DR. RYAN PEEK

I have worked in many rivers and aquatic systems in the West, with particular interest in the integration and application of geospatial data across disciplines such as ecology, genomics, and hydrology at multiple scales. I strive to continue to conduct open and applied conservation research to better understand current and future impacts to our freshwater ecosystems.

I am a strong advocate for open science, and giving voices, training, and space to those who support and foster community with diverse questions and views.

EDUCATION

2018 | 2014

Ph.D., Ecology (with certificate in Conservation Management)
UC Davis — Davis, CA

- Linking watersheds with genomics: Population genetics of Foothill Yellow-legged frog (*Rana boylii*)

2010 | 2008

M.S., Biology
University of San Francisco — San Francisco, CA

- Landscape Genetics of Foothill Yellow-legged Frogs (*Rana boylii*) in regulated and unregulated rivers: Assessing connectivity and genetic fragmentation

2002 | 1998

B.S., Wildlife, Fish & Conservation Ecology
UC Davis — Davis, CA

- Emphasis in Behavioral Ecology

RESEARCH EXPERIENCE

2021 | 2018

Post-doctoral Researcher
Center for Watershed Sciences — UC Davis

- Data scientist and aquatic ecologist. Projects include: Conservation genomics of threatened and endangered frogs in CA, NV, and AZ.
- Analysis of floodplain foodwebs for salmon at landscape scales to better understand connectivity and seasonal dynamics important for restoration.
- Linking functional flow concepts with ecological stream health for environmental flow management in California rivers.

2018 | 2014

Graduate Student Researcher
Center for Watershed Sciences — UC Davis

- Research in amphibian/aquatic ecology, with particular focus on assessing ecological health with molecular techniques to inform conservation in river ecosystems.

Download a PDF of this CV

CONTACT

rapeek@ucdavis.edu
riverpeek
https://github.com/ryanpeek
https://ryanpeek.org
https://orcid.org/0000-0002-9577-6885

LANGUAGE SKILLS

- R
- Bash
- Python
- css
- javascript

*Made with **{pagedown}**.*

Code at github.com/ryanpeek/cv.

Last updated on 2021-12-06.

2014 | 2011

Junior Research Specialist

Center for Watershed Sciences — UC Davis

- Research in stream ecology and montane aquatic ecosystems, with particular focus on ecosystem function and hydroclimatic impacts on regulated rivers in the Sierra Nevada.

2010 | 2009

Research Assistant

UC Berkeley — Berkeley, CA

- Led field research crews for extensive field data collection as part of a California Energy Commission study of regulated flow effects on foothill yellow-legged frog (*Rana boylii*) breeding habitat.
- Collaborated with Sarah Yarnell and Amy Lind on field methodology and integration of conservation genomics with flow analyses.

2009

Research Assistant

UC Davis — Davis, CA

- Research with Sarah Kupferberg and Alessandro Catenazzi of regulated flow effects on water temperatures and foothill yellow-legged frog (*Rana boylii*)
- Ran predation and tadpole growth experiments, field deployment of thermographs in various Sierran rivers throughout California.

INDUSTRY EXPERIENCE

2011 | 2002

Fish & Wildlife Biologist

Stillwater Sciences — Davis CA

- Conducted research in aquatic, terrestrial, and riparian ecosystems as a field lead and project manager. Developed restoration, conservation, and management strategies in various watersheds throughout California and Oregon for amphibian and fisheries related projects.
- Extensive experience completing watershed analyses. Successfully worked independently and collaboratively on various projects including leading field crews, managing budgets, conducting meetings, analyzing data, and writing comprehensive reports.
- Watershed Experience: Alameda Creek (San Francisco Public Utilities Commission), Upper American River (Sacramento Municipal Utility District), South Fork Feather River (South Feather Water & Power), Yuba River (North, Middle, and South) (CH2MHill), Napa River and Floodplain (US Army Corp of Engineers), Santa Clara River (California State Coastal Conservancy), McKenzie River (Eugene Water and Electric Board), Upper Merced River (Merced Alliance), Butte Creek and West Branch Feather River (PG&E), McCloud and Pit Rivers (PG&E)

2010

Biological Science Technician

USDA Forest Service, Pacific Southwest Research Station — Davis, CA

- Developed and designed website on ecology, river regulation and conservation of the foothill yellow-legged frog (*Rana boylii*), including GIS synthesis and development of a distribution map showing over 6,000 records from multiple sources (https://www.fs.fed.us/psw/topics/wildlife/herp/rana_boylii/).
- Conducted 1-D RHABSIM modeling and analysis. Coordinated field research, data collection, and writing.

OPEN SOURCE CONTRIBUTIONS

All projects available at `github.com/ryanpeek/<name>`

- www.r4wrds.com: R course for water resources data science
- `{aggiedown}`: R package for writing dissertations at UC Davis
- R-DAVIS: grad course in data science and visualization
- Mapping-in-R: short course for spatial/GIS topics

2001

Biological Science Technician

National Park Service — Sequoia & Kings Canyon, CA

- Backcountry position conducting Sierra yellow-legged frog surveys in mountain lakes, as well as habitat assessment, data collection, and non-native fish removal.
- This position involved extensive backpacking and hiking experience while living in remote and rugged terrain at 10,000-12,000 feet for multiple weeks at a time. Required the ability to work independently, efficiently, and safely.
- Initial year of a conservation/restoration project targeting the federally threatened Sierra/Mountain yellow-legged frog (*Rana sierrae*)

JOURNAL ARTICLES

2021

Identifying functional flow linkages between stream alteration and biological stream condition indices across California

Frontiers in Environmental Science (accepted)

Center for Watershed Sciences, UC Davis

- Peek, R.A., Irving, K., Yarnell, S.M., Lusardi, R.A., Stein, E.D., Mazor, R.

2021

The use of umbrella fish species to provide a more comprehensive approach for freshwater conservation management in California

Aquatic Conservation: Marine and Freshwater Ecosystems (accepted)

- Obester, A., R. Lusardi, N. Santos, R. Peek, S. Yarnell

2021

Classifying California's stream thermal regimes for cold-water conservation

PLoS ONE 16(8): e0256286. — DOI: 10.1371/journal.pone.0256286

- Willis, A.D., R.A. Peek, A.L. Rypel

2021

Actinemys marmorata (Northwestern Pond Turtle) Feeding on Dicamptodon tenebrosus (Coastal Giant Salamander)

Northwestern Naturalist, 102 (3), 261-264.

DOI: 10.1898/1051-1733-102.3.261

- Peek, R.A. , S.J. Kupferberg, A.C., Catenazzi, P. Georgakakos, M. E. Power

2021

Flow regulation associated with decreased genetic health of a river-breeding frog species

Ecosphere, 12 (5). — DOI: 10.1002/ecs2.3496

- Peek, R.A., S.M. O'Rourke, M.R. Miller.

2020

Understanding community assembly rules in managed floodplain food-webs

Ecosphere, 12 (2). — DOI: 10.1002/ecs2.3330

- Corline, Nicholas J., Ryan A. Peek, Jacob Montgomery, Jacob V.E. Katz and Carson A. Jeffres.

2020

A functional flows approach to selecting ecologically relevant flow metrics for environmental flow applications

River Research and Applications, 36 (2), 318-324. DOI: 10.1002/rra.3575

- Yarnell, S. M., Stein, E. D., Webb, J. A., Grantham, T., Lusardi, R. A., Zimmerman, J., Peek, R. A., Lane, B. A., Howard, J., & Sandoval-Solis, S.

2019

Hybridization between two sympatric ranid frog species in the northern Sierra Nevada

Molecular Ecology, 28 (20), 4636–4647. DOI: 10.1111/mec.15236

- Peek, R., M. Bedwell, S. O'Rourke, G. Wengert, C. Goldberg, M. Miller.

2019

A Lentic Breeder in Lotic Waters: Sierra Nevada Yellow-legged Frog (*Rana sierrae*) Habitat Suitability in Northern Sierra Nevada Streams.

Copeia, 107(4), 676–693. DOI: 10.1643/CH-19-213

- Yarnell, S.M., R.A. Peek, N. Keung, B.D. Todd, S. Lawler, C. Brown

2018

The ecological importance of unregulated tributaries to benthic invertebrate communities in a regulated river

Hydrobiologia, 829, 291–305. DOI: 10.1007/s10750-018-3840-4

- Milner, V.S., S.M. Yarnell, R.A. Peek.

2018

A Freshwater Blueprint for California: Prioritizing freshwater habitat for conservation in California to maximize biodiversity and leverage existing protected areas.

Freshwater Science, 37 (2), 417-431. DOI: 10.1086/697996

- Howard, J.K., K.R. Klausmeyer, K.A. Fesenmyer, J. Furnish, T. Gardali, T. Grantham, J.V. Katz, S. Kupferberg, P. McIntyre, P.B. Moyle, P.R. Ode, R. Peek, R.M. Quinones, A.C. Rehn, N. Santos, S. Schoenig, L. Serpa, J.D. Shedd, J. Slusark, J.H. Viers, A. Wright and S.A. Morrison.

2018

Associating Metrics Of Hydrologic Variability With Benthic Macroinvertebrate Communities In Regulated And Unregulated Snowmelt-Dominated Rivers.

Freshwater Biology 63 (8), 844-858. DOI: 10.1111/fwb.12994.

- Steel, A.E., R.A. Peek, R.A. Lusardi, S.M. Yarnell.

2016

Management of the Spring Snowmelt Recession in Regulated Systems.

JAWRA Journal of the American Water Resources Association 52(3), 723-736. DOI: 10.1111/1752-1688.12424

- Yarnell, S., R. Peek, G. Epke and A. Lind.

2016

Missing the boat on freshwater fish conservation in California.

Conservation Letters 10(1), 77–85. DOI: 10.1111/conl.12249

- Grantham, T., K. Fesenmeyer, R. Peek, E. Holmes, A. Bell, R. Quiñones, N. Santos, J. Howard, J. Viers, P. Moyle.

2015

Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California.

PLoS One 10(7): e0130710. DOI: 10.1371/journal.pone.0130710

- Howard, J.K., K.R. Klausmeyer, K.A. Fesenmyer, J. Furnish, T. Gardali, T. Grantham, J.V. Katz, S. Kupferberg, P. McIntyre, P.B. Moyle, P.R. Ode, R. Peek, R.M. Quinones, A.C. Rehn, N. Santos, S. Schoenig, L. Serpa, J.D. Shedd, J. Slusark, J.H. Viers, A. Wright and S.A. Morrison.

SELECTED DATA SCIENCE WRITING

2021

Dammed Hot: California's regulated streams fail coldwater ecosystems

California Water Blog — Center for Watershed Sciences

- Story about classification of thermal regimes in CA and coldwater management concerns.

2020

Drawing Boundaries with DNA to Improve Conservation

California Water Blog — Center for Watershed Sciences

- Story about using genetics to draw boundaries for conservation management

2016

Cue the Frogs! Water signatures, environmental cues and climate change

California Water Blog — Center for Watershed Sciences

- Story about environmental cues for amphibians in rivers

2015

Time Lapse Photos Expose Nature in the Raw

California Water Blog — Center for Watershed Sciences

- Story about using game cameras to monitor the environment

I enjoy writing about data science, rivers, R, making maps, and frogs ryanpeek.org

TEACHING EXPERIENCE

2021

R for Water Resources Data Sciences (R4WRDS)

State Water Resources Boards (SWRB) — SWRB

- Created and co-instructed R4WRDS Courses, Intro and Intermediate levels. Focused on how to import different datasets, create visualizations, conduct exploratory data analysis, and clean and tidy water data. Taught as a 1 day course virtually in 2021.
- (www.r4wrds.com)

2021 | 2020

California Aquatic Bioassessment Workgroup & CA Society of Freshwater Sciences R Workshop

UC Davis — UC Davis

- Created and co-instructed a short workshop teaching introductory R using bioassessment data for CABW-SFS conference, focused on how to import different datasets, create visualizations to explore basic data trends, and create maps in R to explore/report spatial patterns.
- Two short 2-hour sessions. https://ucd-cws.github.io/CABW2020_R_training/

2021 | 2016

Data Carpentry Workshops

Various

- Teach researchers in science, engineering, medicine, and related disciplines the computing skills they need to get more done using open source and reproducible tools. Specifically, have taught genomics/ecology/geospatial workshops at Stanford, UC Davis, UC Berkeley, and University of Rhode Island Coastal Institute. (http://software-carpentry.org/) (http://www.datacarpentry.org/)

2020 | 2019

Strategies & Techniques for Analyzing Microbial Population Structures (STAMPS)

Marine Biological Laboratory — Woods Hole, MA

- Research facilitator/teacher for the STAMPS course on analysis of metagenomic data. Provided interdisciplinary bioinformatic and statistical training to practitioners of molecular microbial ecology and genomics.
- Topics covered included acquisition and organization of next generation sequence data; principles of quality control of sequence data and data management; methods of taxonomic assignment and clustering of targeted gene data. Also an introduction to the Linux command-line and R statistical environments. (https://www.mbl.edu/education/courses/stamps/)

2019 | 2017

R for Data Analysis and Visualization in Science

UC Davis — Davis, CA

- Lead instructor and creator of graduate course teaching R and version control for 25+ students. Course designed to train students in toolsets applicable to the entire process of reproducible data-driven research and encourage the use of open-source tools.
- Built website and made course materials openly available on github. (https://gge-ucd.github.io/R-DAVIS/).
- Now a required graduate course in Ecology Grad Group

I am passionate about education, and strive to continue learning how to be a better teacher. I am a proud Carpentries Instructor, and the community they represent.

2018

Foothill Yellow-Legged Frog Ecology, Management, and Regulation

Humboldt State — Arcata, CA

- One of three main instructors for workshop designed to cover the natural history and management of the foothill yellow-legged frog.
- Three days of lecture followed by a field day covered ecological requirements of the species, mitigation, restoration, and permitting requirements

2018

Intro to Genomics (Data Carpentry)

DIBSI — Davis, CA

- Co-instructor. DIBSI at UC Davis is a series of two-day or week-long workshops for biologists to learn bioinformatics and data science. The Intro to R course was built as an interactive, week-long introduction to the programming language R. Following Carpentry workshop content, taught basics of R by live-coding with participants
- (https://dib-lab.github.io/2018-06-27-DIBSI-Genomics/)

2017

Intro to R

Data Intensive Biology Summer Institute (DIBSI) — Davis, CA

- Co-Instructor. DIBSI at UC Davis is a series of two-day or week-long workshops for biologists to learn bioinformatics and data science. The Intro to R course was built as an interactive, week-long introduction to the programming language R. Following Carpentry workshop content, taught basics of R by live-coding with participants
- (https://mikoontz.github.io/data-carpentry-week/)

2015

Ecogeomorphology

UC Davis — Davis, CA

- Co-instructor. Taught multidisciplinary collaborative watershed and stream analysis through combined laboratory and field study of a selected stream system (Tuolumne River). Educated students from diverse backgrounds to work in research teams to collect and analyze field data from the Tuolumne River system. Helped collect and develop virtual hike of Tuolumne Meadow with University of Worcester, UK
- Serve as rafting guide, as well as lectured, and taught in classroom, lab, and field, including a 3 day rafting trip on the Tuolumne River. (https://watershed.ucdavis.edu/education/classes/)

2010

Geospatial Analysis

University of San Francisco — San Francisco, CA

- Teaching Assistant
- Lab instructor for undergraduate geospatial analysis course using ArcGIS; planned and conducted lab activities and led discussions for one semester

SELECTED PRESS (ABOUT)

2021 **Dams Ineffective for Cold-water Conservation**
UC Davis
UC Davis
• Press release on recent research about thermal regimes in CA streams.

2013 **Cool and Collected**
College of Agricultural and Environmental Sciences Outlook, Spring
UC Davis

SELECTED PRESS (BY)

2020 **Tips for Souping of RMarkdown Documents**
• Top ten tips for making RMarkdown better

2019 | 2015 **The Aggie Brickyard. A Student Run Magazine**
Co-Founder & Design Editor
UC Davis

OTHER PUBLICATIONS

2013 **Management of the Spring Snowmelt Recession: An Integrated Analysis of Empirical, Hydrodynamic, and Hydropower Modeling Applications**
Final Report. California Energy Commission. Publication number: CEC-500-2013. 137 pp.
• Yarnell, S.M, R.A. Peek, D.E. Rheinheimer, A.J. Lind, and J.H. Viers

2013 **Montane Meadows in the Sierra Nevada: Changing Hydroclimatic Conditions and Concepts for Vulnerability Assessment**
Center for Watershed Sciences Technical Report (CWS-2013-01), University of California, Davis. 63 pp.
• Viers, J.H., SE Purdy, R.A. Peek, A. Fryoff-Hung, N.R. Santos, J.V.E. Katz, J.D. Emmons, D.V. Dolan, and S.M. Yarnell.

2011 **Validation of Regional Habitat Suitability Criteria and Instream Flow Modeling Applications for the Foothill Yellow-Legged Frog (*Rana boylii*)**
Final Report. California Energy Commission, PIER. Publication number: CEC-500-2011.
• Yarnell, S., A. Lind, C. Bondi, R. Peek, and J. Mount. 2011.

2010

Landscape Genetics of Foothill Yellow-legged Frogs (*Rana boylii*) in regulated and unregulated rivers: Assessing connectivity and genetic fragmentation.

Master's Thesis, Biology Department. University of San Francisco, CA. 69 pp.

• Peek, R. A.

ACKNOWLEDGED ARTICLES

2017

Variation in thermal niche of a declining river-breeding frog: From counter-gradient responses to population distribution patterns.

Freshwater Biology 62(7):1255–1265. DOI: 10.1111/fwb.12942

• Catenazzi, A., S. J. Kupferberg.

2016

California Amphibian and Reptile Species of Special Concern.

University of California Press

• Thomson, R.C., A.N. Wright, H.B. Shaffer.

2013

Frogs of the United States and Canada, 2-vol. set.

Baltimore: The Johns Hopkins University Press.

• Dodd, C.K.J.

2013

Transferability of habitat suitability criteria for a stream breeding frog (*Rana boylii*) in the Sierra Nevada, California.

Herpetological Conservation and Biology 8(1):88-–103.

• Bondi, C.A., S.M. Yarnell, and A.J. Lind. 2013.

2012

Effects of Flow Regimes Altered by Dams on Survival, Population Declines, and Range-Wide Losses of California River-Breeding Frogs.

Conservation Biology 26(3): 513–524.

• Kupferberg, S.J., W.J. Palen, A.J. Lind, S. Bobzien, A. Catenazzi, J. Drennan, and M.E. Power.

2007

Removal of nonnative fish results in population expansion of a declining amphibian (mountain yellow-legged frog, *Rana muscosa*).

Biological Conservation 135(1): 11–20.

• Knapp, R.A., D.M. Boiano, V.T. Vredenburg.

SELECTED PRESENTATIONS

2021 **Conservation: Connecting Puddles to Pools**

Guest Lecture, American River College NATR 302 Wildlife Biology, Feb 1.

· Peek, Ryan.

2019 **Bridging Troubled Waters: Merging disciplines for conservation in freshwater ecosystems.**

Invited Ecology Seminar Speaker, UNLV. Las Vegas, NV. 8 Dec.

· Peek, Ryan.

2019 **Using Benthic Macroinvertebrate Data to Assess and Inform Flow Management Recommendations in California**

California Aquatic Bioassessment Workgroup/California Society for Freshwater Science Meeting, Davis, 24 Oct.

· Peek, Ryan, A. Obester, S. Yarnell, R. Lusardi, N. Santos.

2019 **Hybridization between two parapatric ranid frog species in the northern Sierra Nevada, California**

Amphibian Population Task Force (APTF), Arcata, 9–11 Jan.

· Peek, R., M. Bedwell, S. O'Rourke, G. Wengert, C. Goldberg, M. Miller.

2017 **Plasticity in timing of hydrologic spawning cues for the foothill yellow-legged frog (*Rana boylii*) under Mediterranean climate extremes in Sierra Nevada rivers**

Society for Freshwater Science (SFS) Annual Meeting, Raleigh, NC, 5–8 Jun.

· Peek, R., S. Yarnell

SERVICE & LEADERSHIP

2021 | 2015 **Coordinator**

Davis R-Users Group

· https://d-rug.github.io/

2021 | 2016 **Software & Data Carpentry Instructor**

Carpentries

· https://carpentries.org/instructors/

2021 | 2016 **Data Lab Affiliate**

UC Davis Data Lab

· https://datalab.ucdavis.edu/affiliated-students-and-postdocs/

I am a strong advocate and supporter of building an inclusive and open community, and strive to learn from, support, and adapt to whatever community I am a part of.

2021 | 2020

National Center for Ecological Analysis and Synthesis (NCEAS) workgroup

Bay Delta Science Program

- Collaborative multi-agency and academic workgroup formed to focus on data synthesis of long-term trends in the San Francisco Estuary food webs critical to supporting multiple endemic fish species of conservation concern.

2020 | 2019

Center for Watershed Science Executive Committee

UC Davis

- Liaison between researchers and academic faculty conducting research, representative for postdocs and non-academic senate researchers.

AFFILIATIONS & TRAININGS

Society for Study of Amphibians and Reptiles (SSAR)

Ecology Society of America (ESA) | Society for Freshwater Science (SFS)

Whitewater Rafting Guide, Outdoor Adventures, UC Davis