Department of Anthropology Natural History Museum of Utah **University of Utah**

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agreenwald@nhmu.utah.edu

ACADEMIC APPOINTMENTS

2019-present Assistant Professor, Department of Anthropology

Curator of Ethnography, Natural History Museum of Utah

University of Utah

2017-2019 Post-Doctoral Fellow, Center for Evolution and Medicine, Arizona State University

EDUCATION

2013-2017	Ph.D., Anthropology, University of California, Davis
2011-2013	M.A., Anthropology, University of California, Davis
2003-2007	B.A., Anthropology (with Honors), Mills College

RESEARCH INTERESTS

Western North American prehistory and ethnography, human behavioral ecology, climate change adaptations, archaeometry, reproductive and parental investment strategies, subsistence behavior, prehistoric technology, breastfeeding and weaning behavior, maternal time allocation conflicts, life history, biological anthropology

PUBLICATIONS

Journal Articles

Kievman, H., G.R. Burns, and **A.M. Greenwald.** *In revision*. Re-evaluating the significance of *Quercus gambelii* acorns in the Great Basin, Colorado Plateau, and Southwest: Evidence from experimental foraging and bomb calorimetry. *Journal of Ethnobiology*.

Niclou, A., **A.M. Greenwald**, and C. Ocobock. *In review.* The costs of women's work: maternal foraging energetics in an acorn subsistence economy. *American Journal of Biological Anthropology*. [equal coauthorship]

A. Baka, L. Louderback, B.F. Codding, **A.M. Greenwald**. 2024. An investment index for lithic technology: Implications for investment, mobility, and division of labor on the Colorado Plateau, USA. *Journal of Archaeological Science: Reports*. https://doi.org/10.1016/j.jasrep.2024.104373

Greenwald, A.M., G.R. Burns, J.W. Eerkens, E.J. Bartelink, A. Leventhal, and M.V. Arellano. 2023. Sex-Biased Parental Investment and Female Wealth Accumulation in the Santa Clara Valley. *American Journal of Biological Anthropology*. https://doi.org/10.1002/ajpa.24806

H.T. Kievman, K.M. Wilson, R.L.F. Lamson, A. Gyumushyan, B.F. Codding, **A.M. Greenwald**. 2023. Late Holocene size variation of *Mytilus californianus* remains from Shelter Cove (CA-HUM-182, Northern California). *California Archaeology*. https://doi.org/10.1080/1947461X.2023.2223494

Greenwald, A.M., G.R. Burns, J.W. Eerkens, and E.J. Bartelink. 2022. A multi-scalar reassessment of dietary isotopic variability in bioarchaeology: differentiating secular and inter-individual variation. *Journal of Archaeological Science* 141. https://doi.org/10.1016/j.jas.2022.105592

Eerkens, J.W., A. de Voogt, T.L. Dupras, V. Francigny, and **A.M. Greenwald**. 2018. An Isotopic Perspective on Early Childhood Life History on the Nile: δ^{13} C and δ^{15} N in Serial Samples of Permanent First Molars in an Elite Meroitic Population from Sai Island. *International Journal of Osteoarchaeology* 2018:1-11.

J.W. Eerkens, E. Washburn, **A.M. Greenwald**. 2017. Weaning and Early Childhood Diets at Two Early Period Sites in Central California: Implications for Parental Investment and Population Growth. *California Archaeology* 9(1):199-222.

Greenwald, A.M. 2017. Mediating Women's Time Allocation Trade-offs: Basketry Cradle Technology in California and the Maintenance of Women's Foraging Efficiency. *Journal of California and Great Basin Anthropology* 37(1)38-47.

Greenwald, A.M., J.W. Eerkens, and E.J. Bartelink. 2016. Stable Isotope Evidence of Independent Child Foraging in Prehistoric Central California. *Journal of Archaeological Science: Reports* 7:146-154.

Eerkens J.W., L. Harold, K. Perez, E. Murga, P. Kaijankoski, J.S. Rosenthal, and **A.M Greenwald**. 2016. Strontium Isotopes Identify Locals and Non-Locals at CA-SCL-919 and CA-SCL-928 in Milpitas, California. *Society for California Archaeology Proceedings*, 30:281-290.

Eerkens, J.W., K. Sullivan, **A.M. Greenwald**. 2015. Stable Isotope Analysis of Serial Samples of Third Molars as Insight into Inter- and Intra-Individual Variation in Ancient Diet. *Journal of Archaeological Science: Reports* 5:656-663.

Eerkens, J.W., T. Carlson, R.S. Malhi, J. Blake, E.J. Bartelink, G.H. Barfod, A. Estes, R. Garibay, J. Glessner, **A.M. Greenwald**, L. Lentz, H. Li, and C.K. Marshall. 2015. Isotopic and genetic analyses of a mass grave in central California: Implications for precontact hunter-gatherer warfare. *American Journal of Physical Anthropology* 159(1):116-125.

Martinez, M.C., J.W. Eerkens, **A.M. Greenwald**, A. DeGeorgey. 2015. Weaning and Childhood Diet at CA-CCO-297. *Society for California Archaeology Proceedings*, 29:6-12.

Peer-Reviewed Book Chapters

K.J. Knudson, M. Martinez, **A.M. Greenwald**, and D.E. Blom. 2023. Paleodiet Outside of the Tiwanaku Heartland: Isotopic Analysis of Individuals Buried at Tiwanaku-Affiliated Sites in the Moquegua Valley, Peru. Manuscript accepted for publication in *Transforming Food in the Ancient Andes: Food, Diet, and Cuisine*, edited by Deborah E. Blom and Marta P. Alfonso-Durruty, and part of the Amerind Seminar Program. University of Arizona Press: Tuscon, AZ.

N. Burt and **Greenwald, A.M.** 2022. Isotopic reconstruction of ancient human diet and health: implications for evolutionary medicine. In *Evolving Health: Palaeopathology and Evolutionary Medicine*. Oxford University Press. [Equal co-authorship]

Burns, G.R. and **A.M. Greenwald**. 2016. Reconstructing Past Lifeways: Applying Behavioral Ecological Models and Isotopic Analysis to the Archaeological Record. In *Reconstructing Lifeways in Ancient California: Stable Isotope Evidence of Foraging Behavior, Life History Strategies, and Kinship Patterns, edited by A.M. Greenwald and G.R. Burns. Center for Archaeological Research at Davis, Publication 18, Davis, California.*

Greenwald, A.M., A. DeGeorgey, M.C. Martinez, J.W. Eerkens, E.J. Bartelink, D. Simons, C. Alonzo, R. Garibay. 2016. Maternal Time Allocation and Parental Investment in an Intensive Hunter-Gatherer Subsistence Economy. In *Reconstructing Lifeways in Ancient California: Stable Isotope Evidence of Foraging Behavior, Life History Strategies, and Kinship Patterns*, edited by A.M. Greenwald and G.R. Burns. Center for Archaeological Research at Davis, Publication 18, Davis, California.

Greenwald, A.M., J.W. Eerkens, E. Bartelink, A. Leventhal, and R. Cambra. 2016. Stable Isotope Evidence of Episodic Access to Marine Resources in the Santa Clara Valley. In *Reconstructing Lifeways in Ancient California: Stable Isotope Evidence of Foraging Behavior, Life History Strategies, and Kinship Patterns, edited by A.M. Greenwald and G.R. Burns. Center for Archaeological Research at Davis, Publication 18, Davis, California.*

Book Reviews

A.M. Greenwald. 2018. Fierce and Indomitable: The Protohistoric Non-Pueblo World in the American Southwest. *California Archaeology* 10(1):83-85.

PUBLISHED ABSTRACTS

A.M. Greenwald, A. Niclou, C. Ocobock, H. Kievman, A. Baka, A.J. Baide. 2023. The costs of women's work: maternal foraging energetics in an acorn subsistence economy. *American Journal of Biological Anthropology*.

Martinez, M.C., **A.M. Greenwald,** D.E. Blom, and K. Knudson. 2020. Dietary Diversification Across the Tiwanaku Polity: Isotopic Paleodietary Reconstructions Using Sequential Sampling of Dentinal Collagen and Bayesian Methods. *American Journal of Physical Anthropology* 171:175-176.

A.M. Greenwald, D. Blom, and K. Knudson. 2019. Stable Isotope Measures of Weaning Age and Early Childhood Diet in the Ancient Andes: Variation in Early Life Experiences and Health Outcomes across Status and Sex in Tiwanaku-Affiliated Sites in Peru and Bolivia. *American Journal of Physical Anthropology* 168:91.

A.M. Greenwald. 2018. Reproductive and parental investment strategies in ancient California huntergatherers. *American Journal of Physical Anthropology* 165:105-106.

MANUSCRIPTS IN PREPARATION

Greenwald, A.M., J.W. Eerkens, and E.J. Bartelink. Archaeological evidence of the quantity versus quality tradeoff in hunter-gatherers: stable isotope evidence of weaning age in prehistoric Central Californians.

Greenwald, A.M., J.W. Eerkens, and E.J. Bartelink. Parental provisioning and independent child foraging among California hunter-gatherers.

Greenwald, A.M, B. Scaffidi, T. Tung, and K. Knudson. Weaning age and sex-based parental investment strategies in the Majes Valley, Peru.

GRANTS AND FELLOWSHIPS

Evtornal

External	
2021-2024	National Endowment for the Humanities American Rescue Plan funding for <i>Native Voices</i> ethnographic work among Utah's tribes - \$500,000
2013-2017	Dissertation Funding through National Science Foundation BCS-1318532 - \$60,000
Internal	
2022	Early Career Scholar Travel Grant, Department of Anthropology, Duke University - \$500
2022	Center for Bioarchaeological Research (ASU) Research Grant (with co-PIs Kelly Knudson and Marcos Martinez) - \$7,000
2021	Center for Bioarchaeological Research (ASU) Research Grant (with co-PIs Kelly Knudson and Marcos Martinez) - \$5,000
2020-2022	Robin Woods Grant for Future Scientists (funding for undergraduate internships) - \$12,000
2020-2022	1U4U Innovation Funding, University of Utah - \$30,000
2017-2019	Postdoctoral Research Fellowship, Center for Evolution and Medicine, Arizona State University - \$140,000
2016-2017	Kautz Fellowship, University of California, Davis - \$33,000

PENDING AND SUBMITTED GRANTS

External

- 2024 "Before the Bay: Reconstructing Pleistocene-Holocene Lifeways at *Mánni Húyyú Muwékma Yatiš Túnnešte-tka,"* NSF Biological Anthropology \$329,000 [PENDING]
- 2023 "What's Cooking? Experimental Archaeometry with Indigenous Communities," NSF Postdoctoral Fellowship with Dr. Jennifer Chen (PI) \$160,000 [PENDING]
- 2022 "Epidemic-Driven Mortality and Parental Investment in Holocene Europe," NSF Biological Anthropology, with Dr. Rick Paine (Co-PI) \$446,000 [NOT FUNDED]
- 2020 NSF Postdoctoral Fellowship with Drs. Colleen Young (PI) and Shane MacFarlan (Co-PI) \$138,000 [NOT FUNDED]

Internal

2020 CSBS SEED Grant, "Ancient Disease Epidemics: Impacts on Reproductive Strategies and Demographics" with Dr. Rick Paine - \$25,000 [NOT FUNDED]

AWARDS

2023 Award for Excellence, Utah Museum Association

INVITED LECTURES

Greenwald, A.M. 2024. *Indigenous Cradle Technology and Maternal Foraging Energetics*. Women in Nature & Science event, Natural History Museum of Utah.

Greenwald, A.M. 2023. *Career and Research Possibilities in Archaeological Science*. Science Research Initiative, University of Utah.

Greenwald, A.M. 2023. *California Basketry Cradles, Foraging, and Maternal Time Allocation Trade-offs,* Yosemite National Park Resource Management and Science speaker series.

Greenwald, A.M. 2022. *The Resilience of the Mother-Infant Dyad* [Plenary talk], Society for California Archaeology annual meeting.

Greenwald, A.M. 2021. *Mothering in the Past.* Natural History Museum of Utah "Curatorial Breakfast," University of Utah.

Greenwald, A.M. 2020. *Parenting in Ancient North America*. Natural History Museum of Utah Lecture Series, University of Utah.

Greenwald, A.M. 2019. *Indigenous Cradle Technology.* Natural History Museum of Utah "Museum Moment," University of Utah.

Greenwald, A.M. 2019. *Life History Strategies Among Ancient California Foragers: Implications for population growth, resource intensification, and socio-political organization.* Department of Anthropology, University of Utah.

Greenwald, A.M. 2019. *Childhood in Ancient California*. Natural History Museum of Utah, University of Utah.

Greenwald, A.M. 2019. Reproductive and Parental Investment Strategies in the Face of Climate Change and Social Inequality in Two Ancient Populations. Department of Anthropology, University of California, Riverside.

Greenwald, A.M. 2019. *Ancient Lives Under the Microscope: Expanding Archaeology with Chemistry*. Osher Lifelong Learning Institute, at Deer Valley Petroglyph Preserve, Arizona State University.

Greenwald, A.M. 2018. *Evolutionary Insights into Breastfeeding from Archaeological Populations.* Center for Evolution and Medicine Seminar, Arizona State University.

Greenwald, A.M. 2018. *Weaning Age and Childhood Diet Among Ancient California Foragers*. Department of Anthropology, Penn State University.

Greenwald, A.M. 2017. *Parental Investment Strategies and Women's Foraging Efficiency in Central California*. Occasional Speaker Series, Far Western Anthropological Research Group, Davis, California.

Greenwald, A.M. 2017. Reconstructing Weaning Age and Childhood Diet: Life History Strategies and Implications for Demographics, Resource Intensification, and Social Organization in Ancient California. Evolutionary Anthropology Colloquium, Department of Anthropology, University of California, Davis.

Greenwald, A.M. 2016. *Teaching STEM Through Archaeology*. Half-day seminar for the STEM Teachers Academy, University of California, Davis School of Education and the Sacramento County Office of Education.

Greenwald, A.M. 2016. *Breastfeeding, Weaning, and Early Childhood Diet Among Prehistoric California Hunter-Gatherers*. Program in International and Community Nutrition Seminar, Department of Nutrition, University of California, Davis.

SELECTED PRESENTATIONS

Greenwald, A.M. 2024. Behavioral Ecology and Cultural Transmission of Basketry Cradle Technology Across the Great Basin and Sierra Nevada. Society for California Archaeology Annual Meeting.

Greenwald, A.M. and O. Masters. 2023. *Native Voices Initiative: Centering Indigenous Knowledge in the Anthropology Collections at the Natural History Museum of Utah.* American Association of Museums Annual Meeting.

Greenwald, A.M., A. Niclou, H.T. Kievman, G.R. Burns, A. Baka, A.J. Baide, and C. Ocobock. 2023. *Maternal foraging energetics in an acorn subsistence economy*. Society for California Archaeology Annual Meeting.

Greenwald, A.M., A. Merryweather, J. Herridge, A. Anderson, D. Carrier, G.R. Burns, C. McAllister, H.T. Kievman, and M. Weahkee. 2023. *Ancestral Puebloan Running and Walking Biomechanics*. Society for American Archaeology Annual Meeting.

Greenwald, A.M., C. Ocobock, A. Niclou, G.R. Burns, A. Baka, H.T. Kievman, and A.J. Baide. 2023. *The costs of women's work: maternal foraging energetics in an acorn subsistence economy.* American Association of Biological Anthropologists Annual Meeting.

Masters, O. and **A.M. Greenwald**. 2023. *Centering Indigenous Knowledge in Anthropology Collections*. American Alliance of Museums Annual Meeting.

Greenwald, A.M., G.R. Burns, A. Baka, H.T. Kievman, A.J. Baide. 2022. *Infant Carrying Technology and Maternal Foraging Efficiency*. Energetics in Anthropology, Duke University.

Greenwald, A.M., A. Merryweather, J. Herridge, A. Anderson, D. Carrier, G.R. Burns, and M. Weahkee. 2021. *Leveraging Prehistoric Footwear to Reconstruct Ancient Running Biomechanics*. Paper presented at the Great Basin Anthropological Conference Biannual Meeting.

Greenwald, A.M. 2021. Women's Time Allocation Trade-Offs in an Intensive Foraging Economy Led to Future Discounting Reproductive Behavior. Paper presented at the Society for American Archaeology 85th Annual Meeting.

Greenwald, A.M., C. Whelan, and G.R. Burns. 2021. *Quantifying Technological Mediation of Maternal Foraging Efficiency and Metabolic Expenditures During Acorn Gathering*. Paper presented at the Society for California Archaeology annual meeting.

Greenwald, A.M., B. Scaffidi, and K. Knudson. 2019. Parental investment in a high-stress environment: weaning age and early childhood diet in the Majes Valley, Arequipa, Peru. Paper presented at the Society for American Archaeology 84th Annual Meeting, Albuquerque, NM.

Greenwald, A.M. 2019. *Mediating Women's Time Allocation Trade-offs: California Basketry Cradle Technology and Maternal Foraging Efficiency*. Paper presented at the Society for California Archaeology annual meeting, Sacramento, CA.

Greenwald, A.M. and K. Hinde. 2018. *Evolutionary Insights into Breastfeeding from an Archaeological Hunter-Gatherer Population*. Paper presented at the 4th Annual meeting of the International Society for Evolution, Medicine, & Public Health.

Greenwald, A.M. 2018. Reproductive and parental investment strategies in ancient California huntergatherers. Paper presented at the American Association of Physical Anthropologists annual meeting, Austin, Texas.

Greenwald, A.M. 2018. *Childhood Diets in Central California: Gendered Foraging Roles and Diet Breadth Expansion*. Paper presented at the Society for California Archaeology annual meeting, San Diego, California.

Greenwald, A.M. 2017. *Shifts in sex-biased parental investment in the face of climate change among ancient Californians*. Poster presented at the Western Bioarchaeological Group annual meeting, University of Nevada, Reno.

Greenwald, A.M. 2017. Fertility in Ancient California: Life History Strategies and Implications for Demographics, Resource Intensification, and Social Organization. Paper presented at the Society for American Archaeology 82nd Annual Meeting, Vancouver, B.C., Canada.

Greenwald, A.M. 2016. *Mediating Women's Time Allocation Trade-offs: Basketry Cradle Technology in the Great Basin and California*. Paper presented at the Great Basin Anthropological Conference, Reno, NV.

Greenwald, A.M., J.W. Eerkens, A. Leventhal, and R. Cambra. 2016. *Sex-Biased Parental Investment and Female Wealth Accumulation in the Santa Clara Valley*. Paper presented at the Society for California Archaeology Data Sharing meeting, Plymouth, CA.

Greenwald, A.M. 2016. *Parental Investment Strategies Among Hunter-Gatherers in Prehistoric California*. Paper presented at the California Workshop on Evolutionary Social Sciences, San Luis Obispo, CA.

Greenwald, A.M., A. DeGeorgey, M.C. Martinez, J.W. Eerkens, and E.J. Bartelink. 2016. *Women's Labor, Breastfeeding, and Population Growth on the San Francisco Bayshore*. Paper presented at the Society for California Archaeology annual meeting, Ontario, CA.

Greenwald, A.M., G.R. Burns, J.W. Eerkens, E.J. Bartelink. 2015. *A multi-scalar reassessment of dietary isotopic variability*. Paper presented at the Western Bioarchaeological Group annual meeting, Arizona State University.

Greenwald, A.M. and J.W. Eerkens. 2015. *Stable Isotope Measures of Childhood Diet and Independent Child Foraging in Prehistoric Central California*. Paper presented at the Society for American Archaeology annual meeting, San Francisco, CA.

Greenwald, A.M. and J.W. Eerkens. 2014. *Extrinsic Risk and Age at First Reproduction in Prehistoric Central California During the Medieval Climatic Anomaly*. Paper presented at the Society for California Archaeology Annual Meeting, Visalia, CA.

Greenwald, A.M. and J.W. Eerkens. 2013. *Parental Investment Strategies in the Middle-Late Transition in Central California: Stable Isotope Estimates of Weaning and Early Childhood Diet*. Paper presented at the Society for California Archaeology Annual Meeting, Berkeley, CA.

ORGANIZED SYMPOSIA

Greenwald, A.M. and C.S. Whelan. 2021. *Recent Research in Behavioral Ecologically-Focused Experimental Archaeology*. Society for California Archaeology Annual Meeting.

Greenwald, A.M., C.S. Whelan, and G.R. Burns. 2018. *Beyond Foraging: Modeling intensification, territoriality, technology, and the sexual division of labor in prehistory.* Society for California Archaeology Annual Meeting.

Greenwald, A.M. and G.R. Burns. 2017. *Ancient California: Reconstructing Lifeways with Behavioral Ecology Models*. Society for American Archaeology Annual Meeting.

Greenwald, A.M., C.S. Whelan, and G.R. Burns. 2017. *Reconstructing Prehistoric California Lifeways with Evolutionary and Behavioral Ecology Models*. Society for California Archaeology Annual Meeting.

Greenwald, A.M. and G.R. Burns. 2015. *Archaeometric Applications for Reconstructing Past Lifeways in Prehistoric California*. Society for California Archaeology Annual Meeting.

MENTORSHIP

PhD Thesis

Abby Baka, University of Utah, Anthropology, Ongoing, (Committee Chair)

Hayley Kievman, University of Utah, Anthropology, Ongoing, (Committee Chair)

A. Ja'net Baide, University of Utah, Anthropology, Ongoing, (Committee Chair)

Marcos Martinez, Arizona State University, School of Human Evolution and Social Change, Ongoing (Committee Member)

MA/MS Thesis

Olivera Masters, University of Utah, Anthropology, Ongoing, (Committee Chair)

Abby Baka, University of Utah, Anthropology, 2022, (Committee Chair)

Hayley Kievman, University of Utah, Anthropology, 2022, (Committee Chair)

Marcos Martinez, Arizona State University, School of Human Evolution and Social Change, 2021 (Committee Member)

TEACHING

Instructor

Spring 2024, University of Utah

ANTH 2030 Archaeological Science

Spring 2023, University of Utah

ANTH 2030 Archaeological Science

Spring 2022, University of Utah

ANTH 2030 Archaeological Science

Spring 2021, University of Utah

ANTH 2030 Archaeological Science

Fall 2016, University of California, Davis

Behavioral and Evolutionary Biology of the Human Lifecycle

Spring 2014, University of California, Davis

Cultural Resource Management Law and the NRHP Process

SERVICE

2023-present	Committee member, Task Force for Repatriation & Data Stewardship, University of Utah
2022-2023	Search committee member (Human Biology), Department of Anthropology, University of Utah
2021-present	Committee member, Equity, Diversity, and Inclusion Committee, Department of Anthropology, University of Utah.
2020-present	Committee member, Indigenous Advisory Committee, University of Utah.
2019	Faculty/curator search committee member (Curator of Education), Natural History Museum of Utah, University of Utah
2018-present	Editorial board member, Journal of California Archaeology
2016-2017	Archaeology faculty search committee member, Department of Anthropology, University of California, Davis
2014-2017	Vice President and Senior Editor, Center for Archaeological Research at Davis (CARD)
2012-2017	Outreach Volunteer, UC Davis Anthropology Museum Outreach Program
2014-2016	Volunteer Backcountry Archaeologist, Yosemite National Park
2015-2016 Davis	Vice President, Anthropology Graduate Student Association, University of California,
2014-2015	Secretary, Anthropology Graduate Student Association, University of California, Davis
2013-2014	President, Anthropology Graduate Student Association, University of California, Davis

AD HOC REVIEWER

Plos One

Journal of Archaeological Science

American Journal of Biological Anthropology

American Antiquity

Journal of California and Great Basin Anthropology

Arctic Anthropology

PROFESSIONAL MEMBERSHIP

American Association of Biological Anthropologists

Great Basin Anthropological Association

International Society for Evolution, Medicine & Public Health

Society for American Archaeology

Society for California Archaeology

NON-ACADEMIC EMPLOYMENT

2016-2017	On-call Archaeologist, Far Western Anthropological Research Group, Inc., Davis, CA
2016-2017	On-call Archaeologist, Stantec Consulting, Sacramento, CA
2011-2014	Archaeologist/On-call Archaeologist, URS Corporation, Oakland, CA
2007-2011	Archaeologist, LSA Associates, Inc., Pt. Richmond, CA
2005-2007	Assistant Statistician, First 5 Alameda County, San Leandro, CA
2003-2005	Assistant Field Biologist, Merritt Smith Consulting, Lafayette, CA