

## “Two Cool Galaxies” by Howard Banich May 2016

### M81 Details – Partial

**List** (Sources: Aladin, NED and Simbad. Regions labeled by H. Banich)

**AGN**

- X-ray source: CXO J095532.0+690354
- X-ray source: CXO J095532.6+690353
- X-ray source: CXO J095533.1+690355
- X-ray source: CXO J095533.14+690355.1
- X-ray source: CXO J095533.2+690356
- X-ray source: CXO J095533.9+690353
- X-ray source: [SPZ2011] ML1
- X-ray source: [SPZ2011] ML3
- X-ray source: [SPZ2011] ML6
- X-ray source: [SPZ2011] 264
- UV excess source: [MKH2012] CLU161

**Region A**

- HII: PSK 311
- HII: HK NGC 3031 268
- HII: [PR95] 50152
- HII: [NHM2010] 1588
- HII: [NHM2010] 1585
- HII: [NHM2010] 1591
- UV excess source: [MKH2012] CLU246
- SNR: [KBK87] 181
- MW Star: Pul -3 630067

**Region B**

- HII: PSK 287

- HII: [NHM2010] 1475
- HII: [PR95] 50179
- HII: [HK83] 305

**Region C**

- HII: [HK83] 343
- HII: [NHM2010] 1370
- HII: HK NGC 3031 343
- HII: [NHM2010] 1365
- HII: PSK 266
- HII: [KBK87] 266
- Association of Stars: [I92b] 78

**Region D**

- HII: [NHM2010] 2160
- HII: PSK 416
- HII: PSK 422
- SNR: [KBK87] 198
- MW star: 2MASS J09561763+6906051

**Region E**

- Star Cluster: SDSSJ095521.86+690637.7
- Globular Cluster: [PR95] 50777
- Star Cluster: SDSS J095521.86+690637.7
- ? Planetary Nebula: [MPC2001] 44
- X-ray source: 2XMM J095521.7+690636
- X-ray source: [IW2001] H16
- X-ray source: CXO J095521.5+690639

**Region F**

- ? Globular Cluster: [PR95] 50804
- MW star: [GBT92] 26

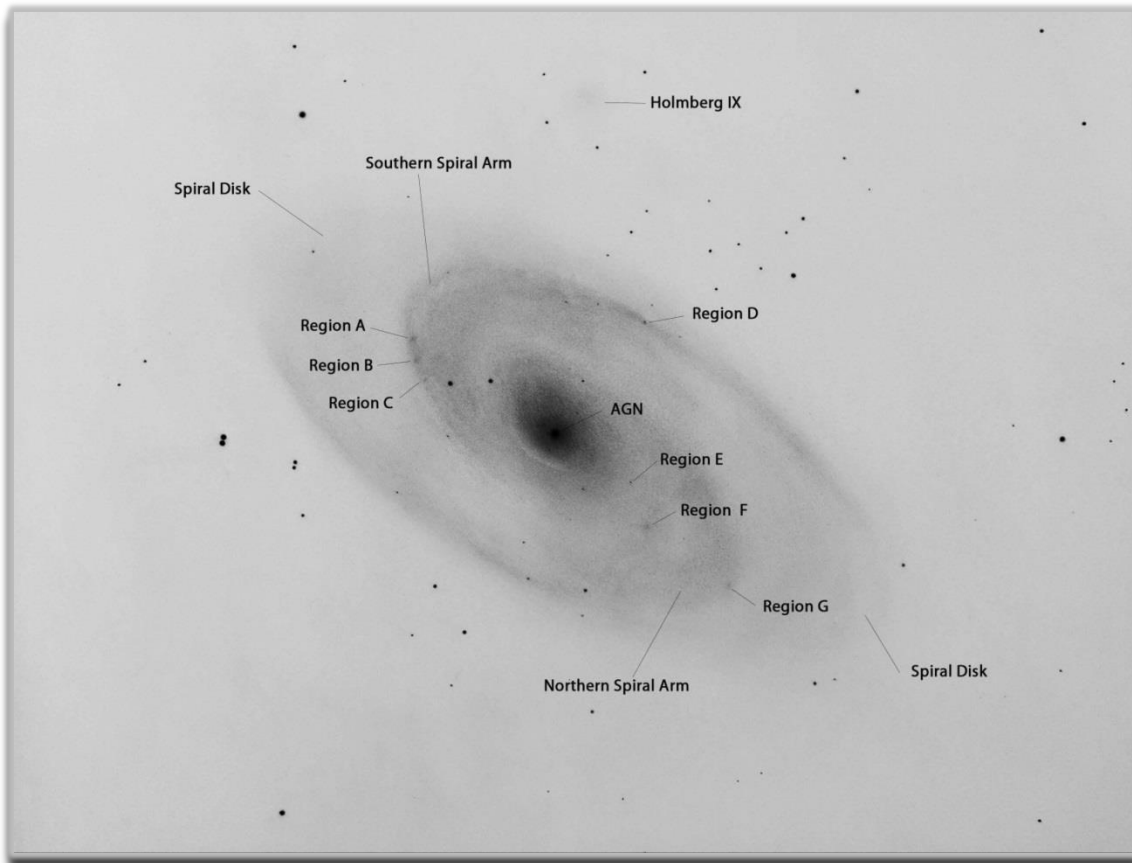
- Star Cluster: [CFT2001] 045

**Region G**

- HII: PSK 89
- HII: PSK 81
- HII: [NHM2010] 0454
- UV excess source: [MKH2012] CLU036

**Holmberg IX – Dwarf Irregular Galaxy**

- Star cluster: [SPM2005] 3-1322
- Star cluster: [SPM2005] 3-1565
- Star cluster: [SPM2005] 3-2116
- Star cluster: [SPM2005] 3-2376
- Star cluster: [SPM2005] 3-2409
- ? Globular cluster: [SPM2005] HoIX-3-1565
- ? Globular cluster: [SPM2005] HoIX-3-1322
- ? Globular cluster: [SPM2005] HoIX-3-2116
- ? Globular cluster: [SPM2005] HoIX-3-2409
- HII: [CVL2009] UGC 5336-12
- HII: SDSS J095730.41+690248.7
- HII: [MH94a] Ho IX 2
- HII: [AIS2009] 18
- HII: [MH94a] Ho IX 1
- HII: [AIS2009] 17
- HII: [MH94a] Ho IX 3
- HII: [MH94a] Ho IX 4



## M82 Details – Partial List

(Sources: Aladin, NED and Simbad. Regions defined by O’Connell & Mangano, 1978)

### Region A

Star Cluster: MGG 1c  
 Star Cluster: [SWG2006] A1  
 Star Cluster: MGG 1b  
 Radio source: [MMW2002] 44.93+63.9  
 Radio source: [FMB2008] 45.17+61.2  
 Radio source: [FMB2008] 44.89+61.2  
 Radio source: [RVZ2004] 44.84+61.8  
 X-ray source: CXOM82 J095553.4+694047  
 SNR: [HTC94] 39  
 SNR: [MMW2002] 44.91+61.1  
 SNR: [MPW94] 44.91+61.1  
 SNR: [MPW94] 44.43+61.8  
 ? SNR: [HTC94] 38  
 ? SNR: [HTC94] 35  
 Molecular Cloud: [KHL2005] C

### Region C

Star cluster: MGG 3  
 Star cluster: MGG m  
 Star cluster: MGG k  
 SNR: [HTC94] 37  
 Radio source: [FMB2008] 44.51+58.2  
 Radio source: [FMB2008] 44.28+59.3  
 Radio source: [FMB2008] 44.01+59.6  
 Radio source: EQ J095552.5+694045.4  
 HMXB: CXOU J095552.7+694045\*  
 X-ray source: [WSG84] 7  
 X-ray source: CXOM82 J095552.8+694046  
 X-ray source: CXOU J095552.7+694046  
 Maser: [SFF97] 4  
 \*(HMXB =High Mass X-ray Binary)

### Region D

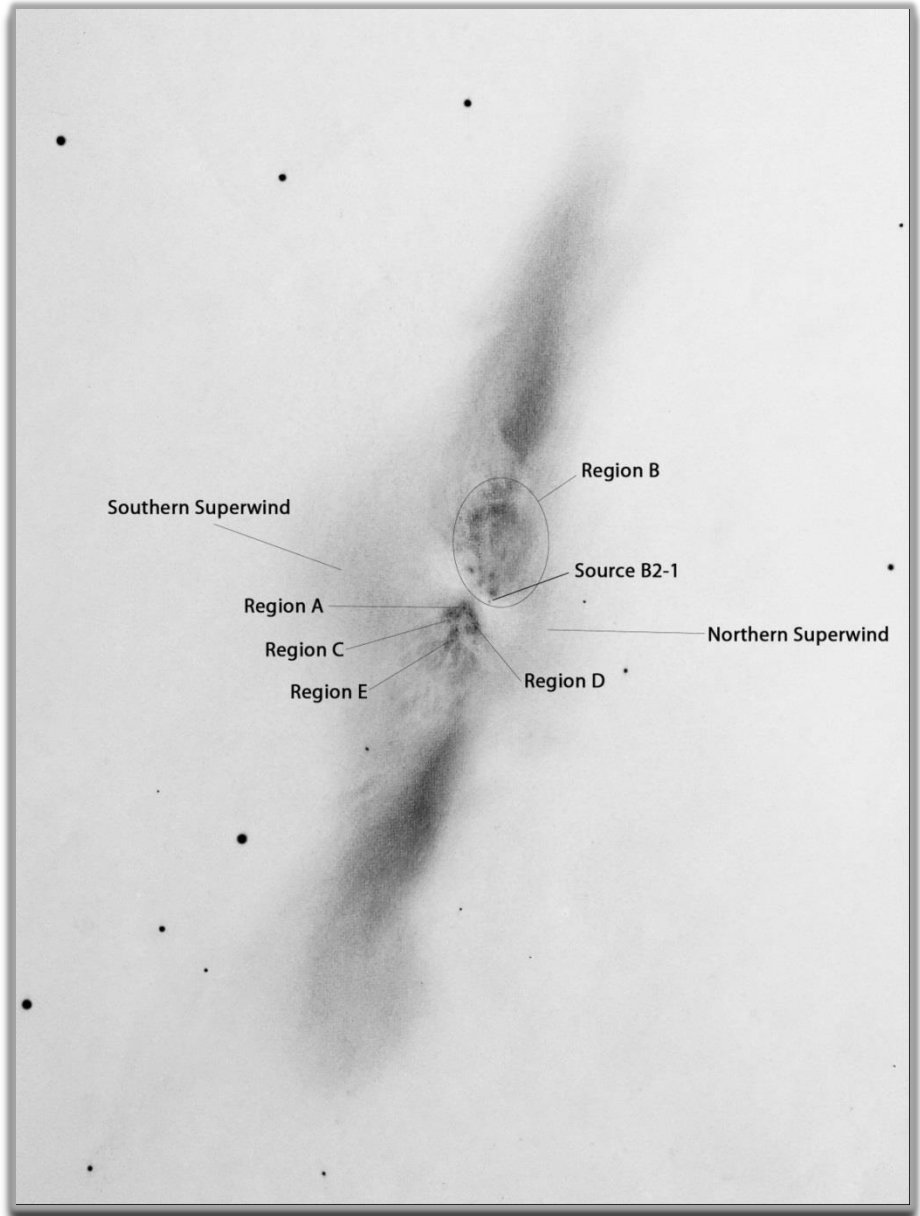
Star Cluster: [KBS2008] 78.2  
 Star Cluster: MGG q  
 Star cluster:  
 ? SNR: [HTC94] 36  
 ? SNR: [RVZ2004] 44.11+64.3  
 Radio source: [RVZ2004] 44.50+65.3  
 Radio source: [RVZ2004] 44.17+64.4  
 IR source: [GIB2011] 19  
 HMXB: CXOU J095553.0+694048

### Region E

Star cluster: [KBS2008] 67.4  
 Radio source: [MPW94] 43.51+63.3  
 Radio source: [RVZ2004] 43.39+62.6  
 Radio source: [FMB2008] 43.40+62.6  
 IR source: [GIB2011] 15  
 IR source: [GIB2011] 14

### Source B2-1:

Star Cluster: [SWG2006] B2-1  
 HMXB: [SST2011] J095554.56+694100.4  
 X-ray source: 2MASSi J0955547+694100  
 Radio source: [RVZ2004] 45.93+74.3



## Further Reading

Barker, S., R. de Grijs, and M. Cerviño. "Star cluster versus field star formation in the nucleus of the prototype starburst galaxy M 82." *Astronomy & Astrophysics* 484, no. 3 (June 2008): pp. 711-720.

<http://www.aanda.org/articles/aa/pdf/2008/24/aa09653-08.pdf>;

<http://arxiv.org/abs/0804.1913>

de Grijs, Richard. "Star formation timescales in M82." *Astronomy and Geophysics* 42, no. 4 (2001): pp. 4.12-4.18.

<http://astrogeo.oxfordjournals.org/content/42/4/4.12.full.pdf>;

<http://adsabs.harvard.edu/full/2001A%26G....42d..12D>

Devereux, Nick, Holland Ford, Zlatan Tsvetanov, and George Jacoby. "STIS Spectroscopy of the Central 10 Parsecs of M81: Evidence for a Massive Black Hole." *Astronomical Journal* (2003).

<http://iopscience.iop.org/article/10.1086/367595/pdf>

O'Connell, R. W. and J. J. Mangano. "The Central Regions of M82." *Astrophysical Journal* 221: 62-79 (1978), pp. 62-65.

<http://adsabs.harvard.edu/abs/1978ApJ...221..62O>

Patterson, Maria T., Rene A.M. Walterbos, Robert C. Kennicutt, Cristina Chiappini, and David A. Thilker. "An Oxygen Abundance Gradient into the Outer Disk of M81." *Monthly Notices of the Royal Astronomical Society* 422, No. 1 (2012), pp. 401-419.

<http://arxiv.org/pdf/1202.0308v1.pdf>