Gerrad D. Jones

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Curriculum Vitae

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# FACULTY POSITIONS

*Assistant Professor,* Department of Biological and Ecological Engineering, Oregon State University 2017-Present

# EDUCATION

*Ph.D. Civil and Environmental Engineering,* University of Nevada Reno (2010-2014), Reno, Nevada, GPA 4.0/4.0; Dissertation Advisor, Dr. Edward Kolodziej. Dissertation Title: Environmental Fate and Transport of Trenbolone Acetate Metabolites in Agro-ecosystems.

*M.S. Water Resources and Environmental Engineering,* Villanova University (2007-2010), Villanova, Pennsylvania, GPA 3.9/4.0: Thesis Advisor, Dr. Bridget Wadzuk. Thesis Title: Statistical Analysis of Modeled Constructed Stormwater Wetland Performance.

*M.S. Wildlife Science*, New Mexico State University (2005-2008), Las Cruces, New Mexico, GPA 4.0/4.0: Thesis Advisor, Dr. Jennifer Frey. Thesis Title: Zoogeography of the Mammals of Padre Island National Seashore, Texas.

*B.S. Biology*, Truman State University (2000-2004), Kirksville, Missouri, GPA 3.8/4.0, Magna Cum Laude.

**RESEARCH EXPERIENCE**

*Oregon State University, May 2017-Present*

* **Water quality/non-target mass spectrometry/geospatial and statistical modeling**
	+ Use machine learning models to identify the unknown chemicals present in surface bodies of water causing endocrine disruption in vertebrates.
	+ Fate and transport of anthropogenic contaminants in the environment.
	+ Design of simple engineered treatment systems to treat nutrients, bacteria, and contaminants of emerging concern to improve ecosystem health.

*EAWAG: The Swiss Federal Institute of Aquatic Science and Technology, June 2014-May 2017, Present Postdoctoral Scientist*

* **Geospatial/Statistical Modelling of Trace Elements**
	+ Use multivariate statistics and artificial neural networks to identify the processes governing the distribution of trace elements (arsenic, copper, mercury, selenium, sulfur, zinc) in soils and in rainfall.
	+ Predict global and regional distributions of elements using ArcMap 10.2 based on various soil physicochemical and climate variables.
	+ Predict global changes in element distribution as a result of climate change.

*University of Nevada Reno, 2014, Postdoctoral Scientist* (March-June 2014)

* **Analytical Method Development**
	+ Conduct laboratory experiments examining steroid hormone (trenbolone acetate metabolites, ethinyl estradiol, testosterone, etc.) adduct formation with cysteine.
	+ Develop analytical methods on for detecting and analyzing steroid hormone photoproducts and cysteine adducts using an HPLC, LC/MS, and LC/MS/MS.

*University of Nevada Reno, 2010-2014, Doctoral Candidate*

* **Agricultural Watershed Management**
	+ Use statistical and physical models to predict the risk of surface-water exposure to endocrine disrupting steroid hormones (i.e., trenbolone acetate metabolites).
	+ Evaluate the *in situ* fate and transport of ammonia, orthophosphate, carbon, and steroid hormones in surface and subsurface runoff from in watersheds.
	+ Develop analytical methods for detecting and analyzing trace concentrations of steroid hormones using a GC/MS/MS.

## Villanova University, 2007-2010, M.S. Candidate

* **Urban Stormwater Management**
	+ Use geospatial, statistical, and hydraulic models to optimize the design of a stormwater wetland retrofit (constructed in 2011).
	+ Classify land cover using aerial images and GIS for use in hydrologic models to predict overland flow.
	+ Collect, process, and analyze environmental water samples for nutrients from various stormwater control measures.

*New Mexico State University, 2005-2008, M.S. Candidate*

* **Community Ecology and Biogeography**
	+ Conduct field surveys to determine the composition and distribution of mammals on Padre Island National Seashore.
	+ Conduct vegetation surveys and use multivariate statistics to quantitatively describe the habitat use of mammals on Padre Island National Seashore.
	+ Conduct field surveys to document and describe habitat associations of endangered least shrews (*Cryptotis parva*) in New Mexico.

*Truman State University, 2001-2004 (Ronald E. McNair Scholar, 2002-2004)*

* **Mammalian Ecology**
	+ Collect echolocation calls of bats in Missouri and analyze their call structure using multivariate statistics to quantify geographic variability.
	+ Geo-reference the Truman State Natural History Museum database.

**PUBLICATIONS (orcid # 0000-0002-1529-9506)**

1. **Jones, G.D.**, Droz, B., Greve, P., Gottschalk, P., Poffet, D., McGrath, S.P., Seneviratne, S.I., Smith, P. Winkel, L.H.E. (2017) Selenium deficiency risk predicted to increase under future climate change. *Proceedings of the National Academy of Sciences of the United States of America.* DOI: 10.1073/pnas.1611576114
2. **Jones, G.D.** and Winkel, L.H.E. Multi-scale factors and processes controlling selenium distributions in soils (2017). Chapter 1. In *Selenium in Plants: molecular, physiological, ecological and evolutionary aspects.* Eds. E. Pilon-Smits, L.H.E. Winkel, Z-Q Lin. *Springer.* ISBN: 978-3- 319-56248- 3
3. Blazina, T., Läderach, A., **Jones, G.D.**, Sodemann, H. Wernli, H., Kirchner, J., Winkel, L.H.E. (2016) Marine primary productivity as a potential source of selenium in rainfall. *Environmental Science and Technology*. 51 (1), 108–118. DOI: 10.1021/acs.est.6b03063
4. Chowdhury, M.T.A., Deacon, C, **Jones, G.D.**, Huq, S.M.I., Williams, P.N., Hoque, A.F.M.M., Winkel, L.H.E., Price, A.H., Norton, G.J., and Meharg, A.A. (2017) Arsenic in the Bangladesh soils related to physiographic region, paddy management, and mirco- and macro- elemental status. *Science of the Total Environment*. 590–591, 406–415. DOI: 10.1016/j.scitotenv.2016.11.191
5. Winkel, L.H.E., Vriens, B., **Jones, G.D.,** Schneider, L.S., Pilon-Smits, E. Banuelos, G.S. (2015). Selenium cycling across soil-plant-atmosphere interfaces: a critical review. *Nutrients.* 7, 4199-4239.
6. **Jones, G.D.**, Benchetler, P., Tate, K.W., Kolodziej E.P. (2014) Characterizing the ecological risk of transport of trenbolone acetate metabolites in agro-ecosystems. *Environmental Science and Technology.* 48 (21), 12569–12576.
7. **Jones, G.D.**, Benchetler, P., Tate, K.W., Kolodziej E.P. (2014) Surface and subsurface attenuation of trenbolone acetate metabolites and manure-derived constituents in irrigation runoff on agro-ecosystems. *Environmental Sciences: Processes & Impacts*. 16 (11): 2507-2516.
8. **Jones, G.D**., Benchetler, P.V., Tate, K.W., Kolodziej, E.P. (2014). Mass balance approaches to characterizing the leaching potential of trenbolone acetate metabolites in agro-ecosystems. *Environmental Science and Technology*, 8 (7), 3715–3723.
9. Qu, S., Kolodziej, E.P., Long, S., Gloer, J.B., Patterson, E.V., Baltrusaitis, J., **Jones, G.D.**, Benchetler, P.V., Cole, E.A., Kimbrough, K.C., Tarnoff, M.D., and Cwiertny, D.M. (2013). Product-to-parent reversion of trenbolone: unrecognized risks for endocrine disruption. *Science*, 342 (6156): 347-351.
10. **Jones, G.D.** and Wadzuk, B.M. (2013). Predicting performance for constructed storm water wetlands. *Journal of Hydraulic Engineering*, 139(11), 1158–1164.
11. **Jones, G.D**. and Frey, J.K. (2013). Mammals of Padre Island National Seashore, Texas. Museum of Texas Tech University, *Special Publications*, 61: 1-70.
12. Kolodziej, E.P; Qu,S; Forsgren, K.L; Long, S.A.; Gloer, J.B.; **Jones, G.D.**; Schlenk, D.; Baltrusaitis, J.; and Cwiertny, D.M. (2013). Identiﬁcation and Environmental Implications of Photo-Transformation Products of Trenbolone Acetate Metabolites. *Environmental Science and Technology*, 47: 5031-5041.
13. **Jones, G.D.** and Frey, J.K. (2008). First Record of Gray Fox (*Urocyon cinereoargenteus*) on Texas Barrier Islands. *Texas Journal of Science*, 60: 225-226.

**CONFERENCE/\*INVITED PRESENTATIONS (presenting author)**

1. **\*Jones, G.D.** “Contaminants of Emerging Concern in Stormwater”. Oral presentation. Erosion Control and Stormwater Management Summit. Keizer, OR. 30 January, 2018.
2. **Jones, G.D.,** Winkel, L.H.E. “Climate-soil interactions drive trace element concentrations in top soils”. Oral presentation. Swiss Geoscience Meeting. Geneva, Switzerland, 18-19 November, 2016.
3. **Jones, G.D.,** Winkel, L.H.E. “Applying Machine Learning Tools to Predict Trace Elements in Soils on a Global Scale”. Oral presentation. Goldschmidt. Yokohama, Japan, 26 June-1 July, 2016.
4. **Jones, G.D.,** Winkel, L.H.E. “Global Predictions of Selenium Distributions in Soils.” Oral Presentation. International Conference on Selenium in the Environment and Human Health, Sao Paulo, Brazil, October 18-21, 2015.
5. **Jones, G.D.,** Winkel, L.H.E. “A Global Predictive Model of Soil Selenium”. Oral Presentation. Goldschmidt. Prague, Czech Republic, August 16-21, 2015.
6. **Jones, G.D.,** Winkel, L.H.E. “Role of climatic factors on the terrestrial distribution of selenium”. Oral Presentation. Selenium Workshop. Karlsruhe, Germany, October 13-14, 2014.
7. **Jones, G.D.,** Vriens, B., Blazina, T., Lenz, M., Winkel, L.H.E. “Role of Climatic Factors on the Terrestrial Distribution of Selenium”. Oral Presentation. European Association for Chemical and Molecular Sciences. Istanbul, Turkey, August 31-September 4, 2014.
8. **Jones, G.D.,** Benchetler, P.V., Kolodziej, E.P., Tate, K.W. “Mass Balance Approaches to Characterizing the Transport Potential of Trenbolone Acetate Metabolites in Agro-Ecosystems.” Oral Presentation. Society of Environmental Toxicology and Chemistry. Nashville, TN, November 17-21, 2013.
9. **Jones, G.D.,** Benchetler, P.V., Kolodziej, E.P., Tate, K.W. “Fate and Transport of Trenbolone Acetate Metabolites in Agricultural Runoff.” Oral Presentation. Soil and Water Conservation Society, Reno, NV, July 20-24, 2013.
10. Kolodziej, E.P., **Jones, G.D.**, Cole, E.A., Cwiertny, D.M. “Transport and Transformation of Androgenic Steroidal Growth Promoters Used in Animal Agriculture”. Poster. Gordon Research Conference, Environmental Sciences: Water. Holderness, NH, June 24-29, 2012.
11. Kolodziej, E.P., **Jones, G.D.**, Popova, I.E., Bair, D.A., Parikh, S.J., Atwill, E.R., O’Geen, A.T., Tate, K.W. “Transport and Mitigation of Beef Cattle Veterinary Pharmaceuticals and Hormones.” Poster. USDA Water and Watersheds Conference, Portland, OR, May 21-25, 2012.
12. Kolodziej, E.P., Tate, K.W., **Jones G.D.,** Atwill, R., O’Geen, T. “Transport and Mitigation of Beef Cattle Veterinary Pharmaceuticals in Surface and Subsurface Runoff from Grazed Watersheds.” Poster. USDA 2011 Project Directors Meeting, Washington D.C., Feb 2, 2011.
13. **Jones, G.D.** and Wadzuk, B.M. “A Randomization Process for Modeling Constructed Wetlands with an Optimization Example.” Oral Presentation. World Environmental and Water Resources Congress, Providence, RI, May 16-20, 2010.
14. **Jones, G.D.,** Mogavero, K., and Wadzuk, B.M. “Developing a water budget for a constructed stormwater wetland.” Oral Presentation. World Environmental and Water Resources Congress, Kansas City, MO, May 17-21, 2009.
15. **Jones, G.D.,** Mogavero, K, and Wadzuk, B.M. “Redesigning Constructed Stormwater Wetlands: an integrated modeling approach to optimize form and function.” Oral Presentation. World Environmental and Water Resources Congress, Kansas City, MO, May 17-21, 2009.
16. **Jones, G.D.** “An Enigma of the Species Area Relationship: Small Island Effect on Coastal Texas Islands.” Oral Presentation. Southwestern Association of Naturalist, Stephenville, TX, April 19-22, 2007. Wilk’s Award Finalist.xc
17. **Jones, G.D.,** Otten, K.M., Wampler, C.R., Schwenke, Z, and Frey, J.K. “Status and habitats of the threatened least shrew (*Cryptotis parva*) in New Mexico.” Oral Presentation. Arizona and New Mexico Chapters of the Wildlife Society, Flagstaff, AZ, 2006.
18. **Jones, G.D.** and Burt, M.S. “Geographic Variability in Call Structure of the Big Brown Bat (*Eptesicus fuscus*) in Missouri.” Poster. Southwestern Association of Naturalists, Huntsville, TX, 2005.
19. **Jones, G.D.** and Burt, M.S. 2003. “The Current Status of the Bobcat (*Lynx rufus*) in Northeast Missouri.” Oral Presentation. Ronald E. McNair Scholar Research Conference, State College, PA.

**AWARDS, GRANTS, AND HONORS**

## Swiss Grant Recipient

* 2014: Presentation Award, 5th annual EuCheMS conference, Istanbul, Turkey, $1,250

## Nevada State Board of Professional Engineers and Land Surveyors,

* 2012-Present: Engineering Intern (NCEES FE Exam: passed, Ei no. 0T6688)

## University of Nevada, Reno

* 2013: Sigma Xi Grants-in-Aid of Research award, $1,000
* 2010-2013: Graduate Student Association, $3,915

## Villanova University

* 2008: Dept. of Civil and Environmental Engineering Research Assistantship, $8,736

## Southwestern Association of Naturalists

* 2007: Wilk’s Award Finalist

### New Mexico State University

* 2005-2006: Ronald E. McNair Graduate Assistantship, $13,900
* 2005: Graduate Student Association, $500

## Truman State University

* 2004: Excellence in Research Award
* 2003-2004: Undergraduate research stipend, $7,000
* 2002-2004: Ronald E. McNair Scholar stipend, $5,700
* 2000-2004: President’s Scholarship, $8,000

**TEACHING AND SUPERVISORY EXPERIENCE**

### Oregon State University, 2017-Present

* Emmanuel Davila-Santiago: (September 2017- Present) MS thesis advisor. Working title: Mining biological and chemical data to reveal unknown environmental endocrine disruptors. Anticipated graduation date: June 2019
* Lauren Bomeisl (June-August 2017): MS thesis committee member. Title: Identifying Nutrient Transport Conditions in the Ecuadorian Andes.

### Eawag, 2014-2017

* Sarah Chekifi (September – December 2015): Supervisor for Term Paper 1: Writing seminar (701-1303-00L) at ETH Zurich. Title: “Intersex and Fish Declines-Challenges of Endocrine Disruption in Fish”.
* Kevin Lang (January – July 2016): Bachelor’s Thesis co-supervisor, Eawag. Topic: using machine learning techniques to identify the dominant mechanisms governing trace element concentrations in different soil horizons within the US.
* Leandro Portenier (September – December 2015): Supervisor for Term Paper 1: Writing seminar (701-1303-00L) at ETH Zurich. Title: “Streams in the urban landscape: thermal pollution and its mitigation.” Publication in preparation.
* Deyan Poffet (March – September 2015): Co-advisor, Masters Student. Thesis title: “Effect of Soil Organic Carbon and Agriculture on Retention of Se in Soil and Se Uptake by Wheat in England and Wales”. Published in Jones et al. (2017) PNAS 114, 2848–2853.
* Schneider Leila (September - December 2014): Co-supervisor for Term Paper 1: Writing seminar (701-1303-00L) at ETH Zurich. Title: “Understanding Soil Biogeochemistry and Uptake Mechanisms to Predict Global Health Risk.” Published in Winkel et al. (2015) *Nutrient*s, 7, 4199-4239.

### University of Nevada Reno, 2011-2014

* Peter Benchetler (January 2012-Dec 2013): Undergraduate research supervisor. Topic: quantifying the fate and transport nitrogen, organic carbon, phosphorous, and *E. coli*/fecal coliforms in agricultural runoff. Published in Jones et al. 2014 (a-c)
* Teaching assistant (Edward Kolodziej): CEE 458- Environmental Chemistry Concepts and Design: Prepare and give lectures on aqueous equilibrium chemistry
* Teaching assistant (Edward Kolodziej): CEE 204- Introduction to Environmental Engineering: Prepare and give lectures on introductory topics in environmental engineering.

### New Mexico State University, 2005-2006

* Field Supervisor
	+ Aaron Sims, John Anderson, Matthew Bast
* Lab Instructor: WLSC 431: Forest and Range Mammals: Prepare labs and lectures on forest and range mammals of the desert Southwest.

## Truman State University, 2003-2004

* Course instructor: Select and discuss readings in conservation biology.
* Mammalogy teaching assistant: Assist in day to day laboratory activities, prepare lectures, organize field trips, and grade assignments.
* Introductory biology teaching assistant: Assist in day to day laboratory activities.

**REFERENCES**

Dr. Lenny Winkel- Associate Professor, Department of Environmental Systems Science, Swiss Federal Institute of Technology (ETH) Zurich, Zurich, Switzerland; Inorganic Geochemistry Group Leader, Department of Water Resources and Drinking Water, Eawag, Dübendorf, Switzerland, Lenny.Winkel@eawag.ch, (+41) 058 765 5601, (Postdoc Supervisor).

Dr. Edward Kolodziej- Associate Professor, Associate Professor, Interdisciplinary Arts and Sciences, University of Washington, Tacoma; Associate Professor, Department of Civil and Environmental Engineering, University of Washington, Seattle, Koloj@uw.edu, (253) 692-5659 (PhD Advisor).

Dr. Bridget Wadzuk- Associate Professor, Civil and Environmental Engineering, Villanova University, Bridget.Wadzuk@villanova.edu, (610) 519-5365 (Masters Advisor).

Dr. Jennifer Frey- College Associate Professor, Department of Fish, Wildlife, and Conservation Ecology, New Mexico State University, JFrey@nmsu.edu, (575) 646-3395 (Masters Advisor).