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Supporting Information for

Boulder Distributions Around Young, Small Lunar Impact Craters and Implications for Regolith Production Rates and Landing Site Safety

R. N. Watkins[1], B. L. Jolliff[2], K. Mistick[1,2], C Fogerty[2], S. J. Lawrence[3], K. N. Singer[4], R. R. Ghent[1,5]

[1]Planetary Science Institute, Tucson, AZ, 1700 E. Fort Lowell, Suite 106, Tucson, AZ 85719,

[2]Washington University in St. Louis, Saint Louis, MO 63130

[3]NASA Johnson Space Center, Houston, TX

[4]Southwest Research Institute, Boulder, CO

[5]Department of Earth Sciences, University of Toronto, Toronto, Ontario, Canada

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Introduction

This file contains supplementary information and images for the boulder distributions described in the manuscript. Figures S1-S6 are the range-frequency distributions (discussed in Section 4.1) for each count site, and Figures S7-S11 show the 99th quantile fits to the size-range distributions (discussed in Section 5.2). Figures S12-S14 are NAC and Apollo surface images that show how we compared surface measurements of boulders to NAC-derived measurements.

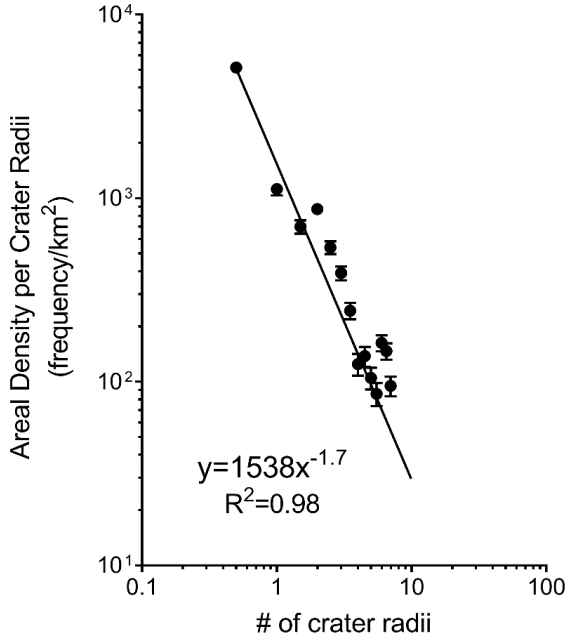


Figure S1. Range-frequency distribution for Cone crater.

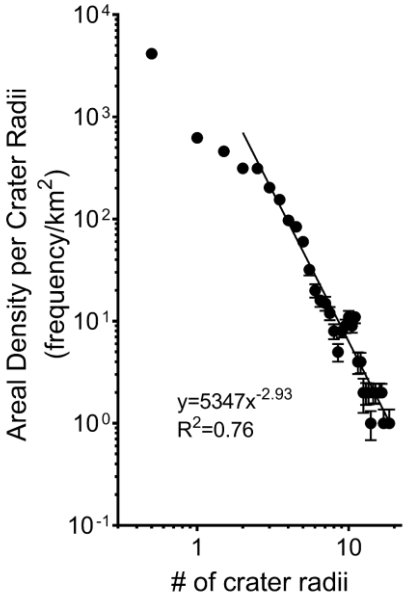


Figure S2. Range-frequency distribution for South Ray crater.

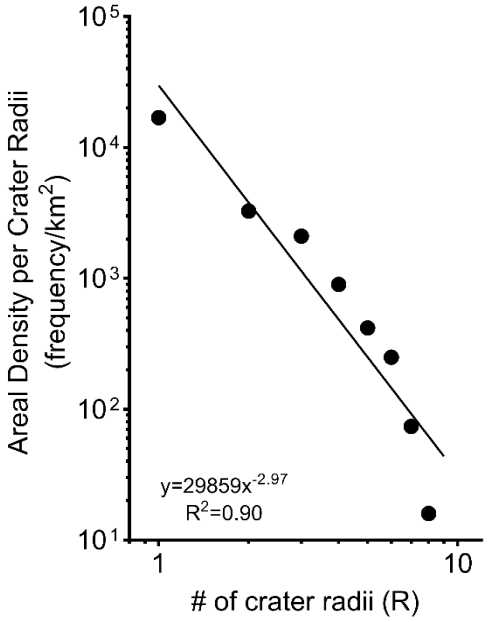


Figure S3. Range-frequency distribution for North Ray crater.

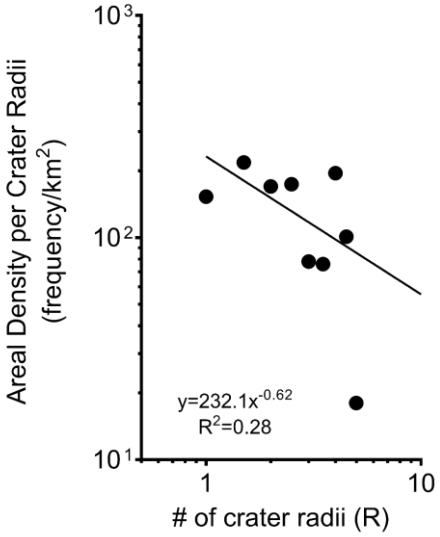


Figure S4. Range-frequency distribution for Surveyor crater.

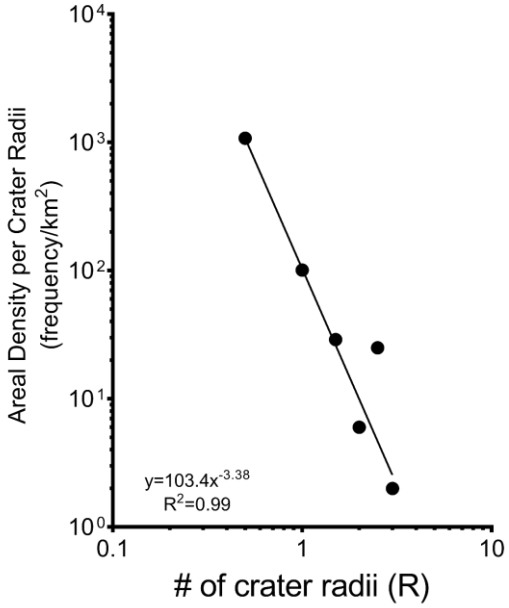


Figure S5. Range-frequency distribution for Zi Wei crater.

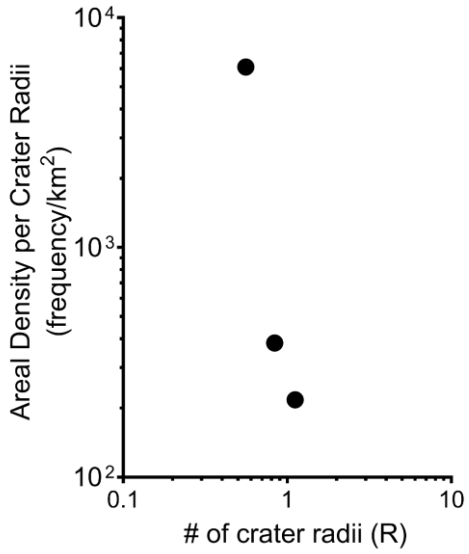


Figure S6. Range-frequency distribution for Camelot crater. *Note: Owing to limited data and boulder contamination from nearby secondary craters, we do not attempt to fit a power-law to this distribution.*

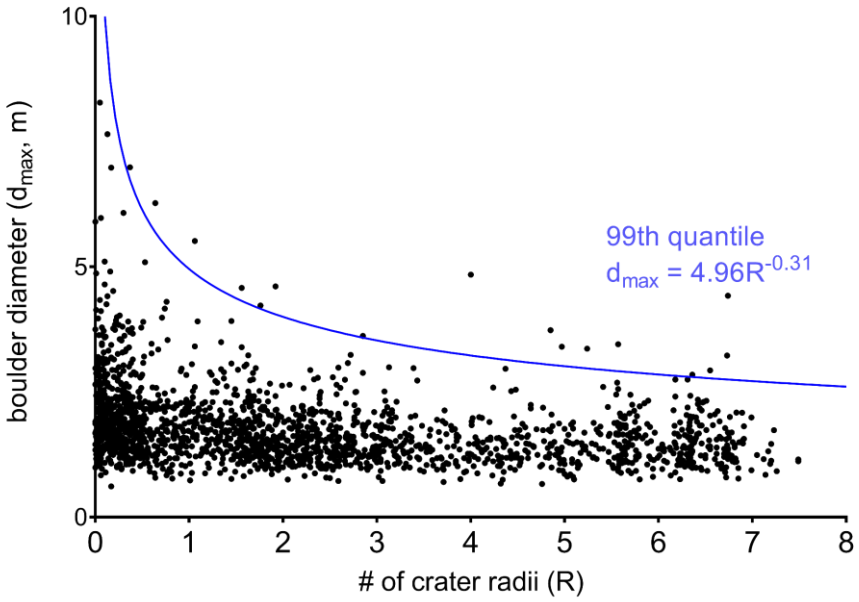


Figure S7. 99th quantile distribution for boulders around Cone crater. The 99th quantile fit was determined using the STATA *qreg* function.

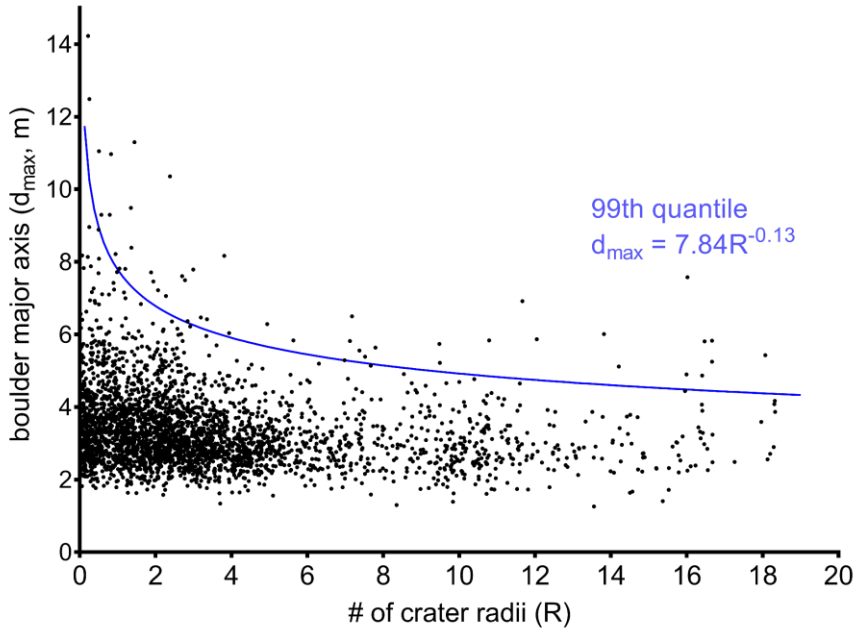


Figure S8. 99th quantile distribution for boulders around South Ray crater. The 99th quantile fit was determined using the STATA *qreg* function.

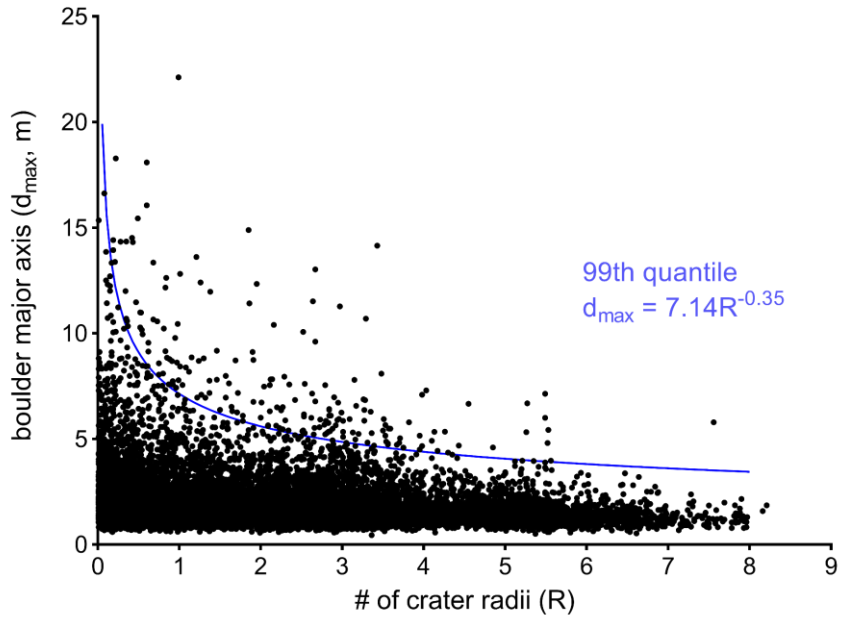


Figure S9. 99th quantile distribution for boulders around North Ray crater. The 99th quantile fit was determined using the STATA *qreg* function.

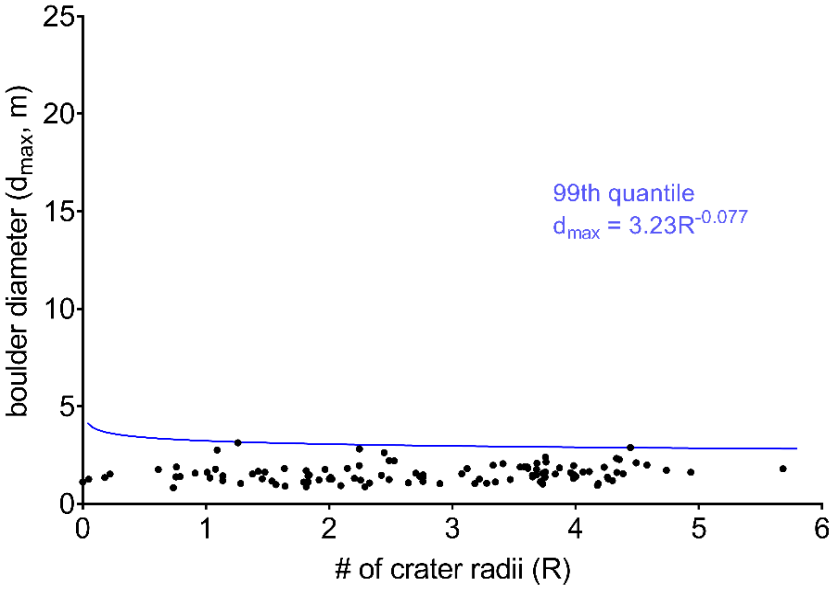


Figure S10. 99th quantile distribution for boulders around Surveyor crater. The 99th quantile fit was determined using the STATA *qreg* function.

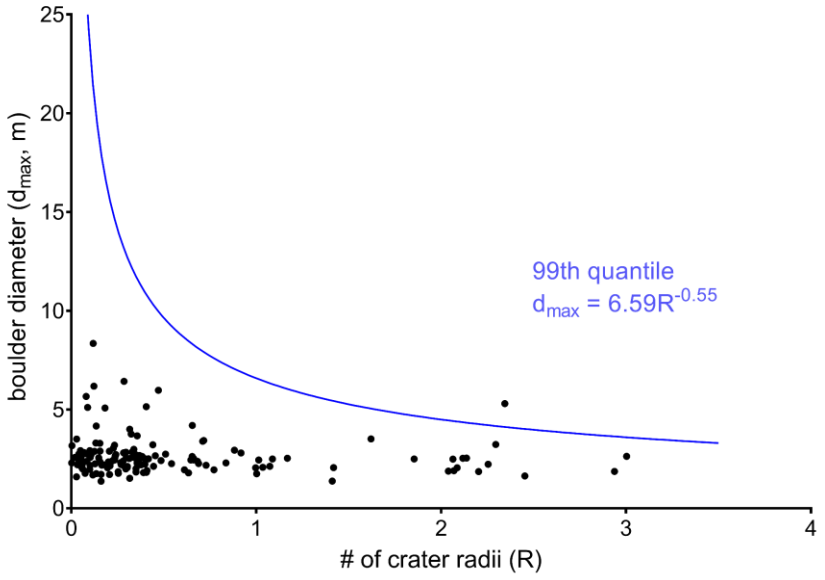


Figure S11. 99th quantile distribution for boulders around Zi Wei crater. The 99th quantile fit was determined using the STATA *qreg* function.

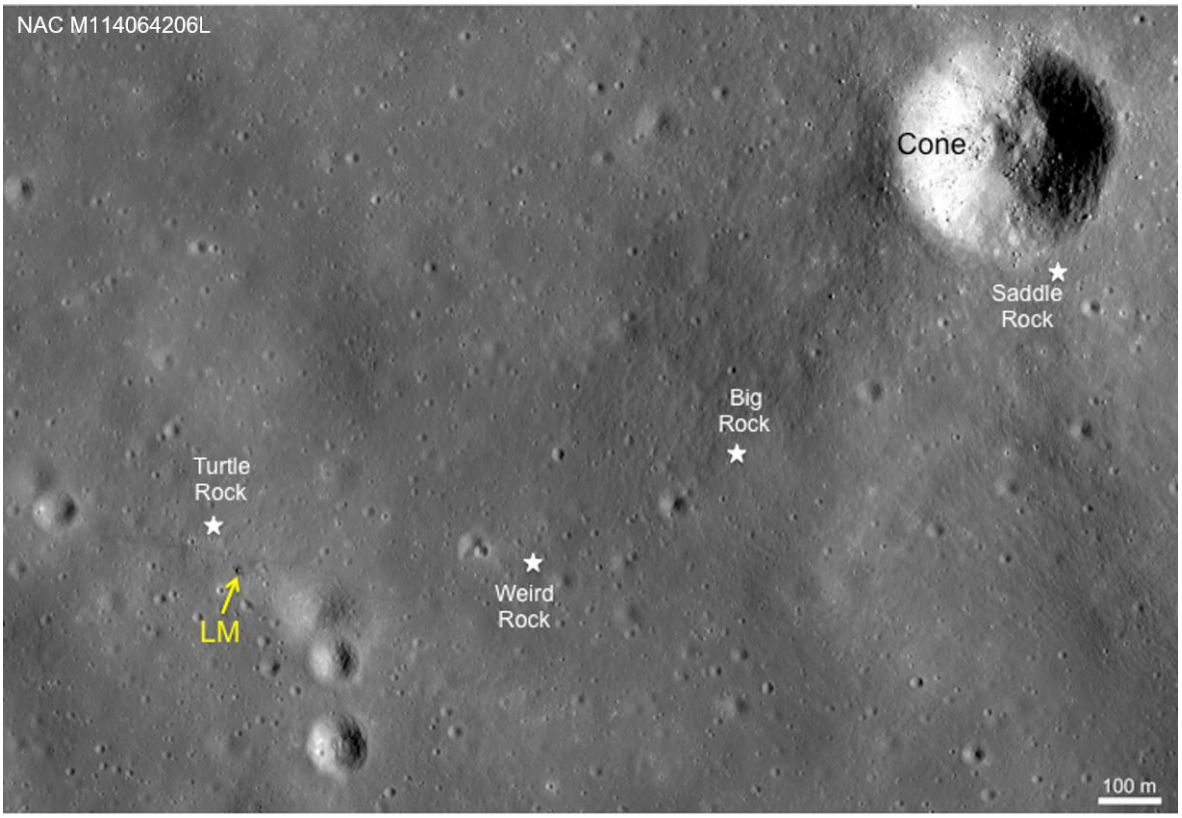


Figure S12. Location of select boulders sa,mpled and measured by Apollo 14 astronauts during their traverse to Cone crater. These surface boulder measurements were used to validate LROC NAC boulder counting and measuring methods.

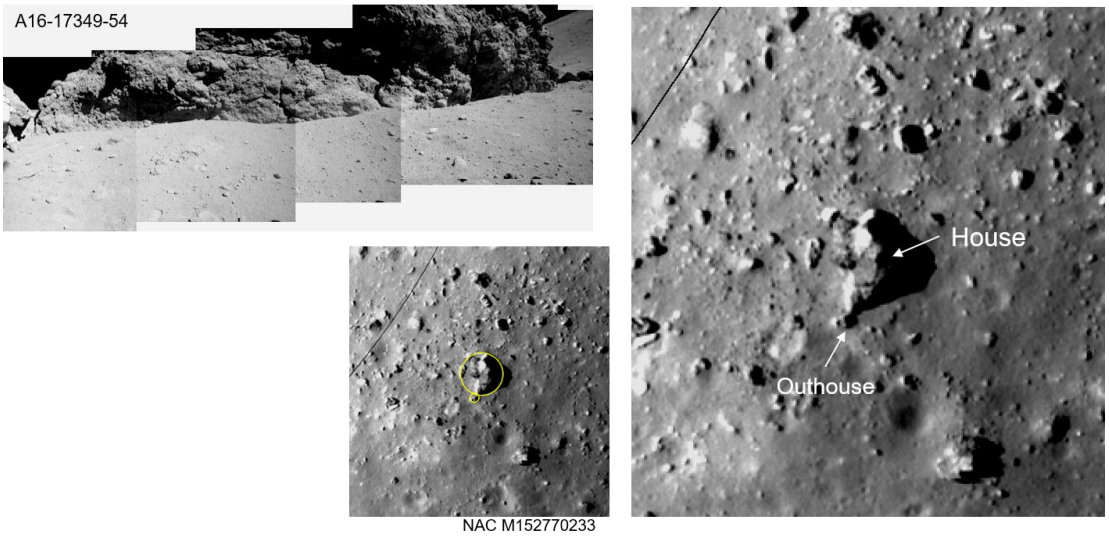


Figure S13. House Rock as imaged by the Apollo 16 astronauts (top left), and NAC images House and Outhouse Rock. The yellow outline in the bottom left image shows the CraterTools measurement of the two boulders.

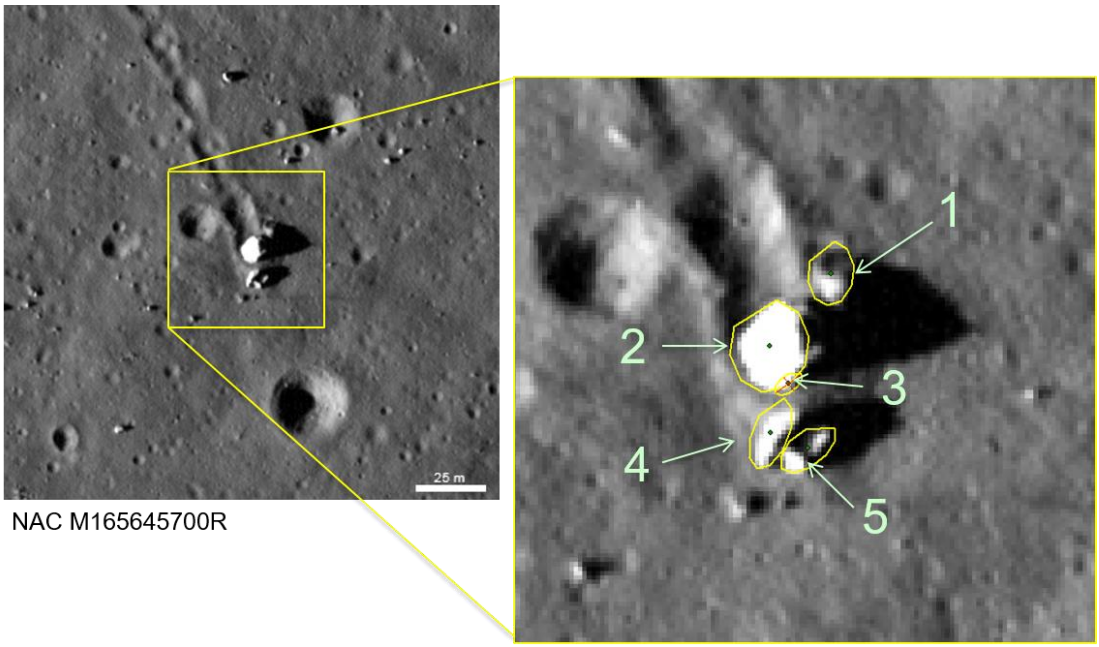


Figure S14. Apollo 17 Station 6 boulder measurements. Yellow outlines are measurements made using Crater Helper Tools in ArcMap.