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## EDUCATION

**University of Arizona,** Tucson, AZ

*B. S.,* Wildlife, Watershed and Rangeland Resources
*Graduation date:* May 2006
*Area of concentration:* Wildlife Science
*Honors Thesis:* Effectiveness of Riparian Protection on Small Mammal Communities Near Development
*Thesis Advisor:* Dr. Robert J. Steidl
*Honors:* suma cum laude; 4.0 GPA

**Graduate Record Exams:**

*Verbal:* 750 / 99th percentile
*Quantitative:* 760 / 85th percentile
*Analytical:* 6.0 / 96th percentile

## HONORS, AWARDS AND SCHOLARSHIPS

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|---|---|
| Graduate and Professional Student Council Student Showcase: 2nd Place | 2008 |
| Pistor-Stanley Scholarship | 2008 |
| Southern Arizona Environmental Management Society tuition scholarship | 2008 |
| Graduate and Professional Student Council Travel Grant Award | 2008 |
| USDA MS-CREES Ecohydrology Fellowship | 2007-2009 |
| Institute for the Study of Planet Earth Graduate Travel Grant Award | 2007, 2008 |
| University of Arizona Graduate College Fellowship | 2007 |
| Institute for the Study of Planet Earth Graduate Poster Competition: 2nd Place | 2007 |
| School of Natural Resources Tuition and Registration Scholarship | 2007 |
| Outstanding Graduating Senior, College of Agriculture and Life Sciences | 2006 |
| Outstanding Graduating Senior, School of Natural Resources | 2006 |
| NASA Undergraduate Research Internship | 2005-2006 |
| College of Agriculture and Life Science Dean's list | 2004-2006 |
| Charles R. Coughlin Scholarship | 2004, 2005 |
| Lionel Drake Scholarship | 2004, 2005 |
| Jim & Mary Faul Scholarship | 2005 |
| Alma Wilson Scholarship | 2004 |

## RESEARCH EXPERIENCE

**Arizona Remote Sensing Center, Office of Arid Lands Studies, University of Arizona,** Tucson, AZ

*Research Assistant,* 2007-present

- Assess phenological metrics in vegetation communities of a Sky Island in Arizona to detect change due to climatic and other factors.  Extract, process, and evaluate Normalized Difference Vegetation Index (NDVI) from Moderate Resolution Imaging Spectroradiometer (MODIS) imagery using time-series

analysis software.  Perform multivariate statistical analyses on pheno-metrics and their response to climatic variables.
- Gather and analyze vegetation data for the Senegal River Valley, to assist in development and training for a decision-support-system for the Senegal Valley Management Consortium (OMVS).  Document and train peers on the processes of downloading, processing, extracting, and analyzing vegetation time-series data.
- Access and process imagery for use in research and assessment of rangeland conditions.  Provide assistance to various researchers in gathering and interpreting remotely sensed phenology and climate time-series data.

*Research Specialist, 2006-2007*

- Assessed phenological metrics in vegetation communities of a Sky Island in Arizona to detect change due to climatic and other factors.  Extracted, processed, and evaluated MODIS NDVI imagery using Timesat software.  Performed multivariate analyses on pheno-metrics and determined their response to climatic variables.
- Performed field measurements and data analysis on recently burned sites, using Landscape Functional Analysis to assess ecosystem source-sink dynamics in burned landscapes.  Assisted in data extraction for burned sites around the world.
- Built and maintained processing programs to facilitate easy access and interpretation of time-series data.
- Assisted with spectral measurements of various desert plants using analytical spectral device.
- Extracted and analyzed multi-temporal satellite data, including NDVI, temperature, precipitation, and other measurements, and prepared geographic images and datasets for related studies and proposals.
- Assisted with off-campus knowledge transfer for the Office of Arid Lands Studies' Geospatial Extension Program, using a "Toolkit" composed of Garmin GPS, HP iPAQs, and ESRI HGIS software, as well as on-site training.  Gathered and processed imagery, prepared and tested toolkit, trained users around the region.
- Assist with new undergraduate interns at ARSC, providing guidance in land surface phenology, spatial analysis, remote sensing, and general lab procedures.

*NASA Undergraduate Research Intern, 2005-2006*

- Evaluated the feasibility of satellite imagery to monitor success of revegetated abandoned farmlands. Wrote and implemented scripts to extract NDVI values from Advanced Very High Resolution Radiometer (AVHRR) and MODIS satellite imagery and precipitation data for replanted sites and associated controls.  Determined the correlation between extracted precipitation data and weather station measurements.  Analyzed time-series NDVI and precipitation data compared to field data and phenology for revegetated plots.  Collaborated with field scientists to corroborate our results.
- Assisted with training for the Office of Arid Lands Studies' Geospatial Extension Program.
- Extracted and analyzed NDVI and precipitation data and field measurements for the study of abandoned agricultural fields undergoing natural succession.

## Related Experience

**Holiday Expeditions,** Salt Lake City, UT

*Company Leader*, 2000-2008

- Accompanied paying guests down rivers and mountain bike trails on the Colorado Plateau.  Oversaw and implemented all stages of full-service trips 2-6 days in length.  Informed guests about the ecology, geology, history, culture and issues of the Colorado Plateau region.  Rowed class 2-5 whitewater. Maintained and repaired all equipment.  Taught mountain biking technique.

**Stepping Stone Solutions,** Santa Clara, CA

*Software Engineer / Project Leader*, 1999-2000

- Upgraded, implemented and maintained contract management database using Lotus Domino, integrated with JavaScript and DHTML.  Designed, developed and documented application, and trained users and technical support staff.  Documented design and function.  Worked with design team to create and maintain reusable design modules built from LotusScript, JavaScript, DHTML, Java, and other tools.  Debugged and upgraded objects, and implemented into existing software.

**InfoImage,** Phoenix, AZ

*Software Engineer / Project Leader*, 1997-1998

- Upgraded and streamlined entire business-process environment through the creation and maintenance of Lotus Notes applications.  Designed, developed and implemented numerous workflow and tracking applications to be fully integrated in a scalable, web-enabled framework.  Enhanced proprietary Lotus Notes software package, winner of the Lotus Beacon Award for best administrative tool.
- Head of development support for clientele base and internal user environment.  Performed executive briefings for customers; presented and explained the company's suite of applications as proof-of-concept examples.

## Peer-Reviewed Publications

Breshears, D.D., Huxman, T.E., Adams, H.D., Zou, C.B., and Davison, J.E. 2008. Vegetation synchronously leans upslope as climate warms.  Proceedings of the National Academy of Sciences 105: 11591-11592.

## Oral Presentations

Davison, J.E., D.D. Breshears, W. J. D. van Leeuwen, "Vegetation phenology in response to climate variability and disturbance across woody-herbaceous plant gradients." Ecological Society of America 93rd annual conference, Milwaukee, WI, August 2008.

Davison, J.E., D.D. Breshears, W. J. D. van Leeuwen, "Drought-induced vegetation change in sky island mountains:  remotely sensed phenology along gradients of woody plant cover." MTNCLIM 2008 Mountain Climate Research Conference, Silverton CO, June 2008.

Davison, J.E., D.D. Breshears, W.J.D. van Leeuwen, "Remotely sensed vegetation dynamics along mountain gradients: characterization of Sky Islands and their responses to disturbance." Invited talk at Northern Arizona University's Geospatial Research and Information Library, Flagstaff, AZ April 2008.

Davison, J.E., D.D. Breshears, W. J. D. van Leeuwen, "Exploration of vegetation response to wildfire across a gradient of woody cover." Association for Fire Ecology, Tucson, AZ, January 2008.

Davison, J.E., W. J. D. van Leeuwen, D.D. Breshears, "Preliminary methodology to analyze vegetation response to disturbance across a gradient of woody cover." Southwest US Region, American Society for Photogrammetry and Remote Sensing  / USA-NPN annual meeting, Tucson, AZ, October 2007.

Davison, J.E., W. J. D. van Leeuwen, G. Casady, S. Marsh, "Phenological characterization of a sky island: Insights into vegetation patterns across space and time." International Symposium on Remote Sensing of Environment, San Jose, Costa Rica, June 2007.

Orr, B.J., S. Bautista, J.A. Alloza, W.J.D. van Leeuwen, G.M. Casady, J.E. Davison, L. Wittenberg, D. Malkinson, Y. Carmel and D.G. Neary, "Satellite-derived vegetation dynamics applied to post-fire

vulnerability assessment in Spain". The 4th International Wildland Fire Convention, Seville, Spain, June 2007.

Davison, J.E., W. J. D. van Leeuwen, G. Casady, S. Marsh, "Vegetation phenology and climate variability in a sky island in Arizona." US Regional Association of the International Association of Landscape Ecology, Tucson, AZ, April 2007.

Davison, J.E., W. J. D. van Leeuwen, M. Karpiscak, T. Bean, "Using remote sensing to monitor revegetation of arid retired farmlands."  Paper presented at the NASA SpaceGrant Symposium, Tucson, AZ, April 2006.

Davison, J.E., W. J. D. van Leeuwen, M. Karpiscak, T. Bean, "Using remote sensing to monitor revegetation of arid retired farmlands." Conference of the Arizona-Nevada Academy of Sciences Annual Meeting, Tucson, AZ, April 2006.

## Poster Presentations

Davison, J.E., W. J. D. van Leeuwen, D. D. Breshears, "Remotely sensed vegetation dynamics along Sky Island woody plant gradients: barometers of climate change and variability." University of Arizona Graduate and Professional Student Council Student Showcase, Tucson, AZ, October 2008.

Davison, J.E., W. J. D. van Leeuwen, D. D. Breshears, "Remotely sensed vegetation dynamics along Sky Island woody plant gradients: barometers of climate change and variability."  Southwest US Region, American Society for Photogrammetry and Remote Sensing  / USA-NPN annual meeting, Tucson, AZ, October 2008.

Davison, J.E., D. D. Breshears, W. J. D. van Leeuwen, "Preliminary analyses of vegetation phenology and disturbance patterns across a gradient of woody cover." Institute for the Study of Planet Earth ISPEFest Graduate Poster Competition, Tucson, AZ, November 2007.

Davison, J.E., J. Kariyeva, W. J. D. van Leeuwen, "Vegetation phenological response to precipitation in The Santa Rita Experimental Range: comparison of two remote measures." Research into Semi-Arid Systems Symposium, Tucson, AZ, October 2007.

Davison, J.E., W. J. D. van Leeuwen, G. Casady, S. Marsh, "Phenological metrics and their response to drought in Arizona: The Santa Rita Mountains." US Regional Association of the International Association of Landscape Ecology, Tucson, AZ, April 2007.

Davison, J.E., B. Orr, A. Thwaits, P. Rasmussen, A. Hays, "The Geospatial Toolkit: a field-based mapping solution." American Farm Bureau Association National Convention, Salt Lake City, UT, January 2007.

van Leeuwen, W. J. D., C. Huang, J.E. Davison, S. Marsh, G. Casady, "Phenology of a sky island: the Santa Rita Mountains." Numerical Terradynamic Simulation Group Global Vegetation Workshop, Missoula, MT, August 2006.

## Professional Organizations

- Ecological Society of America
- International Association of Landscape Ecology
- American Society of Photogrammetry and Remote Sensing

## Technical Skills

- ESRI ArcGIS 9.3
- ERDAS IMAGINE 9.2

- ENVI 4.5
- Mathworks MATLAB 2007b
- SAS JMP! 7.1
- LandCare Research DENSITY mark-recapture software
- AML, Python, LotusScript, JavaScript
- MS Office (Word, Excel, PowerPoint, Access), Lotus Notes/Domino R5 & R4.x

## Other Activities

- School of Natural Resources' Academic Program Review Self-Study participant, 2008
- Preceptor, Introductory Economics, Fall 2005
- Volunteer, Grand Canyon Wildlands Council
- Volunteer, Grand Canyon Youth
- Member, Defenders of Wildlife
- Member, Natural Resources Defense Council
- Member, Sierra Club