

CURRICULUM VITAE

Shannon Arnold Boomgarden



PROFESSIONAL INFORMATION

Address: Natural History Museum of Utah
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PERMITS

State of Utah Archaeological Survey Permit (No. 128)

EDUCATION

- 2015 Ph.D., Anthropology, University of Utah, Salt Lake City.
Dissertation Title: *Experimental Maize Farming in Range Creek Canyon, Utah.*
- 2011 Certificate in Geographic Information Science. University of Utah, Salt Lake City.
- 2005 M.S., Anthropology, University of Utah, Salt Lake City.
- 2001 B.S., Anthropology, University of Utah, Salt Lake City.

COMMITTEE ASSIGNMENTS

University

2004-2006 Anthropology Graduate Student Advisory Committee (Chair)

AWARDS

2014 Second place graduate category, CSBS Research Day Poster Competition, University of Utah.

2008 First place poster, 2008 Great Basin Anthropological Association's Student Poster Competition, 31st Annual Great Basin Archaeological Conference October 2008 Portland, Oregon.

ACADEMIC POSITIONS-University of Utah

2011-present Manager-Archaeology Lab
Natural History Museum of Utah, Rio Tinto Center

2007-present Assistant Director
Archaeological Summer Field School

2007-2012 Center Manager
Archaeological Center

2006 Instructor/course creator
Mapping and GIS in Archaeology

2001-2007 Lab Manager, Utah Museum of Natural History,
Archaeological Center

2003-2006 Instructor
Introduction to World Prehistory, online course

2003-2006 Teaching Assistant/Field Supervisor
Archaeological Summer Field School

2001 Teaching Assistant/Field Supervisor
Archaeological Summer Field School

2000 Student Teaching Assistant
Fundamentals of Archaeology

2000 Intern,
Anthropology Collections, Utah Museum of Natural History

PROFESSIONAL INTERESTS

Paleoecology, experimental archaeology, behavioral ecology, and prehistory of western North America.

CURRENT EMPLOYMENT

I am currently employed as the Assistant Director of the Range Creek Canyon Summer Archaeological Field School and manager of the Range Creek Archaeology Lab, Natural History Museum of Utah. In these two roles I plan, organize, and manage the field and lab research related to the archaeology of the Range Creek Field Station. I created and maintain the spatial database for ongoing archaeological and environmental research projects conducted by the Range Creek Field Station. Each field season I write the research design outlining the field work to be conducted in Range Creek Canyon. I write the technical reports detailing the field schools archaeological activities to meet Section 106 requirements and permit obligations. I supervise the Student Independent Research Group (ANTH 5711) and volunteers in the museum lab, instructing them in lab methods including: cataloging and analyzing artifacts (primarily lithic analysis), using ArcGIS and Pathfinder for spatial analysis, using the Microsoft Access database for IMACS forms, photography, artifact illustration, and technical writing.

During the summer field season I am the Assistant Director for the University of Utah Archaeological Summer Field School. In this position I organize and supervise archaeological fieldwork at the Range Creek Field Station. Students participate in hands-on archaeological, experimental, and paleoenvironmental research. This includes leading student crews on survey and excavation. I maintain and instruct students on the use of the museum's survey and mapping equipment for spatial research (Trimble GeoExplorer XT and Juno GPS receivers, Trimble TS415 5" Total Station, TDS Recon data logger, Sokkia SET 3E total station) and software programs (Pathfinder, ESRI, SURFER, ProLink).

PROFESSIONAL AFFILIATIONS

Utah Professional Archaeological Council
Society for American Archaeology

FIELD EXPERIENCE

2007-present	Assistant Director, University of Utah Summer Field School. Survey and excavation, Range Creek Canyon, central Utah.
2008	May: Field Supervisor, Fish Creek Cove, Teasdale, Utah. Mapping and survey project. I volunteered time to map the site and create a detailed contour map using a total station for the Colorado Plateau Archaeological Alliance.
2008	August: Field Supervisor, Desolation Canyon Survey, Colorado Plateau Archaeological Alliance.

- 2007 October: Field Supervisor, Desolation Canyon Survey, Colorado Plateau Archaeological Alliance.
- 2007 May: The Prison Site (Bluffdale, Utah) I volunteered time to map the site and create a detailed contour map using a total station for the Antiquities Section, State Historic Preservation Office.
- 2003-2006 Summer Field Season: Field supervisor for University of Utah field school, Range Creek and Fish Springs, Utah. Supervisor: Duncan Metcalfe.
- 2003 August-September: Survey in Delta, Utah and Wyoming/Utah border for Mountain State Archaeology Co. Supervisor: Jason Bright.
- 2002 August: Survey for Utah Museum of Natural History, Range Creek, Utah. Supervisor: Duncan Metcalfe and Jerry Spangler.
- 2002 May-August: Excavation, survey, and mapping for State and Institutional Trust Lands Administration, Supervisor: Corinne Springer.
- Survey on the Pole Canyon Sale Parcel south of Moab, Utah
 Survey on the Poison Spider Mesa Sale Parcel, Moab, Utah
 Survey on the Pack Creek Sale Parcel south of Moab, Utah
 Test Excavations/Survey of the Grapevine Pass and Allied Sale Parcel south of St. George, Utah
 Survey of Lower Church Rock Mesa near Monticello, Utah
 Test excavations of three sites on the Notom Sale Parcel near Notom, Utah
 Survey/Test Excavations on the Runts Knob Sale Parcel south of Green River Utah
 Survey of the Parker Mountain Sale Parcel near Loa, Utah
 Excavation of 42Wn2151 near Teasdale, Utah
 Survey for the Range Creek Research Project near Price, Utah
 Survey at Fish Springs Wildlife Refuge
 Survey at the Cunningham Ranch near Green River, Utah
- 2001 August-September: Excavation and mapping for the State and Institutional Trust Lands Administration in Teasdale, south-central Utah. Supervisor: Corinne Springer.
- 2001 June-August: Teaching Assistant supervising mapping, survey and excavation for the University of Utah summer archaeological field school. Fish Springs, Utah and Teasdale, Utah. Supervisor: Duncan Metcalfe
- 2000 May-August: Survey for the National Park Service, Bryce Canyon, Utah. Supervisor: Chris Wenker.
- 2000 February: Survey, systematic collection, and test excavation for the State and Institutional Trust Lands Administration, Springdale, Utah. Supervisor: Kenny Wintch.
- 1999 November: Survey, mapping for the Bureau of Land Management, Wagon Box Emergency Fire Rehab. Box Elder County, Utah. Supervisor: Lori Hunsaker.

- 1999 September-October: Survey and mapping with the University of Utah, Tintic Mining District, Box Elder County, Utah. Supervisor: Peter Ainsworth.
- 1999 June-August: Student of the University of Utah archaeological field school. Survey, mapping and excavation in Fish Springs, west desert, Utah, Bagley Meadows, central Utah, and Menlo Baths, Surprise Valley, CA. Supervisor: Duncan Metcalfe.

POSTERS PRESENTED

Boomgarden, Shannon A., Corinne Springer, Isaac Hart, Michelle Knoll, David Potter
2014 *Experimental Maize Farming in Range Creek Canyon, Utah: Year One*. Poster presented at the 2014 Society for American Archaeology meetings, Austin TX.

Boomgarden, Shannon A.
2008 *Investigating Storage Strategies in Range Creek Canyon*. Poster presented at the 2008 Great Basin Archaeological Conference. Portland, Oregon

Boomgarden, Shannon A.
2008 *Viewshed Analysis of Stored Resources in Range Creek Canyon*. Poster presented at the 2008 Society for American Archaeology meetings, Vancouver B.C.

Metcalfe, Duncan and Shannon A. Boomgarden
2008 *Exploring the cost of hoarding in Range Creek Canyon, Utah*. Poster presented at the 2008 Society of American Archaeology Meetings, Vancouver B.C.

PROFESSIONAL PRESENTATIONS

Boomgarden, Shannon A.
2014 *Agricultural Productivity and Experimental Maize Farming in Range Creek Canyon, Utah*. Delivered at the 34th Great Basin Anthropological Conference. Boise, ID.

Boomgarden, Shannon A.
2014 *Prehistoric Archaeology in Range Creek Canyon, Utah: A Summary of Activities of the Range Creek Field Station*, paper delivered at the Utah Professional Archaeological Counsel, Spring Meeting.

Jones, Kevin T. and Shannon A. Boomgarden
2012 *Thieving Neighbors, Marauding Clans, or Warring Tribes: An Evolutionary Approach to Fremont Conflict*. Delivered at the 33rd Great Basin Anthropological Conference. Stateline, NV.

Metcalf, Duncan, Shannon A. Boomgarden, Joan Coltrain, and Corinne Springer
2012 *Range Creek Field Station: A Case Study*. Delivered at the 33rd Great Basin Anthropological Conference. Stateline, NV.

Boomgarden, Shannon A.
2011 *A GIS Model of Irrigation Potential in Range Creek Canyon, Utah*.
Presented at the Society for American Archaeology 76th annual meeting, Sacramento, CA.

Boomgarden, Shannon A.
2008 *Range Creek Canyon: A Progress Report*. Utah Professional Archaeological Counsel, Spring Meeting.

Boomgarden, Shannon A.
2007 *Preliminary Report of Vandalism in Range Creek Canyon*. Utah Professional Archaeological Counsel, Spring Meeting.

Arnold, Shannon and Joel Boomgarden
2006 *Range Creek: Survey and GIS 2002-2005*. Utah Professional Archaeological Counsel, Spring Meeting.

Barlow K. Renee, Bonnie Bass, Shannon Arnold, Joel Boomgarden, and Peter Nelson
2002 *Locomotive Rock*, Paper presented at the 28th Great Basin Anthropological Conference, Elko.

Boomgarden Joel, Peter Nelson, Shannon Arnold, and Bonnie Bass
2002 *The Deluxe Apartment in the Sky*, Paper presented at the 28th Great Basin Anthropological Conference, Elko.

SYMPOSIUM ORGANIZER

Symposium: Current Research on the West Tavaputs Plateau – Ongoing Archaeological Investigations in Nine Mile and Range Creek Canyons, Utah.
Great Basin Anthropological Conference 2014, Boise ID

Abstract

The West Tavaputs Plateau, home to Nine Mile, Range Creek, and Desolation Canyons, has been the focus of renewed archaeological interest for the last decade. Multiple excavations, horticultural experiments, and modern survey data are providing new and exciting insights into the subsistence, land use, settlement patterns, horticultural technology, and economics of both prehistoric and historic inhabitants of the plateau. Unfortunately, the archaeological record over large swaths of the plateau is also under constant threat from vandalism, looting, and development impacts. This symposium brings together academic, nonacademic,

and agency archaeologists working on the West Tavaputs Plateau and adjoining areas to share the results from their current and ongoing projects pertaining to the area's rich occupation history and its continued preservation.

Symposium: Archaeology and Paleoecology of Range Creek Canyon, Utah.
Society for American Archaeology 2011 Annual Meeting, Sacramento CA

Abstract

Range Creek Canyon is a mid-elevation canyon in the West Tavaputs Plateau in central Utah. Located in a very rugged and remote region, the canyon contains a remarkably intact record of an intense Fremont occupation between AD 900 – 1200. To date over 400 sites have been recorded and only a fraction of the canyon has been surveyed. This symposium focuses on the results and direction of research now centered at the recently established University of Utah field station. Paper topics include experimental archaeology, population estimates, isotopic analysis of soils, high elevation occupation, remote sensing, palynology, fire history, and dating.

INVITED LECTURES

Boomgarden, Shannon A.

2012 *Range Creek Archaeology*. Presentation for the BLM brown bag lunch series, Vernal BLM office.

Boomgarden, Shannon A.

2012 *Range Creek Canyon*. Presentation for the Natural History Museum of Utah, for the Scientist in the Spotlight series.

Boomgarden, Shannon A.

2012 *Range Creek Field School, 2012 research design for survey and excavation*. Presentation for the Natural History Museum of Utah, employee brown bag lecture series.

Boomgarden, Shannon A.

2011 *Archaeology of Range Creek*. Presentation for the Utah Field House of Natural History State Park Museum, public lecture series.

Boomgarden, Shannon A., Rachelle Green, and Jamie Clark

2009 *Review Archaeology in Range Creek Canyon*. Paper presented for the Kiwanis Club of Sugar House.

Boomgarden, Shannon A.

2008 *Archaeology*. Presentation for the 6th grade, Eastwood Elementary school.

Boomgarden, Shannon A.

2007 *Survey and Excavation: Range Creek Canyon*. Paper presented for the Utah Museum of Natural History Employee Lecture Series.

Boomgarden, Shannon A.

2007 *Vandalism in Range Creek: A GIS Approach*. University of Utah, Graduate Student Colloquium.

Arnold, Shannon

2006 *Archaeology*. Career Day Judge Memorial.

Arnold, Shannon and Joel Boomgarden

2006 Review of the Archaeological Investigations in Range Creek Canyon. Paper presented for the Utah Museum of Natural History Employee Lecture Series.

PUBLICATIONS

Boomgarden, Shannon A., Duncan Metcalfe, and Corinne Springer

2014 Prehistoric Archaeology in Range Creek canyon, Utah: A Summary of Activities of the Range Creek Field Station. *Utah Archaeology* 27(1): 9-32.

Boomgarden, Shannon A.

2009 An Application of ArcGIS Viewshed Analysis in Range Creek Canyon. *Utah Archaeology*. Vol. 22(1):15-29.

Bogiatto, Raymond J., Jack M. Broughton, Virginia I. Cannon, Shannon Arnold, and Kevin Dalton

2006 Fish remains dominate Barn Owl pellets in northwestern Nevada. *Western North American Naturalist* 66:395-396.

Broughton, Jack M., Virginia I. Cannon, Raymond J. Bogiatto, Shannon Arnold, and Kevin Dalton

2006 The taphonomy of owl-deposited fish remains and the origin of the Homestead Cave ichthyofauna *Journal of Taphonomy* 4:69-95.

TECHNICAL REPORTS

Boomgarden, Shannon A., Darrin Day, Isaac Hart, Alexa Hudson, Erik Martin, Duncan Metcalfe, Corinne Springer, and Katie Thomas

2013 *Report of the Archaeological Investigations in Range Creek Canyon, Utah: University of Utah Archaeological Field School 2011-2012*. Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Boomgarden, Shannon A., Corinne Springer, Duncan Metcalfe, and Andrew Yentsch
2014 *Report of the Archaeological Investigations in Range Creek Canyon, Utah: University of Utah Archaeological Field School 2013.*

Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Boomgarden, Shannon A., Katie Green, Corinne Springer, and Duncan Metcalfe
2011 *Report of the 2010 Survey and Excavation at Range Creek Canyon, Utah.* Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Yentsch, Andrew, Joel Boomgarden, Shannon A. Boomgarden, Jerry D. Spangler
2010 *A Report of Archaeological Investigations in Range Creek Canyon, Utah: University of Utah Archaeological Field School 2005-2006.* Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Boomgarden, Shannon A., Jamie Clark, Katie Saunders, Corinne Springer, Duncan Metcalfe
2009 *2009 Survey and Excavation in Range Creek Canyon.* Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Boomgarden, Shannon A., Jamie Clark, Rachelle Green, Duncan Metcalfe
2008 *2008 Survey and Excavation in Range Creek Canyon.* Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Boomgarden, Shannon A., Jamie Clark, Rachelle Green, Duncan Metcalfe
2007 *Report 2007 Survey and Excavation in Range Creek Canyon.* Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Metcalfe, Duncan, K. Renee Barlow, Shannon A. Boomgarden, Joel Boomgarden, and Corinne Springer

2007 *2000 and 2001 Archeological Investigations: The Teasdale East Parcels.* Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Spangler, Jerry D., Andrew Yentsch, Joel Boomgarden, and Shannon Arnold

2006 Data Recovery at Two High Elevation Archaic Residential Base Camps (42Cb2178 and 42Cb2186), and a Historic Homestead (42Cb2185), on the West Tavaputs Plateau, Carbon County, Utah. Colorado Plateau Archaeological Alliance. U-06-UC-1081p

Spangler, Jerry D., Shannon Arnold, and Joel Boomgarden

2006 *Chasing Ghosts: An Analysis of Vandalism and Site Degradation in Range Creek Canyon, Utah*. Unpublished manuscript, Colorado Plateau Archaeological Alliance.

Arnold, Shannon and Joel Boomgarden

2002 *A Preliminary Report of the University of Utah Summer Field School Excavation of 42Wn2398, Wayne County, Utah*. Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

Boomgarden, Joel and Shannon Arnold

2002 *A Preliminary Report of the University of Utah Summer Field School Excavation of 42Wn2374, Wayne County, Utah*. Manuscript on file at the Natural History Museum of Utah and the Antiquities Section of the Utah Division of State History, Salt Lake City, Utah.

RESEARCH DESIGNS

Boomgarden, Shannon A., Duncan Metcalfe, and Corinne Springer

2013 Proposal for continued test excavation at 42Em2861 (Big Village), Range Creek Canyon, Utah, University of Utah Archaeological Summer Field School. Draft on file at the Archaeological Center, University of Utah, Salt Lake City.

Boomgarden, Shannon A., Corinne Springer, and D. Metcalfe

2012 Proposal for test excavation at sites 42Em2861 and 42Em2829, Range Creek Research Project. Draft on file at the Archaeological Center, University of Utah, Salt Lake City.

Boomgarden, Shannon A., Corinne Springer, Joan Coltrain, and Duncan Metcalfe

2011 *Archaeological and Ecological Investigations in Range Creek Canyon, 2010: Proposal for testing site 42Em2861*. Draft on file at the Archaeological Center, University of Utah, Salt Lake City.

Boomgarden, Shannon A., Duncan Metcalfe, Corinne Springer, Andrew Yentsch, and Larry Coats

2010 *Archaeological and Ecological Investigations in Range Creek Canyon, 2010: Proposal for testing two sites on state lands*. Draft on file at the Archaeological Center, University of Utah, Salt Lake City.

Boomgarden, Shannon A.

2009 *Archaeological and Ecological Investigations in Range Creek Canyon: A Proposal for Testing Three Sites on State Lands*. Draft on file at the Archaeological Center, University of Utah, Salt Lake City.

Boomgarden, Shannon A.

2008 *Archaeological and Ecological Investigations in Range Creek Canyon: A Proposal for Continued Testing Two Sites on State Lands*. Draft on file at the Archaeological Center, University of Utah, Salt Lake City.

Boomgarden, Shannon A.

2007 *Archaeological and Ecological Investigations in Range Creek Canyon: A Proposal for Testing Two Sites on State Lands*. Draft on file at the Archaeological Center, University of Utah, Salt Lake City.

PH.D. RESEARCH

Boomgarden Shannon A.

2015 *Experimental Maize Farming in Range Creek Canyon, Utah*. Unpublished Ph.D. Dissertation, Department of Anthropology, University of Utah, Salt Lake City.

Abstract

Water is arguably the most important resource for successful crop production in the Southwest. In this dissertation, I examine the economic tradeoffs involved in dry farming maize vs. maize farming using simple surface irrigation for the Fremont farmers who occupied Range Creek Canyon, east-central Utah from AD 900 to 1200. To understand the costs and benefits of irrigation in the past, maize farming experiments are conducted. The experiments focus on the differences in edible grain yield as the amount of irrigation water is varied between farm plots. The temperature and precipitation were tracked along with the growth stages of the experimental crop. The weight of experimental harvest increased in each plot as the number of irrigations increased. The benefits of irrigation are clear, higher yields.

The modern environmental constraints on farming in the canyon (precipitation, temperature, soils, and amount of arable land) were reconstructed to empirically scale variability in current maize farming productivity along the valley floor based on the results of the experimental crop. The results of farming productivity under modern environmental constraints are compared to the past using a tree-ring sequence to reconstruct water availability during the Fremont occupation of Range Creek Canyon. The reconstruction of past precipitation using tree ring data show that dry farming would have been extremely difficult during the period AD 900-1200 in Range Creek Canyon. Archaeological evidence indicates that the Fremont people were farming during this period suggesting irrigation was used to supplement precipitation shortfalls. Large amounts of contiguous arable land, highly suitable for irrigation farming, are identified along the valley bottom. The distribution of residential sites and associated surface rock alignment features are analyzed to determine whether the Fremont located

themselves in close proximity to these areas identified as highly suitable for irrigation farming. Seventy-five percent of the residential sites in Range Creek Canyon are located near the five loci identified as highly suitable for irrigation farming.

MASTERS RESEARCH

Arnold, Shannon

2005 *Preliminary Report of the Spatial Analysis of an Alyawara Household.*
Unpublished Masters Thesis, Department of Anthropology, University of
Utah, Salt Lake City.

Abstract

This thesis focuses on the spatial analysis of refuse debris on the surface of an Alyawara site, Gurlanda B, located in Central Australia. The site was recorded archaeologically after it was abandoned in 1971. The goal of the analysis is to assess the observable patterns in surface refuse distribution of a single family household at Gurlanda B and compare those patterns to the distribution of refuse on the surface of an Alyawara men's household at Bendaijerum ridge (reported by O'Connell 1987). These sites provide an interesting study because of the ethnographic data recorded by W. Denham just prior to the abandonment of the sites. Gurlanda was only occupied once and Denham spent much of this time observing the behavior that occurred on site, some of it relating to questions about site structure. Gurlanda B was then abandoned which, when compared with Bendaijerum, offers an opportunity to look at the archaeological outcomes of certain behaviors related to refuse distribution on each site, and how these might be affected by recycling, differential decay, primary vs. secondary deposition and trampling, and differences in spatial patterning depending on the composition of occupants. Site structure is an important component in ethnoarchaeological studies and has been used to show inconsistencies between known behavior and archaeological patterns.