



# AMQUA 2022

American Quaternary Association Biennial Meeting

June 7-11, 2022 Madison, Wisconsin

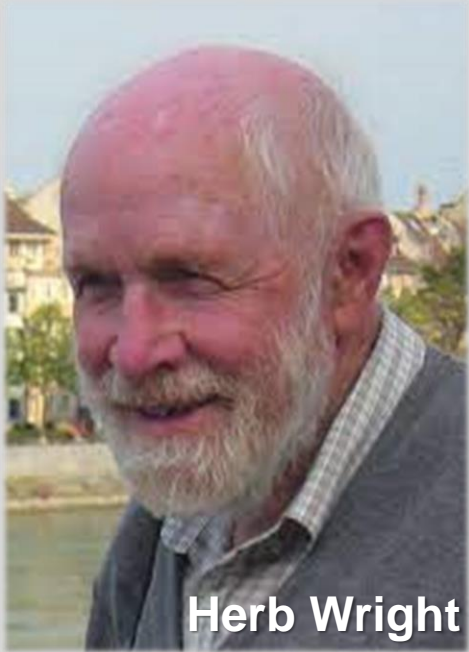
## **DISTINGUISHED CAREER AWARDS**

**2019 Vera Markgraf**

**2020 Julio Betancourt**

**2021 Estella Leopold**

**2022 Julie Brigham-Grette**



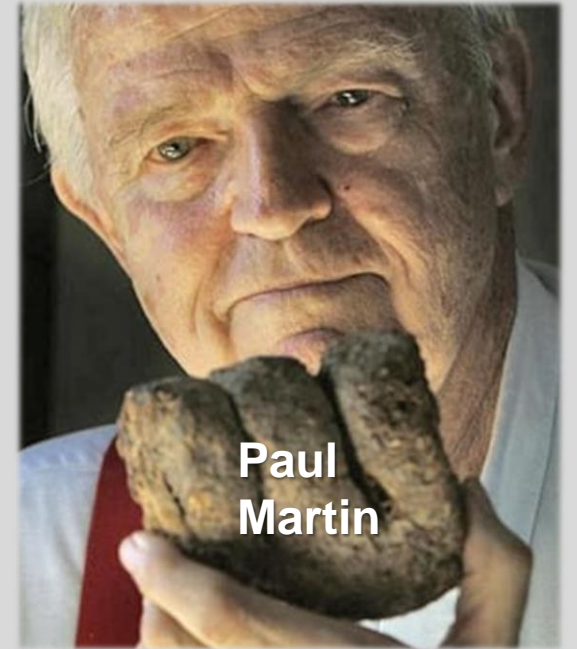
**Herb Wright**



**Dave Hopkins**



**John  
Andrews**



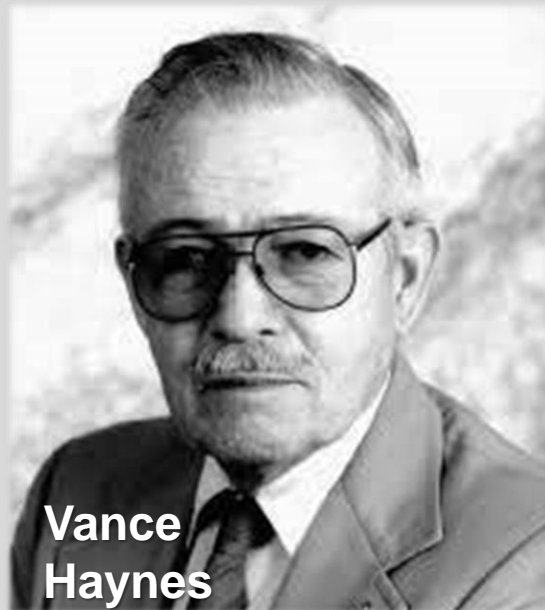
**Paul  
Martin**



**Minze Stuiver**



**Maggie Davis**



**Vance  
Haynes**



**John  
Kutzbach**



**Steve Porter**



**Dick Baker**



**Tom Webb**



**Ray Wood**



**Bill Watts**



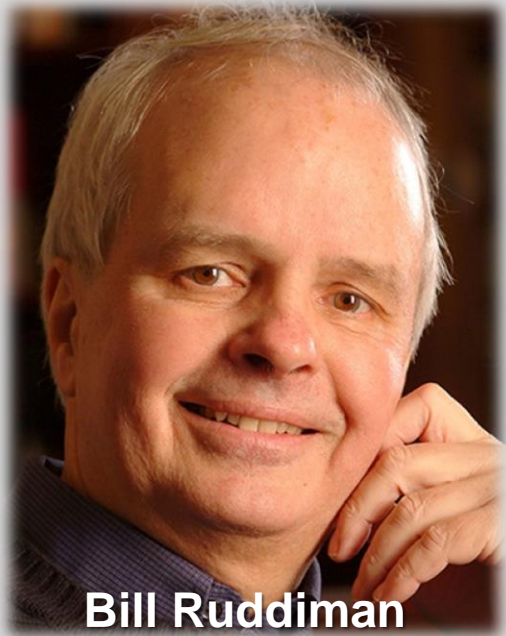
**Peter Birkeland**



**George Frison**



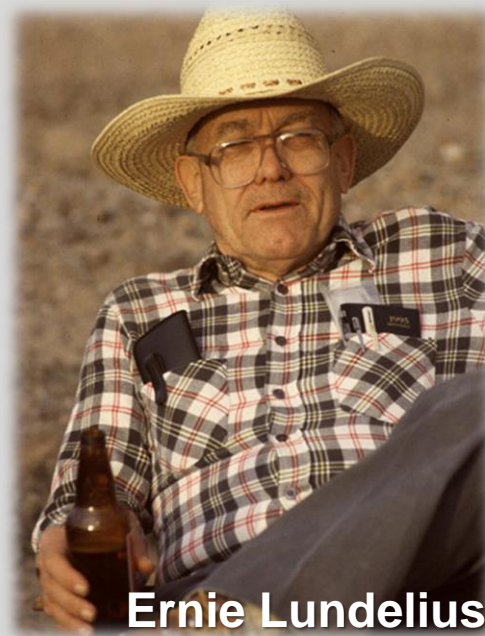
**Ken  
Pierce**



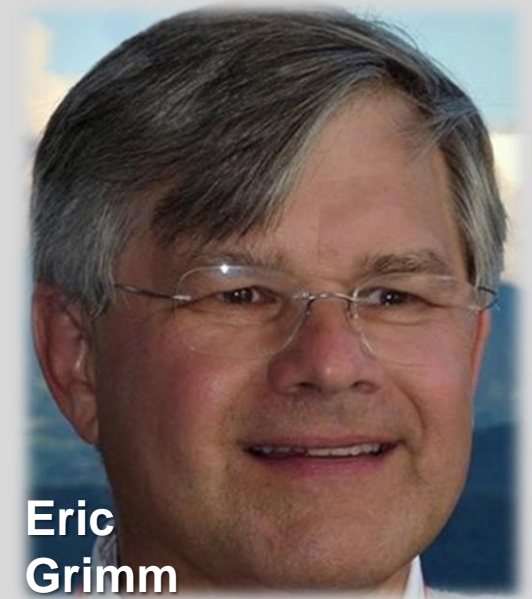
**Bill Ruddiman**



**Paul Colinvaux**



**Ernie Lundelius**



**Eric  
Grimm**



**Pat Bartlein**



**Cathy Whilock**



**Giff Miller**



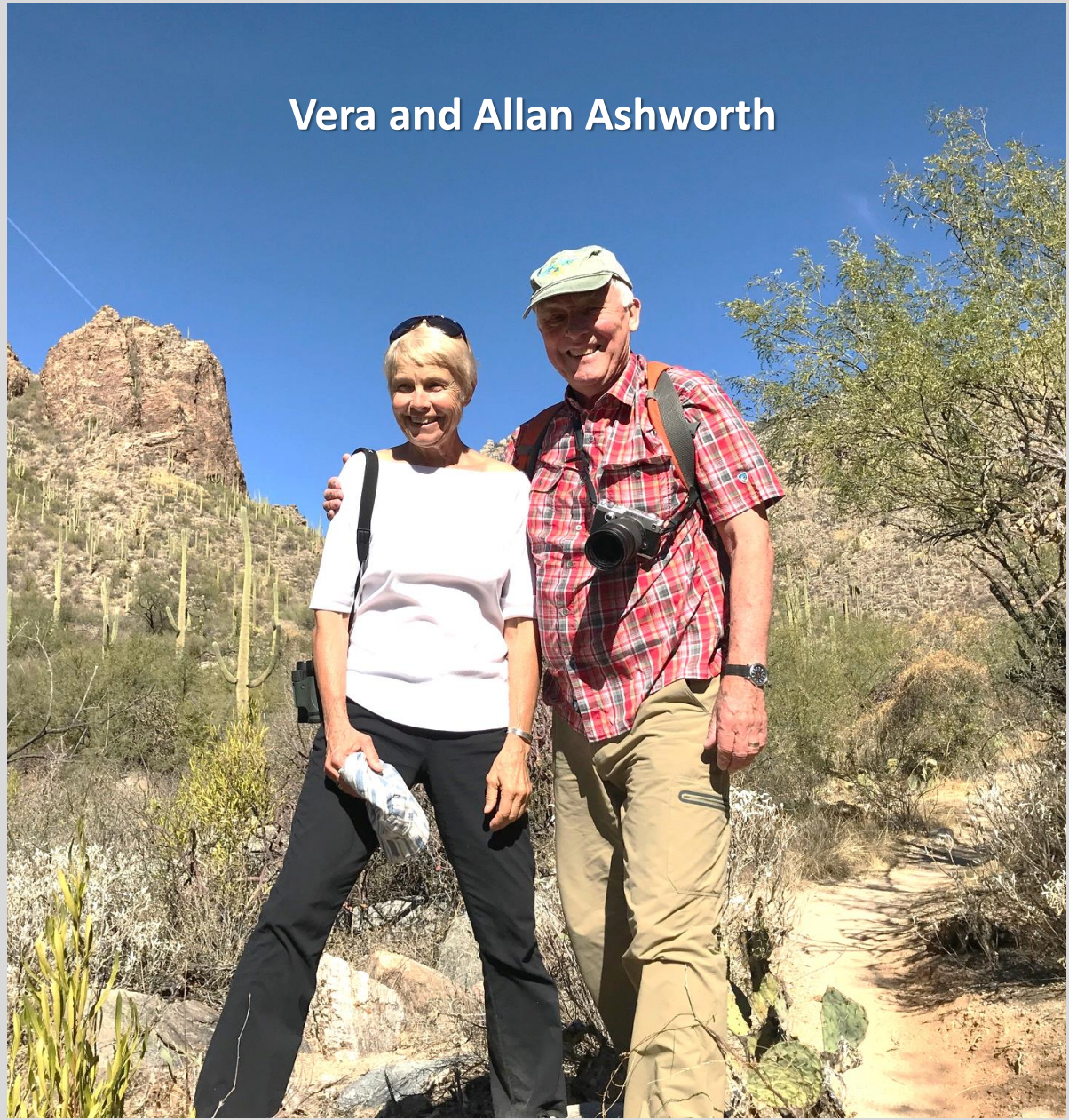
**Vera Markgraf**



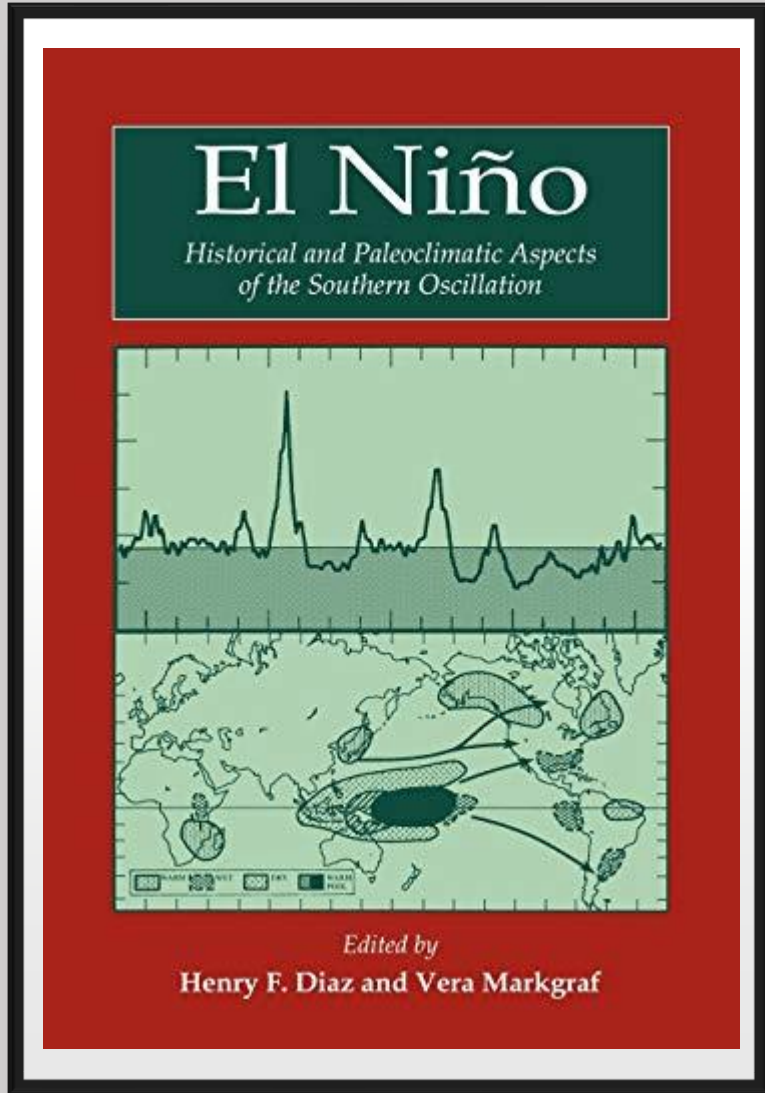
**Vera Markgraf  
2019 AMQUA  
Distinguished  
Career Awardee**



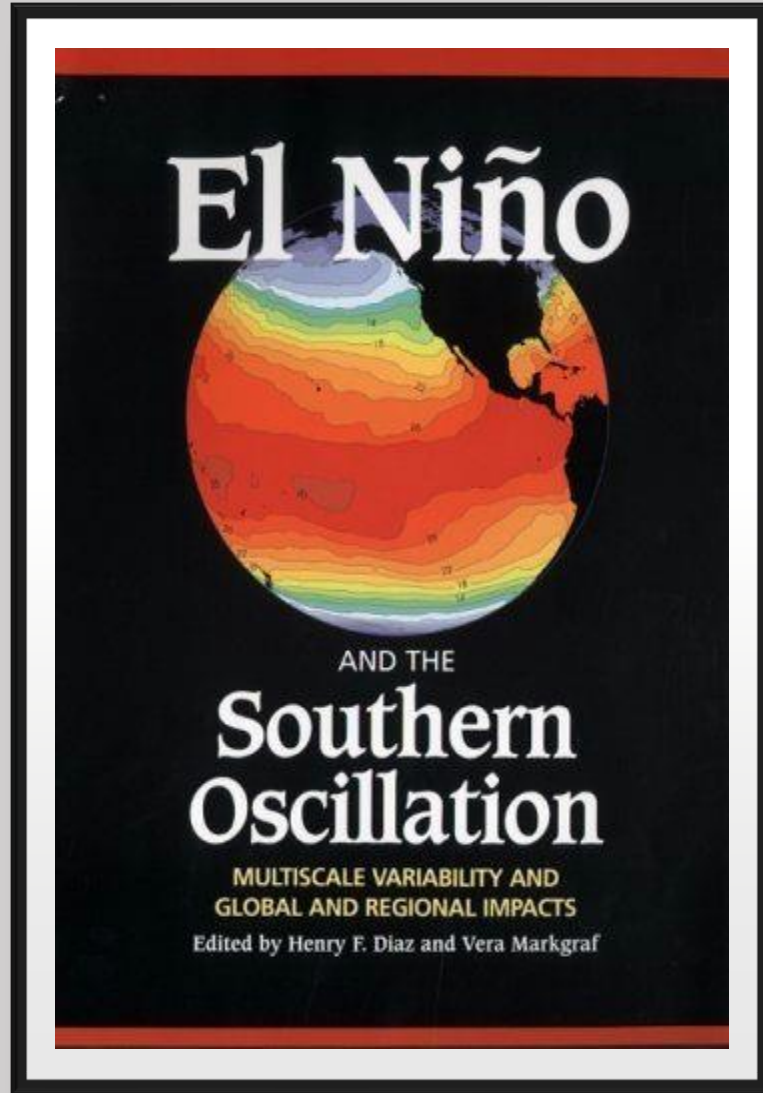
**Platt Bradbury & Vera**



**Vera and Allan Ashworth**



Cambridge Univ. Press 1992



Cambridge Univ. Press 2000



Henry Diaz & Vera Markgraf

PEP I



Volcanos, ice cores, lake sediments, peat bogs and tree-rings: Volcano Parícuta and Laguna Chungara in the Chilean Altiplano are illustrating the variety of paleo-archives available within the PEP I Transect. (Foto: M. Grosjean, Dept. of Geography, University of Bern, Switzerland).

COORDINATION NEWS

\* The plan to convene the first ... \* The Spanish translation of the ...

EDITORIAL

This is the first of the new-style PAGES Newsletters. It reflects our need to respond to the change in the orientation of PAGES from activities concerned mainly with Agenda-setting, towards an increasing emphasis on the implementation of PAGES research. In the present Newsletter, we have emphasized in different ways, the activities going on within two of the three PEP (Pole-Equator-Pole) Transects. We have also introduced two examples of developments in PAGES research coordinated at national level, in the hope that this will encourage other national groups and research consortia to submit for inclusion in future issues.



PERGAMON

Quaternary Science Reviews 19 (2000) 125-140

Paleoclimate reconstruction along the Pole-Equator-Pole transect of the Americas (PEP 1)

Vera Markgraf<sup>a,\*</sup>, T.R Baumgartner<sup>b</sup>, J. P. Bradbury<sup>c</sup>, H. F. Diaz<sup>d</sup>, R. B. Dunbar<sup>e</sup>, B. H. Luckman<sup>f</sup>, G. O. Seltzer<sup>g</sup>, T. W. Swetnam<sup>h</sup>, R. Villalba<sup>i</sup>

<sup>a</sup>Institute of Arctic and Alpine Research, University of Colorado, Boulder CO 80309-0450, USA

<sup>b</sup>Scripps Oceanographic Institute, La Jolla CA 92093, USA

<sup>c</sup>US Geological Survey, Denver Federal Center, MS 980, Denver CO 80225, USA

<sup>d</sup>National Oceanographic and Atmospheric Administration, Climate Diagnostic Center, 325 Broadway, Boulder CO 90303, USA

<sup>e</sup>Department of Geological and Environmental Sciences, Stanford University, Stanford CA 94305-2115, USA

<sup>f</sup>Department of Geography, University of Western Ontario, London, Ont, Canada, N6A 5C2.

<sup>g</sup>Department of Earth Sciences, Syracuse University, Syracuse NY 13244, USA

<sup>h</sup>Tree Ring Laboratory, University of Arizona, Tucson AZ 85721, USA

<sup>i</sup>INIA-CRICYT, c/o. 330, 55000 Mendoza, Argentina

<sup>\*</sup>PAGES Calendar

<sup>\*</sup>PAGES Scientific Highlight:

Great Barrier Reef 'Climatic Optimum' at 5,800 Y BP (M. K. Gagan et al.)

PAGES Core Project Office, Bärenplatz 2, CH-3011 Bern, Switzerland. Phone: +41 31 312 3133, Fax: +41 31 312 3168, Email: pages@ubaclu.unibe.ch, WWW: http://www.ngdc.noaa.gov/paleo/pages.html

INTERHEMISPHERIC CLIMATE LINKAGES



Edited by Vera Markgraf



2001 Academic Press



24 August 1981

Drs. Julio L. Betancourt and  
Tom Van Devender  
Dept. of Geosciences  
University of Arizona  
Tucson, AZ 85721

Dear Julio and Tom:

Thanks for sending me a copy of your SCIENCE article which I did not find time to respond to earlier this summer. I apologize, but the activities here with the Journal and all have kept me hopping.

I have read the revision of your report to SCIENCE with great interest. It is a nice piece of work and cleverly designed. I especially liked your quantitative diagram displaying macrofossil evidence as a kind of histogram. I think my only regret is that you did not take more of a swing at Wright, et al., 1973, over their projected late glacial distributions of ponderosa pine. I was unaware of the known climate requirements of Rocky Mountain juniper; those are helpful indeed.

As Geoff has told you, we tucked in a comment about your work in the southwestern chapter for Porter's book.

Thanks for sending this to me and I am sorry to be so long in responding. Keep up the good work.

Sincerely,

*Estella*

Estella B. Leopold / *Ag*  
Director



# Quaternary Stratigraphy of Betancourt's Life

2020  
2010  
2000  
1990  
1980  
1970  
1960  
1950

*Retired from federal service in 2018  
Moved to USGS Natl Center 2013*

*Co-founded USA-Natl Phenology Network  
Co-founded S AZ Buffelgrass Coord Center*

*U. of Arizona adjunct prof. in 3 diff. colleges  
USGS research scientist since 1987*

*M.S. & Ph.D. from U. Arizona  
Married & had 3 children*

*Tried 1 semester of grad. UNM, fieldwork in Peru,  
Belize, and SW US; B.A. Anthro, U. Texas in 1974*

*Lived in Dallas, Tx from 4<sup>th</sup> grade through high school*

*Emigrated to US during Cuban Revolution  
Childhood in Havana, Cuba;*





THE UNIVERSITY OF ARIZONA  
RESEARCH, INNOVATION & IMPACT

**TUMAMOC**

Desert Laboratory

1981-2012



**Senior Scientist-Research Hydrologist  
National Research Program  
USGS Water Resources Division**

**Retired from USGS in 2018  
Currently flunking retirement as a  
Scientist Emeritus**



**USGS**  
*science for a changing world*  
2013-2022

The USGS logo is centered in the upper portion of the circular inset. It consists of a green square icon with white wavy lines to the left of the text 'USGS' in a bold, green, sans-serif font. Below this, the tagline 'science for a changing world' is written in a smaller, italicized green font. At the bottom of the logo block, the years '2013-2022' are displayed in a bold, green, sans-serif font.



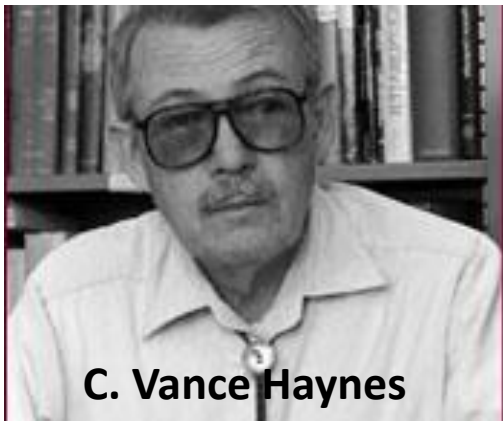
**Vic Baker, UA Geos**



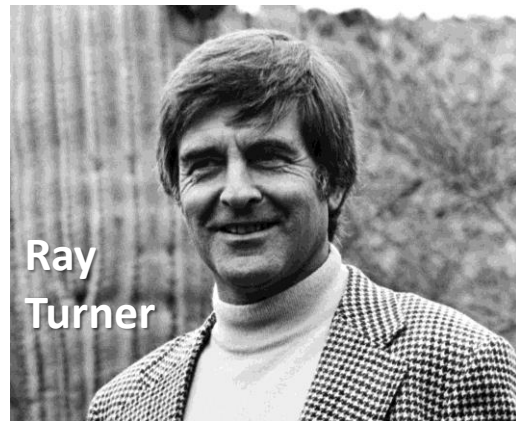
**Jim Brown, UNM**



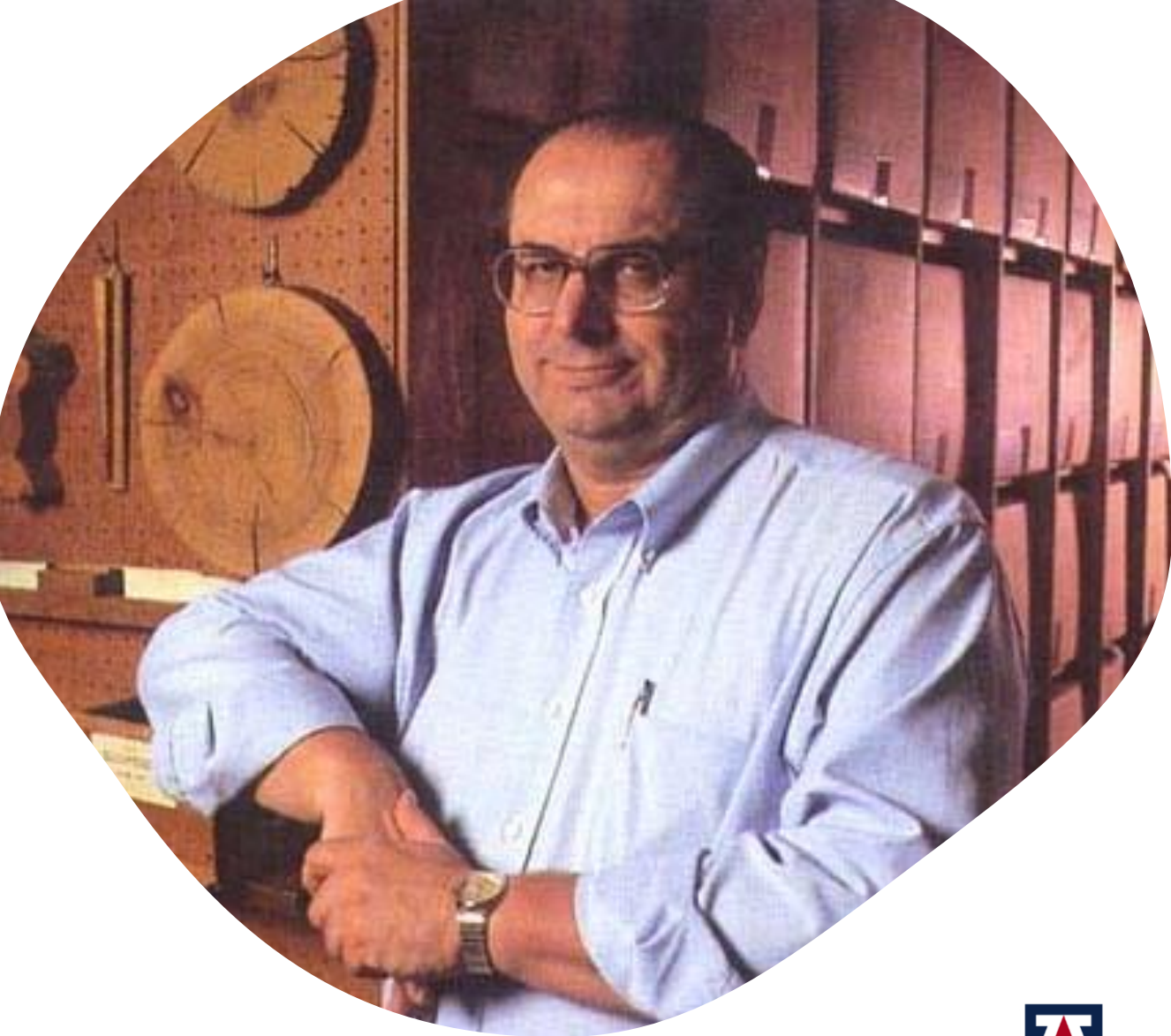
**Paul S. Martin  
UA Desert Lab**



**C. Vance Haynes**



**Ray  
Turner**



*Jeff Dean  
Laboratory of Tree-ring Research  
University of Arizona*



*Tom Van Devender  
Greater Good.org*





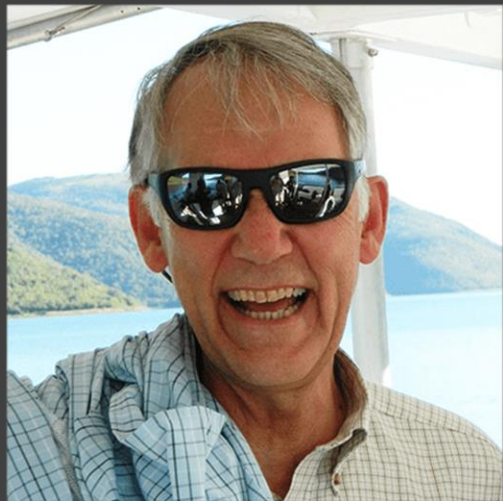
**Ron Oremland**  
Microbiologist



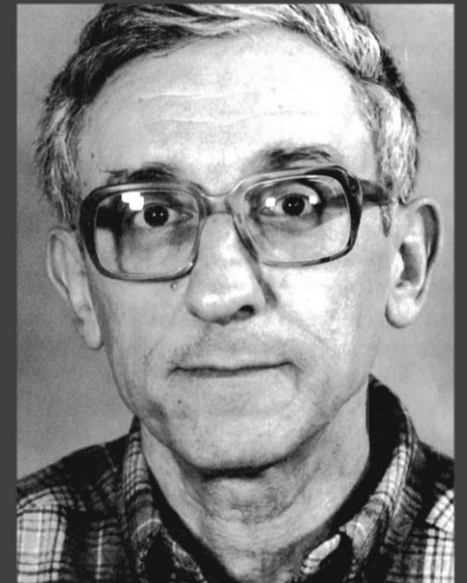
**Jim Cloern**  
Phytoplankton Ecologist



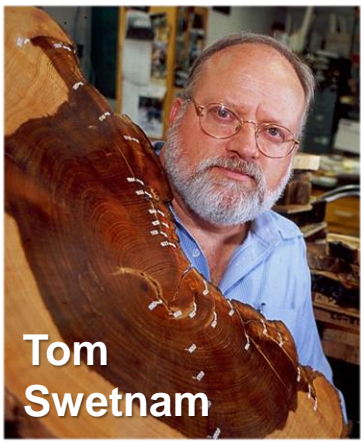
**Bob Hirsch, Administrator**  
Stochastic Hydrologist



**Sam Luoma**  
Ecotoxicologist



**Ike Winograd**  
GW Hydrologist/  
Geochemist



**Tom Swetnam**



**Jay Quade**



**Bob Webb**



**Steve Jackson**



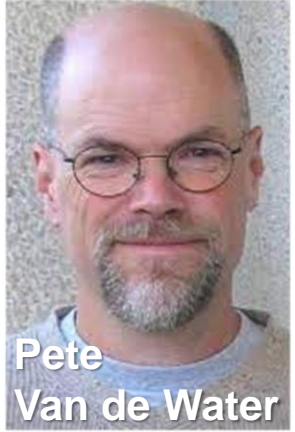
**Scott Anderson**



**Felisa Smith**



**Kate Rylander**



**Pete Van de Water**



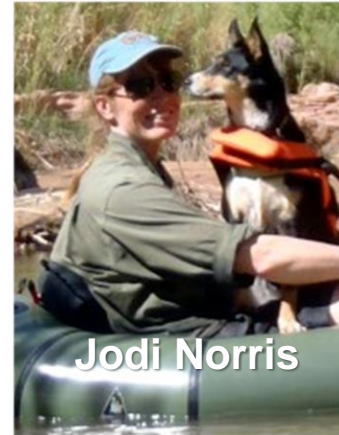
**Mark Lyford**



**Camille Holmgren**



**Steve Gray**



**Jodi Norris**



**Greg Pederson**



**Claudio Latorre**



**Aaryn Olsson**



**Brad Butterfield**



**Greg McCabe**



**Mark Schwartz**



**Toby Ault**



**Lizzie Wolkovich**



**Ben Cook**

# PROCEEDINGS OF THE SIXTH ANNUAL PACIFIC CLIMATE (PACLIM) WORKSHOP

Asilomar, California — March 5-8, 1989

Edited by  
Julio L. Betancourt and Ana M. MacKay



“A PACLIM Workshop is a somewhat informal affair held in full view of Monterey Bay, where a glaciologist can walk the beach with a phytoplankton ecologist. If PACLIM is anything, it is an opportunity to talk across disciplines.”

American Quaternary  
Association Seventh Biennial  
Meeting Program and  
Abstracts, 28-30 June.  
1982. AMQUA 1982.

“Character and Timing of  
Rapid Environmental and  
Climatic Changes”

American Quaternary Association

Seattle, WA

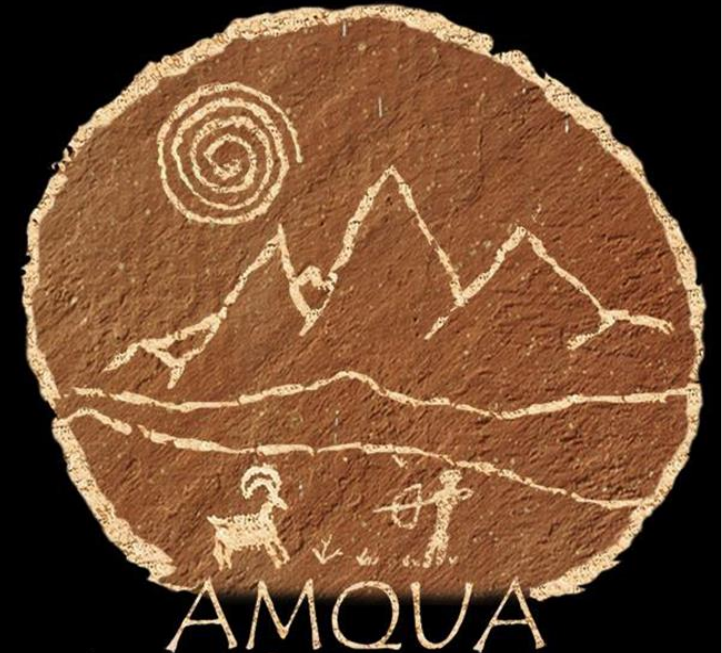
American Quaternary  
Association Eighth Biennial  
Meeting Program and  
Abstracts, 13-15 August  
1984. AMQUA 1984

*“Seasonal Climatic Responses  
in the Quaternary”*

American Quaternary Association

Boulder, CO

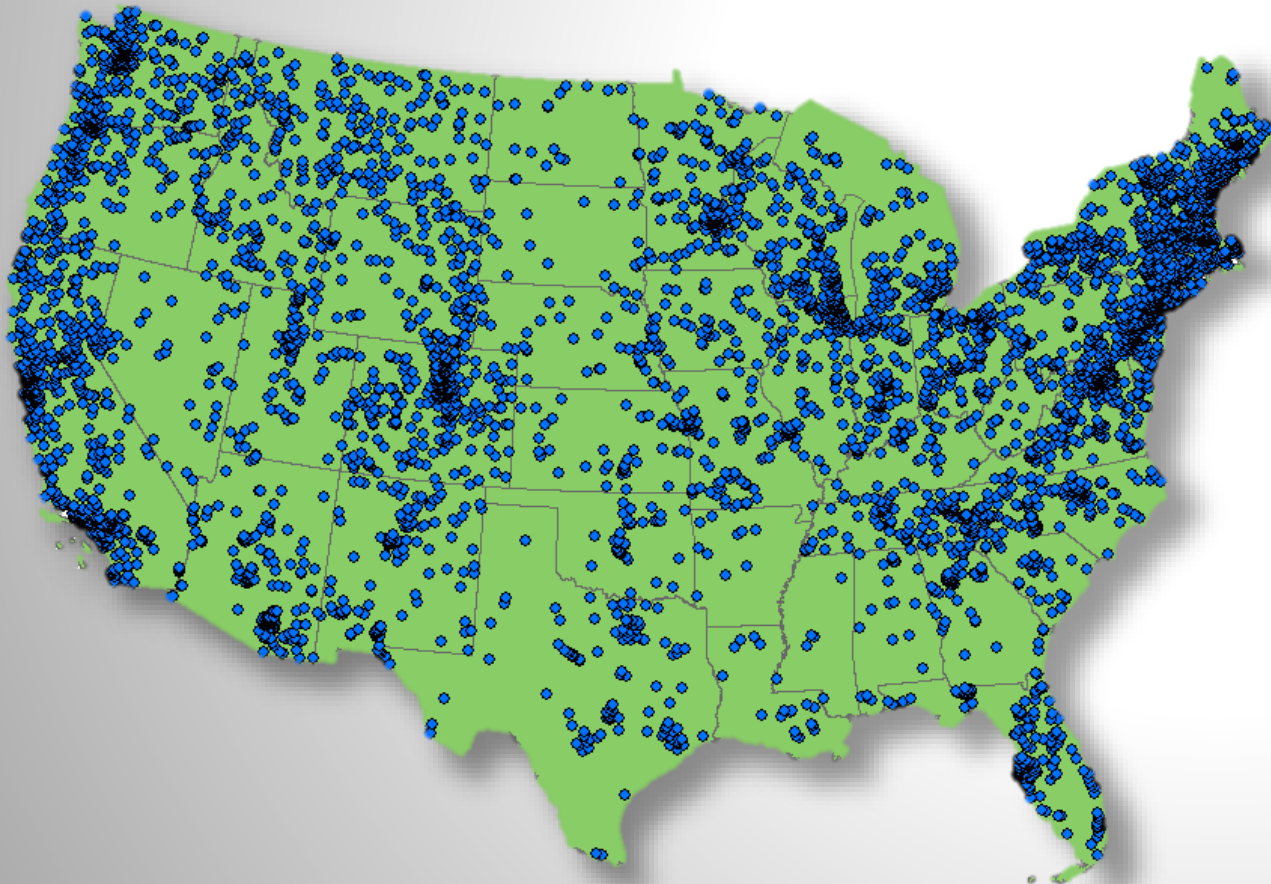
Retooling the  
Quaternary to Manage  
the Anthropocene



American Quaternary Association  
24th Biennial Meeting ~ 28 June - 2 July, 2016  
Santa Fe, New Mexico



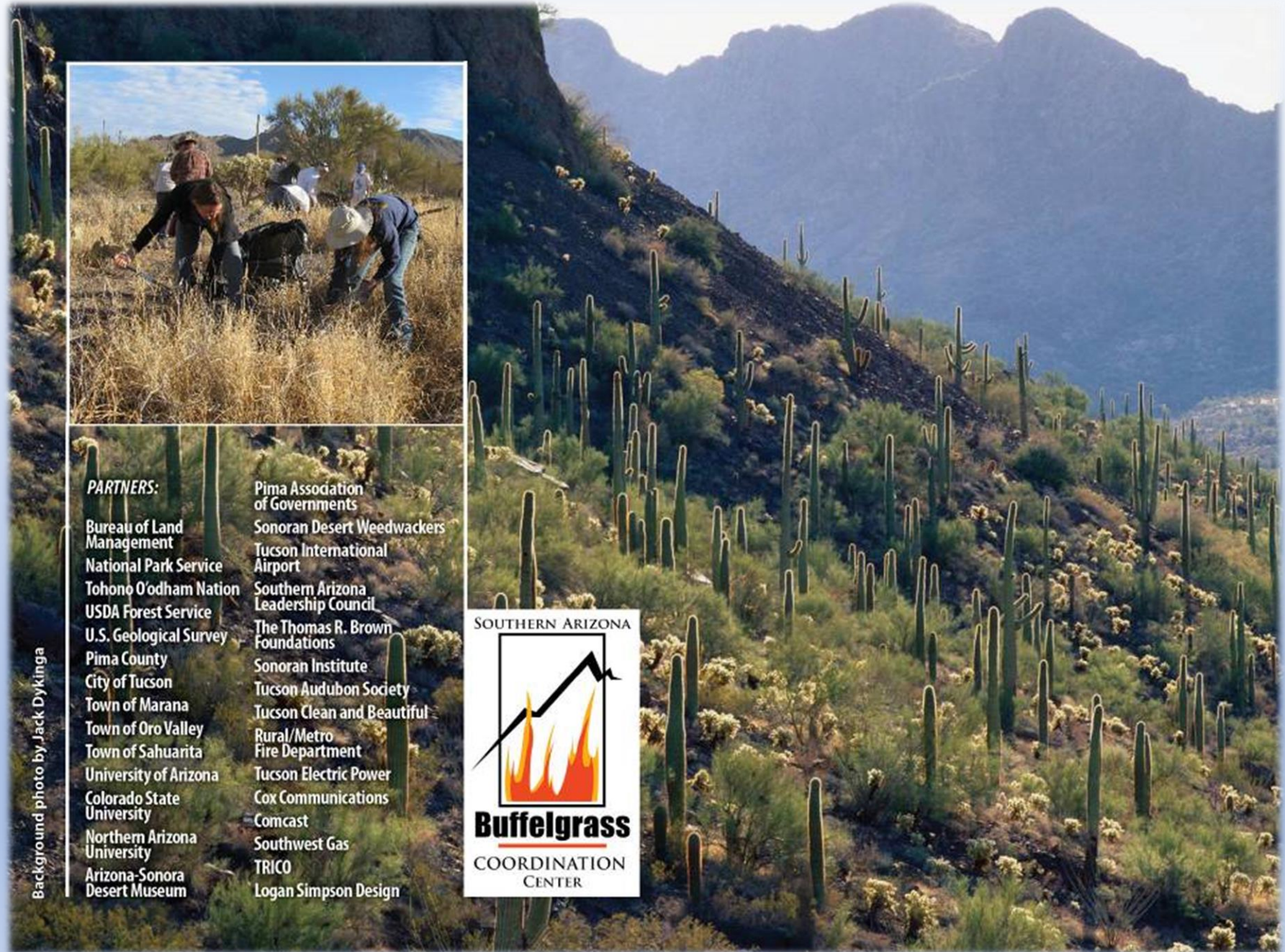
*A large-scale network of repeated and integrated plant and animal phenological observations, and the tools to analyze them at local to national scales*



NPN staff , Tucson

# Southern Arizona Buffelgrass Coordination Center

A non-profit partnership across the public & private sector entrusted with educating, planning, and coordinating mitigation of buffelgrass invasion and its impacts across multiple jurisdictions

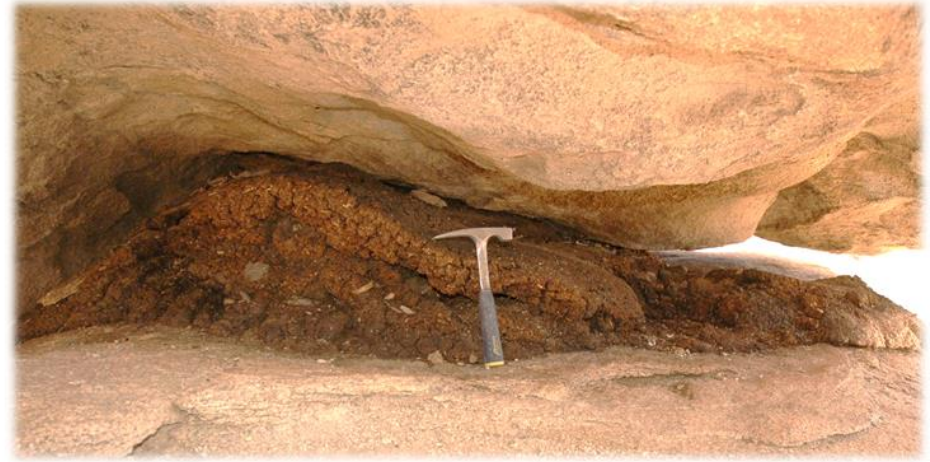
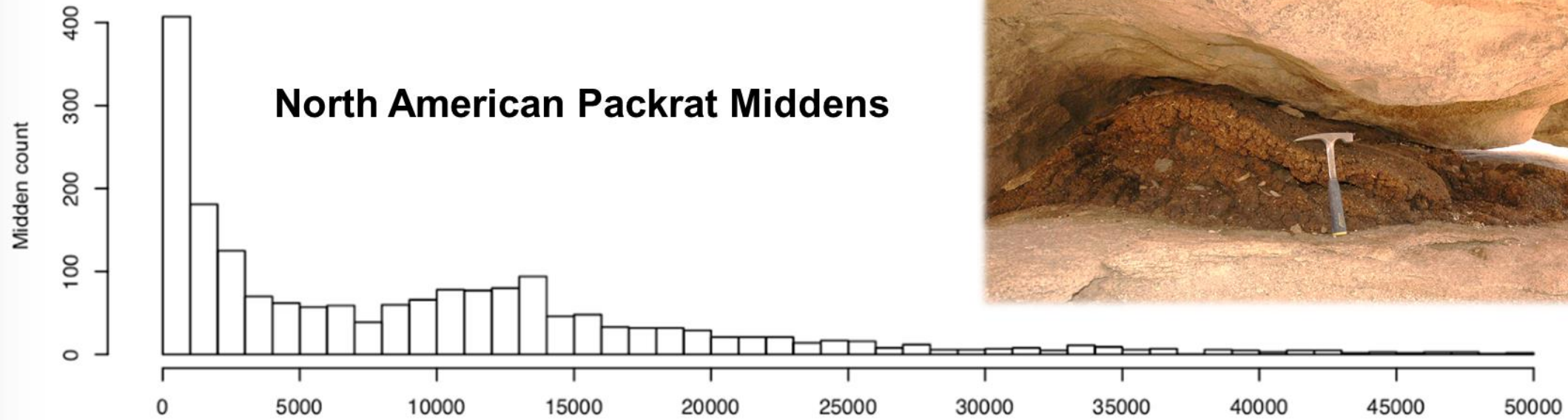


- PARTNERS:**
- Bureau of Land Management
  - National Park Service
  - Tohono O'odham Nation
  - USDA Forest Service
  - U.S. Geological Survey
  - Pima County
  - City of Tucson
  - Town of Marana
  - Town of Oro Valley
  - Town of Sahuarita
  - University of Arizona
  - Colorado State University
  - Northern Arizona University
  - Arizona-Sonora Desert Museum
  - Pima Association of Governments
  - Sonoran Desert Weedwackers
  - Tucson International Airport
  - Southern Arizona Leadership Council
  - The Thomas R. Brown Foundations
  - Sonoran Institute
  - Tucson Audubon Society
  - Tucson Clean and Beautiful
  - Rural/Metro Fire Department
  - Tucson Electric Power
  - Cox Communications
  - Comcast
  - Southwest Gas
  - TRICO
  - Logan Simpson Design

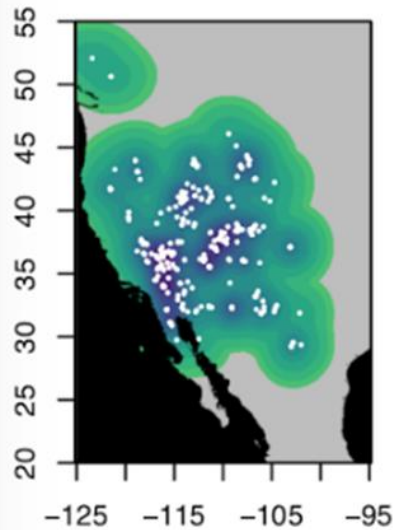
Background photo by Jack Dykinga



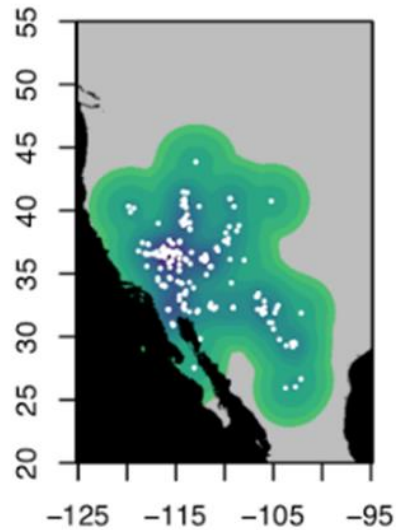
# North American Packrat Middens



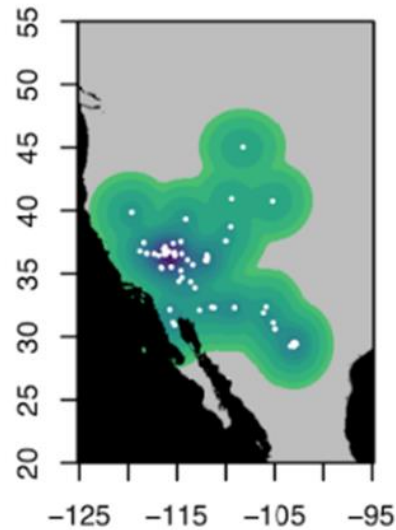
0 to 10 ka



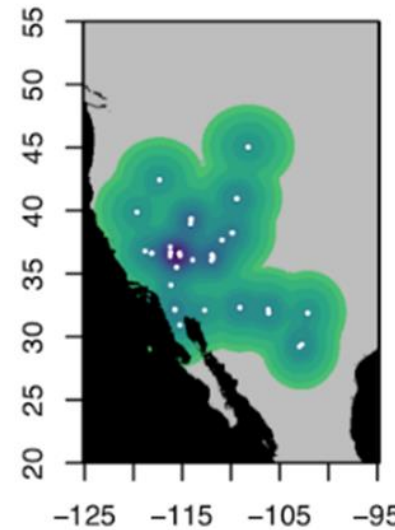
10 to 20 ka



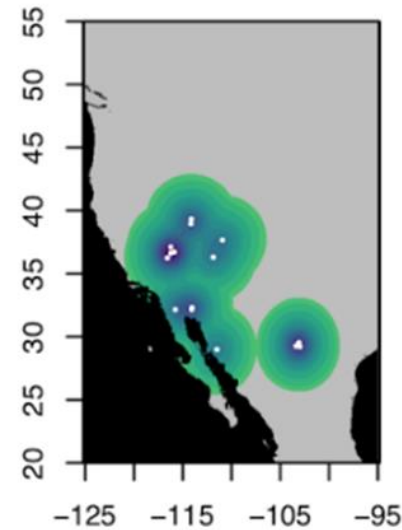
20 to 30 ka



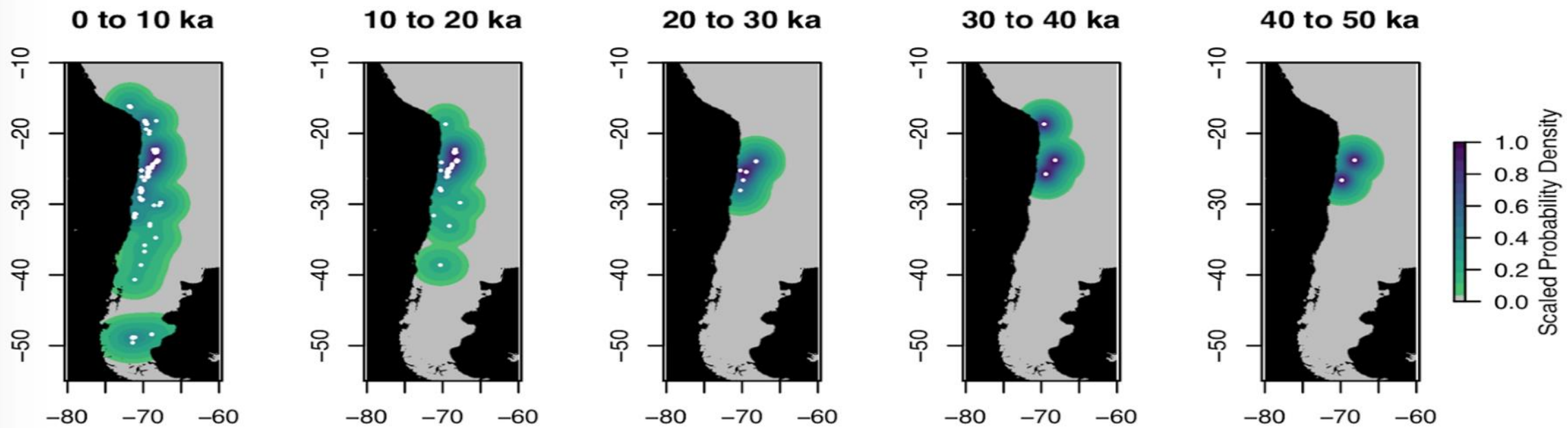
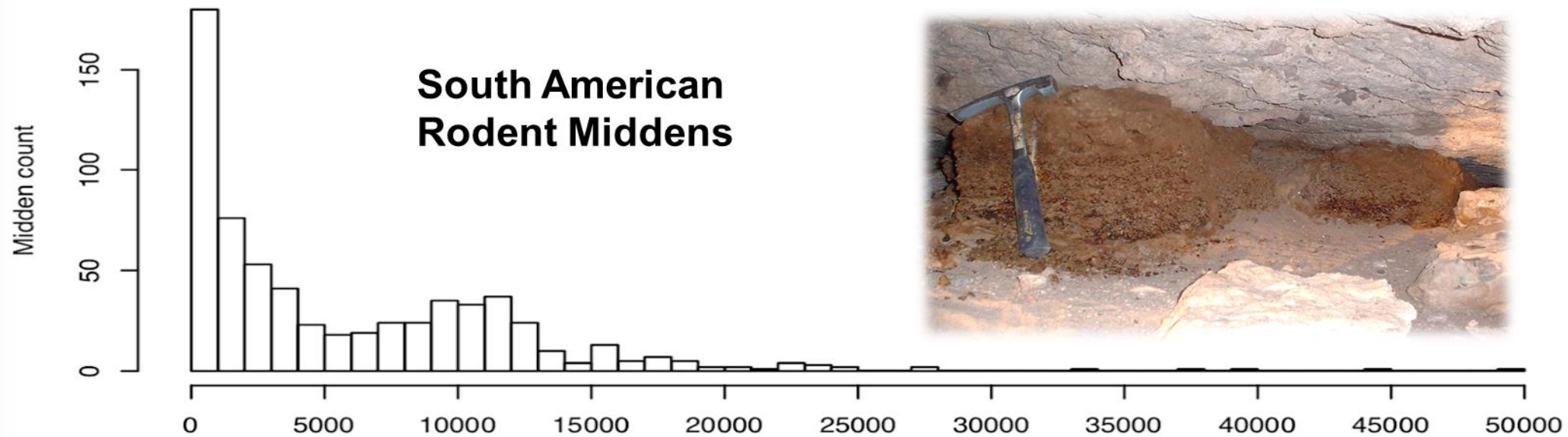
30 to 40 ka



40 to 50 ka

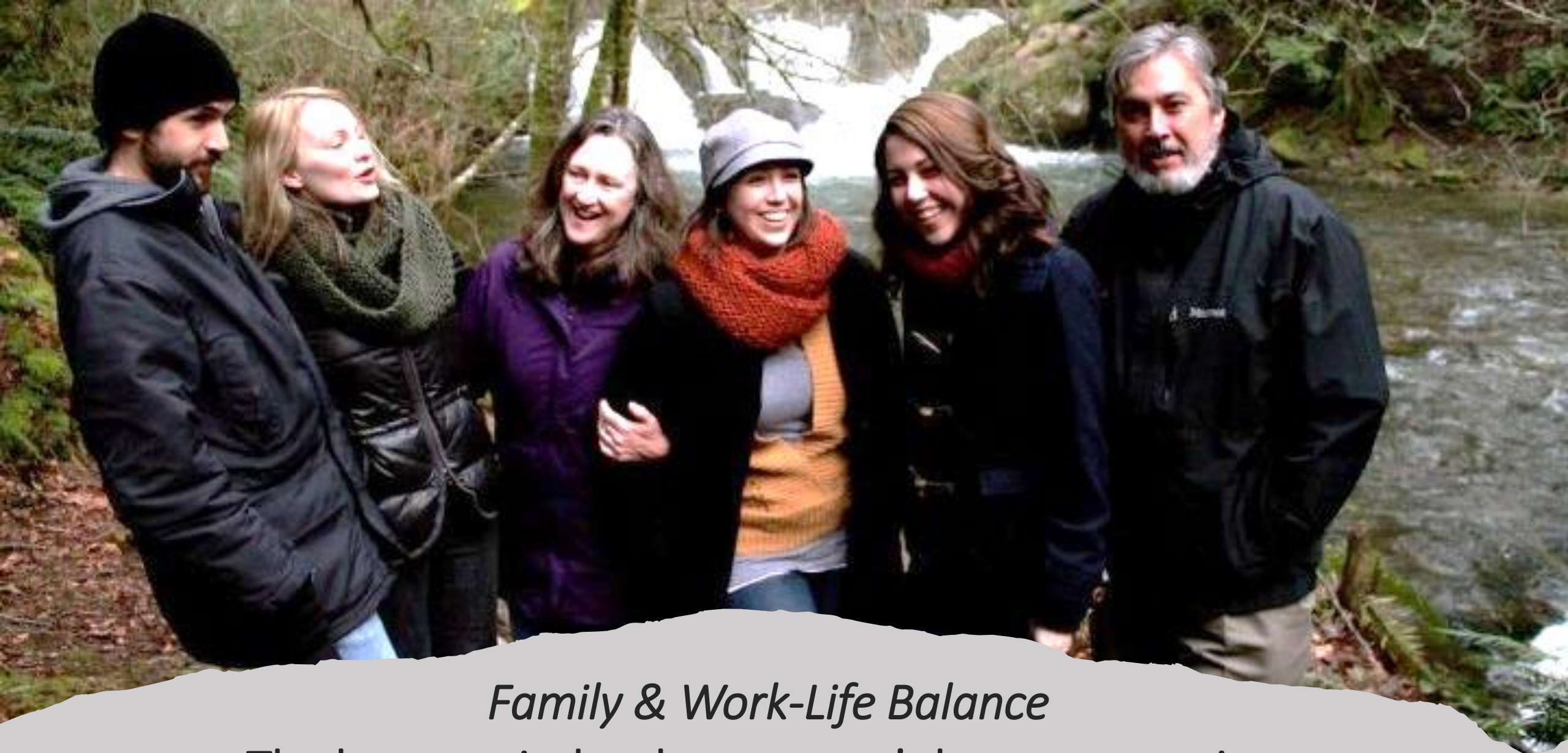


Scaled Probability Density





Kyle Ellingson  
*Popular Science*



*Family & Work-Life Balance*

The best reminder that you can't hug your reprints