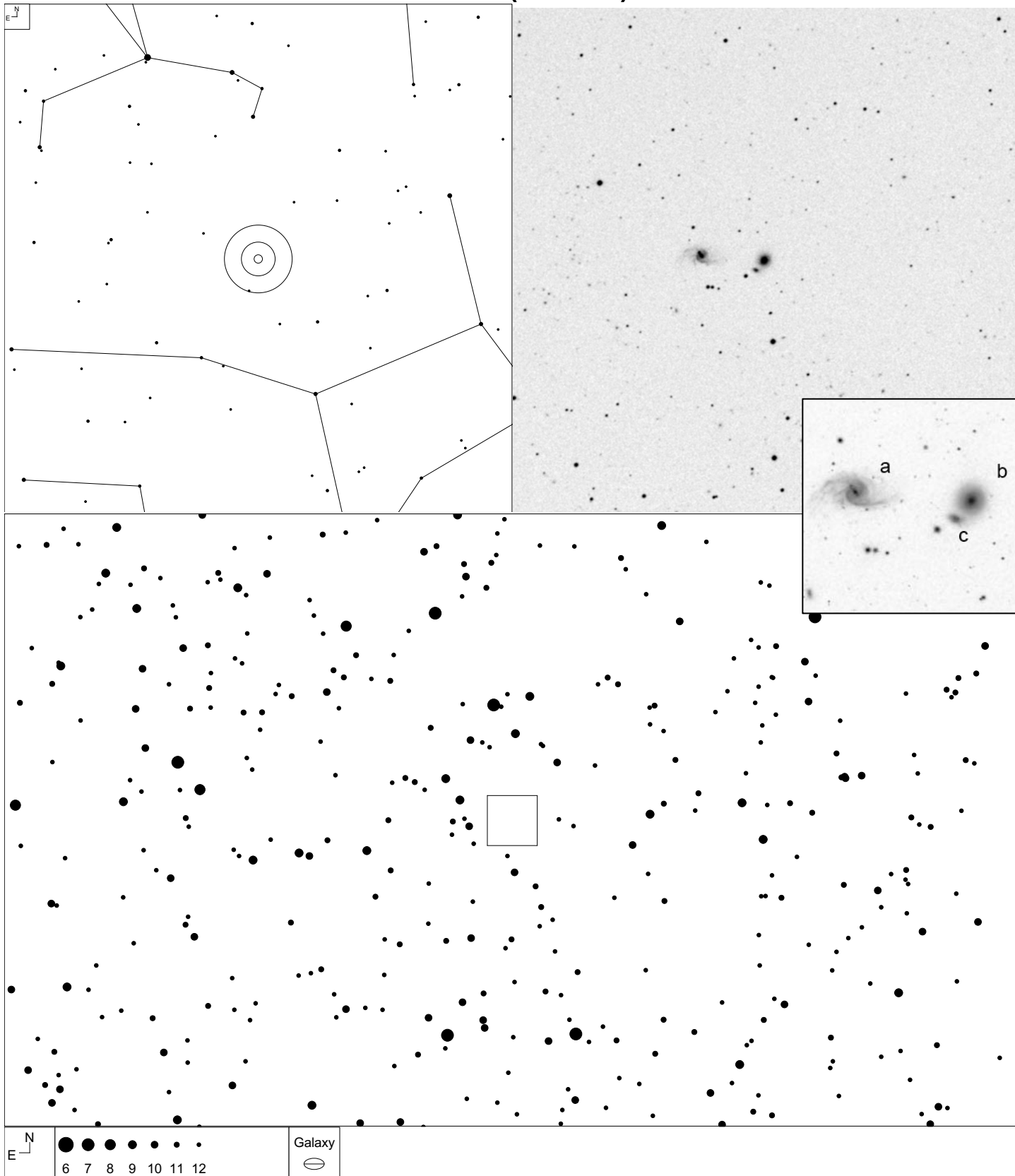


# VV 163 (Bootes)



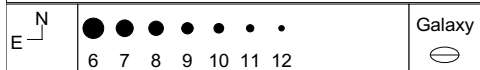
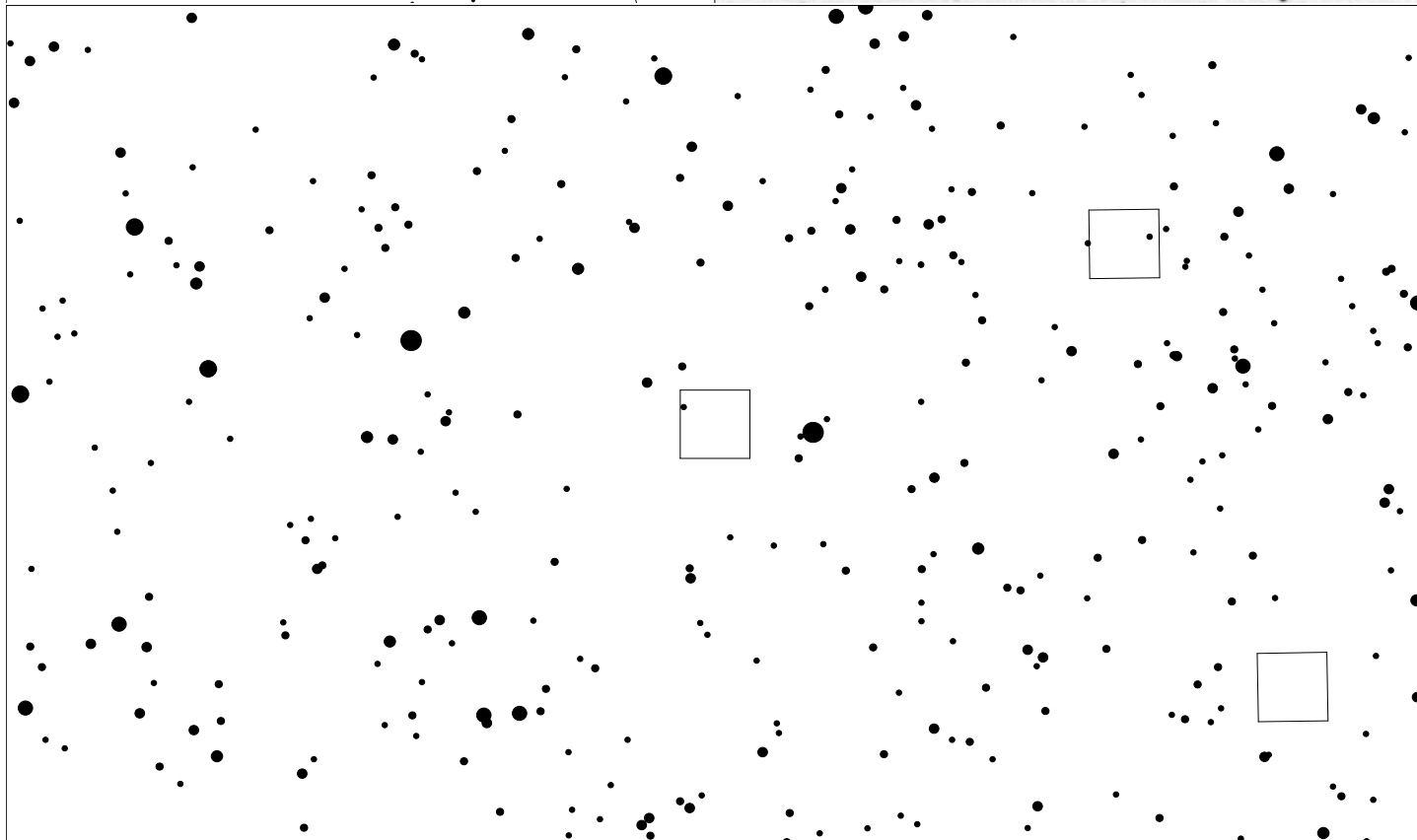
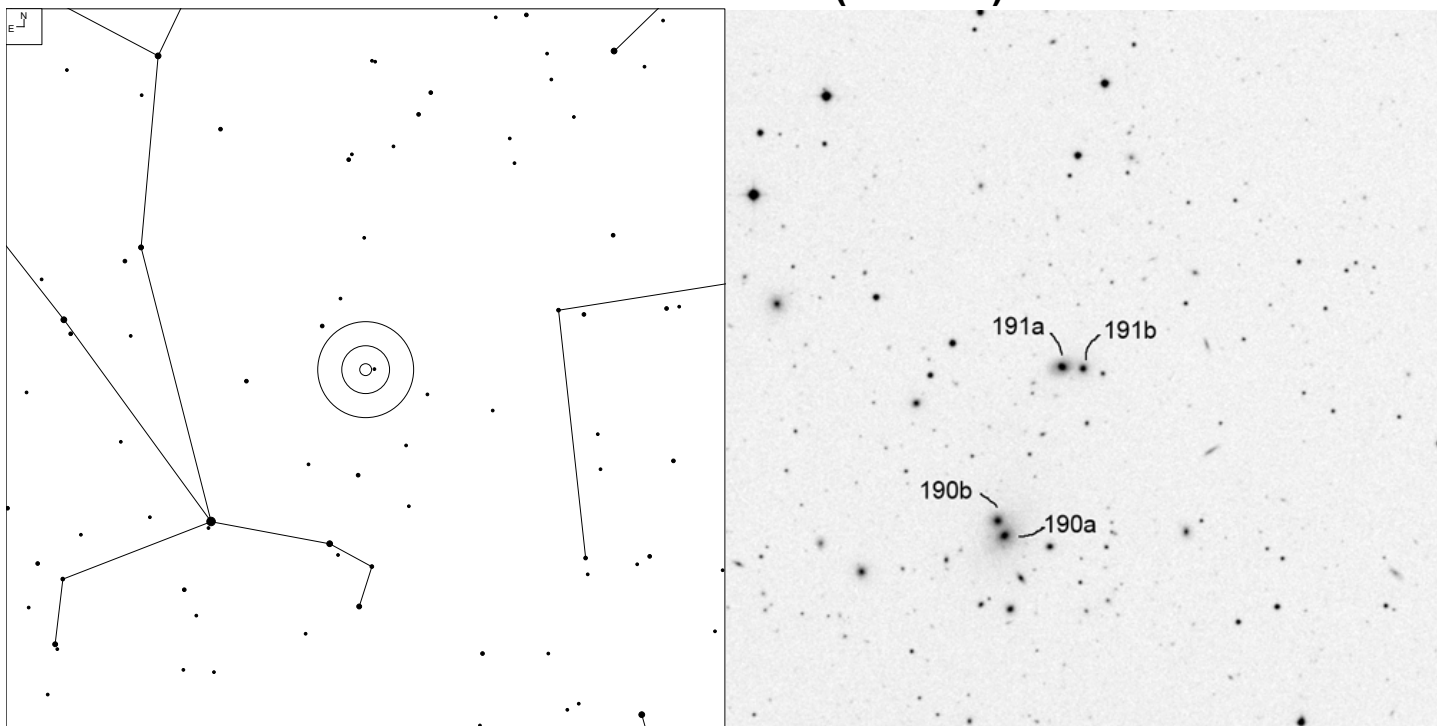
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 163  | 13 44 25.0 | 20 24 50  | GTrpl    | 14.89 | 11          | Ch        |
| 163a | 13 44 24.5 | +20 24 34 | G        | 15.0  |           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

# VV 306 (Bootes)



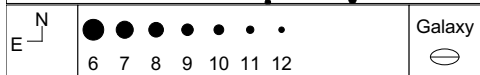
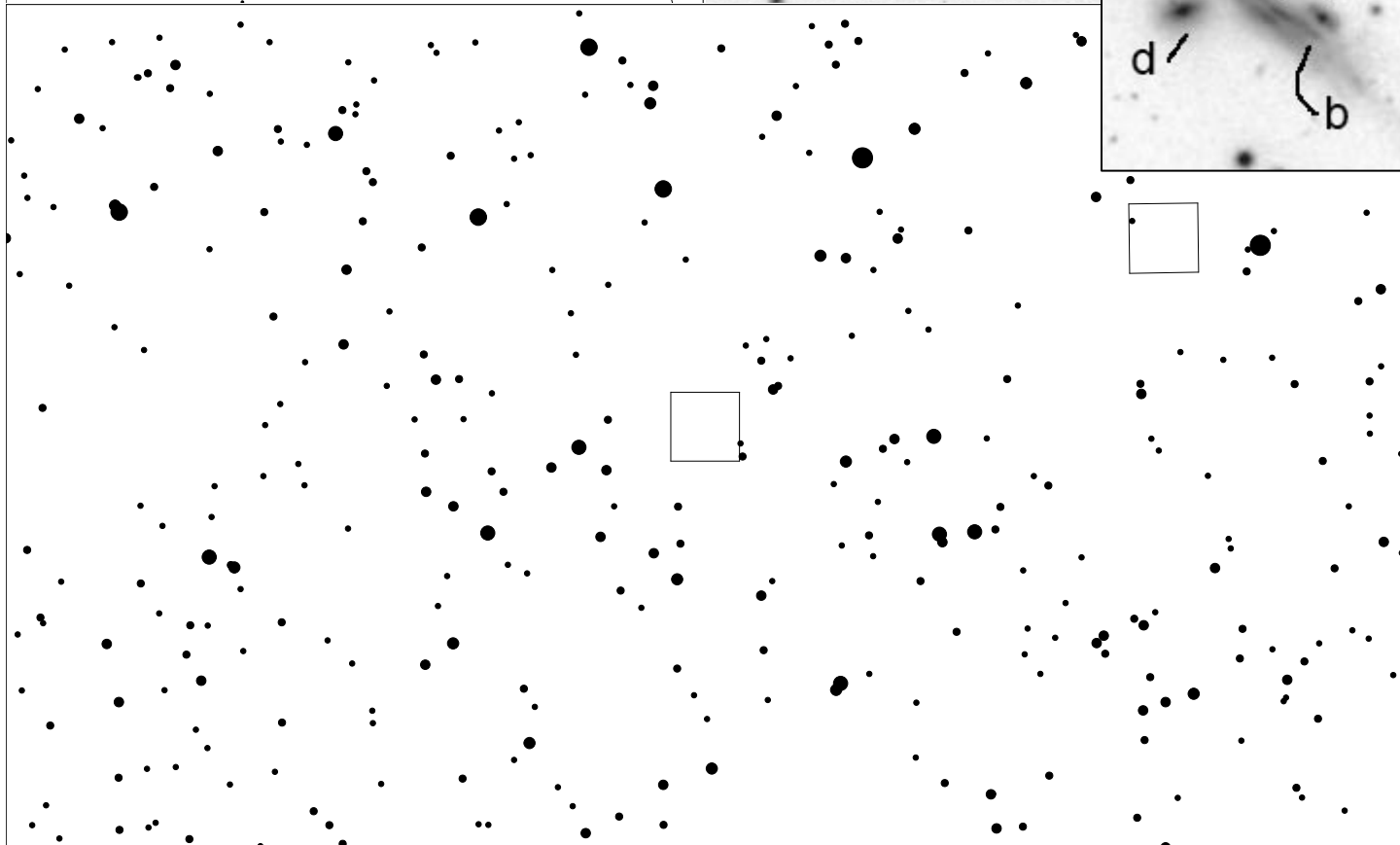
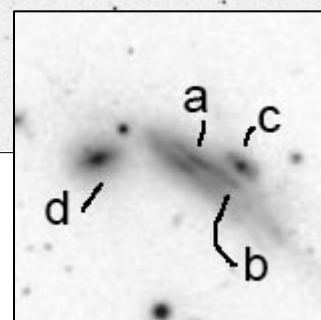
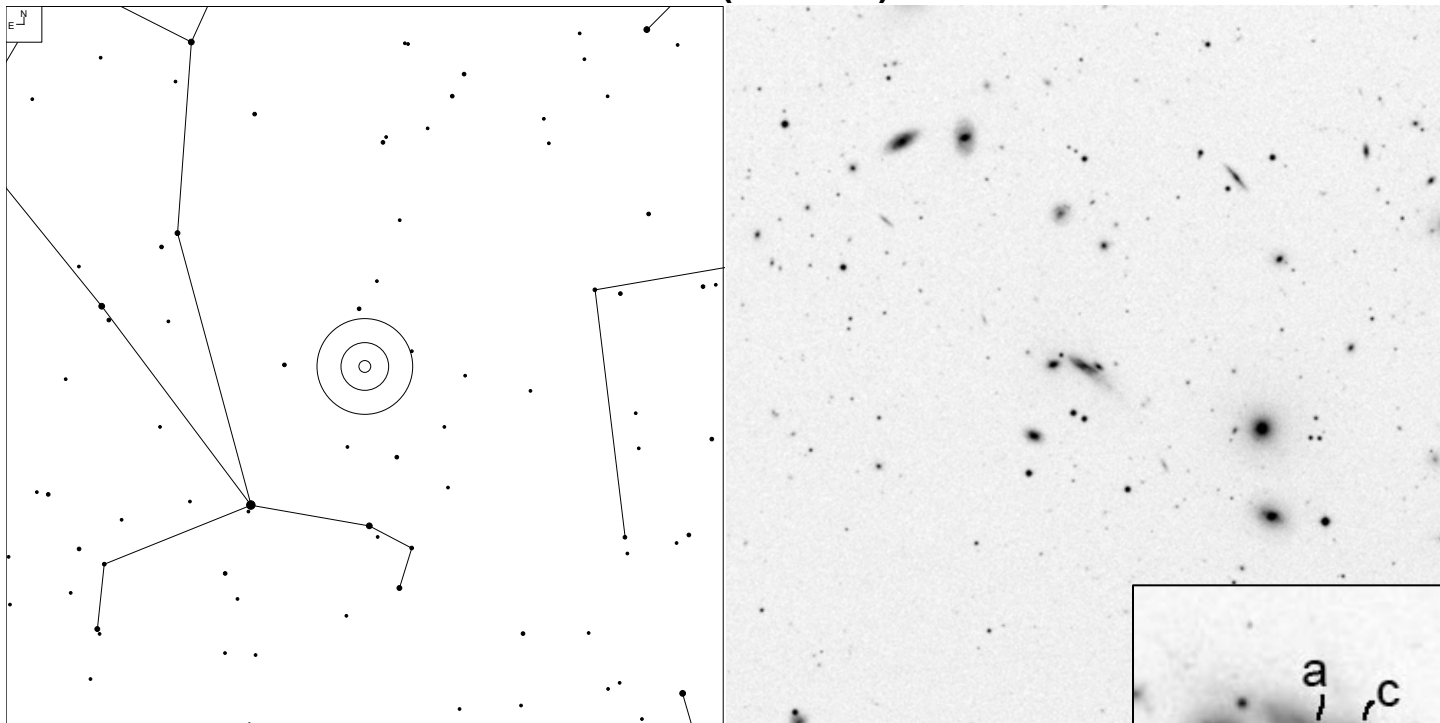
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 306  | 13 48 08.9 | +07 23 27 | GTrpl    |       |             | NNNP      |
| 306c | 13 48 05.0 | +07 23 32 | G        | 15.5  | 6x6         |           |
| 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 (Bootes)



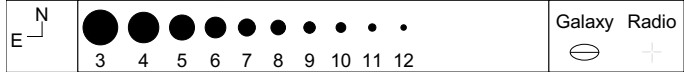
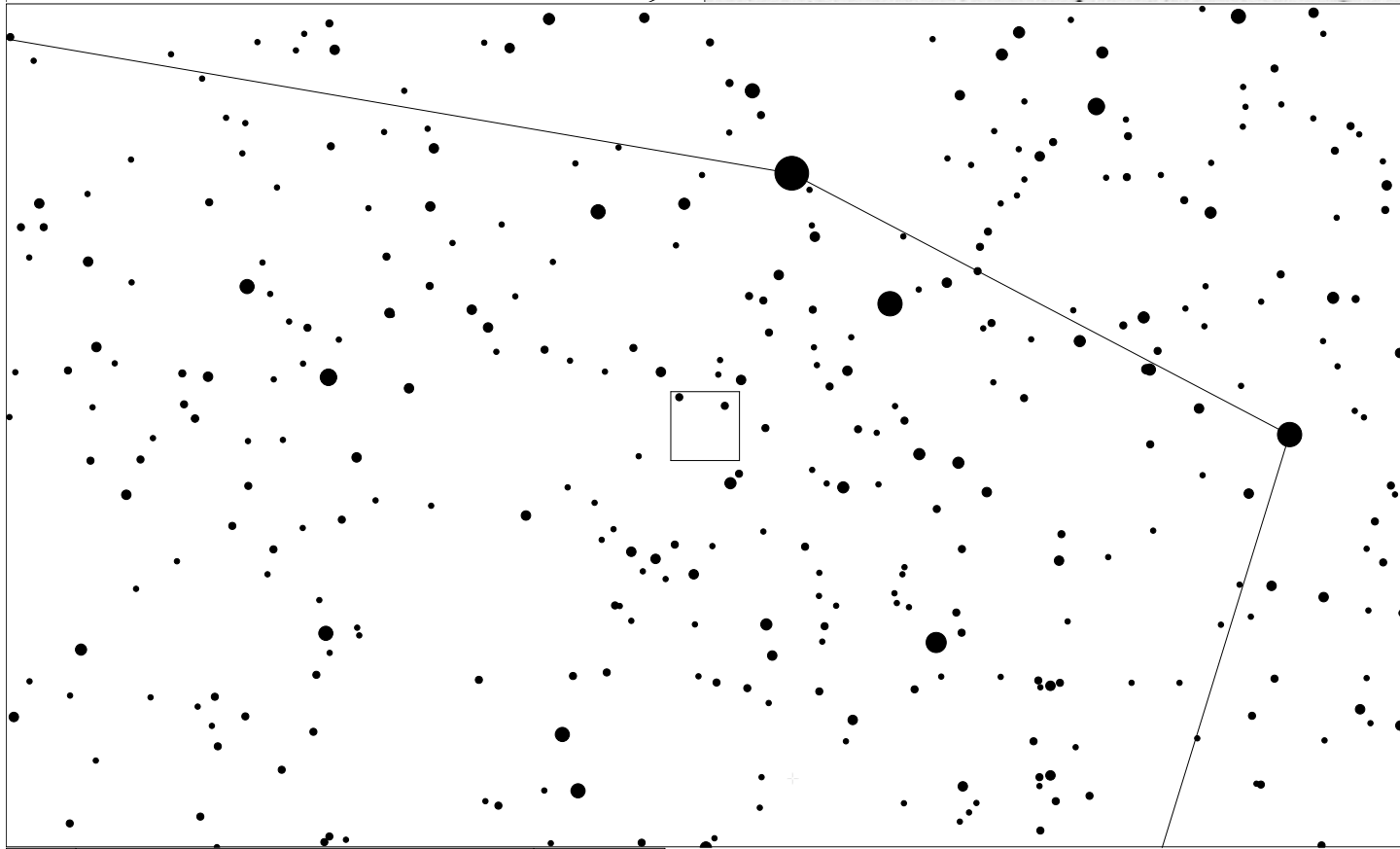
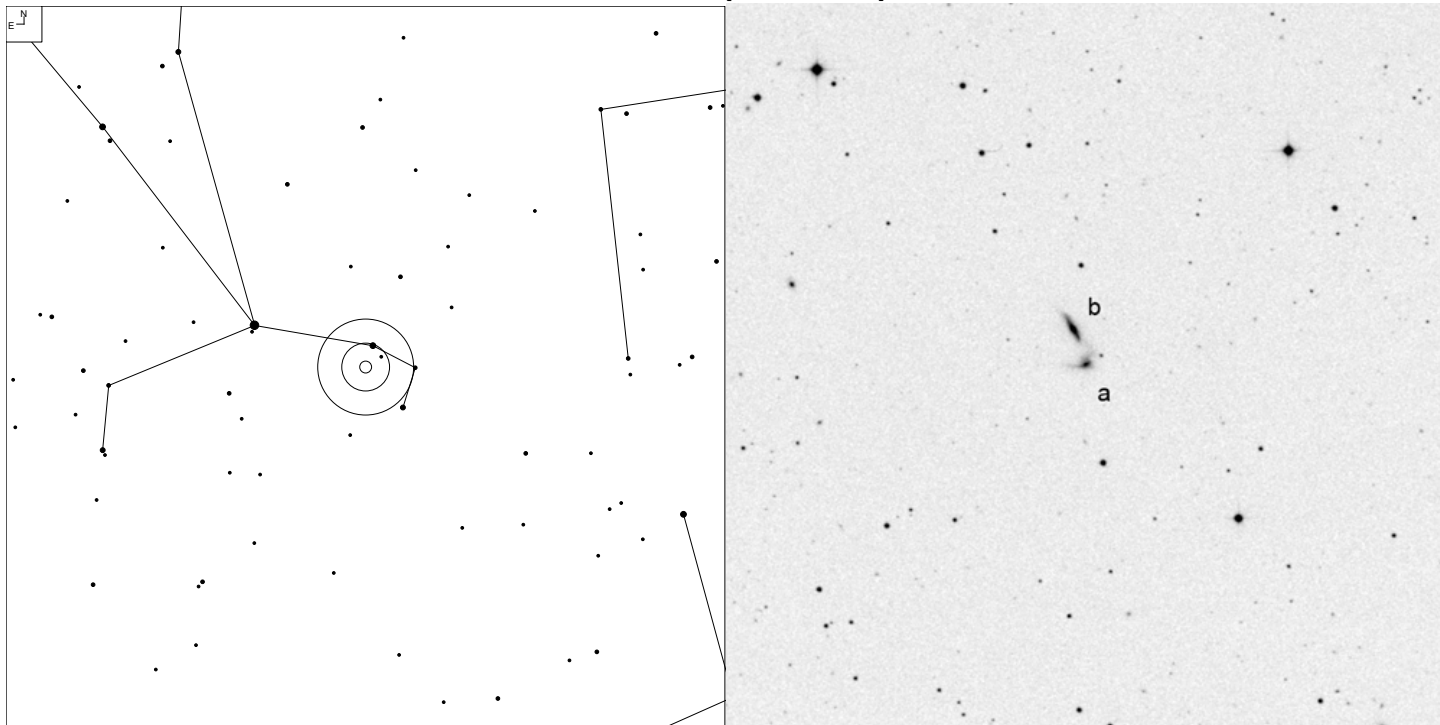
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 190  | 13 48 15.1 | +25 43 59 | GPair    |       |             |           |
| 190b | 13 48 14.1 | +25 43 58 | G        | 16.1g | 4x4         | 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 (Bootes)



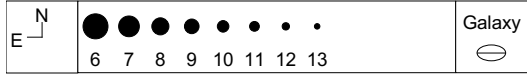
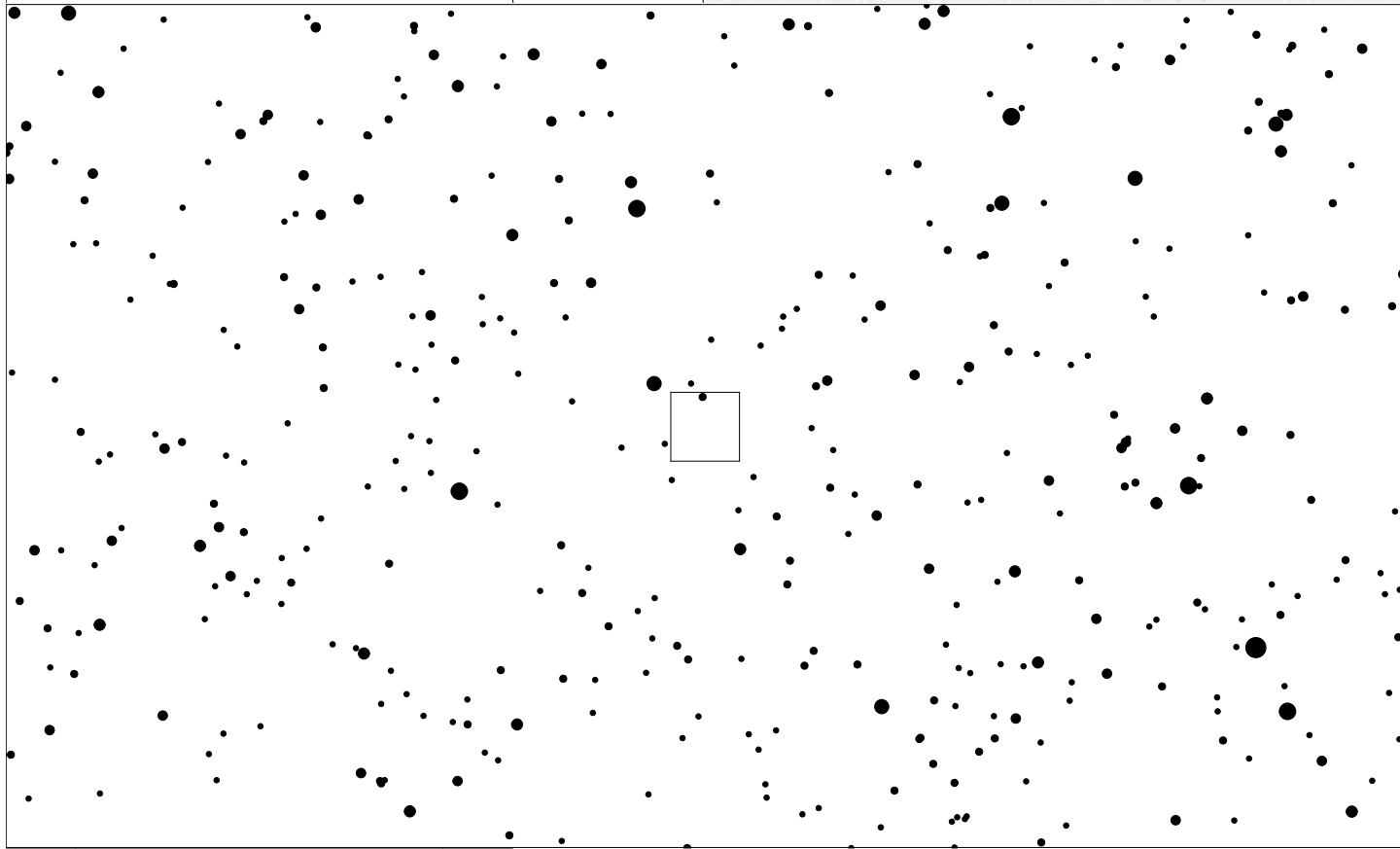
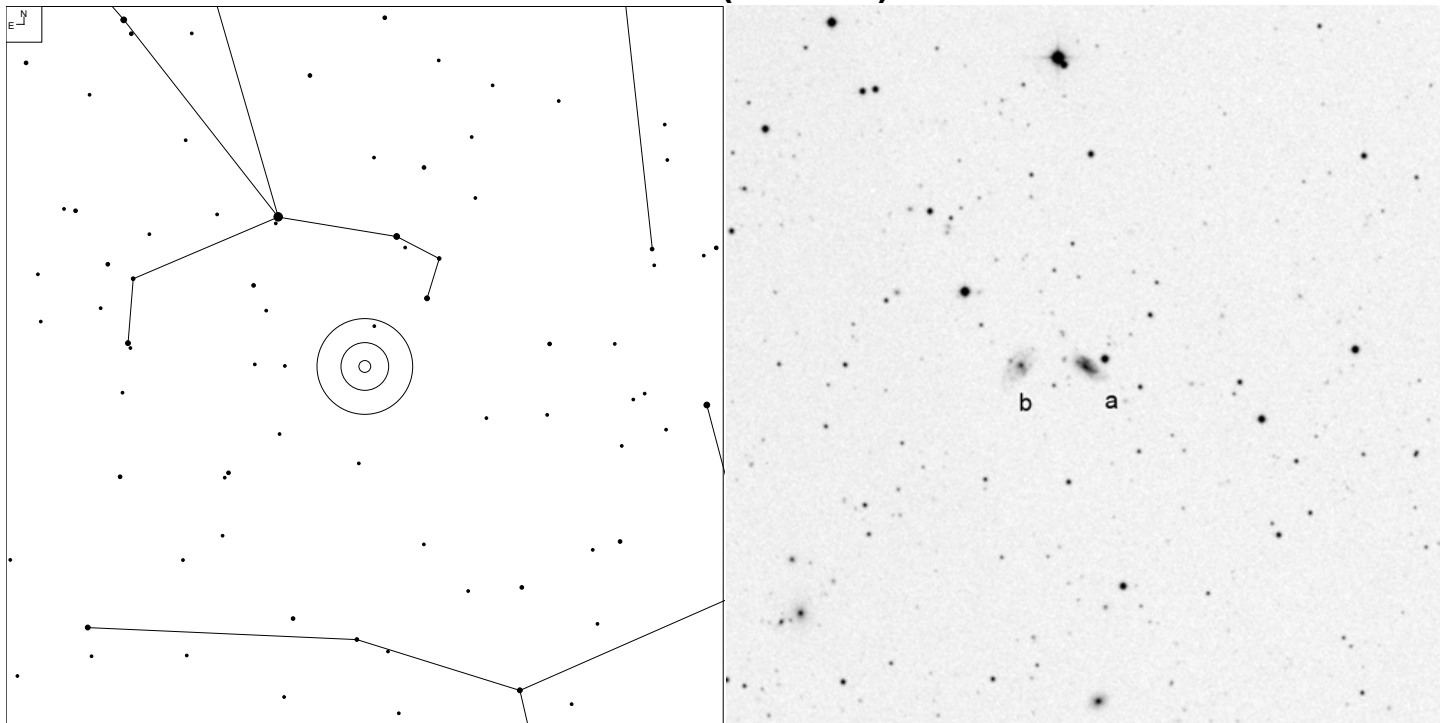
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 281  | 13 55 30.0 | +25 04 26 | GTrpl    |       |             | Ch        |
| 281c | 13 55 28.4 | +25 04 25 | G        | 17.7g | 1x1         |           |
| 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 (Bootes)



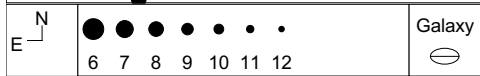
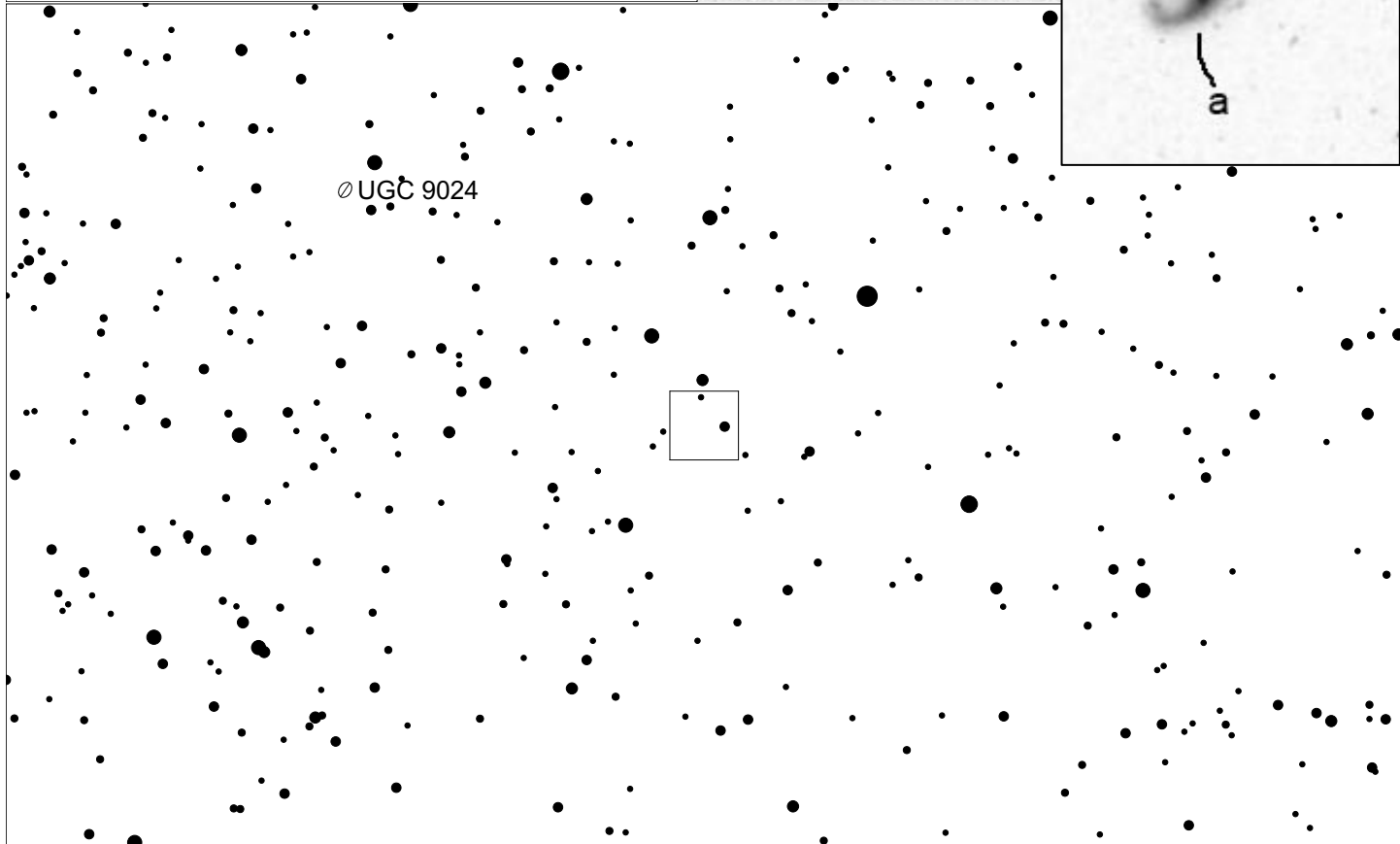
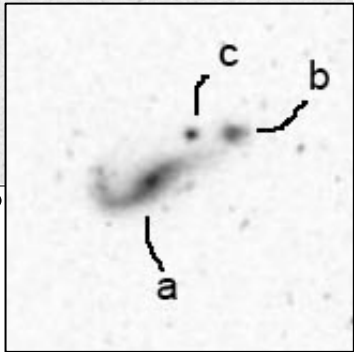
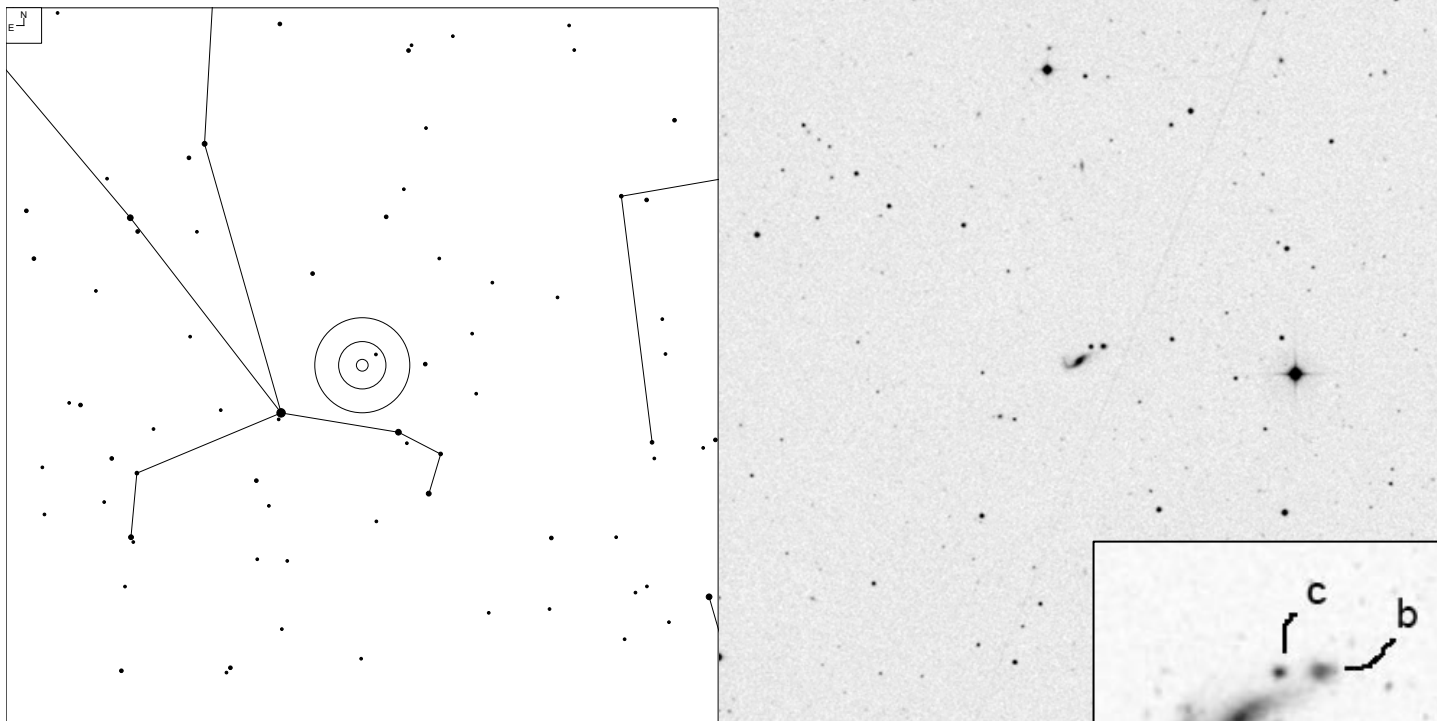
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 335  | 13 55 59.6 | +17 30 21 | GPair    |       |             | PDb       |
| 335a | 13 55 59.1 | +17 29 57 | G        | 14.50 | 9x6       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

# VV 339 (Bootes)



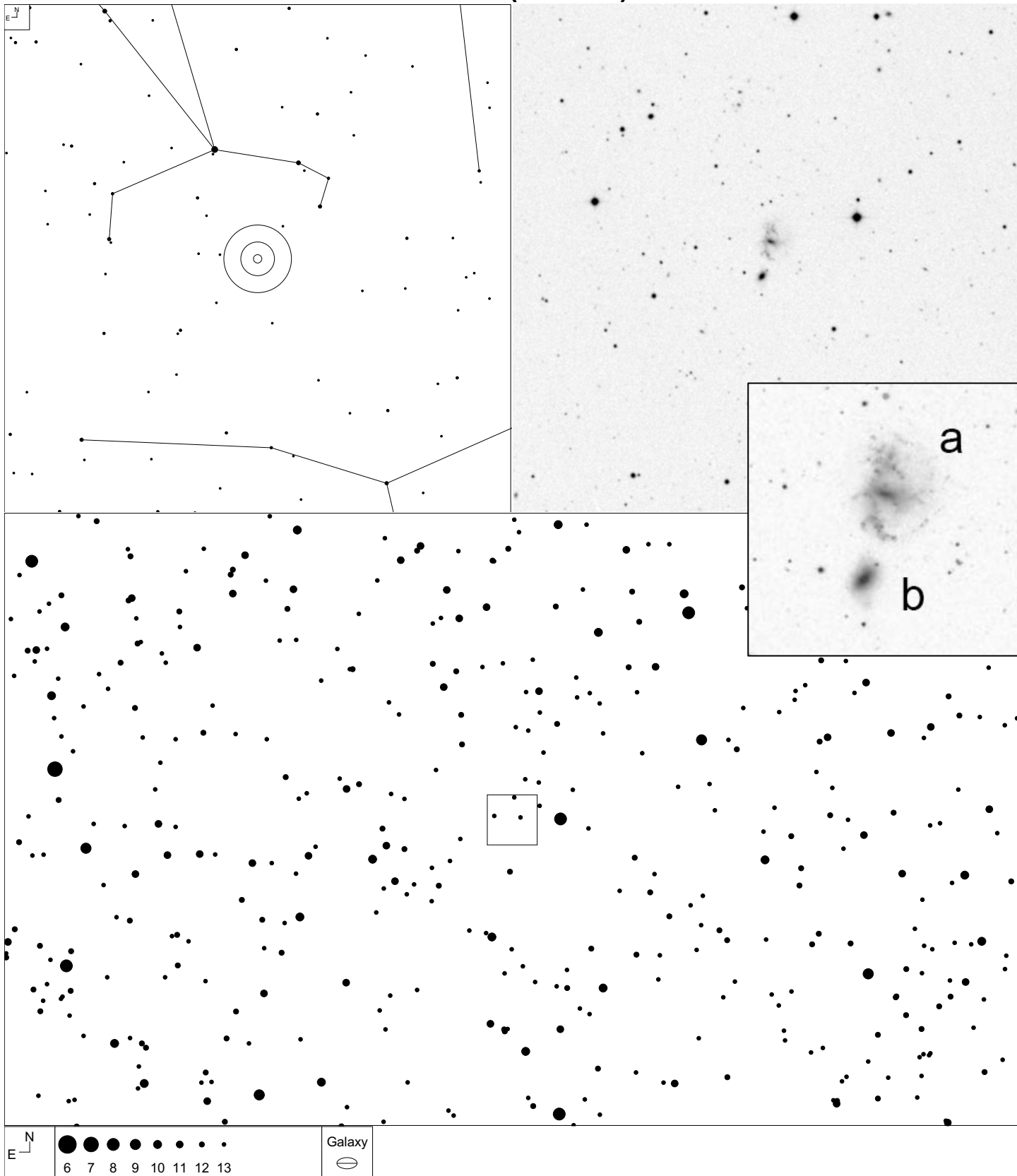
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 339  | 14 00 22.5 | +12 57 26 | GPair    |       |             | PD        |
| 339a | 14 00 19.8 | +12 57 26 | G        | 14.77 | 10x6      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

# VV 277 (Bootes)



| 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         |           |

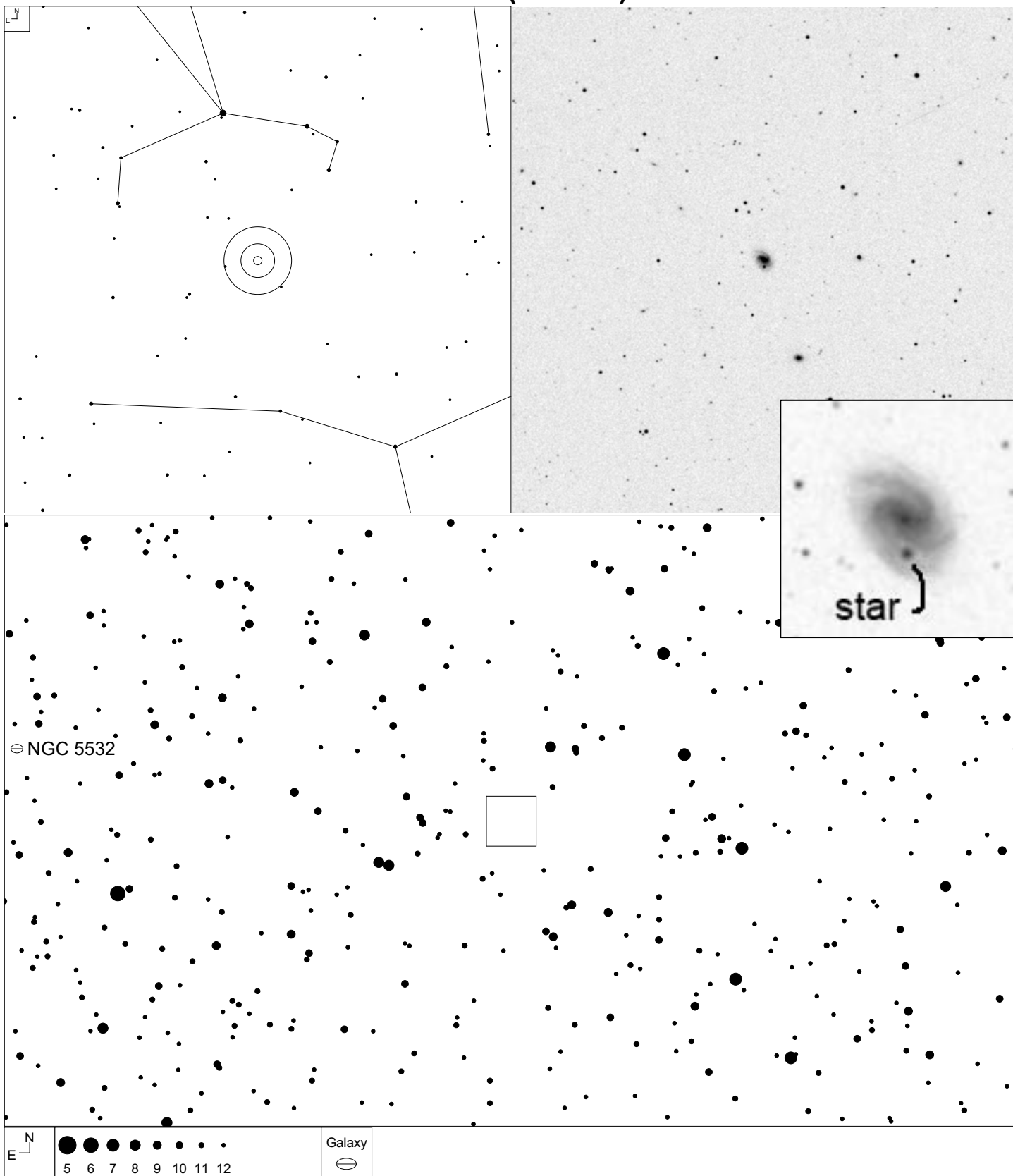
# VV 328 (Bootes)



| 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 (Bootes)

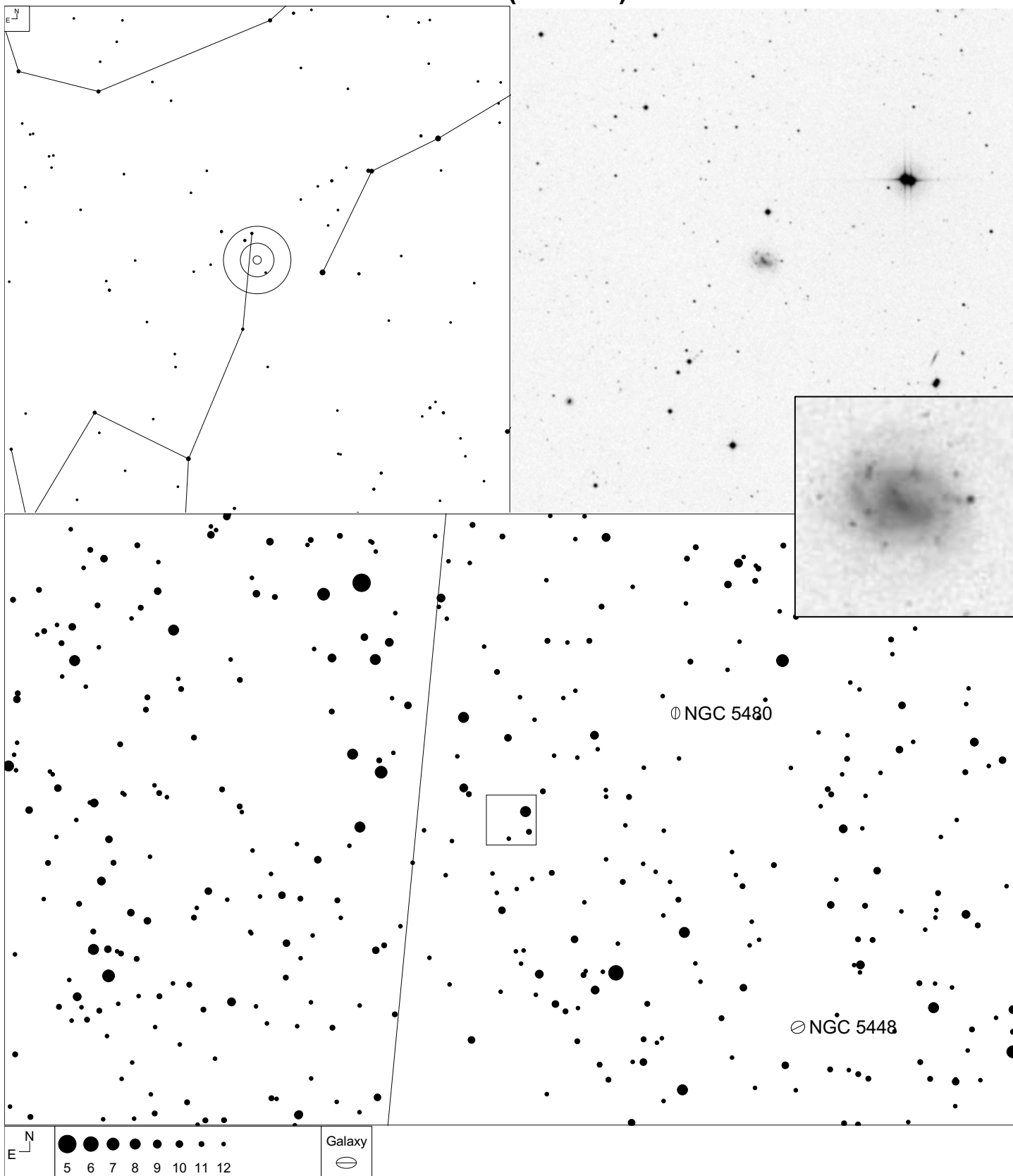


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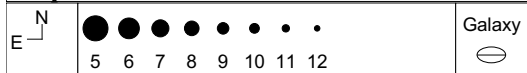
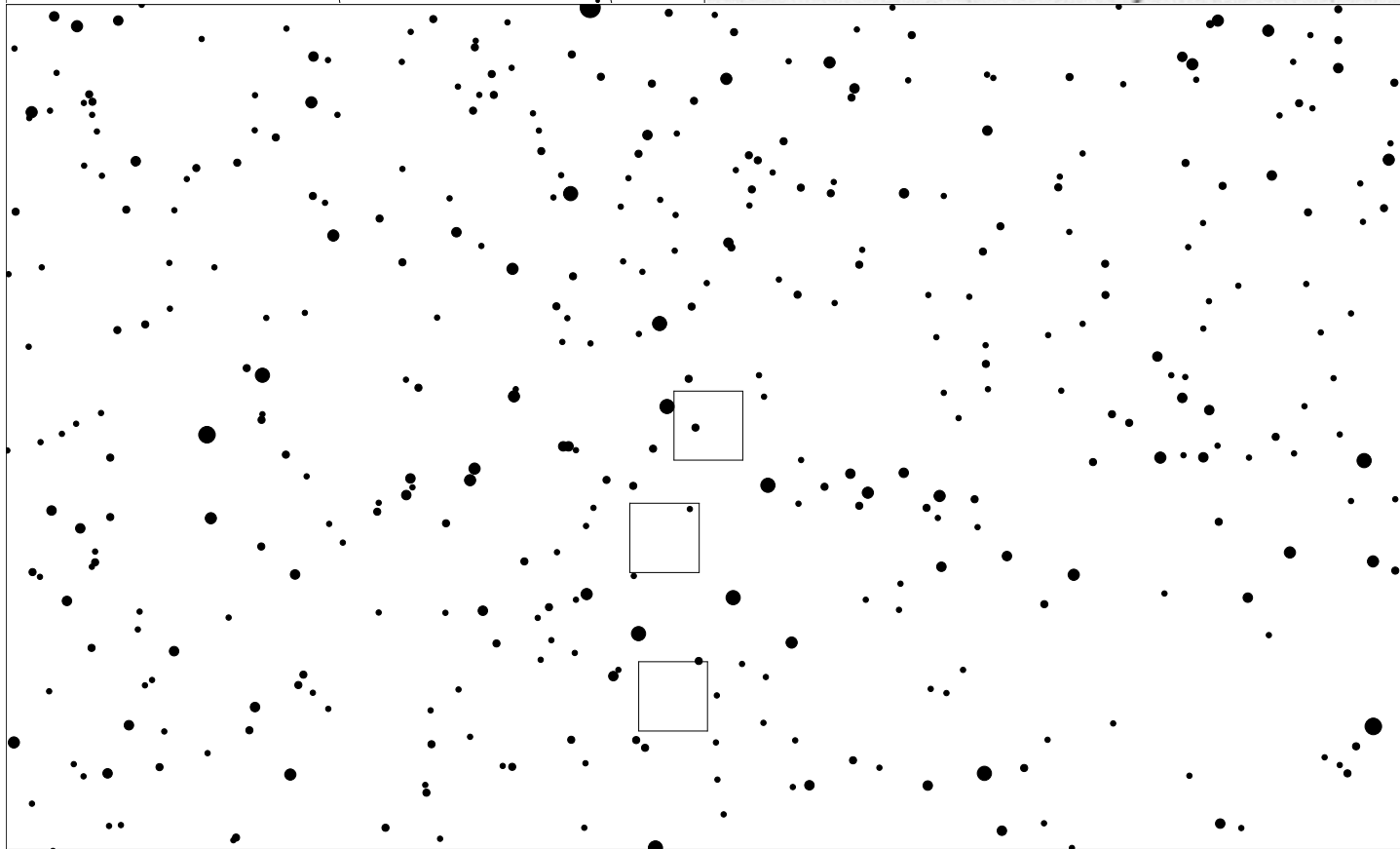
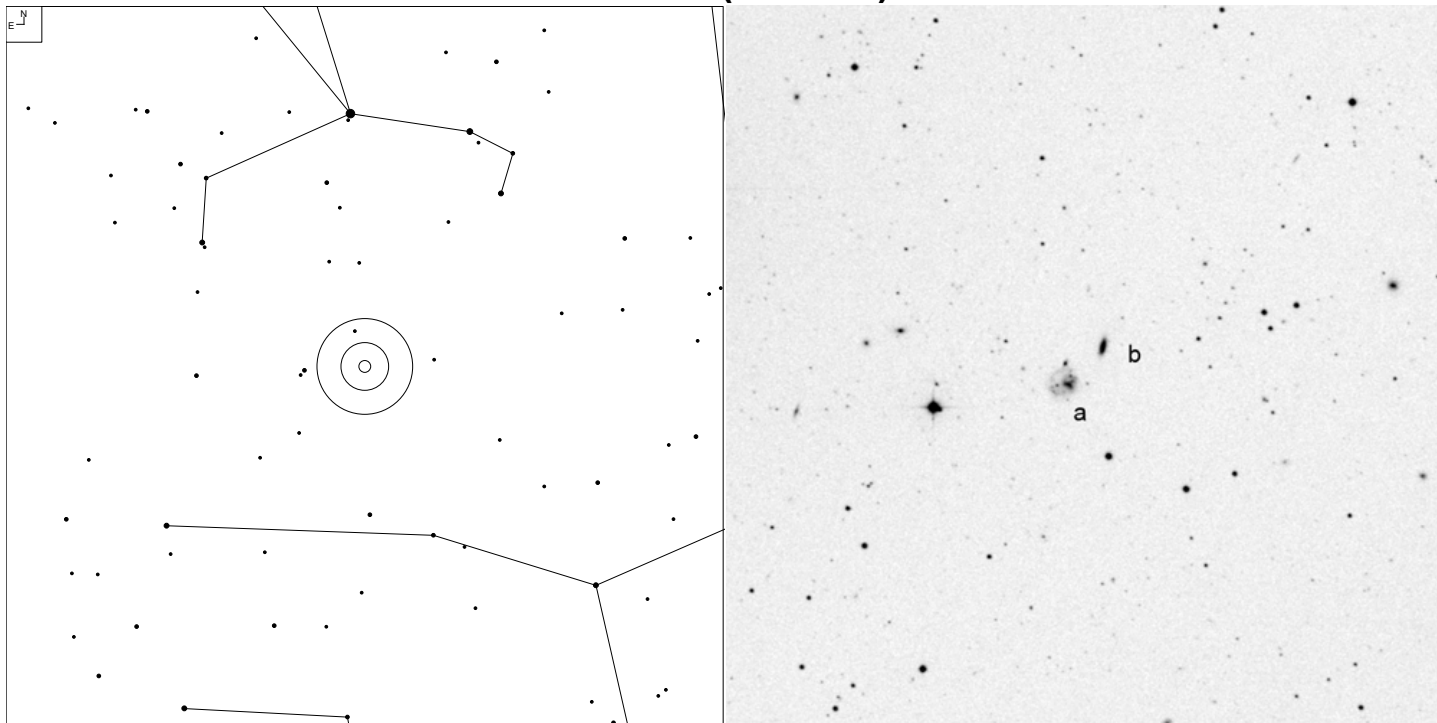
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 103  | 14 07 00.1 | +10 27 44 | GPair?   | 14.8  | 8x5         | PC        |
| 103a | 14 07 00.2 | +10 27 45 | G        | 14.8g | 9x6       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

# VV 125 (Bootes)



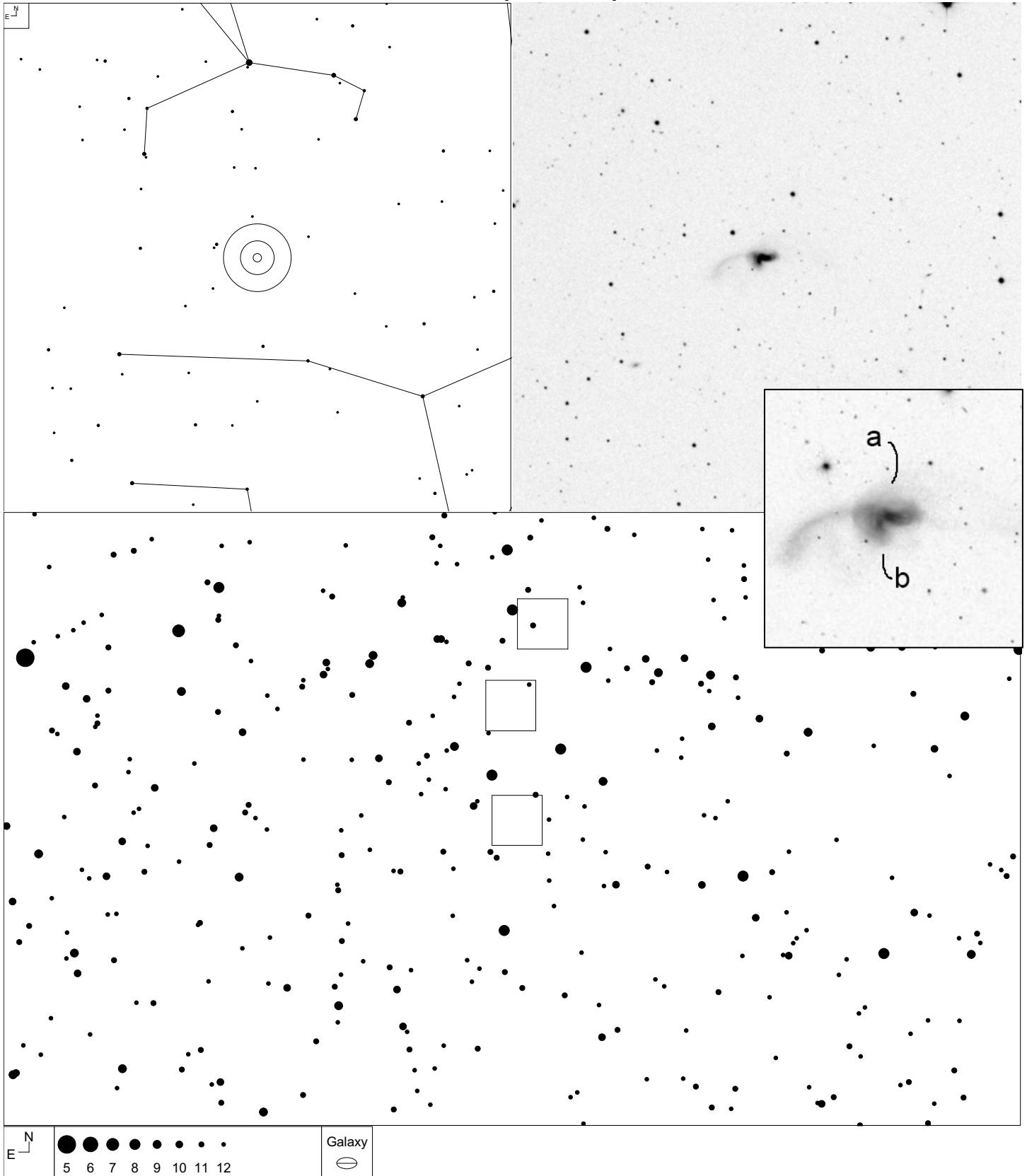
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 125 | 14 11 27.0 | +50 12 33 | G        | 14.85 | 11x8        | N         |

# VV 299 (Bootes)



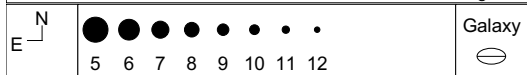
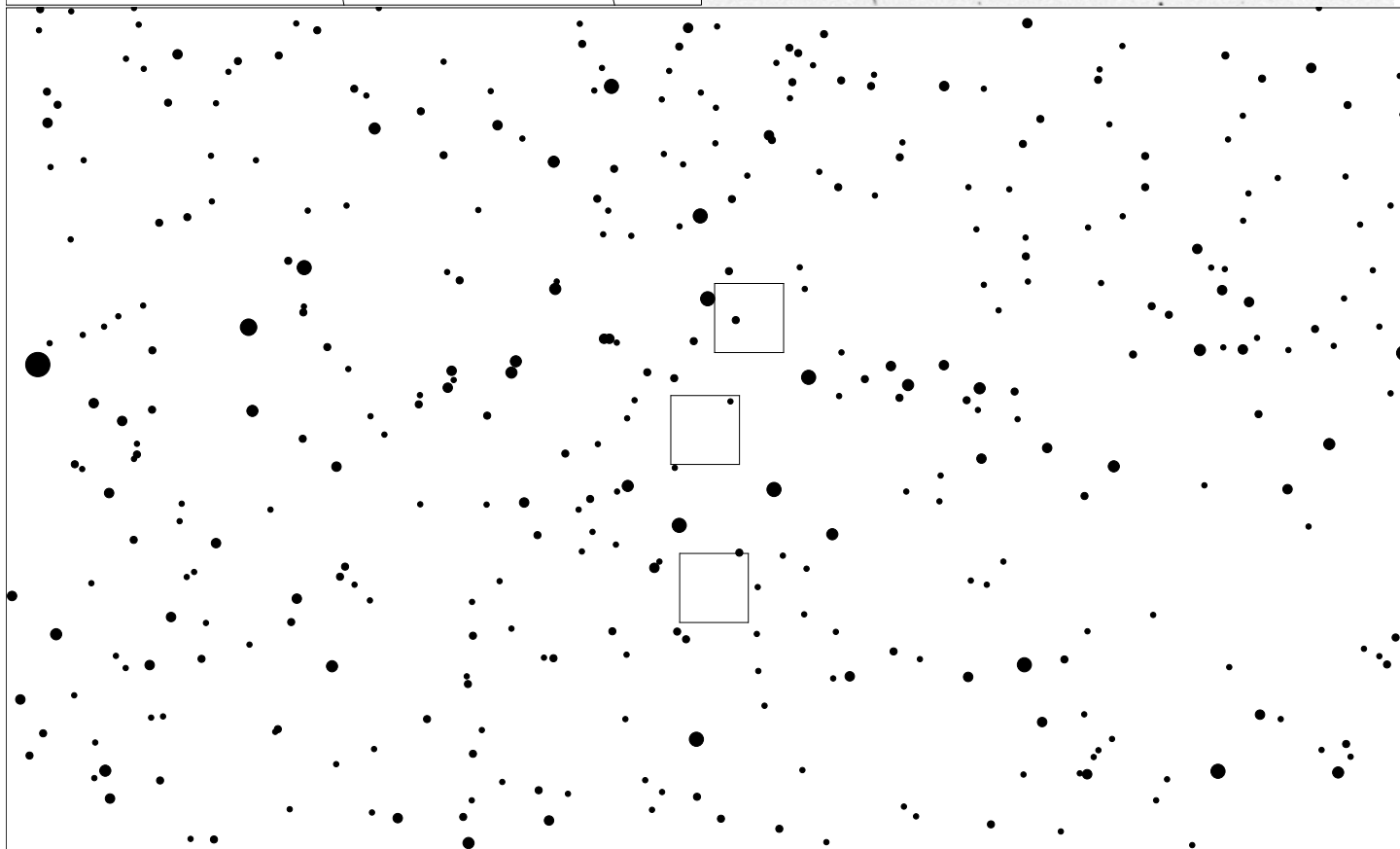
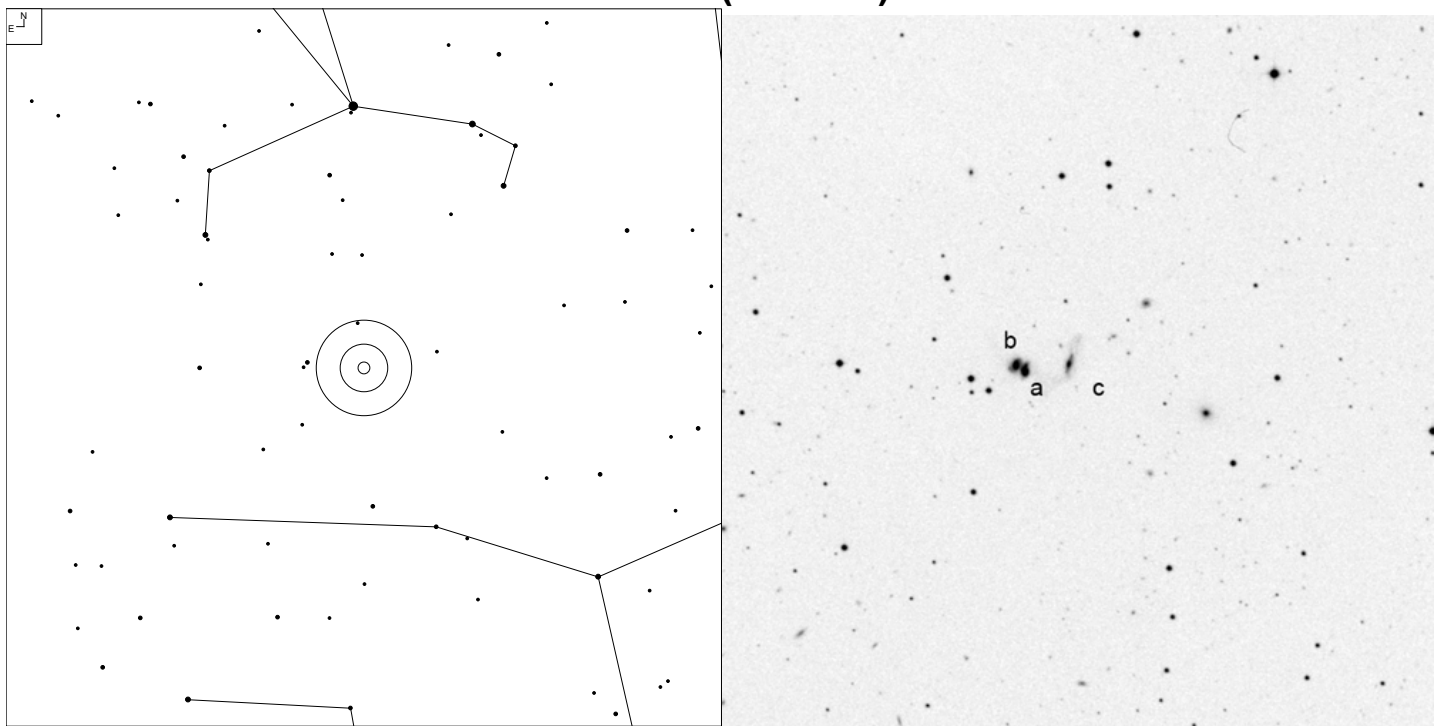
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 299  | 14 13 06.9 | +08 37 31 | GPair    |       |             | PD        |
| 299b | 14 13 05.4 | +08 37 55 | G        | 15.8g | 6x2       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

# VV 70 (Bootes)



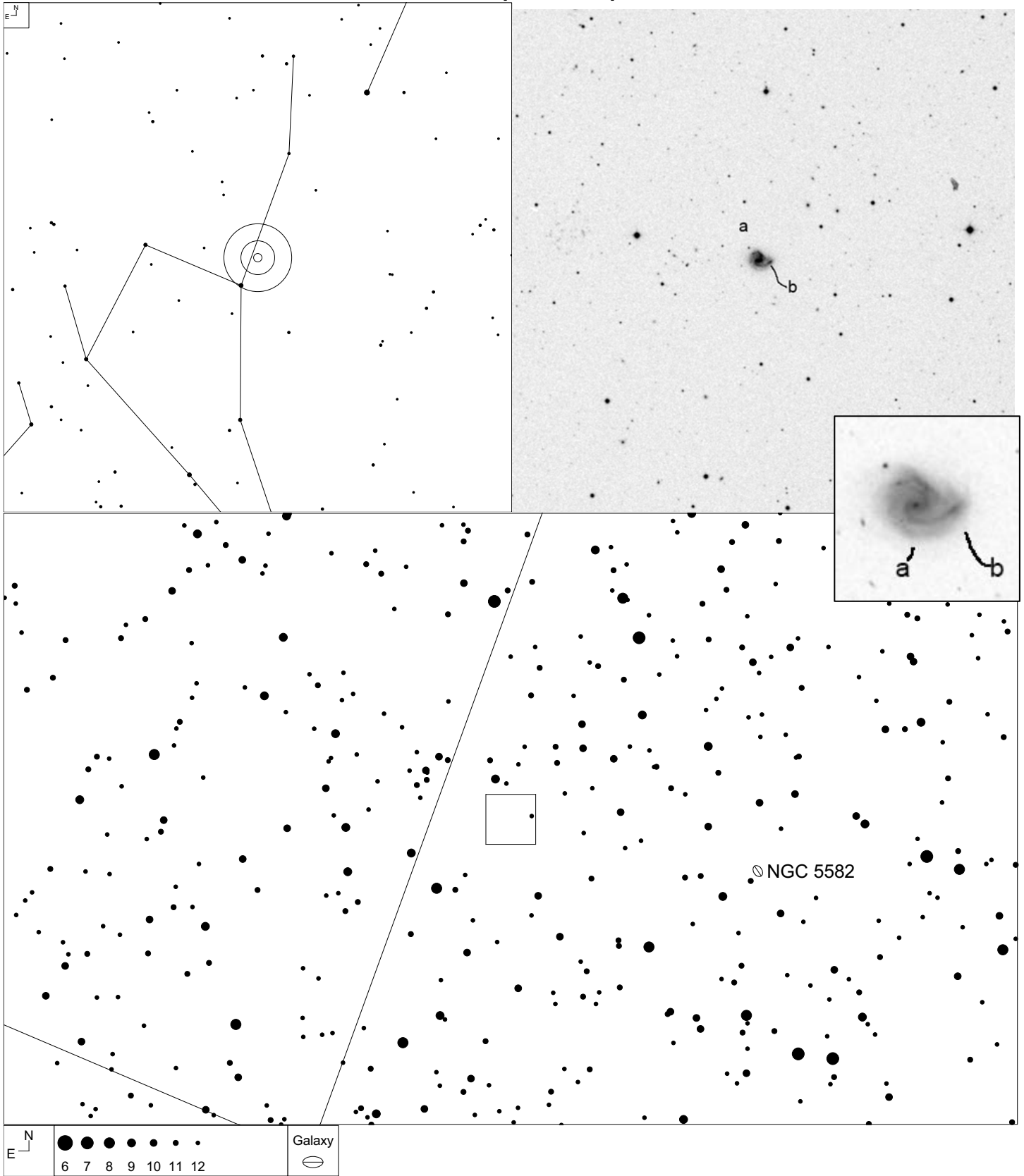
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 70  | 14 13 38.8 | +07 39 34 | GPair    | 13.7  |             | PC        |
| 70a | 14 13 38.4 | +07 39 38 | G        | 14.5  | 10x5        | 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

# VV 223 (Bootes)



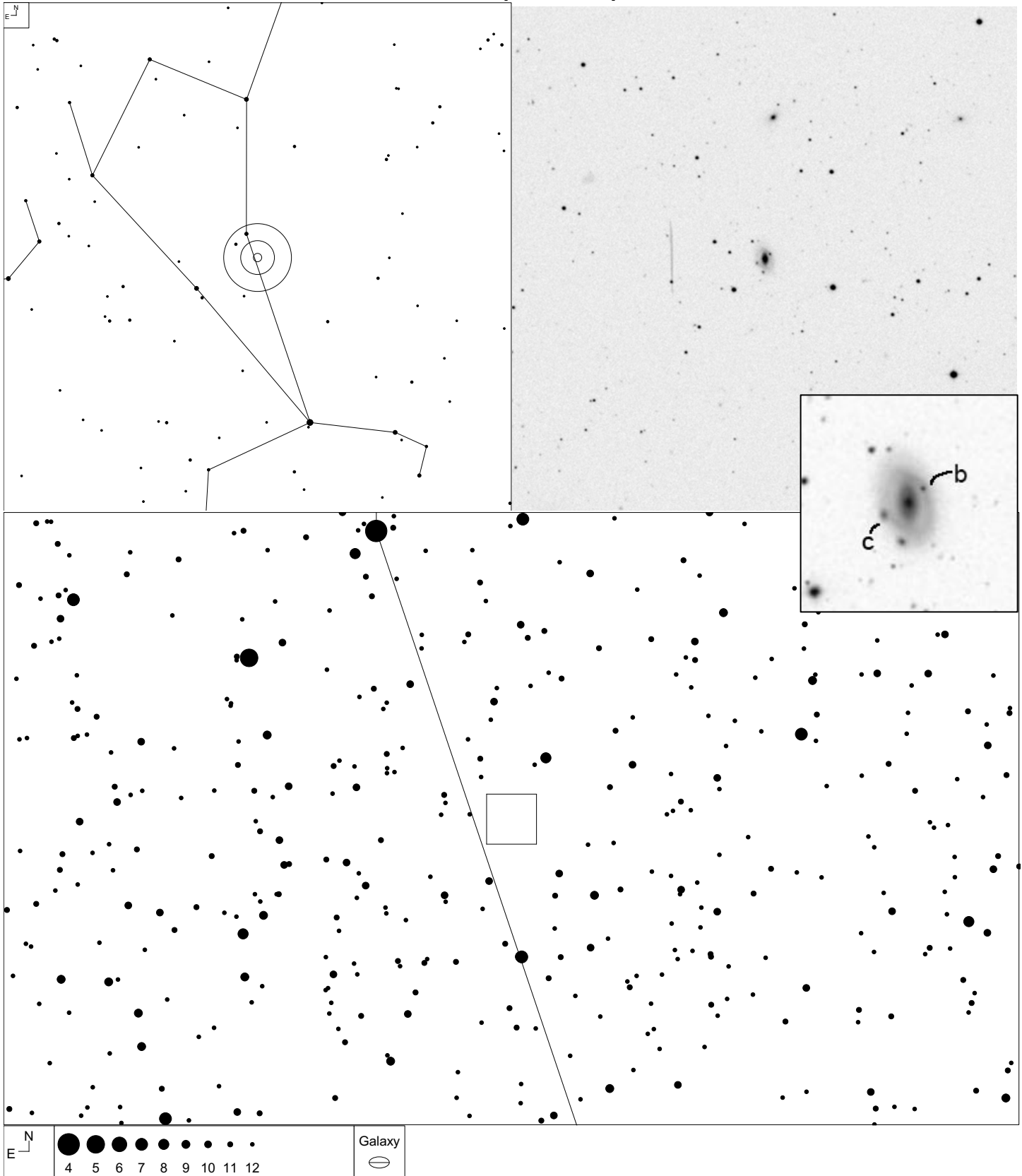
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 223  | 14 13 44.7 | +08 13 13 | GTrpl    |       |             | NNNP      |
| 223c | 14 13 42.0 | +08 13 16 | G        | 16.0g | 10x2        |           |
| 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 (Bootes)



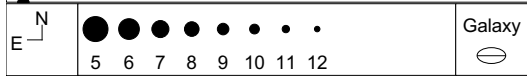
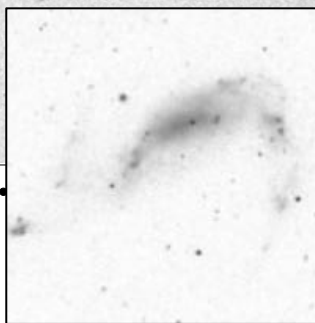
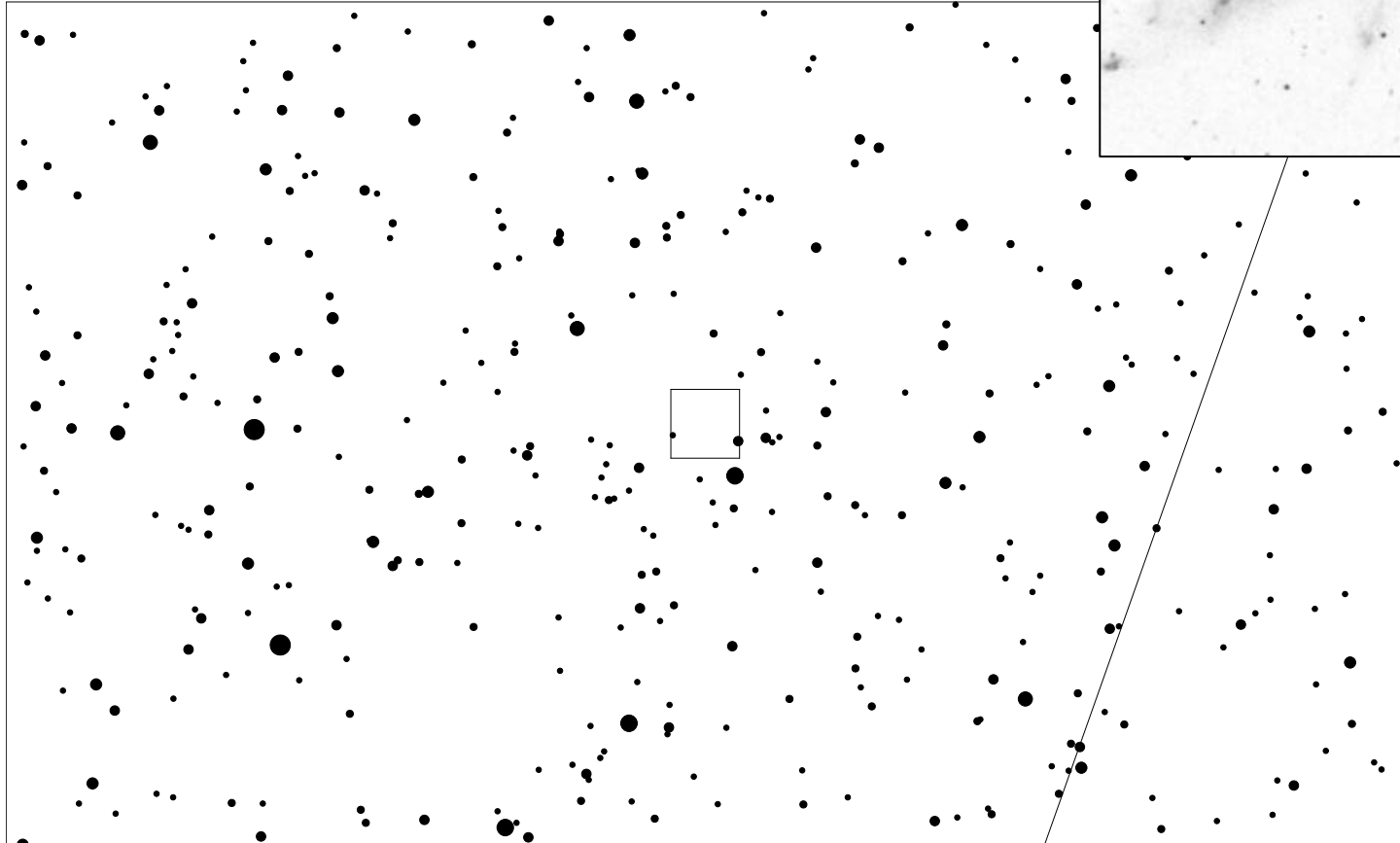
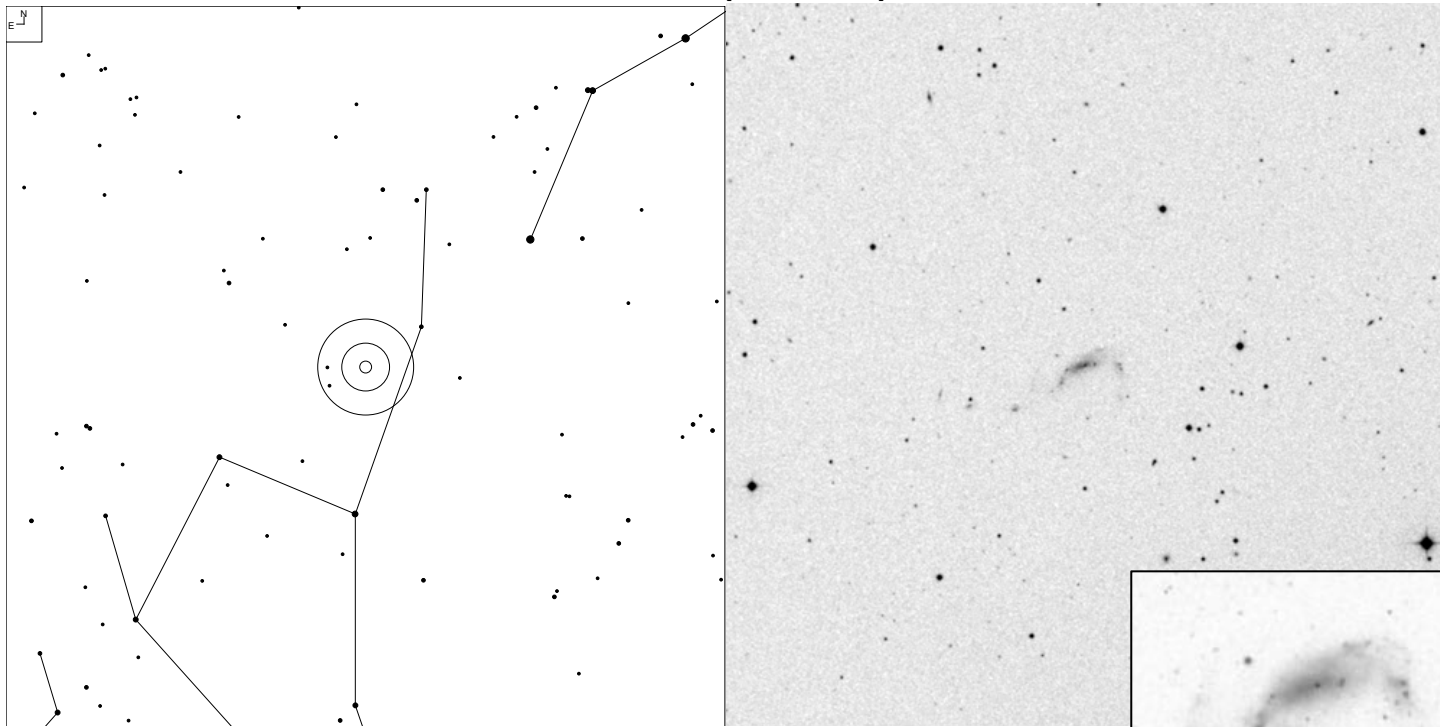
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 24  | 14 27 01.5 | +39 57 25 | GPair    | 14.8  | 8x6         | M         |
| 24b | 14 27 00.6 | +39 57 22 | G        | 20.5g | 1x1         | 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

# VV 15 (Bootes)



| 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         |           |

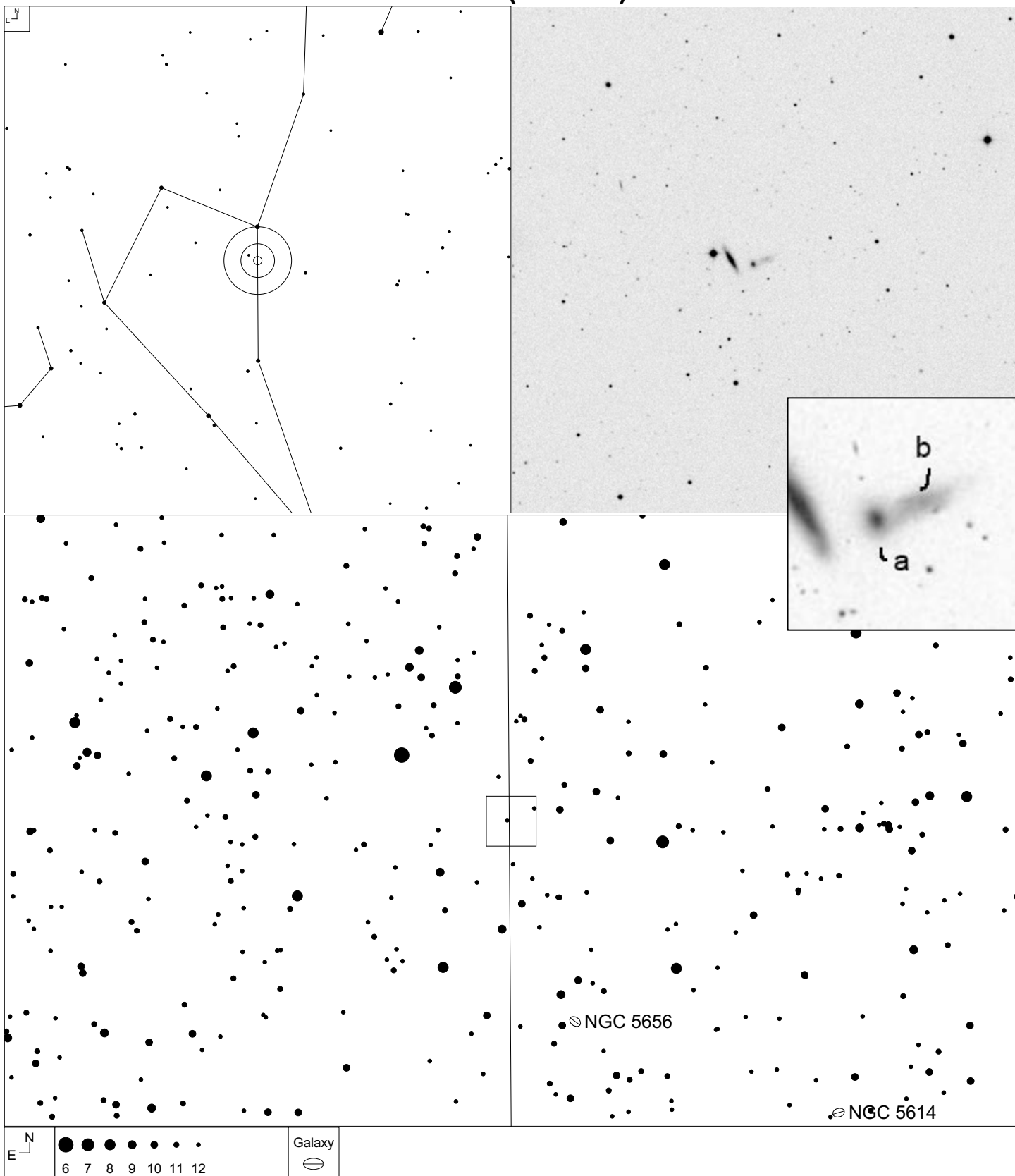
# VV 152 (Bootes)



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

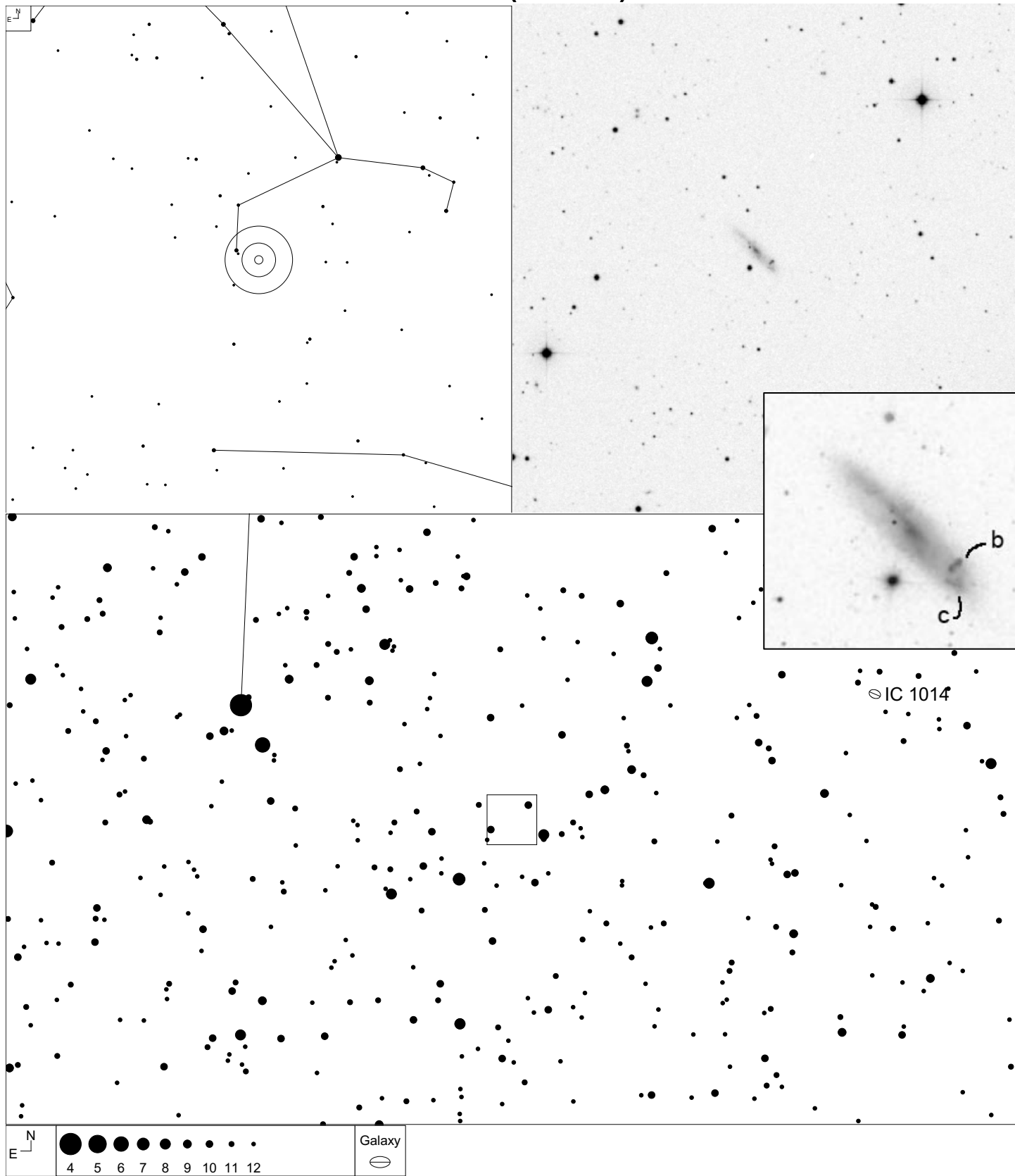


# VV 262 (Bootes)



| 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 |             |           |

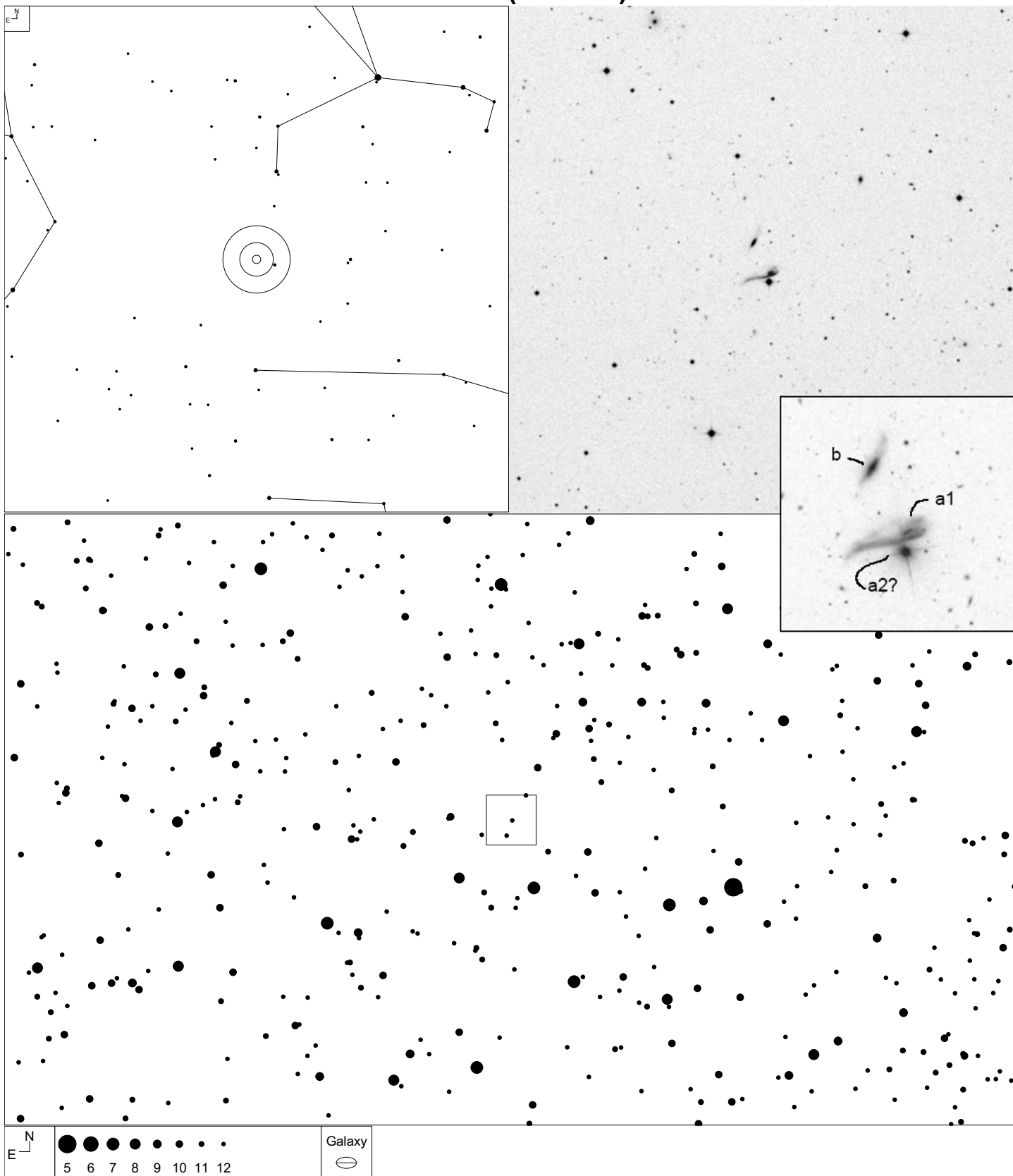
# VV 146 (Bootes)



IC 1014

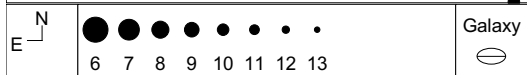
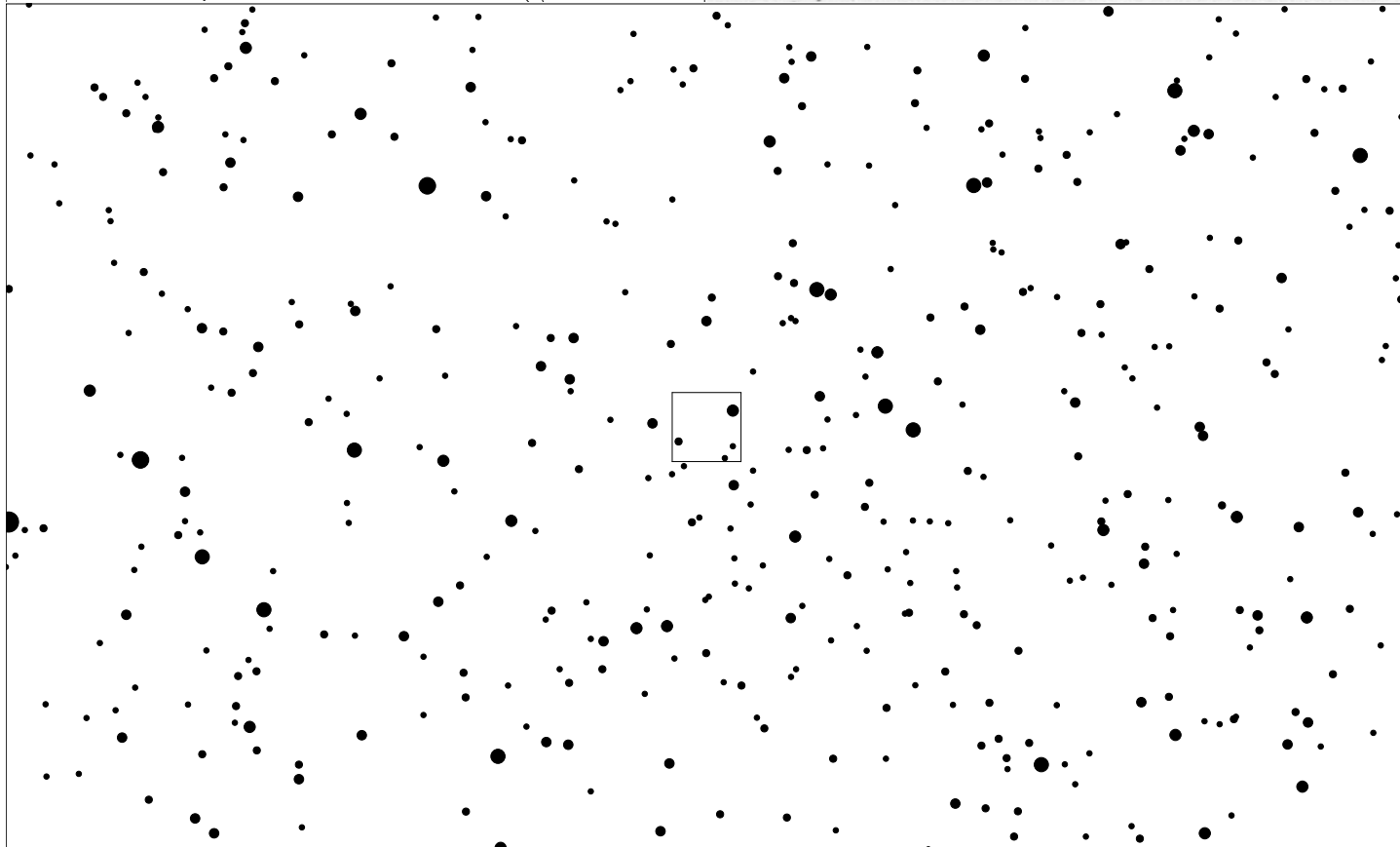
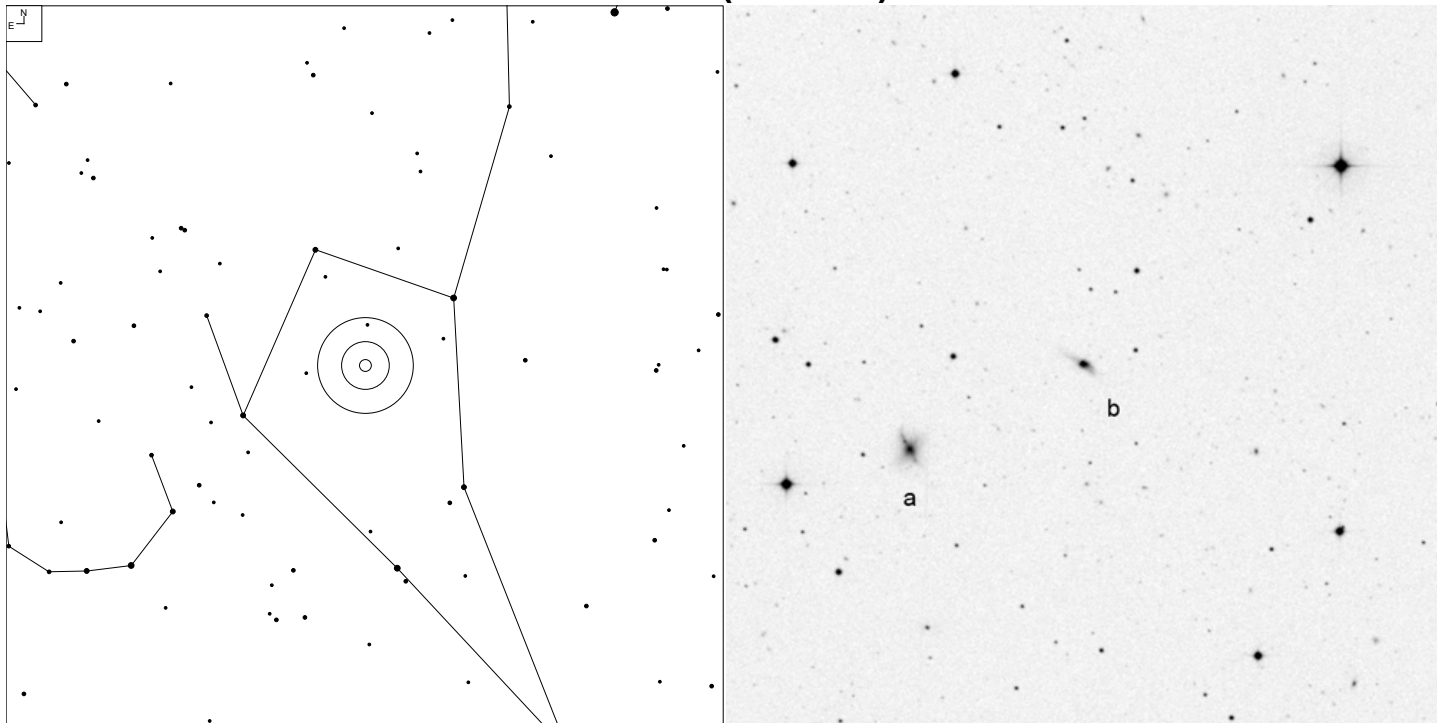
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 146  | 14 35 38.9 | +13 09 56 | GTrpl    | 14.10 | 22x7        | N         |
| 146c | 14 35 37.9 | +13 09 40 | G        | 16    |             |           |
| 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 (Bootes)



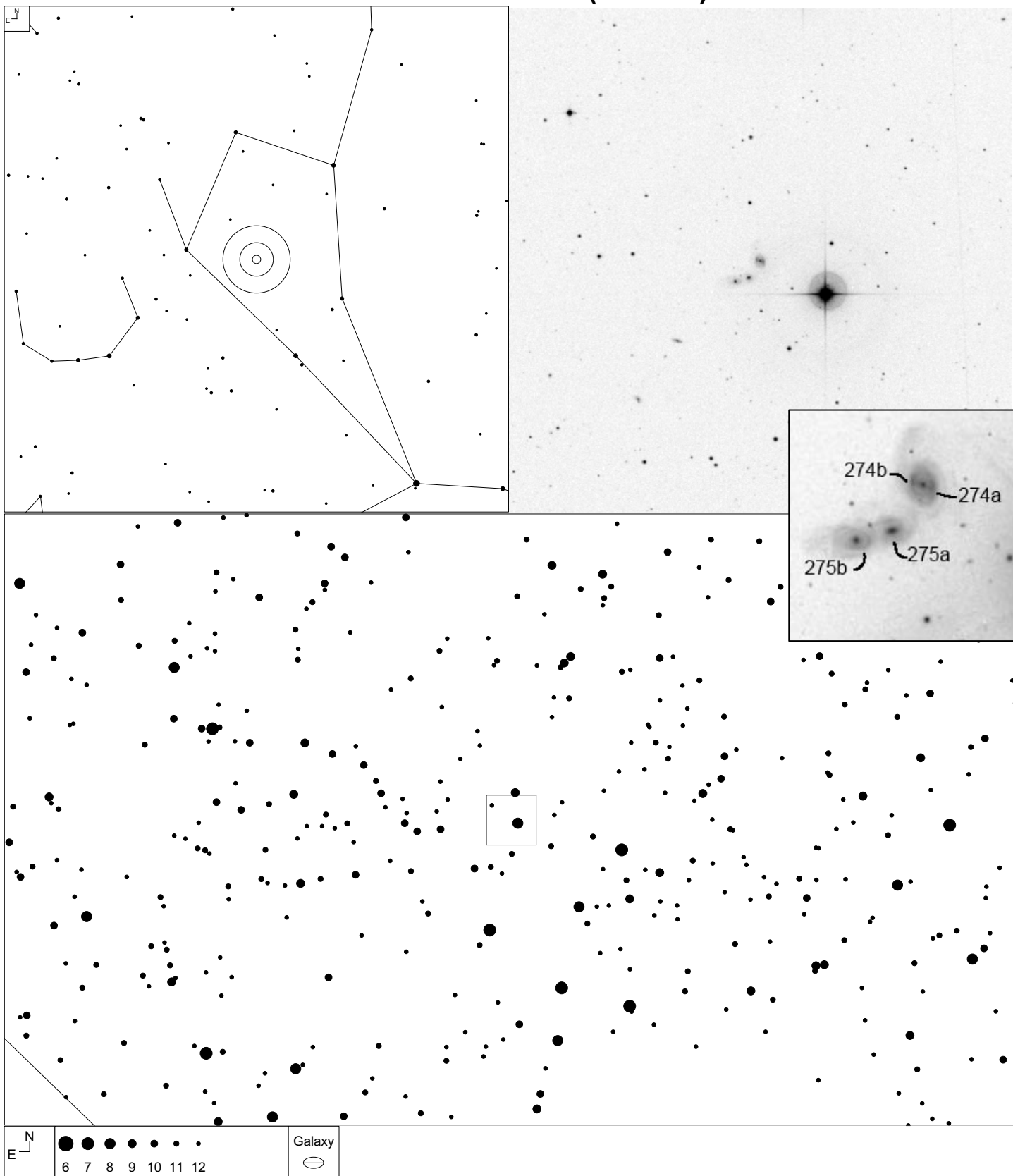
| VV    | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-------|------------|-----------|----------|-------|-------------|-----------|
| 109   | 14 46 02.8 | +08 30 11 | GTrpl    |       |             | NNNP      |
| 109a1 | 14 46 01.8 | +08 29 46 | G        | 15.4  | 4x2         |           |
| 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 (Bootes)



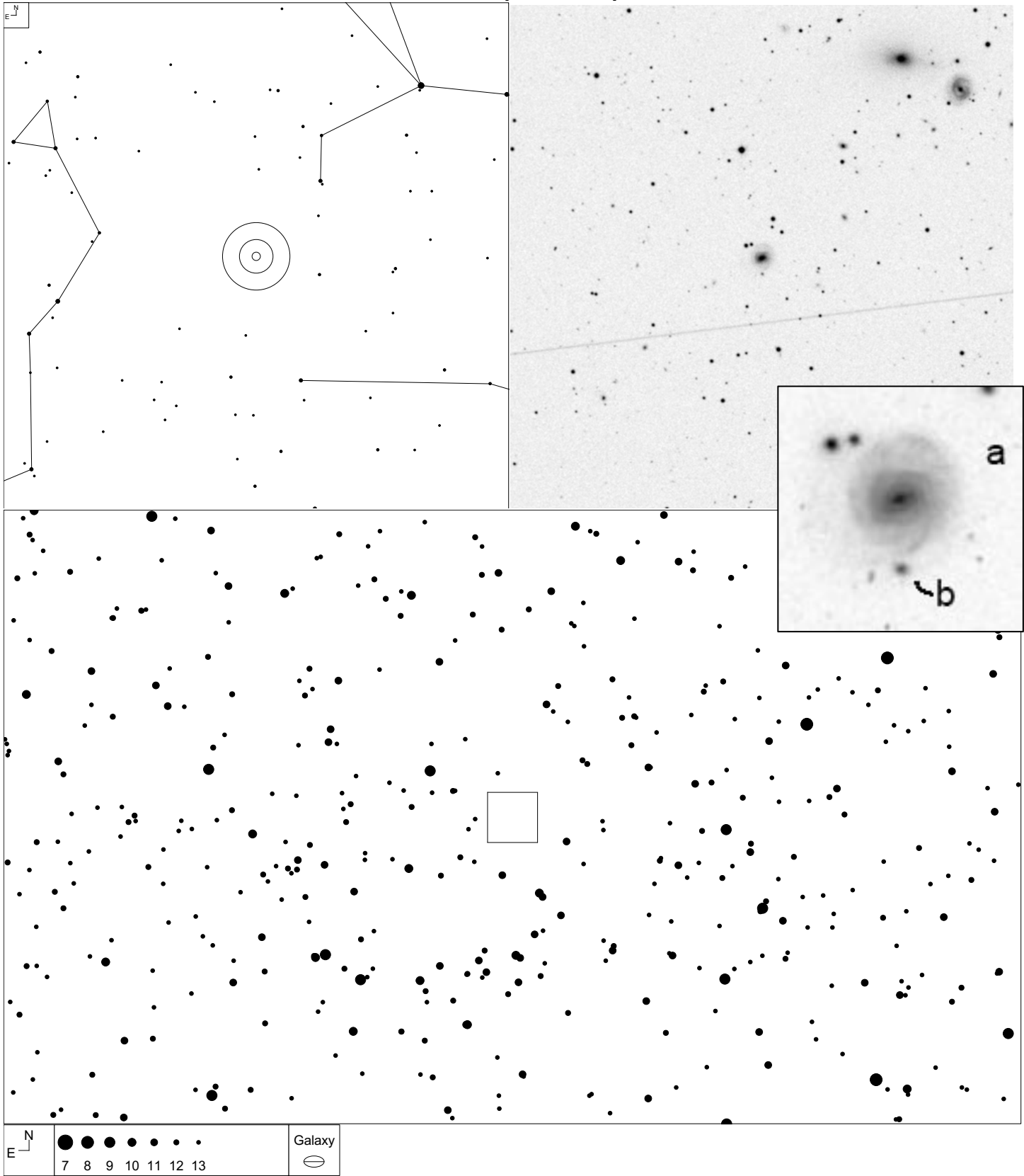
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 324  | 14 51 05.5 | +35 33 23 | GPair    |       |             | PD        |
| 324b | 14 50 56.5 | +35 34 18 | G        | 14.8b | 10x3      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

# VV 274 and VV 275 (Bootes)



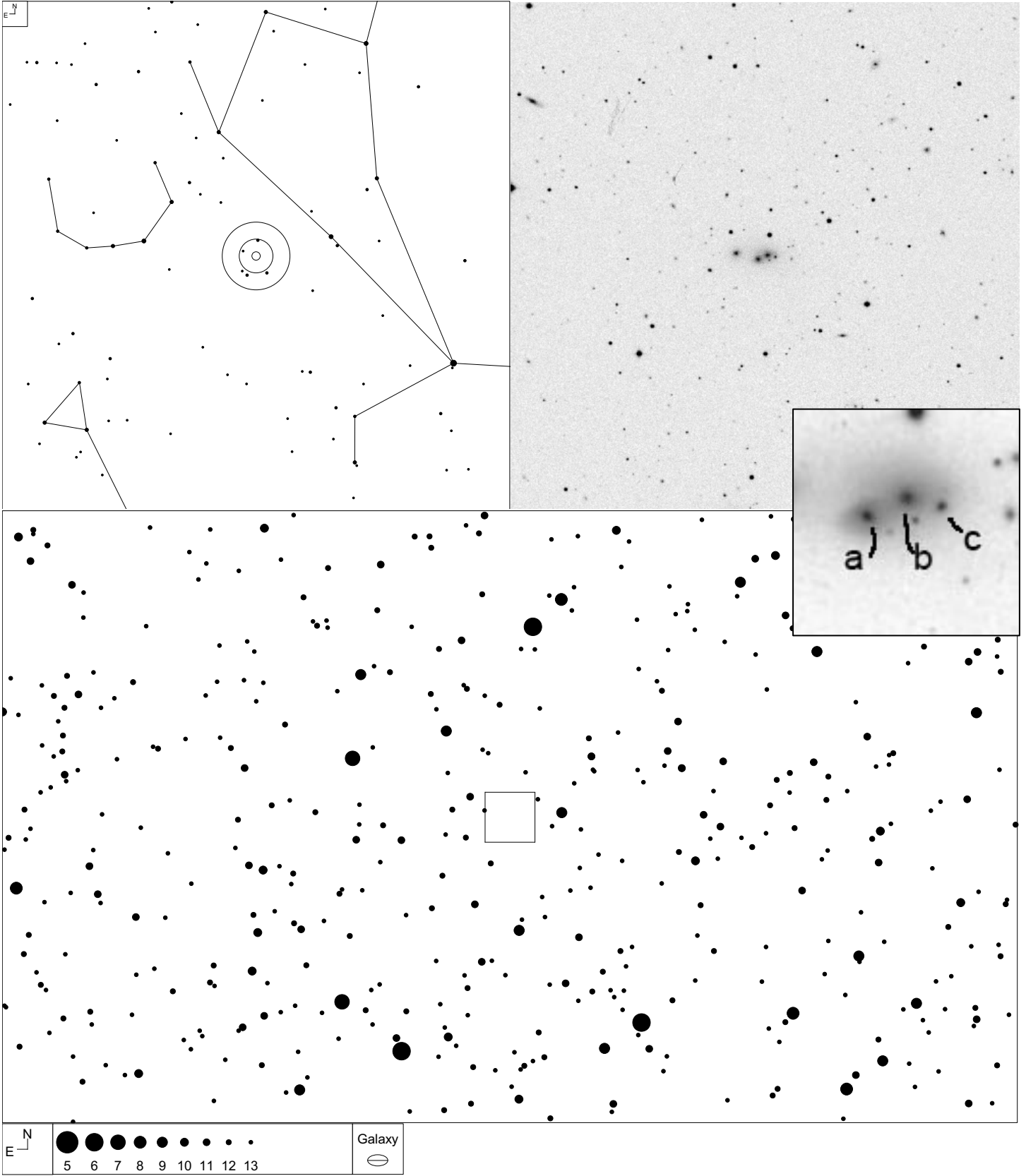
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 274  | 14 55 28.2 | +32 50 25 | GPair    |       |             | PKt       |
| 274a | 14 55 28.2 | +32 50 24 | G        | 15.6g | 6x5         |           |
| 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 (Bootes)



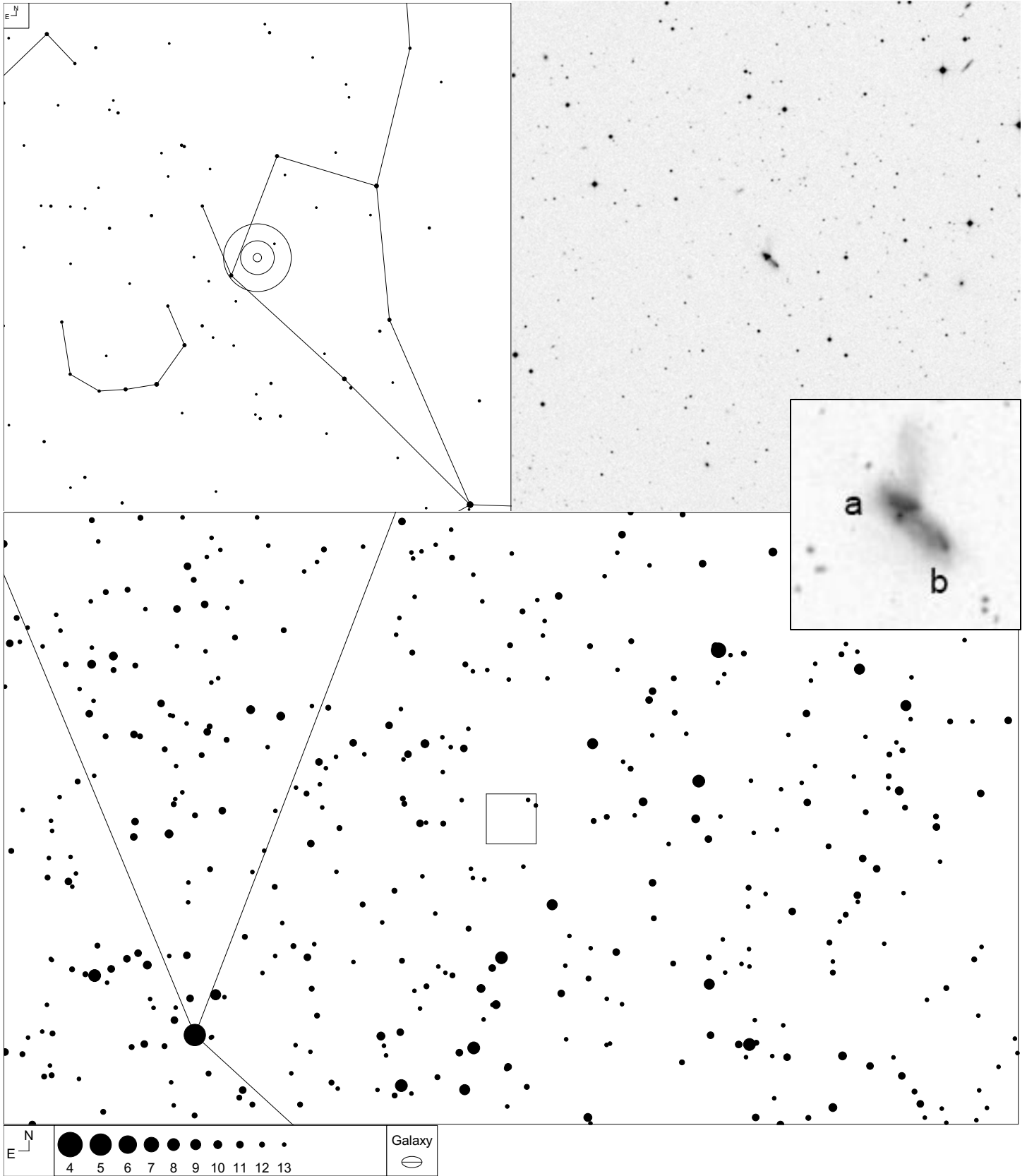
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 26  | 14 56 53.1 | +09 16 18 | GPair    |       |             | M         |
| 26a | 14 56 53.1 | +09 16 18 | G        | 14.39 | 10x9        | 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

# VV 204 (Bootes)



| 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 (Bootes)

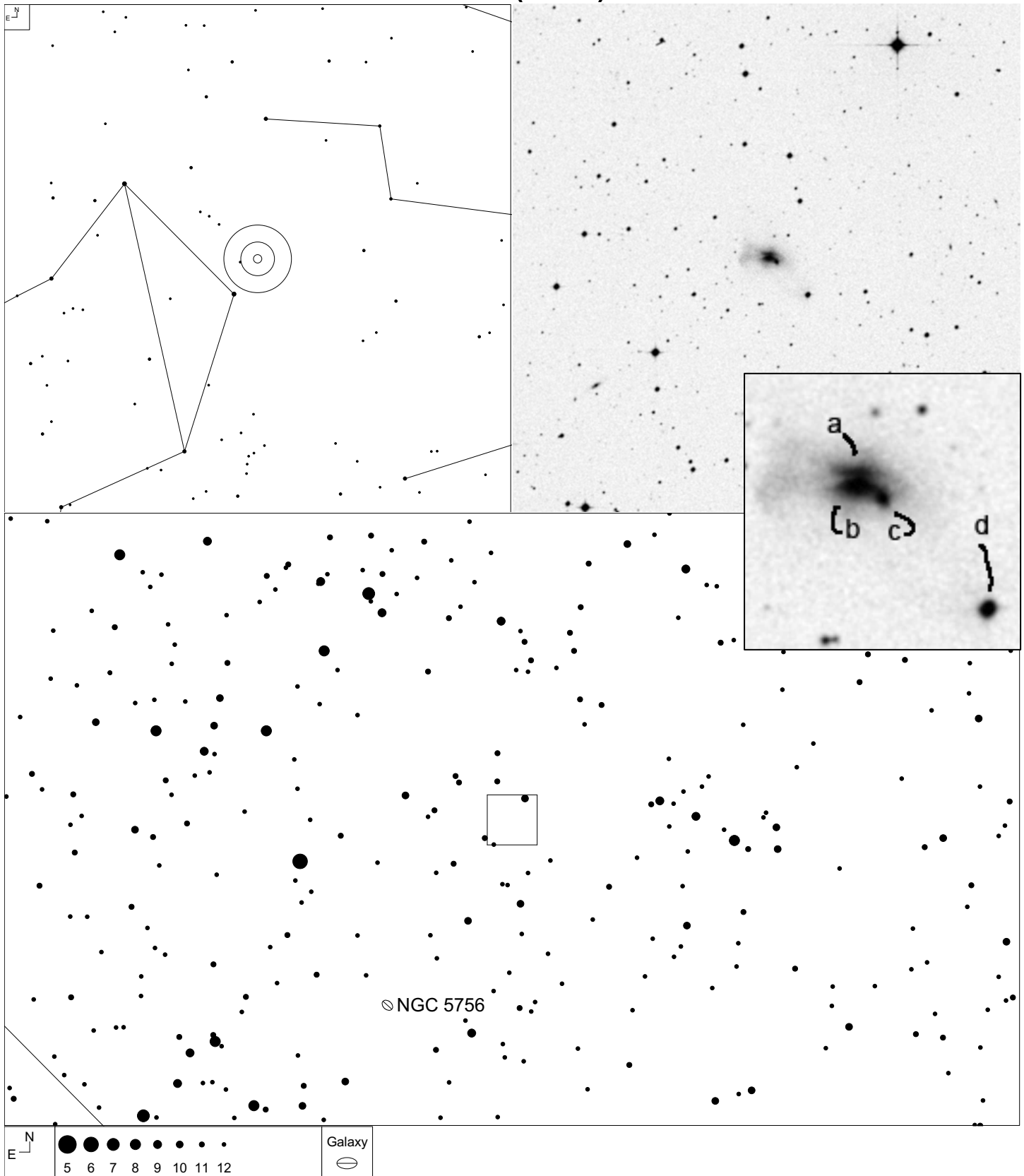


| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 59  | 15 08 04.9 | +34 23 14 | GPair    | 15.9g | 10x3        | N         |
| 59b | 15 08 04.3 | +34 23 07 | G        | 15.6  | 1x1         | 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

This object is also known as Rose 25.

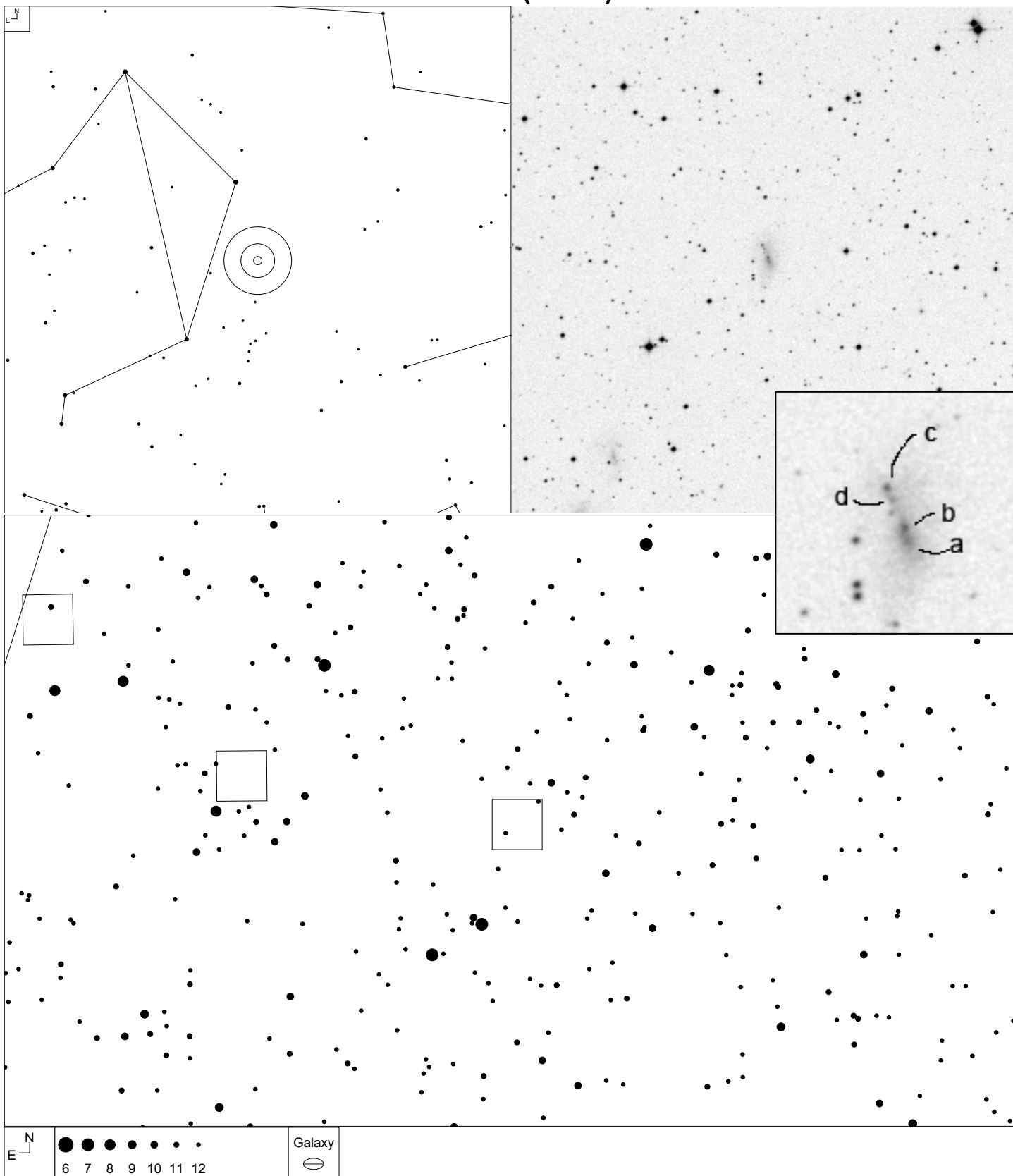


# VV 98 (Libra)



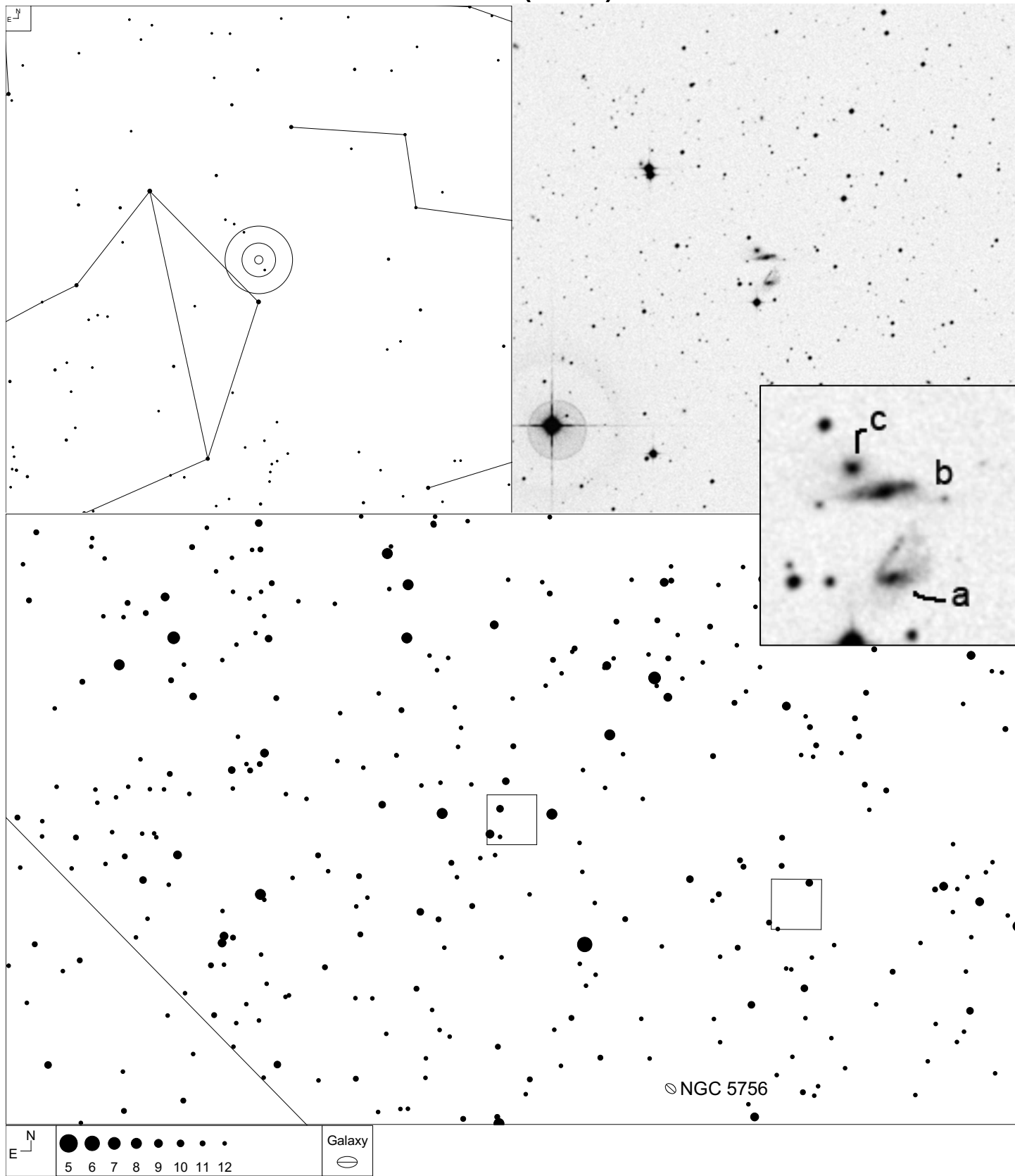
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 98  | 14 45 01.6 | -13 56 48 | GGroup   | 13.3  | 16x10       | PC        |
| 98d | 14 44 57.2 | -13 57 54 | Star     | 14.0b |             |           |
| 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     |       |             |           |

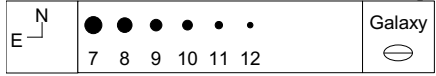
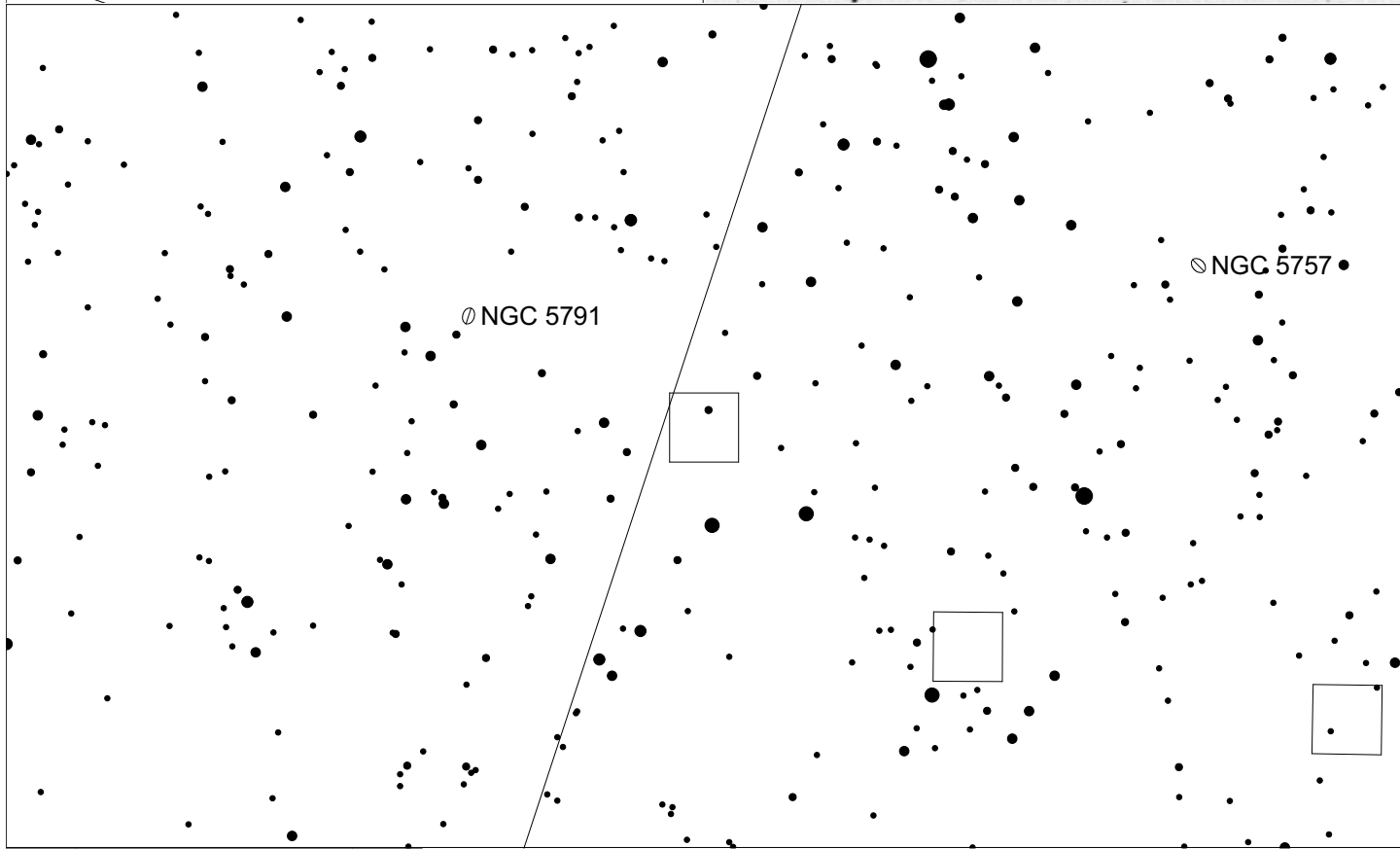
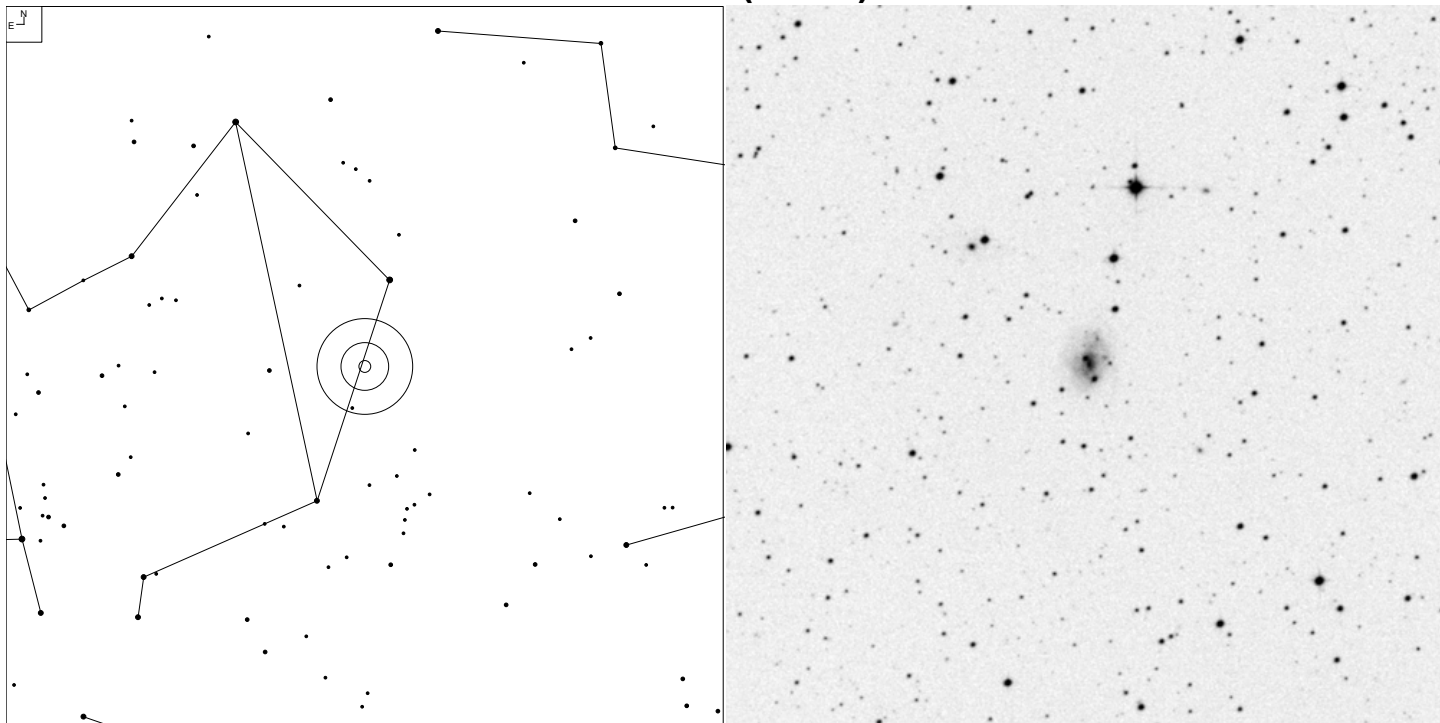
# VV 322 (Libra)



| 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         |           |

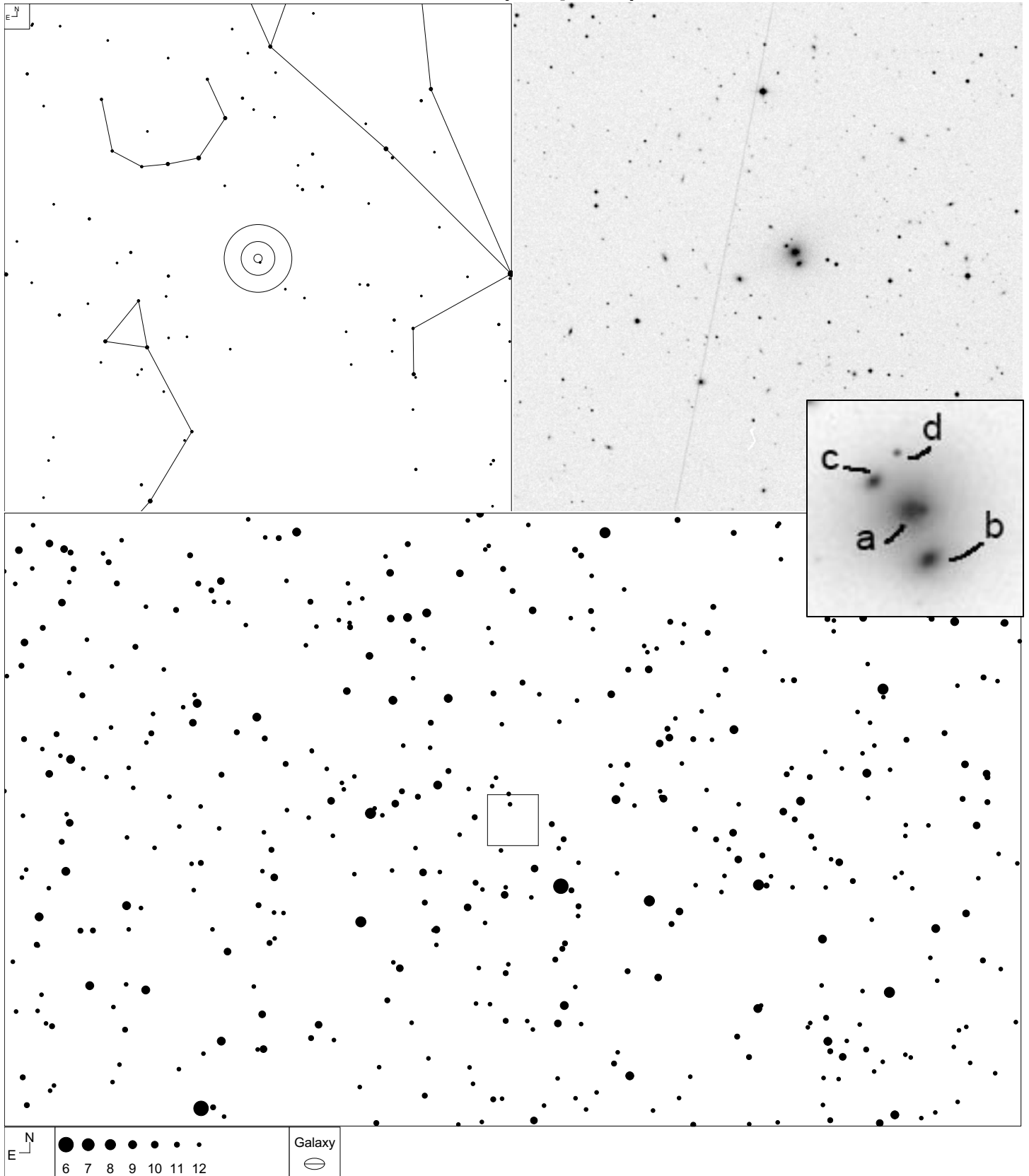


# VV 137 (Libra)



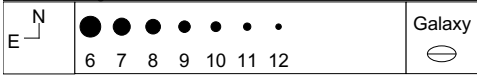
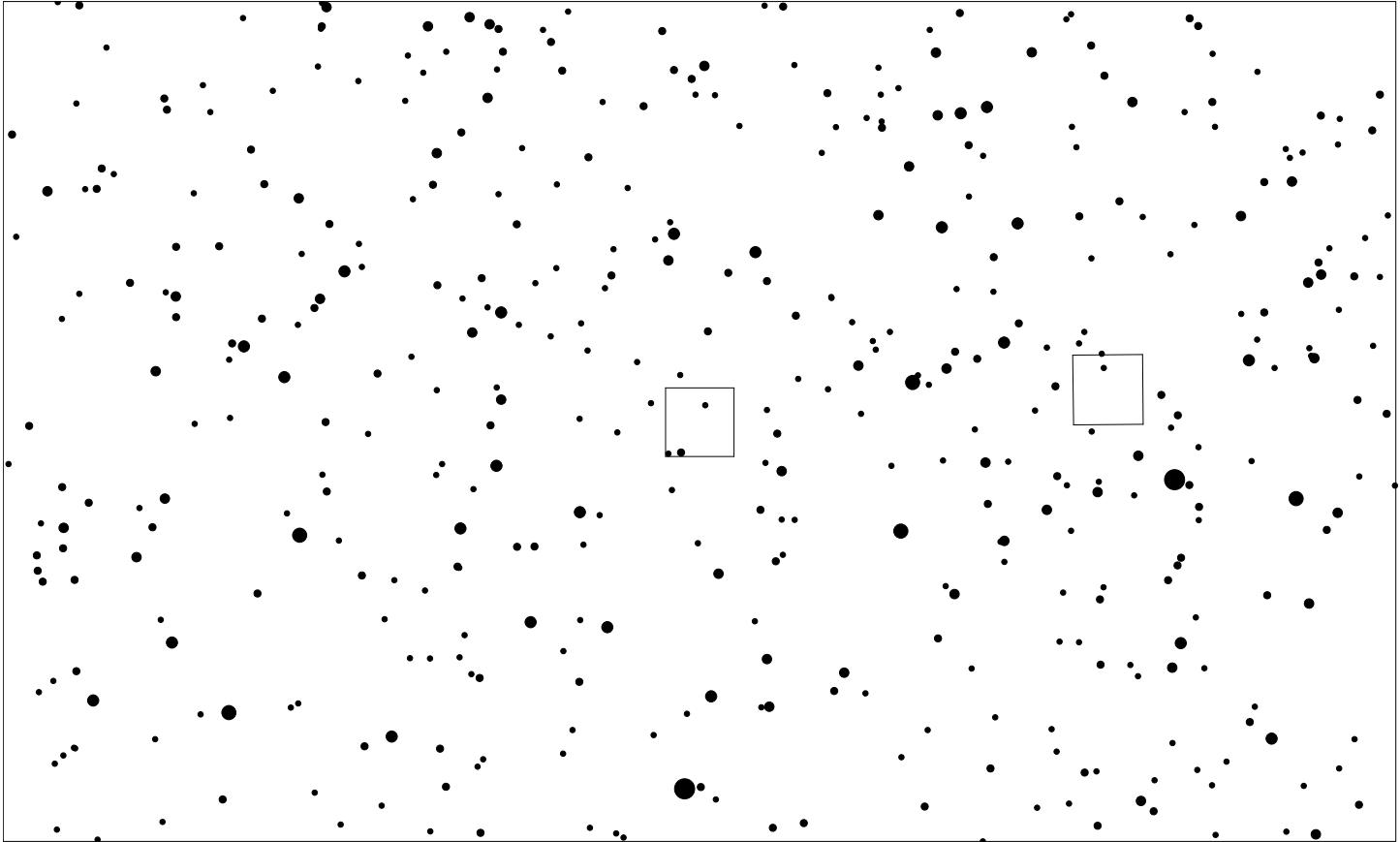
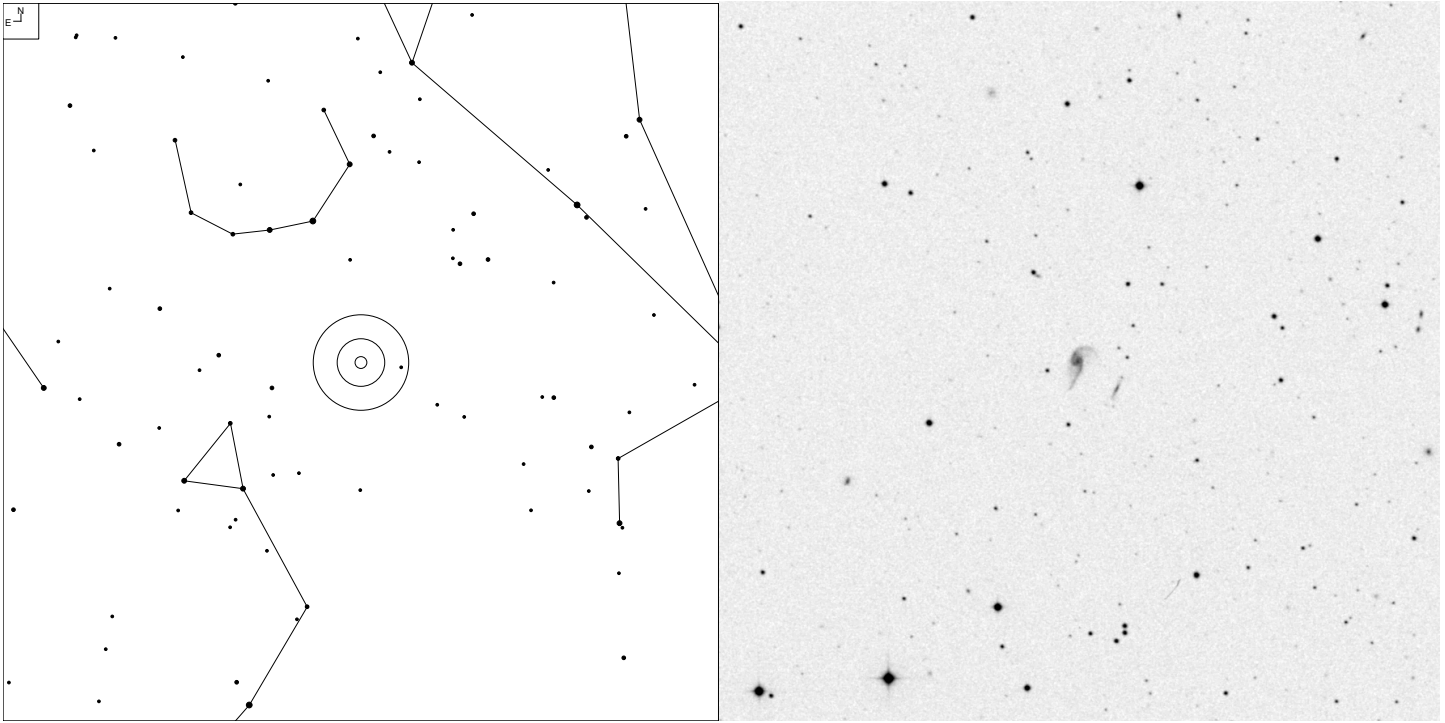
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 137 | 14 55 12.8 | -19 39 53 | G        | 14.06 | 17x1        | N         |

# 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)

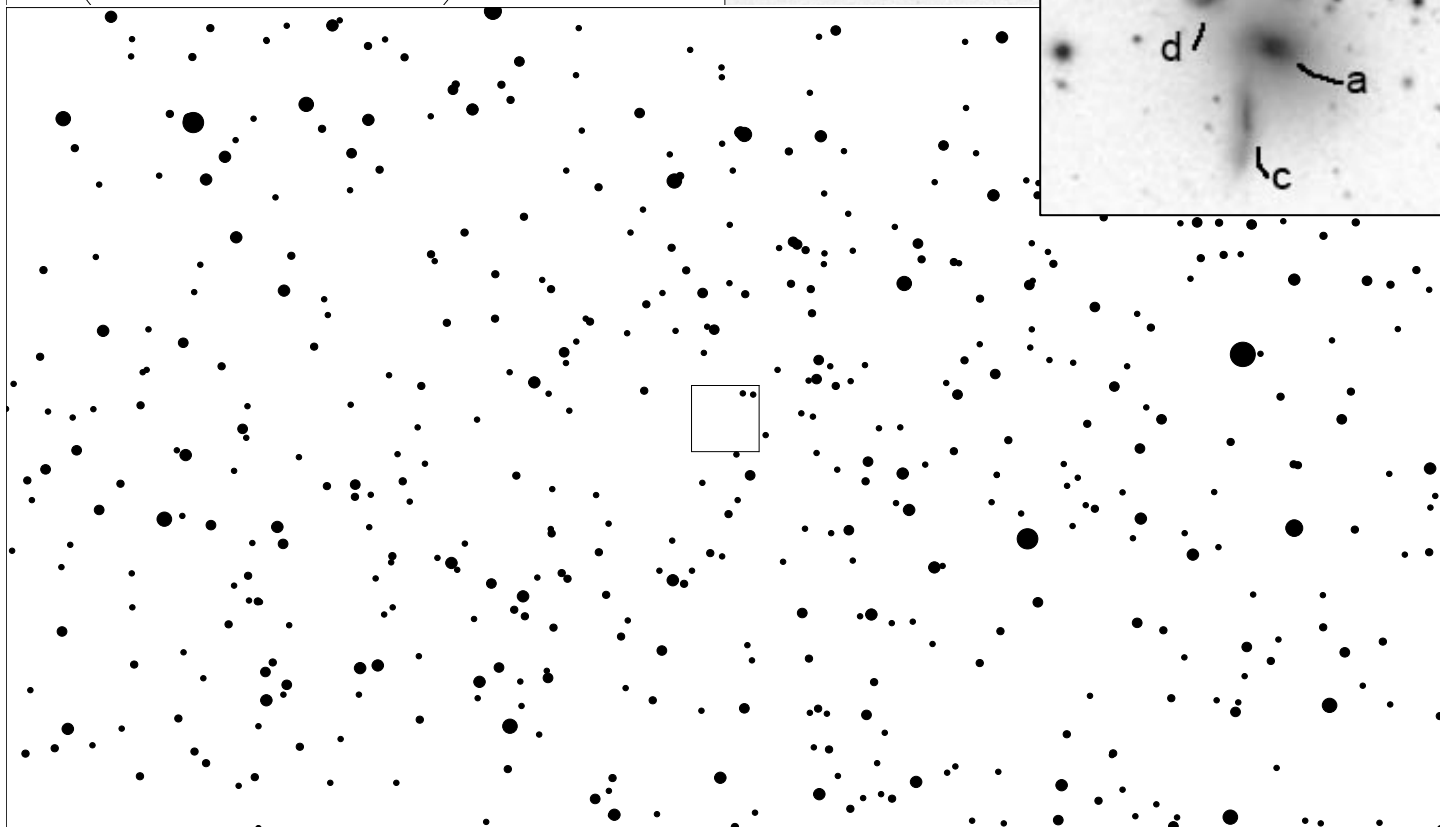
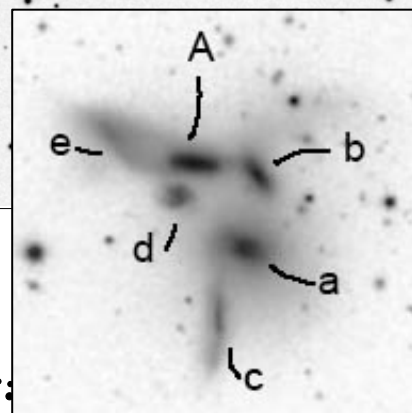
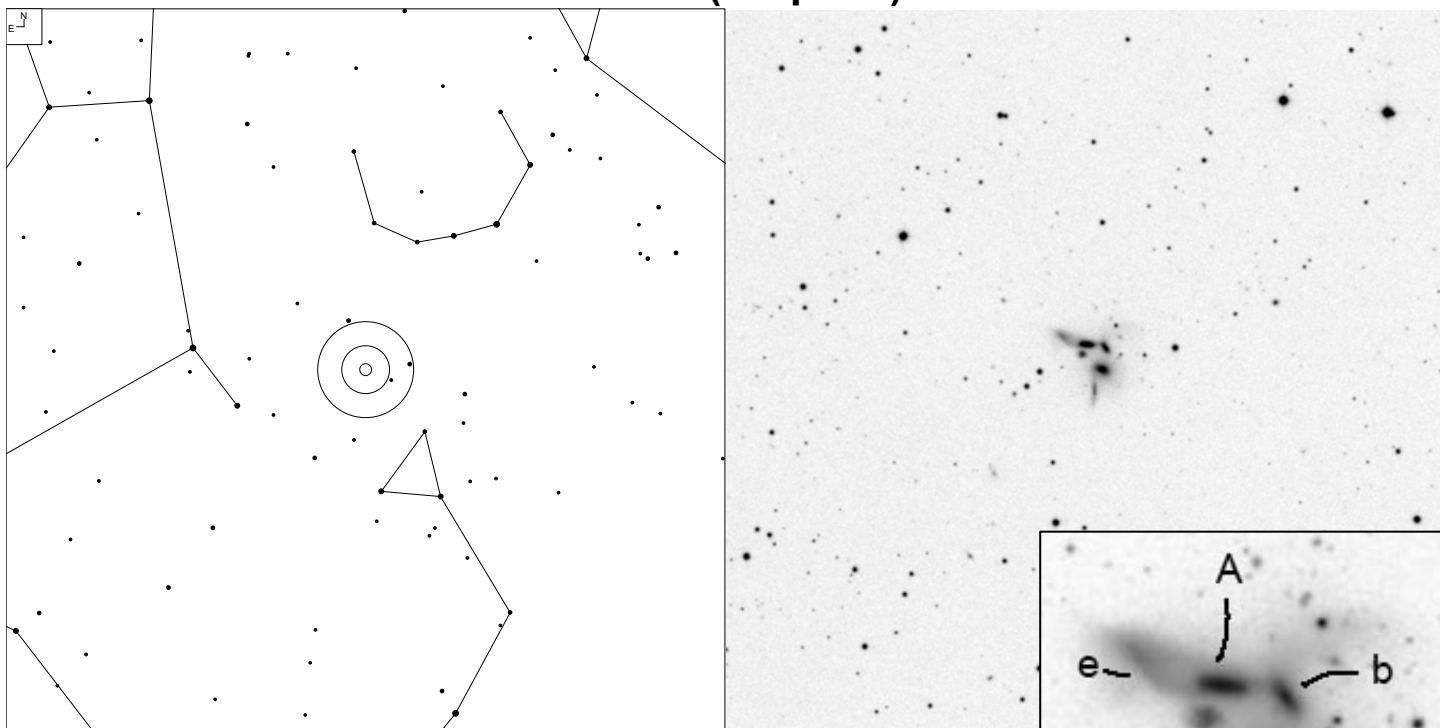


| VV  | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|------|-------------|-----------|
| 227 | 15 25 39.8 | +20 47 18 | GPair?   | 15.5 | 11x7        | PK        |



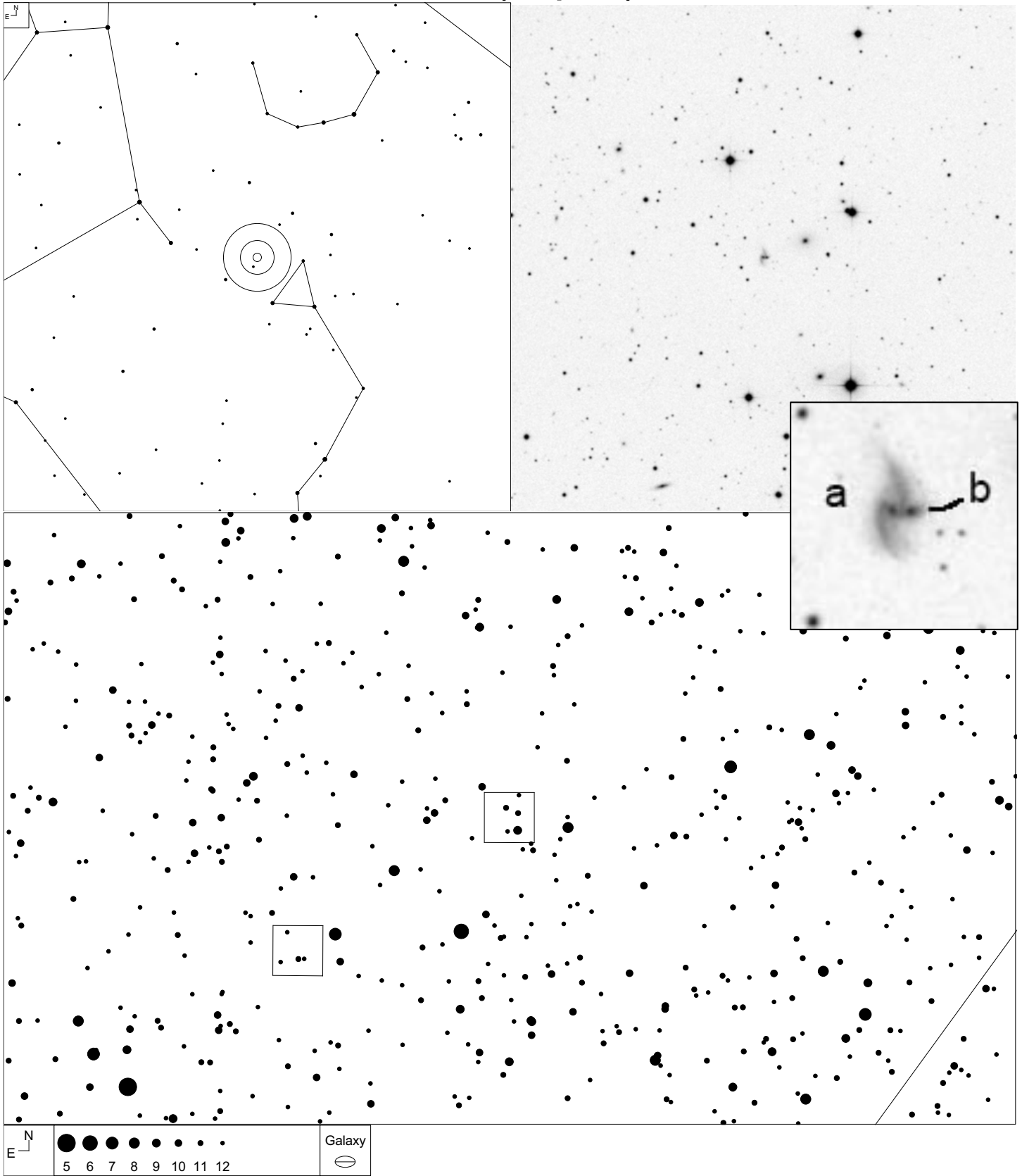


# VV 115 (Serpens)



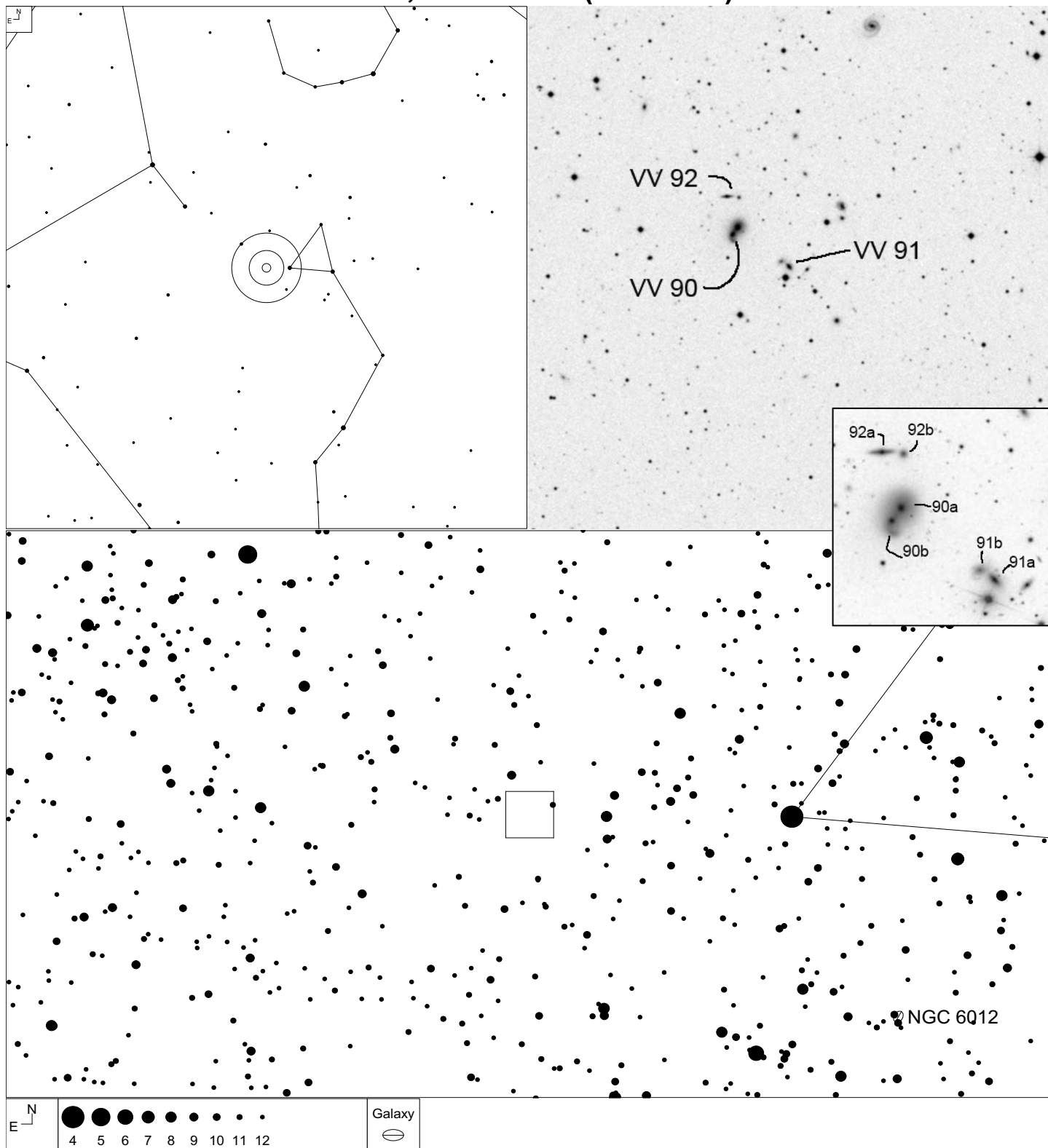
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 115  | 15 59 11.9 | +20 45 31 | GGroup   |       |             | NNN       |
| 115b | 15 59 10.8 | +20 45 44 | G        | 15.31 | 4x2         |           |
| 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         |           |

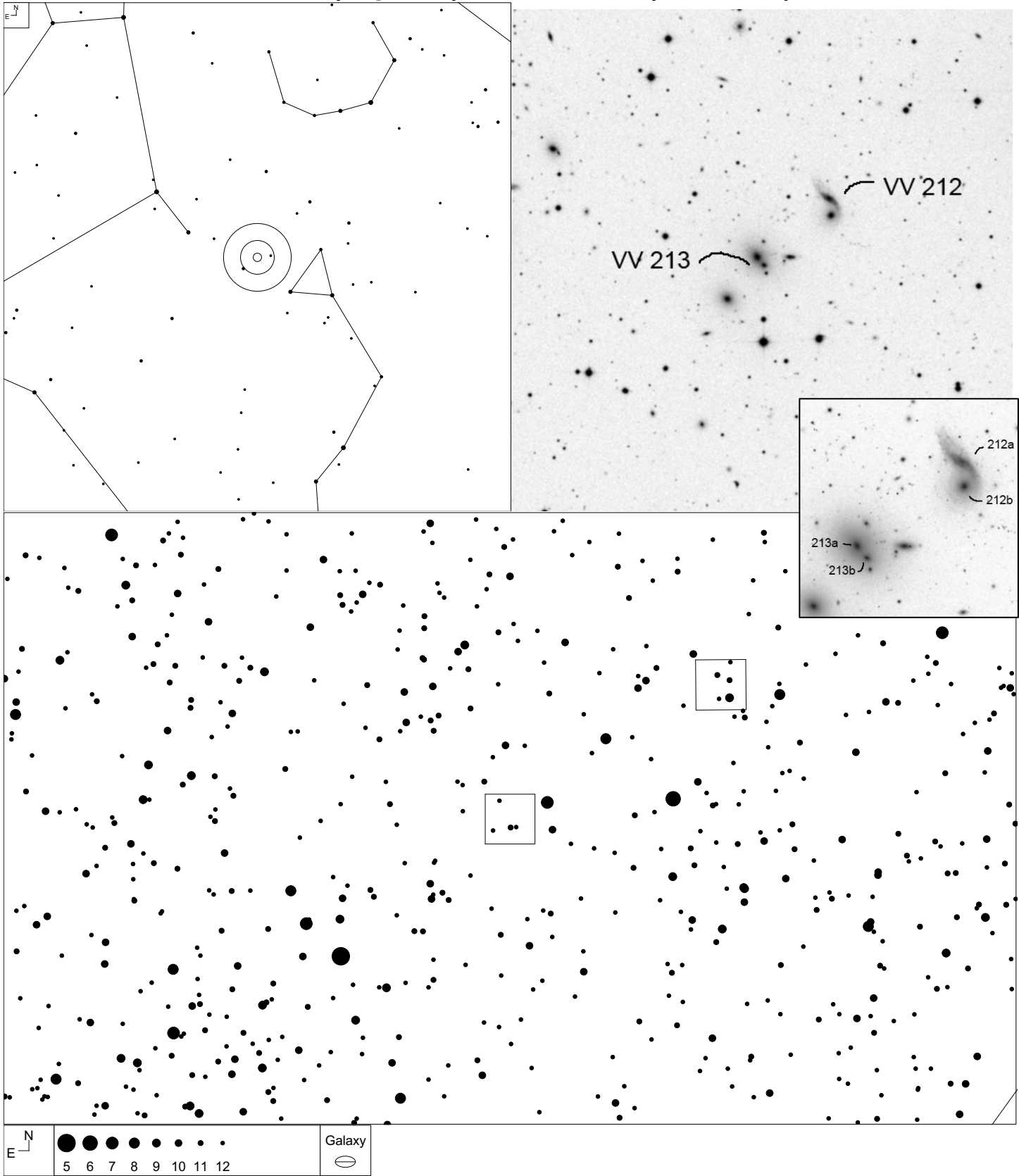
# VV 90, 91 and 92 (Hercules)



NGC 6012

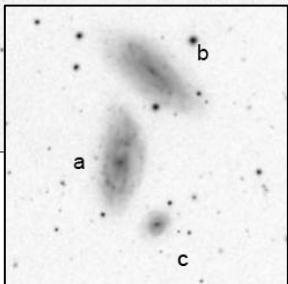
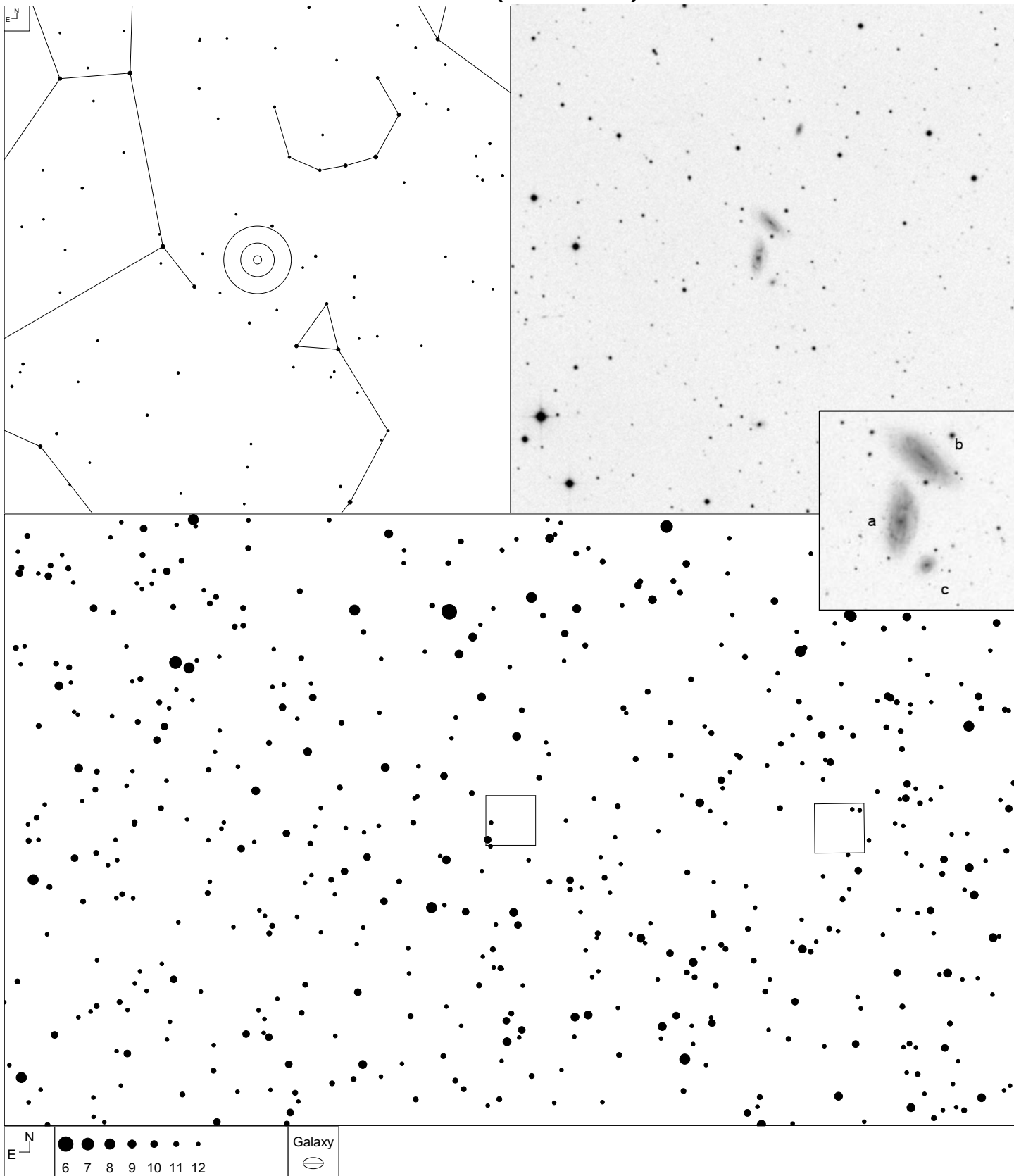
| VV  | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|-----|------------|-----------|----------|-------|-------------|-----------|
| 90  | 16 02 08.2 | +15 41 38 | GPair    |       |             | PC        |
| 90a | 16 02 08.0 | +15 41 47 | G        | 14.8g | 7x6         |           |
| 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)



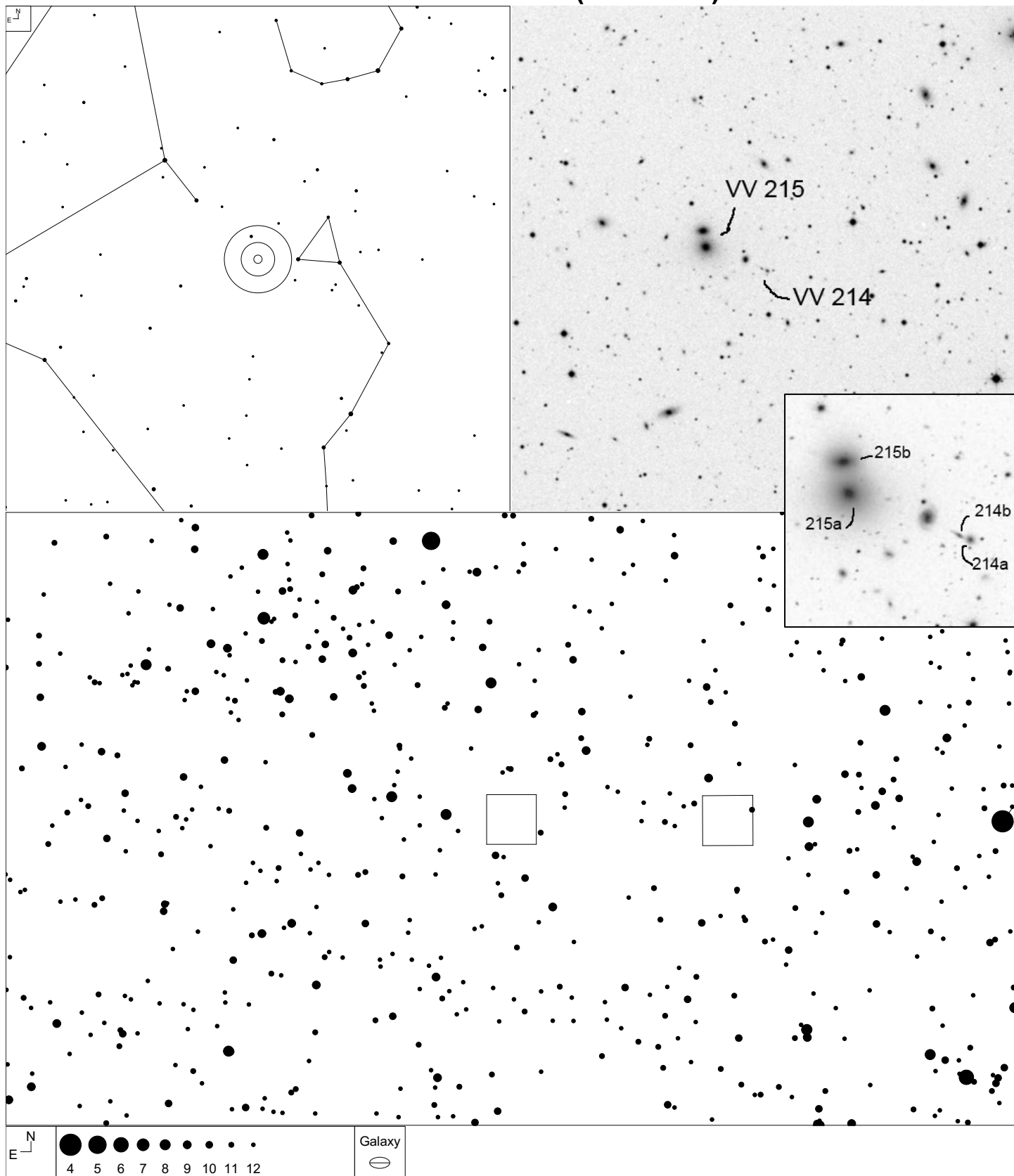
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 213  | 16 04 35.3 | +17 43 09 | GPair    |       |             | PC        |
| 213b | 16 04 34.9 | +17 43 03 | G        | 15.4g | 7x6       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

# VV 327 (Hercules)



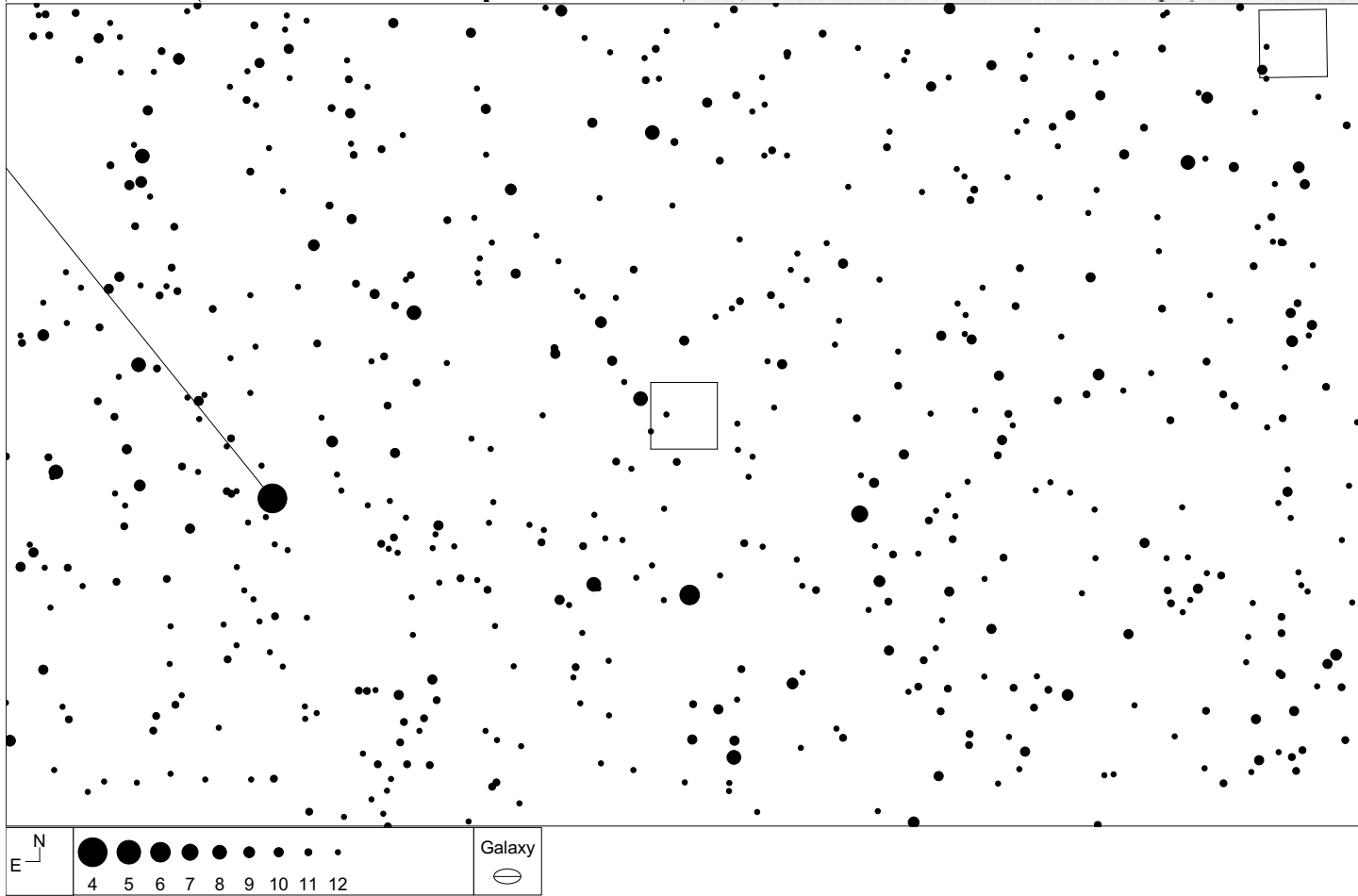
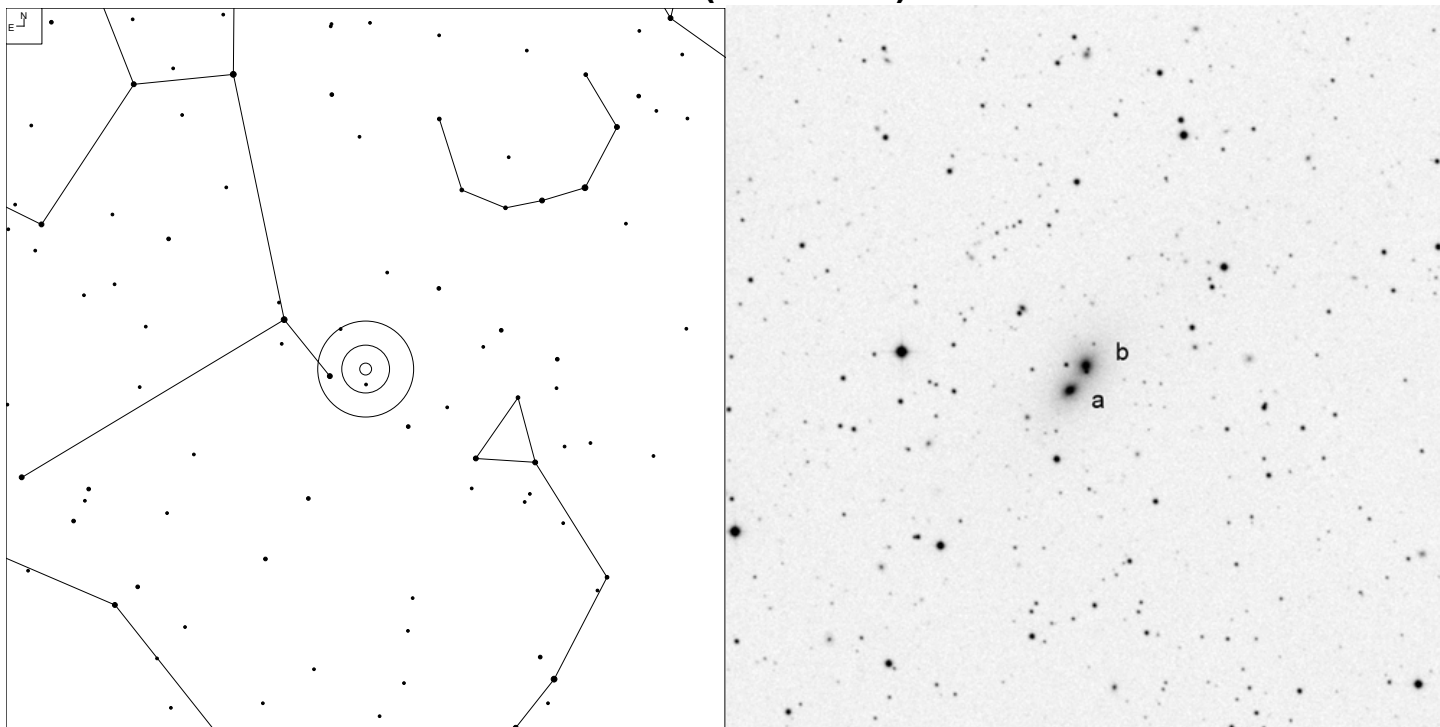
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 327  | 16 06 05.1 | +20 47 13 | GTrpl    |       |             | PD        |
| 327c | 16 06 04.1 | +20 46 21 | G        | 17.0  | 3x3         |           |
| 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)



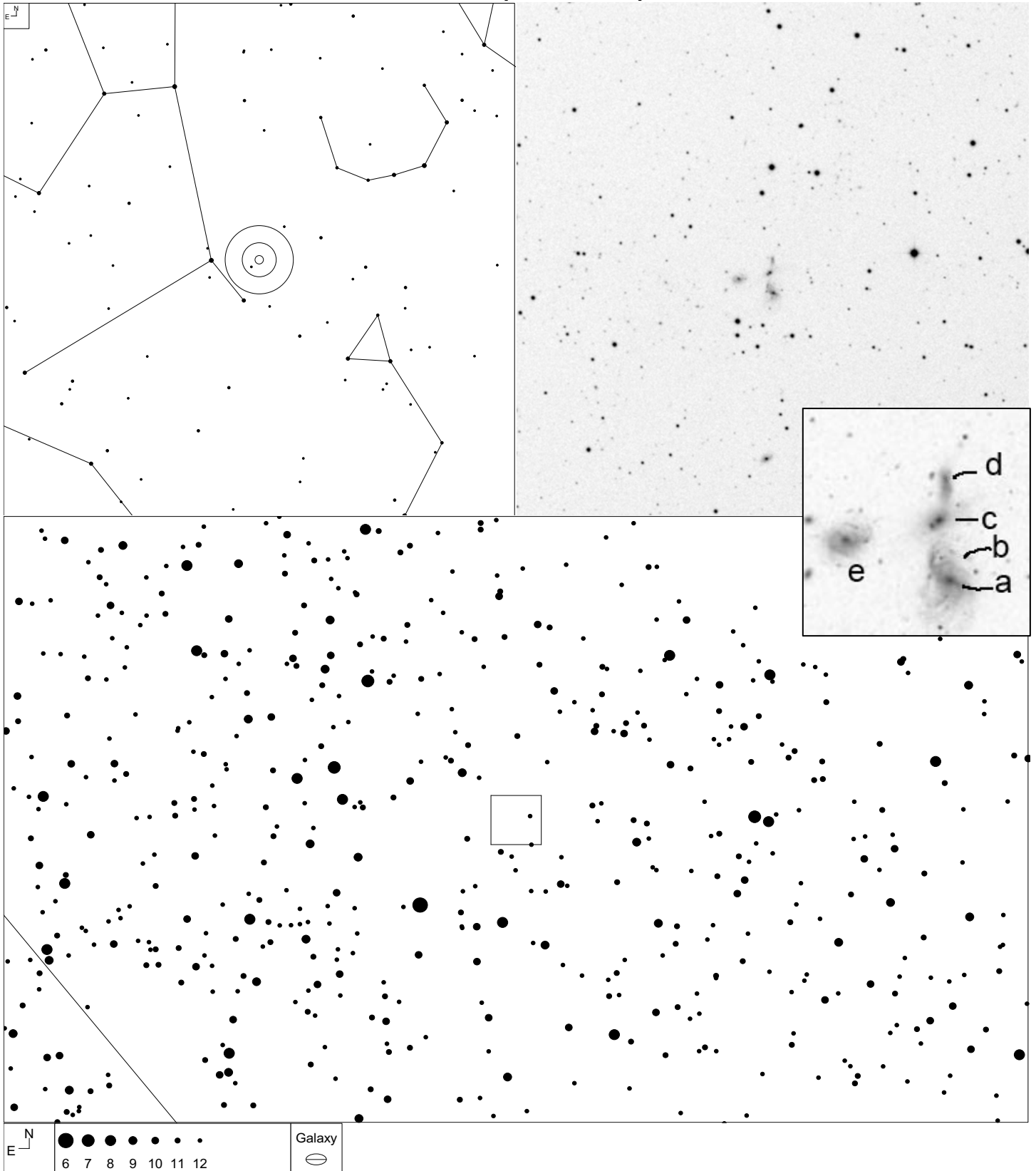
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 214  | 16 06 18.2 | +15 40 29 | GPair    |       |             | PK        |
| 214a | 16 06 17.8 | +15 40 27 | G        | 18.2g | 2x2         |           |
| 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         |           |

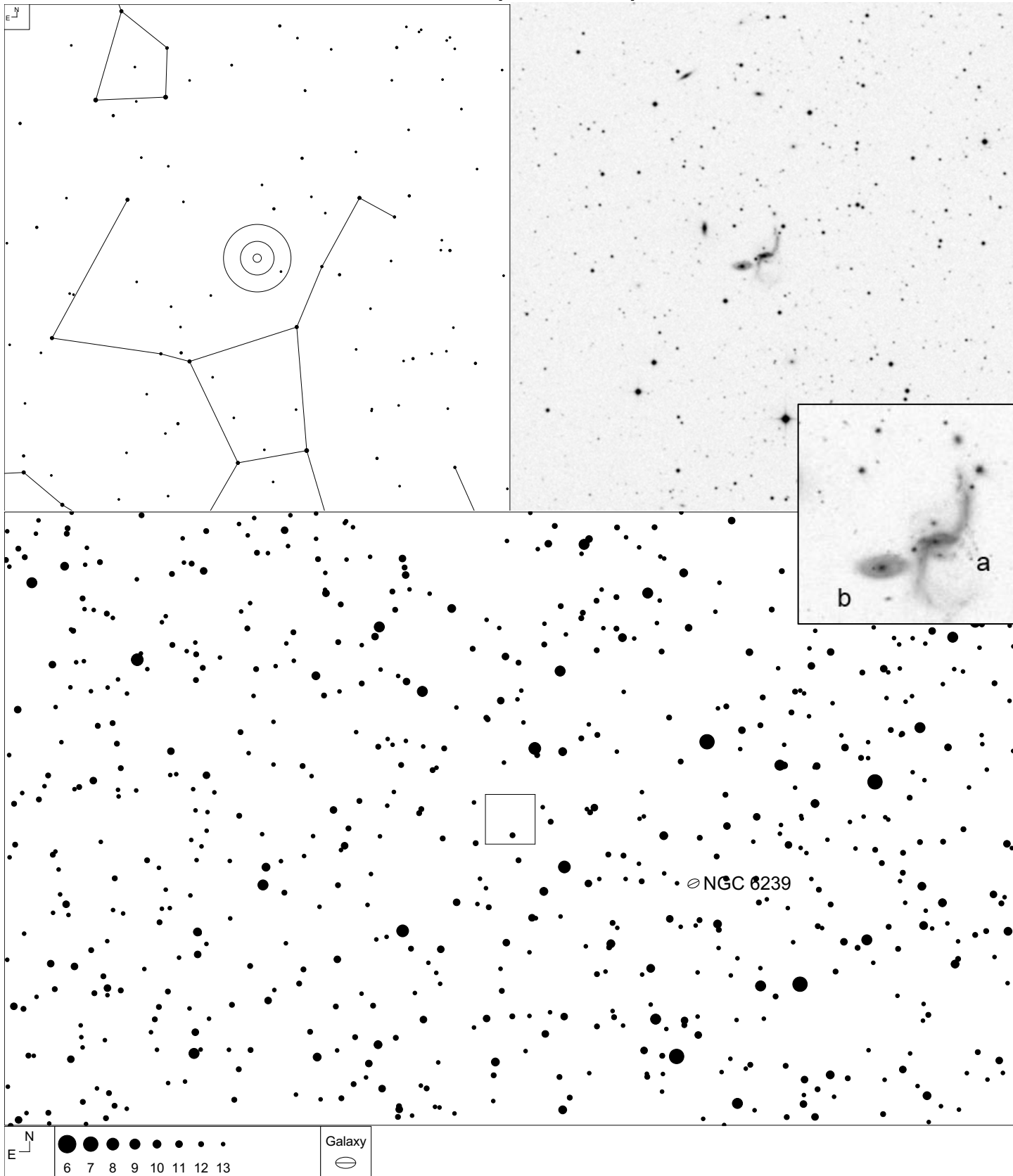
# VV 129 (Hercules)



| 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         |           |

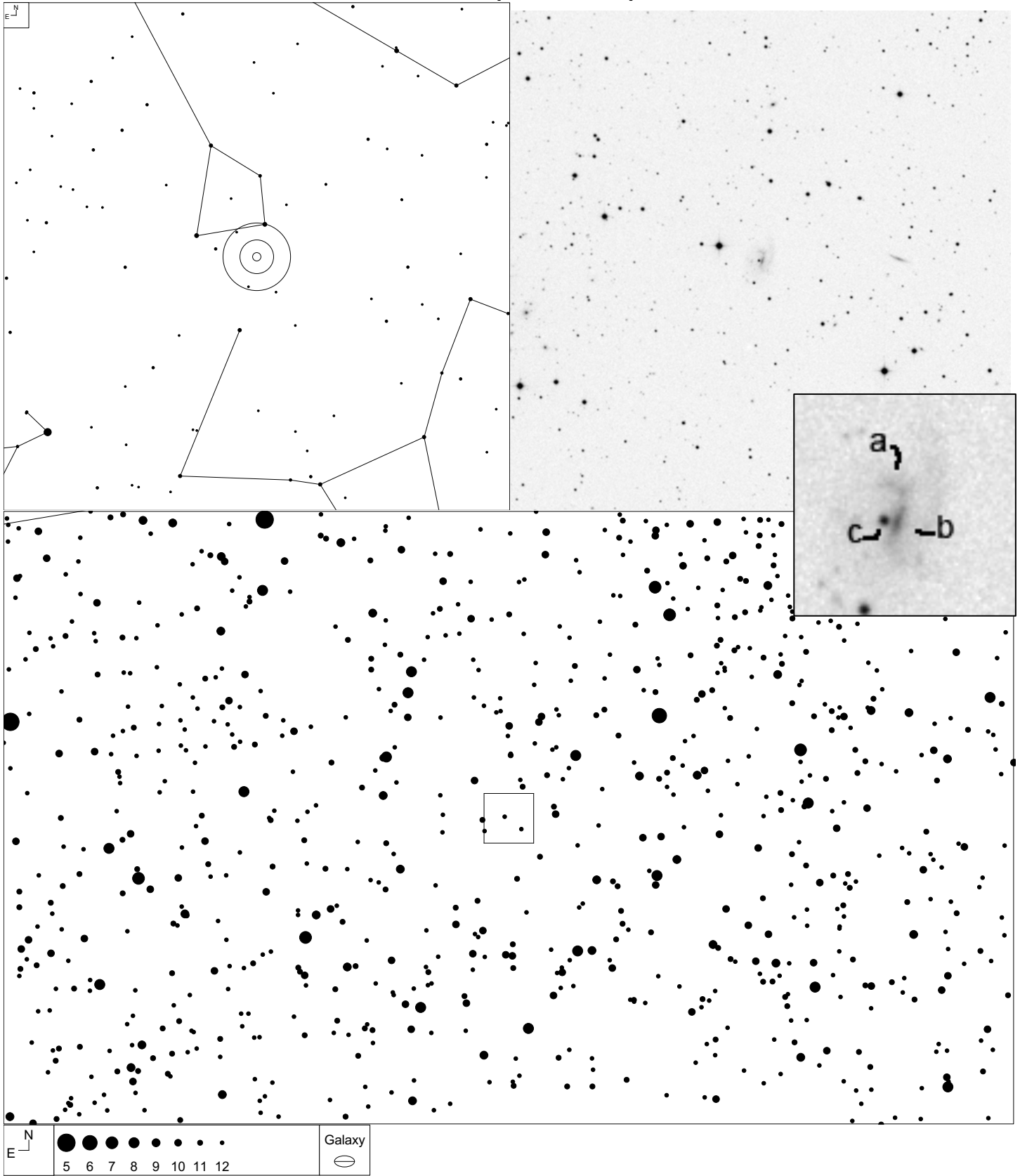


# VV 289 (Hercules)



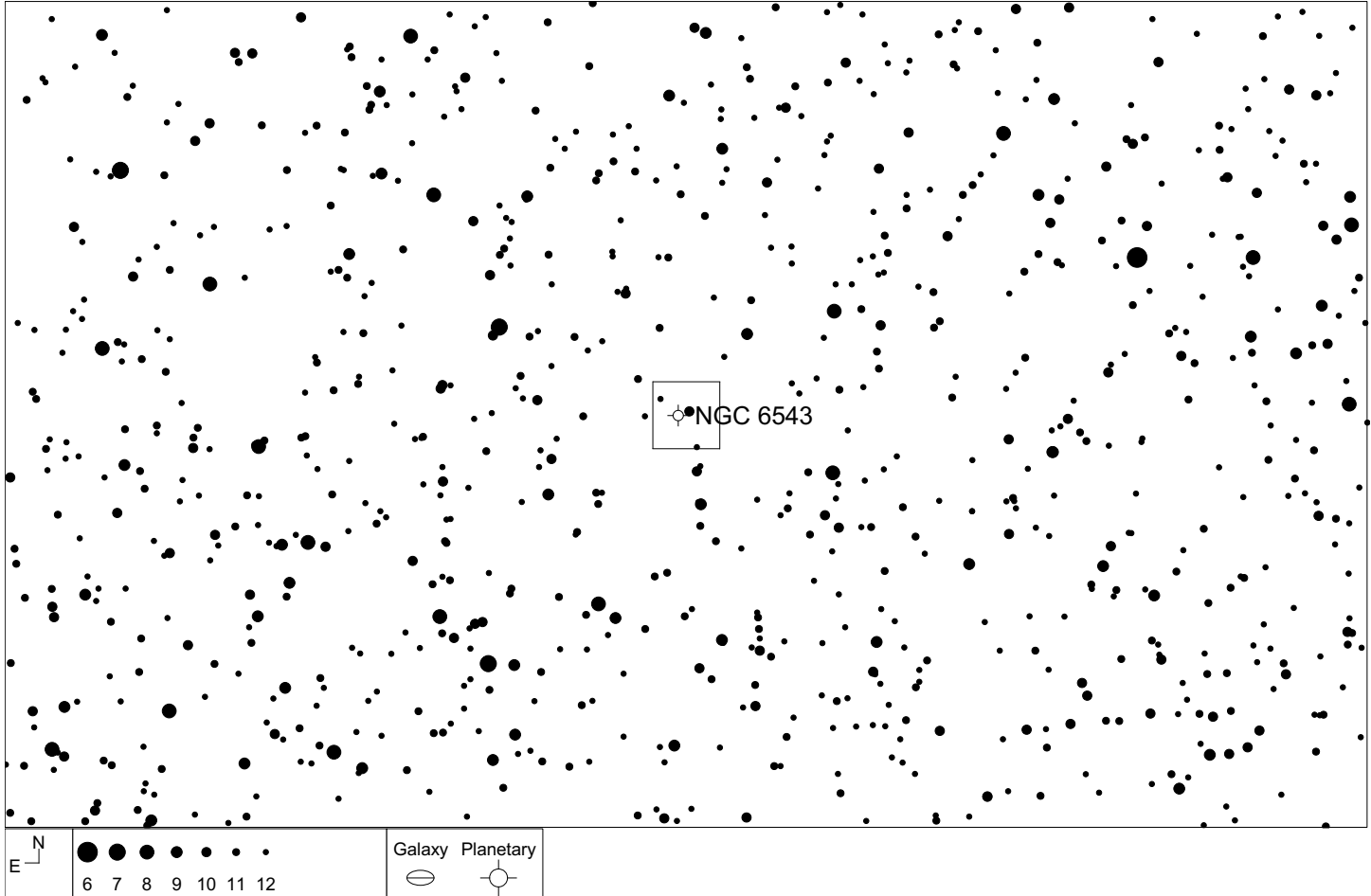
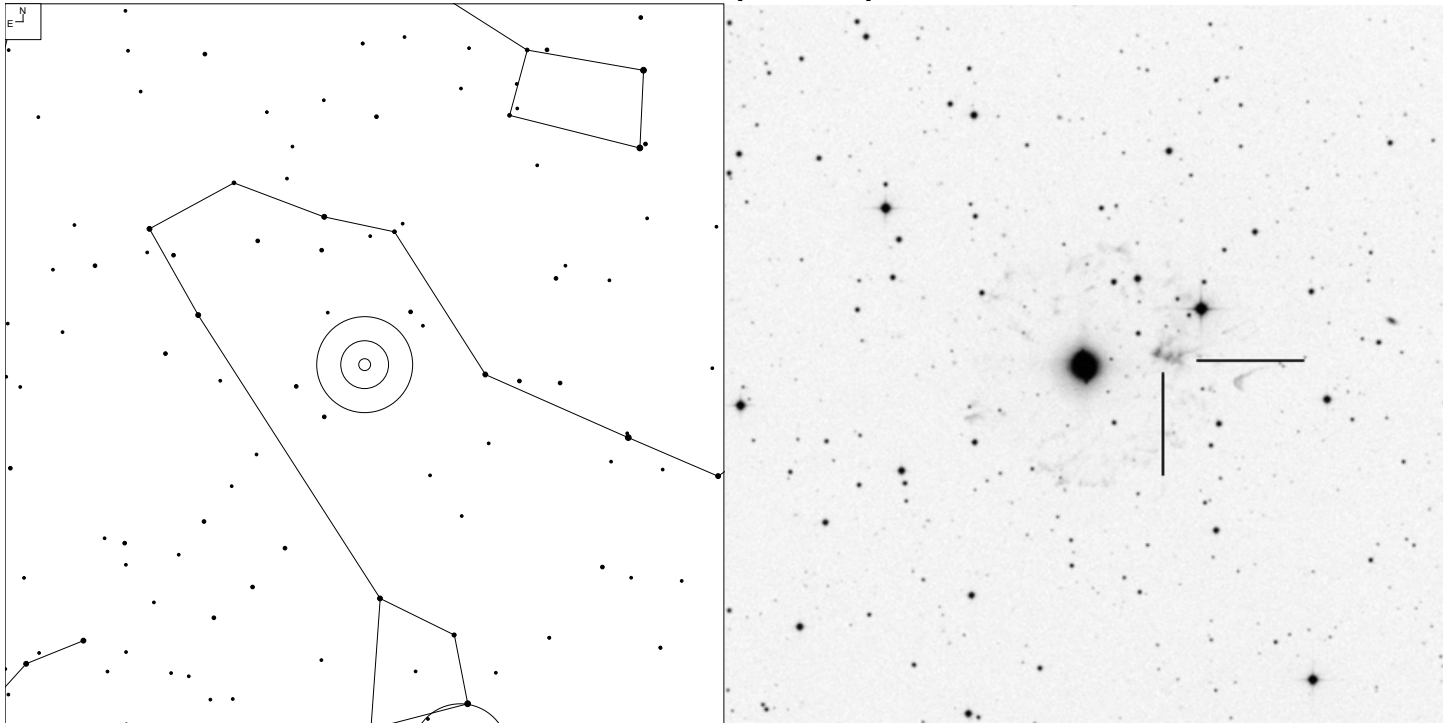
| VV   | RA         | Dec       | NED Type | Mag   | Size (0.1') | Int. Type |
|------|------------|-----------|----------|-------|-------------|-----------|
| 289  | 16 55 00.5 | +43 03 30 | GPair    |       |             | PDbt      |
| 289a | 16 54 58.7 | +43 03 40 | G        | 15.4g | 7x4       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



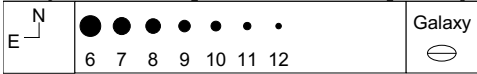
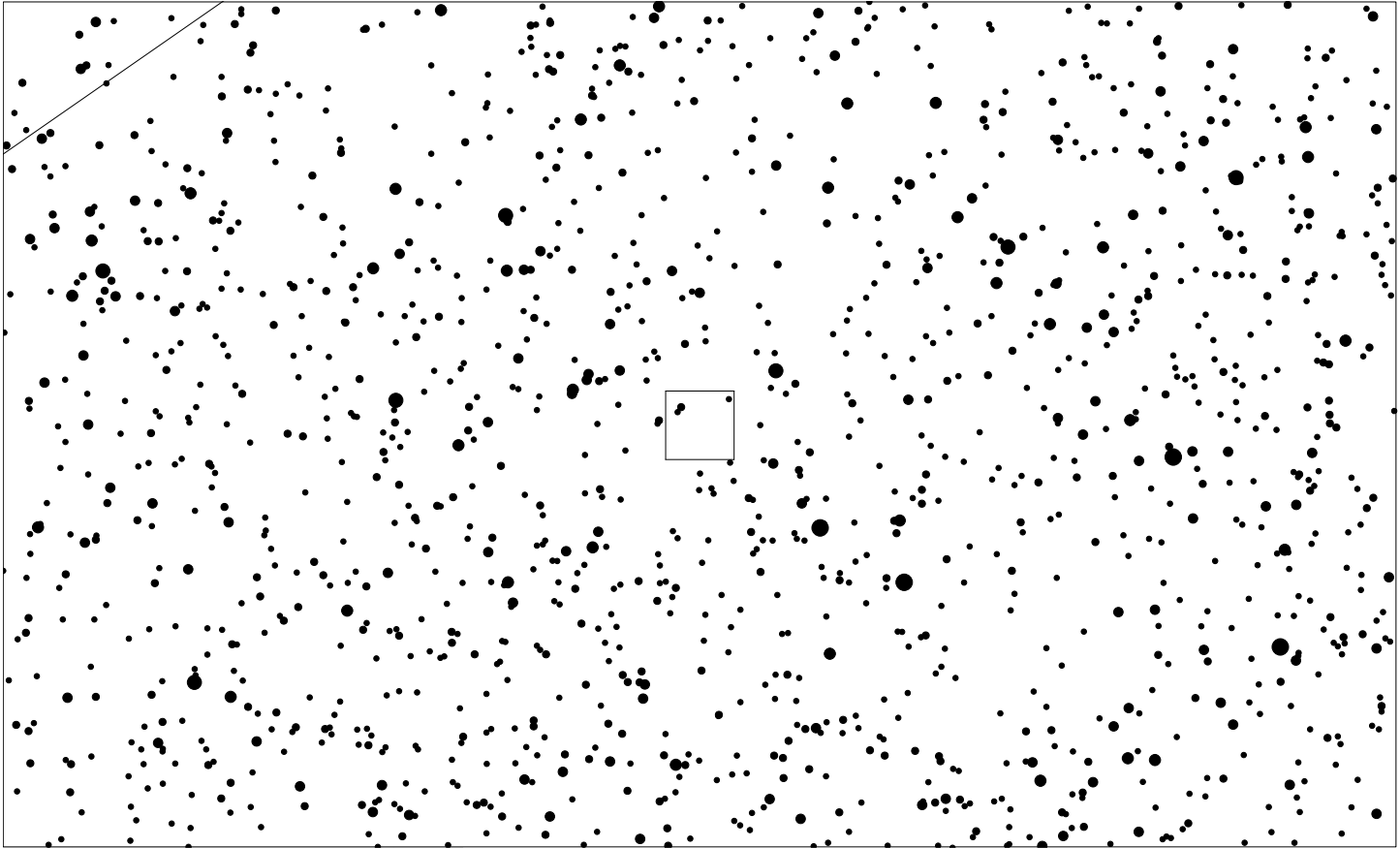
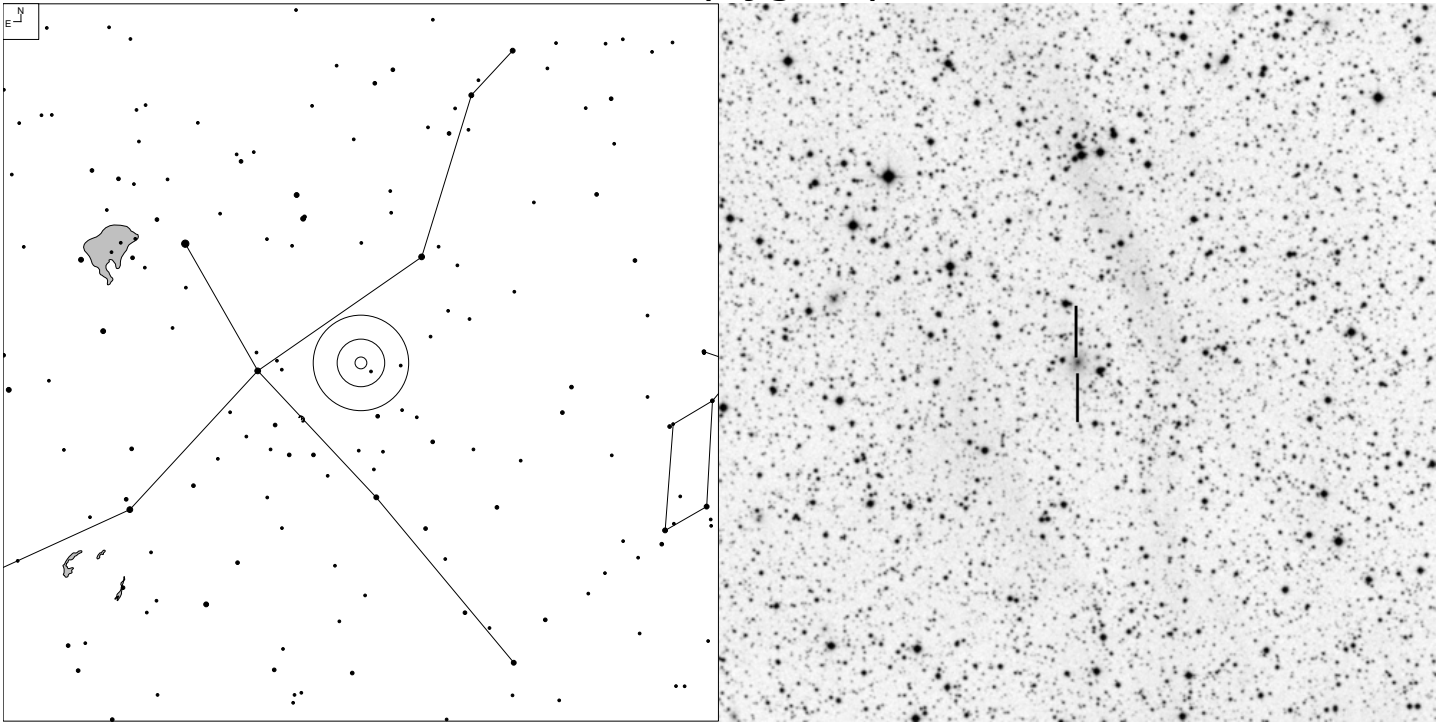
6 7 8 9 10 11 12

Galaxy Planetary

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

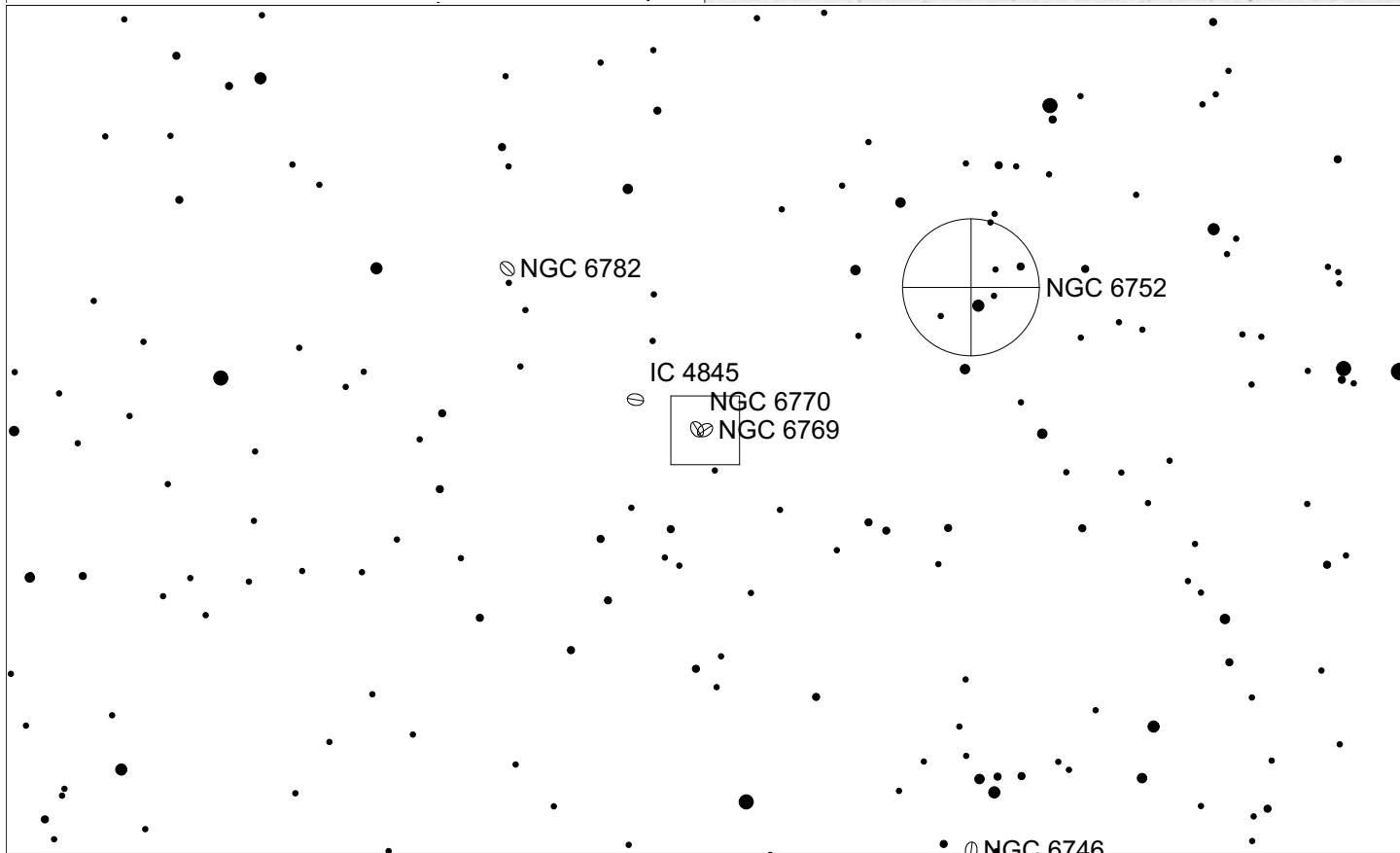
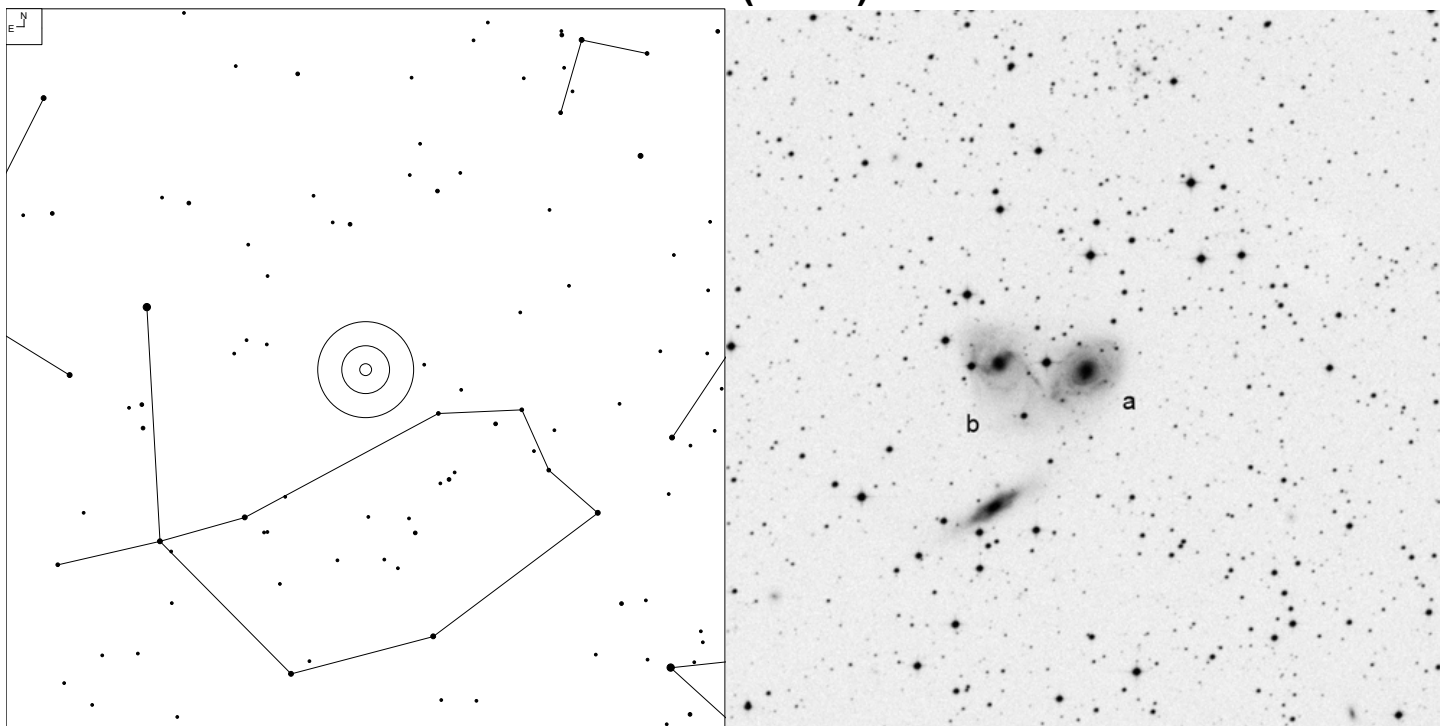
This object is not a galaxy, but rather the brightest segment of the outer halo of NGC 6543.

# 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        |

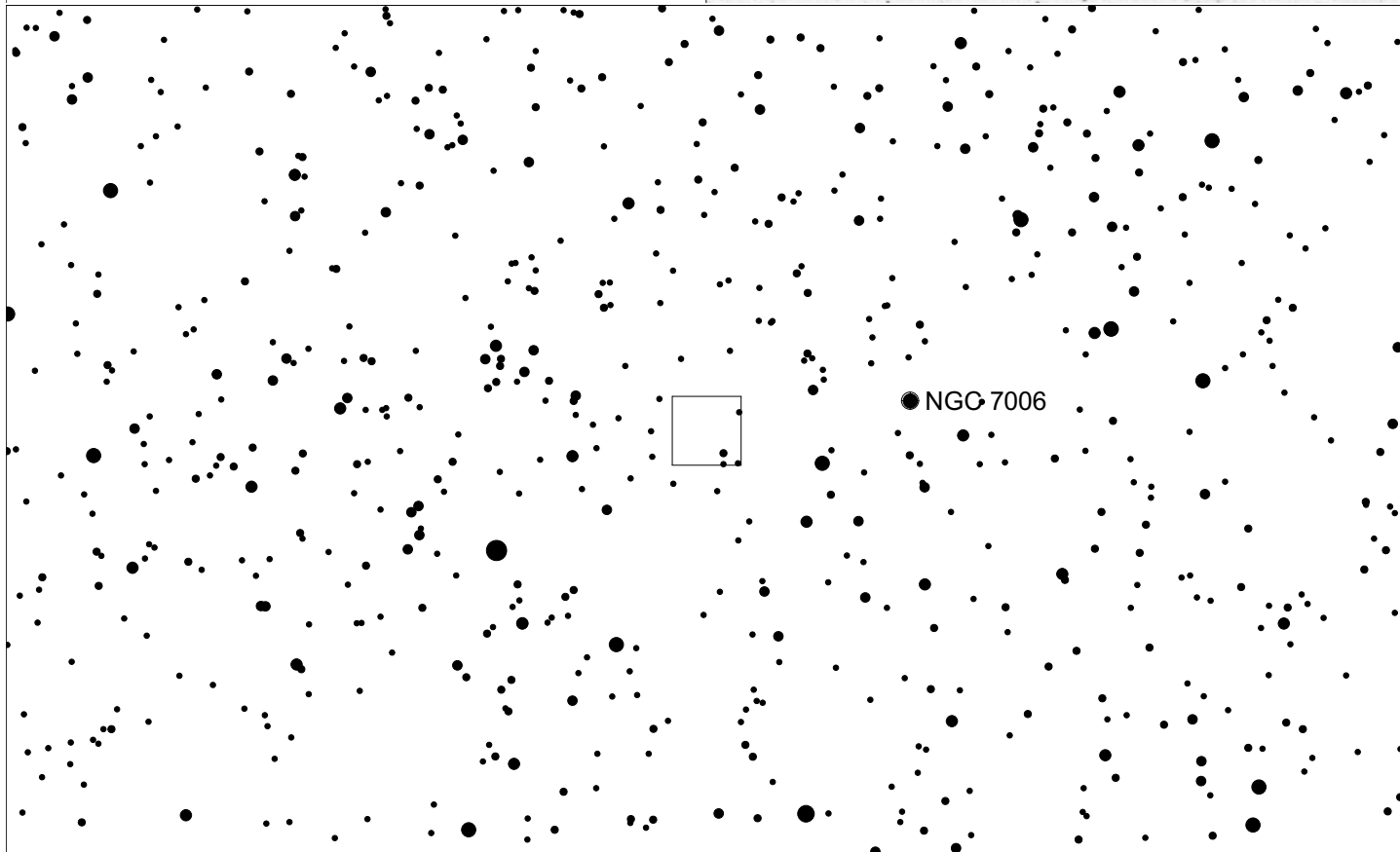
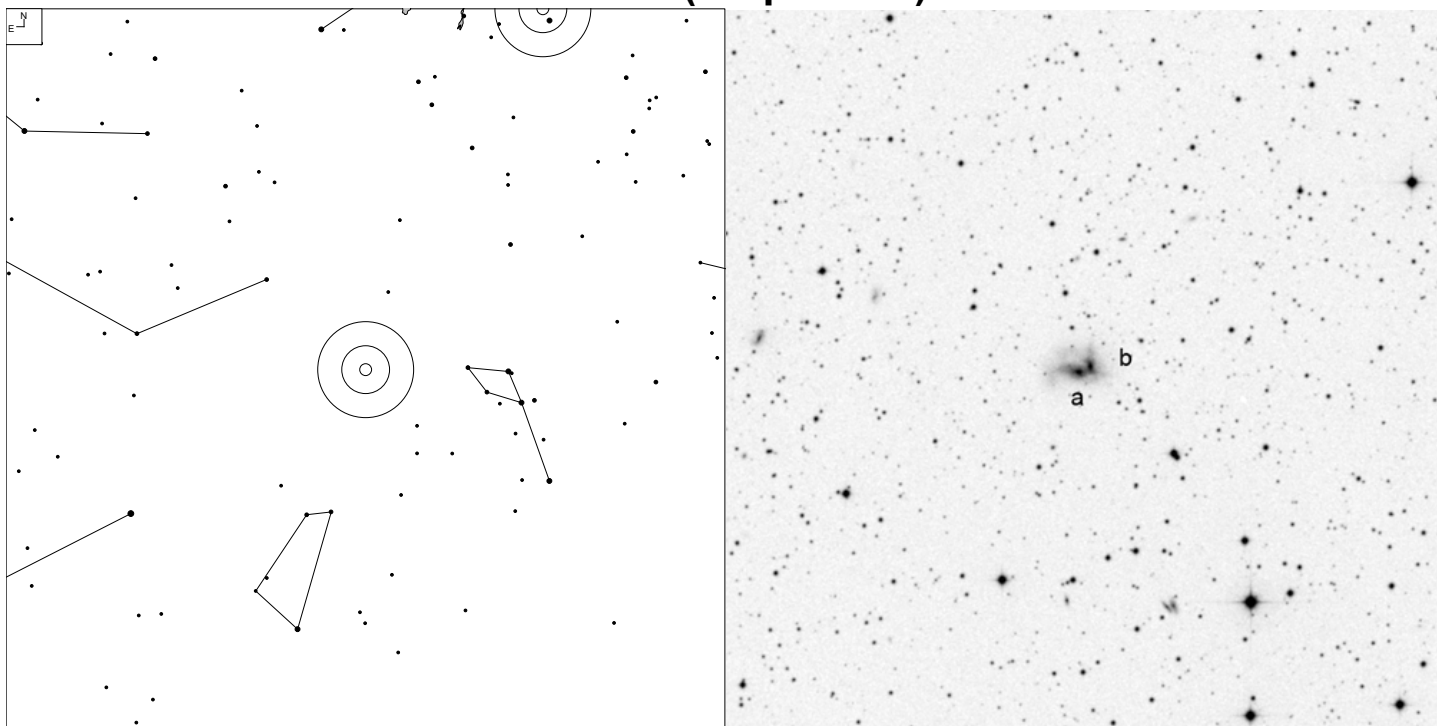
# VV 304 (Pavo)



| 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       |           |



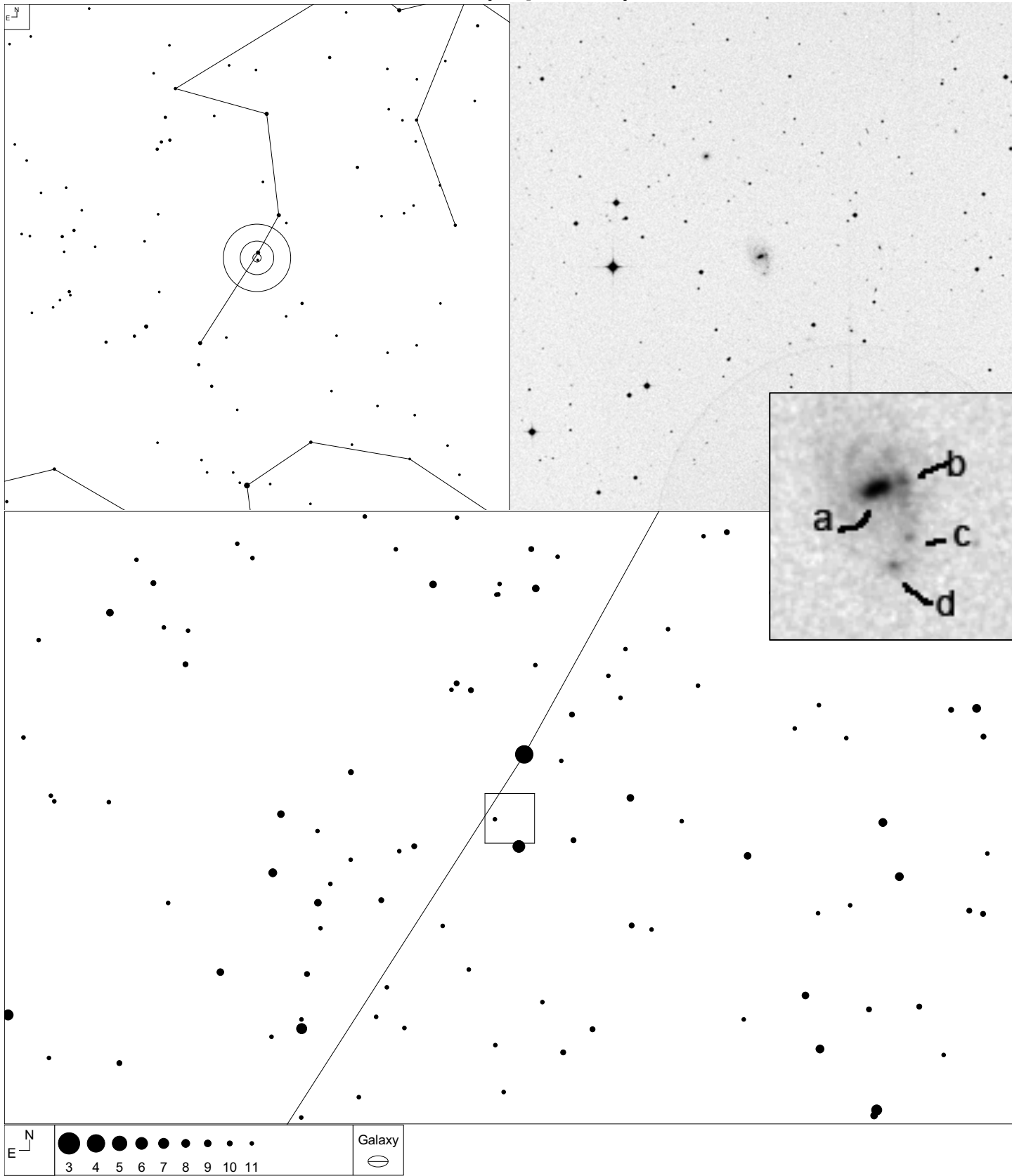
# VV 102 (Delphinus)



Galaxy   
  Globular

| VV   | RA         | Dec       | NED Type | Mag  | Size (0.1') | Int. Type |
|------|------------|-----------|----------|------|-------------|-----------|
| 102  | 21 04 28.7 | +16 05 01 | GPair    |      |             |           |
| 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 |

| VV  | RA         | Dec       | Arp |
|-----|------------|-----------|-----|
| 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 is 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

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

Vorontsov-Velyaminov, Boris A. and Metlov, V. G. “The Nature of the Peculiar Object VV 794.” *Soviet Astronomy Letters*, Vol 6 (Mar-Apr 1980), 109-110

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

Burnham, Robert. *Burnham's Celestial Handbook, Vol. 1 to 3*. New York: Dover Books, 1978

Coe, Steven R. *Deep Sky Observing. The Astronomical Tourist*. New York: Springer Publishing Company, 2000

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

[nedwww.ipac.caltech.edu/](http://nedwww.ipac.caltech.edu/) - NASA-IPAC Extragalactic Database – NED

[archive.stsci.edu/cgi-bin/dss\\_form](http://archive.stsci.edu/cgi-bin/dss_form) - The STScI Digitized Sky Survey

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

[www.cloudynights.com](http://www.cloudynights.com) – Great resource for like-minded amateurs discussing most aspects of the hobby.

[www.galaxyzoo.com](http://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](http://archive.stsci.edu/dss/acknowledging.html) - DSS images (Digital Sky Survey)

[www.sdss.org](http://www.sdss.org) - Sloan Digital Sky Survey – Data Release 10

# Revision History

| <b>Date</b>  | <b>Revision</b>   |
|--------------|---|
| 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.   |