

TEXAS STATE VITA

Please note: For all entries, list most recent items first.

I. ACADEMIC/PROFESSIONAL BACKGROUND

A. Name: Benjamin F. Schwartz

Title: Associate Professor

B. Educational Background

<i>Degree</i>	<i>Year</i>	<i>University</i>	<i>Major</i>	<i>Thesis/Dissertation</i>
Ph.D.	2007	Virginia Tech	Geosciences	Hydrogeophysical quantification of infiltration and recharge through soil-filled sinkholes using Time Domain Reflectometry and Electrical Resistivity Tomography
B.S.	2003	Radford	Geology	

C. University Experience

<i>Position</i>	<i>University</i>	<i>Dates</i>
Assistant Professor	Texas State University – San Marcos, TX	2008 - Present
Associate Professor	Texas State University – San Marcos, TX	2015 - present
Director	Edwards Aquifer Research and Data Center	2015 - present

II. TEACHING

A. Courses Taught:

Spring 2017 – **BIO 7102:** Groundwater Surface Water Interactions, Texas State University
 Spring 2017 – **GEOL 4421:** Hydrogeology, Texas State University
 Fall 2016 – **BIO 7468:** Karst Hydrogeology and Geomorphology, Texas State University
 Spring 2016 – **GEOL 4421:** Hydrogeology, Texas State University
 Fall 2015 – **BIO 7468:** Groundwater Resources, Texas State University
 Spring 2015 – **BIO 7102:** Groundwater Surface Water Interactions, Texas State University
 Spring 2015 – **GEOL 4421:** Hydrogeology, Texas State University
 Fall 2014 – **BIO 7468:** Karst Hydrogeology and Geomorphology, Texas State University
 Spring 2014 – **BIO 7102:** Groundwater Surface Water Interactions, Texas State University
 Spring 2014 – **GEOL 4421:** Hydrogeology, Texas State University
 Fall 2013 – **BIO 7468:** Groundwater Resources, Texas State University
 Spring 2013 – **BIO 7102:** Groundwater Surface Water Interactions, Texas State University
 Spring 2013 – **GEOL 4421:** Hydrogeology, Texas State University
 Fall 2012 – **BIO 7360T:** Karst Hydrogeology and Geomorphology, Texas State University
 Spring 2012 – **BIO 7102:** Groundwater Surface Water Interactions, Texas State University
 Spring 2012 – **GEOL 4421:** Hydrogeology, Texas State University
 Fall 2011 – **BIO 7468:** Groundwater Resources, Texas State University
 Spring 2011 – **BIO 7102:** Groundwater Surface Water Interactions, Texas State University
 Spring 2011 – **GEOL 4421:** Hydrogeology, Texas State University
 Fall 2010 – **BIO 7360T:** Karst Hydrogeology and Geomorphology, Texas State University

Spring 2010 – **GEOL 4421**: Hydrogeology, Texas State University
 Spring 2010 – **BIO 7102**: Groundwater Surface Water Interactions, Texas State University
 Fall 2009 – **BIO 7468**: Groundwater Resources, Texas State University
 May 2009 – **Invited** to teach a 4-day short course on Speleology at Eastern TN State University
 Spring 2009 – **BIO 7360T**: Karst Hydrogeology and Geomorphology, Texas State University
 Spring 2009 – **BIO 7102**: Groundwater Surface Water Interactions, Texas State University
 Fall 2008 – **GEOL 4421**: Hydrogeology, Texas State University
 Spring 2007 – 1.5 months of Groundwater Hydrology, GEOL 4804, VT Dept. of Geosciences.

B. Graduate Theses/Dissertations or Exit Committees:

Schwartz as supervisor or co-advisor (start and end date indicates graduation)

2017- – **Supervisor** for M.S. candidate Dalila Loiacomo at Texas State University
 2016- – **Supervisor** for Ph.D. student William Coleman at Texas State University
 2015- – **Supervisor** for M.S. candidate Lenee Dedeaux at Texas State University
 2015- – **Supervisor** for M.S. candidate Mark Hiler at Texas State University
 2014- – **Supervisor** for Ph.D. student Aubri Jenson at Texas State University
 2014-2016 – **Supervisor** for M.S. candidate Sarah Zappitello at Texas State University
 2013-2016 – **Supervisor** for M.S. candidate Michael Markowski at Texas State University
 2012-2014 – **Co-supervisor** for M.S. candidate Aaron Swink at Texas State University
 2011- – **Supervisor** for Chasity Stinson, MS student at Texas State University
 2011-2015 – **Co-supervisor** for Ph.D. student Emrah Ozel at Texas State
 2009-2013 – **Supervisor** for Benjamin Hutchins, PhD student at Texas State University
 2009-2012 – **Supervisor** for Brett Gerard, MS student at Texas State University
 2009-2013 – **Supervisor** for Benjamin Tobin, PhD student at Texas State University
 2008-2010 – **Co-supervisor** for M.S. candidate Jonathan Gerst at Virginia Tech

Schwartz as committee member (start and end date indicates graduation)

2015- Committee member for Ph.D. student Zachary Adcock at Texas State University
 2015- Committee member for Ph.D. student Parvathi Nair at Texas State University
 2015-2016 Committee member for M.S. candidate Duane Freedman at Texas State University
 2014- Committee member for M.S. candidate Ovie Agare at Texas State University
 2014- Committee member for Ph.D. candidate Kumudan Grubh at Texas State University
 2012-2016 Committee member for M.S. candidate Lauren Loney at Texas State University
 2011-2015 Committee member for Ph.D. candidate Johanna Kovarik at Univ. of South Florida
 2011-2013 Committee member for M.S. candidate Mark Childre at UT San Antonio
 2011-2012 Committee member for M.S. candidate Laura McCalla at Texas State
 2008-2011 – Committee member for M.A. candidate Danielle Livingston at Texas State
 2008-2011 – Committee member for M.S. candidate Joshua Ethridge at Texas State
 2009-2011 – Committee member for M.S. candidate Goniela Iskali at Texas State
 2009-2011 – Committee member for M.S. candidate Goniela Iskali at Texas State
 2008-2010 – Committee member for M.S. candidate Crystal LaBoeuf at Texas State
 2008-2010 – Committee member for M.S. candidate Heather Dammeyer at Texas State
 2008-2010 – Committee member for M.S. candidate Kelly Goodsheller at Texas State

C. Courses Prepared and Curriculum Development:

Fall 2009 – BIO 7468: Groundwater Resources, lectures and lab exercises
 Spring 2009 – BIO 7360T: Karst Hydrogeology and Geomorphology, class materials
 Spring 2009 – BIO 7102: Groundwater Surface Water Interactions
 Fall 2008 - GEOL 4421: Hydrogeology, lectures and lab exercises

III. SCHOLARLY/CREATIVE

1. Chapters in Books (refereed):

- 1) **Schwartz, B. F.** and Davis, N. W., 2015, Exploration of Barberry Cave and the Construction of Big Bucks Pit Caves and Karst of Virginia. In: *The Caves of Burnsville Cove; Cave and Karst Systems of the World*. William B. White, editor. P. 151-166. DOI 10.1007/978-3-319-14391-0_1, Springer International Publishing Switzerland.
- 2) **Schwartz, B. F.**, Orndorff, W. D., Futrell, S. M., Lucas, P. C., 2009, Caves and Karst of Virginia. In: *Caves and Karst of North America*. A. N. Palmer and P. Palmer, editors. P. 39-51. A book published for the 2009 International Congress of Speleology held in Kerrville, Texas.

2. Articles

Refereed Journal Articles (* indicates Ph.D. student author, † indicates M.S. student author, ‡ indicates U.G. student author):

- 1) *Tobin, B. W. and **Schwartz, B. F.**, 2016, Using periodic hydrologic and geochemical sampling with limited continuous monitoring to characterize remote karst aquifers in the Kaweah River basin, California, USA, *Hydrological Processes* DOI: 10.1002/hyp.10859
- 2) †Dammeyer, H. C., Schwinning, S., **Schwartz, B. F.**, and Moore, G. W., 2016, Effects of juniper removal and rainfall variation on tree transpiration in a semi-arid karst: evidence of complex water storage dynamics: Effects of juniper removal in karst, *Hydrological Processes*, DOI: 10.1002/hyp.10938
- 3) *Hutchins, B. T., Engel, A. E., Nowlin, W. N., and **Schwartz, B. F.**, 2016, Chemolithoautotrophy Supports Macroinvertebrate Food Webs and Influences Diversity and Stability in Karst Aquifer Communities. *Journal of Ecology*, DOI: 10.1890/15-1129.1
- 4) *Tobin, B. W., **Schwartz, B. F.**, Kelly, M., and Despain, J. D., 2015, Fire Retardant and Post-Fire Nutrient Mobility in a Mountain Surface Water - Karst Groundwater System: The Hidden Fire, Sequoia National Park. *Environmental Earth Sciences*, 73:951-960.
- 5) Schreiber M, **Schwartz B**, Orndorff W, Doctor D, †Eagle S, †Gerst J., 2015, Instrumenting caves to collect hydrologic and geochemical data: Example from James

- Cave, Virginia, in Younos T and Parece T (eds). *Advances in Watershed Science and Assessment, Handbook of Environmental Chemistry*, v. 33, Springer, 205-231.
- 6) *Eagle, S., Orndorff, W., Schwartz, B., Doctor, D.H., †Gerst, J., and Schreiber, M., 2015, Analysis of hydrologic and geochemical time-series data at James Cave, Virginia: Implications for epikarst influence on recharge in Appalachian karst aquifers, *in* Feinberg, J., Gao, Y., and Alexander, E.C., Jr., eds., *Caves and Karst Across Time: Geological Society of America Special Paper 516*
 - 7) *Hutchins, B. T., **Schwartz, B. F.**, Nowlin, W. N., 2014, Morphological and trophic specialization in a subterranean amphipod assemblage. *Freshwater Biology*, 59, 2447-2461.
 - 8) **Schwartz, B. F.**, Schwinning, S., †Gerard, B., †Kukowski, K. R., †Stinson, C. L., and †Dammeyer, H. C., 2013, Using Hydrogeochemical and Ecohydrological Responses to Understand Epikarst Processes in Semi-Arid Systems, Edwards Plateau, Texas, USA. *Acta Carsologica*, V42, N2-3, p 315-325.
 - 9) *Hutchins, B. T., **Schwartz, B. F.**, Engel, A. S., 2013, Environmental Controls on Organic Matter Production and Transport Across Surface-Subsurface and Geochemical Boundaries in the Edwards Aquifer, Texas, USA. *Acta Carsologica*, V42, N2-3, p 245-259.
 - 10) *Tobin, B. W., *Hutchins, B. T., and **Schwartz, B. F.**, 2013, Spatial and temporal changes in invertebrate assemblage structure from the entrance to deep-cave zone of a temperate marble cave. *International Journal of Speleology*, V 43, N 3, p 203-214.
 - 11) *Hutchins, B. T., †Tovar, R. U., **Schwartz, B. F.**, 2013, New Records of Stygobionts from the Edwards Aquifer of Central Texas. *Speleobiology Notes*, V5, p 14-18
 - 12) *Luhmann, A. J., Covington, M. D., Alexander, S. C., Su Yi Chai, **Schwartz, B. F.**, Groten, J. T., Alexander, C. E., Jr., 2013, Comparison of discharge, chloride, temperature, uranine, δD , and suspended sediment responses from a multiple tracer test in karst. *Carbonates and Evaporites*, V28, p 191-199.
 - 13) †Kukowski, K. R., Schwinning, S., and **Schwartz, B. F.**, 2013, Hydraulic responses to extreme drought conditions in three co-dominant tree species in shallow soil over bedrock. *Oecologia*, V 171, p 819-830.
 - 14) *Luhmann, A. J., Covington, M. D., Alexander, S. C., Su Yi Chai, **Schwartz, B. F.**, Groten, J. T., Alexander, C. E., Jr., 2012, Comparing Conservative and Nonconservative Tracers in Karst and Using Them to Estimate Flow Path Geometry. *Journal of Hydrology*, V 448-449, 201-211.
 - 15) *Tobin, B. W., **Schwartz, B. F.**, 2012, Quantifying Concentrated and Diffuse Recharge in Two Marble Karst Aquifers: Big Spring and Tufa Spring, Sequoia and Kings Canyon National Parks, California, USA. *Journal of Cave and Karst Studies*, V 74(2), 186-196.

- 16) **Schwartz, B. F.**, W. D. Orndorff, M. J. Ficco, W. Balfour, N. W. Davis, and M. Futrell, 2009, Hydrogeology of the Mississippian Carbonate Karst System: Powell Mountain, Virginia. *Journal of Cave and Karst Studies*, 71(3), 168-179.
- 17) **Schwartz, B. F.**, Schreiber, M. S., 2009, Quantifying potential recharge in mantled sinkholes using ERT. *Journal of Ground Water*, 47(3), 370-381.
- 18) **Schwartz, B. F.**, Schreiber, M. S., Yan, T., 2008, Quantifying Field Scale Soil-moisture Using Electrical Resistivity Tomography. *Journal of Hydrology*, 362: 234-246
- 19) **Schwartz, B.F.**, Schreiber, M.E., Pooler, P.S. and Rimstidt, J.D., 2008. Calibrating Access-tube Time Domain Reflectometry Soil Water Measurements in Deep Heterogeneous Soils. *Soil Science Society of America Journal*, 72(4): 917-930.

b. Non-refereed Articles:

- 1) **Schwartz, B. F.**, 1999, Exploring Barberry Cave. *National Speleological Society News*, September, v. 57 no. 9. An article documenting the history of exploration in Barberry Cave, Bath County, Virginia.
- 2) **Schwartz, B. F.**, 1999, Project Caving and Permanent Rigging. *National Speleological Society News*, October, v. 57 no. 10. A technical report dealing with solutions to problems encountered with rigging in long-term project caving.
- 3) **Schwartz, B. F.**, 1993 - present, >20 Reports, maps and articles in *The Virginia Cellars*, the official publication of the Virginia Speleological Survey.
- 4) **Schwartz, B. F.**, 1994 - present, >20 Reports, maps and articles in *The BCCS News*, the official publication of the Butler Cave Conservation Society.

3. Conference Proceedings

a. Reviewed Conference Proceedings (* indicates Ph.D. student author):

- 1) *Hutchins, B. T., **Schwartz, B. F.**, 2013, Food Chain Length in Groundwater: Patterns in $\delta^{15}\text{N}$ Range. Proceedings of the 16th *International Congress of Speleology*, Brno, Czech Republic, July 21-28, 2013.
- 2) *Luhmann, A. J., Covington, M. D., Alexander, S. C., Chai, S. Y., **Schwartz, B. F.**, Groten, J. T., Alexander, E. C., Jr. 2011, Comparison of Discharge, Chloride, Temperature, Uranine, δD , and Suspended Sediment Responses from a Multiple Tracer Test in Karst. Proceedings of the 12th *Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst*. January 2011, St. Louis, Missouri.
- 3) Mock, L. **Schwartz, B. F.**, Nowlin, W. H., *Hutchins, B. T., Hardy, T., Bonner, T. H., 2011, The Role of Metrology in Monitoring and Preserving the Water Quality in the Edwards Aquifer in Central Texas. Proceedings of the 2011 *National Conference of Standards Laboratories International (NCSLI) Symposium*. August 21-25, 2011, National Harbor, MD.
- 4) Doctor, D. H., **Schwartz, B. F.**, Gary, M. O., 2009, Preliminary Development of a Quantitative Karst Classification System, PHORMS. Proceedings of the 15th *International Congress of Speleology*, Kerrville, TX, July 19-26, 2009.

- 5) **Schwartz, B. F.**, Doctor, D. H., 2009, Geomorphic and Hydrogeologic Evolution of Karst in the Burnsville Cove, Virginia, U.S.A.: New Evidence and Perspectives. Proceedings of the 15th *International Congress of Speleology*, Kerrville, TX, July 19-26, 2009.
- 6) **Schwartz, B. F.** and Schreiber, M. E., 2005, New Applications of Differential Electrical Resistivity Tomography and Time Domain Reflectometry to modeling infiltration and soil moisture in agricultural sinkholes. Proceedings of the 10th *Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst*. September 2005

b. Non-refereed conference proceedings:

- 1) Hardy, Thomas B., Nowlin, Weston, **Schwartz, Benjamin F.**, Bonner, Timothy, 2011, Implementation of the San Marcos River Observing System: a Spatially Explicit Delineation of a Spring System based on Physical, Hydrologic, Chemical, and Biological Monitoring. Proceedings of the: 8th *International Symposium on Ecohydraulics*, Seoul, Korea, September 12-16, 2010.
- 2) Orndorff, W., Hypes, R., Lucas, P., Fagan, J, Zokaites, C., Orndorff, Z., Lucas, C., **Schwartz, B. F.**, 2005, Protecting Virginia's Caves and Karst through the Environmental Review Process. Proceedings of the *National Cave and Karst Management Symposium*, November 2005.
- 3) **Schwartz B. F.**, Schreiber M. E., and Orndorff W., 2004. Hydrologic characterization of sinkholes in agricultural settings: Implications for best management practices. Proceedings of the *2004 Virginia Water Resources Research Symposium*, Blacksburg, Virginia, Oct 4-6, 2004.

4. Abstracts (* indicates Ph.D. student author, † indicates M.S. student author, ‡ indicates U.G. student author):

a. Invited Abstracts:

- 1) **Schwartz, B. F.**, Covington, M. D., Myre, J., Kotic, K., and Thaler, E., 2016. Two Years of Continuous Data from the Omega Cave System: What Have We Learned So Far? Geological Society of America Annual Meeting, Denver, CO, September 25-28, 2016.
- 2) **Schwartz, B. F.**, Covington, M. D., Myre, J., Kotic, K., Thaler, E., and Perne, M. 2015. Designing, Building, and Operating a Long-Term Instrumentation Network in the Omega Cave System, VA, USA: Results After the First Year. Geological Society of America Annual Meeting, Baltimore, MD, November 1-4, 2015.
- 3) **Schwartz, B.F.**, Gerard, Brett R., Schreiber, Madeline E., and Schwinning, Susan, 2013. A Deeper Understanding of Processes Controlling Hydrogeochemical Fluxes through Shallow Karstic Critical Zones (the Epikarst). American Geophysical Union Fall Meeting, San Francisco, CA, Dec 9-13, 2013
- 4) **Schwartz, B.F.**, Ficco, M. J., Covington, M. D., 2013. Temporal Variability in Species Richness and Abundance with High-Frequency Sampling from an Edwards Aquifer Artesian Well in San Marcos, TX, USA: Can Biotic Transport Provide Information About Flowpaths? Geological Society of America Annual Meeting, Denver, CO, Oct 27-30, 2013
- 5) **Schwartz, B.F.**, Ficco, M. J., Covington, M. D., 2013. 17 Years of Research and Exploration in the Omega Cave System: Joint Management of Virginia's Longest and

Deepest Cave by the Cave Conservancy of the Virginias and the U.S. Forest Service.
Geological Society of America Annual Meeting, Denver, CO, Oct 27-30, 2013

b. Accepted Abstracts:

- 1) *Jenson, Aubri, **Schwartz, B. F.**, Gao, Y., and Li, Y., 2017. Shallow Speleogenesis in a Coastal Carbonate Platform: Quintana Roo, Mexico. Geological Society of America – South-Central Section Meeting, San Antonio, TX, March 13-14, 2017.
- 2) †Hiler, Mark D., **Schwartz, B. F.**, and Schindel, G., 2017. Delineating the Springshed of Cave Without a Name: Dye Tracing in the Lower Glen Rose Limestone. Geological Society of America – South-Central Section Meeting, San Antonio, TX, March 13-14, 2017.
- 3) †Ray, Christopher J, Gai, Y., Suarez, M., **Schwartz, B. F.**, Rowe, H., Li, Y., Cheng, H., and Edwards, L., 2017. Late Quaternary Stalagmite Paleoclimate Records of Helictite Cave, VA. Geological Society of America – South-Central Section Meeting, San Antonio, TX, March 13-14, 2017.
- 4) †Dedeaux, Lenee, **Schwartz, B. F.**, Yuan, Y., Green, R. T., and Toll, N. J., 2017. Applying Data Mining Techniques to Model Hydraulic Head in the Edwards Aquifer. Geological Society of America – South-Central Section Meeting, San Antonio, TX, March 13-14, 2017.
- 5) †Zappitello, Saj, **Schwartz, B. F.**, Wierman, D. A., 2016. Aquifer Sources of the Pedernales River, Texas. Geological Society of America Annual Meeting, Denver, CO, September 25-28, 2016.
- 6) †Dedeaux, Lenee, **Schwartz, B. F.**, and Yuan, Y., 2016. Applying Data Mining Techniques to Capture Outliers in Hydraulic Head Data: Edwards Aquifer, Central Texas. Geological Society of America Annual Meeting, Denver, CO, September 25-28, 2016.
- 7) †Hiler, Mark D. and **Schwartz, B. F.**, 2016. Delineating the Springshed of Cave Without a Name: Dye Tracing in the Lower Glen Rose Limestone. Geological Society of America Annual Meeting, Denver, CO, September 25-28, 2016.
- 8) *Coleman, W. T., Hutchins, B. T., and **B.F. Schwartz**. 2016. Dynamics of Detectability: Insights from high-frequency sampling at a stygobiont hot-spot, Edwards Aquifer, Texas. *International Conference on Subterranean Biology (organized by International Society for Subterranean Biology)*. June 13-17, 2016, Fayetteville, Arkansas. Poster presentation.
- 9) *Jenson, A., Nice, C., and **B.F. Schwartz**. 2016. Molecular and Morphological Analysis of *Stygobromus sp.* near San Marcos, TX. *International Conference on Subterranean Biology (organized by International Society for Subterranean Biology)*. June 13-17, 2016, Fayetteville, Arkansas. Oral presentation.
- 10) †Worsham, M.R., *P.R. Nair, W.H. Nowlin, R. Gibson, and **B.F. Schwartz**. 2016. The effect of selection and phenotype of response to light in subterranean, epigeal, and interstitial Crangonyctidae. *International Conference on Subterranean Biology (organized by International Society for Subterranean Biology)*. June 13-17, 2016, Fayetteville, Arkansas. Oral presentation.
- 11) Nowlin, W.H., †L.A. Loney, *B.T. Hutchins, and **B.F. Schwartz**. 2016. Ecological stoichiometry and consumer-driven nutrient recycling in a subterranean aquatic community. *International Conference on Subterranean Biology (organized by International Society for Subterranean Biology)*. June 13-17, 2016, Fayetteville, Arkansas. Oral presentation.
- 12) *Hutchins, B.T, A.S. Engel, W.H. Nowlin, and **B.F. Schwartz**. 2016. Biodiversity, stability, and trophic complexity in the Edwards Aquifer, United States: The influence of chemolithoautotrophy on stygobiont community structure. *International Conference on*

- Subterranean Biology (organized by International Society for Subterranean Biology)*. June 13-17, 2016, Fayetteville, Arkansas. Oral presentation.
- 13) *Hutchins, B.T., W.H. Nowlin, †L.A. Loney, A.S. Engel, and **B.F. Schwartz**. 2016. Invertebrate diversity effects on nutrient use and nutrient recycling in groundwater systems. *Association for the Sciences of Limnology and Oceanography Annual Meeting*. Santa Fe, New Mexico. June 5-10, 2016 (Invited presentation). Oral presentation.
 - 14) Nowlin, W.H., †A.P Swink, and B.F. Schwartz. 2016. Factors affecting phosphorus uptake in karst rivers in central Texas. *Society for Freshwater Science Annual Meeting*. Sacramento, California. Oral presentation.
 - 15) †Swink, AP, W.H. Nowlin and B.F. Schwartz. 2016. A meta-analysis of P uptake rates in lotic ecosystems: influence of local conditions on global patterns. *Society for Freshwater Science Annual Meeting*. May 21-26, 2016, Sacramento, California. Oral presentation.
 - 16) *Jenson, Aubri., **Schwartz, Benjamin F.**, 2015. Modeling Speleogenesis and Aquifer Development in a Coastal Carbonate Platform: Quintana Roo, Mexico. Geological Society of America Annual Meeting, Baltimore, MD, November 1-4, 2015.
 - 17) *Jenson, Aubri., **Schwartz, Benjamin F.**, 2015. Estimating Cave Entrance Density Using GIS Analysis: Quintana Roo, Mexico. Geological Society of America Annual Meeting, Baltimore, MD, November 1-4, 2015.
 - 18) †Zappitello, Sarah J., **Schwartz, Benjamin F.**, 2015. Groundwater – Surface Water Interactions in the Pedernales River Basin, Texas. Geological Society of America Annual Meeting, Baltimore, MD, November 1-4, 2015.
 - 19) *Tobin, Benjamin W., **Schwartz, Benjamin F.**, Springer, A. E., Stevens, L., Ledbetter, J., Valle, C. M., and Schenk, E. R., 2015. Remote Karst Spring Characterization and Grouping to Focus Long-Term Monitoring Efforts in Sequoia, Kings Canyon, and Grand Canyon National Parks. Geological Society of America Annual Meeting, Baltimore, MD, November 1-4, 2015.
 - 20) †Markowski, Michael, **Schwartz, Benjamin F.**, Timmins, G., and Nowlin, W., 2015. Using Stormflow-Hydrograph Separation to Understand Infiltration and Recharge Processes in the Trinity Aquifer. Geological Society of America Annual Meeting, Baltimore, MD, November 1-4, 2015.
 - 21) *Benjamin T. Hutchins, **Benjamin F. Schwartz**, and Weston H. Nowlin, 2014. Trophic Specialization in a Diverse Assemblage of Phreatic Groundwater Amphipods. National Speleological Society Annual Meeting, Biospeleology Section, Huntsville, AL, July 14-28, 2014.
 - 22) Ray, C. J., Gao, Y, **Schwartz, B.F.**, Suarez, M. B., Rowe, B., and Edwards, R. L., 2013. Stable isotopes of a speleothem from Helictite Cave, Virginia. American Geophysical Union Fall Meeting, San Francisco, CA, Dec 9-13, 2013
 - 23) Schwinning, Susanne, Jensen, Jennifer, Lomas, Mark, **Schwartz, B.F.**, and Woodward, Ian, 2013. The Prediction of Drought-Related Tree Mortality in Vegetation Models. American Geophysical Union Fall Meeting, San Francisco, CA, Dec 9-13, 2013
 - 24) †Stinson, Chasity L., **Schwartz, Benjamin F.**, Schwinning, Susan, Gerard, Brett R., and Ramirez, Philip. Characterization of Epikarst Storage, Infiltration, and Recharge Using Applied Tracers and Drip Water Analysis: McCarty Cave, South-Central Texas, USA. Geological Society of America Annual Meeting, Charlotte, NC, November 3-7, 2013.
 - 25) *Tobin, B. W., and **Schwartz, B.F.**, 2013. The Role of Karst Groundwater in a Snowmelt-Dominated Hydrologic System: The Kaweah River, California, USA. Geological Society of America Annual Meeting, Denver, CO, Oct 27-30, 2013

- 26) †Rossi, N. P., Johnson, E. A., and **Schwartz, B.F.**, 2013. U-Pb Geochronology of Grenvillian and Late Jurassic Lower Crustal Xenoliths in the Shenandoah Valley. Geological Society of America Annual Meeting, Denver, CO, Oct 27-30, 2013
- 27) †Helsley, J. T., Johnson, E. A., Bodnar, R. J., Farley, C., and **Schwartz, B.F.**, 2013. Ultrahigh Temperatures Recorded in Lower Crustal Xenoliths from the Shenandoah Valley, Va. Geological Society of America Annual Meeting, Denver, CO, Oct 27-30, 2013
- 28) †Eagle, S., Orndorff, W., **Schwartz, B.F.**, Scott, H. and Schreiber, M.E., 2013. Analysis of Hydrologic and Geochemical Time Series Data at James Cave, Virginia: Implications for Epikarst Influence on Recharge in Appalachian Karst Aquifers. Geological Society of America Annual Meeting, Denver, CO, Oct 27-30, 2013
- 29) **Schwartz, B. F.**, Schwinning, S., Gerard, B., Kukowski, K. R., Stinson, C. L., and Dammeyer, H. C., 2013, Using Hydrogeochemical and Ecohydrological Responses to Understand Epikarst Processes in Semi-Arid Systems, Edwards Plateau, Texas, USA. Karst Waters Institute Conference – Carbon and Boundaries, Carlsbad, New Mexico, January 7-11, 2013.
- 30) ‡Wright, Amanda, Johnson, Elizabeth A., Phillips, Ron, **Schwartz, Benjamin F.**, 2013, Petrologic Investigation of Lower Crustal Xenoliths in Highland County, VA. James Madison University Student Research Symposium.
- 31) *Hutchins, B. T., **Schwartz, B. F.**, Engel, A. S., 2013, Environmental Controls on Organic Matter Production and Transport Across Surface-Subsurface and Geochemical Boundaries in the Edwards Aquifer, Texas, USA. Karst Waters Institute Conference – Carbon and Boundaries, Carlsbad, New Mexico, January 7-11, 2013.
- 32) **Schwartz, B. F.** and Gerard, B. R. Fine-scale Hydrologic and Geochemical Responses in Continuous Data Provide Clues to Understanding Epikarst Structure and Hydrogeology in the Edwards Plateau, Texas, USA. Geological Society of America, South-Central Section Annual Meeting, Austin, TX, April 5-6, 2013.
- 33) †Eagle, S., Schreiber, M.E., Orndorff, W., **Schwartz, B.F.**, Gerst J.D, Scott, H. 2012. Statistical analysis of geochemical data to characterize the role of the epikarst in controlling the quantity and quality of recharge to a telogenetic karst aquifer. Geological Society of America Annual Meeting, Charlotte NC Nov 4-7, 2012
- 34) Schwinning, Susanne, Kukowski, Kelly, and **Schwartz, Benjamin F.** Which traits are correlated with high drought mortality in trees? A case study from the Edwards Plateau, Texas, USA. Annual Conference of the British Ecological Society, Birmingham, UK, December 17-20, 2012.
- 35) *Tobin, Benjamin W., **Schwartz, Benjamin F.** Maintaining River Flow in an Alpine Karst Setting: The Roles of Snowmelt and Shallow and Deep Groundwater. Geological Society of America Annual Meeting, Charlotte, NC, November 3-7, 2012.
- 36) †Stinson, Chasity L., **Schwartz, Benjamin F.**, Gerard, Brett R., Schwinning, Susan, Ramirez, Philip, and Timmins, Gabrielle. Preliminary Results from a Multi-Tracer Epikarst Recharge Experiment: McCarty Cave, Texas, USA. Geological Society of America Annual Meeting, Charlotte, NC, November 3-7, 2012.
- 37) †Gerard, Brett R., **Schwartz, Benjamin F.**, Schwinning, Susan, Ramirez, Philip, Stinson, Chasity L., and Timmins, Gabrielle. Effects of Environmental Parameters and Precipitation Dynamics on Infiltration and Recharge into the Trinity Aquifer of Central Texas, USA. Geological Society of America Annual Meeting, Charlotte, NC, November 3-7, 2012.

- 38) †Eagle, Sarah D., Schreiber, Madeline E., Orndorff, William D., **Schwartz, Benjamin F.**, Gerst, Jonathan, and Scott, Heather. Statistical Analysis of Geochemical Data to Characterize the Role of Epikarst in Controlling the Quantity and Quality of Recharge to a Telogenetic Karst Aquifer. Geological Society of America Annual Meeting, Charlotte, NC, November 3-7, 2012.
- 39) †Swink, Aaron, Nowlin, Weston, and **Schwartz, Benjamin F.** Storm Mediated Changes in Nitrogen and Phosphorus Uptake Length in a Spring-Fed River. Great Plains Limnological Conference, Fayetteville, AR, October 6, 2012.
- 40) †Stinson, C. L., **Schwartz, B. F.**, Tobin, B. W., Gerard, B. R., Ramirez, P., Timmins, G., Hutchins, B., and Schwinning, S. Trinity Aquifer Epikarst Study Using $\delta^{18}\text{O}$ and $\delta^2\text{D}$ Stable Isotope Analysis, Cave Without A Name, South-Central Texas. Geological Society of America, South-Central Section Annual Meeting, Alpine, TX, March 8-9, 2012.
- 41) *Tobin, B. W., **Schwartz, B. F.**, Gerard, B. R., Ramirez, P., Timmins, G., Hutchins, B., Stinson, C. L., and Schwinning, S. Autogenic vs. Allogenic Recharge: Searching for the Source of the Stream in Cave Without A Name, Boerne, TX. Geological Society of America, South-Central Section Annual Meeting, Alpine, TX, March 8-9, 2012.
- 42) **Schwartz, B. F.**, Nowlin, W., Hutchins, B., Hardy, T. B., Ramirez, P., Timmins, G., Gerard, B. R., and Hoesel, K. Geochemical Trends and Storm Responses at San Marcos Springs, Texas: New Perspectives and New Questions. Geological Society of America, South-Central Section Annual Meeting, Alpine, TX, March 8-9, 2012.
- 43) †Gerard, B. R., **Schwartz, B. F.**, Ramirez, P., Stinson, C. L., Tobin, B. W., Timmins, G., Hutchins, B., and Schwinning, S. The Influence of Barometric Pressure Fluctuations on Cave Drip Rates. Geological Society of America, South-Central Section Annual Meeting, Alpine, TX, March 8-9, 2012.
- 44) Schreiber, M. E., **Schwartz, B. F.**, Orndorff, W. D., Gerst, J., and Scott, H. Epikarst Control on Quantity and Quality of Recharge to Karst Aquifers: Current Results from Long-Term Monitoring Within James Cave, Virginia. Geological Society of America Annual Meeting, Minneapolis, MN, October 8 – 13, 2011.
- 45) †Gerard, B. R., **Schwartz, B. F.**, and Schwinning, S., Modeling the Precipitation Threshold Required for Recharge in a Karst Aquifer of Central Texas. Geological Society of America Annual Meeting, Minneapolis, MN, October 8 – 13, 2011.
- 46) *Tobin, B. W., **Schwartz, B. F.**, Storm-event Responses of Five Karst Springs in the Kaweah River Basin, Sierra Nevada, California. Geological Society of America Annual Meeting, Minneapolis, MN, October 8 – 13, 2011.
- 47) **Schwartz, B. F.**, Gerard, B. R., Tobin, B. W., Ramirez, P., Hutchins, B., Schwinning, S. and Schreiber, M. E., Hydrogeochemical Responses at in-Cave Sites as Indicators of Epikarst Processes: Cave Without A Name, Central Texas, USA. Geological Society of America Annual Meeting, Minneapolis, MN, October 8 – 13, 2011.
- 48) Hardy, T., Nowlin, W., **Schwartz, B. F.**, and Bonner, T. H. San Marcos River Observing System American Fisheries Society, Annual Meeting, Seattle, WA, September 4-8, 2011.
- 49) Mock, L. **Schwartz, B. F.**, Nowlin, W. H., Hutchins, B. T., Hardy, T., Bonner, T. H., 2011, The Role of Metrology in Monitoring and Preserving the Water Quality in the Edwards Aquifer in Central Texas. 2011 National Conference of Standards Laboratories International (NCSLI) Symposium. August 21-25, 2011, National Harbor, MD.
- 50) *Hutchins, B. and **Schwartz, B. F.**, and Engel, A. S. Hydrogeologic and Geochemical Controls on Nutrient Availability and Food Web Dynamics in the Biodiverse Karstic

- Edwards Aquifer, TX, USA. Ecological Society of America, Annual Meeting, Austin, TX, August 7-12, 2011.
- 51) Engel, A. S., Hutchins, B. **Schwartz, B. F.**, Gray, C., and Birdwell, J. E. Evidence for a Non-terrigenous Food Web Base in the Edwards Aquifer, Texas. National Speleological Society, Annual Meeting, Glenwood Springs, CO. July 18-22, 2011.
- 52) *Hutchins, B.T., **Schwartz, B. F.**, and Engel A. S. Nutrient supply and chemolithoautotrophy as a possible driver of stygobiont diversity and aquifer evolution: the Edwards Aquifer of South-Central Texas. 2011 International Conference on Karst Hydrogeology and Ecosystems. Bowling Green, KY, June 8-10, 2011.
- 53) *Hutchins, B. and **Schwartz, B. F.**, and Engel A. S. Linking Hydrogeology, Geochemistry, and Microbiology to Food Web Dynamics in the Biodiverse Phreatic Karstic Edwards Aquifer, TX, USA. North American Benthological Society Annual Meeting, Providence, RI, May 22-26, 2011.
- 54) *Tobin, Benjamin W., **Schwartz, B. F.**, Quantifying Source Water Elevations for Karst Springs of the Sierra Nevada, California. The roles of Stable Isotopes in Water Cycle Research, Keystone, CO, March 29-31, 2011
- 55) *Scott, Heather, Schreiber, M. E., **Schwartz, B. F.** Orndorff, W. D. Spatial and Temporal Patterns of Temperature at James Cave, Virginia. Paper No. 6-8. Geological Society of America – Southeastern Section Meeting, Wilmington, NC, March 23-25, 2011.
- 56) Schwinning, S., Goodsheller, K. R., **Schwartz, B. F.** Fractured Epikarst Bedrock as Water Source for Woody Plants in Savanna. Abstract H11H-0925. AGU Fall Meeting, San Francisco, CA, December 13-17, 2010.
- 57) *Tobin, Benjamin W., **Schwartz, B. F.**, Downstream Evolution of Water Quality and Quantity in Mountain Marble Karst Aquifers Geological Society of America Annual Meeting, Denver, CO, October 31 – November 3, 2010.
- 58) **Schwartz, B. F.**, Gerst, J., Schreiber, M., Tobin, B. W., Orndorff, W., Doctor, D. H., Schwinning, S. Hydrologic Responses in Epikarst: A Comparative Study Between Virginia and Texas. Geological Society of America Annual Meeting, Denver, CO, October 31 – November 3, 2010.
- 59) Hardy, T. B., Nowlin, W., **Schwartz, B. F.**, Bonner, T. Implementation of the San Marcos River Observing System: a Spatially Explicit Delineation of a Spring System based on Physical, Hydrologic, Chemical and Biological Monitoring. 8th International Symposium on Ecohydraulics, Seoul, Korea, September 12-16, 2010.
- 60) **Schwartz, B. F.**, Barton, H., Futrell, M., and Ficco, M. Tongzi 2010: A summary report on the March expedition (China). National Speleological Society Annual Conference, Essex Junction, VT, August 2-6, 2010.
- 61) *Tobin, Benjamin W., **Schwartz, B. F.**, Assessing Groundwater Resources in a Mountain Setting Geological Society of America, Cordilleran Section Annual Meeting, Anaheim, CA, May 27-29, 2010.
- 62) †Brauch, B., Bennett, J., Urbanczyk, K., and **Schwartz, B. F.** Spring Studies in the Lower Canyons of the Rio Grande, Rio Grande Wild and Scenic River, Texas. Geological Society of America Meeting, North-Central and South Central Joint Meeting, Branson, MO, April 11-13, 2010.
- 63) **Schwartz, B. F.**, Doctor, D. H., Gary, M. O., and Covington, M. D. Quantifiable Characteristics for a Statistical Approach Toward Karst Classification. Geological Society of America Meeting, North-Central and South Central Joint Meeting, Branson, MO, April 11-13, 2010.
- 64) *Hutchins, B., **Schwartz, B. F.**, and Heard, T. M. Unusual $\delta^{18}\text{O}$ Values from the Edwards and Edwards Trinity Aquifers in Central Texas: Interpretations and Potential

- Fractionation Mechanisms. Geological Society of America Meeting, North-Central and South Central Joint Meeting, Branson, MO, April 11-13, 2010.
- 65) **Schwartz, B.F.**, Upchurch, G.R., Willard, D.A., Bernhardt, C.E., and Valella, P.A. 2009. A New Late Glacial Site in the Central Appalachians of Virginia. Preliminary Findings From Paleobotany, Palynology, and Geomorphology. Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract PP31C-1374. AGU Fall Meeting, San Francisco, CA, December 14-18, 2009.
- 66) Bennett, J., Urbanczyk, K., Brauch, B., **Schwartz, B. F.** and Shanks, W.C.P. The influence of Springs on Discharge and River Water Chemistry in the Lower Canyons, Rio Grande Wild and Scenic River, Texas. Geological Society of America Annual Meeting, Portland, OR, October 18-21, 2009.
- 67) Urbanczyk, K., Bennett, J., Brauch, B., Dyess, J., and **Schwartz, B. F.** Structural Geologic Features of the Lower Canyons, Rio Grande Wild and Scenic River, Texas. Geological Society of America Annual Meeting, Portland, OR, October 18-21, 2009.
- 68) Gao, Y., Anthony, D. M., and **Schwartz, B. F.** Development of a Karst Field School to Conduct Interdisciplinary Education and Research Activities in the Southeastern Appalachian Region. Geological Society of America Annual Meeting, Portland, OR, October 18-21, 2009.
- 69) †Gerst, Jonathan, **Schwartz, B. F.**, Schreiber, M. E., Doctor, D. H., Epikarst Role in Controlling the Quality of Karst Aquifer Recharge. Geological Society of America Annual Meeting, Portland, OR, October 18-21, 2009,
- 70) †Dammeyer, H. C., Goodsheller, K., Schwinning, S., **Schwartz, B. F.** Changes in tree water status due to clear-cutting in an oak/juniper woodland on the Edwards Plateau. Texas Chapter of the Society for Ecological Restoration, New Braunfels, October 6-8, 2009.
- 71) †Goodsheller, K., Dammeyer, H.C., Schwinning, S., **Schwartz, B. F.** Response to extreme drought by three Edwards Plateau tree species: live oak, Ashe juniper and cedar elm. Texas Chapter of the Society for Ecological Restoration, New Braunfels, October 6-8, 2009.
- 72) Doctor, D. H., **Schwartz, B. F.**, Gary, M. O., Preliminary Development of a Quantitative Karst Classification System, PHORMS. 15th International Congress of Speleology, Kerrville, TX, July 19-26, 2009.
- 73) **Schwartz, B. F.**, Doctor, D. H., Geomorphic and Hydrogeologic Evolution of Karst in the Burnsville Cove, Virginia, U.S.A.: New Evidence and Perspectives. 15th International Congress of Speleology, Kerrville, TX, July 19-26, 2009.
- 74) **Schwartz, B. F.**, Doctor, D. H., Culver, D., Gerst, J., Hyde, S., Orndorff, W., Pipan, T., Reid, J. W., Schreiber, M. Characterizing epikarst hydrogeology using integrated hydrologic, geochemical and biological approaches. Geological Society of America Annual Meeting, October 4-8, 2008.
- 75) **Schwartz, B. F.**, Doctor, D. H., Swezey, C. S., Piatak, N. M., Geologic and Geomorphic Controls on Conduit Development in Burnsville Cove, Bath County, Virginia. Geological Society of America Annual Meeting, October 4-8, 2008.
- 76) †Gerst, J., **Schwartz, B. F.**, Hyde, S., Schreiber, M., The Role of Epikarst in Controlling Water Quality. Geological Society of America Annual Meeting, October 4-8, 2008.
- 77) **Schwartz, B. F.**, Hyde, S., Schreiber, M. E., Orndorff, Doctor, D. H., Culver, D., Pipan, T., Reid, J. W., High resolution hydrobiogeochemical response of cave drip-waters to surface conditions. Second Appalachian Karst Symposium, Eastern Tennessee State University, Johnson City, TN, May, 2008.

- 78) **Schwartz, B. F.**, Orndorff, W., Ficco, J., Balfour, B., Davis, N. W., Futrell, M., Hydrogeology of the Mississippian Carbonate Karst System, Powell Mountain, Virginia. Second Appalachian Karst Symposium, Eastern Tennessee State University, Johnson City, TN, May, 2008.
- 79) ‡Hyde, S., **Schwartz, B. F.**, Lucas, P., 2007, Characterizing discharge signals and flow mechanisms at a Virginia ebb and flow karst spring. Poster presentation at the *Geological Society of America annual meeting*, October, 2007
- 80) **Schwartz, B. F.**, Schreiber, M., 2007, Field scale soil moisture measurements using TDR-calibrated ERT data. Oral presentation at the *Geological Society of America annual meeting*, October, 2007
- 81) **Schwartz, B. F.**, Schreiber, M., 2006, Examining temporal changes in soil moisture in a karst sinkhole using differential ERT and TDR. Oral presentation at the *Virginia Water Science and Technology Symposium*, November, 2006
- 82) **Schwartz, B. F.**, Schreiber, M., 2006, Integrating Differential Electrical Resistivity Tomography and Time Domain Reflectometry as a tool for modeling soil moisture and infiltration in sinkholes. Oral presentation at the *Geological Society of America annual meeting*, October, 2006
- 83) **Schwartz, B. F.**, 2006, An update on Omega Cave System: the last 6 years of exploration and discovery in Wise County, Virginia. Oral presentation at the *National Speleological Society annual meeting*, August, 2006
- 84) **Schwartz, B. F.**, Schreiber, M., 2006, Integrating Differential Electrical Resistivity Tomography and Time Domain Reflectometry as a tool for modeling soil moisture and infiltration in sinkholes. Poster presented at the *SEG 2006 Hydrogeophysics Workshop*. August, 2006
- 85) **Schwartz, B. F.**, 2006, Techniques for measuring soil moisture in sinkholes. Oral presentation at the *Graduate Student Research Symposium*, Virginia Tech Dept. of Geosciences, March, 2006
- 86) **Schwartz, B. F.** and Schreiber, M. E., 2005, Using TDR and 2D Differential ERT to monitor changes in soil moisture in mantled agricultural sinkholes. Oral presentation at the *Geological Society of America Annual meeting*, October, 2005
- 87) **Schwartz, B. F.**, 2005, A multi-method approach to characterizing sinkhole hydrogeology and recharge mechanisms in agricultural settings. Oral presentation at the *Graduate Student Research Symposium*, Virginia Tech Dept. of Geosciences, March, 2005
- 88) **Schwartz, B. F.**, Schreiber, M. E., Orndorff, W. D., 2004, Hydrologic Characterization of Sinkholes in Agricultural Settings. Oral presentation at the *Geological Society of America annual meeting*, November 2004.
- 89) **Schwartz, B. F.**, Schreiber, M. E., Orndorff, W. D., 2004, Hydrologic Characterization of Sinkholes Using a Multi-method Approach. Oral presentation at the *Virginia Water Resources Research Center symposium*, October 2004.
- 90) **Schwartz, B. F.**, Schreiber, M. E., Orndorff, W. D., 2004, Hydrologic Characterization of Sinkholes Using a Multi-method Approach. Poster presented at *Geological Society of America NE-SE meeting*, March 2004.
- 91) Orndorff, W. D., **Schwartz, B. F.**, Orndorff, Z. W., 2004, Patterns of Karst Hydrological Systems Developed in Ordovician-aged Carbonates of the Southwestern Virginia Valley and Ridge. Oral presentation at the *Geological Society of America NE-SE meeting*, March 2004.

- 92) **Schwartz, B. F.**, 2004, Hydrologic characterization of sinkholes using a multi-method approach. Oral presentation at the *Graduate Student Research Symposium*, Virginia Tech Dept. of Geosciences, March, 2004

5. Other Publications:

- 1) **Schwartz, B. F.**, Karst, Caves, and Quercus: Where in the Soil-Rock System do Tree Roots Fit in? Guidebook for Field Trip to Cave Without A Name for Hays County Master Naturalists, April 29, 2012
- 2) **Schwartz, B. F.** and Schwinning, S., Karst, Caves, and Quercus: Where in the Soil-Rock System do Tree Roots Fit in? Guidebook for Field Trip #11, Ecological Society of America Annual Meeting, Pre-Conference Field Trips, August 7, 2011
- 3) **Schwartz, B. F.**, 2009, Caves and Karst of Virginia: Field Camp #37: Guidebook for a week-long field trip held prior to the 15th International Congress of Speleology in Kerrville, TX, July, 2009.
- 4) **Schwartz, B. F.**, 2008, Karst of the Mississippian Carbonate System – Powell Mountain, *In: Field trip guidebook for the Second Appalachian Karst Symposium: The Karst of Northeastern Tennessee and Southwestern Virginia*. Yongli Gao, Wil Orndorff and Robert Benfield (Editors), Eastern Tennessee State University, Johnson City, TN, May 7-10, 2008

6. Invited Talks, Lectures, and Presentations:

- 1) **Schwartz, B. F.**, August 31, 2016, Exploring and Mapping the Deepest Cave in the USA: Tears of The Turtle Cave, Bob Marshall Wilderness, MT. Speaker at the University of Texas Grotto Meeting.
- 2) **Schwartz, B. F.**, May, 2016, Exploring and Mapping the Deepest Cave in the USA: Tears of The Turtle Cave, Bob Marshall Wilderness, MT. Speaker at Outdoor Recreation graduate class for Dr. Glenn Hanley, Texas State University.
- 3) **Schwartz, B. F.**, September 25, 2014, Introduction to the Amazing Biology in the Deep Artesian Edwards Aquifer. Monthly Seminar Series, Hays County Master Naturalists.
- 4) **Schwartz, B. F.**, October 15, 2014, Exploring and Mapping the Deepest Cave in the USA: Tears of The Turtle Cave, Bob Marshall Wilderness, MT. Speaker at the University of Texas Grotto Meeting.
- 5) **Schwartz, B. F.**, June 26, 2014, Epikarst Hydrogeology, Trees, and Recharge in the Trinity and Edwards Aquifers, Central TX, USA. Monthly Seminar Series, Hays County Master Naturalists.
- 6) **Schwartz, B. F.**, and Brett Gerrard: June 5, 2014, Measuring and Modeling Infiltration and Recharge in Central TX, USA. South Central Texas Water Research Interest Group
- 7) **Schwartz, B. F.**, January 30, 2013, Epikarst Hydrogeology and Deep Artesian Biology in the Trinity and Edwards Aquifers, Central TX, USA. Weekly Seminar Series, University of Minnesota, Department of Geology and Geophysics.
- 8) **Schwartz, B. F.**, October 5, 2012, Maximum and Ebb-and-Flow Discharge in Karst Systems: What Strange Sedimentary Deposits Can Tell Us. Weekly Soft Rock Brown-

- bag Lunch Seminar Series, University of Tennessee, Knoxville, Department of Earth and Planetary Sciences.
- 9) **Schwartz, B. F.**, October 4, 2012, Characterizing flow and recharge in epikarst systems: a multi-disciplinary, multi-year approach. Klepser Seminar Series, University of Tennessee, Knoxville, Department of Earth and Planetary Sciences.
 - 10) **Schwartz, B. F.**, September 12, 2011, Science and Water in Spring Lake and the Upper San Marcos River: Why Does it Matter. Monthly Science Café speaker at Wake The Dead Coffee House, San Marcos, TX.
 - 11) **Schwartz, B. F.**, November 11, 2010, Tongzi 2010, Science and Exploration in Wulong County, Chongqing Municipality, China. Monthly luncheon speaker for the South Texas Geological Society, San Antonio, TX.
 - 12) **Schwartz, B. F.**, October 4, 2010, Tongzi 2010, Exploration and Karst Research in Wulong China. Weekly seminar speaker for the Texas State University Geology Club, San Marcos, TX.
 - 13) **Schwartz, B. F.**, Invited guest lecturer for Groundwater Resources Class, Geography 4334, September 3, 2009.
 - 14) **Schwartz, B. F.**, April 10, 2009, Speleology and Karst research in Virginia. Weekly Hydro Brown Bag Seminar speaker at UT Austin, Jackson School of Geosciences, Austin, TX
 - 15) **Schwartz, B. F.**, February 26, 2009, Interdisciplinary Approaches to Speleology and Karst Studies. Weekly seminar speaker at UT Arlington Department of Earth and Environmental Sciences, Arlington, TX
 - 16) **Schwartz, B. F.**, November 12, 2008, Omega Cave System: 13 years of exploration and discovery. Weekly seminar speaker for the Texas State University Geology Club, San Marcos, TX.
 - 17) **Schwartz, B. F.**, March, 2007, Hydrogeophysics and Hydrogeology in Virginia's Karst. Weekly seminar speaker at USGS-Reston, Reston, VA
 - 18) **Schwartz, B. F.**, November, 2006, Karst, hydrology and geophysics - (How to turn a sinkhole into a complex hydrogeophysical problem). Weekly seminar speaker at Eastern Tennessee State University, Department of Physics, Astronomy and Geology, Johnson City, TN.
 - 19) **Schwartz, B. F.**, 2006, Karst, hydrology and geophysics - (How to turn a sinkhole into a complex hydrogeophysical problem). Weekly seminar speaker at Appalachian State University, Department of Geology, Boone, N.C.

7. Workshops:

- 2005 Wrote a field guide for, organized, and led a two-day karst hydrology field trip to Bath County, VA for a graduate level Karst Hydrology class at Virginia Tech. The field trip was a critical link between classroom exercises, instruction, and discussion and the 'real-world' aspects of karst geology and hydrogeology. The trip included a trip into one of the largest caves in Virginia to observe a karst hydrologic system from the inside.
- 2005 Assisted with a four-day Project Underground workshop and field trip for VA earth science teachers where the primary emphasis was on how to incorporate karst science into SOL materials. Presented an invited talk about my research on sinkhole hydrology and hydrogeophysics and discussed how this current research could be incorporated into classroom materials.

8. Grants and Contracts

a. Funded Grants and Contracts:

- 2016 \$10,000, Cave Conservancy of the Virginias. PI: Benjamin Schwartz, Co-PIs: Dr. Benjamin Hutchins (TPWD), and Mr. Aaron Swink (TSU). *Geographic and Physicochemical Effects on the Distribution of Rare, Groundwater Invertebrates in the Hyporheic Zone of Texas Streams.*
- 2016 \$93,034 WH Nowlin (PI) and BF Schwartz (Co-PI). *Evaluation of the Long-Term, Elevated Temperature and Low Dissolved Oxygen Tolerances of the Comal Springs Riffle Beetle.* Edwards Aquifer Authority (Edwards Aquifer Habitat Conservation Plan).
- 2015 \$73,537 TPWD PI: Benjamin Schwartz, Co-PIs: Chris Nice and Weston Nowlin. *Status Assessment and Ecological Characterization for the Texas Troglotic Water Slater, *Lirceolus smithii*.*
- 2014 \$18,998 TPWD Horned Lizard Wildlife Grant funding. PI: Benjamin Schwartz, Co-PI: Chris Nice. *Molecular and Morphological Analysis of *Stygobromus* sp. near San Marcos, TX.*
- 2014 \$108,552 EAA HCP funding. PI: Weston Nowlin, Co-PI: Benjamin Schwartz. *Refugia Research: Development of Husbandry and Captive Propagation Techniques for Invertebrates Covered Under the Edwards Aquifer Habitat Conservation Plan Proposal.*
- 2014 \$49,980 EAA HCP funding. PI: Thomas Hardy, Co-PIs: Benjamin Schwartz and Weston Nowlin, *Determination of Limitations of Comal; Springs Riffle Beetle Plastron Use During Low Flows.*
- 2013 \$9,398 Cave Conservancy Foundation. PI: Benjamin Schwartz, Co-PI: Matthew Covington – University of Arkansas, *Instrumentation for Long Term Hydrogeochemical and Climatological Monitoring in the Omega Cave System, Wise County, Virginia.*
- 2013 \$30,000 Texas Commission on Environmental Quality, Section 319(h) NPS Water Pollution Management Program. PI: River Systems Institute, Co PI: Dr. Weston Nowlin, Co PI: Dr. Benjamin Schwartz, Texas State University. *Upper San Marcos River Watershed Protection Plan.* Start date: January 2013
- 2012 \$15,000, National Science Foundation. PI: Benjamin Schwartz, PhD Student: Benjamin Hutchins. *Dissertation Research: Ecosystem Scale Abiotic and Biotic Drivers of Food Web Structure in Deep Phreatic Aquifers.*
- 2010 \$9,838, Cave Conservancy of the Virginias. PI: Benjamin Schwartz, Co-PI: Dr. Garland Upchurch – Texas State University. *New Records of Karstic Landscape*

Evolution, Fossil Plant Assemblages, and Paleo-Hydrology as Preserved in an Ancient Appalachian Sinkhole-Lakebed

- 2009 \$1,200,000, The San Marcos River Observing System (\$146,000 to Schwartz as PI). B. Schwartz, W. H. Nowlin, T. Hardy, and T. H. Bonner. Initial white-paper proposal written by me and Weston Nowlin. Texas Legislature (Line Item based on Federal Stimulus Funds). Received January 2010.
- 2009 \$100,494, Water Resources Research National Competitive Grants Program. Co-PI: Dr. Madeline Schreiber – Virginia Tech, Collaborator: Dr. Daniel H. Doctor – USGS. *The Role of Epikarst in Controlling Recharge, Water Quality and Biodiversity in Karst Aquifers: A Comparative Study between Virginia and Texas.* Start date of January 2010. One of only 6 proposals funded nationwide.
- 2008 \$46,278, (\$8,178 to Schwartz as Co-PI) USDA SAWC – Rio Grande Project. PI: Kevin Urbanczyk, Sul Ross State University. Co-PI's: Benjamin Schwartz – Texas State University, Jeffery Bennett – Big Bend National Park. *Evaluation of source of spring flow from Cretaceous Aquifers along the Rio Grande Wild and Scenic River.*
- 2008 \$293,689, Texas Commission on Environmental Quality, Section 319(h) NPS Water Pollution Management Program. PI: River Systems Institute, Co PI: Dr. Weston Nowlin, Co PI: Dr. Benjamin Schwartz, Texas State University. *Determination of NPS Nutrient Inputs to Spring Lake and San Marcos River Headwaters.* Anticipated start date: June 2011
- 2008 \$150,000, Texas ARP/ATP. Co-PI: Susan Schwinning, TSU Dept of Biology. *Epikarst Controls on Recharge, Water Quality and Ecosystem dynamics in Central Texas Hill Country.*
- 2007 \$13,386 Cave Conservancy Foundation. *The Role of Epikarst in Controlling Recharge, Water Quality and Biodiversity in Karst Aquifer Systems of Virginia*
- 2007 \$20,000 Virginia Water Resources Research Center grant. *The Role of Epikarst in Controlling Recharge, Water Quality and Biodiversity in Karst Aquifer Systems of Virginia*
- 2005 \$2,000 Geological Society of America research grant.
- 2005 \$300 Research grant from West Virginia Association for Cave Studies.
- 2003 \$4,600 Research grant from Cave Conservancy of the Virginias for equipment. *Can Cave Sediments Predict Past Flood Magnitudes?*

b. Funded Internal Grants and Contracts:

- 2013 \$24,961, Texas State University, Multi-disciplinary Internal Research Grant. PI: Dr. Jennifer Jensen, Co PI: Dr. Benjamin Schwartz, Co PI: Dr. Susan Schwinning,

Co PI: Dr. Larry Price, Texas State University. *Texas Trends: Towards Developing an Interdisciplinary, Sustained Research Network in Land Change Science at Texas State University*. Start date: July 2013

- 2009 \$31,185.48, One-Time Research Support Funding Proposal. Weston H. Nowlin and Benjamin F. Schwartz. *Proposal for funding to obtain an Ion Chromatograph*.
- 2008 \$4,500, Texas State University Research Enhancement Program (REP) Co-PI: Dr. Garland Upchurch – Texas State University. *New records of karstic landscape evolution, fossil plant assemblages, and paleo-hydrology as preserved in an ancient Appalachian sinkhole-lakebed*.

c. Submitted Grants and Contracts:

d. Unfunded Grants and Contracts:

- 2015 €7,000,000 Euro, approximately \$1,200,000 to Benjamin Schwartz, Co-PI, with Nico Goldscheider and others. *Karst Water Resources in Changing Mountain Environments – KARMEN*. Submitted to Belmont Forum: Belmont Grant Operations System.
- 2015 \$99,996 State of Texas Comptroller's Office: Benjamin Schwartz, Co-PIs: Chris Nice and Weston Nowlin. *Endangered Research Projects for the Texas Troglobitic Water Slater, Lirceolus smithii*.
- 2014: \$1,196,296 (Texas State Portion of a ~\$5,000,000 grant), USDA-NIFA. PI: Dr. Ryan Stewart, Virginia Tech, Co-PIs: Dr. Benjamin Schwartz, Dr. Gregg Evanylo (VT), Dr. Daniel McLaughlin (Univ of Fla), Dr. Madeline Schreiber (VT). *The Role of Regional Epikarst in Water Vulnerability and Resilience*
- 2014: \$57,000, Texas Parks and Wildlife – Wildlife Research Grant. PI: Dr. Weston Nowlin, Co-PI: Dr. Benjamin Schwartz. *Occurrence and Ecology of Imperiled Stygobionts of the Edwards Aquifer*
- 2013: \$2,500,000, NSF-EAR, NSF-NIFA, Water Sustainability and Climate. PI: Dr. Bruce McCarl, Co-PI: Dr. Raghavan Srinivasan, and Co-PI: Dr. Kevin Wagner, Texas A&M, CoPIs at Texas State University (\$160,066): Dr. Benjamin Schwartz and Dr. Thomas Hardy. *WSC 3: Adaptation Actions for Texas Water Management in Reaction to Climate Change Vulnerability*
- 2013 \$206,449, Edwards Aquifer Authority – Habitat Conservation Plan, Biomonitoring Program RFP. PI: Dr. Thomas Hardy, Co-PI: Dr. Weston Nowlin, Co-PI: Dr. Benjamin Schwartz. *Comprehensive Biological Monitoring for Comal and San Marcos Springs Ecosystems*

- 2013 \$370,189, NSF-EAR, Geobiology and Low-Temperature Geochemistry Program. Co-PI: Dr. Annette Engel – UTK. *Evaluating Microbial Roles in Aquifer Hydrogeochemistry and Evolution.*
- 2012 \$56,000, Texas Parks and Wildlife Department, Section 6 funds. PI: Dr. Weston Nowlin – TX State University. *Resource Requirements for Three Federally Listed Groundwater Species in the Edwards Aquifer, Central Texas.*
- 2012 \$419,891, (**resubmission requested**) NSF-EAR, Geobiology and Low-Temperature Geochemistry Program. Co-PI: Dr. Annette Engel – LSU. *Evaluating Microbial Roles in Aquifer Hydrogeochemistry, Evolution, and Ecosystem Dynamics.*
- 2011 \$66,000, (**resubmission requested**) Texas Parks and Wildlife Department, Section 6 funds. PI: Dr. Weston Nowlin – TX State University. *Resource Requirements for Three Federally Listed Groundwater Species in the Edwards Aquifer, Central Texas.*
- 2010 \$326,286, NSF-EAR, Geobiology and Low-Temperature Geochemistry Program. Co-PI: Dr. Annette Engel – LSU. *Evaluating Microbial Roles in Aquifer Hydrogeochemistry, Evolution, and Ecosystem Dynamics.*
- 2009 \$16,000, Texas State University Research Enhancement Program (REP) PI: Dr. Garland Upchurch – Texas State University. *New records of karstic landscape evolution, fossil plant assemblages, and paleo-hydrology as preserved in an ancient Appalachian sinkhole-lakebed.*

9. Fellowships, Awards, Honors:

- 2006 \$15,000 Cave Conservancy Foundation's Ph.D. Graduate Fellowship in Karst Studies. *A multi-method approach to characterizing sinkhole hydrogeology and recharge mechanisms in agricultural settings.*
- Fall 2006 Full Research Assistantship and other funding - co-wrote grant proposal with Dr. Madeline Schreiber to Virginia Water Resources Research Center.
- Spring 2006 Byron N. Cooper Graduate Fellowship award. Full Research Assistantship funding for one semester. Dept. of Geosciences, Virginia Tech.
- 2005 \$5,000 Cave Research Foundation's annual Karst Research Fellowship. Presented annually to one student who proposes an outstanding karst-related research project.
- 2005 National Speleological Society's Ralph W. Stone Award and Fellowship.
- 1999 Fellow award - National Speleological Society.

IV. SERVICE

A. University:

- Member: Spring Lake Diving Control Board Committee, tasked with reviewing, monitoring and coordinating diving research activities in Spring Lake.

B. Departmental:

- Maintain and manage Arc-GIS licenses for the Department of Biology. Also assist students and faculty with installation, setup and troubleshooting of Arc-GIS Desktop.
- Member: 2014 Search committee for Stream Ecologist
- Member: 2015 Search committee for Aquatic Toxicologist
- Member: 2016 Search committee for Aquatic Physiologist
- Member: 10-year Strategic Planning Committee
- Member: Departmental Space Committee

C. Community:

- Member: Board of Directors for San Marcos River Foundation

D. Professional:

- 2010-2013: Associate Editor, Earth Sciences, *Journal of Cave and Karst Studies*.
- 2010: Session Organizer at South Central Geological Society of America Meeting, Branson, MO. *Karst Hydrogeologic Systems of the Central United States and Northern Mexico*
- 2013: Session Organizer at Annual Geological Society of America Meeting, Denver, CO. *The Epikarst as a Boundary and Critical Zone*.
- Reviewer: Journal of Hydrology
- Reviewer: Lakes and Reservoirs Research and Management
- Reviewer: Journal of Hydrogeology
- Reviewer: Journal of Ground Water
- Reviewer: Journal of Cave and Karst Studies
- Reviewer: Acta Carsologica
- Reviewer: US Geologic Survey
- Ad-hoc Reviewer: National Institutes for Water Research
- Ad-hoc Reviewer: National Fellowships Committee for Sigma Delta Epsilon, Graduate Women in Science
- Ad-hoc Reviewer: Israeli Science Foundation
- Ad-hoc Reviewer: Petroleum Research Fund
- Ad-hoc Reviewer: National Science Foundation
- Board member: Edwards Aquifer Authority's Aquifer Science Advisory Panel (ASAP), 2009 - present
- Board member: Karst Waters Institute (KWI), 2011-2014
- Board member: San Marcos River Foundation, 2012-2016
- 2016: Member of the Water Quality Work Group – Appointed by the Edwards Aquifer Habitat Conservation Plan Implementing Committee.

E. Organizations

2003 – present: Property/project co-manager of the Powell Mountain Karst Preserve, for the Cave Conservancy of the Virginias.

1997 – 2003 and 2006 – 2007: Director - Board of directors, Butler Cave Conservation Society.

1993 – present: Director - Board of directors, Virginia Speleological Survey.

Member of:

- Geological Society of America
- American Geophysical Union
- National Speleological Society