

# R. Kyle Bocinsky, PhD · *biographical sketch*

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## Contact Information

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Missoula, MT 59803

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## Research Interests

*Computational social science • human dimensions of climate change • paleo-environments  
complex systems • plant and animal domestication • Indigenous ecologies • reproducibility*

## Education

**Washington State University**, Pullman, Washington  
PhD, Anthropology, December 2014  
Dissertation title: *Landscape-based Null Models for Archaeological Inference*  
Committee: Timothy Kohler (chair), Jade d'Alpoim Guedes, Andrew Duff, and Colin Grier  
  
MA, Anthropology, May 2011  
Thesis title: *Is a Bird in Hand Really Worth Two in the Bush? Models of Domestication on the Colorado Plateau*  
Committee: Timothy Kohler (chair), Andrew Duff, Donna Glowacki, and Brian Kemp  
  
**University of Notre Dame**, Notre Dame, Indiana  
Glynn Family Honors Program, 2004–2008  
BA, Anthropology, May 2008  
Thesis title: *Rodent Stable Carbon-isotope Ratios as a Measure of Maize Production*  
Advisor: Mark Schurr

## Appointments

**University of Montana**, Missoula, Montana  
Jan 2021–Present Director of Climate Extension, Montana Climate Office  
Aug 2020–Dec 2020 Research Affiliate, Montana Climate Office  
Jan 2018–Jul 2020 Research Associate, Montana Climate Office  
  
**Crow Canyon Archaeological Center**, Cortez, Colorado  
Jan 2021–Present Research Associate  
Aug 2018–Dec 2020 Director of the Research Institute  
William D. Lipe Chair in Research  
Jan 2017–July 2018 Research Associate  
Jan 2016–Dec 2016 Director of Sponsored Projects  
  
**Desert Research Institute**, Reno, Nevada  
June 2017–Present Hourly Assistant Research Professor,  
Division of Earth and Ecosystem Sciences  
  
**Washington State University**, Pullman, Washington  
Jan 2016–Dec 2020 Adjunct Research Faculty, Department of Anthropology  
Jan 2015–Dec 2015 Post-doctoral Researcher, Department of Anthropology  
Aug 2014–Dec 2014 Teaching Assistant, Department of Anthropology  
Aug 2009–Jul 2014 Research Fellow, Department of Anthropology  
Aug 2008–Jul 2009 Research Assistant, Department of Anthropology

## Grants, Honors, & Awards

**Co-PD, TCU Missouri River Watershed Consortium** (with Nueta Hidatsa Sahnish College, New Town, North Dakota)  
2021–2023 United States Department of Agriculture, National Institute of Food and Agriculture, *Tribal Colleges Research Grants Program* (2021-38424-34953).  
\$220,000 awarded to NHSC/UM

**Co-PD, All Climate is Local: 'Multiple ways of knowing' to enhance resilience of tribal agroecosystems to droughts, floods, and rising temperatures**

2021–2023 United States Department of Agriculture, National Institute of Food and Agriculture (2021-67019-33420).  
\$49,998 awarded to DRI

**Co-PD, COVID-19 Rapid Response Toolkit for Tribal Extension Agents**

2020–2023 United States Department of Agriculture, National Institute of Food and Agriculture (2020-68008-32762).  
\$300,000 awarded to DRI/CCAC

**Co-PD, Teaching Native Waters: Place-based Community of Practice for STEM Teachers Serving Native American Students**

2020–2022 United States Department of Agriculture, National Institute of Food and Agriculture, *Women and Minorities in Science, Technology, Engineering, and Mathematics* (WAMS) program (2020-38503-31952).  
\$99,998 awarded to DRI/CCAC

**Project Manager, The Maize Database Project**

2019–2022 History Colorado — State Historical Fund (2019-M2-001).  
\$34,912 awarded to CCAC

**Co-PD, Improving the Efficacy of Climate Information for Water Use Decisions: Developing, Testing, and Institutionalizing New Tools for Producers**

2018–2021 United States Department of Agriculture, National Institute of Food and Agriculture, Agriculture and Food Research Initiative program area special competition, *Water for Agriculture: Understanding Decisions and Behaviors Connected with Agriculture and Post-harvest Processing Industry Water Use* (2017-67027-26313).  
\$462,539 awarded to UM

**Co-PI, Developing and Deploying SKOPE—**

**A resource for Synthesizing Knowledge of Past Environments**

2016–2021 National Science Foundation special competition, *Resource Implementations for Data Intensive Research in the Social Behavioral and Economic Sciences* (SMA-1637171).  
\$254,189 awarded to WSU/CCAC, \$1,339,658 total

**Co-PD, Native Waters on Arid Lands: Enhancing Climate Resiliency & Agriculture on American Indian Land**

2015–2020 United States Department of Agriculture, National Institute of Food and Agriculture, Agriculture and Food Research Initiative program area special competition, *Water for Agriculture* (2015-69007-23190).  
\$2,516,844 awarded to the University of Nevada, Reno

**Cordell Prize**

2015 Pecos Conference, Mancos, Colorado  
Awarded for the best extemporaneous talk presented by an archaeologist 35 years of age or younger

**Graduate Achievement Award in the Social Sciences at the Doctoral Level**

2014 College of Arts and Sciences, Washington State University  
Awarded to a doctoral student for outstanding academic performance, achievements in research, scholarly, and/or creative activity, and contributions or service to the social sciences, the college and the institution during their advanced degree studies at Washington State University

**R.E. Taylor Student Poster Award**

2013 Society for Archaeological Science  
Award for the best student research poster presented at the Society for American Archaeology

meetings displaying innovative contributions to archaeological research through the use of scientific methods

**NSF Graduate Research Fellowship**

2010–2015 National Science Foundation (DGE-1347973)

\$92,000 stipend and \$32,000 cost-of-education allowance over three years

**IGERT Program in Evolutionary Modeling Traineeship**

2009–2011 National Science Foundation (DGE-0549425)

\$60,000 stipend and \$20,000 cost-of-education allowance over two years

**Elaine Burgess Graduate Fellowship in Anthropology**

2011 Department of Anthropology, Washington State University, \$1,000

**Nicholas Michael Scoales Scholarship in Archaeology**

2009 Department of Anthropology, Washington State University, \$1,000

**The Rev. Raymond W. Murray, C.S.C. Award in Anthropology**

2008 Department of Anthropology, University of Notre Dame

Awarded to the top graduating senior for exemplary work in anthropology

**Peer-reviewed  
Articles**

Hoylman, Zachary Harwood, **R. Kyle Bocinsky**, and Kelsey G. Jencso

(In review) Drought assessment has been outpaced by climate change: Empirical arguments for a paradigm shift. *Nature Communications*.

Bird, Darcy, Lux Miranda, Marc Vander Linden, Erick Robinson, **R. Kyle Bocinsky**, Christopher Nicholson, José Capriles, Judson Finley, Eugenia Gayo, Adolfo Gil, Jade d'Alpoim Guedes, Julie Hoggarth, Andrea Kay, Emma Loftus, Umberto Lombardo, Madeline Mackie, Dr Alessio Palmisano, Dr Steinar Solheim, Robert Kelly, and Jacob Freeman

(In press) p3k14c: A synthetic global database of archaeological radiocarbon dates. *Nature Scientific Data*.

Price, Michael Holton, José M. Capriles, Julie A. Hoggarth, **R. Kyle Bocinsky**, Claire E. Ebert, and James Holland Jones

2021 End-to-end Bayesian analysis for summarizing sets of radiocarbon dates. *Journal of Archaeological Science* 135: 105473.

<https://doi.org/10.1016/j.jas.2021.105473>

Alam, Ornob, Rafal M. Gutaker, Cheng-chieh Wu, Karen A. Hicks, **R. Kyle Bocinsky**, Cristina Cobo Castillo, Stephen Acabado, Dorian Fuller, Jade A. d'Alpoim Guedes, Yue-ie Hsing, and Michael D. Purugganan

2021 Genome analysis traces regional dispersal of rice in Taiwan and Southeast Asia. *Molecular Biology and Evolution*: msab209.

<https://doi.org/10.1093/molbev/msab209>

Scheffer, Marten, Egbert H. van Nes, Darcy Bird, **R. Kyle Bocinsky**, and Timothy A. Kohler

2021 Loss of resilience preceded transformations of pre-Hispanic Pueblo societies. *Proceedings of the National Academy of Sciences* 118(18): e2024397118.

<https://doi.org/10.1073/pnas.2024397118>

Smith, Ada P., Laurie Yung, Adam Snitker, **R. Kyle Bocinsky**, Elizabeth Covelli Metcalf, and Kelsey Jencso

2021 Scalar mismatches and underlying factors for underutilization of climate information: Perspectives from farmers and ranchers. *Frontiers in Climate* 3: 29 pages.

<https://doi.org/10.3389/fclim.2021.663071>

Robinson, Erick, **R. Kyle Bocinsky**, Darcy Bird, Jacob Freeman, and Robert L. Kelly

2020 Dendrochronological dates confirm a Late Prehistoric population decline in the American Southwest derived from radiocarbon dates. *Philosophical Transactions of the Royal Soci-*

ety B 376: 20190718.  
<https://doi.org/10.1098/rstb.2019.0718>

Strawhacker, Colleen, Grant Snitker, Matthew A. Peeples, Ann P. Kinzig, Keith W. Kintigh, **R. Kyle Bocinsky**, Brad Butterfield, Jacob Freeman, Sarah Oas, Margaret C. Nelson, Jonathan A. Sandor, Katherine A. Spielmann

2020 A landscape perspective on climate-driven risks to food security: Exploring the relationship between climate and social transformations in the Prehispanic U.S. Southwest. *American Antiquity* 85(3): 427–451.

<https://doi.org/10.1017/aaq.2020.35>

Gutaker, Rafal M., Simon C. Groen, Emily S. Bellis, Jae Y. Choi, Inês S. Pires, **R. Kyle Bocinsky**, Emma R. Slayton, Olivia Wilkins, Cristina C. Castillo, Sónia Negrão, M. Margarida Oliveira, Dorian Q. Fuller, Jade A. d'Alpoim Guedes, Jesse R. Lasky, and Michael D. Purugganan

2020 Genomic history and ecology of the geographic spread of rice. *Nature Plants* 6: 492–502.

<https://doi.org/10.1038/s41477-020-0659-6>

Grimstead, Deanna N., Matthew C. Pailles, and **R. Kyle Bocinsky**

2019 Refining potential source regions via combined maize niche modeling and isotopes: A case study from Chaco Canyon, NM, USA. *Journal of Archaeological Method and Theory* 26(1): 25–51.

<https://doi.org/10.1007/s10816-017-9359-6>

Kohler, Timothy A., Philip I. Buckland, Keith W. Kintigh, **R. Kyle Bocinsky**, Adam Brin, Andrew Gillreath-Brown, Bertram Ludäscher, Timothy M. McPhillips, Rachel Opitz, and Jeffrey Terstriep

2018 Paleodata for and from archaeology. *Past Global Changes Magazine* 26(2): 68–69.

<https://doi.org/10.22498/pages.26.2.68>

d'Alpoim Guedes, Jade, and **R. Kyle Bocinsky**

2018 Climate change stimulated agricultural innovation and exchange across Asia. *Science Advances* 4(10): eaar4491.

<https://doi.org/10.1126/sciadv.aar4491>

d'Alpoim Guedes, Jade and **R. Kyle Bocinsky**

2017 A reply to Bellezza. *Current Anthropology* 58(4): 539–539.

<https://doi.org/10.1086/692996>

**Bocinsky, R. Kyle** and Mark D. Varien

2017 Calibrating Maize Paleoproduction Models using Experimental Data. *Ethnobiology* 37(2): 282–307.

<https://doi.org/10.2993/0278-0771-37.2.282>

Gillreath-Brown, Andrew and **R. Kyle Bocinsky**

2017 A Dialogue Between Empirical and Model-Based Agricultural Studies in Archaeology. *Ethnobiology* 37(2): 167–171.

<https://doi.org/10.2993/0278-0771-37.2.167>

Crabtree, Stefani A., **R. Kyle Bocinsky**, Paul L. Hooper, Susan C. Ryan, and Timothy A. Kohler

2017 How to make a polity (in the central Mesa Verde region). *American Antiquity* 82(1): 71–95.

<https://doi.org/10.1017/aaq.2016.18>

d'Alpoim Guedes, Jade, Stefani A. Crabtree, **R. Kyle Bocinsky**, and Timothy A. Kohler

2016 21<sup>st</sup> century approaches to ancient problems: Climate and society. *Proceedings of the National Academy of Sciences* 113(51): 14483–14491.

<https://doi.org/10.1073/pnas.1616188113>

- d'Alpoim Guedes, Jade, Sturt Manning, and **R. Kyle Bocinsky**  
 2016 A 5,500-year model of changing crop niches on the Tibetan Plateau. *Current Anthropology* 57(4): 6 pages.  
<https://doi.org/10.1086/687255>
- Van Dyke, Ruth M., **R. Kyle Bocinsky**, Tucker Robinson, and Thomas C. Windes  
 2016 Great houses, shrines, and high places: Intervisibility in the Chacoan World. *American Antiquity* 81(2): 205–230.  
<https://doi.org/10.7183/0002-7316.81.2.205>
- Bocinsky, R. Kyle**, Johnathan Rush, Keith W. Kintigh, and Timothy A. Kohler  
 2016 Exploration and exploitation in the macrohistory of the pre-Hispanic Pueblo Southwest. *Science Advances* 2(4): e1501532.  
<https://doi.org/10.1126/sciadv.1501532>
- Schwindt, Dylan M., **R. Kyle Bocinsky**, Scott G. Ortman, Donna M. Glowacki, Mark D. Varien, and Timothy A. Kohler  
 2016 The social consequences of climate change in the Central Mesa Verde region. *American Antiquity* 81(1): 74–96.  
<https://doi.org/10.7183/0002-7316.81.1.74>
- Lipe, William D., **R. Kyle Bocinsky**, Brian S. Chisholm, Robin Lyle, David M. Dove, RG Matson, Elizabeth Jarvis, Kathleen Judd, and Brian M. Kemp  
 2016 Cultural and genetic contexts for early turkey domestication in the northern Southwest. *American Antiquity* 81(1): 97–113.  
<https://doi.org/10.7183/0002-7316.81.1.97>
- d'Alpoim Guedes, Jade, Guiyun Jin, and **R. Kyle Bocinsky**  
 2015 The impact of climate on the spread of rice to North-eastern China: A new look at the data from Shandong Province. *PLoS ONE*. 30 June 2015.  
<https://doi.org/10.1371/journal.pone.0130430>
- d'Alpoim Guedes, Jade, **R. Kyle Bocinsky**, and Ethan E. Butler  
 2015 Comment on "Agriculture facilitated permanent occupation of the Tibetan Plateau after 3600 B.P." *Science* 348: 872.  
<https://doi.org/10.1126/science.aaa4819>
- McPhillips, Timothy, Tianhong Song, Tyler Kolisni, Steve Aulenbach, Khalid Belhajjame, **R. Kyle Bocinsky**, et al.  
 2015 YesWorkflow: A User-Oriented, Language-Independent Tool for Recovering Workflow Information from Scripts. *International Journal of Digital Curation* 10(1): 298–313.  
<https://doi.org/10.2218/ijdc.v10i1.370>
- Bocinsky, R. Kyle** and Timothy A. Kohler  
 2014 A 2,000-year reconstruction of the rain-fed maize agricultural niche in the US Southwest. *Nature Communications* 5: 5618.  
<https://doi.org/10.1038/ncomms6618>
- Bocinsky, R. Kyle**  
 2014 Extrinsic site defensibility and landscape-based archaeological inference: An example from the Northwest Coast. *Journal of Anthropological Archaeology* 35: 164–176.  
<https://doi.org/10.1016/j.jaa.2014.05.003>
- Cockburn, Denton, Stefani A. Crabtree, Ziad Kobti, Timothy A. Kohler, and **R. Kyle Bocinsky**  
 2013 Simulating Social and Economic Specialization in Small-scale Agricultural Societies. *Journal of Artificial Societies and Social Simulation* 16(4): 4.  
<https://doi.org/10.18564/jasss.2308>
- Kohler, Timothy A., **R. Kyle Bocinsky**, Denton Cockburn, Mark D. Varien, Stefani A. Crabtree, Ken-

neth E. Kolm, Schaun M. Smith, and Scott G. Ortman  
2012 Modelling Prehispanic Pueblo Societies in their Ecosystems. *Ecological Modelling* 241: 30–41.  
<https://doi.org/10.1016/j.ecolmodel.2012.01.002>

Kohler, Timothy A., Denton Cockburn, Paul L. Hooper, **R. Kyle Bocinsky** and Ziad Kobti  
2012 The coevolution of group size and leadership: An agent-based public goods model for Prehispanic Pueblo societies. *Advances in Complex Systems* 15(1–2): 29 pages.  
<https://doi.org/10.1142/S0219525911003256>.

## Software

\* peer-reviewed  
c on CRAN

\*c Bevan, Andrew, Enrico Crema, **R. Kyle Bocinsky**, Martin Hinz, Philip Riris, and Fabio Silva  
2020 *rcarbon: Calibration and Analysis of Radiocarbon Dates*. R package version 1.4.1 <https://github.com/a>

\*c **Bocinsky, R. Kyle**  
2020 *FedData: Functions to Automate Downloading Geospatial Data Available from Several Federated Data Sources*. R package version 3.0.0 <https://github.com/bocinsky/FedData>.

**Bocinsky, R. Kyle**

2020 *thredds: Access to THREDDS Servers*. R package version 0.0.1 <https://github.com/bocinsky/thredds>.

**Bocinsky, R. Kyle**, Dylan Beaudette, and Scott Chamberlain

2020 *mcOR: The core Montana Climate Office R package*. R package version 0.2.0 <https://github.com/mt-climate-office/mcor>.

\* Price, Michael Holton and **R. Kyle Bocinsky**

2020 *baydem: Bayesian Tools for Reconstructing Past and Present Demography*. R package version 0.1.0 <https://github.com/eehh-stanford/baydem>.

**Bocinsky, R. Kyle**

2019 *demdrainer: Drain Your Dammed DEMs*. R package version 0.1.0 <https://github.com/bocinsky/demdrainer>.

**Bocinsky, R. Kyle**

2019 *tdar: R Bindings to the Digital Archaeological Record (tDAR) API*. R package version 0.1.0 <https://github.com/bocinsky/tdar>.

**Bocinsky, R. Kyle**

2019 *treecats: Tree-like Factors in R*. R package version 0.1.0 <https://github.com/bocinsky/treecats>.

\* **Bocinsky, R. Kyle**

2017 *paleocar: Paleoclimate Reconstruction from Tree Rings using Correlation Adjusted correlation*. R package version 3.3.0. <https://github.com/bocinsky/paleocar>

## Computer Experience

*Statistical Packages:* R, SAS, Stata

*Languages:* R, Java, Javascript, Python, C++, Objective C

*Applications:* ArcGIS, GRASS GIS, QGIS, MS Office, Adobe Illustrator, Final Cut Pro, L<sup>A</sup>T<sub>E</sub>X

*Web Frameworks:* Flask, Bootstrap, Jekyll, Liquid, Shiny

*Agent Based Modeling Frameworks:* RePAST (J, S), Swarm

*Version Control:* Git, Subversion

*Operating Systems:* macOS, Windows, Linux