DR. DEANA D. PENNINGTON
University of Texas at El Paso
Cyber-ShARE Center of Excellence
Classroom Bldg. C401
El Paso, TX 79968
ddpennington@utep.edu
(915) 747-5867 (voice); (915) 401-4656 (cell)

EDUCATION

PhD 2002 Department of Geosciences, Oregon State University
Major: Physical Geography Minors: Geographic Techniques, Geology
MS 1982 Geology and Mineralogy, Ohio State University
BS 1981 Geology and Mineralogy, Ohio State University
Postdoc 2002, Long Term Ecological Research Network Office, University of New Mexico
Graduate Certificate 2007, Organizational Learning, University of New Mexico

RESEARCH INTERESTS

Human/environmental/technical systems, scenario analysis, earth and environmental informatics, collaboration and collaborative environments, innovation science, cyber-learning

EXPERIENCE

Aug 2010-present, University of Texas at El Paso, Cyber-ShARE Center of Excellence, El Paso, TX 79902; Title: Research Assistant Professor

Lead and participate on interdisciplinary research projects:

- Associate Director and Co-PI: National Science Foundation (NSF) CyberShare Center of Excellence – investigating cyber-enhanced environments to advance environmental and earth sciences, especially focused on knowledge representation
- PI: NSF CI-Team Diffusion Project – Studying the process of diffusion of ideas, knowledge, and technical innovations across science communities mediated by virtual environments and social media
- PI: NASA ROSES A-37 Earth, Life and Semantic Web (ELSeWeb): An Earth observation-driven, Semantic Web system for computational modeling of the impact of changing environments on species distribution and zoonotic infectious disease
- PI: Raytheon Virtual Geocaching – A Geospatial CyberLearning Game for STEM Education
- CoPI: NSF GEO: Diversity and Innovation for Geosciences in Texas (DIG Texas)

Promote development of new interdisciplinary research:

- Lead a reading group on interdisciplinary collaboration
- Engage/consult with existing interdisciplinary groups

Aug 2001 – July 2010, University of New Mexico, Long Term Ecological Research Network Office, Albuquerque, NM 87131-0001
Title: Visiting Lecturer, Research Assistant Professor, Research Associate Professor

Lead and participate on interdisciplinary research projects:

- PI: 2006-2010 National Science Foundation (NSF) Cyberinfrastructure (CI) Team Workforce Development projects
- Sr. Personnel: 2003-2008 NSF Science Environment for Ecological Knowledge (SEEK) IT Research
- Co-PI: 2002-2003 NSF Sevilleta Long Term Ecological Research Program

Postdoc: 2001-2002 NSF Long Term Ecological Research Network Office; NSF NPACI project

Teaching on occasion

Mar 1999 – Aug 2001, Oregon State University, Department of Geosciences, 104 Wilkinson Hall, Corvallis, OR 97331; Title: Graduate Research Assistant

Dissertation research on GIS modeling and simulation of broad scale land cover patterns from historic wildfire processes, comparison with current managed forest patterns from remotely-sensed imagery, and forecasting of possible future patterns based on various scenarios. Interaction of landscape patterns with other ecosystem processes: point (biodiversity), network (streamflow), and field (carbon storage).

Nov 1994 – Jun 1997, JSI Fundraising Software (now Sage Software), Williamsburg, Virginia; Title: Conversion Manager/Programmer

Leadership and change management – Led conversion programming department from being non-profitable, behind schedule and low morale situation to a profitable, on schedule, well-managed operation. Devised new business models for this and two other interacting departments to generate new sources of profit

Manager – of data conversion process, including scheduling, personnel assignment, and problem resolution. Designed a new pricing mechanism based on project size and complexity that resulted in increased profits, and profits that more closely reflected project scope and time requirements

Supervision – of 6 conversion programmers. Custom programming specification design, training, issue and conflict resolution.

Liaison – between software developers, conversion programmers and clients. Interacted directly with clients during conversion, especially during problematic conversions. Generated metadata about every column in our database of 16 relational files describing data types, formats, indices, relational structure, content, and dependencies. This became the primary knowledge source for both the conversion and support groups, and was a reference for the developers.

Programming – initially hired as a conversion programmer/analyst and promoted to manager after 1 year. Continued to analyze customer databases and code larger, more complex data conversions using Visual Basic.

Jan 1983 – May 1989, Chevron Oil Corporation, Hobbs, New Mexico (office now closed) Title: Development Geologist

Oil field exploration and development – Analyzed subsurface rock properties through a combination of well-bore logging, seismic, and computer mapping technologies. Proposed drilling locations for new oil wells. Collected and analyzed geologic information during drilling. Recommended tests, evaluated outcomes.

Collaborated with other geologists, engineers and field staff

Selected as lead geologist on highly successful new exploration and development project during final two years

Leadership and change – Initiated an innovative colloquium for geologists and recruited nationwide experts to participate; created a first class library of resources for geologists. These were above and beyond my job description.

Consulted as a key expert within the geology department and across departments; consistently evaluated as excellent performance

PROFESSIONAL AFFILIATIONS

Association of American Geographers American Geophysical Union
ACM Special Interest Group on Computer Human Interaction (SIG-CHI)

GRANTS

(Active)

PI: NSF Award#:OCI-1135525 Total Amount: $1,000,000 *CI-TEAM Diffusion Project: The Virtual Learning Commons: STEM Research Communities Learning about Data Management, Geospatial Informatics, and Scientific Visualizations*; 2011-2014.

PI: NASA Award#:NNX12AF52A Total Amount: $200,000 *ROSES A-37 Earth, Life and Semantic Web (ELSeWeb): An Earth observation-driven, Semantic Web system for computational modeling of the impact of changing environments on health and disease;* 2011-2013.

Co-PI: NSF Award#HRD-1242122 Total Amount: $5,000,000 *Cyber-ShARE Center of Excellence,* 2012-2017

Co-PI: NSF Award#GEO-1202745 Total Amount: $111,500 *Diversity and Innovation for Geosciences in Texas (DIG Texas),* 2012-2015.

(Ended)

PI- NSF Award#:OCI-0753336 Total Amount: $1,000,000 *CI-TEAM Implementation Project: Advancing Cyberinfrastructure-Based Science Through Education, Training, and Mentoring of Science Communities*; 2008-2010. Institution: University of New Mexico

PI- NSF Award#:OCI-0636317 Total Amount: $250,000 *CI-TEAM Demonstration Project: Advancing Cyberinfrastructure-Based Science Through Education, Training, and Mentoring of Science Communities*; 2006-2008. Institution: University of New Mexico

Sr. Pers.- NSF Award#:0225665 Total Award Amount:$12,500,000; *ITR Collaborative Research: Enabling the Science Environment for Ecological Knowledge*; 2002-2008. PI: Michener. Institution: University of New Mexico

CoPI- NSF Award#:0080529 Total Award Amount:$1,500,000; 2000 - 2003 *Sevilleta LTER III: Long Term Ecological Research in a Biome Transition Zone;* PI: Collins. Institution: University of New Mexico

TEACHING AND TRAINING EXPERIENCE

Students & postdocs mentored

2012-present Octavio Lerma – Computational Science PhD student (committee member)
2012-present Leo Salayandia – Computer Science postdoc (adviser)
2012-present Hugo Porras – Computer Science MS student (committee)
2012-present Antonio Garza – Computer Science MS student (co-adviser)
2011-present Aida Gandara – Computer Science PhD student (mentor)
2011-present Nick Del Rio – Computer Science PhD student (mentor)

2010-2011 G. Walker Johnson – Biology PhD student (mentor)
2008-2010 Aaryn Olsson – Geography PhD student U of Arizona (mentor)
2008-2010 Crystal Krause – Biology PhD student NAU (committee member)
2006-2007 Jennifer Fallstad Shah - Bioinformatics postdoc (Sponsoring scientist)
2006-2007 Crystal Krause – Geography MS student (committee member)
2004-2007 Jianting Zhang - SEEK project postdoc (mentor)
2003-2006 Samantha Romanello Katz - SEEK project postdoc (mentor)
2002-2005 Gulian Wang – UC San Diego PhD student Computer Science (mentor)
2002 Ana Davidson - GIS project in biology at UNM (mentor)
2002 Lydia Zeglin - GIS project in biology at UNM (mentor)
2002 Mike Friggens - GIS project in biology at UNM (mentor)

Ecoinformatics Training Workshops

3/2010 CI-Team training on agent based modeling, Santa Fe Complex
2/2010 CI-Team Videoconference training on introductory data management
6/2009 CI-Team Biodiversity Informatics, Northern Arizona University
5/2008 Pan-American Advanced Studies Institute (PASI) on Cyberinfrastructure for International Collaborative Biodiversity and Ecological Informatics, La Selva Biological Field Station, Costa Rica.
1/2008 SEEK Ecological Niche Modeling in the Kepler Workflow System
1/2007 SEEK New Faculty & Postdoc Training Workshop on Ecoinformatics
1/2006 SEEK New Faculty & Postdoc Training Workshop on Ecoinformatics
1/2005 SEEK New Faculty & Postdoc Training Workshop on Ecoinformatics
1/2004 SEEK New Faculty & Postdoc Training Workshop on Ecoinformatics

GIS in Ecology training courses

5/2005 Natl. Inst. for Technology & Liberal Education GIS in Landscape Ecology Workshop
11/2003 Advanced GIS for Organization of Biological Field Stations personnel

Classroom experience

1/99-6/99 Teaching Assistant-Oregon State University
8/89-12/89 Instructor - College of the Southwest, Hobbs, New Mexico
Introductory Physical Geology
4/81-12/82 Teaching Assistant - Ohio State University

SCIENTIFIC COMMUNICATION

Peer-Reviewed Publications

In progress:

Salayandia, L., Gates, A., and Pennington, D. (in prep). MetaShare. To be submitted to NSF workshop on data management.

Pennington, D. D. (in prep), The generative dance of knowledge integration in interdisciplinary research teams. To be submitted to Ecology and Society.

Del Rio, N., Pinheiro da Silva, P., Pennington, D., and Lebo, T. (in prep). Querying for visualizations. To be submitted to SIGGraph 2013.

Pennington, D. D., Simpson, G., Baker, R., et al. (under revision), Interdisciplinary research, transformational learning, and transformative science. *BioScience.*

Krause, C.M., Cobb, N., and Pennington, D. (under revision), Range shifts and extinction risk under future scenarios of climate change: Dispersal ability matters for Colorado Plateau endemic plants. *Diversity and Distributions*.

Accepted, in press, or published:

1. Pennington, D., (2011), Collaborative, cross-disciplinary learning and co-emergent innovation in informatics teams. *International Journal of Earth Science Informatics*, 4(2):55-68. Available online at URL: http://www.springerlink.com/content/81156061q1754t00/. DOI 10.1007/s12145-011-0077-4.
2. Pennington, D., (2011), Bridging the Disciplinary Divide: Co-Creating Research Ideas in eScience Teams. *Computer Supported Cooperative Work, Special Issue on Embedding eResearch Applications: Project Management and Usability* 20(3):165-196. Available online at URL: http://dx.doi.org/10.1007/s10606-011-9134-2.
3. Pennington, D., (2010), The dynamics of material artifacts in collaborative research teams. *Computer Supported Cooperative Work* 19(2):175-199. DOI: 10.1007/s10606-010-9108-9. Available online at url: http://www.springerlink.com/openurl.asp?genre=article&id=doi:10.1007/s10606-010-9108-9.
4. Pennington, D. (2010), Enabling science and technology research teams: A breadmaking metaphor, *Educause Quarterly* 33(1), Special Issue on Anticipating the Future of Higher Education. Available online at url: http://www.educause.edu/EDUCAUSE%2BQuarterly/EDUCAUSEQuarterlyMagazineVolum/EnablingScienceandTechnologyRe/199387.
5. Downey, L.L. and Pennington, D., (2009), Bridging the gap between technology and science with examples from ecology and biodiversity. *International Journal of Biodiversity Informatics*, available online at https://journals.ku.edu/index.php/jbi/article/view/1574/3469
6. Pennington, D., Athanasiadis, I.N., Bowers, S., Krivov, S., Madin, J., Schildhauer, M., and Villa, F., (2008), Indirectly-driven knowledge modeling in ecology. *International Journal of Metadata, Semantics and Ontologies* 3(3):210-225, URL: http://www.inderscience.com/search/index.php?action=record&rec_id=23569&prevQuery=&ps=10&m=or.
7. Pennington, D. (2008), Cross-disciplinary collaboration and learning, *Ecology and Society* 13 (2):8 [online] URL: http://www.ecologyandsociety.org/vol13/iss2/art8/
8. Pennington, D.D., Michener, W.K., Katz, S., Downey, L., and Schildhauer, M. (2008), Transforming scientists through technical education: A view from the trenches. *Computing in Science and Engineering Special Issue on Education* 10(5):28-33, URL: http://www.computer.org/portal/web/csdl/magazines/cise;jsessionid=f05593b98539c54ccdad6782d651#4.
9. Chalcraft, D.R., Cox, S.B., Clark, C., Cleland, E.E., Suding, K.N., Weiher, E. and Pennington, D. (2008), Scale dependent responses of plant biodiversity to nitrogen enrichment. *Ecology* 89(8):2165-2171.
10. Zhang, J., Pennington, D., and Michener, W.K. (2007). Performance evaluations of geospatial web services composition and invocation. *Proceedings of the IEEE International Conference on Web Services (ICWS'07)*, July 9-13, 2007, Salt Lake City, Utah.
11. Pennington, D. (2007). Supporting large-scale science with workflows. *Proceedings of the 2nd Workshop on Workflows in Support of Large-Scale Science (WORKS07*), High Performance Distributed Computing 2007, June 25, 2007, Monterey Bay California.

12. Pennington, D. (2007), Exploratory modeling of forest disturbance scenarios in central Oregon using computational experiments in GIS. *International Journal of Ecological Informatics* 2(4):387-403, URL: http://www.sciencedirect.com/science/article/pii/S1574954107000301.
13. Madin, J., Bowers, S., Krivov, S., Pennington, D., Schildhauer, M.,Villa, F. (2007) An ontology for describing and synthesizing ecological observation data. *International Journal of Ecological Informatics* 2(3):279-296, URL: http://www.sciencedirect.com/science/article/pii/S1574954107000362.
14. Zhang, J., Pennington, D.D., and Liu, X. (2007). GBD-Explorer: Extending open source Java GIS for exploring ecoregion-based biodiversity data. *International Journal of Ecological Informatics* 2(2):94-102.
15. Pennington, D., Madin, J., Villa, F., and Athanasiadis, I.N. (2007). Computer-supported collaborative knowledge modeling in ecology. In: *Social and Collaborative Construction of Structured Knowledge, 16th International World Wide Web Conference (WWW2007), May 8, 2007, Banff, Canada, CEUR Workshop Proceedings*, N. Noy, H. Alani, G. Stumme, P. Mika, Y. Sure, and D. Vrandecic (eds.), ISSN 1613-0073, available online at http://CEUR-WS.org/Vol-273.
16. Pennington, D. and Collins, S.L. (2007), Response of an aridland ecosystem to climatic drivers and pervasive drought. *Landscape Ecology* 22(6):897-910, http://www.springerlink.com/content/98321r113t930623/.
17. Michener, W.K., Beach, J.H., Jones, M.B., Ludaescher,, B., Pennington, D.D., Pereira, R.S., Rajasekar, A., and Schildhauer, M., (2007), A knowledge environment for the biodiversity and ecological sciences, *Journal of Intelligent Information Systems* 29(1):111-126, available online at url: http://www.springerlink.com/content/e252n818242783g4/?p=04f01e6441a645d8920e39115c4cb325&pi=7.
18. Zhang, J. Altintas, I., Tao, J., Liu, X., Pennington, D.D., and Michener, W.K. (2006). Integrating data grid and web services for E-Science applications: A case study of exploring species distributions. Proceedings of the 2nd IEEE International Conference on e-Science and Grid Computing (e-Science 2006). December 4-6, 2006, Amsterdam, Netherlands.
19. Pennington, D. (2006), Representing the dimensions of an ecological niche. 5th International Semantic Web Conference (ISWC'06) Workshop: Terra Cognita 2006 – Directions to the Geospatial Semantic Web, November 6, 2006, Athens, Georgia.
20. Zhang, J., Pennington, D., Michener, W.K. (2006), Automatic Transformation from Geospatial Conceptual Workflow to Executable Workflow Using GRASS GIS Command Line Modules in Kepler, International Conference on Computational Science (ICCS 2006), May 28-31, 2006, University of Reading, UK, *Lecture Notes in Computer Science* 3993, 912-919.
21. Pennington, D. and Michener, W.K. (2005), The EcoGrid and the Kepler Workflow System: a new platform for conducting ecological analyses. *ESA Bulletin* 86(3):169-176.
22. Romanello, S.; Beach, J; Bowers, S; Jones, M; Ludaescher, B; Michener, W.; Pennington, D; Rajasekar, A; & Schildhauer, M. (2005), Creating and providing data management services for the biological and ecological sciences: Science Environment for Ecological Knowledge. In: *Proceedings of the 17th International Conference on Scientific and Statistical Database Management* (SSDBM'05), 21-23 June 2004, Santa Barbara, CA.

23. Zhang, J., Pennington, D., Michener, W.K., (2005), Using web services and scientific workflow for species distribution prediction modeling, 6th International Conference on Web-Age Information Management (WAIM), Hangzhou, China, October 2005, *Lecture Notes in Computer Science* 3739, Springer, pp. 610-617.
24. Zhang, J., Pennington, D., and Michener, W.K., (2005), Validating Compositions of Geospatial Processing Web Services in a Scientific Workflow Environment, the 3rd IEEE International Conference on Web Services (ICWS), Orlando, FL, July 2005, pp. 821-822.
25. Michener, W., Beach, J., Bowers, S., Downey, L., Jones, M., Ludaescher, B., Pennington, D., Rajasekar, A., Romanello, S., Schildhauer, M., Vieglais, D., and Zhang, J., (2005), Data integration and workflow solutions for ecology. Proceedings of Data Integration in the Life Sciences, Second International Workshop, DILS 2005, San Diego, CA, July 20-22, 2005. *Lecture Notes in Computer Science* 3615:321-324.
26. Frank, E., Altintas, I., Zhang, J., Ludaescher, B., Pennington, D., and Michener, W., (2005), A scientific workflow approach to distributed geospatial data processing using web services. Proceedings of the 17th International Scientific and Statistical Database Management Conference (SSDBM 2005), June 27-29, 2005, University of California, Santa Barbara, pp. 87-90.
27. Jasso, H., Shin, P., Fountain, T., and Pennington, D., (2004), Using wavelets for the classification of hyperspectral images. *Fourth European Conference on Ecological Modelling and Fourth International Workshop on Environmental Applications of Machine Learning, ECEM/EAML 2004*, September 27 – October 1, 2004, Bled, Slovenia.
28. Pennington, D., H. Jasso, P. Shin, and T. Fountain, (2004), The effect of landscape heterogeneity on classification accuracy: a comparison of classifier prediction in sub-optimal sampling conditions. *Seventh Workshop on Mining Scientific and Engineering Datasets, 2004 SIAM International Conference on Data Mining (SDM 2004)*, April 24, 2004, Lake Buena Vista, Florida, pp. 11-20.
29. Vande Castle, J., Pennington, D., Fountain, T. and Pancake, C., (2002), A spatial data workbench for data mining, analyses, and synthesis. LTER Information Managers Workshop, The Ecoinformatics Challenge: Meeting Ecological Information Needs for the Site, Network, and Community, July 14-18, 2002, Orlando, Florida, vol. 7: 420-424.
30. Swanson, F.J., Cissel, J.H., Pennington, D.D., and Jones, J.A., (2002), Framing the discussion of future forestry in the Pacific Northwest. A.C. Johnson, R.W. Haynes, and R.A. Monserud, Editors, *Congruent Management of Multiple Resources: Proceedings from the Wood Compatibility Initiative Workshop*, Stevenson, Washington, December 4-7, 2001. U.S. Department of Agriculture Pacific Northwest Research Station General Technical Report PNW-GTR-563.
31. Collinson, J.W., Pennington, D.C. and N.R. Kemp, (1986), Stratigraphy and petrology of Permian and Triassic fluvial deposits in northern Victoria Land, Antarctica. In: *Geological Investigations in Northern Victoria Land*, Antarctic Research Series 46, p 211-242.
32. Collinson, J.W., Pennington, D.C. and N.R. Kemp, (1983), Sedimentary petrology of Permian-Triassic fluvial rocks in Allan Hills, central Victoria Land. *Antarctic Journal of the United States Review* 18(5):20-22.
33. Zawiskie, J., Chapman, D. and R. Alley, (1982), Depositional History of the Paleocene-Eocene Colton Formation, North-Central Utah. *Utah Geol. Assoc. Pub*. 10, p. 273-284.

Edited Book Chapters

1. Krause, C. and Pennington, D. (2012), Strategic Decisions in Conservation: Using Species Distribution Modeling to Match Ecological Requirements to Available Habitat. In: Plant Reintroduction in a Changing Climate: Promises and Perils, Joyce Maschinski and Kristin E. Haskins, Eds. Washington DC:Island Press, 432 pp., ISBN 1597268305.
2. Pennington, D., Higgins, D., Peterson, A.T., Jones, M.B., Ludaescher, B., and Bowers, S., (2007), Ecological Niche Modeling Using the Kepler Workflow System. In: *Workflows for e-Science* (I. Taylor, D. Gannon, E. Deelman, and M. Shields, eds.), Springer-Verlag.

Book Reviews

Pennington, D. (2012), Working toward an integrative understanding of work in living systems. *BioScience* 62(5): 518-519.

Dissertations and Theses

Ph.D. dissertation: Comparison of Structure and Function of Human-Impacted and Natural Forest Landscapes in the Western Cascades of Oregon, Oregon State University,

M.S. thesis: Sedimentary petrology of the Colton Formation (Upper Paleocene-Eocene), central Utah, Ohio State University.

B.S. thesis: Clay minerals of the Jurassic Arapien, Twist Gulch and Morrison Formations of central Utah, Ohio State University.

Non-Peer Reviewed Publications

1. Baker, K.S., Karasti, H., Vanderbilt, K., and Pennington, D. (2011), LTER Information Management and Collaborative Learning Environments: Final Report for the NSF International LTER Supplement 2009. Scripps Institution of Oceanography Technical Report, july 2011. Online at URL: http://escholarship.org/uc/item/9k2879fp#page-2.
2. Pennington, D. and Gates, A.Q., (2010), The CyberShARE approach to engaging collaborative research teams in computational and data intensive science and engineering. White Paper for the NSF Workshop on Cyberinfrastructure Community Development, Arlington, VA, September 22, 2010.
3. Baker, K., Pennington, D., and Porter, J., (2006), Multiple approaches to semantic issues: vocabularies, dictionaries and ontologies. *Databits*, a publication of the Long Term Ecological Research (LTER) Network, Spring 2006.
4. Pennington, D., (2006), Navigating semantic approaches: from keywords to ontologies. *Databits*, a publication of the Long Term Ecological Research (LTER) Network, Spring 2006.
5. Pennington, D., (2005), Cyberinfrastructure for grassland biodiversity studies. *The Network News*, a publication of the Long Term Ecological Research (LTER) Network, Spring 2005.

Invited Speaker

1. "Semantic Heterogeneity: Surviving the Earth Science Data Deluge." Joint presentations at South Dakota State University Geographic Information Science Center of Excellence (GIScCE) and USGS Earth Resources Observations and Science (EROS) Data Center, Brookings, South Dakota, March 18-19, 2013.
2. "A model for knowledge synthesis across disciplines." 3rd Annual Conference for the Science of Team Science, Northwestern University, Chicago, IL, April 16-19, 2012.

3. "Enabling Interdisciplinary Teams." Texas Tech University Interdisciplinary Academy, February 3, 2012.
4. "Science and Technology Research Teams and the Fuzzy Front End of Innovation." Department of Computer Science at University of Texas at El Paso Fall Seminar Series, October 7, 2011.
5. "Synergy and Co-Emergent Innovation in Interdisciplinary Research." Department of Biology at Texas Tech University Fall Seminar Series, September 28, 2011, Lubbock, Texas.
6. "Synergy and Co-Emergent Innovation in Interdisciplinary Research." School of the Coast and Environment at Louisiana State University Fall Seminar Series, September 16, 2011, Baton Rouge, Louisiana.
7. "Participatory Design of Human-Centered Cyberinfrastructure." American Geophysical Union Annual Fall Meeting, Session: "*Advances in Cyberinfrastructure for the Earth and Environmental Sciences*", December 13-17, 2010, San Francisco, CA.
8. "Participatory Design of Research Collaboratories." New Mexico Cyberinfrastructure Day, April 22, 2010, Albuquerque, New Mexico.
9. "The Science of Collaboration." Center for Disease Control, Atlanta, GA, January 13, 2010.
10. "Opportunities and Challenges of Collaboration." 17th General Assembly of the Ibero-American Science and Technology Education Consortium (ISTEC), October 27, 2009, University of New Mexico.
11. "Structure and Function of Cross-Disciplinary Collaboration and the Flow of Information." University of Wisconsin Seminar on Information Management in Ecology, April 2, 2008.
12. New Mexico Cyberinfrastructure Day, March 10-11, 2008, Las Vegas, New Mexico. "If You Build It, Will They Come and How Will They Get There?"
13. 3rd International Workshop on ILTER Ecological Information Management in the East Asia-Pacific Region, October 16-21, 2007, Seoul Korea. "Structure and Function of Cross-Disciplinary Collaborations and the Flow of Information" and "Advances in Technology-Enabled Science: An Overview."
14. East Asian Pacific ILTER Workshop, July 10, 2007, Taiwan. "Scientific Workflows" and "Introduction to Kepler Workflow System."
15. Workshop Panel: Terra Cognita 2006 – Directions to the Geospatial Semantic Web, 5th International Semantic Web Conference (ISWC'06), November 6, 2006, Athens, Georgia.
16. Ocean Informatics Exchange, Scripps Institution of Oceanography, University of California at San Diego, March 16, 2005, "Knowledge representation in scientific informatics."
17. Oregon State University IGERT in Ecosystem Informatics Colloquia, December 3, 2004, "Ecoinformatics and the Research Cycle".
18. National Science Foundation Division of Environmental Biology Distinguished Lecturer, January 26, 2004, "Vision for the 21st Century Information Environment in Ecology."
19. Long Term Ecological Research All-Scientists Meeting, September 19, 2003, "Artificial Intelligence Applications in Remote Sensing."
20. Long Term Ecological Research All-Scientists Meeting, September 21, 2003, "The Spatial Data Workbench."

<u>Conference Presentations</u>

1. Ellins, K., Serpa, L., Pennington, D., Riggs, E., Fox, S., Mosher, S., and Miller, K. (2013) *DIG Texas Instructional Blueprints for Teaching Earth and Space Science*. Geological Society of America South-Central Section 47th Annual Meeting, April 4-5, 2013.
2. Pennington, D., Gandara, A., and Gris, I. (2012) *The Virtual Learning Commons: Supporting the Fuzzy Front End of Scientific Research with Emerging Technologies*. American Geophysical Union Annual Fall Meeting, Dec. 3-7, 2012 San Francisco, CA.
3. Pennington, D., Gandara, A., and Gris, I. (2012) *The Virtual Learning Commons: Supporting Science Education with Emerging Technologies*. American Geophysical Union Annual Fall Meeting, Dec. 3-7, 2012 San Francisco, CA.
4. Pennington, D. *New Models of Knowledge Integration Across Disciplines: Collective Learning Processes.* Poster presentation at the Socio-Environmental Synthesis Center (SESYNC) Education Workshop, June 4-5, 2012.
5. Pennington, D. *A Model of Knowledge Synthesis Across Disciplines*. Science of Team Science Conference, Chicago IL, april 18, 2012.
6. Pennington, D. The Virtual Learning Commons. American Association of Geographers Annual Meeting, Special session: *Mapping Cyberspace and Social Networks II*, February 24-27, 2012, New York, NY.
7. Pennington, D., Titcomb, A., and Nation, M. Evaluation as a Methodology for Understanding and Enabling Interdisciplinary Team Science. American Evaluation Association. November 5, 2011.
8. Pennington, D. The CyberShARE Networked Learning Environment. American Association of Geographers Annual Meeting, Special session: *Educating a Workforce Literate in Cyberinfrastructure*, April 12-16, 2011, Seattle, WA.
9. McConnell, M., Fair, J., Rivas, A., and Pennington, D. Bio-Geo-Dynamic Indicators of Disease: A Workshop for Interdisciplinary Collaborations. 1st International One Health Congress, February 14-16, 2011, Melbourne, Australia.
10. Pennington, D. and Gates, A. Participatory Design of Human-Centered Cyberinfrastructure. American Geophysical Union Annual Fall Meeting, Session: "*Advances in Cyberinfrastructure for the Earth and Environmental Sciences*", December 13-17, 2010, San Francisco, CA.
11. Pennington, D. Reasoning about knowledge in cross-disciplinary teams. Annual Meeting American Geophysical Union, December 14-18, 2009. San Franciso, CA.
12. Baker, K. and Pennington, D. Information infrastructure, information environments, and long-term collaboration. Annual Meeting American Geophysical Union, December 14-18, 2009. San Franciso, CA.
13. Pennington, D. Creative collaboration between scientists and technology experts: Integrating conceptual spaces and constructing collaborative places. Annual Meeting American Association of Geographers, March 22-27, 2009, Las Vegas, Nevada.
14. Pennington, D. Enabling Co-Emergent Innovation through Collaboration between Science and Technology Researchers. 83rd annual Multidisciplinary Meeting, AAAS Southwestern and Rocky Mountain Division, April 9-12, 2008, University of New Mexico, Albuquerque, NM.
15. Pennington, D. Supporting large-scale science with workflows. 2nd Workshop on Workflows in Support of Large-Scale Science (WORKS07), High Performance Distributed Computing 2007, June 25, 2007, Monterey Bay California.

16. Pennington, D., Madin, J., Villa, F., and Athanasiadis, I.N. Computer-supported collaborative knowledge modeling in ecology. *Proceedings: Workshop on Social and Collaborative Construction of Structured Knowledge*, 16th International World Wide Web Conference (WWW2007), May 8, 2007, Banff, Canada.
17. Pennington, D. Using exploratory modeling to quantify the range of uncertainty in historical wildfire modeling and implications for current and future biodiversity in the Oregon Cascades. *5th International Conference on Ecological Informatics (ISEI5)*, Dec. 4-7, 2006, Santa Barbara, California.
18. Pennington, D., Michener, W.K., Higgins, D., Peterson, A. Townsend. Ecological niche modeling with the Kepler Workflow System. *5th International Conference on Ecological Informatics (ISEI5)*, Dec. 4-7, 2006, Santa Barbara, California.
19. Pennington, D. Representing the dimensions of an ecological niche. 5th International Semantic Web Conference (ISWC'06) Workshop: Terra Cognita 2006 – Directions to the Geospatial Semantic Web, November 6, 2006, Athens, Georgia
20. Pennington, D., Michener, W.K., Zhang, J., et al. The Science Environment for Ecological Knowledge (SEEK): A distributed environment for ecological modeling and analysis. *AAG 2005*, April 5-9, 2005, Denver, Colorado.
21. Pennington, D., Berkley, C., Bowers, S., Higgins, D., Jones, M.B., Ludaescher, B., Michener, W,.K., Rajasekar, A., and Schildhauer, M. The Science Environment for Ecological Knowledge (SEEK): A Distributed, Ontologically-Driven Environment for Ecological Modeling and Analysis (extended abstract). *Proceedings: GIScience '04*, October 20-23, 2004, University of Maryland.
22. Pennington, D., H. Jasso, P. Shin, and T. Fountain. The effect of landscape heterogeneity on classification accuracy: a comparison of classifier prediction in sub-optimal sampling conditions. *Seventh Workshop on Mining Scientific and Engineering Datasets, 2004 SIAM International Conference on Data Mining (SDM 2004)*, April 24, 2004, Lake Buena Vista, Florida, pp. 11-20.
23. Pennington, D., Michener, B., Beach, J., Jones, M., Judaescher, B., Schildhauer, M. Ecological Niche Modeling with the Science Environment for Ecological Knowledge (SEEK) Infrastructure (Abstract). *USIALE 2004 Conference Proceedings*, March 31 – April 2, 2004, Las Vegas, Nevada.
24. Pennington, D., Vande Castle, J., Fountain, T., and Wang, G. Spatio-temporal data mining of remotely sensed imagery for ecology (Abstract). *GIScience 2002: Second International Conference on Geographic Information Science, Abstracts*, September 25-28, 2002, Boulder, Colorado, p. 138-140.
25. Pennington, D. Spatiotemporal analysis of landscape structure, function and change in the western Cascades of Oregon (Abstract). *USIALE 2001 Conference Proceedings*, Apr. 25-29, 2001, Tempe, AZ.
26. Pennington, D. Spatial analysis of landscapes: characterizing structure, function and change with GIS (Abstract). *AAG 2001 Conference Proceedings*, Feb. 27-Mar.3, 2001, New York, New York.

COMMUNITY SERVICE

Organized Meetings, Workshops and Sessions

1. With Deborah McGuinnes, Christopher (Kit) Macleod, and Hassan Babaie. AGU Annual Meeting, IN51D and IN53D. Semantics and Cyberinfrastructures for Next Generation Science, December 2012, San Francisco.
2. With W. Hargrove, BienESTAR, August, 2011.University of Texas at El Paso.
3. With M. McConnell, and J. Fair, and A. Rivas, Working meeting on ecology of infectious disease (geo-epidemiology group). July 2011, University of New Mexico.
4. With M. McConnell, and J. Fair, GIS and Epidemiology Workshop (geo-epidemiology group). Feb 2011, University of New Mexico.
5. CyberShare and LTER Information Managers, Dec 9, 2010, University of Texas at El Paso.
6. With M. McConnell, J. Fair, and A. Rivas, Designing Informative Indicators Workshop (geo-epidemiology group). Nov 2010, University of New Mexico.
7. Integrated Methods and Tools from Patch Metric Analysis, Species Distribution Modeling, and Macroecology for Complex Landscape and Biotic Change Analysis. Workshop for the US-IALE 2010 Landscape Ecology Symposium, April 5-9, 2010, Athens, GA.
8. CI-Team All Hands Meeting. Jan 5-7, 2010.
9. CI-Design Integrated Analysis Working Meeting. November 2-4, 2009.
10. CI-Design Lifemapper Working Meeting. Sept. 24-25, 2009, University of Kansas.
11. CI- Design Collaboration Systems Working Meeting. July 26, 2009, Santa Fe Complex, Santa Fe, NM.
12. CI- Design Collaboration Systems Working Meeting. April 29, 2009, University of New Mexico.
13. CI-Design Working Meeting (MoVE group). Jan 7-9, 2009, University of New Mexico.
14. CI-Design Lifemapper Working Meeting. Nov 11-12, 2008, Santa Fe, New Mexico.
15. CI-Design Working Meeting (R2R group). Oct 15-17, 2008, Northern Arizona University.
16. CI-Design Working Meeting (R2R group). May 28-30, 2008, University of New Mexico.
17. CI-Strategy Workshop. Jan 3-4, 2008, University of New Mexico.
18. CI-Team Design Collaboration Systems Working Meeting. Dec 17-20, 2007, University of New Mexico.
19. CI-Vision Workshop. May 30-Jun 1, 2007, University of New Mexico.
20. CI-Team Virtual Seminar on Cyberinfrastructure in Science. Jan-May 2007, University of New Mexico, University of Arizona, New Mexico Tech, and Northern Arizona University.
21. SEEK Biodiversity modeling and analysis working meeting. March 7-10, 2006, University of New Mexico.
22. with Schildhauer, M., and Bowers, S., SEEK Workshop on formal ontologies in ecology. January 24-27, 2006, San Antonio, Texas.
23. with Schildhauer, M., Ludaescher, and Bowers, S., SEEK Workshop on Cyberinfrastructure for Biodiversity and Productivity Analyses. NCEAS, September 26-30, 2005. Santa Barbara, California.
24. with Jones, J., and Romanello, S., Empowering Ecologists with Informatics Education and Training. ESA evening session, August 7-12, 2005, Montreal, Canada.
25. with Schildhauer, M., Ludaescher, B., Bowers, S., SEEK Workshop on Knowledge Representation and Ontologies for Biodiversity and Productivity Analyses. UC Davis, March 7-10, 2005, Davis, California.
26. with Peterson, A.T., SEEK Workshop on Cyberinfrastructure for Ecological Niche Modeling. December 13-17, 2004, University of New Mexico, Albuquerque, New Mexico.

27. with Schildhauer, M., Ludaescher, and Bowers, S., SEEK Workshop on Cyberinfrastructure for Biodiversity and Productivity Analyses. UC San Diego, September 21-23, 2004. San Diego, California
28. with Michener, W. SEEK meeting on Ecological Niche Modeling. Sevilleta LTER Field Station, February 1-7, 2004, Socorro, New Mexico.
29. with Michener, W., SEEK meeting on Biodiversity and Ecological Analysis and Modeling, University of New Mexico, August 26-28, Albuquerque, NM.
30. with Michener, W., SEEK meeting on Ecological Niche Modeling, August 6-8, 2003, Cozumel, Mexico.

Reviewer

1. 2005-present Reviewer, NSF proposal panels – Cyber-Enabled Data and Informatics (CDI); Advances in Biological Informatics (ABI), Cyberinfrastructure Team (CI-Team) programs.
2. 2005-present Reviewer, journal articles – BioScience, Biogeography, Ecology and Society, Environmental Modelling and Software, Global Change Biology, Global Environmental Change, Earth and Environmental Informatics, IJ Ecological Informatics, Remote Sensing of Environment, Water Resources Management, Translational Behavioral Medicine

Committees

3. 2013-present lead for UTEP I3 Move Community on Interdisciplinary Collaboration
4. 2012-present NSF I3 project: UTEP Pro-STEM Council for Institutional Integration and Innovation; Co-lead for subcommittee on student success. Developing technical infrastructure, policies and procedures, and community interactions that promote sharing resources across campus.
5. 2012-present NASA Data System Working Groups on Semantic Technologies, Earth Science Collaboratory.
6. 2011-present UTEP ORSP Proposal Development Team. Conduct interdisciplinary research Vision Charrettes. Occasional proposal review and revision. Frequent consulting for emerging interdisciplinary teams and team leaders.
7. UTEP ORSP Brown Bag Series presentation "Interdisciplinary knowledge creation." June 28, 2012.
8. 2011-2012 Led UTEP reading group on interdisciplinary research collaboration.
9. 2008-2009 UNM Committee on Research Collaboration
10. 2007-2008 Steering committee, Pan-American Advanced Studies Institute (PASI) on Cyberinfrastructure for International Collaborative Biodiversity and Ecological Informatics.
11. 2006-2009 Oregon State University, External advisory board member for the OSU Ecosystem Informatics Program.
12. 2006 University of New Mexico, Committee for assessment of campus-wide geospatial needs and resources.
13. 3/2006 NEON Cyberinfrastructure Specification Meeting II, San Diego, California
14. 2005 University of New Mexico, Search Committee, Geography Lecturer in GIScience.
15. 2005 University Consortium for Geographic Information Science (UCGIS), University of New Mexico alternate delegate.
16. 9/2004-present University of New Mexico, GIS Stakeholders Committee.
17. 12/2003 – 1/2004 University of New Mexico, Search Committee, LTER Network Office, Network Information Services Developer.