Noelle Patterson, EIT

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Research Interests

My current research on environmental flow management of western U.S. rivers merges flow-ecology with resource management. The research interests I have developed from this work include time-series analysis, physical hydrology, riparian ecohydrology, and using these focuses as a lens to understand human-caused changes to river systems.

Education

University of California, Davis Expected 2021
PhD in Hydrologic Sciences GPA 4.00/4.00
Advisors: Dr. Samuel Sandoval Solis and Dr. Belize Lane
Dissertation: Seasonal streamflow analysis to characterize flow regimes and ecohydrologic relationships

University of California, Davis December 2014
B.S. Biological Systems Engineering, with High Honors GPA 3.81/4.00
Education Abroad: Water Quality Management in Galway, Ireland June - July 2012

Professional Experience

Graduate Student Researcher, UC Davis Sep 2017-

- Use Python programming to analyze large streamflow datasets and produce seasonal-scale flow metrics.

Water Resources Control Engineer, CA State Water Resources Control Board July 2015-May 2017

- Managed a policy project to develop source control regulatory measures for pesticides in CA urban areas.

Teaching Assistant, UC Davis Dept. of Bio and Ag Engineering Winter 2015

- *Properties of Materials in Biological Systems*: Lab-based course.

Peer-Reviewed Publications

Patterson, N. K., Lane, B. A., Sandoval-Solis, S., Pasternack, G. B., Yarnell, S. M., and Qiu, Y. A Hydrologic feature detection algorithm to quantify seasonal components of flow regimes. 2020. *Journal of Hydrology,* 585, 1–12.

Dahlke, H., LaHue, G., Mautner, M., Murphy, N., **Patterson, N.**, Waterhouse, H., Yang, F., Foglia, L. Managed Aquifer Recharge as a Tool to Enhance Sustainable Groundwater Management in California: Examples from Field and Modeling Studies. 2018. In Advanced Tools for Integrated Water Resources Management, Volume 3 1st Edition. Elsevier Academic Press.

Selected Presentations

Patterson, N.P. "Intro to Environmental Flows." (May 2019). Guest Lecture, HYD 243: Water Science and Management.

Patterson, N.P., Sandoval-Solis, S., Lane, B. A. (April 2019). "Application of ecologically-based flow metrics for cannabis-impaired streams." Annual Salmonid Restoration Conference, Salmonid Restoration Federation. Santa Rosa, CA.

Patterson, N. P. and Lane, B.A. (January 2019). Functional Flows Calculator: Under the Hood Tutorial. Webinar. State Water Resources Control Board.

Patterson, N.P., Lane, B.A., Yarnell, S., Qiu, Y., Sandoval, S. (December 2018). "Analyzing California reference streamflow with the seasonally-based Functional Flows Calculator," AGU Fall Meeting. Washington DC, December 2018. [Poster]

* Received the American Geophysical Union Outstanding Student Poster Award

Lane, B.A., **Patterson, N.P**., and Sandoval-Solis, S. (September 2018). California Natural Streamflow Classification and Functional Flow Metrics. Webinar. State Water Resources Control Board. Over 50 participants from numerous state agencies, nonprofits, consulting firms, and universities through California.

Patterson, N.P. "Intro to Environmental Flows in California." (May 2018). Guest lecture, ESM 121: Water Science and Management.

Project Experience

Water Resources Research in Latin America 2018-present

- Compile and analyze a massive database of research articles to identify gaps, bright spots, and connectivity in water resources science occurring in Latin America.

Girls' Outdoor Adventure Leadership in Science (GOALS) UC Davis Chapter 2017-2019

- Co-founder and 2017-2018 program chair.
- Work with a team of graduate students to design, fundraise, and implement a free immersive science education summer program for high school girls from backgrounds underrepresented in STEM.

Scholarships and Awards

- UC Davis Dean's Distinguished Graduate Fellowship (2017-2022) - $135,000
- Henry A. Jastro Graduate Research Award (2019) - $2000
- Outstanding Student Presentation Award, American Geophysical Union (2018) - $150
  Award given to top 5% of students for presentation excellence at AGU Annual Conference.
- UC Davis Blum Center: Poverty Alleviation Through Action Grant (2014) - $2000
  Grant funded one month of fieldwork in Uganda to implement a micro irrigation project.

Professional Licensure

Engineer in Training: No. 155576 Feb 2015

Membership

American Geophysical Union 2018-present
Tau Beta Pi Engineering Honors Society 2012-present