Heather Anu Kramer

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EDUCATION

PhD University of California Berkeley May 2016
Environmental Science, Policy, and Management (ESPM)
Not seeing the forest for the points: Novel LiDAR metrics elucidate forest structure and increase LiDAR usability by managers
Certificate in Teaching and Learning in Higher Education
Outstanding Graduate Student Instructor Award

Grinnell College, Grinnell, IA May 2009
Double Major in Biology and Anthropology with highest honors
Multi-scale ecological niche modeling

HONORS, SCHOLARSHIPS & GRANTS

National Science Foundation Graduate Research Fellowship Program ($130,000)	2012-2015
UC Laboratory Fees Research Program ($218,000)	2012-2014
UC Berkeley Outstanding Graduate Student Instructor Award ($250)	2013
California Nevada Hawaii Forest Fire Council Scholarship ($1,000)	2010
USFS Certificate of Merit; Davis, CA	2010
USFS Certificate of Merit; Georgetown, CA	2009
Grinnell College Luebben Anthropology Award	2009
Grinnell College Honors in Biology & Anthropology	2009
Grinnell College Mortar Board	2008-2009
Grinnell College Trustee Honor Scholarship	2005-2009

RESEARCH EXPERIENCE

Postdoctoral Research Associate: University of Wisconsin, Madison, WI 2016-present
SILVIS Lab, Dept. of Forest and Wildlife Ecology
Investigate wildland fire risk in the wildland urban interface across the US
Examine housing rebuilding after wildfire
Collaborate with researchers and agencies

Private Contractor: Deer Creek Resources, Orleans, CA 2015-2016
Revise LiDAR field plot protocol to meet multiple objectives
Facilitate compromise between differing viewpoints under deadline pressure
Develop tablet-based data entry form, train crew in its use, & respond to issues
Derive LiDAR-based predictions of forest metrics based on plot data

Dissertation Research: University of California at Berkeley, Berkeley, CA 2010-2016
Department of Environmental Science, Policy, and Management
Set up LiDAR plot network & develop plot collection protocol
Develop & build novel sampling protocol & measurement tools
Process LiDAR using FUSION & LAStools
Combine diverse databases & create automated error-checking
Perform complex statistical data analyses
Automate ArcMap processes to build & update multiple complex ArcPython scripts
Collaborate with multiple researchers, agencies, & partners to produce useful products

Forestry Technician: Pacific Southwest Research, USFS, Davis, CA 2009-2010
Utilize GIS, database manipulation, & fire modeling programs
Part of the Plumas Lassen Administrative Study, quantifying the change in potential fire behavior resulting from the implementation of various forest treatments

FIELD EXPERIENCE

GIS Technician: Deer Creek Resources, Chico, CA 2015
- Manage GIS trailer on Type 1 wildfire incidents
- Download & incorporate GPS data from fireline field observers
- Make maps on non-negotiable deadlines
- Maintain data libraries, folder structures, equipment & inventories
- Troubleshoot ArcMap, networks, & printer functionality

Participant: TNC Prescribed Fire Training Exchange, NE & CA 2013-2015
- Attend 6 weeks of training over 5 events in diverse locations, fuels, & topographies
- Complete National Wildfire Coordinating Group certification for Firefighter Type II & work on certifications for Fire Effects Monitor, Firefighter Type I, & GIS Specialist
- Learn from & teach participants from government, non-profit, university, & local area
- Train others on how to effectively interact with the media about wildland fire

Forestry Technician: Pacific Southwest Research, USFS, Quincy, CA 2010
- Record forest, shrub, & herbaceous regeneration following high-severity fire

Biological Science Technician: USFS, Georgetown, CA 2009
- Survey for & document reproduction & core use area of Spotted Owls & Goshawks

Archaeology Intern: USFS, Williams, AZ 2007
- Survey for artifacts, map & catalogue sites; incorporate these into a GIS

Archaeological Field School Participant: Grinnell College, Flagstaff, AZ 2006
- Excavate a prehistoric pithouse, map & analyze artifacts, soil, & the house itself

OUTREACH / MENTORING

LiDAR-derived Ladder Fuels; Berkeley, CA 2015
- Mentor 2 undergraduates assisting with photo interpretation, LiDAR analysis, & statistical modeling; Students develop & present a poster

Jepson Herbarium 3-day workshop; Yosemite National Park, CA 2015
- Co-design & lead Wildland Fire workshop for adults

Expanding Your Horizons; Berkeley, CA 2013-2016
- Teach middle school girls about GIS/wildland fire; 1 day yearly

Fire learning rotation; Berkeley, CA, El Cerrito, CA, & Hopland, CA 2012-2016
- Develop multiple hands-on demonstration stations about fire physics & fire ecology & rotate students ages 6-13 through the stations

Bay Area Scientists in Schools; Berkeley, CA & Oakland, CA 2012-2016
- Design 1-hour lesson for 4th graders on fire frequency & severity in the Sierras. Mobilize team of grad & undergrad instructors. Monthly lessons

NatureBridge; San Francisco, CA & Yosemite National Park, CA 2014
- Run interactive fire table at their annual Fundraising Gala in San Francisco; Advise design of new fire-focused facility on Henness Ridge near Yosemite National Park

TEACHING EXPERIENCE

Certificate in Teaching and Learning in Higher Education, UC Berkeley 2015

GIS and Environmental Science: Graduate Student Instructor, UC Berkeley 2015
- Redesign lab & lab introductions to incorporate ArcPython, SQL, & basic coding
- Lead & grade 3 labs; assist with troubleshooting ArcMap issues during all labs

Intro to GIS: Graduate Student Instructor, UC Berkeley 2015
- Help design the course from scratch; Independently develop & lead 9 3-hour labs
- Implement new teaching techniques to engage students with an array of learning styles
- Supervise another student instructor

Wildland Fire Science: Graduate Student Instructor, UC Berkeley 2012-2013
- Organize & facilitate weekly labs; assist with lectures; develop & grade labs & exams
- Lead 2 field labs (Russell Reservation) & assist 1 all-day field trip (Blodgett)
- Facilitate student participation in a prescribed fire at Blodgett Experimental Forest

LEADERSHIP

President, Student Association for Fire Ecology at Berkeley 2015
Treasurer, Student Association for Fire Ecology at Berkeley 2014-2016
Vice President, Student Association for Fire Ecology at Berkeley 2012-2014
Treasurer, Grinnell Mortar Board 2008-2009
Treasurer and Teacher, Grinnell Poi Spinners 2007-2009
Weekend Trip Leader, Grinnell Outdoor Recreation Program 2007-2009
Equipment Room Staff, Grinnell Outdoor Recreation Program 2006-2009
Canoe Trip Leader, Grinnell Outdoor Orientation Program (7-day wilderness trip) 2006-2008
Treasurer, Grinnell Foam Fighting Club 2006-2008
Prepared & managed $1,000/semester budget
Organized, maintained, & purchased equipment & supplies
Coordinated & led equipment building sessions

PRESENTATIONS

Kramer, H.A November 2015. 6th International Fire Ecology and Management Congress, San Antonio, TX. Oral presentation: Estimating ladder fuels: a new approach by land and by air.

Kramer, H.A October 2014. TNC Fire Training Exchange. Oral presentation: LiDAR: an up-and-coming technology for fire modeling.

Kramer, H.A. July 2014. UC Berkeley Forestry Camp. Oral presentation: Introduction to wildland fire science

Kramer, H.A May 2014. Large Wildland Fires Conference, Missoula, MT. Oral presentation: Quantifying Ladder fuels: A new approach using LiDAR.

Kramer, H.A May 2014. FuegoRed conference, Barcelona, Spain. Oral presentation (keynote speaker): Fire in California: Models used and LiDAR contributions; *El fuego en California: Simuladores de comportamiento y aportaciones del LiDAR.*

Kramer, H.A April 2014. Yosemite fire and hydroclimate conference, Yosemite Valley, CA. Oral presentation: Quantifying Ladder fuels: A new approach using LiDAR.

Kramer, H.A, Wilkin, K., December 2013. Lawrence Hall of Science, Berkeley, CA. Oral presentation: Fire in California.

Kramer, H.A December 2012. 5th International Fire Ecology and Management Congress, Portland, Oregon. Oral presentation: What LiDAR metrics are most important for explaining the occurrence of severe wildfire?

Kramer, H.A. September 2011. UC Berkeley LiDAR interest group. Oral Presentation: LiDAR and Potential Dissertation Directions.

Kramer, H.A., and V.M. Eckhart. March 2009. Midwestern Ecology and Evolution Conference, Lincoln, NE. Oral Presentation: Ecological niche modeling at the within-population scale: microtopography controls distribution and performance in the arid-land annual plant *Clarkia xantiana* ssp. *xantiana*.

Kramer, H.A. September and December 2008. Grinnell College, Biology Department, Grinnell, IA. Poster and Oral Presentation: Ecological niche modeling at the within-population scale: microtopography controls distribution and performance in the arid-land annual plant *Clarkia xantiana* ssp. *xantiana*.

Kramer, H.A. November 2008. Intro to GIS class, Grinnell College, Social Studies Department, Grinnell, IA. Oral Presentation: A GIS perspective on ecological niche modeling at the within-population scale.

PUBLICATIONS

Kramer, H.A., Collins, B.M., Kelly, M., Stephens, S.L. *submitted*. Estimating ladder fuels: a new approach by land and by air. *Remote Sensing*.

Kramer, H.A., Collins, B.M., Kelly, M., Stephens, S.L. *submitted*. Accessible LiDAR: estimating large tree density for habitat identification. *Ecosphere*.

Kramer, H.A., Collins, B.M., Kelly, M., Stephens, S.L. 2014. Quantifying ladder fuels: A new approach using LiDAR. *Forests* 5(6):1432-1453.

Collins, B.M., **Kramer, H.A.**, Menning, K., Dillingham, C., Saah, D., Stine, P.A., Stephens, S.L. 2013. Modeling hazardous fire potential within a completed fuel treatment network in the northern Sierra Nevada. *Forest Ecology and Management* 310:156–166.

Kramer, H.A., D.M. Montgomery, V.M. Eckhart, and M.A. Geber. 2011. Environmental and dispersal controls of an annual plant's distribution: how similar are patterns and apparent processes at two spatial scales? *Plant Ecology*, 212(11):1887 - 1899.

SKILLS

LiDAR: FUSION, LASTools, aerial & terrestrial laser scanning, totals station, ground-truth plot design
GIS: GPS, ArcGIS, ArcPython; some familiarity: QGIS, GRASS, ENVI, OBIA, ESRI mobile mapping
Fire Modeling: Forest Veg. Simulator, Farsite, FlamMap, FOFEM, BehavePlus, NEXUS, Fire Fam. Plus
Fire certifications: FFT2 certified, almost FEMO & GISS certified, working on FFT1 (S-131&133)
Programming/Statistics: R, Python, ArcPy
Basic Computer: Excel, Access, Visual Basic, PowerPoint, Word, Illustrator, database management
Field-related: fuels transects, tree inventory, off-road driving, GPS, navigation, plot design

REFERENCES

Dr. Volker Radeloff
Professor, U Wisconsin - Madison
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(608) 263-4349
Relationship: Supervisor, mentor, collaborator

Dr. Scott Stephens
Professor of Fire Science, UC Berkeley
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(510) 642-7304
Relationship: Co-advisor; Instructor for course taught & developed (Wildland Fire Science)

Dr. Maggi Kelly
Cooperative Extension Specialist, UC Berkeley
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Relationship: Co-advisor; Instructor for course taught and developed (GIS & Environmental Science)

Dr. Van Butsic
Assistant Cooperative Extension Specialist, UC Berkeley
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(510) 666-5400
Relationship: Instructor for course taught and developed (Intro to GIS)

Dr. Brandon Collins
Research Forester, Pacific Southwest Research Station, USFS
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(530) 759-1701
Relationship: Supervisor while employee with USFS PSW, collaborator while at UC Berkeley